

Ordinance Regulating Radio Equipment

(An asterisk (*) indicates that the regulations were amended by another regulation.)

November 30, 1950
Radio Regulatory Commission Regulations No. 18
Amended in Regulations No. 8 in 1952
Amended in MPT Ordinance No. 43 in 1952
Amended in MPT Ordinance No. 61 in 1953
Amended in MPT Ordinance No. 7 in 1955
Amended in MPT Ordinance No. 21 in 1956
Amended in MPT Ordinance No. 30 in 1958
Amended in MPT Ordinance No. 10 in 1960
Amended in MPT Ordinance No. 21 in 1960
Amended in MPT Ordinance No. 16 in 1961
Amended in MPT Ordinance No. 41 in 1961
Amended in MPT Ordinance No. 13 in 1963
Amended in MPT Ordinance No. 1 in 1964
Amended in MPT Ordinance No. 20 in 1964
Amended in MPT Ordinance No. 30 in 1964
Amended in MPT Ordinance No. 13 in 1965
Amended in MPT Ordinance No. 28 in 1966
Amended in MPT Ordinance No. 16 in 1967
Amended in MPT Ordinance No. 23 in 1967
Amended in MPT Ordinance No. 5 in 1968
Amended in MPT Ordinance No. 24 in 1968
Amended in MPT Ordinance No. 32 in 1968
Amended in MPT Ordinance No. 9 in 1969
Amended in MPT Ordinance No. 22 in 1970
Amended in MPT Ordinance No. 31 in 1971(*)
Amended in MPT Ordinance No. 25 in 1972(*)
Amended in MPT Ordinance No. 44 in 1972
Amended in MPT Ordinance No. 23 in 1974
Amended in MPT Ordinance No. 18 in 1975
Amended in MPT Ordinance No. 22 in 1975
Amended in MPT Ordinance No. 8 in 1976
Amended in MPT Ordinance No. 19 in 1977
Amended in MPT Ordinance No. 28 in 1977
Amended in MPT Ordinance No. 2 in 1979
Amended in MPT Ordinance No. 12 in 1979
Amended in MPT Ordinance No. 15 in 1980
Amended in MPT Ordinance No. 45 in 1981
Amended in MPT Ordinance No. 11 in 1982
Amended in MPT Ordinance No. 37 in 1982
Amended in MPT Ordinance No. 65 in 1982
Amended in MPT Ordinance No. 3 in 1983
Amended in MPT Ordinance No. 9 in 1983
Amended in MPT Ordinance No. 21 in 1983
Amended in MPT Ordinance No. 37 in 1983
Amended in MPT Ordinance No. 3 in 1984
Amended in MPT Ordinance No. 7 in 1984
Amended in MPT Ordinance No. 33 in 1984
Amended in MPT Ordinance No. 48 in 1984
Amended in MPT Ordinance No. 8 in 1985
Amended in MPT Ordinance No. 45 in 1985
Amended in MPT Ordinance No. 65 in 1985
Amended in MPT Ordinance No. 76 in 1985
Amended in MPT Ordinance No. 3 in 1986
Amended in MPT Ordinance No. 12 in 1986(*)
Amended in MPT Ordinance No. 27 in 1986
Amended in MPT Ordinance No. 43 in 1986
Amended in MPT Ordinance No. 54 in 1986
Amended in MPT Ordinance No. 17 in 1987
Amended in MPT Ordinance No. 40 in 1987
Amended in MPT Ordinance No. 51 in 1987
Amended in MPT Ordinance No. 13 in 1988
Amended in MPT Ordinance No. 24 in 1988
Amended in MPT Ordinance No. 36 in 1988
Amended in MPT Ordinance No. 76 in 1988
Amended in MPT Ordinance No. 4 in 1989
Amended in MPT Ordinance No. 21 in 1989
Amended in MPT Ordinance No. 28 in 1989
Amended in MPT Ordinance No. 42 in 1989
Amended in MPT Ordinance No. 49 in 1989
Amended in MPT Ordinance No. 65 in 1989
Amended in MPT Ordinance No. 78 in 1989
Amended in MPT Ordinance No. 7 in 1990
Amended in MPT Ordinance No. 33 in 1990
Amended in MPT Ordinance No. 41 in 1990a
Amended in MPT Ordinance No. 47 in 1990
Amended in MPT Ordinance No. 5 in 1991
Amended in MPT Ordinance No. 11 in 1991
Amended in MPT Ordinance No. 15 in 1991
Amended in MPT Ordinance No. 35 in 1991
Amended in MPT Ordinance No. 42 in 1991
Amended in MPT Ordinance No. 57 in 1991

Contents

Chapter I General Provisions

- Section 1 General (Articles 1-4)
- Section 2 Quality of Emissions (Articles 5-7)
- Section 3 Protection Devices (Articles 8 and 9)
- Section 4 Special Devices (Articles 9.2 and 9.3)
- Section 5 Interference Prevention Function (Article 9.4)

Chapter II Transmitting Equipment

- Section 1 General (Articles 10-14)
- Section 2 Transmitter (Articles 15-19)
- Section 3 Transmitting Antenna (Articles 20-23)

Chapter III Receiving Equipment (Articles 24-26)

Chapter IV Conditions for Radio Equipment Classified by Service or Emission Class and Frequency Band

- Section 1 Radio Equipment of Broadcasting Stations for AM Broadcasting (Articles 27-33.9)
- Section 1.2 Radio Equipment of Broadcasting Stations for HF Broadcasting (Articles 33.10-33.19)
- Section 2 Radio Equipment of Broadcasting Stations for VHF Broadcasting (Articles 34-37.2)
- Section 2.2 Radio Equipment of Broadcasting Stations for Standard Television Broadcasting (Articles 37.2.2-37.7.2)
- Section 2.2.2 Radio Equipment of Broadcasting Stations for VHF Sound Multiplex Broadcasting or VHF Teletext Broadcasting (Articles 37.7.3-37.7.7)
- Section 2.3 Radio Equipment of Broadcasting Stations for Standard Television Sound Multiplex Broadcasting (Articles 37.8-37.15)
- Section 2.4 Radio Equipment of Broadcasting Stations for Standard Television Teletext Broadcasting (Articles 37.16-37.20)
- Section 2.4.2 Radio Equipment of Broadcasting Stations for Standard Television Data Multiplex Broadcasting Based on Transmission System Using Vertical Blanking Period (Articles 37.20.2-37.20.6)
- Section 2.4.3 Radio Equipment of Broadcasting Stations for Standard Television Data Multiplex Broadcasting Based on Transmission System Using Sound Signal

- Subcarrier (Articles 37.20.7 - 37.20.10)
- Section 2.5 Radio Equipment of Broadcasting-Satellite Stations for Standard Television Broadcasting (Except Digital Broadcasting), Standard Television Sound Multiplex Broadcasting, Standard Television Teletext Broadcasting, or Standard Television Data Multiplex Broadcasting Using Emissions of Frequencies in a Range of Higher Than 11.7 GHz to 12.2 GHz, and Earth Stations Communicating with the Said Broadcasting-Satellite Stations (Articles 37.21 - 37.26.2)
- Section 2.6 Radio Equipment of Broadcasting-Satellite Stations for High-Definition Television Broadcasting (Except Digital Broadcasting), High-Definition Television Sound Multiplex Broadcasting, or High-Definition Television Data Multiplex Broadcasting and Earth Stations Communicating with the Said Broadcasting-Satellite Stations (Articles 37.27 - 37.27.6)
- Section 2.7 Radio Equipment of Broadcasting Stations (Excluding Those Which Perform Satellite Supplementary Broadcasting) that Perform Digital Broadcasting out of VHF Broadcasting (Article 37.27.7 and Article 37.27.8)
- Section 2.8 Radio Equipment of Broadcasting Stations that Perform Digital Broadcasting or High-Definition Television Broadcasting out of Standard Television Broadcasting (Article 37.27.9 - Article 37.27.11)
- Section 2.9 Radio Equipment of Broadcasting Satellite Stations that Perform VHF Broadcasting Using G7W Emissions of Frequencies in a Range of Higher Than 2,630 MHz to 2,655 MHz, Radio Stations that Perform Satellite Supplementary Broadcasting and Earth Stations Communicating with the Said Broadcasting Satellite Stations
- Section 2.10 Radio Equipment of Broadcasting-Satellite Stations for Standard Television Broadcasting, High-Definition Television Broadcasting, VHF Broadcasting, or Data Broadcasting Using Class G7W Emissions of Frequencies in a Range of Higher Than 11.7 GHz to 12.2 GHz and Earth Stations Communicating with the Said Broadcasting-Satellite Stations (Articles 37.27.15-37.27.17)
- Section 2.11 Radio Equipment of Broadcasting-Satellite Stations for Standard Television Broadcasting, High-Definition Television Broadcasting, VHF Broadcasting, or Data Broadcasting Using Class G7W Emissions of Frequencies in a Range of Higher Than 12.2 GHz to 12.75 GHz and Earth Stations Communicating with the Said Broadcasting-Satellite Stations (Articles 37.27.18-37.27.20)
- Section 2.12 Radio Equipment of Radio Stations Relaying Program Raw Materials or Relaying Broadcasting Programs (Articles 37.27.21-37.27.22)
- Section 3 Radio Equipment of Ship Stations and Coast Stations, and INMARSAT Ship Earth Stations, etc. (Articles 37.28-45.3.4)
- Section 3.2 Radio Equipment of Radio Stations in the Aeronautical Mobile Service and in the Aeronautical Radionavigation Service, Portable Stations Mounted in Aircraft, and Radio Equipment of Radio Stations in the Aeronautical Mobile Service (Articles 45.4-45.21)
- Section 4 Radio Direction Finder, etc. (Articles 46-49.4)
- Section 4.2 Radio Equipment of Paging Stations (Limited to Paging Stations Established for

- Telecommunications Service) (Articles 49.6)
- Section 4.3 Radio Equipment of Radio Stations, etc. Performing TDMA Portable Radio Communication (Articles 49.6.2)
- Section 4.3.2 Radio Equipment of Radio Stations, etc. Performing CDMA Portable Radio Communication (Articles 49.6.3 and Article 49.6.4)
- Section 4.4 Radio Equipment of Radio Stations, etc. Performing Time Division Multiplexing/Code Division Multiplexing Portable Radio Communication (Article 49.6.5)
- Section 4.4.2 Radio Equipment of Radio Stations, etc. Performing TDMA/CDMA Portable Radio Communication (Article 49.6.6)
- Section 4.5 Radio Equipment of Radio Stations, etc. Performing MCA Land Mobile Communication (Article 49.7)
- Section 4.6 Radio Equipment of Radio Stations, etc. Performing Digital MCA Land Mobile Communication (Article 49.7.2 and Article 49.7.3)
- Section 4.7 Radio Equipment of Cordless Telephone Radio Stations (Article 49.8)
- Section 4.8 Radio Equipment of Digital Cordless Telephone Radio Stations (Article 49.8.2)
- Section 4.9 Radio Equipment of Radio Stations of the Personal Handy Phone System (Article 49.8.3)
- Section 4.10 Radio Equipment of Premises Radio Stations (Article 49.9 to Article 49.13)
- Section 4.11 Radio Equipment of Specified Low-Power Radio Stations (Article 49.14)
- Section 4.12 Radio Equipment of Radio Stations, etc. Performing Airport Radio Telephone Communication (Article 49.15)
- Section 4.12.2 Radio Equipment of Radio Stations, etc. Performing Digital Airport Radio Telephone Communication (Article 49.15.2)
- Section 4.13 Radio Equipment of Land Mobile Stations of Specified Radio Microphones (Article 49.16)
- Section 4.14 Radio Equipment of Radio Stations of a Low-Power Security System (Article 49.17)
- Section 4.15 Radio Equipment of Radio Stations Performing Portable Mobile-Satellite Data Communication (Article 49.18)
- Section 4.16 Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 22 GHz, 26 GHz or 38 GHz Band. (Article 49.19)
- Section 4.17 Radio Equipment of Radio Stations of a Low-Power Data Communication System (Article 49.20)
- Section 4.18 Radio Equipment of Radio Stations of an Access System in the 5 GHz Band (Article 49.21)
- Section 4.19 Radio Equipment of Radio Stations Performing Road Traffic Information Communication (Article 49.22)
- Section 4.20 Radio Equipment of Radio Stations Performing Portable Mobile Satellite Communication (Article 49.23)
- Section 4.21 Radio Equipment of INMARSAT Portable Mobile Earth Stations (Article

49.24)

- Section 4.22 Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 2 GHz Band (Article 49.25)
- Section 4.22.2 Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 18 GHz Band (Article 49.25.2)
- Section 4.23 Radio Equipment of Land Mobile Stations of an Automated Road Toll Collection System or Base Stations of an Automated Road Toll Collection System (Article 49.25.3)
- Section 4.24 Radio Equipment of Radio Stations, etc. of a Narrow-area Communication System (Article 49.26)
- Section 5 Radio Equipment of Emergency Stations (Article 50)
- Section 6 Radio Equipment of Radio Stations for International Communication (Excluding International Broadcasting) (Articles 51-53)
- Section 7 Radio Equipment of Convenience Radio Stations (Article 54)
- Section 7.2 Radio Equipment of Citizen Radio Stations (Article 54.2)
- Section 7.2.2 Radio Equipment of Small-Scale Earth Stations Whose Transmission Is Controlled by Another Earth Station (Article 54.3)
- Section 7.3 Radio Equipment of Single-Channel Radio Stations Using a Single Sideband (Articles 55-57.2)
- Section 8 Radio Equipment of Radio Stations Using Angularly Modulated Emissions (Articles 57.3-58.2.2)
- Section 9 Radio Equipment of Fixed Stations Forming a Communication System Using Emissions of Frequencies of 54 MHz or More (Articles 58.2.3-58.2.11)
- Section 10 Radio Equipment of Fixed Stations Forming a Communication System Using Subscriber Radio Access Communication, or Radio Equipment of Radio Stations that Perform Communication, etc. for Testing Subscriber Radio Access Communication Equipment (Article 58.2.12)

Chapter V High Frequency-Based Equipment

- Section 1 General (Article 58.3)
- Section 2 Communication Equipment (Articles 58.4-64.2)
- Section 3 Equipment Other Than Communication Equipment (Articles 65-66)

Supplementary Provisions

(Definition)

Article 3 For the interpretation of the provisions of this ordinance, the following definitions shall be complied with.

- 1 “Portable radio communication” refers to radio communication performed between a base station that is established for performing communication with a land mobile station established for portable use or established on an automobile or any other vehicle that moves on land, and the said land mobile station (excluding the airport radio telephone

communication prescribed in item 7 and the digital airport radio communication prescribed in item 8) with a view to providing a telecommunication service.

- 2 “TDMA portable radio communication” refers to portable radio communication that employs a frequency division complex communication system using time division multiplexing and TDMA as the communication system.
- 3 “CDMA portable radio communication” refers to portable radio communication that employs a frequency division complex communication system using code division multiplexing and CDMA as the communication system.
- 4 “Time division multiplexing/code division multiplexing portable radio communication” refers to portable radio communication that employs as the communication system a multiplexing system that combines time division multiplexing and code division multiplexing, and a frequency division complex communication system using CDMA.
- 4.2 “TDMA/CDMA portable radio communication” refers to portable radio communication that employs as the communication system a time division complex communication system using a multiplexing system that combines time division multiplexing and code division multiplexing and an access system that combines TDMA and CDMA.
- 5 “MCA land mobile communication” refers to radio communication using a single communication channel that is performed between an MCA control station (which refers to a land mobile relay station that relays communication by directing the frequency of the emissions used and that is capable of concurrently relaying two or more communications (excluding digital MCA control stations prescribed in the next item; this also applies hereafter) and a land mobile station or directive station (which refers to a base station that performs communication with a land mobile station through relaying by an MCA control station; this also applies hereafter) using emission of the frequency directed by the said MCA control station among emissions of two or more frequencies assigned commonly to two or more radio stations in a given area, and radio communication performed mutually between MCA control stations in order to relay the relevant radio communications as well as radio communication performed to control such radio communications.
- 6 “Digital MCA land mobile communication” refers to radio communication that is performed between a digital MCA control station (which refers to a land mobile station that relays communication by directing the frequency of the emission used and that is capable of concurrently relaying two or more communications through the digital system; this also applies hereafter) and a land mobile station or digital directive station (which refers to a base station that performs communication with a land mobile station through relaying by a digital MCA control station; this also applies hereafter) using emissions of the frequency directed by the said digital MCA control station among emissions of the frequencies assigned commonly to two or more radio stations in a given area, and radio communication performed mutually between digital MCA control stations in order to relay the relevant radio communications as well as radio communication performed to control such radio communications.
- 7 “Airport radio telephone communication” refers to radio communication using a single communication channel that is performed for phone calls between a base station established for the purpose of providing a telecommunication service exclusively in an airport and certain areas adjacent to it and a land mobile station, and radio communication that is performed for controlling the relevant radio communication.
- 8 “Digital airport radio communication” refers to digital system radio communication that is performed mutually between radio stations established for the purpose of providing a

telecommunication service exclusively in an airport and certain areas adjacent to it and a land mobile station, and radio communication that is performed for controlling the relevant radio communication.

- 9 “Portable mobile satellite data communication” refers to radio communication that is performed mainly for data transmission between a portable base earth station established for the purpose of providing a telecommunication service and a portable mobile earth station, and radio communication that is performed for controlling the relevant radio communication.
- 10 “Portable mobile satellite communication” refers to radio communication that is performed mainly for phone calls between a portable base earth station established for the purpose of performing the telecommunication service and a portable mobile earth station, and radio communication that is performed for controlling the relevant radio communication.
- 11 “Municipality digital disaster prevention radio communication” refers to radio communication that is performed mutually between fixed stations established for the purpose of performing disaster prevention administration works in the regions within the range of the areas of municipalities or special sections prescribed in 1 and whose modulation system is 16QAM.
- 12 “Subscriber radio access communication” refers to radio communication that is performed mutually between a fixed station connected to terminal equipment (which refers to those prescribed in Article 52.1 of Telecommunication Business Law (1984 Law No. 86); this also applies hereafter) or customer-provided telecommunications facilities (which refers to those prescribed in Article 70.1 of the same law; this also applies hereafter) and a fixed station established for performing communication with the said fixed station, and radio communication that is performed mutually between fixed stations established for relaying the said radio communication.

Chapter I General Provisions

Section 1 General

(Purpose)

Article 1. The purpose of these Regulations is to determine the conditions for radio equipment and high frequency-based equipment.

(Basis)

Article 2. These Regulations are based on the provisions in Chapter III of the Law (including the cases where these provisions apply mutatis mutandis to Article 100 paragraph 5 of the Law), except otherwise provided for separately.

(Provisions Applied to Broadcasting Test Stations, etc.)

Article 3.2. Those provisions of these Regulations that are related to a broadcasting station,

broadcasting test-satellite station, or earth station that communicates with a broadcasting test-satellite station shall apply to a broadcasting test station, a broadcasting test-satellite station, or an earth station that communicates with a broadcasting test-satellite station, respectively, except for those broadcasting test stations, broadcasting test-satellite stations, and earth stations that communicate with broadcasting test-satellite stations that are announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications because it is difficult or irrational to apply the provisions.

(Announcement: * in No. 444 in 1962.)

(Provisions Applied to Development Test Stations)

Article 4. Those provisions of these Regulations that are related to radio stations in a radiocommunication service shall apply to development test stations whose radio stations will be used to perform development tests for the said radiocommunication service, except for those development test stations that are announced separately (*) because it is difficult or irrational to apply the provisions.

(Announcements: *in No. 444 in 1962 and No. 382 in 1986.)

Section 2 Quality of Emissions

(Frequency Tolerance)

Article 5. The tolerance of frequencies used in transmitting equipment shall be as stipulated in Table 1.

(Permissible Values for Occupied Bandwidth)

Article 6. The permissible values for a bandwidth occupied by emissions shall be as stipulated in Table 2.

(Permissible Values for Spurious Emission/Unwanted Emission Intensity)

Article 7. The permissible values for the intensity of spurious emissions or unwanted emissions shall be as stipulated in Table 3.

Section 3 Protection Devices

(Power Supply Circuit Shutoff, etc.)

Article 8. The water-cooling unit for use with vacuum tubes shall be equipped with an alarm device to warn of cooling water abnormalities. Or, it shall have an automatic circuit breaker in its power supply circuit.

2 The forced-air cooling unit for use with vacuum tubes having an anode dissipation of 1 kW or more shall be equipped with an alarm device to warn of abnormalities in the air flow. Or, it

shall have an automatic circuit breaker in its power supply circuit.

Article 9. In addition to those prescribed in the preceding Article, the power supply circuit of the radio equipment shall be equipped with a fuse or automatic circuit breaker. However, this shall not apply in cases where the load is 10 W or less.

Section 4 Special Devices

(Selective Calling Device, etc.)

Article 9.2. Of the radio stations listed in the left-hand column of the following table, those listed separately shall be equipped with the device listed in the right-hand column. The device shall comply with the technical conditions announced separately.

Radio station	Device
Radio telephone stations using class F3E emissions of a frequency in a range of higher than 54 MHz to 70 MHz, higher than 142 MHz to 162.0375 MHz, or higher than 335.4 MHz to 470 MHz	Selective calling device (Announcement: *1)
Radio stations in the radiolocation service	Selective calling device Identification device (Announcement: *2, *3)
Radio stations in the land mobile service (except land mobile stations for personal handy phone (which refer to radio stations prescribed in Article 6.4 item 6 of the Enforcement Regulations; this also applies hereafter)), radio stations in the portable mobile service, and convenience radio stations	Call name memory device or automatic identification device (Announcement: *1, *4, *5, *6, *18)
Premises radio stations	Transmitter identification device (Announcement: *7)
Radio stations in the maritime mobile service	Automatic identification device (Announcement: *8)

- 2 The selective calling device for radio telephone stations in the aeronautical mobile service using emissions of a frequency from 2,850 kHz to 28,000 kHz or from 118 MHz to 136 MHz shall comply with the technical conditions announced separately (*9).
- 3 The selective calling device for radio stations in the maritime mobile service and for radio stations in the radiolocation service using emissions of a frequency of 44 MHz or lower shall comply with the technical conditions announced separately (*10, *11), provided that the said radio stations are announced separately.
- 4 The call name memory device and identification device for cordless telephone base units (which refer to those cordless telephone radio stations (that is, to those prescribed in Article 6.4 item 1 of the Enforcement Regulations; this also applies hereafter) which use emissions

of a frequency in a range of 380.2125 MHz to 381.3125 MHz; this also applies hereafter) shall comply with the technical conditions announced separately (*12).

- 5 The modulation signal processing device for radio stations in the maritime mobile service, used to maintain secrecy in communication, shall comply with the technical conditions announced separately (*13) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 6 The call name memory device and identification device for digital cordless telephone base units (which refer to those digital cordless telephone radio stations (which refer to those prescribed in Article 6.4 item 5 of the Enforcement Regulations; this also applies hereafter) which are used mainly at a fixed location (excluding those that have a function for relaying radio communication; this also applies hereafter) shall comply with the technical conditions announced separately (*14) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcements: *1 in No. 515 in 1962, *2 in No. 146 in 1970, *3 in No. 142 in 1970, *4 in No. 300 in 1987, *5 in No. 858 in 1982, *6 in No. 250 in 1993, *7 in No. 383 in 1986, *8 in No. 355 in 1992, *9 in No. 341 in 1970, *10 in No. 1044 in 1972, *11 in No. 1009 in 1981, *12 in No. 516 in 1998, *13 in No. 250 in 1994, and *14 in No. 517 in 1998)

(Emergency Warning Signal Generator)

Article 9.3. The emergency warning signal generator shall be capable of generating an emergency warning signal that complies with the conditions defined in the items below. However, this shall not apply to the emergency warning signal generator that is separately stipulated in the standard transmission method for digital broadcasting among standard television broadcasts, etc. (the Ministry of Public Management, Home Affairs, Posts and Telecommunications Ordinance No. 26 amended in 2003; hereafter referred to as “standard method for digital broadcasting”).

- 1) The emergency warning signal shall be modulated using a frequency deviation method for which the mark and space frequencies are 1,024 Hz and 640 Hz, respectively. The frequency tolerance for the signal shall be $\pm 10/1,000,000$.
- 2) The phases of the signal shall be continuous when frequency deviation occurs.
- 3) The transmission rate of the signal shall be 64 bits/s. The transmission rate tolerance shall be $\pm 10/1,000,000$.
- 4) The distortion factor of the signal shall be within 5%.
- 5) The configuration of the signal shall be as announced separately (*).

(Announcement: * in No. 405 in 1985)

Section 5 Interference Prevention Function

(Interference Prevention Function)

Article 9.4. The radio stations prescribed in Article 4 item 3) of the Law shall be equipped with the interference prevention function stated below.

- 1) For cordless telephone base units and digital cordless telephone base units, an interference prevention function that can automatically send a call sign or call name, as specified by the Minister of Public Management, Home Affairs, Posts and Telecommunications, and receive an identification sign (sign designed to identify the remote party of communication but which is not an identification signal as prescribed in

- Article 8 paragraph 1 item 3) of the Law) as specified by the Minister of Public Management, Home Affairs, Posts and Telecommunications
- 2) For radio stations for cordless telephones (excluding those prescribed in the preceding item), the interference prevention function prescribed in Article 6.2 item 1) of the Enforcement Regulations
 - 3) For radio stations of digital cordless telephones (excluding radio stations for digital cordless telephones prescribed in item 1); this also applies in this item and the following item)
 - a The interference prevention function prescribed in Article 6.2 item 1) of the Enforcement Regulations, if communication is performed with digital cordless telephone base units
 - b The interference prevention function prescribed in Article 6.2 item 1) or 3) of the Enforcement Regulations, if radio communication is performed between two radio stations or more for digital cordless telephones or with land mobile stations for personal handy phone systems and if the radio communication is performed not via digital cordless telephone base units and base stations for personal handy phone systems (which refer to base stations established for performing communication mainly with land mobile stations for personal handy phone systems using emissions of a frequency of 1,884.65 MHz or higher but no more than 1,919.45 MHz; this also applies hereafter).
 - 4) Land mobile stations for personal handy phone systems
 - a The interference prevention function prescribed in Article 6.2 item 2) of the Enforcement Regulations, if communication is performed with base stations for personal handy phone systems
 - b The interference prevention function prescribed in Article 6.2 item 1) or 3) of the Enforcement Regulations, if radio communication is performed between two land mobile stations or more for personal handy phone systems or with radio stations for digital cordless telephones and if the radio communication is performed not via digital cordless telephone base units and base stations for personal handy phone systems
 - 5) For specified low-power radio stations (which refer to radio stations prescribed in Article 6.4 item 2 of the Enforcement Regulations; this also applies hereafter) using emissions of a frequency in a range of higher than 73.6 MHz to 1,260 MHz or from 2,400 MHz to 2,483.5 MHz :
 - a The interference prevention function prescribed in Article 6.2 item 3) of the Enforcement Regulations, if the specified low-power radio stations are connected to a telecommunication circuit
 - b The interference prevention function prescribed in Article 6.2 item 3) or 4) of the Enforcement Regulations, if the specified low-power radio stations are not connected to a telecommunication circuit
 - 6) For specified low-power radio stations using emissions of a frequency in a range of higher than 10.5 GHz to 10.55 GHz, or higher than 24.05 GHz to 24.25 GHz, the interference prevention function prescribed in Article 6.2 item 3), 4) or 5) of the Enforcement Regulations

- 7) For specified low-power radio stations using emissions of a frequency in a range of higher than 59 GHz to 66 GHz (excluding those prescribed in the following item):
 - a The interference prevention function prescribed in Article 6.2 item 3) of the Enforcement Regulations, if the specified low-power radio stations are connected to a telecommunication circuit
 - b The interference prevention function prescribed in Article 6.2 item 4) of the Enforcement Regulations, if the specified low-power radio stations are not connected to a telecommunication circuit
- 8) For specified low-power radio stations for the radiolocation service using emissions of a frequency in a range of higher than 60 GHz to 61 GHz or 76 GHz to 77 GHz, the interference prevention function prescribed in Article 6.2 item 5) of the Enforcement Regulations
- 9) For radio stations of a low-power security system (which refer to radio stations prescribed in Article 6.4 item 3 of the Enforcement Regulations; this also applies hereafter) and radio stations of low-power data communication system (which refer to radio stations prescribed in Article 6.4 item 4 of the Enforcement Regulations; this also applies hereafter), the interference prevention function prescribed in Article 6.2 item 3 of the Enforcement Regulations
- 10) For land mobile stations of a DSRC system (which refer to land mobile stations prescribed in Article 6.4 item 7 of the Enforcement Regulations; this also applies hereafter) and radio stations that perform communication for testing the radio equipment at land mobile stations of a DSRC system (which refer to radio stations prescribed in Article 6.4 item 7 of the Enforcement Regulations; this also applies hereafter), the interference prevention function prescribed in Article 6.2 item 2 of the Enforcement Regulations
- 11) Land mobile stations of a radio access system in the 5 GHz band (which refer to radio communication prescribed in Article 6.4 item 8 of the Enforcement Regulations; this also applies hereafter)
 - a When connecting to a telecommunication circuit, the interference prevention function prescribed in Article 6.2 item 2 of the Enforcement Regulations
 - b When connecting to no telecommunication circuit, the interference prevention function prescribed in Article 6.2 item 3 of the Enforcement Regulations

Chapter II Transmitting Equipment

Section 1 General

Article 10 and 11. Deleted (Deleted in No. 16 in 1961.)

(Conversion Ratio of Antenna Power)

Article 12. The conversion ratios for the carrier power, mean power, and peak envelope power of a transmitter shall vary according to their emission class and be as stipulated in Table 4.

(Method for Calculating Antenna Power, etc.)

Article 13. The methods for measuring and calculating the antenna power of radio equipment will be announced (*).

(Announcement: * in No. 683 in 1959)

(Tolerances for Antenna Power)

Article 14. The tolerance for the antenna power of transmitting equipment in each classification listed in the left-hand column of the following table shall be as stipulated in the right-hand column.

Transmitting equipment	Tolerance	
	Upper limit (%)	Lower limit (%)
1) Transmitting equipment of a broadcasting station (excluding that listed in 2))	5	10
2) Transmitting equipment of a broadcasting station for HF broadcasting (except that which uses class A3E emissions), VHF broadcasting, television broadcasting, VHF multiplex broadcasting, or television multiplex broadcasting	10	20
3) Transmitting equipment at a coast station (excluding the coast station specified in item 3.2) below), an aeronautical station, or a radio beacon station for ships which uses emissions of a frequency of 26.175 MHz or lower		
3.2) Transmitting equipment at a ship station or a coast station which performs communication by means of TDMA	20	20
4) Transmitting equipment defined below (1) Transmitting equipment for a survival boat (which refers to a rescue boat and rescue raft; this also applies hereafter) or rescue craft (2) Two-way radio telephone (3) Ship/aircraft two-way radio telephone	50	20
5) Transmitting equipment for a paging station (limited to that established with the aim of performing a telecommunication service)	15	15

6) Transmitting equipment at a radio station using emissions of a frequency higher than 470 MHz (except the transmitting equipment at radio stations for which the conditions for the radio equipment are stipulated in Articles 49.6.2 to 49.7.3, Article 49.8.2, Article 49.8.3, Article 49.15 and Article 54.1 item 4, and radio stations for the single communication channel land mobile service using emissions of an angle-modulated frequency higher than 1,215 MHz but no more than 2,690 MHz and the transmitting equipment defined in 2), 4), 7), 8), 9), and 11) in this table)	50	50	
7) Transmitting equipment defined below (1) Transmitting equipment at a premises radio station which uses emissions of a frequency in a range of 952 MHz to 954 MHz (2) Transmitting equipment at a premises radio station using the 19 GHz band frequencies (3) Transmitting equipment at a specified low-power radio station which uses emissions of a frequency in a range of 2,400 MHz to 2,483.5 MHz and which uses a frequency hopping system (4) Transmitting equipment at a radio station of a low-power data communication system (5) Transmitting equipment at a radio station of an access system in the 5 GHz band	20	80	
8) Transmitting equipment at an amateur radio station	20		
9) Transmitting equipment at a specified low-power radio station using emissions of a frequency in a range of higher than 59 GHz to 66 GHz or of higher than 76 GHz to 77 GHz	50	70	
10) Transmitting equipment at radio stations performing CDMA and time division multiplexing/code division multiplexing portable radio communications	Transmitting equipment at base stations using radio signals at frequencies greater than 832 MHz but no more than 834 MHz; greater than 838 MHz but no more than 846 MHz; or greater than 860 MHz but no more than 895 MHz with a spread code speed (refers to the speed of the signal that spreads the spectrum with a spread code; this also applies hereafter) of 1.2288 megachips per second	59	61

	Transmitting equipment at base stations using radio signals at frequencies greater than 860 MHz but no more than 895 MHz, greater than 1,844.9 MHz but no more than 1,879.9 MHz or greater than 2,110 MHz but no more than 2,170 MHz with a spread code speed of 3.84 megachips per second	87	47
	Transmitting equipment at base stations using radio signals at frequencies greater than 1,844.9 MHz but no more than 1,879.9 MHz or greater than 2,110 MHz but no more than 2,170 MHz with a spread code speed of 1.2288 megachips per second per carrier or 3.6864 megachips per second per carrier	59	61
	Transmitting equipment at land mobile stations using radio signals at frequencies greater than 815 MHz but no more than 850 MHz, greater than 1,749.9 MHz but no more than 1,784.9 MHz, or greater than 1,920 MHz but no more than 1,980 MHz with a spread code speed of 3.84 megachips/s, and whose antenna power is more than 21 dB (with 1 mW regarded as 0 dB)	48	58
	Transmitting equipment at land mobile stations using radio signals at frequencies greater than 815 MHz but no more than 850 MHz, greater than 1,749.9 MHz but no more than 1,784.9 MHz, or greater than 1,920 MHz but no more than 1,980 MHz with a spread code speed of 3.84 megachips/s, and whose antenna power is 21 dB (with 1 mW regarded as 0 dB) or lower	87	47

11) Transmitting equipment at radio stations performing TDMA and CDMA portable radio communications	Transmitting equipment at base stations	87	47
	Transmitting equipment at land mobile stations whose antenna power is more than 21 dB (with 1 mW regarded as 0 dB)	48	58
	Transmitting equipment at land mobile stations whose antenna power is lower than 21 dB (with 1 mW regarded as 0 dB)	87	47
12) Transmitting equipment defined below (1) Transmitting equipment at a radio station that performs road traffic information (2) Transmitting equipment at the base station of a DSRC system (3) Transmitting equipment at a radio station that performs communication for testing the radio equipment at the land mobile station of a DSRC system		20	50
13) Other transmitting equipment		20	50

- 2 Notwithstanding the provisions of the previous paragraph, the transmitting equipment of a broadcasting station for television broadcasting or television multiplex broadcasting using emissions of a frequency in a range of higher than 470 MHz to 770 MHz that is announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications because it is deemed difficult or irrational to apply the said paragraph shall satisfy the technical conditions announced separately (*2).
- 3 Notwithstanding the provisions of paragraph 1, the Minister of Public Management, Home Affairs, Posts and Telecommunications will separately announce (*3, *4, *5, *6, *7) the tolerance for the antenna power of the transmitting equipment of radio equipment at a ship earth station (hereinafter referred to as “INMARSAT ship earth station”) established to perform communication with coast earth stations by means of a relay through a satellite station (hereinafter referred to as “INMARSAT satellite station”) established by a corporate body supervised by the International Mobile Communication Satellite Organization, radio equipment at a portable mobile earth station established to perform communication with portable base earth stations by means of a relay through an INMARSAT satellite station (hereinafter referred to as “INMARSAT portable mobile earth station”), radio equipment at a

radio station that is established on a structure operated in a sea area and performs radio communication by means of a relay through an INMARSAT satellite station, radio equipment that uses emissions of a frequency in a range of higher than 1,626.5 MHz to 1,660.5 MHz among the radio equipment at an aircraft earth station, radio equipment at a radio navigation land station for providing satellite locating error correction information, satellite emergency position-indicating radio beacon, search and rescue radar transponder, and ELT.

(Permissible Values of Specific Absorptance at Human Head)

Article 14.2. Radio equipment at a portable mobile earth station that performs portable mobile satellite communication by means of a relay through an artificial satellite station established at a land mobile station and non-stationary satellite station that performs portable radio communication (limited to the radio equipment for which transmission information is provided by telephone (including that of audio broadcasting; this also applies hereafter in this paragraph) and the radio equipment in a combination of telephone and other information) shall provide specific absorptance (the value of the energy that any arbitrary living tissue of 10 g absorbs for any 6 minutes by being exposed to an electromagnetic field is divided by 10 g, and then is further divided by six minutes) of the emissions radiated at the human head by the radio equipment being 2 W or less/kg, except for the radio equipment defined in the items below:

- 1) Radio equipment whose mean power is 20 mW or less
- 2) Radio equipment announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications when it is considered irrational to apply this regulation, in addition to the condition in the preceding item
- 2 The Minister of Public Management, Home Affairs, Posts and Telecommunications will separately announce the method of measuring specific absorptance at the human head described in the preceding paragraph.

(Announcements: *1 in No. 819 in 1975, *2 in No. 859 in 1982, *3 in No. 566 in 1990, *4 in No. 572 in 1990, *5 in No. 172 in 1996, *6 in No. 121 in 1997, *7 in No. 267 in 1997)

Section 2 Transmitter

(Condition for Frequency Stabilization)

Article 15. A transmitter shall be so constructed that the oscillation frequency will be as free from influence by changes in its power supply voltage or load as possible in order to maintain its frequency within the tolerance.

- 2 The oscillation circuit of a transmitter shall be based on an oscillation method that is as resistant to influence by changes in the ambient temperature or humidity as possible in order to maintain its oscillation frequency within the tolerance.
- 3 The transmitter of a mobile station (including a mobile amateur radio station) shall be able to maintain its frequency within the tolerance against any vibration or shock that can practically occur.

Article 16. The crystal oscillator of a crystal oscillation circuit shall satisfy the conditions stated below in order to maintain its frequency within the tolerance.

- 1) The oscillation frequency shall be determined in advance in tests using the crystal oscillation circuit of the transmitter or a circuit that is equivalent to the said crystal oscillation circuit.
- 2) If a temperature-controlled bath is provided, the temperature-controlled bath shall be able to maintain accurately the permissible value for changes in its temperature according to the temperature coefficient of the crystal oscillator.

(Transmission Rate)

Article 17. A transmitter based on manual keying shall be able to operate stably when the transmission rate of the keying is 25 band.

- 2 A transmitter other than that stated in the previous paragraph shall be able to operate stably at a transmission rate 10% higher than its maximum service transmission rate.
- 3 Notwithstanding the provisions of the previous two paragraphs, the transmitter at an amateur radio station shall be able to operate as stably as possible at its normally used transmission rate.

(Modulation)

Article 18. When a transmitter modulates a carrier with the frequency of a sound signal or a similar signal, the modulation factor shall be kept within $\pm 100\%$ in terms of the peak value of the modulated wave.

- 2 The transmitter at an amateur radio station shall not be provided with a function for ensuring communication secrecy.

(Conditions for Communication Method)

Article 19. The simplex operation-based radio telegraph for a ship or coast station shall be of the break-in type or another type that is equivalent or superior thereto. If the said radio telegraph uses a break-in relay, its configuration shall allow easy replacement of the break-in relay with a spare. However, this does not apply to the break-in relay of radio equipment that uses emissions of a frequency higher than 26.175 MHz.

- 2 The simplex operation-based radio telephone (except a radio telephone at an amateur radio station) shall have the transmission/reception switch of the single-action switching type or another type that is equivalent or superior thereto. In addition, for the radio telephone at a ship station (limited to the manual-switched type), the operator's section of the switch shall be mounted on the microphone or handset of the radio telephone.
- 3 The duplex operation-based radio equipment of a radio telephone station intended to perform a telecommunications service shall be of the vodas type or another type that is equivalent or superior thereto except for simpler radio equipment intended to be used for short-distance communication.
- 4 A voice-operated transmission/reception switch for radio telephone at a radio station in the maritime mobile service with the aim of performing a telecommunication service shall satisfy the technical conditions announced separately (*).

(Announcement: * in No. 411 in 1969)

Section 3 Transmitting Antenna

(Type, Configuration, etc. of Transmitting Antenna)

Article 20. The type and configuration of a transmitting antenna shall satisfy the following items:

- 1) The gain and efficiency of the antenna shall be as high as possible.
- 2) Matching shall be sufficient.
- 3) The antenna shall have a satisfactory directional pattern.

Article 21. Anyone who plans to open a radio station with the aim of performing the service defined in each of the following items may be requested to submit material related to the gain, directional pattern, etc. of the antenna of the said radio station.

- 1) Broadcasting service for a specific broadcasting area
- 2) International communication service
- 3) Radio beacon service and radionavigation service
- 4) Other radiocommunication service for specific partners

Article 22. The directional pattern of an antenna shall be defined in terms of the items stated below:

- 1) Direction of the principal and secondary radiations
- 2) Angle of the principal radiation in a horizontal plane
- 3) Object in the proximity of the location of the antenna that can divert the emissions from the antenna
- 4) Radiation from the feeder

Article 23. Deleted (Deleted in No. 61 in 1953.)

Chapter III Receiving Equipment

(Limit on Secondary Radiated Emissions, etc.)

Article 24. The limit on secondary emissions radiated from the receiving equipment prescribed in Article 29 of the Law within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4 nW or lower as measured using the circuit.

- 2 Notwithstanding the provisions of the preceding paragraph, the limit on the secondary emissions radiated from the receiving equipment at a specified low-power radio station which uses emissions of a frequency from 2,400 MHz to 2,483.5 MHz, at a premises radio station which uses emissions of a frequency in the range higher than 2,425 MHz to 2,475 MHz and uses a frequency hopping system, at the radio station of a low-power data communication system, and at a premises radio station using the 19 GHz band, shall be as stipulated in the following table:

Frequency band	Limit on secondary radiated emissions	
Lower than 1 GHz	4 nW or lower	
1 GHz or higher to lower than 10 GHz	20 nW or lower	
10 GHz or higher	Specified low-power radio station which uses a frequency from 2,400 MHz to 2,483.5 MHz or a premises radio station which uses emissions of a frequency in the range higher than 2,425 MHz to 2,475 MHz and uses a frequency hopping system, and the radio station of a low-power data communication system	20 nW or lower
	Premises radio station using emissions of the 19 GHz band frequencies	20 μ W or lower

- 3 Notwithstanding the provisions of paragraph 1, the limit on secondary emissions radiated from the receiving equipment at a radio station that performs CDMA portable radio communication or at a radio station that performs communication, etc. for testing CDMA portable radio communication equipment (which refers to a radio station that performs communication for testing or adjusting the radio equipment of a base station performing CDMA portable radio communication or a radio station that performs relaying of the communication where portable radio communication between the base station and a land mobile station is disabled; this also applies hereafter), both of which use the emissions at frequencies greater than 815 MHz but no more than 850 MHz, greater than 860 MHz but no more than 901 MHz, or greater than 915 MHz but no more than 940 MHz, a radio station that performs time division multiplexing/code division multiplexing portable radio communication, and a radio station which performs communication, etc. for testing time division multiplexing/code division multiplexing portable radio communication equipment (which refers to a radio station that performs communication for testing or adjusting the radio equipment of a base station performing time division/code division multiplexing portable radio communication or a radio station that performs relaying of the communication where portable radio communication between the base station and a land mobile station is disabled; this also applies hereafter) shall be as stipulated below:

- 1) Receiving equipment receiving signals with a spread code speed of 3.84 megachips per second

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
-----------------------	----------------	---------------------------------------

Base Station	a 30 MHz to less than 1.000 MHz (excluding 860 MHz to no more than 895 MHz)	A value no greater than -57 dB (where one milliwatt is taken as 0 dB; this also applies to the remainder of this paragraph through paragraph 6) in any 100 kHz band
	b 1,000 MHz to no more than 12.75 GHz	A value no greater than -47 dB in any 1 MHz band
Land Mobile Station	a Greater than 815 MHz to no more than 850 MHz and 860 MHz to no more than 895 MHz	A value no greater than -60 dB in any 3.84 MHz band
	b 30 MHz to less than 1,000 MHz (excluding the frequencies prescribed in a above)	A value no greater than -57 dB in any 100 kHz band
	c 1,000 MHz to no more than 12.75 GHz	A value no greater than -47 dB in any 1 MHz band

2) Receiving equipment receiving signals with a spread code speed of 1.2288 megachips per second

Type of Radio Station	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment that receives radio signals at frequencies greater than 887 MHz but no more than 889 MHz; greater than 893 MHz but no more than 901 MHz; or greater than 915 MHz but no more than 940 MHz	a Greater than 887 MHz but no more than 889 MHz; greater than 893 MHz but no more than 901 MHz; or greater than 915 MHz but no more than 940 MHz	A value no greater than -80 dB in any 30 kHz band
		b Greater than 832 MHz but no more than 834 MHz; greater than 838 MHz but no more than 846 MHz; or greater than 860 MHz but no more than 885 MHz	A value no greater than -60 dB in any 30 kHz band
		c Frequencies other than those prescribed in a and b above	A value no greater than -54 dB in any 30 kHz band
	Receiving equipment that receives radio signals at frequencies greater than 815 MHz but no more than 850 MHz	a Greater than 815 MHz but no more than 850 MHz	A value no greater than -80 dB in any 30 kHz band
		b Greater than 860 MHz but no more than 895 MHz	A value no greater than -60 dB in any 30 kHz band

		c Frequencies other than those prescribed in a and b above	A value no greater than -54 dB in any 30 kHz band
Land Mobile Station	Receiving equipment that receives radio signals at frequencies greater than 832 MHz but no more than 834 MHz; greater than 838 MHz but no more than 846 MHz; or greater than 860 MHz but no more than 885 MHz	a Greater than 832 MHz but no more than 834 MHz; greater than 838 MHz but no more than 846 MHz; or greater than 860 MHz but no more than 885 MHz	A value no greater than -81 dB in any 1 MHz band
		b Greater than 887 MHz but no more than 889 MHz; greater than 893 MHz but no more than 901 MHz; or greater than 915 MHz but no more than 940 MHz	A value no greater than -61 dB in any 1 MHz band
		c Frequencies other than those prescribed in a and b above	A value no greater than -54 dB in any 30 kHz band
	Receiving equipment that receives radio signals (limited to radio signals used in combination with radio signals at frequencies greater than 815 MHz but no more than 850 MHz) at frequencies greater than 860 MHz but no more than 895 MHz	a Greater than 860 MHz but no more than 895 MHz	A value no greater than -81 dB in any 1 MHz band
		b Greater than 815 MHz but no more than 850 MHz	A value no greater than -61 dB in any 1 MHz band
		c Frequencies other than those prescribed in a and b above	A value no greater than -54 dB in any 30 kHz band

4 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station that performs CDMA portable radio communication and that uses emissions of a frequency in a range of higher than 1,749.9 MHz to 1,784.9 MHz or higher than 1,844.9 MHz to 1,879.9 MHz, a radio station that performs communication, etc. for testing CDMA portable radio communication equipment, a radio station that performs time division multiplexing/code division multiplexing portable radio communication, and a radio station that performs communication, etc. for testing time division multiplexing/code division multiplexing portable radio communication equipment shall be as stipulated below.

- 1) Receiving equipment receiving signals with a spread code speed of 3.84 megachips per second

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	a 2,010 MHz to no more than 2,025 MHz	A value no greater than -52 dB in any 1 MHz band
	b 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz band
	c 1,000 MHz to no more than 12.75 GHz (excluding the frequencies prescribed in a above and those greater than 1,834.9 MHz but no more than 1,889.9 MHz)	A value no greater than -47 dB in any 1 MHz band
Land Mobile Station	a 1,749.9 MHz to no more than 1,784.9 MHz, and 1,844.9 MHz to no more than 1,879.9 MHz	A value no greater than -60 dB in any 3.84 MHz band
	b 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz band
	c 1,000 MHz to no more than 12.75 GHz (excluding the frequencies prescribed in a above)	A value no greater than -47 dB in any 1 MHz band

2) Receiving equipment receiving signals with a spread code speed of 1.2288 megachips per second per carrier or a spread code speed of 3.6864 megachips per second per carrier

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	a 1,749.9 MHz to no more than 1,784.9 MHz	A value no greater than -80 dB in any 30 kHz band
	b 1,844.9 MHz to no more than 1,879.9 MHz	A value no greater than -60 dB in any 30 kHz band
	c 1,884.5 MHz to no more than 1,919.6 MHz	A value no greater than -41 dB in any 300 kHz band
	d 2,010 MHz to no more than 2,025 MHz	A value no greater than -52dB in any 1 MHz band
	e Frequencies other than those prescribed in a, b, c and d above.	A value no greater than -47dB in any 30 kHz band
Land Mobile Station	a 860 MHz to no more than 895 MHz and 2,110 MHz to no more than 2,170 MHz	A value no greater than -60 dB in any 3.84 MHz band
	b 1,749.9 MHz to no more than 1,784.9 MHz	A value no greater than -61 dB in any 1 MHz band
	c 1,844.9 MHz to less than 1,879.9 MHz	A value no greater than -76 dB in any 1 MHz band
	d Frequencies other than those prescribed in a, b and c above	A value no greater than -47 dB in any 30 kHz band

5 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station that performs CDMA portable radio communication using emissions of a frequency higher than 1,920 MHz but no more than 1,980 MHz or higher than 2,110 MHz but no more than 2,170 MHz, a radio station that performs communication, etc. for testing CDMA portable radio communication equipment as well as a radio station that performs time division multiplexing/code division multiplexing portable radio

communication and a radio station that performs communication, etc. for testing time division multiplexing/code division multiplexing portable radio communication equipment shall be as stipulated below.

- 1) Receiving equipment receiving signals with a spread code speed of 3.84 megachips per second

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	a 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz band
	b 1,000 MHz to no greater than 12.75 GHz (excluding 2,100 MHz to no greater than 2,180 MHz)	A value no greater than -47 dB in any 1 MHz band
Land Mobile Station	a 1,920 MHz to no greater than 1,980 MHz, and 2,110 MHz to no greater than 2,170 MHz	A value no greater than -60 dB in any 3.84 MHz band
	b 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz band
	c 1,000 MHz to no greater than 12.75 GHz (excluding the frequencies prescribed in a above)	A value no greater than -47 dB in any 1 MHz band

- 2) Receiving equipment receiving signals with a spread code speed of 1.2288 megachips or 3.6864 megachips per second per carrier in 1) above.

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	a 1,920 MHz to no greater than 1,980 MHz	A value no greater than -80 dB in any 30 kHz band
	b 2,110 MHz to no greater than 2,170 MHz	A value no greater than -60 dB in any 30 kHz band
	c 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz band
	d 1.000 MHz to no greater than 12.75 GHz (excluding the frequencies prescribed in a and b above)	A value no greater than -47dB in any 1 MHz band
Land Mobile Station	a 925 MHz to no greater than 935 MHz	The mean power in the 100 kHz bandwidth for 51 frequencies in the range of 925 MHz to no greater than 935 MHz with an interval of 200 kHz shall be a value no greater than -67 dB; provided, however, that the mean power in the 100 kHz bandwidth shall be a value no greater than -36 dB for any five among the said 51 frequencies.

	b Higher than 935 MHz to no greater than 960 MHz	The mean power in the 100 kHz bandwidth for 125 frequencies in the range of 935.2 MHz to no greater than 960 MHz with an interval of 200 kHz shall be a value no greater than -79 dB; provided, however, that the mean power in the 100 kHz bandwidth shall be a value no greater than -36 dB for any five among the said 125 frequencies.
	c 1,805 MHz to no greater than 1,880 MHz	The mean power in the 100 kHz bandwidth for 376 frequencies in the range of 1,805 MHz to no greater than 1,880 MHz with an interval of 200 kHz shall be a value no greater than -71 dB; provided, however, that the mean power in the 1 MHz bandwidth shall be a value no greater than -30 dB for any five among the said 376 frequencies.
	d 1,920 MHz to no greater than 1,980 MHz	A value no greater than -61 dB in any 1 MHz width
	e 2,110 MHz to no greater than 2,170 MHz	A value no greater than -76 dB in any 1 MHz width
	f 30 MHz to less than 1,000 MHz (excluding the frequencies prescribed in a and b above)	A value no greater than -57 dB in any 100 kHz width
	g 1,000 MHz to no greater than 12.75 GHz (excluding the frequencies prescribed in c, d and e above)	A value no greater than -47 dB in any 1 MHz width

6 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station that performs TDMA/CDMA portable radio communication using emissions of a frequency higher than 2,010 MHz but no greater than 2,025 MHz and a radio station that performs communication, etc. for testing TDMA/CDMA portable radio communication equipment (which refers to a radio station that performs communication for testing or adjusting the radio equipment of a base stations that performs TDMA/CDMA portable radio communication and a radio station that relays the communication when portable radio communication is disabled between a base station and a land mobile station; this also applies hereafter) shall be as stipulated below.

1) Receiving equipment receiving signals with a spread code speed of 3.84 megachips per second

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
-----------------------	----------------	---------------------------------------

Base Station	a 815 MHz to no greater than 850 MHz, 1,749.9 MHz to no greater than 1,784.9 MHz, 1,920 MHz to no greater than 1,980 MHz and 2,010 MHz to no greater than 2,025 MHz	A value no greater than –78 dB in any 3.84 MHz width
	b 30 MHz to less than 1,000 MHz	A value no greater than –57 dB in any 100 kHz width
	c 1,000 MHz to no greater than 12.75 GHz (excluding the frequencies prescribed in a above)	A value no greater than –47 dB in any 1 MHz width
Land Mobile Station	a 2,010 MHz to no greater than 2,025 MHz	A value no greater than –60 dB in any 3.84 MHz width
	b 30 MHz to less than 1,000 MHz	A value no greater than –57 dB in any 100 kHz width
	c 1,000 MHz to no greater than 12.75 GHz (excluding the frequencies prescribed in a above)	A value no greater than –47 dB in any 1 MHz width

2) Receiving equipment receiving signals with a spread code speed of 1.28 megachips per second per carrier in 1) above.

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	a 815 MHz to no greater than 850 MHz, 1,749.9 MHz to no greater than 1,784.9 MHz and 1,920 MHz to no greater than 1,980 MHz	A value no greater than –78 dB in any 3.84 MHz band
	b 2,010 MHz to no greater than 2,025 MHz	A value no greater than –83 dB in any 1.28 MHz band
	c 30 MHz to less than 1,000 MHz	A value no greater than –57 dB in any 100 kHz band
	d 1.000 MHz to no greater than 12.75 GHz (excluding the frequencies prescribed in a and b above)	A value no greater than –47dB in any 1 MHz band
Land Mobile Station	a 2,010 MHz to no greater than 2,025 MHz	A value no greater than –64 dB in any 1.28 MHz band
	b 30 MHz to less than 1,000 MHz	A value no greater than –57 dB in any 100 kHz band
	c 1.000 MHz to no greater than 12.75 GHz (excluding the frequencies prescribed in a above)	A value no greater than –47dB in any 1 MHz band

7 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a portable mobile earth station that performs portable mobile satellite communication using emissions of a frequency in a range of 1,621.35 MHz to 1,626.5 MHz shall be the value announced separately (*2) by the Minister of Public

Management, Home Affairs, Posts and Telecommunications.

- 8 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a base station of a DSRC system and at a radio station that performs communication for testing radio equipment at a land mobile station of a DSRC system shall be the value announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 9 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a specified low-power radio station using emissions of a frequency in a range of higher than 10.5 GHz to 10.55 GHz or higher than 24.05 GHz to 24.25 GHz shall be 2.5 μ W or lower.
- 10 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station using emissions of a frequency in a range of higher than 54.25 GHz to 59 GHz shall be 50 μ W or lower.
- 11 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a specified low-power radio station using emissions of a frequency in a range of higher than 59 GHz to 66 GHz or higher than 76 GHz to 77 GHz shall be 100 μ W or lower.
- 12 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station of a radio access system in the 5 GHz band, at a radio station using a frequency in a range of higher than 17.70 GHz to 18.72 GHz and higher than 19.22 GHz to 19.70 GHz (limited to a fixed station, base station, land mobile relay station, and land mobile station), at a radio station in the land mobile service using emissions of a frequency of 22 GHz, 26 GHz or 38 GHz band (which refers to a base station or land mobile station using emissions of a frequency higher than 22 GHz to 22.4 GHz, higher than 22.6 GHz to 23 GHz, higher than 25.25 GHz to 27 GHz, higher than 38.05 GHz to 38.5 GHz or higher than 39.05 GHz to 39.5 GHz; this also applies hereafter) shall be as stipulated in the following table.

Frequency band	Limit on secondary emissions radiated
Lower than 1 GHz	4 nW or lower
1 GHz or higher	20 nW or lower

(Announcements: *1 in No. 659 in 1997 and *2 in No. 530 in 1997)

- 13 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at at a premises radio station that uses emissions of a frequency in a range of 952 MHz to 954 MHz shall be the values announced separately by the Minister of Internal Affairs and Communications.

14 Not withstanding the provisions of paragraph 1, the limit on secondary emissions radiated from the receiving equipment at a special low-power radio station using emissions of a frequency higher than 402 MHz to 405 MHz shall be the values announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Other Conditions)

Article 25. Receiving equipment should preferably satisfy the conditions defined in the items below:

- 1) Low internal noise
- 2) Sufficient sensitivity
- 3) Appropriate selectivity
- 4) Sufficient intelligibility

(Receiving Antenna)

Article 26. The provisions related to transmitting antennas shall apply mutatis mutandis to receiving antennas.

Chapter IV Conditions for Radio Equipment Classified by Service or Emission Class and Frequency Band

Section 1 Radio Equipment of Broadcasting Stations for AM Broadcasting

Article 27-33. Deleted (Deleted in No. 29 in 1994.)

(Scope of Application)

Article 33.2. The provisions of this Section shall apply to the radio equipment of a broadcasting station for AM broadcasting within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Modulation Factor)

Article 33.3. The modulator of a transmitter at a broadcasting station for AM broadcasting shall satisfy the conditions defined in the items below:

- 1) For monophonic broadcasting, the modulator shall ensure amplitude modulation linearity up to at least 95%.
- 2) For stereophonic broadcasting, the modulator shall ensure amplitude modulation linearity up to at least 95% with the sum of the left and right side signals (which refers to the sum signal prescribed in Article 2 paragraph 2 of the Standard System for Transmission Related to AM Broadcasting (MPT Ordinance No. 4 in 1992; hereinafter referred to as the “Standard System for AM Broadcasting”; this also applies hereafter in this Section).

(Overall Frequency Response Characteristics)

Article 33.4. The overall frequency response characteristics of a transmitter at a broadcasting station for AM broadcasting shall satisfy the conditions defined in the items

below:

- 1) For monophonic broadcasting, the frequency departure in the modulation that uses a modulating frequency in a range of 100 Hz to 7,500 Hz shall be within the range of allowed limits shown in Figure 1-2 in reference to 50% amplitude modulation with a modulating frequency of 400 Hz.
 - 2) For stereophonic broadcasting, the frequency departure in the modulation that uses a modulating frequency in a range of 100 Hz to 7,500 Hz shall be within the range of allowed limits shown in Figure 1-2 in reference to either 50% amplitude modulation with the sum of the identical left and right side signals having a modulating frequency of 400 Hz or 40% amplitude modulation with the left or right side signal having a modulating frequency of 400 Hz.
- 2) When an identical signal is supplied to both the left and right side signal input terminals of a transmitter, the level difference between the left and right side signals at the output terminals of the transmitter shall be within 1.5 dB for 40% amplitude modulation with the sum signal having any modulating frequency in a range of 200 Hz to 5,000 Hz.

(Overall Distortion Factor)

Article 33.5. The overall distortion factor of a transmitter at a broadcasting station for AM broadcasting shall satisfy the conditions defined in the items below:

- 1) For monophonic broadcasting, 5% or lower for 80% amplitude modulation with modulating frequencies of 200 Hz, 1,000 Hz, and 5,000 Hz
- 2) For stereophonic broadcasting, 5% or lower for both 80% amplitude modulation with the sum of the identical left and right side signals having modulating frequencies of 200 Hz, 1,000 Hz, and 5,000 Hz, and 40% amplitude modulation with either the left or right side signal having modulating frequencies of 200 Hz, 1,000 Hz, and 5,000 Hz

(Carrier Amplitude Regulation)

Article 33.6. The carrier frequency current amplitude regulation of a transmitter at a broadcasting station for AM broadcasting shall satisfy the conditions defined in the items below:

- 1) For monophonic broadcasting, 5% or lower for amplitude modulation with a modulating frequency of 1,000 Hz
- 2) For stereophonic broadcasting, 5% or lower for amplitude modulation with the sum of the identical left and right side signals having a modulating frequency of 1,000 Hz

(Signal-to-Noise Ratio)

Article 33.7. The signal-to-noise ratio of a transmitter at a broadcasting station for AM broadcasting shall satisfy the conditions defined in the items below:

- 1) For monophonic broadcasting, 50 dB or higher for 80% amplitude modulation with a modulating frequency of 1,000 Hz
- 2) For stereophonic broadcasting, 50 dB or higher for 80% amplitude modulation with the sum of the identical left and right side signals having a modulating frequency of 1,000 Hz and 44 dB or higher for 40% amplitude modulation with either the left or right side signal having a modulating frequency of 1,000 Hz

(Channel Separation)

Article 33.8. The channel separation of a transmitter at a broadcasting station for AM broadcasting (which refers to the ratio of the output by which a signal applied to the left or right side signal input terminal of a transmitter appears as the corresponding left or right side signal at the corresponding output terminal of the transmitter versus the output by which the said signal appears as if it were supplied to the other input terminal; this also applies hereafter) shall be 20 dB or higher for 40% amplitude modulation with the left or right side signal having any modulating frequency in a range of 200 Hz to 5,000 Hz.

(Auxiliary Power Supply)

Article 33.9. Broadcasting radio equipment should preferably be equipped with an auxiliary power supply.

Section 1.2 Radio Equipment of Broadcasting Stations for HF Broadcasting

(Scope of Application)

Article 33.10. The provisions of this Section shall apply to the radio equipment of a broadcasting station for HF broadcasting within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Modulation Method)

Article 33.11. The modulation method of a transmitter at a broadcasting station for HF broadcasting shall be double-sideband or single-sideband amplitude modulation.

(Carrier Frequency of a single-sideband transmitter)

Article 33.12. The carrier frequency of a transmitter at a broadcasting station for performing HF broadcasting by means of single-sideband (hereinafter referred to as “single-sideband transmitter” in this section) shall be 2.5 kHz lower than the assigned frequency related to the said single-sideband transmitter.

(Carrier Power of a single-sideband transmitter)

Article 33.13. The carrier power of a single-sideband transmitter shall be 6 dB \pm 0.5 dB lower than the peak envelope power in modulation performed on a saturated level with one modulating frequency.

(Sideband used by a single-sideband transmitter)

Article 33.14. The sideband used by a single-sideband transmitter shall be an upper

sideband.

- 2 The unwanted sideband of a single-sideband transmitter shall be suppressed by 25 dB or more compared with a signal on the desired sideband as modulated with a modulating frequency of 1,000 Hz at the saturated level of transmission output.

(Overall Frequency Response Characteristics of a single-sideband transmitter)

Article 33.15. The overall frequency response characteristics of a single-sideband transmitter shall be within the range of allowed limits shown in Figure 1-2-2 in terms of a frequency departure in modulation with modulating frequencies of 150 Hz to 4,000 Hz in reference to that in 50% modulation with a modulating frequency of 400 Hz (as compared with modulation using one modulating frequency on the saturated level regarded as being 100%, with 100% sideband output voltage).

(Overall Distortion Factor a single-sideband transmitter)

Article 33.16. The overall distortion factor of a single-sideband transmitter shall be 10% or lower in 30% modulation with modulating frequencies of 200 Hz, 1,000 Hz, and 3,000 Hz (as compared with modulation using one modulating frequency on the saturated level regarded as being 100%, with 100% sideband output voltage).

(Signal-to-Noise Ratio of a single-sideband transmitter)

Article 33.17. The signal-to-noise ratio of a single-sideband transmitter shall be 50 dB or higher in 80% modulation with a modulating frequency of 1,000 Hz (as compared with modulation using one modulating frequency on the saturated level regarded as being 100%, with 100% sideband output voltage)

(Application mutatis mutandis to a transmitter of a broadcasting station that performs HF broadcasting by means of double-sideband)

Article 33.18. The provisions of Article 33.3 item 1, Article 33.5 item 1, Article 33.6 item 1 and Article 33.7 item 1 shall be applied mutatis mutandis to a transmitter at a broadcasting station that performs HF broadcasting by means of double-sideband.

(Auxiliary Power Supply)

Article 33.19 The provisions of Article 33.9 shall apply mutatis mutandis to the broadcasting radio equipment of a broadcasting station for HF broadcasting.

Section 2 Radio Equipment of Broadcasting Stations for VHF Broadcasting (Excluding Digital Broadcasting)

(Scope of Application)

Article 34. The provisions of this Section shall apply to the radio equipment of a

broadcasting station for VHF broadcasting (excluding digital broadcasting; this also applies hereunder in this Section) within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Plane of Polarization of Emissions)

Article 35. The plane of polarization of emissions radiated from the transmitting antenna of a broadcasting station for VHF broadcasting shall be horizontal except for those cases which the Minister of Public Management, Home Affairs, Posts and Telecommunications approves as necessary.

(Modulating Signal Tolerances, etc.)

Article 36. The frequency departure of a pilot signal (which refers to the pilot signal prescribed in Article 3 paragraph 3 of the Standard System for Transmission Related to VHF Broadcasting (MPT Ordinance No. 26 in 1968; hereinafter referred to as the “Standard System for VHF Broadcasting”); this also applies hereafter in this Section) shall be within ± 2 Hz of the value prescribed in Article 5 item 4) of the Standard System for VHF Broadcasting.

- 2 The point where the subcarrier used for stereophonic broadcasting (if performed) intersects the time axis on its positive inclination shall be within ± 5 degrees of the point where the pilot signal intersects the time axis, in terms of the pilot signal phase.

(Modulation Factor, etc.)

Article 36.2. A transmitter at a broadcasting station for VHF broadcasting shall ensure modulation linearity up to 100%.

- 2 The pilot signal-caused frequency shift of the main carrier shall be within a range of 10% to 8% of the maximum frequency shift prescribed in Article 3 paragraph 2 of the Standard System for VHF Broadcasting.
- 3 The subcarrier-caused frequency shift of the main carrier in stereophonic broadcasting (if performed) shall be within 1% of the maximum frequency shift prescribed in Article 3 paragraph 2 of the Standard System for VHF Broadcasting.

(Overall Frequency Response Characteristics)

Article 36.3. The characteristic curve of the overall frequency response characteristics of a transmitter at a broadcasting station for VHF broadcasting shall be between the ideal pre-emphasis characteristic curve for a time constant of 50 μ s (inclusive) and the curve of allowed pre-emphasis characteristic limits (inclusive) shown in Figure 2 over a modulating frequency in a range of 50 Hz to 15,000 Hz unless otherwise announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

- 2 When an identical signal is supplied to both the left and right side signal input terminals of a transmitter, the level difference between the left and right side signals at the output terminals of the transmitter shall be within 1.5 dB over any modulating frequency in a range of 100 Hz to 10,000 Hz.

(Announcement: * in No. 537 in 1968)

(Overall Distortion Factor)

Article 36.4. The overall distortion factor of a transmitter at a broadcasting station for VHF broadcasting shall be as stipulated in the right-hand column of the following table when a modulating frequency listed in the corresponding left-hand column of the table causes the frequency of the main carrier to shift by ± 75 kHz.

Modulating frequency	Overall distortion factor
50 Hz to lower than 10,000 Hz	2% or lower
10,000 Hz to 15,000 Hz	3% or lower

(Signal-to-Noise Ratio)

Article 36.5. The signal-to-noise ratio of a transmitter at a broadcasting station for VHF broadcasting shall be 55 dB or higher when a modulating frequency of 1,000 Hz causes the frequency of the main carrier to shift by ± 75 kHz.

(Residual Amplitude Modulation Noise)

Article 36.6. The residual amplitude modulation noise of a transmitter at a broadcasting station for VHF broadcasting (which refers to the amplitude modulation noise included in an unmodulated carrier) shall be lower than the output that the transmitter would produce at 100% amplitude modulation for the main carrier by 50 dB or more.

(Supplementary Provisions Related to Overall Distortion Factor, etc.)

Article 36.7. If the previous three Articles apply, de-emphasis shall be performed using a circuit with an impedance-frequency characteristic that has a time constant of 50 μ s.

(Channel Separation)

Article 37. The channel separation of a transmitter at a broadcasting station for VHF broadcasting shall be 30 dB or higher for any modulating frequency in a range of 100 Hz to 10,000 Hz when the left or right side signal causes the frequency of the main carrier to shift by ± 75 kHz.

(Radio Equipment for Complementary Broadcasting)

Article 37.2. Radio equipment for performing complementary broadcasting shall satisfy the conditions prescribed in Articles 37.7.4 to 37.7.7.

Section 2.2 Radio Equipment of Broadcasting Stations for Standard Television Broadcasting (excluding Digital Broadcasting)

(Scope of Application)

Article 37.2.2. The provisions of this Section shall apply to the video transmitting equipment of a broadcasting station for standard television broadcasting (excluding digital broadcasting; this also applies hereafter in this Section) within the bounds of the output terminal of the television camera to the transmitting antenna (however, the relay line and contact line shall be excluded) and the sound transmitting equipment of the said broadcasting station within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances, etc.)

Article 37.3. The difference in frequency between the video and sound signal carriers shall be within ± 1 kHz of the value (4.5 MHz) prescribed in the Standard System for Transmission Related to Standard Television Broadcasting (Except Digital Broadcasting) (MPT Ordinance No. 36 in 1991; hereinafter referred to as the “Standard System for Standard Television Broadcasting”).

- 2 The luminance signal (which refers to the luminance signal prescribed in Article 7 paragraph 1 of the Standard System for Standard Television Broadcasting) and a signal that modulates a color signal subcarrier shall coincide with each other with a difference of 0.05 μ s or less as a guideline; this also applies to the components of these signals.

Article 37.3.2. The departure of the frequency of a color signal subcarrier shall be within ± 10 Hz of the value (3.579545 MHz) prescribed in the Standard System for Standard Television Broadcasting and the fluctuation of the frequency shall be within ± 0.1 Hz per second.

- 2 The permissible range for the waveform of a synchronizing signal shall be as shown in Figure 3.

(Effective Radiated Power of Sound Transmitting Equipment)

Article 37.4. The effective radiated power of sound transmitting equipment shall be in the range of 15% to 35% of the effective radiated power of video transmitting equipment.

- 2 Notwithstanding the provisions of the previous paragraph, the effective radiated power of transmitting equipment of a broadcasting station for standard television broadcasting announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications shall satisfy the technical conditions announced separately (*).

(Announcement: * in No. 819 in 1975)

(Equivalent Isotropically Radiated Power of Sound Transmitting Equipment)

Article 37.4.2. The equivalent isotropically radiated power of sound transmitting equipment using emissions of a frequency in a range of 11.7 GHz to 12.2 GHz shall be in a range of 7% to 35% of the equivalent isotropically radiated power of video transmitting equipment.

(Plane of Polarization of Emissions)

Article 37.5. The provisions of Article 35 shall apply mutatis mutandis to the transmitting antenna of a broadcasting station for standard television broadcasting.

(Characteristics of Video Transmitting Equipment)

Article 37.6. A video transmitter at a broadcasting station for standard television broadcasting shall have the characteristics defined in the items below:

- 1) The pedestal level shall be 75% of the maximum level of the carrier with the tolerance being $\pm 2.5\%$ of the maximum level of the carrier.
- 2) The white level shall be 12.5% of the maximum level of the carrier with the tolerance being $\pm 2.5\%$ of the maximum level of the carrier.
- 3) The black level shall be as high as the pedestal level with the tolerance being -10% of the difference between the pedestal and white levels in reference to the pedestal level.
- 4) The sync signal peak value fluctuation for the time during which two consecutive fields are transmitted shall remain within $\pm 2.5\%$ of the average of peak values for the said time as much as possible.
- 5) The intensity of the lower sideband generated in modulation with a single frequency of 1,250 kHz or higher shall be lower than that of the lower sideband generated in modulation with a frequency of 200 kHz by 20 dB or more.
- 6) The intensity of the lower sideband generated in modulation with the frequency of a color signal subcarrier shall be lower than that of the lower sideband generated in modulation with a frequency of 200 kHz by 42 dB or more, and the intensity of the upper sideband generated in modulation with a frequency of 4.75 MHz shall be lower than that of the upper sideband generated in modulation with a frequency of 200 kHz by 20 dB or more.
- 7) The overall frequency response characteristics shall be in a range between a value indicated by the ideal characteristic curve shown in Figure 4 and a value listed below:
 - 2 dB for a modulating frequency of 500 kHz
 - 2 dB for a modulating frequency of 1,250 kHz
 - 3 dB for a modulating frequency of 2,000 kHz
 - 4 dB for a modulating frequency of 3,000 kHz
 - 6 dB for a modulating frequency of 4,000 kHz
- 8) In addition to the provisions of the previous item, the output produced in modulation with the frequency of a color signal subcarrier shall be 6 dB ± 2 dB lower than the output produced in modulation with a frequency of 200 kHz, and the output shall not change beyond ± 2 dB over a modulating frequency in a range of 2,100 kHz to 4,180 kHz.
- 9) The delay characteristics of an envelope waveform shall be such that the delay is 0 μ s for modulation with a modulating frequency in a range up to 3,000 kHz and which changes linearly between 3,000 kHz and 4,180 kHz with a delay of -0.17μ s at 3.580 kHz, in reference to the average delay over a modulating frequency in a range of 50 kHz to 200 kHz. In this case, the tolerance should, as a guideline, increase linearly over a modulating frequency in a range of 3.580 kHz to 2,100 kHz with a delay of $\pm 0.05 \mu$ s and $\pm 0.1 \mu$ s at 3.580 kHz and 2,100 kHz, respectively, be $\pm 0.1 \mu$ s over a modulating frequency in a range of 2,100 kHz to 200 kHz, and increase linearly over a modulating frequency in a range of 3.580 kHz and 4,180 kHz with a delay of $\pm 0.1 \mu$ s at 4,180 kHz.

Article 37.6.2. The constant luminance signal processing circuit and adaptive emphasis circuit prescribed in Article 7 paragraph 1 of the Standard System for Standard Television Broadcasting shall have the characteristics defined in the items below:

- 1) The compensation amount of the constant luminance signal processing circuit shall be in a range of 0 dB to +4 dB at 50% saturation of the red signal and of +5 dB to +15 dB at 100% saturation of the red signal.
- 2) The compensation amount of the adaptive emphasis circuit shall be in a range of +2 dB to +3 dB at 4 MHz and of +1 dB to +2 dB at 2 MHz if the low-frequency component of the luminance signal is 0%.

(Characteristics of Ghost Canceling Reference Signal Generator)

Article 37.6.3. When a ghost canceling reference signal is superimposed, the ghost canceling reference signal generator shall have the characteristics defined in the items below in reference to the values prescribed in Article 8 paragraph 6 of the Standard System for Standard Television Broadcasting.

- 1) The 0 level tolerance for the ghost canceling reference waveform and pedestal waveform shall be within +2%.
- 2) The tolerance for the amplitude of the ghost canceling reference waveform shall be within +2%.
- 3) The tolerance for the width of the ghost canceling reference waveform shall be within +1.0 sc (0.28 μ s).
- 4) The tolerance for the 50% position of the amplitude of the rising edge of the ghost canceling reference waveform shall be within +1.5 sc (0.42 μ s). This value applies to long-time fluctuation rather than the next field.
- 5) The rising characteristics of the ghost canceling reference waveform shall be within the range of allowed limits shown in Figure 4-1-2.
- 6) The fluctuation of the fall time of the ghost canceling reference waveform shall be within ± 0.05 μ s.
- 7) The relative fluctuation of the 50% position of the amplitude of the rising edge of the ghost canceling reference waveform shall be within ± 40 degrees (31 ns) of the steady-state value in reference to the color signal subcarrier synchronized with the color burst signal.

(Characteristics of Identification Control Signal Generator)

Article 37.6.4. When an identification control signal is superimposed, the identification control signal generator shall have the characteristics defined in the items below in reference to the values prescribed in Article 8 paragraph 7 of the Standard System for Standard Television Broadcasting.

- 1) The tolerance for the amplitude of the identification control signal waveform shall be ± 2 with the pedestal level and video signal white level regarded as being 0 and +100, respectively.
- 2) The tolerance for the 50% position of the amplitude of the B1 trailing edge of the identification control signal shall be within ± 710 ns.

- 3) The tolerance for the setup level of the identification control signal waveform shall be ± 2 with the pedestal level and video signal white level regarded as being 0 and +100, respectively.

(Characteristics of Sound Transmitter)

Article 37.7. A sound transmitter at a broadcasting station for standard television broadcasting shall have the characteristics defined in the items below:

- 1) The overall frequency response characteristics shall be within -3 dB of the ideal impedance-frequency characteristic curve having a time constant of $75 \mu\text{s}$ for performing pre-emphasis over a modulating frequency in a range of 100 Hz to 7,500 Hz unless otherwise announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2) The overall distortion factor shall be 5% or less if a frequency shift of ± 25 kHz is caused with modulating frequencies of 200 Hz, 1,000 Hz, and 5,000 Hz. In this case, de-emphasis shall be performed using a circuit with impedance-frequency characteristics having a time constant of $75 \mu\text{s}$.
- 3) The signal-to-noise ratio shall be -50 dB or less if a frequency shift of ± 25 kHz is caused with a modulating frequency of 1,000 Hz. In this case, de-emphasis shall be performed according to the provisions of the latter portion of the previous item.

(Radio Equipment for Complementary Broadcasting)

Article 37.7.2. Radio equipment for performing sound signal-based complementary broadcasting shall satisfy the conditions prescribed in Articles 37.9 to 37.15 when a sound signal subcarrier is used and the conditions prescribed in Articles 37.20.8 to 37.20.10 when a data signal subcarrier is used.

- 2) Radio equipment for video signal-based complementary broadcasting shall satisfy the conditions prescribed in Articles 37.17 to 37.20 if the horizontal scan periods of the 14th H to the 16th H, the 21st H, the 277th H to the 279th H, or the 284th H during the vertical blanking period are used, and the conditions prescribed in Articles 37.20.3 to 37.20.6 if the horizontal scan periods of the 10th H to 13th H, the 273rd H to the 275th H, or the 276th H during the vertical blanking period are used.

Section 2.2.2 Radio Equipment of Broadcasting Stations for VHF Sound Multiplex Broadcasting or VHF Teletext Broadcasting

(Scope of Application)

Article 37.7.3. The provisions of this Section shall apply to the radio equipment of a broadcasting station for VHF sound multiplex broadcasting within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna and the radio equipment of a broadcasting station for VHF teletext broadcasting within the bounds of the character signal sender to the transmitting antenna (however, the relay line and

contact line shall be excluded).

(Tolerances)

- Article 37.7.4.** The frequency departure of a multi-subcarrier (which refers to the multi-subcarrier prescribed in Article 2 paragraph 2 of the Standard System for Transmission Related to VHF Sound Multiplex Broadcasting and VHF Teletext Broadcasting (MPT Ordinance No. 25 in 1988; hereinafter referred to as the “Standard System for VHF Sound Multiplex Broadcasting and VHF Teletext Broadcasting”); this also applies hereafter in this Section) shall be within ± 8 Hz of the value prescribed in Article 3 paragraph 1 of the Standard System for VHF Sound Multiplex Broadcasting and VHF Teletext Broadcasting.
- 2 Every two of the points where the multi-subcarrier intersects the time axis on its positive inclination shall be within ± 5 degrees of the point where the pilot signal (which refers to the pilot signal prescribed in Article 2 paragraph 2 of the Standard System for Transmission Related to VHF Broadcasting (MPT Ordinance No. 26 in 1968); this also applies hereafter in this Section) intersects the time axis, in terms of the pilot signal phase.
 - 3 The departure of the transmission rate of a signal that modulates a multi-subcarrier shall be within $\pm 0.01\%$ of the value prescribed in Article 3 paragraph 5 of the Standard System for VHF Sound Multiplex Broadcasting and VHF Teletext Broadcasting.
 - 4 The spectrum of the multi-subcarrier of a transmission system for fixed reception (which refers to a transmission system related to VHF sound multiplex broadcasting and VHF teletext broadcasting used exclusively for fixed reception; this also applies hereafter) shall be within the range of allowed values shown in Figure 4-2.
 - 5 The characteristic curve of the transmission bandpass filter inserted after modulation with the multi-subcarrier of a transmission system for mobile reception (which refers to a transmission system related to VHF sound multiplex broadcasting and VHF teletext broadcasting for other than fixed reception; this also applies hereafter) shall be within the range of allowed values shown in Figure 4-2-2.

(Modulation Factor, etc.)

- Article 37.7.5.** A transmitter shall ensure modulation linearity up to ± 78 kHz in frequency shift.
- 2 When the code of signals modulating a multi-subcarrier are arranged chronologically, if they have a sequence of consecutive 1s, the main carrier frequency shift caused by the maximum amplitude of the multi-subcarrier shall be within a range of 0% to -4% of the value prescribed in Article 3 paragraph 9 of the Standard System for VHF Sound Multiplex Broadcasting and VHF Teletext Broadcasting.

(Eye Aperture Ratio)

- Article 37.7.6.** The eye aperture ratio of a transmitter (which, when a number of waveforms of two signals that respectively modulate two orthogonal multi-subcarriers are superimposed on one another in synchronization with the frequency half the transmission rate prescribed in Article 3 paragraph 5 of the Standard System for VHF Sound Multiplex Broadcasting and VHF Teletext Broadcasting, refers to the ratio of the maximum amplitude in that portion enclosed by the waveform of the minimum 1-level value and the waveform of the maximum

0-level value to the difference in level between the 1-level value and the 0-level steady-state value) shall be 70% or higher as measured at the output terminal of the transmitter. For a transmission system for mobile reception, however, this provision shall apply if the difference in level between the left and right side stereo sound signals is 0.

(Overall Frequency Response Characteristics)

Article 37.7.7. The overall frequency response characteristics of a transmitter shall be within -3 dB of the ideal impedance-frequency characteristic curve that has a time constant of 200 μ s for pre-emphasis over a modulating frequency in a range of 0.3 kHz to 3.4 kHz.

Section 2.3 Radio Equipment of Broadcasting Stations for Standard Television Sound Multiplex Broadcasting

(Scope of Application)

Article 37.8. The provisions of this Section shall apply to the radio equipment of a broadcasting station for standard television sound multiplex broadcasting within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances)

Article 37.9. The frequency departure of a control signal subcarrier shall be within ± 100 Hz of the value prescribed in Article 7 paragraph 1 of the Standard System for Transmission Related to Standard Television Sound Multiplex Broadcasting (MPT Ordinance No. 23 in 1983; hereinafter referred to as the “Standard System for Standard Television Sound Multiplex Broadcasting”).

2 The frequency departure of a control signal (which refers to the control signal prescribed in Article 3 paragraph 2 of the Standard System for Standard Television Sound Multiplex Broadcasting) shall be within ± 0.2 Hz of the value prescribed in Article 7 paragraph 2 of the Standard System for Standard Television Sound Multiplex Broadcasting.

(Modulation Factor, etc.)

Article 37.10. A transmitter shall ensure modulation linearity up to 100%.

2 The frequency shift of the main carrier caused by a subchannel signal (which refers to the subchannel signal prescribed in Article 3 paragraph 2 of the Standard System for Standard Television Sound Multiplex Broadcasting) shall be within 10% of the maximum frequency shift prescribed in paragraph 4 of the said Article.

3 The frequency shift of the main carrier caused by a control channel signal (which refers to the control channel signal prescribed in Article 3 paragraph 2 of the Standard System for Standard Television Sound Multiplex Broadcasting) shall be within 10% of the maximum frequency shift prescribed in paragraph 5 of the said Article.

- 4 The modulation factor of the control channel signal shall be within a range of 50% to 70%.

(Overall Frequency Response Characteristics)

Article 37.11. The overall frequency response characteristics of a transmitter shall be within -3 dB of the ideal impedance-frequency characteristic curve that has a time constant of $75 \mu\text{s}$ for pre-emphasis over a modulating frequency in a range of 100 Hz to 7,500 Hz.

- 2 When an identical signal is supplied to both the left and right side signal input terminals of a transmitter, the level difference between the left and right side signals at the output terminals of the transmitter shall be within 1.5 dB for any modulating frequency in a range of 100 Hz to 7,500 Hz.

(Overall Distortion Factor)

Article 37.12. The overall distortion factor of a transmitter shall be 5% or lower when modulating frequencies of 200 Hz, 1,000 Hz, and 5,000 Hz cause the frequency of a sound signal subcarrier to shift by ± 10 kHz.

(Signal-to-Noise Ratio)

Article 37.13. The signal-to-noise ratio of a transmitter shall be 50 dB or higher when a modulating frequency of 1,000 Hz causes the frequency of a sound signal subcarrier to shift by ± 10 kHz.

(Supplementary Provisions Related to Overall Distortion Factor, etc.)

Article 37.14. If the previous two Articles apply, de-emphasis shall be performed using a circuit with an impedance-frequency characteristic that has a time constant of $75 \mu\text{s}$.

(Channel Separation)

Article 37.15. The channel separation of a transmitter shall be a value on the characteristic curve shown in Figure 4-2-3 or higher for any modulating frequency in a range of 100 Hz to 7,500 Hz when the left or right side signal causes the frequencies of the main carrier and sound signal subcarrier to shift by ± 12.5 kHz and ± 5 kHz, respectively.

Section 2.4 Radio Equipment of Broadcasting Stations for Standard Television Teletext Broadcasting

(Scope of Application)

Article 37.16. The provisions of this Section shall apply to the radio equipment of a broadcasting station for standard television teletext broadcasting within the bounds of the character signal sender to the transmitting antenna (however, the relay line and contact line

shall be excluded).

(Tolerances)

Article 37.17. The frequency departure of a clock frequency shall be within ± 16 Hz of the value prescribed in Article 5 paragraph 4 of the Standard System for Transmission Related to Standard Television Teletext Broadcasting (MPT Ordinance No. 77 in 1985; hereinafter referred to as the “Standard System for Standard Television Teletext Broadcasting”).

- 2 The departure of the timing of a bit synchronization code and a byte synchronization code of a character signal shall be within ± 31 ns of the time prescribed in Article 8 of the Standard System for Standard Television Teletext Broadcasting.

(Data Line Superimposing Position, etc.)

Article 37.18. The data line superimposing position and character signal amplitude steady-state value during the horizontal scan period shall be within the range of allowed values shown in Figure 4-3.

(Spectrum)

Article 37.19. The spectrum of a single character signal pulse shall be, in terms of the characteristic curve, within the range of allowed limits shown in Figure 4-4.

(Eye Aperture Ratio)

Article 37.20. The eye aperture ratio of a transmitter (which, when a number of character signal pulse waveforms are superimposed on one another in synchronization with the clock frequency, refers to the ratio of the maximum amplitude in that portion enclosed by the waveform of the minimum 1-level value and the waveform of the maximum 0-level value to the difference in level between the 1-level steady-state value and the 0-level steady-state value) shall be 70% or higher as measured at the output terminal of the transmitter.

Section 2.4.2 Radio Equipment of Broadcasting Stations for Standard Television Data Multiplex Broadcasting Based on Transmission System Using Vertical Blanking Period

(Scope of Application)

Article 37.20.2. The provisions of this Section shall apply to the radio equipment of a broadcasting station for standard television data multiplex broadcasting based on a transmission system using a vertical blanking period within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances)

Article 37.20.3. The departure of a clock frequency shall be within ± 16 Hz of the value prescribed in Article 1.6 paragraph 4 of the Standard System for Transmission Related to Standard Television Data Multiplex Broadcasting and High-Definition Television Data Multiplex Broadcasting (MPT Ordinance No. 47 in 1994; hereinafter referred to as the “Standard System for Standard Television Data Multiplex Broadcasting, etc.”).

2 The departure of the timing of a bit synchronization code and a byte synchronization code of a data signal shall be within ± 31 ns of the time prescribed in Article 1.9 of the Standard System for Standard Television Data Multiplex Broadcasting, etc.

(Data Line Superimposing Position, etc.)

Article 37.20.4. The data line superimposing position and data signal amplitude steady-state value during the horizontal scan period shall be within the range of allowed values shown in Figure 4-3.

(Spectrum)

Article 37.20.5. The spectrum of a single data signal pulse shall be, in terms of the characteristic curve, within the range of allowed limits shown in Figure 4-4.

(Eye Aperture Ratio)

Article 37.20.6. The eye aperture ratio of a transmitter (which, when a number of data signal pulse waveforms are superimposed on one another in synchronization with the clock frequency, refers to the ratio of the maximum amplitude in that portion enclosed by the waveform of the minimum 1-level value and the waveform of the maximum 0-level value to the difference in level between the 1-level steady-state value and the 0-level steady-state value) shall be 70% or higher as measured at the output terminal of the transmitter.

Section 2.4.3 Radio Equipment of Broadcasting Stations for Standard Television Data Multiplex Broadcasting Based on Transmission System Using Sound Signal Subcarrier

(Scope of Application)

Article 37.20.7. The provisions of this Section shall apply to the radio equipment of a broadcasting station for standard television data multiplex broadcasting based on a transmission system using a sound signal subcarrier within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances)

Article 37.20.8. The frequency departure of a data signal subcarrier shall be within ± 0.7 Hz (confined to the case of a 70.804 kHz data signal subcarrier) or ± 1.0 Hz (confined to the case of a 118.007 kHz data signal subcarrier) of the value prescribed in Article 1.14 paragraph 1 of the Standard System for Standard Television Data Multiplex Broadcasting, etc.

- 2 The departure of the transmission rate of a signal that modulates a data signal subcarrier shall be within $\pm 0.001\%$ of the value prescribed in Article 1.14 paragraph 4 of the Standard System for Standard Television Data Multiplex Broadcasting, etc.
- 3 The spectrum of a data signal subcarrier shall be within the range of allowed values shown in Figure 4-4-2.

(Modulation Factor, etc.)

Article 37.20.9. A transmitter shall ensure frequency shift linearity up to ± 56 kHz.

- 2 The departure of the maximum frequency shift of the main carrier caused by a data signal subcarrier shall be within -4% to $+0\%$ of the value prescribed in Article 1.13 paragraph 4 of the Standard System for Standard Television Data Multiplex Broadcasting, etc.
- 3 The bandpass filter of a data signal subcarrier shall have the attenuation characteristics shown in Table 5.

(Eye Aperture Ratio)

Article 37.20.10. The eye aperture ratio of a transmitter (which, when a number of waveforms of two signal pulses that respectively apply 2PSK to two mutually orthogonal data signal subcarriers are superimposed on one another in synchronization with the frequency half the transmission rate prescribed in Article 1.14 paragraph 4 of the Standard System for Standard Television Data Multiplex Broadcasting, etc. refers to the ratio of the maximum amplitude in that portion enclosed by the waveform of the minimum 1-level value and the waveform of the maximum 0-level value to the difference in level between the 1-level steady-state value and the 0-level steady-state value) shall be 70% or higher as measured at the output terminal of the transmitter.

Section 2.5 Radio Equipment of Broadcasting-Satellite Stations for Standard Television Broadcasting (Except Digital Broadcasting), Standard Television Sound Multiplex Broadcasting, Standard Television Teletext Broadcasting, or Standard Television Data Multiplex Broadcasting Using Emissions of Frequencies in a Range of Higher Than 11.7 GHz to 12.2 GHz, and Earth Stations Communicating with the Said Broadcasting-Satellite Stations

(Scope of Application)

Article 37.21. The provisions of this Section shall apply to the radio equipment of a broadcasting station for standard television broadcasting (except digital broadcasting), standard television sound multiplex broadcasting, standard television teletext broadcasting, or standard television data multiplex broadcasting using emissions of a frequency in a range of higher than 11.7 GHz to 12.2 GHz (hereinafter referred to as “broadcasting-satellite

station” in this Section) and the video transmitting equipment of an earth station communicating with the said broadcasting-satellite station within the bounds of the output terminal of the television camera to the transmitting antenna (however, the relay line and contact line shall be excluded), the sound transmitting equipment of the said earth station within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded), the radio equipment of the said earth station within the bounds of the character signal to the transmitting antenna (however, the relay line and contact line shall be excluded), the radio equipment of the said earth station within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded), and the radio equipment of the said earth station within the bounds of the related-information sender (which refers to a unit that sends related information (which refers to the related information prescribed in Article 18 paragraph 1 item 3) of the Standard System for Standard Television Broadcasting); this also applies to Articles 37.26.3 and 37.27.3) to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Polarization of Emissions)

Article 37.22. The transmitting antenna of a broadcasting-satellite station shall be such that the polarized waves of the emissions transmitted from the antenna are right-hand polarized waves (which refer to the circularly polarized waves in which the electric field vector rotates with time clockwise as viewed facing in the direction of propagation; this also applies hereafter).

(Tolerances)

Article 37.23. The tolerance for the waveforms of a video signal and synchronizing signal shall be as shown in Figure 4-5.

- 2 The frequency departure of a multi-subcarrier (which refers to the multi-subcarrier prescribed in Article 12 paragraph 2 of the Standard System for Standard Television Broadcasting; this also applies hereafter in this Section and the next Section) shall be within ± 16 Hz of the value prescribed in Article 14 paragraph 1 of the Standard System for Standard Television Broadcasting.
- 3 The departure of the transmission rate of a signal modulating a multi-subcarrier shall be within ± 10 bits/s of the value prescribed in Article 14 paragraph 4 of the Standard System for Standard Television Broadcasting.
- 4 The spectrum of a multi-subcarrier shall be within the range of allowed values shown in Figure 4-6.

(Modulation Factor, etc.)

Article 37.24. A transmitter shall ensure modulation linearity.

- 2 The tolerance for the frequency shift of the main carrier caused by a video signal shall be within ± 1 MHz of the maximum value prescribed in Article 12 paragraph 3 of the Standard System for Standard Television Broadcasting.
- 3 The frequency shift of the main carrier caused by a multi-subcarrier shall be in the range of ± 3.0875 MHz to ± 3.575 MHz.

(Overall Frequency Response Characteristics of Video Transmitter)

Article 37.25. The overall frequency response characteristics of a video transmitter shall be within -2 dB of the frequency characteristic curve represented by a transfer function that has zero and extreme points at $1/0.8508 \mu\text{s}$ and $1/0.1819 \mu\text{s}$, respectively, for video signal pre-emphasis at modulating frequencies of 500 kHz, 1,250 kHz, 2,000 kHz, 3,000 kHz, and 4,000 kHz.

(Characteristics of Sound Transmitter)

Article 37.26. A sound transmitter shall have the characteristics stated in the items below:

- 1) The characteristic curve of the overall frequency response characteristics for the transmission of sound signals having a frequency in a range of 50 Hz to 15,000 Hz shall be between the frequency characteristic curve (inclusive) represented by a transfer function that has zero and extreme points at $1/50 \mu\text{s}$ and $1/15 \mu\text{s}$, respectively, for sound signal pre-emphasis and the curve of allowed pre-emphasis characteristic limits (inclusive) shown in Figure 4-7.
- 2) When the maximum value of a sound signal having a frequency listed in the left-hand column of the following table (which refers to the maximum amplitude of a sound signal that can be transmitted; this also applies in the following item) is transmitted, the overall distortion factor shall be lower than or equal to the corresponding value in the right-hand column.

Modulating frequency	Overall distortion factor
50 Hz to lower than 10,000 Hz	2%
10,000 Hz to 15,000 Hz	3%

- 3) The signal-to-noise ratio shall be 55 dB or higher when the maximum value of a sound signal having a frequency of 1,000 Hz is transmitted.
- 4) When the previous two items apply, de-emphasis shall be performed using a circuit having a frequency characteristic represented by a transfer function that has zero and extreme points at $1/15 \mu\text{s}$ and $1/15 \mu\text{s}$, respectively.

(Mutatis Mutandis Applied Provisions)

Article 37.26.2. The provisions of Article 37.3 paragraph 2, Article 37.3.2 paragraph 1, Articles 37.17 to 37.20, and Articles 37.20.3 to 37.20.6 shall apply mutatis mutandis to the radio equipment of a broadcasting-satellite station and an earth station communicating with a broadcasting-satellite station.

Section 2.6 Radio Equipment of Broadcasting-Satellite Stations for High-Definition Television Broadcasting (Except Digital Broadcasting), High-Definition Television Sound Multiplex Broadcasting, or High-Definition Television Data Multiplex

Broadcasting and Earth Stations Communicating with the Said Broadcasting-Satellite Stations

(Scope of Application)

Article 37.27. The provisions of this Section shall apply to the radio equipment of a broadcasting station for high-definition television broadcasting (except digital broadcasting), high-definition television sound multiplex broadcasting, or high-definition television data multiplex broadcasting (hereinafter referred to as “broadcasting-satellite station” in this Section), the video transmitting equipment of an earth station communicating with the said broadcasting-satellite station within the bounds of the output terminal of the television camera to the transmitting antenna (however, the relay line and contact line shall be excluded), the sound transmitting equipment of the said earth station within the bounds of the output terminal of the microphone amplifier or the sound reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded), the radio equipment of the said earth station within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded), and the radio equipment of the said earth station within the bounds of the related-information sender (which refers to a unit that sends related information (which refers to the related information prescribed in Article 18 paragraph 1 item 3) of the Standard System for Transmission Related to High-Definition Television Broadcasting (Except Digital Broadcasting) (MPT Ordinance No. 16 in 1991; hereinafter referred to as the “Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting)”) to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances)

Article 37.27.2. The tolerance for the waveforms of a synchronizing signal in a source signal (which refers to the source signal prescribed in Article 2 of the Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting); this also applies hereafter in this Section) shall be as shown in Figure 4-8.

- 2 The departure of the frequency of a horizontal synchronizing signal in a source signal shall be within $\pm 10/1,000,000$ of the value prescribed in Article 3 item 4) of the Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting).
- 3 The frequency characteristics of the low-pass filter used to limit the band of a multi-signal (which refers to the multi-signal prescribed in Article 7 paragraph 2 of the Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting); this also applies hereafter in this Section) shall be within the range of allowed values shown in Figure 4-8-2.
- 4 The quantization level of a multi-signal (which refers to the quantization level prescribed in Article 7 paragraph 3 of the Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting)) shall be within $\pm 1/3$ of one quantization level of the corresponding level prescribed in Table 8 of the Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting), when the code value is 0 or 2.

(Modulation Factor, etc.)

Article 37.27.3. A transmitter shall ensure modulation linearity.

- 2 The tolerance of the frequency shift of the carrier caused by a transmission video signal (which refers to the transmission video signal prescribed in Article 7 paragraph 2 of the

Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting)) shall be within ± 0.5 MHz of the maximum value prescribed in Article 7 paragraph 3 of the Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting).

- 3 The tolerance of the frequency shift of the carrier caused by a multi-signal shall be within ± 0.5 MHz of the maximum value prescribed in Article 7 paragraph 4 of the Standard System for High-Definition Television Broadcasting (Except Digital Broadcasting).

(Overall Frequency Response Characteristics of Transmitting Equipment)

Article 37.27.4. The overall frequency response characteristics of the transmitting equipment of an earth station within the bounds of the input of the transmission path equalizing filter to the input of the transmitting antenna shall be within the range shown in Figure 4-8-3.

(Characteristics of Sound Transmitter)

Article 37.27.5. A sound transmitter shall have the characteristics defined in the items below:

- 1) The overall frequency response characteristics for the transmission of sound signals having frequencies in the range of 50 Hz to 15,000 Hz shall be within the range shown in Figure 4-8-4.
- 2) When the maximum value of a sound signal having a frequency listed in the left-hand column of the following table (which refers to the maximum amplitude value of a sound signal that can be transmitted; this also applies in the following item) is transmitted, the overall distortion factor shall be lower than or equal to the corresponding value in the right-hand column.

Sound signal frequency	Overall distortion factor
50 Hz to lower than 10,000 Hz	2%
10,000 Hz to 15,000 Hz	3%

- 3) The signal-to-noise ratio shall be 55 dB or higher when the maximum value of a sound signal having a frequency of 1,000 Hz is transmitted.

(Mutatis Mutandis Applied Provisions)

Article 37.27.6. The provisions of Article 37.22 shall apply mutatis mutandis to the radio equipment of a broadcasting-satellite station.

Section 2.7 Radio Equipment of Broadcasting Stations that Perform Digital Broadcasting (Except Broadcasting Stations That Perform Satellite Supplementary Broadcasting) out of VHF Broadcasting

(Scope of Application)

Article 37.27.7. The provisions of this Section shall apply to the sound transmitting equipment of a broadcasting station that performs digital broadcasting out of VHF broadcasting

(excluding satellite supplementary broadcasting) within the bounds of the output terminal of the microphone amplifier or the sound recorder and reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded), the radio equipment of the said broadcasting station within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded), and the radio equipment of the said broadcasting station within the bounds of the related-information sender (which refers to a unit that sends related information (which refers to the related information prescribed in Article 3 paragraph 1 of the standard method for digital broadcasting); hereafter; this also applies to Article 37.27.9, Article 37.27.12, Article 37.27.15 and Article 37.27.18) to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances, etc.)

Article 37.27.8. The tolerances for the modulated wave spectrum for the carrier shall be within the values shown in Figure 4-8-5.

Section 2.8 Radio Equipment of Broadcasting Stations that Perform Digital Broadcasting or High-Definition Television Broadcasting out of Standard Television Broadcasting

(Scope of Application)

Article 37.27.9. The provisions of this Section shall apply to the video transmitting equipment of a broadcasting station that performs digital broadcasting or high-definition television broadcasting out of the standard broadcasting within the bounds of the output terminal of the television camera to the transmitting antenna (however, the relay line and contact line shall be excluded), the sound transmitting equipment of the said broadcasting station within the bounds of the output terminal of the microphone amplifier or the sound recorder and reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded), the radio equipment of the said broadcasting station within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded) and the radio equipment of the said broadcasting station within the bounds of the related-information sender to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances, etc.)

Article 37.27.10. The tolerances for the waveforms of horizontal and vertical synchronizing signals shall be as shown in Figure 4-8-6.

- 2 The tolerances for the horizontal scanning repetition frequency and the sampling frequency shall be as shown in Figure 4-8-7.
- 3 The tolerances for the inverse fast Fourier transform sampling frequency shall be within $\pm 0.3/1,000,000$ of the value prescribed in Article 19 paragraph 3 of the standard method for digital broadcasting.
- 4 The tolerances for the modulated wave spectrum for the carrier shall be within the values shown in Figure 4.8.8.

(Mutatis Mutandis Applied Provisions)

Article 37.27.11. The provisions of Article 35 shall apply mutatis mutandis to the radio equipment of broadcasting stations that perform digital broadcasting or high-definition television broadcasting out of standard television broadcasting.

Section 2.9 Radio Equipment of Broadcasting Satellite Stations that Perform VHF Broadcasting Using G7W Emissions of Frequencies in a Range of Higher Than 2,630 MHz to 2,655 MHz, Radio Stations that Perform Satellite Supplementary Broadcasting and Earth Stations Communicating with the Said Broadcasting Satellite Stations

(Scope of Application)

Article 37.27.12. The provisions of this Section shall apply to the radio equipment of broadcasting-satellite stations that perform VHF broadcasting using Class G7W emissions of frequencies in a range of higher than 2,630 MHz to 2,655 MHz (hereafter referred to as “broadcasting-satellite stations” in this Section), the radio equipment of radio stations that perform satellite supplementary broadcasting, the microphone amplifier of earth stations that perform communication with broadcasting satellite stations or sound transmitting equipment in a range from the output terminal of voice-recording reproduction equipment to a transmitting antenna (excluding a relay line and a contact line), radio equipment in a range from data-signal transmitting equipment to a transmitting antenna (excluding the relay line and contact line), and radio equipment in a range from relevant information transmitting equipment to a transmitting antenna (excluding the relay line and contact line).

(Tolerances, etc.)

Article 37.27.13. The transmission rate of the signal modulating a carrier shall be within (\pm) 1/1,000,000 of the value prescribed in Article 25 paragraph 3 for the standard method of digital broadcasting.

- 2 The tolerance for the modulated wave spectrum for the carrier of an earth station communicating with the broadcasting-satellite station shall be within the values shown in Figure 4-8-9.
- 3 Aperture correction performed in the transmitter of an earth station communicating with the broadcasting-satellite station shall be as shown in Figure 4-8-10.

(Plane of Polarization of Emissions)

Article 37.27.14. The transmitting antenna of a broadcasting-satellite station shall be such that the plane of polarization of emissions transmitted from the antenna is annular.

Section 2.10 Radio Equipment of Broadcasting-Satellite Stations for Standard Television Broadcasting, High-Definition Television Broadcasting, VHF Broadcasting, or Data Broadcasting Using Class G7W Emissions of Frequencies in a Range of Higher Than 11.7 GHz to 12.2 GHz and Earth Stations Communicating with the Said

Broadcasting-Satellite Stations

(Scope of Application)

Article 37.27.15. The provisions of this Section shall apply to the radio equipment of broadcasting-satellite stations that perform standard television broadcasting, high-definition television broadcasting, VHF broadcasting and data broadcasting using Class G7W emissions of frequencies in a range of higher than 12.2 GHz to 12.75 GHz (hereafter referred to as “broadcasting-satellite station” in this Section), the video transmitting equipment of an earth station communicating with the broadcasting-satellite station within the bounds of the output terminal of the television camera to the transmitting antenna (however, the relay line and contact line shall be excluded), the sound transmitting equipment of the said earth station within the bounds of the output terminal of the microphone amplifier or the sound recorder and reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded), the radio equipment of the said earth station within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded), and the radio equipment of the said earth station within the bounds of the related-information sender to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances, etc.)

Article 37.27.16. The tolerances for the waveforms of horizontal and vertical synchronizing signals shall be as shown in Figure 4-8-6.

- 2 The tolerances for the horizontal scanning repetition frequency and the sampling frequency shall be as shown in Figure 4-8-7.
- 3 The transmission rate of the signal modulating a carrier shall be within (\pm) 20/1,000,000 of the value prescribed in Article 31 paragraph 3 for the standard method of digital broadcasting.
- 4 The tolerances for the modulated wave spectrum for the carrier of an earth station communicating with the broadcasting-satellite station shall be as shown in Figure 4-8-11.
- 5 Aperture correction performed in the transmitter of an earth station communicating with the broadcasting-satellite station shall be as shown in Figure 4-8-12.

(Mutatis Mutandis Applied Provisions)

Article 37.27.17. The provisions of Article 37.27.3 shall apply mutatis mutandis to the radio equipment of the narrow-band broadcasting-satellite station and an earth station communicating with the narrow-band broadcasting-satellite station.

Section 2.11 Radio Equipment of Broadcasting-Satellite Stations for Standard Television Broadcasting, High-Definition Television Broadcasting, VHF Broadcasting or Data Broadcasting Using Class G7W

Emissions of Frequencies in a Range of Higher than 12.2 GHz to 12.75 GHz and Earth Stations Communicating with the Said Broadcasting-Satellite Stations

(Scope of Application)

Article 37.27.18. The provisions of this Section shall apply to the radio equipment of broadcasting-satellite stations that perform standard television broadcasting, high-definition television broadcasting, VHF broadcasting and data broadcasting using Class G7W emissions of frequencies in a range of higher than 12.2 GHz to 12.75 GHz (hereafter referred to as “broadcasting-satellite station” in this Section), the video transmitting equipment of an earth station communicating with the broadcasting-satellite station within the bounds of the output terminal of the television camera to the transmitting antenna (however, the relay line and contact line shall be excluded), the sound transmitting equipment of the said earth station within the bounds of the output terminal of the microphone amplifier or the sound recorder and reproducer to the transmitting antenna (however, the relay line and contact line shall be excluded), the radio equipment of the said earth station within the bounds of the data signal sender to the transmitting antenna (however, the relay line and contact line shall be excluded), and the radio equipment of the said earth station within the bounds of the related-information sender to the transmitting antenna (however, the relay line and contact line shall be excluded).

(Tolerances, etc.)

Article 37.27.19. The tolerances for the waveforms of horizontal and vertical synchronizing signals shall be as shown in Figure 4-8-6.

- 2 The tolerances for the horizontal scanning repetition frequency and the sampling frequency shall be as shown in Figure 4-8-7.
- 3 The transmission rate of the signal modulating a carrier shall comply with the conditions defined in the items below:
 - 1) In the case of the broadcasting-satellite stations that perform broadcasting prescribed in Section 6.2 of the standard method for digital broadcasting out of the broadcasting-satellite stations (hereafter referred to as “narrow-band broadcasting-satellite stations”), the transmission rate of the signal modulating a carrier shall be within $\pm 20/1,000,000$ of the value prescribed in Article 39 paragraph 2 of the standard method for digital broadcasting.
 - 2) In the case of the broadcasting-satellite stations that perform broadcasting prescribed in Section 6.3 of the standard method for digital broadcasting out of the broadcasting-satellite stations (hereafter referred to as “broad-band broadcasting-satellite stations”), the transmission rate of the signal modulating a carrier shall be within $\pm 20/1,000,000$ of the value prescribed in Article 31 paragraph 3 of the standard method for digital broadcasting.
- 4 The tolerances for the modulated wave spectrum for the carrier of an earth station communicating with the broadcasting-satellite station shall be as shown in Figure 4-8-11.
- 5 Aperture correction performed in the transmitter of an earth station communicating with the broadcasting-satellite station shall comply with the conditions defined in the items below:
 - 1) In the case of the transmitter of an earth station communicating with the narrow-band

- broadcasting-satellite station, aperture correction shall be as shown in Figure 4-8-13.
- 2) In the case of the transmitter of an earth station communicating with the broad-band broadcasting-satellite station, aperture correction shall be as shown in Figure 4-8-12.

(Polarization of Emissions)

Article 37.27.20. The transmitting antenna of a broadcasting-satellite station shall be such that the plane of polarization of emissions transmitted from the antenna is horizontal or vertical.

Section 2.12 Radio Equipment of Radio Stations Relaying Program Raw Materials or Broadcasting Programs

(Radio Equipment of Radio Stations that Relay Raw Materials of Broadcasting Programs)

Article 37.27.21. Radio equipment at a fixed station that uses Class D7W emissions of frequencies or Class G7W emissions of frequencies in a range of higher than 3.456 GHz to 3.6 GHz, higher than 5.85 GHz to 5.925 GHz, higher than 6.425 GHz to 6.57 GHz, higher than 6.87 GHz to 7.125 GHz, higher than 10.25 GHz to 10.45 GHz, higher than 10.55 GHz to 10.68 GHz, or higher than 12.95 GHz to 13.25 GHz among the radio stations that relay raw materials of broadcasting programs (which refer to the radio stations established with the aim of relaying raw materials of broadcasting programs; this also applies hereafter) shall comply with the conditions in the items below:

- 1) The communication method shall be one-way communication.
 - 2) The modulation method shall be 4PSK, 16QAM, 32QAM or 64QAM.
 - 3) The polarized waves of transmitted or received emissions shall be horizontal polarized waves or vertical polarized waves.
- 2) Radio equipment that uses emissions of frequencies defined in the items below at a radio station for mobile service among the radio stations that relay raw materials of broadcasting programs shall comply with the conditions defined in the items below:
- 1) Radio equipment that uses Class D7W emissions of frequencies or Class D7W emissions of a frequency in a range of higher than 5.85 GHz to 5.925 GHz, higher than 6.425 GHz to 6.57 GHz, higher than 6.87 GHz to 7.12 GHz, higher than 10.25 GHz to 10.45 GHz, higher than 10.55 GHz to 10.68 GHz, or higher than 12.95 GHz to 13.25 GHz
 - a The communication method shall be one-way communication.
 - b The modulation method shall be 4PSK, 16QAM, 32QAM or 64QAM.
 - c The polarized waves of transmitted or received emissions shall be horizontal polarized waves, vertical polarized waves or circular polarized waves.
 - 2) Radio equipment that uses emissions of a frequency in a range of higher than 54.25 GHz to 59 GHz
 - a The communication method shall be one-way communication, simplex operation, duplex operation, dusimplex operation, or broadcast communication.
 - b The modulation method shall be amplitude modulation, frequency modulation, phase modulation or a combination of these modulations.

- c The antenna power shall be 0.1 W or less.

(Radio Equipment of Fixed Stations Relaying Broadcasting Programs)

Article 37.27.22. Radio equipment at a fixed station that uses a digital system among fixed stations that relay broadcasting programs (which refer to fixed stations established with the aim of relaying broadcasting programs; this also applies hereafter) and that uses emissions of a frequency in a range of higher than 3.465 GHz to 13.25 GHz shall comply with the conditions in each item below.

- 1) The communication method shall be one-way communication.
 - 2) The modulation method shall be 64QAM.
 - 3) The polarized waves of transmitted or received emissions shall be horizontally polarized waves or vertically polarized waves.
- 2 The modulation method of the radio equipment that uses emissions of a frequency of higher than 3.456 GHz to 3.6 GHz, higher than 5.85 GHz to 5.925 GHz, higher than 6.425 GHz to 6.57 GHz, higher than 6.87 GHz to 7.125 GHz, higher than 10.25 GHz to 10.45 GHz, higher than 10.55 GHz to 10.68 GHz, or higher than 12.95 GHz to 13.25 GHz among the radio equipment specified in the preceding paragraph shall be orthogonal frequency division multiplexing (OFDM) in addition to the modulation method prescribed in item 2) of the preceding paragraph. In this case, when a signal for contact or control of equipment is also transmitted, a carrier which is 4PSK-modulated by the said signal shall be used, and when a signal for controlling the frequency on the receiving side is also transmitted, an unmodulated carrier shall be used as the said signal.

Section 3 Radio Equipment of Ship Stations and Coast Stations, and INMARSAT Ship Earth Stations, etc.

(Protection of Magnetic Compass)

Article 37.28. Radio equipment that is permanently installed on the navigation bridge of a ship shall have, in a prominent place on its cabinet, a notice indicating the minimum distance at which the magnetic field generated by the said radio equipment will not impair the functions of a magnetic compass.

(Conditions for the Radio Equipment of Compulsory Ship Station, etc.)

Article 38. The antenna of the radio equipment provided for a compulsory ship station according to the provisions of Article 33 of the Law (which refers to the ship station defined in Article 13 paragraph 3 of the Law; this also applies hereafter) shall be constructed in such a way that it will not break under normal vibrations or shocks on a ship.

- 2 An antenna for a radio telephone that must be installed at a compulsory ship station and that uses class F3E emissions of a frequency of 156.8 MHz shall be installed in as high a location as possible on the ship.
- 3 An antenna for the ship earth station defined in Article 28.2 paragraph 1 of the Enforcement

Regulations and the INMARSAT enhanced group call receiver installed at a compulsory ship station according to Article 33 of the Law shall be installed in a location that satisfies the following conditions as far as possible.

- 1) For a directional antenna, a location that is as far from the antenna of other equipment as possible and for which there is no object whose shadow sector exceeds 6 degrees within an elevation angle range of –5 degrees to 90 degrees
- 2) For a non-directional antenna, a location for which there is no object whose shadow sector exceeds 2 degrees within an elevation angle range of –5 degrees to 90 degrees in the bow and stern and an elevation angle range of –15 degrees to 90 degrees on the starboard and port

Article 38.2. The power supply for the radio equipment for a compulsory ship station, etc. (which refers to the compulsory ship station, etc. stated in Article 34 of the Law; this also applies hereafter) shall be able to deliver sufficient power to run the said radio equipment and charge the storage battery for the said radio equipment simultaneously while the ship is cruising.

- 2) The power supply stated in the previous paragraph shall be able to maintain its output voltage to within $\pm 10\%$ of the rated output voltage.

Section 3.2 Radio Equipment of Radio Stations for Aeronautical Mobile Service and Aeronautical Radio Flight Service, Portable Stations Used On Board Aircraft and Aircraft Earth Stations

Article 38.3. The compulsory ship station, etc. in a passenger ship or a ship of 300 tons gross or more shall be equipped with an auxiliary power supply that is capable of running the equipment defined in each of the following items continuously for six hours or longer (or, for a compulsory ship station, etc. equipped with an emergency power supply according to the ordinance based on the provisions of Article 2 of the Ship Safety Law (Law No. 11 in 1933), one hour or longer) except for a compulsory ship station, etc. announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

- 1) Radio equipment that is installed in a ship station for communication based on a radio telephone using class F3E emissions and communication based on a digital selective calling device, and that uses emissions of frequencies listed in the table in Appendix 18 of the Radio Regulations
- 2) Any radio equipment listed below
 - a) Radio equipment that is installed in a ship station for communication based on a radio telephone using class J3E emissions and communication based on a digital selective calling device, and that uses emissions of frequency in a range of 1,606.5 kHz to 3,900 kHz (confined to the radio equipment of a compulsory ship station stated in Article 28 paragraph 1 item 2) of the Enforcement Regulations)
 - b) Radio equipment that is installed in a ship station for communication based on a radio telephone using class J3E emissions and communication based on a digital

selective calling device or narrow-band direct printing (NBDP) telegraph and that uses emissions of a frequency in a range of 1,606.5 kHz to 26,175 kHz (confined to the radio equipment of a compulsory ship station stated in Article 28 paragraph 1 item 3) of the Enforcement Regulations)

- c Radio equipment of an INMARSAT ship earth station (confined to the radio equipment of a ship earth station stated in Article 28.2 paragraph 1 of the Enforcement Regulations)
- 3) Device used to continuously enter position information and other information used to cause the functions of the radio equipment stated in the previous two items to operate normally

(Announcement: * in No. 121 in 1992)

Article 38.4. The radio telephone stated in Article 38 paragraph 2 shall be able to perform communication when used on the navigating bridge.

- 2 The radio equipment that must be equipped at a compulsory ship station, etc. (except automatic distress messaging equipment) shall be able to transmit or receive a distress communication in a location where the ship is maneuvered regularly.
- 3 The satellite emergency position-indicating radio beacon that must be equipped at a compulsory ship station shall be capable of being remote-controlled from a location in which the ship is maneuvered regularly except when the said radio beacon is installed near the said location.
- 4 The provisions of the previous three paragraphs shall not apply to the radio equipment that is announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications if the Minister of Public Management, Home Affairs, Posts and Telecommunications deems that it is difficult or irrational to apply them to the radio equipment because of the structure of the ship or some other factor.

(Announcement: * in No. 122 in 1992)

(Ratio to Representative Frequency)

Article 39. If the transmitter of a ship station radiates emissions of more than one frequency in a frequency band listed in the left-hand column of the following table from the same transmitting antenna, the ratio of the transmitting antenna current or power of each of the frequencies to that of the corresponding representative frequency listed in the middle column shall be the corresponding value in the right-hand column of the table for each type. Notwithstanding the above statement, the table does not represent the relationship between the frequency bands.

Frequency band (kHz)	Representative frequency	Ratio to the transmitting antenna current or power of the representative frequency
110 to 160	143 kHz	85% or higher (current)
405 to 526.5	500 kHz	85% or higher (current)
1,606.5 to 3,900	2,091 kHz or 2,182 kHz	75% or higher (power)
4,000 to 26,175	Minimum frequency	50% or higher (power)

Note: If no frequency has been determined as being representative, the minimum frequency shall be deemed as being a representative frequency.

(Modulation Factors of Emissions, etc.)

Article 40. The percentage of ripple of class A1A, A1B, or A1D emissions used at the radio station in the maritime mobile service or maritime radionavigation service shall be 10% or lower, and the modulation factor of class A2A, A2B, A2D, H2A, H2B, or H2D emissions used at the radio station in the maritime mobile service or maritime radionavigation service shall be 70% or higher, when the modulation frequency is 450 Hz or higher.

- 2 The modulation factor of class A3E or H3E emissions used at the radio station in the maritime mobile service or maritime radionavigation service shall be 70% or higher for the normal intensity of sound input to the microphone (relative to 50 phones; this also applies hereafter).
- 3 The overall distortion factor and noise of a transmitter using class A3E emissions at a radio station in the maritime mobile service or maritime radionavigation service shall be, in terms of the ratio of all the output of the transmitter to the unwanted components of the said output, 20 dB or higher for modulation at 70% with a modulating frequency of 1,000 Hz.
- 4 The overall frequency response characteristics of the transmitter stated in the previous paragraph shall not fluctuate by 6 dB or more in a modulating frequency in a range of 350 Hz to 2,700 Hz, except when the transmitter has been proven as being able to achieve an effect better than or equal to that which can be attained if the transmitter is in the stated conditions.
- 5 In the previous two paragraphs, the modulating frequency shall be applied to the output terminal of the microphone.
- 6 A transmitter using class A2A, A2B, A2D, H2A, H2B or H2D emissions at the radio station in the maritime mobile service or maritime radionavigation service shall radiate the said emissions by opening and closing the key for the modulated wave, except transmitters announced separately (*).

(Announcement: * in No. 1059 in 1970)

(Conditions for the Radio Equipment of a Radio Station, etc. Using Class F3E Emissions)

Article 40.2. The transmitter of a radio station that uses class F3E emissions and that uses emissions of the frequencies listed in the table in Appendix 18 of the Radio Regulations or on-board communication equipment shall satisfy the conditions defined in the items below, in addition to the conditions prescribed in Article 58.

- 1) The frequency modulation shall have a pre-emphasis characteristic of 6 dB per octave.
- 2) The overall distortion and noise shall be, in terms of the ratio of all the output to the unwanted components of the said output, 20 dB or higher when a frequency shift is made by 70% of the maximum frequency shift with a modulating frequency of 1,000 Hz.
- 2 The plane of polarization of emissions radiated from the transmitting antenna of the radio station stated in the previous paragraph shall be vertical, and the antenna of the said radio station (confined to that of a mobile station) shall be non-directional in the horizontal plane.
- 3 In addition to complying with the provisions of the previous paragraph, the transmitting antenna of the on-board communication equipment using emissions of a frequency in a range of higher than 450 MHz to 470 MHz at a radio station stated in paragraph 1 (confined to the equipment installed in a ship) shall have an altitude within 3.5 m of the navigation bridge.
- 4 The radio equipment of a coast station or portable base station for performing the radio

communication stated in paragraph 1 shall be capable of communicating using all the frequencies supported by the said radio station simultaneously (except all frequencies for simplex-operation communication related to harbor service but 156.8 MHz).

Article 40.3. Deleted

(Conditions for the Radio Equipment of an INMARSAT Ship Earth Station, etc.)

Article 40.4. The INMARSAT A radio equipment of an INMARSAT ship earth station shall satisfy the conditions defined in the items below:

- 1) General conditions
 - a The radio equipment shall be easy to inspect and maintain.
 - b The identification indication of the station where the radio equipment is installed shall not be easy to change.
 - c The radio equipment shall be capable of transmitting a distress alarm easily and shall have a provision for preventing a distress alarm from being transmitted due to misoperation.
 - d The radio equipment shall operate stably even if the power supply voltage fluctuates within $\pm 10\%$ of the rated voltage.
 - e If the power is interrupted and recovered within 1 minute, the radio equipment shall resume and continue operation after the power is recovered.
 - f The radio equipment shall operate satisfactorily under normal temperature or humidity variations, vibrations, and shocks.
- 2) Conditions for the transmitter
 - a If radio telegraph-based transmission is performed
 - (1) The modulation method shall be phase modulation.
 - (2) The transmission rate shall be 4,800 bits/s with a tolerance of 0.01%.
 - (3) The ratio of the power flux density of the phase noise to the power of the carrier (hereinafter referred to as "phase noise level") shall not exceed the value on the curve shown in Figure 4-9 wherever possible.
 - (4) The radio equipment shall be equipped with a function that stops transmission immediately if the transmission power value (integrated value for 160 ms) exceeds the normal value by 4 dB or higher.
 - b If radio telephone-based communication is performed
 - (1) The modulation method shall be frequency modulation.
 - (2) The modulating frequency shall be 3,000 Hz or lower.
 - (3) The frequency shift shall be within ± 12 kHz of the frequency of an unmodulated carrier.
 - (4) An automatic controller shall be provided to prevent the frequency shift from exceeding the value prescribed in (3).
 - c If radio high-speed data-based communication is performed

- (1) The modulation method shall be phase modulation.
 - (2) The transmission rate shall be 112 kilobits/s or 128 kilobits/s with a tolerance of 0.0002%.
 - (3) The phase noise level shall not exceed the value on the curve shown in Figure 4-9 wherever possible.
- 3) Conditions for the receiver
- a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -4 dB or higher.
 - b If radio telegraph-based communication is performed, when emissions of the level at which the frequency departure of the carrier is 550 Hz, the frequency departure of the clock is 0.5 Hz, and the ratio of the carrier power for a 2PSK wave to the power flux density of the noise is 43.4 dB are received, the bit error rate after demodulation shall be 0.001% or lower, and the reproduction probability of the carrier and clock 0.58 second after reception shall be 90% or higher.
 - c If radio telephone-based communication is performed, when the carrier that has been frequency-modulated with a modulating frequency of 800 Hz to the level where the maximum frequency shift becomes ± 12 kHz is received at the level where the ratio of the carrier power to the power flux density of noise is 51 dB, the signal-to-noise ratio after demodulation shall be 28 dB or higher.
 - d If radio high-speed data-based communication is performed, when emissions of the level at which the carrier power for a 4PSK wave to the power flux density of the noise is 53.5 dB or 54 dB are received, the bit error rate after demodulation shall be 0.0001% or lower.
- 4) Conditions for the antenna
- a The absolute gain for the elongation from the direction of the principal radiation shall be as listed in the right-hand column of the following table as classified according to the left-hand column.
- | Elongation (θ) from the direction of the principal radiation | Absolute gain |
|---|--|
| 16 degrees to 21 degrees | 8 dB or lower |
| Higher than 21 degrees to 57 degrees | Lower than or equal to the value of the following expression:
$41 - 25\log_{10}\theta$ dB |
| Higher than 57 degrees to 180 degrees | -3 dB or lower |
- b The polarized waves of transmitted or received emissions shall be right-hand polarized waves.
- 5) In addition to the condition stated in each of the previous items, the radio equipment shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 In addition to the provisions of item 1) of the previous paragraph, the INMARSAT C radio

equipment of an INMARSAT ship earth station shall satisfy the conditions defined in the items below:

- 1) Conditions for the transmitter
 - a The modulation method shall be phase modulation.
 - b The transmission rate shall be 600 bits/s or 1,200 bits/s.
 - c The phase noise level shall not exceed the value on the curve shown in Figure 4-9 wherever possible.
 - 2) The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be greater than or equal to the value on the curve shown in Figure 4-9.
 - 3) The polarized waves of transmitted or received emissions shall be right-hand polarized waves.
 - 4) In addition to the conditions stated in the previous three items, the radio equipment shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3 In addition to the provisions of paragraph 1 item 1), the INMARSAT B radio equipment of an INMARSAT ship earth station shall satisfy the conditions defined in the items below:
- 1) Conditions for the transmitter
 - a The modulation method shall be phase modulation.
 - b The transmission rate shall be a value prescribed in the following item (1) or (2) depending on the type of communication to be performed (the tolerance shall be within 0.4/1,000,000).
 - (1) 24 kilobits/s for communication other than that of item (2)
 - (2) 132 kilobits/s for radio high-speed data-based communication
 - c The phase noise level shall not exceed the value on the curve shown in Figure 4-9 wherever possible.
 - d The radio equipment shall be provided with a function that stops transmission immediately if the transmission power value exceeds the usual value by 2 dB or higher.
 - 2) Conditions for the receiver
 - a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -4 dB or higher.
 - b If radio telegraph-based communication (for data transmission, confined to that at 300 bits/s) is performed, when emissions of the level at which the frequency departure of the carrier is 925 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 2PSK wave to the power flux density of the noise is 40.7 dB are received, the bit error rate after demodulation shall be 0.001% or lower with a probability of 80% for any 1 hour.
 - c If radio telegraph-based communication (confined to data transmission at a rate higher than 300 bits/s) is performed, when emissions of the level at which the frequency departure of the carrier is 925 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 4PSK wave to the power

flux density of the noise is 46.5 dB are received, the bit error rate after demodulation shall be 0.001% or lower with a probability of 80% for 1,000 seconds or longer.

- d If radio high-speed data-based communication is performed, when emissions of the level at which the frequency departure of the carrier is 925 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 4PSK wave to the power flux density of the noise is 53.5 dB, the bit error rate after demodulation shall be 0.0001% or lower with a probability of 80% for 1,000 seconds or longer.
- e If radio telephone-based communication is performed, when emissions of the level at which the frequency departure of the carrier is 925 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 4PSK wave to the power flux density of the noise is a value in the left-hand column of the following table are received, the bit error rate after demodulation shall be lower than or equal to the corresponding value in the right-hand column of the following table.

Ratio of carrier power to power flux density of noise	Bit error rate after demodulation
47.2 dB	1% or lower with a probability of 98% for 10 seconds or longer
48.6 dB	0.01% or lower with a probability of 80% for 1,000 seconds or longer

3) Conditions for the antenna

- a The absolute gain for the elongation from the direction of the principal radiation shall be as listed in the right-hand column of the following table as classified according to the left-hand column.

Elongation (θ) from the direction of the principal radiation	Absolute gain
16 degrees to 21 degrees	8 dB or lower
Higher than 21 degrees to 57 degrees	Lower than or equal to the value of the following expression: $41 - 25\log_{10}\theta$ dB
Higher than 57 degrees to 180 degrees	-3 dB or lower

- b The polarized waves of transmitted or received emissions shall be right-hand polarized waves.

- 4) In addition to the conditions stated in the previous three items, the radio equipment shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 4 In addition to the provisions of paragraph 1 item 1) (except e), the INMARSAT M radio equipment of an INMARSAT ship earth station shall satisfy the conditions defined in the items below:

- 1) Conditions for the transmitter
 - a The modulation method shall be phase modulation.
 - b The transmission rate shall be the value stated in (1) or (2) below with a tolerance of 10/1,000,000 depending on the type of communication to be performed.
 - (1) 3,000 bits/s for radio telegraph-based communication (confined to communication for calling or responding)
 - (2) 8,000 bits/s for any communication type other than that stated in (1)
 - c The phase noise level shall not exceed the value on the curve shown in Figure 4-9 wherever possible.
 - d The radio equipment shall be equipped with a function that stops transmission immediately if the transmission power value exceeds the usual value by 5 dB or higher.
- 2) Conditions for the receiver
 - a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -10 dB or higher.
 - b If radio telegraph-based communication (except for communication stated in c) is performed, when emissions of the level at which the frequency departure of the carrier is 924 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 4PSK wave to the power flux density of the noise is 41.6 dB are received, the bit error rate after demodulation shall be 0.001% or lower with a probability of 95% for 3,600 seconds or longer.
 - c If radio telegraph-based communication (confined to communication for calling and line assignment) is performed, when emissions of the level at which the frequency departure of the carrier is 924 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 2PSK wave to the power flux density of the noise is 39.9 dB are received, the bit error rate after demodulation shall be 0.001% or lower with a probability of 80% for any one hour.
 - d If radio telephone-based communication is performed, when emissions of the level at which the frequency departure of the carrier is 924 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 4PSK wave to the power flux density of the noise is the value in the left-hand column of the following table are received, the bit error rate after demodulation shall be lower than or equal to the corresponding value in the right-hand column of the following table.

Ratio of carrier power to power flux density of noise	Bit error rate after demodulation
42 dB	4% or lower with a probability of 90% for 10 seconds or longer
43.4 dB	2% or lower with a probability of 90% for 20 seconds or longer

3) Conditions for the antenna

- a If an axisymmetric antenna is used, the absolute gain for the elongation from the direction of the principal radiation shall be as listed in the right-hand column of the following table as classified according to the left-hand column.

Elongation (θ) from the direction of the principal radiation	Absolute gain
40 degrees to 110 degrees	Lower than or equal to the value of the following expression: $46 - 25\log_{10}\theta$ dB
Higher than 110 degrees to 180 degrees	-5 dB or lower

- b The polarized waves of transmitted or received emissions shall be right-hand polarized waves.
- 4) In addition to the conditions stated in the previous three items, the radio equipment shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 5 In addition to the provisions of paragraph 1 item 1) (except e), the INMARSAT F radio equipment of an INMARSAT ship earth station shall satisfy the conditions defined in the items below:
- 1) Conditions for the transmitter
- a The modulation method shall be phase modulation (16QAM when radio high-speed data-based communication is performed).
- b The transmission rate shall be a value stated in (1), (2) or (3) below (with a tolerance of 10/1,000,000) depending on the type of communication to be performed.
- (1) 3,000 bits/s for radio telegraph-based communication (confined to communication for calling or responding)
- (2) 134,400 bits/s for radio high-speed data-based communication
- (3) 5,600 bits/s or 24,000 bits/s for any communication other than that stated in (1) and (2)
- c The phase noise level shall not exceed the value on the curve shown in Figure 4-9 whenever possible.
- d The radio equipment shall be equipped with a function that stops transmission immediately if the transmission power value exceeds the usual value by 5 dB or higher.
- 2) Conditions for the receiver
- a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -4 dB or higher.

- b If radio telegraph-based communication (except for communication stated in c and d) is performed, when emissions of the level at which the frequency departure of the carrier is 1,110 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 4PSK wave to the power flux density of the noise is a value in the left-hand column of the following table are received, the bit error rate after demodulation shall be lower than or equal to the corresponding value in the right-hand column of the following table.

Ratio of carrier power to power flux density of noise	Bit error rate after demodulation
40.1 dB in data dedicated mode	0.001% or lower for 3,600 seconds or longer
40.5 dB in common mode for data and signaling unit	0.025% or lower for 2,000 seconds or longer

- c If radio telegraph-based communication (confined to communication for calling and line assignment) is performed, when emissions of the level at which the frequency departure of the carrier is 924 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 2PSK wave to the power flux density of the noise is 39.9 dB are received, the bit error rate after demodulation shall be 0.001% or lower with a probability of 80% for any one hour.
- d If radio high-speed data-based communication is performed, when emissions of the level at which the frequency departure of the carrier is 1,110 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 16QAM wave to the power flux density of the noise is 58.2 dB are received, the bit error rate after demodulation shall be 0.00001% or lower for 48 hours or longer.
- e If radio telephone-based communication is performed, when emissions of the level at which the frequency departure of the carrier is 1,110 Hz, the frequency departure of the clock is 0.35/1,000,000, and the ratio of the carrier power for a 4PSK wave to the power flux density of the noise is a value in the left-hand column of the following table are received, the bit error rate after demodulation shall be lower than or equal to the corresponding value in the right-hand column of the following table.

Ratio of carrier to power flux density of noise	Bit error rate after demodulation
41 dB	4% or lower for 500 seconds or longer
42.5 dB	2% or lower for 1,500 seconds or longer

3) Conditions for the antenna

- a The absolute gain for the elongation from the direction of the principal radiation shall be as listed in the right-hand column of the following table as classified according to the left-hand column.

Elongation (θ) from the direction of the principal radiation	Absolute gain
18 degrees or higher to lower than 21 degrees	8 dB or lower
21 degrees or higher to lower than 57 degrees	Lower than or equal to the value of the following expression: 41- 25log100 dB
57 degrees or higher to 180 degrees or lower	-3 dB or lower

- b The polarized waves of transmitted or received emissions shall be right-hand polarized waves.
- 4) In addition to the conditions stated in the previous three items, the radio equipment shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 6 In addition to the provisions of paragraph 1 item 1) (except b and c) and paragraph 2 item 2), the INMARSAT enhanced group call receiver shall satisfy the conditions defined in the items below:
 - 1) The receiver shall be capable of receiving emissions and printing automatically.
 - 2) Upon receiving a distress or emergency communication, the receiver shall issue a special audible and visible alarm that can only be stopped manually.
 - 3) The receiver shall allow the reception and printing functions to be checked easily for normal operation.
 - 4) In addition to the three previous items, the receiver shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 7 The radio equipment at a radio station that is established on a structure operated in a sea area and performs radiocommunication by means of a relay through an INMARSAT artificial satellite shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
(Announcement: * in No. 566 in 1990)

(Digital Selective Calling Devices)

Article 40.5. The digital selective calling device for ship stations shall comply with the conditions defined in the items below:

- 1) General conditions
 - a The device shall be easy to inspect and maintain.
 - b The identification signal of the station where the device is installed shall not be easy to change.
 - c The device shall be capable of displaying the contents of the message to be sent.
 - d The device shall have a function for easily testing whether it is operating normally.
 - e The device shall be capable of sending a distress alarm easily, and be provided with another device that prevents a distress alarm from being sent due to misoperation.

- f The device shall automatically transmit a distress alarm repeatedly 5 times. The repetition of the transmission shall be at irregular intervals in a range of 3.5 minutes to 4.5 minutes.
 - g Upon receiving communications other than distress communications or emergency communications, the device shall indicate them both audibly and visibly.
 - h Upon receiving a distress communication or emergency communication, the device shall issue a special, audible and visible alarm that can only be stopped manually.
 - i If the data of the calls related to received distress communications is not printed immediately, the device shall be capable of storing 20 sets or more of data and retaining them until they are read through printing or other operations.
 - j The device shall be capable only of manual response to distress communications.
 - k The device shall operate stably even if the power supply voltage fluctuates within $\pm 10\%$ of the rated voltage.
 - l The device shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
- 2) Conditions for the selective calling signal
- a The selective calling signal of the digital selective calling device mounted in the radio equipment using emissions of a frequency in a range of 1,606.5 kHz to 26,175 kHz shall comply with the following conditions.
 - (1) The mark frequency shall be 1,615 Hz and the space frequency shall be 1,785 Hz. (The tolerance shall be 0.5 Hz for each.)
 - (2) The signal transmission rate shall be 100 bits/s. (The tolerance shall be 30/1,000,000.)
 - (3) The time interval for time diversity shall be 0.4 second.
 - b The selective calling signal of the digital selective calling device mounted in the radio equipment using emissions of the frequencies given in the table in Appendix 18 of the Radio Regulations shall comply with the following conditions.
 - (1) The mark frequency shall be 1,300 Hz and the space frequency shall be 2,100 Hz. (The tolerance shall be 10 Hz for each.)
 - (2) The signal transmission rate shall be 1,200 bits/s. (The tolerance shall be 30/1,000,000.)
 - (3) The time interval for time diversity shall be 1/30 second.
- 3) In addition to the conditions described in the preceding two items, the device shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The digital selective calling device for coast stations shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications, in addition to the provisions of items 1) (excluding e and f) and 2) of the preceding paragraph.

(Announcement: * in No. 567 in 1990)

(Narrow-Band Direct Printing (NBDP) Telegraphs)

Article 40.6. The narrow-band direct printing (NBDP) telegraph for ship stations and for coast stations shall comply with the conditions defined in the items below:

- 1) General conditions
 - a The telegraph shall be easy to inspect and maintain.
 - b The identification signal shall not be easy to change.
 - c The telegraph shall be capable of responding to identification signals of 4 and 7 characters.
 - d The telegraph shall be capable of performing communication with the automatic repeat request method (which refers to that method in which, if the input signal contains an error, the retransmission of that signal is requested) and with the one-way error correction method (which refers to that method in which any error in the input signal is corrected using the time diversity method.)
 - e The telegraph shall operate stably even if the power supply voltage fluctuates within $\pm 10\%$ of the rated voltage.
 - f The telegraph shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
- 2) The mark frequency shall be 1,615 Hz and the space frequency shall be 1,785 Hz. (The tolerance shall be 0.5 Hz for each.)
- 3) The signal transmission rate shall be 100 bits/s. (The tolerance shall be 30/1,000,000.)
- 4) In addition to the conditions described in the preceding three items, the telegraph shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 568 in 1990)

(Radio equipment for radio stations in maritime mobile service that perform communication using digital selective calling devices, etc.)

Article 40.7. In radio equipment which is installed at ship stations performing communication based on radio telephones using class J3E emissions and communication based on digital selective calling devices or narrow-band direct printing (NBDP) telegraphs and which uses emissions of a frequency in a range of 1,606.5 kHz to 26,175 kHz, the transmitter and the receiver shall comply with the conditions defined in the items below:

- 1) General conditions
 - a The transmitter and the receiver shall be easy to inspect and maintain.
 - b The transmitter and the receiver shall be operable within 1 minute after being turned on.
 - c The transmitter and the receiver shall have a function for indicating that there are emissions.
 - d The transmitter and the receiver shall operate stably even if the power supply

voltage fluctuates within $\pm 10\%$ of the rated voltage.

- e The transmitter and the receiver shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.

2) Conditions for the transmitter

Classification	Condition
Antenna power (which shall be the peak envelope power for communication based on radio telephones and the mean power for communication based on digital selective calling devices or narrow-band direct printing (NBDP) telegraphs)	1) The power shall be 60 W or more. 2) If the power exceeds 400 W, it shall be capable of being reduced to 400 W or lower.
Prevention of overmodulation	The transmitter shall have a function for automatically preventing overmodulation.

3) Conditions for the receiver

- a For communication based on radio telephones

Classification	Condition
Reception frequency stability	Within ± 10 Hz
Sensitivity to class J3E emissions	At a modulation frequency of 1,000 Hz, the receiver input voltage required to set the ratio of the output equal to half the rated output of the receiver to the unwanted components contained within it to 20 dB shall be 6 μ V or less.

- b For communication based on digital selective calling devices or narrow-band direct printing (NBDP) telegraphs

Classification	Condition
Reception frequency stability	Within ± 10 Hz
Sensitivity	The character error rate shall be 1% or less when a desired signal with a receiver input voltage of 1 μ V is supplied.
One-signal selectivity	Passing bandwidth (which refers to the width between the two frequencies showing a sensitivity attenuation of 6 dB, with the frequency having the maximum sensitivity in the middle; this also applies hereafter) The bandwidth shall be in a range of 270 Hz to 300 Hz, whenever possible.

	Attenuation	The bandwidth of a 30 dB reduction shall be within ± 380 Hz. The bandwidth of a 60 dB reduction shall be within ± 550 Hz.
Effective selectivity	Spurious response	The character error rate shall be 1% or less when unmodulated disturbing waves with a receiver input voltage of 31.6 mV at a frequency in a range of the intermediate frequency to three times the frequency of the desired wave (excluding the frequencies within ± 750 Hz of the frequency of the desired wave) are supplied, with a desired signal with a receiver input voltage of 10 μ V being supplied.
	Desensitization effect	The character error rate shall be 1% or less when unmodulated disturbing waves with a receiver input voltage of 1 mV that are distant from the desired wave by 500 Hz are supplied, with a desired signal with a receiver input voltage of 10 μ V supplied.

- 4) In addition to the conditions described in the preceding three items, the transmitter and the receiver shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 In those ship stations that perform communication based on radio telephones using class F3E emissions and communication based on digital selective calling devices and that use emissions of the frequencies given in the table in Appendix 18 of the Radio Regulations, the radio equipment shall comply with the conditions defined in the items below:
 - 1) General conditions
 - a The radio equipment shall be easy to inspect and maintain.
 - b The radio equipment shall be operable within 1 minute after being turned on.
 - c The radio equipment shall allow the operator to select a frequency of 156.525 MHz easily.
 - d The radio equipment shall be capable of switching between transmission and reception within 0.3 second.
 - e For that radio equipment that has two or more controllers, one controller shall be capable of indicating the operating states of the others, and one of the controllers shall be assigned priority.
 - f The radio equipment shall have a function for indicating that there are emissions.
 - g The radio equipment shall operate stably even if the power supply voltage fluctuates within $\pm 10\%$ of the rated voltage.
 - h The radio equipment shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
 - 2) Conditions for the transmitter

Classification	Condition
Antenna power	The power shall be 6 W or more.
Modulation index of class F2B emissions	2 (The tolerance shall be 0.2.)

3) Conditions for the receiver

Classification		Condition
Sensitivity		The character error rate shall be 1% or less when a desired signal with a receiver input voltage of 1 μ V is supplied.
Effective selectivity	Spurious response	The character error rate shall be 1% or less when unmodulated disturbing waves with a receiver input voltage of 4.47 mV at a frequency in a range of the intermediate frequency to three times the frequency of the desired wave (excluding the frequencies within ± 37.5 kHz of the frequency of the desired wave) are supplied, with a desired signal with a receiver input voltage of 1.4 μ V being supplied.
	Desensitization effect	The character error rate shall be 1% or less when disturbing waves with a receiver input voltage of 4.47 mV, modulated with 400 Hz sine waves to set the frequency shift to 3 kHz, are supplied to the adjacent channel, with a desired signal with a receiver input voltage of 1.4 μ V being supplied.
Intermodulation characteristics		The character error rate shall be 1% or less when both unmodulated disturbing waves with a receiver input voltage of 2.5 mV that are distant from the desired wave by 25 kHz and disturbing waves with a receiver input voltage of 2.5 mV that are distant from the desired wave by 50 kHz and that are modulated with 400 Hz sine waves to set the frequency shift to 3 kHz are supplied, with a desired signal with a receiver input voltage of 1.4 μ V being supplied.

- 4) In addition to the conditions described in the preceding three items, the radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3) In those coast stations that perform communication based on radio telephones using class F3E emissions and communication based on digital selective calling devices and that use emissions of the frequencies given in the table in Appendix 18 of the Radio Regulations, the radio equipment shall comply with the provisions of item 3) of the preceding paragraph. In addition, the modulation index of class F2B emissions shall be 2. (The tolerance shall be 0.2.)
(Announcement: * in No. 569 in 1990)

(Receivers for Digital Selective Calling Only)

Article 40.8. Those receivers that are for receiving class F1B emissions of only 2,187.5 kHz and those receivers that are for receiving class F1B emissions of 2,187.5 kHz and 8,414.5 kHz as well as emissions of at least one of 4,207.5 kHz, 6,312 kHz, 12,577 kHz, and 16,804.5 kHz, either simultaneously or sequentially within 2 seconds, shall comply with the conditions defined in the items below:

- 1) General conditions
 - a Upon receiving communications other than distress communications or emergency communications, the receiver shall indicate them both audibly and visibly.
 - b Upon receiving a distress communication or emergency communication, the receiver shall issue a special, audible and visible alarm that can only be stopped manually.
 - c If the data of the calls related to received distress communications is not printed immediately, the receiver shall be capable of storing 20 or more sets of data and retaining them until they are read through printing or other operations.
 - d The reception frequency or frequencies shall be indicated in a location on the cabinet where they can be easily seen.
 - e The receiver shall be operable within 1 minute after being turned on.
 - f The receiver shall operate stably even if the power supply voltage fluctuates within $\pm 10\%$ of the rated voltage.
 - g The receiver shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
- 2) Conditions for the receiver

Classification		Condition
Reception frequency stability		Within ± 10 Hz
Sensitivity		The character error rate shall be 1% or less when a desired signal with a receiver input voltage of 1 μ V is supplied.
One-signal selectivity	Passing bandwidth	The bandwidth shall be in a range of 270 Hz to 300 Hz, whenever possible.
	Attenuation	The bandwidth of a 30 dB reduction shall be within ± 380 Hz. The bandwidth of a 60 dB reduction shall be within ± 550 Hz.
Effective selectivity	Spurious response	The character error rate shall be 1% or less when unmodulated disturbing waves with a receiver input voltage of 31.6 mV at a frequency in a range of the intermediate frequency to three times the frequency of the desired wave (excluding the frequencies within ± 750 Hz of the frequency of the desired wave) are supplied, with a desired signal with a receiver input voltage of 10 μ V being supplied.

	Desensitization effect	The character error rate shall be 1% or less when unmodulated disturbing waves with a receiver input voltage of 1 mV that are distant from the desired wave by 500 Hz are supplied, with a desired signal with a receiver input voltage of 10 μ V being supplied.
--	------------------------	---

- 3) In addition to the conditions described in the preceding two items, the receiver shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 Those receivers that are for receiving class F2B emissions of only 156.525 MHz shall comply with the provisions of item 1) of the preceding paragraph and the conditions defined in the items below:
- 1) Conditions for the receiver

Classification		Condition
Sensitivity		The character error rate shall be 1% or less when a desired signal with a receiver input voltage of 1 μ V is supplied.
Effective selectivity	Spurious response	The character error rate shall be 1% or less when unmodulated disturbing waves with a receiver input voltage of 4.47 mV at a frequency in a range of the intermediate frequency to three times the frequency of the desired wave (excluding the frequencies within ± 37.5 kHz of the frequency of the desired wave) are supplied, with a desired signal with a receiver input voltage of 1.4 μ V being supplied.
	Desensitization effect	The character error rate shall be 1% or less when disturbing waves with a receiver input voltage of 4.47 mV, modulated with 400 Hz sine waves to set the frequency shift to 3 kHz, are supplied to the adjacent channel, with a desired signal with a receiver input voltage of 1.4 μ V being supplied.
Intermodulation characteristics		The character error rate shall be 1% or less when both unmodulated disturbing waves with a receiver input voltage of 2.5 mV that are distant from the desired wave by 25 kHz and disturbing waves with a receiver input voltage of 2.5 mV that are distant from the desired wave by 50 kHz and that are modulated with 400 Hz sine waves to set the frequency shift to 3 kHz are supplied, with a desired signal with a receiver input voltage of 1.4 μ V being supplied.

- 2) In addition to the conditions described in the preceding item, the receiver shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 570 in 1990)

(NAVTEX Transmitters)

Article 40.9. The NAVTEX transmitter for coast stations offering maritime safety information using class F1B emissions of a frequency of 518 kHz shall comply with the conditions defined in the items below:

- 1) General conditions
 - a The transmitter shall be capable of sending navigational alarms, meteorological alarms, search and rescue information, and other information in English.
 - b The transmitter shall perform communication with the one-way error correction method (which refers to the method in which any error in the input signal is corrected using the time diversity method).
 - c The transmitter shall operate stably even if the power voltage fluctuates within $\pm 10\%$ of the rated voltage.
 - d The transmitter shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
 - 2) The mark frequency shall be 1,615 Hz and the space frequency shall be 1,785 Hz. (The tolerance shall be 0.5 Hz for each.)
 - 3) The signal transmission rate shall be 100 bits/s. (The tolerance shall be 30/1,000,000.)
 - 4) In addition to the conditions described in the preceding three items, the transmitter shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The NAVTEX transmitter for coast stations offering maritime safety information using class F1B emissions of a frequency of 424 kHz shall comply with the provisions of items 1) (excluding a), 2), and 3) of the preceding paragraph as well as the conditions defined in the items below:
- 1) The transmitter shall be capable of sending navigational alarms, meteorological alarms, search and rescue information, and other information in Japanese.
 - 2) In addition to the preceding item, the transmitter shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 543 in 1994)

(NAVTEX Receivers)

Article 40.10. Those receivers that are for receiving class F1B emissions of a frequency of 518 kHz shall comply with the conditions defined in the items below:

- 1) General conditions
 - a The receiver shall be capable of automatically receiving concurrently F1B emission 518 kHz and emissions of frequencies announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications and capable of automatically printing or displaying on the screen the received information in English.
 - b The receiver shall allow the reception function and the function of printing or displaying on the screen to be checked easily for normal operation.
 - c Upon receiving a distress communication, the receiver shall issue a special alarm

that can only be stopped manually.

- d The receiver shall operate stably even if the power supply voltage fluctuates within $\pm 10\%$ of the rated voltage.
- e The receiver shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.

2) Sensitivity

- a The character error rate shall be 4% or less when a desired signal with a receiver input voltage of $5 \mu\text{V}$ is supplied, using a dummy antenna circuit containing a series circuit with a capacitance of 150 pF and a resistance of 10Ω .
- b The character error rate shall be 4% or less when a desired signal with a receiver input voltage of $2 \mu\text{V}$ is supplied, using a dummy antenna circuit with a resistance of 50Ω .

3) The character error rate shall be 4% or less when the unmodulated disturbing waves stated below are supplied, with a desired signal with a receiver input voltage of $10 \mu\text{V}$ being supplied, using a dummy antenna circuit containing a series circuit with a capacitance of 150 pF and a resistance of 10Ω .

- a Disturbing waves with the receiver input voltages listed in the right-hand column of the following table according to the classification in the left-hand column of that table:

Disturbing wave frequency	Receiver input voltage
Higher than 517 kHz to 517.5 kHz and higher than 518.5 kHz to 519 kHz	$100 \mu\text{V}$
Higher than 515 kHz to 517 kHz and higher than 519 kHz to 521 kHz	1 mV
Higher than 100 kHz to 515 kHz and higher than 521 kHz to 30 MHz	31.6 mV
Higher than 156 kHz to 174 MHz and higher than 450 MHz to 470 MHz	31.6 mV

- b 518 kHz disturbing waves with a receiver input voltage of $5 \mu\text{V}$
- c Two disturbing waves with a receiver input voltage of 3.16 mV that cause intermodulation (excluding those with frequencies in a range of 516 kHz to 520 kHz)

4) In addition to the conditions described in the preceding three items, the receiver shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

2) Those receivers that are for receiving class F1B emissions of a frequency of 424 kHz shall comply with the provisions of item 1) (excluding a) of the preceding paragraph and the conditions defined in the items below:

- 1) The receiver shall be capable of automatically receiving emissions and printing in Japanese.
- 2) Sensitivity

The character error rate shall be 4% or less when a desired signal with a receiver input voltage of 2.1 μV is supplied, using a dummy antenna circuit with a resistance of 50 Ω .

- 3) The character error rate shall be 4% or less when the unmodulated disturbing waves stated below are supplied, with a desired signal with a receiver input voltage of 4.5 μV being supplied, using a dummy antenna circuit with a resistance of 50 Ω .
 - a Disturbing waves with the receiver input voltages listed in the right-hand column of the following table according to the classification in the left-hand column of that table:

Disturbing wave frequency	Receiver input voltage
Higher than 423 kHz to 423.5 kHz and higher than 424.5 kHz to 425 kHz	40 μV
Higher than 421 kHz to 423 kHz and higher than 425 kHz to 427 kHz	400 μV
Higher than 100 kHz to 421 kHz and higher than 427 kHz to 30 MHz	12.6 mV
Higher than 156 kHz to 174 MHz and higher than 450 MHz to 470 MHz	12.6 mV

- b 424 kHz disturbing waves with a receiver input voltage of 2.2 μV
 - c Two disturbing waves with a receiver input voltage of 1.26 mV that cause intermodulation (excluding those with frequencies in a range of 422 kHz to 426 kHz)
- 4) In addition to the conditions described in the preceding items, the receiver shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 544 in 1994)

(Antenna Power Reduction Devices)

Article 41. The transmitter for ship stations shall be capable of easily reducing its antenna power by 50%. However, this shall not apply to those transmitters whose antenna power is 75 W or less.

- 2 Notwithstanding the provisions of the preceding paragraph, the transmitter for radio telephones for ship stations using emissions of a frequency in a range of 4 MHz to 26.175 MHz (excluding the transmitter described in Article 40.7 paragraph 1) shall be capable of easily reducing its antenna power to 75 W or less, 75% or less at a time.
- 3 Notwithstanding the provisions of paragraph 1, the transmitter for ship stations using class F3E emissions that uses emissions of the frequencies given in the table in Appendix 18 of the Radio Regulations shall be capable of easily reducing its antenna power to 1 W or less.
- 4 Notwithstanding the provisions of paragraph 1, the transmitter that performs communication by means of TDMA and that uses emissions of a frequency specified in the table of Appendix 18 of the Radio Regulations shall be capable of easily reducing its antenna power to 2 W or less.
- 5 Notwithstanding the provisions of paragraph 1, the transmitter for ship stations using

emissions of a frequency in a range of higher than 450 MHz to 470 MHz shall be capable of easily reducing its antenna power by 10%. However, this shall not apply to those transmitters whose antenna power is 0.2 W or less.

(Frequency Switching)

Article 42. The radio telegraph or radio telephone for coast stations or ship stations shall be capable of switching between frequencies within 5 seconds for each of its transmitters or receivers. However, mutual switching between those frequencies in a range of 4 MHz to 28 MHz that are distant by 1 MHz or more shall be performed within 15 seconds.

Article 43. Deleted (Deleted in No. 107 in 1998.)

(Illumination of Controllers)

Article 44. The controller for the radio equipment installed in compulsory ship stations, etc. in passenger ships or in ships of 300 tons gross or greater shall be capable of receiving its power from a power supply that is independent of the ordinary power supply and emergency power supply, and shall be illuminated by illuminating equipment mounted in a position where it can illuminate the controller sufficiently. However, this shall not apply to those controllers in radio equipment for which illumination is deemed difficult or unreasonable and that are announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 123 in 1992)

(Conditions for Receiving Equipment)

Article 45. The main receiving equipment for ship stations that receives emissions of a frequency in a range of higher than 1,606.5 kHz to 28,000 kHz shall have a passing bandwidth of 6 kHz or less, whenever possible, and the attenuation outside the passing bandwidth shall be at least 3 dB per kHz at up to a frequency lower by 30 dB than the limit value of the passing bandwidth.

2 The equipment for radio stations in the maritime mobile service that receives class A3E emissions and that is used to maintain secrecy in communication shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 124 in 1992)

(Satellite Emergency Position-Indicating Radio Beacons)

Article 45.2. Those satellite emergency position-indicating radio beacons that use class G1B emissions of a frequency in a range of 406 MHz to 406.1 MHz and class A3X emissions of a frequency of 121.5 MHz shall comply with the conditions defined in the items below:

1) General conditions

a The beacon shall be capable of sending, at the same time, a signal intended for artificial satellites and a signal used by aircraft for homing.

- b The beacon shall be capable of being removed easily from the hull and of being carried by a single person.
 - c The beacon shall be watertight, float on the surface of the sea, right itself if turned on its side, be equipped with a buoyant cord, and have other features to make the beacon suitable for use at sea.
 - d The cabinet shall be colored either yellow or orange and be equipped with a reflector.
 - e The beacon shall be designed so that it is affected as little as possible by sea water, oil, and sunlight.
 - f The instructions for handling the beacon such as those for turning the power on/off, as well as notes, shall be indicated concisely and in such a manner that they are not obliterated by water, in a location on the cabinet where they can be easily seen.
 - g The beacon shall be capable of being started and stopped manually.
 - h Those beacons that automatically detach themselves from the hull shall automatically start operation after detaching themselves.
 - i The beacon shall be designed to prevent itself from being operated through carelessness.
 - j The beacon shall have a function for indicating that there are emissions intended for reception by artificial satellites.
 - k The beacon shall have a function for easily testing whether it is operating normally.
 - l The beacon shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
- 2) Conditions for the transmitter
- a Device for artificial satellites using class G1B emissions

Classification	Condition
Transmission frequency stability	The frequency shall not fluctuate by more than 2/1,000,000,000 for 100 ms.
Transmission rise time	The time required from the start of transmission until the transmission output increases to 90% of the antenna power shall be 5 ms or less.
Modulation waveform rise and fall times	50 μ s to 250 μ s
Coding type	Bi-phase L code
Transmission repetition period	50 seconds (The tolerance shall be 5%.)

b Device for aircraft using class A3X emissions

Classification	Condition
Modulation frequency	The modulation frequency shall change toward higher or lower frequencies at a rate of two or four times per second in any range of 700 Hz or wider between 300 Hz and 1,600 Hz.
Modulation factor	85% or more
Modulation duty factor	0.33 to 0.55

3) Conditions for the antenna

a Device for artificial satellites using class G1B emissions

Classification	Condition
Gain in the vertical plane	In an angle range of 90% or more of an elevation angle of 5 degrees to 60 degrees, the absolute gain shall be in a range of -3 dB to 4 dB.
Gain and directional pattern in the horizontal plane	Non-directional, with a gain fluctuation of 3 dB or less in all directions
Polarized wave	Right-hand polarized wave or linearly polarized wave

b Device for aircraft using class A3X emissions

Classification	Condition
Directional pattern in the horizontal plane	Non-directional in all directions
Polarized wave	Vertically polarized wave

4) Conditions for the power supply

- a The beacon shall be equipped with an independent battery as its power supply and indicate the expiration date of the battery.
- b The capacity of the battery shall be large enough to operate the transmitting equipment continuously for 48 hours or longer.
- c The condition described in b shall be satisfied even one year after the battery is installed.
- d The battery shall be capable of being replaced and inspected easily.

5) In addition to the conditions described in the preceding items, the beacon shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

2 The satellite emergency position-indicating radio beacon mounted on ships of less than 20 tons gross (excluding those passenger ships engaged in international voyage) shall comply

with the conditions defined in the items below, in addition to the provisions of the items of the preceding paragraph (excluding item 1) b and h and item 4) b and c).

- 1) The beacon shall be small-sized and lightweight, be capable of being removed easily from the hull, and be capable of being carried by a single person.
 - 2) The beacon shall operate while floating on the surface of the sea.
 - 3) The capacity of the battery shall be large enough to operate the transmitting equipment continuously for 24 hours or longer.
 - 4) The condition described in the preceding item shall be satisfied even one year after the battery is installed.
 - 5) The beacon shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications, in addition to the conditions described in the preceding items.
- 3) Those satellite emergency position-indicating radio beacons that use class F1B emissions of a frequency in a range of 1,644.3 MHz to 1,646.5 MHz shall comply with the conditions defined in the items below, in addition to the provisions of paragraph 1 item 1) (excluding a) and 4).
- 1) General conditions
 - a) The beacon shall have a function for automatically updating the position information and sending a distress alarm when it starts operation.
 - b) The satellite emergency position-indicating radio beacon shall have either a function for automatically updating and transmitting the position information for that beacon after the start of operation or a function for, upon receiving emissions from a radar, emitting radio waves in response to those radio waves so that the position of that beacon can be indicated by an indicator on that radar.
 - 2) Conditions for the transmitter

Classification	Condition
Transmission frequency stability	The fluctuation shall be within 1/100,000,000 per minute.
Signal modulation method	FSK method
Frequency deviation	±120 Hz (The tolerance shall be 10%.)
Coding type	NRZ coding
Transmission rate	32 bits/s (The tolerance shall be 2/1,000,000.)

3) Conditions for the antenna

Classification	Condition
Gain in the vertical plane	In an elevation angle range of 0 degrees to 90 degrees, the absolute gain shall be 0 dB or more.
Gain in the horizontal plane	The absolute gain shall be 0 dB or more in all directions.
Polarized wave	Right-hand polarized wave

- 4) In addition to the conditions described in the preceding three items, the beacon shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 572 in 1990)

(Two-Way Radio Telephones)

Article 45.3. The two-way radio telephone shall comply with the conditions defined in the items below:

- 1) The telephone shall be small-sized and lightweight, and be capable of being easily carried by a single person (excluding those telephones that are used in a fixed location in a lifeboat).
- 2) There shall be only a minimum number of required external controls, and they shall be capable of being handled easily.
- 3) The telephone shall be watertight, and be designed to be affected as little as possible by sea water, oil, and sunlight.
- 4) The cabinet shall be colored either yellow or orange. Alternatively, it shall have an indication on a yellow or orange band.
- 5) The instructions for handling the telephone such as those for turning the power on/off, as well as notes, shall be indicated concisely and in such a manner that they are not obliterated by water, in a location on the cabinet where they can be easily seen.
- 6) The telephone shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
- 7) The telephone shall be capable of being attached to the clothes of the user and be equipped with a cord that can be put around the wrist or neck of the user (limited to those having the structure that allows it to be torn off when a certain amount of tension is applied to it) (excluding those that are used in a fixed location in a survival boat).
- 8) The telephone shall be free from sharp edges, etc. that could damage the survival boat.
- 9) The telephone shall be operable within 5 seconds after being turned on.
- 10) The telephone shall be capable of using emissions of at least two frequencies including 156.8 MHz.
- 11) The effective radiated power shall be 0.25 W or more.
- 12) When disturbing waves that are distant from the desired wave by 25 kHz or more are supplied in the state where a desired wave input voltage that is 6 dB higher than the receiver input voltage required to set the noise suppression to 20 dB is supplied, the disturbing wave input voltage at the time the noise suppression becomes 20 dB shall be 3.16 mV or higher.
- 13) The telephone shall be equipped with an independent battery as its power supply. The battery shall be capable of being easily replaced and recharged.
- 14) The capacity of the battery shall be large enough to operate the radio telephone satisfactorily for 8 hours or longer. (The ratio of transmission time to reception time shall be 1/9.) After 8 hours have passed, the effective radiated power shall be 0.25 W or more.
- 15) The condition described in the preceding item shall be satisfied even two years after the battery is installed (excluding those cases in which a rechargeable battery is used).
- 16) The battery for use in the case of emergency shall be easily distinguishable from that used daily by means of color or indication. If the battery is the primary one, it shall be designed to be identifiable as being either used or unused.

(Ship/Aircraft Two-Way Radio Telephones)

Article 45.3.2. The ship/aircraft two-way radio telephone shall comply with the conditions defined in the items below:

- 1) There shall be only a minimum number of required external controls, and they shall be capable of being handled easily.
- 2) The instructions for handling the telephone such as those for turning the power on/off, as well as notes, shall be indicated concisely and in such a manner that they are not obliterated by water, in a location on the cabinet where they can be easily seen.
- 3) The telephone shall be capable of using emissions having frequencies of 121.5 MHz and 123.1 MHz.
- 4) The class of emissions used shall be A3E.
- 5) The maximum modulation factor in the usual operating state shall be 80% or more.
- 6) The antenna power shall be 100 mW or more.
- 7) The antenna shall be of single type, the directional pattern of the antenna shall be non-directional in the horizontal plane, and the plane of polarization of the emissions from the antenna shall be vertical.
- 8) When a reception input voltage of 20 μ V is supplied with a signal modulated by 30% at a modulation frequency of 1,000 Hz, the signal-to-noise (SN) ratio of the output shall be 6 dB or more.
- 9) When a reception input voltage of 10 mV that is modulated by 30% at a frequency in a range of 350 Hz to 2,500 Hz is supplied, and the output is within ± 10 dB of the rated output, the ratio of the output to the unwanted components contained in it shall be 16.5 dB or more.
- 10) The capacity of the battery shall be large enough to operate the radio telephone satisfactorily and continuously for 8 hours or longer. If the battery is the primary one, its expiration date shall be indicated.

(Search and Rescue Radar Transponders)

Article 45.3.3. The search and rescue radar transponder shall comply with the conditions defined in the items below:

- 1) General conditions
 - a The transponder shall be small-sized and lightweight.
 - b The transponder shall be watertight.
 - c The cabinet shall be colored either yellow or orange so that it can be easily detected when it is on the surface of the sea. The transponder shall be affected as little as possible by sea water, oil, and sunlight.
 - d The instructions for handling the transponder such as those for turning the power on/off, as well as notes, shall be indicated concisely and in such a manner that they are not obliterated by water, in a location on the cabinet where they can be easily seen.
 - e The transponder shall be capable of being operated easily even by those persons who have no special knowledge or skill related to its handling.
 - f The transponder shall be free from sharp edges, etc. that could damage the survival boat.
 - g The transponder shall be capable of being started and stopped manually.

- h The transponder shall be designed to prevent itself from being operated through carelessness.
 - i The transponder shall have a function for displaying that there are emissions and that it is waiting for reception.
 - j The transponder shall have a function enabling testing easily and periodically to ensure that it is operating normally.
 - k The transponder shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.
 - l Those transponders that are not integral with the survival boat shall be equipped with a buoyant cord, shall float on the surface of the sea, and shall be capable of being removed easily from the hull.
 - m Those transponders that are used on the surface of the sea shall right themselves when turned on their side.
- 2) Conditions for the transmitter
- a The transmitter shall perform frequency sweep in a range of 9,200 MHz to 9,500 MHz.
 - b The frequency sweep time shall be $7.5 \mu\text{s} \pm 1 \mu\text{s}$.
 - c The frequency sweep shall be of the saw-tooth waveform type, and the return time shall be $0.4 \mu\text{s} \pm 0.1 \mu\text{s}$.
 - d One response transmission shall consist of 12 frequency sweeps.
 - e The delay from the point when radar emissions are received until a response starts shall be within $0.5 \mu\text{s}$.
 - f The time from one emission until the next response can be made shall be within $10 \mu\text{s}$.
 - g The equivalent isotropically radiated power shall be 400 mW or more.
- 3) The effective reception sensitivity (which refers to the reception sensitivity of the equipment plus the receiving antenna gain of that equipment) shall be better than -50 dB (with 1 mW regarded as 0 dB).
- 4) Conditions for the antenna
- a When mounted in a survival boat, the antenna shall be at a height of 1 meter or greater above sea level.
 - b The directional pattern shall be as follows:
 - (1) In the horizontal plane, the antenna shall be non-directional, with the gain fluctuation being within $\pm 2 \text{ dB}$.
 - (2) The vertical plane shall be at 25 degrees or greater.
 - c The plane of polarization shall be horizontal.
- 5) Conditions for the battery
- a A battery dedicated to the transponder, with an expiration term of 1 year or longer, shall be used.

- b The capacity of the battery shall be large enough to operate the transponder satisfactorily and continuously for 8 hours when it receives radar emissions at 1 ms intervals after waiting for reception for 96 hours.
- 2 The search and rescue radar transponder mounted in ships of less than 20 tons gross (excluding those passenger ships engaged in international voyage) shall comply with the conditions defined in the items below, in addition to the provisions of the items of the preceding paragraph (excluding item 4) a and item 5) b).
 - 1) The transponder shall be capable of being easily carried by a single person.
 - 2) The capacity of the battery shall be large enough to operate the transponder satisfactorily and continuously for 8 hours when it receives radar emissions at 1 ms intervals after waiting for reception for 48 hours.

(Ship Automatic-Identification System)

Article 45.3.4. The radio equipment at a ship station that performs communication by means of TDMA using class F1D emissions and by means of a digital selective calling device and that uses emissions of a frequency specified in the table of Appendix 18 of the Radio Regulations shall comply with the conditions defined in the items below:

- 1) General conditions
 - a The radio equipment shall be capable of transmitting emissions by means of TDMA.
 - b The radio equipment shall be capable of receiving two emissions simultaneously by means of TDMA.
 - c The radio equipment shall be capable of transmitting and receiving emissions by means of a digital selective calling device.
 - d The radio equipment shall be capable of receiving emissions from an artificial satellite to obtain a signal for synchronization.
 - e The radio equipment shall have an automatic operation mode (which refers to the function for automatically operating in all areas).
 - f The radio equipment shall have an allocation mode (which refers to the function for operating when a coast station specifies a data transmission interval and a time slot).
 - g The radio equipment shall have a polling mode (which refers to the function for operating according to a request for transmission from other ship stations or coast stations).
 - h The radio equipment shall have a frequency selection function and frequency switching function that operates over the whole region of the frequencies prescribed in Appendix 18 of the Radio Regulations.
 - i The frequency switching function in h above shall be capable of being operated by a manual input, TDMA, control from a coast station by a digital selective calling device, or control from other equipment installed in the ship where the radio equipment is installed.
 - j The radio equipment shall process radiodetermination information from a terrestrial radio navigation device or a satellite radio navigation device within a unite of 1/10,000 a minute.
 - k The radio equipment shall have a device that can easily test whether the radio equipment operates properly.
 - l The radio equipment shall be capable of transmitting information automatically and continuously to other ship stations or coast stations.

- m The power shall be capable of being supplied from the principal power source or alternative power source of a ship.
 - n The radio equipment shall be capable of transmitting static information on a ship (which refers to inherent information for identifying ships), dynamic information on a ship (which refers to information on the movement of ships which is automatically updated during navigation), and information on navigation (which refers to information that is manually updated during navigation).
 - o The radio equipment shall be capable of transmitting character information whenever required.
- 2) Conditions for the transmitter
- a TDMA transmitting section

Classification	Condition
Modulation method	GMSK
Transmission rate	9,600 bits/s (The tolerance shall be 50/1,000,000.)
Modulation index	(1) Within 0.5 when the channel interval is 25 kHz (2) Within 0.25 when the channel interval is 12.5 kHz
Rise time of transmitting power	The time required until the transmitting power reaches 80% of its stable state after the transmitter starts transmitting emissions shall be within 1 ms.
Fall time of transmitting power	The time required until the transmitting power becomes 50 dB or lower after the transmitter finishes transmitting emissions shall be within 1 ms.
Frequency stability when the transmitter starts transmitting emissions	The frequency stability 1 ms after the transmitter starts transmitting emissions shall be within ± 1 kHz.

b Digital selective calling device transmitting section

Classification	Condition
Modulation method	2FSK
Modulation frequency	B signal (2,100 Hz) and Y signal (1,300 Hz). The tolerance shall be within $\pm 1\%$.
Modulation speed	1,200 bits/s. The tolerance shall be within 30/1,000,000.
Modulation index	2 (The tolerance shall be 0.2.)

- 3) Conditions for the receiver
- a TDMA receiving section

Classification	Condition	
Sensitivity	When the channel interval is 25 kHz	The packet error rate when a signal of -107 dB (with 1 mW regarded as 0 dB) is added shall be 20% or less.
	When the channel interval is 12.5 kHz	The packet error rate when a signal of -98 dB (with 1 mW regarded as 0 dB) is added shall be 20% or less.
Error characteristics in a high-level input	The number of errors when a signal of -7 dB (with 1 mW regarded as 0 dB) is added 1,000 times shall not be more than the	

		number of errors when a signal of -77 dB (with 1 mW regarded as 0 dB) is added 1,000 times, by 10 times or more.	
Adjacent channel removal rate	When a signal of a desired frequency which is 6 dB higher than a sensitivity measurement state and an unmodulated disturbing wave which is an adjacent channel frequency are simultaneously added, the ratio of the desired wave to the disturbing wave in which 80% of the signal can be properly received shall be the values specified in the right-hand columns.	When the channel interval is 25 kHz	70 dB or more
		When the channel interval is 12.5 kHz	50 dB or more
Spurious response	When a signal of a desired frequency which is 3 dB higher than a sensitivity measurement state and a disturbing wave modulated at 400 Hz (the frequency shift shall be 12% of the channel interval) are simultaneously added, the ratio of the desired wave to the disturbing wave in which 80% of the signal can be properly received shall be 70 dB or more.		

b Digital selective calling device receiving section

Classification	Condition
Sensitivity	When a signal of a frequency ± 1.5 kHz distant from 156.52 MHz is received, the signal when the bit error rate is 1% shall be -107 dB (with 1 mW regarded as 0 dB) or less.
Error characteristics in a high-level input	The bit error rate when a signal of -7 dB (with 1 mW regarded as 0 dB) is added shall be 1% or less.
Adjacent channel removal rate	When a signal of a desired frequency which is 3 dB higher than a sensitivity measurement state and a disturbing wave which is modulated at 400 Hz (the frequency shift shall be ± 3 kHz) are added by a frequency of the upward and downward channels (± 25 kHz), the ratio of the desired wave to the disturbing wave when the bit error rate is 1% shall be 70 dB or more.
Spurious response	When a signal of a desired frequency which is 3 dB higher than a sensitivity measurement state and a disturbing wave which is changed in a frequency range from 100 kHz to 2 GHz excluding an adjacent channel of the desired wave are simultaneously added, the ratio of the desired wave to the disturbing wave when the bit error rate is 1% shall be 70 dB or more.

4) Indication section

a The direction, distance and ship name of at least three ships shall be indicated.

b The direction and distance shall be indicated without being scrolled.

5) The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions defined in each of the calling items.

2 The radio equipment at a coast station that performs communication by means of TDMA using

class F1D emissions and a digital selective paging device and that uses emissions of a frequency specified in the table of Appendix 18 of the Radio Regulations shall comply with the conditions defined in the items below in addition to the conditions defined in the preceding paragraph (excluding item 1) e to n of the preceding paragraph and item 5).

- 1) The radio equipment shall be capable of transmitting information of time and location cyclically in order for a ship station to obtain synchronization indirectly.
- 2) The radio equipment shall be capable of allocating transmitting slots to ship stations.
- 3) The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions defined in the two preceding items.

Section 3.2 Radio Equipment of Radio Stations in the Aeronautical Mobile Service and in the Aeronautical Radionavigation Service, Portable Stations Mounted in Aircraft, and Radio Equipment of Radio Stations in the Aeronautical Mobile Satellite Service

Article 45.4. Deleted (Deleted in No. 30 in 1958.)

(General Conditions)

Article 45.5. The radio equipment for aircraft stations and for aircraft earth stations shall comply with the conditions defined in the items below:

- 1) The radio equipment shall be constructed so that it is small-sized and lightweight, and shall be capable of being handled easily.
 - 2) The radio equipment shall not impair the functions of the important electric equipment of the aircraft, nor shall the operation of the radio equipment be obstructed by other equipment.
 - 3) The radio equipment shall operate satisfactorily with its functions not being degraded by the environmental conditions in the normal navigation state of the aircraft, such as temperature and altitude.
 - 4) The antenna system shall withstand wind pressure and icing.
 - 5) When a circuit is provided for each of the antenna, receiver, and microphone, each of the circuits shall be connected to the bonding system of the airframe via a DC route.
 - 6) The risk of causing fire shall be minimal.
- 2 The radio equipment for portable stations mounted in aircraft shall comply with the conditions described in the items of the preceding paragraph, whenever possible.

(Ratio of the Antenna Power)

Article 45.6. In a frequency band of 28 MHz or lower or in a frequency band from 118 MHz to 142 MHz, the antenna power at each frequency of the transmitter for an aircraft station generating two or more emissions using the same antenna shall be 50% or more of the

maximum antenna power in that frequency band for each type.

(Noise Field Strength)

Article 45.7. As a guideline, the local noise field strength at the location where the receiving equipment for an aircraft station for receiving emissions of a frequency in a range of 1,606.5 kHz to 28,000 kHz is mounted shall be 5 μ V or less per meter in that reception frequency band.

(Power Equipment)

Article 45.8. The power equipment for an aircraft station using a DC power supply shall be equipped with a storage battery of sufficient capacity to operate the minimum radio equipment required for the safety of the navigation of the aircraft continuously for 30 minutes or longer.

- 2 The storage battery provided in accordance with the provisions of the preceding paragraph shall be capable of being recharged during the navigation of the aircraft.
- 3 Notwithstanding the provisions of the preceding two paragraphs, the power equipment for an aircraft station installed in a glider shall comply with the conditions announced separately (*).

(Announcement: * in No. 74 in 1979)

(Switching Devices, etc.)

Article 45.9. The radio equipment for aeronautical stations and aircraft stations performing communication related to air traffic control shall switch between frequencies within 30 seconds if using emissions of a frequency of 28 MHz or lower and within 8 seconds if using emissions of a frequency in a range of 118 MHz to 142 MHz.

- 2 In an aircraft station, those controllers that must be operated or those indicators that must be checked during the navigation of the aircraft shall be capable of being operated or checked while the operator remains seated, shall have name or function indications, and shall be equipped with devices for illuminating them appropriately.
- 3 Whenever possible, the receiver for aeronautical stations and for aircraft stations shall be of the fixed tuned frequency switching method (which refers to the method used to tune the receiver to the required frequency beforehand and which can easily select the frequency to be used through a simple switching operation; this also applies hereafter).
- 4 Whenever possible, the radio equipment for the aeronautical stations and aircraft stations other than those aeronautical stations and aircraft stations prescribed in paragraph 1 shall comply with the provisions of paragraph 1.

(Modulation Factor)

Article 45.10. The modulation factor of the class A2A, A2B, or A2D emissions used by aeronautical stations and aircraft stations shall be 85% or more. (The modulator factor with the output signal of a selective calling device shall be 60% or more.)

- 2 The maximum modulation factor of the class A3E emissions or class H3E emissions used by aeronautical stations and aircraft stations shall be 85% or more in the normal operating state.

- 3 In addition to the provisions of the preceding paragraph, the average modulation factor of the class A3E emissions used by aeronautical stations and aircraft stations (limited to those emissions at a frequency in a range of 118 MHz to 142 MHz) shall be 50% or more in the normal operating state.

(Conditions for the Radio Equipment for Aircraft Stations)

Article 45.11. The radio equipment for aircraft stations that uses class J3E emissions of a frequency of 28 MHz or lower shall comply with the conditions prescribed in the tables in the items below in the normal state during navigation of the aircraft.

1) Transmitter

Classification	Condition
Carrier power	Value lower than the peak envelope power by 26 dB or more
Sideband	Upper sideband
Output impedance	50 Ω , whenever possible
Overall frequency response characteristics (at the modulation frequencies from 350 Hz to 2,500 Hz)	Within 6 dB
Overall distortion and noise	The ratio of the total output of the transmitter to the unwanted components contained in it shall be 20 dB or more when a signal at the reference input level that is modulated at a frequency of 1,000 Hz is supplied.

2) Receiver

Classification	Condition	
Sensitivity	At a modulation frequency of 1,000 Hz, the receiver input voltage required to set the ratio of the total output of the receiver to the unwanted components contained in it to 20 dB shall be 3 μ V or less.	
One-signal selectivity	Passing bandwidth	± 1.1 kHz or more
	Attenuation	The bandwidth of a 60 dB reduction shall be within ± 2 kHz.
	Spurious response	1) The intermediate frequency response and the image frequency response shall both be 60 dB or more for receivers with a reception frequency of 22 MHz or lower and both 50 dB or more for receivers with a frequency in a range of higher than 22 MHz to 28 MHz. 2) Other responses shall be 40 dB or more.
Effective selectivity	The desensitization effect shall be such that the disturbing wave input voltage that suppresses the output of the desired wave by 3 dB is 10 mV or higher when disturbing waves distant from the desired wave by 4 kHz or more are supplied in the state in which a modulated 10 μ V desired wave input voltage is supplied.	
Frequency departure of the local oscillator	Same as the frequency tolerance of the transmitting equipment	

Characteristics of the automatic gain control device	The output changes shall be within 10 dB when a receiver input voltage modulated at a frequency of 1,000 Hz is changed from 5 μ V to 100 mV.
Rated output	The receiver input voltage required to generate the rated output shall be 5 μ V or less at a modulation frequency of 1,000 Hz.
Overall distortion and noise	The ratio of the total output of the receiver to the unwanted components contained in it shall be 20 dB or more when a 30 μ V receiver input voltage modulated at a frequency of 1,000 Hz is supplied.

- 2 The receiver prescribed in the preceding paragraph that is equipped with a selective calling device shall be capable of receiving a selective calling signal with no carrier added.
- 3 The radio equipment at aircraft stations that uses class J2D emissions of a frequency of 22 MHz or lower (limited only to the frequencies for the aeronautical mobile (R) service) shall comply with the conditions prescribed in the items below in the normal state during navigation of the aircraft.

(1) Transmitter

Classification	Condition
Sideband	Upper sideband
Overall frequency response characteristics (at modulation frequencies from 350 Hz to 2,500 Hz)	Within ± 4 dB of the said output with reference to a transmitter output that is 1,000 Hz higher than the carrier frequency.
Transmission rate and signal modulation mode	The signal modulation mode shall be as follows for each transmission rate: 1. When the transmission rate is 300 bits/sec or 600 bits/sec: 2 PSK 2. When the transmission rate is 1,200 bits/sec: 4 PSK 3. When the transmission rate is 1,800 bits/sec: 8 PSK

(2) Receiver

Classification		Condition
Sensitivity		The signal-to-noise ratio upon input of 1 μ V shall be 10 dB or higher.
One-signal selectivity	Passing bandwidth	4 dB or lower from the said maximum value with reference to the maximum value in the passing band of the frequency 350 Hz higher than the carrier frequency or higher but no more than the frequency 2,500 Hz higher than the carrier frequency.

	Attenuation	The attenuation shall be respectively as follows with reference to the maximum value in the passing band of each of the input frequency range: 1) When the input frequency is the frequency 300 Hz lower than the carrier frequency or higher but no more than the carrier frequency, and frequency 2,900 Hz higher than the carrier frequency or higher but no more than the frequency 3,300 Hz higher than the carrier frequency: 35 dB or higher 2) When the input frequency is lower than the frequency 300 Hz lower than the carrier frequency and higher than the frequency 3,300 Hz higher than the carrier frequency: 60 dB or higher.
	Spurious response	1) The spurious response including the image frequency shall be 60 dB or higher.
Frequency tolerance of a local oscillator		Same as the frequency tolerance of the transmitting equipment

3) The antenna shall be that whose emission has the vertical polarized wave plane.

4) The signal component in the data link layer shall be the one announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

Article 45.12. The radio equipment for aircraft stations that uses emissions of a frequency in a range of 118 MHz to 142 MHz (excluding radio equipment that uses emissions of G1D) shall comply with the conditions prescribed in the tables in the items below in the normal state during the navigation of the aircraft.

1) Transmitter

Classification	Condition
Modulation method	Amplitude modulation method
Signal-to-noise (SN) ratio	35 dB or more when the signal is modulated by 85% at a frequency of 1,000 Hz
Overall frequency response characteristics (at the modulation frequencies from 350 Hz to 2,500 Hz)	Within 6 dB
Overall distortion and noise	The ratio of the total demodulated output of the transmitter to the unwanted components contained in it shall be 12 dB or more when the signal is modulated at each of 350 Hz, 1,000 Hz, and 2,500 Hz at a level equal to the input level required for modulation by at least 85% at a frequency of 1,000 Hz.

2) Transmitting antenna

Classification	Condition
Directional pattern in the horizontal plane	Satisfactorily non-directional
Plane of polarization	Vertical

3) Receiver

Classification		Condition
Sensitivity		The receiver input voltage required to set the signal-to-noise (SN) ratio to 6 dB shall be 10 μ V or less for a signal modulated by 30% at a frequency of 1,000 Hz.
One-signal Selectivity	Passing bandwidth	With a receiver input voltage modulated by 30% at a frequency of 1,000 Hz being supplied with a value higher by 6 dB than the point of the maximum sensitivity of the receiver, the width at the time the output at the maximum sensitivity of the receiver is attained shall be at least $\pm 0.005\%$ of the assigned frequency (at least ± 8 kHz of the assigned frequency when an offset carrier is received).
	Attenuation	With a receiver input voltage modulated by 30% at a frequency of 1,000 Hz being supplied, the bandwidth in which the receiver input voltage decreases by 40 dB shall be within ± 17 kHz and the bandwidth in which it decreases by 60 dB shall be within ± 25 kHz when an output equivalent to that at the maximum sensitivity of the receiver is attained.
	Spurious response	60 dB or more
Effective selectivity	Cross modulation characteristics	The receiver output due to cross modulation shall be lower than the rated output by 10 dB or more when 10 mV disturbing waves (at a frequency in a range of 100 MHz to 156 MHz) distant from the desired wave by 50 kHz or more that are modulated by 30% at a frequency of 1,000 Hz are supplied, with a desired input voltage in a range of 20 μ V to 500 μ V being supplied.
	Desensitization effect	The signal-to-noise (SN) ratio of the receiver output shall be 6 dB or more when the disturbing waves stated below are supplied, with a 20 μ V desired wave input voltage modulated by 30% at a frequency of 1,000 MHz being supplied. 1) Disturbing waves at the spurious response frequency and a frequency in a range of 100 MHz to 156 MHz (excluding the frequencies within 25 kHz of the desired wave frequency) with a receiver input voltage of 10 mV 2) Disturbing waves at a frequency in a range of 25 kHz to 1,215 MHz (excluding the spurious response frequency and the frequencies in a range of 100 MHz to 156 MHz) with a receiver input voltage of 200 mV

Overall frequency response characteristics	<ol style="list-style-type: none"><li>1) 6 dB or less at a modulation frequency of 350 Hz to 2,500 Hz<li>2) In addition to 1), when an offset carrier is received, attenuation shall be performed at each modulation frequency if the modulation frequency exceeds 2,500 Hz. (At a modulation frequency of 5,000 Hz, the output shall be lower by 18 dB or more than the output at a frequency of 1,000 Hz.)
--	---

Classification	Condition
Characteristics of the automatic volume control device	<ol style="list-style-type: none"> 1) The changes in the audio frequency output shall be within 10 dB when the receiver input voltage modulated by 30% at a frequency of 1,000 Hz is changed from 10 μV to 10 mV. 2) The time required to set the audio frequency output to a value within ± 3 dB of the steady state output shall be within 0.25 second when the receiver input voltage modulated by 30% at a frequency of 1,000 Hz is changed instantaneously from 200 mV to 10 μV. 3) The time required to set the audio frequency output to a value within ± 3 dB of the steady state output shall be within 0.25 second when the mode is switched from transmission to reception. (The receiver input voltage shall be 10 μV and shall be modulated by 30% at a frequency of 1,000 Hz.)
Gain	An output lower than the rated output by 10 dB or less shall be generated when a 20 μ V receiver input modulated by 30% at a frequency of 1,000 Hz is supplied.
Output control	The output shall be capable of being attenuated by 40 dB or more. (This is limited to those receivers that have an output level controller.)
Overall distortion and noise	<ol style="list-style-type: none"> 1) The ratio of the rated output to the unwanted components contained in it shall be 12 dB or more when a 10 mV receiver input voltage modulated by 85% at a frequency in a range of 350 Hz to 2,500 Hz is supplied. 2) When the output is within ± 10 dB of the rated output, with a 10 mV receiver input voltage modulated by 30% at a frequency in a range of 350 Hz to 2,500 Hz being supplied, the ratio of that output to the unwanted components contained in it shall be 16.5 dB or more.
Noise level	The output at non-modulation shall be higher than the rated output by 25 dB or less when the gain is controlled to achieve the rated output, with a 200 μ V to 100 mV receiver input voltage modulated by 30% at a frequency of 1,000 Hz being supplied.

2 The radio equipment for aircraft stations that uses emissions of a frequency in a range of 118 MHz to 142 MHz and that uses class A2D emissions shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications, in addition to the conditions described in the preceding paragraph.

(Announcement: * in No. 342 in 1989)

3 The radio equipment for aircraft stations that uses emissions of a frequency in a range of 118

MHz to 137 MHz as well as emissions of G1D shall comply with the conditions prescribed in the tables in the items below in the normal state, under the normal state of aircraft navigation.

1) Transmitter

Classification	Condition
Modulation method	Differential 8PSK
Transmission rate	31,500 bits/s (The tolerance shall be 50/1,000,000.)
Adjacent channel leakage power	1) The power radiated into the ± 8 kHz band of the frequency 25 kHz distant from the carrier frequency is 16 μ W or lower. 2) The adjacent channel leakage power shall not exceed the tolerances shown in Figure 4-11.

2) Receiver

Classification	Condition
Sensitivity	The receiving input level is -94 dB or lower (with 1 mW regarded as 0 dB) when the bit error rate after correcting the error is 0.01% with the antenna gain being 2.15 dB and the feeder loss being 3 dB.
Effective selectivity	The bit error rate after correcting the error is 0.01% or lower with the antenna gain being 2.15 dB, the feeder loss being 3 dB, the receiving input level of the desired wave being -88 dB (with 1 mW regarded as 0 dB) when disturbing waves stated below (confined to the disturbing waves that are amplitude modulated or differential 8PSK modulated) are added. 1) Disturbing waves having a frequency with the difference between the desired wave and the frequency being 25 kHz or higher to lower than 100 kHz, and with the receiving input level being -48 dB (with 1 mW regarded as 0 dB). 2) Disturbing waves having a frequency with the difference between the desired wave and the frequency being 100 kHz or more, and with the receiving input level being -28 dB (with 1 mW regarded as 0 dB).

- 3) The antenna shall radiate emissions with a perpendicular polarization plane.
- 4) The radio equipment for aircraft stations that uses emissions of a frequency in a range of 118 MHz to 137 MHz as well as emissions of G1D shall comply with the technical requirements announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications, in addition to the conditions described in the preceding items.

(ELTs)

Article 45.12.2. The ELT shall comply with the conditions defined in the items below:

- 1) General conditions
 - a) The ELT shall be small-sized and lightweight, and be capable of being carried by a single person except for the one that is fixed in aircraft and cannot be easily removed therefrom.

- b The ELT shall be watertight.
- c The ELT shall float on the surface of the sea, right itself when turned over on its side, and be capable of being moored to a survival craft (limited to the one that is used on the surface of the sea for the purpose of rescue).
- d The cabinet shall be colored either yellow or orange.
- e The ELT shall be equipped with an independent battery as its power supply and indicate the expiration date of the battery.
- f The instructions for handling the ELT as well as cautions shall be indicated concisely in a location on the cabinet where they can be easily seen.
- g The ELT shall be capable of being operated easily even by those persons who have no special knowledge or skill related to its handling.
- h The ELT shall be provided with measures for preventing careless operation.
- i The ELT shall have a function to indicate that it is radiating emissions of a frequency by means of an alarm sound, alarm light, etc. (except for the ELT that uses emissions of a frequency of only 121.5 MHz on the surface of the sea for the purpose of rescue).
- j The ELT shall automatically operate by shocks such as a crash in accordance with the conditions for a crash acceleration detection function that will be separately announced. The ELT shall also be easy to operate manually (except for the ELT that is used on the surface of the sea for the purpose of rescue).
- k The ELT shall operate satisfactorily under normal temperature or humidity variations, vibrations, or shocks.

2) Conditions for transmitting equipment

- a Those transmitters that use emissions with frequencies of 121.5 MHz or 243 MHz shall comply with the following conditions.
 - (1) The class of emissions used shall be A3X. The transmitting equipment may, however, use class A3E emissions as well.
 - (2) The antenna power shall be 50 mW or more and shall be capable of being operated continuously for a period of 48 hours or more.
 - (3) When class A3X emissions are used, the modulation frequency shall vary toward lower frequencies at a rate of two or four times per second in any 700 Hz or wider range between 300 Hz and 1,600 Hz.
 - (4) The antenna shall be of single type and dedicated to the transmitting equipment, the directional pattern of the antenna shall be non-directional in the horizontal plane, and the plane of polarization of the emissions from the antenna shall be vertical.
- b Those transmitters that use emissions of a frequency in a range of 406 MHz to 406.1 MHz shall comply with the following conditions.
 - (1) The class of emissions used shall be G1B.

- (2) The transmitter shall comply with the conditions prescribed in Article 45.2 paragraph 1 item 2) a and paragraph 1 item 3) a.
 - (3) In addition to the provisions of (1) and (2), the transmitter shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The provisions of Article 45.5 paragraph 1 and Article 45.8 shall not apply to ELTs.
(Announcement: * in No. 267 in 1997)

(Airborne Portable Radios)

Article 45.12.3. Those technical conditions for airborne portable radios that should not conform to provisions of these Regulations shall be announced separately (*).
(Announcement: * in No. 432 in 1979)

(Conditions for Radio Equipment for Aircraft Stations, etc. Using Class F3E Emissions)

Article 45.12.4. The provisions of Article 40.2 paragraphs 1 and 2, Article 41 paragraph 4, and Article 42 shall apply mutatis mutandis to radio equipment for aircraft stations using class F3E emissions and for portable stations mounted in aircraft that uses emissions of the frequencies given in the table in Appendix 18 of the Radio Regulations.

(Aeronautical DMEs)

Article 45.12.5. The aeronautical DME shall comply with the conditions defined in the items below:

- 1) The aeronautical DME mounted in an aircraft (hereinafter referred to as “airborne DME”) shall comply with the following conditions in the normal state during the navigation of the aircraft.
 - a The emissions for interrogation (hereinafter referred to as “interrogation signals”) shall be pulse pairs, and their characteristics shall be as shown in Figure 5.
 - b The DME shall receive the emissions from an aeronautical DME mounted on the surface of the earth (hereinafter referred to as “ground DME”) or from a TACAN system mounted on the surface of the earth (hereinafter referred to as “ground TACAN system”) for its identification (hereinafter referred to as “beacon signals”) and convert them to an audio frequency.
 - c For a line-of-sight distance within 370.4 km, the DME shall be capable of measuring the distance at an error equal to or less than 3% of that distance or 0.9 km, whichever is larger. (The error includes the permissible error at the ground DME or ground TACAN system.)
 - d The high-frequency energy contained in the frequency band within the range of ± 250 kHz of the assigned frequency shall be 90% or more of the total high-frequency energy radiated.
 - e The intervals at which interrogation signals are emitted shall be irregular.
 - f The number of interrogation signal emissions shall be 30 or less per second on

average during a tracking (which refers to the state in which the DME measures the distance continuously; this also applies hereafter in this Article) and shall not exceed 150 per second during a search (which refers to the state in which the DME sends interrogation signals to enter the tracking state; this also applies hereafter in this Article).

- g The DME shall start to measure the distance 50 μ s after the emission of the first pulse of an interrogation signal for the X channel (with a tolerance of 1 μ s) and 56 μ s after that time for the Y channel (with a tolerance of 1 μ s).
 - h The plane of polarization of the emissions from the antenna shall be vertical.
- 2) The ground DME shall comply with the following conditions.
- a General conditions
 - (1) The emissions for response (hereinafter referred to as “response signals”) and beacon signals shall be pulse pairs.
 - (2) The beacon signal shall be sent at least once per 40 seconds with Morse code (at a transmission rate of about 6 alphabetic words per minute) even during the transmission of a response signal. One transmission shall not exceed 10 seconds.
 - (3) When sending neither a response signal nor beacon signal, the DME shall emit random pulse pairs.
 - (4) The equivalent isotropically radiated power (EIRP) shall be -7 dB or less (with 1 W regarded as 0 dB) in the frequency bandwidth higher than the assigned frequency by 550 kHz to 1,050 kHz and the frequency bandwidth lower than the assigned frequency by 550 kHz to 1,050 kHz, and shall be -27 dB or less (with 1 W regarded as 0 dB) in the frequency bandwidth higher than the assigned frequency by 1,750 kHz to 2,250 kHz and the frequency bandwidth lower than the assigned frequency by 1,750 kHz to 2,250 kHz.
 - b Conditions for the transmitter

Classification	Condition
Characteristics of pulse pairs	As per Figure 5.
Value set as the number of emissions of pulse pairs	1) For the beacon signal, the setting shall be 1,350 per second if it is a single pulse (with a tolerance of 10), or 2,700 per second if it is a pair of pulse pairs (with a tolerance of 20). 2) For the minimum of the sum of the response signal and the random pulse pair, the setting shall be at least 700 per second, and shall be as near 700 as possible.
Configuration of the beacon signal	As per Figure 6.
Response delay	The time from the point at which the first pulse of an interrogation signal is received until the first pulse of the response signal for that interrogation signal is emitted shall be 50 μ s for the X channel and 56 μ s for the Y channel. The tolerance shall be 1 μ s for both channels (0.5 μ s if the transmitter is mounted together with the radio equipment of an ILS radio station or an MLS angle system).

Strength of continuous waves	Lower than the peak envelope power by more than 80 dB between pulse pairs and between pulses in a pulse pair in the frequency band from 960 MHz to 1,215 MHz
------------------------------	--

c Conditions for the receiver

Classification		Condition
Sensitivity		The peak envelope power of the interrogation signal shall be -93 dB or less (with 1 mW regarded as 0 dB) when the response ratio (which refers to the percentage of the number of responses to the number of interrogations; this also applies hereafter) becomes 70%, with the antenna gain being 4 dB and the feeder loss being 3 dB.
One-signal selectivity	Passing bandwidth	When the response ratio becomes 70% or more, with an interrogation signal higher by 3 dB than the point of the maximum sensitivity of the receiver being supplied to the input terminal, the passing bandwidth shall be ± 100 kHz or more of the assigned frequency of the airborne DME related to that interrogation signal.
	Attenuation	No response shall be made when an interrogation signal with a peak envelope power of -12 dB (with 1 mW regarded as 0 dB) and at a frequency within ± 900 kHz of the assigned frequency of the airborne DME, with the antenna gain being 4 dB and the feeder loss being 3 dB.
	Spurious response	1) The intermediate frequency response shall be 80 dB or more. 2) The image frequency response shall be 75 dB or more, as shall be the other response in the frequency band from 960 MHz to 1,215 MHz.

Classification	Condition
Number of random pulse pairs emitted due to internal noise	When an interrogation signal with a peak envelope power of -93 dB (with 1 mW regarded as 0 dB) is input, with the antenna gain being 4 dB and the feeder loss being 3 dB, and the response signal accounts for 90% of the maximum number of pulse pairs that can be emitted from the transmitter, the number of random pulse pairs emitted due to internal noise shall be 5% or less of the maximum number of pulse pairs.
Characteristics of the decoder	<ol style="list-style-type: none"> 1) The decoder shall not operate when a pulse other than that of an interrogation signal is supplied to the input terminal. 2) When an appropriate pulse is supplied, with an interrogation signal being supplied to the input terminal and a response signal being transmitted from the transmitter, this transmission shall not be affected. 3) The decoder shall not operate when an interrogation signal that differs by 2 μs or more from the pulse interval of the interrogation signal of the airborne DME shown in Figure 5 and which has a strength higher by 75 dB than the point of the maximum sensitivity of the receiver is supplied.
Reception quiescent time	The reception quiescent time from the point at which an interrogation signal is received until the second pulse of the response signal for that interrogation signal is emitted and the reception quiescent time after that second pulse is emitted shall be within 60 μ s, whenever possible.
Desensitization for the control of the number of pulse pairs to be emitted	When the number of emissions in the transmitter is 90% or less of the setting, the sensitivity fluctuation shall be 1 dB or less, and when it exceeds 90% of the setting, the sensitivity shall decrease so that that setting is not exceeded. (The maximum sensitivity reduction shall be 50 dB or more, whenever possible.)
Sensitivity recovery time	When an interrogation signal with a value higher than the point of the maximum sensitivity of the receiver by up to 60 dB is supplied to the input terminal, the time required to recover the suppressed sensitivity to a value higher than the point of the maximum sensitivity of the receiver by 3 dB shall be 8 μ s or less.

- d The plane of polarization of the emissions from the antenna shall be vertical.
- 3) In addition to the conditions described in the preceding items, the DME shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 Notwithstanding the provisions of item 1) a, c, f, and g of the preceding paragraph, “Characteristics of pulse pairs”, “Value set as the number of emissions of pulse pairs”, and “Response delay” in item 2) b, “Sensitivity”, “One-signal selectivity” (excluding “Spurious response”), “Number of random pulse pairs emitted due to internal noise”, “Reception quiescent time”, and “Desensitization for the control of the number of pulse pairs to be

emitted” in c, and the provisions of item 3), those aeronautical DMEs that have two distance measurement modes with different degrees of precision (hereinafter referred to as “aeronautical DME/Ps” in this paragraph) shall comply with the conditions defined in the items below:

- 1) The aeronautical DME/P mounted in an aircraft (hereinafter referred to as “airborne DME/P”) shall comply with the following conditions in the normal state during the navigation of the aircraft.
 - a The interrogation signal shall be a pulse pair, the characteristics of which shall be as shown in Figure 5-2.
 - b The distance measurement modes with different degrees of precision shall be IA mode (which refers to the mode used by an aircraft outside the final approach area to obtain the line-of-sight distance to the runway; this also applies hereafter in this Article) and FA mode (which refers to the mode used by an aircraft inside the final approach area or the runway area to obtain the line-of-sight distance to the runway; this also applies hereafter in this Article).
 - c Within a line-of-sight distance of 40 km along an extension from the center of the runway, the airborne DME/P shall be capable of measuring the distance with the following precision.

- (1) The absolute value of the error shall be equal to or less than the value obtained from the following expression when measurement is performed in IA mode at a point whose distance is 37 km to 9.3 km from the reference point (which refers to a single point located at a height of between 15 meters and 18 meters and vertical to the intersection of the center line of the runway and the end of the runway which the aircraft is to approach for landing; this also applies hereafter).

$$\frac{165}{27.5} \cdot D + \frac{820}{27.7} \quad (\text{In meters})$$

where D is the distance from the reference point (in kilometers).

- (2) The absolute value of the error shall be 100 meters or less in IA mode and shall be equal to or less than the value obtained from the following expression in FA mode when measurement is performed at a point within 9.3 km from the reference point.

$$\frac{55}{9.3} \cdot D + 30 \quad (\text{In meters})$$

where D is the distance from the reference point (in kilometers).

- (3) The absolute value of the error shall be 30 meters or less when measurement is performed in FA mode at the reference point and on the runway.
- (4) The absolute value of the error shall be 100 meters or less when measurement is performed within the effective range of the radio equipment of a radio station that performs backward guidance.

- d The number of emissions of an interrogation signal shall be as follows.
 - (1) During a search: 40 or less per second
 - (2) During a tracking:
 - (a) IA mode: 16 or less per second
 - (b) FA mode: 40 or less per second
 - (3) While the airborne DME/P is on the ground: 5 or less per second
- e The reference time used to measure the distance shall be the time at which the first pulse of an interrogation signal is emitted plus the applicable time given below.
 - (1) In IA mode
 - (a) W and X channels: 50 μ s
 - (b) Y and Z channels: 56 μ s
 - (2) In FA mode
 - (a) W and X channels: 56 μ s
 - (b) Y and Z channels: 62 μ s
- 2) The aeronautical DME/P mounted on the surface of the ground (hereinafter referred to as “ground DME/P”) shall comply with the following conditions.
 - a General conditions

Upon receiving an interrogation signal in FA mode, the ground DME/P shall send a response signal before a beacon signal.
 - b Conditions for the transmitter

Classification	Condition
Characteristics of pulse pairs	As per Figure 5-2.
Value set as the number of emissions of pulse pairs	1) For the beacon signal, which shall be a single pulse pair, the setting shall be 1,350 per second (with a tolerance of 10). 2) For the minimum of the sum of the response signal and the random pulse pair, the setting shall be in a range of 700 to 1,200 per second, and shall be as near 700 as possible.
Response delay	The time from the point at which the first pulse of an interrogation signal is received until the first pulse of the response signal for that interrogation signal is emitted shall be as follows. <ul style="list-style-type: none"> a In IA mode <ul style="list-style-type: none"> (1) W and X channels: 50 μs (2) Y and Z channels: 56 μs b In FA mode <ul style="list-style-type: none"> (1) W and X channels: 56 μs (2) Y and Z channels: 62 μs

c Conditions for the receiver

Classification	Condition
Sensitivity	With the antenna gain being 4 dB and the feeder loss being 3 dB and with 1 mW regarded as 0 dB, the peak envelope power of the interrogation signal when the response ratio becomes 70% shall be -76 dB or less in IA mode; in FA mode, the peak envelope power of the interrogation signal when the response ratio becomes 80% shall be -65 dB or less.
Attenuation at the one-signal selectivity	<ol style="list-style-type: none"> 1) In IA mode, the frequency within ± 1 MHz of the assigned frequency of the airborne DME shall be reduced by 12 dB or more, and the frequency within ± 5 MHz of the assigned frequency shall be reduced by 60 dB or more. 2) In FA mode, the frequency within ± 3 MHz of the assigned frequency of the airborne DME shall be reduced by 12 dB or more, and the frequency within ± 10 MHz of the assigned frequency shall be reduced by 60 dB or more. 3) No response shall be made when an interrogation signal with a peak envelope power of -12 dB (with 1 mW regarded as 0 dB) and at a frequency within ± 900 kHz of the assigned frequency of the airborne DME is input, with the antenna gain being 4 dB and the feeder loss being 3 dB.
Number of random pulse pairs emitted due to internal noise	When an interrogation signal with a peak envelope power of -76 dB in IA mode and -65 dB in FA mode is input, with the antenna gain being with 4 dB and the feeder loss being 3 dB (with 1 mW regarded as 0 dB), and when the response signal accounts for 90% of the maximum number of pulse pairs that can be emitted from the transmitter, the number of random pulse pairs emitted due to internal noise shall be 5% or less of the maximum number of pulse pairs.
Reception quiescent time	The reception quiescent time from the point at which an interrogation signal is received until the second pulse of the response signal for that interrogation signal is emitted and the reception quiescent time after that second pulse is emitted shall not exceed 60 μ s. In IA mode, however, the time may exceed 60 μ s, provided that this does not impair its use in FA mode.
Desensitization for the control of the number of pulse pairs to be emitted	<ol style="list-style-type: none"> 1) When the number of emissions in the transmitter is 90% or less of the setting, the sensitivity fluctuation shall be 1 dB or less. 2) In IA mode, the transmitter shall comply with the condition described in 1). In addition, when the number of emissions exceeds 90% of the setting, the sensitivity shall decrease so that that setting is not exceeded. (The maximum sensitivity reduction shall be 50 dB or more, whenever possible.)

- 3) In addition to the conditions described in the preceding items, the DME/P shall comply with the technical conditions announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcements: *1 in No. 872 in 1988 and *2 in No. 873 in 1988)

(Radio Equipment for ATCRBS Radio Stations)

Article 45.12.6. The radio equipment for ATCRBS radio stations shall satisfy the conditions defined in the items below:

- 1) The radio equipment for an ATCRBS radio station that is established on the ground (hereinafter referred to as “SSR”) shall satisfy the conditions below:
 - a Emissions shall consist of interrogation signals and radio waves for suppressing side lobes (hereinafter referred to as “suppressing signals”).
 - b An interrogation signal shall consist of two or three pulses and a suppression signal shall consist of one or two pulses.
 - c The characteristics of interrogation signals per mode (hereinafter referred to as “interrogation mode”) and the characteristics of suppression signals shall be as shown in Figure 7.
 - d The position of an aircraft shall be marked on the polar coordinates on the display of an indicator instrument.
 - e The equipment shall be capable of measurement with the degree of precision specified below:
 - (1) The equipment shall be capable of measuring the distance to a target with an error within 300 meters if possible (the error includes a tolerance for the radio equipment for an ATCRBS radio station that is established on an aircraft (hereinafter referred to as “ATC transponder”), which shall also apply to (2)).
 - (2) The equipment shall be capable of measuring the bearing of a target with an error within one degree if possible.
 - f Interrogation signals and suppression signals (referred to as “signals including interrogation signals” under (1) and (2)) shall satisfy the following conditions:
 - (1) For an SSR that can transmit signals including interrogation signals of mode A or C:

The SSR shall transmit signals including interrogation signals of mode A or C at 450 or less cycles per second.
 - (2) For an SSR that can transmit signals including interrogation signals of mode S, batched mode A/C, and batched mode A/C/S:
 - (a) The SSR shall transmit signals including interrogation signals of batched mode A/C/S at 250 or less cycles per second.
 - (b) The SSR shall transmit signals including interrogation signals in a block constituting mode S and batched mode A/C at 250 or less cycles per second.
 - (c) The SSR shall not transmit signals including interrogation signals of mode

- S at intervals of less than 400 μ s. This limitation, however, shall not apply to those cases where no response is required.
- (d) Regarding the number of times the SSR transmits signals including interrogation signals of mode S to select and call an individual aircraft, the average over four seconds shall be less than 1,200 cycles per second, the average over one second shall be less than 1,800 cycles per second, and the average over 40 ms shall be less than 2,400 cycles per second.
 - g The difference between the frequency of the interrogation signals and the frequency of the suppression signals shall not exceed 200 kHz.
 - h The plane of polarization of emissions from the antenna shall be vertical.
- 2) Under normal conditions during aircraft navigation, the ATC transponder shall satisfy the following conditions:
- a General conditions
 - (1) Upon the reception of an interrogation signal from an SSR, the ATC transponder shall automatically transmit a response signal. (The emission of special position identification pulse shall be initiated manually.)
 - (2) The response signal shall consist of either framing pulses, data pulses, and a special position identification pulses, as shown in Figure 8, or a preamble and a data block (including an identification signal), as shown in Figure 8-2.
 - (3) An ATC transponder that cannot respond to mode S interrogation signals shall transmit a response signal consisting of 4,096 response codes according to the combination of pulses in groups shown in Figure 8, in response to any interrogation signals of mode A, batched mode A/C (excluding signals with 21 μ s intervals between pulse P₁ and pulse P₃), and batched mode A/C/S (excluding signals with 21 μ s intervals between pulse P₁ and pulse P₃). An ATC transponder that can respond to mode S interrogation signals shall transmit said response signal in response to a mode A interrogation signal.
 - (4) The ATC transponder shall emit special position identification pulses continuously in a range of 15 seconds to 30 seconds.
 - (5) The ATC transponder that is capable of transmitting pressure altitude information but which cannot respond to mode S interrogation signals shall transmit data on pressure altitude as announced separately (*1) (as shall be obtained by the conversion into a pressure altitude at standard atmospheric pressure; this also applies hereafter), constituting the pulses in groups shown in Figure 8, in response to any of the interrogation signals of mode C, batched mode A/C (excluding signals with 8 μ s intervals between pulse P₁ and pulse P₃), and batched mode A/C/S (excluding signals with 8 μ s intervals between pulse P₁ and pulse P₃). An ATC transponder that is capable of transmitting pressure altitude information, and which can respond to mode S interrogation signals, shall transmit said data on pressure altitude in response to a mode C interrogation signal. The error for said data on pressure altitude shall be within 38.1 meters.
 - (6) The ATC transponder shall be capable of temporarily stopping the

transmission of the data on pressure altitude.

- (7) The ATC transponder that can respond to mode S interrogation signals shall transmit a beacon signal in the format announced separately (*2), according to the data block shown in Figure 8-2, in response to an interrogation signal of either mode S or batched mode A/C/S.

b Conditions for the transmitter

- (1) For the transmitter of an ATC transponder that cannot respond to mode S interrogation signals:

Classification		Condition
Antenna power	Antenna installed on an aircraft that may operate at altitudes higher than 4,500 meters	If the antenna is a single type with a quarter wavelength and a feeder loss of 3 dB, when the transponder replies with a string of all pulses at 1,200 or less cycles/second, the antenna power shall be between 24 dB and 30 dB (with 1 W regarded as 0 dB).
	Antenna installed on an aircraft that operates at altitudes of 4,500 meters or lower	If the antenna is a single system with a quarter wavelength and a feeder loss of 3 dB, when the transponder replies with a string of all pulses at 1,200 or less cycles/second, the antenna power shall be between 21.5 dB and 30 dB (with 1 W regarded as 0 dB).
Pulse characteristics		As per Figure 8.
Number of times response signal is transmitted per second	Range of setting	500 to 2,000 cycles/second (if the maximum number is less than 2,000 cycles/second, it shall be applied as is) of the transmission of any string of pulses
	Maximum number	1,200 or more cycles/second for transmission of a string of all pulses. For a transmitter installed on an aircraft that operates only at altitudes of 4,500 meters or lower, however, transmission at 1,000 or more cycles/second of a string of all pulses
Response delay		<p>1) When a mode A or C interrogation signal is applied to the input terminal of the receiver (the amplitude of pulse P₁ shall fall within the range of the maximum sensitivity point of the receiver to 50 dB), the first pulse of the response signal issued in response to the interrogation signal shall occur after an interval of 3 μs (with a tolerance of 0.5 μs) from pulse P₃ of the interrogation signal.</p> <p>2) The interval stated in 1) may vary within 0.2 μs if the interrogation mode changes.</p>

Response signal jitter	When a mode A or C interrogation signal is applied to the input terminal of the receiver (the amplitude of pulse P ₁ and P ₃ shall fall within the range higher than the maximum sensitivity point of the receiver by 3 dB to 50 dB), the jitter in pulse P ₃ of the interrogation signal shall be within 0.1 μs.
Response characteristics	<p>1) When a mode A or C interrogation signal is applied to the input terminal of the receiver (the amplitude of pulse P₁ shall fall within the range of the maximum sensitivity point of the receiver to 50 dB), the response characteristics shall satisfy the following conditions:</p> <p>a The response ratio shall be 90% or more when the following conditions are satisfied:</p> <p>(1) When an appropriate pulse is applied between 1.3 μs and 2.7 μs from the application of pulse P₁ of the interrogation signal, the amplitude of the appropriate pulse is lower than the amplitude of pulse P₁ of the said interrogation signal by 9 dB or more.</p> <p>(2) The amplitude of pulse P₃ of the interrogation signal is in the range of 1 dB lower than to 3 dB larger than that of said pulse P₁.</p> <p>(3) When a noise pulse is applied, the amplitude of the interrogation signal is at least 10 dB larger than that of the noise pulse.</p> <p>b The response ratio shall be 10% or less when the pulse interval of the interrogation signal is displaced at least 1 μs from any pulse interval sample as shown in Figure 7.</p> <p>2) The response ratio shall be 10% or less when a single pulse is applied to the input terminal of the receiver (the amplitude of the pulse shall fall within the range of the maximum sensitivity point of the receiver to 50 dB).</p>

Side lobe suppression characteristics

- 1) If the following conditions are satisfied when pulse P_1 of a mode A or C interrogation signal and a suppression signal are applied to the input terminal of the receiver (the amplitude of pulse P_1 shall fall within the range higher than the maximum sensitivity point of the receiver by 3 dB to 50 dB), the response operation shall be suppressed for 35 μs (with a tolerance of 10 μs) from the reception of the suppression signal, with the response ratio being 1% or less.
 - a The amplitude of the suppression signal is larger than the amplitude of interrogation signal pulse P_1 .
 - b The interval between interrogation signal pulse P_1 and the suppression signal pulse is 1.85 μs to 2.15 μs .
- 2) The period from the end of the suppression described in 1) until the recovery of the suppression function shall be 2 μs or shorter.

- (2) For the transmitter of an ATC transponder that can respond to mode S interrogation signals:

Classification		Condition
Antenna power	Antenna installed on an aircraft that may operate at altitudes higher than 4,500 meters	If the antenna is a single type with a quarter wavelength and a feeder loss of 3 dB, the peak envelope power of the pulses of a response signal shall be between 24 dB and 30 dB (with 1 W regarded as 0 dB).
	Antenna installed on an aircraft that operates at altitudes of 4,500 meters or lower	The maximum velocity is more than 324 km/h.
	The maximum velocity is 324 km/h or less.	If the antenna is a single type with a quarter wavelength and a feeder loss of 3 dB, the peak envelope power of the pulses of the response signal shall be between 21.5 dB and 30 dB (with 1 W regarded as 0 dB).
Pulse characteristics		As per Figures 8 and 8-2.
Number of times response signal is transmitted per second	Range of setting	The valid range for the response to mode A or C interrogation signals is the same as that given in the description under (1).
	Maximum number	1) For response to mode S interrogation signals, 50 or more cycles/second. 2) The maximum number per second for response to mode A or C interrogation signals is the same as that given in the description under (1).

Response delay	<ol style="list-style-type: none"> 1) When a mode S interrogation signal is applied to the input terminal of the receiver (if the feeder loss is 3 dB, the pulse peak envelope power shall fall within the range of the point 3 dB lower than the maximum sensitivity point of the receiver to -24 dB (with 1 mW regarded as 0 dB)), the first pulse of the response signal issued in response to the interrogation signal shall occur after an interval of 128 μs (with a tolerance of 0.25 μs) from the synchronizing phase inversion point of pulse P₆ of the interrogation signal. 2) When an interrogation signal of batched mode A/C/S is applied to the input terminal of the receiver (if the feeder loss is 3 dB, the pulse peak envelope power shall fall within the range of the maximum sensitivity point of the receiver to -24 dB (with 1 mW regarded as 0 dB)), the first pulse of the response signal issued in response to the interrogation signal shall occur after an interval of 128 μs (with a tolerance of 0.5 μs) from pulse P₄ of the interrogation signal. 3) The delay of the response issued in response to mode A or C interrogation signals is the same as that given in the description under (1).
Response signal jitter	<ol style="list-style-type: none"> 1) When a mode S interrogation signal is applied to the input terminal of the receiver (if the feeder loss is 3 dB, the pulse peak envelope power shall fall within the range of the point 3 dB lower than the maximum sensitivity point of the receiver to -24 dB (with 1 mW regarded as 0 dB)), the root-mean-square value shall be 0.05 μs or less. 2) When an interrogation signal that is batched mode A/C/S is applied to the input terminal of the receiver (if the feeder loss is 3 dB, the pulse peak envelope power shall fall within the range of the maximum sensitivity point of the receiver to -24 dB (with 1 mW regarded as 0 dB)), the root-mean-square value shall be 0.06 μs or less. 3) The jitter in the response signal issued in response to mode A or C interrogation signals is the same as that given in the description under (1).

Response characteristics	<p>1) If the feeder loss is 3 dB, and when a mode S interrogation signal is applied to the input terminal of the receiver with the peak envelope power in the range of -71 dB to -24 dB (with 1 mW regarded as 0 dB), the response characteristics shall satisfy the following conditions:</p> <ul style="list-style-type: none"> a After the synchronizing phase inversion of pulse P_6 of the said interrogation signal, if a mode A or C interrogation signal at least 6 dB smaller than the said interrogation signal is also applied, the response ratio shall be 95% or more, and if a mode A or C interrogation signal at least 3 dB smaller than the said interrogation signal is also applied, the response ratio shall be 50% or more. b After pulse P_1 of the said interrogation signal, if a mode A or C interrogation signal that consists of pulse pairs is also applied according to the pulse characteristics shown in Figure 7, that is, they are at least 9 dB smaller than the previously applied mode S interrogation signal and the pulse interval is 2 μs, the response ratio shall be 90% or more. <p>2) If the feeder loss is 3 dB, and when a mode S interrogation signal is applied to the input terminal of the receiver with the peak envelope power in the range of -68 dB to -24 dB (with 1 mW regarded as 0 dB), when a mode A or C interrogation signal that is at least 12 dB smaller than the mode S interrogation signal is also applied and the maximum pulse-repetition frequency is 10 kHz, the response ratio shall be 95% or more.</p>
	<p>3) When no effective interrogation signals are applied and all on-board devices that may cause interference within the aircraft are operating, the transponder shall not respond two or more times for 10 seconds.</p>
Side lobe suppression characteristics	<p>If the feeder loss is 3 dB, and when a mode S interrogation signal is applied to the input terminal of the receiver (the pulse peak envelope power shall fall within the range of the maximum sensitivity point of the receiver to -24 dB (with 1 mW regarded as 0 dB)), the side lobe suppression characteristics shall satisfy the following conditions:</p> <ul style="list-style-type: none"> a If the amplitude of pulse P_6 of the interrogation signal is at least 3 dB less than the amplitude of the suppression signal, the response ratio shall be less than 10%.

	b If the amplitude of pulse P ₆ of the interrogation signal is at least 12 dB larger than the amplitude of the suppression signal, the response ratio shall be 99% or more.
--	--

c Conditions for the receiver

(1) For the receiver of an ATC transponder that cannot respond to mode S interrogation signals:

Classification	Condition
Sensitivity	If the antenna is a single type with a quarter wavelength, a feeder loss of 3 dB, and a response ratio of 90% when a mode A or C interrogation signal with the amplitudes of pulses P ₁ and P ₃ equal is applied to the input terminal, the peak envelope power of pulse P ₁ of the interrogation signal shall be -74 dB (with a tolerance range of between -72 dB and -80 dB) (with 1 mW regarded as 0 dB), and variations after the interrogation mode changes shall be within 1 dB.
Pulse width differentiation characteristics	When the appropriate pulses specified below are applied to the input terminal, the sum of the response count and the number of times the response operation is suppressed shall be 10% or less of the interrogation count. 1) Pulses having an amplitude falling within the range of the maximum sensitivity point of the receiver to 6 dB and a width of 0.3 μs or less 2) Pulses having an amplitude falling within the range of the maximum sensitivity point of the receiver to 50 dB and a width of 1.5 μs or more
Echo suppression characteristics	When either appropriate pulses specified below (the pulse amplitude shall fall within the range of the maximum sensitivity point of the receiver to 50 dB) are applied to the input terminal, the conditions below shall be satisfied: 1) Pulses with a width of more than 0.7 μs a Sensitivity shall not be decreased by more than 9 dB compared with the pulse amplitude. b In the case of a, the time allowed until the sensitivity recovers to a value 3 dB higher than the maximum sensitivity point of the receiver (referred to as “sensitivity recovery time” in 2)) shall be within 15 μs of the pulse being applied. In this connection, the average recovery rate shall not exceed 4 dB per 1 μs. 2) Pulses with a width of 0.7 μs or less The decrease in sensitivity and the sensitivity recovery time shall be equal to or less than the respective values specified under 1).

Reception quiescent time	The duration from the reception of an interrogation signal to the emission of the last pulse of the response signal issued in response to the interrogation signal, or within 125 μ s of the emission of the said last pulse
Desensitization for controlling the response count	If the response count of the response signal issued in response to a mode A or C interrogation signal is equal to or less than 90% of the set count, the suppression shall be 3 dB or less. If the response count is more than 150% of the set count, the suppression shall be 30 dB or more.

(2) For the receiver of an ATC transponder that can respond to mode S interrogation signals:

Classification	Condition
Sensitivity	<ol style="list-style-type: none"> 1) If the antenna is a single type with a quarter wavelength, a feeder loss of 3 dB, and a response ratio of 90%, the peak envelope power of the interrogation signal shall fall within the range between -74 dB and -80 dB (with 1 mW regarded as 0 dB, which is also true for 2) and 3)). 2) If the antenna is a single type with a quarter wavelength, a feeder loss of 3 dB, and a response ratio of 99%, the peak envelope power of the interrogation signal shall be equal to or higher than the maximum sensitivity point of the receiver and equal to or lower than -24 dB. 3) If the antenna is a single type with a quarter wavelength, a feeder loss of 3 dB, and a response ratio of 10%, the peak envelope power of the interrogation signal shall be -84 dB or lower.
Classification	Condition
Pulse width differentiation characteristics	The pulse width differentiation characteristics for mode A or C interrogation signals are the same as those given in the description under (1).
Echo suppression characteristics	<ol style="list-style-type: none"> 1) When the receiver receives a mode S interrogation signal to which the transponder cannot respond or need not respond, the receiving sensitivity shall recover to the maximum sensitivity point of the receiver within 128 μs after the synchronizing phase inversion. 2) The echo suppression characteristics for mode A or C interrogation signals are the same as those given in the description under (1).

Time required for the recovery of receiving sensitivity	Within 125 μ s of the emission of the last pulse of the response signal, the receiving sensitivity shall recover to a level within 3 dB of the maximum sensitivity point of the receiver.
Desensitization for controlling the response count	The desensitization for controlling the response count for mode A or C interrogation signal is the same as that given in the description under (1).

- d The direction pattern of the antenna set on a horizontal plane shall be satisfactorily non-directional and the plane of polarization of emissions from the antenna shall be vertical.
- 3) The radio equipment for ATCRBS radio stations shall satisfy the technical conditions announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications, in addition to the conditions in the preceding items.
(Announcements: *1 in No. 231 in 1976 and *2 in No. 874 in 1988)

(Radio Equipment for ILS Radio Stations)

Article 45.12.7. The radio equipment for ILS radio stations shall satisfy the conditions defined in the items below:

- 1) Localizer
 - a The effective range shall be as shown in Figure 9.
 - b The precision of a course line (that is assumed to run on a horizontal plane and pass on a locus of points of a theoretical 0 of DDM (difference in depth of modulation that is obtained by dividing the difference between the larger and smaller modulation factors of two modulation signals at a given reception point by 100; this also applies hereafter), nearest to the center line of the runway; this also applies hereafter), if adjusted to a value as close as possible to the design value, as the course line is regarded as being a straight line by averaging it, shall be such that the values of DDM on that line shall fall within the range of values specified in Figure 10.
 - c Within the effective range, the deviation sensitivity (which refers to the ratio of the lateral deviation in distance from the reference line on a given horizontal plane to the resultant DDM value change; this also applies hereafter) and the angle deviation sensitivity (which refers to the ratio of the angular deviation from the reference line to the resultant DDM value change; this also applies hereafter) shall be as illustrated in Figure 11.
 - d A Morse-coded beacon signal shall be transmitted six or more times per minute (the transmission rate shall be such that about seven alphabetic words are transmitted per minute).
 - e Conditions for transmitting equipment

Classification	Condition
----------------	-----------

Radiation characteristics	Emissions (radio waves radiated) from the transmitter shall form an electric field distribution of radio waves that have been amplitude modulated by modulation signals with frequencies of 90 Hz and 150 Hz. Within the effective range, when viewing from the course line to the transmitting antenna, at the left of the course line, the modulation factor of the modulation by the 90 Hz signals is larger than that by the 150 Hz signals and, at the right of the course line, this relation is inverted.
---------------------------	--

Modulation signal	Frequency tolerance	2.5% (1.5% if possible)
	Modulation factor	18% to 22% on the course line
	Harmonics content ratio	10% or less
	Phase characteristics	As per Figure 12.
Beacon signal	Frequency tolerance	1,020 Hz (with a tolerance of 50 Hz)
	Modulation method	Amplitude modulation
	Modulation factor	5% to 15%
Plane of polarization of radio waves to be emitted	Horizontal (the vertically polarized wave component shall be such that, when an aircraft on the course line tilts sideways by 20 degrees, the DDM change shall be 0.016 or less.)	

2) Glide path

- a The effective range is as shown in Figure 9.
- b The precision of an ILS glide path (that is assumed to run on a vertical plane including the center line of the runway and which passes through a locus of points of a theoretical 0 of DDM, nearest to the ground surface; this also applies hereafter), if adjusted to a value as close as possible to the design value, as the ILS glide path is regarded as being a straight line by averaging it, shall be such that the values of DDM on that line shall fall within the range of values specified in Figure 10.
- c Within the effective range, the angle deviation sensitivity shall be as illustrated in Figure 11.
- d Conditions for transmitting equipment

Classification		Condition
Radiation characteristics		Emissions (radio waves radiated) from the transmitter shall form an electric field distribution of radio waves that have been amplitude modulated by modulation signals with frequencies of 90 Hz and 150 Hz. Within the effective range, above the ILS glide path, the modulation factor of the modulation by the 90 Hz signals is larger than that by the 150 Hz signals and, below the ILS glide path, this relation is inverted.
Modulation signal	Frequency tolerance	2.5% (1.5% if possible)
	Modulation factor	37.5% to 42.5% on the ILS glide path
	Harmonics content ratio	10% or less
	Phase characteristics	As per Figure 12.
Plane of polarization of radio waves to be emitted		Horizontal

- 3) Marker beacon
 - a The effective range shall be as shown in Figure 9.
 - b Conditions for transmitting equipment

Classification		Condition	
Modulation signal	Frequency	Outer Marker	400 Hz (with a tolerance of 2.5%)
		Middle Marker	1,300 Hz (with a tolerance of 2.5%)
		Inner Marker	3,000 Hz (with a tolerance of 2.5%)
	Modulation factor		91% to 99%
	Harmonics content ratio		15% or less
	Constitution	Outer Marker	Repetition of lines
		Middle Marker	Repetition of alternate points and lines
		Inner Marker	Repetition of points
Transmission rate		Standard: 6 cycles/second for points, 2 cycles/second for lines	
Antenna directional pattern		Towards the sky in a form that corresponds as closely as possible to a complete sector	
Plane of polarization of radio waves to be emitted		Horizontal	

- 4) The radio equipment for ILS radio stations shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications, in addition to the conditions in the preceding items.

(Announcement: * in No. 233 in 1976)

(VOR)

Article 45.12.8. The VOR shall satisfy the conditions defined in the items below:

- 1) General conditions
 - a The VOR shall continuously transmit a reference phase signal and a variable phase signal.
 - b The phase of the reference phase signal and the phase of the variable phase signal shall match in the magnetic north direction of the VOR, and differ according to the phase angle from magnetic north in other directions.
 - c An error of the azimuth given by a phase difference that may occur as described in b shall be within two degrees.
 - d A Morse-coded beacon signal shall be transmitted at least once per 30 seconds (the transmission rate shall be such that about seven alphabetic words are transmitted per minute).

2) Conditions for transmitting equipment

Classification		Condition
Primary carrier	Modulation method	Carriers shall be amplitude modulated by a modulation signal in the air.
	Modulation signal	1) Standard VOR a Subcarrier that has been frequency modulated by a reference phase signal b Variable phase signal 2) Doppler VOR a Reference phase signal b Subcarrier that has been frequency modulated by a variable phase signal
	Relative positions of modulation signals in a frequency range	As per Figure 13.
	Modulation factor	According to the elevation angle classification below, the modulation factor of each modulation signal specified above shall be as follows: 1) 5 or less degrees of elevation angle 28% to 32% 2) 5 to 60 degrees of elevation angle 25% to 35%
Subcarrier	Frequency	9,960 Hz (with a tolerance of 1%)
	Modulation method	Subcarriers shall be frequency modulated by a modulation signal in the air.
	Modulation signal	Reference phase signal for standard VOR and variable phase signal for Doppler VOR
	Modulation index	16 (with a tolerance of 1)
	Modulation factor of a residual amplitude component	5% or less for standard VOR and 40% or less at 30 meters or more from the antenna for Doppler VOR
	Intensity of harmonics	When the intensity of primary harmonics is assumed to be 0 dB, the intensity of the subsequent harmonics shall be as follows: Secondary harmonics: -30 dB or less Tertiary harmonics: -50 dB or less Quartic or subsequent harmonics: -60 dB or less
Reference and variable phase signals	Frequency	30 Hz (with a tolerance of 1%)
	Phase characteristics	As per Figure 14.
Beacon signal	Modulation frequency	1,020 Hz (with a tolerance of 50 Hz)
	Modulation method	Amplitude modulation
	Modulation factor	20% or less
Plane of polarization of radio waves to be emitted		Horizontal

3) The VOR shall satisfy the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications, in addition to the

conditions in the preceding items.

(Announcement: * in No. 234 in 1976)

(Airborne Meteorological Radar, etc.)

Article 45.12.9. Airborne meteorological radars, tactical air navigation (TACAN) systems, radio altimeters, and airborne Doppler radars shall conform to the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in four Nos. 235 to 238 in 1976)

(MLS Angle System)

Article 45.12.10. The MLS angle system shall comply with the conditions in the items below:

- 1) Radio equipment that performs direction guidance shall comply with the conditions below.
 - a The signals used for direction guidance shall consist of direction guidance signals, the basic data signal, and the auxiliary data signal shown in Figure 15.
 - b The average number of transmissions of the direction guidance signals within 10 seconds shall be 750 to 810 cycles/minute (referred to as “normal rate” in Table 6) or 2,250 to 2,430 cycles/minute (referred to as “high rate” in Table 6).
 - c The effective range shall be as shown in Figure 16.
 - d The precision of direction guidance (based on an hour rate of 95%; this also applies hereafter in this Article) shall be such that the distance from the point indicated by the direction guidance signals as the reference point to a reference point is within 6 meters.
 - e The plane of polarization of emissions from the antenna shall be vertical.
 - f The beam emitted for scanning (which refers to the changing of the radiation direction of emissions by a predetermined method; this also applies hereafter in this Article) used to provide the proportional angle guidance information for the direction guidance signals (hereinafter referred to as “scanning beam” in this Article) shall comply with the conditions below.
 - (1) The scanning beam radiation shall be at least within the effective range (or proportional angle guidance range (effective range where proportional angle guidance information can be obtained; this also applies hereafter in this Article) in the case of k below).
 - (2) The scanning range and scanning rate of the scanning beam shall be as shown in Table 4.
 - (3) The half-power angle of the scanning beam shall be 4 degrees or less in the main axis direction of the antenna.
 - g The direction guidance signals (limited to the preamble signal, beacon signal, and airborne antenna selection signal), basic data signal, and auxiliary data signal shall

comply with the conditions below.

- (1) The modulation method shall be phase modulation.
 - (2) The modulation rate shall be 15,625 bits/s.
- h The beacon signal shall comply with the conditions below in addition to the conditions in g.
- (1) The beacon signal shall consist of four alphabetic characters.
 - (2) When the beacon signal is transmitted using Morse code, the format shown in Figure 17 shall be observed, and the beacon signal shall be transmitted at a rate of at least 6 cycles/minute.
 - (3) When the beacon signal is transmitted using the basic data signal, the second through fourth characters of the beacon signal shall be transmitted sequentially.
- i The direction guidance OCI signal shall comply with the conditions below.
- (1) The modulation method shall be pulse amplitude modulation.
 - (2) The direction guidance OCI signal shall have the characteristics shown in Figure 18.
 - (3) The strength of the direction guidance OCI signal outside the effective range shall be greater than the strength of other direction guidance signals transmitted by the radio equipment that performs direction guidance.
 - (4) The strength of the direction guidance OCI signal within the effective range (proportional angle guidance range in the case of j below) shall be at least 5 dB lower than the maximum strength of the scanning beam.
- j When the proportional angle guidance range is narrower than the effective range, the proportional angle guidance range shall be indicated by the basic data signal.
- k When the direction guidance clearance signal (signal which is transmitted by radio equipment performing direction guidance and which is within the effective range but outside the proportional angle guidance range; this also applies hereafter in this Article) is transmitted, the signal transmitted shall comply with the conditions below.
- (1) The modulation method shall be pulse amplitude modulation.
 - (2) The direction guidance clearance signal shall have the characteristics shown in Figure 18.
- 2) Radio equipment that performs backward guidance shall comply with the conditions below.
- a The signals used for backward guidance shall consist of the backward guidance signals, the basic data signal, and the auxiliary data signal shown in Figure 15.
 - b The average number of transmissions of the backward guidance signals within 10 seconds shall be 375 to 405 cycles/minute.
 - c The effective range shall be as shown in Figure 16.

- d The precision of backward guidance shall be such that the distance from the point indicated by the backward guidance signals as the reference point (point 15 to 18 meters above the runway center point; this also applies hereafter in this Article) to a backward reference point is within 6 meters.
- e The plane of polarization of emissions from the antenna shall be vertical.
- f The scanning beam used to provide the proportional angle guidance information for the backward guidance signals shall comply with the conditions below.
 - (1) The scanning beam radiation shall be at least within the effective range (or proportional angle guidance range in the case of k below).
 - (2) The scanning range and scanning rate of the scanning beam shall be as shown in Table 4.
 - (3) The half-power angle of the scanning beam shall be 4 degrees or less in the main axis direction of the antenna.
- g The backward guidance signals (limited to the preamble signal, beacon signal, and airborne antenna selection signal), basic data signal, and auxiliary data signal shall comply with the conditions below.
 - (1) The modulation method shall be phase modulation.
 - (2) The modulation rate shall be 15,625 bits/s.
- h The beacon signal shall comply with the conditions below in addition to the conditions in g.
 - (1) The beacon signal shall consist of four alphabetic characters.
 - (2) When the beacon signal is transmitted using Morse code, the format shown in Figure 17 shall be observed, and the beacon signal shall be transmitted at a rate of at least 6 cycles/minute.
 - (3) When the beacon signal is transmitted using the basic data signal, the second through fourth characters of the beacon signal shall be transmitted sequentially.
- i The backward guidance OCI signal shall comply with the conditions below.
 - (1) The modulation method shall be pulse amplitude modulation.
 - (2) The backward guidance OCI signal shall have the characteristics shown in Figure 18.
 - (3) The strength of the backward guidance OCI signal outside the effective range shall be greater than the strength of other backward guidance signals transmitted by the radio equipment that performs backward guidance.
 - (4) The strength of the backward guidance OCI signal within the effective range (proportional angle guidance range in the case of j below) shall be at least 5 dB lower than the maximum strength of the scanning beam.
- j When the proportional angle guidance range is narrower than the effective range, the proportional angle guidance range shall be indicated by the basic data signal.

- k When the backward guidance clearance signal (signal which is transmitted by radio equipment performing backward guidance and which is within the effective range but outside the proportional angle guidance range; this also applies hereafter in this Article) is transmitted, the signal transmitted shall comply with the conditions below.
 - (1) The modulation method shall be pulse amplitude modulation.
 - (2) The backward guidance clearance signal shall have the characteristics shown in Figure 18.
- 3) Radio equipment that performs elevation guidance shall comply with the conditions below.
 - a The signals used for elevation guidance (hereinafter referred to as “elevation guidance signals” in this Article) shall be as shown in Figure 15.
 - b The average number of transmissions of the elevation guidance signals within 10 seconds shall be 2,250 to 2,430 cycles/minute.
 - c The effective range shall be as shown in Figure 16.
 - d The precision of elevation guidance shall be such that the distance from the point indicated by the elevation guidance signals as the reference point to a reference point is within 0.6 meters.
 - e The plane of polarization of emissions from the antenna shall be vertical.
 - f The scanning beam used to provide the proportional angle guidance information for the elevation guidance signals shall comply with the conditions below.
 - (1) The scanning beam radiation shall be at least within the effective range.
 - (2) The scanning range and scanning rate of the scanning beam shall be as shown in Table 4.
 - (3) The half-power angle of the scanning beam shall be 2.5 degrees or less in the main axis direction of the antenna.
 - g The preamble signal of the elevation guidance signals shall comply with the conditions below.
 - (1) The modulation method shall be phase modulation.
 - (2) The modulation rate shall be 15,625 bits/s.
 - h The elevation guidance OCI signal shall comply with the conditions below.
 - (1) The modulation method shall be pulse amplitude modulation.
 - (2) The elevation guidance OCI signal shall have the characteristics shown in Figure 18.
 - (3) The strength of the elevation guidance OCI signal outside the effective range shall be greater than the strength of other elevation guidance signals transmitted by the radio equipment that performs elevation guidance.
 - (4) The strength of the elevation guidance OCI signal within the effective range shall be at least 5 dB lower than the maximum strength of the scanning beam.

- 4) The MLS angle system shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding items.

(Announcement: * in No. 876 in 1988)

(ACAS)

Article 45.12.11. The ACAS shall comply with the conditions in the items below:

- 1) The ACASI (a type of ACAS which displays position information only) shall comply with the conditions below.

a Conditions for the transmitter

- (1) The characteristics of the interrogation signal and suppression signal in each mode shall be as shown in Figure 18-2.
- (2) When the interrogation signal is not transmitted, and the feeder loss is 3 dB, the peak envelope voltage shall be -97 dB or lower (with 1 W regarded as 0 dB) in a frequency range of 960 MHz to 1,215 MHz.
- (3) The transmitter shall be capable of transmitting the interrogation signal and suppression signal in mode C.
- (4) The number of transmissions of the interrogation signal and transmission power shall be controlled using the method announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- (5) The jitter of the interrogation signals (series of interrogation signals required to obtain information for one display; this also applies hereafter) shall be within $\pm 10\%$.
- (6) With a transmitter capable of transmitting the interrogation signal in mode S, the beacon signal shall be transmitted according to the data block shown in Figure 18-2 in the format announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

b Conditions for the receiver

- (1) In a frequency range of 1,087 MHz to 1,093 MHz, the sensitivity (which refers to the peak envelope power of the response signal when a quarter-wavelength antenna is used and a feeder loss is 3 dB and when the decodable ratio (ratio of the identification count to the response signal receive count as a percentage) is 90%; this also applies hereafter in this Article) shall be -73 dB (with 1 mW regarded as 0 dB) or lower.
- (2) The attenuation in the one-signal selectivity shall comply with the attenuation values prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Difference in frequency from 1,090 MHz	Attenuation
10 MHz to less than 15 MHz	20 dB or more
15 MHz to less than 25 MHz	40 dB or more
25 MHz or more	60 dB or more

- c A special antenna shall be installed on the top and bottom of the aircraft.
- 2) The ACASII (a type of ACAS which displays position information and vertical avoidance information) shall comply with the conditions below.

a Conditions for the transmitter

- (1) The characteristics of the interrogation signal and suppression signal in each mode shall be as shown in Figure 18-2.
- (2) When the interrogation signal is not transmitted, and the feeder loss is 3 dB, the peak envelope voltage shall be -97 dB or lower (with 1 W regarded as 0 dB) in a frequency range of 1,027 MHz to 1,033 MHz.
- (3) The transmitter shall be capable of transmitting the interrogation signal and suppression signal in batched mode C and the interrogation signal in mode S.
- (4) The number of transmissions of the interrogation signal and transmission power shall be controlled using the method announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- (5) The transmission interval of the interrogation signals shall comply with the time intervals prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Classification	Interval
1) Interrogation signals in mode S which require no response	8 or 10 seconds
2) Interrogation signals other than those of 1)	1 second

- (6) The jitter of the interrogation signals shall be within $\pm 10\%$.
- (7) With a transmitter capable of transmitting the interrogation signal in mode S, the beacon signal shall be transmitted according to the data block shown in Figure 18-2 in the format announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

b Conditions for the receiver

- (1) The sensitivity shall comply with the conditions below.
 - (a) In a frequency range of 1,087 MHz to 1,093 MHz, the sensitivity shall be in a range of higher than -79 dB to -75 dB (with 1 mW regarded as 0 dB).
 - (b) When the feeder loss is 3 dB, the decodable ratio of response signals with

a peak envelope power of -81 dB or lower (with 1 mW regarded as 0 dB) shall be 10% or less.

- (c) When the feeder loss is 3 dB, the decodable ratio of response signals with a peak envelope power ranging from the value exceeding the maximum sensitivity point by 3 dB to -24 dB (with 1 mW regarded as 0 dB) shall be 99% or more.

(2) The receive sensitivity shall be controlled as follows:

- (a) When an response signal in mode C exceeding the maximum sensitivity point by 13 dB is received, the sensitivity shall be decreased, for 21 μ s or more after the rising edge of the first pulse, to a point that is 8 dB to 10 dB lower than the peak envelope power of the first pulse, and shall be restored to the maximum sensitivity within 26 μ s after the rising edge of the first pulse.
- (b) When an response signal in a mode exceeding the maximum sensitivity point by 10 dB is received, the sensitivity shall be decreased, for 115 μ s or more after the rising edge of the first pulse, to a point that is 5 dB to 7 dB lower than the peak envelope power of the first pulse, and shall be restored to the maximum sensitivity within 120 μ s after the rising edge of the first pulse.
- (c) When a signal with a pulse width shorter than 0.3 μ s is received, the receive sensitivity shall not be controlled.
- (d) When a signal with a rise time exceeding 0.5 μ s is received, the receive sensitivity shall not be controlled.

(3) The attenuation in the one-signal selectivity shall comply with the attenuation values prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Difference in frequency from 1,090 MHz	Attenuation
5.5 MHz to less than 10 MHz	3 dB or more
10 MHz to less than 15 MHz	20 dB or more
15 MHz to less than 25 MHz	40 dB or more
25 MHz or more	60 dB or more

- c A special antenna shall be installed on the top and bottom of the aircraft.
- d The transmission delay between the antennas installed on the top and bottom of the aircraft shall not exceed 0.05 μ s.
- e A function for adjusting the direction of collision avoidance based on the interrogation signal in mode S shall be provided.

3) The plane of polarization of the emissions from the antenna shall be vertical.

4) The ACAS shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding three items.

(Announcement: * in No. 574 in 1990)

Article 45.13. Deleted (Deleted in No. 3 in 1983.)

(Conditions for Radio Equipment of Aeronautical Stations)

Article 45.14. The radio equipment of aeronautical stations, which uses J3E emissions 28 MHz or lower shall comply with the conditions prescribed in Article 45.11.1; provided that, notwithstanding the conditions stipulated in the same item, the carrier power shall be 40 dB or more lower than the peak envelope power.

Article 45.15. The radio equipment of aeronautical stations which uses emissions of a frequency from 118 MHz to 142 MHz (excluding radio equipment that uses emissions of G1D) shall comply with the conditions prescribed in the table below in addition to the conditions prescribed in Article 45.12 paragraph 1 item 3) (other than the paragraph on sensitivity, the paragraph on passing bandwidth, and the paragraph on overall frequency response characteristics (only 2))).

1) Transmitter

Classification	Condition
Modulation method	Amplitude modulation
Overall distortion factor	10% or less when modulated at 80% by a modulating frequency of 1,000 Hz
Overall frequency response characteristics (modulating frequency ranging from 300 Hz to 3,000 Hz)	6 dB or less. However, this is not applicable when the transmitter has a function for achieving the equivalent or superior performance.
Signal-to-noise ratio	30 dB or more when modulated at 80% by a modulating frequency of 1,000 Hz

2) Receiver

Classification	Condition
Sensitivity	5 μ V or less when the receiver input voltage required to ensure a signal-to-noise ratio of 6 dB is modulated at 30% by a frequency of 1,000 Hz
Passing bandwidth in the one-signal selectivity	When a receiver input voltage modulated at 30% by a frequency of 1,000 Hz is applied at the point 6 dB higher than the maximum sensitivity of the receiver, and the level of output is equivalent to the output level at the maximum sensitivity of the receiver, the bandwidth shall be $\pm 0.005\%$ or more of the assigned frequency (5 kHz or more when the receiver is used for long-distance communications for air traffic control with an aircraft station in a certain direction).

3) Antenna

Classification	Condition
Plane of polarization	Emissions used in communications for air traffic control shall be vertically polarized waves, and shall also include horizontally polarized waves wherever possible.

- 2 The radio equipment of aeronautical stations which uses class A2D emissions of a frequency from 118 MHz to 142 MHz shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding paragraph.
- 3 The radio equipment of aeronautical stations which uses emissions of a frequency in a range of 118 MHz to 137 MHz as well as emissions of G1D shall comply with the conditions prescribed in each item of Article 45.12 paragraph 3.
(Announcement: * in No. 342 in 1989)

(Modulation Factor of Radio Beacon Stations)

Article 45.16. The modulation factor of class A2A emissions from a transmitter used for a non-directional radio beacon shall be 80% or more. However, when a modulating frequency includes a voice frequency, the modulation factor of the portion of the modulating frequency for a radio beacon shall be 40% or more.

- 2 The modulation factor of Z marker emissions shall be 95% or more.

(Overall Distortion Factor, etc. of Radio Beacon Stations)

Article 45.17. The overall distortion factor of a transmitter used for a non-directional radio beacon shall be 10% or less in the case of modulation at 80%. However, when a modulating frequency includes a voice frequency, the overall distortion factor shall be 5% or less.

- 2 The overall distortion factor of a Z marker transmitter shall be 15% or less in the case of modulation at 95% wherever possible.
- 3 The signal-to-noise ratio of a transmitter used for a non-directional radio beacon and a Z

marker transmitter shall be 40 dB or more in the case of modulation at 80%.

(Radio Equipment of Radio Stations, etc. Performing Aeronautical Radio Telephone Communication)

Article 45.18. Deleted.

(Exception to Radio Equipment of Aircraft Stations, etc.)

Article 45.19. Notwithstanding the provisions of Articles 45.11 to 45.12.2, 45.12.5 to 45.12.8, 45.12.10, 45.14, and 45.15, the radio equipment which is prescribed in the Articles and which is announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications because it is difficult or irrational to apply the said provisions to the radio equipment shall comply with the technical conditions announced separately (*).

(Announcements: * in Nos. 240-242 in 1976 and No. 430 in 1979)

(Radio Equipment of Aircraft Earth Stations, etc.)

Article 45.20. Radio equipment at aircraft earth stations (excluding radio equipment capable of high-speed radio data communications) that uses radio signals at frequencies greater than 1,626.5 MHz but no more than 1,660.5 MHz shall comply with the conditions in the items below:

- 1) General conditions
 - a The modulation method shall be phase modulation.
 - b The radio equipment shall have a function for automatically correcting the transmission frequency of a carrier by receiving emissions from an aircraft earth station via satellite stations.
 - c The polarized wave of transmitted or received emissions shall be a right-hand polarized wave.
- 2) Conditions for transmitting equipment
 - a The stability of the carrier power shall be within ± 1 dB.
 - b The level of phase noise shall not exceed the curve shown in Figure 19 in a detuning frequency (which refers to the frequency of the difference from the frequency of the carrier wave; this also applies hereafter) range of 10 Hz to 10,000 Hz.
- 3) Conditions for receiving equipment
 - a Operation shall be normal when the power flux density of the receiving antenna is -100 dB per square meter (with 1 W regarded as 0 dB).
 - b In a detuning frequency from 10 Hz to 10,000 Hz, operation shall be normal when emissions with the phase noise level not exceeding the curve shown in Figure 19 are received.
 - c When a desired signal is applied, and both adjacent carriers of the desired signal which have a power 5 dB higher than the carrier power of the desired signal are applied simultaneously, the bit error rate after demodulation following error correction shall comply with the values prescribed in the right-hand column of the

table below, according to the classification in the left-hand column and the conditions in the middle column of the table.

Channel and modulation method classification	Ratio of carrier power to noise power flux density	Bit error rate
P channel 2PSK	38.0 dB-Hz	1/100,000 or less
P channel 4PSK	43.3 dB-Hz	1/100,000 or less
C channel	50.0 dB-Hz	1/1,000 or less

- 4) The radio equipment of INMARSAT aircraft earth stations shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions prescribed in the preceding items.

(Announcement: * in No. 441 in 1995)

2 Radio equipment at aircraft earth stations that uses radio signals at frequencies greater than 1,626.5 MHz but no more than 1,660.5 MHz (limited to radio equipment capable of high-speed radio data communications) must comply with the conditions in the items below as well as the conditions prescribed in Item 1b and Item 1c in the previous paragraph.

1) Conditions on transmitting equipment

The transmitting equipment shall comply with the conditions prescribed in Article 40.4 Paragraph 5 Item 1. In this case, “5,600 bits/second or 24,000 bits/second” in b(3) of this item shall be read as “5,600 bits/second.”

2) Conditions on receiving equipment

a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiving equipment shall be -13 dB or more.

b When the receiving equipment is performing radiotelephony communications and it receives a radio signal at a level where the carrier frequency tolerance is 1,110 Hz, the clock frequency tolerance is 0.35 ppm, and the ratio of the QPSK signal’s carrier power to the noise power flux density is given in the left column of the table below, the bit error rate after demodulation shall be no greater than the corresponding value given in the right column of the table below.

Carrier power to noise power flux ratio	Bit error rate after demodulation
40.5 dB	No greater than 4 percent in a period of 100 seconds or more
41.9 dB	No greater than 2 percent in a period of 300 seconds or more

c When the receiving equipment is performing radio data communications (including facsimile transmissions) and it receives a radio signal at a level where the carrier frequency tolerance is 1,110 Hz, the clock frequency tolerance is 0.35 ppm, and the ratio of the QPSK signal’s carrier power to the noise power flux density is given in the left column of the table below, the bit error rate after demodulation shall be no greater than the corresponding value given in the right column of the table below.

Carrier power to noise power flux ratio	Bit error rate after demodulation
---	-----------------------------------

40.1 dB in a dedicated data mode	No greater than 0.001 percent in a period of 3,600 seconds or more
40.5 dB in a common data and signaling unit mode	No greater than 0.025 percent in a period of 2,000 seconds or more

- d When the receiving equipment is performing communications for calling or line assignment and it receives a radio signal at a level where the carrier frequency tolerance is 924 Hz, the clock frequency tolerance is 0.35 ppm, and the ratio of the BPSK signal's carrier power to the noise power flux density is 39.9 dB, the bit error rate after demodulation shall be no greater than 0.001 percent at a probability of 80 percent over any one hour period.
 - e When the receiving equipment is performing high-speed radio data communications and it receives a radio signal at a level where the carrier frequency tolerance is 1,110 Hz, the clock frequency tolerance is 0.35 ppm, and the ratio of the 16 QAM signal's carrier power to the noise power flux density is 55.4 dB, the bit error rate after demodulation shall be no greater than 0.00001 percent over the time it takes to measure 1,000 or more bit errors.
- 3) The receiving equipment shall comply with technical conditions notified separately by the Minister for Internal Affairs and Communications in addition to the conditions prescribed in the previous two items above.

Article 45.21 The radio equipment of an aircraft earth station that uses emissions of a frequency in a range of higher than 14 GHz to 14.5 GHz and the radio equipment of an aeronautical earth station that performs communication with the aircraft earth station shall comply with the conditions defined in the items below.

1) General conditions

- a The antenna of an aircraft earth station shall have a function for automatically tracking the direction of an artificial satellite which is the other party of communication.
- b The aircraft earth station shall be capable of transmitting a signal only when it receives a "enable transition" command from the aeronautical earth station.
- c The frequency that an aircraft earth station uses and the power that the aircraft earth station radiates shall be automatically set by a control command from the aeronautical earth station.
- d The aircraft earth station shall have a function for detecting a fault of its own station and for automatically stopping its transmissions when it detects the fault and when it cannot receive a signal from the aeronautical earth station.
- e The radio equipment of an aeronautical earth station shall be capable of being connected to telecommunications line facilities.
- f The aeronautical earth station shall have a function for managing the aggregate equivalent isotropic radiated power levels produced by one, or two or more co-frequency aircraft earth stations that access the same transponder of the same satellite..

2) Conditions for transmitting equipment of an aircraft earth station

- a The communication method shall be the duplex system, multi-address calling system or a combination of these systems.
- b The modulation method shall be phase modulation and emissions shall be transmitted by an energy dispersal (including a spread spectrum method).
- c The power per 40 kHz bandwidth radiated from the transmitting antenna shall comply with the values prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Elongation () from the direction of principal radiation	Maximum radiation power (with 1 W regarded as 0 dB)
2.5 degrees to fewer than 7 degrees	Equal to or lower than the value obtained by the following expression: $33 - 25 \log_{10}\theta$ dB
7 degrees to fewer than 9.2 degrees	12 dB or less
9.2 degrees to fewer than 48 degrees	Equal to or lower than the value obtained by the following expression: $36 - 25 \log_{10}\theta$ dB
48 degrees to 180 degrees or less	-6 dB or less

- d The cross polarization power shall be controlled so as not to cause such interference that hinders the operation of a radio station related to radio communication using a cross polarization side transponder of an artificial satellite station that is the other party of communication.
- 3) The cross polarization discrimination of an antenna of an aircraft earth station shall be 10 dB or more including the deterioration due to a radome.

Section 4 Radio Direction Finder, etc.

(Radio Direction Finder)

Article 46. The antenna of the radio direction finder shall be firmly secured in a location with a minimum direction measurement error.

- 2 The calibration curve for the radio direction finder shall be created immediately after installation, and the radio direction finder shall be calibrated regularly. However, this shall not apply to radio direction finders announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3 When the radio direction finder is operated, those objects including an antenna that can disturb the propagation of emissions shall be placed in their normal state to suppress direction measurement value variations.

Article 47. Deleted.

(Terrestrial Radionavigation Devices)

Article 47.2. The terrestrial radionavigation device (which refers to the receiving equipment that receives emissions from radio stations on land to perform radio navigation) that is installed in ships shall comply with the conditions defined in the items below.

- 1) General conditions
 - a The device shall be capable of calculating and indicating the present location by receiving a signal for measuring the location that is transmitted from a radio station

on land.

b The time required to capture the signal shall be within 7.5 minutes after the power is turned on.

2) Electrical conditions

a The device shall operate by receiving a signal with an electric field strength from 17.8 $\mu\text{V/m}$ to 316 mV/m .

b The device shall operate at a navigation speed of up to 16 knots/h and an acceleration of up to 3 knots/m.

(Satellite Radionavigation Devices)

Article 47.3. The satellite radionavigation device (which refers to the receiving equipment that receives emissions from an artificial satellite station to obtain radio navigation and time of ships) that is installed in a ship shall comply with the conditions defined in the items below:

1) General conditions

a The device shall be capable of measuring the location of a ship within a unite of 1/1,000 minute based on the latitude and longitude of the world geodetic system (which refers to the land survey criteria prescribed in Article 11 paragraph 3 of the Land Survey Law (Law No. 188 enacted in 1949); this also applies hereafter) and of indicating the coordinated universal time as well.

b When the device converts the geodetic system into a system other than the world geodetic system, the device shall be capable of indicating that the conversion of coordinates has been carried out and of identifying the geodetic system used to indicate the location.

c The device shall be capable of outputting a newly calculated location within 1 second.

d The device shall be capable of outputting the ground speed (which refers to the speed using the ground as the criterion) and the ground course (which refers to the course using the ground as the criterion).

2) Electrical conditions

a The device shall operate by receiving a signal for measuring the location transmitted from an artificial satellite station.

b The measurement accuracy of the location shall be within 100 m (the probability shall be 95%).

c The measurement accuracy of the location of a ship that uses a differential signal transmitted from a radio station on land shall be within 10 m (the probability shall be 95%).

d The device shall be capable of receiving a signal from an artificial satellite in a range from -130 dB (with 1 mW regarded as 0 dB) to -120 dB and, when receiving the said signal, it shall be capable of properly operating continuously even when the said signal changes up to -133 dB.

e When the device becomes unable to receive a signal from an artificial satellite, the device shall be capable of raising an alarm and of indicating the measurement time and location immediately before the abnormality occurred until the device is restored to the normal operation state.

(Radar)

Article 48. The radar for radionavigation installed in a ship shall comply with the conditions in the items below:

- 1) The radar shall be installed in such a way that the radar does not impede the functions of the radio equipment, compass, and other important equipment installed on the ship and such that the operation of the radar is not impeded by other equipment.
- 2) Mechanical noise generated by the radar shall be minimal so as not to impede the hearing of voice and other sounds necessary for the safe navigation of the ship.
- 3) The radar shall allow operations including power-on/off switching at a location close to the display screen of the indicator, and the controls for operating the indicator shall be easily identifiable and usable.
- 4) The radar shall be fully operational within 4 minutes, and shall be capable of being prepared in advance to fully operate within 15 seconds.
- 5) The radar shall operate stably even when the power supply voltage fluctuates within $\pm 10\%$ of the rated voltage.
- 6) The radar shall operate satisfactorily under normal temperature or humidity variations or vibrations.
- 7) The indicator shall comply with the conditions below.
 - a The indicator shall have a device for reducing unnecessary presentations caused by rain and snow, the sea surface, and other radars on the display screen.
 - b The indicator shall be capable of displaying the heading (only when a display method based on polar coordinates is used).
- 8) The radar shall comply with the conditions below.
 - a When the antenna is installed 15 meters above sea level, the radar shall be capable of displaying the following targets clearly:
 - (1) Ship of 5,000 tons gross which is 7 nautical miles distant
 - (2) Buoy which has an effective reflection area of 10 m^2 and which is 2 nautical miles distant
 - (3) Buoy which has an effective reflection area of 10 m^2 and which is 92 meters distant
 - b The radar shall have the following resolution:
 - (1) The radar shall be capable of separately displaying two targets which are placed at the same distance and within an azimuth of 3 degrees.
 - (2) The radar shall be capable of separately displaying two targets which are in the same direction and 68 meters away from each other, using a minimum range.
 - c The radar shall have the following precision:
 - (1) The radar shall be capable of measuring the direction of a target 0.75 nautical mile distant with an error not exceeding 2 degrees.
 - (2) The radar shall be capable of measuring the distance between the ship and target within an error of 6% of the range value currently used (or within an error of 82 meters when the range is less than 0.75 nautical mile).

- 9) When the ship is inclined 10 degrees sideways, the radar shall be capable of displaying the targets listed in (1) through (3) of a of the preceding item.
- 2 The radar which shall be installed in a ship in accordance with the provisions of Article 2 of the Ship Safety Law and which is used for radionavigation (excluding the radionavigation specified in paragraph 3 below) shall comply with the conditions in the items below in addition to the conditions in the items of the preceding paragraph (excluding item 7) b, item 8), and item 9)).
 - 1) The indicator shall comply with the conditions below.
 - a The device prescribed in item 7) a of the preceding paragraph shall be capable of stopping operation as required, and the functions of the device shall be capable of being manually adjusted continuously.
 - b The indicator shall be capable of displaying a target in true-motion and relative-motion modes and in daylight, and shall have the following effective display screen diameter:
 - (1) 18 cm or more for a radar installed in a ship of less than 1,000 tons gross
 - (2) 25 cm or more for a radar installed in a ship of 1,000 tons gross to less than 10,000 tons gross
 - (3) 34 cm or more for a radar installed in a ship of 10,000 tons gross or more
 - c The indicator shall be capable of displaying the direction of a target within 5 seconds by an electronic bearing line (which refers to a straight bright line for electrically presenting the direction of a target on the display screen; this also applies hereafter in this Article), and shall be capable of displaying only the value of a measured direction.
 - d The indicator shall be capable of displaying a bright line for electrically presenting a heading (hereinafter referred to as “ship’s heading line”) on the display screen.
 - e The error of a ship’s heading line shall be within 1 degree with respect to the heading, and the width of the line on the periphery of the display screen shall be within 0.5 degree.
 - f The indicator shall be capable of hiding a ship’s heading line, and the hiding of a ship’s heading line shall be automatically canceled.
 - g The indicator shall have at least ranges of 0.25 nautical mile, 0.5 nautical mile, 0.75 nautical mile, 1.5 nautical miles, 3 nautical miles, 6 nautical miles, 12 nautical miles, and 24 nautical miles.
 - h The indicator shall display 2 to 6 range rings (which are electrically presented as bright circles to indicate certain distances from the center of the display screen where the ship is located; this also applies hereafter in this Article) for ranges of 0.25 nautical mile, 0.5 nautical mile, and 0.75 nautical mile, and shall display 6 range rings for ranges of 1.5 nautical miles, 3 nautical miles, 6 nautical miles, 12 nautical miles, and 24 nautical miles, at regular intervals up to the periphery of the display screen. When the off-center function (function for displaying the position of the ship at a point other than the center of the display screen; this also applies hereafter in this Article) is used, the indicator shall be capable of displaying

additional range rings at regular intervals.

- i The indicator shall clearly display the value of the currently used range and the value of the currently used interval between range rings at easy-to-read locations.
- j The indicator shall be capable of displaying the distance to a target within 5 seconds with a variable distance marker, and shall be capable of displaying only the value of a measured distance.
- k The radar which has an automatic radar plotting function (which refers to the function for automatically tracking an object, indicating information about the movement of the object, and raising an alarm when the object reaches a specific distance; this also applies hereafter) shall comply with the conditions defined in the items below:
 - (1) The radar shall not impair other functions of the radar by having an automatic radar plotting function.
 - (2) The indication by the automatic radar plotting function shall be capable of being deleted whenever necessary.
 - (3) The radar shall not impair other functions of the radar by impairing the automatic radar plotting function.
 - (4) The radar shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in items (1) to (3).
- l The radar which has a manually-operated radar plotting function (which refers to the function for tracking an object manually, indicating information about the movement of the object, and raising an alarm when the object reaches a specific distance) shall comply with the conditions defined in the items below:
 - (1) The radar shall not impair other functions of the radar by having a manually-operated radar plotting function.
 - (2) The indication by the manually-operated radar plotting function shall be capable of being deleted whenever necessary.
 - (3) The radar shall not impair other functions of the radar by impairing the manually-operated radar plotting function.
 - (4) The radar shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in items (1) to (3).
- 2) The radar shall be capable of indicating the direction of a target stably relative to due north by interlocking with the compass. Furthermore, when the compass is rotated horizontally two times per minute, the error of the direction displayed by interlocking with the rotations shall be within 0.5 degree with respect to the direction indicated by the compass.
- 3) The radar shall be capable of measuring the azimuth between the heading and a target even when the mechanism for interlocking with the compass does not operate.
- 4) The radar shall minimize the display of false images.
- 5) The antenna shall make 20 revolutions or more per minute automatically and

continuously through an azimuth of 360 degrees, and shall operate normally even when the relative wind velocity is 51.5 meters per second.

- 6) The radar shall comply with the conditions below.
 - a When the antenna is installed 15 meters above sea level, the radar shall be capable of displaying the following targets clearly:
 - (1) Rock wall which is 20 nautical miles distant and which rises 60 meters above sea level
 - (2) Rock wall which is 7 nautical miles distant and which rises 6 meters above sea level
 - (3) Ship of 5,000 tons gross which is 7 nautical miles distant
 - (4) Ship 10 meters long which is 3 nautical miles distant
 - (5) Buoy which has an effective reflection area of 10 m² and which is 2 nautical miles distant
 - (6) Targets listed below which are 50 meters to 1 nautical mile distant and shall be clearly displayed only by range switching:
 - (a) Ship of 5,000 tons gross
 - (b) Ship 10 meters long
 - (c) Buoy which has an effective reflection area of 10 m²
 - b The radar shall have the following resolution:
 - (1) When the range is 1.5 nautical miles, the radar shall be capable of separately displaying two targets which are within an azimuth of 2.5 degrees and equally placed at a distance of half the range or more.
 - (2) When the range is 1.5 nautical miles or less, the radar shall be capable of separately displaying two targets which are in the same azimuth, 40 meters distant from each other, and equally placed at a distance of half the range or more.
 - c The radar shall have the following precision:
 - (1) The radar shall be capable of measuring the direction of a target displayed on the periphery of the display screen with an error not exceeding 1 degree. This shall not be applied when the off-center function is used.
 - (2) When the distance to a target is measured by displaying the target on range rings or by using a variable distance marker, the radar shall be capable of measuring the distance with an error not exceeding 1% of the currently used range value or 30 meters, whichever is larger.
 - d The display of electronic bearing lines, range rings, and variable distance markers shall be capable of being changed in brightness, and shall be individually erasable.
- 7) When the ship is inclined 10 degrees sideways, the radar shall be capable of displaying the targets listed in (1) through (6) of a of the preceding item.
- 8) A device which can display a still target or land in a fixed manner on the display screen of the indicator when the ship is traveling shall confine the display of the traveling of the

ship to within a circular area whose center is at the center of the display screen and whose radius is 75% of the effective radius of the display screen. When the next screen is displayed as a result of the ship having traveled beyond the display area of the radar, the first display of the ship shall lie within the circular area whose center is at the center of the display screen and whose radius is 50% or more of the effective radius of the display screen.

- 9) The radar shall have a measuring instrument which enables remarkable degradation of the radar performance to be detected easily. Even when no target exists, a means of checking for normal operation shall be provided.
 - 10) The radar shall operate normally when the geomagnetism varies.
 - 11) The radar which uses emissions of a frequency of the 9 GHz band shall be capable of polarizing the emissions horizontally. When a different polarized wave is used, the indicator shall be capable of indicating the type of polarized wave being used.
 - 12) The radar which uses emissions of a frequency of the 9 GHz band shall be capable of detecting a signal from the radar beacon and search and rescue radar transponder, and shall be capable of displaying a bright line starting at the position on the display screen. The radar which does not use emissions of a frequency of the 9 GHz band shall be capable of detecting a signal from the radar beacon, and shall be capable of displaying a bright line starting at the position on the display screen.
 - 13) The radar shall comply with the technical conditions announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding items.
 - 14) Two radars installed in a ship of 10,000 tons gross or more shall be capable of being used independently and simultaneously.
- 3) The radar which shall be installed in a ship in accordance with the provisions of Article 2 of the Ship Safety Law and which is used for radionavigation on a ship of less than 500 tons gross (excluding a passenger ship) which is not engaged in international navigation shall comply with the conditions in the items below in addition to the conditions in the items of paragraph 1 (other than items 7) b, 8) a and c, and 9)).
- 1) The radar shall comply with items 1) c, 1) d, 1) e, 1) i, 4), 6) a (other than (6) (a) and (6) (b)), 6) c (other than (2)), and 7) of the preceding paragraph. In this case, “displaying the direction of a target within 5 seconds by an electronic bearing line (which refers to a straight bright line for electrically presenting the direction of a target on the display screen; this also applies hereafter in this Article), and shall be capable of displaying only the value of a measured direction.” in item 1) c of the preceding paragraph shall read “measuring the direction of a target swiftly.”; “50” in item 6) a (6) of the preceding paragraph shall read “92”; “1” and “the off-center function” in item 6) c (1) of the preceding paragraph shall read “2” and “a device which can display a still target or land in a fixed manner on the display screen of the indicator when the ship is travelling”, respectively; “(6)” in item 7) of the preceding paragraph shall read “(6) (other than (a) and (b))”.
 - 2) The indicator shall comply with the conditions below.
 - a) The indicator shall be capable of displaying the relative position of a target on a plane, and the effective diameter of the display screen shall be 14 cm or more.
 - b) The indicator shall be capable of hiding a ship’s heading line temporarily.

- c For a range of 1 nautical mile or more, the indicator shall display 4 or more range rings at regular intervals up to the periphery of the display screen.
 - d For a range of less than 1 nautical mile, the indicator shall display 2 or more range rings at regular intervals up to the periphery of the display screen.
- 3) The radar shall have the following precision:
- a When the distance to a target is measured by displaying the target on range rings, the radar shall be capable of measuring the distance with an error not exceeding 6% of the currently used range value or 82 meters, whichever is larger.
 - b When the distance to a target is measured by using a variable distance marker, the radar shall be capable of measuring the distance with an error not exceeding 6% of the currently used range value or 120 meters, whichever is larger.
- 4) A device which can display a still target or land in a fixed manner on the display screen of the indicator when the ship is travelling shall not remarkably restrict the display of a target in the direction in which the ship is travelling.
- 5) The radar which has a device for interlocking with the compass shall comply with the conditions in items 2) and 3) of the preceding paragraph.
- 6) The antenna shall make 12 revolutions or more per minute automatically and continuously through an azimuth of 360 degrees.
- 4) Notwithstanding the provisions of paragraphs 1, 2, or 3, the radar for radionavigation which is installed in a ship and which is announced separately (*3) by the Minister of Public Management, Home Affairs, Posts and Telecommunications because it is difficult or irrational to apply the said provisions to the radar shall comply with the technical conditions announced separately (*3).
- (Announcements: *1 in No. 584 in 1996, *2 in No. 587 in 1998, and *3 in No. 329 in 1980)

(Radio Equipment of Radiolocation Land Stations for Vehicle Detection)

Article 48.2. The radio equipment of a radiolocation land station which uses emissions of the 13 GHz band and performs operations such as the detection of a vehicle running on a road shall comply with the conditions in the items below:

- 1) The antenna power shall be 0.03 W or less.
- 2) The radio equipment shall operate satisfactorily under normal temperature or humidity variations or vibrations.
- 3) The radio equipment shall have a function for transmitting a position information signal which complies with the conditions below.
 - a The coding type shall be the split phase code in which the polarity of the transmitted signal is inverted at the middle point of each bit of the signal.
 - b The signal transmission rate shall be 16,000 bits/s (with a tolerance of 100/1,000,000).
 - c A transmitted signal shall be amplitude-modulated at a modulation factor of 100%.

(Radio Equipment of Radionavigation Land Stations for Providing Satellite Locating Error Correction Information)

Article 49 The radio equipment of a radionavigation land station which uses emissions of a frequency from 285 kHz to 325 kHz to provide satellite locating error correction information shall comply with the conditions in the items below:

- 1) General conditions
 - a The radio equipment shall be capable of transmitting satellite locating error correction information for correcting a locating error in received satellite emissions.
 - b When the station also provides radio beacon service or special service, the radio equipment shall not affect the direction information and meteorological information provided for ships.
- 2) Conditions for the transmitter
 - a The modulation signal shall consist of pulses, and its transmission rate shall be 25 bits/s, 50 bits/s, 100 bits/s, or 200 bits/s.
 - b The modulation method shall be the MSK method.
 - c The modulation signal shall be such that “0” of the binary signal delays the phase of the carrier by 90 degrees, and “1” advances the phase of the carrier by 90 degrees.
 - d The phase of the carrier shall change continuously, and the allowable phase change shall be 90 degrees \pm 0.3 degrees.
- 3) The radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding two items.

(Announcement: *in No. 121 in 1997)

(Automatic Alarm Telephone)

Article 49.2. An automatic alarm telephone shall comply with the conditions in the items below:

- 1) The automatic alarm telephone shall be capable of transmitting a radio telephone alarm signal continuously for 30 seconds or more.
- 2) The automatic alarm telephone shall allow the transmission of a radio telephone alarm signal to be stopped easily.
- 3) The frequency departure of sounds constituting a radio telephone alarm signal shall be within \pm 1.5%.
- 4) The error of the length of each sound constituting a radio telephone alarm signal shall be within \pm 0.05 second.
- 5) The interval between two adjacent sounds constituting a radio telephone alarm signal shall be within 0.05 second.
- 6) The ratio of the amplitude of the strongest sound to the amplitude of the weakest sound of the sounds constituting a radio telephone alarm signal shall not exceed 1.2.
- 7) The automatic alarm telephone installed together with radio telephone transmitting equipment at a coast station shall be capable of transmitting the signal prescribed in Table 7-2 of the Ordinance for Operating Radio Stations wherever possible. In this case, the provisions of item 3) shall be applied.
- 8) The automatic alarm telephone shall operate stably when the power supply voltage

fluctuates within $\pm 10\%$ of the rated voltage. (This shall apply only to automatic alarm telephones that are electrically operated.)

- 9) An audible monitor device which enables a radio telephone alarm signal to be aurally checked easily without transmitting emissions shall be provided.

(Attention Signal Generator)

Article 49.3. The attention signal generator (which refers to a device for generating the attention signal tone prescribed in Article 73.2 paragraph 2 of the Ordinance for Operating Radio Stations) shall comply with the conditions in the items below:

- 1) The frequency departure of a tone shall be within ± 30 Hz.
- 2) When the attention signal generator automatically controls the duration of tone output, the tone duration error shall be within a range from +1.5 seconds to -0.5 second.

(Radio Buoy)

Article 49.4. A radio buoy shall comply with the conditions in the items below:

- 1) The radio buoy shall have a sufficient buoyancy, and shall operate normally when exposed to seawater, rain, snow, and so forth.
- 2) The radio buoy shall operate normally under normal vibration or shock.
- 3) The radio buoy shall operate normally when the supply voltage is reduced by 10% from the rated voltage.
- 4) The radio buoy shall radiate codes or signals correctly.
- 5) The modulation factor of class A2A emissions (other than those radiated with an antenna power of 1 W or less) shall be 70% or more.

Section 4.2 Radio Equipment of Paging Stations (Limited to Paging Stations Established for Telecommunications Service)

(Conditions for the Transmitter)

Article 49.5. The transmitter of paging stations (limited to paging stations established for telecommunications service) shall comply with the conditions in the items below:

- 1) Transmitter which uses class F1B emissions of a frequency in a range of higher than 273 MHz to 328.6 MHz
 - a The modulation signal shall consist of pulses, and its transmission rate shall be 512 bits/s or more.
 - b The frequency deviation shall be within ± 6.5 kHz from the frequency of the unmodulated carrier.
 - c The adjacent channel leakage power shall be such that, in the case of modulation using a standard coding test signal (which refers to a signal that repeats 2-value

dummy noise with a coding length of 511 bits; this also applies hereafter) with the same transmission rate as that of the modulation signal, the power radiated into the ± 8 kHz band of the frequency which is 25 kHz distant from the carrier frequency is lower than the carrier power by 70 dB or more, or 2.5 μ W or less.

- 2) Transmitter which uses class F2D emissions of a frequency in a range of higher than 76.0 MHz to 90.0 MHz and which superimposes the emissions on VHF broadcasting emissions
 - a The modulation signal shall consist of pulses, and its transmission rate shall be 16,000 bits/s or more.
 - b The maximum value of the frequency shift shall not exceed 10% relative to the maximum frequency shift prescribed in Article 3 paragraph 2 of the Standard System for VHF Broadcasting.
 - c The frequency of a subcarrier shall be 76 kHz for a transmission rate of 16,000 bits/s, or 66.5 kHz for a transmission rate of 19,000 bits/s.

Article 49.6. Deleted

Section 4.3 Radio Equipment of Radio Stations, etc. Performing TDMA Portable Radio Communication

(Radio Equipment of Radio Stations, etc. Performing TDMA Portable Radio Communication)

Article 49.6.2. The radio equipment which transmits emissions of a frequency in a range of higher than 810 MHz to 828 MHz, higher than 832 MHz to 834 MHz, higher than 838 MHz to 846 MHz, higher than 860 MHz to 885 MHz, higher than 1,477 MHz to 1,501 MHz, or higher than 1,513 MHz to 1,516 MHz at a base station that performs TDMA portable radio communication, the radio equipment which transmits emissions of a frequency in a range of higher than 887 MHz to 889 MHz, higher than 893 MHz to 901 MHz, higher than 915 MHz to 958 MHz, higher than 1,429 MHz to 1,453 MHz, or higher than 1,465 MHz to 1,468 MHz at a land mobile station that performs TDMA portable radio communication, or the radio equipment which transmits emissions of a frequency in a range of higher than 810 MHz to 828 MHz, higher than 832 MHz to 834 MHz, higher than 838 MHz to 846 MHz, higher than 860 MHz to 885 MHz, higher than 887 MHz to 889 MHz, higher than 893 MHz to 901 MHz, higher than 915 MHz to 958 MHz, higher than 1,429 MHz to 1,453 MHz, higher than 1,465 MHz to 1,468 MHz, higher than 1,477 MHz to 1,501 MHz, or higher than 1,513 MHz to 1,516 MHz at a radio station that performs communication, etc. for testing TDMA portable radio communication equipment (which refers to a radio station which performs communication for testing or adjusting the radio equipment at base stations performing TDMA portable radio communication or a radio station that relays the communication where portable radio communication between the base station and land mobile stations is disabled; this also applies hereafter) shall comply with the conditions in the items below:

- 1) General conditions

- a The communication method shall be duplex operation in which time division multiplexing is used for transmission from a base station to a land mobile station, and in which time division multiple access is used for transmission from a land mobile station to a base station. However, the number of channels multiplexed in time division multiplexing and the number of channels per carrier in time division multiple access shall be as announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - b The transmitter of each land mobile station communicating with a base station shall be identified automatically.
 - c Switching from a speech channel of one base station to a speech channel of another base station shall be performed automatically.
 - d The radio equipment of a base station shall be capable of being connected to telecommunication circuit equipment.
 - e An area which is associated with the service provided by one base station and which can provide an electric field strength sufficient for the service shall be capable of being divided to match the traffic of the area.
- 2) Conditions for the transmitter
- a The modulation method shall be QPSK which shifts the reference phase $\pi/4$ shift every 2 bits.
 - b In modulation, a 50% roll-off band limitation shall be imposed on the transmission side. In this case, the roll-off rate shall be 0.5.
 - c The adjacent channel leakage power shall be such that in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the ± 10.5 kHz band of the frequency 50 kHz distant from the carrier frequency is lower than the carrier power by 45 dB or more.
 - d The leakage power when the carrier is not transmitted during communication shall be lower than the mean power when the carrier is transmitted by 60 dB or more, or shall be 2.5 μ W or less.
 - e The modulation signal shall consist of pulses, and its transmission rate shall be 42,000 bits/s (with a tolerance of 100/1,000,000). However, the transmission rate of a signal which consists of pulses converted from, for example, voice and to which another signal for correcting an error in the said signal is added shall be as announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The radio equipment of a land mobile station prescribed in the preceding paragraph shall comply with the conditions in the items below in addition to the conditions in the preceding paragraph.
- 1) As the frequency of emissions to be transmitted, a frequency 130 MHz higher (or 55 MHz higher when emissions of a frequency in a range of higher than 887 MHz to 889 MHz, higher than 893 MHz to 901 MHz, or higher than 915 MHz to 940 MHz are transmitted, or 48 MHz lower when emissions of a frequency in a range of higher than 1,429 MHz to 1,453 MHz or higher than 1,465 MHz to 1,468 MHz are transmitted) than

the frequency of emissions received from a base station of the preceding paragraph shall be selected automatically.

- 2) The radio equipment shall have an automatic control function to minimize the antenna power.
- 3) Radio equipment which can switch the antenna power by connecting a power amplifier shall identify the power amplifier and start operation when the power amplifier is connected, according to the conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 384 in 1997)

Section 4.3.2 Radio Equipment of Radio Stations, etc. Performing CDMA Portable Radio Communication

(Radio Equipment of Radio Stations, etc. Performing CDMA Portable Radio Communication)

Article 49.6.3. The radio equipment which transmits emissions of a frequency greater than 832 MHz but no more than 834 MHz, greater than 838 MHz but no more than 846 MHz, greater than 860 MHz but no more than 895 MHz, or greater than 1,513 MHz but no more than 1,516 MHz at a base station that performs CDMA portable radio communication, the radio equipment which transmits emissions of a frequency in a range of greater than 815 MHz but no more than 850 MHz, greater than 887 MHz but no more than 889 MHz, greater than 893 MHz but no more than 895 MHz, greater than 893 MHz but no more than 901 MHz, greater than 915 MHz but no more than 940 MHz, or greater than 1,465 MHz but no more than 1,468 MHz at a land mobile station that performs CDMA portable radio communication, or the radio equipment which transmits emissions of a frequency in a range greater than 815 MHz but no more than 850 MHz, greater than 860 MHz but no more than 901 MHz, greater than 915 MHz but no more than 940 MHz, greater than 1,465 MHz but no more than 1,468 MHz, or greater than 1,513 MHz but no more than 1,516 MHz with a spread code speed of 1,2288 megachips per second at a radio station that performs communication, etc. for testing CDMA portable radio communication equipment shall comply with the conditions in the items below (limited only to item 2 c for land mobile relay stations):

- 1) General conditions The communication method shall be duplex operation in which code division multiplexing is used for transmission from a base station to a land mobile station, and in which code division multiple access is used for transmission from a land mobile station to a base station.
 - b The transmitter of each land mobile station communicating with a base station shall be identified automatically.
 - c Switching from a speech channel of one base station to a speech channel of another base station shall be performed automatically.
 - d The radio equipment of a base station shall be capable of being connected to telecommunication circuit equipment.
 - e An area which is associated with the service provided by one base station and which can provide an electric field strength sufficient for the service shall be capable of being divided to match the traffic of the area.

- f The radio equipment shall have a function for improving receiving characteristics by separating multi-path propagation components received dispersively in time from each other and combining these multi-path propagation components.
- 2) Conditions for the transmitter
- a The modulation method used by the transmitter of a base station shall be 4PSK, and the modulation method used by the transmitter of a land mobile station shall be the combination of 2PSK and $\pi/2$ shift 4PSK or offset 4PSK.
 - b The transmitter shall have an automatic control function to minimize the antenna power based on control information from a land mobile station for the transmitter of a base station or based on control information from a base station for the transmitter of a land mobile station.
 - c The adjacent channel leakage power shall comply with the values announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - d The data transmission rate shall be the variable transmission rate announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The radio equipment of a land mobile station prescribed in the preceding paragraph shall comply with the conditions in the items below in addition to the conditions in the preceding paragraph.
- 1) As the frequency of emissions to be transmitted by receiving emissions from a base station of the preceding paragraph, frequencies prescribed below shall be selected automatically.
 - a As for transmitters transmitting emissions of a frequency higher than 815 MHz but no more than 850 MHz, a frequency 45 MHz lower than the frequency of the received emission.
 - b As for transmitters transmitting emissions of a frequency higher than 887 MHz but no more than 889 MHz, higher than 893 MHz but no more than 901 MHz or higher than 915 MHz but no more than 940 MHz, a frequency 55 MHz higher than the frequency of the received emission.
 - c As for transmitters transmitting emissions of a frequency higher than 1,465 MHz but no more than 1468 MHz, a frequency 48 MHz lower than the frequency of the received emission.
 - 2) The radio equipment shall have an automatic control function to minimize the antenna power by measuring the receive power of emissions from a base station of the preceding paragraph.
 - 3) The leakage power when the carrier is not transmitted shall be less than - 61 dB (with 1 mW regarded as 0 dB) within an arbitrary 1 MHz width at the antenna terminal of a land mobile station in the transmission frequency band.
(Announcement: *in No. 385 in 1997)
 - 4) The effective radiation power shall be 31 dB (with 1 mW regarded as 0 dB; this also applies hereafter in this paragraph) or greater but no more than 38 dB, 27 dB or greater but no more than 34 dB, or 23 dB or greater but no more than 30 dB.

Article 49.6.4. The radio equipment that transmits emissions of a frequency in a range greater than 860 MHz but no more than 895 MHz, greater than 1,844.9 MHz but no more than 1,879.9, or greater than 2,110 MHz but no more than 2,170 MHz at a base station that performs CDMA portable radio communication, the radio equipment that transmits emissions of a frequency in a range greater than 815 MHz but no more than 850 MHz, greater than 1,749.9 MHz but no more than 1,784.9 MHz, or greater than 1,920 MHz but no more than 1,980 MHz at a land mobile station that performs CDMA portable radio communication, or the radio equipment which transmits emissions of a frequency in a range greater than 815 MHz but no more than 850 MHz, greater than 860 MHz but no more than 895 MHz, greater than 1,749.9 MHz but no more than 1,784.9 MHz, greater than 1,844.9 MHz but no more than 1,879.9 MHz, greater than 1,920 MHz but no more than 1,980 MHz, or greater than 2,110 MHz but no more than 2,170 MHz at a radio station that performs communication, etc. for testing CDMA portable radio communication equipment shall comply with the conditions in the items (limited only to item 2 c and d for land mobile relay stations) below. These conditions, however, do not apply to radio equipment prescribed in previous articles.

1) General conditions

- a The communication method shall be duplex operation that uses code division multiplexing when transmitting from a base station to a land mobile station and that uses CDMA when transmitting from a land mobile station to a base station.
- b The radio equipment shall be the one in which the transmitter of each land mobile station that performs communication with a base station is automatically identified.
- c The radio equipment shall be the one in which the call channel of the base station prescribed in 1) is automatically switched to the call channel of another base station.
- d The radio equipment of the base station shall be capable of connecting to the telecommunication circuit equipment.
- e The area that is related to the provision of service of the base station prescribed in 1 and where field intensity necessary for carrying out the said service is available shall be capable of being segmentalized to suit the traffic of the said area.
- f The radio equipment shall have the function to separate the multipath propagation received in temporal dispersion and improve the receive characteristics by synthesizing multipath components.

2) Conditions for the transmitter

- a The modulation method shall be 2PSK or 4PSK for transmitters at base stations and 2PSK, 4PSK, offset 4PSK or a combination of 2PSK and $\pi/2$ shift 4PSK for transmitters at land mobile stations.
- b The transmitter shall have an automatic control function to minimize the antenna power based on control information from a land mobile station for the transmitter of a base station or based on control information from a base station for the transmitter of a land mobile station.
- c The adjacent channel leakage power shall comply with the values announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

- d The intermodulation characteristics shall conform with the values separately announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - e The data transmission rate shall be the variable transmission rate separately announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The radio equipment of a land mobile station prescribed in the preceding paragraph shall comply with the conditions in the items below in addition to the conditions in the preceding paragraph.
- 1) As the frequency of emissions to be transmitted by receiving emissions from a base station of the preceding paragraph, frequencies given below shall be selected automatically.
 - a For radio equipment that transmits emissions of a frequency greater than 815 MHz but no more than 850 MHz, a frequency 45 MHz lower than the received frequency.
 - b For radio equipment that transmits emissions of a frequency greater than 1,749.9 MHz but no more than 1,784.9 MHz, a frequency 95 MHz lower than the received frequency.
 - c For radio equipment that transmits emissions of a frequency greater than 1,920 MHz but no more than 1,980 MHz, a frequency 190 MHz lower than the received frequency.
 - 2) The radio equipment shall have an automatic control function to minimize the antenna power by measuring the received power of emissions from a base station of the preceding paragraph.
 - 3) The leakage power when the carrier is not transmitted at the antenna terminal of a land mobile station in the transmission frequency band shall be the values in the items below:
 - a For the radio equipment whose spread code speed is 3.84 megachips/s, -55 dB (with 1 mW regarded as 0 dB) or lower within an arbitrary 3.84 MHz width
 - b For radio equipment transmitting radio signals at frequencies greater than 1,749.9 MHz but no more than 1,784.9 MHz or greater than 1,920 MHz but no more than 1,980 MHz with a spread code speed of 1.2288 megachips/s or 3.6864 megachips/s, -61 dB (with 1 mW regarded as 0 dB) or lower in any 1 MHz band
 - 4) For the radio equipment whose spread code speed is 3.84 megachips/s, the antenna power shall be 24 dB (with 1 mW regarded as 0 dB) or lower, and the absolute gain of the antenna power shall be 3 dB or lower.
 - 5) For radio equipment transmitting radio signals at frequencies greater than 1,749.9 MHz but no more than 1,784.9 MHz or greater than 1,920 MHz but no more than 1,980 MHz with a spread code speed of 1.2288 megachips/s or 3.6864 megachips/s, the equivalent isotropically radiated power shall be 24 dB (with 1 mW regarded as 0 dB) or lower.

Section 4.4 Radio Equipment of Radio Stations, etc. Performing Time Division Multiplexing/Code Division Multiplexing Portable Radio Communication

(Radio Equipment of Radio Stations, etc. Performing Time Division Multiplexing/Code Division Multiplexing Portable Radio Communication)

Article 49.6.5. Radio equipment at a base station that performs time division multiplexing/code division multiplexing portable radio communication and transmits emissions of a frequency greater than 832 MHz but no more than 834 MHz, greater than 838 MHz but no more than 846 MHz, greater than 860 MHz but no more than 895 MHz, greater than 1,844.9 MHz but no more than 1,879.9 MHz, or greater than 2,110 MHz but no more than 2,170 MHz, radio equipment at a land mobile station that performs time division multiplexing/code division multiplexing portable radio communication and transmits emissions of a frequency greater than 815 MHz but no more than 850 MHz, greater than 887 MHz but no more than 889 MHz, greater than 893 MHz but no more than 901 MHz, greater than 915 MHz but no more than 940 MHz, greater than 1,749.9 MHz but no more than 1,784.9 MHz, or greater than 1,920 MHz but no more than 1,980 MHz, or radio equipment at a radio station that performs communication, etc. for testing performs time division multiplexing/code division multiplexing portable radio communication and transmits emissions of a frequency greater than 815 MHz but no more than 850 MHz, greater than 860 MHz but no more than 901 MHz, greater than 915 MHz but no more than 940 MHz, greater than 1,749.9 MHz but no more than 1,784.9 MHz, greater than 1,844.9 MHz but no more than 1,879.9 MHz, greater than 1,920 MHz but no more than 1,980 MHz, or greater than 2,110 MHz but no more than 2,170 MHz shall comply with the conditions defined in the items (limited only to item 2 b and c for land mobile relay stations) below:

1) General conditions

- a The communication method shall be a multiplex method based on a combination of time division multiplexing and code division multiplexing when emissions of a frequency are transmitted from a base station to a land mobile station, and the radio equipment shall be duplex operation based on CDMA when emissions of a frequency are transmitted from a land mobile station to a base station.
- b The radio equipment shall be the one in which transmitters of each land mobile station that performs communication with the base station can be automatically identified.
- c The radio equipment shall be the one in which the call channel of the base station prescribed in 1) is automatically switched to the call channel of another base station.
- d The radio equipment of the base station shall be capable of connecting to the telecommunication circuit equipment.
- e The area that is related to the provision of service of the base station prescribed in 1 and where field intensity necessary for carrying out the said service is available shall be capable of being segmentalized to suit the traffic of the said area.
- f The radio equipment shall have the function to separate the multipath propagation received in temporal dispersion and improve the receive characteristics by synthesizing multipath components.

2) Conditions for transmitting equipment

- a The modulation method shall be 2PSK or 4PSK for the transmitting equipment at a base station, 2PSK, 4PSK, offset 4PSK or a combination of 2PSK and $\pi/2$ shift 4PSK for the transmitting equipment at a land mobile station.
- b The adjacent channel leakage power shall conform with the values separately announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- c Intermodulation characteristics shall conform with the values separately announced

- by Minister of Public Management, Home Affairs, Posts and Telecommunications.
- d The data transmission rate shall be the variable transmission rate announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The radio equipment at a land mobile station prescribed in the preceding paragraph shall comply with the conditions in the items below in addition to the conditions prescribed in the same paragraph.
 - 1) As the frequency of emissions to be transmitted by receiving emissions from a base station of the preceding paragraph, the frequencies given below shall be selected automatically.
 - a As for the radio equipment transmitting emissions of a frequency higher than 815 MHz but no more than 850 MHz, a frequency 45 MHz lower than the frequency of the received emission.
 - b As for the radio equipment transmitting emissions of a frequency higher than 887 MHz but no more than 889 MHz, higher than 893 MHz but no more than 901 MHz or higher than 915 MHz but no more than 940 MHz, a frequency 55 MHz higher than the frequency of the received emission.
 - c As for the radio equipment transmitting emissions of a frequency higher than 1,749.9 MHz but no more than 1,784.9 MHz, a frequency 95 MHz lower than the frequency of the received emission.
 - d As for the radio equipment transmitting emissions of a frequency higher than 1,920 MHz but no more than 1,980 MHz, a frequency 190 MHz lower than the frequency of the received emission.
 - 2) The radio equipment shall have an automatic control function to minimize the antenna power by the control information from the base station specified in the preceding paragraph.
 - 3) The radio equipment shall have an automatic control function to minimize the antenna power by measuring the received power of emissions from the base station stated in the preceding paragraph.
 - 4) The leakage power when the carrier is not transmitted shall be as given below at the antenna terminal of a land mobile station in the transmission frequency band.
 - a For the radio equipment with a spread code speed of 3.84 megachips/s, -55 dB (with 1 mW regarded as 0 dB) or lower within an arbitrary 3.84 MHz width
 - b For the radio equipment with a spread code speed of 1.2288 megachips/s, -61 dB (with 1 mW regarded as 0 dB) or lower in any 1 MHz width.
 - 5) For the radio equipment with a spread code speed of 3.84 megachips/s, the antenna power shall be 24 dB (with 1 mW regarded as 0 dB) or lower and the absolute gain of the antenna shall be 3 dB or lower.
 - 6) For the radio equipment that transmits emissions of a frequency of higher than 1,749.9 MHz but no more than 1,784.9 MHz or higher than 1,920 MHz but no more than 1,980 MHz with a spread code of 1.2288 megachips/s, the equivalent isotropically radiated power shall be 24 dB (with 1 mW regarded as 0 dB) or lower.

Section 4.4.2 Radio Equipment at Radio Stations, etc. Performing TDMA/CDMA Portable Radio Communication

Article 49.6.6 Radio equipment at a base station or land mobile station that performs

TDMA/CDMA portable radio communication or at a radio station that performs communication, etc. for testing TDMA/CDMA portable radio communication equipment emitting a frequency higher than 2,010 MHz but no more than 2,025 MHz shall comply with the conditions prescribed in the items (limited only to item 2 b and c for land mobile relay stations) below.

- 1) General conditions
 - a The communication method shall be a multiplex method based on a combination of time division multiplexing and code division multiplexing when emissions of a frequency are transmitted from a base station to a land mobile station, and the communication method shall be duplex operation based on a combination of TDMA and CDMA when emissions of a frequency are transmitted from a land mobile station to a base station.
 - b The radio equipment shall be that in which the transmitters of each land mobile station that performs communication with the base station can be automatically identified.
 - c The radio equipment shall be that in which the call channel of the base station prescribed in 1) is automatically switched to the call channel of another base station.
 - d The radio equipment at the base station shall be capable of connecting to the telecommunication circuit equipment.
 - e The area that is related to the provision of service of the base station prescribed in 1 and where field intensity necessary for carrying out the said service is available shall be capable of being segmentalized to suit the traffic of the said area.
 - f The radio equipment shall have the function to separate the multipath propagation received in temporal dispersion and improve the receive characteristics by synthesizing multipath components.
- 2) Conditions for transmitting equipment
 - a The modulation method shall be 4PSK.
 - b The adjacent channel leakage power shall conform with the values separately announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - c Intermodulation characteristics shall conform with the values separately announced by Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2 The radio equipment in the preceding paragraph shall comply with the conditions given below in addition to the conditions prescribed in the same paragraph.

Radio equipment	Leakage power when the carrier is not transmitted at the antenna terminal in the transmission frequency band
Equipment with a spread code speed of 3.84 megachips/s	A value no greater than -77 dB (with 1 mW regarded as 0 dB) in any 3.84 MHz band
Equipment with a spread code speed of 1.28 megachips/s	A value no greater than -80 dB (with 1 mW regarded as 0 dB) in any 1.28 MHz band

- 3 The radio equipment at the land mobile station in paragraph 1 shall comply with the conditions below in addition to the conditions prescribed in the same paragraph.

- 1) The radio equipment shall have an automatic control function to minimize the antenna power by the control information from the base station specified in paragraph 1.
- 2) The radio equipment shall have an automatic control function to minimize the antenna power by measuring the received power of emissions from the base station stated in paragraph 1.
- 3) The leakage power when the carrier is not transmitted shall be as given below at the antenna terminal of a land mobile station in the transmission frequency band.
 - a For radio equipment with a spread code speed of 3.84 megachips/s, -63 dB (with 1 mW regarded as 0 dB) or lower within an arbitrary 3.84 MHz width
 - b For the radio equipment with a spread code speed of 1.28 megachips/s, -63 dB (with 1 mW regarded as 0 dB) or lower in any 1.28 MHz width.
- 4) The absolute gain of the antenna shall be 3 dB or lower.

Section 4.5 Radio Equipment of Radio Stations, etc. Performing MCA Land Mobile Communication

(Radio Equipment of Radio Stations, etc. Performing MCA Land Mobile Communication)

Article 49.7. The radio equipment that transmits emissions of a frequency in a range of higher than 850 MHz to 860 MHz, or higher than 905 MHz to 915 MHz at an MCA control station that performs MCA land mobile communication, and the radio equipment which transmits emissions of a frequency in a range of higher than 850 MHz to 860 MHz at a radio station that performs communication, etc. for testing MCA land mobile communication equipment (which refers to a radio station that performs communication for testing or adjusting the radio equipment of MCA control stations performing MCA land mobile communication; this also applies hereafter) (limited to a radio station that shares a transmitter with an MCA control station), or the radio equipment which transmits emissions of a frequency in a range of higher than 905 MHz to 915 MHz at a land mobile station that performs MCA land mobile communication, directive station, or radio station that performs communication, etc. for testing MCA land mobile communication equipment (except a radio station that shares a transmitter with an MCA control station) shall comply with the conditions in the items below. However, this shall not apply to radio equipment when the Minister of Public Management, Home Affairs, Posts and Telecommunications deems it difficult or irrational for the radio equipment to comply with the conditions in the items below, and the radio equipment complies with the technical conditions announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

- 1) Conditions for the transmitter
 - a Transmitter of an MCA control station or radio station that performs communication, etc. for testing MCA land mobile communication equipment (limited to the radio station which shares the transmitter with an MCA control station)
 - (1) The modulation method shall be frequency modulation.
 - (2) The modulating frequency shall be within 3,000 Hz.
 - (3) The frequency shift shall be within ± 5 kHz of the frequency of the unmodulated carrier.

- (4) The transmitter shall be equipped with an automatic controller for preventing the frequency shift from exceeding the value prescribed in (3). (This shall not apply to a transmitter that transmits digital signals only.)
 - (5) A low-pass filter (limited to that for which the ratio of the attenuation at each frequency between 3 kHz and 15 kHz to that at 1 kHz is greater than or equal to the value determined by the expression below) shall be provided between the automatic controller stated in (4) and the modulator. (This shall not apply to a transmitter that transmits digital signals only.)
 $60\log_{10}(f/3)$ dB ($80\log_{10}(f/3)$ dB when emissions with a frequency shift within ± 2.5 kHz are used)
 f represents each frequency (in kHz) between 3 kHz and 15 kHz.
 - (6) When an input voltage 10 dB higher than the input voltage required for modulation at 60% of the maximum frequency shift by a frequency of 1,250 Hz is applied, the adjacent channel leakage power shall be as follows:
 - (a) When the frequency shift is within ± 2.5 kHz, the power radiated into the ± 4.25 kHz band of the frequency 12.5 kHz distant from the carrier frequency shall be lower than the carrier power by 60 dB or more.
 - (b) When the frequency shift is within ± 2.5 kHz, the power radiated into the ± 8 kHz band of the frequency 25 kHz distant from the carrier frequency shall be lower than the carrier power by 65 dB or more.
- b Transmitter of a land mobile station, directive station, or radio station that performs communication, etc. for testing MCA land mobile communication equipment (except the radio station which shares the transmitter with an MCA control station)
- (1) The transmitter shall comply with the conditions in (1) through (6) above.
 - (2) The oscillation method shall be the frequency synthesizer method which uses crystal oscillation to control the oscillation frequency.
 - (3) As the frequency of emissions to be transmitted, a frequency 55 MHz higher than the frequency of received emissions shall be selected automatically.
 - (4) A transmitter which can switch the antenna power by connecting a power amplifier shall identify the power amplifier and start operation when the power amplifier is connected, according to the conditions announced separately (*2).
- 2) The radio equipment shall be equipped with a controller that complies with the conditions below.
- a Controller of an MCA control station or radio station that performs communication, etc. for testing MCA land mobile communication equipment (limited to the radio station which shares the transmitter with an MCA control station)
- (1) The control signal (including a clearing signal; this also applies hereafter in this Article) shall be as follows:
 - (a) The coding type shall be the NRZ code.
 - (b) The signal transmission rate shall be 1,200 bits/s (with a tolerance of 100/1,000,000).
 - (c) The control signal shall be modulated using the MSK method. The mark frequency shall be 1,200 Hz and the space frequency shall be 1,800 Hz

- (with a tolerance of 100/1,000,000 for each).
- (d) The signal level shall be such that the frequency shift is held within ± 5 kHz.
 - (2) The controller shall be equipped with a storage device which complies with the conditions announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (3) The transmission method used for the control signal for contact setting shall be time slot random access.
 - (4) The speech connection method shall be the delay system.
 - (5) When the relay of communication for speech is stopped after a frequency of emissions used for the speech is specified, a clearing signal shall be automatically transmitted by emissions of the specified frequency.
 - (6) Within 3 seconds of speech after the start of transmission of the control signal specifying the frequency of emissions used for speech and speech time (180 seconds maximum), a clearing signal shall be automatically transmitted by emissions of the specified frequency.
- b Controller of a land mobile station, directive station, or radio station that performs communication, etc. for testing MCA land mobile communication equipment (except the radio station which shares the controller with an MCA control station)
- (1) The controller shall comply with the conditions in a (3) above.
 - (2) The control signal shall be as follows:
 - (a) The control signal shall comply with the conditions in a (1) (a) and (d) above.
 - (b) The signal transmission rate shall be 1,200 bits/s (with a tolerance of 200/1,000,000).
 - (c) The control signal shall be modulated using the MSK method. The mark frequency shall be 1,200 Hz and the space frequency shall be 1,800 Hz (with a tolerance of 200/1,000,000 for each).
 - (3) When a receiver input voltage higher than or equal to an arbitrary value between 0.32 mV and 1 mV is applied, the antenna power shall automatically decrease to 1 W or less. (This shall apply only to the controller of a land mobile station which transmits emissions of a frequency in a range of higher than 905 MHz to 915 MHz.)
 - (4) As the frequency of emissions to be used, a frequency specified with the control signal prescribed in a (1) shall be selected automatically.
 - (5) Within a specified speech time after the reception of the control signal specifying the frequency of emissions to be used for speech and the speech time, the radiation of emissions of the specified frequency shall be automatically stopped, and the frequency of emissions to be received shall automatically switch to the frequency of emissions used to transmit the control signal prescribed in a (1). (This shall apply only to the controller of a land mobile station and directive station.)

- (6) When the receiver input voltage of the emissions used for speech is not higher than an arbitrary set value, or when a clearing signal is received, the radiation of emissions shall be automatically stopped, and the frequency of emissions to be received shall automatically switch to the frequency of emissions used to transmit the control signal prescribed in a (1). (This shall apply only to the controller of a land mobile station and directive station.)
- (7) When emissions are radiated continuously because of a failure in the radio equipment, the radiation shall be automatically stopped before the radiation continues for 360 seconds. (This shall apply only to the controller of a land mobile station and directive station.)
- (8) The controller shall be equipped with a storage device which complies with the conditions announced separately (*3) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcements: *1 in No. 123 in 1993, *2 in No. 590 in 1994, and *3 in No. 124 in 1993)

Section 4.6 Radio Equipment of Radio Stations, etc. Performing Digital MCA Land Mobile Communication

(Radio Equipment of Radio Stations, etc. Performing Digital MCA Land Mobile Communication)

Article 49.7.2. The radio equipment which transmits emissions of a frequency in a range of higher than 1,453 MHz to 1,477 MHz or higher than 1,501 MHz to 1,525 MHz at a digital MCA control station that performs digital MCA land mobile communication, the radio equipment which transmits emissions of a frequency in a range of higher than 1,501 MHz to 1,525 MHz at a radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (which refers to a radio station that performs communication for testing or adjusting the radio equipment of digital MCA control stations; this also applies hereafter) (limited to a radio station which shares a transmitter with a digital MCA control station), or radio equipment which transmits emissions of a frequency in a range of higher than 1,453 MHz to 1,477 MHz at a land mobile station that performs digital MCA land mobile communication, digital directive station, or radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (except the radio station which shares a transmitter with a digital MCA control station) shall comply with the conditions in the items below:

- 1) Conditions for the transmitter
 - a The communication method shall be time division multiplexing for transmission from a digital MCA control station to a land mobile station or digital directive station, or shall be time division multiple access for transmission from a land mobile station or digital directive station to a digital MCA control station. However, the number of channels multiplexed in time division multiplexing and the number of channels per carrier in time division multiple access shall be as announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and

Telecommunications.

- b The modulation method shall be multi-subcarrier 16QAM (where the number of subcarriers is 4). However, the modulation method that performs communication for data transfer shall be multi-subcarrier 4PSK or multi-subcarrier 64QAM (where the number of subcarriers is 4).
 - c In modulation, a 50% roll-off band limitation shall be imposed on the transmission side. In this case, the roll-off rate shall be 0.2.
 - d The adjacent channel leakage power shall be such that, in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the ± 9 kHz band of the frequency 25 kHz distant from the carrier frequency is lower than the carrier power by 45 dB or more.
 - e The leakage power when the carrier is not transmitted during communication shall be lower than the mean power when the carrier is transmitted by 60 dB or more, or shall be 2.5 μ W or less.
 - f The modulation signal shall consist of pulses, and its transmission rate shall be 64,000 bits/s for the modulation signal using multi-subcarrier 16QAM, 32,000 bits/s for the modulation signal using multi-subcarrier 4PSK, and 96,000 bits/s for the modulation signal using multi-subcarrier 64QAM (with a tolerance of 5/1,000,000). However, the transmission rate of a signal which consists of pulses converted from, for example, voice and to which another signal for correcting an error in the said signal is added shall be as announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - g As the frequency of emissions to be transmitted by a land mobile station, digital directive station, or radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (except the radio station which shares the transmitter with a digital MCA control station), a frequency 48 MHz lower than the frequency of received emissions shall be selected automatically.
 - h A transmitter which can switch the antenna power by connecting a power amplifier shall identify the power amplifier and start operation when the power amplifier is connected, according to the conditions announced separately (*2).
- 2) The radio equipment shall be equipped with a controller which complies with the conditions below.
- a Controller of a digital MCA control station or radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (limited to the radio station which shares the transmitter with a digital MCA control station)
 - (1) The controller shall be equipped with a storage device which complies with the conditions announced separately (*3) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (2) The transmission method used for the control signal shall be time slot random access.

- (3) The speech connection method shall be the delay system.
 - (4) When the relay of communication for speech is stopped after a frequency of emissions used for the speech is specified, a clearing signal shall be automatically transmitted by emissions of the specified frequency.
 - (5) Within 3 seconds of speech after the start of transmission of the control signal specifying the frequency of emissions used for speech and speech time (300 seconds maximum), a clearing signal shall be automatically transmitted by emissions of the specified frequency.
- b Controller of a land mobile station, digital directive station, or radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (except the radio station which shares the transmitter with a digital MCA control station)
- (1) The controller shall comply with the conditions in a (2) above.
 - (2) The controller shall have an automatic control function to minimize the antenna power when a receiver input voltage equal to or greater than the value announced separately (*4) by the Minister of Public Management, Home Affairs, Posts and Telecommunications is applied.
 - (3) As the frequency of emissions to be used, a frequency specified with the control signal shall be selected automatically.
 - (4) Within a specified speech time after the reception of the control signal specifying the frequency of emissions used for speech and the speech time, the radiation of emissions of the specified frequency shall be automatically stopped, and the frequency of emissions to be received shall automatically switch to the frequency of emissions used to transmit the control signal. (This shall apply only to the controller of a land mobile station and digital directive station.)
 - (5) When a deterioration in the receive signal of emissions used for speech is detected, or if a clearing signal is received, the radiation of emissions shall be automatically stopped, and the frequency of emissions to be received shall automatically switch to the frequency of emissions used to transmit the control signal. (This shall apply only to the controller of a land mobile station and digital directive station.)
 - (6) When emissions are radiated continuously because of a failure in the radio equipment, the radiation shall be automatically stopped before the radiation continues for 600 seconds. (This shall apply only to the controller of a land mobile station and digital directive station.)
 - (7) The controller shall be equipped with a storage device which complies with the conditions announced separately (*4) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcements: *1 in No. 125 in 1993, *2 in No. 592 in 1994, *3 in No. 126 in 1993, and *4 in No. 127 in 1993)

Article 49.7.3. The radio equipment which transmits emissions of a frequency in a range of higher than 836 MHz to 838 MHz, higher than 850 MHz to 860 MHz, higher than 891 MHz to 893 MHz, or 905 MHz to 915 MHz at a digital MCA control station that performs digital MCA land mobile communication, the radio equipment which transmits emissions of a frequency in a range of higher than 836 MHz to 838 MHz, higher than 850 MHz to 860 MHz, or higher than 891 MHz to 893 MHz at a radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (limited to the radio station which shares the transmitter with a digital MCA control station), or the radio equipment which transmits emissions of a frequency in a range of higher than 891 MHz to 893 MHz or higher than 905 MHz to 915 MHz at a land mobile station that performs digital MCA land mobile communication, a digital directive station, or a radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (except the radio station which shares the transmitter with a digital MCA control station) shall comply with the conditions in the items below:

1) Conditions for the transmitter

- a The communication method shall be time division multiplexing for transmission from a digital MCA control station to a land mobile station or digital directive station, or shall be time division multiple access for transmission from a land mobile station or digital directive station to a digital control station. However, the number of channels multiplexed in time division multiplexing and the number of channels per carrier in time division multiple access shall be as announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- b The modulation method shall be $\pi/4$ shift 4QSK.
- c In modulation, a 50% roll-off band limitation shall be imposed on the transmission side. In this case, the roll-off rate shall be 0.5.
- d The adjacent channel leakage power shall be such that, in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the $\pm R$ (R shall be a value of 1/4 of the transmission rate of the modulation signal) kHz band of the frequency 25 kHz distant from the carrier frequency is lower than the carrier power by 55 dB or more or is 32 μ W or less. However, it shall be lower by 45 dB or more in the case of radio stations of 1 W or less.
- e The leakage power when the carrier is not transmitted during communication shall be -50 dB or less (with 1 mW regarded as 0 dB) within the occupied bandwidth, or shall be 4 nW or less outside of the occupied bandwidth.
- f The modulation signal shall consist of pulses, and its transmission rate shall be 32,000 bits/s or more.
- g As the frequency of emissions to be transmitted by a land mobile station, digital directive station, or radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (except the radio station which shares the transmitter with a digital MCA control station), a frequency that is 55 MHz higher than the frequency of received emissions shall be selected automatically.

- 2) The radio equipment shall be equipped with a controller which complies with the conditions below.
 - a Controller of a digital MCA control station and a radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (limited to the radio station which shares the transmitter with a digital MCA control station)
 - (1) The controller shall be equipped with a storage device which complies with the conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (2) The communication connection method shall be the waiting system.
 - (3) When the relay of communication for speech is stopped after a frequency of emissions used for the speech is specified, a clearing signal shall be automatically transmitted by emissions of the specified frequency.
 - (4) Within 3 seconds of communication after the start of transmission of the control signal specifying the frequency of emissions used for communication and communication time, a clearing signal shall be automatically transmitted by emissions of the specified frequency.
 - b Controller of a land mobile station, digital directive station, or radio station that performs communication, etc. for testing digital MCA land mobile communication equipment (except the radio station which shares the transmitter with a digital MCA control station)
 - (1) The controller shall be equipped with a storage device which complies with the conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (2) The controller shall have an automatic control function to minimize the antenna power.
 - (3) As the frequency of emissions to be used, a frequency specified with the control signal be selected automatically.
 - (4) Within a specified speech time after the reception of the control signal specifying the frequency of emissions used for communication and the communication time, the radiation of emissions of the specified frequency shall be automatically stopped, and the frequency of emissions to be received shall automatically switch to the frequency of emissions used to transmit the control signal. (This shall apply only to the controller of a land mobile station and digital directive station.)
 - (5) When deterioration in the receive signal of emissions used for speech is detected, or if a clearing signal is received, the radiation of emissions shall be automatically stopped, and the frequency of emissions to be received shall automatically switch to the frequency of emissions used to transmit the control signal. (This shall apply only to the controller of a land mobile station and digital directive station.)
 - (6) The controller shall have a function to automatically stop the radiation of

emissions when emissions are radiated continuously because of a failure in the radio equipment.

Section 4.7 Radio Equipment of Cordless Telephone Radio Stations

(Radio Equipment of Cordless Telephone Radio Stations)

Article 49.8. The radio equipment of a cordless telephone radio station shall comply with the conditions in the items below:

- 1) General conditions
 - a The communication method shall be duplex operation.
 - b Communication within the voice band shall be possible.
 - c The radio equipment of a cordless telephone base unit shall be capable of being connected to telecommunication equipment (telephone line only) directly or via a wired contact line.
 - d The radio equipment of a cordless telephone radio station shall be housed in a single cabinet, and the cabinet shall not be opened easily. However, this shall not apply to power supply equipment, transmitters, receivers, and so forth announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - e The frequency of emissions to be used shall be selected as announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - f The radio equipment of a cordless telephone radio station shall be equipped with a carrier sensing device (which refers to a device used to prevent interference; this also applies hereafter) which complies with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - g Only when the call name of a base unit is received, switching to a speech channel shall be performed.
 - h The radiation of the emissions in a control channel shall comply with the conditions below. However, this shall not apply to radio equipment when it is deemed difficult or irrational for the radio equipment to comply with the conditions below, and the radio equipment complies with the technical conditions announced separately (*).
 - (1) When emissions of a frequency of 254.425 MHz or 254.9625 MHz are used:
Within 1 second
 - (2) When emissions of a frequency of 380.775 MHz or 381.3125 MHz are used:
Within 4 seconds
 - i When emissions for transmitting a control signal are radiated continuously because of a failure in the radio equipment, the radiation shall be automatically stopped before the radiation continues for 60 seconds.

- j When operation for stopping communications is performed or emissions of speech channels are not received, the radiation of emissions shall be stopped automatically.
- 2) Conditions for the transmitter
- a The modulating frequency shall be within 3,000 Hz.
 - b The adjacent channel leakage power shall be such that when an input voltage 10 dB higher than the input voltage required for modulation of a ± 1.5 kHz frequency shift by a frequency of 1,250 Hz is applied, the power radiated into the ± 4.25 kHz band of a frequency 12.5 kHz distant from the carrier frequency is lower than the carrier power by 60 dB or more.
 - c The oscillation method shall be the frequency synthesizer method which uses crystal oscillation to control the oscillation frequency.

(Announcement: * in No. 764 in 1987)

Section 4.8 Radio Equipment of Digital Cordless Telephone Radio Stations

(Radio Equipment of Digital Cordless Telephone Radio Stations)

Article 49.8.2. The radio equipment of a digital cordless telephone radio station shall comply with the conditions in the items below:

- 1) General conditions
 - a For transmission from a digital cordless telephone base unit to a digital cordless telephone handset (which refers to a digital cordless telephone radio station other than digital cordless telephone base units (except those which have a function for relaying radio communication); this also applies hereafter in this Article and the next Article), for transmission from a digital cordless telephone base unit to a digital cordless telephone repeater (which refers to a repeater that relays communications between a digital cordless telephone base unit and a digital cordless telephone handset or a personal handy phone system land mobile station, among digital cordless telephone radio stations; this also applies hereunder in this Article and the next Article), and for transmission from a repeater of a digital cordless telephone to a digital cordless telephone handset or a personal handy phone system land mobile station, the communication method shall be time division duplex operation based on time division multiplexing. For transmission from a digital cordless telephone handset to a digital cordless telephone base unit or a digital cordless telephone repeater and for transmission from a digital cordless telephone repeater to a digital cordless telephone base unit, the communication method shall be time division duplex operation based on time division multiple access. However, the number of channels multiplexed in time division multiplexing, the number of channels per carrier in time division multiple access, and the frame configuration of a time division duplex operation method shall be as announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

- b The radio equipment of a digital cordless telephone base unit shall be capable of being connected to telecommunication circuit equipment directly or via a wired contact line. However, this shall not apply to the radio equipment of a digital cordless telephone base unit announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - c The radio equipment of a digital cordless telephone radio station shall be housed in a single cabinet, and the cabinet shall not be opened easily. However, this shall not apply to power supply equipment, transmitters, receivers, and so forth announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - d The radio equipment of a digital cordless telephone radio station shall be equipped with a carrier sensing device that complies with the technical conditions announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - e Only when the call name of a base unit is received, switching to a speech channel shall be performed (except when the communication described in paragraph 2 item 2) is performed).
 - f The radiation of emissions in a control channel shall comply with the technical conditions announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications (except when the communication described in paragraph 2 item 2) is performed).
 - g When emissions are radiated continuously because of a failure in the radio equipment, the radiation shall be automatically stopped before the radiation continues for 60 seconds.
 - h When operation for stopping communications is performed or emissions of speech channels are not received, the radiation of emissions shall be stopped automatically.
- 2) Conditions for the transmitter
- a The modulation method shall be 2PSK, 4PSK (including $\pi/4$ shift 4PSK; this also applies to the next article), 8PSK, 12QAM, 16QAM, 24QAM, 32QAM, 64QAM, or 256QAM.
 - b In modulation, a 50% roll-off band limitation shall be imposed on the transmission side. In this case, the roll-off rate shall be 0.5.
 - c The adjacent channel leakage power shall be such that, in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the ± 96 kHz band of the frequency 600 kHz and 900 kHz distant from the carrier frequency is 800 nW or less and 250 nW or less, respectively.
 - d During communication, the leakage power shall be 80 nW or less when the carrier is not transmitted.
 - e The modulation signal shall consist of pulses, and its transmission rate shall be as announced separately (*1) by the Minister of Public Management, Home Affairs,

Posts and Telecommunications.

- f The antenna power shall be 10 mW or lower in terms of the mean power per channel.
 - g The absolute gain of the antenna shall be 4 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 10 mW to the antenna with its absolute gain being 4 dB, the shortage shall be compensated for by the gain of the antenna.
- 2 The radio equipment of a digital cordless telephone handset shall comply with the conditions in the items below in addition to the conditions prescribed in the preceding paragraph.
- 1) The frequency of emissions to be transmitted shall be automatically selected by receiving the emissions from a digital cordless telephone base unit (except when the communication prescribed in the item below is performed).
 - 2) Radio communication which is performed between two or more digital cordless telephone handsets (limited to the handsets which memorize the call name of the same digital cordless telephone base unit) or which is performed with a land mobile station of a personal handy phone system memorizing the call name of the same digital cordless telephone base unit, and for which a digital cordless telephone base unit and a base station of a personal handy phone system are bypassed, shall comply with the conditions below, except for the radio equipment announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (a) Emissions of a frequency of 1,895.15 MHz or an integral multiple of 300 kHz added to 1,895.15 MHz in a range from 1,895.15 MHz to 1,897.85 MHz shall be used.
 - (b) The frequency of emissions to be transmitted shall be automatically selected by receiving the emissions from the first digital cordless telephone handset that initiates transmission.
 - (c) The speech time shall not exceed 30 minutes.
 - (d) After a speech finishes, the radiation of emissions shall be stopped for 1/90 or longer (at least two seconds) of the time required for the speech.
 - 3) The maximum number of simultaneously usable channels shall be as announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcements: *1 in No. 612 in 1998 and *2 in No. 11 in 1995)

Section 4.9 Radio Equipment of Radio Stations of a Personal Handy Phone System

(Radio Equipment of Radio Stations of a Personal Handy Phone System)

Article 49.8.3. The radio equipment of land mobile stations of a personal handy phone system, base stations of a personal handy phone system, radio stations that relay communication between base stations and land mobile stations, or radio stations that perform communication, etc. for testing personal handy phone system communication equipment

(which refer to radio stations that relay communication between a base station of a personal handy phone system and a land mobile station, and radio stations that perform communication for testing or adjusting the radio equipment of the base station of a personal handy phone system; this also applies hereafter) shall comply with the conditions in the items below in addition to the conditions stipulated in paragraph 1 item 1), d, g, and h of the preceding Article as well as in paragraph 2 item 2, d and e of the same Article.

- 1) For transmission from a digital cordless telephone base unit or a base station of a personal handy phone system, from a base station of a personal handy phone system to a radio station that relays communication between a base station of a personal handy phone system and a land mobile station, and from a radio station that relays communication between a base station of a personal handy phone system and a land mobile station to a land mobile station of a personal handy phone system, the communication method shall be time division duplex operation based on time division multiplexing. For transmission from a land mobile station of a personal handy phone system to a digital cordless telephone base unit, a digital cordless telephone repeater, a base station of a personal handy phone system or a radio station that relays communication between a base station of a personal handy phone system and a land mobile station, and from a radio station that relays communication between a base station of a personal handy phone system and a land mobile station to a base station of a personal handy phone system, the communication method shall be time division duplex operation based on time division multiplex access. However, the number of channels multiplexed in time division multiplexing, the number of channels per carrier in time division multiple access, and the frame configuration of a time division duplex operation method shall be as announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - 2) The individual land mobile stations of a personal handy phone system which communicate with a base station of the personal handy phone system shall be identified automatically.
 - 3) The modulation method shall be 2PSK, 4PSK, 8PSK, 12QAM, 16QAM, 24QAM, 32QAM, 64QAM or 256QAM.
 - 4) In modulation, a 50% roll-off band limitation shall be imposed on the transmission side. In this case, the roll-off rate shall be 0.5. However, the roll-off rate when emissions of a frequency with the occupied frequency bandwidth of higher than 288 kHz are transmitted shall be 0.5 or 0.38.
 - 5) In the case of modulation of adjacent channel leakage power using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the ± 96 kHz band of the frequency 600 kHz or 900 kHz distant from the carrier frequency when emissions of a frequency with the occupied frequency bandwidth of 288 kHz or lower are transmitted shall be 800 nW or lower or 250 nW or lower respectively, and the power radiated into the ± 96 kHz band of the frequency 900 kHz or 1,200 kHz distant from the carrier frequency when emissions of a frequency with the occupied frequency bandwidth of higher than 288 kHz are transmitted shall be 800 nW or lower or 250 nW or lower respectively.
 - 6) The radio equipment of radio stations of a personal handy phone system shall be capable of using the frequency announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications as a control channel.
- 2 The radio equipment of a land mobile station of a personal handy phone system shall comply

with the conditions below in addition to the conditions prescribed in paragraph 1 item 1) c, item 2) f and g, and paragraph 2 item 3) of the same Article and the preceding paragraph.

- 1) In communication with a digital cordless telephone base unit, switching to a speech channel shall be performed only when the call name of the digital cordless telephone base unit is received.
 - 2) The frequency of emissions to be transmitted shall be automatically selected by receiving the emissions from a digital cordless telephone base unit or a base station of a personal handy phone system (except when the communication prescribed in the item below is performed).
 - 3) The conditions in paragraph 2 item 2) (a) through (d) of the preceding Article shall apply mutatis mutandis to radio communication which is performed between two or more land mobile stations of a personal handy phone system (limited to the land mobile stations which memorize the call name of the same digital cordless telephone base unit) or which is performed with a digital cordless telephone handset memorizing the call name of the same digital cordless telephone base unit, and for which a digital cordless telephone base unit and a base station of a personal handy phone system are bypassed, except for the radio equipment announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3) The radio equipment of a base station of a personal handy phone system or a radio station that performs communication, etc. for testing personal handy phone system communication equipment shall comply with the conditions in the items below in addition to the conditions prescribed in paragraph 1.
- 1) The radio equipment of a base station shall be capable of being connected to telecommunication circuit equipment.
 - 2) The antenna power shall be as follows in terms of the mean power per channel.
 - a) When emissions of a frequency from 1,884.65 MHz to 1,893.35 MHz, from 1,908.35 MHz to 1,915.55 MHz and from 1,918.55 MHz to 1,919.45 MHz are transmitted, the antenna power shall be 0.5 W or less.
 - b) When emissions of a frequency from 1,906.25 MHz to 1,908.05 MHz and from 1,915.85 MHz to 1,918.25 MHz are transmitted, the antenna power shall be 2 W or less (when being used as a speech channel, the antenna power shall be 0.5 W or less).
 - c) When emissions of a frequency from 1,893.65 MHz to 1,905.95 MHz are transmitted, the antenna power shall be 0.02 W or less.
 - 3) The absolute gain of the antenna shall be as follows:
 - a) When emissions of a frequency from 1,908.35 MHz to 1,915.55 MHz or from 1,918.55 MHz to 1,919.45 MHz are used, the absolute gain of the antenna shall be 10 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.5 W to the antenna with its absolute gain being 10 dB, the shortage shall be compensated for by the gain of the antenna.
 - b) When emissions of a frequency from 1,906.25 MHz to 1,908.05 MHz and from 1,915.85 MHz to 1,918.25 MHz are used, the absolute gain of the antenna shall be 15 dB or less (10 dB or less when used as a call channel). However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 2 W (0.5 W when using as a call channel) to the antenna with its

absolute gain being 15 dB (10 dB or less when using as a call channel), the shortage shall be compensated for by the gain of the antenna.

- c When emissions of a frequency from 1,893.65 to 1,905.95 MHz (excluding 1,898.45 MHz and 1,900.25 MHz) are used, the absolute gain of the antenna shall be 10 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.02 W to the antenna with its absolute gain being 10 dB, the shortage shall be compensated for by the gain of the antenna.
 - d Notwithstanding the provisions of a and c, when an adaptive array antenna (an antenna that increases the antenna gain in the direction of the other party of communication, and that decreases the antenna gain in the direction of other radio stations using the same channel) is used, the absolute gain of the antenna shall be 10 dB or less. However, when emissions of a frequency from 1,908.35 MHz to 1,915.55 MHz or from 1,918.55 MHz to 1,919.45 MHz are used, and when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.5 W to the antenna with its absolute gain being 16 dB, the shortage shall be compensated for by the gain of the antenna. Also, when emissions of a frequency from 1,893.65 to 1,905.95 MHz (excluding 1,898.45 MHz and 1,900.25 MHz) are used, and when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.02 W to the antenna with its absolute gain being 16 dB, the shortage shall be compensated for by the gain of the antenna.
 - e When emissions of a frequency from 1,884.65 MHz to 1,893.35 MHz are used, the absolute gain of the antenna shall be 21 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.5 W to the antenna with its absolute gain being 21 dB, the shortage shall be compensated for by the gain of the antenna.
- 4 The radio equipment of a radio station that relays communication between a base station of a personal handy phone system and a land mobile station shall comply with the items below in addition to the conditions prescribed in paragraph 1.
- 1) The radio equipment shall be capable of being connected to a radio station that performs communication, etc. for testing a base station of a personal handy phone system, a land mobile station and radio equipment of a personal handy phone system.
 - 2) The antenna power shall be as follows in terms of the mean power per channel.
 - a When emissions of a frequency from 1,893.65 MHz to 1,905.95 MHz (excluding a frequency of 1,898.45 MHz and 1,900.25 MHz) are used, the antenna power shall be 0.01 W or less.
 - b When emissions of a frequency from 1,884.65 MHz to 1,893.35 MHz and from 1,906.25 MHz to 1,919.45 MHz are used to communicate with a base station of a personal handy phone system, the antenna power shall be 0.01 W or less.
 - c When emissions of a frequency from 1,884.65 MHz to 1,893.35 MHz and from 1,906.25 MHz to 1,919.45 MHz are used to communicate with a land mobile station of a personal handy phone system, the antenna power shall be 0.02 W or less.
 - 3) The absolute gain of the antenna shall be as follows.
 - a When emissions of a frequency from 1,893.65 MHz to 1,919.45 MHz (excluding

1,898.45 MHz and 1,900.25 MHz) are used, the absolute gain of the antenna shall be 4 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.01 W to the antenna with its absolute gain being 4 dB, the shortage shall be compensated for by the gain of the antenna.

- b When emissions of a frequency from 1,884.65 MHz to 1,893.35 MHz and from 1,906.25 MHz to 1,919.45 MHz are used to communicate with a base station of a personal handy phone system, the absolute gain of the antenna shall be 4 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.01 W to the antenna with its absolute gain being 4 dB, the shortage shall be compensated for by the gain of the antenna.
- c When emissions of a frequency from 1,884.65 MHz to 1,893.35 MHz are used to communicate with a land mobile station of a personal handy phone system, the absolute gain of the antenna shall be 21 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.02 W to the antenna with its absolute gain being 21 dB, the shortage shall be compensated for by the gain of the antenna.
- d When emissions of a frequency from 1,906.25 MHz to 1,919.45 MHz are used to communicate with a land mobile station of a personal handy phone system, the absolute gain of the antenna shall be 10 dB or less. However, when the effective radiated power is equal to or less than the value obtained by applying an antenna power of 0.02 W to the antenna with its absolute gain being 10 dB, the shortage shall be compensated for by the gain of the antenna.

(Announcement: * in No. 612 in 1998)

Section 4.10 Radio Equipment of Premises Radio Stations

(Radio Equipment of Premises Radio Stations)

Article 49.9. The radio equipment of a premises radio station shall comply with the conditions in the items below, according to the classifications therein.

- 1) Radio equipment of a premises radio station that uses emissions of a frequency in a range of 952 MHz to 954 MHz
 - a The cabinet of the radio equipment shall not be opened easily.
 - b The absolute gain of the transmitting antenna shall be 6 dB or less. However, when the equivalent isotropically radiated power is equal to or less than the value obtained by applying an antenna power of 1 W to the antenna with its absolute gain being 6 dB, the shortage shall be compensated for by the gain of the antenna.
 - c The radio equipment shall be capable of receiving emissions of a frequency radiated from a device for responding (which refers to a device that operates with emissions of a frequency radiated from transmitting equipment and that radiates all or part of the power it receives as emissions in the same frequency band; the same also applies

in item 3) d as well as Article 49.14 item 3) and item 4)).

- 2) Radio equipment of a premises radio station which uses emissions of a frequency in the 1,200 MHz band
 - a The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment, controllers, and so forth announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - b The oscillation method of the transmitter shall be the crystal oscillation method or the synthesizer method that uses crystal oscillation to control the oscillation frequency.
 - c The absolute gain of the transmitting antenna shall be 2.14 dB or less. However, when the equivalent isotropically radiated power is equal to or less than the value obtained by applying an antenna power of 0.1 W to the antenna with its absolute gain being 2.14 dB, the shortage shall be compensated for by the gain of the antenna.
 - d The radio equipment shall not be equipped with a feeder or grounding device. However, this shall not apply to the radio equipment announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - e The radio equipment shall be equipped with a transmission time restriction device and carrier sensing device that comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - f The adjacent channel leakage power of the transmitter shall be as follows:
 - (1) The transmitter with a channel interval of 25 kHz
In the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the ± 8 kHz band of the frequency 25 kHz distant from the carrier frequency shall be lower than the carrier power by 60 dB or more.
 - (2) The transmitter with a channel interval of 50 kHz
In the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the ± 16 kHz band of the frequency 50 kHz distant from the carrier frequency shall be lower than the carrier power by 60 dB or more.
- 3) Radio equipment of a premises radio station which uses emissions of a frequency in the 2,450 MHz band
 - a The cabinet of the radio equipment shall not be opened easily.
 - b The absolute gain of the transmitting antenna shall be 20 dB or less.
 - c For radio equipment using a frequency hopping system, the frequency retention time (which refers to the time period during which emissions are continuously radiated in a specific frequency; this definition applies to this item, Article 49.14

item 3, and Article 49.20 item 1) in frequency hopping shall be 0.4 second or less, and the total frequency retention time in any frequency for 2 seconds shall be 0.4 second or less.

d The radio equipment shall be capable of receiving emissions of a frequency radiated from a device for responding (which refers to a device that operates with emissions of a frequency radiated from transmitting equipment and that radiates all or part of the power it receives as emissions in the same frequency band; the same also applies in Article 49.14 item 2) and item 3)).

4) Radio equipment of a premises radio station which uses emissions of a frequency in the 19 GHz band

a The high-frequency section and modulation section (except for the antenna system) shall not be opened easily.

b The communication method shall be one-way communication operation based on time division duplex operation, simplex operation, semi-duplex operation, or duplex operation.

c The modulation method shall be QAM, 4FSK, or 4PSK.

d The modulation signal shall consist of pulses, and its transmission rate shall be 10 megabits/s or more.

e The absolute gain of the antenna shall be 20 dB or less.

f The adjacent channel leakage power of the transmitter shall be such that, in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the ± 8.5 MHz band of the frequency 20 MHz distant from the carrier frequency is lower than the carrier power by 30 dB or more.

(Announcement: * in No. 385 in 1986)

Article 49.10. - Article 49.13. Deleted

Section 4.11 Radio Equipment of Specified Low-Power Radio Stations

(Radio Equipment of Specified Low-Power Radio Stations)

Article 49.14. The radio equipment of a specified low-power radio station shall comply with the conditions in the items below according to the classifications therein.

1) Radio equipment which uses emissions of a frequency in a range of higher than 73.6 MHz to 1,260 MHz (excluding higher than 402 MHz to 405 MHz).

- a The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment, controllers, and so forth announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - b The oscillation method of the transmitter shall be the crystal oscillation method or the synthesizer method which uses crystal oscillation to control the oscillation frequency.
 - c The absolute gain of the transmitting antenna shall be 2.14 dB or less. However, this shall not apply to the transmitting antenna announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - d The radio equipment shall not be equipped with a feeder or grounding device. However, this shall not apply to the radio equipment announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - e The radio equipment shall be equipped with a transmission time restriction device and carrier sensing device which comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications. However, this shall not apply to radio equipment announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications because the Minister of Public Management, Home Affairs, Posts and Telecommunications deems it difficult or irrational for the radio equipment to comply with this condition.
 - f The adjacent channel leakage power of the transmitter shall be such that the power radiated into the ± 4.25 kHz band of the frequency 12.5 kHz distant from the carrier frequency is lower than the carrier power by 40 dB or more. However, this shall not apply to a transmitter when the Minister of Public Management, Home Affairs, Posts and Telecommunications deems it difficult or irrational for the transmitter to comply with this condition, and the transmitter complies with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 2) Radio equipment which uses emissions of a frequency higher than 402 MHz to 405 MHz
- a It shall be contained in a cabinet as stipulated in 1) and shall not be easily opened.
 - b It shall have no feeder or grounding device.
 - c Radio equipment in a human body (radio equipment that is used in the state where it is implanted in a living body or in the state where it is temporarily placed in a living body and which performs communication with a radio control equipment installed outside the body (hereinafter referred to as “Radio control equipment outside a living body” in this item); this also applies hereafter in this item) shall be radio equipment that emits radio waves controlled by the radio control equipment outside a living body; provided, however, that this may not apply to an urgent communication regarding abnormality of the living body or device.
 - d Radio control equipment outside a living body shall be equipped with a carrier sense

that complies with the following technical conditions.

- (1) When receiving from another radio station, etc. an emission equal to or higher than the value of the receiving input power shown in the expression below, the carrier sense shall be the one that generates no emission in the frequency band in which it received the said emission; provided, however, that when receiving in all frequency bands in the range higher than 402 MHz to 405 MHz from another radio station, etc. an emission equal to or higher than the value of the receiving input power shown in the expression below, it can generate emissions in the frequency band where the said receiving input power reaches the lowest value.

$101 \log B - 150 + G$ dB (with 1 mW regarded as 0 dB)

where B is the maximum radiation bandwidth in the communication state (which refers to the bandwidth in which the radio equipment in a living body or the radio control equipment outside the living body radiates and is the larger of either of the upper limit and the lower limit frequency widths (Hz) at which the attenuation from the maximum value of the radiation power during the maximum modulation becomes 20 dB; this also applies hereafter in this item), where G is the absolute gain of the receiving antenna.

- (2) The receiving bandwidth of the carrier sense shall be equal to or higher than the value of the maximum radiation bandwidth.
 - (3) The receiving time of the carrier sense per frequency stipulated in 1) shall be 10 msec or longer and the sweep repetition time of the carrier sense in the frequency higher than 402 MHz but no more than 405 MHz shall be 5 sec or less.
 - (4) The carrier sense can have a function to select an alternative channel upon the first connection of communication in the event that normal communication is disabled due to crossing from another radio station during communication.
 - (5) An alternative channel shall be selected by performing the carrier sense prescribed in (1) to (3) and when transmitting via the alternative channel, carrier sense must be performed once again before transmission. In this case, the receiving input power of the carrier sense shall not be more than 6 dB higher than the receiving input power of the carrier sense upon selecting the alternative channel.
- e When the communication connection time is interrupted for 5 sec or longer, the transmission shall be terminated.
- 3) Radio equipment which uses emissions of a frequency from 2,400 MHz to 2,483.5 MHz and which uses the frequency hopping system
 - a The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.
 - b The absolute gain of the transmitting antenna shall be 6 dB or less. However, when the equivalent isotropically radiated power within a bandwidth of 1 MHz is equal to or less than the value obtained by applying an antenna power which is announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications pursuant to the provisions of Article 6 paragraph 4 item 2) of the Enforcement Regulations to the antenna with its absolute gain being 6 dB, the shortage shall be compensated for by the gain of the transmitting antenna.

- c The frequency retention time in frequency hopping shall be 0.4 second or shorter, and the total sum of the frequency retention time in any frequency for 2 seconds shall be 0.4 second or shorter.
 - d The radio equipment shall be capable of receiving emissions of a frequency radiated from the device for responding.
- 4) Radio equipment which uses emissions of a frequency in a range of higher than 2,425 MHz to 2,475 MHz (except the radio equipment prescribed in the preceding item)
- a The cabinet in which the radio equipment is housed shall not be capable of being opened easily.
 - b The absolute gain of the transmitting antenna shall be 20 dB or less.
 - c The radio equipment shall be capable of receiving emissions of a frequency radiated from the device for responding.
- 5) Radio equipment which uses emissions of a frequency in a range of higher than 10.5 GHz to 10.55 GHz or higher than 24.05 GHz to 24.25 GHz
- a The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to the antenna system.
 - b The radio equipment shall operate satisfactorily under normal temperature or humidity variations or vibrations.
 - c The absolute gain of the transmitting antenna shall be 24 dB or less. However, when the equivalent isotropically radiated power is equal to or less than the value obtained by applying an antenna power of 0.01 W to the antenna with its absolute gain being 24 dB, the shortage shall be compensated for by the gain of the antenna.
 - d The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the provisions prescribed in a to c above.
- 6) Radio equipment which uses emissions of a frequency in a range of higher than 59 GHz to 66 GHz (except radio equipment prescribed in the items below)
- a The transmitter shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily.
 - b The absolute gain of the transmitting antenna shall be 47 dB or less.
- 7) Radio equipment for a radiolocation service that uses emissions of a frequency in a range of higher than 60 GHz to 61 GHz or higher than 76 GHz to 77 GHz
- a The transmitter shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to the antenna system.
 - b The radio equipment shall operate satisfactorily under normal temperature or humidity variations or vibrations.
 - c The radio equipment shall have a function for stopping emission radiation at times other than when measurement is being performed.
 - d The absolute gain of the transmitting antenna shall be 40 dB or less.

(Announcement: * in No. 49 in 1989)

Section 4.12 Radio Equipment of Radio Stations, etc. Performing Airport Radio Telephone Communication

(Radio Equipment of Radio Stations, etc. Performing Airport Radio Telephone Communication)

Article 49.15. The radio equipment that transmits emissions of a frequency in a range of higher than 885 MHz to 887 MHz at a base station that performs airport radio telephone communication or a radio station that performs communication, etc. for testing airport radio telephone communication equipment (which refers to a radio station that performs communication for testing or adjusting the radio equipment at a base station performing airport radio telephone communication or that performs relaying of the communication where airport radio telephone communication between the base station and a land mobile station is disabled; this also applies hereafter) (limited to a radio station that shares a transmitter with a base station performing airport radio telephone communication), or the radio equipment which transmits emissions of a frequency in a range of higher than 830 MHz to 832 MHz at a land mobile station that performs airport radio telephone communication or a radio station that performs communication, etc. for testing airport radio telephone communication equipment (except the radio station which shares a transmitter with a base station performing airport radio telephone communication) shall comply with the conditions in the items below:

- 1) General conditions
 - a The communication method shall be simplex operation.
 - b Communication within the voice band shall be possible.
- 2) Conditions for the transmitter
 - a The modulation method shall be frequency modulation.
 - b The modulating frequency shall be within 3,000 Hz.
 - c The frequency shift shall be within ± 2.5 kHz of the frequency of the unmodulated carrier.
 - d The transmitter shall be equipped with an automatic controller for preventing the frequency shift from exceeding the value prescribed in c. (This shall not apply to a transmitter which transmits the control signal.)
 - e A low-pass filter (limited to that for which the ratio of the attenuation at each frequency between 3 kHz and 15 kHz to that at 1 kHz is greater than or equal to the value determined by the expression below) shall be provided between the automatic controller stated in d and the modulator. (This shall not apply to a transmitter which transmits the control signal.)
 $80\log_{10}(f/3)$ dB
f represents each frequency (in kHz) between 3 kHz and 15 kHz.
 - f The adjacent channel leakage power shall be such that, when an input voltage 10 dB higher than the input voltage required for modulation at 60% of the maximum frequency shift by a frequency of 1,250 Hz is applied, the power radiated into the ± 4.25 kHz band of the frequency 12.5 kHz distant from the carrier frequency is lower than the carrier power by 60 dB or more.

- g The control signal shall comply with the conditions below. However, this shall not apply to a transmitter when the Minister of Public Management, Home Affairs, Posts and Telecommunications deems it difficult or irrational for the transmitter to comply with the conditions below, and the transmitter complies with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (1) The coding type shall be the NRZ code.
 - (2) The signal transmission rate shall be 1,200 bits/s (with a tolerance of 100/1,000,000).
 - (3) The control signal shall be modulated using the MSK method. The mark frequency shall be 1,200 Hz and the space frequency shall be 1,800 Hz (with a tolerance of 100/1,000,000 for each).
- 2 The radio equipment which uses emissions of a frequency in a range of higher than 830 MHz to 887 MHz at a land mobile station that performs airport radio telephone communication shall comply with the conditions in the items below in addition to the conditions prescribed in the preceding paragraph.
 - 1) The frequency of emissions to be used shall be selected automatically by receiving the emissions from a base station performing airport radio telephone communication.
 - 2) During operation, the control signal from a base station performing airport radio telephone communication shall be capable of being received.

(Announcement: * in No. 268 in 1993)

Section 4.12.2 Radio Equipment of Radio Stations, etc. Performing Digital Airport Radio Communication

(Radio Equipment of Radio Stations, etc. Performing Digital Airport Radio Communication)

Article 49.15.2. The radio equipment (limited to radio equipment sharing transmission equipment with a base station performing digital airport radio communication) that transmits emissions of frequencies in a range of higher than 460 MHz to 462 MHz at a base station that performs digital airport radio communication, at a radio station that performs communication for testing or adjusting radio equipment of a base station that performs digital airport radio communication, or at a radio station that relays digital airport radio communication when such communication is disabled between a base station and a land mobile station (hereinafter called “radio stations performing communication, etc. for testing digital airport radio communication equipment) or the radio equipment which transmits emissions of a frequency in a range of higher than 415.5 MHz to 417.5 MHz at radio stations (excluding those sharing transmission equipment with base stations performing digital airport radio communication) performing communication, etc. for the purpose of testing digital airport radio communication shall comply with the conditions in the items below:

- 1) General conditions
 - a The communication method shall be time division multiplexing for transmission from a base station to a land mobile station and shall be time division multiple access for transmission from a land mobile station to a base station. However, the

number of channels multiplexed in time division multiplexing and the number of channels per carrier in time division multiple access shall be 4.

b The channel interval shall be 25 kHz.

2) Conditions for the transmitter

a The modulation method shall be $\pi/4$ shift 4PSK.

b In modulation, a 50% roll-off band limitation shall be imposed on the transmission side. In this case, the roll-off rate shall be 0.5 or lower.

c The adjacent channel leakage power shall be such that in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, the power radiated into the $(\pm) R$ (R shall be $1/4$ of the modulation signal's transmission speed) kHz band of the frequency 25 kHz distant from the carrier frequency is lower than the carrier power by 55 dB or more or shall be $32 \mu W$ or less. In case of radio equipment of 1 watt or less, however, the power shall be lower by 45 dB or more.

d. The leakage power when the carrier is not transmitted during communication shall be $(-)$ 50 dB or less (1 mw shall be regarded as 0 dB) within the exclusive frequency band and shall be 4 nW or lower outside the exclusive frequency band.

e. The modulation signal shall consist of pulses, and its transmission rate shall be 32,000 bits/s or faster.

3) Other conditions

a. For the controller of a base station, the communication connection method shall be the waiting system.

b. Controller of a land mobile station

(1) Only the emissions of frequencies to be automatically selected by the reception of emissions from a base station shall be radiated.

(2) The controller shall have a function to automatically stop the radiation of emissions when emissions are radiated continuously because of a failure in the radio equipment.

2 Notwithstanding the provisions of item 3 b. (1) of the preceding paragraph, radio equipment of land mobile stations that can directly communicate with each other shall automatically select the emissions to radiate by receiving emissions from a base station and shall also select emissions not based on such emissions.

Section 4.13 Radio Equipment of Land Mobile Stations of Specified Radio Microphones

(Radio Equipment of Land Mobile Stations of Specified Radio Microphones)

Article 49.16. The radio equipment of a land mobile station of a specified radio microphone (which refers to a radio microphone that uses emissions of a frequency higher than 779

MHz to 788 MHz and higher than 797 MHz to 806 MHz; this also applies hereafter) shall comply with the conditions in the items below:

- 1) The communication method shall be one-way communication or broadcast communication.
- 2) The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment, transmitters, and so forth announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3) The modulation method shall be frequency modulation.
- 4) The modulating frequency shall be within 15,000 Hz. However, the modulating frequency in a stereo transmission method shall be within 53,000 Hz. This shall not apply to power supply equipment, transmitters, and so forth announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 5) The frequency shift shall be within ± 150 kHz of the frequency of the unmodulated carrier. However, the frequency shift in a stereo transmission method shall be within ± 75 kHz.
- 6) The adjacent channel leakage power of the transmitter shall be as follows:
 - a When the frequency shift is within ± 40 kHz, the power radiated into the ± 55 kHz band of the frequency 250 kHz distant from the carrier frequency shall be lower than the carrier power by 60 dB or more when an input voltage 36 dB higher than the input voltage required for modulation of a ± 5 kHz frequency shift by a frequency of 1,000 Hz is applied.
 - b When the frequency shift exceeds ± 40 kHz but is within ± 150 kHz, the power radiated into the ± 165 kHz band of the frequency 500 kHz distant from the carrier frequency shall be lower than the carrier power by 60 dB or more when an input voltage 36 dB higher than the input voltage required for modulation of a ± 2.4 kHz frequency shift by a frequency of 1,000 Hz is applied.
 - c In the case of the frequency shift in a stereo transmission method, the power radiated into the ± 125 kHz band of the frequency 500 kHz distant from the carrier frequency shall be lower than the carrier power by 60 dB or more when an input voltage 25 dB higher than the input voltage required for modulation of a ± 28.5 kHz frequency shift by a frequency of 1,000 Hz is applied.
- 7) The oscillation method of the transmitter shall be the crystal oscillation method or the synthesizer method which uses crystal oscillation to control the oscillation frequency.
- 8) The absolute gain of the transmitting antenna shall be 2.14 dB or less.
- 9) The radio equipment shall not be equipped with a feeder or grounding device. However, this shall not apply to the cases announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcements: *1 in No. 698 in 1989 and *2 in No. 694 in 1989)

Section 4.14 Radio Equipment of Radio Stations of a Low-Power Security System

(Radio Equipment of Radio Stations of a Low-Power Security System)

Article 49.17. The radio equipment of a radio station of a low-power security system shall comply with the conditions in the items below:

- 1) The communication method shall be one-way communication, simplex operation, or broadcast communication.
- 2) The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment, controllers, and so forth announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3) The oscillation method of the transmitter shall be the crystal oscillation method or the synthesizer method which uses crystal oscillation to control the oscillation frequency.
- 4) The radio equipment shall not be equipped with a feeder or grounding device.
- 5) The radio equipment shall stop the radiation of emissions within 3 seconds after the start of the radiation, and shall perform an additional transmission only after 2 seconds have elapsed.
- 6) The adjacent channel leakage power of the transmitter shall be as follows:
 - a When the occupied bandwidth of emissions to be transmitted is within 4 kHz, the power radiated into the ± 2 kHz band of the frequency 12.5 kHz distant from the carrier frequency shall be lower than the carrier power by 40 dB or more.
 - b When the occupied bandwidth of emissions to be transmitted exceeds 4 kHz but is within 8.5 kHz, the power radiated into the ± 4.25 kHz band of the frequency 12.5 kHz distant from the carrier frequency shall be lower than the carrier power by 40 dB or more.
 - c When the occupied bandwidth of emissions to be transmitted exceeds 8.5 kHz but is within 12 kHz, the power radiated into the ± 6 kHz band of the frequency 25 kHz distant from the carrier frequency shall be lower than the carrier power by 40 dB or more.
 - d When the occupied bandwidth of emissions to be transmitted exceeds 12 kHz but is within 16 kHz, the power radiated into the ± 8 kHz band of the frequency 25 kHz distant from the carrier frequency shall be lower than the carrier power by 40 dB or more.

(Announcement: *in No. 323 in 1992)

Section 4.15 Radio Equipment of Radio Stations Performing Portable Mobile-Satellite Data Communication

(Radio Equipment of Radio Stations Performing Portable Mobile-Satellite Data Communication)

Article 49.18. The radio equipment of a radio station which performs portable mobile satellite data communication shall comply with the conditions in the items below according to the classifications therein.

- 1) The radio equipment which transmits emissions of a frequency in a range of higher than 14 GHz to 14.5 GHz and receives emissions of a frequency in a range of higher than 12.25 GHz to 12.75 GHz at a portable base earth station which performs portable mobile satellite data communication via an artificial satellite station established on a

geostationary satellite (which refers to an artificial satellite which has a circular orbit above the equator and moves around the rotation axis of the Earth in the same direction and at the same cycle as the rotation of the Earth; this also applies hereafter) or the radio equipment which transmits emissions of a frequency in a range of higher than 14.0 GHz to 14.4 GHz and receives emissions of a frequency in a range of higher than 12.25 GHz to 12.75 GHz at a portable mobile earth station which performs portable mobile satellite data communication via an artificial satellite station established on a geostationary satellite shall comply with the conditions below.

a General conditions

- (1) The antenna of a portable mobile earth station shall have a function for automatically tracking the direction of an artificial satellite station.
- (2) The portable mobile earth station shall start transmission only when it receives a control signal transmitted from a portable base earth station via an artificial satellite station.
- (3) The portable mobile earth station shall have a function for automatically stopping emissions when emissions transmitted from a portable base earth station via an artificial satellite station cannot be received normally.
- (4) The portable base earth station shall have a function for limiting the number of portable mobile earth stations which can transmit emissions simultaneously.

b Conditions for the transmitter of a portable mobile earth station

- (1) The modulation method shall be frequency modulation or phase modulation, and emissions shall be transmitted by an energy dispersion method (including a spread spectrum method).
- (2) The power per 40 kHz bandwidth radiated from the transmitting antenna in all directions within ± 3 degrees of inclination of the orbit of a geostationary satellite shall comply with the values prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Elongation (θ) from an artificial satellite station	Maximum radiation power (with 1 W regarded as 0 dB)
2.5 degrees to less than 11 degrees	Lower than or equal to the value obtained by the following expression: $26 - 25\log_{10}\theta - 10\log_{10}N$ dB N represents the ratio of the maximum power per arbitrary unit bandwidth when all of the applicable portable mobile earth stations transmit emissions simultaneously to the maximum power per unit bandwidth when one portable mobile earth station transmits emissions; this also applies hereafter in this item.
11 degrees to 180 degrees	Lower than or equal to the value obtained by the following expression: $0 - 10\log_{10}N$ dB

- (3) The cross polarization power (with 1 W regarded as 0 dB) per 40 kHz

bandwidth radiated from the transmitting antenna shall be lower than or equal to the value obtained by the following expression:

$$7-10 \log_{10} N \text{ dB}$$

- 2) The radio equipment which transmits emissions of a frequency in a range of higher than 148 MHz to 150.05 MHz at a portable base earth station or portable mobile earth station which performs portable mobile satellite data communication via an artificial satellite station established on a non-geostationary satellite (which refers to an artificial satellite other than geostationary satellites; this also applies hereafter) shall comply with the conditions below.
 - a General conditions
 - (1) The communication method shall be duplex operation for the radio equipment of a portable base earth station, or simplex operation for the radio equipment of a portable mobile earth station.
 - (2) The transmitters of individual portable mobile earth stations which perform communication with a portable base earth station shall be identified automatically.
 - (3) A frequency used by a portable mobile earth station shall be automatically selected by a control signal of the artificial satellite station.
 - (4) A portable mobile earth station shall start transmission only when it receives a control signal from the artificial satellite station.
 - (5) A portable mobile earth station shall be capable of limiting the transmission time for all or part of the transmission frequency band according to a control signal from the artificial satellite station, and the transmission time shall be as announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - b Conditions for the transmitter of a portable mobile earth station
 - (1) The modulation method shall be $\pi/2$ shift differential 2PSK.
 - (2) The modulation signal shall consist of pulses, and its transmission rate shall be 2,400 bits/s or less.
 - (3) The antenna power shall be 10 W or less.
 - c Conditions for the antenna of a portable mobile earth station
 - (1) The absolute gain of the transmitting antenna shall be 2.14 dB or less.
 - (2) The polarized wave of transmitted or received emissions shall be a linearly polarized wave or right-hand polarized wave.

(Announcement: * in No. 658 in 1997)

Section 4.16 Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 22 GHz, 26 GHz or 38 GHz Band

(Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 22 GHz, 26 GHz or 38 GHz Band)

Article 49.19. The radio equipment of a base station which uses emissions of a frequency in a range of higher than 25.25 MHz to 27 GHz, higher than 38.05 MHz to 38.5 GHz, or higher than 39.05 GHz to 39.5 GHz, among radio stations in the land mobile service using emissions of a frequency in the 22 GHz, 26 GHz or 38 GHz band shall comply with the conditions in the items below:

- 1) The communication method shall be frequency division duplex operation or time division duplex operation which uses frequency division multiplexing or time division multiplexing respectively.
 - 2) The modulation method shall be GMSK, 2PSK or 16QAM. However, this shall not apply to the modulation method announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - 3) The antenna power shall be 0.5 W or less.
 - 4) The polarized wave of transmitted or received emissions shall be a linearly polarized wave or a vertically polarized wave.
- 2 The radio equipment of land mobile stations that perform communication with the base station prescribed in the preceding paragraph shall comply with the conditions in the items below in addition to the conditions prescribed in items 1) to 4) of the preceding paragraph.

- 1) The communication method shall be FDMA or TDMA which uses frequency division multiplexing or time division multiplexing respectively.
 - 2) The transmitting antenna shall be a parabolic antenna with the absolute gain being 20 dB or more.
- 3 The radio equipment (except the radio equipment prescribed in the preceding paragraph) of land mobile stations, among radio stations in the land mobile service using emissions of a frequency of 22 GHz, 26 GHz or 38 GHz band shall comply with the conditions in the items below:

- 1) The communication method shall be frequency division duplex operation or time division duplex operation.
- 2) The modulation method shall be GMSK, 4PSK or 16QAM. However, this shall not apply to the modulation method announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3) The antenna power shall be 0.5 W or less.
- 4) The polarized wave of transmitted or received emissions shall be a linearly polarized wave or a vertically polarized wave.
- 5) The equivalent isotropically radiated power for an elongation from the direction of principal radiation in the transmitting antenna shall be as stipulated in the right-hand column according to the classification listed in the left-hand column.

Classification	Equivalent isotropically radiated power (with 1 mW regarded as 0 dB)	
	Elongation (θ) from the direction of principal radiation	
Radio equipment which uses emissions of a frequency in a range of 22 GHz or 26 GHz	0 degree to 5 degrees	Lower than or equal to the value obtained by the following expression: $73 - 3.8\theta$ dB
	More than 5 degrees to less than 100 degrees	Lower than or equal to the value obtained by the following expression: $68.5 - 20.8\log_{10}\theta$ dB
	100 degrees to 180 degrees	Lower than 26.9 dB
Radio equipment which uses emissions of a frequency in a range of 38 GHz	0 degree to 6 degrees	Lower than or equal to the value obtained by the following expression: $71 - 3.3\theta$ dB
	More than 6 degrees to less than 140 degrees	Lower than or equal to the value obtained by the following expression: $67.3 - 20.9\log_{10}\theta$ dB
	140 degrees to 180 degrees	22.4 dB

Section 4.17 Radio Equipment of Radio Stations of a Low-Power Data Communication System

(Radio Equipment of Radio Stations of a Low-Power Data Communication System)

Article 49.20. The radio equipment of a radio station of a low-power data communication system shall comply with the conditions in the items below according to the classification in the items below:

- 1) The radio equipment that uses emissions of a frequency from 2,400 MHz to 2,483.5 MHz:
 - a The high-frequency section and modulation section (except for the antenna system) shall not be capable of being opened easily.
 - b The communication method shall be one-way communication, simplex operation, dusimplex operation, or duplex operation.
 - c The modulation method shall be one of the items below.
 - (1) Orthogonal frequency division multiplexing (OFDM) or spread spectrum method
 - (2) Digital modulation method other than (1) above
 - d The spread spectrum method shall be the direct spread method, frequency hopping method, or a combination of the direct spread method and frequency hopping method, or a combination of OFDM and frequency hopping method.
 - e The antenna power of the transmitter shall be one of the items below.
 - (1) The antenna power of the transmitting equipment which uses the frequency hopping method (including a combination of the frequency hopping method

and direct spread method or a combination of the frequency hopping method and OFDM), and that uses emissions of a frequency from 2,427 MHz to 2,470.75 MHz shall provide a mean power within a bandwidth of 1 MHz of 3 mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.

- (2) The antenna power of the transmitting equipment which uses OFDM or the spread spectrum method and does not conform to (1) above shall provide the mean power within a bandwidth of 1 MHz of 10 mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.
 - (3) The antenna power of the transmitting equipment other than that stated in (1) and (2) above shall be 10 mW or less.
- f The transmitting antenna shall comply with the conditions in the items below:
- (1) The absolute gain of the transmitting antenna shall be 12.14 dB or less. However, when the equivalent isotropically radiated power (for the transmitting antenna that uses the modulation method prescribed in c (1) above, the equivalent isotropically radiated power within a bandwidth of 1 MHz; the same applies in c (2)) is equal to or lower than the value obtained by applying an antenna power with the mean power of 10 mW (for the transmitting antenna that uses the modulation method prescribed in c (1) above, the mean power within a bandwidth of 1 MHz shall be 10 mW. However, for the transmitting antenna that uses the frequency hopping method, a combination of the direct spread method and frequency hopping method, or a combination of OFDM and frequency hopping method and that uses emissions of a frequency from 2,427 MHz to 2,470.75 MHz, the mean power within a bandwidth of 1 MHz shall be 3 mW; the same applies in c (2)) to the transmitting antenna with its absolute gain being 12.14 dB, the shortage shall be compensated for by the gain of the transmitting antenna.
 - (2) The angular width of the principal radiation in the horizontal and vertical planes of the transmitting antenna shall not exceed the value obtained by the following expression.
$$360/A \text{ degree}$$

A represents the value determined by dividing an equivalent isotropically radiated power by the value obtained by applying an antenna power with the mean power of 10 mW to the transmitting antenna with its absolute gain being 2.14 dB, and shall be 1 when it is lower than 1.
- g The number of carriers within a bandwidth of 1 MHz in OFDM shall be 1 or more.
- h The diffusion bandwidth of the radio equipment that uses the spread spectrum method (which refers to a frequency bandwidth with an upper frequency limit and lower frequency limit such that each of the mean powers radiated above the upper frequency limit and below the lower frequency limit is equal to 5% of the total mean power radiated; this also applies hereafter) shall be 500 kHz or more.
- i The diffusion rate of the radio equipment that uses the spread spectrum method

(which refers to the value obtained by dividing the diffusion bandwidth by a frequency equal to the transmission rate of the modulation signal; this also applies hereafter) shall be 5 or more.

- j The frequency retention time in the frequency hopping method shall be 0.4 second or less. For the radio equipment that uses the frequency hopping method excluding a combination of the spread spectrum method and OFDM, the total sum of the frequency retention time in any frequency within the time obtained by multiplying the diffusion rate by 0.4 second shall be 0.4 second or shorter.
- 2) The radio equipment that uses emissions of a frequency from 2,471 MHz to 2,497 MHz:
- a The high-frequency section and modulation section except for the antenna system shall not be capable of being opened easily.
 - b The communication method shall be one-way communication, simplex operation, dusimplex operation, or duplex operation, all of which use the spread spectrum method.
 - c The spread spectrum method shall be the direct spread method, frequency hopping method, or a combination of the direct spread method and frequency hopping method.
 - d For the transmitting power of the transmitting equipment, the mean power within a bandwidth of 1 MHz is 10 mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.
 - e The absolute gain of the transmitting antenna shall be 2.14 dB or less. However, when the effective radiated power is lower than or equal to the value obtained by applying an antenna power with the mean power of 10 mW within a bandwidth of 1 MHz to the transmitting antenna with its absolute gain being 2.14 dB, the shortage shall be compensated for by the gain of the transmitting antenna.
 - f The diffusion bandwidth shall be 500 kHz or more.
 - g The diffusion rate shall be 10 or more.
 - h The radio equipment connected to telecommunication circuit equipment shall be equipped with a device which detects emissions radiated from another radio station and prevents interference, or a device which prevents interference by operation on a receive signal and a signal for diffusion for signal level detection.
- 3) The radio equipment that uses emissions of a frequency of 5,180 MHz, 5,200 MHz, 5,220 MHz, 5,240 MHz, 5,260 MHz, 5,280 MHz, 5,300 MHz or 5,320 MHz indoors, or that uses emissions of a frequency of 5,180 MHz, 5,200 MHz, 5,220 MHz, or 5,240 MHz in aircrafts:
- a The high-frequency section and modulation section except for the antenna system shall not be capable of being opened easily.
 - b The communication method shall be one-way communication, simplex operation, dusimplex operation, or duplex operation.
 - c The modulation method shall be one of the items below:
 - (1) OFDM or the spread spectrum method that uses the direct spread method

- (2) The amplitude modulation method, phase modulation method, frequency modulation method, pulse modulation method or combination of these methods
- d The signal transmission rate shall be 10 megabits/s or more. However, the radio equipment shall be capable of transmitting a signal at the rate of 20 megabits/s.
- e The transmitting burst length shall be 4 ms or less.
- f The antenna power of the transmitter shall be one of the items below.
 - (1) For the antenna power of the transmitting equipment which uses the modulation method prescribed in (1) of item c above, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.
 - (2) For the antenna power of the transmitting equipment which uses the modulation method prescribed in (2) of item c above, the mean power shall be 10 mW or less.
- g The equivalent isotropically radiated power within a bandwidth of 1 MHz shall be as follows:
 - (1) When using emissions of a frequency of 5,180 MHz, 5,200 MHz, 5,220 MHz, or 5,240 MHz :
 - 10 mW or lower
 - (2) When using emissions of a frequency of 5,260 MHz, 5,280 MHz, 5,300 MHz or 5,320 MHz
 - (i) When equipped with a function that reduces the mean antenna power by 3 dB in the communication system specified in 1):
 - 10 mW or lower
 - (ii) Cases other than (i):
 - 5 mW or lower
- h The number of carriers within a bandwidth of 1 MHz in OFDM shall be 1 or more.
- i The value obtained by dividing the diffusion bandwidth of the radio equipment that uses the spread spectrum method by a frequency equal to the transmission rate of the modulation shall be 5 or more, or the value obtained by directly multiplying the signal that sweeps over the bandwidth of a frequency five times or more than the frequency of the same transmitting rate as that of the modulation signal by the transmitting cycle of the modulation signal.
- j The mean power radiated within a bandwidth of ± 9 MHz of the frequencies 20 MHz and 40 MHz distant from the frequency of the carrier shall be lower than the mean power of the carrier by 25 dB and 40 dB.
- k The equivalent isotropically radiated power within a bandwidth of 1 MHz shall be according to the classifications given in the upper columns of the table and shall comply with the conditions given in the lower column of the same table in the

following cases:

(1) When using emissions of a frequency of 5,180 MHz, 5,200 MHz, 5,220 MHz, or 5,240 MHz:

Classification		Equivalent isotropically radiated power within a bandwidth of 1 MHz
Frequency band	Frequency (f) of the difference from 5,240 MHz	
5,140 MHz or higher but no more than 5,142 MHz	Higher than 98 MHz but no more than 100 MHz	2.5 μ W or lower
Higher than 5,142 MHz but no more than 5,150 MHz	Higher than 90 MHz but no more than 98 MHz	15 μ W or lower
5,250 MHz or higher but lower than 5,251 MHz	10 MHz or higher but lower than 11 MHz	The value obtained by the expression given below or lower: $10^{1-(f-9)}$ mW
5,251 MHz or higher but lower than 5,260 MHz	11 MHz or higher but lower than 20 MHz	The value obtained by the expression given below or lower: $10^{-1.8-(8/90)(f-11)}$ mW
5,260 MHz or higher but lower than 5,266.7 MHz	20 MHz or higher but lower than 26.7 MHz	The value obtained by the expression given below or lower: $10^{-1.8-(6/50)(f-20)}$ mW
5,266.7 MHz or higher but no more than 5,360 MHz	26.7 MHz or higher but lower than 120 MHz	2.5 μ W or lower

(2) When using emissions of a frequency of 5,260 MHz, 5,280 MHz, 5,300 MHz, or 5,320 MHz:

Classification		Equivalent isotropically radiated power within a bandwidth of 1 MHz
Frequency band	Frequency (f) of the difference from 5,260 MHz	
5,140 MHz or higher but no more than 5,233.3 MHz	Higher than 26.7 MHz but lower than 120 MHz	2.5 μ W or lower
5,233.3 MHz or higher but lower than 5,240 MHz	Higher than 20 MHz but no more than 26.7 MHz	The value obtained by the expression given below or lower: $10^{-1.8-(6/50)(f-20)}$ mW
5,240 MHz or higher but lower than 5,249 MHz	Higher than 11 MHz but no more than 20 MHz	The value obtained by the expression given below or lower: $10^{-1.8-(8/90)(f-11)}$ mW
5,249 MHz or higher but lower than 5,250 MHz	Higher than 10 MHz but no more than 11 MHz	The value obtained by the expression given below or lower: $10^{1-(f-9)}$ mW
5,350 MHz or higher but no more than 5,360 MHz	90 MHz or higher but no more than 100 MHz	2.5 μ W or lower

l The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions prescribed in items a to k above.

- 4) The radio equipment that uses emissions of a frequency from 24.77 GHz to 25.23 GHz and that uses emissions of a frequency of 24.77 GHz or an integer multiple of 10 MHz added to 24.77 GHz or that uses emissions of a frequency from 27.02 GHz to 27.46 GHz and that uses emissions of a frequency of 27.02 GHz or an integer multiple of 10 MHz added to 27.02 GHz
 - a The high-frequency section and modulation section except for the antenna system shall not be capable of being opened easily.
 - b The communication method shall be one-way communication, simplex operation, dusimplex operation, or duplex operation.
 - c The radio channel shall be formed using one, two or more unit radio channels (which refer to radio channels whose carrier frequency is a frequency from 24.77 GHz to 25.23 GHz, being 24.77 GHz or an integer multiple of 20 MHz added to 24.77 GHz, or a frequency from 27.02 GHz to 27.46 GHz, being 27.02 GHz or an integer multiple of 20 MHz added to 27.02 GHz; this also applies hereafter in this item and in 30 of Table 2) that are simultaneously used.
 - d The maximum number of unit radio channels that are simultaneously used shall be 3 when emissions of a frequency from 24.77 GHz to 25.23 GHz are used and shall be 6 when emissions of a frequency from 27.02 GHz to 27.46 GHz are used.
 - e The carrier frequency when two or more unit radio channels are used as one radio channel shall be one of the items below in accordance with the number of unit radio channels that are used as one radio channel.
 - (1) When an odd number of unit radio channels are used as one radio channel, the carrier frequency shall be a frequency from 24.77 GHz to 25.23 GHz, being 24.77 GHz or an integer multiple of 20 MHz added to 24.77 GHz, or a frequency from 27.02 GHz to 27.46 GHz, being 27.02 GHz or an integer multiple of 20 MHz added to 27.02 GHz.
 - (2) When an even number of unit radio channels are used as one radio channel, the carrier frequency shall be a frequency from 24.78 GHz to 25.22 GHz, being 24.78 GHz or an integer multiple of 20 MHz added to 24.78 GHz, or a frequency from 27.03 GHz to 27.45 GHz, being 27.03 GHz or an integer multiple of 20 MHz added to 27.03 GHz.
 - f The modulation method shall be one of the items below.
 - (1) Orthogonal frequency division multiplexing method (OFDM)
 - (2) Amplitude modulation method, phase modulation method, frequency modulation method, pulse modulation method or a combination of these modulation methods
 - g The signal transmission rate per unit radio channel shall be 10 megabits/s or more. However, the radio equipment shall be capable of transmitting a signal at 20 megabits/s or more per unit radio channel.
 - h The transmitting burst length shall be 4 ms or less.
 - i The antenna power of the transmitting equipment shall be one of the items below.

- (1) The antenna power of the transmitting equipment that uses the modulation method prescribed in f (1) above shall be one of the items below in accordance with the number of unit radio channels that are simultaneously used.
 - (i) For the antenna power of the transmitting equipment in which the number of unit radio channels used is 3 or less, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.
 - (ii) For the antenna power of the transmitting equipment in which the number of unit radio channels used is 4 or more, the mean power shall be 10 mW or less.
- (2) The antenna power of the transmitting equipment that uses the modulation method prescribed in f (2) above shall be 10 mW or less.
- j The radio equipment shall have an automatic control function to minimize the antenna power.
- k The number of carriers within a bandwidth of 1 MHz in OFDM shall be 1 or more.
- l The gain of the transmitting antenna shall be one of the items below.
 - (1) The absolute gain of the antenna when emissions of a frequency from 24.77 GHz to 25.23 GHz are used shall be 10 dB or less. However, when the equivalent isotropically radiated power within a bandwidth of 1 MHz is equal to or less than the value obtained by applying an antenna power with the mean power of 10 mW within a bandwidth of 1 MHz to the antenna power with the absolute gain being 2.14 dB, the shortage shall be compensated for by the gain of the transmitting antenna.
 - (2) The absolute gain of the antenna when emissions of a frequency from 27.02 GHz to 27.46 GHz are used shall be 2.14 dB or less. However, when the equivalent isotropically radiated power within a bandwidth of 1 MHz is equal to or less than the value obtained by applying an antenna power with the mean power of 10 mW (for the radio equipment in which 4 or more unit radio channels are used simultaneously, when the equivalent isotropically radiated power is equal to or less than the value obtained by applying an antenna power with the mean power of 10 mW) to the antenna power with the absolute gain being 2.14, the shortage shall be compensated for by the gain of the transmitting antenna.
- m The angular width of the principal radiation in the horizontal plane and vertical plane of the transmitting antenna specified in l (1) above shall not exceed the value determined by the following expression.

$$360/A \text{ degree}$$

A represents the value obtained by dividing the equivalent isotropically radiated power within a bandwidth of 1 MHz by the value obtained by applying an antenna power with the mean power of 10 mW within a bandwidth of 1 MHz to the transmitting antenna with the absolute gain being 2.14 dB and shall be 1 when it is lower than 1.
- n The mean power radiated into the ± 9 kHz band of the carrier frequency in the unit radio channel (for the radio equipment in which two or more unit radio channels are used as one radio channel, the frequency of the value obtained by the expression specified below) 20 MHz or 40 MHz distant from the carrier frequency shall be lower than that of the carrier power by 25 dB and 40 dB or more respectively. However, in the frequency bands specified in the table below, the equivalent isotropically radiated power within a bandwidth of 1 MHz shall be the values given

in the table below.

$20 + 10 (n-1)$ MHz and $40 + 10 (n-1)$ MHz or more

n represents the number of unit radio channels which are simultaneously used.

Frequency band	Equivalent isotropically radiated power within a bandwidth of 1 MHz
From 24.705 GHz to lower than 24.74 GHz, higher than 25.26 GHz to 25.295 GHz, from 26.955 GHz to lower than 26.99 GHz, and higher than 27.49 GHz to 27.525 GHz	1 μ W or less
From 24.74 GHz to lower than 24.75 GHz, higher than 25.25 GHz to 25.26 GHz, from 26.99 GHz to lower than 27 GHz, and higher than 27.48 GHz to 27.49 GHz	16 μ W or less

- o The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions prescribed in a to n above.

Section 4.18 Radio Equipment of Radio Stations of an Access System in the 5 GHz Band

(Radio Equipment of Radio Stations of an Access System in the 5 GHz Band)

Article 49.21. The radio equipment at a base station, land mobile relay station and land mobile station (excluding the land mobile station prescribed in the next paragraph) of an access system in the 5 GHz band shall comply with the conditions defined in the items below:

- 1) The communication method shall be one-way communication, simplex operation, broadcast communication, dusimplex operation, or duplex operation. However, for the radio equipment whose communication method is dusimplex operation or duplex operation, a time division duplex operation method shall be used.
- 2) The modulation method shall be one of the items below.
 - a The spread spectrum method that uses the orthogonal frequency division multiplexing or direct spread method
 - b The amplitude modulation method, phase modulation method, frequency modulation method, pulse modulation method, or a combination of these methods
- 3) The transmission burst length shall be 4 ms or less.
- 4) The antenna power shall be 250 mW, and the antenna power within a bandwidth of 1 MHz shall be 50 mW or less.
- 5) The frequency of emissions that a land mobile station and land mobile relay station transmit shall be automatically selected by receiving emissions of a base station at the other end of communication (in the case of a land mobile station, including those relayed by other radio stations).
- 6) The antenna of transmitting equipment shall comply with the conditions in the items below.
 - a The absolute gain shall be 13 dB or less; provided, however, that when the equivalent isotropically radiated power is equal to or less than the value obtained by applying

antenna power of 250 mW to the transmitting antenna with an absolute gain of 13 dB, the shortage shall be compensated for by the gain of the transmitting antenna.

- b The angular width of the principal radiation in the horizontal plane of the transmitting antenna shall not exceed the value obtained by the following expression.

$360/A$ degree

A represents the value determined by dividing an equivalent isotropically radiated power by the value obtained by applying an antenna power with the mean power of 250 mW to the transmitting antenna with its absolute gain being 0 dB, and shall be 4 when it is lower than 4.

- 7) The number of carriers within a bandwidth of 1 MHz in OFDM shall be 1 or more.
- 8) The value obtained by dividing the diffusion bandwidth of the radio equipment that uses the spread spectrum method by a frequency equal to the transmission rate of the modulation signal shall be 5 or more, or the value obtained by directly multiplying the signal that sweeps over the bandwidth of a frequency five times or more than the frequency of the same transmission rate as that of the modulation signal, by the transmitting cycle of the modulation signal.
- 9) The adjacent leakage power shall comply with the conditions in the items below:

- a 20 MHz system (which refers to the system whose occupied frequency bandwidth is higher than 9.5 MHz to 19.7 MHz; this also applies hereafter)

The mean value of the power in an antenna terminal radiated into the ± 9 MHz band of the frequency 20 MHz and 40 MHz distant from the assigned frequency shall be 0.5 mW or less or 16 μ W or less respectively.

- b 10 MHz system (which refers to the system whose occupied frequency bandwidth is higher than 4.5 MHz to 9.5 MHz; this also applies hereafter)

The mean value of the power in an antenna terminal radiated into the ± 4.5 MHz band of the frequency 10 MHz and 20 MHz distant from the assigned frequency shall be 0.25 mW or less or 8 μ W or less respectively.

- c 5 MHz system (which refers to the system whose occupied frequency bandwidth is 4.5 MHz or lower; this also applies hereafter)

The mean value of the power in an antenna terminal radiated into the ± 2.25 MHz band of the frequency 5 MHz and 10 MHz distant from the assigned frequency shall be 0.125 mW or less or 4 μ W or less respectively.

- 10) The out-band leakage power shall comply with the conditions in the items below:

- a 20 MHz system

- (1) When emissions of a frequency of higher than 4,900 MHz to 5,000 MHz are used

Frequency band	Equivalent isotropically radiated power within a bandwidth of 1 MHz
4,880 MHz or higher to lower than 4,900 MHz	15 μ W or less

and higher than 5,000 MHz to 5,020 MHz	
--	--

(2) When emissions of a frequency of higher than 5,030 MHz to 5,090 MHz are used

Frequency band	Equivalent isotropically radiated power within a bandwidth of 1 MHz
5,000 MHz or higher but lower than 5,020 MHz	30 μ W or less
5,020 MHz or higher but lower than 5,030 MHz	1 mW or less
Higher than 5,091 MHz but no more than 5,100 MHz	0.5 mW or less
Higher than 5,100 MHz but no more than 5,120 MHz	15 μ W or less

b 10 MHz system

(1) When emissions of a frequency of higher than 4,900 MHz to 4,950 MHz are used

Frequency band	Equivalent isotropically radiated power within a bandwidth of 1 MHz
4,895 MHz or higher to lower than 4,905 MHz and higher than 4,9551 MHz to 4,965 MHz	15 μ W or less

(2) When emissions of a frequency of higher than 5,030 MHz to 5,060 MHz are used

Frequency band	Equivalent isotropically radiated power within a bandwidth of 1 MHz
5,015 MHz or higher but lower than 5,025 MHz	30 μ W or less
5,025 MHz or higher but lower than 5,030 MHz	1 mW or less
Higher than 5,065 MHz but no more than 5,075 MHz	15 μ W or less

c 5 MHz system

(1) When emissions of a frequency of higher than 4,900 MHz to 4,950 MHz are used

Frequency band	Equivalent isotropically radiated power within

	a bandwidth of 1 MHz
4,902.5 MHz or higher to lower than 4,907.5 MHz and higher than 5,100 MHz to 5,120 MHz	15 μ W or less

(2) When emissions of a frequency of higher than 5,030 MHz to 5,060 MHz are used

Frequency band	Equivalent isotropically radiated power within a bandwidth of 1 MHz
5,022.5 MHz or higher but lower than 5,027.5 MHz	30 μ W or less
5,027.5 MHz or higher but lower than 5,030 MHz	1 mW or less
Higher than 5,062.5 MHz but no more than 5,067.5 MHz	15 μ W or less

- 11) The upper limit of the equivalent isotropically radiated power radiated within a bandwidth of ± 10 MHz of the frequencies of 4,840 MHz and 4,860 MHz when emissions of a frequency of higher than 4,900 MHz to 5,000 MHz are used, and within a bandwidth of ± 10 MHz of the frequencies of 4,960 MHz and 4,980 MHz when emissions of a frequency of higher than 5,030 MHz to 5,091 MHz are used, shall be either 2 μ W or 0.2 μ W.
 - 12) The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the technical conditions prescribed in each item of the preceding paragraph.
- 2 The radio equipment at a land mobile station of a radio access system in the 5 GHz band (limited to the land mobile station whose antenna power is 0.01 W or less) shall comply with the conditions defined in the items below in addition to the conditions defined in items 1) to 3), item 5), items 7) to 9), and item 12) of the preceding paragraph.
- 1) The antenna power of the transmitting equipment shall be one of the items below.
 - a For the transmitting equipment that uses the modulation method prescribed in item 2) a of the preceding paragraph, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.
 - b For the transmitting equipment that uses the modulation method prescribed in item 2) b of the preceding paragraph, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.
 - 2) The antenna of the transmitting equipment shall comply with the conditions in the items below:
 - a The absolute gain shall be 0 dB. However, when the equivalent isotropically radiated power within a bandwidth of 1 MHz is equal to or lower than the value obtained by applying the antenna power of 10 mW to the transmitting antenna with its absolute

gain being 0 dB, the shortage shall be compensated for by the gain of the transmitting antenna power.

- b) The angular width of the principal radiation in the horizontal plane of the transmitting antenna shall not exceed the value obtained by the following expression.

$360/A$ degree

A represents the value determined by dividing an equivalent isotropically radiated power by the value obtained by applying an antenna power with the mean power of 250 mW to the transmitting antenna with its absolute gain being 0 dB, and shall be 1 when it is lower than 1. However, the upper limit of the equivalent isotropically radiated power within a bandwidth of 1 MHz shall be the value obtained by applying 10 mW to the transmitting antenna with its absolute gain being 10 dB.

- 3) The equivalent isotropically radiated power radiated within a bandwidth of ± 10 MHz of the frequencies of 4,840 MHz and 4,860 MHz when emissions of a frequency of higher than 4,900 MHz to 5,000 MHz are used, and within a bandwidth of ± 10 MHz of the frequencies of 4,960 MHz and 4,980 MHz when emissions of a frequency of higher than 5,030 MHz to 5,091 MHz are used, shall be 0.2 μ W or less.
- 4) The high-frequency section and modulation section except for the antenna system shall not be capable of being opened easily.

Section 4.19 Radio Equipment of Radio Stations Performing Road Traffic Information Communication

(Radio Equipment of Radio Stations Performing Road Traffic Information Communication)

Article 49.22. The radio equipment which transmits emissions of a frequency in the 2.5 GHz band at a radio station that performs road traffic information communication shall comply with the conditions in the items below:

- 1) The modulation signal shall consist of pulses, and its transmission rate shall be 64,000 bits/s (with a tolerance of 50/1,000,000).
- 2) The modulation method shall be GMSK.
- 3) The radio equipment shall have a function for generating two signals of opposite polarities by performing amplitude modulation at 10% by a modulating frequency of 1 kHz for a GMSK-modulated signal.
- 4) The transmitting antenna system shall consist of two antennas, and shall radiate the two signals generated according to the provisions of the preceding item.
- 5) The antenna power shall be 0.02 W or less.
- 6) The out-band leakage power shall be such that in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal, that power radiated into the ± 42.5 kHz band of the frequency 125 kHz distant from the carrier frequency is lower than the carrier power by more than 40 dB or more.

Section 4.20 Radio Equipment of Radio Stations Performing Portable Mobile Satellite Communication

(Radio Equipment of Radio Stations Performing Portable Mobile Satellite Communication)

Article 49.23. The radio equipment of a radio station performing portable mobile satellite communication shall comply with the conditions in the items below according to the classifications therein.

1) The radio equipment which transmits emissions of a frequency from 6,345 MHz to 6,425 MHz and receives emissions of a frequency from 4,120 MHz to 4,200 MHz at a portable base earth station that performs portable mobile satellite communication via an artificial satellite station established on a geostationary satellite or the radio equipment which transmits emissions of a frequency from 2,660 MHz to 2,690 MHz and receives emissions of a frequency from 2,505 MHz to 2,535 MHz at a portable mobile earth station that performs portable mobile satellite communication via an artificial satellite station established on a geostationary satellite shall comply with the conditions below.

a General conditions

- (1) The communication method shall be duplex operation.
- (2) The transmitters of individual portable mobile earth stations which perform communication with a portable base earth station shall be identified automatically.
- (3) A frequency used for speech by a portable mobile earth station shall be automatically selected by a control signal of the portable base earth station.
- (4) The radio equipment of a portable base earth station shall be capable of being connected to telecommunication circuit equipment.

b Conditions for the transmitter of a portable mobile earth station

- (1) The modulation method shall be 4PSK which shifts the reference phase $\pi/4$ every 2 bits.
- (2) The modulation signal shall consist of pulses, and its transmission rate shall be 18,000 bits/s or less.
- (3) The leakage power when the carrier is not transmitted shall be lower than the mean power when the carrier is transmitted by 60 dB or more.

c The polarized wave of emissions transmitted or received by a portable mobile earth station shall be a right-hand polarized wave.

2) The radio equipment which transmits emissions of a frequency from 29.1 GHz to 29.3 GHz at a portable base earth station that performs portable mobile satellite communication via an artificial satellite station established on a non-geostationary satellite or the radio equipment which transmits emissions of a frequency from 1,621.35 MHz to 1,626.5 MHz at a portable mobile earth station that performs portable mobile satellite communication via an artificial satellite station established on a non-geostationary satellite shall comply with the conditions below.

a General conditions

- (1) The communication method shall be duplex operation.
- (2) A frequency used for speech by a portable mobile earth station shall be automatically selected by a control signal of the portable base earth station.
- (3) The radio equipment of a portable base earth station shall be capable of being connected to telecommunication circuit equipment.
- b Conditions for the transmitter of a portable mobile earth station
 - (1) The modulation method shall be 4PSK.
 - (2) The modulation signal shall consist of pulses, and its transmission rate shall be 50 kilobits/s or less.
- c The polarized wave of transmitted or received emissions shall be a right-hand polarized wave.
- d The radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions prescribed in a to c.

(Announcement: * in No. 659 in 1997)

Section 4.21 Radio Equipment of INMARSAT Portable Mobile Earth Stations

(Radio Equipment of INMARSAT Portable Mobile Earth Stations)

Article 49.24. The INMARSAT A radio equipment of an INMARSAT portable mobile earth station shall comply with the conditions in the items below:

- 1) Conditions for the transmitter
 - a The modulation method shall comply with the condition prescribed in Article 40.4 paragraph 1 item 2) a (1).
 - b The transmission rate shall be the value prescribed in (1) or (2), depending on the type of communication.
 - (1) When communication other than (2) is performed: 4,800 bits/s (with a tolerance of 0.01%).
 - (2) When radio high-speed data-based communication is performed: The transmission rate shall comply with the condition prescribed in Article 40.4 paragraph 1 item 2) c (2).
 - c The ratio of the phase noise power flux density to the carrier power (hereinafter referred to as “phase noise level”) shall not exceed a value on the curve shown in Figure 4-9 whenever possible. However, when discrete components of higher than 10 Hz to less than 1 kHz distant from the carrier exceed a value on the curve, the sum of the discrete components and continuous components shall not exceed 0.11 radian.
 - d The transmitter shall comply with the condition prescribed in Article 40.4

- paragraph 1 item 2) a (4).
- 2) Conditions for the receiver
 - a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall comply with the conditions prescribed in Article 40.4 paragraph 1 item 3) a.
 - b In direct printing telegraph-based communication, when emissions of the level at which the carrier frequency departure is 550 Hz, the clock frequency departure is 0.5 Hz, and the ratio of the carrier power of the 2PSK wave to the noise power flux density is 43.4 dB are received, the bit error rate after demodulation shall be 0.001% or less, and the reproduction probability of the carrier and clock 0.58 second after reception shall be 90% or more.
 - c In radio high-speed data-based communication, when emissions of the level at which the ratio of the carrier power of the 4PSK wave to the noise power flux density is 53.5 dB if the transmission rate of the modulation signal is 112 kilobits/s, or is 54 dB if the transmission rate of the modulation signal is 118 kilobits/s are received, the bit error rate after demodulation shall be 0.0001% or less.
 - 3) Conditions for the antenna

The antenna shall comply with the conditions prescribed in Article 40.4 paragraph 1 item 4) a and b.
 - 4) The radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding three items.
- 2) The INMARSAT C radio equipment of an INMARSAT portable mobile earth station shall comply with the conditions in the items below:
- 1) Conditions for the transmitter
 - a The modulation method shall comply with the condition prescribed in Article 40.4 paragraph 2 item 1) a.
 - b A transmission rate of 600 bits/s or 1,200 bits/s shall be selected automatically. In this case, the stability shall be 1/1,000,000 or less for 10 seconds.
 - c The phase noise level shall not exceed a value on the curve shown in Figure 4-9 whenever possible. However, when discrete components of higher than 10 Hz to less than 100 kHz distant from the carrier exceed the curve, the sum of the discrete components and continuous components shall not exceed 0.1 radian or -20 dB with respect to the unmodulated carrier.
 - 2) The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall comply with the condition prescribed in Article 40.4 paragraph 2 item 2).
 - 3) The polarized wave of transmitted or received emissions shall comply with the condition prescribed in Article 40.4 paragraph 2 item 3).
 - 4) The radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding three items.
- 3) The INMARSAT B radio equipment of an INMARSAT portable mobile earth station shall comply with the conditions in the items below:

- 1) Conditions for the transmitter
The transmitter shall comply with the condition prescribed in Article 40.4 paragraph 3 item 1).
- 2) Conditions for the receiver
 - a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall comply with the condition prescribed in Article 40.4 paragraph 3 item 2) a.
 - b In direct printing telegraph-based communication, when emissions of the level at which the carrier frequency departure is 925 Hz, the clock frequency departure is 0.35/1,000,000, and the ratio of the carrier power of the 2PSK wave to the noise power flux density is 40.7 dB are received, the bit error rate after demodulation shall be 0.001% or less with a probability of 80% for any one hour.
 - c In radio data-based communication (including facsimile transmission), when emissions of the level at which the carrier frequency departure is 925 Hz, the clock frequency departure is 0.35/1,000,000, and the ratio of the carrier power of the 4PSK wave to the noise power flux density is 48.5 dB are received, the bit error rate after demodulation shall be 0.001% or less with a probability of 80% for 1,000 seconds or more.
 - d In radio high-speed data-based communication, when emissions of the level at which the carrier frequency departure is 925 Hz, the clock frequency departure is 0.35/1,000,000, and the ratio of the carrier power of the 4PSK wave to the noise power flux density is 53.6 dB are received, the bit error rate after demodulation shall be 0.0001% or less with a probability of 80% for 1,000 seconds or more.
 - e In communication for calling and circuit allocation, the receiver shall comply with the condition prescribed in a.
 - f In radio telephone-based communication, the receiver shall comply with the condition prescribed in Article 40.4 paragraph 3 item 2) d.
- 3) Conditions for the antenna
The antenna shall comply with the conditions prescribed in Article 40.4 paragraph 3 item 3) a and b.
- 4) The radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding three items.
- 4 The INMARSAT M radio equipment of an INMARSAT portable mobile earth station shall comply with the conditions in the items below:
 - 1) Conditions for the transmitter
 - a The modulation method shall comply with the condition prescribed in Article 40.4 paragraph 4 item 1) a.
 - b The transmission rate shall be the value (with a tolerance of 0.001% or less) prescribed in (1) or (2) below, depending on the type of communication.
 - (1) When communication other than (2) is performed: 8,000 bits/s
 - (2) When communication for calling or responding is performed: 3,000 bits/s

- c The phase noise level shall comply with the condition prescribed in Article 40.4 paragraph 4 item 1) c.
 - d The transmitter shall comply with the condition prescribed in Article 40.4 paragraph 4 item 1) d.
- 2) Conditions for the receiver
- a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -12 dB or more.
 - b In radio data-based communication (including facsimile transmission), when emissions of the level at which the carrier frequency departure is 924 Hz, the clock frequency departure is 0.35/1,000,000, and the ratio of the carrier power of the 4PSK wave to the noise power flux density is 41.6 dB are received, the bit error rate after demodulation shall be 0.001% or less with a probability of 95% for 3,600 seconds or more.
 - c In communication for calling and circuit allocation, when emissions of the level at which the carrier frequency departure is 924 Hz, the clock frequency departure is 0.35/1,000,000, and the ratio of the carrier power of the 2PSK wave to the noise power flux density is 39.9 dB are received, the bit error rate after demodulation shall be 0.001% or less with a probability of 80% for any one hour.
 - d In radio telephone-based communication, the receiver shall comply with the condition prescribed in Article 40.4 paragraph 4 item 2) d.
- 3) Conditions for the antenna
- a The absolute gain for an elongation from the principal radiation direction shall comply with the values prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

	Classification		Absolute gain
	Elongation (θ) from the direction of principal radiation		
Horizontal array antenna	Horizontal direction	21 degrees to 48 degrees	Lower than or equal to the value obtained by the following expression: $38 - 25\log_{10}\theta$ dB
		More than 48 degrees to 180 degrees	-5 dB or less
	Vertical direction	20 degrees to 130 degrees	Lower than or equal to the value obtained by the following expression: $15 - 0.0012\theta^2$ dB
		More than 130 degrees to 180 degrees	-5 dB or less
Vertical array antenna	Vertical direction	20 degrees to 70 degrees	Lower than or equal to the value obtained by the following expression: $41 - 25\log_{10}\theta$ dB

		More than 70 degrees to 180 degrees	-5 dB or less
Plane array antenna which does not have a function for automatically tracking the direction of an artificial satellite station	30 degrees to 40 degrees		Lower than or equal to the value obtained by the following expression: $14 + 10\log_{10}(\sin(x)/x)$ dB $X=4.1\theta$ radian
	More than 40 degrees to 90 degrees		Lower than or equal to the value obtained by the following expression: $44 - 25\log_{10}\theta$ dB
	More than 90 degrees to 180 degrees		-5 dB or less

- b The polarized wave of transmitted or received emissions shall comply with the condition prescribed in Article 40.4 paragraph 4 item 3) b.
- 4) The radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and the Telecommunications in addition to the conditions in the preceding three items.
- 5 The INMARSAT mini-M radio equipment of an INMARSAT portable mobile earth station shall comply with the conditions in the items below:
- 1) Conditions for the transmitter
The transmitter shall comply with the conditions prescribed in Article 40.4 paragraph 5 item 1). In this case, “5,600 bits/second or 24,000 bits/second” in b(3) of this item shall be read as “5,600 bits/second.”
 - 2) Conditions for the receiver
 - a The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be equal to or more than the value prescribed in (1) or (2) below.
 - (1) -7 dB in the case of the radio equipment which has a function for performing communication by radio high-speed data-based communication
 - (2) -17 dB in the case of radio equipment other than that of (1) above
 - b The receiver shall comply with the conditions prescribed in Article 45.20 Paragraph 2 Item 2b to Item 2d.
 - c When the receiving equipment is performing high-speed radio data communications and it receives a radio signal at a level where the carrier frequency tolerance is 1,110 Hz, the clock frequency tolerance is 0.35 ppm, and the ratio of the 16 QAM signal’s carrier power to the noise power flux density is 53.2 dB, the bit error rate after demodulation shall be no greater than 0.00001 percent over a period of 1,500 seconds or more.
 - 3) Conditions for the antenna
 - a The absolute gain for an elongation from the principal radiation direction shall be the values which add the maximum gain of the antenna to the permissible values of

the relative gain prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Classification		Elongation (θ) from the direction of principal radiation	Permissible value of relative gain
Antenna which has a function for performing communication by radio high-speed data-based communication		15 degrees to less than 33 degrees	Value obtained by the following expression: $33\log_{10}(\cos(2.2(\theta - 1)))$ dB
		33 degrees to less than 60 degrees	Value obtained by the following expression: $-2 - 10\log_{10}\theta$ dB
		60 degrees to less than 75 degrees	Value obtained by the following expression: $51.2 - 40\log_{10}\theta$ dB
		75 degrees to less than 90 degrees	Value obtained by the following expression: $-0.41\theta + 6.9$ dB
		90 degrees to 180 degrees	-30 dB
Antenna which does not have a function for performing communication by radio high-speed data-based communication	Antenna which has a function for automatically tracking the direction of an artificial satellite station	40 degrees to less than 90 degrees	Value obtained by the following expression: $38 - 25\log_{10}\theta$ dB
		90 degrees to 180 degrees	-12 dB
	Antenna which does not have a function for automatically tracking the direction of an artificial satellite station	30 degrees to less than 120 degrees	Less than the value obtained by the following expression: $39 - 27\log_{10}\theta$ dB
		120 degrees to 180 degrees	-19 dB or less

b The polarized wave of transmitted or received emissions shall be a right-hand polarized wave.

4) The radio equipment shall comply with the technical conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding three items.

(Announcement: * in No. 172 in 1996)

6 The INMARSAT F radio equipment of an INMARSAT portable mobile earth station shall comply with the conditions in the items below.

1) Conditions for the transmitter

a The modulation method shall be phase modulation (when radio high-speed data-based communication is performed: phase modulation or 16QAM).

b The transmission rate shall be the value prescribed in (1), (2) or (3), depending on the type

of communication (with a tolerance of 10/1,000,000).

(1) When telegraph-based communication (limited to that for calling or responding) is performed: 3,000 bits/s

(2) When radio high-speed data-based communication is performed: 67,200 bits/s or 134,400 bits/s

(3) When communication other than (1) and (2) is performed: 5,600 bits/s or 24,000 bits/s

c The phase noise level shall not exceed a value on the curve shown in Figure 4-9 whenever possible.

d The radio equipment shall be equipped with a function that stops transmission immediately if the transmission power value exceeds the usual value by 5 dB or more.

2) Conditions for the receiver

The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -12.5 dB or more.

3) Conditions for the antenna

a The absolute gain for an elongation from the direction of the principal radiation shall comply with the values prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Classification	Elongation () from the direction of principal radiation	Absolute gain
	The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiving equipment is less than -7 dB	38 degrees or more to less than 63 degrees
63 degrees or more		-3 dB or less
The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiving equipment is -7 dB or less	30 degrees or more to less than 63 degrees	Lower than or equal to the value of the following expression: $41 - 25 \log_{10}\theta$ dB
	63 degrees or more	-4 dB or less

b The polarized wave of transmitted or received emissions shall be a right-hand polarized wave.

4) The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding three items.

7 The INMARSAT D radio equipment of an INMARSAT portable mobile earth station shall comply with the conditions in the items below.

1) Conditions for the transmitter

a The modulation method shall be frequency modulation.

b The transmission rate of 4 bits/s, 16 bits/s, 32 bits/s, 64 bits/s, or 128 bits/s shall be selected automatically.

c The phase noise level shall not exceed a value on the curve shown in Figure 4-9 whenever possible.

- 2) The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -25 dB or more.
- 3) The polarized wave of transmitted or received emissions shall be a right-hand polarized wave.
- 4) The radio equipment shall comply with the technical conditions announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications in addition to the conditions in the preceding three items.

8 INMARSAT BGAN radio equipment at INMARSAT portable mobile earth stations must comply with the conditions in the items below.

- 1) Conditions on the transmitter
 - a The modulation method shall be phase modulation or 16 QAM.
 - b The transmission rate shall be one of the following values (the permissible tolerance shall be 10 ppm): 33,600 bits/second, 67,200 bits/second, 134,400 bits/second, 187,200 bits/second, 234,000 bits/second, 268,800 bits/second, 302,400 bits/second, or 604,800 bits/second
 - c The phase noise level shall not exceed, wherever possible, the values of the curve shown in Figure 4-9.
- 2) Conditions on the receiver

The ratio of the absolute gain of the antenna system to the equivalent noise temperature of the receiver shall be -18.5 dB or more.
- 3) Conditions on the antenna
 - a The absolute gain with respect to the elongation from the direction of the primary radiation shall be no greater than the sum of the antenna's absolute gain and the permissible value of the absolute gain shown in the right column of the table below following the classifications given in the left column of the table below.

Classification	Elongation (θ) from the direction of the principal radiation	Permissible value of the absolute gain
	The maximum equivalent isotropically radiated power is greater than 10 dB (where 1 watt is taken as 0 dB)	
120 degrees or more		-5 dB
The maximum equivalent isotropically radiated power is 10 dB or less (where 1 watt is taken as 0 dB)	90 degrees or more	-5 dB

- b The polarized wave of the radio signals that the antenna transmits or receives shall be right-hand polarized wave.
- 4) The radio equipment shall comply with technical conditions notified separately by the

Minister for Internal Affairs and Communications in addition to the conditions prescribed in the previous three items above.

Section 4.22 Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 2 GHz Band

(Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 2 GHz Band)

Article 49.25. Base stations or land mobile stations established for the purpose of performing telecommunications services that use emissions of frequencies in a range of higher than 2025.5 MHz to 2075.5 MHz or higher than 2205.5 MHz to 2255.5 MHz (hereinafter referred to as “radio stations in the land mobile service using emissions of frequencies in the 2 GHz band”) shall comply with the conditions in the items below:

- 1) The communication method shall be duplex operation.
- 2) The modulation method shall be 4PSK.
- 3) The transmitting antenna shall be a non-directional antenna, which shall be such that the absolute gain is 10 dB or more or shall be a directional antenna, which shall be such that the absolute gain is 14 dB or more (Addition No. 22, 1997)

Section 4.22.2 Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 18 GHz Band

(Radio Equipment of Radio Stations in the Land Mobile Service Using emissions of a Frequency in the 18 GHz Band)

Article 49.25.2. Radio equipment at base stations, land mobile relay stations, and land mobile stations among radio stations in the land mobile service established for telecommunications service and public services that use emissions of a frequency in a range of higher than 17.7 GHz to 17.82 GHz, higher than 17.97 GHz to 18.57 GHz, and higher than 19.22 GHz to 19.70 GHz (hereinafter referred to as “radio stations in the land mobile service using emissions of frequencies in the 18 GHz band”) shall comply with the conditions in the items below:

- 1) The communication method shall be frequency division duplex operation or time division duplex operation.
- 2) The modulation method shall be 4FSK, 4PSK, 16QAM, or OFDM, or shall have performance equal to or higher than that of these methods. However, for those that can automatically change the modulation method, the modulation method may also be 2 PSK limited to cases in which carriers attenuate due to rainfalls.
- 3) The signal transmission rate shall be 6 megabits/s or faster.

- 4) The antenna power shall be 1 W or less. However, for antenna power exceeding 0.1W, the power shall automatically decrease to 0.1 W or less when a receiver input voltage higher than or equal to an arbitrary value is applied.
 - 5) The polarized waves of transmitted or received emissions shall be horizontal polarized waves or vertical polarized waves.
 - 6) The transmitting antenna shall be a directional antenna, which shall be such that the absolute gain is 20 dB or more.
 - 7) The gain for an elongation from the direction of principal radiation shall be announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - 8) In addition to the provisions in the preceding items, technical conditions to be separately announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications shall be complied with.
- 2 Radio equipment (limited to that performing communication using the multiple access method) of land mobile stations among radio stations in the land mobile service using emissions of frequencies in the 18 GHz band shall comply with the conditions prescribed in the preceding items 2 to 8 and for the communication method with the conditions for time division duplex operation or for frequency division duplex operation using the time division multiple access method.
- 3 Radio equipment of base stations or land mobile relay stations communicating with the land mobile stations prescribed in the preceding paragraph shall comply with the conditions prescribed in the items below in addition to those prescribed in paragraph 1 items 1 to 3, item 5, and item 8.
- 1) The antenna power shall be 1 W or less.
 - 2) The transmitting antenna shall be such that the absolute gain is 20 dB or less.

Section 4.23 Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 60 GHz Band

(Radio Equipment of Radio Stations in the Land Mobile Service Using Emissions of a Frequency in the 60 GHz Band)

Article 49.25.3 The radio equipment of a base station (except the base station used for broadcasting service) which uses emissions of a frequency in a range of higher than 54.25 GHz to 59 GHz shall comply with the conditions in the items below:

- 1) The communication method shall be frequency division duplex operation or time division duplex operation or broadcast communication which uses one-way communication, frequency division multiplexing or time division multiplexing.
- 2) The modulation method shall be amplitude modulation, frequency modulation, phase

- modulation or a combination of these modulations.
- 3) The antenna power shall be 0.1 W or less.
 - 4) The polarized wave of transmitted or received emissions shall be a linearly polarized wave or a vertically polarized wave.
- 2 The radio equipment of land mobile stations that perform communication with the base station prescribed in the preceding paragraph shall comply with the conditions of items 2) to 4) of the preceding paragraph, and the communication method shall be frequency division duplex operation or time division duplex operation that uses FDMA or TDMA.
 - 3 The radio equipment (except the radio equipment prescribed in the preceding paragraph) of a land mobile station (except the land mobile station used for broadcasting service) which uses emissions of a frequency in a range of higher than 54.25 GHz to 59 GHz shall comply with the conditions in items 2) to 4) of paragraph 1, and the communication method shall be one-way communication, frequency division duplex operation or time division duplex operation.

Section 4.24 Radio Equipment of Radio Stations, etc. of Dedicated Short Range Communications (DSRC)

(Radio Equipment of Radio Stations, etc. of DSRC)

Article 49.26 The radio equipment of a radio station that performs communication for testing a land mobile station of a DSRC, a base station of a DSRC or the radio equipment of a land mobile station of a DSRC shall comply with the conditions in the items below:

- 1) The communication method shall be one-way communication, duplex operation, or duplex operation which uses time division multiplexing.
- 2) The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment and other devices announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3) Conditions for the transmitter
 - a The modulation method shall be ASK or QPSK.
 - b The modulation signal shall be as follows:
 - (1) The coding type shall be the split phase code in which the polarity of the transmitted signal is opposite at the middle point of each bit of the signal.
 - (2) The signal transmission rate shall be 1,024 kilobits/s for ASK, and 4,096 kilobits/s (with a tolerance of 100/1,000,000) for QPSK.
 - c The adjacent channel leakage power shall be such that the power radiated into the ± 2.2 MHz band of the frequency 5 MHz distant from the carrier frequency is lower than the carrier power by more than 30 dB, and the power radiated into the ± 2.2 MHz band of the frequency 10 MHz distant from the carrier frequency is lower than the carrier power by more than 40 dB.
- 2 The radio equipment of a land mobile station of a DSRC system shall comply with the conditions in the items below in addition to the conditions prescribed in the preceding paragraph.

- 1) The absolute gain of the transmitting antenna shall be 10 dB or less.
- 2) The leakage power of the transmitter when the carrier is not being transmitted shall be 2.5 μ W or less.
- 3 The radio equipment of a base station of a DSRC system shall comply with the conditions in the items below in addition to the conditions prescribed in paragraph 1.
 - 1) The antenna power of the transmitter shall be 0.3 W or less.
 - 2) The absolute gain of the transmitting antenna shall be 20 dB or less.
 - 3) The leakage power of the transmitter when the carrier is not being transmitted shall be 2.5 μ W or less.
- 4 The radio equipment of a radio station which performs communication for testing the radio equipment of a land mobile station of a DSRC system shall comply with the conditions in the items below in addition to the conditions prescribed in paragraph 1.
 - 1) The absolute gain of the transmitting antenna shall be 10 dB or less.
 - 2) The leakage power of the transmitter when the carrier is not being transmitted shall be 2.5 μ W or less.

Section 5 Radio Equipment of Emergency Stations

(Power Supply)

Article 50. The power supply of the radio equipment of an emergency station shall comply with the conditions in the items below unless otherwise specified.

- 1) The power supply shall be a hand generator, or a motor generator fuelled by gasoline, kerosene, gas oil, heavy oil, or so forth, and shall be available at all times for operation of a duration of 24 hours or more.
- 2) The power supply shall operate at full power immediately after it is turned on.

Section 6 Radio Equipment of Radio Stations for International Communication (Excluding International Broadcasting)

(Frequency Deviation Telegraph)

Article 51. For the transmitter at a radio telegraph station in the international communications service (excluding broadcasting; this also applies hereafter) that uses the frequency deviation method, the variation rate of the amplitudes of the two emissions generated when its key is operated shall be within $\pm 5\%$.

- 2 The deviation frequency described in the above paragraph shall be as stable as possible.

(Crosstalk)

Article 52. The crosstalk between sidebands in a single-sideband transmitter at a radio station that intends to provide an international communications service shall be within –35 dB.

(Variations in the Strength of a Reduced Carrier)

Article 53. Variations in the current amplitude of a reduced carrier used by the transmitter defined in the preceding Article shall be within 10% or as low as possible.

Section 7 Radio Equipment of Convenience Radio Stations

(Radio Equipment at a Convenience Radio Station)

Article 54. Radio equipment at a convenience radio station shall comply with the conditions in the items below according to the classifications therein.

- 1) Radio equipment that uses emissions of frequencies in the 150 MHz and 400 MHz bands (except radio equipment covered in the following item)
 - a The communication method shall be simplex operation or one-way communication.
 - b The height from the ground of a transmitting antenna (excluding the one whose horizontal surface has directivity) shall not exceed 30 meters.
- 2) Radio equipment that uses emissions of frequencies in a range of higher than 347.7 MHz to 351.9 MHz
 - a The communication method shall be simplex operation or one-way communication.
 - b The radio equipment shall be housed in a cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment, transmitters, receivers and other devices announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - c The radio equipment shall not generate emissions of any frequencies other than those announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 3) Radio equipment that uses emissions of frequencies in the 27 MHz band
 - a The communication method shall be one-way communication.
 - b The oscillation method shall be crystal oscillation.
 - c The radio equipment shall be contained in a cabinet except for power supplies.
 - d The antenna shall be of the whip type, and its length shall not exceed 2 meters.
 - e Neither a feeder nor grounding device shall be provided.
- 4) Radio equipment that uses emissions of frequencies in the 900 MHz band
 - a General conditions

- (1) The communication method shall be simplex operation.
 - (2) The modulation method shall be frequency modulation.
 - (3) The oscillation method shall be the frequency synthesizer method that controls the oscillation frequency by crystal oscillation.
 - (4) The radio equipment shall be contained in a cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to the antennas, feeders, power supplies, transmitters, receivers, and other devices announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (5) The absolute gain of the transmitting antenna shall be 7.1 dB or less, and its horizontal directional pattern shall be non-directional.
 - (6) The procedure for selecting frequencies for emissions to be used, the procedures for transmission and reception, and the configuration of a control signal shall be as announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - (7) The contents of the memory which contains the procedures for selecting frequencies for emissions to be used and for transmission and reception shall not be changed, and this memory shall be integral with the processor controlled by it.
 - (8) The frequencies of emissions to be used (including the channel number that indicates the frequency), and the contents of a received control signal shall not be displayed.
 - (9) The emission of any frequencies other than those announced separately (*4) by the Minister of Public Management, Home Affairs, Posts and Telecommunications shall not be generated.
 - (10) When emission generation is started or stopped, or every 60 seconds with emission generation continued, only a control signal shall be sent automatically. The communication method shall be simplex operation.
 - (11) When class F2D emission generation is continued owing to the radio equipment's failure, the generation shall be stopped automatically before the duration of the emission reaches 60 seconds.
- b Conditions for the transmitter
- (1) Transmitter which uses class F2D emissions
 - (a) The modulation signal shall be as follows.
 - (1) The coding type shall be the NRZ code.
 - (2) The signal transmission rate shall be 1,200 bits/s (with a tolerance of 200/1,000,000).
 - (3) The MSK method shall be used for modulation, the mark frequency shall be 1,200 Hz, and the space frequency shall be 1,800 Hz (with a tolerance of 200/1,000,000).
 - (b) The frequency deviation shall exceed the frequency of an unmodulated

carrier by ± 2.5 kHz and shall be within ± 5 kHz of this frequency.

- (2) Transmitter which uses class F3E emissions
 - (a) The modulation frequency shall be 3,000 Hz or less.
 - (b) The frequency deviation shall be within ± 5 kHz of the frequency of an unmodulated carrier.
 - (c) An automatic controller that prevents frequency deviation from exceeding the value defined in (c) shall be supported.
 - (d) A low-pass filter (limited to a low-pass filter that provides the ratio of attenuation at the frequencies from 3 kHz to 15 kHz to attenuation at 1 kHz being equal to or higher than the value determined by the expression below) shall be mounted between the automatic controller described in (d) and the modulator.
 $60\log_{10}(f/3)$ dB.
f indicates a frequency (in kHz) from 3 kHz to 15 kHz.
- 5) Radio equipment that uses emissions of frequencies in the 50 GHz band
 - a An automatic controller that prevents the occupied bandwidth from exceeding the value defined in No. 6 of Table 2 shall be installed.
 - b The radio equipment shall be contained in a cabinet that shall not be capable of being opened easily, except for antennas, feeders, power supplies, and accessories.
 - c Only power supply switches, selectors for transmission or reception, emission type selectors, frequency selectors, and indicator selectors shall be used as switches external to the transmitter.
 - d The transmitting antenna shall provide an absolute gain of 45 dB or less.
- 2 Radio equipment that uses the real number zero-point single-sideband modulation method shall comply with the conditions in the items below in addition to the conditions prescribed in items 1) and 2) of the preceding paragraph.
 - 1) The channel interval shall be 6.25 kHz.
 - 2) The adjacent channel leakage power shall be such that, in the case of modulation using a 1,700 Hz sine wave with the antenna power set at 80% of the rated output, the mean value of the power radiated into the ± 1.7 kHz band of the frequency 6.25 kHz distant from the frequency to be transmitted shall be lower than the mean power by 45 dB or more.
- 3 Radio equipment that uses the narrow-band digital communication method (which refers to a narrow-band digital communication method using a modulation method of $\pi/4$ shift 4PSK, offset 4PSK, 16QAM or multi-subcarrier 16QAM; this also applies hereafter) shall comply with the conditions in the items below in addition to the conditions prescribed in items 1) and 2) of paragraph 1.
 - 1) The modulation method shall refer to 4 value digital modulation (which refers to $\pi/4$ shift 4PSK or offset 4PSK; this also applies hereafter in this paragraph and in Article 57.3.2), or 16 value digital modulation (which refers to 16QAM or multi-subcarrier 16QAM; this also applies hereafter in this paragraph and in Article 57.3.2).
 - 2) The channel interval shall be 6.25 kHz.
 - 3) The adjacent channel leakage power shall comply with the conditions in the items below in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal:

- a In the case of radio equipment which uses 4 value digital modulation, the power radiated into the $\pm R$ band (R shall be 1/4 of the transmission rate of the modulation signal) of the frequency 6.25 kHz distant from the carrier frequency shall be lower than the carrier power by 45 dB or more.
- b In the case of radio equipment which uses 16 value digital modulation, the power radiated into the $\pm R$ band (R shall be 1/8 of the transmission rate of the modulation signal) of the frequency 6.25 kHz distant from the carrier frequency shall be lower than the carrier power by 45 dB or more.

Section 7.2 Radio Equipment of Citizen Radio Stations

(Radio Equipment at a Citizen Radio Station)

Article 54.2. Radio equipment at a citizen radio station (which refers to a radio station specified in the applicable ministerial ordinance of the Ministry of Public Management, Home Affairs, Posts and Telecommunications as described in Article 4-2 of the Law; this also applies hereinafter) shall comply with the conditions defined in the items below:

- 1) The communication method shall be simplex operation.
- 2) The transmitter shall oscillate by the crystal oscillation method.
- 3) Radio equipment shall be contained in a cabinet that shall not be capable of being opened easily, except for power supplies, transmitters, and receivers.
- 4) The external transmitter and receiver shall be connected via a cord whose length does not exceed 2 meters.
- 5) The transmitting antenna shall be of the whip type, and its length shall not exceed 2 meters.
- 6) Neither a feeder nor grounding device shall be supported.
- 7) No modulation frequency shall be oscillated.

Section 7.2.2 Radio Equipment of Small-Scale Earth Stations Whose Transmission Is Controlled by Another Earth Station

(Radio Equipment at a Small-Scale Earth Station Whose Transmission Is Controlled by Another Earth Station)

Article 54.3. Radio equipment constituting a communication system along with one of two or more earth stations opened on the ground (which are mobile stations and operate only when they are stopped) that controls transmission (hereinafter referred to as “control earth station” in this Article), having a transmitting antenna whose absolute gain is 50 dB or less, transmitting emissions of frequencies in a range of higher than 14.0 GHz to 14.4 GHz, and receiving emissions of frequencies in a range of higher than 12.44 GHz to 12.75 GHz shall comply with the conditions defined in the items below:

- 1) The cabinet for a transmitter/receiver shall not be capable of being opened easily.

- 2) The modulation method shall be frequency modulation or phase modulation.
- 3) The degree of cross polarized wave identification shall be 27 dB or more.
- 4) The electric power per 40 kHz bandwidth radiated from a transmitting antenna shall comply with the values prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table.

Elongation from the direction of principal radiation (θ)	Maximum radiation power (with 1 W regarded as 0 dB)
2.5 degrees to fewer than 7 degrees	Equal to or lower than the value obtained by the following expression: $33 - 25\log_{10}\theta$ dB
7 degrees to fewer than 9.2 degrees	12 dB or less
9.2 degrees to fewer than 48 degrees	Equal to or lower than the value obtained by the following expression: $36 - 25\log_{10}\theta$ dB
48 degrees to 180 degrees	-6 dB or less

- 5) A function for automatically suspending emission when the oscillation circuit for a transmitter is out of order shall be supported.
- 6) A function for enabling the start of transmission only when a control signal from the control earth station via a satellite station is received shall be supported.

Section 7.3 Radio Equipment of Radio Stations Using Amplitude Modulation Emissions

(Carrier Frequency)

Article 55. A single-channel radio telephone using a single sideband of 28 MHz or below (excluding radio telephones at radio stations in the maritime mobile service, aeronautical mobile service, and maritime radionavigation service and those at broadcasting stations) shall provide the carrier frequency that is lower than the frequency assigned to the radio telephone by 1.5 kHz (by 3.75 kHz for a radio telephone at a fixed station for program raw material relay or broadcasting program relay (hereinafter referred to as “broadcast relay”)).

(Conditions for the transmitter)

Article 56. The transmitter at a radio station that uses class H3E, J3E, or R3E emissions of 28 MHz or below shall comply with the conditions defined in the table below, except for transmitters at radio stations in the aeronautical mobile service, broadcasting stations, fixed stations for broadcast relay, and amateur radio stations.

Classification	Condition
Carrier power	For class R3E emissions, a value lower than the mean

	power modulated in the saturated level by a modulation frequency by 18 dB ±2 dB. For class J3E emissions, a value lower than this mean power by 40 dB or more
Sideband	Upper sideband
Output impedance	75 Ω wherever possible (except for ship stations and transmitters which output an antenna power of 1 W or less)
Tone frequency (except for transmitters provided for in Article 40.7 paragraphs 1 and 2)	1,500 Hz wherever possible
Overall frequency response characteristics (modulation frequencies from 350 Hz to 2,700 Hz)	6 dB or less (except for transmitters which output an antenna power of 1 W or less)
Overall distortion and noise	When the reference input level modulated by a frequency of 1,000 Hz is added, the ratio of total equipment output to unwanted elements contained in it shall be 20 dB or more (except for transmitters using class H3E emissions or outputting an antenna power of 1 W or less)

- 2 The transmitter listed in the previous paragraph and used for the maritime mobile service shall also comply with the conditions defined in the items below:
- 1) The frequency modulation accompanying a carrier shall be as low as possible.
 - 2) A transmitter equipped with a selective calling device shall be capable of transmitting a carrier together with a selective calling signal.

(Conditions for the Receiver)

Article 57. The receiver at a radio station in the maritime mobile service that uses class J3E emissions of 28 MHz or below shall comply with the conditions prescribed in the right-hand column of the table below according to the classification in the left-hand column of the table, except for the receiver at a radio station that uses transmitting equipment providing an antenna power of 1 W or less.

Classification		Condition
Sensitivity		The receiver input voltage required for making the ratio of half the receiver's rated output to unwanted elements contained in it be 20 dB shall be 3 μV or less with a modulation frequency of 1,000 Hz (except for the receivers provided for in Article 40.7 paragraphs 1 and 2).
One-signal selectivity	Passing bandwidth	The bandwidth of a 6 dB reduction shall be in a range of higher than 2.4 kHz to 3 kHz wherever possible.
	Attenuation	The bandwidth of a 26 dB reduction shall be within ±1.7 kHz. The bandwidth of a 46 dB reduction shall be within ±1.9 kHz. The bandwidth of a 66 dB reduction shall be within

		±2.1 kHz.
	Spurious response	40 dB or more
Effective selectivity		The desensitization effect shall be such that the disturbing wave input voltage that suppresses the output of a desired signal by 3 dB is 10 mV or more when the disturbing wave distant by 4 kHz or more (3 kHz or more for a radio station in the maritime mobile service that uses emissions in a range of higher than 1,606.5 kHz to 26,175 kHz) from the desired signal is applied with a modulated desired input voltage of 10 μV applied.
Local oscillator		1) Frequency variations per hour shall be within ±20 Hz for 13 MHz or below, and within ±50 Hz for higher than 13 MHz. 2) In addition to satisfying the condition in 1), the receiver at a ship station that is not used together with a transmitter shall be capable of being adjusted so that a desired signal may be received at a frequency difference of 50 Hz or less.
Overall distortion and noise		When a receiver input voltage of 30 μV modulated at a frequency of 1,000 Hz is applied, the ratio of half the rated output to the unwanted elements contained in it shall be 20 dB or more.

- 2 The receiver listed in the previous paragraph that is equipped with a selective calling device shall be able to receive a selective calling signal with no carrier added.

(Technical Conditions for Radio Equipment at a Radio Station in the Maritime Mobile Service Used for Facsimile Transmission)

Article 57.2. The radio equipment at a radio station in the maritime mobile service that uses class J2C or J3C emissions of 28 MHz or below shall comply with the technical conditions announced separately (*) as well as the conditions defined in Articles 56 and 57.

(Announcement: *1 in No. 736 in 1985)

(Radio Equipment at a Radio Station of Real Number Zero-Point Single-Sideband Modulation Method)

Article 57.2.2. The radio equipment at a radio station of the real number zero-point single-sideband modulation method which uses emissions of a frequency in a range of higher than 142 MHz to 170 MHz or higher than 335.4 MHz to 470 MHz shall comply with the conditions in the items below. However, this shall not apply to the radio equipment at coast stations, aeronautical stations, amateur radio stations, and convenience radio stations.

- 1) The channel interval shall be as follows:
 - a The channel interval of a single-sideband shall be 6.25 kHz.
 - b The channel interval of a frequency band other than a single-sideband shall be 12.5

kHz.

- 2) The adjacent channel leakage power shall comply with the conditions in the items below in the case of modulation using a 1,700 Hz sine wave with the antenna power set at 80% of the rated output:
 - a In the case of radio equipment with the channel interval of 6.25 kHz, the power radiated into the ± 1.7 kHz band of the frequency 6.25 kHz distant from the frequency to be transmitted shall be lower than the mean power by 55 dB or more or 32 μ W or less.
 - b In the case of radio equipment with the channel interval of 12.5 kHz, the power radiated into the ± 3.4 kHz band of the frequency 12.5 kHz distant from the frequency to be transmitted shall be lower than the mean power by 55 dB or more or 32 μ W or less.
- 2 In the case of radio equipment which radiates emissions of a frequency automatically selected by receiving emissions from a land station which is the other party of the communication, the communication method shall be duplex operation or dusimplex operation.
- 3 The radio equipment which has a function to automatically correct a transmission frequency (hereafter referred to as "frequency tracking function") shall comply with the frequency obtained by receiving emissions from a land station which is the other party of the communication (hereafter referred to as a "reference station") in addition to the conditions in the preceding paragraph.

(Announcements: *1 in No. 408 in 1994, *2 in No. 409 in 1994, *3 in No. 806 in 1982, and *4 in No. 512 in 1993)

Section 8 Radio Equipment of Radio Stations Using Angularly Modulated Emissions, etc.

(Conditions for the Transmitter)

Article 57.3. The transmitter for radio equipment at a fixed station, a radio station in the portable mobile service, and a radio station in the land mobile service that uses class F1B, F1C, F1D, F1E, F1F, F1N, F1X, G1B, G1C, G1D, G1E, G1F, G1N, or G1X emissions of frequencies in a range of higher than 54 MHz to 960 MHz, or frequencies in a range of higher than 1,215 MHz to 2,690 MHz shall comply with the conditions defined in the items below, except for radio stations that perform TDMA portable radio communication, radio stations that perform communication, etc. for testing TDMA portable radio communication equipment, radio stations that perform CDMA portable radio communication, radio stations that perform communication, etc. for testing CDMA portable radio communication equipment, radio stations that perform time division multiplexing/code division multiplexing portable radio communication, radio stations that perform communication, etc. for testing time division multiplexing/code division multiplexing portable radio communication equipment, radio stations that perform TDMA/CDMA portable radio communication, radio stations that perform communication, etc. for testing TDMA/CDMA portable radio communication equipment, radio stations that perform MCA land mobile communication

using emissions of frequencies in a range of higher than 850 MHz to 915 MHz, radio stations that perform communication, etc. for testing MCA land mobile communication equipment, radio stations that perform digital MCA land mobile communication using emissions of frequencies in a range of higher than 836 MHz to 915 MHz, or higher than 1,453 MHz to 1,525 MHz, radio stations that perform communication, etc. for testing digital MCA land mobile communication equipment, radio stations for cordless telephones, radio stations for digital cordless telephones, land mobile stations for personal handy phone systems, base stations for personal handy phone systems, radio stations that perform communication, etc. for testing personal handy phone system communication equipment, specified low-power radio stations, radio stations that perform digital airport radio communication and radio stations that perform communication, etc. for testing digital airport radio communication equipment, radio stations for low-power security systems, radio stations for low-power data communication systems, radio stations of the narrow-area digital communication method prescribed in the next Article, fixed stations that perform 1,900 MHz band subscriber radio access communication (which refer to fixed stations that perform subscriber radio access communication using emissions of a frequency of 1,893.65 MHz or higher to 1,919.45 MHz; this also applies hereafter), radio stations that perform communication, etc. for testing 1,900 MHz band subscriber radio access communication equipment (which refer to radio stations that perform communication for testing or adjusting the radio equipment of fixed stations performing 1,900 MHz band subscriber radio access communication; this also applies hereafter), and radio stations announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications when it is considered difficult or irrational to apply the conditions defined in the items below:

- 1) The modulation signal shall consist of pulses, and its transmission rate shall be 8 kilobits/s or less. For a radio station that uses emissions of frequencies in a range of higher than 1,215 MHz to 2,690 MHz, and a radio station announced separately (*2) by the Minister of Public Management, Home Affairs, Posts and Telecommunications, however, the transmission rate shall be 16 kilobits/s or less.
- 2) The frequency deviation shall be as follows.
 - a When the transmission rate of a modulation signal is 4 kilobits/s or less, the frequency deviation shall be within ± 2 kHz with respect to the frequency of an unmodulated carrier.
 - b When the transmission rate of a modulation signal is in a range of higher than 4 kilobits/s to 8 kilobits/s, the frequency deviation shall be within ± 4 kHz with respect to the frequency of an unmodulated carrier.
 - c When the transmission rate of a modulation signal exceeds 8 kilobits/s, the frequency deviation shall be within ± 8 kHz with respect to the frequency of an unmodulated carrier.
- 3) When a standard coding test signal having the same transmission rate as that of a modulation signal is used for modulation, adjacent channel leakage power values shall be as follows.
 - a When the transmission rate of a modulation signal is 4 kilobits/s or less, the electric power radiated in the ± 2 kHz band with respect to the frequency distant from the carrier frequency by 6.25 kHz shall be lower than the power of the carrier by 60 dB or more.

- b When the transmission rate of a modulation signal is in a range of higher than 4 kilobits/s to 8 kilobits/s, the electric power radiated in the ± 4 kHz band with respect to the frequency distant from a carrier frequency by 12.5 kHz shall be lower than the power of the carrier by 60 dB or more.
- c When the transmission rate of a modulation signal exceeds 8 kilobits/s, the electric power radiated in the ± 8 kHz band with respect to the frequency distant from a carrier frequency by 25 kHz shall be lower than the power of the carrier by 60 dB or more.

(Announcements: *1 in No. 108 in 1997 and *2 in No. 771 in 1986)

(Radio Equipment of Radio Stations Using Narrow-band Digital Communication Method)

Article 57.3.2. The radio equipment at a radio station of the narrow-band digital communication method which uses emissions of a frequency in a range of higher than 142 MHz to 170 MHz, higher than 255 MHz to 275 MHz, or higher than 335.4 MHz to 470 MHz shall comply with the conditions in the items below. However, this shall not apply to the radio equipment at specified low-power radio stations, radio stations that perform digital airport radio communication and radio stations that perform communication, etc. for testing digital airport radio communication equipment, radio stations for low-power security systems, coast stations, aeronautical stations, amateur stations, convenience radio stations, and radio stations announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications when it is considered too difficult or irrational to apply the conditions in the items below:

- 1) The modulation method shall be 4 value digital modulation or 16 value digital modulation.
- 2) The channel interval shall be as follows:
 - a The radio equipment which uses 4 value digital modulation shall comply with the conditions in the items below:
 - (1) 6.25 kHz/carrier ((2) and (3) shall be excluded).
 - (2) 12.5 kHz when the multiplexing number per carrier in TDMA is 2, or 12.5 kHz in the case of TDMA (including dusimplex operation; hereafter referred to as "TDMA") or when the number of channels per carrier in TDMA is 2 (however, it shall be 1 in the case of time division duplex operation).
 - (3) 25 kHz when the multiplexing number per carrier in the time division multiplexing method is 4 (however, it shall be 2 in the case of time division duplex operation), or when the number of channels per carrier in TDMA is 4 (however, it shall be 2 in the case of time division duplex operation).
 - b The radio equipment which uses 16 value digital modulation shall comply with the conditions in the items below:
 - (1) 6.25 kHz/carrier ((2) and (3) shall be excluded).
 - (2) 12.5 kHz when the multiplexing number per carrier in the time division multiplexing method is 4 (however, it shall be 2 in the case of time division duplex operation), or when the number of channels per carrier in TDMA is 4

(however, it shall be 2 in the case of time division duplex operation).

- (3) 25 kHz when the multiplexing number per carrier in the time division multiplexing method is 6 or when the number of channels per carrier in TDMA is 6.
- 3) The adjacent channel leakage power in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal shall comply with the conditions in the items below:
- a The radio equipment that uses 4 value digital modulation shall comply with the conditions in the items below:
 - (1) In the case of radio equipment whose channel interval is 6.25 kHz, the power radiated into the $\pm R$ band (R shall be 1/4 of the transmission rate of the modulation signal; this also applies hereafter in item a) of the frequency 6.25 kHz distant from the carrier frequency shall be lower than the carrier power by 55 dB or more or 32 W or less. However, it shall be lower by 45 dB or more in the case of radio stations of 1 W or less.
 - (2) In the case of radio equipment whose channel interval is 12.5 kHz, the power radiated into the $\pm R$ band of the frequency 12.5 kHz distant from the carrier frequency shall be lower than the carrier power by 55 dB or more or 32 μ W or less. However, it shall be lower by 45 dB or more in the case of radio stations of 1 W or less.
 - (3) In the case of radio equipment whose channel interval is 25 kHz, the power radiated into the $\pm R$ band of the frequency 25 kHz distant from the carrier frequency shall be lower than the carrier power by 55 dB or more or 32 μ W or less. However, it shall be lower by 45 dB or more in the case of radio stations of 1 W or less.
 - b The radio equipment that uses 16 value digital modulation shall comply with the conditions in the items below:
 - (1) In the case of radio equipment whose channel interval is 6.25 kHz, the power radiated into the $\pm R$ band (R shall be 1/4 of the transmission rate of the modulation signal; this also applies hereafter in item a) of the frequency 6.25 kHz distant from the carrier frequency shall be lower than the carrier power by 55 dB or more or 32 W or less. However, it shall be lower by 45 dB or more in the case of radio stations of 1 W or less.
 - (2) In the case of radio equipment whose channel interval is 12.5 kHz, the power radiated into the $\pm R$ band of the frequency 12.5 kHz distant from the carrier frequency shall be lower than the carrier power by 55 dB or more or 32 μ W or less. However, it shall be lower by 45 dB or more in the case of radio stations of 1 W or less.
 - (3) In the case of radio equipment whose channel interval is 25 kHz, the power radiated into the $\pm R$ band of the frequency 25 kHz distant from the carrier frequency shall be lower than the carrier power by 55 dB or more or 32 μ W or less. However, it shall be lower by 45 dB or more in the case of radio stations of 1 W or less.

- 2 In the case of radio equipment which radiates emissions of a frequency automatically selected by receiving emissions from a land station which is the other party of the communication, the communication method shall be duplex operation or dusimplex operation.
- 3 The radio equipment which has a frequency tracking function shall comply with the frequency obtained by receiving emissions from a reference station in addition to the conditions in the preceding paragraph.

Article 58. The transmitter for radio equipment at a radio station that uses class F2A, F2B, F2C, F2D, F2N, F2X, or F3E emissions shall comply with the conditions defined in the items below, except for transmitters at radio stations in the aeronautical mobile service (excluding aircraft stations that use emissions of frequencies listed in the table in Appendix 18 of the Radio Regulations), broadcasting stations, radio stations that perform broadcast relay, radio stations that perform MCA land mobile communication using emissions of frequencies in a range of higher than 850 MHz to 915 MHz, radio stations that perform communication, etc. for testing MCA land mobile communication equipment, radio stations that perform airport radio telephone communication using emissions of frequencies in a range of higher than 830 MHz to 887 MHz, radio stations that perform communication, etc. for testing airport radio telephone communication equipment, land mobile stations for specified radio microphones, radio stations for cordless telephones, specified low-power radio stations, radio stations for low-power security systems, radio stations for low-power data communications systems, experimental stations, convenience radio stations (excluding those using emissions of frequencies in a range of higher than 335.4 MHz to 470 MHz), amateur radio stations, premises radio stations, and radio stations announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications when it is considered difficult or irrational to apply the conditions defined in the items below:

- 1) The modulation frequency shall not exceed 3,000 Hz.
- 2) The transmitter which uses emissions of frequencies in a range of higher than 54 MHz to 70 MHz, higher than 142 MHz to 162.0375 MHz, higher than 450 MHz to 470 MHz, or higher than 1,215 MHz to 2,690 MHz (limited to the transmitter for on-board communication equipment using emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz for emissions of frequencies in a range of higher than 450 MHz to 470 MHz) shall provide a frequency shift that does not exceed ± 5 kHz with respect to the frequency of an unmodulated carrier, and the transmitter which uses emissions of frequencies in a range of higher than 335.4 MHz to 470 MHz, or higher than 810 MHz to 960 MHz (excluding the transmitter for on-board communication equipment using emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz) shall provide a frequency shift that does not exceed ± 2.5 kHz with respect to the frequency of an unmodulated carrier.
- 3) An automatic controller that prevents the frequency shift from exceeding the value defined in the previous item shall be supported (except for the transmitter which provides an antenna power of 1 W or less (limited to the transmitter for on-board communication equipment using emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz when emissions of frequencies in a range of higher than 335.4 MHz to 470 MHz are used)).
- 4) A low-pass filter (limited to a low-pass filter that provides the ratio of attenuation at each of the frequencies of 3 kHz to 15 kHz to attenuation at 1 kHz that is equal to or greater

than the value determined by the expression in the right-hand column in the table below according to the transmitter classification in the left-hand column of the table) shall be installed between the automatic controller defined in the preceding item and the modulator.

Transmitter classification	Expression for determining the attenuation ratio
Transmitter using emissions of frequencies in a range of higher than 54 MHz to 70 MHz, or higher than 142 MHz to 162.0375 MHz, or a transmitter in on-board communication equipment using emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz	$40\log_{10}(f/3)$ dB In this table, f indicates a frequency (in kHz) from 3 kHz to 15 kHz.
Transmitter using emissions of frequencies in a range of higher than 335.4 MHz to 470 MHz, or higher than 810 MHz to 960 MHz (excluding the transmitter for on-board communication using emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz)	$80\log_{10}(f/3)$ dB
Transmitter using emissions of frequencies in a range of higher than 1,215 MHz to 2,690 MHz,	$60\log_{10}(f/3)$ dB

- 5) When the input voltage higher by 10 dB than the input voltage required for modulation of 60% of the maximum frequency shift at a frequency of 1,250 Hz is applied, adjacent channel leakage power values shall be as follows.
- a For the transmitter which uses emissions of frequencies in a range of higher than 335.4 MHz to 470 MHz, or higher than 810 MHz to 690 MHz (excluding the transmitter for on-board communication equipment using emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz), the electric power radiated in the ± 4.25 kHz band with respect to the frequency distant from the frequency of a carrier by 12.5 kHz shall be lower than the power of the carrier by 60 dB or more.
 - b For the transmitter which uses emissions of frequencies in a range of higher than 1,215 MHz to 2,690 MHz, the electric power radiated in the ± 8 kHz band with respect to the frequency distant from the frequency of a carrier by 25 kHz shall be lower than the power of the carrier by 60 dB or more.

(Announcement: * in No. 63 in 1984)

(Conditions for the Receiver)

Article 58.2. The receiver at a radio station in the maritime mobile service that uses class F2A, F2B, F2D, F2N, F2X, or F3E emissions of frequencies in a range of higher than 54 MHz to 70 MHz, or higher than 142 MHz to 162.0375 MHz shall comply with the conditions prescribed in the right-hand column of the table below according to the classification in the left-hand column thereof, except for receivers at radio stations that provide an antenna power

of 1 W or less, radio stations defined in Article 40.2 paragraph 1 (including cases where the paragraph is also applicable to Article 45.12.4; this also applies to the next paragraph), and radio stations announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications when it is considered too difficult or irrational to apply the conditions defined in this Article.

Classification		Condition
Sensitivity		The receiver input voltage required for making the noise suppression 20 dB shall be 2 μ V or less.
One-signal selectivity	Passing bandwidth	The bandwidth of a 6 dB reduction shall be 12 kHz or more.
	Attenuation	The bandwidth of a 70 dB reduction shall be within 25 kHz.
	Spurious response	80 dB or more
Effective selectivity	Desensitization effect	When a disturbing wave distant from a desired signal by 20 kHz or more is applied with the applied desired input voltage higher by 6 dB than the receiver input voltage required for making the noise suppression 20 dB, the disturbing wave input voltage generated when noise suppression of 20 dB is achieved shall be 10 mV or more.
	Intermodulation characteristics	When disturbing waves that generate intermodulation with no desired signal are applied at an input voltage of 1.78 mV, the noise suppression level shall be 20 dB or less.
Frequency variations in a local oscillator		Within 0.001%
Overall distortion and noise		When a receiver input voltage of 10 μ V modulated up to 70% of the maximum frequency shift at a frequency of 1,000 Hz is applied, the ratio of the total device output to the unwanted elements contained within it shall be 20 dB or more.

- 2 The receiver at the radio station defined in Article 40.2 paragraph 1 (excluding the receiver defined in the next Article) shall satisfy the technical conditions announced separately (*2).
(Announcements: *1 in No. 63 in 1984 and *2 in No. 622 in 1970)

Article 58.2.2. The receiver at a radio station in the maritime mobile service that uses class F2A, F2B, F2D, F2N, F2X, or F3E emissions of frequencies in a range of higher than 335.4 MHz to 470 MHz (excluding the receiver for on-board communication equipment that uses emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz) shall comply with the conditions prescribed in the right-hand column of the table below according to classifications defined in the left-hand column thereof, except for receivers at radio stations announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications when it is considered too difficult or irrational to apply the conditions defined in this Article.

Classification		Condition
Sensitivity		The standard sensitivity (which refers to the receiver input voltage required for making the ratio of the sum of device signal, noise, and distortion output to the sum of noise and distortion output 12 dB when a desired signal modulated up to 60% of the maximum frequency shift at a frequency of 1,000 Hz is applied; this also applies hereafter) is 2 μ V or less.
Passing bandwidth for one-signal selectivity		8 kHz or more when the receiver input voltage for making the noise suppression level 20 dB is applied
Effective selectivity	Spurious response	When a disturbing wave modulated up to 60% of the maximum frequency shift at a frequency of 400 Hz is applied with the applied desired input voltage higher than the standard sensitivity by 3 dB, the ratio of the disturbing wave input voltage to the standard sensitivity when the ratio of the sum of device signal, noise, and distortion output to the sum of noise and distortion output is 12 dB shall be 70 dB or more (50 dB or more for the receiver for a radio station that provides an antenna power of 1 W or less).
	Adjacent channel selectivity	When a disturbing wave distant from a desired wave by 12.5 kHz and modulated up to 60% of the maximum frequency shift at a frequency of 400 Hz is applied with the applied desired input voltage higher than the standard sensitivity by 3 dB, the ratio of the disturbing wave input voltage to the standard sensitivity when the ratio of the sum of device signal, noise, and distortion output to the sum of noise and distortion output is 12 dB shall be 60 dB or more.
	Intermodulation characteristics	When disturbing waves that generate intermodulation are applied with the applied desired input voltage higher than the standard sensitivity by 3 dB, the ratio of the disturbing wave input voltage to the standard sensitivity when the ratio of the sum of device signal, noise, and distortion output to the sum of noise and distortion output is 12 dB shall be 70 dB or more (60 dB or more for the receiver for a radio station that provides an antenna power of 1 W or less).
Frequency variations in a local oscillator		Within 0.0003% (within 0.0004% for the receiver for a radio station that provides an antenna power of 1 W or less)

Overall distortion and noise	When a receiver input voltage of 10 μ V modulated up to 70% of the maximum frequency shift at a frequency of 1,000 Hz is applied, the ratio of the total device output to the unwanted elements contained within it shall be 20 dB or more.
------------------------------	---

- 2 The receiver for on-board communication equipment that uses class F3E emissions of frequencies in a range of higher than 450 MHz to 467.58 MHz (excluding the receiver which provides an antenna power of 1 W or less) shall satisfy the conditions prescribed in the right-hand column of the table below according to the classification in the left-hand column thereof.

Classification		Condition
Sensitivity		The receiver input voltage required for making the noise suppression level 20 dB shall be 2.5 μ V or less.
One-signal selectivity	Passing bandwidth	12 kHz or more
	Attenuation	The bandwidth of a 70 dB reduction shall be within 30 kHz.
	Spurious response	70 dB or more
Effective selectivity	Desensitization effect	When a disturbing wave distant from a desired signal by 25 kHz or more is applied with the applied desired input voltage higher by 6 dB than the receiver input voltage required for making the noise suppression level 20 dB, the disturbing wave input voltage when the noise suppression level is 20 dB shall be 3.16 mV or more.
	Intermodulation characteristics	When disturbing waves that generate intermodulation with no desired signal are applied at an input voltage of 1.78 mV, the noise suppression level shall be 20 dB or less.
Frequency variations in a local oscillator		Within 0.001%
Overall distortion and noise		When a receiver input voltage of 10 μ V modulated up to 70% of the maximum frequency shift at a frequency of 1,000 Hz is applied, the ratio of the total device output to the unwanted elements contained within it shall be 20 dB or more.

(Announcement: * in No. 63 in 1984)

Section 9 Radio Equipment of Fixed Stations Forming a Communication System Using Emissions of Frequencies of 54 MHz or More

(Conditions for Radio Equipment Forming a Communication System)

Article 58.2.3. If two or more fixed stations that use a telemeter or radio telephone using emissions of frequencies of 54 MHz or more functionally constitute a communication system, the radio equipment shall satisfy the conditions defined in the items below, except for radio equipment at a radio station that uses the real number zero-point single-sideband modulation method prescribed in Article 57.2.2, the radio equipment at a radio station that uses the narrow-band digital communication method prescribed in Article 57.3.2, and the radio equipment announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

- 1) When a test tone of 800 Hz in the 0 dB level (with 1 W regarded as 0 dB) is applied to the input of the transmitting terminal equipment, the output at the receiving terminal equipment shall be -40 dB or more, and the standard S/N ratio shall be 30 dB or more. When only emissions of frequencies of 1,000 MHz or below are used, however, the standard S/N ratio shall be 20 dB or more.
- 2) Measures for maintaining good local communication should be taken wherever possible, and measures to guard against interference with communication by other radio stations shall be taken.

(Radio Equipment at a Fixed Station for Telecommunications Service Using Emissions of Frequencies in the 4 GHz, 5 GHz, 6 GHz, 6.5 GHz or 7.5 GHz Band)

Article 58.2.4. Radio equipment at a fixed station established for telecommunications service that uses emissions of frequencies in a range of higher than 3.6 GHz to 4.2 GHz, higher than 4.4 GHz to 5 GHz, or higher than 5.952 GHz to 6.425 GHz shall comply with the conditions in the items below:

- 1) The communication method shall be one-way communication or duplex operation.
 - 2) The modulation method shall be frequency modulation (limited to modulation of the main carrier by an analog signal by a signal composed of digital and analog signals; this also applies to the next Article), 4PSK, 16QAM, 64QAM, or 256QAM.
 - 3) The polarized wave of emissions to be sent or received shall be a horizontally polarized wave or a vertically polarized wave.
- 2 The radio equipment established with the aim of performing telecommunications service which uses emissions of a frequency in a range of higher than 6,570 MHz to 6,870 MHz or higher than 7,425 MHz to 7,750 MHz shall comply with the conditions defined in the items below:
- 1) The communication method shall be duplex operation.
 - 2) The modulation method shall be 4PSK, 16QAM, 32QAM, 64QAM, or 128QAM.
 - 3) The polarized wave of emissions to be sent or received shall be a horizontally polarized wave or a vertically polarized wave.

(Radio Equipment at a Fixed Station for Telecommunications Service Using Emissions of Frequencies in the 11 GHz or 15 GHz Band)

Article 58.2.5. Radio equipment at a fixed station established for telecommunications service that uses emissions of frequencies in a range of higher than 10.7 GHz to 11.7 GHz, or higher than 14.4 GHz to 15.35 GHz shall comply with the conditions defined in the items below:

- 1) The communication method shall be one-way communication or duplex operation.
- 2) The modulation method shall be frequency modulation, 4PSK, 8 PSK, 16QAM, or 64 QAM.

- 3) The polarized wave of emissions to be sent or received shall be a horizontally polarized wave or a vertically polarized wave.

(Radio Equipment at a Fixed Station for Telecommunications Service Using Emissions of Frequencies in the 18 GHz Band)

Article 58.2.6. Radio equipment at a fixed station for telecommunications service using emissions of a frequency in a range of higher than 17.70 GHz to 17.82 GHz, higher than 17.85 GHz to 18.57 GHz, higher than 18.60 GHz to 18.72 GHz, or higher than 19.22 GHz to 19.70 GHz (hereinafter referred to as a “fixed station for telecommunications service using emissions of frequencies in the 18 GHz band”) shall comply with the conditions in the items below:

- 1) The communication method shall be frequency division duplex operation.
- 2) The modulation method shall be 4FSK, 4PSK, 16 QAM or OFDM, or shall have performance equal to or higher than that of these methods.
- 3) The signal transmission rate shall be 6 megabits/s or faster.
- 4) The antenna power shall be 1 W or less.(In a range of higher than 17.85 GHz to 17.97 GHz and in a range of higher than 18.6 GHz to 18.72 GHz, the antenna power shall be 0.5 W or less.) However, for antenna power exceeding 0.1 W, the power shall automatically decrease to 0.1 W or less when a receiver input voltage higher than or equal to an arbitrary value is applied.
- 5) The polarized waves of transmitted or received emissions shall be horizontal polarized waves or vertical polarized waves.
- 6) The transmitting antenna shall be a directional antenna, which shall be such that the absolute gains is 20 dB or more.
- 7) The gain for an elongation from the direction of principal radiation shall be announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 8) The technical conditions to be announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications shall be complied with in addition to provisions in the preceding items.

(Radio Equipment at a Fixed Station for Telecommunications Service Using Emissions of Frequencies in the 22 GHz Band)

Article 58.2.6.2 Radio equipment at a fixed station established for telecommunications service that uses emissions of frequencies in a range of higher than 22.4 GHz to 22.6 GHz, or higher than 23 GHz to 23.2 GHz (hereinafter referred to as “fixed station for telecommunications service using emissions of frequencies in the 22 GHz band”) shall comply with the conditions defined in the items below:

- 1) The communication method shall be duplex operation.
- 2) The modulation method shall be 4FSK or 4PSK.
- 3) The modulation signal shall consist of pulses, and its transmission rate shall be 8.192 megabits/s. When a signal for correcting an error is added to the said modulation signal, however, the transmission rate of the error correction signal shall not exceed the transmission rate of the modulation signal.
- 4) The transmitting antenna shall have characteristics equal to or better than those of a parabolic antenna with a diameter of 30 cm to 120 cm.

(Radio Equipment at a Fixed Station for Telecommunications Service Using Emissions of

Frequencies in the 38 GHz Band)

Article 58.2.7. Radio equipment at a fixed station established for telecommunications service that uses emissions of frequencies in a range of higher than 37.9 GHz to 38.05 GHz, or higher than 38.9 GHz to 39.05 GHz (hereinafter referred to as “fixed station for telecommunications service using emissions of frequencies in the 38 GHz band”) shall comply with the conditions defined in the items below:

- 1) The communication method shall be duplex operation.
- 2) The modulation method shall be 4FSK or 4PSK.
- 3) The modulation signal shall consist of pulses, and its transmission rate shall be 8.192 megabits/s or less. When a signal for correcting an error is added to the said modulation signal, however, the transmission rate of the error correction signal shall not exceed the transmission rate of the modulation signal.
- 4) The transmitting antenna shall have a gain or directional pattern equal to or better than that of a parabolic antenna with a diameter of 30 cm.

(Pushed back from Article 58.2.5.)

(Radio Equipment at a Fixed Station Forming a Communication System Using Emissions of Frequencies in the 6.5 GHz or 7.5 GHz Band)

Article 58.2.8. Radio equipment at a fixed station forming a communication system using emissions of frequencies in a range of higher than 6.57 GHz to 6.87 GHz, or higher than 7.425 GHz to 7.75 GHz (excluding fixed stations used for telecommunications service and broadcasting service) shall comply with the conditions defined in the items below:

- 1) The communication method shall be duplex operation.
- 2) The modulation method shall be 4PSK, 16QAM, 32QAM, 64QAM, or 128QAM.
- 3) The polarized wave emissions to be sent or received shall be a horizontally polarized wave or a vertically polarized wave.

(Radio Equipment at a Fixed Station Forming a Communication System Using Emissions of Frequencies in the 12 GHz Band)

Article 58.2.9. Radio equipment at a fixed station forming a communication system using emissions of frequencies in a range of higher than 12.2 GHz to 12.5 GHz shall comply with the conditions defined in the items below:

- 1) The communication method shall be one-way communication or duplex operation.
- 2) The modulation method shall be 4PSK, 16QAM, 32QAM, 64QAM, or 128QAM.
- 3) The polarized wave of emissions to be sent or received shall be a horizontally polarized wave or a vertically polarized wave.

(Radio Equipment at a Fixed Station for Public Services Using Emissions of Frequencies in the 18 GHz Band)

Article 58.2.9.2. Radio equipment at a fixed station established for public services using emissions of a frequency in a range of higher than 17.7 GHz to 17.85 GHz, higher than 17.97 GHz to 18.60 GHz, or higher than 19.22 GHz to 19.70 GHz (hereinafter referred to as “fixed station for public services using emissions of frequencies in the 18 GHz band”) shall comply with the conditions in the items below:

- 1) The communication method shall be frequency division duplex operation.
- 2) The modulation method shall be 4FSK, 4PSK, 16 QAM, or OFDM, or shall have performance equal to or higher than that of these methods.
- 3) The signal transmission rate shall be 6 megabits/s or faster.
- 4) The antenna power shall be 1 W or less. However, for antenna power exceeding 0.1 W, the power shall automatically decrease to 0.1 W or less when a receiver input voltage higher than or equal to an arbitrary value is applied.
- 5) The polarized waves of transmitted or received emissions shall be horizontal polarized waves or vertical polarized waves.
- 6) The transmitting antenna shall be a directional antenna, which shall be such that the absolute gain is 20 dB or more
- 7) The gain for an elongation from the direction of principal radiation shall be announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 8) The technical conditions to be announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications shall be complied with in addition to provisions in the preceding items.

(Radio Equipment at a Fixed Station Forming a Communication System Using Emissions of Frequencies in the 40 GHz Band)

Article 58.2.10. Radio equipment at a fixed station forming a communication system using emissions of frequencies in a range of higher than 37.5 GHz to 37.9 GHz, or higher than 38.5 GHz to 38.9 GHz shall comply with the conditions defined in the items below:

- 1) The communication method shall be one-way communication or duplex operation.
- 2) The modulation method shall be frequency modulation (limited to modulation of the main carrier by an analog signal), 2PSK, 4PSK, or 2FSK.
- 3) The polarized wave emissions to be sent or received shall be a horizontally polarized or a vertically polarized wave.

(Radio Equipment at a Fixed Station Forming a Communication System Using Emissions of Frequencies in the 23 GHz Band)

Article 58.2.11. Radio equipment at a fixed station forming a communication system using emissions of frequencies in a range of higher than 23.2 GHz to 23.6 GHz shall comply with the conditions in the items below:

- 1) The communication method shall be one-way communication, duplex operation, or broadcasting communication.
- 2) The modulation method shall be amplitude modulation, frequency modulation, 4PSK, or 16QAM.
- 3) If 4PSK or 16QAM is used, the modulation signal shall consist of pulses, and its transmission rate shall be 50 megabits/s or less.
- 4) If a one-way communication or duplex operation method is used, the transmitting antenna shall have a gain or directional pattern equal to or better than that of a parabolic antenna with a diameter of 30 cm.

(Radio Equipment at a Fixed Station Established for Performing a Digital Disaster Prevention Service in a City, Town, or Village that Uses Emissions of Frequencies in the 60 MHz Band)

Article 58.2.12. Radio equipment at a fixed station established for performing a digital disaster prevention service in a city, town, or village that uses emissions of frequencies in a range of higher than 54 MHz to 70 MHz shall comply with the conditions in the items below:

- 1) The communication method shall be time division duplex operation using time division multiplexing or TDMA.
- 2) The modulation method shall be 16QAM.
- 3) The adjacent channel leakage power shall provide the power radiated into the $\pm R$ band (R shall be $1/8$ of the transmission rate of the modulation signal) of the frequency 15 kHz distant from the carrier frequency that is lower than the carrier power by 45 dB or more in the case of a radio station whose antenna power is 1 W or less, or by 55 dB or more or 32 μ W or less in the case of a radio station whose antenna power is 1 W or more.

**Section 10 Radio Equipment of Fixed Stations Forming a
Communication System Using Subscriber Radio Access
Communication, or Radio Equipment of Radio Stations
that Perform Communication, etc. for Testing Subscriber
Radio Access Communication Equipment**

(Radio Equipment at a Fixed Station that Performs 1,900 MHz Band Subscriber Radio Access Communication, and that Performs Communication, etc. for Testing 1,900 MHz Band Subscriber Radio Access Communication Facilities)

Article 58.2.13. Radio equipment at a fixed station that performs 1,900 MHz band subscriber radio access communication and that is connected to terminal equipment or customer-provided telecommunications facilities shall satisfy the conditions defined in the items below:

- 1) General conditions
 - a The communication method shall be time division duplex operation using time division multiple access. The number of channels per carrier for time division multiple access and the frame configuration for time division duplex operation shall be, however, as announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - b The carrier sensor to be supported shall comply with the terminal conditions announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - c If emission is continued owing to the failure of radio equipment, the emission shall be stopped automatically before the duration of the emission reaches 60 seconds.
- 2) Conditions for the transmitter
 - a The modulation method shall be QPSK which shifts the reference phase $\pi/4$ every 2 bits.

- b Modulation shall be accompanied by band limitation of 50% roll-off on the transmission side, provided that the roll-off rate is 0.5.
 - c When a standard coding test signal having the same transmission rate as that of a modulation signal is used for modulation, the adjacent channel leakage power radiated in a band of ± 96 kHz with respect to the frequency distant from the carrier frequency by 600 kHz or 900 kHz shall be 800 nW or less, or 250 nW or less, respectively.
 - d While no carrier is sent during communication, the leakage power shall be 80 nW or less.
 - e The modulation signal shall consist of pulses, and its transmission rate shall be 384,000 bits/s (with a tolerance of 100/1,000,000). The transmission rate of a signal which consists of pulses converted from, for example, voice shall be, however, as announced separately (*1) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
 - f The antenna power shall be 0.08 W or less.
 - g The antenna shall provide an absolute gain of 22 dB or less. When the effective radiated power is equal to or lower than the value generated when an antenna power of 0.08 W is applied to an antenna with an absolute gain of 22 dB, however, this value shall be compensated for by the antenna gain.
 - h The frequency of emissions to be sent shall be selected automatically by sending emissions for a fixed station as the remote station.
- 2 Radio equipment at a fixed station for communicating with a fixed station connected to terminal equipment of customer-provided telecommunications facilities or at a radio station that performs communication, etc. for testing 1,900 MHz band subscriber radio access communication equipment shall comply with the conditions defined in the items below, as well as the conditions defined in items 1) b and c, and items 2) a to e in the previous paragraph.
- 1) For transmission to a fixed station connected to terminal equipment or customer-provided telecommunications facilities from a fixed station for communicating with a fixed station connected to terminal equipment or customer-provided telecommunications facilities, or for transmission to a fixed station for relaying 1,900 MHz band subscriber radio access communication from a fixed station for communicating with a fixed station connected to terminal equipment or customer-provided telecommunications facilities (excluding a fixed station for relaying 1,900 MHz band subscriber radio access communication), the communication method shall be time division duplex operation using time division multiplexing. For transmission to a fixed station for communicating with a fixed station connected to terminal equipment or customer-provided telecommunications facilities (excluding a fixed station for relaying 1,900 MHz band subscriber radio access communication) from a fixed station for relaying 1,900 MHz band subscriber radio access communication, the communication method shall be time division duplex operation using time division multiple access. The multiplex count in time division multiplexing, the number of channels per carrier for time division multiple access, and the frame configuration for time division duplex operation shall be, however, as announced separately (*) by the

Minister of Public Management, Home Affairs, Posts and Telecommunications.

- 2) The antenna power shall be 0.16 W or less.
- 3) The antenna shall provide an absolute gain of 22 dB or less. When the effective radiated power is equal to or lower than the value generated when an antenna power of 0.16 W is applied to an antenna with an absolute gain of 22 dB, however, this value shall be compensated for by the antenna gain.

Chapter V High Frequency-Based Equipment

Section 1 General

(Method for Computing High-Frequency Output, and Other Topics)

Article 58.3. Methods for measuring and computing high-frequency output generated from high frequency-based equipment shall be announced (*).

(Announcement: * in No. 851 in 1959)

Section 2 Communication Equipment

(Scope of application)

Article 58.4. The provisions in this Section shall apply to the communication equipment for which a permit prescribed in Article 100 paragraph 1 item 1) of the Law is required.

(Frequency Range, etc.)

Article 59. The communication equipment described in the items below shall comply with the conditions defined in the respective items. However, this shall not apply to radio stations announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

- 1) For power line communication equipment (which refers to power line communication equipment as specified in Article 44 paragraph 1 item 1 of the Enforcement Regulations; this also applies hereafter), a frequency from 10 kHz to 450 kHz shall be used.
 - 2) For inductive radio communication equipment (which refers to inductive radio communication equipment as specified in Article 44 paragraph 1 item 2 of the Enforcement Regulations, excluding inductive reading and writing radio communication equipment as specified in (2) of the said item; this also applies hereafter), a frequency from 10 kHz to 250 kHz shall be used.
- 2 The high-frequency output of the transmission equipment of power line communication equipment (excluding that of special equipment) shall not exceed 10 W.

(Frequency Tolerance)

Article 59.2. The tolerance of the frequency emitted from power line communication equipment or inductive radio communication equipment shall be 1/1,000. Notwithstanding

the above provisions, the type of equipment for which that value should be moderated according to the opinion of the Minister of Public Management, Home Affairs, Posts and Telecommunications, as well as an available frequency and a new value for the equipment, shall be defined separately (*).

(Announcement: * in No. 118 in 1960)

Article 59.3. The tolerance of the frequency emitted from inductive reading and writing radio communication equipment shall be 50/1,000,000.

(Permissible Level of Leakage Field Strength)

Article 60. The strength of the electric field generated by the carrier wave of high-frequency current through a power line of power line communication equipment shall be 500 μV per meter or less over 1 km or more from the transmitter and at a point $\lambda/2$ from the power line (where λ represents the wavelength of the carrier wave in meters; this also applies hereafter). However, this shall not apply to power line communication equipment announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

Article 61. The strength of the electric field generated by the carrier wave of a high-frequency current through a line for inductive radio communication equipment shall be 200 μV per meter or less at a point $\lambda/2$ from the line except when this value cannot be measured owing to topographical restrictions such as in a tunnel in a coal mine or similar locations.

Article 61.2. The strength of the electric field generated by the carrier wave emitted from inductive reading and writing radio communication equipment shall be equal to or lower than the value specified in the items below at a distance of 10 m.

- 1) 47.544 mV/m in the frequency band of 13.553 MHz or higher to 13.567 MHz
- 2) 1.061 mV/m in the frequency band of 13.41 MHz or higher to lower than 13.553 MHz or higher than 13.567 MHz to 13.71 MHz
- 3) 316 $\mu\text{V}/\text{m}$ in the frequency band of 13.11 MHz or higher to lower than 13.41 MHz or higher than 13.71 MHz to 14.01 MHz
- 4) 150 $\mu\text{V}/\text{m}$ at frequencies other than those specified in item 3) above

Article 62. The strength of harmonics, subharmonics, or parasitic emissions radiated from power line communication equipment or inductive radio communication equipment shall be lower than that of the carrier wave by 30 dB or more.

Article 62.2 The strength of harmonics or subharmonics radiated from inductive reading and writing radio communication equipment shall be 50 μW or less.

(Conditions of Power Line Communication Equipment)

Article 63. To prevent interference with other communication equipment owing to a high-frequency current flowing through the power line, power line communication equipment shall comply with the conditions defined in the items below:

- 1) A branch point of a power line through which a high-frequency current flows shall be provided with a retardation coil to satisfy the transmission characteristic requirements.
- 2) There shall be few other lines and communication equipment units near a power line through which a high-frequency current flows.

(Conditions of Inductive Radio Communication Equipment)

Article 64. A line for inductive radio communication equipment through which a high-frequency current flows shall not be linked with other transmitting lines wherever possible to prevent interference with other communication equipment.

(Prevention of Interference, etc. by Communication Equipment)

Article 64.2. For power line communication equipment, inductive radio communication equipment, or inductive reading and writing radio communication equipment, measures required for removing interference or disturbance shall be taken if an emission or high-frequency current emitted secondarily from the equipment continuously causes or could cause serious interference or disturbance to other communication equipment.

Section 3 Equipment Other Than Communication Equipment

(Permissible Value of Electric Field Strength)

Article 65. Unless otherwise announced (*), the maximum permissible value of the strength of the electric field generated by frequency emissions used by or spurious emissions emitted from high frequency-based equipment other than communication equipment shall be as follows.

- 1) Medical equipment: 100 μ V per meter or less at a distance of 30 meters (at the boundary between the site for the building or construction in which the equipment is installed and an adjacent area owned by the equipment owner if the distance between the equipment and the boundary exceeds 30 meters)
- 2) Industrial heating equipment: 100 μ V per meter or less at a distance of 100 meters (at the boundary between the site for the building or construction in which the equipment is installed and an adjacent area owned by the equipment owner if the distance between the equipment and the boundary exceeds 100 meters)
- 3) Miscellaneous equipment
 - (1) Miscellaneous equipment providing a high-frequency output of 500 W or less: Same as item 1)
 - (2) Miscellaneous equipment providing a high-frequency output of higher than 500 W:

Value specified in item 1) multiplied by $\sqrt{\frac{P}{500}}$ (P represents the high-frequency

output in watts) that does not exceed the value specified in item 2), or a lower value

(Announcement: * in No. 257 in 1971)

(Prevention of Interference, etc. by Equipment Other Than Communication Equipment)

Article 66. For the equipment defined in the items of the preceding Article, measures required for removing interference or disturbance shall be taken if an emission or high-frequency current emitted secondarily from the equipment continuously causes or could cause serious interference or disturbance to other communication equipment.

Supplementary Provisions

- 1 These Regulations shall come into force as of December 1, 1950.
- 2 The provisions of Article 7 paragraph 1 item 2) shall not be applied to transmitting equipment installed on or before June 1, 1950 and using frequencies of and higher than 30,000 kc for two (2) years as of December 1, 1950.
- 3 Deleted
- 4 Deleted
- 5 The provisions of item 2) of the table in Article 42 shall not be applied to transmitters installed on or before June 1, 1950 for two (2) years as of December 1, 1950.
- 6 For equipment approved on or before May 31, 1961, and which uses high frequencies but which is not used for transmission (excluding the equipment provided in the proviso in Article 65), the values specified in each item of this Article shall be read, by May 31, 1963, as follows, respectively.
 - 1) Medical equipment: 10 μ V or lower per meter at a distance of 1,600 meters
 - 2) Industrial heating equipment: 100 μ V or lower per meter at a distance of 1,600 meters
 - 3) Miscellaneous equipment:
 - (1) Equipment rated at no more than 500 W high-frequency output: Value specified in item 1)
 - (2) Equipment rated at more than 500 W high-frequency output: Value specified in item 1) multiplied by $\sqrt{\frac{P}{500}}$ (P represents the high-frequency output in watts) that does not exceed the value specified in item 2), or a lower value
- 7 Administrative disposition, procedures, or other actions based on the provisions before amendment by these Regulations shall be deemed as having been made in accordance with these Regulations, in case there are corresponding provisions therein.

Supplementary Provisions

(Radio Regulatory Commission Regulations No. 8 issued on June 18, 1952)

These Regulations shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 43 issued on December 1, 1952)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 61 issued on November 25, 1953)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Deleted
- 3 Deleted

Supplementary Provisions

(MPT Ordinance No. 7 issued on January 29, 1955)

This MPT Ordinance shall come into force as of February 1, 1955.

Supplementary Provisions

(MPT Ordinance No. 21 issued on November 29, 1956)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Deleted
- 3 Deleted

Supplementary Provisions

(MPT Ordinance No. 30 issued on November 5, 1958)

- 1 This MPT Ordinance shall come into force as of December 1, 1958.

- 2 Notwithstanding the provisions of Article 37.4 of the Regulations after amendment by this MPT Ordinance (hereinafter referred to as the “Regulations after amendment”), radio equipment installed in a TV broadcasting station that is preliminarily licensed or licensed on or before November 30, 1958 can continue to conform to the prior Regulations until May 31, 1959 (until May 31, 1962 for a TV broadcasting station that is preliminarily licensed on or before November 30, 1958, but not licensed on or before May 31, 1959).
- 3 Notwithstanding the provisions of Article 6 of the Regulations after amendment, radio equipment that uses class A1 and A3 emissions and which is installed in a radio station that is preliminarily licensed or licensed on or before November 30, 1958 (excluding radio stations in the maritime mobile service, broadcasting stations, and broadcast relay radio stations) shall continue to conform to the prior Regulations until May 31, 1961, except for substituted or added devices or units in such radio equipment.
- 4 Notwithstanding the provisions of Article 6 of the Regulations after amendment, radio equipment that uses class A1 and A3 emissions and which is installed in a radio station in the maritime mobile service that is preliminarily licensed or licensed on or before May 31, 1959 shall continue to conform to the prior Regulations until December 31, 1963, except for substituted or added devices or units in such radio equipment.
- 5 Notwithstanding the provisions of Article 6 paragraph 1, Article 7 paragraph 2 items 2) to 4), and Articles 58 and 58.2 of the Regulations after amendment, radio equipment installed in a radio station that uses frequencies of 25,000 kc (inclusive) to 500 Mc (exclusive) and is preliminarily licensed or licensed on or before November 30, 1958 (excluding radio equipment in a radio station in the maritime mobile service, and radio equipment that uses a frequency of 61.79 Mc) shall continue to conform to the prior Regulations until May 31, 1962, except for substituted or added devices or units in such radio equipment.
- 6 Notwithstanding the provisions of Article 5 paragraph 6, Article 6 paragraph 1, Article 7 paragraph 2 item 1), and Articles 56.3 and 56.4 of the Regulations after amendment, radio equipment installed in a radio station that uses a single sideband and is preliminarily licensed or licensed on or before November 30, 1958 (excluding radio equipment in a radio station in the maritime mobile service) shall continue to conform to the prior Regulations until November 30, 1962, except for substituted or added devices or units in such radio equipment.
- 7 Notwithstanding the provisions of Article 5 paragraph 1, Article 6 paragraph 1, Article 7 paragraph 2 items 2) to 4), and Articles 58 and 58.2 of the Regulations after amendment, radio equipment that uses a frequency of 61.79 Mc and is preliminarily licensed or licensed on or before November 30, 1959 shall continue to conform to the prior Regulations until November 30, 1967, except for substituted or added devices or units in such radio equipment.
- 8 Notwithstanding the provisions of Article 5 paragraph 1, Article 6 paragraph 1, Article 7 paragraph 2 items 2) to 4), and Articles 58 and 58.2 of the Regulations after amendment, radio equipment installed in a radio station in the maritime mobile service that uses emissions of frequencies of 25 Mc to 500 Mc and is preliminarily licensed or licensed on or before November 30, 1959 shall continue to conform to the prior Regulations until December 31, 1963, except for substituted or added devices or units in such radio equipment.

- 9 Notwithstanding the provisions of Article 5 paragraph 6, Article 6 paragraph 1, Article 7 paragraph 2 item 1), and Articles 40.2, 56.3, and 56.4 of the Regulations after amendment, radio equipment installed in a radio station in the maritime mobile service that uses a single sideband and is preliminarily licensed or licensed on or before May 31, 1959 shall continue to conform to the prior Regulations until December 31, 1963, except for substituted or added devices or units in such equipment.
- 10 Notwithstanding the provisions of Article 5 paragraph 1 of the Regulations after amendment, replacement or addition made on or after December 1, 1958, for radio equipment installed in a radio station that is preliminarily licensed or licensed on or before November 30, 1958 (excluding radio equipment in a radio station in the maritime mobile service) shall be subject to the tolerances specified in the right-hand column in the table in this paragraph.

Supplementary Provisions

(MPT Ordinance No. 10 issued on June 18, 1960)

This MPT Ordinance shall come into force as of September 1, 1960.

Supplementary Provisions

(MPT Ordinance No. 21 issued on September 27, 1960)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 16 issued on June 1, 1961)

- 1 This MPT Ordinance shall come into force as of the day of promulgation; provided, however, that the amendments to Articles 45.6, 45.7, 45.9 to 45.12, 45.14, and 45.15 shall come into force as of June 1, 1962, and the amendments to Articles 55 and 56.4, the amendments for adding one article after Article 58.2, and the amendments for adding one section after Chapter IV Section 8 shall come into force as of January 1, 1962.
- 2 The provisions of Article 5 after amendment shall not be applied until December 31, 1971 to radio equipment other than radio equipment that is installed in a radio station for a ship or aircraft engaged in international voyage or aviation and that uses emissions of a frequency of 30 Mc or lower. The provisions of Article 5 before amendment shall continue to be applied to the equipment.
- 3 Among the radio equipment defined in the above paragraph, the provisions of Article 7 after

amendment shall not be applied until May 31, 1962 to radio equipment in a radio station in the aeronautical mobile service, until December 31, 1963 to radio equipment in a TV broadcasting station, and until December 31, 1961 to equipment in other radio stations. The provisions of Article 7 before amendment shall continue to be applied to such equipment.

- 4 Among the radio equipment in a radio station preliminarily licensed or licensed on or before December 31, 1961, notwithstanding the provisions of Articles 5 and 7 after amendment, the prior Regulations shall continue to be applied until December 31, 1963 to radio equipment in a ship station for a ship not engaged in international voyage and until December 31, 1964 to radio equipment that is installed in a ship station for a ship engaged in international voyage and that uses emissions of a frequency higher than 30 Mc in terms of frequency tolerance and the permissible value of spurious emission intensity, except for devices or units in such radio equipment substituted or added on or after January 1, 1962.
- 5 Notwithstanding the provisions of Article 5 after amendment, the prior Regulations shall continue to be applied until December 31, 1965 to radio equipment in a radio station preliminarily licensed or licensed on or before December 31, 1961 (except the radio equipment in the ship station defined in the preceding paragraph and the radio equipment in a radio station installed in a ship or aircraft engaged in international voyage or aviation that uses emissions of a frequency of 30 Mc or lower) in terms of frequency tolerance, except for devices or units in such radio equipment substituted or added on or after January 1, 1962.
- 6 Notwithstanding the provisions of Article 7 after amendment, the prior Regulations shall continue to be applied until November 30, 1966 to coast stations, until November 30, 1967 to fixed stations, and until May 31, 1966 to other radio stations (except TV broadcasting stations) in terms of the permissible value of spurious emission intensity on radio equipment in a radio station preliminarily licensed or licensed on or before December 31, 1961 (except radio equipment in a ship station and a radio station in the aeronautical mobile service), except for devices or units in such radio equipment substituted or added on or after January 1, 1962.
- 7 Notwithstanding the provisions of Article 7 after amendment, the prior Regulations shall continue to be applied until December 31, 1966 to radio equipment in a radio station in the aeronautical mobile service preliminarily licensed or licensed on or before May 31, 1962 (except radio equipment that is installed in a radio station in an aircraft engaged in international aviation and that uses emissions of a frequency of 30 Mc or lower) in terms of the permissible value of spurious emission intensity, except for devices or units in such radio equipment substituted or added on or after June 1, 1962.
- 8 Notwithstanding the provisions of Article 7 after amendment, the prior Regulations shall continue to be applied until May 31, 1966 to radio equipment in a TV broadcasting station preliminarily licensed or licensed on or before December 31, 1963 in terms of the permissible value of spurious emission intensity, except for devices or units in such radio equipment substituted or added on or after January 1, 1964.
- 9 Notwithstanding the provisions of Article 19 paragraph 3 after amendment, the prior Regulations shall continue to be applied until May 31, 1965 to radio equipment in a radio

station in the maritime mobile service preliminarily licensed or licensed on or before May 31, 1961 in terms of the communication method, except for devices or units in such radio equipment substituted or added on or after June 1, 1961.

- 10 Notwithstanding the provisions in the right-hand column in the table below after amendment, the prior Regulations shall continue to be applied until December 31, 1966 to radio equipment in the radio stations listed in the left-hand column in this table that were preliminarily licensed or licensed on or before May 31, 1962 in terms of the items described in the middle column of this table, except for devices or units in such radio equipment substituted or added on or after June 1, 1962.

Aircraft station	Antenna power at each frequency for a transmitter which generates two or more emissions using the same antenna in the frequency bands of 1,605 kc to 2,800 kc and 18 Mc to 28 Mc	Article 45.6
	Strength of the local noise field at the site where receiving equipment for receiving emissions of frequencies in a range of 1,605 kc to 2,800 kc and 18 Mc to 28 Mc is installed	Article 45.7
	Frequency switch, and modulation factors of class A2 and A3 emissions	Article 45.9 and 45.10
	Conditions for radio equipment	Article 45.11 and 45.12
Aeronautical station	Frequency switch, and modulation factors of class A2 and A3 emissions	Article 45.9 and 45.10
	Conditions for radio equipment	Article 45.14 and 45.15

- 11 Notwithstanding the provisions of Articles 56.4 and 58.2.2 after amendment, the prior Regulations shall continue to be applied until November 30, 1967 to a fixed station, until November 30, 1966 to a radio station in the maritime mobile service, and until May 31, 1966 to other radio stations in terms of the conditions for the receiver for radio equipment that is installed in a radio station preliminarily licensed or licensed on or before December 31, 1961 and that uses single-sideband emissions or class F3 emission, except for devices or units in such radio equipment substituted or added on or after January 1, 1962.
- 12 Notwithstanding the provisions of Article 58.2.3 after amendment, the prior Regulations shall continue to be applied until November 30, 1967 in terms of the conditions for radio equipment in a fixed station that is preliminarily licensed or licensed on or before December 31, 1961 and forms a communication system functionally integrated together with other fixed stations using a telemeter or radio telephone using emissions of a frequency of 54 Mc or higher, except for devices or units in such radio equipment substituted or added on or after January 1, 1962.
- 13 Notwithstanding the definitions in Table 1 based on the provisions of Article 5 after amendment, the value listed in column (B) of this table shall be applied to a frequency tolerance for devices or units in transmitting equipment in a radio station preliminarily licensed or licensed on or before December 31, 1963 that are substituted or added on or after January 1, 1964.

14 to 16 Omitted

Supplementary Provisions

(MPT Ordinance No. 41 issued on December 26, 1961)

- 1 This MPT Ordinance shall come into force as of January 1, 1962.
- 2 Omitted

Supplementary Provisions

(MPT Ordinance No. 13 issued on July 31, 1963)

- 1 This MPT Ordinance shall come into force as of August 1, 1963.
- 2 Notwithstanding the provisions of Article 55 after amendment, the conditions for radio equipment installed in a convenience radio station that uses emissions of frequencies in the 26 Mc and 27 Mc bands (except the convenience radio stations used at sea and those which communicate with such convenience radio stations; this also applies to the next paragraphs) shall continue to conform to the prior Regulations until July 31, 1964.
- 3 Notwithstanding the provisions of Article 55 after amendment, the conditions for radio equipment installed in a convenience radio station that is licensed or preliminarily licensed on or before July 31, 1964 and that uses emissions of frequencies in the 26 MHz and 27 MHz bands shall continue to conform to the prior Regulations, except for radio equipment substituted on or after August 1, 1964.
- 4 Notwithstanding the provisions of Article 55 after amendment, the conditions for radio equipment installed in a convenience radio station using emissions of frequencies in the 26 MHz and 27 MHz bands that is already licensed or preliminary licensed at the enforcement of this MPT Ordinance and is used only on the same ship shall continue to conform to the prior Regulations, except for radio equipment substituted on or after August 1, 1963.

Supplementary Provisions

(MPT Ordinance No. 1 issued on February 1, 1964)

- 1 This MPT Ordinance shall come into force as of August 1, 1964.
- 2 Notwithstanding the provisions of Article 49 after amendment, the conditions for an automatic alarm receiver installed in a ship station on or before July 31, 1964 shall continue to conform to the prior Regulations (*) until July 31, 1967 if it is also now installed in the ship station.

* Prior Radio Equipment Regulations

(Automatic Alarm Receiver)

Article 49. The automatic alarm receiver shall be capable of continuously operating audible alarms installed on the ship's bridge, in the communication cabin, and in the communication manager room when it is activated by an alarm signal (which refers to an alarm signal transmitted by the radio telegraph defined in Table 7-1 of the Ordinance for Operating Radio Stations; this also applies hereafter) or when it experiences a failure, and shall be stopped only by the switch mounted in the communication cabin.

- 2 The automatic alarm receiver to be installed in a ship shall comply with the conditions defined in Tables 1 and 2 of the Test Regulations, as well as the provisions of the above paragraph.
- 3 Part of the Radio Law Enforcement Regulations (Radio Regulatory Commission Regulations No. 14 issued in 1950) shall be amended as follows.

Article 30 paragraph 1 item 2) shall be amended as follows.

- 2) Deleted

Supplementary Provisions

(MPT Ordinance No. 20 issued on October 1, 1964)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 30 issued on December 28, 1964)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 40.2 of the Equipment Regulations after amendment by this MPT Ordinance, the conditions for radio equipment installed in a radio station already preliminarily licensed or licensed at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations until May 31, 1971.

Supplementary Provisions

(MPT Ordinance No. 13 issued on May 26, 1965)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 19 paragraph 2 after amendment, the conditions for a radio telephone installed in a ship station already preliminarily licensed or licensed at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations until May 31, 1968, except for the radio telephone substituted or added on or after May 26, 1965.
- 3 Notwithstanding the provisions of Article 38.2 paragraph 2 after amendment, the conditions for the power supply for major equipment for radio telegraph in a compulsory ship station installed in a ship already present at the enforcement of this MPT Ordinance (including a ship under construction) shall continue to conform to the prior Regulations.
- 4 Concerning conditions for the transmitter in a portable radio telegraph for a lifeboat installed in a radio station on or before May 25, 1966, “antenna power” in Article 45.3 paragraph 1 item 2) after amendment shall be replaced by “antenna power except when the DC input to the final stage of the transmitter is 10 W or higher” as long as the portable radio telegraph for a lifeboat continues to be installed.
- 5 Notwithstanding the provisions of Article 48 after amendment, the conditions for a radar for radionavigation already installed in a ship at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations as long as the radar continues to be installed.
- 6 Notwithstanding the provisions of Article 49.3 after amendment, the conditions for automatic distress messaging equipment already installed in a radio station at the enforcement of this MPT Ordinance (except such equipment used on the sea surface) shall continue to conform to the prior Regulations as long as this equipment continues to be installed.
- 7 Notwithstanding the provisions of Article 49.3 after amendment, the conditions for automatic distress messaging equipment installed in a radio station on or before December 31, 1965 (except such equipment used on the sea surface) shall continue to conform to the prior Regulations as long as this equipment continues to be installed.

Supplementary Provisions

(MPT Ordinance No. 28 issued on December 15, 1966)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 58 paragraph 1 item 2), definitions of Table 1 based on the provisions of Article 5, and definitions of Table 2 based on the provisions of Article 6 of the Equipment Regulations after amendment (hereinafter referred to as the “new

provisions”), the conditions for a transmitter used for maritime mobile telephone communication by a ship station or portable station already licensed or preliminarily licensed at the enforcement of this MPT Ordinance, excluding transmitters substituted according to the conditions of the new provisions, shall continue to conform to the prior Regulations until May 31, 1971, except for transmitters added on or after the day when this MPT Ordinance is enforced.

- 3) Among the radio equipment installed in a coast station or portable base station for maritime mobile telephone communication, or a radio station for testing maritime mobile telephone communication equipment, notwithstanding the new provisions, the conditions for a transmitter used for maritime mobile telephone communication with a ship station or portable station in which the conditions for its transmitter shall continue to conform to the prior Regulations according to the provisions of the preceding paragraph or a transmitter used for communication for testing or adjusting radio equipment used with the former transmitter shall continue to conform to the prior Regulations until May 31, 1971.

Supplementary Provisions

(MPT Ordinance No. 16 issued on July 15, 1967)

- 1) This MPT Ordinance shall come into force as of the day of promulgation.
- 2) Notwithstanding the definitions of Table 1 based on the provisions of Article 5 and the definitions of Table 2 based on the provisions of Article 6 after amendment, the conditions for transmitting equipment that is listed in the left-hand column of the table below and that is installed in a meteorological aids station already licensed or preliminarily licensed at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations until the date specified in the right-hand column of this table, except for the reason listed in the middle column of the table.

Classification of transmitting equipment	Reason	Date
1) Radiosonde using emissions of a frequency of 405 MHz or 408 MHz		November 30, 1967
2) Meteorological radio robot using emissions of a frequency of 405 MHz or 408 MHz	Addition	November 30, 1972
3) Meteorological radio robot using emissions of a frequency of 1,665 MHz and transmitting equipment installed in a radio station that communicates with the radio station related to the meteorological radio robot	Substitution or addition	November 30, 1972

Supplementary Provisions

(MPT Ordinance No. 23 issued on September 5, 1967)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 5 issued on January 25, 1968)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 24 issued on July 1, 1968)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 32 issued on August 20, 1968) (Summary)

- 1 This MPT Ordinance shall come into force as of August 22, 1968; provided, however, the amendments for adding two articles after Article 45.12 that are related with Article 45.12.2 paragraph 1 shall come into force as of January 1, 1969.

Supplementary Provisions
(MPT Ordinance No. 9 issued on March 28, 1969)

- 1 This MPT Ordinance shall come into force as of April 1, 1969.
- 2 Among the radio equipment installed in a radio station using emissions of a frequency in a range of higher than 54 MHz to 68 MHz, higher than 142 MHz to 162.0375 MHz, or higher than 335.4 MHz to 470 MHz (excluding radio equipment defined in paragraphs 7, 8, 10, 11, and 18), notwithstanding the provisions of Articles 7, 9.2, 58, 58.2, and 58.2.2, and Tables 1 and 2 after amendment, the conditions for radio equipment in a radio station already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and radio equipment whose operation does not adversely affect the license or operation of the radio station and which is considered as being specifically necessary can continue to conform to the prior Regulations until March 31, 1974, provided that such radio equipment shall be announced separately.
- 3 Notwithstanding the provisions of Articles 14 and 49.3 after amendment, the conditions for automatic distress messaging equipment installed in a radio station on or before March 31, 1971 (limited to equipment using class A1A emissions of a frequency of 2,091 kHz) shall

continue to conform to the prior Regulations as long as this equipment continues to be installed.

- 4 Notwithstanding the provisions of Article 14 after amendment, the tolerance for antenna power for the radio telegraph for an engine-powered lifeboat, emergency portable radio telegraph, and airborne portable radio using emissions of a frequency of 25.11 MHz or lower which are installed in radio stations on or before March 31, 1971 shall continue to conform to the prior Regulations as long as such equipment continues to be installed.
- 5 Notwithstanding the provisions of Article 40 paragraph 4 after amendment, the overall frequency response characteristics of a transmitter installed in a coast station or ship station licensed or preliminarily licensed on or before December 31, 1971 shall continue to conform to the prior Regulations until December 31, 1977, except for the transmitter substituted or added on or after January 1, 1972.
- 6 Notwithstanding the provisions of Article 41 paragraph 3 after amendment, the conditions for a device for lowering the antenna power of a transmitter that is installed in a radio telephone in a ship station licensed or preliminarily licensed on or before December 31, 1971 and that uses emissions of a frequency in a range of higher than 4 MHz to 23 MHz shall continue to conform to the prior Regulations until December 31, 1977, except for the transmitter substituted or added on or after January 1, 1972.
- 7 Notwithstanding the provisions in the left-hand column of the table below after amendment, the conditions for transmitting equipment that is installed in a radio station licensed or preliminarily licensed on or before December 31, 1971 and that uses emissions of a frequency listed in the table in Appendix 18 of the Supplementary Provisions (excluding the transmitting equipment defined in paragraph 10) shall continue to conform to the prior Regulations until the date prescribed in the right-hand column of this table, except for transmitting equipment substituted (excluding transmitting equipment also used for maritime mobile telephone communication from before January 1, 1972) or added on or after January 1, 1972.

Article 41 paragraph 4, Article 58 item 4), and Table 1	December 31, 1982
Article 58 item 2) and Table 2	December 31, 1972

- 8 Notwithstanding the provisions of Article 54 and Tables 1 and 2 after amendment, the conditions for radio equipment in a convenience radio station that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and that uses emissions of a frequency of 467 MHz shall conform to the prior Regulations until March 31, 1974, except for radio equipment substituted or added on or after the day when this MPT Ordinance is enforced.
- 9 Among the radio equipment installed in a radio station over a single channel using class A3A, A3H, or A3J emissions of a frequency of 28 MHz or lower, notwithstanding the provisions of Articles 56 and 57 after amendment, the conditions for radio equipment in a radio station licensed or preliminarily licensed on or before December 31, 1971 and radio equipment

whose operation does not adversely affect the license or operation of the radio station and which is considered as being specifically necessary can continue to conform to the prior Regulations until December 31, 1977, provided that such radio equipment shall be announced separately.

- 10 Notwithstanding the provisions of Article 58 and Table 2 after amendment, the conditions for transmitting equipment in a radio station for maritime mobile telephone communication (excluding transmitting equipment also used for communication other than maritime mobile telephone communication) and for transmitting equipment in a radio station for testing maritime mobile telephone communication equipment can continue to conform to the prior Regulations until December 31, 1972.
- 11 Notwithstanding the provisions of Article 58 item 4) after amendment, the conditions for a low-pass filter installed on or before December 31, 1971 in the transmitting equipment defined in the previous paragraph can continue to conform to the prior Regulations until December 31, 1982.
- 12 Notwithstanding the provisions of Article 65 after amendment, the permissible value of the electric field strength of high frequency-based equipment defined in Article 65 that is permitted as of March 31, 1970 (excluding high frequency-based equipment specified by announcement based on the provisions of this Article and defined in the next paragraph) shall continue to conform to the prior Regulations until March 31, 1980, except for equipment substituted or added on or after April 1, 1970.
- 13 Notwithstanding the provisions of Article 65 after amendment, the permissible value of the electric field strength of high frequency-based equipment according to an induction heating system (which generates heat by electromagnetically inducing high-frequency current in a load in a high-frequency magnetic field) permitted on or before March 31, 1971 (excluding high frequency-based equipment specified by announcement based on the provisions of Article 65) shall continue to conform to the prior Regulations until March 31, 1981, except for equipment substituted or added on or after April 1, 1971.
- 14 Notwithstanding the provisions of Table 1 after amendment, the frequency tolerance of transmitting equipment in a ship station that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and that uses emissions of a frequency of 4,208 kc, 4,229 kc, 6,312 kc, 6,343.5 kc, 8,416 kc, 8,458 kc, 12,624 kc, 12,687 kc, 16,832 kc, 16,916 kc, 22,265 kc, 22,320 kc, or 22,370 kc shall continue to conform to the prior Regulations until December 31, 1969.
- 15 Notwithstanding the provisions of Note 15 in Table 1 after amendment, the frequency tolerance of transmitting equipment that is installed in an aircraft station licensed or preliminarily licensed on or before July 31, 1969 for aircraft not engaged in international aviation or in an aeronautical station communicating with only the above aircraft station, and that is over a single channel using single-sideband emissions shall continue to conform to the prior Regulations until March 31, 1971.
- 16 Notwithstanding the provisions of Table 1 after amendment, the frequency tolerance of

transmitting equipment installed in a ship station that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and that uses emissions of a frequency in a range of higher than 4,172.25 kHz to 4,178 kHz, higher than 6,258.25 kHz to 6,267 kHz, higher than 8,341.75 kHz to 8,356 kHz, higher than 12,503.25 kHz to 12,534 kHz, higher than 16,660.5 kHz to 16,712 kHz, or higher than 22,184.5 kHz to 22,222.5 kHz shall continue to conform to the prior Regulations until December 31, 1972, except for transmitting equipment substituted or added on or after the date on which this MPT Ordinance is enforced.

- 17 Notwithstanding the provisions of Table 1 after amendment, the frequency tolerance of transmitting equipment for a single-sideband radio telephone (excluding transmitting equipment installed in a radio station, aeronautical station, and aircraft station for international public communication in the maritime mobile service) that is installed in a radio station licensed or preliminarily licensed on or before December 31, 1971, and whose operation does not adversely affect the license or operation of the radio station and which is regarded as being specifically necessary, can continue to conform to the prior Regulations until December 31, 1977, provided that such transmitting equipment shall be announced separately.
- 18 Notwithstanding the provisions of Tables 1 and 2 after amendment, the allowed occupied bandwidth and the frequency tolerance of transmitting equipment in a convenience radio station licensed or preliminarily licensed on or before December 31, 1969 (excluding the convenience radio station defined in paragraph 8) shall continue to conform to the prior Regulations until December 31, 1974, except for transmitting equipment substituted or added on or after January 1, 1970.

Supplementary Provisions

(MPT Ordinance No. 22 issued on September 3, 1970)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 45.10 paragraph 3 and Article 45.12 after amendment (hereinafter referred to as the “new provisions”), the conditions for radio equipment installed in an aeronautical or aircraft station that is licensed or preliminarily licensed on or before August 31, 1971 and that uses emissions of a frequency in a range of 118 MHz to 144 MHz (excluding radio equipment substituted or added after this day) shall continue to conform to the prior Regulations until August 31, 1976, except for radio equipment that complies with the conditions of the new provisions.
- 3 The type of a device or unit that already has the type approval according to the Test Regulations at the enforcement of this MPT Ordinance, that is used in radio equipment installed in an aircraft (excluding radio equipment using single-sideband emissions installed in an aircraft, a selective calling device for aircraft, and an ELT), and that uses emissions of a frequency in a range of 118 MHz to 144 MHz shall cease to be effective on September 1, 1971 (on September 1, 1976 for a device or unit in radio equipment defined in the preceding

paragraph).

Supplementary Provisions

(MPT Ordinance No. 31 issued on December 24, 1971)

(MPT Ordinance for Amending Part of the Radio Law Enforcement Regulations)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 The announcement based on the provisions of Article 3 of the Equipment Regulations before amendment by this MPT Ordinance shall be deemed as being the announcement based on the provisions of Article 4 of the Equipment Regulations after amendment.

Supplementary Provisions

(MPT Ordinance No. 25 issued on July 1, 1972) (Summary)

(MPT Ordinance for Amending Part of the Radio Law Enforcement Regulations)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Cycles per second, cycles, kc, Mc, Gc, or Tc used as frequency units in the announcements, administrative dispositions, procedures, and other actions based on the Radio Law (Law No. 131 enforced in 1950) before the enforcement of this MPT Ordinance shall be deemed as Hz, kHz, MHz, GHz, or THz, respectively, on and after the day when this MPT Ordinance is enforced.

Supplementary Provisions

(MPT Ordinance No. 44 issued on December 21, 1972)

This MPT Ordinance shall come into force as of January 1, 1973.

Supplementary Provisions

(MPT Ordinance No. 23 issued on December 16, 1974)

This MPT Ordinance shall come into force as of January 1, 1975.

Supplementary Provisions

(MPT Ordinance No. 18 issued on November 1, 1975)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 48 after amendment, the conditions for a radar for radionavigation installed in a ship on or before April 30, 1976 (day announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications for the radar defined in Article 48 paragraph 2 after amendment) shall continue to conform to the prior Regulations as long as the radar continues to be installed.

Supplementary Provisions

(MPT Ordinance No. 22 issued on December 1, 1975)

- 1 This MPT Ordinance shall come into force as of January 1, 1976; provided, however, that the amendments for adding one paragraph to Article 14 and for adding one paragraph to Article 37.4 shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 56 paragraph 1 after amendment, the conditions for transmitting equipment installed in a coast station of a single channel that uses class A3A emissions of a frequency of 28 MHz or lower can continue to conform to the prior Regulations until December 31, 1977.
- 3 Notwithstanding the provisions of Article 56 paragraph 2 item 2) after amendment, the conditions for a transmitter in a coast station using class H3E, J3E, or R3E emissions that uses emissions of a frequency listed in the left-hand column of the table below and that is installed in the radio station on or before the day prescribed in the right-hand column thereof can continue to conform to the prior Regulations as long as the transmitter continues to be installed.

Higher than 4 MHz to 23 MHz	December 31, 1977
4 MHz or lower, or higher than 23 MHz to 28 MHz	December 31, 1981

- 4 Notwithstanding the provisions of Article 56 (excluding paragraph 2 item 3)) and Table 1 after amendment, the conditions for transmitting equipment in a radio station (excluding a coast station) using class H3E, J3E, or R3E emissions that uses emissions of a frequency listed in the left-hand column of the table below and that is installed in the radio station on or before the day prescribed in the right-hand column thereof can continue to conform to the prior Regulations until January 1, 1990 as long as the transmitting equipment continues to be installed.

Higher than 4 MHz to 23 MHz	December 31, 1977
4 MHz or lower, or higher than 23 MHz to 28 MHz	December 31, 1981

- 5 Notwithstanding the provisions of Table 1 after amendment, the prior Regulations shall continue to be applied until January 1, 1990 to transmitting equipment defined in item 1) as long as the transmitting equipment continues to be installed, and until May 31, 1977 to transmitting equipment defined in item 2), in terms of the frequency tolerance of transmitting equipment installed in a ship radio telegraph station already directed to use emissions of a frequency in a range of higher than 4 MHz to 25.11 MHz at the enforcement of the MPT Ordinance.
 - 1) Transmitting equipment that uses class A1A, A1B, or A1D emissions of a frequency in a range of higher than 4,187 kHz to 4,231 kHz, higher than 6,280.5 kHz to 6,345.5 kHz, higher than 8,374 kHz to 8,459.5 kHz, higher than 12,561 kHz to 12,689 kHz, higher than 16,748 kHz to 16,917.5 kHz, or higher than 22,267.5 kHz to 22,374 kHz, or of a frequency of only 25,096 kHz
 - 2) Other transmitting equipment
- 6 Notwithstanding the provisions of Table 1 after amendment, the frequency tolerance of transmitting equipment for printing telegraphs in a radio station in the maritime mobile service already licensed or preliminarily licensed at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations until December 31, 1984, except for transmitting equipment substituted or added on or after the day when this MPT Ordinance is enforced.

Supplementary Provisions

(MPT Ordinance No. 8 issued on March 25, 1976)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Articles 45.12.5 to 45.12.9 and of Table 1 after amendment (hereinafter referred to as the “new provisions”), radio equipment that is installed in a radionavigation land station or radio beacon station already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and that is listed in the left-hand column of the table below shall continue to conform to the prior Regulations until the day prescribed in the right-hand column thereof, except for radio equipment that complies with the conditions based on the new provisions and radio equipment substituted or added on or after the day when this MPT Ordinance is enforced.

Radio equipment in ground DME, SSR, ground TACAN, and ILS radio stations	November 30, 1977
VOR	November 30, 1982

- 3 Among the radio equipment in an aircraft station already licensed or preliminarily licensed at the enforcement of this MPT Ordinance, airborne DME, ATC transponders, airborne meteorological radar, airborne TACAN, radio altimeters, and airborne Doppler radar shall continue to conform to the prior Regulations as long as the radio equipment continues to be installed, notwithstanding the new provisions, except for radio equipment that complies with the conditions based on the new provisions and radio equipment substituted or added on or after the day when this MPT Ordinance is enforced.

Supplementary Provisions

(MPT Ordinance No. 19 issued on June 27, 1977)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 28 issued on November 26, 1977)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 14 paragraph 1 and Table 1 after amendment, the frequency tolerance and antenna power tolerance of transmitting equipment that is installed in a signal broadcasting station already licensed or preliminarily licensed at the enforcement of this MPT Ordinance (limited to the signal broadcasting station established for public use) and that uses emissions of a frequency in a range of higher than 142 MHz to 148 MHz shall continue to conform to the prior Regulations until May 31, 1986.

Supplementary Provisions

(MPT Ordinance No. 2 issued on February 13, 1979)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Part of the Radio Apparatus Type Test Regulations (MPT Ordinance No. 40 issued in 1961) shall be amended as follows.
In the description of devices and units in radio equipment for a land mobile station or portable station that uses class A3 emissions of a frequency in the 26 MHz band in the table of No. 2 in Table 2, "Article 7 paragraph 5 of the Equipment Regulations" in 2 (3) of the column for the conditions shall be changed to "Article 7 paragraph 6 of the Equipment Regulations."

Supplementary Provisions

(MPT Ordinance No. 12 issued on July 4, 1979)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Part of the Radio Law Enforcement Regulations (Radio Regulatory Commission Regulations No. 14 issued in 1950) shall be amended as follows.
In 19 in the table of No. 1 in Table 1, “Article 49.2.3 of the Equipment Regulations” shall be changed to “Article 49.2.4 of the Equipment Regulations.”

Supplementary Provisions

(MPT Ordinance No. 15 issued on May 6, 1980)

(Date of Enforcement)

- 1 This MPT Ordinance shall come into force as of the day when the law for amending part of the Radio Law (Law No. 67 enforced in 1979) is enforced.

(Interim Measures)

- 2 Notwithstanding the provisions of Articles 7, 9.2, 58, and 58.2 and Tables 1 and 2 of the Equipment Regulations after amendment (hereinafter referred to as the “new MPT Ordinance”), the conditions for radio equipment in a radio station that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and that uses emissions of a frequency in a range of higher than 68 MHz to 70 MHz can continue to conform to the prior Regulations until November 30, 1987, except for radio equipment substituted or added on or after the day when this MPT Ordinance is enforced.
- 3 Notwithstanding the provisions of Article 47 paragraph 1 of the new MPT Ordinance, the conditions for the medium wave radio direction finder defined in Article 11.4 paragraph 1 of the Enforcement Regulations that is installed in a ship on or before the day (*) to be announced by the Minister of Public Management, Home Affairs, Posts and Telecommunications can continue to conform to the prior Regulations as long as the medium wave radio direction finder continues to be installed in the ship.
* (May 24, 1981)
- 4 Notwithstanding the provisions of Article 48 of the new MPT Ordinance, the conditions for a radar for radionavigation already installed in a ship at the enforcement of this MPT Ordinance can continue to conform to the prior Regulations as long as the radar continues to be installed in the ship.

Supplementary Provisions

(MPT Ordinance No. 45 issued on December 21, 1981)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 11 issued on March 8, 1982)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 37 issued on September 13, 1982)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Articles 7, 58, and 58.2.2 (excluding the column “passing bandwidth for one-signal selectivity” in the table in paragraph 1), and Tables 1 and 2 after amendment, the conditions for radio equipment in a radio station that uses emissions of a frequency in a range of higher than 335.4 MHz to 470 MHz can continue to conform to the prior Regulations until May 31, 1984 (until May 31, 1991 for radio equipment in a radio station that is licensed or preliminarily licensed on or before May 31, 1984 (excluding radio equipment substituted or added on or after June 1, 1984)).
- 3 Radio equipment that is designed for use with a radio station utilizing emissions of a frequency in a range of higher than 335.4 MHz to 470 MHz and that is granted the technical standard conformity certification as being proven to comply with the conditions defined in the Equipment Regulations before amendment shall lose the validity of the said certification on June 1, 1984.

Supplementary Provisions
(MPT Ordinance No. 65 issued on November 22, 1982)

- 1 This MPT Ordinance shall come into force as of December 1, 1982; provided, however, that the amendments to contents (limited to the part for replacing “Section 7.2 Radio Equipment at a Single-Channel Radio Station Using a Single Sideband (Articles 55-57.3)” by “Section 7.2 Radio Equipment at a Citizen Radio Station (Article 54.2)” and “Section 7.3 Radio Equipment at a Single-Channel Radio Station Using a Single Sideband (Articles 55-57.3)””, revisions of Article 54 item 2), amendments for changing Chapter IV Section 7.2 to Chapter IV Section 7.3, amendments for adding one section after Chapter IV Section 7, and amendments of 4 in “Table of Frequency Tolerances” in Table 1 shall come into force as of January 1, 1983.

- 2 Radio equipment that uses only class A3 emissions in the 26 MHz and 27 MHz bands, which provides an antenna power of 0.5 W or lower, and which receives the technical standard conformity certification on or before December 31, 1982 shall be deemed to be granted the technical standard conformity certification as being proven to comply with the technical standards for radio equipment in a citizen radio station as of January 1, 1983.

Supplementary Provisions

(MPT Ordinance No. 3 issued on January 31, 1983)

- 1 This MPT Ordinance shall come into force as of February 1, 1983.
- 2 Notwithstanding the provisions of Articles 45.12 and 45.15, and Table 1 after amendment, the conditions for radio equipment that is installed in an aircraft station or aeronautical station and that uses emissions of a frequency in a range of 118 MHz to 144 MHz can continue to conform to the prior Regulations until January 31, 1984 (until November 30, 1992 for radio equipment installed in a radio station licensed or preliminarily licensed on or before January 31, 1984 (except radio equipment substituted or added on or after February 1, 1984)).
- 3 The type of a device or unit that already has the type approval according to the Test Regulations at the enforcement of this MPT Ordinance and that is used in radio equipment installed in an aircraft shall cease to be effective on February 1, 1984; provided, however, that the device or unit of the said type installed in an aircraft on or before January 31, 1984 shall be considered as being approved until November 30, 1992 as long as the device or unit continues to be installed.
- 4 Notwithstanding the provisions of Article 45.11 item 1) after amendment, the conditions for the attenuation of unwanted emissions for each frequency of the transmitter that is installed in an aircraft station licensed or preliminarily licensed on or before January 31, 1983 (except the transmitter substituted or added on or after February 1, 1983) and that uses class J3E emissions of 28 MHz or lower shall continue to conform to the prior Regulations.
- 5 Part of the Radio Apparatus Type Test Regulations (MPT Ordinance No. 40 issued in 1961) shall be amended as follows.
In 1 in the column for the conditions for a radio telephone that uses double sideband emissions (excluding an ELT), in the description of a device or unit of radio equipment installed in the aircraft in the table in Table 1, “from 1,605 kHz to 28,000 kHz and “shall be deleted, with “144 MHz” changed to “142 MHz.” Furthermore, 2 in the same column shall be deleted, and “(limited to the equipment which uses emissions of a frequency in a range of 118 MHz to 144 MHz)” in 3 of the same column shall be deleted, with 3 and 4 in the same column changed to 2 and 3, respectively. In addition, the column for the conditions for the radio telephone that uses single-sideband emissions shall be changed as follows.

- | |
|--|
| <ol style="list-style-type: none">1 The radio telephone shall use a single channel that uses an upper sideband of class A3J emissions of a frequency of 28 MHz or lower.2 The carrier frequency shall comply with the provisions of Article 4.3.2 of the Enforcement Regulations.3 The antenna power shall be 10 W or more.4 The receiver with a selective calling device shall comply with the provisions of Article 45.11 paragraph 2 of the Equipment Regulations.5 The provisions of Article 45.9 of the Equipment Regulations shall be satisfied. |
|--|

Supplementary Provisions

(MPT Ordinance No. 9 issued on March 25, 1983) (Summary)

(MPT Ordinance for Amending Part of the Radio Law Enforcement Regulations, etc.)

- 1 This MPT Ordinance shall come into force as of July 1, 1983.
- 2 Out of administrative disposition, procedures, and other actions based on the Enforcement Regulations, the Licensing Regulations, the Equipment Regulations, the Regulations on Technical Standard Conformity Certification for Specified Radio Equipment, the Ordinance for Operating Radio Stations, and the Test Regulations before amendment by this MPT Ordinance (excluding those actions concerned with amateur radio stations), indications of emission classes according to the provisions of Article 4.2 of the Enforcement Regulations before amendment shall be deemed as being appropriate indications of the emission classes in compliance with the provisions of the same Article after amendment on or after the date of enforcement of this MPT Ordinance.
- 3 For an amateur radio station, the provisions of Article 2 paragraph 2, Article 4.2 paragraphs 1 and 2, Article 4.4 paragraph 1, and Article 12 paragraph 10 of the Enforcement Regulations before amendment, of Tables 2 and 3 of the Equipment Regulations before amendment, and of Articles 130 and 134 of the Ordinance for Operating Radio Stations before amendment shall remain in force after the enforcement of this MPT Ordinance.

4 to 6 (Omitted)

Supplementary Provisions

(MPT Ordinance No. 21 issued on May 30, 1983) (Summary)

- 1 This MPT Ordinance shall come into force as of June 6, 1983.
- 2 (Omitted)

Supplementary Provisions

(MPT Ordinance No. 37 issued on September 26, 1983) (Summary)

- 1 This MPT Ordinance shall come into force as of October 1, 1983.
- 2 Notwithstanding the provisions of Article 7 and Table 1 after amendment, the conditions for transmitting equipment installed in a radio station can continue to conform to the prior Regulations until January 1, 1985 (until January 1, 1994 in terms of the intensity of a spurious emission and until January 1, 1990 in terms of the frequency tolerance for transmitting equipment in a radio station licensed or preliminarily licensed on or before January 1, 1985 (except transmitting equipment substituted or added on or after January 2, 1985)).
- 3 Notwithstanding the provisions of the preceding paragraph, and Article 7 and Table 1 after amendment, the frequency tolerance and the permissible value of the intensity of a spurious emission of transmitting equipment in a radio station that is licensed or preliminarily licensed on or before May 25, 1980 and that uses emissions of a frequency in a range of higher than 68 MHz to 70 MHz can continue to conform to the prior Regulations until November 30, 1987, except for radio equipment substituted or added on or after May 26, 1980.
- 4 Notwithstanding the provisions of paragraph 2 of the Supplementary Provisions and of Table 1 after amendment, the frequency tolerance of the transmitting equipment (excluding transmitting equipment of a multiplex channel, on-board communication equipment, and radiosondes) in a radio station that uses emissions of a frequency in a range of higher than 335.4 MHz to 470 MHz (excluding radio stations in the aeronautical mobile service, radio stations performing broadcasting relay, earth stations, space stations, and amateur radio stations) can continue to conform to the prior Regulations until May 31, 1984 (until May 31, 1991 for transmitting equipment in a radio station licensed or preliminarily licensed on or before May 31, 1984 (excluding transmitting equipment substituted or added on or after June 1, 1984)).
- 5 Notwithstanding the provisions of paragraph 2 of the Supplementary Provisions and Article 7 after amendment, the intensity of a spurious emission from transmitting equipment (excluding transmitting equipment of a multiplex channel) in a radio station that uses emissions of a frequency in a range of higher than 335.4 MHz to 470 MHz (excluding radio stations in the aeronautical mobile service, radio stations performing broadcasting relay, earth stations, space stations, amateur radio stations, ship stations, portable stations in ships, radio stations of a multiplex channel, on-board communication equipment, and meteorological aids stations, the mean power of whose fundamental frequency is 1 W or lower) can continue to conform to the prior Regulations until May 31, 1984 (until May 31, 1991 for transmitting equipment in a radio station licensed or preliminarily licensed on or before May 31, 1984 (excluding transmitting equipment substituted or added on or after June 1, 1984)).

- 6 Notwithstanding the provisions of paragraph 2 of the Supplementary provisions and Table 1 after amendment, the frequency tolerance of transmitting equipment in an aeronautical station or aircraft station that uses emissions of a frequency in a range of 118 MHz to 144 MHz can continue to conform to the prior Regulations until January 31, 1984 (until November 30, 1992 for transmitting equipment in a radio station licensed or preliminarily licensed on or before January 31, 1984 (excluding transmitting equipment substituted or added on or after February 1, 1984)).
- 7 Notwithstanding the provisions of paragraph 2 of the Supplementary Provisions and Table 1 after amendment, the frequency tolerance of transmitting equipment in a ship or coast station that uses class A3E emissions of a frequency in a range of higher than 26,175 kHz to 28,000 kHz and that provides an antenna power of 1 W or lower can continue to conform to the prior Regulations until December 31, 1989 (until November 30, 1996 for transmitting equipment in a radio station licensed or preliminarily licensed on or before December 31, 1989 (excluding transmitting equipment substituted or added on or after January 1, 1990)).
- 8 The announcement based on the provisions of Article 7 paragraph 9 and Note 5 or 12 for Table 1 before amendment shall be deemed as being the announcement based on Article 7 paragraph 12 and Note 24 or 27 for Table 1 after amendment.
- 9 The type of a device or unit that already has the type approval according the Test Regulations at the enforcement of this MPT Ordinance and that is listed in the left-hand column of the table below (excluding the type announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications) shall cease to be effective on January 2, 1985; provided, however, that the device or unit of the said type installed in a radio station on or before January 1, 1985 shall be considered as being approved until the date given in the right-hand column of the table as long as the device or unit continues to be installed.

Device or unit	Date
1) Device or unit in radio equipment for a land mobile station or portable station that uses class A3E emissions of a frequency in the 26 MHz band	January 1, 1990
2) Device or unit for a radio buoy that uses emissions of a frequency in a range of higher than 1,606.5 kHz to 4,000 kHz	
3) Device or unit that is installed in a transmitter for a radio station using single-sideband emissions (limited to a mobile station (excluding an aircraft station)) and that uses emissions of a frequency in a range of higher than 1,606.5 kHz to 4,000 kHz or higher than 23 MHz to 28 MHz	
4) Device or unit that is installed in a transmitter for a radio station using class F3E emissions, that uses emissions of a frequency in a range of higher than 142 MHz to 162.0375 MHz, and that provides an antenna power of 1 W or lower	
5) Device or unit in a transmitter used for a broadcasting station engaged in television broadcasting or television multiplex broadcasting	January 1, 1994
6) Device or unit that is installed in a transmitter for a radio station using class F3E emissions, that uses emissions of a frequency in a range of higher than 54 MHz to 70 MHz, and that provides an antenna power of 1 W or lower	

- 10 The type of a device or unit that already has the type approval according to the Test Regulations at the enforcement of this MPT Ordinance and that is used in a portable radio telegraph for a lifeboat or in automatic distress messaging equipment (excluding such types announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications) shall cease to be effective on January 2, 1985; provided, however, that a device or unit installed in a radio station on or before January 1, 1985 shall be considered as being approved as long as the device or unit continues to be installed.
- 11 Radio equipment that is listed in the left-hand column of the table below and that is granted the technical standard conformity certification as being proven to comply with the conditions defined in the Equipment Regulations before amendment on or before January 1, 1985 shall lose the validity of the said certification on the date prescribed in the right-hand column of the table.

Radio equipment	Date
1) Radio equipment that is provided for in Article 8 item 4) of the Regulations on Technical Standard Conformity Certification for Specified Radio Equipment (MPT Ordinance No. 37 issued in 1981; referred to as the "Certification Regulations" in this table and the next paragraph) and that uses emissions of a frequency in a range of higher than 1,606.5 kHz to 4,000 kHz or higher than 23 MHz to 28 MHz	January 2, 1990

2) Radio equipment that is provided for in Article 8 item 5) of the Certification Regulations, that uses emissions of a frequency in a range of higher than 142 MHz to 162.0375 MHz, and that provides an antenna power of 1 W or lower	
3) Radio equipment that is provided for in Article 8 item 5) of the Certification Regulations, that uses emissions of a frequency in a range of higher than 54 MHz to 70 MHz, and that provides an antenna power of 1 W or lower	January 2, 1994
4) Radio equipment provided for in Article 8 item 6) of the Certification Regulations	

12 The form of an indication based on Article 6 of the Certification Regulations concerned with the radio equipment listed in the preceding paragraph (limited to radio equipment that is granted the technical standard conformity certification on or after the day on which this MPT Ordinance is enforced) shall conform to Table 5 of the Certification Regulations, with A added to the end of a number specified in Note 3 of No. 1 in Table 5.

13 to 18 (Omitted)

Supplementary Provisions

(MPT Ordinance No. 3 issued on January 30, 1984)

- 1 This MPT Ordinance shall come into force as of the day of promulgation; provided, however, that the amendments to Article 48, and the provisions of paragraphs 2 to 6 and 8 of the Supplementary Provisions shall come into force as of March 1, 1984.
- 2 Notwithstanding the provisions of Article 48 after amendment, the conditions for a radar for radionavigation installed in a ship can continue to conform to the prior Regulations until August 31, 1984.
- 3 Notwithstanding the provisions of Article 48 after amendment, the conditions for a radar for radionavigation installed in a ship on or before August 31, 1984 can continue to conform to the prior Regulations as long as the radar continues to be installed.
- 4 Notwithstanding the provisions of Article 48 after amendment, the conditions for a radar for radionavigation that is installed in a ship of 500 to less than 1,600 tons gross constructed or beginning to be constructed on or before August 31, 1984 can continue to conform to the prior Regulations.
- 5 Notwithstanding the provisions of paragraph 3 of the Supplementary Provisions, and Article 48 paragraph 2 item 1) k after amendment, the conditions for the automatic radar plotting aid supported by a radar for radionavigation that is installed in a ship on or before August 31, 1984 shall continue to conform to the prior Regulations until January 1, 1991.

- 6 Among the conditions for a radar for radionavigation installed in a ship that is constructed or beginning to be constructed on or before August 31, 1984 (excluding a tanker), “10,000 tons” in Article 48 paragraph 2 item 1) k shall be replaced by “15,000 tons.”
- 7 Notwithstanding the provisions of Article 58, Article 58.2 paragraph 1, Article 58.2.2 paragraph 1, and Table 2 after amendment, the conditions for radio equipment in a radio station that uses class F2A, F2B, F2D, F2N, or F2X emissions can continue to conform to the prior Regulations until May 31, 1984 (until May 31, 1991 for radio equipment in a radio station licensed or preliminarily licensed on or before May 31, 1984 (excluding radio equipment substituted or added on or after June 1, 1984)).
- 8 The announcement based on the provisions of Article 48 paragraph 1 item 7) c (4) before amendment shall be considered as being the announcement based on the provisions of Article 48 paragraph 1 item 7) c (4) and paragraph 2 item 1) k after amendment.

Supplementary Provisions

(MPT Ordinance No. 7 issued on March 14, 1984)

- 1 This MPT Ordinance shall come into force seven (7) days after the day of promulgation.
- 2 Notwithstanding the provisions of Articles 7, 49.8, 58, and 58.2.2 and Tables 1 and 2 after amendment, the conditions for radio equipment in a land mobile station licensed or preliminarily licensed on or before the day when this MPT Ordinance is enforced (limited to the land mobile station that performs cordless telephone communication) shall continue to conform to the prior Regulations until May 31, 1991.

Supplementary Provisions

(MPT Ordinance No. 33 issued on July 25, 1984)

This MPT Ordinance shall come into force as of the day on which the law for amending part of the Radio Law (Law No. 48 issued in 1984) is enforced (September 1, 1984).

Supplementary Provisions

(MPT Ordinance No. 48 issued on December 24, 1984)

- 1 This MPT Ordinance shall come into force as of January 15, 1985.
- 2 The provisions of Article 37.28 after amendment shall not be applied to radio equipment already installed in a ship at the enforcement of this MPT Ordinance, as long as the radio

equipment continues to be installed.

Supplementary Provisions

(MPT Ordinance No. 8 issued on March 15, 1985)

This MPT Ordinance shall come into force as of April 1, 1985.

Supplementary Provisions

(MPT Ordinance No. 45 issued on June 1, 1985)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 65 issued on July 27, 1985)

- 1 This MPT Ordinance shall come into force as of the day of promulgation; provided, however, that the amendments to Article 54 shall come into force six (6) months after the day of promulgation.
- 2 Notwithstanding the provisions of Article 54 after amendment, the conditions for radio equipment in a convenience radio station that uses emissions in the 900 MHz band and that accommodates radio equipment that is granted the technical standard conformity certification before the day on which the amendments to Article 54 after amendment are enforced shall continue to conform to the prior Regulations.

Supplementary Provisions

(MPT Ordinance No. 76 issued on October 15, 1985)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 37.17 paragraph 2 after amendment, the conditions for radio equipment in a radio station that is engaged in television teletext broadcasting and already licensed at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations.

Supplementary Provisions

(MPT Ordinance No. 3 issued on January 8, 1986)

- 1 This MPT Ordinance shall come into force as of January 20, 1986.
- 2 The announcement based on the provisions of Article 7 paragraph 12 and Article 45.18 before amendment shall be regarded as being the announcement based on the provisions of Article 7 paragraph 13 and Article 45.19 after amendment.

Supplementary Provisions

(MPT Ordinance No. 12 issued on March 22, 1986) (Summary)

(MPT Ordinance for Amending Part of the Radio Law Enforcement Regulations)

- 1 This MPT Ordinance shall come into force as of the day when the amendments to Article 37 of the Radio Law (Law No. 131 issued in 1950) in Article 21 of the law for arranging and rationalizing restrictions on civil activities for permission, approval, etc. (Law No. 102 issued in 1985) are enforced (March 31, 1986).

Supplementary Provisions

(MPT Ordinance No. 27 issued on May 27, 1986)

- 1 This MPT Ordinance shall come into force as of June 1, 1986; provided, however, that the amendments for adding a proviso to Article 49.7, and the amendments to Note 26 in "Table of Frequency Tolerances" in Table 1 shall come into force as of July 1, 1986.
- 2 Notwithstanding the enforcement of this MPT Ordinance, the portable radio telegraph for a lifeboat defined in Article 37 item 3) of the Law shall continue to conform to the prior Regulations until June 30, 1986.
- 3 The announcement based on the provisions of Article 7 paragraph 13 and Article 49.7 item 3) before amendment shall be regarded as being the announcement based on the provisions of Article 7 paragraph 14 and Article 49.7 paragraph 2 after amendment.

Supplementary Provisions

(MPT Ordinance No. 43 issued on July 28, 1986)

- 1 This MPT Ordinance shall come into force as of August 1, 1986.
- 2 Notwithstanding the provisions of Article 7, Article 49.5 item 3), and Table 2 after amendment, the permissible value for the intensity of a spurious emission, adjacent channel leakage power, and allowed occupied bandwidth of radio equipment in a paging station established for telecommunications service that uses emissions of a frequency in a range of higher than 273 MHz to 328.6 MHz can continue to conform to the prior Regulations until

July 31, 1987 (until May 31, 1991 for radio equipment in a radio station licensed or preliminarily licensed on or before July 31, 1987 (excluding radio equipment substituted or added on or after August 1, 1987)).

- 3 Notwithstanding the provisions of Article 49.6 paragraph 1 item 2) after amendment, the adjacent channel leakage power of radio equipment in a radio station that performs automobile radio telephone communication using emissions of a frequency in a range of higher than 870 MHz to 940 MHz can continue to conform to the prior Regulations until July 31, 1987 (until May 31, 1991 for radio equipment in a radio station licensed or preliminarily licensed on or before July 31, 1987 (excluding radio equipment substituted or added on or after August 1, 1987)).
- 4 Radio equipment that is designed for use with a land mobile station for automobile radio telephone communication using emissions of a frequency in a range of higher than 870 MHz to 940 MHz and that is granted the technical standard conformity certification defined in Article 38.2 paragraph 1 of the Law as being proven to comply with the conditions defined in the Equipment Regulations before amendment shall lose the validity of the said certification on August 1, 1987.
- 5 Part of the Radio Law Enforcement Regulations (Radio Regulatory Commission Regulations No. 14 issued in 1950) shall be amended as follow.
 “Article 7 paragraph 8 item 2)” in 11 and 20 in the table in No. 1 of Table 1 shall be changed to “Article 7 paragraph 9 item 2).”
 “Article 7 paragraph 8 item 2)” in Table 2-2 (4) a shall be changed to “Article 7 paragraph 9 item 2).”
- 6 Part of the Radio Station Licensing Procedure Regulations (Radio Regulatory Commission Regulations No. 15 issued in 1950) shall be amended as follows.
 “each item of Article 7 paragraph 7” in Note 13 in No. 2 of Table 2-2 shall be changed to “each item of Article 7 paragraph 9.”
 “each item of paragraphs 7 and 8” in Note 29 (4) in No. 2 of Table 2-4 shall be changed to “each item of paragraphs 8 and 9.”
- 7 The announcement based on the provisions of Article 7 paragraphs 10 and 14 before amendment shall be deemed as being the announcement based on the provisions of Article 7 paragraphs 11 and 15 after amendment.

Supplementary Provisions
 (MPT Ordinance No. 54 issued on October 1, 1986)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 17 issued on April 25, 1987)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.

- 2 Notwithstanding the provisions of Article 49.7 items 1) and 2) after amendment, the conditions for radio equipment in a radio station that performs MCA land mobile communication using emissions of a frequency in a range of higher than 850 MHz to 915 MHz can continue to conform to the prior Regulations until May 31, 1991 (until May 31, 1996 for radio equipment in a radio station licensed or preliminarily licensed on or before May 31, 1991 (excluding radio equipment substituted or added on or after June 1, 1991)).

- 3 Radio equipment that is designed for use with a land mobile station for MCA land mobile communication using emissions of a frequency in a range of higher than 850 MHz to 915 MHz and that is granted the technical standard conformity certification defined in Article 38.2 paragraph 1 of the Law as being proven to comply with the conditions defined in the Equipment Regulations before amendment shall lose the validity of the said certification on June 1, 1991.

- 4 Notwithstanding the provisions of Article 58, and Tables 1 and 2, the conditions for radio equipment in a land mobile station licensed or preliminarily licensed on or before the day when this MPT Ordinance comes into force (limited to the land mobile station that uses emissions of a frequency in a range of higher than 814 MHz to 815 MHz) shall continue to conform to the prior Regulations until May 31, 1996.

Supplementary Provisions

(MPT Ordinance No. 40 issued on August 8, 1987)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 51 issued on September 29, 1987)

This MPT Ordinance shall come into force as of the day (*) when the law for amending part of the Radio Law (Law No. 55 issued in 1987) comes into force.

- (*) This law shall come into force as of October 1, 1987, according to government ordinance No. 319 issued in 1987.

Supplementary Provisions

(MPT Ordinance No. 13 issued on March 28, 1988)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 24 issued on April 19, 1988)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 36 issued on June 9, 1988)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Articles 9.2, 40.2, 40.3, 58 and Table 1 after amendment, the conditions for radio equipment in a radio station that performs maritime mobile telephone communication defined in Article 40.2 before amendment and in a radio station for testing maritime mobile telephone communication equipment can continue to conform to the prior Regulations until November 30, 1996.
- 3 Radio equipment that is designed for use with a radio station for maritime mobile telephone communication and that is granted the technical standard conformity certification provided for in Article 38.2 paragraph 1 of the Law as being proven to comply with the conditions defined in the Equipment Regulations before amendment shall lose the validity of the said certification on December 1, 1996.

Supplementary Provisions
(MPT Ordinance No. 76 issued on December 21, 1988)

- 1 This MPT Ordinance shall come into force as of the day of promulgation; provided, however, that the amendments to Article 45.12.5, amendments for adding one paragraph to the same Article, amendments to Article 45.12.6, amendments for adding one article after Article 45.12.9, amendments to Article 45.19, amendments to 7 and 8 in "Table of Frequency Tolerances" in Table 1, amendments to V1D and V3D in the table of No. 1 in Table 2, amendments for adding one table after Table 3, amendments to Figure 5, amendments for adding one figure after Figure 5, amendments to Figures 6 to 8, amendments for adding one figure after Figure 8, and amendments for adding four figures after Figure 14 shall come into force as of January 1, 1989.

- 2 Notwithstanding the provisions of Articles 45.12.5 and 45.12.6, 7 and 8 in “Table of Frequency Tolerances” in Table 1, V1D, V1X, VXX, and WXX in the table of No. 1 in Table 2, and Figures 5 to 8 after amendment, the conditions for radio equipment in an aeronautical DME or ATCRBS radio station licensed or preliminarily licensed on or before December 31, 1988 and radio equipment in a radio station whose operation does not adversely affect the license or operation of the radio station and which is considered as being specifically necessary can continue to conform to the prior Regulations, provided that such equipment shall be announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 878 in 1988)

Supplementary Provisions

(MPT Ordinance No. 4 issued on January 27, 1989)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 21 issued on May 30, 1989)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 28 issued on June 1, 1989)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 42 issued on June 30, 1989)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 49 issued on August 1, 1989)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 65 issued on October 25, 1989)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 78 issued on December 18, 1989)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 7 issued on January 25, 1990)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 33 issued on June 18, 1990)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 The convenience radio station that is licensed or preliminarily licensed on or before May 31, 1993 according to the specification of a frequency listed in the table in Article 13 paragraph 1 of the Radio Law Enforcement Regulations (Radio Regulatory Commission Regulations No. 14 issued in 1950) before amendment by the MPT Ordinance for amending part of the Radio Law Enforcement Regulations (MPT Ordinance No. 32 issued in 1990) shall be exempted from the obligation to install the automatic identification device defined in the table in Article 9.2 paragraph 1 of Radio Equipment Regulations after amendment by this MPT Ordinance until May 31, 2000.
- 3 Notwithstanding the provisions of Article 49.11 paragraph 1 item 1) a of the Radio Equipment Regulations after amendment by this MPT Ordinance, the conditions for radio equipment in a radio station that performs MARINET phone communication and that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and radio equipment in a radio station that performs communication, etc. for testing MARINET phone communication equipment can continue to conform to the prior Regulations until May 31, 1996.

Supplementary Provisions
(MPT Ordinance No. 41 issued on July 23, 1990)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPT Ordinance No. 47 issued on September 18, 1990)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 In the period from the date specified in the preceding paragraph to June 30, 1991, “emergency position-indicating radio beacon” in Article 7 paragraph 15, Article 49.3 (including the heading), and Tables 1 and 2 of the Equipment Regulations after amendment by this MPT Ordinance (hereinafter referred to as the “new Regulations”) shall be replaced by “automatic distress messaging equipment,” “search and rescue radar transponder” in Article 7 paragraph 15 of the new Regulations by “search and rescue radar transponder (which refers to a radar transponder that generates emissions in response to emissions generated from a radar when a ship is wrecked, to display its location on the radar indicator; this also applies hereafter),” and “satellite emergency position-indicating radio beacon” in Article 7 paragraph 16 by “satellite emergency position-indicating radio beacon (which refers to a radio beacon that transmits a signal through relay by a satellite station when a ship is wrecked to indicate the position of transmission from the radio beacon; this also applies hereafter).”
- 3 Notwithstanding the provisions of Articles 7, 14, and 40.4 of the new Regulations, the conditions for transmitting equipment in an INMARSAT ship earth station installed in a ship constructed or beginning to be constructed on or before January 31, 1995 can continue to conform to the prior Regulations until January 31, 1999.
- 4 Notwithstanding the provisions of Article 45.3.4 of the new Regulations, the conditions for a two-way radio telephone installed in a radio station on or before January 31, 1992 (excluding the two-way radio telephone that uses emissions of a frequency in a range of higher than 450 MHz to 467.58 MHz) can continue to conform to the prior Regulations until January 31, 1999.
- 5 Notwithstanding the provisions of Article 40.2, 45.3.4, 58, and 58.2.2 and Tables 1 and 2 of the new Regulations, the conditions for a two-way radio telephone that is installed in a ship constructed or beginning to be constructed on or before January 31, 1992 and that uses

emissions of a frequency in a range of higher than 450 MHz to 467.58 MHz shall continue to conform to the prior Regulations until January 31, 1995.

- 6 Notwithstanding the provisions of Table 1 of the new Regulations, the frequency tolerance of transmitting equipment in a ship or coast station that performs communication by a digital selective calling device using emissions of a frequency in a range of 1,606.5 kHz to 26,175 kHz and that is licensed or preliminarily licensed on or before January 1, 1992 can continue to conform to the prior Regulations until January 31, 1999, except for transmitting equipment substituted or added on or after January 2, 1992.
- 7 Notwithstanding the provisions of Table 1 of the new Regulations, the frequency tolerance of transmitting equipment in a ship or coast station that performs communication by a narrow-band direct printing telegraph using emissions of a frequency in a range of 1,606.5 kHz to 26,175 kHz and that is licensed or preliminarily licensed on or before January 1, 1992 can continue to conform to the prior Regulations, except for transmitting equipment substituted or added on or after January 2, 1992.

Supplementary Provisions

(MPT Ordinance No. 5 issued on January 21, 1991)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 11 issued on February 28, 1991)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Among the radio equipment in a radio station for communication, etc. for testing convenience land mobile radio telephone communication equipment that is already established or is to be established on or after the date of enforcement of this MPT Ordinance by a person who is already licensed for a radio station for convenience land mobile radio telephone communication at the enforcement of this MPT Ordinance, notwithstanding the provisions of Article 49.12 after amendment, the conditions for radio equipment that uses emissions of a frequency in a range of higher than 821 MHz to 826 MHz or higher than 940 MHz to 945 MHz shall continue to conform to the prior Regulations until further notice, and notwithstanding the provisions of Article 7, 49.12, 57.3, and 58 and Tables 1 and 2 after amendment, the conditions for radio equipment that uses emissions of a frequency in a range of higher than 810 MHz to 815 MHz or higher than 951 MHz to 956 MHz shall continue to conform to the prior Regulations until further notice.
- 3 Notwithstanding the provisions of Article 49.6 paragraphs 1 and 2 after amendment, the conditions for radio equipment that is installed in a radio station for 800 MHz band automobile radio telephone communication or a radio station for communication, etc. for testing 800 MHz band automobile radio telephone communication equipment and that transmits emissions of a frequency in a range of higher than 885 MHz to 887 MHz shall continue to conform to the prior Regulations until the date announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications. In addition, notwithstanding the provisions of Articles 7, 49.6, 57.3, and 58 and Tables 1 and 2 after amendment, the conditions for such radio equipment that transmits emissions of a frequency in a range of higher than 940 MHz to 942 MHz shall continue to conform to the prior Regulations until the date announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications.
- 4 The provisions which are applied to radio equipment whose conditions are defined in Article 49.6 paragraphs 1 and 2 shall be applied until the date announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications to radio equipment that is installed in a base station for 800 MHz band automobile radio telephone communication or in a radio station for communication, etc. for testing 800 MHz band automobile radio telephone communication equipment (limited to the radio station that shares a transmitter with a base station for 800 MHz band automobile radio telephone communication) and that transmits emissions of a frequency in a range of higher than 844 MHz to 846 MHz or transmits emissions for 800 MHz band automobile radio telephone communication, or radio equipment that is installed in a land mobile station for 800 MHz band automobile radio telephone communication or in a radio station for communication, etc. for testing 800 MHz band automobile radio telephone communication equipment (excluding the radio station that shares a transmitter with a base station for 800 MHz band automobile radio telephone communication) and that transmits emissions of a frequency in a range of

higher than 899 MHz to 901 MHz.

- 5 Among the radio equipment that is installed in a radio station for MCA land mobile communication or in a fixed station for testing MCA land mobile communication equipment, notwithstanding the provisions of Article 7, 49.7, 57.3, and 58 and Tables 1 and 2 after amendment, the conditions for radio equipment that uses emissions of a frequency in a range of higher than 834 MHz to 838 MHz shall continue to conform to the prior Regulations until the date announced separately by the Minister of Public Management, Home Affairs, Posts and Telecommunications, and notwithstanding the provisions of Article 49.7 after amendment, the conditions for radio equipment that uses emissions of a frequency in a range of higher than 889 MHz to 893 MHz shall continue to conform to the prior Regulations until the date announced separately (*) by the Minister of Public Management, Home Affairs, Posts and Telecommunications.

(Announcement: * in No. 338 in 1991)

References

- 1 Paragraph 3 of the Supplementary Provisions is announced as of December 31, 1992.
 2 Paragraph 4 of the Supplementary Provisions is announced as of July 31, 1991.
 3 Paragraph 5 of the Supplementary Provisions is announced as of May 31, 2001.

Supplementary Provisions

(MPT Ordinance No. 15 issued on March 1, 1991)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 35 issued on July 17, 1991)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 42 issued on July 29, 1991)

This MPT Ordinance shall come into force as of August 1, 1991.

Supplementary Provisions

(MPT Ordinance No. 57 issued on December 2, 1991)

- 1 This MPT Ordinance shall come into force as of February 1, 1992; provided, however, that the amendments to Article 40.3 and Table 1 shall come into force as of the day of promulgation.

- 2 Notwithstanding the provisions of Table 1 after amendment, the frequency tolerance of transmitting equipment that is installed in a coast station or ship station on or before December 31, 1991 and that uses class F1B or F1D emissions of a frequency of 29.7 MHz or lower can continue to conform to the prior Regulations.
- 3 The compulsory ship station that shall continue to conform to the prior Regulations according to the provisions of paragraph 2 of the Supplementary Provisions in the law for amending part of the Radio Law (Law No. 67 issued in 1991) shall continue to conform to the prior Regulations until the date specified in this paragraph.

Supplementary Provisions

(MPT Ordinance No. 6 issued on January 16, 1992)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 22 issued on May 15, 1992)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 55 issued on September 24, 1992)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 66 issued on October 7, 1992)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 79 issued on December 25, 1992)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 11 issued on March 10, 1993)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 19 issued on April 7, 1993)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 52 issued on October 5, 1993)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 55 issued on October 12, 1993)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions after amendment, the conditions for radio equipment that is installed in an amateur radio station or a convenience radio station using emissions in the 900 MHz band and that is licensed or preliminarily licensed, or is granted the technical standard conformity certification defined in Article 38.2 paragraph 1 of the Law before the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations.

Supplementary Provisions

(MPT Ordinance No. 62 issued on November 26, 1993)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 76 issued on December 22, 1993)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 7 issued on February 3, 1994)

(Date of Enforcement)

1 This MPT Ordinance shall come into force as of the day of promulgation.

(Partial Amendment of the Radio Station Licensing Procedure Regulations)

2 Part of the Radio Station Licensing Procedure Regulations (Radio Regulatory Commission Regulations No. 15 issued in 1950) shall be amended as follows.

In Note 22 in Table 2-4-2, “800 MHz band automobile radio telephone communication” shall be changed to “800 MHz band portable/automobile radio telephone communication,” to “1,500 MHz band portable/automobile radio telephone communication.”

(Partial Amendment of the Radio Apparatus Type Test Regulations)

3 Part of the Radio Apparatus Type Test Regulations (MPT Ordinance No. 40 issued in 1961) shall be amended as follows.

In Article 2 item 7), “800 MHz band automobile radio telephone communication” shall be changed to “800 MHz band portable/automobile radio telephone communication.” In Article 2 item 8), “1,500 MHz band automobile radio telephone communication” shall be changed to “1,500 MHz band portable/automobile radio telephone communication.” In Tables 1 and 2, “800 MHz band automobile radio telephone communication” shall be changed to “800 MHz band portable/automobile radio telephone communication,” “800 MHz band analog automobile radio telephone communication device” to “800 MHz band analog portable/automobile radio telephone communication device,” “800 MHz band digital automobile radio telephone communication device” to “800 MHz band digital portable/automobile radio telephone communication device,” and “1,500 MHz band automobile radio telephone communication” to “1,500 MHz band portable/automobile radio telephone communication.”

In Table 7, “800 MHz band automobile radio telephone communication” shall be changed to “800 MHz band portable/automobile radio telephone communication,” and “1,500 MHz band automobile radio telephone communication” to “1,500 MHz band portable/automobile radio telephone communication.”

In Table 8, “800 MHz band automobile radio telephone communication” shall be changed to “800 MHz band portable/automobile radio telephone communication,” “800 MHz band analog automobile radio telephone communication device” to “800 MHz band analog portable/automobile radio telephone communication device,” “800 MHz band digital automobile radio telephone communication device” to “800 MHz band digital portable/automobile radio telephone communication device,” and “1,500 MHz band automobile radio telephone communication” to “1,500 MHz band portable/automobile radio telephone communication.”

(Interim Measures Accompanying Partial Amendment of the Radio Apparatus Type Test Regulations)

4 The type of a device or unit that already has the approval at the enforcement of this MPT Ordinance and that is used in a transmitter-receiver for a land mobile station that performs 800 MHz or 1,500 MHz band automobile radio telephone communication shall be regarded

as being the type of a device or unit in a transmitter-receiver for a land mobile station that performs 800 MHz or 1,500 MHz band portable/automobile radio telephone communication according to the provisions after amendment.

- 5 Administrative disposition, procedures, or other actions based on the provisions before amendment by this MPT Ordinance shall be deemed as having been made in accordance with the corresponding provisions in the Regulations after amendment.

(Partial Amendment of the Regulations on Technical Standard Conformity Certification for Specified Radio Equipment)

- 6 Part of the Regulations on Technical Standard Conformity Certification for Specified Radio Equipment (MPT Ordinance No. 37 issued in 1981) shall be amended as follows. In Article 8 item 3), "800 MHz band automobile radio telephone communication" shall be changed to "800 MHz band portable/automobile telephone communication."

In Note 1 in Table 4, "800 MHz band automobile radio telephone communication" shall be changed to "800 MHz band portable/automobile telephone communication."

(Interim Measures Accompanying Partial Amendment of the Regulations on Technical Standard Conformity Certification for Specified Radio Equipment)

- 7 Equipment that is granted the technical standard conformity certification on or before the date of enforcement of this MPT Ordinance and that is designed for use with a land mobile station that performs 800 MHz or 1,500 MHz band automobile radio telephone communication shall be considered as being equipment which is designed for use with a land mobile station that performs 800 MHz or 1,500 MHz band portable/automobile radio telephone communication according to the provisions after amendment.
- 8 Administrative disposition, procedures, or other actions based on the provisions before amendment by this MPT Ordinance shall be deemed as having been made in accordance with the corresponding Regulations after amendment.

Supplementary Provisions

(MPT Ordinance No. 13 issued on March 2, 1994)

- 1 This MPT Ordinance shall come into force as of the day of promulgation; provided, however, that the amendments for adding one item to Article 49.11 paragraph 2 shall come into force as of April 1, 1994.
- 2 Notwithstanding the provisions of Article 49.11 paragraph 2 item 3) after amendment, the conditions for radio equipment in a radio station for MARINET phone communication licensed or preliminarily licensed on or before March 31, 1994 can continue to conform to the prior Regulations until May 31, 2001.
- 3 The type of a device or unit that has the type approval according to the Test Regulations on or before March 31, 1994 and that is used in a transmitter-receiver for a portable station that performs MARINET phone communication shall cease to be effective on June 1, 2001.

- 4 Radio equipment that is designed for use with a radio station performing MARINET phone communication and that is granted the technical standard conformity certification provided for in Article 38.2 paragraph 1 of the Law as being proven to comply with the conditions defined in the Equipment Regulations before amendment shall lose the validity of the said certification on June 1, 2001.

Supplementary Provisions
(MPT Ordinance No. 29 issued on April 28, 1994)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 36 issued on June 2, 1994)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 50 issued on July 5, 1994)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 57 issued on August 4, 1994)

(Date of Enforcement)

1 This MPT Ordinance shall come into force as of the day of promulgation.

(Interim Measures)

2 Notwithstanding the provisions of Articles 45.2, 45.3, and 45.3.2 after amendment, the conditions for radio equipment for a satellite emergency position-indicating radio beacon, two-way radio telephone, and search and rescue radar transponder that is installed in a ship on or before November 3, 1994 can continue to conform to the prior Regulations as long as such radio equipment continues to be installed on the ship.

Supplementary Provisions

(MPT Ordinance No. 71 issued on October 6, 1994)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 87 issued on December 22, 1994)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 21 issued on March 24, 1995)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 44 issued on June 1, 1995)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.

- 2 Notwithstanding the provisions of Article 49.5 after amendment, the conditions for radio equipment that is installed in a paging station already licensed at the enforcement of this MPT Ordinance (limited to the paging station established for telecommunications service) and that uses a modulation signal having a transmission rate of lower than 512 bits/s can continue to conform to the prior Regulations until May 31, 2001.

Supplementary Provisions

(MPT Ordinance No. 50 issued on July 4, 1995)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 60 issued on August 8, 1995)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 64 issued on August 8, 1995)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 77 issued on October 12, 1995)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 10 issued on February 28, 1996)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 22 issued on March 7, 1996)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 37 issued on April 11, 1996)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 56 issued on July 11, 1996)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 71 issued on November 5, 1996)

(Date of Enforcement)

1 This MPT Ordinance shall come into force as of the day of promulgation.

(Interim Measures)

- 2 Among the radio equipment installed in a ship on or before November 22, 1996, notwithstanding the provisions of Articles 40.7 and 45.3 after amendment, the conditions for radio equipment for a ship station that performs communication by a radio telephone using emissions of a frequency in a range of 1,606.5 kHz to 26,175 kHz and communication by a digital selective calling device or narrow-band direct printing telegraph, and radio equipment for a two-way radio telephone can continue to conform to the prior Regulations as long as such radio equipment continues to be installed in the ship.
- 3 Notwithstanding the provisions of Article 7 paragraph 20 after amendment, the conditions for transmitting equipment in an INMARSAT aircraft earth station that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance can continue to conform to the prior Regulations, except for radio equipment substituted or added on or after the day

when this MPT Ordinance is enforced.

Supplementary Provisions

(MPT Ordinance No. 77 issued on December 12, 1996)

(MPT Ordinance for Arranging MPT Ordinances Related to Enforcement, etc. of Radio Regulations Defined in the Constitution of the International Telecommunication Union)

- 1 This MPT Ordinance shall come into force as of January 1, 1997; provided, however, that the amendments to Article 6.3 item 3) of the Basic Radio Station Standards, the amendments to Article 6.4 items 3) and 4) of the Enforcement Regulations, the amendments to Article 33.2 paragraph 1 item 1) of the Enforcement Regulations, the amendments to Article 38 of the Enforcement Regulations (excluding amendments for changing “Communication Convention and Supplementary Provisions” to “Communication Constitution, Communication Convention, and Radio Regulations”), the amendments to Table 5-2 of the Licensing Regulations, the amendments to Article 153.2 of the Ordinance for Operating Radio Stations, the amendments to Article 7 paragraph 3 of the Equipment Regulations, the amendments to Article 38.3 item 1) of the Equipment Regulations, the amendments to Article 40.2 paragraph 1 of the Equipment Regulations, the amendments to Article 40.5 paragraph 1 item 2) b of the Equipment Regulations, the amendments to Article 40.7 paragraphs 3 and 4 of the Equipment Regulations, the amendments to Article 41 paragraph 3 of the Equipment Regulations, the amendments to Article 45.12.4 of the Equipment Regulations, the amendments to Article 58 of the Equipment Regulations, and the amendments to Table 1 of the Equipment Regulations shall come into force as of June 1, 1998.

- 2 The license issued according to the provisions of the Radio Operator Regulations before amendment by this MPT Ordinance (limited to the license for first-class radio operator for general services, second-class radio operator for general services, third-class radio operator for general services, maritime first-class radio operator, maritime second-class radio operator, maritime third-class radio operator, maritime fourth-class radio operator, aeronautical radio operator, and maritime I-category special radio operator) that is already effective at the enforcement of this MPT Ordinance shall be deemed as being the license based on Table 13 Form 1 or 3 of the Radio Operator Regulations after amendment by this MPT Ordinance.

- 3 Concerning the above paragraph, in the license of a person who passed a national examination for first-class radio operators carried out on or before March 31, 1983 or who passed the test for telecommunications technology in the said examination (including the person who graduated on or before March 31, 1983 from a school, etc. approved for the qualification of first-class radio operators according to the provisions of Article 21 of the MPT Ordinance and who is exempted from the test of telecommunications technology in a national examination for first-class radio operators according to the provisions of Article 9 of the MPT Ordinance) and then passed a national examination for first-class radio operators, according to the provisions of the Radio Operator Regulations before amendment by the MPT Ordinance for amending all of the Radio Operator Regulations (MPT Ordinance No. 18

issued in 1990), “first-class radio electronic certificate, and second-class radio telegraph operator certificate on aeronautical mobile service and aeronautical mobile satellite service” shall be changed to “first-class radio telegraph operator certificate and first-class radio electronic certificate.”

Supplementary Provisions

(MPT Ordinance No. 6 issued on March 17, 1997)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 28 issued on June 9, 1997)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Article 45.12.2 paragraph 1 item 2) a (3) after amendment, the conditions for radio equipment in an aircraft station licensed or preliminarily licensed on or before the date on which this MPT Ordinance comes into force can continue to conform to the prior Regulations.
- 3 Radio equipment that is designed for use with a radio station for a low-power data communication system and that receives the technical standard conformity certification on or before the day on which this MPT Ordinance comes into force shall be deemed to be granted the technical standard conformity certification as being proven to comply with the technical standards for radio equipment defined in Article 49.20 item 5) after amendment on the day when this MPT Ordinance comes into force.

Supplementary Provisions

(MPT Ordinance No. 36 issued on June 16, 1997)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 44 issued on June 24, 1997)

(Date of Enforcement)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.

(Interim Measures)

- 2 The conditions for radio equipment in a broadcasting station for standard television facsimile multiplex broadcasting that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations.

Supplementary Provisions

(MPT Ordinance No. 54 issued on July 31, 1997)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 59 issued on September 22, 1997)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Part of the Radio Station Licensing Procedure Regulations (Radio Regulatory Commission Regulations No. 15 issued in 1950) shall be amended as follows.
In Note 16 in Table 2-14, “Article 49.18 of the Equipment Regulations” shall be changed to “Article 49.18 item 1) of the Equipment Regulations,” and “land mobile satellite data communication” to “portable mobile satellite data communication.”

Supplementary Provisions

(MPT Ordinance No. 66 issued on September 24, 1997)

This MPT Ordinance shall come into force as of the day on which the law for amending part of the Broadcasting Law and the Cable Television Broadcasting Law (Law No. 58 issued in 1997) comes into force (October 1, 1997).

Supplementary Provisions

(MPT Ordinance No. 87 issued on December 16, 1997)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Among the radio equipment that is designed for use with a radio station for a digital cordless telephone and a land mobile station for a portable handy phone system and that complies with the conditions in Article 7 paragraph 15 of the Equipment Regulations before amendment by this MPT Ordinance (hereinafter referred to as the “previous Regulations”), notwithstanding the provisions of Article 7 paragraph 15 of the Equipment Regulations after amendment by this MPT Ordinance (hereinafter referred to as the “new Regulations”), the

permissible value of the intensity of a spurious emission of radio equipment that is granted the technical standard conformity certification (hereinafter referred to as “technical certification”) defined in Article 38.2 paragraph 1 of the Law before the enforcement of the MPT Ordinance shall continue to conform to the prior Regulations, and notwithstanding the provisions of Article 7 paragraph 15 of the new Regulations, the permissible value of the intensity of a spurious emission of radio equipment that is granted the technical certification in the period from the day when this MPT Ordinance comes into force to December 31, 1998 can continue to conform to the prior Regulations.

- 3 Notwithstanding the provisions of Article 49.8.3 paragraphs 1 and 3 of the new Regulations, the conditions for radio equipment for a base station for a personal handy phone system or a radio station performing communication, etc. for testing personal handy phone system communication equipment which is already established by a person who is already licensed for a base station for a personal handy phone system at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations, except for radio equipment substituted on or after the day when this MPT Ordinance comes into force.
- 4 Notwithstanding the provisions of Article 49.8.3 paragraphs 1 and 3 of the new Regulations, the conditions for radio equipment for a base station for the personal handy phone system or a radio station for communication, etc. for testing the personal handy phone system communication equipment which is to be established by the above person in the period from the day when this MPT Ordinance comes into force to December 31, 1998 can continue to conform to the prior Regulations, except for radio equipment substituted on or after January 1, 1999.
- 5 The technical certification for radio equipment that is designed for use with a radio station for a digital cordless telephone, a land mobile station for a personal handy phone system, and a base station for a personal handy phone system and that shall continue to conform to the prior Regulations according to the provisions of the preceding three paragraphs shall continue to conform to the prior Regulations.

Supplementary Provisions

(MPT Ordinance No. 8 issued on March 3, 1998)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- 2 Notwithstanding the provisions of Articles 58.2.8 and 58.2.9 of the Radio Equipment Regulations after amendment by this MPT Ordinance, the conditions for radio equipment in a fixed station for public service that is already licensed or preliminarily licensed at the enforcement of this MPT Ordinance and that uses emissions of a frequency in a range of higher than 6.57 GHz to 6.87 GHz, higher than 7.425 GHz to 7.75 GHz, or higher than 12.2 GHz to 12.5 GHz can continue to conform to the prior Regulations.

Supplementary Provisions

(MPT Ordinance No. 56 issued on June 11, 1998)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 76 issued on September 30, 1998)

(Date of Enforcement)

1 This MPT Ordinance shall come into force as of the day of promulgation.

(Interim Measures)

2 Notwithstanding the provisions of Article 24 paragraph 3 of the Equipment Regulations after amendment, the conditions for a receiver in a radio station for CDMA portable/automobile radio telephone communication and a radio station for communication, etc. for testing CDMA portable/automobile radio telephone communication equipment that are already licensed or preliminarily licensed at the enforcement of this MPT Ordinance can continue to conform to the prior Regulations.

Supplementary Provisions

(MPT Ordinance No. 81 issued on October 1, 1998)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 87 issued on October 5, 1998)

(Date of Enforcement)

1 This MPT Ordinance shall come into force as of the day when the law for arrangement, etc. of the related laws for rationalizing restrictions in the telecommunication field (Law No. 58 issued in 1998) comes into force (November 1, 1998).

(Interim Measures)

2 Radio equipment that is designed for use with a radio station defined in Article 4 item 3) of the Law and that is granted the technical standard conformity certification provided for in Article 38.2 paragraph 1 of the Law before the enforcement of this MPT Ordinance shall be deemed to be granted the technical standard conformity certification as being proven to comply with the technical standards for radio equipment defined in Articles 9.4, 49.8, and 49.8.2 after amendment by this MPT Ordinance on the day when this MPT Ordinance comes into force.

Supplementary Provisions

(MPT Ordinance No. 107 issued on December 18, 1998)

(Date of Enforcement)

- 1 This MPT Ordinance shall come into force as of February 1, 1999; provided, however, that the amendments to Article 48, and the provisions of paragraphs 3 and 4 of the Supplementary Provisions shall come into force as of the day of promulgation.

(Interim Measures)

- 2 The conditions for radio equipment for an emergency position-indicating radio beacon installed in a ship on or before January 31, 1999 shall continue to conform to the prior Regulations until July 31, 1999.
- 3 Notwithstanding the provisions of Article 48 after amendment, the conditions for a radar for radionavigation to be installed in a ship can continue to conform to the prior Regulations until December 31, 1998.
- 4 Notwithstanding the provisions of Article 48 after amendment, the conditions for a radar for radionavigation installed in a ship on or before December 31, 1998 can continue to conform to the prior Regulations as long as the radar continues to be installed.

Supplementary Provisions

(MPT Ordinance No. 112 issued on December 25, 1998)

(Date of enforcement)

1 This MPT Ordinance shall come into force as of the day of promulgation.

(Interim measures)

2 Notwithstanding the post-amendment provisions of Article 7, Article 24, Article 49.19 and items 1 and 2 of the attached table, the conditions for radio equipment at land mobile stations using emissions of frequencies in the 22 GHz or 26 GHz band licensed at the enforcement of this MPT Ordinance shall continue to conform to the prior Regulations until March 31, 2002.

3 The technical standard conformity certification for radio equipment at land mobile stations using emissions of frequencies in the 22 GHz band that conforms to Article 49.19 of the pre-amendment Radio Equipment Regulations shall continue to conform to the prior Regulations.

(Partial amendment to the Ministerial Ordinance to Partially Amend the Radio Equipment Regulations)

4 A part of the Ministerial Ordinance to Partially Amend the Radio Equipment Regulations (MPT Ordinance No. 87 issued in 1997) shall be amended as follows.

December 31, 1998 and January 1, 2000 described in paragraph 4 of the Supplementary Provisions shall be amended to December 31, 2002 and January 1, 2003 respectively.

Supplementary Provisions

(MPT Ordinance No. 19 issued on March 8, 1999)

(Date of enforcement)

1 This MPT Ordinance shall come into force as of the day of promulgation.

(Interim measures)

2 Notwithstanding the post-amendment provisions of Article 57.3.2 paragraph 1 item 3, the conditions for licensed radio equipment at radio stations for public digital mobile communication that complies with the conditions set forth in Article 49.21 of the pre-amendment regulations shall continue to conform to the prior Regulations. However, this shall not apply to replacing radio equipment or radio equipment to be additionally installed from and after the day this Ministerial Ordinance comes into effect.

Supplementary Provisions

(MPT Ordinance No. 34 issued on April 12, 1999)

This Ministerial Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 41 issued on May 21, 1999)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 76 issued on October 8, 1999)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 80 issued on October 13, 1999)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 86 issued on October 28, 1999)

This Ministerial Ordinance shall come into force as of the day the Law to Partially Amend the Broadcasting Law (Law No. 58, 1999) comes into effect (November 1, 1999).

Supplementary Provisions

(MPT Ordinance No. 91 issued on October 29, 1999)

This Ministerial Ordinance shall come into force as of the day the amended regulations described in the proviso to paragraph 1 of the supplementary provisions of the Law to Partially Amend the Radio Law (Law No. 47, 1999) comes into effect (November 1, 1999).

Supplementary Provisions

(MPT Ordinance No. 101 issued on December 21, 1999)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 5 issued on February 3, 2000)

(Date of enforcement)

1 This MPT Ordinance shall come into force as of the day of promulgation.

(Interim measures)

2 Notwithstanding the post-amendment provisions of Article 24 paragraph 3 of the Radio Equipment Regulations, the conditions for receiving equipment at radio stations for CDMA mobile radio-telephone communication and communication using automobile radio telephones preliminarily licensed or licensed at the enforcement of this Ministerial Ordinance and for receiving equipment at radio stations that perform communications for the purpose of testing the facilities for CDMA mobile radio-telephone communication and communication using automobile radio telephones shall continue to conform to the prior Regulations.

(Partial amendment to the Regulations concerning the Technical Standard Conformity Certification

for Specific Radio Equipment)

- 3 The Regulations concerning the Technical Standard Conformity Certification for Specific Radio Equipment (MPT Ordinance No. 37, 1981) shall be partially revised as follows.
The phrases “to 895 MHz, higher than 898 MHz” in Article 2 item 10, and “to 840 MHz, higher than 843 MHz” and “to 895 MHz, higher than 898 MHz” in Article 2 item 10.3 shall be deleted.
The term “certificate” in Article 14 paragraph 1 item 3) shall be amended to the “technical standard conformity certification.”
The term “Article 15” in Article 29 shall be amended to “Article 14 paragraph 1 and Article 15.”

Supplementary Provisions

(MPT Ordinance No. 10 issued on March 1, 2000)

(Date of enforcement)

- 1 This MPT Ordinance shall come into force as of the day one month after the day of promulgation.
- (Partial amendment to the Radio Station Licensing Procedure Regulations)
- 2 The Radio Station Licensing Procedure Regulations (Radio Regulatory Committee Regulations No. 15, 1950) shall be partially amended as follows.
The phrase “mobile and automobile radio telephone communication” in the proviso to Note 22 in the written format for Radio Stations and Work Designs mentioned in item 2) of the attached list shall be amended to “mobile radio communication.”

Supplementary Provisions

(MPT Ordinance No. 16 issued on March 16, 2000)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 32 issued on May 17, 2000)

(Date of enforcement)

- 1 This MPT Ordinance shall come into force as of the day of promulgation.
- (Interim measures)
- 2 The license for premises radio stations using the emissions of frequencies in the 400 MHz band licensed at the enforcement of this MPT Ordinance shall lose its validity on the day this Ministerial Ordinance comes into effect.
 - 3 Radio equipment used at premises radio stations using emissions of frequencies in the 400 MHz band and certified under the technical standard conformity certification immediately before this Ministerial Ordinance comes into effect shall be regarded as complying with the technical standards for radio equipment stipulated in Article 49.14 of the amended Ministerial Ordinance and thus having been certified under the technical standard conformity certification on the day this Ministerial Ordinance comes into effect.

Supplementary Provisions

(MPT Ordinance No. 45 issued on August 2, 2000)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 49 issued on August 9, 2000)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPT Ordinance No. 60 issued on September 27, 2000) (Summary)

(Ministerial Ordinance Concerning the Reorganization of Ordinances of the Ministry of Posts and Telecommunications for the Reform of Central Ministries and Agencies)

(Date of enforcement)

Article 1 This Ministerial Ordinance shall come into force as of the day (January 6, 2001) the Law to Partially Amend the Cabinet Act comes into effect.

Article 2 The forms created in the style used before the amendment to be made by this Ministerial Ordinance shall be allowed to be used for the time being after the Ministerial Ordinance comes into effect. In this case, forms created in the style used prior to amendment may be modified when they are used. (Omitted)

Supplementary Provisions

(MPT Ordinance No. 86 issued on December 12, 2000)

This MPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHPT Ordinance No. 10 issued on February 1, 2001)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHPT Ordinance No. 15 issued on February 23, 2001)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHPT Ordinance No. 64 issued on April 17, 2001)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHP Ordinance No. 76 issued on May 28, 2001)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPHP Ordinance No. 81 issued on June 1, 2001)

This MPHPT Ordinance shall come into force as of the day one year after the day of promulgation.

Supplementary Provisions
(MPHP Ordinance No. 92 issued on July 2, 2001)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions
(MPHP Ordinance No. 21 issued on February 28, 2002)

This MPHPT Ordinance shall come into force as of the day of promulgation.

(Date of Enforcement)

1 This MPHPT Ordinance shall come into force as of the day of promulgation.

(Interim Measures)

- 2 Notwithstanding the provisions of the Radio Equipment Regulations after amendment based on this Ordinance (hereinafter referred to as the “new Regulations”), the conditions for radio equipment at radio stations of PHS for which a license or a preliminary license has been obtained when this Ordinance is enforced can continue to conform to the prior Regulations until May 31, 2012.
- 3 Notwithstanding the provisions of the new Regulations, the Minister of Public Management, Home Affairs, Posts and Telecommunications can grant a license to the radio stations of PHS using the radio equipment that complies with the conditions prescribed in the Radio Equipment Regulations before amendment pursuant to this Ordinance (hereinafter referred to as the “old Regulations”) from the date of enforcement of this Ordinance to May 31, 2011. In this case, the conditions for the radio equipment can continue to conform to the prior Regulations until May 31, 2012.
- 4 The effect of the technical standards conformity certification related to the radio equipment at land mobile stations of PHS and the approval prescribed in Article 38.16 paragraph 1 of the Law (hereinafter referred to as “technical standards conformity certification, etc.”) which have been obtained when this Ordinance is enforced shall remain in force even after the enforcement of this Ordinance.
- 5 The effect of the technical standards conformity certification, etc. related to the radio equipment at radio stations of PHS (excluding land mobile stations of PHS) which has been obtained when this Ordinance is enforced shall remain in force until May 31, 2012.
- 6 An application for the technical standards conformity certification, etc. related to the radio stations of PHS that comply with the conditions of the old Regulations can be made from the date of enforcement of this Ordinance to December 31, 2003 (for application by means of the simplified procedure prescribed in Article 6.2, Article 26, Article 35 and Article 52 of the Technical Standards Conformity Certification Regulations (hereinafter referred to as a “simplified procedure”), until May 31, 2012). In this case, the examination of the technical standards conformity certification, etc. can continue to conform to the prior Regulations, and the preceding

two items shall apply mutatis mutandis to the effect of the technical standards conformity certification, etc.

Supplementary Provisions
(MPHP Ordinance No. 61 issued on June 14, 2002)

(Date of Enforcement)

- 1 This MPHPT Ordinance shall come into force as of the day of promulgation.

(Interim Measures)

- 2 Notwithstanding the provisions prescribed in the Radio Equipment Regulations after amendment pursuant to this Ordinance, the conditions for the radio equipment at radio stations that perform CDMA portable radio communication prescribed in Article 7 paragraph 9 item 3) of the Radio Equipment Regulations for which a license or a preliminary license has been obtained when this Ordinance is enforced and that use emissions of a frequency in a range of higher than 1,920 MHz to 1,980 MHz and higher than 2,110 MHz to 2,170 MHz (hereinafter referred to as “radio equipment that performs CDMA portable radio communication and uses emissions of a frequency in the 2 GHz band”) can continue to conform to the prior regulations.
- 3 The Minister of Public Management, Home Affairs, Posts and Telecommunications can grant a license to the radio stations performing CDMA portable radio communication that use the radio equipment for CDMA portable radio communication using the 2 GHz band that complies with the conditions prescribed in the Radio Equipment Regulations before amendment pursuant to this Ordinance (hereinafter referred to as the “old Regulations”) from the date of enforcement of this Ordinance to May 31, 2004. In this case, the conditions for the radio equipment can continue to conform to the prior Regulations.
- 4 The effect of the technical standards conformity certification related to the radio equipment for CDMA portable radio communication using the 2 GHz band and the approval prescribed in Article 38.16 paragraph 1 of the Law (hereinafter referred to as “technical standards conformity certification, etc.”) which have been obtained when this Ordinance is enforced shall remain in force even after the enforcement of this Ordinance.
- 5 An application for the technical standards conformity certification, etc. related to the radio equipment for CDMA portable radio communication using the 2 GHz band that complies with the conditions of the old Regulations can be made from the date of enforcement of this Ordinance to March 31, 2003. In this case, the examination of the technical standards conformity certification, etc. can continue to conform to the prior Regulations, and the provisions of the preceding paragraph shall apply mutatis mutandis to the effect of the technical standards conformity certification, etc.

Supplementary Provisions
(MPHP Ordinance No. 67 issued on June 25, 2002)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHP Ordinance No. 76 issued on June 28, 2002)

(Date of Enforcement)

- 1 This MPHPT Ordinance shall come into force as of July 1, 2002.

(Interim Measures)

- 2 Notwithstanding the provisions of Article 48 paragraph 2 and paragraph 3 of the Radio Equipment Regulations after amendment pursuant to this Ordinance, the conditions of the radar for radionavigation to be installed on a ship that has begun to be built before the date of enforcement of this Ordinance and that must be installed on a ship according to the order based on the provisions of Article 2 of the Ships Safety Law (Law No. 11 of 1933) can continue to conform to the prior Regulations.
- 3 Notwithstanding the provisions of Article 47 of the Radio Equipment Regulations after amendment pursuant to this Ordinance, the conditions for the medium-wave radio direction finder that has been installed in a ship before the date of enforcement of this Ordinance and that is prescribed in Article 11.4 paragraph 4 of the Radio Law Enforcement Regulations before amendment pursuant to the Ordinance (MPHPT Ordinance No. 74 of 2002) for amending part of the Radio Law Enforcement Regulations shall continue to conform to the prior Regulations.

Supplementary Provisions

(MPHP Ordinance No. 98 issued on September 19, 2002)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHP Ordinance No. 101 issued on September 27, 2002)

- 1 This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHP Ordinance No. 124 issued on December 20, 2002)

(Date of Enforcement)

- 1 This ministerial ordinance shall come into force as of the date of its promulgation, however the revised Article 7 Paragraph (18) and Article 45-12-2 shall come into force on January 17, 2003.

(Invalidating provisions regarding certain radio stations that execute digital MCA land mobile communications)

- 2 The provisions under Article 7, Article 49-7-3, Article 57-3 and Separate Tables 1 and 2 of the Equipment Regulations amended by this ministerial ordinance concerning radio equipment requirements for radio stations that execute digital MCA land mobile communications as stipulated in Article 7 Paragraph (10) of the Equipment Regulations, as amended by this ordinance, and which

use frequencies exceeding 836 MHz up to 838 MHz or frequencies exceeding 891 MHz up to 893 MHz, shall become invalid after May 31, 2007.

(Interim Measures)

- 3 The radio equipment requirements for radio stations that execute MCA land mobile communications as stipulated in Article 7 Paragraph (11) Item (i) of the Equipment Regulations prior to amendment pursuant to this ministerial ordinance, and which use frequencies exceeding 1,465 MHz up to 1,468 MHz or frequencies exceeding 1,513 MHz up to 1,516 MHz, that have been granted a license or pre-permit, or have applied for a license before the effective date of this ministerial ordinance, shall be dealt with as in past cases until May 31 2005, notwithstanding the provisions under Article 7, Article 49-7, Article 57-3, Article 58 and Separate Table 1 of the Equipment Regulations amended by this ministerial ordinance.

- 4 The licensee of a radio station such as specified in the preceding paragraph can establish radio stations that execute MCA land mobile communications, and which use frequencies exceeding 1,465 MHz up to 1,468 MHz or frequencies exceeding 1,513 MHz up to 1,516 MHz, as stipulated in Article 7 Paragraph (11) Item (i) of the Equipment Regulations prior to amendment pursuant to this ministerial ordinance, even after the effective date of this ministerial ordinance, until May 31 2005. In this case, the radio equipment requirements for the radio station shall be dealt with as in past cases.

- 5 The radio equipment requirements for radio stations that execute MCA land mobile communications as stipulated in Article 7 Paragraph (11) Item (i) of the Equipment Regulations prior to amendment pursuant to this ministerial ordinance, and which use frequencies exceeding 1,468 MHz up to 1,477 MHz or frequencies exceeding 1,516 MHz up to 1,525 MHz, that have been granted a license or pre-permit, or that have applied for a license before the effective date of this ministerial ordinance, shall be dealt with as in past cases until May 31 2009, notwithstanding the provisions under Article 7, Article 49-7, Article 57-3, Article 58, Separate Table 1 of the Equipment Regulations amended by this ministerial ordinance.

- 6 The licensee of radio stations as specified in the preceding paragraph can establish radio stations that execute MCA land mobile communications as stipulated in Article 7 Paragraph (11) Item (i) of the Equipment Regulations prior to amendment pursuant to this ministerial ordinance, and which use frequencies exceeding 1,468 MHz up to 1,477 MHz or frequencies exceeding 1,516 MHz up to 1,525 MHz, even after the effective date of this ministerial ordinance, until May 31 2009. In this case, the radio equipment requirements for the radio station shall be dealt with as in past cases.

Supplementary Provisions

(MPHP Ordinance No. 23 issued on January 17, 2003)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHP Ordinance No. 61 issued on March 31, 2003)

This MPHPT Ordinance shall come into force on April 1, 2003.

Supplementary Provisions

(MPHP Ordinance No. 91 issued on June 18, 2003)

(Date of Enforcement)

1 This MPHPT Ordinance shall come into force as of the day of promulgation.

(Interim Measures)

- 2 The effect of the technical standards conformity certification related to radio equipment for a specified low-power radio station using a frequency in the range of 2,400 MHz to 2,483.5 MHz, and adopting a frequency hopping system, and the approval prescribed in Article 38.16 paragraph 1 of the Law (hereinafter referred to as “technical standards conformity certification, etc.”) that have been obtained when this Ordinance is enforced shall remain in force even after the enforcement of this Ordinance.
- 3 An application for the technical standards conformity certification, etc. related to radio equipment for a specified low-power radio station that complies with the conditions of the old Equipment Regulations prior to this Ordinance, uses a frequency in the range of 2,400 MHz to 2,483.5 MHz, and adopts a frequency-hopping system may be made from the date of enforcement of this Ordinance, to June 30, 2004. In this case, examination of the technical standards conformity certification, etc. may continue to conform to the prior Regulations, and the provisions of the preceding paragraph shall apply mutatis mutandis to the effect of the technical standards conformity certification. etc.

Supplementary Provisions

(MPHP Ordinance No. 133 issued on October 9, 2003)

This MPHPT Ordinance shall come into force as of the day of promulgation.

Supplementary Provisions

(MPHP Ordinance No. 5 issued on January 26, 2004)

This MPHPT Ordinance shall come into force as of the day the Law to Partially Amend the Radio Law (Law No. 68, 2003) comes into effect (January 26, 2004).

Supplementary Provisions

(MPHP Ordinance No. 31 issued on March 1, 2004)

This MPHPT Ordinance shall come into force come into force as of the day of promulgation.