**COMMONWEALTH OF AUSTRALIA AUSTRALIAN COMMUNICATIONS AND MEDIA AUTHORITY**



***Radiocommunications Act 1992***

## SPECTRUM LICENCE FOR THE 3.4 GHz BAND

This licence is issued under Part 3.2 of the Act to the person named at Item 1 of Part 1, Licence Schedule 1 of this licence.

1. The person named at Item 1 of Part 1, Licence Schedule 1 of this licence (the licensee), or a person authorised under subsection 68 (1) of the Act, is authorised, under this licence, to operate radiocommunications devices in accordance with:
   1. the Act;
   2. the core conditions set out in Licence Schedule 2;
   3. the statutory conditions set out in Licence Schedule 3; and
   4. the other conditions set out in Licence Schedule 4.
2. This licence comes into force on the date shown at Item 5 of Part 1, Licence Schedule 1

and remains in force until the end of the date shown at Item 6 of Part 1, Licence Schedule 1.

## Definitions

1. In this licence, unless the contrary intention appears:

***3.4 GHz band*** means the following frequency bands:

(a) 3425 MHz to 3492.5 MHz; and

(b) 3542.5 MHz to 3700 MHz.

***Act*** means the *Radiocommunications Act 1992.*

***area-adjacent spectrum licences*** mean the spectrum licences that authorise the operation of radiocommunications devices in the geographic areas adjacent to the geographic areas described in Tables 1 and 2 of Part 2 of Licence Schedule 1 of this licence.

***frequency-adjacent spectrum licences*** mean the spectrum licences that authorise the operation of radiocommunications devices in the frequency bands adjacent to the frequency bands described in Table 1 of Part 2 of Licence Schedule 1 of this licence.

***harmful interference*** has the same meaning as in the spectrum plan made under subsection 30 (1) of the Act.

***HCIS identifier*** means an identifier used to describe a geographic area in the HCIS.

***Hierarchical Cell Identification Scheme (HCIS)*** means the cell grouping hierarchy scheme used to describe areas in the Australian Spectrum Map Grid 2012 published by the ACMA, as existing from time to time.

*Note:* The *Australian Spectrum Map Grid 2012* is available on the ACMA website at: [www.acma.gov.au](http://www.itu.int/)

***ITU Radio Regulations*** means the Radio Regulations published by the International Telecommunication Union, as in force from time to time.

*Note:* The Radio Regulations are available on the ITU website at: [www.itu.int.](http://www.acma.gov.au/)

***occupied bandwidth***, in relation to a radiocommunications transmitter, means the width of a frequency band having upper and lower limits that are necessary to contain 99% of the true mean power of the transmitter's emission at any time.

***total radiated power***, is defined as the integral of the power transmitted in different directions over an entire radiation sphere. It is measured considering the combination of all radiating elements on an antenna panel or individual device.

## Definitions (cont)

1. Unless the contrary intention appears, terms and expressions used in this licence have the meanings given to them by the *Radiocommunications (Unacceptable Levels of Interference - 3.4 GHz Band) Determination 2015* (as in force time to time).

*Note:* A number of terms used in this licence, are defined in the Act and have the meanings given to them by the Act, including:

* ACMA
* core condition
* frequency band
* radiocommunications device
* radiocommunications receiver
* radiocommunications transmitter
* radio emission
* Register
* spectrum licence
* spectrum plan

1. Unless the contrary intention appears, in this licence:
   1. the value of a parameter in Licence Schedules 2 and 3 must be estimated with a level of confidence not less than 95% that the true value of the parameter will always remain below the requirement specified; and
   2. the range of numbers that identify a frequency band includes the higher, but not the lower, number.

# Licence Schedule 1 Licence details, bands and areas

## Part 1 Licence Details

***Item Licensee Details***

1. *Name of licensee*
2. *Address of licensee*

|  |  |  |
| --- | --- | --- |
| *3* | *Client number*  ***Licence Details*** |  |
| *4* | *Band release* | 3.4 GHz Band |
| *5* | *Date of licence effect* |  |
| *6* | *Date of licence expiry* | 13/12/2030 |
| *7* | *Licence number* |  |
| *8* | *Date of licence issue* |  |

## Part 2 Frequency bands and geographic areas

For core condition 1, this licence authorises the operation of radiocommunications devices in the frequency bands specified in column 3 and within the corresponding geographic areas specified in column 2 of Table 1.

The frequency band consists of the bandwidth between the lower and upper frequencies, where the lower frequency limit is exclusive and upper frequency limit is inclusive. The geographic areas in column 2 of Table 1 are described by the sequence of HCIS identifiers in Table 2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Identifier (column 1)** | **Geographic areas (column 2)** | **Frequency bands (column 3)** | | | |
| **Lower band (MHz)** | | **Upper band (MHz)** | |
| **Lower limit** | **Upper limit** | **Lower limit** | **Upper limit** |
| A | 1 | 3425 | 3490 |  |  |

|  |  |
| --- | --- |
| **Geographic areas (column 1)** | **HCIS identifiers (column 2)** |
| 1 |  |

*Note:* The HCIS is described in the *Australian Spectrum Map Grid 2012*. The *Australian Spectrum Map Grid 2012* is available on the ACMA website at: [www.acma.gov.au](http://www.acma.gov.au/) . Copies are also

available from offices of the ACMA.

# Licence Schedule 2 Core Conditions

## Frequency band and geographic areas

1. This licence authorises the operation of radiocommunications devices in the frequency bands and within the geographic areas set out in Part 2 of Licence Schedule 1.

## Emission limits outside the frequency band

1. Core conditions 3 to 10 apply in relation to those frequencies that are outside the frequency bands set out in Part 2 of Licence Schedule 1.
2. Where a written agreement specifying the maximum permitted level of radio emission for frequencies described in core condition 2 exists between:
   1. the licensee; and
   2. all the affected licensees of frequency-adjacent spectrum licences and area-adjacent spectrum licences;

the licensee must comply with that specified maximum permitted level of radio emission.

1. Where there is no written agreement for the purposes of core condition 3 in force, the licensee must comply with core conditions 5 to 10.

## Unwanted emission limits

1. (1) The licensee must ensure that radiocommunications transmitters operated under this licence, other than a transmitter that is not exempt from the registration requirement under statutory condition 4 of Licence Schedule 3, does not exceed the unwanted emission limits in core conditions 6, 8 and 9.

(2) The licensee must ensure that radiocommunications transmitters operating under this licence that are exempt from the registration requirement under statutory condition 4 of Licence Schedule 3 do not exceed the unwanted emission limits described in core conditions 7, 8 and 9.

1. The unwanted emission limits in Table 3 apply:
   1. at frequencies outside the upper or lower frequency limits set out in Part 2 of Licence Schedule 1; and
   2. offset from the upper or lower frequency limits set out in Part 2 of Licence Schedule 1;

where:

**foffset:** is the frequency offset from the upper or lower frequency limits set out in Part 2 of Licence Schedule 1. The closest -3dB point of the specified bandwidth to the upper or lower frequency limits of the licence is placed at **foffset.**

## Table 3: Radiated maximum true mean power unwanted emission limits

|  |  |  |
| --- | --- | --- |
| **Frequency offset range**  **(foffset)** | **Total radiated power**  **(dBm)** | **Specified Bandwidth** |
| 0 kHz < foffset < 5 MHz | 2 – (7/5).foffset(MHz) | 100 kHz |
| 5 MHz < foffset < 10 MHz | -5 | 100 kHz |
| foffset > 10 MHz | -6 | 1 MHz |

1. The unwanted emission limits in Table 4 apply:
   1. at frequencies outside the upper or lower frequency limits set out in Part 2 of Licence Schedule 1; and
   2. offset from the upper or lower frequency limits set out in Part 2 of Licence Schedule 1;

where:

**foffset:** is the frequency offset from the upper or lower frequency limits set out in Part 2 of Licence Schedule 1. The closest -3dB point of the specified bandwidth to the upper or lower frequency limits of the licence is placed at **foffset.**

## Table 4: Radiated maximum true mean power unwanted emission limits

|  |  |  |
| --- | --- | --- |
| **Frequency offset range**  **(foffset)** | **Total radiated power**  **(dBm)** | **Specified Bandwidth** |
| 0 kHz < foffset < 1 MHz | -15 | 30 kHz |
| 1 MHz < foffset < 5 MHz | -10 | 1 MHz |
| 5 MHz < foffset < 100 MHz | -13 | 1 MHz |
| foffset > 100 MHz | -25 | 1 MHz |

1. For radiocommunications transmitters operated under this licence: the unwanted emission limits in Table 5 apply at frequencies outside the:
   1. the unwanted emission limits in Table 5 apply at frequencies outside the 3295-3805 MHz frequency range for devices that are exempt from the registration requirement under statutory condition 4 of Licence Schedule 3; and
   2. the unwanted emission limits in Table 6 apply at frequencies outside the 3380-3720 MHz frequency range for all other devices;

when measured over the specified bandwidth for the relevant frequency range.

## Table 5: Radiocommunications transmitter unwanted emission limits for devices exempt from registration

|  |  |  |
| --- | --- | --- |
| **Frequency range**  **(f)** | **Total radiated power**  **(dBm)** | **Specified**  **Bandwidth** |
| 9 kHz < f < 150 kHz | -36 | 1 kHz |
| 150 kHz < f < 30 MHz | -36 | 10 kHz |
| 30 MHz < f < 1 GHz | -36 | 100 kHz |
| 1 GHz < f < 19 GHz | -30 | 1 MHz |

## Table 6: Radiocommunications transmitter unwanted emission limits for registered devices

|  |  |  |
| --- | --- | --- |
| **Frequency range**  **(f)** | **Total radiated power**  **(dBm)** | **Specified**  **Bandwidth** |
| 9 kHz < f < 150 kHz | -36 | 1 kHz |
| 150 kHz < f < 30 MHz | -36 | 10 kHz |
| 30 MHz < f < 1 GHz | -36 | 100 kHz |
| 1 GHz ≤ f ≤ 3.1 GHz | -30 | 1 MHz |
| 3.1 GHz ≤ f ≤ 4.2 GHz | -47 | 1 MHz |
| 4.2 GHz ≤ f ≤ 19 GHz | -30 | 1 MHz |

1. For radiocommunications receivers operated under this licence, the unwanted

emission limits in Table 7 apply at frequencies outside the:

* 1. 3295-3805 MHz frequency range for devices that are exempt from the registration requirement under statutory condition 4 of Licence Schedule 3; and
  2. 3380-3720 MHz frequency range for all other devices;

when measured over the specified bandwidth for the relevant frequency range.

## Table 7: Radiocommunications receiver unwanted emission limits

|  |  |  |
| --- | --- | --- |
| **Frequency range**  **(f)** | **Total radiated power**  **(dBm)** | **Specified**  **Bandwidth** |
| 30 MHz < f < 1 GHz | -57 | 100 kHz |
| 1 GHz < f < 19 GHz | -47 | 1 MHz |

**Emission limits outside the geographic areas**

1. Core conditions 11 to 13 apply in relation to those areas that are outside the geographic areas set out in Part 2 of Licence Schedule 1.
2. Where a written agreement specifying the maximum permitted level of radio emission for areas described in core condition 10 exists between:
   1. the licensee; and
   2. all the affected licensees of frequency-adjacent spectrum licences and area-adjacent spectrum licences;

the licensee must comply with that specified maximum permitted level of radio emission.

1. Where there is no written agreement for the purposes of core condition 11 in force, the licensee must comply with core condition 13.
2. The licensee must ensure that the maximum permitted level of radio emission for an area described in core condition 11 caused by the operation of radiocommunications transmitters under this licence does not exceed a total radiated power of 47 dBm/MHz:

## Liability to pay charges

1. The licensee must comply with all its obligations to pay:
   1. charges fixed by determinations made under section 60 of the *Australian Communications and Media Authority Act 2005*;
   2. the spectrum access charges fixed by determinations made under section 294 of the Act; and
   3. amounts of spectrum licence tax.

## Third party use

1. (1) The licensee must notify any person whom the licensee authorises under section 68 of the Act to operate radiocommunications devices under this licence of that person’s obligations under the Act, in particular:
   1. the registration requirements under Part 3.5 of the Act for operation of radiocommunications devices under the licence (if applicable); and
   2. any rules made by the ACMA under subsection 68(3) of the Act.

(2) Any person other than the licensee who operates a radiocommunications device under the licence must comply with rules made by the ACMA under subsection 68(3) of the Act.

## Radiocommunications transmitter registration requirements

1. The licensee must not operate a radiocommunications transmitter under this licence unless:
   1. the transmitter has been exempted from the registration requirements under statutory condition 4 below; or
   2. both:
      1. the requirements under Part 3.5 of the Act relating to registration of the transmitter have been met; and
      2. the transmitter complies with the details about it that have been entered in the Register.

# Licence Schedule 3 Statutory Conditions (cont)

## Exemption from registration requirements

1. The following kinds of radiocommunications transmitters are exempt from the registration requirement in statutory condition 3:
   1. a transmitter that operates in the 3.4 GHz band with a maximum total radiated power of less than or equal to 25 dBm per occupied bandwidth;

## Residency

1. (1) The licensee must not derive any income, profits or gains from operating radiocommunications devices under this licence, or from authorising an authorised person to do so, unless:
   1. the licensee is an Australian resident; or
   2. the income, profits or gains are attributable to a permanent establishment in Australia through which the licensee carries on business.
2. An authorised person must not derive income, profits or gains from operating radiocommunications devices under this licence, or from allowing third parties to operate radiocommunications devices under this licence, unless:
   1. the authorised person is an Australian resident; or
   2. the income, profits or gains are attributable to a permanent establishment in Australia through which the authorised person carries on business.
3. In this condition:

***Australian resident*** has the same meaning as in the *Income Tax Assessment Act 1997*.

***authorised person*** means a person authorised under section 68 of the Act by the licensee to operate radiocommunications devices under this licence.

***permanent establishment*** has the same meaning as:

* 1. if the licensee or authorised person (as appropriate) is a resident of a country or other jurisdiction with which Australia has an agreement within the meaning of the *International Tax Agreements Act 1953*-that agreement; or
  2. in any other case-the *Income Tax Assessment Act 1997*.

# Licence Schedule 4 Other Conditions

## Definitions

1. In this Licence Schedule 4:

***communal site*** has the same meaning as in the *Radiocommunications (Interpretation) Determination 2015* as in force from time to time.

***managing interference*** includes but is not limited to:

* 1. investigating the possible causes of the interference;
  2. taking all steps reasonably necessary to resolve disputes about interference;
  3. taking steps (or requiring persons authorised to operate devices under this

licence to take steps) reasonably likely to reduce interference to acceptable levels; and

* 1. negotiating with other persons to reduce interference to acceptable levels.

## Responsibility to manage interference

1. The licensee must manage interference between:
   1. radiocommunications devices operated under this licence; and
   2. radiocommunications devices operated under this licence and under each other spectrum licence held by the licensee.

## Co-sited devices

1. If:
   1. interference occurs between a radiocommunications device:
      1. operated under this spectrum licence; and
      2. operated under another licence (the ***other licence***);

when the measured separation between the phase centre of the antenna used with each device is less than 500 metres; and

* 1. that interference is not the result of operation of a radiocommunications device in a manner that does not comply with the conditions of the relevant licence; and
  2. either the licensee or the holder (or authorised third party) of the other licence wishes to resolve the interference;

the licensee must manage interference with:

* 1. the holder of the other licence; or
  2. if a site manager is responsible for managing interference at that location, that site manager.

# Licence Schedule 4 Other Conditions (cont)

## Information for register

1. The licensee must give the ACMA all information as required by the ACMA from time to time for inclusion in the Register.

*Note:* Licensees should assist the ACMA in keeping the Register accurate and up to date by informing the ACMA of changes to device registration details as soon as possible.

## International coordination

1. The licensee must ensure that operation of a radiocommunications transmitter under this licence does not cause harmful interference to a radiocommunications receiver that operates in accordance with the ITU Radio Regulations and is located in a country other than Australia.

## Electromagnetic Energy (EME) Requirements

1. The licensee must comply with Parts 2, 3 and 4 of the *Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015*, as in force from time to time. For the purpose of compliance with this condition, the definition of licence in subsection 4(1) of the *Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015* is to be read as if it referred to a spectrum licence.

## Record Keeping - transmitters located at communal sites

1. (1) If the licensee operates a radiocommunications transmitter under the licence, and the transmitter:
   1. is located at a communal site; and
   2. is not exempt under statutory condition 4 of Licence Schedule 3; the licensee must comply with sub-conditions 7(2) and 7(3).

# Licence Schedule 4 Other conditions (cont)

1. (2) In relation to each transmitter, the licensee must keep a record which includes the following information:
   1. the transmitter's device registration number as specified in the Register;
   2. the licence number of the licence;
   3. the transmitter's geographic location;
   4. if the licensee owns the transmitter, the licensee's name and address;
   5. if the licensee does not own the transmitter, the owner's name and address;
   6. the transmitter's centre frequency;
   7. the transmitter's emission designator;
   8. details of the transmitter's antenna including the manufacturer, model, type, gain, polarisation, azimuth and average ground height;
   9. the transmitter's maximum true mean power; and
   10. the transmitter's maximum EIRP.

(3) If the ACMA requests a copy of a record kept under sub-condition 7(2), the licensee must comply with the request as soon as practicable.

## Coordination with the Mid-West Radio Quiet Zone (RQZ)

1. Before seeking to register a radiocommunications transmitter for use in or around the RQZ and supplementary RQZ, as defined by the *Radiocommunications (Mid-West Radio Quiet Zone) Frequency Band Plan 2011* (as in force from time to time), the licensee must follow the procedures set out in Radiocommunications Assignment and Licensing Instruction (RALI) MS 32 as existing from time to time, as if the radiocommunications transmitter it is seeking to register were an apparatus licensed transmitter.

*Note:* RALI MS 32 Coordination of Apparatus Licensed Services Within The Mid-West Radio Quiet Zone is available on the ACMA website at [www.acma.gov.au.](http://www.acma.gov.au/)

## Harmful Interference

1. The licensee must ensure that operation of a radiocommunications transmitter that is exempt from registration under statutory condition 4 of Licence Schedule 3 does not cause harmful interference to other radiocommunications devices operated in the

3.4 GHz band under a different spectrum or apparatus licence.

## Managing interference with Uralla Earth station facility

1. The licensee must not cause interference to Earth stations operated within HCIS identifier NU7K4 beyond the levels specified in *RALI[ESPZ]*

# Licence Schedule 4 Other conditions (cont)

## Coordination with Earth station protection zones

1. Before seeking to register a radiocommunications transmitter, the licensee must follow the procedures set out in RALI[ESPZ] for the protection of the defined Earth station protection zones.

**Synchronisation Requirement**

1. In the event there are unacceptable levels of interference experienced by one or more other spectrum licensees in the 3.4 GHz band and no agreement can be reached on how to manage this interference, the licensee is required to synchronise devices operated under this licence with other affected licensees. This includes:
   1. Implementing an uplink-to-downlink ratio of 30:70
   2. Aligning the timing of uplink and downlink operations including the timing of frame start points with other affected licensees; and
   3. Employing a sub-frame duration of 1 ms and a guard period of 33.2 μs.

**Managing interference caused by spurious emissions**

1. If:

(a) interference occurs between a radiocommunications device:

(i) operated under this licence; and

(ii) operated under another licence (the ***other licence***);

and the interference is due to spurious emissions at frequencies below 3100 MHz and above 4200 MHz from a radiocommunications device operating under this licence; and

(b) that interference is not the result of operation of a radiocommunications device in a manner that does not comply with the conditions of the relevant licence; and

(c) either the licensee or the holder (or authorised third party) of the other licence wishes to resolve the interference;

the licensee must ***manage interference*** with:

(d) the holder of the other licence; or

(e) if a site manager is responsible for managing interference at that location, that site manager.

# Licence Schedule 5 Licence Notes

## Variation to licence conditions

1. The ACMA may, with the written agreement of the licensee, vary this licence by including one or more further conditions, or revoking or varying any conditions of the licence, provided that the conditions, as varied, still comply with the requirements of Subdivision C of Division 1 of Part 3.2 of the Act.
2. The ACMA may, by written notice given to the licensee, vary this licence by including one or more further conditions (other than core conditions), or revoking or varying any conditions (other than core conditions) of the licence, provided that the conditions as varied still comply with the requirements of Subdivision C of Division 1 of Part 3.2 of the Act.

## Determination of Unacceptable Interference

1. The ACMA has made the *Radiocommunications (Unacceptable Levels of Interference - 3.4 GHz Band) Determination 2015* that sets out the unacceptable levels of interference for the purpose of registering radiocommunications transmitters to be operated under this licence, and which is to be used for the issuing of certificates by accredited persons under subsection 145(3) of the Act.

*Note:* Although not mandatory, the registration of radiocommunications receivers to be operated under the licence is advised because one of the matters ACMA will take into account in settling interference disputes is the time of registration of the receiver involved in the interference.

## Guidelines

1. The ACMA has issued written Radiocommunications Advisory Guidelines (the

***guidelines***) under section 262 of the Act about:

* 1. co-ordinating the operation of radiocommunications transmitters under this licence with radiocommunications receivers operated under other licences:
     + *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters - 3.4 GHz Band) 2015*; and
  2. co-ordinating the operation of radiocommunications receivers operated under this licence with transmitters operated under other radiocommunications licences:
     + *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed and Receivers - 3.4 GHz Band) 2015*.

1. The guidelines should be read in conjunction with the *Radiocommunications (Unacceptable Levels of Interference - 3.4 GHz Band) Determination 2015* (see Licence Note 3). This determination sets out the unacceptable levels of interference for the purpose of registration of transmitters to be operated under this licence. The guidelines should be followed by licensees (and accredited persons) in the planning of services and the resolution of interference cases. The ACMA will consider these guidelines during the settlement of interference disputes. Each case will be assessed on its merits. Copies of the guidelines are available from [www.legislation.gov.au](http://www.legislation.gov.au/) and the ACMA.

## Suspension and cancellation of spectrum licences

1. The ACMA may, by written notice given to a licensee, suspend or cancel a spectrum licence in accordance with Division 3 of Part 3.2 of the Act.

## Re-issue

1. A spectrum licence will not be re-issued to the same licensee without a price based allocation procedure unless:
   1. the licence was used to provide a service of a kind determined by the Minister under subsection 82 (3) of the Act for which re-issuing licences to the same licensees would be in the public interest; or
   2. the ACMA is satisfied under paragraph 82 (1) (b) of the Act that special circumstances exist as a result of which it would be in the public interest for that licensee to continue to hold that licence.

## Trading

1. (1) A licensee may assign or otherwise deal with the whole or any part of a spectrum licence provided that this is done in accordance with any rules determined by the ACMA under section 88 of the Act.

(2) An assignment under section 85 of the Act of the whole or any part of a licence that involves any change to a licence does not take effect until the Register has been amended under Part 3.5 of the Act, to take it into account.

## Appeals

1. An application may be made to the ACMA for reconsideration of a decision of a kind listed in section 285 of the Act. A person affected by and dissatisfied with an ACMA decision may seek a reconsideration of the decision by the ACMA under subsection 288(1) of the Act. This decision can be subject to further review by the Administrative Appeals Tribunal, subject to the provisions of the *Administrative Appeals Tribunal Act 1975*.

## Labelling of transmitters

1. Licensees should affix identification labels containing the name and address of the licensee on all fixed transmitters operated under this licence.

*Note:* An example of an identification label would be one containing the following statement: “This device is the property of ‘name’”.