



Radiocommunication Bureau (BR)

Administrative Circular
CACE/1148

1 July 2025

**To Administrations of Member States of the ITU, Radiocommunication Sector Members,
ITU-R Associates and ITU Academia participating in the work of Radiocommunication
Study Group 3**

Subject: **Radiocommunication Study Group 3 (Radio-wave Propagation)**

- **Proposed adoption of 1 draft new and 13 draft revised ITU-R Recommendations and their simultaneous approval by correspondence in accordance with § A2.6.2.4 of Resolution ITU-R 1-9 (Procedure for the simultaneous adoption and approval by correspondence)**

At the meeting of Radiocommunication Study Group 3, held on 6 June 2025, the Study Group decided to seek adoption of 1 draft new and 13 draft revised ITU-R Recommendations by correspondence (§ A2.6.2 of Resolution ITU-R 1-9) and further decided to apply the procedure for simultaneous adoption and approval by correspondence (PSAA, § A2.6.2.4 of Resolution ITU-R 1-9). The titles and summaries of the draft Recommendations are given in the Annex to this letter. Any Member State raising an objection to the adoption of a draft Recommendation is requested to inform the Director and the Chair of the Study Group of the reasons for the objection.

The consideration period shall extend for 2 months ending on 1 September 2025. If within this period no objections are received from Member States, the draft Recommendations shall be considered to be adopted by Study Group 3. Furthermore, since the PSAA procedure has been followed, the draft Recommendations shall also be considered as approved.

After the above-mentioned deadline, the results of the above procedures will be announced in an Administrative Circular and the approved Recommendations will be published as soon as practicable (see <http://www.itu.int/pub/R-REC>).

Any ITU member organization aware of a patent held by itself or others which may fully or partly cover elements of the draft Recommendations mentioned in this letter is requested to disclose such information to the Secretariat as soon as possible. The Common Patent Policy for ITU-T/ITU-R/ISO/IEC is available at <http://www.itu.int/en/ITU-T/ipr/Pages/policy.aspx>.

Mario Maniewicz
Director

Annex : Titles and summaries of the draft Recommendations

Documents: Documents 3/28(Rev.1), 3/30, 3/32(Rev.1), 3/34(Rev.1), 3/35(Rev.2), 3/38, 3/39(Rev.1), 3/40(Rev.1), 3/42(Rev.1), 3/43(Rev.1), 3/44(Rev.1), 3/45(Rev.1), 3/46(Rev.1) 3/47(Rev.1)

These documents are available in electronic format at: <https://www.itu.int/md/R23-SG03-C/en>

Annex

Titles and summaries of the draft ITU-R Recommendations

Draft new Recommendation ITU-R P.[LUNAR]

Doc. 3/34(Rev.1)

Methods and models for predicting lunar radio-wave propagation characteristics

The Attachment contains a draft new Recommendation on radio-wave propagation in the lunar environment relating to WRC-27 agenda item 1.15. The draft new recommendation is composed of the following four sections:

Section A: The Irregular Lunar Model (ILM): Point-to-area mode (site general).

Section B: The Irregular Lunar Model (ILM): Point-to-point mode (site specific).

Section C: Electrical characteristics of the surface of the Moon.

Section D: Prediction of other propagation losses.

Draft revision of Recommendation ITU-R P.837-7

Doc. 3/28(Rev.1)

Characteristics of precipitation for propagation modelling

This draft revision extends the applicability of the rainfall rate prediction method of the recommendation from annual to monthly statistics by providing the details and step-by-step procedure of the monthly prediction method.

The revision presents a modification of the text after validation with measurements of applicability of the existing recommendation to a monthly statistics method of the rainfall rate exceeded for a specified monthly probability at a given location, as outlined in Annex 1 to the draft revised recommendation.

Draft revision of Recommendation ITU-R P.310-10

Doc. 3/30

Definitions of terms relating to propagation in non-ionized media

The revision adds a new definition for beam spreading loss in the table in the Annex of terms used in radio-wave propagation in non-ionized media in Section C: Terms related to tropospheric effects on radio-wave propagation.

Draft revision of Recommendation ITU-R P.2040-3

Doc. 3/32(Rev.1)

Effects of building materials and structures on radio-wave propagation ~~above~~ in the range of about 100 MHz to 450 GHz

This draft revision presents an update of the text of the Recommendation in force to uniform mathematical formulation and to provide new data for additional materials as from the new draft Report.

Ionospheric propagation data and prediction methods required for the design of satellite networks and systems

The draft revision of the recommendation comprises of the following:

- Addition of a new section 4.2 “Ionospheric refractive index”, the subsequent sections and equation should be renumbered.
- Revision of section 5.2, adding sections 5.2.1 “Geographic dependence of scintillations”, and 5.2.2 “Seasonal, local time and solar dependence of scintillations”.

A path-specific propagation prediction method for point-to-area terrestrial services in the frequency range 30 MHz to 6 GHz

The draft revision of the recommendation comprises of the following:

- Section 3.2.1 is amended to add information about clutter classification models.
- Section 4.4 on troposcatter propagation model is modified to revert to the previous troposcatter model from Recommendation ITU-R P.1812-6, without harmonization with the preliminary draft revision (PDR) of Recommendation ITU-R P.617.

In 2023, ITU-R Study Group 3 harmonized the empirical troposcatter model from Recommendation ITU-R P.617-5 across Recommendations ITU-R P.1812 and ITU-R P.2001, based on validation against trans-horizon measurements. However, subsequent analyses revealed significant errors for short paths and small scatter angles (conditions outside its original empirical range). Although the revised model in the PDR of Recommendation ITU-R P.617-5 addressed these issues, it did not significantly improve the prediction accuracy of Recommendation ITU-R P.1812-7 over Recommendation ITU-R P.1812-6 on trans-horizon paths and showed a degraded prediction accuracy for shorter paths (below 20 km), particularly in dense urban environments.

Propagation data and prediction methods for the planning of short-range outdoor radiocommunication systems and radio local area networks in the frequency range 300 MHz to ~~3~~100 GHz

This draft revision proposes three modifications as follows:

- 1) The modification to the scope of the frequency range in Recommendation ITU-R P.1411 extends the upper limit to 300 GHz.
- 2) The modification to Table 4 in section §4.1.1 involves new coefficients for the site-general basic transmission loss model, specifically for below roof-tops propagation scenarios based on measurement results. This update extends the applicable frequency ranges: 450 MHz to 300 GHz for line-of-sight in urban and suburban environments, 800 MHz to 159 GHz for non-line-of-sight in urban high-rise environments, and 450 MHz to 255 GHz for non-line-of-sight in suburban environments.
- 3) A number of editorial corrections including Table 11 in section §5.1.1.

Draft revision of Recommendation ITU-R P.1238-12

Doc. 3/40(Rev.1)

**Propagation data and prediction methods for the planning of indoor
radiocommunication systems and radio local area networks
in the frequency range from 300 MHz to 450 GHz**

This draft revision proposes modifications as follows:

- 1) The modification to Table 2 in Section § 3.1 for covering a wider frequency range based on measurement datasets submitted to DBSG3.
- 2) A number of editorial corrections.

Draft revision of Recommendation ITU-R P.617-5

Doc. 3/42(Rev.1)

**Propagation prediction techniques and data required for the
design of trans-horizon radio-relay systems**

The troposcatter model in § 4 of Recommendation ITU-R P.617-5 was found to predict excessive levels of the troposcatter field at small scattering angles. This was due to the $35\log_{10}\theta$ term in (4) of Recommendation ITU-R P.617-5 and may be corrected by amending this term.

Draft revision of Recommendation ITU-R P.1814-0

Doc. 3/43(Rev.1)

Prediction methods required for the design of terrestrial free-space optical links

The revisions include an updated version of Section 4 “Specific atmospheric attenuation due to absorption and scattering γ_{atmo} ” and of Section 7 “Link margin calculation”. This draft revision originated from the following main issues identified in Recommendation ITU-R P.1814-0:

1. the specific fog attenuation model conflicts with experimental data and theoretical calculations based on the scattering theory and microphysics;
2. the model for specific rain attenuation does not include multiple scattering effects;
3. the model for specific snow attenuation conflicts with physical arguments;
4. a method to calculate the path attenuation from the specific attenuation of the individual contributions is missing.

Therefore, the following updates are highlighted:

- a) proposes a new model of specific fog attenuation in Section 4.1.2.1 of Annex 1;
- b) proposes a new model of specific rain attenuation in Section 4.1.2.2 of Annex 1;
- c) removes the model of specific snow attenuation reported in Section 4.2.3 of the in-force Recommendation P.1814-0;
- d) provides a method to calculate the path attenuation from the specific attenuation of the individual contributions in Section 4.2 of Annex 1;
- e) provides a methodology to calculate the statistics of total atmospheric attenuation in Section 4.3 of Annex 1;
- f) based on bullet e) above, simplifies Section 7.

Propagation data and prediction methods required for the design of terrestrial line-of-sight systems

The draft revision of the recommendation comprises of the following:

- 1 Addition of related Recommendations;
- 2 Addition of a Table of Contents;
- 3 Text is added after equation (14) to ensure valid results in all cases of multipath outage for all percentages of time in section 2.3.2;
- 4 The text of section 2.3.4 is amended to refer to Recommendation ITU-R P.841 for worst-month to annual conversion of multipath fading and enhancement;
- 5 Text is added after equation (32) to ensure valid results in all cases of rain attenuation in section 2.4.1;
- 6 The upper frequency limit of section 2.4.1, “rain attenuation” is increased to 175 GHz, based on measured data.

A general purpose wide-range terrestrial propagation model in the frequency range 30 MHz to 50 GHz

In 2023, ITU-R Study Group 3 harmonized the empirical troposcatter model from Recommendation [ITU-R P.617-5](#) across Recommendations [ITU-R P.1812](#) and ITU-R P.2001, based on validation against trans-horizon measurements. However, subsequent analyses revealed significant errors for short paths and small scatter angles (conditions outside its original empirical range). Although the revised model in the preliminary draft revised (PDR) of Recommendation ITU-R P.617-5 addressed these issues, it did not significantly improve the prediction accuracy of Recommendation ITU-R P.2001-5 over ITU-R P.2001-4 on trans-horizon paths and showed a degraded prediction accuracy for shorter paths. As a result, it was agreed to revert to the previous troposcatter model from Recommendation ITU-R P.2001-4, without harmonization with the PDR of Recommendation ITU-R P.617.

Propagation data and prediction methods for systems using high altitude platform stations and other elevated stations in the stratosphere at frequencies greater than about ~~700.7~~ GHz

The draft revision of the recommendation comprises of the following:

- Section 3, “Propagation prediction methods for the design of systems using high-altitude stations,” was updated to include a method for estimating the received power of each arrival path as a function of its path difference relative to the first arriving path.
- Editorial modification in the title to reflect the change from 0.7 GHz to 700 MHz.

Propagation data required for the evaluation of interference between stations in space and those on the surface of the Earth

The draft revision of the recommendation comprises of the following:

- Section 2.4.2 on beam-spreading loss for propagation through the atmosphere is replaced by a reference to Section 5 of Recommendation [ITU-R P.834](#);
 - Section 2.6 Diffraction/ducting loss due to terrain and/or specific obstruction L_{dtb} (dB) contains a modified Bullington method without smooth-Earth correction appropriate for low elevation angles. In this revision, the computation of diffraction loss due to a local obstruction now refers to Recommendation [ITU-R P.526](#), in particular:
 - for a single knife-edge obstacle: to section 4.1,
 - for a finite-width screen: to section 5.1,
 - for general slant path terrain obstruction: equation (13f) and the related text are replaced by a reference to section 4.6.
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