



Recommendation ITU-R P.2108-0
(06/2017)

Prediction of clutter loss

P Series
Radiowave propagation



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, 2017

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(2017)

Scope

This Recommendation provides methods for estimating loss through clutter at frequencies between 30 MHz and 100 GHz.

Keywords

Clutter, attenuation, shielding, terrestrial, Earth-space, aeronautical

The ITU Radiocommunication Assembly,

considering

- a) that, for system planning and interference assessment it may be necessary to account for the attenuation suffered by radio waves in passing over or between buildings;
- b) that, where a terrestrial station may be shielded by buildings a detailed calculation for a general case can be difficult to formulate and losses due to clutter must be considered dependant on the deployment scenario;
- c) that, where terrestrial stations are in motion the clutter environment of the radio path will be variable,

recognizing

- a) that Recommendation ITU-R P.1411 contains data and models for short-range radio system, mainly within an urban environment from 300 MHz to 100 GHz;
- b) that Recommendation ITU-R P.2040 contains basic expressions for reflection from and penetration through building materials, and a harmonised representation of building material electrical properties above about 100 MHz;
- c) that Recommendation ITU-R P.452 contains a prediction method for the evaluation of interference between stations on the surface of the Earth at frequencies from about 0.1 GHz to 50 GHz, accounting for both clear-air and hydrometeor scattering interference mechanisms;
- d) that Recommendation ITU-R P.1812 describes a propagation prediction method suitable for terrestrial point-to-area services in the frequency range 30 MHz to 3 GHz;
- e) that Recommendation ITU-R P.833 presents several models to enable the user to evaluate the effect of vegetation on radiowave signals between 30 MHz and 60 GHz;
- f) that Recommendation ITU-R P.[BEL] provides a statistical model for building entry loss for frequencies between about 80 MHz and 100 GHz,

recommends

that the material in Annex 1 be used to estimate clutter loss.