



The MD-9600.

# Review – Two DMR Rigs from Moonraker

Tim Kirby G4VXE takes a look at the TYT MD-9600 144/430MHz DMR mobile transceiver and the Moonraker HT-500D DMR Dual-Band Handheld Transceiver.

**T**owards the end of the National Hamfest at Newark, Chris Taylor from Moonraker approached our editor with a couple of boxes, saying, have a look at these! Very kindly, Don passed them onto me to review.

I'm always pleased to look at new rigs and find out what they're like but I was particularly looking forward to trying the TYT MD-9600. Here in west Oxfordshire, we're just in range of a few DMR repeaters and I was curious to see what the mobile experience would be like.

## The TYT MD-9600 Dual-Band DMR Mobile

Here's what the publicity says about the TYT MD-9600 Dual-Band DMR Mobile: "Now you can go digital on the road with the TYT MD-9600 DMR Digital Mobile Two Way Radio! The MD-9600 gives you the crystal clear, noise-free audio of over-the-air digital communications in your vehicle, full analogue transceiver capabilities, and bundles it all together at a price you can afford! The MD-9600 supports analogue and digital modes so you can enjoy the best of both. It provides dual-band support, operating on both 400-480MHz UHF

frequencies and 136-174MHz VHF at up to 50W VHF and 45W UHF, using Time-Division Multiple-Access (TDMA) digital technology. This digital mobile radio is also compatible with Motorola TRBO and DMR Tier II. The MD 9600 offers 250 zones with 16 channels for each zone. It has built-in CTCSS/DCS, channel scan, priority scan, short text message features, draft message edit, contacts check and edit, and encryption. As for calling features, the MD-9600 has them, including Private Call, Group Call and All Call. It also includes Lone worker mode, power save mode, low power alarm, an emergency alarm and VOX capability.



**The MD-9600.**

*Plus, it's PC programmable and firmware upgradeable to boot, providing the maximum flexibility and versatility to rival any other digital mobile radio on the market! The TYT MD-9600 gives you a colour LCD display with clear, sharp text for an easy read from your dash or console. It also gives you programmable function keys on the console and a hand mic with programmable keys, two built-in LEDs and a DTMF keypad and for full access to its menu of powerful digital and analogue features. No doubt about it, the MD-9600 gives you all the value of a premium digital mobile radio at an amazingly low analogue price!"*

The features are listed in the sidebar.

### Getting Started

Within minutes after taking delivery of the rigs from Don, I had the MD-9600 out of the box and was connecting it up to my PC to set up the basics. I should add that Moonraker had supplied the rig with a codeplug, which is ready to go. (A quick reminder that the codeplug of a digital radio determines the setup and configuration of the radio, including the channels, talkgroups and so on. The codeplug supplied with both the radios reviewed here includes all UK DMR and analogue repeaters along with Marine band and PMR446 receive channels). All I had to do was to load the Customer Programming Software (CPS) on my PC, connect up the programming lead between the rig and the computer and press 'read radio'. To my delight it worked first time. It doesn't always, so it's good when it does, especially because I use a virtual PC running on my Macbook, which shouldn't complicate

things but sometimes does.

Because the codeplug was all set up, the only thing I really needed to change was to enter my DMR ID into the rig rather than the demonstration one that had been set. That done and the configuration saved back to the rig, I was all ready to go. I installed the rig into the car (it's a little too big to go in the centre console) but managed a temporary solution quite easily and looked forward to the morning commute to see what I could hear.

Here in west Oxfordshire, my daily commute takes me on the fringes of several DMR repeaters, including the GB7CT VHF repeater at Tring some 40-odd miles away. I knew I could detect that signal quite well through the journey, so I was curious to see how that translated into digital coverage.

Sure enough, I found that I could receive DMR signals from GB7CT although only on certain parts of my journey. I became quite adept in making quite short, snappy contacts on pieces of road when I knew there was coverage. One morning there was a lift and signals were gloriously strong all the way to the railway station. On one of my first mobile DMR contacts, it was great to speak with **Steve M3SXA** also using the GB7CT repeater.

If I was travelling in a more westerly direction, then I could use the GB7CT Swindon UHF DMR repeater. It was on a trip over the Cotswolds to the Cheltenham area that I discovered a problem with the MD-9600s firmware.

At the start of each transmission you make, there's a quick handshake protocol (known as the Transmit Admit criteria) to

### The following features are listed for the MD-9600:

- 1000 Channels
- 136-174MHz VHF Frequencies 400-480MHz UHF Frequencies
- Repeater Capable
- AMBE+2™ Digital Vocoder
- Encryption (Digital Mode Only)
- Private Call/Group Call/All Call
- 45W/25W Output Power
- Hi/Low Power Selectable
- Emergency Alarm
- Channel Scan
- Priority Scan
- Talk Around
- Colour LED Display
- Lighted LED Keypad
- Text Messaging
- LED Status Light On Hand Mic
- Low Battery Alert
- Battery Saver
- Timeout Timer
- VOX
- Audible Button Beeps
- Voice Prompts
- Cloning Capable
- PC Programmable (Optional Software and Cable Required)
- Programmable Multifunction Key
- MIL-STD-810 C/D/E
- Digital/Analogue Combined

check that the repeater can be contacted and if it can't, then what should happen is that you get a warning tone to show you're out of range. However, I discovered that quite often with the MD-9600, the rig would not be able to establish communication with the repeater but, rather than issue the warning tone, it would hang up the radio, which would then need to be switched off and on again before it would transmit. On a hilly road with a variable path to the repeater, this could happen quite a lot! Clearly this isn't an issue if you use the rig in a base station situation where the signal path to the repeater is much more of a known quantity.

When I got home, I did a little research to see if anyone else had encountered these issues (yes, they had) and whether there was any sort of workaround or fix (yes, there is!). It transpired that the problem only occurs if the Zone (a group of channels and talkgroups within the codeplug) is solely on UHF, so the fix was to edit each of the zones and put a dummy VHF frequency into it. Actually, this worked out well for me because for my commute, I wanted to be able to switch between GB7CT, GB7TC, GB7BK, GB7AV DMR repeaters as well as some analogue repeaters!

So, I programmed up a new zone called 'Commute', which reflected this and





**The Moonraker HT-500D.**

wondered whether it would solve the issue with the rig hanging up. Sure enough it did! This made for a much better mobile DMR experience. It didn't improve the coverage, of course, but at least the rig didn't need to be switched off and on at regular intervals.

Using DMR mobile, apart from the coverage issues, was enjoyable. The quality of the received audio is excellent and I enjoyed making contacts around the country and across the world. Similarly, I was pleased to receive good audio reports of my transmissions using the MD-9600.

The MD-9600 contains many useful



**The Moonraker HT-500D.**

DMR facilities. The ability to listen across all the talkgroups on each timeslot was perhaps the most useful one to me. That way, you can keep an ear on what's going on without having to scan across all the talkgroups. The codeplug supplied by Moonraker also included a good range of contact details, so that the radio will display someone's name and callsign, which it translates from the DMR ID that they are transmitting.

Of course, the MD-9600 works on FM as well, so my regular commuting configuration was to have the FM repeater, GB3RD, running on one side of the radio and one of the DMR repeaters running on the other side of the radio. That way I was able to get the best of both worlds. Audio reports on FM were also very good. The display is nice and sharp and easy to read when mobile,

RF power output can be set to any of four levels, which equate to around 5, 10, 18 and 45W on 144MHz, with the highest level just a little lower on 430MHz. This makes the rig usable by Foundation licensees on the lowest two power settings.

As supplied, the codeplug contains all current digital and analogue repeaters in the UK as well as other things to listen to, such as Marine and NATS (aircraft) frequencies – the latter being some FM outlets given that the MD-9600 does not work on AM (used for many aircraft channels).

### Conclusions

I found the MD-9600 enjoyable to use. The firmware bug around the 'transmit admit'

### Note from Moonraker

As a postscript to Tim's review, Moonraker have asked us to include the following: "TYT are a progressive company and since the launch of the MD-9600 radios the manufacturers have done many updates both to the firmware and, in the latest batch, to the hardware too. We have carried out factory approved modifications to the radios supplied in the early batches to address customers issues. The radio has become a very good seller for us alongside the HT-500".

Moonraker have also said that, if readers call and quote PW, they will include free shipping to UK mainland.

feature was annoying but once I found a way around it, that was fine. I strongly suspect that by the time you read this, there will be a new version of the firmware that will, all being well, resolve the issue, but do check with your vendor first. As noted previously, if you are going to use the rig at home on a base antenna, it's unlikely that you will notice the problem at all. I was pleased to find that various problems that had been reported with earlier versions of the firmware had been eliminated and did not show up during the review period. Keep checking for firmware releases because I'm quite certain that further improvements and features will be added.

If you have one or more DMR repeaters in your area, as well as conventional FM repeaters and simplex activity, you could do a lot worse than consider the MD-9600. It is available for £279.95 from major amateur radio retailers.

### The HT-500D DMR Digital Dual-Band Transceiver

Also in the box from Chris was a dual-band DMR handheld! A quick look at the rig and I realised that this is almost identical to another handheld we reviewed here in our November 2017 issue. Given this is the case it's obviously not appropriate to publish a full review of the rig. However, we thought it might be useful to refer you to the features of the HT-500D:

The publicity says: "The HT-500D takes the experience of DMR to a new level with features designed for the amateur radio user. The MOONRAKER HT-500D operates in analogue and digital modes 400-480MHz frequencies on UHF and 136-174MHz VHF at up to 5W of power. It uses Time-Division

Multiple-Access (TDMA) digital technology to double the number of users on a single 12.5kHz channel.

The Audio on DMR is excellent in both transmit and receive ensuring dependable communications.

The HT-500D boasts 3,000 channels, 10,000 contacts, built-in CTCSS/DCS (analogue mode only), single call, group call and all call, remote kill/stun/activate, transmit interrupt, VOX, and lone worker function. It is compatible with MOTOTRBO™ Tier I and II,

The MOONRAKER HT-500D is equipped with an excellent large colour LCD display. It also has the traditional keypad allowing pre-programmed functions as well as direct frequency entry in VFO mode

The HT-500D dual-band digital radio uses Digital Mobile Radio (DMR) Tier 2 Standard protocol. It is compatible with the popular MOTO TRBO series Tier I and II using standard encryption, as well as other makes and models of DMR supported

radios. It is also compatible with any existing analogue two-way radio operating on the supported UHF and VHF frequencies for easy migration to digital technology.

The radio is waterproof to IP67 as long as all covers are fitted. The radio is firmware upgradeable and software is supplied free of charge".

It's also worth mentioning that the HT-500D comes with two years warranty and, as mentioned in the context of the MD-9600, the codeplug is programmed with a wide range of talkgroups, repeaters and so on.

### Overall

Perhaps it's useful to repeat some of my conclusions from that previous review, because the same thoughts apply with the HT-500D.

Decide for yourself whether you need a dual band DMR rig. It's certainly nice having the two bands available on one rig, rather than carrying a UHF DMR rig and a FM

dual-bander and if you don't have an FM dual-bander already, the HT-500D would probably be cheaper than two separate rigs.

I wasn't fond of the trackball but I was glad that I was able to get around that by programming the side buttons on the rig. Other than that, I found the rig easy to use and didn't have to resort to the instruction manual, which was probably a blessing.

Bear in mind that the supplied antenna seems quite poor to me, so be prepared to replace it – this need not be expensive to do. RF performance of the rig itself seemed good.

The Moonraker HT-500D costs £199.95 from Moonraker UK Ltd.

Our thanks to Chris Taylor and Moonraker UK Ltd, for the loan of the two rigs for our review. Moonraker were also kind enough to say that we could offer the two radios as competition prizes, for which we are, of course, extremely grateful. Please see below for how to enter for a chance to win.

## PW Competition

# Two prizes to be won, worth £480 in total!

Thanks to our friends at Moonraker, we are able to offer the two transceivers reviewed by Tim Kirby as competition prizes. See below for details of how to enter. The first correct answer will win the TYT MD-9600 144/430MHz DMR mobile transceiver and the second correct answer will win the Moonraker HT-500D DMR Dual-Band Handheld Transceiver. **To be entered into the draw to win one of these super DMR transceivers, answer the following questions by completing the form below. Photocopies are accepted. Please provide a valid phone number so we can contact you should you win!**



### The Questions:

What does DMR stand for?

- Data Modes Radio.
- Digital Mobile Repeater
- Digital Mobile Radio

What are the SKU codes for the two radios reviewed?  
(Hint – check the Moonraker website!) .....

.....

Entries close at midnight on February 11th 2018. To be accepted into the draw, you must answer the questions correctly and answers received after the date will not be accepted. Two winners will be notified by e-mail or telephone on February 28th 2018. If either winner cannot be contacted or does not claim the prize within 30 days of notification, we reserve the right to withdraw the prize from the winner and pick a replacement winner. The winners will also be announced in the May issue of PW.

**ENTRIES CLOSE 11/2/2018**

### How to Enter

Free entry by returning this form to the address below.

Title..... Initials.....

Surname.....

Address .....

.....

..... Postcode .....

Yes I am happy to receive special offers by post.

Telephone .....

Yes I am happy to receive telephone calls about special offers.

E-mail address .....

Yes I am happy to receive emails about special offers.

Return to **Competitions, Marketing Department, Practical Wireless, Warners Group Publications, The Maltings, West Street, Bourne, Lincs PE10 9PH**