



## Radiocommunication Bureau (BR)

Administrative Circular  
**CACE/806**

20 April 2017

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

Subject: **Radiocommunication Study Group 3 (Radiowave Propagation)**

- **Proposed adoption of 2 draft new ITU-R Recommendations and 9 draft revised ITU-R Recommendations and their simultaneous approval by correspondence in accordance with § A2.6.2.4 of Resolution ITU-R 1-7 (Procedure for the simultaneous adoption and approval by correspondence)**

At the meeting of Radiocommunication Study Group 3, held on 30 March 2017, the Study Group decided to seek adoption of 2 draft new ITU-R Recommendations and 9 draft revised ITU-R Recommendations by correspondence (§ A2.6.2 of Resolution ITU-R 1-7) and further decided to apply the procedure for simultaneous adoption and approval by correspondence (PSAA, § A2.6.2.4 of Resolution ITU-R 1-7). The titles and summaries of the draft Recommendations are given in the Annex to this letter. Any Member State who objects to the adoption of a draft Recommendation is requested to inform the Director and the Chairman of the Study Group of the reasons for the objection.

The consideration period shall extend for 2 months ending on 20 June 2017. 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>.



François Rancy  
Director

#### **Annex: Titles and summaries of the draft Recommendations**

**Documents:** Documents [3/51\(Rev.1\)](#), [3/57\(Rev.1\)](#), [3/43](#), [3/44\(Rev.1\)](#), [3/46](#), [3/47](#), [3/49\(Rev.1\)](#), [3/50\(Rev.1\)](#), [3/53](#), [3/54\(Rev.1\)](#), [3/55](#)

These documents are available in electronic format at: <https://www.itu.int/md/R15-SG03-C/en>

#### **Distribution:**

- Administrations of Member States of the ITU and Radiocommunication Sector Members participating in the work of Radiocommunication Study Group 3
- ITU-R Associates participating in the work of Radiocommunication Study Group 3
- ITU Academia
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups
- Chairman and Vice-Chairmen of the Conference Preparatory Meeting
- Members of the Radio Regulations Board
- Secretary-General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development Bureau

## Annex

### Titles and summaries of the draft Recommendations

Draft new Recommendation ITU-R P.[CLUTTER]

Doc. [3/51\(Rev.1\)](#)

#### Prediction of Clutter Loss

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

Draft new Recommendation ITU-R P.[BEL]

Doc. [3/57\(Rev.1\)](#)

#### Prediction of Building Entry Loss

This Recommendation provides a method for estimating building entry loss at frequencies between about 80 MHz and 100 GHz. The method is not site-specific, and is primarily intended for use in sharing and compatibility studies.

Draft revision of Recommendation ITU-R P.1510-0

Doc. [3/43](#)

#### Annual mean surface temperature

This proposed draft revision provides new monthly and updated annual maps of mean surface temperature with higher resolution of 0.75° instead of 1.5° for the in-force version of this Recommendation.

These new monthly and updated monthly maps present an improvement for the prediction of clear sky and cloud attenuation, particularly for the communication links established in high latitudes that are of interest because of new arctic maritime routes due to the global warming.

The new monthly maps are required for the prediction of rainfall rate and therefore of rain attenuation in the proposed revision of Rec. ITU-R P.837-6.

Draft revision of Recommendation ITU-R P.837-6

Doc. [3/44\(Rev.1\)](#)

#### Characteristics of precipitation for propagation modelling

This proposed revision of Recommendation [ITU-R P.837-6](#) provides an updated and more accurate prediction method for rainfall rate statistics. This prediction method requires the monthly mean surface temperature and monthly total rainfall, which are parameters measured and archived by various meteorological offices.

When tested against the experimental statistics gathered in the DBSG3 database, the updated prediction method significantly improves the accuracy of the rain attenuation prediction methods in Recommendations [ITU-R P.530](#) and [ITU-R P.618](#) in temperate climates and in low-latitude regions.

The step-by-step methodology has been reviewed and validated. In parallel, validation examples and validated different implementations of the updated prediction method has been produced in commonly used programming languages such as: MATLAB, Octave, Python, and EXCEL.

Note that this proposed revision requires the prior approval of the proposed revision of Recommendation ITU-R P.1510.

Draft revision of Recommendation ITU-R P.1407-5

Doc. [3/46](#)

### **Multipath propagation and parameterization of its characteristics**

Recommendation ITU-R P.1407-5 describes the nature of multipath propagation and defines the appropriate parameters for the statistical description of multipath effects, and provides examples of correlation effects among multiple propagation paths and their computation.

The revision proposes to add the calculation of total power for directional power-delay profiles. The directional power-delay profile includes delay time and both azimuth and elevation angle of arrival. However, the current Rec. ITU-R P.1407-5 defines only the parameters of delay profile in section 2 and the parameters of azimuth angle of arrival profile in section 3. The parameters of elevation angle of arrival profile are not defined. The definition of elevation angle of arrival profile was added.

Section 2 defines the parameters of delay profile. Section 3 defines the parameters of azimuth /elevation angle of arrival profile. Section 4, which is a new section, defines the directional power-delay profile.

Draft revision of Recommendation ITU-R P.527-3

Doc. [3/47](#)

### **Electrical characteristics of the surface of the Earth**

This proposed revision provides a new and more comprehensive approach to modelling the electrical characteristics of the surface of the Earth, covering a wider range of ground types including ice and vegetation cover, and applicable up to 1 000 GHz. The parameters used differ from those in the current revision of the recommendation. Some material in terms of the earlier parameters is retained in an Appendix as a convenience to users of Recommendations ITU-R P.368 and ITU-R P.832. The new models in Annex 1 are fully compatible with this earlier information.

Draft revision of Recommendation ITU-R P.619-1

Doc. [3/49\(Rev.1\)](#)

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

The objective of this proposed draft revision is to provide additional information and calculation methods for predicting interference over Earth-space paths. Changes to the existing Recommendation ITU-R P.619-1 are shown in track changes until Annex 1, where the following Annex 1 in this document will replace the entire Annex 1 of the existing ITU-R P.619-1.

Draft revision of Recommendation ITU-R P.620-6

Doc. [3/50 \(Rev.1\)](#)

### **Propagation data required for the evaluation of coordination distances in the frequency range 100 MHz to 105 GHz**

The proposed revisions given in the Annex cover the following topics:

- a) The text inside Appendix 4 to Annex 1 of Recommendation ITU-R P.620-6 was deleted and replaced with a statement that points users toward Recommendation ITU-R F.699. This was done because the text in Appendix 4 to Annex 1 was a direct copy of a previous version of Recommendation ITU-R F.699. In order to ensure that any future updates of Recommendation ITU-R F.699 are applied to these calculations, a pointer to the current version of Recommendation ITU-R F.699 should be used instead.
- b) Additionally edits were made outside of Appendix 4 to Annex 1 to add a scope and keywords to the document, as well as to remove all references to Appendix 4 to Annex 1.

Draft revision of Recommendation ITU-R P.1144-7

Doc. [3/53](#)

### **Guide to the application of the propagation methods of Radiocommunication Study Group 3**

This proposed draft revision to Recommendation ITU-R P.1144-7 includes the relevant data from Recommendation ITU-R P.619 in Table 1 and for Recommendations ITU-R P.837 and ITU-R P.1510 in Table 2.

Draft revision of Recommendation ITU-R P.1411-8

Doc. [3/54\(Rev.1\)](#)

### **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 100 GHz**

This draft revision proposes eight modifications as follows:

- 1) The addition of two new sections, “§ 4.1.1 Site-general model” for propagation below rooftops and “§ 4.2.1 Site-general model” for propagation over-rooftops, to add new site-general path loss models and parameters derived from 0.8 to 73 GHz measurements in urban and suburban environments.

- 2) The revision of section § 4.1.2.2, relevant to the NLoS path loss model for propagation within street canyons, to extend the applicable frequency range of the NLoS propagation model to 38 GHz and add a new equation for chamfered shape buildings at the intersection area based on path loss measurements at 2.2, 4.7, 26.4 and 37.1 GHz.
- 3) The modification of section § 4.2.2, relevant to the NLoS path loss model for propagation over roof-tops, to extend the applicable frequency range of the current path loss model to 38 GHz based on 28 and 38 GHz measurement results and to correct an error in equation (48).
- 4) The modification of section “§ 5.1.1 delay spread for over roof-tops propagation environments” to add new measurement data at 27, 51-57, and 67-73 GHz bands in Table 9.
- 5) The modification of section “§ 5.1.2 delay spread for below roof-tops propagation environments” to add new measurement data at 27, 28, 38, 51-57, and 67-73 GHz in Table 12.
- 6) The addition of a new section “§ 5.3 effect of antenna beamwidth” and a modification of § 5.1.2.2 to add new prediction models and data tables for delay and angular spread associated with antenna beamwidth.
- 7) The modification of section “§ 6 Polarization characteristics” to add the measured XPD for the bands 51-57 GHz and 67-73 GHz in a low rise urban environment.
- 8) A number of editorial corrections.

### **Propagation data and prediction methods for the planning of indoor radiocommunication systems and radio local area networks in the frequency range 300 MHz to 100 GHz**

The revisions of Recommendation ITU-R P.1238-8 are the following.

- Addition of new data to Table 2 (power loss coefficients)  
Additional measurement results for various frequency bands (0.8, 2.2, 4.7, 26, 28, 37, 38, 51-57, 67-73, and 300 GHz) in various environments (office, commercial, corridor, and data centre) are included. Additional footnotes for the clarification of the measurement situation are also included. Above the table, an explanation for the measurement data of 300 GHz is added, because the measurement data at 300 GHz is a special case for this Recommendation.  
As editorial modifications, the row of 2.625 GHz is moved appropriately, because it was originally between the rows of 3.5 and 4 GHz. The frequency units in table are modified to GHz.
- Addition of new data to Table 4 (shadow fading statistics)  
Additional measurement results for various frequency bands (0.8, 2.2, 4.7, 26, 37, 38, 51-57, and 67-73 GHz) in office and commercial environments are included. Additional footnotes for clarification of the measurement situation are also included.

- Addition of new data to Table 5 (r.m.s. delay spread)  
Additional measurement results for various frequency bands (28, 38, 51-57, and 67-73 GHz) in various environments (commercial, office, classroom, computer cluster, and corridor) are included. An additional column summarizes many footnotes.
  - Addition of a new model to Section 5.1.2 (effect of antenna radiation pattern)  
Section 5.1.2 includes a new prediction model to calculate r.m.s. delay spread and r.m.s. angular spread dependent on half-power beamwidth of antenna. The parameters for the calculation of the model are summarized in additional tables (Tables 8 and 9).
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