

WRC-15 briefing

Key issues, areas of disagreement and likely outcomes

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Sample



About this sample

This extract from the *WRC-15 Briefing* gives the table of contents and the list of tables, illustrations and diagrams. It also includes the following pages:

- P 6-8: **The introduction**
- P 9: the first page of the **WRC-15: processes and key issues** chapter
- P12: the first page of **The WRC-15 agenda** chapter
- P31: the first page of the **Glossary**

In total the *WRC-15 Briefing* is 37 pages.

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Introduction

The World Radiocommunication Conference (WRC) is held every three to five years, generally at the ITU in Geneva. It is the highest-ranking meeting of the Radiocommunication Bureau (BR) of the ITU and can affect the Radio Regulations – the ITU document that controls how spectrum is used – in any way the meeting decides. While these have often been small adjustments to the spectrum usage around the world, the next Conference (WRC-15) is likely to see a major shake-up of bands below 5 GHz in order to cater for the growing spectrum need of IMT.

WRC-15 is likely to see a major shake-up of bands below 6 GHz in order to cater for the growing spectrum need of IMT

Due to the existing high-pressure on bands below 5 GHz for terrestrial and other services this is a controversial issue and WRC-15 may be one of the hardest in recent years to find agreement between all countries. WRC-15 will be held in Geneva in November 2015. WRC-15

KEY POINTS

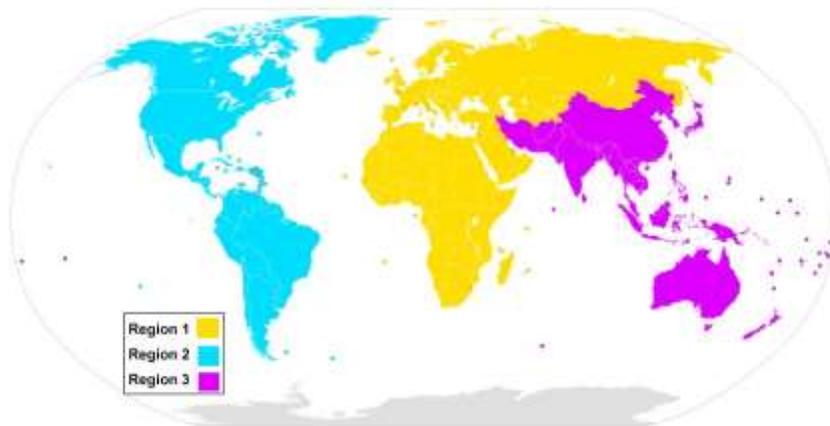
- The World Radiocommunication Conference in 2015 will change the way spectrum is used for the next 10-15 years
- All users of spectrum will meet in Geneva in November to decide on how the airwaves are used in a month-long Conference
- The WRC is the ITU Radiocommunication Bureau's highest ranking conference
- Crucial issues to be faced will include whether the C-band should be entirely used by satellite, finding more spectrum for fixed-satellite and ensuring low frequencies are available for IMT
- However, consensus should be reached

THE ITU

The International Telecommunication Union (ITU) is the UN agency tasked with improving telecoms, broadband and other communications technologies. Importantly for the WRC, it splits up the world into three regions. These are:

- Region 1: Europe, Middle East and Africa
- Region 2: The Americas
- Region 3: Asia-Pacific

Figure 1. The ITU regions



The reason these Regions are of importance to the ITU is that the way the Radio Regulations are written allows each Region to allocate spectrum in a manner distinct from the other Regions. Equally, the Regulations allow all regions to allocate spectrum in a fully harmonized manner with each region using the same piece of spectrum for the same service.

Definition

IMT: the ITU term for mobile broadband

Furthermore, the Regulations allow for countries to allocate spectrum on a sub-regional or single-country basis through the use of the footnotes, which litter the Regulations. You will see the variety of numbers in Figure 2 below underneath the various allocations in each region.

Figure 2 also shows the manner in which global harmonisation is sometimes achievable and sometimes not. The band 3500 - 3700 MHz, for example, is allocated to the Fixed and Fixed-Satellite services across the world, but only has an allocation to Mobile in Regions 2 and 3.

Figure 2. An extract from the Radio Regulations

Region 1	Region 2	Region 3
<p>3300 – 3400 MHz</p> <p>RADIOLOCATION</p> <p>5.149 5.429 5.430</p>	<p>3300 – 3400 MHz</p> <p>RADIOLOCATION</p> <p>Amateur Fixed Mobile</p> <p>5.149 5.430</p>	<p>3300 – 3400 MHz</p> <p>RADIOLOCATION</p> <p>Amateur</p> <p>5.149 5.429</p>
<p>3400 – 3600 MHz</p> <p>FIXED FIXED-SATELLITE (space-to-Earth) Mobile 5.430A Radiolocation</p> <p>5.431</p>	<p>3400 – 3500 MHz</p> <p>FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.431A Radiolocation 5.433</p> <p>5.282</p>	<p>3400 – 3500 MHz</p> <p>FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.432B Radiolocation 5.433</p> <p>5.432A</p>
<p>Reference to Footnote</p>	<p>3500 – 3700 MHz</p> <p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433</p>	<p>3500 – 3600 MHz</p> <p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433</p>

Finally, the other important part of the Radio Regulations that will be discussed in detail at the WRC is amending the footnotes i.e. countries or groups of countries may adopt existing footnotes or create new ones.

The broad terms seen in figure 2 such as 'MOBILE' or 'FIXED', known as Applications, apply to a whole range of services such as paging, trunking, aeronautical telemetry and communications as well as IMT. The footnotes allow specific identification for technologies such as satellite and IMT, and this issue will take up a large amount of the discussion at WRC-15. There are many spectrum bands with a mobile allocation, but it is only those with an IMT identification that are actively used for mobile and mobile broadband:

700 MHz, 2.1 GHz, 2.5 GHz etc. This has been a key driving force for the global adoption of IMT or mobile broadband across the world.

Similarly, the satellite sector benefits from harmonization and one Agenda Item is looking to clear up spectrum at 10-17 GHz. Each Agenda Item is discussed and then resolved by adherence to a 'Method' these are a group of, normally, 2-4 brief sentences that allow each Agenda Item to come to a conclusion

Definition

Method: the ITU term for a way of resolving an Agenda Item. A Method can be a partial solution, so concluding an Agenda Item may require the use of several Methods.

WRC-15: processes and key issues

Definition

CONFERENCE PREPARATORY MEETING

Before the WRC can begin, the ITU holds a pre-meeting six months beforehand that helps to define the terms of the discussion at the WRC itself. This is called the Conference Preparatory Meeting or CPM. The work here is carried out through a moving document called the CPM Text.

PPDR: Public Protection and Disaster Relief

AGENDA ITEMS

Table 1 below gives a brief list of the Agenda Items to be discussed at the WRC. A full list can be found in the Appendix to this document. These cover a wide range of issues from IMT systems, through satellite to wireless avionics systems

Figure 3. Agenda items for WRC-15

AI	Outline
1.1	To find IMT Candidate bands
1.2	To allow Region 1 allocation of 694-790 MHz for mobile
1.3	To review PPDR spectrum
1.4	To look at new spectrum for amateur radio in the 5 GHz band
1.5	To look at using some fixed satellite bands for unmanned aircraft
1.6.1	To consider 250 MHz more to fixed satellite between 10-17 GHz in Region 1
1.6.2	To consider 250 MHz more to fixed satellite in Regions 2 and 3 between 13-17 MHz
1.7	To review spectrum use at 5 GHz by fixed satellite service
1.8	To review regulations of earth stations on vessels
1.9.1	To consider new fixed satellite allocations at 7 and 8 GHz
1.9.2	To consider more spectrum for maritime mobile at 7 and 8 GHz
1.10	To consider more mobile satellite spectrum at 22-26 GHz
1.11	To consider more earth exploration satellite service at 7-8 GHz
1.12	To consider 600 MHz more spectrum for earth exploration satellites at 8-9 GHz
1.13	To consider changing regulations for space research service
1.14	To consider achieving a universal time reference or 'universal clock'
1.15	To consider spectrum demands for maritime mobile
1.16	To consider regulations and spectrum for Automatic Identification System (AIS) technology
1.17	To consider spectrum for wireless avionics systems
1.18	To consider 77 GHz spectrum for automotive applications
2-9	Agenda Items 2-9 are stock Agenda Items, which deal with regulatory provisions and are listed at all conferences.
10	To recommend new agenda items for the next WRC: this is also a perennial agenda item but will be important to the growth of future communications services. It was keenly contested at WRC-12

JTG CREATION AND EXECUTION

The broad scope of Agenda Item 1.1 saw the decision made that, rather than

The WRC-15 agenda

AGENDA ITEM 1.1

Agenda Item 1.1 at WRC-15 is likely to bring up the most detailed negotiations of the Conference. The text is as follows:

To consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for IMT and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications.

The text was agreed at WRC-12, after fierce negotiations, and holds several important features, which increase the scope of the Agenda Item and mean that the entirety of the WRC has something to gain or lose from the outcome of the Agenda Item. This level of importance meant that it took three weeks at WRC-12 to agree on the short paragraph of text alone. The fact that IMT does not currently suit high frequencies has subsequently been recognised by the ITU's Working Party 5D and a limit of 6 GHz as the highest frequency was placed on the candidate bands.

Agenda Item 1.1 at WRC-15 is likely to bring up the most detailed negotiations of the Conference

Band-by-Band Breakdown

In this section we will go into further detail about some of the key bands which are most likely to be of interest to the IMT industry and possibly the most difficult for the incumbent industries. We will not examine all 19 bands, but concentrate on the four principal ones supported by the IMT industry.

470-694/8 MHz

Figure 7. 470 - 790 MHz in the Radio Regulations

Allocation to services		
Region 1	Region 2	Region 3
460-470	FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth) 5.287 5.288 5.289 5.290	
470-790 BROADCASTING	470-512 BROADCASTING Fixed Mobile 5.292 5.293	470-585 FIXED MOBILE BROADCASTING 5.291 5.298
	512-608 BROADCASTING 5.297	585-610 FIXED MOBILE BROADCASTING RADIONAVIGATION 5.149 5.305 5.306 5.307
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	610-890 FIXED MOBILE 5.313A 5.317A BROADCASTING
	614-698 BROADCASTING Fixed Mobile 5.293 5.309 5.311A	
	698-806 MOBILE 5.313B 5.317A BROADCASTING Fixed	
5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.311A 5.312 5.312A		

Glossary

Abbreviation or technical term	Meaning
Aeronautical radionavigation service	Navigation services used by planes (Also known as ARNS)
Allocation	The designation of a particular frequency band for a service type in the Radio Regulations
AMS	ITU term meaning Aeronautical Mobile Service
AMSS	Aeronautical Mobile Satellite Service for satellite reception in the air
ARNS	Aeronautical radionavigation service: navigation services used by planes.
ASA	Authorised Shared Access: see LSA
ASMG	Arab Spectrum Management Group: group of national administrations in the ITU-R
Assignment	Giving an organization a licence to use a specific frequency range: usually done by national administrations
ATU	African Telecommunications Union: specialized agency of the African Union, which is concerned with telecommunications
Band edge mask	The limit of emissions allowed within a particular band, which may comprise of several blocks.
Block edge mask	The limit of emissions allowed within a particular block of frequencies (or a specific channel)
BSS	Broadcasting-Satellite Service – where the satellite receiver is used for television reception
C-band	3.4-3.6 GHz, 3.6-3.8 GHz and 3.8-4.2 GHz. Best known as a satellite band but there are also IMT allocations, which the mobile community wish to expand further. Unlike higher frequency satellite bands this does not suffer from rain fade in tropical regions.
CEPT	European Conference of Postal and Telecommunications Administrations: Copenhagen-based group that facilitates pan-European co-operation on spectral and postal matters
CITEL	Inter-American Telecommunication Commission: entity of the Organization of American States that is concerned with telecommunications
Compatibility studies	An assessment of the likelihood and extent of interference between different technologies or uses. These are a key part of the regulatory process in deciding spectrum allocations, particularly at regional and ITU level
Contiguous	Licences which are next to each other and provide a continuous band when put together.