

Vero VR-N7500

Dual band radio

What's special about the Vero VR-N7500 dual band mobile radio? As it turns out, it's quite an innovative device and, as far as I know, is unique on the market.

Let's have a quick look at what the manufacturers have to say and follow that up with my impressions of using the radio.

The Vero Telecom VGC VR-N7500 is a brand new 50 watt VHF/40 watt UHF Headless ham transceiver with a solid build quality. It is very different in design compared to any other ham radio you have used in your mobile or base.

The VR-N7500 can implement a smartphone as the control panel. The main radio can be installed in the trunk while the phone/tablet is connected to the radio through Bluetooth.

Multiple Bluetooth Connections

- Connect to optional bluetooth PTT
- Connect to bluetooth headset (eg Cardo, Schuberth, Viper, Sena, Interphone and Vimoto etc.) This is very useful for cycling enthusiasts, omitting the cumbersome wiring.
- Connect to cell phone to programme the radio
- Connect to optional bluetooth speaker microphone
- Connect to other bluetooth 2.0+ accessories
- Using the APRS feature you can send your updated location in real time to the APRS-IS servers, which will then plot your position on APRS maps such as APRS.FI

Key Features

- Output Power: 50 watts VHF 40 watts UHF
- App programming
- CTCSS/DCS/DTMF/2-Tone, 5-Tone decode and encode.
- Supplied with wired mic.
- Allows Multi Bluetooth connections
- Allows Network radio to RF connection

Out of the box

The most important thing that you notice about the VR-7500 is that it doesn't have a front panel – or more accurately a control panel. It's a headless, 'no-fuss' radio. It has a really nice, robust feel to it.

As I'm sure you will have gathered from the manufacturers' information, your mobile



The Vero VR-N7500 dual band mobile showing the speaker/microphone.

phone, connected via Bluetooth, is the control panel that allows you to adjust the settings of the radio. It's worth pointing out at this early stage, that although you will need a mobile phone to set the VR-7500 up, you don't need the phone to use the rig, which might be a bit of a shortcoming, although without the 'control' phone handy, functionality of the rig is limited.

The other important thing to consider about the VR-7500 is what sort of mobile phone you have. The VR-7500 can be programmed by both Android and iOS devices, however, it's fair to say that there is much more functionality available to Android users than to iOS users. You certainly *can* use an iOS device, but some features will not be accessible. I will cover this in more detail shortly.

Although I have said 'mobile phone', any Bluetooth enabled device capable of running either Android or iOS should be capable of communicating with the VR-7500. Although both I and the RSGB would advise caution in this regard, I understand that some users with Android enabled systems in their cars have 'jailbroken' the systems and can run the VR-7500 control app natively on the car's audio/navigation/control system. I have not tested this, so cannot provide any further details.

The VR-7500 comes with a standard 'fist' type microphone, but if you wanted to mount the radio in the boot, for example, or under the seat, you can purchase an optional

Bluetooth speaker/microphone to allow you to do this. Another built-in option is that you can use the microphone/speaker on the Android/iOS device you are using to control the radio. In a mobile context, this would only work if you had a hands-free system to control your phone. When I tried this, in the shack, although transmitted and received audio was received on the Android device, it was not the best quality and was subject to slight delays and jumpiness. So, this would be fine for monitoring and short-term usage, but I feel most people would want better quality than this.

Programming the radio

The first thing you'll want to do, of course, is to program up the radio with the channels that you want to use. To do this, you'll need to get the app installed on your mobile phone/device. Both applications are free of charge. For the Android version search for HT (the icon has green circles). For the iOS version search for BS HT (once again, the icon has green circles)

By the way, only limited documentation comes with the VR-7500, but Min, G0JMS has put together a useful document on getting the most out of your VR-7500, which can be downloaded from the Moonraker website at <https://moonrakeronline.com>. There is also a Facebook group and a Google group for

people interested in the VR-7500 that may help you with support.

As I'm primarily an iOS user, I decided to set up the app on my iPhone. The first thing was to pair the rig, using Bluetooth. Switch the VR-7500 on and then press the power button on the rig twice in fairly quick succession. You'll see the lights flash on the rig to indicate that it is now in pairing mode. Within the HT app on your phone you will now be able to complete the pairing process and within a very short space of time, you will see the radio indicated under 'My Device' showing connected. You can then open this up and will see a graphical display of 16 channels with some frequencies.

It's now time to setup some channels. Simply long press one of the channel 'squares' and you'll be taken into the 'Channel Setup'. You can set up the name of the channel, transmit and receive frequencies, CTCSS, Power Level and Bandwidth. There are some other features, including setting the channel as receive only, or muting.

As soon as you enter the channel data, the channel will be available on the radio.

In use

A really nice feature of the VR-7500 is that it has built in APRS (1200 baud) capability. You can setup the APRS channel (144.800MHz) and there's also an APRS settings page that allows you to connect to an APRS iGate (gateway between RF to the APRS-IS service on the internet). For example, this may allow the APRS packets that you receive to be sent to the APRS.FI site (<http://aprs.fi>). You could also enable APRS packets to come from the Internet and be sent from your radio. I did not enable this as I could not see any benefit, but you can filter this data, so if you only wanted to rebroadcast APRS packets from within 100km you could set this up. You can also opt to receive APRS messages sent from the Internet. You can elect to send an APRS beacon packet at a timed interval that you can select (I opted for 15 minutes – if APRS is very busy where you are, perhaps go less frequently). Within this beacon packet, the VR-7500 will include your location (latitude/longitude) and some text, which you can configure. Should you wish to disable sending your position for reasons of privacy, you can of course do so.

The VR-7500 will operate in dual channel mode, so you can monitor APRS as well as listening to a local repeater or simplex channel. You can also scan through the group of 16 channels. When the scanner finds a busy channel, it will stop there until the transmission ends. As far as I can see, there is no option to modify the scan behaviour. I did not find a way of muting the APRS packet activity from the speaker. There is a mute



The radio can be controlled by many Bluetooth enabled devices.

checkbox for the channel, but it did not save the setting! There's a setting to determine which channel your APRS beacon is sent on. It's well worth checking this otherwise you could be sending APRS packets on your local repeater.

One point I should bring out if you are planning to use an iOS device, the memory capacity is limited to a single group of 16 memories. On Android you can have as many groups of 16 memories as you like!

Pairing with an Android device

It's immediately clear that using an Android device with the VR-7500 is preferable and a considerable number of facilities are available on the Android app that are not present on the iOS version.

The first thing that I absolutely loved was the ability to upgrade the firmware of the VR-7500 through the app. The app indicates whether an upgrade is available and if it is, the firmware is downloaded onto the Android device and then sent and installed onto the radio using Bluetooth. I don't think I have ever seen such a seamless firmware upgrade process. Well done, Vero!

Setup of memories, scanning and frequencies is essentially the same as on the iOS version and seemed to work well. What you can do though is to have multiple memory groups (each memory group contains 16 channels). I cannot see mention of any limit on the number of memory groups that are available on Android.

There is greater APRS functionality on Android than on iOS. As well as the Map, plotting stations that you have heard and showing their distance, you can display a list of the APRS messages that you have received as well as a list of the individual APRS stations seen. The Map can be configured to show stations that you have received over a period of time, ranging from the last 3 hours up to 'ever'.

Perhaps the major difference between the iOS and Android version of the software is that in Android there is some 'network radio' (Voice over IP) capability. The Android app has a built in VoIP client allowing you to connect to the Vero network. You can, if you wish, also bind the VR-7500 to a channel on the Vero network so that it will act as a gateway. Please be mindful of your licencing conditions here.

I hadn't realised until I tried out the network radio functionality, that if you have the app switched on your phone, but you are away from the radio, you can still use the app as a Network Radio client. I put a call through the Vero UK channel to see if Min, GQJMS was around. Indeed, he was out for a walk with his phone, but not in Bluetooth range of his VR-7500 and we were still able to have a quick chat. It's worth stating that the Network Radio interfacing on the VR-7500 only works with the Vero network and you cannot use it in the same way with Zello, for example. GQJMS told me that a US amateur had used a VR-7500 as a gateway between a network radio channel and a repeater. Other amateurs can connect to the network channel using either an Android mobile phone running the HT app, or another Vero VR-7500 and Android app running as a gateway and another FM to access the gateway.

If one or more amateurs in your area have VR-7500 radios, it looks like there is an intriguing 'Teams' feature to play with. It bears some resemblance to Yaesu's Group Monitor feature on Fusion radios. The Vero Teams feature allows you to create a group of users on a particular frequency and once established it appears that you can exchange voice, APRS, Morse code and even SSTV pictures. I wasn't able to test this, which was a shame, but I was particularly intrigued by the possibility of sending SSTV natively! The documentation only mentions sending SSTV, so I am not sure whether you would be able to receive the pictures that were sent. Min, GQJMS says that this feature works on RF and he believes, on a network channel also.

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The Vero VR-N7500 does not have a control panel so can be mounted in the boot of your car.

What about the RF features?

Receive sensitivity of the VR-7500 seemed largely what I would expect from a VHF FM rig and I was able to hear everything that I expected to at the appropriate signal strengths. The VR-7500 has three output power settings; Low, Medium and High (VHF: 50W/UHF: 40W). I measured the power settings on 2m as High: 40W, Medium: 15W and Low: 7W. Measurements on 70cm was a little less on the high power setting at around 35W but 15W and 7W on the medium and low settings respectively. Squelch control didn't seem quite as granular as I might have liked, but this was not a serious problem. Transceive coverage of the rig is between 136-174MHz and 400-480MHz, so please make sure that you type carefully when setting up the transmit frequency! If you wanted to set a receive only channel – perhaps Marine band or PMR446, then you could easily do this, setting 'Disable TX' in the channel settings. To be doubly secure, you could set an obscure Tx frequency in the amateur bands, so that there was no chance of transmitting somewhere that you shouldn't.

The audio quality of the speaker in the supplied speaker/mic was 'average'. I found it a little prone to distortion even at modest levels. It wasn't dreadful, just not quite as sharp as I'd have liked. Tone is generally on the high side, which is probably quite good for listening in the car, but perhaps less pleasant when listening in a quieter shack.

Bluetooth speaker/microphones

The VR-7500 does not come with a Bluetooth microphone as standard. There are two different types of Bluetooth microphone. The first that I tested was an BMH-7500 that looks exactly like a speaker/mic but without a cord.

To use it, of course, you'll need to pair it. Put the rig into pairing mode by pressing the power button twice in quick succession. Then switch on the BMH-7500 and place that into pairing mode by pressing the power button on the microphone twice in quick succession. After a short while

there will be a Chinese announcement (there's no option to change to English) and the pattern of the lights on the microphone will change. All being well, the speaker/mic is now paired with the rig.

The two buttons with arrows on the right of the microphone keypad serve as up and down keys. Pressing the OK button on the keypad allows you to toggle between the up/down keys serving as volume or channel controls. When in channel mode, the microphone will announce which channel number (in the group of sixteen) that you are on.

Audio quality of the BMH-7500 seemed broadly similar to the speaker/microphone on the wired microphone, which as they look almost identical is not surprising. However, there seemed a little less distortion on the BMH-7500, which made me wonder if my wired microphone had a minor fault.

The range of the Bluetooth seemed to allow a distance of 10m or so between the rig and speaker/microphone that would certainly be adequate for placing the rig in the boot of your car, or under a seat. If you were using it in the shack, you wouldn't be able to get too far around the house with it, but it would afford some flexibility. The BMH-7500 has a magnet on the back of it, allowing you to secure the microphone to some suitable metallic object.

The second Bluetooth speaker/microphone that I tested was the BHM-78, also from Vero. This is a more sophisticated device and in fact, looks like a miniature handheld. It's a Bluetooth speaker/microphone with GPS and colour display capability. You can either pair it directly with the rig, or with your mobile phone, where it will communicate with the HT application. A word of warning if you are an iOS user – this didn't seem to work when I tried it. If you are an Android user, you can use the BHM-78 as a speaker microphone, not only to the Vero VR-N7500 but also for the Network Radio channel.

The BHM-78 also has a nice compass display (which seems quite accurate) as well as indicated your altitude (calculated by GPS) and the current temperature. It will also show a distance and bearing to APRS stations that you have received.

Despite a fairly small speaker, the audio quality from the BHM-78 is quite pleasant to listen to and does not distort unduly at the type of volume that you might need to listen to in a vehicle, although it does not lend itself to handsfree operation.

A Bluetooth PTT is also available, another useful option when mobile.

Overall

I said at the outset that the Vero VR-N7500 is an innovative device. The nice thing is that the facilities are well implemented and did not feel flaky. RF performance of the rig was perfectly respectable and I liked the well-built, chunky feel of the rig itself.

The built in APRS capabilities were enjoyable and well implemented.

You will get the most out of the VR-N7500 if you are an Android user. If you are an iOS user, then, as I've noted, things will be a little more restricted and there is no possibility for you to use the Network Radio capabilities. Vero Teams features, which look interesting, are only available to Android users.

If I had a reservation, it was about the requirement to have a mobile phone as a control panel. Why? After all, most of us carry a phone with us all the time and programming the rig from a quickly connected phone is hardly a problem. It's not that. My only reservation is that in 10 or 15 years time, Android and iOS may have vanished completely – or at least will have (I hope!) evolved massively. Finding a suitable device to program your VR-7500, may, at that time, prove a challenge – a bit like that bit of software than you can only run on a Windows 98 (or worse still, an MS-DOS) PC!

Assuming that you are happy to set that aside, then if you are someone who enjoys both radio and mobile phone technology then the Vero VR-N7500 is well worth a look. The 'headless' radio may also be attractive to those who monitor a limited range of channels – you don't need a display – you can just power on the rig and it will be on whatever channel you left it on. You can navigate the channels, if required, from the microphone, without recourse to your mobile phone, only using that if programming is required.

Thanks

Many thanks to Chris Taylor of Moonraker for the review model and his willingness to answer questions, also many thanks to Min, G0JMS for his insight into the detailed operation of the VR-N7500. The VR-N7500 costs £149.99, the BMH-7500 speaker microphone £39.95, the Bluetooth PTT £12.95 and the N7500 LCD Speaker Microphone BHM-78 unit £59.95 available from Moonraker UK Ltd (<https://moonrakeronline.com/>) and other retailers.