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

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

Please find attached the reply 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

Reply Comments of
Rogers Communications Canada Inc.
March 2, 2018

Introduction

1. Rogers Communications Canada Inc. (Rogers) welcomes the opportunity to reply to comments filed by other parties in response to *SMSE-019-17: Consultation on the Technical, Policy and Licensing Framework for Wireless Microphones*[1] (the Consultation), published on Innovation, Science and Economic Development Canada's (ISED or the Department) website on February 21, 2018.

2. Rogers stated its position on all of the issues raised in the Consultation in its comments of February 15, 2018. This reply is limited to comments on proposals made by other parties. Failure to address any specific issue raised by other parties should not be taken by the Department as Rogers' acquiescence with the position.

Rogers' Reply to Comments of Other Parties

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?

3. Most submissions generally support 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. Support for ISED's proposals comes from across services, with stakeholders of the mobile industry, broadcasters, white space devices (WSDs) proponents, and wireless microphone manufacturers all agreeing on harmonization.[2]

[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] Rogers Comments, para 9; Bell Comments, pg 1; SaskTel Comments, para 4; Shaw Comments, para 5; Canadian Association of Broadcasters Comments, para 6; 6Harmonics Comments, pg 1; Lectrosonics Comments, pg 1; Shure Comments, pg 4; RABC Comments, pg 2.

4. However, agreement was not unanimous as CBC/Radio-Canada supports allowing wireless microphone operation with a maximum transmit e.i.r.p. of 50 mW, which Sennheiser also supports but suggests the higher power for wireless microphones to operate across the entire duplex gap (652-663 MHz).[3] Conversely, the Dynamic Spectrum Alliance (DSA) supports the transmit power levels and operation restricted to the upper 6 MHz of the duplex gap but believes that WSDs should also be allowed to operate on a licence-exempt basis.[4] The Department should reject all these proposals.

5. WSDs have already been proposed to receive access to channels 3 and 4 (60-72 MHz) for fixed WSDs and channels 14 to 20 (470-512 MHz) for personal/portable and fixed WSDs as part of the Department's *Consultation on the Technical and Policy Framework for White Space Devices* (WSD Consultation).[5] Providing exclusive access to the upper portion of the 600 MHz duplex gap for professional users of wireless microphones provides reasonable accommodation to the incumbent users, while still providing sufficient spectrum for use by WSDs. In regards to allowing wireless microphones to transmit at higher power levels, the Department should note Shaw's comments that the lack of a Canadian-specific study into the number and types of wireless microphones means there is limited evidence on whether even the proposed maximum transmit levels are sufficiently stringent to ensure that mobile service operations will be protected.[6]

6. Nearly all comments support the Department's 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. As noted above, Sennheiser believes that wireless microphones should operate across the entire duplex gap and, specifically, that a 1 MHz guard band is not needed around the downlink block to protect mobile services.[7] Also noted above is Shaw's concern over a lack of Canadian-specific studies. Shaw states that, "In order to avoid interference, the frequency separation needs to be large enough to ensure that spurious emissions become negligible, or equivalent to the noise floor."[8]

7. Rogers believes that the Department's proposals of a maximum transmit e.i.r.p. of 20 mW should likely achieve the right balance between mobile services and wireless microphones but ISED should be cautious in adopting the new standard, as it is possible that a 20 mW maximum will not protect 5G/NR users from interference. Further, while a 1 MHz separation around the mobile downlink block would serve

[3] CBC/Radio-Canada Comments, pg 2; Sennheiser Comments, pg 1.
[4] DSA Comments, pg 2.
[5] ISED, *SMSE-018-17: Consultation on the Technical and Policy Framework for White Space Devices* (Consultation); http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11343.html.
[6] Shaw Comments, para 6-9.
[7] Sennheiser Comments, pg 7.
[8] Shaw Comments, para 7.

both user groups, and should be sufficient to protect both mobile and wireless microphone users operating in adjacent channels from possible interference, it makes sense to consider an additional separation to protect the mobile uplink band starting at 663 MHz. As such, we repeat our call to 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.[9]

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.

8. There is broad support for 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.[10] CBC/Radio-Canada explicitly state they, "supporte cette utilisation mais s'attend à des règles strictes, claires et facilement applicables soient mises en place pour la protection des liens point-à-points existants."[11]

9. In their support for the Department's proposal, RABC highlights their understanding that secondary use by wireless microphones in these bands would only be permitted on a licensed basis.[12] As the 600 MHz band is being reallocated to mobile services, providing licensed, secondary use for wireless microphones to the Q2 frequency bands will balance broadcasters need for access to additional spectrum with the need to protect incumbent fixed services within these bands.

10. As the Consultation states, ISED does not see an immediate need for making the frequency band 960-1164 MHz available for the operations of wireless microphones at this time.[13] The Department of National Defence, Transport Canada, and NAV CANADA support this view and state that wireless microphones should not be allowed to operate within the 960-1164 MHz frequency range.[14] However,

[9] Rogers Comments, para 14.
[10] Rogers Comments, para 15; Bell Comments, pg 1; SaskTel Comments, para 8; Shaw Comments, para 9; 6Harmonics Comments, pg 1; Canadian Association of Broadcasters Comments, para 6; Shure Comments, pg 6; Sennheiser Comments, pg 7.
[11] CBC/Radio-Canada Comments, pg 2.
[12] RABC Comments, pg 2.
[13] ISED, *Consultation*, para 52.
[14] Department of National Defence, para 1; Transport Canada, pg 1; NAV CANADA, pg 1.

Sennheiser argues for additional bands beyond those proposed by ISED as part of the Consultation be considered, including 960-1164 MHz.[15] Rogers believes that the opening of four additional bands for licensed, secondary use by wireless microphones is sufficient at this time and supports ISED's continued monitoring of international trends and developments regarding wireless microphone operations in additional frequency bands.

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)?

11. Most submissions generally support 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. Upon review of the comments, no new evidence is provided that invalidates 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).

12. As the Canadian Association of Broadcasters highlight:

> Broadcasters are in favour of restricting WSDs from these sub-bands so that a licence exempt approach can be used. It is expected that these sub-bands will be utilized for news gathering purposes where deployment will occur on a moment's notice and registration of the location in the WSD database will be highly impractical.[16]

This view is echoed by SaskTel and CBC/Radio-Canada, who state that making the 600 MHz duplex gap and guard band exclusively available to wireless microphones

[15] Sennheiser Comments, pg 5-6.
[16] Canadian Association of Broadcasters, para 9.

will allow for both flexibility and a degree of certainty for use by broadcasters in news gathering.[17]

13. While the WSD proponent DSA "fundamentally disagrees" with ISED's proposal that the entire duplex gap be shared exclusively between voluntarily licensed eligible and licence-exempt wireless microphones (thus excluding WSDs), fellow WSD proponent 6Harmonics simply "supports the harmonisation of wireless microphone use" in these bands.[18] The RABC states that some members, including CanWISP, Canadian Electrical Contractors Association, and WSD manufacturers, believe that exclusive access for wireless microphones in the 653-657 MHz portion of the duplex gap addresses the broadcasters' spectrum needs without having to limit access to the rest of the bands by WSDs. The Department should reject the position of the DSA and non-broadcasters/mobile industry RABC members, as they provide no evidence for their position. In the WSD Consultation, the Department is already proposing to open additional bands to WSD access. As such, the risk to both future mobile services and potential crowding out of wireless microphones in the 600 MHz band is too great with no evidence of actual need for yet more additional WSD accessible spectrum.

14. Most submissions are supportive that comment on the proposal by the Department to limit the ability to voluntarily license wireless microphones to professional users only, such as broadcasters and operators of large event venues, professional theatre operators, professional touring companies and professional sports complexes.[19] Shure Inc., Sennheiser and Mr. Wayne Stacey support a more expansive definition of "professional users" in at least some of the proposed bands.[20] However, the Department should continue to take a cautious approach in the criteria it uses to determine who is eligible to voluntarily license wireless microphones, as those who fall outside the current criteria will still be able to access the spectrum on a licence-exempt basis.

[17] SaskTel Comments, para 12; CBC/Radio-Canada Comments, pg 3.
[18] DSA Comments, pg 3; 6Harmonics Comments, pg 2.
[19] RABC Comments, pg 2; SaskTel Comments, para 10; Canadian Association of Broadcasters Comments, para 6; CBC/Radio-Canada Comments, pg 2; DSA Comments, pg 3; Lectrosonics Comments, pg 2.
[20] Sennheiser Comments, pg 8; Shure Comments, pg 9; Wayne Stacey Comments, para 9.

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).

15. There is almost unanimous support for the Department's 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.[21] Shure, however, suggests that the Department should consider a more flexible definition of professional users to permit secondary licences for users wherever "needed to serve productions where professional grade wireless microphone support is necessary".[22] The Department should reject such expansion because, as RABC states, "by restricting the eligibility criteria to professional users only, accurate interference calculations will be made thereby preventing interference with STL/TSL systems in use by broadcasters."[23]

16. The DSA believes that ISED should not license the operation of wireless microphones on a secondary basis in the frequency bands 6930-6955 MHz and 7100-7125 MHz. Their rationale is that there are no current wireless microphone incumbents requiring protection but licensing them on a go forward basis could create challenges by increasing the number of incumbents in the future, should ISED authorize licence-exempt Radio Local Area Networks (RLAN) operations in the 5925-7125 MHz frequency band.[24] However, the Department's proposals are designed primarily to protect the incumbent fixed service users, and licence-exempt secondary access to the bands will not provide the same level of interference protection. As such, the Department should reject the DSA's proposal.

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

[21] SaskTel Comments, para 13; Rogers Comments, para 25; Shaw Comments, para 11; Lectrosonics Comments, pg 2; CBC/Radio-Canada comments, pg 3; Canadian Association of Broadcasters Comments, para 6; Sennheiser Comments, pg 8.
[22] Shure Comments, pg 11.
[23] RABC Comments, pg 3.
[24] DSA Comments, pg 4.