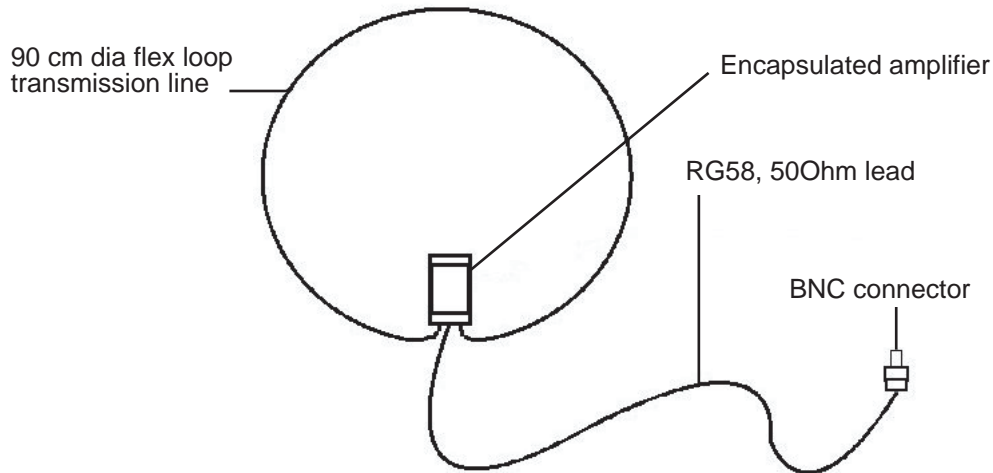


# Active Loop Antenna



## Predictable Performance

Computer optimised design  
 Extremely broadband 10kHz -30MHz  
 Sensitivity set by received background noise  
 High linearity complementary push pull amplifier  
 Good response to high angle and low angle DX  
 Deep broadside nulls for ground wave signals

## Easy to Use

Mount near ground level  
 Encapsulated for outdoor use  
 Very compact size: 1.3m diameter  
 Easily transported

## Noise Immunity

Immunity to electrical field interference  
 Easily located away from local interference sources  
 Isolated from mains borne interference  
 Survives RF fields of 13V/m

## No Tuning

No inconvenience  
 No band changing elements  
 Narrowband/ VLF version 30-300KHz

## Applications

Surveillance  
 VLF time and frequency receiver  
 EMC & EMI testing

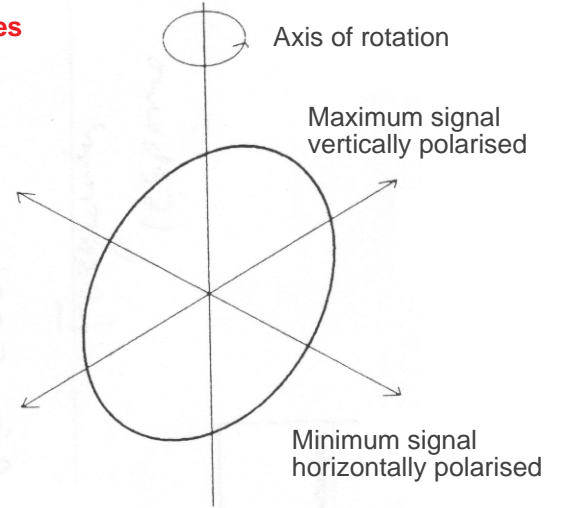
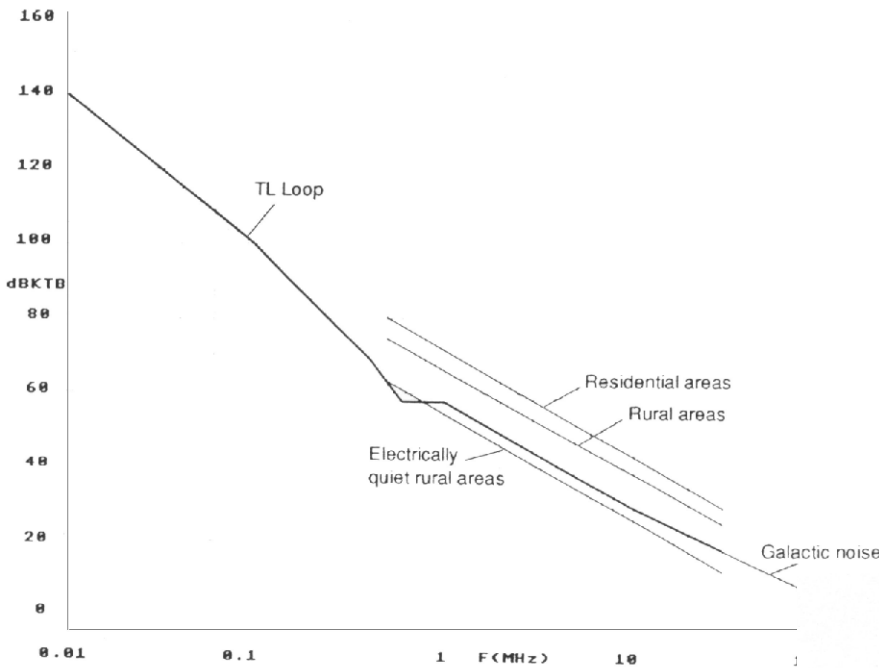
## Introduction

The principle of operation is that an rf voltage appears across the terminals of a loop when it is placed in an electromagnetic field. This voltage is proportional to frequency for a given field strength. Therefore at Very Low Frequencies, the voltage is very small, and requires greater amplification. The new TL Loop uses a unique feedback system to optimise the amplification factor. The method uses a loop constructed of transmission line in which the line is also part of the feedback system. The antenna is broadband and requires no adjustment other than orientation since it has deep broadside nulls for "Vertically polarised ground waves. There is no null in the vertical direction, as with whips, so that short hop high angle sky wave reception and long hop low angle reception can both be excellent. Best results are obtained with a clear site. No radio frequency grounding of the antenna is required.

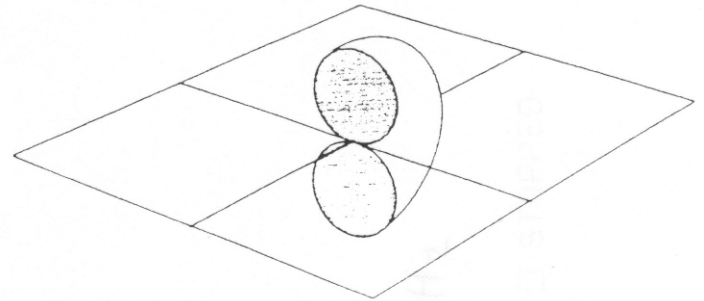
A perfectly lossless antenna picks up more ambient noise, due to atmospherics, interference, etc., as one goes down in frequency. Such high levels of signal and noise can be considerably attenuated without seriously affecting the overall signal to noise ratio. In other words a smaller less efficient antenna can be used just as effectively coupled with a low noise amplifier. Active antennas therefore do not produce high signal levels but nor do they need to; S/N is what counts. It is preferable that the antenna is positioned vertically, just above ground in an open area. Being an antenna which responds to the magnetic field component, it is highly immune to capacitively coupled local interference which is a common problem of active whips, and local interference can be reduced either by nulling or by relocating the antenna far away.

The antenna is highly portable yet may be permanently installed outdoors. Permanent support is easily arranged by attaching the loop to a circular hoop on a short pole. The power requirements are 12V at 50mA. This is fed via the coaxial cable from the receiver using an 'isolating T' section.

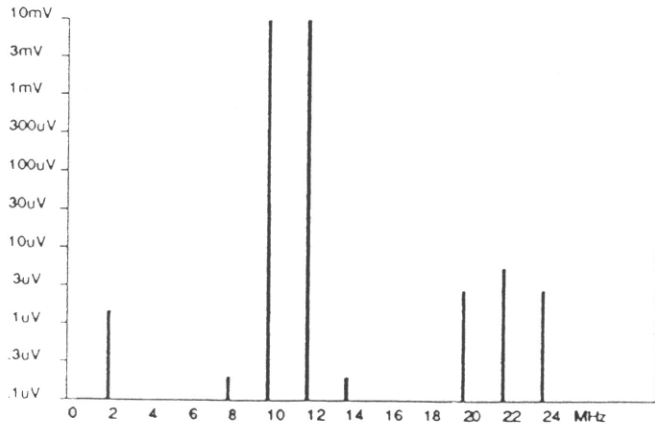
## Effective Noise Of AE30-300 (TL Loop) Compared To Typical Noise Sources



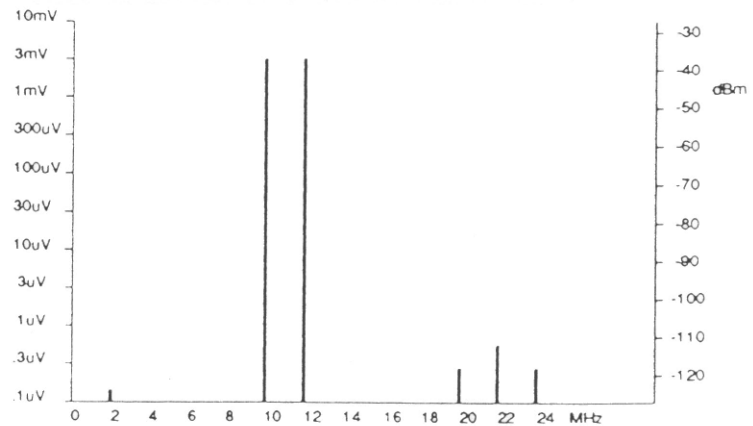
**Vertical Loop & Section Through Doughnut Radiation Pattern In Free Space**



## Typical Intermodulation Products At Antenna Output



Two very strong signals at 10 and 12 MHz rarely encountered



Two strong signals at 10 and 12 MHz sometimes encountered

**technical**  
 Test, Measurement,  
 Calibration, Control  
 & Recording  
 Instrumentation  
**866-327-8731**  
 www.technical-sys.com

**Quartzlock** Quartzlock is a registered trademark  
 Specification subject to change without notice  
 This issue replaces all previous issues  
 This specification does not form any part of a contract

- Quartzlock  
The most stable  
Frequency  
Standards  
available
- DPS - Division & LF Trace RE  
Pulsation Atomic Standard  
Hydrogen Maser
- ISO 9001
- Craft  
Award  
2009/2
- NIST Traceable  
Standard
- NPL Referenced
- 5T Smart  
Awards

Quartzlock r UK r USA r EU r China r CIS r Pacific Rim  
 World Wide Representatives in 45 Countries