

TYT TH-UVF1 Dual Band Handheld Transceiver

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We've all seen the new Chinese handheld radios on the market. Most of them are priced lower than their competitors and offer great features. I have been very tempted to buy one, but was not sure how they would perform. Luckily, I was asked to review one of these neat little radios, the TYT H-UVF1, a dual band VHF/UHF handheld.

The TH-UVF1 has a good set of basic features. The dual band handheld works on one band at a time and offers 128 memory channels. Its extended receive coverage includes an FM broadcast band receiver covering the frequency range 70 to 108 MHz, the FM broadcast band in China. The radio also offers scan and priority scan functions, VOX and a voice prompt. To see the complete list of features for the TH-UVF1, visit the manufacturer's website, www.tyt888.com.

Early versions of the TH-UVF1, including the review radio, included a scrambler function that is not legal for use by Amateur Radio operators. We understand that this feature has been disabled in current units.

What's in the Box

The box contains several items: the transceiver, a flexible rubber antenna (about 7 inches long) with SMA connector, an owner's manual, a belt clip with strap and a drop-in charger base. The dealer included a car cigarette adapter for the charger base as a special promotion. TYT offers a few accessories, including a speaker/mic, programming cable/software and mobile battery eliminator. The battery eliminator plugs into the auto's cigarette lighter socket and has an adapter on the other end that replaces the transceiver's battery pack. This is the only provision for using an external power source.

The TYT TH-UVF1 has a nice feel. It fits in the hand very well and has a nice weight. It stands almost 4½ inches tall (without the antenna) by 2¼ inches wide. The Li-ion battery is easy to release from the back. The radio case is constructed of a high density plastic, similar to most other radios on the market.

The radio has one knob on top that turns the unit on and adjusts the volume. The PTT (push to talk) button is on the left side (look-

ing at the front of the radio). Right below the PTT is a small MONI button that opens the squelch and beneath that is a red CALL button. On the right hand side of the radio is a small panel that can be pulled open to reveal two jacks for the optional external speaker/mic.

The front of the radio is laid out similar to other popular handheld radios. The front-firing speaker is above the 1 × ½ inch LCD display. The keypad has 0-9 numbers with (*) and (#) function keys. There is a bright red MENU key along with UP/DOWN arrow keys and a U/V key. These will be discussed later in the review. Of course each number key also serves a separate function, for example, the #5 key helps to control the SQUELCH setting (accessed by pressing MENU and the number). All in all the aesthetics of the radio look just fine.

Turning the radio on revealed a nice amber display with two frequency rows (VHF and UHF). A small arrow indicated which row was in receiving mode. Using the U/V button, you can easily switch between the two rows. You can change the color of the display from amber to blue or light purple. I liked the blue.

Learning to Use the TH-UVF1

The owner's manual is small, about the size of a CD case book insert. The manual has 42 pages that describe the features of the radio, the warranty, the MENU options, how to change the MENU settings, accessories and a section on "Optional Signalings."

Most of the manual introduces each of the 34 MENU items and then follows with explanations of how to either turn each function on/off and how to adjust the settings. The manual does little to explain what each function does — that is left up to the operator to figure out on their own. I had trouble understanding how to use some of the different functions. If you have successfully used other handheld radios, programmed memory channels and banks, entered CTCSS tones and so on, then you should be able to figure out the TH-UVF1. If this is your first time operating a handheld radio, some of these instructions might as well be written in Greek.

As we were completing the review, we learned that Nifty Ham Accessories (www.niftyaccessories.com) now makes a handy Quick Reference guide for the TH-UVF1. This laminated reference folds down to



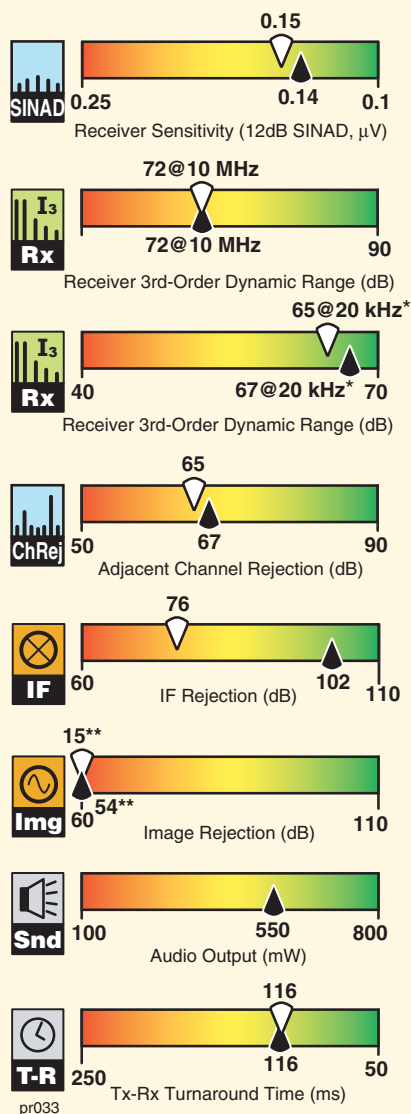
wallet size and includes step-by-step instructions for using the radio's various features. Given the radio's poorly written instruction manual, the Nifty reference card is good news.

You can download support software from the manufacturer's website by going to www.tyt888.com, or you can purchase a USB programming cable along with the software on a CD as I did. The optional software really helps programming go faster. Opening the program is fairly easy once it has been downloaded to your computer. You will need to choose a COM port for the program to "talk" to your radio. I have a three year old HP Pavilion with *Windows Vista* and everything worked just fine. Next, just choose your favorite repeaters, enter receive and transmit frequencies (keep in mind the + or - offset frequency), any CTCSS access tones, transmit power level and even a channel name. I programmed a few of my local repeaters within just a few minutes and downloaded them to the radio.

How Does it Play?

Once you program your favorite repeaters, you will need to toggle between MANUAL mode and MEMORY mode by pressing and holding the U/V button. This function was explained to me by the ARRL Lab team

Key Measurements Summary



Key:
**Off Scale
*Measurement noise limited at value shown.

2 M
70 cm

Bottom Line

The TYT TH-UVF1 dual band handheld offers a good basic feature set at a nice price. The user interface and instructions need work, but the radio works well once you have figured out how to program and use it.

since the owner's manual did not mention this step. I also discovered that a full reset of the radio can be accomplished by turning the radio on while pushing the MENU button. Be careful when toggling between MEMORY and MANUAL modes that you don't accidentally press the MENU button instead (which is right next to the UP arrow key). Don't ask me how I know this. Luckily, a friendly voice will ask you if you want to reset the radio before applying this function. Pressing the U/V button will allow escape from any function.

With my favorite repeaters now programmed into the radio I was able to cycle

through them fairly easily by using the UP/DOWN arrow keys and after transmitting my call sign, the radio's front firing speaker sprang to life. The speaker sounded fine as our local repeater identified itself. Almost immediately I was in a contact with another ham. The audio report was a bit nasally, but completely readable. Next, I brought up several other repeaters, one 20 miles and the other 30 miles away. Of course I was using full power (5 W). Both repeaters sounded great considering the distance. I half expected to hear a lot of static, which was not the case.

I enjoyed the FM broadcast receiver function. It can be toggled on and off by

Table 2
TYT TH-UVF1, serial number 1007A30405

Manufacturer's Specifications

Frequency coverage: Transmit, 144-148 and 430-450 MHz; receive, 70-108 (WFM), 136-174, 245, 350-390 and 400-520 MHz.

Modes: FM, FM narrow.

Power requirements: 7.2 V dc (battery only).†

Receiver

FM sensitivity: 12 dB SINAD, < 0.18 μ V.

FM two-tone, third-order IMD dynamic range: Not specified.

FM two-tone, second-order IMD dynamic range: Not specified.

Adjacent-channel rejection: Not specified.

Spurious response: Not specified.

Squelch sensitivity: Not specified.

Audio output: >0.5 W.

Transmitter

Power output: VHF, 5 W, UHF 4 W.

Spurious signal and harmonic suppression: >60 dB.

Transmit-receive turnaround time (PTT release to 50% of full audio output): Not specified.

Receive-transmit turnaround time ("tx delay"): Not specified.

Size (height, width, depth): 2.2 × 4.5 × 1.2 inches (not including projections); weight, 9 oz.

Price: \$130. USB cable and programming software, \$20.

†7.4 V, 1500 mAh Li-ion battery, drop-in charging base and ac adapter supplied.

Replacement battery, \$22. Cigarette lighter adapter for charging base, \$10. Mobile battery eliminator, \$15.

*Measurement was noise limited at the value indicated.

**Spurious output, worst case (low power), did not exceed 25 μ W.

Measured in the ARRL Lab

Transmit, 144-148, 430-450 MHz; receive, 136-173.995, 400-469.995 MHz, 70-108 MHz (WFM).

As specified.

Receive, battery power, 258 mA (max volume, no signal, lights on), 84 mA (standby, lights off), 54 mA (power save on); transmit, 146 MHz, 1.56 A (high), 0.56 A (low), 440 MHz, 1.52 A (high), 0.83 A (low) at 8.3 V dc (full charge).

Receiver Dynamic Testing

For 12 dB SINAD, 146 MHz, 0.15 μ V; 162.4 MHz, 0.18 μ V, 440 MHz, 0.14 μ V.

20 kHz offset: 146 MHz, 65 dB*, 440 MHz, 67 dB*; 10 MHz offset: 146 MHz, 72 dB, 440 MHz, 72 dB.

146 MHz, 67 dB, 440 MHz, 103 dB.

20 kHz offset: 146 MHz, 65 dB, 440 MHz, 67 dB.

IF rejection, 146 MHz, 76 dB, 440 MHz, 102 dB; image rejection, 146 MHz, 15 dB, 440 MHz, 54 dB.

At threshold, 0.1 μ V; 0.27 μ V (max).

0.55 W at 10% THD into 8 Ω (external speaker). THD at 1 V RMS, 1.7%.

Transmitter Dynamic Testing

146 MHz, 5.4 W (high), 0.75 W (low), 440 MHz, 3.6 W (high), 1.1 W (low) at 8.3 V dc (full charge).

146 MHz, 45 dB, 440 MHz, 54 dB, meets FCC requirements.**

Squelch on, S9 signal, 116 ms.

146 MHz, 56 ms, 440 MHz, 58 ms.

pressing the MONITOR button while holding the MENU button. While enabled, broadcast reception is interrupted by activity (such as a friend calling on the local repeater) on the previously tuned frequency or memory channel. Once on-channel activity quiets down, FM broadcast returns automatically.

Lab Notes

In the Lab, most of the measurements were as expected for a current dual band handheld with extended receiver coverage. A few measurements stood out, though.

The radio barely met FCC spectral purity requirements on 2 meters at the low power setting. Most VHF transceivers we've reviewed recently have spurious signal and harmonic suppression of 70 dB or more on 2 meters.

Reception in the "narrow band" mode did not improve adjacent channel rejection. In fact, the noise heard (without any adjacent signal) is higher and speaker audio tended to cut out at times.

Image rejection on the 2 meter band is only 15 dB. There was no specified IF

frequency, but the Lab found it at 38.850 MHz. That means for 146 MHz, there's an image frequency at 223.7 MHz so you might experience interference from 1.25 meter signals depending on activity in your area.

Final Thoughts

If you can get past the lack of information and explanations in the owner's manual, the TYT TH-UVF1 dual band radio is a good performer. It did everything I needed it to do for accessing local repeaters in south Georgia and north Florida. Of course, I had also procured the software and USB cable to help in programming. The radio offers a wide range of features for its price. The FM broadcast feature is fun; however, you will have to turn this feature off before switching back to either MANUAL or MEMORY modes. I should also point out that in MANUAL mode, the scan function seems quite slow. Recently TYT made some changes to increase scanning speed and fix a problem with scanning memory channels with alpha tags. There is also a new option for tuning in steps of 7.5 kHz.

While the price might make this radio attractive to the "inexperienced new ham" buying a first radio, I didn't find the user interface intuitive and was frustrated by the poor owner's manual. The Nifty Quick Reference and programming software can help. I would recommend this radio for someone who has a lot of patience and/or a ham who has successfully played with handheld radios before.

For the price of most single band radios, the TYT TH-UVF1 offers a dual band package — all too tempting for some. Accessories won't break the bank either. Lastly, I certainly hope that TYT will improve its owner's manual, which will really make this radio shine.

Thanks to Bob Allison, WB1GCM, in the ARRL Lab and Bill Simpson, NIJBS, of Lentini Communications for their help with this review.

Manufacturer: TYT Electronics Co Ltd, Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China; www.tyt888.com.

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