

Consultation on a Policy and Licensing Framework
for Spectrum in the 3800 MHz Band
SLPB-006-21

Comments of
Canadian Wireless Telecommunications Association
February 15, 2022

Introduction

1. The Canadian Wireless Telecommunications Association (CWTA) appreciates the opportunity to provide the following comments in response to *SLPB-006-21: Consultation on a Policy and Licensing Framework for Spectrum in the 3800 MHz Band*¹ (Consultation).
2. CWTA is the authority on wireless issues, developments, and trends in Canada. Its membership is comprised of companies that provide services and products across the wireless industry, including wireless carriers and manufacturers of wireless equipment.
3. Our comments are limited to responding to Q1— *Coexistence with aeronautical radionavigation systems*, Q23 – *Licence Term*, and a comment on the timing of payment of licence fees. Absence of a response to any other proposals in the Consultation should not be interpreted as agreement or disagreement with such proposals.
4. To the extent that there is any inconsistency between CWTA’s submission and that of a CWTA member, the CWTA member’s submission shall prevail.

Coexistence with aeronautical radionavigation systems

6. Q1. ISED is seeking comments on its proposal to extend the mitigation measures described in SRSP-520 to protect radio altimeters from flexible use operations in the 3500 MHz band to flexible use operations in the 3800 MHz band (3650-3900 MHz). This extension is proposed until domestic and international studies are completed.

5. While CWTA agrees that public safety is paramount, any restrictions placed on the use of licensed spectrum should be evidenced-based. Due to the lack of convincing evidence of interference with radio altimeters caused by flexible use operations in the 3500 MHz or 3800 MHz band, CWTA does not support the extension of the mitigation measures to protect radio altimeters described in SRSP-520 to flexible use operations in the 3800 MHz band (“Mitigation Measures”).
6. Canada’s wireless industry has a long, demonstrated history as a responsible user of radio frequency spectrum. Telecommunications equipment suppliers build their equipment to exacting standards, using sophisticated digital processing, algorithms, and filters to minimize the radiating of power outside of their operating band. This allows for the maximum use of spectrum reserved for cellular communications while avoiding harmful interference with equipment operating in

¹ <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11757.html>

adjacent bands. This, together with the huge gap, or guard band, between the 3500 MHz and 3800 MHz bands and the 4200-4400 MHz band used by aircraft radio altimeters, makes it extremely unlikely that any spurious emissions from 5G transmitters can cause interference with aircraft radio altimeters.

7. Statements made by the aviation industry regarding the issue of interference use words like “potential” or “possible”. Central to their argument and the decision by ISED to amend SRSP-520 to include the Mitigation Measures is the report prepared by RTCA Inc. entitled *Assessment of C-Band Mobile Telecommunications Interference Impact on Low Range Radar Altimeter Operations*² (“RTCA Study”) which claims to simulate the worst-case scenario for 5G emissions and their impact on aircraft radio altimeters.
8. The FCC concluded that the RTCA Study “does not demonstrate that harmful interference would likely result under reasonable scenarios’ or even “reasonably foreseeable” scenarios.³ Despite not being convinced by the RTCA Study, the FCC created a 220 MHz guard band between the C-Band authorized for use in cellular communications and the spectrum being used by aircraft radio altimeters. This guard band is twice the size of the guard band originally requested by the aviation industry.
9. The RTCA Study has also been questioned by other regulators. The Australian Communications and Media Authority stated that it views the *RTCA Report* as “conservative” and “consider[s] that compatibility with radio altimeters can be successfully managed with [wireless broadband] services introduced up to 4000 MHz.”⁴
10. The Chief Expert, Avionics and Electrical Systems, for the European Union Aviation Safety Agency (“EASA”) determined there is no need for immediate action, stating “[w]e believe that just having the [RTCA Report] is not sufficient evidence. We’re not seeing many occurrences. In fact, on the 5G case we haven’t seen any, and we really need to have a solid basis in our regulatory system to take action.”⁵
11. As former FCC Chair, Tom Wheeler, recently commented, “clear heads are needed to separate what is only hypothetically possible based on worst-case

² https://www.rtca.org/wp-content/uploads/2020/10/SC-239-5G-Interference-Assessment-Report_274-20-PMC-2073_accepted_changes.pdf

³ FCC – Final Rule – Expanding Flexible Use to the 3700-4200 MHz band – at paragraph 370 - <https://www.govinfo.gov/content/pkg/FR-2020-04-23/pdf/2020-05164.pdf>

⁴ Australian Communications and Media Authority, Replanning the 3700-4000 MHz Band, Outcomes Paper at 3 (dated Jan. 2021); available at: https://www.acma.gov.au/sites/default/files/2021-01/Replanning%20the%203700-4200%20MHz%20band_Outcomes%20paper.docx .

⁵ 5G Signal Interference with Aviation Radar Altimeters (RADALTs) at 15:01; available at: <https://www.icao.tv/videos/anc-talk-5g>. As referenced in November 24, 2021 letter from AT&T and Verizon to FCC Chair Rosenworcel Re: Expanding Use of the 3.7-4.2 GHz Band, GN Docket No. 18-122

assumptions from what is highly probable based on real-world use”.⁶ Looking at real-world use, there is no convincing evidence that flexible use operations in the 3500 MHz or 3800 MHz band poses a risk to the operation of radio altimeters. Most notably, mid-band spectrum below the spectrum used for aircraft radio altimeters (4200 MHz to 4400 MHz) has been deployed for 5G in nearly 40 countries without any reported incidents of interference.

12. Since the Mitigation Measures were enacted, international regulators have reiterated the absence of any reported instances of interference between operations in these spectrum bands and that of radio altimeters. Recent statements from regulators in other countries include:

UK regulator Ofcom (January 2022): *“We can’t comment on how airwaves are allocated by authorities in other countries. But in the UK, 5G and other mobile services have been used in airwaves alongside altimeters for some years with no reported cases of interference in UK airspace.”*⁷

Australian Civil Aviation Safety Authority (January 7, 2022): *“While CASA and the Australian Transport Safety Bureau (ATSB) have urged pilots to report any anomalies with radio altimeters near 5G towers, they have yet to see any. In fact, the ATSB says there have been no reports of radio altimeter incidents linked to 5G since the telecommunications technology rolled out 2 years ago.”*⁸

Norway’s Telecom Regulator (January 2022): *“The 5G networks now being developed in Norway and Europe use lower frequencies than in the US and other parts of the world. The frequencies we use have a greater distance from those used in the altimeters in aircraft, and we therefore do not have the same problem”. In addition, it also states: “authorities are not aware on reported interference from 5G to the altimeters, and 5G deployment has been ongoing for several years in Europe and the rest of the world. In Japan where they currently use frequencies closest to the altimeters, tens of thousands of 5G base stations have been taken in use. As far as Nkom is aware, no interference has been reported there”.*⁹

European Union Aviation Safety Agency (oversees civil aviation in 31 EU countries) (January 2022): *“The technical data received from EU manufacturers offers no conclusive evidence for immediate safety concerns at this time.”*

⁶ <https://www.brookings.edu/blog/techtank/2021/11/22/will-5g-mean-airplanes-falling-from-the-sky/>

⁷ <https://www.mobileuk.org/news/statement-5g-and-aviation-in-the-uk>

⁸ <https://www.casa.gov.au/no-sign-5g-interference-australia>

⁹ <https://www.nkom.no/aktuelt/nkom-folger-5g-utbyggingen-i-norge-ogsa-i-forhold-til-luftfarten>

*"At this time, EASA is not aware of any in-service incidents caused by 5G interference."*¹⁰

German Federal Telecom Regulator (January 2022): *underlines how measurements carried out in France and Norway "have shown that there has been no concrete influence on the instruments so far".*¹¹

South Korea - Ministry of Science and ICT (January 2022) *confirmed "there has been no interference report at all since the 5G commercialization in April 2019."*¹²

13. Perhaps most importantly given the well-publicized debate occurring in the United States, even the U.S. Federal Aviation Authority has acknowledged that there are no reported cases of interference:

U.S. Federal Aviation Administration (November 2021 Bulletin):
*"There have not yet been proven reports of harmful interference due to wireless broadband operations internationally, although this issue is continuing to be studied. In the United States, there has been wireless broadband deployment in the 3.65-3.7 GHz band since 2007. The FCC started a proceeding to authorize mobile broadband service in the 3.55-3.7 GHz band in December 2012 and adopted final rules in April 2015 and October 2018. Commercial deployment started in September 2019, with no known issues for altimeters to date."*¹³

14. The lack of any reported cases of interference in countries where sub-4100 MHz spectrum has been deployed for cellular use is not surprising. After years of study, the U.S. Federal Communications Commission (FCC) concluded that providing a 220 MHz guard band between cellular services and radio altimeters operating in the 4.2 to 4.4 GHz band is sufficient to protect radio altimeters without additional mitigation measures. In Japan, the guard band is even smaller at 100 MHz.
15. In Canada, the guard bands for 3500 MHz and 3800 MHz spectrum are 550 MHz and 300 MHz, respectively. Despite these generous guard bands, the lack of any reported cases of radio altimeter inference, and the absence of any independent testing of radio altimeters used in Canada, the Mitigation Measures were imposed on the flexible use of 3500 MHz spectrum band. ISED's reason for implementing

¹⁰ <https://www.cnn.com/2022/01/19/business/5g-aviation-safety-europe/index.html>

¹¹ <https://www.businessinsider.de/wirtschaft/mobility/5g-probleme-mit-flugzeugen-usa-will-spaetere-einfuehrung-und-europa/>

¹² <http://www.businesskorea.co.kr/news/articleView.html?idxno=85377>

¹³

https://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/dc7bd4f27e5f107486257221005f069d/27ffcbb45e6157e9862587810044ad19/%24FILE/AIR-21-18.pdf

the Mitigation Measures is based primarily on studies such as the discredited RTCA Study referenced above.

16. Despite this overly cautious approach, the Government of Canada has continued to allow aircraft to fly from Canada to the nearly 40 countries that have deployed mid-band spectrum for cellular use, including in the vicinity of airports. It is not clear why the Government thinks there is a risk to flying in Canada but not in these other countries. It cannot be unsafe in Canada yet safe elsewhere.

The Impact of Unwarranted Constraints

17. We appreciate that ISED introduced the Mitigation Measures out of an abundance of caution, but unwarranted constraints on both the 3500 MHz and 3800 MHz bands will be harmful to Canadians and the Canadian economy.
18. As the COVID-19 pandemic has shown, Canada's digital networks are critical to maintaining economic and social activity. As Canadian businesses and governments accelerate the digitization of their operations and offerings, the expansion and enhancement of Canada's digital networks will be key to Canada's economic recovery.
19. Accenture has estimated that 5G will contribute an additional \$40 billion in GDP to Canada's economy by 2026 and add up to 250,000 new full-time jobs in the same period. Accenture further predicts that the use of 5G with other mobile technologies have the potential to address 23% of Canada's total 2030 green house gas emission targets by 2025.
20. However, the realization of these benefits depends on the ability to use spectrum to its maximum potential. Independent network analyst, Opensignal, recently observed that while Canada has been a leader in 4G, it risks "falling behind on both 5G availability and quality of experience" due to a lack of spectrum being made available for 5G.¹⁴ Unwarranted constraints placed on the use of 3500 MHz and 3800 MHz will place Canada further behind its international peers, the vast majority of whom have no restrictions on the use of mid-band spectrum on account of radio altimeters.
21. While the geographical footprint affected by the Mitigation Measures may seem relatively small, the negative impacts of the measures are not. As pointed out in comments to the recent SRPP-520 consultation, protection zones around airports also impact neighbouring highways, businesses, industrial parks and commercial transportation and shipping operations¹⁵. In its comments to that consultation, Bell

¹⁴ Canada's 5G future – the story so far (December 2021) -

<https://www.opensignal.com/2021/12/16/canadas-5g-future-the-story-so-far>

¹⁵ BCE Comments - Addendum to the Consultation on Amendments to SRSP-520 Technical Requirements for Fixed and/or Mobile Systems, including Flexible Use Broadband Systems in the Band 3450-3650 MHz.

estimated the Mitigation Measures in the exclusion zones will impact service on 56 highways while restrictions in the protected zones will impact service on an additional 97 highways.¹⁶

22. The impacts of the Mitigation Measures are far greater than just a few “dropped calls”¹⁷. Mid-band spectrum is considered the most important spectrum band for 5G because it combines speed, capacity and coverage in a way that provides more versatility and utility than low-band or high-band spectrum. This spectrum will serve as the foundation for digitization across industries, making them more productive and competitive, as well as increasing the capacity of fixed wireless broadband solutions.
23. To minimize the disruption in service caused by the Mitigation Measures carriers will have to incur additional capital and operational expenditures. These extra costs have the potential to negatively impact carriers’ capacity to invest in network expansion or densification elsewhere, thereby impacting communities that are far from affected airports.
24. However, it is unlikely that these additional expenditures will fully compensate for the reduced ability to use licensed spectrum. This means that individuals and businesses operating within or in the vicinity of affected airports may not be able to use some 5G technologies; making it more difficult to compete with national and international businesses that do not face such restrictions.

Recommendations regarding Mitigation Measures

25. Due to the lack of convincing evidence of interference with radio altimeters caused by flexible use operations in the 3800 MHz band, CWTA does not support the extension of the mitigation measures to protect radio altimeters described in SRSP-520 (“Mitigation Measures”) to flexible use operations in the 3800 MHz band.
26. If, notwithstanding this lack of evidence, ISED determines that mitigation measures are needed they must be evidence-based and demonstrably shown to be required. Appropriate testing of radio altimeter models used in Canada and under conditions that reflect real-world environments is necessary. The current Mitigation Measures did not result from this type of testing and should not be blindly applied to the 3800 MHz band.
27. Canada’s wireless industry routinely works with ISED and other spectrum users to address any concerns regarding radiofrequency interference. CWTA and some of our members, alongside representatives from government and the aviation industry, are participating in the Radio Advisory Board of Canada (RABC) working

¹⁶ Ibid, paragraph 11.

¹⁷ See for example: <https://toronto.citynews.ca/2022/02/03/congress-takes-up-controversy-over-5g-service-near-airports/>

group that has been created to support ISED and Transport Canada in their study of this issue. We are pleased that ISED and Transport Canada are looking at the coexistence of both the 3500 MHz and 3800 MHz band with radio altimeters as we think that properly conducted studies will show that the Mitigation Measures are not required for the use of either spectrum bands.

28. ISED should ensure that these studies are conducted transparently and expeditiously. They should also be completed prior to, and without delaying, the auction of the 3800 MHz spectrum. Completing this process prior to the auction is important to all auction participants so they can properly evaluate the impacts of any restrictions, or the absence thereof, on the value of the auctioned spectrum. As the FAA has been able to clear 90% of the radio altimeter models used in the U.S. commercial fleet in just a few weeks¹⁸, ISED and Transport Canada should work on a similarly aggressive timetable.
29. Regardless of the outcomes of these studies, it is important to recognize that if some models of radio altimeters are found to be susceptible to interference from radiofrequencies that are hundreds of megahertz away from their licensed use, the ultimate resolution is not to restrict the use of 3500 MHz or 3800 MHz spectrum, it is to replace the defective altimeters.
30. As stated above, the wireless industry adheres to strict international and national standards and regulations regarding the design and operation of its radio transmitters. It is apparent that when it comes to radio altimeters the aviation industry does not.
31. In a letter to U.S. National Economic Council, representatives from the aviation industry pledged to work “diligently to develop new standards, equipment, and aircraft/helicopter integration solutions”.¹⁹ The Government of Canada should take up the aviation industry on its pledge. If public safety is paramount, and we agree that it is, then it is unacceptable that the Government permits the aviation industry to use equipment that does not employ standard safety measures such as radio filters. It also sends a message to other spectrum users that they have no responsibility to design their equipment to block out-of-band radio emissions.
32. Some commentators have noted that the main obstacle to replacing altimeters is the cost:

The science here is pretty clear—it is hard to repeal the laws of physics. The *real politick* of this comes down to the costs of fixing the altimeters, just like the wheelchairs, hearing aids, and pacemakers were fixed. As the FCC

¹⁸ FAA 5G Statement issued on January 27, 2022 - <https://www.faa.gov/newsroom/faa-statements-5g> : “Continued collaboration between the FAA and wireless companies has enabled the agency to clear an estimated 90 percent of the U.S. commercial aircraft fleet, including the Boeing 737 MAX, for most low-visibility approaches in 5G deployment.”

¹⁹ Letter dated November 5, 2021 - <https://www.aia-aerospace.org/news/radio-altimeters/>

engineers concluded, “well-designed equipment should not ordinarily receive any significant interference (let alone harmful interference).”²⁰

33. If cost is the main obstacle, the Government of Canada should establish a fund to assist aircraft operators in replacing models of altimeters that are identified as being problematic. The money for this fund can come from the billions of dollars that the wireless industry has paid to the Government in the 3500 MHz band auction and the additional funds that will be paid in the 3800 MHz band auction. While these amounts are paid to the general revenue of the Government, it is within the power of the Government to allocate a portion of these funds for the replacement of altimeters.
34. The Government should also impose a deadline by which aircraft operators must replace faulty altimeters. To the extent there are any mitigation measures in place regarding the flexible use of the 3500 MHz and/or 3800 MHz spectrum bands, they should expire as of the above-referenced deadline. After that date it should be incumbent on Transport Canada to impose any necessary flight restrictions on aircraft that have not replaced their faulty radio altimeters.

Licence Term

Q23. ISED is seeking comments on its proposal to issue new flexible use spectrum licences in the 3800 MHz band with a 20-year licence term and the proposed wording of the condition of licence above.

35. CWTA agrees that the term of licences issues should be 20 years. However, since it is anticipated that the 3800 MHz auction will be completed in 2023 but the 3700-4000 MHz band will not be cleared of fixed satellite service operations (FSS) until 2025²¹, the 20-year period should be measured from the date that the clearance has been completed and the 3800 MHz band is capable of being used for flexible use. If the transition period for FSS is not considered when calculating the licence term, the effective use of the licences will be less than 20 years.
36. Similarly, the transition period should be considered with respect to the deployment requirements proposed in Annex B. For example, with an expected two-year delay from the auction date to the time the 3800 MHz is cleared for use, a five-year deployment requirement is effectively a three-year requirement. To give proposed deployment requirements their intended effect, the period for each deployment requirement should not start until the spectrum band has been cleared for use.

²⁰ <https://www.brookings.edu/blog/techtank/2021/11/22/will-5g-mean-airplanes-falling-from-the-sky/>

²¹ As per Decision on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band - <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11699.html>.

Payment

37. For the reasons set out in paragraph 35 above, except for a modest deposit, licence winners should not be required to make payment for licences until the spectrum band is cleared of FSS operations. Otherwise, licensees will be required to pay amounts for licences that are not yet usable. Licensees will need to begin recovering these costs from subscribers even though subscribers are not yet able to benefit from the use of the licensed spectrum. In this way, ISED's proposed auction payment policy would directly harm Canadian wireless consumers.

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