Table 3: Summary of Broadcast, Spaceborne and Airborne/terrestrial Allocations Adjacent to Radio Astronomy Bands (status WRC-03)

Status	Allocation ITU RR	RAS [2]	Brdcst [3]	Spaceborne	Airborne/ Terrestrial
	13.26 - 13.36 MHz			MOBILE (R)	AERONAUTICAL[5]
1	**13.36 - 13.41 MHz**	PRIMARY			FIXED **5.149**[4]
	13.41 - 13.60 MHz				FIXED/Mobile
	25.21 - 25.55 MHz				FIXED/MOBILE
2	**25.55 - 25.67 MHz**	PRIMARY	**5.149**		**5.149**
	25.67 - 26.10 MHz		PRIMARY		
	30.01 - 37.5 MHz				FIXED/MOBILE
3	**37.5 - 38.25 MHz**	secondary			FIXED/MOBILE
					5.149
	38.25 - 39.986 MHz				FIXED/MOBILE
	72.0 - 73.0 MHz				FIXED/MOBILE
4	**73.0 - 74.6 MHz**	PRIM.R2 [6]			FIXED/MOBILE
					5.149
	74.8 - 74.8 MHz				FIXED/MOBILE
	149.9 - 150.05 MHz			MOBILE Earth → space RADIONAVIG.	
5	**150.05 - 153.0 MHz**	PRIMARY		**5.149**	FIXED/MOBILE
	153.0 - 154.0 MHz				FIXED
	315.0 - 322.0 MHz				FIXED/MOBILE
6	**322.0 - 328.6 MHz**	PRIMARY			FIXED/MOBILE
					5.149
	328.6 - 335.4 MHz				AERONAUTICAL RADIONAVIG.
	406.0 - 406.1 MHz			MOBILE Earth → space	
7	**406.1 - 410.0 MHz**	PRIMARY			FIXED/MOBILE
					5.149
	410.0 - 420.0 MHz			MOBILE	MOBILE
	470.0 - MHz			PRIMARY PRIM.R3 sec.R2	FIXED/MOBILE
8	**608.0 - 614.0 MHz**	PRIM.R2 sec.R1/R3 **5.149**	PRIM.R1/R3		
	- 790.0 MHz		PRIMARY		

	1300.0 - 1350.0 MHz				AERONAUTICAL RADIONAVIG. RADIOLOCAT.
9	**1330.0 - 1400.0 MHz**	notificat. of use		RADIONAVIG. SATELLITE **5.149** passive	**5.149**
	1350.0 - 1400.0 MHz				FIXED/MOBILE R1 RADIOLOCAT. **5.149**
10	**1400.0 - 1427.0 MHz** 1427.0 - 1429.0 MHz	PRIMARY	**5.340**	PASSIVE **5.340** SPACE OPER. Earth → space	**5.340** FIXED/MOBILE
	1559.0 - 1610.0 MHz			RADIONAVIG. SATELLITE space → Earth space ↔ space	AERONAUTICAL RADIONAVIG.
	1610.0 - MHz				AERONAUTICAL
11	**1610.6 - 1613.8 MHz** - 1626.5 MHz	PRIMARY		MOBILE Earth → space **5.149** **5.372** RADIODET.SAT. Earth → space R2 **5.372** Mobile space → Earth **5.372**	RADIONAVIG.
	1656.5 - 1660.0 MHz			MOBILE Earth → space	
12	**1660.0 - 1660.5 MHz**	PRIMARY		MOBILE Earth → space **5.149** **5.376A**	
12	**1660.5 - 1668 MHz**	PRIMARY		PASSIVE **5.149** **5.379A**	Fixed/Mobile
12	**1668 - 1668.4 MHz**	PRIMARY		PASSIVE MOBILE **5.379C** Earth → space **5.149** **5.379A**	Fixed/Mobile **5.149**

12	**1668.4 - 1670.0 MHz**	PRIMARY		METEOROLOG. AIDS MOBILE **5.379C** Earth → space **5.149**	FIXED/MOBILE **5.149**
	1670.0 - 1690.0 MHz			METEOROLOG. AIDS METEOROLOG. SATELLITE space → Earth MOBILE Earth → space	FIXED/MOBILE
13	1710.0 - MHz **1718.8 - 1722.2 MHz** - 1930.0 MHz	secondary **5.385**			FIXED/MOBILE **5.149**
14	2520.0 - 2655.0 MHz **2655.0 - 2670.0 MHz**	secondary	SATELLITE **5.413** SATELLITE **5.149** **5.413**	FIXED R2/R3 passive	FIXED/MOBILE FIXED/MOBILE **5.149**
14	**2670.0 - 2690.0 MHz**	secondary		MOBILE Earth → space FIXED R2/R3 passive	FIXED/MOBILE **5.149**
15	**2690.0 - 2700.0 MHz** 2700.0 - 2900.0 MHz	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340** AERONAUTICAL RADIONAVIG. radiolocat.
16	3100.0 - MHz **3260.0 - 3267.0 MHz** - 3300.0 MHz	notific. of use	**5.149**	**5.149**	RADIOLOCAT. RADIOLOCAT. **5.149**
16	3300.0 - MHz **3332.0 - 3339.0 MHz**	notific. of use	**5.149**	**5.149**	 RADIOLOCAT. **5.149**
16	**3345.8 - 3352.5 MHz** - 3400.0 MHz	notific. of use	**5.149**	**5.149**	RADIOLOCAT. **5.149**
17-19	4500.0 - 4800.0 MHz **4800.0 - 4990.0 MHz**	secondary		FIXED space → Earth	FIXED/MOBILE FIXED/MOBILE **5.149** **5.443**

20	**4990.0 - 5000.0 MHz**	PRIMARY		passive	FIXED/MOBILE
			5.149		**5.149**
	5000.0 - 5010.0 MHz			RADIONAVIG. Earth → space	AERONAUTICAL RADIONAVIG.
	5010.0 - 5030.0 MHz			RADIONAVIG. space → Earth space ↔ space **5.443B**	AERONAUTICAL RADIONAVIG.
	5030.0 - 5150.0 MHz				AERONAUTICAL RADIONAVIG.
	5925.0 - MHz			FIXED Earth → space	FIXED/MOBILE
21	**6650.0 - 6675.2 MHz** - 6700.0 MHz	notific. of use		**5.149**	**5.149**
	10.55 - 10.60 GHz				FIXED/MOBILE
22	**10.60 - 10.68 GHz**	PRIMARY		EARTH EXPL. (passive) PASSIVE	FIXED/MOBILE
			5.149	**5.149**	**5.149** radiolocat.
22	**10.68 - 10.70 GHz**	PRIMARY		EARTH EXPL. (passive) PASSIVE	
			5.340	**5.340**	**5.340**
	10.70 - 11.70 GHz			FIXED	FIXED/MOBILE
	14.40 - 14.47 GHz			FIXED Earth → space Mobile Earth → space space resear. **5.504A**	FIXED/MOBILE
23	**14.47 - 14.50 GHz**	secondary		FIXED Earth → space Mobile Earth → space **5.149** **5.504A**	FIXED/MOBILE **5.149**
	14.50 - 14.80 GHz			FIXED Earth → space Space resear.	FIXED/MOBILE
	14.80 - 15.35 GHz			Space resear.	FIXED/MOBILE
24	**15.35 - 15.40 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
	15.40 - 15.70 GHz			FIXED	AERONAUTICAL

				space → Earth **5.511A**	RADIONAVIG.
	21.40 - 22.00 GHz		SATELLITE R1/R3		FIXED/MOBILE
	22.00 - GHz				FIXED/MOBILE
25	**22.01 - 22.21 GHz**	notific. of use	**5.149**	**5.149**	**5.149**
	- 22.21 GHz				
26	**22.21 - 22.50 GHz**	PRIMARY		EARTH EXPL. PASSIVE	FIXED/MOBILE
				5.149	**5.149**
	22.50 - 22.55 GHz				FIXED/MOBILE
	22.55 - GHz			INTER-SATL.	FIXED/MOBILE
27	22.81 - 22.86 GHz	notific. of use	**5.149**	**5.149**	**5.149**
	- 23.00 GHz				
	23.00 - GHz			INTER-SATL.	FIXED/MOBILE
28	**23.07 - 23.12 GHz**	notific. of use	**5.149**	**5.149**	**5.149**
	- 23.55 GHz				
	23.55 - 23.60 GHz				FIXED/MOBILE
29	**23.60 - 24.00 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
	24.00 - 24.05 GHz			AMATEUR	AMATEUR
	31.0 - 31.3 GHz			space resear.	FIXED **5.543A** MOBILE **5.149**
30	**31.3 - 31.5 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
31	31.5 - 31.8 GHz	PRIMARY		PASSIVE **5.149**	Fixed/Mobile
	31.8 - 32.0 GHz			SPACE RES. space → Earth	FIXED. RADIONAVIG
	36.0 - GHz			PASSIVE	FIXED/MOBILE
32	**36.43 - 36.5 GHz**	notific. of use		**5.149**	**5.149**
	- 37.0 GHz				
	41.50 - 42.5 GHz		FIXED SATELLITE	FIXED Earth → space	BROADCASTING Mobile
			5.551H **5.551I**	**5.551H** **5.551I**	
33	**42.5 - 43.5 GHz**	PRIMARY		FIXED Earth → space	FIXED/MOBILE
				5.149	**5.149**
	43.5 - 47 GHz			MOBILE RADIONAVIG.	MOBILE RADIONAVIG.

	47.0 - 47.2 GHz			AMATEUR	AMATEUR
	47.2 - GHz			FIXED	FIXED/MOBILE
				Earth → space	
				space ↔ space	
				5.555A	
34	**48.94 - 49.04 GHz**	PRIMARY		**5.340**	**5.340**
				5.149	**5.149**
	- 50.2 GHz				
34	**50.2 - 50.4 GHz**		**5.340**	FIXED	**5.340**
				Earth → space	
				PASSIVE	
				5.340	
				5.555A	
	50.4 - 51.4 GHz			FIXED/Mobile	FIXED/MOBILE
				Earth → space	
35	**51.4 - 52.6 GHz**				FIXED/MOBILE
		5.556			
35	**52.6 - 54.25 GHz**	**5.556**	**5.340**	PASSIVE	
				5.340	**5.340**
	54.25 - 58.2 GHz			PASSIVE	FIXED/MOBILE
				INTER-SATL.	
	58.2 - 59.0 GHz	notific. of use			
	59.0 - 64.0 GHz			INTER-SATL.	FIXED/MOBILE
					RADIOLOCAT.
35	**64.0 - 65.0 GHz**	**5.556**			
	65.0 - 66.0 GHz			EARTH EXPL.	
				SPACE RESEAR.	
	75.5 - 76.0 GHz			FIXED	FIXED
				(space → Earth)	MOBILE
			BRDCST	BRDCST	
				Space research	
				(space → Earth)	
36	**76.0 - 77.5 GHz**	PRIMARY			RADIOLOCAT.
		5.149		AMATEUR	Amateur
				Space research	
				(space → Earth)	
36	**77.5 - 78.0 GHz**	secondary		AMATEUR	AMATEUR
		5.149		Space research	
				(space → Earth)	
36	**78.0 - 79.0 GHz**	secondary		Amateur	RADIOLOCAT.
		5.149		Space research	AMATEUR
				(space → Earth)	
36	**79.0 - 81.0 GHz**	PRIMARY		Amateur	RADIOLOCAT.
		5.149		Space research	AMATEUR
				(space → Earth)	
36	**81.0 - 84.0 GHz**	PRIMARY		FIXED/MOBILE	FIXED/MOBILE
		5.149		(Earth → space)	
				Space research	

36	**84.0 - 86.0 GHz**	PRIMARY **5.149**		FIXED (Earth → space)	FIXED/MOBILE
36	**86.0 - 92.0 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
36	**92.0 - 94.0 GHz**	PRIMARY **5.149**			FIXED/MOBILE RADIOLOCAT.
36	**94.0 - 94.1 GHz**	secondary		EARTH EXPL. (active) SPACE RES. (active)	RADIOLOCAT.
36	**94.1 - 95.0 GHz**	PRIMARY **5.149**			FIXED/MOBILE RADIOLOCAT.
36	**95.0 - 100.0 GHz**	PRIMARY **5.149**		RADIONAVIG.	FIXED/MOBILE RADIOLOCAT. RADIONAVIG.
36	**100.0 - 102 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
36	**102.0 - 105.0 GHz**	PRIMARY **5.149**			FIXED/MOBILE
36	**105.0 - 109.5 GHz**	PRIMARY **5.149**		SPACE RES. (passive)	FIXED/MOBILE
36	**109.5 - 111.8 GHz**	PRIMARY		PASSIVE **5.340**	
36	**111.8 - 114.25 GHz**	PRIMARY **5.149**		SPACE SERV. (passive)	FIXED/MOBILE
36	**114.25 - 116.0 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
	116.0 - 119.98 GHz			EARTH EXPL. (passive) INTER-SATL. SPACE RES. (passive)	
	122.25 - 123.0 GHz			INTER-SATL.	FIXED/MOBILE Amateur
37	**123.0 - 126.0 GHz**	secondary **5.554**		FIXED/MOBILE (space → Earth) RADIONAVIG.	RADIONAVIG.
37	**126.0 - 130.0 GHz**	secondary **5.149**		FIXED/MOBILE (space → Earth) RADIONAVIG.	RADIONAVIG.
37	**130.0 - 134.0 GHz**	PRIMARY **5.149**		EARTH EXPL. (active) INTER-SATEL.	FIXED/MOBILE
37	**134.0 - 136.0 GHz**	secondary		AMATEUR	AMATEUR
37	**136.0 - 141.0 GHz**	PRIMARY **5.149**		Amateur	RADIOLOCAT. Amateur
37	**141.0 - 148.5 GHz**	PRIMARY **5.149**			FIXED/MOBILE RADIOLOCAT.

37	**148.5 - 151.5 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
37	**151.5 - 155.5 GHz**	PRIMARY **5.149**			FIXED/MOBILE RADIOLOCAT.
37	**155.5 - 158.5 GHz**	PRIMARY **5.149**		PASSIVE	FIXED/MOBILE
	158.5 - 164.0 GHz			FIXED/MOBILE (space → Earth)	FIXED/MOBILE
38	**164.0 - 167.0 GHz**	PRIMARY			PASSIVE
			5.340	**5.340**	**5.340**
	167.0 - 168.0 GHz			FIXED INTER-SATL.	FIXED/MOBILE
39	**168.0 - 170.0 GHz**	notific. of use **5.149**		FIXED (space → Earth) INTER-SATL.	FIXED/MOBILE
39	**170.0 - 174.5 GHz**	notific. of use		FIXED (space → Earth)	FIXED/MOBILE
	174.5 - 174.8 GHz			INTER-SATL.	FIXED/MOBILE
	174.8 - 182.0 GHz			PASSIVE INTER-SATL.	
	182.0 - 185.0 GHz	PRIMARY	**5.340**	**5.340**	**5.340**
	185.0 - 190.0 GHz			PASSIVE	
	190.0 - 191.8 GHz			EARTH EXPL. (passive)	
			5.340	SPACE RES. (passive) **5.340**	**5.340**
40	**191.8 - 200.0 GHz**	notific. of use **5.149**		INTER-SATL. MOBILE RADIONAVIG.	FIXED/MOBILE RADIONAVIG.
40	**200.0 - 202.0 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
40	**202.0 - 209.0 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
40	**209.0 - 217.0 GHz**	PRIMARY **5.149**		FIXED (Earth → space)	FIXED/MOBILE
40	**217.0 - 226.0 GHz**	PRIMARY **5.149**		FIXED (Earth → space) SPACE RES. (passive)	FIXED/MOBILE
40	**226.0 - 231.5 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
	231.5 - 232.0 GHz:				FIXED/MOBILE Radiolocation
	240.0 - 241.0 GHz				FIXED/MOBILE RADIOLOCAT.

41	**241.0 - 248.0 GHz**	PRIMARY **5.149**		Amateur	RADIOLOCAT. Amateur
41	**248.0 - 250.0 GHz**	secondary **5.149**		AMATEUR	AMATEUR
41	**250.0 - 252.0 GHz**	PRIMARY	**5.340**	PASSIVE **5.340**	**5.340**
41	**252.0 - 265.0 GHz**	PRIMARY **5.149**		MOBILE (Earth → space) RADIONAVIG.	FIXED/MOBILE RADIONAVIG.
41	**265.0 - 275.0 GHz**	PRIMARY **5.149**		FIXED (Earth → space)	FIXED/MOBILE
42	**275.0 - 1000.0 GHz**	notific. of use **5.565**			

Notes:
1. The band number refers to the numbering used in Section 4.3 of this Handbook.
2. Radio Astronomy Service.
3. Broadcasting service.
4. Footnotes referring to the protection of the Radio Astronomy Service are indicated by number.
5. Primary services are indicated by CAPITAL letters.
6. Status and region indication.

4.3. Comments on Frequency Allocations

This section incorporates CRAF comments on current and requested radio astronomy frequency allocations. These have been arrived at through extensive discussion over many years in the international scientific community.

The CRAF comments are interspersed with remarks on the scientific background to some of the allocations.

The comments are ordered according to increasing frequency.

1. **13.36 - 13.41 MHz:**
2. **25.55 - 25.67 MHz:**
   This band and the preceding band have worldwide shared primary allocations (see also No. **5.149**). These bands are used for observations of decametric radiation from the planet Jupiter and from the Sun.

3. **37.5 - 38.25 MHz:**
   This band has worldwide a secondary allocation (see No. **5.149**). Together with the bands 13.36 - 13.41 MHz and 25.55 - 25.67 MHz this band is very important for research of radiation from Jupiter. Jovian decametric radiation was discovered long after all the decametric frequency bands had been allocated and widely used by active services. The allocations to the Radio Astronomy Service are extremely narrow; how-