

Recommendation ITU-R P.1511-3

(08/2024)

P Series: Radiowave propagation

Topography for Earth-space propagation modelling

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 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 <https://www.itu.int/pub/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 P.1511-3

Topography for Earth-space propagation modelling

(Question ITU-R 214/3)

(2001-2015-2019-2024)

Scope

This Recommendation provides global topographic data, information on geographic coordinates, and topographic height data for the prediction of propagation effects for Earth-space paths in ITU-R P-series Recommendations.

Keywords

Topography, geographic coordinates, geodetic height, orthometric height, ellipsoid, geoid, geoid undulation

The ITU Radiocommunication Assembly,

considering

- a) that information on ground topography is needed for the prediction of attenuation and scattering;
- b) that the information is needed for all locations of the globe, especially when regional or continental calculations are necessary,

recommends

- 1 that the data in Annex 1 should be used to obtain the topographic height of the surface of the Earth above mean sea level when no local data or data with better spatial resolution are available;
- 2 that the method in Annex 1 should be used to convert the height above the WGS 84 ellipsoid to the height above the WGS 84 geoid (i.e. the height above mean sea level), or *vice versa*, when no local data or data with better resolution are available;
- 3 that the method in Annex 1 should be used to calculate the look angles and range between two stations in geodetic coordinates.

Acronyms/Abbreviations

EGM Earth Gravitational Model

WGS World Geodetic System

Related ITU-R Recommendations

Recommendation ITU-R P.618

Recommendation ITU-R P.676

Recommendation ITU-R P.836

Recommendation ITU-R P.1144

Recommendation ITU-R P.2145

NOTE – The latest revision/edition of the Recommendation should be used.