

## **PART 1A - AGENDA ITEM 1.4 - IMT-2000**

*Agenda Item 1.4: to consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the results of ITU-R studies in accordance with Resolution 228 (Rev.WRC-03)*

### **Issues**

Estimate the spectrum requirements and evaluate potential frequency ranges suitable for the future development of IMT-2000 and systems beyond IMT-2000. This should cover satellite and terrestrial component.

### **Introduction**

1. WRC-07 will consider under agenda item 1.4 frequency-related matters for the future development of IMT 2000 and systems beyond IMT 2000 taking into account the results of ITU-R studies in accordance with Resolution 228 (Rev.WRC-03). The CPM Report includes the results of the ITU-R studies on the spectrum requirements and potential frequency ranges suitable for the future development of IMT-2000 and systems beyond IMT- 2000.
2. A new name of “IMT-Advanced” for those systems, system components, and related aspects that include new radio interface(s) that support the new capabilities of systems beyond IMT-2000, has been proposed as detailed in the draft Resolution ITU-R [IMT.NAME] that will be considered for approval at the 2007 Radiocommunication Assembly. This draft Resolution clarifies that the term “IMT-2000” includes the future development of IMT-2000 and that “IMT” comprises both IMT-2000 and IMT-Advanced.
3. The capabilities of IMT-Advanced (mobile access capabilities and new nomadic/local area wireless access capabilities) are envisaged to handle a wide range of supported data rates according to economic and service demands in multi-user environments with target peak data rates of up to approximately 100 Mbit/s for high mobility such as mobile access and up to approximately 1 Gbit/s for low mobility such as nomadic/local wireless access.
4. In the ITU-R study, the predicted total spectrum bandwidth requirement for both existing mobile cellular systems, including pre-IMT-2000 and IMT-2000 and its enhancements, and IMT-Advanced for the year 2020 was calculated for both low and high user-demand scenarios to be 1 280 MHz and 1 720 MHz, respectively. The spectrum prediction is based on an assumption of one network deployment. In case of several parallel network deployments in a country, spectrum requirements will be higher. CEPT supports the high user-demand scenario.
5. As the amount of spectrum currently identified for terrestrial cellular use in Europe is 585 MHz comprising the 900 MHz, 1800 MHz, the 2 GHz and the 2.6 GHz spectrum bands, the results show that additional spectrum beyond that identified for IMT-2000

at WARC-92 and WRC-2000 is required. In the case of the high user-demand scenario this requirement is equivalent to additional spectrum of 1135 MHz.

6. The WARC-92 identified (RR 5.388) the frequency bands 1885 – 2025 MHz and 2110 – 2200 MHz for IMT-2000, including 1980 – 2010 MHz (uplink) and 2170 – 2200 MHz (downlink) for the satellite component. This is reflected in Resolution 212, which was drafted at WARC-92 and amended at WRC-95 and WRC-97.
7. The WRC2000 identified the frequency bands 862 - 960 MHz (RR 5.317A), 1710 - 1805 MHz and 2500 - 2690 MHz, (RR 5.384A) for IMT-2000. These identifications are also reflected in WRC2000 Resolutions 223 and 224.
8. In addition to bands already identified for IMT-2000, the following bands, some of which may need a primary allocation to the mobile service, are being considered as candidate bands for the terrestrial component of IMT: 410-430 MHz, 450-470 MHz, 470-806/862 MHz, 2.3-2.4 GHz, 2.7-2.9 GHz, 3.4-4.2 GHz and 4.4-4.99 GHz. In all of these bands, administrations have implemented various systems and services, as listed in Report ITU-R M.2079, so that these bands are not currently available for the worldwide or Regional deployment of IMT-2000 and IMT-Advanced.
9. For the satellite component of IMT, studies have been undertaken to assess the spectrum requirements for the period 2010 to 2020 and have identified a requirement for additional spectrum. Europe does not however, consider it necessary to propose additional spectrum to satisfy MSS requirements under agenda item 1.4, but seeks identification of the existing MSS bands in the ranges 1 518-1 525 MHz and 1 668-1 675 MHz, recognizing the difficulties of using the 1 668-1 675 MHz for such purpose within CEPT.
10. For the terrestrial component, the purpose of the WRC-2007 should be to identify bands globally to the greatest extent possible in order to facilitate worldwide roaming and reduction of equipment-cost through economies of scale.
11. For the terrestrial component, the identification of the additional bands should be done through (a) new footnote(s) in Article 5, referring to a supporting resolution. It is believed that this approach, whereby the identification of spectrum is made by a footnote in association with a RR Resolution, rather than the use of a RR Resolution alone which is generally considered to apply to transitional matters, gives the most stable identification of spectrum for IMT. This is important to facilitate global roaming and global economies of scale in the manufacture of equipment, and is particularly important for developing countries to gain the greatest benefit from IMT.
12. On the basis that IMT is the root name for both IMT-2000 and IMT-Advanced and the technologies associated with those terms, IMT should be used as the application name in the Radio Regulation footnotes. A footnote would be used to identify the specific spectrum bands for IMT. According to CPM Report Method 1A CEPT supports that existing IMT-2000 spectrum could be identified generically for IMT.
13. Particular issues for 3400 - 3800 MHz

14. Particular issues for 470 - 862 MHz
15. Suppression of Resolution 228
16. NOC for bands 410 - 430 MHz, 2300 - 2400 MHz, 2700 - 2900 MHz and 4400 - 4990 MHz

## **Proposals**

This proposal is divided into six parts:

- the first part addresses that there is no need to modify the footnotes 5.388, 5.317A and 5.384A and Resolutions 212, 223 and 224, apart from the consequential action of implementing the method adopted by WRC-07, in line with the decisions of the Radiocommunication Assembly on the Resolution on Naming.
- the second part addresses proposals for identification of bands to fulfil the full range of requirements of IMT-Advanced;
- the third part addresses spectrum to improve the coverage for IMT and the regulatory provisions for the band 470 - 862 MHz;
- the fourth part addresses the spectrum for the satellite component;
- the fifth part addresses the need to suppress Resolution 228;
- the sixth part addresses proposals for a change for allocations to services in Article 5.

**Proposals submitted by the following administrations**

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**Agenda item 1.4**

**Part 1A1 - Proposals on provisions for spectrum already identified for IMT-2000**

**NOC EUR/1.4/1**

No. **5.317A**

No. **5.384A**

No. **5.388**

Resolution 212

Resolution 223

Resolution 224

***Reasons:***

CEPT considers that there is no need to modify these footnotes and Resolutions, apart from the consequential action of implementing the method adopted by WRC-07, in line with the decisions of the Radiocommunication Assembly on the Resolution on Naming. This should consist of the systematic replacement of “IMT-2000” with IMT, except for references to the past.

**Proposals submitted by the following administrations**

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**Agenda item 1.4**

**Part 1A2- Proposals for identification of bands to fulfil the full range of requirements of IMT-Advanced**

**Proposals submitted by the following administrations**

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**Agenda item 1.4**

**Part 1A3 - Proposals for identification of bands to improve the coverage for  
IMT**

Proposals submitted by the following administrations

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Agenda item 1.4

PART 1A4 - Proposal for the identification of bands for the satellite component

ARTICLE 5

MOD EUR/1.4/XX

1 300-1 525 MHz

Allocation to services		
Region 1	Region 2	Region 3
<b>1 518-1 525</b> FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B <u>MOD 5.351A</u> 5.341 5.342	<b>1 518-1 525</b> FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B <u>MOD 5.351A</u> 5.341 5.344	<b>1 518-1 525</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B <u>MOD 5.351A</u> 5.341

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SUP EUR/1.4/XX

5.348C

MOD EUR/1.4/XX

**5.351A** For the use of the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212** (Rev.WRC-97) and **225** (Rev.WRC-07). (WRC-2000)

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1 660-1 710 MHz

Allocation to services			
Region 1	Region 2	Region 3	
1 668-1 668.4	MOBILE-SATELLITE (Earth-to-space), MOD 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A 5.379D		Deleted: 5.348C
1 668.4-1 670	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space), MOD 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E		Formatted: Indent: Left: 0 pt, Hanging: 153 pt Deleted: 5.348C
1 670-1 675	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 MOBILE-SATELLITE (Earth-to-space), MOD 5.351A 5.379B 5.341 5.379D 5.379E 5.380A		Deleted: 5.348C

RESOLUTION 225 (Rev.WRC-03)

Use of additional frequency bands for the satellite component of IMT

The World Radiocommunication Conference (Geneva, 2003),

*considering*

a) that the bands 1980-2010 MHz and 2170-2200 MHz are identified for use by the satellite component of International Mobile Telecommunications (IMT) through No. 5.388 and Resolution 212 (Rev.WRC-97);

b) Resolutions 212 (Rev.WRC-97), 223 (WRC-2000) and 224 (WRC-2000) on the implementation of the terrestrial and satellite components of IMT-2000;



c) that the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz are allocated on a co-primary basis to the mobile-satellite service and other services in accordance with the Radio Regulations;

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d) that distress, urgency and safety communications of the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (R) service have priority over all other mobile-satellite service communications in accordance with Nos. **5.353A** and **5.357A**,

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*recognizing*

a) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite, fixed (including point-to-multipoint distribution/communication systems) and mobile are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;

b) that other services such as the mobile service and radiodetermination-satellite service are in operation or planned, in accordance with the Table of Frequency Allocations, in the bands 1 525-1 559/1 626.5-1 660.5 MHz and 1 610-1 626.5/2 483.5-2 500 MHz, or in portions of those bands, and that those bands, or portions thereof, are intensively used in some countries by applications other than the IMT, satellite component, and the sharing studies within ITU-R are not finished;

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c) that studies of potential sharing and coordination between the satellite component of IMT, and the terrestrial component of IMT, mobile-satellite service applications and other high-density applications in other services such as point-to-multipoint communication/ distribution systems in the bands 2 500-2 520 MHz and 2 670-2 690 MHz bands are not finished;

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d) that the bands 2 520-2 535 MHz and 2 655-2 670 MHz are allocated to the mobile-satellite, except aeronautical mobile-satellite, service for operation limited to within national boundaries pursuant to Nos. **5.403** and **5.420**;

e) Resolution ITU-R 47 on studies under way on satellite radio transmission technologies for IMT,

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*resolves*

1 that, in addition to the frequency bands indicated in *considering a*) and *resolves 2*, the frequency bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz and 2 483.5-2 500 MHz may be used by administrations wishing to implement the satellite component of IMT, subject to the regulatory provisions related to the mobile-satellite service in these frequency bands;

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2 that the bands 2 500-2 520 MHz and 2 670-2 690 MHz as identified for IMT-2000 in No. **5.384A** and allocated to the mobile-satellite service may be used by administrations wishing to implement the satellite component of IMT; however, depending on market developments, it may be possible in the longer term for bands 2 500-2 520 MHz and 2 670-2 690 MHz to be used by the terrestrial component of IMT;

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3 that this identification of frequency bands for the satellite component of IMT does not preclude the use of these bands by any applications of the services to which they are allocated and does not establish priority in the Radio Regulations,

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*invites ITU-R*

1 to study the sharing and coordination issues in the above bands related to use of the mobile-satellite service allocations for the satellite component of IMT, and the use of this spectrum by the other allocated services, including the radiodetermination-satellite service;

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2 to report the results of these studies to a future world radiocommunication conference,

*instructs the Director of the Radiocommunication Bureau*

to facilitate to the greatest extent possible the completion of these studies.

**Reasons:** To identify the MSS bands 1 518-1 525 MHz and 1 668-1 675 MHz as being available for use by the satellite component of IMT.

**Proposals submitted by the following administrations**

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**Agenda item 1.4**

**PART 1A5 - Proposal for suppression of Resolution 228**

SUP            EUR/1.4/xx

Resolution 228

**Reasons:** If WRC-07 completes all aspects of agenda item 1.4, then Resolution 228 will no longer be needed.

**Proposals submitted by the following administrations**

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**Agenda item 1.4**

**PART 1A6 - Proposals for No change for allocations to services in Article 5**

ARTICLE 5

NOC     EUR/1.4/A1

**410-460 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>410-420</b>	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	
<b>420-430</b>	FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	

**Reasons:** This band will not be available for IMT in most of the CEPT countries because of current use by PAMR/PMR systems.

**2 170-2 520 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>2 300-2 450</b>	<b>2 300-2 450</b>	
FIXED	FIXED	
MOBILE	MOBILE	
Amateur	RADIOLOCATION	
Radiolocation	Amateur	
5.150 5.282 5.395	5.150 5.282 5.393 5.394 5.396	
5.405 5.407 5.412 5.414	5.404 5.407 5.414 5.415A	

**Reasons:** The band 2.3-2.4 GHz is used for aeronautical telemetry in several CEPT countries and such use is continuously increasing (see WRC-07 agenda item 1.5). Such applications have to operate in this frequency range and would put severe constraints on IMT over very large areas. In addition, the size of the band is limited and has been so far only envisaged in individual countries for some TDD technologies.

NOC      EUR/1.4/A4

**2 700-4 800 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>2 700-2 900</b>	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	

**Reasons:** This frequency band was extensively studied in preparation for WRC2000 for introduction of IMT-2000. Radars for civil aviation, meteorological and defence applications are widely used in this frequency band and can not be moved in another band and sharing with radars was shown as not feasible.

NOC      **EUR/1.4/A5**

**2 700-4 800 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>4 400-4 500</b>	FIXED MOBILE	
<b>4 500-4 800</b>	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE	

**Reasons:** This band is extensively used for fixed and mobile applications and is not available even in the long term in many CEPT countries. Moreover, the band 4.5-4.8 GHz is also planned for FSS as part of appendix 30B.

NOC      **EUR/1.4/A6**

**4 800-5 570 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>4 800-4 990</b>	FIXED MOBILE 5.442 Radio astronomy 5.149 5.339 5.443	

**Reasons:** This band is extensively used for fixed and mobile applications and is not available even in the long term in many CEPT countries.