



Recommendation ITU-R M.1905
(01/2012)

**Characteristics and protection criteria for
receiving earth stations in the
radionavigation-satellite service
(space-to-Earth) operating in the
band 1 164-1 215 MHz**

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



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Foreword

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

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

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

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P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

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

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RECOMMENDATION ITU-R M.1905

**Characteristics and protection criteria for receiving earth stations
in the radionavigation-satellite service (space-to-Earth)
operating in the band 1 164-1 215 MHz**

(Questions ITU-R 217-2/4 and ITU-R 288/4)

(2012)

Scope

Characteristics and protection criteria for radionavigation-satellite service (RNSS) receiving earth stations operating in the band 1 164-1 215 MHz are presented in this Recommendation. This information is intended for performing analyses of radio-frequency interference impact on RNSS (space-to-Earth) receivers operating in the band 1 164-1 215 MHz from radio sources other than in the RNSS.

The ITU Radiocommunication Assembly,

considering

- a) that systems and networks in the radionavigation-satellite service (RNSS) provide worldwide accurate information for many positioning, navigation and timing applications, including safety aspects for some frequency bands and under certain circumstances and applications;
- b) that there are various operating and planned systems and networks in the RNSS;
- c) that characteristics of systems and networks in the RNSS and their protection criteria could be different subject to frequency bands and applications;
- d) that there are studies being conducted or planned on the impact to systems and networks in the RNSS from radio sources other than in the RNSS;
- e) that there are a large number of aeronautical and non-aeronautical RNSS applications used or planned for use in the band 1 164-1 215 MHz;
- f) that Recommendation ITU-R M.1787 provides technical descriptions of systems and networks in the RNSS 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;
- g) that Recommendation ITU-R M.1904 provides technical characteristics and protection criteria of receiving space stations operating in the RNSS (space-to-space) in the bands 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz;
- h) that Recommendation ITU-R M.1901 provides guidance on this and other ITU-R Recommendations related to systems and networks in the RNSS operating in the frequency bands 1 164-1 215 MHz, 1 215-1 300 MHz, 1 559-1 610 MHz, 5 000-5 010 MHz and 5 010-5 030 MHz,

recognizing

- a) that the band 1 164-1 215 MHz is allocated on a primary basis to the RNSS (space-to-Earth and space-to-space) in all three Regions;
- b) that the band 1 164-1 215 MHz is also allocated on a primary basis to the aeronautical radionavigation service (ARNS) in all three Regions;

c) that No. 5.328A of the Radio Regulations (RR) states that “stations in the radionavigation-satellite service in the band 1 164-1 215 MHz shall operate in accordance with the provisions of Resolution 609 (WRC-03) and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1 215 MHz. No. 5.43A of the RR does not apply. The provisions of No. 21.18 shall apply”;

recommends

1 that the characteristics and protection criteria of receiving earth stations given in Annex 2 should be used in performing analyses of the interference impact on RNSS (space-to Earth) receivers operating in the band 1 164-1 215 MHz from radio sources other than in the RNSS;

2 that a safety margin, as discussed in Annex 1, should be applied for the protection of the safety aspects and applications of the RNSS when performing interference analyses;

3 that the following Note should be considered as part of this Recommendation.

NOTE 1 – The 6 dB aeronautical safety margin, as discussed in § 3.2 of Annex 1, was developed for a specific aeronautical radionavigation application of the RNSS in the band 1 164-1 215 MHz, and was not intended to be applied to non-aeronautical applications. The level of the safety margin, if any, to be applied to non-aeronautical safety applications of RNSS is to be established on the basis of further study.

Annex 1

Margin for safety applications in the RNSS

1 Introduction

There is a long history within ITU and the International Civil Aviation Organization (ICAO) of reserving a portion of the interference link budget for a margin in order to ensure that the safety aspects of the radionavigation service are protected. These margin values typically lie in the range of 6 to 10 dB, or more. Furthermore, there is ample precedent for a safety margin for radionavigation safety applications in ITU, for example:

“Regardless of the original intentions of radio spectrum planners, there can be no doubt that the pressure on the radio spectrum for additional allocations to the various radio communication services can result in aeronautical protection criteria being effectively regarded as non-aeronautical sharing criteria. As a consequence, a safety service must take considerable precautions to ensure that any radio service sharing the same radio band is constrained sufficiently to leave an adequate margin under all likely circumstances so that the aggregate harmful interference never exceeds the required protection criteria.”¹

Also, Recommendation ITU-R M.1318-1 contains, in its Annex, a model for the evaluation of interference to RNSS receivers from radio sources other than in the RNSS. That model includes the use of a factor called “protection margin (dB)”. Its description states that it is used “to ensure protection as provided by RR. No. 4.10”.

¹ This text appeared in Annex 5 of former Recommendation ITU-R M.1477 (Geneva, 2000).