



VIA E-MAIL

satelliteauthorization-autorisationsatellite@ised-isde.gc.ca

October 4, 2021

Innovation, Science and Economic Development Canada
c/o Senior Director, Space Services and International
Engineering, Planning and Standards Branch
235 Queen Street (6th Floor, East Tower)
Ottawa, Ontario K1A 0H5

**Re: Canada Gazette Notice SMSE-009-21
Consultation on Updates to the Licensing and Fee Framework
for Earth Stations and Space Stations in Canada**

Inmarsat Solutions (Canada) Inc. ("Inmarsat") appreciates the opportunity to comment on the *Consultation on Updates to the Licensing and Fee Framework for Earth Stations and Space Stations in Canada*, Canada Gazette Notice No. SMSE-009-21 (the "Consultation").

Inmarsat operates a global satellite communications system of 13 geostationary orbit ("GSO") space stations offering diverse services in the L-, S-, and Ka-bands. Inmarsat also operates Canadian Earth Stations in Winnipeg, Manitoba, and Weir, Quebec, providing feeder links and telemetry, tracking, and command ("TT&C") functions in both the C-band and Ka-band in the fixed-satellite service ("FSS"). These earth stations support mobile-satellite service ("MSS") operations in the L-band and ESIM services in the Ka-band, both in Canada and across the Americas.

Inmarsat participated in the preparation of comments contemporaneously filed by the Global VSAT Forum ("GVF"). Inmarsat generally concurs with GVF's comments and further elaborates on its views on certain questions raised by ISED in the Consultation, addressing particular questions below.

Q1

ISED is seeking comments on its proposals to:

- a. use spectrum licenses to authorize fixed and transportable earth stations and ESIMs within Canadian territory, with multiple earth stations authorized under a single license

A: Inmarsat supports this proposal, which will formalize and simplify the licensing of ESIMs and reduce regulatory burdens. The adoption of a permanent procedure to replace a long-standing interim approach¹ is welcome.

Inmarsat further supports permitting ESIMs on board Canadian-licensed or registered vessels and aircraft to operate outside Canada, subject to any applicable international or

¹ CPC-2-6-01, <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01940.html>.

domestic regulatory regime. Further, ESIMs brought into Canada for temporary use and duly authorized in the country of origin should be able to operate under the same technical and operational characteristics as the Canadian earth stations authorized by the associated licence.

Q1

ISED is seeking comments on its proposals to:

- b. issue the proposed spectrum licenses for a Tier 1 service area, and have those licenses authorize the radio service and frequency bands

A: Inmarsat generally supports this proposal, but urges ISED to consider licenses for smaller service areas for a smaller annual fee in cases where the use of a frequency band varies across Canada. Allowing applicants to apply for Tiers that match the scope and area of their service, and pay a lower, comparable annual fee, would encourage earth station deployment in Canada as a whole, and would encourage deployment in frequencies and service areas in which ISED policies emphasize earth station deployment.

Q1

ISED is seeking comments on its proposals to:

- c. apply the general conditions of license that are listed in Annex A to earth station spectrum licenses.

A: Inmarsat acknowledges that the general conditions listed in Annex A are the same general conditions of license that apply now. This consultation may provide an opportunity to streamline these conditions, and Inmarsat may consider submissions from other commenters and revisit this issue in reply comments.

Q2

ISED is seeking comments on its proposals to:

- a. implement spectrum licenses that require site approvals for all earth stations described above operating in any frequency band

A: Inmarsat does not object to requiring site approval for earth stations mentioned in bands and areas where coordination is required (i.e. those shared with terrestrial services or near international borders), except to the extent that generic licenses are available in a band on a non-protected basis.

Q2

ISED is seeking comments on its proposals to:

- b. collect and assess the technical information listed in annex B as part of the site approval process

A: Inmarsat recommends that recommends that ISED substantially simplify the technical information requested in annex B. The information collected should be limited to that needed to understand the interference potential or susceptibility of the earth station. Much

of the information listed seems of limited relevance given the advent of adaptive coding and modulation. Inmarsat proposes that the following information is not critical:

For transmitter information:

- Where the transmit carrier is digitally modulated, the modulated bit rate in Mb/s

For receiver information:

- Lowest total receiving system noise temperature (in Kelvins) with reference to the output of the receiving antenna of the earth station under "clear sky conditions"
- Carrier-to-noise (C/N) ratio (in dB)
- Where the receive carrier is digitally modulated, the type of modulation phases
- Where the receive carrier is digitally modulated, the number of modulation phases
- Where the receive carrier is digitally modulated, the modulated bit rate in Mbps

Q2

ISED is seeking comments on its proposals to:

- c. require earth station licensees with site-approved spectrum licenses to hold licenses for entire spectrum blocks, as per relevant SRSPs

A: While Inmarsat generally supports simplification of the satellite licensing structure, it is unclear that ISED's proposal is adequate for satellite services. The use of spectrum for satellite services will not necessarily adapt to other services' channelization. Further, TT&C and beaconing applications, as well as certain service carriers, may require only a fraction of a larger defined band. ISED's should modify its proposal to permit licensees to hold authorizations for partial spectrum blocks.

Q3

ISED is seeking comments on any additional technical information that should be required for site-approved earth stations. In providing comments, respondents are requested to include supporting arguments and a rationale.

A: Inmarsat's view is that no further information should be required.

Q4

ISED is seeking comments on what other types of earth stations, in addition to those identified, could be subject to spectrum licenses that require site approvals.

A: Other types of earth stations should not be subject to site approvals.

Q5

ISED is seeking comments on its proposal to adopt generic spectrum licenses in order to authorize systems of identical fixed earth stations and ESIMs.

A: Inmarsat supports ISED's proposal.

Q6

ISED is seeking comments on its proposals to allow generic spectrum licensing systems of identical fixed earth stations and ESIMs in the frequency bands discussed above.

A: Inmarsat supports ISED's proposal, particularly for the 17.7-20.2 GHz and 27.5-30.0 GHz frequency ranges.

Q7

ISED is also seeking comments on any other bands that should be considered for generic spectrum licensing for fixed earth stations and ESIMs, including for systems of identical receive-only earth stations in the 4000-4200 MHz band. In providing comments, respondents are requested to include supporting arguments and a rationale.

A: In light of the HDFSS identification of the bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) in No. 5.516B of the Radio Regulations, Inmarsat support spectrum licensing in these bands for both ESIMs and fixed earth stations.

Q8

ISED is seeking comments on its proposals to:

- a. issue generic spectrum licenses for ESIMs on a no-interference, no-protection basis
- b. require ESIM licensees to provide a contact that would be available to respond to interference issues 24 hours a day, 7 days a week, as per the license conditions in annex A
- c. require applicants to submit technical information needed to confirm compliance with SRSP-101 when they apply for generic spectrum licences for ESIMs and for fixed earth stations intended for self-installation by consumers

A: Inmarsat acknowledges that some evolution of the international status of ESIMs is ongoing, as follow-on work from WRC-19 under Resolution 169 is ongoing. Inmarsat does not object to generic spectrum licenses issued to ESIMs on a no-interference, no-protection basis **to the extent that the interfering station is operating as authorized**. A blanket denial of protection against other spectrum users not operating in accordance with their authorizations is unwarranted.

Inmarsat does not object to a requirement to provide a continuous point of contact. Inmarsat notes that there is such a requirement of United States licensees, and Inmarsat does maintain a 24-hour point of contact at several of its facilities throughout the globe, including at its Network Operations Centre in London.

Inmarsat does not oppose a requirement to submit information needed to confirm compliance with SRSP-101.

Q9

ISED is seeking comments on whether an RSS should be developed for earth stations intended for self-installation by consumers.

A: Inmarsat supports ISED's proposal, and urges caution when considering issues related to consumer installation. Enforceable standards are necessary for self-installation. Professional installations of consumer earth stations aim to satisfy customer expectations, maximize RF safety, and ensure that no harmful interference is caused to other operators from faulty installation. It is important that measures be put in place to ensure these objectives are met by consumer installations, and that a procedure exists to address faulty installations.

Q11

ISED is seeking comments on its proposal to introduce spectrum licensing to authorize FSS feeder link and/or TT&C spectrum used by space stations to support MSS, with licences issued immediately after a favourable licensing decision and fees applicable once satellites are in operation.

Q12

ISED is seeking comments on whether to require MSS satellite operators to comply with the rules regarding minimum holdings for FSS feeder link spectrum, as defined in RP-008. In providing comments, respondents are requested to include supporting arguments and a rationale.

A: Inmarsat supports ISED's proposal to introduce spectrum licensing to authorize FSS feeder link and TT&C spectrum to support MSS, with licenses issued immediately after a favourable licensing decision. Fees should be applicable once the satellite is in operation.

RP-008 provides that "If [a] sub-band is not identified in annex A [of the Policy], applications requesting only part of the bands identified in the Canadian Table of Frequency Allocations will be assessed on a case-by-case basis." Inmarsat licenses for TT&C and feeder link spectrum in the 3600-4200 MHz range at Weir, Quebec, and will continue to do so for the lifetime of the satellites the station serves. A restrictive minimum holdings standard retroactively applied to this facility would be inappropriate.

Q13

ISED is seeking comments on its proposals to:

- a. issue spectrum licences instead of approvals in principle for MSS satellites, with fees remaining payable only once satellites are launched and operational
- b. issue spectrum licences for MSS satellites with a 20-year term
- c. issue separate spectrum licences for MSS satellites and MSS earth stations, with each licence assigned a fee.

A: Inmarsat agrees that a consistent licensing mechanism for FSS, BSS, and MSS satellite systems will simplify the licensing process.

Q14

ISED is seeking comments on its proposals to:

- a. issue the three types of satellite-related spectrum licences separately and assign a separate fee for each
- b. allow communication with multiple GSO satellites on a single earth station licence
- c. require separate earth station licences for NGSO systems

A: Inmarsat supports these proposals, and supports the establishment of an expedited procedure for adding additional satellite networks to an existing earth station licence to avoid unnecessary processing delays.

Q15

ISED is seeking comments on its proposal to assign a consumption-based fee to earth station spectrum licences, where site and station approvals are required, as follows:

below or equal to 1 GHz: \$2000/MHz
above 1 GHz and below or equal to 3.4 GHz: \$100/MHz
above 3.4 GHz and below or equal to 7.075 GHz: \$20/MHz
above 7.075 GHz and below or equal to 17.3 GHz: \$10/MHz
above 17.3 GHz and below or equal to 51.4 GHz: \$5/MHz
above 51.4 GHz: \$1/MHz

Q16

ISED is seeking comments on its proposal to assign a consumption-based fee to generic earth station spectrum licences for fixed earth stations and ESIMs at the rate of \$5/MHz.

A: Inmarsat agrees with ISED's proposal to abandon the current capacity-based license fee model, which is measured by telephone voice channels or the equivalent. Currently, the number of telephone channels equivalent to the digitally modulated channel is calculated by dividing the modulation bit rate by 64 kbps. In effect, more data transmitted over a given amount of bandwidth results in a higher the license fee paid by the operator. This penalizes the efficient use of spectrum.

ISED should note that Canada's earth station licensing fees are still higher than the licensing fees of some of Canada's peers that do not take a per-MHz approach to pricing. For example, the United States annual license fee for an earth station is presently USD 595 per earth station license, which may include an authorization for multiple earth stations, including ESIM and small fixed terminal types. Further, unlike terrestrial spectrum licenses, the same FSS spectrum may be authorized to multiple operators. Accordingly, ISED should consider reducing the proposed per-MHz fees substantially.

Q17

ISED is seeking comments on its proposal to modify the existing consumption-based fee for spectrum licences for MSS earth stations operating in bands allocated to MSS as follows:

at or below 3 GHz: \$1500/MHz
above 3 GHz: \$5/MHz

Q18

ISED is seeking comments on its proposal to assign the spectrum licence fee for MSS earth stations based on the maximum amount of spectrum a system is capable of using, within a range of possible operation. This amount would be the assigned spectrum used in the fee calculation.

A: ISED's justification of a very substantial fee per MHz below 3 GHz is based upon alleged "contention for spectrum from terrestrial services, similar to the fee proposal for site-approved spectrum licences." Inmarsat notes that the L-band spectrum for which it holds Canadian earth station licenses is exclusively allocated to the MSS, is designated for, among other things, GMDSS and other safety uses, and is explicitly *not* fair game for contention from terrestrial services. A one-size-fits all fee, particularly of this magnitude, is not warranted below 3 GHz. Inmarsat opposes this value with the expectation that an assessment of similar magnitude to past assessments on L-band spectrum will be made.

Inmarsat does not oppose a fee comparable to whatever assessment is made against ESIMs in the decision on Q16, nor does Inmarsat object to an assessment based on the maximum amount of spectrum a system is capable of using.

Q21

ISED is seeking comments on its proposals to introduce a minimum annual spectrum licence fee of \$160 for earth stations and \$300 for space stations, and to apply these fees whenever the application of the consumption-based fee model would result in a fee lower than those amounts.

Q22

ISED is seeking comments on its proposal to apply a minimum annual spectrum licence earth station fee of \$160 to radioastronomy sites.

Q23

ISED is seeking comments on its proposals to introduce developmental spectrum licence fees for earth stations and space stations at a flat rate of \$160 and \$300, respectively.

Q24

ISED is also seeking comments on limits to eligibility requirements for developmental spectrum licences, limits on frequency bands where developmental licences could be issued, and conditions of licence that could be applied. In providing comments, respondents are requested to include supporting arguments and a rationale.

A: Inmarsat does not oppose the proposals in Questions 21-22.

Inmarsat understands that developmental licenses are limited to non-commercial operations and authorize operation only on a no-protection, no-interference basis. With this understanding, Inmarsat supports the proposal of Question 23 and suggests that no limits to eligibility requirements or frequency bands are needed in Question 24.

/s/ Brennan Price

Brennan Price

Director, Regulatory Affairs

Inmarsat Solutions (Canada) Inc.

1441 L St NW Ste 610

Washington DC 20005

USA

Tel +1 703 223-3327

brennan.price@inmarsat.com