



Radiocommunication Bureau (BR)

Administrative Circular
CACE/1155

29 August 2025

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

Subject: **Radiocommunication Study Group 3 (Radio-wave Propagation)**
 – Approval of 1 new ITU-R Question

By Administrative Circular [CACE/1146](#) dated 24 June 2025, 1 draft new ITU-R Question was submitted for approval by correspondence in accordance with Resolution ITU-R 1-9 (§ A2.5.2.3).

The conditions governing this procedure were met on 24 August 2025.

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 237/3

Propagation characteristics and prediction methods required for lunar radiocommunication

(2025)

The ITU Radiocommunication Assembly,

considering

- a)* that the lunar radio-wave propagation environment has unique exosphere, soil, and topographic conditions;
- b)* that the lunar radio-wave propagation environment has unique propagation mechanisms, including diffraction, reflection, scattering, multipath fading, etc. that need to be characterised;
- c)* that knowledge of the propagation characteristics for space services in the lunar and deep space areas are critical to the efficient design of future lunar and planetary communication;
- d)* that the lunar propagation environment includes the exosphere, regolith, and bedrock;
- e)* that the study of the complex relative permittivity of the lunar propagation environment is needed in characterising several lunar radio-wave propagation mechanisms,

recognising

- a)* that there are studies on sharing and compatibility for lunar radio communications between potential systems on the Moon's surface and systems orbiting the Moon;
- b)* that there is a shielded zone of the Moon (SZM) referred to in No. **22.22** of the Radio Regulations (RR) which has absence of appreciable water vapour and oxygen in the lunar atmosphere;
- c)* that there is future development of communications on the lunar surface, and between lunar orbit and the lunar surface including active and passive sensors on the Moon;
- d)* that there is also strong interest in studying the future development of applications for communication between the Earth's and Moon's surfaces,

decides that the following Questions should be studied

- 1 What are the radio-wave propagation mechanisms of the lunar surface with regards to reflection, scattering, diffraction, fading, and so on?
- 2 What are the multipath propagation characteristics of the lunar radio-wave propagation environment between the lunar surface and lunar orbit?
- 3 What are the propagation characteristics of the lunar surface and the lunar orbital environment?
- 4 What propagation models need to be developed for paths between the Earth's and the Moon's surfaces, between terminals on the lunar surface, and between lunar orbit and lunar surface to support radio-wave communication, sharing, and compatibility studies in these regions?
- 5 What factors can be used for frequency scaling, lunar spatial and temporal statistics of radio-wave propagation, and over what ranges are they appropriate for lunar radio communications?

- 6 What are the best ways of presenting the required data for the lunar radio-wave environment?
- 7 What are the physical and electrical properties of the lunar surface and how can they be characterised, especially with regards to reflection and scattering?
- 8 What are the radio-wave propagation characteristics of lunar particulates and/or dust near the surface?
- 9 What are the propagation characteristics of the lunar terrain and how can they be modelled to support radio-wave propagation prediction methods?
- 10 What are the characteristics of the lunar radio noise environment on the Earth-facing side and the Earth-shielded side?

further decides

- 1 that the results of the above studies (in particular for method and data) should be included in one or more Reports or Recommendations and Handbooks, as appropriate;
- 2 that radio-wave propagation characterisation and data for future lunar communication systems should be provided by 2027.

Category: S2
