



Recommendation ITU-R P.1815-1
(10/2009)

Differential rain attenuation

P Series
Radiowave propagation



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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)

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.

Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
BT	Broadcasting service (television)
F	Fixed service
M	Mobile, radiodetermination, amateur and related satellite services
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.

Electronic Publication
Geneva, 2009

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Differential rain attenuation

(Question ITU-R 208/3)

(2007-2009)

Scope

This Recommendation predicts the joint differential rain attenuation statistics between a satellite and two locations on the surface of the Earth.

The ITU Radiocommunication Assembly,

considering

- a) that it is necessary to have appropriate techniques to predict differential attenuation due to rain between satellite paths from a single satellite to multiple locations on the surface of the Earth for the purpose of sharing analyses;
- b) that estimates of the spatial correlation of rain rate are available;
- c) that methods have been developed to predict differential attenuation between space-Earth paths due to rain,

recommends

- 1** that the methods described in Annex 1 should be used to predict differential rain attenuation on satellite paths between a single satellite and multiple locations on the surface of the Earth.

Annex 1**Description of differential rain attenuation method****1 Introduction**

The method described in this Annex predicts the joint differential rain attenuation statistics between a satellite and two locations on the surface of the Earth and is applicable to frequencies up to 55 GHz, elevation angles above approximately 10°, and site separations between 0 and at least 250 km.

This method considers the statistical and temporal characteristics of rain cell size, rain intensity and movement of rain cells related to differential rain attenuation.