



Feasibility Study

37 GHz to 43.5 GHz

1 Glossary of Terms, Abbreviations, and Acronyms

Acronym	Explanation
3G	Third generation mobile telecommunications is a generation of standards for mobile phones and mobile telecommunication relating to the ITU-R IMT-2000 specifications.
4G	Fourth Generation Network Technology relating to ITU-R IMT-Advanced specifications.
5G	Fifth Generation Network Technology, relating to the ITU-R IMT-2020 specifications.
6G	Sixth Generation Network Technology, relating to the ITU-R IMT-2030 specifications.
Act	Electronic Communications Act, 2005 (Act No. 36 of 2005).
AAS	Active antennae systems.
Administration	Members States of the International Telecommunications Union.
Allocation	Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space <i>radiocommunication services</i> or the <i>radio astronomy service</i> under specified conditions.
Assignment	The authorisation given by the authority to a licensee to use a radio frequency or radio frequency channel under specified conditions.
ATU	African Telecommunications Union.
Authority	The Independent Communications Authority of South Africa.
BFWA	Broadband Fixed Wireless Access.
CEPT	Conference of European Posts and Telecommunications Authorities.
CRASA	Communications Regulators' Association of Southern Africa.
DC-MSS-IMT	Direct Connectivity between Mobile-Satellite Service space station and IMT UEs.
DECT	Digital Enhanced Cordless Telecommunications 1880 - 1900 MHz which is a digital communication standard, primarily used for creating cordless phone systems.
ECA	The Electronic Communications Act of South Africa, Act No 36 of 2005.
EIRP	Effective isotropically radiated power.
ERP	Effective radiated power, which is the product of the power supplied to an antenna and its gain relative to a half wave dipole in a given direction.
FDD	Frequency Division Duplex.
FWA	Fixed Wireless Access.
FS	Fixed Service.
FSS	Fixed Satellite Service.
Gbps	Gigabits per second.
GHz	Gigahertz of Radio Frequency Spectrum.
GSM	Global System for Mobile Communications, (originally Groupe Spécial Mobile), and is a standard set developed by the European Telecommunications Standards Institute (ETSI) to describe technologies for second generation (2G) digital cellular networks.
GSMA	Global System for Mobile Communications Association.
IMT	The name that encompasses IMT-2000, IMT-Advanced, IMT-2020 and IMT-2030 collectively known as International Mobile Telecommunications.
IMT-2000	The International Mobile Telecommunications, as envisioned in ITU-R Recommendation ITU-R M.687 and M.816.
IMT-Advanced	The International Mobile Telecommunications, as envisioned in Recommendation ITU-R M.1645.
IMT-2020	The International Mobile Telecommunications, as envisioned in Recommendation ITU-R M.2083.

Acronym	Explanation
IMT-2030	The International Mobile Telecommunications, as envisioned in Recommendation ITU-R M.2160.
IoT	Internet of Things.
ITU	International Telecommunication Union.
ITU RR	International Telecommunication Union Radio Regulations.
kHz	Kilohertz of Radio Frequency Spectrum.
LTE	Long Term Evolution and is a standard for wireless communication of high-speed data for mobile phones and data terminals. It is based on the GSM/EDGE and UMTS/HSPA network technologies.
M2M	Machine to Machine.
MHz	Megahertz of Radio Frequency Spectrum.
MIMO	Multiple-Input and Multiple-Output and is the use of multiple antennas at both the transmitter and receiver to improve communication performance.
NRFP	The National Radio Frequency Plan for South Africa.
NTN	Non-terrestrial Network
PMSE	Programme making and special events applications (PMSE)
PRASA	Passenger Rail Agency of South Africa.
PTM	Point to Multipoint.
PTP	Point to Point.
Radio-communication	All electronic communication by means of radio waves.
RATG	Radio Access Technology Group.
Revocation Period	A period of transition during which incumbent users are migrated out of the band in question to clear sufficient spectrum for new service providers.
RFSAP	Radio Frequency Spectrum Assignment Plan.
RLAN	Radio Local Access Network and is the high data rate two-way (duplex) wireless data communications network.
SABRE	South African Band Re-Planning Exercise.
SADC	Southern African Development Community.
SADC RFSAP	Southern African Development Community Frequency Allocation Plan.
SAPS	South African Police Service.
Service licence	BS, ECS or ECNS licence.
SF	Single Frequency.
SFN	Single Frequency Network.
TDD	Time Division Duplex.
VSAT	Very small aperture terminal used for fixed satellite services.
WAS	Wireless Access Systems and is end-user radio connections to public or private core networks.

2 Introduction

- 2.1 The frequency range 37-43.5GHz (“40GHz”) has a TDD band plan (J1) as shown on Figure 6 below. The arrangements for the band are set out in Section 11 of ITU-R M.1036-7. This band falls under the mmWave frequency range and is suitable for IMT. It has been identified as one of the “*most promising*” bands for IMT-2020.⁶⁵ The band is used for many other services, including FS, FSS, space research, and broadcasting.

Figure 6: Frequency arrangements between 37GHz-43.5GHz

GHz	37	43.5
J1	TDD	
	37	43.5

M.1036-11

Source: ITU-R M.1036

3 Regulatory context

- 3.1 In Region 1, this band is allocated to FS, FSS, mobile services, and space-to-earth research and exploration. In South Africa, the 40GHz band is allocated to mobile services on a primary basis, with some sub-bands being allocated to aeronautical and maritime mobile on a secondary basis. In the NRFP, this band has been identified for IMT.

4 Economic feasibility for IMT

- 4.1 The band is highly valued for IMT services. Auction results from the US⁶⁶ and the UK⁶⁷ suggest that the band is highly valued for IMT.⁶⁸ India also plans to hold auctions for

⁶⁵ See GSMA. 218. IMT Spectrum Between 24.25 and 86 GHz GSMA Public Policy Position. 2018, available at: <https://www.gsma.com/connectivity-for-good/spectrum/wp-content/uploads/2018/12/AI-1.13-Positions.pdf> 5252

⁶⁶ See United States Federal Communications Commission Auction 103 Winning Bidders and Incentive Payments. 2020, available at: <https://www.fcc.gov/auction/103>

⁶⁷ See Ofcom. 2025. Award of the mmWave (26 GHz and 40 GHz) spectrum bands, available at: <https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/237135-enabling-mmwave-spectrum-for-new-uses/associated-documents/oct-25-updates/regulation-120-results-of-the-mmwave-auction.pdf?v=406750>

⁶⁸ Note that a value per 10 MHz cannot be calculated from these auction results due to the reporting format used by the US and UK regulators.

spectrum in the 37-40GHz range in 2026.⁶⁹ This suggests that the band is feasible for IMT.

5 Technical feasibility

- 5.1 Incumbent users may pose an interference risk for IMT. The UK has decided to phase out fixed services in a substantial part of this band in ‘dense geographic areas’, in favour of allocating it to mobile use.⁷⁰ Outside of those areas, licensees may use the band in accordance with its shared access licensing framework. If this band is allocated to IMT in South Africa, it is likely that incumbent users in dense urban areas may need to be migrated. This transition process may be informed by Ofcom’s interference and coordination strategy for the 40GHz range⁷¹:
 - 5.1.1 A Revocation Period is defined. By the end of this period, incumbent users will be transitioned out of the band to clear sufficient spectrum for mobile services. In the UK strategy, the Revocation Period is longer for the 40GHz range than for the 26GHz range.
 - 5.1.2 Operators must submit a coordination request with a technical coordination plan before IMT deployment.
 - 5.1.3 If the request is approved, the operator can continue with deployment.
 - 5.1.4 If the request is denied due to a risk of harmful interference, operators will not be allowed to transmit on any frequency in the 40GHz range. The operator may resubmit a coordination request if it is initially denied.
- 5.2 This strategy can help to ensure that harmful interference between mobile services and incumbent users is minimized during the Revocation Period.

⁶⁹ See Telecom Regulatory Authority of India. 2025. Recommendations on the Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT, available at: https://www.trai.gov.in/sites/default/files/2025-02/Recommendations_04022025.pdf 46

⁷⁰ See Ofcom Information Memorandum on 26GHz and 40GHz bands, available at: <https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/237135-enabling-mmwave-spectrum-for-new-uses/associated-documents/nov-204-updates/mmwave-information-memorandum-v3.0-002.pdf?v=402790>

⁷¹ See Ofcom. 2025, Enabling mmWave spectrum for new uses, available at: <https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/237135-enabling-mmwave-spectrum-for-new-uses/associated-documents/nov-204-updates/annex-5-coordination-procedures-under-the-spectrum-access-high-density-26-ghz-and-40-ghz-licences-sept-25.pdf?v=402787>

6 Maturity of the IMT ecosystem

- 6.1 Like most bands in the mmWave frequency range, the device ecosystem is relatively underdeveloped, especially in comparison to the mid-band frequencies. There is only 1 device that supports the band⁷².

7 International considerations

- 7.1 This band is allocated to mobile services on a primary basis in all three regions, aside from sub-bands 40.5-41MHz (which is allocated to aeronautical and maritime on a secondary basis in Region 1) and 47.47MHz (which is allocated to amateur and amateur-satellite services). While the ITU has identified the 40GHz band for the terrestrial component of IMT, this identification does not give IMT services priority use of the band, nor does it prevent the application of other services within the band.⁷³
- 7.2 Only the UK and the US have conducted spectrum auctions for IMT in this band. In India, the 42.5-43.5 frequency range will not be considered for auction due to the limited device ecosystem.⁷⁴ However, many countries in Region 1 have identified the band for IMT, and plan to assign spectrum in the mmWave frequency range in future.

8 Stakeholder comments

- 8.1 Table 6 contains a summary of stakeholders' comments on the Draft IMT Roadmap 2024, Second Draft IMT Roadmap 2025, and Draft Radio Frequency Migration Plan 2024, alongside the Authority's response.

Table 6: Stakeholder comments and the Authority's responses for the 37 – 43.5 GHz band

Stakeholder comments	Authority's comment
Cell C, Vodacom, and MTN support the allocation of this band for IMT. Vodacom supports the development of a feasibility study for the band. MTN notes that AT&T is deploying services in the 39GHz band in the USA.	An RFSAP is in the process of being developed for this band given that it has been recommended for IMT in WRC-23.
Cell C advises the development of a clear coordination procedures and a possible migration plan for incumbent users. Telkom acknowledges the possible coordination of IMT with incumbents on a geographical basis, resulting in the need for FS links to migrate only in dense urban areas.	Coordination / coexistence will be considered during the course of developing the feasibility study and RFSAP for the band, as discussed in Section 5.

⁷² See ATU-R recommendation relating to International Mobile Telecommunications (IMT) Spectrum Roadmap For Africa. 2025. <https://atuuat.africa/wp-content/uploads/2025/08/Project-4-IMT-Spectrum-Roadmap-for-Africa-Final.pdf>

⁷³ See WRC-19 Footnote 5.550B.

⁷⁴ See Telecom Regulatory Authority of India. 2025. Recommendations on the Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT, available at: https://www.trai.gov.in/sites/default/files/2025-02/Recommendations_04022025.pdf

Stakeholder comments	Authority's comment
	Stakeholders are encouraged to provide comments in this regard.
Huawei, however, notes the limited device ecosystem.	The Authority is considering information on the maturity of this band for IMT. Stakeholders are encouraged to provide comments in this regard.
Viasat previously commented, in its response to the 2024 Draft Radio Frequency Migration Plan, that it is carrying out tests in this band and requested that the Authority considers recent developments regarding high throughput satellite services when conducting a feasibility study, as well as when designing the RFSAP. MTN notes the protections provided for passive earth-exploration satellite services in this band.	The Authority is gathering information on test results and other information that could assist in the development of an RFSAP for this band, including on how coordination with satellite services could take place. Stakeholders are encouraged to provide comment in this regard.

9 Considerations in favour of and against IMT allocation

9.1 There are a number of advantages to allocating the band for IMT:

9.1.1 The band has been allocated for IMT in the NRFP;

9.1.2 The allocation of this band to IMT is economically feasible;

9.1.3 There is a possibility of shared use of the band with incumbent users, including on a geographic basis;

9.1.4 There is potential for the implementation of short-term coordination and long-term migration strategies;

9.1.5 There is a limited, but growing number of devices suitable for this band;

9.1.6 There is growing interest in the band globally and within Region 1;

9.1.7 Stakeholders have expressed interest in the band.

9.2 Given the evident lack of disadvantages regarding the allocation of this band for IMT, the considerations in favour of the allocation outweigh those against doing so.