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The FLEX-6600M as an SO2R Contesting Radio

I first saw the FLEX-6600M at Hamvention® 2017, and it immediately got my attention. I had been looking for a way to upgrade and simplify my SO2R contesting station that consisted of aging Icom and Yaesu radios and a rat's nest of wiring and interfaces. I had tinkered with some software-defined radio (SDR) dongles and realized that SDRs were definitely here to stay. I grabbed the brochures on the 6600M and started following the comments on the FlexRadio Community website. I became a little concerned when I read there that radios ordered around Hamvention 2017 had not been delivered by the end of that year, but FlexRadio worked through these early delivery issues, and 6600Ms started showing up in customers' shacks in early 2018. Paul Staupe, WØAD, took delivery of one in early February and invited me over to try it out. I was hooked and knew that this would be my next radio. In early March 2018, I called FlexRadio and asked about delivery times. They said backlogs were 2 months and promised delivery in early May "before Dayton." Sure enough. My new 6600M arrived on May 4.

User Interface Decisions

I completely dismantled my existing station and rebuilt it around the 6600M. Besides the two radios that it replaced (Icom IC-7600 and Yaesu FT-2000D), I found that several things no longer were needed, including my trusty Top Ten DX Doubler and myriad interfaces and cables. One of the first decisions you have to make with the 6600M is what user interface approach you want to take for contesting. One is to operate the radio entirely from the computer display using the *SmartSDR* application. All buttons are a mouse click and "tuning the VFO" is accomplished with the mouse wheel. I actually tried this in a contest and couldn't get used to it. One problem I had was continually having to change focus between *SmartSDR* application and *N1MM Logger+*. The other way to operate the radio is by using its front panel, which has a very simple and intuitive layout. *Each* radio (or "slice" on the panel display), offers controls for **VFO**, **AF GAIN**, **AGCT**, **WIDTH**, and **RX** and **TX**. Some common controls include **KEYER**, **MIC GAIN**, **POWER**, **ANTENNA TUNER**, **MOX**, and **TUNE**, plus six programmable function keys. That's it. Everything else is adjustable via menus.
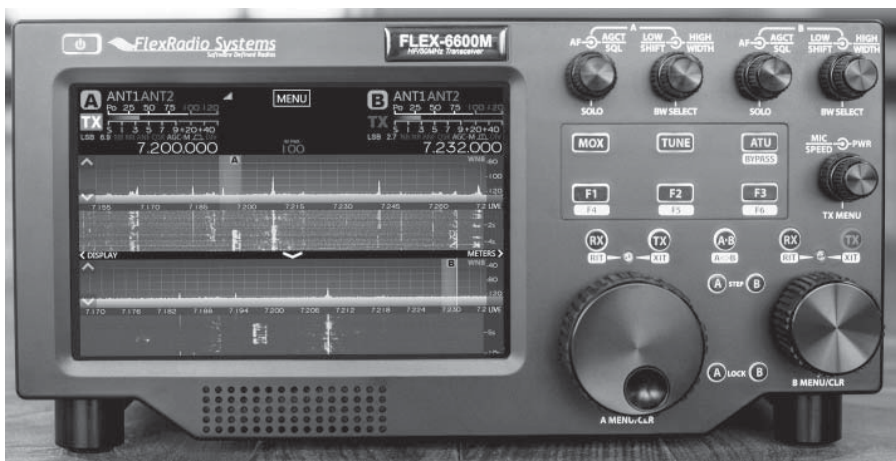

Figure 1 — FLEX-6600M HF/50 MHZ software-defined transceiver.

An HDMI port on the 6600M allows you to display the radio's front panel on an external monitor, and this is what I do. In practice, the VFO knob is the main thing I touch on the radio during a contest. All other control of the radio is via *N1MM+*, including band and mode changes. My eyes are usually on the N1MM screen and the front panel of the radio. I am trying to train them to look at the monitor plugged into the 6600M rather than the smaller screen on the radio, though.

At this point, it is not possible to have both the *SmartSDR* console *and* the front panel user interface connected to the 6600M at the same time. According to the folks at FlexRadio, this is something they plan to address in a future release of the 6600M software.

Setting up for SO2R

When I first tried SO2R, the other band was almost completely blanked out. I checked the user manual and discovered that I had not enabled full-duplex (FDX) mode. Once I did, there was no significant interference on the alternate band except around the first harmonic. It was truly like having two physically separate radios. Nonetheless, I chose to retain my two Dunestar switchable band-pass filters on each slice. One reason was that I use a triplexer with my tri-band Yagi and felt I needed the extra protection. The other reason was that I occasionally run my

Elecraft 500 W amplifier, and the manual recommends extra protection when running high power.

The 6600M has two USB ports on the rear apron that you can configure to output BCD codes for the two bands you are operating. Using an excellent write-up on the NN4XX website, I was able to make two USB cables that connected directly between my 6600M and WXØB band decoders for automatic switching of both my Dunestar band-pass filters as well as my WXØB SixPak for antenna switching.

I wondered about how I would manage audio. I was used to my trusty Top Ten DX Doubler, which allowed me to listen to Radio 1, Radio 2, or both (i.e., one radio in each ear). You can do the equivalent on the 6600M without an external box. Normally, you hear both radios in both ears depending on how you have the mixing set. If you press (not turn) the audio knob for slice A, it mutes slice B, and you can hear slice A in both ears. If you press it again, it brings back slice B. It works the same way, of course, for slice B. Using the ~ button in *N1MM+* makes this even easier. I often start a contest running on one band and muting the audio on the other band. Once the rate starts to slow down on slice A even a little bit, I hit the ~ button to bring in slice B and start listening there while still running on slice A. If I need to hear a weak one on slice B, I hit ~ again, and it mutes

slice A. When I am done with the slice B contact, I hit ~ again, and I am back to hearing both bands in both ears. I realize that this is an *N1MM+* feature and not a 6600M feature, but it really works well with the FLEX-6600M.

Using the Radio During a Contest

The 6600M has the best-sounding audio of any radio I have every owned. Most of the contesting I do is CW. With the 6600M, I run the filters at 250 HZ on both bands for the entire contest. If I need to pull a weak one out of the noise, I pop in the audio peak filter (APF) using one of the radio's six user-programmable function keys. Selectivity and adjacent-signal rejection are excellent. When I rushed the radio on the air for WPX CW after having it only a week, I would sometimes hear artifacts of other signals in the passband. I asked about that on the FlexRadio Community and realized that I did not have things set quite right. In general, I was told "less is more." I set the RF gain down to almost zero, turned off the noise blanker and noise reduction, reduced the AGC down to about 40%, and turned off the APF. Since doing this, I have not noticed any problems. Overall, it is a fun radio to use and listen to during a contest.

I've also operated a couple of SSB and RTTY contests with the 6600M so far, and all went well. Some configuration of the *DAX* application is necessary to set up the audio channels between the radio and the computer. Tutorials abound that tell how to do this. When operating SO2R on RTTY, I always set the SO2R lockout flag in *N1MM* to "first one wins" to make sure I am not transmitting on two bands at once. In a recent RTTY contest, I accidently had it set to "Multi-Op." When I tried to transmit on the second radio before the first one was done, the 6600M told me I could not do that. It was nice to have that further safeguard.

The only thing I've had to be careful of when operating SO2R with this radio is to make sure I do not inadvertently turn the wrong VFO knob when CQing on one band and listening on the other. Of course, you could do this with a traditional two-radio SO2R setup, but it is a little easier to do on the 6600M because the two VFO knobs are right next to each other on the same radio. Other than that, I cannot find any fault with the 6600M as an SO2R contesting radio. It is necessary to read the manual and stay engaged with the FlexRadio Community as you learn to use the radio.

Final Thoughts

I have found the support from FlexRadio to be first rate. I had a problem with the

Figure 2 — KØAD's former SO2R contesting station.

Figure 3 — KØAD's simplified SO2R contesting station with the FLEX-6600M.

amplifier keying relay on the first 6600M I received. After no solution was found in the FlexRadio Community, I submitted a trouble ticket to FlexRadio Technical Support. They quickly responded and helped me determine that it was, indeed, a hardware problem. I did not want to return my new radio, so they agreed to send me a new

one (within a week!), and I returned my old one free of charge in the replacement box.

Initially, spending on the order of $5,000 for a contest radio seemed like a lot for a retired guy in his 70s, but after I realized I would recover more than half of that investment by selling the gear the 6600M had replaced, I decided to go for it. I'm glad I did.