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| **Radiocommunication Assembly (RA-15)Geneva, 26-30 October 2015** |  |
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| Radiocommunication Study Group 5 |
| terrestrial SERVICES |
| LIST OF RECOMMENDATIONS |
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# ITU-R F-series of Recommendations

# ITU-R M-series of Recommendations

# ITU-R SF-series of Recommendations

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| **NOC** = Maintained | **MOD** = Revised | **SUP** =Deleted | **ADD** =New text | **UNA** = Undergoing approval |

ITU-R F-series of Recommendations

Fixed service

| Rec.ITU-R | Recommendation title | Actionby RA-15 | Comments |
| --- | --- | --- | --- |
| **F.106-2** | The use of diversity for voice-frequency telegraphy on HF radio circuits | NOC |  |
| **F.162-3** | Use of directional transmitting antennas in the fixed service operating in bands below about 30 MHz | NOC |  |
| **F.240-7** | Signal-to-interference protection ratios for various classes of emission in the fixed service below about 30 MHz | NOC |  |
| **F.246-3** | Frequency-shift keying | NOC |  |
| [**F.302**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.302)**-3** | Limitation of interference from trans-horizon radio-relay systems | NOC |  |
| [**F.338**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.338)**-2** | Bandwidth required at the output of a telegraph or telephone receiver | NOC |  |
| [**F.339**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.339)**-8** | Bandwidths, signal-to-noise ratios and fading allowances in HF fixed and land mobile radiocommunication systems | NOC |  |
| [**F.348**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.348)**-4** | Arrangement of channels in multi-channel single-sideband and independent-sideband transmitters for long-range circuits operating at frequencies below about 30 MHz | NOC |  |
| **F.382-8** | Radio-frequency channel arrangements for fixed wireless systems operating in the 2 and 4 GHz bands | NOC |  |
| **F.383-9** | Radio-frequency channel arrangements for high-capacity fixed wireless systems operating in the lower 6 GHz (5 925 to 6 425 MHz) band | NOC |  |
| **F.384-11** | Radio-frequency channel arrangements for medium- and high-capacity digital fixed wireless systems operating in the 6 425-7 125 MHz band | NOC |  |
| **F.385-10** | Radio-frequency channel arrangements for fixed wireless systems operating in the 7 110-7 900 MHz band | NOC |  |
| **F.386-9** | Radio-frequency channel arrangements for fixed wireless systems operating in the 8 GHz (7 725 to 8 500 MHz) band | NOC |  |
| **F.387-12** | Radio-frequency channel arrangements for fixed wireless systems operating in the 10.7-11.7 GHz band | NOC |  |
| [**F.454**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.454)**-1** | Pilot carrier level for HF single-sideband and independent‑sideband reduced-carrier systems | NOC |  |
| [**F.497**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.497)**-7** | Radio-frequency channel arrangements for fixed wireless systems operating in the 13 GHz (12.75-13.25 GHz) frequency band  | NOC |  |
| [**F.556**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.556)**-1** | Hypothetical reference digital path for radio-relay systems which may form part of an integrated services digital network with a capacity above the second hierarchical level | NOC |  |
| [**F.557**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.557)**-5** | Availability objective for radio-relay systems over a hypothetical reference digital path | NOC |  |
| [**F.592**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.592)**-4** | Vocabulary of terms for the fixed service | NOC |  |
| [**F.594**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.594)**-4** | Error performance objectives of the hypothetical reference digital path for radio-relay systems providing connections at a bit rate below the primary rate and forming part or all of the high grade portion of an integrated services digital network | NOC |  |
| [**F.595**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.595)**-10** | Radio-frequency channel arrangements for fixed wireless systems operating in the 17.7-19.7 GHz frequency band | NOC |  |
| [**F.612**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.612) | Measurement of reciprocal mixing in HF communication receivers in the fixed service | NOC |  |
| [**F.613**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.613) | The use of ionospheric channel sounding systems operating in the fixed service at frequencies below about 30 MHz | NOC |  |
| [**F.634**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.634)**-4** | Error performance objectives for real digital radio-relay links forming part of the high-grade portion of international digital connections at a bit rate below the primary rate within an integrated services digital network | NOC |  |
| [**F.635**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.635)**-7** | Radio-frequency channel arrangements based on a homogeneous pattern for fixed wireless systems operating in the 4 GHz (3 400-4 200 MHz) band | NOC |  |
| [**F.636**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.636)**-4** | Radio-frequency channel arrangements for fixed wireless systems operating in the 14.4-15.35 GHz band | NOC |  |
| [**F.637**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.637)**-4** | Radio-frequency channel arrangements for fixed wireless systems operating in the 21.2-23.6 GHz band  | NOC |  |
| [**F.695**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.695) | Availability objectives for real digital radio-relay links forming part of a high-grade circuit within an integrated services digital network | NOC |  |
| [**F.696**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.696)**-2** | Error performance and availability objectives for hypothetical reference digital sections forming part or all of the medium‑grade portion of an ISDN connection at a bit rate below the primary rate utilizing digital radio-relay systems | NOC |  |
| [**F.697**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.697)**-2** | Error performance and availability objectives for the local-grade portion at each end of an ISDN connection at a bit rate below the primary rate utilizing digital radio-relay systems | NOC |  |
| [**F.698**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.698)**-2** | Preferred frequency bands for trans-horizon radio-relay systems | NOC |  |
| [**F.699**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.699)**-7** | 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 | NOC |  |
| [**F.701**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.701)**-2** | Radio-frequency channel arrangements for digital point-to-multipoint radio systems operating in frequency bands in the range 1 350 to 2 690 MHz (1.5, 1.8, 2.0, 2.2, 2.4 and 2.6 GHz) | NOC |  |
| [**F.746**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.746)**-10** | Radio-frequency arrangements for fixed service systems | NOC |  |
| [**F.747**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.747)**-1** | Radio-frequency channel arrangements for fixed wireless system operating in the 10.0-10.68 GHz band | NOC |  |
| [**F.748**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.748)**-4** | Radio-frequency arrangements for systems of the fixed service operating in the 25, 26 and 28 GHz bands | NOC |  |
| [**F.749**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.749)**-3** | Radio-frequency arrangements for systems of the fixed service operating in sub-bands in the 36-40.5 GHz band | NOC |  |
| [**F.750**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.750)**-4** | Architectures and functional aspects of radio-relay systems for synchronous digital hierarchy (SDH)-based network | NOC |  |
| [**F.751**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.751)**-2** | Transmission characteristics and performance requirements of radio-relay systems for SDH-based networks | NOC |  |
| [**F.752**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.752)**-2** | Diversity techniques for point-to-point fixed wireless systems | NOC |  |
| [**F.755**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.755)**-2** | Point-to-multipoint systems used in the fixed service | NOC |  |
| **F.757-4** | Basic system requirements and performance objectives for fixed wireless access using mobile-derived technologies offering telephony and data communication services | NOC |  |
| [**F.758**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.758)**-6** | System parameters and considerations in the development of criteria for sharing or compatibility between digital fixed wireless systems in the fixed service and systems in other services and other sources of interference | NOC |  |
| [**F.763**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.763)**-5** | Data transmission over HF circuits using phase shift keying or quadrature amplitude modulation | NOC |  |
| [**F.764**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.764)**-1** | Minimum requirements for HF radio systems using a packet transmission protocol | NOC |  |
| [**F.1093**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1093)**-2** | Effects of multipath propagation on the design and operation of line-of-sight digital fixed wireless systems | NOC |  |
| **F.1094-2** | Maximum allowable error performance and availability degradations to digital fixed wireless systems arising from radio interference from emissions and radiations from other sources | NOC |  |
| [**F.1095**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1095) | A procedure for determining coordination area between radio‑relay stations of the fixed service | NOC |  |
| **F.1096-1** | Methods of calculating line-of-sight interference into fixed wireless systems to account for terrain scattering | NOC |  |
| [**F.1097**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1097)**-1** | Interference mitigation options to enhance compatibility between radar systems and digital radio-relay systems | NOC |  |
| [**F.1098**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1098)**-1** | Radio-frequency channel arrangements for fixed wireless systems in the 1 900-2 300 MHz band  | NOC |  |
| [**F.1099**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1099)**-5** | Radio-frequency channel arrangements for high- and medium-capacity digital fixed wireless systems in the upper 4 GHz (4 400‑5 000 MHz) band | NOC |  |
| [**F.1101**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1101) | Characteristics of digital fixed wireless systems below about 17 GHz | NOC |  |
| [**F.1102**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1102)**-2** | Characteristics of fixed wireless systems operating in frequency bands above about 17 GHz | NOC |  |
| [**F.1103**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1103)**-1** | Basic requirements and technologies for fixed wireless access systems operating in bands below 3 GHz for the provision of wireless subscriber connections in rural areas | NOC |  |
| [**F.1105**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1105)**-3** | Fixed wireless systems for disaster mitigation and relief operations | NOC |  |
| [**F.1106**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1106) | Effects of propagation on the design and operation of trans‑horizon radio-relay systems | NOC |  |
| **F.1107-2** | Probabilistic analysis for assessing interference into the fixed service from satellites using the geostationary orbit | NOC |  |
| [**F.1108**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1108)**-4** | Determination of the criteria to protect fixed service receivers from the emissions of space stations operating in non-geostationary orbits in shared frequency bands | NOC |  |
| [**F.1110**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1110)**-3** | Adaptive radio systems for frequencies below about 30 MHz | NOC |  |
| [**F.1111**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1111)**-1** | Improved Lincompex system for HF radiotelephone circuits | NOC |  |
| [**F.1112**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1112)**-1** | Digitized speech transmissions for systems operating below about 30 MHz | NOC |  |
| [**F.1113**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1113) | Radio systems employing meteor-burst propagation | NOC |  |
| [**F.1190**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1190) | Protection criteria for digital radio-relay systems to ensure compatibility with radar systems in the radiodetermination service | NOC |  |
| **F.1191-3** | Necessary and occupied bandwidths and unwanted emissions of digital fixed service systems | NOC |  |
| [**F.1192**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1192) | Traffic capacity of automatically controlled radio systems and networks in the HF fixed service | NOC |  |
| [**F.1242**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1242) | Radio-frequency channel arrangements for digital radio systems operating in the range 1 350 MHz to 1 530 MHz | NOC |  |
| [**F.1243**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1243) | Radio-frequency channel arrangements for digital radio systems operating in the range 2 290-2 670 MHz | NOC |  |
| [**F.1245**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1245)**-2** | Mathematical model of average an related radiation patterns for line-of-sight point-to-point fixed wireless system antennas for use in certain coordination studies and interference assessment in the frequency range from 1 GHz to about 70 GHz | NOC |  |
| [**F.1246**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1246) | Reference bandwidth of receiving stations in the fixed service to be used in coordination of frequency assignments with transmitting space stations in the mobile-satellite service in the 1-3 GHz range | NOC |  |
| **F.1247-4** | Technical and operational characteristics of systems in the fixed service to facilitate sharing with the space research, space operation and Earth exploration-satellite services operating in the bands 2 025-2 110 MHz and 2 200-2 290 MHz | NOC |  |
| [**F.1248**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1248) | Limiting interference to satellites in the space science services from the emissions of trans-horizon radio-relay systems in the bands 2 025-2 110 MHz and 2 200-2 290 MHz | NOC |  |
| **F.1249-4** | Technical and operational requirements that facilitate sharing between point‑to‑point systems in the fixed service and the inter-satellite service in the band 25.25-27.5 GHz | NOC |  |
| [**F.1330**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1330)**-2** | Performance limits for bringing into service the parts of international plesiochronous digital hierarchy and synchronous digital hierarchy paths and sections implemented by digital fixed wireless systems | NOC |  |
| [**F.1332**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1332)**-1** | Radio-frequency signal transport through optical fibres | NOC |  |
| [**F.1333**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1333)**-1** | Estimation of the actual elevation angle from a station in the fixed service towards a space station taking into account atmospheric refraction | NOC |  |
| [**F.1334**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1334) | Protection criteria for systems in the fixed service sharing the same frequency bands in the 1 to 3 GHz range with the land mobile service | NOC |  |
| [**F.1335**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1335) | Technical and operational considerations in the phased transitional approach for bands shared between the mobile‑satellite service and the fixed service at 2 GHz | NOC |  |
| [**F.1336**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1336)**-4** | Reference radiation patterns of omnidirectional, sectoral and other antennas for the fixed and mobile services for use in sharing studies in the frequency range from 400 MHz to about 70 GHz | NOC |  |
| [**F.1337**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1337) | Frequency management of adaptive HF radio systems and networks using FMCW oblique-incidence sounding | NOC |  |
| [**F.1338**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1338) | Threshold levels to determine the need to coordinate between particular systems in the broadcasting-satellite service (sound) in the geostationary-satellite orbit for space-to-Earth transmissions and the fixed service in the band 1 452‑1 492 MHz | NOC |  |
| [**F.1399**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1399)**-1** | Vocabulary of terms for wireless access | NOC |  |
| [**F.1400**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1400) | Performance and availability requirements and objectives for fixed wireless access to public switched telephone network | NOC |  |
| [**F.1401**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1401)**-1** | Considerations for the identification of possible frequency bands for fixed wireless access and related sharing studies | NOC |  |
| [**F.1402**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1402) | Frequency sharing criteria between a land mobile wireless access system and a fixed wireless access system using the same equipment type as the mobile wireless access system | NOC |  |
| [**F.1403**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1403) | Power flux-density criteria in ITU-R Recommendations for protection of systems in the fixed service shared with space stations of various space services | NOC |  |
| [**F.1404**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1404)**-1** | Minimum propagation attenuation due to atmospheric gases for use in frequency sharing studies between systems in the fixed service and systems in the broadcasting-satellite, mobile‑satellite and space science services | NOC |  |
| [**F.1487**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1487) | Testing of HF modems with bandwidths of up to about 12 kHz using ionospheric channel simulators | NOC |  |
| [**F.1488**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1488) | Frequency block arrangements for fixed wireless access systems in the range 3 400-3 800 MHz | NOC |  |
| [**F.1489**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1489) | A methodology for assessing the level of operational compatibility between fixed wireless access and radiolocation systems when sharing the band 3.4-3.7 GHz | NOC |  |
| [**F.1490**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1490)**-1** | Generic requirements for fixed wireless access systems | NOC |  |
| [**F.1494**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1494) | Interference criteria to protect the fixed service from time varying aggregate interference from other services sharing the 10.7-12.75 GHz band on a co-primary basis | NOC |  |
| [**F.1495**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1495)**-2** | Interference criteria to protect the fixed service from time varying aggregate interference from other radiocommunication services sharing the 17.7-19.3 GHz band on a co-primary basis | NOC |  |
| [**F.1496**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1496)**-1** | Radio-frequency channel arrangements for fixed wireless systems operating in the band 51.4-52.6 GHz | NOC |  |
| [**F.1497**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1497)**-2** | Radio-frequency channel arrangements for fixed wireless systems operating in the band 55.78-66 GHz | NOC |  |
| [**F.1498**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1498)**-1** | Deployment characteristics of fixed service systems in the band 37-40 GHz for use in sharing studies | NOC |  |
| [**F.1499**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1499) | Radio transmission systems for fixed broadband wireless access based on cable modem standard | NOC |  |
| [**F.1500**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1500) | Preferred characteristics of systems in the fixed service using high altitude platforms operating in the bands 47.2-47.5 GHz and 47.9-48.2 GHz | NOC |  |
| [**F.1501**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1501) | Coordination distance for systems in the fixed service (FS) involving high-altitude platform stations (HAPSs) sharing the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz with other systems in the fixed service | NOC |  |
| [**F.1502**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1502) | Protection of the fixed service in the frequency band 8 025-8 400 MHz sharing with geostationary-satellite systems of the Earth exploration-satellite service (space-to-Earth) | NOC |  |
| **F.1509-3** | Technical and operational requirements that facilitate sharing between point‑to‑multipoint systems in the fixed service and the inter-satellite service in the band 25.25-27.5 GHz | NOC |  |
| [**F.1518**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1518) | Spectrum requirement methodology for fixed wireless access and mobile wireless access networks using the same type of equipment, when coexisting in the same frequency band  | NOC |  |
| [**F.1519**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1519) | Guidance on frequency arrangements based on frequency blocks for systems in the fixed service | NOC |  |
| **F.1520-3** | Radio-frequency arrangements for systems in the fixed service operating in the band 31.8-33.4 GHz | NOC |  |
| [**F.1565**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1565) | Performance degradation due to interference from other services sharing the same frequency bands on a co-primary basis with real digital fixed wireless systems used in the international and national portions of a 27 500 km hypothetical reference path at or above the primary rate | NOC |  |
| [**F.1566**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1566)**-1** | Performance limits for maintenance of digital fixed wireless systems operating in plesiochronous and synchronous digital hierarchy-based international paths and sections | NOC |  |
| [**F.1567**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1567) | Radio-frequency channel arrangement for digital fixed wireless systems operating in the frequency band 406.1-450 MHz | NOC |  |
| [**F.1568**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1568)**-1** | Radio-frequency block arrangements for fixed wireless access systems in the range 10.15-10.3/10.5-10.65 GHz | NOC |  |
| [**F.1569**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1569) | Technical and operational characteristics for the fixed service using high altitude platform stations in the bands 27.5‑28.35 GHz and 31-31.3 GHz | NOC |  |
| **F.1570-2** | Impact of uplink transmission in the fixed service using high altitude platform stations on the Earth exploration-satellite service (passive) in the 31.3-31.8 GHz band | NOC |  |
| [**F.1571**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1571) | Mitigation techniques for use in reducing the potential for interference between airborne stations in the radionavigation service and stations in the fixed service in the band 31.8‑33.4 GHz | NOC |  |
| [**F.1605**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1605) | Error performance and availability estimation for synchronous digital hierarchy terrestrial fixed wireless systems | NOC |  |
| [**F.1606**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1606) | Interference criteria to protect fixed wireless systems from time varying aggregate interference produced by non-GSO satellites operating in other services sharing the 37-40 GHz and 40.5‑42.5 GHz bands on a co‑primary basis | NOC |  |
| [**F.1607**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1607) | Interference mitigation techniques for use by high altitude platform stations (HAPS) in the 27.5-28.35 GHz and 31.0‑31.3 GHz bands | NOC |  |
| [**F.1608**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1608) | Frequency sharing between systems in the fixed service using high altitude platform stations and conventional systems in the fixed service in the bands 47.2-47.5 and 47.9-48.2 GHz | NOC |  |
| [**F.1609**](http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-F.1609)**-1** | Interference evaluation from fixed service systems using high altitude platform stations to conventional fixed service systems in the bands 27.5-28.35 GHz and 31-31.3 GHz | NOC |  |
| **F.1610** | Planning, design and implementation of HF fixed service radio systems | NOC |  |
| **F.1611** | Prediction methods for adaptive HF system planning and operation | NOC |  |
| **F.1612** | Interference evaluation of the fixed service using High Altitude Platform Stations (HAPS) to protect the radio astronomy service (RAS) from uplink transmission in HAPS systems in the 31.3-31.8 GHz band | NOC |  |
| **F.1613** | Operational and deployment requirements for fixed wireless access (FWA) 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 | NOC |  |
| **F.1668-1** | Error performance objectives for real digital fixed wireless links used in 27 500 km hypothetical reference paths and connections | NOC |  |
| **F.1669-1** | Interference criteria of fixed wireless systems operating in the 37-40 GHz and 40.5-42.5 GHz bands with respect to satellites in the geostationary orbit | NOC |  |
| **F.1670-1** | Protection of fixed wireless systems from terrestrial digital video and sound broadcasting systems in shared VHF and UHF bands | NOC |  |
| **F.1671** | Guidelines for a process to address the deployment of area‑licensed fixed wireless systems operating in neighbouring countries | NOC |  |
| **F.1703** | Availability objectives for real digital fixed wireless links used in 27 500 km hypothetical reference paths and connections | NOC |  |
| **F.1704** | Characteristics of multipoint-to-multipoint fixed wireless systems with mesh network topology operating in frequency bands above about 17 GHz | NOC |  |
| **F.1705** | Analysis and optimization of the error performance of digital fixed wireless systems for the purpose of bringing into service and maintenance | NOC |  |
| **F.1706** | Protection criteria for point-to-point fixed wireless systems sharing the same frequency band with nomadic wireless access systems in the 4 to 6 GHz range | NOC |  |
| **F.1760** | Methodology for the calculation of aggregate equivalent isotropically radiated power (a.e.i.r.p.) distribution from point-to-multipoint high-density applications in the fixed service operating in bands above 30 GHz identified for such use | NOC |  |
| **F.1761** | Characteristics of HF fixed radiocommunication systems | NOC |  |
| **F.1762** | Characteristics of enhanced applications for high frequency (HF) radiocommunication systems | NOC |  |
| **F.1763-1** | Radio interface standards for broadband wireless access systems in the fixed service operating below 66 GHz | NOC |  |
| **F.1764-1** | Methodology to evaluate interference from user links in fixed service systems using high altitude platform stations to fixed wireless systems in the bands above 3 GHz | NOC |  |
| **F.1765** | Methodology for determining the aggregate equivalent isotropically radiated power from point-to-point high-density applications in the fixed service operating in bands above 30 GHz | NOC |  |
| **F.1766** | Methodology to determine the probability of a radio astronomy observatory receiving interference based on calculated exclusion zones to protect against interference from point-to-multipoint high-density applications in the fixed service operating in bands around 43 GHz | NOC |  |
| **F.1777-1** | System characteristics of television outside broadcast, electronic news gathering and electronic field production in the fixed service for use in sharing studies | NOC |  |
| **F.1778-1** | Channel access requirements for HF adaptive systems in the fixed and land mobile services | NOC |  |
| **F.1819** | Protection of the radio astronomy service in the 48.94-49.04 GHz band from unwanted emissions from HAPS in the 47.2‑47.5 GHz and 47.9-48.2 GHz bands | NOC |  |
| **F.1820** | Power flux density at international borders for high altitude platform stations providing fixed wireless access services to protect fixed service in neighbouring countries in the 47.2-47.5 GHz and 47.9‑48.2 GHz bands | NOC |  |
| **F.1821** | Characteristics of advanced digital high frequency (HF) radiocommunication systems | NOC |  |
| **F.1891** | Technical and operational characteristics of gateway links in the fixed service using high altitude platform stations in the band 5 850-7 075 MHz to be used in sharing studies | NOC |  |
| **F.2004** | Radio-frequency channel arrangements for fixed service systems operating in the 92-95 GHz range  | NOC |  |
| **F.2005** | Radio-frequency channel and block arrangements for fixed wireless systems operating in the 42 GHz (40.5 to 43.5 GHz) band | NOC |  |
| **F.2006** | Radio-frequency channel and block arrangements for fixed wireless systems operating in the 71-76 and 81-86 GHz bands | NOC |  |
| **F.2011** | Evaluation of interference from high-altitude platform (HAPS) gateway links (HAPS-to-ground direction) in the fixed service to conventional fixed wireless systems in the range 5 850-7 075 MHz | NOC |  |
| **F.2086-0** | Draft new Recommendation ITU-R F.[FS DEPLOY] – Deployment scenarios for point-to-point systems in the fixed service | NOC |  |

ITU-R M-series of Recommendations

Mobile, radiodetermination, amateur and related satellite services

| Rec.ITU-R | Recommendation title | Actionby RA-15 | Comments |
| --- | --- | --- | --- |
| [**M.441**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.441)**-1** | Signal-to-interference ratios and minimum field strengths required in the aeronautical mobile (R) service above 30 MHz | NOC |  |
| [**M.476**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.476)**-5** | Direct-printing telegraph equipment in the maritime mobile service | NOC |  |
| [**M.478**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.478)**-5** | Technical characteristics of equipment and principles governing the allocation of frequency channels between 25 and 3 000 MHz for the FM land mobile service | NOC |  |
| [**M.489**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.489)**-2** | Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz | NOC |  |
| [**M.492**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.492)**-6** | Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service | NOC |  |
| [**M.493**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.493)**-14** | Digital selective-calling system for use in the maritime mobile service | NOC |  |
| [**M.496**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.496)**-3** | Limits of power flux-density of radionavigation transmitters to protect space station receivers in the fixed-satellite service in the 14 GHz band | NOC |  |
| [**M.540**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.540)**-2** | Operational and technical characteristics for an automated direct-printing telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships | NOC |  |
| [**M.541**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.541)**-9** | Operational procedures for the use of digital selective-calling equipment in the maritime mobile service | MOD | SeeDoc. 5/1005 |
| [**M.584**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.584)**-2** | Codes and formats for radio paging | NOC |  |
| [**M.585**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.585)**-7** | Assignment and use of identities in the maritime mobile service  | NOC |  |
| [**M.586**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.586)**-1** | Automated VHF/UHF maritime mobile telephone system | NOC |  |
| [**M.587**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.587)**-1** | Coast station identities and initiation of location registration in an automated VHF/UHF maritime mobile telephone system | NOC |  |
| [**M.589**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.589)**-3** | Technical characteristics of methods of data transmission and interference protection for radionavigation services in the frequency bands between 70 and 130 kHz | NOC |  |
| [**M.625**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.625)**-4** | Direct-printing telegraph equipment employing automatic identification in the maritime mobile service | NOC |  |
| [**M.626**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.626) | Evaluation of the quality of digital channels in the maritime mobile service | NOC |  |
| [**M.627**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.627)**-1** | Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy | NOC |  |
| [**M.628**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.628)**-5** | Technical characteristics for search and rescue radar transponders | NOC |  |
| [**M.629**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.629)**-1** | Use of the radionavigation service of the frequency bands 2 900-3 100 MHz, 5 470-5 650 MHz, 9 200‑9 300 MHz, 9 300-9 500 MHz and 9 500‑9 800 MHz | NOC |  |
| [**M.687**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.687)**-2** | International Mobile Telecommunications-2000 (IMT‑2000) | NOC |  |
| [**M.688**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.688) | Technical characteristics for a high frequency direct-printing telegraph system for promulgation of high seas and NAVTEX-type maritime safety information | NOC |  |
| [**M.689**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.689)**-3** | International maritime VHF radiotelephone system with automatic facilities based on DSC signalling format | NOC |  |
| [**M.690**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.690)**-3** | Technical characteristics of emergency position-indicating radio beacons operating on the carrier frequencies of 121.5 MHz and 243 MHz | NOC |  |
| [**M.693**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.693)**-1** | Technical characteristics of VHF emergency position-indicating radio beacons using digital selective calling | NOC |  |
| [**M.816**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.816)**-1** | Framework for services supported on International Mobile Telecommunications-2000 (IMT-2000) | NOC |  |
| [**M.817**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.817) | International Mobile Telecommunications-2000 (IMT‑2000). Network architectures | NOC |  |
| [**M.819**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.819)**-2** | International Mobile Telecommunications-2000 (IMT‑2000) for developing countries | NOC |  |
| [**M.820**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.820)**-1** | Use of 9-digit identities for narrow-band direct-printing telegraphy in the maritime mobile service | NOC |  |
| [**M.821**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.821)**-1** | Optional expansion of the digital selective-calling system for use in the maritime mobile service | NOC |  |
| [**M.822**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.822)**-1** | Calling-channel loading for digital selective calling (DSC) for the maritime mobile service | NOC |  |
| [**M.823**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.823)**-3** | Technical characteristics of differential transmissions for global navigation satellite systems from maritime radio beacons in the frequency band 283.5-315 kHz in Region 1 and 285-325 kHz in Regions 2 and 3  | NOC |  |
| [**M.824**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.824)**-4** | Technical parameters of radar beacons  | NOC |  |
| [**M.825**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.825)**-3** | Characteristics of a transponder system using digital selective calling techniques for use with vessel traffic services and ship-to-ship identification | NOC |  |
| [**M.826**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.826) | Transmission of information for updating electronic chart display and information systems (ECDIS) | NOC |  |
| [**M.1033**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1033)**-1** | Technical and operational characteristics of cordless telephones and cordless telecommunication systems | NOC |  |
| [**M.1034**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1034)**-1** | Requirements for the radio interface(s) for International Mobile Telecommunications-2000 (IMT-2000) | NOC |  |
| [**M.1035**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1035) | Framework for the radio interface(s) and radio sub-system functionality for International Mobile Telecommunications-2000 (IMT-2000) | NOC |  |
| [**M.1036**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1036)**-4** | Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations (RR) | MOD | SeeDoc. 5/1008 |
| [**M.1039**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1039)**-3** | Co-frequency sharing between stations in the mobile service below 1 GHz and mobile earth stations of non-geostationary mobile-satellite systems (Earth-space) using frequency division multiple access (FDMA) | NOC |  |
| [**M.1041**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1041)**-2** | Future amateur radio systems  | NOC |  |
| [**M.1042**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1042)**-3** | Disaster communications in the amateur and amateur-satellite services | NOC |  |
| [**M.1043**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1043)**-2** | Use of the amateur and amateur-satellite services in developing countries | NOC |  |
| [**M.1044**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1044)**-2** | Frequency sharing criteria in the amateur and amateur-satellite services | NOC |  |
| [**M.1072**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1072) | Interference due to intermodulation products in the land mobile service between 25 and 3 000 MHz | NOC |  |
| [**M.1073**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1073)**-3** | Digital cellular land mobile telecommunication systems | NOC |  |
| [**M.1074**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1074) | Integration of public mobile radiocommunication systems | NOC |  |
| [**M.1075**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1075) | Leaky feeder systems in the land mobile services | NOC |  |
| [**M.1076**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1076)**-1** | Wireless communication systems for persons with impaired hearing | NOC |  |
| [**M.1078**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1078) | Security principles for International Mobile Telecommunications-2000 (IMT-2000) | NOC |  |
| [**M.1079**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1079)**-2** | Performance and quality of service requirements for International Mobile Telecommunications-2000 (IMT‑2000) access networks | NOC |  |
| [**M.1080**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1080) | Digital selective calling system enhancement for multiple equipment installations | NOC |  |
| [**M.1081**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1081)**-1** | Automatic HF facsimile and data system for maritime mobile users | NOC |  |
| [**M.1082**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1082)**-1** | International maritime MF/HF radiotelephone system with automatic facilities based on DSC signalling format | NOC |  |
| [**M.1084**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1084)**-5** | Interim solutions for improved efficiency in the use of the band 156‑174 MHz by stations in the maritime mobile service | NOC |  |
| [**M.1168**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1168) | Framework of International Mobile Telecommunications-2000 (IMT‑2000) | NOC |  |
| [**M.1170**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1170)**-1** | Morse telegraphy procedures in the maritime mobile service | NOC |  |
| [**M.1171**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1171) | Radiotelephony procedures in the maritime mobile service | NOC |  |
| [**M.1172**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1172) | Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service | NOC |  |
| [**M.1173**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-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 | NOC |  |
| [**M.1174**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1174)**-3** | Technical characteristics of equipment used for on-board vessel communications in the bands between 450 and 470 MHz | NOC |  |
| [**M.1175**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1175) | Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals | NOC |  |
| [**M.1176**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1176)**-1** | Technical parameters of radar target enhancers | NOC |  |
| [**M.1177**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1177)**-4** | Techniques for measurement of unwanted emissions of radar systems | NOC |  |
| [**M.1178**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1178) | Use of the maritime radionavigation band 283.5‑315 kHz (Region 1) and 285-325 kHz (Regions 2 and 3) | NOC |  |
| [**M.1179**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1179) | Procedures for determining the interference coupling mechanisms and mitigation options for systems operating in bands adjacent to and in harmonic relationship with radar stations in the radiodetermination service | NOC |  |
| [**M.1182**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1182)**-1** | Integration of terrestrial and satellite mobile communication systems | NOC |  |
| [**M.1223**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1223) | Evaluation of security mechanisms for IMT-2000 | NOC |  |
| [**M.1224**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1224)**-1** | Vocabulary of terms for International Mobile Telecommunications (IMT) | NOC |  |
| [**M.1225**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1225) | Guidelines for evaluation of radio transmission technologies for IMT-2000 | NOC |  |
| [**M.1226**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1226) | Technical and operational characteristics of wind profiler radars in bands in the vicinity of 50 MHz | NOC |  |
| [**M.1227**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1227)**-2** | Technical and operational characteristics of wind profiler radars in bands in the vicinity of 1 000 MHz | NOC |  |
| [**M.1307**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1307) | Automatic determination of location and guidance in the land mobile services | NOC |  |
| [**M.1308**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1308) | Evolution of land mobile systems towards IMT-2000 | NOC |  |
| [**M.1311**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1311) | Framework for modularity and radio commonality within IMT-2000 | NOC |  |
| [**M.1312**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1312) | A long-term solution for improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service | NOC |  |
| [**M.1314**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1314)**-1** | Reduction of unwanted emissions of radar systems operating above 400 MHz  | NOC |  |
| [**M.1371**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1371)**-5** | Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile band | NOC |  |
| [**M.1372**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1372)**-1** | Efficient use of the radio spectrum by radar stations in the radiodetermination service | NOC |  |
| [**M.1388**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1388) | Threshold levels to determine the need to coordinate between space stations in the broadcasting-satellite service (sound) and particular systems in the land mobile service in the band 1 452-1 492 MHz | NOC |  |
| [**M.1390**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1390) | Methodology for the calculation of IMT-2000 terrestrial spectrum requirements | NOC |  |
| [**M.1450**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1450)**-5** | Characteristics of broadband radio local area networks  | NOC |  |
| [**M.1452**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1452)**-2** | Millimetre wave vehicular collision avoidance radars and radiocommunication systems for intelligent transport system applications | NOC |  |
| [**M.1453**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1453)**-2** | Transport information and control systems – dedicated short range communications at 5.8 GHz | NOC |  |
| [**M.1454**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1454) | E.i.r.p. density limit and operational restrictions for RLANs or other wireless access transmitters in order to ensure the protection of feeder links of non-geostationary systems in the mobile-satellite service in the frequency band 5 150-5 250 MHz | NOC |  |
| [**M.1456**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1456) | Minimum performance characteristics and operational conditions for high altitude platform stations providing IMT-2000 in the bands 1 885-1 980 MHz, 2 010‑2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2 | NOC |  |
| [**M.1457**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1457)**-12** | Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-2000 (IMT‑2000) | NOC |  |
| [**M.1458**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1458) | Use of the frequency bands between 2.8-22 MHz by the aeronautical mobile (R) service for data transmission using class of emission J2D | NOC |  |
| [**M.1459**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1459) | Protection criteria for telemetry systems in the aeronautical mobile service and mitigation techniques to facilitate sharing with geostationary broadcasting-satellite and mobile-satellite services in the frequency bands 1 452-1 525 MHz and 2 310-2 360 MHz | NOC |  |
| [**M.1460**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1460)**-2** | Technical and operational characteristics and protection criteria of radiodetermination radars in the frequency band 2 900‑3 100 MHz | NOC |  |
| [**M.1461**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1461)**-1** | Procedures for determining the potential for interference between radars operating in the radiodetermination service and systems in other services | NOC |  |
| [**M.1462**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1462) | Characteristics of and protection criteria for radars operating in the radiolocation service in the frequency range 420-450 MHz | NOC |  |
| [**M.1463**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1463)**-3** | Characteristics of and protection criteria for radars operating in the radiodetermination service in the frequency band 1 215-1 400 MHz | NOC |  |
| [**M.1464**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1464)**-2** | Characteristics of non-meteorological radiolocation radars, and characteristics and protection criteria for sharing studies for aeronautical radionavigation and radars in the radiodetermination service operating in the frequency band 2 700‑2 900 MHz  | NOC |  |
| [**M.1465**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1465)**-2** | Characteristics of and protection criteria for radars operating in the radiodetermination service in the frequency range 3 100‑3 700 MHz | NOC |  |
| [**M.1466**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1466) | Characteristics of, and protection criteria for radars operating in the radionavigation service in the frequency band 31.8-33.4 GHz | NOC |  |
| [**M.1467**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1467)**-1** | Prediction of sea area A2 and NAVTEX ranges and protection of the A2 global maritime distress and safety system distress watch channel  | NOC |  |
| [**M.1544**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1544)**-1** | Minimum qualifications of radio amateurs | NOC |  |
| [**M.1545**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1545) | Measurement uncertainty as it applies to test limits for the terrestrial component of International Mobile Telecommunications-2000 | NOC |  |
| [**M.1579**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1579)**-2** | Global circulation of IMT terrestrial terminals | NOC |  |
| [**M.1580**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1580)**-5** | Generic unwanted emission characteristics of base stations using the terrestrial radio interfaces of IMT‑2000 | NOC |  |
| [**M.1581**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1581)**-5** | Generic unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT‑2000 | NOC |  |
| [**M.1582**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1582) | Method for determining coordination distances, in the 5 GHz band, between the international standard microwave landing system stations operating in the aeronautical radionavigation service and stations of the radionavigation-satellite service (Earth-to-space) | NOC |  |
| [**M.1584**](http://web.itu.ch/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1584) | Methodology for computation of separation distances between earth stations of the radionavigation-satellite service (Earth-to-space) and radars of the radiolocation service and the aeronautical radionavigation service in the frequency band 1 300-1 350 MHz | NOC |  |
| **M.1634** | Interference protection of terrestrial mobile service systems using Monte Carlo simulation with application to frequency sharing | NOC |  |
| **M.1635** | General methodology for assessing the potentialfor interference between IMT-2000 or systems beyond IMT-2000and other services | NOC |  |
| **M.1637** | Global cross-border circulation of radiocommunication equipment in emergency and disaster relief situations  | NOC |  |
| **M.1638-1** | Characteristics of and protection criteria for sharing studies for radiolocation (except ground based meteorological radars) and aeronautical radionavigation radars operating in the frequency bands between 5 250 and 5 850 MHz | NOC |  |
| **M.1640** | Characteristics of, and protection criteria for sharing studies for radars operating in the radiodetermination service in the frequency band 33.4‑36 GHz | NOC |  |
| **M.1641-1** | A methodology for co-channel interference evaluation to determine separation distance from a system using HAPS to a cellular system to provide IMT-2000 service within the boundary of an administration | NOC |  |
| **M.1644** | Technical and operational characteristics, and criteria for protecting the mission of radars in the radiolocation and radionavigation service operating in the frequency band 13.75-14 GHz | NOC |  |
| **M.1645** | Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000 | NOC |  |
| **M.1646** | Parameters to be used in co-frequency sharing and pfd threshold studies between terrestrial IMT-2000 and BSS (sound) in the 2 630‑2 655 MHz band | NOC |  |
| **M.1651** | A method for assessing the required spectrum for broadband nomadic wireless access systems including radio local area networks using the 5 GHz band | NOC |  |
| **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 | NOC |  |
| **M.1653** | Operational and deployment requirements for wireless access systems including radio local area networks in the mobile service to facilitate sharing between these systems and systems in the Earth exploration-satellite service (active) and the space research service (active) in the band 5 470-5 570 MHz within the 5 460-5 725 MHz range  | NOC |  |
| **M.1654** | A methodology to assess interference from broadcasting satellite service (sound) into terrestrial IMT‑2000 systems intending to use the band 2 630‑2 655 MHz | NOC |  |
| **M.1677-1** | International Morse code  | NOC |  |
| **M.1678** | Adaptive antennas for mobile systems  | NOC |  |
| **M.1730-1** | Characteristics of and protection criteria for the radiolocation service in the frequency band 15.7‑17.3 GHz  | NOC |  |
| **M.1732-1** | Characteristics of systems operating in the amateur and amateur-satellite services for use in sharing studies  | NOC |  |
| **M.1739** | Protection criteria for wireless access systems, including radio local area networks, operating in the mobile service in accordance with Resolution 229 (WRC-03) in the bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470‑5 725 MHz  | NOC |  |
| **M.1746** | Harmonized frequency channel plans for the protection of property using data communication  | NOC |  |
| **M.1767** | Protection of land mobile systems from terrestrial digital video and audio broadcasting systems in the VHF and UHF shared bands allocated on a primary basis  | NOC |  |
| **M.1768-1** | Methodology for calculation of spectrum requirements for the terrestrial component of International Mobile Telecommunications | NOC |  |
| **M.1795** | Technical and operational characteristics of land mobile MF/HF systems  | NOC |  |
| **M.1796-2** | Characteristics of and protection criteria for terrestrial radars operating in the radiodetermination service in the frequency band 8 500-10 680 MHz  | NOC |  |
| **M.1797** | Vocabulary of terms for the land mobile service  | NOC |  |
| **M.1798-1** | Characteristics of HF radio equipment for the exchange of digital data and electronic mail in the maritime mobile service  | NOC |  |
| **M.1801-2** | Radio interface standards for broadband wireless access systems, including mobile and nomadic applications, in the mobile service operating below 6 GHz  | NOC |  |
| **M.1802-1** | Characteristics and protection criteria for radars operating in the radiolocation service in the frequency band 30-300 MHz  | NOC |  |
| **M.1808** | Technical and operational characteristics of conventional and trunked land mobile systems operating in the mobile service allocations below 869 MHz to be used in sharing studies | NOC |  |
| **M.1822** | Framework for services supported by IMT | NOC |  |
| **M.1823** | Technical and operational characteristics of digital cellular land mobile systems for use in sharing studies | NOC |  |
| **M.1824-1** | System characteristics of television outside broadcast, electronic news gathering and electronic field production in the mobile service for use in sharing studies | NOC |  |
| **M.1825** | Guidance on technical parameters and methodologies for sharing studies related to systems in the land mobile service | NOC |  |
| **M.1826** | Harmonized frequency channel plan for broadband public protection and disaster relief operations at 4 940-4 990 MHz in Regions 2 and 3 | NOC |  |
| **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 | NOC |  |
| **M.1828** | Technical and operational requirements for aircraft stations of aeronautical mobile service limited to transmission for flight testing in the bands around 5 GHz | NOC |  |
| **M.1829** | Method for determining the necessary geographical separation distances, in the 5 GHz band, between the international standard microwave landing system (MLS) stations operating in the aeronautical radionavigation service and transmitters operating in the aeronautical mobile service (AMS) to support telemetry | NOC |  |
| **M.1830** | Technical characteristics and protection criteria of aeronautical radionavigation service systems in the 645-862 MHz frequency band | NOC |  |
| **M.1841-1** | Compatibility between FM sound-broadcasting systems in the frequency band of about 87-108 MHz and the aeronautical ground-based augmentation system in the frequency band 108-117.975 MHz | NOC |  |
| **M.1842-1** | Characteristics of VHF radio systems and equipment for the exchange of data and electronic mail in the maritime mobile service RR Appendix 18 channels | NOC |  |
| **M.1849-1** | Technical and operational aspects of ground-based meteorological radars | NOC |  |
| **M.1851** | Mathematical models for radiodetermination radar systems antenna patterns for use in interference analyses | NOC |  |
| **M.1874-1** | Technical and operational characteristics of oceanographic radars operating in sub-bands within the frequency range 3‑50 MHz | NOC |  |
| **M.1890** | Intelligent transport systems – Guidelines and objectives | NOC |  |
| **M.2002** | Objectives, characteristics and functional requirements of wide-area sensor and/or actuator network (WASN) systems | NOC |  |
| **M.2003-1** | Multiple gigabit wireless systems in frequencies around 60 GHz | NOC |  |
| **M.2007** | Characteristics of and protection criteria for radars operating in the aeronautical radionavigation service (ARNS) in the frequency band 5 150-5 250 MHz | NOC |  |
| **M.2008-1** | Characteristics and protection criteria for radars operating in the aeronautical radionavigation service in the frequency band 13.25‑13.40 GHz | NOC |  |
| **M.2009-1** | Radio interface standards for use by public protection and disaster relief operations in some parts of the UHF band in accordance with Resolution 646 (Rev.WRC-12) | NOC |  |
| **M.2010** | Characteristics of a digital system, named Navigational Data for broadcasting maritime safety and security related information from shore-to-ship in the 500 kHz band | NOC |  |
| **M.2012-2** | Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-Advanced (IMT-Advanced) | NOC |  |
| **M.2013** | Technical characteristics of, and protection criteria for non-ICAO aeronautical radionavigation systems, operating around 1 GHz | NOC |  |
| **M.2015-1** | Frequency arrangements for public protection and disaster relief radiocommunication systems in UHF bands in accordance with Resolution 646 (Rev.WRC-12) | NOC |  |
| **M.2034** | Telegraphic alphabet for data communication by phase shift keying at 31 baud in the amateur and amateur-satellite services | NOC |  |
| **M.2057** | Systems characteristics of automotive radars operating in the frequency band 76-81 GHz for intelligent transport systems applications | NOC |  |
| **M.2058** | Characteristics of a digital system, named navigational data for broadcasting maritime safety and security related information from shore-to-ship in the maritime HF frequency band | NOC |  |
| **M.2059** | Operational and technical characteristics and protection criteria of radio altimeters utilizing the band 4 200-4 400 MHz | NOC |  |
| **M.2067** | Technical characteristics and protection criteria for Wireless Avionics Intra-Communication systems | NOC |  |
| **M.2068** | Characteristics of and protection criteria for systems operating in the mobile service in the frequency range 14.5-15.35 GHz | NOC |  |
| **M.2069** | Antenna rotation variability and effects on antenna coupling for radar interference analysis | NOC |  |
| **M.2070** | Generic unwanted emission characteristics of base stations using the terrestrial radio interfaces of IMT-Advanced | NOC |  |
| **M.2071** | Generic unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT-Advanced | NOC |  |
| **M.2083-0** | IMT Vision – “Framework and overall objectives of the future development of IMT for 2020 and beyond” | NOC |  |
| **M.2084-0** | Radio interface standards of vehicle-to-vehicle and vehicle-to-infrastructure communications for Intelligent Transport System applications | NOC |  |
| **M.2085-0** | Technical conditions for the use of wireless avionics intra-communication systems operating in the aeronautical mobile (R) service in the frequency band 4 200-4 400 MHz | NOC |  |
|  | Draft new Recommendation ITU-R M.[AMS-CHAR-15GHZ] - Technical characteristics and protection criteria for aeronautical mobile service systems in the frequency range 14.5-15.35 GHz | ADD | SeeDoc. 5/1006 |
|  | Draft new Recommendation ITU-R M.[VDES] - Technical characteristics for a VHF data exchange system in the VHF maritime mobile band | ADD | SeeDoc. 5/1007 |
|  | Draft new Recommendation ITU-R M.[BSMS700] - Specific out-of-band emission limit of IMT mobile stations operating in the frequency band 694-790 MHz for protection of existing services in Region 1 in the frequency band below 694 MHz | ADD | SeeDoc. 5/1009 |

ITU-R SF-series of Recommendations

Frequency sharing and coordination between fixed-satellite and fixed service systems
From SG 9

| Rec.ITU-R | Recommendation title | Actionby RA-12 | Comments |
| --- | --- | --- | --- |
| **SF.674-3** | Determination of the impact on the fixed service operating in the 11.7-12.2 GHz band when geostationary fixed-satellite service networks in Region 2 exceed power flux-density thresholds for coordination | NOC |  |
| **SF.675-4** | Calculation of the maximum power density (averaged over 4 kHz or 1 MHz) of angle-modulated and digital carriers | NOC |  |
| **SF.765-1** | Intersection of radio-relay antenna beams with orbits used by space stations in the fixed-satellite service | NOC |  |
| **SF.766** | Methods for determining the effects of interference on the performance and the availability of terrestrial radio-relay systems and systems in the fixed-satellite service | NOC |  |
| **SF.1006** | Determination of the interference potential between earth stations of the fixed-satellite service and stations in the fixed service | NOC |  |
| **SF.1395** | Minimum propagation attenuation due to atmospheric gases for use in frequency sharing studies between the fixed-satellite service and the fixed service  | NOC |  |
| **SF.1482** | Maximum allowable values of power flux-density (pfd) produced at the Earth’s surface by non-GSO satellites in the fixed-satellite service (FSS) operating in the 10.7-12.75 GHz band  | NOC |  |
| **SF.1483** | Maximum allowable values of power flux-density (pfd) produced at the Earth’s surface by non-GSO satellites in the fixed-satellite service (FSS) operating in the 17.7-19.3 GHz band  | NOC |  |
| [**SF.1485**](http://www.itu.int/rec/R-REC-SF/recommendation.asp?lang=en&parent=R-REC-SF.1485) | Determination of the coordination area for earth stations operating with non-geostationary space stations in the fixed-satellite service in frequency bands shared with the fixed service  | NOC |  |
| **SF.1486** | Sharing methodology between fixed wireless access systems in the fixed service and very small aperture terminals in the fixed-satellite service in the 3 400-3 700 MHz band  | NOC |  |
| **SF.1572** | Methodology to evaluate the impact of space-to-Earth interference from the fixed-satellite service to the fixed service in frequency bands where precipitation is the predominant fade mechanism | NOC |  |
| [**SF.1585**](http://www.itu.int/rec/R-REC-SF/recommendation.asp?lang=en&parent=R-REC-SF.1585) | Example approach for determination of the composite area within which interference to fixed service stations from earth stations on board vessels when operating in motion near a coastline would need to be evaluated | NOC |  |
| **SF.1601-2** | Methodologies for interference evaluation from the downlink of the fixed service using high altitude platform stations to the uplink of the fixed-satellite service using the geostationary satellites within the band 27.5-28.35 GHz  | NOC |  |
| **SF.1602** | Methodology for determining power flux-density statistics for use in sharing studies between fixed wireless systems and multiple fixed-satellite service satellites | NOC |  |
| **SF.1648** | Use of frequencies by earth stations on board vessels transmitting in certain bands allocated to the fixed-satellite service | NOC |  |
| **SF.1649-1** | Guidance for determination of interference from earth stations on board vessels to stations in the fixed service when the earth station on board vessels is within the minimum distance | NOC |  |
| **SF.1650-1** | The minimum distance from the baseline beyond which in-motion earth stations located on board vessels would not cause unacceptable interference to the terrestrial service in the bands 5 925-6 425 MHz and 14-14.5 GHz | NOC |  |
| **SF.1707** | Methods to facilitate the implementation of large numbers of earth stations in the FSS in areas where terrestrial services are also deployed  | NOC |  |
| **SF.1719** | Sharing between point-to-point and point-to-multipoint fixed service and transmitting earth stations of GSO and non-GSO FSS systems in the 27.5-29.5 GHz band | NOC |  |
| **SF.1843** | Methodology for determining the power level for high altitude platform stations ground terminals to facilitate sharing with space station receivers in the bands 47.2-47.5 GHz and 47.9-48.2 GHz | NOC |  |

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