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 blocks[1], i.e.

- Block A[2] 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 (dBµV/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 dBµV/m** (for Blocks B and C) and **54 dBµV/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 Database[3] or Restack Channel Chart[4]. 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 modulated[5] (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 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*

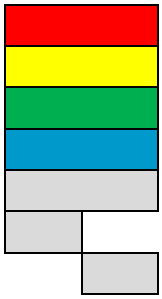
8. Recommendation ITU-R BT.1871 *User requirements for wireless microphones*

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

Wireless Microphone Restrictions based on Postcodes

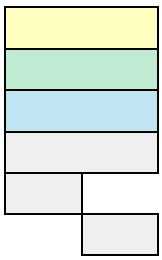
LEGEND

NOT PERMITTED for wireless microphone operation



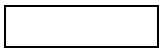
Block A channels (174-230 MHz) assigned for broadcasting
Block B channels (526-568 MHz) assigned for broadcasting
Block C channels (568-610 MHz) assigned for broadcasting
Block D channels (610-652 MHz) assigned for broadcasting
Block E channels (652-694 MHz) assigned for broadcasting
Lower Block E channels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

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
2000					
2006					
2007					
2008					
2009					
2010					
2011					
2015					
2016					
2017					
2018					
2019					
2020					
2021					
2022					
2023					
2024					
2025					
2026					
2027					
2028					
2029					
2030					
2031					
2032					
2033					
2034					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2035					
2036					
2037					
2038					
2039					
2040					
2041					
2042					
2043					
2044					
2045					
2046					
2047					
2048					
2049					
2050					
2060					
2061					
2062					
2063					
2064					
2065					
2066					
2067					
2068					
2069					
2070					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2071					
2072					
2073					
2074					
2075					
2076					
2077					
2079					
2080					
2081					
2082					
2083					
2084					
2085					
2086					
2087					
2088					
2089					
2090					
2092					
2093					
2094					
2095					
2096					
2097					
2099					
2100					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2101					
2102					
2103					
2104					
2105					
2106					
2107					
2108					
2109					
2110					
2111					
2112					
2113					
2114					
2115					
2116					
2117					
2118					
2119					
2120					
2121					
2122					
2125					
2126					
2127					
2130					
2131					
2132					
2133					
2134					
2135					
2136					
2137					
2138					
2140					
2141					
2142					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2143					
2144					
2145					
2146					
2147					
2148					
2150					
2151					
2152					
2153					
2154					
2155					
2156					
2157					
2158					
2159					
2160					
2161					
2162					
2163					
2164					
2165					
2166					
2167					
2168					
2170					
2171					
2172					
2173					
2174					
2175					
2176					
2177					
2178					
2179					
2190					
2191					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2192					
2193					
2194					
2195					
2196					
2197					
2198					
2199					
2200					
2203					
2204					
2205					
2206					
2207					
2208					
2209					
2210					
2211					
2212					
2213					
2214					
2216					
2217					
2218					
2219					
2220					
2221					
2222					
2223					
2224					
2225					
2226					
2227					
2228					
2229					
2230					
2231					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2232					
2233					
2234					
2250					
2251					
2256					
2257					
2258					
2259					
2260					
2261					
2262					
2263					
2555					
2556					
2557					
2558					
2559					
2560					
2563					
2564					
2565					
2566					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2567					
2568					
2569					
2570					
2571					
2572					
2573					
2574					
2745					
2746					
2747					
2748					
2750					
2752					
2753					
2754					
2755					
2756					
2757					
2758					
2759					
2760					
2761					

Sydney POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
2762					
2763					
2765					
2766					
2767					
2768					
2770					
2773					
2774					
2775					
2776					
2777					
2778					
2779					
2780					
2782					
2783					
2784					
2785					
2786					
2787					

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
3000					
3002					
3003					
3004					
3005					
3006					
3008					
3010					
3011					
3012					
3013					
3015					
3016					
3018					
3019					
3020					
3021					
3022					
3023					
3024					
3025					
3026					
3027					
3028					
3029					
3030					
3031					
3032					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3033					
3034					
3036					
3037					
3038					
3039					
3040					
3041					
3042					
3043					
3044					
3045					
3046					
3047					
3048					
3049					
3050					
3051					
3052					
3053					
3054					
3055					
3056					
3057					
3058					
3059					
3060					
3061					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3062					
3064					
3065					
3066					
3067					
3068					
3070					
3071					
3072					
3073					
3074					
3075					
3076					
3078					
3079					
3081					
3082					
3083					
3084					
3085					
3086					
3087					
3088					
3089					
3090					
3091					
3093					
3094					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3095					
3096					
3097					
3099					
3101					
3102					
3103					
3104					
3105					
3106					
3107					
3108					
3109					
3111					
3113					
3114					
3115					
3116					
3121					
3122					
3123					
3124					
3125					
3126					
3127					
3128					
3129					
3130					
3131					
3132					
3133					
3134					
3135					
3136					
3137					
3138					
3139					
3140					
3141					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3142					
3143					
3144					
3145					
3146					
3147					
3148					
3149					
3150					
3151					
3152					
3153					
3154					
3155					
3156					
3158					
3159					
3160					
3161					
3162					
3163					
3165					
3166					
3167					
3168					
3169					
3170					
3171					
3172					
3173					
3174					
3175					
3177					
3178					
3179					
3180					
3181					
3182					
3183					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3184					
3185					
3186					
3187					
3188					
3189					
3190					
3191					
3192					
3193					
3194					
3195					
3196					
3197					
3198					
3199					
3200					
3201					
3202					
3204					
3205					
3206					
3207					
3211					
3212					
3214					
3215					
3216					
3217					
3218					
3219					
3220					
3221					
3222					
3223					
3224					
3225					
3226					
3227					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3228					
3230					
3231					
3240					
3331					
3335					
3337					
3338					
3340					
3427					
3428					
3429					
3431					
3434					
3435					
3437					
3438					
3440					
3441					
3750					
3752					
3753					
3754					
3756					
3757					
3758					
3759					
3761					
3764					
3765					
3766					
3767					
3770					
3775					
3777					
3779					
3781					
3782					
3785					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3786					
3787					
3788					
3789					
3791					
3792					
3793					
3795					
3796					
3800					
3802					
3803					
3804					
3805					
3806					
3807					
3808					
3809					
3810					
3812					
3813					
3814					
3815					
3816					
3818					
3820					
3821					
3822					
3910					
3911					
3912					
3913					
3915					
3916					
3918					
3919					
3920					
3921					
3922					

Melbourne POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
3923					
3925					
3926					
3927					
3928					
3929					
3930					
3931					
3933					
3934					
3936					
3937					
3938					
3939					
3940					
3941					
3942					
3943					
3944					
3945					
3946					
3950					
3951					
3975					
3976					
3977					
3978					
3980					
3981					
3984					
3987					
3988					
3991					
3992					
3995					
3996					

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
4000					
4005					
4006					
4007					
4008					
4009					
4010					
4011					
4012					
4013					
4014					
4017					
4018					
4019					
4020					
4021					
4022					
4025					
4030					
4031					
4032					
4034					
4035					
4036					
4037					
4051					
4053					
4054					

Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
4055					
4059					
4060					
4061					
4064					
4065					
4066					
4067					
4068					
4069					
4070					
4072					
4073					
4074					
4075					
4076					
4077					
4078					
4101					
4102					
4103					
4104					
4105					
4106					
4107					
4108					
4109					
4110					

Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
4111					
4112					
4113					
4114					
4115					
4116					
4117					
4118					
4119					
4120					
4121					
4122					
4123					
4124					
4125					
4127					
4128					
4129					
4130					
4131					
4132					
4133					
4151					
4152					
4153					
4154					
4155					
4156					

Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
4157					
4158					
4159					
4160					
4161					
4163					
4164					
4165					
4169					
4170					
4171					
4172					
4173					
4174					
4178					
4179					
4183					
4184					
4205					
4207					
4208					
4209					
4210					
4211					
4212					
4213					
4214					
4215					
4216					
4217					
4218					

Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
4219					
4220					
4221					
4223					
4224					
4225					
4226					
4227					
4228					
4229					
4230					
4270					
4271					
4272					
4275					
4280					
4285					
4287					
4300					
4301					
4303					
4304					
4305					
4306					
4307					
4309					
4310					
4311					
4312					
4313					
4340					

Brisbane POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
4346					
4500					
4501					
4502					
4503					
4504					
4505					
4506					
4507					
4508					
4509					
4510					
4511					
4512					
4514					
4515					
4516					
4517					
4518					
4519					
4520					
4521					
4550					
4551					
4552					
4553					
4570					
4575					

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
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
5000					
5006					
5007					
5008					
5009					
5010					
5011					
5012					
5013					
5014					
5015					
5016					
5017					
5018					
5019					
5020					
5021					
5022					
5023					
5024					
5025					
5031					
5032					
5033					
5034					
5035					
5037					
5038					
5039					
5040					

Adelaide	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
5041					
5042					
5043					
5044					
5045					
5046					
5047					
5048					
5049					
5050					
5051					
5052					
5061					
5062					
5063					
5064					
5065					
5066					
5067					
5068					
5069					
5070					
5072					
5073					
5074					
5075					
5076					
5081					
5082					
5083					

Adelaide	Block A	Block B	Block C	Block D	Block E
POSTCODES	174 -230MHz	526 -568MHz	568 -610MHz	610 -652MHz	652 -694MHz
5084					
5085					
5086					
5087					
5088					
5089					
5090					
5091					
5092					
5093					
5094					
5095					
5096					
5097					
5098					
5106					
5107					
5108					
5109					
5110					
5111					
5112					
5113					
5114					
5115					
5116					
5117					
5118					
5120					
5121					

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
6000					
6003					
6004					
6005					
6006					
6007					
6008					
6009					
6010					
6011					
6012					
6014					
6015					
6016					
6017					
6018					
6019					
6020					
6021					
6022					
6023					
6024					
6025					
6026					
6027					

Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
6028					
6029					
6030					
6031					
6032					
6033					
6034					
6035					
6036					
6037					
6038					
6041					
6042					
6043					
6044					
6050					
6051					
6052					
6053					
6054					
6055					
6056					
6057					
6058					
6059					

Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
6060					
6061					
6062					
6063					
6064					
6066					
6067					
6068					
6069					
6070					
6071					
6072					
6073					
6074					
6076					
6081					
6082					
6083					
6084					
6090					
6100					
6101					
6102					
6103					
6104					

Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
6105					
6106					
6107					
6108					
6109					
6110					
6111					
6112					
6121					
6122					
6123					
6124					
6125					
6126					
6147					
6148					
6149					
6150					
6151					
6152					
153					
6154					

Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
6155					
6156					
6157					
6158					
6159					
6160					
6161					
6162					
6163					
6164					
6165					
6166					
6167					
6168					
6169					
6170					
6171					
6172					
6173					
6174					
6175					
6176					

Perth POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 652 -694MHz
6207					
6208					
6210					
6213					
6214					
6302					
6304					
6308					
6401					
6501					
6502					
6503					
6505					
6556					
6558					
6560					
6562					
6566					
6567					
6907					

Wireless Microphone Restrictions in Ballarat City

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

Wireless Microphone Restrictions in Bendigo City

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

Wireless Microphone Restrictions in Canberra City

Canberra POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 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					

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

Newcastle POSTCODES	Block A 174 -230MHz	Block B 526 -568MHz	Block C 568 -610MHz	Block D 610 -652MHz	Block E 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 Number	Option 1 with 400 kHz separation (MHz)	Option 2 with 400 kHz separation (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	-