ITU Region 1 allocations and footnotes	South African Allocation and footnotes	Typical Applications	Notes and Comments
Below 8.3 kHz (Not allocated) 5.53 5.54	**Below 8.3 kHz** (Not allocated) 5.53 5.54	Not allocated	Frequency bands below 8.3 kHz are not allocated in South Africa
8.3 – 9 kHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	**8.3 – 9 kHz** METEOROLOGICAL AIDS 5.54A	Thunderstorm detection stations	
9 – 11.3 kHz METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	**9 – 11.3 kHz** METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	Thunderstorm detection stations Navigational Aids Inductive Loop Systems (9 – 135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015)
11.3-14 kHz RADIONAVIGATION	**11.3-14 kHz** RADIONAVIGATION	Navigational Aids Inductive Loop Systems (9 – 135kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1
14-19.95 kHz FIXED MARITIME MOBILE 5.57 5.55 5.56	**14-19.95 kHz** FIXED MARITIME MOBILE 5.57 5.56	Maritime mobile communications	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 2153-7 Standard frequency and time signal may also be transmitted in this band.
19.95-20.05 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	**19.95-20.05 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	Inductive Loop Systems (9 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015) SRDs - see ITU-R Rec.SM. 1896-1
20.05-70 kHz FIXED MARITIME MOBILE 5.57 5.56 5.58	**20.05-70 kHz** FIXED MARITIME MOBILE 5.57 5.56	Maritime mobile communications Inductive Loop Systems (9 – 135 kHz) RFID (59.75 – 60.25 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Standard frequency and time signal may also be transmitted in this band. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No., 38641 March 2015) SRDs - see ITU-R Rec.SM. 1896-1

Commented [B1]: Reference to Annexure B of RFSR2015 is omitted on the draft publication.

Commented [B3]: The reference made to the postscript 4 seems to be missing on the draft NRFP2021. However, the Authority must note that the ITU-R Rec SM 1896 has been Superseded.

Commented [B2]: The Authority should keep consistency. In the allocation above the range is 9 – 135 kHz. In this allocation the format is changed to 9kHz – 135kHz. The ITU-R uses 9 – 135kHz.

Commented [B4]: ITU-R Rec SM 2153 is Superseded.

Commented [B5]: The use of this band by standard frequency and time signal is allowed under **No. 5.56.** It is not a primary allocation. The Authority should not deviate from the structure of the Region 1 allocation unnecessarily, however, the information that the Authority is trying to provide can be provided in the notes and comments.

70-72 kHz RADIONAVIGATION 5.60	**70-72 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9-135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 - 135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 386410 March 2015) SRDs - see ITU-R Rec.SM. 1896-1
72-84 kHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	**72-84 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1 Standard frequency and time signal may also be transmitted in this band.
84-86 kHz RADIONAVIGATION 5.60	**84-86 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	I Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896 -1
86-90 kHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	**86-90 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015) SRDs - see ITU-R Rec.SM. 1896-1 Standard frequency and time signal may also be transmitted in this band.
90-110 kHz RADIONAVIGATION 5.62 Fixed 5.64	**90-110 kHz** RADIONAVIGATION 5.62 Fixed 5.64	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1

Commented [B6]: Reference to ITU-R Rec SM 1896-1 is omitted in the draft NRFP2021.

110-112 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64	**110-112 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.64	Maritime mobile communication Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1
112-115 kHz RADIONAVIGATION 5.60	**112-115 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1
115-117.6 kHz RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.66	**115-117.6 kHz** RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64	Navigational Aids Maritime mobile communication Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz))	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1
117.6-126 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**117.6-126 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	Maritime mobile communication Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1
126-129 kHz RADIONAVIGATION 5.60	**126-129 kHz** RADIONAVIGATION 5.60	Navigational Aids Maritime mobile communication Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz))	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1
129-130 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**129-130 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	Maritime mobile communication Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1

130-135.7 kHz FIXED MARITIME MOBILE 5.64 5.67	**130-135.7 kHz** FIXED MARITIME MOBILE 5.64	Maritime mobile communication Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range - radiocommunications (9 -135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896-1
135.7-137.8 kHz FIXED MARITIME MOBILE Amateur 5.67A 5.64 5.67 5.67B	**135.7-137.8 kHz** FIXED MARITIME MOBILE Amateur 5.67A 5.64	Maritime mobile communications Amateur -	Amateur (135.7-137.8 kHz) services are limited to maximum radiated power of 1 W (e.i.r.p).
137.8-148.5 kHz FIXED MARITIME MOBILE 5.64 5.67	**137.8-148.5 kHz** FIXED MARITIME MOBILE 5.64	Maritime mobile communications	
148.5-255 kHz BROADCASTING 5.68 5.69 5.70	**148.5-160 kHz** BROADCASTING	Broadcasting	The Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013. Frequency Assignment Plan (GE75) applies.
	148.5-200 kHz FIXED 5.68		
	200-255 kHz AERONAUTICAL RADIONAVIGATION 5.70	Navigational aids	
255-283.5 kHz BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70	**255-283.5 kHz** AERONAUTICAL RADIONAVIGATION 5.70	Navigational Aids	
283.5-315 kHz AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74	**283.5-315 kHz** AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74	Navigational Aids Supplementary navigational information using narrow-band	

Commented [B7]: There are no SRDs or Inductive loop systems in this band. Reference to Annexure B of RFSR2015 should be removed in the NRFP2021.

Commented [B8]: In this particular case, the Authority is justified to create the sub-bands for Fixed Service and Aeronautical Radionavigation because South Africa is specifically mentioned in the footnote.

Commented [B9]:
COMMENT A

The draft NRFP2021 made allocation for MARITIME RADIONAVIGATION on a primary basis. It is assumed that this is to implement the allocation in **No. 5.74.** We propose that the Authority retains the format of ITU-R Region 1 in this case and leave the allocation in the footnote. The allocation is not particular to SA but rather to Region 1. The allocation for Region 1 is given in the first column and it only additionally allocates MRITIME RADIONAVIGATION on a primary in Region 1 through a footnote. Why does the Authority deviate from ITU-R Region 1 format because of a footnote that already refers to Region 1? Unnecessarily deviating from the ITU-R in this manner will clutter the document and make it difficult to read.

If this table of frequency allocation was done at a Regional level. Then it will be justified for Region 1 to create the sub-allocations in this manner. But it is inappropriate to create these sub-allocations at a national level if the footnotes making the allocations refer to regional allocations.

315-325 kHz AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 5.75	**315-325 kHz** AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73	Navigational Aids Coast Radio Telegraph Stations Radionavigation	
325-405 kHz AERONAUTICAL RADIONAVIGATION	**325-405 kHz** AERONAUTICAL RADIONAVIGATION	Navigational Aids	
405-415 kHz RADIONAVIGATION 5.76	**405-415 kHz** RADIONAVIGATION 5.76	Navigational Aids	
415-435 kHz MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	**415-435 kHz** MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	Maritime mobile communications Under the MMS the use of the band 415 - 495 kHz is limited to radiotelegraphy	NAVDAT System (TX for coast stations only)
435-472 kHz MARITIME MOBILE 5.79 Aeronautical radionavigation 5.82	**435-472 kHz** MARITIME MOBILE 5.79 Aeronautical radionavigation 5.82	Maritime mobile communications Coast Stations in the NAVTEX service on 490 kHz; Res.339 applies. Transmission of navigational and meteorological warnings and urgent info for ships (NBDP telegraphy)	NAVDAT System (TX for coast Stations only) Article 31 and Article 52 apply.
472-479 kHz MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.77 5.80 5.80B 5.82	**472-479 kHz** MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.82	Navigational Aids	NAVDAT System (TX for coast stations only)
479-495 kHz MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.82	**479-495 kHz** MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.82	NAVTEX service on 490 kHz	NAVDAT System (TX for coast stations only) Article 31 and Article 52
495-505 kHz MARITIME MOBILE 5.82C	**495-505 kHz** MARITIME MOBILE 5.82C	Limited to radiotelegraphy;	NAVDAT System (TX for coast stations only) Article 31 and Article 52 apply.

Commented [B10]: Just included “Article” to follow ITU-R format. This information should also be in the last column and not in the typical applications column.

Commented [B11]: The draft NRFP2021 included No. 5.80B to the amateur services. It looks like this was done in error as the footnote does not even apply to SA. We propose deletion.

Commented [B12]: In the draft NRFP2021 reference is made to Article 32. It looks like this was done in error and it should be Article 52.

505-526.5 kHz MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	**505-526.5 kHz** MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	Maritime mobile communications Maritime Radio Telegraphy NAVTEX service on 518 kHz Navigational Aids	NAVDAT System (TX for coast stations only) Article 31 and Article 52 Resolution 339 (Rev.WRC-07) applies The use of the band 505-526.5 kHz in the MMS is limited to radiotelegraphy
526.5-1 606.5 kHz BROADCASTING 5.87 5.87A	**526.5-1 606.5 kHz** BROADCASTING 5.87	Medium Wave Sound Broadcasting (535.5 -1606.5 kHz) ~~Inductive Loop Systems (740 –8800 kHz)~~ Digital Satellite Broadcasting (DSB) services	The Terrestrial Broadcasting Frequency Plan as amended (GG No. 36321) 02 April 2013. Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Digital Sound Broadcasting (DSB) Regulations was published in GG44469 Notice 215 of 2021.
1 606.5-1 625 kHz FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	**1 606.5-1 625 kHz** FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	Maritime mobile communications Land mobile communications	Some countries in Region 1 use radiodetermination systems in this band.
1 625-1 635 kHz RADIOLOCATION 5.93	**1 625-1 635 kHz** RADIOLOCATION 5.93	Navigational Aids	
1 635-1 800 kHz FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96	**1 635-1 800 kHz** FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	Maritime mobile communications Land mobile communications	Some countries in Region 1 use radiodetermination systems in this band.
1 800-1 810 kHz RADIOLOCATION 5.93	**1 800-1 810 kHz** RADIOLOCATION 5.93	Navigational Aids	
1 810-1 850 kHz AMATEUR 5.98 5.99 5.100 5.101	**1 810-1 850 kHz** AMATEUR 5.100	Amateur communications	

Commented [B13]: The typical service column in the draft NRFP2021 is cluttered and contains additional information that belongs to column 4 of the document.

Commented [B14]: No. 5.87 was deleted in the draft NRFP2021. This footnote allocates MS on secondary in various countries, seven of which are neighbors to SA. Even though SA is not in the footnote, it is important to retain this footnote in the SA allocation column so that spectrum users are aware of the arrengement in the immediate neighboring countries.

Commented [B15]: COMMENT A above also applies to this allocation. NRFP2021 allocates RADIODETERMINATION on a primary basis for SA. It is assumed that this is done because of **No. 5.92.** The footnote does not even allocate on a primary basis**.** We propose that this allocation is left on the footnote and the information that the Authority wanted to communicate can be captured in the fourth column**.**

Commented [B16]: In the draft NRFP2021 **No. 5.101** is removed in error in the column for Region 1 allocation.

1 850-2 000 kHz FIXED MOBILE except aeronautical mobile 5.92 5.96 5.103	**1 850-2 000 kHz** FIXED MOBILE except aeronautical mobile 5.92 5.103	Maritime mobile applications. Maritime mobile communications Land mobile communications Amateur communications	Some countries in Region 1 use radiodetermination systems in this band. 1850-1950 kHz is used for Maritime Coast Stations; 1950 - 2045 kHz is used by ship stations SSB Radio Telephony. Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
2 000-2 025 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 000-2 025 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	Maritime mobile communications Land mobile communications	Some countries in Region 1 use radiodetermination systems in this band. 1950-2045 kHz is used by ship stations SSB Radio Telephony
2 025-2 045 kHz FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103	**2 025-2 045 kHz** FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103	Maritime mobile communications Limited to Oceanographic buoy stations	Some countries in Region 1 use radiodetermination systems in this band.
2 045-2 160 kHz FIXED MARITIME MOBILE LAND MOBILE 5.92	**2 045-2 160 kHz** FIXED MARITIME MOBILE LAND MOBILE 5.92	Maritime mobile communications Land mobile communications	
2 160-2 170 kHz RADIOLOCATION 5.93 5.107	**2 160-2 170 kHz** RADIOLOCATION 5.107	Navigational Aids	
2 170-2 173.5 kHz MARITIME MOBILE	**2 170-2 173.5 kHz** MARITIME MOBILE	Maritime mobile communications	
2 173.5-2 190.5 kHz MOBILE (distress and calling) 5.108 5.109 5.110 5.111	**2 173.5-2 190.5 kHz** MOBILE (distress and calling) 5.108 5.109 5.110 5.111	2 182 kHz is an international distress and calling frequency for radiotelephony. 2 187.5 kHz – DSC for distress and calling 2 174.5 kHz – international distress frequency for NBDP telegraphy .	Article 31 and Article 52 applies

Commented [B17]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote

Commented [B18]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote.

Commented [B19]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote.

Commented [B20]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote

Commented [B21]: In the draft NRFP2021 this footnote is removed. The footnote makes additional allocation to FS on a primary basis in various countries, including the Kingdom of Eswatini, which is an immediate neighbor to SA. This is important information to spectrum users in SA.

2 190.5-2 194 kHz MARITIME MOBILE	**2 190.5-2 194 kHz** MARITIME MOBILE	Maritime mobile communications	
2 194-2 300 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.112	**2 194-2 300 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	Maritime mobile communications Land mobile communications	Some countries in Region 1 use radiodetermination systems in this band.
2 300-2 498 kHz FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	**2 300-2 498 kHz** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	Land Mobile and Maritime applications Sound Broadcasting	Terrestrial Broadcasting Frequency Plan 2013
2 498-2 501 kHz STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	**2 498-2 501 kHz** STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)		
2 501-2 502 kHz STANDARD FREQUENCY AND TIME SIGNAL Space Research	**2 501-2 502 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space Research		
2 502-2 625 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.114	**2 502-2 625 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	Land Mobile and Maritime applications	Some countries in Region 1 use radiodetermination systems in this band.
2 625-2 650 kHz MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	**2 625-2 650 kHz** MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	Sonobuoys Maritime mobile communications	Some countries in Region 1 use radiodetermination systems in this band.
2 650-2 850 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 650-2 850 kHz** FIXED MOBILE except aeronautical mobile (R)	Fixed Services links Maritime mobile communications	Some countries in Region 1 use radiodetermination systems in this band.

Commented [B22]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote

Commented [B23]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote

Commented [B24]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote

	5.92 5.103	Land mobile communications	
2 850-3 025 kHz AERONAUTICAL MOBILE (R) 5.111 5.115	**2 850-3 025 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115	Aeronautical mobile (R) 3 023 kHz may be used under the MMS for search and rescue operations	Appendix 27 Allotment Plan applies Article 31 applies
3 025-3 155 kHz AERONAUTICAL MOBILE (OR)	**3 025-3 155 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies
3 155-3 200 kHz FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	**3 155-3 200 kHz** FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	Maritime mobile communications Land mobile communications SRD[5] Low power wireless hearing aids	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channels may be assigned in the band 3155 – 3400 kHz.
3 200-3 230 kHz FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	**3 200-3 230 kHz** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	Maritime mobile communications Land mobile communications HF Sound Broadcasting Low power wireless hearing aids	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channel may be assigned in the band 3155 – 3400 kHz.
3 230-3 400 kHz FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118	**3 230-3 400 kHz** FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116	HF Sound Broadcasting Low power wireless hearing aids	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channel may be assigned in the band 3155 – 3400 kHz.
3 400-3 500 kHz AERONAUTICAL MOBILE (R)	**3 400-3 500 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R) applications	Appendix 27 Allotment Plan applies

Commented [B25]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote

Commented [B26]: Article 31 was just moved to the additional information column.

Commented [B27]: In the draft NRFP2021, **No. 5.113** applies to BROADCASTING only in the SA Allocation. In the Radio Regulations, the footnote applies to the band and not only to broadcasting, even though the contents refer to the use of broadcasting. The Authority should follow the ITU-R.

Commented [B28]: In the draft NRFP2021, **No. 5.113** applies to BROADCASTING only in the SA Allocation. In the Radio Regulations, the footnote applies to the band and not only to broadcasting, even though the contents refer to the use of broadcasting. The Authority should follow the ITU-R.

3 500-3 800 kHz AMATEUR FIXED MOBILE except aeronautical mobile 5.92	**3 500-3 800 kHz** AMATEUR FIXED MOBILE except aeronautical mobile 5.92	Amateur communications Maritime communications Land mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Some countries in Region 1 use radiodetermination systems in this band.
3 800-3 900 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**3 800-3 900 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Aeronautical mobile (OR) applications	Appendix 26 Allotment Plan applies
3 900-3 950 kHz AERONAUTICAL MOBILE (OR) 5.123	**3 900-3 950 kHz** AERONAUTICAL MOBILE (OR) BROADCASTING 5.123	Aeronautical mobile (OR) applications	Appendix 26 Allotment Plan applies
3 950-4 000 kHz FIXED BROADCASTING	**3 950-4 000 kHz** FIXED BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
4 000-4 063 kHz FIXED MARITIME MOBILE 5.127 5.126	**4 000-4 063 kHz** FIXED MARITIME MOBILE 5.127	Maritime mobile communications	Use of the band 4000-4063 kHz by the MMS is limited to ship stations using radiotelephony
4 063-4 438 kHz MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	**4 063-4 438 kHz** MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	Maritime mobile communications DSC for distress and calling on 4209.5 kHz Coast Station NAVTEX service on 4207.5 kHz International distress frequency for NBDP telegraphy on 4177 kHz Coast stations meteorological and navigational warnings and urgent information (NBDP) on 4209.5 kHz Maritime Safety Information on 4210 kHz	ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies Resolution 339 (Rev.WRC-07) applies Article 31 and Article 52 apply.
4 438-4 488 kHz	**4 438-4 488 kHz**	Maritime communications Land mobile communications	

Commented [B29]: COMMENT A above also applies here. The allocation of RADIO DETERMINATION should be left in the footnote

Commented [B30]: In the draft NRFP2021, in this allocation, the Authority has made additional comments in column 4, reffering to Annexure B of RFSR. The application for SRD in this band has been added in the typical application column.

Commented [B31]: We support this deviation from ITU-R because SA is specifically mentioned under No.5.123. The footnote applies to the entire band, though.

Commented [B32]: Some of the information in the draft NRFP2021 that was put in the typical application column is transferred to additional information column.

Commented [B33]: The draft NRFP2021 unnecessarily deviate from the ITU-R Region allocation format in this band because No. 5.128 also allocates sub-bands within this allocation to various countries. South Africa is not even one of the countries listed, neither does the footnote allocate FS on a PRIMARY basis. We propose that the allocation of FS be left in the footnote.

Column 3 is also cleaned up and information shared between column 3 and column 4 to avoid cluttering the document.

FIXED MOBILE except aeronautical mobile (R) Radiolocation 5.132A 5.132B	FIXED MOBILE except aeronautical mobile (R) Radiolocation 5.132A	Oceanographic Radars	
4 488 -4 650 kHz FIXED MOBILE except aeronautical mobile (R)	**4 488 -4 650 kHz** FIXED MOBILE except aeronautical mobile (R)	Fixed and Mobile applications Maritime applications	
4650 – 4700 kHz AERONAUTICAL MOBILE (R)	**4650 – 4700 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R)	Appendix 27 Allotment Plan applies
4 700-4 750 kHz AERONAUTICAL MOBILE (OR)	**4 700-4 750 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies
4 750-4 850 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	**4 750-4 850 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	Aeronautical mobile (OR) land mobile HF Sound broadcasting	Appendix 26 Allotment Plan applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
4 850-4 995 kHz FIXED LAND MOBILE BROADCASTING 5.113	**4 850-4 995 kHz** FIXED LAND MOBILE BROADCASTING 5.113	Land mobile HF Sound broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
4 995-5 003 kHz STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	**4 995-5 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)		
5 003-5 005 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**5 003-5 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		
5 005-5 060 kHz FIXED BROADCASTING 5.113	**5 005-5 060 kHz** FIXED BROADCASTING 5.113	HF Sound broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013

Commented [B34]: In the draft NRFP2021, the Authority has, in error, put Aeronautical mobile under the typical applications column. The has been removed here, including reference made to Appendix 26 allotment Plan in column 4.

Commented [B35]: In this allocation NRFP2021 makes reference to Appendix 26 in column 4, this should be Appendix 27 and not appendix 26. Also in the typical application it should be Aeronautical mobile (R) and not Aeronautical mobile.

Commented [B36]: The typical application in the draft NRFP2021 should be changed to Aeronautical mobile (OR) and not just Aeronautical mobile

		Fixed Applications	
5 060-5 250 kHz FIXED Mobile except aeronautical mobile 5.133	**5 060-5 250 kHz** FIXED Mobile except aeronautical mobile 5.133	SADC harmonised HF frequencies for cross-border mobile communications; Maritime applications	
5 250-5 275 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A 5.133A	**5 250-5275 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	SADC[6] harmonised HF frequencies for cross-border mobile communications; Oceanographic Radar	Oceanographic Radars are used in accordance with ITU Resolution 612 (Rev WRC-12).
5 275 -5 351.5kHz FIXED MOBILE except aeronautical mobile	**5 275 -5 351.5kHz** FIXED MOBILE except aeronautical mobile Amateur NF0	Amateur communications	
5 351.5 -5 366.5 kHz FIXED MOBILE except aeronautical mobile Amateur 5.133B	**5 351.5 -5 366.5 kHz** FIXED MOBILE except aeronautical mobile Amateur 5.133B NF0	Amateur communications	
5 366.5 -5 450 kHz FIXED MOBILE except aeronautical mobile	**5 366.5 -5 450 kHz** FIXED MOBILE except aeronautical mobile		
5 450 kHz – 5 480 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**5 450 kHz – 5 480 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Aeronautical mobile (OR)	Appendix 27 Allotment plan applies
5 480-5 680 kHz AERONAUTICAL MOBILE (R) 5.111 5.115	**5 480-5 680 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115	Aeronautical mobile (R)	Appendix 27 Allotment Plan applies
5 680-5 730 kHz AERONAUTICAL MOBILE (OR) 5.111 5.115	**5 680-5 730 kHz** AERONAUTICAL MOBILE (OR) 5.111 5.115	Aeronautical mobile (OR) Search and rescue on 5 680 kHz under MMS SRD[7] applications (5 725 – 5 875 kHz)	Appendix 26 Allotment Plan applies Article 31 applies on the use of 6215 kHz Common international SRD band; see ITU-R Rec.SM 1896-1 Radio Frequency Spectrum Regulations (Annex B) (GG.

Commented [B38]: Reference should be made to Appendix 26 and not Appendix 27 as in the draft NRFP2021

Commented [B39]: In the draft NRFP2021, reference to the ITU-R Recommendation is incomplete. The Authority's intention was probably to make reference **to ITU-R Rec.SM 1896-1**

Commented [B37]: The correct range for SRDs in this band is 5 725 – 5 875 kHz and not 6 765 – 6 795 kHz as written in the draft NRFP2021

			No.38641, 30 March 2015).
5 730-5 900 kHz FIXED LAND MOBILE	**5 730-5 900 kHz** FIXED LAND MOBILE	Land mobile	
5 900-5 950 kHz BROADCASTING 5.134 5.136	**5 900-5 950 kHz** BROADCASTING 5.134 5.136	HF Sound Broadcasting	FS and LMS may be used on a secondary basis.
5 950-6 200 kHz BROADCASTING	**5 950-6 200 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
6 200-6 525 kHz MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	**6 200-6 525 kHz** MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	Maritime mobile communications DSC for distress and calling on 6215 kHz, 6312 kHz and 6215 kHz International distress frequency for NBDP telegraphy 6268 kHz ~~Maritime safety information (MSI) on 6314 kHz~~	ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies Article 31 applies FS may be used on a secondary basis in the band 6 200 – 6 213.5 kHz and 6 220.5 – 6 525 kHz.
6 525-6 685 kHz AERONAUTICAL MOBILE (R)	**6 525-6 685 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	Appendix 27 Allotment Plan applies
6 685-6 765 kHz AERONAUTICAL MOBILE (OR)	**6 685-6 765 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications(OR)	Appendix 26 Allotment Plan applies
6 765-7 000 kHz FIXED MOBILE except aeronautical mobile (R) 5.138	**6 765-7 000 kHz** FIXED MOBILE except aeronautical mobile (R) 5.138	Inductive Loop Systems (6 765 – 6 795 kHz)	
7 000-7 100 kHz AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	**7 000-7 100 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
7 100-7 200 kHz **AMATEUR** 5.141A 5.141B	**7 100-7 200 kHz** **AMATEUR** 5.141B	Amateur communications	
7 200-7 300 kHz BROADCASTING	**7 200-7 300 kHz** BROADCASTING	HF Sound Broadcasting	

Commented [B40]: In the draft NRFP2021, the Authority made sub-allocations for FS and LMS on a secondary basis in line with **No. 5.156.** This is not necessary as SA is not particularly mentioned in the footnote. Allocation of FS and LMS should remain in the footnote. However, the information the Authority is trying to communicate is incorporated in column for additional comments.

Commented [B41]: In the draft NRFP2021, the Authority made sub-allocations for FS in the frequency band 6 200 – 6 213.5 kHz and 6 220.5 – 6 525 kHz in line with No. **5.137.** Similarly, to the comment above, it is not necessary to deviate from the format on the RR as SA is not particularly mentioned in the footnote**.**

Commented [B42]: Reference to Annexure B of RFSR2015 in the draft NRFP2021 should be removed in column 4 of this allocation. There are no SRDs allocated here in RFSR2015

Commented [B43]: **No. 5.141B** has been removed in the SA allocation column of the draft NRFP2021. Botswana is a neighboring country listed in the footnote and it is important to spectrum users to be aware of this arrangement in Botswana. It is proposed that this footnote not be deleted in the SA allocations and footnotes column.

7 300-7 400 kHz BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	**7 300-7 400 kHz** BROADCASTING 5.134 5.143 5.143B	HF Sound Broadcasting	Article 12 Planning Procedures applies FS and LMS may operate in the band 7 300 – 7 450 kHz on a secondary basis Res.517 (Rev.WRC-19) apply. The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 NINP to broadcasting
7 400-7 450 kHz BROADCASTING 5.143B 5.143C	**7 400-7 450 kHz** BROADCASTING 5.143B	HF Sound Broadcasting Inductive Loop Systems (7400 – 8800 kHz)	ITU RR Article 12 Planning Procedures applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Res.517 (Rev.WRC-19) apply. Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). FS and LMS may operate in the band 7 350 – 7 450 kHz on a secondary basis
7 450-8 100 kHz FIXED MOBILE except aeronautical mobile (R) 5.144	**7 450-8 100 kHz** FIXED MOBILE except aeronautical mobile (R) 5.144	Inductive Loop Systems (7400 – 8800 kHz) SADC harmonised HF frequencies for cross-border mobile communications;	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
8 100-8 195 kHz FIXED MARITIME MOBILE	**8 100-8 195 kHz** FIXED MARITIME MOBILE	Maritime mobile communications Inductive Loop Systems (7400 – 8800 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
8 195-8 815 kHz MARITIME MOBILE 5.109 5.110 5.132 5.145	**8 195-8 815 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.145	Maritime mobile communications GMDS calls using DSC on 8414.5 kHz	ITU RR Appendix 17 Channelling Plan applies See Section 7 Transmission of meteorological

Commented [B45]: Combining the range given under No. 5.143 and No. 5.143B

Commented [B44]: On the same argument given for other allocations above, it is proposed that the Authority not deviate from the manner in which allocations are done in the Radio Regulations, unless when it is necessary. FS and LMS should remain allocated in **No. 5.143** and **No. 5.143B**

Commented [B46]: On the same argument based on some of the allocations above, it is proposed that the NRFP2021 not to deviate unnecessarily from the allocations done as per the Radio Regulations. FS and LMS should remain allocated in **No. 5.143B**

5.111	5.111	Inductive Loop Systems (7400 – 8800 kHz) DSC for distress and calling on 8414.5 kHz International distress frequency for NBDP telegraphy on 8376.5 kHz maritime safety information (MSI) on 8416.5 kHz;	bulletins and notices to navigators ITU RR Appendix 25 Allotment Plan applies Article 31 applies Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
8 815-8 965 kHz AERONAUTICAL MOBILE (R)	**8 815-8 965 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
8 965-9 040 kHz AERONAUTICAL MOBILE (OR)	**8 965-9 040 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
9 040-9 305 kHz FIXED	**9 040-9 305 kHz** FIXED	Fixed Applications	
9 305 -9 355 kHz FIXED Radiolocation 5.145A 5.145B	**9 305 -9 355 kHz** FIXED Radiolocation 5.145A	Fixed Applications Oceanographic radars	
9355-9 400 kHz FIXED	**9355-9 400 kHz** FIXED		
9400-9500 kHz BROADCASTING 5.134 5.146	**9400-9500 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Fixed services may be used on a secondary basis
9 500-9 900 kHz BROADCASTING 5.147	**9 500-9 900 kHz** BROADCASTING 5.147	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Fixed services may be used on a secondary basis in the band 9 775 – 9 900 kHz
9 900-9 995 kHz FIXED	**9 900-9 995 kHz** FIXED	Fixed Applications	

Commented [B47]: Typical application not added in the draft NRFP2021

Commented [B48]: Typical applications changed to Fixed Applications to avoid duplication with column 2

Commented [B49]: Typical applications changed to Fixed Applications to avoid duplication with column 2

Commented [B50]: It is proposed that the NRFP2021 does not dviate from the Radio Regulations format and that FS is remains allocated in **No. 5.146**

Commented [B51]: Similarly as above, it is proposed that the Authority maintain the manner in which it is done in the RR and FS must be allocated in No. 5.147

9 995-10 003 kHz STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	**9 995-10 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111		
10 003-10 005 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	**10 003-10 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	Passive sensing	
10 005-10 100 kHz AERONAUTICAL MOBILE (R) 5.111	**10 005-10 100 kHz** AERONAUTICAL MOBILE (R) 5.111	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
10 100-10 150 kHz FIXED Amateur	**10 100-10 150 kHz** FIXED Amateur	Fixed Applications Amateur communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
10 150-11 175 kHz FIXED Mobile except aeronautical mobile (R)	**10 150-11 175 kHz** FIXED Mobile except aeronautical mobile (R)	SADC harmonised HF frequencies for cross-border mobile communications;	
11 175-11 275 kHz AERONAUTICAL MOBILE (OR)	**11 175-11 275 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
11 275-11 400 kHz AERONAUTICAL MOBILE (R)	**11 275-11 400 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
11 400-11 600 kHz FIXED	**11 400-11 600 kHz** FIXED	Fixed Applications	
11 600-11 650 kHz BROADCASTING 5.134 5.146	**11 600-11 650 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	FS may operate in this band on a secondary basis. Article 12 Planning Procedures and Resolution 517 (WRC-19) applies
11 650-12 050 kHz BROADCASTING 5.147	**11 650-12 050 kHz** BROADCASTING 5.147	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies FS may operate in this band on a secondary basis.

Commented [B52]: It is proposed that the Authority does not deviate from the format in the RR and that FS remains allocated only in **No. 5.146**

Commented [B53]: It is proposed that the Authority does not deviate from the format in the RR and that FS remains allocated only in **No. 5.147**

12 050-12 100 kHz BROADCASTING 5.134 5.146	**12 050-12 100 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies FS may operate in this band on a secondary basis.
12 100-12 230 kHz FIXED	**12 100-12 230 kHz** FIXED	Fixed Applications	
12 230-13 200 kHz MARITIME MOBILE 5.109 5.110 5.132 5.145	**12 230-13 200 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.145	Maritime mobile communications GMDS calls using DSC on 12 577 kHz DSC for distress and calling on 12 577 kHz International distress frequency for NBDP telegraphy on 12 520 kHz maritime safety information (MSI) on 12 579 kHz;	ITU RR Appendix 17 Channelling Plan applies Transmission of meteorological bulletins and notices to navigators ITU RR Appendix 25 Allotment Plan applies ITU RR Appendix 15 See section 17 for details
13 200-13 260 kHz AERONAUTICAL MOBILE (OR)	**13 200-13 260 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
13 260-13 360 kHz AERONAUTICAL MOBILE (R)	**13 260-13 360 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
13 360-13 410 kHz FIXED RADIO ASTRONOMY 5.149	**13 360-13 410 kHz** FIXED RADIO ASTRONOMY 5.149	Radio Astronomy (Observations of decametric radiation)	See section 5 for coordination with radio astronomy
13 410-13 450 kHz FIXED Mobile except aeronautical mobile (R)	**13 410-13 450 kHz** FIXED Mobile except aeronautical mobile (R)	Maritime and/or land mobile communications	
13 450-13 550 kHz FIXED Mobile except aeronautical mobile (R)	**13 450-13 550 kHz** FIXED Mobile except aeronautical mobile (R)	Oceanographic radars	

Commented [B54]: It is proposed that the Authority does not deviate from the format in the RR and that FS remains allocated only in **No. 5.146**

Commented [B55]: Some information is removed from the typical application column to additional comments column for clarity purpose only and to avoid cluttered columns.

Commented [B56]: The radio astronomy application is included.

Commented [B57]: The reference to SRD and Common ISM band is incorrectly placed in this allocation in the draft NRFP2021. The correct placement is under 13 550 – 13 570 kHz.

Radiolocation 5.132A 5.149A	Radiolocation 5.132A		
13 550-13 570 kHz FIXED Mobile except aeronautical mobile (R) 5.150	**13 550-13 570 kHz** FIXED Mobile except aeronautical mobile (R) 5.150	Inductive Loop Systems (13 553 – 13 567 kHz) RFID and EAS systems (13 553 – 13 567 kHz) SRD8 applications	Common international SRD band; see ITU-R Rec. SM. 1896-1 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). The band 13 553-13 567 kHz is designated for ISM applications (5.150).
13 570-13 600 kHz BROADCASTING 5.134 5.151	**13 570-13 600 kHz** BROADCASTING 5.134 5.151	HF Sound Broadcasting	Article 12 Planning Procedures Res.517 (WRC-19) applies FS and MS except aeronautical mobile service may be used in this band on a secondary basis.
13 600-13 800 kHz BROADCASTING	**13 600-13 800 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
13 800-13 870 kHz BROADCASTING 5.134 5.151	**13 800-13 870 kHz** BROADCASTING 5.134 5.151	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies
13 870-14 000 kHz FIXED Mobile except aeronautical mobile (R)	**13 870-14 000 kHz** FIXED Mobile except aeronautical mobile (R)	Fixed Applications Maritime communications Land mobile communications	
14 000-14 250 kHz AMATEUR AMATEUR-SATELLITE	**14 000-14 250 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
14 250-14 350 kHz AMATEUR 5.152	**14 250-14 350 kHz** AMATEUR	Amateur communications	

Commented [B58]: It is proposed that additional allocation for FS and MS except aeronautical mobile (R) remain allocated in **No. 5. 151** as it is done in the RR.

Commented [B59]: It is proposed that additional allocation for FS and MS except aeronautical mobile (R) remain allocated in **No. 5. 151** as it is done in the RR

Commented [B60]: Reference to Annexure B of RFSR2015 should be removed from column 4 of this allocation.

Commented [B61]: Reference to Annexure B of RFSR2015 should be removed from column 4 of this allocation.

14 350-14 990 kHz FIXED Mobile except aeronautical mobile (R)	**14 350-14 990 kHz** FIXED Mobile except aeronautical mobile (R)	SADC harmonised HF frequencies for cross-border mobile communications;	
14 990-15 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	**14 990-15 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111		
15 005-15 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**15 005-15 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		
15 010-15 100 kHz AERONAUTICAL MOBILE (OR)	**15 010-15 100 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
15 100-15 600 kHz BROADCASTING	**15 100-15 600 kHz** BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. ITU RR Article 12 Planning Procedures applies
15 600-15 800 kHz BROADCASTING 5.134 5.146	**15 600-15 800 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. FS may operate in this band on a secondary basis. Article 12 Planning Procedures and Resolution 517 (WRC-19) applies
15 800-16 100 kHz FIXED 5.153	**15 800-16 100 kHz** FIXED	Fixed Applications	
16 100-16 200 kHz FIXED Radiolocation 5.145A	**16 100-16 200 kHz** FIXED Radiolocation 5.145A	Oceanographic radars	

Commented [B62]: Same comments regarding **No. 5.146** above applies

5.145B			
16 200-16 360 kHz FIXED	**16 200-16 360 kHz** FIXED	Fixed Applications	
16 360-17 410 kHz MARITIME MOBILE 5.109 5.110 5.132 5.145	**16 360-17 410 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.145	Maritime mobile communications GMDS calls using DSC on 16 804 kHz DSC for distress and calling on 16 804 kHz International distress frequency for NBDP telegraphy on 16 695 kHz maritime safety information (MSI) on 16 806.5 kHz;	ITU RR Appendix 17 Channelling Plan applies Transmission of meteorological bulletins and notices to navigators ITU RR Appendix 25 Allotment Plan applies ITU RR Appendix 15 See section 17 for details
17 410-17 480 kHz FIXED	**17 410-17 480 kHz** FIXED	Fixed Applications	
17 480-17 550 kHz BROADCASTING 5.134 5.146	**17 480-17 550 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. FS may operate in this band on a secondary basis.
17 550-17 900 kHz BROADCASTING	**17 550-17 900 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013.
17 900-17 970 kHz AERONAUTICAL MOBILE (R)	**17 900-17 970 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
17 970-18 030 kHz AERONAUTICAL MOBILE (OR)	**17 970-18 030 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies

Commented [B64]: Some information is removed from the typical application column to additional comments column for clarity purpose only and to avoid cluttered columns.

Commented [B63]: All footnotes in this allocation are applicable only to the Maritime services. In the draft NRFP2021, it looks like only No. 5. 109 is applicable to MMS

Commented [B65]: Same comments on **No. 5.146 above** applies

18 030-18 052 kHz FIXED	**18 030-18 052 kHz** FIXED	Fixed Applications	
18 052-18 068 kHz FIXED Space research	**18 052-18 068 kHz** FIXED Space research	Fixed Applications	
18 068-18 168 kHz AMATEUR AMATEUR-SATELLITE 5.154	**18 068-18 168 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
18 168-18 780 kHz FIXED Mobile except aeronautical mobile	**18 168-18 780 kHz** FIXED Mobile except aeronautical mobile	land mobile communications	
18 780-18 900 kHz MARITIME MOBILE	**18 780-18 900 kHz** MARITIME MOBILE	Maritime mobile communications	ITU RR Appendix 17 Channelling Plan applies
18 900-19 020 kHz BROADCASTING 5.134 5.146	**18 900-19 020 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	Article 12 Planning Procedures Resolution 517 (WRC-19) applies ~~The Terrestrial Broadcasting~~ Frequency Plan (GG no.36321) 02 April 2013. FS may operate in this band on a secondary basis.
19 020-19 680 kHz FIXED	**19 020-19 680 kHz** FIXED	Fixed Applications	
19 680-19 800 kHz MARITIME MOBILE 5.132	**19 680-19 800 kHz** MARITIME MOBILE 5.132	Maritime applications maritime safety information (MSI) on 19 680.5 kHz	Appendix 17 applies.
19 800-19 990 kHz FIXED	**19 800-19 990 kHz** FIXED	Fixed Applications	
19 990-19 995 kHz STANDARD FREQUENCY AND TIME SIGNAL	**19 990-19 995 kHz** STANDARD FREQUENCY AND TIME SIGNAL		

Commented [B66]: Reference to Annexure B of RFSR2015 should be removed from column 4 of this allocation.

Commented [B67]: Same comments on **No. 5.146** above applies

Space research 5.111	Space research 5.111		
19 995-20 010 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	**19 995-20 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111		
20 010-21 000 kHz FIXED Mobile	**20 010-21 000 kHz** FIXED Mobile		
21 000-21 450 kHz AMATEUR AMATEUR-SATELLITE	**21 000-21 450 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
21 450-21 850 kHz BROADCASTING	**21 450-21 850 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013.
21 850-21 870 kHz FIXED 5.155A 5.155	**21 850-21 870 kHz** FIXED	Fixed Applications[9]	
21 870-21 924 kHz FIXED 5.155B	**21 870-21 924 kHz** FIXED 5.155B	Fixed Applications	This band is used by the FS for services related to aircraft flight safety
21 924-22 000 kHz AERONAUTICAL MOBILE (R)	**21 924-22 000 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
22 000-22 855 kHz MARITIME MOBILE 5.132 5.156	**22 000-22 855 kHz** MARITIME MOBILE 5.132	Maritime safety information (MSI) on 22 376 kHz.	ITU RR Appendix 17 Channelling Plan applies. ITU RR Appendix 25 Allotment Plan applies. See Section 7 for details
22 855-23 000 kHz FIXED 5.156	**22 855-23 000 kHz** FIXED	Fixed Applications	
23 000-23 200 kHz	**23 000-23 200 kHz**	Fixed Applications	

Commented [B68]: Reference to Annex B of RFSR2015 should be removed in column 4 of this allocation in the draft NRFP2021

Commented [B69]: The use for aircraft safety is transferred to additional information column.

FIXED Mobile except aeronautical mobile (R) 5.156	FIXED Mobile except aeronautical mobile (R)		
23 200-23 350 kHz FIXED 5.156A AERONAUTICAL MOBIL (OR)	**23 200-23 350 kHz** FIXED 5.156A AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	The use of this band by the FS is limited to the provision of services related to aircraft flight safety
23 350-24 000 kHz FIXED MOBILE except aeronautical mobile 5.157	**23 350-24 000 kHz** FIXED MOBILE except aeronautical mobile 5.157	Inter-ship radiotelegraphy	The use of this band by the MMS is limited to inter-ship radiotelegraphy
24 000-24 450 kHz FIXED LAND MOBILE	**24 000-24 450 kHz** FIXED LAND MOBILE		
24 450 -24 600 kHz FIXED LAND MOBILE Radiolocation 5.132A 5.158	**24 450 -24 600 kHz** FIXED LAND MOBILE Radiolocation 5.132A	Oceanographic radars	
24 600-24 890 kHz FIXED LAND MOBILE	**24 600-24 890 kHz** FIXED LAND MOBILE		
24 890 kHz-24 990 kHz AMATEUR AMATEUR SATELLITE	**24 890 kHz-24 990 kHz** AMATEUR AMATEUR SATELLITE		
24 990-25 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	**24 990-25 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)		
25 005-25 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**25 005-25 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		
25 010-25 070 kHz FIXED	**25 010-25 070 kHz** FIXED		

Commented [B70]: Some information transferred to column 4 to leave only information relation to the typical application.

Commented [B71]: It is not necessary to deviate from the RR in the manner in which it is done in the draft NRFP2021. It is a bit confusing and may lead to unintended consequences. In this regard MS is not only Maritime and Land mobiles, there is Mobile satellite as well. It is proposed that the NRFP2021 follows the format of the RR as much as possible.

Commented [B72]: Reference to Annex B of RFSR2015 should be removed from column 4 of this allocation.

MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
25 070-25 210 kHz MARITIME MOBILE	**25 070-25 210 kHz** MARITIME MOBILE	Maritime mobile communications	ITU RR Appendix 17 Channelling Plan applies
25 210-25 550 kHz FIXED MOBILE except aeronautical mobile	**25 210-25 550 kHz** FIXED MOBILE except aeronautical mobile		
25 550-25 670 kHz RADIO ASTRONOMY 5.149	**25 550-25 670 kHz** RADIO ASTRONOMY 5.149	Radio Astronomy (Observations of decametric radiation)	See section 5 for coordination with radio astronomy
25 670-26 100 kHz BROADCASTING	**25 670-26 100 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies. The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
26 100-26 175 kHz MARITIME MOBILE 5.132	**26 100-26 175 kHz** MARITIME MOBILE 5.132	maritime safety information (MSI) on 26 100.5 kHz	ITU RR Appendix 17 Channelling Plan applies. ITU RR Appendix 25 Allotment Plan applies. The frequency 26 100.5 kHz is the international frequency for transmission of MSI. International DSC calling at 26121 kHz
26 175-26200 kHz FIXED MOBILE except aeronautical mobile	**26 175-26 200 kHz** FIXED MOBILE except aeronautical mobile	Mobile systems (single frequency) CB Radio ISM applications SRD applications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Common international SRD band; see ITU-R Rec. SM. 1896-1 CB Radio (26.96-27.410 MHz) ISM applications (26.975-27.283 MHz) SRD applications (26 957-27 283 kHz)
26 200-26 350 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	**26 200-26 350 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	Mobile systems (single frequency) Oceanography radars	

Commented [B73]: Additional Information on the application for radio astronomy

26 350-27 500 kHz FIXED MOBILE except aeronautical mobile 5.150	**26 350-27 500 kHz** FIXED MOBILE except aeronautical mobile 5.150	Single Frequency Mobile Inductive Loop Systems, Nonspecific SRD's Surface Model Control	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Surface Model Control (26.995 MHz, 27.045 MHz, 27.095 MHz, 27.145 MHz and 27.195 MHz) SRD's (26.957 – 27.283 MHz)
27.5-28 MHz METEOROLOGICAL AIDS FIXED MOBILE	**27.5-28 MHz** METEOROLOGICAL AIDS FIXED MOBILE	Radiosondes	
28-29.7 MHz AMATEUR AMATEUR-SATELLITE	**28-29.7 MHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
29.7-30.005 MHz FIXED MOBILE	**29.7-30.005 MHz** FIXED MOBILE	Single frequency mobile (29.7- 29.99 MHz) Government Services	Amateur – disaster and emergencies Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
30.005-30.01 MHz SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	**30.005-30.01 MHz** SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	Government Services	

30.01-37.5 MHz
FIXED
MOBILE
	30.01-37.5 MHz
	FIXED
	MOBILE
		Single Frequency Mobile
		Government Services
		Mobile application
		Wireless Microphone
		PMR
			Single Frequency Mobile bands
			(32 – 32.325 MHz); (33.675 – 34.175 MHz) (33.25 – 33.5 MHz) and (36.825 – 38.5 MHz)
			PMR paired bands (MTX) // (BTX)
			Mobile 1
			(32.325 – 33.675 MHz) // (41.65 – 43 MHz)
			Mobile 2
			(34.175 – 35 MHz) // (40.625 – 41.25 MHz)
			Mobile 3
			(38.5 – 39.825 MHz) // (35.5 – 36.825 MHz)
			Wireless microphone (35.5 – 33.5 MHz)

Commented [B74]: Reference to Annex B of RFSR2015 should be removed in column 4 of NRFP2021 for this allocation.

Commented [B75]: As it is written in the draft NRFP2021, column 3 on typical application is difficult to read.

37.5-38.25 MHz FIXED MOBILE Radio astronomy 5.149	**37.5-38.25 MHz** FIXED MOBILE Radio astronomy 5.149	Single Frequency Mobile Government Services Radio Astronomy (Observations of decametric radiation)	See Section 5 for coordination with radio astronomy.

38.25-39 MHz
FIXED
MOBILE
	38.25-39 MHz
	FIXED
	MOBILE
		Single Frequency Mobile
		Mobile application
		PMR
			Single Frequency Mobile bands
			(36.825 – 38.5 MHz)
			Mobile Application (MTX) // (BTX)
			(Mobile 3)
			(38.5 – 39.825 MHz) // (35.5 – 36.825 MHz)

39-39.5 MHz
FIXED
MOBILE
Radiolocation 5.132A
5.159
	39-39.5 MHz
	FIXED
	MOBILE
	Radiolocation 5.132A
		Single Frequency Mobile
		Mobile applications
		Oceanographic radars
			Single Frequency Mobile
			(39.825 – 40.625 MHz)
			Mobile (MTX) // (BTX)
			(Mobile 3)
			(38.5 – 39.825 MHz) // (35.5 – 36.825 MHz)

39.5-39.986 MHz
FIXED
MOBILE
	39.5-39.986 MHz
	FIXED
	MOBILE
		Single Frequency Mobile
		Mobile applications
		PMR
			Single Frequency Mobile
			(39.825 – 40.625 MHz)
			Mobile (MTX) // (BTX)
			(Mobile 3)
			(38.5 – 39.825 MHz) // (35.5 – 36.825 MHz)

39.986-40.02 MHz FIXED MOBILE Space research	**39.986-40.02 MHz** FIXED MOBILE Space research	Single Frequency Mobile Mobile applications PMR	**Single Frequency Mobile** (39.825 – 40.625 MHz)

40.02-40.98 MHz
FIXED
MOBILE
5.150
	40.02-40.98 MHz
	FIXED
	MOBILE
	5.150
		Single Frequency Mobile
		Mobile applications
		Wireless Microphones
		Non-Specific SRDs
		Surface Model Control
		ISM applications
		PMR
			Single Frequency Mobile bands
			(39.825 – 40.625 MHz)
			Mobile (MTX) // (BTX)
			Mobile 2
			(34.175 – 35 MHz) // (40.625 – 41.25 MHz)
			
			Wireless microphone (40.6 – 40.7 MHz)
			Non-specific SRD (40.66 – 40.7 MHz)

Commented [B77]: This is in line with SARAO's request on the update to section 5 of the band plan.

Commented [B76]: The inclusion of a typical application for radio astronomy is included.

Commented [B78]: As it is written in the draft NRFP2021, column 3 on typical application is difficult to read.

			ISM (40.66 – 40.7 MHz) Surface Model Control (40.665 MHz; 40.675 MHz; 40.685 MHz and 40.695 MHz) Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Common international SRD

40.98-41.015 MHz
FIXED
MOBILE
Space research
5.160 5.161
	40.98-41.015 MHz
	FIXED
	MOBILE
	Space research
	5.160[AddA4]
		Mobile applications
		PMR
			Mobile (MTX) // (BTX)
			Mobile 2
			(34.175 – 35 MHz) // (40.625 – 41.25 MHz)

41.015-42MHz
FIXED
MOBILE
5.160 5.161
	41.015-42 MHz
	FIXED
	MOBILE
	5.160[AddA4]
		Mobile applications
		Single Frequency Mobile
		Government Services
		PMR
			Single Frequency Mobile bands
			(41.45 – 41.65 MHz)
			
			Mobile (MTX) // (BTX)
			Mobile 1
			(32.325 – 33.675 MHz) // (41.65 – 43 MHz)
			Mobile 2
			(34.175 – 35 MHz) // (40.625 – 41.25 MHz)

42-42.5 MHz
FIXED
MOBILE
Radiolocation 5.132A
5.160 5.161B
	42-42.5 MHz
	FIXED
	MOBILE
	Radiolocation 5.132A
	5.160
		Mobile applications
		Government Services
		PMR
			Mobile (MTX) // (BTX)
			Mobile 2
			(34.175 – 35 MHz) // (40.625 – 41.25 MHz)

42.5-44 MHz
FIXED
MOBILE
5.160 5.161 5.161A
	42.5-44 MHz
	FIXED
	MOBILE
	5.160
		Mobile applications
		Government Services
			Mobile (MTX) // (BTX)
			Mobile 1
			(32.325 – 33.675 MHz) // (41.65 – 43 MHz)

44-47 MHz
FIXED
MOBILE
5.162 5.162A
	44-47 MHz
	FIXED
	MOBILE
		Meteor Burst
		CT0 Cordless Telephones
		PMR
		Government Services
			Mobile (MTX) // (BTX)
			(45.3-46.9 MHz)// (47.5-49.1 MHz)
			Cordless Telephones
			(46.61 – 46.97) // (49.67 – 49.97 MHz)
			10 frequency pairs assigned to CT0;

Commented [B79]: As it is written in the draft NRFP2021, column 3 on typical application is difficult to read.

Commented [B80]: It is proposed that No. 5.160 be retained in the NRFP2021 because one of SA's neighboring country is included in the footnote for additional allocation to the ARNS.

			Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

47-50 MHz
BROADCASTING
5.162A 5.163 5.164 5.165
	47-50 MHz
	BROADCASTING
	5.164 5.165
		Meteor Burst
		CT0 Cordless Telephones
		PMR
		Government Services
			Mobile (MTX) // (BTX)
			(45.3-46.9 MHz)// (47.5-49.1 MHz)
			Cordless Telephones
			(46.61 – 46.97) // (49.67 – 49.97 MHz)
			10 frequency pairs assigned to CT0;
			
			Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

50-52 MHz BROADCASTING Amateur 5.166A 5.166B 5.166C 5.166D 5.166E 5.169 5.169A 5.169B 5.162A 5.164 5.165	**50-54 MHz** AMATEUR 5.169	 Government Wireless microphones	 Government Wireless microphones (53 – 54 MHz) Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).

52-68 MHz
BROADCASTING
5.162A 5.163 5.164 5.165
5.169 5.169A 5.169B 5.171
	54-68 MHz
	BROADCASTING
	FIXED
	MOBILE except aeronautical mobile
	
	5.165 5.171
		Broadcasting systems
		Government services
		Single Frequency Mobile
		Mobile applications
		Sport Stadium Communication
		National Emergency alarm Radio
			The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
			
			Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
			
			Single Frequency Mobile band
			(54 –54.325MHz)
			
			Mobile (MTX) // (BTX)
			Mobile 1
			(59.9 – 60.025 MHz) // (54.325 – 54.45 MHz)
			
			Mobile 2
			(58.5 – 59.9 MHz) // (55.45 – 56.85 MHz)
			Sport Stadium Communications
			(62.8 – 62.85 MHz)
			
			National Emergency Alarm Radio
			(NEAR) (66 – 68 MHz)

Commented [B81]: **No. 5.165** should be retained to highlight additional allocation in a neighboring country and **No. 5.171** can be applied to the whole band to avoid having to write it twice and clutter the column.

68-74.8 MHz
FIXED
MOBILE except aeronautical mobile
5.149 5.175 5.177 5.179
	68-74.8 MHz
	FIXED
	MOBILE except aeronautical mobile
	Amateur
	Radio Astronomy
	5.149
		Single Frequency Mobile
		Mobile applications
		PMR and/or PAMR
		
		Radio astronomy (interplanetary scintillation)
			Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
			Single Frequency Mobile band
			(68 – 69.25 MHz);(70.975 – 71.475 MHz) ; (72.525 – 73.425 MHz)
			Mobile (MTX) // (BTX)
			Mobile 1
			(76.175 – 76.925 MHz) // (69.25 - 70 MHz)
			Mobile 2
			(75.2 – 76.175 MHz) // (70 – 70.975 MHz)
			Mobile 3
			(76.925 – 77.975 MHz) // (71.475 – 72.525 MHz)
			Mobile 4
			(78.625 - 80 MHz) // (73.425 – 74.8 MHz)
			
			See Section 5 for coordination with radio astronomy

74.8-75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181	**74.8-75.2 MHz** AERONAUTICAL RADIONAVIGATION 5.180	Instrument Landing System (ILS) Marker beacons	Marker beacons at 75 MHz

75.2-87.5 MHz
FIXED
MOBILE except aeronautical mobile
5.175 5.179 5.187
	75.2-87.5 MHz
	FIXED
	MOBILE except aeronautical mobile
		Single Frequency Mobile
		Mobile applications
		PMR and/or PAMR
			Single Frequency Mobile
			(80 – 80.5 MHz); (83.625 – 85.025 MHz)
			Mobile (MTX) // (BTX)
			Mobile 1
			(76.175 – 76.925 MHz) // (69.25 - 70 MHz)
			Mobile 2
			(75.2 – 76.175 MHz) // (70 – 70.975 MHz)
			Mobile 3
			(76.925 – 77.975 MHz) // (71.475 – 72.525 MHz)
			Mobile 4
			(78.625 - 80 MHz) // (73.425 – 74.8 MHz)
			Mobile 5
			(82.975 – 83.625 MHz) // (77.975 – 78.625 MHz)
			Mobile 6
			(87 – 87.5 MHz) // (80 – 80.5 MHz)
			Mobile 7
			(86.375 - 87 MHz) // (81 – 81.625 MHz)
			Mobile 8
			(85.025 – 86.375 MHz) // (81.625 – 82.975 MHz)

87.5-100 MHz BROADCASTING 5.190	**87.5-100 MHz** BROADCASTING	FM Sound broadcasting Digital Sound Broadcasting (DSB)	FM Sound broadcasting (87.5-108 MHz) Geneva 1984 Agreement (GE84) applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Digital Sound Broadcasting (DSB) Regulations was published in GG44469 Notice 215 of 2021
100-108 MHz BROADCASTING 5.192 5.194	**100-108 MHz** BROADCASTING 5.194	FM Sound broadcasting Digital Sound Broadcasting (DSB)	FM Sound broadcasting (87.5-108 MHz) Geneva 1984 Agreement (GE84) applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Digital Sound Broadcasting (DSB) Regulations was published in GG44469 Notice 215 of 2021
108-117.975 MHz AERONAUTICAL RADIONAVIGATION 5.197 5.197A	**108-117.975 MHz** AERONAUTICAL RADIONAVIGATION 5.197A	Instrument Landing System (ILS) / Localiser VHF Omni-directional Range (VOR) Aeronautical mobile communications	Safety and regularity of flights ILS Localiser (108-112 MHz) VHF Omni-directional Range (VOR) (112-117.975 MHz) Aeronautical mobile communication (108 – 117.975 MHz) Resolution 413 (Rev.WRC-07) applies
117.975-137 MHz AERONAUTICAL MOBILE (R) 5.111 5.200 5.201 5.202	**117.975-137 MHz** AERONAUTICAL MOBILE (R) 5.111 5.200 5.201	Aeronautical mobile communications International Distress Frequency	Safety and regularity of flights International Distress Frequency at 121.5 MHz ITU RR Article 31 applies Aeronautical mobile communications (117.975 – 121.450 MHz); (121.550 – 137 MHz) auxiliary emergency frequency 123.1 MHz -
137-137.025 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth)	**137-137.025 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth)	MET SAT	

Commented [B82]: Again, it is proposed that NRFP2021 follows the format of the RR and that the allocation of Aeronautical Mobile remains in the footnote No. 5.197

Commented [B83]: There is a neighboring country in **No. 5.201**

Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.208		
137.025-137.175 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	**137.025-137.175 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208		
137.175-137.825 MHz SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	**137.175-137.825 MHz** SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.208	NOAA meteorology satellite	NOAA meteorology satellite (137.500-137.620 MHz)
137.825-138 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed	**137.825-138 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth)		

Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronauteical mobile (R) 5.204 5.205 5.206 5.207 5.208	Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208		

138-143.6 MHz
AERONAUTICAL MOBILE (OR)
5.210 5.211 5.212 5.214
143.6-143.65 MHz
AERONAUTICAL MOBILE (OR)
SPACE RESEARCH (space-to-Earth)
5.211 5.212 5.214
143.65-144 MHz
AERONAUTICAL MOBILE (OR)
5.210 5.211 5.212 5.214
	138-144 MHz
	FIXED
	MOBILE
	5.212
		Single Frequency Mobile
		Mobile applications
		Single Frequency alarm
		Remote control industrial apparatus
		PMR and/or PAMR
			Single Frequency Mobile band
			(141 – 141.5 MHz)
			Single Frequency Mobile alram
			(140.5 - 141 MHz)
			
			Remote control industrial apparatus (141 – 142 MHz)
			
			Mobile (MTX) // (BTX)
			Mobile 1
			(138 – 140.5 MHz) // (141.5 - 144 MHz)
			Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

144-146 MHz AMATEUR AMATEUR-SATELLITE 5.216	**144-146 MHz** AMATEUR AMATEUR-SATELLITE		

146-148 MHz
FIXED
MOBILE except aeronautical mobile (R)
	146-148 MHz
	FIXED
	MOBILE except aeronautical mobile (R)
		Mobile applications
		PMR and/or PAMR
			Mobile (MTX) // (BTX)
			Mobile 2
			(146 – 148.95 MHz) // (153.05 - 156 MHz)

148-149.9 MHz FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221 5.218A	**148-149.9 MHz** FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	Mobile applications Single Frequency Mobile Wildlife telemetry Tracking PMR and/or PAMR Low Earth Orbit system	Single Frequency Mobile (148.95 – 151 MHz) Wildlife telemetry Tracking (148 – 152) Mobile 2 (146 – 148.95 MHz) // (153.05 - 156 MHz) Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). For some small LEO systems this band is supplemented by the band 149.9-150.05 MHz

149.9-150.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	**149.9-150.05 MHz** MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 NF3	Mobile applications Single Frequency Mobile Wildlife telemetry Tracking Low Earth Orbit system	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Wildlife telemetry Tracking (148 – 152) Single Frequency Mobile (148.95 – 151 MHz) Radio Frequency Spectrum Assignment Plan GG 41512 Notice 149 of 2018
150.05-153 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	**150.05-153 MHz** FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	Mobile applications Single Frequency Mobile Single Frequency Alarm Paging Government services Load shedding Wildlife telemetry tracking PMR and PAMR Radio Astronomy (continuum band and also used for pulsar and solar observation)	Channels 150.550 MHz and 150.5625 MHz are used for load shedding. Channels 150.625 MHz and 150.675 MHz are reserved for in-house paging Wildlife telemetry Tracking (148 – 152) Single Frequency Alarm (152.05 – 152.55 MHz) Single Frequency Mobile (148.950 – 151 MHz); (152.55 – 153.05 MHz) See Section 5 for coordination with radio astronomy
153-154 MHz FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	**153-154 MHz** FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	Mobile applications Single Frequency Mobile PMR and/or PAMR	Single Frequency Mobile (152.55 – 153.05MHz); (156.00-156.4875) MHz Mobile 2 (146 – 148.95 MHz) // (153.05 - 156 MHz) Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
154-156.4875 MHz FIXED MOBILE except aeronautical mobile (R) 5.225A 5.226	**154-156.4875 MHz** FIXED MOBILE except aeronautical mobile (R) 5.226	Mobile applications Single Frequency Mobile PMR and/or PAMR Maritime mobile communications Land mobile in areas remote from coast	PMR and/or PAMR (154-156 MHz) Single Frequency Mobile (152.55 – 153.05MHz); Mobile 2 (146 – 148.95 MHz) // (153.05 - 156 MHz) Mobile 3

			(156 – 156.7625 MHz) // (160.6 – 160.975 MHz) (Limited to inland areas)
156.4875-156.5625 MHz MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	**156.4875-156.5625 MHz** MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	Single Frequency Mobile. Maritime mobile DSC Land Mobile	Single Frequency Mobile (156.375 – 156.7625 MHz) The bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz may also be used for FS and LMS inland on NINP basis to Maritime Service ITU RR Article 31 and Article 52 applies Appendix 18 apply.
156.5625-156.7625 MHz FIXED MOBILE except aeronautical mobile (R) 5.226	**156.5625-156.7625 MHz** FIXED MOBILE except aeronautical mobile (R) 5.226	Fixed and mobile applications Maritime mobile communications Land mobile in areas remote from coast	Single Frequency Mobile (156.375 – 156.7625 MHz) ITU RR Article 31 and Article 52applies Appendix 18 apply
156.7625-156.7875 MHz MARITIME MOBILE Mobile-satellite (earth- to- space) 5.111 5.226 5.228	**156.7625-156.7875 MHz** MARITIME MOBILE Mobile-satellite (earth to space) 5.111 5.226 5.228	Maritime applications International DSC AIS broadcast messages	ITU RR Article 31 apply Appendix 18 apply International distress, safety and calling on 156.8 MHz
156.7875-156.8125 MHz MARITIME MOBILE (distress and calling) 5.111 5.226	**156.7875-156.8125 MHz** MARITIME MOBILE (distress and calling) 5.111 5.226	Distress and safety calling	DSC on channel 16 (156.76250 – 156.8375) See section 7 for details
156.8125-156.8375 MHz MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	**156.8125-156.8375 MHz** MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	Distress and safety calling	DSC on channel 16 (156.76250 – 156.8375) See section 7 for details

Commented [B84]: It is proposed that the additional allocation of FS and LMS remains in footnote 5.227

156.8375-157.1875 MHz FIXED MOBILE except aeronautical mobile 5.226	**156.8375-157.1875 MHz** FIXED MOBILE except aeronautical mobile 5.226	Maritime mobile communications (ship stations). Government Services Land Mobiles	Mobile communications paired with (161.5 – 162.0 MHz) ITU RR Article 31 and Article 52 Appendix 18 apply Government Services (156.8375 – 157.45 MHz)
157.1875-157.3375 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	**157.1875-157.3375 MHz** FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	Government Services	Resolution 739 (Rev.WRC-19) apply MSS and Maritime mobile-satellite shall protect RAS in line with 5.208A
157.3375-161.7875 MHz FIXED MOBILE except aeronautical mobile 5.226	**157.3375-161.7875 MHz** FIXED MOBILE except aeronautical mobile 5.226	Government services PMR and/or PMR Maritime mobile communications (Coast stations). Land mobile in areas remote from coast	Government Services (157 – 160.6 MHz) PMR and/or PMR (161.475-162.050 MHz) ; (160.6 – 160.975 MHz) Single Frequency applications Article 31 and Article 52 apply Appendix 18 Apply Mobile (160.975 – 161.475 MHz) // (156.9 – 157.4 MHz)
161.7875-161.9375 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	**161.7875-161.9375 MHz** FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	Government services Maritime mobile communications (Coast stations). Land mobile in areas remote from coast Automatic Identification system (AIS) PMR and/or PMR	Government Services (161.475-162.050 MHz) AIS at 161.975 MHz; 162.025 MHz and 162.050-174 MHz Article 31 and Article 52 apply

161.9375-161.9625 MHz
FIXED
MOBILE except aeronautical mobile
Maritime mobile-satellite (Earth-to-space) 5.228AA
5.226
	161.9375-161.9625 MHz
	FIXED
	MOBILE except aeronautical mobile
	Maritime mobile-satellite (Earth-to-space) 5.228AA
	5.226
		Sonobuoys
		Meteorological bulletins and notice to navigators
		Mobile applications
		Single Frequency Mobile
		Private Maritime
			Sonobuoys (161.875 – 173.875)
			
			Mobile 1 DF (MTX) // (BTX)
			(161.475 –165.0375 MHz) //
			(156.875 – 160.4375 MHz)
			
			Single Frequency Mobile (156.8375 – 156.875 MHz)
			(160.45 – 161.475 MHz)

Commented [B85]: It is not clear which band is this range paired with.

Commented [B86]: Footnote **5.208A** is removed on the draft NRFP2021. This footnote protects radio astronomy and should be retained in SA allocation column.

Commented [B87]: No. 5.208B has been incorrectly removed on the SA allocation in the draft NRFP2021

Commented [B88]: Paired frequency bands needs to be confirmed.

Commented [B90]: This should be confirmed, the “and” on the draft NRFP2021 seem to be misplaced. Again there is reference to a paired band on column 4 (156.9 – 157.4 MHz). It is not clear which range it is paring with.

Commented [B89]: It is also proposed that the links for MMS NGSO are allocated on the footnotes No. 5.228AB and No. 5.228AC as per RR

161.9625-161.9875 MHz
FIXED
MOBILE except aeronautical mobile
Mobile-satellite (Earth-to-space) 5.228F
5.226 5.228A 5.228B
	161.9625-161.9875 MHz
	FIXED
	MOBILE except aeronautical mobile NF4
	Mobile-satellite (Earth-to-space) 5.228F
	5.226 5.228A 5.228B
		Mobile applications
		Search and Rescue (air-to-ground)
		AIS
			Mobile 1 DF (MTX) // (BTX)
			(161.475 –165.0375 MHz) //
			(156.875 – 160.4375 MHz)
			Aircraft communication permitted for search and rescue.

161.9875-162.0125 MHz
FIXED
MOBILE except aeronautical mobile
Maritime mobile-satellite (Earth-to-space) 5.228AA
5.226 5.229
	161.9875-162.0125 MHz
	FIXED
	MOBILE except aeronautical mobile
	Maritime mobile-satellite (Earth-to-space) 5.228AA
	5.226 5.229
		Meteorological bulletins and notice to Navigators
		
		Mobile applications
			Mobile 1 DF (MTX) // (BTX)
			(161.475 –165.0375 MHz) //
			(156.875 – 160.4375 MHz)

162.0125-162.0375 MHz
FIXED
MOBILE except aeronautical mobile
Mobile-satellite (Earth-to-space) 5.228F
5.226 5.228A 5.228B 5.229
	162.0125-162.0375 MHz
	FIXED
	MOBILE except aeronautical mobile
	Mobile-satellite (Earth-to-space) 5.228F
	5.226 5.228A 5.228B
		Mobile applications
		Search and Rescue (air-to-ground)
		AIS
			Mobile 1 DF (MTX) // (BTX)
			(161.475 –165.0375 MHz) //
			(156.875 – 160.4375 MHz)
			Aircraft communication permitted for search and rescue.

162.0375-174 MHz
FIXED
MOBILE except aeronautical mobile
5.226 5.229
	162.0375-174 MHz
	FIXED
	MOBILE except aeronautical mobile
	5.226 5.229 NF5
		Mobile applications
		
		Single Frequency Mobiles
		
		Meter Reading
		
		Non-specific SRD's –Telecommand only
		
		Non-specific SRDs
		
		Wireless microphones and assistive listening devices
			Mobile 1 DF (MTX) // (BTX)
			(161.475 –165.0375 MHz) //
			(156.875 – 160.4375 MHz)
			
			Mobile 2 DF (MTX) // (BTX)
			(165.05 – 165.5375 MHz) // (170.05 – 170.5375 MHz)
			
			Mobile 3 DF (MTX) // (BTX)
			(165.55 – 167.4875 MHz) //
			(172.05 – 173.9875 MHz)
			
			Mobile 4 DF (MTX) // (BTX)
			(167.5 – 168.9375 MHz) //
			(172.05 – 173.9875 MHz)
			
			Telecommand only (173.2125 –173.2375 MHz)
			Meter Reading (169.4 – 169.475 MHz)
			
			Non-specific SRDs (173.2375 – 173.2875 MHz)
			
			Wireless microphones and assistive listening devices 173.7 – 175.1 MHz)

Commented [B91]: It is proposed that the use of this band by Aeronautical Mobile remains in the footnote No. 5.228A as it is done in the Radio Regulations.

			Single Frequency Mobile (168.95 – 170.05 MHz); (172 – 172.0375 MHz) Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
174-223 MHz BROADCASTING 5.235 5.237 5.243	**174-223 MHz** BROADCASTING	Digital Television broadcasting Digital Sound broadcasting (T-DAB) Wireless microphones	TV Band III (174 – 214 MHz) The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013 T-DAB (214 – 230 MHz) SADC Harmonised band for digital broadcasting DSB Regulations GG 44469 Notice 215 of 2021 Wireless microphones (174 – 216 MHz) Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
223-230 MHz BROADCASTING Fixed Mobile 5.243 5.246 5.247	**223-230 MHz** BROADCASTING Fixed Mobile	Digital Sound broadcasting (T-DAB)	The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013 T-DAB (214 – 230 MHz) SADC Harmonised band for digital broadcasting DSB Regulations GG 44469 Notice 215 of 2021
230-235 MHz FIXED MOBILE 5.247 5.251 5.252	**230-238 MHz** BROADCASTING 5.252 5.254	Digital Television broadcasting	Digital Terrestrial TV (230 – 238 MHz) The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013
235-267 MHz FIXED MOBILE 5.111 5.252 5.254 5.256 5.256A	**238-246 MHz** FIXED MOBILE 5.111 5.254 5.256	PMR and/or PAMR International Distress Frequency Low-power devices	PMR and/or PAMR (238 – 242.95 MHz) International Distress Frequency at 243 MHz Low-power devices ancillary to the broadcasting service (243.05 – 246.00 MHz) Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz) Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

Commented [B93]: The frequency is for use by survival craft stations and equipment for survival purposes. It is not clear if it is an international distress frequency. International distress frequencies are declared as such in the RR.

Commented [B92]: No. 5.252 on the draft NRFP2021 should be removed from the footnotes in this band. It only applies to 230 – 238 MHz.
It is also proposed that the use of this band by mobile-satellite be left in the footnote.

	246-254 MHz BROADCASTING 5.252 5.254	Digital Television broadcasting	Digital Terrestrial TV (246 - 254 MHz) The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013
	246-267 MHz FIXED MOBILE 5.111 5.254 5.256	Trunking	Trunking (MTX) // (BTX) (262 – 267.4 MHz) // (254 – 259.4 MHz)

267-272 MHz
FIXED
MOBILE
Space operation (space-to-Earth)
5.254 5.257
	267-272 MHz
	FIXED
	MOBILE
	Space operation (space-to-Earth)
	5.254 5.257
		Trunking
		Government Services
		Space Telemetry
			Trunking (MTX) // (BTX)
			(262 – 267.4 MHz) // (254 – 259.4 MHz)
			Space Telemetry (267 – 272 MHz) can be used on a primary basis
			Government Services (267.4-272)

272-273 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	**272-273 MHz** SPACE OPERATIONS (space-to-earth) FIXED MOBILE 5.254	Government services	
273-312 MHz FIXED MOBILE 5.254	**273-312 MHz** FIXED MOBILE 5.254	Single Frequency Mobile Government services	Single Frequency Mobile (278 – 286 MHz)
312-315 MHz FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	**312-315 MHz** FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	Government services	
315-322 MHz FIXED MOBILE 5.254	**315-322 MHz** FIXED MOBILE 5.254	Government services	

Commented [B94]: No. 5.254 still applies in this sub-allocation. It is deleted on the draft NRFP2021

Commented [B95]: No. 5.252 on the draft NRFP2021 should be removed from the footnotes in this band. It only applies to 230 – 238 MHz.
It is also proposed that the use of this band by mobile-satellite be left in the footnote.
In the typical application column, the range of Government Services seem to be out of this band.

Commented [B96]: Space operations is allocated on a secondary basis in the RR. The use of space telemetry is highlighted in the additional comments. This is to try and align to RR as much as possible. As also proposed above, it is also proposed that mobile-satellite remain allocated in the footnote as in the RR.

Commented [B97]: Similar comments as above on the mobile-satellite allocation

322-328.6 MHz FIXED MOBILE RADIO ASTRONOMY 5.149	**322-328.6 MHz** FIXED MOBILE RADIO ASTRONOMY 5.149	Government services Radio Astronomy (Observation of deuterium)	See Section 5 for coordination with radio astronomy
328.6-335.4 MHz AERONAUTICAL RADIONAVIGATION 5.258 5.259	**328.6-335.4 MHz** AERONAUTICAL RADIONAVIGATION 5.258	ILS Glide Path	
335.4-387 MHz FIXED MOBILE 5.254	**335.4-387 MHz** FIXED NF6 MOBILE NF7 5.254	Fixed Wireless Access (FWA) (PtP/PtMP) Government Services Digital Trunking (PPDR[11]) PMR and/or PAMR Unmanned Aerial Vehicle (UAV)	FWA (336 – 346 MHz) paired with (356 – 366 MHz) Government Services (366 – 380 MHz) Trunking (PPDR) (380 – 387 MHz) paired with (390 – 397 MHz) Unmanned Aerial Vehicle (356.0 – 366.0 MHz) Radio Frequency Spectrum Assignment Plan GG 41512 Notice 148 of 2018
387-390 MHz FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	**387-390 MHz** FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	Digital trunking (Govt) PMR and/or PAMR	Trunking (Govt) (387 – 390 MHz) paired with (397 – 400 MHz) Radio Frequency Spectrum Assignment Plan GG 41512 Notice 148 of 2018
390-399.9 MHz FIXED MOBILE 5.254	**390-399.9 MHz** FIXED MOBILE NF7 5.254	Government Services PMR and/or PAMR	Trunking (Govt) (387 – 390 MHz) paired with (397 – 400 MHz) Radio Frequency Spectrum Assignment Plan GG 41512 Notice 148 of 2018 Resolution 646 (Rev.WRC-15) applies ITU-R Recommendation M.2015-2
399.9-400.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	**399.9-400.05 MHz** MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B		Radio Frequency Spectrum Assignment Plan GG 41512 Notice 148 of 2018
400.05-400.15 MHz STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	**400.05-400.15 MHz** STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262		

Commented [B98]: There is a neighboring country in the footnote

400.15-401 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.2625.264	**400.15-401 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	Radiosondes Communication with manned space vehicles	
401-402 MHz METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	**401-402 MHz** METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	Radiosonde Data uplink to GSO	Note limitations in e.i.r.p in No. 5.264A
402-403 MHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	**402-403 MHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	Radiosondes Medical implants SRDs	Note limitations in e.i.r.p 5.264A Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Medical implants (402 – 405 MHz) SRDs (402 – 406 MHz) ITU-R Recommendation SM.1896-1 ITU- R Recommendation. RS.1346
403-406 MHz METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	**403-406 MHz** METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	Radiosondes Medical implants SRDs	Note limitations in e.i.r.p 5.264A Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Medical implants (402 – 405 MHz) SRDs (402 – 406 MHz)

Commented [B99]: Again it is proposed that the format of the RR be followed and all additional information remains on the footnotes.

Commented [B100]: There is a neighboring country in the footnote

			ITU-R Recommendation SM.1896-1 ITU- R Recommendation. RS.1346
406-406.1 MHz MOBILE-SATELLITE (Earth-to-space) 5.266 5.267 5.265	**406-406.1 MHz** MOBILE-SATELLITE (Earth-to-space) 5.265 5.266 5.267	COSPAS – SARSAT: Low power satellite EPIRBs (distress and safety purposes)	Emergency Position Indicating Radio Beacon (EPIRB) Article 32 applies Article 34 applies Appendix 15 applies

406.1-410 MHz
FIXED
MOBILE except aeronautical mobile
RADIO ASTRONOMY
5.149 5.265
	406.1-410 MHz
	FIXED
	MOBILE except aeronautical mobile
	RADIO ASTRONOMY
	5.149 5.265
		Mobile applications
		Government services
		Fixed links
		PMR and/or PAMR
		PPDR
		Radio Astronomy (continuum observations)
			Mobile (MTX) // (BTX) (Govt public safety)
			(407.625 – 410 MHz) // (416.1 – 417.625 MHz)
			
			Fixed Links
			(406.1 – 407.625) paired with (417.625 -420)
			
			The use of this band for PPDR to be studies
			See Section 5 for coordination with radio astronomy

410-420 MHz
FIXED
MOBILE except aeronautical mobile
SPACE RESEARCH (space-to-space) 5.268
	410-420 MHz
	FIXED
	MOBILE except aeronautical mobile
	SPACE RESEARCH (space-to-space)
	5.268
		Mobile applications
		Mobile Data
		Government Services
		Digital Trunking
		PMR and/or PAMR
		PPDR
		Communication links with manned space vehicles
			Mobile (MTX) // (BTX) (Govt)
			(410 – 413 MHz) // (420 – 423 MHz)
			
			Mobile Data (MTX) // (BTX)
			(413 – 413.7625 MHz) // (423 – 423.7625 MHz)
			
			Digital Trunking (MTX) // (BTX)
			(413.7625 – 416.1 MHz) // (423.7625 – 426.1 MHz)
			
			The use of this band for PPDR to be studies

420-430 MHz
FIXED
MOBILE except aeronautical mobile
Radiolocation
5.269 5.270 5.271
	420-430 MHz
	FIXED
	MOBILE except aeronautical mobile
	Radiolocation
		Mobile applications
		Mobile Data
		Single Frequency links
		Government Services
		Digital Trunking
		PMR and/or PAMR
		PPDR
			Mobile (MTX) // (BTX) (Govt)
			(410 – 413 MHz) // (420 – 423 MHz)
			
			Mobile Data (MTX) // (BTX)
			(413 – 413.7625 MHz) // (423 – 423.7625 MHz)
			
			Digital Trunking (MTX) // (BTX)
			(413.7625 – 416.1 MHz) // (423.7625 – 426.1 MHz)

			Single Frequency links (426.1 – 430 MHz) – SF links will only be assigned in this band where migration above 1 GHz is not possible. The use of this band for PPDR to be studies
430-432 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277	**430-432 MHz** AMATEUR RADIOLOCATION	Amateur Applications	
432-438 MHz AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.271 5.276 5.277 5.280 5.281 5.282	**432-438 MHz** AMATEUR NF8 RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.282	Amateur applications Amateur satellite ISM applications SRDs	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). ISM and SRDs (433.0 – 434.79) ITU-R Rec RS.1260-2 for EESS Amateur-satellite (435 - 438 MHz) in line with **No. 5.282** Amateur (432 – 438 MHz)
438-440 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277 5.283	**438-440 MHz** AMATEUR RADIOLOCATION	Amateur	

440-450 MHz
FIXED
MOBILE except aeronautical mobile
Radiolocation
5.269 5.270 5.271 5.284 5.285 5.286
	440-450 MHz
	FIXED
	MOBILE except aeronautical mobile
	Radiolocation
	5.286
		Mobile Data (Telemetry)
		Mobile applications
		Single Frequency Mobile
		PMR and/or PAMR
		Fixed applications
			Mobile Data (Telemetry) (MTX) // (BTX)
			(440 – 441 MHz) // (445 – 446 MHz)
			Channels 440.0125 MHz, 440.3625 MHz, 445.0125 MHz and 445.3625 MHz are used for Agri Telemetry
			Channels 440 - 440.100 MHz and 445 – 445.1 MHz are used as simplex.
			Channels 440.275 MHz, 440.2875 MHz, 445.2750 MHz, 445.2875 MHz, 440.375 MHz and 445.375 MHz are roving simplex channels.
			Mobile (MTX) // (BTX)
			(441.1 – 445 MHz) // (446.1 – 450 MHz)
			The use of space operations and space research in accordance with No. 5.286
			PMR and/or PAMR446 (446 – 446.1 MHz)

Commented [B101]: Reference to Annexure B on column 4 of draft NRFP2021 should be reviewed. There are no licence free operations in Annex B

Commented [B102]: Again, it is proposed that the amateur service remains allocated in the footnote as it is done in the RR

Commented [B103]: Reference to Annexure B of RFSR2015 in the draft NRFP should be reviewed as the are no Licence free applications operating in this band.

Commented [B104]: Reference to Annexure B of RFSR2015 in the draft NRFP should be reviewed as the are no Licence free applications operating in this band.

Again, the allocation of space research and space operation should remain in the footnote. The Authority should follow the format of the RR and deviate only when it is necessary.

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
	5.209 5.286 5.286A 5.286B 5.286C
		Fixed Links (PtP)
		IMT
		Government Services
		PMR and/or PAMR
		Trunk Mobile
		Paging systems
			Fixed Links
			(450 – 453 MHz) paried with (460 – 463 MHz)
			Single Frequency mobile (453 – 454 MHz)
			IMT (450 – 470 MHz)
			Trunking (MTX)//(BTX)
			(464.425 – 470 MHz)// (454.425 – 460 MHz)
			The use of space operation and space research in accordance with No. 5.286
			Resolution 224 (Rev.WRC-19) apply
			ITU-R Rec. M.1036-6
			Paging (454 – 454.425 MHz)

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 5.286B 5.286C
		IMT
		Trunk Mobile
			IMT (450 – 470 MHz)
			Trunking (MTX)//(BTX)
			(464.425 – 470 MHz)// (454.425 – 460 MHz)
			Resolution 224 (Rev.WRC-19) apply

456-459 MHz
FIXED
MOBILE 5.286AA
5.271 5.287 5.288
	456-459 MHz
	FIXED
	MOBILE 5.286AA NF9
	5.287
		IMT
		Trunk Mobile
		Government services
			IMT (450 – 470 MHz)
			Trunking (MTX)//(BTX)
			(464.425 – 470 MHz)// (454.425 – 460 MHz)
			Resolution 224 (Rev.WRC-19) apply
			ITU-R Rec. M.1036-6

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 5.209 5.286A 5.286B 5.286C	IMT Trunk Mobile Government services	(464.425 – 470 MHz)// (454.425 – 460 MHz) IMT (450 – 470 MHz) Resolution 224 (Rev.WRC-19) apply ITU-R Rec. M.1036-6
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 Meteorological-satellite (space-to-Earth) 5.287 5.289	Fixed Links INT Single Frequency Mobile Lower Power Mobile Security systems Government services SRDs	Fixed Links (450 – 453 MHz) paired with (460 – 463 MHz) IMT (450 – 470 MHz) Single Frequency Mobile (463.025 – 463.975 MHz) Security systems (464.5375 MHz) SRDs (464.5 – 464.5875 MHz) Low Power Mobile Radio (463.975 MHz, 464.125 MHz, 464.175 MHz, 464.325 MHz, 464.375 MHz)

Commented [B105]: Again, avoid deviating from RR format. Allocation of SO and SRS to remain in the footnote.

			Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Recommendation ITU-R M.1036-6
470-694 MHz BROADCASTING 5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.312	**470-694 MHz** BROADCASTING 5.149 5.29 5.296 5.300 5.304	Digital terrestrial broadcasting Radio astronomy (VLBI Observations) Services ancillary to broadcasting and program making (SAB/SAP) Land Mobiles applications	RAS VLBI Observations (608 – 614 MHz) See Section 5 for coordination with radio astronomy GE06 Plan applies SADC Harmonised for digital terrestrial television Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013. The use of TVWS is under consideration Radio Frequency Spectrum Assignment Plan, Government Gazette 43341 (Notice 284 of 2020) The use of land mobiles in accordance with **No. 5.296**
694-790 MHz MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING 5.300 5.312	**694-790 MHz** MOBILE except aeronautical mobile NF9 5.312A 5.317A	IMT	International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036-6 ITU-R Recommendation M.2090 Resolution 760 (WRC-19) Future consideration for broadband PPDR described in ITUR- Rec. M.2015 and taking into account Resolution 646 (WRC-15) Harmonised SADC band for IMT (Band IV/V)

790-862 MHz
FIXED
MOBILE except aeronautical mobile 5.316B 5.317A
BROADCASTING
5.312 5.319
	790-862 MHz
	
	MOBILE except aeronautical mobile NF9
	5.316B 5.317A
		IMT	International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014.
			Assignment Plan (GG N. 38640) as amended 30 March 2015.
			Recommendation ITU-R M.1036-6
			Harmonised SADC band for IMT (Band IV/V
			
			IMT (MTX) // (BTX)
			(832 – 862 MHz) // (791 – 821 MHz)
			
			Future consideration for broadband PPDR described in ITUR- Rec. M.2015 and taking into account Resolution 646 (WRC-15)

Commented [B106]: Fixed service have to be removed the same way broadcasting has been removed on the draft NRFP, only mobile should be in this allocation for SA allocations. The column for typical applications should also be updated on the draft NRFP to reflect that only IMT is a recognised.

			Fixed and broadcasting services currently operating in this band to be migrated in line with radio frequency migration plan Radio Frequency Spectrum Assignment Plan GG 42337 Notice 165 of 2019

862-890 MHz
FIXED
MOBILE except aeronautical mobile 5.317A
BROADCASTING 5.322
5.319 5.323
	862-890 MHz
	FIXED
	MOBILE except aeronautical mobile 5.317A NF10
		Fixed Links
		Wireless Access
		Fixed Wireless Access
		IMT900
		GSM-R
		CT2 Cordless phones
		Wireless audio systems and microphones
		RFID
		SRDs
		Alarms
			Fixed Links
			(856 – 864.1 MHz) paired with (868.1 – 876 MHz)
			
			Wireless Access (872 – 877.695 MHz)
			
			GSM-R (MTX) // (BTX)
			(877.695 – 880 MHz)// (921 – 925 MHz)
			
			IMT (MTX) // (BTX)
			(880 – 915 MHz) // (925 – 960 MHz)
			
			Fixed Wireless Access
			(864.1 – 868.1 MHz)
			
			See Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015), bands and channels used in the licence free range.

890-942 MHz
FIXED
MOBILE except aeronautical mobile 5.317A
BROADCASTING 5.322
Radiolocation
5.323
	890-942 MHz
	FIXED
	MOBILE except aeronautical mobile 5.317A NF9 NF10 NF11
	Radiolocation
		IMT900
		GSM-R
		RFID (including passive tags and vehicle location)
			IMT (MTX) // (BTX)
			(880 – 915 MHz) // (925 – 960 MHz)
			
			GSM-R (MTX) // (BTX)
			(877.695 – 880 MHz)// (921 – 925 MHz)
			RFID (915.1 – 921 MHz)
			International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014
			
			Radio Frequency Spectrum Assignment Plan (GG N. 38640) as amended 30 March 2015.

942-960 MHz	**942-960 MHz**	IMT	IMT (MTX) // (BTX)

Commented [B108]: The paired band on the draft NRFP2021 need to be confirmed as they do not align.

Commented [B107]: Mentioning every specific channel for SRDs seem to clutter the document and makes it difficult to read. Column 4 can be used to refer interested persons to RFSR2015.

Commented [B109]: Pairs for GSM-R need to be confirmed

FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.323	FIXED MOBILE except aeronautical mobile 5.317A		(880 – 915 MHz) // (925 – 960 MHz) Recommendation ITU-R M.1036-6
960-1 164 MHz AERONAUTICAL RADIONAVIGATION 5.328 AERONAUTICAL MOBILE (R) 5.327A 5.328AA	**960-1 164 MHz** AERONAUTICAL RADIONAVIGATION 5.328 AERONAUTICAL MOBILE (R) 5.327A 5.328AA	Distance measuring equipment Secondary surveillance radar Automatic Dependent Surveillance-Broadcast (ADS-B) (Airborne electronic aids to air navigation and any directly associated	Res. 425 (WRC-19) applies (global flight tracking for civil aviation) Secondary surveillance radar (1087.7-1092.3 MHz)
1 164-1 215 MHz AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	**1 164-1 215 MHz** AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	Galileo GLONASS Aeronautical radionavigation systems: - Distance Measurement Equipment - Surveillance Radar	Galileo (1164 - 1214 MHz) GLONASS (1190.3-1213.8 MHz)
1 215-1 240 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	**1 215-1 240 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.331 5.332	GLONASS GPS Radar/navigation	GLONASS (1237.8-1253.8 MHz) GPS (1215.6-1239.6 MHz)
1 240-1 300 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335 5.335A	**1 240-1 300 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.331 5.332 5.335A	GLONASS (1237.8-1253.8 MHz) Galileo (1260-1300 MHz) Air Traffic Control Radar (1 240 – 1 350 MHz) Amateur (1 240 – 1 300 MHz)	

Commented [B110]: Structure of RR should be maintained.

Commented [B111]: Structure of RR

Commented [B112]: Maintain the structure of RR

1 300-1 350 MHz AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	**1 300-1 350 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	Aeronautical radionavigation systems: Ground Base Radar Radio astronomy (Doppler shifted radiation from hydrogen)	See Section 5 for coordination with radio astronomy
1 350-1 400 MHz FIXED MOBILE RADIOLOCATION 5.149 5.338 5.338A 5.339	**1 350-1 400 MHz** FIXED NF14 MOBILE RADIOLOCATION 5.149 5.338A 5.339	Fixed links (duplex) Radio astronomy (Doppler shifted radiation from hydrogen)	Full duplex fixed links 1 350-1 375 MHz Paired with 1492-1517 MHz 1 375-1 400 MHz Paired with 1427-1452 MHz See Section 5 for coordination with radio astronomy
1 400-1 427 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**1 400-1 427 MHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	Radio Astronomy (Hydrogen line and continuum observations)	All emissions are prohibited in this band.
1 427-1 429 MHz SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341 5.342	**1 427-1 429 MHz** SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341A	Fixed links (duplex) IMT	

	5.338A 5.341		
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	Fixed links (duplex) IMT	
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 MOBILE except aeronautical mobile 5.346[IMT44] BROADCASTING BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.345 NF 12	Terrestrial Digital Audio Broadcasting (T-DAB) IMT	
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	Fixed Links Single Frequency Mobile IMT	
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 5.348B 5.351A 5.341	IMT Satellite component	
1 525-1 530 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349	**1 525-1 530 MHz** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile	GMDSS Maritime satellite Mobile satellite Aeronautical Mobile satellite Land Mobile satellite	

5.341 5.342 5.350 5.351 5.352A 5.354	5.341 5.351 5.352A 5.354		
1 530-1 535 MHz SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	**1 530-1 535 MHz** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Fixed Mobile except aeronautical mobile 5.341 5.351 5.354	GMDSS (SAT-COM) Mobile satellite systems Fixed applications	
1 535-1 559 MHz MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	**1 535-1 559 MHz** MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359	Mobile satellite systems GMDSS	
1 559-1 610 MHz AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341	**1 559-1 610 MHz** AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341	Galileo (1559.42-1591.42 MHz) GLONASS (1592.9-1610.5 MHz) GPS (1563.42-1587.42 MHz)	
1 610-1 610.6 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610-1 610.6 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.364 5.366 5.367 5.368 5.371 5.372	GLONASS (1592.9-1610.5 MHz) MSS	
1 610.6-1 613.8 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION	**1 610.6-1 613.8 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION	Radio Astronomy (Observation of OH radical and molecules)	See Section 5 for coordination with radio astronomy

5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	5.149 5.341 5.364 5.366 5.367 5.368 5.371 5.372		
1 613.8-1 621.35 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1 613.8-1 621.35 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.364 5.365 5.366 5.367 5.368 5.371 5.372	Mobile satellite systems	
1621.35-1626.5 MHz MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1621.35-1626.5 MHz** MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth) 5.208B 5.341 5.364 5.365 5.366 5.367 5.368 5.371 5.372	MSS	MSS (1 1610 – 1 626.5)
1 626.5-1 660 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	**1 626.5-1 660 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376	GMDSS (SAT-COM) GMDSS (D&S-OPS) Mobile satellite systems	GMDSS (SAT-COM) in 1626.5 – 1645.5 MHz GMDSS (D&S-OPS) in 1645.5-1646.5 MHz
1 660-1 660.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A	**1 660-1 660.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.376A	Radio Astronomy (Observation of OH radical and molecules)	See Section 5 for coordination with radio astronomy
1 660.5-1 668 MHz RADIO ASTRONOMY SPACE RESEARCH (passive)	**1 660.5-1 668 MHz** RADIO ASTRONOMY SPACE RESEARCH (passive)	Fixed Applications	See Section 5 for coordination with radio astronomy

Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	Fixed Mobile except aeronautical mobile 5.149 5.341 5.379A	Radio Astronomy (Observation of OH radical and molecules)	
1 668-1 668.4 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	**1 668-1 668.4 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379A	IMT satellite component Radio Astronomy (Observation of OH radical and molecules)	IMT satellite component (1 668 – 1 675 MHz) See Section 5 for coordination with radio astronomy
1 668.4-1 670 MHz METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	**1 668.4-1 670 MHz** METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D	Radio Astronomy (Observation of OH radical and molecules) IMT satellite component Radiosondes	See Section 5 for coordination with radio astronomy
1 670-1 675 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	**1 670-1 675 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	IMT satellite component Radiosondes	
1 675-1 690 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	**1 675-1 690 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	Fixed Applications	

5.341	5.341		
1 690-1 700 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	Radiosondes	
1 700-1 710 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	**1 700-1 710 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	Fixed links (single frequency)	
1 710-1 930 MHz FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.386 5.387 5.388	**1 710-1 930 MHz** FIXED MOBILE 5.384A 5.388A 5.388B[UseL28] 5.149 5.341 5.385 5.388	Radio astronomy ((OH radical and molecules)	Radio astronomy (1718.8 – 1722.2 MHz) See Section 5 for coordination with radio astronomy
1 930-1 970 MHz FIXED MOBILE 5.388A 5.388B 5.388	**1 930-1 970 MHz** MOBILE 5.388A 5.388B [UseL28] 5.388		
1 970-1 980 MHz FIXED MOBILE 5.388A 5.388B 5.388	**1 970-1 980 MHz** MOBILE 5.388A 5.388B [UseL28] 5.388		
1 980-2 010 MHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	**1 980-2 010 MHz** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A	IMT (terrestrial and satellite) Fixed Applications	

	5.388 5.389A 5.389B 5.389F[UseL5]		
2 010-2 025 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 010-2 025 MHz** FIXED MOBILE 5.388A 5.388B[UseL28] 5.388	IMT (terrestrial) (2010-2025 MHz) Fixed Applications	TDD
2 025-2 110 MHz SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	**2 025-2 110 MHz** SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	Fixed links (2025-2110 MHz paired with 2200-2285 MHz) Earth exploration satellite applications	Radio Frequency channel arrangement according to ITU-R F.1098.
2 110-2 120 MHz FIXED MOBILE 5.388A5.388B SPACE RESEARCH (deep space) (Earth-to-space) 5.388	**2 110-2 120 MHz** MOBILE 5.388A 5.388B[UseL28] SPACE RESEARCH (deep space) (Earth-to-space) 5.388	IMT (terrestrial) (2110-2170 MHz)	Paired with 1920-1980 MHz ITU-R Rec. M. 1036 applies
2 120-2 160 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 120-2 170 MHz** MOBILE 5.388A 5.388B[UseL28] 5.388		
2 160-2 170 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 160-2 170 MHz** MOBILE 5.388A 5.388B[UseL28] 5.388		
2 170-2 200 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	**2 170-2 200 MHz** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F[UseL5]	IMT (satellite) (2170-2200 MHz) Fixed Applications	Paired with 1980-2010 MHz. The development of satellites for IMT services to be monitored. ITU-R Rec. M. 1036 applies Res 212 (Rev. WRC-19) applies.

2 200-2 290 MHz SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	**2 200-2 290 MHz** SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	Fixed links (2025-2110 MHz paired with 2200-2285 MHz) Earth exploration satellite applications	Radio Frequency channel arrangement according to ITU-R F.1098.
		BFWA (2 285-2 300 MHz)	
2 290-2 300 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	**2 290-2 300 MHz** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	BFWA (2 285-2 300 MHz)	
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 Amateur Radiolocation 5.150 5.282	2300-2400 MHz Fixed links PTP/PTMP IMT (TDD) BFWA	Fixed paired with 2400-2500 MHz. IMT Radio Frequency Channel arrangement according to ITU-R M.1036
2 450-2 483.5 MHz FIXED MOBILE Radiolocation 5.150 5.397	**2 450-2 483.5 MHz** FIXED MOBILE Radiolocation 5.150	2400-2500 MHz Fixed links PTP/PTMP SRD: - Wireless LANs (2400-2483.5 MHz) - Measurement and Remote-control equipment - Radio frequency identification - Radio determination applications	FS paired with 2300-2400 MHz. ISM band (2 400-2 500[1] MHz) centre frequency 2450 MHz. ITU-R Rec.SM.1896-1 Report ITU-R SM. 2153-7
2 483.5-2 500 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION SATELLITE (space-to-Earth) 5.398	**2 483.5-2 500 MHz** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A		

[1] In some countries, the upper limit is 2 483.5 MHz

Radiolocation 5.398A 5.150 5.399 5.401 5.402	RADIODETERMINATION SATELLITE (space-to-Earth) 5.398 Radiolocation 5.398A 5.150 5.399 5.401[SpNt12] 5.402		
2 500-2 520 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.405 5.412	**2 500-2 520 MHz** FIXED MOBILE except aeronautical mobile 5.384A	BFWA (2500-2690 MHz) IMT (2500-2690 MHz)	
2 520-2 655 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.4135.416 5.339 5.405 5.412 5.418B 5.418C	**2 520-2 655 MHz** FIXED MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.418B 5.418C		
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** FIXED 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	Radio Astronomy (Continuum measurements and galactic studies)	Radio Astronomy (2655 – 2690 MHz) See section 5 for coordination with radio astronomy
2 670-2 690 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** FIXED MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	Radio Astronomy (Continuum measurements and galactic studies)	See section 5 for coordination with radio astronomy
2 690-2 700 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	**2 690-2 700 MHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY	Radio Astronomy (Continuum measurements and galactic studies)	

5.340 5.422	SPACE RESEARCH (passive) 5.340 5.422[AddA14]		
2 700-2 900 MHz AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	**2 700-2 900 MHz** AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423	Aeronautical radionavigation radars : primary surveillance radar Meteorological radar	
2 900-3 100 MHz RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	**2 900-3 100 MHz** RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	Aeronautical radionavigation radars: - PSR (primary surveillance radar) - Meteorological radar	
3 100-3 300 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	**3 100-3 300 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149	Radio astronomy (CH Molecules)	See section 5 for coordination with radio astronomy
3 300-3 400 MHz RADIOLOCATION 5.149 5.429 5.429A 5.429B 5.430	**3 300-3 400 MHz** MOBILE except aeronautical mobile 5.149 5.429[AddA10] 5.429A[AddA27] 5.429B[IMT33]	IMT Radio astronomy (CH Molecules)	See section 5 for coordination with radio astronomy
3 400-3 600 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.430A Radiolocation 5.431	**3 400-3 600 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.430A Radiolocation	BFWA IMT (3400-3600 MHz)	
3 600-4 200 MHz FIXED FIXED-SATELLITE (space-to-Earth) Mobile	**3 600-4 200 MHz** FIXED FIXED-SATELLITE (space-to-Earth) Mobile	Fixed services for PtP in the range 3600-4200 MHz Fixed-satellite (space-to-Earth) for PtP/VSAT/SNG in the range 3600-4200 MHz BFWA in the range 3600-3800MHz	The channelling arrangement for PTP links in this band is based on ITU-R Recommendation F.635 Annex 1 Resolution 246 (WRC-19) applies for BFWA. Some administrations are considering the use of the frequency band 3600 - 3800 MHz for future systems operating in the mobile service.
4 200-4 400 MHz	**4 200-4 400 MHz**	Radio altimeters on board aircraft	

AERONAUTICAL MOBILE(R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440	AERONAUTICAL MOBILE(R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.440		
4 400-4 500 MHz FIXED MOBILE 5.440A	**4 400-4 500 MHz** FIXED MOBILE		
4 500-4 800 MHz FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A	**4 500-4 800 MHz** FIXED FIXED-SATELLITE (space-Earth) 5.441 MOBILE	Fixed links SRD: - Reservoir Level Probing Radar (RLPR)	The band 4 500-4 800 MHz is part of the APP30B Plan (FSS space-to-Earth). Refer to Annex B. Ultra-wideband applications (UWB): see ITU-R Rec.SM.1896-1, Rec SM.1755, and Rep SM. 2153-7
4 800-4 990 MHz FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy 5.149 5.339 5.443	**4 800-4 990 MHz** FIXED MOBILE 5.441B[IMT25] 5.442 Radio Astronomy 5.149 5.339	IMT Fixed links Radio Astronomy (Obervations of formaldehyde (H2CO) interstellar clouds)	See section 5 for coordination with radio astronomy
4 990-5 000 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	**4 990-5 000 MHz** FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY Space Research (passive) 5.149	Radio Astronomy (Obervations of formaldehyde (H2CO) interstellar clouds)	See section 5 for coordination with radio astronomy
5 000-5 010 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	**5 000-5 010 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)		
5 010-5 030 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION	**5 010-5 030 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA		

RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	AERONAUTICAL R A D I O N A V I G A T I O N RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B		
5 030-5 091 MHz AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	**5 030-5 091 MHz** AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	Microwave Landing systems.	
5 091-5 150 MHz FIXED SATELLITE (Earth-to-Space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	**5 091-5 150 MHz** FIXED SATELLITE (Earth-to-Space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444		
5 150-5 250 MHz FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION	**5 150-5 250 MHz** FIXED-SATELLITE (Earth-to-space) 5.447A	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-19)

5.446 5.446C 5.446D 5.447 5.447B 5.447C	MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.447[AddA3] 5.447B 5.447C		
5 250-5 255 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	**5 250-5 255 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-19)
5 255-5 350 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	**5 255-5 350 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-19)
5 350-5 460 MHz EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION5.448D	**5 350-5 460 MHz** EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION5.448D	Ground based and airborne weather Radar	
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)	**5 470-5 570 MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-19)

SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B		
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	Wireless Access Systems (WAS)/RLAN Ground-based meteorological radars (5600-5650 MHz)	Res. 229 (rev. WRC-19)
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 5.453[AddA18] SADC18	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-19)
5 725-5 830 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455	**5 725-5 830 MHz** FIXED FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.453[AddA18]	BFWA (5725-5850 MHz) SRD applications: - Reservoir Level Probing Radar (RLPR) - RTTT (Road Transport and Traffic Telematics) (5795-5815 MHz) - Transport and information control systems (ITS) 5 805-5 815 MHz)	ITU-R Rec.SM.1896-1 ITU-R Report SM. 2153-7
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** FIXED FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.453[AddA18] SADC18	BFWA (5725-5850 MHz) SRD applications: - Reservoir Level Probing Radar (RLPR)	ITU-R Rec.SM.1896-1 ITU-R Report SM. 2153-7
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	Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) FIXED links (5850-5925 MHz)	FS could be used for temporary OB links. ISM (5725-5875 MHz) ITU-R Rec.SM.1896-1

		SRD: - Reservoir Level Probing Radar (RLPR)	ITU-R Report SM. 2153-7
5 925-6 700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	**5 925-6 700 MHz** FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.149 5.440 5.458	Fixed links - Lower 6 GHz (5925-6425 MHz) and Upper 6 GHz (6425-7110 MHz) Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) UWB SRD application (6000 - 9000 MHz) Radio astronomy (observation of Methanol)	Channelling plan for L6 GHz band in accordance with ITU-R Rec. F.383 Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384 Earth Station onboard vessels (ESV) also allowed under FSS. Ultra-wideband applications (UWB): see ITU-R Rec.SM.1896-1, Rec SM.1755, Rec SM.1756, Rec SM 1757 and Rep SM. 2153-7 See section 5 for coordination with radio astronomy
6 700-7 075 MHz FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B	**6 700-7 075 MHz** FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B	Fixed links - Upper 6 GHz (6425-7110 MHz)	ITU-R Rec. F.384 applies The band 6 725-7 025 MHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex B.
7 075-7 145 MHz FIXED MOBILE 5.458 5.459	**7 075-7 145 MHz** FIXED MOBILE 5.458	Fixed links - Upper 6 GHz (6425-7110 MHz) and Lower 7 GHz (7110-7425 MHz)	ITU-R Rec. F.384 applies ITU-R Rec. F.385 applies.
7 145-7190 MHz FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	**7 145-7190 MHz** FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458	Fixed links - Lower 7 GHz (7110-7425 MHz)	ITU-R Rec. F.385 applies.
7 190- 7 235 MHz	**7 190- 7 235 MHz**	Fixed links - Lower 7 GHz (7110-7425 MHz)	ITU-R Rec. F.385applies

EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458		
7 235-7 250 MHz EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A FIXED MOBILE 5.458	**7 235-7 250 MHz** EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A FIXED MOBILE 5.458	Fixed links - Lower 7 GHz (7110-7425 MHz)	ITU-R Rec. F.385 applies.
7 250-7 300 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	**7 250-7 300 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	Fixed links - Lower 7 GHz (7110-7425 MHz)	ITU-R Rec. F.385 applies.
7 300-7 375 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	**7 300-7 375 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	Fixed links - Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz)	ITU-R Rec. F.385 applies
7 375-7 450 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB	**7 375-7 450 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB	Fixed links - Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz)	ITU-R Rec. F.385 applies
7 450-7 550 MHz FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB	**7 450-7 550 MHz** FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	Fixed links - Upper 7 GHz (7425-7750 MHz)	ITU-R Rec. F.385 applies

5.461A	MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB 5.461A		
7 550-7 750 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5461AB	**7 550-7 750 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5461AB	Fixed links - Upper 7 GHz (7425-7750 MHz)	ITU-R Rec. F.385 applies
7 750-7 900 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	**7 750-7 900 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	Fixed links - Lower 8 GHz (7725-8275 MHz)	ITU-R Rec. F.386 applies
7 900-8 025 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	**7 900-8 025 MHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	Fixed links - Lower 8 GHz (7725-8275 MHz)	ITU-R Rec. F.386 applies
8 025-8 175 MHz EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	**8 025-8 175 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	Fixed links - Lower 8 GHz (7725-8275 MHz) Earth exploration satellite systems	ITU-R Rec. F.386 applies
8 175-8 215 MHz EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	**8 175-8 215 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	Fixed links - Lower 8 GHz (7725-8275 MHz) Earth exploration satellite systems	ITU-R Rec. F.386 applies

8 215-8 400 MHz EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	**8 215-8 400 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	Fixed links - Lower 8 GHz (7725-8275 MHz) and Upper 8 GHz (8275-8500 MHz)	ITU-R Rec. F.386 applies.
8 400-8 500 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466	**8 400-8 500 MHz** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465	Fixed links - Upper 8 GHz (8275-8500 MHz)	ITU-R Rec. F.386 applies.
8 500-8 550 MHz RADIOLOCATION 5.468 5.469	**8 500-8 550 MHz** RADIOLOCATION 5.468[AddA19]	RADARS e.g. precision airfield approach radars.	
8 550-8 650 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	**8 550-8 650 MHz** EARTH EXPLORATION SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468[AddA19] 5.469A	RADARS e.g. precision airfield approach radars	
8 650-8 750 MHz RADIOLOCATION 5.468 5.469	**8 650-8 750 MHz** RADIOLOCATION 5.468[AddA19]	RADARS e.g. precision airfield approach radars	
8 750-8 850 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	**8 750-8 850 MHz** RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471[AddA4]	RADARS e.g. precision airfield approach radars	
8 850-9 000 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	**8 850-9 000 MHz** RADIOLOCATION MARITIME RADIONAVIGATION 5.472	RADARS e.g. precision airfield approach radars	
9 000-9 200 MHz AERONAUTICAL RADIONAVIGATION 5.337	**9 000-9 200 MHz**	RADARS e.g. precision airfield approach radars	

RADIOLOCATION 5.471 5.473A	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.471[AddA4]		
9 200-9 300 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D	**9 200-9 300 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474A[UseL3] 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474 5.474D	RADARS e.g. precision airfield approach radars	
9 300-9 500 MHz RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.427 5.474 5.475 5.475A 5.475B 5.476A	**9 300-9 500 MHz** **RADIONAVIGATION** EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.427 5.474 5.475 5.475A 5.475B 5.476A	RADARS e.g. precision airfield approach radars	
9 500-9 800 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	**9 500-9 800 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	RADARS e.g. precision airfield approach radars	
9 800-9 900 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 5.478A 5.478B	**9 800-9 900 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477[DcoS12] 5.478A 5.478B		
9 900-10 000 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5474C RADIOLOCATION Fixed 5.474D 5.477 5.478 5.479	**9 900-10 000 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474A[UseL3] 5.474B 5474C RADIOLOCATION Fixed 5.474D 5.477[DcoS12] 5.479	RADARS e.g. precision airfield approach radars	

10-10.4 GHz EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	**10-10.4 GHz** EARTH EXPLORATION SATELLITE (active) 5.474A[UseL3] 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	Fixed Links	
10.4-10.45 GHz FIXED MOBILE RADIOLOCATION Amateur	**10.4-10.45 GHz** FIXED MOBILE RADIOLOCATION Amateur	BFWA – 10.5 GHz (10.15-10.30 GHz)	Paired with 10.50-10.65 GHz ITU-R Rec. F.1568 applies.
10.45-10.5 GHz RADIOLOCATION Amateur Amateur-satellite 5.481	**10.45-10.5 GHz** RADIOLOCATION Amateur Amateur-Satellite 5.481[AddA8]	RADIOLOCATION	
10.5-10.55 GHz FIXED MOBILE Radiolocation	**10.5-10.55 GHz** FIXED MOBILE Radiolocation	BFWA – 10.5 GHz (10.50-10.65 GHz)	Paired with 10.15-10.30 GHz ITU-R Rec. F.1568 applies
10.55-10.6 GHz FIXED MOBILE except aeronautical mobile Radiolocation	**10.55-10.6 GHz** FIXED MOBILE Radiolocation	BFWA – 10.5 GHz (10.50-10.65 GHz)	Paired with 10.15-10.30 GHz ITU-R Rec. F.1568 applies.
10.6-10.68 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)	**10.6-10.68 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY	BFWA – 10.5 GHz (10.50-10.65 GHz) Radio Astronomy (Non-thermal synchrotron and enigmatic quasars)	ITU-R Rec. F.1568 applies. For sharing between EESS (passive) and the fixed and mobile service, Res.751 applies. See section 5 for coordination with radio astronomy

Radiolocation 5.149 5.482 5.482A	SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A		
10.68-10.7 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	**10.68-10.7 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483[AddA1]	Radio astronomy (Non-thermal synchrotron and enigmatic quasars)	See section 5 for coordination with radio astronomy
10.7 – 10.95 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**10.7 – 10.95 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	DTH Applications under the FSS Fixed Links	ITU-R F 387 applies
10.95-11.2 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**10.95-11.2 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	DTH Applications under the FSS Fixed Links	ITU-R F 387 applies
11.2-11.45 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**11.2-11.45 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	DTH Applications under the FSS Fixed links	ITU-R F 387 applies
11.45-11.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**11.45-11.7 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	Fixed links - 11 GHz (10.7-11.7 GHz) Fixed-satellite downlinks (PTP/VSAT/SNG) DTH Applications under the FSS	ITU-R F 387 applies

11.7-12.5 GHz FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	**11.7-12.5 GHz** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	Fixed Links Broadcasting satellite systems	This band is available for BSS in accordance with Appendix 30 of ITU RR. Refer to Annex B.
12.5-12.75 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.494 5.495 5.496	**12.5-12.75 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.494[AddA22] 5.495[AddA2]	FSS uplinks (VSAT/SNG) (12.5-12.75 GHz) Aeronautical Earth Stations/ ESV/ESIM Applications NGSO FSS Fixed links	Article 9.12 applies Res. 155 (WRC – 15) applies
12.75-13.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)	**12.75-13.25 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)	Fixed links - 13 GHz (12.75-13.25 GHz)	Channelling plan for 13 GHz band in accordance with ITU-R Rec. F.497 The band 12.75-13.25 GHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex B. Article 9.12 applies Res. 172 (WRC-19) applies
13.25-13.4 GHz EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	**13.25-13.4 GHz** EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A	Airborne Doppler Radar	
13.4-13.65 GHz EARTH EXPLORATION –SATELLITE (active) FIXED SATELLITE (space-to-Earth) 5.499A 5.499B RADIOLOCATION SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal satellite (Earth-to-space) 5.499E 5.500 5.501 5.501B	**13.4-13.65 GHz** EARTH EXPLORATION –SATELLITE (active) FIXED SATELLITE (space-to-Earth) 5.499A 5.499B RADIOLOCATION SPACE RESEARCH 5.499C 5.499D	SRD: - Radio determination Applications	ITU-R Rec.SM.1896-1 Report ITU-R SM. 2153-7

	Standard frequency and time signal satellite (Earth-to-space) 5.499E 5.500[AddA14] 5.501B		
13.65-13.75 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	**13.65-13.75 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.500[AddA14] 5.501B	RADIOLOCATION	
13.75-14 GHz FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503	**13.75-14 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.500[AddA14] 5.502 5.503	FSS uplinks (PTP/VSAT/SNG) RADIOLOCATION	
14-14.25 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C5.506A Space research 5.504A 5.505	**14-14.25 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.504C 5.506A Space Research 5.504A 5.505[AddA16]	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications NGSO FSS Fixed links	Res. 902 applies. ITU-R M.1643 applies.
14.25-14.3 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508	**14.25-14.3 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.508A Space Research	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed links	Res. 902 applies. ITU-R M.1643 applies.

	5.504A 5.505[AddA16] 5.508[AddA1]		
14.3-14.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.5065.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	**14.3-14.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.509A[UseC9] Radionavigation-satellite 5.504A	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed links	Res. 902 applies. ITU-R M.1643 applies.
14.4-14.47 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A	**14.4-14.47 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.509A[UseC9] Space research (space-to-Earth) 5.504A	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed links	Res. 902 applies. ITU-R M.1643 applies.
14.47-14.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.5065.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	**14.47-14.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.509A[UseC9] Radio astronomy 5.149 5.504A	FSS uplinks (PTP/VSAT/SNG) Radio Astronomy (non-thermal synchrotron and enigmatic quasars) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed Links	See section 5 for coordination with radio astronomy
14.5-14.75 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F5.510 MOBILE	**14.5-14.75 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510	Fixed links - 15 GHz (14.5-15.35 GHz)	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636

Space research 5.509G	MOBILE Space research 5.509G		The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some countries. Refer to Annex B.
14.75-14.8 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research 5.509G	**14.75-14.8 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research 5.509G	Fixed links - 15 GHz (14.5-15.35 GHz)	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636 The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some countries. Refer to Annex B.
14.8-15.35 GHz FIXED MOBILE Space research 5.339	**14.8-15.35 GHz** FIXED MOBILE Space research 5.339	Fixed links - 15 GHz (14.5-15.35 GHz)	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636 The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some countries. Refer to Annex B.
15.35-15.4 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	**15.35-15.4 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511[AddA4]	Radio Astronomy (for observation of non-thermal synchrotron sources and quasars)	
15.4-15.43 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.4-15.43 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	Radio altimeters / Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
15.43-15.63 GHz FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	**15.43-15.63 GHz** FIXED-SATELLITE (Earth-to-space)5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
15.63-15.7 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.63-15.7 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
15.7-16.6 GHz RADIOLOCATION 5.512 5.513	**15.7-16.6 GHz** RADIOLOCATION 5.512[AddA17]	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)

16.6-17.1 GHz RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513 5.515	**16.6-17.1 GHz** RADIOLOCATION Space Research (deep space)(Earth-to-space) 5.512[AddA17] 5.515		
17.1-17.2 GHz RADIOLOCATION 5.512 5.513 5.515	**17.1-17.2 GHz** RADIOLOCATION 5.512[AddA17] 5.515	WAS/RLAN (17.1-17.3 GHz)	
17.2-17.3 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	**17.2-17.3 GHz** EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512[AddA17] 5.513A	WAS/RLAN (17.1-17.3 GHz)	
17.3-17.7 GHz FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	**17.3-17.7 GHz** FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514[AddA6]	Broadcasting satellite systems feeder links	The band 17.3-17.7 GHz is part of the APP30A Plan (Feeder Links for BSS) for many countries; refer to Annex B. Res.143 applies applies for HDFFS.
17.7-18.1 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE	**17.7-18.1 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS) Broadcasting satellite systems feeder links	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 Res 169 (WRC-19) applies for ESIM.
18.1-18.4 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A (Earth-to-space) 5.520 MOBILE 5.519 5.521	**18.1-18.4 GHz** FIXED FIXED – SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.520 MOBILE 5.519	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 Res 169 (WRC-19) applies for ESIM.
18.4-18.6 GHz FIXED	**18.4-18.6 GHz** FIXED	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 Res 169 (WRC-19) applies for ESIM.

FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A MOBILE	FIXED – SATELLITE (space-to-Earth) 5.484A 5.517A MOBILE		
18.6-18.8 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	**18.6-18.8 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED – SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C[UseC5]	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 Res 169 (WRC-19) applies for ESIM.
18.8-19.3 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A MOBILE	**18.8-19.3 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.523A MOBILE	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 Res 169 (WRC-19) applies for ESIM.
19.3-19.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E MOBILE	**19.3-19.7 GHz** FIXED FIXED – SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E MOBILE	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 Res 169 (WRC-19) applies for ESIM.
19.7-20.1 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524[AddA16]	ESIM (under the FSS)	Res.143 applies for HDFFS. Res 156 (WRC-15) applies for ESIM.
20.1-20.2 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	**20.1-20.2 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524[AddA16] 5.525 5.526 5.527 5.528	ESIM (under the FSS)	Res.143 applies for HDFFS Res 156 (WRC-15) applies for ESIM.

20.2-21.2 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524	**20.2-21.2 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.524[AddA16]	Fixed Satellite Systems	
21.2-21.4 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	**21.2-21.4 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3
21.4-22 GHz FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B	**21.4-22 GHz** FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz) Broadcasting satellite systems	
22-22.21 GHz FIXED MOBILE except aeronautical mobile 5.149	**22-22.21 GHz** FIXED MOBILE except aeronautical mobile 5.149	Fixed links Radio astronomy (red-shifted H_2O)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3 See section 5 for coordination with radio astronomy
22.21-22.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.1495.532	**22.21-22.5 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	Fixed links Radio astronomy (red-shifted H_2O)	See section 5 for coordination with radio astronomy

22.5-22.55 GHz FIXED MOBILE	**22.5-22.55 GHz** FIXED MOBILE	Fixed links Radio astronomy (methyl formate)	See section 5 for coordination with radio astronomy
22.55-23.15 GHz FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	**22.55-23.15 GHz** FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3 See section 5 for coordination with radio astronomy
23.15-23.55GHz FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	**23.15-23.55 GHz** FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	Fixed links Radio astronomy (methyl formate)	See section 5 for coordination with radio astronomy
23.55-23.6 GHz FIXED MOBILE	**23.55-23.6 GHz** FIXED MOBILE	Fixed links	
23.6-24 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**23.6-24 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Radio Astronomy (Observation of ammonia and continuum observations)	See section 5 for coordination with radio astronomy
24-24.05 GHz AMATEUR AMATEUR-SATELLITE 5.150	**24-24.05 GHz** AMATEUR AMATEUR-SATELLITE 5.150	AMATEUR AMATEUR-SATELLITE ISM (24.0-24.25 GHz) SRD applications (24-24.25 GHz)	ISM band (24.0-24.25 GHz) Centre frequency 24.125 GHz
24.05-24.25 GHz RADIOLOCATION	**24.05-24.25 GHz** RADIOLOCATION	SRD: - Reservoir Level Probing Radar (RLPR)	ISM band (24.0-24.25 GHz) Centre frequency 24.125 GHz

Amateur Earth exploration-satellite (active) 5.150	Amateur Earth Exploration-Satellite (active) 5.150		ITU-R Rec SM.1896-1 ITU-R Report SM.2153-7
24.25-24.45 GHz FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	**24.25-24.45 GHz** FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	Fixed links (24.25 – 26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 1, Annex 3(Note: In this recommendation, this band is known as 26 GHz). Temporary fixed links for ENG/OB Res. 242 (WRC-19) applies
24.45-24.65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	**24.45-24.65 GHz** FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	Fixed links - 26 GHz (24.25-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz))	Channelling in accordance with ITU-R Rec. F.748 Annex 1, Annex 3 (Note: In this recommendation, this band is known as 26 GHz) Res. 242 (WRC-19) applies
24.65-24.75 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	**24.65-24.75 GHz** FIXED FIXED SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	Fixed links - 26 GHz (24.25-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 1, Annex 3 (Note: In this recommendation, this band is known as 26 GHz). Res. 242 (WRC-19) applies
24.75-25.25 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB	**24.75-25.25 GHz** FIXED FIXED SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 1, Annex 3 (Note: In this recommendation, this band is known as 26 GHz). Res. 242 (WRC-19) applies
25.25-25.5 GHz FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)	**25.25-25.5 GHz** FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 1, Annex 3. (Note: In this recommendation, this band is known as 26 GHz). Res. 242 (WRC-19) applies

25.5-27 GHz EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A	**25.5-27 GHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B[UseL8] FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C[UseL16] Standard frequency and time signal-satellite (Earth-to-space) 5.536A	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 1, Annex 3 (Note: In this recommendation, this band is known as 26 GHz).. Res. 242 (WRC-19) applies
27-27.5 GHz FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB	**27-27.5 GHz** FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB	IMT (24.25-27.5 GHz)	Res. 242 (WRC-19) applies
27.5-28.5 GHz FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 MOBILE 5.538 5.540	**27.5-28.5 GHz** FIXED 5.537A[SpNt2] FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 MOBILE 5.538 5.540	Fixed links – 28 GHz (27.5-29.5 GHz) ESIM (under the FSS)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 2 (Note: In this recommendation, this band is known as 28 GHz) Res.143 applies for HDFFS. The band 27.5-30 GHz may be used by the FSS for BSS feeder links Res 169 (WRC-19) applies for ESIM.
28.5-29.1 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	**28.5-29.1 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 5.517A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	Fixed links – 28 GHz (27.5-29.5 GHz) ESIM (under the FSS)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 2 (Note: In this recommendation, this band is known as 28 GHz) Res.143 applies for HDFFS. The band 27.5-30 GHz may be used by the FSS for BSS feeder links Res 169 (WRC-19) applies for ESIM.

29.1-29.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	**29.1-29.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	Fixed links ESIM (under the FSS)	Channelling plan in accordance with ITU-R Rec. F.748 Annex 2 (Note: In this recommendation, this band is known as 28 GHz) Res 169 (WRC-19) applies for ESIM.
29.5-29.9 GHz FIXED-SATELLITE (Earth-to-space) 5.484A5.484B 5.516B 5.527A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.5405.542	**29.5-29.9 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.427A 5.539 5.527A Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542[AddA14]	ESIM (under the FSS)	Res.143 applies for HDFFS. Res 156 (WRC-15) applies for ESIM.
29.9-30 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	**29.9-30 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.427A 5.539 5.527A MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542[AddA14]	ESIM (under the FSS)	Res.143 applies for HDFFS. Res 156 (WRC-15) applies for ESIM.
30-31 GHz FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	**30-31 GHz** FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.542[AddA14]		

31-31.3 GHz FIXED 5.338A 5.543B MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	**31-31.3 GHz** FIXED 5.338A 5.543B MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 5.544 5.149	Fixed links Fixed satellite systems Radio Astronomy (Continuum Observations)	See section 5 for coordination with radio astronomy
31.3-31.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**31.3-31.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Radio Astronomy (Continuum Observations)	Radio Astronomy (Continuum Observations)
31.5-31.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.546	**31.5-31.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile 5.149 5.546[DcoS2]	Radio Astronomy (Continuum Observations)	Radio Astronomy (Continuum Observations)
31.8-32 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	**31.8-32 GHz** FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	Fixed links (PTP/PTMP)	
32-32.3 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	**32-32.3 GHz** FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	Fixed links (PTP/PTMP)	

32.3-33 GHz FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	**32.3-33 GHz** FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.548	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	
33-33.4 GHz FIXED 5.547A RADIONAVIGATION 5.547 5.547E	**33-33.4 GHz** FIXED 5.547A RADIONAVIGATION 5.547	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Channelling plan in accordance with ITU-R Rec. F.1520 Annex 1, Annex 2 (Note: In this recommendation, this band is known as 32 GHz). Res.75 applies for HDFS.
33.4-34.2 GHz RADIOLOCATION 5.549	**33.4-34.2 GHz** RADIOLOCATION 5.549[AddA13]		
34.2-34.7 GHz RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) 5.549	**34.2-34.7 GHz** RADIOLOCATION SPACE RESEARCH (deep space)(Earth-to-space) 5.549[AddA13]		
34.7-35.2 GHz RADIOLOCATION Space research 5.550 5.549	**34.7-35.2 GHz** RADIOLOCATION Space Research 5.549[AddA13]		
35.2-35.5 GHz METEOROLOGICAL AIDS RADIOLOCATION 5.549	**35.2-35.5 GHz** METEOROLOGICAL AIDS RADIOLOCATION 5.549[AddA13]		
35.5-36 GHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	**35.5-36 GHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549[AddA13] 5.549A		
36-37 GHz	**36-37 GHz**	Radio astronomy (HC_3N and OH lines)	See section 5 for coordination with radio astronomy

EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A		
37-37.5 GHz FIXED MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) 5.547	**37-37.5 GHz** FIXED MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) 5.547	Fixed links IMT	
37.5-38 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	**37.5-38 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	Fixed links IMT	
38-39.5 GHz FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B Earth exploration-satellite (space-to-Earth) 5.547	**38-39.5 GHz** FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B Earth exploration-satellite (space-to-Earth) 5.547	Fixed links - 38 GHz (37.0-39.5 GHz) IMT (37-43.5 GHz)	Res 243 (WRC-19) applies for IMT Channelling plan in accordance with ITU-R Rec. F.749 Annex 1 (Note: In this recommendation, this band is known as 38 GHz) Res.75 applies for HDFS. Res 168 (WRC-19) applies for HAPS
39.5-40 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B	**39.5-40 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C	IMT (37-43.5 GHz) Fixed Links	Res.75 applies for HDFS. Res.143 applies for HDFS.

MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E	MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E		Res 243 (WRC-19) applies for IMT
40-40.5 GHz EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E	**40-40.5 GHz** EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E	IMT (37-43.5 GHz)	Res.143 applies for HDFFS. Res 243 (WRC-19) applies for IMT
40.5-41 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547	**40.5-41 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547	Fixed links (40.5 – 43.5 GHz) IMT (37-43.5 GHz)	BFWA or MWS (40.5-43.5 GHz) Res.75 applies for HDFS. Channelling plan in accordance with ITU-R Rec. F.2005 (Note: In this recommendation, this band is known as 42 GHz) Res 243 (WRC-19) applies for IMT
41-42.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547 5.551F 5.551H 5.551I	**41-42.5 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile	Fixed links (40.5 – 43.5 GHz) IMT (37-43.5 GHz)	BFWA or MWS (40.5-43.5 GHz) Res.75 applies for HDFS. Channelling plan in accordance with ITU-R Rec. F.2005 (Note: In this recommendation, this band is known as 42 GHz) Res 243 (WRC-19) applies for IMT

	5.547 5.551H 5.551I		
42.5-43.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY 5.149 5.547	**42.5-43.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except Aeronautical Mobile 5.550B RADIO ASTRONOMY 5.149 5.547	Fixed links IMT Radio Astronomy (Observation of silicon monoxide)	See section 5 for coordination with radio astronomy
43.5-47 GHz MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	**43.5-47 GHz** MOBILE 5.553 5.553A [IMT35] MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	IMT	
47-47.2 GHz AMATEUR AMATEUR-SATELLITE	**47-47.2 GHz** AMATEUR AMATEUR-SATELLITE	Amateur Amateur satellite	
47.2-47.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	**47.2-47.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B[IMT52] 5.552A	IMT	
47.5-47.9 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B	**47.5-47.9 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B[IMT52]	IMT	
47.9-48.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	**47.9-48.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B[IMT52] 5.552A	IMT	

48.2-48.54 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**48.2-48.54 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		
48.54-49.44 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.149 5.340 5.555	**48.54-49.44 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.149 5.340 5.555	Radio astronomy (diatomic molecules and other molecules)	See section 5 for coordination with radio astronomy
49.44-50.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**49.44-50.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		
50.2-50.4 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**50.2-50.4 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		
50.4-51.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-satellite (Earth-to-space)	**50.4-51.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-Satellite (Earth-to-space)	Fixed Links	
51.4-52.4 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE 5.338A 5.547 5.556	**51.4-52.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE		

	5.338A 5.547 5.556		
52.4-52.6 GHz FIXED 5.338A MOBILE 5.547 5.556	**52.4-52.6 GHz** FIXED 5.338A MOBILE 5.547 5.556		
52.6-54.25 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	**52.6-54.25 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	Passive sensing	Passive sensing (53.6 – 59.3 GHz)
54.25-55.78 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	**54.25-55.78 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)	Passive sensing	
55.78-56.9 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	**55.78-56.9 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Passive sensing	
56.9-57 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	**56.9-57 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Passive sensing	
57-58.2 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A	**57-58.2 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED	Passive sensing Fixed Links	

MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Multiple GIGABIT wireless systems WAS/RLANS (57-66 GHz) SRD Applications (57 – 64 GHz)	
58.2-59 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	**58.2-59 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	Multiple GIGABIT wireless systems WAS/RLANS Passive sensing (53.6 – 59.3 GHz)	
59-59.3 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	**59-59.3 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	Multiple GIGABIT wireless systems WAS/RLANS Passive sensing (53.6 – 59.3 GHz)	
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	SRD applications (61-61.5 GHz): Reservoir Level Probing Radar (RLPR) Multiple GIGABIT wireless systems WAS/RLANS	
64-65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	**64-65 GHz** FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556		
65-66 GHz EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile	**65-66 GHz** EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile	Multiple GIGABIT wireless systems WAS/RLANS	

SPACE RESEARCH 5.547	SPACE RESEARCH 5.547		
66-71 GHz INTER-SATELLITE MOBILE 5.553 5.558 5.559AA MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	**66-71 GHz** INTER-SATELLITE MOBILE 5.553 5.558 5.559AA MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	IMT (66-71 GHz)	
71-74 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**71-74 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	Fixed links (71-76 GHz)	
74-76 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	**74-76 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	Fixed links (71-76 GHz)	
76-77.5 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**76-77.5 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-Earth) 5.149	-	
77.5-78 GHz AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth)	**77.5-78 GHz** AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth)		

5.149	5.149		
78-79 GHz RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	**78-79 GHz** RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560		
79-81 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**79-81 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149		
81-84 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	**81-84 GHz** FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149	Fixed links (81-86 GHz)	
84-86 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	**84-86 GHz** FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	Fixed links (81-86 GHz)	
86-92 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**86-92 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		

	5.340		
92-94 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149 5.338A	**92-94 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149 5.338A		
94-94.1 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	**94-94.1 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A		
94.1-95 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**94.1-95 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
95-100 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**95-100 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554		
100-102 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**100-102 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		
102-105 GHz FIXED	**102-105 GHz** FIXED		

MOBILE RADIO ASTRONOMY 5.149 5.341	MOBILE RADIO ASTRONOMY 5.149 5.341		
105-109.5 GHz RADIO ASTRONOMY 5.562B	**105-109.5 GHz** RADIO ASTRONOMY 5.562B		
109.5-111.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**109.5-111.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		
111.8-114.25 GHz FIXED MOBILE RADIO ASTRONOMY 5.562B SPACE RESEARCH (passive) 5.562B 5.149 5.341	**111.8-114.25 GHz** FIXED MOBILE RADIO ASTRONOMY 5.562B SPACE RESEARCH (passive) 5.562B 5.149 5.341		
114.25-116 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**114.25-116 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		
116-119.98 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	**116-119.98 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341		
119.98-122.25 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	**119.98-122.25 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341		

122.25-123 GHz FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	**122.25-123 GHz** FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138		
123-130 GHz FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	**123-130 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554		
130-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A	**130-134 GHz** EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A		
134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	**134-136 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy		
136-141 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**136-141 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149		
141-148.5 GHz FIXED MOBILE RADIO ASTRONOMY	**141-148.5 GHz** FIXED MOBILE RADIO ASTRONOMY		

RADIOLOCATION 5.149	RADIOLOCATION 5.149		
148.5-151.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**148.5-151.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**151.5-155.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
155.5-158.5 GHz FIXED MOBILE RADIO ASTRONOMY 5.149	**155.5-158.5 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149		
158.5-164 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**158.5-164 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)		
164-167 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**164-167 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
167-174.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558	**167-174.5 GHz** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558		

5.149 5.562D	5.149 5.562D		
174.5-174.8 GHz FIXED INTER-SATELLITE MOBILE 5.558	**174.5-174.8 GHz** FIXED INTER-SATELLITE MOBILE 5.558		
174.8-182 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**174.8-182 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)		
182-185 GHz EARTH-EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**182-185 GHz** EARTH-EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
185-190 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**185-190 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)		
190-191.8 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**190-191.8 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		
191.8-200 GHz FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	**191.8-200 GHz** FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554		
200-209 GHz	**200-209 GHz**		

EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A		
209-217 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	**209-217 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341		
217-226 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	**217-226 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341		
226-231.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**226-231.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
231.5-232 GHz FIXED MOBILE Radiolocation	**231.5-232 GHz** FIXED MOBILE Radiolocation		
232-235 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	**232-235 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation		
235-238 GHz EARTH EXPLORATION-SATELLITE (passive)	**235-238 GHz**		

FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B		
238-240 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	**238-240 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
240-241 GHz FIXED MOBILE RADIOLOCATION	**240-241 GHz** FIXED MOBILE RADIOLOCATION		
241-248 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	**241-248 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149		
248-250 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	**248-250 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149		
250-252 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	**250-252 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A		
252-265 GHz FIXED	**252-265 GHz** FIXED		

MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554		
265-275 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	**265-275 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A		
275-3000 GHz (Not allocated) 5.564A 5.565	**275-3000 GHz** (Not allocated) 5.564A 5.565		