

Response to Ministry of Business, Innovation  
and Employment discussion document  
**“UHF Radiomicrophones: Opportunities for future use”**

24<sup>th</sup> June, 2013.

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## UHF Radiomicrophones: Opportunities for future use

### EXECUTIVE SUMMARY

- 1) Given that at best this document describes a proposal to extend GUSL no 222922 to 510 MHz but notes there will be a loss of 16MHz to Te Pūtahi Paoho and the impending closure of the 700 MHz band, it would be more appropriate for the title of this document to be: “UHF Radiomicrophones: Reduced opportunities for future use”.
- 2) This document fails to acknowledge that SKY Television Ltd has rights to convert 64 MHz of analogue spectrum to digital transmission. If these rights are taken up, Auckland in particular will have little spectrum available for radio microphones.
- 3) In addition, there is no commentary on the international trend to use UHF television spectrum for other whitespace uses. Given that the RSM has carried out a white space spectrum feasibility study to investigate the amount of spectrum available for white space use in the UHF TV band and subsequently published a report “White Space spectrum availability in New Zealand” (BIE-MAKO-2318352), it is inexcusable that radio microphone usage and alternative white space usage are being considered in isolation. It should also be noted that no reference was made to radio microphone usage in the white space report.
- 4) The fundamental issue for continued radio microphone usage in New Zealand is the availability of adequate viable spectrum. To date, the MBIE has been ineffective with respect to planning and provision of viable radio microphone spectrum.
- 5) Given the economic and social activities that use and depend on radio microphone usage, it is unfortunate that the MBIE has yet again failed to make any assessment of the economic and social impact of reduced viable spectrum availability for future radio microphone usage in New Zealand.

## COMMENTS AND RESPONSES TOP QUESTIONS:

### 4.1 What frequencies can Radiomicrophones currently use?

*“Radiomicrophones can normally transmit up to a power of -20 dBW (10 mW) EIRP. However, if the radiomicrophone operator first determines the absence of existing licensed services in the proposed area of operation, they may operate above -20 dBW (10 mW) EIRP, up to -3 dBW (500 mW) EIRP. This determination can be made by accessing the Ministry’s online SMART database of radio licenses.”*

The text of the radio microphone GUSL’s are not available in the SMART database as described above. The New Zealand Gazette is the only online government source of the GUSL text.

*4.1 “Before 2009 the frequency range 646 – 806 MHz was all that was available for UHF radiomicrophones. The 518 – 582 MHz and 614 – 646 MHz frequency ranges have subsequently been added.”*

The reality is that the MBIE has had little regard to radio microphone licensing in the past and it was administrative oversight that the GUSL’s did not include all the available UHF TV spectrum as is common practice internationally. The addition of 518 – 582 MHz and 614 – 646 MHz to GUSL’s in 2009 merely added GUSL licensing to spectrum that was being actively used for radio microphones in New Zealand.

### 5.1 The digital dividend

*“The Ministry has already provided additional spectrum within the television broadcasting bands for radiomicrophones. This is 96 MHz more spectrum than what was available before 2009. In 2009 an additional 64 MHz (518 – 582 MHz) was provided. Then in 2010 an additional 32 MHz (614 – 646 MHz) was provided. These new assignments were to assist with radiomicrophone transition out of the digital dividend spectrum (698 – 806 MHz).”*

My comment in 4.1 is also relevant to the text above. In addition, even considering the additional spectrum of 582 to 586 MHz that can be added to the GUSL in November 2012, there is not in any practical sense an additional 96 MHz of viable spectrum for radio microphones. Only spectrum that is free of DTV transmission is truly viable for radio microphones. MBIE has failed to practically advise radio microphone users of any spectrum that is or will be viable for radio microphones.

#### 5.1.1 Question 1:

Yes, radio microphones should continue to have use of the 703 – 806 MHz band until the license expires. Practically, the issue of continued usage should a LTE service commences will probably result in the spectrum becoming unusable for the radio microphone. Any potential interference to LTE should be resolved by the MBIE communicating with the public to ensure all radio microphones in the 703 – 806 MHz spectrum are turned off as LTE services are implemented and the GUSL expires. MBIE must acknowledge that the vast majority of radio microphone systems are

operated by individuals who have limited technical skills, do not have any knowledge of the frequencies their radio microphones operate on, have never read the conditions of the GUSL license and do not know that they will be required to vacate the spectrum.

#### 6. Question 2

I disagree with this proposal as 10mW is an arbitrary transmission level not based on any tests of the effect of DTE and radio microphones operating in close proximity.

I would recommend MBIE undertake tests to determine if radio microphones of higher power can be used in all or part of the guard band spectrum and consult with the AMCA in Australia who are considering the same issue rather than suggest the use of a 10mW limit. It should be noted that the ACMA are considering the lower, centre and upper guard bands for radio microphone usage.

#### 6. Question 3

Yes, 698 to 703 MHz is of use to radio microphone users. A spread of spectrum is important to professional users who often require multi channel spacing between close proximity radio microphone receivers and transmitters such as used for IEM & IFB. Even partial usage of the guard band could provide for an additional 2 or 3 channels of IEM/IFB. This does need to be at least 100mW and preferably 250mW levels.

#### 7. Digital Radiomicrophones

*“Digital radiomicrophones provide many advantages over analogue, such as low noise, low distortion, encryption, better immunity from interference, better audio quality, enhanced transmission reliability, increased flexibility, and increased spectral efficiency”.*

At this time, digital radio microphones are not currently a real world panacea for users. While users look forward to advances in digital radio microphone technology that will result in widespread application, to date, only one digital manufacturer has had success with *“increased spectral efficiency”* with the use of AM transmission techniques. *“Immunity from interference”* from DTV transmission is not a feature of digital radio microphones, and *“enhanced transmission reliability”* is dependent on usage. Digital transmission is, at the receiver, either on or off and appears to have similar range to analogue FM for the same transmission power. The term *“increased flexibility”* is somewhat vague.

#### 7. Question 4.

Yes, digital radio microphones should be allowed. The ongoing development of digital radio microphone transmission technology is resulting in the use of a variety of modulation schemes. The automatic adoption of US/EU approved standards within the GUSL would be appropriate.

8. Question 5.

Not to my knowledge.

A final note. Could the MBIE please spell radio microphone correctly as two separate words.