AMATEUR RADIO MOBILE - LET'S HIT THE ROAD

One decision that has to be made when considering amateur radio mobile is what bands do you want to access. If the quick answer is that VHF and UHF (2 metres and 70cm), then a dual band radio is all you need. There are plenty of models to choose from. Here are a few from Icom and Yaesu. There are other radio brands, eg Alinco and many from China but I have concentrated on the two major manufacturers currently in the market with a good range of models. Kenwood is not selling new amateur radio equipment into Australia, but there are plenty of well regarded Kenwood radios still for sale used.

Yaesu FTM-300DR - includes Yaesu C4FM digital mode and APRS - Approx. $700
Yaesu FTM-400DR - includes Yaesu C4FM digital mode and APRS- Approx. $800
Yaesu FTM-100DR - includes Yaesu C4FM digital mode and APRS - Approx. $650
Icom ICOM IC-2730A - approx. $500
Icom ID-5100A - includes DStar and APRS - approx. $850
Icom ID-4100A - includes DStar and APRS - approx. - $750

A dual band radio is the best choice, you don't just want 2 metres. The newest radios from Yaesu and Icom are featuring their digital mode choices. Yaesu have their own C4FM (System Fusion) and Icom use the DStar system. A recent arrival has been the DMR digital radio system, much used in the commercial world. These digital radios modes are all incompatible with each other. If you don't want these digital modes, then the Icom IC-2730A is an excellent dual band mobile radio that springs to mind. One dual band radio that is very well regarded is the Yaesu FTM-400DR. The large, easy to read screen and easy to use menu system makes it a standout and ideal for mobile use.

HOW MUCH POWER?

Some mobile radios offering VHF and UHF sometimes have a restricted choice of power output. Three or four levels of power output are commonplace with dual band radios and this allows you to choose one that matches your licence. Foundation licensees can only use 10 watts on SSB and FM. Standard licensees can use 100 watts on SSB and 30 watts on FM. Advanced licensees can use 400 watts on SSB and 120 watts FM. A mobile radio with 65 to 80 watts of full output could only be used legally by an Advanced licensee.

APRS is a system that uses GPS to digipeat (beacon) your position coordinates and other information for display on a map. Look up aprs.fi on the internet for an example of the system in use. Radios that feature APRS usually have a GPS receiver built in. If you don't need this, why pay extra when you just need a reliable, good performing dual band radio for the vehicle? One thing worth keeping in mind is that dual band mobile VHF and UHF transceivers are normally FM only, often with C4FM or DStar digital modes built in. SSB mode is normally only available on a multi band multi mode radio. SSB is very much better for DX than FM.

I WANT ALL BANDS, ALL MODES

If you want to cover all bands from HF, VHF and UHF, then you will be looking for a multiband mobile radio. The choices here are rather limited after the demise of the Yaesu FT-857. The FT-857D can be picked up used, but if you want a new rig then the Icom 7100 is a pretty good choice. The Icom IC-7100 has a nice ergonomic display. Both these two radios have a healthy set of menu items to go through. The Yaesu FT-857 does have a rather tiny screen and small buttons. Another option is to look at something like the Yaesu FT-891 which offers HF and 6 metres. The FT-891 has a separate head for easier fitting into a vehicle.

DUAL BAND MOBILE RADIOS

Yaesu FTM-100DR

Yaesu FTM-300DR

Yaesu FTM-400DR

Icom ICOM IC-2730A

Icom ID-4100A

Icom ID-5100A

The main units are usually under the passenger's seat or under the dash. That leaves the VHF and UHF bands, which means a second dual band radio plus the cabling. Modern cars aren't as easy to fit multiple radios into as the older vehicles, so that Icom IC-7100 starts to look pretty inviting.

ICOM IC-7100 all band all mode

The decision to try HF mobile often brings with it a range of challenges. Fitting a radio that has HF capabilities into a modern vehicle can result in noise induced by modern vehicle systems being picked up, especially on the lower HF bands. Quite often, suppressor kits for engine components have to be sourced to avoid high noise levels while the engine is running. These problems are often not an issue with older mechanical vehicles that lack these vehicle electronics. Codan and Barrett mobile HF companies sell suppressor kits that help to minimise vehicle induced noise. The choice and location of an antenna also needs careful consideration. Earthing of the antenna to the body and chassis is usually necessary and earthing straps can often be needed to connect to major vehicle components such as the exhaust system. Location of the antenna has quite an effect on the propagation pattern of a vehicle based vertical antennas. Without going into antennas too deeply, a vehicle based whip is trying to perform like a quarter wave antenna for the band, usually with the help of loading coils. There are various antenna choices: monoband whips, multi-tap whips and screwdriver type autotune antennas.

YAESU FT-857D all band all mode

WHERE DO I PUT EVERYTHING?

Mounting radios in modern vehicles can appear to be difficult, but there are options available. There are numerous mounts on the market, many are designed for mobile phones, GPS units and tablets but could be used for a radio head unit. The radio heads are quite light in weight and could be held in place by nothing more than two sided tape (a good tape brand like 3M).

YAESU FT-891 HF & 6 metres

Here are a few websites to look in for mounting options:

https://www.holdmyphone.com.au/
https://www.rammount.com/consumer/device-mounts/tablet-mounts
https://www.supercheapauto.com.au/shop-by-category/accessories/interior-accessories/car-holders
https://www.consoles.com.au/

Ram mounts are very solid and they have a huge range suitable for holding almost anything, including GPS units, tablets and laptops. If you have a 4WD then the https://www.consoles.com.au website has a range designed for specific vehicles that fit overhead and on top of some dashboards, as a pod. These are roomy enough inside to hold two or three radios. Custom cutting to suit your needs is available, and these units look very neat and professional. It is entirely possible that the base unit from a dual band radio would fit inside with the head mounted on the side.

Hold My Phone mounts are available from Autobarn. A look at EBay reveals quite a range of mounts for all sorts of things: phones, GPS units and tablets. A radio head could be attached to a mount that uses the cup holders fitted to most vehicles these days. Another option is to use the seat mounting points to hold a mount with a flexible tube and the radio attached with 2 sided tape

I really do recommend the RAM mounts. They are not cheap but their suction cups really hold on. The RAM mount designed for a GPS could probably hold your radio head also.

Another option for those who want to fabricate something themselves is to make use of existing mounting points. The car seat mounting bolts and centre consoles can be unscrewed and a simple mount made from plywood and thin metal brackets and slipped under the console, which is then reattached. EBay also has a range of suction cups that are very strong and could be used to support tablets with mapping software and GPS units, sitting above the dashboard. No holes need to be drilled. A radio head could be attached to it.

EBay cup holder mount

Making use of an existing roof console

WHAT OTHER MOBILE RADIO CHOICES ARE THERE?

Another option to consider, especially if you are planning to travel into remote areas is HF Land Mobile. Codan, Barrett and Icom all make radios suitable for remote area travel. These are licensed under a class licence system. This means that anyone planning to install any of these radios needs to join a network, that is your licence. The biggest network is VKS 737 but there are others. The networks have a range of HF frequencies available for members licensed from the ACMA. Users of these Land Mobile HF sets are obliged to use only the frequencies that their network has available. You cannot use an amateur radios on these frequencies. Radios for this market need to be type approved. These radios are all very rugged, made to military specifications and can survive operation in rough terrain. Manual tap and autotune antennas are available. The Land Mobile radios have a channelised format for storing freqencies rather than a normal VFO type tuning knob. Spot frequencies on the amateur bands can be installed on free channels. The current models offer 500 channels for frequency storage. A handy option offered by the networks is a radio telephone service for calls that are normally out of the mobile telephone network range.

These radios are not cheap, but are worth considering if you are travelling into remote regions. There are older reconditioned versions of these units available that are still very capable and offer a considerable cost advantage. It would be necessary to have these radios programmed, to avoid transmissions on frequencies that you do not have a licence for.

The channelised format is especially desirable when operating mobile. One thing you do not want is a complex rig that is distracting and difficult to operate on the road.

Consoles.com.au roof console - made to suit vehicle

RAM mount for GPS

Kenwood TS-480-SAT - HF and 6 metres. Kenwood also made the similar looking TS480-HX - 200 watts of output.

Codan Envoy HF Land Mobile

Barrett 4050 HF Land Mobile

Icom IC-F8101 HF Land Mobile