



**Consultation on a License Renewal Process for Spectrum in the Bands 849-851 MHz and
894-896 MHz for Air-Ground Services**

Canada Gazette - Notice No. SLPB-006-18

REPLY COMMENTS

October 10, 2018

SKYSURF CANADA COMMUNICATIONS INC.



October 10, 2018

VIA E-MAIL

Director
Spectrum Regulatory Best Practices
Innovation, Science and Economic Development Canada
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RE: Reply Comments - *Consultation on a License Renewal Process for Spectrum in the Bands 849-851 MHz and 894-896 MHz for Air-Ground Services ('ATG')*

Attention: Director, Spectrum Regulatory Best Practices

Once again we would like to thank the Director for this opportunity for SkySurf Canada Communications Inc. to provide comments on the important future role of ATG inflight connectivity in Canada. We look forward to the license framework outcomes, based on this public consultation of the past record and future contribution of SkySurf in Canada.

Best regards,

Adrian Science

A handwritten signature in blue ink, appearing to read "Adrian Science". The signature is fluid and cursive, with a large initial "A".

President, CEO, Founder
SkySurf Canada Communications Inc.



Section I: Summary and Background

1. **SkySurf Canada Communications Inc.** ('SkySurf') appreciates this opportunity to respond to the comments of Rogers Communications Canada Inc. ('Rogers') and Saskatchewan Telecommunications ('SaskTel').
2. Prior to addressing the individual points of difference with Rogers and SaskTel, we believe it is important to identify key facts and characteristics attributable to the usefulness, life expectancy and contribution of Air-Ground Services ('ATG') in order to set aside many of the claims by Rogers and Sasktel.
3. SkySurf has effectively pioneered, developed and made use of the spectrum that it won at public auction in May 2009. We understand that the spectrum is a public resource that is to be used in ways to serve the public interest. As a result of significant network investment and commercial activities, SkySurf estimates that for the twelve-month period ending June 2018, approximately 25.0 million passengers on commercial aircraft in Canadian airspace had inflight connectivity through an ATG network and approximately 3.0 million passengers used ATG technology to connect in-flight in Canadian airspace during this period. We forecast that ATG network access and passenger usage is expected to continue to grow through 2026 and beyond especially for commercial aircraft operators' North American fleet and private aircraft operators. Any change to regulations governing ATG spectrum may impede this planned investment, growth and overall public utility.
4. SkySurf submits the following summary points to help identify key areas of differentiation with Rogers and SaskTel that help define the ongoing usefulness and contribution of ATG:
5. ***ATG is a widely used, proven, dependable solution.*** The ATG offering in Canada has rapidly evolved since the spectrum auction in May 2009. In the past few years, there has been significant network investment, technology innovation as well as other commercial activities including the development of important relationships with U.S. based partners to ensure seamless cross border transitions. The service offering today is an efficient and proven service. Any regulatory disruption including a change to the likelihood of spectrum renewal or the repurposing of spectrum would result in significant time and financial investment by all stakeholders without certainty of a workable alternative solution. Low earth orbit ("LEO") satellite solutions remain in early developmental stages with no definitive date of implementation.
6. ***Potential disruption to airline operators and end-users.*** Any forced move to a LEO satellite based in-flight communication solution based on regulatory changes would at minimum, require significant switching costs including aircraft recertification, investment in new equipment, aircraft downtime, installation and other costs with the potential to disrupt service on the existing aircraft fleet. It is SkySurf's position that ATG should have a clear path forward under an appropriate licensing regime to ensure ATG customers have the right to continue existing service. We do not agree with Rogers and

SaskTel proposals that would be disruptive to end-users without a comparable satellite solution. We request that ISED allow the technology underpinning the present ATG service to continue to develop in a competitive landscape that benefits the public.

7. ***Benefits of ATG will continue to provide advantage over satellite.*** We submit that ATG connectivity is a preferred terrestrial solution today and will continue to be beyond 2026. Because signals delivered by satellite travel further distances than those delivered by ATG cell sites, even prospective low earth orbit solutions will have additional latency embedded in any future solution. In addition to a favorable end-user benefits related to latency as well as speed and reliability, ATG is also a favorable solution for commercial and private operators' fleets over land. For example, antennae and installation costs are lower and less disruptive than those of satellite. Additionally the equipment needed by a plane to receive a signal in an ATG solution weighs less than the satellite equivalent, providing a continuing lower cost fuel benefit to ATG users with corresponding environmental benefits. We submit that these are distinctive ATG benefits that will apply beyond the license periods under consideration by Rogers and SaskTel. ATG technology is an important terrestrial solution that is evolving and incorporating innovative solutions to improve the end user passenger experience as well as operators' financial and operating metrics. On this basis, we submit that ATG in-flight connectivity should remain a critical component of the communication infrastructure, especially for aircraft operators over land, and object to any claim that the technology is 'sun setting'.
8. ***The Canadian public is receiving 'optimal value' from SkySurf's spectrum usage.*** The spectral efficiency of the current EV-DO RevB technology for ATG, and its eventual successor, Long-Term Evolution ('LTE'), is greater than 98% of the theoretical Shannon law (which states that the limit is 2 bits per Hertz). ATG utilizes the licensed spectrum 'optimally' to the best degree possible. As such, any reference to repurposing the spectrum for alternative uses may not be valid because spectral efficiency is already optimized. Since there is very little room left for improvement in spectral efficiency, we submit that the likelihood of a disruptive new technology for ATG is limited. The "5G" trend is to use cell splitting to provide increased data speeds and network capacity. This cell splitting is already taking place over southern Ontario on the ATG network which is an example of an evolving network plan to innovate and improve subscriber service.

Section II: Specific responses to public consultation comments by respondent

Sasktel

9. **Paragraph 6.** Sasktel states that "*these proposed new satellite technologies will utilize large numbers of low earth orbit (LEO) satellites capable of offering high bandwidth broadband services, including to airborne aircraft*". SkySurf makes the comment that this LEO technology is speculative and years away from implementation and active service. Even as satellite solutions develop, there will continue to be a need for a proven, reliable, cost effective ATG dual solution to promote responsible infrastructure redundancy.

10. **Paragraph 10.** Sasktel states that *“the Canadian license expiry dates align with the October 2026 license expiry dates for corresponding licenses in the United States.* SkySurf is of the view that it would be more advantageous to review any changes made by the FCC to the U.S. spectrum allocation and subsequently take the appropriate time to craft a response that benefits all ATG stakeholders. It should be noted that there is heavy ATG usage in the United States and it would be improbable to expect that any action would be taken to disrupt the extensive, existing, commercialization of ATG inflight connectivity.

Rogers

11. **Paragraph E.3.** Rogers states *“the department has an important role to ensure that Canada continues to be at the forefront of 5th generation technology innovation and adoption by providing access to new spectrum, including by reallocating spectrum used by sun – setting technologies that can no longer effectively or efficiently serve Canadians”.* SkySurf endorses Rogers’ statement that *“the Department has an important role to ensure that Canada continues to be at the forefront of 5th generation technology innovation and adoption”.* SkySurf rejects the comments of Rogers that imply ATG is a *“sun-setting technology that no longer effectively or efficiently serves Canadians”.* It is demonstrably the case that ATG ‘effectively’ and ‘efficiently’ serves Canadians. The number of ATG users continue to grow and there is a strong and expanding installed base of airplanes equipped with ATG in Canada. SkySurf, along with its firm multi-year commitment with its technology leading partner will continue to innovate on behalf of commercial and private aircraft operators and passengers. By providing SkySurf with a long-term license, ISED will be ensuring that ATG technology investment and innovation will continue.
12. **Paragraph 4.** Rogers states that *“access to new spectrum is critical” in the Machine-to - Machine Market ‘with the increasing demand for data’*”. SkySurf takes issue with these ‘expectations’. Initial spectrum requirements to support IoT applications such as industrial machine-to-machine communications can be accommodated in current allocations of commercial 4G terrestrial operators. This is due to the nature of the messaging for these applications. We expect that industrial communications about the operation of machinery or electronics will, after initialization, be largely supporting exception monitoring about imminent machine or system failures. In most applications, these situations do not require high bandwidth even with massive deployments. We believe that the current constraint on the deployment of IoT communication is the sensors needed in the first-centimeters, rather than in the last-mile of connections. Cost-effective sensor solutions will need to be implemented and deployed, taking many years, before deployments of edge devices requiring more bandwidth. In these circumstances the case being made that there is an urgent need to ‘grab’ all possible spectrum does not seem to have validity. In addition, ATG represents a perfect fit for M2M technology in the airline industry.
13. **Paragraph 6.** Rogers states *“we believe that the increase in power that will better enable the deployment of advanced 4G LTE services to benefit Canadian wireless*

consumers – and future 5G services – could potentially have some impact on services in the Air-Ground spectrum. This could especially be true if the legacy equipment deployed in the Air-Ground spectrum is technically deficient in co-existing with services in adjacent bands”. SkySurf finds this speculation about ‘legacy equipment’ and ‘technical deficiency’ unfounded. The assumption of incompatibility caused by hypothetical obsolescence is not grounded in fact or a fair assessment of the innovative efforts by SkySurf and its technology partners. Furthermore, if Rogers anticipates an increase in ‘power’ for ‘advanced’ services there would seem to be an obligation on Rogers and the providers of these ‘advanced’ services to provide better filters to remedy potential problems.

14. Rogers makes a presumption that ATG has no sustainable future and will not continue to evolve to be an ongoing, positive contributor to aircraft and passengers travelling in Canadian airspace over land. Rogers uses terms like “*re-farming ATG spectrum for commercial use*”, “*end – of – life timelines for the current service*”, “*operating a service near the end of its useful life*”. SkySurf rejects Rogers’ underlying assumption that ATG will not contribute as a technology, and that it does not provide any commercial alternative. SkySurf firmly believes that Rogers misreads the future for ATG. It believes ATG is a technology with indisputable unique benefits that justify the recognition of a licensing regime that gives it the opportunity to continue its contribution. It is not necessary for Rogers to suggest that the current ATG spectrum should be ‘re-farmed’ to provide themselves and other terrestrial telecommunication operators with more abundant spectrum.
15. In paragraphs 16 and 19 particularly, Rogers proposes a short term, 3-year license, for ATG with the possibility of 3-year renewals. SkySurf finds that a 3-year term is neither equitable or practical. Given the investment by all the stakeholders in Canadian ATG – developmental costs, network costs, on-board equipment costs, maintenance costs – it would be punitive to truncate the service before it has had time to deliver the anticipated benefits and returns to its stakeholders. Practically a 3-year term would leave stakeholders in a state of uncertainty with negative implications for commercial and private aircraft operators and end users. SkySurf finds a 3 year license term to be far too short and too disruptive to be worthy of consideration by ISED. SkySurf repeats its view that it is in the best interests of all stakeholders and users to find out what, exactly will be the changes, if any, to the US licensing and then have a settling in period to adjust, if necessary, or continue unchanged as may be the case. A 10-year licensing period would seem best suited to providing the security that ATG participants need whilst giving an appropriate horizon for consultation.
16. Both Sasktel and Rogers take the view that “*licenses issued through this renewal process should not have a high expectation of renewal*”. SkySurf draws ISED’s attention to the pioneering role that SkySurf took to bring in-flight connectivity to Canada. It further makes the indisputable claim that it has made sure ATG works ‘effectively’ and ‘efficiently’ in Canada. Against this background and SkySurf’s track record of service, the public will benefit from its continued involvement as license holder and developer of the service in Canada. Given the market expects ATG to be available, SkySurf should be

delivering that availability. It is SkySurf's contention that ISED should not eliminate the opportunity for ATG to continue into the future and that commercial circumstances and competing technologies should be the determiner of the life cycle of ATG and that SkySurf should be given continued recognition for its pioneering and development of ATG in Canada.

17. SkySurf responds to Sasktel and Rogers concerns that the longevity of ATG should not be forced on the marketplace by the elimination of a license to provide the service. The license and its renewal should leave the opportunity open for the marketplace to enjoy its preference. In paragraph 21 of its response, Rogers states that *"any ongoing deployments should purely be driven by the licensee's business case and not by a condition of license to maintain or expand coverage (Otherwise it could result in significant investments in new equipment by the licensees that cannot be recovered before the end of the short term license)."* SkySurf agrees it is not the job of ISED to maintain or expand coverage that is not needed. It surely, though, is the responsibility of ISED to provide a licensing environment which does not eliminate a service that is in use, with subscribers committed to the service. Rogers is correct in that there is a clear linkage between the license and the service of ATG. But that linkage does not require the license period to determine the fate of the life expectancy of ATG. ISED should only ensure that there is a level playing field for ATG to carry on in competition with satellite, which is not handcuffed by regulatory restraints.
18. Both Rogers and SaskTel agree that there is a requirement to extend the license for SkySurf for ATG spectrum. Rogers takes the view that the license should be extended for 3 years with the possibility of 3 years extension. This extension is both impractical for and destructive to ATG. A 3-year extension would give the customers of ATG no choice but to move to a satellite offering. ATG customers could not risk having their ATG service removed and would need to make alternative decisions ahead of the 3-year timetable, with all its uncertainties. This would, effectively, unintended or not, signal the premature end of ATG. Sasktel, in paragraph 10, recommends that the *"Canadian expiry dates align with the October 2026 license expiry dates for corresponding licenses in the United States"*. A coterminous conclusion for both sets of licenses would work if both sets of circumstances, in both countries, were identical; they are not and what happens in the United States needs to be digested and given a considered response that is applicable to the realities of Canada as well as achieves harmonization with the policy approach of the United States. A digestive and consideration period is best for achieving the best policy decision. It also gives the providers and users of Canadian ATG the rightful opportunity, if relevant changes occur in the U.S. to input to ISED so that ISED can reach a conclusion that gives SkySurf, the license holder, and all those dependent on it, the time to achieve adequate consultation with ISED. SkySurf finds that a 10-year license, which gives a needed reflective period post any U.S. policy reconfigurations in 2026, would meet the needs of the circumstances, to continue seamless connectivity without signaling any disruptive change to those who use ATG service. This reflective period is best suited to taking into account all the reasonable entitlements of the ATG family and the ultimate interests of Canada.

PART III - Summary

19. SkySurf endorses the potential role for satellite solutions as envisaged by Rogers and Sasktel. Improvement in satellite connectivity can only benefit the commercial and private aircraft operators' ability to provide connectivity to the global travelling public. Whilst agreeing with Rogers and SaskTel the importance of satellite connectivity, SkySurf has a different view about the future role of ATG. ATG is a well utilized in-flight solution that will coexist with satellite because it will continue to offer favorable performance over land. We believe that the public will benefit from this technology 'rivalry'.
20. SkySurf asks ISED to recognize that uncertainty created by the absence of an expectation of spectrum license renewal along with a shorter renewal period would negatively impact the future of ATG to the detriment of Canadian commercial and private aircraft operators and end users. Any change in the spectrum framework would result in serious commercial consequences not associated with market forces or technological capabilities.
21. In direct contrast to claims by Rogers and Sasktel, ATG will be a long-term, effective solution for in-flight connectivity over land. SkySurf and its partners plan to continue to invest in network technology which we expect will maintain ATG's superior position over satellite for the foreseeable future. As Rogers references in its response, bands 849-851 MHz and 894-896 MHz is a relatively small amount of spectrum. We submit that a policy change to a 'small' spectrum band favoring a nascent, unproven LEO satellite solution would likely have widespread economic impact and result in reduced inflight connectivity.
22. ATG is an efficient user of the current spectrum it is allocated in Canada. Its take-up rate continues to increase. It is not handcuffed by disruptive changes anticipated in EVDO in the time beyond the timeline under consideration for this license. Our network partner, the leader in ATG technology, is committed to bringing its latest technology to SkySurf in Canada. This technology partner has made significant improvement over the speed and responsiveness of ATG over the past 5 years. These improvements will undoubtedly continue to make ATG, over land, a superior provider of service over satellite. SkySurf has demonstrated already, through its cell splitting in Ontario that ATG data speeds and network capacity will increase to keep it ahead of any competitive satellite offering over land. With this demonstrated ability for ATG to match performance to customer needs and to bring a package of advantages beyond the overall deliverables of satellite, SkySurf asks that the continuity of the existing licensing framework.
23. In view of these reply comments and consistent with our initial comments, SkySurf submits that ISED should facilitate a stable investment environment that supports market based forces that lead to future technology through the following regulatory environment:
 1. A 10-year license renewal term; and
 2. A high expectation of license continuity.