

EXPLANATORY STATEMENT

Approved by the Australian Communications and Media Authority

Radiocommunications Act 1992

Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers — 850/900 MHz Band) 2021

Authority

The Australian Communications and Media Authority (**the ACMA**) has made the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers — 850/900 GHz Band) 2021 (Advisory Guidelines)* under section 262 of the *Radiocommunications Act 1992 (the Act)* and subsection 33(3) of the *Acts Interpretation Act 1901 (AIA)*.

Section 262 of the Act provides that the ACMA may make written advisory guidelines about any aspect of radiocommunication or radio emission.

Subsection 33(3) of the AIA relevantly provides that where an Act confers power to make a legislative instrument, the power shall be construed as including a power exercisable in the like manner and subject to like conditions (if any) to repeal, rescind, revoke, amend or vary any such instrument.

Purpose and operation of the instrument

A spectrum licence permits a licensee, subject to specified conditions, to operate radiocommunications devices within 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.

The Act provides a number of means by which the ACMA may manage interference caused to the operation of the radiocommunications receiver under a spectrum licence, including the ability to make advisory guidelines under section 262 of the Act.

The ACMA is preparing to allocate spectrum licences in a part of the spectrum called the 850/900 MHz band. New spectrum licences will be allocated in the following parts of spectrum:

- 814 MHz to 825 MHz;
- 859 MHz to 870 MHz;
- 890 MHz to 950 MHz;
- 935 MHz to 960 MHz.

Spectrum licences are already issued in the frequency bands 825 MHz to 845 MHz and 870 to 890 MHz (collectively, the **850 MHz band**), and the ACMA has previously made an instrument under section 262 of the Act in relation to those licences, the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers — 800 MHz Band) 2012 (2012 Advisory Guidelines)*.

The Advisory Guidelines are one of a set of legal instruments made by the ACMA that comprise the technical framework applicable to spectrum licences in the 850/900 MHz band, and revoke and replace the 2012 Advisory Guidelines.

The purpose of the Advisory Guideline is to provide guidance to assist in managing the potential for interference to particular radiocommunications receivers, operating under a spectrum licence, from interference caused by radiocommunications transmitters operated under an apparatus, class or spectrum licence in the 850/900 MHz band (**850/900 MHz transmitters**), where the 850/900 MHz transmitters operate in adjacent geographic areas, or adjacent frequency bands, to those receivers. The Advisory Guidelines also provide guidance on managing interference across the geographic areas of spectrum licences issued in the 850/900 MHz band.

The Advisory Guidelines aim to manage the potential for in-band and out-of-band interference caused by radiocommunications transmitters operated under an apparatus, class or spectrum licence interfering with radiocommunications receivers in the circumstances specified in the Advisory Guidelines. The Advisory Guidelines provide advice regarding the management of interference across the geographical areas of the 850/900 MHz band, or in adjacent frequency bands. Operators of spectrum, class or apparatus licensed services should use the Advisory Guidelines in the planning of services or in the resolution of interference with radiocommunications under spectrum licences in the 850/900 MHz band. The ACMA will also take the Advisory Guidelines into account when determining whether an apparatus licensee, class licensee or spectrum licensee is causing interference to a spectrum licensed radiocommunications receiver that is operating in accordance with its licence conditions.

The Advisory Guidelines do not limit the ability of a spectrum licensee to negotiate operating or protection arrangements with another licensee.

The Advisory Guidelines are not legally binding.

A provision-by-provision description of the Advisory Guidelines is set out in the notes at **Attachment A**.

The Advisory Guidelines are a disallowable legislative instrument under the *Legislation Act 2003* (**the LA**).

The Advisory Guidelines are also subject to the sunset provisions of the LA.

Documents incorporated by reference

Subsection 314A(2) of the Act provides that an instrument under the Act may make provision in relation to a matter by applying, adopting or incorporating (with or without modifications) matter contained in any other instrument or writing as in force or existing at a particular time or from time to time. The Advisory Guidelines incorporate the following documents by reference, as in force or existing from time to time:

- Radiocommunications Assignment and Licensing Instruction (**RALI**) FX 22 *Frequency assignment requirements for the fixed service in the 800 MHz band*, published by the ACMA and available, free of charge, from the ACMA's website at www.acma.gov.au;
- RALI LM 8 *Frequency Assignment Requirements for the Land Mobile Service*, published by the ACMA and available, free of charge, from the ACMA's website at www.acma.gov.au.

The Advisory Guidelines also incorporate the following Acts and legislative instruments (including by the adoption of definitions) or otherwise refer to them, as in force from time to time:

- the Act;

- the *Radiocommunications (Interpretation) Determination 2015*, or any instrument replacing that determination;
- the *Radiocommunications (Low Interference Potential Devices) Class Licence 2015*;
- the *Radiocommunications Spectrum Marketing Plan (850/900 MHz) 2021 (marketing plan)*;
- the *Radiocommunications (Unacceptable Levels of Interference — 850/900 MHz Band) Determination 2021*.

Each of these Acts and legislative instruments is available, free of charge, from the Federal Register of Legislation (www.legislation.gov.au).

Consultation

Before the Advisory Guidelines were made, the ACMA was satisfied that consultation was undertaken to the extent appropriate and reasonably practicable, in accordance with section 17 of the LA.

In December 2020, the ACMA set up a short-term industry technical liaison group (**TLG**) to support the development of a technical framework to support the introduction of 5th generation wireless broadband services in the 850/900 MHz band.

The TLG was asked to consider and provide advice to the ACMA on technical aspects required for the development of the spectrum licence technical framework in the 850/900 MHz band. These included:

- identifying relevant reference technologies;
- the development of the core conditions of the spectrum licensed band in accordance with section 66 of the Act;
- the development of a determination on unacceptable levels of interference made under subsection 145(4) of the Act;
- the development of any associated advisory guidelines to be made under section 262 of the Act;
- the development of a minimum contiguous bandwidth for spectrum licences in the 850/900 MHz band.

The ACMA developed papers which outlined its proposed approach to the spectrum licensing framework for the 850/900 MHz band. These papers were made available by the ACMA to the TLG members for comment. These papers can be found on the ACMA's website. The ACMA had regard to the views expressed by the TLG members when preparing the Advisory Guidelines and other instruments for the allocation of new spectrum licences in the 850/900 MHz band.

A draft version of the Advisory Guidelines was released for public consultation on 27 April 2021, together with the consultation paper *Draft instruments for the 850/900 MHz band auction*. Consultation closed on 24 May 2021.

The ACMA received a number of submissions on the draft version of the Advisory Guidelines. The submissions related to:

- coordination requirements with other radiocommunications devices;
- what the performance levels of a 'notional receiver' should be for the purposes of the Advisory Guidelines;
- the circumstances in which a licensee, who wishes to register a new radiocommunications device, ought to give notice to licensees with devices already registered; and

Explanatory Statement to the Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers — 850/900 MHz Band) 2021

- other technical matters.

The ACMA made some changes to the Advisory Guidelines as a result of the submissions. In particular:

- some proposed coordination requirements were removed; and
- a notional receiver performance level of -96 dBm/(5 MHz) has been included.

Regulatory impact assessment

A preliminary assessment of the proposal to make the Advisory Guidelines was conducted by the Office of Best Practice Regulation (**OBPR**), based on information provided by the ACMA, for the purposes of determining whether a Regulation Impact Statement (**RIS**) would be required. OBPR advised that a RIS would not be required because the proposed regulatory change is minor or machinery in nature – OBPR reference number 43548.

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 LA applies, to cause a statement of compatibility with human rights to be prepared in respect of that legislative instrument.

The statement of compatibility set out below has been prepared to meet that requirement.

Overview of the instrument

Section 262 of the Act permits the ACMA to make advisory guidelines about any aspect of radiocommunication or radio emissions. The purpose of the Advisory Guidelines is to provide information and guidance to assist with the management of interference to radiocommunications receivers operating under spectrum licences in or adjacent to the 850/900 MHz band caused by radiocommunications transmitters operating under other licences issued in or near the 850/900 MHz band.

Human rights implications

The ACMA has assessed whether the Advisory Guidelines are compatible with human rights, being the rights and freedoms recognised or declared by the international instruments listed in subsection 3(1) of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Having considered the likely impact of the Advisory Guidelines and the nature of the applicable rights and freedoms, the ACMA has formed the view that the Advisory Guidelines do not engage any of those rights or freedoms.

Conclusion

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

Notes to the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers — 850/900 MHz Band) 2021*

Part 1—Preliminary

Section 1 Name

This section provides for the Advisory Guidelines to be cited as the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers — 850/900 MHz Band) 2021*.

Section 2 Commencement

This section provides for the Advisory Guidelines to commence on the day after the day they are registered on the Federal Register of Legislation.

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

Section 3 Revocation

This section revokes the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licence Receivers — 800 MHz Band) 2012* (F2012L01774).

Section 4 Authority

This section identifies the provision of the Act that authorises the making of the Advisory Guidelines, namely section 262 of the Act.

Section 5 Definitions

This section defines a number of key terms used throughout the Advisory Guidelines.

A number of other expressions used in the Advisory Guidelines are defined in the Act.

This section also provides that unless the contrary intention appears, terms used in the Advisory Guidelines that are defined in:

- the *Radiocommunications (Interpretation) Determination 2015*, or another instrument that replaces that determination;
- the *Radiocommunications (Unacceptable Levels of Interference – 850/900 MHz Band) Determination 2021* (**subsection 145(4) determination**);

have the same meaning as in those instruments.

This section also provides that, in the Advisory Guidelines, a reference to a part of the spectrum, a frequency band includes all frequencies that are greater than but not including the lower frequency, up to and including the higher frequency.

Section 6 References to other instruments

This section provides that in the Advisory Guidelines, unless the contrary intention appears:

- a reference to another legislative instrument is a reference to that other legislative instrument as in force from time to time; and

Explanatory Statement to the Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers — 850/900 MHz Band) 2021

- a reference to any other kind of instrument or writing is a reference to that other instrument or writing as in force or existing from time to time.

Part 2—Overview

Section 7 Background

This section provides basic information about spectrum licences and the modes of interference occurring across frequency boundaries and geographical areas of spectrum licences. It describes how interference is managed under the Act.

The Advisory Guidelines have been made to provide guidance in the resolution of cases of interference occurring to spectrum licensed radiocommunications receivers, caused by radiocommunications transmitters operated under other licences.

Section 8 Purpose

Subsection 8(1) outlines the purpose of the Advisory Guidelines. Their purpose is to assist in the management of in-band and out-of-band interference by providing compatibility requirements for registered fixed receivers operated under a spectrum licence issued for the 850/900 MHz band. They are also intended to provide protection to radiocommunications receivers operated under spectrum licences in the 850/900 MHz band from interference caused by radiocommunications transmitters operated under an apparatus, class or spectrum licence. The management of, and protection from, interference is facilitated by the minimum level of receiver performance requirements set out in the Advisory Guidelines.

Subsection 8(2) provides that the Advisory Guidelines should be used by operators of spectrum, class and apparatus licensed services in planning services or for the resolution of interference with radiocommunications under spectrum licences in the 850/900 MHz band.

Subsection 8(3) states that the ACMA will take the Advisory Guidelines into account in determining whether interference has occurred from a radiocommunications transmitter operating under an apparatus licence, class licence or spectrum licence to a radiocommunications receiver operating under a spectrum licence in the 850/900 MHz band, in the absence of separate protection arrangements agreed between the affected licensees.

Subsection 8(4) provides that the Advisory Guidelines do not prevent a licensee negotiating other protection arrangements with another licensee.

Part 3—Managing interference from other services

Section 9 In-band interference

Subsection 9(1) explains the methods through which in-band interference to a radiocommunications receiver operated under a spectrum licence in the 850/900 MHz band, caused by apparatus and spectrum licensed transmitters, is managed.

If interference is from an adjacent spectrum licensed radiocommunications transmitter, it is managed through the core conditions of the licence and application of the device boundary criteria and deployment constraints specified in the subsection 145(4) determination.

If interference is caused by an apparatus-licensed radiocommunications transmitter issued:

- on or after 18 June 2013, in the 825 MHz to 845 MHz and 870 MHz to 890 MHz frequency bands; or
- after the commencement of the marketing plan, in the 814 MHz to 825 MHz, 859 MHz to 950 MHz and 935 MHz to 960 MHz frequency bands;

it is managed as if the transmitter is operated under a spectrum licence. This means that the device boundary criteria that apply to spectrum-licensed radiocommunications transmitters are treated as though they apply to those apparatus licensed radiocommunications transmitters. (Spectrum licences in the 850 MHz band were re-issued on 18 June 2013.)

Section 9 also indicates that device boundary criteria incorporate emission limits that provide protection from in-band interference in the geographic area of a spectrum licence.

Section 10 Out-of-band interference

Section 10 explains what constitutes out-of-band interference to a radiocommunications receiver operated under a spectrum licence, and how it can be managed through compatibility requirements for receivers.

Out-of-band interference can occur when radiocommunications transmitters are operated near each other, whether in frequency or distance. It may consist of intermodulation products, harmonic signals, parasitic signals or other spurious signals generated at site or arriving at the radiocommunications receiver.

Out-of-band interference may extend for significant frequency separations on either side of a spectrum licence and its severity may depend on the quality of the radiocommunications receiver. For these reasons, out-of-band interference is managed through interference management procedures based on a compatibility requirement in Part 5 for radiocommunications receivers. A minimum level of receiver performance is specified in Part 4, in conjunction with a compatibility requirement for co-ordination with other licensed services. The use of a performance standard for spectrum licensed radiocommunications receivers ensures that the burden of mitigating interference is not solely placed on the operator of the radiocommunications transmitter.

Section 11 Recording radiocommunications receiver details in the Register

Section 11 explains that a receiver will not be afforded protection unless the details of the receiver are included in the Register of Radiocommunications Licences (**Register**). In order to meet the compatibility requirement in Part 5 of the Advisory Guidelines, a fixed radiocommunications receiver operated under an 850/900 MHz band spectrum licence must have its details included in the Register.

Section 12 Mobile devices

Section 12 explains that the compatibility requirement in Part 5 is not applicable to mobile devices.

Section 13 Apparatus licensed services near the 850 MHz band

Section 13 explains that spectrum licensed radiocommunications base station and mobile receivers operating in the 850 MHz band (the parts of the spectrum from 814 MHz to 845 MHz and 859 MHz to 890 MHz), generally use near-or-adjacent frequencies to those that may be used by apparatus licensed base transmitters of trunked land mobile services (**TLMS**) in the frequency range 851 MHz to 854 MHz, and fixed service transmitters in the 845 MHz to 851 MHz band.

Section 14 Spectrum licensed services near the 850 MHz band

Section 14 explains that mobile devices are not afforded protection from other services due to the fact that it is difficult to predict the levels of interference to such devices (as outlined in section 10)

Section 15 Apparatus licensed transmitters near the 900 MHz band

This section notes the operation of apparatus licensed aeronautical navigation services in the 960 MHz to 1215 MHz frequency range and that, in the spectrum immediately or near adjacent to 960 MHz, such activities are limited to the operation of distance measuring equipment and tactical air navigation systems.

This section notes that mobile receivers operating in the 900 MHz band (the parts of the spectrum from 890 MHz to 915 MHz, and 935 MHz to 960 MHz) are not registered, and consequently not afforded protection from aeronautical services operating above 960 MHz. As mobile and aeronautical services have operated on either side of the 960 MHz boundary for many years, no issues are expected to arise from the continued operation of apparatus licensed aeronautical navigation services.

Section 16 Spectrum licensed transmitters near the 900 MHz band

Subsection 16(1) explains that a spectrum licensed base station radiocommunications receiver operated in the 900 MHz band uses near-or-adjacent frequencies to base station radiocommunications transmitters operated under spectrum licences in the 850 MHz band. The remainder of section 16 sets out guidance for the coordination of these radiocommunications devices and the management of interference. However, subsection 16(2) provides that, despite anything else specified in section 16, negotiation between licensees is preferred to optimise spectrum utility and access on either side of the 890 MHz band.

Subsections 16(3), (4), (5) provide that base station radiocommunications receivers operated under a spectrum licence in the 900 MHz band will generally only be given protection from registered base station radio communications transmitters operated under a spectrum licence in the 850 MHz band in certain circumstances set out in the subsections.

Some of these circumstances require notice be given to a licensee of an intention to register a device under a licence on the Register of Radiocommunications Licences. Subsections 16(9) and (10) outline when a licensee should give such notice.

Where notice is given under 16(9) in relation to an 850 MHz base station transmitter, subject to any agreement about the management of adjacent band interference between licensees, the licensee who gave the notice must ensure that within three months of receiving the notification that the transmitter either satisfies the ‘protection criterion’ (see below) or has an adjacent-channel leakage ratio of at least 100 dB below the transmitter’s in-channel power.

Further, a 900 MHz band base station receiver will generally not receive protection from the registering 850 MHz transmitter unless the receiver satisfies the selectivity requirement.

Subsections 16(11) and (12) provide definitions specific to section 16 of the Advisory Guidelines, the defined terms are: notification window, protection criterion, restricted segment and selectivity requirement. In particular, the ‘protection criterion’ is -102 dBm/(5 MHz).

Section 17 Class licensed services near the 900 MHz band

Section 17 notes that the *Radiocommunications (Low Interference Potential Devices) Class Licence 2015* authorises the ubiquitous, uncoordinated operation by a range of radiocommunications transmitters in the frequency range 915 MHz to 935 MHz and notes the class licence prescribes the relevant operating conditions.

Part 4—Minimum level of receiver performance

Section 18 Notional receiver performance

Section 18 explains why a notional receiver performance level is needed. The level of interference experienced by a receiver is in part dependent on the quality of the receiver itself. Emissions from a transmitter should not have to be reduced below a point where the performance of the receiver is the main cause of the problem. As a result, it is necessary to establish a benchmark performance level for radiocommunications receivers.

The benchmark performance level is set out in Schedule 1 to the Advisory Guidelines.

This section also provides that a receiver will need to meet the notional receiver performance level to gain protection from interference from a radiocommunications transmitter.

Part 5—Compatibility requirement

Section 19 Compatibility

This section sets out the compatibility requirements to be met for a fixed radiocommunications transmitter operated under an apparatus licence or registered under a spectrum licence, in relation to a fixed radiocommunications receiver, to receive protection from interference under the Advisory Guidelines. The fixed radiocommunications receiver must:

- > have at least the notional level of receiver performance set out in Schedule 1;
- > meet the compatibility requirement of the minimum wanted signal level set out in Schedule 2;
- > be operated under a spectrum licence in the 814 MHz to 845 MHz or 890 to 915 MHz frequency ranges; and
- > be included in the Register:
 - for a fixed radiocommunications transmitter operated under an apparatus licence – before the date of issue of the apparatus licence the transmitter is operated under; or
 - for a fixed radiocommunications transmitter registered in relation to a spectrum licence – before the date of registration of the transmitter in relation to the spectrum licence.

Schedule 1 Notional receiver performance level

Schedule 1 provides spectrum licensees with information regarding the notional performance of receivers operating under a spectrum licence in the 850/900 MHz band. The Schedule provides information relating to:

- > receiver adjacent channel selectivity;
- > receiver intermodulation response rejection;
- > receiver blocking; and
- > receiver antenna and feeder losses.

Spectrum-licensed radiocommunications receivers operating in the 850/900 MHz band should meet this performance level to minimise interference from radiocommunications transmitters operating under other types of licences.

Schedule 2 Compatibility requirement

This section outlines, for the purpose of assessing compatibility with other radiocommunications services, the maximum unwanted signal level that a radiocommunications service in the 850/900 MHz band should not exceed. It also provides that logarithmic scaling should be used to find a maximum unwanted signal level in alternative bandwidths.