INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NO. 2785 **25 November 2022**

HEREBY ISSUES A NOTICE REGARDING DRAFT RADIO FREQUENCY ASSIGNMENT PLANS FOR THE FREQUENCY BAND 138 TO 144 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 **Draft Radio Frequency Spectrum Assignment Plan for the frequency band 1518 MHz to 1525 MHz for public consultation** in terms of regulation 3 of the Radio Frequency Spectrum Regulations 2015 and the Radio Frequency Migration Plan of 2013 and 2019.
2. The Radio Frequency Migration Regulations 2013 provide that upon completion of this Radio Frequency Spectrum Assignment Plan the Authority will issue a notice to users to be migrated (regulation 6(1) of the Radio Frequency Migration Regulations).
3. Interested persons are hereby invited to submit written representations of their views on this RFSAP, in both MS Word and.pdf format.
4. Submission must be made no later than 16h00 on Friday 13 January 2023.
5. Persons making representations are further invited to indicate whether they require an opportunity to make oral representations.
6. Written representations or enquiries may be directed by email to:

Attention:

Mr Manyaapelo Richard Makgotlho

e-mail: rmakgotlho@icasa.org.za

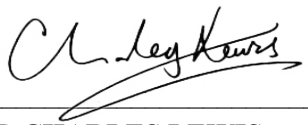
cc: jdikgale@icasa.org.za

7. All written representations submitted to the Authority pursuant to this notice will be made available for inspection by interested persons from 17 January 2023 at the ICASA Library. Electronic copies of such representations are obtainable on request and documents will be obtainable on payment of a fee.
8. The draft plans and non-confidential representations will be uploaded to the ICASA website under this link: https://www.icasa.org.za/legislation-and-regulations/radio-frequency-spectrum-plans/draft-radio-frequency-spectrum-plans

9. In terms of section 4D of the ICASA Act, any person may request that any part of the pre-registration notice be treated as confidential. Confidential documents must be clearly marked as such and submitted together with the original written representation. Requests for Confidentiality must be submitted in line with the Guidelines for Confidentiality Request published in Government Gazette No 41839 dated 17 August 2018.

10. Where an Applicant has requested confidentiality on sections of its written representations, the written representations must be accompanied by one (1) non-confidential copy with sections that are redacted. The non-confidential version of the written representations will be published for public comment if the request for confidentiality is granted. Requests for confidentiality will be considered within fourteen (14) working days of receiving the request. The Authority will communicate its decision to the respective Applicant.

11. In the event that the request for confidentiality is refused, the Applicant may choose to withdraw the information on which confidentiality is requested.



DR CHARLES LEWIS
ACTING CHAIRPERSON

Radio Frequency Spectrum Assignment Plan

Rules for Services operating in the Frequency Band
1518 MHz to 1525 MHz

Table of Contents

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).
"CEPT"	means European Conference of Postal and Telecommunications Administrations
"DF"	means Dual Frequency
"DM RS"	means Demodulation Reference Signal
"GSO"	means Geostationary Orbit (for satellites)
"IMT"	means International Mobile Telecommunications
"ITU"	means the International Telecommunication Union;
"ITU-R"	means the International Telecommunication Union Radiocommunication Sector
"MSS"	means Mobile-Satellite Service (or Mobile-Satellite radiocommunication Service), defined in Article 1.25 of the ITU Radio Regulations
"NRFP"	means the National Radio Frequency Plan 2021 for South Africa
"RFSAP"	means the Radio Frequency Spectrum Assignment Plan
"SF"	means Single Frequency
"STL"	means Studio Transmitter Link
"WRC-03"	means the World Radio Conference held in Geneva in 2003
"WRC-07"	means the World Radio Conference held in Geneva in 2007
"WRC-12"	means the world Radio Conference held in Geneva in 2012
"WRC-15"	means the World Radio Conference held in Geneva in 2015
"WRC-19"	means the World Radio Conference held in Sharm el-Sheikh in 2019

2 Purpose

2.1 The Radio Frequency Spectrum Assignment Plan (RFSAP) provides information of the requirements attached to the use of a frequency band in line with the allocation and other information in the National Radio Frequency Plan (NRFP). This information includes technical

characteristics of radio systems, frequency channelling, coordination, and details on the required migration of existing users of the band and the expected method of assignment.

This RFSAP states the requirements for the utilization of the frequency band between 1518 MHz and 1525 MHz for Fixed, Mobile, and Mobile-Satellite services.

2.2 This follows the feasibility study concerning the 1518 - 1525 MHz band[1], as mandated by the Frequency Band Migration Regulation and Plan contained in the IMT Roadmap 2014[2] and IMT Roadmap 2019[3].

2.3 This Authority decision is consistent with the ITU allocations for the 1518 - 1525 MHz band, as shown in Table 1. The whole band is allocated for Mobile, Fixed and Mobile-Satellite services on a primary basis within Region 1.

2.4 Table 3 (Appendix A) shows the National Frequency Plan for South Africa for the 1518 - 1525 MHz band. In the table, it is clearly stipulated that the band 1518 - 1559 MHz is identified for the satellite component of IMT, i.e., Resolution 225[4] applies, for the IMT Satellite component and Single Frequency Links (1517 – 1525 MHz). The 2019 RFSAP[5] also stated "the requirements for the utilisation of the frequency band between 1518 MHz and 1525 MHz for the IMT Satellite component and Single Frequency Links (1517 – 1525 MHz)". The single frequency links are typically used in private and communal radio repeaters which boost and retransmit weak radio signals across a wider area. The satellite component of IMT provides users with quality telecommunication services primarily on a global coverage basis and is most economic outside those areas covered by the terrestrial component.

2.5 The 2019 RFSAP further stated, "the RFSAP seeks to ensure that there is no harmful interference to IMT Satellite Systems and to assign for single frequency links where there is no harmful interference to IMT Satellite services". The 2019 RFSAP also stated that "this Radio Frequency Spectrum Assignment Plan supersedes any previous spectrum assignment arrangements for the same spectrum location", and that a feasibility study needs to be conducted in order to implement the requirements of the existing RFSAP 2019.

2.6 The Authority has concluded on encouraging a mixed use of the band for Fixed, Mobile, and Mobile-Satellite services. The intention of this RFSAP is ensure both Fixed and Mobile usage of the band, whilst ensuring that there is no harmful interference to any future IMT Satellite Systems – and to assign for single frequency links (Fixed links) where there is no harmful interference to IMT Satellite services.

3 General

3.1 Technical characteristics of the equipment used in Single Frequency Links (Fixed Services), Mobile Services and IMT Satellite shall conform to all applicable South African standards, international standards, International Telecommunication Union (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.

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[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] Final (Draft) IMT Roadmap 2014, Government Gazette Vol. 593 Pretoria, 14 November 2014 No. 38213

[3] Final (Draft) IMT Roadmap 2019, Government Gazette Vol. 645, 29 March 2019 No. 42361

[4] https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000C0034PDFE.pdf

[5] Radio Frequency Spectrum Assignment Plan, Rules for Services operating in the Frequency Band 1518 MHz to 1525 MHz Government Gazette No. 42337 435, 29 March 2019

3.3 The equipment used shall be certified under South African law and regulations.

3.4 The allocation of this frequency band and the information in this Radio Frequency Spectrum Assignment Plan (RFSAP) are subject to review.

3.5 Frequency bands assigned for the IMT Satellite component include bands 1518 – 1525 MHz.

3.6 Frequency bands assigned for Single Frequency Links include bands 1517 – 1525 MHz.

3.7 WRC-03 and WRC-07 allocated this additional spectrum to the mobile satellite service to complement existing L-band allocations used by numerous satellite operators. Therefore, the band 1518 – 1525 MHz is sometimes called "Extended L band" for MSS, referring to satellite user terminals operating in the band 1518 to 1525 MHz (space to Earth), with the terminals transmitting to the satellite in the band 1670 MHz to 1675 MHz (Earth to space). In general, the wider band 1518 - 1559 MHz band is used by several GSO MSS operators, including Inmarsat, to provide vital communication services to ships, aircraft, and land mobile users.

3.8 This Satellite component of IMT is applicable for the provision of the satellite service. The typical technical and operational characteristics identified as appropriate by the ITU are described in the following documents

- This band is identified as being available for the satellite component of IMT, and some of the services offered by MSS operators form part of the "satellite component for IMT-2000", as defined by Recommendation ITU-R M. 1850-2 (https://www.itu.int/rec/R-REC-M.1850);
- ITU-R Recommendation M.1391: Methodology for the calculation of IMT-2000 satellite spectrum requirements (https://www.itu.int/rec/R-REC-M.1391/en);
- ITU-R Recommendation M.1167: Framework for the satellite component of International Mobile Telecommunications-2000 (IMT-2000) (https://www.itu.int/rec/R-REC-M.1167); and
- ITU-R Recommendation M.818 - Satellite operation within International Mobile Telecommunications-2000 (IMT-2000) (https://www.itu.int/rec/R-REC-M.818/en)

3.9 Single Frequency Links (in the Fixed Service) are applicable for the provision of the system and service. The typical technical and operational characteristics identified as appropriate by the ITU are described in the following documents

- CEPT Recommendation T/R 13-01 E (Preferred channel arrangements for fixed service systems operating in the frequency range 1 - 2.3 GHz (https://docdb.cept.org/download/2499)
- ITU-R Recommendation F.1242: Radio-frequency channel arrangements for digital radio systems operating in the range 1 350 MHz to 1 530 MHz (https://www.itu.int/rec/R-REC-F.1242/en)

3.10 The following reports provide the details of co-existence studies between Mobile and MSS services in this band.

- ECC Report 263 [6] (Mar 2017) addressed the compatibility studies between IMT base stations operating below 1518 MHz and MSS land terminals operating above 1518 MHz.

[6] ECC Report 263, Adjacent band compatibility studies between IMT operating in band 1492-1518 MHz and the MSS operating in 1518-1525 MHz, 3 March 2017 (https://docdb.cept.org/document/967)

- This led to the following balanced approach published in ECC decision (17)06 [7] and EC decision 2018/661/EU [8].
- ECC/DEC/ (04)09 amended 26 June 2009: ECC Decision of 12 November 2004 on the designation of the bands 1518 - 1525 MHz and 1670 - 1675 MHz for the Mobile-Satellite Service [9].

3.11 The use of the band 1518 - 1525 MHz by the mobile-satellite service is subject to coordination. According to the Radio Regulations, the mobile-satellite service operating in the band 1518-1525 MHz stations shall not claim protection from the stations in the fixed service[10].

3.12 The following documents may also be useful when considering the 1518-1525 MHz band:

3.12.1 ITU-R Recommendation M.1167 (10/95): Framework for the satellite component of International Mobile Telecommunications-2000 (IMT-2000) (https://www.itu.int/rec/R-REC-M.1167)

3.12.2 ITU-R Recommendation F.1242-0 (05/97): Radio-frequency channel arrangements for digital radio systems operating in the range 1 350 MHz to 1 530 MHz (https://www.itu.int/rec/R-REC-F.1242/en)

3.12.3 Recommendation ITU-R M.1480 -0 (05/2000): Essential technical requirements of mobile earth stations of geostationary mobile-satellite systems that are implementing the Global mobile personal communications by satellite (GMPCS) – Memorandum of understanding arrangements in parts of the frequency band 1-3 GHz (https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.1480-0-200005-I!!PDF-E.pdf)

3.12.4 ITU-R Recommendation M.818 -2 (06/2003): Satellite operation within International Mobile Telecommunications-2000 (IMT-2000) (https://www.itu.int/rec/R-REC-M.818/en)

3.12.5 Recommendation ITU-R M.1343 -1 (06/05): Essential technical requirements of mobile earth stations for global non-geostationary mobile-satellite service systems in the bands 1-3 GHz (https://www.itu.int/rec/R-REC-M.1343/en)

3.12.6 ECC/DEC/ (04)09, ECC Decision of 12 November 2004 on the designation of the bands 1518 - 1525 MHz and 1670 - 1675 MHz for the Mobile-Satellite Service, Amended 26 June 2009 (https://docdb.cept.org/document/382)

3.12.7 ITU RESOLUTION 225 (REV.WRC-12) Use of additional frequency bands for the satellite component of IMT (https://www.itu.int/dms_pub/itu-r/oth/0C/0A/R0C0A00000F0075PDFE.pdf)

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[7] ECC/DEC/ (17)06, ECC Decision of 17 November 2017 on the harmonised use of the frequency bands 1427-1452 MHz and 1492-1518 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL), Approved 17 November 2017, Corrected 2 March 2018 (https://docdb.cept.org/document/1016)

[8] EC decision 2018/661/EU: Commission Implementing Decision (EU) 2018/661 of 26 April 2018 amending Implementing Decision (EU) 2015/750 on the harmonisation of the 1 452-1 492 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Union as regards its extension in the harmonised 1 427-1 452 MHz and 1 492-1 517 MHz frequency bands (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D0661&rid=1)

[9] https://docdb.cept.org/document/382

[10] ITU Radio Regulations Footnote 5.348 under No. 9.11A

3.12.8 Recommendation ITU-R M. 1850 -2 (09/2014) Detailed specifications of the radio interfaces for the satellite component of International Mobile Telecommunications-2000 (IMT-2000) (https://www.itu.int/rec/R-REC-M.1850)

3.12.9 ETSI EN 301 444 V2.2.1 (2021-04) Satellite Earth Stations and Systems (SES); Land Mobile Earth Stations (LMES) and Maritime Mobile Earth Stations (MMES) providing voice and/or data communications, operating in the 1,5 GHz and 1,6 GHz frequency bands; Harmonised Standard for access to radio spectrum. (https://www.etsi.org/deliver/etsi_en/301400_301499/301444/02.02.01_60/en_301444v020201p.pdf)

3.12.10 ITU-R M.1184-3 (01/2018): Technical characteristics of mobile satellite systems in the frequency bands below 3 GHz for use in developing criteria for sharing between the mobile-satellite service (MSS) and other services (https://www.itu.int/rec/R-REC-M.1184/en)

3.12.11 ECC Report 280 Satellite Solutions for 5G, 18 May 2018 (https://docdb.cept.org/document/2989)

3.12.12 CEPT Report 069 Report from CEPT to the European Commission in response to the Mandate "Ultra-Wideband technology in view of a potential update of Commission Decision 2007/131/EC". Report approved on 26 October 2018 (https://docdb.cept.org/document/7244), if such ultra-wideband technology would be used in South Africa;

3.13 Documents considering various aspects of the coordination are mentioned in the section "Co-ordination Requirements".

4 Channelling Plan

4.1 The channelling plan for Single Frequency Links is as per ITU-R recommendation F.1242.

The Final Frequency Migration Plan 2019 [11], recommended a possible channelling scheme shown in the Table 2[12].

[11] Final Frequency Migration Plan 2019 (Government Gazette Number 42337 Notice 166 of 2019), 29 March 2019 (https://www.icasa.org.za/uploads/files/final-radio-frequency-migration-plan-2019.pdf)

[12] Minor changes have been made to that table, e.g., IMT channels were renamed, and thus the number of 500 kHz wide channels was reduced and the channel numbering inside the band changed.

Single (or simplex) frequency channel (shared) [intended for migration of links < 1 GHz]									
	ITU / CEPT	Based on REC ITU-R F.1242							
	Band	1.5 GHz (F.S) Simplex							
	Ctr.Freq								
	Ch.Width	7 x500 kHz	& 140 x 25 kHz						
	Separ.								
	Ch.Spac.	7 x 500 kHz & 140 x 25 kHz							
	Ctr.Gap								
Ch.	**Centre, MHz**	**Ch.**	**Centre, MHz**	**Ch.**	**ntre, MHz**	**Ch.**	**Centre, MHz**	**Ch.**	**Centre, MHz**
1 (IMT)	1517.75	37	1521.7375	73	1522.638	109	1523.5375	145	1524.4375
2 (IMT)	1518.25	38	1521.7625	74	1522.663	110	1523.5625	146	1524.4625
3	1518.75	39	1521.7875	75	1522.688	111	1523.5875	147	1524.4875
4	1519.25	40	1521.8125	76	1522.713	112	1523.6125		
5	1519.75	41	1521.8375	77	1522.738	113	1523.6375		
6	1520.25	42	1521.8625	78	1522.763	114	1523.6625		
7	1520.75	43	1521.8875	79	1522.788	115	1523.6875		
8	1521.0125	44	1521.9125	80	1522.813	116	1523.7125		
9	1521.0375	45	1521.9375	81	1522.838	117	1523.7375		
10	1521.0625	46	1521.9625	82	1522.863	118	1523.7625		
11	1521.0875	47	1521.9875	83	1522.888	119	1523.7875		
12	1521.1125	48	1522.0125	84	1522.913	120	1523.8125		
13	1521.1375	49	1522.0375	85	1522.938	121	1523.8375		
14	1521.1625	50	1522.0625	86	1522.963	122	1523.8625		
15	1521.1875	51	1522.0875	87	1522.988	123	1523.8875		
16	1521.2125	52	1522.1125	88	1523.013	124	1523.9125		
17	1521.2375	53	1522.1375	89	1523.038	125	1523.9375		
18	1521.2625	54	1522.1625	90	1523.063	126	1523.9625		
19	1521.2875	55	1522.1875	91	1523.088	127	1523.9875		
20	1521.3125	56	1522.2125	92	1523.113	128	1524.0125		
21	1521.3375	57	1522.2375	93	1523.138	129	1524.0375		
22	1521.3625	58	1522.2625	94	1523.163	130	1524.0625		
23	1521.3875	59	1522.2875	95	1523.188	131	1524.0875		
24	1521.4125	60	1522.3125	96	1523.213	132	1524.1125		
25	1521.4375	61	1522.3375	97	1523.238	133	1524.1375		
26	1521.4625	62	1522.3625	98	1523.263	134	1524.1625		
27	1521.4875	63	1522.3875	99	1523.288	135	1524.1875		
28	1521.5125	64	1522.4125	100	1523.313	136	1524.2125		
29	1521.5375	65	1522.4375	101	1523.338	137	1524.2375		
30	1521.5625	66	1522.4625	102	1523.363	138	1524.2625		
31	1521.5875	67	1522.4875	103	1523.388	139	1524.2875		
32	1521.6125	68	1522.5125	104	1523.413	140	1524.3125		
33	1521.6375	69	1522.5375	105	1523.438	141	1524.3375		
34	1521.6625	70	1522.5625	106	1523.463	142	1524.3625		
35	1521.6875	71	1522.5875	107	1523.488	143	1524.3875		
36	1521.7125	72	1522.6125	108	1523.513	144	1524.4125		

Table 1: Simplex Channels as per section "1.12.1.3 Simplex Channels" of Appendix G of the Final Frequency Migration Plan 2019 (Page 204/293).

This table may also be illustrated with the diagram provided in Figure 1:

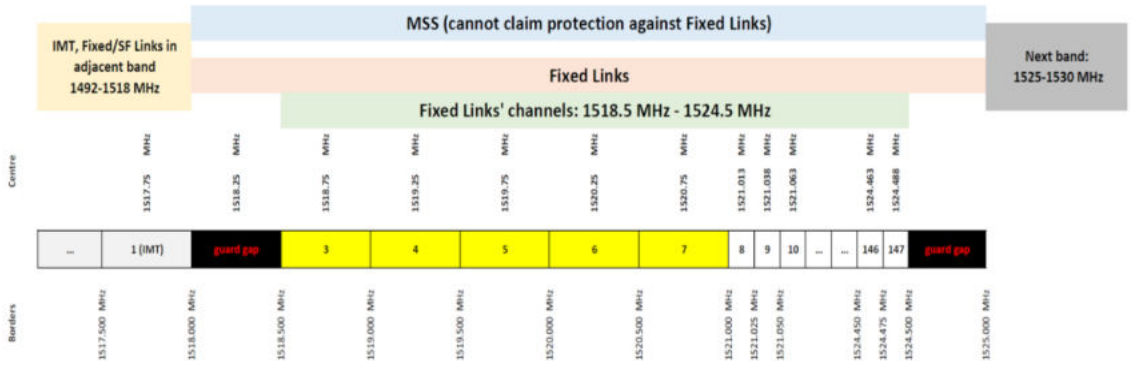

Figure 1: Illustration for the channel plan for fixed links for 1518-1525 MHz band, based on Table 2 (not to scale).

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, Mobile, and Mobile-Satellite services. They include Single frequency (SF) links and IMT satellite services.

5.3 Only systems using digital technologies that promote spectral efficiency will be issued with an assignment. Capacity enhancing digital techniques are being rapidly developed, and such techniques that promote efficient use of spectrum without reducing quality of service are encouraged.

5.4 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.

5.5 The allocation of spectrum and shared services within these bands are found in the National Radio Frequency Plan (NRFP), and an extract of the NRFP is shown in Appendix A.

5.6 Maximum radiated power is specified through the type approval process for the equipment used.

5.7 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.

5.8 ICNIRP Guideline compliance is required, where applicable;

5.9 Criteria and guidelines for interference mitigation are described in Appendix D; and

5.10 Whenever possible, the operators / spectrum users are encouraged to share the spectrum.

6 Implementation

6.1 This RFSAP shall be effective on the date of issue.

6.2 No new assignment for the band 1518 – 1525 MHz shall be approved unless they comply with the RFSAP.

7 Co-ordination Requirements

7.1 Coordination is performed by the Authority during the process of assignment.

7.2 The following documents may include information useful for coordination:

7.2.1 ECC Report 263 [13], CEPT Report 269 [14], CEPT Report 65 [15], and Decision (EU) 2018/661 8 regarding compatibility with services operating in the bands 1492 - 1518 MHz, 1427 - 1518 MHz, 1492 - 1517 MHz, and 1452 - 1492 MHz, respectively. Also, Decision (EU) 2018/661 [16], ECC/DEC/ (17)06 [17], ECC Report 299 [18], Recommendation ITU-R M.1036 [19]. For instance:

- ECC Report 263 addressed the compatibility studies between IMT base stations operating below 1518 MHz and MSS land terminals operating above 1518 MHz and states

  "Based on the final results of its compatibility studies, it is concluded that:
  - The minimum in-band blocking characteristic for land mobile earth stations receivers from a 5 MHz broadband signal interferer (LTE) operating below 1518 MHz shall be −30 dBm above 1520 MHz;
  - The base station unwanted emission limits EIRP for a broadband signal interferer (LTE) operating below 1518 MHz shall be −30 dBm/MHz above 1520 MHz. This figure is 10 dB more stringent than ECC Decision (13)03 due to a different service in the adjacent band.

  It is noted that the IMT block ends at 1517 MHz.
  - With 1 MHz frequency separation, the required separation distances range from 435 – 6,100 m for land MESs; from 8,800 – 13,600 m for sea MESs; and from 7,700 – 16,500 m for aircraft MESs.
  - With 3 MHz frequency separation, the required separation distances range from 10 – 1,550 m for land MESs; from 400 – 3,400 m for sea MESs; and from 400 – 4,585 m for aircraft MESs.

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[13] ECC Report 263 Adjacent band compatibility studies between IMT operating in band 1492-1518 MHz and the MSS operating in 1518-1525 MHz. Approved 03 March 2017 (https://docdb.cept.org/document/967)

[14] CEPT Report 269 Least restrictive technical conditions for Mobile/Fixed Communications Networks in 1427-1518 MHz. Approved 17 November 2017. Corrected 2 March 2018 (https://docdb.cept.org/document/1017)

[15] CEPT Report 65. Report from CEPT to the European Commission in response to the Mandate "to develop harmonised technical conditions in additional frequency bands in the 1.5 GHz range for their use for terrestrial wireless broadband electronic communications services in the Union". Report approved on 17 November 2017 by the ECC. Corrected 2 March 2018 (https://docdb.cept.org/document/1018)

[16] Decision (EU) 2018/661, Commission Implementing Decision (EU) 2018/661 of 26 April 2018 amending Implementing Decision (EU) 2015/750 on the harmonisation of the 1452-1492 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Union as regards its extension in the harmonised 1427-1452 MHz and 1492-1517 MHz frequency bands (https://docdb.cept.org/document/8820)

[17] ECC/DEC/ (17)06, ECC Decision of 17 November 2017 on the harmonised use of the frequency bands 1427-1452 MHz and 1492-1518 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL), Approved 17 November 2017, Corrected 2 March 2018 (https://docdb.cept.org/document/1016)

[18] 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 (https://docdb.cept.org/document/9066)

[19] Recommendation ITU-R M.1036 -6 (10/2019): Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations (RR) (https://www.itu.int/rec/R-REC-M.1036)

- With 6 MHz frequency separation, the required separation distances range from 10 – 1,100 m for land MESs; from 300 – 1300 m for sea MESs; and from 300 – 2,000 m for aircraft MESs."
- The Report 263 also advises on the base station unwanted emission limits per cell above 1,518 MHz, maximum out-of-block EIRP limits for emissions within the band 1,427 – 1,517 MHz per antennas, base station unwanted emission limits per cell above 1,518 MHz for base stations operating in 1,492 - 1517 MHz.

- CEPT Report 269 states
  - "Base station power in 1,512 - 1,517 MHz should not exceed 58 dBm/5 MHz EIRP;
  - Base station unwanted emissions within 1,427 - 1,517 MHz are defined by the BEM in ECC/DEC/ (13)03; 16.3 dBm/5 MHz EIRP for the first adjacent 5 MHz block, 11 dBm/5 MHz EIRP for the second and 9 dBm/5 MHz EIRP for the third and beyond. It is proposed that this should apply also to emissions from blocks in the frequency band 1,452 – 1,492 MHz for emissions that fall into 1,427 – 1,452 MHz or 1,492 – 1,517 MHz when these are used for MFCN;
  - Base station unwanted emissions into the frequency band 1,400 – 1,427 MHz should not exceed -72 dBW/27 MHz;
  - Base station unwanted emissions in 1,520 – 1,559 MHz should not exceed -30 dBm/MHz EIRP;
  - Base station unwanted emissions in 1,518 – 1,520 MHz should not exceed -0.8 dBm/MHz EIRP "

7.2.2 See ECC Report 198 [20] for fixed links;

7.2.3 CEPT Recommendation T/R 13-01 E regarding coordination between mobile and fixed services [21]; For example, it mentions that "According ERC Report 65 a separation distance of 2 km and a carrier separation of 8.3 MHz is required between FS and MS stations operating in adjacent bands. Therefore, a careful deployment and coordination between MS and FS with channel spacing below 14 MHz is needed."

7.2.4 ERC/REC 70-03 [22] regarding the use of Short Range Devices (SRD), should such be introduced in the 1,518 – 1,525 MHz band in the future;

[20] ECC Report 198 Adaptive modulation and ATPC operations in fixed point-to-point systems - Guideline on coordination procedures, 16 May 2013 (https://docdb.cept.org/document/305)

[21] CEPT Recommendation T/R 13-01 E (Recommendation T/R of 1993 on "Preferred channel arrangements for fixed service systems operating in the frequency range 1-2.3 GHz". 1993. Revised on 5 February 2010) (https://docdb.cept.org/document/868)

[22] ERC/REC 70-03 ERC Recommendation of 6 October 1997 on relating to the use of Short Range Devices (SRD). Editorial update on 11 February 2022 (https://docdb.cept.org/document/845)

7.2.5 ECC Report 121 [23], ECC Report 147 [24], and ECC Report 253 [25] regarding compatibility with professional wireless microphone systems (PWMS), should such be introduced in the 1518-1525 MHz band in the future; and;

7.2.6 ITU Recommendation ITU-R M.1459 and ECC Report 295 [26] regarding protection criteria for and coordination between telemetry systems in the aeronautical mobile service and MSS [27], should such be introduced in the 1,518 – 1,525 MHz band in the future.

7.3 In the event of any interference, the Authority will require affected parties to carry out coordination. In the event that 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.

7.4 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.

7.5 Whenever possible, Cross Border Frequency Coordination will abide by the Harmonised Calculation Method for Africa (HCM4A) Agreement. This follows the 3rd CRASA AGM that agreed that CRASA should implement the Cross Border Frequency Coordination Harmonised Calculation Method for Africa (HCM4A) Agreement.

7.6 The ECC had noted the need for greater understanding of the concept and need for harmonisation in the signing of the HCM4A Agreement by the SADC Member States if the implementation of the Agreement was to be effective. The ECC, therefore, agreed to convene a workshop on HCM4A and requested CRASA Members to consider signing the agreement. These activities were part of the Frequency Planning Sub Committee (FPSC) Operations Plan 2015/16.

7.7 At the 5th CRASA AGM, Swakopmund, Namibia – 07-08 April 2016 [5], the subject of Cross Border Frequency Coordination using the Harmonised Calculation Method for Africa (HCM4A) was discussed in detail, following similar efforts in Europe. The Resolution CRASA/AGM/15.16/07 stipulates, "The AGM urged CRASA Members to prioritise the motivation to their administrations who are yet to indicate their interest to sign the Harmonised Calculation Method for Africa (HCM4A), to do so as soon as possible".

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[23] ECC Report 121 Compatibility studies between Professional Wireless Microphone Systems (PWMS) and other services/systems in the bands 1452-1492 MHz, 1492-1530 MHz, 1533-1559 MHz also considering the services/systems in the adjacent bands (below 1452 MHz and above 1559 MHz). 22 September 2008 (https://docdb.cept.org/document/229)

[24] ECC Report 147 Additional compatibility studies relating to PWMS in the 1518.1559 MHz excluding the band 1543.45-1543.95 MHz and 1544-1545 MHz, Tromsø, May 2010 (https://docdb.cept.org/document/256).

[25] ECC Report 253 Compatibility studies for audio PMSE at 1492-1518 MHz and 1518-1525 MHz, 30 September 2016 (https://docdb.cept.org/document/957)

[26] ECC Report 295 Guidance on Cross-border coordination between MFCN and Aeronautical Telemetry Systems in the 1429-1518 MHz band. Approved 8 March 2019 (https://docdb.cept.org/document/9070)

[27] Recommendation ITU-R M.1459-0 (05/2000): "Protection criteria for telemetry systems in the aeronautical mobile service and mitigation techniques to facilitate sharing with geostationary broadcasting-satellite and mobile-satellite services in the frequency bands 1 452-1 525 MHz and 2 310-2 360 MHz" (https://www.itu.int/rec/R-REC-M.1459-0-200005-I/en)

7.7.1 Therefore, coordination would follow the HCM4A as detailed in Sub-Saharan Africa Assessment Report on Harmonization of ICT Policies in Sub-Saharan Africa[28] (HIPSSA)

7.8 A harmonized calculation method (HCM4A) brings these benefits

7.8.1 Based on HCM Agreement used in Europe

7.8.2 Optimise spectrum usage;

7.8.3 Prevent harmful interferences;

7.8.4 Confer an adequate protection for stations;

7.8.5 Define technical provisions and administrative procedures;

7.8.6 Quick assignment of preferential frequencies; Transparent decisions through agreed assessment procedures; Quick assessment of interference through data exchange

7.9 HCM4A involves all 4 sub regions of Africa. This means the HCM4A projects include performing a survey and a comparative analysis of existing administrative and technical procedures related to bilateral and multilateral cross-border frequency coordination agreements across the 4 geographical sub-regions as defined by the African Union (AU), namely,

7.9.1 Central Africa: [Burundi, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, Sao Tome, and Principe];

7.9.2 East Africa: [Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, Sudan, Tanzania, Uganda];

7.9.3 Southern Africa: [Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe]; and

7.9.4 West Africa: [Benin, Burkina-Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal, Togo].

7.10 HCM4A also comes with a software tool for Sub-Saharan Africa[29], [30]

7.10.1 Optimise spectrum usage by accurate interference field strength calculations;

7.10.2 Establish general parameters, improvement and supplementation of technical provisions, and individual restrictions;

7.10.3 Establish models for computer-aided interference range calculations; and

7.10.4 Harmonise parameters: objectively predictable towards transparent decisions.

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[28] https://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_agreement.pdf.pdf

[29] Cross-Border Frequency Coordination: Harmonized Calculation Method for Africa (HCM4A) https://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_agreement.pdf.pdf

[30] PowerPoint Presentation (itu.int) https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2017/May%20BKK/Presentations/HCM%20and%20HCM4A%20BKK%2020170504%20IB.pdf

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 Revocation

9.1 Not applicable.

10 Frequency Migration

10.1 Specific Procedure
Studio transmission links may be migrated into this band under Fixed Services and are subject to coordination with the existing co-primary users.

Appendix A National Radio Frequency Plan

Table 2 shows an extract from the National Frequency Plan for South Africa.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 518-1 525 MHz FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.342	1 518-1 525 MHz FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.351A 5.341	IMT Satellite component	The band 1518-1559 MHz is identified for satellite component of IMT; Res. 225 applies. Radio Frequency Spectrum Assignment Plan GG 42286 Notice 125 of 2019 Final Frequency Migration Plan 2019 (GG No. 42337 Notice 36 of 2019)

Table 2: National Radio Frequency Plan for South Africa for 1518 to 1525 MHz band[31]

[31] National Radio Frequency Plan 2021, (NRFP-21) 8.3 kHz – 3000 GHz Independent Communications Authority of South Africa, Government Gazette No 46088, 25 March 2022 (https://www.icasa.org.za/uploads/files/National-Radio-Frequency-Plan-2021.pdf)

Appendix B Interference Resolution Process

Many technical procedures related to bilateral and multilateral cross-border frequency coordination agreements for the four (4) geographical sub-regions are defined by the African Union which includes the Southern African sub-region of ten (10) countries. Whenever possible, cross-Border Frequency Coordination and interference resolution should follow the Harmonized Calculation Method for Africa (HCM4A) [32] .
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.

[32] Cross-Border Frequency Coordination: Harmonized Calculation Method for Africa (HCM4A) https://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_agreement.pdf.pdf