Takeaways from WRC-23

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Outcomes

WRC-23 took place in Dubai, over the period 20 November to 15 December 2023, and was attended by over 3,900 delegates from 163 Member states. The conference approved 43 new resolutions, revised 56 existing ones, and suppressed 33 resolutions. It may well be argued that, there were no surprises in what contentious subjects were to be. Specifically, Agenda Mobile Items 1.2, 1.3, 1.5, on UHF (470-694 MHz), 3.5 GHz (3300-3800 MHz), and as importantly Upper-6 GHz (6425-7125 MHz). The main surprise was in how harmonisation is getting more difficult to attain, which is apparent from decisions relating to IMT identification by footnote. On the other hand, important outcomes can be quoted as: Identification of new spectrum for high altitude IMT stations (HIBS) on 700-900 MHz, 2 GHz and 2.6 GHz for high altitude IMT stations (HIBS), new bands for ESIMs, and for aeronautical mobile satellite services, as well as the approval of a recommendation to allow 41 countries to acquire new and usable orbital resources for satellite broadcasting.

IMT-2030 vision recommendation was also approved by the Radio Assembly (RA-23). WRC-23 eventually adopted a new study item for IMT in WRC-27, in the highly controversial bands 4400-4800 MHz (already considered and not agreed in previous Conference), 7125-8400 MHz (or parts thereof), and 14.8-15.35 GHz.

WRC-23 was marked by historic decisions from satellite perspectives, which aim to safeguard critical satellite services, and to allocate additional spectrum for new services and applications. As a clear indication of this shift, 80% of Agenda Items discussed in CPM-27, and to be discussed over the next four-year cycle, relate to satellite matters, which reflects investments and opportunities in satellite-based communications.

Upper- 6 GHz (6425-7025 / 7025-7125 MHz)

While the lower part of 6 GHz is already designated for Wi-Fi in most countries, the upper-part of the band, U6 (6425-7025 / 7025-7125 MHz), has been contentious, and may have been the most contested band in the conference. Claims of 'Victory' were also contested by both camps; GSMA representing mobile operators, and the Wi-Fi Radio Local Area Network (RLAN) community. GSMA hails the identification of U6 for IMT in every ITU Region, and states identification by countries representing around 60% of the world's population. The Wi-Fi Industry on the other hand hails victory in the adopted provision, that U6 is used by wireless access systems such as Wi-Fi, and blocking any future proposal to expand U6 for IMT identification to other countries or regions at WRC-27.

At the end, it seems more like, less and less harmonisation, particularly as some countries, such as the UK are considering hybrid IMT/5G and Wi-Fi 7 rules, with mobile data and Wi-Fi equipment sharing U6. This could be in the form of indoor/outdoor split, with Wi-Fi for indoor only, and IMT for outdoor. Geographical split is also an option, with mobile given priority in defined high-traffic locations, and Wi-Fi elsewhere.

694 MHz to 2.6 GHz for HIBS

A key milestone at WRC-23 was the identification of global spectrum in the 694-960 MHz, 1710-1885 MHz, and 2500-2690 MHz bands for HAPS, (or HIBS high-altitude IMT base stations), and to establish regulations for their operations.

UHF (470-694 MHz)

Region 1 managed to maintain a No Change Position on the band currently primarily used for TV broadcast until 2030. While GSMA welcomed identification of new low-band spectrum in 614-694 MHz, in some Arab countries and the MEA region, the European Broadcasting Union (EBU) welcomed the decision that broadcast service remains the only primary service in 470–694 MHz across ITU Region 1, for Digital Terrestrial TV and new technologies such as UHDTV. Additional country names were added for a footnote allocating the band on secondary basis for land mobile enabling Programme Making & Special Events (PMSE), and wireless multichannel audio systems (WMAS) in 79 countries of EMEA. No further studies expected for WRC-27, but a

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future agenda item was also agreed for WRC-31, which is to re-assess the needs of the band 470-694 MHz for broadcast and mobile, keeping the door open for future co-primary allocation to mobile.

3300-3800 MHz

WRC-23 did not modify the rules for accessing the band for mobile, but enabled the addition of countries to the footnote that identifies the band 3300-3400 MHz for IMT, with restrictions that makes mobile secondary to radiolocation service.

The 3700-3800 MHz band was allocated to Mobile. The band 3600-3800 MHz was also identified for IMT with similar conditions to those currently applied in 3400-3600 MHz making the band 3400-3800 MHz available for mobile broadband across multiple regions.

4800-4990 MHz

As for the 4800-4990 MHz (A.I. 1.1), WRC-23 could not agree to modifications of the PFD limits protection criteria for Aeronautical Mobile and Maritime Mobile, which left the band restricted from being used by high power IMT stations. Some administrations added their names, and some removed their names, out of the footnote that restricts the use of IMT stations.

Space Decisions

The Radio Regulations Board approved a recommendation to allow 41 countries to acquire new and usable orbital resources for satellite broadcasting. The countries were unable to use their assigned orbital slots in recent years due to factors such as lack of coordination and interference from other satellite networks.

WRC-23 also reached compromise on satellite power limit review. NGSO newcomers including SpaceX and Amazon, argue that EPFD rules are outdated, having been created over a decade ago, and constraining their constellation plans more than necessary to protect satellites in geostationary orbit (GEO). Viasat, SES, and other GEO operators, warned changing the rules would disrupt the stability of a regulatory regime that has allowed space business to proliferate in recent years.

Compromise was reached whereby Regulators will undertake technical studies for changing satellite transmission power limits, under the condition that there would not be any regulatory action resulting from them until at least 2031. Still, for NGSOs, deferring regulatory action to WRC-31 is still too long, and for GEO operators opening the door to potential regulatory action as soon as WRC-31 is too soon.

A new agenda for Mobile Satellite Service (MSS) direct to IMT mobile terminal was also agreed to be studied for WRC-27, in the frequency bands identified for IMT between 694 - 2700 MHz.

Other key decisions

Several agenda items, covering satellite related topics, were also discussed and successfully finalised in WRC-23. Most importantly, new frequencies were identified for non-geostationary fixed-satellite service Earth Stations in Motion (ESIMs), to deliver high-speed broadband on-board aircraft, vessels, trains, and vehicles. As per GSOA, decisions made during the conference will enable the power of satellite communications to be leveraged, ensure a connected future, and help connect the 2.6 billion people that are not yet online.

For Maritime and Aeronautical services, provisions were included to protect ship and aircraft mobile stations located in international airspace and waters from other stations within national territories. Additionally, to support the modernization of the Global Maritime Distress and Safety System (GMDSS), WRC-23 took regulatory actions including the implementation of e-navigation systems, to enhance distress and safety communications at sea.

A new application of MetAids (space weather) sensors was defined by WRC-23, and a new agenda for WRC-27 was agreed to study multiple bands for space weather applications, between 27.5-74.6 MHz, and in UHF 608-614 MHz.

A very interesting future agenda for WRC-27 includes a number of candidate bands for lunar orbiting and space research allocations, which paves the way for spectrum to be organised in the Radio Regulations for space research missions, and between lunar orbits and the lunar surface.

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