EXPLANATORY STATEMENT

Issued by the Australian Communications and Media Authority

Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.3 GHz Band) 2013

Radiocommunications Act 1992

Purpose

The purpose of the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.3 GHz Band) 2013* (**the Advisory Guidelines**) is to provide guidance to assist in the protection of radiocommunications receivers operating under:

- apparatus or class licences from interference caused by radiocommunications transmitters operating under spectrum licences in the 2.3 GHz band in adjacent geographic areas, or adjacent frequency bands; and
- 2.3 GHz band spectrum licences from interference caused by radiocommunications transmitters operating under spectrum licences in the 2.3 GHz band in adjacent geographic areas.

The Advisory Guidelines are designed to be used by operators of spectrum licensed services and apparatus licensed services in the planning of services or in the resolution of interference.

Legislative Provisions

Under section 262 of the *Radiocommunications Act 1992* (**the Act**), the Australian Communications and Media Authority (**the ACMA**) may make advisory guidelines about any aspect of radiocommunication or radio emissions. Subsection 262(2) of the Act provides a non-exhaustive list of examples of the matters about which advisory guidelines may be made, one of which is 'interference with radiocommunications'.

Pursuant to subsection 33(3) of the *Acts Interpretation Act 1901* and section 262 of the Act, the ACMA may revoke a legislative instrument made under section 262 of the Act.

The Advisory Guidelines are a legislative instrument under the *Legislative Instruments Act 2003* (**the LI Act**).

Background

A spectrum licence permits a licensee, subject to specified conditions, to operate radiocommunications devices within a particular spectrum space, defined by a frequency band and a geographic area. Interference occurring between adjacent spectrum licences consists of in-band interference across the geographic boundaries, and out-of-band interference across the frequency boundaries. Interference can also occur between spectrum licensed services and services operating under apparatus and class licensing arrangements respectively.

The Act provides a number of means by which the ACMA may manage interference resulting from operation of a radiocommunications transmitter under a spectrum licence, including the ability to make advisory guidelines under section 262 of the Act. The *Radiocommunications Advisory Guidelines (Managing Interference from Transmitters - 2.3 GHz Band) 2009* (**the 2009 Guidelines**) made under section 262 of the Act provide guidance to assist with the protection of radiocommunications receivers operating under other licences from spectrum licensed radiocommunications transmitters operating in the 2.3 GHz band.

Current spectrum licences in the 2.3 GHz band will expire on 24 July 2015. To prepare for the re-issue and/or re-allocation of spectrum licences in the 2.3 GHz band, the ACMA conducted a review of the 2.3 GHz spectrum licensing technical framework. The aim of the review was to:

> ensure flexibility so that a range of modern technologies can be used in the band, with a particular focus on International Mobile Telecommunications (IMT) technologies;
> provide conditions that enable continued usage of existing network technologies in the band;
> provide interference management within the 2.3 GHz band, and in adjacent bands; and

> address deficiencies that have come to light during the current licence period.

The review recommended that the 2009 Guidelines be amended to account for the modernisation of mobile communications technologies that has occurred since its publication, as well as to allow for developments that may be expected to take place in the next spectrum licence period.

The Advisory Guidelines are one of a set of legal instruments being made by the ACMA to vary the technical framework applicable to the 2.3 GHz band according to the review recommendations. The Advisory Guidelines revoke, with effect from 25 July 2015, the 2009 Guidelines and implement the review recommendations. The ACMA will also make the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers - 2.3 GHz Band) 2013* and the *Radiocommunications (Unacceptable Levels of Interference – 2.3 GHz Band) Determination 2013*.

Operation

The Advisory Guidelines aim to manage the potential for unwanted emissions, blocking and intermodulation products caused by radiocommunications transmitters operating under a spectrum licence interfering with radiocommunications receivers in the circumstances specified in Parts 2, 3, 4, 5 and 6 of the Advisory Guidelines. Further, the Advisory Guidelines provide advice regarding the protection of radio-astronomy services operating in the 2200 MHz - 2700 MHz band (Part 7), and the management of interference across the geographical boundaries of 2.3 GHz spectrum licences (Part 8). Operators of spectrum licensed and apparatus licensed services should use the Advisory Guidelines in the planning of services or the resolution of interference. The ACMA also takes the Advisory Guidelines into account when determining whether a spectrum licensee is causing interference to a licensed radiocommunications receiver that is operating in accordance with its licence conditions.

Consultation

The ACMA has consulted extensively with stakeholders about the review of the spectrum licensing technical framework for the 2.3 GHz band.

In October 2012, the ACMA established an advisory body known as a Technical Liaison Group (**TLG**) to support the review of the technical framework in the 2.3 GHz band. Incumbent and prospective licensees for the 2.3 GHz band were invited to participate in the TLG process. The TLG's role was to consider and provide advice to the ACMA on technical aspects required for the development or review of the technical framework.

The ACMA developed three discussion papers which outlined the proposed approach to the spectrum licensing framework for the 2.3 GHz band. These papers were provided for comment by the ACMA to TLG members and are available on the ACMA website at http://www.acma.gov.au.

The ACMA took into account the views expressed by TLG members when preparing the draft Advisory Guidelines. The draft Advisory Guidelines were available for public comment from 14 October 2013 to 13 November 2013 in order to give TLG members, as well as other interested parties, a further opportunity to comment on the draft technical framework before the final Advisory Guidelines were made by the ACMA.

There were two submissions received during public consultation regarding the revised technical framework. As a result of one of these submissions, the ACMA made a minor change to Part 3 of the Advisory Guidelines to specify that the protection and coordination requirements of RALI MS37 (referenced below) applies in the event that the transmission parameters of an existing device operating under a spectrum licence in the 2.3 GHz band are modified. No other material changes were made to the Advisory Guidelines after consultation.

Regulatory Impact

Prior to releasing the draft Advisory Guidelines for comment, the ACMA consulted with the Office of Best Practice Regulation (**the OBPR**) on the requirement for a regulation impact statement (**RIS**) for this legislative instrument. The OBPR advised that the Advisory Guidelines do not warrant the preparation of a RIS because the instrument is likely to have only minor and machinery impacts. The reference for the OBPR's assessment is ID 16044.

Documents Incorporated by Reference

The Advisory Guidelines incorporate the following documents by reference:

> The Radio Regulations published by the International Telecommunication Union (ITU), as in force from time to time. Copies of the Radio Regulations can be obtained at www.itu.int.

> The *Radiocommunications Assignment and Licensing Instruction No. FX 3 - Microwave Fixed Services Frequency Coordination* (RALI FX 3) published by the ACMA, as in existence from time to time.[1]

> The *Radiocommunications Assignment and Licensing Instruction FX 21 - Television Outside Broadcasting Services in the bands 1980-2110 MHz and 2170-2300 MHz* (RALI FX 21) published by the ACMA, as in existence from time to time.

> The *Radiocommunications Assignment and Licensing Instruction MS 31 - Notification Zones for Apparatus Licensed Services Around Radio Astronomy Facilities* (RALI MS 31) published by the ACMA, as in existence from time to time.

> The *Radiocommunications Assignment and Licensing Instruction No. MS 37 - Coordination of spectrum-licensed devices operating in the 2.3 GHz band with SRS earth stations in the 2290–2300 MHz band* (RALI MS 37) published by the ACMA, as in existence from time to time.

> The following documents published by the ITU Radiocommunications Sector and available on the ITU website (http://www.itu.int):

a. Recommendation ITU-R P.1144 *Guide to the application of the propagation methods of Radiocommunications Study Group 3*;
b. Recommendation ITU-R SF.1006 *Determination of the interference potential between earth stations of the fixed-satellite service and stations in the fixed service*;
c. Recommendation ITU-R SA.1154 *Provisions to protect the space research (SR), space operations (SO) and Earth exploration-satellite services (EESS) and to facilitate sharing with the mobile service in the 2 025–2 110 MHz and 2 200–2 290 MHz bands*;
d. Recommendation ITU-R SA.363 *Space operation systems*;
e. Recommendation ITU-R SA.609 *Protection criteria for radiocommunication links for manned and unmanned near-Earth research satellites*;
f. Recommendation ITU-R SA.1157 *Protection criteria for deep-space research*;
g. Recommendation ITU-R SA.509 *Space research earth station and radio astronomy reference antenna radiation patterns for use in interference calculations, including coordination procedures*;
h. Recommendation ITU-R SA.1014 *Telecommunications requirements for manned and unmanned deep space research*;
i. Recommendation ITU-R SA.1016 *Sharing considerations relating to Deep-Space Research*;
j. Recommendation ITU-R SA.1743 *Maximum allowable degradation to radiocommunication links of the space research and space operation services arising from interference from emissions and radiations from other radio sources*.

> Spectrum Planning Paper 10/01 *Coordination Information for Defence Aeronautical Mobile Telemetry Systems Operating in the 2200 to 2300 MHz Frequency Range* made by the ACMA. Copies are available at http://www.acma.gov.au.

Statement of compatibility with human rights

Subsection 9(1) of the *Human Rights (Parliamentary Scrutiny) Act 2011* requires the rule maker in relation to a legislative instrument to which section 42 (disallowance) of the LI Act applies to cause a statement of compatibility to be prepared in respect of that legislative instrument. The Advisory Guidelines are a legislative instrument to which section 42 applies.

The ACMA is satisfied that the Advisory Guidelines are compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human*

[1] Copies of each RALI may be obtained from the ACMA's website at http://www.acma.gov.au.

Rights (Parliamentary Scrutiny) Act 2011. The Advisory Guidelines do not have any human rights implications as they do not engage any of the applicable rights or freedoms.

The Advisory Guidelines are compatible with human rights as they do not raise any human rights issues.

Detailed Description of the Instrument

Section 1 – Name of Advisory Guidelines

This section provides that the name of the Advisory Guidelines is the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.3 GHz Band) 2013*.

Section 2 – Commencement

This section provides that the Advisory Guidelines commence on 25 July 2015.

Section 3 – Revocation

This section revokes the *Radiocommunications Advisory Guidelines (Managing Interference from Transmitters — 2.3 GHz Band) 2009*, with effect from 25 July 2015.

Section 4 – Purpose

This section states that the purpose of the Advisory Guidelines is to manage interference to radiocommunications receivers operating under another licence that is adjacent (in frequency or area) to a 2.3 GHz band spectrum licence. The guidelines also provide guidance on managing interference across the geographical boundaries of 2.3 GHz spectrum licences. The Advisory Guidelines should be referred to in the planning of services in the 2.3 GHz band as well as in the settling of any interference dispute that may arise between spectrum licensees and any licensees in adjacent licence areas and bands.

Section 5 – Interpretation

This section defines terms used in the Advisory Guidelines. Unless the contrary intention appears, terms used in the guidelines that are defined in the *Radiocommunications (Unacceptable Levels of Interference – 2.3 GHz Band) Determination 2013* (**subsection 145(4) determination**), the *Radiocommunications (Interpretation) Determination 2000* or the Act have the same meaning as in those instruments.

Part 1 - Background

This Part provides background information about the 2.3 GHz spectrum licence band. A radiocommunications transmitter operating under a spectrum licence may cause interference by way of unwanted emissions and blocking. Part 1 outlines what Parts 2-8 of the Advisory Guidelines address. Part 1 also refers to ITU-R Recommendation P.1144 "*Guide to the application of the propagation methods of Radiocommunications Study Group 3*". This recommendation provides a guide on the application of various propagation methods developed internationally by the ITU-R. It is recommended that consideration be given to this ITU-R Recommendation when choosing a propagation model to assess interference.

Part 2 – Point-to-point fixed service receivers
Section 2.1 – Background and Section 2.2 – Protection requirements

Section 2.1 provides background information on point-to-point fixed service receivers operating in bands adjacent to the 2.3 GHz band. A reference to RALI FX 3 is made for guidance on channel arrangements and frequency assignment criteria for point-to-point fixed services. Since RALI FX 3 is under constant review, licensees are advised to consult the most current version when planning systems and managing interference.

Section 2.2 provides that point-to-point fixed services are to be provided protection on a first-in-time coordinated basis. This means fixed service receivers that are registered in the register of radiocommunications licences (**the Register**) established under section 143 of the Act, before a

radiocommunications transmitter operated under a 2.3 GHz band spectrum licence, are afforded the protection specified in RALI FX 3.

Part 3 – Space research, space operations and earth exploration-satellite service receivers
Section 3.1 - Background and Section 3.2 – Protection requirements

Section 3.1 outlines the use of the 2200-2300 MHz band by space research, space operations and earth exploration-satellite services. It states that it is a condition of a 2.3 GHz band spectrum licence that earth stations operating under these services are provided with the in-band protection defined in Recommendation ITU-R SF.1006. Details of the relevant earth stations to protect are contained on the Register.

Section 3.2 explains that the protection requirements for Earth station radiocommunications receivers operating in the space research service (deep space, space-to-space) in the band 2290-2300 MHz are defined in RALI MS 37. RALI MS 37 includes in-band protection requirements in accordance with Annex 7 to Appendix 7 of the Radio Regulations (see subsection 3.2(1)), as well as out-of-band protection requirements which provide protection from blocking to these receivers. It is a condition of a 2.3 GHz spectrum licence that the licensee must comply with the requirements specified in RALI MS 37 relating to the protection to be afforded to deep space Earth station receivers if the receiver:

(a) is licensed under the Act; and

(b) was registered in the Register prior to the date on which the radiocommunications transmitter operated under a 2.3 GHz spectrum licence is registered.

Further, the protection and coordination requirements of RALI MS 37 apply to radiocommunications transmitters operated under spectrum licences in the 2.3 GHz band if their transmission parameters are modified after the date on which an Earth station receiver was registered in the Register.

Additional information in the form of references to various ITU-R Recommendations is also provided in section 3.2 to assist in managing interference.

Part 4 – Mobile Services
Section 4.1 – Background and Section 4.2 – Protection requirements

Section 4.1 provides information on mobile services that operate in 2200-2290 MHz band. Currently the only mobile services in operation in the band are aeronautical mobile telemetry (**AMT**) services at specific locations as provided in the Spectrum Planning Paper 10/01. Section 4.2 provides that a spectrum licensed transmitter operating in the 2.3 GHz band will not be deemed to cause unacceptable interference to AMT services if it is operated in accordance with the conditions of the licence. It is noted that currently no mobile service operates in the 2290-2300 MHz band. However, the Advisory Guidelines will be updated in the event this changes.

Part 5 – Television outside broadcast (TVOB) service
Section 5.1 – Background and Section 5.2 – Protection requirements

Section 5.1 states that the *Television Outside Broadcast Service (1980–2110 MHz and 2170–2300 MHz) Frequency Band Plan 2012* makes provision for television outside broadcast (**TVOB**) services to operate in the 1980–2110 MHz and 2170–2300 MHz frequency bands. Section 5.2 provides that a radiocommunications transmitter operated under a 2.3 GHz band spectrum licence is required to protect TVOB services in accordance with RALI FX 21, if the transmitter was registered in the Register after the date of issue of the TVOB apparatus licence. Only TVOB receivers with site details recorded in the Register will be afforded protection.

Part 6 – Class licensed services
Section 6.1 – Background and Section 6.2 – Protection requirements

This section states that the LIPD class licence permits the operation of a number of different types of radiocommunications transmitters in the 2400-2483.5 MHz band. Devices operated under the LIPD class licence must not cause interference to other services and are not offered protection from other services. Section 6.2 provides that a spectrum licensed transmitter operating in the 2.3 GHz band will

not be deemed to cause unacceptable interference to a device operating under the LIPD class licence if it is operated in accordance with the conditions of the licence.

Part 7 – Radio Astronomy Service Receivers
Section 7.1 Background and Section 7.2 – Protection Requirements

Section 7.1 provides information on the use of various bands by Radio Astronomy services under Australian footnote AUS87 of the Australian Radiofrequency Spectrum Plan (**Spectrum Plan**) prepared under subsection 30(1) of the Act. One of these bands overlaps with part of the 2.3 GHz band. This use is on a fortuitous basis, however due to the highly sensitive nature of radio-astronomy equipment, the ACMA requests that spectrum licensees operating radiocommunications transmitters in the 2.3 GHz band have regard to this service when deploying systems.

Section 7.2 requests that, when deploying systems, spectrum licensees have regard to Radio Astronomy services operating under footnote AUS87 of the Spectrum Plan. RALI MS 31 is referenced as it contains details on the notification procedure to follow before deploying systems. Since RALI MS 31 is subject to review, licensees are advised to consult the most current version to ensure the most up-to-date information and notification procedures are used. Details on the location of radio astronomy receivers operating in the spectrum in, or close in frequency to, the 2.3 GHz band are contained in footnote AUS87 of the Spectrum Plan. When considering Radio Astronomy sites contained in footnote AUS87, the most current version of the Spectrum Plan should be consulted to determine if any sites have been removed from or included in this list. At the time of making of the Advisory Guidelines, the *Australian Radiofrequency Spectrum Plan 2013* is the current version.

Part 8 – Adjacent area spectrum licensed receivers
Section 8.1 - Background and Section 8.2 – Recommended preliminary coordination procedures

Section 8.1 provides background information on the primary mechanism for managing interference across spectrum licence geographical boundaries, which is through the subsection 145(4) determination. The unacceptable levels of interference specified in that determination control levels of emissions across a geographical boundary rather than coordinating with individual stations. Since Time Division Duplex (**TDD**) technologies are considered the most likely to be deployed in the 2.3 GHz band, it is noted that at times it may be necessary for licensees operating radiocommunications transmitters in the 2.3 GHz band to negotiate with adjacent area spectrum licensees when deploying services in order to avoid causing harmful interference. Harmful interference has the same meaning as in the Spectrum Plan.

Section 8.2 provides that in order to best manage interference across geographical boundaries it is recommended that when planning services, spectrum licensees operating radiocommunications transmitters in the 2.3 GHz band should, in addition to meeting the requirements of the subsection 145(4) determination, coordinate with services that are registered in the Register and operating under spectrum licences in geographic areas adjacent to their licence area to avoid harmful interference. If this preliminary coordination indicates interference may occur, it is recommended that licensees either replan their systems or negotiate with the affected spectrum licensees to find a resolution.