

ITU activities to allocate additional RF for 5G, above 24 GHz

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Additional Spectrum is most critical for IMT-2020

- RF below 1 GHz provides coverage and wall penetration
- RF between 1 GHz and 6 GHz is the most popular
- RF above 24 GHz provides capacity

WRC-19 agenda item 1.13

to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **238 (WRC-15)**

Conference Preparatory Meeting CPM19-1
Decision to establish Task Group 5/1 and ToR
Invites ITU-R SG 5 to establish TG 5/1

ITU-R SG 5
Establishes Task Group 5/1 and approves ToR
Elects Chairwoman

Activities under WRC-19 AI 1.13

Relevant ITU-R Working Parties

Terrestrial component of IMT:

- Spectrum needs
- Technical and operation characteristics including protection criteria
- Deployment scenarios

Existing services (also adjacent bands):

- Technical characteristics
- Protection criteria

All services and relevant frequency bands:

- Propagation models for sharing studies

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TG 5/1 Terms of Reference



- Conduct sharing and compatibility studies in accordance with Res. 238 (WRC-15)
- Develop draft CPM-text under WRC-19 AI 1.13

TG 5/1-1

23-24 May 2016
Structure &
Working methods

TG 5/1-2

15-23 May 2017

TG 5/1-3

19-28 Sept 2017

TG 5/1-4

17-26 Jan 2018

TG 5/1-5

2-11 May 2018

TG 5/1-6

20-29 Aug 2018

Studies

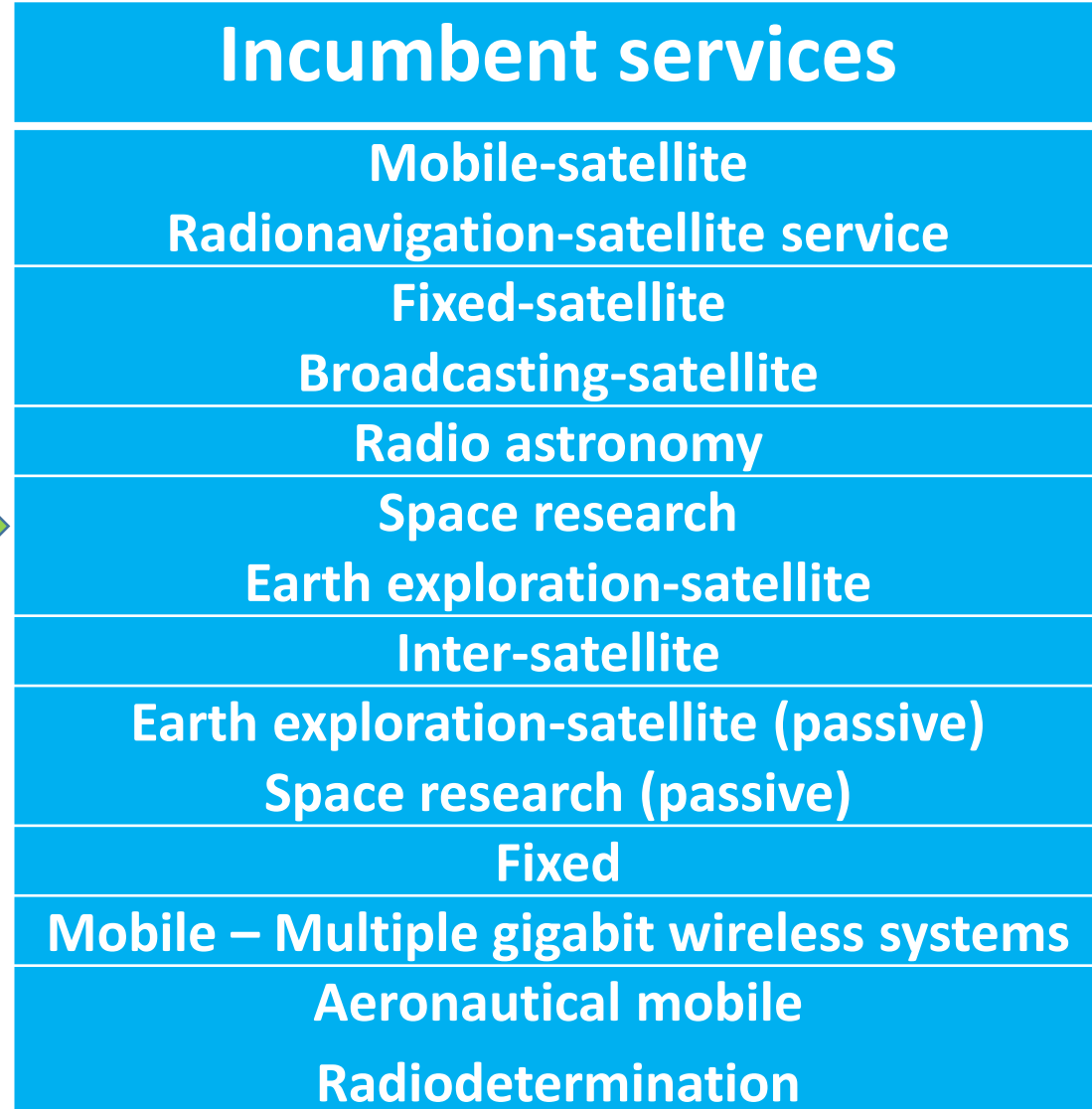
CPM text

CPM text provides the international radio regulatory solutions to allocate to the mobile service and identify RF for IMT in particular frequency bands

CPM19-2, 18-28 Feb 2019

World Radio Conference WRC-19, 28 Oct-22 Nov 2019

WRC-19 AI 1.13 sharing & compatibility studies



24.25 GHz



86 GHz

IMT frequency bands before WRC-15

Frequency bands (bandwidth) in MHz	RR provisions identifying the band for IMT	Remarks for APT Member countries
450-470 (20)	5.286AA	ALL countries
698-960 (262)	5.312A, 5.313A, 5.316B, 5.317A	698-790 (10), 790-960 (ALL)
1 710-2 025 (315)	5.384A, 5.388	ALL
2 110-2 200 (90)	5.388	ALL
2300-2400 (100)	5.384A	ALL
2500-2690 (190)	5.384A	ALL
3400-3600 (200)	5.430A, 5.432A, 5.432B, 5.433A	3400-3500 (9), 3500-3600 (8)

New IMT frequency bands agreed at WRC-15

WRC - 15



Frequency band (MHz)	Bandwidth (MHz)	R1	R2	R3
470 – 608	138		some	
614 – 698	84		some	
1427 – 1452	25	any	any	any
1452 – 1492	40	some	any	any
1492 – 1518	26	any	any	any
3300 – 3400	100	some	some	some
3600 – 3700	100		some	
4800 – 4990	190		some	some

25 July 2018

All IMT frequency bands

Frequency band (MHz)	Bandwidth (MHz)
450-470	20
470-608	138
614-698	84
698-960	262
1427-1452	25
1452-1492	40
1492-1518	26
1710-2025	315
2110-2200	90
2300-2400	100
2500-2690	190
3300-3400	100
3400-3600	200
3600-3700	100
4800-4990	190
	1,880 (not equally spread over the 3 Regions)

Broadband applications in the mobile service (WRC-19 agenda items 1.13 and 1.16)

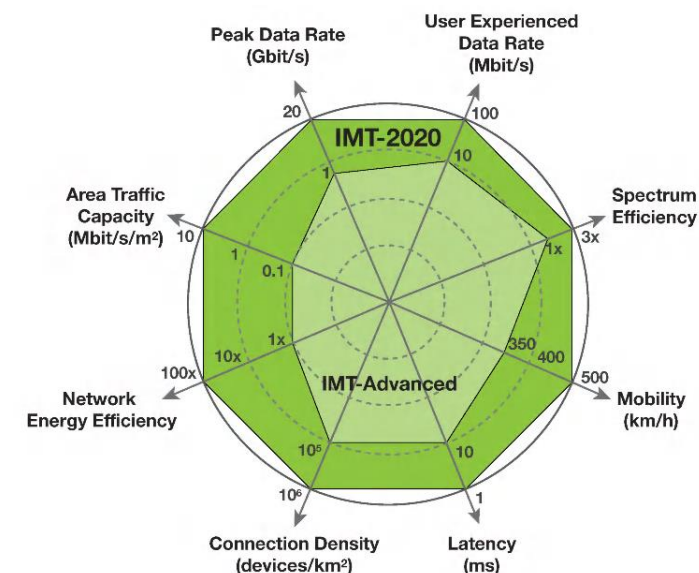


The following bands, which are already allocated to mobile, will be studied with a view to an **IMT-2020** identification:

- 24.25 – 27.5 GHz
- 37 – 40.5 GHz
- 42.5 – 43.5 GHz
- 45.5 – 47 GHz
- 47.2 – 50.2 GHz
- 50.4 – 52.6 GHz
- 66 – 76 GHz
- 81 – 86 GHz

The following bands will also be studied, although they do not currently have global mobile allocations:

- 31.8 – 33.4 GHz
- 40.5 – 42.5 GHz
- 47 - 47.2 GHz



New Propagation Recommendations developed mainly for A.I. 1.13

[P.2040](#)

Effects of building materials and structures on radiowave propagation above about 100 MHz

[P.2041](#)

Prediction of path attenuation on links between an airborne platform and Space and between an airborne platform and the surface of the Earth

[P.2108](#)

Prediction of Clutter Loss

[P.2109](#)

Prediction of Building Entry Loss

Conclusion

WRC-19 agenda item 1.13: to consider identification of frequency bands for the future development of IMT, including possible additional allocations to the mobile service on a primary basis.

The 24.25 – 27.5 GHz band seems the most suitable, as it is the lowest and some countries (US 28 GHz, S. Korea, China?, Japan?) already use it for 5G. EU agreed to open up the 3.6 and 24.25-27.5 GHz bands by 2020

Maximum channel bandwidth equals 400 MHz and capacity is 40 Gbit/s

The presentation detailed preparations guiding the CPM meeting on 18-28 Feb 2019 and other ITU activities to allocate additional RF for 5G, above 24 GHz at the 20 (WRC-19 28 Oct-22 Nov 2019)

RF-EMF for 5G above 6 GHz may be considered when responding to ICNIRP changes

Thanks to Sergio Buonomo, counsellor for ITU R SG5, for providing helpful slides

Any Questions?