



May 28, 2020

Via Electronic Mail

Radio Spectrum Management Policy and Planning
Ministry of Business, Innovation and Employment
PO Box 2847
WELLINGTON 6140
New Zealand

Ref: Comments on the Re-planning options for frequency bands within 1710-2300 MHz - Discussion document

Ladies and Gentlemen,

Shure Incorporated welcomes the opportunity to comment on RSM's Discussion document addressing the Re-planning options for frequency bands within 1710-2300 MHz.¹ For over 90 years, Shure has been a respected manufacturer of high-quality, innovative audio products based in the United States with a significant market share also in New Zealand. Shure products (www.shure.com) are utilized worldwide in applications known as audio-PMSE (also known as SAB/SAP), which includes deployments in industries such as broadcast and film production and other professional indoor and outdoor media content creation, in addition to a variety of other civic, business, and special event contexts. These applications continue to grow annually in scale and density to meet the needs of broadcast and event producers engaged in increasingly complex productions to meet audience expectations.

Shure has actively participated for many years in various proceedings around the world, e.g. by filing comments in the Australian ACMA Strategies for Wireless Access Services, Spectrum Access Options SPP 08/08², the United Kingdom (Ofcom)³ and various EU (RSPG)⁴ and U.S. (FCC) filings.⁵

Before we provide more details on the frequency bands within 1710-2300 MHz, we have two general comments on the Discussion document. Shure's main concern is that opening the 1785 -1800 MHz band (also known as the 1800 MHz duplex gap) for wireless microphones will not be viewed as adequate compensation for the spectrum losses that PMSE faces in the 600 and 700 MHz bands.

¹ <https://www.rsm.govt.nz/assets/Uploads/documents/consultations/2020-1710-2300-mhz/2019-20-discussion-document-options-for-1710-2300-mhz.pdf>

² <https://www.acma.gov.au/sites/default/files/2019-08/ACMA-Discussion-Paper-Spectrum-Planning-Discussion-Paper-SPP-0808-Strategies-for-Wireless-Access-Services-Spectrum-Access-Options-Consultation-Outcomes.pdf>

³ https://www.ofcom.org.uk/__data/assets/pdf_file/0017/55601/shure.pdf

⁴ E.g.: Public consultation on the Draft RSPG Work Programme for 2020 and beyond (29 November 2019): <https://rspg-spectrum.eu/public-consultations/> (Responses)

⁵ E.g.: FCC Docket on "Next Generation" Broadcast Television Standard (GN Docket No. 16-142) [https://ecfsapi.fcc.gov/file/1022064357718/Shure%20Next%20Gen%20Broadcast%20Comments%20\(FINAL%20022018\).pdf](https://ecfsapi.fcc.gov/file/1022064357718/Shure%20Next%20Gen%20Broadcast%20Comments%20(FINAL%20022018).pdf)

First, the RSM should be mindful of PMSE deployments in its deliberations to allocate frequencies to mobile (IMT) and keep in mind that many ITU-R PMSE (ENG/SAB/SAP) reports will be reviewed and updated in the study period 2019-2023, providing an outlook on future needs of PMSE and other applications. Prior to allocating such frequencies, the RSM should be aware that DECT frequency bands are used for audio PMSE applications as well, e.g. talkback systems, which are commonly used for production communication as well as security communication. The DECT range, 1.880-1.900 MHz, is currently used heavily for wireless talkback, intercom, and conferencing applications. Currently, there are discussions on the ETSI level to extend that range to 1920 MHz. CRA should therefore consider DECT appropriately in its plans.

Second, the UHF TV band within 470-694 MHz is the primary band for professional wireless audio PMSE operation globally. We encourage RSM to safeguard access to this band for the foreseeable future. This band offers the most reliable operation due to a combination of good propagation, antenna efficiency, and relatively low and predictable ambient noise and interference levels. Other bands that are used, where available, include the VHF television band in 174-216 MHz, 823-832 MHz, 1785 -1805 MHz and 863-865 MHz. These bands are subject to high levels of interference in certain locations. The aeronautical DME band ("Air Band") in 960-1164 MHz is currently being studied for shared use by PMSE. A few administrations have allowed licensed PMSE systems to operate in portions of the 1350-1400 MHz and 1518-1525 MHz bands, but the long-term availability of these frequencies is uncertain, and the administration in charge of the allocation should be encouraged to make them available to help alleviate the loss of the 700 MHz band.

Responses to the RSM's questions 1 and 2:

1. *Do you agree with the RSM proposal to use the 1800 MHz duplex gap (1785-1805 MHz) for radio microphones? If not, what is a better use of this block of spectrum?*

RSM proposes to re-purpose the 1800 MHz duplex gap (1785-1805 MHz) to accommodate radio microphones, complying with ETSI standard EN 300 422-1.

This RSM proposal makes sense to us, as long as it doesn't go hand-in hand with a reduction of other available frequencies for PMSE, for the reasons stated above.

Australia has allocated the 1785 to 1800 MHz band to PMSE. This frequency range is only for wireless microphone and other audio transmitter use and available in all areas.⁶

In **Europe**, the 1785-1805 MHz band is also available for Radio microphones and In-ear monitors pursuant to ERC/REC 70-03 Annex 10⁷ and EC Decision 2014/641/EU.⁸ The band is harmonized within EU member states and the U.K. pursuant to standard EN 300 422 for wireless microphones. Specifically, Annex 10 of **CEPT Rec 70-03**⁹ covers the frequency bands and regulatory as well as informative parameters recommended for radio microphones and wireless audio and multimedia streaming

⁶ <https://www.acma.gov.au/wireless-microphones>

⁷ <https://www.ecodocdb.dk/download/25c41779-cd6e/Rec7003e.pdf>

⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014D0641>

⁹ <https://www.ecodocdb.dk/download/25c41779-cd6e/Rec7003e.pdf>

systems used for audio/video transmissions and audio/video synchronisation signals including cordless loudspeakers / cordless headphones. The sub-bands intended for these PMSE applications are:

- Radio microphones: CEPT sub-bands a1), e), f1), f2), f3), f4), g),h1), h2), h3), j1), j2), j3),
- Wireless audio and multimedia streaming systems: sub-bands g), and j2),

Sub-band	Frequency Range
a1	29.7-47 MHz
e	174-216 MHz
f1	470-786 MHz
f2	786-789 MHz
f3	823-826 MHz
f4	826-832 MHz
g	863-865 MHz
h1	1350-1400 MHz
h2	1492-1518 MHz
h3	1518-1525 MHz
j1	1785-1795 MHz
j2	1795-1800 MHz
j3	1800-1804.8 MHz

Source: <https://www.ecodocdb.dk/download/25c41779-cd6e/Rec7003e.pdf>

While agreeing with the RSM plans for this band, Shure is concerned about RSM statement on p. 8 that it wants to re-purpose the 1800 MHz duplex gap (1785-1805 MHz) to accommodate radio microphones to “ensure that sufficient spectrum is available for this use in lieu of the previous clearance of the 700 MHz band in 2013, and any future clearance of portions of the 600 MHz band.” As mentioned in our introduction, the UHF/TV band remains crucial for wireless microphones and should remain accessible. Opening the 1800 MHz duplex gap for wireless microphones will not compensate PMSE for the spectrum losses that PMSE suffers in the 600 and 700 MHz bands.

2. *What size guard band would be appropriate for achieving compatibility between radio microphone use and mobile networks operating below 1785 MHz and above 1805 MHz?*

The RSM might want to consider 200 KHz as the appropriate guard band, as set forth in **CEPT Report 050**¹⁰ that provides useful guidance:

¹⁰ <https://www.ecodocdb.dk/document/50>

Table 1: BEM range recommendation for PMSE audio applications in the 1785-1805 MHz

	Frequency Range	Handheld e.i.r.p.	Reasoning
OOB (= Out of Band)	< 1785 MHz	-17 dBm/200kHz	LTE UE (User Equipment) spectrum emission mask
Restricted frequency range	1785-1785.2 MHz	4 dBm/200kHz	GSM blocking
	1785.2-1803.6 MHz	13 dBm/channel	
	1803.6-1804.8 MHz	10 dBm/200kHz*	slow increase of LTE UE selectivity
Restricted frequency range	1804.8-1805 MHz	-14 dBm/200kHz	GSM blocking
OOB	> 1805 MHz	-37 dBm/200kHz	OOB calculation, in line with ERC/REC 74-01 [on Unwanted Emissions in the Spurious Domain]
	Frequency Range	Body worn e.i.r.p.	Reasoning
OOB	< 1785 MHz	-17 dBm/200kHz	LTE UE spectrum emission mask
	1785-1804.8 MHz	17 dBm/channel	
Restricted frequency range	1804.8-1805 MHz	0 dBm/200kHz	GSM blocking
OOB	> 1805 MHz	-23 dBm/200kHz	OOB calculation**

* with a limit of 13 dBm/channel

** For the body worn case the body loss is 14 dB higher than for the handheld case, therefore the -23 dBm for body worn is equivalent to -37 dBm for handheld.

Source: ECC Report 191 Adjacent band compatibility between MFCN and PMSE audio applications in the 1800 MHz range

Shure has no comments on Questions 3 to 12 of the Discussion document.

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Shure applauds the work of the RSM for this band and will continue to support its efforts to secure sufficient access to spectrum for PMSE as a vital industry that provides a critical service to the economy, society and culture of New Zealand.

Please contact the undersigned if you have any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark Brunner". The signature is fluid and cursive, with the first name "Mark" and last name "Brunner" clearly distinguishable.

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