DICK SMITH ELECTRONICS

AUSTRALIAN RADIO FREQUENCY HANDBOOK

By Jack McDonald

ncludes a list of frequencies you can listen to!

What Is Scanning?
What Do You Need?
How To Use A Scanner.
How To Get The Most From Your Scanner.

COMPLETE NEW REVISED EDITION

DICK SMITH ELECTRONICS AUSTRALIAN RADIO FREQUENCY HANDBOOK

FIFTH EDITION

Original by Jack McDonald

Illustrations by Alistair Barnard
Murray Roberts

FIFTH EDITION

A NOTE FROM THE PUBLISHER:

The first time a book of this type has ever been attempted in Australia, represents a breakthrough in the type of information available to the general public.

The frequency information published in this book is as supplied to the author from hundreds of sources throughout Australia. Obviously, neither the author nor the publisher has had the opportunity to check the details, so no guarantee can be given that they are either 100% correct or completely up-to-date.

Neither the author nor the publisher can take any responsibility for the use of information supplied in this book, or of any consequences arising therefrom.

Deliberately left out of the frequency directory in this book are any references to the frequencies used by drug squads, ASIO and similar law enforcement authorities.

This stand has been taken as it is believed such information could be used by certain groups in the community to commit crime, or to thwart the authorities in their investigation of crime.

FIFTH EDITION

This edition would not have been possible were it not for the efforts of the hundreds of scanner enthusiasts who wrote in after the third edition went out of print. To all those who wrote in and contributed their ideas, thank you!

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PREFACE

This book has been born out of the need for a readily available guide, both for the established and the newcomer, to scanner radio monitoring. Listening to radio transmissions outside the common 'garden variety' local AM broadcasting station is challenging, and this book helps you meet that challenge.

The main aspects of scanner radio monitoring are in this fourth edition and the author is open to any suggestions about what you, the reader, want in any future editions. Compiling the frequency directory section involved considerable research throughout Australia, and this is a particular area where readers can help. I hope this book will be at your fingertips as much as the controls of your scanner and provide a constant source of reference data.

Good monitoring.

Send all frequencies to:

RADIO FREQUENCY HANDBOOK

PO Box 321

North Ryde NSW 2113

FOREWORD

Hi!

Welcome to one of the fastest growing hobbies in the world today; scanning!

Scanning has only become possible in the last decade through incredible advances in electronics. Radio transmissions that were clouded in mystery have now been put within reach of everyone.

True, short wave listeners have for years searched the high frequency bands on the lookout for new or unusual stations. But until now, the technology simply hasn't been available for most people to listen in to the millions of transmissions in the VHF and UHF bands.

And that's where the excitement is!

You'll hear fire crews racing to a city skyscraper. A jumbo jet obtaining clearance to land after an international flight. Tow truck drivers on their way to another accident. Paging services summoning doctors to an operation. Harbour control nudging a supertanker into its berth. The list is endless.

Obviously, the average person can gain access to an incredible range of information on community happenings. Far from being concerned about people listening in on their transmissions, many law enforcement officers now feel that scanner use should be encouraged — if only for the direct assistance that people can give authorities.

For example, imagine how many extra pairs of eyes are on the lookout for stolen cars. Or how quickly news crews can be on the spot if they hear of an emergency as it happens!

I believe that responsible use of scanning receivers can only do the community good. And who knows? — your interest in scanning could be the start of an exciting career in electronics.

Good scanning!

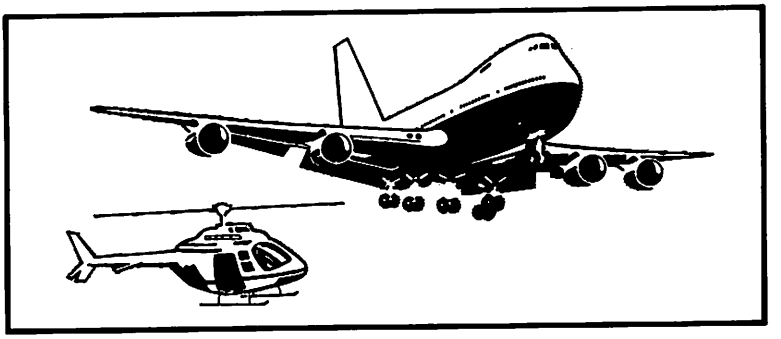
Dick Smith
VK2DIK

CHAPTER 1

WHAT IS SCANNER RADIO MONITORING?

This is a question often asked by those who are unaware of the hobby of listening to radio communications on the Very High Frequency (VHF) and Ultra High Frequency (UHF) bands. It's a unique, exciting and legitimate hobby which has been made easy by a marvel of computer age technology — the Scanner Radio Receiver.

Quite simply, a scanner radio is a computer-controlled radio, which can be made to search the radio frequencies by itself, looking for signals.



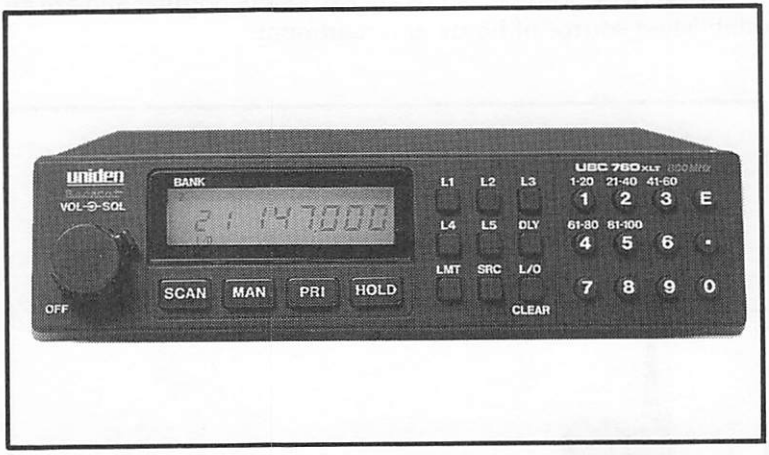
These radios enable everyone to listen to a whole range of radio communications on tens of thousands of channels. You may hear high — flying jumbo jets, emergency services vehicles at the scene of a disaster, a ship heading for port, the possibilities are endless. In fact, part of the fun of owning a scanner can be using its built-in microcomputer to search the radio bands for interesting signals — scanner hobbyists are discovering new stations every day!

This book explains how to join the growing number of scanner hobbyists throughout the world. Whether you want to ride in the cockpits of aircraft, hear tomorrow's news today direct from the emergency services, or listen to radio amateurs and CBers chatting on the air, the following pages will show you how easy it is.

In the USA, scanner radios are extremely popular and are an established source of home entertainment.

Early scanners needed expensive crystals to make them work on a limited number of channels — but today's models available from Dick Smith Electronics do away with crystals. You decide the number of channels you want to listen to and the frequencies of those channels are simply programmed by touching a row of buttons. It's just like an oversized electronic calculator — but instead of mathematical problems, you are programming a microcomputer which controls the frequencies that the scanner receives. Full easy-to-follow instructions on how you can program your scanner, follow in a later chapter of this book.

A directory at the back of this book has most of the frequencies you will need to begin the hobby of scanner radio listening. Here for the first time in Australia a comprehensive list of scanner frequencies is available! They have been gathered from various sources across Australia.



Frequencies used by national security organisations and agencies involved in detecting illicit drug trading have been left out of the directory deliberately. By programming your scanner with local emergency services, it's possible to hear the news as it happens.

CHAPTER 2
SCANNER RADIO HISTORY

History of Scanner Radio

The first radios available to the general public for listening to the VHF band appeared in the late 1960s. They were tuneable just like an ordinary transistor radio, but had the added capability of tuning approximately 150MHz to 174MHz. In those early days of VHF listening a tuneable radio was quite sufficient, but as the VHF band became more congested during the 1970s it was more and more difficult to receive only the signals you wanted. The selectivity, or ability to receive a signal without also hearing signals on adjacent channels, was very poor on the tuneable radios. Those who wanted to listen to particular frequencies got hold of old taxi radios and put in the appropriate crystals. This gave interference-free reception, but meant that you had to have a crystal for each frequency and several old two-way radios to successfully monitor a number of channels.

It was quite an expensive exercise until someone in the United States invented a crystal-controlled VHF radio that could monitor more than one frequency — the scanner was born. The early scanners could monitor up to eight frequencies, and each frequency or channel needed its own crystal. Using solid-state technology, the scanner switched in one crystal at a time at a rate of about 16 per second. When it came across a channel with a transmission it stopped; after the transmission ended the scanning process continued until another transmission was received.

Freelance photographers with cine (movie) cameras who worked as 'stringers' for TV stations introduced scanner radios to Australia in the early 1970s. The stringers used to monitor police and fire brigade calls to get news topics such as a big fire, robbery or fatal accident. They would film these incidents and sell the footage to TV stations as news film. By the late 1970s, the number of radio channels being used by essential services had grown considerably, and the cost of crystals needed was almost equal to the price of the scanners.

Computer technology then took over with synthesised or crystal-less scanners which allow the monitoring of any fre-

quency within prescribed bands at the touch of buttons or keys. Today's modern microprocessor controlled scanners have all the features anyone could want for monitoring the VHF and UHF bands — and are within the financial reach of the average consumer.

CHAPTER 3
PROGRAMMING A SCANNER

The first thing to do is to ensure that the scanner is set up with the supplied telescopic antenna fully extended. For weak signal reception or electrically noisy locations, an external antenna may be helpful. Antenna selection is important as there are different models ranging from simple straight whip types to sophisticated 'discone' types, each of which are made to cover certain frequency bands.

Connect the scanner to a 12V DC source, or to a 240V AC to 12V DC plug pack mains adaptor (ensuring that the polarity is correct in both cases to avoid damaging the unit).

For our purpose, the well-known Uniden Bearcat 760 XLT shall be used as a model for programming. A look at the UBC 760 XLT front panel from left to right reveals four main sections: a combined on/off-volume and squelch control, primary operations section including the backlit digital display, frequency channel functions section and a numeric keypad. This scanner is capable of storing up to 100 channels in five 20-channel banks.

Your own scanner may be slightly different, but the basics of operation are still generally similar. If it lacks a programming feature covered, simply skip over to the next function.

Switch on the scanner and turn the volume control up far enough to provide a comfortable listening level. Adjust the squelch control by turning the knob on the side in a clockwise (left to right) direction until a 'rushing' background noise is heard. Now, turn the knob back, slowly, until the noise just disappears.

The 'squelch' control may be new to you: it is simply a control which enables the receiver to remain quiet until a signal is received. Without the squelch properly set, either irritating background noises will be heard when signals are not coming in, or, in some cases, the receiver will not be able to pick up weaker signals.

When the scanner is first switched on, each channel will read '000.000'. To start programming, move over to the primary

operations section (just below the display panel) where, for the time being, the most important controls are the 'MAN' (manual) and 'HOLD' keys. On the extreme right, there is the numeric keypad where the actual frequencies will by keyed in. This consists of the numbers, 1 to 0, a decimal point and an 'E' (enter) key. We shall go back to the frequency channel functions section (the in-between panel) later.

Choose an active VHF/UHF frequency for your area from the frequency directory section of this book. Press a number to select a channel into which you want the frequency to be stored (eg, '1' for Channel 1, '5' for Channel 5, and so on) and then the 'MAN' (manual) key. Now, press the frequency digits — including the decimal point — on the numeric keypad. As you enter the numbers, these will appear on the digital display. When completed, press the 'E' (enter) key.

If an error has been made or a frequency outside the bands of the scanner is attempted, the display will show 'Error'.

DON'T PANIC! If you have done everything correctly, you will have programmed your first frequency into your chosen channel on the scanner.

Simply enter a new frequency, using the correct procedure, and the old one will be erased.

Normally, the most important frequency nominated by yourself is programmed into Channel 1, and the lesser frequencies into successive channels. This enables you to make use of the 'PRIORITY' function (if your scanner has one), which then allows you to keep track of the activity on one frequency while listening to the activity on others.

Another method used in programming the UBC 760 XLT scanner is directing the unit to look for new active frequencies within the 12 bands of the receiver. The search function allows you to search through entire bands (eg, the whole emergency sevices band) and not just individual frequencies. In order to do so, let's now go to the frequency channel section (the panel between the primary operations panel and the numeric keypad) and look at how the search function is activated.

The first thing to remember is that two frequencies within the required search range must be set. Hence, enter the LOWER limit frequency (eg, 450MHz) on the keypad and press the 'LMT' (limit) key. Next, enter the UPPER limit frequency (eg, 470MHz) and press the 'LMT' key again. In this case, you want the scanner to search between 450 and 470MHz. Once that is done, press the 'SRC' (search) key to begin the scan search. That's all there is to it!

When an active frequency is found, the scanning will stop in order to monitor the channel. When the signal source stops transmitting, the unit will resume searching.

Pressing the 'HOLD' key will hold the search on the frequency it has stopped at. Pressing the 'HOLD' key again steps the search up to the next frequency and so on; pressing the 'LMT' key steps it back down. To leave the search mode, press the 'MAN' key.

On the same panel, there are five keys marked 'L1', 'L2', 'L3', 'L4' and 'L5'. These are five frequency bands into which you can individually program upper and lower frequencies in order to specify a search range within one band (that is, 66 to 88, 108 to 136, 136 to 174, 350 to 512 and 806 to 956MHz). This saves you a lot of time because you don't have to manually re-key upper and lower frequency bands each time you want to do a search.

A similar procedure to that used for programming the search function is used. Firstly, enter your LOWER frequency limit and press one of the 'L'-denominated keys (eg, 'L1'). Enter in your UPPER frequency limit and press the same 'L' key (in this example, 'L1' again). You have now entered the first frequency range into the scanner's memory. Pressing the same 'L' key (ie, 'L1') begins the search function.

In each case, you may program five separate bands into memory positions L1 to L5. When finished, the search function for each can be activated by simply pressing L1, L2, L3, L4 or L5, corresponding to the bands entered.

As mentioned earlier instead of manually programming frequencies read from a list, the UBC 760 XLT can be programmed during the search function. In other words, during a search you may come across a frequency that you want to save and you can do so immediately, instead of feverishly writing it down to key in later.

Firstly, select the channel number you wish to program a frequency into (eg, Channel 6). Once done, go into the search function procedure previously described. When the scanner stops at a frequency that you want to save, press the 'HOLD' key to stop scanning (or searching) and then press the 'E' key to save that frequency into the channel selected. The same procedure is repeated if you want to save another frequency in another channel.

That's all there is to it! Certainly different from tuning in a normal radio receiver, but it's no more complex than operating a microwave oven.

Now that you have mastered the art of programming the

UBC 760 XLT, activating the scanning function should soon have your unit picking up transmissions. If not, the frequency you have selected is not active at that moment (eg, taxi-cab and armed forces transmissions are often intermittent), or the volume setting is too low, the squelch control is set too high, or the antenna system is inadequate for your location for your frequency band selected.

If all is well, you can now sit back, watch your scanner scan channels for activity and enjoy listening to what you can pick up!

The Uniden Bearcat 760 XLT has many other special and unique features such as the 'MEMORY LOCK' switch on the rear of the unit, used to lock the keypad to prevent an accidental erasure of a frequency previously programmed. Memory protection from power loss through a lithium battery backup with a lifespan of around two to three years is included. An 'EXT.SP' jack allows you to either use a pair of mono headphones for private listening, or an external speaker in noisy environments.

The scanner that you have may differ from these features, but the primary operations covered remains basically the same for most scanners.

CHAPTER 4
INSIDE A SCANNER

It's not the intention of this chapter to give you a course in digital circuits, monolithic crystals filters, transistors and oscillators, but rather to explain in simple terms the inner workings of a scanner. Basically, there are two types of scanners — the crystal controlled and the frequency synthesised.

The difference between the two is the method used in the frequency determining circuitry. In both types of scanners there's a number of channels. A digital scanning circuit switches across these channels at a rate of about 16 per second.

The crystal type requires a quartz crystal as the frequency determining element for each channel. Synthesised scanners use complex solid-state circuits to synthesise, or make, the various frequencies which are programmed in by the scanner user.

Channels not receiving a radio transmission are automatically bypassed, while channels in use are locked in. When the communication ends on a locked-in channel the scanning process resumes. All this takes place without the scanner user doing a thing except sitting back and listening.

A refinement on some scanners is called a priority channel. Basically, this involves a nominated channel being scanned even when another channel is locked in, and when a transmission appears on the priority channel, it is given priority over all other channels. Other standard features on scanners are the Delay and Lock Out facilities, already explained.

When To Listen

Knowing frequencies that are in use in your area by checking the frequencies directory, a little common sense, and experience at scanning helps you choose the right time to listen.

Business two-way radio communciations are mostly confined to business hours, amateur and CB operators can be on air at any time with peak periods coinciding with morning and afternoon road traffic peaks and at weekends.

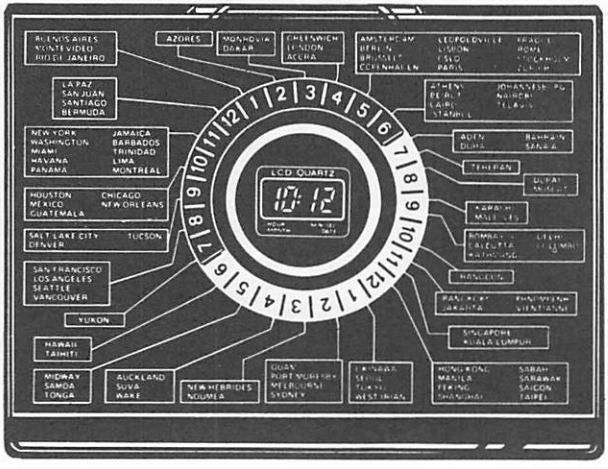
Aviation band signals also will be heard during peak aircraft

times. These are around 6a.m. to midnight for domestic and international jets, during the early hours of the day for overnight cargo planes, charter and private flights mainly during daylight, and peak flying training at weekends.

During and after storms, a flurry of activity can be heard by electricity supply authorities, and security companies whose mobile units check out alarms accidentally set off by wind or power failure. If the storm is severe, State Emergency Services may be called out to help remove fallen trees and put protective sheeting over roofs that have lost tiles. Country fire brigades are heard often during summer, and they may test their base and mobile radios on Sunday mornings.

DATE	TIME	FREQ	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES
13/7	1955	135·5	AIRCRAFT	BOSFORD	6-8	RETURNING TO MASCOT WITH HEART PATIENT
13/7	2005		AMBULANCE	CITY	9	TO AIRPORT FOR ABOVE
21/7	0035	468·0	SECURITY	CITY	7	ROBBERY INVESTIGATION
21/7	1800	73·5	COUNCIL	LOCAL	9	POWER LINE DOWN AFTER ACCIDENT
21/7	1805		TOWTRUCK		6	ACCIDENT SEE ABOVE
21/7	15·30	1455	HELICOPTER MOBILE	CITY	9	
21/7	1600	1470	HAND HELD	CITY	9	

To help you build up a knowledge of VHF and UHF activity, it's suggested that you keep a log of new discoveries, or, if you're keen, a record of routine communications. This can be kept in a small exercise book or notepad and may be quite useful for later reference, rather than trusting to memory. A scanner log should contain the frequency, category (i.e., fire, ambulance, etc.), location, signal strength, time and date.



Have an accurate clock as part of your monitoring station, and an extension telephone will help you avoid being dragged away right in the middle of some exciting listening.

BUYING A SCANNER

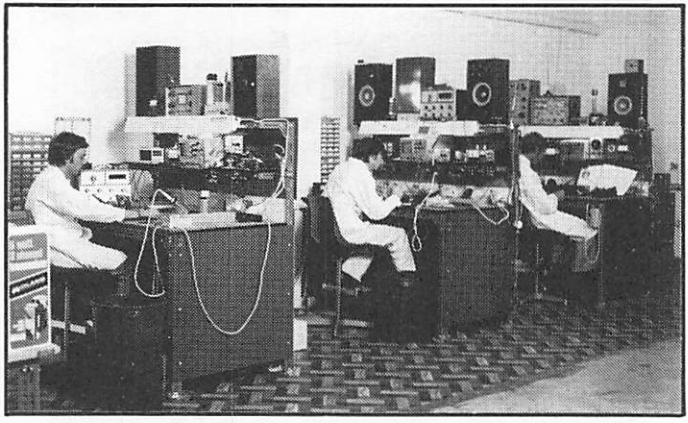
One of the most important considerations when buying a radio scanner is after-sales service. This is particularly important with the more complex synthesised scanners.

Most scanners, if treated properly, will give good service year in, year out. However, as with any product, things can go wrong.

Any prospective buyer of a scanner should check with the retailer on the availability of after-sales servicing. Should something go wrong with a new scanner, the best advice is not to hesitate in getting it back to the retailer you bought it from. It's a good practice to deal only with the retailer you bought it from, and also to keep the receipt of purchase as proof of the date you took possession of the scanner.

Due to the complex nature of modern day scanners, servicing is not a job that can be tackled by just anyone. It needs a technician with both experience in scanner fault-finding and the necessary service equipment.

Dick Smith Electronics maintain a fully equipped service centre at North Ryde, NSW. Simply return your faulty scanner to any Dick Smith Electronics store.



CHAPTER 5
RECEIVING RADIO SIGNALS

The subject of radio is a long and involved one — but to get the most from your scanner you should understand a little of how radio signals can travel from the transmitter to the receiver.

Let's use an example: If you were to throw a pebble into a pond, there would be a disturbance of the pond at the point where the pebble hit the water, and waves would travel out from this point towards the bank.

At the bank you could place a toy boat in the water, and watch it rise and fall as the waves arrived.

What you have done is make a 'transmitter' and a 'receiver'. The transmitter is the pebble you threw into the pond, and the receiver is the toy boat which told you the waves had arrived. The waves themselves are really nothing — just a movement of the medium itself — in this case, the water.

It's very similar with radio: at the transmitter an electrical disturbance is made. Waves travel outwards from this disturbance to be intercepted by an aerial and converted back into electrical energy — an image of the electric current which made the disturbance back at the transmitter.

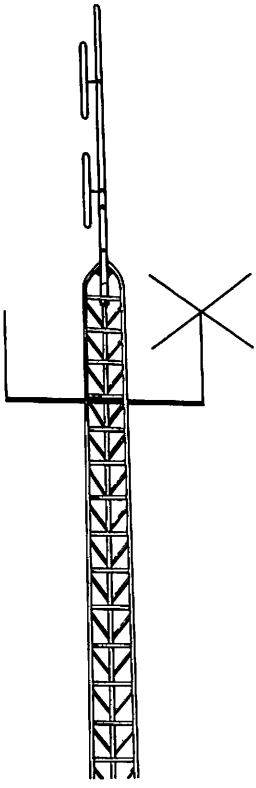
Between the transmitter and the receiver, radio waves can be dramatically affected by a huge range of natural and man-made obstacles. The term used to explain the characteristics of radio wave transmission and how they're affected once they leave the transmitter is called 'propagation'.

Signals on low and medium frequency bands can 'bend' around objects — even around the earth itself — and very long distances can often be acheived.

On the VHF and UHF bands, however, signals travel virtually in straight lines — know as 'line-of-sight' propagation. Some rare exceptions cause signals to travel long distances. An explanation of this has been included in a later chapter on advanced scanner techniques

This chapter will concentrate on normal 'line-of-sight' propagation.

Most of your scanner listening will involve signals up to a radius of 100 kilometres or more from your receiver. Line-of-sight means that the antennas at the transmitting and receiving ends must be able to 'see' one another for communication to take place, although in practice the radio horizon is somewhat further than the optical or visual horizon.



AM stations are not located in the VHF area

Television stations, and AM and FM radio stations use the VHF band. They have their transmitting antenna on strategic high spots to give them the widest possible signal coverage area because of the limits of line-of-sight propagation.

The same high-spot technique is used by fire brigade, ambulance and most other two-way radio users in the high VHF and UHF bands. A need for reliable communications by emergency services is the reason why they try to produce radio signals that virtually saturate their coverage area, no matter what the terrain. Obviously, a life could be endangered if an emergency unit was out of radio range of its base. No system is

perfect, and in the largest capital cities you may hear a base operator tell a mobile unit to 'change location and try again'. Sometimes, by moving as little as one metre, perfect communication can be restored. This could be caused by the mobile being shielded by a tall building or power-lines, and sometimes due to the mobile being in particularly low terrain.

Antennas For Scanning

If your scanner comes with its own telescopic antenna, it may be adequate to pick up signals in your local area. But nothing beats having an outside antenna for a scanner to get the best results. You will find that signals are received more strongly and the number of signals that can be heard also increases.

The general rule is: the higher you put your outside scanner antenna, the further away you will be able to hear signals. Most scanning hobbyists find that there's little gain in having more than one antenna, two or three metres above the roof-line of their houses.

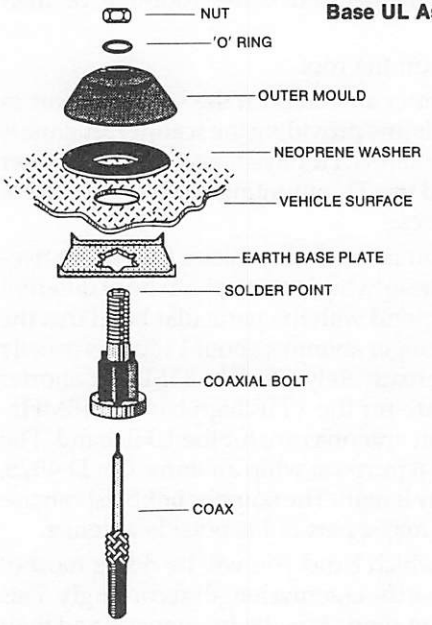
Take extreme care while on the roof.

Some people mount scanner antennas on the same support as TV antennas — normally this is fine providing the scanner antenna is above and clear of the other antenna. Hobbyists also mount scanner antennas on TV mast pipe and use TV mounting hardware available at Dick Smith Electronics stores.

If you have a look at antennas used on vehicles fitted with two-way radios, you will see that these 'whip' antennas can be of different lengths. These lengths correspond with the particular band that the radio is transmitting on. The longer antenna, about 115cm, is usually for the VHF low band (approximately 70MHz-85MHz); shorter antennas, about 40cm long, are for the VHF high band (148MHz-174MHz), while the very short antennas are for the UHF band. The Dick Smith Electronics general purpose whip antenna, Cat D-4025, is suitable as it can be cut to any length. The scanner hobbyist can use any of these antennas as the major part of his outside antenna.

You will have to decide which band you will be doing most of your listening on — and choose the antenna length accordingly. This is easily found by looking at the chart showing frequencies and their corresponding antenna lengths, which is included with the antenna. A low band antenna will also pick up signals on the high band and UHF, but not as well as the antennas cut to the correct lengths for these higher bands. In most cases, a high band antenna would be suitable for UHF reception, but poor for low band signals. Certainly a UHF antenna will give a lower performance on the other two bands.

Compact short length antennas such as the Mobile One 'Scantenna' (Dick Smith Electronics Catalogue No. D-4434) specially designed for mobile use may also be used for base station scanners in cases where space may be a limitation or where the landlord objects to large antenna arrays being mounted on the roof. Mobile antennas are usually fitted with a standard 5/16 inch female thread and will require a mounting base to suit. Fitting the cable to the mounting base is similar to installing a CB antenna (see diagram below) while the base itself can be installed through the use of any suitable piece of hardware such as Mirror/Roof Rack Mounts (D-4512), Boot Mounts (D-4515) or Gutter Mounts (D-5125 or D-5100). Although reception may not be as good as a base antenna, these are often efficient enough to receive the entire VHF/UHF band from 70MHz to 500MHz including commercial VHF and UHF transmissions, VHF aircraft bands and UHF CB channels. What's more, such antennas are often low priced!



Base UL Assembly

INSTALLATION

1. Separate the base pieces.
2. Drill a ⅞" (23mm) hole in the vehicle body.
3. Feed the bolt through the base plate and insert them into the hole from underneath.
4. Place the neoprene washer over the exposed bolt.
5. Fit the outside mold over the bolt and washer ensuring the star shaped insulator on the bolt fits neatly home.
6. Next, slide the 'O' ring over the bolt.
7. Tighten the locknut down to form a weather-proof seal.
8. Screw whip onto base.

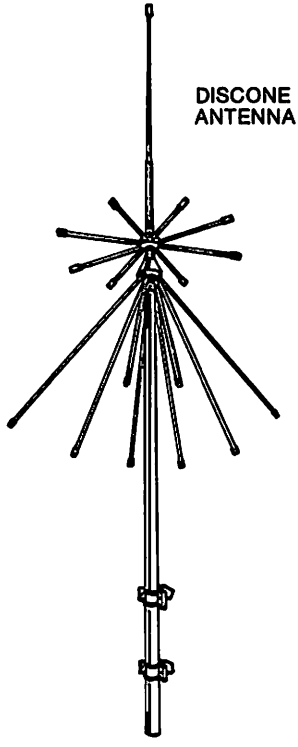
Base station scanner antennas provide the best performance by far of course. Some, such as the D-4432 Mobile One Indoor/Outdoor antenna, are within an affordable price range. The antenna itself, covering the 70MHz to 174MHz and 400MHz to 500MHz bands, offers versatility, ease of installation and removal through its in-built eye-hook, supplied with prefitted cable and connector.

By far the most popular scanner antenna is the 'ground plane' antenna. Those who transmit on the VHF and UHF bands often use this type of antenna as their radio base-station antenna. Amateur radio operators and CBers have long favoured the ground plane due to its simple design, low cost to build, and good performance. A ground plane has a vertical element, and usually four radial elements evenly spaced at a roughly 45° angle down from the horizontal.

A broadband antenna design suitable for VHF low, VHF high and UHF bands is called the 'discone'. It can be capable of receiving from 25MHz to 1300MHz, is a good performer and popular among hobbyists who want to listen for scanner bands.

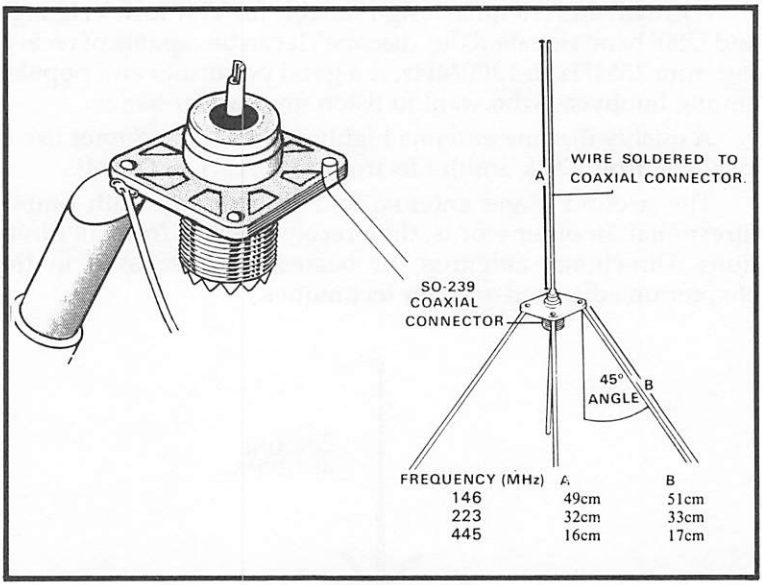
A quality discone antenna highly suitable for scanner use is available from Dick Smith Electronics stores, Cat D-4840.

The ground plane antenna and discone are both ommi-directional. In other words, they receive signals from all directions. Directional antennas, or beams, are discussed in the chapter on advanced scanner techniques.



HOW TO BUILD YOUR OWN

In its simplest form, a ground plane antenna can be made using SO-239 coaxial socket and five pieces of 40-centimetre long stiff wire, such as can be cut from a wire coathanger. Using a large-tipped soldering iron, solder the wires as shown in the illustration below.



FREQUENCY (MHz)	A	B
146	49cm	51cm
223	32cm	33cm
445	16cm	17cm

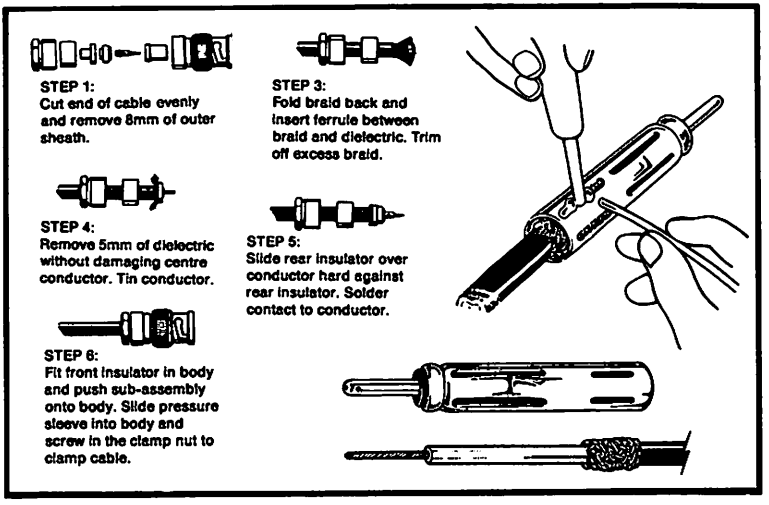
The reason an 'upside-down' SO-239 socket is used as the base for this antenna is that standard (and cheap!) PL-259 plugs can be used to connect the coaxial cable to the antenna.

Then protect the soldering from weather with a good outside lacquer such as the Dick Smith Electronics Cat No. N-1130, Clear Protective Lacquer. All that needs to be done now is connect a length of coaxial cable fitted with a PL-259 plug to the SO-239 socket, screw it up tightly, and seal it with Silastic (Dick Smith Electronics Cat No. N-1225) to prevent moisture getting in. Once up, signals will be heard from places barely received, if at all, on your in-built telescopic antenna. Those with some engineering skill can build more elaborate ground plane antennas using a whip antenna (as seen on radio-equipped vehicles) as the main element and lengths of aluminium tubing as radial elements.

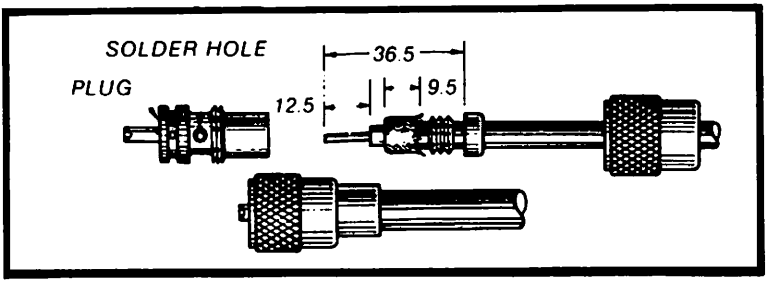
At the rear of your scanner is an external antenna socket. You'll need to solder the right connector plug to one end of a length of 50 ohm coaxial cable; this is used as the feedline

'GROUND PLANE' ANTENNA

from the outside antenna. Coaxial cable is used because it efficiently brings the signal received by the antenna down to the scanner. For short runs of feedline, Dick Smith Electronics Cat W-2092 RG58c/u cable should be sufficient; but for longer runs Dick Smith Electronics Cat W-2099 low-loss, RG-213 cable is recommended.



These illustrations show how the correct plugs are connected to the coaxial cable. The cable can be as long as necessary to achieve its purpose, but no longer. Coaxial cable 'attenuates' signals, especially at UHF, so the shorter the length the better. At the receiver end, a 'car radio antenna' plug is used (Dick Smith Electronics Cat P-2000), while at the antenna end a standard PL-259 (UHF-type) plug is used (Dick Smith Electronics Cat P-2310 with P-2360 adaptor). Most modern hand-held scanners use a BNC connector, which provides lower losses than a PL-259, in a more compact size. These plugs must be soldered on to the cable correctly; follow these diagrams and you shouldn't have any trouble.



CHAPTER 6

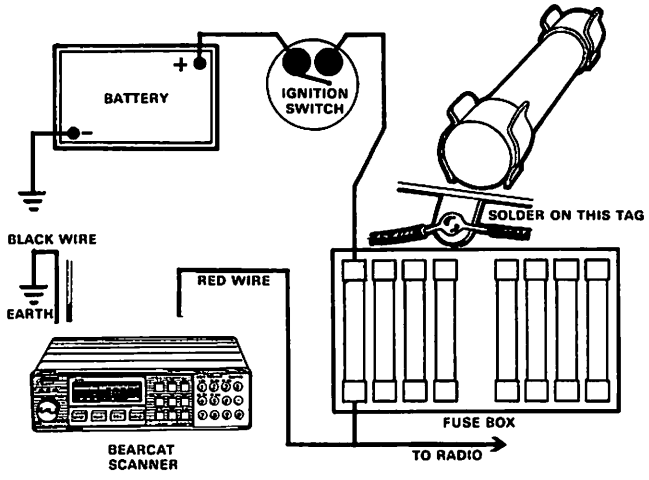
MOBILE SCANNING

Modern scanners are as much at home in a vehicle as they are in a building. To get the best from a mobile installation, a scanner should be within easy reach of the driver (or passenger) so that its controls can be operated just like an ordinary car radio.

If something exciting or particularly interesting is heard, you can touch the manual key on the scanner to stop it on the channel concerned. Possibly you may want to lock out a channel or turn up the volume — and having the scanner within reach certainly helps. After the decision has been made on where to mount the scanner, the next consideration is supplying the power to it.

This can be obtained from the vehicle's fusebox, which is usually located under the dashboard. There will be a terminal marked 'accessory' and this should provide sufficient current for

a scanner. (Using the Dick Smith Electronics 'Quick Connectors', Cat H-5012 and Cat H-5026, makes wiring a lot easier.)



An easier way to get power is to take it from the car's cigarette lighter socket — you'll need the appropriate plug, which is available from Dick Smith Electronics, (Cat P-1675). This could be more convenient where a scanner will only be occasionally used as a mobile. Whichever method you choose to get power, take care that the scanner is connected correctly.

Check the car's battery terminal to make sure it has a negative earth system — this means that the negative (-) of the battery is connected to the car body. (Most cars made since 1970 are negative earth.) This is correct polarity for scanners — and those which are made to run off 12 volts DC are supplied with a DC power cord. All that needs to be done is to connect the red (positive) wire to the fusebox terminal (or cigarette lighter socket) and the black (negative) wire to any metal part of your car. This should complete the circuit and the scanner will come to life.

An external antenna is a must in a mobile situation. The easiest solution is to use the existing car radio antenna either straight into the scanner antenna socket, or both the scanner and car radio on the same antenna.

We've all seen two-way radio antennas on taxis and other radio-equipped vehicles, and these can be used for scanners. The longer antennas are for the VHF high band, while shorter antennas are generally used on UHF. Mounting the antenna in the centre of the roof of the vehicle provides the best performance: this is

because the metal roof provides a ground plane effect (see the chapter on antennas). Reduced performance results from mounting antennas on a mudguard, boot-lid or guttering.

For those who don't want to drill holes on their cars, a magnetic base antenna is suggested. These stick to the roof or any suitable part of the car's metal bodywork and shouldn't come loose when used with smaller antennas, even at high speeds. A roof-rack is also ideal for use with most antennas and will withstand rough roads and high speeds.

Using an outside scanner antenna advertises there is some form of radio equipment in the car. This often invites your car to be broken into and the equipment stolen. The use of a Quick Release Antenna Adapter such as the DSE D-4501 allows you to remove your antenna from its mount quickly and easily through a simple push of its locking button. This also prevents your antenna from being stolen in your absence. Of course, the best prevention is to remove both the antenna as well as your scanner from your vehicle.

While it may be okay to have a look at a fire or an accident, it would be unwise to get in the way of police, firefighters or ambulance officers doing their job. If you find yourself in such a situation, keep well back and be content to watch and hear the action.

A foolish person would not only be putting his life in danger by rolling up at a stakeout or a seige, but the situation could turn very nasty and cost many lives. Interfering in such situations risks prosecution.

Dick Smith Electronics stocks a full range of scanners, including Uniden, AOR and Yaesu, at all of its stores.

CHAPTER 7
ADVANCED SCANNER TECHNIQUES

The Use Of Preamplifiers

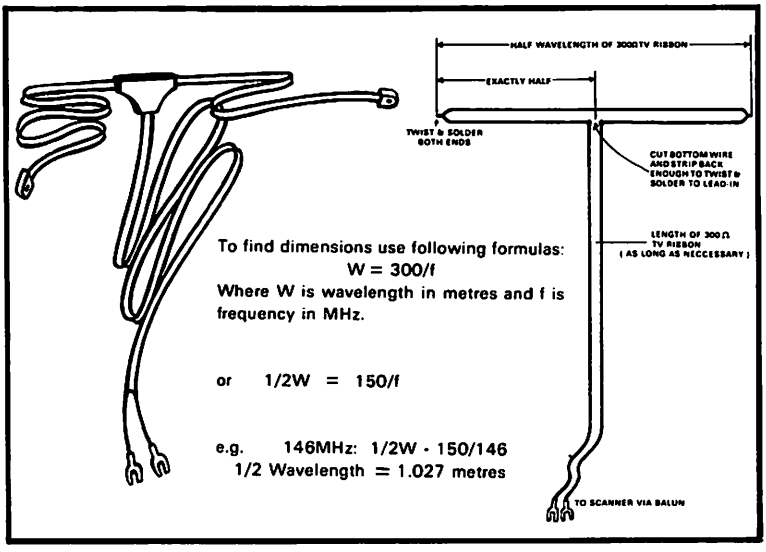
Late model scanners will have more than adequate sensitivity for normal monitoring requirements. However, in some locations, and for those trying to pick up transmissions from as far away as possible, a preamplifier could be just the thing to improve the strength of signals being put into the scanner.

After installing a preamplifier, scanner hobbyists have experienced signal reception where none or only occasional and broken transmissions were heard. A preamp should only follow improvements to the antenna system. Check the installation of the coaxial feedline to make sure it has good connections at both the antenna and scanner ends — the antenna end must be properly sealed to prevent moisture entering. The use of a preamp can cause problems by amplifying already strong signals and swamping or overloading the scanner. It can also amplify noise — degrading the signal. While this shouldn't do any permanent damage, it can result in intermodulation interference blotting out wanted signals.

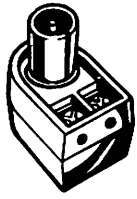
Directional Antennas

The most important part of any monitoring station is the antenna. No matter how good a receiver you're using, it will only work its best if the antenna system adequately picks up signals in the first place. Generally, a resonant antenna will perform better than a non-resonant antenna. The simplest type of resonant antenna is a 'half-image dipole'. The job of any antenna is to convert feeble radio waves that hit it, into electrical energy that can be used by the receiver. It will do a much better job when cut to the specific size required to become electrically resonant to radio waves of a specific frequency.

Some hobbyists prefer to use a dipole type of antenna to improve the reception on one of their favourite frequencies. The easiest way to do this is to construct a folded dipole. But, rather than cutting and feeding a half-wavelength piece of wire into the

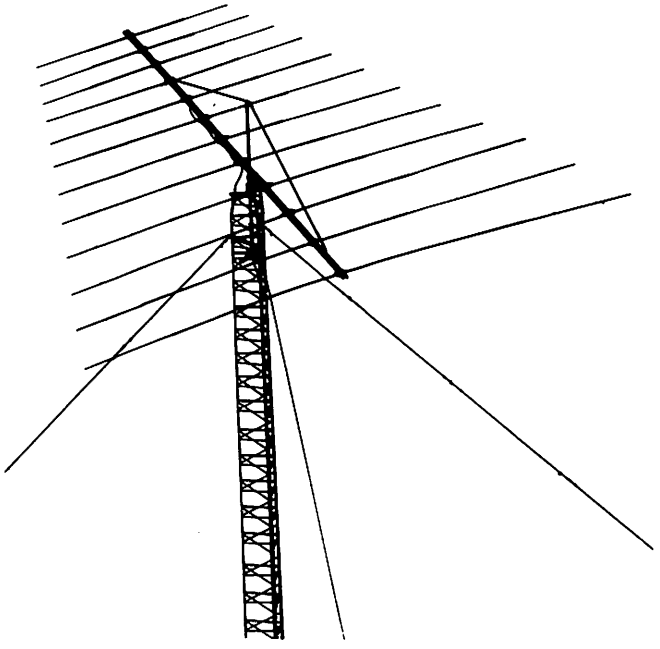


centre, a half-wavelength of TV ribbon may be used.
Cut it so that it's half a wavelength for the frequency you want, electrically join the ends, and cut one side of it exactly in the centre so a length of TV ribbon feedline can be connected. TV ribbon has an impedance of 300 ohms which is much too high for scanner receivers — but this is overcome by using a standard TV 300 ohm to 75 ohm balun. A dipole such as described will provide an amount of directivity — that is, it will favour signals from certain directions.



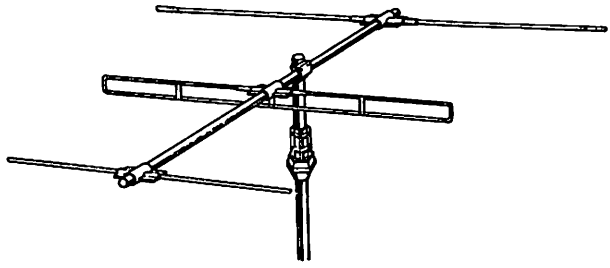
The dipole and folded dipole can be made even more directional by adding another length of wire or tubing slightly longer than half-wavelength and about 0.2 of a wavelength away. This additional element, which now makes the antenna a two-element beam, is called the reflector. The dipole is called the driven element — this is because when the antenna is used for transmitting, signal is fed to it. The reflector receives power from the driven element and re-radiates it in such a way that it makes the antenna favour one direction.

The degree of directivity can be further increased by placing another element slightly shorter than a half wavelength in front of the driven element. This third element is called the director and is described as being at the front of the beam — the direction which favours the reception of the signals. More directors, each one slightly less in length than the previous one, will further increase the



directivity. Have a look at a common TV antenna and you'll see that it's a beam-type like the one just described although — because those antennas are required to receive a number of TV channels — manufacturers piggy-back two or more beams together.

The subject of antennas is a very complex one, and the theory explained in this book has only been sufficient to help a scanner hobbyist understand the operation of beam antennas. By pointing a beam in the right direction, signals will be received more strongly and signals from the side and back of the antenna will be much weaker or not heard at all. If you want to pick up signals from two or more different directions, the beam antenna will have to be turned by hand or a device called a antenna rotator which is remotely operated by an electric motor. Most scanner hobbyists will get satisfactory reception with simple antennas. But those who want to specialise in their listening, or wish to hear signals from as far distant as possible, will use a beam.



Emergency Power For Monitoring

Nothing can be more frustrating than to have a mains power failure rob a scanner hobbyist of his 'ears' on local activity. We've all experienced power failures resulting from a variety of causes, and which usually take more than an hour to repair. Some real action is likely to be missed on your scanner while the power is out. In fact, the power failure could have been caused by a serious accident or explosion and it may take quite a long time to restore the supply. Many scanner radios can operate from both 240 volt mains power and 12 volt DC.

It's a simple matter to have an emergency power back-up for your scanner; always keep handy a rechargeable battery such as is used in a car or motorcycle. They can be a little messy and they can be a safety hazard with acid spills and hydrogen gas given off during recharging. To avoid these problems... the most convenient source of emergency power is a rechargeable Gel-Cell 12 volt battery; the Dick Smith Electronics Cat S-3315 is suitable for the job.

Monitoring HF Frequencies

It can be very helpful when monitoring transmissions from emergency services to listen to both the VHF/UHF channels and frequencies on the HF bands. To cover large areas, the fire brigades, and SES make use of the HF frequencies. During natural disasters all available frequencies will be in use and scanner hobbyists will best appreciate the action if use is made of both a scanner and a shortwave receiver. Check the HF frequency listing in the frequency directory section of this book for the appropriate frequencies.

Long Distance Propagation

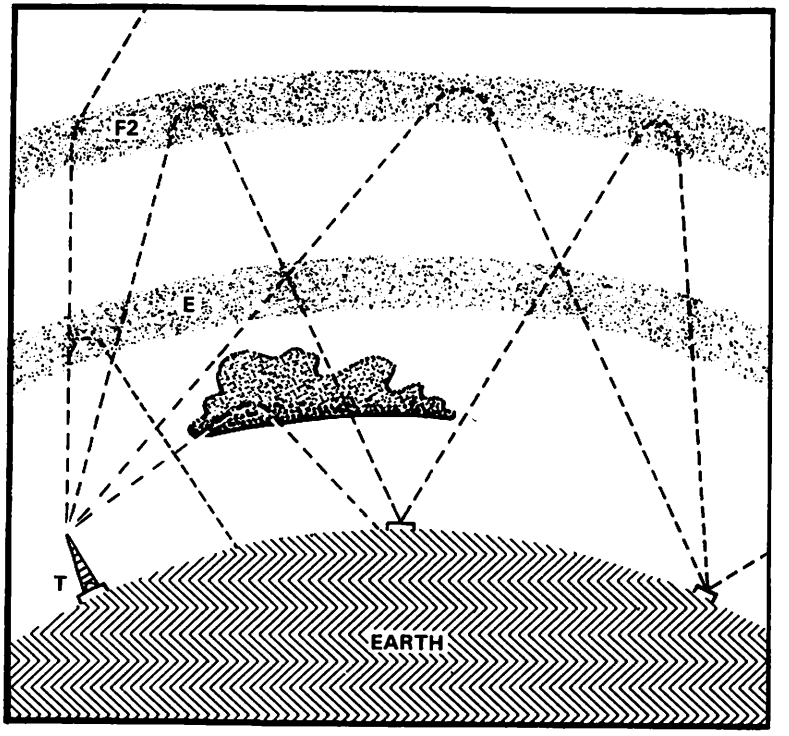
As explained in an earlier chapter "Receiving Radio Signals", VHF and UHF signals normally travel line-of-sight. High frequency HF signals, those below 30MHz, can travel around the world due to refraction from what is called the ionosphere.

The Ionosphere consists of three layers of ionised particles above the earth which bend radio signals back to earth. On hitting the earth's surface the signal can bounce back to the ionosphere, giving multi-hop propagation and communication over huge distances.

The level of ionisation depends upon radiation from the sun. As well, the ionosphere goes through an 11 year cycle in line with what is known as the sunspot cycle. During the peak year it's possible, although extremely rare, for VHF low band signals to be refracted from the ionosphere and give long-distance communication.

Considerable confusion can occur if, say, a northern hemisphere signal crosses the equator and comes up on a channel normally carrying only local communications. This type of propagation is called 'transequatorial' and could mean, for example, signals from Hong Kong being heard in Australia.

Reflection from occasional patchy concentrations of ionisation much closer to earth (known as the Sporadic E Layer) can provide propagation over distances up to 3000 kilometres. This layer doesn't have an 11-year cycle like the main three layers, and it has been associated with some unusual communication



distances on frequencies up to the 2-metre amateur band 144-148MHz.

The most common cause of long-distance communication on the VHF high band and UHF band is tropospheric ducting. The troposphere is the area above the earth of about one mile or less, and under certain circumstances signals can be ducted well beyond line-of-sight. The duct is formed along the boundary of two air-masses. For example, coastal ducting can occur due to the presence of cold and warm layers of air. This phenomenon is also known as 'inversion'. A boundary of two such air-masses usually lies along the edges of a stable, slow moving high pressure weather system — as occurs over the southern part of the Australian continent during summer. This can give VHF and UHF communications across Bass Strait and the Great Australian Bight.

Reflections from meteor trails (which are also ionised) can cause signals to be heard over longer than normal distances. A shower of meteors can cause bursts of reception from transmissions not normally received. This phenomena is known as 'meteor scatter'.

The various aspects of radio-wave propagation can be the subject of a life time study, but for the hobby listener the basics as just discussed should give you sufficient knowledge to understand why signals can travel well beyond line-of-sight.

Understanding Receiver Images

Scanner receivers, like virtually all modern receivers, are of the superheterodyne variety. This means that the signal the receiver is tuned to is mixed with another signal generated by a small oscillator inside the receiver to produce a third frequency known as the Intermediate Frequency or IF. The oscillator is usually below the incoming signal, and in the case of the Bearcat scanners, is 10.8MHz lower. The oscillator and the incoming signal are mixed, and this produces a new signal of 10.8MHz — the IF frequency. Varying the oscillator frequency input to the mixer then allows the receiver to tune to the desired incoming signal, while keeping the necessary fixed IF frequency output. This IF signal is then amplified by the IF amplifier which is fixed at 10.8MHz to provide the most gain and selectivity before the signal continues through the receiver for further amplification, and to have the audio extracted for reproduction by the speaker. A deficiency that can occur with superheterodyne receivers is known as 'image response'.

What Is An Image?

Well, let's forget about radios for a short while and imagine that you're in front of a mirror — you will have an image of yourself. If

you're 50 centimetres away from the mirror, your image will also appear 50 centimetres away from the mirror. This statement is true no matter what distance you are in front of the mirror, your image will be that same distance behind. Keeping this in mind, think back to the earlier explanation of how the receiver oscillator was mixed with the incoming signal to produce the 10.8MHz IF. A strong enough signal can be mixed by the oscillator to produce a secondary 10.8MHz signal receivable by the IF amplifier. This unwanted signal, which is on a frequency of 10.8MHz just below the oscillator, would be in an image relationship to that being generated by the oscillator, just like your own image in the mirror would appear. Take, for example, a scanner tuned to 463.225MHz — the oscillator is generating a signal of 452.425, and there happens to be a very strong signal on 441.625MHz. Both of these signals can mix with the oscillator to produce the required IF.

There's another deficiency that can occur which is known as 'double-spotting' — this means that the incoming signal can appear to be on two frequencies. Due to the mixing process, if the incoming signal is strong enough it can mysteriously also appear on 484.825 — which is 21.6MHz, or twice the IF higher than the incoming signal. It's also possible (due to internal mixing in a scanner) that a strong VHF highband signal can be heard as an interferring image on the UHF bands. The general equation to determine the real frequency of the interfering signal is VHF frequency x 3 — IF x 2. To solve this problem in reverse, the equation is UHF frequency + IF x 2 ÷ 3. When making new frequency discoveries, a wise scanner hobbyist checks if the find is a new one or only an image response of another frequency.

Interference

Reception on a scanner can be spoiled by interference from unwanted signals. It could be that your monitoring set-up has a community base-station site, a radio link, paging system, taxi base or repeater close by. One of these signals could be heard, or partly heard, on top of a wanted signal or popping up on a vacant channel, causing your scanner to stop. The inteference could be in the form of overloading — the unwanted signal is so strong it just forces itself down the antenna and into the scanner. A simple cure in some cases is to use a higher setting on the squelch. This practice might be acceptable when the interference is only occasional, but if it's persistent and ruining reception more drastic action needs to be taken.

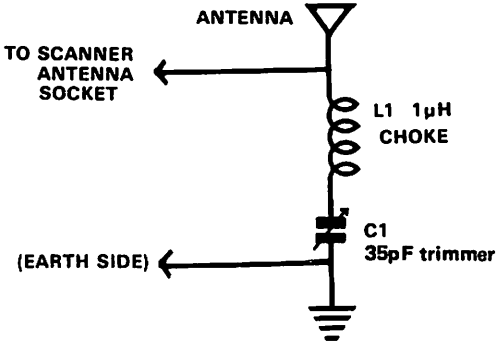
The first thing to do when trying to eliminate such interference is to confirm that it's getting into the scanner through the antenna. Disconnect the antenna and if the interference disappears, it's a sure bet that the interference is being picked up along with the wanted signals. Should the interference persist even with the antenna dis-

connected, you'll have to experiment with some form of electromagnetic shielding for the scanner — like putting it in a metal box and earthing that box.

To attack an interference problem you have to first determine its frequency. This is where a tuneable VHF/UHF receiver comes in handy, and you can, of course, try locating the offending signals by using your scanner's search mode. After doing this, action can be taken to prevent the signal getting into your scanner. If the offending signal is far removed from the frequencies your scanner is programmed for, the problem might be due to your antenna being too broad.

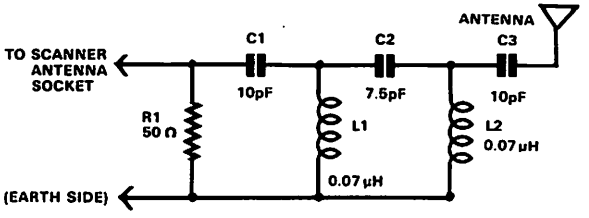
In other words, it's not selective enough and allows all signals to reach your scanner. This problem can be evident when using a broadband discone. A ground plane, dipole, or a beam antenna designed for the frequencies you want to hear could be the answer. A bit of trial-and-error experimentation is needed to find the best solution for a particular interference problem. Perhaps the interference is coming from some business two-way radio frequency and only present during office hours.

The use of an in-line attenuator could also be tried to see if it reduces the unwanted signal's strength sufficiently so that it's no longer heard on top of wanted signals. Such an attenuator will, of course, also reduce the strength of signals you want to hear. But this could be a solution a scanner hobbyist has to use if the frequency of the interfering signal can't be determined.



Another method is to use a filter; the simplest form consists of a coil and capacitor in series. This filter reduces interference from signals in the range of 88-216MHz. It's tuned by C1, a 35pF trimmer to provide attenuation to any frequency within the above range — this includes the FM broadcast band 88-108 and TV 174-216. This allows the unwanted signal to be bypassed to earth instead of entering the scanner. What it does is tune the coil/capacitor combination

to make it resonant with the unwanted signal and offer a path of least resistance to earth. It will work best if enclosed in a small metal box.



Another type of filter for scanners is called the 'high pass'. It allows signals above a pre-determined frequency a good signal path, while those below the frequency are effectively attenuated. C1, C2 and C3 are small fixed mica. If the filter is designed to have a cut-off frequency of 110MHz, it will attenuate FM broadcast stations, VHF low band and 27MHz CB signals while not greatly affecting reception of the aircraft band, VHF high band and UHF channels.

Another type of filter consists of a quarter wavelength of coaxial cable, which is effectively connected across the scanner antenna socket. The squelch is set at its highest level to permit the interference to be received, and then the coaxial stub is shortened by snipping small pieces off its end until the interference stops. At this stage, the stub is very close to its ultimate length. However, a little fine tuning may be necessary using a lower squelch setting.

Other Listening Hobbies

Ever since the radio spectrum was first used there have been enthusiasts ready to receive signals. A popular listening hobby is Shortwave Listening — which, as its title suggests, is the tuning in to high frequency (HF) or shortwave frequencies. Among the signals to be heard are overseas broadcast stations, amateur radio operators, the Royal Flying Doctor Service, ships at sea, international jets, the military and a whole host of others. Scanner hobbyists can also use a shortwave receiver to listen to the HF frequencies used by police, aircraft, rural fire brigades, etc. Full discussion on shortwave listening is out of the scope of this book — but HF frequencies that will interest scanner hobbyists have been included in the frequency directory. (see Section Two of this book.)

One of the most popular brands of shortwave receivers is made by the leading Japanese company, Yaesu, and is stocked by Dick Smith Electronics. These modern receivers (such as the FRG-8800 shown overleaf), enable even the raw beginner to hear signals from throughout Australia and around the world.

Another type of listening hobby involves the AM broadcast band. This is called Medium Wave Listening and can, in its simplest form, only require a good sensitive broadcast receiver. During daylight hours AM broadcast stations can be heard up to 500 kilometres or so. But at night and during the early hours of the morning careful tuning will pick up broadcasts from all Australian states, New Zealand and Asia. When radio conditions are right, the Americas, Africa and Europe might be heard.

Both shortwave and medium wave listeners write to the stations they hear, giving details of the program heard, the frequency and a signal report. Most stations acknowledge the listeners' reports with a QSL card or letter.

The relatively new FM broadcast band has attracted the attention of hobby listeners. Long-distance reception on this band is very rare, but at least two Melbourne stations, 3-MMM and 3-FOX, have received reports of being heard in Argentina. The best time for long-distance FM band signals would be during the summer. Because TV stations use frequencies not too different from the FM broadcast band, long-distance TV is also possible. During summer, TV signals have been received in Australia from New Zealand, and Brisbane TV has been picked up in Melbourne.

In this brief summary of other listening hobbies, the last to be discussed is the Very Low Frequency (VLF) band, which is 10-30KHz, or below the AM broadcast band. Unlike other bands,there's very little in the way of receivers available for VLF listening. Add-on converters for shortwave receivers are the easiest way to tune in VLF signals.

What's On VLF?

Well there's marine and aviation beacons, code signals, and an Omega navigation station located in eastern Victoria's Gippsland district. This is part of an eight-station network throughout the world. The others are in Argentina, La Reunion, Liberia, Norway, North Dakota, Hawaii and Japan. Each station transmits signals independently, in its turn, and in accordance with a precisely

timed sequence which is repeated every ten seconds. Position-fixing by Omega requires the use of a spedial receiver, and is achieved by the reception from three Omega stations. The frequencies used by Omega are 10.2kHz, 11.33kHz and 13.6kHz.

CHAPTER 8
KEEPING AHEAD OF THE NEWS

The News Media

Newspapers, radio and TV stations make good use of two-way radios to keep in touch with their journalists, photographers and news-camera crews. Radio journalists in particular often don't have time to get to a phone, and use either a two-way radio installed in the news car or a hand-held radio to send a report back to their station's newsroom. These reports can either be recorded, then edited for a news bulletin, or the journalist can be put directly on air to tell the listening audience details of a news event.

The possibilities range from graphic description of a large fire, the decision of workers attending a stop-work meeting, or the latest from parliamentary rounds. Commercial radio broadcasting stations pride themselves on having 'immediate' news —and modern VHF and UHF radio systems help them achieve this. Television stations don't use VHF or UHF radio to the same extent as radio stations, because their journalists record their reports on film or videotape.

However, a system called Electronic News Gathering (ENG) is in widespread use. ENG enables either pre-recorded news reports or 'live' reports to be sent back to the studio or direct to air via microwave radio links. This system overcomes the need to rush film back to the station, then wait half an hour for it to be processed before it can be shown to TV viewers. Newspapers have much later news deadlines than TV and radio stations, and their journalists prefer to sit down at a typewriter or visual display terminal (VDT) and write their story.

Although individual media organisations will only have a relatively small number of mobile radio transceivers, they're given special treatment by the Department of Communications when allocating frequencies. Traditionally, Australian radio and TV stations and newspapers get their own two-way radio channel — unlike other commercial users of the VHF and UHF bands who have to share with others.

Because of this, you will find that frequencies given to the media remain silent most of the time. The Australian news

media uses scanner radios to monitor the emergency services, but this can vary between the different sections of the media and from state to state.

Reference Material Aids Monitoring

Every monitoring set-up should have the latest edition of a street directory, and an atlas and maps of the state showing the largest towns. This will enable you to follow the action more closely and get a better idea of what is happening at the scene of an emergency incident.

Use the same brand of street directory that the emergency services in your area use. Map page numbers and co-ordinates are often given to mobile units when they are sent to a location, and by using the same directory you can easily find that location.

These are the street directories currently in use:

Adelaide	Fullers
Brisbane	UBD
Canberra	UBD Tourist Map
Darwin	Lands Department
Hobart	Tasmap
Melbourne	Melways
Perth	Metropolitan
Sydney	Gregory's

Carefully study the contents of your street directory — you'll be amazed at the information it contains. A telephone book should always be kept handy to your scanner because it will enable you to check the location of something you only partly hear on your scanner. If your area has both white pages and yellow pages phone books, keep both within reach because they contain different listings. A country phone book or two, available from post offices, will be helpful if you are listening to transmissions in or from country STD phone districts.

Tape Recorders

It's very handy to be able to tape-record scanner transmissions for later reference. An inexpensive cassette recorder is all that is needed. It can be either directly connected to your scanner, or left running in the same room to pick up and record what you're listening to.

A suitable model is the Dick Smith Electronics battery/mains cassette recorder (Cat A-4028). A recorder can be of great help when you have not quite caught what was said on a particular

channel, but have it down on cassette. Simply replay it to find out what is happening during times of action.

Some hobbyists use a special endless cassette in their recorders. This lets them record a few minutes of transmission for replay. An endless cassette means your recorder can run continuously, unlike a standard cassette which needs turning over when it finishes recording on one side.

Cassette recorders can be made to operate only when your scanner receives transmissions. This requires a device called a 'VOX' (also known as a 'voice operated switch'). An easy-to-build kit VOX is particularly useful for those channels you wish to monitor, but which have very little radio traffic. Just set your scanner on the preferred channel or channels, connect a VOX to your recorder, and check your recorder later to see if any transmissions have been recorded.

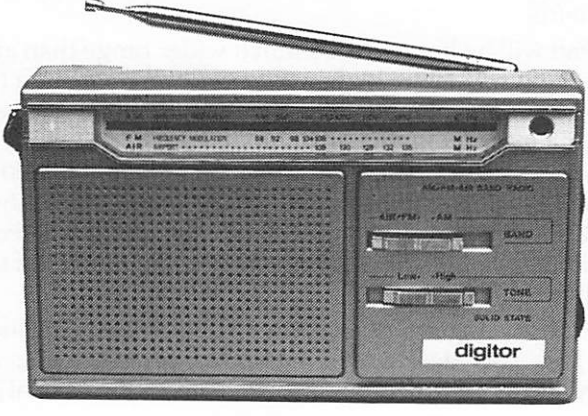
This technique is very good for monitoring channels set aside for distress calls, such as the UHF CB channel 5 and the VHF marine channel 16. It's a sure way of confirming that a channel is active, and ensures you don't miss any of the action.

CHAPTER 9
LISTENING TO THE AIR BANDS

The Air Band

This covers the frequency range from 108 to 136MHz (MHz is an abbreviation for megahertz or millions of hertz; one Hertz equals one cycle per second). It consists of, at present, 200 navigation channels spaced at 50kHz (kilohertz or thousands of hertz) from 108 to 118MHz and 720 voice comunication channels spaced every 25kHz from 118 to 126MHz. The navigation channels are used for VOR (VHF omni range),a tracking aid for aircraft, and the localiser portion of the ILS (instrument landing system), an approach aid. When tuned to these aids, all you will hear is the morse code identification of the aid, repeated continuously, except where ATIS (automatic terminal information service) is provided at some larger airports. The ATIS broadcasts consist of present weather and runway-use information, recorded by one of the town controllers and repeated continuously. Of more interest to the average listener are the 720 communications channels.

At any air pageant, you'll see people with special transistor radios to their ears catching the action on the local aviation channel. The radios they use are mostly cheap tuneable transistor receivers which can pick up aircraft and airport transmissions (such as the Dick Smith Electronics Cat No. D-2836).



There's an interesting number of scanner hobbyists who devote a lot of their time to the aviation band. Modern scanners have this band as well as the other VHF and UHF channel bands.

There are many different services provided to pilots on the communication channels that you can tune into. These range from 'flight services' at remote country airports such as Leigh Creek, S.A. or Meekathara, W.A., where only one frequency is used to provide an information service, to the highly complex control and information services provided at international airports. As an example, at Sydney there are 33 VHF and 11 HF frequencies used for communication, plus an ATIS broadcast on the VOR.

Air-Band Transmissions

The mode of transmissions on VHF is AM, or amplitude modulation. Therefore, a receiver designed to receive FM (frequency modulation) could be unsuitable for listening to the air-band with, even if it covered the correct frequencies. Some receivers are able to resolve both AM and FM transmissions by use of special detector circuits.

Antennas at airports are relatively low — at an airport with a control tower, the antennas are usually on top of the tower, while others could be on airport buildings. These antennas, although not high when compared to other VHF radio installations, are high enough to give the airport an adequate range to cover the airspace it controls. If the airport's antenna is out of line-of-sight propagation with your scanner monitoring set-up, you probably won't be able to receive it. An outside antenna will considerably increase the range of your reception (see chapter on scanner antennas), and this is one area where a little attention could reap benefits.

Aircraft will be heard over a much wider range than airports — the general rule is the higher the aircraft is flying, the further its radio signals are heard. For example, at 500 feet an aircraft could be heard for a radius of about 50 kilometres, while jets at 24,000 feet or higher will be received more than 300 kilometres away. The larger airports require aircraft entering their control area to identify themselves on radio. These airports broadcast information to pilots on the weather and other conditions for take-off and landing.

The English language is used for all transmissions to and from aircraft. This was decided by international agreement, and is obviously necessary when you consider that an international jet may

transit through the airspace of up to fifteen countries during one single flight.

There is another language used that, to the outsider, may sound just as confusing as a foreign language. It consists of the jargon and abbreviations of the airways. These terms will be explained, and after a few sessions of listening in to the air-band, you will be able to follow the conversations just like the professionals.

Firstly, we will deal with the phonetic alphabet. To avoid confusion, words which are clear and unmistakable are used in place of letters for all transmissions. As an example, an aircraft registered VH-DIK is referred to as 'Delta India Kilo'. The full phonetic alphabet is given later in the 'Understanding Codes' chapter.

So that everyone on a particular frequency knows who is being called, each aircraft and ground station is given a unique radio callsign. Australian aircraft on domestic flights use the last three letters of their registration as their radio callsign.

International aircraft use their prefix followed by the flight number. Examples are:

QANTAS 28	QANTAS flight 28
NEW ZEALAND 5A ALPHA	Air New Zealand flight 5A
SPEEDBIRD 9	British Airways flight 9
LUFTHANSA 690	Lufthansa flight 690

Military aircraft use a variety of callsigns. Examples are:

HOTSHOT 09
NAVY 704
RESCUE 26
ARMY 819
SKYKING

Air-traffic control uses callsigns that combine the ATC units' location and the function performed. Examples are:

SYDNEY DEPARTURES
ADELAIDE TOWER
BRISBANE CONTROL
MELBOURNE APPROACH

Flight service units just use the location from which they operate as their callsigns. Examples are:

DUBBO SYDNEY CHARLEVILLE
ISA (short for Mt. Isa)

When an aircraft is called for the first time by a ground station, the full callsign is used: 'Alpha Bravo Charlie, Sydney Control do you read?'. After communication is established, only the aircraft callsign is used: 'Alpha Bravo Charlie. Descend to seven thousand'.

An aircraft calling a ground station for the first time also uses both callsigns: 'Dubbo, Alpha Bravo Charlie'. After the initial contact, only the aircraft callsign is used: 'Alpha Bravo Charlie, request traffic for descent'.

Service

To understand the conversations you will pick up, you need to know how airspace is divided up to suit different air-traffic requirements, and what services are provided by air-traffic controllers and flight service operators.

Glossary of Terms

When listening to the air band, you may come across a few unfamiliar words and phrases. This glossary will give you a basic understanding of the terms. The meanings given here are not technically complete, but are sufficient for the purposes of this booklet. In other words, before you go out to fly a Jumbo, you may have to go into it more deeply.

Acknowledge: 'Let me know you have received and understood the message.'

ADF:	Short for Automatic Direction Finder. A type of navigation aid which uses ground-based beacons called NDBs. It allows a pilot to track accurately toward or away from the tuned NDB.
Affirmative:	'Yes' or 'permission granted'.
Airway:	Another name for the air-route between two aerodromes or navigation aids (VORs or NDBs). Major ones are given titles such as BRAVO 69, ALPHA 76, etc.
Airways Clearance:	A clearance, given by the ATC, to operate within controlled airspace on the specified route at the specified altitude.
Altimeter:	An instrument which reads the height of the aircraft. It works on atmospheric pressure and is normally set up by the pilot to read height above sea-level. It has a knob and subscale so the pilot can set the current pressure in millibars.
Altitude:	Height above sea-level.
Apron:	Part of the airport used by aircraft to load, etc.
ATC:	Short for Air-Traffic Control.
ATIS:	Short for Automatic Terminal Information Service. A recorded message, retransmitted continuously, giving the pilot airport and weather information.
Base:	Part of the standard traffic circuit used by aircraft approaching to land. See 'circuit' below.
Cavok:	Abbreviation for 'ceiling and visibility OK'. That is, no cloud below 5,000 feet and visibility better than 10 kilometres.
Ceiling:	The height above the ground of the base of the lowest layer of cloud covering more than half the sky.
Circuit:	Standard pattern flown by aircraft prior to landing. It makes it easier for aircraft to see each other at uncontrolled aerodromes and at busy light aircraft airports such as Bankstown and Moorabbin. The legs of the circuit are named below.
Clearance:	Instructions given to pilot permitting taxiing, take-off or landing.
Crosswind:	A wind which blows across the runway. Also one of the legs of the circuit.

Cruise:	The portion of the flight where the aircraft is at a constant level. That is, after climb and before descent.
DME:	Short for 'Distance Measuring Equipment'. A navigation aid which gives the pilot his distance in nautical miles from the selected ground station.
Downwind:	A wind which blows down the runway the same direction as the aircraft taking off or landing. That is, a tailwind. A tailwind is undesirable as aircraft have better performance taking off or landing into wind. Also one of the legs of the circuit.
Estimate:	The time (given in minutes past the hour) that an aircraft expects to arrive over a reporting point or at its destination.
ETA:	Estimated Time of Arrival. The same as 'estimate.'
ETD:	Estimated Time of Departure.
Final:	One of the legs of the circuit.
Flight Level:	The height reading of the altimeter when set to the average sea-level pressure of 1013 millibars, instead of the actual pressure. This simplifies procedures but does not give accurate heights to avoid hills, etc. It is therefore only used above 10,000 feet in Australia. E.g., flight level 210 equals 21,000 feet. Flight level 185 equals 18,500 feet, etc.
Flight Service:	The organisation responsible for providing information to aircraft operating outside controlled airspace.
Go Around:	A manoeuvre where an aircraft aborts its landing approach. Also called 'missed approach'.
Heading:	The direction the aircraft is pointed. It is measured in degrees from magnetic north. E.g., heading 060 equals 60° east of north.
Holding:	Aircraft can't stop in mid-air, so in order to lose time (sometimes required by ATC or to await an improvement in the weather) they fly a holding pattern.
IFR:	Short for Instrument Flight Rules. The regulations under which instrument flights are conducted.
ILS:	Short for Instrument Landing System. An

	approach aid which gives pilots both vertical (along the 'glide slope') and horizontal (along the 'localiser') guidance to landing.
IMC:	Short for Instrument Meteorological Conditions or the conditions when instrument flight is required (bad weather).
INS:	A completely self-contained navigation system which does not rely on ground-based navigation aids. It stands for Inertial Navigation System.
Instrument Flight:	Flying an aircraft solely by the instruments, without outside reference. It is required in cloud and on dark nights.
Line Up:	The term used to describe an aircraft taxiing on to the runway to the position to start its take-off run.
Localiser:	Part of the ILS system that can be used to align the aircraft with the extended centre-line of the runway.
Locator:	Low-powered NDB, usually located in the vicinity of an aerodrome.
Marker Beacon:	A beacon associated with the ILS system. There are normally outer and middle markers.
NDB:	Short for Non-Directional Beacon. A low frequency navigation beacon used by aircraft for track guidance.
Negative:	'No', or 'that is incorrect', or 'permission not granted'.
Octas:	Equivalent to eighths of cloud. E.g., half of the sky covered with cloud which equals four-eighths equals four octas.
Out:	Radio transmission is finished, no response is required.
Position Report:	Report given to ATC or FS by an aircraft giving its position, altitude, and ETA at next point.
QNH:	The millibar setting on the adjustable subscale of an altimeter that gives the correct altitude reading. The QNH varies with atmospheric pressure.
Radial:	The track given in degrees magnetic from a VOR navigation beacon.
Romeo:	Radio procedure for acknowledged or received.

Runway:	The part of the aerodrome used for take-off and landing. Runways are numbered according to the direction they are pointing. E.g., one with a direction of 156° would be called runway 16 while the same runway 16, from the other end would be called runway 34 (from 336°, the reciprocal of 156°).
SAR:	Search and Rescue.
Sartime:	A search-and-rescue operation can be initiated if an aircraft hasn't landed by a Sarwatch time nominated by its pilots.
Seelonce:	A French word meaning 'silence' — used to achieve radio silence during times of emergency communications.
SID:	Abbreviation for Standard Instrument Departure. A laid-down procedure for an aircraft from the time of take-off until it is established en route.
Touch-And-Go:	Aircraft touches runway and then takes off again. A training pilot could be heard doing touch-and-go as part of landing and circuit practice.
VASI:	Short for Visual Approach Slope Indicator. A system of lights that help a pilot maintain the correct approach to the runway.
Vectors:	Radar headings given to an aircraft by ATC to position the aircraft as required.
VFR:	Short for Visual Flight Rules. The regulations under which visual flights are conducted.
VMC:	Visual Meteorological Conditions, or good weather conditions which permit visual flight.
VOR:	The initials of VHF Omni-Range. A type of radio navigation beacon used by aircraft for track guidance. They operate on the VHF band from 108 to 117.95MHz.
Wake Turbulence:	The turbulence left behind an aircraft in flight. This can be quite violent behind a large jet, and ATC have certain minimum separation standards to allow for it to clear.
Wilco:	'Your last message (or message indicated) received, understood, and will be complied with.'
Zulu:	Another name for Co-ordinated Universal Time (UTC), the modern term for 'Greenwich Mean Time'.

Controlled Airspace

Airspace and airports that are busy are designated 'controlled', and are looked after by air-traffic controllers to prevent collisions between aircraft and to ensure an orderly flow of air-traffic.

All aircraft that wish to operate in controlled airspace or use a controlled aerodrome, must have permission to do so. This permission is called a 'clearance'. The clearance is issued by ATC via radio; it consists of the route the aircraft is to fly and the height (altitude) it is to fly at. Before take off on a flight that will operate in controlled airspace, the pilot will lodge a flight plan which includes his desired route and altitude. He is usually cleared the way he plans; however, ATC can change his route or altitude as traffic dictates.

While operating within a controlled airspace, all aircraft must remain in contact with ATC on the frequency specified. As an aircraft passes along a route, it is transferred from one controller to the next by changing frequencies when told.

Controlled airspace has defined vertical and horizontal limits. For example, the routes used by international aircraft flying from Sydney to Singapore across Australia are 60 nautical miles wide, and are controlled from 25,000 to 45,000 feet. The controlled airspace used to accommodate aircraft flying Sydney to Melbourne is much wider to allow more tracks, and is controlled from 10,000 to 45,000 feet. Routes used by aircraft are called 'airwaves'; major ones are given names such as Bravo and Whiskey 69, etc.

The areas used by the aircraft for climb and descent in the vicinity of aerodromes have lower controlled limits the closer one gets to the aerodrome. Within about fifteen miles from the airport, the controlled airspace goes all the way to ground level.

The air-traffic controllers' work is split up so each person or group has a specified area to look after and function to perform. These include tower controllers who look after aircraft from take-off to about thirty miles out, and approach controllers who separate aircraft on descent for landing. Each function normally has its own frequency, except in busy centres where there may be two departure and two approach frequencies.At smaller centres tower approach and departures may all be looked after by one controller on one frequency.

Other services provided by ATC are surface movement control, referred to as 'ground' (e.g., Sydney Control). Control looks after aircraft from the time departures control is finished with them until they are required on the approach frequency for their destination, or until they leave controlled airspace. The larger airports broadcast information to pilots on weather and other conditions for take-off

and landing.

This is called Aeronautical Terminal Information Service (ATIS), and it's changed hourly. To make sure pilots have the latest ATIS, they're given an alphabetical identification — for example, Information Alpha; when this is updated by Flight Service it would become Information Bravo, etc.

Where there are two nearby controlled airports, (such as Sydney's Mascot and Bankstown, and Melbourne's Tullamarine and Moorabbin), the ATIS are given widely separated letters of the alphabet. This avoids confusion and ensures that the pilot has listened to the correct one.

On reaching the airport control area reporting-in-point, pilots call the airport they are heading for, check in and state that they've received Information Alpha, or whatever letter is current. The pilot is then given approach clearance and instructions, and his aircraft's progress is watched on radar.

The common frequency used by small aircraft operating out of uncontrolled small airports is 119.1MHz — you'll most likely find plenty of communications on this channel if you're within radio range. Aircraft emergencies are usually heard on the international VHF aviation band distress channel of 121.5MHz. If you're listening to other VHF and UHF scanner channels, having the distress channel programmed into your scanner will safeguard against missing out on some real life drama.

The commercial airlines also have their own channels allocated within the aviation band, and here are some of them:

Ansett	130.600
Australian Airlines	129.500
East West Airlines	128.800
QANTAS	131.700
Singapore Airlines	131.000
Air India, UTA	131.100
JAL, Cathay Pacific	131.800
Thai International, Alitalia	131,900
Other airlines using QANTAS facilities	131.700
International Airline Chaser Channel	123.450

Further VHF aviation frequencies can be found in the frequency directory.

Uncontrolled Airspace

Airspace and aerodromes that have relatively few aircraft operating through them have no need for the positive control provided by ATC. Instead, these areas are looked over by Flight Service officers, who do not control aircraft, but provide an advisory

information service on the whereabouts of other traffic so pilots can work out their own separation. Flight Service (FS) units also provide information on weather conditions and the status of aerodromes and navigation aids, etc. FS units also arrange clearances for aircraft wishing to enter controlled airspace.

Some FS stations also have HF (high frequency) radio frequencies so they can work aircraft at greater distances than is possible with VHF. Some also have remote VHF repeaters operating on a separate VHF frequency to improve range.

Aircraft operating outside controlled airspace above 5,000 feet are required to report their departure and arrival to the FS unit in their area. They must maintain what is known as 'sarwatch', (short for Search and Rescue Watch), so that a missing aircraft can quickly be located. If an aircraft misses an expected position or arrival report, it is called on all likely frequencies; if it doesn't respond, a search is organised. ATC also maintains a sarwatch for aircraft operating in controlled airspace; position reports are also given there except, when an aircraft is within ATC radar coverage.

Aviation communications can also be heard on high frequency bands. To monitor these you'll need a good quality communications receiver — preferably with an accurate digital frequency readout. The YAESU FRG-8800 receiver, available from Dick Smith Electronics, is suitable (Cat D-2820).

The aviation HF band uses single sideband—SSB (upper)—and has various frequencies roughly between 2MHz and 24MHz. High frequency radio allows aircraft to keep in communication over distances of many thousands of kilometres. The HF band is used in Australia to track approaching jetliners from overseas, and aircraft out of VHF range travelling in Australian airspace. These are

the frequencies:

North-Eastern	3.452, 6.616, 8.891
North Central	3.452, 6.541, 8.843
North-Western	3.461, 6.604, 8.900
South-Western	3.461, 4.684, 6.565, 8.822
South Central	2.944, 4.678, 5.526, 8.876
Central Eastern	3.452, 6.610, 8.831

The major HF aircraft bands are:

Aircraft flights between Japan, Malaysia, Singapore, Auckland, and the U.S.A. use frequencies 8.900 - 8.905MHz and 5,520 - 5.525MHz.

Europe and Asia to Darwin and Perth: 2.987, 5.673, 8.854, 8.868, 13.288, and 17.965MHz.

Africa and Indian Ocean to Perth: 3.481, 6.561, 10.025, 13.336, and 17.965MHz.

North and South America, Asia and Pacific to Sydney: 2.945, 5.638, 8.847, 13.304, and 17.949MHz.

The Department of Aviation operates a HF network called VOLMET which transmits weather information for aircraft within Australia. It can be heard on 2.965, 6.676, and 11.387MHz. Weather information is also broadcast on some VLF aeronautical beacons — see frequency directory.

International assigned aircraft bands are:

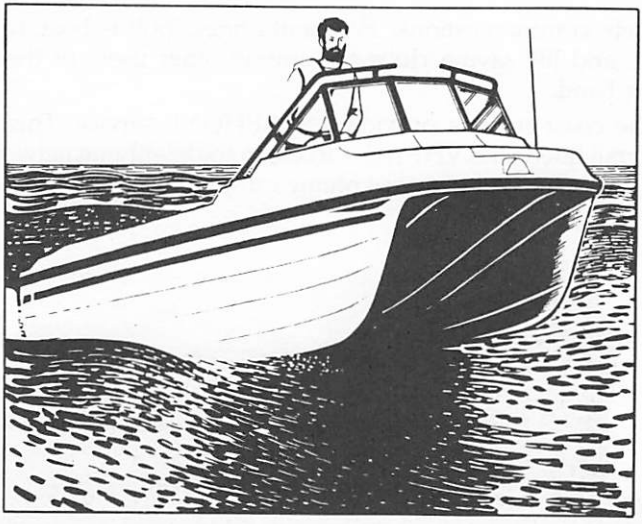
2.850 - 3.155	10.005 - 10.100
3.400 - 3.500	11.175 - 11.400
4.650 - 4.730	13.200 - 13.360
5.450 - 5.730	15.010 - 15.100
6.525 - 6.765	17.900 - 18.030
8.815 - 9.040	

The international HF emergency frequency for aircraft is 8.3644MHz.

Further information on listening to air bands can be found in Dick Smith Electronics B-4112, 'Listening Into Aircraft Radio by Bob Bell', 1992. See also page 172.

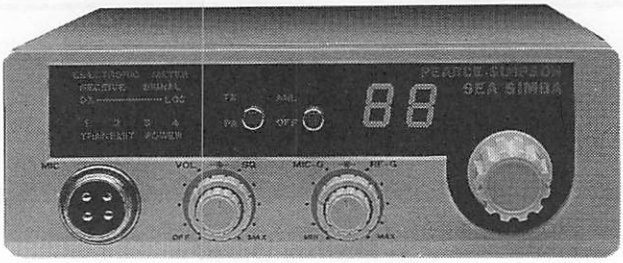
CHAPTER 10
LISTENING TO THE MARINE BANDS

The Marine Band



Seaborne ships, ocean-going yachts, and powerboats all depend on radio communications to keep them informed of weather conditions and hazards to navigation. And, of course, radio is used in times of emergency to alert authorities on land and other vessels so that help can be sent. Marine communications are found on both HF and VHF frequencies. We'll concentrate first on the VHF frequencies which can be heard on your scanner.

In recent years, the VHF marine band has gained popularity among volunteer water search and rescue groups, who find it ideal for their short-range communications. The coast stations operated by the Overseas Telecommunications Commission of Australia also use this band for monitoring the distress frequency channel 16 (156.800MHz), and to broadcast weather bulletins and navigation warnings on channel 67 (156.375MHz). Channel 67 is a supplementary safety channel. Vessels make their initial call on channel 16 and, if there's no immediate danger to life, the communication is transferred to channel 67. Volunteer search and rescue groups also use channel 70 (156.525MHz) and channel 73 (156.675MHz)



for their communications. Port authorities, police boat squads, yachts, and life saving clubs are among other users of the VHF marine band.

The coast stations provide a SEAPHONE service. This gives small craft fitted with VHF radio access to the telephone network for local, interstate, and overseas phone calls.

That completes the run-down on the VHF marine band, except to mention that all of the VHF frequencies and their uses are listed in the frequency directory.

In Australia, there's a high frequency band allocated for in-shore use such as harbours, inland waterways, and close to the coastline. This has frequencies in the 27MHz band, and is very popular among small craft owners, yachts, powerboats and volunteer groups such as life saving clubs, the Volunteer Coast Guard, air sea rescue, etc. Part of its popularity is due to the inexpensive transceivers which are available. The frequencies used are 27.680MHz (Commercial organizations, calling and working), 27.720MHz (fishing boats), 27.860MHz (calling and working for distress, emergency, safety messages, for weather and position reports), 27.880MHz (distress only), 27.900MHz, (ship-shore-ship), 27.910MHz (ship-shore-

ship), 27.940MHz (club events, ship-shore-ship and intership), 27.960MHz (intership) and 27.980MHz (surf rescue). A mixture of AM and SSB is used on these frequencies, with SSB being permitted only since 1982.

The internationally allocated HF marine bands have frequencies on 2MHz, 4MHz, 6MHz, 8MHz, 12MHz, 13MHz, 16MHz, 17MHz, and 22MHz — see the HF frequency list in the back section of this book. The coast radio stations are the link between land and ship on the high seas. These stations communicate with ships using voice, morse code and radio-teleprinter. They provide vital information on weather and navigation hazards, and can handle telegrams to and from ships.

There's a radio-telephone service, similar to SEAPHONE, but called RADPHONE. This service enables crew and passengers on a ship to talk to anywhere in the world through the normal phone networks. The RADPHONE frequencies are included in the HF frequency list mentioned earlier.

The primary role of coast radio stations is carried out under internationally agreed conventions for Safety of Life at Sea. All marine air-and-sea-searches are co-ordinated by the Australian Coastal Surveillance Centre in Canberra through the coast stations. There are three types of emergencies:

Distress

The spoken word MAYDAY (repeated three times) indicates an immediate danger of loss of life or property, and commands absolute priority over all other communications.

Urgency

The spoken word PAN (repeated three times) indicates the safety of a vessel or person is in jeopardy, and commands priority over all other communications except DISTRESS.

Safety

The spoken word SECURITE (pronounced SAY-CURE-E-TAY) indicates that a coast radio station is about to transmit a message concerning navagation safety, or important weather information.

The distress frequencies of 2182kHz and channel 16 (156.80MHz) have silence periods of three minutes commencing on the hour and half-hour. All transmissions, except those covering a DISTRESS situation must stop during these periods — this helps in the reception of weak signals, giving distress signals a better chance to be heard during bad radio conditions. A coast station or ship receiving a MAYDAY call can impose radio silence on the frequency by using the voice signal SEELONCE (which is French for 'silence').

The marine bands provide a wide range of communications for the listener — sample them for yourself.

CHAPTER 11

AMATEUR AND CB RADIO

Amateur Radio

In Australia, there are about 18,000 licensed amateur radio operators, and listening to them can be interesting and educational. To be an amateur operator you need an Amateur Operator's Certificate of Proficiency, which has to be earned by study and passing examinations held by the Department of Communications. There are three classes of amateur operators — Novice, Limited and Full.

The simplest exams are for the Novice Licence. This allows its qualifiers to transmit on sections of the 80-metre, 15-metre, 10-metre and 2 metre bands using relatively low power. The Limited Licence confines holders to amateur bands from six metres (50MHz) and above. Full Licence-holders can operate on all amateur bands. The examination standard is the same as for the Limited Licence except that it includes a 10-word-per-minute morse code test. If you want to know more about amateur licences and the study material needed, just check the bookshop section at Dick Smith Electronics stores.

By far the most popular band for scanner hobbyists listening to amateur operators is two metres (144-148MHz). A lot of communication is done on FM repeaters, which are dotted over Australia — amateur repeaters' frequencies are included in the

frequency directory. Many amateurs have two-metre transceivers in their cars and boats; occasionally, you will hear an operator talking from a light plane or helicopter. There's very little activity on the amateur six-metre and 70-centimetre (420-450MHz) bands when compared to two metres. These other two bands also have FM repeaters which are worth checking out occasionally with your scanner.

Amateurs are allocated a host of high frequency (short wave) bands which are used for local, interstate, and overseas communications. They use voice transmission, video, radio teletype, morse code, and ASCII (a computer code). Most Australian amateurs are listed in the 'Wireless Institute of Australia Callbook' under their official callsigns — the callbook is available from Dick Smith Electronics stores. A wealth of information on amateur radio can also be found in the many excellent ARRL (American Radio Relay League) publications such as 'The ARRL Radio Handbook for Radio Amateurs', published once a year.

CITIZENS BAND RADIO

Since CB radio was legalised in Australia in 1975, this form of personal communication has come a long way. Scanner-owners can listen in on the CB UHF band, which has 40 channels (see the frequency directory). In Australia, there's another CB band which has 40 channels, but this is on the high frequency 27MHz band. The UHF CB band is shared mainly during working hours with small businesses and tradesmen. These business firms have been attracted to UHF CB radio because it's cheap and suits their needs for short-range communication.

One UHF CB channel which could be of interest to scanner listeners is channel 5. This channel is kept clear for emergencies, and anything from a car breakdown to a plane crash could be heard being reported by a CB operator who happens to be able to radio for help. Channel 5 is monitored by CB operators belonging to emergency monitoring groups in most areas throughout Australia. These dedicated volunteers have been responsible for calling ambulances to accident scenes after getting a call over the emergency channel. Vital minutes have been saved, particularly on country roads where the nearest phone could be kilometres away.

CB operators have also discovered how easy it is to monitor their UHF band by using a VHF/UHF scanner — scanners have found pride of place at a growing number of CB stations. Most of what you may want to know about CB can be found in a range of books on the subject in all Dick Smith Electronics stores.

How Repeaters Work

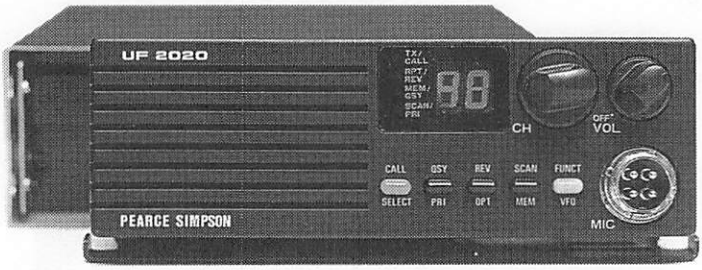
Line-of-sight propagation on the VHF/UHF bands means that the higher an antenna system is, the further it will 'see' radio signals. Obviously, it would be impossible for mobile units to always be on high ground, and this is where a very neat device called a 'repeater' comes in handy.

Just imagine two mobile units on opposite sides of a big hill — and they're not in communication range. If a third mobile happened to be on top of the hill, he would be able to speak to the other two and relay messages between them. This is exactly what a repeater does — automatically.

A common type of repeater uses two frequencies — an input on which mobiles (or even a low-lying base-station) transmit, and an output which is received by them. The repeater need be nothing more than a transmitter and receiver combination. It re-transmits or *repeats* the transmissions sent to it.

Repeaters are in widespread use, and even amateur operators and CBers have their own. To monitor a repeater, you need only listen to its output frequency to hear signals from both base station and mobile units.

Communication satellites used for international communications are actually elaborate repeaters. They remain in a fixed position above the earth and ground stations, and using microwave radio frequencies, can transmit and receive signals across the world.



Back to VHF/UHF communications — another common way to increase the coverage area of a two-way radio system is by using a community base site. These sites, usually operated by companies who manufacture two-way radios, are on high spots and often have tall, triangular-shaped self-supporting towers with several antennas. The idea is that two-way radio systems have their base-stations (transmitter and receiver) at the site, from where they are remotely operated by Telecom landline. While these sites can give the same base-to-mobile range as a repeater, they don't increase the mobile-to-mobile range.

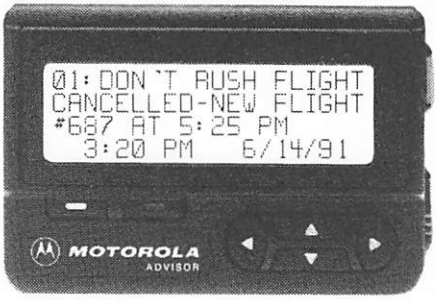
CHAPTER 12

PAGING AND TONE SIGNALS

Paging Services And Other Tone Signals

This is a new and developing area of interest for scanner listeners. Until recently, there was only Telecom's Telefinder paging service operating on 148.0125MHz. All one can hear on this frequency is a series of tones being transmitted.

Each pager, which is really a miniature receiver, responds to only one set of tones; when it receives them it sets off a beep. So you can see there's very little interest in just listening to these pager tones.



But this is now changing following the federal government's decision to allow private companies to compete with Telecom in operating radio paging systems. Licences have now been issued for firms to do so. While some systems are using the traditional beeping pager, other firms offer advanced technology pagers capable of receiving voice messages.

Not all signals consisting of tones are for paging systems. Tones can be used to send data — e.g., in the form of radio-teletype transmissions. Ambulance paramedics can send cardiograph (heartbeat) signals by radio to a major hospital. Doctors are then able to use sophisticated equipment to diagnose the patient's heart problem, and recommend the action for paramedics to take.

Another type of tone, 'digital identification' is used by some large taxi services to speed up communications and cut down on voice replies from taxi drivers. For example, the radio bese of a taxi

company with digital identification puts out a call – it might be following your phone call asking for a taxi. From their cabs, the drivers respond by pressing a button which sends out a series of tones. These tones are displayed at the taxi radio base as the taxi's callsign. The name, pick-up point, and destination of the intending passenger is then given,— and the taxi-driver acknowledges by pressing his ID button.

Tones are also used so that two-way radio systems can call individual mobiles — it's just like the digital identification system just mentioned; but it works in reverse. This is called 'selective calling' — or SELCALL for short. A simpler method of selective calling is by the use of a tone or series of tones to trigger special receiver circuitry that fully turns on a receiver. Radios with selective calling usually remain silent until the correct tones are received. They are particularly popular among business two-way radio users who share a frequency with a number of others.

CHAPTER 13
SATELLITES AND SPACECRAFT

Listening to transmissions from satellites and spacecraft is a popular activity overseas and is gaining a following in Australia. A decision by the National Aeronautics and Space Administration (NASA) in 1982 to move one of its old satellites closer to Australia has brought an unexpected bonus for hobby listeners.

NASA launched a series of Applications Technology Satellites in the 1960s. The only two still in orbit are ATS-1 (1966) and ATS-3(1967). Other ATS satellites either failed to achieve orbit or were removed from space when they became uncontrollable. ATS-1 and ATS-3 are geostations between the South Pacific nations. They revolutionised university education in the South Pacific by bringing extension courses direct to students in scattered island nations, and have also been used for health education, oceanographic research, meteorology and general communications for the entire pacific region.

However, one of the satellite's two altitude control jets failed and NASA had to make a quick decision on its future. It decided to re-position the satellite over the north-east of Australia. There it's subject to a weaker gravitational pull and needs less fuel to keep it in orbit. This change in position brings ATS-1 within range of most of Australia — and, for the first time in its life, can be used from Western Australia.

A few other meteorological satellites in use are:

USA — NOAA7 137.620MHz
USSR — 'METEOR' 137.200, 137.300, 137.400MHz
USSR — MET 30 137.150MHz

Many groups hoping to use the sophisticated Australian Domestic Satellite AUSSAT launched in 1985 gained valuable experience by using ATS-1. The police, emergency services, health and educational authorities were some of the groups that benefitted from practical experience in satellite communications.

Transmissions from ATS-1 have been monitored in Australia. The primary channel is 135.600MHz, with other downlink channels being 135.575 and 135.625MHz.

ATS-3 is geostationary on the equator at 105° west longitude, and has a coverage area just touching the eastern tip of the north

island of New Zealand.

For those keen on hearing the NASA Space Shuttle, the frequencies used on previous missions have been 243.000, 259.700 and 296.800MHz.

Another area of listening interest is the growing number of orbiting amateur radio satellites using frequencies in the internationally assigned amateur radio bands. None of these satellites are geostationary, and they can only be received when passing line-of-sight, with the strongest signals coming from an overhead pass.

Some amateur satellites have uplink frequency bands on two metres — 145.900 - 146MHz approximately — with a downlink band around 29MHz on the 10 metre band. Others use two metres as the uplink and 70 centimetres as the downlink. It's dependent upon those who construct these satellites, but there's also provision for uplinks in the 7MHz, 14MHz, 18MHz, 21MHz and 24MHz bands.

A new breed of amateur satellites was launched in the 1980s by AMSAT, the radio amateur satellite corporation. The first of these series was named AMSAT Phase 3-B, and the orbit provides reception for up to 12 hours a day in Australia. Details on amateur satellites are in the 'W.I.A. Australian Amateur Call Book', available from Dick Smith Electronics.

Another type of satellite that can be heard in Australia is called 'Fleet Satellite Communications' (FLTSATCOM). It consists of four geostationary satellites serving the Atlantic, Pacific east, Pacific west and Indian oceans. The last two are received in Australia. Each FLTSATCOM has a 22-channel UHF transponder — of interest to hobby listeners are 10 channels for the U.S. Navy lying between 250.450—269.950MHz. The navy uses voice transmissions for the USAF and U.S. Defence Department.

Reception from satellites can suffer from fading, due to what is known as 'Faraday's Rotation'. This is caused by a satellite's signal passing through the ionosphere and changing its polarity from vertical to horizontal and back again. Fading can occur also due to a satellite tumbling or rolling. To counteract this, a circular polarised antenna such as a crossed yagi or a turnstile antenna can be used for reception.

Due to an effect called the 'Doppler Shift', the frequency of an orbiting satellite changes during its pass and some receiver adjustment is necessary.

CHAPTER 14

UNDERSTANDING CODES

Time

The 24-hour system is used by aviation, amateur radio, marine, military, shortwave broadcast stations, essential services, and some others. For those unfamiliar with this system, the following table will explain how it works:

1 a.m.	0100	1 p.m.	1300
2 a.m.	0200	2 p.m.	1400
3 a.m.	0300	3 p.m.	1500
4 a.m.	0400	4 p.m.	1600
5 a.m.	0500	5 p.m.	1700
6 a.m.	0600	6 p.m.	1800
7 a.m.	0700	7 p.m.	1900
8 a.m.	0800	8 p.m.	2000
9 a.m.	0900	9 p.m.	2100
10 a.m.	1000	10 p.m.	2200
11 a.m.	1100	11 p.m.	2300
Noon	1200	Midnight	2400

1.15 a.m. is expressed as 0115, while 1.15 p.m. is 1315, 15 minutes past midnight is 0015, and so on.

'Co-ordinated Universal Time' (UTC), formerly Greenwich Mean Time (GMT), is used by the military, amateurs and shortwave broadcasters. UTC is 10 hours behind Australian Eastern Standard Time, therefore 0900 AEST Wednesday would be 2300 UTC Tuesday. UTC is also called Zulu Time, i.e., 2300 Zulu or 2300Z. Zulu is the phonetic name for the letter Z — see Phonetic Alphabet.

Standard Frequency And Time Signals

A number of countries, including Australia, provide standard frequency and time-signal broadcasts on short wave. These broadcasts are used for precision time, reference applications, and navigation.

Stations providing this service are:

	Callsign	
Fort Collins, Colorado	WWV	2.5MHz
Kauai, Hawaii	WWVH	"
Koganei, Japan	JJY	5MHz
Moscow, USSR	RWN	"
Fort Collins, Colorado	WWV	"
Kauai, Hawaii	WWVH	"
Olifantsfontein, Sth Africa	ZUO	"
Koganei, Japan	JJY	10MHz
Moscow, USSR	RWM	"
Fort Collins, Colorado	WWV	"
Kauai, Hawaii	WWVH	"
Buenos Aires, Argentina	LOL	15MHz
Fort Collins, Colorado	WWV	"
Kauai, Hawaii	WWVH	"
Buenos Aires, Argentina	JJY	"
Fort Collins, Colorado	WWV	20MHz

Phonetic Alphabet

In times of poor reception, it is very easy to mistake individual letters of the alphabet because so many letters sound alike.

To a lesser extent, numbers can also be confused.

To avoid this possibility, the Phonetic Alphabet has been developed, with each letter representing a word specifically chosen to have the minimum chance of being confused. The Phonetic Alphabet should be used wherever words are being used to represent letters; it is very unwise to use other words (such as A for Apple, T for Tom, etc.) as the Phonetic Alphabet is far more widely known.

The alphabet is listed below, with the word that represents each letter being spelled out in correct pronunciation; the accent is placed on the syllable in capital letters. The numerals are also listed; note their special pronunciation, also designed for minimum confusion.

A	ALPHA (ALFa)	B	BRAVO (BRARvoh)
C	CHARLIE (CHARlee)	D	DELTA (DELta)
E	ECHO (ECKoh)	F	FOXTROT (FOCKStrot)
G	GOLF (GOLF)	H	HOTEL (hoTEL)
I	INDIA (INNdeeah)	J	JULIET (JOOleeET)
K	KILO (KEEloh)	L	LIMA (LEEma)
M	MIKE(MIKE)	N	NOVEMBER (noVEMber)
O	OSCAR (OSKar)	P	PAPA (paPAH)
Q	QUEBEC (keeBEK or KweeBEK)		
R	ROMEO (ROHmeeoh)	S	SIERRA (SEEaira)
T	TANGO (TANGgoh)	U	UNIFORM (YOOniform)

V	VICTOR (VIKtor)	W	WHISKEY (WISKee)
X	X-RAY (ECKSray)	Y	YANKEE (YANKee)
Z	ZULU (ZOOloo)		
1	WUN	2	TOO
3	thurEE	4	FAWer
5	FIEyiv	6	SIX
7	SEVen	8	AIT
9	NINER	0	ZEEroh

The Morse Code

Morse is an 'aural' language (that is, received by the ears, not by the eyes). It should never be represented in dot and dash form. Instead, try to think of morse as containing 'dits' and 'dahs'. A 'dit' is a short, sharp note made by quickly pressing the key and releasing it. A 'dah' should be three times as long as a 'dit'; that is, the key is held down for three times the length of a 'dit'.

VLF beacons and amateur radio repeaters are automatically identified by their callsigns given in morse code. It may help the hobby listener to tape record the morse identification and play it back until the callsign is worked out by referring to this list:

A	di'dah	U	di'di'dah
B	dah di'di'dit	V	di'di'di'dah
C	dah di'dah dit	W	di'dah dah
D	dah di'di	X	dah di'di'dah
E	dit	Y	dah di'dah dah
F	di'di'dih dit	Z	dah dah di'dit
G	dah dah dit		
H	di'di'di'dit	•	di'dah di'dah di'dah
I	di'dit	?	di'di'dah dah di'dit
J	di'dah dah dah	Error	di'di'di'di'di'di'di'dit
K	dah di'dah	1	di'dah dah dah dah
L	di'dah di'dit	2	di'di'dah dah dah
M	dah dah	3	di'di'di'dah dah
N	dah dit	4	di'di'di'di'dah
O	dah dah dah	5	di'di'di'di'dit
P	di'dah dah dit	6	dah di'di'di'dit
Q	dah dah di'dah	7	dah dah di'di'dit
R	di'dah dit	8	dah dah dah di'dit
S	di'di'dit	9	dah dah dah dah dit
T	dah	0	dah dah dah dah dah

The 'Q' Code

This code is used throughout the world by those involved in tele-

communications and by amateur radio operators. The codes below are only the most common; the complete 'Q' code is much larger. 'Q' codes simplify and shorten communication. Each group of letters can be used to represent either a question — (e.g., QRA —What is the name of your station?) or a statement — eg. (e.g., QRA — The name of my station is . . .).

QRA — What is the name of your station?
QRG — What is my frequency?
QRH — Does my frequency vary?
QRK — What is my readability?
QRM — Are you being interfered with by other stations?
QRN — Are you troubled by atmospheric interference (static)?
QRP — Can you reduce power?
QRT — Shall I stop sending?
QRY — Am I on standby?
QRV — Are you ready?
QRX — When will you call me again? (wait)
QRZ — Who is calling me?
QSA — What is my strength?
QSB — Am I fading?
QSL — Can you acknowledge?
QSN — Did you hear me on . . . ?
QSO — Two-way communication between stations.
QSY — Will you change to another fequency?
QTH — What is your location?
QTR — What is the correct time?

CHAPTER 15
GLOSSARY OF SCANNER TERMS

AM	Amplitude Modulation, a method of superimposing sound intelligence on the radio signal by changing the amplitude (wave height) of the transmitted carrier. AM is the oldest form of modulation. It's the standard form of modulation for the aircraft band, and can be found still in use by old radio systems on the VHF low band. A little AM can be heard on the CB and amateur bands and, of course, there are the AM radio broadcasting stations.
Attenuate	To reduce in strength or level.
Audio	The soundwave intelligence on a modulated signal.
Balun	A small transformer used in antenna systems for matching a balanced impedance such as an antenna to an unbalanced transmission line.
Beacon	A transmitting station which sends out a continuous signal for either navigation or propagation purposes.
Birdie	Frequencies generated by intermodulation. The name 'birdie' comes from the fact that the signal sounds like a steady whistle. Birdies will occur on some frequencies on your scanner. To confirm that it's a birdie, remove the antenna — if it disappears, it's a genuine signal and not a birdie. See also Modulation.
CAT	The computer interface system for YAESU receivers and transceivers.
Coax	The common name for coaxial cable which has an inner wire insulated from a braided metal sheath.
Code	Morse code, a code of transmission, also used to automatically identify beacons and amateur repeaters. Q Code, an international code consisting of three-letter groups starting with the letter Q. See Q Code list in this book. Essential services and others use either figure or a combination of

	letter and figure codes to speed up radio procedures and for security purposes.
Delay	A scanner facility which provides a short delay before the scanner resumes scanning channels.
Diplexer	A device which allows transmission and reception simultaneously on the one antenna.
Duplex	See Repeater and Split Frequency.
Feeder	See Transmission Line.
Flutter	Variation in received signal strength. Flutter can occur when a mobile is moving and is due to the signal being reflected or shielded by buildings and structures.
Front-to-back Ratio	The ratio of signal strength picked up by the front of a directional antenna compared with the signal picked up by the rear.
FM	Frequency Modulation, a method of superimposing sound intelligence on a radio signal by varying the frequency or phase of the transmitted carrier. It's superior to AM and less prone to electrical interference, such as from vehicle ignition.
Gain	An improvement in signal level. A directional antenna is said to have gain over an omnidirectional antenna because it picks up a stronger signal.
GHz	Gigahertz, or thousands of millions of cyles per second.
High Pass Filter	A filter which attenuates signals below a determined frequency while allowing signals above that frequency to pass.
Hz	Hertz, or cycles per second.
IF	Abbreviation for Intermediate Frequency. Superheterodyne receivers mix the received frequency with another frequency generated by an in-built oscillator to produce an IF, which is then amplified. The audio intelligence is then removed, amplified and reproduced by a loudspeaker.
Image	A receiver can respond to a signal on a frequency that has a plus or minus relationship to the receiver's tuned frequency and its intermediate frequency. Such a signal is called an image. See IF.
Impedance	For the most efficient transfer of signal from an antenna to a receiver, the impedance of the

	antenna, feedline, and receiver antenna input socket must be the same. The impedance used for scanners is 50 ohms.
Intermodulation	The mixing of two signals together to cause interference. Usually spasmodic, because both signals have to be on the air simultaneously, mix, and produce a phantom signal.
Ionosphere	Name given to ionised layer(s) above the earth which refract radio signals.
Keypad	The name to given to the panel of buttons on a modern programmable scanner.
kHz	Kilohertz, or thousand of cycles per second.
Lock Out	A scanner facility which enables a channel to be locked or switched out.
Low Pass Filter	A filter which attenuates signals above the determined frequency while allowing signals below that frequency to pass.
Memory	A scanner with a memory which holds programmed frequencies, even if the scanner is turned off.
MHz	Megahertz, or millions of cycles per second.
Modulation	Adding audio or data intelligence to a radio carrier.
Overload	Interference caused by a strong signal on another frequency (or even band) swamping a receiver.
Polarisation	A vertical antenna (such as is commonly used on vehicles), radiates vertically polarised radio waves; a horizontal antenna produces horizontally polarised radio waves. Best reception can be expected by having both the transmitting and receiving antennas using the same polarisation.
Polarity	Scanners that can operate off a car battery (12 volts) need to be correctly connected to a vehicle's electrical system. That is, the positive scanner power lead (usually red) to the vehicle's positive, and the negative lead (usually black) to negative. See also Polarisation.
Priority	A scanner facility which gives the signals on a chosen channel priority over all other channels.
Repeater	An automatic relay radio station which receives signals on one frequency and re-transmits them on another frequency to give much

	greater effective range.
Ribbon	A two-wire transmission cable used for television reception, having an impedance of 300 ohms.
Scan Rate	The number of channels per second that a scanner samples for transmission.
Search	A scanner facility which enables a band of frequencies to be searched automatically for signals.
Selective Calling	Sometimes abbreviated to SELCALL. It's used in radio communication systems to provide an ability to call only a selected radio or radios. Particularly popular among business two-way radio users who share frequencies with others.
Simplex	The use of the same frequency for transmitting and receiving.
Skip	Unusual propagation resulting in VHF or UHF signals travelling much further than their normal line-of-sight range. On the VHF low band, skip is more common than the VHF high band and UHF.
Split Frequency	The technique of transmitting on one frequency and receiving on another. Popular among taxi services because it prevents taxi drivers chatting to each other.
Splitter	A device which takes a wide band of VHF and UHF signals, separates or splits them, and assists in the connection of more than one receiver to a wide-band antenna.
Squelch	Sometimes also called Mute. It allows a receiver to remain silent until a signal is received. Without a squelch, or with it incorrectly adjusted, a receiver will reproduce background hiss when a signal isn't being received.
Transmission Line	The cable that connects the scanner to the antenna.
Wavetrap	A filter which traps unwanted frequencies. Can be used to attenuate unwanted frequencies which are causing interference to wanted frequencies.

THE FREQUENCY DIRECTORY

NSW
Sydney

ABC TV	463.300
Air India	497.200
All Purpose Messengers	161.290
All Trans	497.200
Ambulance	76.64, 76.685, 76.70, 76.73, 76.76 76.67, 76.69, 76.55, 76.58, 77.435, 83.13, 84.15, 412.475, 467.675.
ANL Container Term.	453.975, 463.475
Ansett	454.700, 454.175, 470.1
ATN	463.800, 166.030, 165.64, 166.03, 470.125, 470.725, 469.975, 472.8, 463.2, 475.1, 473.375, 486.6
Attorney General's Dept.	171.810, 171.870, 171.840
Austas Voice Pager	149.810
Australian Airlines	162.100
Aust. B'casting Corp.	159.820, 164.500, 171.900
Australia's Wonderland	485.85, 486.275, 486.825, 487.0
AWA Marine	469.800
Baulkham Hills Bushfire Brigade	159.700
Blacktown Bush Fire Brigade	163.060
Blue Mountains Bush Fire Brigade	72.890
Bush Fire Brigades	168.790, 168.79, 168.82, 47.7, 471.725
Bus Services	163.390, 166.810
Camden Bush Fire Brigade	166.120
Daily Mirror	82.98
Darling Harbour	472.4
Dept. of Public Works	157.540 (VL2DI)
Blue Mtns Area	78.160 (VL2BF)
Gosford	78.055 (VL2BF)
Dept. of Water Resources	164. 345, 164.755, 164.845
DMR	167.530 to 167.830 (30kHz spacing)
DOC	499.625, 495.000
Elcom	76.97, 77.0, 77.015, 77.03, 77.045, 77.060, 77.075, 77.090, 77.105, 77.120, 77.150, 82.050, 82.065, 82.080, 82.095, 82.11, 82.125, 82.140, 82.155, 82.170, 450.2, 450.45, 463.35, 494.25, 494.55, 494.85
Fiji Airlines	154.100

Fire	78.130, 78.070, 78.040, 78.065, 78.125, 78.010, 78.160, 78.280
Fleets Flyers	458.225
Foreign Airlines (Syd Airport)	461.3, 462.8, 463.675
Forestry Comm. of NSW	72.980, 73.040, 73.100, 73.160, 72.995, 73.010, 73.025, 73.040, 73.055, 73.070, 73.085, 74.390, 473.540
Gas Company	168.31, 172.5, 172.53
Gosford Bush Fire Brigade	170.400
Grain Handling Authority	71.450
Hawkesbury Bush Fire Brigade	170.250
Health Commission	453.925
HMAS Penguin-Diver Control	156.475
Hornsby Bush Fire Brigade	160.180
Illawarra County Council	72.54, 72.32, 72.35, 72.62, 72.74
James Watt Pty Ltd	464.125
Kuringai Bush Fire Brigade	170.730
Legion Cabs	486.725, 486.750, 486.775, 486.8, 486.825, 487.025, 487.625
Liverpool Bush Fire Brigade	171.120
Locksmith	168.370
Macquarie Shopping Ctr	489.275
Main Roads Dept.	167.770
Maritime Services Board	454.000, 454.275, 469.725, 156.650
Mayne Nickless	464.700
Metropolitan Security	164.410
Namoi County Council	72.5, 72.62
National Parks & Wildlife Service	73.040, 73.160, 74.510, 159.43, 165.1, 170.4
Northern Rivers TV	162.22
NRMA	487.125, 487.225, 487.425, 487.725, 488.025, 488.125
NSW Ambulance	76.580 to 76.940 (30kHz spacing)
NSW Board of Fire Commissioners	78.01, 78.04, 78.055, 78.07, 78.115, 78.13, 78.16, 78.28
NSW Fire Brigade	78.040, 78.070, 78.130, 78.160, 78.175, 159.22, 78.055
Olympic Airways	469.975
Paging (tone)	148.012
Penrith Bush Fire Brigade	168.550
Port Kembla Maritime	169.495

Premier Taxis	162.160, 162.190, 162.220
Prospect County Council	75.770, 75.89, 76.31, 81.27, 81.63, 81.69, 81.810, 81.96
Qantas	164.650, 472, 166.66, 461.1, 461.225, 461.250, 461.85, 464.025, 464.575, 464.950, 488.95
Railex	455.200
Railways	161.410
Rangers	159.43
RSL Cabs	488.6, 488.625, 488.650, 488.675, 488.7, 488.725
SES	168.820, 168.850
Shellharbour Bush Fire Brigade	166.120
Singapore Airlines	158.250, 158.400, 158.450
Snowy Mts Auth.	70.58, 70.7
Soil Conservation	78.250
Southern Mines Rescue	167.350, 484.200, 484.250
State Emergency Service	165.4, 166.33, 168.85, 467.250
State Rail	82.260, 168.64, 450.050, 407.525, 407.825, 408.675, 408.7, 408.725, 409, 409.3, 485.975, 486.050, 487.6, 409.325, 409.6, 410.625, 410.925, 411.175, 411.525, 411.550, 411.625, 412.525, 450.080, 450.2, 450.250, 463.625, 464.15, 465.2, 465.475, 465.575, 469.625, 485.075, 494.250, 505.550 to 506.875 in 25kc steps.
Surf Life Saving	484.95, 485, 488.625, 489.225
Sutherland Bush Fire Brigade	167.290
Sydney Airport (Aircraft loading vehicles)	452.000
Sydney Airport (Restricted Tarmac)	166.660
Sydney County Council	80.58, 80.85, 80.925, 81.0, 81.3, 490.050, 490.175, 440.35, 440.95, 441.25
Sydney Cricket Ground	493.825
Sydney Morning Herald	163.300
Taronga Park Zoo	450.2
Taxis	73.655, 73.88, 74.27, 74.33, 75.56, 77.3, 81.990, 82.38, 82.41, 82.5, 83.49, 83.64, 84.06, 84.12, 162.16, 162.19, 162.22, 165.01, 165.22, 166.045, 167.38, 168.7, 170.88, 72.53, 73.22, 73.49, 73.520, 72.380, 72.440, 72.5, 84.33, 84.39, 84.42, 84.48, 84.78, 84.9, 158.38, 159,13, 162.04
Taxis Combined	405.775, 405.8, 405.825, 405.850,

	405.900, 405.950, 405.975, 414.5, 414.650, 414.55, 414.6, 414.625, 414.675, 414.7, 414.775, 414.850
Taxi Trucks	160.635, 163.365, 164.320, 165.070, 165.400, 167.230, 167.410, 169.300, 158.29, 163.63, 461.3, 461.575, 463.2, 463.3, 463.475, 485.075, 485.425, 486.075, 486.375
TCN 9	480.225, 481.175, 453.700, 75.862
Technical Education Dept.	458.050
Telecom	169.625, 81.150, 158.62, 158.635, 158.65, 158.665, 158.68, 159.58, 164.14, 164.53, 163.545, 164.56, 164.575, 164.59, 164.605, 164.620, 166.945, 168.250, 168.19, 490.675, 494.95, 500.050, 500.175, 500.225, 500.250, 500.275, 500.300, 500.325, 500.425, 500.450
TEN 10	160.925, 492.975, 462.95, 463.6, 507.425, 507.8, 508.4
TEN 10 (engineering)	167.920
Thai Airways	465.825
TNT (Orange)	496.900
TNT (St. Marys)	496.650
Tow Trucks	160.450, 165.160, 170.760
Trains	465.425
TV New England	163.150
2BE Bega	74.042
2CH	160.420, 161.260
2DAY FM	490.725
2GB	165.640
2KY	493.325
2MMM FM	473.275
2SM	467.425
2UE	488.2
2UW	162.040, 489.050
University of NSW	464.200
Unofficial Helicopter Chit-Chat	123.450
Urban Transit Authority	157.48, 486.5
UTA Airlines	463.150
Volunteer Rescue Association	84.48, 84.99, 467.35, 491.35
Voice Call Paging	149.8875
VRA of NSW	84.480
Wales Rescue Helicopter	484.950, 485.000
Warringah Bush Fire Brigade	171.030
Water Board	80.01, 80.04, 80.07, 80.01, 80.13,

	80.16, 80.175, 80.19, 80.22, 80.28, 80.31, 80.34
Western Medical Services	453.600, 453.875
Westfield Shopping Ctrs	469.5
Wireless Inst.	147.000
Wollondilly Bush Fire Brigade	75.590
Wollongong Bush Fire Brigade	164.350

Newcastle

Ambulance	76.715, 76.670
BHP Locos	83.100
Coal Loader	467.175
Crane Services	73.575
Electricity Supply	77.000
Fire	78.100, 70.675, 78.055
Medical Service	463.300
NBN TV	488.975
NRMA	169.330
Police	73.327, 84.000
Taxi	70.675, 70.737
Wales Rescue Helicopter	485.000
Wards Transport	490.700
Water Supply	77.540, 77. 390

Tamworth

Airport	118.100
Ambulance	76.670
Ashford Shire Council	75.920
Baraba Shire Council	166.120, 469.875
Boolaroo Shire Council	75.590
East West Airlines	76.820
Fire	78.160
New England Society	77.420
NRMA	162.040
Police	83.880, 84.000
SES	168.820, 168.850
Tamworth City Council	72.800, 80.040, 80.760
Taxis	73.880

CENTRAL WEST

Ambulance	76.670
Central West County Council	70.13, 70.22, 70.34
Central West Water Bd	166.180
Department Main Rds	167.770
Electricity Commission	77.080, 77.090, 77.120, 82.110, 82.140, 82.170
Evans Shire	73.987

Gabonne Shire	74.270
Ophir County Council	166.180
Orange City Council	74.237
Orange Taxis	170.940
SES	168.820, 168.850
Telecom	158.650
TNT Orange	496.900
Young Shire	77.240
Young Taxis	77.660
Wellington Shire	75.470

Albury

Albury City Council	73.850
Ambulance	76.67
Border Rescue	84.48
Electricity Supply	72.562, 73.100, 82.140
Gas	488.525
Hume Shire Council	167.230
NSW Rail	463.550
Paper Mill	485.025
Police	83.76, 167.890, 167.920
Taxi	164.380
2AY	464.80

NSW AMBULANCE CODES

ZERO 1	Clear the air, standby — urgent message
CODE 1	Ambulance officer in trouble, requires police
CODE 2	Cardiac arrest
CODE 3	Doctor required at hospital casualty
CODE 4	D.O.A. Police required at hospital or address
CODE 5	Arriving at hospital, D.O.A. for certification
CODE 6	Departing hospital for morgue
CODE 7	Arriving at morgue
CODE 8	Prefix for terminal cases
CODE 9	Rescue unit required
CODE 10	Fire brigade required
CODE 11	Live wires down, require county council
CODE 12	Poisonous gas
CODE 13	Danger of explosion
CODE 14	Ambulance in collision
CODE 15	Patients or officer injured
CODE 16	Tow truck required
CODE 17	Overdose
CODE 18	Airport alert
CODE 19	Disaster

CODE 20 Officer's mealbreak

MUNICIPAL COUNCILS AND BUSH FIRE BRIGADE CHANNELS

Baulkham Hills	VL2XL 159.700
Campbelltown	VL2HA 78.825
Goulburn	VK2AF 166.285
Liverpool	VL2LV 171.120
Springwood	VL2EW 72.650
Sutherland	VL2RP 167.290

VL2EW, VL2AF operate through Katoomba fire control VL2KL, which also uses 72.887 and bushfire emergency channel 168.790.

Fire Control

National Parks Rangers	159.430
Water Board Rangers	80.160

NSW BUSH FIRE BRIGADE SIGNALS

1	No sign of fire, investigating
2	Local alarm not ringing
3	Local alarm is ringing
4	Large bush — no more assistance
6	Part dwelling or out-building — second station not required
10	Malicious false alarm
14	Large bush — stop
15	Rubbish fire — stop
20	Petrol on road
30	Person asphyxiated
Colour Signals	
RED	More assistance
WHITE	Other fire
BLUE	At fire
GREEN	Stop
YELLOW	Other, general message

W — Band

Station	Base XMIT	Base REC
Ch.10 TV News	495.325	490.125
Radio 2UE	488.200	483.000
SLSA/A	484.950	484.950
SLSA/A	485.000	485.000

VICTORIA

Melbourne

ABC	158.080
ABC - TV	171.78, 474.275, 474.575, 443.95
Aerospace Technologies	170.5

of Australia	
Age, The	479.100
Albion Reid	73.800 74.540
Allied Messenger Service	169.810
Ambulance	76.25, 76.43, 76.49, 76.67, 76.73, 76.9, 412.475, 412.5, 412.575, 412.65, 412.75, 412.85, 413.025, 413.075, 413.1, 413.125, 413.15, 413.175, 413.225, 413.275, 413.35, 413.375, 413.425, 469.525, 469.825, 470.150, 470.4
Ambulance Service — Melbourne	(VL3RS), 76.250, 76.430, 76.490, 484.550
(VL3WX) Country Chl	76.670
Ambulance Service — Peninsula	(VL3PY) 76.730
Animal Ambulance	(3NSJ) 492.825
Ansett airport reception	463.675
Ansett Air-to-ground	130.650
APM (fire)	73.100
Ararat Cabs	81.42
Arrow Cabs	73.46,73.47
ATV	10465.800
Aussie Cabs	81.84
Austas Voice Pager	149.810
Australian Airlines Airport Reception	463.300
Australian Airlines Air-to-ground	129.500
Belgrave Heating 3KC	82.500,82.530
Berwick City Council	172.890
Berwick Taxi Service	172.765
Berwick Watching Service	172.770
Black Cabs	489.100, 489,125, 489.200
Board of Works	169.42, 169.45, 169.465 169.48, 169.51, 169.54, 169.57
Bob Jane Car Dealer	159.640
Box Hill City Council	486.650
BP Australia	160.420
BP Australia (Crib Pt)	167.410
Brick Transports	79.090
Bread/Cake Deliveries	486.100, 77.360
Brotherhood of St. Lawrence	160.420
Bus Lines	463.850, 454.350, 470.550, 493.775
Cameo Transport	75.680
CFA	

Flinders Shire	164.230
Ford Motor Co.	169.660
Forest Commission	71.345, 71.330, 71.360, 71.375, 71.390, 71.240
Four Wheel Drive Clubs	161.350
Frankston Taxis	77.180
Gas and Fuel	466.825, 466.650, 467.25, 467.400, 467.435, 467.460
Gas and Fuel Corp.	466.45, 466.6, 466.65, 466.825, 466.85, 467.125, 467.25, 467.4, 467.425, 467.45
Gilbarco Pumps	463.125
Glaziers 3HSG	160.450
Golden Messengers	454.875, 464.375
Govt. Aircraft Factory	170.550
Green McCandish	81.000
GTV 9	464.875, 485.425, 486.375, 492.55, 494.375
Herald/Sun, The	470.250
Hire Cars (AM)	73.040
Hometune 3NRV	491.575
HSV 7	160.540, 160.54, 419.125, 485.4, 485.75, 491.75
Humes Ltd. 3NII	485.975
Ipec	493.350
Kays Mini Messengers	160.120
Lift Mechanics 3CK	460.175
Lilydale Shire Council	160.240
Locksmith	470.125
Mannor Messengers	84.540
Medical Services	84.330, 158.470, 165.040, 464.450, 465.450, 493.275
Melbourne City Council	73.70
Melbourne Taxis	488.7, 488.85, 489.025, 489.05, 489.075, 489.1, 489.125, 489.175, 489.2, 489.25, 489.4, 489.425, 489.45
Merrit & Morris Cigarettes 3YQ	160.060
MMBW	77.420, 169.42, 169.45, 169.48, 169.51, 169.54
MMBW S & R	496.10
Mobil	84.840, 157.480, 157.540, 159.790
Monash Garden Supplies	159.670
Mornington Wreckers	76.280
MSS	494.150
MTB	487.175
Municipal Councils (various)	74.00
National Parks Service	71.660

Nunawading City Council	158.590
Packenham Blue Metal	172.230
Paging (tone)	148.012
Petrochem Altona	467.275, 468.050
Pilots	493.475
Plumbers	160.330, 160.450
Port Emergency Service	415.475, 416.075
Port of Melb. Tug Control	494.075
Port VHF Channels	156.300, 156.375, 156.400, 156.600, 156.650, 156.800
Private Investigators	76.340, 160.630, 488.675
Process Server	485.600
Public Works Dept.	485.625
Qantas	131.900, 166.660, 166.06
Quebec Security	464.625
RAAF Sonobuoys	163.750, 489.775
RACV	495.325, 495.350, 495.375
Rank Security	485.375
RAN, Williamstown Naval Dockyard, Armament Depot	167.800
Refrigeration Repairs	492.025
Regal Taxis	488.825, 488.875, 488.9, 488.925, 488.975, 489.225
RMIT	463.475
Road Repairs	461.125
Roden Security	470.125
Rolex Transport	465.275
Royal Auto Club	490.1, 490.123, 490.150, 490.175, 490.2, 490.225, 490.250
RSPCA	490.775
Rural Water Commission	160.36, 164.98, 165.01, 165.04, 165.07, 166, 168.13, 465.575
Salvation Army 3MBT	463.650
Scanno Base Trucking	493.650
Seaford Petroleum	82.950
Seapak	492.075
Security Pioneer Asphalt Brooklyn, Epping, Westall 3MP	461.000
SECV	72.62, 72.71, 72.65, 72.59, 72.50, 162.220, 75.860
Select Tyre Service 3SR	82.530
SES	468.600, 468.625, 468.650, 468.675
SES (Frankston)	170.070
Sherbrooke Shire Council	76.640
Silver Top Taxis	483.375, 483.525, 483.575, 483.600,

	488.5, 488.525, 488.55, 488.575, 488.6, 488.625, 488.725, 488.75, 488.775, 488.8
Skip Collection 3NPV	464.250
Southern Peninsula Rescue Squad	155.100
Standard Roads	160.150
State Electricity Commision	72.35, 72.47, 72.5, 72.56, 72.59, 72.62, 72.65, 72.68, 72.71, 75.77, 75,8, 75.86, 162.34, 166.06, 166.42, 166.48, 166.69, 171.18, 171.24, 463.75,
State Emergency Service	486.6, 486.625, 486.65
State Rivers & Water Supply	169.660
Stock Ex Broker	461.650
Surf Life Saving Society	484.525, 485.15, 486.95
Taurus Constructions	76.880, 80.520
Taxis — General	488.000 - 489.500 (base chnls), mobile chnls exactly 5.2MHz lower.
Taxi Trucks	492.150
Telecom	78.07, 78.13, 81.36, 81.49, 83.61, 157.96, 157.99, 158.02, 158.665, 158.74, 159.46, 159.58, 160.02, 161.01, 163.54, 163.6, 163.72, 163.78, 169, 169.06, 475.075, 486.9, 490.675, 500.1, 500.125
Telecom districts	— Dandenong 500.050 — Clayton 500.075 — Croydon 500.150 — Frankston 500.175
3AW	492.275
3CGI Taxis	73.46, 77.18, 77.66, 77.72, 77.9, 80.1, 80.58, 81.42, 84.54, 84.84, 157.45, 160.09, 160.42, 162.61, 165.64, 170.52, 171.18, 173.31, 473.825, 489.0
3DB	498.075
3GL	465.275
3ML	487.750
3MP	487.775
3NY	487.100
3TT	492.725
3UZ	82.20
3XY	486.875
TNT 3ZH	76.370
Tow Trucks	77.425, 157.540, 157.600, 158.620, 158.920, 158.950, 158.980, 159.040, 159.070, 159.820, 160.120, 161.320, 164.620, 167.290, 167.680, 167.320,

	167.890, 168.790, 168.850, 160.880, 81.160, 81.960
Transport Regulation Board	467.050
Trains	77.24, 411.475, 411.525, 414.175, 414.2, 414.5, 414.525, 414.550, 414.575, 414.625, 414.675, 414.7, 414.725, 414.825, 414.85, 414.875, 414.9, 414.95, 415.05, 415.075, 415.125, 415.225, 415.25, 415.4, 417.85, 418.15, 418.45, 418.75, 419.05, 419.35, 419.65, 419.95, 465.55, 469.6, 469.7, 469.725
TRB inspectors VL3XT	462.725
TV Rental and sales	159.550
TV Repair 3RR	83.010
3ML	487.750
3NY	487.100
3AW	492.275
3DB	498.075
Unofficial Helicopter	123.450
Chit Chat	492.825
Vet 3NSJ VIC Rail	468.30, 468.775, 77.240
Voicecall Pager	149.890
Washing Machine Service	80.160
Wayne Pumps	179.730
Werribee City Council	76.520
Westgate Bridge Control	467.20
Windscreen Repairs	465.250
Wormalds	487.325, 76.190
Yellow Cabs	488.875, 488.900, 488.925, 488.975, 489.000
Yellow Express Courier	83.700
3AW	492.275
3DB	498.075
3MP	487.775
3UZ	82.20
3GL	465.275
3XY	486.875

METROPOLITAN FIRE BRIGADE STATION NUMBERS

1	Eastern Hill
2	West Melbourne
3	Carlton
4	Brunswick
5	Broadmeadows
6	Coburg
9	Fitzroy
10	Richmond

11	Lalor
12	Preston
13	Northcote
14	Rosanna
15	Ivanhoe
16	Greensborough
18	Hawthorn
19	Kew
20	Boxhill
21	Surrey Hills
22	Ringwood
23	Camberwell
24	Malvern
25	Oakleigh
26	Croydon
27	Nunawading
28	Mount Waverley
29	Glenhhuntly
30	Templestowe
31	Wheelers Hill
32	Brighton
33	Mentone
34	Moorabbin
35	Windsor
36	Sandringham
37	St Kilda
38	South Melbourne
39	Port Melbourne
40	Laverton
41	St Albans
42	Newport
43	Deer Park
44	Sunshine
45	Spotswood
46	Altona
47	Footscray
48	North Melbourne
50	Moonee Ponds
51	Keilor
52	Essendon

COUNTRY FIRE AUTHORITY — VICTORIA

Alphabetical List of Callsigns

VC3CL	Carlton Group
VL3AG	Horsham Urban Network
VL3AY	Seymour Shire Group
VL3BA	Benabra Network
VL3BF	Beaufort Group
VL3BP	Tyrell Group

VL3BS	Corryong and Dist. Group
VL3CB	Beechworth Group
VL3CH	Belfast Group
VL3CS	CFA Headquarters
VL3DB	Tambo Group
VL3DE	Heywood and Dist. Group
VL3DF	Ouyen Group
VL3DM	Rochester Shire Group
VL3DP	Goroke Group
VL3DY	Camperdown Dist. Group
VL3EA	Clear Lake Group
VL3EJ	Leslie Manor Network
VL3ER	Beeac and Dist. Group
VL3ES	Casterton Urban Network
VL3EU	Pyrenes Group
VL3EZ	Bellarine Group
VL3FC	Glenlyon Group
VL3FI	Numurkah Shire Group
VL3FV	Gorangamite Group
VL3GL	Gelantipy Network
VL3GN	Harrow Group
VL3GU	Ballan Group
VL3GY	Tallangatta and Dist. Group
VL3HA	Jeparit Group
VL3HE	Maroondah Group
VL3HF	Heyfield Group
VL3HI	Hopkins Gurides Group
VL3HJ	Mirboo Shire and Dist. Group
VL3HN	Mt. Macedon Counter Disaster School
VL3HQ	Deakin Group
VL3JA	Southern Grampians Group
VL3JD	Dundas Group
VL3JH	Chiltern and Dist. Group
VL3JI	Dimboola Group
VL3JT	Tungamah Group
VL3JW	Lilydale Dist. Group
VL3JX	Geelong Network
VL3JZ	Whittlesea-Diamond Valley Group
VL3KA	Upper Yarra Group
Vl3KG	Kaniva Group
VL3KH	Leigh Group
VL3KJ	Westmore Group
VL3KO	Ballarat Network
VL3KQ	Bendigo Urban Group
VL3KR	Ararat Group
VL3KW	Stawell Group
VL3LB	Mid-Murray Group
VL3LC	Ballarat Shire Group
VL3LD	Grenville Shire Group

VL3LL	Buninyong Group Network
VL3LN	Tullaroop Group
VL3LY	Mt. Cottrell Group
VL3MA	Maldon Group
VL3MK	Bendigo Group
VL3MO	Creswick Group
VL3MP	Metcalfe Group
VL3NC	Devenish Group
VL3ND	Newstead Group
VL3NE	Newborough Network
VL3NG	Wodonga and Dist. Group
VL3NI	Lower Yarra Group
VL3NJ	MacArthur Group
VL3NK	Chelsea/Frankston Dist. Group
VL3NL	Lismore and Dist. Group
VL3NM	Dartmoor and Dist. Group
VL3NP	Bass-Wonthaggi-Phillip Is. Group
VL3NR	Nareen Gr Southern Hume Hwy Group
VL3NZ	Orbost Urban Network
VL3OF	Westernport Group
VL3OJ	Dandenong Ranges Group
VL3OO	Great Ocean Group
VL3OQ	Mortlake Group
VL3OS	Mt. Mackay Lookout
VL3OX	Bacchus Marsh Group
VL3PB	Grampians Group
Vl3PC	Nathalia and Dist. Group
VL3PS	Kara Kara Group
VL3PT	Natimuk Group
VL3PU	Berwick Shire Group
VL3QA	Apsley Group
VL3QB	Benalla and Dist. Group
VL3QC	Casterton Group
VL3QD	Edenhope Group
VL3QJ	Narracan Shire and Dist. Group
VL3QK	Kyneton Dist. Group
VL3QM	Ovens Valley Group
VL3QN	Bannockburn Regional Control
VL3QW	Winchelsea Group
VL3RC	Mt. Macedon Group
VL3RD	McIvor Pyalong Group
VL3RF	Barwon Group
VL3RK	Anakie Group
VL3RL	Romsey and Dist. Group
VL3RO	Regional Officers Network
VL3RQ	Mansfield Group
VL3RW	Wangaratta Group
VL3RX	South West Gippsland Group
VL3SA	Waranga Group

VL3SL	Broadford and Kilmore Group
VL3SN	Wedderburn Group
VL3SR	East Loddon Group
VL3TA	Tahara Group
VL3TD	Drouin Dist. Group
VL3TJ	Balmoral Group
VL3TM	Hawkesdale Group
VL3TO	Euroa and Dist. Group
VL3TP	Maffra Dist. Group
VL3TQ	Gordon Shire Group
VL3TX	Rutherglen Group
VL3TY	Yarrawonga Group
VL3TZ	Moyhu and Dist. Group
VL3UB	Murrayville Network
VL3UD	Dandenong Urban Group
VL3UM	Stratford and Dist. Group
VL3UT	Inglewood Group
VL3UW	Yarram Dist. Group
VL3UX	Alexandra Group
VL3VA	Merri Group
VL3VC	South Gippsland Shire Group
VL3VF	Pyramid Hill Network
VL3VK	Bairnsdale Dist. Group
VL3VN	Morwell Dist. Group
VL3VP	Mildura Urban Group
VL3VS	Lowan Group
VL3VY	Shepparton and Dist. Group
VL3WC	Traralgon Dist. Group
VL3WE	Knox Group
VL3WG	Kerang Shire Group
VL3WJ	Yea Dist. Group
VL3WP	Dunolly and Dist. Group
VL3WV	South-Western Border Group
VL3WY	Portland Network
VL3XB	Murchison Group
VL3XG	Omeo and Dist. Group
VL3XH	Donald Group
VL3XJ	Mt. Arapiles Lookout Tower
VL3XU	Stradbroke Dist. Group
VL3YA	Violet Town Shire Group
VL3YC	Cobden & Dist. Group
VL3YR	Elmore Group
VL3ZF	Timboon and Dist. Group
VL3ZL	Kiewa Valley Group
VL3ZX	Rodney Group
VL3Z0	Zone Officer Network

COUNTRY FIRE AUTHORITY — VHF CHANNELS

163.030	163.090	163.120	163.150	163.180

163.210 163.240 163.270 163.300 163.330

Geelong

Ambulance	76.670
Bellarine Group	163.150
Bellarine Tug Control	494.075
CFA Geelong Network	163.330
Fire	163.150
Queenscliff Pilot Station	493.475
SES	468.650
Taxi	80.94
3GL	465.275
Water Supply	82.56

Wodonga

Ambulance	76.670
Border Rescue	84.48
Fire	163.120
Police	168.280
Taxi	170.460
VIC Rail	465.900
La Trobe Valley - Gippsland Ambulance	76.760
APM	463.625, 76.820
APM Voice Paging	40.680
Bairnsdale Taxi	81.420
Bass/Girdies Business Shared	162.760, 80.580, 80.840
Bass Shire	451.500, 461.000
Bass Strait Fishing	156.575
Boats/Newhaven	166.510
Borough of Wonthaggi	
Cowes Estate Agent	80.670
Electrican Traralgar	81.660
Esso Longford	71.510
Esso Longford/Barry Beach	167.770
Esso Longford/ Helicopter	126.400
Esso Offshore Radio Location	429.000
Fire	163.09, 163.120, 163.240
Fire Towers	496.100
Forest Commission	71.240, 71.375, 71.390, 71.330, 71.345, 496.100, 460.000, 460.175
Forest Commission Erica/Traralgon	450.800
Foster Business Shared	71.420, 169.900
Four Wheel Drive Club	161.350

(Gippsland Ranges)	
Gas and Fuel Corp.	80.820, 81.330, 81.600, 157.180, 461.500, 466.750
GESR Traralgon	162.225
GLVB	162.400
Harbour Masters	155.975
Intercom	
Housing Ministry	74.060
Korumburra Taxi	82.500
Lakes Entrance Harbour	156.400
Master VZ3IF	74.420
Lands Department	
Moe Business Shared	165.790
Moe Security	170.280
Moe Taxi	162.610
Morwell Business Shared	73.730, 84.840
Morwell Driving School	160.420
Morwell Shire	164.590
Morwell Taxi	76.580
Narrican Shire	157.450
National Parks	71.615, 451.225, 460.625
Oil Rigs Helicopter	71.162
Paynesville Public Works	155.975
Phillip Island Shire	167.650
Police	168.280, 168.190
Port Welshpool Harbour Master VZ3DY	156.700
RAAF Sonobuoys	163.750
Sale Taxi	80.100
SECV Locos	77.240, 166.330, 166.420, 166.480, 166.690, 166.600, 116.750
SECV Open Cut Yallourn/Morwell 3NN	171.180, 166.690
SECV Telefunken Paging	450.325
Sides Drilling	73.730
Skyfarmers Leongatha	80.340
State Rivers & Water Supply	83.700
State Rivers Heyfield	80.970
Telecom Mt. Tassie, 3ZM	78.070, 83.400
Traralgon Taxi	165.010
Vet Traralgon	169.780
Vic Rail	74.420
Walter Wright	73.160
Water Supply	167.20
Westernport Water Trust Cowes	158.770
Wonthaggi Borough 3WB	166.510
Wonthaggi Business Shared	167.980,84.840

Wonthaggi Hospital	73.370
Wonthaggi Radio/TV	159.850
Wonthaggi Taxi	160.300

Ballarat

Ambulance	76.670
CFA Network	163.330
Shire Group	163.120
Ararat Beaufort	163.150
Stawell Pyrenees	159.520
Westmere Groups	
City Council	
Forest Commission	71.375
Local Aircraft	124.900, 125.800
Police	168.280
SECV	75.800
Taxi	70.040, 488.95
Telecom	478.775, 500.175
3BA Courier Mail	167.770
Tow Trucks	166.300
TV Repair	169.365
Water Supply	167.200

Bendigo

Ambulance	71.670
Bendigo City Council	80.825
Fire — Urban	163.330
— East Loddon, Elmore, Maldon, Metcalfe & Bendigo Groups	163.240
Forest Commission (includes fire towers)	71.330
Marong Shire VL3PZ	159.250
Taxis	160.000
Water Supply	169.630

AMBULANCE SERVICE OF VICTORIA

There are 17 regional ambulance services in Victoria, each with their own district. The district headquarters control a number of stations which are usually connected to the headquarters radio room by landline. The districts are also in radio contact with adjacent districts and can relay messages to ambulance services — Melbourne.

Ambulance Service	Headquarters	Callsign
Ballarat and district	Ballarat	VL3PX
Central Victoria	Bendigo	VL3SV
East Gippsland	Sale	VL3EG
Geelong and district	Geelong	VL3OG
Glenelg district	Hamilton	VL3OH

Goulburn Valley	Sepparton	VL3GD
Mid Murray	Swan Hill	VL3TU
North-Eastern Victoria	Wangaratta	VLSNS
North-West Victoria	Mildura	VL3HN
Northern Districts	Echuca	VL3NV
Peninsular	Frankston	VL3PY
South Gippsland	Leongatha	VL3SG
South-Western Victoria	Warrnambool	VL3PQ
Melbourne	Melbourne	VL3RS
Wimmera district	Horsham	VL3WD
Alexandra and district	Alexandra	VL3UG

The ambulance service of Victoria uses a number code, although its use varies throughout the state. The ambulance service—Melbourne refers to motor car accidents as being a 'MCA', while most other districts stick to the formal code and call them a 'signal 3'. Some districts give the patient's condition as 'A' fair, 'B' serious and 'C' critical, while others use 'signal 1' for critical and serious and 'signal 2' for satisfactory condition.

Here is the official code list:

0	Non-urgent use
1	Attention (medical) required immediately on arrival at hospital
2	Not serious
3	Accident
4	Asphyxia
5	Baby born
6	Blood transfusion
7	Burns
8	Case urgent (no delay)
9	Case as soon as possib1e
10	CVA
11	Cardiac (heart-attack)
12	Collapse
13	Fracture of.....
14	Haemorrhage
15	Head injury
16	Possible drowning or internal injuries
17	Possible drowning
18	Maternity case
19	Mental case
20	Minor injuries
21	Multiple injuries
22	Murder?
24	Number of patients and injuries
26	Overdose
27	Oxygen being given
29	Communication priority
30	Patient conscious

31	Patient violent
32	Respiratory difficult
33	Rape
34	Shock severe
35	Shooting
37	Transfusion being administered
38	Trilene being administered
41	Brawl
46	Doctor in attendance
47	Doctor required
48	Female
50	Hazards present
51	Hospital notification
53	Male
55	Police in attendance
56	Police required
58	Relative with patient
61	Air ambulance ETA
63	Call by phone
64	Case cancelled
65	Communication/casualty unit at scene
66	Contact communication officer at scene
74	Leaving branch station for.....
80	Now mobile and loaded for .....
81	Now at destination
82	Now clear and available
83	Patient deceased
86	Phone switched to HQ's
87	Return to HQ's
89	Return to branch
90	Return to residence
98	Take a mealbreak

SOUTH AUSTRALIA

Adelaide

ABC	161.700
Adelaide Fire	168.820, 168.850
ADS-10 TV	472.75
Advertiser Newspapers	162.580, 456.350, 456.850
Ambulance	158.47, 158.53, 159.07, 159.16, 159.19, 159.25, 159.31, 159.280, 494.1
Ansett	470.175
Answer Page	149.785
Aust. Detective Svc.	456.525, 466.025
Australian National Rail	162.64, 167.53, 168.52, 168.58, 168.61, 168.64, 450.850, 471.3, 471.375, 471.4, 471.425, 471.5, 471.525, 471.575, 471.65, 471.7,

	471.725, 471.85, 471.95
Buses	165.13, 165.19, 165.28, 165.88, 165.185, 165.130, 165.220, 170.4, 485.5, 485.55, 485.575, 485.625, 485.775, 485.925, 485.95
Couriers	463.550, 463.625, 465.425, 465.725, 465.475
Dept. of Lands	157.69
Dept. of Marine and Harbours	77.18, 158.83
Dept. of Mines and Energy	162.265
Dept. of Woods and Forest	71.24, 74.09, 74.3, 75.89, 80.91, 163.465
5AA	469.450, 459.950
5AD	485.200, 480.000, 168.155
5DN	491.200
5KA	170.10
Electricity	159.49, 154.82, 160.3, 160.42, 160.435, 160.45, 160.48, 160.495, 160.51, 160.6, 161.17, 161.26, 161.305, 166.15, 166.165, 166.18, 166.195, 165.55, 165.64, 166, 166.135, 166.21, 166.225, 166.24, 166.27, 166.81, 166.91, 167.035, 474.875, 474.4, 474.975, 475.075 164.995, 160.465, 168.370, 166.150, 436.050, 459.737
Engineering and Water Supply	76.76, 76.94, 76.97, 164.68, 164.77, 164.92, 165.04, 168.145, 164.465
Fire Brigade	168.820
Fisheries & Fauna	164.240
Forest Service	82.675, 163.630, 450.775
Glenelg Sailing Club	77.930
Highways Dept.	156.940, 447.900
Hospitals	78.1
Marine & Harbours Dept.	77.090
Metro Fire	168.25, 168.82, 168.85, 168.88, 168.91, 168.97
MSS (security)	490.150
National Parks & Wildlife Service	162.865, 162.97, 488.05
News, The	168.280
NWS-9	473.85, 474.15, 484.975, 485.05, 485.425, 486.375, 488.9, 489.5, 157.66, 491.20
Penfolds	72.53
Philips TMC	458.475, 467.975
Public Building Dept.	169.330, 169.690, 453.800, 463.300
Qantas	464.95

Royal Automobile Association	75.750, 75.740, 75.800, 488.2
SAGASCO	173.310, 173.730
SAS 7 TV	485.325, 485.4, 485.775, 486.6, 487.4
STA	165.130, 165.180, 165.28
State Emergency Service	163.99, 164.08, 164.17, 167.29, 167.32, 167.35, 167.38, 167.41
State FMG	167.380, 167.350, 167.410
State Rescue Copter	163.630
Sunday Mail	168.275
Surf Rescue	159.490, 451.100, 460.600, 489.025, 489.225
Taxis — Suburban	499.500
Taxis	75.430, 75.560, 77.060, 80.190, 80.400, 80.460, 80.510, 80.530, 499.500, 488.500, 488.550, 488.575, 488.475
Taxi Trucks	157.960, 173.160, 166.720
Tow Trucks	157.690, 173.160, 166.720
Toyota 4WD Club	162.460
Trains	157.480, 157.485, 473.175
Voice Paging	149.690, 149.790
Water Supply	162.040
Yellow Cabs	80.19, 80.4, 80.46, 80.52
CFS Country Fire Service	163.090, 163.120, 163.150, 163.210, 163.270, 163.300, 163.420, 163.360, 163.060, 163.075, 163.540, 163.195, 163.570, 163.165, 163.510, 163.525, 163.405, 163.285 (helicopter 163.630), 488.3, 488.475, 488.6, 488.875, 487.975

Country Fire Services

Angaston VL5BQ	163.360
Athelstone VL5JX	163.060
Balaclava VL5JB	163.075
Barmera VL5BM	163.090
Barossa VL5AF	163.360
Beachport VL5FW	163.270
Blyth VL5DG	163.540
Burnside VL5NO	163.060
Burra Burra VL5GN	163.195
Bute VL5JF	163.300
Carrieton VL5AJ	
Central Yorke Pen. VL5LL	163.300
Clare VL5CG	163.195
Cleve VL5ME	163.210
Clinton VL5AG	163.300
Coonalpyn Downs VL5EX	163.090
Crystal Brook VL5DX	163.540
Dudley VL5JZ	163.165

East Torrens VL5GG	163.060
Elliston VL5GV	163.150
Eudunda VL5MX	163.570
Franklin Harbour VL5HC	163.165
Georgetown VL5AB	163.510
Gladstone VL5JG	163.510
Glossop VL5BM	163.090
Gumeracha VL5GS	163.195
Hallett VL5LO	163.195
Hawker VL5EU	
Jamestown VL5FF	163.150
Kadina VL5JD	163.300
Kanyaka-Quorn VL5IN	163.270
Kapunda VL5FG	163.570
Karoonda/East Murray VL5MY	163.150
Kimba VL5DF	163.060
Lameroo VL5IZ	163.500
Laura VL5HZ	163.510
Le Hunte VL5GD	163.090
Light VL5BL	163.525
Lincoln VL5GZ	163.165
Loxton VL5EV	163.210
Lucindale VL5JP	163.060
Mallala VL5FZ	163.525
Meadows VL5CM	163.150
Meningie VL5DH	163.090
Mitcham VL5BA	163.300
Monarto VL5XO	163.090
Morgan VL5ZZ	163.570
Mt. Barker VL5AE	163.060
Mt. Gambier VL5AM	163.360
Mt. Pleasant VL5HU	163.420
Munno Para VL5AS	163.420
Murray Bridge VL5EW	163.090
Murray Bay VL5QJ	163.300
Naracoorte VL5BN	163.150
Noarlunga VL5TB	163.090
Onkaparinga VL5AO	163.420
Orroroo VL5IK	163.510
Owen VL5IW	163.525
Paringa VL5AL	163.210
Peake VL5FC	163.090
Penola VL5CP	163.300
Peterborough VL5FB	163.510
Pinnaroo VL5IA	163.090
Pt. Elliot and Goolwa VL5GE	163.150
Pt. Germein VL5AC	163.405
Pt. MacDonell VL5AY	163.360

Pt. Wakefield VL5IQ	163.075
Redhill VL5I V	163.540
Ridley VL5LG	163.360
Riverton VL5NB	163.075
Robe VL5LH	163.510
Robertstown VZ5AY	163.570
Saddleworth and Auburn VL5NE	163.075
Salisbury VL5FS	163.270
Snowtown VL5GA	163.540
Spalding VL5DQ	163.195
Stirling VL5ES	163.210
Stirling North VL5BB	163.405, 163.270
Strathalbyn VL5CS	163.150
Streaky Bay VL5CT	163.420
Tatiara VL5AZ	163.090
Tea Tree Gully VL5DZ	163.270
Tumby Bay VL5LK	163.285
Truro VL5BQ	163.360
Victor Harbour VL5FM	163.285
Waikerie VL50T	163.210
Warooka VL5EZ	163.150
Willunga Vl5JY	163.285
Wilmington VL5DL	163.285
Yorketown VL5GY	163.150

WESTERN AUSTRALIA

Perth	463.85
ABC	
Aircraft	117.750, 120.500, 120.700, 120.995, 121.500, 121.600, 122.400, 160.210,
All West Towing Service	163.480
Amateur Band Two Metre	146.500, 146.700, 146.800
Amateur Satellite Service	435 to 438.000
Ambulance	79.6, 79.63, 79.96, 79.99, 79.625, 79.630, 80.01, 80.04, 80.025, 80.055, 80.07, 80.085, 80.595, 80.625, 80.67, 412.475, 412.75, 463.275, 464.575
Ansett	130.600
Australian Airlines	129.500
Auto Club	73.58, 74.48
Aviation:	126.600
Jandakot Twr	
Perth Approach	
Perth ATIS	113.7
Perth Control	123.900, 125.000
Perth FIS	122.400
Perth Radar	118.700, 126,000, 127.200

Perth Taxiing	121.700
Perth Tower	118.100, 120.500
Pearce	139.900
Control	120.900
Perth Terminal Information	
Departures	135.900
Pearce (RAAF)	
Radar	118.300, 118.500
Pearce Twr	
Perth Emergency	120.700, 123.900
Cathay Pacific	131.800
Bush Fire Brigade	78.865, 78.88, 78.91, 79.39, 79.405, 79.435, 79.45, 79.465, 79.48, 79.495, 79.51, 79.525, 79.555, 79.57, 79.585, 79.87, 79.885, 79.9
Channel 9	169.960
Daynite Towing	170.430
Fire Brigade	77.090, 77.120, 80.850 (Nth Perth) 76.61, 76.805
Gosnells Shire	160.540
Kimbers Towing Service	170.430
Locum	78.970, 468.350
Maritime Mobile	457.525, 457.550, 457.575, 467.525, 467.575
Metropolitan Road Department	160.000
Mines	76.64
Plumbers	84.300
Qantas	131.700
Railway	168.520, 168.425, 463.550, 463.500
Readymix	463.650
Royal Auto Club	74.420, 4.480
RSPCA	463.000, 463.775
SEC	499.775
Securatek	492.150
Shipping	156.000, 156.300, 156.375, 156.400, 156.600, 156.700, 156.800, 157.300
Space Operation Service	449.75 to 450.250
State Emergency Service	468.600, 490.000, 163.27, 163.39, 164.23, 164.44, 164.89, 165.07, 467.175, 468.625, 468.65
State Energy Comm.	73.520, 80.525
Swan Taxis	488.625, 489.325, 489.175, 488.900, 489.025, 488.775, 509.885
TAA	129.500
Target Towing	168.880
Taxis	71, 173.97, 487.3, 488.3, 488.5, 488.525, 488.625, 488.7, 488.775, 488.8, 488.9, 489.175, 489.325

Telecom	84.57, 84.81, 84.99, 158.29, 158.74, 158.77, 159.46, 159.58, 473.525, 474.4, 490.675, 490.975, 500.050, 500.1, 500.150, 500.175, 500.3, 500.325, 500.450, 500.475, 500.725, 501.025
TNT	492.000, 497.000
Tow Trucks	80.820, 82.860, 157.840, 163.480, 168.860
TV	486.375, 486.425, 487.350
TVW-7	463.875, 474.875, 165.460
Unknown	125.400, 163.175, 172.000
Volunteer Fire Brigade	76.13, 76.265, 76.55, 77.975
WA Gas	170.58
WA News	163.180
Water Auth. of WA	72.605, 72.62, 72.635, 72.665, 72.695, 72.77, 72.785, 72.83, 72.905, 72.95, 73.55, 73.61, 75.53, 77.48, 76.69, 84.24
Water Supply Board	84.24, 84.27, 84.3, 84.33
West Rail	168.52, 168.55, 168.58, 168.64, 168.67, 169, 169.12, 169.18, 169.21, 169.24, 169.27, 172.8, 172.83, 172.89, 172.98, 173.19 463.475, 463.55, 463.575, 463.75
Wormald Security	174.000

AUSTRALIAN CAPITAL TERRITORY

Canberra

ABC	74.330
Ambulance	76.670, 412.475, 413.025, 413.425, 486.925
Australia Post Courier	500.6
Bush Fire	77.540
Canberra Times	492.025
Capital TV	160.450, 485.425, 488.675, 492.975
Electricity Auth.	73.070, 73.1, 73.130
Fire Brigade	71.540, 465.025, 465.325, 465.650, 466.850
National Gallery	467.625, 467.7
Parliament House	467.125, 467.85, 468.05, 468.25, 468.5, 468.675, 468.825, 469.05, 469.225
Taxis	464.150, 490.325, 490.525, 490.625, 490.675
TCN-9 News	75.860
Telecom	78.340, 82.500
2CC	463.125
Volunteer Fire Brigade	163.3

QUEENSLAND

Brisbane

ABC-TV	166.900, 474.925, 474.575, 474.275, 486.725, 487.375, 487.925
Ambulance	79.750, 79.870, 82.975, 79.81, 79.84, 82.17, 82.71, 82.98, 82.92, 83.055, 83.520, 84.99, 85.98, 509.55, 76.67
Brisbane City Coucil	76.127, 76.367, 76.457, 75.92
Brisbane Fire Brigade	74.062
Brisbane FM/TV	167.11, 488.2, 489.425
Bush Fire	78.685
Channel 0	487.400
Channel 9	165.940, 453.525, 463.025, 494.825
Courier	466.125
Darling Downs TV	169.36, 169.51
Dept. of Forestry	78.01, 78.025, 78.04, 78.07, 78.085, 78.1, 78.115, 79.495, 79.51, 79.54, 79.57, 461.125
Dept. Primary Industries (Fisheries)	490.675
Dream World	484.8, 485.125
Electricity	78.825, 79.075, 79.087, 78.175, 78.19, 78.205, 78.22, 78.235, 78.25, 78.265, 78.28, 78.295, 78.31, 78.325, 78.34, 78.355, 78.37, 78.385, 78.4, 78.97, 78.975, 78.985, 78.46, 78.475, 78.49, 78.505, 78.565, 78.82, 79, 79.015, 158.785, 167.47, 471.925, 488.125, 491.225, 491.625, 488.150, 490.9, 77.3, 78.16, 79.03, 79.045, 79.06, 79.075, 79.09, 79.105, 79.12, 79.135, 74.15, 79.165, 74.18, 79.195, 79.27, 79.285, 79.3, 79.375, 167.47
Emergency Service	78.565, 467.525, 467.625, 467.725, 467.775
Estate Agents	463.875
Fire Brigade	74.03, 74.06, 74.12, 74.135, 76.1, 466.85, 466.875, 466.925, 466.975, 466.95, 467.325, 467.375, 467.8, 467.675
Flying Doctor	70.130
4BC	160.360
4BH	171.060
4BK — Channel 7	488.525
4CA	173.79
4KQ	170.100
4MMM-FM	167.110
4RR	170.745, 171.45
4TO	171.93
Gas Co	157.660
Gold Coast Council	159,205

Lift Mechanics	468.175
Logan Shire	78.675
Mines	157.66, 165.265, 166.84, 469.65, 469.725
Mirage (Pt. Douglas)	40.75
National Safety Council	466.3
Northern Rivers TV	162.46
PGH Brickworks	158.320
QATB	79.750, 79.810, 79.870, 82.975
Qld Broadcasting (various)	170.1, 170,34, 170.37, 474.55, 485.15, 485.2, 485.325, 485.775, 487.4, 508.925
Qld Newspapers	162.4
Qld TV	461.325, 463, 463.025, 463.475, 467.75, 485.425, 486.375
Railways	168.520, 168.640, 168.565, 168.775, 464.250, 485.350, 467.473, 163.675, 163.69, 163.735, 166.195, 166.675, 166.69, 166.735, 167.68, 168.64, 168.775, 168.82, 168.85, 162.295, 408.4, 408.65, 408.675, 408.7, 408.725, 408.8, 408.925, 408.95, 408.975, 409, 409.025, 409.1, 409.25, 409.275, 409.3, 409.325, 409.55, 464.25, 467.375, 467.45, 489.475, 485.35
Redlands Shire Council	168.460
Rockhampton TV	171.030
Royal Auto CWB of Qld	470.1, 470.525
Sand/Gravel Dredge Co.	158.620
South Coast Fire	74.137
State Emergency Service	466.775, 467.25, 468.6, 468.625, 468.65
Surf Life Saving	484.95, 485, 488.65, 489.225
Swim Pool Company	469.025
Taxis	81.362, 83.815, 83.850, 84.775, 84.600, 162.475, 72.98, 83.79, 83.82, 83.85, 83.88, 83.91, 84.54, 84.6, 84.66, 84.78, 84.75, 84.81, 84.87, 157.465, 157.525, 158.155, 158.185, 159.235, 162.94, 167.14, 169.63, 169.675, 509.550
Telecom	78.43, 78.445, 78.535, 78.415, 78.55, 500.050, 500.075, 500.1, 500.125, 500.175, 500.25, 500.3, 79.21, 79.225, 79.24, 79.255, 79.345, 79.36, 160.375, 160.39, 160.535, 169.78
Tow Trucks	78.250, 160.270, 169.930
Voice Pagers	402.875, 406.625
Wales Helicopter	484.950, 485.000

Water Resources Commission	76.7, 165.505, 165.535, 70.505

Mackay

City Cabs VH4CB	167.140
Mackay Electrical Board	79.120, 79.150, 79.045
Main Roads	158.875, 158.905
Nebo Shire Council	79.405
Pioneer Shire Council	73.670
Police	77.420
QATB	82.980
Railways	168.520
Sarina Shire Council	79.435
Sugar Research	474.500, 471.775
Telecom	160.390

TASMANIA

Ambulance	77.84, 77.63, 77.36, 78.385, 79.96, 79.345, 79.81, 78.13, 78.16
Ambulance (Sth Tas.)	450.650
Australian News Print	76.430
ANM Maydene	76.460
Australia Post	470.350
Bell Bay Mutual Aid Grp	76.820
Burnie Taxi	74.210
Coaches	74.120
Department Mines	450.025
Devonport Taxi	78.100
DMR	77.54, 77.615, 77.78
Emergency Services	76.370, 76.385, 76.79
Fire	77.210, 76.46, 76.52, 76.55, 76.61, 76.85, 76.88, 76.94, 74.745, 77., 77.03, 77.21, 77.36, 77.405, 77.435, 77.585, 77.645, 77.735, 77.645, 77.915, 77.975, 77.975, 78.055
Forestry	76.940, 76.970, 77.000, 77.465
Hobart Airport	118.100
Hydro-Electric Commission	169.30, 161.14, 73.310, 73.520, 73.640, 73.700, 73.760, 73.790 73.16, 73.19, 73.22, 73.28, 73.58, 73.73, 160.15, 160.27, 170.01, 73.89
Launceston Airport	124.100
Launceston Fire	77.370
Launceston Taxi	70,940, 71.480, 78,070
Main Roads	77.540
Marine Board Burnie	156.800, 156.600, 156.300
Marine Board Tamar River Area	157.660
Metropolitan Water Board	161.255

National Parks and Wildlife, Lands Department, Inland Fisheries and Forest Commission	77.000, 77.120
North Wood Chips	76.400
Royal Auto Club	74.21
Rural Fire Brigade — State Disaster	76.790
SES	76.390
7EX	169.960
7HT	165.760
7LA	162.640
Tasmanian Breweries	158.350
Taxis	73.940, 75.612, 162.455, 164.770, 167.825, 168.425, 72.44, 74.15, 75.74
Telecom	80.040
Telecom — Launceston	80.280
— NW Coast	80.040
Transport Commission	78.580
Ulverstone Taxi	72.440
Urban Fire Brigades	72.210
Wildlife Parks	77.120
Wynyard Airport	122.600

Tasmanian Fire Service

Municipality	Ch.	Callsign
Beaconsfield	S	VL7LG
Bothwell	S	VL7JX
Brighton	D	VL7KW
Bruny	S	VL7LH
Burnie	H	VL7GM
Campbell Town	S	VL7LI
Circular Head	S	VL7LJ
Clarence	C	VL7DQ
Deloraine	C	VL7KP
Devonport	B	VL7HP
Esperance	S	VL7LK
Evandale	A	VL7KK
Fingal	H	VL7LA
Flinders	N	VL7ME
George Town	S	VL7LL
Glenorchy	B	VL7AN
Glamorgan	H	VL7LB4
Gormanston	S	VL7LP
Green Ponds	D	VL7KX
Hamilton	A	VL7JT
Hobart	H	VL7CL
Huon	S	VL7LM
Kentish	C	VL7KR

Kingsborough	S	VL7DX
Latrobe	B	VL7KO
Launceston	N	VL7CS
Lilydale	S	VL7LN
Longford	A	VL7LM
New Norfolk	A	VL7JI
Oatlands	D	VL7KY
Penguin	D	VL7KZ
PortCygnet	S	VL7KJ
Portland	C	VL7KL
Queenstown	S	VL7LO
Richmond	N	VL7LC
Ringarooma	C	VL7KT
Ross	C	VL7LR
Scottsdale	C	VL7KS
Sorell	N	VL7LD
Spring Bay	N	VL7LE
St.Leonards	A	VL7KN
Strahran	S	VL7LS
Tasman	N	VL7LF
Ulverstone	D	VL7JS
Waratah	C	VL7KU
Westbury	C	VL7KV
Wynyard	C	VL7JR
Zeehan	S	VL7LT

Channels		
	A	76,520
	B	76,550
	C	76,610
	D	76.850
	H	77,030
	N	77,090
	S	77,150

NORTHERN TERRITORY

Alice Springs Taxi	75.62
Ambulance	463.625
Bushfire Council	163.24, 163.285, 163.345, 168.325
Darwin Taxis	73.82, 74.3
Electricity Commission	76.58, 464.825, 465.425, 466.625, 466.925, 467.225, 467.825
Emergency Services	80.07, 80.22, 80.31, 80.43, 169.87
Fire Service	170.55, 467.95, 467.8
Gas Company	167.2
Imparja TV	167.62
Railways	168.91
Surf Life Saving	75.53
Taxis	81.66, 83.55
Telecom	73.55, 159.58, 159.8

HF FREQUENCIES LISTINGS (INTERNATIONAL)

(All frequencies are in megahertz)

1.715	Pleasure-craft (marine).
2.000	Radphones ship
2.020	RFDS
2.032	Water safety groups
2.056	Radphones Adel., Bris., Dar., Melb., Perth, Syd., and T'ville
2.112	Calling and working fishing vessels
2.160	Emergency Fire Service (SA)
2.164	Calling and working fishing vessels
2.182	Maritime international distress
2.201	Ship-shore working
2.260	RFDS
2.280	RFDS
2.284	Yachts and other pleasure-craft
2.316	VL5AP VKA
2.344	VL7AX
2.470	RFDS
2.488	Country Fire Authority (Vic)
2.500	WWV, WWVH time and frequency stations
2.512	Country Fire Authority (Vic)
2.524	Yachts and other pleasure craft
2.580	Country Fire Authority (Vic)
2.5815	Emergency Fire Service (SA)
2.600	Country Fire Authority (Vic)
2.612	Forestry Commission (Vic)
2.620	Country Fire Authority (Vic)
2.620	Emergency Fire Service (SA)
2.638	Trading vessels and other sea-going craft
2.6576	RFDS Kalgoorlie VJQ (WA)
2.660	Country Fire Authority (Vic)
2.6695	Emergency Fire Service (SA)
2.676	Water safety groups
2.680	Emergency Fire Service (SA)
2.692	Country Fire Authority (Vic)
2.708	Forestry Commission (Vic)
2.720	Emergency Fire Service (SA)
2.728	Forestry Commission (Vic)
2.740	Country Fire Authority (Vic)
2.752	Emergency Fire Service (SA)
2.760	Outpost net, Broomfield (Vic)
2.780	Country Fire Authority (Vic)
2.780	Emergency Fire Service (SA)
2.792	RFDS Derby VJB
2.7935	RFDS (WA)
2.8000	Bush Walkers (NSW)

2.805	RFDS Wyndham VKF
2.808	Emergency Fire Service (SA)
2.836	Emergency Fire Service (SA)
2.840	Forestry Commission (Vic)
2.850	Country Fire Authority (Vic)
2.944	Aircraft, SE Aust.
2.945	International ground-to-air, Sydney
2.965	VOLMET
2.987	International ground-to-air, Perth
3.008	Aircraft
3.114	Navy
3.152	Emergency Fire Service (SA)
3.155	St. John's Search and Rescue
3.158	Emergency Fire Service (SA)
3.164	Air Ambulance
3.196	Forestry Commission (NSW)
3.252	Police — NSW
3.260	Police — Northern Territory
3.260	Country Fire Authority (Vic)
3.290	Country Fire Authority (Vic)
3.340	Country Fire Authority (Vic)
3.360	Country Fire Authority (Vic)
3.375	State Emergency Services
3.393	Country Fire Authority (Vic)
3.404	Aircraft
3.418	Aircraft
3.432	VOLMET
3.446	Aircraft
3.452	Aircraft, Nth Cent, Nth East, Cent East, Aust.
3.461	Aircraft, Sth Cent, Nth West, Sth West, Aust.
3.467	Aircraft, South Pacific
3.481	Aircraft
3.600	Wireless Institute Civ. Emer. Network (WICEN)
3.720	State Emergency Service
3.729	State Emergency Services (NSW South)
3.732	State Emergency Services (NSW North & national)
3.733	State Emergency Service (NSW West)
3.740	Esso oil rigs Bass Strait
3.743	State Emergency Services
3.746	State Emergency Services, Sydney
3.752	VKR Brisbane
3.836	Country Fire Authority (Vic)
3.848	Country Fire Authority (Vic)
4.002	Bass Strait oil rigs
4.010	RFDS aeromedical (SA)
4.0115	RFDS (SA)
4.030	RFDS (WA)
4.040	ANARE
4.045	RFDS Charleville School-of-the-Air
4.045	RFDS Carnarvon VJT

4.055	RFDS Broken Hill VJC
4.0465	RFDS Charleville School-of-the-Air
4.0565	RFDS Broken Hill
4.0723	Radphones ships to Brisbane, Melbourne and Perth
4.0754	Radphones ships to Sydney
4.1064	Radphones ships to Darwin and Brisbane
4.1188	Radphones ships to Adelaide, Darwin and Townsville
4.1204	Pleasure-craft and water safety groups
4.125	International ships supplementary distress
4.125	Radphone calling frequency
4.1346	Ship working frequency
4.1436	Coast stations to small craft, South Pacific
4.140	RAN
4.3667	Radphones Brisbane, Melbourne and Perth
4.3698	Radphones Sydney
4.4008	Radphones Brisbane, Darwin and Perth
4.407	Radphones Adelaide, Darwin and Townsville
4.413	Radphones Adelaide, Darwin and Townsville
4.4287	Coast stations working frequency
4.450	Forestry Commission (NSW)
4.510	Emergency Fire Service (SA)
4.524	Country Fire Authority (Vic)
4.550	Frequency Monitoring System
4.560	VKG Sydney
4.567	State Emergency Services VL2ZQ Sydney
4.571	State Emergency Service
4.574	State Emergency Service
4.580	VKG (night)
4.635	Broken Hill School-of-the-Air
4.678	Aircraft, SE Australia
4.684	Aircraft, SW Australia
4.693	Aircraft, South Central Australia
4.725	US Strategic Air Command
4.746	USAF SAC
4.748	Kelly Air Force Base, Texas
4.780	VKC
4.860	RFDS School-of-the-Air
4.880	Forestry Commission (Vic)
4.926	RFDS
4.940	Outpost, Broomfield (Vic)
4.980	RFDS (Qld)
5.000	JJY RWN WWVH ZUO time and frequency stations
5.0115	Kalgoorlie School-of-the-Air
5.070	Sacred Heart Mission (NT) 8SF
5.110	RFDS
5.145	RFDS (Qld)
5.180	VL5AP VKA
5.200	RFDS
5.227	RFDS

5.230	RFDS
5.260	RFDS
5.2615	Meekatharra School-of-the-Air
5.300	RFDS (Qld & WA)
5.345	Forestry Commission (WA)
5.355	Outpost, Hobart VIH
5.355	BHP Central Queensland
5.360	RFDS (WA)
5.370	Forestry Commission (WA)
5.370	Alice Springs School-of-the-Air
5.410	RFDS (NT)
5.445	Mt. Isa School-of-the-Air
5.450	Forestry Commission (WA)
5.484	Aircraft
5.498	Aircraft, Papua New Guinea
5.514	Department of Aviation and Medical Aid, Iron Range
5.526	Aircraft, South, East Sydney
5.643	Aircraft, International Pacific, Sydney, Auckland
5.634	Aircraft — Indian Ocean
5.638	International ground-to-air, Sydney
5.645	Aircraft North Sea oil rigs
5.666	Aircraft South Pacific
5.673	International ground-to-air, Darwin and Perth
5.680	International Search and Rescue Frequency
5.688	RAAF
5.740	RFDS
5.810	USN Virginia
5.835	ANARE
5.845	RFDS (SA and NT)
5.865	Cairns School-of-the-Air
5.870	USN Key West CW
6.2062	Ship-to-shore
6.2155	International ship station calling frequency
6.383	USCG California CW
6.5126	Coast station working frequency
6.526	Qantas aircraft
6.541	Aircraft
6.561	International aircraft to ground — Perth
6.565	Aircraft, South-West, Australia
6.568	Aircraft
6.580	Aircraft, South-East, Australia
6.604	Aircraft, North-West, Australia
6.610	Aircraft
6.616	Aircraft, North-East, Australia
6.624	Aircraft
6.638	Aircraft
6.666	Aircraft
6.676	VOLMET
6.697	USN aircraft

6.723	USN aircraft
6.750	MacDill Air Force Base, Florida
6.756	Andrews Air Force Base, Maryland
6.850	Antarctic Bases
6.880	RFDS (NSW)
6.886	RFDS
6.890	RFDS (WA)
6.905	Outpost Control Brisbane
6.920	RFDS Broken Hill
6.925	RFDS aeromedical
6.935	USCG
6.937	Forestry Commission (NSW)
6.940	Forestry Commission (NSW)
6.945	Charleville School-of-the-Air
6.950	RFDS (NT)
6.960	RFDS (WA)
6.965	RFDS aeromedical
6.970	Sydney Norfolk/Telecom
6.975	Telecom Darwin
7.160	Maritime Customs
7.307	RFDS
7.330	State Emergency Services, Sydney
7.392	RFDS
7.410	RFDS
7.465	RFDS (Qld)
7.517	RFDS
7.550	RFDS (WA)
7.5815	Andersen Air Force Base, Guam
7.760	VKG (secondary) Sydney
7.9925	ANARE
8.035	School-of-the-Air
8.090	USN Virginia, USN Maryland CW
8.144	RFDS (WA)
8.147	RFDS
8.165	RFDS Charters Towers
8.175	RFDS (SA)
8.226	Radphones ships to Bris., Darwin, Melb. and Perth
8.2384	Radphones ships to Darwin
8.2446	Radphones ships to Townsville
8.257	International ships station calling frequency
8.2815	Radphones ships to Sydney
8.364	International aeronautical emergency foundation
8.465	USCG Virginia CW
8.471	USCG Puerto Rico CW
8.575	USCG California CW
8.722	Radphones Sydney
8.7499	Radphones Brisbane, Darwin, Melbourne and Perth
8.7623	Radphones Darwin
8.7685	Radphones Townsville
8.822	Aircraft, South-West, Australia

8.831	Aircraft Central-East, Australia
8.843	Aircraft North-Central Australia
8.847	International ground-to-air, Sydney
8.854	International ground-to-air, Darwin and Perth
8.858	Aircraft, South Central Australia
8.867	Ground-to-air Sydney, Pacific
8.875	Aircraft, Papua New Guinea
8.876	Aircraft, South-East Australia
8.886	Aircraft — Indian Ocean
8.891	Aircraft
8.896	Aircraft
8.900	Aircraft — South Pacific
8.922	Air Ambulance
8.924	Aircraft, South Pacific
8.938	Aircraft
8.945	Aircraft
8.963	Hickham Air Force Base, Hawaii
8.964	USAF SAC
8.967	Andrews AFB, Maryland
8.975	RAAF
8.989	McClellan Air Force Base, California
8.997	USN aircraft Antarctica
9.027	US Strategic Air Command
9.050	USCG Hawaii CW
9.075	BHP Western Qld
9.300	State Emergency Services (NSW)
9.940	ANARE
10.000	JJY WWV, WWVH, LOL, RWM, time and freq. stations
10.017	Aircraft
10.025	International ground-to-air — Perth
10.093	Qantas Aircraft
10.505	VKG
11.182	Scott Air Force Base, Illinois
11.201	RAAF
11.220	US Strategic Air Command
11.225	USAF
11.243	US Strategic Air Command
11.246	USAF
11.300	Aircraft, Indian Ocean
11.319	Aircraft, Pacific Ocean
11.387	VOLMET
11.396	Aircraft, South-East Asia
12.225	ANARE
12.3362	Radphones ships to Sydney
12.4075	Radphones ships Perth
12.4106	Radphones ships to Darwin
12.4168	Radphones ships to Brisbane
12.423	Radphones Sydney
13.107	Radphones Sydney

13.1783	Radphones Perth
13.1814	Radphones Darwin
13.1876	Radphones Brisbane
13.1938	Radphones Sydney
13.218	Vandenburg AFB, California
13.241	US Strategic Air Command
13.244	MacDill Air Force Base, Florida
13.247	Andrews Air Force Base, Maryland
13.288	International ground-to-air — Darwin and Perth
13.300	Aircraft, South Pacific
13.304	International ground-to-air — Sydney
13.306	Aircraft, Indian Ocean
13.336	International ground-to-air, Sydney
14.415	ANARE
14.896	McMurdo Station, Antarctica
15.000	LOL, WWV, WWVH, JJY Time & freq. stations
15.041	SAC bombers
15.042	USAF
15.845	ANARE
16.4631	Radphones ships to Sydney
16.4693	Radphones ships to Perth
16.4879	Radphones ships to Sydney
16.910	USCG Hawaii CW
17.105	NOAA California CW
17.236	Radphones Sydney
17.2422	Radphones Perth
17.2608	Radphones Sydney
17.904	Aircraft, Indian Ocean
17.907	Aircraft
17.909	Aircraft, South Pacific
17.925	International ground-to-air — Perth
17.949	International ground-to-air — Sydney
17.961	Aircraft Atlantic Ocean
17.965	International air-to-ground — Darwin and Perth
18.026	RAAF
19.240	ANARE
20.000	WWV, WWVH, time and frequency stations
22.0062	Radphones ships to Sydney (22.6022)
22.0341	Radphones ships to Sydney (22.6301)
22.0682	Radphones ships to Sydney (22.6642)
22.6022	Radphones Sydney
22.6301	Radphones Sydney
22.6642	Radphones Sydney

YOUR OWN LISTINGS OF HF FREQUENCIES

VKS 737 4WD CLUB

1. 5455
2. 8022
3. 11.612
4. 14.977
5. 3995.

HF FREQUENCIES

AUSTRALIAN VLF (LONG WAVE) 200-415kHz AERONAUTICAL BEACONS

These stations transmit their callsigns in morse code. Those marked with an asterisk (*) also carry weather and runway information in voice transmissions.

	IDENT	FREQ.
*Adelaide	AD	362
Aeropelican, Lake Macquarie NSW	PLX	203
Albany WA	AL	240
Albury NSW	AY	236
*Alice Springs NT	AS	224
Amberley Qld	AM	359
Andamooka SA	AMK	206
Archerfield Qld	AF	206
Ardrossan SA	ARS	398
Armidale NSW	ARM	401
Bairnsdale Vic	BNS	212
Balgo Hill WA	BGO	206
Ballidu WA	BIU	332
Barcaldine Qld	BAR	332
Bathurst NSW	BTH	383
Bendigo Vic	BDG	245
Birdsville Qld	BDV	209
Blackall Qld	BCK	203
Boorhaman Vic	BHN	203
Bordertown SA	BOR	251
Boulia Qld	BOU	212
Bourke NSW	BKE	389
Bowen Qld	BWN	292
*Brisbane Qld	BN	302
Broken Hill NSW	BH	332
Brommeltown Qld	BML	374
Broome WA	BR	320
Brunette Downs NT	BRU	248
Bundaberg Qld	BU	320
Cairns Qld	CS	364
Calga NSW	CAA	392
Camden NSW	CN	281
Camooweal Qld	CMW	254
*Canberra ACT	CB	263
Carnarvon WA	CR	380
Casino NSW	CAS	332
Ceduna SA	CD	293
Chalkers NSW	CHK	206
Charleville Qld	CV	269
Christmas Island	XMS	341
Clackline WA	CKL	200
Clermont Qld	CMT	209

Cloncurry Qld	CCY	264
Cobar NSW	CBA	395
Cocos Islands	CC	305
Coen Qld	COE	404
Coffs Harbour NSW	CH	311
Condoblin NSW	CDO	401
Coober Pedy SA	CBP	212
Cooktown Qld	CKN	260
Coolangatta Qld	CG	278
Cooma NSW	CM COM	293
Coonabarabran NSW	CBB	200
Coonamble NSW	CNB	206
Cootamundra NSW	CTM	395
Corowa NSW	COR	380
Corryong Vic	CRG	386
Cowes Vic	CWS	275
Cowra NSW	CWR	299
Cunderlin WA	CUN	292
Cunnamulla Qld	CMU	218
Curtin Springs NT	CSP	200
*Darwin NT	DN	344
Deniliquin NSW	DLQ	392
Derby WA	DB	332
*Devonport Tas	DV	281
Dubbo NSW	DU	251
East Sale Vic	ES L	350
Edinburgh SA	ED	311
Emerald Qld	EML	324
Esperance WA	ESO	328
Fitzroy Crossing WA	FTZ	407
Flinders Island Tas	FI	296
Forest WA	FT	268
Gayndah Qld	GAY	284
Georgetown Qld	GTN	200
Geraldton WA	GN	360
Gibb River WA	GIB	392
Gladstone Qld	GL	236
Glen Elgin NSW	GGN	245
Glen Innes NSW	GLI	212
Goondiwindi Qld	GDI	398
Goulburn NSW	GLB	407
Gove NT	GV	380
Grafton NSW	GFN	389
Griffith NSW	GTH	305
Groote Eylandt NT	GTE	407
Gunnedah NSW	GDH	407
Halls Creek WA	HC	266
Hamilton Vic	HML	203
Hay NSW	HAY	209
Holbrook NSW	HBK	320

Hooker Creek NT	HOO	398
Horsham Vic	HSM	401
Hughenden Qld	HUG	340
Inverell NSW	IVL	260
Iron Range Qld	IR	392
Jervois NT	JVS	203
Julia Creek Qld	JLC	206
Kalgoorlie WA	KG	287
Karratha WA	KA	404
Katoomba NSW	KAT	353
Kilcoy Qld	KCY	392
King Island Tas	KI	332
Kingscote SA	KSC	215
Koolan Island WA	KLI	352
Kowanyama Qld	KOW	242
Kununurra WA	KU	227
Lake Albert SA	LRT	227
Lancelin WA	LCI	245
*Launceston Tas	LT	242
Laverton Vic	LV	344
Laverton WA	LTN	407
Learmonth WA	LM	396
Leigh Creek SA	LC	341
Leonora WA	LEO	377
Lismore NSW	LIS	404
Longreach Qld	LR	353
Lord Howe Island	LH	272
McArthur River NT	MHU	200
Mackay Qld	MK	308
Mallacoota SA	MCO	338
Mangalore Vic	MNG	254
Maningrida NT	MGD	401
Mansfield Vic	MFD	284
Marulan NSW	MRU	230
Maryborough Qld	MYB	248
Meekatharra WA	MR	351
Melbourne/Essendon Vic	EN	356
Merimbula NSW	MER	395
Mildura Vic	MI	272
Minnipa SA	MPA	200
Modbury SA	MBY	377
Moomba SA	MMB	227
*Moorabbin Vic	MB	398
Morawa WA	MRW	236
Moree NSW	MOR	392
Moruya NSW	MRY	215
Mount Gambier SA	MG	266
Mount Hope SA	MTP	356
Mount Isa Qld	MA	236
Mount Livingstone Vic	LVG	227

Mount Magnet WA	MOG	324
Mount McQuoid NSW	MQD	404
Mount Sandon NSW	MSO	326
Mount William Vic	MWM	233
Mudgee NSW	MDG	398
Nambour Qld	NMB	380
Narembeen WA	NRB	227
Narrabri NSW	NBR	413
Narrandera NSW	NAR	329
Narromine NSW	NRM	215
Newman WA	NWN	233
Nhill Vic	NHL	326
Norfolk Island	NF	376
Normantown Qld	NM	312
Norseman WA	NSM	384
Nowra NSW	NW	401
Nullagine WA	NUL	209
Nyngan NSW	NYN	404
Oakey	OK	254
Onslow WA	OL	312
Oodnadatta SA	OD	308
Orange NSW	OR	413
Paraburdoo WA	PBO	278
Parafield SA	PF	206
Parkes NSW	PKS	290
Perth WA	PH	400
Perth/Gingin WA	GIG	372
Perth/Jandakot WA	JT	281
Perth/Pearce WA	PE	340
Pingelly WA	PGL	233
Point Lookout NSW	PLO	266
Port Hedland WA	PD	260
Portland Vic	POD	209
Port Lincoln SA	PLC	389
Port Macquarie NSW	PMQ	395
Port Stanvac SA	PSV	236
Proserpine Qld	PPN	244
Quirindi NSW	QDI	386
Redland Bay Qld	RLB	218
Richmond Qld	RMD	215
Rockhampton Qld	RK	335
Roma Qld	ROM	377
Roper Bar NT	RRB	215
Rottnest Island WA	RTI	317
Rugby NSW	RUG	257
Scone NSW	SCN	209
Singleton NSW	SGT	275
Southern Cross WA	SCR	221
St. George Qld	SGE	404
St.Stonefield SA	SFL	257

Strahan Tas	SRN	257
Strathbogie Vic	SBG	413
Swan Hill Vic	SWH	407
*Sydney NSW	SY	317
Sydney/Bankstown NSW	BK	212
Sydney/Richmond NSW	RI	347
Tailem Bend SA	TBD	242
*Tamworth NSW	TW	341
Taree NSW	TRE	371
Taroom Qld	TAM	221
Temora NSW	TEM	212
Tennant Creek NT	TC	272
Thargomindah Qld	TGM	206
Thursday Island	HID	356
Tibooburra NSW	TIB	200
Timber Creek NT	TBR	212
Tindal NT	TN	388
Townsville Qld	TL	276
Victoria River Downs NT	VRD	377
Wagga Wagga NSW	WG	221
Walgett NSW	WLG	374
Warracknabeal Vic	WKB	212
Warrnambool Vic	WBL	395
Wave Hill NT	WAV	203
Wee Jasper NSW	WJS	374
Weipa Qld	WP	374
West Maitland NSW	WMD	224
West Wyalong NSW	WWL	389
Whyalla SA	WH	371
Williamsdale NSW	WLE	287
Williamtown NSW	WLM	365
Windorah Qld	WDH	407
Winton Qld	WTN	398
Wittenoom WA	WI	365
Wollongong NSW	WOL	242
Wonthaggi Vic	WON	383
Woomera SA	WR	248
Wyndham WA	WM	372
*Wynyard Tas	WY	302
Yarrowee Vic	YWE	389
Yass NSW	YAS	335

VHF AIRCRAFT CHANNELS

FREQ	CHANNEL USAGE
NSW	
118.1	Bankstown Tower
118.2	Coffs Harbour/Wagga Tower
118.3	Nowra Tower/GND

118.5	Sydney Control
119.1	Club Frequency
119.4	Tamworth Tower
120.1	Camden Tower
120.5	Sydney Tower
120.9	Auto Information Service (Bankstown)
121.1	Sydney (Flight Services)
121.5	Distress Frequency
122.5	Gliders/Soaring Clubs
122.7	Gliders/Soaring Clubs
122.9	Gliders/Soaring Clubs
123.0	Sydney Departure
123.4	Sydney Control
124.2	Albury Tower
124.4	Sydney Approach
125.3	Sydney Departures
125.6	Sydney Control
126.1	Sydney Approach
126.4	Airships
126.9	Sydney Control
127.0	Sydney Control
127.3	Sydney Control
128.2	Sydney Control
128.4	Sydney Control
128.6	Sydney Control
128.8	East West Airlines
128.9	Airships
129.2	Sydney Control
130.1	Sydney Control
130.6	Ansett

ACT

118.7	Canberra Tower
121.7	Canberra Ground
124.5	Canberra Approach
125.9	Canberra Departures
129.5	Australian Airlines
130.6	Ansett Airlines

N.T

118.3	Darwin/Alice Springs Tower
119.0	Darwin Ground
120.5	Darwin Approach
121.9	Tindal Approach
122.7	Gliding
123.8	Darwin Control
126.4	Helicopters
130.6	Ansett Airlines
133.8	Darwin Control

134.0	Darwin Control
134.1	Darwin Approach
134.2	Darwin Control
134.4	Darwin Control

QLD

118.1	Archerfield/ Rockhampton Tower
118.3	Amberley/Townsville Tower
118.7	Coolangatta/Hamilton Isle Tower
118.9	Brisbane Control
120.1	Oakey Tower
120.5	Brisbane Tower
122.5	Gliding
122.7	Gliding
122.9	Gliding
124.5	Maroochydore Tower
124.6	Brisbane Approach
124.9	Cairns Tower
125.9	Rockhampton Control
126.2	Amberley Approach
126.4	Airships
126.8	Townsville Approach
127.2	Brisbane Control
127.4	Townsville Control
127.6	Townsville Control
128.8	East West Airlines
129.5	Australian Airlines
129.7	Air Queensland
129.9	Helicopters
130.0	Brisbane Control
130.6	Ansett Airlines
132.65	Australian Airlines
133.0	Townsville Control
133.4	Brisbane Control
133.8	Brisbane Control
135.3	Townsville Control
135.9	Brisbane Control

SA

118.2	Adelaide Approach
118.3	Edinburgh/Woomera Tower
118.7	Parafield Tower
120.5	Adelaide Tower
120.9	Parafield Tower
122.5	Gliding Clubs
122.7	Gliding/Balloon Clubs
124.2	Adelaide Approach
124.6	Parafield Tower
125.3	Adelaide Control (East)

127.1	Adelaide (West)
128.1	Adelaide (North)
130.65	Ansett Airlines
131.8	Adelaide Control (North)
131.9	Qantas
132.7	Adelaide Control West
132.8	Adelaide North-East
132.9	Adelaide North
135.0	Adelaide North-West
135.4	Adelaide North
135.5	Airships

VIC

118.1	Moorabbin Tower
118.2	Avalon/Point Cook Tower
118.3	Sale Tower
118.4	Melbourne Departures
119.1	Aero Clubs
120.1	Avalon Tower
120.5	Melbourne Tower
121.7	Melbourne Ground
121.9	Essendon Ground
122.0	Civil Aviation Authority
122.7	Gliding/Balloons
122.9	Gliding/Balloons
123.	Moorabbin Tower
123.3	Sale Approach
123.6	Melbourne Control
125.1	Essendon Tower
125.7	Melbourne Control
126.6	Melbourne Control
127.0	Melbourne Control
127.4	Melbourne Control
128.5	Melbourne Control
128.9	Airships
129.5	Australian Airlines
129.850	Overseas Airlines
130.0	Overseas Airlines
130.3	Melbourne Control
130.5	Melbourne Control
130.6	Ansett Airlines
130.65	Ansett Airlines
130.950	Ansett Airlines
131.5	Qantas Airlines
131.9	Qantas Airlines
135.3	Melbourne Control
135.5	Point Cook Tower
135.7	Melbourne Approach

WA

118.1	Jandakot Tower
118.3	Learmonth/Pearce Tower
118.7	Perth Approach
119.3	Perth Control
119.9	PT Hedland Tower
120.8	Helicopters (Fremantle)
121.3	Helicopters
122.3	Helicopters
122.7	Gliding Clubs
122.9	Gliding Clubs
123.7	Perth Approach
124.5	Karratha Tower
125.0	Perth Control
125.2	Perth Control
126.8	Perth Control
127.3	Perth Control
128.8	Skywest Airlines
129.5	Australian Airlines
129.6	Royal Flying Doctor Service
130.1	Perth Control
130.9	Perth Control
130.95	Ansett Airlines
132.0	Perth Control
132.8	Perth Control
133.2	Perth Control
133.4	Perth Control
133.5	Perth Control
133.6	Perth Control
133.7	Perth Control
134.0	Perth Control
134.2	Perth Control
134.5	Perth Control
135.55	Airships
135.9	Pearce Approach

BEACON FREQUENCIES

AUSTRALIAN 27MHz MARINE FREQUENCIES

Freq. (MHz)	Use
27.680	Commercial organisations. Calling and working ship-ship and ship-shore.
27.720	Professional fishing. Calling and working ship-ship and ship-shore.
27.820	Professional fishing. Calling and working ship-ship and ship-shore.
27.860	Distress, safety and calling, supplementry to 27.880.
27.880	Distress, safety and calling.
27.900	Non Commercial organisations. Calling and working ship-shore.
27.910	Non-Commercial organisations. Calling and working ship-shore.
27.940	Non-Commercial organisations. Calling and working for club events, ship-shore and ship-ship.
27.960	Non-Commercial organisations. Calling and working, ship-ship.
27.980	Recognised rescue organisations, eg. Surf rescue. Calling and working, ship-ship and ship-shore.

VHF MARINE FREQUENCIES

Ch	Freq. (MHz) Ship	Shore	Ch	Freq. (MHz) Ship	Shore
1	156.050	160.650	60	156.025	160.625
2	156.100	160.700	61	156.075	160.675
3	156.150	160.750	62	156.125	160.725
4	156.200	160.800	63	156.175	160.775
5	156.250	160.850	64	156.225	160.825
6	156.300	156.300	65	156.275	160.875
7	156.350	160.950	66	156.325	160.925
8	156.400	156.400	67	156.375	156.375
9	156.450	156.450	68	156.425	156.425
10	156.500	156.500	69	156.475	156.475
11	156.550	156.500	70	156.525	156.525
12	156.600	156.600	71	156.575	156.575
13	156.650	156.650	72	156.625	156.625
14	156.700	156.700	73	156.675	156.675
15	156.750	156.750	74	156.725	156.725
16	156.800	156.800	77	156.875	156.875
17	156.850	156.850	78	156.925	161.525
18	156.900	161.500	79	156.975	161.575
19	156.950	161.550	80	157.025	161.625
20	157.000	161.600	81	157.075	161.675
21	157.050	161.650	82	157.125	161.725
22	157.100	161.700	83	157.175	161.775
23	157.150	161.750	84	157.225	161.825
24	157.200	161.800	85	157.275	161.875
25	157.250	161.850	86	157.325	161.925
26	157.300	161.900	87	157.375	161.975
27	157.350	161.950	87A	157.375	157.375
28	157.400	162.000	88	157.425	162.025

VHF MARINE FREQUENCIES USE

Chl	Use
6	SAR, Port Operations, Commercial
8	Port Operations, Commercial
9—14	Port Operations
16	Distress and Safety
20	Port Operations
23—28	Public Correspondence (Seaphone)
67	Distress and Safety
68	Port Operations
71	Professional Fishing
72	Yachts, Commercial, Professional Fishing, Port Operations
73	Non-Commercial, Yachts etc.
74	Commercial
77	Yachts, Professional Fishing
78	Commercial
79	Port Operations
87	Public Correspondence (Seaphone)
87A	Withdrawn 31-3-92

MARINE HF COMMUNICATIONS STATIONS

Freq. MHz	Call sign	Location and other information
3.348	HWN	Paris, France — French Navy
4.286	VHP	Belconnen, ACT — RAN Drills and WX* information
6.4075	GKC	Portished (near Bristol), UK
6.4075	VHP/VIX	Belconnen, ACT — RAN
6.430	CFH	Halifax, Nova Scotia — Canadian Navy
8.437	JOS	Nagasaki, Japan
8.4445	KFS	San Francisco California — also on 8.5584
8.445	XSX	Taiwan — WX reports daily 1040 UTC
8.4529	VAI	Vancouver, BC — WX at 0130/0530/1730 hours UTC
8.460	PPJ	Juncao Radio, Brazil
8.463	CKN	Vancouver, BC — Canadian Navy, also on 6.946
8.473	HLG	Seoul Korea
8.4745	WLO	Mobile, Alabama, USA
8.476	9VG	Singapore Radio
8.4781	TIM	Limon, Costa Rica — also on 13.0996
8.4785	FUF	Forte-De-France, Martinique — French Navy
8.479	JCU	Choshi, Japan
8.486	WOE	Lantana, Florida
8.490	XSQ	China (PR) — also on 8.5138
8.502	XSG	Shanghai, China — also on 8.665
8.504	ZLB	Awarua, NZ (near Invercargill)
8.521	VIS26	OTC, Sydney, NSW
8.564	DZE	Manila R. Philippines — Tfc. list 1130 UTC
8.568	DZR	Manila R. Philippines — diff. to above
8.573	CLA	Havanna, Cuba — also on 8.7019
8.580	DZO	Manila, Philippines (RMP)
8.582	KLB	Seattle, Washington (USA)
8.586	WCC	Chatham, Mass. (USA) — RCA Comms, Cape Cod — also 8.630
8.591	KOK	Los Angeles, California
8.5984	ZLO	Irirangi Naval Radio, NZ
8.619	VRN	Royal Navy Station, Hong Kong
8.646	FUJ	French Naval Station. Noumea, New Caledonia
8.666	KLC	Calveston, Texas Radio
12.125	CKN	Vancouver, BC — Radio
12.135	NAM/ NAA	Various US Naval Stations in the Atlantic region
12.6855	KFS	San Francisco, Calif.
12.698	ZSC	Cape Town, South Africa — T/S 0755-0800UTC
12.700	NMN	Commsta Portsmouth VA
12.7045	WLO	Mobile, Alabama US
12.7164	ZLO	Naval Radio Irirangi, NZ

12.724	9VG	Singapore Radio
12.726	CFH	Halifax, Nova Scotia — Canadian Navy
12.808	VTG4	Bombay Naval Radio India
12.8265	WNU34	Slidell, Louisiana, USA
12.843	HLO	Seoul, Korea
12.849	ZSJ5	Johannesburg, South Africa
12.8745	HPN60	Panama City, Panama Republic
12.876	VAI	Vancouver, BC — same as 8.4531
12.878	JCU	Choshi, Japan CW
12.8895	NMO	Pearl Harbour, Hawaii — USCG
12.9075	VHP/VIX	Belconnen, ACT — RAN CW
12.9255	WCC	Cape Cod, Mass. — RCA Comms. — also on 13.033
16.8735	ZLS	Irirangi Naval Radio NZ
16.8745	ZLO	Irirangi, NZ — Naval CW
16.9188	VHP	Belconnen, ACT — RAN CW
16.9476	VIP	Perth Radio, CW
16.958	FUJ	Noumea, New Caledonia CW/RTTY
16.9804	DAM	Elmshorn, Federal Repuclic of Germany CW
17.0025	XSG	Shanghai, China CW
17.1436	DAN	Norrdeich, Federal Republic of Germany CW
17.1461	4XO	Haifa, Israel CW
22.428	9VG	Singapore — Tfc. list at 0245 UTC CW
22.461	FUJ	Noumea, New Caledonia Navy CW
22.474	VIS	Sydney, NSW — Tfc. list at 0250 UTC CW
22.485	VHP/VIX	Belconnen, ACT — RAN CW
22.557	KPH	Bolinas, California — RCA Comms. CW Tfc. list at 0300 — also on 22.5675

THE SHORTWAVE BROADCAST BANDS

120 metres	2300-2495kHz
90 metres	3200-3400kHz
75 metres	3900-4000kHz
60 metres	4750-5060kHz
49 metres	5950-6200kHz
41 metres	7100-7300kHz
31 metres	9500-9775kHz
25 metres	11700-11975kHz
19 metres	15100-15450kHz
16 metres	17700-17900kHz
13 metres	21450-21750kHz
11 metres	25600-26100kHz

YOUR OWN LISTINGS
MARINE HF STATIONS

YOUR OWN LISTINGS
MARINE HF STATIONS

YOUR OWN LISTINGS
MARINE HF STATIONS

AM BROADCAST STATION FREQUENCIES

	Call	Freq.
NEW SOUTH WALES		
Armidale	2AD	1134
Armidale	2AN	720
Albury	2AY	1494
Bega	2BA	810
Bega	2BE	765
Moruya (translator)	2BE-T	765
Broken Hill	2BH	567
Sydney	2BL	702
Bathurst	2BS	1503
Byrock	2BY	657
Sydney	2CH	1170
Albury	2CO	675
Cooma	2CP	1602
Orange	2CR	549
Campbelltown	2CT	1602
Dubbo	2DU	1251
Newcastle (translator)	2EA-T	1584
Sydney	2EA	1386
Wollongong (translator)	2EA-T	1485
Sydney	2FC	576
Sydney	2GB	873
Grafton	2GF	1206
Glen Innes	2GL	819
Goulburn	2GN	1368
Gosford	2GO	1323
Orange	2GZ	1089
Newcastle	2HD	1134
Katoomba	2KA	783
Penrith (translator)	2KA-T	1476
Kempsey	2MC	531
Newcastle	2KO	1413
Kempsey	2KP	684
Sydney	2KY	1017
Young	2LF	1359
Lithgow	2LG	1485
Lismore	2LM	900
Lithgow	2LT	1395
Mudgee	2MG	1449
Murwillumbah	2ML	720
Gunnedah	2MO	1080
Murwillumbah	2MW	972
Newcastle	2NA	1512
Broken Hill	2NB	999
Newcastle	2NC	1233
Muswellbrook	2NM	1458
Grafton	2NR	738
Tamworth	2NU	648
Bolwarra	2NX	1341

Inverell	2NZ	1188
Wollongong	2OO	1575
Parkes	2PK	1404
Deniliquin	2QN	1521
Taree	2RE	1557
Griffith	2RG	963
Sydney	2SM	1269
Nowra	2ST	999
Tamworth	2TM	1287
Taree	2TR	756
Sydney	2UE	954
Muswellbrook	2UH	1044
Sydney	2UW	1107
Moree	2VM	1530
Wilcannia	2WA	1584
Bourke	2WEB	576
Wagga	2WG	1152
Wollongong	2WL	1314
Wollongong	2WN	1431
Sydney	2WS	1224
Cooma	2XL	918

VICTORIA

Melbourne	3AK	1503
Melbourne	3AR	621
Melbourne	3AW	1278
Ballarat	3BA	1314
Bendigo	3BO	945
Colac	3CS	1134
Melbourne	3CR	837
Maryborough	3CV	1071
Melbourne	3DB	1026
Melbourne	3EA	1224
Sale	3GI	828
Geelong	3GL	1341
Hamilton	3HA	981
Melbourne	3KZ	1179
Melbourne	3LO	774
Mildura	3MA	1467
Frankston	3MP	1377
Omeo	3MT	720
Wangaratta	3NE	1566
Swan Hill	3SH	1332
Shepparton	3SR	1260
Sale	3TR	1242
Warragul	3UL	531
Melbourne	3UZ	927
Wangaratta	3WA	756
Warrnambool	3WL	1602
Horsham	3WM	1089
Horsham	3WV	594
Warrnambool	3YB	882

Melbourne	3XY	1422
QUEENSLAND		
Oakley	4AK	1242
Atherton	4AM	558
Atherton	4AT	720
Ayr	4AY	936
Brisbane	4BC	1116
Brisbane	4BH	882
Brisbane	4BK	1296
Bundaberg	4BU	1332
Gladstone	4CD	927
Biloela (translator)	4CD-T	927
Brisbane	4EB	1485
Gold Coast	4GG	1197
Charters Towers	4GC	1170
Gympie	4GM	1566
Toowoomba	4GR	864
Gympie	4GY	558
Hughenden	4HU	1485
Ipswich	4IP	1008
Julia Creek	4JK	567
Brisbane	4KQ	693
Innisfail - Tully	4KZ	531
Longreach	4LG	1098
Mount Isa	4LM	1368
Maryborough	4MB	1161
Mount Isa	4MI	1080
Mackay	4MK	1026
Mossman	4MS	639
Nambour	4NA	828
Mackay	4QA	756
Maryborough	4QB	855
Emerald	4QD	1548
Brisbane	4QG	792
Longreach	4QL	540
Townsville	4QN	630
Eidsvold	4QO	855
Brisbane	4QR	612
Toowoomba	4QS	747
St. George	4QW	711
Cairns	4QY	801
Rockhampton	4RK	837
Rockhampton	4RO	990
Kingaroy	4SB	1071
Southport	4SO	1593
Thursday Is.	4TI	1062
Townsville	4TO	774
Charleville	4VL	918
Warwick	4WK	963
Weipa	4WP	1044
Roma	4ZR	1476

SOUTH AUSTRALIA

Adelaide	5AA	1386
Adelaide	5AD	1323
Adelaide	5AN	891
Port Augusta	5AU	1242
Port Pirie	5CK	639
Adelaide	5CL	729
Adelaide	5DN	972
Leigh Creek	5LC	1602
Port Lincoln	5LN	1485
Adelaide	5KA	1197
Mount Gambier	5MG	1548
Murray Bridge	5MU	1458
Renmark	5MV	1593
Naracoorte	5PA	1161
Crystal Brooke	5PI	1044
Renmark	5RM	801
Mount Gambier	5SE	1296
Streaky Bay	5SY	693
Adelaide	5UV	531
Woomera	5WM	1584

WESTERN AUSTRALIA

Albany	6AL	630
Northam	6AM	864
Broome	6BE	675
Busselton	6BS	684
Bridgetown	6BY	900
Carnarvon	6CA	846
Collie	6CI	1134
Derby	6DB	873
Dalwallinu	6DL	531
Esperance	6ED	837
Geraldton	6GE	1008
Kalgoorlie	6GF	648
Geraldton	6GN	828
Perth	6IX	1080
Karratha	6KA	1260
Kalgoorlie	6KG	981
Kununurra	6KW	756
Perth	6KY	1206
Merridin	6MD	1098
Mount Newman	6MN	567
Narrogin	6NA	918
Northam	6NM	612
Perth	6NR	927
Port Hedland	6NW	1026
Port Hedland	6PH	603
Perth	6PM	990
Perth	6PR	882
Bunburry	6TZ	963
Albany	6VA	783

Wagin	6WA	558
Katanning	6WB	1071
Perth	6WF	720
Wyndham	6WH	1017
Perth	6WN	810
Exmouth	6XM	1188
TASMANIA		
Devonport	7AD	900
Burnie	7BU	558
Launceston	7EX	1008
Fingal	7FG	1161
Hobart	7HO	864
Hobart	7HT	1080
Launceston	7LA	1098
Launceston	7NT	711
Queenstown	7QN	630
Queenstown	7QT	837
Scottsdale	7SD	540
St. Helens	7SH	1584
Hobart	7ZL	603
Hobart	7ZR	936
AUSTRALIAN CAPITAL TERRITORY		
Canberra	2CA	1053
Canberra	2CC	1206
Dickson	2CN	1440
Canberra	2CY	846
Canberra	2XX	1008
NORTHERN TERRITORY		
Alice Springs	8AL	1377
Darwin	8DN	1242
Darwin	8DR	657
Gove	8GO	990
Alice Springs	8HA	900
Jabiru	8JB	747
Katherine	8KN	675
Tennant Creek	8TC	684

FM BROADCAST STATION FREQUENCIES

	Call sign	Freq. (MHz)
NEW SOUTH WALES		
Albury	2REM	107.9
Armidale	2ARM	92.3
Bathurst	2MCE	92.3
Lismore	2NCR	92.5
Newcastle	2ABC	106.1
Newcastle	2NUR	103.7
Sydney	2ABC	92.9
Sydney	2CBA	103.2
Sydney	2DAY	104.1
Sydney	2JJJ	105.7
Sydney	2MBS	102.5
Sydney	2MMM	104.9
Sydney	2SER	107.5
Wagga Wagga	2AAA	107.1
AUSTRALIAN CAPITAL TERRITORY		
Canberra	1ABC	101.9
VICTORIA		
Ballarat	3ABC	105.3
Castlemaine	3CCC	103.9
Churchill	3GCR	103.5
Melbourne	3ABC	105.7
Melbourne	3EON	92.3
Melbourne	3FOX	101.9
Melbourne	3MBS	93.7
Melbourne	3PBS	107.7
Melbourne	3RRR	102.7
QUEENSLAND		
Brisbane	4ABC	106.1
Brisbane	4MBS	103.3
Brisbane	4MMM	104.1
Brisbane	4ZZZ	102.1
Toowoomba	4DDB	102.7
Rockhampton	4ABC	93.7
Townsville	4ABC	101.5
SOUTH AUSTRALIA		
Adelaide	5ABC	92.1
Adelaide	5SSA	107.5
Adelaide	5EBI	92.9
Adelaide	5MMM	93.7
Mt. Gambier	5ABC	104.1
Loxton	5ABC	105.1

WESTERN AUSTRALIA		
Bunbury	6ABC	93.3
Newman	6NEW	92.9
Perth	6ABC	97.5
Perth	6NOW	96.1
Perth	6UVS	92.1
TASMANIA		
Hobart	7ABC	93.9
Hobart	7CAE	92.1
Hobart	7HFC	103.3
Launceston	7ABC	93.3
NORTHERN TERRITORY		
Alice Springs	8CCC	102.1
Darwin	8TOP	104.1

AUSTRALIAN TV CHANNELS

Chnl	Vision Carrier (MHz)	Primary Sound Carrier (MHz)	Chnl	Vision Carrier (MHz)	Primary Sound Carrier (MHz)
0	46.25	51.75	44	639.25	644.75
1	57.25	62.75	45	646.25	651.75
2	64.25	69.75	46	653.25	658.75
3	86.25	91.75	47	660.25	665.75
4	95.25	100.75	48	667.25	672.75
5	102.25	107.75	49	674.25	679.75
5A	138.25	143.75	50	681.25	686.75
6	175.25	180.75	51	688.25	693.75
7	182.25	187.75	52	695.25	700.75
8	189.25	194.75	53	702.25	707.75
9	196.25	201.75	54	709.25	714.75
10	209.25	214.75	55	716.25	721.75
11	216.25	221.75	56	723.25	728.75
28	527.25	532.75	57	730.25	735.75
29	534.25	539.75	58	737.25	742.75
30	541.25	546.75	59	744.25	749.75
31	548.25	553.75	60	751.25	756.75
32	555.25	560.75	61	758.25	763.75
33	562.25	567.75	62	765.25	770.75
34	569.25	574.75	63	772.25	777.75
35	576.25	581.75	64	779.25	784.75
39	604.25	609.75	65	786.25	791.75
40	611.25	616.75	66	793.25	798.75
41	618.25	623.75	67	800.25	805.75
42	625.25	630.75	68	807.25	812.75
43	623.25	637.75	69	814.25	819.75

NEW ZEALAND TV CHANNELS

Chnl	Frequency Bandwidth	Video Freq. MHz	Sound Freq. MHz
1	44-51	45.25	50.75
2	54-61	55.25	60.75
3	61-68	62.25	67.75
4	174-181	175.25	180.75
5	181-188	182.25	187.75
6	188-195	189.25	194.75
7	195-202	196.25	201.75
8	202-209	203.25	208.75
9	209-216	210.25	215.75
10	216-223	217.25	222.75
11	223-230	224.25	229.75

BAND PLAN

160 Metres — 1.8 to 1.875 MHz
1.800 to 1.815 MHz Morse Section
1.815 to 1.875 MHz voice section (LSB)
1.820 kHz also a popular crystal net
1.825 MHz national call channel
80 Metres — 3.5 to 3.7 MHz and 3.794 to 3.8 MHz
3.525 to 3.625 MHz is the Novice Band in Australia
3.5 to 3.55 MHz Morse section
3.550 to 3.7 MHz Voice section (LSB)
3.7 to 3.75 MHz is the US Novice Band
3.565 MHz is a popular Novice listening and working channel
3.794 to 3.8 MHz is the new DX window
40 metres — 7.0 to 7.3 MHz
7.00 to 7.035 MHz morse section
7.035 to 7.3 MHz voice section (USB)
7.050 MHz national listening channel
7.1 to 7.150 MHz is the US Novice Band
Some AM stations but mainly Morse and LSB.
30 metres — 10.1 to 10.15 MHz
20 metres — 14.0 to 14.35 MHz
14.0 to 14.1 MHz morse section
14.1 to 14.35 MHz voice section (USB)
14.1 to 14.2 MHz popular into Europe
14.2 to 14.35 MHz US segment
17 metres — 18.068 to 18.168 MHz
15 metres — 21.0 to 21.45 MHz
21.0 to 21.150 MHz is morse section
21.1 to 21.2 MHz is the US Novice Band
21.125 to 21.2 MHz is the Novice Band in Australia
21.150 to 21.450 MHz is voice section
In the US voice is 21.25 to 21.45 MHz. Morse is 21.0 to 21.25 MHz
12 metres — 24.89 to 24.99 MHz
10 metres — 28.0 to 29.7 MHz
28.0 to 28.5 MHz is the American Morse section
28.1 to 28.6 MHz is the Australian Novice Band
28.1 to 28.5 MHz is the US Novice Band
28.5 to 29.7 MHz is the voice section
28.5 MHz is the national calling frequency in Australia
28.55 MHz is a popular international channel
28.6 MHz is the international DX listing frequency
A 23 channel system has been organised for modifying 11 metre rigs to 10 metres. The range is from 28.3 to 28.590 MHz.
29.6 MHz international FM calling channel
29.3 to 29.5 MHz used for communicating through American and Russian Amateur radio orbiting satellites.

Ch	Freq.	Ch	Freq.	Ch	Freq.
1	28.30	9	28.40	17	28.50
2	28.31	10	28.41	18	28.51

Ch	Freq.	Ch	Freq.	Ch	Freq.
3	28.32	11	28.42	19	28.52
4	28.34	12	28.44	20	28.54
5	28.35	13	28.45	21	28.55
6	28.36	14	28.46	22	28.56
7	28.37	15	28.47		

AUSTRALIAN AMATEUR FREQUENCIES

1.80 —	1.875MHz	144.00 —	148.00MHz
3.50 —	3.70MHz	420.00 —	450.00MHz
7.00 —	7.30MHz		
10.100 —	10.150MHz	1240.00 —	1300.00MHz
14.00 —	14.35MHz	2300.00 —	2450.00MHz
18.068 —	18.168MHz	3300.00 —	3500.00MHz
21.00 —	21.45MHz	5650.00 —	5850.00MHz
24.890 —	24.990MHz	10000.00 —	10500.00MHz
28.00 —	29.70MHz	24000.00 —	24250.00MHz
52.00 —	54.00MHz		
#50.00 —	54.00MHz		

AUSTRALIAN NOVICE FREQUENCIES

3.525 — 3.625MHz
21.125 — 21.20MHz
28.100 — 28.60MHz
* 146.00 — 148.00MHz
* FM only, 10 watts max.

Registered operation in some states.

AUSTRALIAN AMATEUR REPEATERS

Listing of Repeaters by Frequency (output)

VK2RAH	29.620	Wollongong
VK5RLZ	29.620	Elizabeth
VK3RHF	29.640	Mt Dandenong
VK3RMS	53.550	Wattle Glen
VK3RDD	53.575	Dandenong
VK2RSN	53.625	Mt Sugarloaf
VK3RTN	53.675	Lake Mountain
VK4RGA	53.725	Amys Peak
VK4RIK	53.725	Mt Haren
VK6RTH	53.800	Herne Hill
VK2RWI	53.850	Dural
VK3RMS	53.900	Mt Dandenong
VK3RGM	53.975	Mt Buller
VK2RBB	146.625	Byron Bay
VK2RLD	146.625	Razorback Range
VK4RGT	146.625	Mt Maurice
VK4RGY	146.625	Mt Boulder
VK5RLZ	146.625	Elizabeth
VK7RAD	146.625	Mt Duncan
VK2RCH	146.650	Bruxner Park
VK2RDX	146.650	Mt Bindo-Oberon
VK2RMI	146.650	Terry Hi Hi
VK3REG	146.650	Donalds Knob
VK3RGV	146.650	Mt Wombat
VK4ROM	146.650	Grafton Range
VK5RNC	146.650	Naracoorte
VK6RBY	146.650	Bunbury
VK8RMS	146.650	Nhulunbuy
VK2RCV	146.675	Sth Grafton
VK4RTA	146.675	Longland Gap
VK4RET	146.675	Mt Kianarow
VK5RSV	146.675	O'Halloran Hill
VK5TTY	146.675	Adelaide
VK6RCA	146.675	Carnarvon
VK6RNR	146.675	Hudgejah
VK2RAO	146.700	Mt Canobolas
VK2RMU	146.700	Milton
VK2RPM	146.700	Middle Brother Mtn
VK3RML	146.700	Mt Dandenong
VK3RNC	146.700	Mt Mitta Mitta
VK3RON	146.700	Ouyen
VK4RAR	146.700	Mt Archer
VK4RAT	146.700	Mt Stuart
VK4RGC	146.700	Springbrook
VK4RMI	146.700	Four Mile Hill
VK5RMN	146.700	The Bluff
VK6RAP	146.700	Roleystone
VK6RWR	146.700	Wickham
VK7RHT	146.700	Mt Wellington

VK8RDA	146.700	Karama
VK2RAG	146.725	Somersby
VK4RSB	146.725	Mt Gordon
VK6RAL	146.725	Albany
VK2RHR	146.750	Mt Gibralter
VK2RFS	146.750	Mt Mumbulla
VK2RTM	146.750	Mt Crawney
VK2RWG	146.750	Mt Flackney
VK3RBA	146.750	Mt Buninyong
VK4RDD	146.750	Mt Lofty
VK5RAC	146.750	Williams Hill
VK6RES	146.750	Esperence
VK6RLM	146.750	Lesmurdie
VK7RNW	146.750	Lonah
VK2RTZ	146.775	Sugarloaf Range
VK3RUG	146.775	Mt Eildon
VK4RDY	146.775	Mt Dryinder
VK2RCC	146.800	Needle Mountain
VK2RIC	146.800	Parrots Nest
VK2RLE	146.800	Heathcote
VK2RTD	146.800	Mt Kendall
VK3RLV	146.800	Mt Tassie
VK3RMA	146.800	Mildura
VK4RBU	146.800	Mt Goonaneman
VK5REP	146.800	Coolanie
VK6RTH	146.800	Tic Hill
VK6RWP	146.800	Dampier
VK4RDT	146.850	Gabbinbah
VK5RBV	146.825	Angaston
VK6RAA	146.825	Mt Barker
VK2RAB	146.850	Mt Kaputar
VK2RAW	146.850	Mt Murray
VK2RGF	146.850	Mt Bingar
VK3RMN	146.850	Kinglake
VK4RSC	146.850	Buderim
VK5RHO	146.850	Houghton
VK6REX	146.850	Exmouth
VK6RKB	146.850	Kambalda
VK2RMB	146.875	Terrey Hills
VK4RBS	146.875	Bayside
VK4RCH	146.875	Red Hill
VK6RSR	146.875	O'Connor
VK1RAC	146.900	Black Hill
VK2RAN	146.900	Mt Sugarloaf
VK2RRT	146.900	Boona Mount
VK3RBS	146.900	Smeatons Hill
VK3REB	146.900	Mt Nowa Nowa
VK3RSH	146.900	Swan Hill
VK4RAI	146.900	Mt Stradbroke
VK4RGA	146.900	Amys Peak
VK5RMG	146.900	Mt Gambier
VK6RBY	146.900	Mt William

VK6RMN	146.900	Mt William
VK7REC	146.900	Snow Hill
VK2RGR	146.925	North Ryde
VK4RRC	146.925	Mt Mee
VK2RHR	146.925	Hogson Range
VK1RGI	146.950	Mt Ginini
VK2RNE	146.950	Mt Rumbee
VK3RWZ	146.950	Mt William
VK4RCA	146.950	Mt Bellenden Ker
VK4RBD	146.950	Blackwater
VK6RPD	146.950	Bentley
VK8RCA	146.950	Alice Springs
VK6RSG	146.975	Shay Gap
VK2RAN	146.975	Mt Sugarloaf
VK4RRR	146.975	Blue Mtn NEBO
VK6REE	146.975	Portable
VK2RWI	147.000	Dural
VK2RGL	147.000	Mt Anakie
VK3RNE	147.000	Mt Big Ben
VK4RBN	147.000	Mt Glorious
VK4RMK	147.000	Black Mountain
VK5RAD	147.000	Crafers
VK6RAK	147.000	Boulder
VK6RAW	147.000	Mt Lathan
VK6REE	147.000	Portable
VK6RGN	147.000	Geraldton
VK6RNW	147.000	Port Hedland
VK7RAA	147.000	Mt Barrow
VK8RTE	147.000	Palmerston
VK2ROT	147.025	Paddington
VK3RGS	147.025	Mt Fatigue
VK2RBM	147.050	Mt Druitt
VK3RGO	147.050	Mt Livingstone
VK3RVL	147.050	Robinvale
VK3RWL	147.050	Mt Warrnambool
VK6RTY	147.050	Roleystone
VK3RCR	147.075	Heathmont
VK7RWC	147.075	Mt Reid
VK2RWM	147.100	Grenfell
VK3RPB	147.100	Mt Porepunkah
VK3RSG	147.100	Bass Hill
VK4RGY	147.100	Mt Boulder
VK6RWC	147.100	Millenden
VK3RGC	147.125	Montpellier
VK2RWS	147.150	Chatswood
VK3RCV	147.150	Mt Alexander
VK4RAG	147.150	Spring Hill
VK4RWI	147.150	Portable
VK3REC	147.175	Mt Dandenong
VK6RIC	147.175	Portable
VK2RSD	147.200	Mt Cambewarra
VK2RWH	147.200	Warner's Bay

VK6RCT	147.200	Cataby
VK2RST	147.225	Lane Cove
VK3RWG	147.225	Mt Baw Baw
VK6RHW	147.225	Hoddywell
VK2RNS	147.250	Asquith
VK3RMM	147.250	Mt Macedon
VK6RMS	147.250	Mt Saddleback
VK7RAF	147.250	Mt Faulkner
VK2RIL	147.275	Sublime Point
VK3ROW	147.275	Otway Ranges
VK6RWM	147.275	Wyalkatchem
VK2RTS	147.300	Lower Blue Mtns
VK3RWP	147.300	Portable
VK4RQT	147.300	Mt Glorious
VK6REN	147.300	Ocean Hill
VK5RLD	147.325	Berri
VK2RGN	147.325	Mt Gray
VK3RTY	147.350	Mt Dandenong
VK6RBN	147.350	Busselton
VK2RGL	147.375	Cabbage Tree Mt
VK4RMV	147.625	Miriam Vale
VK4RBT	147.650	Mt Cotton?
VK4RBT	147.675	Mt Cotton?
VK4REG	147.825	Manly West
VK5RBG	147.825	Gawler
VK4RCB	147.850	Mt Inkeman
VK2RGN	147.925	Mt Gray
VK4RWB	147.975	Mt Bertha
VK2RTK	438.025	High Range
VK4RTQ	438.025	Mt Tamborine
VK2RAG	438.075	Somersby
VK3RMU	438.075	Mt St Leonards
VK4RSC	438.075	Buderim
VK2RMB	438.175	Terrey Hills
VK2RNT	438.175	Armidale
VK3RUG	438.175	Devils River
VK2RUW	438.225	Port Kembla
VK4ROU	438.225	Mt Dandenong
VK4RAT	438.225	Mt Stuart
VK4RGC	438.225	Springbrook
VK6RTH	438.225	Herne Hill
VK2RWS	438.275	Chatswood
VK3RWE	438.275	Portable
VK8RDN	438.275	Darwin
VK2REE	438.325	Mount Marie
VK2RWM	438.325	Grenfell
VK5ROH	438.325	Mt Gambier
VK1RIR	438.375	Isaacs Ridge
VK2RUT	438.375	Kurrajong
VK3RGU	438.375	Carrajung
VK4RWM	438.375	Ipswich
VK2RUH	438.425	Hurstville

VK4RMU	438.425	Boveys Lookout
VK5RBV	438.425	Angaston
VK2RRS	438.475	Parramatta
VK3RBU	438.475	Mt Hollowback
VK3RCY	438.475	Mt Alexander
VK4RXX	438.475	Maleny
VK4RHR	438.500	Hodgeson Range
VK7RIN	438.500	Barren Tier
VK1RGI	438.525	Mt Ginini
VK2RPM	438.525	Taree
VK2RWI	438.525	Dural
VK3RAD	438.525	Mitcham
VK3RNU	438.525	Mt Stanley
VK3RRU	438.525	Merbein
VK4RBC	438.525	Mt Coottha
VK5RVP	438.525	Crafers
VK6RUF	438.525	Roleystone
VK7RIT	438.525	Sandy Bay
VK7RAB	438.550	Mt Arthur
VK7RTC	438.600	Mt Nelson
VK2RUM	438.625	New Lambton
VK3RWI	438.625	Portable
VK4RAG	438.625	Spring Hill
VK4RWI	438.650	Portable
VK7RAC	438.650	Table Cape
VK2RAN	438.675	Mt Sugarloaf
VK2RSC	438.675	Mt Nardi
VK2RTW	438.675	Willans Hill
VK3RWU	438.675	Mt William
VK4RBU	438.675	Mt Goonaneman
VK6RBN	438.675	Busselton
VK4RDB	438.700	Mt Mowbullan
VK2RIL	438.725	Sublime Point
VK4RGY	438.825	Mt Boulder
VK4RBA	438.950	Redbank Plains
VK3RMM	439.275	Mt Macedon
VK4RDU	439.275	Picnic Point
VK4RIK	439.350	Mt Haren
VK3RSE	439.375	Glen Waverley
VK3RDU	439.425	Chessney Vale
VK3RGL	439.575	Mt Anakie
VK3RPU	439.725	Arthurs Seat
VK5RWH	1281.250	Adelaide
VK4REX	1281.650	Brisbane City
VK2RWI	1281.750	Dural

BEACONS

* Denotes attended programmable keyer
** Indicates this service to QSY in near future
*** Indicates a change in statue eg. inactive or off-air

28MHz Beacons
28.125** VE2TEN Chicoutimi
28.175** VE3TEN Ottawa
28.2025*** 9J2B Zambia
28.205 DL01GI Salzburg QSL DJ5DT
28.2075 W4ESY Florida
28.210 3B8MS Mauritius
28.2125 ZD9GI Gough Island
28.215 GB3SX Crowborough. QSL G3DME
28.2175 VE2TEN Reserved
28.220 5 B4CY Limassol. QSL 5B4AP
28.2225 HG5 AIR Hungary
28.225 VE8AA Lake Contwoyto
28.2275 FX3TEN France
28.230 ZL2MHF Mt Climie. QSL ZL2ACT
28.2325 VP8 --- Falkland Islands
28.235 Burmuda. QSL VP9BY
28.2375 LA5TEN Oslo
28.240 OA4CK Lima
28.240 PY1CK Rio De Janiero. QSL Box 1044, Rio.
28.2425 ZS1CTB Cape Town
28.245 A9SC Bahrain. QSL B.A.R.S.
28.2475 EA2HB San Sebastian
28.2525 VE7TEN Reserved
28.2575 DK0TE Konstanz
28.266 ZS2JV Salisbury
28.270 ZS6PW Petoria
28.2725 TU2ABJ Abidjan
28.275 VE3TEN Reserved
28.2775 DF0AAB Luetjenberg
28.280 YV5AYV Caracas
28.2825 W9 --- Reserved QRP
28.285 VP8ADE Adelaide Islands
28.2875 W8 --- Tuckasegee, NC, Reserved
28.290 VS6HK Hong Kong,outside of allocation for beacons.
QSL H.A.R.T.S. Box 541 Hong Kong
28.295 VU2BCN Bangalore 10 watts
28.315 ZS6DN Johannesburg
28.399 PY2AMI Americana City
28.888 W6IRT N. Hollywood

50 MHz Beacons
50.0003 PY1 --- Rio De Janiero
50.005 Z55VHF Natal, South Africa
50.005 H44HIR Honiara, Solomon Is.
50.005* W6HTH/KH6 Honolulu

50.008 JA2IGY Mie, Japan
50.010 ZS1STB
50.020 GB3SIX Anglesey, GB
50.023 HH2PR Haiti
50.025 6Y5RC Jamaica
50.030* ZS6PW
50.035 ZB2VHF Gibraltar
50.036 HC1JX Quito
50.038** FY7THF French Guyana
50.040 ZS6VHF
50.040* KL7CTG Anchorage
50.040 WA6MHZ San Diego
50.048*** VE6ARC Alberta
50.050 WA1EXN Maine
50.050* K6FV San Francisco
50.050* ZS6LN
50.050*** VE6NAB Alberta
50.050 ZS3E South Africa
50.055 WA9FEF Illinois
50.055 ZS6XJ
50.060 PY2AA Sao Paulo, Brazil
50.065* WB5ZRL New Orleans
50.065 KH6EQI Pearl Harbour, Hawaii
70.070 YV5ZZ Caracas
50.070 VP9WB Bermuda
50.073* W7KMA Columbia
50.075 VS6SIX Hong Kong
50.080 W1AW Connecticut
50.080* TI2NA Costa Rica
50.085 WA6RJA Los Angeles
50.088 VE1SIX New Brunswick
50.089 WD4CEI North Carolina
50.093* WA8FTA Michigan
50.100* ZS6HVB
50.103* FO8DR Tahiti
50.103 AH8A American Samoa
50.103* N8AJD Ohio
50.104 K4EJQ Tennessee
50.105*** KC4AAD McMurdo Sound
50.110* KG6 — Guam
50.110* KH0AB Saipan
50.110* AL7C Anchorage
50.110* JD1YAA Minami Torishima (JARL)
50.120* 4S7EA Sri Lanka
50.144* KC6IN Ponape
50.498 5B4CY Cyprus
51.020* ZL1UHF Auckland (ZLIADE)
51.999*** YJ8PV Port Vila
52.100*** VK0BC Casey Base
52.013** P29 SIX Port Moresby (Requested to QSV)
52.250* ZL2VHM Palmerston Nth (ZL2BFR)
52.500 JA2IGY Nagoya (JARL)

52.510 ZL2MHF Mt Climie (ZL2ACT)

144 MHz Beacons
145.100 ZL1VHF Auckland (ZL1ADE)
145.125 ZL1VHN Mt Maungataureia (ZL1AZJ)
145.150 ZL1VHW Waikato (ZL1TAT)
145.200 ZL2UHF Wellington (ZL2BAC)
145.225 ZL2VHT Inglewood (ZL1TSH)
145.250 ZL2VHP Mt Stewart (ZL2BFR)
145.270 ZL2UHC Upper Hutt (ZL2ACT)
145.280 ZL2VHN Takaka (ZL2TJB)
145.300 ZL3VHF Christchurch (ZL3RW)
145.400 ZL4VHF Dunedin (ZL4MK)
145.425 ZL4VHI Invercargill (ZL4GL)

432 MHz Beacons
433.000 ZL2UHF Wellington (ZL2BAC)
433.070*** ZL2UHC Upper Hutt (ZL2ACT)
433.080*** ZL2VHN Takaka (ZL2TJB)
433.100 ZL1UHF Auckland (ZL1ADE)
433.120*** ZL1VHN Mt Maungataureia
433.150 ZL1VHN Waikato (ZL1TAT)
433.200 ZL3UHF Christchurch (ZL3RW)
433.150 ZL1VHW Waikato (ZL1TAT)
433.180 ZL1VHT Taupo (ZL1BFA)
433.200 ZL3UHF Christchurch (ZL3RW)
433.225 ZL2VHT Inglewood (ZL2TSH)
433.250 ZL2VHP Manawatu (ZL2BFR)

AUSTRALIAN BEACONS

Freq.	Call	Serv. Area
HF Bands		
3.699	VK2RCW	Sydney
28.260	VK5WI	Adelaide
28.262	VK2RSY	Sydney
28.264	VK6RWA	Perth
28.265	VK4RIK	Cairns
28.266	VK6RTW	Albany
28.268	VK8VF	Darwin
28.270	VK4RTL	Townsville
6 Metre Band		
50.043	VK8RAS	Alice Springs
50.056	VK8VF	Darwin
50.066	VK6RPR	Perth
52.200	VK8VF	Darwin (VK8GB)
52.300	VK2RBH	Broken Hill
52.320	VK6RTT	Wickham (UK60X)
52.325	VK2RHV	Newcastle
52.330	VK3RGL	Geelong
52.345	VK4ABP	Longreach
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.410	VK1RCC	Canberra
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.445	VK4RIK	Cairns
52.450	VK5VF	Adelaide
52.460	VK6RPH	Perth
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.485	VK8RAS	Alice Springs
2 Metre Band		
144.022	VK6RBS	Busselton
144.400	VK4RTT	Toowoomba (Mt. Mowbullan)
144.410	VK1RCC	Canberra
144.420	VK2RSY	Sydney
144.430	VK3RTG	Melbourne
144.435	VK3RMV	Hamilton
144.445	VK4RIK	Cairns
144.445	VK4RTL	Townsville
144.450	VK5VF	Adelaide
144.465	VK6RTW	Albany
144.470	VK7RMC	Launceston
144.480	VK8VF	Darwin
144.485	VK8RAS	Alice Springs

144.530	VK3RGG	Geelong
144.535	VK3RGI	Gippsland
144.550	VK5RSE	Mt Gambier
144.600	VK6RTT	Wickham
144.800	VK5VF	Adelaide (Mt. Lofty)
144.950	VK2RCW	Sydney
144.950	VK3RCW	Melbourne
145.000	VK6RPH	Perth
147.400	VK2RCW	Sydney

70 cm and above

432.066	VK6RBS	Busselton
432.160	VK6RPR	Perth
432.410	VK1RBC	Canberra
432.410	VK6RTT	Wickham
432.420	VK2RSY	Sydney
432.430	VK3RTG	Melbourne
432.435	VK4RMV	Hamilton
432.440	VK4RSD	Brisbane
432.445	VK4RIK	Cairns
432.445	VK4RTL	Townsville
432.450	VK3RAI	Melbourne (Mt. Bunningyong)
432.465	VK6RTW	Albany
432.475	VK7RTW	Ulverstone
432.530	VK3RGL	Geelong
432.535	VK3RMB	Ballarat
432.545	VK4RAR	Rockhampton
432.565	VK6RTU	Kalgoorlie

1296.198	VK6RBS	Busselton
1296.410	VK1RBC	Canberra
1296.420	VK2RSY	Sydney
1296.440	VK4RSD	Brisbane
1296.445	VK4RIK	Cairns
1296.480	VK6RPR	Perth
2304.420	VK2RSY	Sydney
2304.445	VK4RIK	Cairns
2306.440	VK4RSD	Brisbane
10300.0	VK6RUF	Perth
10368.0	VK3RGZ	Melbourne
10445.0	VK4RIK	Cairns

AUSTRALIAN UHF REPEATER LIST

Area	Channel
ACT	
Canberra	2/32
Canberra	8/38
NEW SOUTH WALES	
Albury	6/36
Armidale	4/34
Barraba	6/36
Bathurst	8/38
Bega	6/36
Binya	3/33
Blue Mountains	2/32
Bombala	8/38
Booral	7/37
Bowral	6/36
Braidwood	3/33
Brewarrina	1/31
Brindabella Ranges	7/37
Broken Hill	4/34
Broken Hill	7/37
Buladelah	7/37
Casino	6/36
Cobar	8/38
Coffs Harbour	6/36
Coolah	6/36
Cooma	4/34
Coonabarbran	4/34
Corowa	2/32
Corowa	5/35
Cowra	7/37
Deepwater	5/35
Deniliqin	1/31
Dungog	3/33
Eden	2/32
Glen Innes	7/37
Gloucester	2/32
Grafton	8/38
Grenfell	1/31
Gundagai	7/37
Gunnedah	2/32
Guyra	1/31
Hampton	1/31
Hay	4/34
Inverell	2/32
Jindabyne	1/31
Junee	5/35
Kariong	8/38
Lismore	2/32
Manilla	3/33
Monkey Hill	6/36
Mt Lambie	2/32
Murrirundi	3/33
Muswellbrook	4/34
Narrabri	2/32
Narranderra	8/38
Narromine	5/35
Narromine	6/36
Newcastle	1/31
Newcastle	5/35
Newcastle	6/36
Nundle	7/37
Orange	3/33
Port Macquarie	2/32
Sydney	5/35
Sydney (South)	1/31
Sydney (West)	3/33
Sydney (Outer West)	4/34
Sydney (North)	7/37
Tamworth	4/34
Tenterfield	3/33
Tumbarumba	3/33
Tumut	6/36
Tweed Heads	4/34
Wagga Wagga	1/31
Wagga Wagga	5/35
Walbundrie	2/32
Walcha	2/32
Walcha	6/36
Walcha	8/38
Warden	1/31
Warrumbungles	1/31
Wingham	1/31
Wilcannia	1/31
Wollongong	8/38
NORTHERN TERRITORY	
Bushy Park	1/31
Darwin	1/31
Eridunda Station	3/33
Katherine	2/32
Maryvale Station	4/34
Mt Swan	2/32
QUEENSLAND	
Alpha	2/32
Atherton	8/38
Amiens	8/38
Ayr	3/33

Area	Channel
Barcaldine Downs	1/31
Bathurst Heads	1/31
Bauhina Downs	4/34
Biloela	7/37
Blackall	8/38
Blackwater	6/36
Brisbane	1/31
Brisbane	5/35
Brisbane	7/37
Bundaberg	4/34
Bundaberg	7/37
Cairns	3/33
Chinchilla	8/38
Clermont	6/36
Clermont	7/37
Crows Nest	6/36
Dimbulah	6/36
Dirranbandi	8/38
Double Island Point	3/33
Edward River	3/33
Emerald	8/38
Gladstone	6/36
Gold Coast	3/33
Goondiwindi	4/34
Gympie	2/32
Gympie	5/35
Gympie	7/37
Hervey Bay	8/38
Hughenden	1/31
Ingham	2/32
Inglewood	1/31
Innisfail	1/31
Ipswich	4/34
Jerico	4/34
Kilcoy	3/33
Lakeland Downs	2/32
Longreach	3/33
Mackay	3/33
Mackay	6/36
Marlborough	2/32
Maryborough	6/36
Maxwelton	2/32
Miles	6/36
Monto	3/33
Moranbah	4/34
Moura	1/31
Mt Isa	1/31
Mundubbera	6/36
Murgon	7/37
Quilpie	2/32
Rockhampton	1/31
Rockhampton	4/34
Roma	1/31
Springsure	3/33
Sunshine Coast	6/36
Sunshine Coast	8/38
Tambo	6/36
Taroom	2/32
Thargomindah	6/36
Toowoomba	2/32
Toowoomba	4/34
Townsville	1/31
Townsville	4/34
Wavell Heights	2/32
Warwick	1/31
Wide Bay	1/31
Yaraka	7/37
SOUTH AUSTRALIA	
Adelaide	1/31
Adelaide	3/33
Adelaide	5/35
Angaston	4/34
Blinman	3/33
Carrietown	1/31
Ceduna	1/31
Clare	7/37
Cleve	2/32
Coonalpyn	6/36
Coppudurba Hill	1/31
Hawker	7/37
Kangaroo Island	4/34
Mannum	8/38
Mt Bryan	8/38
Mt Gambier	5/35
Mt Gambier	7/37
Myponga	2/32
Naracoorte	4/34
Orroroo	2/32
Port Lincoln	8/38
Port Pirie	4/34
Renmark	6/36
Snowtown	6/36
Tarcoola	6/36
Wilkatana	8/38
Yorketown	7/37
TASMANIA	
Burnie	8/38
Central Highlands	7/37

Area	Channel
Davenport	1/31
East Coast	6/36
Flinders Island	1/31
Hobart	1/31
Hobart	5/35
Launceston	2/32
Launceston	6/36
Midlands	4/34
North East Coast	3/33
North West Coast	4/34
North West Coast	6/36
Sandfly	2/32
West Coast	2/32
VICTORIA	
Alexandra	1/31
Ballarat	2/32
Ballarat	5/35
Bairnsdale	7/37
Beech Forest	3/33
Bendigo	4/34
Cavendish	8/38
Currajung	4/34
Echuca	6/36
Euroa	3/33
Falls Creek	3/33
Foster	6/36
Geelong	4/34
Halls Gap	6/36
Hamilton	5/35
Harcourt	8/38
Hawkesdale	4/34
Horsham	3/33
Kerang	2/32
Lavington	4/34
Mansfield	2/32
Melbourne (North)	1/31
Melbourne (Metro)	3/33
Melbourne (Metro)	5/35
Melbourne (South)	7/37
Mildura	3/33
Moe	2/32
Mornington Pen.	8/38
Mortlake	7/37
Mt Cann	8/38
Mt Concord	6/36
Mt Delegate	3/33
Mt Terrible	8/38
Myrtleford	8/38
Penshurst	1/31
Shepparton	7/37
St Arnaud	1/31
Swifts Creek	1/31
Tallangatta	7/37
Wangarrata	6/36
Waubra	7/37
WESTERN AUSTRALIA	
Albany	3/33
Augusta	7/37
Bencubin	2/32
Boyup Brook	4/34
Bunbury	2/32
Carnamah	2/32
Carnarvon	2/32
Coolgardie	7/37
Darkin	6/36
Denmark	1/31
Esperance	4/34
Kalgoorlie	2/32
Kambalda	1/31
Katanning	1/31
Kellerberrin	1/31
Kulin	4/34
Lancelin	4/34
Mandurah	7/37
Manjimup	6/36
Margaret River	6/36
Meekatharrra	1/31
Merredin	2/32
Mia Mia	1/31
Mt Manypeaks	6/36
Mt Barker	5/35
Mt Barrow	7/37
Mt Saddleback	1/31
Mt Solus	4/34
Nannup	2/32
Perth	1/31
Perth	3/33
Perth	5/35
Perth	8/38
Ravensthorpe	8/38
Stirling Ranges	7/37
Wickham	1/31
Wongan Hills	8/38
Wyalkatchem	6/36
York	7/37

This list is supplied by CB ACTION MAGAZINE and is believed to be accurate as at April 1992.

NEW ZEALAND REPEATERS

All repeaters are FM voice unless indicated as AM, data, linear, or ATV.

Output	Input	Service Area
144.350	144.950	Rotorua (linear)
144.350	144.950	Dunedin (linear)
145.725	145.125	Manawatu (data)
145.775	144.650	Invercargill (AM)
146.625	146.025	Auckland
146.625	146.025	Timaru
146.625	146.025	Wellington (data)
146.650	146.050	S. Hawkes Bay
146.650	146.050	Dunedin
146.650	146.050	Whangarei (data)
146.700	146.100	Bombay
146.700	146.100	Hawkes Bay
146.700	146.100	Motueka
146.700	146.100	Oamaru
146.750	146.150	Taupo 897
146.750	146.150	Titahi 90
146.750	146.150	Westport
146.750	146.150	Christchurch
146.750	146.150	Balclutha
146.775	146.175	Taihape
146.775	146.175	Pukoti (data)
146.800	146.200	Tauranga
146.800	146.200	Poverty Bay
146.800	146.200	Masterton
146.800	146.200	Murchison
146.800	146.200	Takapo
146.800	146.200	Invercargill
146.850	146.250	Waitomo
146.850	146.250	Kapiti 615
146.850	148.250	Queenstown
146.900	146.300	Auckland
146.900	146.300	Gisborne
146.900	146.300	Wanganui
146.900	146.300	Kaikoura
146.900	146.300	Dunedin
146.950	146.350	Waikato
146.950	146.350	Blenheim
146.950	146.350	Greymouth
146.950	146.350	Waimate
146.950	146.350	Gore 640
146.975	146.375	Tairua 349
146.975	146.375	Oponake
147.000	146.400	Lower Hutt
147.000	146.400	Alexandra
147.025	147.625	Tokoroa
147.025	147.700	Far North
147.100	147.700	Belmont

147.125	147.725	Manawatu
147.150	147.750	Kaikohe
147.150	147.750	Hikurangi
147.150	147.750	S. Wairarapa
147.150	147.750	Westport
147.175	147.775	Dargaville
147.175	147.775	Holdsworth
147.200	147.800	Whangarei
147.200	147.800	New Plymouth
147.200	147.800	Nelson
147.225	147.825	Waitomo (data)
147.250	147.850	Napier
147.250	147.850	Christchurch
147.275	147.875	Kakaramea
147.300	147.900	Rodney
147.300	147.900	Climie 867
147.325	147.925	Barton
147.350	147.950	Rotorua
147.350	147.950	Rewa 604
147.350	147.950	Golden Bay
147.375	147.975	Edgecumbe
433.975	438.975	Blue Duck
434.025	439.025	Egmont
438.500	433.500	Auckland
438.500	433.500	Wellington
438.500	433.500	Hornby
438.500	433.500	Dunedin
438.525	433.525	Manawatu
438.550	433.550	Rotorua
438.600	433.600	Waikato
438.600	433.600	Climie 867
438.650	433.650	Tokoroa
433.650	433.650	Taihape
438.700	433.700	Whangarei
438.700	433.700	Waitomo
438.700	433.700	Hawkes Bay
438.700	433.700	Invercargill
438.750	433.750	Waimerino
438.800	433.800	Egmont
438.850	433.850	Tauranga
438.850	433.850	Kapiti 30
438.900	433.900	Nelson
438.950	433.950	Hunua
438.950	433.950	Tawa 70
439.000	434.000	Auckland
439.000	434.000	Hawkes Bay
439.000	434.000	Wellington
439.000	434.000	Christchurch
615.250	433.250	Auckland (ATV)
615.250	443.250	Wellington (ATV)
615.250	443.250	Tasman Bay (ATV)
615.250	443.250	Albany (ATV)

NEW ZEALAND BEACONS

Freq	Call	Site
28.230	ZL2MHF	Mt Climie (Upper Hutt)
51.020	ZL1UHF	Nihotupu (Auckland)
51.030	ZL2MHB	Napier (Hawkes Bay)
51.225	ZL2VHT	Inglewood (Taranaki)
52.250	ZL2VHM	Manawatu
52.310	ZL3MHF	Aylesbury (C'church)
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Mt Climie (Upper Hutt)
145.100	ZL1VHF	Mt Otau (Auckland)
145.150	ZL1VHW	Hamilton
145.175	ZL1VHR	Kakanui (Rotorua)
145.200	ZL2UHF	Wellington
145.225	ZL2VHT	Inglewood (Taranaki)
145.240	ZL2MHB	Napier (Hawkes Bay)
145.300	ZL2VHF	Christchurch
145.400	ZL4VHF	Dunedin
145.425	ZL4VHI	Invercargill
433.000	ZL2UHF	Wellington
433.100	ZL1UHF	Nihotupu (Auckland)
433.125	ZL1UHB	Broadwood
433.150	ZL1VHW	Hamilton
433.200	ZL3UHF	Christchurch
433.225	ZL2VHT	Inglewood (Taranaki)
1297.000	ZL2UHF	Wellington
1297.100	ZL1UHF	Nihotupu (Auckland)
1297.150	ZL1VHW	Hamilton
1297.225	ZL2VHT	Inglewood (Taranaki)
2320.803	ZL1SHF	Rodney
5765.000	ZL1SHF	Rodney
10250.0	ZL2UHF	Wellington
24100.0	ZL2UHF	Wellington

New Zealand 2 metre beacons are located between 144.250-144.300 MHz.

CB RADIO INFORMATION

HF CHANNEL FREQUENCIES

Ch. No.	Freq. MHz	Ch. No.	Freq. MHz
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

UHF CHANNEL FREQUENCIES

Ch. No.	Freq. MHz	Ch. No.	Freq. MHz
1	476.425	21	476.925
2	476.450	22	476.950
3	476.475	23	476.975
4	476.500	24	477.000
5	476.525	25	477.025
6	476.550	26	477.050
7	476.575	27	477.075
8	476.600	28	477.100
9	476.625	29	477.125
10	476.650	30	477.150
11	476.675	31	477.175
12	476.700	32	477.200
13	476.725	33	477.225
14	476.750	34	477.250
15	476.775	35	477.275
16	476.800	36	477.300
17	476.825	37	477.325
18	476.850	38	477.350
19	476.875	39	477.375
20	476.900	40	477.400

CB REPEATERS

About 400 CB UHF repeaters have been approved by the Department of Communications for use throughout Australia. They're in the capital cities, rural areas and even at Ayres Rock in the Northern Territory.

These repeaters transmit on the CB channels 1 through 8 with their inputs being channels 31 through 38 respectively (see chapter 'How Repeaters Work').

Channels 1 and 3 repeaters are for use in the capital cities and channel 5 repeater is for emergency calls.

Repeater Output Channels	Repeater Input Channels
Ch 1 (476.425 MHz)	Ch 31 (477.175 MHz)
2 (476.450 MHz)	32 (477.200 MHz)
3 (476.475 MHz)	33 (477.225 MHz)
4 (476.500 MHz)	34 (477.250 MHz)
5 (476.525 MHz)	35 (477.275 MHz)
6 (476.550 MHz)	36 (477.300 MHz)
7 (476.575 MHz)	37 (477.325 MHz)
8 (476.600 MHz)	38 (477.350 MHz)

LOG RECORD

DATE	TIME	FREQ.	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES

LOG RECORD

DATE	TIME	FREQ.	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES

LOG RECORD

DATE	TIME	FREQ.	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES

LOG RECORD

DATE	TIME	FREQ.	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES

LOG RECORD

DATE	TIME	FREQ.	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES

LOG RECORD

DATE	TIME	FREQ.	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES

LOG RECORD

DATE	TIME	FREQ.	CATEGORY	LOCATION	SIGNAL STRENGTH	NOTES

FURTHER REFERENCES

The ARRL Amateur Operator's Handbook (updated annually)
Wireless Institute of Australia Australian Amateur Callbook (updated annually)
Radio Frequency Interference Handbook by William Nelson
The ARRL Antenna Handbook
The Scanner Fanatics Frequency Register of NSW
The Scanner Fanatics Frequency Register of Victoria
The Scanner Fanatics Frequency Register of Western Australia
The Scanner Fanatics Frequency Register of Queensland
The Register of Government Frequencies in NSW, the ACT & Victoria
Listening Into Aircraft Radio by Bob Bell
Shortwave Listening Guidebook by Harry Helms
World Radio TV Handbook (updated annually)
Passport to Worldband Radio (updated annually)
Radio in Australia by Robin Davies (covers AM & FM frequencies)
The Department of Transport & Communications Government Publications

DICK SMITH ELECTRONICS STORE ADDRESSES

NEW SOUTH WALES

Albury	471 Dean Street	(060) 21 8399
Bankstown	T54 Level Bankstown Square	(02) 707 4888
Blacktown	Shop 1, 65 Main Street	(02) 671 7722
Bondi Junction	90/94 Ebley Street	(02) 387 1444
Brookvale	Shop 2, 1B Cross Street Warringah Mall	(02) 905 0441
Campbelltown	Shop 8 Endeavour Square, Dumaresq Street	(046) 27 2199
Chatswood	Shop 235, Chatswood Chase	(02) 411 1955
Chullora	147 Hume Highway	(02) 642 8922
Gore Hill	164 Pacific Highway	(02) 439 5311
Gosford	99 Donnison Street	(043) 25 0235
Hornsby	17-19 Florence Street	(02) 477 6633
Hurstville	124 Forest Road	(02) 580 8622
Kotara	82 Park Avenue	(049) 56 2092
Liverpool	Cnr George St & Elizabeth Drive	(02) 600 9888
Maitland	450 High Street	(049) 33 7866
Miranda	621 The Kingsway	(02) 525 2722
Newcastle	173 Maitland Rd, Tighes Hill	(049) 61 1896
North Ryde	396 Lane Cove Road	(02) 878 3855
North Sydney	Shop M15, Greenwood Plaza Pacific Highway	(02) 964 9467
Orange	217 Summer Street	(063) 61 8400
Parramatta	37 George Street	(02) 689 2188
Penrith	Cnr Henry & Riley Streets	(047) 32 3400
Sydney	818 George Street	(02) 211 3777
Sydney	125 York Street	(02) 267 9111
Tamworth	Shop 3, Regent Cinema Complex Kable Ave	(067) 66 1711
Wollongong	263 Keira Street	(042) 28 3800

AUSTRALIAN CAPITAL TERRITORY

Belconnen	5 Chandler Street	(06) 253 1785
Fyshwick	96 Gladstone Street	(06) 280 4944

VICTORIA

Ballarat	35 Sturt Street	(053) 31 5433
Bendigo	145 McCrae Street	(054) 43 0388
Box Hill	Shop 46, Box Hill Central	(03) 890 0699
Brighton	Cnr Hawthorn & Nepean Hwy	(03) 592 2366
Coburg	260 Sydney Road	(03) 383 4455
Dandenong	Shop 1, 176 Lonsdale Street	(03) 794 9377
Essendon	1150 Mt. Alexander Road	(03) 379 7444
Footscray	Shop 11, 13 Footscray Plaza	(03) 689 2055
Frankston	70 Wells Street	(03) 781 4196
Geelong	125 Moorabool Street	(052) 23 2711
Melbourne	399 Elizabeth Street	(03) 326 6088
Melbourne	Shop 20, Midtown Plaza 246 Bourke Street	(03) 639 0396
Richmond	Cnr Bridge Rd & Boulevarde	(03) 428 1614

DICK SMITH ELECTRONICS STORE ADDRESSES (Cont'd.)

Ringwood	Shop 2, 141 Maroondah Hwy	(03) 879 5338
Springvale	Springvale & Dandenong Roads	(03) 547 0522
QUEENSLAND		
Booval	160 Brisbane Road	(07) 282 6200
Brisbane	157 Elizabeth Street	(07) 229 9377
Buranda	170 Logan Road	(07) 391 6233
Cairns	Shop 1, 201 Mulgrave Road	(070) 311 515
Capalaba	Shop 11, Capalaba Park Shopping Centre, Redlands Bay Road	(07) 245 2870
Chermside	Cnr Gympie & Hamilton Roads	(07) 359 6255
Maroochydore	Shops 4 & 5, Cnr Cornmeal & Horton Parades	(074) 79 1800
Rockhampton	Queen Elizabeth Drive	(079) 27 9644
Southport	Gold Coast Highway, Welch St	(075) 32 9033
Toowoomba	Cnr Bowen & Ruthven Streets	(076) 38 4300
Townsville	Cnr Kings Road & Woolcock Sts	(077) 72 5722
Underwood	Cnr Pacific Hwy & Kingston Rd	(07) 341 0844
SOUTH AUSTRALIA		
Adelaide City	252 Pulteney Street	(08) 232 1200
Beverley	688 Port Road	(08) 347 1900
Elizabeth City	Shop T25 Prince Charles Walk Elizabeth City Centre	(08) 255 6099
Enfield	435 Main North Road	(08) 260 6088
St Marys	1267 South Road	(08) 277 8977
WESTERN AUSTRALIA		
Cannington	Cnr Wharf Street & Albany Hwy	(09) 451 8666
Fremantle	66 Adelaide Street	(09) 335 9733
Midland	Cnr Victoria Prd. & Gt. Eastern Hwy, Midvale (near Roe Hwy)	(09) 250 1460
Northbridge	414 William Street	(09) 328 6944
Raine Square	125 William Street	(09) 481 3261
TASMANIA		
Hobart	Shop 40a Cat & Fiddle Arcade	(002) 31 0800
Launceston	139 Charles Street	(003) 34 4555
NORTHERN TERRITORY		
Darwin	20 Stuart Highway	(089) 81 1977

Outside Sydney: (008) 22 6610
Free Call
Sydney: (02) 888 2105

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SCANNING

As predicted in 1981 when the original version of this book was first published, scanning has become not only a real possibility, but even more enjoyable through incredible advances in the field of electronics and microprocessors. While thousands of the original book were sold, Dick Smith Electronics, recognising the advances in technology, has commissioned a rewrite and updating of the entire contents of this book. Chapters include — Programming a Scanner, Advanced Scanner Techniques, satellite/space vehicle and transponders reception, aircraft listening, and much more!

Thousands of radio transmissions on the VHF and UHF bands are within your reach! You'll hear fire crews racing to a city skyscraper, an international jumbo jet landing, tow truck drivers going to another accident, taxi-drivers and even maritime transmissions as ocean-liners come into port. Also, a list of frequencies is provided, which includes aircraft channels, marine HF installations, amateur radio operator bands, aerodrome terminal frequencies and many others. To all who contributed: thank you!

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