



**Submission to
Innovation, Science and Economic Development Canada
by**

SSI Micro Ltd.

In Response to

***“Notice of Application Received from TerreStar Solutions Inc. for a
Tier 1 Spectrum Licence in the 1695-1710 MHz Frequency Band and in the
PCS Block H (1910-1915 MHz/1995-2000 MHz)”***

Notice published May 25, 2017

June 27, 2017



A. Introduction and Summary

1. SSi Micro Ltd. ("SSi") is pleased to submit these comments to Canada's Minister of Innovation, Science and Economic Development ("ISED Canada" or the "Department") in response to the Department's May 25, 2017 call for comments concerning an application received from TerreStar Solutions Inc. ("TerreStar") for a Tier 1 Spectrum Licence in the 1695-1710 MHz Frequency Band and in the PCS Block H (1910-1915 MHz/1995-2000 MHz).
2. SSi is the licensee of BRS (formerly known as MCS) spectrum in the 2500 MHz band in Nunavut and the Northwest Territories, as well as a licensee of PCS spectrum in the 1900 MHz band in all three Northern Territories. We have extensively deployed satellite and terrestrial wireless facilities across Canada's North, and we continue our wireless network deployment and the expansion of our service offerings and operations. As such, we have an interest in TerreStar's application and we appreciate the opportunity to provide these comments.
3. SSi supports TerreStar's application for a Tier 1 Spectrum Licence in the named frequency bands. We have been discussing with TerreStar ways in which we may work together effectively going forward, and granting this application will permit TerreStar to fulfill its promise to offer fixed and mobile broadband wireless service in remote and rural communities across Canada, including the North. This should lead to greater investment in technologies, more competitive broadband wireless fixed and mobile offerings, and new and innovative services that will be of great value and use to across Canada.

B. Background on SSi

4. SSi is a leader in the field of remote and rural connectivity. Headquartered in Yellowknife, Northwest Territories, we specialize in the design, deployment and operation of communications networks to support the needs of communities that have limited or no access to terrestrial transport and interconnection to the outside world. Our networks deliver broadband Internet via advanced satellite delivery platforms, and we provide local distribution of communications services within communities using terrestrial wireless and broadband technologies.
1. One of the first Internet service providers in the Northern Canada, SSi is proud to have deployed and to operate broadband wireless networks using 2500 MHz spectrum in communities across Nunavut and the Northwest Territories. We deliver retail broadband throughout Nunavut under the QINIQ brand name, and we are the only provider to offer an equal level of service in all 25 communities.

2. As a licensee of spectrum in the 1900 MHz band, over the last several years we have made extensive investments in state-of-the-art mobile equipment, RF and network planning, partnership arrangements in Canada and abroad, systems development and testing, and regulatory interventions and processes. Notably, in the last eighteen months SSi has invested to upgrade all 25 communities in Nunavut with 4G-LTE and 2G-GSM last-mile technologies to offer fixed and mobile voice and broadband services. We are also currently working to complete local network interconnection with the Incumbent Local Exchange Carrier across the North.
5. As a wireless network operator providing service in some of the harshest climates and remote locations on earth, we understand first-hand and in detail the challenges faced in providing effective and affordable communications services to remote and outlying areas, and in providing a competitive alternative to incumbent operators in small and remote markets.
6. There are many facets to remote area connectivity, and we are constantly evaluating and developing new technologies and integrating these to ensure our offerings remain attractive and competitive.
7. In this regard, as we noted in 2014 when the Department consulted on the use of the 2000 MHz band in Canada Gazette Notice DGSO-002-12, *“Consultation on a Policy, Technical and Licensing Framework for Use of the Bands 2000-2020 MHz and 2180-2200 MHz”*, we are very encouraged by the promise the 2000 MHz band holds for effective deployment and ever more extensive network coverage in remote areas of the country. We support TerreStar’s current application as a beneficial step in its efforts to contribute to the goal of improving telecommunications availability in non-metropolitan areas of Canada.
8. SSi supports TerreStar’s application as an effective, minimally disruptive way to increase the amount of licensed spectrum available for broadband wireless fixed and mobile services in remote and rural areas of Canada. In these comments, SSi addresses three reasons why ISED should grant TerreStar’s application:
 - With a Tier 1 licence for the requested spectrum, TerreStar will be able to move quickly to improve broadband wireless service in remote and rural areas of Canada, including Canada’s North. Without this licensed spectrum, there is a risk that TerreStar’s existing licensed spectrum will lie fallow, resulting in underuse of an important national resource;
 - Licensing TerreStar to use this spectrum as proposed is consistent with developments in the United States, and thus consistent with ISED’s long-standing policy to harmonize rules that pertain to wireless services so as to permit Canadian consumers to benefit from the economies of scale attendant on larger markets and lower manufacturing costs for handsets and other equipment; and
 - TerreStar has proposed appropriate measures to protect Meteorological Satellite users in the 1695-1710 MHz spectrum that should alleviate any concerns the Department may have about coexistence with these spectrum uses.

C. Licensing enables TerreStar to augment broadband wireless service across Canada

9. With this application, TerreStar is seeking permission to make use of frequencies that will make it possible for the company to make effective use of spectrum for which it has already been licensed. TerreStar wishes to use uplink frequencies within the 1695-1710 MHz frequency band. The frequencies between 1700 and 1710 MHz can only be used in conjunction with the download band at 2000-2020 MHz for which TerreStar is already licensed. TerreStar is also applying to make use of 5 MHz of spectrum between 1695-1710 MHz, as well as 5 MHz of Block H spectrum at 1995-2000 MHz, in certain designated Canadian “protection zones”.
10. Residents and businesses in Canada’s remote and rural regions are at a great disadvantage, relative to metropolitan Canada, in terms of available fixed and mobile broadband telecommunications services. In part, this is due to the limited amount of licensed spectrum that can be used to improve service in these regions.
11. TerreStar can contribute more effectively to closing the availability gap if it is permitted to use the requested uplink frequencies in conjunction with the download band for which it is already licensed. TerreStar has provided a plan to accommodate the existing licensed users of frequencies in the requested bands, and has made a convincing case that the frequencies in question can best be used as it proposes.
12. With the exception of meteorological receiving stations using the 1675-1710 MHz band at several discrete locations, this band is not being used in Canada at the present time. TerreStar’s application proposes to put the band to productive use where there is unmet demand – in remote and rural Canada – and is thus consistent with principles of good stewardship of the resource of radio spectrum. As noted below, TerreStar has also proposed a conservative plan to protect existing users in the band.

D. Licensing this spectrum ensures coordination across North America

13. TerreStar’s application is occasioned by the approval given in June 2016 by the Third Generation Partnership Project (“3GPP”) to the Band 70 plan.
14. In the United States, the Federal Communications Commission (“FCC”) licensed Band 70 for mobile wireless communications in March 2014. In making this decision (Report and Order FCC 14-31), the FCC noted that among its reasons was the ever-increasing demand for wireless communications in the U.S.

15. For many years, ISED has sought, whenever possible, to harmonize spectrum management in Canada with the rules that are set by the FCC for the United States. ISED explained the reasons for this practice in Canada Gazette Notice DGSO-002-12, *“Consultation on a Policy, Technical and Licensing Framework for Use of the Bands 2000-2020 MHz and 2180-2200 MHz”*:

“7. Industry Canada has often aimed to harmonize rules pertaining to wireless services within North America. Harmonization leads to larger markets and lower manufacturing costs of wireless handsets and equipment due to economies of scale, which results in reduced costs and increased availability for Canadian consumers.”

16. SSI believes that the Department will best serve the public interest by following this practice in the current case. Permitting TerreStar to use the 1695-1710 MHz band and the Block H PCS frequencies as it has proposed is consistent with the rules the FCC has set, and it is reasonable to believe that in this case, too, harmonization will benefit Canadian consumers with lower costs and increased availability of wireless handsets and equipment due to improved economies of scale for manufacturers and sellers of this equipment.

E. TerreStar has proposed a plan that protects existing users from risk

17. As the Department notes in its Notice of Application dated May 25, 2017, certain meteorological satellite (“MetSat”) receiving stations use the 1675-1700 MHz frequency band at specified locations across Canada.
18. The FCC faced a similar situation in the U.S. Based upon advice from the Commerce Spectrum Management Advisory Committee (“CSMAC”) and the National Telecommunications and Information Administration (“NTIA”), the FCC developed a formula for predicting zones where existing users in this band must be protected. Within these “protection zones”, the FCC decided to permit commercial operations subject to the completion of a successful coordination process to ensure that the commercial operations meet specified conditions, and will not cause harmful interference that reduces the function of U.S. meteorological satellites.
19. In its application, TerreStar proposes to use the regulatory and coordination framework developed for use with the same frequencies in the United States. The first part of the process TerreStar proposes is to identify Canadian protection zones. In its application, TerreStar uses a conservative methodology to predict ten such locations across the country.
20. The second part of the process that TerreStar is proposing consists of applying the FCC/NTIA coordination procedure in Canada. In addition, it proposes to supplement this procedure by conducting interference testing in two locations before it commences its operations in any protected zone.



21. SSi submits that TerreStar's application proposes a reasonable and very conservative set of measures to protect meteorological satellite operations in Canada. These measures should ensure coexistence between these operations and both its mobile and fixed commercial operations in the locations in Canada where MetSat receive functions must be protected. TerreStar's comprehensive coordination commitments should relieve any concerns the Department may have about coexistence with MetSat receive locations.
22. TerreStar's proposal provides the Department with an opportunity to take advantage of the work conducted by CSMAC, NTIA and FCC in the United States, as well as the coordination and interference testing that TerreStar is offering to conduct, to move ahead to licence the use of the requested frequency bands in an expeditious manner.
23. Of course, the vast majority of the Canadian population and landmass lies outside of the ten proposed protection zones. No coordination is required in the rest of Canada, and we understand there should be no risk of interference with MetSat reception associated with granting TerreStar's application for a licence.
24. In summary, SSi supports TerreStar's application. TerreStar is proposing to use a minimal amount of spectrum, subject to comprehensive commitments to mitigate any possibility of interference, in a way that will benefit Canadians in remote and rural areas of the country as well as in its metropolitan regions.
25. SSi appreciates the opportunity to provide these comments to the Department.

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