EXPLANATORY STATEMENT

Issued by the Australian Communications and Media Authority

Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2012

Radiocommunications Act 1992

Purpose

The purpose of the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2012* (the Advisory Guidelines) is to provide guidance to assist in the protection of radiocommunications receivers operating under apparatus licences in adjacent geographic areas, or adjacent frequency bands from interference caused by radiocommunications transmitters operating under spectrum licences in the 1800 MHz band. 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'.

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

Background

The 15 year spectrum licences in the 1710-1785 MHz and 1805-1880 MHz band (the 1800 MHz band) were issued in two tranches, the first in 1998 and the second in 2000.

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. One of these includes the ability to make advisory guidelines under section 262 of the Act about interference management.

The *Radiocommunications Advisory Guidelines (Protection of Apparatus-licensed and Class-licensed Receivers – 1800 MHz Band) 1999* (the 1999 Guidelines) made under section 262 of the Act provide guidance to assist with the protection of apparatus and class licensed radiocommunications receivers from spectrum licensed radiocommunications transmitters operating in the 1800 MHz band. Similarly, the *Radiocommunications Advisory Guidelines (Managing Interference from Apparatus-licensed and Class-licensed Transmitters – 1800 MHz Band) 1999* and the *Radiocommunications Advisory Guidelines (Protection of Mobile Base Receivers – 1800 MHz Lower Band) 1999* made under section 262 of the Act deal with managing interference in other specific circumstances.

Current spectrum licences in the 1800 MHz band will expire on 17 June 2013 (for licences issued in 1998) or on 3 May 2015 (for licences issued in 2000). To prepare for the re-issue and/or re-allocation of spectrum licences in the 1800 MHz band, the ACMA conducted a review of the 1800 MHz 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 1800 MHz band, and in adjacent bands; and
- address deficiencies that have come to light during the current licence period.

The review recommended that the 1999 Guidelines be amended to account for the modernisation of mobile communications technologies that has occurred since the publication of the 1999 Guidelines, 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 spectrum licensing technical framework applicable to the 1800 MHz band according to the review recommendations. The Advisory Guidelines revoke the 1999 Guidelines and implement the review recommendations. The ACMA will also make the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 1800 MHz Band) 2012, Radiocommunications Advisory Guidelines (Additional Device Boundary Criteria – 1800 MHz Band 2012* and the *Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination 2012*.

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 and 6 of the Advisory Guidelines. Further, the Advisory Guidelines provide recommendations (in Parts 5, 7 and 8) regarding:

> the protection of radio-astronomy services operating in the 1250 MHz - 1780 MHz band on an opportunistic basis;
> the deployment of mobile communications on-board aircraft within the radiofrequency spectrum designated for spectrum licensing; and
> the co-existence arrangements between Public Mobile Telecommunications Service (PMTS) networks and railway networks using Global System for Mobile Communications - Railway (GSM-R) technologies, operating under 1800 MHz spectrum licences.

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 1800 MHz band.

In July 2011, the ACMA established an advisory body known as a Technical Liaison Group (TLG) to support the review of the technical framework in the 1800 MHz band. Incumbent

and prospective licensees for the 1800 MHz band were invited to participate in the TLG process.

The TLG was tasked to consider and provide advice to the ACMA on technical aspects required for the development or review of the technical framework for the 1800 MHz band. This included consideration of:

> the core conditions of the spectrum licence in accordance with section 66 of the Act;
> the unacceptable levels of interference determination made under subsection 145(4) of the Act for the 1800 MHz band;
> the radiocommunications advisory guidelines made under section 262 of the Act for the 1800 MHz band;
> the draft spectrum licence; and
> the minimum contiguous bandwidth for spectrum licences in the 1800 MHz band.

The ACMA developed three discussion papers which outlined the proposed approach to the spectrum licensing framework for the 1800 MHz 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 also available for public comment from 27 June 2012 to 27 July 2012 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 2 submissions received during the public consultation regarding the draft Advisory Guidelines. After considering the submissions, the ACMA made a minor amendment to the draft Advisory Guidelines to clarify text in Part 7 surrounding the use of mobile communications systems on-board aircraft.. Minor editorial amendments were also made to the draft Advisory Guidelines.

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 #14048.

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 from the ITU at www.itu.int.

> The *Radiocommunications Assignment and Licensing Instruction No. FX 3 - Microwave fixed services frequency coordination* (RALI FX 3) which is a document published by the ACMA that provides frequency assignment policy and coordination procedures for the coordination and licensing of microwave fixed services. A copy of this document, as in force from time to time, may be obtained from the ACMA's website at http://www.acma.gov.au.

> The *Radiocommunications Assignment and Licensing Instruction MS 31 - Notification Zones for Apparatus Licensed Services Around Radio Astronomy Facilities* (RALI MS 31) which is a document published by the ACMA that sets out the process for notification to relevant parties of prospective frequency assignments that might impede or degrade the operation of key radio astronomy facilities . A copy of this document, as in force from time to time, may be obtained from the ACMA's website at http://www.acma.gov.au.

> The *Radiocommunications Assignment and Licensing Instruction No. MS 34 - Frequency Coordination and Licensing Procedures for Apparatus Licensed Public Telecommunications Services in the 1800 MHz Band* (RALI MS 34) which is a document published by the ACMA. A copy of this document, as in force from time to time, may be obtained from the ACMA's website at http://www.acma.gov.au.

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

a. ITU-R Recommendation SA.1026-4 *Interference Criteria for Space-to-Earth Data Transmission Systems Operating in the Earth Exploration-Satellite and Meteorological-Satellite Services Using Satellites in Low-Earth Orbit*.; and
b. ITU-R Recommendation SA.1160-2: *Interference Criteria for Data Dissemination and Direct Data Readout Systems in the Earth Exploration-*

Satellite and Meteorological-Satellite Services Using Satellites in the Geostationary Orbit.

> The *Australian Radiofrequency Spectrum Plan 2009* made by the ACMA. Copies are available from the comlaw website at www.comlaw.gov.au.

> The *Radiocommunications Licence Conditions (PTS Licence) Determination 1997*, made by the ACMA defining conditions that apply to public mobile telecommunications services. Copies are available from the comlaw website at www.comlaw.gov.au.

> The technical specification for the GSM telecommunications system "3GPP TS 45.005 Version 9.3.0 (2010-05), 3rd Generation Partnership Project, Technical Specification Group GSM/EDGE Radio Access Network, Radio Transmission and Reception (release 9)" published by the 3rd Generation Partnership Project (3GPP) in May 2010, as in force from time to time. Copies of this document can be accessed through the 3GPP website: http://www.3gpp.org.

Detailed Description of the Instrument

Details of the instrument are set out in **Attachment A**.

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 *Legislative Instruments Act 2003* applies to cause a statement of compatibility to be prepared in respect of that legislative instrument. This statement is **Attachment B**.

ATTACHMENT A

DETAILS OF THE *RADIOCOMMUNICATIONS ADVISORY GUIDELINES (MANAGING INTERFERENCE FROM SPECTRUM LICENSED TRANSMITTERS – 1800 MHZ BAND) 2012*

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 – 1800 MHz Band) 2012*.

Section 2 – Commencement

This section provides that the Advisory Guidelines commence on 18 June 2013.

Section 3 – Revocation

This section revokes the *Radiocommunications Advisory Guidelines (Protection of Apparatus-licensed and Class-licensed Receivers – 1800 MHz Band) 1999*.

Section 4 – Purpose of these guidelines

This section states that the purpose of the Advisory Guidelines is to manage interference to radiocommunications receivers of apparatus licensed or class licensed services which are operating in or adjacent to the 1800 MHz band that is outside the spectrum licensed bands or outside the spectrum licensed areas. This section also indicates that the Advisory Guidelines should be referred to in the planning of services in the 1800 MHz 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 the terms used in the Advisory Guidelines. Some of the terms used have the same meaning as in the *Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination 2012*, the *Radiocommunications (Interpretation) Determination 2000* and the Act.

Part 1 - Background

This Part provides background information about the 1800 MHz spectrum licence band. A radiocommunications transmitter operating under a spectrum licence may cause interference

by way of unwanted emissions and blocking. Part 1 explains that the Advisory Guidelines specifically address:

- point to point fixed services operating in and adjacent to the 1800 MHz spectrum licensed bands;
- meteorological-satellite services operating in the band below 1710 MHz, adjacent to the 1800 MHz spectrum licensed bands;
- cordless communications devices authorised by a class licence and operating in the 1880 MHz - 1900 MHz spectrum licensed band; and
- Public Telecommunications Services (PTS) operating in the 1800 MHz band outside areas designated for spectrum licensing.

The Advisory Guidelines also provide advice regarding:

- the protection of radio-astronomy services operating in the 1250 MHz - 1780 MHz band on an opportunistic basis;
- the deployment of mobile communications on-board aircraft within the radiofrequency spectrum designated for spectrum licensing; and
- the co-existence arrangements between Public Mobile Telecommunications Service (PMTS) networks and railway networks using Global System for Mobile Communication – Railway (GSM-R) technologies, operating under 1800 MHz spectrum licences.

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 recommendation when choosing a propagation model to assess interference.

Part 2 – Point-to-point fixed service receivers

Section 2.1 – Background

This section provides background information on point-to-point fixed service receivers operating in and adjacent to frequencies and areas that have been allocated for spectrum licensing in the 1800 MHz 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 – Point-to-point receiver categories

This section explains that for the purpose of the Advisory Guidelines, radiocommunications receivers of a fixed service operating in the 1800 MHz band are taken to belong to one of two categories. Category 1 is a receiver operating under an apparatus licence that was issued before 18 June 2013, and Category 2 is a receiver operating under an apparatus licence that was issued on or after 18 June 2013.

This is done to simplify interference management considerations and allow services operating before 18 June 2013 to receive the full protection offered by RALI FX3.

Section 2.3 – Protection requirements

This section explains the protection afforded to the different point-to-point receiver categories. It is intended that Category 1 receivers are provided with out-of-band and in-band protection in accordance with the protection requirements detailed at Appendix 1 to RALI FX 3. Category 2 receivers are provided with:

- out-of-band protection from frequency adjacent transmitters operated under a spectrum licence in accordance with the protection requirements detailed at Appendix 1 to RALI FX 3; and
- the same in-band protection from co-channel interference as afforded to devices operated under a spectrum licence. In this case, a transmitter operated under a spectrum licence will not be deemed to cause interference if it is operated in accordance with the conditions of that spectrum licence and the *Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination 2012*.

Protection to Category 2 receivers is based on a first-in-time coordination process. This means that radiocommunications receivers that operate under an apparatus licence that is issued prior to the registration of a spectrum licensed transmitter in the Register maintained by the ACMA under section 143 of the Act receive protection in accordance with the Advisory Guidelines.

Part 3 – Meteorological satellite service (space-to-Earth)

Section 3.1 - Background

This section outlines the use of the spectrum below 1710 MHz by the Meteorological-satellite (Met-Sat) service. It details the type of interference that may occur to this service from radiocommunications transmitters operated in the 1800 MHz band.

Section 3.2 – Protection requirements

This section explains that the protection requirements for Met-Sat service Earth station radiocommunications receivers operating in the band below 1710 MHz are set out in the ITU-R Recommendations listed in the section.

Section 3.3 – Additional information on Meteorological-satellite service protection

This section provides a list of ITU-R Recommendations that provide additional information on the prediction of appropriate co-ordination distances, propagation models, threshold co-ordination levels and Earth station receiver and antenna characteristics, which may assist in assessing compliance with interference criteria.The section also provides further information about other possible issues and resources which may assist in assessing compliance with interference criteria.

Part 4 – Cordless communications devices

Section 4.1 – Background

This part of the Advisory Guidelines provide information on cordless communications devices that operate adjacent to the 1800 MHz band in the frequency band 1880-1900 MHz. These devices are authorised for operation by the *Radiocommunications (Cordless Communications Devices) Class Licence 2001.*

Section 4.2 – Protection requirements

This section provides that a spectrum licenced transmitter will not be deemed to cause unacceptable interference to cordless communications devices if it complies with the in-band emission limits specified in the *Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination 2012* and with all relevant core conditions of the spectrum licence.

Part 5 – Radio Astronomy Service Receivers

Section 5.1 Background

This section provides background information on the use of various bands by Radio Astronomy services under Australian footnote AUS87 of the *Australian Radiofrequency Spectrum Plan 2009* (the ARSP). One of these bands overlaps with part of the 1800 MHz band.

This use is on a fortuitous basis, however due to the highly sensitive nature of radio-astronomy equipment the ACMA has requested that all spectrum users, including spectrum licensees, have regard to this service when deploying systems.

Details on the location of radio astronomy receivers operating in the spectrum in or close in frequency to the 1800 MHz band are contained in footnote AUS87 of the ARSP. When considering Radio Astronomy sites contained in footnote AUS87, the most current version of the ARSP (available on Comlaw – www.comlaw.gov.au) should be consulted to determine if any sites have been removed from or included in this list.

Section 5.2 – Protection Requirements

This section requests that, when deploying systems, spectrum licensees have regard to Radio Astronomy services operating under footnote AUS87 of the ARSP. 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.

Part 6 – Public Telecommunications Service

Section 6.1 - Background

This section provides background information on the use of the 1800 MHz band by Public Telecommunications Service (PTS) outside areas subject to spectrum licensing in the 1800 MHz band. This use is divided into two licence types:

- PMTS Class B – which authorises the use of terrestrial systems; and
- PMTS Class C – which authorises the use of systems onboard aircraft.

Reference is made to RALI MS 34 for licensing and protection arrangements for PMTS Class B licences. Since RALI MS 34 is subject to continual review licensees are advised to consult the most current version when planning systems and managing interference.

For purposes of managing interference from transmitters operating under a spectrum licence, consideration of the different interference mechanisms is required. Two types of services operated under the PMTS Class B licence are identified in this section:

- receivers operating in the 1800 MHz lower band (1710 MHz - 1785 MHz), typically being base station receivers; and
- receivers operating in the 1800 MHz upper band (1805 MHz - 1880 MHz), typically being user terminals (i.e. mobile and nomadic devices).

Section 6.2 – Protection Requirements

This section details the protection requirements for receivers operating under a PMTS Class B and PMTS Class C licence. PMTS Class B radiocommunications receivers operating in the 1800 MHz lower band (1710 MHz - 1785 MHz), typically being base station receivers, are offered:

- the same level of in-band protection as if they were operating under an 1800 MHz spectrum licence;
- the same level of out-of-band protection as if they were operating under an 1800 MHz spectrum licence from transmitters with an effective antenna height less than or equal to 10 metres;
- the level of out-of-band protection specified in RALI MS34 for transmitters operating with an effective antenna height greater than 10 metres. Such protection is offered on a first in time basis. This means that radiocommunications receivers that operate under an apparatus licence that is issued prior to the registration of a spectrum-licensed transmitter in the Register will receive protection in accordance with the Advisory Guidelines.

PMTS Class B receivers operating in the 1800 MHz upper band (1805 MHz - 1880 MHz), typically being user terminals, are offered the same protection as mobile, nomadic and other devices which are generally exempt from having to comply with the registration requirements in Part 3.5 of the Act (see subsection 69(2) of the Act), under the conditions of the spectrum licence under which the device operates. The ACMA would not regard interference from spectrum licensed radiocommunications transmitters to a mobile station receiver operating in the 1800 Mhz band as unacceptable provided the transmitter is operated in accordance with all conditions of the licence and the *Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination 2012*.

PMTS Class C licences operate on the basis that they do not cause interference and they cannot claim protection from interference. PMTS Class C licences are afforded the same protection from radiocommunications transmitters operating under a spectrum licence as they are afforded from other apparatus licensed services. That is, unacceptable interference is taken not to occur provided a radiocommunications transmitter operating under a spectrum licence in the 1800 MHz band is operated in accordance with all conditions of the licence and the *Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination 2012*.

Part 7 – Use of Mobile Communications systems on-board Aircraft (MCA)

Section 7.1 Background

This section provides background information on the ACMA's decision to include guidance on the use of MCA in the spectrum licensed bands. Subsection 7.1(2) provides that it is recommended that the operation of MCA systems in spectrum licensed bands adhere to the licence conditions imposed on the PMTS Class C licence in the *Radiocommunications Licence Conditions (PTS Licence) Determination 1997*. The PMTS Class C licence was created to authorise operation of MCA systems in apparatus licensed bands and the licence conditions were developed in consultation with industry and take into consideration international deployments of similar systems. Section 7.1 also explains that the recommendation in subsection 7.1(2) does not oblige a spectrum licensee to give a third party authorisation under section 68 of the Act that contains the conditions referred to in subsection (2) and that the licensee is free to impose other technical conditions on third party use if it wishes to do so.

Section 7.2 – Recommended MCA Technical Conditions

This section outlines the recommended technical conditions for use of MCA systems in the 1800 MHz spectrum licensed band. It includes the frequencies of operation, height restrictions, emissions limits for the base station unit and the system controller unit, and out-of-band emission limits.

Section 7.3 – Additional Recommended MCA Conditions

This section outlines recommended additional conditions with regard to MCA systems in terms of operation of the systems whilst an aircraft is on the ground and compliance with systems installation under the *Civil Aviation Safety Regulations 1998*. The conditions are those which are applicable to PMTS Class C stations as specified in the *Radiocommunications Licence Conditions (PTS Licence) Determination 1997*.

Part 8 – Co-existence arrangements for Global System for Mobile Communications – Railway (GSM-R) networks

Section 8.1 Background

This section provides background information on the co-existence between GSM-R systems and other PMTS systems. Due to the different operating parameters and requirements of these systems, it is recognised that additional measures may be required in order for these systems to co-exist. A number of studies have been performed internationally on this issue. Reference is made to the relevant reports.

Section 8.2 – Co-existence recommendations

This section recommends that all spectrum licensees consider co-existence issues with GSM-R services when planning and deploying networks. Specific issues for consideration are identified.

ATTACHMENT B

Statement of Compatibility with Human Rights

Prepared in accordance with Part 3 of the Human Rights (Parliamentary Scrutiny) Act 2011

Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2012

This legislative instrument is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Overview of the Legislative Instrument

Section 262 of the *Radiocommunications Act 1992* (the Act) permits the Australian Communications and Media Authority (the ACMA) to may make advisory guidelines about any aspect of radiocommunication or radio emissions.

The purpose of the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) 2012* (the Advisory Guidelines) is to provide for the protection of radiocommunications receivers operating under an apparatus licence in adjacent geographic areas, or adjacent frequency bands to the 1800 MHz band.

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 *Legislative Instruments Act 2003* applies to cause a statement of compatibility to be prepared in respect of that legislative instrument.

The Advisory Guidelines are a legislative instrument subject to disallowance under section 42 of the *Legislative Instruments Act 2003*.

Human Rights Implications

The Advisory Guidelines do not engage any of the applicable rights or freedoms.

Conclusion

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