



Received: 19 January 2024

Document 5D/60-E
22 January 2024
English only

TECHNOLOGY ASPECTS

IAFI¹

CONSIDERATIONS ON PRELIMINARY DRAFT NEW REPORT ITU-R M.[IMT.ABOVE 100 GHz]

1 Introduction

The 44th Meeting of ITU-R Working Party (WP) 5D further developed the Report on “Technical feasibility of IMT in bands above 100 GHz” in [Annex 5.3](#) to Document 5D/1776 and elevated the document to PDNR. Further, during RA-23 approved the Recommendation ITU-R M.2160 on “Framework and overall objectives of the future development of IMT for 2030 and beyond”.

We propose two edits for the PDNR ITU-R M.[IMT.ABOVE 100 GHz]:

- 1) update the scope in section 2;
- 2) update the reference to Recommendation ITU-R M.2160 in section 3.

With the above edits, the PDNR ITU-R M.[IMT.ABOVE 100 GHz] is stable and can be considered for elevation to DNR in the 45th Meeting of ITU-R WP 5D.

2 Proposal

Editorial changes are provided for section 2 and 3 in track changes for consideration of the meeting and further recommend the elevation of this report to DNR.

Attachment: Proposals on Annex 5.3 to Working Party 5D Chairman’s Report

¹ ITU-APT Foundation of India is a sector member of ITU (<https://iafi.in>).

ATTACHMENT

PRELIMINARY DRAFT NEW REPORT ITU-R M.[IMT.ABOVE 100 GHz]

Technical feasibility of IMT in bands above 100 GHz

1 Introduction

Report ITU-R M.2376 contains studies of frequency ranges (6-100 GHz) for International Mobile Telecommunications (IMT) technologies. It is envisioned that future IMT systems will need to support very high throughput data links to cope with the growth of the data traffic, new extremely bandwidth demanding use cases, as well as new capabilities of integrated sensing and communication (ISAC). There has been academic and industry research and development ongoing related to suitability of mobile broadband systems in frequency bands above 92 GHz to enable services requiring tera-bit per second speeds. This has prompted researchers to consider the technical feasibility of higher frequency bands in IMT.

2 Scope

This Report provides information on the technical feasibility of IMT in bands between 92 GHz and 400 GHz. This Report complements the studies carried in Report ITU-R M.2376. This technical feasibility Report includes information on propagation mechanisms and channel models, as well as newly developed technology enablers such as active and passive components, antenna techniques, deployment architectures, and the results of simulations and performance tests.

Aspects of coexistence with incumbent radiocommunications services above 92 GHz are outside the scope of this document, and this report does not presuppose the inclusion of any item on a future WRC agenda nor the decisions of a future WRC.

3 ITU Related documents

Resolution [ITU-R 56](#) – Naming for International Mobile Telecommunications

Resolution [ITU-R 65](#) – Principles for the process of future development of IMT for 2020 and beyond

Recommendation ITU-R M.[\[IMT.FRAMEWORK 2030 AND BEYOND\]](#)²

Recommendation [ITU-R F.699](#) – Reference radiation patterns for fixed wireless system antennas for use in coordination studies and interference assessment in the frequency range from 100 MHz to 86 GHz

Recommendation [ITU-R P.525](#) – Calculation of free-space attenuation

Recommendation [ITU-R P.676](#) – Attenuation by atmospheric gases and related effects

Recommendation [ITU-R P.838](#) – Specific attenuation model for rain for use in prediction methods

Recommendation [ITU-R P.2109](#) – Prediction of building entry loss

Question [ITU-R 229/5](#) – Further development of the terrestrial component of IMT

Question [ITU-R 262/5](#) – Usage of the terrestrial component of IMT systems for specific applications

² This recommendation is not yet approved but may be approved in the future.

- Question [237/1](#) – Technical and operational characteristics of the active services operating in the range 275-1 000 GHz
- Question [ITU-R 228-3](#) – Propagation data required for the planning of radiocommunication systems operating above 275 GHz
- Question [231/7](#) – Earth exploration-satellite service (active) and space research service (active) operating above 100 GHz
- Question [257/7](#) – Technical and operational characteristics of radio astronomy applications operating above 275 GHz
- Report [ITU-R M.2516](#) – Future technology trends of terrestrial IMT systems towards 2030 and beyond
- Report [ITU-R M.2376](#) – Technical feasibility of IMT in bands above 6 GHz
- Report [ITU-R M.2412](#) – Guidelines for evaluation of radio interface technologies for IMT 2020
- Report [ITU-R M.2417](#) – Technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz
- Report [ITU-R F.2416](#) – Technical and operational characteristics and applications of the point-to-point fixed service applications operating in the frequency band 275-450 GHz
- Report [ITU-R SM.2352](#) – Technology trends of active services in the frequency range 275-3 000 GHz
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