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Inquiry regarding the implementation the of the Radio Frequency Migration Plan and the International Mobile Telecommunications (IMT) Roadmap for public consultation

October 2021

# **Introduction**

1. The Authority is developing the revised radio frequency migration and assignment plans for IMT frequency bands and other Radiocommunications frequency bands to ensure that sufficient radio frequency spectrum is available for broadband and other services in the short term (within the next 3-5 years).
2. The Authority considers that there are two key aspects to this process:
   1. A broad range of radio frequency bands that might be considered for migration and radio frequency spectrum assignment plans *(category 1 bands)*, and
   2. A set of 14 IMT bands and 8 other radiocommunications bands for closer study *(category 2 bands)*. The Authority is considering assignment of the first set of 14 bands to IMT. The Authority is considering migrating current users in these 14 IMT bands into the other 8 radiocommunications bands or may consider applications that facilitate access to Broadband Service in the latter bands.
3. Questions on each of these two categories of bands are set out in the next sections.

# **2** **Category 1 bands**

1. The main objective of the category 1 bands is to identify priority IMT and other Radiocommunications frequency bands. Stakeholders are requested to consider the frequency bands below and the questions at the top of each column.
2. Stakeholders are requested to provide comments at the bottom of each response to the table indicating whether alternative frequency bands ought to be considered in respect of category 1 bands.
3. Stakeholders are further requested, in respect of category 1 bands, to provide any other information that might assist the Authority to rank the various frequency bands, in respect of information acquired on the impact of the frequency band on your businesses, on consumers, or on the economy more broadly.
4. IMT frequency category 1 bands for comment are:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Band** | **Q1: Rate[[1]](#footnote-1) the importance of this band to your business.** | **Q2: Does your firm use this band? (Yes/No)** | **Q3: If yes to Q2, what does your firm use this band for?** | **Q4: Does your firm have plans to use this band in the future?** | **Q5: If your firm uses this band or plans to use it, what is the value (in annual revenues) of the use of this band for your application?** | **Q6: If yes to Q2, what would be the impact if you had to vacate this band?** | **Q7: Additional comments and if yes to Q2, how many sites in total have you deployed for this band and how many sites per province?** |
| **1.** | 450 – 455 & 455 – 456 & 456 – 459 & 459 – 460 & 460 - 470 MHz |  |  |  |  |  |  |  |
| **2.** | 617 – 652 MHz  paired with  663 - 698 MHz |  |  |  |  |  |  |  |
| **3.** | 694 - 790 MHz |  |  |  |  |  |  |  |
| **4.** | 733 – 758 MHz (700MHz Guard frequency bands) |  |  |  |  |  |  |  |
| **5.** | 790 - 862 MHz |  |  |  |  |  |  |  |
| **6.** | 862 - 890 MHz (including 862-876 MHz) |  |  |  |  |  |  |  |
| **7.** | 890 - 942 MHz |  |  |  |  |  |  |  |
| **8.** | 942 - 960 MHz |  |  |  |  |  |  |  |
| **9.** | 1350 - 1375 MHz paired with  1492 - 1518 MHz |  |  |  |  |  |  |  |
| **10.** | 1375 – 1400 MHz paired with  1427 – 1452 MHz |  |  |  |  |  |  |  |
| **11.** | 1452 - 1492 MHz |  |  |  |  |  |  |  |
| **12.** | 1492 - 1518 MHz |  |  |  |  |  |  |  |
| **13.** | 1880 - 1900 MHz (1880 - 1920 MHz +1885 - 1980 MHz) |  |  |  |  |  |  |  |
| **14.** | 1980 - 2010 / 2170-2200 MHz + 2010-2025 MHz |  |  |  |  |  |  |  |
| **15.** | 2010-2025 MHz Planned for IMT |  |  |  |  |  |  |  |
| **16.** | 2025 – 2110 paired with  2200 - 2285 MHz |  |  |  |  |  |  |  |
| **17.** | 2300 - 2400 MHz |  |  |  |  |  |  |  |
| **18.** | 2500 - 2690 MHz |  |  |  |  |  |  |  |
| **19.** | 3300 - 3400 MHz |  |  |  |  |  |  |  |
| **20.** | 3400 - 3600 MHz |  |  |  |  |  |  |  |
| **21.** | 3600 - 3800 MHz |  |  |  |  |  |  |  |
| **22.** | 3800 - 4200 MHz |  |  |  |  |  |  |  |
| **23.** | 4800 - 4990 MHz |  |  |  |  |  |  |  |
| **24.** | 24.25 - 27.5 GHz |  |  |  |  |  |  |  |
| **25.** | 37 - 43.5 GHz (including 38-39.5 GHz for HAPS) |  |  |  |  |  |  |  |
| **26.** | 45.5-47 GHz |  |  |  |  |  |  |  |
| **27.** | 47.2 - 48.2 GHz (identified for IMT in Region 2 and another 69 countries from Regions 1 and 3) |  |  |  |  |  |  |  |
| **28.** | 66 - 71 GHz |  |  |  |  |  |  |  |

1. The category 1 frequency bands for other Radiocommunications Services to be commented on are:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Band** | **Q1: Rate[[2]](#footnote-2) the importance of this band to your business** | **Q2: Does your firm use this band (Yes/No)** | **Q3: If yes to Q2, what does your firm use this band for?** | **Q4: Does your firm have plans to use this band in the future?** | **Q5: If your firm uses this band or plans to use it, what is the value (in annual revenues) of the use of this band for your application?** | **Q6: If yes to Q2, what would be the impact if you had to vacate this band?** | **Q7: Additional comments and if yes to Q2, how many sites in total have you deployed for this band and how many sites per province?** |
| **29.** | 75.2 - 87.5 MHz |  |  |  |  |  |  |  |
| **30.** | 138 - 144 MHz |  |  |  |  |  |  |  |
| **31.** | 150.05 - 153 MHz |  |  |  |  |  |  |  |
| **32.** | 156.4875 -  156.5625 MHz |  |  |  |  |  |  |  |
| **33.** | 156.875 - 174 MHz |  |  |  |  |  |  |  |
| **34.** | 174 - 223 MHz |  |  |  |  |  |  |  |
| **35.** | 214 - 230 MHz  T-DAB |  |  |  |  |  |  |  |
| **36.** | 223 - 230 &  230 - 238 MHz |  |  |  |  |  |  |  |
| **37.** | 238 - 267 MHz |  |  |  |  |  |  |  |
| **38.** | 335.4 - 380 MHz |  |  |  |  |  |  |  |
| **39.** | 380 - 387 &  387 - 390 &  390 - 399.9 MHz |  |  |  |  |  |  |  |
| **40.** | 410 - 420 &  420 - 430 MHz |  |  |  |  |  |  |  |
| **41.** | 440 - 450 MHz |  |  |  |  |  |  |  |
| **42.** | 470 - 493 MHz |  |  |  |  |  |  |  |
| **43.** | 825 to 830 MHz and  870 to 875 MHz |  |  |  |  |  |  |  |
| **44.** | 1518 - 1525 MHz |  |  |  |  |  |  |  |
| **45.** | 1525 - 1530 &  1530 - 1535 &  1535 - 1559 MHz |  |  |  |  |  |  |  |
| **46.** | 1668 - 1675MHz |  |  |  |  |  |  |  |
| **47.** | 2290 - 2300 MHz |  |  |  |  |  |  |  |
| **48.** | 5470 - 5725 MHz |  |  |  |  |  |  |  |
| **49.** | 5725 - 5850 MHz |  |  |  |  |  |  |  |
| **50.** | 5850 - 5925 MHz |  |  |  |  |  |  |  |
| **51.** | 5925 - 6425 MHz |  |  |  |  |  |  |  |
| **52** | 6425 – 7025 MHz  (or 7125 MHz) |  |  |  |  |  |  |  |
| **53.** | 10700 - 11700 MHz |  |  |  |  |  |  |  |
| **54.** | 15400 - 15700 MHz |  |  |  |  |  |  |  |
| **55.** | 57 - 66 GHz |  |  |  |  |  |  |  |
| **56.** | 71-76 GHz and  81- 86 GHz |  |  |  |  |  |  |  |

1. Are there any other IMT or other Radiocommunications frequency bands which have not been covered above that you feel need to be considered? Please detail these frequency bands and why they need to be considered.

# **Category 2 bands**

1. The following is a list of the 22 category 2 radio frequency bands:
   1. This first list concerns bands that ***may be*** considered for IMT services, with the current users migrating to alternative bands:

|  |  |
| --- | --- |
| No | **Band** |
| 1 | 450 – 455 & 455 – 456 & 456 – 459 & 459 – 460 & 460 - 470 MHz |
| 2 | 1452 - 1492 MHz |
| 3 | 1492 – 1518 MHz |
| 4 | 2300 - 2400 MHz |
| 5 | 3300 - 3400 MHz |
| 6 | 3600 - 3800 MHz |
| 7 | 3800 – 4200 MHz |
| 8 | 24.25 – 27.5 GHz |
| 9 | 1980-2010 / 2170-2200 MHz + 2010-2025 MHz |
| 10 | 738 – 758 MHz |
| 11 | 4800 – 4990 MHz |
| 12 | 37 - 43.5 GHz |
| 13 | 45.5 - 47 GHz |
| 14 | 47.2 - 48.2 GHz |

* 1. This second list concerns other radiocommunications frequency bands that may be considered for services that facilitate access to broadband services or bands to which users in the first (IMT) list might migrate into:

|  |  |
| --- | --- |
| **No** | **Band** |
| 1 | 66 – 71 GHz |
| 2 | 71 - 76 GHz and 81 - 86 GHz |
| 3 | 57 - 66 GHz |
| 4 | 5925 - 6425 MHz |
| 5 | 380 - 387 & 387 - 390 & 390 - 399.9 MHz |
| 6 | 1518 - 1525 MHz |
| 7 | 27.5-29.5 GHz (28 GHz) |
| 8 | 75.2-87.5 MHz |

* 1. Are there any other IMT or other Radiocommunications frequency bands which have not been included in the tables above that you feel need to be considered? For this band(s) please also provide answers to question below.

1. In respect of each of the category 2 bands, provide any information on the feasibility of changes in usage of these bands, in the following respects:
   1. Proposed applications and potential users that might be assigned spectrum in the band.
   2. Regulatory considerations, including an explanation as to how the use of the band for the proposed application helps achieve the objectives set out in Section 2 of the ECA and meets the requirements set out in section 30 and Section 34 of the ECA.
   3. Economic costs and benefits of migration (please provide any information or research that your firm has available and any relevant underlying data):
      1. Annual revenues earned for services in the current and proposed applications in South Africa,
      2. Annual costs (including operating costs, depreciation, etc.) of providing the services for the current and proposed applications in South Africa,
      3. Fixed investment costs of the current and proposed applications. This includes the costs of the assets deployed to offer the current and proposed services,
      4. Consumer economic benefits of the current and proposed applications including using any measures of consumer surplus (the difference between consumer willingness to pay for the current and proposed applications, and the prices to consumers of the current and proposed applications),
      5. Estimates of elasticities of demand for the current and proposed applications (estimates of consumer price sensitivity),
      6. Estimates of the impact of the current and proposed applications on economic variables such as gross domestic product, employment, inflation, and export competitiveness in South Africa,
      7. Supplier (licensee) economic benefits of the current and proposed applications including using any measures of producer surplus. Producer surplus means the economic profits, i.e., revenues less all costs, after taking into account the costs of capital, to the current and proposed users. The costs of capital may apply the firm’s weighted average cost of capital to the value of the assets and working capital used to provide the service,
      8. Costs incurred by current users to migrate to alternative bands (if any), indicating to which bands the current users might migrate. Such costs might include:
         1. Investments to mitigate against mobile interference, such as protective site engineering measures or commercial arrangements with mobile operators,
         2. Costs associated with contract changes, such as price changes relating to different satellite frequencies for example, or costs arising from outsourcing services currently delivered in-house, or loss of business,
         3. Retuning or other adaptions to equipment in South Africa and elsewhere, potentially also affecting uplink operations in cases of fixed frequency pairings,
         4. Equipment related costs such as purchasing and installing new equipment suitable for use with different frequencies, and loss of current equipment still within its expected working life, and
         5. Relocation costs.
   4. Technical feasibility of migration, including:
      1. Relevant regional and international best practices for migration in South Africa,
      2. Coexistence analysis, including coordination requirements to avoid potential interference with neighbouring bands, etc.
      3. Maturity of the ecosystem,
      4. International benchmark studies, and
      5. Likely timelines for the migration.

1. 1 = Not relevant to my organisation; 2 = Minor relevance but not commercially relevant to my organisation; 3 = Some relevance commercially to my organisation; 4 = Reasonably commercially relevant to my organisation; 5 = Critical commercial relevance to my organisation [↑](#footnote-ref-1)
2. 1 = Not relevant to my organisation; 2 = Minor relevance but not commercially relevant to my organisation; 3 = Some relevance commercially to my organisation; 4 = Reasonably commercially relevant to my organisation; 5 = Critical commercial relevance to my organisation [↑](#footnote-ref-2)