



中华人民共和国工业和信息化部

Ministry of Industry and Information Technology of the People's Republic of China



WRC-15 及 CPM19-1



❖ What WRC-15 for?

❖ *Allocation spectrum for a changing world*

Smart and safe infrastructure

Sustainable development : climate change /earth monitoring

Convergence of fixed and mobile

Accommodation the need of 57% people who are still offline

Broadband mobile internet and IoT



❖ Francois Rancy:

- ❖ WRC-15 mandated to review and revise the Radio Regulations ,the international treaty governing the use of radio frequency spectrum and satellite orbit resources in an rea of rapid changes in radiocommunications and the wider sphere of ICT
- ❖ The multi-stakeholder (regulators, equipment vendors, network operators, industry forums and users of spectrum) approach enables the necessary consensus to be built to ensure that WRCs maintain a stable, predictable and universally applied regulatory environment that secures long-term investments for a Multi-trillion dollar industry without disrupting the services currently provided to the worldwide population universally.



❖ **Fundamental element:**

to the successful outcome of WRC :

1. Building consensus on how to balance the demands of services such as broadcasting, satellite, mobile broadband, aeronautical, maritime, amateur, Earth observation and radiolocation services.
2. Balance the harmonization and flexibility of the use of spectrum.



❖ WRC-15

- ❖ Around 3300 participants, representing 162 out of ITU's 193 Member States attended the four-week conference from 2 to 27 November. Some 500 participants representing 130 other entities, including industry, also attended the conference as observers.
- ❖ The Conference was steered under the Chairmanship of Mr Festus Yusufu Narai Daudu of Nigeria.



	Documents
1 Opening of the meeting	—
2 Approval of the agenda	—
3 Election of the Chairman of the Conference	ADM/1
4 Address by the Chairman of the Conference	—
5 Election of the Vice-Chairmen of the Conference	—
6 Address by the Secretary-General	—
7 Address by the Director of the Radiocommunication Bureau	—
8 Conference structure	DTG

first of all, start by thanking the Almighty God for making it possible for me to be alive and to be the first African to chair a WRC in the





❖ Main outcomes from global prospective(1):

❖ Global infrastructure and communications

- ❖ Unmanned aircraft and wireless avionics systems
- ❖ Global flight tracking for civil aviation
- ❖ Enhanced maritime communications systems
- ❖ Road Safety
- ❖ On-board communications and critical functions of ships
- ❖ **ITS (WRC-19)**
- ❖ **Railway radiocommunication(WRC-19)**
- ❖ **GMDSS modernization (covers two polar) (WRC-19)**
- ❖ **GADSS(WRC-19)**
- ❖ **Satellite component for VDE of maritime(WRC-19)**
- ❖ **regulatory actions within the frequency band 156-162.05 MHz for autonomous maritime radio devices (WRC-19)**
- ❖ **WPT for electric vehicles(WRC-19)**



❖ Unmanned aircraft and wireless avionics systems

- ❖ WRC-15 opened the way for the development by ICAO of worldwide standards for unmanned aircraft systems (UAS), and identified the regulatory conditions that may be applied to such systems internationally.
- ❖ WRC-15 also agreed on spectrum for wireless avionics intra-communications (WAIC) to allow for the heavy and expensive wiring used in aircraft to be replaced by wireless systems.



❖ Global flight tracking for civil aviation

- ❖ Agreement was reached on the allocation of radio-frequency spectrum for global flight tracking in civil aviation for improved safety. The frequency band 1087.7-1092.3 MHz has been allocated to the aeronautical mobile-satellite service (Earth-to-space) for reception by space stations of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters. This will facilitate reporting the position of aircraft equipped with ADS-B anywhere in the world, including oceanic, polar and other remote areas. The International Civil Aviation Organization (ICAO) will address the performance criteria for satellite reception of ADS-B signals according to established standards and recommended practices (SARP).



❖ Enhanced maritime communications systems

- ❖ WRC-15 considered regulatory provisions and frequency allocations to enable new Automatic Identification System (AIS) applications and other possible new applications to improve maritime radiocommunication. New applications for data exchange, using AIS technology, are intended to improve the safety of navigation. New allocations were made in the bands 161.9375-161.9625 MHz and 161.9875-162.0125 MHz to the maritime mobile-satellite service. Studies will continue on the compatibility between maritime mobile-satellite service (MMSS) in the downlink in the band 161.7875-161.9375 MHz and incumbent services in the same and adjacent frequency bands.



❖ Road Safety

- ❖ Radio-frequency spectrum needed for the operation of short-range high-resolution automotive radar has been allocated in the 79 GHz frequency band. This will provide a globally harmonized regulatory framework for automotive radar to prevent collisions and improve vehicular safety by reducing traffic accidents. According to UN data, more than 1.25 million fatalities occur each year on the roads around the world.



- ❖ Main outcomes from global prospective(2):
- ❖ **Climate change and monitoring the environment**
 - ❖ Earth observation satellites for environmental monitoring
 - ❖ New spectrum for TT&C for EESS
 - ❖ Possible upgrading of status of allocation to the meteorological-satellite service (and EESS in the frequency band 460-470 MHz (**WRC-19**))



❖ Earth observation satellites for environmental monitoring

- ❖ WRC-15 agreed to new allocations in the 7-8 GHz frequency range needed to uplink large amounts of data for operations plans and dynamic spacecraft software modifications that will eventually lead to simplified on-board architecture and operational concepts for future missions of earth-exploration satellite services (EESS).
- ❖ Allocations of spectrum in the 9-10 GHz frequency range will lead to the development of modern broadband sensing technologies and space-borne radars on active sensing EESS. Scientific and geo-information applications will provide high quality measurements in all weather conditions with enhanced applications for disaster relief and humanitarian aid, land use and large-area coastal surveillance.



❖ Main outcomes from global prospective(3):

❖ Broadband communication and IoT :

❖ *Mobile broadband communications (below 6GHz)*

- ❖ Additional spectrum for IMT between 24—86GHz(WRC-19)
- ❖ Additional spectrum for fixed service used by HAPS(WRC-19)
- ❖ WAS includes RLAN in 5GHz band(WRC-19)
- ❖ Identify spectrum in 275-450GHz for fixed and mobile services applications(WRC-19)
- ❖ Harmonized spectrum for narrow and broadband Machine to Machine communication(WRC-19)



❖ Mobile broadband communications

- ❖ Following the growing demand for spectrum for mobile broadband services, WRC-15 identified frequency bands in the L-band (1427-1518 MHz) and in the lower part of the C-band (3.4 -3.6 GHz). WRC-15 achieved agreement on some additional portions in other bands that were also allocated to mobile broadband services in order to be used in regions where there was no interference with other services.
- ❖ To counteract the difficulties encountered in finding additional spectrum for IMT in bands below 6 GHz, WRC-15 decided to include studies in the agenda for the next WRC in 2019 for the identification of bands above 6 GHz that will allow technology to meet demand for greater capacity. Administrations and industry can now concentrate on the development of necessary technologies in line with the schedule for the implementation of [IMT-2020](#).
- ❖ WRC-15 took a key decision that will provide enhanced capacity for [mobile broadband in the 694-790 MHz frequency band in ITU Region-1](#) (Europe, Africa, the Middle East and Central Asia) and a globally harmonized solution for the implementation of the digital dividend. Full protection has been given to television broadcasting as well as to the aeronautical radionavigation systems operating in this frequency band.



❖ PolicyTracker :the spectrum management newsletter 2015.12.08

- ❖ Patchwork consensus was achieved on a variety of issues, not least the [US, Colombia, Costa Rica and Canada's identification of 3.6-3.7 GHz for IMT](#). The same countries (with Mexico replacing Costa Rica) also identified the UHF band for IMT. If large markets like these can harmonize, does regional consensus really matter? Indeed, a smaller country without identification could well find it easier to get IMT up and running if they're in the backyard of a market like China.
- ❖ Writing regional harmony into the Radio Regulations may be tricky, but in the real world it may just develop naturally.



❖ Main outcomes from global prospective(4):

❖ Operation of satellite systems :

- ❖ Sustainable availability of 5GHz band for feeder-links to NGSO MSS
- ❖ Operation of broadband satellite systems: Earth Stations in Motion
- ❖ Expansion of 13.4-13.65GHz(downlink)/14.5-14.75GHz(uplink) for some countries in Region1 and 14.5-14.8GHz(uplink) for some countries in Region 3 for FSS
- ❖ Relaxation of requirement for the size of ESV antenna in C band
- ❖ Improvements of coordination procedures
- ❖ *Review, and revise if necessary, the limitations mentioned in Annex 7 to Appendix 30*
- ❖ *17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) ESIM*
- ❖ *Development of a regulatory framework for non-GSO FSS satellite systems that operate in Q and V bands*
- ❖ *spectrum needs for telemetry, tracking and command in the space operation service for non-GSO satellites with short duration missions*
- ❖ *Study of technical and operational issues and regulatory provisions for new non-geostationary-satellite orbit systems in C band*
- ❖ *Possible allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth-to-space)*



❖ Operation of broadband satellite systems: Earth Stations in Motion

- ❖ WRC-15 agreed to facilitate the global deployment of Earth Stations In Motion (ESIM) in the 19.7-20.2 and 29.5-30.0 GHz frequency bands in the fixed-satellite service (FSS), paving the way for satellite systems to provide global broadband connectivity for the transportation community. Earth stations on-board moving platforms, such as ships, trains and aircraft, will be able to communicate with high power multiple spot beam satellites, allowing transmission rates in the order of 10-50 Mbits/s.



❖ Main outcomes from global prospective(5):

❖ Space operation

- ❖ Removal of 5km limitation when space vehicle are communicating with orbiting manned space vehicles.

❖ Amateur radio service gets new allocation

- ❖ New allocation for amateur radio service in the frequency band 5351.5 - 5366.5 kHz will maintain stable communications over various distances, especially for use when providing communications in disaster situations and for relief operations.



❖ Emergency communications and disaster relief

- ❖ WRC-15 identified spectrum in the 694-894 MHz frequency band to facilitate mobile broadband communications for robust and reliable mission critical emergency services in public protection and disaster relief (PPDR), such as police, fire, ambulances and disaster response teams.

❖ Search and rescue

- ❖ WRC-15 reinforced protection to Search and Rescue beacons that transmit in the 406-406.1 MHz frequency band signals to uplink to search and rescue satellites, such as the Cospas-Sarsat system. Resolution 205 was modified to ensure that frequency drift characteristics of radiosondes are taken into account when operating above 405 MHz to avoid drifting close to 406 MHz. Administrations are requested to avoid making new frequency assignments for the mobile and fixed services within the adjacent frequency bands to prevent interference in the frequency band 406-406.1 MHz. As of December 2013, the Cospas-Sarsat System has provided assistance in rescuing over 37,000 persons in over 10,300 incidents worldwide.



❖ Universal Time

- ❖ WRC-15 decided that further studies regarding current and potential future reference time-scales are required, including the modification of coordinated universal time (UTC) and suppressing the so-called “leap second”. By seeking more widely the views of international organizations, industry and user groups on this issue , a report will be considered by the World Radiocommunication Conference in 2023. Until then, UTC shall continue to be applied as described in Recommendation ITU-R TF.460-6 and as maintained by the International Bureau of Weights and Measures (BIPM).



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❖ CPM19-1 Mandate:

Allocation of ITU-R preparatory work

ToR for possible new task group

Chapters and rapporteurs



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Mr. Mochael Moller:

Director-General of United Nations Office at Geneva

“There is not a single person on the planet that is not touched every day by something that happened in Geneva”



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Thanks