Mark Connelly - {The following is an excerpt from some recent correspondence with Gerry Thomas of RadioPlus Electronics.}

Life goes on, as they say, and I expect my radio involvements to get back on track even though I won't have all those Cape Cod weekend trips to juice up the logbook. Local outings are still on hold: in the northern and western suburbs of Boston we got slammed with 2 feet of snow earlier this week (on top of as much as a foot of existing cover). My home QTH set-up is passable for European DX, mediocre to Africa, but poor to South America and the Caribbean (I guess because of hills in that direction). I really am looking forward to the after-work beach DX outings, but those look like a distant-future thing if you took a peek out the window here right now.

The loop experiments at East Harwich did produce some interesting results. Mainly I was looking at both absolute weak signal audibility (signal to amp. Noise ratio) and raw S-meter readings. The former is of prime concern with a good communications receiver; the latter is more important with cheaper receivers (especially portables) where the receiver's own lack of sensitivity is the biggest problem. I did give a bit of attention to ease of nulling, and achievable null depth.

I have some additional tests that I want to do before publishing the article. One problem I ran across was, even near midday, really weak high band stations (above 1300 kHz) exhibited some skip-related strength variation over time. That's what you get from trying to do these types of tests during the winter. In any event, the high-band usable sensitivity differences aren't as great as the low-band differences.

So what happened in Loop Tests, Part 1? Generally the "old Quantum" had about 6-10 dB higher S-meter reading for a given head than the "new Quantum" in non-regeneration mode. I guess the new Quantum with your transformer update would perform about the same as the old Quantum I have. That being said, the old Quantum had a noisefloor of S9 on the R8A set to PREAMP ON, versus a noisefloor of S8 for the new Quantum. The usable sensitivity, therefore, was no different for a given head with either base. The Kiwa Loop produced about an S4 noisefloor (amp. noise) when peaked on a no-signal frequency. The signal output of the Kiwa was lower by something like 10-15 dB versus the Quantum (normal head, old base) and more like 25 dB less versus the Quantum with the larger head (the one you'd sent me a long time ago, presumably the same one you're providing with your longwave-capable QX+). Large head versus smaller head on a given Quantum base gave about 16 dB of gain on the low end of the dial (530) and about 8 dB of improvement up around 1600 kHz. That's usable gain, as the amplifier noisefloor is the same with either head.

On both the "new Quantum" and the Kiwa, regeneration increased output by as much as 15 dB before received audio got excessively muddy. Amp. noise also goes up during regeneration, so weak signal sensitivity really doesn't change much. Using single sideband and passband tuning on receive lets you squeeze a little more out of the regen. before audio quality goes into the dumper (or before oscillation breaks out). Actually, from my experiences, regeneration has the greatest benefit when the receiver isn't, by itself, up to snuff for split DXing ... e.g. Sangean portables, car radios, etc. Only once in a while will regeneration improve reception on a receiver that already has a good choice of IF bandwidths, PBT, etc.

So who's better, Kiwa or Quantum? A good sensitivity test is Turks and Caicos on 530 kHz at a distance of about 1400 miles on pure midday groundwave. At south-facing beaches in Dennisport, etc. it is strong enough to be a hair over the noise floor on my Ford Taurus car radio (and easily copyable there on the Drake R8A with any good loop, a 100' wire, or an MFJ-1024 active whip). At the E. Harwich house with something like 3-4 miles of sandy pinelands on the bearing to T&C-530 before hitting the water, the signal level is about 6-10 dB weaker than at the beach sites. The car radio doesn't receive the 530 groundwave at the house. It's still easily heard on a 100' sloper to the Drake R8A. Using the normal Quantum head (with either base) produced a signal that was barely over the amplifier noise threshold. The Kiwa Loop produced a cleaner (though "S-meter weaker") signal, perhaps an S-unit over its S4 noise deck. The winner turned out to be the Quantum (again, either base) with the larger ferrite head. It had a narrow, but noticeable, hearability edge over the Kiwa on the Turks & Caicos - 530 signal there. Weak signals higher in the band were pretty much a dead heat between the "big head" Quantum and the Kiwa in terms of usable signal-to-noise. With cheapo portables, the Quantum would be preferable because of higher "S-meter output". On a good radio like a Drake or AOR, it wouldn't matter. The normal head Quantum lagged some, thereby validating a "size does matter" principle. With really weak signals, amplifier gain cannot make up for lack of ferrite, even with the best noise-figure FET's you can find. It should be stated that, especially at night, over 95% of what you can hear with a Kiwa or large-head Quantum can also be heard with a Quantum having the standard size head.

I think that the large-head version of the Quantum Loop may come fairly close to the performance of the old Gordon Nelson NRC 6 ft. FET Altazimuth Loop in terms of digging out the weak ones. You'd have to be way out in the middle of nowhere to see much difference. The 100' sloper at E. Harwich, when fed through an MWT-3 regenerative preselector (gain about 40 dB), could still pull up a couple of signals none of the loops could find, but you're talking about 1/10 of 1% of anything of interest unless you're DXing from Antarctica or somewhere comparably remote.

Nulling is best with the Kiwa, second best with a normal head Quantum, and third with the large head Quantum. In all cases, if there's something on a channel at a right angle to a dominant and within 30-40 dB of its strength, it can be made audible without much difficulty with any of these loops.

I did notice some of the hand capacitance effect you'd mentioned. Instead of causing imprecise peaking, the main thing it did was to couple in some "hand signal" to make a tight null less deep (if I was peaking a subdominant's signal). A bit irritating, but not a big deal.

On other antenna matters, I've been following the pennant and flag discussions (on the Topband, Pennant / Flag, and NRC reflectors) by hobby luminaries such as Kazaross, Rauch (W8JI), Griggs (K1ZM), Cunningham (K6SE), and Breed (K9AY). Good info. for the upcoming outdoor antenna experimentation season.

Gerry Thomas replies:

Of immediate importance is that fact that I have made a couple of fairly important changes to the QX Loop. The first is the substitution of an all-nylon shaft/screw on the VC. I had been having problems finding an adhesive that could adhere nylon and brass so I started using a steel screw. This resulted in hand capacitance while tuning and required gripping the tuning knob by the skirt to avoid the hand capacitance. I'm now machining the nylon spacer so that it is "keyed" to the VC shaft. This allows me to go back to the nylon screw and all hand capacitance is gone. The second important change is the switch from the broad-band output transformer that I had been using and the incorporation in the QX of the auto-transformer that I use in the QX Pro. Instead of the 16:1 step-down, its now closer to 50-90:1. This results in about a 6-10 dB gain in output across the band. All QX's sold within the last month or so have these mods as will all future QX's.