



## Feasibility Study

47.2 GHz to 48.2 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.                                                                                                                                                                |

| <b>Acronym</b>      | <b>Explanation</b>                                                                                                                                                                        |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 47.2-48.2GHz has a TDD band plan (L1), as shown on Figure 8 below. The arrangements for the band are set out in Section 13 of ITU-R M.1036-7. This band is suitable for IMT and falls under the mmWave frequency range. The band is used for FS, FSS, and mobile services.

**Figure 8: Frequency arrangements between 47.2GHz-48.2GHz**

| GHz | 47.2 | 48.2 |
|-----|------|------|
| L1  |      |      |
|     | TDD  |      |
|     | 47.2 | 48.2 |

M.1036-13

Source: ITU-R M.1036-7

## 3 Regulatory context

- 3.1 In Region 1, this band has been allocated to mobile services, FS, and FSS on a co-primary basis. The same allocation is applied in the NRFP. The band has been identified for IMT in the NRFP.

## 4 Economic feasibility for IMT

- 4.1 The indications are that the highest value use for this band is for IMT services. For instance, auction results in the US<sup>79</sup> suggest that this band is highly valued for IMT.<sup>80</sup>
- 4.2 As is the case with other mmWave bands, the economic viability of this band to IMT is hindered by deployment costs.<sup>81</sup>

## 5 Technical feasibility

- 5.1 The identification of this band for IMT does not preclude the application of other services within the band, nor does it give IMT services priority use of the band.<sup>82</sup> Incumbent users may pose an interference risk for IMT. Compatibility with adjacent bands must also be considered.

<sup>79</sup> See United States Federal Communications Commission Auction 103 Winning Bidders and Incentive Payments. 2020, available at: <https://www.fcc.gov/auction/103>

<sup>80</sup> Note that a value per 10 MHz cannot be calculated from these auction results due to the reporting format used by the US regulator.

<sup>81</sup> See GSA. 2025. Hot Topic Millimetre Wave, available at: <https://gsacom.com/paper/millimetre-wave-spectrum-july-2025/>

<sup>82</sup> See WRC-19 Footnote 5.553B.

- 5.2 Co-existence between IMT and incumbent users (particularly FSS) can be achieved. The ITU recommends the establishment of coordination areas to mitigate the risk of harmful interference. The exact calculation of a coordination area is case-specific and is determined by the level interference. However, a general outline on how to calculate the coordination area is available in Recommendation ITU-R M.2161-0.<sup>83</sup>

## 6 Maturity of the IMT ecosystem

- 6.1 The device ecosystem is limited. There are no devices that support this band.<sup>84</sup>

## 7 International considerations

- 7.1 This band has been identified for IMT, and the US has assigned spectrum in this band to IMT operators. However, there have been no spectrum auctions or licenses recorded in Region 1.

## 8 Stakeholder comments

- 8.1 Refer to Table 8 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 8: Stakeholder comments and the Authority's responses for the 47.2 – 48.2 GHz band**

| Stakeholder comments                                                                                                                                                                                                                                                                                                                                                                                                          | Authority's comment                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cell C, MTN, and Vodacom support the assignment of this band for IMT, following the development of a RFSAP. Telkom supports RFSAP development for this band, however, notes that this band is of lesser priority in terms of licensing than the 26 GHz and 40 GHz bands. Telkom also proposes that in fact no feasibility study is needed for this band because it is either unused, or there is minimal use of it currently. | The Authority is in the process of developing an RFSAP for this band given that it has been recommended for IMT in WRC-23. Given that the band is highly valuable for IMT, the Authority expects there to soon be a growing device ecosystem. While the band may be unused, part of the reason for preparing this feasibility study is to solicit feedback from stakeholders on the use or otherwise of the band. |
| Huawei, however, note the limited device ecosystem for this band.                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Viasat previously requested, when commenting on the 2024 Draft Radio Frequency Migration Plan, that the Authority considers recent developments regarding high throughput satellite services when conducting a feasibility study, as well as when designing the RFSAP. Cell C advises that coexistence                                                                                                                        | The Authority is considering whether and how coordination with satellite services could take place. Stakeholders are encouraged to provide comment                                                                                                                                                                                                                                                                |

<sup>83</sup> See ITU-R M.2161-0, available at: [https://www.itu.int/dms\\_pubrec/itu-r/rec/m/R-REC-M.2161-0-202312-!!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.2161-0-202312-!!!PDF-E.pdf)

<sup>84</sup> 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>

| <b>Stakeholder comments</b>         | <b>Authority's comment</b> |
|-------------------------------------|----------------------------|
| with incumbent users be considered. | in this regard.            |

## 9 Considerations in favour of and against IMT allocation

- 9.1 The band was identified for IMT by the ITU and in the NRFP;
- 9.2 The band is likely of high value for IMT;
- 9.3 However, the device ecosystem is limited;
- 9.4 Despite the limited device ecosystem and absence of recorded IMT licenses in Region 1, auction results from the US suggest that this band is highly valued for IMT and thus the considerations in favour of the allocation to IMT outweigh those against doing so.