



eutelsatasia
communications via satellite

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Director-General (Telecoms and Post)
Deputy CE (Policy, Regulation & Competition Development)
Infocomm Media Development Authority
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Dear Ms Chia,

Please find hereafter comments of Eutelsat to the Second Consultation on 5G Mobile Services and Networks issued on 7th May 2019 by the Info-Communication Media Development Authority of Singapore (IMDA).

Eutelsat would like to thank IMDA for having launched this Second Consultation on the 5G topic, and to give the opportunity to contribute to the national preparation for deployment of 5G networks and services.

In case of question, please contact Mr Fabrice Barbedette (fbarbedette@eutelsat.com).

Sincerely yours,

Christophe Cazes

CEO

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SUMMARY OF MAJOR POINTS

IMDA has open up for comments the Second Consultation on 5G Mobile Services and Networks, addressing in particular, but not limited to, the 3.5 GHz band (3.4-3.6 GHz) band and the 28 GHz band (27.5-29.5 GHz).

Eutelsat provides detailed elements and rational in the Comments section below, and that are summarizes hereafter:

3.5 GHz band:

- If IMDA were to engage theoretical studies to assess guard band sizing in the band 3.6-3.7 GHz between 5G terrestrial mobile networks and FSS networks, it is suggested to invite contributions from all interested parties in order to reach a commonly agreed conclusion.
- Eutelsat would invite IMDA to ensure the current specifications of the studies and tests are accurate or modified in order to include the impact of multiple 5G base stations on a single satellite service reception and thus ensure results of tests will be reliable enough to draw conclusion.
- Eutelsat would suggest IMDA no change be made to Table of Allocation in Singapore for the band 3.6 – 3.7 GHz and no decision taken on deployment of Mobile networks in 3.5 GHz band before the outcome of the on-going studies, coordination and consultation is known.

28 GHz band:

- Usage of the 28GHz band by satellite services is, among others, the basis for both existing and future satellite systems providing ubiquitous broadband access and in the case of the VHTS (Very High Throughput Satellite) systems, this will entail the operation of ubiquitous end-user terminals throughout the 28 GHz band.
- Ka-band can also be deployed to connect gateways with remote terminals in Ku-band. In such case, volume requirements are usually high from gateway to terminals and therefore the whole uplink Ka-band should remain usable without undue constraints for gateway earth stations.
- Under Agenda Item 1.13 of WRC-19, the 28GHz band is not a candidate band for potential identification for 5G terrestrial systems. Therefore, any decision by IMDA to identify this band at national level would contribute to a lack of harmonization of the band on a global and regional basis, which be a severe detriment to investment in satellite solutions on which so much of the world relies upon for ubiquitous connectivity, and would also eventually be to the detriment of 5G terrestrial systems.
- Deployment of any new application in the 28 GHz bands should not interfere with space stations receivers, nor put undue constraints on deployment and operations of earth stations. While deployment of terrestrial 5G services might be possible in some satellite uplink bands for a limited deployment of fixed gateway earth stations, in the case of ubiquitous deployment of satellite end-user terminals in the band as would be the case for VHTS systems in the 28 GHz band, coexistence with 5G terrestrial services in the same band and same geographical area is simply not feasible

STATEMENT OF INTEREST

Eutelsat Communications is one of the world's leading operators in the commercial satellite business. The company provides capacity on a fleet of 37 satellites in geostationary orbit serving broadcasters, video service providers, telecom operators, ISPs and government agencies operating in more than 150 countries across Europe, Africa, Asia and the Americas. Eutelsat's focus is on delivering the highest quality of service through technological performance, market expertise and innovation. With head offices in Paris, Eutelsat has a workforce of 1,000 commercial, technical and operational professionals of 46 nationalities, and sales offices in key markets around the world.

Based in Singapore, Eutelsat Asia Pte Ltd embodies Eutelsat long-term commitment to the Asia-Pacific region. Our commitment is to help our clients to grow their business in the Asia Pacific region and to connect them to the rest of the world.

Eutelsat has noted with great interest and attention the Infocomm Media Development Authority's ("IMDA") Second Consultation Paper on 5G Mobile Services and Networks, as many of the frequency bands considered are either currently used on our operational satellites and/or will be used in our future satellite, including many of which that are already under development.

The recent years have witnessed the rapid expansion of Eutelsat in Asia-Pacific. In September 2012, Eutelsat bought the GE-23 satellite from GE Capital operating under orbital rights at 172 degrees East. The satellite was later renamed EUTELSAT 172A and integrated into Eutelsat's global fleet. EUTELSAT 172A offered until 2017 a unique coverage spanning the Pacific Ocean from Los Angeles to Beijing and from Anchorage to Perth in C-band and Ku-band and as an exceptional platform to serve the dynamic markets in Asia-Pacific. EUTELSAT 172A was then replaced in 2017 by EUTELSAT 172B satellite, which on top of continuity mission in C and Ku bands added an innovative HTS payload in Ku/Ka bands focusing on mobility market. EUTELSAT 172A was then relocated at 174 degrees East and renamed EUTELSAT 174A and ensure growth of activity in the Asia-Pacific region. Eutelsat's development in Asia was also reinforced by the launch of EUTELSAT 70B satellite at 70.5 degrees East with a dedicated Asian Ku-band coverage and cross straps capabilities between Europe, Africa and Asia. The combination of the three satellites' footprints provides a complete coverage of Asia-Pacific and those satellites are particularly solicited for data and mobility applications. Eutelsat is also exploring axis of further development in Asia-Pacific region and for this reason is highly attentive to and interested in Singapore spectrum policy evolution.

Eutelsat is convinced that satellite will continue to play a key role in the future telecommunications ecosystem including as a part of 5G. As such Eutelsat is confident that the IMDA will consider the spectrum needs of satellite alongside those of terrestrial mobile services.

COMMENTS

Eutelsat would like to address in particular the following subjects contained in the Consultation and respond to the associated questions:

3.5 GHz band:

Question 3: IMDA would like to seek views and comments on the suitable technical parameters, including the reasonable amount of guard band needed to reduce potential interference between IMT and FSS use in the 3.5 GHz band.

Paragraph 65 of the Consultation refers to technical studies and trials tests in C-band. Eutelsat is not aware of specifications of these tests, nor on assumptions for the technical studies. If IMDA were to engage theoretical studies to assess guard band sizing, it is suggested to invite contributions from all interested parties in order to reach a commonly agreed conclusion. Our understanding is that IMDA is also testing these interferences in practice by examining the impact of one 5G base station on one satellite reception. As a matter of fact, in real life, the satellite reception will be affected by several 5G base stations, which leads us to believe that the current tests will materially underestimate the actual level of interference produced by the 5G services on the reception of the satellite service. Given the importance of the C Band in the region, Eutelsat is quite concerned by the fact that wrong conclusions could be derived from these tests and affect the ability of the satellite industry to contribute to the maximum extent to bringing video content and connecting unserved or underserved areas in the region and globally.

Also, as highlighted in paragraph 69, coordination between Mobile service in Singapore and FSS service in neighboring countries is required and to be achieved. This coordination will provide additional inputs on the possibility and conditions for deployment of 5G Mobile network in 3.5 Ghz band.

As a consequence, Eutelsat would invite IMDA to ensure the current specifications of the studies and tests are accurate or modified in order to include the impact of multiple 5G base stations on a single satellite service reception and thus ensure results of tests will be reliable enough to draw conclusion. Also, Eutelsat would suggest IMDA no change be made to Table of Allocation in Singapore for the band 3.6 – 3.7 GHz and no decision taken on deployment of Mobile networks in 3.5 GHz band before the outcome of the on-going studies, coordination and consultation is known.

28 Ghz band:

Following the 2017 Public Consultation, IMDA intends to update its national frequency plan to allocate the 27.5-29.5 GHz band to the Mobile service on a primary basis, although it is recognized that coexistence with existing services requires coordination (paragraph 73 of the Consultation). Intent is driven on the assumption that this band would be used only by mobility satellite earth stations on-board airplanes and maritime vessels. This interest is indeed demonstrated under Agenda Item 1.5 of WRC-19.

However, Eutelsat would like to bring to the attention of IMDA that usage of the 28GHz band by satellite services goes far beyond these mobility applications, but rather is also, among others, the basis for both existing and future satellite systems providing ubiquitous broadband access. In the case of the so-called VHTS (Very High Throughput Satellite) systems, this will entail the operation of ubiquitous end-user terminals throughout the 28 GHz band. Eutelsat is currently operating several geostationary satellites over Europe, Middle-East and Americas providing broadband and mobility services in the 27.5-30GHz band. Our future HTS and VHTS satellites are in the process of manufacturing for launch by 2019 and 2021 to enhance service over Europe, Middle-East and Africa with more on-board capacity to sustain growth of traffic requirements. Eutelsat is also planning for the development over Asia-Pacific region in Ka-band, including 28GHz band. Requirements of satellite capacity in Ka-band over Asia-Pacific region are significant and expected to further grow in the future, as demonstrated with recent launches and orders of satellites. Ka-band can also be deployed to connect gateways with remote terminals in Ku-band. In such case, volume requirements are usually high from gateway to terminals and therefore the whole uplink Ka-band should remain usable without undue constraints for gateway earth stations.

It is to be underlined that under Agenda Item 1.13 of WRC-19, the 28GHz band is not a candidate band for potential identification for 5G terrestrial systems. Therefore, any decision by IMDA to identify this band at national level would contribute to a lack of harmonization of the band on a global and regional basis, which would be a severe detriment to investment in satellite solutions on which so much of the world relies upon for ubiquitous connectivity, and would also eventually be to the detriment of 5G terrestrial systems.

Paragraph 75 of the Consultation raises the concern of measures to be adopted by FSS stations to protect 5G terrestrial services in 28GHz band. To begin with, we disagree in principle to such an approach by which the incumbent service would be expected to protect the newcomer. In any case deployment of any new application in the 28 GHz band should not interfere with space stations receivers, nor put undue constraints on deployment and operations of earth stations. Furthermore, while deployment of terrestrial 5G services might be possible in some satellite uplink bands for a limited deployment of fixed gateway earth stations, in the case of ubiquitous deployment of satellite end-user terminals in the band as would be the case for VHTS systems in the 28 GHz band, coexistence with 5G terrestrial services in the same band and same geographical area is simply not feasible.

As a consequence, for the reasons detailed above, Eutelsat would encourage IMDA not to update its national frequency plan to allocate the 27.5-29.5 GHz frequency band to the Mobile service on a primary basis and not to support the deployment of mobile terrestrial services in the band.

CONCLUSION

Through this contribution to the Second Consultation on 5G Mobile Services and Networks, Eutelsat has demonstrated to IMDA its interest in contributing to this national exercise as a satellite operator willing to development its activities in particular in Asia-Pacific region.

Regarding the 3.5GHz band, it is suggested that all studies, analyses and coordination be performed and concluded before any decision on the band, and in particular in the 3600-3700GHz proposed guard band.

Regarding the 28GHz band, it is suggested that this band not be identified for mobile terrestrial 5G systems as this would jeopardize the existing and future satellite systems, without justifiable benefit to the 5G terrestrial ecosystem.