

# Results of RA-07/WRC-07

**Moscow**  
**26-29 November 2007**

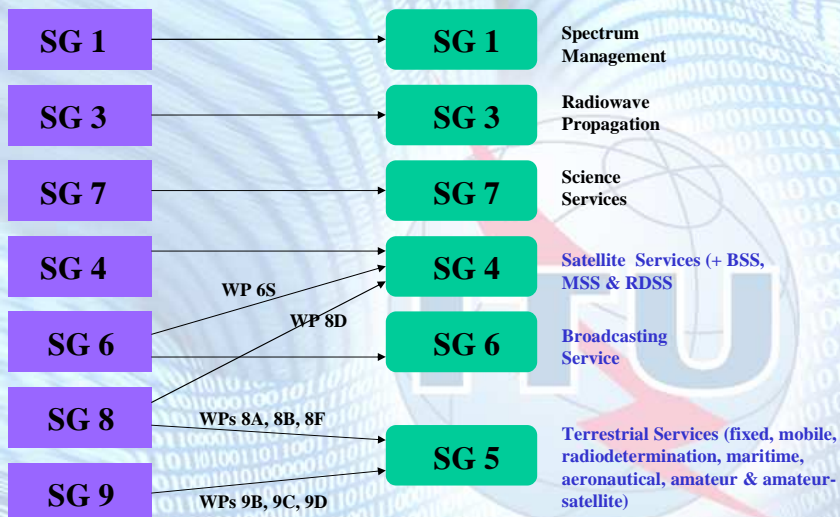
*Nangapuram Venkatesh*  
Counsellor, ITU-BR



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## RA - 07

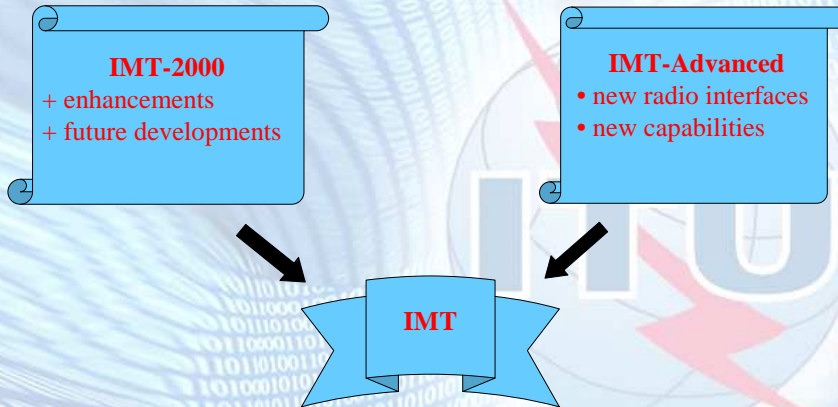


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## Resolution ITU-R 56

### Naming for International Mobile Telecommunications



## Resolution ITU-R 57

### Principles for the process of development of IMT-Advanced

- definition of minimum technical requirements and evaluation criteria
- invitation to ITU-R Members (and other orgs.) through a Circular letter to propose candidate radio interface technologies
- evaluation by ITU-R (+ other orgs.) of the technologies proposed
- consensus building to achieve harmonization
- development of IMT-Advanced radio interface specifications Recommendations (c.f. paralleling Rec. M.1457 for IMT-2000)

**Resolution ITU-R 57 (continued)**

- review of technical requirements and evaluation criteria in the light of technological advances and changes in market requirements
- ongoing process whereby specifications updated in the light of new proposals

Same approach as  
for IMT-2000

Viewed positively by  
Industry

Recommendation ITU-R M.1457-7 approved,  
with the addition of a 6<sup>th</sup> radio interface

- OFDMA TDD WMAN - a subset of IEEE 802.16 (WiMAX) specifications

## WRC - 07

### WRC-07 Agenda Item 1.4

#### For terrestrial component:

#### IMT spectrum requirement for year 2020:

1280-1720 MHz, including existing allocations

#### Candidate frequency bands:

410-430, 450-470, 470-806/862 MHz

2.3-2.4, 2.7-2.9, 3.4-4.2, 4.4-4.99 GHz

#### Sharing studies: No general agreement - studies continuing

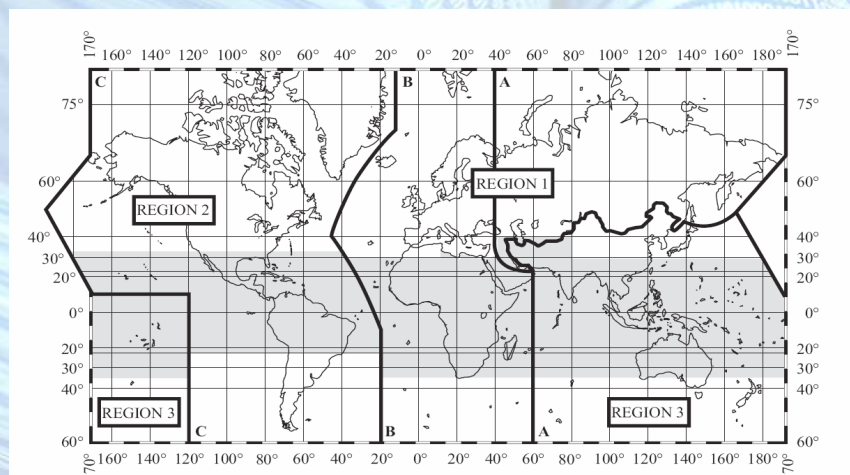
#### Methods to satisfy Agenda:

1. Identify bands by footnote for root name IMT (IMT-2000 + IMT-Advanced)
2. Identify bands by footnote specifically for IMT-2000 and IMT-Advanced
3. Use existing or future primary allocation to MS + new WRC Resolution/Recommendation
4. No change to RR. Could be applied on a band-by-band basis to all or parts of any of the candidate frequency bands

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## ITU Regions

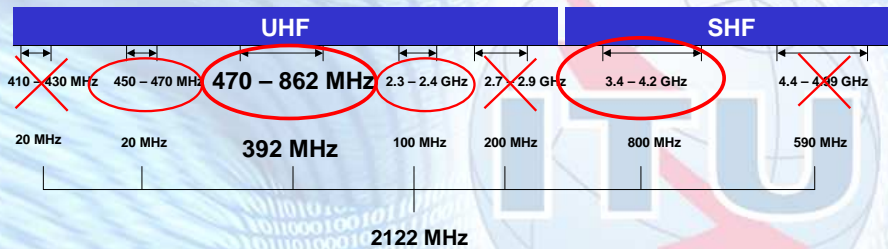


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## WRC - 07 - Agenda Item 1.4

For the terrestrial component for world wide allocation



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## Agenda item 1.4 / UHF

### Results in Region 1

- Allocation added to MS in 790-862 MHz sub-band on co-primary basis with BC
- Mod footnote 5.317A
  - Identification of the sub-band for IMT
  - No priority for IMT w.r.t. other services / applications
- New footnote 5.XXX
  - Allocation is effective as of 17 June 2015
  - Use of MS stations subject to successful application of GE06 procedures

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## Agenda item 1.4/UHF (continued 1)

### Results in Region 1 ...

- Mod footnote 5.316 to limit its validity until 16 June 2015 (gives primary allocation to MS in many Region 1 countries) but secondary w.r.t. other countries
- Add footnote 5.316A: additional countries to allocate MS as of WRC-07, effective until 16 June 2015 (POL & LIT subject to agreement from Russia); complementary to 5.316 to include additional Region 1 countries

## Agenda item 1.4/UHF (continued 2)

### Results in Region 1 ...

- Resolution 224 (linked to 5.XXX and 5.317A)
  - MS should not interfere with BC or claim protection from BC in GE06 Plan
  - Deployment of MS should not prevent the inclusion of new entries in GE06 Plan
- Resolution COM4/13 linked to 5.XXX and 5.317A on the sharing studies to be performed and to report to WRC-11
- Joint Task Group 5-6 created to carry out sharing studies referred to in COM4/13

## Agenda item 1.4/UHF (continued 3)

Allocation to services		
Region 1	Region 2	Region 3
476-510 BROADCASTING	476-512 BROADCASTING Fixed Mobile 5 292 MOD 5 293	476-505 FIXED MOBILE BROADCASTING
	512-608 BROADCASTING 5 297	5 291 5 298
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	585-610 FIXED MOBILE BROADCASTING RADIO NAVIGATION 5 149 5 305 5 306 5 307
	614-698 BROADCASTING Fixed Mobile MOD 5 293 5 309 ADD 5 311A	610-690 FIXED MOBILE MOD 5 317A ADD 5 317T BROADCASTING
5 149 5 201A 5 294 5 296 5 300 5 302 5 304 5 306 ADD 5 311A 5 312	698-806 BROADCASTING Fixed MOBILE MOD 5 317A →ADD 5 317U	
790-862 FIXED BROADCASTING MOBILE except aeronautical mobile ADD 5 333X MOD 5 317A	MOD 5 293 5 309 ADD 5 311A	
5 312 5 314 5 315 MOD 5 316 ADD 5 316A 5 319	806-890 FIXED MOBILE MOD 5 317A BROADCASTING	
862-890 FIXED MOBILE except aeronautical mobile MOD 5 317A BROADCASTING 5 322		
5 319 5 323	5 317 5 318	5 149 5 305 5 306 5 307 ADD 5 311A 5 320

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## Agenda Item 1.4 / C Band

	A	B	C	D	E	F	G	H	I	J
1	C BAND INPUT DOCS BAR CHART - VERSION 08									
2	26 oct07									
3									NOC	Some countries
4	Doc No	Countries	34	35	36	37	38	39	40	41
5	1044	CEPT	1	1	1	1	1	1	1	1
7	13	CANADA	1	1	1	1	1	1	1	1
9	14	CITEL	1	1	1	1	1	1	1	1
11	16	RCC approx	1	1	1	1	1	1	1	1
13	19	RUSSIA	1	1	1	1	1	1	1	1
15	25	MEXICO	1	1	1	1	1	1	1	1
17	27	KEN UGN TNZ	1	1	1	1	1	1	1	1
19	33	INDONESIA	1	1	1	1	1	1	1	1
21	41	APT	1	1	1	1	1	1	1	1
23	43	AFCP (ATU)	1	1	1	1	1	1	1	1
24		CUBA	1	1	1	1	1	1	1	1
27	47	BHR JOR OMA	1	1	1	1	1	1	1	1
29	53	ARS UAE KWT	1	1	1	1	1	1	1	1
31	54	SADC	1	1	1	1	1	1	1	1
33	55A3	BRAZIL	1	1	1	1	1	1	1	1
34		LEB, QATAR	1	1	1	1	1	1	1	1
37	57*	NIGERIA *15*	1	1	1	1	1	1	1	1
38										
39	58	TUNISIA	1	1	1	1	1	1	1	1
41	60	NIGERIA	1	1	1	1	1	1	1	1
42										
43	65	IRAN	1	1	1	1	1	1	1	1
44										
45	69	UKRAINE	1	1	1	1	1	1	1	1
46										
47	76A2	EGYPT	1	1	1	1	1	1	1	1
48										
49	82	KOR JPN SGP	1	1	1	1	1	1	1	1
50										
51	83	KOR JPN	1	1	1	1	1	1	1	1
52										

- Many different positions and therefore again very difficult to find a world wide allocation
- Clear strong support to No Change in the 3.8-4.2 GHz from many countries
- Proponents of protection of satellite networks were all fighting against an allocation for IMT.

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## Agenda Item 1.4 / C Band

- No change to table of frequency allocations
- New country footnotes 5.AAA for some Region 1 countries (not RCC countries) to allocate MS in the 3.4-3.6 GHz band
- IMT should respect a maximum interfering PFD level
- New country footnotes for some Region 2 & 3 countries, specifying IMT identification and interfering PFD level
- Not on WRC-11 agenda

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## Agenda Item 1.9

### **Sharing between space and terrestrial services in the band 2 500 – 2 690 MHz**

- Tighter PFD limits introduced for BSS in Table 21-4 of Article 21
- To avoid placing undue constraints on the satellite services, Resolution COM4/12 provides for application of pre-WRC-07 PFD limits for certain satellite networks listed
- Footnote 5.384A modified to identify 1 710-1 885, 2 300-2 400 and 2 500-2 690 Mhz bands for IMT implementation

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## Resolutions modified - 1

- Resolution 212 (Rev. WRC-07) recognizes availability of 230 Mhz for IMT implementation in the bands 1 885-2 025 MHz and 2 110-2 200 MHz and invites further ITU-R studies on IMT, with focus on meeting telecommunication needs of developing countries and rural areas
- Resolution 221 (Rev. WRC-07): modified to include generic reference to IMT and removal of Table of HAPS characteristics, which has been included Appendix 4

## Resolutions modified - 2

- Resolution 223 (Rev. WRC-07): recognizes identification of IMT in bands 1 710-1 885, 2 300-2 400 and 2 500-2 690 Mhz, that other services operate in these bands and invites ITU-R to study sharing and enhancement of IMT, particularly to meet needs of developing countries and rural areas
- Resolution 224 (Rev. WRC-07): asks for sharing studies in the UHF sub-bands (seen earlier) between MS and BC and to develop harmonized frequency arrangements in the 450-470 MHz band

## Summary

- Positive outcome for IMT spectrum allocation issues, particularly in UHF band
- SHF band outcome - C Band - not so good immediately, but footnotes for the 3 400- 3 600 GHz band provide coordination mechanism for introduction of IMT
- No clear winners but all services got something

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## Conclusion

- Have focused on spectrum allocation for IMT but the WRC-07 dealt with many other issues
- About 30 Agenda Items were considered, related to almost all terrestrial and space radio services, like
  - Future generations of mobile telephony
  - Aeronautical telemetry and telecommand systems
  - Satellite services including meteorological applications, FSS plan,
  - Maritime distress and safety signals - international regulations were reviewed
  - Digital broadcasting
  - Use of radio in disaster prediction and detection

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