

COMMONWEALTH OF AUSTRALIA
AUSTRALIAN COMMUNICATIONS AND MEDIA AUTHORITY



Radiocommunications Act 1992

SPECTRUM LICENCE FOR THE 1800 MHz 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 the following:
 - (a) the Act;
 - (b) the core conditions set out in Licence Schedule 2;
 - (c) the statutory conditions set out in Licence Schedule 3;
 - (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:

1800 MHz band means the following frequency bands:

- (a) 1710 MHz - 1785 MHz (**1800 MHz lower band**);
- (b) 1805 MHz - 1880 MHz (**1800 MHz upper band**).

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 Part 2 of Licence Schedule 1 of this licence.

cab-radio transmitter means a radiocommunications transmitter on board a train for the purposes of either or both voice and data communications necessary to perform, support or facilitate rail safety and control communications.

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 Part 2 of Licence Schedule 1 of this licence.

GSM-R or **Global System for Mobile Communications - Railway** means the system set out in the *European Integrated Railway Radio Enhanced Network Functional Requirements Specification Version 7.0.0* and the *European Integrated Railway Radio Enhanced Network System Requirements Specifications Version 150.0* published by the International Union of Railways, as existing from time to time.

Note: The European Integrated Railway Radio Enhanced Network (EIRENE) specifications are available on the International Union of Railways website at: www.uic.org.

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 or **HCIS** means the cell grouping hierarchy scheme used to describe geographic 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.

Definitions (cont)

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

Note: Copies of the Radio Regulations can be obtained from the International Telecommunications Union website at: www.itu.int

Licence Schedule means a Schedule to this licence.

metropolitan areas means the Adelaide, Brisbane, Melbourne, Perth and Sydney areas of high mobile use as defined in Schedule 4 of the *Radiocommunications (Unacceptable Levels of Interference - 1800 MHz Band) Determination 2023* (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).

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

non-metropolitan areas means any areas that are not metropolitan areas.

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 radio emission at any time.

peak power means the average power measured within a specified bandwidth during one radio frequency cycle at the crest of the signal envelope.

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.

unwanted emission, in relation to the operation of a radiocommunications transmitter authorised by this licence, means a radio 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.

Definitions (cont)

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 - 1800 MHz Band) Determination 2023* (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>Licensee Details</i>	
1	<i>Name of licensee</i>	Vodafone Hutchison Australia Pty Limited
2	<i>Address of licensee</i>	Attn Paul Kinnane PO Box 1113 NORTH SYDNEY NSW 2060
3	<i>Client number</i>	1136980
	<i>Licence Details</i>	
4	<i>Band release</i>	1800 MHz Band
5	<i>Date of licence effect</i>	30/05/2017
6	<i>Date of licence expiry</i>	17/06/2028
7	<i>Licence number</i>	10235466
8	<i>Date of licence issue</i>	5/05/2023

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 of Table 1 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	1775	1785	1870	1880
B	2	1770	1775	1865	1870
C	3	1735	1750	1830	1845
D		1780	1785	1875	1880
E	4	1775	1785	1870	1880
F	4	1775	1785	1870	1880
G	5	1770	1780	1865	1875

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	LQ1, LQ2, LQ4, LQ5, LQ7, LQ8, LR2, LR3, LR5, LR6
2	MS8, MS9, MT3, MT6, MT9, MU3, MU5, MU6, MU8, MU9, NS7, NS8, NS9, NT1, NT2, NT3, NT4, NT7, NU1, MV2A, MV2B, MV2C, MV2D, MV2H, MV3A, MV3B, MV3C, MV3D, MV3E, MV3F, MV3G, MV3H, MV3J, MV3K, NT5A, NT5B, NT5C, NT5D, NT5E, NT5F, NT5G, NT5H, NT5I, NT5J, NT5K, NT5L, NT5M, NT5N, NT6A, NT6B, NT6C, NT6D, NT6E, NT6F, NT6G, NT6H, NT6I, NT6J, NT6K, NT6L, NT8A, NT8B, NT8E, NT8F, NT8I, NT8J, NT8M, NT8N, NU2A, NU2B, NU4A, NU4B, NU4C, NU4D, NU4E, NU4F, NU4G, NU4H, NU4I, NU4J, NU4K, NU4M, NU4N, NU4O, NU7A, NU7B, NU7C, NU7E, NU7F, NU7G, NU7I, NU7J, NU7M, NU7N, NV1A, NV1B, NV1E, NV1F, MV2E1, MV2E2, MV2E3, MV2F1, MV2F2, MV2F3, MV2G1, MV2G2, MV2G3, MV2G6, MV2L2, MV2L3, MV2L6, MV3I1, MV3I2, MV3I3, MV3I4, MV3I5, MV3I6, MV3I8, MV3I9, MV3L1, MV3L2, MV3L3, MV3L4, MV3L5, MV3L6, MV3L7, MV3N1, MV3N2, MV3N3, MV3O1, MV3O2, NT5O1, NT5O2, NT5O3, NT5P1, NT5P2, NT5P3, NT6M1, NT6M2, NT6M3, NT6N1, NT6N2, NT6N3, NT6O1, NT6O2, NT6O3, NT6P1, NT6P2, NT6P3, NU2C4, NU2C5, NU2C6, NU2C7, NU2C8, NU2C9, NU2D4, NU2D7, NU2E1, NU2E2, NU2E3, NU2E4, NU2E5, NU2E7, NU2F1, NU2F2, NU2F3, NU2G1, NU2G2, NU2G3, NU2H1, NU2I1, NU2I4, NU2I7, NU2M1, NU2M4, NU2M7, NU4L1, NU4L2, NU4L3, NU4L4, NU4L5, NU4L6, NU4L7, NU4L8, NU4P1, NU4P2, NU4P4, NU4P7, NU5A1, NU5A4, NU5A7, NU5E1, NU5E4, NU7D1, NU7D4, NU7D7, NU7K1, NU7K2, NU7K3, NU7K4, NU7K5, NU7K6, NU7K7, NU7O1, NU7O4, NU7O7, NV1C1, NV1I1
3	MW5, MW6, MW8, MW9, MX3, MW1O, MW1P, MW2H, MW2L, MW2M, MW2N, MW2O, MW2P, MW3A, MW3E, MW3I, MW3M, MW3N, MW4C, MW4D, MW4G, MW4H, MW4K, MW4L, MW4O, MW4P, MW7C, MW7D, MW7G, MW7H, MW7J, MW7K, MW7L, MW7P, MX2C, MX2D, MW1K7, MW1K8, MW1K9, MW1L7, MW1L8, MW1L9, MW2G8, MW2G9, MW2I7, MW2I8, MW2I9, MW2J7, MW2J8, MW2J9, MW2K2, MW2K3, MW2K5, MW2K6, MW2K7, MW2K8, MW2K9, MW3B1, MW3B4, MW3B7, MW3F1, MW3F4, MW3F7, MW3J1, MW3J4, MW3J5, MW3J6, MW3J7, MW3J8, MW3J9, MW3O4, MW3O5, MW3O6, MW3O7, MW3O8, MW3O9, MW3P4, MW3P5, MW3P6, MW3P7, MW3P8, MW3P9, MW7F3, MW7F6, MW7F9, MW7N1, MW7N2, MW7N3, MW7N6, MW7O1, MW7O2, MW7O3, MW7O4, MW7O5, MW7O6, MW7O9, MX1D1, MX1D2, MX1D3, MX1D6, MX2A1, MX2A2, MX2A3, MX2A4, MX2A5, MX2A6, MX2B1, MX2B2, MX2B3, MX2B4, MX2B5, MX2B6, MX2B8, MX2B9, MX2G1, MX2G2, MX2G3, MX2H1, MX2H2, MX2H3, MX2H4, MX2H5, MX2H6, NW1M4, NW1M5, NW1M7, NW1M8

Licence Schedule 1

Licence details, bands and areas (cnt)

Geographic areas (column 1)	HCIS identifiers (column 2)
4	JW6, JW9, JX3, JX6, KW4, KW7, KX1, KX2, KX4, KX5, KX8, KX9, LX3, LX5, LX6, LX7, LX8, LX9, MX4, MX7, KW5I, KW5M, KW5N, KW8A, KW8B, KW8C, KW8E, KW8F, KW8G, KW8H, KW8I, KW8J, KW8K, KW8L, KW8M, KW8N, KW8O, KW8P, KW9E, KW9I, KW9J, KW9K, KW9M, KW9N, KW9O, KW9P, KX3A, KX3B, KX3C, KX3D, KX3E, KX3I, KX6M, KX6N, KX6O, KX6P, LW7M, LW7N, LW9P, LX1A, LX1B, LX1C, LX1D, LX1F, LX1G, LX1H, LX1L, LX1P, LX2D, LX2E, LX2F, LX2G, LX2H, LX2I, LX2J, LX2K, LX2L, LX2M, LX2N, LX2O, LX2P, LX4D, LX4G, LX4H, LX4K, LX4L, LX4M, LX4N, LX4O, LX4P, MW7M, MX1A, MX1B, MX1C, MX1E, MX1F, MX1G, MX1H, MX1I, MX1J, MX1K, MX1L, MX1M, MX1N, MX1O, MX1P, MX2E, MX2F, MX2I, MX2J, MX2K, MX2L, MX2M, MX2N, MX2O, MX2P, KW5E7, KW5E8, KW5E9, KW5F7, KW5J1, KW5J4, KW5J7, KW5O1, KW5O4, KW5O7, KW8D1, KW8D4, KW8D7, KW9F1, KW9F4, KW9F7, KW9L7, KW9L8, KW9L9, KX3F1, KX3F2, KX3F3, KX3F4, KX3F5, KX3F6, KX3G1, KX3G2, KX3G3, KX3G4, KX3G5, KX3G6, KX3H1, KX3H2, KX3H3, KX3M1, KX3M2, KX3M3, KX3M4, KX3M5, KX3M7, KX6A1, KX6A4, KX6A7, KX6E1, KX6E4, KX6E7, KX6I1, KX6I4, KX6I7, LW7I7, LW7I8, LW7I9, LW7J7, LW7J8, LW7J9, LW7K7, LW7K8, LW7O1, LW7O2, LW7O4, LW7O5, LW7O7, LW7O8, LW7O9, LW7P7, LW7P8, LW7P9, LW8M7, LW8M8, LW9N4, LW9N5, LW9N6, LW9N7, LW9N8, LW9N9, LW9O4, LW9O5, LW9O6, LW9O7, LW9O8, LW9O9, LX1E1, LX1E2, LX1E3, LX1E5, LX1E6, LX1J2, LX1J3, LX1K1, LX1K2, LX1K3, LX1K5, LX1K6, LX1K8, LX1K9, LX2A1, LX2A2, LX2A4, LX2A5, LX2A6, LX2A7, LX2A8, LX2A9, LX2B4, LX2B5, LX2B6, LX2B7, LX2B8, LX2B9, LX2C4, LX2C5, LX2C6, LX2C7, LX2C8, LX2C9, LX4F3, LX4F6, LX4F9, LX4J3, LX4J6, LX4J9, MW7N4, MW7N5, MW7N7, MW7N8, MW7N9, MW7O7, MW7O8, MX1D4, MX1D5, MX1D7, MX1D8, MX1D9, MX2A7, MX2A8, MX2A9, MX2B7, MX2G4, MX2G5, MX2G6, MX2G7, MX2G8, MX2G9, MX2H7, MX2H8, MX2H9
5	AU9, AV9, AW3, BU7, BU8, BU9, BV3, BV6, BV7, BV8, BV9, BW1, BW2, BW3, BW5, BW6, CV4, CV7, CW1, CW4, BV1A, BV1B, BV1C, BV1D, BV2A, BV2B, BV2C, BV2D, BV2G, BV2H, BV2K, BV2L, BV2O, BV2P, BV5C, BV5D, BV5G, BV5H, BV5K, BV5L, BV5O, BV5P, BV1E1, BV1E2, BV1E3, BV1E4, BV1E5, BV1E6, BV1F1, BV1F2, BV1F3, BV1F4, BV1F5, BV1F6, BV1G1, BV1G2, BV1G3, BV1G4, BV1G5, BV1G6, BV1H1, BV1H2, BV1H3, BV1H4, BV1H5, BV1H6, BV2E1, BV2E2, BV2E3, BV2E4, BV2E5, BV2E6, BV2F1, BV2F2, BV2F3, BV2F4, BV2F5, BV2F6, BV4M4, BV4M5, BV4M6, BV4M7, BV4M8, BV4M9, BV4N4, BV4N5, BV4N6, BV4N7, BV4N8, BV4N9, BV4O4, BV4O5, BV4O6, BV4O7, BV4O8, BV4O9, BV4P4, BV4P5, BV4P6, BV4P7, BV4P8, BV4P9, BV5M4, BV5M5, BV5M6, BV5M7, BV5M8, BV5M9, BV5N4, BV5N5, BV5N6, BV5N7, BV5N8, BV5N9

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 the ACMA.

Frequency bands 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 bands

2. Core Conditions 3 to 16 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 spectrum licences 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 16.

Unwanted emission limits outside the frequency bands

5. (1) The licensee must ensure that radiocommunications transmitters operated under this licence in the 1800 MHz upper band do not exceed the unwanted emission limits in Core Conditions 6 and 10 for non-AAS devices and Core Conditions 7 and 11 for AAS devices.
 - (2) Subject to sub-condition 5(3), the licensee must ensure that radiocommunications transmitters operated under this licence in the 1800 MHz lower band do not exceed the unwanted emission limits in Core Conditions 8 and 12.
 - (3) For any frequency where an emission limit described in Core Condition 9 is less than the emission limit described in Core Condition 8, the emission limits in Core Condition 9 applies.
 - (4) The licensee must ensure that radiocommunications receivers operated under this licence do not exceed the unwanted emission limits described in Core Conditions 13 to 16.

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

- (a) operating inside the 1805-1880 MHz frequency band; and
- (b) within the 1795-1890 MHz frequency band; and
- (c) at frequencies outside the upper or lower frequency limits set out in Part 2 of Licence Schedule 1; and
- (d) 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: Unwanted emission limits for transmitters operating in the 1800 MHz upper band at frequencies inside the 1795-1890 MHz band - non-AAS devices

Frequency offset (f_{offset})	Radiated Maximum True Mean Power (dBm EIRP)	Measurement Bandwidth
$0 \text{ kHz} \leq f_{\text{offset}} < 200 \text{ kHz}$	21.5	30 kHz
$200 \text{ kHz} \leq f_{\text{offset}} < 1 \text{ MHz}$	$2 - 13.125 \times (f_{\text{offset}} - 0.2)$	30 kHz
$1 \text{ MHz} \leq f_{\text{offset}} < 5.8 \text{ MHz}$	-8.5	30 kHz
$5.8 \text{ MHz} \leq f_{\text{offset}}$	-13	30 kHz

7. The unwanted emission limits in Table 4 apply to all radiocommunications transmitters with AAS:

- (a) operating inside the 1805-1880 MHz frequency band; and
- (b) within the 1795-1890 MHz frequency band; and
- (c) at frequencies outside the upper or lower frequency limits set out in Part 2 of Licence Schedule 1; and
- (d) 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 4: Unwanted emission limits for transmitters operating in the 1800 MHz upper band at frequencies inside the 1795-1890 MHz band - AAS devices.

Frequency offset (f_{offset})	Total Radiated Power (dBm) per cell/sector	Measurement Bandwidth
$0 \text{ kHz} \leq f_{\text{offset}} < 200 \text{ kHz}$	15.5	30 kHz
$200 \text{ kHz} \leq f_{\text{offset}} < 1 \text{ MHz}$	$-4 - 13.125 \times (f_{\text{offset}} - 0.2)$	30 kHz
$1 \text{ MHz} \leq f_{\text{offset}} < 5.8 \text{ MHz}$	0.7	1 MHz
$5.8 \text{ MHz} \leq f_{\text{offset}}$	-3.7	1 MHz

8. The unwanted emission limits in Table 5 apply to all radiocommunications transmitters:

- (a) operating inside the 1710-1785 MHz frequency band; and
- (b) at $f_{\text{offset}} \leq \text{occupied bandwidth (measured in MHz)} + 5 \text{ MHz}$; and
- (c) at frequencies outside the upper or lower frequency limits as set out in Part 2 of Licence Schedule 1; and
- (d) 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 5: Unwanted emission limits for transmitters operating in the 1800 MHz lower band for $f_{\text{offset}} \leq \text{occupied bandwidth} + 5 \text{ MHz}$ - all transmitters.

Frequency offset (f_{offset})	Radiated Maximum True Mean Power (dBm EIRP)	Measurement Bandwidth
$0 \text{ kHz} \leq f_{\text{offset}} < 200 \text{ kHz}$	21.5	30 kHz
$200 \text{ kHz} \leq f_{\text{offset}} < 1 \text{ MHz}$	$2 - 13.125 \times (f_{\text{offset}} - 0.2)$	30 kHz
$1 \text{ MHz} \leq f_{\text{offset}} < 5.8 \text{ MHz}$	-8.5	30 kHz
$5.8 \text{ MHz} \leq f_{\text{offset}}$	-13	30 kHz

9. The unwanted emission limits in Tables 6a and 6b apply to all radiocommunications transmitters:

- (a) operating inside the 1710-1785 MHz frequency band; and
- (b) at frequencies below 1710 MHz; and
- (c) at $f_{\text{offset}} \leq \text{occupied bandwidth (measured in MHz)} + 5 \text{ MHz}$; and

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 lower frequency limits of the licence is placed at f_{offset} .

Table 6a: Unwanted emission limits for transmitters operating in the 1800 MHz lower band at frequencies below 1710 MHz and for $f_{\text{offset}} \leq \text{occupied bandwidth} + 5 \text{ MHz}$ - all transmitters.

Frequency Range	Radiated Maximum True Mean Power (dBm EIRP)	Measurement Bandwidth
$1709.5 \text{ MHz} \leq f < 1710 \text{ MHz}$	-8.5	30 kHz
$f < 1709.5 \text{ MHz}$	-33.5	30 kHz

Table 6b: Unwanted emission limits for transmitters operating in the 1800 MHz lower band at frequencies between 1709.7 MHz and 1710 MHz and for $f_{\text{offset}} \leq \text{occupied bandwidth} + 5 \text{ MHz}$ - all transmitters.

Frequency Range	Radiated Peak Power (dBm EIRP)	Measurement Bandwidth
$1709.7 \text{ MHz} \leq f < 1710 \text{ MHz}$	-10	300 kHz

10. The unwanted emission limits in Table 7 apply to all radiocommunications transmitters with non-AAS:

- (a) operating inside the 1805-1880 MHz frequency band; and
- (b) at frequencies outside the 1795-1890 frequency band.

Table 7: Unwanted emission limits for transmitters operating in the 1800 MHz upper band at frequencies outside the 1795-1890 MHz band - non-AAS devices.

Frequency range (f)	Mean power (dBm) per transmitter port	Measurement Bandwidth
9 kHz \leq f < 150 kHz	-36	1 kHz
150 kHz \leq f < 30 MHz	-36	10 kHz
30 MHz \leq f < 1 GHz	-36	100 kHz
1 GHz \leq f < 12.75 GHz	-30	1 MHz

11. The unwanted emission limits in Table 8 apply to all radiocommunications transmitters with AAS:

- (a) operating inside the 1805-1880 MHz frequency band; and
- (b) at frequencies outside the 1795-1890 frequency band.

Table 8: Unwanted emission limits for transmitters operating in the 1800 MHz upper band at frequencies outside the 1795-1890 MHz band - AAS devices.

Frequency range (f)	Total Radiated Power (dBm) per cell/sector	Measurement Bandwidth
9 kHz \leq f < 150 kHz	-27	1 kHz
150 kHz \leq f < 30 MHz	-27	10 kHz
30 MHz \leq f < 1 GHz	-27	100 kHz
1 GHz \leq f < 12.75 GHz	-21	1 MHz

12. The unwanted emission limits in Table 9 apply to all radiocommunications transmitters:

- (a) operating inside the 1710-1785 MHz frequency band; and
- (b) at $f_{\text{offset}} > \text{occupied bandwidth (measured in MHz)} + 5 \text{ MHz}$;

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 9: Unwanted emission limits for transmitters operating in the 1800 MHz lower band for $f_{\text{offset}} > \text{occupied bandwidth} + 5 \text{ MHz}$ - all transmitters.

Frequency range (f)	Total Radiated Power (dBm)	Measurement 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
$1 \text{ GHz} \leq f < 12.75 \text{ GHz}$	-30	1 MHz

13. The unwanted emission limits in Table 10 apply to all radiocommunications receivers with non-AAS:

- (a) operating inside the 1710-1785 MHz frequency band; and
- (b) at frequencies outside the 1795-1890 MHz frequency band.

Table 10: Unwanted emission limits for receivers operating in the 1800 MHz lower band at frequencies outside the 1795-1890 MHz band - non-AAS devices.

Frequency range (f)	Mean power (dBm) per receiver port	Measurement Bandwidth
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	-57	100 kHz
$1 \text{ GHz} \leq f < 12.75 \text{ GHz}$	-47	1 MHz

14. For a radiocommunications receiver mentioned in Core Condition 13, where the antenna or transceiver array boundary connectors support both a radiocommunications receiver and a radiocommunications transmitter:

- (a) the unwanted emission limits in Table 10 do not apply; and
- (b) the unwanted emission limits in Table 7 apply, measured over the measurement bandwidth, for the relevant frequency range.

15. The unwanted emission limits in Table 8, measured over the measurement bandwidth for the relevant frequency range, apply to radiocommunications receivers with AAS:

- (a) for receivers operating inside the 1710-1785 MHz frequency band; and
- (b) at frequencies outside the 1795-1890 MHz frequency band.

16. The unwanted emission limits in Table 11 apply to all radiocommunications receivers operating inside the 1805-1880 MHz frequency band.

Table 11: Unwanted emission limits for receivers operating in the 1800 MHz upper band - all receivers

Frequency range (f)	Total Radiated Power (dBm)	Measurement Bandwidth
$30 \text{ MHz} \leq f < 1 \text{ GHz}$	-57	100 kHz
$1 \text{ GHz} \leq f < 12.75 \text{ GHz}$	-47	1 MHz

Emission limits outside the geographic area

17. Core Conditions 18 to 21 apply in relation to those areas that are outside the geographic areas set out in Part 2 of Licence Schedule 1.
18. Where a written agreement specifying the maximum permitted level of radio emission for areas described in Core Condition 17 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.
19. Where there is no written agreement for the purposes of Core Condition 18 in force, the licensee must comply with Core Condition 20.
20. The licensee must ensure that the maximum permitted level of radio emission for an area that is outside the geographic areas set out in Part 2 of Licence Schedule 1 caused by the operation of radiocommunications transmitters under this licence does not exceed either:
- (a) an EIRP of 54.5 dBm/30 kHz for GSM-R transmitters; or
 - (b) a total radiated power of 50 dBm/5 MHz for all other transmitters located in metropolitan areas; or
 - (c) a total radiated power of 53 dBm/5 MHz for all other transmitters located in non-metropolitan areas.

21. The licensee complies with Core Condition 20 by ensuring that the maximum permitted level of radio emissions caused by the operation of radiocommunications transmitters under this licence does not exceed either:
- (a) an EIRP of 54.5 dBm/30 kHz for GSM-R transmitters; or
 - (b) a total radiated power of 50 dBm/5 MHz for all other transmitters located in metropolitan areas; or
 - (c) a total radiated power of 53 dBm/5 MHz for all other transmitters located in non-metropolitan areas.

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) 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.

Transmitter registration requirements

3. The licensee must not operate a radiocommunications transmitter under this licence unless:
 - (a) the transmitter is exempt from registration 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. The following kinds of radiocommunications transmitters are exempt from the registration requirement in Statutory Condition 3:
- (a) a transmitter that operates in the 1800 MHz band with a total radiated power of less than or equal to 28 dBm per occupied bandwidth; or
 - (b) a GSM-R mobile transmitter that operates in the 1800 MHz band with an EIRP of less than or equal to 39 dBm per occupied bandwidth; or
 - (c) a cab-radio transmitter that operates in the 1800 MHz band with a total radiated power of less than or equal to 31 dBm per occupied bandwidth.

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 any income, profits or gains from operating 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.

managing interference includes but is not limited to:

- (a) investigating the possible causes of the interference; and
- (b) taking all steps reasonably necessary to resolve disputes about interference; and
- (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; and
- (d) negotiating with other persons to reduce interference to acceptable levels.

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 200 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 the 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 radiocommunications device registration details as soon as possible.

International coordination

5. A 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 this 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).

7. (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 this 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; and
 - (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.

Harmful interference

8. 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 operating under a different spectrum or apparatus licence.

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 this 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 by 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 - 1800 MHz Band) Determination 2023*, 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 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 *Radiocommunications (Unacceptable Levels of Interference - 1800 MHz Band) Determination 2023* 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 the following:
 - (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 - 1800 MHz Band) 2023*;
 - (b) co-ordinating the operation of radiocommunications receivers operated under this licence with radiocommunications transmitters operated under other licences:
 - *Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers - 1800 MHz Band) 2023*.

5. The guidelines should be read in conjunction with the *Radiocommunications (Unacceptable Levels of Interference - 1800 MHz Band) Determination 2023* (see Licence Note 3). The determination sets out the unacceptable levels of interference for the purpose of registration of radiocommunications 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: The 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. The ACMA may renew spectrum licences in accordance with Division 3A of Part 3.2 of the Act.
8. A person may apply for renewal in accordance with section 77A of the Act. The application must be made within the 2-year period ending when the licence is due to expire.
9. The ACMA may request further information in connection with an application for renewal, in accordance with section 77B of the Act.
10. The ACMA must not renew a spectrum licence for a period of 10 years or longer unless satisfied that it is in the public interest to do so.
11. If the ACMA renews a spectrum licence, the conditions of the new spectrum licence need not be the same as those of the licence it replaces.
12. If the ACMA has the discretion to renew the licence, it also has the discretion to refuse to renew the licence. The ACMA must make its decision within 6 months after receiving the application for renewal.

Trading

13. (1) A licensee may assign or otherwise deal with the whole or any part of a spectrum licence provided that 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 in respect of spectrum licences has been amended under Part 3.5 of the Act, to take it into account.

Appeals

14. An application may be made to the ACMA for re-consideration 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

15. 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’”.