Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.5 GHz Mid Band Gap) 2023

The Australian Communications and Media Authority makes the following guidelines under section 262 of the *Radiocommunications Act 1992*.

Dated: 16 March 2023

Chris Jose
[signed]
Member

Linda Caruso
[signed]
~~Member~~/General Manager

Australian Communications and Media Authority

Part 1—Preliminary

1 Name

These are the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.5 GHz Mid Band Gap) 2023*.

2 Commencement

This instrument commences at the start of the day after the day it is registered on the Federal Register of Legislation.

Note: The Federal Register of Legislation may be accessed free of charge at www.legislation.gov.au.

3 Authority

This instrument is made under section 262 of the Act.

4 Repeal of the *Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 2.5 GHz Mid-band Gap) 2012*

The *Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 2.5 GHz Mid-band Gap) 2012* [F2012L02555] are repealed.

5 Definitions

(1) In this instrument, unless the contrary intention appears:

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

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

2.5 GHz band means the 2.5 GHz lower band and the 2.5 GHz upper band.

2.5 GHz lower band means the frequency band 2500 MHz to 2570 MHz.

2.5 GHz mid band gap means the frequency band 2570 MHz to 2620 MHz.

2.5 GHz mid band gap spectrum licence means a spectrum licence that authorises the operation of radiocommunications devices in the 2.5 GHz mid band gap.

2.5 GHz upper band means the frequency band 2620 MHz to 2690 MHz.

Act means the *Radiocommunications Act 1992*.

ARQZWA (short for Australian Radio Quiet Zone Western Australia) has the meaning given by the *Radiocommunications (Australian Radio Quiet Zone Western Australia) Frequency Band Plan 2023*, or any instrument made under section 32 of the Act as a replacement of that plan.

FDD means frequency division duplex.

fixed receiver means a radiocommunications receiver:

(a) located at a fixed point on land or sea; and

(b) not designed or intended for use while in motion.

fixed service has the meaning given by the spectrum plan.

fixed transmitter means a radiocommunications transmitter:

(a) located at a fixed point on land or sea; and

(b) not designed or intended for use while in motion.

in-band means:

(a) for a radiocommunications device operated under a spectrum licence – the part of the spectrum within which the operation of radiocommunications devices is authorised under the licence; or

(b) for a radiocommunications device operated under an apparatus licence that specifies a frequency band– the frequencies within the lower frequency limit and the upper frequency limit specified in the licence; or

(c) for a radiocommunications device operated under an apparatus licence that specifies a specific frequency and bandwidth – the frequencies within that bandwidth, when centred on the specific frequency.

ITU-R Recommendation means a recommendation made by the Radiocommunication Sector of the International Telecommunication Union.

Note: ITU-R Recommendations are available, free of charge, from the website of the International Telecommunication Union at www.itu.int.

out-of-band, for a radiocommunications device, means a frequency other than an in-band frequency.

point to point station has the meaning given by:

(a) the *Radiocommunications (Interpretation) Determination 2015*; or

(b) if another instrument replaces that determination and defines the term – the other instrument.

radio astronomy service has the meaning given by the spectrum plan.

RALI FX 3 means the Radiocommunications Assignment and Licensing Instruction FX 3 *Microwave fixed services frequency coordination*, published by the ACMA.

Note: RALI FX 3 is available, free of charge, from the ACMA's website at www.acma.gov.au.

RALI MS 32 means the Radiocommunications Assignment and Licensing Instruction MS 32 *Coordination of Apparatus Licensed Services Within the Australian Radio Quiet Zone Western Australia*, published by the ACMA.

Note: RALI MS 32 is available, free of charge, from the ACMA's website at www.acma.gov.au.

WAS means wireless access service.

Note: A number of other expressions used in this instrument are defined in the Act, including the following:

(a) ACMA;
(b) apparatus licence;
(c) class licence;
(d) frequency band;
(e) interference;
(f) radiocommunications device;
(g) radiocommunications receiver;
(h) radiocommunications transmitter;
(i) Register;
(j) spectrum licence;
(k) spectrum plan.

(2) In this instrument, unless otherwise specified, a reference to a part of the spectrum or a frequency band includes all frequencies that are greater than but not including the lower frequency, up to and including the higher frequency.

Note: This subsection means the lower number in a part of the spectrum or a frequency band is not included in the part of the spectrum or the frequency band.

6 References to other instruments

In this instrument, unless the contrary intention appears:

(a) a reference to any other legislative instrument is a reference to that other legislative instrument as in force from time to time; and

(b) a reference to any other kind of instrument or writing is a reference to that other instrument or writing as in force or existence from time to time.

Note 1: For references to Commonwealth Acts, see section 10 of the *Acts Interpretation Act 1901*; and see also subsection 13(1) of the *Legislation Act 2003* for the application of the *Acts Interpretation Act 1901* to legislative instruments.

Note 2: All Commonwealth Acts and legislative instruments are registered on the Federal Register of Legislation.

Note 3: See section 314A of the Act.

Part 2—Overview

7 Background

(1) The 2.5 GHz mid band gap has been allocated for spectrum licensing. Spectrum licensed, apparatus licensed and class licensed radiocommunications transmitters communicate with radiocommunications receivers in and adjacent to the 2.5 GHz mid band gap. These receivers may suffer interference from unwanted emissions, blocking and intermodulation caused by a radiocommunications transmitter operated under a 2.5 GHz mid band gap spectrum licence.

(2) This instrument has been made to provide guidance on the management of interference from radiocommunications transmitters operated under a 2.5 GHz mid band gap spectrum licence to:

(a) spectrum licensed receivers operating in the 2.5 GHz band, typically used for WAS (Part 3); and

(b) apparatus licensed receivers used for fixed services, operating in and adjacent to the 2.5 GHz mid band gap, typically used for special application point to point links (Part 4).

(3) This instrument also provides advice regarding coordination with the ARQZWA (Part 5).

(4) 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 Radiocommunication Study Group 3" provides a guide on the application of various propagation methods developed by the Radiocommunication Sector of the International Telecommunication Union. It advises on the most appropriate methods for particular applications, as well as the limits, required input information and output for each of these methods. The most recent version of propagation models developed by the Radiocommunication Sector of the International Telecommunication Union should be considered when modelling propagation in the 2.5 GHz mid band gap.

Note 1: ITU-R Recommendation P.1144 is available, free of charge, from the International Telecommunication Union's website at www.itu.int.

Note 2: The use of other published propagation models applicable to the 2.5 GHz mid band gap may also be suitable.

(5) The ACMA may take this instrument into account in determining whether a radiocommunications transmitter operated under a 2.5 GHz mid band gap spectrum licence is causing interference to an apparatus licensed or class licensed radiocommunications receiver operating in circumstances set out in this instrument.

(6) This instrument does not prevent a person negotiating and implementing other protection requirements with other persons.

Part 3—Spectrum licensed receivers

8 Background

(1) Fixed receivers operate under spectrum licences other than 2.5 GHz mid band gap spectrum licences. These include those operating in the 2.5 GHz band, used for WAS at the time this instrument was made.

(2) Typically, the ACMA has not published documents setting out coordination requirements between radiocommunications devices operated under spectrum licences. It is necessary to look at the relevant spectrum licence technical framework for each band to determine system characteristics and coordination requirements.

(3) The frequency band 2500 MHz to 2690 MHz has been divided into three bands, including the 2.5 GHz mid band gap. The 2.5 GHz lower band and the 2.5 GHz upper band exist either side of the 2.5 GHz mid band gap and constitute the 2.5 GHz band, and the spectrum licences for the 2.5 GHz band are paired to support FDD WAS.

(4) WAS involves the deployment of a network of fixed transmitters, used as base stations, transmitting to lower power mobile user equipment, typically to provide access to a public data network.

(5) The technical framework for the spectrum licences in the 2.5 GHz band is designed to support FDD services with fixed transmitters, used as base stations, transmitting in the 2.5 GHz upper band.

9 Protection requirements

(1) The protection requirements for a fixed receiver operating under a spectrum licence in the 2.5 GHz band, that was first included in the Register before the registration of a fixed transmitter operating under a 2.5 GHz mid band gap spectrum licence, are in the:

(a) compatibility requirement; and

(b) notional receiver performance levels;

specified for these receivers in the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 2.5 GHz Mid Band Gap) 2023*.

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

Part 4—Fixed services

10 Background

(1) Fixed receivers are used for fixed services in and adjacent to the 2.5 GHz mid band gap.

(2) The ACMA has not developed any policies for channelling arrangements for apparatus licensed point to point stations used for fixed link systems, which operate in and immediately adjacent to the 2.5 GHz mid band gap, due to the small number, specialised nature and remote locations of these stations.

(3) The ACMA has generally stopped issuing apparatus licences for radiocommunications devices used for fixed services in the 2.1 GHz band, other than in the 2.2 GHz band.

(4) Apparatus licensed point to point stations generally operate in accordance with RALI FX 3.

11 Protection requirements

Protection requirements for an apparatus licensed point to point station used for fixed link systems, included in the Register before the registration of a fixed transmitter operating under a 2.5 GHz mid band gap spectrum licence, are in RALI FX 3.

Part 5—Radio Astronomy Services

12 Background

(1) Sensitive radiocommunications receivers used for radio astronomy services operate in, and adjacent to, the 2.5 GHz mid band gap.

(2) The site located in remote central Western Australia identified for future radio astronomy use has been protected by the establishment of the ARQZWA across the radiofrequency spectrum from 70 MHz through to 25.25 GHz. The location of the site, and the definition of the ARWZWA, can be found in the *Radiocommunications (Australian Radio Quiet Zone Western Australia) Frequency Band Plan 2023*. An area within 70 km of the site has been excluded from the geographic area of the 2.5 GHz mid band gap spectrum licences.

13 Protection requirements

Licensees of 2.5 GHz mid band gap spectrum licences in areas adjacent to the ARQZWA should coordinate proposed stations using the methods and limits set out for apparatus licensees in RALI MS 32.