



**VIA EMAIL**

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**Re: Consultation on Releasing Millimetre Wave Spectrum to Support 5G, Canada Gazette, July 15, 2017, Notice No. SLPB-001-17 (“SLPB-001-17”)**

**A. INTRODUCTION**

1. These comments are submitted to the Department of Innovation, Science & Economic Development Canada (the “Department” or “ISED”) in the proceeding initiated by *Consultation on Releasing Millimetre Wave Spectrum to Support 5G, Canada Gazette*, July 15, 2017, Notice No. SLPB-001-17 (“SLPB-001-17”), by a coalition of satellite broadband operators composed of Hughes Network Systems, LLC and Hughes Network Systems Canada ULC (“Hughes”); Inmarsat, Inc. (“Inmarsat”); WorldVu Satellites Ltd. d/b/a OneWeb (“OneWeb”); The Boeing Company (“Boeing”); SES Americom, Inc. (“SES”); and O3b Limited (“O3b”) (referred to herein as the “Coalition” or the “BSOs”).
2. The Coalition is pleased to participate in this proceeding and welcomes the opportunity to comment on some of the policy and licensing considerations associated with the release of millimetre wave spectrum in the 28 GHz, 37-40 GHz and 64-71 GHz bands. The members of the Coalition make extensive use of spectrum in the 28 GHz band for the purposes of providing broadband satellite services in North America and will have an ongoing need for this spectrum as well as spectrum in the 37-40 GHz band in order to provide these services and others in the future. As such, the members of the Coalition have a direct interest in the outcome of this proceeding and, to this end, wish to signal their willingness to work with the Department and

industry stakeholders to study and establish practical and efficient technical rules that will facilitate the coexistence of both the FSS and flexible terrestrial users in these bands.

3. Set out below are the Coalition's initial responses to the questions posed by the Department in SLPB-001-17. Individual BSO members of the Coalition may also submit comments separately in this proceeding in order to elaborate on various issues raised in SLPB-001-17.

## **B. RESPONSES TO SPECIFIC QUESTIONS POSED IN SLPB-001-17**

***Question 4-1: Given the disruptive nature of 5G, will new business models and network applications develop that may require policy and regulatory consideration from ISED? Please describe potential new business models and network applications as well as their benefits to Canadians.***

### **The role of the Satellite and Space Industries Sector in the 5G Ecosystem**

4. The introduction of new technologies invariably results in the development of new business models and network applications. We have witnessed this phenomenon in the past with the introduction of Wi-Fi, non-geostationary orbit ("NGSO") satellites, as well as 3 and 4G, to cite a few examples.
5. Insofar as 5G technologies are concerned, SLPB-001-17 notes that there are several forecasted use cases for 5G in various spectrum bands, including "enhanced/ultra-fast mobile broadband, massive machine type communications, and ultra-reliable/low latency communications, all of which are predicted to drive increased usage and facilitate deployment of integrated verticals such as healthcare, transportation, and smart cities, while leveraging massive Internet-of-Things (IoT) growth."<sup>1</sup>
6. These potential use cases must be considered alongside other technological developments, particularly in the satellite and space industries, because these developments are poised to play a critical role in the 5G ecosystem. As indicated in a recent report prepared for the Satellite Industry Association ("SIA"), growth in the overall satellite industry sector is continuing unabated, with global satellite revenues reaching \$260 billion at the end of 2016, representing a year-over-year growth rate of 2%.<sup>2</sup> The provision and delivery of satellite services represents the largest segment of this industry sector, with consumer services (including satellite TV, radio, and broadband) representing the primary revenue source.

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<sup>1</sup> SLPB-001-17, para. 8.

<sup>2</sup> Bryce Space and Technology, *2017 State of the Satellite Industry Report*, prepared for the SIA, June 2017, available online at: <http://www.sia.org/wp-content/uploads/2017/07/SIA-SSIR-2017.pdf> ("Satellite Industry Report").

7. Satellite ground equipment revenues also grew by seven percent year over year led by satellite navigation and chipset sales supporting location-based services and devices.<sup>3</sup>
8. The growing importance of the satellite industry is underlined by both the continued increase in the number of operational satellites in orbit and by the announced plans for new satellites and vast constellations with increasing and diverse capabilities. Over the past five years, the number of operational satellites increased by 47 percent, rising from 994 satellites in 2012 to 1,459 at the end of 2016.<sup>4</sup>
9. Additionally, there is an increasing focus on the next generation of satellite designs and operations, as new and advanced systems are being deployed today and developed for later this decade as an essential component of the 5G ecosystem. For example, the Department has approved several novel NGSO networks to be operated by Telesat Canada, Aireon Canada, exactEarth, the University of Toronto and 1021823 B.C. Ltd, with other applications for further NGSO constellations in the Ku, Ka, V, and Q bands pending at this time from Kepler Communications and Telesat Canada.
10. Moreover, the next generation of geostationary orbit (“GSO”) constellations are also being planned, as demonstrated by the HNS 95WL satellite being constructed for Hughes Network Systems, LLC, and more are expected to follow.
11. Progress is also being made on the development of standards for 5G for satellite at 3GPP and, as satellite technology continues to evolve, the Coalition anticipates that a number of new and innovative systems will be proposed and deployed in the next few years.
12. All of this holds tremendous promise for users across Canada whether for 5G, aircraft and maritime communications, the IoT, public safety and national security, or any number of other critical use cases. With the next generation of systems planned for the frequency bands above 40 GHz, satellite operators will have access to the capacity that is required to meet the demands of 5G services including speeds exceeding 100 Mbps.
13. In SLPB-001-17, the Department has asked whether new business models and network applications will develop as a result of 5G that may require policy and regulatory consideration from ISED.
14. Given that 5G technologies are still very much in their infancy it is not possible to predict all of the business models and network applications that will result from their introduction. However, at this stage – before the marketplace for these technologies takes off – the Department has an

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<sup>3</sup> Satellite Industry Report, p. 9.

<sup>4</sup> *Ibid*, p. 8.

important policy and regulatory role to play in ensuring a level playing field that is both technologically and competitively neutral.

15. As indicated above, the satellite and space industry sector will play a significant role in the 5G ecosystem, delivering capacity and offering competitive choices for consumers, businesses and even other 5G service providers. It is critical, therefore, to ensure that sufficient spectrum is available for all competitive platforms across multiple frequency bands – low, medium and high – in order to ensure that consumers across the country, no matter where they live, can benefit from the availability of advanced communications services, including 5G.
16. In order to gain the full benefits of all technologies, the Department must also maintain some spectrum for exclusive FSS use. It is well documented that ubiquitous deployment of FSS user terminals is not possible in the same geographical area as terrestrial services such as the Mobile and Fixed services.
17. Therefore, continued application of Canadian footnotes C16E and C16F, which give priority to the FSS over the FS, in portions of the 19 and 28 GHz bands is essential for continued deployment of the FSS. Similarly, portions of the V-band above 40 GHz and in the 48 GHz band, as per ITU Footnote 5.516B are also required.

***Question 5-1: ISED is seeking comments on developing a flexible use licensing model for fixed and mobile services in the 28 GHz and 37-40 GHz frequency bands, and allowing licence-exempt use of the 64-71 GHz frequency band ahead of WRC-19 and before 5G technology standards are finalized.***

#### **Developing Canada's Approach to the Use of 5G Spectrum**

18. The members of the Coalition are not opposed to the development of a flexible use licensing model for fixed and mobile use in the 28 GHz and 37-40 GHz frequency bands, provided that it establishes a technologically and competitively neutral policy and regulatory framework for the release of 5G spectrum which recognizes the role that the satellite and space industries sector plays in the 5G ecosystem and ensures that sufficient spectrum is available for all competitive platforms in these bands, including advanced satellite and terrestrial mobile services.
19. In order to achieve this balance, the Coalition has proposed a sharing mechanism in this submission which encourages earth station operators to site their stations in areas outside densely populated urban areas, thereby ensuring the areas that are valued most highly by flexible use operators will be protected for future deployment.

## **28 GHz frequency band (27.5-28.35 GHz)**

### ***i. Changes to spectrum utilization policies***

***Question 6-1: ISED is seeking comments on the changes proposed above to introduce flexible use licensing in the 28 GHz band, including consequential changes to the CTFA domestic footnotes and the policy on this band contained in SP 3-30 GHz, Revisions to Spectrum Utilization Policies in the 3-30 GHz Frequency Range and Further Consultation.***

20. At paragraph 25 of the SLPB-001-17, the Department states that it is of the opinion that “soft partitioning continues to be an effective approach to sharing spectrum between different services in this band and plans to continue facilitating the deployment of earth stations while ensuring that minimal constraints are imposed on the future deployment of fixed and mobile services.” It then goes on to propose the following changes to the Canadian Table of Frequency Allocations (“CTFA”) in order to facilitate flexible use of the 28 GHz band for terrestrial services:

**MOD C47A:** In the frequency band ~~27.35-28.35~~ 27.5 GHz, use of spectrum for fixed service systems will be given priority over fixed-satellite service systems sharing this spectrum on a co-primary basis. Fixed-satellite service implementation in this band will be limited to applications that will pose minimal constraints upon the deployment of fixed service systems, such as a small number of large antennas for feeder links.

**ADD C47C:** In the frequency band 27.5-28.35 GHz, use of spectrum for fixed service systems and mobile service systems will be given priority over fixed-satellite service systems sharing this spectrum on a co-primary basis. Fixed-satellite service implementation in this band will be limited to applications which will pose minimal constraints upon the deployment of fixed service systems and mobile service systems, such as a small number of large antennas for feeder links.

21. The Coalition is also of the view that soft partitioning continues to be an effective approach to sharing spectrum between different services in the band and agrees with the Department that the deployment of earth stations should continue to be facilitated.
22. The members of the Coalition are familiar with the language contained in the newly proposed footnote C47C and, subject to the sharing conditions discussed in the responses to Questions 6-4, 6-5 and 6-6 below, they are not opposed to the inclusion of the new footnote **C47C** in the CTFA, but would suggest a change to further clarify this note, since the term “large” is not well defined:

**ADD C47C:** In the frequency band 27.5-28.35 GHz, use of spectrum for fixed service systems and mobile service systems will be given priority over fixed-satellite service systems sharing this **spectrum** on a co-primary basis. Fixed-satellite service implementation in this band will be limited to applications which will pose minimal constraints upon the deployment of fixed service systems and mobile service systems, such as a small number of **large** antennas **to be individually licensed** for feeder links.

23. Additionally, the Coalition supports the proposal by the Department in paragraph 26 that airborne and maritime ESIMs continue to be allowed to communicate with GSO FSS space stations on a non-interference, no-protection basis. As the Department notes it has already granted ESIM terminal operations on this basis. WRC-19 agenda item 1.5 will address ESIM operations in the 27.5-28.35 GHz band which should help establish measures to ensure compatibility between mobile systems and ESIM terminals. The Department may wish to revisit the conditions of operation based on the outcome of the Conference. The conditions for ESIM operations should be appropriately reflected in the Department's policies. The coalition further encourages the Department to continue to allow airborne and maritime ESIMs to communicate with NGSO FSS space stations in the 28 GHz band on a non-interference, no protection basis as well.

### **Moratorium**

***Question 6-2: ISED is seeking comments on the moratorium for new site-specific fixed service licences as described above.***

24. The Coalition supports the imposition of a moratorium on new site-specific fixed service licences. Continued licensing in the band could create additional uncertainty prior to auction or other licensing mechanisms for flexible use services, resulting in potentially difficult negotiations between future site-specific fixed-only licensees and new flexible use licensees. The deployment of fixed links would also impact the sharing between flexible use services and other services, such as the FSS.

### ***ii. Changes to band plan***

***Question 6-3: ISED is seeking comments on its proposal to adopt the band plan [as shown in figure 3 of SLPB-001-17] in the 28 GHz band.***

25. If the Department concludes that a new band plan should be adopted for the 28 GHz band as a result of this proceeding, it would not be opposed to the harmonization of the Canadian band with the band plan adopted by the FCC in the United States as depicted in Figure 3 of SLPB-001-17. However, as discussed below, the Coalition does not endorse or support all of the technical rules

that the FCC has adopted for upper microwave flexible use service (“UMFUS”) and FSS co-existence which result in overly onerous FSS earth station siting.

**iii. Band sharing with other services**

**Question 6-4:**

**A. ISED seeks comments on its proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the 28 GHz band when a pre-determined trigger threshold is exceeded.**

26. The Coalition agrees with the Department’s proposal for site-by-site coordination between flexible use terrestrial stations and future FSS earth stations, based on some pre-determined coordination threshold. In the 28 GHz band, since the earth stations are transmitting only, one key consideration will be the protection requirements of the IMT base stations and their associated mobile terminals. The Coalition would welcome the opportunity to review the coordination threshold with other industry stakeholders.
27. Another important consideration is the relative timing of flexible use deployments and the timing of FSS earth station license applications, processing and deployment. For instance, the Department already recognizes that certain earth stations licensed before the consultation was issued would be grandfathered. The Coalition interprets the grandfathering process as allowing these earth stations to continue operating under existing conditions of licence, regardless of any new rules that might be adopted for sharing with flexible use services.
28. There is also the question of how to deal with new earth station applications that may be received before the licensing of flexible use service stations, whereby the FSS earth station would need to be deployed in accordance with Canadian footnote C47C, but where coordination is not possible. The Coalition believes that the Department could use earth station siting restrictions as described in the response to Question 6-5 below to minimize any impacts on future 5G deployments.

**B. If site-by-site coordination is proposed, what coordination trigger and value would be the most appropriate (e.g. PFD or distance threshold)?**

29. A coordination distance is much simpler to implement and administer than a PFD or other technical coordination threshold, but the Coalition doubts that a single value for a coordination distance could be adopted that would suit all possible FSS earth station deployments, and thus would recommend that the Department adopt a PFD threshold.
30. The Coalition would propose that the Department encourage further study of the appropriate value to protect flexible use stations. The appropriate PFD value will also depend on other aspects of the sharing regime adopted such as population parameters.

***C. ISED is also inviting proposals for specific technical rules on proposed flexible use stations and FSS earth stations (e.g. site shielding) that could facilitate more efficient sharing between terrestrial and earth stations.***

31. The Coalition believes that there are many ways to reduce interference caused by transmitting earth stations into flexible use stations, and that site shielding is only one possible measure that could be used. Therefore, the Department is encouraged not to adopt any such restrictions but instead let the coordination process between licensees determine the appropriate measures to improve sharing and to mitigate interference.

***iv. Geographic restrictions on the deployment of fixed-satellite services earth stations***

***Question 6-5:***

***A. ISED is seeking comments on whether there should be restrictions on the geographic areas in which new FSS earth stations can be deployed in the 28 GHz band.***

32. The Coalition understands that flexible use terrestrial operators are likely to deploy 28 GHz 5G networks in densely populated areas, with large cities being first to see any deployments, and even then, for a foreseeable time, only in their downtown cores. Even over the longer term, it is likely that many access points or “hot spots” could use the 28 GHz band across such large cities, and even medium to small cities, however, the propagation characteristics in this frequency band do not lend themselves to large scale deployments across vast areas. In addition, much of this use outside of dense urban cores is likely to be indoors, where interference from transmitting FSS earth stations would not be an issue. As such, any earth station siting restrictions adopted by the Department must take into account these technical realities. FSS earth station deployment should not be constrained in areas where 28 GHz flexible use systems are not expected to be deployed.

***B. If geographic restrictions on FSS earth stations are proposed, ISED is inviting detailed proposals on how they could be implemented, and what areas should be targeted.***

33. The Coalition urges the Department to conduct studies on appropriate siting restrictions in light of Canada’s geography and population. The members of the Coalition have conducted extensive work in preparing their petitions to reconsider the FCC’s earth station siting restrictions and would be happy to discuss its proposal and their possible application in Canada, with the Department and Canadian stakeholders.

***v. Coexistence between flexible use terrestrial stations and space stations in the fixed-satellite services (Earth-to-space)***

***Question 6-6: ISED is seeking comments on whether it should impose any limits on the aggregate emissions of the terrestrial services. If limits are proposed, ISED is inviting detailed proposals on why they should be implemented, and what the limits should be.***

34. The Coalition is concerned about potential aggregate interference into satellite receivers from unintended emissions of 5G stations (both base stations and user terminals) towards the sky. Studies carried out in the United States and in the ITU show that 5G systems are proposed to operate with highly directional antennas pointed with negative pitch towards the ground. It should therefore not be a significant limitation to impose an emission mask in the form of EIRP density as a function of elevation angle on the individual 5G stations. This will not ensure that aggregate emissions will not raise the noise in FSS satellite receivers, but will significantly reduce the probability of harmful interference into the satellites.
35. In the United States, the FCC has not adopted any limitations on the operation of UMFUS and as a result harmful interference could occur to FSS satellite receivers, both serving the United States and those near its borders. The FCC has recently opened a docket to receive additional studies and evidence of potential interference, but unless action is taken expeditiously, it may be too late to solve the interference after the fact. Notwithstanding the foregoing, the Coalition believes that the Department is in an excellent position to provide leadership on this issue. The Department has the technical knowledge and expertise to review the record, and invite parties to submit studies, that would allow it to formulate operational restrictions on flexible use stations that would not constrain their deployment but at the same time provide a level of assurance to FSS operators that their satellite receivers will not receive harmful interference.
36. The Coalition believes that it may be possible to develop a simple solution to address this issue, based on EIRP emission masks applied to individual flexible use stations, or a combination of maximum transmit power density and antenna patterns, combined with pointing restrictions. The Coalition would encourage all parties to come together and study such operational restrictions, and individual members of the Coalition would be available to participate in such work.

***vi. Treatment of existing users***

***Question 6-7: ISED proposes that all existing FSS earth stations and those in applications pending approval for operation would be permitted to continue to operate under the current conditions of licence [as described in SLPB-001-17]. Comments are sought on this proposal.***

37. The Coalition agrees with the Department's proposal that all existing FSS earth stations along with those reflected in applications that are pending approval for operation would be permitted to continue to operate under their current conditions of licence.
38. With respect to new FSS earth stations in the 28 GHz band, the Coalition supports the spectrum sharing and licensing approach described in the responses to Questions 6-4, 6-5 and 6-6 above.

## **Frequency band 37-40 GHz**

### ***i. Changes to spectrum utilization policies***

***Question 7-1: ISED is seeking comments on the proposal to implement flexible use licensing in the frequency band 37-40 GHz, including the consequential changes to CTFA footnote C51, while continuing to allow for fixed-satellite service (space-to-Earth) in the band.***

39. In addition to the 28 GHz band, the Department is also proposing to make the frequency band 37-40 GHz available for flexible use for terrestrial services.
40. The Coalition notes that the FSS currently has an allocation in this band, but use of this band by the FSS is limited to applications that pose minimal constraints upon the deployment of fixed service systems in the band, as currently reflected in footnote C51 of the CTFA.
41. In SLPB-001-17, the Department is proposing to extend this limitation to both fixed and mobile services, but it has also stated that it “*recognizes the need for the FSS to continue having access to the band*” and, thus, “*a sharing mechanism to accommodate these services would be developed in collaboration with stakeholders.*”
42. The Coalition agrees that the FSS has a continuing need for access to the 37-40 GHz band. This is evident from Telesat’s request to the Department for an authorization to operate an NGSO network in several upper frequency bands, including in the 37.5-42.5 GHz (space-to-Earth) direction, as well as applications by Boeing and other NGSO systems filed with the FCC for authority to provide satellite services in the United States using spectrum in the Q and V bands.
43. Given these developments, the Coalition supports the Department’s proposal to develop a sharing mechanism in collaboration with stakeholders that will ensure that the FSS has ongoing access to the 37-40 GHz band. To facilitate this effort, the Coalition has proposed a sharing mechanism approach in its responses to Questions 7-4 and 7-5 below.

***Question 7-2: ISED is seeking comments on whether a moratorium on the issuance of new licences under the New Licensing Framework for the 24, 28 and 38 GHz Bands and Decision on a Licence Renewal Process for the 24 and 38 GHz Bands is required at this time.***

44. The Coalition is not opposed to a moratorium on the issuance of new fixed service licences that would be issued pursuant to the framework established in *New Licensing Framework for the 24, 28 and 38 GHz Bands and Decision on a Licence Renewal Process for the 24 and 38 GHz Bands*.

**ii. Changes to band plan**

**Question 7-3: ISED is seeking comments on the proposal to adopt the band plan as shown in figure 7 for the frequency band 37-40 GHz.**

45. If the Department concludes that a new band plan should be adopted for the 37-40 GHz band as a result of this proceeding, it would not be opposed to the harmonization of the Canadian band with the band plan adopted by the FCC in the United States as depicted in Figure 7 of the Consultation in SLPB-001-17.

**iii. Band sharing with other services**

**Question 7-4:**

**A. ISED seeks comments on the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the frequency band 37.5-40 GHz when a pre-determined trigger threshold is exceeded.**

**B. If site-by-site coordination is proposed, what coordination trigger and value would be the most appropriate (e.g. PFD or distance threshold)?**

**C. ISED is also inviting proposals for specific additional technical rules on flexible use stations and FSS earth stations (e.g. site shielding) that could facilitate more efficient sharing between terrestrial and earth stations**

46. Similarly to its views in response to Question 6-4 above, the Coalition believes site-by-site coordination offers the best sharing scenario between the two services, and that combined with reasonable earth station siting restrictions for deployment of FSS earth stations before the licensing of 5G occurs, as discussed in response to Question 7-5, would provide a workable deployment environment, within the spirit of footnote C51.
47. Unlike the 28 GHz band, in the 37-40 GHz band, the roles are reversed in that the flexible use transmitters could interfere into the receive FSS earth station. Due to the divergent characteristics of FSS earth stations of various operators, a “one-size-fits-all” approach such as a “coordination distance” or “PFD value” may not be appropriate.
48. The Department may wish to study the matter further with a view to find consensus amongst all stakeholders on appropriate coordination trigger.

**iv. Geographic restrictions on the deployment of earth stations**

**Question 7-5:**

**A. ISED is seeking comments on whether there should be restrictions on the geographic areas in which new FSS earth stations can be deployed in the frequency band 37.5-40 GHz.**

***B. If geographic restrictions on FSS earth stations are proposed, ISED is inviting detailed proposals on how they could be implemented, and what areas should be targeted?***

49. Similarly to its response to Question 6-5, the Coalition believes there would be merit for the Department to undertake studies with the various stakeholders to define appropriate FSS earth station siting restrictions that take into account the particular geography and population distribution in Canada.

***v. Band sharing with the space research service (SRS) (space-to-Earth) and mobile-satellite service (MSS) (space-to-Earth)***

***Question 7-6: It is proposed that, should SRS and/or MSS systems be deployed, flexible use licensees in the band 37.6-40 GHz may be subject to technical provisions to facilitate co-existence. Comments are sought. ISED notes that any such technical provisions would be established through a future consultation process.***

50. The Coalition is not in a position to comment on this question at this time. Once the Coalition has had the opportunity to review the initial submissions of other interested parties in this proceeding, it may provide reply comments on this issue.

***vi. Treatment of existing users***

***Question 7-7***

***ISED is seeking comments on:***

***A. the options and implications for the treatment of incumbent licensees currently holding Tier 3 licences, the percentage that would apply to option 1 and supporting rationale.***

***B. the options and implications for the treatment of incumbent licensees currently holding FCFS licences and supporting rationale.***

51. Provided that incumbent licensees are required to coordinate with the FSS in the manner proposed in the responses to Questions 7-4 and 7-5 above, the Coalition does not take a position on this issue at this time. The Coalition may provide further comments on this issue once it has had the opportunity to review the initial submissions of interested parties in this proceeding.

**Frequency band 64-71 GHz for licence-exempt use**

***Question 8-1: ISED is seeking comments on its proposal to designate the band 64-71 GHz for licence-exempt operations on a no-protection, no-interference basis.***

52. The Coalition does not take a position on this issue at this time. The Coalition may provide comments on this issue once it has had the opportunity to review the initial submissions of interested parties in this proceeding.

**General spectrum access considerations for terrestrial services in the 28 GHz and 37-40 GHz frequency bands**

**Question 9-1: ISED is seeking comments on:**

**A. Whether flexible use access in these bands should be exclusively licenced or licence-exempt.**

**B. If a licencing approach is proposed, which types of licences (radio licences, spectrum licences with user-defined licence areas, spectrum licences with service areas for competitive licensing, or others) are expected to best lend themselves to licensing flexible use in the 28 GHz and 37-40 GHz frequency bands in order to support a variety of 5G technologies, applications and business cases?**

**C. Whether a licence-exempt dynamic access using data base should be implemented in all, or portions of the 28 GHz, 37-40 GHz, particularly in the band 37-37.6 GHz.**

53. The Coalition's preference is that spectrum licences be issued to flexible use operators in the 28 GHz and 37-40 GHz frequency bands, for each spectrum block and tier area shared only with other services such as FSS, as it is easier to manage the coordination process when the licensees are readily identifiable. The use of Tier 4 licensing areas will facilitate the implementation of earth station siting restrictions, as proposed in response to questions 6-5 and 7-5, by taking into account the nature (size, population, urban/rural mix, and potential transient population) for each tier.
54. The Coalition does not support licence-exempt flexible use in the 28 GHz band because it is not compatible with the approach adopted by the FCC for this band in the United States. Because of this, the Coalition is not confident that a database solution will be developed exclusively for the Canadian market.
55. With respect to licence-exempt dynamic access in the 37-40 GHz band, the Coalition is not aware of any effective or proven database solutions that can manage multiple uses in the band (i.e., fixed, mobile, FSS, SRS and MSS) at this point in time. Accordingly, and unless it can be demonstrated that a given database solution is capable of protecting both current and future licensed earth stations from interference, the Coalition's preference is that spectrum licences be issued to flexible use operators in this band as well.

**Question 9-2: If an exclusive licensing approach is implemented, preliminary comments are sought on the benefits and risks related to longer licence terms for these frequency bands.**

56. The Coalition does not take a position on this issue at this time. The Coalition may provide comments on this issue once it has had the opportunity to review the initial submissions of interested parties in this proceeding.

***Question 9-3: If an exclusive licensing approach is proposed, ISED is seeking preliminary comments on possible measures that could support competition in light of the current conditions in the Canadian wireless service market and anticipated development and deployment of 5G services if flexible use licensing is developed through a spectrum licensing model.***

57. The Coalition does not take a position on this issue at this time. The Coalition may provide comments on this issue once it has had the opportunity to review the initial submissions of interested parties in this proceeding.

**C. CONCLUSION**

58. The Coalition thanks the Department for the opportunity to participate in this proceeding and looks forward to reviewing the comments of other interested parties. In the interim, the Coalition reiterates the willingness of its members to work with the Department and industry stakeholders to study and establish practical and efficient technical rules that will facilitate the coexistence of both the FSS and flexible terrestrial users in the bands under consideration in this proceeding.

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All of which is respectfully submitted by the BSO members of the Coalition this 15<sup>th</sup> day of September 2017.