

EUTELSAT RESPONSE TO THE RSPG DRAFT OPINION FOR PUBLIC CONSULTATION ON THE ITU-R WORLD RADIOCOMMUNICATION CONFERENCE 2019

1. Executive Summary

This document is Eutelsat's response to the RSPG document entitled "(Draft) RSPG Opinion on the ITU-R World Radiocommunication Conference 2019", dated 05 June 2018. Our response focuses primarily on WRC-19 Agenda Item 1.13 and the need to comply with the agenda of the Conference, which explicitly excludes the frequency band 27.5-29.5 GHz from discussions related to the potential identification of additional spectrum for 5G.

The decisions made at WRC-19 will have direct social and economic impacts on the wealth, well-being and future developments of all countries and their citizens in the EU and worldwide. Indeed, it is indisputable that 5G is expected to provide better quality mobile services in a seamless mode which will allow all technologies – terrestrial and satellite – to be part of the ecosystem which the 5G development and applications will foster. As such, satellites will be part of the 5G global network. Because of their focus on serving territories, and not only populations, High Throughput Satellites (HTS) and Very High Throughput Satellites (VHTS) will be necessary to provide high quality broadband connectivity everywhere, and more specifically to many remote areas where no mobile network will be deployed, and are thus key to bridging the digital divide.

As a consequence, we do expect balance and appropriate decisions to facilitate the deployment of terrestrial services as well as broadband connectivity via satellites in a complementary mode.

2. General comments related to the 26 and 28 GHz bands.

1. The risk hanging over the reintroduction of the 28 GHz band in the Conference is serious and should be dealt with by RSPG as a priority.

For Eutelsat one of the most critical issue of the RSPG opinion is introduced in section 4.1 (General objective) of that document, where the RSPG recognizes the threat hanging over the 27.5 – 29.5 GHz band. In this section, the RSPG even acknowledges the possibility of the introduction of a late AI at WRC-19 to identify the band for IMT, this despite that *"Member states objected to any consideration of the 27.5 – 29.5 GHz band for IMT-2020 harmonization"*.

CEPT Member States have adopted a very clear and strong position on this issue in the document called "CEPT Roadmap on 5G¹", that goes as follows: ***"Europe has harmonized 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"***.

This unambiguous CEPT position, emphasizing the unavailability of the 28 GHz band for 5G in Europe, should explicitly appear in the RSPG opinion as a key justification of the RSPG recommendation to support the IMT identification in the 26 GHz band. The CEPT position should be strongly promoted all along the document as one key basis on which the RSPG opinion should be founded.

- As a consequence, the fact that *"the band is not available for 5G"* in Europe should be clearly mentioned both in section 4.9.3 (recommendation on AI 1.13 – IMT2020/5G) and in section 4.2.3 (recommendation on AI1.5 - ESIM).
- In section 4.2 (where general considerations are given on AI 1.5, ESIM), as the RSPG acknowledges the reality of the threat on the 28 GHz band – *"there will be an ecosystem for 5G systems developed in the*

¹ See: <http://cept.org/ecc/topics/spectrum-for-wireless-broadband-5g#roadmap>

27.5 – 29.5 GHz band”-, Eutelsat suggests that the RSPG not only mentions that *“the band is not considered under the Agenda for WRC”* but again strongly re-affirms the European position not to identify or harmonize the 28 GHz band for IMT.

- Closely related to the above, is section 4.9 (where general considerations are given on IMT2020/5G). Eutelsat requests the RSPG to not only note that *“the studies are limited to eleven bands ranging from 24.25 to 86 GHz”*, but unambiguously reaffirm that the 28 GHz band must not be considered under AI 1.13, as it is unavailable for 5G in Europe, and maintain the European commitment to avoid IMT being identified in that band.

2. The limits adopted in the ECC Decision on 26 GHz to protect adjacent passive services.

Eutelsat would like to draw the RSPG’s attention on the limits imposed to the out-of-band emissions by the ECC Decision on 26 GHz.

- The ECC plenary has indeed approved Decision (18)06 on 26 GHz with an in-band limit for base stations of -42 dBW/200 MHz to the adjacent passive band at 24 GHz. Eutelsat fully supports the need to protect these passive bands that are used to provide critical satellite services (such as remote sensing / meteorological observation) which are essential to the well-being of the planet and even more critical in a time of climate change.

With regard to these limits, and in view of the objections of several administrations who see them as being overly restrictive and likely to impede the development of IMT in the 26 GHz band, Eutelsat expresses its view that implementation of IMT in the entire 26 GHz band, in such a way as to protect the adjacent band passive services, is reasonable and possible, even if it may take a few extra years to develop the IMT equipment in the lower part of the 26 GHz band. In this respect, Eutelsat shares the view supported by a number of administrations, including those which believe, as proposed by France, *“that manufacturers will be capable of developing equipment to comply with these limits for operations across the 26 GHz band, the difficulty to do so as early as 2020 is recognized. This could delay the availability of the entirety of the band, as the equipment available in the 2020 timescale is likely to only be able to comply to the out of band limits while operating in the top of the band.”*

- In contrast to the limits agreed for out-of-band emissions, Eutelsat was very concerned that the proposed provisions calling for an in-band power limit for IMT operations in 26 GHz was not maintained in the ECC decision for 26 GHz as approved in previous ECC meetings. Eutelsat understands that the ECC decision at 26 GHz is meant to be a strong basis to facilitate the 5G roll-out across Europe, but still strongly believes that in the long term and generally speaking, the regulation of the 26 GHz band as well as the regulation of other bands, as soon as they are shared by several types of applications, *must* protect the incumbent services provided by satellites.

In view of the above, Eutelsat again asks the RSPG to continue to affirm the need for the 27.5 – 29.5 GHz band for the current and future developments of HTS and VHTS systems, which are key to addressing the digital divide, being complementary to terrestrial services.

3. Comments to specific WRC-19 Agenda items of interest and importance to Eutelsat:

1. WRC-19 Agenda Item 1.13 (IMT-2020/5G)

It is important 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. However, there is a need for access to sufficient spectrum for connectivity for both terrestrial and satellite services. Furthermore, FSS needs access to sufficient spectrum for user terminals: this cannot be shared on a co-primary basis with IMT.

In particular, there is a need for continued, sustainable and viable access for broadband FSS services for current and future earth station utilization of the 27.5 – 30.0 GHz bands, and in both directions in appropriate parts of 40/50 GHz, without undue geographical or technical constraints.

Eutelsat's position on AI 1.13 is as follows:

- There is a need for access to sufficient spectrum for connectivity for both terrestrial and satellite broadband services.
- The WRC-15 decision should be respected, by restricting the identification of IMT only within candidate bands, as specified in Resolution 238 of WRC-15.
- There is a need for continued, sustainable and viable access for broadband FSS services for current and future earth station utilization of the 24 and 27-27.5 GHz bands outside of region 1, and in both directions in appropriate parts of 40/50 GHz, without undue geographical or technical constraints.
- There is a very real potential for interference from IMT transmitters in the mm wave bands into satellite receivers. We need to adopt measures for protection of the FSS from IMT operations in bands that are identified for IMT by WRC-19.
- FSS needs access to sufficient core broadband spectrum for ubiquitous user terminals: this cannot be shared on a co-primary basis with IMT.
- Harmonization and economy of scale is important, not just for IMT, but for all services, including satellite.
- By their very nature, satellite services cannot operate on country by country basis.
- FSS also needs access to broadband spectrum for individually licensed earth stations. This can be shared but there must be reasonable measures to ensure also future deployment of the FSS services.
- Decisions on the identification of spectrum for IMT must be harmonized on a global or wide regional basis, in order to give the technical and regulatory certainty required for investment and deployment of global broadband satellites systems.
- Support regional and global harmonization of spectrum for wireless and satellite services, respectively, and provide reasonable protections for satellite services will enable:
 - individually licensed earth stations in certain frequency bands, and
 - end-user terminals in core satellite bands.

2. WRC-19 Agenda Item 1.14 (HAPS)

Eutelsat supports studying HAPS spectrum requirements, the suitability of using existing HAPS identifications and performing sharing and compatibility studies. Eutelsat believes that a balance between flexibility for HAPS and compatibility with, without additional constraints to, FSS operations must be achieved.

In this respect we would have concern for defining new conditions for HAPS by which both HAPS and FSS would be operating in the same direction in the same bands. Compatibility between FSS and HAPS is nevertheless easily achieved when the two systems are operating in opposite directions in any given band. According to us, there is enough spectrum that this additional flexibility for HAPS is not merited given the sharing difficulties that this entails.

Specifically, Eutelsat believes that any changes or additions to the identifications for HAPS should be on the basis of justification of need for more spectrum and comprehensive sharing studies, and should:

- Ensure the protection of existing FSS, and other services, in the identified bands and those adjacent to it.

- Ensure that new FSS systems can be deployed in the future, without significant constraints and without unacceptable interference from HAPS.

In order to achieve the above points Eutelsat is of the view that the above needs are best met in any given frequency band where the HAPS and the FSS services are operating in opposite directions (i.e. space to Earth for FSS and platform-to-Earth for HAPS, etc.) and as such any addition or changes to identification for HAPS under this Agenda Item should be restricted to such operations.

3. WRC-19 Agenda Item 1.5 (ESIMs in the FSS Ka band)

Earth Stations in Motion are already operated via our KA-Sat satellite over several European countries, the main application being dedicated to provide broadband access into ships and airplanes. The demand for internet access onboard aircrafts in particular is currently expanding very fast over the world and is expected to be the main driver of growth for HTS and VHTS satellites in the near future.

- WRC-15 adopted provisions for ESIM operations within the FSS allocation in the 19.7 – 20.2 GHz and 29.5 – 30 GHz bands, subject to conditions in Resolution 156.
- To expand worldwide the ECC Decision (13)01 allowing the harmonized 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.

Given the ever increasing demand for mobility in telecommunications and the unique ability of satellite to provide truly global coverage, exploring ways to extend the bandwidth over which ESIMs can operate is a natural direction for the satellite community to take. Technological advances in the functionality and tracking performance of mobile satellite earth stations has been proven for operations in the upper part of the band, 19.7 – 20.2 GHz and 29.5 – 30 GHz band. As such studies are showing the technical and regulatory feasibility of ESIMs sharing both with traditional fixed satellite services as well as terrestrial fixed services also in the 17.7-19.7 GHz and 27.5-29.5 GHz bands.

As a consequence, Eutelsat's position is to allow ESIMs to operate with GSO FSS networks in the bands: 17.7-19.7 GHz and 27.5-29.5 GHz subject to appropriate technical and regulatory mechanisms for aeronautical, maritime, and land ESIM operations in order to protect other allocated services and other FSS operations in the bands.

These technical and regulatory mechanisms would be encompassed in a Resolution that would define conditions for ESIM operations, including:

- that ESIMs operate within the envelope of the FSS network
- that Maritime ESIMs that operate within 60 km distance of low water mark of a country are subject to the prior agreement of the concerned coastal State
- that Aero ESIM meet an appropriate PFD mask at the surface of the Earth
- that ESIMs meet an off-axis EIRP mask outside 3 degrees of the GSO or a maximum ESIM transmit EIRP.

4. WRC-19 Agenda Item 1.6 (NGSO FSS in Q/V bands)

There are GSO networks and non-GSO systems planned in the bands under consideration that are already allocated to FSS. However, the lack of a framework for sharing between non-GSO and GSO systems creates uncertainty amongst FSS operators in these bands.

Eutelsat supports the advancement of next generation satellite technologies for both non-GSO and GSO satellite networks by establishing a framework for FSS systems in the frequency bands 37.5-39.5 GHz (s-E), 39.5-42.5 GHz

(s-E), 47.2-50.2 GHz (E-s) and 50.4-51.4 GHz (E-s). This framework needs to insure that no undue constraints are put on our future GSO operations in the band (i.e. gateway expansion for future HTS systems).

Eutelsat thus supports the development of a new Recommendation for the calculation of maximum levels of interference between non-GSO and GSO FSS systems in frequency bands above 30 GHz.

5. WRC-19 Agenda Item 1.12 Intelligent Transport systems

Studies on compatibility of ITS and FSS in the frequency range 5850 – 5925 MHz have only been conducted by the European CEPT – and only for IEEE 801.11p technology – but not yet at the ITU-R. These studies are reported in the ECC report 101. The Current Mandate from the European Commission requests CEPT to investigate whether the conclusions drawn in ECC Report 101 are valid for the LTE based V2X technology as well (CEPT Report to be finalized by March 2019). However, the lack of a regulatory framework for the sharing between NGSO and GSO systems creates uncertainty amongst FSS operators in these bands.

Eutelsat's position is that No changes to the Radio Regulations are necessary. Instead, there should simply be a requirement for the design of the ITS devices to ensure they cope with the interference environment created by other co-primary services, as operation for ITS in shared bands should be made under non protected basis. This can be made in the proposed ITU R Recommendation or, if it is the case, in a WRC Resolution when identifying bands for ITS.