

EXPLANATORY STATEMENT

Approved by the Australian Communications and Media Authority

Radiocommunications Act 1992

Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 850/900 MHz Band) 2021

Authority

The Australian Communications and Media Authority (**the ACMA**) has made the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 850/900 MHz Band) 2021 (Advisory Guidelines)* under section 262 of the *Radiocommunications Act 1992 (the Act)* and subsection 33(3) of the *Acts Interpretation Act 1901 (the 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 a 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 resulting from the operation of a radiocommunications transmitter 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 the spectrum:

- 814 MHz to 825 MHz;
- 859 MHz to 870 MHz;
- 890 MHz to 915 MHz;
- 935 MHz to 960 MHz.

Spectrum licences are already issued in the frequency bands 825 MHz to 845 MHz and 870 MHz 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 from Spectrum Licensed Transmitters – 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 Guidelines is to provide guidance to assist in managing the potential for interference to particular radiocommunications receivers, operating under apparatus or class licences, from interference caused by radiocommunications transmitters operating under spectrum licences 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 unwanted emissions, blocking and intermodulation products caused by radiocommunications transmitters operating under a 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 licensed and apparatus licensed services should use the Advisory Guidelines in the planning of services or the resolution of interference. The ACMA will also take 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.

The Advisory Guidelines do not limit the actions of a spectrum licensee in negotiating 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 subject to the sunset provisions in Part 4 of Chapter 3 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:

- ITU-R Recommendation P.1144 *Guide to the application of the propagation methods of Radiocommunications Study Group 3*, published by the Radiocommunications Sector of the International Telecommunication Union (**ITU**), and available, free of charge, at www.itu.int;
- the Radio Regulations published by the ITU. The Radio Regulations contain Articles, Appendixes, Resolutions and Recommendations of the ITU, relating to international radiocommunications coordination. The Radio Regulations are available, free of charge, at www.itu.int;
- Radiocommunications Assignment and Licensing Instruction (**RALI**) FX 16 *Frequency assignment requirements for the point to multipoint service in the 400 MHz and 800/900 MHz bands*, published by the ACMA and available, free of charge, from the ACMA's website at www.acma.gov.au;
- 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 Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 850/900 MHz Band) 2021*;
- the *Radiocommunications (Interpretation) Determination 2015*, or any instrument replacing that determination;
- the *Radiocommunications (Spectrum Re-allocation – 850/900 MHz Band) Declaration 2020*;
- 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 assist with 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 under subsection 145(4) of the Act;
- the development of any associated advisory guidelines to be made under section 262 of the Act; and
- 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.

The ACMA took into account the views expressed by the TLG when preparing the draft Advisory Guidelines. 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.

As a result of that consultation, there was one submission that related to the Advisory Guidelines, seeking the inclusion of a description of arrangements for trunked land mobile services in the 850/900 MHz band as existing in 2021. When new 850/900 MHz band spectrum licences are issued in 2024, the 2021 arrangements for trunked land mobile services will no longer be in place and so the ACMA has decided to not include a description of these arrangements in the Advisory Guidelines.

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 of the LI Act applies (disallowance), 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 apparatus, class and spectrum licences in or adjacent to the 850/900 MHz band caused by radiocommunications transmitters operating under spectrum licences issued in 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 in 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 from Spectrum Licensed Transmitters – 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 from Spectrum Licensed Transmitters – 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 Authority

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

Section 4 Revocation

This section revokes the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 800 MHz Band) 2012* (F2012L01775).

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

- 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, and specifies the provisions of the Act relevant to interference management.

The Advisory Guidelines have been made to provide guidance in the resolution of cases of interference occurring to licensed radiocommunications receivers, caused by radiocommunications transmitters operated under 850/900 MHz band spectrum licences.

Section 8 Purpose

Subsection 8(1) describes the purpose of the Advisory Guidelines. Their purpose is to manage interference by providing for the protection of radiocommunications receivers that are operated under a receiver licence or that receive, or are intended to receive, radiocommunications from radiocommunications transmitters operated under transmitter licences in or adjacent to the 850/900 MHz band:

- outside the parts of the spectrum specified in the *Radiocommunications (Spectrum Re-allocation – 850/900 MHz Band) Declaration 2020*; or
- outside the named area specified in that declaration.

Subsection 8(2) provides that the Advisory Guidelines provide guidance for the management of interference to licensed radiocommunications receivers operating in relation to:

- apparatus licensed trunked land-mobile radiocommunications receivers (Part 3);
- apparatus licensed fixed link radiocommunications receivers (Part 4);
- spectrum licensed base station receivers (Part 5); and
- apparatus licensed aeronautical navigation services (Part 6).

Subsection 8(3) advises that the protection criteria and coordination arrangements recommended in the Advisory Guidelines are specified in RALI FX 22 and RALI LM 8.

Subsection 8(4) advises that, when modelling propagation loss in the 850/900 MHz band, ITU-R Recommendation P.1144 provides a guide on the application of various propagation methods. These methods were developed internationally by the ITU's Radiocommunications Sector. ITU-R Recommendation P.1144 advises users on the most appropriate propagation methods for particular applications, as well as the limits, required input information, and output for each of the methods. The subsection recommends that the most recent version of the propagation models defined by the ITU-R should be considered when modelling propagation in the 850/900 MHz band.

Subsection 8(5) states that the ACMA will take the Advisory Guidelines into account in determining whether interference has occurred from a radiocommunications transmitter operating under a spectrum licence in the 850/900 MHz band to a radiocommunications device operating under another licence, in the absence of separate criteria agreed between the affected licensees.

Subsection 8(6) notes that the Advisory Guidelines do not prevent a licensee negotiating other protection arrangements with another licensee.

Part 3–Trunked land-mobile receivers

Section 9 Background

Subsection 9(1) notes that after 1 July 2024, the ACMA’s policy is for trunked land-mobile services to operate in a paired band where the base station radiocommunications receivers use the 806 MHz to 809 MHz frequency band, and mobile radiocommunications receivers use the 851 MHz to 854 MHz frequency band. This places land-mobile receivers in these two bands in spectrum lower-adjacent to the 850 MHz band after the commencement of spectrum licences in the 850/900 MHz band.

Accordingly, such receivers may experience interference from radiocommunications transmitters operated under those spectrum licences.

Subsection 9(2) provides that the protection of trunked land-mobile radiocommunications receivers from spectrum licensed radiocommunications transmitters is on a first-in-time basis. The ACMA intends that any existing apparatus licensed receiver, licensed prior to the registration of a spectrum licensed transmitter in the Register of Radiocommunications Licences (**Register**), will receive protection in accordance with the Advisory Guidelines.

Section 10 Trunked Land-Mobile Base Station Receivers

Subsection 10(1) sets out the protection requirements for base station radiocommunications receivers that are in operation before 1 July 2024 in the frequency band 820 MHz to 825 MHz, and at any time in the frequency band 806 MHz to 809 MHz, for the percentage of time specified in RALI LM 8.

Those protection requirements are:

- a wanted signal to unwanted signal level ratio at the receiver input not less than the wanted to unwanted ratio specified in RALI LM 8; and
- a blocking level at the receiver input not exceeding the blocking level specified in RALI LM 8.

Subsection 10(2) provides for assumptions to be made about:

- the radiofrequency selectivity performance of the base station radiocommunications receiver;
- the base station receiver intermediate frequency bandwidth; and
- the base station receiver antenna;

for the purpose of those protection requirements.

Section 11 Trunked Land-Mobile Mobile Receivers

Subsection 11(1) sets out the protection requirements for mobile radiocommunications receivers that are in operation before 1 July 2024 in the frequency band 865 MHz to 870 MHz, and at any time in the frequency band 851 MHz to 854 MHz, for the percentage of time and percentage of locations specified in RALI LM 8. Those protection requirements are:

- a wanted signal to unwanted signal level ratio at the receiver input not less than the wanted to unwanted ratio specified in RALI LM 8; and
- a blocking level at the receiver input not exceeding the blocking level specified in RALI LM 8.

Subsection 11(2) provides that the mobile radiocommunications receiver intermediate frequency bandwidth may be assumed to be that specified in RALI LM 8, for the purpose of these protection requirements.

Part 4—Fixed service receivers

Section 12 Background

Section 12 describes the arrangements for fixed service receivers that operate in and around the 850/900 MHz band, which may be affected by radiocommunications transmitters operated under spectrum licences in the 850/900 MHz band.

Fixed service receivers, including point-to-point links and point-multipoint link services, operate in the frequency bands 804 MHz to 806 MHz and 845 MHz to 851 MHz, adjacent to the 850/900 MHz band. The protection of fixed link radiocommunications receivers from spectrum licensed radiocommunications transmitters is on a first-in-time basis. The ACMA intends that any existing apparatus licensed fixed link receiver, licensed prior to the registration of a spectrum licensed transmitter in the Register, will receive protection in accordance with the Advisory Guidelines.

RALI FX 22 specifies the arrangements for all fixed point-to-point links, and RALI FX 16 specifies the arrangements for point-to-multipoint services in the frequency range 804 MHz to 851 MHz.

Sound outside broadcast (**SOB**) links also operate in the latter band, predominately in the 845 MHz to 846.5 MHz segment. A SOB link is typically operated on a temporary, transportable basis. Given the ad hoc nature of their operation, a SOB link is operated on a “no interference/no protection” basis in the 845 MHz to 851 MHz frequency band with regard to fixed links of the primary service planned in the spectrum plan, other SOB links and spectrum licensed services that operate in the 850/900 MHz band.

Section 13 Protection requirements

Section 13 sets out the protection requirements for fixed service receivers, and SOB links.

Subsection 13(1) provides that spectrum licensees in the 850/900 MHz band are to ensure that authorised radiocommunications transmitters protect fixed point-to-multipoint service receivers to the level detailed in sections 4.2.2 and 6.2.2 of RALI FX 22.

Subsection 13(2) provides that spectrum licensees are to ensure that authorised radiocommunications transmitters protect fixed point-to-multipoint service receivers according to the protection ratio and usable sensitivity level details in RALI FX 16.

Part 5—900 MHz base station receivers

Section 14 Background

Section 14 describes the arrangements for base station receivers that operate under spectrum licences in the frequency band 890 MHz to 915 MHz (**900 MHz Lower Sub-band**), which may be affected by radiocommunications transmitters operated under spectrum licences in the 850/900 MHz band.

Protection of these base station radiocommunications receivers from spectrum licensed radiocommunications transmitters operating in the frequency band 859 MHz to 890 MHz requires cooperation between the licensees below and above the 890 MHz boundary, and requires licensees to participate, in good faith, in the implementation of mitigation measures set out in section 16 of the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 850/900 MHz Band) 2021*.

In the absence of such cooperation and participation, the ACMA intends for coordination of devices and licences to occur on a first-in-time basis.

Section 15 Protection requirements

Section 15 provides that the protection requirements for 900 MHz base station radiocommunications receivers are specified in section 16 of the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 850/900 MHz Band) 2021*.

Part 6–Systems operating under the Aeronautical Radionavigation Service

Section 16 Background

Section 16 describes the arrangements for radiocommunications devices used to provide aeronautical services in the 960 MHz to 1215 MHz frequency band. Many of these are transponder-based, using discrete frequency pairs (namely 1030 MHz and 1090 MHz).

The Advisory Guidelines are concerned with compatibility between radiocommunications transmitters operated under spectrum licences in the 850/900 MHz band, and radiocommunications receivers used to provide aeronautical services operating in the frequency band 960 MHz to 980 MHz. In Australia, this part of the spectrum is exclusively used by distance measuring equipment and tactical air navigation systems.

Historically, radiocommunications transmitters below 960 MHz have been used as base stations for 2G, 3G and 4G public mobile telecommunications services, and have operated under apparatus licences for many years without causing interference to aeronautical services above 960 MHz. However, this Part sets out a protection requirement that is intended to ensure ongoing protection of aeronautical services from interference from radiocommunications transmitters below 960 MHz, used as base stations for 4G and 5G (and future generation) public mobile telecommunications services, operated under spectrum licences.

Section 17 Protection requirements

Section 17 provides the protection requirement for radiocommunications receivers used to provide aeronautical services in the frequency band 960 MHz to 980 MHz.