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February 15, 2018

Via email: ic.spectrumengineering-genieduspectre.ic@canada.ca

Senior Director
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235 Queen St
Ottawa, ON K1A 0H5

Re: Canada Gazette Notice No. SMSE-019-17: Consultation on the Technical, Policy and Licensing Framework for Wireless Microphones

Attached, please find the comments of Rogers Communications Canada Inc. (Rogers) in response to *Canada Gazette*, Part I, November 25, 2017, *Consultation on the Technical, Policy and Licensing Framework for Wireless Microphones* (SMSE-019-17).

Rogers thanks the Department for the opportunity to provide input on this important issue.

Yours very truly,



Howard Slawner
Vice President – Regulatory Telecom
HS/pg

Attach.

Consultation on the Technical, Policy and Licensing
Framework for Wireless Microphones
SMSE-019-17

Comments of
Rogers Communications Canada Inc.
February 15, 2018



Introduction

1. Rogers Communications Canada Inc. (Rogers) is pleased to provide Innovation, Science and Economic Development Canada (ISED or the Department) with the following comments in response to *SMSE-019-17: Consultation on the Technical, Policy and Licensing Framework for Wireless Microphones*¹ (the Consultation), published in the *Canada Gazette*, Part I, November 25, 2017.
2. The Department should look to update its policy and regulatory framework to ensure reliable spectrum access for the use of wireless microphones by professional users. Wireless microphones and related systems, such as cue and control communications and synchronization of video camera signals, are used both indoors and outdoors in venues including but not limited to broadcast studios, on-location news, sports arenas, and film and television production studios. In situations such as large sporting events, entertainment productions or concerts, hundreds of wireless microphones may be used in the same location.² Creating effective spectrum frameworks and harmonizing policy wherever possible with regional and global ecosystems, especially those of the United States (U.S.), to ensure economies of scale and minimize cross-border interference issues, are important for supporting the digital technologies and services that entertain and inform Canadians.
3. Rogers understands the importance of content creation in Canada. Rogers' Media Division (Rogers Media) is a diversified, leading Canadian media company that engages in television and radio broadcasting, televised shopping, magazines, and sports entertainment. In broadcasting, Rogers Media has 55 local radio stations across the country and a variety of local, national and multicultural television properties including seven "City" stations (Vancouver; Edmonton; Calgary; Saskatchewan, Winnipeg; Toronto; and, Montreal); five local over-the-air OMNI television stations and the national specialty channel OMNI Regional; 3 national specialty channel's OLN, FX, and FXX. In addition, Rogers Media operates 4 sports channels including its flagship station, Sportsnet, which is distributed nationally on a regional basis. Rogers Media also operates many well-known consumer and online magazines, a suite of digital assets (90+ owned and 300+ premium partnership sites), and owns Rogers Centre stadium, a year-round sports and entertainment facility, and the Toronto Blue Jays Baseball Club. Through its diversified assets, Rogers Media spends hundreds of millions of dollars each year in the production of local programming and each of its businesses, local or national, use wireless microphones extensively in their regular operations.

¹ ISED, *SMSE-019-17: Consultation on the Technical, Policy and Licensing Framework for Wireless Microphones* (Consultation); <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11342.html>.

² ISED, *Consultation*, para 6-7.

4. ISED's policies related to wireless microphones must carefully consider the incumbent services that make use of spectrum, including Canadian OTA television broadcasters. Local television is a foundational element of the Canadian broadcasting system, which provides significant value and is a low-cost means for access to television, in rural and urban markets across Canada. However, Canadian OTA television broadcasters have been forced to face equipment obsolescence twice now.
5. As recently as 2011, these broadcasters were required to incur substantial costs to transition from analog to digital technology and to implement the current digital television (DTV) allotment plan, including the replacement of low-power apparatus, such as wireless cameras and microphones. These investments have not been fully depreciated. The Department's new DTV allotment plan that incorporates the 600 MHz repacking process affects virtually all OTA broadcasters and their equipment, meaning that these companies will be required to incur additional substantial costs above and beyond those that they have already incurred to implement the current allotment plan. However, systemic changes in local OTA television's business model pose a significant challenge to the sector's financial health. The Government should cover the costs incurred by local television stations to vacate the 600 MHz spectrum in order to accommodate the plan to re-allocate the spectrum, including any required modifications to, or purchase of, new wireless microphones.
6. Further, it should be highlighted that wireless microphones serve a mission-critical role in television and radio broadcasting and in live performance industries. Wireless microphones should continue to have the option of operating in a licence-exempt manner on a no-protection, no-interference basis, or applying for a licence in exchange for interference protection from white space devices (WSDs).³ In addition, the Department should consider making some spectrum exclusively available on a secondary basis to wireless microphones by professional users as defined by the Department's eligibility criteria. It is too early in the 600 MHz reallocation process to know all of the technical implications that will result from this television densification program and there is little to no practical knowledge on the real world working requirements of the next generation Advanced Television Systems Committee (ATSC) 3 standards. Any authorization of WSDs must continue to be on a secondary basis to wireless microphone use by professional users and the Department should not hesitate to place a moratorium on WSDs should incumbent services receive any interference whatsoever from WSDs.
7. The remainder of Rogers' comments will respond to the specific issues raised in the Consultation.

³ For detailed comments on WSDs, please see Rogers' Comments on ISED's White Space Devices Consultation.

Q1. ISED is seeking comments on its proposal to allow wireless microphones to use the 3 MHz guard band (614-617 MHz) and the 11 MHz duplex gap (652-663 MHz) subject to appropriate conditions to mitigate adjacent channel interference to mobile services.

A. Should technical rules be harmonized with those of the FCC to allow low power wireless microphones in the guard band (614-617 MHz) and duplex gap (653-663 MHz) with a maximum transmit e.i.r.p. of 20 mW?

B. Should a 1 MHz frequency separation be adopted for wireless microphones around the mobile service downlink spectrum (617-653 MHz) to protect mobile service operations?

In providing comments, respondents are requested to include supporting arguments and rationale.

8. Rogers generally supports the Department's proposals to harmonize technical rules with those of the Federal Communications Commission (FCC) to allow low power wireless microphones in the guard band (614-617 MHz) and duplex gap (653-663 MHz), subject to the imposition of appropriate technical rules to mitigate interference to mobile services. For clarity, while we generally support harmonizing the technical specifications with the FCC to permit low power wireless microphones, as per our comments in the Department's White Space Device (WSD) Consultation, Rogers also supports the Department's proposals to limit the usage of all WSDs to below 608 MHz.
9. Rogers generally supports the harmonization of Canadian technical rules with those developed by the FCC, including in the case of wireless microphones. As ISED states, such actions could benefit users of wireless microphones that already use the 600 MHz band and may be able to adjust their equipment to operate in the guard band or duplex gap.⁴ In addition, harmonization of technical rules can provide continental technical and economic benefits, and support broader spectrum initiatives. However, while we are confident that the FCC has conducted a thorough analysis of the new technical rules, and in particular the maximum transmit e.i.r.p. of 20 milliwatt (mW), we urge caution on the part of ISED in adopting this new standard. Mobile network operators in the U.S. are only just beginning to launch commercial mobile services in the new 600 MHz band, so there is limited actual field experience in how well the new rules will protect mobile users in that band [NTD: T-Mobile U.S. has actually launched in the 600MHz band in a few areas.]. Additionally, the band is likely to be used for both 4th generation Long Term Evolution (4G/LTE),

⁴ ISED, *Consultation*, para 36.

which is a mature technology, and 5th generation New Radio (5G/NR), which is a new technology. It is possible that a 20 mW maximum will not protect 5G/NR users from interference.

10. Over the long term, technical compatibility of lower power wireless microphones on both sides of the Canadian-U.S. border will be essential for the field production of a wide range of content, as professionals and organizations frequently work on either side of the border. For example, when Canadian content producers are working in the U.S. covering news, political, and sporting events, Canadian equipment will continue to work and not provide local interference. This will also be important for when U.S. broadcasters come to Canada to produce events such as sporting events, including basketball, baseball, IndyCar racing, etc., or cover news or political events.
11. Common standards between Canada and the U.S. means the Canadian content production sector can eventually leverage the purchasing power of a much larger U.S. economy and broadcast sector to benefit from economies of scale. This results in overall lower technology costs for both Canadian organizations and independent producers.
12. Further, harmonization of technical rules with the FCC will continue to protect the existing large deployment of Astronomical and Heath RF equipment. In addition, common frequencies shared between Canada and the U.S. means more efficient use of bandwidth and support of ISED and the FCC's reallocating 600 MHz spectrum from the broadcast to the mobile sector.
13. Rogers supports the proposed 1 MHz frequency separations (616-617 MHz and 652-653 MHz) around the mobile service downlink spectrum (617-653 MHz) to protect mobile service operations. The separation would serve both user groups, protecting both mobile and wireless microphone users operating in adjacent channels from possible interference. We are confident that the FCC has conducted a thorough analysis of and that the proposed separation will be sufficient to protect mobile operations, although we note that FCC does not appear to have considered an additional separation to protect the mobile uplink band starting at 663 MHz.
14. Despite our confidence in the proposed technical rules, Rogers recommends a cautious approach to implementing the new rules, in order to minimize any risk to commercial mobile services operating in the future 600 MHz band. Rogers recommends that ISED take two specific measures to mitigate this risk:
 - i. Wait until two years after the 600 MHz spectrum auction in Canada or the completion of the U.S. transition timetable, whichever is the later, before adopting the new rules for wireless microphones; and

- ii. Have RABC or some other technical organization conduct a technical evaluation of potential interference between wireless microphones and mobile devices intended for operation in the 600 MHz band, for both 4G and 5G technologies.

Q2. ISED is seeking comments on its proposal to introduce the use of wireless microphones, on a secondary basis, into the frequency bands 941.5-952 MHz, 953-960 MHz, 6930-6955 MHz and 7100-7125 MHz with appropriate conditions to prevent interference to fixed services.

In providing comments, respondents are requested to include supporting arguments and rationale.

15. Rogers supports ISED's proposal to introduce the use of wireless microphones, on a secondary basis, into the frequency bands 941.5-952 MHz, 953-960 MHz, 6930-6955 MHz and 7100-7125 MHz with appropriate conditions to prevent interference to fixed services. Broadcasters need access to additional spectrum bands for wireless devices, as the 600 MHz band is being reallocated to mobile services and there will be limited spectrum bandwidth that will remain in that band for wireless microphones.
16. Wireless microphones have already been moved out of the 700 MHz band when spectrum for television (TV) Channels 51 and higher was reallocated by ISED from broadcast to mobile wireless service between 2010 and 2013.⁵ More frequencies for wireless microphones are necessary to help alleviate congestion in large cities or at events where it is not uncommon to use hundreds of wireless frequencies.
17. Rogers further proposes that the Department consider reserving a portion of these frequencies exclusively for broadcast use. In light of the important role that broadcasting, especially that of local broadcasting, continues to play in the communities it serves, including the provision of local news and information programming, emergency alerting, and support for community organizations and charities, the Department must ensure the ability for content producers to create the programming that Canadians enjoy and rely on.

⁵ ISED, *Consultation*, para 15.

Q3. ISED is seeking comments on its proposal to allow wireless microphones to access the broadcasting bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz), the duplex gap (652-663 MHz) and the guard band (614-617 MHz) on a licence-exempt basis, and the voluntary licensing of eligible users' wireless microphones.

A. ISED is seeking comments on the eligibility criteria to determine who should be permitted to voluntarily license their systems (see paragraph 62).

B. Should ISED consider a licence-exempt approach for wireless microphones within the broadcasting or 600 MHz bands (614-617 MHz and 652-663 MHz)?

In providing comments, respondents are requested to include supporting arguments and rationale.

18. Rogers generally supports the Department's proposal to allow wireless microphones to access the broadcasting bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz), the duplex gap (652-663 MHz) and the guard band (614-617 MHz) on a licence-exempt basis. For clarity, we also support the creation of 1 MHz separations (616-617 MHz and 652-653 MHz) in which no wireless microphones would be permitted to operate on any basis.

19. We also support the proposal by the Department to limit the ability to voluntarily license wireless microphone to professional users only, such as broadcasters and operators of large event venues, professional theatre operators, professional touring companies and professional sports complexes. As the Department states, "Licensing would improve the ability for these wireless microphones users to coordinate and re-use spectrum, while providing them with a degree of certainty."⁶ However, Rogers believes that the FCC has proposed a more orderly licensing arrangement in which professional users, where performance and reliability are paramount, have exclusive access to a portion of the duplex gap (653-657 MHz). Making the same arrangement in Canada, we believe, would still allow for sufficient spectrum for licence-exempt users in the guard band (614-616 MHz), in the duplex gap (657-663 MHz), and the other new bands proposed in this consultation. Finally, as this is licence-exempt spectrum, voluntarily licensing of wireless microphone systems in the broadcasting bands and the 600 MHz guard and duplex bands by professional users should be on a no-cost basis or cost-recovery basis only.

20. Along with restricting voluntary licensing of wireless microphones to professional users, the Department should also ensure that any WSD usage continues to only be on a secondary basis within any band that ISED permits WSDs operation. WSD

⁶ ISED, *Consultation*, para 62.

operators should not be given the privilege to license any of these frequencies for WSD use. For clarity, we again support the Department's proposals to limit WSD usage to below 608 MHz, specifically excluding WSD usage in the 600 MHz duplex gap (652-663 MHz) and guard band (614-617 MHz).

21. The Department should also consider excluding any WSD usage in the frequencies of 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz are TV channels below Channel 37. Broadcast devices have always been designed to operate within TV channels. Therefore these frequencies may be best reserved exclusively for broadcast wireless devices. There is a large burden to equipment manufacturers in trying to recoup research and development costs in designing technology that is sufficiently frequency agile and cost effective. Allowing manufacturers to design around a contained set of frequencies will reduce development costs and increase availability.
22. The Department should also move forward with its proposal to allow licence-exempt usage of eligible users' wireless microphones within the 600 MHz guard band and duplex gap, subject to 1 MHz separations (effectively the ranges 614-616 MHz and 653-663 MHz, respectively). As stated in the Consultation, "This approach would provide a uniform regulatory framework for wireless microphones in the sub-bands in which they are allowed to operate in the frequency range 470-663 MHz."⁷
23. Broadcasters need sufficient spectrum for wireless devices, as the majority of the 600 MHz band is to be reallocated for exclusive mobile service. Allowing professional users to operate in the 600 MHz guard band and duplex gap will help to alleviate coordination challenges for large cities or at events where it is not uncommon to see hundreds of wireless frequencies in use. Importantly, such an approach will provide the freedom and flexibility to broadcasters to cover late breaking news or events in any part of Canada without the need of a licence or specific frequency.

⁷ ISED, *Consultation*, para 65.

Q4. ISED is seeking comments on its proposal to license the operations of wireless microphones on a secondary basis in the frequency bands 941.5-952 MHz and 953-960 MHz, 6930-6955 MHz and 7100-7125 MHz, based on its eligibility criteria.

A. ISED is also seeking comments on the eligibility criteria (see paragraph 64).

In providing comments, respondents are requested to include supporting arguments and rationale.

24. The Department should proceed with its proposal to license the usage of wireless microphones on a secondary basis in the 941.5-952 MHz and 953-960 MHz, 6930-6955 MHz, and 7100-7125 MHz frequency bands, based on its eligibility criteria. The proposed licensing approach is supported by Rogers as it protects existing licensed users in these bands.

25. As in our response to Q3A, we also support limiting the ability to voluntarily license wireless microphone to professional users only, such as broadcasters and operators of large event venues, professional theatre operators, professional touring companies and professional sports complexes. Any licensing of wireless microphone systems on a secondary basis in the 941.5-952 MHz and 953-960 MHz, 6930-6955 MHz, and 7100-7125 MHz frequency bands should be on a no-cost or cost-recovery basis.

26. Rogers thanks the Department for the opportunity to share its views and participate in this consultation process.