St Clair Amateur Newsletter

October 2020

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www.scarc.net
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John Sundstrom, WA0LIS - emeritus

Emergency Comm Committee
Curtis Williams, W5DTR

ARES/RACES Directed Net is normally conducted by Gene Kramer, WA9TZL (Tuesdays following the Club "on-the-air" meeting.)

SCARC License Testing October 24th

Social Distancing at the Test Session October 24th KC9MZ Photo

We had another successful test session October 24th. Dave Unverferth, KD9PLF upgraded to General!

Thanks, to our VEs - Gary N8GIL, Larry K9LWW, Dan KD9ADB, Steve KB0WBM, Michael KA9HNT and Randy KC9MZ.

Thanks to the Swansea Moose, Bob WA9TUG and Larry K9LWW for reserving the Moose Pavilion.

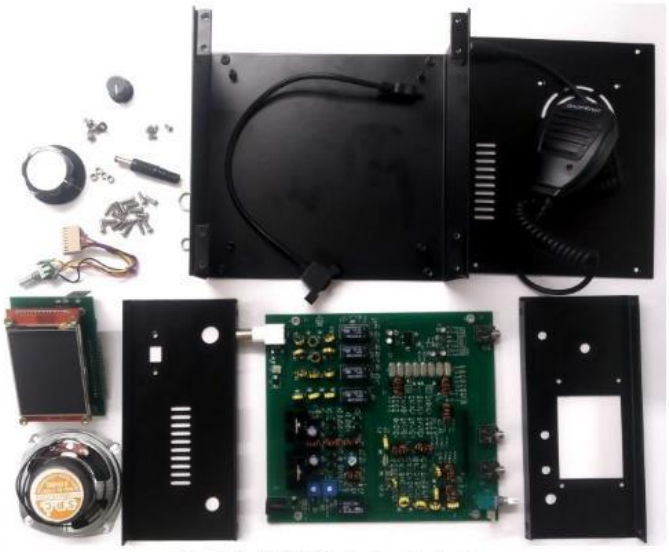
If you or someone you know would like to test, please have them email me at kc9mz@arrl.net. We don't have anyone needing to test so far, so I don't have any date scheduled.

µBITX All-Band HF Amateur Radio Transceiver Review

Dave WB1CDG

The uBitx is a 3-30 MHz all band SSB/CW transceiver kit designed by VU2ESE, Ashhar Farhan. Farhan is a co-owner of HF Signals, manufacturer of the BITX series of amateur radio kits. It is supplied as a completely pre-populated and tested circuit board, with all of the necessary controls and wiring. Just plug the display board onto the main circuit board, connect the controls, and you're done. It's that easy. No soldering is required. It is available as a bare-bones kit for $149, or as a complete kit that includes the speaker and enclosure for $199. Add $10 for shipping, particularly if you want to be astonished with speedy delivery from halfway around the world. Ordering details are on the hfsignals.com website.

I'll leave off the circuit details and the in-depth engineering discussion. The company website covers that in detail, so I'll gloss over it here. The receiver is a superhet that is surprisingly quiet and seems to do a good job of rejecting unwanted signals. However, if you live close to high power AM broadcast station, you may have issues with broadcast interference. The receiver has no AGC, and no RF gain control. The only controls are the on/off/volume knob and the multi-function tuning dial. Other controls are either absent on this radio, or are reached through the Arduino menu system (accessed by pushing IN on the tuning dial and holding it for a few seconds). The radio's simplicity is one of its most attractive selling points to me!



The Full uBITX Kit including the the box

The Arduino microprocessor is programmable. The firmware can be readily upgraded or modified to add new features. The µBitx SI5351a PLL chip provides three stable oscillators for the mixers that are under the Arduino's control. This increases opportunities for modifying filters, IF frequencies, etc. The current µBITX is up to version 6. Ashhar Farhan has been designing BITX kits for a decade. The Version 6 µBITX uses much of the circuitry and components of previous tried-and-true circuits (such as the IF stages) designed by Farhan. A high quality Cohn filter with 8 crystals is used in

the µBitx to create an excellent SSB filter. The µBitx can be easily connected to a computer using the USB port on the Raduino for CAT control.

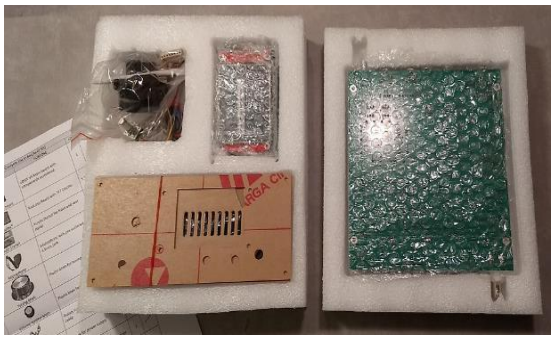
The transmitter reportedly puts out 10 watts PEP on SSB and 10w continuous output on CW 40m; output varies by band. 80 meters will be the band with the highest output power. Power output decreases as frequency increases; you can expect around 4 watts on 20m and 2 watts on 10m. In actual use, I've found that mine puts out around 7 watts average on 40m LSB according to my MFJ wattmeter. Presuming that I'm modulating around 70% of my PEP, and also taking into account my inexpensive meter with slow response time, I'd say the HF Signals advertised power levels are conservative. I like it when a company "under-promises and over-delivers."

The kit contains the main board (pre-assembled and tested), the Raduino daughter board assembly, a collection of small components, and a Baofeng hand microphone. The µBITX toroid coils are hand-wound and the boards are hand-assembled by a collective of women in India, thus providing them employment in a culture where women have few such opportunities. This radio is not only an awesome little transceiver, but it is also a radio with a social conscience!

The assembled boards are powered up and quality checked, and a final RF check is performed as well to verify the receiver's sensitivity as well as the transmitter output prior to being shipped. Each board is individually numbered and initialed by the person who performed the final quality control inspection. Most will have a "U" on them. If you see an "F" on the board, then you have one that was tested by the designer, Ashhar Farhan, himself.

There are weaknesses in this radio, as one would expect at this price point. There is no manufacturer support for this product, and the transceiver comes with no warranty whatsoever. However, there is a pretty robust online community with BITX fans willing to offer help if you encounter problems. Some operators have trouble with the jacks; a normal length plug (for mic, phones, key) enters the jack too far and shorts the wrong connections. This is easy to remedy, though; just put a spacer on the shaft of the audio plug, buy a different plug, or replace the jack with a standard size.

HF Signals says that wiring up the kit takes 1-5 hours, depending on your skills. In this regard, they were mistaken. I wired up my kit in less than 15 minutes and was ready to put it on the air. I did not, however, put it in a cabinet right away. I just assembled it in "breadboard" fashion, so I could get it on the air to test it. I didn't want to waste time putting it in a cabinet if it wasn't a "keeper." Building it was easy.



When I unboxed the kit, I was faced with a bubble-wrapped main board and daughter board. A little plastic bag contained knobs, potentiometer, etc. The packing list was clear and complete. HF Signals thoughtfully included acrylic front and back panels which would be a HUGE help if you wanted to build your own case. I strongly encourage you to buy the complete kit with the cabinet and speaker included for $200. The price difference is negligible compared to the hassle of finding and modifying your own enclosure (like I did).

I didn't prepare myself with any instructions (not included, but available online). I just went ahead and assembled it. It was incredibly intuitive. It's a bit embarrassing to call something a "kit" when it is this close to being fully built. I used the acrylic front panel for testing, leaving the brown paper covering over the clear acrylic to protect it. The brown panel in the pictures below is really a clear acrylic panel with a brown protective paper covering; I didn't want to scratch the front panel during testing and evaluation.

Somewhere I read online that this µBITX was designed for 12V not 13.8V. Other sources said that was it was fine with 13.8VDC. Just to be safe, I cracked open my 13.8V power supply and found the potentiometer that adjusts voltage output, and I turned down my voltage to from 13.8 to 12VDC. I plugged an external speaker into the headphone jack, connected the power supply, and turned the radio on using the pwr/vol control. It sprang to life with a beautiful color touch display! The touch display lets the operator change easily from VFO 1 to VFO 2, change bands quickly and efficiently, and a variety of other operations. Pushing IN on the tuning knob once lets you access the Arduino menus to select and adjust a variety of features.

You can see in the photo that I used the front panel phone jack for an external speaker (the grey wire). It sounded fantastic! I wasn't keen on the close proximity between the microphone plug (black plug and wire in the photo above) and the volume control, but in actual use it's not a big deal. I usually just turn the volume to the 1 o'clock position and leave it. Sometimes, if I'm working a really strong station, I'll have to back it down, but I prefer to work weaker stations rather than the stronger ones, so I tend to leave the volume high. I was pleased with the exceptional audio output of this little radio.

Spinning the dial slowly tunes the radio in .05k increments. Other tuning increments can be selected via the Arduino menu (accessed by pushing in on the tuning knob and scrolling through options), if you'd prefer to tune the VFO in different increments. If you spin the tuning knob quickly, however, the frequency will change by larger increments, making movement across a band much more efficient. If you press IN on the tuning dial twice (double-tap), it will enter "fast tune" mode and you can scroll through the band(s) very quickly.

I spun the dial across 40 meters and listened to several conversations. The signals heard were clean and the audio was remarkably crisp and clear. I quickly landed a contact in Alabama with a 5/9 signal. He reported that my audio sounded impressive… especially in a kit QRP rig! I hit a station in Tennessee, reporting 5/7 signal, who also remarked how great my audio sounded. This little radio exceeded my expectations by far! I noticed that if I kept the microphone close to my upper lip, angled, and spoke in a deliberative tone, my power output was higher, so that's what I started doing (a poor man's speech processor). I kept the radio on my bench for a week, regularly using it a few minutes each evening. On 40M that week, I easily landed contacts in Texas, Missouri, New Jersey, and Kansas. I tried 80m one evening and landed two local (Illinois) QSOs, just for fun. One afternoon, I spun around 20M and hit a station in Mississippi around lunchtime. If propagation is good, I can work other stations like gangbusters, pulling in 5/7 and 5/9 signal reports. But if the conditions aren't good, then I'm wasting my time trying… during those periods,

the bands belong to the kilowatt stations. Such is the life of a QRPer. Trying to work a rare station in a pileup isn't effective with QRP; the DX station always answers the strong stations who are hitting them at S9 (or 20 over 9). A 10w radio with no linear amplifier, radiating a Carolina Windom antenna just 15 feet off the ground just isn't going to compete with a 4 element beam on a 60 foot tower being driven with a kilowatt of power! QRPers need to use different tactics. If I am spinning the dial and hear someone calling CQ, I can pounce on them quickly and typically make a contact before the kilowatt stations find him and overpower me. Nets are another way to make QRP contacts, since there is etiquette involved, I can check into a net and collect QSOs from different regions or states without competing against the kilowatt stations. Many nets use Netlogger software, so you can check in online, and when Net Control calls you for check-in, there is no competition at all (a great scenario for a QRP station).

After my week of breadboard testing and making contacts all over the country, I concluded that this was a great little radio that deserved a permanent spot in my ham shack. I decided to put it in a cabinet of some kind. I pondered a few different options and reviewed what others had done online (travel bag, ammo can, cookie tin, etc), but then I remembered a test equipment case I picked up at the last hamfest we had in Collinsville. It was a portable industrial thermometer device I bought for $3 that had a case about the right size. I wasn't interested in the thermometer, so I gutted it and installed my µBitx transceiver in the case. I found some old Bakelite military surplus knobs in my junk box that looked like they'd do the job, and used a sheet of plastic (Kydex) for a faceplate and rear panel. I used my Dremel tool to cut out the rectangle for the display and used a drill for holes to mount the other controls.

The Kydex sheet plastic is generally used for thermo-molding irregular shapes. Heat it to 350 degrees for a few minutes, form it into shape, then let it cool; it will retain the irregular shape. Kydex is used for a variety of tool holsters, knife sheaths, and the like. Kydex was easy to "work" for this project, although regular old sheet plastic (or even metal) would have been cheaper. I used what I had on hand. I wanted an internal speaker, so mounted one that I found in my radio junk box, facing rearward. I had to drill quite a few holes to make a speaker grille on the rear panel, but the plastic drilled easily and it didn't take very long. I used a polarized Molex connector for power, and an SO-239 for the antenna jack. I mounted an extra external speaker jack on the rear panel, too… just because I found an extra jack in my junk box and wanted to use it.

The cabinet also had a folding carry handle that would convert to a stand, so I installed that on the chassis as well. Aside from labeling the jacks, controls, and whatnot, the project was complete.

Now when I enter my ham shack, I flip on my µBitx V6 to see which bands are active and how the propagation is at the time. If the bands are hopping, I'll go ahead and see who I can work with my little kit QRP transceiver. If there is a contest going on, "the juice ain't worth the squeeze" and I'll just find something else to do. If propagation isn't very good, I'll just tune µBitx to a net frequency and let it idle while I do something ELSE in my man cave until conditions improve. There is a ton of empty space in this cabinet, and I'm toying with the idea of adding a built-in rechargeable battery pack.

If you're on a budget, are interested in QRP, need a backup radio, would like some building fun, or want a neat new toy, this rig would be a great choice. If you're a computer guy, you can modify the open source firmware to your heart's content. The internet following of the uBitx radio is practically a cult; there is plenty of discussion in the online community regarding modifications and other ideas for this little rig. For around $150, it would betough to beat this little 3-30mhz SSB/CW QRP transceiver. I really like mine!

73!

- WB1CDG

Operating Events and HAMFESTS:

Saint Louis Halloween Hamfest October 31st CANCELED next date October 30th, 2021

ARRL Sweepstakes – CW November 7-9 http://www.arrl.org/sweepstakes

ARRL Sweepstakes – Phone November 21-23

ARRL 160 Meter December 4-6 http://www.arrl.org/160-meter

ARRL 10 Meter December 12-13 http://www.arrl.org/10-meter

CWops Test (CWT) Every Wednesday at 1300-1400Z, 1900-2000Z, and 0300-0400Z 28 to 45 kHz from the band edges

RRI Training Broadcast Schedule Wednesday 2000 CDT (0200Z Thursday) 7060 kHz, and 2130 CDT (0330Z Thursday) 3563 KHz, Thursday 1900 CDT (0001Z Friday) 14060 KHz

Election of Officers

January started the process for election of club offices. If you would like to nominate someone or run for offices yourself, please let the Sergeant at Arms, Dan, KD9ADB know. The current slate of nominees is:

President:	Randy, KC9MZ
Vice President:	Michael, KA9HNT and Jim KD9BLA
Secretary:	Steve, W9ZS
Treasurer:	Bob, WA9TUG
Publicity Activist:	Dan, K9JDW
Sgt at Arms:	Dan, KD9ADB
Activity Manager:	Jim, KD9BLA

Still postponed due to CV-19.

Meeting Date, Time and Location:

Next month's meeting will be on October 29th and it will be an "On the Air" meeting. Check-in starts at 8 pm CDT. Steve, W9ZA, will have the 224.12MHz Net at 7 pm.

New Members: New applications should be submitted to the Sgt. at Arms. Applications will be vetted by the Sgt. at Arms and will be brought forward for a vote at the next monthly meeting after being submitted. We look forward to meeting/greeting any new member because to grow our club, we must find people that love to talk (should not be too hard) and that would love to be on the radio. So putting the two together can make a dedicated enthusiast for HAM Radio. We welcome all new members and prospective members and thank them for their interest in Ham Radio.

For Sale

Kenwood TS-450 and Astron RS-30 power supply

This transceiver is very clean, original box, manuals. I've tested the output on each band and its 100 watts or so. Audio sounds good on station receiver. This rig does not have the auto tune unit.
The Astron power supply has a broken rocker switch which selects volts or amps on the built in meter.
It looks like the Kenwood was bought to replace a malfunctioning Ten-Tec and never used. The owner went into a Home, both for $450.

Astatic D-104 amplified microphone black head and chrome neck ($55, some paint chips on the base).

Alinco DR-112T 2 meter transceiver the unit is complete in the box, looks as new, 45 watts out. $40

(Yaesu FT-767GX)

Yaesu FT-767GX transceiver with manual. $500.00. Built in power supply and antenna tuner, 160 – 6 Meters.

The above listings are all estate sale items.

Call Randy, KC9MZ, 618-235-1444, or email jlr.bastian@norcom2000.com if interested.

There are more For Sale items on our web site: http://scarc.net/

FCC Proposes new fees for Amateur Radio!

The FCC is proposing a $50 fee for new or modified Amateur Radio licenses, license renewals and vanity call signs.

This is all from the "Ray Baum's Act", part of Public Law 115-141.

Filing deadlines for comments have not yet been established.

This is condensed from https://forums.qrz.com/index.php?threads/fcc-proposes-new-filing-fee-structure-new-fees-for-ham-radio.722029/

http://www.arrl.org/news/fcc-proposes-to-reinstate-amateur-radio-service-fees

According to the ARRL the FCC is already accepting comments.

http://www.arrl.org/news/fcc-application-fee-proposal-proceeding-is-open-for-comments

I suggest we take pen in hand and write our Congressman! (Or fingers on keyboard. For most of us it's Mike Bost https://bost.house.gov/contact)

Thanks to Tom W9KC, for tipping us off via the SCARC email reflector!

So far, there have been 2,135 comments on this proposal. Have you sent yours in? As of October 28th the FCC is still taking comments. You can view the comments here: https://www.fcc.gov/ecfs/search/filings?proceedings_name=20-270&sort=date_disseminated,DESC&submissiontype_description=COMMENT

Here are some shorts:

Our "On the Air Meeting" held on September 24th had approximately 35 check-ins.

Don't forget the "Good Morning Net" M-F, 7-8am by Larry, K9LWW and the 224.12 MHz Net on Thursdays, 7 pm by Steve, W9ZS. Thank you guys for running these nets!

Thank you to Dave WB1CDG, for the great review of the uBITX HF Transceiver! I really liked how you repurposed the thermometer case!

So what else is going on amongst us? Any projects you've taken on while we are locked down? Share them with the Club! Please send anything you might have for SCAN to kc9mz@arrl.net.

I hope you can check in to the meeting this coming Thursday at 2000 CDT.

73 es gud dx,

Randy, KC9MZ

Please patronize our supporters!