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| Summary: | | | |
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| Proposal: | | | |
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DRAFT CEPT BRIEF ON AGENDA ITEM 1.5

1.5 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)

# ISSUE

Resolution 158 (WRC-15) in its resolves to invite ITU-R 1-3 invites the ITU-R:

* “to study the technical and operational characteristics and user requirements of different types of earth stations in motion that operate or plan to operate within geostationary FSS allocations in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, including the use of spectrum to provide the envisioned services to various types of earth station in motion and the degree to which flexible access to spectrum can facilitate sharing with services identified in recognizing further a) to n)”;
* “to study sharing and compatibility between earth stations in motion operating with geostationary FSS networks and current and planned stations of existing services allocated in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz to ensure protection of, and not impose undue constraints on, services allocated in those frequency bands, and taking into account recognizing further a) to n)”
* “to develop, for different types of earth stations in motion and different portions of the frequency bands studied, technical conditions and regulatory provisions for their operation, taking into account the results of the studies above”

Resolution 158 (WRC-15) in its resolves to further invite the 2019 World Radiocommunication Conference

* “to consider the results of the above studies and take necessary actions, as appropriate, provided that the results of the studies referred to in resolves to invite ITU-R are complete and agreed by ITU-R study groups.”

# Preliminary CEPT position

CEPT supports a regulatory framework for the operation of earth stations in motion (ESIM) in the bands 17.7-19.7 GHz and 27.5-29.5 GHz, while ensuring protection of, and not imposing undue constraints on, services allocated in those frequency bands.

Due to the foreseen growing demand for ESIM and because ESIM terminals are ‘in motion’ and world-wide use, the regulatory framework for these terminals needs to be as simple and practicable as possible. The following conditions are considered in the 27.5-29.5 GHz bands as a way forward:

* Maritime ESIM – together with other technical conditions, a minimum distance limit at the low water mark officially recognized by coastal states might be adopted as has been done for Resolution 902 (WRC-03). ESIM should comply with this minimum distance unless prior agreement of the concerned administrations has been given.
* Aircraft ESIM – together with other technical conditions, the pfd limits on the earth’s surface could be used as a basis for agreement with the relevant ITU-R Working Parties. This would ensure protection of terrestrial systems in the Fixed Service. ESIM should comply with this pfd limit unless prior agreement of the concerned administrations has been given.
* Land ESIM – operating within national boundaries no specific regulatory action or amendments to the Radio Regulations at WRC-19 are needed, but further consideration may be needed on methods for:
  1. identifying with which countries an administration intending on authorising / deploying Land ESIM should first effect coordination and seek agreement with;
  2. which methodology(-ies) may be used to effect such coordination.

Regarding the 17.7-19.7 GHz band, the CEPT is of the view that ESIM shall not claim protection from the fixed and mobile services in the band.

Regarding the 27.5-29.5 GHz band, the CEPT supports studying appropriate sharing techniques, including e.i.r.p. or pfd values for ESIM in order to protect the fixed and mobile services allocated in the bands. CEPT has developed a Roadmap on 5G (<http://www.cept.org/ecc/topics/spectrum-for-wireless-broadband-5g#roadmap>). In this respect it is noted that “Europe has harmonised the 27.5-29.5 GHz band for broadband satellite and is supportive of the worldwide use of this band for ESIM. This band is therefore not available for 5G”.

# Background

WRC-15 adopted Resolution 156 (WRC-15) which allows FSS frequency bands 19.7-20.2 GHz and 29.5-30.0 GHz to be used by ESIM operating with geostationary space stations. The Resolution is largely based on Reports ITU-R S.2223 and ITU-R S.2357, which study technical and operational use of ESIM. Agenda item 1.5 of WRC-19 was proposed by CEPT to WRC-15 and can be viewed as continuation of the work accomplished during the previous cycle, in that it seeks to extend the operation of ESIM into the FSS frequency ranges of 17.7-19.7 GHz and 27.5-29.5 GHz by ensuring, at the same time, protection of other services. The detailed requirements for studies under this agenda item are contained in Resolution 158 (WRC-15).

The use of ESIM within the frequency bands 17.3-20.2 GHz and 27.5-30.0 GHz is harmonised within the CEPT with ECC Decision (13)01 on “The harmonised use, free circulation and exemption from individual licensing of Earth Stations On Mobile Platforms (ESOMPs) within the frequency bands 17.3-20.2 GHz and 27.5-30.0 GHz”. ECC Decision (13)01 is based on ECC Report 184, which considers the regulatory and technical aspects of the introduction of ESIM in the bands 17.3-20.2 GHz and 27.5-30.0 GHz. The studies that need to be performed under resolves to invite ITU-R 1-3 in Resolution 158 (WRC-15) are similar to those that were already established in ECC Report 184. The following methodology was used in the CEPT in order to introduce ESIM into the bands 17.3-20.2 GHz and 27.5-30.0 GHz:

It was established that from the perspective of potential uplink or downlink interference to FSS services, operation of ESIM is equivalent to stationary FSS earth stations, since:

In the space-to-Earth frequency range of 17.3-20.2 GHz, FSS satellites operating with ESIM comply with the same regulatory and technical constraints as FSS satellites operating with stationary FSS earth stations.

In the Earth-to-space frequency range of 27.5-30.0 GHz, ESIM comply with the same regulatory and technical constraints (e.g. Recommendation ITU-R S.524) as stationary FSS earth stations.

Based on the above, it was concluded that the operation of ESIM will not produce a different interference environment for other satellite services compared to the operation of stationary FSS earth stations;

In order to mitigate interference between administrations that have identified the band for ESIM and possible neighbouring administrations that have identified the band for terrestrial services[[1]](#footnote-2), the ECC Report 184 has identified the following possible methods:

Land based ESIM and fixed service networks can be coordinated using Recommendation ITU‑R SF.1707 on “Methods to facilitate the implementation of large numbers of earth stations in the FSS in areas where terrestrial services are also deployed”;

For maritime ESIM, a PFD threshold at the coast of a country in the 27.5-30.0 GHz band, combined with ESIM ability to regulate or even cease its transmissions dependent on the location, is suitable for the protection of fixed service deployment in that country;

For aircraft-mounted ESIM, a PFD mask, combined with ESIM ability to regulate or even cease its transmissions dependent on the location, provides adequate protection to the fixed service in the neighbouring administration.

ECC Decision (13)01[[2]](#footnote-3) gives the necessary conditions to allow ESIM operation in the band 17.3-20.2 GHz and 27.5-30.0 GHz within Europe. These conditions are based on ECC Report 184. The bands, which are already harmonised throughout CEPT for uncoordinated FSS earth stations, are also designated for use by ESIM. In those bands which are designated for fixed operation: 27.8285-28.4445 GHz and 28.9485-29.4525 GHz (and in some countries the band 28.8365-28.9485 GHz), ESIM may operate in international waters and international airspace in line with ECC Decision (13)01.

Within the ITU-R, at Working Party 4A (WP 4A)’s 2nd meeting (Geneva, September 2016), the drafting of a working document on the operation of ESIM communicating with geostationary space stations in the fixed-satellite service allocations at 17.7-19.7 GHz and 27.5-29.5 GHz continues to make progress.

This Working Document covers:

* 1. ESIM user and system requirements
  2. flexible Access to spectrum
  3. characteristics and spectrum use of ESIM – maritime and aeronautical
  4. compatibility with other services (Mobile, EESS, NGSO MSS feeder links, GSO FSS - including HDFSS, BSS feeder links)
  5. Regulatory issues, where questions have been outlined for:

1. unauthorised/illegal entry of ESIM in the territory of an administration, which is an issue also discussed under Agenda Item 9.1, Issue 9.1.7
2. the protection of terrestrial services / frequency assignments (FS and MS) from maritime, aeronautical and land-based ESIM in the 27.5-29.5 GHz band
3. regulatory challenges of ESIM coexistence and coordination with other services

This working document and the following documents are separate annexes of the WP 4A Chairman’s Report:

1. “Working document [towards a preliminary draft new Recommendation/Report] on a methodology to estimate the interference from land-based ESIM communicating with GSO space stations in the FSS into FS stations operating in the 27.5-29.5 GHz frequency band

Some progress was made:

1. gathering information on propagation losses and maximum permissible interference levels and on the interference criteria for the FS,
2. analysing the interference from a network of interfering earth stations and simulating e.i.r.p. spectral density levels of interfering earth stations
3. quantifying interference power spectral density from land-based ESIM onto an FS victim receiver
4. “Preliminary study material for the case of Airborne ESIM and the FS in the 27.5-29.5 GHz band”.

Some progress was made:

1. gathering parameters and characteristics needed for studies, including relevant propagation models and
2. calculating the cumulative distribution function for the interference levels from an ESIM Aero FSS station into a FS station receiver and the results compared to the short-term and long-term permissible interference levels
3. “ITU SRS database analysis of [stationary] FSS earth station e.i.r.p. spectral density envelope in 27.5-29.5 GHz”. This study analyses and compares e.i.r.p. off-axis spectral density levels of [stationary] FSS earth stations in the frequency range 27.5-29.5 GHz against the ESIM e.i.r.p. spectral density mask identified in Resolution 156 (WRC-15).

The results of this analysis, which have not been agreed by WP4A, indicate that in the frequency range 27.5-29.5 GHz, the Resolution 156 (WRC-15) e.i.r.p. spectral density mask is in the main more stringent than the most frequently used stationary FSS earth station e.i.r.p. spectral densities in the SRS. The study concludes that ESIM terminals that comply with the Resolution 156 (WRC-15) mask are operating well within the envelope of fixed FSS earth stations.

1. “ITU SRS database analysis of [stationary] FSS earth station characteristics in 17.7-19.7 GHz”. This study analyses the [stationary] FSS earth station antenna patterns, antenna gains and noise temperatures notified to the ITU with satellite filings in the band 17.7-19.7 GHz. The study, which requires further discussion by WP4A concludes:
   1. in the frequency range of 17.7-19.7 GHz, ESIM terminals are receiving and therefore there is no potential interference to other services

no specific limits were adopted for ESIM in the 19.7-20.2 GHz band with Resolution 156 (WRC-15) that can be used for comparison.

* 1. by far the most frequently used antenna pattern in the frequency range of 17.7-19.7 GHz is APEREC015V01 (based on Recommendation ITU-R S.580-6)

for the purposes of studies under AI 1.5, the antenna pattern APEREC015V01 is recommended to be used together with the ESIM parameters that fall within the value ranges for antenna gain and noise temperature of stationary FSS ES in the SRS.

* 1. there seems to be no direct correlation between the antenna patterns and antenna gains for any antenna diameter range nor between noise temperature and any of the antenna patterns or diameters.

No studies were received on maritime ESIM as of the September 2016’s meeting of WP 4A, but the membership is encouraged to cover this type of ESIM at future meetings of WP 4A.

WP 7C has sent a LS to WP 4A which concludes that if GSO FSS downlinks serving ESIM in the 18.6-18.8 GHz band are the same as GSO FSS downlinks serving conventional FSS earth stations and RR Table 21-4 limits are met, then there is no need for additional sharing studies, as the interference environment for EESS (passive) in remote sensing would not change.

WP 7B has sent a LS to WP 4A which indicates that WP 7B could not identify any scenarios where the operation of ESIM would change the interference environment to primary meteorological-satellite service in the 18 GHz range or secondary EESS in the 28 GHz range. WP 7B was also unable to identify any EESS operation in the 28.5-29.5 GHz band.

At the February 2017 meeting of PTB an PTB(17)INFO(10) was introduced which examined the adequacy of the current language in Article 18 of RR requiring authorisation of transmitters. The contribution also provides some relevant information about how Article 18 of RR is implemented by network operators in practice.

ESIM DEMAND and user requirements

Aeronautical ESIM

Over the next decade, a growing number of connected aircrafts and vessels are expected. In addition, there will be an increase of high capacity satellite systems (both GSO and NGSO) capable of delivering high-speed connection over satellite through high-powered narrow spot beams. Meeting that market demand is vital.

The air traffic sector is growing substantially. Boeing and Airbus are forecasting demand for 39620 and 33070 new aircrafts respectively through 2035, in total 72690 new aircrafts.

Table 1: Boeing New Aircraft Deliveries Through 2035

|  |  |  |
| --- | --- | --- |
| Aircraft type | Seats | Total deliveries through 2035 |
| Regional jets | ≤ 90 | 2380 |
| Single-aisle | 90 – 230 | 28140 |
| Small widebody | 200 – 300 | 5100 |
| Medium widebody | 300 – 400 | 3470 |
| Large widebody | ≥ 400 | 530 |
| Total | - | 39620 |

In total, the global aeronautical satellite communications market is forecast to grow from 47500 terminals in 2014 to 95500 in-service by the end of 2024.

The satellite industry is investing in high capacity satellite systems enabling service operators and airlines the flexibility to offer passengers a broad range of service packages to fit their different needs. By 2025, there will be over 3 Tbps of GSO-HTS capacity globally by 2025. At a minimum, this equates to triple the amount of traditional FSS capacity in orbit today, and depending on bits per hertz efficiencies, it could be even more.

Global IP traffic will nearly triple over the next five years, and by 2020 smartphones are expected to generate 30% of the total IP traffic. In this new age of connectivity, a record 3.6 billion airline passengers will board over 40 million commercial flights worldwide in 2016 and 65% of today’s travellers would choose to access entertainment services on their own device.

The majority of these passengers will expect to connect to high-speed Wi-Fi, stream video entertainment, text, and catch up on email and social media like they do on the ground. In fact, more than half of the world’s airline passengers say the availability and quality of inflight Wi-Fi is increasingly a factor in their airline choice when booking a flight. Passenger demand for inflight connectivity is increasing with aviation growing into one of the largest user segments of satellite capacity.

Responding to this demand, the number of connected commercial aircrafts globally is expected to grow from 5300 in 2015 to 23100 in 2025. The region with highest annual growth is Latin America growing from 44 to 1529 connected flights in 2025. The number of connected aircrafts in Europe is also facing a high growth with 28.2% annually up to 2025 booming from 455 aircrafts to 5465.

Table 2: Expected annual growth of connected aircrafts

|  |  |  |  |
| --- | --- | --- | --- |
| Region | Connected aircrafts in 2015 | Connected aircrafts in 2025 | Annual growth (%) |
| North America | 3940 | 7710 | 6.9 |
| Latin America | 44 | 1529 | 42.6 |
| Europe | 455 | 5465 | 28.2 |
| Middle East | 491 | 2131 | 15.8 |
| Asia & Oceania | 356 | 6256 | 33.2 |

Airlines are implementing inflight connectivity systems primarily to provide a better passenger experience as described above. However, carriers are also increasingly implementing inflight connectivity to drive cost savings, safety, and operational efficiencies across their fleets.

With a lightweight portable tablet pilots can receive critical real-time flight data, including regularly updated flight-path weather and turbulence reports. Agile flight plans that avoid major storms and turbulence can optimize the fuel consumption and reduce amount of toxic emissions into the atmosphere, avoid delays and hopefully provide passengers with a smoother, safer and more enjoyable journey.

The move to pilot EFBs and cabin crew tablets will have an impact on the environment as the transition to EFBs from paper reports is already saving hundreds of thousands of pages of daily inflight documentation, maps, charts and manuals (average of 12,000 pages per pilot), which cuts the weight on board planes and saves airlines more than 83 million litres of fuel consumption each year.

New age commercial aircraft engines feature thousands of sensors, constantly monitoring engine wear, oil pressure, and fuel consumption to enable predictive and preventative maintenance programs that can save time and money. By pinpointing engine issues airlines can schedule maintenance, avoid aircraft downtime and delays, improve turn times, reduce maintenance costs, and keep aircrafts running and passengers travelling on time.

A legacy Boeing 737, for example, generates a mere 3 gigabytes of data from a month of operations, while a single flight by a new Boeing 787 generates more than 500 gigabytes of operational data from thousands of sensors across the plane, resulting in more than 30 terabytes over the course of a month in flight. When the aircraft is in operation up in the air, most of this data is being transmitted locally around the aircraft and downloaded on a server on the aircraft for further analysis. Part of this data though, i.e. not the full data set, will be transmitted real-time with satellite communication to schedule for example maintenance in advance in order to avoid various issues as described above.

In summary, the connected aircraft will enable a variety of new features:

1. Connecting flight information to passengers in real-time
2. Inflight repair report
3. Real-time card processing
4. Passenger entertainment
5. Electronic flight bag
6. Real-time weather reports
7. Communication with air traffic controllers
8. Constant engine monitoring

It is noted that features such as safety-of-life services are not foreseen to be used in the connected aircraft.

Maritime ESIM

The number of maritime vessels in service grew by almost 25 per cent between 2012 and 2013 and revenues increased by more than 15 per cent. Surpassing a rate of increase of 20,000 vessels is seen as a tipping point for the industry and the new target is now an increase to around 50,000 vessels over the next few years. The enabler of this growth is satellite communications.

# List of relevant documents

* Report ITU-R S.2223: “Technical and operational requirements for GSO FSS earth stations on mobile platforms”
* Report ITU-R S.2357: “Technical and operational guidelines for earth stations on mobile platforms communicating with geostationary space stations in the fixed-satellite service in the frequency bands 19.7-20.2 GHz and 29.5-30.0 GHz”;
* At its 2nd meeting (Geneva, September 2016) ITU-R, Working Party 4A (WP 4A) produced the following:

a Working document on WRC-19 agenda item 1.5 - Operation of earth stations in motion (ESIM) communicating with geostationary space stations in the fixed-satellite service allocations at 17.7-19.7 GHz and 27.5-29.5 GHz (Annex 16 of Doc. 4A/196)

a Working document on WRC-19 Agenda item 1.5 - Preliminary study material for the case of airborne ESIM and the fixed service in the 27.5-29.5 GHz frequency band (Annex 17 of Doc. 4A/196)

a Working document on WRC-19 agenda item 1.5 - Working document [towards a preliminary draft new Recommendation/Report] on a methodology to estimate the interference from land-based earth stations in motion (ESIM) communicating with geostationary space stations in the fixed satellite service into fixed service stations operating in the 27.5-29.5 GHz frequency band (Annex 18 of Doc. 4A/196)

a Working document on WRC-19 agenda item 1.5 - ITU SRS database analysis of [stationary] FSS earth station e.i.r.p. spectral density envelope in 27.5-29.5 GHz (Annex 19 of Doc. 4A/196)

a Working document on WRC-19 agenda item 1.5 - ITU SRS database analysis of [stationary] FSS earth station characteristics in 17.7-19.7 GHz (Annex 20 of Doc. 4A/196)

a Work plan for WRC-19 agenda item 1.5 (Annex 27 of Doc. 4A/196)

* ECC Report 184: “The Use of Earth Stations on Mobile Platforms Operating with GSO Satellite Networks in the Frequency Ranges 17.3-20.2 GHz and 27.5-30.0 GHz”;
* ECC Decision (13)01: “The harmonised use, free circulation and exemption from individual licensing of Earth Stations On Mobile Platforms (ESOMPs) within the frequency bands 17.3-20.2 GHz and 27.5-30.0 GHz”;
* ETSI EN 303 978: “Satellite Earth Stations and Systems (SES); Harmonized EN for Earth Stations on Mobile Platforms (ESOMP) transmitting towards satellites in geostationary orbit in the 27,5 GHz to 30,0 GHz frequency bands covering the essential requirements of article 3.2 of the R&TTE Directive”;
* ECC Report 217: The Use of Land and Maritime Earth Stations on Mobile Platforms Operating with NGSO FSS Satellite Systems in the Frequency Range 17.3-20.2 GHz, 27.5-29.1 GHz and 29.5-30.0 GHz
* ECC Report 232: Compatibility between Fixed Satellite Service uncoordinated receive Earth Stations and the Fixed Service in the band 17.7-19.7 GHz
* ECC Report 241: Enhanced access to spectrum for FSS uncoordinated earth stations in the 17.7-19.7 GHz band;
* Recommendation ITU-R RS.1449: “Feasibility of sharing between the FSS (space-to-Earth) and the Earth exploration-satellite (passive) and space research (passive) services in the band 18.6-18.8 GHz”;
* Recommendation ITU-R M.1643: “Technical and operational requirements for aircraft earth stations of aeronautical mobile-satellite service including those using fixed-satellite service network transponders in the band 14-14.5 GHz (Earth-to-space)”.

# Actions to be taken

To propose sharing studies and regulatory solutions

Based on the parameters provided by ITU-R WP 5A and WP5B, to assess the appropriateness of the agreed pfd limits contained in ECC Decision (13)01 for aircraft ESIM to protect the Mobile services.

Further studies are necessary on the implementation of pfd limits on maritime ESIM

# Relevant information from outside CEPT (examples of these are below)

## European Union (date of proposal)

## Regional telecommunication organisations

APT (date of proposal)

ATU (date of proposal)

Arab Group (20 April 2017)

The division of use ESIM stations in the frequency bands and 05/27 to 05/29 07/17 to 07/19 GHz to three main types:

Stations on ships

Stations on board aircraft

Earth stations

Invite Arab states to study the impact of these uses on the radio services allocated in the frequency bands 27.5-29.5 and 17.7-19.7 GHz with respect to different types of ESIM stations.

Preliminary position in support of No change to the Radio Regulations for the frequency bands 19.7 - 17.7 GHz and 29.5 - 27.5 GHz with respect to ESIM usage.

CITEL (July 2017)

Canada

Support studies under the terms of Resolution 158 (WRC-15). Studies are necessary to determine compatibility of ESIMs with services allocated in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz. Sharing and compatibility studies between ESIM and FSS networks should include consideration of both geostationary and non-geostationary satellite systems, including non-GSO MSS feeder links, to ensure their protection.

B, USA

Support studies under the terms of Resolution 158 (WRC-15) on sharing and compatibility between ESIMs and current and planned stations of existing services allocated in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, while ensuring protection and not imposing undue constraints on these allocated services, and to take appropriate action based on the results of these studies.

Before identifying use of the frequency bands, or portions thereof, for ESIM operation, studies should address each operational type of earth stations in motion to include the appropriate technical and regulatory provisions necessary to ensure protection of existing and planned allocated services.

RCC (16th September 2016, updated 14th April 2017)

The RCC Administrations consider that technical conditions and regulatory provisions shall be developed with regard to operation of earth stations in motion (ESIMs) communicating with geostationary space stations in the fixed-satellite service and using frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) to provide protection, based on existing criteria, of services having allocations in these (and adjacent) frequency bands, including EESS (passive) in the frequency band 18.6-18.8 GHz and future use of EESS (Earth-to-space) in the frequency band 28.5-29.5 GHz and also use of terrestrial services in the frequency bands 25.25-27.5 GHz and 27.5-29.5 GHz.

The RCC Administrations consider that the methods including segmentation of the frequency bands, limitation of ESIM maximum off-axis e.i.r.p. spectral density, and other methods or their combinations, should be considered as the methods for sharing frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) between ESIMs and GSO FSS stations and stations of other services having allocations in these frequency bands. ESIMs in the frequency bands 17.7-19.7 GHz shall not claim protection from fixed and mobile services.

The RCC Administrations consider that when developing technical conditions and regulatory provisions for operation of ESIMs in the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) special measures shall be envisaged to exclude unauthorized use of ESIMs in the territory of States that haven’t granted relevant authorizations (licenses).

Regulations applicable to ESIM, which would be defined under the issue 9.1.7 of WRC-19 agenda item 9.1, shall be taken into account when developing regulations within the frameworks of WRC-19 agenda item 1.5.

## International organisations

IATA (date of proposal)

ICAO (date of proposal)

IMO (25th August 2016, WP 4A ITU-R (doc. 4A/103))

The Group reviewed and after some consideration agreed with the text of the background section and Preliminary draft IMO position, as initially proposed by China in the annex to document IMO/ITU EG 12/5/9

### Background

Currently, there is a growing need for global broadband satellite communications by the maritime community and some of this need can be met by allowing earth stations in motion to communicate with space stations of the FSS operating in the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space).

### Preliminary draft IMO position

Support the study of this agenda item, recognizing the growing need for global broadband satellite communications in motion by the maritime community.

SFCG, ESA (June 2016)

The band 18.6-18.8 GHz is allocated to the Earth exploration-satellite service (passive) on a primary basis in all three Regions and to the space research service (passive) on a secondary basis in Regions 1 and 3 and on a primary basis in Region 2. The band 28.5-29.5 GHz is further allocated on a secondary basis to the Earth exploration-satellite service in the Earth-to-space direction.

SFCG does not oppose the use of the 17.7-19.7 GHz and 27.5-29.5 GHz bands by earth stations in motion as long as EESS operations in the 18.6-18.8 GHz and 28.5-29.5 GHz bands are not adversely affected.

WMO and EUMETNET (3rd March 2017)

No position declared

## Regional organisations

Eurocontrol (date of proposal)

## OTHER INTERNATIONAL AND REGIONAL ORGANISATIONS

EBU (date of proposal)

GSMA (date of proposal)

CRAF (December 2016, Updated 8th March 2017)

There are no RAS frequency allocations within or adjacent to the frequency bands considered for this agenda item. CRAF has no position on this agenda item.

NOC declared in update of 8th March 2017.

1. ECC Report 184 did not study the protection of the Mobile Service in the 27.5-29.5 GHz because no applications were identified at the time of its development. [↑](#footnote-ref-2)
2. According to ECO web site information by June 2016, 21 CEPT Administrations have implemented this decision. [↑](#footnote-ref-3)