

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

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**HEREBY ISSUES A NOTICE REGARDING THE FINAL RADIO FREQUENCY ASSIGNMENT PLANS FOR THE FREQUENCY BAND 335.4 MHz TO 380 MHz IN TERMS OF REGULATION 3 OF THE RADIO FREQUENCY SPECTRUM REGULATIONS, 2015**

1. The Independent Communications Authority of South Africa ("the Authority"), hereby publishes the Final **Radio Frequency Spectrum Assignment Plan for the frequency band 335.4 MHz to 380 MHz** in terms of regulation 3 of the Radio Frequency Spectrum Regulations, 2015, read with the Radio Frequency Migration Regulation 2013, the 2013 and 2019 Radio Frequency Migration Plans.

A handwritten signature in black ink, appearing to read 'Yolisa Kedama', written over a horizontal line.

YOLISA KEDAMA
ACTING CHAIRPERSON

335.4 - 380 MHz

Page 1



Radio Frequency Spectrum Assignment Plan

Rules for Services operating in the Frequency Band
335.4 MHz to 380 MHz

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1 Glossary

In this Radio Frequency Spectrum Assignment Plan, terms used shall have the same meaning as in the Electronic Communications Act 2005 (no. 36 of 2005); unless the context indicates otherwise:

“Act”	means the Electronic Communications Act, 2005 (Act No. 36 of 2005) as amended
“Administration”	means any governmental department or service responsible for discharging the obligations undertaken in the Constitution of the International Telecommunication Union, in the Convention of the International Telecommunication Union and in the Administrative Regulations (CS 1002).
“BTX”	means Base Transceiver
“B(F)WA”	means Broadband (Fixed) Wireless Access
“DMR”	Digital Mobile Radio
“FAP”	means Frequency Allocation Plan
“FWA”	means Fixed Wireless Access
“ITU”	means the International Telecommunication Union;
“ITU-R”	means the International Telecommunication Union Radiocommunication Sector
“MTX”	means Mobile Transceiver
“NRFP”	means the National Radio Frequency Plan 2021 for South Africa
“PAMR”	means Private Access Mobile Radio
“PMR”	means Public Mobile Radio
“PPDR”	means Public Protection and Disaster Relief
“PTP/PTMP”	means Point to Point/Point to Multi Point
“RFSAP”	means Radio Frequency Spectrum Assignment Plan
“SADC”	means Southern African Development Community
“SF”	means Single Frequency
“UAV”	means Unmanned Aerial Vehicle
“WRC-19”	means World Radiocommunications Conference 2019 held in Sharm el-Sheikh

2 Purpose

- 2.1** The RFSAP provides information on the requirements attached to the use of a frequency band in line with the allocation and other information in the NRFP. This information includes technical characteristics of radio systems, frequency channelling, coordination, and details on required migration of existing users of the band and the expected method of assignment.
- 2.2** The RFSAP states the requirements for the utilisation of the frequency band between 335.4 - 380 MHz for co-primary Fixed and Mobile Services, and Mobile-Satellite (space-to-earth) services on a secondary basis.
- 2.3** This follows the feasibility study concerning the 335.4 - 380 MHz band¹, as mandated by the 2019 Radio Frequency Migration Plan². The 2019 RFM made two (2) key proposals for this band:
- 2.3.1** Firstly, migrating the existing over 1300 fixed links in this 335.4 - 380 MHz band to above 3 GHz as per SADC proposed common sub-allocation/utilisation. The current players have shown indications that they may relinquish these Fixed Links assignments spectrum due to spectrum fees imposed.
- 2.3.2** Secondly, that a feasibility study on the use of this band as per SADC Frequency Allocation Plan (FAP) sub-allocation/utilisation to assign BFWA and UAV Fixed and Mobile Services respectively in the band.
- 2.4** However, at the conclusion of the feasibility study into the band³, the Authority has concluded that these proposals would result in a more inefficient use of this spectrum band, because the fixed links would be migrated out (faster) and yet no new BWA/UVA services are licensed in the band in the near future.
- 2.5** Therefore, the Authority has concluded that proceeding with an exclusive assignment just for BFWA (in the Fixed Service) and UAVs (in the Mobile Service) in this band is premature at this stage. Consequently, though the co-primary allocations for Fixed and Mobile Services (and Mobile-Satellite (space-to-earth) services on a secondary basis) will continue, the Authority will *not* continue with its intention to assign exclusively for just BFWA and UAV applications.
- 2.6** Therefore, the intention of this RFSAP is to assign this band for Fixed and Mobile Services (inclusive of *non-exclusive* BFWA and UAV services) with coordination amongst fixed and mobile services. This Authority decision is consistent with the ITU and SADC allocations for the 335.4 - 380 MHz band as shown in Appendix A. The proposed SADC common sub-allocations and the sub-bands proposed will be respected in this RFSAP (see Appendix A).

3 General

- 3.1** Technical characteristics of the equipment used in Fixed and Mobile Services' systems shall conform to all applicable South African standards, international standards, ITU and its radio regulations as agreed and adopted by South Africa.
- 3.2** All installations must comply with safety rules as specified in applicable standards.
- 3.3** The equipment used shall be certified under South African law and regulations.

¹ Implementation of the Radio Frequency Migration Plan and the International Mobile Telecommunications (IMT) Roadmap for public consultation, Government Gazette No. 45690, 24 December 2021.

² Government Gazette No 42337, 29 March 2019. <https://www.icasa.org.za/uploads/files/final-radio-frequency-migration-plan-2019.pdf>

³ Implementation of the Radio Frequency Migration Plan and the International Mobile Telecommunications (IMT) Roadmap for public consultation, Government Gazette No. 45690, 24 December 2021.

- 3.4** The allocation of this frequency band and the information in the RFSAP are subject to review.
- 3.5** Frequency bands sub-allocations will be as per the SADC sub-allocations/utilisations as shown in Appendix A:
- 3.5.1** 335.4 - 336 MHz for PMR and/or PAMR
 - 3.5.2** 336 - 346 MHz for Fixed Wireless Access (PTP//PTMP rural system – paired with 356 - 366 MHz)
 - 3.5.3** 346.0 - 356.0 MHz for PMR and/or PAMR
 - 3.5.4** 356.0 - 366.0 MHz for Fixed Wireless Access (PTP//PTMP rural system – paired with 336 - 346 MHz)
 - 3.5.5** 366.0 - 386.0 MHz for PMR and/or PAMR
- 3.6** As seen in Appendix A, Footnote 5.254⁴ applies.
- 3.6.1** Footnote 5.254: The bands 235 - 322 MHz and 335.4 - 399.9 MHz may be used by the mobile satellite service, subject to agreement obtained under No. 9.21, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. 5.256A. (WRC-03)
- 3.7** The following documents may provide additional information for mobile-satellite service and UAV applications and typical characteristics and requirements for various systems operating in the band:
- 3.7.1** Recommendation M.1039-3 (03/06) Co-frequency sharing between stations in the mobile service below 1 GHz and mobile earth stations of non-geostationary mobile-satellite systems (Earth-space) using frequency division multiple access (FDMA). https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.1039-3-200603-1!!PDF-E.pdf .
 - 3.7.2** ERC Report 087 Sharing studies between MES and existing terrestrial services in the bands already allocated to the MSS below 1 GHz, 1 June 2000. <https://docdb.cept.org/download/2177> .
 - 3.7.3** Report ITU-R M.2204-0 (11/2010) Characteristics and spectrum considerations for sense and avoid systems use on Unmanned Aircraft Systems (UAS). <https://www.itu.int/pub/R-REP-M.2204> .
 - 3.7.4** Recommendation ITU-R M.1808-1 (11/2019) Technical and operational characteristics of conventional and trunked land mobile systems operating in the mobile service allocations below 869 MHz to be used in sharing studies in bands below 960 MHz. <https://www.itu.int/rec/R-REC-M.1808/en> .
 - 3.7.5** Recommendation ITU-R SM.329-12 (09/2012) Unwanted emissions in the spurious domain. <https://www.itu.int/rec/R-REC-SM.329>
 - 3.7.6** Recommendation T/R 25-08 Planning criteria and cross-border coordination of frequencies for land mobile systems in the range 29.7-470 MHz. Approved 15

⁴ The Footnote is from the National Radio Frequency Plan 2021 (NRFP-21).

January 1990. Amended 28 September 2018. <https://docdb.cept.org/document/909>. This document does not directly apply to the 335.4 – 380 MHz band (likely due to this band being devoted to defence in Europe) but may offer information useful for planning and coordination.

3.7.7 The documents Report ITU-R M.2014, ERC Report 104, ECC Report 97, ECC Report 42, ECC/DEC/(19)02, ECC Decision (04)06, ECC Report 173 do not directly apply to the 335.4 – 380 MHz band (likely due to this band being devoted to defence in Europe) but may offer a host of useful information, especially for PMR/PAMR.

4 Channelling Plan

- 4.1 The frequency band 335.4 - 380 MHz will be assigned according to the SADC proposed common sub-allocations as per Appendix A.
- 4.2 Fixed Services will operate in the 336.0 – 346.0 MHz band paired with 356.0 – 366.0 MHz.
- 4.3 Mobile Services will operate in the unpaired 335.4 – 336.0 MHz, 346.0 – 356.0 MHz and 366.0 - 380.0 MHz bands.

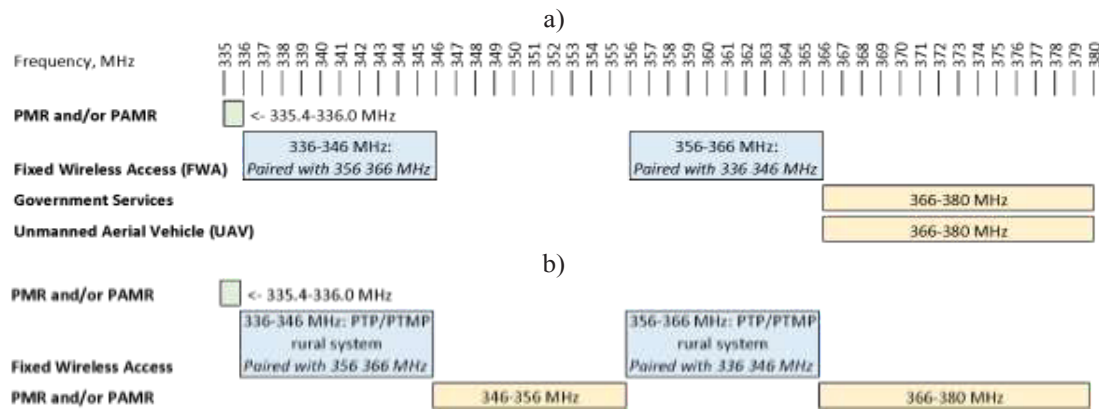


Figure 1: Channel arrangements for 335.4 – 380 MHz: a) current National Radio Frequency Plan 2021 sub-allocations, as per Table 1; b) proposed SADC sub-allocation, as per Table 2.

5 Requirements for usage of radio frequency spectrum

- 5.1 This chapter covers the minimum key characteristics considered necessary in order to make the best use of the available frequencies.
- 5.2 The use of the band is limited to Fixed and Mobile services.
- 5.3 In some cases, a radio system conforming to the requirements of this RFSAP may require modifications if harmful interference is caused to other radio stations or systems.
- 5.4 The allocation of spectrum and shared services within these bands are found in the National Radio Frequency Plan (NRFP) and an extract of NRFP is shown in Appendix A.
- 5.5 Maximum radiated powers are specified through the type approval process for the equipment used.
 - 5.5.1 Base Station transmissions should not exceed 46 dBm per channel and a maximum of 55 dBm total ERP per base station.
 - 5.5.2 Mobile Station transmissions should not exceed 33 dBm EIRP.

- 5.6** In some cases, a radio system conforming to the requirements of this RFSAP may require modifications if major interference is caused to other radio stations or systems.

6 Implementation

- 6.1** The RFSAP shall be effective on the date of issue.
- 6.2** No new assignment in the band 335.4 – 380 MHz shall be approved unless they comply with this RFSAP.

7 Co-ordination Requirements

- 7.1** Coordination is performed by the Authority during the process of assignment.
- 7.2** In the event of any interference, the Authority will require affected parties to carry out coordination. If the interference continues to be unresolved after 24 hours, the affected parties may refer the matter to the Authority for a resolution. The Authority will decide the necessary modifications and schedule of modifications to resolve the dispute. The Authority will be guided by the interference resolution process as shown in Appendix B.
- 7.3** Assignment holders shall take full advantage of interference mitigation techniques such as antenna discrimination, tilt, polarization, frequency discrimination, shielding / blocking (introduce diffraction loss), site selection, and/or power control to facilitate the coordination of systems.

8 Assignment

8.1 Standard Approach

The assignment of frequency will take place according to the Standard Application Procedures in the Radio Frequency Spectrum Regulations 2015.

9 Amendments

- 9.1** The Fixed Links Licences in the band will be amended after consultation and when this RFSAP comes into force.
- 9.2** Upon publication of this RFSAP, the provisions of Regulation 6 of the Radio Frequency Migration Regulations 2013 shall be implemented.

10 Frequency Migration

10.1 Specific Procedure

There is no specific technical procedure needed. The Authority believes appropriate and proportionate spectrum fees would encourage any migrations needed from the 335.4 – 380 MHz band to other bands.

Appendix A National Radio Frequency Plan

Table 1 shows an extract from the National Frequency Plan for South Africa for the band 335.4 - 380 MHz.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
335.4-387 MHz FIXED MOBILE 5.254	335.4-387 MHz FIXED NF6 MOBILE NF7 Mobile-satellite 5.254	PTP/PTMP FWA (336 – 346 MHz) FWA (356 – 366 MHz) Government Services (366-380 MHz) Digital Trunking (Emergency) (380 – 387 MHz) (PPDR ⁵) PMR and/or PAMR (335.4-336 MHz) Unmanned Aerial Vehicle (UAV) (366.0- 380.0 MHz)	Paired with 356 – 366 MHz Paired with 336 – 346 MHz Paired with 390 – 397 MHz (Coordination is required with PTP/PTMP in the implementation of UAV) Radio Frequency Spectrum Assignment Plan GG 41512 Notice 148 of 2018

Table 1: National Radio Frequency Plan for South Africa for 335.4 - 380 MHz band⁶

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	SADC proposed common sub-allocations / utilisation	Additional information
335.4-387 MHz FIXED MOBILE 5.254	335.4-387 MHz FIXED MOBILE 5.254	335.4-336 MHz PMR and/or PAMR	
		336-346 MHz Fixed Wireless Access	PTP/PTMP rural system; Paired with 356-366 MHz
		346.0-356.0 MHz PMR and/or PAMR	
		356.0-366.0 MHz Fixed Wireless Access	PTP/PTMP rural system; Paired with 336-346 MHz
		366.0-380.0 MHz PMR and/or PAMR	

⁵ http://www.crasa.org/common_up/crasa-setup/12-03-2015_GUIDELINES%20ON%20FREQUENCIES%20FOR%20PPDR%202014.pdf

⁶ National Radio Frequency Plan 2021, (NRFP-21) 8.3 kHz – 3000 GHz, Independent Communications Authority of South Africa. <https://www.icasa.org.za/uploads/files/National-Radio-Frequency-Plan-2021.pdf>

		380.0-387.0 MHz PPDR	Paired with 390.0-397.0 MHz To be used mainly for digital systems.
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Table 2: SADC Radio Frequency Spectrum Allocation Plan for the 335.4 - 380 MHz band ⁷

⁷ SADC Radio Frequency Spectrum Allocation Plan (SADC RFSAP) 8.3 kHz – 3000 GHz. Edition 2021.
https://assets.website-files.com/5fb8ce4adbd6ad2ccc1423e7/612fe72be15121775ae6a121_2021%20SADC%20RADIO%20FREQUENCY%20SPECTRUM%20ALLOCATION%20PLAN.%20docx%5B1%5D.pdf

Appendix B Interference Resolution Process

Technical procedures related to bilateral and multilateral cross-border frequency coordination agreements for 4 geographical sub-regions are defined by the African Union, which includes the Southern African sub-region of 10 countries. Cross-Border Frequency Coordination and interference resolution should follow the Harmonized Calculation Method for Africa, (HIPSSA)⁸ and (HCM4A),⁹ or any appropriate methods applicable.

When requesting coordination, the relevant characteristics of the base station and the code or PCI group number should be forwarded to the Administration affected. All of the following characteristics should be included:

- a) carrier frequency (MHz);
- b) name of transmitter station;
- c) country of location of transmitter station;
- d) geographical coordinates (latitude, longitude);
- e) effective antenna height (m);
- f) antenna polarisation;
- g) antenna azimuth (degrees);
- h) antenna gain (dBi);
- i) effective radiated power (dBW);
- j) expected coverage zone or radius (km);
- k) date of entry into service (month, year);
- l) code group number used;
- m) antenna tilt (degrees).

The Administration affected will evaluate the request for coordination and will, within thirty (30) days, notify the Administration requesting coordination the result of the evaluation. If, in the course of the coordination procedure, the Administration affected requires additional information, it may request such information.

If no reply is received by the Administration requesting coordination within (30) days, it may send a reminder to the Administration affected. Where the Administration fails to respond within thirty (30) days following communication of the reminder will be deemed to have given its consent, and the code coordination may be put into use with the characteristics given in the request for coordination.

The above-mentioned periods are subject to extension by common consent.

⁸ Cross-Border Frequency Coordination: Harmonized Calculation Method for Africa (HCM4A), Agreement. HIPSSA - Harmonization of ICT Policies in Sub-Saharan Africa, ITU, 2013, 54pp. Available online at https://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_agreement.pdf.pdf

⁹ Cross-Border Frequency Coordination Agreement Harmonized Calculation Method for Africa (HCM4A): On the coordination of frequencies between 29.7 MHz and 43.5 GHz For the fixed service and the land mobile service. Adopted on (01.01.2022). DRAFT, 25 pp. Available online at https://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/PRIDA/PublishingImages/Pages/default/HCM4A_2022_%20Main%20text_and%20annex%2012%20_EN_v.0.pdf