

RECOMMENDATION ITU-R SM.1045-1

FREQUENCY TOLERANCE OF TRANSMITTERS

(Question ITU-R 54/1)

(1994-1997)

The ITU Radiocommunication Assembly,

considering

- a) that Appendix 7 (S2) to the Radio Regulations (RR) specifies permissible frequency tolerances applicable to certain categories of stations in the frequency range from 9 kHz to 40 GHz;
- b) that in many cases tighter frequency tolerances may contribute to a better utilization of the radio-frequency spectrum;
- c) that due to technological progress, transmitters with more stringent frequency stability than required by RR Appendix 7 (S2), can be manufactured at reasonable costs;
- d) that it may be desirable to revise RR Appendix 7 (S2);
- e) that long-term design objectives for frequency tolerances of transmitters should be developed based on an improvement of radio-frequency spectrum utilization and the operational, technical and economical requirements of the various radio services,

recommends

- 1 that the frequency tolerances given in column 1 of Table 1 should be applied for the installation of new stations;
- 2 that more stringent values than those given in column 1 of Table 1 should be used when operational and technical reasons require;
- 3 that the values given in column 2 of Table 1 for some frequency bands and categories of stations should be taken into consideration as the long-term design objective of transmitters based on advances in technology;
- 4 that further studies should be carried out by Radiocommunication Study Groups and administrations to determine long-term objective values of frequency tolerance for frequency bands and categories of stations for which values cannot be set at present in column 2 of Table 1.

TABLE 1

1 Transmitter frequency tolerance is defined in RR Article 1 (S1) and is expressed in parts in 10^6 , unless otherwise indicated $\pm 10^{-6}$.

2 The power shown for the various categories of stations is the peak envelope power (pep) for single-sideband transmitters and the mean power for all other transmitters, unless otherwise indicated. The term "power of a radio transmitter" is defined in RR Article 1 (S1).

Frequency bands (lower limits exclusive, upper limits inclusive)	Categories of stations	Frequency tolerance	
		Achievable now (Column 1)	Long-term design objective (Column 2)
9-1 606.5 kHz	Fixed (9-50 kHz)	100	12 Hz
	Fixed (50-240 kHz)	50	
	Fixed (240-535 kHz)	50	
	Land/coast	100 ⁽¹⁾	

TABLE 1 (Continued)

Frequency bands (lower limits exclusive, upper limits inclusive)	Categories of stations	Frequency tolerance	
		Achievable now (Column 1)	Long-term design objective (Column 2)
9-1 606.5 kHz (<i>Cont.</i>)	Land/coast – digital selective calling (DSC)	10 Hz	> 200 W, 50)
	Land/aeronautical	100	
	Mobile/ship, emergency, survival	20 Hz ⁽²⁾	
	Mobile/ship – DSC	10 Hz	
	Mobile/aircraft	100	20 Hz
	Land mobile	100	
	Radiodetermination	100	
	Broadcasting	10 Hz	
1 606.5-4 000 kHz	Fixed	15	50
	Fixed – single sideband (SSB) radiotelephony	20 Hz	
	Fixed – frequency shift keying (FSK) radiotelegraphy and data transmission	10 Hz	
	Land/coast, aeronautical, base	50 (≤ 200 W, 100) ⁽¹⁾	
	Land/coast, base – SSB radiotelephony	20 Hz	
	Land/coast – DSC	10 Hz	
	Land/aeronautical – SSB	10 Hz	
	Mobile/ship	20 Hz (A1A, 50) ⁽²⁾	
	Mobile/ship – DSC	10 Hz	50
	Mobile/survival	20 Hz	
	Mobile/aircraft, emergency position-indicating radiobeacons (EPIRBs)	100	
	Mobile/aircraft – SSB	20 Hz	
	Mobile/land	50	
	Mobile/land – SSB radiotelephony, FSK radiotelegraphy	40 Hz	
	Radiodetermination	10 (≤ 200 W, 20)	
	Broadcasting	10 Hz	
4-29.7 MHz	Fixed	10	
	Fixed – SSB radiotelephony	20 Hz	
	Fixed – radio telegraphy and data transmission	10 Hz	
	Land/coast	20 Hz ⁽¹⁾	
	Land/coast – A1A	10	
	Land/coast – DSC	10 Hz	
	Land/aeronautical	50 (≤ 500 W, 100)	
	Land/aeronautical – SSB	10 Hz	
	Land/base	20	
	Land/base – SSB radiotelephony	20 Hz (≤ 500 W, 50 Hz)	
	Mobile/ship	50 Hz ^{(2), (3)}	
	Mobile/ship – A1A	10	
	Mobile/ship – DSC	10 Hz	
	Mobile/survival	50 Hz	
	Mobile/aircraft	100	