

Australian Amateur Radio Foundation Licence Theory



Chapter 10

REGULATIONS

ACMA Foundation Syllabus 2

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Australian Amateur Radio Foundation Licence Theory

Regulations

An Amateur Radio Licence, issued by the Australian Communications and Media Authority (ACMA), authorises the operation of an Amateur station for self-training in radio communications, between Radio Amateurs and technical investigations into radio communications.

Unlicensed radiocommunications or transmissions outside the Amateur Radio bands is prohibited except in an emergency.

Amateur radio is authorised to operate on several frequencies within bands; however, some bands are 'shared' with other radio services.

Amateur stations are used for:

- self-training in and technical investigations of radiocommunications
- communicating with other amateurs
- transmitting news and information about the operation of amateur radio stations.

A radio amateur is not allowed to use an amateur radio transmission for the following purposes.

- Commercial purposes or financial gain
- Transmit any kind of entertainment or advertising.
- Transmit secret or encoded messages for the purpose of obscuring the meaning of the message. (Encoded messages are permitted if their intention is to control equipment such as satellite or repeater station.)
- Transmission on behalf of a third party for financial gain.
- Not permit another person to operate the licensee's station unsupervised unless the person is suitably qualified.

The Foundation Licence

The Foundation Licence is an entry level licence and offers many opportunities to experience amateur radio, although the licence is limited in frequencies and power output.

A Foundation Amateur Licence is subject to conditions in the following regulations.

Hint: Ensure you are reading the latest version of these documents.

1. [The Radiocommunications Act 1992.](#)
2. [Radiocommunications \(Amateur Stations\) Class Licence 2023](#)
3. [ACMA Amateur Operating Procedures](#) (ACMA SITE)

The conditions of the Foundation Licence, such as frequencies, power and types of transmission modes are to be found in document 2 Schedule 3A listed above.

Transmitter Output Power

The licensee must not operate an amateur foundation station using a transmitter output power of more than 10 watts peak power (P_x).

Permitted Frequencies and Modes

Frequencies

The radio spectrum is divided between primary and secondary users. Primary users are the principal users of that segment of the radio spectrum. Secondary users share the spectrum segment with primary users, but they must not cause harmful interference to primary users and cannot claim protection from harmful interference caused by primary users.

Harmful interference is defined in the International Telecommunications Union (ITU) Radio Regulations as interference that:

- endangers the functioning of a radionavigation service or other safety services that are operating in accordance with the Radio Regulations; or
- obstructs, repeatedly interrupts or seriously degrades a communications service operating in accordance with the Radio Regulations.

Amateurs have primary use status in most HF bands, the 52–54 and 144–148 MHz bands and some SHF and EHF bands.

Foundation (6 bands)

Foundation amateur radio bands are stipulated in the Radiocommunications (Amateur Stations) Class Licence 2023 Schedule 2 Table A. A copy is shown below.

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Schedule 2—Permitted frequencies, and limits on operation

(subsections 17(1), (2) and (3))

Table A – ACMA Recognition Certificate (Foundation) and Recognised Qualification (Foundation Type)

Item	Column 1	Column 2	Column 3
	Frequency bands	Power limits	Limitations
1	(a) 3.500 MHz to 3.700 MHz (b) 7.000 MHz to 7.100 MHz (c) 21.000 MHz to 21.450 MHz	10 watts pX	A If a person operates an amateur station with an emission mode that has a necessary bandwidth exceeding 8 kHz, the maximum power spectral density from the station must not be greater than 1 watt per 100 kHz
2	7.100 MHz to 7.300 MHz	10 watts pX	A person must not operate an amateur station with an emission mode that has a necessary bandwidth exceeding 8 kHz
3	28.000 MHz to 29.700 MHz	10 watts pX	If a person operates an amateur station with an emission mode that has a necessary bandwidth exceeding 16 kHz, the maximum power spectral density from the station must not be greater than 1 watt per 100 kHz
4	(a) 144.000 MHz to 148.000 MHz (b) 430.000 MHz to 450.000 MHz	10 watts pX	No limitation

Hint: Know your frequencies.

A

Power Spectral Density (PSD) measures how power is distributed across different frequencies. If you take any 100 kHz "slice" of your signal's bandwidth, the total power contained in that specific slice must not exceed 1 watt. This rule specifically affects wideband signals. If you have a very wide signal (e.g., 1 MHz wide), you cannot simply put all 10 watts of your power into one tiny 10 kHz spot; you must spread it out, so no single 100 kHz section is "louder" than 1 watt.

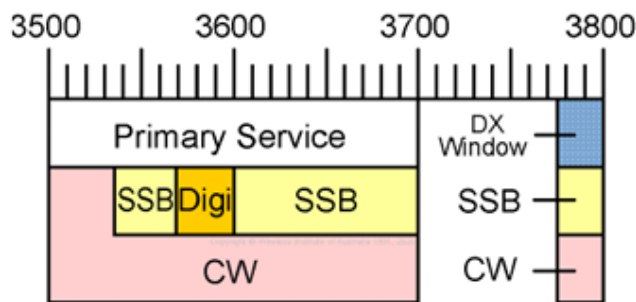
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Amateur Band Plan

The amateur band plan is a voluntary agreement between amateur radio operators and is followed by convention within Australia. The band plan divides the amateur radio bands into segments for different uses. By following the band plan, you assist in managing interference between amateur stations.

Amateurs should check the [Australian Radiofrequency Spectrum Plan](#) for full details.

80 metre band – 3500 -3700 kHz All licence classes 3776 - 3800 kHz Advanced licensees only

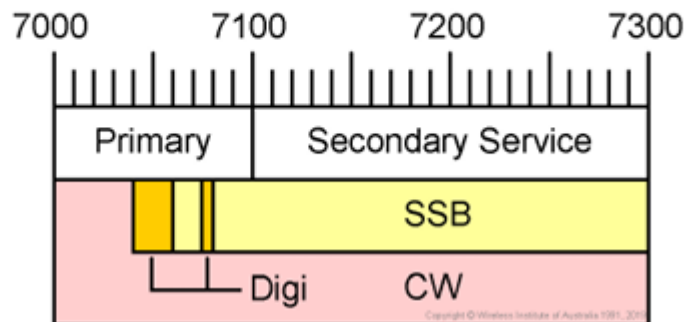


3.500 - 3.700	CW	
3.535 - 3.570	SSB	
3.570 - 3.600	Digital data modes	(Note 1)
3.600 - 3.700	SSB	(Note 2)
3.600	WICEN frequency	
3.600	IARU Region III emergency centre frequency	
3.776 - 3.800	DX Window	

NOTE: DX WINDOW

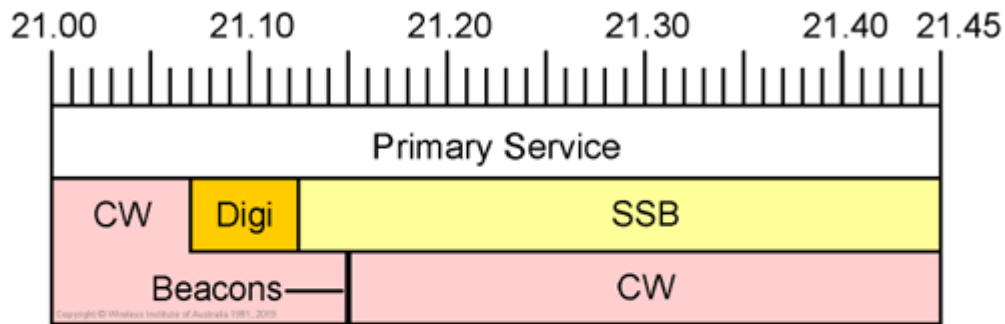
Emissions must not extend below 3776 kHz. Therefore when using LSB, the suppressed carrier frequency should be no lower than 3779 kHz.

40 metre band – All licence classes



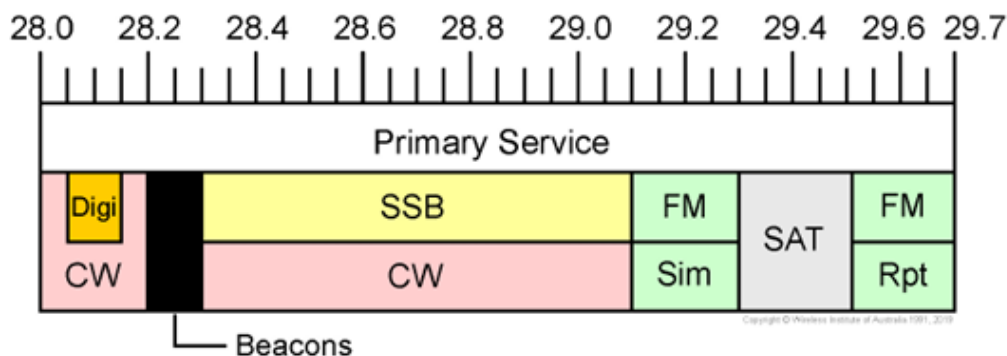
7.000 - 7.300	CW	
7.040 - 7.060	Digital data modes	(Note 1)
7.060 - 7.074	SSB (shared with international digimode activity)	(Note 2)
7.074	WICEN frequency (interim)	
7.074 - 7.080	Digital data modes	(Note 1)
7.080 - 7.300	SSB	(Note 2)
7.110	IARU Region III emergency centre frequency	

15 metre band – All licence classes



21.000 - 21.450	CW	
21.070 - 21.150	Digital data modes	(Note 1)
21.150	IBP Beacons	(Note 3)
21.150 - 21.450	SSB	(Note 2)
21.190	WICEN frequency	
21.340 +/- 5 kHz	SSTV calling frequency	(Note 2)
21.360	IARU Region III emergency centre frequency	

10 metre band – All licence classes



28.000 - 28.200	CW AND DIGITAL MODES	(Note 1)
28.000 - 28.070	CW	
28.070 - 28.190	Digital data modes	
28.190 - 28.200	IBP Beacons	(Note 3)
28.200 - 28.300	Continuous Duty Beacons	(Note 3)
28.300 - 29.100	CW / SSB / AM	(Note 2)
28.450	WICEN frequency	
28.680 +/- 5 kHz	SSTV calling frequency	(Note 1)
28.885	International 6 Metre liaison frequency	
29.110 - 29.290	FM SIMPLEX	(Note 5)
29.120	Simplex repeater gateway frequency	
29.200	National calling frequency	
29.300 - 29.510	AMATEUR SATELLITES	(Note 4)
29.510 - 29.700	FM REPEATERS AND SIMPLEX	(Note 6)
29.520 - 29.580	Repeater inputs	
29.600	International simplex calling frequency	
29.620 - 29.680	Repeater outputs	

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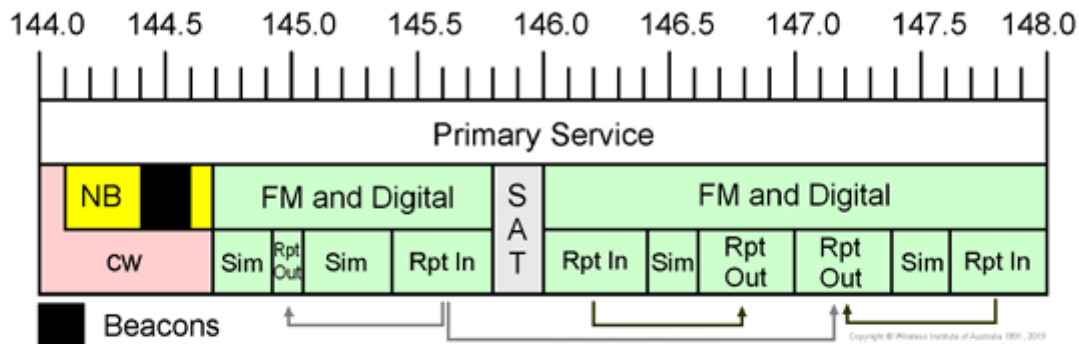
2 Metre band – All licence classes

Band Allocation

144 - 148 MHz

AMATEUR

Primary Service



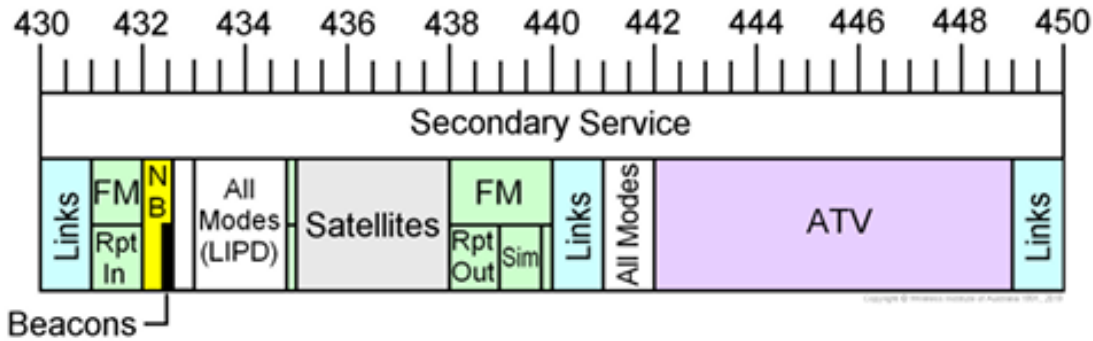
144.000 - 144.700	NARROW BAND MODES	(Note 1)
144.000 - 144.025	Amateur Satellites (new IARU segment)	
144.000 - 144.100	EME	
144.100 - 144.400	CW / SSB	
144.100	Calling frequency: national primary	
144.200	Calling frequency: national secondary	
144.220 - 144.240	Digital DX modes	
144.240 - 144.300	Guard band: New Zealand beacons	
144.300	SSB chat frequency	
144.320 - 144.340	Digital DX modes	
144.300 - 144.500	Space communications	
144.400 - 144.600	Beacons	(Note 2)
144.600 - 144.700	Experimental	
144.700 - 144.900	DIGITAL SIMPLEX (12.5 or 25 kHz channel spacing)	(Note 4)
144.750	Digital High Site Hotspot	
144.800	Digital Narrow band calling	
144.925 - 145.050	REPEATER OUTPUTS (12.5 kHz channels)	(Notes 5,7)
	Paired with inputs at 145.525 - 145.650 (600 kHz offset)	
145.075 - 145.400	FM AND DIGITAL SIMPLEX (25 kHz channels)	(Note 4)
145.100	Non-voice modes (RTTY, SSTV, Fax)	
145.175	National APRS frequency	
145.200	National WICEN frequency	
145.250	CW practice / information beacons (future)	
145.300	National ARDF frequency	
145.325	Internet gateways	
145.350	Internet gateways	
145.375	Internet gateways	
145.400 - 145.775	REPEATER INPUTS (12.5 and 25 kHz channels)	(Note 5)
145.4125 - 145.5125	Paired with outputs at 147.0125 - 147.1125 (1.6 MHz offset)	
145.5250 - 145.6500	Paired with outputs at 147.1250 - 147.2500 (1.6 MHz offset)	
	or 144.9250 - 145.0500 (600 kHz offset)	
145.6625 - 145.7750	Paired with outputs at 147.2625 - 147.3750 (1.6 MHz offset)	

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70 cm band – All licence classes

Band Allocation

420 - 450 MHz	RADIOLOCATION	Primary Service
420 - 450 MHz	FIXED, MOBILE	Primary Service
430 - 450 MHz	AMATEUR	Secondary Service
435 - 438 MHz	AMATEUR SATELLITE	Permitted on non-interference basis



430.025 - 430.975	REPEATER LINKS - Group A	(Note 7)
431.0250 - 431.9375	REPEATER INPUTS Group A (7 MHz offset) Paired with outputs 438.0250 - 438.9375	(Note 6,9)
431.950 - 432.700	NARROW BAND MODES	(Note 1)
431.950 - 432.000	EME guard band	
432.000 - 432.100	EME	
432.100 - 432.400	CW / SSB	
432.100	Calling frequency: national primary	
432.200	Calling frequency: national secondary	
432.220 - 432.240	Digital DX modes	
432.240 - 432.300	Guard band: New Zealand beacons	
432.300	SSB chat frequency	
432.320 - 432.340	Digital DX modes	
432.400 - 432.600	Beacons	(Note 2)
432.600 - 433.000	Experimental (future)	
432.625 - 432.975	Legacy repeater inputs (5.4 MHz offset)	(Note 6,9)
433.025 - 434.775	ALL MODES	(Notes 4, 5, 6)
433.050 - 434.790	LIPD Class Licence band	
433.025 - 433.750	Legacy repeater inputs (5 MHz offset)	
434.000 - 434.775	Repeater links - Group D	(Note 7)
434.275 - 434.775	Repeater inputs - 5 MHz offset (legacy)	
434.800 - 434.9875	REPEATER INPUTS Group B (5 MHz offset) (12.5 or 25 kHz channel spacing)	(Notes 4, 7)
435.000 - 438.000	AMATEUR SATELLITES	(Note 3)
438.000 - 438.9375	REPEATER OUTPUTS Group A (7 MHz offset) (12.5 or 25 kHz channels)	(Note 6)
438.0250 - 438.7625	Existing repeater outputs (legacy 5 or 5.4 MHz offset)	(Note 9)
438.7750 - 438.9375	New repeater outputs	

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Cross Band Repeater

Foundation licensees are not permitted operate through a cross-band repeater system where the repeater output frequency is not permitted to be used by a foundation licensee.

Your carrier and modulated signal cannot cross the boundary edges of your operational bands.

Emission modes and emissions

Emission limits

The ITU has developed a system of letters and numbers to identify different radio transmission types. They provide an internationally recognised standard by which to specify, accurately and concisely, the significant characteristics of a transmission.

Emission designator codes are used mainly by assigned frequency amateur stations such as repeater stations and beacon stations.

Examples of commonly used amateur transmissions and the corresponding emission classifications are listed below.

Purpose of transmission	Emission mode symbols for a transmitter modulation			
	AM	SSB	FM	PM
Morse	A1AA1B	J2A J2B	F1B	G1B
Speech	A3E	J3E	F3E	G3E
Data (packet)	A2D A1D	J2D	F1D F2D	G1D G2D
RTTY	A2D	J2D	F2D	G2D
Facsimile	A2C	J2C	F2C	G2F
FSTV	C3F A3F	J3F	F3F	G3F
SSTV	A2F	J2F J3F	F2F F3F	G2F G3F

AM = amplitude modulated

SSB = amplitude modulated and uses a single-sideband, suppressed carrier

FM = angle modulated and uses frequency modulation and

PM = angle modulated and uses phase modulation.

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Examples:

- Single sideband (SSB) suppressed carrier is represented by: 2K80J3E

The first 4 letters/numbers represent the necessary bandwidth of the signal, '2K80' means two thousand, eight hundred Hz, or 2800 Hz. The final 3 letters/numbers represent the modulation used, 'J' means the carrier is amplitude modulated, '3' means single channel analogue and 'E' means telephony (speech).

- FM is represented by: 16K0F3E

'16K0' means 16 kHz bandwidth, 'F' means Frequency modulation, '3' means single channel analogue and 'E' means telephony.

[A full description of the ITU system can be found at Appendix 1 of the ITU Radio Regulations—Classification of emissions and necessary bandwidths, available on the ITU's website.](#)

Permitted frequency emission modes are outlined in the Schedule 1 in the Amateur LCD, and Schedule 2 in the class licence.

Spurious emission limits

Spurious emissions from an amateur station can cause interference to other stations and services.

You must operate within the maximum permitted spurious emission power levels specified in Section 11 of the [Amateur LCD](#), and Section 15 of the [class licence](#).

Distress

Distress

Mayday is an internationally recognised radio word (telephony) to signal **distress**. This is primarily used by aircraft and boats. A 'mayday' call indicates an aircraft, or ship is in grave and imminent danger and requires immediate assistance. All seamen and pilots are told to repeat the word three times, "Mayday, mayday, mayday." The repetition helps radio operators distinguish the transmission from other transmissions.

SOS is the internationally recognised morse code signal (telegraphy) for Mayday.

If you hear a distress call and no one responds to the call, you are authorised to respond to that call no matter what the frequency.

Distress signal

A distress signal indicates that a person is threatened by grave and imminent danger and requires immediate assistance.

- The distress signal is the word 'mayday'.
- Distress call and message.

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The **distress call** consists of:

- the distress signal 'mayday' sent 3 times.
- the words 'this is'
- the call sign or other identification of the station in distress sent 3 times.

"Mayday, mayday, mayday. This is (*Identify station three times*) "

The **distress message** consists of, in addition to the distress call.

- the position of the station in distress
- the nature of the distress and the kind of assistance required.
- any other information which might be of assistance.

Your obligation is to accept distress traffic if no other response is heard.

A distress call or message has priority over all other transmissions and may be heard on any frequency.

When a distress call is heard, you must:

- immediately cease all transmissions
- continue to listen on the frequency.
- record full details of the distress message.

If a distress message is received, wait for a short while to see if the message is received by a station better placed to help.

If the distress message is not acknowledged within a reasonable time, the amateur operator is obliged to respond.

Example of a Distress Message

"MAYDAY, MAYDAY, MAYDAY"

"This is [Vessel Name] [Vessel Name] [Vessel Name]"

"MAYDAY [Vessel Name]"

"My position is [Latitude/Longitude or bearing and distance from a landmark]"

"Nature of distress: [e.g., Sinking, Fire, Collision]"

"I require immediate assistance."

"I have [Number] persons on board."

"[Any other helpful info: e.g., We are abandoning to a life raft]"

"OVER"

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Mayday Acknowledgement

If a distress message is received, wait for a short while to see if the message is received by a station better placed to help.

If the distress message is not acknowledged within a reasonable time, the amateur operator is obliged to respond.

"MAYDAY (*name of vessel sending distress*) said **3 times**."

"THIS IS... (*call sign and location*) said **3 times**."

"RECEIVED MAYDAY".

Notifying the appropriate authority

After acknowledging or attempting to acknowledge receipt of the distress message, you must immediately forward details of the distress situation to:

- for land-based distress situations – the police via 000
- for air or sea-based distress situations – the Rescue Co-ordination Centre, Canberra, ACT, for:
 - aviation rescue services telephone 1800 815 257
 - maritime rescue services telephone 1800 641 792.

You should resume listening and keep the respective authority informed of any developments.

Assistance should be given until cessation of distress traffic is announced (with the phrase 'seelonce feenee'), or until you are advised that assistance is no longer required.

"Seelonce feenee" (from French silence fini, 'silence finished') means that the emergency situation has been concluded and the channel may now be used normally.

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Urgency

The term “pan pan”, is used in radiotelephony communications to signify that there is an urgency on board a boat, ship, aircraft or other vehicle. Pan Pan is referred to when there is a state of urgency but not when there is an immediate danger to a person's life or to the vessel itself. Pan-Pan is derived from the French word "panne", which means failure or breakdown. Pan-Pan most often refers to a mechanical failure or breakdown.

Urgency signals

In cases where the use of the distress signal is not fully justified, the urgency signal may be used.

The urgency signal is ‘pan pan’ repeated 3 times before the message.

The **urgency signal** has priority over all other transmissions except distress. All stations hearing an urgency signal must:

- ensure that they do not cause interference to the transmission of the message that follows.
- be prepared to assist if required.

Authority contact details are the same as for distress messages.

International use of radiocommunications in the event of natural disasters

In natural disasters, normal communications systems may be overloaded, damaged, or completely disrupted, and the rapid establishment of communication to facilitate world-wide relief actions is essential.

Amateur bands are well adapted for short-term use in emergency situations. The amateur service, with its widespread distribution and demonstrated capacity to assist, may assist in communications until normal communications are restored.

Amateur involvement is limited to the duration of the emergency and to the specific geographical area of the emergency, as defined by the responsible authority of the affected country.

Any communications shall be carried out only with the consent of the administration of the country in which the disaster has occurred.

Distress and Urgency Table

State	Telegraphy	Telephony
Distress	SOS SOS SOS	Mayday Mayday Mayday
Urgency	XXX XXX XXX	Pan-pan Pan-pan Pan-pan

Hint: Know and remember the difference between telegraphy and telephony.

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Emergency services operations or training exercises

If you operate your station for emergency services operations or training exercises, you must transmit your call sign:

- every time you start a transmission.
- every time you finish a transmission.
- at least once every 30 minutes during a transmission or series of transmissions that lasts for more than 30 minutes.

If you are participating in an emergency services exercise (for example, Wireless Institute Civil Emergency Network), operational call signs, like mobile 1, base 2, are often used.

Term Origins

The "Mayday" distress signal was invented in 1923 by Frederick Stanley Mockford at Croydon Airport in London. The phonetic equivalent of the French phrase *m'aider* ("help me") to be easily understood by pilots and ground staff.

SOS originated as a German government maritime radio on April 1, 1905, and was formally used by the SS Arapahoe in 1909 and became globally recognized following its use by the Titanic in 1912.

The term "Pan-Pan" (pronounced pahn-pahn) originates from the French word "panne," meaning "breakdown" or "mechanical failure," and serves as an international aviation and maritime radio signal for an urgent situation.

Station Operations

Identification

Call signs must be used at the following times, even when conducting tests.

- At the beginning of a transmission
- At the end of the transmission
- Every 10 minutes during a transmission

Once communications have been established with another station (known as a series of transmissions), it is not necessary to use call signs every 'over' – call signs must be used every 10 minutes.

You can identify by voice (using the English language), by visual image or by an internationally recognised code (for example, Morse).

Operating portable / mobile

Portable means you are transmitting from an established base other than your licensed location. Mobile means you are transmitting from a vehicle, vessel or aircraft.

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When operating your amateur radio station portable, you may add the numeral of the state or territory you are operating into the end of your call sign.

For example: *VK6HR portable 8*.

If you operate your station in a vehicle, a boat/ship or an aircraft, you normally add the following suffixes after your call sign, respectively:

- mobile
- maritime mobile
- aeronautical mobile.

Encryption/scrambling

Transmissions from an amateur station must not be encrypted or scrambled, except for signals used to control a satellite, signals used to control a remote amateur station or by stations participating in emergency services operations or exercises.

Re-transmission

If you re-transmit another station's transmission, you must have the other station's permission and indicate it is a retransmission.

Operating from different locations - [ACMA Website](#)

Amateur operators with assigned or non-assigned licences who want to operate an amateur station from a location different to the one on their licence must provide an updated address to the ACMA if they intend to operate for a continuous period of more than:

- for an amateur beacon or an amateur repeater station – 7 days
- for a non-assigned station – 4 months.

Stations connected to the internet

If you connect your station (including a repeater station) to the internet (including via an Amateur Internet Linking System), you must have measures in place to ensure that it cannot be operated by unlicensed persons.

Club call signs.

Amateur radio clubs or groups can apply for club call signs. Club call signs are associated with an advanced qualification. A club call sign may also be used by an amateur with a standard or foundation qualification, provided they operate in accordance with their respective licence conditions (including frequencies and power levels).

Special Event Call sign

If a special event call sign is assigned to a person, the person must not transmit the special event call sign otherwise than in relation to the relevant event.

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If the ACMA assigns a special call sign to a person, the ACMA may specify that the call sign is a special event call sign; and must specify the event in relation to which the call sign may be used (relevant event).

If the ACMA specifies an assignment period for a special event call sign, it must specify a period which it reasonably expects will at least encompass the duration of the relevant event.

Use of AX call sign

Amateur operators with call sign VK, may substitute those letters with the letters AX on the following dates each year:

- (a) 26 January. Australia Day
- (b) 25 April. Anzac Day
- (c) 17 May. World Telecommunication Day.

Example: On a date specified in subsection (4), a person who is assigned the VK1ZZZ call sign may use instead the AX1ZZZ call sign.

Contest call sign.

If a contest call sign is assigned to a person, the person must not transmit the contest call sign other than when competing in a contest conducted by a body or organisation, whether or not in Australia, that exists primarily for amateur purposes.

VK0 and VK9 Call sign.

If a person is assigned a call sign with the prefix VK0, the person must not transmit the call sign unless the person is located in the Australian Antarctic Territory.

If a person is assigned a call sign with the prefix VK9, the person must not transmit the call sign unless the person is located in an external Territory.

Operations and ACMA

ACMA is authorised to undertake the following actions.

- ACMA inspectors are authorised to inspect the operator's licence any reasonable time.
- Restrict the operation of a station causing interference.
- Inspect a station to ensure compliance.
- Impose fines and or equipment forfeit if deliberate interference is caused by a station.

All operators are to inform ACMA of changes to their residential address.

An amateur station must be kept secure to prevent unlawful and unlicensed operation of the station.

Keep your contact details current.

Amateur call sign holders should keep their contact details up to date with the ACMA. This allows us to contact you when your call sign needs to be reconfirmed, or you need to have your call sign reassigned.

If your details are incorrect and we can't contact you, your call sign may be cancelled.

Additional ACMA material.

ACMA also source regulation questions from their web site page at <https://www.acma.gov.au/amateur-radio-operating-procedures>.

This is worth reading. So is a double up to the material here but it helps to reinforce your knowledge.

Go to Chapter 10 Questions.

Have fun and stay safe.

