

# LF Engineering Active Antenna

By Bob Grove

**W**e find considerable interest in active antennas, but many of them work very poorly. What is an active antenna? It is a short (from a few inches to a few feet) metallic element with an amplifier at its base. Sometimes called an "E field" or "voltage probe" antenna, the short element detects very small signal voltages which are then, in turn, amplified and fed to the receiver.

While there are disadvantages—cost, power requirement, signal overload vulnerability, self-generated noise, environmental deterioration—the advantages—small size and wide bandwidth—are often overriding factors. With the good and bad points in mind, we decided to take a look at one of the newest active antennas on the market, the H-800 "SkyMatch" from LF Engineering Co.

Measuring just over two feet in length and a mere inch in diameter, the 12 ounce, PVC-enclosed and fully-weather-sealed antenna/amplifier assembly comes with 50 feet of small-diameter RG-174/U cable fitted with an RCA plug to attach to the host control box. The package includes a stainless steel hose clamp to secure the active assembly to a mounting pipe or mast up to 2" in diameter. A 24" RCA/RCA cable is also provided to attach the control box to the receiver. Unless your radio is a Sangean, however, you will need to provide an antenna adaptor.

The setup is powered by a 120 VAC wall adaptor (provided) or optional 9 volt batteries (two required); current consumption is a mere 10 mA, and that includes the indicator LED. There is no need for any controls (and none is provided) other than the on/off switch.

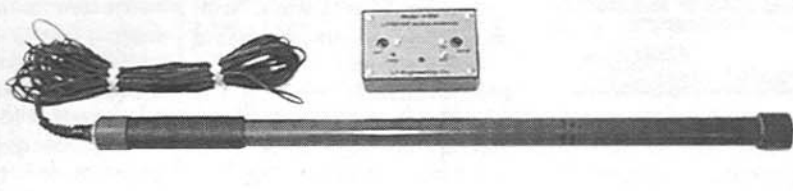
## Wide frequency coverage

The antenna has an incredibly wide frequency response, from 10 kHz through 50 MHz, down a mere 3 dB at those end points. Just for kicks, we tested the unit clear up to 460 MHz and signals were receivable, although we would not recommend the unit as a substitute for a good outdoor scanner antenna, unless you are in a major metropolitan area and any additional antenna is out of the question.

Since the SkyMatch has signal delivery equivalent to a 100 foot dipole, longwave, mediumwave, and shortwave signal strengths are impressive. The internal electronics automatically match the inherently high impedance of the active antenna to the low impedance of the transmission line for excellent efficiency. As with any antenna, the SkyMatch should be mounted as high and distant from electrical power lines and large metal surfaces as possible.

## Results were impressive

For a simple test, we placed the active antenna probe on a short wood mount about 10' off the ground, just outside the office building, and connected it to an inexpensive shortwave receiver.



The unit's AC adaptor was plugged into a convenient wall receptacle to provide power.

Our first (and lowest frequency) quarry was a local non-directional beacon (NDB) for aircraft, operating on a frequency of 335 kHz; it came thundering in, at least as loud as when monitored by a 136 foot wire antenna.

Next, the medium wave broadcast band. A normally weak, 770 kHz, community station about 20 miles away came booming in—I double-checked my tuning to make sure I was on the right frequency! Impressive: I'd never before heard them that loud here at the office. Similarly, two usually-S-9 AMers were 40 over. This thing works!

But how about intermod? After all, this is an active device, prone to generating interference from the mixing of powerful signals. Checking sum and difference frequencies between the two boomers, intermod was barely audible. Good news ... but such performance might have been expected with a unit claiming 90 dB dynamic range. Of course there was plenty of interference from some two dozen computers, their related peripherals, and various pieces of test equipment running simultaneously at the office, but that can't be blamed on the antenna!

## The bottom line

For VLF and "sferics" enthusiasts who already have receiving equipment for the basement band and are looking for a good antenna, this is the one. Broadcast DXers will also like the signal catching ability of the little powerhouse, and so will shortwave enthusiasts who wish they had room for a big, outdoor antenna.

Scanner devotees will also find considerable satisfaction in the SkyMatch through at least 50 MHz, and probably well into high VHF. Most (probably all) commercial scanner antennas compromise reception below about 100 MHz; the SkyMatch will provide enormous improvement in the 25-54 MHz part of the spectrum when compared with scanner antennas.

But all good things must come to an end. The higher we go in frequency—UHF and 800 MHz especially—performance degrades rapidly. Still, in a pinch, some reception is probably possible in strong signal areas. Used within the limits of its intended frequency range, 10 kHz through 50 MHz, the LF Engineering SkyMatch may have no equal.

The H-800 SkyMatch active antenna is \$109 including shipping from LF Engineering Co. (17 Jeffrey Rd., East Haven, CT 06513; ph. 203-248-8851).