

EXPLANATORY STATEMENT

Approved by the Australian Communications and Media Authority

Radiocommunications Act 1992

Radiocommunications (Unacceptable Levels of Interference – 850/900 MHz Band) Determination 2021

Authority

The Australian Communications and Media Authority (**the ACMA**) has made the *Radiocommunications (Unacceptable Levels of Interference – 850/900 MHz Band) Determination 2021 (the instrument)* under subsection 145(4) of the *Radiocommunications Act 1992 (the Act)* and subsection 33(3) of the *Acts Interpretation Act 1901 (AIA)*.

Section 145 of the Act provides that the ACMA may refuse to include details of a radiocommunications transmitter that is proposed to be operated under a spectrum licence in the Register of Radiocommunications Licences (**Register**), maintained by the ACMA under Part 3.5 of the Act. The ACMA may so refuse where it is satisfied that the transmitter could cause an unacceptable level of interference to the operation of other radiocommunications devices under that spectrum licence or any other licence. Subsection 145(4) of the Act provides that the ACMA may determine, by written instrument, what are unacceptable levels of interference for the purposes of section 145 of the Act.

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 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.

Section 69 of the Act requires each spectrum licence to include a condition that a radiocommunications transmitter must not be operated under the licence unless the requirements of the ACMA under Part 3.5 of the Act for registration of transmitters have been met.

The instrument aims to ensure that high levels of emission from radiocommunications transmitters operated under a spectrum licence issued in the following parts of the spectrum (collectively, the **850/900 MHz band**):

- the 850 MHz Lower Band (814 MHz to 845 MHz);
- the 850 MHz Upper Band (859 MHz to 890 MHz);
- the 900 MHz Lower Band (890 MHz to 915 MHz);
- the 900 MHz Upper Band (935 MHz to 960 MHz);

do not cause an unacceptable level of interference to radiocommunications.

The instrument sets out what is meant by an ‘unacceptable level of interference’ in relation to a radiocommunications transmitter operated under a spectrum licence issued in the 850/900 MHz band. If the ACMA is satisfied that the operation of the radiocommunications transmitter could cause interference of the kind set out in the instrument, the ACMA will be able to refuse to register a

radiocommunications transmitter. Refusal to register a radiocommunications transmitter is subject to internal reconsideration and review by the Administrative Appeals Tribunal (see paragraph 285(n) of the Act).

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

The instrument is a disallowable legislative instrument for the purposes of the *Legislation Act 2003* (**the LA**). The instrument is 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 instrument incorporates the following by reference, as existing from time to time:

- 3 Second SRTM Derived Digital Elevation Model (DEM) Version 1.0 (**DEM-3S**), created by Geoscience Australia, and available free of charge from its website at www.ga.gov.au (Geoscience Australia has also published a smoothed variation of DEM-3S. This smoothed variation contains different elevation data than DEM-3S and is not to be used for the purposes of this instrument);
- the Australian Spectrum Map Grid 2012, published by the ACMA, and available free of charge from its website at www.acma.gov.au;
- the Radio Regulations, published by the International Telecommunication Union (**ITU**). The Radio Regulations contains Articles, Appendices, Resolutions and Recommendations of the ITU relating to international radiocommunications coordination. The Radio Regulations are available, free of charge, from the ITU's website at www.itu.int.

The instrument also incorporates the designation of the Geocentric Datum of Australia in Commonwealth of Australia *Gazette* GN 35, dated 6 September 1995 (**GDA94**), as in existence on that date. *Gazette* GN 35 is available, free of charge, from the Federal Register of Legislation at www.legislation.gov.au.

The instrument also incorporates the following Acts as in force from time to time

- the Act;
- the *Seas and Submerged Lands Act 1973*.

The instrument also incorporates the *Radiocommunications (Unacceptable Levels of Interference – 800 MHz Band) Determination 2012* (**the previous determination**). The effect of the previous determination is saved in relation to radiocommunications transmitters included on the Register before the commencement of the instrument, and is incorporated as in force at the time each such transmitter was included on the Register.

The Acts and legislative instrument mentioned above may be obtained from the Federal Register of Legislation (www.legislative.gov.au).

Consultation

Before the instrument was 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 for use 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 the instrument;
- 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 instrument.

A draft version of the instrument 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 were minor changes to align the language in the instrument with similar instruments dealing with unacceptable levels of interference, such as the *Radiocommunications (Unacceptable Levels of Interference – 26 GHz Band) Determination 2020*. The use of similar language, as appropriate, provides consistency for users of this type of instrument.

Regulatory impact assessment

A preliminary assessment of the proposal to make the instrument 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 69 of the Act requires each spectrum licence to include a condition which specifies that a radiocommunications transmitter must not be operated under the licence unless the requirements of the ACMA under Part 3.5 of the Act for registration of transmitters have been met.

Under subsection 145(1) of the Act, the ACMA may, if it is satisfied that the operation of a radiocommunications transmitter could cause an unacceptable level of interference to other radiocommunications devices, refuse to register the transmitter. The instrument sets out what is meant by an 'unacceptable level of interference' in relation to a radiocommunications transmitter operated under a spectrum licence issued in the 850/900 MHz band. The requirements provided in the instrument only apply in relation to 850/900 MHz band spectrum licensees.

Human rights implications

The ACMA has assessed whether the instrument is 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* as they apply to Australia.

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

Conclusion

The instrument is compatible with human rights as it does not raise any human rights issues.

Notes to the *Radiocommunications (Unacceptable Levels of Interference – 850/900 MHz Band) Determination 2021*

Section 1 Name

This section provides for the instrument to be cited as the *Radiocommunications (Unacceptable Levels of Interference – 850/900 MHz Band) Determination 2021*.

Section 2 Commencement

This section provides for the instrument to commence at the start of the day after the day it is 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 (Unacceptable Levels of Interference – 800 MHz Band) Determination 2012* (F2012L01777).

Section 4 Authority

This section identifies the provision of the Act that authorises the making of the instrument, namely subsection 145(4) of the Act.

Section 5 Definitions

This section defines a number of key terms used throughout the instrument. It also provides that the range of numbers that identifies a frequency band includes the higher, but not the lower, number.

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

Section 6 References to other instruments

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

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

Section 7 Emission designator

This section provides that the designation of a radiocommunications transmitter's emission is to be worked out using the methods set out in the Radio Regulations, made by the ITU. It also provides that, for the purposes of determining the emission designation of a radiocommunications transmitter using the Radio Regulations, a reference to "necessary bandwidth" in those Regulations for a given class of emission is taken to be a reference to the occupied bandwidth of the transmitter. The designation of a radiocommunications transmitter's emission is relevant for the coordination and identification of radio emissions and is also used when determining whether two or more fixed transmitters are a group of radiocommunications transmitters under section 8 of the instrument.

Section 8 Group of radiocommunications transmitters

This section defines what ‘a group of radiocommunications transmitters’ is for the purpose of the instrument. A group of radiocommunications transmitters consists of two or more fixed transmitters at a common site that have common features. Including radiocommunications transmitters within a group may make registration of devices easier for licensees.

Section 9 Group of radiocommunications receivers

This section defines what ‘a group of radiocommunications receivers’ is for the purpose of the instrument. A group of radiocommunications receivers consists of two or more fixed receivers at a common site that have certain features in common. Inclusion of radiocommunications receivers within a group may make registration of devices easier for licensees.

Section 10 Unacceptable level of interference

This section provides the technical definition of what will be deemed unacceptable levels of interference for the purpose of interference management in the 850/900 MHz band. A radiocommunications transmitter producing emissions that are found to cause unacceptable levels of interference to other services will, in most circumstances, not be registered on the Register of Radiocommunications Licenses for operation under a spectrum licence in the band, in accordance with subsection 145(1) of the Act. Licensees who operate such devices without registration will be in breach of the condition included in the licence because of section 69 of the Act and may become subject to further compliance action under the Act. It is an offence, and subject to a civil penalty, to operate a radiocommunications device otherwise than as authorised by a spectrum licence (see Part 3.1 of the Act). The maximum penalty for the offence is 2 years imprisonment for an individual, or 1500 penalty units (\$333,000 on the current value of a penalty unit) where the radiocommunications device is a radiocommunications transmitter. The maximum civil penalty is 300 penalty units (\$66,600 on the current value of a penalty unit) where the radiocommunications device is a radiocommunications transmitter. Operation of a radiocommunications device is not authorised by a spectrum licence if it is not in accordance with the conditions of the licence (subsection 64(2) of the Act).

Under subsection 10(1), a radiocommunications transmitter operated under a spectrum licence is taken to be causing unacceptable interference if:

- the operation of the transmitter breaches the core conditions of the licence relating to the maximum permitted level of radio emissions from the radiocommunications transmitter outside the geographic and frequency boundaries of the licence; or
- subject to the exceptions below, any part of the ‘device boundary’ of the transmitter lies outside the geographic area of the licence. The ‘device boundary’ is a theoretical boundary calculated around the device using the methodology set out in the Schedules to the instrument; or
- the transmitter has an effective antenna height greater than 10 metres; or
- the device boundary of the transmitter cannot be calculated in accordance with Part 1 of Schedule 2 to the instrument.

Subsection 10(2) provides that a level of interference mentioned in paragraph 10(1)(b) of the instrument is not unacceptable in the case where device boundary lies outside the boundary of the ASMG and is connected to a radial mentioned in Part 1 of Schedule 2 and does not cross the geographic area of another spectrum licence in the 850/900 MHz band.

Subsection 10(3) provides that a level of interference mentioned in paragraph 10(1)(b) is not unacceptable in relation to a part of the device boundary that lies outside the geographic area of the licence, and that is connected to a radial that:

- is mentioned in Part 1 of Schedule 2;
- does not cross over the land outside the geographic area of the licence that is permanently above the Australian territorial sea baseline; and
- does not cross over an area within any of the hierarchical cell identification scheme (HCIS) identifiers IW3E, IW3I, IW3M, IW6A, IW6E, KX9, LX7, LX8 or LX9.

In each of these cases, the fact that the device boundary is located outside of the geographic area of the licence does not mean that the transmitter is taken to be causing unacceptable interference. (The transmitter may, however, be taken to be causing unacceptable interference for other reasons.)

The ASMG is set out in the Australian Spectrum Map Grid 2012, available from the ACMA's website. It is used to identify the geographic areas of spectrum licences. In accordance with paragraph 66(1)(c) of the Act, a condition specifying the geographic areas within which operation of radiocommunications devices is permitted under the licence is a core condition of a spectrum licence.

The ASMG uses the HCIS to identify particular areas in Australia. The HCIS identifiers included in subsection 10(3) cover an area near Adelaide, and an area in Bass Strait.

Subsection 10(4) provides that 'Australian territorial sea baseline' means the baseline from which the breadth of the territorial sea, or any part of the territorial sea, is to be measured under section 7 of the *Seas and Submerged Lands Act 1973*.

Subsection 10(5) provides that this section does not apply in relation to a radiocommunications transmitter to which section 12 applies.

Section 11 Accuracy

Section 11 specifies that, unless otherwise specified, the value of a parameter in Schedules 1, 2 and 3 must be estimated with a level of confidence not less than 95 percent that the true value of the parameter will always remain below the requirement specified in this instrument. That is to say, an estimate must have a likelihood of 95 percent or greater of being within the requirement for the parameter.

Section 12 Transition – radiocommunications transmitter registered before commencement of this section

Section 12 applies to a radiocommunications transmitter included in the Register in relation to a spectrum licence in the 850/900 MHz band in the period commencing on the day the previous determination commenced and ending at the commencement of section 12. If the registration date of such a radiocommunications transmitter falls between those dates, then the level of interference caused by a relevant transmitter is unacceptable if it would have been unacceptable under the previous determination, as in force at the time the relevant transmitter was included in the Register.

Schedule 1 – Location of a transmitter

This Schedule sets out how to work out the location of a radiocommunications transmitter (and the location of a group of radiocommunications transmitters), in terms of the location of the centre of the antenna or antennas specified in latitude and longitude.

Schedule 2 – Device boundaries and device boundary criteria

This Schedule sets out the technical procedure for calculating the device boundary of a radiocommunications transmitter or group of radiocommunications transmitters, for the purposes of section 10 of the instrument.

Part 1 of Schedule 2

Part 1 of the Schedule details the steps involved in calculating the device boundary. The calculation is an iterative process and involves testing whether the device boundary criterion specified in Part 2 is met at increasing distances (of 100 metre increments) from the transmitter along radial lines spaced around the centre location of the transmitter (worked out in accordance with Schedule 1). The latitude and longitude of the first point on a radial where the device boundary criterion is less than or equal to zero is considered to be the furthest point of the device boundary on this radial. There are 360 radials for each transmitter, meaning there are 360 points that form the device boundary.

If the end point of any radial in relation to a transmitter is outside the geographic area of the licence, then unless an exception applies, the transmitter will be taken to cause an unacceptable level of interference.

For a group of radiocommunications transmitters the device boundary is calculated as if for a single radiocommunications transmitter. However, the radiated power for a group of radiocommunications transmitters is taken to be equal for each bearing and to have a value that is equal to the maximum horizontally radiated power, in any direction, of any of the radiocommunications transmitters in the group.

Part 2 of Schedule 2

Part 2 provides the device boundary criterion, which is the mathematical expression used to calculate a device boundary in accordance with Part 1 of this Schedule. The mathematical expression consists of the horizontally radiated power of a device minus the path loss function. The device boundary criterion has function dependencies which include the horizontally radiated power, the receiver level of protection and the propagation loss set out in Part 3 of this Schedule, for each segment along each radial.

Part 3 of Schedule 2

Part 3 provides the methodology for determining the propagation loss component for determining the device boundary criterion in Part 2. This Part uses the Modified Hata propagation from 'ERC Report 068' published by the European Conference of Postal and Telecommunications Administrations (or CEPT) in 2000 which details the method and parameters to be used to calculate the propagation loss. CEPT reports are available, free of charge, at <https://docdb.cept.org/home>. This Part also details how relevant parameters, which are used in the calculation of propagation loss, are to be determined.

Schedule 3 – Antenna height and average ground height

Part 1 of Schedule 3

Part 1 of this Schedule specifies the procedure for calculating effective antenna height for the purpose of the instrument, taking account of average ground height above sea level and antenna height above ground. The effective antenna height of a spectrum-licensed radiocommunications device is used to calculate the propagation loss component of the device boundary criterion. The device boundary criterion is set out in Part 2 of Schedule 2. The device boundary criterion is the mathematical expression used to calculate a device boundary. The process for calculating a device boundary is set out in Part 1 of Schedule 2.

Part 2 of Schedule 3

Part 2 of this Schedule sets out the procedure for calculating the average ground height of a point on any radial from the location of a radiocommunications transmitter. It does so by taking account of the height of the cell in the digital elevation model corresponding to that point, and the surrounding cells.

These heights are calculated with reference to a digital elevation model sourced from Geoscience Australia.

Part 3 of Schedule 3

Part 3 provides the mathematical formula for Vincenty's Formula, which is used in the calculation of the coordinates (in latitude and longitude) of the points along the radials about the transmitter in Part 1. These coordinates are used in Part 2 to obtain the average ground height for that point for use in Part 1. This simplification of Vincenty's Formulae performs location calculations over the GRS80 ellipsoid as referenced by the GDA94 to a high degree of accuracy, using an iterative routine.