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Sloping Random Wire Antennas by Jim Herkimer

In his phasing unit articles, Mark Connelly mentioned the minimum antenna length for passive systems is about 120 feet. In order to accomodate this length in the space available, I simply tilted the wires using available supports. I've found these sloping wires preferable to horizontal ones for phasing experiments. It makes no difference which end is fed, directionality is always from the low end, which makes it equally convenient for those with shack locations on second or third floors, as opposed to those with basement or first floor locations. Although a slope angle of 45 degrees is desireable, angles as great as 60 degrees will still show a pronounced directionality. With the slopers used here, (120 feet long, at 60 and 170 degrees), minimum phasing unit adjustments are required to cover a large portion of the band. Often, only one LC module is needed, simply to peak the wire favoring the direction of the propagation opening. Under these conditions, actual phasing is reserved for stations that are seldom heard/desired, and/or masked in adjacent channel interference. In short, it pays to optimize the wires to be phased

At our cottage, I use a 120 foot sloper at 160° which runs down to the dock at the edge of the St. Lawrence River. This has proven to be an effective Caribbean antenna. Unfortunately, during the summer months, there is considerable ignition noise from the numerous outboard motor boats on the river. I tied a short piece of copper tubing to the end of the sloper, and tossed this into the river. This has proven effective in reducing the noise, but also narrowed the beamwidth, as normally dominant stations to the west, in Ontario, are now completely absent. I've not experimented with various resistors, as I have been quite happy with the antenna thus far. Incidentally, I had a neighbor remove the copper tubing from the river at timed intervals. The effect was similar to throwing a switch. The differences in response were quite remarkable. Also, this terminated sloper was excellent for longwave trans-Atlantics, while a similar length wire at horizontal was poor, even though the horizontal wire favored Europe on BCB.

We know about resonant antennas using sloping elements from the ham press: Inverted Vees, Delta Loops, and the ½ and ¼ wave slopers; these consistently show better low angle response than horizontal arrays. However, at BCB frequencies, such short wire lengths (in terms of wavelength) require some investigation.

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More on Sloping Random Wire Antennas by NHP

In DXM #719, dated April 27, 1985, Jim Herkimer gives a brief description of his use of a random wire antenna which sloped down to ground level. The antenna was directional from the low end, whether the receiver was fed by the high end or the low end of the wire. He also found that grounding the low end of a 120' long sloper (receiver was fed at the high end) meant increased antenna directionality.

I used an 85' sloper during the day at Pender Island, B.C. which was pointed at 275°, and could be grounded in salt water. The receiver used was a SONY 2010 with a step attenuator. As most of my test stations were off the back of the antenna, it wasn't too surprising that a 15' high vertical gave better signal strengths (up to +12 or 14 dB, though most were in the 3-4 dB range), than the ungrounded sloper, on all but the few signals within 50° of the end of the sloper. These signals were about equal on the sloper and the vertical. An anomaly was that a couple of signals directly off the back of the sloping antenna were also about equal in strength of the vertical and the sloper.

Below about 1350 kHz, there were not really significant signal strength differences between the grounded and ungrounded sloping antennas. However, there were no signals in this frequency range which were really off the end of the antenna, not within ±90°. Above 1350 kHz, there were stations located off the end of the wire, and these increased in strength about 8 to 10 dB when the end of the wire was grounded in salt water.

I was not able to try the sloper and vertical at night on skywave (antenna comparisons are often difficult on such signals anyway), nor on any Australians which may have been coming in at dawn. My results were not too spectacular in favor of the grounded sloper, but such results may have been due to the less than optimum angle of the sloper (about 30°) and relative shortness of the wire. Perhaps Jim will be able to give us some conclusions from his own sloper observations at some future date.

In the meantime, Jim offers a few words on the "snake" antenna: "The snake antenna is quickly gaining popularity among 160 meter amateur radio operators as a simple, yet effective low noise receiving antenna and as a makeshift transmitting antenna. It consists of 130 to 150 feet of coaxial cable, of which any type of coax will work fine. The far end of the coax has the center conductor tied to the braided shield. The other end, where it is connected to the receiver, has the braided shield broken approximately an inch back from the end, leaving only the center conductor connected to the receiver. Amateur radio operators claim that the coax is simply stretched out on the ground, in a straight line, and the antenna is directional off its far end. (Therefore, the longer the better). It is generally used with a matching device to accept power from a transmitter. However, I'm not sure if a matching device is necessary for receiving purposes only. A fellow in Florida worked another ham in Italy with such an antenna, running a transceiver "barefoot", i.e. no linear amplifier, so it does indeed work"

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Thanks to Don, Ben and Jim for contributions this time. 73 Nick