

# Report on Frequency Management related topics

Presented to CGMS-54 Working Group I on 13 April 2026, agenda item 2.1

This report will provide an overview on the outcome of the following meeting/conferences on issues of interest to CGMS:

- 44<sup>th</sup> annual meeting of the Space Frequency Coordination Group (SFCG), 10 –18 June 2025;
- 7<sup>th</sup> meeting of WMO Expert Team on Radio Frequency Coordination (ET-RFC), 4 – 6 February 2026.

Issues worth noting by CGMS WGI that were discussed and progressed at SFCG-44 and/or the 7<sup>th</sup> meeting of the WMO ET-RFC are the following:

- Progress in SFCG and WMO on their objectives/positions for WRC-27 agenda items of interest/concern to CGMS, see sections 3.1 to 3.5 (limited to those listed in the HLPP),
  - Including issues related to the preliminary agenda items WRC-31 of interest and potential new items discussed in SFCG, see section 3.6,
- OSCAR Database updates and changes in Section 2.

## OSCAR/space database (1/2):

- SFCG action item 43/12 called for SFCG member agencies to check the information about their passive and active sensors in the WMO OSCAR database and provide corrections and additions as needed.
- In response to requests from SFCG-43, WMO confirmed that all requested updates to existing information in OSCAR/Space have been implemented. Key changes include a new structure for separating responsible and cooperating agencies (meanwhile already implemented) and a refined approach to the visibility of frequency data as proposed by SFCG and agreed with WMO:
  - TT&C information will be hidden from public view but retained for logged-in users,
  - data downlink frequency information will be restricted to allocated frequency bands, with exact frequencies hidden,
  - DCP frequency information remains publicly visible.
- SFCG was tasked to review the correct categorization of frequency information (sensors, TT&C, and DCP/data downlink).
  - Done and implemented in OSCAR/space.

OSCAR/space database (2/2):

- WMO informed SFCG about its plans to integrate an **RFI reporting module into OSCAR/Space**, designed to facilitate reporting from WMO Members (National Meteorological and Hydrological Services).
  - This integration necessitates a significant redesign to store detailed instrument channel information in a relational database, ensuring consistency across the platform and supporting both scientific and frequency management aspects of RFI reporting.
- SFCG was invited to provide feedback for the design of this new module.
  - **Scope of what can be reported, RFI only or also other anomalies/instances leading to loss of data, is not yet fully clear and requires further discussion.**

## WRC-27 Agenda Items of interest/concern to CGMS

Section 2.2.1 of the HLPP stipulates to facilitate an effective preparation of national and ITU-R regional groups' positions for the World Radiocommunication Conference (WRC) 2027 favourable for CGMS-related issues, in particular but not exclusively with regard to the:

- Establishment of protection for passive microwave sensors in the bands 50.2-50.4 GHz, 52.6-54.25 GHz and in bands above 86 GHz from unwanted emissions from active services in neighbouring frequency bands (WRC-27 agenda items 1.1, 1.3, 1.8 and 1.18).
- Possible new primary frequency allocations to EESS (passive) in the bands 4200-4400 MHz and 8400-8500 MHz for Sea Surface Temperature (SST) measurements to complement the SST measurements in the 6/7 GHz range (WRC-27 agenda item 1.19).
- Protection of the frequency bands 7450-7550 MHz, 7750-7900 MHz and 8025-8400 MHz, used for the downlink from MetSat and EO satellites, from possible future frequency usage by International Mobile Telecommunications (IMT) (WRC-27 agenda item 1.7).

Sections 3.1 to 3.5 of the corresponding paper provide a short overview on the relevant WRC-27 agenda items and the corresponding **SFCG preliminary objectives** from SFCG-44, 10 – 18 June 2025, and the **preliminary positions of WMO** as updated at the recent 7th meeting of WMO ET-RFC, 4 – 6 February 2026.

## WRC-31 Preliminary Agenda Items

### 2.1: New allocations in 275-325 GHz for passive and active services

- Currently the frequency allocation table end at 275 GHz, above that use is just identified with no allocation status.

### 2.6: IMT in bands [102-109.5 GHz, 151.5-164 GHz, 167-174.8 GHz, 209-226 GHz and 252-275 GHz]

- Challenge: Protection of the EESS (passive) from IMT unwanted emissions in neighbouring bands.

### 2.10: EESS (Earth-to-space) in the frequency band 22.55-23.15 GHz

- Opportunity: A companion uplink allocation for the downlink in Ka-Band (25.5-27 GHz)

### 2.11: EESS (space-to-Earth) for EO payload data in bands within the range 37.5-52.4 GHz

- Opportunity: New allocation of downlink spectrum with bandwidth larger than currently available to accommodate higher data rate requirements.

SFCG: Discussion and action ongoing for a possible new proposal for a WRC-31 AI for a new EESS (space-to-Earth) allocation in the band 7900-8025 MHz to bridge the allocation gap between the existing downlink allocation to MetSat at 7750-7900 MHz and EESS at 8025-8400 MHz.

To be considered by CGMS:

**Actions proposed:** CGMS is invited to note this report and provide feedback and information on its activities via the CGMS/SFCG Liaison Officer to SFCG-45 (June 2026) on any frequency related matter.

# Background slides on WRC-27 issues

WRC-27 Agenda Items of interest/concern to CGMS (AIs 1.1 & 1.3) (1/2)

**WRC-27 agenda items 1.1 and 1.3: New satellite applications in existing allocations to the Fixed-Satellite service (FSS), which in turn requires the establishment/update of limits to protect passive sensors (EESS (passive)) in the bands 50.2-50.4 GHz and 52.6-54.25 GHz, where No. 5.340 applies.**

- Similarly to what was studied already in the past which led to the establishment of unwanted emission limits in Resolution 750 of the Radio Regulations (RR) to protect the bands 50.2-50.4 GHz and 52.6-54.25 GHz, studies are now performed for these new satellite applications, taking into account aggregation effects on potential RFI with already existing satellite applications.
- **Preventive mechanism:** Adjust, as necessary, the existing unwanted emission limits in Resolution 750 of the Radio Regulations.

## WRC-27 Agenda Items of interest/concern to CGMS (AIs 1.1 & 1.3) (2/2)

### WRC-27 agenda items 1.1:

Band	Frequency Allocations
47.2-50.2 GHz	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
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)

### WRC-27 agenda items 1.3:

Band	Frequency Allocations
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
52.6-54.25 GHz	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340, 5.556

### ITU:

- Task: Establishment/update of unwanted emission limits to protect passive sensors in the bands:
  - 50.2-50.4 GHz from FSS aeronautical and maritime ESIMs at 47.2-50.2 GHz and 50.4-51.4 GHz bands (AI 1.1)  
→ Limited to no interest from satellite operators!
  - 52.6-54.25 GHz from FSS gateway uplinks at 51.4-52.4 GHz, i.e. not directly adjacent (AI 1.3).  
→ Significant interest from SpaceX and Amazon but with understanding that the passive sensors must be protected!
  - Still to be concluded: Are the already existing unwanted emission limits in the RR Resolution 750 still appropriate to protect the 50.3 GHz and 52.7 GHz passive sensing bands from these additional applications, taking into account aggregation effects on potential RFI with already existing satellite applications?

### Developments:

- Two FCC proceedings, titled "Satellite Spectrum Abundance" and "Facilitating More Intensive Use of Upper Microwave Spectrum" deal with the band 50.4-52.4 GHz.
  - SpaceX is seeking an FCC license to operate up to 15,000 additional Starlink satellites, with the consequential need for a large number of additional feeder link stations operating in the lower 50 GHz bands.

WRC-27 Agenda Items of interest/concern to CGMS (AI 1.18 resolves 1) (1/3)

WRC-27 agenda item 1.18, resolves 1: Protection of EESS (passive) from unwanted emissions of active services operating in frequency bands adjacent to EESS (passive) allocations 86-92 GHz, 114.25-116 GHz, 164-167 GHz and 200-209 GHz, where No. 5.340 ( all emissions prohibited) applies

- Opportunity: WRC-27 Agenda Item 1.18 res.1 attempts at implementing relevant unwanted emission limits to protect EESS (passive) in a number of bands subject to RR footnote 5.340 (all emissions are prohibited);
- Preventive mechanism: Establishment of unwanted emission limits in Resolution 750 in the Radio Regulations for these passive bands, proactively before the active services are deployed.
  - Right timing as Starlink (probably followed by other operators) is currently seeking (temporary) licenses in countries around the world for feeder uplink stations in bands adjacent to 86-92 GHz, and already succeeded in some countries, like US, UK, Germany (soon), etc.
    - These licenses usually (but definitely should) contain unwanted emission limits to protect passive sensors.
    - For any such already issued licenses it will be important to update as necessary those limits, to be aligned with the outcome of WRC-27.

## WRC-27 Agenda Items of interest/concern to CGMS (AI 1.18 resolves 1) (2/3)

Band	Frequency Allocations
81-84 GHz	<p>FIXED 5.338A (already covered in Res 750)</p> <p>FIXED-SATELLITE (Earth-to-space)</p> <p>MOBILE</p> <p>MOBILE-SATELLITE (Earth-to-space)</p> <p>RADIO ASTRONOMY</p> <p>Space research (space-to-Earth)</p> <p>5.149, 5.561A</p>
84-86 GHz	<p>FIXED 5.338A (already covered in Res 750)</p> <p>FIXED-SATELLITE (Earth-to-space) 5.561B</p> <p>MOBILE</p> <p>RADIO ASTRONOMY</p> <p>5.149</p>
86-92 GHz	<p>EARTH EXPLORATION-SATELLITE (passive)</p> <p>RADIO ASTRONOMY</p> <p>SPACE RESEARCH (passive)</p> <p>5.340</p>
92-94 GHz	<p>FIXED 5.338A (already covered in Res 750)</p> <p>MOBILE</p> <p>RADIO ASTRONOMY</p> <p>RADIOLOCATION</p> <p>5.149</p>

### ITU:

- FIXED in 81-86 GHz: out of scope of this WRC-27 agenda item (unwanted emission limits already incl. in Res 750)
- FIXED-SATELLITE (E-s) in 81-86 GHz:
  - Studies performed, unwanted emission levels still to be agreed
- MOBILE in 81-86 GHz:
  - Discussions in ITU-R regarding AERONAUTICAL MOBILE ongoing, no use of LAND MOBILE at this stage
- MOBILE in 92-94 GHz:
  - Unwanted emission limits under development based on RSTT characteristics in Report ITU-R M.2500 (Railway Radiocommunication Systems between Train and Trackside)
- RADIOLOCATION in 92-94 GHz:
  - Unwanted emission limits under development based on characteristics in Recommendation ITU-R M.2162 and Report ITU-R M.2562 (Foreign Object Debris (FOD) detection system).

### Developments:

- (Temporary) licenses in countries around the world for feeder uplink stations in bands adjacent to 86-92 GHz, and already succeeded in some countries, others will follow around the world.

# WRC-27 Agenda Items of interest/concern to CGMS (AI 1.18 resolves 1) (3/3)

Band	Frequency Allocations
111.8-114.25 GHz	<b>FIXED</b> <b>MOBILE</b> RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149, 5.341
114.25-116 GHz	<b>EARTH EXPLORATION-SATELLITE (passive)</b> RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340

Band	Frequency Allocations
158.5-164 GHz	<b>FIXED</b> <b>FIXED-SATELLITE (space-to-Earth)</b> <b>MOBILE</b> <b>MOBILE-SATELLITE (space-to-Earth)</b>
164-167 GHz	<b>EARTH EXPLORATION-SATELLITE (passive)</b> RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340
167-174.5 GHz	<b>FIXED</b> <b>FIXED-SATELLITE (space-to-Earth)</b> <b>INTER-SATELLITE</b> <b>MOBILE 5.558</b> 5.149, 5.5262D

Band	Frequency Allocations
191.5-200 GHz	<b>FIXED</b> <b>INTER-SATELLITE</b> <b>MOBILE</b> <b>MOBILE-SATELLITE</b> <b>RADIONAVIGATION</b> <b>RADIONAVIGATION-SATELLITE</b> 5.149, 5.341, 5.554
200-209 GHz	<b>EARTH EXPLORATION-SATELLITE (passive)</b> RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340, 5.341, 5.563A
209-217 GHz	<b>FIXED</b> <b>FIXED-SATELLITE (Earth-to-space)</b> <b>MOBILE</b> RADIO ASTRONOMY 5.149, 5.341

• The band 200-209 GHz is limited to limb sounding.

- **FIXED** in 111.8-114.25 GHz:
  - Unwanted emission limits as contained in Report ITU-R F.2558.
- **MOBILE**:
  - No use of MOBILE at this stage.
- **Developments:** The band 111.8-114.25 GHz is in FCC proceedings "Satellite Spectrum Abundance"
- **FIXED** in 158.5-164 GHz and 167-174.5 GHz:
  - Unwanted emission limits as contained in Report ITU-R F.2558.
- **MOBILE, MOBILE-SATELLITE and INTERSATELLITE**:
  - No use of these services at this stage
- **FIXED-SATELLITE (s-E)** in 158.5-164 GHz and 167-174.5 GHz:
  - For the bands 158.5-164 GHz (space-to-Earth) and 167-174.5 GHz (space-to-Earth), the potential for interference into the cold calibration of the sensor was identified as the predominant case.
- **Technical analysis** show that the protection criteria is not exceeded technical analysis and that there is no need to apply unwanted emission limits to FSS space stations.

WRC-27 Agenda Items of interest/concern to CGMS (AI 1.8) (1/2)

WRC-27 agenda item 1.8: Possible additional frequency allocations to the Radiolocation service (RLS) on a primary basis in the frequency range 231.5-275 GHz and possible new identifications for RLS applications in the frequency bands within the frequency range 275-700 GHz for millimetric and sub-millimetric wave imaging systems.

- For radar-type applications in the Radiolocation service (RLS) **protection of passive sensors in the EESS (passive) has to be ensured.**
  - **Sharing and compatibility studies (in-band and adjacent bands) are in progress** for such active millimetric and sub-millimetric wave RLS systems >231.5 GHz.
    - The principle applied is to minimize the RFI potential by avoiding co-channel operations, thus not to provide new allocations/identifications in overlap with passive sensors.
    - Challenge: To determine the unwanted emission limits necessary especially for automotive and aeronautical applications.

## WRC-27 Agenda Items of interest/concern to CGMS (AI 1.8) (2/2)

Current allocation (and identification >275 GHz) situation for EESS (passive) and Radiolocation services and planned use by passive sensors:

226-231.5	235-238	239.2-242.2	244.2-247.2	248-250	250-252	252-275	275-296	296-306	313-318	333-356	356-439	450-700
5.340	shared	shared	shared		5.340		Shared, 5.564A, 5.565	5.565	5.565	5.565	Shared, 5.564A, 5.565	5.565
		ICI	ICI						ICI EPS-Sterna	ICI EPS-Sterna		ICI EPS-Sterna (AWS)
		238-248 RADIOLOCATION										
So far proposed Radiolocation systems in ITU-R WP5B (Doc 5B/315, Annex 2.9):												
<p><b>Status:</b> The approach is to allocate and identify frequencies for RLS <b>avoiding overlap with nadir or conical scanning passive sensors</b> and to establish unwanted emission limits to protect the neighbouring passive sensing bands.</p>						Radar A (scan) Radar B (track) Car Radar X (short) Car Radar Y (park) Security Radar 3 Security Radar 4			Radar A (scan) Radar B (track) Car Radar X (short) Car Radar Y (park)			

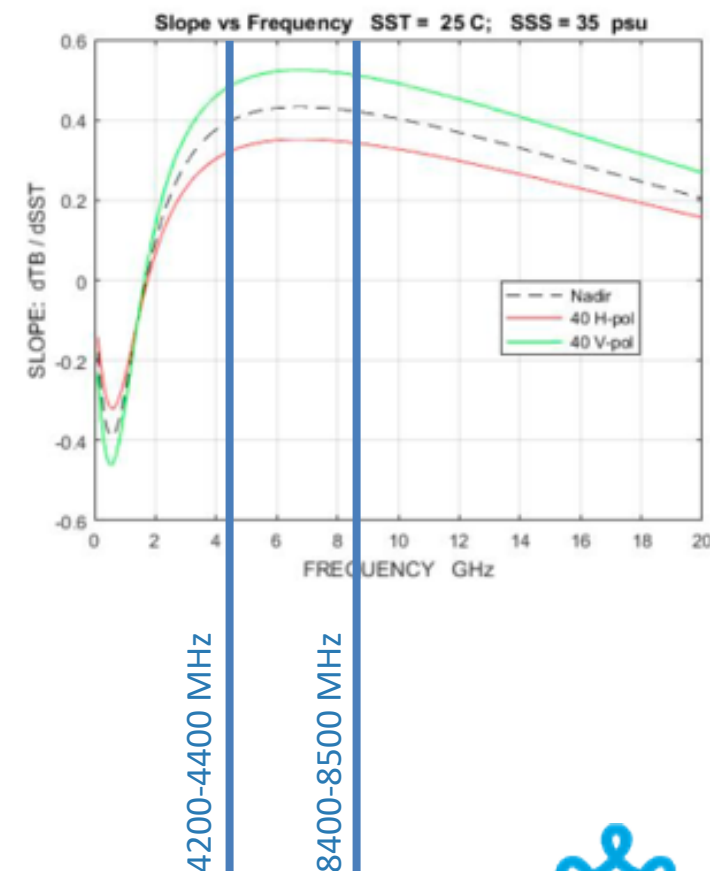
Some entities push for regulations before the WRC process is completed, e.g. through establishment of ETSI standards. Also in the US the company TeraDAR received a 10-year license until 2033 for the 300-350 GHz.

Compatibility studies indicate that in bands above 356 GHz co-channel operation with RLS is feasible without RFI.

WRC-27 Agenda Items of interest/concern to CGMS (AI 1.19) (1/2)

- WRC-27 agenda item 1.19: Frequency allocations for EESS (passive) for Sea Surface Temperature (SST) in the bands 4200-4400 MHz and 8400-8500 MHz
  - To complement current SST measurements in the 6425-7250 MHz range, under RR No. 5.458 (not an allocation).
- EESS (passive) characteristics in 4200-4400 MHz and 8400-8500 MHz derived from those EESS (passive) SST sensors in the 6-7 GHz range in Recommendation ITU-R RS.1861-1.
- EESS (passive) protection criteria in Recommendation ITU-R RS.2017.
- RR No. 5.437: Passive sensing in the Earth exploration-satellite and space research services may be authorized in the frequency band 4200-4400 MHz on a secondary basis. (WRC-15)

Sensitivity of brightness temperatures to sea surface salinity



WRC-27 Agenda Items of interest/concern to CGMS (AI 1.19) (2/2)

- Opportunity: WRC-27 Agenda Item 1.19 aims at new frequency allocations for EESS (passive) in the bands 4200-4400 MHz and 8400-8500 MHz (on a non-protection basis);
  - Compensation for the degraded usability and quality of the SST measurement data in the 6/7 GHz range due to the IMT identification in that range at WRC-23;
    - Vision: Future multichannel instruments utilising all three bands for SST measurements.
- **Some potential negative impacts** on these potential new allocations to EESS (passive) for SST measurements in the bands 4200-4400 MHz and 8400-8500 MHz **from potential IMT identification under WRC-27 agenda item 1.7.**

WRC-27 Agenda Items of interest/concern to CGMS (AI 1.7) (1/2)

- Despite the fact that there are already a number of bands identified for IMT, including the newly identified bands, 6425-7125 MHz in Region 1 and 7025-7125 MHz in Region 3, there was still a large majority of countries at WRC-23 insisting to study even more bands for International Mobile Telecommunication (IMT). As a result of that **WRC-27 agenda item 1.7** was established.
  - Under this new agenda item for IMT, sharing and compatibility studies will have to be performed, with a view to ensuring the protection of services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also on services in adjacent bands, for the frequency bands:
    - 4400-4800 MHz, **7125-8400 MHz** and 14.8-15.35 GHz.
- Of utmost importance to MetSat is the long-term availability and protection of the following bands for the downlink of instrument data to main stations and/or data broadcast directly to users (direct readout)
  - **7450-7550 MHz (limited to GSO)**
  - **7750-7900 MHz (limited to non-GSO)**
  - **8025-8400 MHz (used by most of the today's EO missions)**

## WRC-27 Agenda Items of interest/concern to CGMS (AI 1.7) (2/2)

Band	Frequency Allocations (simplified to essential)
7075-7145 MHz	FIXED MOBILE 5.458
7145-7190 MHz	FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458
7190-7235 MHz	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.458
7235-7250 MHz	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED MOBILE 5.458
7250-7450 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE
7450-7550 MHz	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461A MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth)
7550-7750 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth)
7750-7900 MHz	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth)
7900-8025 MHz	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
8025-8400 MHz	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) (only 8175-8215 MHz) MOBILE 5.463
8400-8500 MHz	FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.465

Issues: Potential negative impacts particularly

- In the bands 7450-7550 MHz and 7750-7900 MHz used for data reception of MetSat Earth stations for the global distribution of meteorological data.
- In the band 8025-8400 MHz used for data reception of EESS Earth stations of hundreds of Earth observation satellite systems worldwide.
  - Status: Studies on required separation/coordination distances still ongoing, ranging from 1 to 200 km, depending on assumptions
  - Challenge: Difficulty in harmonizing study methodologies, propagation models, and parameter selection across contributions, notably regarding clutter loss models, terrain data, antenna characteristics, which will need to be considered for a meaningful comparison and consolidation of results.
- Sea Surface Temperature (SST) measurements under Footnote RR 5.458.
  - Status: Issue not discussed at ITU-R level, due to the status of the SST measurements only through FN 5.458.
- In the band 7145-7235 MHz for Space research uplinks and in the band 7190-7250 MHz for EESS uplinks.
  - Status: Discussion about the so-called reverse band studies are ongoing in the ITU-R.
- On potential new allocations to EESS (passive) in the neighbouring bands 4200-4400 MHz and 8400-8500 MHz for SST measurements due to unwanted emissions of the new IMT into the new EESS (passive) allocations.
  - Status: Discussion are ongoing in the ITU-R.



## Summary table of allocations & identifications to EESS (passive) vs. WRC-27/31 AIs

EESS (passive) primary allocations either RR FN. 5.340 or shared				EESS (passive) identifications above 275 GHz			
Frequency band	WRC AI	Frequency band	WRC AI	Frequency band	WRC AI	Frequency band	WRC AI
1400-1427 MHz (5.340)	1.12, 1.13	100-102 GHz (5.340)	2.6	275-286 GHz (shared 5.564A, 5.565)	1.8, 2.1	634-654 GHz (5.565)	1.8
2690-2700 MHz (5.340)		109.5-111.8 GHz (5.340)	2.6	296-306 GHz (5.565)	1.8, 2.1	657-692 GHz (5.565)	1.8
10.6-10.68 GHz (shared)		114.25-116 GHz (5.340)	1.18	313-318 GHz (5.565)	1.8, 2.1	713-718 GHz (5.565)	1.8
10.68-10.7 GHz (5.340)		116-122.25 GHz (shared)		318-333 GHz (shared 5.564A, 5.565)	1.8, 2.1	729-733 GHz (5.565)	1.8
15.35-15.4 GHz (5.340)	1.7	148.5-151.5 GHz (5.340)	2.6	313-356 GHz (5.565)	1.8, 2.1	750-754 GHz (5.565)	1.8
18.6-18.8 GHz (shared)		164-167 GHz (5.340)	1.18, 2.6	361-365 GHz (shared 5.564A, 5.565)	1.8	771-776 GHz (5.565)	1.8
21.2-21.4 GHz (shared)		174.8-182 GHz (shared)	2.6	369-392 GHz (shared 5.564A, 5.565)	1.8	823-846 GHz (5.565)	1.8
22.21-22.5 GHz (shared)		182-185 GHz (5.340)	2.6	397-399 GHz (shared 5.564A, 5.565)	1.8	850-854 GHz (5.565)	1.8
23.6-24 GHz (5.340)		185-190 GHz (shared)	2.6	409-411 GHz (shared 5.564A, 5.565)	1.8	857-862 GHz (5.565)	1.8
31.3-31.5 GHz (5.340)		190-191.8 GHz (5.340)	2.6	416-434 GHz (shared 5.564A, 5.565)	1.8	866-882 GHz (5.565)	1.8
31.5-31.8 GHz (5.340 R2) (shared R1,R3)		200-209 GHz (5.340)	1.18	439-450 GHz (shared 5.564A, 5.565)	1.8	905-928 GHz (5.565)	1.8
36-37 GHz (shared)		226-231.5 GHz (5.340)	1.8, 2.6	450-467 GHz (5.565)	1.8	951-956 GHz (5.565)	1.8
50.2-50.4 GHz (5.340)	1.1	235-238 GHz (shared)	1.8	477-502 GHz (5.565)	1.8	968-973 GHz (5.565)	1.8
52.6-54.25 GHz (5.340)	1.3	239.2-242.2 GHz (shared)	1.8	523-527 GHz (5.565)	1.8	985-990 GHz (5.565)	1.8
54.25-59.3 GHz (shared)		244.2-247.2 GHz (shared)	1.8	538-581 GHz (5.565)	1.8		
86-92 GHz (5.340)	1.18	250-252 GHz (5.340)	1.8, 2.6	611-630 GHz (5.565)	1.8		