

**Hong Kong's Preliminary Positions on
Agenda Items for World Radiocommunication Conference 2019**

Purpose

This paper seeks Members' views on Hong Kong's preliminary positions on the agenda items for the World Radiocommunication Conference 2019 (WRC-19) of the International Telecommunication Union (ITU), which will take place in Sharm el-Sheikh of Egypt from 28 October to 22 November 2019.

Background

2. At the 17th meeting of the Radio Spectrum and Technical Standards Advisory Committee (SSAC) held in April 2018, the Office of the Communications Authority (OFCA) introduced vide SSAC Paper 1/2018 the agenda items of WRC-19 and requested for Members' comments on the agenda items. So far, OFCA has not received any comment from Members of SSAC. After the meeting, OFCA has sought comments of concerned government departments on the agenda items of WRC-19. OFCA has received comments from Civil Aviation Department, Hong Kong Observatory and Marine Department. Their comments are outlined below.

3. Civil Aviation Department (CAD) has no comment on specific agenda items of WRC-19. CAD expresses that the safety of air operation is highly dependent on the availability of radio spectrum that can support the requirements of high integrity and availability as associated with aeronautical safety systems, and demands special protection to avoid harmful interferences to these systems. As such, CAD fully supports the position of the International Civil Aviation Organisation (ICAO) and requests for incorporation of ICAO position into Hong Kong's position on WRC-19.

4. Hong Kong Observatory (HKO) shares the view of World Meteorological Organisation (WMO) on the importance of protecting the 23.6 – 24 GHz band. Regarding agenda items 1.6, 1.7, 1.13, 1.14, 1.16, 9.1.5 and 9.1.9, HKO considers that WRC-19 should ensure no potential interference to the operation of HKO equipment including radiometers (22.24 – 31.4 GHz and 51.3 – 59 GHz), radiosonde system (403 MHz) and C-band radars (5625 MHz). HKO basically supports the preliminary positions of WMO on WRC-19 agenda items.

5. Marine Department (MD) has no comment on specific agenda items of WRC-19. MD advises that the International Maritime Organisation (IMO) would submit their final positions to WRC-19 after reviewing the outcome of the expert group meetings and Conference Preparatory Meeting. MD will in general follow the final positions of IMO.

6. In September 2018, the ITU Radiocommunication Sector (ITU-R) issued the draft Conference Preparatory Meeting (CPM)¹ Report on the basis of the latest results developed by the responsible ITU-R study groups, comprising six chapters in accordance with the following structure –

Chapter	WRC-19 Agenda Items
1 Land mobile and fixed services	1.11, 1.12, 1.14, 1.15
2 Broadband applications in the mobile service	1.13, 1.16, 9.1 (issues 9.1.1, 9.1.5, 9.1.8)
3 Satellite services	1.4, 1.5, 1.6, 7, 9.1 (issues 9.1.2, 9.1.3, 9.1.9)
4 Science services	1.2, 1.3, 1.7
5 Maritime, aeronautical and amateur services	1.1, 1.8, 1.9, 1.10, 9.1 (issue 9.1.4)
6 General issues	2, 4, 9.1 (issues 9.1.6, 9.1.7), 10

¹ The draft CPM Report consolidates the ITU-R preparatory studies and possible solutions to the WRC-19 agenda items. It will be used to support the work of WRC-19.

Hong Kong's Preliminary Positions

7. Taking into account the received views and the draft CPM Report incorporating the latest results of ITU-R studies, OFCA sets out at Annex to this paper Hong Kong's preliminary positions on the WRC-19 agenda items.

8. OFCA will continue to coordinate with the Ministry of Industry and Information Technology of the Mainland Government to facilitate the formulation of the Hong Kong's final positions for WRC-19.

Advice Sought

9. Members are invited to give their views on Hong Kong's preliminary positions.

**Office of the Communications Authority
December 2018**

Agenda Item 1.1 (Res. 658)

to consider an allocation of the frequency band 50 – 54 MHz to the amateur service in Region 1, in accordance with Resolution 658 (WRC-15)²

Key Issue

WRC-19 will consider an allocation to the amateur service in the band 50 – 54 MHz in Region 1 in order to increase the amount of radio spectrum for the amateur service and to harmonise the allocation of the band 50 – 54 MHz in Region 1 with that in Regions 2 and 3, based on the results of ITU-R studies.

Background

The 50 – 54 MHz band is allocated to the broadcasting service on a primary basis, with additional or alternative allocations to the amateur, fixed, mobile, and/or radiolocation (limited to the operation of wind profiler radars) services in some countries in Region 1 without a regional harmonisation. As the 50 – 54 MHz band is allocated to the amateur service on a primary basis in Regions 2 and 3, a global harmonisation of the allocation to the amateur service in the band 50 – 54 MHz is desired.

ITU-R Preparatory Studies

Studies were conducted to explore the feasibility of sharing the 50 – 54 MHz band between amateur service and the incumbent broadcasting, land mobile or radiolocation (i.e. wind profiler radars) services. To achieve the required protection margin, typical separation distances between amateur service and the other services range from tenth to hundredth of kilometres. As regards spectrum needs, one study suggested that 1.75 MHz of spectrum is required for the amateur service in the 50 – 54 MHz band while another study suggested 4 MHz of spectrum.

Hong Kong Allocation

Frequency Bands	Primary Allocation unless otherwise stated
50 – 51.5 MHz	Amateur service
51.5 – 51.825 MHz	Amateur service Fixed service

² Resolution 658 (WRC-15): Allocation of the frequency band 50 – 54 MHz to the amateur service in Region 1

	Land mobile service
51.825 – 54 MHz	Land mobile service

Hong Kong's Preliminary Position

In Hong Kong, this band is allocated and utilised for amateur and land mobile services. Any allocation of this band, or portion of this band, to amateur service in Region 1 in the 50 – 54 MHz band shall not adversely affect the existing services in the same and adjacent bands.

Agenda Item 1.2 (Res. 765)

to consider in-band power limits for earth stations operating in the mobile-satellite service (MSS), meteorological-satellite service (MetSat) and Earth exploration-satellite service (EESS) in the frequency bands 401 – 403 MHz and 399.9 – 400.05 MHz, in accordance with Resolution 765 (WRC-15)³

Key Issue

WRC-19 will consider the results of ITU-R studies and establish in-band power limits applicable to earth stations transmissions in 399.9 – 400.05 MHz band and 401 – 403 MHz band in order to ensure that the operation of low or moderate output powers for MSS, EESS and MetSat systems would not be affected.

Background

The EESS (Earth-to-space) and MetSat (Earth-to-space) systems operate in 401 – 403 MHz band, while MSS (Earth-to-space) systems operate in the 399.9 – 400.05 MHz band. There have been significant increase in use of these bands for satellite uplink telecommand purposes, which are operating at much higher power levels and might cause harmful interference to the satellite receivers of those MSS, EESS and MetSat systems in the low power operations. Necessary mitigation measures should be developed to protect MSS, EESS and MetSat systems operating in the 401 – 403 MHz and 399.9 – 400.05 MHz bands.

ITU-R Preparatory Studies

ITU-R's studies show that non-geostationary (non-GSO) MSS earth station (Earth-to-space) in telecommand operations are not compatible with the low power operations of MSS, EESS, and MetSat systems in the 399.9 – 400.05 MHz and 401 – 403 MHz bands. WRC-19 will consider the proposed limits for equivalent isotropically radiated power (e.i.r.p.) of earth stations for different operations at these bands. WRC-19 would also consider the grandfathering use of systems for which the confirmed bringing into use date is prior to WRC-19.

³ Resolution **765 (WRC-15)**: Establishment of in-band power limits for earth stations operating in mobile-satellite service, the meteorological-satellite service and the Earth exploration-satellite service in the frequency bands 401 – 403 MHz and 399.9 – 400.05 MHz

Hong Kong Allocation

Frequency Bands	Primary Allocation unless otherwise stated
399.9 – 400.05 MHz	To be planned
401 – 402 MHz	Meteorological aids service Earth exploration satellite (Earth-to-space) service Meteorological satellite (Earth-to-space) service
402 – 403 MHz	Meteorological aids service Earth exploration satellite (Earth-to-space) service Meteorological satellite (Earth-to-space) service <i>Secondary allocation:</i> Mobile service except aeronautical mobile service

Hong Kong's Preliminary Position

Hong Kong supports the development of appropriate mitigation measures to protect the low power operations of MSS, EESS and MetSat systems operating in the 401 – 403 MHz and 399.9 – 400.05 MHz bands.

Agenda Item 1.3 (Res. 766)

to consider possible upgrading of the secondary allocation to the meteorological-satellite service (MetSat) (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (EESS) (space-to-Earth) in the frequency band 460 – 470 MHz, in accordance with Resolution 766 (WRC-15)⁴

Key Issue

WRC-19 will consider the result of ITU-R studies and establish a power flux-density (pfd) limit to be placed on MetSat (space-to-Earth) and EESS (space-to-Earth) to protect the existing primary services operating in the 460 – 470 MHz band, in order to facilitate the upgrade of the secondary allocation to the MetSat (space-to-Earth) to primary status and a possible primary allocation to the EESS (space-to-Earth) in the 460 – 470 MHz band.

Background

The 460 – 470 MHz band is currently allocated to fixed and mobile services on a primary basis and MetSat (space-to-Earth) on a secondary basis. The EESS may also be used in this band for space-to-Earth transmissions. The functions provided by MetSat (space-to-Earth) and EESS (space-to-Earth) operating in the 460 – 470 MHz band are essential for monitoring and predicting climate change, monitoring ocean, water resources, weather forecasting and assisting in protecting biodiversity, as well as improving maritime security. In view of the importance of these applications, a primary allocation to the MetSat (space-to-Earth) and EESS (space-to-Earth) in the 460 – 470 MHz band is required. It would provide confidence to space and meteorological agencies involved in satellite data collection programmes and the public sectors funding the development and operation of such systems.

ITU-R Preparatory Studies

The results of ITU-R studies have determined the pfd limits for the downlink emission of non-geostationary (non-GSO) and geostationary (GSO) satellites. As the current studies set out two options of pfd limits for GSO satellite, further studies would be required to conclude on a single mask for GSO satellite. In addition, an appropriate arrangement is also needed to ensure existing satellite systems can continue to operate in compliance with the provisions to be adopted in WRC-19.

⁴ Resolution 766 (WRC-15): Consideration of possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460 – 470 MHz

Hong Kong Allocation

The 460 – 470 MHz band is allocated to land mobile service.

Hong Kong's Preliminary Position

Hong Kong is of the view that the proposed primary allocation to MetSat and EESS for satellite downlink service in the band 460 – 470 MHz should be subject to satisfactory results of ITU-R compatibility studies.

Agenda Item 1.4

to consider the results of studies in accordance with Resolution 557 (WRC-15)⁵, and review, and revise if necessary, the limitations mentioned in Annex 7 to Appendix 30 (Rev.WRC-15), while ensuring the protection of, and without imposing additional constraints on, assignments in the Plan and the List and the future development of the broadcasting-satellite service within the Plan, and existing and planned fixed-satellite service networks

Key Issue

WRC-19 will consider removing some or all of the current limitations on the use of the orbital arc for broadcasting-satellite service (BSS) networks as contained in Annex 7 to Radio Regulations (RR) Appendix 30 (Rev.WRC-15).

Background

In the 11.7 – 12.7 GHz band, BSS and fixed-satellite service (FSS) networks from different Regions may operate simultaneously and share orbit resource in their respective Regions. Annex 7 to RR Appendix 30 (Rev.WRC-15) imposes limitations on BSS regarding the orbital position, as well as the corresponding equivalent isotropically radiated power and power flux density for various interregional sharing situations. On the other hand, the FSS in the same frequency band is not subject to any orbital position limitations. WRC-19 will consider the proposed revisions of the orbital position limitations in Annex 7 to RR Appendix 30 for possible additional BSS orbital resource.

ITU-R Preparatory Studies

The ITU-R studies cover various Annex 7 limitation scenarios and the relevant mitigation measures required to complete coordination by concerned Administrations. The results of these studies show that some limitations of Annex 7 could be deleted.

⁵ Resolution 557 (WRC-15): Consideration of possible revision of Annex 7 to Appendix 30 of the Radio Regulations

Hong Kong Allocation

Agenda Item 1.4 Concerned Frequency	Hong Kong Allocation	
	Frequency Bands	Primary Allocation unless otherwise stated
11.7 – 12.2 GHz	11.7 – 12.2 GHz	Fixed service Mobile service, except aeronautical mobile service Broadcasting service Broadcasting satellite service
12.2 – 12.5 GHz	12.2 – 12.5 GHz	Fixed satellite (space-to-Earth) service
12.5 – 12.7 GHz	12.5 – 12.7 GHz	Fixed service Fixed satellite (space-to-Earth) service Mobile service

Hong Kong's Preliminary Position

Hong Kong considers that revision of any limitations in Annex 7 to RR Appendix 30 should not impose undue constraints on existing services in the 11.7 – 12.7 GHz band.

Agenda Item 1.5 (Res. 158)

to consider the use of the frequency bands 17.7 – 19.7 GHz (space-to-Earth) and 27.5 – 29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service and take appropriate action, in accordance with Resolution 158 (WRC-15)⁶

Key Issue

WRC-19 will consider the use of the earth stations in motion (ESIMs) in the 17.7 – 19.7 GHz (space-to-Earth) and 27.5 – 29.5 GHz (Earth-to-space) bands and provisions to protect existing services to which these bands are allocated.

Background

In accordance with Resolution 156 (WRC-15), operation of ESIMs need to protect the existing services to which the 17.7 – 19.7 GHz and 27.5 – 29.5 GHz bands are allocated. WRC-19 will consider the technical, operational and regulatory responsibilities of administrations responsible for the operation, authorisation and interference management system of the ESIMs.

ITU-R Preparatory Studies

ITU-R has conducted sharing and compatibility studies between ESIMs and existing services operating in the 17.7 – 19.7 GHz and 27.5 – 29.5 GHz bands, and provide details on how ESIMs can protect these existing services. For example, it is proposed that ESIMs should not claim protection from terrestrial services operating in the 17.7 – 19.7 GHz band and should not cause unacceptable interference to receiving stations of terrestrial services operating in the 27.5 – 29.5 GHz band. Some studies conclude that ESIMs would not cause interference to Earth exploration-satellite service (passive) operating in the 18.6 – 18.8 GHz as both services are receiving in this frequency band.

Hong Kong Allocation

Frequency Bands	Primary Allocation unless otherwise stated
17.7 – 18.4 GHz	Fixed service Fixed satellite (space-to-Earth) (Earth-to-space) service

⁶ Resolution 158 (WRC-15): Use of the frequency bands 17.7 – 19.7 GHz (space-to-Earth) and 27.5 – 29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service

18.4 – 18.8 GHz	Fixed service Fixed satellite (space-to-Earth) service
18.8 – 19.3 GHz	Fixed service Fixed satellite (space-to-Earth) service
19.3 – 19.7 GHz	Fixed service Fixed satellite (space-to-Earth) (Earth-to-space) service
27.50 – 28.35 GHz	Fixed service Fixed satellite (Earth-to-space) service
28.35 – 29.10 GHz	Fixed satellite (Earth-to-space) service
29.10 – 29.25 GHz	Fixed service Fixed satellite (Earth-to-space) service
29.25 – 29.50 GHz	Fixed satellite (Earth-to-space) service

Hong Kong's Preliminary Position

Hong Kong supports the development of technical, operational conditions and regulatory provisions for ESIMs operating in 17.7 – 19.7 GHz and 27.5 – 29.5 GHz bands in order to protect existing services to which these bands are allocated. However, these provisions should not impose any undue constraints on existing services already allocated in these frequency bands.

Agenda Item 1.6

to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency bands 37.5 – 39.5 GHz (space-to-Earth), 39.5 – 42.5 GHz (space-to-Earth), 47.2 – 50.2 GHz (Earth-to-space) and 50.4 – 51.4 GHz (Earth-to-space), in accordance with Resolution 159 (WRC-15)⁷

Key Issue

WRC-19 will consider the technical, operational and regulatory provisions applicable to the 37.5 – 39.5 GHz, 39.5 – 42.5 GHz, 47.2 – 50.2 GHz and 50.4 – 51.4 GHz bands (i.e. the 50/40 GHz frequency bands). This agenda item also deals with the protection of Earth exploration-satellite services (EESS) (passive) and radio astronomy service operating in the adjacent bands.

Background

Advances in technology have enabled the deployment of non-geostationary (non-GSO) fixed-satellite service (FSS) systems in the 50/40 GHz frequency bands. Currently, there are no regulatory provisions for sharing between non-GSO systems and geostationary (GSO) networks in the 50/40 GHz frequency bands. The Radio Regulations (RR) does not have any coordination procedures applicable to non-GSO systems operating within the FSS allocations in frequency bands in the 37.5 to 51.4 GHz range. WRC-19 would address these issues to clarifying the uncertainties among potential operators of non-GSO satellite systems in the 50/40 GHz bands.

ITU-R Preparatory Studies

The result of the compatibility studies for non-GSO FSS satellite systems and GSO FSS/broadcasting-satellite service (BSS) networks operating in the 50/40 GHz frequency bands show that the criterion of a 10% increase in unavailability caused by interference would be met taking into account operational mitigation technique. ITU-R also studied the unwanted emission power limits for non-GSO FSS user equipment and gateways required for the protection of EESS (passive) in the adjacent bands. One study showed that a 3 dB decrease of the input power to the non-GSO FSS earth station antenna flange might meet the EESS (passive) protection criteria.

⁷ Resolution 159 (WRC-15): Studies of technical, operational issues and regulatory provisions for non-geostationary fixed-satellite services satellite systems in the frequency bands 37.5 – 39.5 GHz (space-to-Earth), 39.5 – 42.5 GHz (space-to-Earth), 47.2 – 50.2 GHz (Earth-to-space) and 50.4 – 51.4 GHz (Earth-to-space)

Hong Kong Allocation

Agenda Item 1.6 Concerned Frequency	Hong Kong Allocation	
	Frequency Bands	Primary Allocation unless otherwise stated
37.5 – 39.5 GHz	37 – 39.5 GHz	Fixed service
39.5 – 42.5 GHz	39.5 – 42.5 GHz	To be planned
47.5 – 50.2 GHz	47.2 – 50.2 GHz	To be planned
50.4 – 51.4 GHz	50.4 – 51.15 GHz	Fixed service
	51.15 – 52.6 GHz	To be planned

Hong Kong's Preliminary Position

Hong Kong supports the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the 50/40 GHz frequency bands.

Agenda Item 1.7 (Res. 659)

to study the spectrum needs for telemetry, tracking and command in the space operation service for non-GSO satellites with short duration missions, to assess the suitability of existing allocations to the space operation service and, if necessary, to consider new allocations, in accordance with Resolution 659 (WRC-15)⁸

Key Issue

WRC-19 will consider, based on the result of ITU-R studies, the spectrum needs for telemetry, tracking and command in the space operation service for non-geostationary (non-GSO) satellites with short duration missions and also assess the suitability of existing allocations to the space operation service below 1 GHz band. For new allocations, the 150.05 – 174 MHz and 400.15 – 420 MHz bands are under consideration.

Background

ITU-R studied the spectrum requirements of telemetry, tracking and command in the space operation service with short duration missions. Such missions provide an affordable means to allow new entrants to access orbital resources, in terms of both spectrum and orbit. Therefore, the demand for allocations for space operation service (SOS) is expected to increase. WRC-19 will consider the spectrum needs as well as new allocations, if necessary, to SOS for non-GSO satellite with short duration missions.

ITU-R Preparatory Studies

The result of ITU-R study indicated that the spectrum requirement of SOS for non-GSO satellite with short duration missions are in the range from 0.625 MHz to 2.5 MHz (space-to-Earth) and in the range from 0.682 MHz to 0.938 MHz (Earth-to-space). Some studies found that the existing 137 – 138 MHz (space-to-Earth) allocation could suitably meet the spectrum requirement of SOS short duration missions. In addition, some studies found that the 403 – 405 MHz band (Earth-to-space) could be considered for allocation to support SOS of non-GSO short duration missions.

⁸ Resolution **659 (WRC-15)**: Studies to accommodate requirements in the space operation service for non-geostationary satellites with short duration missions

Hong Kong Allocation

Frequency Bands	Primary Allocation unless otherwise stated
137 – 138 MHz	Meteorological satellite (space-to-Earth) service
148 – 149.9 MHz	Land mobile service
272 – 273 MHz	Fixed service Mobile service
403 – 405 MHz	<i>Primary allocation:</i> Meteorological aids service <i>Secondary allocation:</i> Mobile service except aeronautical mobile service
405 – 406 MHz	Meteorological aids service

Hong Kong's Preliminary Position

Hong Kong is of the view that the frequency allocation for telemetry, tracking and command in the space operation service for non-GSO satellites with short duration missions should be subject to satisfactory results of the ITU-R compatibility studies.

Agenda Item 1.8 (Res. 359)

to consider possible regulatory actions to support Global Maritime Distress Safety Systems (GMDSS) modernisation and to support the introduction of additional satellite systems into the GMDSS, in accordance with Resolution 359 (Rev.WRC-15)⁹

Key Issue

This agenda item covers two issues related to the GMDSS. The first issue (“Issue A”) concerns the modernisation of GMDSS through the introduction of Navigational Data (NAVDAT) service into GMDSS. The second issue (“Issue B”) concerns the introduction of an additional satellite system into the GMDSS.

Background

Issue A

The International Maritime Organisation (IMO) has adopted a modernisation plan for the GMDSS. New technologies for possible introduction in the modernised GMDSS include very high frequency (VHF) data exchange system (VDES) and NAVDAT system. NAVDAT is a kind of digital system for broadcasting maritime safety information from shore-to-ship and could operate in both the Medium Frequency (MF) and High Frequency (HF) bands. WRC-19 would consider the regulatory provisions for both MF and HF NAVDAT applications.

Issue B

At present, only one satellite system is incorporated by the IMO in the GMDSS. WRC-19 would consider issues relating to the introduction of additional satellite systems into the GMDSS.

ITU-R Preparatory Studies

Issue A

Recommendation ITU-R M.2010 described that the band 415 – 526.5 kHz could be used for the operation of NAVDAT service in the MF band. In particular, the band 495 – 505 kHz is considered the best choice for international NAVDAT service because it has been globally allocated to maritime mobile service. It is also suggested that the bands 415 – 495 kHz (in

⁹ Resolution 359 (Rev.WRC-15): Consideration of regulatory provisions for updating and modernisation of the Global Maritime Distress and Safety System

Regions 1, 2 and 3) and 505 – 526.5 kHz (in Regions 1 and 3) or 505 – 510 kHz (in Region 2) could be used for national NAVDAT service. As for HF NAVDAT, Recommendation ITU-R M.2058 recommended six channels in the 4 MHz, 6 MHz, 8 MHz, 12 MHz, 16 MHz and 22 MHz bands for the operation of NAVDAT in the HF band. WRC-19 would consider appropriate technical and regulatory approach to facilitate effective implementation of NAVDAT and its compatibility with existing maritime mobile stations.

Issue B

IMO is considering GMDSS-candidate non-geostationary (non-GSO) mobile-satellite service system operating in the 1616 – 1626.5 MHz band. As this band is also used by other non-GSO and geostationary mobile satellite service and other services, WRC-19 would consider the allocations of and regulatory provision for this band.

Hong Kong Allocation

Issue A

Frequency Bands	Primary Allocation unless otherwise stated
415 – 526.5 kHz	Maritime mobile service
4063 – 4438 kHz	Maritime mobile service
6200 – 6525 kHz	Maritime mobile service
8195 – 8815 kHz	Maritime mobile service
12230 – 13200 kHz	Maritime mobile service
16360 – 17410 kHz	Maritime mobile service
22000 – 22855 kHz	Maritime mobile service

Hong Kong’s Preliminary Position

For Issue A, Hong Kong supports the development of appropriate regulatory measures for the modernisation of GMDSS. For Issue B, Hong Kong is of the view that introduction of additional satellite systems into GMDSS operating in 1616 – 1626.5 MHz band should not impose any adverse impact on existing services.

Agenda Item 1.9.1 (Res 362)

to consider regulatory actions within the frequency band 156 – 162.05 MHz for autonomous maritime radio devices to protect the GMDSS and automatic identifications system (AIS) in accordance with Resolution 362 (WRC-15)¹⁰ based on the results of ITU-R studies

Key Issue

WRC-19 will consider the regulation of autonomous maritime radio devices (AMRD) in order to enhance safety of navigation and to ensure the integrity of Global Maritime Distress Safety Systems (GMDSS).

Background

An AMRD, such as AIS station, could enhance the safety of navigation. However, in other cases, signals or information from some other kinds of AMRD may distract or mislead the navigator and degrade the safety of navigation. As defined in Radio Regulations (RR) No. 1.28, AMRD are not listed and are therefore not formally recognised as maritime mobile service (MMS). It is necessary to categorise and regulate the technical and operational characteristics and identification of AMRD.

ITU-R Preparatory Studies

ITU-R Working Party (WP) 5B has defined AMRD as a mobile station, operating at sea and transmitting independently of a ship station or a coast station. Two categories/groups of AMRD are identified: Group A AMRDs that enhance the safety of navigation and Group B AMRDs that do not enhance the safety of navigation. For Group A AMRDs, it is proposed that they can be operated on frequency channel 156.525 MHz (channel 70), 161.975 MHz (channel 2087/AIS 1) and 162.025 MHz (channel 2088/AIS 2).

Hong Kong's Preliminary Position

Hong Kong supports identification of appropriate frequency channels, as well as determination of the related technical / operational characteristics and device identification, for different groups of AMRDs operating in the frequency band 156 – 162.05 MHz.

¹⁰ Resolution 362 (WRC-15): Autonomous maritime radio devices operating in the frequency band 156 – 162.05 MHz

Agenda Item 1.9.2 (Res 360)

to consider modifications of the Radio Regulations, including new spectrum allocations to the maritime mobile-satellite service (MMSS) (Earth-to-space and space-to-Earth), preferably within the frequency bands 156.0125 – 157.4375 MHz and 160.6125 – 162.0375 MHz of Appendix 18, to enable a new VHF data exchange system (VDES) satellite component, while ensuring that this component will not degrade the current terrestrial VDES components, applications specific messages (ASM) and AIS operations and not impose any additional constraints on existing services in these and adjacent frequency bands as stated in recognising d) and e) of Resolution 360 (Rev. WRC-15)¹¹ based on the results of ITU-R studies

Key Issue

WRC-19 will consider new spectrum allocations to MMSS (Earth-to-space and Space-to-earth), preferably within the frequency bands 156.0125 – 157.4375 MHz and 160.6125 – 162.0375 MHz.

Background

Very high frequency (VHF) data exchange system (VDES) is a new technology likely to be adopted in the modernised Global Maritime Distress Safety System (GMDSS). Currently, no allocations were made to the VDES satellite component. WRC-19 will consider, based on the results of ITU-R studies, modifications of the Radio Regulations (RR), including new spectrum allocations within the frequency bands 156.0125 – 157.4375 MHz and 160.6125 – 162.0375 MHz to enable a new VDES satellite component.

ITU-R Preparatory Studies

Compatibility studies were performed between VDES satellite component and incumbent services, on identification of the spectrum requirements and a technical description of the VDES satellite component. It also proposed using the maritime VHF channels set out in RR Appendix 18 and channels in the band 160.9625 – 161.4875 MHz for the VDES satellite component.

¹¹ Resolution 360 (Rev.WRC-15): Consideration of regulatory provisions and spectrum allocations to the maritime mobile-satellite service to enable the satellite component of the VHF Data Exchange System and enhanced maritime radiocommunication

Hong Kong Allocation

Frequency Bands	Primary Allocation unless otherwise stated
160.6 – 161.475 MHz	Maritime mobile service
161.475 – 161.9375 MHz	Maritime mobile service

Hong Kong's Preliminary Position

Hong Kong supports new spectrum allocations to MMSS for VDES satellite component without imposing undue constraints on existing services operating in the same and adjacent bands.

Agenda Item 1.10 (Res. 426)

to consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS), in accordance with Resolution 426 (WRC-15)¹²

Key Issue

WRC-19 will consider the spectrum needs and regulatory provisions for the introduction and the use of GADSS, taking into account the results of ITU-R studies.

Background

The International Civil Aviation Organisation (ICAO) developed a Concept of Operations (ConOps) to support the future development of GADSS. The ConOps supports aircraft tracking, autonomous distress tracking, post-flight localisation and recovery, as well as procedures and information management. ICAO intends to use systems operating under existing allocations in accordance with the provisions of the Radio Regulations (RR), including the use of Emergency Position Indicating Radio Beacon (EPIRB) operating in the 406 – 406.1 MHz band.

ITU-R Preparatory Studies

ICAO has concluded that the GADSS requirements can be satisfied using systems operating within existing aeronautical frequency allocations or distress spectrum, (e.g. the 406 – 406.1 MHz band) and therefore no additional spectrum allocations are required. Thus, no changes are required to RR Article 5. Nevertheless, possible changes to other portions of RR have been identified to facilitate GADSS implementation.

Hong Kong Allocation

The 406 – 406.1 MHz band is allocated to mobile-satellite service (earth to space) and is deployed solely for EPIRB use.

Hong Kong's Preliminary Position

Hong Kong supports the implementation of GADSS.

¹² Resolution 426 (WRC-15): Studies on spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System

Agenda Item 1.11

to take necessary actions, as appropriate, to facilitate global or regional harmonised frequency bands to support railway radiocommunication systems between train and trackside within existing mobile service allocations, in accordance with Resolution 236 (WRC-15)¹³

Key Issue

WRC-19 will take appropriate actions to facilitate global or regional harmonised frequency bands for the implementation of railway radiocommunication systems between train and trackside (RSTT), within existing mobile service allocations, based on results of the related ITU-R studies.

Background

RSTT are vital to improve railway traffic control, passenger safety and improved security for train operations. The implementation of RSTT varies in different countries. It is considered that harmonised frequency bands will improve interoperability of RSTT, reducing the railway infrastructure investment and providing economies of scale.

ITU-R Preparatory Studies

ITU-R studied the generic architecture, main applications, current technologies, generic operating scenarios of RSTT and developed Report ITU-R M.2418-0. Another draft Report ITU-R M.[RSTT_USAGE] was also developed which includes the detailed characteristics, implementations of current and planned RSTT and the spectrum needs of RSTT. In addition, ITU-R commenced development of Recommendation ITU-R M.[RSTT_FRQ], which provides possible harmonisation of frequency ranges within existing mobile service allocations and frequency arrangements for RSTT on global or regional basis.

In the draft Resolution being developed by ITU-R, administrations are encouraged to consider parts of the following ranges for achieving global frequency harmonisation for RSTT: 138 – 174 MHz, 335.4 – 470 MHz, 873 – 915 MHz, 918 – 960 MHz, while the following additional frequency bands, or parts thereof, are proposed for harmonised RSTT use within Region 3: 703 – 748 MHz, 758 – 803 MHz, 1770 – 1880 MHz, 43.5 – 45.5 GHz, 92 – 109.5 GHz.

Hong Kong Allocation

For the frequency bands identified in the draft resolution being developed by ITU-R for RSTT, their allocations in Hong Kong are as follows –

¹³ Resolution 236 (WRC-15): Railway radiocommunication systems between train and trackside

Agenda Item 1.11 Concerned Frequency	Hong Kong Allocation	
	Frequency Bands	Primary Allocation unless otherwise stated
138 – 174 MHz	138 – 174 MHz	Most of this band is allocated to the land mobile service and maritime mobile service.
335.4 – 470 MHz	335.4 – 406.1 MHz	Fixed, mobile, mobile satellite, meteorological aids, earth exploration satellite, and/or meteorological satellite services, mainly on a primary basis (399.9 – 400.05 MHz band is to be planned)
	406.1 – 430 MHz	Fixed service Land mobile service
	430 – 440 MHz	<i>Primary allocation:</i> Radiolocation service <i>Secondary allocation:</i> Amateur service
	440 – 470 MHz	Land mobile service
703 – 748 MHz	703 – 748 MHz	Broadcasting service
758 – 803 MHz	758 – 798 MHz	Broadcasting service
	798 – 803 MHz	Broadcasting service Mobile service
873 – 915 MHz	873 – 915 MHz	Land mobile service
918 – 960 MHz	918 – 960 MHz	
1770 – 1880 MHz	1770 – 1880 MHz	Fixed service Mobile service
43.5 – 45.5 GHz	43.5 – 45.5 GHz	To be planned
92 – 109.5 GHz	92 – 100 GHz	To be planned
	100 – 102 GHz	All emissions prohibited
	102 – 109.5 GHz	To be planned

Hong Kong's Preliminary Position

Hong Kong supports global or regional harmonisation of frequency bands for RSTT within existing mobile service allocations.

Agenda Item 1.12 (Res. 237)

to consider possible global or regional harmonised frequency bands, to the maximum extent possible, for the implementation of evolving Intelligent Transport Systems (ITS) under existing mobile-service allocations, in accordance with Resolution 237 (WRC-15)¹⁴

Key Issue

WRC-19 will consider possible global or regional harmonised frequency bands for implementation of evolving ITS under the existing mobile service allocations, taking into account results of the ITU-R studies.

Background

ITS, covering vehicle-to-vehicle, vehicle-to-infrastructure, vehicle-to-network and vehicle-to-pedestrian communications, have been deployed in some countries to assist safe driving and to support transportation system efficiency and environmental sustainability. To facilitate ITS deployment, Resolution **237 (WRC-15)** invites ITU-R to study the possible global or regional harmonised frequency bands for the implementation of evolving ITS under the existing mobile service allocations for consideration by WRC-19.

ITU-R Preparatory Studies

Studies conducted by ITU-R have indicated that the frequency band 5850 – 5925 MHz, or parts thereof, have been designated for the implementation of ITS by some administrations in Regions 1, 2 and 3. There were views that FSS uplink earth stations would have potential of causing harmful interference to ITS receivers in 5850 – 5925 MHz band. Accordingly, some administration in Region 1 concluded that ITS stations could not claim protection from FSS uplink earth station in the 5850 – 5925 MHz band. There were also views that the probability of interference from ITS stations to FSS space receivers might be negligible. Consequently, ITU-R has developed preliminary draft new Recommendation ITU-R M.[ITS_FRQ]¹⁵ that recommends administrations to consider using the frequency band 5850 – 5925 MHz (which is allocated to the mobile service globally), or parts thereof, for current and future ITS applications, taking into account coexistence issues between ITS and other services.

¹⁴ Resolution **237 (WRC-15)**: Intelligent Transport Systems applications

¹⁵ Recommendation ITU-R M.[ITS_FRQ] entitled “Harmonisation of frequency arrangements for Intelligent Transport Systems in the mobile service”

Hong Kong Allocation

The 5850 – 5925 MHz band is allocated to the fixed and fixed-satellite (Earth-to-space) services on a co-primary basis, while part of which, i.e. the 5850 – 5875 MHz band, is also allocated to the industrial, scientific and medical service on a primary basis.

Hong Kong's Preliminary Position

Hong Kong supports the identification of global or regional harmonised frequency bands for implementation of evolving ITS under the existing mobile service allocations.

Agenda Item 1.13 (Res. 238)

to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 (WRC-15)¹⁶

Key Issue

WRC-19 will consider identification of additional frequency bands for the future development of IMT and additional spectrum allocations to the mobile service on a primary basis in portion(s) of the frequency range between 24.25 and 86 GHz for the future development of IMT for 2020 and beyond, by taking into account the results of ITU-R studies.

Background

IMT systems are being evolved to provide various types of applications including enhanced mobile broadband (eMBB), massive machine-type communications and ultra-reliable and low-latency communications. Among these applications, eMBB service would provide high data rates thus requiring large contiguous blocks of spectrum. Resolution 238 (WRC-15) identifies 11 candidate frequency bands in the frequency range between 24.25 – 86 GHz with a view to accommodating the spectrum needs of future IMT systems, in particular eMBB. WRC-19 will consider, based on the results of ITU-R sharing and compatibility studies, the identification of the candidate frequency bands for this purpose.

ITU-R Preparatory Studies

Out of the 11 candidate frequency bands identified in Resolution 238 (WRC-15), ITU-R has performed studies on the following frequency bands: 24.25 – 27.5 GHz, 31.8 – 33.4 GHz, 37 – 40.5 GHz, 40.5 – 42.5 GHz, 42.5 – 43.5 GHz, 47.2 – 50.2 GHz, 50.4 – 52.6 GHz, 66 – 76 GHz and 81 – 86 GHz; while no studies for the 45.5 – 47.0 GHz and 47.0 – 47.2 GHz bands have been performed. According to the preliminary ITU-R study results, the sharing of IMT systems with existing services in the 24.25 – 27.5 GHz, 37 – 40.5 GHz, 40.5 – 42.5 GHz, 42.5 – 43.5 GHz, 47.2 – 50.2 GHz, 50.4 – 52.6 GHz, 66 – 76 GHz and 81 – 86 GHz are feasible subject to various mitigation measures.

¹⁶ Resolution 238 (WRC-15): Studies on frequency-related matters for International Mobile Telecommunications identification including possible additional allocations to the mobile services on a primary basis in portion(s) of the frequency range between 24.25 and 86 GHz for the future development of International Mobile Telecommunications for 2020 and beyond

Hong Kong Allocation

Regarding the list of potential candidate frequency bands, the corresponding frequency allocation in Hong Kong is tabulated below –

Candidate Frequency Bands	Primary Allocation unless otherwise stated
24.25 – 27.5 GHz	Fixed service (24.45 – 27.5 GHz) Radionavigation service (24.25 – 24.65 GHz) FSS (Earth-to-space) (24.75 – 25.25 GHz) FSS (Earth-to-space) (27 – 27.5 GHz)
31.8 – 33.4 GHz	To be planned (31.8 – 33 GHz) Radionavigation service (33 – 33.4GHz)
37 – 40.5 GHz	Fixed service (37 – 39.5 GHz) To be planned (39.5 – 40.5 GHz)
40.5 – 42.5 GHz	To be planned
42.5 – 43.5 G	To be planned
45.5 – 47.0 GHz	To be planned
47.0 – 47.2 GHz	Amateur service Amateur satellite service
47.2 – 50.2 GHz	To be planned
50.4 – 52.6 GHz	Fixed service (50.4 – 51.15 GHz) To be planned (51.15 – 52.6 GHz)
66 – 76 GHz	To be planned
81 – 86 GHz	To be planned

Hong Kong's Preliminary Position

Hong Kong supports the identification of additional frequency bands, including possible additional allocations to the mobile service on a primary basis, for the future development of IMT systems.

Agenda Item 1.14 (Res. 160)

to consider, on the basis of ITU-R studies in accordance with Resolution 160 (WRC-15)¹⁷, appropriate regulatory actions for high-altitude platform stations (HAPS), within existing fixed-service allocations

Key Issue

WRC-19 will consider additional identification in the fixed service bands and related regulatory actions for HAPS gateway and fixed terminal links to provide broadband connectivity, based on the results of ITU-R studies.

Background

HAPS is a possible means for providing fixed broadband connectivity that would enable wireless broadband deployment in remote areas with minimal ground network infrastructure. Resolution 160 (WRC-15) was adopted to facilitate access to broadband applications delivered by HAPS. World Radiocommunication Conference decisions in the past have resulted in a global identification for HAPS in the 47.2 – 47.5 GHz and 47.9 – 48.2 GHz bands (collectively referred to as the “47 GHz bands”), as well as the 27.9 – 28.2 GHz band (fixed downlink), paired with the 31.0 – 31.3 GHz band (fixed uplink) for some countries outside Region 2, and the 6440 – 6520 MHz (HAPS-to-ground direction) and 6560 – 6640 MHz (ground-to-HAPS direction) bands (collectively referred to as the “6 GHz bands”) for a few countries like Australia, Burkina Faso, Cote d’Ivoire, Mali and Nigeria. WRC-19 will consider identification of additional frequency bands for HAPS in the fixed service bands.

ITU-R Preparatory Studies

A new ITU-R recommendation and a new ITU-R report are being developed to address the deployment and technical characteristics of broadband HAPS systems and spectrum needs of HAPS systems respectively. The studies estimate the spectrum needs for HAPS to be in the range from 396 MHz to 2969 MHz for the uplink and 324 MHz to 1505 MHz for downlink, depending on the user density settings. To meet the spectrum needs, on top of the existing HAPS designations, WRC-19 will consider additional HAPS designations worldwide in the Fixed Service (FS) bands at 6 GHz, 27.9 – 28.2 GHz, 31 – 31.3 GHz, 38 – 39.5 GHz, as well as, for Region 2 only, the 21.4 – 22 GHz and 24.25 – 27.5 GHz bands.

¹⁷ Resolution 160 (WRC-15): Facilitating access to broadband applications delivered by high-altitude platform stations

Hong Kong Allocation

Frequency Bands	Primary Allocation unless otherwise stated
6440 – 6640 MHz	Fixed service Fixed satellite (Earth-to-space) service
27.9 – 28.2 GHz	Fixed service Fixed satellite (Earth-to-space) service
31 – 31.3 GHz	Fixed service
38 – 39.5 GHz	Fixed service
47.2 – 48.2 GHz	To be planned

Hong Kong's Preliminary Position

Hong Kong is of the view that identification of additional bands to facilitate the development of global broadband applications delivered by HAPS should be subject to availability of feasible mitigation measures to ensure no harmful interference to existing services.

Agenda Item 1.15 (Res. 767)

to consider identification of frequency bands for use by administrations for the land mobile and fixed services applications operating in the frequency range 275 – 450 GHz, in accordance with Resolution 767 (WRC-15)¹⁸

Key Issue

WRC-19 will consider identification of spectrum for land mobile service (LMS) and fixed service (FS) applications in the 275 – 450 GHz frequency range while maintaining protection of the existing Earth exploration-satellite service (EESS) (passive) and radio astronomy service (RAS) applications identified in No. 5.565 of Radio Regulations (RR), based on the results of the ITU-R studies.

Background

The frequency band above 275 GHz is not allocated by ITU for any services, but identified for use by administrations for passive service applications, such as RAS, EESS (passive) and space research service (SRS) (passive). In accordance with Report ITU-R M.2417-0, the spectrum needs of LMS applications operating in the frequency band 275 – 450 GHz such as close proximity mobile system applications/intra-device applications, and wireless links between data centres, are 50 GHz of total spectrum bandwidth.

ITU-R Preparatory Studies

A new ITU-R report on the compatibility between LMS, FS applications and both EESS (passive) and RAS in the 275 – 450 GHz band is being developed. According to the results of the preliminary studies, sharing is feasible between applications in the LMS/FS, and applications in the EESS (passive)/RAS in the following frequency bands: 275 – 296 GHz, 306 – 313 GHz, 320 – 330 GHz and 356 – 450 GHz.

Hong Kong Allocation

Spectrum in the frequency range 275 GHz – 450 GHz is not allocated to any service in Hong Kong.

Hong Kong's Preliminary Position

Hong Kong supports the identification of frequency bands in the range 275 – 450 GHz for the LMS and FS applications while maintaining protection of the existing services.

¹⁸ Resolution **767 (WRC-15)**: Studies towards an identification for use by administrations for land-mobile and fixed services applications operating in the frequency range 275 – 450 GHz

Agenda Item 1.16 (Res. 239)

to consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution 239 (WRC-15)¹⁹

Key Issue

WRC-19 will consider, additional spectrum allocations to the mobile service in the frequency bands between 5150 MHz and 5925 MHz and related regulatory actions, based on the results of ITU-R studies.

Background

Over the last decade, the demand for mobile broadband applications especially for WAS/RLAN has grown rapidly. According to Resolution **239 (WRC-15)**, the minimum spectrum need for WAS/RLAN in the 5 GHz (i.e. 5150 GHz – 5925 GHz) frequency range in the year 2018 is estimated to be 880 MHz. WRC-15 has examined the possibility of additional global allocations to the mobile service for terrestrial mobile broadband applications, including the 5 GHz frequency range, to facilitate contiguous spectrum for WAS/RLAN. However, no agreement was reached at WRC-15. WRC-19 will continue to consider additional spectrum allocations to mobile service in the 5 GHz frequency range.

ITU-R Preparatory Studies

Sharing and compatibility studies were performed in the following frequency bands: 5150 – 5250 MHz, 5250 – 5350 MHz, 5350 – 5470 MHz, 5725 – 5850 MHz and 5850 – 5925 MHz. The study results show that there are no feasible mitigation techniques to facilitate sharing between radio local area networks (RLAN) and earth exploration-satellite service (active), or between RLAN and radar systems in the 5350 – 5470 MHz band, and there are difficulties for the sharing of RLAN with existing services in the 5250 – 5350 MHz and the 5725 – 5850 MHz bands. No agreement/conclusion could be reached on the studies for the 5150 – 5250 MHz and the 5850 – 5925 MHz bands.

¹⁹ Resolution **239 (WRC-15)**: Studies concerning Wireless Access Systems including radio local area networks in the frequency bands between 5 150 MHz and 5 925 MHz

Hong Kong Allocation

Frequency Bands	Primary Allocation unless otherwise stated
5150 – 5250 GHz	Aeronautical radionavigation service, Mobile service, except aeronautical mobile service
5250 – 5350 GHz	Radiolocation service, Mobile service, except aeronautical mobile service
5350 – 5470 GHz	Aeronautical radionavigation service
5470 – 5725 GHz	Radiolocation service, Mobile service, except aeronautical mobile service
5725 – 5850 GHz	<i>Primary allocation:</i> Industrial, scientific and medical service <i>Secondary allocation:</i> Amateur service
5850 – 5875 GHz	Fixed service, Fixed satellite (Earth-to-space) service, Industrial, scientific and medical service
5875 – 5925 GHz	Fixed service, Fixed satellite (Earth-to-space) service

Hong Kong's Preliminary Position

Hong Kong is of the view that any additional allocation to the mobile service in the frequency bands between 5150 MHz and 5925 MHz for WAS/RLAN applications should be subject to satisfactory results of compatibility studies conducted by ITU-R.

Agenda Items 2, 3, 4, 5, 6, 8, 9.2, 9.3 and 10

Agenda items 2, 3, 4, 5, 6, 8, 9.2, 9.3 and 10 are mainly related to administrative work of the WRC-19. Hong Kong's preliminary positions on these agenda items are neutral.

Agenda Item 7

to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev.WRC-07)²⁰, in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit

Key Issue

A number of issues have been proposed and discussed under Agenda Item 7. Thirteen issues are consolidated in the draft Conference Preparatory Meeting Report –

- Issue A – Bringing into use of frequency assignments to all non-geostationary (non-GSO) satellite systems, and consideration of a milestone-based deployment approach for non-GSO satellite systems in specific bands and services

There are no provisions in the Radio Regulations (RR) that specifically address the bringing into use (BIU) of frequency assignments to space stations in non-GSO systems. Issue A would examine the possible development of regulatory provisions beyond those under RR Nos. 11.25 and 11.44 on the non-GSO fixed-satellite service (FSS)/mobile-satellite service (MSS) systems and the implications of the application of such milestones to non-GSO FSS/MSS systems brought into use after WRC-15.

- Issue B – Application of coordination arc in the Ka-band, to determine coordination requirements between the FSS and other satellite services

Issue B studies the introduction of the coordination arc with a value of 8 degrees as coordination criteria between FSS and MSS systems and among MSS systems, in the frequency bands 29.5 – 30 GHz (Earth-to-space)/19.7 – 20.2 GHz (space-to-Earth) in all 3 Regions, as substitution of the existing trigger of coordination $\Delta T/T > 6\%$.

- Issue C – Issues for which consensus was achieved in ITU-R and a single method has been identified

WRC-19 will address such things as resolving inconsistencies in regulatory provisions, clarifying certain existing practices, or increasing transparency in the regulatory process.

- Issue D – Identification of those specific satellite networks and systems with which coordination needs to be effected under RR Nos. 9.12, 9.12A and 9.13

²⁰ Resolution 86 (Rev.WRC-07): Implementation of Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference

Issue D studies the proposal for the Bureau to publish a list of potentially affected satellite networks and/or systems following the receipt of a coordination request (a new one or a modification to an existing one, as appropriate) for frequency assignments subject to RR Nos. 9.12, 9.12A and 9.13, rather than a list of affected administrations only.

- Issue E – Resolution related to RR Appendix 30B

Issue E addresses a special one-time applied measure and procedure to be contained in a new World Radiocommunication Conference Resolution as an enhancement of equitable access to spectrum/orbital resources for developing countries to facilitate the processing of their submission in RR Appendix **30B**.

- Issue F – Measures to facilitate entering new assignments into the RR Appendix 30B List

Issue F addresses the administrations' difficulties in the coordination of submissions of new networks and access to the frequency bands of RR Appendix **30B**. Specifically, it considers the proposals of reducing coordination arc, bringing the size of the coordination arc in line with that used for the unplanned frequency bands and introducing power flux-density (pfd) masks and levels like in RR Appendices **30** and **30A**.

- Issue G – Updating the reference situation for Regions 1 and 3 networks under RR Appendices 30 and 30A when provisionally recorded assignments are converted into definitive recorded assignments

Issue G addresses the situations that updating or not updating the reference situation can have different effects on its protection against later submissions.

- Issue H – Modifications to RR Appendix 4 items to be provided for non-GSO satellite systems not subject to the procedures of Section II of RR Article 9

Issue H relates to the need to ensure that sufficient orbital characteristics are provided in the advance publication information (API) for frequency assignments to non-GSO systems in frequency bands not subject to coordination under Section II of RR Article 9 which would allow potentially affected administrations to model a non-GSO system as soon as the API is published.

- Issue I – Additional RR Appendix 4 data items to be provided for non-GSO satellite systems with multiple orbital planes

Issue I relates to the need to include specific RR Appendix 4 data items to clarify whether API or the coordination request submitted by administrations represents a single non-GSO system or multiple, mutually exclusive configurations of a non-GSO system.

- Issue J – Pfd limit in Section 1, Annex 1 of RR Appendix 30
Issue J relates to modification to allow List assignments to exceed the pfd limit specified in Section 1, Annex 1 of RR Appendix 30.
- Issue K – Difficulties for Part B examinations under § 4.1.12 or 4.2.16 of RR Appendices 30 and 30A and § 6.21 c) of RR Appendix 30B
Issue K proposes to add one more examination under § 4.1.12 or § 4.2.16 RR Appendices **30** and **30A** and § 6.21 c) of RR Appendix **30B** such that should any remaining affected networks whose assignments have been entered in the List, as appropriate, before the submission under § 4.1.12 or § 4.2.16 of RR Appendices **30** and **30A** or § 6.17 of RR Appendix **30B**, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected.
- Issue L – Update to RR Appendix 4 data elements required for RR Article 22 equivalent power flux-density (epfd) verification after revision of Recommendation ITU-R S.1503
Issue L proposes revision to the data elements required for RR Article 22 epfd verification in consequence of the revision of Recommendation ITU-R S.1503.
- Issue M – Simplified regulatory regime for non-GSO satellite systems with short-duration missions
Issue M addresses a simplified regulatory regime for the advance publication, notification and recording procedures for non-GSO satellite systems with short-duration missions.

Background

The advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks are the regulatory foundation for space services. WRC-19 is invited by Resolution **86 (Rev. WRC-07)** to consider, under the standing Agenda Item 7, any proposals which deal with deficiencies and improvements in the regulatory/procedural matters for frequency assignments pertaining to space service, ensuring these procedures, and the related appendices of the RR reflect the latest technologies.

Hong Kong's Preliminary Position

Hong Kong is of the view that streamlining of the advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks would facilitate efficient and effective utilisation of spectrum and orbital resources of satellite service.

Agenda Items 9.1

(Issues 9.1.1, 9.1.2, 9.1.3, 9.1.4, 9.1.5, 9.1.6, 9.1.7, 9.1.8, 9.1.9)

Agenda item (AI) 9.1 is to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention, on the activities of the Radiocommunication Sector since WRC-15

Key Issue

- Issue 9.1.1 – ITU-R conducted studies to evaluate the coexistence and compatibility between the terrestrial component of International Mobile Telecommunications (IMT) and the satellite component of IMT deployed in neighbouring countries, different concerned countries, and adjacent geographical areas across different countries in the 1980 – 2010 MHz and 2170 – 2200 MHz bands. The studies cover scenarios for satellite component of IMT with different characteristics, and terrestrial component of IMT deployments in different environments. WRC-19 would address the views received on the studies.
- Issue 9.1.2 – The compatibility studies between IMT and broadcasting-satellite service (BSS) (sound) in the 1452 – 1492 MHz band in Regions 1 and 3 are conducted by ITU-R taking into account IMT and BSS (sound) operational requirements. Currently, there are provisions in Radio Regulations (RR) regarding coordination for potential interference from IMT systems into the BSS (sound) receivers and from a BSS (sound) space station into IMT receivers. WRC-19 would further consider stipulating power flux-density limits for the protection of IMT in Regions 1 and 3.
- Issue 9.1.3 – ITU-R conducted studies on technical/operational issues and regulatory provisions for new non-geostationary (non-GSO) systems in a number of frequency bands between 3700 MHz and 7025 MHz that are allocated to the fixed-satellite service, while ensuring that existing services are protected. This issue addresses, specifically in the 6725 – 7025 MHz band, the protection of feeder links (space-to-Earth) for mobile-satellite service (MSS) systems from unacceptable interference, pursuant to existing criteria, from co-frequency non-GSO fixed-satellite service (FSS) earth stations operating in the Earth-to-space direction.
- Issue 9.1.4 – This issue relates to the studies on the impact of the future deployments of sub-orbital vehicles on RR. Technical studies on link budget, Doppler shift and frequency planning have been performed. It is expected that sub-orbital vehicles could use existing allocations and equipment standardised by ICAO for harmonisation and interoperability. No regulatory action under RR is needed.
- Issue 9.1.5 – WRC-03 allocated the 5150 – 5350 MHz and 5470 – 5725 MHz bands to

the mobile service globally for implementation of wireless access systems including radio local area networks (RLANs). Radiolocation service in the 5250 – 5350 MHz band and radiodetermination services in the 5470 – 5725 MHz band should not impose on the mobile service more stringent protection criteria than those stated in Rec. ITU-R M.1638. During the WRC-15 study cycle, Rec. ITU-R M.1638 was revised to Rec. ITU-R M.1638-1 and the technical characteristics and protection criteria for ground based meteorological radars were removed. Given the potential impact on the widespread deployment of RLANs in the 5250 – 5350 MHz and 5470 – 5725 MHz bands, WRC-19 would review the issue of referencing these Recommendations.

- Issue 9.1.6 – This issue assesses the impact of Wireless Power Transmission for Electric Vehicles (WPT-EV) on radiocommunications services and to study suitable harmonised frequency ranges to minimise the negative impact. The results of ITU-R studies show that WPT-EV operating at 55 – 65 kHz will cause harmful interference to Standard Frequency and Time Signal service operating at 60 kHz, whereas WPT-EV in the ranges of 19 – 25 kHz, 55 – 5x kHz, 6y – 65 kHz and 79 – 90 kHz, to be further defined in the final Conference Preparatory Meeting Report, is compatible with radiocommunication services operating at other frequency bands provided that the WPT-EV unwanted emissions are tightly controlled. Currently, there is no need for activity related to WRC-19 to amend the RR.
- Issue 9.1.7 – Unauthorised uplink satellite transmission may cause interference to legitimate users and raise other difficulties for spectrum managers. This issue examines the need for additional measures to limit unauthorised uplink transmissions from earth terminal stations.
- Issue 9.1.8 – This issue addresses the harmonised use of spectrum to support the implementation of narrowband and broadband machine-type communication (MTC) infrastructures. Results of ITU-R studies show that existing spectrum identified for IMT and RLAN may also be used by MTC. Under this circumstance, no regulatory action under RR is needed.
- Issue 9.1.9 – This issue studies spectrum needs and possible allocation of the frequency band 51.4 – 52.4 GHz to FSS (Earth-to-space). Sharing and compatibility studies with FS, MS and Earth exploration-satellite service have been performed, with proposed mitigation measures for the protection of existing services operating in-band and in adjacent bands. WRC-19 will consider the associated regulatory actions under RR.

Hong Kong's Preliminary Position

On Issue 9.1.1, Hong Kong is of the view that coexistence for terrestrial component of IMT and satellite component of IMT should be subject to satisfactory results of ITU-R studies.

On Issue 9.1.2, Hong Kong supports the development of appropriate measures for the protection of IMT.

On Issues 9.1.3 – 9.1.9, Hong Kong's preliminary positions are neutral.