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Innovation, Science and Economic Development Canada (ISED)  
c/o Senior Director, Spectrum Licensing and Auction Operations  
235 Queen Street, 6th Floor  
Ottawa, Ontario K1A 0H5

Email: [ic.spectrumauctions-encheresduspectre.ic@canada.ca](mailto:ic.spectrumauctions-encheresduspectre.ic@canada.ca)

**RE: Canada Gazette, Part I, June 2017 - Notice SLPB-001-17 - Reply Comments to Consultation on Releasing Millimetre Wave Spectrum to Support 5G**

Pursuant to the procedures set forth in Gazette Notice SLPB-001-17 - *Consultation on Releasing Millimetre Wave Spectrum to Support 5G* published on June 5, 2017 (the “**Consultation**”), TeraGo Networks Inc. (“**TeraGo**”) is pleased to submit the following reply comments after having reviewed the submissions received and made public by ISED.

**REPLY COMMENTS TO SPECIFIC QUESTIONS**

**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.**

1. As stated in our own response, TeraGo does not support a moratorium on the issuance of new site-specific licences in the 38.4-40 GHz bands since it will have a detrimental effect on our business in both the short and medium term. TeraGo’s position is echoed by Bell and Rogers who note that the 38.4-40 GHz band is presently being used for mobile services and for enterprise wireless solutions, of which an immediate moratorium will negatively impact deployment plans for incumbents and disadvantage Canadians who rely on these services.
2. TeraGo notes that it also does not support any recommendations to ISED for a replacement band to substitute for the current use of the 38.4-40 GHz band. Such a proposal, if implemented would not alleviate the detrimental effect it would have on current operators who have already made, and will continue to make significant deployments on a site-specific, first-come-first-served (FCFS) basis. A replacement band would require immense resources, both in costs for new radio equipment and labour to move existing stations off of the 38 GHz band and onto a proposed replacement band. Correspondingly, a replacement band that contemplates the vacating of the 38 GHz band would essentially obsolete radio equipment that is in current use that cannot support a band outside of 38 GHz, generating a write-off loss for operators and equipment manufacturers. TeraGo therefore reaffirms its recommendation to allow site specific licenses to continue to be

issued and, for existing licencees to continue operating in the band in conjunction with future 5G applications.

3. In the alternative, if ISED does issue a moratorium (contrary to the position set forth by TeraGo), TeraGo is in alignment with Shaw's view where an exception should be made to allow for continued site specific licenses to be issued within a licensee's existing geographical license area and frequency block. This will allow operators to continue servicing Canadians on a limited basis without expansion of existing coverage.

**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.**

4. TeraGo is aligned with Bell's viewpoint that 5G will not be a fundamental change or reallocation of spectrum to a new service, but rather a natural progression to more ubiquitous coverage and smaller cells. This is compatible with existing 38 GHz uses and deployments. As such, existing 38 GHz licences obtained from the 1999 auction should remain as having a high expectation of renewal, so long as no breaches of the conditions of licence have occurred. This viewpoint goes on to support Bell's suggested approach of allowing existing licencees to retain the same amount of spectrum (as aligned with the new band plan), without giving up an arbitrary percentage of a licensee's spectrum.
5. Telus and Shaw maintain that ISED should not renew or convert any existing Tier 3 licences and suggest that there will be some sort of "windfall" and perceived advantage for existing Tier 3 licence holders. The crux of the matter is that existing Tier 3 licence holders rely on the 38 GHz band to build out their existing businesses. As originally intended by ISED, heavy investments have been made by TeraGo to make use of this resource to generate a sustainable business model, to create jobs and to offer Canadians choice in the form of a competitive internet service provider. TeraGo views 5G as a progressive and next generation use of the 38 GHz spectrum, similar to other technological advances in radio equipment over the last 17 years that have been developed to advance and improve the various services operators can provide. A further renewal of these licences cannot be viewed as a "windfall" for incumbents who have pioneered and invested in the use of the spectrum in the first place.
6. In further response to Shaw's disapproval for renewing and converting existing Tier 3 fixed service licences to flexible use, we note that this is in direct conflict with their own argument they subsequently use to lend support for the protection of FCFS licences in Question 7-7(B). The following is quoted from paragraph 75 of Shaw's response:

Licensees who have invested in operations and services must have the certainty to know that these investments will be respected by the regulatory process. This need for certainty is especially critical during the nascent stages of facilities-based competition in Canada, not to mention its continuation through 5G development and deployment.

TeraGo holds a similar view conveyed in this quote, but respectfully submits that the need for certainty and respect of investments apply more so for Tier 3 licence holders, whose

licences were issued with a long-term focus through a formal auction. This is in stark contrast to the one-year site specific licences that are issued by ISED at the simple application request by an operator. For that reason, ISED is urged to convert and re-issue Tier 3 licences at par with what is currently held by incumbents.

7. Shaw further states that “if ISED were to carve out one or more of the proposed 200 MHz blocks to award flexible-use licences to these incumbent licensees, it would mean fewer opportunities for accessing the spectrum by competitive providers.” TeraGo believes that this will not be the case. We note that in a scenario where existing licensees are renewed and re-assigned 200MHz blocks within the new band plan, up to 1600 MHz of spectrum will still be available at any proposed ISED auction; providing ample opportunity for competitive providers to acquire spectrum.
8. In direct response to Telus’ claim that TeraGo has not filed their site information, or that it is no longer in compliance with deployment requirements, TeraGo notes that it has in fact filed and uploaded technical site information with ISED (including at the critical renewal stage in January 2015) which ISED accepted. ISED has previously reviewed and relied on such filings to re-issue new licences that met conditions of licence (and also to cancel several licences in geographic areas where TeraGo did not).
9. In response to Rogers’ and SaskTel’s viewpoints, whose recommendations on re-issuance of existing Tier 3 licences fall between the 0% made by Telus and Shaw and the full 100% re-issuance suggested by Bell (and supported by TeraGo), we highlight certain incorrect assumptions in which their recommendations are based on. As noted by Rogers, it has assumed existing Tier 3 holders have, and are continuing to “warehouse” the spectrum. Respectfully, TeraGo believes the reason there are only 4 remaining Tier 3 licensees in the 38 GHz band today is that these are the operators left that are actually using such spectrum as intended. ISED has already taken steps during its renewal process in 2015 to reclaim back many licences that were not meeting conditions of licence. In light of that, ISED has already effectively removed spectrum speculators and hoarders. The 33% and 40% reductions cited by Rogers and SaskTel, respectively, are arbitrary and are not defensible. SaskTel in particular has assumed without support that all new flexible licences (without consideration for market and area Tier size) will be more valuable than existing Tier 3 licences and therefore warrant a 40% reduction in spectrum holdings. TeraGo notes that using a market value approach is not the way ISED should address this question, especially given that the market value has yet to be established on the new flexible licences and that spectrum itself is a highly regulated resource.
10. It is imperative that ISED not set a precedent of reclaiming or revoking spectrum licences from holders who are meeting the conditions of licence. By doing so now, ISED would set a “chilling precedent” from which assurances can no longer be had that operators can rely on the spectrum that they’ve acquired from an ISED auction to build their business on.

**Question 7-7: ISED is seeking comments on:  
B. the options and implications for the treatment of incumbent licensees currently holding FCFS licences and supporting rationale.**

11. TeraGo reiterates its position that incumbent licensees currently holding FCFS grid cell or site-specific licences will need to be allowed to continue operating on their existing deployments with measures put in place so to be protected from any interference. TeraGo notes that respondents, Bell, Shaw, and SaskTel have also provided their support on this perspective.
12. SaskTel suggests that new 5G wireless operators will simply coordinate and negotiate agreements with incumbent FCFS licence holders to permit both fixed and mobile systems in the 38 GHz band. TeraGo is supportive of this approach since it is aligned with ISED's proposal to have the band operate on flexible use, and not simply favouring the new mobile applications. In addition, TeraGo notes that such self-coordination is already successfully occurring amongst operators through the FCSA (Frequency Coordination System Association) and there is no indication that such process cannot be replicated to allow FCFS operators to continue to operate with protection from 5G interference. In allowing for self-coordination to occur, this will help alleviate concerns of FCFS licensees severely limiting deployment of 5G in major urban areas.
13. Bell suggests that it may be possible to have all FCFS licensees shift to a single block within the new band plan. TeraGo is supportive of this approach as a secondary alternative to permitting existing deployments to exist as they are. If such an approach is adopted, TeraGo suggest that an adequate transition period is factored in to allow operators to plan and allocate the resources required to move from one part of the band to another.

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

14. TeraGo notes that many respondents are supportive of the new flexible licences being issued as exclusive and as area-based licences. There is very little variance on perspectives on that point. However, where there are some differing opinions, is in respect to the size of the service areas that such flexible licences will be issued as.
15. Carrying through the notion that 5G will not be a fundamental change or reallocation of spectrum to a new service, but rather a technological advance of services that is compatible with existing applications, TeraGo submits that the new flexible licences should continue to follow the Tier 3 defined areas and there is no need to redefine the size of the licence areas.
16. We note that Bell is of the opinion (which we are in agreement with) that "service areas should be of significant size to in order to minimise boundary coordination requirements". Tier 3 defined areas therefore bring a balance of being large enough service areas to

which operators can economically deploy and market their services to, while not being so small that it will require immense boundary coordination.

17. Certain respondents have noted that smaller Tier-4 area licences should be considered. TeraGo's opinion is that the issuance of smaller Tier-4 licences will limit the deployment of 5G to Canadians in predominantly the urban centres, and stall deployments in more rural areas where Canadians live. The reason for this is that it can be anticipated that large operators and ILECs will likely be the majority holders of Tier-4 area licences in the major urban centres of Canada when such licences are released by ISED. The rural and less expensive Tier-4 area licences may or may not find their way to smaller competitive operators. Because Tier-4 area licences are smaller, operators will by necessity be incentivized to only deploy in the area their licence covers. On the other hand, by maintaining the Tier-3 areas, a holder of the new flexible licences will be incentivized to offer 5G within the larger area, which will include both urban centres and more rural towns, thus accelerating the spread of 5G services geographically.

#### **ADDITIONAL COMMENTS**

18. TeraGo makes note of the fact that on October 26, 2017, the U.S. Federal Communications Commission (FCC) announced and released draft text of a Second Report and Order, Order on Reconsideration, and Memorandum Opinion and Order (the "**Proposed FCC Order**") that would make available 1,700 MHz of additional high-frequency spectrum, including in the 24 GHz band, for flexible and 5G use<sup>1</sup>. The Proposed FCC Order will be reviewed and considered at the FCC's open meeting on November 16, 2017. If adopted by the FCC, TeraGo reiterates and reemphasizes the importance of harmonization with the U.S. and ensuring common industry standards. Therefore it would be incumbent on ISED to expedite its consideration of the 24 GHz band for inclusion in the "flexible use" model via an upcoming consultation.

TeraGo thanks ISED again for the opportunity to provide input on this very important issue.

Sincerely,

**TERAGO NETWORKS INC.**



Antonio (Tony) Ciciretto  
President & Chief Executive Officer

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<sup>1</sup>[http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2017/db1026/DOC-347449A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db1026/DOC-347449A1.pdf)