

1. Scope

This document recommends the operating practices for wireless microphones licenced for use in the broadcasting services band 520-694 MHz and the band 1790-1800 MHz in Australia. This arrangement is in line with the *Radiocommunications (Low Interference Potential Devices) Class Licence 2000*.

See <http://www.comlaw.gov.au/Series/F2005B00339>

The LIPD class licence has been updated to allow analog and digital systems in 520-694 MHz.

Operation of wireless microphones is allowed under the LIPD class licence on the basis that no interference is caused to other radiocommunications users, no protection is provided from interference for users operating under the licence and users must abide by any other limitations and requirements of the licence.

Appendix A provides restrictions of use of wireless microphones in each capital city and some larger regional centres based on Australia Post postal code areas (2006).

The ACMA has also developed spreadsheets for several areas with spectrum availability based on the unused channel accordance by using predicted TV coverage areas. They are based on [ABS statistical area level 2 \(SA2\)](#)

For Sydney at the suburb level, [click here](#).

For Brisbane at the suburb level, [click here](#).

For Melbourne at the suburb level, [click here](#).

For Perth at the suburb level, [click here](#).

ACMA also provides other information for other areas at <http://www.acma.gov.au/Industry/Suppliers/A-Type-of-equipment/WirelessMicrophones/fact-sheets-and-faqs>

2. Background

Wireless microphones usually operate within the television broadcasting spectrum in interleaved channels where channels are not assigned in the geographical area for digital terrestrial television broadcasting purposes.

It should be noted that operation of wireless microphones in VHF Band III (174-230 MHz) is not permitted in all metropolitan areas and some regional areas in Australia where this band would be fully occupied by TV channels and digital radio sub-band.

It should also be noted that the use of wireless microphones in the UHF Bands IV/V (520-694 MHz) will operate as a secondary application and that operation of any wireless microphones in frequency range below 520 MHz and above 694 MHz is not permitted. The band 1790-1800 MHz is also assigned to wireless microphone use in Australia.

Special event licences may be obtained for alternative operational parameters of wireless microphones after suitable interference impact assessment has been carried out. For further information, please contact the ACMA:

Radiocommunications Licensing and Assignments Section
Operations and Services Branch
Australian Communications and Media Authority
PO Box 78
Belconnen ACT 2616
Telephone: 1300 850 115
Fax number: 02 6219 5347
Email: licensing@acma.gov.au

3. Operation of Wireless Microphones

3.1 Operation of Wireless Microphones in Broadcasting Services Band

- i) Broadcasting services bands for digital TV in Australia comprise at present VHF Band III (174-230 MHz) and UHF Bands IV/V (520-694 MHz).
- ii) Digital TV channels are assigned in five contiguous channel blocks¹, i.e.
 - Block A² includes channels 6 to 12 (174-230 MHz)
 - Block B includes channels 28 to 33 (526-568 MHz)
 - Block C includes channels 34 to 39 (568-610 MHz)
 - Block D includes channels 40 to 45 (610-652 MHz)
 - Block E includes channels 46 to 51 (652-694 MHz)
- iii) Operation of wireless microphones in VHF Band III (174-230 MHz) is not permitted in all metropolitan areas and some regional areas where this band would be fully occupied by TV channels in Block A and digital radio sub-band.
- iv) Operation of wireless microphones in frequency range outside of UHF Bands IV/V (520-694 MHz) is also not permitted.
- v) Blocks B, C, D and E will each comprise six DVB-T channels, e.g. three commercial, two national and one unassigned.
- vi) If an unassigned channel is not in use in any coverage area, frequencies within this unassigned channel could potentially be used for wireless microphone.

¹ ACMA's Decision Paper (IFC 07/2011) – *Clearing the Digital Dividend: Decisions on planning principles for restacking digital television channels (May 2011)*

² Block A excludes channels 9 & 9A which are reserved as retention of spectrum for digital radio sub-band in Australia

vii) Coverage area in the class licence, for a broadcasting station, means the area surrounding the digital radio and television transmitters in relation to the median field strength E(50,50) of a transmission made by a station, means:

- (a) for a transmission in the band 174-230 MHz, in respect of a television broadcasting service: 44 dBuV/m;
- (b) for a transmission in the band 174-230 MHz, in respect of a radio broadcasting service: 63 dBuV/m;
- (c) for a transmission in the band 520-610 MHz: 50 dBuV/m;
- (d) for a transmission in the band 610-694 MHz: 54 dBuV/m.

within the boundary described by the minimum field strength limits for *Rural* environments. The minimum median field strengths used for planning are given in Table 1 of which those levels in bold are the *Rural* contour:

Table 1: Minimum median field strengths used for restack planning

	UHF (Blocks B and C) (526-610 MHz)			UHF (Blocks D and E) (610-694 MHz)		
	Rural	Suburban	Urban	Rural	Suburban	Urban
Minimum median field strength (dB μ V/m)	50	63	71	54	67	74

viii) The use of wireless microphones in the UHF Bands IV/V (520-694 MHz) will operate as a secondary application according to the following principles of channel block restriction for wireless microphone usage in digital TV coverage areas:

- For a transmission made using broadcasting services band within a designated channel block (e.g. Blocks B, C, D or E), a coverage area is defined as an area that receives the transmitted signal at a minimum median field strength of at least **50 dB μ V/m** (for Blocks B and C) and **54 dB μ V/m** (for Blocks D and E);
- Operation of wireless microphones is only permitted in frequencies that are not in the designated channel block (e.g. Blocks B, C, D or E) that provides digital terrestrial television broadcasting services within a coverage area.

For each capital city and some larger regional centres, the tables in Appendix A list frequency availability for wireless microphone use with reference to postcodes that lie within that coverage area. When using wireless microphones in regional and remote areas not included in Appendix A, operators should confirm local television channels from the Australian Communications and Media Authority's (ACMA) Broadcast

Transmitter Database³ or Restack Channel Chart⁴. Also refer the ACMA website for other areas.

It should be noted that broadcasting channels could have been licensed under ACMA's *retransmission regime* to provide digital TV services terrestrially to small communities. It is possible that some of these low power services may not be included in the ACMA's Broadcast Transmitter Database or the Restack Channel Chart.

3.2 Operation of Wireless Microphones in 1790-1800 MHz Band

The band 1790-1800 MHz is spectrally adjacent to spectrum licensed devices operating in 1710-1785 MHz (i.e. 1800 MHz Lower band) and 1805-1880 MHz (i.e. 1800 MHz Upper band).

Operation of wireless microphones in the band 1790-1800 MHz is allowed under the LIPD class licence on the basis that no interference is caused to spectrum licensed devices and no protection is provided from interference caused by spectrum licensed devices in the 1800 MHz Lower / Upper bands.

Class licensing is also proposed for indoor use of 1786-1790 MHz and ACMA is to consider apparatus licensing of 1786-1790 MHz on a case-by-case basis.

The table in Appendix B shows the indicative band plan for optimal use of wireless microphones in the band 1790-1800 MHz.

4. Characteristics of Wireless Microphones

- i) Wireless microphone receivers are generally manufactured with either a single conversion or double conversion IF system. The double conversion receiver offers improved selectivity over the single conversion system.
- ii) Most professional wireless microphone systems are based on diversity reception. Various technologies are available, ranging from passive antenna diversity to true diversity using separate receivers for each antenna with audio switching or combining arrangements.
- iii) Most professional wireless microphone systems are frequency agile allowing the selection of an alternate channel or operating frequency in the event of interference.

³ <http://www.acma.gov.au/Industry/Spectrum/Acquire-a-licence/Apparatus-licences/licensed-broadcasting-transmitters-acquire-a-licence-acma>

⁴ <http://www.acma.gov.au/Industry/Spectrum/Digital-Dividend-700MHz-and-25Gz-Auction/Restack/restack-of-digital-tv-services-spectrum-for-broadcasters-acma>

- iv) Most professional analogue wireless microphones use techniques to overcome the restrictions of the radio channel. The first of these is pre-emphasis to reduce high frequency noise and the second is companding circuits to improve the dynamic range of the received signal.

5. Licensing of Wireless Microphones

The licensing arrangements are those used by the ACMA at the time of preparing this document, but should be verified with the ACMA at the time of licensing the equipment.

5.1 Class Licensed Wireless Microphones in Broadcasting Services Band

Under the *Radiocommunications (Low Interference Potential Devices) Class Licence 2000*, the ACMA permits the operation of class licensed wireless microphones in Band IV/V (520–694 MHz) of the television broadcasting spectrum, with the following restrictions:

- i) A wireless microphone with a transmitter power not exceeding maximum effective isotropic radiation power (EIRP) of 100 mW (or approximately maximum ERP of 60.95 mW).
- ii) A wireless microphone must not transmit in the coverage area of a digital TV broadcasting station (including a repeater or translator station) operating in the same channel.
- iii) When operating in an unused TV channel but in the licensed area of a television broadcasting station (including a repeater or translator station) operating in an adjacent TV channel, then the channel centre frequency of the wireless audio transmitter must be at least 400 kHz above the upper edge or 400 kHz below the lower edge of the adjacent TV channel.
- iv) The emission must be frequency modulated⁵ (analogue system) or shift-QPSK modulated (digital system) with a maximum occupied bandwidth of 330 kHz.

5.2 Class Licensed Wireless Microphones in the 1790-1800 MHz Band

Under the *Radiocommunications (Low Interference Potential Devices) Class Licence 2000*, the ACMA permits the operation of class licensed wireless microphones in the band 1790–1800 MHz, with the following restrictions:

⁵ This condition refers to analogue frequency modulation commonly adopted in wireless microphones. It may be subject to change as it restricts the operation of wireless microphones that would adopt other modulation schemes.

- i) A wireless microphone with a transmitter power not exceeding maximum effective isotropic radiation power (EIRP) of 100 mW (or approximately maximum ERP of 60.95 mW).
- ii) A wireless microphone must comply with either ETSI Standard EN 301 840 or ETSI Standard EN 300 422.

5.3 Apparatus Licensed Wireless Microphones

The ACMA requires all wireless microphones with a transmitter power exceeding maximum EIRP of 100 mW to be apparatus licensed. The licences are subject to the following restrictions:

- i) The transmitted power must not exceed maximum EIRP of 250 mW, otherwise special drop-through licensing provisions are invoked requiring case-by-case consideration by the ACMA.
- ii) The wireless audio transmitter can be used Australia wide on a no interference no protection basis.

Land mobile (ambulatory) apparatus licences to operate wireless microphones in the television services bands at powers greater than the class licence limit may be obtained from the ACMA using the R057 form – *Application for apparatus licence(s)*.

Special event licences may be obtained for alternative operational parameters after suitable interference impact assessment has been carried out. These licences can be obtained through the ACMA using the same procedures.

For further information, please contact:

Radiocommunications Licensing and Assignments Section
Operations and Services Branch
Australian Communications and Media Authority
PO Box 78
Belconnen ACT 2616
Telephone: 1300 850 115
Fax number: 02 6219 5347
Email: licensing@acma.gov.au

6. Biomedical Monitoring Equipment

Biomedical monitoring equipment is used extensively in hospitals to monitor the condition of seriously ill patients. These biomedical telemetry transmitters of maximum EIRP not exceeding 11 mW are class licensed under the LIPD rules in the band 520-668 MHz. The use of wireless microphones in hospital environments should be avoided at all times.

7. Compliance with EMR Standards

Wireless microphone compliance is covered under
[Radiocommunications \(Compliance Labelling - Electromagnetic Radiation\) Notice 2014](#)

[Radiocommunications \(Electromagnetic Radiation-Human Exposure\) Standard 2014](#)

This has been made mandatory by Section 162 of the *Radiocommunications Act 1992*. Schedule 5 of the ARPANSA standard covers the compliance of mobile and portable transmitting equipment operating in frequency range of 100 kHz to 2500 MHz. It states that:

- i) If used by an aware user, then a wireless microphone is exempt from testing for compliance with the ARPANSA standard provided the nominal mean power output delivered to the antenna **does not exceed 100 mW**.
- ii) If used by a member of the general public, then a wireless microphone is exempt from testing for compliance with the ARPANSA standard provided the nominal mean power output delivered to the antenna **does not exceed 20 mW**.

As it can be reasonably argued that a wireless microphone could be used by any person, it is advisable that all wireless microphones with a nominal mean power output delivered to the antenna of greater than 20 mW be tested for compliance with the public limit of the ARPANSA standard, unless that wireless microphone has been supplied with a declaration of conformity stating that the microphone complies with the public limit of the standard.

Manufacturers and importers of wireless microphones should be aware of the requirements to test and label their products in accordance with
[Radiocommunications \(Compliance Labelling - Electromagnetic Radiation\) Notice 2014](#)
[Radiocommunications \(Electromagnetic Radiation-Human Exposure\) Standard 2014](#)

Table 2 summarises the regulatory arrangements for EMR compliance and licensing that are applicable to the use of wireless microphones.

Table 2: Wireless microphone regulatory arrangements

Microphone transmitter power delivered to the antenna (mW)	Requirement for declaration of conformity with public exposure limit of the ARPANSA standard	Comments
< 20	No	Wireless microphones in this power range can be operated under a class licence system that carries no licence fee.
20 - 100	1. Yes, for members of the general public 2. No, for aware users	Wireless microphones with maximum EIRP of 100 mW can be operated under a class licence system that carries no licence fee. Although a declaration of conformity is not required for aware users, broadcasters are strongly advised to ensure all wireless microphones in this power range are covered by a declaration of conformity with the public exposure limit of the ARPANSA standard.
> 100	Yes	Wireless microphones with maximum EIRP exceeding 100 mW require an apparatus licence that carries a licence fee. For further information, contact the ACMA for information regarding apparatus licence application: http://www.acma.gov.au/Industry/Spectrum/Acquire-a-licence/Apparatus-licences/apparatus-licence-forms-i-acma

8. References

1. *Radiocommunications (Low Interference Potential Devices) Class Licence 2000*, <http://www.comlaw.gov.au/Series/F2005B00339>
2. ETSI EN 300 422-1 (V1.4.2) “*Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement*”
3. ETSI EN 301 840-1 (V1.1.1) “*Electromagnetic compatibility and Radio spectrum Matters (ERM); Digital radio microphones operating in the CEPT Harmonized band 1 785 MHz to 1 800 MHz; Part 1: Technical characteristics and methods of measurement*”








4. ARPANSA standard (RPS No.3) “*Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz published by the Australian Radiation Protection and Nuclear Safety Agency, 2002*”
5. [Radiocommunications \(Compliance Labelling - Electromagnetic Radiation\) Notice 2014](#)
6. [Radiocommunications \(Electromagnetic Radiation-Human Exposure\) Standard 2014](#)
7. AZ / NZS 4268:2012 *Radio equipment and systems – Short range devices – Limits and methods of measurement*
8. Recommendation ITU-R BT.1871 *User requirements for wireless microphones*

APPENDIX A
(Informative only and may subject to ACMA licensing changes)

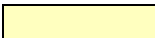
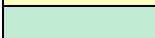
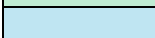



Wireless Microphone Restrictions based on Postcodes

LEGEND

NOT PERMITTED for wireless microphone operation

	Block A channels (174-230 MHz) assigned for broadcasting
	Block B channels (526-568 MHz) assigned for broadcasting
	Block C channels (568-610 MHz) assigned for broadcasting
	Block D channels (610-652 MHz) assigned for broadcasting
	Block E channels (652-694 MHz) assigned for broadcasting
	Lower Block E channels (652-673 MHz) assigned for broadcasting
	Upper Block E channels (673-694 MHz) assigned for broadcasting

POSSIBLE (but may be restrictive) for wireless microphone operation

	Frequencies within Block B (526-568 MHz) may be available for wireless mics
	Frequencies within Block C (568-610 MHz) may be available for wireless mics
	Frequencies within Block D (610-652 MHz) may be available for wireless mics
	Frequencies within Block E (652-694 MHz) may be available for wireless mics
	Frequencies within Lower Block E (652-673 MHz) may be available for wireless mics
	Frequencies within Upper Block E (673-694 MHz) may be available for wireless mics

UNRESTRICTIVE for wireless microphones operation

	All frequencies within the designated block are available for wireless mics
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Wireless Microphone Restrictions in Sydney (incl. Central Coast) Coverage Area

- For operation in Sydney wide areas except Sydney South East (e.g. Coogee, Maroubra, Matraville, Malabar, Little Bay, Kurnell) and Central Coast (i.e. north of Hawkesbury River) regions, the preferred operating frequency range for wireless microphone would be 568-610 MHz (i.e. Block C);
- For operation only in Sydney CBD within 20 km radius, the preferred operating frequency range for wireless microphone would be 610-652 MHz (i.e. Block D);
- For operation only in Sydney South East (e.g. Coogee, Maroubra, Matraville, Malabar, Little Bay, Kurnell) and Central Coast (i.e. north of Hawkesbury River) regions, the preferred operating frequency range for wireless microphone would be 673-694 MHz (i.e. Upper Block E);
- Alternatively, the band 1790-1800 MHz would be available for wireless microphone operation in Sydney including Central Coast areas.

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2000						2035						2071					
2006						2036						2072					
2007						2037						2073					
2008						2038						2074					
2009						2039						2075					
2010						2040						2076					
2011						2041						2077					
2015						2042						2079					
2016						2043						2080					
2017						2044						2081					
2018						2045						2082					
2019						2046						2083					
2020						2047						2084					
2021						2048						2085					
2022						2049						2086					
2023						2050						2087					
2024						2060						2088					
2025						2061						2089					
2026						2062						2090					
2027						2063						2092					
2028						2064						2093					
2029						2065						2094					
2030						2066						2095					
2031						2067						2096					
2032						2068						2097					
2033						2069						2099					
2034						2070						2100					

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2101						2143						2192					
2102						2144						2193					
2103						2145						2194					
2104						2146						2195					
2105						2147						2196					
2106						2148						2197					
2107						2150						2198					
2108						2151						2199					
2109						2152						2200					
2110						2153						2203					
2111						2154						2204					
2112						2155						2205					
2113						2156						2206					
2114						2157						2207					
2115						2158						2208					
2116						2159						2209					
2117						2160						2210					
2118						2161						2211					
2119						2162						2212					
2120						2163						2213					
2121						2164						2214					
2122						2165						2216					
2125						2166						2217					
2126						2167						2218					
2127						2168						2219					
2130						2170						2220					
2131						2171						2221					
2132						2172						2222					
2133						2173						2223					
2134						2174						2224					
2135						2175						2225					
2136						2176						2226					
2137						2177						2227					
2138						2178						2228					
2140						2179						2229					
2141						2190						2230					
2142						2191						2231					

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Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2232						2567						2762					
2233						2568						2763					
2234						2569						2765					
2250						2570						2766					
2251						2571						2767					
2256						2572						2768					
2257						2573						2770					
2258						2574						2773					
2259						2745						2774					
2260						2746						2775					
2261						2747						2776					
2262						2748						2777					
2263						2750						2778					
2555						2752						2779					
2556						2753						2780					
2557						2754						2782					
2558						2755						2783					
2559						2756						2784					
2560						2757						2785					
2563						2758						2786					
2564						2759						2787					
2565						2760											
2566						2761											

Wireless Microphone Restrictions in Melbourne Coverage Area

- For operation in Melbourne wide areas except Anglesea and Aireys Inlet region, the preferred operating frequency range for wireless microphone would be 526-568 MHz (i.e. Block B);
- For operation only in Melbourne CBD within 10 km radius, the preferred operating frequency range for wireless microphone would be 526-610 MHz (i.e. Blocks B and C) and 652 -694MHz (i.e. Block E);
- For operation only in Anglesea and Aireys Inlet region, the preferred operating frequency range for wireless microphone would be 610-652 MHz (i.e. Block D);
- Alternatively, the band 1790-1800 MHz would be available for wireless microphone operation in Melbourne wide areas.

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3000						3033						3062					
3002						3034						3064					
3003						3036						3065					
3004						3037						3066					
3005						3038						3067					
3006						3039						3068					
3008						3040						3070					
3010						3041						3071					
3011						3042						3072					
3012						3043						3073					
3013						3044						3074					
3015						3045						3075					
3016						3046						3076					
3018						3047						3078					
3019						3048						3079					
3020						3049						3081					
3021						3050						3082					
3022						3051						3083					
3023						3052						3084					
3024						3053						3085					
3025						3054						3086					
3026						3055						3087					
3027						3056						3088					
3028						3057						3089					
3029						3058						3090					
3030						3059						3091					
3031						3060						3093					
3032						3061						3094					

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Melbourne POSTCODES	Block A	Block B	Block C	Block D	Block E	Melbourne POSTCODES	Block A	Block B	Block C	Block D	Block E	Melbourne POSTCODES	Block A	Block B	Block C	Block D	Block E
	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz		174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz		174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
3095						3142						3184					
3096						3143						3185					
3097						3144						3186					
3099						3145						3187					
3101						3146						3188					
3102						3147						3189					
3103						3148						3190					
3104						3149						3191					
3105						3150						3192					
3106						3151						3193					
3107						3152						3194					
3108						3153						3195					
3109						3154						3196					
3111						3155						3197					
3113						3156						3198					
3114						3158						3199					
3115						3159						3200					
3116						3160						3201					
3121						3161						3202					
3122						3162						3204					
3123						3163						3205					
3124						3165						3206					
3125						3166						3207					
3126						3167						3211					
3127						3168						3212					
3128						3169						3214					
3129						3170						3215					
3130						3171						3216					
3131						3172						3217					
3132						3173						3218					
3133						3174						3219					
3134						3175						3220					
3135						3177						3221					
3136						3178						3222					
3137						3179						3223					
3138						3180						3224					
3139						3181						3225					
3140						3182						3226					
3141						3183						3227					

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Melbourne POSTCODES	Block A	Block B	Block C	Block D	Block E	Melbourne POSTCODES	Block A	Block B	Block C	Block D	Block E	Melbourne POSTCODES	Block A	Block B	Block C	Block D	Block E
	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz		174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz		174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
3228						3786						3923					
3230						3787						3925					
3231						3788						3926					
3240						3789						3927					
3331						3791						3928					
3335						3792						3929					
3337						3793						3930					
3338						3795						3931					
3340						3796						3933					
3427						3800						3934					
3428						3802						3936					
3429						3803						3937					
3431						3804						3938					
3434						3805						3939					
3435						3806						3940					
3437						3807						3941					
3438						3808						3942					
3440						3809						3943					
3441						3810						3944					
3750						3812						3945					
3752						3813						3946					
3753						3814						3950					
3754						3815						3951					
3756						3816						3975					
3757						3818						3976					
3758						3820						3977					
3759						3821						3978					
3761						3822						3980					
3764						3910						3981					
3765						3911						3984					
3766						3912						3987					
3767						3913						3988					
3770						3915						3991					
3775						3916						3992					
3777						3918						3995					
3779						3919						3996					
3781						3920											
3782						3921											
3785						3922											

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Wireless Microphone Restrictions in Brisbane (incl. Gold Coast & Sunshine Coast) Coverage Area

- For operation only in Brisbane north and north west areas, the preferred operating frequency range for wireless microphone would be 526-568 MHz (i.e. Block B);
- For operation only in Brisbane CBD within 10 km radius, the preferred operating frequency range for wireless microphone would be 568-610 MHz (i.e. Block C) and 673-694MHz (i.e. Upper Block E);
- Alternatively, the band 1790-1800 MHz would be available for wireless microphone operation in Brisbane including Gold Coast and Sunshine Coast areas.

Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
4000						4055						4111					
4005						4059						4112					
4006						4060						4113					
4007						4061						4114					
4008						4064						4115					
4009						4065						4116					
4010						4066						4117					
4011						4067						4118					
4012						4068						4119					
4013						4069						4120					
4014						4070						4121					
4017						4072						4122					
4018						4073						4123					
4019						4074						4124					
4020						4075						4125					
4021						4076						4127					
4022						4077						4128					
4025						4078						4129					
4030						4101						4130					
4031						4102						4131					
4032						4103						4132					
4034						4104						4133					
4035						4105						4151					
4036						4106						4152					
4037						4107						4153					
4051						4108						4154					
4053						4109						4155					
4054						4110						4156					

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Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
4157						4219						4346					
4158						4220						4500					
4159						4221						4501					
4160						4223						4502					
4161						4224						4503					
4163						4225						4504					
4164						4226						4505					
4165						4227						4506					
4169						4228						4507					
4170						4229						4508					
4171						4230						4509					
4172						4270						4510					
4173						4271						4511					
4174						4272						4512					
4178						4275						4514					
4179						4280						4515					
4183						4285						4516					
4184						4287						4517					
4205						4300						4518					
4207						4301						4519					
4208						4303						4520					
4209						4304						4521					
4210						4305						4550					
4211						4306						4551					
4212						4307						4552					
4213						4309						4553					
4214						4310						4570					
4215						4311						4575					
4216						4312											
4217						4313											
4218						4340											

Wireless Microphone Restrictions in Adelaide Coverage Area

- For operation in Adelaide wide areas, the preferred operating frequency range for wireless microphone would be 526-568 MHz (i.e. Block B);
- For operation only in Adelaide CBD within 20 km radius, the preferred operating frequency range for wireless microphone would be 610-694 MHz (i.e. Blocks D & E);
- Alternatively, the band 1790-1800 MHz would be available for wireless microphone operation in Adelaide wide areas.

Adelaide	Block A	Block B	Block C	Block D	Block E	Adelaide	Block A	Block B	Block C	Block D	Block E	Adelaide	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz	POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz	POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
5000						5041						5084					
5006						5042						5085					
5007						5043						5086					
5008						5044						5087					
5009						5045						5088					
5010						5046						5089					
5011						5047						5090					
5012						5048						5091					
5013						5049						5092					
5014						5050						5093					
5015						5051						5094					
5016						5052						5095					
5017						5061						5096					
5018						5062						5097					
5019						5063						5098					
5020						5064						5106					
5021						5065						5107					
5022						5066						5108					
5023						5067						5109					
5024						5068						5110					
5025						5069						5111					
5031						5070						5112					
5032						5072						5113					
5033						5073						5114					
5034						5074						5115					
5035						5075						5116					
5037						5076						5117					
5038						5081						5118					
5039						5082						5120					
5040						5083						5121					

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Adelaide	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
5125					
5126					
5127					
5131					
5132					
5133					
5134					
5136					
5137					
5138					
5140					
5141					
5142					
5144					
5151					
5152					
5153					
5154					
5155					
5156					
5157					
5158					
5159					
5160					
5161					
5162					
5163					
5164					
5165					
5166					
5167					
5168					
5169					
5170					
5171					
5172					
5173					

Adelaide	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
5174					
5201					
5202					
5203					
5204					
5210					
5211					
5212					
5213					
5214					
5221					
5222					
5231					
5232					
5233					
5234					
5235					
5236					
5237					
5238					
5240					
5241					
5242					
5243					
5244					
5245					
5250					
5251					
5252					
5253					
5254					
5255					
5256					
5259					
5260					
5261					
5264					

Adelaide	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
5301					
5306					
5307					
5350					
5351					
5352					
5353					
5354					
5355					
5356					
5371					
5372					
5373					
5374					
5400					
5401					
5410					
5411					
5412					
5413					
5451					
5452					
5460					
5461					
5501					
5502					
5550					
5558					
5570					
5571					
5572					
5573					
5575					
5576					
5581					
5582					
5583					

Wireless Microphone Restrictions in Perth Coverage Area

- For operation in Perth wide areas except Mandurah, Pinjarra and Dwellingup, the preferred operating frequency range for wireless microphone would be 568-610 MHz (i.e. Block C);
- For operation only in Perth CBD within 20 km radius, the preferred operating frequency range for wireless microphone would be 526-610 MHz (i.e. Blocks B and C);
- For operation only in Perth coastal areas between Rockingham and Two Rocks, the preferred operating frequency range for wireless microphone would be 568-652 MHz (i.e. Blocks C and D);
- Alternatively, the band 1790-1800 MHz would be available for wireless microphone operation in Perth wide areas.

Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
6000						6028						6060					
6003						6029						6061					
6004						6030						6062					
6005						6031						6063					
6006						6032						6064					
6007						6033						6066					
6008						6034						6067					
6009						6035						6068					
6010						6036						6069					
6011						6037						6070					
6012						6038						6071					
6014						6041						6072					
6015						6042						6073					
6016						6043						6074					
6017						6044						6076					
6018						6050						6081					
6019						6051						6082					
6020						6052						6083					
6021						6053						6084					
6022						6054						6090					
6023						6055						6100					
6024						6056						6101					
6025						6057						6102					
6026						6058						6103					
6027						6059						6104					

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Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz	Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
6105						6155						6207					
6106						6156						6208					
6107						6157						6210					
6108						6158						6213					
6109						6159						6214					
6110						6160						6302					
6111						6161						6304					
6112						6162						6308					
6121						6163						6401					
6122						6164						6501					
6123						6165						6502					
6124						6166						6503					
6125						6167						6505					
6126						6168						6556					
6147						6169						6558					
6148						6170						6560					
6149						6171						6562					
6150						6172						6566					
6151						6173						6567					
6152						6174						6907					
153						6175											
6154						6176											

Wireless Microphone Restrictions in Ballarat City

Ballarat	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
3350					
3352					
3355					
3356					
3357					

Wireless Microphone Restrictions in Bendigo City

Bendigo	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
3453					
3515					
3550					
3551					
3555					
3556					
3570					

Wireless Microphone Restrictions in Canberra City

Canberra	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
2600					
2601					
2602					
2603					
2604					
2605					
2606					
2607					
2609					
2611					
2612					
2614					
2615					
2617					
2618					
2619					
2620					
2900					
2902					
2903					
2904					
2905					
2906					
2911					
2912					
2913					
2914					

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Wireless Microphone Restrictions in Newcastle City (Incl. Port Stephens & Lower Hunter Region)

Newcastle POSTCODES	Block A	Block B	Block C	Block D	Block E
	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
2264					
2265					
2267					
2278					
2280					
2281					
2282					
2283					
2284					
2285					
2286					
2287					
2289					
2290					
2291					
2292					
2293					
2294					
2295					
2296					
2297					
2298					
2299					
2300					
2302					
2303					
2304					
2305					
2306					
2307					
2315					
2316					
2317					
2318					
2319					
2320					
2321					
2322					
2323					
2324					
2325					
2326					
2327					
2334					

Wireless Microphone Restrictions in Wollongong City

Wollongong POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2500					
2502					
2505					
2506					
2508					
2515					
2516					
2517					
2518					
2519					
2525					
2526					
2527					
2528					
2529					
2530					
2533					
2575					
2576					

APPENDIX B
(Informative only)

Indicative Band Plan for Optimal Use of 1790-1800 MHz

Intermodulation-free channels	Option 1 with 400 kHz separation	Option 2 with 400 kHz separation
Number	(MHz)	(MHz)
1	1790.350	1790.600
2	1790.750	1791.050
3	1791.200	1791.950
4	1791.600	1792.350
5	1792.100	1792.800
6	1792.500	1793.750
7	1792.950	1794.600
8	1793.350	1795.050
9	1793.900	1796.100
10	1794.350	1796.650
11	1794.750	1797.500
12	1795.200	1797.900
13	1795.800	1798.800
14	1796.250	1799.250
15	1796.800	-
16	1797.200	-
17	1797.650	-
18	1798.050	-
19	1798.550	-
20	1798.950	-
21	1799.400	-
22	1799.800	-