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Director
Space Services Planning
Innovation, Science and Economic Development Canada
235 Queen Street
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Re: Canada Gazette Notice No. SMSE-016-18, October 2018
Consultation on the Utilization of the Bands 18.8-19.3 GHz and 28.6-29.1 GHz, and the Bands 17.3-17.7 GHz, 19.3-19.7 GHz and 29.1-29.25 GHz by the Fixed-Satellite Service

Inmarsat appreciates the opportunity to comment on the *Consultation on the Utilization of the Bands 18.8-19.3 GHz and 28.6-29.1 GHz, and the Bands 17.3-17.7 GHz, 19.3-19.7 GHz and 29.1-29.25 GHz by the Fixed-Satellite Service*, Canada Gazette Notice No. SMSE-016-18 (the "Consultation"). Inmarsat is the leader in global mobile satellite communications, and currently operates a global system of 13 satellites and associated ground infrastructure that offers a wide range of communications solutions to customers on land, in the air, and at sea in L-band, S-band and Ka-band spectrum. Inmarsat's Global Xpress broadband satellite service uses the Ka-band, including the spectrum that is the subject of this Consultation, to deliver data to the most remote and inaccessible locations of the world, and along many long-haul aviation and maritime routes that otherwise lack high-speed connectivity. As such, Inmarsat has a direct interest in the topics raised in the Consultation.

As the Consultation, notes, there are several trends that are impacting the satellite industry and one of these is the growing demand for ubiquitous broadband connectivity. This includes connectivity aboard planes, on ships, and in rural and remote areas, and satellites, with their broad reach and coverage, play an important role in enabling such connectivity. Having operated a global satellite systems for almost 40 years, Inmarsat agrees that one of the key challenges that

regulators face is ensuring that international and domestic frameworks provide regulatory certainty for existing service providers, while enabling innovation and the provision of new services and applications.

In these comments Inmarsat focuses on the specific questions raised by ISED in the Consultation. As a general matter, Inmarsat agrees with the underlying policy objectives behind this Consultation, which state that spectrum should be used in a way that maximizes the economic and social benefits for Canadians. These objectives also underscore that spectrum policy and management should permit the flexible use of spectrum to the extent possible and support the efficient functioning of markets by harmonizing spectrum use with international allocations and standards.

Question 1: *ISED is seeking comments on the proposal to give co-primary status to both GSO networks and NGSO systems in the FSS in the bands 18.8-19.3 GHz and 28.6-29.1 GHz.*
Inmarsat supports the ISED proposal for co-primary status of GSO FSS networks and NGSO FSS systems in the 18.8-19.3 GHz and 28.6-29.1 GHz. As the Consultation noted, ISED has already issued many authorizations for the operation of GSO satellites, gateway stations, and subscriber terminals. Giving these operations co-primary status would provide business continuity to existing licensees in these bands, whereas the Consultation Option 2 (giving secondary status to current GSO licensees in these bands) would be disruptive to licensees' plans and service offerings. In addition, it is recognized that the ITU obligation for coordination of NGSO FSS and GSO FSS systems on the basis of co-primary status in the relevant bands will continue to apply. Further Inmarsat agrees that the alignment of regional allocations is not a significant factor for NGSO systems given their global nature.

***Question 2**: ISED is seeking comments on the proposal to use the original date of authorization for domestic systems for domestic coordination purposes.*
Inmarsat has no specific comment on this proposal which addresses Canadian domestic system coordination issues. However, Inmarsat observes that, in its experience, most first come first served processes are based on date of receipt of an authorization application, as opposed to the date of grant of the authorization. It is not clear if that is what was intended by this proposal. In any case, what is clear is that for foreign systems authorized for use in Canada, coordination would be based on

standard international practices, which would mean no change from the existing status of licensees or approved systems. Inmarsat supports that aspect of this proposal.

***Question 3**: Is there additional information on coordination practices for GSO networks and NGSO systems in the FSS that should be considered? If so, please explain in detail.*
***Question 4**: ISED seeks comments on its view that, at this time, the existing approach to addressing domestic coordination disputes is sufficient.*

Inmarsat notes that both Questions 3 and 4 are addressing domestic coordination issues. As was the case for Question 2, Inmarsat has no specific comments on the Canadian domestic coordination process.

***Question 5**: ISED is seeking comments on the proposed changes to the CTFA.*
In providing responses, include supporting arguments for or against the proposed changes.

Inmarsat supports the proposed changes to footnotes **C16E** and **C16F** in the CTFA that recognize the co-primary status to GSO FSS and NGSO FSS operations in the 18.8-19.3 GHz and the 28.6-29.1 GHz bands. Inmarsat sees these changes as consequential to the decision in Question 1 and agrees with these changes for the reasons stated previously.

***Question 6**: ISED is seeking comments on the above proposed changes to the CTFA.*
In providing responses, include supporting arguments for or against the proposed changes.

ADD C43A Assignments to stations in the broadcasting-satellite service in the frequency band 17.3-17.7 GHz may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the *Radio Regulations*. The use of these assignments by the fixed-satellite service (space-to-Earth) is limited to low density deployments of earth stations communicating with geostationary satellite systems.

C46A (CAN-18) MOD The use of the frequency band 19.3-19.7 GHz by the fixed-satellite service (space-to-Earth) is limited to <u>low density deployments of earth stations communicating with geostationary satellite systems and to</u> feeder links <u>to non-geostationary satellite systems in</u> ~~for~~ the mobile-satellite service.

C48 (CAN-18) MOD The use of the frequency band 29.1-29.25 GHz by the fixed-satellite service (Earth-to-space) is limited to low-density deployments of earth stations communicating with geostationary satellite systems and to feeder links to non-geostationary satellite systems in ~~for~~ the mobile-satellite service.

Inmarsat supports the proposed new footnote **C43A** that would allow broader use of the 17.3-17.7 GHz band by the FSS. Inmarsat also supports the objective behind ISED's proposal to expand the types of FSS operations allowed in the 19.3-19.7 GHz and 29.1-29.25 GHz bands. As ISED explains the current limitation of FSS use to feeder links for other services has resulted in the very light FSS use in these frequency ranges, which runs counter to the policy objective "*that spectrum should be used in a way that maximizes the economic and social benefits for Canadians*." Given that spectrum is a limited resource it is important to utilize it as efficiently and robustly as possible. Consequently, Inmarsat does not support the proposed limitation to "low-density deployments of earth stations*"* in the 19.3-19.7 GHz (FN **C46A**) and 29.1-29.25 GHz (FN **C48**) bands for the following reasons.

As stated in paragraph 53 of the Consultation:

> The spectrum policies governing the bands 17.3-17.7 GHz, 19.3-19.7 GHz, and 29.1-29.25 GHz were last revised in 2004 when the Department published SP 3-30 GHz. Since then, the services and applications traditionally delivered under the FSS, BSS and MSS allocations have increasingly converged. For instance, Internet-based video services are displacing traditional broadcasting services, *while earth stations in motion (ESIMs) communicating with FSS networks are being deployed to meet growing demand for ubiquitous broadband services in the mobility market*. (*emphasis added*)

Considerable work has been done in the ITU-R under WRC-19 Agenda item 1.5 to study the potential impact of allowing Earth Stations In Motion (ESIM) to operate in the 17.7-19.7 GHz and 27.5-29.5 GHz bands. For the 17.7-19.7 GHz (space-to-Earth) band (including the 19.3-19.7 GHz band) it is understood that allowing ESIM operation with GSO FSS networks does not change the interference environment for other services, as ESIM are only receiving in this band. For the 27.5-29.5 GHz (Earth-to-space) band (including the 29.1-29.25 GHz band) the ITU-R studies have shown that conditions can be placed on the operation of ESIM to protect terrestrial services (i.e. an elevation angle dependent pfd mask on the Earth's surface), and that ESIM operation can be coordinated with

NGSO MSS feeder link operations. As such, the proposed limitation to "low-density deployments of earth stations" in footnotes **C46A** and **C48** could unnecessarily restrict ESIM operation in the 19.3-19.7 GHz and 29.1-29.5 GHz bands. Inmarsat understands that the restriction to "low-density deployments of earth stations" is intended to apply to fixed earth stations within Canada, which could in fact create constraints on terrestrial services. Inmarsat requests that ISED reconsider this aspect of the proposed changes to footnotes **C46A** and **C48**, perhaps be creating an exclusion for ESIM as follows (changes shown in *italics*):

C46A (CAN-18) MOD The use of the frequency band 19.3-19.7 GHz by the fixed-satellite service (space-to-Earth) is limited to *ESIMs and* low density deployments of *fixed* earth stations communicating with geostationary satellite systems and to feeder links to non-geostationary satellite systems in ~~for~~ the mobile-satellite service.

C48 (CAN-18) MOD The use of the frequency band 29.1-29.25 GHz by the fixed-satellite service (Earth-to-space) is limited to *ESIMs and* low-density deployments of *fixed* earth stations communicating with geostationary satellite systems and to feeder links to non-geostationary satellite systems in ~~for~~ the mobile-satellite service.