

A few Digital Tips

Over a number of years, I have developed some tricks in receiving and printing Digital signals. Often I have come across other stations that are experiencing problems decoding signals, even when they are strong. The reason for this can often be found at either or both ends of the QSO.

First let me tackle the transmit end of the QSO. Most if not all “Modern” digital modes only require low power. There are nostalgia modes like RTTY that still need power that would make the rocket engines used on a Saturn 5 rocket look like a cigarette lighter, but we have come a long way since then with better coding methods, better computer software and better transceivers.

What happens when I turn the power up with a mode like Olivia?

The optimum power for the Olivia family is 30 Watts; yes, I said 30 Watts. If you need more than this, then the receiving end may need to look at the way the signal is being received. More of that to come. When the power of modes like Olivia is pushed beyond 30 Watts, the encoded tones can be distorted making decode of the signal a lot harder, especially when conditions are marginal.

If you are using a laptop computer soundcard, be aware that they are notoriously poor. Oh, playing music through the sound card may sound fine, working on Skype my work perfectly, but when working with encoded tones, like the ones on a telephone, or the DTMF pad on a microphone, they have to be as pure as you can make them or the tone will be misread.

Most new radios come with a good quality soundcard built in, which simplifies digital modes a great deal. If you don't have one of these radios, consider adding a quality sound card to your computer. If you have a desktop model, then a quality add on card will work just fine. If you have a laptop computer, then consider a good quality USB soundcard. An EBay \$10.00 USB soundcard will not do you any favours; it will be as bad, or worse than the one in the laptop itself. The same with the desktop add on card, don't cheap out; cheap soundcards run dear.

An alternative to these soundcards is a device like the SingnaLink USB, RigBlaster, or the Timewave Navigator. Each has its pros and cons and the price reflects the quality of the product. I leave the choice to your wallet. How these cards are configured will have a great effect on your digital signal, both received and transmitted. Follow closely what the manufacture has to say, and then tweak the settings to fit your environment.

Most Digital programs come with a utility to “Calibrate” the soundcard. Don't be misled by thinking that this is just for SSTV, it is not, and when done properly¹ can make a huge difference

¹ To get this right allow at least 10 hours for receive and the same for transmit, it makes a significant difference. Do the calibration overnight, or when you are out for the day.

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to your weak signal reception, and received transmitted signal. Also, turn off any signal processing including compression!

Reception techniques

There are many ways to tweak out that signal and print it. I have found the following to make a significant difference:

- Turn off any receiver noise reduction, noise blanking
- Use a medium speed AGC
- Use your band pass filter to cut out all unwanted stations
 - Adjust the filter to match the bandwidth of the mode being used, this way the S/N ratio is greatly improved, and the signal strength you report will be of the actual received signal and not the noise on the band.
- The use of a preamp can make reception worse, as it amplifies the noise and not necessarily to tones you are trying to decode
- Within your digital program, change the synchronization bandwidth to match signal strength and the S/N ratio. With a poor S/N ratio, increase the sync depth. This will make decode longer, but at least you will have something to print.
- Backing off the RF gain can improve the S/N ratio and enhance the decode
- Look for signals within the band plan² for the mode you are using.
 - All the bands are segregated by mode, power, and or license. Make sure you are in the correct place to work the mode of your choice.

Just a side bar note here. If you want to earn the prestigious title of “Lid” then just use the wrong mode in the wrong section of the band. It may look like a certain part of the band is clear and plenty of room to play; however, should you be here. Don’t be surprised if you get QRMed if you have an FT-8 signal in the Olivia section of a band. Ft-8 will not bother an Olivia signal, but an Olivia signal will make a real mess of the FT-8 signal. **That is why we have band plans use them.**

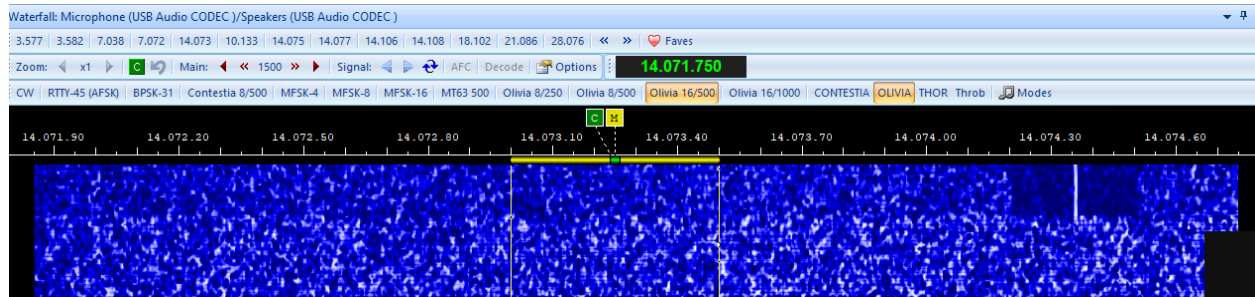
It doesn’t matter how good the signal being received is if you have a poor receive setup and technique. Similarly, a strong signal is no good if it can’t be decoded due to distortion of the tones because you are running too much power.

In the digital world, might is not right, and the meek shall inherit the digital modes.

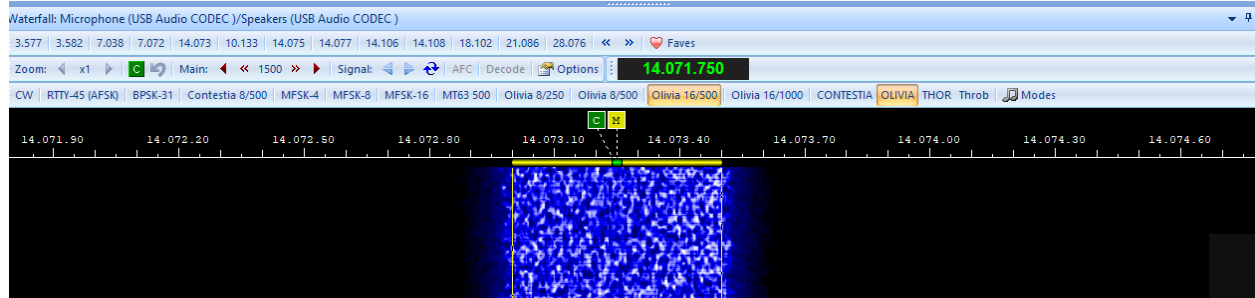
² Remember all digital modes are USB regardless of band. It is no good looking for an Olivia signal in the SSTV or CW section of the band.

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Ready to receive an Olivia 16/500 signal with the band pass wide open (3.6k)



Ready to receive an Olivia 16/500 signal with the band pass at just 500 Hertz, the size of an Olivia 16/500 signal. This will cut down the noise and enhance reception. As you can see, most



of the noise has gone.

I hope this will help with your Digital experience, and perhaps quash a few outdated concepts.

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