



WRC

Agenda Item 1.1

to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution 233 (WRC-12)

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Cairo 16 – 17 February 2015

Requirements



- Meet expected growth that is driven to a large extent by audiovisual content
- Available in a timely manner
- Harmonized worldwide
- Preferably adjacent to existing allocations
- Consistent with existing mobile standards
 - Mobile telephony
 - WiFi

Estimated Spectral Needs



Source	US	Australia	Russia	Japan	China	Huawei, Ericsson, Nokia	GSMA	India
Date	2014	2020	2020	2020		2020	2020	
Total:		1 081 MHz	1 065 MHz	2 020 MHz	600-800 Mz (by 2015) 1 700-2 100 MHz (by 2020)	1 240 MHz (Low user density) 1 880 MHz (High user density)	1 600-1 800 MHz	
Additional:	275 MHz	300 MHz	385 MHz					300 MHz (by 2017) 200 MHz (by 2020)

- Agreed ITU-R Study Results

- 1 340 to 1 960 MHz for IMT by 2020 dependent on the user density
- 880 MHz for RLANs by 2018

Expected Benefits



- Multimedia applications
 - Mobile telemedicine
 - Teleworking
 - Distance learning
- Reduce digital divide between urban & rural areas
- Improved RLAN performance/capacity
- Continued growth of the mobile market



Frequency Ranges Identified

470 – 674/698 MHz

1 350 – 1 400 MHz

1 427 – 1 525 MHz

(1 427-1 452, 1 452-1 492, 1 492-1 518, 1 518-1 525MHz)

1 695 – 1 710 MHz

2 700 – 2 900 MHz

3 300 – 4 200 MHz

(3 300-3 400, 3 400-3 600, 3 600-3 700, 3 700-3 800, 3 800-4 200 MHz)

4 400 – 4 990 MHz

(4 400-4 500 MHz, 4 500-4 800 MHz, 4 800-4 990 MHz)

5 350 – 5 470 MHz

5 725 – 5 850 MHz

5 925 – 6 425 MHz

En-route Radar (adjacent band)

Airport /Windfarm/Met Radar

} Radio Altimeters (Adjacent Band)

Weather Radar (Airborne/Land based)

Draft CPM Methods (1)



The following draft methods may be applied to potential candidate frequency bands:

- **Method A** – No change, which may be accompanied by reasons.
- **Method B** – Make an allocation to the MS on a primary basis (either by a new allocation or the upgrade of an existing secondary allocation) with a view to facilitate the development of terrestrial mobile broadband applications.
 - **Method B-ToA** - Make an allocation to the MS on a primary basis in the Table of Frequency Allocations.
 - **Method B-FN** - Make an allocation to the MS on a primary basis in a footnote.
- **Method C** - To identify the frequency band for IMT either in a new or existing footnote. This Method can be applied individually if there is already a primary mobile allocation or in conjunction with Method B.

Draft CPM Methods (2)



Band (MHz)	Applicable Possible Options			
	Method A	Method B-ToA	Method B-FN	Method C
470-694/698	A, A1,A2, A3	B, B1, B2, B3	B, B4	C,C1
1 350-1 400	A	B, B1	B, B1	C, C1a, C1b, C2
1 427-1 452	A			C, C1a, C1b, C2, C3
1 452-1 492	A	B	B	C, C1, C2, C3, C4
1 492-1 518	A			C, C1, C2, C3, C4
1 518-1 525	A	B	B	C, C1, C2, C3
1 695-1 710	A	B	B	C, C1
2 700-2 900	A	B Opt 1, Opt 2	B Opt 1, Opt 2	C Opt 1
3 300-3 400	A	B Opt 1	B Opt 1	C
3 400-3 600	A	B, B1, B2, B3, B4	B, B1, B2, B3, B4	C, C1, C2, C3, C4
3 600-3 700	A	B, B1, B2	B, B1, B2	C, C1, C2
3 700-3 800	A	B, B1, B2	B, B1, B2	C, C1, C2
3 800-4 200	A	B, B1, B2	B, B1, B2	C, C1, C2
4 400-4 500	A			C
4 500-4 800	A			C, C1, C2, C3
4 800-4 990	A			C
5 350-5 470	A			
5 725-5 850	A			
5 925-6 425	A			C, C1, C2, C3, C4

Aeronautical Systems Affected (1)



- **Radar General**
 - High transmit power
 - Sensitive receivers
- **L-Band Radar (1 300-1 350 MHz)**
 - En-route surveillance
 - Located in remote areas and at some airports
 - Omni directional with a range of up to 240 nmi
- **S Band Radar (2 700-2 900 MHz)**
 - Approach surveillance and windfarm mitigation
 - Located at airports and near windfarms
 - Ranges up to 40-60 nmi
- **C-band Radar (5 350-5 470 MHz)**
 - Ground based & airborne? weather radar
 - Located at airports and on-board aircraft?
 - Range 80-120 nmi

Aeronautical Systems Affected (2)



- **Radio Altimeter (4 200-4 400 MHz)**
 - Located on aircraft
 - Used in all phases of flight
 - Integral part of the automated landing system
 - Sensitive receivers
 - Ranges up to 6,000ft vertically



Where is the Work Being Done

- Globally
 - WP 5D
 - CPM
 - WRC
- Regionally
 - Africa - ATU
 - Americas – CITES
 - Arab Group – ASMG
 - Asia Pacific – APT
 - Europe – CPG PT-D
 - Russian Commonwealth – RCC
- ICAO
 - ACP WG-F



Questions