

## Ordinance Regulating Radio Equipment (Excerpt)

November 30, 1950

Radio Regulatory Commission Regulations No. 18

### Chapter I      General Provisions Section 1      General (Articles 1-4)

(This Part be omitted)

### Section 2      Quality of Emissions (Articles 5-7)

(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 (Articles 8 and 9)

(This Part be omitted)

### Section 4      Special Devices (Articles 9.2 and 9.3)

(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 notified separately.

Radio station	Device
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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 (Notification: *1)
Radio stations in the radiolocation service	Selective calling device Identification device (Notification: *2, *3)
Radio stations in the land mobile service (except land mobile stations for PHS (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 (Notification: *1, *4, *5, *6, *18)
Premises radio stations	Transmitter identification device (Notification: *7)
Radio stations in the maritime mobile service	Automatic identification device (Notification: *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 notified 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 notified separately (\*10, \*11), provided that the said radio stations are notified 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 notified 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 notified separately (\*13) by the Minister of Internal Affairs and Communications.

- 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 notified separately (\*14) by the Minister of Internal Affairs and Communications.

(Notification(s): \*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.**

(This part be omitted)

## **Section 5 Interference Prevention Function (Article 9.4)**

(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 Internal Affairs and Communications, 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 Internal Affairs and Communications
- 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 PHS systems and if the radio communication is performed not via digital cordless telephone base units and base stations for PHS systems (which refer to base stations established for performing communication mainly with land mobile stations for PHS systems using emissions of a frequency of 1,884.65 MHz or higher but less than 1,919.45 MHz; this also applies hereafter).
- 4) Land mobile stations for PHS 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 PHS 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 PHS 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 PHS 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 the following radio stations, the function prescribed in Article 6-2 Item 3 of the Enforcement Regulations.
- a Specified Low-Power Radio Station using emissions of a frequency in a range of higher than 312MHz to 315.25MHz or less, or higher than 433.67MHz to 434.17MHz or less
  - b Radio station of low-power security system (which refer to radio stations prescribed in Article 6, Paragraph 4, Item 3 of the Enforcement Regulations; this also applies hereafter)
  - c Radio stations of low-power data communication system (which refer to radio stations prescribed in Article 6, Paragraph 4, Item 4 of the Enforcement Regulations; this also applies hereafter)
  - d Radio station of Ultra Wide-band Wireless System which refer to radio stations prescribed in Article 4-4, Paragraph 2, Item 2 of the Enforcement Regulations (hereafter referred to as “the radio station of Ultra Wide-band Wireless System”)
- 10) For land mobile stations of a DSRC system (which refer to land mobile stations prescribed in Article 6, Paragraph 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 Paragraph 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 Paragraph 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 (Articles 10-14)

(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 (excluding that listed in 2-2)), VHF multiplex broadcasting, or television multiplex broadcasting	10	20
2-2) Transmitting equipment with an antenna power of 0.5W or less (for using multi-channels simultaneous amplifier only) which is used at a radio station of digital broadcasting of television broadcasting which uses emissions of a frequency in a range of higher than 470MHz to 770MHz.		
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	20	20
3.2) Transmitting equipment at a ship station or a coast station which performs communication by means of TDMA		
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	50	20

rescue craft (2) Two-way radio telephone (3) Ship/aircraft two-way radio telephone		
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 less than 2,690 MHz and the transmitting equipment defined in 2), 4), 7), 8), 9), 11), and 12) 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 952 MHz to 955 MHz (4) 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 (5) Transmitting equipment at a radio station of a low-power data communication system (except the equipment which uses emissions of a frequency in a range of higher than 5,470MHz to 5,725MHz or less) (6) Transmitting equipment at a radio station of an access system in the 5 GHz band	20	80
8) The following Transmitting equipment	20	

<p>(1) Transmitting equipment at an amateur radio station</p> <p>(2) Transmitting equipment at a specified low-power radio station using emissions of a frequency in a range of higher than 169.39MHz to 169.81MHz or less, higher than 312MHz to 315.25MHz or less, or higher than 433.67MHz to 434.17MHz or less</p> <p>(3) Transmitting equipment at a radio station of Ultra Wide-band Wireless System</p>			
<p>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</p>	50	70	
<p>10) Transmitting equipment at radio stations performing CDMA and time division multiplexing/code division multiplexing portable radio communications</p>	<p>The following Transmitting equipment;</p> <p>(1) Transmitting equipment of the base station prescribed in Article 49-6-3</p> <p>(2) Transmitting equipment of the radio station which is communicate with the land mobile station (except performing a rely of portable radio communication), and performing communication, etc., for testing CDMA portable radio communication equipment prescribed in Article 49-6-3</p> <p>(3) Transmitting equipment of the base station with a spread code speed (refers to the speed of the signal that spreads the spectrum with a spread code;</p>	59	61

	<p>this also applies hereafter) of 1.2288 mega-chips per second or 3.6864 mega-chips per second for one carrier frequency prescribed in Article 49-6-4.</p> <p>(4) Transmitting equipment of the radio station which is communicate with the land mobile station (except performing a rely of portable radio communication), and performing communication, etc., for testing CDMA portable radio communication equipment 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 mega-chips per second or 3.6864 mega-chips per second for one carrier frequency prescribed in Article 49-6-4.</p> <p>(5) Transmitting equipment of the base station with a spread code speed of 1.2288 mega-chips per second for one carrier frequency prescribed in Article 49-6-5.</p> <p>(6) Transmitting equipment of the radio</p>		
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	<p>station which is communicate with the land mobile station (except performing a rely of portable radio communication), and performing communication, etc., for testing TD/CDMA portable radio communication equipment 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 mega-chips per second for one carrier frequency prescribed in Article 49-6-5.</p>		
	<p>The following Transmitting equipment;                  (1) Transmitting equipment of the base station with a spread code speed of 3.84 mega-chips per second prescribed in Article 49-6-4                  (2) Transmitting equipment of the radio station which is communicate with the land mobile station (except performing a rely of portable radio communication), and performing communication, etc., for testing CDMA portable radio</p>	87	47

	<p>communication equipment with a spread code speed of 3.84 mega-chips per second prescribed in Article 49-6-4.</p> <p>(3) Transmitting equipment of the base station with a spread code speed of 3.84 mega-chips per second prescribed in Article 49-6-5</p> <p>(4) Transmitting equipment of the radio station which is communicate with the land mobile station (except performing a rely of portable radio communication), and performing communication, etc., for testing TD/CDMA portable radio communication equipment with a spread code speed of 3.84 mega-chips per second prescribed in Article 49-6-5.</p>		
	<p>The following Transmitting equipment and the antenna power is more than 21 dB (with 1 mW regarded as 0 dB);</p> <p>(1) The transmitting equipment of the land mobile station (except performing a rely of portable radio communication) with a spread code speed of 3.84 mega-chips/s prescribed in Article 49-6-4.</p>	48	58

	<p>(2) Transmitting equipment of the radio station which is communicate with the base station, and performing communication, etc., for testing CDMA portable radio communication equipment prescribed in Article 49-6-4.</p> <p>(3) The transmitting equipment of the land mobile station (except performing a rely of portable radio communication) with a spread code speed of 3.84 mega-chips/s prescribed in Article 49-6-5.</p> <p>(2) Transmitting equipment of the radio station which is communicate with the base station, and performing communication, etc., for testing TD/CDMA portable radio communication equipment with a spread code speed of 3.84 mega-chips/s prescribed in Article 49-6-5.</p>		
	<p>The following Transmitting equipment and the antenna power is 21 dB (with 1 mW regarded as 0 dB) or lower;</p> <p>(1) The transmitting equipment of the land mobile station (except performing a rely of portable radio</p>	87	47

	<p>communication) with a spread code speed of 3.84 mega-chips/s prescribed in Article 49-6-4.</p> <p>(2) Transmitting equipment of the radio station which is communicate with the base station, and performing communication, etc., for testing CDMA portable radio communication equipment prescribed in Article 49-6-4.</p> <p>(3) The transmitting equipment of the land mobile station (except performing a rely of portable radio communication) with a spread code speed of 3.84 mega-chips/s prescribed in Article 49-6-5.</p> <p>(4) Transmitting equipment of the radio station which is communicate with the base station, and performing communication, etc., for testing TD/CDMA portable radio communication equipment with a spread code speed of 3.84 mega-chips/s prescribed in Article 49-6-5.</p>		
<p>11) Transmitting equipment at radio stations performing TD/CDMA portable radio</p>	<p>The following transmitting equipment;</p> <p>(1) Transmitting equipment of base stations</p>	<p>87</p>	<p>47</p>

communications	(2) Transmitting equipment of the radio station which is communicate with the land mobile station (except performing a rely of portable radio communication), and performing communication, etc., for testing TD/CDMA portable radio communication equipment.		
	The following transmitting equipment and the antenna power is 10 dB or less (with 1 mW regarded as 0 dB); (1) Transmitting equipment of the land mobile station (except performing a rely of portable radio communication) (2) Transmitting equipment of the radio station which is communicate with the base station, and performing communication, etc., for testing TD/CDMA portable radio communication equipment.	196	67
	The following transmitting equipment and the antenna power is more than 10 dB to 21 dB or less (with 1 mW regarded as 0 dB); (1) Transmitting equipment of the land mobile	87	47

	<p>station (except performing a rely of portable radio communication)</p> <p>(2) Transmitting equipment of the radio station which is communicate with the base station, and performing communication, etc., for testing TD/CDMA portable radio communication equipment.</p>		
	<p>The following transmitting equipment and the antenna power is more than 21 dB (with 1 mW regarded as 0 dB);</p> <p>(1) Transmitting equipment of the land mobile station (except performing a rely of portable radio communication)</p> <p>(2) Transmitting equipment of the radio station which is communicate with the base station, and performing communication, etc., for testing TD/CDMA portable radio communication equipment.</p>	48	58
12) Transmitting equipment at radio stations performing orthogonal frequency division multiple access broad band wireless access system, which	Transmitting equipment at base stations	87	47
	Transmitting equipment at land mobile stations	48	58

transmission burst length are values of natural number multiple of 911.46 micro seconds or values that added 1,070 micro seconds to natural number multiple of 911.46 micro seconds.			
13) Transmitting equipment defined below (1) Transmitting equipment at a radio station that performs road traffic information (for special service station which is transmitting the information of road traffic which using emission of a frequency in the 2.5GHz band, the same applies hereafter.) (2) Transmitting equipment at the base station of a DSRC system (for base station which is communicate with DSRC land mobile station which using emission of a frequency of more than 5,770MHz to 5,810MHz or less, the same applies hereafter.) (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
14) 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 notified separately (\*1) by the Minister of Internal Affairs and Communications because it is deemed difficult or irrational to apply the said paragraph shall satisfy the technical conditions notified separately (\*2).

3 Notwithstanding the provisions of paragraph 1, the Minister of Internal Affairs and Communications 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 18 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 land mobile station that performs portable mobile communication, a land mobile station that performs broad band wireless access system (it is performed mainly for data transmission between a base station which is communicate with land mobile station and the land mobile station (including a relay communication by a land mobile relay station), for the purpose of providing a telecommunication service, which is using emission of a frequency of higher than 2,545MHz to 2,625MHz or less, the same applies hereafter.) 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 notified separately by the Minister of Internal Affairs and Communications when it is considered irrational to apply this regulation, in addition to the condition in the preceding item
- 2 The Minister of Internal Affairs and Communications will separately announce the method of measuring specific absorptance at the human head described in the preceding paragraph.

(Notifications: \*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 (Articles 15-19)

(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.

## Section 3 Transmitting Antenna (Articles 20-23)

(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.

## Chapter III Receiving Equipment (Articles 24-26)

(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
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		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 μW 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 less than 850 MHz, greater than 860 MHz but less than 901 MHz, or greater than 915 MHz but less 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	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment which is receiving	a 30 MHz to less than 1.000 MHz (excluding 860 MHz to less than 895	A value no greater than -57 dB (where one mili-watt is taken

	emission of a frequency greater than 815MHz to 850MHz	MHz)	as 0 dB; this also applies to the remainder of this paragraph through paragraph 7) in any 100 kHz band
		b 1,000 MHz to 12.75 GHz	A value no greater than -47 dB in any 1 MHz band
Land Mobile Station (except performing a relay of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 860MHz to 895MHz	a 30 MHz to less than 1,000 MHz (excluding the frequencies 815 MHz to 850 MHz, and 860 MHz to 895 MHz)	A value no greater than -57 dB in any 100 kHz band
		b 815 MHz to 850 MHz and 860 MHz to 895 MHz	A value no greater than -60 dB in any 3.84 MHz band
		c 1,000 MHz to 12.75 GHz	A value no greater than -47 dB in any 1 MHz band
Land Mobile Station (limited performing a relay of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 815MHz to 850MHz	a 30 MHz to less than 1,000 MHz (excluding the frequencies 860 MHz to 895 MHz)	A value no greater than -57 dB in any 100 kHz band
		b 1,000 MHz to 12.75 GHz	A value no greater than -47 dB in any 1 MHz band
	Receiving equipment which is receiving emission of a frequency greater than 860MHz to 895MHz	a 30 MHz to less than 1,000 MHz (excluding the frequencies 815 MHz to 850 MHz, and 860 MHz to 895 MHz)	A value no greater than -57 dB in any 100 kHz band
		b 815 MHz to 850 MHz and 860 MHz to 895 MHz	A value no greater than -60 dB in any 3.84 MHz band
		c 1,000 MHz to 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 mega-chips per second

Type of Radio Station	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
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Base Station	Receiving equipment that receives radio signals at frequencies greater than 815 MHz but less than 850 MHz	a Greater than 815 MHz to 850 MHz	A value no greater than -80 dB in any 30 kHz band
		b Greater than 860 MHz to 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
	Receiving equipment that receives radio signals at frequencies greater than 887 MHz to 889 MHz; greater than 893 MHz to 901 MHz; or greater than 915 MHz to 940 MHz	a Greater than 832 MHz to 834 MHz; greater than 838 MHz to 846 MHz; or greater than 860 MHz to 885 MHz	A value no greater than -60 dB in any 30 kHz band
		b Greater than 887 MHz to 889 MHz; greater than 893 MHz to 901 MHz; or greater than 915 MHz to 940 MHz	A value no greater than -80 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 (except performing a rely of portable radio communication)	Receiving equipment that receives radio signals at frequencies greater than 832 MHz but less than 834 MHz; greater than 838 MHz but less than 846 MHz; or greater than 860 MHz but less than 885 MHz	a Greater than 832 MHz but less than 834 MHz; greater than 838 MHz but less than 846 MHz; or greater than 860 MHz but less than 885 MHz	A value no greater than -81 dB in any 1 MHz band
		b Greater than 887 MHz but less than 889 MHz; greater than 893 MHz but less than 901 MHz; or greater than 915 MHz but less than 940 MHz	A value no greater than -61 dB in any 1 MHz band
		c Frequencies other than those prescribed in a and	A value no greater than -54 dB in any 30

		b above	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 less than 850 MHz) at frequencies greater than 860 MHz but less than 895 MHz	a Greater than 815 MHz but less than 850 MHz	A value no greater than -61 dB in any 1 MHz band
		b Greater than 860 MHz but less than 895 MHz	A value no greater than -81 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
Land Mobile Station (limited performing a rely of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 815MHz to 850MHz	a Greater than 815 MHz to 850 MHz	A value no greater than -80 dB in any 30 kHz band
		b Greater than 860 MHz to 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
	Receiving equipment which is receiving emission of a frequency greater than 887MHz to 889MHz, greater than 893MHz to 901MHz, or greater than 915MHz to 940MHz	a Greater than 832 MHz to 834 MHz; greater than 838 MHz to 846 MHz; or greater than 860 MHz to 885 MHz	A value no greater than -60 dB in any 30 kHz band
		b Greater than 887 MHz to 889 MHz; greater than 893 MHz to 901 MHz; or greater than 915 MHz to 940 MHz	A value no greater than -80 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 which is receiving emission of a frequency greater than	a Greater than 832 MHz to 834 MHz; greater than 838 MHz to 846 MHz; or	A value no greater than -81 dB in any 1 MHz band

	832MHz to 834MHz, greater than 838MHz to 846MHz, or greater than 860MHz to 885MHz	greater than 860 MHz to 885 MHz	
		b Greater than 887 MHz to 889 MHz; greater than 893 MHz to 901 MHz; or greater than 915 MHz to 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 which is receiving emission of a frequency greater than 860MHz to 895MHz (limited only using in combination with an emission of a frequency greater than 815MHz to 850MHz)	a Greater than 815 MHz to 850 MHz	A value no greater than -61 dB in any 1 MHz band
		b Greater than 860 MHz to 895 MHz	A value no greater than -81 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 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, both of which use the emissions at frequencies greater than 1,427.9 MHz but less than 1,452.9 MHz, or greater than 1,475.9 MHz but less than 1,500.9 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 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	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment which is receiving emission of a frequency greater than	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 12.75 GHz	A value no greater

	1,427.9MHz to 1,452.9MHz	(excluding the frequencies 1,465.9 MHz to 1,510.9 MHz, or 2,010MHz to 2,025MHz)	than -47 dB in any 1 MHz band
		c 2,010 MHz to 2,025 MHz	A value no greater than -52 dB in any 1MHz band
Land Mobile Station (except performing a rely of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 1,475.9MHz to 1,500.9MHz	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 12.75 GHz (excluding the frequencies 1,427.9 MHz to 1,452.9 MHz, or 1,475.9 MHz to 1,500.9 MHz)	A value no greater than -47 dB in any 1 MHz band
		c 1,427.9 MHz to 1,452.9 MHz and 1,475.9 MHz to 1,500.9 MHz	A value no greater than -60 dB in any 3.84 MHz band
Land Mobile Station (limited performing a rely of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 1,427.9MHz to 1,452.9MHz	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 12.75 GHz (excluding the frequencies 1,465.9 MHz to 1,510.9 MHz, or 2,010MHz to 2,025MHz)	A value no greater than -47 dB in any 1 MHz band
		c 2,010 MHz to 2,025 MHz	A value no greater than -52 dB in any 1 MHz band
	Receiving equipment which is receiving emission of a frequency greater than 1,475.9MHz to 1,500.9MHz	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 12.75 GHz (excluding the frequencies 1,427.9 MHz to 1,452.9 MHz, or 1,475.9 MHz to 1,500.9 MHz)	A value no greater than -47 dB in any 1 MHz band
		c 1,427.9 MHz to 1,452.9 MHz and 1,475.9 MHz to 1,500.9 MHz	A value no greater than -60 dB in any 3.84 MHz band

2) Receiving equipment receiving signals with a spread code speed of 1.2288 mega-chips per second

Type of Radio Station	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment which is receiving emission of a frequency greater than 1,427.9MHz to 1,452.9MHz	a 1,427.9 MHz to 1,452.9 MHz	A value no greater than -80 dB in any 30 kHz band
		b 1,475.9 to 1,500.9 MHz	A value no greater than -60 dB in any 30 kHz band
		c 1,884.5 MHz to 1,919.6 MHz	A value no greater than -41 dB in any 300 kHz band
		d 2.010 MHz to 2,025 MHz	A value no greater than -52 dB in any 1 MHz band
		e Frequencies other than those prescribed in a and d above	A value no greater than -47 dB in any 30 kHz band
Land Mobile Station (except performing a relay of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 1,475.9MHz to 1,500.9MHz	a 860 MHz to 895 MHz, and 2.110 MHz to 2,170 MHz	A value no greater than -60 dB in any 3.84 MHz band
		b 1,427.9 MHz to 1,452.9 MHz	A value no greater than -61 dB in any 1 MHz band
		c 1,475.9 MHz to 1,500.9 MHz	A value no greater than -76 dB in any 1 MHz band
		d 1,884.5 MHz to 1,919.6 MHz	A value no greater than -41 dB in any 300 kHz band
		e Frequencies other than those prescribed in a and d above	A value no greater than -47 dB in any 30 kHz band
Land Mobile Station (limited)	Receiving equipment which is receiving emission of a frequency	a 1,427.9 MHz to 1,452.9 MHz	A value no greater than -80 dB in any 30 kHz band

performing a rely of portable radio communication)	greater than 1,427.9MHz to 1,452.9MHz	b 1,475.9 MHz to 1,500.9 MHz	A value no greater than -60 dB in any 30 kHz band
		c 1,884.5 MHz to 1,919.6 MHz	A value no greater than -51 dB in any 300 kHz band
		d 2,010 MHz to 2,025 MHz	A value no greater than -52 dB in any 1 MHz band
		e Frequencies other than those prescribed in a and d above	A value no greater than -47 dB in any 30 kHz band
	Receiving equipment which is receiving emission of a frequency greater than 1,475.9MHz to 1,500.9MHz	a 860 MHz to 895 MHz, and 2.110 MHz to 2,170 MHz	A value no greater than -60 dB in any 3.84 MHz band
		b 1,427.9 MHz to 1,452.9 MHz	A value no greater than -61 dB in any 1 MHz band
		c 1,475.9 MHz to 1,500.9 MHz	A value no greater than -76 dB in any 1 MHz band
		d 1,884.5 MHz to 1,919.6 MHz	A value no greater than -51 dB in any 300 kHz band
		e Frequencies other than those prescribed in a and d 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 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 mega-chips per second

Type of Radio Station	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment which is receiving emission of a frequency greater than 1,749.9MHz to 1,784.9MHz	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 less than 12.75 GHz (excluding the frequencies 1,834.9 MHz to 1,889.9 MHz, or 2,010 MHz to 2,025 MHz)	A value no greater than -47 dB in any 1 MHz band
		c 2,010 MHz to 2,025 MHz	A value no greater than -52 dB in any 1 MHz band
Land Mobile Station (except performing a relay of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 1,844.9MHz to 1,879.9MHz	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 less than 12.75 GHz (excluding the frequencies 1,749.9 MHz to 1,784.9 MHz, and 1,844.9 MHz to 1,879.9 MHz)	A value no greater than -47 dB in any 1 MHz band
		c 1,749.9 MHz to 1,784.9 MHz, and 1,844.9 MHz to 1,879.9 MHz	A value no greater than -60 dB in any 3.84 MHz band
Land Mobile Station (limited performing a relay of portable radio)	Receiving equipment which is receiving emission of a frequency greater than 1,749.9MHz to 1,784.9MHz	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 less than 12.75 GHz (excluding the frequencies 1,834.9	A value no greater than -47 dB in any 1 MHz band

communication)		MHz to 1,889.9 MHz, or 2,010 MHz to 2,025 MHz)	
		c 2,010 MHz to 2,025 MHz	A value no greater than -52 dB in any 1 MHz band
	Receiving equipment which is receiving emission of a frequency greater than 1,844.9MHz to 1,879.9MHz	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 less than 12.75 GHz (excluding the frequencies 1,749.9 MHz to 1,784.9 MHz, and 1,844.9 MHz to 1,879.9 MHz)	A value no greater than -47 dB in any 1 MHz band
	c 1,749.9 MHz to 1,784.9 MHz, and 1,844.9 MHz to 1,879.9 MHz	A value no greater than -60 dB in any 3.84 MHz band	

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

Type of Radio Station	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment which is receiving emission of a frequency greater than 1,749.9MHz to 1,784.9MHz	a 1,749.9 MHz to less than 1,784.9 MHz	A value no greater than -80 dB in any 30 kHz band
		b 1,844.9 MHz to less than 1,879.9 MHz	A value no greater than -60 dB in any 30 kHz band
		c 1,884.5 MHz to less than 1,919.6 MHz	A value no greater than -41 dB in any 300 kHz band
		d 2,010 MHz to less 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	Receiving equipment which is receiving	a 860 MHz to 895 MHz and 2,110 MHz to 2,170	A value no greater than -60 dB in any 3.84 MHz

Station (except performing a rely of portable radio communication)	emission of a frequency greater than 1,844.9MHz to 1,879.9MHz	MHz	band
		b 1,749.9 MHz to 1,784.9 MHz	A value no greater than -61 dB in any 1 MHz band
		c 1,844.9 MHz to 1,879.9 MHz	A value no greater than -76 dB in any 1 MHz band
		d 1,884.5 MHz to 1,919.6 MHz	A value no greater than -41 dB in any 300 kHz band
		e Frequencies other than those prescribed in a, b, c, and d above	A value no greater than -47 dB in any 30 kHz band
Land Mobile Station (limited performing a rely of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 1,749.9MHz to 1,784.9MHz	a 1,749.9 MHz to 1,784.9 MHz	A value no greater than -80 dB in any 30 kHz band
		b 1,844.9 MHz to 1,879.9 MHz	A value no greater than -60 dB in any 30 kHz band
		c 1,884.5 MHz to 1,919.6 MHz	A value no greater than -51 dB in any 300 kHz band
		d 2,010 MHz to 2,025 MHz	A value no greater than -52 dB in any 1 MHz band
		e Frequencies other than those prescribed in a, b, c, and d above	A value no greater than -47 dB in any 30 kHz band
	Receiving equipment which is receiving emission of a frequency greater than 1,844.9MHz to 1,879.9MHz	a 860 MHz to 895 MHz and 2,110 MHz to 2,170 MHz	A value no greater than -60 dB in any 3.84 MHz band
		b 1,749.9 MHz to 1,784.9 MHz	A value no greater than -61 dB in any 1 MHz band
		c 1,844.9 MHz to 1,879.9 MHz	A value no greater than -76 dB in any 1 MHz band
		d 1,884.5 MHz to 1,919.6	A value no greater than

		MHz	-51 dB in any 300 kHz band
		e Frequencies other than those prescribed in a, b, c, and d above	A value no greater than -47 dB in any 30 kHz band

6 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 less than 1,980 MHz or higher than 2,110 MHz but less 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 mega-chips per second

Type of Radio Station	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment which is receiving emission of a frequency greater than 1,920MHz to 1,980MHz	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 12.75 GHz (excluding 2,100 MHz to 2,180 MHz)	A value no greater than -47 dB in any 1 MHz band
Land Mobile Station (except performing a relay of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 2,110MHz to 2,170MHz	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 12.75 GHz (excluding the frequencies 1,920 MHz to 1,980 MHz, and 2,110 MHz to 2,170 MHz)	A value no greater than -47 dB in any 1 MHz band
		c 1, 920 MHz to 1,980 MHz, and 2,110 MHz to 2,170 MHz	A value no greater than -60 dB in any 3.84 MHz band
Land Mobile Station (limited)	Receiving equipment which is receiving emission of a frequency	a 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz band

performing a rely of portable radio communication)	greater than 1,920MHz to 1,980MHz	b 1,000 MHz to 12.75 GHz (excluding 2,100 MHz to 2,180 MHz)	A value no greater than -47 dB in any 1 MHz band
	Receiving equipment which is receiving emission of a frequency greater than 2,110MHz to 2,170MHz	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 12.75 GHz (excluding the frequencies 1,920 MHz to 1,980 MHz, and 2,110 MHz to 2,170 MHz)	A value no greater than -47 dB in any 1 MHz band
		c 1, 920 MHz to 1,980 MHz, and 2,110 MHz to 2,170 MHz	A value no greater than -60 dB in any 3.84 MHz band

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

Type of Radio Station	Class of Receiving Equipment	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	Receiving equipment which is receiving emission of a frequency greater than 1,920MHz to 1,980MHz	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 12.75 GHz (excluding the frequencies 1,920 MHz to 1,980 MHz, and 2,110 MHz to 2,170 MHz)	A value no greater than -47dB in any 1 MHz band
		c 1,920 MHz to 1,980 MHz	A value no greater than -80 dB in any 30 kHz band
		d 2,110 MHz to 2,170 MHz	A value no greater than -60 dB in any 30 kHz band
Land Mobile Station (except	Receiving equipment which is receiving emission of a frequency greater than 2,110MHz	a 30 MHz to less than 1,000 MHz (excluding the frequencies 925 MHz to 960 MHz)	A value no greater than -57 dB in any 100 kHz width

performing a rely of portable radio communication)	to 2,170MHz	b 925 MHz to 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.
		c Higher than 935 MHz to 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.
		d 1,000 MHz to 12.75 GHz (excluding the frequencies 1,805 MHz to 1,880 MHz, 1,920 MHz to 1,980 MHz, and 2,110 MHz to 2,170MHz)	A value no greater than -47 dB in any 1 MHz width

		e 1,805 MHz to 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.
		f 1,920 MHz to 1,980 MHz	A value no greater than -61 dB in any 1 MHz width
		g 2,110 MHz to 2,170 MHz	A value no greater than -76 dB in any 1 MHz width
Land Mobile Station (limited performing a relay of portable radio communication)	Receiving equipment which is receiving emission of a frequency greater than 1,920MHz to 1,980MHz	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 12.75 GHz (excluding the frequencies 1,920 MHz to 1,980 MHz, and 2,110 MHz to 2,170MHz)	A value no greater than -47 dB in any 1 MHz band
		c 1,920 MHz to 1,980 MHz	A value no greater than -80 dB in any 30 kHz band
		d 2,110 MHz to 2,170 MHz	A value no greater than -60 dB in any 30 kHz band
	Receiving equipment which is receiving emission of a frequency greater than 2,110MHz to 2,170MHz	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 12.75 GHz (excluding the frequencies 1,920 MHz to 1,980 MHz, and 2,110 MHz to 2,170MHz)	A value no greater than -47 dB in any 1 MHz band
		c 1,920 MHz to 1,980 MHz	A value no greater than -61 dB in any 1 MHz

		band
	d 2,110 MHz to 2,170 MHz	A value no greater than -76 dB 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 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 mega-chips 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 the frequencies 815 MHz to 850 MHz)	A value no greater than -57 dB in any 100 kHz width
	b 815 MHz to 850 MHz, 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, and 1,920 MHz to 1,980 MHz	A value no greater than -78 dB in any 3.84 MHz width
	c 1,000 MHz to no greater than 12.75 GHz (excluding the frequencies 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, 1,920 MHz to 1,980 MHz, and 2,000 MHz to 2,035 MHz)	A value no greater than -47 dB in any 1 MHz width
Land Mobile Station (except performing a relay of portable radio communication)	a 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz width
	b 1,000 MHz to 12.75 GHz (excluding the frequencies 2,000 MHz to 2,035 MHz)	A value no greater than -47 dB in any 1 MHz width
Land Mobile Station	a 30 MHz to less than 1,000 MHz (excluding the frequencies 815 MHz to 850 MHz)	A value no greater than -57 dB in any 100 kHz band

(limited performing a rely of portable radio communication)	b 815 MHz to 850 MHz, 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, and 1,920 MHz to 1,980 MHz	A value no greater than -60 dB in any 3.84 MHz band
	c 1,000 MHz to no greater than 12.75 GHz (excluding the frequencies 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, 1,920 MHz to 1,980 MHz, and 2,000 MHz to 2,035 MHz)	A value no greater than -47 dB in any 1 MHz band

2) Receiving equipment receiving signals with a spread code speed of 7.68 mega-chips per second per carrier in 1) above.

Type of Radio Station	Frequency Band	Limit on Secondary Radiated Emissions
Base Station	a 30 MHz to less than 1,000 MHz (excluding the frequencies 815 MHz to 850 MHz)	A value no greater than -57 dB in any 100 kHz width
	b 815 MHz to 850 MHz, 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, and 1,920 MHz to 1,980 MHz	A value no greater than -78 dB in any 3.84 MHz width
	c 1,000 MHz to 12.75 GHz (excluding the frequencies 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, 1,920 MHz to 1,980 MHz, and 1,990 MHz to 2,045MHz)	A value no greater than -47 dB in any 1 MHz width
Land Mobile Station (except performing a rely of portable radio communication)	A 30 MHz to less than 1,000 MHz	A value no greater than -57 dB in any 100 kHz width
	b 1,000 MHz to no greater than 12.75 GHz (excluding the frequencies 1,990MHz to 2,045MHz)	A value no greater than -47 dB in any 1 MHz width
Land Mobile Station (limited performing a rely of portable radio communication)	a 30 MHz to less than 1,000 MHz (excluding the frequencies 815 MHz to 850 MHz)	A value no greater than -57 dB in any 100 kHz band
	b 815 MHz to 850 MHz, 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, and 1,920 MHz to 1,980 MHz	A value no greater than -60 dB in any 3.84 MHz band
	c 1,000 MHz to 12.75 GHz (excluding the frequencies 1,427.9 MHz to 1,452.9 MHz, 1,749.9 MHz to 1,784.9 MHz, 1,920 MHz to 1,980 MHz, and 1,990 MHz to 2,045MHz)	A value no greater than -47 dB in any 1 MHz band

3) Receiving equipment receiving signals with a spread code speed of 1.28 mega-chips 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

8 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 notified separately (\*2) by the Minister of Internal Affairs and Communications.

9 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 notified separately by the Minister of Internal Affairs and Communications.

10 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  $\mu$ W or lower.

11 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  $\mu$ W or lower.

12 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  $\mu$ W or lower.

13 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station of Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access System (limited the base station which has a transmitting antenna that is 17 dB or less based on the absolute antenna gain, the land mobile station which has a transmitting antenna that is 2 dB or less based on the absolute antenna gain, and the land mobile relay station which has a transmitting antenna facing up to the base station that is 2 dB or less based on the absolute antenna gain), at a radio station of Time Division/Frequency Division Multiple Access method Broad Band Mobile Wireless Access System, 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

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

14 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a premises radio station that uses emissions of a frequency in a range of 952 MHz to 954 MHz shall be as stipulated in the following table.

Frequency band	Limit on secondary emissions radiated
Lower than 1 GHz (excluding higher than 715MHz to 960MHz or less)	A value no greater than -54 dBm in any 100 kHz band

higher than 715MHz to 945MHz or less	A value no greater than -61 dBm in any 1MHz band
higher than 945MHz to 950MHz or less	A value no greater than -61 dBm in any 100kHz band
higher than 950MHz to 956MHz or less	A value no greater than -54 dBm in any 100kHz band
higher than 956MHz to 960MHz or less	A value no greater than -61 dBm in any 100kHz band
1 GHz or higher (excluding higher than 1,884.5MHz to 1,919.6MHz or less)	A value no greater than -47 dBm in any 1MHz band
higher than 1,884.5MHz to 1,919.6MHz or less	A value no greater than -61 dBm in any 1MHz band

15 Notwithstanding 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 notified separately by the Minister of Internal Affairs and Communications.

16 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station of an Ultra Wide-band Wireless System shall be as stipulated in the following table.

Frequency band	Limit on secondary emissions radiated in any 1MHz band	
	Using emission of a frequency of 3.4GHz to 4.8GHz	Using emission of a frequency of 7.25GHz to 10.25GHz
Lower than 1,600MHz	A value no greater than -90 dBm	
1,600MHz to less than 2,700MHz	A value no greater than -85 dBm	
2,700MHz to less than 3.4GHz	A value no greater than -70 dBm	
3.4GHz to less than 4.8GHz	A value no greater than -54 dBm	A value no greater than -70 dBm
4.8GHz to less than 7.25GHz	A value no greater than -70 dBm	
7.25GHz to less than 10.25GHz	A value no greater than -70 dBm	A value no greater than -54 dBm

10.25GHz to less than 10.6GHz	A value no greater than -70 dBm
10.6GHz to less than 10.7GHz	A value no greater than -85 dBm
10.7GHz to less than 11.7GHz	A value no greater than -70 dBm
11.7GHz to less than 12.75GHz	A value no greater than -85 dBm
12.75GHz and more	A value no greater than -70 dBm

17 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a Specified Low-Power Radio Station that uses emissions of a frequency in a range of higher than 312MHz to 315.25MHz, and higher than 433.67MHz to 434.17MHz shall be as stipulated in the following table.

Frequency band	Limit on secondary emissions radiated
Lower than 1 GHz	A value no greater than 4 nW in any 100kHz band
1 GHz or higher	A value no greater than 4 nW in any 1MHz band

Note: The limit of the secondary emissions radiated defines a value of Equivalent Isotropic radiated Power.

18 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a Fixed Station for Telecommunication Services that uses emissions of a frequency in the 1500 MHz band shall be as stipulated in the following table.

Frequency band	Limit on secondary emissions radiated
30MHz to lower than 1,000MHz	A value no greater than -57 dBm in any 100kHz band
1,000MHz to 12.75GHz (excluding 2,010MHz to 2,025MHz)	A value no greater than -47 dBm in any 1MHz band
2,010MHz to 2,025MHz	A value no greater than -52 dBm in any 1MHz band

19 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a Time division / Orthogonal Frequency Division Multiple access broad band wireless access system (limited the base station which has a

transmitting antenna that is 12 dB or less based on the absolute antenna gain, the land mobile station which has a transmitting antenna that is 4 dB or less based on the absolute antenna gain, and the land mobile relay station which has a transmitting antenna facing up to the base station that is 4 dB or less based on the absolute antenna gain) shall be as stipulated in the following table.

Frequency band	Limit on secondary emissions radiated
9kHz to lower than 150kHzMHz	A value no greater than -54 dBm in any 1kHz band
150kHz to lower than 30MHz	A value no greater than -54 dBm in any 10kHz band
30MHz to lower than 1,000MHz	A value no greater than -54 dBm in any 100kHz band
1,000MHz and higher	A value no greater than -47 dBm in any 1MHz band

20 Notwithstanding the provisions of paragraph 1, the limit on the secondary emissions radiated from the receiving equipment at a radio station of Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access System, and the base station which has a transmitting antenna that is exceeded 17 dB based on the absolute antenna gain, the land mobile station which has a transmitting antenna that is exceeded 2 dB based on the absolute antenna gain, or the land mobile relay station which has a transmitting antenna facing up to the base station that is exceeded 2 dB based on the absolute antenna gain, and the receiving equipment at a radio station of Time division / Orthogonal Frequency Division Multiple access broad band wireless access system, and the base station which has a transmitting antenna that is exceeded 12 dB based on the absolute antenna gain, the land mobile station which has a transmitting antenna that is exceeded 4 dB based on the absolute antenna gain, or the land mobile relay station which has a transmitting antenna facing up to the base station that is exceeded 4 dB based on the absolute antenna gain, shall be as stipulated in the following table.

Frequency Band	Limit on secondary emissions radiated
9 kHz or more to less than 150 kHz	A mean value of the power no greater than -54 dB (with 1 mW regarded as 0 dB. The same applies the mean value of the power of this table hereafter.) in any 1 kHz band
150 kHz or more to less than 30 MHz	A mean value of the power no greater than -54 dB in any 10 kHz band
30 MHz or more to less than	A mean value of the power no greater than -54 dB in any 100

1,000 MHz	kHz band
1,000 MHz or more to less than 2,505 MHz	A mean value of the power no greater than -47 dB in any 1 MHz band
2,505 MHz or more to less than 2,535 MHz	1 a radio station of Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access System (limited The equipment which has a transmission burst length is 5 msec)
	a. the receiving equipment of the base station A mean value of the power no greater than -61 dB in any 1 MHz band
	b. the receiving equipment of land mobile station
	(1) the receiving equipment of the land mobile station which has a transmitting antenna that is greater than 2 dB to 10 dB based on the absolute antenna gain (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is 17 dB or less based on the absolute antenna gain) A mean value of the power no greater than -70 dB in any 1 MHz band
	(2) the receiving equipment of the land mobile station which has a transmitting antenna that is exceeded 10 dB based on the absolute antenna gain (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is 17 dB or less based on the absolute antenna gain) A mean value of the power no greater than -68 dB in any 1 MHz band
(3) the receiving equipment of the land mobile station except (1) and (2) above (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is exceeded 17 dB based on the absolute antenna gain) A mean value of the power no greater than -61 dB in any 1 MHz band	

	MHz band
	c the receiving equipment of the land mobile relay station
	<p>(1) the receiving equipment of the land mobile relay station which has a transmitting antenna facing up to the base station that is exceeded 10 dB based on the absolute antenna gain (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is 17 dB or less based on the absolute antenna gain)</p> <p>If the equipment receives the radio wave from the base station, to apply the provisions of b(2) above, if the equipment receives the radio wave from the land mobile station, to apply the provisions of Paragraph 13.</p>
	<p>(2) the receiving equipment of the land mobile relay station except (1) previously (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is exceeded 17 dB based on the absolute antenna gain)</p> <p>If the equipment receives the radio wave from the base station, to apply the provisions of b(3) above, if the equipment receives the radio wave from the land mobile station, to apply the provisions of a above.</p>
	<p>(3) the receiving equipment of the land mobile relay station except (1) and (2) above;</p> <p>It shall be complied with the values notified separately by the Minister of Internal Affairs and Communications.</p>
	2 a radio station of Time division / Orthogonal Frequency Division Multiple access broad band wireless access system
	a the receiving equipment of the base station A mean value of the power no greater than -61 dB in any 1 MHz band
	b the receiving equipment of the land mobile station
	(1) the receiving equipment of the land mobile station

	<p>which has a transmitting antenna that is greater than 4 dB to 10 dB based on the absolute antenna gain (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is 12 dB or less based on the absolute antenna gain)</p> <p>A mean value of the power no greater than -70 dB in any 1 MHz band</p>
	<p>(2) the receiving equipment of the land mobile station which has a transmitting antenna that is exceeded 10 dB based on the absolute antenna gain (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is 12 dB or less based on the absolute antenna gain)</p> <p>A mean value of the power no greater than -68 dB in any 1 MHz band</p>
	<p>(3) the receiving equipment of the land mobile station except (1) and (2) above (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is exceeded 12 dB based on the absolute antenna gain)</p> <p>A mean value of the power no greater than -61 dB in any 1 MHz band</p>
	<p>c the receiving equipment of the land mobile relay station</p>
	<p>(1) the receiving equipment of the land mobile relay station which has a transmitting antenna facing up to the base station that is exceeded 10 dB based on the absolute antenna gain (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is 12 dB or less based on the absolute antenna gain)</p> <p>If the equipment receives the radio wave from the base station, to apply the provisions of b(2) above, if the equipment receives the radio wave from the land</p>

	mobile station, to apply the provisions of Paragraph 19.
	<p>(2) the receiving equipment of the land mobile relay station except (1) previously (limited the station which is communicating with other party of communication that is the base station which has a transmitting antenna that is exceeded 12 dB based on the absolute antenna gain)</p> <p>If the equipment receives the radio wave from the base station, to apply the provisions of b(3) above, if the equipment receives the radio wave from the land mobile station, to apply the provisions of a above.</p>
	<p>(3) the receiving equipment of the land mobile rely station except (1) and (2) above;</p> <p>It shall be complied with the values notified separately by the Minister of Internal Affairs and Communications.</p>
2,535 MHz or more	A mean value of the power no greater than -47 dB in any 1 MHz band

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

### Section 4.3 Radio Equipment of Radio Stations, etc. Performing TDMA Portable Radio Communication (Articles 49.6.2)

(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 notified separately (\*) by the Minister of Internal Affairs and Communications.
  - 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  $\pm 10.5$  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  $\mu$ 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 notified separately (\*) by the Minister of Internal Affairs and Communications.
- 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 notified separately (\*) by the Minister of Internal Affairs and Communications.

(Notification: \* in No. 384 in 1997)

### Section 4.3.2 Radio Equipment of Radio Stations, etc. Performing CDMA Portable Radio Communication (Articles 49.6.3 and Article 49.6.4)

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

**Article 49.6.3** The radio equipment at a base station that performs CDMA portable radio communication, the radio equipment at a land mobile station that performs CDMA portable radio communication, or the radio equipment at a radio station that performs communication, etc. for testing CDMA portable radio communication equipment with a transmitting emission of the frequency prescribed in the bottom column of the table below according to the classification in the preceding column of the table shall comply with the conditions in the items below (limited only to Item 1 b, and Item 2 c for the land mobile station (limited performing a rely of

portable radio communication), limited only to item 2 c for land mobile relay stations):

Type of the radio equipment	Frequency
The radio equipment of the base station with a spread code speed of 1.2288 mega-chips/s	Greater than 832 MHz to 834 MHz, greater than 838 MHz to 846 MHz, greater than 860 MHz to 895 MHz, or greater than 1,513 MHz to 1,516 MHz
The radio equipment of the land mobile station (except performing a relay of portable radio communication) with a spread code speed of 1.2288 mega-chips/s	Greater than 815 MHz to 850 MHz, greater than 887 MHz to 889 MHz, greater than 893 MHz to 901 MHz, greater than 915 MHz to 940 MHz, or greater than 1,465 MHz to 1,468 MHz
The radio equipment of the radio station performing communication, etc., for testing CDMA portable radio communication equipment with a spread code speed of 1.2288 mega-chips/s	Greater than 815 MHz to 850 MHz, greater than 860 MHz to 901 MHz, greater than 915 MHz to 940 MHz, greater than 1,465 MHz to 1,468 MHz, or greater than 1,513 MHz to 1,516 MHz

1) General conditions

- a 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 dispersive 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 notified separately (\*) by the Minister of Internal Affairs and Communications.
  - d The data transmission rate shall be the variable transmission rate notified separately (\*) by the Minister of Internal Affairs and Communications.
- 2 The radio equipment of a land mobile station prescribed in the preceding paragraph (except performing a rely of portable radio communication) 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 less 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 less than 889 MHz, higher than 893 MHz but less than 901 MHz or higher than 915 MHz but less 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 less 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.
  - 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 less than 38 dB, 27 dB or greater but less than 34 dB, or 23 dB or greater but less than 30 dB.

- 3 The radio equipment of a land mobile station prescribed in Paragraph 1 (limited performing a rely of portable radio communication) shall comply with the conditions in the items below in addition to the conditions prescribed in Paragraph 1, Item 1 b, and Item 2 c.
  - 1) An antenna power of an equipment facing up the base station (the radio equipment of a land mobile station (limited performing a rely of portable radio communication) which is communicating with the base station. The same applies hereafter) shall be 40 mW or less.
  - 2) An absolute gain of transmitting antenna of equipment facing up the base station shall be 9 dB or less.
  - 3) An antenna power of equipment facing up the land mobile station (the radio equipment of a land mobile station (limited performing a rely of portable radio communication) which is communicating with the land mobile station (except performing a rely of portable radio communication). The same applies hereafter) shall be 110 mW or less.
  - 4) An absolute gain of transmitting antenna of equipment facing up the land mobile station shall be 0 dB or less. However, when the equivalent isotropic radiated power is equal to or less than the value obtained by applying an antenna power of 110 mW to the antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the antenna.
  - 5) When the equipment would be shared with an equipment prescribed in Paragraph 3 of next Article, or Article 49-6-5, Paragraph 3, An antenna power of equipment facing up the base station shall be 40 mW or less, and an antenna power of equipment facing up the land mobile station shall be 110 mW or less. However, for the equipment facing up the land mobile station, when the equivalent isotropic radiated power is equal to or less than the value obtained by applying an antenna power of 110 mW to the antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the antenna.
  - 6) An amplitude characteristics (which is defined the ration between an output power of a facing up the land mobile station and an input power of a facing up the base station, or the ration between an output power of a facing up the base station and an input power of a facing up the land mobile station, The same applies hereafter) of an equipment facing up the base station and an equipment facing up the land mobile station shall comply with the values notified separately by the Minister of Internal Affairs and Communications.

- 7) The radio equipment shall has a function of prevention any interference to another radio station.

(Notification: \*in No. 385 in 1997)

**Article 49.6.4** The radio equipment at a base station that performs CDMA portable radio communication, the radio equipment at a land mobile station that performs CDMA portable radio communication, or the radio equipment at a radio station that performs communication, etc. for testing CDMA portable radio communication equipment with a transmitting emission of the frequency prescribed in the bottom column of the table below according to the classification in the preceding column of the table shall comply with the conditions in the items below (limited only to Item 1 b, and Item 2 c for the land mobile station (limited performing a rely of portable radio communication), limited only to item 2 c and d for land mobile relay stations). These conditions, however, do not apply to radio equipment prescribed in previous articles.

Type of the radio equipment	Frequency
The radio equipment of the base station	Greater than 860 MHz to 895 MHz, greater than 1,475.9 MHz to 1,500.9 MHz, greater than 1,844.9 MHz to 1,879.9 MHz, or greater than 2,110 MHz to 2,170 MHz
The radio equipment of the land mobile station (except performing a rely of portable radio communication)	Greater than 815 MHz to 850 MHz, greater than 1,427.9 MHz to 1,452.9 MHz, greater than 1,749.9 MHz to 1,784.9 MHz, or greater than 1,920 MHz to 1,980 MHz
The radio equipment of the radio station performing communication, etc., for testing CDMA portable radio communication equipment	Greater than 815 MHz to 850 MHz, greater than 860 MHz to 895 MHz, greater than 1,427.9 MHz to 1,452.9 MHz, greater than 1,475.9 MHz to 1,500.9 MHz, greater than 1,749.9 MHz to 1,784.9 MHz, greater than 1,844.9 MHz to 1,879.9 MHz, greater than 1,920 MHz to 1,980 MHz, or greater than 2,110 MHz to 2,170 MHz

- 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 providing 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 multi-path propagation received in temporal dispersion and improve the receive characteristics by synthesizing multi-path 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 notified separately by the Minister of Internal Affairs and Communications.
  - d The inter-modulation characteristics shall conform with the values separately notified by the Minister of Internal Affairs and Communications.
  - e The data transmission rate shall be the variable transmission rate separately notified by the Minister of Internal Affairs and Communications.
- 2 The radio equipment of a land mobile station prescribed in the preceding paragraph (except performing a rely of portable radio communication) 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 less 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 less 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 less 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 less than 1,784.9 MHz or greater than 1,920 MHz but less 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 less than 1,784.9 MHz or greater than 1,920 MHz but less than 1,980 MHz with a spread code speed of 1.2288 megachips/s or 3.6864 megachips/s, the equivalent isotropic radiated power shall be 24 dB (with 1 mW regarded as 0 dB) or lower.
- 3 The radio equipment of a land mobile station prescribed in Paragraph 1 (limited performing a rely of portable radio communication) shall comply with the conditions in the items below in addition to the conditions prescribed in Paragraph 1, Item 1 b, and Item 2 c.
- 1) An antenna power of equipment facing up the base station shall be 40 mW or less.
  - 2) An absolute gain of transmitting antenna of equipment facing up the base station shall be 9 dB or less.
  - 3) An antenna power of equipment facing up the land mobile station shall be 110 mW or less.
  - 4) An absolute gain of transmitting antenna of equipment facing up the land mobile station shall be 0 dB or less. However, when the equivalent isotropic radiated power is equal to or less than the value obtained by applying an antenna power of 110 mW to the

antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the antenna.

- 5) When the equipment would be shared with equipment prescribed in Paragraph 3 of preceding Article, or Paragraph 3 of next Article, An antenna power of equipment facing up the base station shall be 40 mW or less, and an antenna power of equipment facing up the land mobile station shall be 110 mW or less. However, for the equipment facing up the land mobile station, when the equivalent isotropic radiated power is equal to or less than the value obtained by applying an antenna power of 110 mW to the antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the antenna.
- 6) An amplitude characteristics of an equipment facing up the base station and an equipment facing up the land mobile station shall comply with the values notified separately by the Minister of Internal Affairs and Communications.
- 7) The radio equipment shall has a function of prevention any interference to another radio station.

#### Section 4.4 Radio Equipment of Radio Stations, etc. Performing Time Division Multiplexing/Code Division Multiplexing Portable Radio Communication (Article 49.6.5)

(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, radio equipment at a land mobile station that performs time division multiplexing/code division multiplexing portable radio communication, or radio equipment at a radio station that performs communication, etc. for testing performs time division multiplexing/code division multiplexing portable radio communication with a transmitting emission of the frequency prescribed in the bottom column of the table below according to the classification in the preceding column of the table shall comply with the conditions in the items below (limited only to Item 1 b, and Item 2 b for the land mobile station (limited performing a rely of portable radio communication), limited only to item 2 b and c for land mobile relay stations):

Type of the radio equipment	Frequency
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The radio equipment of the base station	Greater than 832 MHz to 834 MHz, greater than 838 MHz to 846 MHz, greater than 860 MHz to 895 MHz, greater than 1,475.9 MHz to 1,500.9 MHz, greater than 1,844.9 MHz to 1,879.9 MHz, or greater than 2,110 MHz to 2,170 MHz
The radio equipment of the land mobile station (except performing a rely of portable radio communication)	Greater than 815 MHz to 850 MHz, greater than 887 MHz to 889 MHz, greater than 893 MHz to 901 MHz, greater than 915 MHz to 940 MHz, greater than 1,427.9 MHz to 1,452.9 MHz, greater than 1,749.9 MHz to 1,784.9 MHz, or greater than 1,920 MHz to 1,980 MHz
The radio equipment of the radio station performing communication, etc., for testing TD/CDMA portable radio communication equipment	Greater than 815 MHz to 850 MHz, greater than 860 MHz to 901 MHz, greater than 915 MHz to 940 MHz, greater than 1,427.9 MHz to 1,452.9 MHz, greater than 1,475.9 MHz to 1,500.9 MHz, greater than 1,749.9 MHz to 1,784.9 MHz, greater than 1,844.9 MHz to 1,879.9 MHz, greater than 1,920 MHz to 1,980 MHz, or greater than 2,110 MHz to 2,170 MHz

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 providing 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 multi-path propagation received in temporal dispersion and improve the receive characteristics by synthesizing multi-path 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 notified by the Minister of Internal Affairs and Communications.
  - c Inter-modulation characteristics shall conform with the values separately notified by Minister of Internal Affairs and Communications.
  - d The data transmission rate shall be the variable transmission rate notified separately by the Minister of Internal Affairs and Communications.
- 2 The radio equipment at a land mobile station prescribed in the preceding paragraph (except performing a rely of portable radio communication) 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 less 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 less than 889 MHz, higher than 893 MHz but less than 901 MHz or higher than 915 MHz but less 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 less 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 less 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 less than 1,784.9 MHz or higher than 1,920 MHz but less than 1,980 MHz with a spread code of 1.2288 megachips/s, the equivalent isotropic radiated power shall be 24 dB (with 1 mW regarded as 0 dB) or lower.
- 3 The radio equipment of a land mobile station prescribed in Paragraph 1 (limited performing a rely of portable radio communication) shall comply with the conditions in the items below in addition to the conditions prescribed in Paragraph 1, Item 1 b, and Item 2 b
- 1) An antenna power of equipment facing up the base station shall be 40 mW or less.
  - 2) An absolute gain of transmitting antenna of equipment facing up the base station shall be 9 dB or less.
  - 3) An antenna power of equipment facing up the land mobile station shall be 110 mW or less.
  - 4) An absolute gain of transmitting antenna of equipment facing up the land mobile station shall be 0 dB or less. However, when the equivalent isotropic radiated power is equal to or less than the value obtained by applying an antenna power of 110 mW to the antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the antenna.
  - 5) When the equipment would be shared with equipment prescribed in Article 49-6-3, Paragraph 3, or Paragraph 3 of preceding Article, An antenna power of equipment

facing up the base station shall be 40 mW or less, and an antenna power of equipment facing up the land mobile station shall be 110 mW or less. However, for the equipment facing up the land mobile station, when the equivalent isotropic radiated power is equal to or less than the value obtained by applying an antenna power of 110 mW to the antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the antenna.

- 6) An amplitude characteristics of an equipment facing up the base station and an equipment facing up the land mobile station shall comply with the values notified separately by the Minister of Internal Affairs and Communications.
- 7) The radio equipment shall has a function of prevention any interference to another radio station.

#### Section 4.4.2 Radio Equipment of Radio Stations, etc. Performing TDMA/CDMA Portable Radio Communication (Article 49.6.6)

**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 less than 2,025 MHz shall comply with the conditions in the items below (limited only to Item 1 b, and Item 2 b for the land mobile station (limited performing a rely of portable radio communication), limited only to item 2 b and c for land mobile relay stations):

- 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 providing 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 multi-path propagation received in temporal dispersion and improve the receive characteristics by synthesizing multi-path 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 notified by the Minister of Internal Affairs and Communications.
  - c Inter-modulation characteristics shall conform with the values separately notified by Minister of Internal Affairs and Communications.
- 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 a land mobile station prescribed in Paragraph 1 (except performing a rely of portable radio communication) shall comply with the conditions in the items 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.
- 4 The radio equipment of a land mobile station prescribed in Paragraph 1 (limited performing a rely of portable radio communication) shall comply with the conditions in the items below in addition to the conditions prescribed in Paragraph 1, Item 1 b, and Item 2 b
- 1) The spread code speed shall be 3.84 mega-chips/s or 7.68 mega-chips/s.
  - 2) An antenna power of equipment facing up the base station shall be 40 mW or less.
  - 3) An absolute gain of transmitting antenna of equipment facing up the base station shall be 9 dB or less.
  - 4) An antenna power of equipment facing up the land mobile station shall be 110 mW or less.
  - 5) An absolute gain of transmitting antenna of equipment facing up the land mobile station shall be 0 dB or less. However, when the equivalent isotropic radiated power is equal to or less than the value obtained by applying an antenna power of 110 mW to the antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the antenna.
  - 6) An amplitude characteristics of an equipment facing up the base station and an equipment facing up the land mobile station shall comply with the values notified separately by the Minister of Internal Affairs and Communications.
  - 7) The radio equipment shall has a function of prevention any interference to another radio station.

#### Section 4.5 Radio Equipment of Radio Stations, etc. Performing MCA Land Mobile Communication (Article 49.7)

(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 Internal Affairs and Communications 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 notified separately (\*1) by the Minister of Internal Affairs and Communications.

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  $\pm 5$  kHz of the frequency of the un-modulated 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  $\pm 2.5$  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  $\pm 2.5$  kHz, the power radiated into the  $\pm 4.25$  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  $\pm 2.5$  kHz, the power radiated into the  $\pm 8$  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 notified 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  $\pm 5$  kHz.
    - (2) The controller shall be equipped with a storage device which complies with the conditions notified separately (\*2) by the Minister of Internal Affairs and Communications.
    - (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 notified separately (\*3) by the Minister of Internal Affairs and Communications.

(Notifications: \*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 (Article 49.7.2 and Article 49.7.3)

(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 notified separately (\*1) by the Minister of Internal Affairs and Communications.

- 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  $\pm 9$  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  $\mu$ 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 notified separately (\*1) by the Minister of Internal Affairs and Communications.
  - 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 notified 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 notified separately (\*3) by the Minister of Internal Affairs and Communications.

- (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 notified separately (\*4) by the Minister of Internal Affairs and Communications 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 notified separately (\*4) by the Minister of Internal Affairs and Communications.

(Notification(s): \*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 notified separately by the Minister of Internal Affairs and Communications.
  - 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  $\mu\text{W}$  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 notified separately by the Minister of Internal Affairs and Communications.
    - (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 notified separately by the Minister of Internal Affairs and Communications.
- (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 (Article 49.8)

(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 notified separately (\*) by the Minister of Internal Affairs and Communications.

e The frequency of emissions to be used shall be selected as notified separately (\*) by the Minister of Internal Affairs and Communications.

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 notified separately (\*) by the Minister of Internal Affairs and Communications.

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 notified 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  $\pm 1.5$  kHz frequency shift by a frequency of 1,250 Hz is applied, the power radiated into the  $\pm 4.25$  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.

(Notification: \* in No. 764 in 1987)

## Section 4.8 Radio Equipment of Digital Cordless Telephone Radio Stations (Article 49.8.2)

(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 PHS 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 PHS 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 notified separately (\*1) by the Minister of Internal Affairs and Communications.

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 notified separately (\*2) by the Minister of Internal Affairs and Communications.

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 notified separately (\*1) by the Minister of Internal Affairs and Communications.

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 notified separately (\*1) by the Minister of Internal Affairs and Communications.

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

notified separately (\*1) by the Minister of Internal Affairs and Communications (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  $\pm 96$  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 notified separately (\*1) by the Minister of Internal Affairs and Communications.

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 PHS 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 PHS system are bypassed, shall comply with the conditions below, except for the radio equipment notified separately by the Minister of Internal Affairs and Communications.

- (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 notified separately (\*1) by the Minister of Internal Affairs and Communications.
- (Notification(s): \*1 in No. 612 in 1998 and \*2 in No. 11 in 1995)

## Section 4.9 Radio Equipment of Radio Stations of the PHS System (Article 49.8.3)

(Radio Equipment of Radio Stations of a PHS System)

**Article 49.8.3.** The radio equipment of land mobile stations of a PHS system, base stations of a PHS system, radio stations that relay communication between base stations and land mobile stations, or radio stations that perform communication, etc. for testing PHS system communication equipment (which refer to radio stations that relay communication between a base station of a PHS 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 PHS 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 PHS system, from a base station of a PHS system to a radio station that relays communication between a base station of a PHS system and a land mobile station, and from a radio station that relays communication between a base station of a PHS system and a land mobile station to a land mobile station of a PHS system, the communication method shall be time division duplex operation based on time division multiplexing. For transmission from a land mobile station of a PHS system to a digital cordless telephone base unit, a digital cordless telephone repeater, a base station of a PHS system or a radio station that relays communication between a base station of a PHS system and a land mobile station, and from a radio station that relays communication between a base station of a PHS

system and a land mobile station to a base station of a PHS 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 notified separately (\*) by the Minister of Internal Affairs and Communications.

- 2) The individual land mobile stations of a PHS system which communicate with a base station of the PHS 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  $\pm 96$  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  $\pm 96$  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 PHS system shall be capable of using the frequency notified separately by the Minister of Internal Affairs and Communications as a control channel.
- 2 The radio equipment of a land mobile station of a PHS 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 PHS 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 PHS 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 PHS system are bypassed, except for the radio equipment notified separately by the Minister of Internal Affairs and Communications.

- 3 The radio equipment of a base station of a PHS system or a radio station that performs communication, etc. for testing PHS 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 PHS 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 PHS system, a land mobile station and radio equipment of a PHS 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 PHS 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 PHS system, the antenna power shall be 0.02 W or less.
  - d The radio equipment of the radio station prescribed in Article 16, Item 1-2 of Regulations for Enforcement of the Radio Law, and notwithstanding the provisions of 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 PHS system, the antenna power shall be 0.01 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 PHS 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 PHS 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 PHS 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.
  - e The radio equipment of the radio station prescribed in Article 16, Item 1-2 of Regulations for Enforcement of the Radio Law, and notwithstanding the provisions of c and d, 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 PHS system, the absolute gain of the antenna shall be 4 dB or less. However,

when the equivalent isotropic 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.

(Notification: \* in No. 612 in 1998)

## Section 4.10 Radio Equipment of Premises Radio Stations (Article 49.9 to Article 49.13)

(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 isotropic 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 channels shall be constructed using one or more two unit channels simultaneously (952.2MHz or the frequency that added integral multiple of 200kHz to 952.2MHz between 952.2MHz and 953.8MHz of center frequency, and channel of 200kHz bandwidth. The same applies f, appendix table 2 (8), and appendix table 3 24(1).)

d The radio equipment shall be equipped with a transmission time restriction device and carrier sensing device that comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications.

e The power of both ends of radio channels shall be no greater than 10 dB (with 1 mW regards as 0 dB. The same apply f)

f The adjacent channel leakage power of the transmitter which is adjacent an unit of channel on radio channel shall be no greater than 0.5 dB on both channel edges.

g 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 5) and item 7)).

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 notified separately (\*) by the Minister of Internal Affairs and Communications.

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 isotropic 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 notified separately (\*) by the Minister of Internal Affairs and Communications.

e The radio equipment shall be equipped with a transmission time restriction device and carrier sensing device that comply with the technical conditions notified separately (\*) by the Minister of Internal Affairs and Communications.

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  $\pm 8$  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  $\pm 16$  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  $\pm 8.5$  MHz band of the frequency 20 MHz distant from the carrier frequency is lower than the carrier power by 30 dB or more.

(Notification: \* in No. 385 in 1986)

## Section 4.11 Radio Equipment of Specified Low-Power Radio Stations (Article 49.14)

(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 312 MHz to 315.25 MHz, higher than 402 MHz to 405 MHz, higher than 433.67 MHz to 434.17 MHz, and higher than 952 MHz to 955 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 notified separately (\*) by the Minister of Internal Affairs and Communications.

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 notified separately by the Minister of Internal Affairs and Communications.

d The radio equipment shall not be equipped with a feeder or grounding device. However, this shall not apply to the radio equipment notified separately by the Minister of Internal Affairs and Communications.

e The radio equipment shall be equipped with a transmission time restriction device and carrier sensing device which comply with the technical conditions notified separately (\*) by the Minister of Internal Affairs and Communications. However, this shall not apply to radio equipment notified separately (\*) by the Minister of Internal Affairs and Communications because the Minister of Internal Affairs and Communications 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  $\pm 4.25$  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 Internal Affairs and Communications deems it difficult or irrational for the transmitter to comply with this condition, and the transmitter complies with the technical conditions notified separately (\*) by the Minister of Internal Affairs and Communications.

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.

$10 \log B - 150 + G$  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 less 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 312 MHz to 315.25 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 notified separately by the Minister of Internal Affairs and Communications.
- b The radio equipment shall not be equipped with a feeder or grounding device.
- c The radio equipment shall be equipped with a transmission time restriction device which comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications.

4) Radio equipment which uses emissions of a frequency from 433.67 MHz to 434.17 MHz

- a The radio equipment which are the data transmission for International Freight Service

- (which is the radio equipment equipped on International Cargo Transportation Service (including containers, pallets and similar the transportation materials), it shall be carry out a transmission regarding an information for International Cargo Transportation Service, the same applies hereafter), and the data controlled for International Freight Service (which is the radio equipment that is used a port, an airport, and another place of shipping terminals mainly, it shall be carry out an start up and termination of the radio equipment which are the data transmission for International Freight Service or a transmission an information about the International Transportation Cargo, the same applies hereafter) shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, the radio equipment of the data controlled for International Freight Service shall not apply to power supply equipment, controllers.
- b The radio equipment shall not be equipped with a feeder or grounding device.
  - c The radio equipment shall be equipped with a transmission time restriction device which comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications.
  - d The radio equipment shall be displayed a necessary certification identifications which is notified separately by the Minister of Internal Affairs and Communications.
- 5) Radio equipment which uses emissions of a frequency from 952 MHz to 955 MHz
- a The cabinet of the radio equipment shall not be capable of being opened easily.
  - b The absolute gain of the transmitting antenna shall be 3 or less. However, when the Equivalent Isotropic Radiated Power is lower than or equal to the value obtained by applying an antenna power with the mean power of 0.01 Watts to the transmitting antenna with its absolute gain being 3 dB, the shortage shall be compensated for by the gain of the transmitting antenna.
  - c The radio channels shall be constructed an unit channel (952.2MHz or the frequency that added integral multiple of 200kHz to 952.2MHz between 952.2MHz and 954.8MHz of center frequency, and channel of 200kHz bandwidth.)
  - d The radio equipment shall be equipped with a transmission time restriction device and carrier sensing device which comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications.
  - e The power of both ends of radio channels shall be no grater than -10 dB (with 1 mW regards as 0 dB. The same apply f)
  - f The adjacent channel leakage power of the transmitter which is adjacent an unit of channel on radio channel shall be no grater than -18 dB on both channel edges.
  - g The radio equipment shall be capable of receiving emissions of a frequency radiated

from a device for responding.

6) 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 isotropic radiated power within a bandwidth of 1 MHz is equal to or less than the value obtained by applying an antenna power which is notified separately by the Minister of Internal Affairs and Communications 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.

7) 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.

8) 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 isotropic 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 notified separately by the Minister of Internal Affairs and Communications in addition to the provisions prescribed in a to c above.

9) 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.

10) 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.

(Notification: \* in No. 49 in 1989)

## Section 4.13 Radio Equipment of Land Mobile Stations of Specified Radio Microphones (Article 49.16)

(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 notified separately (\*1) by the Minister of Internal Affairs and Communications.

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 notified separately (\*2) by the Minister of Internal Affairs and Communications.

5) The frequency shift shall be within  $\pm 150$  kHz of the frequency of the unmodulated carrier. However, the frequency shift in a stereo transmission method shall be within  $\pm 75$  kHz.

6) The adjacent channel leakage power of the transmitter shall be as follows:

a When the frequency shift is within  $\pm 40$  kHz, the power radiated into the  $\pm 55$  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  $\pm 5$  kHz frequency shift by a frequency of 1,000 Hz is applied.

b When the frequency shift exceeds  $\pm 40$  kHz but is within  $\pm 150$  kHz, the power radiated into the  $\pm 165$  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  $\pm 2.4$  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  $\pm 125$  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  $\pm 28.5$  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 notified separately by the Minister of Internal Affairs and Communications.

(Notification(s): \*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 (Article 49.17)

(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 notified separately (\*) by the Minister of Internal Affairs and Communications.
- 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  $\pm 2$  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  $\pm 4.25$  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  $\pm 6$  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  $\pm 8$  kHz band of the frequency 25 kHz distant from the carrier frequency shall be lower than the carrier power by 40 dB or more.

(Notification: \*in No. 323 in 1992)

## Section 4.15 Radio Equipment of Radio Stations Performing Portable Mobile-Satellite Data Communication (Article 49.18)

(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  $\pm 3$  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 ( $\theta$ ) 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: $26 - 25\log_{10}\theta - 10\log_{10}N \text{ dB}$ 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 notified separately (\*) by the Minister of Internal Affairs and Communications.

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.

(Notification: \* 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. (Article 49.19)

(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 notified separately by the Minister of Internal Affairs and Communications.
  - 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 notified separately by the Minister of Internal Affairs and Communications.
- 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 isotropic 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	Elongation ( $\theta$ ) from the direction of principal radiation	Equivalent isotropic radiated power (with 1 mW regarded as 0 dB)
	Radio equipment which uses emissions of a frequency in a range of 22 GHz or 26 GHz	0 degree to 5 degrees
More than 5 degrees to less than 100 degrees		Lower than or equal to the value obtained by the following expression: $73 - 3.8\theta$ 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 (Article 49.20)

(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, half duplex 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 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 which uses OFDM method and does not conform to (1) above shall be one of the items as follows;
      - (i) Shall provide the mean power within a bandwidth of 1 MHz of 10 mW or less in the case of occupied Bandwidth is no greater than 26 MHz.
      - (ii) Shall provide the mean power within a bandwidth of 1 MHz of 5 mW or less in the case of occupied Bandwidth is greater than 26 MHz to 38 MHz.
    - (4) The antenna power of the transmitting equipment other than that stated in (1), (2), and (3) 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 isotropic radiated power (for the transmitting antenna that

uses the modulation method prescribed in c (1) above, the equivalent isotropic 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.

$360/A$  degree

A represents the value determined by dividing an equivalent isotropic 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.
- k The radio equipment of e(3)(ii) above shall be equipped a carrier sense function.

- 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, half duplex 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, 5,190 MHz, 5,200 MHz, 5,220 MHz, 5,230 MHz, 5,240 MHz, 5,260 MHz, 5,270 MHz, 5,280 MHz, 5,300 MHz, 5,310 MHz or 5,320 MHz (shall be limited using indoors, or the place of the similar environment condition of shielding characteristics as the indoor, and notified separately by the Minister of Internal Affairs and Communications)
  - 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, half duplex operation, or duplex operation.
  - c The modulation method shall be one of the items below:
    - (1) In case of Occupied Bandwidth 18 MHz or less
      - (i) The spread spectrum method that uses the direct spread method
      - (ii) The amplitude modulation method, phase modulation method, frequency

modulation method, pulse modulation method or combination of these methods

(iii) OFDM

(2) In case of Occupied Bandwidth greater than 18 MHz to 38 MHz: OFDM

d The signal transmission rate shall be as follows;

(1) For the Occupied Bandwidth is no greater than 19 MHz, the radio equipment shall be capable of transmitting a signal at the rate of 20 megabits/s.

(2) For the Occupied Bandwidth is greater than 19 MHz to 38 MHz, the radio equipment shall be capable of transmitting a signal at the rate of 40 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 Item C, (1)(i) 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 Item C, (1)(ii) above, the mean power shall be 10 mW or less.

(3) For the antenna power of the transmitting equipment which uses the modulation method prescribed in Item C, (1)(iii) and (2) above, the mean power shall be as follows;

(i) For the Occupied Bandwidth is no greater than 19 MHz, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.

(ii) For the Occupied Bandwidth is greater than 19 MHz to 38 MHz, the mean power within a bandwidth of 1 MHz shall be 5 mW or less.

g The equivalent isotropic radiated power within a bandwidth of 1 MHz shall be as follows:

(1) In case of the Occupied Bandwidth is no greater than 19 MHz;

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

10 mW or lower

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

(a) 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

(b) Cases other than (a):

5 mW or lower

- (2) In case of the Occupied Bandwidth is greater than 19 MHz to 38 MHz;
  - (i) When using emissions of a frequency of 5,190 MHz or 5,230 MHz :  
5 mW or lower
  - (ii) When using emissions of a frequency of 5,270 MHz or 5,310 MHz
    - (a) When equipped with a function that reduces the mean antenna power by 3 dB in the communication system specified in 1):  
5 mW or lower
    - (b) Cases other than (a):  
2.5 mW or lower
- h The number of carriers within a bandwidth of 1 MHz in OFDM shall be 1 or more.
- i Spreading Factor of The Spread Spectrum Method shall be one of the items below.
  - (1) The equipment is the spread spectrum method, their Spreading Factor shall be 5 or more.
  - (2) The equipment is the spread spectrum method, 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 Adjacent Channel Leakage Power shall be as follows;
  - (1) In case of the Occupied Bandwidth is no greater than 18 MHz; The mean power radiated within a bandwidth of  $\pm 9$  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.
  - (2) In case of the Occupied Bandwidth is greater than 18 MHz to 19 MHz; The mean power radiated within a bandwidth of  $\pm 9.5$  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.
  - (3) In case of the Occupied Bandwidth is greater than 19 MHz to 38 MHz; The mean power radiated within a bandwidth of  $\pm 19$  MHz of the frequencies 40 MHz and 80 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 Out-band Leakage Power 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 :
    - (i) In case of the Occupied Bandwidth is no greater than 18 MHz;

Classification			Equivalent isotropic radiated power
Frequency band	Reference Channel	Frequency (f) of the	

		difference from the reference channel	within a bandwidth of 1 MHz
5,140 MHz to 5,142 MHz	5,240MHz	Higher than 98 MHz to 100 MHz	2.5 uW or lower
Higher than 5,142 MHz to 5,150 MHz		Higher than 90 MHz to 98 MHz	15 uW or lower
5,250 MHz to lower than 5,251 MHz		10 MHz to lower than 11 MHz	The value obtained by the expression given below or lower: $101-(f-9)$ mW
5,251 MHz to lower than 5,260 MHz		11 MHz to lower than 20 MHz	The value obtained by the expression given below or lower: $10-1-(8/90)(f-11)$ mW
5,260 MHz to lower than 5,266.7 MHz		20 MHz to 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 to less than 5,360 MHz		26.7 MHz to lower than 120 MHz	2.5 $\mu$ W or lower

Note: The unit of f is “MHz”.

(ii) In case of the Occupied Bandwidth is greater than 18 MHz to 19 MHz;

Classification			Equivalent isotropic radiated power within a bandwidth of 1 MHz
Frequency band	Reference Channel	Frequency (f) of the difference from the reference channel	
5,135 MHz to 5,142 MHz	5,180MHz	Higher than 38 MHz to 45 MHz	2.5 uW or lower
Higher than 5,142 MHz to 5,150 MHz		Higher than 30 MHz to 38 MHz	15 uW or lower

5,250 MHz to lower than 5,251 MHz	5,240MHz	10 MHz to lower than 11 MHz	The value obtained by the expression given below or lower: 101-(f-9) mW
5,251 MHz to lower than 5,260 MHz		11 MHz to lower than 20 MHz	The value obtained by the expression given below or lower: 10-1-(8/90) (f-11) mW
5,260 MHz to lower than 5,266.7 MHz		20 MHz to 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 to less than 5,365 MHz		26.7 MHz to lower than 125 MHz	2.5 μW or lower

Note: The unit of f is “MHz”.

(2) When using emissions of a frequency of 5,190 MHz or 5,230 MHz:

Classification			Equivalent isotropic radiated power within a bandwidth of 1 MHz
Frequency band	Reference Channel	Frequency (f) of the difference from the reference channel	
5,100 MHz to 5,142 MHz	5,190MHz	Higher than 48 MHz to 90 MHz	2.5 uW or lower
Higher than 5,142 MHz to 5,150 MHz		Higher than 40 MHz to 48 MHz	15 uW or lower
5,250 MHz to lower than 5,251 MHz	5,230MHz	20 MHz to lower than 21 MHz	The value obtained by the expression given below or lower: 101-(f-20)+log(1/2) mW

5,251 MHz to lower than 5,270 MHz		21 MHz to lower than 40 MHz	The value obtained by the expression given below or lower: $10^{-1-(8/190)(f-21)} - 1 + \log(1/2)$ mW
5,270 MHz to lower than 5,275.8 MHz		40 MHz to lower than 45.8 MHz	The value obtained by the expression given below or lower: $10^{-(17/200)(f-40)} - 1.8 + \log(1/2)$ mW
5,275.8 MHz to less than 5,400 MHz		45.8 MHz to lower than 170 MHz	2.5 μW or lower

Note: The unit of f is “MHz”.

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

(i) In case of the Occupied Bandwidth is no greater than 18 MHz;

Classification			Equivalent isotropic radiated power within a bandwidth of 1 MHz
Frequency band	Reference Channel	Frequency (f) of the difference from the reference channel	
5,140 MHz to 5,233.3 MHz	5,260 MHz	Higher than 26.7 MHz to lower than 120 MHz	2.5 μW or lower
Greater than 5,233.3 MHz to 5,240 MHz		Higher than 20 MHz to 26.7 MHz	The value obtained by the expression given below or lower: $10^{-1.8-(6/50)(f-20)}$ mW
Greater than 5,240 MHz to 5,249 MHz		Higher than 11 MHz to 20MHz	The value obtained by the expression given below or lower: $10^{-1-(8/90)(f-11)}$ mW
Greater than 5,249		Higher than 10 MHz to	The value obtained

MHz to 5,250 MHz		11 MHz	by the expression given below or lower: $10^{1-(f-9)}$ mW
5,350 MHz to 5,360 MHz		90 MHz to 100 MHz	2.5 $\mu$ W or lower

Note: The unit of f is “MHz”.

(ii) In case of the Occupied Bandwidth is greater than 18 MHz to 19 MHz;

Classification			Equivalent isotropic radiated power within a bandwidth of 1 MHz
Frequency band	Reference Channel	Frequency (f) of the difference from the reference channel	
5,135 MHz to 5,233.3 MHz	5,260 MHz	Higher than 26.7 MHz to lower than 125 MHz	2.5 $\mu$ W or lower
Greater than 5,233.3 MHz to 5,240 MHz		Higher than 20 MHz to 26.7 MHz	The value obtained by the expression given below or lower: $10^{-1.8-(6/50)(f-20)}$ mW
Greater than 5,240 MHz to 5,249 MHz		Higher than 11 MHz to 20MHz	The value obtained by the expression given below or lower: $10^{-1-(8/90)(f-11)}$ mW
Greater than 5,249 MHz to 5,250 MHz		Higher than 10 MHz to 11 MHz	The value obtained by the expression given below or lower: $10^{1-(f-9)}$ mW
5,350 MHz to 5,365 MHz	5,320 MHz	30 MHz to 45 MHz	2.5 $\mu$ W or lower

Note: The unit of f is “MHz”.

(4) When using emissions of a frequency of 5,270 MHz or 5,310 MHz:

Classification	Equivalent isotropic
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Frequency band	Reference Channel	Frequency (f) of the difference from the reference channel	radiated power within a bandwidth of 1 MHz
5,100 MHz to 5,210 MHz	5,270 MHz	Higher than 60 MHz to lower than 170 MHz	2.5 μW or lower
Greater than 5,210 MHz to 5,224.2 MHz		Higher than 45.8 MHz to 60 MHz	2.5 μW or lower
Greater than 5,224.2 MHz to 5,230 MHz		Higher than 40 MHz to lower than 45.8 MHz	The value obtained by the expression given below or lower: $10^{-(17/200)(f-40)-1.8+\log(1/2)}$ mW
Greater than 5,230 MHz to 5,249 MHz		Higher than 21 MHz to 40MHz	The value obtained by the expression given below or lower: $10^{-(8/190)(f-21)-1+\log(1/2)}$ mW
Greater than 5,249 MHz to 5,250 MHz		Higher than 20 MHz to 21 MHz	The value obtained by the expression given below or lower: $10^{-(f-20)+\log(1/2)}$ mW
5,350 MHz to greater than 5,355.8 MHz	5,310 MHz	40 MHz to greater than 45.8 MHz	15 μW or lower
5,355.8 MHz to 5,400 MHz		45.8 MHz to 90 MHz	2.5 μW or lower

Note: The unit of f is “MHz”.

- 1 The radio equipment shall comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications in addition to the conditions prescribed in items a to k above.

- 3-2) The radio equipment that uses emissions of a frequency of 5,500 MHz, 5,510 MHz, 5,520 MHz, 5,540 MHz, 5,550 MHz, 5,560 MHz, 5,580 MHz, 5,590 MHz, 5,600 MHz, 5,620 MHz, 5,630 MHz, 5,640 MHz, 5,660 MHz, 5,670 MHz, 5,680 MHz, or 5,700 MHz (excluding the radio station which is used for an operation on the air (excluding the operating in the airplane..))
- a The radio equipment shall comply with the conditions prescribed in item 3)a, 3)b, 3)e, 3)h, and 3)i.
  - b The modulation method shall be one of the items below:
    - (1) In case of Occupied Bandwidth 19.7 MHz or less
      - (i) The spread spectrum method that uses the direct spread method
      - (ii) The amplitude modulation method, phase modulation method, frequency modulation method, pulse modulation method or combination of these methods
      - (iii) OFDM
    - (2) In case of Occupied Bandwidth greater than 19.7 MHz to 38 MHz: OFDM
  - c The signal transmission rate shall be as follows;
    - (1) For the Occupied Bandwidth is no greater than 19.7 MHz, the radio equipment shall be capable of transmitting a signal at the rate of 20 megabits/s.
    - (2) For the Occupied Bandwidth is greater than 19.7 MHz to 38 MHz, the radio equipment shall be capable of transmitting a signal at the rate of 40 megabits/s.
  - d 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 Item b, (1)(i) 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 Item b, (1)(ii) above, the mean power shall be 10 mW or less.
    - (3) For the antenna power of the transmitting equipment which uses the modulation method prescribed in Item b, (1)(iii) and Item b, (2) above, the mean power shall be as follows;
      - (i) For the Occupied Bandwidth is no greater than 19.7 MHz, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.
      - (ii) For the Occupied Bandwidth is greater than 19.7 MHz to 38 MHz, the mean power within a bandwidth of 1 MHz shall be 5 mW or less.
  - e The equivalent isotropic radiated power within a bandwidth of 1 MHz shall be as follows:

- (1) In case of the Occupied Bandwidth is no greater than 19.7 MHz;
    - (i) When equipped with a function that reduces the mean antenna power by 3 dB in the communication system specified in 1):
      - 50 mW or lower
    - (ii) Cases other than (i):
      - 25 mW or lower
  - (2) In case of the Occupied Bandwidth is greater than 19.7 MHz to 38 MHz;
    - (i) When equipped with a function that reduces the mean antenna power by 3 dB in the communication system specified in 1):
      - 25 mW or lower
    - (ii) Cases other than (i):
      - 12.5 mW or lower
- f The Adjacent Channel Leakage Power shall be as follows;
- (1) In case of the modulation type is not OFDM; The mean power radiated within a bandwidth of  $\pm 9$  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.
  - (2) In case of the modulation type is OFDM, shall be as follows;
    - (i) In case of the Occupied Bandwidth is 19.7 MHz or less; The mean power radiated within a bandwidth of  $\pm 9.5$  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.
    - (ii) In case of the Occupied Bandwidth is greater than 19.7 MHz to 38 MHz; The mean power radiated within a bandwidth of  $\pm 19$  MHz of the frequencies 40 MHz and 80 MHz distant from the frequency of the carrier shall be lower than the mean power of the carrier by 25 dB and 40 dB.
- g The Out-band Leakage Power shall be as follows;
- (1) When using emissions of a frequency of 5,500 MHz, 5,520 MHz, 5,540 MHz, 5,560 MHz, 5,580 MHz, 5,600 MHz, 5,620 MHz, 5,640 MHz, 5,660 MHz, 5,680 MHz, or 5,700 MHz:
    - (i) In case of the modulation type is not OFDM;

Frequency Band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
5,460 MHz to 5,470 MHz, and 5,725 MHz to 5,740 MHz	12.5 $\mu$ W or lower

(ii) In case of the modulation type is OFDM;

Frequency Band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
5,455 MHz to 5,460 MHz	2.5 $\mu$ W or lower
Greater than 5,460 MHz to 5,470 MHz, and 5,725 MHz to less than 5,740 MHz	12.5 $\mu$ W or lower
5,740 MHz to 5,745 MHz	2.5 $\mu$ W or lower

(2) When using emissions of a frequency of 5,510 MHz, 5,550 MHz, 5,590 MHz, 5,630 MHz, or 5,670 MHz:

Frequency Band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
5,420 MHz to 5,460 MHz	12.5 $\mu$ W or lower
Greater than 5,460 MHz to 5,470 MHz	50 $\mu$ W or lower
5,725 MHz to 5,760 MHz	12.5 $\mu$ W or lower

h The radio equipment shall comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications in addition to the conditions prescribed in items a to g 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

(This Part be omitted)

## Section 4.18 Radio Equipment of Radio Stations of an Access System in the 5 GHz Band (Article 49.21)

(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, half duplex operation, or duplex operation. However, for the radio equipment whose communication method is half duplex 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 In case of the occupied bandwidth is 19.7 MHz or less;
    - (i) The spread spectrum method that uses the direct spread method
    - (ii) The amplitude modulation method, phase modulation method, frequency modulation method, pulse modulation method, or a combination of these methods
    - (iii) The spread spectrum method that uses the orthogonal frequency division multiplexing method
  - b In case of the occupied bandwidth is greater than 19.7 MHz to 38 MHz; OFDM
- 3) The transmission burst length shall be 4 ms or less.
- 4) The antenna power shall be as follows;
  - a In case of the modulation type is OFDM
    - (i) In case of the occupied bandwidth is 19.7 MHz or less; the antenna power shall be 250 mW or less, and the antenna power within a bandwidth of 1 MHz shall be 50 mW or less.
    - (ii) In case of the occupied bandwidth is greater than 19.7 MHz to 38 MHz; the antenna power shall be 250 mW or less, and the antenna power within a bandwidth of 1 MHz shall be 25 mW or less.
  - b In case of the modulation type is other than a above; the antenna power shall be 250 mW or less, 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 isotropic 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.  
$$360(A/4) \text{ degree}$$

A represents the value determined by dividing an equivalent isotropic 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 40 MHz system (which refers to the system using emission of a frequency of 4,930 MHz and 4,970 MHz) whose occupied frequency bandwidth is higher than 19.7 MHz to 38 MHz (which is using for OFDM only); this also applies hereafter)  
The mean value of the power in an antenna terminal radiated into the  $\pm 19$  MHz band of the frequency 40 MHz and 80 MHz distant from the assigned frequency shall be 0.25 mW or less or 8  $\mu$ W or less respectively.
  - b 20 MHz system (which refers to the system whose occupied frequency bandwidth is higher than 9 MHz to 19.7 MHz; this also applies hereafter)  
The mean value of the power in an antenna terminal radiated into the  $\pm 9$  MHz band of the frequency 20 MHz and 40 MHz distant from the assigned frequency shall be 0.5 mW or less or 16  $\mu$ W or less respectively.
  - c 10 MHz system (which refers to the system whose occupied frequency bandwidth is higher than 4.5 MHz to 9 MHz; this also applies hereafter)  
The mean value of the power in an antenna terminal radiated into the  $\pm 4.5$  MHz band of the frequency 10 MHz and 20 MHz distant from the assigned frequency shall be 0.25 mW or less or 8  $\mu$ 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  $\pm 2.25$  MHz band of the frequency 5 MHz and 10 MHz distant from the assigned frequency shall be 0.125 mW or less or 4  $\mu$ W or less respectively.
- 10) The out-band leakage power shall comply with the conditions in the items below:
  - a 40 MHz system

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
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4,840 MHz to 4,870 MHz	2 $\mu$ W or less
Greater than 4,870 MHz to 4,880 MHz	2.5 $\mu$ W or less
Greater than 4,880 MHz to 4,900 MHz, and 5,000 MHz to less than 5,020 MHz	15 $\mu$ W or less
5,020 MHz to 5,060 MHz	2.5 $\mu$ W or less

b 20 MHz system

(i) When emissions of a frequency of higher than 4,900 MHz to 5,000 MHz are used

(a) In case of modulation type is not OFDM

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
4,880 MHz to 4,900 MHz and 5,000 MHz to 5,020 MHz	15 $\mu$ W or less

(b) In case of modulation type is OFDM

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
4,875 MHz to 4,880 MHz	2.5 $\mu$ W or less
Greater than 4,880 MHz to 4,900 MHz and 5,000 MHz to less than 5,020 MHz	15 $\mu$ W or less
5,020 MHz to 5,025 MHz	2.5 $\mu$ W or less

(ii) When emissions of a frequency of higher than 5,030 MHz to 5,090 MHz are used

(a) In case of modulation type is not OFDM

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
5,000 MHz to 5,020 MHz	30 $\mu$ W or less
Greater than 5,020 MHz to 5,030 MHz	1 mW or less
5,091 MHz to less than 5,100 MHz	0.5 mW or less
5,100 MHz to 5,120 MHz	15 $\mu$ W or less

(b) In case of modulation type is OFDM

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
4,995 MHz to 5,000 MHz	2.5 $\mu$ W or less
Greater than 5,000 MHz to 5,020 MHz	30 $\mu$ W or less
Greater than 5,020 MHz to 5,030 MHz	1 mW or less

5,091 MHz to less than 5,100 MHz	0.5 mW or less
5,100 MHz to 5,120 MHz	15 $\mu$ W or less
5,120 MHz to 5,125 MHz	2.5 $\mu$ W or less

c 10 MHz system

(i) When emissions of a frequency of higher than 4,900 MHz to 4,950 MHz are used

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
4,895 MHz to lower than 4,905 MHz and higher than 4,955 MHz to 4,965 MHz	15 $\mu$ W or less

(ii) When emissions of a frequency of higher than 5,030 MHz to 5,060 MHz are used

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
5,015 MHz to lower than 5,025 MHz	30 $\mu$ W or less
5,025 MHz to lower than 5,030 MHz	1 mW or less
Higher than 5,065 MHz to 5,075 MHz	15 $\mu$ W or less

d 5 MHz system

(i) When emissions of a frequency of higher than 4,900 MHz to 4,950 MHz are used

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
4,902.5 MHz to lower than 4,907.5 MHz and higher than 4,952.5 MHz to 4,957.5 MHz	15 $\mu$ W or less

(ii) When emissions of a frequency of higher than 5,030 MHz to 5,060 MHz are used

Frequency band	Equivalent isotropic radiated power within a bandwidth of 1 MHz
5,022.5 MHz to lower than 5,027.5 MHz	30 $\mu$ W or less
5,027.5 MHz to lower than 5,030 MHz	1 mW or less
Higher than 5,062.5 MHz to 5,067.5 MHz	15 $\mu$ W or less

11) The upper limit of the equivalent isotropic radiated power radiated within a bandwidth of  $\pm 10$  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  $\pm 10$  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  $\mu$ W or 0.2  $\mu$ W.

12) The radio equipment shall comply with the technical conditions notified separately by the

Minister of Internal Affairs and Communications 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(iii) and 2) b of the preceding paragraph shall be as follows;
      - (i) In the case of occupied bandwidth is 19.7 MHz or less, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.
      - (ii) In the case of occupied bandwidth is greater than 19.7 MHz to 38 MHz, the mean power within a bandwidth of 1 MHz shall be 5 mW or less.
    - b For the transmitting equipment that uses the modulation method prescribed in item 2) a(i) of the preceding paragraph, the mean power within a bandwidth of 1 MHz shall be 10 mW or less.
    - c For the transmitting equipment that uses the modulation method prescribed in item 2) a(ii) of the preceding paragraph, the mean power 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 isotropic 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.  
$$360/A \text{ degree}$$

A represents the value determined by dividing an equivalent isotropic 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 isotropic 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 isotropic radiated power radiated within a bandwidth of  $\pm 10$  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  $\pm 10$  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  $\mu$ 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 (Article 49.22)

(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  $\pm 42.5$  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 (Article 49.23)

(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 notified separately (\*) by the Minister of Internal Affairs and Communications in addition to the conditions prescribed in a to c.

(Notification: \* in No. 659 in 1997)

## Section 4.21 Radio Equipment of INMARSAT Portable Mobile Earth Stations (Article 49.24)

(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 notified separately (\*) by the Minister of Internal Affairs and Communications 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 notified separately (\*) by the Minister of Internal Affairs and Communications 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 notified separately (\*) by the Minister of Internal Affairs and Communications 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 ( $\theta$ ) 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=4.1θ 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 notified 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	Antenna which has a	40 degrees to less	Value obtained by the

does not have a function for performing communication by radio high-speed data-based communication	function for automatically tracking the direction of an artificial satellite station	than 90 degrees	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 notified separately (\*) by the Minister of Internal Affairs and Communications in addition to the conditions in the preceding three items.

(Notification: \* 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 ( $\theta$ ) 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	
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 notified separately by the Minister of Internal Affairs and Communications 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 notified separately by the Minister of Internal Affairs and Communications 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 ( $\theta$ ) from the direction of the principal radiation	Permissible value of the absolute gain
	The maximum equivalent isotropic radiated power is greater than 10 dB (where 1 watt is taken as 0 dB)	
120 degrees or more		$-5$ dB
The maximum equivalent isotropic 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 (Article 49.25)

(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 (Article 49.25.2)

(Radio Equipment of Radio Stations in the Land Mobile Service Using emissions of a Frequency in the 18 GHz Band)

**Article 49.25.2.** 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 notified separately by the Minister of Internal Affairs and Communications.
  - 8) In addition to the provisions in the preceding items, technical conditions to be separately notified by the Minister of Internal Affairs and Communications 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 4.24 Radio Equipment of Radio Stations, etc. of a Dedicated Short Range Communications (DSRC) (Article 49.26)

(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, simplex operation, half duplex operation, duplex operation, or broadcast operation which uses time division method is used for transmission from a base station of a DSRC, and a radio station that performs communication for testing a land mobile station of a DSRC to a land mobile station of a DSRC, one-way communication, half duplex operation, or duplex operation which uses time division multiple access method is used for transmission from a land mobile station of a DSRC to a base station of a DSRC, and a radio station that performs communication for testing a land mobile station of a DSRC.

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 notified separately (\*) by the Minister of Internal Affairs and Communications.

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  $\pm 2.2$  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  $\pm 2.2$  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  $\mu$ 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  $\mu$ 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  $\mu$ W or less.

## Section 4.25 Radio Equipment of Radio Stations of Ultra Wide-band Wireless System (UWB) (Article 49.27)

**Article 49.27** The radio equipment of a radio station of the Ultra Wide-band Wireless System shall comply with the conditions in the items below:

- 1) The communication method shall be Simplex operation, half duplex operation, or duplex operation.
- 2) The cabinet shall not be capable of being opened easily.
- 3) The radio equipment of radio station shall have an indication in an easily visible location on the cabinet to the effect that the transmission of the said radio equipment is possible only indoors.
- 4) The radio equipment which is not use an alternating-current source shall not be emit the radio wave until a receiving the signal from another radio equipment using an alternating-current source.
- 5) The antenna power of using frequency range shall be comply with the following values;
  - (a) The mean value of the power no greater than -41.3 dB (with 1 mW regard as 0 dB. The same apply (b)) in any 1 MHz band.
  - (b) The peak value of the power no greater than 0 dB in any 50 MHz band.
- 6) The antenna of the transmitting equipment; the absolute gain shall be 0 dB. However, when the equivalent isotropic radiated power is equal to or lower than the value obtained by applying the antenna power referred to the previous Item the transmitting antenna with its absolute gain being 0 dB, the shortage shall be compensated for by the gain of the transmitting antenna power.
- 7) The frequency bandwidth of upper and lower limit when the emission power of 10 dB below maximum emission power shall be 450 MHz or more.
- 8) The transmission speed shall be 50 Mbits/s or more. However, excluding in case of preventing any interferences from whether a noise or other radio station
- 9) The radio equipment using emission of frequencies between 3.4 GHz to lower than 4.8 GHz shall has a function of reducing any interference that comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications.

## Section 4.26 Radio Equipment of Radio Stations of Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access System

(The radio equipment of the radio station of Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access System)

**Article 49.28** The radio equipment of a base station of Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access, the radio equipment which a land mobile station or transmits emissions of a frequency in a range of higher than 2,545 MHz to 2,625 MHz at a radio station that performs communication, etc. for testing Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access equipment (which refers to a radio station which performs communication for testing or adjusting the radio equipment at base stations performing Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access or a radio station that relays the communication where portable radio communication between the base station and land mobile stations of the other party of communication is disabled; this also applies hereafter) shall comply with the conditions in the all items below:

### 1) General conditions

(a) The communication method shall be as follows;

- (i) The equipment which has a transmission burst length is 5 msec (shall be limit that complies with the conditions notified separately by the Minister of Internal Affairs and Communications.);

It shall be a multiplexing method in which combines Orthogonal Frequency Division Multiplexing method and Time Division Multiplexing is used for transmission from a base station or a land mobile relay station to a land mobile station, or from a base station to a land mobile relay station, and Time Division Duplex method in which uses Orthogonal Frequency Division Multiple Access method is used for transmission from a land mobile station or a land mobile relay station to a base station, or from a land mobile station to a land mobile relay station.

- (ii) The equipment which has a transmission burst length is a natural number multiple of 911.46 micro seconds or a frequency that added 1,070 micro seconds to natural number multiple of 911.46 micro seconds (shall be limit that complies with the conditions notified separately by the Minister of Internal Affairs and

Communications.);

It shall be Orthogonal Frequency Division Multiplexing method is used for transmission from a base station or a land mobile relay station to a land mobile station, or from a base station to a land mobile relay station, and time division duplex method in which uses Orthogonal Frequency Division Multiple Access method is used for transmission from a land mobile station or a land mobile relay station to a base station, or from a land mobile station to a land mobile relay station.

- (b) The transmitter of each land mobile station communicating with a base station or land mobile relay station shall be identified automatically.
  - (c) Switching from a speech channel of one base station or land mobile relay station to a speech channel of another base station shall be performed automatically. (Except a case of a forming the communication systems by land mobile stations which have transmitting antenna gain an exceeding 2 dB referred as the absolute antenna gain.).
  - (d) The radio equipment of a base station shall be capable of being connected to telecommunication circuit equipment.
- 2) Conditions for the transmitter
- (a) The modulation method shall be as follows;
    - (i) The equipment which has a transmission burst length is 5 msec;  
It shall be Binary Phase Shift Keying (BPSK), Quadrature Phase Shift Keying (QPSK), 16-Quadrature Amplitude modulation (16QAM), or 64-Quadrature Amplitude Modulation (64QAM) method is used for transmission from a base station or a land mobile relay station to a land mobile station, or from a base station to a land mobile relay station, and QPSK or 16QAM is used for transmission from a land mobile station or a land mobile relay station to a base station, or from a land mobile station to a land mobile relay station.
    - (ii) The equipment which has a transmission burst length is a natural number multiple of 911.46 micro seconds or a frequency that added 1,070 micro seconds to natural number multiple of 911.46 micro seconds;  
It shall be QPSK, 8- Phase Shift Keying (8PSK), 16QAM, or 64QAM method.
  - (b) The adjacent channel leakage power shall comply with the conditions notified separately by the Minister of Internal Affairs and Communications.
- 2 The radio equipment of a base station or land mobile relay station prescribed in the

preceding paragraph shall comply with all the conditions in the items below in addition to the conditions in the items of preceding paragraph.

- (a) The antenna power of transmitter shall be no greater than 20 watts.
  - (b) The transmitting antenna; the absolute gain shall be no greater than 25 dB.
  - (c) The leakage power of transmitter when the carrier is not transmitted shall be no greater than -30 dB (with 1 mW regards as 0 dB) within the frequency band of a transmitting band at an antenna terminal.
- 3 The radio equipment of a land mobile station prescribed in the paragraph 1 shall comply with all the conditions in the items below in addition to the conditions in the items of paragraph 1.
- (a) The antenna power of transmitter shall be no greater than 0.2 watts.
  - (b) The absolute gain of the transmitting antenna shall be as follows;
    - (i) The equipment which has a transmission burst length is 5 msec;  
It shall be no greater than 25 dB.
    - (ii) The equipment which has a transmission burst length is a natural number multiple of 911.46 micro seconds or a frequency that added 1,070 micro seconds to natural number multiple of 911.46 micro seconds;  
It shall be no greater than 0 dB.
  - (c) The leakage power of transmitter when the carrier is not transmitted shall be no greater than -30 dB (with 1 mW regards as 0 dB) within the frequency band of a transmitting band at an antenna terminal.
- 4 The radio equipment shall comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications in addition to the technical conditions prescribed in each item of the preceding paragraph.

#### Section 4.27 Radio Equipment of Radio Stations of Time Division/Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access System

(The radio equipment of the radio station of Time Division/Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access System)

**Article 49.29** The radio equipment of a base station of Time Division/Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access, the radio equipment which a land mobile station or transmits emissions of a frequency in a range of higher than 2,545 MHz to 2,625 MHz at a radio station that performs communication, etc. for testing Time Division/Orthogonal Frequency Division Multiple Access method Broad Band

Mobile Wireless Access equipment (which refers to a radio station which performs communication for testing or adjusting the radio equipment at base stations performing Time Division/Orthogonal Frequency Division Multiple Access method Broad Band Mobile Wireless Access or a radio station that relays the communication where portable radio communication between the base station and land mobile stations of the other party of communication is disabled; this also applies hereafter) shall comply with the conditions in the all items below:

1) General conditions

- (a) The communication method shall be a multiplexing method in which combines Orthogonal Frequency Division Multiplexing method and Time Division Multiplexing method, or a multiplexing method in which combines Orthogonal Frequency Division Multiplexing method, Time Division multiplexing method, and Space Division Multiplexing method is used for transmission from a base station or a land mobile relay station to a land mobile station, or from a base station to a land mobile relay station, and Time Division Duplex method in which combines in which uses connection method in which combines Orthogonal Frequency Division Multiple Access method and Time Division Multiple Access method, or Time Division Duplex method in which combines in which uses connection method in which combines Orthogonal Frequency Division Multiple Access method, Time Division Multiple Access method, and Space Division Multiple Access method is used for transmission from a land mobile station or a land mobile relay station to a base station, or from a land mobile station to a land mobile relay station.
- (b) The transmitter of each land mobile station communicating with a base station or land mobile relay station shall be identified automatically.
- (c) Switching from a speech channel of one base station or one land mobile relay station to a speech channel of another base station shall be performed automatically. (Except a case of a forming the communication systems by land mobile stations which have transmitting antenna gain an exceeding 4 dB referred as the absolute antenna gain.).
- (d) The radio equipment of a base station shall be capable of being connected to telecommunication circuit equipment.

2) Conditions for the transmitter

- (a) The modulation method shall be Binary Phase Shift Keying (BPSK), Quadrature Phase Shift Keying (QPSK), 16-Quadrature Amplitude modulation (16QAM), 32-QuadratureAmplitude Modulation (32QAM), 64-QuadratureAmplitude Modulation (64QAM), or 256-QuadratureAmplitude Modulation (256QAM) method.

- (b) The transmission burst length shall comply with the conditions notified separately by the Minister of Internal Affairs and Communications.
  - (c) The adjacent channel leakage power shall comply with the conditions notified separately by the Minister of Internal Affairs and Communications.
- 2 The radio equipment of a base station or land mobile relay station prescribed in the preceding paragraph shall comply with all the conditions in the items below in addition to the conditions in the items of preceding paragraph.
- (a) The antenna power of transmitter shall be no greater than 10 watts.
  - (b) The transmitting antenna; the absolute gain shall be no greater than 25 dB.
  - (c) The leakage power of transmitter when the carrier is not transmitted shall be no greater than -30 dB (with 1 mW regards as 0 dB) within the frequency band of a transmitting band at an antenna terminal.
- 3 The radio equipment of a land mobile station prescribed in the paragraph 1 shall comply with all the conditions in the items below in addition to the conditions in the items of paragraph 1.
- (a) The antenna power of transmitter shall be no greater than 0.2 watts.
  - (b) The absolute gain of the transmitting antenna shall be no greater than 25 dB.
  - (c) The leakage power of transmitter when the carrier is not transmitted shall be no greater than -30 dB (with 1 mW regards as 0 dB) within the frequency band of a transmitting band at an antenna terminal.
- 4 The radio equipment shall comply with the technical conditions notified separately by the Minister of Internal Affairs and Communications in addition to the technical conditions prescribed in each item of the preceding paragraph.

## Section 4.28 Radio Equipment of Radio Stations of Time Division/Frequency Division Multiple Access method Broad Band Mobile Wireless Access System

(The radio equipment of the radio station of Time Division/Frequency Division Multiple Access method Broad Band Mobile Wireless Access System)

**Article 49.30** The radio equipment of a base station of Time Division/Frequency Division Multiple Access method Broad Band Mobile Wireless Access, the radio equipment which a land mobile station or transmits emissions of a frequency in a range of higher than 2,545 MHz to 2,575 MHz or higher than 2,595 MHz to 2,625 MHz at a radio station that performs communication, etc. for testing Time Division/Frequency Division Multiple Access method Broad Band Mobile Wireless Access equipment (which refers to a radio station which performs

communication for testing or adjusting the radio equipment at base stations performing Time Division/Frequency Division Multiple Access method Broad Band Mobile Wireless Access or a radio station that relays the communication where portable radio communication between the base station and land mobile stations of the other party of communication is disabled; this also applies hereafter) shall comply with the conditions in the all items below:

- 1) General conditions
  - (a) The communication method shall be a multiplexing method in which combines Frequency Division Multiplexing method, Time Division Multiplexing method, and Space Division Multiplexing method is used for transmission from a base station to a land mobile station, and Time Division Duplex method in which uses connection method in which combines Frequency Division Multiple Access method, Time Division Multiple Access method, and Space Division Multiple Access method 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.
- 2) Conditions for the transmitter
  - (a) The modulation method shall be Binary Phase Shift Keying (BPSK), Quadrature Phase Shift Keying (QPSK), 8-Phase Shift Keying (8PSK), 12-Quadrature Amplitude modulation (12QAM), 16-Quadrature Amplitude modulation (16QAM), 24-Quadrature Amplitude Modulation (24QAM), 32-Quadrature Amplitude Modulation (32QAM), or 64-Quadrature Amplitude Modulation (64QAM) method.
  - (b) The transmission burst length shall comply with the conditions notified separately by the Minister of Internal Affairs and Communications.
  - (c) The adjacent channel leakage power shall comply with the conditions notified separately by the Minister of Internal Affairs and Communications.
- 2 The radio equipment of a base station prescribed in the preceding paragraph shall comply with all the conditions in the items below in addition to the conditions in the items of preceding paragraph.
  - (a) The antenna power of transmitter shall be as follows;
    - (i) The equipment of 5 MHz System (which applies the system that is constructed by adjacent carrier waves of 8 or less) shall be 19 watts or less.
    - (ii) The equipment of 10 MHz System (which applies the system that is constructed by

adjacent carrier waves more than 8 to 16) shall be 38 watts or less.

- (b) The absolute gain of the transmitting antenna shall be no greater than 11 dB.
  - (c) The leakage power of transmitter when the carrier is not transmitted shall be no greater than -60 dB (with 1 mW regards as 0 dB) in any 1 MHz band width at an antenna terminal.
- 3 The radio equipment of a land mobile station prescribed in the paragraph 1 shall comply with all the conditions in the items below in addition to the conditions in the items of paragraph 1.
- (a) The antenna power of transmitter shall be no greater than 0.5 watts.
  - (b) The absolute gain of the transmitting antenna shall be no greater than 4 dB.
  - (c) The leakage power of transmitter when the carrier is not transmitted shall be no greater than -65 dB (with 1 mW regards as 0 dB) in any 1 MHz band width at an antenna terminal.

## Section 5 Radio Equipment of Emergency Stations (Article 50)

(This Part be omitted)

## Section 6 Radio Equipment of Radio Stations for International Communication (Excluding International Broadcasting) (Articles 51-53)

(This Part be omitted)

## Section 7 Radio Equipment of Convenience Radio Stations (Article 54)

(This Part be omitted)

### Section 7.2 Radio Equipment of Citizen Radio Stations (Article 54.2)

(This Part be omitted)

#### Section 7.2.2 Radio Equipment of Small-Scale Earth Stations Whose

## Transmission Is Controlled by Another Earth Station (Article 54.3)

(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 ( $\theta$ )	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 Single-Channel Radio Stations Using a Single Sideband (Articles 55-57.2)

(This Part be omitted)

### Section 8 Radio Equipment of Radio Stations Using Angularly Modulated Emissions (Articles 57.3-58.2.2)

(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 PHS systems, base stations for PHS systems, radio stations that perform communication, etc. for testing PHS 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 notified separately (\*1) by the Minister of Internal Affairs and Communications 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 notified separately (\*2) by the Minister of Internal Affairs and Communications, 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  $\pm 2$  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  $\pm 4$  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  $\pm 8$  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  $\pm 2$  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  $\pm 4$  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  $\pm 8$  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.

(Notification(s): \*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 notified separately (\*1) by the Minister of Internal Affairs and Communications 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 half duplex 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  $\mu$ 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  $\mu$ 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  $\mu$ 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  $\mu$ 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 half duplex 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 notified separately (\*) by the Minister of Internal Affairs and Communications 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  $\pm 5$  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  $\pm 2.5$  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  $\pm 4.25$  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  $\pm 8$  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.

(Notification: \* 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 notified separately (\*) by the Minister of Internal Affairs and Communications 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 $\mu$ 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 $\mu$ 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 notified separately (\*2).

(Notification(s): \*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 notified separately (\*) by the Minister of Internal Affairs and Communications 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 $\mu$ 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 $\mu$ 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 $\mu$ 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 $\mu$ 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.

**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)**

(This Part be omitted)

**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)**

(This Part be omitted)

**Chapter V      High Frequency-Based Equipment**

(This Part be omitted)