



Recommendation ITU-R F.1245-2
(03/2012)

**Mathematical model of average and related
radiation patterns for line-of-sight
point-to-point fixed wireless system
antennas for use in certain coordination
studies and interference assessment in
the frequency range from
1 GHz to about 70 GHz**

F Series
Fixed service



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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.

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RECOMMENDATION ITU-R F.1245-2*

Mathematical model of average and related radiation patterns for line-of-sight point-to-point fixed wireless system antennas for use in certain coordination studies and interference assessment in the frequency range from 1 GHz to about 70 GHz

(Question ITU-R 110-2/5)

(1997-2000-2012)

Scope

This Recommendation provides average and related reference radiation patterns for line-of-sight point-to-point fixed wireless system (FWS) antennas in the frequency range from 1 GHz to about 70 GHz. The analysis in this Recommendation may be used in certain coordination studies and interference assessments when particular information concerning the FWS antenna is not available.

The ITU Radiocommunication Assembly,

considering

- a) that the reference radiation pattern of line-of-sight point-to-point fixed wireless system (FWS) antennas stated in Recommendation ITU-R F.699 gives the peak envelope of side-lobe patterns;
- b) that if the peak envelope radiation pattern is used in the assessment of the aggregate interference consisting of many interference entries, the predicted interference will result in values that are greater than values that would be experienced in practice;
- c) that, therefore, it is necessary to use the antenna radiation pattern representing average side-lobe levels in the following cases:
 - to predict the aggregate interference to a geostationary or non-geostationary satellite from numerous radio-relay stations;
 - to predict the aggregate interference to a radio-relay station from many geostationary satellites;
 - to predict interference to a radio-relay station from one or more non-geostationary satellites under the continuously variable angle which should be averaged;
 - in any other cases where the use of the radiation pattern representing average side-lobe levels is appropriate;
- d) that a simple mathematical formula is preferable to the radiation pattern representing average side-lobe levels;
- e) that a mathematical model is also required for generalized radiation patterns of antennas for statistical interference analyses involving a few interference entries such as from geostationary satellites into systems in the fixed service,

* This Recommendation should be brought to the attention of Radiocommunication Study Groups 4 and 7.