David A. Minster, NA2AA, ARRL Chief Executive Officer, na2aa@arrl.org

Second Century

Keeping it Clean

The ARRL Board of Directors overwhelmingly approved the creation of the Clean Signal Initiative in January 2022. The program is intended to bring ARRL technical experts together with manufacturers to push technology farther in pursuit of clean signals on the band. What exactly does that mean? It is evolving as we learn more by working together. Even more importantly for each of us, it means that we all must play an active role in the signals we emit every day.

When I first began to transition — away from what would generously be referred to today as "older gear" — to the newer breed of transceiver with RS-232 ports for CAT control, I was not very happy to learn that the radio I had selected had a problem. It was a known problem — namely, key clicks. When you put a signal with key clicks through an amplifier and a stack of Yagis, you can quickly discover there are people who are not very happy with you! Because it was a known problem, there were kits readily available to correct the problem. I dispatched the rig to a well-known expert to not only install the kit, but to put it through paces with some test gear to ensure that I would not be a bad actor in the next CW contest.

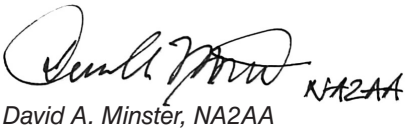
Have you spent any time on FT8? One of the things I have noticed about both FT8 and FT4 is that very well-known DXers and contesters are now operating with these modes. Activity has skyrocketed, and on most bands if you're looking for contacts, that's where they're hanging out. With the proliferation of FT8 has come a cadre of entry-level operators who don't understand how FT8 works. They're not understanding of the fact that these are audio signals. These signals must carefully be controlled to not go through audio processing, they must not be overdriven, and an understanding of how the computer and the radio are interfaced is fundamental to having a clean signal. It is commonplace to see signals with artifacts across the band. Overdriven audio can lead to the entire band being filled with hash. It is also commonplace to hear computer sound effects being transmitted along with an FT8 signal. All of this is unacceptable and requires a great deal of attention to detail. After all, if the band is open, your signal will be heard around the world — and this is especially true on FT8.

We had a learning experience recently in the ARRL Radio Lab, with one of the many new transceivers that has a built-in USB port that carries CAT control and audio between the radio and a computer. These radios are making connectivity incredibly easy, and reducing the burden of external boxes and cables from the operating position. What we discovered is that the signal we were transmitting was definitely not clean. This was the radio, as configured, out of the box. Doing some research before going any further, we discovered that we were not the only ones having this difficulty. It was going to take some careful "tweaking" of the various settings to get to a satisfactory signal. We've gone through the process, and the signal we transmit is now something we can be happy with. This experience caused us to pause and wonder whether this is something, going forward, we need to integrate into *QST* Product Review Equipment Testing. We've decided that it is, and we're now discussing the parameters for testing the single cable interfaces on new radios.

While we were at it, we also stopped to look at what else we may be missing. The practice of accessing radios remotely is growing significantly. Manufacturers have used different mechanisms to support this, from a transceiver "faceplate," to proprietary software, to custom boxes for carrying audio and CW between locations. An emerging design trend is a single ethernet connector, built either into the radio or through a companion interface box. How much data do these network connections carry? How well behaved are these connections on your local area network? We intend to experiment in these areas, and possibly add another area of equipment testing and review for these new transceivers, to understand how they behave on a network and over an internet connection.

Our Clean Signal Initiative is about collaboration and working together to get to a set of standards that we all can agree meet or exceed our expectations for quality on-the-air signals. But this is not something we need to wait on. Let's commit to doing our part individually. The responsibility of working to ensure that your signal (CW, digital, or sideband) is of a high quality ultimately falls on your shoulders. Don't let this hold you back! Work with your club members or reach out to the ARRL Technical Information Service for assistance. It's just another membership benefit you enjoy from ARRL.

Be radio active! Get on the air and make contacts, whatever the mode. Be a connector. Help people in the area, in your club, or on the air as they work toward excellent signal quality. And thanks for all the VOTA contacts in 2023! See you on the air throughout 2024.



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