

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:
 - (a) the Act;
 - (b) the core conditions set out in Licence Schedule 2;
 - (c) the statutory conditions set out in Licence Schedule 3; and
 - (d) 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

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

3.4 GHz band means the frequency band 3400 MHz to 3700 MHz.

3GPP TS 36.211 means the document entitled "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 14.6.0 Release 14)" published by the European Telecommunications Standards Institute (ETSI), as it existed at the time the *Australian Communications and Media Authority (Radiocommunications Licence Conditions - 3.4 GHz and 3.6 GHz Bands Interference Management) Direction 2018* was made.

Note: 3GPP TS 36.211 is available free of charge on the ETSI website at: www.etsi.org.

Act means the *Radiocommunications Act 1992*.

active antenna system or **AAS** refers to a base station antenna system where the amplitude and/or phase between antenna elements is continually adjusted resulting in an antenna pattern that varies in response to short term changes in the radio environment.

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.

earth station has the meaning given in Schedule 1 of the *Radiocommunications (Interpretation) Determination 2015* (as in force from time to time).

earth station protection zones has the meaning given by RALI MS 44.

frequency-adjacent spectrum licences mean 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.

Definitions (cont)

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 in force from time to time.

Note: The *Australian Spectrum Map Grid 2012* is available on the ACMA website at: www.acma.gov.au.

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.

Licence Schedule means a Schedule to this licence.

non-active antenna system or ***non-AAS*** means a base station antenna system that is not an AAS.

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.

RALI MS 32 means the Radiocommunications Assignment and Licensing Instruction No. MS 32 Coordination of Apparatus Licensed Services within the Australian Radio Quiet Zone Western Australia, as in existence from time to time and published on the ACMA's website at www.acma.gov.au.

RALI MS 44 means the Radiocommunications Assignment and Licensing Instruction No. MS 44 Frequency Coordination Procedures for the Earth Station Protection Zones, as in existence from time to time and published on the ACMA's website at www.acma.gov.au.

re-allocation zone has the meaning given by section 5 of the *Radiocommunications Spectrum Marketing Plan (3.6 GHz Band) 2018*, as in force on the day this licence was issued.

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

Definitions (cont)

unwanted emission, in relation to the operation of a transmitter authorised by this licence, means an emission outside the lower and upper frequency limits of the frequency bands described in Table 1 of Part 2 of Licence Schedule 1 of this licence.

4. 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 from time to time), or any instrument made under subsection 145(4) of the Act as a replacement of that determination (as in force from 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 licence tax
- spectrum plan

5. Unless the contrary intention appears, in this licence:
- (a) 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
 - (b) 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

<i>Item</i>	<i>Licence Details</i>	
1	<i>Name of licensee</i>	NBN CO LIMITED
2	<i>Address of licensee</i>	Level 13 100 Arthur Street NORTH SYDNEY NSW 2060
3	<i>Client number</i>	8129031
	<i>Licence Details</i>	
4	<i>Band release</i>	3.4 GHz Band
5	<i>Date of licence effect</i>	13/07/2021
6	<i>Date of licence expiry</i>	13/12/2030
7	<i>Licence number</i>	11286131
8	<i>Date of licence issue</i>	15/03/2023

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 bands consist 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.

Licence Schedule 1 Licence details, bands and areas (cont)

Table 1: Frequency bands and geographic areas of this licence

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	3400	3475		
B	2	3400	3475		
C	3	3400	3475		
D	4	3400	3475		
E	5	3400	3475		

Licence Schedule 1 Licence details, bands and areas (cont)

Table 2: Description of the geographic areas of this licence

Geographic areas (column 1)	HCIS identifiers (column 2)
1	AU9, AV9, AW3, BU7, BU8, BV2, BV5, BV7, BV8, BW1, BW2, BW5, AU6I, AU6J, AU6K, AU6L, AU6M, AU6N, AU6O, AU6P, BU4H, BU4I, BU4J, BU4K, BU4L, BU4M, BU4N, BU4O, BU4P, BU5E, BU5F, BU5G, BU5H, BU5I, BU5J, BU5K, BU5L, BU5M, BU5N, BU5O, BU5P, BU9A, BU9B, BU9E, BU9F, BU9I, BU9J, BU9M, BU9N, BV1A, BV1B, BV1C, BV1D, BV1E, BV1F, BV1G, BV1H, BV1I, BV1J, BV1K, BV3A, BV3B, BV3E, BV3F, BV3I, BV3J, BV3M, BV3N, BV4H, BV4I, BV4J, BV4K, BV4L, BV4M, BV4N, BV4O, BV4P, BV6A, BV6B, BV6E, BV6F, BV6I, BV6J, BV6M, BV6N, BV9A, BV9B, BV9E, BV9F, BV9I, BV9J, BV9M, BV9N, BW3A, BW6A, BW6E, BW6I, BW6M, BV1L1, BV1L2, BV1L3, BV1L4, BV1L6, BV1L7, BV1L9, BV1P3, BV1P6, BV3C1, BV3C2, BV3C4, BV3C5, BV3C7, BV3C8, BV3G1, BV3G2, BV3G4, BV3G5, BV4D5, BV4D6, BV4D7, BV4D8, BV4D9, BV4E4, BV4E5, BV4E6, BV4E7, BV4E8, BV4E9, BV4F4, BV4F5, BV4F6, BV4F7, BV4F8, BV4F9, BV4G4, BV4G5, BV4G6, BV4G7, BV4G8, BV4G9, BV9C1, BV9C2, BV9C4, BV9C5, BV9C7, BV9C8, BV9G1, BV9G2, BV9G4, BV9G5, BV9G7, BV9G8, BW3M4, BW3M7, BW3M8
2	IW2, IW5, IW7, IW8, IW9, JW1, JW4, IV8K, IV8L, IV8N, IV8O, IV8P, IV9F, IV9I, IV9J, IV9K, IV9L, IV9M, IV9N, IV9O, IV9P, IW1P, IW3A, IW3B, IW3C, IW3D, IW3E, IW3F, IW3G, IW3H, IW3I, IW3J, IW3K, IW3L, IW3M, IW3P, IW4D, IW4G, IW4H, IW4K, IW4L, IW4N, IW4O, IW4P, IW6A, IW6C, IW6D, IW6E, IW6F, IW6G, IW6H, IW6I, IW6J, IW6K, IW6L, IW6M, IW6N, IW6O, IW6P, JV7M, JV7N, JV7O, JV7P, JV8M, JW2A, JW2B, JW2C, JW2E, JW2F, JW2G, JW2H, JW2I, JW2J, JW2K, JW2M, JW2N, JW2O, JW5A, JW5B, JW5C, JW5E, JW5F, JW5I, JW5J, JW5M, JW7A, JW7B, JW7C, JW7D, JW7E, JW7F, JW7G, JW7I, JW8A, IV8H9, IV8J8, IV8J9, IV9E3, IV9E4, IV9E5, IV9E6, IV9E7, IV9E8, IV9E9, IV9G1, IV9G2, IV9G4, IV9G5, IV9G6, IV9G7, IV9G8, IV9G9, IW1L6, IW1L9, IW3O1, IW3O2, IW3O3, IW3O6, IW3O9, IW6B4, IW6B7, IW6B8, IW6B9, JV7I7, JV7I8, JV7I9, JV7J7, JV7J8, JV7J9, JV7K7, JV7K8, JV7K9, JV7L7, JV7L8, JV7L9, JV8I7, JV8I8, JV8I9, JV8N1, JV8N4, JV8N5, JV8N6, JV8N7, JV8N8, JV8N9, JV8O7, JW2D1, JW2D2, JW2D4, JW2D5, JW2D6, JW2D7, JW2D8, JW2D9, JW2L1, JW2L2, JW2L3, JW2L4, JW2L5, JW2L6, JW3A7, JW3E1, JW5N1, JW5N2, JW5N4, JW5N5, JW5N7, JW5N8, JW8B1, JW8B2, JW8B4

Licence Schedule 1
Licence details, bands and areas (cont)

Geographic areas (column 1)	HCIS identifiers (column 2)
3	NT6, NT2P, NT3M, NT3N, NT3O, NT3P, NT4G, NT4H, NT4K, NT4L, NT4O, NT4P, NT5D, NT5E, NT5F, NT5G, NT5H, NT5I, NT5J, NT5K, NT5L, NT5M, NT5N, NT5O, NT5P, NT7C, NT7D, NT7F, NT7G, NT7H, NT7I, NT7J, NT7K, NT7L, NT7N, NT7O, NT7P, NT8A, NT8B, NT8C, NT8D, NT8E, NT8F, NT8G, NT8I, NT8J, NT8K, NT8M, NT8N, NT8O, NT8P, NT9M, NT9P, NU2A, NU2B, NU2C, NU2D, NU2E, NU2F, NU2G, NU2H, NU2L, NU2P, NU3A, NU3D, NU3E, NU3F, NU3G, NU3H, NU3I, NU3J, NU3K, NU3L, NU3M, NU3N, NU3O, NU3P, NU6A, NU6B, NU6C, NU6D, NT2O3, NT2O5, NT2O6, NT2O8, NT2O9, NT4C6, NT4C9, NT4D4, NT4D5, NT4D6, NT4D7, NT4D8, NT4D9, NT5A4, NT5A5, NT5A6, NT5A7, NT5A8, NT5A9, NT5B4, NT5B5, NT5B6, NT5B7, NT5B8, NT5B9, NT5C2, NT5C3, NT5C4, NT5C5, NT5C6, NT5C7, NT5C8, NT5C9, NT7A6, NT7A8, NT7A9, NT7B2, NT7B3, NT7B4, NT7B5, NT7B6, NT7B7, NT7B8, NT7B9, NT7E2, NT7E3, NT7E4, NT7E5, NT7E6, NT7E7, NT7E8, NT7E9, NT7M1, NT7M2, NT7M3, NT7M5, NT7M6, NT7M9, NT8H1, NT8H2, NT8H4, NT8H5, NT8H6, NT8H7, NT8H8, NT8H9, NT8L1, NT8L4, NT8L7, NT9A1, NT9A2, NT9A3, NT9A4, NT9A5, NT9I7, NT9I8, NT9I9, NT9J7, NT9J8, NT9N1, NT9N2, NT9N3, NT9N4, NT9N7, NT9O1, NT9O2, NT9O3, NT9O5, NT9O6, NT9O8, NT9O9, NU1B2, NU1B3, NU1B5, NU1B6, NU1C1, NU1C2, NU1C3, NU1C4, NU1C5, NU1C6, NU1D1, NU1D2, NU1D3, NU1D4, NU1D5, NU1D6, NU1D9, NU1H3, NU2J3, NU2K1, NU2K2, NU2K3, NU3B1, NU3B4, NU3B5, NU3B6, NU3B7, NU3B8, NU3B9, NU3C2, NU3C3, NU3C5, NU3C6, NU3C7, NU3C8, NU3C9, NU5D1, NU5D2, NU5D3, NU6E1, NU6E2, NU6E3, NU6E4, NU6E5, NU6E6, NU6F1, NU6F2, NU6F3, NU6F4, NU6F5, NU6F6, NU6G1, NU6G2, NU6G3, NU6G4, NU6G5, NU6G6, NU6H1, NU6H2, NU6H3, NU6H4, NU6H5, NU6H6

Licence details, bands and areas (cont)

Geographic areas (column 1)	HCIS identifiers (column 2)
4	MV6, MW1, MW6, MW7, MW8, MW9, NV5, MV2P, MV3D, MV3H, MV3L, MV3M, MV3N, MV3O, MV3P, MV5D, MV5H, MV5L, MV5P, MV7L, MV7O, MV7P, MV8D, MV8H, MV8I, MV8J, MV8K, MV8L, MV8M, MV8N, MV8O, MV8P, MV9A, MV9B, MV9C, MV9D, MV9E, MV9F, MV9G, MV9H, MV9I, MV9J, MV9K, MV9L, MV9M, MV9N, MV9O, MW2A, MW2B, MW2C, MW2D, MW2E, MW2F, MW2G, MW2H, MW2I, MW2J, MW2K, MW2L, MW2O, MW2P, MW3A, MW3B, MW3C, MW3E, MW3F, MW3G, MW3I, MW3J, MW3K, MW3M, MW3N, MW3O, MW3P, MW4A, MW4B, MW4C, MW4E, MW4F, MW4G, MW4I, MW4J, MW4K, MW4M, MW4N, MW4O, MW4P, MW5C, MW5D, MW5G, MW5H, MW5K, MW5L, MW5M, MW5N, MW5O, MW5P, MX1C, MX1D, MX1H, MX2A, MX2B, MX2C, MX2D, MX2E, MX2F, MX2G, MX2H, MX3A, MX3B, MX3C, MX3D, MX3E, MX3F, MX3G, MX3H, NV1I, NV1J, NV1K, NV1L, NV1M, NV1N, NV1O, NV1P, NV2H, NV2I, NV2J, NV2K, NV2L, NV2M, NV2N, NV2O, NV2P, NV3E, NV3F, NV3G, NV3H, NV3I, NV3J, NV3K, NV3L, NV3M, NV3N, NV3O, NV3P, NV4A, NV4B, NV4C, NV4D, NV4E, NV4F, NV4G, NV4H, NV4I, NV4J, NV4K, NV4L, NV4M, NV4N, NV7A, NV7B, NV7C, NV7D, NV7E, NW1M, NW1N, NW1O, NW1P, LW3L3, LW3L5, LW3L6, LW3L8, LW3L9, LW3P3, LW3P6, LW3P9, LW6D3, LW6D6, LW6D9, LW6H3, LW6H6, LW6H9, LW6L3, LW6L6, LW6L9, LW6P3, LW6P6, LW6P9, LW9D3, LW9D6, LW9D9, MV3G9, MV3K3, MV3K6, MV3K9, MV5G5, MV5G6, MV5G8, MV5G9, MV5K2, MV5K3, MV7K6, MV7K8, MV7K9, MV7N9, MV8E6, MV8E9, MV8F4, MV8F5, MV8F6, MV8F7, MV8F8, MV8F9, MV8G4, MV8G5, MV8G6, MV8G7, MV8G8, MV8G9, MV9P1, MV9P4, MW2M1, MW2M2, MW2M3, MW2M4, MW2N1, MW2N2, MW2N3, MW2N6, MW3D4, MW3D7, MW3H1, MW3H4, MW3H7, MW3H8, MW3L1, MW3L4, MW3L5, MW3L6, MW3L7, MW3L8, MW3L9, MW4L4, MW4L7, MW4L8, MW4L9, MW5I7, MW5I8, MW5I9, MW5J3, MW5J6, MW5J7, MW5J8, MW5J9, NV2D7, NV2D8, NV2D9, NV4O1, NV4O2, NV4O3, NV4O4, NV4O5, NV4O6, NV4P1, NV4P2, NV4P3, NV4P4, NV4P5, NV4P6, NV4P8, NV4P9, NV7F1, NV7F2, NV7F3, NV7F4, NV7F5, NV7F7, NV7I1, NV7I2, NV7I3, NV7I4, NV7I5, NV7I7, NW1I4, NW1I5, NW1I6, NW1I7, NW1I8, NW1I9, NW1J4, NW1J5, NW1J6, NW1J7, NW1J8, NW1J9, NW1K4, NW1K5, NW1K6, NW1K7, NW1K8, NW1K9, NW1L4, NW1L5, NW1L6, NW1L7, NW1L8, NW1L9

Licence Schedule 1

Licence details, bands and areas (cont)

Geographic areas (column 1)	HCIS identifiers (column 2)
5	KW9, KX2, KX5, KX8, KX9, LX5, LX7, LX8, KW7L, KW7O, KW7P, KW8B, KW8C, KW8D, KW8E, KW8F, KW8G, KW8H, KW8I, KW8J, KW8K, KW8L, KW8M, KW8N, KW8O, KW8P, KX1C, KX1D, KX1G, KX1H, KX1K, KX1L, KX1O, KX1P, KX3A, KX3B, KX3C, KX3D, KX3E, KX3F, KX3G, KX3H, KX3I, KX3J, KX3K, KX3M, KX3N, KX3O, KX4C, KX4D, KX4G, KX4H, KX4J, KX4K, KX4L, KX4N, KX4O, KX4P, KX6A, KX6B, KX6C, KX6E, KX6F, KX6G, KX6H, KX6I, KX6J, KX6K, KX6L, KX6M, KX6N, KX6O, KX6P, LW7A, LW7E, LW7F, LW7I, LW7J, LW7K, LW7M, LW7N, LW7O, LW7P, LX1A, LX1B, LX1C, LX1D, LX1E, LX1F, LX1G, LX1H, LX1J, LX1K, LX1L, LX1O, LX1P, LX2A, LX2E, LX2I, LX2M, LX2N, LX2O, LX4C, LX4D, LX4E, LX4F, LX4G, LX4H, LX4I, LX4J, LX4K, LX4L, LX4M, LX4N, LX4O, LX4P, LX6A, LX6E, LX6I, LX6M, KW5P8, KW5P9, KW6M7, KW6M8, KW6M9, KW6N7, KW6N8, KW6N9, KW6O7, KW6O8, KW6O9, KW6P7, KW6P8, KW6P9, KW7D9, KW7H3, KW7H5, KW7H6, KW7H8, KW7H9, KW7K5, KW7K6, KW7K8, KW7K9, KW8A2, KW8A3, KW8A4, KW8A5, KW8A6, KW8A7, KW8A8, KW8A9, KX1J9, KX1N3, KX1N6, KX1N9, KX3L1, KX3L2, KX3L3, KX3L4, KX3L5, KX4B3, KX4B6, KX4B9, KX4F3, KX4F5, KX4F6, KX4F7, KX4F8, KX4F9, KX6D4, KX6D7, KX6D8, KX6D9, LW4M7, LW4M8, LW4M9, LW7B1, LW7B4, LW7B5, LW7B7, LW7B8, LW7B9, LW7C7, LW7C8, LW7G1, LW7G2, LW7G4, LW7G5, LW7G6, LW7G7, LW7G8, LW7G9, LW7H7, LW7L1, LW7L2, LW7L4, LW7L5, LW7L7, LW7L8, LW8M4, LW8M5, LW8M7, LW8M8, LW8M9, LX1I1, LX1I2, LX1I3, LX1I4, LX1I5, LX1I6, LX1I8, LX1I9, LX1N1, LX1N2, LX1N3, LX1N5, LX1N6, LX1N7, LX1N8, LX1N9, LX2P4, LX2P5, LX2P6, LX2P7, LX2P8, LX2P9, LX3M7, LX3M8, LX3M9, LX4A6, LX4A7, LX4A8, LX4A9, LX4B2, LX4B3, LX4B4, LX4B5, LX4B6, LX4B7, LX4B8, LX4B9, LX6B4, LX6B7, LX6F1, LX6F4, LX6F7, LX6J1, LX6J4, LX6J7, LX6N1, LX6N4

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. 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

2. Core Conditions 3 to 11 apply in relation to those frequencies that are outside the frequency bands set out in Part 2 of Licence Schedule 1.
3. Where a written agreement specifying the maximum permitted level of radio emission for frequencies described in Core Condition 2 exists between:
 - (a) the licensee; and
 - (b) all the affected licensees of frequency-adjacent and area-adjacent spectrum licences;

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

4. Where there is no written agreement for the purposes of Core Condition 3 in force, the licensee must comply with Core Conditions 5 to 11.

Unwanted emission limits

5.
 - (1) The licensee must ensure that radiocommunications transmitters operated under this licence that are not exempt from the registration requirement under Statutory Licence Condition 4 of Licence Schedule 3 do not exceed the unwanted emission limits in Core Conditions 6, 7, 9(b) and 9(c).
 - (2) The licensee must ensure that radiocommunications transmitters operating under this licence that are exempt from the registration requirement under Statutory Licence Condition 4 of Licence Schedule 3 do not exceed the unwanted emission limits described in Core Conditions 8 and 9(a).
 - (3) The licensee must ensure that radiocommunications receivers operated under this licence do not exceed the unwanted emission limits described in Core Conditions 10 and 11.

Licence Schedule 2

Core Conditions (cont)

6. The unwanted emission limits in Table 3 apply to radiocommunications transmitters with non-AAS:

- (a) at frequencies outside the upper or lower frequency limits set out in Part 2 of Licence Schedule 1; and
- (b) offset from the upper or lower frequency limits set out in Part 2 of Licence Schedule 1;

where:

f_{offset} 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 f_{offset} .

Table 3: Radiocommunications transmitter unwanted emission limits for registered devices

Frequency offset range (f_{offset})	Total radiated power (dBm)	Specified Bandwidth
$0 \text{ kHz} \leq f_{\text{offset}} < 5 \text{ MHz}$	$-7 - (7/5) f_{\text{offset}} \text{ (MHz)}$	100 kHz
$5 \text{ MHz} \leq f_{\text{offset}} < 10 \text{ MHz}$	-14	100 kHz
$f_{\text{offset}} \geq 10 \text{ MHz}$	-15	1 MHz

7. For radiocommunications transmitters with AAS the same limits as specified in Core Condition 6 apply but with an additional 9 dB added to the total radiated power limits that apply under that Core Condition.

8. The unwanted emission limits in Table 4 apply:

- (a) at frequencies outside the upper or lower frequency limits set out in Part 2 of Licence Schedule 1; and
- (b) offset from the upper or lower frequency limits set out in Part 2 of Licence Schedule 1;

where:

f_{offset} 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 f_{offset} .

Licence Schedule 2**Core Conditions (cont)****Table 4: Radiocommunications transmitter unwanted emission limits for devices exempt from registration**

Frequency offset range (f_{offset})	Total radiated power (dBm)	Specified Bandwidth
$0 \text{ kHz} \leq f_{\text{offset}} < 1 \text{ MHz}$	-15	30 kHz
$1 \text{ MHz} \leq f_{\text{offset}} < 5 \text{ MHz}$	-10	1 MHz
$5 \text{ MHz} \leq f_{\text{offset}} < 100 \text{ MHz}$	-13	1 MHz
$f_{\text{offset}} \geq 100 \text{ MHz}$	-25	1 MHz

9. For radiocommunications transmitters operated under this licence:

- (a) which are devices that are exempt from the registration requirements under Statutory Licence Condition 4 of Licence Schedule 3 - the unwanted emission limits in Table 5 apply at frequencies outside the 3295 MHz to 3805 MHz frequency range;
or
- (b) which are devices with non-AAS that are not exempt from the registration requirements under Statutory Licence Condition 4 of Licence Schedule 3 - the unwanted emission limits in Table 5 apply at frequencies outside the 3360 MHz to 3840 MHz frequency range; or
- (c) which are devices with AAS that are not exempt from the registration requirements under Statutory Licence Condition 4 of Licence Schedule 3 - the same unwanted emission limits in Core Condition 9(b) apply at frequencies outside the 3360 MHz to 3840 MHz frequency range, but with an additional 9 dB added to the total radiated power limits that apply under that Core Condition.

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

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

Frequency range (f)	Mean power (dBm) per receiver antenna port	Specified Bandwidth
$9 \text{ kHz} \leq f < 150 \text{ kHz}$	-36	1 kHz
$150 \text{ kHz} \leq f < 30 \text{ MHz}$	-36	10 kHz
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	-36	100 kHz
$1 \text{ GHz} \leq f < 19 \text{ GHz}$	-30	1 MHz

Licence Schedule 2

Core Conditions (cont)

10. For radiocommunications receivers operated under this licence:
- when a radiocommunications receiver is used in relation to a radiocommunications transmitter that is exempt from the registration requirements under Statutory Licence Condition 4 of Licence Schedule 3 - the unwanted emission limits in Table 6 apply at frequencies outside the 3295 MHz to 3805 MHz frequency range; or
 - when a radiocommunications receiver with non-AAS is used in relation to a radiocommunications transmitter that is not exempt from the registration requirements under Statutory Licence Condition 4 of Licence Schedule 3 - the unwanted emission limits in Table 6 apply at frequencies outside the 3360 MHz to 3840 MHz frequency range;

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

Note 1: Although not mandatory, the registration of radiocommunications receivers to be operated under this licence is advised because one of the matters the ACMA will take into account in settling interference disputes is the time of registration of the receiver involved in the interference.

Note 2: The unwanted emission limits in Core Condition 10 only apply during periods an associated radiocommunications transmitter in the device is not operating.

Table 6: Radiocommunications receiver unwanted emission limits

Frequency range (f)	Mean power (dBm) per receiver antenna port	Specified Bandwidth
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	-57	100 kHz
$1 \text{ GHz} \leq f < 19 \text{ GHz}$	-47	1 MHz

11. For radiocommunications receivers operated under this licence, when a radiocommunications receiver with AAS is used in relation to a radiocommunications transmitter that is not exempt from the registration requirements under Statutory Licence Condition 4 of Licence Schedule 3 - the unwanted emission limits in Table 7 apply at frequencies outside the 3360 MHz to 3840 MHz frequency range, when measured over the specified bandwidth for the relevant frequency range.

Note 1: Although not mandatory, the registration of radiocommunications receivers to be operated under this licence is advised because one of the matters the ACMA will take into account in settling interference disputes is the time of registration of the receiver involved in the interference.

Note 2: The unwanted emission limits in Core Condition 11 only apply during periods an associated radiocommunications transmitter in the device is not operating.

Licence Schedule 2

Core Conditions (cont)

Table 7: Radiocommunications receiver unwanted emission limits

Frequency range (f)	Total radiated power (dBm)	Specified Bandwidth
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	-27	100 kHz
$1 \text{ GHz} \leq f < 19 \text{ GHz}$	-21	1 MHz

Emission limits outside the geographic areas

12. Core Conditions 13 to 16 apply in relation to those areas that are outside the geographic areas set out in Part 2 of Licence Schedule 1.
13. Where a written agreement specifying the maximum permitted level of radio emission for areas described in Core Condition 12 exists between:
 - (a) the licensee; and
 - (b) 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.
14. Where there is no written agreement for the purposes of Core Condition 13 in force, the licensee must comply with Core Condition 15.
15. The licensee must ensure that the maximum permitted level of radio emission for an area outside the area described in Core Condition 14 caused by the operation of radiocommunications transmitters under this licence does not exceed a total radiated power of 48 dBm/5 MHz.
16. The licensee complies with Core Condition 15 by ensuring that the maximum permitted level of radio emissions caused by the operation of radiocommunications transmitters under this licence does not exceed a total radiated power of 48 dBm/5 MHz.

Licence Schedule 3

Statutory Conditions

Liability to pay charges

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

Third party use

2. (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:
 - (a) the registration requirements under Part 3.5 of the Act for operation of radiocommunications devices under the licence (if applicable); and
 - (b) 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 this licence must comply with rules made by the ACMA under subsection 68(3) of the Act.

Radiocommunications transmitter registration requirements

3. The licensee must not operate a radiocommunications transmitter under this licence unless:
 - (a) the transmitter has been exempted from the registration requirements under Statutory Condition 4 below; or
 - (b) both:
 - (i) the requirements under Part 3.5 of the Act relating to registration of the transmitter have been met; and
 - (ii) the transmitter complies with the details about it that have been entered in the Register.

Exemption from registration requirements

4. Radiocommunications transmitters that operate in the 3.4 GHz band with a maximum total radiated power of less than or equal to 28 dBm per occupied bandwidth are exempt from the registration requirement in Statutory Condition 3.

Residency

5. (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:
 - (a) the licensee is an Australian resident; or
 - (b) 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:
 - (a) the authorised person is an Australian resident; or
 - (b) 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 in:

- (a) 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
- (b) in any other case-the *Income Tax Assessment Act 1997*.

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, or any instrument made under section 64 of the *Australian Communications and Media Authority Act 2005* as a replacement of that determination, as in force from time to time.

managing interference includes but is not limited to the following:

- (a) investigating the possible causes of the interference;
- (b) taking all steps reasonably necessary to resolve disputes about interference;
- (c) taking steps (or requiring persons authorised to operate radiocommunications devices under this licence to take steps) reasonably likely to reduce interference to acceptable levels;
- (d) negotiating with other persons to reduce interference to acceptable levels.

relevant area has the meaning given by subsection 4(1) of the *Australian Communications and Media Authority (Radiocommunications Licence Conditions - 3.4 and 3.6 GHz Bands Interference Management) Direction 2018*.

relevant band means the part of the spectrum from 3400 to 3700 MHz.

PTS transmitter licence means a transmitter licence of the PTS type.

special subframe configuration 6 means a special subframe configuration, as referred to in clause 4.2 of 3GPP TS 36.211, that is consistent with special subframe configuration 6, as referred to in Table 4.2-1 of 3GPP TS 36.211.

uplink-downlink configuration 2 means an uplink-downlink configuration, as referred to in clause 4.2 of 3GPP TS 36.211, that is consistent with uplink-downlink configuration 2, as referred to in Table 4.2-2 of 3GPP TS 36.211.

Responsibility to manage interference

2. The licensee must manage interference between:
 - (a) radiocommunications devices operated under this licence; and
 - (b) radiocommunications devices operated under this licence and under each other spectrum licence held by the licensee.

Co-sited devices

3. If:
- (a) interference occurs between a radiocommunications device:
 - (i) operated under this spectrum licence; and
 - (ii) 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
 - (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.

Information for register

4. 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

5. 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

6. 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, or any instrument made under section 110A of the Act as a replacement of that determination, 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*, or the definition of licence in that other instrument, is to be read as if it referred to a spectrum licence.

Record Keeping - transmitters located at communal sites

7. (1) If the licensee operates a radiocommunications transmitter under the licence, and the transmitter:
- (a) is located at a communal site; and
 - (b) is not exempt under Statutory Condition 4 of Licence Schedule 3,
- the licensee must comply with sub-conditions 7 (2) and 7 (3).
- (2) In relation to each radiocommunications transmitter, the licensee must keep a record which includes the following information:
- (a) the transmitter's device registration number as specified in the Register;
 - (b) the licence number of the licence;
 - (c) the transmitter's geographic location;
 - (d) if the licensee owns the transmitter, the licensee's name and address;
 - (e) if the licensee does not own the transmitter, the owner's name and address;
 - (f) the transmitter's centre frequency;
 - (g) the transmitter's emission designator;
 - (h) details of the transmitter's antenna including the manufacturer, model, type, gain, polarisation, azimuth and average ground height;
 - (i) the transmitter's maximum true mean power;
 - (j) 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)

8. 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), or any instrument made under section 32 of the Act as a replacement of that Plan (as in force from time to time), the licensee must follow the procedures set out in 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 Australian Radio Quiet Zone Western Australia* is available on the ACMA website at www.acma.gov.au.

Harmful Interference

9. 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 under a different spectrum or apparatus licence.

Coordination with earth station protection zones

10. Before seeking to register or operate a radiocommunications transmitter, the licensee must follow the procedures set out in RALI MS 44 for coordination with, and protection of, any earth stations operating in the 3.4 GHz band in earth station protection zones.

Synchronisation Requirement

11. If:

- (a) interference occurs between:
 - (i) a radiocommunications device (the *first device*) operated under this licence; and
 - (ii) a radiocommunications device (the *other device*) operated under another spectrum licence or a PTS transmitter licence in the relevant band and within the relevant area (the *other licence*); and
- (b) the level of interference to the first device or to any other devices exceeds the compatibility requirement set out in the *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers - 3.4 GHz Band) 2015*, as in force from time to time, or any instrument made under section 262 of the Act as a replacement of those guidelines, as in force from time to time; and
- (c) either the licensee or the holder (or authorised third party) of the other licence wishes to resolve the interference; and
- (d) no agreement between the licensee and each person operating one or more other devices can be reached on how to manage the interference;

then the licensee is required to manage interference by:

- (e) either:
 - (i) operating the first device with a frame structure that uses both uplink-downlink configuration 2 and special subframe configuration 6; or
 - (ii) operating the first device using a sequence and duration of radio emissions that is consistent with those configurations (disregarding any time at which the device is not making a radio emission); and
- (f) synchronising the timing of the frame structure or other sequence of radio emissions of the first device with the timing of the frame structure or other sequence of radio emissions of each of the other devices (disregarding any device at a time at which the device is not making a radio emission).

Note 1: A licensee may act in accordance with sub-paragraph 11(e)(ii) by operating a radiocommunications transmitter in a manner that complies with the specification made by 3rd Generation Partnership Project numbered 3GPP TS 38.211, published on its website at www.3gpp.org.

Note 2: The synchronisation requirement only applies when an interference issue occurs and where there is no other measure agreed to between the licensees to resolve the interference. This means synchronisation can be done on a site/cell specific basis. During any period in which the licensee and other licensee are taking steps to resolve the interference issue or synchronise, the ACMA will generally give priority to the device registered first in time in any interference dispute, meaning that a device or devices registered later-in-time will generally be required to accept any interference or cease causing interference during this time.

Managing interference caused by unwanted emissions

12. 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 unwanted emissions at frequencies below 3360 MHz and above 3840 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.

Managing interference to incumbent apparatus licences

13. The licensee must provide protection to any radiocommunications devices operating in a re-allocation zone in the 3575 MHz to 3700 MHz frequency range in accordance with an apparatus licence in the manner set out in Part 3, Part 4 and Part 5 of the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters - 3.4 GHz Band) 2015*, as in force from time to time, or any instrument made under section 262 of the Act as a replacement of those guidelines, as in force from time to time, until the end of the re-allocation period for the relevant re-allocation zone.

WARNING: The licensee should consider the changes made to the Act and other legislation by the *Radiocommunications Legislation Amendment (Reform and Modernisation) Act 2020*. That Act can be obtained from the Federal Register of Legislation at www.legislation.gov.au.

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

3. The ACMA has made the *Radiocommunications (Unacceptable Levels of Interference - 3.4 GHz Band) Determination 2015*, as in force from time to time, 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 1: Although not mandatory, the registration of radiocommunications receivers to be operated under the licence is advised because one of the matters the ACMA will take into account in settling interference disputes is the time of registration of the receiver involved in the interference.

Note 2: The *Radiocommunications (Unacceptable Levels of Interference - 3.4 GHz Band) Determination 2015* may be replaced as a result of the sunset provisions in the *Legislation Act 2003* or for other reasons.

Guidelines

4. The ACMA has issued written Radiocommunications Advisory Guidelines (the *guidelines*) under section 262 of the Act about:
- (a) 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*, as in force from time to time; and
 - (b) co-ordinating the operation of radiocommunications receivers operated under this licence with radiocommunications transmitters operated under other radiocommunications licences:
 - *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers - 3.4 GHz Band) 2015*, as in force from time to time.
5. The guidelines should be read in conjunction with the *Radiocommunications (Unacceptable Levels of Interference - 3.4 GHz Band) Determination 2015*, as in force from time to time (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 and the ACMA.

Note: Those guidelines may be replaced, as a result of the sunset provisions in the *Legislation Act 2003* or for other reasons.

Suspension and cancellation of spectrum licences

6. 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

7. Item 44 of Schedule 3 to the *Radiocommunications Legislation Amendment (Reform and Modernisation) Act 2020* inserts a new Division 3A of Part 3.2 into the Act, which provides that:
- (a) a spectrum licensee may apply for renewal of a spectrum licence (new section 77A); and

Licence Schedule 5

Licence Notes (cont)

- (b) the ACMA may request further information in relation to such an application and refuse to consider the application, or take any action in relation to the application, if the information is not provided (new section 77B); and
- (c) the ACMA may renew the spectrum licence, by issuing a new licence to the applicant or refuse to renew the licence (new section 77C).

Note: Because of the new subsection 65A(21) of the Act, inserted by item 40 of Schedule 3 to the *Radiocommunications Legislation Amendment (Reform and Modernisation) Act 2020*, this licence does not include a renewal statement.

Trading

- 8. (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

- 9. 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

- 10. 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'".