



**Recommendation ITU-R M.1471-1**  
(01/2010)

**Guide to the application of the  
methodologies to facilitate coordination and  
use of frequency bands shared between the  
mobile-satellite service and the fixed  
service in the frequency range 1-3 GHz**

**M Series**  
**Mobile, radiodetermination, amateur  
and related satellite services**

## Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

## Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

### Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
<b>BO</b>	Satellite delivery
<b>BR</b>	Recording for production, archival and play-out; film for television
<b>BS</b>	Broadcasting service (sound)
<b>BT</b>	Broadcasting service (television)
<b>F</b>	Fixed service
<b>M</b>	<b>Mobile, radiodetermination, amateur and related satellite services</b>
<b>P</b>	Radiowave propagation
<b>RA</b>	Radio astronomy
<b>RS</b>	Remote sensing systems
<b>S</b>	Fixed-satellite service
<b>SA</b>	Space applications and meteorology
<b>SF</b>	Frequency sharing and coordination between fixed-satellite and fixed service systems
<b>SM</b>	Spectrum management
<b>SNG</b>	Satellite news gathering
<b>TF</b>	Time signals and frequency standards emissions
<b>V</b>	Vocabulary and related subjects

*Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.*

Electronic Publication  
Geneva, 2010

© ITU 2010

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without written permission of ITU.

## RECOMMENDATION ITU-R M.1471-1\*

**Guide to the application of the methodologies to facilitate coordination  
and use of frequency bands shared between  
the mobile-satellite service and the fixed service  
in the frequency range 1-3 GHz**

(Questions ITU-R 201/4 and ITU-R 118/5)

(2000-2010)

**Scope**

This Recommendation provides an analytical index which identifies several ITU-R Recommendations addressing various aspects of frequency sharing between the fixed service (FS) and mobile-satellite service (MSS). It also categorizes these Recommendations in order to facilitate their application.

The ITU Radiocommunication Assembly,

*considering*

- a) that various portions of the 1-3 GHz frequency range are allocated to the fixed service (FS) and that this service continues to be extensively used by many administrations;
- b) that recent world radiocommunication conferences have made new allocations to the MSS in the 1-3 GHz range;
- c) that most of the new allocations for the MSS in the 1-3 GHz range have been established in frequency bands that were already allocated to the fixed service;
- d) that numerous ITU-R Recommendations have been established regarding various aspects of frequency sharing between the fixed service and MSS, and that an analytical index which identifies and categorizes these Recommendations will facilitate their application;
- e) that in accordance with the Radio Regulations (RR) Article 9 and Appendix 7, a coordination area is determined to identify fixed service stations which could affect or be affected by the operation of mobile earth stations (MESs), and analyses, if required, may be needed in the course of coordination to further define the potential for interference and identify design and operating constraints that may be needed to resolve any difficulties;
- f) that in order to prevent interference between MSS (space-to-Earth) transmissions and receiving fixed service stations, the RR specify thresholds of pfd and fractional degradation in performance as well as a system-specific methodology (RR Appendix 5) to determine whether coordination is required, and analyses may be needed in the course of coordination to define the potential for interference and design and operating constraints that may be needed to resolve any difficulties,

*recognizing*

- a) that the specific factors and methodologies applied in the course of coordination are subject to agreement of the parties concerned, and that the relevant ITU-R Recommendations are intended to provide impartial technical advice that may facilitate the coordination process;

---

\* This Recommendation should be brought to the attention of Radiocommunication Study Group 5.

- b) that the technical aspects of coordination of frequency assignments for fixed service and MSS systems are complex and may require application of analyses using complicated computer software;
- c) that the availability of ITU-R Recommendations relevant to coordination of fixed service and MSS frequency assignments may be particularly beneficial to developing countries in relation to protection of their fixed service systems, their introduction of MSS systems within their territories, and the introduction of MSS systems in neighbouring territories;
- d) that administrations are submitting to the ITU Radiocommunication Bureau computer software that has been developed to facilitate bilateral coordination,

*recommends*

**1** that the following ITU-R Recommendations may be considered in the coordination of fixed service stations with MESSs (see Note 1):

- Recommendation ITU-R M.1469 – Methodology for evaluating potential for interference from time division multiple access/frequency division multiple access (TDMA/FDMA) mobile-satellite service (MSS) Earth-to-space transmissions into line-of-sight fixed service receivers in the frequency range 1-3 GHz;
- Recommendation ITU-R M.1474 – Methodology to evaluate the impact of interference from time division multiple access/frequency division multiple access (TDMA/FDMA) mobile-satellite service (MSS) systems on baseband performance in digital line-of-sight fixed service receivers based on statistics of radio-frequency interference in the frequency range 1-3 GHz;
- Recommendation ITU-R F.1245 – Mathematical model of average and related radiation patterns for line-of-sight point-to-point radio-relay system antennas for use in certain coordination studies and interference assessment in the frequency range from 1 GHz to about 70 GHz;

**2** that the following ITU-R Recommendations may also be considered in the coordination of fixed service systems with MSS (space-to-Earth) systems (see Note 1):

- Recommendation ITU-R M.1141 – Sharing in the 1-3 GHz frequency range between non-geostationary space stations operating in the mobile-satellite service and stations in the fixed service;
- Recommendation ITU-R M.1142 – Sharing in the 1-3 GHz frequency range between geostationary space stations operating in the mobile-satellite service and stations in the fixed service;
- Recommendation ITU-R M.1143 – System specific methodology for coordination of non-geostationary space stations (space-to-Earth) operating in the mobile-satellite service with the fixed service;
- Recommendation ITU-R M.1319 – The basis of a methodology to assess the impact of interference from time division multiple access/frequency division multiple access (TDMA/FDMA) mobile-satellite service (MSS) (space-to-Earth) transmissions on the performance of line-of-sight fixed service receivers in the frequency range 1-3 GHz;
- Recommendation ITU-R F.1108 – Determination of the criteria to protect fixed service receivers from the emissions of space stations operating in non-geostationary orbits in shared frequency bands;
- Recommendation ITU-R F.699 – Reference radiation patterns for fixed wireless system antennas for use in coordination studies and interference assessment in the frequency range from 100 MHz to about 70 GHz;

- Recommendation ITU-R F.1245 – Mathematical model of average and related radiation patterns for line-of-sight point-to-point radio-relay system antennas for use in certain coordination studies and interference assessment in the frequency range from 1 GHz to about 70 GHz;
- Recommendation ITU-R M.1472 – Methodology to evaluate the impact of interference from time division multiple access/frequency division multiple access (TDMA/FDMA) mobile-satellite service (MSS) (space-to-Earth) transmissions on baseband performance in frequency division multiplexing-frequency modulation (FDM-FM) analogue line-of-sight fixed service receivers in the frequency range 1-3 GHz;
- Recommendation ITU-R M.1473 – Methodology to evaluate the impact of interference from time division multiple access/frequency division multiple access (TDMA/FDMA) mobile-satellite service (MSS) (space-to-Earth) transmissions on video baseband performance in TV-FM analogue line-of-sight fixed service receivers in the frequency range 1-3 GHz;
- Recommendation ITU-R M.1474 – Methodology to evaluate the impact of interference from time division multiple access/frequency division multiple access (TDMA/FDMA) mobile-satellite service (MSS) systems on baseband performance in digital line-of-sight fixed service receivers based on statistics of radio-frequency interference in the frequency range 1-3 GHz;

**3** that the following ITU-R Recommendations may also be considered in assessments of the potential for interference from fixed service transmitters to MSS space station receivers (see Note 1):

- Recommendation ITU-R M.1141 – Sharing in the 1-3 GHz frequency range between non-geostationary space stations operating in the mobile-satellite service and stations in the fixed service;
- Recommendation ITU-R M.1142 – Sharing in the 1-3 GHz frequency range between geostationary space stations operating in the mobile-satellite service and stations in the fixed service;
- Recommendation ITU-R F.699 – Reference radiation patterns for fixed wireless system antennas for use in coordination studies and interference assessment in the frequency range from 100 MHz to about 70 GHz;

**4** that the technical guidance and planning tool provided in Recommendation ITU-R F.1335 may be considered when planning the transition of fixed service systems from the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all Regions, and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2.

NOTE 1 – This list should be expanded, as appropriate, and it should be considered establishing a finer categorization of the ITU-R Recommendations included in the list.

---