NEW ALA1530 and ALA1530LF
MAGNETIC BROADBAND ACTIVE LOOP ANTENNA

30kHz to 30MHz

Improved mechanical design

The **ALA1530** is a compact Active Magnetic loop antenna primarily designed to provide improved performance over conventional passive and active antennas. This loop has been production for over 10 years and has recently had significant design changes to improve LW/MW and SW reception. The ALA1530 has been re-engineered to increase the LW and MW gain by approx. 10dB and 4dB respectively. The upper HF gain is increased by approx. 5dB. The amplifier intermodulation performance has been improved and an FM band filter is now fitted. A resettable fuse is now fitted to Antenna Interface. Over the past decade the ALA1530 range of loops has redefined the active antenna market place; by affording the user the possibility to reject locally radiated and mains borne noise and still provide improved sensitivity compared to larger antennas. 1m dia. Aluminium loop is designed for outdoors, even at ground level. The loop has a frequency range from **30kHz to 30MHz** and matches directly to the receiver. The past 10 years has seen the ALA1530 become the premiere active loop antenna for the Radio Enthusiast, Government Monitoring and Broadcast organisations.

The amplifier is fitted in a separate module to reduce mechanical stress on the amplifier and facilitate easy replacement.

- Balanced low impedance Magnetic loop with enhanced performance compared to shielded and Moebius loop types
- Unique Impedance tracking Amplifier to optimise loop/amplifier matching
- ALA1530 reference Loop calibrated by a UKAS Approved Test Facility; can be use for Field Strength measurements
- Up to 30dB rejection of locally radiated and power-line noise compared to an active whip
- Figure of eight directivity and deep nulls to further reduce interference; ideal for LW/MW with antenna rotator
- Very low intermodulation ensures good performance in a strong signal environment
- ALA1530LF has higher LF gain down to 20kHz, lower MW IMD and reduced HF gain
- Rugged construction 1m dia, Aluminium loop, with Antenna Interface and a linear regulated power supply (UK, Europe, N. A. only)
- No tuning necessary or matching unit; No planning problems, works at ground level, can be camouflage
- Separate Head Amplifier fits on top of loop to reduce mechanical stress and afford easy replacement.

<u>This is no ordinary loop antenna</u>

The ALA1530 is the result of several years development. Most Broadband loops work by virtue that the current induced by the H or Magnetic Field is constant irrespective of frequency. Wideband loop antennas are usually designed by connecting a low impedance, high gain amplifier to a single or multi-turn loop (shielded). This approach presents several problems:

1. Shielded Moebius and Multi-turn loops have too much capacitance or inductance and hence reduced HF bandwidth. A Moebius shielded loop has 4-5 x the inductance of the ALA1530 loop thus limiting the loop current with 6-12dB roll off above 20MHz.
2. Optimum loop/amplifier power transfer occurs over a narrow bandwidth, this is because the loop impedance rises with frequency from a few Ohms at LF to several hundred Ohms at HF. This rise in loop impedance opposes the current transfer to the amplifier and reduces the loop/amplifier power transfer (gain).

The E-Field is cancelled out by virtue of the loop aperture being very small in terms of wavelength and the phase difference of the balanced loop output is 180 degrees.

MAGNETIC LOOP ANTENNA ADVANTAGE

Most active antennas are the whip type and respond mainly to the electric-field. The Magnetic Broadband Loop responds primarily to the magnetic-field, this ensures high rejection of nearby **electric-fields**. The intensity of the electric-field is usually higher than the magnetic-field when an antenna is close to interference sources such as TVs florescent lamps, mains wiring etc. Therefore, by rejecting the electric-field there will be a reduction in local interference compared to other types of active and passive antennas. Interference reduction is further enhanced by the deep nulls of the 'Figure-of-Eight' directivity pattern.

INTERMODULATION

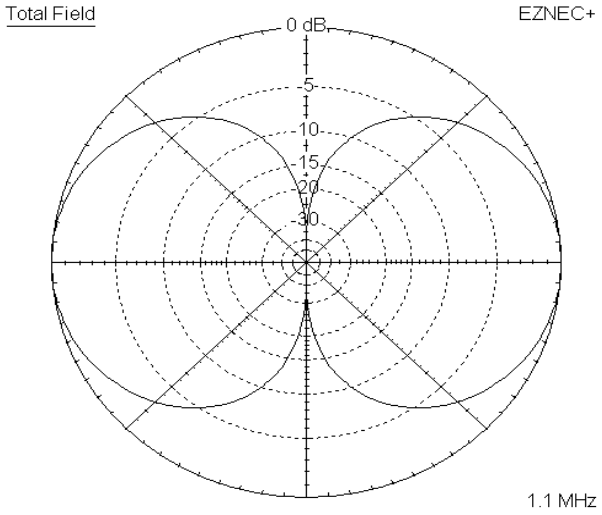
Some active antennas generate intermodulation products which can appear as spurious signals interfering with reception. This interference is usually second order intermodulation is caused by non-linearity in the amplifier, producing signals which are the sum and difference of strong Broadcast stations. The ALA 1530 Broadband Loop has been specifically designed to reduce intermodulation products to a minimum. The second order and the third order intercept points are typically **+90dBm** OIP2 and **+47dBm** OIP3 respectively. Thus the level of the intermodulation products are generally below the atmospheric and man made noise. Note: Some manufactures don't even state the second order intermodulation performance.

ANTENNA DESIGN

The Loop antenna consists of a rigid aluminium loop and a variable impedance balanced gain optimised broadband amplifier using low noise RF power transistors with transformer noiseless feedback. The amplifier is encapsulated in resin and housed in a uPVC box, this ensures reliable operation in all weather conditions. The antenna provides low noise performance, large signal handling ability. Rejection of mains borne noise is accomplished by using a balanced amplifier so that the feeder does not form part of the antenna return path. The amplifier input is protected with high speed diodes.

The ALA1530 is supplied Antenna Interface and a 12 volt regulated power supply. RG58C 50 ohm coaxial feeder cable is recommended for the antenna. The recommended maximum feeder length is 100m. A 1m coax. lead connects the Antenna Interface to the receiver. A plastic loop version is available; the ALA1530P, this loop does not use a separate amplifier module.

The ALA 1530 should be positioned approximately 5m away from any buildings.



Loop pattern as viewed from above

TECHNICAL INFORMATION

Power consumption:	12 volts at 130mA
Amplifier Intercept point typically (MW Band):	OIP2 +90dBm, OIP3 +47dBm; LF version OIP2 +90dB, OIP3 +49dBm
Output impedance:	50 ohms BNC
Max. Field strength	400V/m or 1.0A/m pulse

See Reviews in Jan. 2012 *RadCom*, 2004 *WRTH* and Nov. 2000 *SWM*

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