
**Vodacom's written submission in response to ICASA's Draft National Radio Frequency
Plan 2017**

[Government Gazette Number: 40480, Notice Number 861 of 9 December 2016]

INTRODUCTION

Vodacom (Pty) Ltd (“Vodacom”) welcomes the opportunity to comment on the “Draft National Radio Frequency Plan 2017” as published by ICASA (“the Authority”) in Government Gazette No. 40480, Notice Number 861 of 16 December 2016.

Vodacom confirms its willingness to participate in the public hearings on 9 and 10 February 2017 and any further consultative process, which the Authority may undertake in this regard.

Our submission is comprised of two parts:

- Part A: Vodacom’s comments in principle on the Draft National Radio Frequency Plan (NRFP) 2017; and
- Part B: Vodacom’s specific comments on service allocations in the Draft National Radio Frequency Plan 2017.

1 PART A: In Principle Comments

Vodacom congratulates the Authority on progressing with updating the National Radio Frequency Spectrum Plan to reflect agreements at World Radio Conference (WRC) 15, the African Telecommunication Union (ATU) and the Southern African Development Community (SADC) Frequency Allocation Plan.

Vodacom takes note of the contents of the draft NFRP.

Vodacom's specific comments are confined to the following aspects of the Draft National Radio Frequency Plan ("draft NFRP") 2017:

- a) The International Mobile Telecommunications (IMT) bands designated for assignment in the Invitation to Apply (ITA) published in Government Gazette No. 40145 on 16 July 2016;
- b) Other IMT Bands;
- c) Bands allocated to Digital Terrestrial Television (DTT);
- d) Bands considered for primary allocation to 5G services on the WRC-19 agenda;
- e) The V-band;
- f) Bands that have been allocated to terrestrial fixed links; and
- g) Comments on typography.

2 PART B: Comments of Specific formulation

Vodacom's comments on the draft NFRP use the following format.

- Specific portions from the draft NRFP have been extracted for ease of reference.
- The original format of the text in the table of frequency allocations is maintained as far as possible.
- Proposed additions to the text in the draft NRFP are in ***bold italics***.
- Proposed redactions from the text in the draft NRFP are marked as ~~striketrough~~.
- Comments on and reasons for proposed changes to the draft NRFP are explained in text paragraphs following specific extracts from the draft NRFP.

2.1 Comments on IMT bands designated for assignment in the Invitation to Apply (ITA) of 2016

2.1.1 IMT700

694 - 790 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
694-790 MHz MOBILE except aeronautical mobile 5.312A 5.317A 5.300 5.311A 5.312	694-790 MHz MOBILE except aeronautical mobile 5.312A 5.317A 5.311A	IMT700 (694 - 790 MHz) <i>IMT750 (733 - 758 MHz)</i>	International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. IMT in accordance with ITU-R Recommendation M.2090 and Resolution 760 (WRC-15) applies Recommendation ITU-R M.1036

Explanation of Vodacom's comments and proposals

- Vodacom notes and supports the allocation of this spectrum to MOBILE and IMT in accordance WRC-15 Region 1 resolutions and the Authority's Radio Frequency Assignment Plans (RFSAP) for IMT700 and IMT750 (Government Gazette No. 38640) as amended on 30 March 2015.
- Vodacom proposes that "IMT750" be added to the list of Typical Applications in accordance with the Authority's Radio Frequency Assignment Plan (RFSAP) for IMT750 which came in to effect on the 1st of January 2016.

2.1.2 IMT800

790 - 862 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
790-862 MHz FIXED MOBILE except aeronautical mobile 5.316B 5.317A 5.312 5.319	790-862 MHz FIXED MOBILE except aeronautical mobile 5.316B 5.317A	Fixed Links (856 – 864.1 MHz) IMT800 BTX (791 – 821 MHz) Mobile Wireless Access (827.775 – 832.695 MHz) IMT800 MTX (832 – 862 MHz) Television Broadcasting (470 – 854 MHz) IMT850	International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036 The fixed links have to be migrated along with the broadcasting service in line with Radio Frequency Migration Plan. Band IV/V analogue television to migrate to digital television according to SADC time lines. WRC-07, WRC-12 and WRC-15 allocated this band to Mobile service except aeronautical mobile and identified it for IMT. Fixed links operating in this band will have to be migrated in order to accommodate IMT.

Explanation of Vodacom's comments and proposals

- Vodacom notes and supports the allocation of this spectrum to MOBILE and IMT in accordance WRC-15 Region 1 resolutions and the Authority's Radio Frequency Assignment Plan (Government Gazette No. 38640) as amended on 30 March 2015.
- Vodacom proposes that the South African co-primary allocation to FIXED services be revoked in line with the Radio Frequency Assignment Plan (Government Gazette No. 38640) as amended on 30 March 2015. The Authority may consider allocating fixed services secondary status in the band as a transitional arrangement until the migration of fixed links has been completed.
- Vodacom proposes that "Fixed Links", "Mobile Wireless Access" and "Television Broadcasting" be removed from the list of Typical Applications in accordance with the RFSAP for IMT800 and which came into effect on the 1st of July 2015.
- Vodacom proposes that "IMT850" be added to the list of typical applications pending the finalization of the IMT850 RFSAP. Vodacom submits that the Authority must expedite the finalization the IMT850 RFSAP.

2.1.3 IMT2600

IMT2600 (2500 -2690 MHz)			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
2 500-2 520 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.412	2 500-2 520 MHz MOBILE except aeronautical mobile 5.384A NF9	IMT2600 MTX (2500 – 2570 MHz)	Paired with 2620 – 2690 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036
2 520-2 655 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.412 5.418B 5.418C	2 520-2 655 MHz MOBILE except aeronautical mobile 5.384A NF9 5.339	IMT2600 MTX (2500 – 2570 MHz) IMT2600 TDD (2570 – 2620 MHz) IMT2600 BTX (2620 – 2690 MHz) BFWA (2500-2690 MHz) IMT (2500-2690 MHz)	Paired with 2620 – 2690 MHz Paired with 2500 – 2570 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036 The band 2 500-2 690 MHz is also used for BFWA in some SADC countries
2 655-2 670 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	2 655-2 670 MHz MOBILE except aeronautical mobile 5.384A NF9 Radio astronomy 5.149	IMT2600 BTX (2620 – 2690 MHz)	Paired with 2500 – 2570 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036
2670-2 690 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	2 670-2 690 MHz MOBILE except aeronautical mobile 5.384A Radio astronomy 5.149	IMT2600 MTX (2620 – 2690 MHz)	Paired with 2500 – 2570 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036

Explanation of Vodacom's comments and proposals

Vodacom notes and supports the allocation of this spectrum to MOBILE and IMT in accordance WRC-15 Region 1 resolutions and the Authority's Radio Frequency Assignment Plan (Government Gazette No. 38640) as amended on 30 March 2015.

2.2 Comments on other bands allocated to IMT in South Africa

2.2.1 IMT450

450 – 470 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
450-455 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	450-455 MHz FIXED MOBILE 5.286AA NF9	Fixed links (450 – 453 MHz) Single Frequency Mobile (453 – 454 MHz) Government Services Paging (454 – 454.425 MHz) Trunked Mobile BTX (454.425 – 460 MHz) IMT450 (450 – 470 MHz) Fixed links (PTP) IMT (450-470 MHz) PMR and/or PAMR	Paired with 460 – 463 MHz Recommendation ITU-R M.1036 Paired with 464.425 – 470 MHz This band is currently used for a variety of fixed and mobile systems in the various SADC countries. This band is also identified for IMT (Res.224 applies) and typical applications will be restricted to IMT only, as of the 1st of April 2022 in accordance with the IMT450 Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015.
455-456 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	455-456 MHz FIXED MOBILE 5.286AA NF9 5.209 5.286A	Trunked mobile BTX (454.425 – 460 MHz) IMT450 (450 – 470 MHz) Government Services	Paired with 464.425 – 470 MHz Recommendation ITU-R M.1036 Typical applications will be restricted to IMT only, as of the 1st of April 2022 in accordance with the IMT450 Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015.
456-459 MHz FIXED MOBILE 5.286AA 5.271 5.287 5.288	459-460 MHz FIXED MOBILE 5.286AA NF9 5.209 5.271 5.286A	Trunked Mobile BTX 454.425 – 460 MHz IMT450 (450 – 470 MHz)	Paired with 464.425 – 470 MHz Recommendation ITU-R M.1036 Typical applications will be restricted to IMT only, as of the 1st of April 2022 in accordance with the IMT450 Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015.
459-460 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	459-460 MHz FIXED MOBILE 5.286AA NF9 5.209 5.271 5.286A	Trunked Mobile BTX 454.425 – 460 MHz IMT450 (450 – 470 MHz) Government Services	Paired with 464.425 – 470 MHz. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015 Recommendation ITU-R M.1036 Typical applications will be restricted to IMT only, as of the 1st of April 2022 in accordance with the IMT450 Radio

450 – 470 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
			<i>Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015.</i>
460-470 MHz FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth) 5.287 5.288 5.289 5.290	460-470 MHz FIXED MOBILE 5.286AA NF9 5.287 5.289	Fixed Links (460 – 463 MHz) Single Frequency Mobile (463.025 – 463.975 MHz) Low Power Mobile Radio (463.975 MHz, 464.125 MHz, 464.175 MHz, 464.325 MHz, 464.375 MHz) Single Frequency Mobile (464.375 – 464.425 MHz) Trunked Mobile MTX (464.425 – 470 MHz) IMT450 (450 – 470 MHz) Security Systems (464.5375 MHz) Non-specific SRDs (464.5 – 464.5875 MHz) Government Services	Paired with 450 – 453 MHz Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 20115). Recommendation ITU-R M.1036 Paired with 454.425 – 460 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 20115). <i>Typical applications will be restricted to IMT only, as of the 1st of April 2022 in accordance with the IMT450 Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015.</i>

Explanation of Vodacom's comments and proposals

- Vodacom notes and supports the allocation of this spectrum to MOBILE and IMT in accordance with Region 1 resolutions and the Authority's Radio Frequency Assignment Plan (Government Gazette No. 38640) as amended on 30 March 2015.
- Vodacom suggests that the Notes and Comments be amended to align with the Authority's RFSAP for IMT450 which comes into effect on 1 April 2018 and for which the migration of non-IMT services must be completed by 1 April 2022.

2.2.2 IMT1400

1427 - 1518 MHz				
WRC-15 allocations and footnotes	ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1427-1 429 MHz SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5,341A 5.338A 5.341	1 427-1 429 MHz SPACE OPERATION (Earth-to-space) FIXED NF14 MOBILE except aeronautical mobile 5,341A 5.338A 5.341 NF9	1 427-1 452 MHz Fixed links (duplex) IMT1400 subject to the outcome of studies under WRC-15 resolution 223.	1427-1 452 MHz Fixed links (duplex) IMT1400 subject to the outcome of studies under WRC-15 resolution 223.	Paired with 1 375 – 1 400 MHz In accordance with Recommendation ITU-R F.1242 IMT Res. 223 (Rev.WRC-15). This band has been identified for IMT. Typical applications will be restricted to IMT only, once the IMT1400 RFSAP has been finalized and existing services have been migrated.
1 429-1 452 MHz FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341 5.342	1 429-1 452 MHz FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341 NF9	1 427-1 452 MHz Fixed links (duplex) IMT1400 subject to the outcome of studies under WRC-15 resolution 223.	1 427-1 452 MHz Fixed links (duplex) IMT1400 subject to the outcome of studies under WRC-15 resolution 223.	Paired with 1 375 – 1 400 MHz) In accordance with Recommendation ITU-R F.1242 IMT Res. 223 (Rev.WRC-15). This band has been identified for IMT. Typical applications will be restricted to IMT only, once the IMT1400 RFSAP has been finalized and existing services have been migrated.
1 452-1 492 MHz FIXED MOBILE except aeronautical mobile 5.346 BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.342 5.345	1 452-1 492 MHz FIXED NF14 MOBILE except aeronautical mobile 5.346 BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.345 NF12 NF9	Terrestrial Digital Audio Broadcasting (T-DAB) (1 452 – 1 479.5 MHz IMT1400 subject to the outcome of studies under WRC-15 resolution 223.	The Terrestrial Broadcasting Frequency Plan (GG No.36321) 02 April 2013. IMT Res. 223 (Rev.WRC-15) IMT Res. 223 (Rev.WRC-15) This band has been identified for IMT. Typical applications will be restricted to IMT only, once the IMT1400 RFSAP has been finalized and existing services have been migrated.	
		Satellite Digital Audio Broadcasting (S-DAB) (1 479.5 – 1 492 MHz)		
1 492-1 518 MHz FIXED MOBILE except aeronautical mobile 5.341A 5.341 5.342	1 492-1 518 MHz FIXED MOBILE except aeronautical mobile 5.341A 5.341 NF9	Fixed Links (1 492 – 1 517 MHz) Single Frequency Links (1 517 – 1 525 MHz) IMT1400 subject to the outcome of studies	Paired with 1 350 – 1 375 MHz In accordance with Recommendation ITU-R F.1242 IMT Res. 223 (Rev.WRC-15). This band has been identified for IMT. Typical applications will be restricted to IMT only, once the IMT1400 RFSAP has	

1427 - 1518 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		<i>under WRC-15 resolution 223.</i>	<i>been finalized and existing services have been migrated.</i>

Explanation of Vodacom's comments and proposals

- Vodacom proposes that a reference to “NF9” be included in the South African allocations and footnotes.
- Vodacom requests that the Authority creates a Radio Frequency Spectrum Assignment Plan for IMT1400 band in line with the development of 3GPP standards and device ecosystems for the band. A RFSAP for IMT1400 should take into account the outcome of studies by ITU Working Party 5D (WP5D).

2.2.3 IMT1800

1710 - 1785 MHz // 1805 - 1880 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 710-1 930 MHz FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.387 5.388	1 710-1 930 MHz FIXED MOBILE 5.384A 5.388A NF9 5.149 5.341 5.385 5.388	DECT FWA (1880 – 1900 MHz) FWA TDD (1900 – 1920 MHz) Fixed Broadband data applications (1 785 – 1 805 MHz) IMT1800 MTX (1710 – 1785 MHz) DECT Cordless telephones (1880 – 1900 MHz) IMT1900 TDD (1900 – 1920 MHz) IMT2100 MTX (1920 – 1980 MHz) IMT 1 710-1 785 MHz IMT BFWA 1787 – 1797 MHz 1785-1805 MHz BFWA	Paired with BTX 1805 – 1880 MHz. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 20145). Paired with 1710-1785 MHz.
		1 805-1 880 MHz IMT 1 880-1 900 MHz FWA Cordless telephone 1 900-1 920 MHz FWA IMT (terrestrial) 1 920-1 980 MHz IMT (terrestrial)	

Explanation of Vodacom's comments and proposals

- Vodacom proposes that the frequency allocation to BFWA access be reduced from 1785 – 1805 MHz to 1787 – 1797 MHz. This will afford the adjacent IMT1800 bands protection from interference.

The Authority's proposed BFWA (1785-1805) deviates from ITU-R M.1036 for IMT1800 (3GPP B3/ITU-R B2) and is therefore not a harmonized channeling arrangement operating with IMT1800.

Recent media reports¹ indicate that WBS's intend to decommission the iBurst network. Vodacom supports the decommissioning of iBurst's BFWA network.

- Vodacom recommends phasing out the BFWA 1787-1797 channeling arrangement pending the conclusion of WBS's decommissioning process.
- Vodacom requests that the Authority proceeds with the finalisation of the RFSAP for IMT1800.

¹ WBS has indicated that they are in the process of decommissioning the iBurst network (<https://mybroadband.co.za/news/cellular/196024-iburst-decommissioning-its-network.html>).

2.2.4 IMT2100 FDD

1920 - 1980 MHz // 2110 - 2170 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 930-1 970 MHz FIXED MOBILE 5.388A 5.388B 5.388	1 930-1 970 MHz FIXED MOBILE 5.388A NF9 5.388	IMT2100 MTX (1920 - 1980 MHz)	Paired with 2110 - 2170 MHz.
1 970-1 980 MHz FIXED MOBILE 5.388A 5.388B 5.388	1 970-1 980 MHz FIXED MOBILE 5.388A NF9 5.388	IMT2100 MTX (1920 - 1980 MHz)	Paired with 2110 - 2170 MHz.
2 120-2 160 MHz FIXED MOBILE 5.388A 5.388B 5.388	2 120-2 160 MHz FIXED MOBILE 5.388A NF9 5.388	IMT-2100 BTX (2110 - 2170 MHz)	Paired with 1920 - 1980 MHz. Recommendation ITU-R M.1036
2 160-2 170 MHz FIXED MOBILE 5.388A 5.388B 5.388	2 160-2 170 MHz FIXED MOBILE 5.388A NF9 5.388	IMT-2100 BTX (2110 - 2170 MHz)	Paired with 1920 - 1980 MHz. Recommendation ITU-R M.1036

Explanation of Vodacom's comments and proposals

- Vodacom requests that the Authority proceeds with the finalisation of the RFSAP for IMT2100.

2.2.5 IMT2100 TDD

1900 – 1920; 2010 – 2025 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 710-1 930 MHz FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.387 5.388	1 710-1 930 MHz FIXED MOBILE 5.384A 5.388A NF9 5.149 5.341 5.385 5.388	DECT FWA (1880 – 1900 MHz) FWA TDD (1900 – 1920 MHz) Fixed Broadband data applications (1 785 – 1 805 MHz) IMT1800 MTX (1710 – 1785 MHz) DECT Cordless telephones (1880 – 1900 MHz) IMT1900 TDD (1880 – 1920 MHz) IMT1900 TDD (1900 – 1920 MHz) IMT2100 MTX (1920 – 1980 MHz) 1 710-1 785 MHz IMT 1785-1805 MHz BFWA	Paired with BTX 1805 – 1880 MHz. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Paired with 1710-1785 MHz.
		1 805-1 880 MHz IMT 1 880-1 900 MHz FWA Cordless telephone 1 900-1 920 MHz FWA IMT (terrestrial) 1 920-1 980 MHz	
		IMT (terrestrial)	
2 010-2 025 MHz FIXED MOBILE 5.388A 5.388B 5.388	2 010-2 025 MHz FIXED MOBILE 5.388A NF9 5.388	IMT TDD (2010 – 2025 MHz)	IMT TDD applications (Future) Recommendation ITU-R M.1036

Explanation of Vodacom's comments and proposals

- Vodacom requests that the Authority proceeds with the finalisation of the RFSAP for IMT2100.
- Vodacom proposes that “FWA TDD (1900 – 1920 MHz)” be removed from the list of Typical Applications.

- Vodacom requests that the Authority investigates the potential secondary allocation of 1880 – 1900 to IMT. Vodacom requests that the Authority drafts a RFSAP for IMT1900.
- Vodacom proposes that South Africa aligns with the ITU Region 1 allocation of MOBILE to 2025 -2110 MHz.

2.2.6 IMT2300

IMT2300 (2300 -2400 MHz)						
WRC-15 allocations and footnotes	ITU Region 1	South African allocations and footnotes	Typical Applications	Notes and Comments		
2 300-2 450 MHz FIXED MOBILE 5.384A Amateur Radiolocation 5.150 5.282 5.395		2 300-2 450 MHz FIXED MOBILE 5.384A NF9 Amateur 5.150 5.282	FWA (PTP/PTMP) (2307-2387 MHz) Outside Broadcast Links FWA (PTP/PTMP) (2401 - 2481 MHz) IMT2300 TDD (2300 - 2400 MHz) WLAN, FDDA and model ctrl. (2400 - 2483.5 MHz) Non-Specific SRDs and low power video surveillance (2400 - 2483.5 MHz) RFID (2 400 - 2 483.5 MHz) ISM applications (2400 - 2500 MHz) 2300-2400 MHz Fixed links PTP/PTM	Paired with 2401 - 2481 MHz 28 MHz channels OB links. Frequency co-ordination with other systems operating in the band is mandatory on a case-by-case basis. Primary basis: 2377 MHz and 2471 MHz. Secondary basis: 2321 MHz, 2349 MHz, 2415 MHz and 2443 MHz Paired with 2307-2387 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 20115). Recommendation ITU-R M.1036 8) Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 20115). Fixed paired with 2400-2500 MHz. This band has been identified for IMT.		

Explanation of Vodacom's comments and proposals

- Vodacom requests that the Authority proceeds with the finalisation of the RFSAP for IMT2300.

2.2.7 IMT3300

3300 – 3400 MHz						
WRC-15 allocations and footnotes	ITU Region 1	South African allocations and footnotes		Typical Applications	Notes and Comments	
3300-3 400 MHz RADIOLOCATION 5.149 5.429 5.429A 5.429B 5.430		3300-3 400 MHz MOBILE RADIOLOCATION 5.149 5.429A 5.429B		Government Services IMT Res. 223 (Rev. WRC-15)	International Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036	Mobile

Explanation of Vodacom's comments and proposals

South Africa and 33 African countries successfully advocated at WRC-15 for this band to be developed for IMT services. It is important the countries that support WRC-15 resolutions 5.429A and 5.429B allocate this band to mobile on a primary basis.

A primary allocation to mobile service demonstrates the required commitment to develop this band for IMT at 3GPP and for equipment manufacturers to invest in the development of supporting technology ecosystems.

- Vodacom requests that the Authority amend National Radio Frequency plan to allocate this band to MOBILE services on a primary basis.
- Vodacom further requests that the Authority creates a Radio Frequency Spectrum Assignment Plan for the IMT3300 band aligned with development of a device ecosystem for the band. This RFSAP will prescribe how the existing services will be migrated out of the IMT3300 band.
- Vodacom requests that the Authority revokes the allocation the RADIOLOCATION services, based on the understanding that this band is not used for radiolocation services in South Africa and neighbouring countries.

2.2.8 IMT3500

3400 - 3600 MHz						
WRC-15 allocations and footnotes	ITU Region 1	South African allocations and footnotes	Typical Applications	Notes and Comments		
3 400-3 600 MHz FIXED FIXED-SATELLITE (space-to-Earth) Mobile 5.430A Radiolocation 5.431		3 400-3 600 MHz FIXED MOBILE 5.430A NF9	FWA (3400 – 3600 MHz) IMT3500 (3410 – 3490 MHz) IMT3500 (3510 – 3590 MHz) IMT3500 (3400 – 3600 MHz) TDD	Paired with 3510 – 3590 MHz Paired with 3410 – 3490 MHz International Mobile Telecommunication Roadmap (GG No. 38213) 14 November 2014. 3400 -3600 MHz TDD Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036 The band 3400 -3600 MHz is also used for BFWA in some SADC countries		

Explanation of Vodacom's comments and proposals

- Vodacom requests that the Authority amend National Radio Frequency plan to allocate this band to MOBILE services on a primary basis to align with the Authority's Radio Frequency Assignment Plan for the frequency band from 3400 to 3600 MHz which comes into effect on the 1st of April 2017 (as published in Government Gazette No 38640 Notice 278 of 2015).
- Vodacom proposes that "FWA" be removed from the typical applications and that the IMT3500 allocation be corrected to align with the RFSAP for IMT3500. The amendment can be done by adding "IMT3500 (3400 – 3600MHz) TDD" to the Typical Application and the Notes and Comments, and removing the text referring to 3510 – 3590 MHz paired with 3410 to 3490 MHz.

2.2.9 3600 to 3800 MHz

3600 - 4200 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
3 600-4 200 MHz FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3 600-4 200 MHz FIXED FIXED-SATELLITE (space-to-Earth) NF14 MOBILE	Fixed links (4 GHz) (3600 – 4200 MHz) C-band downlink (VSAT/SNG/PTP links) Fixed services (PTP) (3600-4200 MHz) Fixed-satellite (space-to-Earth) (PTP/VSAT/SNG) (3600-4200 MHz) Broadband Fixed Wireless Access (BFWA) (3600-3800 MHz) Terrestrial Mobile IMT	The sub-band 3 600-3 800 MHz could be used for BFWA where frequency sharing with FS PTP and/or FSS is feasible. The channelling arrangement for PTP links in this band is based on ITU-R Recommendation F.635 Annex 1. The sub-band 3600- 4200 MHz is used for medium and high capacity PTP links and FSS. In the band 3 600-3 800 MHz, BFWA, FS PTP and FSS applications will have to operate on coordinated basis. However, considering the difficulty in coordinating ubiquitous user terminals used for BFWA and VSAT, it is proposed that VSAT systems be migrated to the Ku-band.

Explanation of Vodacom's comments and proposals

Vodacom supports the Authority's proposal to migrate VSAT Fixed Satellite Services to the Ku-band.

- While Vodacom generally opposes deviations from regional harmonisation, Vodacom requests that the Authority considers conferring co-primary status to MOBILE in this band and add “terrestrial mobile” and “IMT” to the Typical Applications for 3600 to 3800 MHz. In this instance the Authority be following a precedent set by a part of Europe who have adopted this approach since WRC-15.

This position makes it possible to use the available technology ecosystem nationally.

The band is likely to be used in urban areas which are not typically near national borders. In the unlikely event of harmful interference into neighbouring countries, this can be mitigated by appropriate cross border coordination mechanisms.

2.3 Bands allocated to Digital Terrestrial Television (DTT)

470 to 694 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
470-694 MHz BROADCASTING 5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.311A 5.312	470-694 MHz BROADCASTING RADIO ASTRONOMY 5.304 5.149 5.311A	DTT Broadcasting (470-694 MHz) Radio Astronomy (606 – 614 MHz) SAP/SAB Applications	Broadcasting Allotments in accordance with GE89 and GE06. Broadcast assignments in accordance with the latest version of the Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013. Band IV/V Analogue television to migrate to digital television in line with SADC time line. The use of 'White Spaces' in this band is under consideration (subject to NINP basis to users under a primary allocation). 470 - 606MHz, max. 50 mW ERP 606 - 614 MHz, max. 50 mW ERP

Explanation of Vodacom's comments and proposals

Vodacom notes and supports the Authority's allocation of this band to Digital Terrestrial Television.

2.4 Bands considered for primary allocation to 5G services on the WRC-19 agenda

2.4.1 5150 to 5925 MHz

5150 – 5925 MHz						
WRC-15	ITU	Region	1	South African allocations and footnotes	Typical Applications	Notes and Comments
5 150-5 250 MHz	AERONAUTICAL	RADIONAVIGATION	FIXED-SATELLITE (Earth-to-space)	5 150-5 250 MHz	NGSO MSS feeder links (5091 – 5150 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
5.447A				5.447A	WAS / RLAN (5150 – 5350 MHz)	
MOBILE except aeronautical mobile 5.446A 5.446B				MOBILE except aeronautical mobile 5.446A 5.446B	(indoor use only)	
5.446 5.446C 5.447 5.447B 5.447C				5.446 5.446C 5.447B 5.447C		
5 250-5 255 MHz	EARTH	EXPLORATIONSATELLITE (active)	RADIOLOCATION	5 250-5 255 MHz	WAS / RLAN (5150 – 5350 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
SPACE RESEARCH 5.447D				SPACE RESEARCH 5.447D	(indoor use only)	
MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A				MOBILE except aeronautical mobile 5.446A 5.447F 5.448A		
5 255-5 350 MHz	EARTH	EXPLORATIONSATELLITE (active)	RADIOLOCATION	5 255-5 350 MHz	WAS / RLAN (5150 – 5350 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
SPACE RESEARCH (active)				EARTH EXPLORATIONSATELLITE (active)	(indoor use only)	
MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A				RADIOLOCATION		
				SPACE RESEARCH (active)		
				MOBILE except aeronautical mobile 5.446A 5.447F 5.448A		
5 350-5 460 MHz	EARTH	EXPLORATIONSATELLITE (active) 5.448B	SPACE RESEARCH (active) 5.448C	5 350-5 460 MHz		
5.448C				EARTH EXPLORATIONSATELLITE (active) 5.448B		
AERONAUTICAL				SPACE RESEARCH (active) 5.448C		
RADIONAVIGATION 5.449				AERONAUTICAL		
				RADIONAVIGATION 5.449		
				RADIOLOCATION 5.448D		

5150 – 5925 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIOLOCATION 5.448D			
5 460-5 470 MHz RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B	5 460-5 470 MHz RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B		
5 470-5 570 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	5 470-5 570 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	WAS / RLAN (5470 – 5725 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
5 570-5 650 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452	5 570-5 650 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.452	Location Radar Ground based meteorological radars (5600 – 5650 MHz) WAS / RLAN (5470 – 5725 MHz) Weather Radars (5600 – 5650 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
5 650-5 725 MHz RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.282 5.451 5.453 5.454 5.455	5 650-5 725 MHz RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.282	WAS / RLAN (5470 – 5725 MHz) (indoor use only)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
5 725-5 830 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION	5 725-5 830 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION	Fixed links (5725 – 5850 MHz) RTTA data (5795 – 5815 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). BFWA in some SADC countries is

5150 – 5925 MHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
Amateur 5.150 5.451 5.453 5.455	Amateur Fixed NF16 5.150	ISM applications (5725 – 5875 MHz) BFWA (5725-5850 MHz) ISM (5725-5875 MHz) RTTT (Road Transport and Traffic Telematics) (5795-5815 MHz) SRD applications (5725-5875 MHz) SRD - Transport and information control systems (5805-5815 MHz)	limited to below 5850 MHz in order to protect FSS in the band 5850-6425 MHz. Common international SRD band; see ITU-R Rec.SM. [SRD] Transport information and control systems Recommendation ITU-R M.1453
5 830-5 850 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.451 5.453 5.455	5 830-5 850 MHz FI- RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) Fixed NF16 5.150	Fixed links BFWA (5725 – 5850 MHz) ISM applications (5725 – 5875 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 3417238641, 3130 March 2015). BFWA in some SADC countries is limited to below 5850 MHz in order to protect FSS in the band 5850-6425 MHz.
5 850-5 925 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	5 850-5 925 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	C-band uplink (VSAT/SNG/PTP links) ISM applications (5725 – 5875 MHz) Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) FIXED links (5850-5925 MHz) ISM (5725-5875 MHz)	FS could be used for temporary OB links.

Explanation of Vodacom's comments and proposals

The technology ecosystem in this band is evolving rapidly.

- Vodacom suggests that the Authority removes the restriction of WAS / RLAN services to indoor services in the Typical Applications column. This would give the Authority more flexibility to adjust the usage conditions of these bands by amending the Radio Frequency Spectrum Regulations.

2.4.2 24.25 to 27.5 GHz

24.25 – 27.5 GHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
25.25-25.5 GHz FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.25-25.5 GHz FIXED NF14 MOBILE	Fixed Links (26 GHz) (24.5 – 26.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1.
25.5-27 GHz EARTH EXPLORATIONSATELLITE (space-to Earth) 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A	25.5-27 GHz EARTH EXPLORATIONSATELLITE (space-to Earth) 5.536B FIXED NF14 5.536A MOBILE	National Polar-Orbiting Operational Environment Satellite System (NPOESS) Fixed Links (26 GHz) (24.5 – 26.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1.
27-27.5 GHz FIXED INTER-SATELLITE 5.536 MOBILE	27-27.5 GHz FIXED MOBILE		

Explanation of Vodacom's comments and proposals

- Vodacom requests that the Authority aligns with ITU region 1 by allocating these bands to MOBILE on a co-primary basis.

This is prudent given that the band will be considered for 5G services at WRC-19.

2.5 V-band

57 – 66 GHz			
WRC-15 ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
57-58.2 GHz EARTH EXPLORATIONSATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	57-58.2 GHz EARTH EXPLORATIONSATELLITE (passive) FIXED NF14 INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Passive Sensing (53.6 – 59.3 GHz) <i>Multi-gigabit wireless systems</i>	The band 55.78-59 GHz is identified for HDFS; Res.75 applies. <i>Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Radio Frequency Spectrum Regulations Amendments, (Government Gazette Number 40436, 22 November 2016)</i>
58.2-59 GHz EARTH EXPLORATIONSATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	58.2-59 GHz EARTH EXPLORATIONSATELLITE (passive) FIXED NF14 MOBILE SPACE RESEARCH (passive) 5.547 5.556	<i>Multi-gigabit wireless systems</i>	The band 55.78-59 GHz is identified for HDFS; Res.75 applies <i>Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Radio Frequency Spectrum Regulations Amendments, (Government Gazette Number 40436, 22 November 2016)</i>
59-59.3 GHz EARTH EXPLORATIONSATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	59-59.3 GHz EARTH EXPLORATIONSATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	Passive Sensing (53.6 – 59.3 GHz) <i>Multi-gigabit wireless systems</i>	<i>Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Radio Frequency Spectrum Regulations Amendments, (Government Gazette Number 40436, 22 November 2016)</i>
59.3-64 GHz FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	59.3-64 GHz FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	Government Services <i>Multi-gigabit wireless systems</i>	<i>Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Radio Frequency Spectrum Regulations Amendments, (Government Gazette Number 40436, 22 November 2016)</i>

Explanation of Vodacom's comments and proposals

- Vodacom requests that the Authority aligns the Notes and Comments with the Radio Frequency Spectrum Regulations for the V-band.

- Vodacom requests that “Multi-gigabit wireless systems” be added to the Typical Applications.

2.6 Bands that have been allocated to terrestrial fixed links

Vodacom supports the channel arrangements for Fixed Services Systems in National Footnote 14.

2.7 Comments on Typography

The acronym “*HDFFS*” is not defined. This appears to be a typographical error which could be corrected by replacing ~~HDFFS~~ with *HDFS*.

The acronym “*HPVS*” is not defined. This appears to be a typographical error which could be corrected by replacing ~~HPVS~~ with *HDFS*.

END