

ITU-R

Radiocommunication Sector of ITU

Recommendation ITU-R RS.1858

(01/2010)

**Characterization and assessment of
aggregate interference to the Earth
exploration-satellite service (passive)
sensor operations from multiple
sources of man-made emissions**

RS Series

Remote sensing systems



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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.

Policy on Intellectual Property Right (IPR)

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Series of ITU-R Recommendations

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P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
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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 RS.1858

Characterization and assessment of aggregate interference to the Earth exploration-satellite service (passive) sensor operations from multiple sources of man-made emissions

(Question ITU-R 243/7)

(2010)

Scope

This Recommendation provides information on the characterization and assessment of aggregate interference to passive sensor operations from multiple sources of man-made emissions. First, various sources of interference are enumerated. Next, the statistical moments of the aggregate interference are determined. Finally, results of a dynamic simulation that validates the aggregation methodology are discussed.

The ITU Radiocommunication Assembly,

considering

- a) that passive sensors are used in the remote sensing of the Earth and its atmosphere by Earth exploration and meteorological satellites in certain frequency bands allocated to the Earth exploration-satellite service (EESS) (passive);
- b) that the products of these passive sensor operations are essential to and used extensively in meteorology, climatology, and other disciplines for operational and scientific purposes;
- c) that passive sensors operating in the EESS (passive) are sensitive to any emissions within their allocated band;
- d) that any man-made emissions in bands allocated to the EESS (passive) may constitute degradation to the passive sensors using those bands and, subsequently, may impact their intended operations;
- e) that passive sensors may not be able to differentiate natural emissions from man-made emissions, and that man-made emission power may not be identifiable in the passive sensor products;
- f) that it is necessary to characterize the sources of degradation to passives sensors;
- g) that it is necessary to develop appropriate methodologies to assess the aggregate impact of interference on passive sensor operations,

noting

- a) that Recommendations ITU-R RS.515, ITU-R RS.1028 and ITU-R RS.1029 provide general EESS (passive) operational characteristics, performance and protection criteria;
- b) that Recommendation ITU-R SM.1633 considers the impact of man-made emissions to EESS (passive) in certain bands in the range 1.4 to 60 GHz resulting from certain active services in specific adjacent or nearby bands;
- c) that Recommendation ITU-R SM.1542 provides some information regarding techniques that the EESS (passive) sensors may employ to mitigate effects of unwanted emissions,