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| **Radiocommunication Study Groups** |  |
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| **22 May 2023** |
| **English only** |
| Annex 6 to Working Party 5A Chairman’s Report  |
| Preliminary Draft New Recommendation ITU-R M.[AS Guidance][[1]](#footnote-1) |
| Guidance on technical and operational measures for the use of the frequency band 1 240-1 300 MHz by the amateur and amateur-satellite service in order to protect the radionavigation-satellite service (space-to-Earth) |

Scope

This Recommendation provides guidance on technical and operational measures for administrations authorizing stations operating in the amateur and amateur-satellite services to protect the radionavigation satellite service (space-to-Earth) in the frequency band 1 240-1 300 MHz. The relevant measures are contained in the Annex to this Recommendation.

Keywords

Radionavigation satellite-service (RNSS), amateur service, amateur-satellite service,

Abbreviations/Glossary

RNSS: Radionavigation-satellite service

IARU: International Amateur Radio Union

ATV: Amateur Television

RR: Radio Regulations

Related ITU Recommendations and Reports

Report [ITU-R M.2513-0](https://www.itu.int/pub/R-REP-M/publications.aspx?lang=en&parent=R-REP-M.2513) – Studies regarding the protection of the primary RNSS (space‑to-Earth) by the secondary amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz.

Report ITU-R M.[AMATEUR.CHARACTERISTICS] – Amateur and amateur-satellite services characteristics and usage in the 1 240-1 300 MHz frequency band.

Report [ITU-R M.2458-0](https://www.itu.int/pub/R-REP-M.2458) – RNSS applications in the 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559‑1 610 MHz frequency bands.

Recommendation [ITU-R M.1902-2](https://www.itu.int/rec/R-REC-M.1902/en) – Characteristics and protection criteria for receiving earth stations in the RNSS (space-to-Earth) operating in the band 1 215-1 300 MHz.

Recommendation [ITU-R M.1787-4](https://www.itu.int/rec/R-REC-M.1787/en) – Description of systems and networks in the RNSS (space-to-Earth and space-to-space) and technical characteristics of transmitting space stations operating in the bands 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz.

Recommendation [ITU-R M.2030-0](https://www.itu.int/rec/R-REC-M.2030/en) – Evaluation method for pulsed interference from relevant radio sources other than in the RNSS to the RNSS systems and networks operating in the 1 164-1 215 MHz, 1 215 1 300 MHz and 1 559-1 610 MHz frequency bands.

Recommendation [ITU-R M.1732-3](https://www.itu.int/rec/R-REC-M.1732/en) – Characteristics of systems operating in the amateur and amateur-satellite services for use in sharing studies.

Handbook [ITU-R 52](https://www.itu.int/pub/R-HDB-52) – Amateur and amateur-satellite services.

The ITU Radiocommunication Assembly,

considering

*a)*that the IARU develops, maintains and publishes detailed band plans for the operation and development of the amateur and amateur-satellite services in all three Regions;

*b)* that Report ITU-R M.[AMATEUR.CHARACTERISTICS] provides information on the applications and operational characteristics of the use of the band 1 240-1 300 MHz by the amateur and amateur-satellite services;

*c)* thatReport [ITU-R M.2513-0](https://www.itu.int/pub/R-REP-M/publications.aspx?lang=en&parent=R-REP-M.2513) provides studies and measurements regarding the amateur and amateur-satellite services transmissions and their potential to cause harmful interference to RNSS (space-to-Earth), that, may under certain conditions, exceed the protection criteria given in Recommendation [ITU-R M.1902-2](https://www.itu.int/rec/R-REC-M.1902/en);

*d)*that Recommendation [ITU-R M.1902-2](https://www.itu.int/rec/R-REC-M.1902/en) provides the characteristics and protection criteria for radionavigation-satellite service (space-to-Earth) receivers operating in the band 1 215-1 300 MHz;

*d)*that RNSS systems using the frequency band 1 240-1 300 MHz are operational, or becoming operational, worldwide, with the aim of supporting a wide range of new satellite positioning applications;

*e)* that administrations wishing to implement this Recommendation may need a transition period to make the necessary changes to their national amateur and amateur-satellite services authorizations,

recognizing

*a)* that the frequency band 1 240-1 300 MHz is allocated to the radionavigation-satellite service (space-to-Earth) and (space-to-space) on a primary basis;

*b)* that the frequency band 1 240-1 300 MHz is also allocated to the amateur service on a secondary basis;

*c)* that under provision of RR No. **5.282**, the frequency band 1 260-1 270 MHz is allocated to the amateur-satellite service (Earth-to-space) on a secondary basis;

*d)*  that the frequency band 1 240-1 300 MHz is also allocated worldwide to the earth exploration-satellite service (active), radiolocation service (RR No. **5.329** applies) and the space research service on a primary basis;

*e)* that the relation between the services mentioned in *recognizing* a), b), c) and d) above is stipulated in the provisions of RR No. **5.23** to **5.33** and these provisions shall continue to apply with respect to RNSS despite this recommendation;

*f)* that additional services are also allocated in some countries under RR Nos. **5.330** (fixed and mobile services) and **5.331** (radionavigation service) within the frequency band 1 215-1 300 MHz;

*g)* that the amateur and amateur-satellite services continually develop their use of the frequency band 1 240-1 300 MHz in accordance with RR Nos. **1.56** and **1.57**;

*h*) that the maximum power of amateur stations is fixed by the administrations concerned as stipulated in RR No. **25.7**;

*[i)* that administrations licensing stations of the amateur and amateur-satellite services and assigning relevant frequencies, are responsible for the compliance of those stations with the relevant provisions of the RR, especially the protection of primary services in other administrations concerned;]

[noting

*a)*that depending on national requirements, administrations may wish to take additional measures on amateur and amateur-satellite operations in the vicinity of airports in the frequency band 1 240-1 300 MHz;]

recommends

[1 that in order to facilitate coexistence between the services, administrations wishing to authorize the amateur and amateur-satellites services and RNSS across their territory in the frequency band 1 240-1 300 MHz, should use the technical and operational measures described in Annex 1 as guidance.]

[

1 that the technical and operational measures described in Annex 1 should be considered in order to facilitate coexistence between the services, when administrations wish to authorize the amateur and amateur-satellites services and RNSS across their territory in the frequency band 1 240-1 300 MHz.

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Annex 1

Guidance on technical and operational measures for use of the band 1 240-1 300 MHz by the amateur and amateur-satellite services

The following measures facilitate coexistence between RNSS (space-to-Earth) receivers and amateur services in the 1 240 to 1 300 MHz frequency band:

For narrowband (BW < 150 kHz) applications in the amateur service:

1. Block 1: 1 296-1 298 MHz; Maximum transmitter power = 50 W
2. Block 2: 1 298-1 300 MHz; Maximum transmitter power = 150 W

For narrowband earth-moon-earth communications in the amateur service using a symmetric high-performance antenna (e.g. boresight gain at least 30 dBi) pointing at least 15 degrees above the horizontal:

1. Block 2: 1 298-1 300 MHz; Maximum transmitter power = 500 W

20230515 ed: Views were expressed that maximum transmitter power is most appropriate method for the 1 296-1 300 MHz preferred band, while another view was expressed that e.i.r.p. was required. Noting that e.i.r.p. might be more appropriate for other preferred band segments. We were unable to agree on the terminology so the matter will be elevated to the next higher level for further discussion.

20230516 ed: this section needs a new home as it isn’t EME but is still narrowband applications

c) [In Region 1 Block 3:] [1 258-1 260 MHz];

 [Maximum transmitter power = xx W eirp/xx kHz] *ed: consider various antenna elevations*

[In Regions 2 and 3 Block 3: [1 255-1 257 MHz];

Maximum transmitter power = [100][xx] W][ eirp/xx kHz]]

d) [Block 3:] [1 258-1 260 MHz];

 [Maximum transmitter power = xx W eirp/xx kHz] *ed: consider various antenna elevations*

e) [Block 3: [1 255-1 257 MHz];

Maximum transmitter power = [100][xx] W][ eirp/xx kHz]]

f) [Block 3: [1 254-1 258 MHz];

Maximum transmitter power = [100][xx] W][ eirp/xx kHz]]

*-----------------------------------------------------------------------*

*20230516 ed: This section not discussed*

g) [Block A’: [1 293-1 294 MHz];

[Maximum transmitter power = 1W] Maximum EIRP = 10.0 dBW/20 kHz

 [Block A’ [1 293.845-1 294.345 MHz]

 [10W EIRP ] [Maximum transmitter power = 1W] Maximum EIRP = 10.0 dBW/20 kHz

2) for broadband applications [(bandwidth > than 150 kHz)] in the amateur service:

a) [Block B: [1 254-1 258 MHz]; [Maximum transmitter power = 100W][100W/1MHz]]

 [Block B: 1 254-1 258 MHz; Maximum transmitter power = 100W]

 [Block B: [1 255-1 257 MHz]: [Maximum transmitter power = 100W][100W/1MHz]]

 [[Block B: [1 258-1 260 MHz]; Maximum EIRP = xx dBW/yy MHz]

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20230516 Ed: section 3 more-or-less agreed, need to adjust power dBW to make a workable uplink

3) for narrowband applications operating (bandwidth ≤ 150 kHz) in the amateur-satellite service (Earth-to-space):

a) Block C: 1 260-1 262 MHz; Maximum EIRP = [28.0] dBW/150 kHz

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4) outside these preferred frequency blocks, very low power experimental applications in the amateur service may operate with a maximum power = [500 mW][100 mW][5 mW]:

[EIRP =-xx dBW per yy MHz.]. *ed: may consider antenna elevation criteria*

5) exclusion of the frequency bands [1 263.75-1 293.75] MHz and [1 259.25-1 277.25] MHz [1240 – 1261 MHz and 1 262-1 293.75 MHz ]for national licensing and assignments of ATV;

6) when amateur /amateur satellite station antennas are installed at large antenna heights compared to the typical values contained in Report ITU-R M.2513-0, additional constraints or limitations than those listed in the above 1) to 5) may need to be considered by administrations, in particular for cases of the amateur station category referred to as “permanent installations” such as repeaters and propagation beacons;

20230516 ed: need to reword this section

[4) in case of rapid increase of amateur satellites in the frequency band 1 260-1 270 MHz, additional measures on the time length of transmitter usage may be needed;

5) the operating duration of each amateur satellite uplink transmitter may need to be limited within 30 minutes per day;

6) considering the study regarding amateur satellite uplink scenario depicted in Annex 3 of Report ITU-R M.2513-0, it is recommended amateur satellites stations only operate when elevation angle exceeds 45 Deg, in order to alleviate the potential interference to nearby RNSS receivers;]

[6) due to the known interference cases and the immediate roll-out of dedicated mass-market RNSS receivers in the frequency band 1 240-1 300 MHz, administrations are invited to also consider changes to the existing assignments of domestic broadband ATV stations, already in operation;

7) amateur stations need not to be deployed at a distance of less than 20 km from airports;

8) administrations should be mindful about the location of amateur stations in order to avoid pointing of the station antenna pattern peak in the direction of airports and air corridors for aircraft flights;

9) the main lobe of the amateur station antenna pattern need not to be directed in the ±30º sector towards the airport, located at less than 100 km from such amateur station;

10) the main lobe of the amateur station antenna pattern need not to be directed in the ±10º sector towards the airport, located at less than 120 km from such amateur station (for amateur-satellite service uplink).

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1. This Recommendation should be brought to the attention of the International Amateur Radio Union (IARU). [↑](#footnote-ref-1)