Martlesham RT

April 2025

Barry Lewis G4SJH
RSGB Microwave Manager

Microwave and Millimetre Bands in the Spotlight

Frequency Bands getting a mention:

1240 – 1300 MHz - 23cms in Europe and IARU

2300 - 2350 MHz – UK and internationally

2400 – 2450 MHz - Internationally

5.650 - 5. 850 GHz – Internationally

241 – 250 GHz – Internationally

>250 GHz - Internationally

23cm Band in CEPT (1258 – 1300 MHz)

- Draft ECC Decision (25)01 public consultation just closed.
  - Resolution Meeting 22-23 May
  - Approval by 27th June.
  - In force – TBD at end June.
  - The “supporting” administrations will indicate their intention to implement by 27th June.
  - ECC Decisions are not binding and can be partially implemented.

Designation of the frequency bands used by the Global Navigation Satellite System, Galileo, and Technical and operational measures for the use of the frequency band 1258-1300 MHz by the amateur and amateur-satellite services in order to protect the radionavigation-satellite service (space-to-Earth)

approved DD Month YYYY

DECIDES

1. that CEPT administrations shall designate the bands 1164-1215 MHz, 1258-1300 MHz, 1559-1610 MHz for the use of the RNSS system, Galileo;

2. that CEPT administrations allowing operations of the amateur and amateur-satellite services across their territory in all or part of the frequency band 1258-1300 MHz shall use the technical and operational measures described in Annex 1 in order to protect RNSS (space-to-Earth);

2300 MHz - 2400 MHz

- WRC-27 agenda item 1.13:
  - Direct connectivity between satellites and mobile phones.
  - New allocations for the mobile satellite service (MSS) sought.
  - Downlink frequencies should be in BS transmit bands and uplink in handset transmit bands - implies paired band operation….
- 15 paired bands understudy in ITU-R (all well known mobile phone bands)
  - Including 2305-2320 (UL) paired with 2345 – 2360 MHz (DL)
  - Not including 2300-2400 MHz – the unpaired arrangement (TDD).
- Amateur service allocation is secondary whereas mobile service has a primary allocation (and IMT identification)

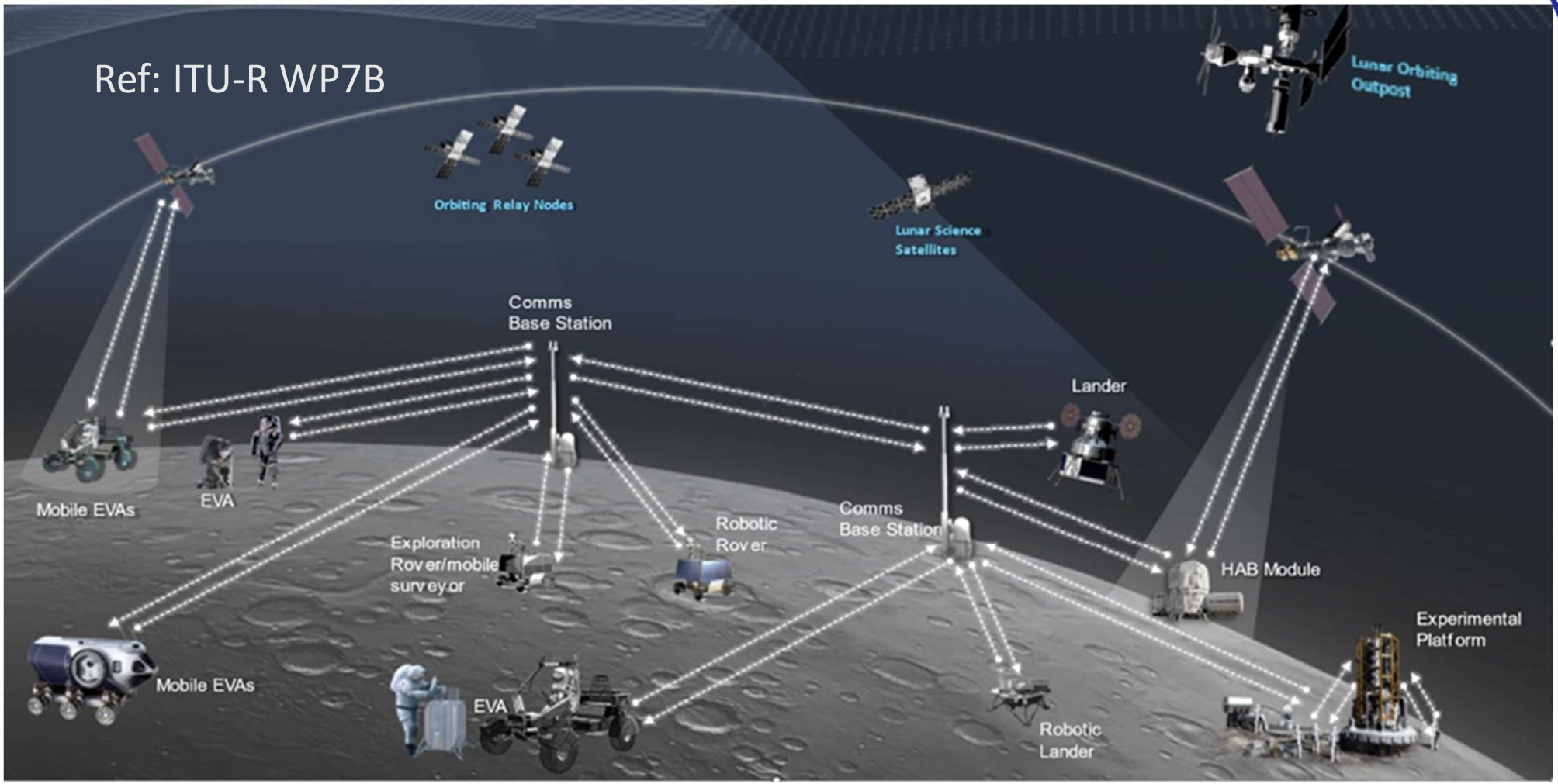
Recent Ofcom Initiatives

- Shared Spectrum Access
  - Has been enabling small scale licenses for any interested party to provide local access or networking since 2019.
- Includes spectrum in the bands: 2390-2400 MHz, 3.8-4.2 GHz, 1800 MHz and 26GHz spectrum.
- From Jan 25, constraints liberalised in a number of aspects but importantly:
  - The range 2320 – 2340 MHz was added allowing up to 20MHz wide systems.
  - Currently indoor only but there have been requests for temporary outdoor installation.

Lunar Surface Communications

- WRC-27 agenda item 1.15:
  - Space Research Service allocations for lunar surface communications including between the surface and lunar orbit.
  - Not Earth to Moon communications.
- 11 frequency ranges under study from 390 MHz – 28.35 GHz including region 1 amateur bands at:
  - 2400-2450 MHz; 5650 – 5725 MHz and 5775 – 5925 MHz.
  - Including amateur satellite bands in 13cms and 6 cms.
- Amateur and amateur satellite service allocations are secondary.

Lunar Surface Scenarios



Lunar Surface Scenarios by Frequency

Frequency band	Lunar surface to lunar surface	Lunar orbit to lunar surface	Lunar surface to lunar orbit
390-406 MHz		X	
406-406.1 MHz			X
420-430 MHz	X		
440-450 MHz			X
2 400-2 483.5 MHz	**X**		
2 483.5-2 500 MHz		X	
2 500-2 690 MHz	X		
3 500-3 800 MHz	X		
5 150-5 570 MHz	X		
5 570-5 725 MHz	**X**		
5 775-5 855 MHz	**X**		
5 855-5 925 MHz	**X**		
7 190-7 235 MHz		X	
8 450-8 500 MHz			X
27.5-28.35 GHz	X		

241 – 250 GHz and above

- WRC-27 agenda item 1.8 and WRC-31 Preliminary agenda item 2.1:
  - 1.8 considers radiolocation service applications in 231.5 – 275 GHz and new identifications in the range 275 – 700 GHz.
  - WRC-31 2.1 will consider possible new allocations for several services (including amateur and amateur satellite) in the range 275 – 325 GHz.
- Amateur services are;
  - Currently primary 248-250 GHz and secondary 241-248 GHz.
- No spectrum from 275 to 3000 GHz is allocated in Article 5 of the Radio Regulations.
  - Some frequency ranges are “identified” for specific services and some are highlighted for passive services such as radio astronomy in footnotes.
  - Amateur services are “active” services and are not excluded from frequencies above 275 GHz.

Amateur services above 275 GHz

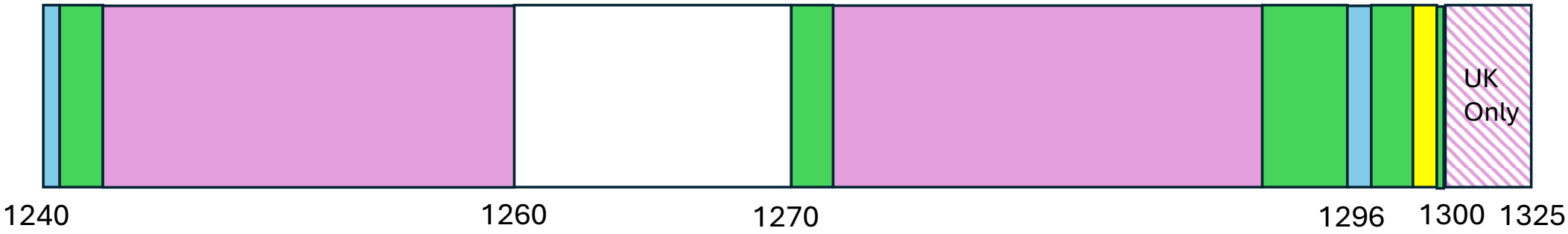
- ITU-R SG5 Working Party 5A is drafting a new work item:
  - ITU-R Report on Experimental Activities in the Millimetric Wave Bands by Stations of the Amateur Service.
  - Currently contains information on 240 GHz and above.
- This will be approved before the end of the study cycle and used to inform the discussions on the proposed WRC-31 agenda items.
- Additional material is desirable.
  - Contributions can be made via the IARU.

23cm Band Plan

- IARU R1 Interim Meeting 24-25th April in Paris
  - 23cm Band on the agenda – first band plan discussions
  - 5 contributions received on the topic: https://storage.iaru-r1.org/index.php/s/m2gy2J4nwAFwgqF
  - VHF and above Committee C5 Docs:
    - 03 – IARU Spectrum Regulatory Liaison Committee (SRLC – i.e. from me!).
    - 04 – UBA Belgium – 23cm band national consultation (aborted for now).
    - 05 – UBA Belgium – Some band plan options to shift EME and ATV.
    - 10 – RSGB UK - Some band plan options.
    - 11 – RSGB UK – Consideration of >1300 MHz.
    - 12 – RSGB UK – FMATV considerations.

23cm Band Plan Discussion

Current band arrangement in overview



Narrowband up to 2.7kHz

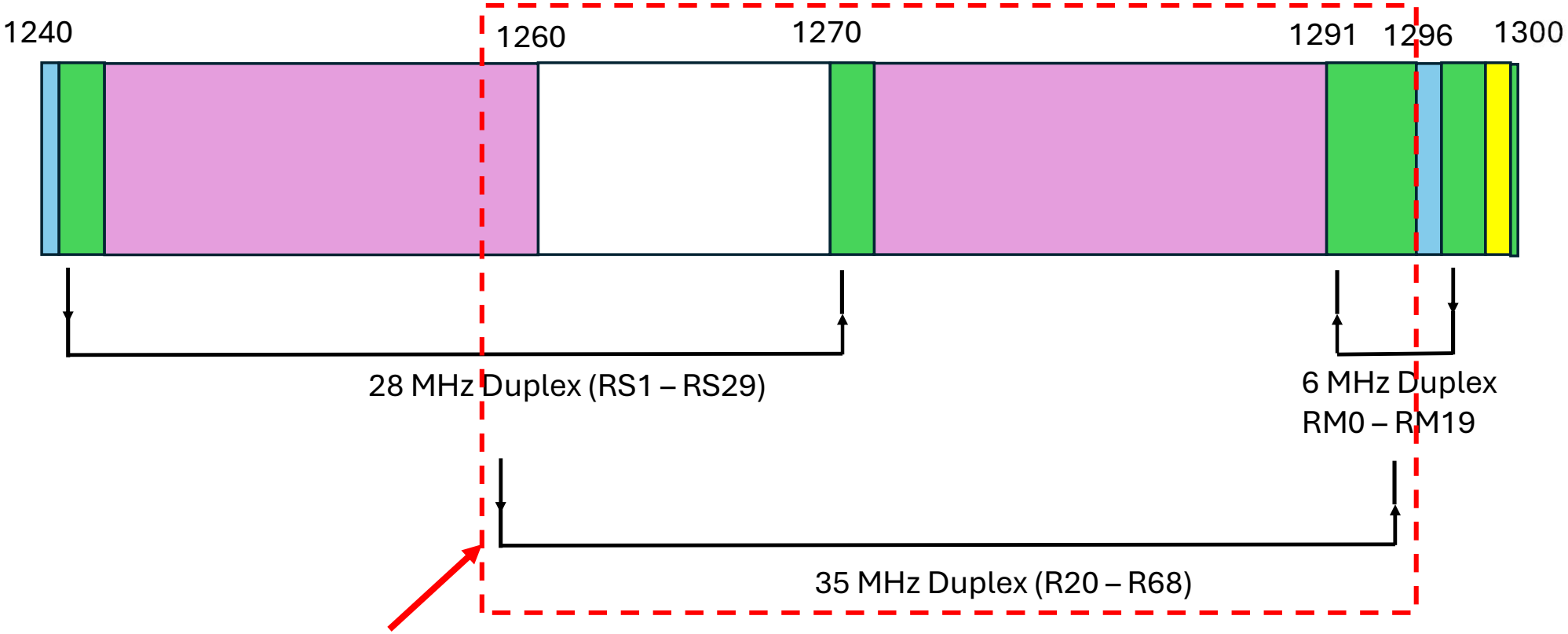
Medium BW up to 20kHz

Wide BW up to 150kHz

Broadband for ATV etc.

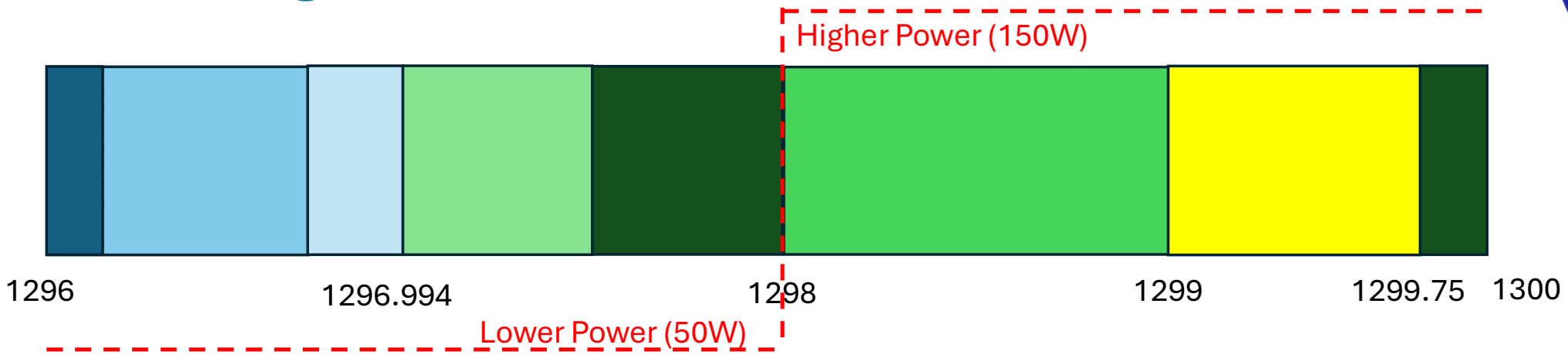
The IARU “VHF and above” Committee C5 will start the initial band plan discussions at the IARU Region 1 Interim Meeting, April 24-25.

Affected parts of the current band



In this range 1258 – 1296 MHz, very low power (in practice no emissions) according to ITU-R M.2164 and Draft ECC Decision(25)01.

Zooming in on 1296 – 1300 MHz



MGM and Telegraphy + EME

MGM and Telegraphy and SSB

Beacon Exclusive

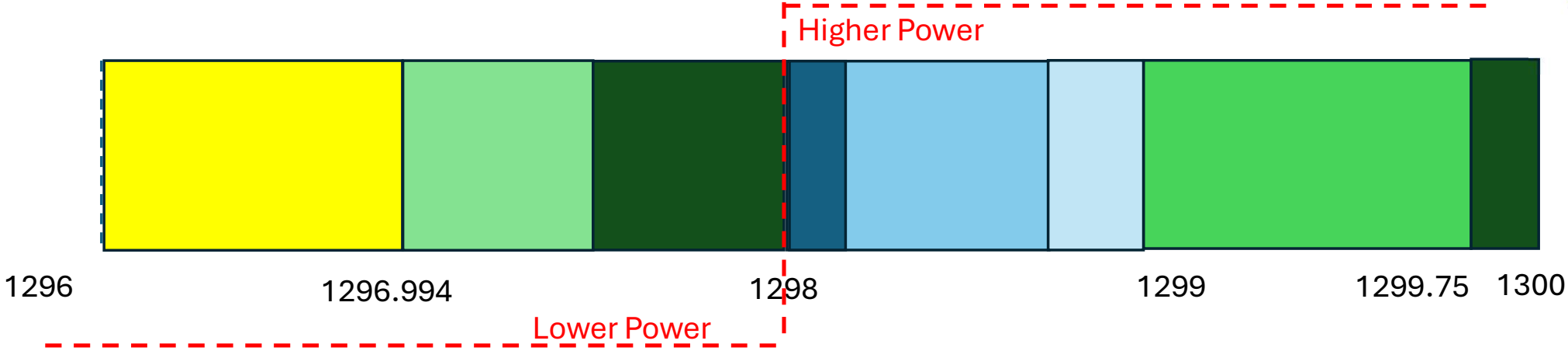
RM0 to RM19 Repeater outputs

19 + 8 Simplex channels

Mixed analogue or digital use in 25 kHz channels and RS1 to RS39 (?)

5 x150kHz channels for high speed Digital Data

[Alternative] plan for 1296 – 1300 MHz



MGM and Telegraphy + EME

MGM and Telegraphy and SSB

Beacon Exclusive

RM0 to RM19 Repeater outputs

19 + 8 Simplex channels

Mixed analogue or digital use in 25 kHz channels and RS1 to RS39 (?)

[x] x150kHz channels for high speed Digital Data

That’s it!

- Thanks
- 73 G4SJH

Reminder of ITU-R Recommendation M.2164