

**TECHNICAL CONDITIONS FOR THE RADIO EQUIPMENT
OF MCA CONTROL STATIONS WHICH PERFORM MCA LAND
MOBILE COMMUNICATION, DIRECTIVE STATIONS,
LAND MOBILE STATIONS OR RADIO STATIONS
WHICH PERFORM COMMUNICATION FOR TESTING
MCA LAND MOBILE COMMUNICATION EQUIPMENT AND
TO WHICH IT IS DIFFICULT OR UNREASONABLE TO APPLY
THE CONDITION OF EACH ITEM OF ARTICLE 49.7
OF THE ORDINANCE REGULATING RADIO EQUIPMENT**

(The proviso of Article 49.7 of the Ordinance Regulating Radio Equipment)

March 10, 1993

Ministry of Posts and Telecommunications No. 123

Finally amended in No. 591 on October 28, 1994

The technical conditions for the radio equipment of an MCA control station which performs MCA land mobile communication, a directive station, a land mobile station, or a radio station which performs communication for testing MCA land mobile communication equipment and to which it is difficult or unreasonable to apply the condition of each item of Article 49.7 of the Ordinance Regulating Radio Equipment shall be stipulated as follows based on the provisions of the proviso of Article 49.7 of the Ordinance Regulating Radio Equipment (Radio Regulatory Commission Regulations No. 18 of 1950).

Ministry of Posts and Telecommunications Announcement No. 348 of 1990 (the Announcement stipulating the technical conditions for the radio equipment of an MCA control station which performs MCA land mobile communication, a directive station, a land mobile station, or a fixed station for testing MCA land mobile communication equipment and to which it is difficult or unreasonable to apply the condition of each item of Article 49.7 of the Radio Equipment) shall be repealed.

1 Conditions for the transmitting device

- (1) The transmitting device of an MCA control station or a radio station which performs communication for testing MCA land mobile communication equipment (limited to the radio stations which share the transmitting device with an MCA land mobile station)
 - a The modulation method shall be frequency modulation.
 - b The modulation frequency shall be within 3,000 Hz.
 - c The frequency shift or frequency deviation shall be within ± 5 kHz of the frequency of the unmodulated carrier.
 - d The transmitting device shall be equipped with an automatic control device for preventing the frequency shift from exceeding the value prescribed in c. above. (This does not apply to a transmitting device which exclusively transmits digital signals.)
 - e A low-pass filter (limited to the low-pass filter in which the ratio of the attenuation at each frequency between 3 kHz and 15 kHz to the attenuation at 1 kHz is equal to or greater than the value determined by the expression shown in the right-hand column of the table below in accordance with the classification of the transmitting devices listed in the left-hand column of the

table) shall be provided between the automatic control device stated in c. above and the modulator.
(This does not apply to a transmitting device which exclusively transmits digital signals.)

Classification	Expression for Obtaining the Ratio of Attenuation
The transmitting device which uses emissions of a frequency in a range of higher than 850 MHz to 915 MHz or whose frequency shift or frequency deviation is within ± 2.5 kHz	$80 \log_{10} (f/3)$ dB f represents each frequency (in kHz) between 3 kHz and 15 kHz (the same applies hereafter).
The transmitting device which uses emissions of a frequency in a range of higher than 850 MHz to 915 MHz or whose frequency shift or frequency deviation is higher than ± 2.5 kHz	$40 \log_{10} (f/3)$ dB
The transmitting device which uses emissions of a frequency in a range of higher than 1,465 MHz to 1,525 MHz	$60 \log_{10} (f/3)$ dB

- f When the 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 the value below. However, when a sound signal is not transmitted, the adjacent channel leakage power which is modulated by the standard encoding test signal with the same transmission rate as that of the modulation signal shall be the value below.
- i) For the transmitting device whose frequency shift or frequency deviation 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.
- ii) For the transmitting device whose frequency shift or frequency deviation exceeds ± 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. However, for the transmitting device which uses emissions of a frequency in a range of higher than 1,465 MHz to 1,525 MHz, said power shall be lower than the carrier power by 60 dB or more.
- (2) The transmitting device of a land mobile station, a directive station or a radio station which performs communication for testing MCA land mobile communication equipment (except the radio station which shares the transmitting device with an MCA control station)
- a The transmitting device shall comply with the conditions defined in (1) above.
- b The oscillation method shall be the frequency synthesizer method which uses crystal oscillation to control the oscillation frequency.
- c As the frequency of emissions to be transmitted, a frequency 55 MHz higher than the frequency of received emissions (a frequency 48 MHz lower than that when emissions of a frequency in a range of higher than 1,465 MHz to 1,477 MHz are transmitted) shall be automatically selected.
- d The transmitting device 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, by the method of identifying the power amplifier based on operation processing or by the method of identifying the power amplifier based on a comparison of the types of power amplifiers. The condition for identifying the power amplifier, when it is connected, shall comply with the conditions defined in the right-hand column of the table below in accordance with the

classification of the methods stated in the left-hand column of the table.

Method	Condition
<p>1 Method of identifying the power amplifier based on operation processing</p>	<p>(1) The radio station shall transmit a connection attestation request signal (which refers to a signal for attesting the power amplifier) to the power amplifier. The power amplifier shall carry out operation processing of the received connection attestation request signal using an attestation identification code (which refers to a code stored in the power amplifier which can be connected to the radio equipment of radio stations and the radio equipment of said radio equipment; the same applies hereafter), and shall transmit the results of operation processing to the radio station.</p> <p>(2) The radio station shall compare the operation results from the power amplifier with the operation results obtained using the attestation identification code stored in the said land mobile station, and shall identify the power amplifier only when both results coincide.</p>
<p>2 Method of identifying the power amplifier based on a comparison of the types of power amplifiers</p>	<p>(1) The radio station shall transmit a type code transmission request signal (which refers to a signal which requests the transmission of the type code; the same applies hereafter) to the power amplifier.</p> <p>(2) After receiving the type code transmission request signal, the power amplifier shall transmit the type code to the radio station.</p> <p>(3) The radio station shall identify the power amplifier only when the type code received is stored in the said radio station.</p>

2 Conditions for the control device

- (1) The control device of an MCA control station or a radio station which performs communication for testing MCA land mobile communication equipment (limited to the radio station which shares the transmitting device with an MCA control station)
 - a The control signal (including a clearing signal; the same applies hereafter) shall be as follows.
 - i) The coding type shall be the NRZ code.
 - ii) The transmission rate shall be 3,600 bits/s (with a tolerance of 200/100 for each).
 - iii) The modulation method shall be the direct digital modulation method.
 - iv) The signal level shall be such that the frequency shift is held within ± 5 kHz.
 - b The control device shall be equipped with a storage device that can store a group (which refers to a group of directive stations and land mobile stations which perform communication, or land mobile stations; the same applies hereafter) code.
 - c The transmission method used for the control signal for contact setting shall be time slot random access.
 - d The speech connection method shall be the delay system.
 - e 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.
 - f When the time of speech has passed 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.
- (2) The control device of a land mobile station, a directive station or a radio station that performs

communication for testing MCA land mobile communication equipment (except the radio station which shares the transmitting device with an MCA control station)

- a The control device shall comply with the conditions defined in (1) a. and c. above.
- b The frequency of emissions to be used shall be such that the frequency specified by the control signal in (1) a. above is automatically selected.
- c Within a specified speech time after the reception of the control signal specifying the frequency of emissions to be used for speech and 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 (1) a. above. (This shall apply only to the control device of a land mobile station and a directive station.)
- d 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 (1) a. above. (This shall not apply to the control device of a land mobile station and a directive station.)
- e 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 control device of a land mobile station and a directive station.)
- f The control device shall be equipped with a storage device that can store the system (which refers to a communication network which consists of a control channel and a speech channel controlled by the said control channel) code and the group code.

Supplementary Provisions

The radio equipment of a radio station which performs MCA land mobile communication and for which technical standards conformity certification was obtained before the enforcement of this Announcement as the one that complies with the conditions prescribed in the MPT Announcement before amendment shall remain in effect even after the day this Announcement is enforced.