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21 February 2019

Director
Space Services Planning
Innovation, Science and Economic Development Canada
235 Queen Street
Ottawa, ON K1A 0H5

Dear Sir or Madam:

Re: Reply Comments of Ciel Satellite Limited Partnership, SES S.A., and O3b Limited - 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, Part I, October 25, 2018, Notice No. SMSE-016-18

I. Introduction.

1. Ciel Satellite Limited Partnership (“Ciel”) and its affiliates SES S.A. (“SES”) and O3b Limited (“O3b”) (collectively, the “Companies”) submit these Reply Comments in response to 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, Part I, October 25, 2018, Notice No. SMSE-016-18* (the “Consultation”) initiated by Innovation, Science and Economic Development Canada (“ISED” or the “Department”).
2. After reviewing the submissions to the Consultation, the Companies urge ISED to take the following actions: (1) adopt a co-primary regime to allow GSO networks and NGSO systems to have co-primary status in the FSS, (2) permit fixed-satellite service (“FSS”)

use in the 17.3-17.7 GHz band; (3) increase GSO FSS use of the 19.3-19.7 GHz and 29.1-29.25 GHz bands; and (4) reference ITU date priority and other international coordination practices for domestic coordination purposes. As evidenced by the record, there is substantial support for these propositions.

II. ISED should adopt its 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.

3. As noted in our initial submission, the Companies support ISED's proposal to grant co-primary status to both GSO networks and NGSO systems in the FSS in the 18.8-19.3 GHz and 28.6-29.1 GHz bands (identified in the Consultation as "Option 1"). A majority of commenters agree with this position, voicing support for a co-primary regime.¹
4. A co-primary regime is more conducive to the future development and deployment of both GSO and NGSO satellite communications solutions for Canadians, and as discussed by other stakeholders, is more aligned with current and past practices of the Department. The Department grants licenses for both types of systems in the 18.8-19.3 GHz and 28.6-29.1 GHz bands, and both have been given the opportunity to develop technologies and deploy operations in Canada.² Employing a GSO-secondary regime would create uncertainty for existing licensees as well as systems under construction, and would stifle innovation and business development.³ The Companies agree with the statements made by Inmarsat, that employing a co-primary regime would provide regulatory stability and encourage continuous deployment of both systems.⁴
5. Adopting a co-primary regime would also best promote the Department's policy objectives.⁵ Connecting all Canadians is a priority goal for the Department and as ISED noted in the Consultation, both GSO and NGSO satellite operators are implementing new communications technologies in the FSS bands that will benefit Canadians living in rural and remote areas.⁶ As highlighted by Bell, "Both GSO and NGSO constellations

¹ See Comments of Viasat at 6; see Comments of Inmarsat at 2; see Comments of Hughes at para. 11; see Comments of SpaceX at 2; see Comments of Xplornet at para. 13; see Comments of Bell at para. 4.

² See Comments of Hughes at para. 12.

³ See Comments of Xplornet Communications Inc at para. 15; see *also* Comments of SpaceX at 2; see *also* Comments of Hughes at para. 12.

⁴ See Comments of Inmarsat at 2.

⁵ See Comments of Xplornet Communications Inc. at para. 23.

⁶ See Consultation para. 6; see *also* Comments of Hughes at 4; see Comments of Xplornet at para. 15.

offer the potential to deliver high-speed internet connectivity and innovative services and applications for all Canadians.”⁷ Confirming the existing equal status of GSO FSS networks and NGSO FSS systems in the bands would ensure that Canadians will benefit from the development and roll-out of all these technologies.

6. The Companies agree with the Radio Advisory Board of Canada (“RABC”) that these are the only bands that have been “allocated internationally on an equal footing to NGSO and GSO Fixed-Satellite Service.”⁸ Therefore, a co-primary allocation on an international level strengthens the rationale for co-primary allocation domestically. Several commenters agreed that harmonizing with current international practices is beneficial for both GSO and NGSO operations in the FSS in the 18.8-19.3 GHz and 28.6-29.1 GHz bands.⁹ Further, as noted by Viasat, coordination between GSO and NGSO operators is common, pursuant to provision No. 5.523A of the ITU’s Radio Regulations, and a co-primary regime will allow for easier coordination between GSO networks and NGSO systems.¹⁰
7. Additionally, Canada’s geography and distance from the equator allow for less complex coordination between GSO networks and NGSO systems and is better suited for co-primary jurisdiction. While the U.S. Federal Communications Commission implemented a GSO-secondary regime in these bands, the lower latitude of the United States’ geography makes coordination between GSO networks and NGSO systems in these bands more difficult.¹¹ The first illustration below shows that for an earth station located at the Southern part of Canada the angular separation between the NGSO satellite (blue) and GSO satellite (red) is sufficiently large to ensure a significant antenna discrimination. The geometry is even more favorable for Northern parts of Canada.

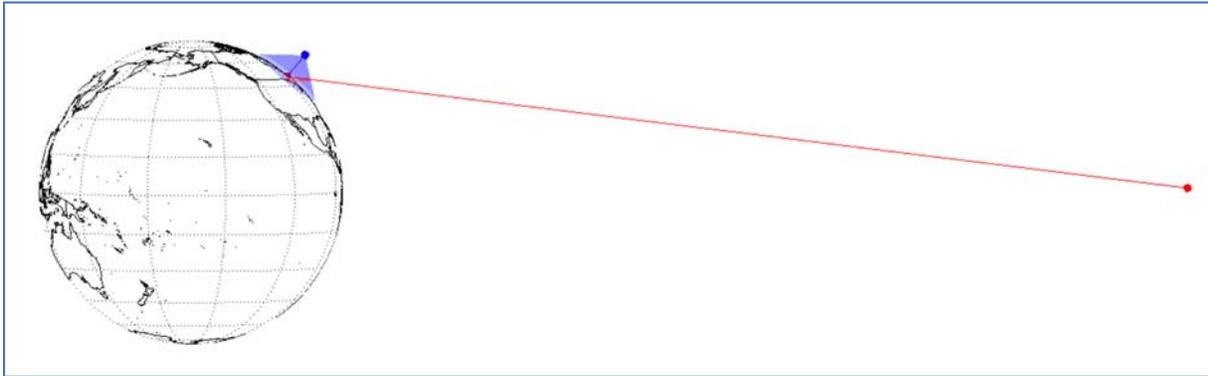
⁷ See Comments of Bell at para. 3.

⁸ See Comments of RABC at 1.

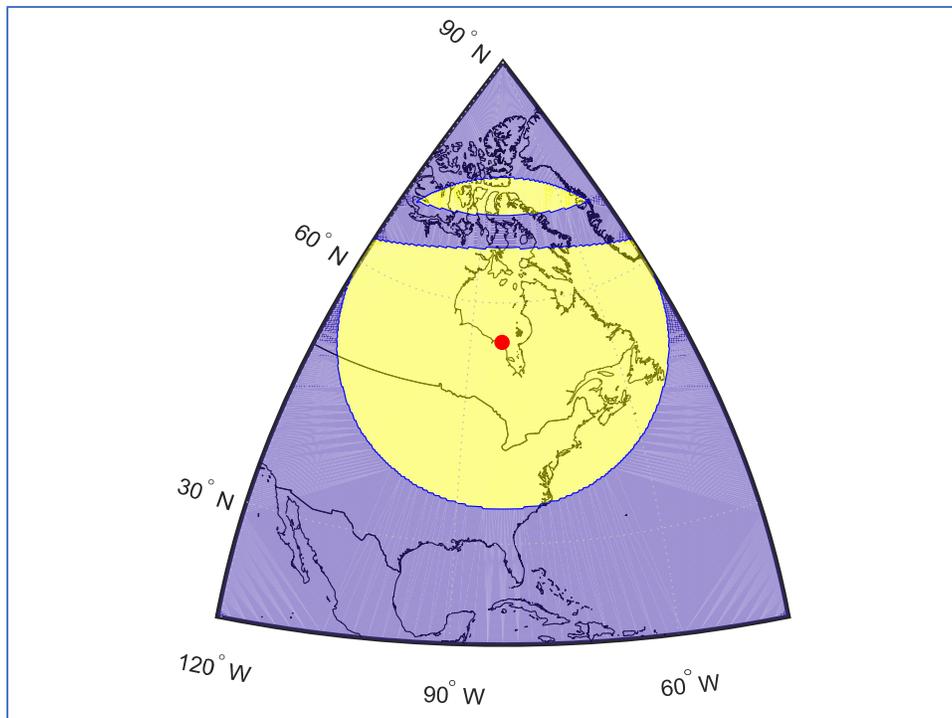
⁹ “Harmonization of Canadian regulations with ITU rules is particularly important considering the global nature of NGSO systems.” See Comments of Hughes at para. 14. “As noted in the Consultation, such an approach is in line with global developments, including the emergence of NGSO FSS systems, the international regulatory framework.” See Comments of SpaceX at 3.

¹⁰ “Because GSO networks and NGSO systems are already co-primary internationally, operators already routinely coordinate co-primary operations at 18.8-19.3 GHz and 28.6-29.1 GHz internationally pursuant to provision No. 5.523A of the ITU’s Radio Regulations...there is no reason by such coordination could not be effectively concluded in Canada as well.” See Comments of Viasat at 6.

¹¹ See Comments of ViaSat at 6; see *also* Comments of Ciel at para. 8.



8. The second illustration below provides a top-down view of this NGSO satellite serving Canada. The yellow highlighted area, which covers large parts of Canada, can be served by this NGSO satellite without issue from GSO satellites. The missing area in northern Canada, shown in dark blue, could easily be served by an alternative satellite located over northern Canada. A majority of the NGSO satellite constellations have polar or near-polar orbits affording them an increased concentration of satellites at the poles which only increases the ability to serve these high latitudes while avoiding coordination issues with GSO satellites.



9. For the above technical reasons, any concerns regarding GSO operators obstructing the deployment of later-filed NGSO systems are overstated and unfounded.

III. Many comments support revising the footnotes C16E and C16F to reflect a co-primary allocation in the bands 18.8-19.3 GHz and 28.6-29.1 GHz.

10. The Companies agree and support the proposed revisions to the Canadian Table of Frequency Allocations (“CTFA”), modifying footnotes C16E and C16F to make them consistent with Option 1, designating GSO and NGSO FSS as co-primary in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. There is ample support in the record to conform the CTFA to adoption of co-primary status of NGSO and GSO operations in these bands.¹²

IV. Commenters generally support changes to the spectrum utilization policy for the use of the bands 17.3-17.7 GHz, 19.3-19.7 GHz and 29.1-29.25 GHz.

11. There is substantial support in the record for ISED’s proposal to modify the CTFA to permit additional FSS use in the 17.3-17.7 GHz band and the 19.3-19.7 GHz and 29.1-29.25 GHz bands, and to allow for a more flexible regime.¹³ Opening these bands to expanded usage will maximize the economic and social benefits for Canadians, as it will encourage business and technological development, and will increase communications options for Canadians.
12. First, the Companies, in conjunction with many other commenters, are confident that the contemplated FSS use would not constrain the services that are currently authorized in the 17.3-17.7 GHz band, and support ISED’s proposal to add footnote C43A. However, the Companies believe that the amendments to the language proposed by the Companies for footnote C43A more closely reflects the comments on the record, most of which demonstrate a belief in the ability for FSS systems to use this band without threatening the current operations.¹⁴

¹² See Comments of Inmarsat at 3; see Comments of Hughes at para. 21; see Comments of Xplornet at para. 21; see Comments of Viasat at 8.

¹³ See Comments of Hughes at para. 22; see Comments of Xplornet at para. 22; see Comments of Inmarsat at 4; see Comments of Viasat at 9.

¹⁴ See Comments of Ciel at paras. 17-20.

13. Secondly, the Companies agree with several other commenters that ISED should allow for increased GSO FSS use of the 19.3-19.7 GHz and 29.1-29.25 GHz bands.¹⁵ As noted in our initial submission, the Companies suggest suppressing footnotes C46A and C48, and modifying footnotes C16D and C16G.¹⁶ As previously discussed, the Companies recommend these modifications to permit expanded use of these bands while protecting incumbent primary deployment.¹⁷

14. The Companies' proposed modifications to the CTFA align with most of the other recommendations made in the record. The Companies' proposals only recommend an alternate means of achieving the same outcome, which is to modify the CTFA to permit additional FSS use in the 17.3-17.7 GHz band and the 19.3-19.7 GHz and 29.1-29.25 GHz bands.

V. ISED should adopt use of ITU date priority to apply to domestic systems for domestic coordination purposes.

15. Numerous commenters recommended reference to ITU date priority and other international coordination practices, and the Companies agree that aligning with international rules is preferable. The Companies share concerns with Viasat that "Using the domestic authorization date to establish coordination priority [unduly] disadvantages non-Canadian systems in the Canadian coordination process[.]"¹⁸

VI. Conclusion.

16. The Companies support ISED's proposals to grant co-primary status to both GSO networks and NGSO systems in the FSS in the 18.8-19.3 GHz and 28.6-29.1 GHz bands, and also to modify the CTFA to permit additional FSS use in the 17.3-17.7 GHz band and the 19.3-19.7 GHz and 29.1-29.25 GHz bands. Adopting these proposals will greatly benefit Canadians and will continue to fuel communication and technological development throughout the country.

17. All of which is respectfully submitted

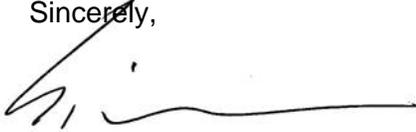
¹⁵ See Comments of Inmarsat at 4; see Comments of Xplornet at para. 22; see Comments of Viasat at 9.

¹⁶ See Comments of Ciel at paras. 23-24.

¹⁷ See Comments of Ciel at paras. 21-24.

¹⁸ See Comments of Viasat at 6.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Gibson', with a long horizontal flourish extending to the right.

Scott Gibson
Vice President & General Counsel
Ciel Satellite Limited Partnership