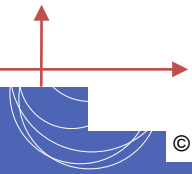


WRC19 & PROPOSED NEXT STEPS

Presenter Hakan Ohlsen
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Subject COAI / GSA Workshop, New Delhi, 22nd Jan 2020
Version



Qualcomm



NOKIA



SAMSUNG

WORLD RADIOCOMMUNICATION CONFERENCE 2019

SHARM EL-SHEIKH, EGYPT

ITU Radiocommunication Assembly (RA-19) was held October 21 – 25
WRC-19 between October 28 – November 22, and
The first Conference Preparatory Meeting for WRC-23 (CPM23/1) on November 25-26



WRC-19 was the largest WRC ever with about 3500 participants

Around 163 countries represented

At the peak of the WRC it was almost 100 meetings sessions per day!

IDENTIFICATION TO 5G (IMT) GLOBAL LEVEL

24.25 - 27.5 GHz

eventually the entire band may become available in most countries, a total amount of 3.25 gigahertz

37.0 – 43.5 GHz

the entire frequency range will not be implemented in most countries/regions, around 3 GHz is expected to be available in general

66.0 – 71.0 GHz

global identification to IMT (except possibly in some countries in Americas) – also pushed for unlicensed use for RLAN (Wi-Fi)



In total, more than

11 GHz

is thus available in most countries



IDENTIFICATION TO 5G (IMT) COUNTRY FOOTNOTES IN THE RADIO REGULATIONS



45.5 – 47.0 GHz

more than 60 countries, representing all three regions, a majority in Africa

47.2 – 48.2 GHz

all countries in Americas and with additional country footnotes for countries in Africa, Europe, Middle East and Asia-Pacific, almost 100 countries in total

Both bands have primary mobile allocation, thus, any country can implement 5G when they so wish

An additional

1.5 GHz + 1 GHz

Is identified in country footnotes

Additional countries wanted to join these footnotes, but were blocked by some countries



CANDIDATE BANDS NOT IDENTIFIED TO 5G (IMT)

31.8 – 33.4 GHz

secured for continued use for backhaul systems

47.0 – 47.2 GHz

too small for 5G

48.2 – 50.2 GHz

limited support from countries

50.4 – 52.6 GHz

passive satellite service on both sides limits possible use

71.0 – 76.0 / 81.0 – 86.0 GHz

secured for continued use for backhaul systems



WAY OUT

24.25 – 27.5 GHz

EESS protection 23.6-24 GHz

- Before September 1, 2027
-33 dBW/200MHz BS
-29 dBW/200MHz UE
- After September 1, 2027
-39 dBW/200MHz BS
-35 dBW/200 MHz UE

EESS protection @50.2-50.4 GHz
and 52.6-54.25 GHz

- **Encouragement to apply
Cat B (SM.329) spurious
limits**

EESS (passive) protection

37 – 43.5 GHz

EESS protection 36-37 GHz

- **-43 dBW/MHz and
-23 dBW/GHz**
(mandatory)
- -30 dBW/GHz
(recommended)

24.25 – 27.5 GHz; 42.5 – 43.5 GHz; 47.2 – 48.2 GHz

- Take practical measure to ensure that
 - Antennas pointing are below the horizon
 - Mechanical is tilt below the horizon
- As far as practicable select sites for BSs with >30 dBW/200 MHz EIRP per beam so that direction of maximum radiation is separated from geostationary satellite orbit within line-of-sight by +/-7.5 degrees
- Encourages to keep base station antenna patterns within the limits of approximation envelope according to M.2101

In band satellite protection

THE BAND 4800 – 4990 MHZ UPDATES OPENING UP FOR 5G USE

WRC-15

- Identified to IMT (5G) for Cambodia, Laos, Uruguay, and Vietnam
- Restrictive technical conditions prevent efficient use

WRC-19

- new countries added to footnotes, now **42 countries**
- Some countries **excluded from technical conditions** (pfd limit):
Armenia, Brazil, Cambodia, China, Russian Federation, Kazakhstan, Lao P.D.R.,
Uzbekistan, South Africa, Viet Nam and Zimbabwe. **The pfd limit do not apply to non-coastal countries**
- Additional countries expressed interest of this range
- Review at WRC-23



AGENDA ITEMS AT WRC-23 RELATED TO 5G

Fixed, Mobile and Broadcasting issues

1.1 4800 – 4990 MHz

1.2 IMT identification

1.3 3600 – 3800 MHz
mobile allocation

1.4 HIBS below 2.7
GHz

1.5 470 – 694 MHz
Region 1 broadcast
and mobile

1.1 Technical and regulatory conditions for the protection of stations of the aeronautical and maritime mobile services located in international airspace or waters (i.e. outside national territories) from 5G in the band 4 800-4 990 MHz

1.2 Potential 5G identifications:

- 3 300-3 400 MHz (footnotes Region 1, Region 2);
- 3 600-3 800 MHz (Region 2);
- 7 025-7 125 MHz (global);
- 6 425-7 025 MHz (Region 1);
- 10 000-10 500 MHz (Region 2)

1.3 Primary mobile allocation 3 600-3 800 MHz (Region 1)

1.5 Review of the spectrum use of the frequency band 470-960 MHz in Region 1, with possible regulatory actions in 470 – 694 MHz

General Topics

9.1 c IMT for fixed wireless access (FWA) under the fixed service (FS)

9.1 d Protection of EESS (passive) in the frequency band 36-37 GHz from non-GSO FSS space stations

HIBS = High altitude platform station as IMT Base Stations

AI 1.2 ON IMT IDENTIFICATION TIMELINE

March 3GPP SI "Feasibility on 7-24GHz"

2020

2021

2022

2023

WRC 2023



15 June
Parameters deadline

CPM23-2 Feb

Nov '23

IMT (& others) parameters definition

Sharing studies
Less than two years!

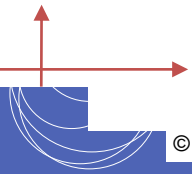
SUMMARY AND CONCLUSIONS FOR 5G (IMT)

- Successful WRC-19 with 17.25 GHz of mmWave spectrum identified to IMT
- India to consider 5G/IMT allocations in the bands; 24.25-27.5 GHz, 37-43.5 GHz, 45.5-47 GHz, 47.2-48.2 GHz, 66-71 GHz as well as 27.5-29.5 GHz
- Agreements made for EESS protection as well as for in-band satellite protection
- Opportunities for 4800-4990 MHz with 42 countries driving ecosystem development
- 3300-3800 MHz increasing attention for 5G/IMT usage, now 53 countries in all three Regions have identified the band 3300-3400 MHz
- Additional mid-band spectrum to be considered and studied towards WRC-23

SUMMARY

GSA India recommendations for discussion

- Low, mid and high bands are complementary and enable the full 5G vision
- Recognize that 5G is being deployed around the world now – time to act !
- Low bands
 - 2020. Licence / auction 700MHz
- Mid bands
 - 2020. Licence / auction 3.3-3.6 GHz
 - Target at least 80-100 MHz contiguous per operator
 - Reasonable cost to encourage rapid infrastructure deployments & longer term benefit to India
- High bands
 - Target at least 800-1000 MHz contiguous per operator/network from within 24.25-29.5 GHz
 - 2020. Prepare for licensing - sharing studies, consultation, licensing conditions, set 2021 target date
 - 2021. Licence / auction spectrum from within 24.25-29.5GHz



The Road to 5G with GSA

The Industry Voice of the Global Mobile Ecosystem

Facts - Figures - Graphs - Reports - Market Monitoring - Analysis - Advocacy - Databases... [Read More >](#)

THANK YOU

Check out <https://gsacom.com> for regular report updates

5G ecosystem update



5G licensing update

