Section 4 Trends in radio wave usage in Japan

1. Major use by frequency band

Regarding frequency, the International Telecommunication Union (ITU) divides the world into three regions and specifies international allocations for each frequency band and type of operation based on the Radio Regulations established in the ITU Constitution.

Based on these international allocations, the "Frequency Allocation Plan¹" specifies the frequencies, types of operations, purposes, and conditions that can be allocated to assist in the application for licenses for radio stations under the Radio Act. When establishing or amending this plan, the Radio Regulatory Council is consulted.

The main uses and characteristics of frequency bands in our country are as shown in (Figure 2-1-4-1).





Spectrum	Wave length	Characteristics
Very low	10 to	Propagating along ground surface, waves of this spectrum can go over low hills. Being capable of
frequency	100km	propagating in water, the spectrum can be used for seabed exploration
Low frequency	1 to 10km	Being capable of propagating to very distant places, the spectrum is used by standard frequency stations to inform radio clock, etc. of time and frequency standard.
Medium	100 to	Capable of propagating through reflection off the E-layer of the ionosphere that is formed at the height of
frequency	1000m	about 100km, the spectrum is used mainly for radio broadcasting.
High frequency	10 to 100m	Capable of reaching the other side of the globe by being reflected off the F-layer of the ionosphere that is formed at the height of about 200 to 400km and by repeating reflection between F-layer and the ground surface. Widely used for ocean ship and international flight plane communication, international broadcasting and amateur radio.
Very high frequency	1 to 10m	Waves of this spectrum propagate rather straight and are not easily reflected off the ionosphere, butare capable of reachingthe other side of mountains and buildings to a certain extent. The spectrum is widely used for a variety of mobile communications including emergency and fire emergency radio.
Ultra high frequency	10cm to 1m	Waves of this spectrum have stronger tendency to propagate straight compared with very high frequency, butare capable of reaching the other side of mountains and buildings to a certain extent. The spectrum is widely used mostly for a variety of mobile communication systems including mobile phones, and digital television broadcasting and microwave ovens.
Super high frequency	1to 10cm	Due to the strong tendency to propagate straight, this spectrum is suitable for emission to a specific direction. It is mainly used for fixed trunk circuits, satellite communication, satellite broadcasting and wireless LAN.
Extremely high frequency	1mm to 10mm	With strong tendency to propagate straight, waves of the spectrum can transmit very large information quantity, but not very far in bad weather due to rain or fog. For this reason, the spectrum is used for relatively short-distance radio access communication and image transmission systems, simplicity radio, car collision prevention radar and radio telescopes for astronomical observation.
Tremendously	0.1mm to	The spectrum has nature similar tolight. It is rarely used for communication but used for radio telescopes
high frequency	1mm	for astronomical observation as is the case of Extremely high frequency.

¹ https://www.tele.soumu.go.jp/j/adm/freq/search/share/index.htm

2. Trends in the number of radio stations

As of the end of the FY2023, the number of radio stations (excluding radio stations that do not require licenses, such as wireless LAN terminals) was 321.63 million (an increase of 5.2% from the previous fiscal year). Among these, the number of land mobile stations such as mobile phone terminals was 318.11 million (an increase of 5.3% from the previous fiscal year), accounting for 98.9% of the total number of radio stations. Additionally, the number of simple radio stations also increased to 1.5 million (an increase of 4.9% from the previous fiscal year) (Figure 2-1-4-2).



Figure 2-1-4-2 Changes in the number of radio stations

*1 Land mobile station: A radio station (such as a mobile phone devices) operated while moving on land or stopped at an unspecified point.

*2 Convenience radio station: A radio station that performs simple radio communication.

3. Radio wave monitoring to eliminate obstruction of important radio communication etc.

The MIC has established "DEURAS (DEtect Unlicensed RAdio Stations)" facilities to detect radio sources that interfere with important radio communications, such as fire and emergency radio, aviation and maritime radio, and mobile phones, and to crack down on unauthorized radio stations that disrupt the radio usage environment using sensor station facilities installed on the rooftops of major cities' towers and buildings and unauthorized radio station search vehicles².

In FY2023, the number of interference and obstruction reports was 2,331, a decrease of 101 cases (4.2% decrease) from the previous fiscal year. Among these, the number of cases of interference with important radio communications increased by 6 cases (1.6% increase) to 391 cases compared to the previous fiscal year. The total number of measures for such interference and obstruction in FY2023, including previously unaddressed cases, was 2,468 (Figure 2-1-4-3).

Furthermore, the number of appearances of unauthorized radio stations in FY2023 decreased by 649 cases (14.5% decrease) to 3,832 cases compared to the previous year. The total number of measures in FY2023, including previously unaddressed cases, decreased by 216 cases (19.7% decrease) to 882 cases compared to the previous year. The breakdown of the total number of measures includes 63 prosecutions (7.1%) and 819 directives (92.9%) **(Figure 2-1-4-4)**.

Figure 2-1-4-3 Changes in the number of reports of jamming and obstruction of radio stations and the number of actions taken



² Regarding obstructions to important radio communications, in FY2010, DEURAS established a 24-hour system for receiving obstruction reports and have been working to promptly eliminate them. As an international radio wave monitoring facility registered with the International Telecommunication Union (ITU), DEURAS plays a role in HF and cosmic radio wave monitoring.

Chapter 1



Number of unlicensed radio stations found		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	(FY)
Stations found	Unlicensed personal radio stations	2,081	2,788	865	784	265	245	99	40	28	25	32	3	7	
	Unlicensed amateur stations	1,367	1,803	2,225	1,592	1,291	1,229	1,749	1,253	1,739	2,959	2,126	1,831	2,028	
	Unlicensed citizens band radio	538	342	642	404	375	478	414	443	477	2,594	5,035	958	472	
	Others	4,917	3,648	3,369	4,541	3,221	2,489	2,508	2,958	4,293	1,187	1,341	1,689	1,325	
	Total	8,903	8,581	7,101	7,321	5,152	4,441	4,770	4,694	6,537	6,765	8,534	4,481	3,832	
Number of actions against unlicensed radio stations															
Number of actions	Prosecution	249	231	228	215	230	168	168	208	189	62	49	94	63	
	Guidance	2,247	3,038	1,764	1,465	2,156	1,196	1,300	1,136	1,058	581	752	1,004	819	
	Total	2,496	3,269	1,992	1,680	2,386	1,364	1,468	1,344	1,247	643	801	1,098	882	

Figure 2-1-4-4 Changes in the number of reports of unlicensed radio stations and the number of actions taken