

## NCJ Reviews: W2IHY 8 Band Audio Equalizer and Noise Gate and EQplus

I went to the 2011 Dayton Hamvention® not intending to purchase anything for the shack. I spent my time looking at new antenna options, ring rotators, the new Elecraft and TEN-TEC radios and attending seminars. My friend Dan, W5DNT, suggested I check out the W2IHY audio enhancement products, as he was impressed with the performance demos at W2IHY's Hamvention booth. Following Hamvention, Dan purchased a W2IHY system, and soon we were on the air between his ranch location and my station testing it. The audio I was hearing was remarkable, and I felt that the W2IHY system might improve *my* SSB contesting.

I called W2IHY in late June, and Julius immediately amazed me with his knowledge, his communication skills and his ability to tell about his products without pushing me to buy. I ordered the 8 Band Audio Equalizer and Noise Gate (\$269.99) and the EQplus (\$359.99). You can match multiple microphones to multiple rigs using W2IHY's customized individual cables (\$30 apiece). Julius wired my units to accept two microphone inputs and two outputs for my two-rig station. (In the case of the EQplus, I'd prefer to have the connectors on the front of the box, not on the back, for convenience in a contest setup, where various operators may be using different microphones, for example.)

### Initial Impressions

The system comes professionally packaged in several boxes to protect it from the turbulence of shipping. W2IHY's gear is a thing of beauty, with handsome black metallic cases and clearly contrasting white legends and lettering. The system's footprint was larger than I'd expected, so I had to make some space on my desk for it. Julius told me that once the units were set up, there would be little to adjust, and he was right. While the visual appearance of the system is striking and pleasant, its on-the-air performance exceeded my wildest expectations.

### Ease of Installation

Installation is simple and straightforward. It involves connecting cables from one box to another box to the radios and the microphones. There are a number of cables to connect, and it's possible to get confused if you don't pay close attention. My friend

Dan worked with me via telephone, and it took me all of five minutes to get everything set up.

I had one hiccup when I first hooked things up. I could hear hum in my signal's audio that was not there without the system in line. It turned out that setting the W2IHY system boxes on top of my amplifier caused the problem; relocating them about 15 inches away made the hum disappear.

### Technical Features

The 8 Band Audio equalizer and Noise Gate serves several purposes, but it's primarily an equalizer. According to the W2IHY Web site ([www.w2ihy.com](http://www.w2ihy.com)), it can provide pileup-penetrating audio with substantial high frequency content, or fine-tune your microphone for more natural reproduction. "You can make good microphones sound great, and poor microphones sound good," W2IHY claims. *All true!*

For the uninitiated, think of an equalizer — a piece of broadcast radio studio gear commonplace for years now — as a complex set of tone controls that can "boost" or "cut" audio frequency components within each of its available ranges or bands — eight in this case. It uses filters to do this.

The W2IHY unit is a "graphic equalizer." This simply means that you can visually set a response curve by observing the relative positions of the adjustment sliders for each range. A classic "smiley face" curve will, for example, emphasize the low and high-frequency components of your voice, while keeping the mid-range relatively "flat" or even subduing it a bit.

This unit allows you to tweak your transmit audio's frequency response within its eight ranges, from 50 Hz to 3200 Hz, up or down by as much as 16 dB for each octave. The ability to emphasize or boost your audio within selected segments lets you shape your signal's "sound," improving its intelligibility, clarity or richness — or all three at the same time.

The noise gate in the box is designed to reduce unintended VOX triggering, keeping background noise within your shack from going out over the air. This can be especially useful in multi-multi stations or in places where your station is less than ideally isolated from household noises, such as that TV your kids watch practically 24/7 — when they're not texting or online, that is.



Figure 1 — W2IHY 8 Band Audio Equalizer and Noise Gate



Figure 2 — The W2IHY EQplus with the equalizer unit stacked on top

I did not really have an opportunity to take advantage of the noise gate, however, because background noise simply is not an issue in my station. I have a dedicated radio room with no TV outlet or AM/FM radio (my wife did this for me, and I am one lucky guy).

The EQ plus adds another layer of features and functionality to the 8 band equalizer/noise gate, and that made it a must for me. While the equalizer allows you to boost or cut along the graphic curve formed by the slider controls, the EQplus employs an adjustable compressor that can boost your signal's *average* power. It does this by reducing the dynamic range of your audio — the difference between a soft sound and a loud sound — essentially squeezing a larger signal into a smaller envelope. The EQplus has some basic equalization capabilities of its own, plus an "effects processor." These let you boost the bass or treble components of your voice, while imparting greater "presence" and richer, studio-quality audio. A "downward expander" in the EQplus is supposed to reduce background noise and may be adapted for each environment. The box contains an audio limiter too.

The two boxes connect together for a seamless, complementary audio processing system, but each may be used solo too. All you need to do is flip the separate power switches for each and season the audio to your taste.

### On-the-Air Performance

It's easy to spot operators using W2IHY gear. Their clear, crisp, strong and natural audio is very distinctive. My home setup already was quite good before I purchased the W2IHY system. I use an ICOM IC-7800 and a Heil PR 781 microphone. My rig provides several ways to tailor your transmit audio, and it was hard for me to believe that you could improve significantly upon the ICOM-Heil combination, but you can.

The major advantage I have found is that my W2IHY-enhanced audio breaks the DX pileups more quickly and easily than ever before. Friends who hear me on the air with the system in line all comment that it makes me sound, well, *just like me*.

I really bought the system to see how it would perform in SSB contest service, such as in the North American QSO Party or CQ World Wide DX phone. I used the system in both events.

My most amazing moment came during the 2011 CQ WW phone on 10 meters. I was doing a lot of searching and pouncing to get multipliers and points. There seemed to be an endless number of JA stations on 10 that were running. I worked everyone I could find using the spotting cluster on *WriteLog*, and I *rarely had to wait!* I believe I worked 90 percent of them on my first call. *Wow!*

A second highlight came when I worked Neil, JT1RF, on 15. Mongolia is a long way from WØ, but I worked him on the second or third call, and I credit the W2IHY audio system for making that possible.

The VP5H team also ran W2IHY gear through its paces during the ARRL International DX Contest (see sidebar, "Using W2IHY Audio Gear at VP5H for the ARRL DX Phone").

### Delightful Reports

Many hams tend to employ "tighter" audio that emphasizes a high-end response (sometimes applying tons of compression) for DX contesting and to elbow through the crowd. A distinguishing point of the W2IHY system over this and other approaches, such as using different Heil elements or tailoring your audio using your radio's own controls and adjustments, is that it boosts average power while not sacrificing intelligibility or making you sound like someone with nasal congestion. With the W2IHY gear in line, you don't *have* to give up the low end for the mid-range. You can "roll off" (de-emphasize) low or high-frequency components as desired, but still

include them without attenuation.

The W2IHY system can make any Heil microphone sound *substantially* better. I own a few Heil microphones and like them, and they are all I use. Even so my W2IHY system has improved their performance by 10<sup>3</sup>.

For casual operating, most folks like a "flatter" response curve (ie, no special emphasis on any particular frequency range — essentially equal from the low end to the high end), although some prefer a *flattering* response with more bass (well, male ops anyway).

I use the same "sound" for contesting and DXing and in casual conversation. I leave the microphone settings on the IC-7800 on "wide" and use the W2IHY boxes to tailor the audio. Once set up, W2IHY boxes may be placed out of the way. It's easy to switch different microphones into one or more rigs, if necessary.

Of course, it is difficult to tease out my contest successes on the basis of my new W2IHY system or other factors, including favorable propagation. But, there's no doubt in my mind that this system has enhanced my SSB activity and makes it much easier to score contacts and multipliers sooner and

in more rapid succession.

Stations hear me more easily, and my audio has more "punch." I don't have to wait as long to work the new ones, and I delight in the compliments from DX stations regarding my audio quality. This system definitely has earned a place in my station's SSB DXing and contesting lineup.

### Do You Really Need It?

Some might argue that their new rigs, whether a FlexRadio or the Elecraft K3 or the Yaesu FTDX5000D, already have audio enhancement capabilities, possibly superior to those in the IC-7800, making it less likely that the W2IHY system will help them. I tend to disagree. Julius has demonstrated his system using his Flex, his TEN-TEC Orion and other rigs, and in every instance the system has enhanced the audio. You really need to try this gear for yourself, to appreciate what it can do for your audio.

*One final comment:* I found Julius incredibly easy to work with, and I was astonished at the lengths he went, to make sure my system worked to my satisfaction. Every ham I have talked with has similar experiences. In my estimation, Julius sets the industry standard for customer service.

### Using W2IHY Audio Gear at VP5H for the ARRL DX Phone

I took a W2IHY system from Julius to the VP5H ARRL International DX Contest operation in Turks & Caicos. The system was identical to the one I own, and I wanted to test it under contest conditions, where voice clarity is critical to maintaining a good rate. I took along my Heil 6 headset/microphone, and my contesting partners packed their HM-10 headsets. We mated the system with an ICOM IC-7600 and an Acom 2000a amplifier. My contest partners were Glenn, WØGJ, and Mark, WAØMHJ. Neither had used a W2IHY system before.

The system performed flawlessly over 48 continuous hours, and we received many excellent audio reports. The occasional operator would suggest we were flat-topping, but my friends who listened with FlexRadios suggested this was not the case. We received 10 positive comments for every two or three negative ones.

The VOX on the radio required some adjustment to work with our voices and the keying of the rig, but that had nothing to do with the W2IHY system. It was more of a function of the audio AF GAIN setting, as each of us had differing loudness preferences. I simply turned down the audio, and the VOX played perfectly.

I feel the W2IHY system provided us with three major advantages:

1. We had very clear and loud-sounding audio. Very few stations asked for repeats.
2. The amplifier stayed at peak power more often with the system in line than when it was off line. As Glenn noted, "The amp does not cycle from peak to less than peak when the system is on. It is like SSB with full power all the time." Mark also felt our audio sounded better and stronger with the system on.
3. It made mating microphones easy, and we didn't have to make any audio adjustments at the rig. We left the settings in place, and everyone sounded good, no matter which mic element we were using.

What could be improved with the system for contesting? First, we thought it would be nice to combine the EQplus and the 8 Band Equalizer into a single box. This would save on packing space, always at a premium for DXpeditions and overseas contesting. Second, reducing the size of the units a bit would help with packing as well as fitting them on the operating desk. Third, adding voice-keyer capability for storing contest messages would mean one less device to pack and interface with the W2IHY system and the rig. Finally, could PC/software control be added to the system, to further tailor audio?

All told, the system was easy to install, easy to use and well worth the packing for the trip. I'd be interested in knowing if other contesters or DXpeditions have used or would consider using W2IHY audio gear.

NCJ