

## The Outline of Proposed Amendment to Ministerial Ordinance

### 1. Item

Partial amendment of Ordinances and Notifications concerning the technical regulations for enhancing 700MHz bands intelligent transport system.

### 2. Amendment to Ministerial Ordinance

- Ordinance for Enforcement of the Radio Act [Partial amendment]
- Ordinance Regulating Radio Equipment [Partial amendment]

### 3. Reasons for amendment

In order to enhance service contents using 700MHz bands intelligent transport systems (ITS) and toughen the ITS infrastructure, in addition to existing Vehicle-to-Vehicle and Vehicle-to-Infrastructure communication, the government of Japan establishes the technical regulations on radio equipment for Infrastructure-to-Infrastructure communications using 700MHz bands.

### 4. Outline of the amendment

Technical Regulation on Vehicle-to-Vehicle, Vehicle-to-Infrastructure and Infrastructure-to-Infrastructure communications in 760MHz Band are established as follows:

General requirements	
Communication method	Communication method shall be broadcast communication, one-way communication or simplex operation.
Frequency band	$755.5\text{MHz} < f \leq 764.5\text{MHz}$

Technical requirements for radio equipment	
Antenna power	The antenna power shall provide a mean power within a bandwidth of 1,000kHz of 10mW or less.
Tolerance of antenna power	The tolerance of antenna power shall be within the range of +20% and -50%.(fixed station and base station) The tolerance of antenna power shall be within the range of +50% and -50%.(mobile station)

Tolerance of frequency	The tolerance of the frequency shall be $\pm 20 \times 10^{-6}$ (fixed station, base station and mobile station)		
Modulation method	Modulation method shall be orthogonal frequency division multiplexing.		
Permissible values for occupied bandwidth	9MHz or less		
Transmission rate	Transmission rate shall be 10Mbps or more. (fixed station) Transmission rate shall be 5Mbps or more. (base station and mobile station)		
Permissible values for unwanted emission intensity	Type of radio station	Frequency band	Limit on Secondary Emission
	Fixed station and Base station	$f \leq 710\text{MHz}$	Average power shall be 2.5 $\mu\text{W}$ or less in any 100kHz band.
		$710\text{MHz} < f \leq 750\text{MHz}$	Average power shall be 20 nW or less in any 100kHz band.
		$750\text{MHz} < f \leq 755\text{MHz}$	Average power shall be 100 $\mu\text{W}$ or less in any 100kHz band.
		$765\text{MHz} < f \leq 770\text{MHz}$	Average power shall be 100 $\mu\text{W}$ or less in any 100kHz band.
		$770\text{MHz} < f \leq 810\text{MHz}$	Average power shall be 320 pW or less in any 100kHz band.
		$810\text{MHz} < f \leq 1\text{GHz}$	Average power shall be 2.5 $\mu\text{W}$ or less in any 100kHz band.
$1\text{GHz} < f$		Average power shall be 2.5 $\mu\text{W}$ or less in any 1MHz band.	

Land mobile station	$f \leq 710\text{MHz}$	Average power shall be $2.5\mu\text{W}$ or less in any 100kHz band.	
	$710\text{MHz} < f \leq 750\text{MHz}$	Average power shall be $20\text{nW}$ or less in any 100kHz band.	
	$750\text{MHz} < f \leq 755\text{MHz}$	Average power shall be $100\mu\text{W}$ or less in any 100kHz band.	
	$765\text{MHz} < f \leq 770\text{MHz}$	Average power shall be $100\mu\text{W}$ or less in any 100kHz band.	
	$770\text{MHz} < f \leq 810\text{MHz}$	Average power shall be $10\text{nW}$ or less in any 100kHz band.	
	$810\text{MHz} < f \leq 1\text{GHz}$	Average power shall be $2.5\mu\text{W}$ or less in any 100kHz band.	
	$1\text{GHz} < f$	Average power shall be $2.5\mu\text{W}$ or less in any 1MHz band.	
Limit on secondary emission, etc.	Station	Frequency band	Limit on secondary emission
	Fixed station and Base station	$f \leq 770\text{MHz}$	Average power shall be $4\text{nW}$ or less in any 100kHz band.
		$770\text{MHz} < f \leq 810\text{MHz}$	Average power shall be $320\text{pW}$ or less in any 100kHz band.
		$810\text{MHz} < f \leq 1,000\text{MHz}$	Average power shall be $4\text{nW}$ or less in any 100kHz band.
		$1,000\text{MHz} < f$	Average power shall be

		4nW or less in any 1MHz band.
	land mobile station	$f \leq 1,000\text{MHz}$ Average power shall be 4nW or less in any 100kHz band.
		$1,000\text{MHz} < f$ Average power shall be 4nW or less in any 1MHz band.

Controller	
Interference prevention function	The radio equipment shall automatically transmit and receive identification sign.
Identification sign	48 bits or more
Carrier sensing device	In case of the power at a terminal of antenna is -53dBm or more, the radio wave shall not be emitted. (mobile station)
Transmission time control	Summation of transmission time of Vehicle-to-Infrastructure and Infrastructure-to-Infrastructure communications shall be 10.5ms or less in any 100ms (fixed station or base station). Summation of transmission time shall be 0.66ms or less in any 100ms and each transmission time shall be 0.33ms or less (land mobile station).

Antenna	
Antenna gain	The absolute gain of transmission antenna shall be 0dB or less. However, when the equivalent isotropically radiated power is less than the value which 10mW average transmission power (average power is 10mW in 1MHz) is added to transmission antenna whose absolute gain is 0dB, it can be compensated for shortfall up to 13dB(base station). When equivalent isotropically radiated power is smaller than

	value which 10mW average transmission power (average power is 10mW in 1MHz) is added to transmission antenna whose absolute gain is 0dB, it can be compensated for shortfall up to 5dB(mobile station).
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5. Proposed date of entry into force

July, 2017