



Radiocommunication Bureau (BR)

Administrative Circular
CACE/1037

30 August 2022

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

Subject: **Radiocommunication Study Group 3 (Radiowave Propagation)**
 – **Approval of 1 revised ITU-R Question**

By Administrative Circular [CACE/1030](#) dated 23 June 2022, 1 draft revised ITU-R Question was submitted for approval by correspondence in accordance with Resolution ITU-R 1-8 (§ A2.5.2.3).

The conditions governing this procedure were met on 23 August 2022.

The text of the approved Question is attached for your reference in the Annex to this letter and will be published by the ITU.

Mario Maniewicz
Director

Annex: 1

Annex

QUESTION ITU-R 202-5/3

Methods for predicting propagation over the surface of the Earth

(1990-2000-2007-2015-2022)

The ITU Radiocommunication Assembly,

considering

- a)* that the presence of obstacles on the propagation path may modify, to a large extent, the mean value of the transmission loss, as well as the fading amplitude and characteristics;
- b)* that, with increase in frequency, the influence of the detailed roughness of the surface of the Earth as well as that of vegetation and natural or man-made structures on or above the surface of the Earth becomes more significant;
- c)* that propagation over high mountain ridges is sometimes of great practical importance;
- d)* that diffraction and site shielding are of practical significance in interference studies;
- e)* that the increase in performance and storage capacity of computers, permits the development of detailed digital terrain and clutter data bases;
- f)* that the field strength of the ground wave for frequencies between 10 kHz and 30 MHz is given in Recommendation ITU-R P.368, and a computer implementation, "LFMF-SmoothEarth", is available from the Radiocommunication Study Group 3 Web page;
- g)* that information on the phase of the ground-wave mode is required;
- h)* that information on ground conductivity is often available in digital form;
- i)* that seasonal variation of ground-wave propagation has been observed;
- j)* that the availability of high resolution terrain and building databases makes it practical to develop diffraction models which take 3-dimensional information into account;
- k)* that frequency-selective and other specialized materials are expected to be increasingly incorporated into the built environment (e.g. buildings, bridges, dams, etc.),

decides that the following Questions should be studied

- 1 What is the influence of terrain irregularities, vegetation and buildings, the existence of conducting structures and seasonal variability, both for locations within the service area around a transmitter and for the evaluation of interference at much greater distances, on the transmission loss, polarization, group delay and angle of arrival?
- 2 What is the additional transmission loss in urban areas?
- 3 What is the screening provided by obstacles near a terminal, taking into account the propagation mechanisms over the path?
- 4 What are the conditions under which obstacle gain occurs and the short-term and long-term variations of transmission loss under these conditions?
- 5 What are suitable methods and formats for describing the detailed roughness of the surface of the Earth including topographic features and man-made structures?
- 6 How can terrain data bases, together with other detailed information on terrain features, vegetation and buildings be applied in the prediction of attenuation, time delay, scatter and diffraction?
- 7 Can more accurate evaluation of losses be made by taking the three-dimensional shape of terrain and building obstacles into account?
- 8 How can quantitative relationships and statistically-based prediction methods be developed which treat reflection, diffraction and scatter from terrain features and buildings, as well as the influence of vegetation?
- 9 What is the phase of the ground-wave mode?
- 10 How can information on ground conductivity be made available digitally as matrix or vector information?

further decides

- 1 that the results of the above studies should be included in Recommendations and/or Reports;
- 2 that the above studies should be completed by 2025.

Category: S2
