The Outline of Proposed Amendment to Ministerial Ordinance

1. Item

Partial amendment of Regulations for Radio Equipment

- 2. Amendment to ministerial ordinance Amendment for Radio Equipment
- 3. Reasons for amendment

Regarding the existing satellite communication system using L-band based on the satellite constellation by non-geostationary satellites, the existing satellite operator is planning to upgrade the satellites in order to achieve high speed communication, and is also planning to utilize this satellite communication system for distress and safety communications of ships and aircrafts.

Responding these new usage needs for "Non-geostationary satellite system using advanced L-band", Japan will formulate the technical requirements for implementing this non-geostationary orbit satellite system using Advanced L-band.

4. Outline of the amendment

	Advanced L-band non-geosta			
Station Clace	Mobile earth station (except for GMDSS)	Aircraft earth station	Ship earth station (for GMDSS)	
condition	Appropriate measures shall be taken to prevent inappropriate use for promoting security, and to satisfy the Radio-radiation protection guidelines in order to countermeasure effects on the human body, etc.			
Frequency band	Service link: 1,618.25-1,626.5MHz In operating, Frequency band shall comply with the results of international coordination by the Radio Regulations.		and shall comply with the results on by the Radio Regulations.	
Transmitter				
Frequency tolerance	30×10 ⁻⁶			
tolerance	Upper limit 50%, Lower limit 50%			
unwanted emission a intensity	To meet Radio Regulations Appendix 3 and Recommendation ITU-R M.1343	To meet ETSI EN 301 473	To meet Radio Regulations Appendix 3 and Recommendation ITU-R M.1343	
	To meet Recommendation ITU-R M.1343	To meet ETSI EN 301 473E	To meet Recommendation ITU-R M.1343	
stop function	To meet Recommendation ITU-R M.1343			
Receiver				
Limit of secondary radiated emissions	Same as Power level when no carrier is transmitting			
Antenna				
	To keep at least 3 degrees from the horizontal plane	To meet Table 2	To keep at least 3 degrees from the horizontal plane	
Polarization	Right-handed circular polariz	zation	·	

Table 1 Basic technical requirements of radio equipment

Table 2 Additional technical requirements for aircraft earth stations

	al technical requirements for aircraft earth stations
System	Aircraft earth station of Advanced L-band non-geostationary system
Transmitter	
Power handling	To have 20W CW handling performance. For AES3, to design according to the maximum
performance	number of transmission carriers.
Antenna	
voltage	
standing wave	1.8 : 1
ratio	
Equivalent	Upper limit 9dBW, lower limit -4dBW of EIRP of one carrier.
isotropic	The average EIRP within the transmission burst time shall not exceed 15dBW minus
radiation power	antenna gain.
radiation power	For AES2 and AES3, to have the ability to control the radiated power level within a
Power control	back-off range of 8 dB and a step size of 1 dB.
Transmission	
	Operable at flight speeds below 800 knots (1480 km / h)
performance	
Receiver	The allowed is level shall be as followed
D	The allowable noise level shall be as follows.
Receive	Wideband: -124dBm @ 200kHz (desired signal level: -106dBm @ 35kHz)
sensitivity	Narrow band: -121dBm @ CW (same channel), -106dBm @ CW (adjacent channel),
	-66dBm @ CW (10ch apart)
Packet error	1x10 ⁻⁶
rate	
	Enable to receive and track the satellite downlink signal even under the interference
	signal of -10dBm, in the band of 470MHz to 18,000MHz except for the band of 0.95 \times
	1616 MHz to 1.05×1626.5 MHz.
	Enable to reduce the interference signal to a value obtained by linear interpolation from
	-50 dBm to -72 dBm between 0.95×1616 MHz and 0.99938×1616 MHz, and to a value
Interference	obtained by linear interpolation from -72 dBm to -10 dBm between 1.00062×1626.5
elimination	MHz and 1.05×1626.5 MHz.
Chilination	Enable to receive and track satellite downlink signals in the 1626.5 MHz to 1660.5 MHz
	band, even under -96 dBm CW interference signals, when there is no other AMS (R) S
	device in the same aircraft.
	Enable to receive and track satellite downlink signals in the 1626.5 MHz to 1660.5 MHz
	band, even under -2 dBm CW interference signals, when there is other AMS (R) S device
	in the same aircraft.
Reception	Operable at flight speeds below 800 knots (1480 km / h)
performance	
Antenna	
Minimum	
elevation angle	Satisfying requirements for antenna polarization, antenna gain, and axial ratio in the
of transmitting	range of elevation angle of 8° to 90°.
antenna	
Antenna gain	Minimum gain: -2 Weighted dBic, Maximum gain: 3 Weighted dBic
Axle ratio	2.5dB or lower
Comica	The decibel difference between the minimum antenna gain at the minimum elevation
Carrier	angle and the maximum antenna gain at the same elevation angle below the horizon shall
multipath	be larger than the minimum carrier multipath difference.
difference	Minimum carrier multipath difference shall be greater than 3dB.
Type of aircraft e	

Type of aircraft earth station

AES1: Consists of one Short Burst Data (SBD) transceiver and one Passive Low Gain Antenna (LGA)

AES2: Consists of one or two L-band transceivers and one passive LGA

AES3: Consists of two or more SBD and / or L-band transceivers and one Passive LGA

Table 3 Additional technical requirements for Ship earth stationsSystemShip earth station of Advanced L-band non-geostationary system

System	Ship earth station of Advanced L-band non-geostationary system (for GMDSS)	
General Condition		
Other requirements	Required functions, interfaces, identification of ship earth stations, transmission of distress alerts/calls, reception of distress, urgency and safety alerts/calls, audible signal and visual indications, test facilities, Enhanced Group Call (EGC) communications including Maritime Safety Information (MSI), position updating, power and energy supply, and antenna locations shall comply with IMO resolution MSC.434 (98). Safety precautions and maintenance shall comply with IMO Resolution A.694 (17).Labeling and identification shall comply with IMO Resolution MSC.434 (98) and IMO Resolution A.694 (17).	

5. Proposed date of entry into force

July, 2020