

# Natural Radio

*News, Comments and Letters About Natural Radio*

**May 2002**

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Spring has come to Chicago again, with record temperatures in the upper 80's last week. Even though it's back into the 40's and raining, maybe it's Spring-cleaning time for the Natural Radio column. I received no reports for the coordinated listening, so maybe this is an activity that has waning interest -- or maybe the web is a better way to pass this kind of information. The VLF\_Group on the web, managed by Shown Korgan is an excellent source of information, which I monitor several times a day. If conditions for listening are good it can be posted on the web and passed on to others while they are still able to do something about it.

My thought is to spend less time reporting events that are better reported over the web, and spend more time writing equipment reviews, reflections and more in-depth technical articles. However, I do have a concern. Those of us with web access just assume that everyone has instant access to the web, but I know this is not the case. Since we are a group of technically oriented people, I'm sure that more of us have access than in the general population, but I'm not sure what the numbers are. If you don't have Internet access, please drop me a line, so I can get a handle on the numbers and adjust what I report accordingly. Also, as always, I am open to suggestions for future articles. Any articles that you may wish to write will be most welcome.

***Roland SH-550 Digital Noise Eliminator*** I recently acquired a Roland SH-550 Digital Noise Eliminator. This unit has a comb filter that removes the 50 or 60 Hz. hum as well as its harmonics from your desired signal. It also has a noise filter that works as a series of band pass filters that open up only when the signal exceeds a certain threshold. I have just began experimentation with this unit and it seems to be very effective for removing residual hum from existing recordings.

Of course, my real hope is to use it at home for monitoring in a noisy suburban neighborhood. Initial tests in the house enabled me to hear sferics without any hum. With that large amount of filtering, there was considerable ringing on the sferics, but it did work. The next step is to build an outdoor receiver mounted in the quietest location I can find in the yard, feeding the Digital Noise Eliminator. I'll report on my progress in a future column.

## ***Review of the Kiwa Earth Monitor***

Thanks to Jon Wallace, for loaning me his Kiwa Earth Monitor for evaluation. The Earth Monitor is a well-built receiver that consists of two parts. The front-end is built of PVC tubing and has a spike on the bottom that can be inserted into the earth for grounding. There is a binding post on top to connect the antenna to. The receiver comes with 20 ft. of antenna wire that wraps around a handy reel for storage at the top of the PVC tubing. This front-end comes with about 25 ft. of cable to connect it to the receiver unit.

The receiver unit is about 4x3x2 inches and is well constructed. The front cover hinges up to access the 6 AAA batteries inside. Front panel controls include and on/off switch with an indicator led; volume control; hi-pass in/out switch; band pass in/out switch; band pass frequency adjust; and band pass wide/narrow switch. On the back of the receiver are jacks

for the front-end unit, headphones, line-level recording output, and an external power source.

The operating manual could be a little more informative, but a cassette is included with the receiver that completely explains operation and use, along with some sample signals.

To use the unit, the front-end probe is inserted into the ground, and the antenna is unwound and connected to a convenient support. Kiwa recommends that you construct a mast from PVC and hook the antenna to it in order to keep the unit away from trees and other obstructions. This makes quick setup difficult but is no more difficult than with any other receiver with a wire antenna. I prefer a whip antenna, because much of my listening is done on the way to work, where I can just pull in to a quiet site, clamp the front-end to my window and extend the antenna and start listening. Kiwa might benefit from making an alternate front-end available for in car listening.

I tested the unit with the wire antenna strung out horizontally and found the sensitivity less than on my homebrew receiver. In order to be fair with comparisons between the two radios, I rigged up a 72" whip antenna for the Kiwa, which is the same antenna I use on my receiver. This antenna brought the sensitivity up considerably, and I would say the Kiwa was now more sensitive than mine.

Using the hi-pass filter and the band pass filter removed almost all the residual hum from the signal at my quiet location. By keeping the receiver at least 10 feet away from the front-end and running the interconnecting cable along the ground, I was able to run the receiver with the volume control wide open without any feedback problems. This is a tribute to good circuit design.

I did a midnight test in my front yard, and was able to hear a few weak whistlers. The hum level here is quite pronounced as in any suburban neighborhood. However, by using both the high pass and the band pass filter brought the hum down to a tolerable level. The filtering on the Kiwa was a little better than on my homebrew receiver. My filtering is a high pass with a corner frequency of about 350 Hz. and a rolloff of 24 db per octave. The Kiwa Earth Monitor has a high pass filter with a corner frequency of 300 Hz and a rolloff of 18 db per octave. The bandwidth and rolloff of the bandpass filter are not specified.

In summary, the Kiwa Earth Monitor is a well-built well designed receiver with many nice features. Adding a whip antenna to the unit gives you much flexibility in setup. At \$145., this unit is more pricey than other commercial whistler receivers, but the added features and solid construction make it well worth the price. I hope to add one of these to my arsenal of whistler receivers in the future.

The unit is available from Kiwa Electronics, 612 South 14th Avenue, Yakima, WA 98902 USA (409) 453-5492. Information and complete specifications are available on the web at <http://kiwa.com/ethmon.html>.