|  |  |
| --- | --- |
| U.S. Radiocommunications Sector  Fact Sheet | |
| **Working Party:** ITU-R WP 4C | **Document No:** USWP4C-24-12 |
| **Ref:** Resolution 252 (WRC-23) | **Date:** 22 March 2024 |
| Document Title: Characteristics of Stations in the Mobile-Satellite Service in the 1 645.5-1 646.5 MHz Frequency Band and adjacent bands 1 626.5-1 645.5 MHZ and 1 646.5-1 660.5 MHz | |
| **Author(s)/Contributors(s):**  Brennan Price  Viasat | Email: [brennan.price@inmarsat.com](mailto:brennan.price@inmarsat.com) [sic] Phone: +1 703 223-3327 |
| **Purpose:** To provide characteristics necessary for sharing and compatibility studies for WRC-27 agenda item 1.12, as called for by *resolves to invite the ITU Radiocommunication Sector* 2 of Resolution 252. | |
| **Abstract:** The contribution will provide characteristics of stations utilized for distress, urgency, and safety communications in the 1 645.5-1 646.5 MHz frequency band, as prescribed by RR No. 5.375 and Article 31. The contribution also describes characteristics of stations in adjacent frequency bands. | |

|  |  |
| --- | --- |
| **Radiocommunication Study Groups** | A blue logo with a black background  Description automatically generated |
|  |  |
|  |  |
| Received: 22 March 2024  Subject: WRC-27 Agenda Item 1.12; Resolution 252 | **Document US4C/24/12-E** |
| **22 March 2024** |
| **Original: English** |
| **United States of America** | |
| Characteristics of Stations in the Mobile-Satellite Service in the 1 645.5-1 646.5 MHz Frequency Band and Adjacent Bands 1626.5-1645.5 MHz and 1646.5-1660.5 MHz | |
|  | |

ITU-R Resolution 252 (WRC-23) calls studies to be conducted on sharing and compatibility with existing services in, among several frequency bands, the 1 645.5-1 646.5 MHz frequency band. As a result of action at WRC-23 modifying RR No. **5.375**, the use of the frequency band 1 645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress, urgency and safety communications, under conditions further described in Article 31, which relates to Frequencies for the Global Maritime Distress and Safety System (GMDSS). This band is also identified in Appendix 15 (Rev.WRC-19).

Characteristics of stations used for distress, urgency, and safety communications are found in ITU-R Recommendation M.1184-3, and are excerpted in Table 1 below. The header “C” in the table describes a two-way store and forward communication system transmitting messages from ship-to-shore, shore-to-ship and ship-to-ship, including email, SMS, telex, chart and weather updates. The header “maritime” describes a higher data rate, simultaneous data and voice communication link utilizing compact terminals.

Characteristics of services in the adjacent bands, 1626.5-1645.5 MHz and 1646.5-1660.5 MHz found in ITU-R Recommendation M.1184-3 are shown in Table 2. The United Kingdom proposes that these characteristics should be taken into consideration for any protection and sharing studies to ensure no harmful interference to existing incumbent services in the adjacent frequency bands as a result of any new allocations or regulatory actions for future low-data rate non-geostationary mobile-satellite systems. The information below should considered for inclusion in any working document developed studies under WRC-23 agenda item 1.12

TABLE 1

EXCERPT OF RELEVANT CHARACTERISTICS FOR EXISTING GSO MSS SERVICES IN THE BAND 1645.5-1646.5 MHZ FROM

RECOMMENDATION ITU-R M.1184

|  |  |  |  |
| --- | --- | --- | --- |
|  | **C** | **Maritime** | |
| **High gain** | **Low gain** |
| Service | MMSS | MMSS | MMSS |
| Typical mobile station antenna gain (dBi) | 0 | 16 | 9 |
| Antenna type (example) | Quad helix | Phased array | Phased array |
| Typical antenna size | 5 cm diameter | 50 cm diameter | 30 cm diameter |
| Mobile earth station figure of merit (*G*/*T*) (dB(K–1)) | −23 | −7.5 | −15.5 |
| Mobile earth station e.i.r.p./channel (dBW) | 11 | 22 | 15.1 |
| User data rate | 600 bit/s | 500 kbit/s | 250 kbit/s |
| Modulation | BPSK | 16-QAM | 16-QAM |
| Typical *C*/*N*0 for communication channel (dB(Hz)) | 32 | 67 | 57 |
| Satellite e.i.r.p./channel (dBW) | 20 | 40.5 | 40.5 |
| Channel spacing (nominal) (kHz) | 5 | 200 | 200 |
| Satellite peak antenna gain (1) (dBi) | 18 | 41 | 41 |

Interference criteria for the mobile-satellite service are found in ITU-R Recommendation M.1183‑0, which provides:

*that the maximum level of interference power in any such digital channel caused by the transmitters of another mobile-satellite network or fixed-satellite network, should not exceed for more than (100 – X)% of any month, 6% of the total noise power at the input to the demodulator which would give rise to the desired performance objectives[.]*

The methodology for determining performance objectives for narrow-band channels in mobile satellite systems using geostationary satellites not forming part of the ISDN is contained in ITU‑R Recommendation M.1228, and other ITU-R M series recommendations may be relevant.

The United States proposes that these characteristics and criteria be taken into account in studies for agenda item 1.12 required by *resolves* 2 of ITU-R Resolution 252