



Feasibility Study

24.25 GHz to 27.5 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 This band is arrangement I1, the frequency range 24.25-27.5 GHz (“26 GHz”), as shown on Figure 5 below. I1 has a TDD band plan. This band is suitable for IMT. It falls under the high-frequency range from 24-100GHz known as millimetre wave (“mmWave”) which is ideal for IMT use⁴⁶. The band is currently mainly used for FS links, and it is also used for mobile and inter-satellite services (excluding aeronautical mobile), and FSS.

Figure 5: Frequency arrangements between 24.25GHz-27.5GHz

GHz	24.25	27.5
I1	TDD	
	24.25	27.5

M.1036-10

Source: ITU-R M.1036

3 Regulatory context

- 3.1 The 26 GHz band is allocated to mobile services on a primary basis in all three ITU regions. This band has been identified for IMT in the NRFP. There is provision for IMT in the entire band.

4 Economic feasibility for IMT

- 4.1 The benefits of using this band for IMT are considerable. While there are other users of this band, such as FS and FSS, auction results in the Austria⁴⁷, Croatia⁴⁸, Finland⁴⁹, and the UK⁵⁰ suggest that the band is highly valued for IMT.⁵¹ The 26 GHz band is

⁴⁶ See GSA. 2025. Hot Topic Millimetre Wave, available at: <https://gsacom.com/paper/millimetre-wave-spectrum-july-2025/>

⁴⁷ See Austria Telecommunications and Postal Division Auction result 26 GHz/3600 MHz., available at: https://www.rtr.at/TKP/was_wir_tun/telekommunikation/spectrum/procedures/26G_3600M_2024/Results.en.html

⁴⁸ See HAKOM awarded radio frequency spectrum for the fifth generation mobile communications, available at: <https://www.hakom.hr/en/hakom-awarded-radio-frequency-spectrum-for-the-fifth-generation-mobile-communications/9081>

⁴⁹ See Finland Ministry of Transport and Communications Press Release: 5G spectrum auction concluded, available at: <https://valtioneuvosto.fi/en/-/1410829/5g-spectrum-auction-concluded-1206517>

⁵¹ Note that a value per 10 MHz cannot be calculated from the UK auction results due to the reporting format used by Ofcom.

considered to be one of the “*most promising*” bands for IMT-2020 services.⁵² The aforementioned auction results are as follows, expressed in 2025 Rands:

- 4.1.1 In Austria, 1 400 MHz of spectrum in the 26 GHz range were awarded to three licensees during the 2024 auction, with an approximate value of R2.45 million per 10 MHz.⁵³
- 4.1.2 In Croatia, 1 000 MHz of spectrum were awarded to four licensees during the 2021 auction, with an approximate value of R1.07 million per 10MHz.⁵⁴
- 4.1.3 In Finland, 2 400 MHz of spectrum in the 25.1-27.5 GHz were awarded to three licensees during the 2020 auction, with an approximate value of R2.11 million per 10 MHz.⁵⁵
- 4.2 Although the African Telecommunications Union (“ATU”) has encouraged the allocation of this band to IMT⁵⁶, the use of mmWave in Africa is hampered by deployment costs and economic barriers.⁵⁷

5 Technical feasibility

- 5.1 While the band has been identified for IMT in all three regions, IMT services do not have priority use of the band, nor does the identification prevent the application of other services within the band.⁵⁸ Therefore, there is a risk of interference with incumbent users. In the UK, Ofcom has allocated the bulk of the band (25.1GHz-27.5GHz) to IMT in

⁵² See GSMA. 2018. 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>

⁵³ In Austria’s 2024 auction, 1400 MHz of spectrum were awarded for the value of EUR115 736 per 10MHz. This figure is converted to 2024 Rands using an exchange rate of R20.5562/EUR and subsequently inflated to 2025 Rands. For exchange rate data, see: <https://www.resbank.co.za/en/home/what-we-do/statistics/key-statistics/selected-historical-rates> ; for CPI data see: <https://www.statssa.gov.za/publications/P0141/CPIHistory.pdf>

⁵⁴ In Croatia’s 2021 auction, 1000 MHz of spectrum were awarded for the value of HRK376 881 per 10 MHz. This figure is converted to 2021 USD using an exchange rate of HRK 6.4/USD, then from USD to Rands using R14.8/USD and subsequently inflated to 2025 Rands. For exchange rate data, see: <https://data.worldbank.org/indicator/PA.NUS.FCRE> ; for CPI data see: <https://www.statssa.gov.za/publications/P0141/CPIHistory.pdf>

⁵⁵ In Finland’s 2020 Auction, 2400 MHz of spectrum were awarded for the value of EUR87 500 per 10 MHz. This figure is converted to 2020 Rands using an exchange rate of R18.9371/EUR and subsequently inflated to 2025 Rands. For exchange rate data, see: <https://www.resbank.co.za/en/home/what-we-do/statistics/key-statistics/selected-historical-rates> ; for CPI data see: <https://www.statssa.gov.za/publications/P0141/CPIHistory.pdf>

⁵⁶ See ATU-R Recommendation 005-0. 2021, available at: https://atuuat.africa/wp-content/uploads/2021/08/En_ATU-R-Recommendation-005-0.pdf

⁵⁷ See GSA. 2025. Hot Topic Millimetre Wave, available at: <https://gsacom.com/paper/millimetre-wave-spectrum-july-2025/> 4646

⁵⁸ See WRC-19 Footnote 5.532AB.

dense areas where mmWave deployments are most likely, while permitting shared access in 25.25GHz-25.1GHz across the country, and shared access in the remainder of the band outside of dense urban areas⁵⁹. Incumbents in dense urban areas in the exclusive part of the band must migrate out of the band.

- 5.2 If this band is allocated to IMT in South Africa, it is likely that incumbent users in high-demand areas, such as towns and metropolitan areas, will need to be migrated. This transition process may be informed by Ofcom's interference and coordination strategy for the 26GHz range⁶⁰:
 - 5.2.1 A Revocation Period (i.e., period of transition) is defined. By the end of this period, incumbent users will be transitioned out of the band to clear sufficient spectrum for mobile services.
 - 5.2.2 During the Revocation Period, coordination zone maps are developed to determine whether IMT deployment will cause harmful interference to incumbent users.
 - 5.2.3 If there is no risk of interference, the operator can proceed with deployment.
 - 5.2.4 If there is a risk of interference, the operator must submit a detailed technical coordination plan and can only proceed with deployment once the coordination plan has been approved.
- 5.3 This strategy can help to ensure that harmful interference between mobile services and incumbent users is minimized, and to assist with the smooth transition of FS and FSS outside of the band.

6 Maturity of the IMT ecosystem

- 6.1 The device ecosystem is moderately developed and growing. There are 57 devices that support band plan n258 (24.25-27.5GHz), and the ATU notes that this band is already allocated to IMT under regional or national licenses in countries outside of Africa.⁶¹ However, spectrum allocation is not as harmonised as it is for the mid-band frequency

⁵⁹ 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>

⁶⁰ 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>

⁶¹ See ATU-R recommendation relating to International Mobile Telecommunications (IMT) Spectrum Roadmap For Africa. 2025, available at: <https://atuuat.africa/wp-content/uploads/2025/08/Project-4-IMT-Spectrum-Roadmap-for-Africa-Final.pdf>

ranges. Europe has pioneered 26GHz IMT allocation in Region 1, while in Africa and the Middle East, the use of mmWave has been conducted primarily on a trial basis⁶².

7 International considerations

- 7.1 This band was identified for IMT in Resolution 224 of WRC-19. The ATU has recommended that a contiguous block of 800-1000MHz of spectrum within this band be assigned to licensees⁶³ In the UK, three operators have each been assigned blocks of 800MHz of spectrum in this range for IMT services in high density areas.⁶⁴ South Africa is obligated, as per the Act, to harmonise its frequency allocation with those of other countries in the Region.

8 Stakeholder comments

- 8.1 Table 5 below shows a summary of various stakeholder 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 5: Stakeholder comments and the Authority's responses for the 24.25 – 27.5 GHz band

Stakeholder comments	Authority's comment
MTN, Telkom, Vodacom, Huawei, Qualcomm, and Cell C support the allocation of this band for IMT. Vodacom cites that the device ecosystem for this band already encompasses a fairly wide selection. Further, MTN and Vodacom recommend that the Authority places focus on the 26.5-27.5 GHz subrange due to its popularity in a number of countries. Vodacom comments that there are 60 devices supporting band n257 and 64 device variants supporting n258. Huawei notes that this band has the most developed ecosystem of the mmWave bands, but that even though spectrum in the band has been released in European markets, deployments are modest.	The Authority is in the process of developing an RFSAP for IMT services in this band given that it has been recommended for IMT in WRC-23.
Telkom proposes that coordination with FS links may be possible in this band, particularly outside of high-density areas. Telkom further notes that the current main use of this band is for FS links. MTN notes that while migration may need to take place for some users, there are portions of the band that can be fast-tracked for assignment. Vodacom proposes that detailed use of the band for fixed links be provided for transparency purposes. Cell C notes that measures should be put in place to ensure compatibility with passive services and FSS gateway stations in adjacent bands.	Coordination / coexistence will be considered during the course of developing the feasibility study and RFSAP for the band, as discussed in Section 5. The current main use of this band has been reflected as FS links. Stakeholders are encouraged to provide comments in this regard.

⁶² See GSA. 2025. Hot Topic Millimetre Wave, available at: <https://gsacom.com/paper/millimetre-wave-spectrum-july-2025/>

⁶³ See ATU Recommendation 005. 2021, available at: https://atuuat.africa/wp-content/uploads/2021/08/En_ATU-R-Recommendation-005-0.pdf

⁶⁴ 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>

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 to mobile services in all three regions;
- 9.1.2 The band has been identified for IMT in the NRFP;
- 9.1.3 There is a high likelihood that the highest value use of the band is for IMT rather than alternatives such as FS or FSS;
- 9.1.4 There is a possibility of shared/coordinated use, including on a geographic basis;
- 9.1.5 There is a growing device ecosystem;
- 9.1.6 Various jurisdictions in Region 1 have identified the band for IMT use;
- 9.1.7 Countries in Region 1 plan to (or have already) allocate large blocks in the 24.25-27.5 MHz range to IMT operators;
- 9.1.8 Several stakeholders consider the band suitable for IMT;

9.2 However, there are costs and economic barriers that may hinder the deployment of mmWave for IMT;

9.3 Despite barriers to deployment of mmWave for IMT, is it evident from auctions in other countries that this band is valuable for IMT, in addition to the possibility for spectrum sharing on a geographic basis, a growing device ecosystem, and stakeholder support. The considerations in favour of the allocation of this band for IMT, therefore, outweigh those against doing so.