



Feasibility Study

4800 MHz to 4990 MHz

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 arrangements for this band are set out in Section 9 of ITU-R M.1036-7. The frequency range 4800-4990MHz falls under band H1, which has a TDD band plan (see Figure 3)³⁰. This arrangement is suitable for IMT and has been identified as “*key mid-band spectrum for 5G expansion*.”³¹ The ITU has allocated this band to mobile services and FS on a primary basis, and to radio astronomy on a secondary basis.

Figure 3: Frequency arrangements between 4800MHz-4990MHz

MHz	4 800	4 990
H1	TDD	
	4 800	4 990

M.1036-09

Source: ITU-R M.1036

3 Regulatory context

- 3.1 This band has been allocated to mobile services on a primary basis in all three Regions, and has been identified for IMT in the NRFP. In Region 1 and in SA, the band is allocated to FS and mobile services on a co-primary basis, and to radio astronomy on a secondary basis. There is provision for IMT in the entire band. Spectrum can be allocated either wholly or partially to IMT.

4 Economic feasibility for IMT

- 4.1 The indications are that the highest value use for this band is for IMT services. While there are other users of this band, auction results in Hong Kong³² suggest that the band is highly valued for IMT. The auction results are as follows, expressed in 2025 Rands:

- 4.1.1 In Hong Kong, 80 MHz of spectrum in the 4840-4920 MHz range were awarded to two licensees during the 2019 auction, with an approximate value of R73.82 million per 10 MHz.³³

³⁰ See Section 9 of ITU-R M.1036-7.

³¹ See Miller et al. 2021, available at: <https://www.gsma.com/connectivity-for-good/spectrum/wp-content/uploads/2023/07/Sub-Saharan-Africa-Roadmaps-for-5G-Spectrum.pdf>

³² See Hong Kong Office of Communications Authority Auction of Radio Spectrum in the 4.9 GHz Band for the Provision of Public Mobile Services: Successful Bidder Notice, available at: https://www.ofca.gov.hk/en/news_info/press_releases/index_id_2014.html

³³ In Hong Kong's 2019 auction, 80 MHz of spectrum were awarded for the value of HK\$30 000 000 per 10MHz. This figure is converted to 2019 Rands using an exchange rate of HK\$0.5354/R and subsequently inflated to 2025

5 Technical feasibility

- 5.1 While the band has been identified for IMT, the identification does not establish priority for IMT. Any IMT use is subject to agreement with incumbent users.³⁴ This may pose a risk of interference. If the band is allocated to IMT, coordination strategies within the band and compatibility measures with adjacent frequency bands may be necessary.

6 Maturity of the IMT ecosystem

- 6.1 This band has a growing device ecosystem, with new IMT assignments in China and Japan.³⁵ There are 993 devices that support this band (n79).³⁶

7 International considerations

- 7.1 The band has been identified for IMT use in all 3 Regions. South Africa has an obligation, as per the Act, to harmonise spectrum allocation with other countries in Region 1.

8 Stakeholder comments

- 8.1 Refer to Table 3 below for 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 3: Stakeholder comments and the Authority's responses for the 4800 – 4990 MHz band

Stakeholder comments	Authority's comment
Vodacom, Huawei, MTN, Cell C, and Telkom support the allocation of this band for IMT. Vodacom further recommends the expedited migration of current incumbents who are not licensed to provide IMT services in this band. Cell C recommends that coexistence and migration guidelines are issued for this band. MTN, Vodacom, and Huawei note the moderate, but growing device ecosystem due to increased assignments in the Asia-Pacific and Latin American regions, most notably in China. MTN comments that the band is likely to have similar characteristics to the highly-valued IMT3500MHz band. Similarly, Huawei comments that this band complements the 3300-3800MHz corridor.	The Authority is in the process of developing an RFSAP for IMT services in this band.

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>

³⁴ See WRC-19 Footnote 5.441B.

³⁵ See GSMA Spectrum Policy Trends 2023, available at: <https://www.gsma.com/connectivity-for-good/spectrum/wp-content/uploads/2023/02/Spectrum-Policy-Trends-2023-1.pdf>

³⁶ 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>

9 Considerations in favour of and against IMT allocation

9.1 There are a number of advantages to allocating this band to IMT, including:

9.1.1 The NRFP identified 4800-4990 MHz for IMT;

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

9.1.3 Most stakeholders consider the band to be suitable for IMT;

9.1.4 There is a moderate, but growing, device ecosystem;

9.2 However, there is risk of interference with incumbent users if they are not migrated from the band.

9.3 Despite the risk of interference with incumbent users, the band is clearly valuable for IMT, and its allocation is supported by stakeholders. The considerations in favour of the allocation of this band for IMT, therefore, outweigh those against doing so.