Wellbrook ALA-1530

US$190 £129.95 €190

OVERVIEW

Wellbrook Communications manufactures a range of active loop antennas which have achieved widespread popularity in the last few years, especially for those with restricted space and/or high levels of local noise and interference. The ALA-1530 was introduced some time ago and is designed to cover the range 50kHz to 30MHz although in practice its HF response extends at least an octave above the quoted limit and it also works quite well at lower frequencies.

The essence of a loop antenna is that it responds mainly to the magnetic-field component of an electromagnetic wave (the H-field) rather than the electric (E) field. Since local noise and interference are well within the near field of the antenna, they consist chiefly of E-field components and as such are rejected by it. Loop antennas also display quite sharp nulls off the sides, typically of the order of 20-26dB. This property can be exceedingly useful in rejecting either local noise or a distant interfering station. An active loop such as the ALA-1530 has the further advantage of a low and more or less constant impedance with frequency, making it a good match to the receiver. Because of the use of current-to-voltage amplifiers the active loop can display a substantially flat response over its range, making it useful for measurement purposes. The amplifier in the Wellbrook unit displays a claimed third-order output intercept point of between +36 and +42dBm, and measurements suggested that our sample was well towards the upper end of this range. This standard of performance is very much better than any receiver likely to be used with the unit.

FEATURES & FUNCTIONALITY

The ALA-1530 consists of an aluminium loop with a diameter of 94cm (3ft), a head unit containing a balun and wideband push-pull amplifier, mounting hardware and a 12V power supply. There is also an 'antenna interface' box, which is sited in the listening room and into which the 12V supply is connected for transmission along the main RF cable to the antenna. The box embodies an integral fuse and a 1m lead terminated in a PL259 connector which provides the input to the receiver. All necessary connectors and sundries are supplied. At the antenna end, the head-end electronics are housed in a white PVC box which apparently is UV stabilized. The RF output from the loop amplifier emerges on a female BNC connector. Our only minor reservation in respect of the mechanical design is that a BNC would not have been our first choice for an outdoor connector exposed to the vagaries of temperature and humidity changes; a TNC or preferably an N-type would have been preferable. The mounting hardware is such as to allow easy mounting on a rotatable stub mast, which will permit advantage to be taken of its ability to null-out interference at the lower frequencies. Alternatively, it can be easily secured to a suitable fixed support such as a fence post. Wellbrook recommends that the antenna is mounted at least 6m from a building to minimize local noise, although in practice we found the loop's siting to be entirely non-critical. We tested it at the top of an existing rotatable Yagi array for the HF and 144MHz amateur bands and also on a garden fence post about 1·5m from the ground and 10m or so from the office. We also tried it briefly in the loft above the laboratory and

a few feet on the patio outside.

For our assessments we principally used the Icom IC-R8500 re-tested for this years' edition of *WRTH*. We also employed several other receivers that were to hand, ranging from a Sangean ATS-909 to several amateur and general-coverage transceivers including a Yaesu FT-990. For a couple of days we made good use of a Racal RA-1792 which had just been extensively overhauled and was being 'run-in' prior to delivery to its new owner. For our antenna comparison and test purposes we used 11m and 24m long wires at heights of about 10m, a trapped 80/40m dipole at 15m and a rotatable seven-element Yagi for 14, 21 and 28MHz at 20m tower.

PERFORMANCE

We first established some approximate comparative signal strengths at the test site, which is at approximately 52N44 003W and is electrically very quiet. In very general terms the Wellbrook loop mounted on the 1·5m fence post produced similar levels of signal to those from the 11m long wire on frequencies below about 10MHz and was about 3-5dB down on both long wires elsewhere. However, during daylight hours our HP 8950 spectrum analyser showed that it was between 7 and 9dB quieter than either long wire, and during the evening the difference was generally 10-12dB. This was an excellent result. It was very interesting to note that on the 24m long wire, which runs quite close to the office, some spurii from a PC were visible at about 20dB above the noise floor in the 4-12MHz region. However, there was absolutely no trace of these on the ALA-1530 even when it was mounted in the loft directly over the laboratory and only about 3m from the PC! This was also an excellent result, and one which highlighted the ability of the loop to reject local interference. In comparison with the trap dipole, the Wellbrook loop was very much quieter and almost made listening on the 7MHz amateur band at night a pleasure. The ability to null-out high-power broadcast stations near the band edges was exceedingly useful. As an aside, when used as a receiving antenna for the 1·8MHz amateur band, the ALA-1530 loop was a good deal better than either random wire. It even brought in some low-power MF non-directional beacons never before heard at our location. These were a good S6 on the loop and entirely inaudible on any other antenna.

Evaluating the directive properties of the Wellbrook loop led to the intriguing conclusion that higher was not necessarily better. When mounted on the 1·5m fence post, it was easy to generate nulls well in excess of 20dB on LW and MW stations; on BBC R4 on 198kHz the measured null was 28dB. On the 20m tower, the nulls appeared to be between 3 and 6dB worse in the LW/MW region but somewhat better at higher frequencies. As an example RAF Volmet on 5450kHz could be nulled by about 14dB at the lower height but almost 20dB on the tower. It is not quite clear why this should be the case, given that the difference in height is a tiny part of the wavelength at these frequencies and in both these cases one would expect the ground wave and the incident wave to be in phase. Nevertheless, the disparity is to some extent academic because the available degree of rejection was excellent wherever the antenna was mounted.

BEST ACTIVE LOOP ANTENNA

CONCLUSION

Overall, our view of the Wellbrook loop is that it is ideal for anyone with a small garden or limited space for antenna erection, and can give a good account of itself in distinctly unpromising circumstances. Its ability to reject local interference, or to give a good 20dB of rejection to an adjacent MW transmitter, might well be a bonus in many urban situations. It is very well made and should be reliable in service. All in all, the Wellbrook ALA-1530 is very highly recommended.

Rating table Wellbrook ALA-1530

Mechanical design	★★★★★
Constructional quality	★★★★
Ease of use	★★★★½
Manual	★★★★
Versatility	★★★★
VFM – absolute	★★★★
Overall rating	★★★★½

Key:

★ = Poor ★★ = Fair ★★★ = Average
★★★★ = Good ★★★★★ = Excellent
VFM = Value for money