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Via email: ic.spectrumauctions-encheresduspectre.ic@canada.ca

Subject: SLBP-006-17: Consultation on the Spectrum Outlook 2018 to 2022

Dear Ms. Davis,

1. TerreStar Solutions Inc. (TerreStar) appreciates the opportunity to comment on the above noted Consultation dated October 2017. TerreStar will limits its comments at this point to sections 6.3.4 AWS-3 Unpaired Spectrum and 6.1 related to the licensing of AWS-2 spectrum (1915-1920 MHz paired with 1995-2000 MHz). Questions 19 and 20 are addressed in this submission.

Background

2. In ISED’s Consultation on the Spectrum Outlook 2018 to 2022 SLPB-006-17, the AWS-3 band and AWS-2 (H Block) is summarized as follows:

   6.3.4 AWS-3 unpaired

3. International context: The AWS-3 unpaired band (1695-1710 MHz) was also auctioned in the U.S. in 2014 as part of its AWS-3 auction. This block was unpaired and the majority of the licences were won by the same licensee as the H-block.

4. Potential equipment ecosystem: In the U.S., the H-block, the AWS-3 unpaired spectrum and AWS-4 spectrum are held by the same licensee nationwide. As such, the expected equipment ecosystems for these blocks of spectrum are linked and 3GPP band class 70 pairs the band 1695-1710 MHz (AWS-3 unpaired) with 1995-2020 MHz (upper portion of H-block and lower portion of AWS-4).
5. **Current and potential use in Canada:** In Canada, this spectrum is allocated to meteorological aids and meteorological-satellite (space-to-earth) services. Radiocommunication systems, such as meteorological earth stations and weather balloons, are deployed in this band. As well, the frequency band 1700-1710 MHz is used for low-capacity point-to-point microwave systems, such as one-way audio studio transmitter links.

6. **Although, to-date there is no equipment available for this band class and the timing of equipment is unknown, given that this band has been licensed in the United States, ISED expects that it will become available within the next five years. As a result, ISED considers that AWS-3 unpaired spectrum could be made available for commercial mobile.**

**AWS-2 (H Block)**

7. The AWS-2 band, specifically the frequency range 1915-1920 MHz /1995-2000 MHz (H Block), accounts for 10 MHz of the overall target. Although the H Block was auctioned in the U.S. in 2014, the equipment ecosystem has not yet developed. Therefore, ISED will continue to monitor developments in the AWS-2 band and consult on its future use when an equipment ecosystem is expected.

8. **Q19 – Provide, with rationale, your view of the above assessments on the bands being considered internationally for commercial mobile, fixed, satellite, or licence-exempt;**

   **Q20 – ISED is seeking comments on the potential frequency bands for release in table 7:**

   a) the proposed services and/or applications for each frequency band

   b) the potential timing of releasing for each frequency band

   c) the priority of the release of the frequency bands


10. **In line with the 3GPP standard for Band 70 and following the recent consultation on TerreStar’s application for the use of 1695 – 1710 MHz band in conjunction with the AWS-4 spectrum, the Department should add the mobile use for 1695 – 1710 MHz band to the Canadian Table of Frequency Allocations. This would have the additional benefit of harmonizing the Canadian and US frequency allocation plans.**
11. The Department has already supported the fixed and mobile use of AWS-4 for downlink transmission in decision SLPB-008-1. It should therefore do the same for the proposed uplink spectrum as defined in Band 70. Since the 1695 – 1710 MHz band will be used for both fixed and mobile uses in conjunction with AWS-4 spectrum, following the recent consultation on TerreStar’s application for fixed and mobile use of 1695 – 1710 MHz, the fixed use for 1695 – 1710 MHz in the Canadian Table of Frequency Allocations should be similarly modified with a footnote like C36 for AWS-4. This will permit the enhanced use of fixed spectrum in this band as long as it adheres to the technical and protection requirements for mobile use in the 1695 – 1710 MHz band.

12. In early February of 2017, TerreStar sought a licence for part of the 1695 – 1710 MHz unpaired AWS-3 band through its application which was Gazetted in 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) which was posted for comment on May 25, 2017. A decision was rendered on this application by ISED on February 15th, 2018. In this decision, ISED stated that “ISED considers that further public consultation is required in line with the principles outlined in the SPFC, including the priority and timing of spectrum releases to ensure they are aligned with and reflective of market and technology developments, maximizing the use of spectrum and fostering innovation.” It further invited comments on the priority and timing of the use of the frequency bands included in this application.

**TerreStar’s Submission regarding Spectrum Outlook 2018 to 2022**

13. In relation to the specific questions raised in the consultation, the unpaired AWS-3 and AWS-2 spectrum should be used for fixed and mobile use, in the same way that the AWS-4 downlink spectrum has such a designation in Canada, as identified in the Industry Canada decision SLPB-008-1. The FCC has decided to designate this spectrum for mobile use in the absence of representations from those who would want to use the spectrum for fixed use. In Canada however, as has been well documented in TerreStar’s application noted above, and in the responses to the application, there is a need for new fixed spectrum in rural and remote areas, generally outside of current cellular coverage, and because of the use of standard LTE technology for both services, can also be used for mobile services. This difference in use between Canada and the US should be maintained in any decisions ISED makes on the unpaired AWS-3 and AWS-2 spectrum.

14. The timing and priority for the decision of this band is urgent, given the licensing, technical standards and coordination agreements in place in the United States. TerreStar recommends that ISED move quickly to consult on the use of the unpaired AWS-3 and AWS-2 spectrum and licence one or more entity in a timely manner to ensure the band gets utilised efficiently.
15. TerreStar requires access to a portion of the unpaired AWS-3 spectrum in order to use its licensed AWS-4 downlink at 2000 – 2020 MHz. The longer ISED delays the licensing of the unpaired AWS-3 spectrum, the longer TerreStar will be denied the opportunity to use this spectrum to meet the needs of Canadians in rural, remote as well as more populated areas of the country.

16. The FCC’s AWS-3 auction which included the unpaired AWS-3 spectrum auction was launched in late 2014 and completed at the end of January 2015. AWS-2 was auction in the US in early 2014 with DISH Networks being licensed for the whole country.

17. In the three years since these auctions in the US, much has happened:

18. A) In December 2014, Industry Canada (now Innovation, Science and Economic Development – ISED) licensed TerreStar as the sole licensee for the 40 MHz of AWS-4 terrestrial spectrum in Canada and afterwards agreed to its designation of this spectrum as downlink, to harmonize with the decision made in the US and subsequently to be incorporated by the 3rd Generation Partnership Project (3GPP) into Band 66 and Band 70. TerreStar was also licensed in this decision to offer Canadian MSS service using the EchoStar T-1 satellite by March 31, 2020 and to coordinate the use of that service with ATC services in Canada and the US.

19. B) As the Department notes in this consultation, the outcome of the FCC’s AWS-3 auction netted the H-block, the unpaired AWS-3 spectrum and AWS-4 spectrum being held by the same licensee nationwide. This licensee, Dish Networks, is a significant minority shareholder in TerreStar and controls Gamma Acquisitions (Canada) ULC which holds the licence for the satellite that is used to offer MSS service in Canada.

20. C) The AWS-4 downlink spectrum has been combined with the unpaired AWS-3 spectrum, (1695 – 1710 MHz uplink spectrum), and 1995 – 2000 MHz downlink spectrum in band 70 through the 3GPP. The development of this band plan dictates that the unpaired AWS-3 uplink and AWS-2 spectrum will not be used for anything other than Band 70 cellular equipment developed and “loaded into” cellular handsets. That is to say, no other use of this spectrum, other than the one noted below, will be supported in North America due to interference potential to main stream cellular services using this band. TerreStar is licensed for 20 MHz of downlink spectrum in Band 70. The only other downlink spectrum is AWS-2 (the downlink 5 MHz from 1995 – 2000 MHz). The only uplink for these two downlink segments is the unpaired AWS-3 spectrum. One of the challenges of licensing the unpaired AWS-3 spectrum is that it is encumbered by the need to protect Meteorological satellite (METSAT) receiving locations in a few locations in Canada.

21. D) In addition to the 3GPP’s approval of Band 70, the 3GPP is in the process of approving an aggregation scheme which allows for the aggregation of supplementary downlink spectrum in Band 66 with Band 70 using AWS-1 and AWS-3 paired spectrum. AWS-1 and AWS-3 spectrum has been licensed in Canada to new entrant and existing incumbent wireless cellular providers. This development at 3GPP demonstrates that there are now two main ways to use the Band 70 downlink spectrum.
spectrum: either with the unpaired AWS-3 uplink spectrum or aggregated as supplementary spectrum with Band 66 spectrum.

22. E) In February, 2016, TerreStar filed a licence application for a limited amount of the unpaired AWS-3 spectrum with downlink AWS-4 spectrum to provide fixed and mobile broadband services in rural and remote areas of Canada, and under strict limitations, to use the same spectrum in metropolitan and suburban areas to provide high speed mobile cellular services. The limitations proposed would have protected a small number of existing meteorological satellite receiving stations that use some of the same spectrum. After a full public consultation of this application, the decision on this application was recently released, as noted above.

23. F) TerreStar’s application, and comments received from respondents, demonstrated that there is significant need for Band 70 spectrum to meet needs across the country: in rural and remote areas, equipment would have been developed to provide high speed Broadband fixed services in the short term, with compatible mobile equipment for rural, remote and metro areas being developed when the development of such equipment occurs in the US.

24. G) Through a lengthy and detailed coordination negotiations in the US including the FCC, NTIA, NOAA, meteorological satellite (METSAT) users and mobile carriers, guidelines have been developed that allows for a harmonized use of the unpaired AWS-3 uplink spectrum with METSAT users.

25. ISED’s stated policy is to fast follow and harmonize with the decisions made by the FCC for spectrum which is used for consumer related services using widely available equipment. This facilitates timely licensing of Canadian service providers in order that Canada can be well positioned to use said spectrum as the same time that services and equipment become available for the North American market.

26. TerreStar submits that ISED needs to make the licensing of unpaired AWS-3 and AWS-2 spectrum a high priority as this spectrum has been licensed for over 3 years in the US and there is a need in Canada. TerreStar also believes that it is likely, with the right conditions developing in the US, that this spectrum will be in use in the near future. The result will be that cellular base stations and handsets using this band will be readily available in Canada, with US base stations broadcasting in this band in Canadian border areas.

27. This provides an opportunity for ISED to move quickly to catch up on the three-year regulatory lag. Due to the fact that US licensing of the unpaired AWS-3 and AWS-2 spectrum has taken place and technical and coordination developments in the US have been completed, ISED should take advantage of these developments and fast track a policy consultation and licensing process to harmonize the use of unpaired AWS-3 and AWS-2 spectrum with the United States.

28. History is sometime a useful guide in planning for the future. Industry Canada was in a similar position in 2014 when the FCC had licensed and developed its technical standards for the AWS-4
spectrum in 2012 through its decision FCC 12-151. In that case, Industry Canada issued a consultation document, SMSE -011-14 in May 2014, and published a policy and licensing decision in December of the same year. In that consultation, it considered whether it should auction this spectrum, as it often does, but came to the conclusion that due to existing licensing actions, it would licence the spectrum without an auction. So in the period of less than one year, Industry Canada had harmonized the AWS-4 spectrum and accomplished North American compatibility.

29. There is another reason that ISED should move quickly with the licensing of this band. It has completed a thorough consultation process on TerreStar’s above noted application for the use of the unpaired AWS-3 and AWS-2 spectrum in 2017, in which the majority of issues that were addressed and reply comments received.

30. Given the information noted above, TerreStar submits that ISED should make it a priority to harmonize the use of the unpaired AWS-3 and AWS-2 spectrum with the US, while also allowing for fixed use. Using an expedited consultation process, much like it did for AWS-4 spectrum in 2014, ISED should move expeditiously to license the use of this spectrum in Canada. TerreStar submits that this is in the public interest as it ensures that spectrum which will be used in the US imminently is also available to Canadian wireless operators and Canadians as a whole. It will benefit rural and remote unserved Canadians with fixed and mobile services as well as the Canadians in general with much needed spectrum to meet the needs of exponentially growing data consumption.

31. In summary, TerreStar supports the licensing of unpaired AWS-3 and AWS-2 spectrum on a high priority basis because TerreStar needs access to a portion of the unpaired AWS-3 uplink spectrum to use its lower band AWS-4 spectrum (2000 – 2020 MHz) and due to its imminent use in the US. The consultation on TerreStar’s application and respondents’ comments demonstrated the need and demand for this spectrum and in large part addressed the major issues related to the use of the unpaired AWS-3 and AWS-2 spectrum. TerreStar believes that the submissions to this consultation will support these views.

32. TerreStar therefore strongly urges ISED to start immediately to work on a new expedited consultation and licensing process, even before the decisions of this consultation are released, to make the unpaired AWS-3 and AWS-2 spectrum available in Canada and make the harmonization of Band 70 for use across North America a reality in the near term.

Sincerely,

Jan Skora
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