



Radiocommunication Bureau (BR)

Administrative Circular
CACE/728

29 May 2015

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

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

- **Proposed adoption of 23 draft revised ITU-R Recommendations and their simultaneous approval by correspondence in accordance with § 10.3 of Resolution ITU-R 1-6 (Procedure for the simultaneous adoption and approval by correspondence)**
- **Proposed approval of suppression of 1 ITU-R Recommendation**


At the meeting of Radiocommunication Study Group 3, held on 30 April 2015, the Study Group decided to seek adoption of 23 draft revised ITU-R Recommendations by correspondence (§ 10.2.3 of Resolution ITU-R 1-6) and further decided to apply the procedure for simultaneous adoption and approval by correspondence (PSAA) (§ 10.3 of Resolution ITU-R 1-6). The titles and summaries of the draft Recommendations are given in Annex 1. Furthermore, the Study Group proposed approval of suppression of 1 Recommendation listed in Annex 2.

The consideration period shall extend for 2 months ending on 29 July 2015. 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.

Any Member State who objects to the adoption of a draft Recommendation or approval of the suppression of a Recommendation is requested to inform the Director and the Chairman of the Study Group of the reasons for the objection.

After the above-mentioned deadline, the results of the PSAA procedure 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 1: Titles and summaries of the draft Recommendations

Annex 2: Recommendation proposed for suppression

Documents: Documents [3/66\(Rev.1\)](#), [3/67\(Rev.1\)](#), [3/69\(Rev.1\)](#), [3/73\(Rev.1\)](#), [3/74\(Rev.1\)](#), [3/76\(Rev.1\)](#), [3/78\(Rev.1\)](#), [3/79\(Rev.1\)](#), [3/82\(Rev.1\)](#), [3/84\(Rev.1\)](#), [3/85\(Rev.1\)](#), [3/88\(Rev.1\)](#), [3/92\(Rev.1\)](#), [3/93\(Rev.1\)](#), [3/95\(Rev.1\)](#), [3/97\(Rev.1\)](#), [3/98\(Rev.1\)](#), [3/99\(Rev.1\)](#), [3/100\(Rev.1\)](#), [3/102\(Rev.1\)](#), [3/103\(Rev.1\)](#), [3/104\(Rev.1\)](#), [3/105\(Rev.1\)](#)

These documents are available in electronic format at: <http://www.itu.int/md/R12-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
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups and the Special Committee on Regulatory/Procedural Matters
- 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 1

Titles and summaries of the draft Recommendations

Draft revision of Recommendation ITU-R P.1321-4

Doc. 3/66(Rev.1)

Propagation factors affecting systems using digital modulation techniques at LF and MF

This draft revision provides updated information on the seasonal variation of MF ground wave propagation.

Draft revision of Recommendation ITU-R P.533-12

Doc. 3/67(Rev.1)

Method for the prediction of the performance of HF circuits

This draft revision includes two changes proposed for clarification and two changes that modify calculations. The calculations of above-the-MUF loss and penetration loss are proposed since it has been demonstrated that the performance predictions are improved in comparison to D1 databank measurements. Finally to bring the method up to date with these proposed changes, the not-otherwise-included loss coefficients, L_z and L_y , are assigned new values.

Draft revision of Recommendation ITU-R P.372-11

Doc. 3/69(Rev.1)

Radio noise

This draft revision has been reviewed with respect to brightness temperature. Variable symbols for temperature were reviewed and 'T' has been substituted for 't' for consistency, as follows:

- 1 Correction to equation (10) for brightness temperature in line with Recommendation ITU-R P.1322.
- 2 Addition of equation (11) which estimates the mean radiating temperature, T_{mr} , for clear and cloudy weather.
- 3 ' T_o ' replaces ' t_o ' in equations (2), (3) and (4) and the text of section 2.
- 4 ' T_c ' replaces ' t_c ' in equation (3) and the text of section 2.
- 5 ' T_t ' replaces ' t_t ' in equation (4) and the text of section 2.
- 6 ' T_a ' replaces ' t_a ' in equation (9) and the text of sections 2 and 4.
- 7 ' T_b ' replaces ' t_b ' in the text and equations of sections 4 and 6.
- 8 Equations have been renumbered appropriately.

Topography for Earth-to-space propagation modelling

This draft revision includes:

- 1 addition of a scope to the Recommendation;
- 2 addition of a declaration that the digital maps are an integral part of the Recommendation;
- 3 the naming of the digital product files has been aligned with the agreed naming convention;
- 4 the digital products should be made available alongside the text of the Recommendation in line with current practice.

It should be noted that there is no change proposed to the recommended methods or the data values in the associated digital products.

Probability distributions relevant to radiowave propagation modelling

The purpose of this revision is to correct an error in section 5 and incorporate new information that generalizes the combined log-normal and Rayleigh distribution.

Characterization of the variability of propagation phenomena and estimation of the risk associated with propagation margin

This draft revision provides changes to Annex 2. It gives a new map of the climatic ratio and also corrects a minor editorial mistake.

A path-specific propagation prediction method for point-to-area terrestrial services in the VHF and UHF bands

This draft revision proposes:

- 1 an additional line *h)* under *noting*;
- 2 revisions of sections 1, 2, 3.2, 4.9 and 4.10 of Annex 1.

Propagation effects relating to terrestrial land mobile and broadcasting services in the VHF and UHF band

This draft revision includes additional references to ITU-R Recommendations accompanied by a transition of the building entry loss definition to Recommendation ITU-R P.2040.

Figure 2 has been corrected editorially.

The prediction of the time and the spatial profile for broadband land mobile services using UHF and SHF bands

This draft revision proposes that the arrival angle profile formula at a mobile service (MS) station for low-antenna-height base stations (BSs) be based on measured data. This formula can be expressed as the same formula of the arrival angle profile prediction formula at MS for high-antenna-height BS in Annex 3. Therefore, the current formula in Annex 3 can be used from low to high antenna BSs, thus extending the range of the base station antenna height.

Propagation data and prediction methods for the planning of indoor radiocommunication systems and radio local area networks in the frequency range 900 MHz to 100 GHz

This draft revision proposes:

- 1 a lower frequency limit is changed from 900 MHz to 300 MHz. According to this modification, some descriptions are added to the *considering* section;
- 2 a Recommendation ITU-R P.2040 related description is inserted in a *noting b*);
- 3 in section 3.1, the form of equation (1) has been changed to include the reference distance parameter. Some definitions are added. Related to this path loss model, several data derived from actual measurements are added to Tables 2, 3 and 4 and several descriptions for explanation are added in the footnote part for these tables;
- 4 several data for delay spread are provided in section 4.3, some related descriptions are deleted and some are included in the footnote of the table;

- 5 the current section 4.4 has been deleted. A new subsection is established and some measurement data are provided;
- 6 section 7 is modified and an appendix at the end of this Recommendation is deleted.
- 7 in section 9.3, a new subsection is established and some text and a new data table of angular spread are provided;
- 8 a number of editorial corrections, renumbering tables, figures and equations are also included in this draft revision.

Draft revision of Recommendation ITU-R P.1411-7

Doc. 3/85(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 revision of § 4.1.1 of the path loss model for propagation within street canyons to add a new LoS path loss equation and a data table in 28 GHz and 60 GHz for millimetre-wave propagation.
- 2 The modification of equations in § 4.2.2 to correct errors and to consider the applicable frequency range up to 28 GHz for the reflection-dominant region in over-rooftop propagation situations.
- 3 The revision of section 4.3 “Models for propagation between terminals located from below roof-top height to near street level” to add two new sub-sections, § 4.3.2 “Site-specific model in urban environments” and § 4.3.3 “Site-specific model in residential environments” including new path loss models for propagation between low-height terminals.
- 4 The revision of § 5.1.2 to add a new r.m.s. delay spread table in 30 GHz and 60 GHz for millimetre-wave propagation.
- 5 The addition of two new sections, § 5.1.3 and § 5.2.2 to add new data tables for propagation between low-height terminals in different urban environments.
- 6 The addition of a new section 9 to add new data tables of stationary distance and r.m.s. delay spread from measurement for propagation when high speed trains travel at speeds exceeding 200 km/h.
- 7 The revision of § 4.5.2 indicating that guidance on the effects of building material properties and structures on radio propagation can be found in Recommendation ITU-R P.2040.
- 8 A number of editorial corrections.

Renumbering of tables, figures and equations is also included in this draft revision.

The radio refractive index: its formula and refractivity data

This draft revision includes the following:

- In section 1 of Annex 1 a clarification concerning the definition of dry air pressure has been added.
- In section 3.1 of Annex 1 new digital maps have been included as an integral part of the Recommendation. In section 3.2 the maps have been updated and the new maps are included as an integral part of the recommendation.

Effects of tropospheric refraction on radiowave propagation

This draft revision includes in Annex 1, section 6, a title change from "Effective path length" to "Excess path length" to align it with the text of the Recommendation and there are some editorial changes in this section.

The model provided from equation (22) has been updated to include:

- A new refractivity coefficient (k_2).
- Separate mapping functions.
- A correction from dry to hydrostatic component.
- A correction of the gravity constant in equation (23e).
- Model parameters as an integral part of the Recommendation.
- The definition of the interpolation procedure to be used along the horizontal.

Effects of building materials and structures on radiowave propagation above about 100 MHz

This draft revision includes the following:

- a) "*notings*" are added to draw attention to further associated Recommendations.
- b) "*recommends*" is expanded to describe the new structure.
- c) Section 1 of Annex 1 has some material removed to a new Annex 2.
- d) Sections 2 and 3 of Annex 1 are revised to align mathematical symbols, and to remove material not relevant to this Recommendation. The parameter table for modelling electric properties is slightly expanded.

- e) A new Annex 2 defines building-related losses, and provides guidance on how to measure building entry loss.

Draft revision of Recommendation ITU-R P.530-15

Doc. 3/95(Rev.1)

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

The proposals include:

- a revision in § 2.3.8 of a number of attenuation events lasting for 10 s or longer based on more measurement data, and
- a revision in § 2.4.2 of the method to combine rain and wet snow in the calculation of attenuation due to hydrometeors.

Draft revision of Recommendation ITU-R P.1621-1

Doc. 3/97(Rev.1)

Propagation data required for the design of Earth-space systems operating between 20 THz and 375 THz

This draft revision proposes:

- A correction of the Bufton wind profile and of the root mean square wind speed.
- The addition of information concerning the Huffnagel-Valley 5/7 C_n^2 default profile.
- An editorial correction.

Draft revision of Recommendation ITU-R P.2001-1

Doc. 3/98(Rev.1)

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

This draft revision includes:

- 1 the double limitation applied to smooth-surface heights was addressed to conform to treatment found in Recommendations ITU-R P.452 and ITU-R P.526;
- 2 the anomalous-propagation model smooth-surface limit was made to conform to that found in Recommendations ITU-R P.452, ITU-R P.526 and ITU-R P.1812;
- 3 equation 3.8.8d previously contained an obvious error and was adjusted to conform to the same equation found in Recommendations ITU-R P.452, ITU-R P.526 and ITU-R P.1812;
- 4 in the third paragraph following equation (C.2.2) the reference to equation (C.2.12) was changed to (C.2.13);

- 5 an adjustment was made to the method of calculating surface heights for water-vapour density. The associated revisions occur at § 3.2, where a method has been added for obtaining surface height at the mid-point of the path, and in Appendix F;
- 6 several changes of editorial nature were made to variable names, terminology, etc.;
- 7 equation (E.10) has been amended to correct a sign error.

Draft revision of Recommendation ITU-R P.618-11

Doc. 3/99(Rev.1)

Propagation data and prediction methods required for the design of Earth-space telecommunication systems

This draft revision proposes three changes in Annex 1 as follows:

- Add a subsection to § 2.2.1, describing the step-by-step procedure of a new method to predict the probability to have rain attenuation on a slant path.
- Editorially change to implement in § 2.2.4.2 the same footnote as in § 2.2.1.2.
- Correct equation (58), provide editorial changes and simplify the estimation of atmospheric mean radiating temperature.

Draft revision of Recommendation ITU-R P.681-7

Doc. 3/100(Rev.1)

Propagation data required for the design of Earth-space land mobile telecommunication systems

It is proposed to replace section 6 and section 8.1 of this Recommendation and to add Annex 2 at the end of the text.

Draft revision of Recommendation ITU-R P.452-15

Doc. 3/102(Rev.1)

Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies above about 0.1 GHz

This draft revision proposes changes to:

- 1 section 4.6 of Annex 1 contains a modification to equation (58), a path angular distance interpolation factor;
- 2 section 5 of Annex 1 contains numerous modifications;
- 3 section 4 of Attachment 2 to Annex 1 proposes to suppress text immediately following equation (152).

Acquisition, presentation and analysis of data in studies of tropospheric propagation

This draft revision proposes:

- in the *recommends* part, that the reference to tropospheric propagation is changed to radiowave propagation to align it with the title and current parts;
- that the acceptance criteria are updated to clarify the difference between information on the experiment results provided using the templates of SG 3 (i.e. SG 3 formatted tables) and the computer files containing the data;
- that the list of parts and tables provided in Annex 1 is updated to include new tables and revised tables.

Propagation data required for the design of broadcasting-satellite systems

The following changes are proposed:

- In the *considering* portion of the Recommendation, add the text:
“that Recommendation ITU-R P.2040 provides guidance on the effects of building material properties and structures on radiowave propagation”.
- Annex 1, section 4.1: “Building Entry Loss”: Replace the full current text with:
“Material relating to building entry loss can be found in Recommendation ITU-R P.2040”.

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

The changes concern:

- update of some elements of Table 1 – ITU-R radiowave propagation prediction methods;
- review and update of Table 2;
- review and update of Annex 1 to include new spatial interpolation methods and a clarification on the use of the geographic coordinates with respect to different reference systems.

Annex 2

(Source: Document 3/72)

Recommendation proposed for suppression

Recommendation ITU-R	Title
P.1322 ¹	Radiometric estimation of atmospheric attenuation

¹ Suppression subject to the approval of the revision to Recommendation ITU-R P.372-11 (see Annex 1 to this letter).