Radiocommunications Advisory Guidelines (Managing Interference from Transmitters - 2.5 GHz Mid-band Gap) 2012

Radiocommunications Act 1992

The AUSTRALIAN COMMUNICATIONS AND MEDIA AUTHORITY makes these Advisory Guidelines under section 262 of the *Radiocommunications Act 1992*.

Dated *13th December* 2012

Chris Chapman
[signed]
Member

Richard Bean
[signed]
Member/~~General Manager~~

Australian Communications and Media Authority

Part 1 Preliminary

1.1 Name of guidelines

These guidelines are the *Radiocommunications Advisory Guidelines (Managing Interference from Transmitters - 2.5 GHz Mid-band Gap) 2012.*

1.2 Commencement

These guidelines commence on the same day as the *Radiocommunications Spectrum Conversion Plan (2.5 GHz Mid-band Gap) 2012*.

Note All legislative instruments and compilations are registered on the Federal Register of Legislative Instruments kept under the *Legislative Instruments Act 2003*. See http://www.frli.gov.au.

1.3 Purpose

(1) The purpose of these guidelines is to manage interference from radiocommunications transmitters operated under a spectrum licence in the 2.5 GHz Mid-band Gap, so as to provide for the protection of radiocommunications receivers operating in or adjacent to the 2.5 GHz Mid-band Gap.

(2) The ACMA will take these guidelines into account in determining whether a spectrum licensed radiocommunications transmitter is causing interference to a licensed radiocommunications receiver operating as set out in these guidelines.

(3) These guidelines do not prevent a licensee negotiating other protection requirements with another licensee.

1.4 Interpretation

(1) In these guidelines, unless the contrary intention appears:

2.1 GHz band means the frequency band 1900 MHz - 2300 MHz.

2.2 GHz band means the frequency band 2025MHz - 2285 MHz.

2.3 GHz band means the frequency band 2302 MHz - 2400 MHz.

2.5 GHz band means the frequency bands:
(a) 2500 MHz - 2570 MHz, the (***2.5 GHz Lower band***); and
(b) 2620 MHz - 2690 MHz, the (***2.5 GHz Upper band***).

2.5 GHz Mid-band Gap means the frequency band 2570 MHz - 2620 MHz.

Conversion Plan means the *Radiocommunications Spectrum Conversion Plan (2.5 GHz Mid-Band Gap) 2012*.

FDD means frequency division duplex.

ITU means the International Telecommunication Union.

ITU-R Recommendation means a Recommendation made by the ITU Radiocommunications sector (ITU-R) as in force from time to time.

Mid-West Radio Quiet Zone means the area defined by the *Radiocommunications (Mid-West Radio Quiet Zone) Frequency Band Plan 2011*.

RALI FX-03 means the Radiocommunications Assignment and Licensing Instruction No. FX-03 Microwave Fixed Services Frequency Coordination, published by the ACMA, and as in force from time to time.

RALI MS-32 means the Radiocommunications Assignment and Licensing Instruction No. MS-32 Coordination of Apparatus Licensed Services within the Mid West Radio Quiet Zone, published by the ACMA, as in force from time to time.

RALIs mean Radiocommunications Assignment and Licensing Instructions issued by and available from the ACMA.

WAS means wireless access services.

(2) In these guidelines, unless otherwise specified, the range of numbers that identifies a frequency band includes the higher, but not the lower, number.

(3) The following terms used in these guidelines that are defined in the *Radiocommunications (Unacceptable Levels of Interference - 2.5GHz Mid-band Gap) Determination 2012* have the same meaning as in that Determination:
(a) fixed receiver;
(b) fixed transmitter;
(c) geographic area.

(4) The following terms, used in these guidelines that are defined in the *Australian Radiofrequency Spectrum Plan 2009* have the same meaning as in that Plan:
(a) fixed service;
(b) radio astronomy service.

Note A number of terms used in these guidelines are defined in the *Radiocommunications Act 1992* and have the meanings given to them by that Act, including:

- ACMA
- apparatus licence
- class licence
- frequency band
- interference

- radiocommunications receiver
- radiocommunications transmitter
- Register
- spectrum licence.

Part 2 Background

2.1 Background

(1) Apparatus, class and spectrum licensed radiocommunications receivers have operated in frequency bands adjacent to the 2.5 GHz Mid-band Gap. These radiocommunications receivers could suffer interference caused by radiocommunications transmitters operated under a spectrum licence in the 2.5 GHz Mid-band Gap.

(2) Existing licensed fixed receivers, the details of which were included in the Register prior to the registration of a fixed transmitter operated under a spectrum licence in the 2.5 GHz Mid-band Gap are to be provided protection in accordance with these guidelines.

(3) These guidelines have been made for the management of interference to radiocommunications receivers operating adjacent to the 2.5 GHz Mid-band Gap, including the following:

(a) spectrum licensed receivers operating under spectrum licences in the 2500-2570 MHz and 2620-2690 MHz bands, typically WAS; and

(b) apparatus licensed receivers in the fixed service operating in and adjacent to the 2.5 GHz Mid-band Gap spectrum licence band, typically special application point to point links.

(4) These guidelines also provide advice regarding the protection of radio-astronomy services operating in the Mid-West Radio Quiet Zone in Western Australia.

(5) As radio waves propagate in different ways because of factors such as frequency, terrain, atmospheric conditions and topography, there are a number of ways to predict path loss. The ITU-R Recommendation P.1144 “Guide to the application of the propagation methods of Radiocommunications Study Group 3” assists in the choice and application of propagation prediction methods suitable to determining path loss for coordination. It is recommended that the most recent version of propagation models defined by the ITU-R should be considered when modelling propagation in the 2.5 GHz Mid-band Gap.

Note 1 The ITU-R Recommendation P 1144 is available from the ITU website at http://www.itu.int.
Note 2 The use of other published propagation models applicable to the 2.5 GHz band may also be suitable.

Part 3 Other Spectrum Licensed Receivers

3.1 Background

(1) This Part applies to the protection of fixed receivers operating under spectrum licences other than in the 2.5 GHz Mid-band Gap.

(2) These include radiocommunications receivers that will operate in the band 2500-2570 MHz and may operate in the band 2620-2690 MHz, under a spectrum licence in the 2.5 GHz band, that is likely to support FDD WAS.

(3) Typically there are no RALIs that describe coordination between radiocommunications devices licensed using spectrum licences. It is necessary to look at the relevant spectrum licence technical framework for each band to determine system characteristics and coordination methods.

3.2 Wireless access services

(1) The band 2500-2690 MHz has been restructured into three bands. The bands 2500-2570 MHz and 2620-2690 MHz either side of the 2.5 GHz Mid-band Gap were paired and licensed for reallocation under a spectrum licence to support FDD WAS.

(2) WAS involves the deployment of a network of fixed base station radiocommunications transmitters servicing lower power mobile user equipment typically providing access to a public data network.

(3) The technical framework for the spectrum licences in the 2.5 GHz band is designed to support FDD services with fixed base stations transmitting in the 2620-2690 MHz band.

3.3 Protection requirements

(1) The protection requirements for fixed receivers operating under spectrum licences in the 2.5 GHz band included in the Register prior to the registration of a fixed transmitter to be operated under a spectrum licence in the 2.5 GHz Mid-band Gap can be found in the technical framework for that licence in the form of the compatibility requirement (a minimum wanted signal level of -102.5 dBm/MHz for registered receivers) and notional receiver performance requirements.

(2) The location and antenna details of fixed receivers can be found in the Register and coordination with these sites is typically required for fixed outdoor transmitters located within 200 metres of these locations.

Part 4 Fixed Service Receivers

4.1 Background

(1) This Part applies to the protection of fixed receivers operating as part of the fixed service in spectrum in, and adjacent to, the 2.5 GHz Mid-band Gap.

(2) There are no formal channelling arrangements for apparatus licensed point-to-point fixed link systems operating in and immediately adjacent to the 2.5 GHz Mid-band Gap due to the small number and specialised nature of these links located in remote areas of Australia.

Note Technical details of these links can be found in the Register available on the ACMA website www.acma.gov.au.

(3) The closest formalised point-to-point fixed link frequency band currently open to new frequency assignments is the 2.2 GHz band. That band overlays an older band now closed to new assignments, the 2.1 GHz band. Apparatus licensed point-to-point fixed links in these frequency bands operate in accordance with requirements of RALI FX-03.

4.2 Protection requirements

(1) The protection requirements for apparatus licensed point–to-point fixed links not located in the 2.1 GHz and 2.2 GHz bands included in the Register prior to the registration of a fixed transmitter to be operated under a spectrum licence in the 2.5 GHz Mid-band Gap can be found in the relevant ITU-R Recommendations and the general text of RALI FX-03, where applicable.

(2) Protection requirements for apparatus licensed point-to-point fixed links located in the 2.1 GHz and 2.2 GHz bands included in the Register prior to the registration of a fixed transmitter operated under a spectrum licence in the 2.5 GHz Mid-band Gap are specified in RALI FX-03.

(3) In planning for the operation of radiocommunications transmitters under a spectrum licence in the 2.5 GHz Mid-band Gap, spectrum licensees are to provide the same level of out-of-band and in-band protection to point-to-point fixed link radiocommunications receivers as would be provided by apparatus licensed fixed service transmitters whose frequencies are assigned in accordance with RALI FX-03.

Part 5 Radio Astronomy Service Receivers

5.1 Background

(1) This Part applies to the protection of sensitive radio astronomy service receivers operated in bands that are in and adjacent to the 2.5 GHz Mid-band Gap.

(2) A site located in central Western Australia has been identified for future radio astronomy use and has been protected by the establishment of the Mid-West Radio Quiet Zone across the radio spectrum from 100 MHz through to 25 GHz.

(3) The location of the site and the Mid-West Radio Quiet Zone, are defined in the *Radiocommunications (Mid-West Radio Quiet Zone) Frequency Band Plan 2011*. An area within 70 km of the site has been excluded from the geographic area of allocated spectrum licences in the 2.5 GHz Mid-band Gap.

5.2 Protection requirements

Licensees in areas adjacent to the Mid-West Radio Quiet Zone are required to coordinate proposed stations using the methods and limits set out for apparatus licensees in RALI MS-32.