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USER REPORT

WOR Is Loud, Proud With Omnia 5-EX

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The author says no one is going to take his new processor — *no one*.

NEW YORK WOR(AM), on the air since 1922, holds many distinctions among pioneering stations. We are the first AM HD Radio station in New York City. And as the self-proclaimed loudest analog AM signal on the dial in the state, we take our audio processing seriously.

With such a reputation to uphold, Frank Foti of **Omnia Audio** brought over each of the company's AM processors for us to sample, starting with the AM-3.

We put the AM-3 and the AM-4.5 on the air at WOR, and while the processors were clean, we couldn't seem to get the desired punch and density. The AM-4.5 was better than the AM-3, but it had a strange curve to its attack times that would cause two of our talent to distort when they took short pauses.

After hearing what was said about the AM-3 and AM-4.5, Frank called and reported that his new AM processor, the 5-EX, would be right for us, particularly because it had two outputs, one for the analog AM, and one for the HD signal that WOR has been running since October of 2002.

I arranged for Frank and Telos Sales Manager Kirk Harnack to meet with me at the WOR transmitter facility early one fine afternoon.

Go digital, or stay analog

The Omnia 5-EX allows the user to adjust almost anything and has many neat features, such as the front-panel display that shows every parameter available in the unit. Additionally, it has an Ethernet jack on the back, so you can telnet into the unit — even from the Internet, if your router is set up properly. It outputs an AES/EBU signal for the analog and digital sides of your HD Radio exciter, while allowing you to maintain an analog audio output for the analog AM just in case. The analog output can be set to output HD audio or AM audio, and its level is set independently from the AES output.

Further examination of the back of the unit shows a DB-25 connector that can be used for control of the 5-EX through Omnia Remote software, or for troubleshooting. A DB-9 connector allows you to issue commands to the 5-EX from relays on your site controller. Grounding one of eight input pins enables eight scripts to run in changing configuration of your Omnia.

Because we feed the HD Radio exciter AES signals for analog and digital inputs, we set the 5-EX to its aggressive talk setting, and set the AM and HD AES outputs to the setting of the processors already on the air. After a quick transfer of XLR connectors, the Omnia was in action.

Our first order of business was to check the analog modulation with an oscilloscope. With the HD carriers off, we made sure the analog modulation was about -97 percent, with the positive peaks at +122 percent. It became evident while tweaking the analog output that Frank Foti listened to what my Chief Engineer Kerry Richards and I had to say about his previous Omnia AM processors. On the AM-3 and AM-4.5, you needed to adjust both the left *and* the right outputs to get the proper modulation levels for the analog

signal. With the 5-EX, the left and right output gain controls are ganged together, allowing the balance to be adjusted as desired. What a pleasant surprise.

In my enthusiasm for the HD Radio aspects of this processor, I almost forgot to mention that the analog AM output of the Omnia 5-EX is stereo, and can easily feed a C-Quam AM Stereo exciter.

Once the analog output was set, we set the upper rolloff frequency to 6 kHz to meet the IBOC specifications. Frank then made a few magic tweaks on the processor, and it was time to turn the HD carriers back on.

On the analog processing side of the 5-EX, Frank first took the signal through a wide-band AGC and then a two-band AGC for further processing. At this point, the signal splits. One side of the splitter feeds the rest of the 5-EX's AM processing chain, which includes five-band processing and clippers. The other split goes into a special limiting section set up specifically for the HD codecs.

You can do what you wish to the AM signal, as it has its own processing section that manages to keep the HD audio as clean as possible — important when feeding a data-reduced codec. Violent clipping or aliasing through multi-band filters will produce artifacts that are tolerable through analog transmission paths.

Through an HD Radio codec, however, these artifacts multiply quickly and take on a life of their own. The 5-EX uses the two-band AGC as its spectral control and uses minimal limiting. It enabled us to make the HD-to-analog blend almost the same volume level, yet keep the HD audio clean.

The range of control you have over the audio with unit is phenomenal. There are too many controls to list in this article, but suffice it to say, Foti and his team have thought of just about everything.

Road trip

The real test was in the field, so we piled in the HD Radio-equipped Ford Explorer and went for a ride directly up Route 17 in New Jersey, WOR's major null.

Additionally, we parked about 2,000 feet from our direct competition's tower. With 50,000 watts 2,000 feet from the car, the RF ACG in the radio should have been begging for mercy. We set the radio to analog-only and punched up the competition. Then we hit the WOR button — and almost blew the doors off the car.

Sitting right in front of the competition, we were louder and the signal had oomph. Switching to the HD audio, we found it cleaner than with our processor.

My only complaint was the analog was too boomy. Frank loves his bass, and the Omnia 5-EX can deliver. We decided to leave well enough alone for the evening.

Driving in the next morning, the analog signal was loud and the HD Radio sounded clean. But I thought the analog audio was still too boomy. So at the office, I logged into the unit from my desk over IP, used the remote software to make a few adjustments, and had WOR sounding just the way it should — loud, but not fatiguing.

I did note a unique phenomenon on the HD Radio side. I live about 50 miles north-northwest of the transmitter in the null, and I have never been able to get the HD signal in the morning until I hit the New York/New Jersey line on Route 17. That first morning, imagine my surprise when sitting at a traffic light in Monroe, N.Y., the radio pops into HD Radio mode in a place where the HD signal shouldn't exist.

I thought it must be a fluke and dialed into the remote control to check antenna parameters. They were fine. It appears using the 5-EX may have slightly increased our HD coverage. The unit's analog audio sounds smoother than our previous processing, and the high-frequency rolloff does not seem to have a "splash" to it. I wonder if the splashing I was hearing interfered with the HD carriers. The extended HD coverage continued, so it was not a fluke.

Do we like the Omnia 5-EX on WOR? Definitely. This processor is configurable, and should enable the user to get the desired sound on any format. Foti hit a home run with this processor. I put it into the rack with a spot welder, and if he thinks he's going to get this one back, he's sorely mistaken.

For more information, including pricing, contact Omnia Audio in Cleveland at (216) 241-3343 or visit www.omniaaudio.com.

The World Of Processing

"Processing" is a term that can mean many things in radio.

For this issue of *Buyer's Guide*, Radio World presents information about on-air radio broadcast processors, as well as specialty devices such as profanity delays (a timely topic) and audio devices used in production studios.

As always, *User Reports* are written by radio professionals whom we ask to describe why they purchased a particular product; the writers are not paid for these articles. The stories are distinct from *Product Evaluation* articles, which appear elsewhere in Radio World and are written by paid writers to whom a product is shipped for review. *Tech Updates* are brief reports about new products.

All are intended to help you become a more informed buyer.