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| U.S. Radiocommunications SectorFact Sheet |
| **Working Party:** ITU-R WP 4C | **Document No:** USWP4C-24-12 |
| **Ref:** Resolution 252 (WRC-23) | **Date:** 23 February 2024 |
| Document Title: Characteristics of Stations in the Mobile-Satellite Service in the 1 645.5-1 646.5 MHz Frequency Band |
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| **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. |

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| Characteristics of Stations in the Mobile-Satellite Service in the 1 645.5-1 646.5 MHz Frequency Band |
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ITU-R Resolution 252 (WRC-23) calls studies to be conducted on sharing an compatibility with existing services in, among other 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.

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.

TABLE 1

EXCERPT OF RELEVANT CHARACTERISTICS FROM

RECOMMENDATION ITU-R M.1184

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|  | **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 is 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