

## **COMMENTS OF TELESAT**

In response to “*Proposed Malaysia’s Position for World Radiocommunication Conference 2019 (WRC-19) Agenda Items*”, 11 July 2019

*August 8, 2019*

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## **Introduction**

Telesat is grateful for the opportunity to provide its reply to the “*Proposed Malaysia’s Position for World Radiocommunication Conference 2019 (WRC-19) Agenda Items*”. This reply provides a brief introduction to Telesat followed by Telesat’s comments on some of the Agenda Items.

## **Telesat**

Telesat is headquartered in Ottawa, Canada and was established in 1969 with an initial mandate to provide satellite services to all parts of Canada. Telesat launched the world's first domestic commercial geostationary satellite in 1972 and has since then evolved into an international, diversified, and end-to-end satellite services company, with an unparalleled reputation for innovation, technical and operational expertise and customer service.

Presently, Telesat, is one of the largest and most successful satellite operators in the world and a leading provider of voice, data, video and IP networking services to the private sector and governments. The company’s advanced communications are delivered through its global fleet of 17 satellites. Telesat also operates a teleport and terrestrial infrastructure that is seamlessly integrated with its fleet. Through this combination of space and ground assets, Telesat’s communications solutions support the demanding requirements of customers throughout the world.

Telesat is now launching Telesat LEO, a revolutionary satellite constellation of highly advanced satellites in low-earth-orbit (~1,000 km from earth; ~35 times closer than traditional satellites) that will seamlessly integrate with terrestrial networks. The satellite system will operate in Ka-band, including also the 28GHz band, as further detailed below. The global network will deliver fiber quality throughput (Gbps links; low latency) anywhere on earth. This is a highly flexible system

that dynamically allocates capacity where there's demand, thus maximizing system efficiency. This is also a future-proof solution for backhaul cellular/5G traffic, including to rural and remote areas, and will provide high-speed broadband access to planes, ships, remote enterprise and government users.

As a highly advanced and efficient system with unparalleled economies of scale (multiple Tbps of usable capacity with global coverage), Telesat LEO will deliver to target markets a lower cost solution compared to any other satellite system. Telesat's Phase 1 LEO launched successfully on January 12, 2018. Project plans are moving forward aggressively and start of global service is targeted for 2022.

Telesat has a fifty-year history of successful innovations that have reshaped global communications. With the LEO constellation, Telesat will enable economical fiber quality broadband anywhere and, once again, transform global communications.

### **Proposed Views for Agenda Item 1.5**

In relation to Aeronautical ESIM, **Telesat is of the view that a pfd mask is sufficient to ensure protection of terrestrial services and that an altitude limit is an unnecessary restriction** (as an example, a pfd mask has been successfully implemented in CEPT since 2013 for protection of terrestrial FS in portions of the 28GHz band <https://www.ecodocdb.dk/download/51c777fb-3800/ECCDEC1301.PDF>)

Telesat would also like to respectfully express its concerns in relation to the intended use of the 27.5-29.5GHz band for 5G deployment, as described in the Consultation Document under this agenda item.

Due to the imminent use of the band by its novel Telesat LEO system, Telesat urges MCMC to consider an adequate balance between 5G deployment in Malaysia and the global requirements of the satellite community.

Telesat LEO will use the 27.5 – 29.1 GHz and 29.5 – 30.0 GHz bands in the Earth-to-space direction for both user terminals and gateway earth stations. As already mentioned, Telesat plans to start commercial service with its LEO Constellation in 2022, with South East Asia being a top priority region for both service provision and gateway deployment. In other words, availability of the 28GHz band is key to the provision of Telesat LEO services in Malaysia.

Use of the 28GHz band by terrestrial 5G will disrupt the global harmonised framework for FSS and will be incompatible with RR 5.516B, which identifies the following portions of the 28GHz band for high-density applications in the Fixed Satellite Service (FSS) in Region 3: 28.45-28.94 GHz, 28.94-29.1 GHz and 29.46-29.5 GHz ..

The clearest evidence of the value of the 28 GHz band to the satellite community is the very large number of current and future satellite systems designed to operate in the band of which the MCMC has already been informed, including Telesat LEO. Investments of billions of dollars have been committed to new and innovative satellite systems which are providing and will continue to provide tremendous social and economic value, by connecting the unconnected on land, at sea and in the air, and providing essential connectivity services, such a cellular and 5G backhaul, in an efficient and economic manner. The 27.5-29.5GHz band is also essential for feeder link earth stations for a large number of satellite systems with payloads in Ka and other frequency bands, including Telesat LEO.

Telesat is of the opinion that, rather than in the 28GHz, terrestrial 5G would be well accommodated in the 26GHz band (i.e. 24.25 to 27.5 GHz, which is also supported by Malaysia under AI 1.13). Also, WRC-19 AI 1.13 is studying more than 30GHz of spectrum to accommodate 5G in microwave frequencies.

As a final remark, should MCMC proceed with some terrestrial 5G deployment in the 28GHz band, Telesat respectfully asks MCMC to, as a minimum, preserve part of the 28GHz band for primary FSS use (including ESIM and coherently also with RR 5.516B). Also, should 5G be deployed in part of the band, Telesat is of the view that land FSS transmitters (including ESIM) can still operate, given adequate sharing conditions (e.g. in areas sufficiently distant from 5G deployments).

All of the above is in order to establish a fair and balanced spectrum environment and provide critical regulatory stability for all services concerned.

#### **Proposed Views for Agenda Item 7/Issue A. Milestones sub-issue.**

Telesat greatly appreciates the statement: *“Malaysia supports requirement for BIU of frequency assignments of non-GSO systems and introduction of milestone-based approach for specific services and frequency bands that recognises that constellations of non-GSO systems may generally take time to be developed and to complete their deployment”*.

#### *Striking the right balance*

The Conference should provide a regulatory solution that strikes the right balance between preventing spectrum speculation and ensuring that sufficient time is available for the deployment of systems composed of a significant number of satellites, some of which have very complex and spectrally efficient designs. Any solution endorsed by WRC-19 should not impose unnecessary

burdens that would prevent the projects currently being designed and/or deployed from coming to fruition.

*New rules should either not apply retroactively or provide for enough time to adjust deployment plans*

A considerable number of non-GSO systems have been initiated under the current regulatory regime, which establishes the obligation for an administration and its operator to deploy one satellite in one of the notified orbital planes before the end of the seven-year regulatory period of the relevant ITU “filing”. There is one method in the final CPM report with several options, all of which indicate that a possible new regulatory framework would apply milestones retroactively to such systems. This causes severe uncertainty to the administrations and operators involved, because any new obligations would be known only on the last day of the Conference.

*Milestones shall embed adequate margins*

Any milestones the Conference may adopt should determine the minimum percentage of satellites in a constellation that should be launched before a certain date. This date should be counted from the end of the seven-year regulatory period of the ITU filing or from a certain “reference date”, whichever is later. In order to overcome the negative consequences of a retroactive application of the new rules to systems already brought into use and currently under deployment, the reference date and associated first milestone should fall late enough after the Conference to allow for enough time to adapt the schedule of a system (e.g. account for the potential lack of availability of launch capabilities or other unforeseen development and/or deployment delays that may affect systems composed of several satellites).

Appropriate time to deploy would prevent administrations from asking the Radio Regulations Board (RRB) for possible time extensions should such unforeseen difficulties and delays occur. Telesat is of the view that such requests should be avoided, so that the Radio Regulations Board would not be in the position of requiring the definition of cases of “force majeure” applicable to non-GSO satellite systems that may be controversial.

**For the reasons above, Telesat is of the view that the first milestone should fall no earlier than 1 January 2025. Also, the first milestone should be associated to a small portion (ca. 10%) of the total number of satellites in the notified system.** Taking into account the information contained in Table 3/7/1.3.2-1 of the CPM Report (see page 476), this could be achieved in different ways. For example, one option could be to choose milestones (B1, B2, B3) associated to a reference date of 1 January 2023, while another option could be to choose milestones (E1, E2, E3) associated to a reference date of 1 January 2021.

In summary, Telesat believes that in order to foster global and/or regional competition and, consequently, bring several benefits to business, citizens and consumers around the world it is important that any milestones that may be established give an opportunity to all administrations and satellite operators planning a system the necessary time to deploy. The Radio Regulations should create a favorable environment for as many systems as possible to come to fruition as this will foster a competitive marketplace that will benefit industry, governments and consumers.

### **Proposed Views for Agenda Item 10**

Telesat (and other satellite operators) support **a new WRC-23 AI for Earth Stations In Motion (ESIM) communicating with non-geostationary (NGSO) space stations in the fixed-satellite**

**service (FSS) in the frequency bands 17.7-18.6 (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space),** while ensuring due protection of existing services in those bands

This is along similar lines as ITU-R Resolution 156 (WRC-15) and WRC-19 AI 1.5 for GSO ESIM in similar frequency bands.

While there is scope to believe that the GSO ESIM regulatory framework in Ka-band will be finalised at WRC-19, there is currently no guidance (including for protection of terrestrial systems), for NGSO ESIM which are being deployed.

Overall, while sharing conditions are expected to be similar, if not identical, to those for GSO ESIM, the development of a globally harmonised framework, with suitable technical, operational and regulatory conditions, will enable and facilitate provision of valuable services using NGSO satellites, while also making sure that no harmful interference is caused to other systems operating in the same bands.

Such proposal is currently under discussion in CEPT and CITELE and, should it go to the Conference, Telesat hopes for support from Malaysia for the reasons above.