ATU-R RECOMMENDATION

relating to

International Mobile Telecommunications (IMT) Spectrum Roadmap For Africa

numbered

ATU-R Recommendation 008-0

JULY 2025

Contents

1. SCOPE

This recommendation provides the roadmap as guidance on International Mobile Telecommunications (IMT) spectrum bands release and applicable regulatory conditions for the terrestrial component of IMT in Africa, and does not address other radiocommunication services nor other applications within the mobile service.

2. INTRODUCTION

In the rapidly evolving landscape of telecommunications and digital services, developing a comprehensive, multi-year spectrum roadmap for African countries is essential for fostering ICT sector growth, enhancing connectivity, and driving innovation across the continent. A spectrum roadmap serves as a critical tool, providing stakeholders with insights into planned spectrum awards, regulatory priorities, and the overall direction of spectrum management. This roadmap complements the decisions made by the International Telecommunication Union (ITU) World Radiocommunication Conferences on regional and global spectrum allocations and offers a localized, forward-looking framework for managing the scarce spectrum resource.

To maximize its effectiveness, a multi-year spectrum roadmap must address current and emerging challenges in radio spectrum management, looking at least 3 to 5 years into the future. It should identify key technological trends and their potential impact on spectrum policy and planning. Moreover, it must provide a detailed outline of spectrum management projects and programs designed to meet the identified challenges and capitalize on emerging opportunities. Importantly, this roadmap must be treated as a living document that is reviewed and updated regularly, ideally annually, to ensure its relevance in a dynamic and fast-changing environment. This ongoing review process allows for stakeholder input, integration of new information, and adaptation to unforeseen developments, ensuring that spectrum management remains flexible and effective.

Administrations must ensure that their spectrum roadmaps are clear, with specific objectives, tasks, and milestones that guide the entire process. By publishing and annually reviewing these roadmaps, governments can foster transparency, encourage market participation, and reduce uncertainty, thus attracting more significant investments in infrastructure and service deployment. This approach is key to promoting competition, innovation, and sustainable development of the ICT sector.

A well-structured spectrum roadmap also facilitates the coordination of public and private efforts, ensuring that African countries are equipped to provide reliable, high-speed internet access to their citizens, businesses, and other users. By enabling ICT services such as e-commerce, remote education, communication, entertainment, and access to critical services like healthcare, such a roadmap becomes a cornerstone for national socio-economic development.

Furthermore, a transparent and regularly updated IMT spectrum roadmap creates an environment of healthy competition among service providers by offering clear indications of available or forthcoming spectrum opportunities. This clarity enables stakeholders to make informed decisions about network expansion, technology upgrades, and long-term investment in new services, such as 5G and beyond, which require strategic spectrum planning. The result is a competitive market that drives higher-quality services lowers prices and encourages innovative solutions for consumers.

Additionally, a multi-year spectrum roadmap is a valuable tool for regional and international cooperation. Neighboring countries can use their roadmaps to coordinate cross-border and regional spectrum use, share best practices, and develop agreements that ensure seamless network deployment while ensuring co-existence and minimizing interference.

Through efficient spectrum management, African nations can position themselves as attractive destinations for inward foreign investment, stimulate the growth of local technology industries, and create new job opportunities, leading to broad socio-economic development. A well-designed spectrum roadmap is thus a key instrument for achieving sustainable development goals (SDGs) and prosperity across Africa. By regularly reviewing and updating these roadmaps, countries can ensure that their ICT markets remain competitive, resilient, and poised to unlock the full potential of their digital economies, ultimately improving the quality of life for citizens and creating new opportunities

3. CONSIDERATIONS

a) Spectrum Allocations for Mobile and identification for IMT

This sub-section summarizes the spectrum allocations for Mobile service and identification for IMT in ITU Radio Regulations for Region 1 (with a focus on Africa), WRC-23 outcomes, and AfriSAP Mobile allocations and IMT identifications as a key consideration.

The ITU Radio Regulations (RR) form the foundation of global spectrum planning and allocation, establishing the essential provisions for the distribution and technical parameters necessary for deploying all radiocommunication services and applications. As a legally binding international treaty, the RR ensures the efficient and harmonized use of the radio frequency spectrum among countries, fostering global interoperability and minimizing interference between services.

The RR plays a particularly crucial role in the context of IMT. It includes the "identification" of frequency bands for IMT use, which signals to the ICT sector the potential future use of these bands for mobile broadband services, such as 4G, 5G, and beyond. This identification serves as a global reference for administrations. They then review and adjust their national spectrum plans and roadmaps to include the necessary steps for making identified bands available for IMT applications. ICT sector stakeholders, including operators, manufacturers, and service providers, rely on these provisions to align their strategies and prepare for deploying new technologies by adhering to the framework set forth in the RR.

The ITU Radio Regulations contain a table of frequency allocations in Chapter 2 of Article 5. This table identifies the radiocommunications services allocated in the frequency bands between 8.3 kHz and 3000 GHz. IMT is a mobile service application. A band allocated to Mobile is also identified for IMT by means of a footnote in the Radio Regulations.

The recent decisions made during the World Radiocommunication Conference 2023 (WRC-23) introduced significant updates to the RR, marking substantial progress in the global effort to expand mobile broadband services. These updates include the identification of additional spectrum for IMT in key frequency bands such as 3300-3400 MHz, 3600-3800 MHz[1], 4800-4990 MHz, and 6425-7125 MHz. These newly identified bands will support the continued deployment of 5G technologies and lay the groundwork for the future development and eventual deployment of 6G technologies.

WRC-23 called for studies on potential new frequency bands for IMT in the frequency bands 4.4 - 4.8 GHz, 7.125 - 8.4 GHz (or parts of), and 14.8 - 15.35 GHz, taking into account existing primary services operating in those bands or adjacent frequency bands. range, a crucial step in the evolution of 6G. These studies will explore the feasibility and impact of using these higher frequency bands for next-generation mobile networks, with the results to be presented and discussed at WRC-27. The forward-looking agenda set by WRC-23 ensures that the global spectrum regulatory framework continues

[1] **Some countries in Africa have limited their use of 5G up to 3700 MHz (see RR No. 5.433B)**

supporting mobile broadband growth and innovation in the ICT sector.

The outcomes of WRC-23 reinforce the expansion of mobile broadband and foster future technological advancements by identifying the necessary spectrum resources for IMT. This is a critical enabler for the continued success of 5G and the future implementation of 6G, which will unlock new possibilities for connectivity and innovation on a global scale.

ATU publishes this Africa Spectrum Allocation Plan (AfriSAP). It includes a common Spectrum Allocations and Applications table and additional information to guide African regulators. The first edition is based on the ITU RR of 2020.

The table below collects all bands identified for IMT in one or more African countries. It is based on information from the ITU Radio Regulations 2024 and the 1st Edition of the AfriSAP. For completeness, Annex 1 of this Recommendation contains the footnotes from the ITU RR that identify these bands for IMT.

Table 1: Bands identified for IMT in at least one African country[2]

Band	RR Footnote	ITU-R Resolution	Notes
450 - 470 MHz	5.286AA	Res. 224 (Rev. WRC-19)	IMT identification in all Regions
614-694 MHz	5.307A	Res. 224 (Rev.WRC-23)	WRC-23: IMT identification in Egypt and 10 countries in the Middle East.
694 - 790 MHz	5.317A	Res. 224 (Rev. WRC-19) Res. 760 (Rev. WRC-19) Res. 749 (Rev. WRC-19)	IMT identification in Regions 1 and 2
790 - 960 MHz	5.317A	Res. 224 (Rev. WRC-19) Res. 760 (Rev. WRC-19) Res. 749 (Rev. WRC-19)	IMT identification in all Regions
1 427 - 1 452 MHz	5.341A	Res. 223 (Rev. WRC-19)	IMT identification in Region 1
1 452 - 1 492 MHz	5.346	Res. 223 (Rev. WRC-19) Res. 761 (Rev. WRC-19)	IMT identification in 44 African countries
1 492 - 1 518 MHz	5.341A	Res. 223 (Rev. WRC-19)	IMT identification in Region 1
1 710 - 1 885 MHz	5.384A	Res. 223 (Rev. WRC-19)	IMT identification in all Regions
1 885 - 2 025 MHz	5.388	Res. 212 (Rev. WRC-19) Res. 223 (Rev. WRC-19) Res. 221 (Rev. WRC-07)	IMT identification in all Regions
2 110 - 2 200 MHz	5.388	Res. 212 (Rev. WRC-19) Res. 223 (Rev. WRC-19) Res. 221 (Rev. WRC-07)	IMT identification in all Regions
2 300 - 2 400 MHz	5.384A	Res. 223 (Rev. WRC-19)	IMT identification in all Regions
2 500 - 2 690 MHz	5.384A	Res. 223 (Rev. WRC-19)	IMT identification in all Regions
3 300 - 3 400 MHz	5.429B	Res. 223 (Rev. WRC-19)	IMT identification in 49 African countries
3 400 - 3 600 MHz	5.430A	-	IMT identification in all Regions
3 600 – 3 800 MHz	5.433B 5.434B		WRC-23: 3 600 – 3 700 MHz is identified for IMT in Angola, Botswana, Guinea, Lesotho, Malawi and South Sudan

[2] **Source: ITU Radio Regulations 2024, 1st Edition of AfriSAP**

Band	RR Footnote	ITU-R Resolution	Notes
			3 600 – 3 800 MHz is identified for IMT in the rest of African countries and several other countries in Region 1
4 800 - 4 990 MHz	5.441B	Res. 223 (Rev. WRC-19)	IMT identification in 26 African countries
6 425 – 7 125 MHz	5.457D,5.457F, 5.457E	Resolution 220 (WRC 23)	WRC-23: IMT identification is in Region 1, and some countries in Regions 2 and 3 IMT identification in 7025-7125 MHz in Region 3
24.25 - 27.5 GHz	5.532AB	Res. 242 (WRC-19)	IMT identification in all Regions
37 - 43.5 GHz	5.550B	Res. 243 (WRC-19)	IMT identification in all Regions
45.5 - 47 GHz	5.553A	Res. 244 (WRC-19)	IMT identification in 35 African countries
47.2 - 48.2 GHz	5.553B	Res. 243 (WRC-19)	IMT identification in 50 African countries and Region 2
66 - 71 GHz	5.559AA	Res. 241 (WRC-19)	IMT identification in All Regions

The Radio Regulations and the AfriSAP identify the frequency ranges for IMT but do not specify the frequency arrangements or band plan, i.e., duplex mode, lower and upper edges, and duplex gap. ITU Recommendation M.1036 contains frequency arrangements for the bands identified for IMT in the Radio Regulations.

3GPP[3] includes in its specifications the band plans for GSM, UMTS, LTE, and 5G NR technologies. The 3GPP band plans are generally aligned with the M.1036 arrangements, but 3GPP also includes band plans that are not covered in M.1036. The 3GPP band plans are used by industry manufacturers and operators as the basis for mobile deployments.

3GPP specifications contain many frequency arrangements including in some cases, multiple options for a particular frequency bandplans. Annex 2 of this Recommendation lists all the 3GPP band plans, for LTE and 5G NR technologies. It is possible to find a list of the key band plans defined by 3GPP with the greatest usage or expectation for implementation in African countries. The table below is an extract of 3GPP band plans relevant to the IMT bands identified above.

ITU-R M.1036 contains frequency arrangements for IMT. The 3 GPP has defined various frequency bands for mobile communication technologies, including LTE (Long Term Evolution) and NR (New Radio for 5G). The table below shows the M.1036 arrangements and the associated 3GPP bandplans for the mobile bands.

[3] **https://www.3gpp.org/**

Table 2: 3GPP and M.1036-7 bandplans[4]

Band	M.1036-7	3GPP band plan	Uplink 3GPP band	Downlink 3GPP band	Duplex
450 MHz 450 - 470 MHz	D14	b31/n31	452.5 MHz – 457.5 MHz	462.5 MHz – 467.5 MHz	FDD
	D13	b72/n72	451 MHz – 456 MHz	461 MHz – 466 MHz	FDD
	D12	b73	450 MHz – 455 MHz	460 MHz – 465 MHz	FDD
600 MHz 614-694 MHz	A12	b71/n71	663 MHz – 698 MHz	617 MHz – 652 MHz	FDD
	A13	n105	663 MHz – 703 MHz	612 MHz – 652 MHz	FDD
700 MHz 694 - 790 MHz	A5/A7	b28/n28	703 MHz – 748 MHz	758 MHz – 803 MHz	FDD
	A6	b44	703 MHz – 803 MHz	703 MHz – 803 MHz	TDD
	A10	b67/n67	N/A	738 MHz – 758 MHz	SDL
		b68	698 MHz – 728 MHz	753 MHz – 783 MHz	FDD
		n29	N/A	717 MHz – 728 MHz	SDL
800 MHz 790 - 862 MHz	A3	b20/n20	832 MHz – 862 MHz	791 MHz – 821 MHz	FDD
900 MHz 880 – 960 MHz	A2	b8/n8	880 MHz – 915 MHz	925 MHz – 960 MHz	FDD
Core L-band 1452-1492 MHz	G1	b32	N/A	1452 MHz – 1496 MHz	SDL
Extended L-band 1 427 - 1 452 MHz, 1 492 - 1 518 MHz	G3	b50/n50	1432 MHz - 1517 MHz	1432 MHz - 1517 MHz	TDD
	G3	b51/n51	1427 MHz - 1432 MHz	1427 MHz - 1432 MHz	TDD
	G2	b74/n74	1427 MHz – 1470 MHz	1475 MHz – 1518 MHz	FDD
	G2	b11	1427.9 MHz – 1447.9 MHz	1475.9 MHz –1495.9 MHz	FDD
	G2	b21	1447.9 MHz– 1462.9 MHz	1495.9 MHz– 1510.9 MHz	FDD
	G1	b75/n75	N/A	1432 MHz – 1517 MHz	SDL
	G1	b76/n76	N/A	1427 MHz – 1432 MHz	SDL
		n91	832 MHz – 862 MHz	1427 MHz – 1432 MHz	FDD
		n92	832 MHz – 862 MHz	1432 MHz – 1517 MHz	FDD
		n93	880 MHz – 915 MHz	1427 MHz – 1432 MHz	FDD
		n94	880 MHz – 915 MHz	1432 MHz – 1517 MHz	FDD
		n109	703 MHz – 733 MHz	1432 MHz – 1517 MHz	FDD
1800 MHz 1 710 - 1 885 MHz	B2	b3/n3	1710 MHz – 1785 MHz	1805 MHz – 1880 MHz	FDD
2100 MHz 1 885 - 2 025 MHz / 2 110 - 2 200 MHz	B1	b1/n1	1920 MHz – 1980 MHz	2110 MHz – 2170 MHz	FDD
		b65/n65	1920 MHz – 2010 MHz	2110 MHz – 2200 MHz	FDD
2 GHz TDD		b33	1900 MHz – 1920 MHz	1900 MHz – 1920 MHz	TDD

[4] **Source: 3GPP TS 36.101 V18.6.0 (2024-06), Table 5.5-1; 3GPP TS 38.101-1 V18.6.0 (2024-06), Table 5.2-1; 3GPP TS 38.101-2 V18.6.0 (2024-06), Table 5.2-1**

Band	M.1036-7	3GPP band plan	Uplink 3GPP band	Downlink 3GPP band	Duplex
	B1	b34/n34	2010 MHz – 2025 MHz	2010 MHz – 2025 MHz	TDD
2300 MHz 2 300 - 2 400 MHz	E1	b40/n40	2300 MHz – 2400 MHz	2300 MHz – 2400 MHz	TDD
2600 MHz 2 500 - 2 690 MHz	C1	b7/n7	2500 MHz – 2570 MHz	2620 MHz – 2690 MHz	FDD
	C1	b38/n38	2570 MHz – 2620 MHz	2570 MHz – 2620 MHz	TDD
	C3	b41/n41	2496 MHz 2690 MHz	2496 MHz 2690 MHz	TDD
C-band 3 300 - 3 400 MHz 3 400 - 3 600 MHz 3 600 – 3 800 MHz	F2	b22	3410 MHz – 3490 MHz	3510 MHz – 3590 MHz	FDD
	F3	b42	3400 MHz – 3600 MHz	3400 MHz – 3600 MHz	TDD
	F3	b43	3600 MHz – 3800 MHz	3600 MHz – 3800 MHz	TDD
	F3	b48	3550 MHz – 3700 MHz	3550 MHz – 3700 MHz	TDD
	F3	b52	3300 MHz - 3400 MHz	3300 MHz - 3400 MHz	TDD
	F3	n48	3550 MHz – 3700 MHz	3550 MHz – 3700 MHz	TDD
	F3	n77	3300 MHz – 4200 MHz	3300 MHz – 4200 MHz	TDD
	F3	n78	3300 MHz – 3800 MHz	3300 MHz – 3800 MHz	TDD
4800 MHz 4 800 - 4 990 MHz	H1	n79	4400 MHz – 5000 MHz	4400 MHz – 5000 MHz	TDD
Upper 6 GHz 6 425 – 7 125 MHz	N1	n104	6425 MHz – 7125 MHz	6425 MHz – 7125 MHz	TDD
26 GHz 24.25 - 27.5 GHz		n257	26500 MHz – 29500 MHz	26500 MHz – 29500 MHz	TDD
	I1	n258	24250 MHz – 27500 MHz	24250 MHz – 27500 MHz	TDD
45.5 - 47 GHz	K1	No bandplan defined in 3GPP			
37 - 43.5 GHz	J1	n259	39500 MHz – 43500 MHz	39500 MHz – 43500 MHz	TDD
	J1	n260	37000 MHz – 40000 MHz	37000 MHz – 40000 MHz	TDD
47.2-48.2 GHz	L1	n262	47200 MHz – 48200 MHz	47200 MHz – 48200 MHz	TDD
57-71 GHz		n263	57000 MHz – 71000 MHz	57000 MHz – 71000 MHz	TDD

b) Band support in networks and user equipment

The identification of a band in the Radio Regulations, or the specification of a band plan in 3GPP specifications, does not always result in a band being released for use, or in the availability of network equipment or user equipment. National authorities decide which bands to release, according to their national circumstances (for instance, certain IMT bands may already be in use by other services) and the national demand for spectrum for IMT. Manufacturers will support a band in the equipment only if there is market demand.

The GSA[5] collects and makes publicly available information about mobile networks and their status, covering most countries worldwide. The information includes the bands that are supported by networks.

[5] https://gsacom.com/

The table 3 below shows the number of countries where a band has been used in some way[6].

Table 3: Countries where IMT frequency bands are in use as of September 2024

		Countries with the band in use	
Band	**3GPP bandplan**	**in Region 1**	**in the World**
450 MHz 450 - 470 MHz	b31	10	13
	b72	1	1
	b73	0	0
	n31	0	0
	n72	0	0
600 MHz 614-694 MHz	b71	0	5
	n71	0	4
	n105	0	0
700 MHz 694 - 790 MHz	b28	22	57
	b44	0	0
	b67	2	2
	b68	0	0
	n28	28	41
	n29	0	0
	n67	0	0
800 MHz 790 - 862 MHz	b20	90	105
	n20	2	4
900 MHz 880 – 960 MHz	b8	47	71
	n8	0	4
Core L-band 1452-1492 MHz	b32	10	10
Extended L-band 1 427 - 1 452 MHz, 1 492 - 1 518 MHz	b75/n75/ b76/n76	6	6
	b74/n74/b11/b 21	0	1
	b50/n50/ b51/n51	0	0
1800 MHz 1 710 - 1 885 MHz	b3	114	173
	n3	12	18
2100 MHz 1 885 - 2 025 MHz / 2 110 - 2 200 MHz (1980- 2010, ,2170-2200)	b1	52	83
	b65	0	0
	n1	20	26
	n65	0	0
2 GHz TDD	b33	9	9
	b34	1	1
	n34	0	0
2300 MHz 2 300 - 2 400 MHz	b40	27	46
	n40	9	12
	b7	68	98

6. Source : GSA, https://gambod.gsacom.com/dashboard.https://gambod.gsacom.com/dashboard. Data from September 2024. Note that information in the GSA database for some countries may not be complete, so the table should be seen as indicative and not a precise description. For the L-band (core and extended), the data has been corrected with the information from ECO Report 03

		Countries with the band in use	
Band	**3GPP bandplan**	**in Region 1**	**in the World**
2600 MHz 2 500 - 2 690 MHz	b38	35	52
	b41	9	19
	n7	2	5
	n38	1	1
	n41	4	12
C-band 3 300 - 3 400 MHz 3 400 - 3 600 MHz 3 600 – 3 800 MHz	b42	27	38
	b43	16	18
	b48	0	1
	b52	0	0
	n48	0	2
	n77	1	5
	n78	46	70
4800 MHz 4 800 - 4 990 MHz	n79	2	5
Upper 6 GHz 6 425 – 7 125 MHz	n104	0	0
26 GHz 24.25 - 27.5 GHz	n257	5	13
	n258	9	14
37 - 43.5 GHz	n259	0	0
	n260	0	5
47.2-48.2 GHz	n262	0	3
57-71 GHz	n263	0	0

c) Equipment availability

The GSA also publishes information about the mobile devices announced by manufacturers. This information includes, among other characteristics, the type of device, the supported bands, and the availability of the device (whether it is just announced or commercially available). According to the GSA, there is greater availability of user equipment in the bands listed in the previous section.[7] For example, regarding the 5G ecosystem, the GSA reports 2,022 user devices available for band n78 (3300 – 3800 MHz), and 1,543 available devices for band n3 (1800 MHz). Considering LTE/4G, the GSA reports 17,468 devices for band 3 (1800 MHz) and 11,126 for band 20 (800 MHz).[8] The greater availability of 4G and 5G equipment in these bands results from many factors, notably spectrum harmonization achieved by WRC decisions regarding IMT spectrum identification

The table below shows the number of commercial devices available that support each band. Data from September 2024.

[7] GSA, 5G Device Ecosystem, July 2024,

[8] GSA, GAMBoD database, September 2024, https://gambod.gsacom.com/devices/search

Table 4: IMT Bands support in devices[9]

Band	3GPP bandplan	Number of commercial devices – all device types	Number of commercial devices - Phone type only
450 MHz 450 - 470 MHz	b31	72	4
	b72	24	0
	b73	4	0
	n31	0	0
	n72	0	0
600 MHz 614-694 MHz	b71	977	266
	n71	646	194
	n105	0	0
700 MHz 694 - 790 MHz	b28	3687	1536
	b44	4	2
	b67	2	0
	b68	0	0
	n28	1680	1009
	n29	134	38
	n67	0	0
800 MHz 790 - 862 MHz	b20	3971	1522
	n20	1044	507
900 MHz 880 – 960 MHz	b8	5074	2101
	n8	1407	845
Core L-band 1452-1492 MHz	b32	886	335
Extended L-band 1 427 - 1 452 MHz, 1 492 - 1 518 MHz*	b11	17	1
	b21	84	1
	b75	7	0
	b76	7	0
	b74	0	0
	b50	0	0
	b51	0	0
	n75	127	35
	n76	102	14
	n74	0	0
	n50	1	1
	n51	0	0
1800 MHz 1 710 - 1 885 MH	b3	5654	2299
	n3	1711	1010
2100 MHz 1 885 - 2 025 MHz / 2 110 - 2 200 MHz	b1	6094	2361
	b65	2	0
	n1	1921	1136
	n65	8	3
2 GHz TDD	b33	0	0
	b34	1582	908
	n34	14	8

[9] Source: GSA, https://gambod.gsacom.com/dashboardhttps://gambod.gsacom.com/dashboard

Band	3GPP bandplan	Number of commercial devices – all device types	Number of commercial devices - Phone type only
2300 MHz 2 300 - 2 400 MHz	b40	3923	1913
	n40	1025	582
2600 MHz 2 500 - 2 690 MHz	b7	4863	1968
	b38	3618	1798
	b41	3839	1874
	n7	2178	1291
	n38	1200	682
	n41	1966	1167
C-band 3 300 - 3 400 MHz 3 400 - 3 600 MHz 3 600 – 3 800 MHz	b42	1062	348
	b43	618	68
	b48	865	290
	b52	0	0
	n48	487	165
	n77	1776	1040
	n78	2083	1224
4800 MHz 4 800 - 4 990 MHz	n79	993	412
Upper 6 GHz 6 425 – 7 125 MHz	n104	0	0
26 GHz 24.25 - 27.5 GHz	n257	54	14
	n258	57	26
37 - 43.5 GHz	n259	1	0
	n260	108	66
47.2-48.2 GHz	n262	0	0
57-71 GHz	n263	0	0

4. SPECIFIC CONSIDERATIONS ON INDIVIDUAL BANDS

a) 600 MHz Band

1) 614-694 MHz is allocated to the broadcasting service on a primary basis in Africa. In addition, there is a primary allocation to the mobile service, except aeronautical mobile, and IMT identification in Egypt (and other countries from the Middle East) (RR footnote 5.307A). In Gambia, Mauritania, Namibia, Nigeria, Senegal, Somalia, Tanzania and Chad the band is allocated to the mobile service on a secondary basis (RR footnote 5.307B).
2) In Cameroon, Libya and Sudan (and some Middle East countries), the frequency band 582-790 MHz is allocated to fixed and mobile, except aeronautical mobile, services on a secondary basis (RR footnote 5.300)
3) there is also a secondary allocation to land mobile services for applications ancillary to broadcasting and programme-making.5.296
4) There are two frequency arrangements for this band in M.1036 and in 3GPP:
    - 663 MHz – 698 MHz uplink, 617 MHz – 652 MHz downlink (M.1036 A12, 3GPP b71/n71)
    - 663 MHz – 703 MHz uplink, 612 MHz – 652 MHz downlink (M.1036 A13, 3GPP n105)
5) n105 is intended for Region 3 but it is yet to be deployed in any country in that Region. It is noted, that n105 spans a wider frequency range than covered by FNs 5.307A and 5.307B.
6) According to GSA, Frequency arrangement A12/ 3GPP band 71 is supported by more device

models than A13/3GPP n105

7) Frequency arrangement A12/ 3GPP band 71 is more suitable for countries that have a need to protect radio astronomy in 606-614 MHz) and/or for countries having interest in implementing 3GPP band 68 e.g. for public safety network.

b) 700 MHz band

1) The band 694 - 790 MHz is identified for IMT in Region 1.
2) Many African countries have plans for use for IMT already. Some African countries have released the band, or parts thereof, for IMT use already
3) The frequency arrangement used in Region 1 countries is M.1036 A7 / 3GPP band 28, but only the lower part (typically known as band 28 lower duplexer): 703 MHz – 733 MHz paired with 758 MHz – 788 MHz
4) Parts of the band 694-790 MHz are also planned for the deployment of broadband PPDR in accordance with AfriSAP and ITU-R M 2015.

c) 800 MHz /900 MHz / 1800 MHz /2100 MHz

1) 790-960 MHz is identified for IMT (fn5.317A), 1 710-1 885 MHz is identified for IMT (FN5.384A), ands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for IMT use (fn 5.388)
2) These bands are the cornerstone of IMT use in Region 1. The 900 MHz and 1800 MHz bands have been in use for more than 30 years, starting with GSM technology and evolving, where possible, to 3G and 4G. 2100 MHz was the designated 3G band I Region 1, and has been in use for IMT since the early 2000s. The 800 MHz band has been in use for 4G for more than 10 years in most countries. Terminal support of these bands is widespread
3) These bands are typically used for IMT with the following band plans:
    - 800 MHz: 832 MHz – 862 MHz uplink, 791 MHz – 821 MHz downlink (M.1036 A3, 3GPP band 20)
    - 900 MHz: 880 MHz – 915 MHz uplink, 925 MHz – 960 MHz downlink (M.1036 A2, 3GPP band 8)
    - 1800 MHz: 1710 MHz – 1785 MHz uplink, 1805 MHz – 1880 MHz downlink (M.1036 B2, 3GPP Band 3)
    - 2100 MHz: 1920 MHz – 1980 MHz uplink, 2110 MHz – 2170 MHz downlink (M.1036 B1, 3GPP band 1)
4) The channel raster in particular in 900 MHz and 1800 MHz may be based on the 2x200 kHz raster from GSM. Blocks and guard bands of 200 kHz are not well suited to LTE and 5G deployments, 5 MHz blocks without guard bands between them are preferable.
5) the Bands 1980-2010 and 2170-2200 MHz are used for MSS in co-existence with IMT.

d) 1 427 - 1 518 MHz (L-band)

1) In Region 1, the frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for (IMT) in accordance with Resolution 223 (fn 5.341A). 1 452-1 492 MHz is identified for (IMT) as the core L-band in African countries in accordance with Resolution 223 (fn 5.346)
2) 3GPP and ITU M.1036 propose three frequency arrangements for 1427-1518 MHz: TDD, Supplementary downlink (SDL) and FDD (1427 MHz – 1470 MHz paired with 1475 MHz – 1518 MHz). In addition, 3GPP ha recently introduced in their specifications a set of FDD arrangements that pair 1427-1517 MHz (as downlink) with 703 MHz – 733 MHz, or 832 MHz – 862 MHz or 880

MHz – 915 MHz (as uplink) These frequency ranges correspond with the uplinks of the 700 MHz, or 800 MHz or 900 MHz bands.

3) The GSA data shows that SDL band plans, for LTE and 5G NR, are the band plans with highest level of support (see table 4). It must be noted that support for TDD band plans is scarce.
4) In Region 1, CEPT has published two decisions for this frequency range: ECC Decision (17)06 on L-Band extensions 1427-1452 and 1492-1517MHz, and ECC decision (13)03 for Core L-Band 1452-1492MHz. These decisions harmonise the band for downlink only use
5) ECC Decision (17)06 contains also the technical conditions for protection of services below 1427 MHz (EESS, radio astronomy) and above 1518 MHz (MSS). The ECC conditions for protection of MSS are aligned with those proposed in Recommendation ITU-R M.2159
6) According to Res. 223 (Rev.WRC-19) there is a need to ensure the continued operations of the MSS in the frequency band 1 518-1 525 MHz;
7) Administrations may apply regulatory measures in Recommendation ITU-R M.2159-0 (12/2023) to ensure coexistence between the MSS in the frequency band 1 518-1 525 MHz and IMT in the frequency band 1 492-1 517 MHz. Other references include:
    - ECC Report 263 - Adjacent band compatibility studies between IMT operating in the frequency band 1492-1518 MHz and the MSS operating in the frequency band 1518-1525 MHz"[10],
    - ECC Report 299 - Measures to address potential blocking of MES operating in bands adjacent to 1518 MHz (including 1525-1559 MHz) at sea ports and airports"[11]

e) 2300 MHz

1) The frequency band 2300-2400 MHz is identified for IMT in all regions in accordance with Resolution 223 (fn 5.384A)
2) There is one frequency arrangement in use in TDD arrangement for the whole band, defined as E1 in M.1036 and b40/n40 in 3GPP
3) The band is in use in some African countries and in other parts of the world for 4G and for 5G.
4) The band has good support in 4G and 5G terminals and network equipment

f) 2600 MHz

1) The 2 500-2 690 MHz band is identified for IMT in all regions in accordance with Resolution 223 (fn 5.384A)
2) There are two frequency arrangements for the band
    - FDD+TDD in the centre gap (M.1036 arrangement C1)
        - 3GPP band 7: 2500 MHz – 2570 MHz FDD uplink, 2620 MHz – 2690 MHz FDD downlink
        - 3GPP band 38: 2570 MHz – 2620 MHz for TDD
    - TDD in the whole band (M.1036 arrangement C3)
3) The FDD/TDD band plan has broad support in 4G terminals, all band plans have broad support in 5G terminals
4) The 2 500-2 690 MHz is already in use in many African countries, as a capacity band for 4G or as 5G NR band

[10] https://docdb.cept.org/download/1294

[11] https://docdb.cept.org/download/1391

5) The use of an FDD band plan in one country and a TDD band plan (3GPP band 41) in a neighbouring country requires cross-border coordination if there are deployments at either side, near the border.

g) 3300-3700/3800 MHz (C-band)

1) The frequency band 3 300 - 3 400 MHz is identified for IMT in 49 African countries, and several countries in Regions 1 and 3 (fn 5.429B and 5.429F). It is also identified for IMT in Region 2 (fn 5.429D). 3400-3600 is identified for IMT in Regions 1 and 2 (fn 5.430A and 5.431B). 3600-3800 MHz is identified for IMT in most African countries, except Angola, Botswana, Guinea, Lesotho, Malawi and South Sudan where only 3600-3700 MHz is identified. The band is identified for IMT is several other Region 1 countries.
2) The frequency band 3400-3800 MHz is also allocated to the Fixed Service Satellite and the Fixed Service in Region 1 the Radio Regulations. The frequency band 3400-3700 MHz block is the downlink of the extended C-band for satellite services, and 3700-4200 MHz is the downlink of the regular C-band for satellites services. Parts of the 3400-3800 MHz are in use for FSS in several African countries. Several African countries also have Fixed Service use, notably for Broadband Wireless Access.
3) In CEPT, the 3400-3800 MHz was harmonised as the primary MFCN band in 2019
4) The most common band plan for IMT in this band is TDD: M.1036 arrangement F3, 3GPP band n78 (3300 MHz – 3800 MHz). Band n78 is the most supported band in 5G terminals.
5) ATU Recommendation 005 and other publicly available documents recommend that for 5G use in the band 80 or 100 MHz are assigned to each mobile operator, in a contiguous block.
6) The band 3.4-4.2 GHz which overlap with 3.3-3.8 GHz has historically been used by Fixed Satellite Services (FSS) earth station receivers. Although WRC-23 identified mobile services as primary in R1 up to 3800MHz (or 3700 MHz in some countries in Africa), FSS ES still operate in the band especially in 3.7-4.2 GHz. Sharing between FSS receiving earth stations and IMT is a complex issue that requires careful planning and consideration are needed to ensure the continued usage of FSS ES in C-band when deploying 5G in 3.4-3.8 GHz or parts thereof. Recommendations on best practices to mitigate interference from IMT into FSS ES are presented in ITU-R Report S.2546.

h) 4 800 - 4 990 MHz

1) The band is allocated to the Mobile Service on a primary basis in all regions. The band is identified for IMT in several African countries and other countries in Regions 1 and 3 through fn 5.441B of the Radio Regulations. This footnote specifies that agreement of neighbouring countries under No. 9.21 should be obtained before bringing an IMT station into use, and that the pfd from transmissions from IMT stations must not exceed −155 dB(W/(m2 · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast. This is to protect stations in the Aeronautical and Maritime Mobile Services in international air space and waters. Resolution 223 resolves that the pfd limit shall not apply to South Africa, Zimbabwe, and a few other countries outside Africa.
2) IMT stations can be notified to ITU for inclusion in the MIFR as stations with the “IM” type of service, or as stations in the Mobile service with other type of service
3) A TDD bandplan is defined in M.1036 – arrangement H1 – and in 3GPP – band n79

i) 6425-7125 MHz

1) At WRC-23, Regions and countries identified the band or part thereof for IMT. The frequency bands 6 425-7 125 MHz in Region 1 and 7 025-7 125 MHz in Region 3 are identified for IMT (fn 5.457E). Cambodia, Lao P.D.R. and the Maldives in Region 3, and Brazil and Mexico in Region 2, also identified 6 425-7 125 MHz for IMT (fn 5.457D and 5.457F).
2) A TDD frequency arrangement is defined in M.1036 – arrangement N1 – and in 3GPP – band n104. 3GPP finalised in the first quarter of 2025 the work to incorporate the technical conditions for protection of FSS uplink, as agreed at WRC-23.
3) The predominant existing use of the 6 425 – 7 025 MHz band in African countries is for the Fixed Service as well as MSS feeder links, and FSS.
4) Resolution 220 (WRC- 23) applies.

j) 26 GHz (24.25-27.5 GHz)

1) The frequency band 24.25-27.5 GHz is identified for IMT in all regions in accordance with Resolution 242 (fn 5.532AB). Resolution 750 contains the conditions for compatibility with the passive Earth exploration satellite service
2) Only TDD frequency arrangements are available. An arrangement for TDD in 24250 MHz – 27500 MHz is proposed in M.1036 as I1 and in 3GPP as n258.
3) ATU Recommendation 005 encourages administrations to assign a large contiguous block of spectrum per operator, preferably 800-1000 MHz bandwidth
4) The band is used in Africa predominantly for the fixed service.
5) The band is already in use in countries outside of Africa for licensed 5G mobile and 5G fixed wireless access, under national or regional licences.

5. RECOMMENDATIONS FOR RELEASE OR REGULATORY ACTION

a) 600 MHz Band

It is recommended that African administrations with an interest in introducing IMT in the 600 MHz frequency band in the future,

1) Adopt n71 band plan, i.e. 663 MHz – 698 MHz uplink, 617 MHz – 652 MHz downlink
2) Initiate discussions on a possible primary allocation at a future WRC by way of supporting the preliminary Agenda Item 2.14 for WRC-31 or possibly joining fn5.307A.
3) Start migration plan for DTT multiplexes in 600 MHz
4) Start discussions with neighbours on an approach for cross-border coexistence
5) Taking into account the GE-06 Agreement with respect to DTT services, seek support from the ITU on the international coordination plan or replan of the band as was previously done after WRC-12

b) 700 MHz band

It is recommended that African administrations that have not yet planned the release of 700 MHz

1) Finalise migration of DTT out of the channels above 694 MHz
2) Target release of 2x30 MHz (703 MHz – 733 MHz paired with 758 MHz – 788 MHz, bandplan M.1036 A7 / 3GPP band 28), in increments of 2x5MHz.

In countries where part of the band has been released, it is recommended to award any remaining block as a matter of priority

c) 800 MHz /900 MHz / 1800 MHz /2100 MHz

It is recommended that African administrations

1) Release any remaining block in the core bands as a matter of priority
2) Remove any technology evolution constraints – licensees should be able to use any band on an IMT technology agnostic basis without requiring further regulatory approval
3) Maintain existing 3GPP band plans: b20/n20 in 800 MHz, b8/n8 in 900 MHz, b3/n3 in 1800 MHz, b1/n1 in 2100 MHz
4) Consider rationalising and refarming the assignments in these bands into 2x5 MHz blocks, in cooperation with licensees
5) Note that the bands 1980-2010 MHz, 2170-2200 MHz are paired and used for satellite component of IMT for MSS application

d) 1 427 - 1 518 MHz (L-band)

It is recommended that African administrations

1) Consult national stakeholders on their interest and timeline for release
2) Adopt a downlink only bandplan in 1427-1517 MHz, or portion thereof (depending on the size of guard band) with a 5 MHz channelization raster
3) Consider the technical conditions as per recommendation ITU RM 2159-0 and in ECC Decision 17(06) for application in the national regulations

e) 2300 - 2400 MHz

It is recommended that African administrations

1) Release the band for 4G which can also be evolved to 5G
2) Target release of the band with the TDD frequency arrangement (n40), with a 1x10 MHz raster
3) Make available enough spectrum to allow at least 40 MHz contiguous block per operator.

f) 2500 - 2690 MHz

It is recommended that African administrations

1) Release any remaining block in the band as a matter of priority
2) Remove any technology evolution constraints – licensees should be able to use any band on an IMT technology agnostic basis without requiring further regulatory approval
3) Target release of the band with a 2x5MHz raster if using a C1 arrangement, or with a 1x10MHz raster if using a C3 arrangement

g) 3300-3700/3800 MHz (C-band)

It is recommended that African administrations

1) Update the national table of frequency allocations to reflect the primary allocation to Mobile

and the IMT identification, in the relevant parts of the band
2) Target release of the band with a TDD band plan (n78) with a 1x10 MHz raster
3) Make available enough spectrum to allow 80/100MHz contiguous block per operator within the range 3300-3700/3800 MHz
4) Develop and put in place a migration plan of Fixed Service users
5) Ensure the protection of FSS ES operating in the band and in adjacent band following guidelines presented in Report ITU-R S.2546

h) 4 800 - 4 990 MHz (4800 MHz)

It is recommended that African administrations

1) Consult with stakeholders on national requirements and release timeline
2) If and when the band is licensed for IMT use, and noting the restrictive conditions for IMT in the Radio Regulations, consider the best route for notification to ITU for inclusion in the MIFR

i) 6425-7125 MHz (Upper 6 GHz)

It is recommended that African administrations

1) Update the national table of frequency allocations to reflect the IMT identification in Region 1 in the band
2) Refrain from authorising unlicensed use in the band in order to avoid challenges to existing use as well as to future IMT use
3) Consult with national stakeholders on their interest and timeline for release, and on the feasibility of limiting new authorisations to use the 6425-7125 MHz band for new FS links
4) Evaluate and consult with mobile operators and other users of the Fixed Service on possible scenarios for the shared use of the band by IMT and FS, noting that the IMT use of the band will be in urban and suburban areas. Options include:
    - Migration of all FS links
    - Introduction of IMT in urban and suburban areas, and migration of the FS in those areas. Preservation of FS outside urban/suburban areas.
    - A phased approach, such as links in urban/suburban areas are migrated first, and links in rural areas are migrated later
5) A timeline for migration of FS, agreed with users, considering the number of FS stations impacted and the alternative methods of transmission (other FS bands, fibre)
6) Identify mitigation and coexistence measures for the FS links that will be preserved, notably protection/exclusion areas around receivers

j) 24.25-27.5 GHz (26 GHz band)

It is recommended that African administrations

1) Consult with stakeholders on national requirements and release timeline Target release of the band with a TDD band plan (3GPP n258, M.1036, band plan I1) with a 1x100 MHz raster
2) Make available enough spectrum to allow 800-1000 MHz contiguous block per operator.
3) Consult with fixed service licensees on the possible coexistence between fixed services and IMT,

or on the potential migration of fixed services. ECC Report 303 provides guidelines for coexistence between the two services.

6. RECOMMENDED SEQUENCING OF SPECTRUM RELEASE

Considering that:

1. different African administrations are at different stages of introduction of spectrum for IMT
2. the needs of African countries with regards to mobile capacity vary
3. spectrum reframing can be used to allow more evolving IMT technologies in the bands that are used currently for legacy IMT technologies
4. African administrations have existing users and services in some of the bands that are identified for IMT, and the needs of those users should be considered

it is recommended that:

1. African administrations consider the development of national IMT roadmaps.
2. While recognizing the unique and different national realities, African administrations seek to *foster harmonization, economies of scale, and mitigate cross-border harmful interference* of the spectrum bands by undertaking to release the bands as provided in table 5 below:

Table 5: Indicative release timelines for bands that are identified for IMT in the Radio Regulations

	First spectrum release (by 2028)	**Second spectrum release** (between 2025 to 2030)	**Third spectrum release** (between 2028 to 2032)
Bands below 2GHz	• 800 MHz • 900 MHz • 1800 MHz	• 700 MHz	• 1427 – 1518 MHz • 600 MHz in countries with IMT identification in the Radio Regulations
Bands above 2GHz	• 2100 MHz • 2600 MHz	• 2300 MHz • Parts of 3300 to 3700/3800 MHz according to national allocation	• Upper 6GHz • 4800 MHz
mmWave bands			• 26 GHz subject to national requirements

7. ANNEXES

Annex 1: Footnotes in the Radio Regulations relevant for IMT in Africa

5.286AA The frequency band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) - see Resolution **224 (Rev.WRC-19)***. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.307A *Additional allocation*: in Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, Iraq, Jordan, Kuwait, Oman, Palestine*, Qatar and the Syrian Arab Republic, the frequency band 614-694 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis and identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-23)** subject to the agreement obtained under No. **9.21.** Stations in the mobile service shall not create a field strength for more than 1% of the time at the highest of the clutter height or 10 m above ground level at the border of the territory of any other administration that exceeds the field strength value as calculated using § 4.1.3.2 of Annex 2 to the GE06 Agreement with regard to allowance for multiple interference, Table A.1.10 and the methodology given in the GE06 Agreement. Stations in the mobile service of the countries listed in this footnote shall not cause harmful interference to, or claim protection from the existing and future broadcasting stations of the neighbouring countries operating in accordance with the GE06 Plan. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations and shall in no way adversely affect the development of the existing and future broadcasting service in accordance with the GE06 Agreement. For countries party to the GE06 Agreement, the use of stations in the mobile service is also subject to the successful application of the procedures of that Agreement. This allocation does not establish priority in the Radio Regulations and shall allow the implementation and development of the broadcasting service in accordance with the GE06 Agreement. The countries listed in this footnote and located in the African Broadcasting Area should ensure protection of the radio astronomy service within the frequency band 606-614 MHz, as allocated in No. **5.304**, consistent with the most recent version of Recommendation ITU-R RA.769. The countries listed in this footnote, which are neighbouring to the countries listed in No. **5.312**, should ensure the protection of the aeronautical radionavigation service in the frequency band 645-862 MHz (WRC-23)

5.317A The parts of the frequency band 698-960 MHz in Region 2 and the frequency bands 694-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions **224 (Rev.WRC-23)**, **760 (Rev.WRC-23)** and **749 (Rev.WRC-23)**, where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-23)

5.341A In Region 1, the frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in

---

* ***Note by the Secretariat:*** **This Resolution was revised by WRC-23.**

* **Pursuant to Resolution 99 (Rev. Dubai, 2018) of the Plenipotentiary Conference, and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.**

accordance with Resolution **223 (Rev.WRC-15)***. This identification does not preclude the use of these frequency bands by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. (WRC-15)

5.346 In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kenya, Kuwait, Lesotho, Lebanon, Liberia, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Palestine**, Qatar, Dem. Rep. of the Congo, Rwanda, Senegal, Seychelles, Somalia, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1 452-1 492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-23)**. This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to the agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. See also Resolution **761 (Rev.WRC-19)**. (WRC-23)

5.384A The frequency bands 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz, or portions thereof, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)***. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

5.388 The frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications (IMT). Such use does not preclude the use of these frequency bands by other services to which they are allocated. The frequency bands should be made available for IMT in accordance with Resolution **212 (Rev.WRC-23)** (see also Resolution **223 (Rev.WRC-23)**). (WRC-23)

5.429B In the following countries of Region 1: Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Comoros, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, Eritrea, Eswatini, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Mauritania, Mongolia, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution **223 (Rev.WRC-23)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall

---

Note by the Secretariat: **This Resolution was revised by WRC-19 and WRC-23.**

** **The use by Palestine of the allocation to the mobile service in the frequency band 1 452-1 492 MHz identified for IMT is noted, pursuant to Resolution 99 (Rev. Dubai, 2018) of the Plenipotentiary Conference and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.**

* ***Note by the Secretariat:*** **This Resolution was revised by WRC-19 and WRC-23.**

not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-23)

5.430A The allocation of the frequency band 3 400-3 600 MHz to the mobile, except aeronautical mobile, service is subject to agreement obtained under No. **9.21**. This frequency band is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The provisions of Nos. **9.17** and **9.18** shall also apply in the coordination phase. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m^2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) and with the assistance of the Bureau if so requested. In case of disagreement, the Bureau shall calculate and verify the pfd, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)

5.433B In Angola, Botswana, Guinea, Lesotho, Malawi and South Sudan, the frequency band 3 600-3 700 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of the frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The conditions of No. 5.434A shall apply. (WRC-23)

5.434B In Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, Benin, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kazakhstan, Kenya, Kuwait, Lebanon, Liberia, Libya, Madagascar, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Uzbekistan, Palestine*, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, the frequency band 3 600-3 800 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of the frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The conditions of No. 5.434A shall apply. (WRC-23)

5.441B In Angola, Argentina, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Chile, China, Colombia, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gabon, Ghana, Guinea, Iran (Islamic Republic of), Iraq, Kazakhstan,

*** Pursuant to Resolution 99 (Rev. Dubai, 2018) of the Plenipotentiary Conference, and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.**

Lao P.D.R., Lesotho, Liberia, Madagascar, Malawi, Mali, Mongolia, Namibia, Niger, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, South Sudan, South Africa, Chad, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. **9.21** with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density (pfd) produced by this station does not exceed −155 dB(W/(m^2 · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. Resolution **223 (Rev.WRC-23)** applies. (WRC-23)

5.457E The frequency bands 6 425-7 125 MHz in Region 1 and 7 025-7 125 MHz in Region 3 are identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **220 (WRC-23)** applies.

The frequency bands are also used to implement wireless access systems (WAS), including radio local area networks (RLANs). (WRC-23)

5.532AB The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **242 (Rev.WRC-23)** applies. (WRC-23)

5.550B The frequency band 37-43.5 GHz, or portions thereof, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Because of the potential deployment of FSS earth stations within the frequency range 37.5-42.5 GHz and high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz in Region 1, 40-40.5 GHz in all Regions and 40.5-42 GHz in Region 2 (see No. **5.516B**), administrations should further take into account potential constraints to IMT in these frequency bands, as appropriate. Resolution **243 (Rev.WRC-23)** applies. (WRC-23)

5.553A In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, Djibouti, Egypt, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, Guinea-Bissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Somalia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account No. **5.553**. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the

implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations and shall not cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **244 (Rev.WRC-23**) applies. (WRC-23)

5.553B In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution **243 (Rev.WRC-23)** applies. (WRC-23)

5.559AA The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution **241 (Rev.WRC-23)** applies. (WRC-23)

Annex 2: 3GPP bandplans

LTE Bands: 3GPP TS 36.101 V18.6.0 (2024-06), Table 5.5-1 E-UTRA operating bands

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit F_{UL_low} – F_{UL_high}	Downlink (DL) operating band BS transmit UE receive F_{DL_low} – F_{DL_high}	Duplex Mode
1	1920 MHz – 1980 MHz	2110 MHz – 2170 MHz	FDD
2	1850 MHz – 1910 MHz	1930 MHz – 1990 MHz	FDD
3	1710 MHz – 1785 MHz	1805 MHz – 1880 MHz	FDD
4	1710 MHz – 1755 MHz	2110 MHz – 2155 MHz	FDD
5	824 MHz – 849 MHz	869 MHz – 894MHz	FDD
6[1]	830 MHz – 840 MHz	875 MHz – 885 MHz	FDD
7	2500 MHz – 2570 MHz	2620 MHz – 2690 MHz	FDD
8	880 MHz – 915 MHz	925 MHz – 960 MHz	FDD
9	1749.9 MHz – 1784.9 MHz	1844.9 MHz – 1879.9 MHz	FDD
10	1710 MHz – 1770 MHz	2110 MHz – 2170 MHz	FDD
11	1427.9 MHz – 1447.9 MHz	1475.9 MHz – 1495.9 MHz	FDD
12	699 MHz – 716 MHz	729 MHz – 746 MHz	FDD
13	777 MHz – 787 MHz	746 MHz – 756 MHz	FDD
14	788 MHz – 798 MHz	758 MHz – 768 MHz	FDD
15	Reserved	Reserved	FDD
16	Reserved	Reserved	FDD
17	704 MHz – 716 MHz	734 MHz – 746 MHz	FDD
18	815 MHz – 830 MHz	860 MHz – 875 MHz	FDD
19	830 MHz – 845 MHz	875 MHz – 890 MHz	FDD
20	832 MHz – 862 MHz	791 MHz – 821 MHz	FDD
21	1447.9 MHz – 1462.9 MHz	1495.9 MHz – 1510.9 MHz	FDD
22	3410 MHz – 3490 MHz	3510 MHz – 3590 MHz	FDD

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Duplex Mode
	F_{UL_low} – F_{UL_high}	F_{DL_low} – F_{DL_high}	
23[1]	2000 MHz – 2020 MHz	2180 MHz – 2200 MHz	FDD
24[17]	1626.5 MHz – 1660.5 MHz	1525 MHz – 1559 MHz	FDD
25	1850 MHz – 1915 MHz	1930 MHz – 1995 MHz	FDD
26	814 MHz – 849 MHz	859 MHz – 894 MHz	FDD
27	807 MHz – 824 MHz	852 MHz – 869 MHz	FDD
28	703 MHz – 748 MHz	758 MHz – 803 MHz	FDD
29	N/A	717 MHz – 728 MHz	FDD[2]
30[15]	2305 MHz – 2315 MHz	2350 MHz – 2360 MHz	FDD
31	452.5 MHz – 457.5 MHz	462.5 MHz – 467.5 MHz	FDD
32	N/A	1452 MHz – 1496 MHz	FDD[2]
33	1900 MHz – 1920 MHz	1900 MHz – 1920 MHz	TDD
34	2010 MHz – 2025 MHz	2010 MHz – 2025 MHz	TDD
35	1850 MHz – 1910 MHz	1850 MHz – 1910 MHz	TDD
36	1930 MHz – 1990 MHz	1930 MHz – 1990 MHz	TDD
37	1910 MHz – 1930 MHz	1910 MHz – 1930 MHz	TDD
38	2570 MHz – 2620 MHz	2570 MHz – 2620 MHz	TDD
39	1880 MHz – 1920 MHz	1880 MHz – 1920 MHz	TDD
40	2300 MHz – 2400 MHz	2300 MHz – 2400 MHz	TDD
41	2496 MHz – 2690 MHz	2496 MHz 2690 MHz	TDD
42	3400 MHz – 3600 MHz	3400 MHz – 3600 MHz	TDD
43	3600 MHz – 3800 MHz	3600 MHz – 3800 MHz	TDD
44	703 MHz – 803 MHz	703 MHz – 803 MHz	TDD
45	1447 MHz – 1467 MHz	1447 MHz – 1467 MHz	TDD
46	5150 MHz – 5925 MHz	5150 MHz – 5925 MHz	TDD[8]

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Duplex Mode
	F_{UL_low} – F_{UL_high}	F_{DL_low} – F_{DL_high}	
47	5855 MHz – 5925 MHz	5855 MHz – 5925 MHz	TDD[11]
48	3550 MHz – 3700 MHz	3550 MHz – 3700 MHz	TDD
49	3550 MHz – 3700 MHz	3550 MHz – 3700 MHz	TDD[16]
50	1432 MHz - 1517 MHz	1432 MHz - 1517 MHz	TDD[13]
51	1427 MHz - 1432 MHz	1427 MHz - 1432 MHz	TDD[13]
52	3300 MHz - 3400 MHz	3300 MHz - 3400 MHz	TDD
53	2483.5 MHz - 2495 MHz	2483.5 MHz - 2495 MHz	TDD
54	1670 MHz - 1675 MHz	1670 MHz - 1675 MHz	TDD
…			
64	Reserved		
65	1920 MHz – 2010 MHz	2110 MHz – 2200 MHz	FDD
66	1710 MHz – 1780 MHz	2110 MHz – 2200 MHz	FDD[4]
67	N/A	738 MHz – 758 MHz	FDD[2]
68	698 MHz – 728 MHz	753 MHz – 783 MHz	FDD
69	N/A	2570 MHz – 2620 MHz	FDD[2]
70	1695 MHz – 1710 MHz	1995 MHz – 2020 MHz	FDD[10]
71	663 MHz – 698 MHz	617 MHz – 652 MHz	FDD
72	451 MHz – 456 MHz	461 MHz – 466 MHz	FDD
73	450 MHz – 455 MHz	460 MHz – 465 MHz	FDD
74	1427 MHz – 1470 MHz	1475 MHz – 1518 MHz	FDD
75	N/A	1432 MHz – 1517 MHz	FDD[2]
76	N/A	1427 MHz – 1432 MHz	FDD[2]
85	698 MHz – 716 MHz	728 MHz – 746 MHz	FDD
87	410 MHz – 415 MHz	420 MHz – 425 MHz	FDD

E-UTRA Operating Band	Uplink (UL) operating band BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Duplex Mode
	F_{UL_low} – F_{UL_high}	F_{DL_low} – F_{DL_high}	
88	412 MHz – 417 MHz	422 MHz – 427 MHz	FDD
103[18]	787 MHz – 788 MHz	757 MHz – 758 MHz	FDD
106	896 MHz – 901 MHz	935 MHz – 940 MHz	FDD

NOTE 1: Band 6, 23 is not applicable
NOTE 2: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.
NOTE 3: A UE that complies with the E-UTRA Band 65 minimum requirements in this specification shall also comply with the E-UTRA Band 1 minimum requirements.
NOTE 4: The range 2180-2200 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured.
NOTE 5: A UE that supports E-UTRA Band 66 shall receive in the entire DL operating band
NOTE 6: A UE that supports E-UTRA Band 66 and CA operation in any CA band shall also comply with the minimum requirements specified for the DL CA configurations CA_66B, CA_66C and CA_66A-66A.
NOTE 7: A UE that complies with the E-UTRA Band 66 minimum requirements in this specification shall also comply with the E-UTRA Band 4 minimum requirements.
NOTE 8: This band is an unlicensed band restricted to licensed-assisted operation using Frame Structure Type 3
NOTE 9: In this version of the specification, restricted to E-UTRA DL operation when carrier aggregation is configured.
NOTE 10: The range 2010-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 300 MHz The range 2005-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 295 MHz.
NOTE 11: This band is unlicensed band used for V2X communication. There is no expected network deployment in this band so Frame Structure Type 1 is used.
NOTE 12: A UE that complies with the E-UTRA Band 74 minimum requirements in this specification shall also comply with the E-UTRA Band 11 and Band 21 minimum requirements.
NOTE 13: UE that complies with the E-UTRA Band 50 minimum requirements in this specification shall also comply with the E-UTRA Band 51 minimum requirements.
NOTE 14: A UE that complies with the E-UTRA Band 75 minimum requirements in this specification shall also comply with the E-UTRA Band 76 minimum requirements.
NOTE 15: Uplink transmission is not allowed at this band for UE with external vehicle-mounted antennas.
NOTE 16: This band is restricted to licensed-assisted operation using Frame Structure Type 3
NOTE 17: DL operation in this band is restricted to 1526 – 1536 MHz and UL operation is restricted to 1627.5 – 1637.5 MHz and 1646.5 – 1656.5 MHz.
NOTE 18: This band is restricted to NB-IoT operation only

5G NR Bands: 3GPP TS 38.101-1 V18.6.0 (2024-06), Table 5.2-1: NR operating bands in FR1

NR operating band	Uplink (UL) *operating band* BS receive / UE transmit F_{UL_low} – F_{UL_high}	Downlink (DL) *operating band* BS transmit / UE receive F_{DL_low} – F_{DL_high}	Duplex Mode
n1	1920 MHz – 1980 MHz	2110 MHz – 2170 MHz	FDD
n2	1850 MHz – 1910 MHz	1930 MHz – 1990 MHz	FDD
n3	1710 MHz – 1785 MHz	1805 MHz – 1880 MHz	FDD
n5	824 MHz – 849 MHz	869 MHz – 894 MHz	FDD
n7	2500 MHz – 2570 MHz	2620 MHz – 2690 MHz	FDD
n8	880 MHz – 915 MHz	925 MHz – 960 MHz	FDD
n12	699 MHz – 716 MHz	729 MHz – 746 MHz	FDD
n13	777 MHz – 787 MHz	746 MHz – 756 MHz	FDD
n14	788 MHz – 798 MHz	758 MHz – 768 MHz	FDD
n18	815 MHz – 830 MHz	860 MHz – 875 MHz	FDD
n20	832 MHz – 862 MHz	791 MHz – 821 MHz	FDD
n24[16]	1626.5 MHz – 1660.5 MHz	1525 MHz – 1559 MHz	FDD
n25	1850 MHz – 1915 MHz	1930 MHz – 1995 MHz	FDD
n26	814 MHz – 849 MHz	859 MHz – 894 MHz	FDD
n28	703 MHz – 748 MHz	758 MHz – 803 MHz	FDD
n29	N/A	717 MHz – 728 MHz	SDL[19]
n30[3]	2305 MHz – 2315 MHz	2350 MHz – 2360 MHz	FDD
n31	452.5 MHz – 457.5 MHz	462.5 MHz – 467.5 MHz	FDD
n34	2010 MHz – 2025 MHz	2010 MHz – 2025 MHz	TDD
n38[10]	2570 MHz – 2620 MHz	2570 MHz – 2620 MHz	TDD
n39	1880 MHz – 1920 MHz	1880 MHz – 1920 MHz	TDD
n40	2300 MHz – 2400 MHz	2300 MHz – 2400 MHz	TDD
n41	2496 MHz – 2690 MHz	2496 MHz – 2690 MHz	TDD
n46	5150 MHz – 5925 MHz	5150 MHz – 5925 MHz	TDD[13]

NR operating band	Uplink (UL) *operating band* BS receive / UE transmit F_{UL_low} – F_{UL_high}	Downlink (DL) *operating band* BS transmit / UE receive F_{DL_low} – F_{DL_high}	Duplex Mode
n47[11]	5855 MHz – 5925 MHz	5855 MHz – 5925 MHz	TDD
n48	3550 MHz – 3700 MHz	3550 MHz – 3700 MHz	TDD
n50	1432 MHz – 1517 MHz	1432 MHz – 1517 MHz	TDD[1]
n51	1427 MHz – 1432 MHz	1427 MHz – 1432 MHz	TDD
n53	2483.5 MHz – 2495 MHz	2483.5 MHz – 2495 MHz	TDD
n54	1670 MHz – 1675 MHz	1670 MHz – 1675 MHz	TDD
n65	1920 MHz – 2010 MHz	2110 MHz – 2200 MHz	FDD[4]
n66	1710 MHz – 1780 MHz	2110 MHz – 2200 MHz	FDD
n67	N/A	738 MHz – 758 MHz	SDL[19]
n70	1695 MHz – 1710 MHz	1995 MHz – 2020 MHz	FDD
n71	663 MHz – 698 MHz	617 MHz – 652 MHz	FDD
n72	451 MHz – 456 MHz	461 MHz – 466 MHz	FDD
n74	1427 MHz – 1470 MHz	1475 MHz – 1518 MHz	FDD
n75	N/A	1432 MHz – 1517 MHz	SDL[19]
n76	N/A	1427 MHz – 1432 MHz	SDL[19]
n77[12]	3300 MHz – 4200 MHz	3300 MHz – 4200 MHz	TDD
n78	3300 MHz – 3800 MHz	3300 MHz – 3800 MHz	TDD
n79[17]	4400 MHz – 5000 MHz	4400 MHz – 5000 MHz	TDD
n80	1710 MHz – 1785 MHz	N/A	SUL
n81	880 MHz – 915 MHz	N/A	SUL
n82	832 MHz – 862 MHz	N/A	SUL
n83	703 MHz – 748 MHz	N/A	SUL
n84	1920 MHz – 1980 MHz	N/A	SUL
n85	698 MHz – 716 MHz	728 MHz – 746 MHz	FDD
n86	1710 MHz – 1780 MHz	N/A	SUL

NR operating band	Uplink (UL) *operating band* BS receive / UE transmit F_{UL_low} – F_{UL_high}	Downlink (DL) *operating band* BS transmit / UE receive F_{DL_low} – F_{DL_high}	Duplex Mode
n89	824 MHz – 849 MHz	N/A	SUL
n90	2496 MHz – 2690 MHz	2496 MHz – 2690 MHz	TDD[5]
n91	832 MHz – 862 MHz	1427 MHz – 1432 MHz	FDD[9]
n92	832 MHz – 862 MHz	1432 MHz – 1517 MHz	FDD[9]
n93	880 MHz – 915 MHz	1427 MHz – 1432 MHz	FDD[9]
n94	880 MHz – 915 MHz	1432 MHz – 1517 MHz	FDD[9]
n95[8]	2010 MHz – 2025 MHz	N/A	SUL
n96[14]	5925 MHz – 7125 MHz	5925 MHz – 7125 MHz	TDD[13]
n97[15]	2300 MHz – 2400 MHz	N/A	SUL
n98[15]	1880 MHz – 1920 MHz	N/A	SUL
n99[16]	1626.5 MHz – 1660.5 MHz	N/A	SUL
n100	874.4 MHz – 880 MHz	919.4 MHz – 925 MHz	FDD
n100[21]	874.4 MHz – 880 MHz	919.4 MHz – 925 MHz	FDD
n101[21]	1900 MHz – 1910 MHz	1900 MHz – 1910 MHz	TDD
n104[17,18]	6425 MHz – 7125 MHz	6425 MHz – 7125 MHz	TDD
n105	663 MHz – 703 MHz	612 MHz – 652 MHz	FDD
n106	896 MHz – 901 MHz	935 MHz – 940 MHz	FDD
n109	703 MHz – 733 MHz	1432 MHz – 1517 MHz	FDD[9]

NOTE 1: UE that complies with the NR Band n50 minimum requirements in this specification shall also comply with the NR Band n51 minimum requirements.
NOTE 2: UE that complies with the NR Band n75 minimum requirements in this specification shall also comply with the NR Band n76 minimum requirements.
NOTE 3: Uplink transmission is not allowed at this band for UE with external vehicle-mounted antennas.
NOTE 4: A UE that complies with the NR Band n65 minimum requirements in this specification shall also comply with the NR Band n1 minimum requirements.
NOTE 5: Unless otherwise stated, the applicability of requirements for Band n90 is in accordance with that for Band n41; a UE supporting Band n90 shall meet the requirements for Band n41. A UE supporting Band n90 shall also support band n41.

NR operating band	Uplink (UL) *operating band* BS receive / UE transmit F_{UL_low} – F_{UL_high}	Downlink (DL) *operating band* BS transmit / UE receive F_{DL_low} – F_{DL_high}	Duplex Mode

NOTE 6: A UE that supports NR Band n66 shall receive in the entire DL operating band.
NOTE 7: A UE that supports NR Band n66 and CA operation in any CA band shall also comply with the minimum requirements specified for the DL CA configurations CA_n66B and CA_n66(2A) in the current version of the specification.
NOTE 8: This band is applicable in China only.
NOTE 9: Variable duplex operation does not enable dynamic variable duplex configuration by the network, and is used such that DL and UL frequency ranges are supported independently in any valid frequency range for the band.
NOTE 10: When this band is used for V2X SL service, the band is exclusively used for NR V2X in particular regions.
NOTE 11: This band is unlicensed band used for V2X service. There is no expected network deployment in this band.
NOTE 12: In the USA this band is restricted to 3450 – 3550 MHz and 3700 – 3980 MHz. In Canada this band is restricted to 3450 – 3650 MHz and 3650 – 3980 MHz.
NOTE 13: This band is restricted to operation with shared spectrum channel access as defined in 37.213.
NOTE 14: This band is applicable only in countries/regions designating this band for shared-spectrum access use subject to country-specific conditions.
NOTE 15: The requirements for this band are applicable only where no other NR or E-UTRA TDD operating band(s) are used within the frequency range of this band in the same geographical area. For scenarios where other NR or E-UTRA TDD operating band(s) are used within the frequency range of this band in the same geographical area, special co-existence requirements that are not covered by the 3GPP specifications may apply.
NOTE 16: DL operation in this band is restricted to 1526 – 1536 MHz and UL operation is restricted to 1627.5 – 1637.5 MHz and 1646.5 – 1656.5 MHz.
NOTE 17: For this band, CORESET#0 values from Table 13-5 or Table 13-6 in [8, TS 38.213] are applied regardless of the minimum channel bandwidth.
NOTE 18: This band is applicable only in countries/regions designating this band for IMT licensed operation subject to country-specific conditions.
NOTE 19: For SDL bands, downlink configuration for RRM performance testing is same as FDD.
NOTE 20: Operating band n200 is a reserved value.
NOTE 21: This band is applicable only in countries subject to ECC Decision (20)02 [16], for the FRMCS application.

3GPP TS 38.101-2 V18.6.0 (2024-06), Table 5.2-1: NR operating bands in FR2

Operating Band	Uplink (UL) operating band BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Duplex Mode
	F_{UL_low} – F_{UL_high}	F_{DL_low} – F_{DL_high}	
n257	26500 MHz – 29500 MHz	26500 MHz – 29500 MHz	TDD
n258	24250 MHz – 27500 MHz	24250 MHz – 27500 MHz	TDD
n259	39500 MHz – 43500 MHz	39500 MHz – 43500 MHz	TDD
n260	37000 MHz – 40000 MHz	37000 MHz – 40000 MHz	TDD
n261	27500 MHz – 28350 MHz	27500 MHz – 28350 MHz	TDD
n262	47200 MHz – 48200 MHz	47200 MHz – 48200 MHz	TDD
n263	57000 MHz – 71000 MHz	57000 MHz – 71000 MHz	TDD[1]
NOTE 1: This band is for unlicensed operation and subject to regional and/or country specific regulatory requirements.			

Annex 3: 3GPP bandplans

IMT bands in Region 1

There is no single recommendation or Decision in CEPT on IMT frequency bands. However, ECO REPORT 03, "THE LICENSING OF "MOBILE BANDS"[12] IN CEPT includes the list of bands used for mobile systems such as GSM, UMTS, LTE or 5G NR in many CEPT countries. It is therefore a good reference for the most typical bands in the CEPT region. The table below shows the list of bands

Table 3: Typical MFCN bands in the CEPT region

694-790 MHz
790-862 MHz
880-915 MHz / 925-960 MHz
1427-1452 MHz and 1492-1518 MHz
1452-1492 MHz
1710-1785 MHz / 1805-1880 MHz
1900-1980 MHz / 2010-2025 MHz / 2110-2170 MHz
2300-2400 MHz
2500-2690 MHz
3400-3800 MHz
24.25-27.50 GHz

The Regional Commonwealth in the Field of Communications (RCC) has published Recommendation RCC 3/24[13] with the frequency plans for using IMT systems in RCC countries. This recommendation covers only a part of the frequency bands identified in the Radio Regulations for IMT, taking into account the plans and current use in RCC countries and ensuring compatibility with other services. The Recommendation covers the following bands:

Table 4: Bands for which RCC 3/24 recommends a frequency allocation plan

450-470 MHz
694-960 MHz
1427–1518 MHz
1710-2200 MHz
2300-2400 MHz
2500 - 2690 MHz
3400-3800 MHz
4800-4990 MHz
6425-7125 MHz
2425-2750 MHz

[12] **https://efis.cept.org/views2/report03.jsp**

[13] **RCC 3/24**

African Telecommunications Union

Westlands Office Park, Acacia House, 1st Floor

P. O Box 35282 – 00200 Nairobi, Kenya

Tel: +254 722 203132

Email: sg@atuuat.africa

Website: www.atuuat.africa

*****