VOLUME 4

**ITU-R Recommendations incorporated by reference[[1]](#footnote-1)\***

TABLE OF CONTENTS

*Page*

Rec. ITU-R TF.460-6 Standard-frequency and time-signal emissions 1

Rec. ITU-R M.489-2 Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz 7

Rec. ITU-R M.492-6 Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service 9

Rec. ITU-R P.525-4 Calculation of free-space attenuation 19

Rec. ITU-R P.526-15 Propagation by diffraction 23

Rec. ITU-R M.541-11 Operational procedures for the use of digital selective calling equipment in the maritime mobile service 65

Rec. ITU-R M.585-9 Assignment and use of identities in the maritime mobile service *(Annex 1)* 113

Rec. ITU-R M.633-5 Transmission characteristics of a satellite emergency position-indicating radio beacon (satellite EPIRB) operating through a satellite system in the 406.0-406.1 MHz band 125

Rec. ITU-R S.672-4 Satellite antenna radiation pattern for use as a design objective in the fixed-satellite service employing geostationary satellites 127

Rec. ITU-R M.690-3 Technical characteristics of emergency position-indicating radio beacons operating on the carrier frequencies of 121.5 MHz and 243 MHz 153

Rec. ITU-R RA.769-2 Protection criteria used for radio astronomical measurements   
*(parts related to the application of No. 5.372)* 155

Rec. ITU-R P.838-3 Specific attenuation model for rain for use in prediction methods 167

Rec. ITU-R M.1084-5 Interim solutions for improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service 175

Rec. ITU-R SM.1138-3 Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions 187

*Page*

Rec. ITU-R SA.1154-0 Provisions to protect the space research (SR), space operations (SO) and Earth-exploration satellite services (EES) and to facilitate sharing with the mobile service in the 2 025-2 110 MHz and 2 200-2 290 MHz bands 195

Rec. ITU-R M.1171-1 Radiotelephony procedures for routine calls in the maritime mobile service 225

Rec. ITU-R M.1172-0 Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service 235

Rec. ITU-R M.1173-1 Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz 269

Rec. ITU-R M.1174-4 Technical characteristics of equipment used for on-board vessel communications in the bands between 450 and 470 MHz 271

Rec. ITU-R M.1187-1 A method for the calculation of the potentially affected region for a mobile-satellite service network in the 1-3 GHz range using circular orbits 275

Rec. ITU-R S.1256-0 Methodology for determining the maximum aggregate power flux-density at the geostationary-satellite orbit in the band 6 700-7 075 MHz from feeder links of non-geostationary satellite systems in the mobile-satellite service in the space‑to‑Earth direction 281

Rec. ITU-R RS.1260-2 Feasibility of sharing between active spaceborne sensors and other services in the range 420-470 MHz 289

Rec. ITU-R BO.1293-2 Protection masks and associated calculation methods for interference into broadcast-satellite systems involving digital emissions 303

Rec. ITU-R S.1340-0 Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the Earth-to-space direction in the band 15.4-15.7 GHz 315

Rec. ITU-R S.1428-1 Reference FSS earth-station radiation patterns for use in interference assessment involving non-GSO satellites in frequency bands between 10.7 GHz and 30 GHz 331

Rec. ITU-R BO.1443-3 Reference BSS earth station antenna patterns for use in interference assessment involving non-GSO satellites in frequency bands covered by RR Appendix 30 335

Rec. ITU-R RA.1513-2 Levels of data loss to radio astronomy observations and percentage-of-time criteria resulting from degradation by interference for frequency bands allocated to the radio astronomy service on a primary basis 343

Rec. ITU-R M.1583-1 Interference calculations between non-geostationary mobile-satellite service or radionavigation-satellite service systems and radio astronomy telescope sites 357

Rec. ITU-R S.1586-1 Calculation of unwanted emission levels produced by a non‑geostationary fixed-satellite service system at radio astronomy sites 365

Rec. ITU-R F.1613-0 Operational and deployment requirements for fixed wireless access systems in the fixed service in Region 3 to ensure the protection of systems in the Earth exploration-satellite service (active) and the space research service (active) in the band 5 250-5 350 MHz 373

Rec. ITU-R RA.1631-0 Reference radio astronomy antenna pattern to be used for compatibility analyses between non-GSO systems and radio astronomy service stations based on the epfd concept 389

*Page*

Rec. ITU-R M.1642-2 Methodology for assessing the maximum aggregate equivalent power flux-density at an aeronautical radionavigation service station from all radionavigation-satellite service systems operating in the 1 164-1 215 MHz band 393

Rec. ITU-R M.1643-0 Technical and operational requirements for aircraft earth stations of aeronautical mobile-satellite service including those using fixed-satellite service network transponders in the band 14-14.5 GHz (Earth-to-space) 409

Rec. ITU-R M.1652-1 Dynamic frequency selection in wireless access systems including radio local area networks for the purpose of protecting the radiodetermination service in the 5 GHz band   
*(Annexes 1 and 5)* 415

Rec. ITU-R M.1827-1 Guideline on technical and operational requirements for stations of the aeronautical mobile (R) service limited to surface application at airports in the frequency band 5 091-5 150 MHz 433

Rec. ITU-R M.2013-0 Technical characteristics of, and protection criteria for non-ICAO aeronautical radionavigation systems, operating around 1 GHz 437

Rec. ITU-R RS.2065-0 Protection of space research service (SRS) space-to-Earth links in the 8 400‑8 450 MHz and 8 450-8 500 MHz bands from unwanted emissions of synthetic aperture radars operating in the Earth exploration-satellite service (active) around 9 600 MHz 447

Rec. ITU-R RS.2066-0 Protection of the radio astronomy service in the frequency band 10.6-10.7 GHz from unwanted emissions of synthetic aperture radars operating in the Earth exploration-satellite service (active) around 9 600 MHz 455

Rec. ITU-R S.2157-0 Procedures for the evaluation of interference from any non-geostationary-satellite system into a global set of the generic geostationary-satellite reference links in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) 463

Cross-reference list of the regulatory provisions, including footnotes and Resolutions, incorporating ITU-R Recommendations by reference 479

1. \* In some of these Recommendations, which were adopted prior to 1 January 2001, the prefix “S” before the references to RR is still maintained until the concerned Recommendation is modified according to the standard procedures. [↑](#footnote-ref-1)