



Recommendation ITU-R SA.1155-2
(07/2017)

**Protection criteria related to the operation
of data relay satellite systems**

SA Series
Space applications and meteorology



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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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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 SA.1155-2*

Protection criteria related to the operation of data relay satellite systems

(1995-2013-2017)

Scope

This Recommendation specifies the protection criteria for data relay satellite systems and presents them in the form of I_0/N_0 values and provides a supporting analysis and text consistent with and relevant to the protection criteria.

Keywords

DRS, space-to-Earth, Earth-to-space, space-to-space, forward feeder link, return feeder link

Related ITU-R Recommendations

Recommendations ITU-R SA.510, ITU-R SA.1018, ITU-R SA.1019, ITU-R SA.1274, ITU-R SA.1275, ITU-R SA.1276, ITU-R SA.1414

The ITU Radiocommunication Assembly,

considering

- a) that data relay satellite systems are in operation or are planned corresponding to the hypothetical reference system as described in Recommendation ITU-R SA.1018;
- b) that these data relay satellite systems support links with widely different characteristics as described in Recommendation ITU-R SA.1414;
- c) that preferred frequency bands for data relay satellite systems have been identified in Recommendation ITU-R SA.1019;
- d) that sharing between data relay satellite systems and other space and terrestrial radio systems is required in all of the preferred frequency bands, identified in Recommendation ITU-R SA.1019;
- e) that the numbers of space and terrestrial radio systems using the shared bands with data relay satellite systems will increase in the future, thus increasing the potential of interference situations;
- f) that the link margins for data relay satellite forward and return links are typically 2 to 4 dB, but in some cases may be on the order of 1 dB;
- g) that the link design margin for the space-to-space link is often the limiting factor;
- h) that data relay satellite systems will transmit and receive signals in the space operation, space research, Earth exploration-satellite, fixed-satellite, and inter-satellite services;
- i) that detailed technical information regarding protection criteria is contained in the Annex,

recommends

- 1 that protection criteria, specified in maximum aggregate interference power spectral density to system noise power density ratio, from all sources should not be exceeded for more than 0.1% of the time for the various links of data relay satellite systems as indicated in Table 1;

* This Recommendation should be brought to the attention of Radiocommunication Study Groups 4 and 5.