

Noise. It's an inescapable fact of radio life, and it's getting worse. Can we do anything about it? WB6NOA says SGC's new ADSP² Speaker is a good start.

CQ Reviews:

The SGC ADSP² Speaker

BY GORDON WEST,* WB6NOA

More background noise is on its way. I had an opportunity to witness an ever-encroaching noise floor during my visit to the Consumer Electronics Show in Las Vegas, Nevada, last January. My receiver was a portable Yaesu FT-817, and my noise "sniffer" antenna was a homebrew ferrite-rod affair that peaked at around 10 MHz and was tied into an SGC ADSP² speaker in addition to the built-in FT-817 speaker.

My mission was to see what types of new home electronics may cause a jump in our neighborhood HF noise floor and to see how effective the SGC speaker was at reducing it. Of specific interest were those new 50-inch plasma, color LCD and thin-film-transistor, high-definition TV sets. I also prowled around the home automation booths and saw some in-house broadband technology that was carried on both wires and wireless—yet one more addition to our ever-increasing HF noise floor. Yes, there were birdies all over the VHF and UHF bands, too, from almost any type of home appliance and office equipment without a well-shielded microprocessor clock.

After multiple days at the show, there was not one specific home-entertainment box that significantly stood out as an RF noise emitter. This is the good news. Even standing in front of those big high-definition televisions, the noise floor didn't cause the little Yaesu to pop out of my backpack. However, the collection of all of the running electronics *did* raise the noise floor considerably on HF.

I confirmed this *outside* several CES display areas while tuning in the 10-MHz WWV time signal out of Colorado. Within



The SGC ADSP² speaker offers two levels of noise reduction: One push of the top button drops the noise by 13 dB, best for SSB; pressing it a second time puts in 26 dB of DSP noise reduction, best for CW or data signals in a high-noise environment. A third push returns you to normal audio.

a couple of hundred feet of the CES facility the time signal was tough to hear. When I walked farther out in the parking lot, though, background noise dropped and the time signals came in relatively clearly. During each test I had a clear shot at the sky, so signals were not attenuated by building walls or overhangs.

Neighborhood Noise Problems

What happens if you live in a neighborhood that has big-time home automation; big-screen, high-definition TVs; and even a couple of those noisy, pesky touch lamps thrown in, too? And why not add in a couple of noisy fish-tank heaters along with that new, cool neon clock you can see the kids next door hanging up in their garage?

Your HF antenna is already in place; a good key to minimizing your neigh-

borhood noise floor is to get any HF antenna up as high as possible. Give me a nice 3-element beam up 75 feet, and few new TVs are likely to bother it. However, your 7-band vertical is on the roof, and it's not going to move. Your neighbors are staying put, and your noise floor hangs around S-7 on 40 meters, just the point where you can barely hear all the early-morning check-ins on your favorite net.

If you have one of the newer rigs, take advantage of built-in digital signal processing. On CW, sideband, or data, DSP many times will help pull weak signals out of the roar of consumer-electronics broadband noise. Your rig probably has many levels of DSP adjustment, so play with the knobs and listen to the results on sideband and CW, or watch the noise floor and data signal strengths on your computer, if it's

*CQ Contributing Editor, 2414 College Dr., Costa Mesa, CA 92626
e-mail: <wb6noa@cq-amateur-radio.com>



SGC Co-Founder Pierre Goral, SK

Pierre Goral, K17UA, President and co-founder of SGC, became a Silent Key on February 12, 2004. He and the late Don Stoner, W6TNS, founded the company (as Stoner-Goral Communications) in 1971, and the company has become a major supplier of rugged portable HF SSB radios to military, government, and commercial users as well as the amateur market. A company statement says that while they mourn the loss of their friend and leader, "SGC will continue to move forward and produce products to the standards the industry has come to rely on after more than 30 years of successful business." *CQ* extends its condolences to the Goral family and the SGC family as well.

tied in to the rig. But if that's not enough, or you have an older rig without built-in DSP, SGC's new ADSP² speaker may be able to help.

The ADSP² Speaker

Back in Las Vegas, I tested the two-position SGC ADSP² speaker on my FT-817 out in the parking lot with my little broadband HF antenna, and the results were promising. The "A" in ADSP, by the way, stands for "automatic," meaning that manual adjustments are not necessary for the filtering to do its job.

Simple hook-up and operation are part of the beauty of the speaker. Plug the speaker's miniature plug into your transceiver, and add 12 volts at 110 ma. For the CES tests, I ran the FT-817 on

its own internal battery pack and plugged the SGC speaker into a compact, 3-amp/hour, nickel metal-hydrate pack that gave me more time than I needed to conduct my four days of testing inside the building.

When the SGC speaker receives 12 volts, it springs to life and lights up a small red light-emitting diode (LED) behind the front grill. Push the white button once to activate the ADSP² with about 13 dB of noise reduction, and a single green LED will be lit from behind the front grill in the lower right corner. Press the button one more time for 26 dB of noise reduction, and you now see two green LEDs behind the front grill.

I tuned into a local morning net on 40 meters, and within 100 feet of the CES building with home automation, signals were right at the noise floor. With one push of the speaker button, the noise went way down and voices magically appeared. The improvement in reception was dramatic. Voices that a moment ago had been covered by the electronics hash were not only audible, but also reasonably intelligible. The voices sounded a bit pinched, but this is the normal sound of digital signal processing.

On CW the results were even more dramatic; code in the noise was now code in the clear. It was the same thing for several PSK-31 whistles—from out of the noise came relatively clear reception.

Pushing the SGC ADSP² speaker button a second time takes the noise-reduction circuitry from 13 dB to 26 dB. The result on sideband was not impressive. Sure, the noise floor even went further down, but the characteristics of everyone's voices made it hard to understand what they were saying.

"In some situations—especially on single sideband—a second push of noise reduction is not necessarily better, and it pays to be flexible in the use of noise reduction when trying to copy SSB signals," comments an SGC rep. However, SGC was quick to add that the second push of the ADSP² button makes a remarkable reception difference when trying to pull out weak CW signals, packet and PSK-31 signals,

along with the reception of weather facsimile on a laptop computer.

He was right. On CW the double push of the ADSP² button remarkably cleaned up any noise off weak incoming signals, and the improvement was worth the second push. Same thing for PSK-31 signals—the noise floor went even further down to allow the whistle to completely stand out from the almost hushed background noise.

Pushing the button on top of the ADSP² speaker a third time returns the speaker to normal, straight-through audio. All the noise coming out of the nearby CES building was back! One more push of the button, though, and 13 dB of noise reduction was just right for hearing the gang on 40 meters, plus WWV at 10 MHz, and later during a nighttime drive home on 75 meters. The ADSP was quite effective in reducing the elevated noise floor in my mobile caused by a noisy fuel pump.

The circuitry that SGC offers in its little speaker is part of a much wider range of ADSP equipment that the company puts into its marine and military radios. They even have a small board that will fit into most portable ham transceivers and that includes a pair of filters to further quell the hash. Their three proprietary band-pass filters and 26-dB ADSP² circuit can be fitted to nearly any transceiver to enhance your ability to pull signals out of the background noise.

One warning: Once you begin using the ADSP² for the majority of your mobile HF communications, you will quickly become spoiled when you listen to any other mobile rig on the same band *without* ADSP.

From what I could hear inside and outside the CES show, I saw that a digital-signal-processing setup placed inside a speaker as SGC has done is a practical way to reduce the noise floor caused by new types of consumer electronics emitting broadband noise.

List price for the SGC ADSP² speaker is \$129.95. For more information on the speaker and other SGC products, visit the company's website at <<http://www.sgcworld.com>>. ■