Wireless Institute of Australia

Australian Amateur Band Plans

Updated April 2010

Introduction

Spectrum Management

International spectrum management is the responsibility of the International Telecommunications Union (ITU). The ITU Radio Regulations allocate separate bands for each service such as fixed, mobile, broadcasting or amateur. Some bands are shared by more than one service.

When bands are shared, services designated “Primary” are entitled to full protection from interference caused by secondary services. Secondary services must tolerate interference from primary services operating in the same band, and not cause any interference to primary services. Other services may also be permitted to share bands with primary and secondary services on a non-interference basis.

Each ITU member nation implements the Radio Regulations within its borders. Most member nations follow the ITU allocation tables fairly closely, although they do have the right to make variations to suit local requirements. In Australia, spectrum management is the responsibility of the Australian Communications and Media Authority (ACMA). It determines frequency allocations and licence conditions for all transmitting stations in Australia and its territories.

Amateur Self-Regulation

Amateurs use a wide variety of different modes. Within one amateur band, activity can include CW, voice, satellite and EME activity, and ATV. The best way of avoiding clashes is to set aside different band segments for each of these activities, so that all amateurs can pursue their interests without interference.

Amateur band plans are voluntary agreements, often known as "Gentlemen's Agreements". They are sponsored by the WIA, but they are for the benefit of all amateurs. Most amateurs - WIA members or not - abide by the band plans because it makes sense to give everyone a fair go. Clashes still occur at times, and the usual reason is lack of awareness of the band plans. Most amateurs are willing to change frequency if the problem is explained to them politely.

Band Planning Guidelines

Band plans need to satisfy a number of conflicting criteria:

- They should take local conditions into account, but they should be consistent with international usage.
- They should encourage spectrum efficiency, but they should also ensure that all modes have their fair share of spectrum space.
- They should take the popularity of each mode into account, while still providing enough spectrum space for less popular activities. For example, ATV requires far more bandwidth per operator than other modes; and activities such as EME are of major importance regardless of the number of stations involved.
- Band plans must be flexible enough to adapt to changing needs, but they tend to lose support if they are changed too often. The aim must be to think ahead and to make sure that future options are not closed off.

Mode Compatibility

Some modes require exclusive band segments, but others can coexist with similar modes in the same part of the band. On the HF bands, there are three main mode divisions: CW, digital data modes, and SSB. Image modes such as SSTV are usually sent as SSB signals, so these modes can be used in the SSB band segments. The same applies to digital voice modes that occupy much the same bandwidth as an SSB signal.

AM receives little use nowadays because it is less efficient than SSB and occupies twice as much bandwidth. But it can still be found, mainly on 160 metres and sometimes around 29 MHz.

On 10 metres, there is also a fourth category for FM. This mode is quite popular above 29 MHz, but it should not be used on lower frequencies because of its wide bandwidth. It should also be noted that most HF radios cannot comply with ACMA's bandwidth limit of 8 kHz for FM operation on bands below 10 metres.

On the VHF-UHF bands, the grouping of modes is slightly different. The three main groups are:

- CW and SSB: the preferred modes for weak signal work, including digital DX modes using SSB bandwidths.
- FM: not suitable for weak signal work and not compatible with SSB or CW. This category also includes modes such as packet, which usually use FM mode on the VHF bands.
- ATV: requires a very large bandwidth but has a very low power density, so it needs an exclusive interference-free band segment.

Calling Frequencies

On the VHF bands, the band plans include calling frequencies. These frequencies are "meeting places" and should be used only to make initial contact before moving to another frequency. If you "hog" the calling frequency you will prevent others from making calls or hearing more distant stations that may appear on the frequency.

Beacons

Beacons give an indication of band conditions and provide a warning of DX openings. They also serve as test signals for receiver calibration and testing. There should be no other transmissions within the beacon segments or on their band edges. This applies even if you are hundreds of kilometres away from the nearest beacon!

On the VHF/UHF bands, beacon frequencies are allocated according to a geographic allocation plan with a frequency spacing of 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Satellite Segments

The band plans provide separate band segments for satellite operation. Satellite downlink bands should be kept clear of other transmissions at all times - right to the band edges. On bands where the satellite band joins an FM segment, there should be no FM operation on the bandedge.

FM Segments

FM operators can operate on any simplex channel or on unused repeater frequencies. The band plan SSB and beacon segments should be avoided at all times. It is also a good idea to avoid operating simplex on repeater input channels - you may unintentionally key up a distant repeater.

Further Information

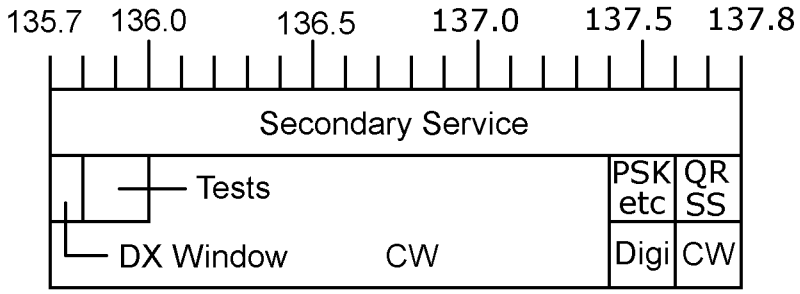
The band plans are reviewed regularly, to keep up to date with changing patterns of activity. The band plans apply in all states, so any changes must be discussed and agreed in all states before they are adopted. If a proposed new application requires a change to the band plan, or if you are aware of any band planning problems in your area, please advise the Technical Advisory Committee.

Further information about technical standards, frequency allocation and licensing of unattended stations (including beacons, repeaters, links, gateways etc) is available on request from the Technical Advisory Committee.

LF Band

2200 Metre Band – Advanced Licensees only

The following plan is recommended as an interim plan for the 2200 metre band. This plan is based on the unofficial 2200 metre band plan adopted by LF operators in ITU Region I.

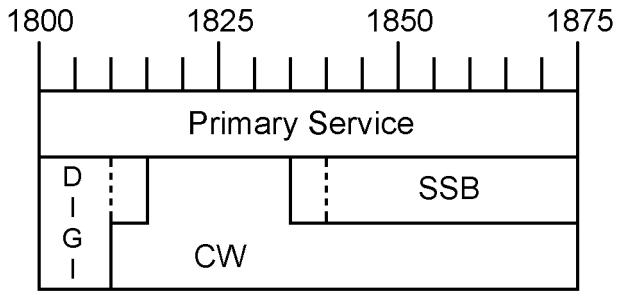


135.7 -	137.4 kHz	CW only
135.7 -	135.8 kHz	International DX window
135.8 -	136.0 kHz	Test transmissions and test beacons
136.0 -	137.4 kHz	Normal CW operation (centre of activity 136.5 kHz)
137.4 -	137.6 kHz	Narrow band digital modes, e.g. PSK (centre of activity 137.5 kHz)
137.6 -	137.8 kHz	Slow CW modes, e.g. QRSS

MF and HF Bands

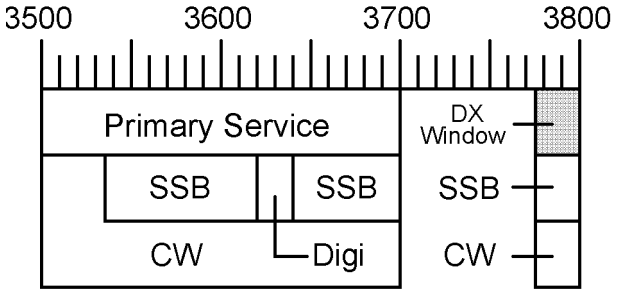
Footnotes for these bands appear after the 10 metre listing.

160 Metre Band – Advanced Licensees only



1800 -	1810	Digital data modes	(Notes 1, 2)
1810 -	1840	CW only	(Note 1)
1840 -	1875	SSB / AM	(Note 1)

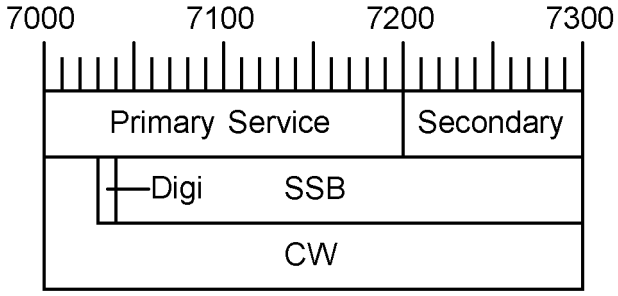
80 Metre Band – 3500 -3700 kHz All licence classes
3776 - 3800 kHz Advanced licensees only



3.500 -	3.700	CW	
3.535 -	3.620	SSB	
3.600		WICEN frequency	
3.600		IARU Region III emergency centre frequency	
3.620 -	3.640	Digital data modes	(Note 2)
3.640 -	3.700	SSB	
3.776 -	3.800	DX Window	

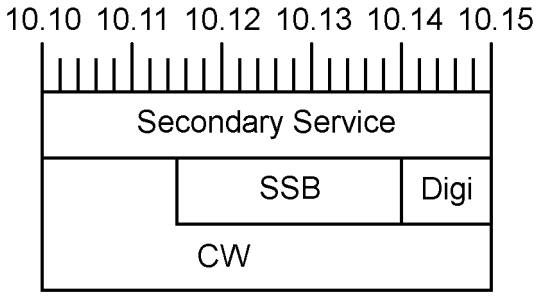
NOTE: DX WINDOW
Emissions must not extend below 3776 kHz. Therefore when using LSB, the suppressed carrier frequency should be no lower than 3779 kHz.

40 Metre Band – All licence classes



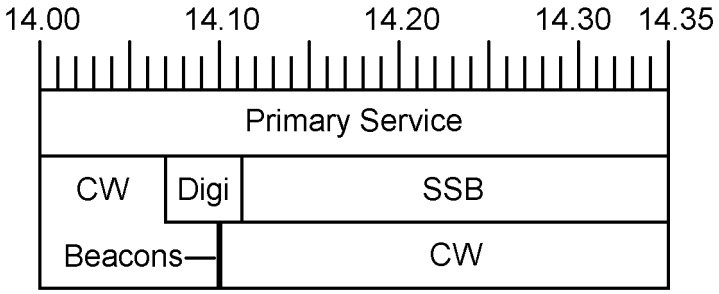
7.000 -	7.300	CW	
7.030 -	7.040	Digital data modes	(Note 2)
7.040 -	7.300	SSB	
7.075		WICEN frequency	
7.110		IARU Region III emergency centre frequency	
7.130 -	7.150	WIA news transmissions	

30 Metre Band – Advanced licensees only



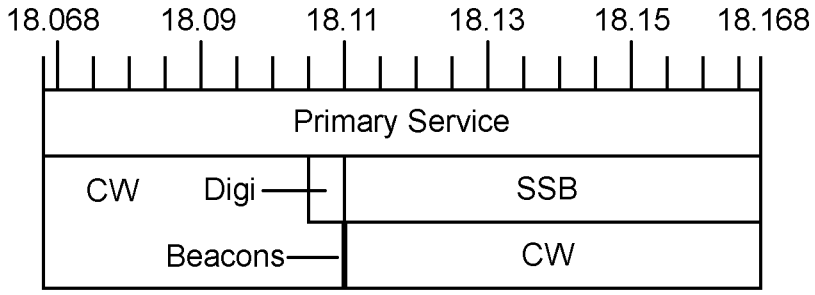
10.100 - 10.150	CW	
10.115 - 10.140	SSB	
10.115	WICEN frequency	
10.140 - 10.150	Digital data modes	(Note 2)

20 Metre Band – Advanced & Standard licensees



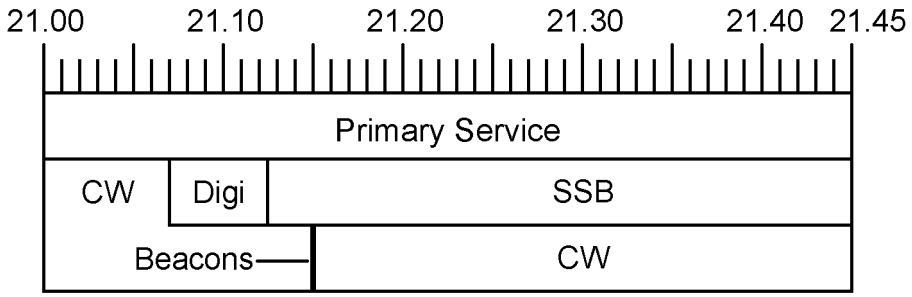
14.000 - 14.350	CW	
14.070 - 14.112	Digital data modes	(Note 2)
14.070 - 14.080	Amtor, PSK etc.	
14.080 - 14.095	RTTY	
14.095 - 14.112	Packet Radio	
14.100	IBP Beacons	(Note 3)
14.112 - 14.350	SSB	
14.125	WICEN frequency	
14.230	SSTV calling frequency	(Note 2)
14.250	FAX calling frequency	(Note 2)
14.300	IARU Region III emergency centre frequency	

17 Metre Band – Advanced licensees only



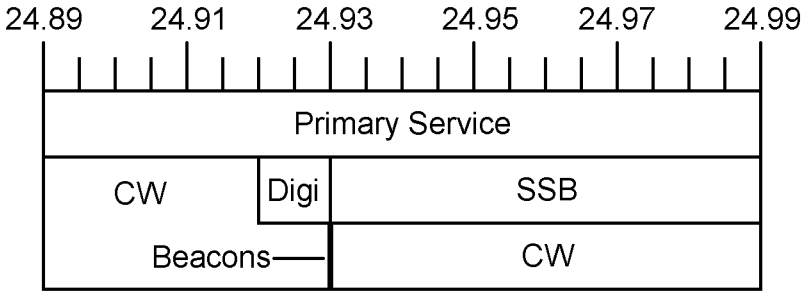
18.068 - 18.168	CW	
18.100 - 18.110	Digital data modes	(Note 2)
18.110	IBP Beacons	(Note 3)
18.110 - 18.168	SSB	
18.150	WICEN frequency	
18.160	IARU Region III emergency centre frequency	

15 Metre Band – All licence classes



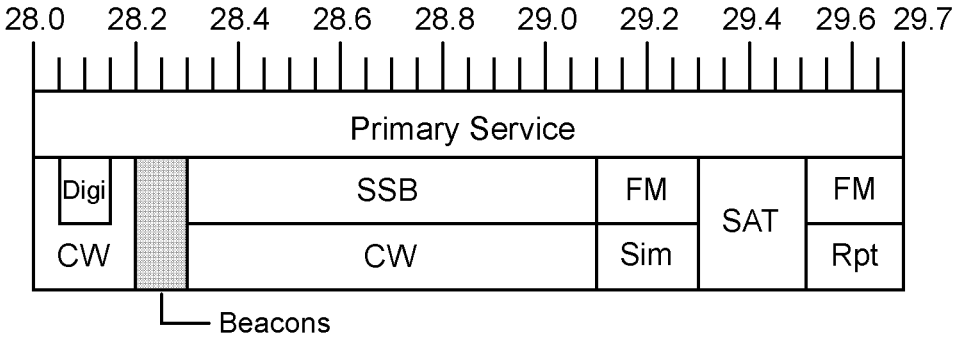
21.000 - 21.450	CW	
21.070 - 21.125	Digital data modes	(Note 2)
21.150	IBP Beacons	(Note 3)
21.150 - 21.450	SSB	
21.190	WICEN frequency	
21.340 +/- 5 kHz	SSTV calling frequency	(Note 2)
21.360	IARU Region III emergency centre frequency	

12 Metre Band – Advanced licensees only



24.890 - 24.990	CW	
24.920 - 24.930	Digital data modes	(Note 2)
24.930	IBP Beacons	(Note 3)
24.930 - 24.990	SSB	
24.950	WICEN frequency	

10 Metre Band – All licence classes



28.000 - 28.200	CW AND DIGITAL MODES	(Note 2)
28.000 - 28.050	CW only	
28.050 - 28.150	Digital data modes	
28.150 - 28.200	CW only	
28.190 - 28.200	IBP Beacons	(Note 3)
28.200 - 28.300	Continuous Duty Beacons	(Note 3)
28.300 - 29.100	CW / SSB / AM	
28.390	Recommended intra-VK calling frequency	
28.450	WICEN frequency	
28.680 +/- 5 kHz	SSTV calling frequency	(Note 2)
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	
29.250	Recommended packet 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	

Notes for the 160 - 10 Metre Bands

Note 1: 160 Metres

DX operation has absolute priority between 1810 and 1840 kHz. Digital mode operation may occur up to 1815 kHz, but only for contacts with overseas stations that cannot operate below 1810 kHz. SSB operation may occur down to 1835 kHz, but only for contacts with overseas stations that cannot operate above 1840 kHz. Operation may vary from the band plan during times when all stations within working range are in full daylight.

Note 2: Modes

"Digital Data Modes" includes all modes such as RTTY, packet and Amtor, using FSK or PSK and with bandwidths up to 2 kHz. The SSB segment can also be used for digital voice modes and image transmission modes such as SSTV or Fax, using bandwidths up to 4 kHz, or for AM. On 10 metres, the recommended segment for AM is 29.0 - 29.1 MHz.

Note 3: Beacons

The beacon segments should be kept clear of all other transmissions.

Note 4: Amateur Satellites

Amateur satellites may operate in the bands 7.0 - 7.1, 14.0 - 14.250, 18.068 - 18.168, 21.0 - 21.45, 24.89 - 24.99 and 28.0 - 29.7 MHz. Current satellites operate between 21.160 - 21.300 and 29.300 - 29.500 MHz. The 10 metre satellite segment should be kept clear of all other transmissions.

Note 5: FM Simplex

Maximum permitted bandwidth for FM is 16 kHz on 10 metres, and 6 kHz on lower bands. Most multimode transceivers cannot comply with the 6 kHz bandwidth limit and should not be used in FM mode below 10 metres. Please avoid operation on 29.300 or 29.500 MHz, as this can interfere with satellite downlinks.

Note 6: FM Repeaters

The standard repeater input frequencies are 29.52, 29.54, 29.56 and 29.58 MHz. Some overseas repeaters operate on 10 kHz spaced channels. Repeater offset is 100 kHz. Further details on repeater planning and frequency allocations are available from the Technical Advisory Committee.

6 Metre Band – 50 - 52 MHz Advanced licensees only
52 - 54 MHz Advanced & Standard licensees

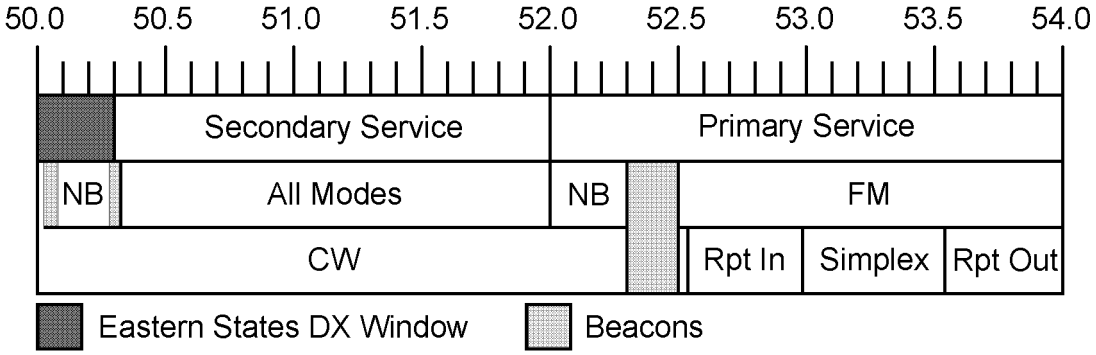
Band Allocation

50 - 52 MHz	BROADCASTING	Primary Service
	AMATEUR	Secondary Service
52 - 54 MHz	AMATEUR	Primary Service

NOTE: The band 45 - 52 MHz is allocated on a primary basis to the Broadcasting Service for television channel 0. In the eastern call areas VK1, VK2, VK3 and VK4, operation on frequencies below 52 MHz is subject to the following restrictions:

- Amateur stations may operate only within the sub-band 50.000 - 50.300 MHz.
- Permitted modes and maximum power limits are: CW (100 watts), SSB (100 watts) or FSK (30 watts).
- No operation on any frequency below 52 MHz is permitted within 120 km of main channel 0 stations, or within 60 km of translators which have their outputs or inputs on channel 0.
- No operation is permitted if it causes interference to reception of Channel 0 television.

Please refer to the ACMA Amateur Licence Conditions Determination (LCD) for full details of these restrictions.



50.000 - 50.300	NARROW BAND MODES	(Note 1)
50.000 - 50.080	CW only	
50.020 - 50.080	Beacons	(Note 2)
50.080 - 50.100	International DX window	
50.100 - 50.150	CW / SSB: International DX only	
50.110	International DX calling frequency	
50.150 - 50.280	CW / SSB: DX or local	
50.200	Australian calling frequency	
50.220 - 50.240	Digital DX modes	
50.280 - 50.300	Beacons (VK1,2,3,4,7)	(Note 2)
50.300 - 50.320	Beacons (VK5,6,8,9,0 only)	(Note 2)
50.320 - 52.000	ALL MODES (VK5,6,8,9,0 only)	
52.000 - 52.500	NARROW BAND MODES	(Note 1)
52.000 - 52.100	CW only	
52.100 - 52.300	SSB	
52.100	Calling frequency	
52.300 - 52.500	Beacons	(Note 2)

52.525 - 53.975	FM SIMPLEX AND REPEATERS	(Notes 3,4)
52.525	International simplex calling frequency	
52.550 - 52.975	Repeater inputs	
53.000	Simplex: data (BBS forwarding)	
53.025	Simplex: data (general use)	
53.050	Simplex: data (recommended APRS channel)	
53.075	Simplex: data (general use)	
53.125 - 53.525	Simplex: voice	
53.150	National WICEN frequency	
53.300	National ARDF frequency	
53.500	National voice calling frequency	
53.550 - 53.975	Repeater outputs	

Note 1: Narrow Band Modes

This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. International practice is to keep the segment below 50.150 MHz clear at all times for international DX operation, and to use 50.150 MHz and above for contacts within the country or region. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. The calling frequencies are 50.110 MHz for international DX only, and 50.200 MHz for all other operation.

The following spot frequencies are recommended for digital DX operation using SSB-based modes:
50.220 Weak signal modes with bandwidths below 100 Hz, e.g. PSK and slow CW
50.225 Weak signal modes with bandwidths up to 500 Hz, e.g. MFSK, JT44 and similar
50.230 High speed meteor scatter modes with bandwidths up to 3 kHz, e.g. FSK441

Note 2: Beacons

The beacon segments should be kept clear of other transmissions. Beacon frequency spacing is 2 kHz.

On 50 MHz, beacons in the eastern states are confined to the DX window. The international beacon sub-band is 50.020 - 50.080 MHz. To reduce overcrowding in the lower end of the DX window, the following alternative frequencies for beacons have been adopted:

For call areas VK1, VK2, VK3, VK4, and VK7: 50.280 - 50.299 MHz.
For call areas VK5, VK6, VK8, VK9 and VK0: 50.300 - 50.319 MHz.

On 52 MHz, beacon frequencies are allocated on a call area basis, e.g. VK1: 52.410 - 52.419, VK2: 52.420 - 52.429 etc. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: FM Simplex

Channel spacing is 25 kHz. Channels reserved for special purposes should be kept clear of other operation.

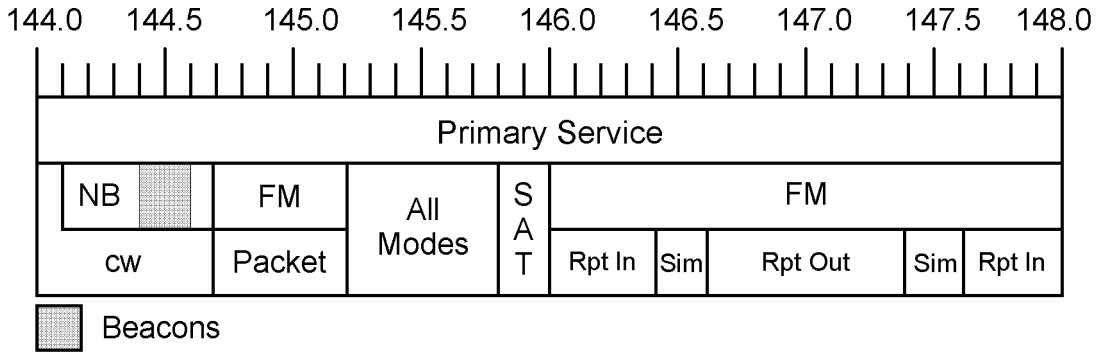
Note 4: Repeaters

The repeater split is 1 MHz (negative offset) and the channel spacing is 25 kHz. Seven repeater channels are reserved for exclusive use in the following call areas:
52.750 / 53.750 - VK5/8 52.800 / 53.800 - VK6
52.825 / 53.825 - VK7 52.850 / 53.850 - VK2
52.900 / 53.900 - VK3 52.950 / 53.950 - VK4
The remaining channels are available for use in any call area.
Repeater channels are co-ordinated nationally to reduce the possibility of interstate sporadic E interference.

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 -	144.100	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)
144.625 -	144.675	General / Experimental	
144.700 -	145.200	DIGITAL AND PACKET RADIO	(Note 4)
144.950		Space communications only	
145.125		Recommended D-Star simplex frequency	
145.175		National APRS frequency	
145.200		National WICEN packet frequency	
145.225 -	145.775	ALL MODES	(Note 4)
145.225 -	145.275	General / Experimental	
145.300		National ARDF frequency	
145.325 -	145.400	Recommended for simplex IRLP/Echolink nodes	
145.425 -	145.525	FM voice simplex	
145.550		Space communications only	
145.575		Information Beacons	
145.600		RTTY (AFSK)	
145.625		SSTV / Fax (AFSK)	
145.650 -	145.675	CW practice beacons / broadcast relays	
145.700		ARDF homing beacons	
145.800 -	146.000	AMATEUR SATELLITES	(Note 3)
146.025 -	147.975	FM SIMPLEX AND REPEATERS	(Notes 4,5,6)
146.025 -	146.400	Repeater inputs - group A	
146.425 -	146.600	Simplex	
146.500		National voice calling frequency	
146.600		RTTY (AFSK)	
146.625 -	147.000	Repeater outputs - group A	

147.025 -	147.375	Repeater outputs - group B
147.400 -	147.600	Simplex
147.400		ATV liaison
147.575 -	147.600	Packet radio
147.625 -	147.975	Repeater inputs - group B

Note 1: Narrow Band Modes

This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. Please avoid any terrestrial operation within the EME segment.
The following spot frequencies are recommended for digital DX operation using SSB-based modes:
144.220 / .320 Weak signal modes with bandwidths below 100 Hz, e.g. PSK and slow CW
144.225 / .325 Weak signal modes with bandwidths up to 500 Hz, e.g. MFSK, JT44 and similar
144.230 / .330 High speed meteor scatter modes with bandwidths up to 3 kHz, e.g. FSK441
SSB operators should note that the segment 144.110 – 144.165 MHz is used in some countries for international digital mode EME operation.
The band 144.3 - 144.5 MHz is not an IARU recognised satellite band, however some frequencies in this segment may be used at times for space communications.

Note 2: Beacons

The beacon segment should be kept clear of other transmissions. Beacon frequencies are allocated on a call area basis, e.g. VK1: 144.410 - 144.419, VK2: 144.420 - 144.429 etc. Beacon frequency spacing is 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: Amateur Satellites

The satellite segment should be kept clear of all terrestrial operation.

Note 4: All Mode, Digital, Packet and FM Simplex Segments

Channel spacing is 25 kHz. Channels reserved for special purposes should be kept clear of other operation. The space shuttle frequencies on 144.950 and 145.550 MHz should be kept clear of all terrestrial operation.
Recommended simplex frequencies for digital modes such as D-Star is 145.125 MHz. Recommended frequencies for simplex IRLP repeater gateways are the channels between 145.325 and 145.400 MHz.

Note 5: FM Repeaters

Channel spacing is 25 kHz, and offset is 600 kHz. Inputs and outputs may be reversed but this is not recommended. Vacant repeater output frequencies can be used as simplex channels, but repeater inputs should be avoided.
The following channels are reserved for WICEN repeaters:
147.175 (all states)
147.125, 147.150 (NSW, Queensland)
146.925, 147.300 (Victoria)
Digital (D-Star) repeaters will use frequencies on odd multiples of 12.5 kHz in between the existing 25 kHz spaced FM repeater channels. Frequency pairs to be allocated will be between 146.0375 - 146.3875 MHz input and 146.6375 - 146.9875 MHz output.

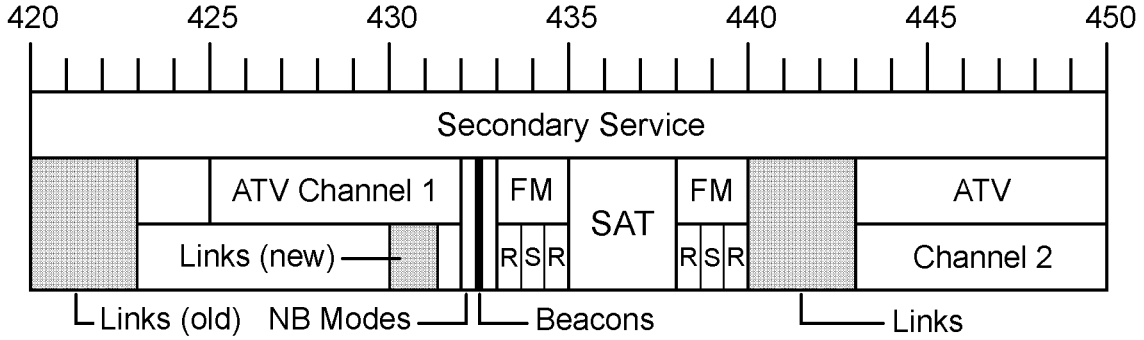
Note 6: Repeater Linking

Our licence conditions require tone access for repeaters that are linked to repeaters in certain other bands, to prevent transmissions from being relayed on frequencies that the operators are not entitled to use. CTCSS is also used to activate selective linking or for interference protection.
The following CTCSS tones have been adopted for repeater access:
91.5 Hz: For use with repeaters fitted with CTCSS for interference protection.
141.3 or 146.2 Hz: To activate links to repeaters on other VHF/UHF bands.
85.4 Hz: To activate links to other bands that some operators are not permitted to use.
The previously recommended 123 Hz tone is no longer recommended for future repeaters due to problems with false detecting.

70 Cm Band – 420 - 430 MHz Advanced licensees only
430 - 450 MHz All licence classes

Band Allocation

420 - 450 MHz	RADIOLOCATION	Primary Service
420 - 450 MHz	FIXED, MOBILE	Primary Service
420 - 430 MHz	AMATEUR (restricted access in some states)	Secondary Service
430 - 450 MHz	AMATEUR	Secondary Service
435 - 438 MHz	AMATEUR SATELLITE	Permitted on non-interference basis



NOTE: Operating restrictions apply in parts of VK2, VK3 and VK6 where some or all of the 420 - 430 MHz band has been assigned to non-amateur services. Please refer to the current ACMA Amateur Licence Conditions Determination for details of operating restrictions.

420.000 -	423.000	REPEATER LINKS Not available in some states	(Note 7)
425.000 -	432.000	ATV CHANNEL 1 Not available in some states	(Note 8)
430.025 -	430.975	REPEATER LINKS - Segment A	(Note 7)
431.025 -	431.250	REPEATER LINKS - Segment B	(Note 7)
431.275 -	431.975	REPEATER LINKS - Reserved	(Note 9)
432.000 -	432.600	NARROW BAND MODES	(Note 1)
431.950 -	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)
432.625 -	433.000	RESERVED	(Note 9)
433.025 -	434.975	FM SIMPLEX AND REPEATERS	(Notes 4, 5, 6)
433.025 -	433.725	Repeater inputs - Group A	
433.750 -	434.250	Simplex	
433.750		RTTY (AFSK)	
433.775		SSTV / Fax (AFSK)	
433.800		WICEN	
434.050 -	434.250	Packet Radio	
434.275 -	434.975	Repeater inputs - Group B	
435.000 -	438.000	AMATEUR SATELLITES	(Note 3)
438.025 -	439.975	FM SIMPLEX AND REPEATERS	(Notes 5,6)

438.025 -	438.725	Repeater outputs - Group A	
438.750 -	439.250	Simplex	
438.800		WICEN	
438.900		Recommended D-Star primary simplex frequency	
438.850		National ARDF frequency	
439.000		National voice calling frequency	
439.050 -	439.075	Packet Radio	
439.100		APRS	
439.150 -	439.175	Recommended for simplex IRLP/Echolink nodes	
439.200 -	439.250	Packet Radio	
439.275 -	439.975	Repeater outputs - Group B	
440.025 -	440.975	REPEATER LINKS - Segment C	(Note 7)
441.025 -	441.975	REPEATER LINKS - Segment D	(Note 7)
442.025 -	442.975	REPEATER LINKS - Segment E	(Note 7)
443.000 -	450.000	ATV CHANNEL 2	(Note 8)

Note 1: Narrow Band Modes
This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. Please avoid any terrestrial operation within the EME segment. The "Digital DX modes" segments include recommended spot frequencies for SSB-based digital modes, on the same pattern as in Note 1 of the 2 metre band plan.

Note 2: Beacons
The beacon segment should be kept clear of other transmissions. Beacon frequencies are allocated on a call area basis, e.g. VK1: 432.410 - 432.419, VK2: 432.420 - 432.429 etc. Beacon frequency spacing is 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: Amateur Satellites
The satellite segment should be kept clear of all terrestrial operation.

Note 4: LIPD Allocation
Stations operating between 433.050 and 434.790 MHz may experience interference from LIPDs ("Low Interference Potential Devices"). Repeaters have no protection from interference caused by LIPDs.

Note 5: FM Simplex
Channel spacing is 25 kHz. Channels reserved for special purposes should be kept clear of other operation.
This segment also includes recommended simplex frequencies for D-Star digital simplex operation – primary channel 438.900, secondary 438.9125 and 438.8875 (12.5 kHz spacing).

Note 6: FM Repeaters
Channel spacing is 25 kHz, and offset is 5 MHz. Vacant repeater output frequencies can be used as simplex channels, but input frequencies should be avoided. Repeater channels reserved for WICEN portable repeaters: 438.275, 438.625, 439.925, 439.975 MHz.
Digital (D-Star) repeaters will use channel pairs with output frequencies between 438.025 and 438.375 MHz, using a 5.4 MHz TX/RX offset. For areas where beacons are co-located with repeaters, D-Star repeaters will be allocated to the upper end of the repeater segment, with 5 MHz offset and output frequencies on odd multiples of 12.5 kHz between 439. 8125 and 439.9875 MHz.

Note 7: Repeater Links
Conditions apply as per Note 6 of the 2 metre band plan. The 420 MHz link segment is unavailable in areas where some or all of the 420 - 430 MHz band has been assigned to non-amateur services. Segments A and C are the preferred link segments for use at most link sites. Segments A and E are 12 MHz offset pairs for use at sites where repeaters are co-sited with TX low links. Segment D is preferred for 11 MHz offset pairs for use at sites with multiple co-sited links that require frequency separation in both the 430 and 440 MHz segments.

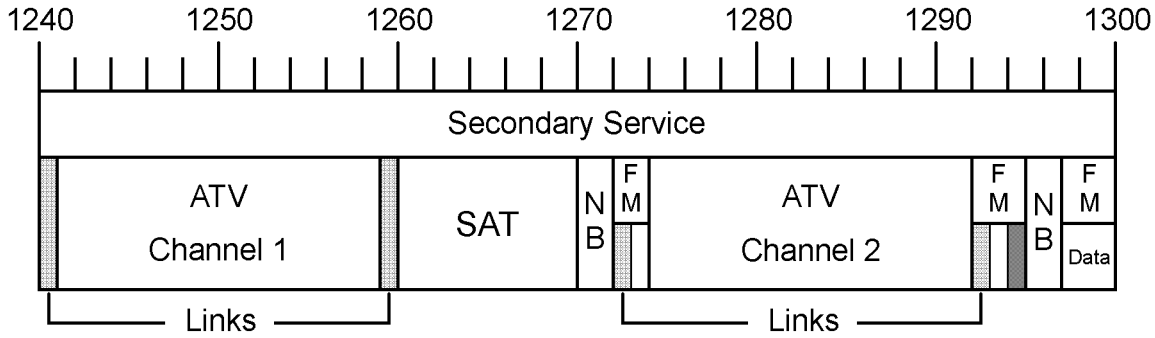
Note 8: Amateur Television
AM transmissions must be VSB only. Video carrier frequencies are: Channel 1 426.250 MHz, Channel 2 444.250 MHz. For digital ATV, the recommended standard is DVB-T using a 7 MHz bandwidth centred on 428.500 MHz (Channel 1) or 446.500 MHz (Channel 2). ATV Channel 1 is no longer used in states where 420 - 430 MHz restrictions apply.

Note 9: Reserved Segments
These band segments are reserved for possible future use in the event of further band allocation changes.
The 432.625 - 433.000 MHz segment is also used for digital repeater inputs.

23 Cm Band – Advanced and Standard licensees only

Band Allocation

1240 - 1300 MHz	RADIOLOCATION	Primary Service
1240 - 1260 MHz	RADIONAVIGATION - SATELLITE	Primary Service
1240 - 1300 MHz	AMATEUR	Secondary Service
1260 - 1270 MHz	AMATEUR SATELLITE (uplinks)	Permitted on non-interference basis



1240.000 -	1241.000	REPEATER LINKS - Group A	(Note 7)
1241.000 -	1259.000	ATV CHANNEL 1	(Note 8)
1259.000 -	1260.000	REPEATER LINKS - Group A	(Note 7)
1260.000 -	1270.000	AMATEUR SATELLITES	(Note 3)
1270.000 -	1272.000	NARROW BAND MODES (Possible future use)	(Note 1)
1270.000 -	1270.600	Same pattern as 1296.000 - 1296.600	
1270.600 -	1272.000	General / Experimental	
1272.025 -	1273.000	REPEATER LINKS - Group B	(Note 7)
1273.025 -	1273.975	FM REPEATER OUTPUTS	(Note 6)
1274.000 -	1292.000	ATV CHANNEL 2	(Note 8)
1292.025 -	1293.000	REPEATER LINKS - Group B	(Note 7)
1293.025 -	1293.975	FM REPEATER INPUTS	(Note 6)
1294.000 -	1294.975	FM SIMPLEX	(Note 4)
1294.000		National voice calling frequency	
1294.750		RTTY (AFSK)	
1294.775		SSTV / Fax (AFSK)	
1294.800		WICEN	
1294.850		National ARDF frequency	
1295.000 -	1297.000	NARROW BAND MODES	(Note 1)
1295.000 -	1295.900	General / Experimental	
1295.900 -	1296.100	EME	
1296.100 -	1296.400	CW / SSB	
1296.100		Calling frequency: national primary	
1296.200		Calling frequency: national secondary	
1296.220 -	1296.240	Digital DX modes	
1296.240 -	1296.300	Guard band: New Zealand beacons	
1296.320 -	1296.340	Digital DX modes	
1296.400 -	1296.600	Beacons	(Note 2)
1296.600 -	1297.000	General / Experimental	
1297.025 -	1300.000	SIMPLEX (DATA)	(Note 5)
1297.025 -	1297.400	General FM - 25 kHz channel spacing	
1297.500 -	1297.900	D-Star – 200 kHz channel spacing	
1297.500		D-Star – recommended national calling frequency	
1298.100 -	1299.900	High speed - 200 kHz channel spacing	

Note 1: Narrow Band Modes

This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. Please avoid any terrestrial operation within the EME segment. The "Digital DX modes" segments include recommended spot frequencies for SSB-based digital modes, on the same pattern as in Note 1 of the 2 metre band plan.
The 1270 MHz segment is reserved for possible future use.

Note 2: Beacons

The beacon segment should be kept clear of other transmissions. Beacon frequencies are allocated on a call area basis, e.g. VK1: 1296.410 - 1296.419, VK2: 1296.420 - 1296.429 etc. Beacon frequency spacing is 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: Amateur Satellites

The satellite segment should be kept clear of all terrestrial operation.

Note 4: FM Simplex Segment

Channel spacing is 25 kHz. Channels reserved for special purposes should be kept clear of other operation.

Note 5: Simplex (Data) Segments

The 1297.025 – 1297.400 MHz segment is recommended for FM data modes, with 25 kHz channel spacing. The 1297.500 – 1297.900 MHz segment is recommended for D-Star simplex operation with 200 kHz channel spacing. The channels between 1298.100 and 1299.900 MHz are used for the simplex ports of D-Star repeaters.

Note 6: FM Repeaters

Channel spacing is 25 kHz, and the offset is 20 MHz.
Digital (D-Star) repeaters will be allocated frequencies spaced at 200 kHz intervals in the upper part of the repeater segment (primary frequency 1273.900 / 1293.900 MHz).

Note 7: Repeater Links

Two sets of link pairs are available, Group A on 1240/1259 MHz and Group B on 1272/1292 MHz. Wider offsets can be obtained with cross-group pairing, e.g. 1240 / 1292 MHz for a 52 MHz offset.

Note 8: Amateur Television

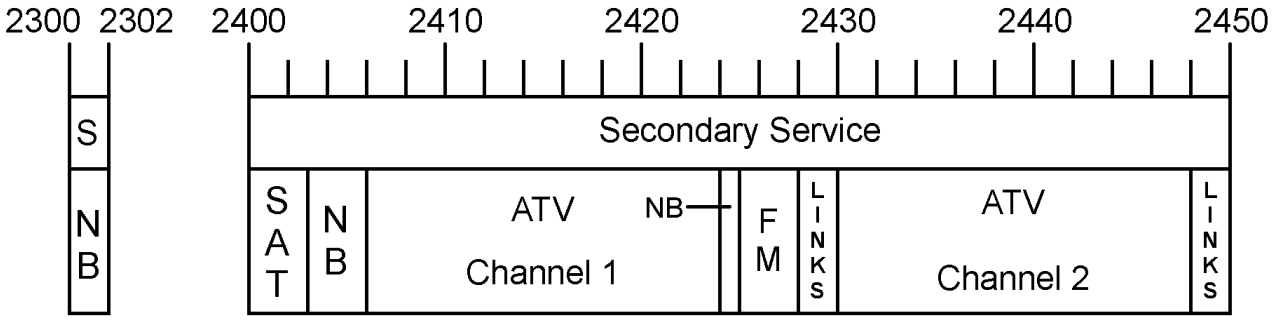
Both channels may be used for AM, FM or digital modes. Recommended uses are:

Channel 1:	Simplex or repeater inputs	
	FM or DVB	Maximum bandwidth +/- 9 MHz, centred on 1250 MHz
	AM	Video 1242.250 MHz, audio 1247.750 MHz
	AM	Video 1253.250 MHz, audio 1258.750 MHz
Channel 2:	Simplex or repeater outputs	
	FM or DVB	Maximum bandwidth +/- 9 MHz, centred on 1283 MHz
	AM	Video 1275.250 MHz, audio 1280.750 MHz
	AM	Video 1286.250 MHz, audio 1291.750 MHz

13 cm Band – 2300 - 2302 MHz Advanced licensees only
2400 - 2450 MHz Advanced & Standard licensees

Band Allocation

2300 - 2450 MHz	FIXED, MOBILE	Primary Services
2300 - 2450 MHz	RADIOLOCATION	Primary Service
2400 - 2450 MHz	INDUSTRIAL / SCIENTIFIC / MEDICAL (Other services must accept any harmful interference from ISM devices).	
2300 - 2302 MHz	AMATEUR	Secondary Service
2400 - 2450 MHz	AMATEUR	Secondary Service
2400 - 2450 MHz	AMATEUR SATELLITE	Permitted on non-interference basis



2300.000 -	2302.000	NARROW BAND MODES	(Note 1)
2400.000 -	2403.000	AMATEUR SATELLITES	(Note 3)
2403.000 -	2406.000	NARROW BAND MODES	(Note 1)
2403.000 -	2403.100	EME only	
2403.100 -	2403.400	CW / SSB	
2403.100		Calling frequency: national primary	
2403.200		Calling frequency: national secondary	
2403.220 -	2403.240	Digital DX modes	
2403.400 -	2403.600	Beacons	(Note 2)
2403.600 -	2406.000	General / Experimental	
2406.000 -	2424.000	ATV CHANNEL 1	(Note 6)
2424.000 -	2425.000	NARROW BAND MODES (JA - ZL)	(Note 1)
2425.000 -	2428.000	FM SIMPLEX	(Note 4)
2425.000		National voice calling frequency	
2425.750		RTTY (AFSK)	
2425.775		SSTV / Fax (AFSK)	
2425.800		WICEN	
2425.850		National ARDF frequency	
2426.000 -	2428.000	Data	
2428.025 -	2429.975	FM DUPLEX	(Note 5)
2430.000 -	2448.000	ATV CHANNEL 2	(Note 6)
2448.025 -	2449.975	FM DUPLEX	(Note 5)

Note 1: Narrow Band Modes

This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. Please avoid any terrestrial operation within the EME segment. The "Digital DX modes" segment includes recommended spot frequencies for SSB-based digital modes, on the same pattern as in Note 1 of the 2 metre band plan.

The 2403 MHz segment may have to be moved if required by future amateur satellite allocations. The 2424 MHz segment is reserved for possible use for EME contacts with Japan and New Zealand, which have their weak signal segments in this part of the band.

The segment 2300 – 2302 MHz is recommended for use in areas where the weak signal segment on 2403 MHz suffers unacceptable interference from digital links and other devices, and also for crossband EME contacts with overseas stations operating on 2304 MHz.

Note 2: Beacons

The beacon segment should be kept clear of other transmissions. Beacon frequencies are allocated on a call area basis, e.g. VK1: 2403.410 - 2403.419, VK2: 2403.420 - 2403.429 etc. Beacon frequency spacing is 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: Amateur Satellites

The satellite segment should be kept clear of all terrestrial operation.

Note 4: FM Simplex

Channel spacing is 25 kHz, or 100 kHz in the high speed data segment. Channels reserved for special purposes should be kept clear of other operation.

Note 5: FM Duplex

These segments are for duplex links with an offset of 20 MHz. Recommended channel spacing is 25 kHz, or 100 kHz for high speed data, with voice links in the lower half of the segment and data links in the upper half.

Note 6: Amateur Television

Both channels may be used for AM or FM, simplex or repeater operation. Satellites have absolute priority in the lower end of the band, and the availability of Channel 1 is conditional upon its not being required for future satellite use. Channel 2 is recommended as the primary channel. Recommended uses are:

Channel 1 (secondary): Simplex or repeater output.
FM or DVB centred on 2415 MHz (maximum bandwidth +/- 9 MHz), or AM (video 2415.000 MHz, audio 2420.500 MHz).

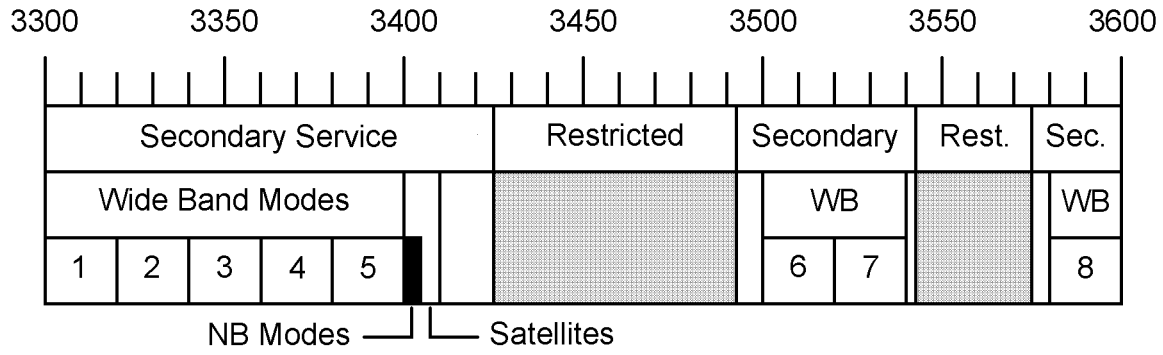
Channel 2 (primary): Simplex or repeater input
FM or DVB centred on 2439 MHz (maximum bandwidth +/- 9 MHz), or AM (video 2439.000 MHz, audio 2444.500 MHz).

9 Cm Band – Advanced licensees only

Band Allocation

3300 - 3600 MHz	RADIOLOCATION	Primary Service
3300 - 3600 MHz	AMATEUR	Secondary Service
3400 - 3410 MHz	AMATEUR SATELLITE	Permitted on non-interference basis
3400 - 3600 MHz	FIXED SATELLITE (Space to Earth)	Secondary Service
3400 - 3600 MHz	FIXED, MOBILE	Secondary Service

NOTE: In the band segments 3425.0 - 3442.5 MHz and 3475.0 - 3492.5 MHz, operation is prohibited in and around most major population centres. In the segments 3442.5 - 3475.0 MHz and 3542.5 - 3575.0 MHz, operation is prohibited in most parts of Australia. For full details, please refer to the current ACMA Amateur Licence Conditions Determination.



3300.000 -	3400.000	WIDEBAND MODES	(Note 5)
3300.000 -	3320.000	Channel 1: ATV	
3320.000 -	3340.000	Channel 2: Voice or data	
3340.000 -	3360.000	Channel 3: Simplex, any mode	
3360.000 -	3380.000	Channel 4: ATV	
3380.000 -	3400.000	Channel 5: Simplex, any mode	
3400.000 -	3410.000	AMATEUR SATELLITES	(Note 3)
3400.000 -	3402.000	NARROW BAND MODES	(Note 1)
3400.000 -	3400.100	EME only	
3400.100 -	3400.400	CW / SSB	
3400.100		Calling frequency: national primary	
3400.200		Calling frequency: national secondary	
3400.220 -	3400.240	Digital DX modes	
3400.400 -	3400.600	Beacons	(Note 2)
3400.600 -	3402.000	General / Experimental	
3402.000 -	3403.000	FM SIMPLEX (VOICE)	(Note 4)
3403.000 -	3405.000	FM SIMPLEX (DATA)	(Note 4)
3405.000 -	3425.500	ALL MODES	
3425.000 -	3492.500	NO OPERATION	
3500.000 -	3600.000	WIDEBAND MODES	(Note 5)
3500.000 -	3520.000	Channel 6: ATV	
3520.000 -	3540.000	Channel 7: Voice or data	
3542.500 -	3575.000	NO OPERATION	
3580.000 -	3600.000	Channel 8: ATV	

Note 1: Narrow Band Modes

This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. Please avoid any terrestrial operation within the EME segment. The "Digital DX modes" segment includes recommended spot frequencies for SSB-based digital modes, on the same pattern as in Note 1 of the 2 metre band plan.

Note 2: Beacons

The beacon segment should be kept clear of other transmissions. Beacon frequencies are allocated on a call area basis, e.g. VK1: 3400.410 - 3400.419, VK2: 3400.420 - 3400.429 etc. Beacon frequency spacing is 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: Amateur Satellites

There are no amateur satellites currently operating or planned for this band.

Note 4: FM Simplex

Recommended channel spacing is 100 kHz. Channels reserved for special purposes should be kept clear of other operation.

Note 5: Wideband Modes

These segments are for wideband simplex operation or duplex links. Suggested uses are:

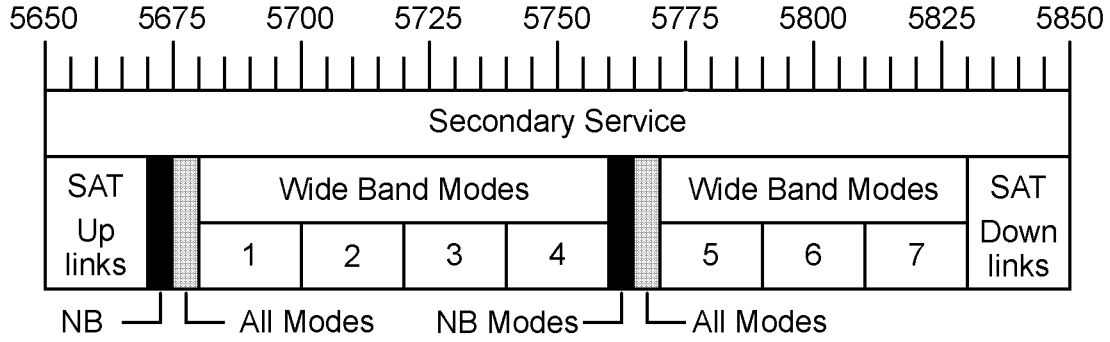
ATV: FM ATV, DVB or AM. Video carrier at centre of channel. Maximum bandwidth for Channel 5 should be +/- 9 MHz. Recommended use for duplex links is channel 1 input and channel 6 output.

Data or Voice: Recommended channel spacing is 100 kHz, or 1 MHz for high speed data, excluding upper and lower segment edges, with voice links at the lower end of the segment and data links at the upper end.

6 Cm Band – Advanced & Standard licensees

Band Allocation

5650 - 5850 MHz	RADIOLOCATION	Primary Service
5650 - 5725 MHz	SPACE RESEARCH	Secondary Service
5650 - 5850 MHz	AMATEUR	Secondary Service
5650 - 5670 MHz	AMATEUR SATELLITE (uplinks)	Permitted on non-interference basis
5830 - 5850 MHz	AMATEUR SATELLITE (downlinks)	Secondary Service



5650.000 -	5670.000	AMATEUR SATELLITES	(UPLINKS)	(Note 3)
5670.000 -	5672.000	NARROW BAND MODES	(Possible future use)	(Note 1)
5672.000 -	5673.000	FM SIMPLEX (VOICE)	(Possible future use)	(Note 4)
5673.000 -	5675.000	FM SIMPLEX (DATA)	(Possible future use)	(Note 4)
5675.000 -	5680.000	ALL MODES		
5680.000 -	5760.000	WIDEBAND MODES		(Note 5)
5680.000 -	5700.000	Channel 1: ATV		
5700.000 -	5720.000	Channel 2: Data		
5720.000 -	5740.000	Channel 3: Voice		
5740.000 -	5760.000	Channel 4: ATV		
5760.000 -	5762.000	NARROW BAND MODES		(Note 1)
5760.000 -	5760.100	EME only		
5760.100 -	5760.400	CW / SSB		
5760.100		Calling frequency: national primary		
5760.200		Calling frequency: national secondary		
5760.220 -	5760.240	Digital DX modes		
5760.400 -	5760.600	Beacons		(Note 2)
5760.600 -	5762.000	General / Experimental		
5762.000 -	5763.000	FM SIMPLEX (VOICE)		(Note 4)
5763.000 -	5765.000	FM SIMPLEX (DATA)		(Note 4)
5765.000 -	5770.000	ALL MODES		
5770.000 -	5830.000	WIDEBAND MODES		(Note 5)
5770.000 -	5790.000	Channel 5: Data		
5790.000 -	5810.000	Channel 6: Voice		
5810.000 -	5830.000	Channel 7: ATV		
5830.000 -	5850.000	AMATEUR SATELLITES	(DOWNLINKS)	(Note 3)

Note 1: Narrow Band Modes

This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. Please avoid any terrestrial operation within the EME segment. The "Digital DX modes" segment includes recommended spot frequencies for SSB-based digital modes, on the same pattern as in Note 1 of the 2 metre band plan. The 5670 MHz segment is reserved for possible future use.

Note 2: Beacons

The beacon segment should be kept clear of other transmissions. Beacon frequencies are allocated on a call area basis, e.g. VK1: 5760.410 - 5760.419, VK2: 5760.420 - 5760.429 etc. Beacon frequency spacing is 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: Amateur Satellites

The satellite segments should be kept clear of all terrestrial operation.

Note 4: FM Simplex

Recommended channel spacing is 100 kHz. Channels reserved for special purposes should be kept clear of other operation. The segments at 5672 and 5673 MHz are reserved for possible future use.

Note 5: Wideband Modes

These segments are for wideband simplex operation or duplex links. Suggested uses are:

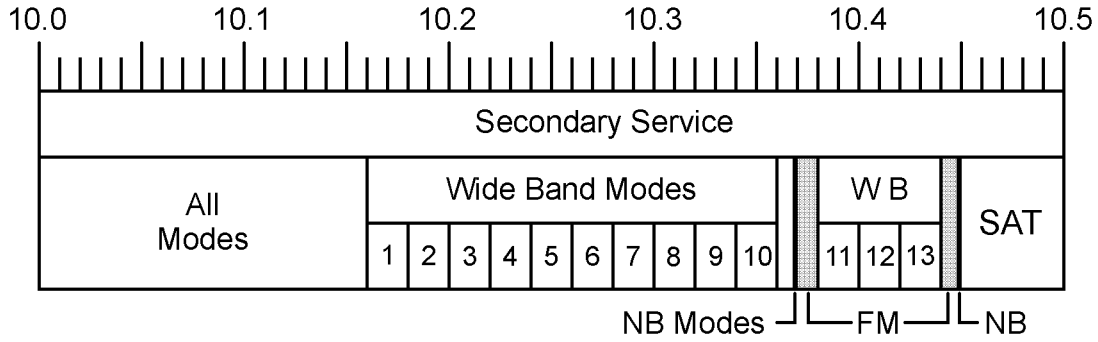
ATV: FM ATV, DVB or AM. Video carrier at centre of channel. Maximum bandwidth for Channel 4 should be +/- 9 MHz. Recommended use for duplex links is channel 1 input and channel 7 output.

Data or Voice: Recommended channel spacing is 100 kHz, or 1 MHz for high speed data, excluding upper and lower segment edges. Duplex offset is 70 MHz.

3 Cm Band – Advanced licensees only

Band Allocation

10.000 - 10.500 GHz	RADIOLOCATION	Primary Service
10.000 - 10.025 GHz	METEOROLOGICAL SATELLITE	Secondary Service
10.000 - 10.500 GHz	AMATEUR	Secondary Service
10.450 - 10.500 GHz	AMATEUR SATELLITE	Secondary Service



10000.000 - 10160.000	ALL MODES		
10160.000 - 10360.000	WIDEBAND MODES		(Note 5)
10160.000 - 10180.000	Channel 1: Data		
10180.000 - 10200.000	Channel 2: Voice		
10200.000 - 10220.000	Channel 3: ATV		
10220.000 - 10240.000	Channel 4: Data		
10240.000 - 10260.000	Channel 5: Voice		
10260.000 - 10280.000	Channel 6: ATV		
10280.000 - 10300.000	Channel 7: Data		
10300.000 - 10320.000	Channel 8: Voice		
10320.000 - 10340.000	Channel 9: ATV		
10340.000 - 10360.000	Channel 10: Simplex, any mode		
10360.000 - 10368.000	ALL MODES		
10368.000 - 10370.000	NARROW BAND MODES		(Note 1)
10368.000 - 10368.100	EME only		
10368.100 - 10368.400	CW / SSB		
10368.100	Calling frequency: national primary		
10368.200	Calling frequency: national secondary		
10368.220 - 10368.240	Digital DX modes		
10368.400 - 10368.600	Beacons		(Note 2)
10368.600 - 10370.000	General / Experimental		(Note 3)
10370.000 - 10371.000	FM SIMPLEX (VOICE)		(Note 4)
10371.000 - 10380.000	FM SIMPLEX (DATA)		(Note 4)
10380.000 - 10440.000	WIDEBAND MODES		(Note 5)
10380.000 - 10400.000	Channel 11: Data		
10400.000 - 10420.000	Channel 12: Voice		
10420.000 - 10440.000	Channel 13: ATV		
10440.000 - 10447.000	FM SIMPLEX (DATA)	(Possible future use)	(Note 4)
10447.000 - 10448.000	FM SIMPLEX (VOICE)	(Possible future use)	(Note 4)
10448.000 - 10450.000	NARROW BAND MODES	(Possible future use)	(Note 1)
10450.000 - 10500.000	AMATEUR SATELLITES		

Note 1: Narrow Band Modes

This segment is reserved for modes such as CW, digital modes and SSB with bandwidths up to 4 kHz. Weak signal operation has absolute priority. Calling frequencies should be used only to make initial contact and then vacated as soon as possible. Please avoid any terrestrial operation within the EME segment. The "Digital DX modes" segment includes recommended spot frequencies for SSB-based digital modes, on the same pattern as in Note 1 of the 2 metre band plan. The 10448 MHz segment is reserved for possible future use.

Note 2: Beacons

The beacon segment should be kept clear of other transmissions. Beacon frequencies are allocated on a call area basis, e.g. VK1: 10368.410 - 10368.419, VK2: 10368.420 - 10368.429 etc. Beacon frequency spacing is 2 kHz. Further details on beacon frequency allocations are available from the Technical Advisory Committee.

Note 3: Amateur Satellites

The satellite segment should be kept clear of all terrestrial operation.

Note 4: FM Simplex

Recommended channel spacing is 100 kHz. Channels reserved for special purposes should be kept clear of other operation.

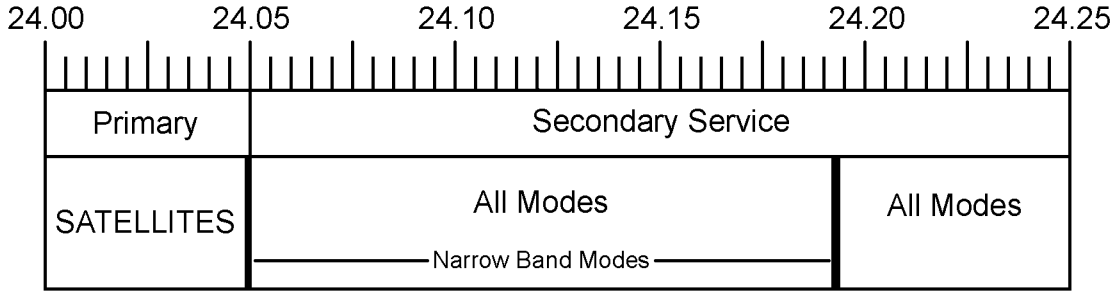
Note 5: Wideband Modes

These segments are for wideband simplex operation or duplex links. A variety of duplex offsets between 60 and 220 MHz can be obtained by choosing the appropriate channel pairs. Suggested uses are:
ATV: FM ATV, DVB or AM. Video carrier at centre of channel.
Data or Voice: Recommended channel spacing is 100 kHz, or 1 MHz for high speed data, excluding upper and lower segment edges.

1.25 Cm Band – Advanced licensees only

Band Allocation

24.00 - 24.05 GHz	AMATEUR	Primary Service
24.00 - 24.05 GHz	AMATEUR SATELLITE	Primary Service
24.05 - 24.25 GHz	RADIOLOCATION	Primary Service
24.05 - 24.25 GHz	AMATEUR	Secondary Service
24.05 - 24.25 GHz	EARTH EXPLORATION SATELLITE	Secondary Service



24.000 -	24.050	AMATEUR SATELLITES
24.048 -	24.050	NARROW BAND MODES (Recommended segment) Same pattern as for lower bands
24.050 -	24.192	ALL MODES
24.192 -	24.194	NARROW BAND MODES (Alternative segment)
24.194 -	24.250	ALL MODES

Bands Above 24 GHz – Advanced licensees only

47.00 - 47.20 GHz	AMATEUR & AMATEUR SATELLITE	Primary Service
76.00 - 77.50 GHz	RADIO ASTRONOMY & RADIOLOCATION	Primary Services
76.00 - 77.50 GHz	AMATEUR & AMATEUR SATELLITE	Secondary Services
76.00 - 81.00 GHz	SPACE RESEARCH	Secondary Service
77.50 - 78.00 GHz	AMATEUR & AMATEUR SATELLITE	Primary Services
77.50 - 79.00 GHz	RADIO ASTRONOMY	Secondary Service
78.00 - 81.00 GHz	AMATEUR & AMATEUR SATELLITE	Secondary Services
78.00 - 81.00 GHz	RADIOLOCATION	Primary Service
79.00 - 81.00 GHz	RADIO ASTRONOMY	Primary Service
122.25 - 123.00 GHz	FIXED, MOBILE , SPACE RESEARCH, EARTH EXPLORATION SATELLITE, INTER-SATELLITE AMATEUR	 Primary Services Secondary Service
134.00 - 136.00 GHz	AMATEUR & AMATEUR SATELLITE RADIOLOCATION	Primary Services Secondary Service
136.00 - 141.00 GHz	RADIO ASTRONOMY, RADIOLOCATION AMATEUR & AMATEUR SATELLITE	Primary Services Secondary Services
241.00 - 248 GHz	RADIOLOCATION AMATEUR & AMATEUR SATELLITE	Primary Service Secondary Service
248.00 - 250 GHz	AMATEUR & AMATEUR SATELLITE	Primary Service