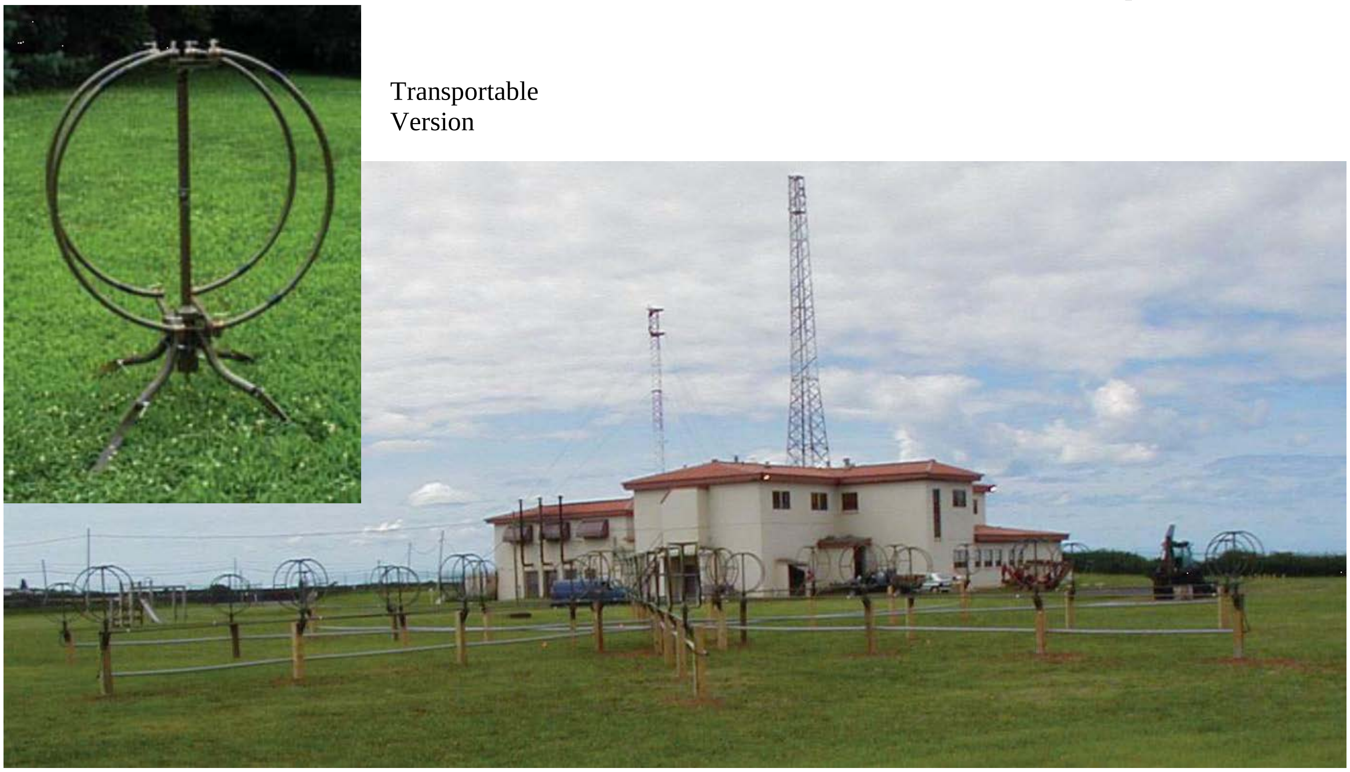
USAP Aperiodic Loop Antenna

- Operating Range 2.0-32.0 MHZ
- Small Size
- Rugged Construction
- Easily Installed
- Fixed and Transportable Versions



Transportable Version

Our basic antenna is an *untuned, balanced loop* which has dimensions that are small compared with the wavelength. A preamplifier circuit, fitted at the base of the antenna, exactly complements the loop characteristics. This combination results in a nominally constant, effective, height over the 2.0 to 32.0 MHz frequency range.

At frequencies less than 30.0 MHz it is possible to employ an antenna for receiving purposes which is electrically small and has poor free-space coupling efficiency, without prejudicing the overall system noise factor. This is because the antenna output noise comes primarily from atmospheric and galactic sources. The thermal noise introduced by the antenna radiation resistance is insignificant by comparison, if this resistance is presumed to be at ambient temperature.

While a requirement for free-space coupling efficiency remains for a transmit antenna, it does not for the receive antenna. The aperiodic loop antenna configuration includes loop/preamplifier elements, in an "end fire" array, with an interconnecting transmission line coupling each element. The element spacing has been carefully chosen to provide optimum directional characteristics for both long and short haul, point-to-point HF communication using the ionosphere. Outputs are available at both ends so the array can look both ways simultaneously, if required, or can be rapidly switched through 180° with a coaxial relay.

The loop, with its vertical plane, is mounted close to the ground in terms of wavelength to obtain additional incident and reflected signals. The loop element is a welded assembly of aluminum alloy weighing only 10 pounds, and may be mounted on a tripod or bolted to a post with an angle bracket.

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The following chart gives an executive overview of various configurations.
See full catalog for detailed description and performance details.

Loop Antenna Selection Chart

Model	Directional gain dB (rel. to Isotropic) 2	5	10	15	20	30 MHz	Beamwidth between 3dB pts. Azimuth 5 MHz	Azimuth 30 MHz	Elevation 5 MHz	Elevation 30 MHz	Site Requirements Length metres	Width metres	Approx. Relative Cost	Comments
Linear Arrays														
4E26	5	8	10	11	9	11	86°	54°	80°	30°	25	1	0.8	Long, Med and Short Haul Circuits
8E13	5	8	10	12	13	14	86°	54°	80°	30°	30	1	1.0	Long, Med and Short Haul Circuits
8E26	8	10	13	14	11	14	76°	40°	54°	21°	60	1	1.4	Long and Med Haul Circuits
16E13	8	10	13	14	15	17	76°	40°	54°	21°	60	1	1.9	Long and Med Haul Circuits
2B/8E13	6	10	13	15	16	17	66°	16°	80°	30°	30	20	1.9	Long, Med and Short Haul Circuits
2B/8E26	8	11	15	16	14	17	66°	16°	54°	21°	60	20	2.6	Long and Med Haul Circuits
2B/16E13	8	11	15	17	18	20	66°	16°	54°	21°	60	20	3.7	Long and Med Haul Circuits
Rosette Systems														
3R/4E26	5	8	10	11	9	11	86°	54°	80°	30°	25 m diameter		2.6	Omnidirectional coverage in Azimuth in 6 sectors
4R/8E13	5	8	10	12	13	14	86°	54°	80°	30°	30 m diameter		4.0	Omnidirectional coverage in Azimuth in 8 sectors
18C50	8	12	14	16	16	17	40°	9°	60°	22°	50 m diameter		6.5	Omnidirectional coverage in Azimuth in 36 sectors

1. Linear Arrays

First *numbers* indicate number of elements in array.
Next *letter* indicates type of array, i.e., 'E' endfire.
Next *numbers* indicate inter element spacing in feet.

2. Combination of Linear Arrays

First *number* indicates number of arrays.
Next *letter* indicates arrangement of arrays i.e., B for Broadside, R for Rosette.
Finally the model number for individual linear arrays.

3. Circular Arrays

First *numbers* indicate number of elements in array.
Next *letter* indicates type of array i.e., 'C' for Circular.
Next *numbers* indicate diameter in metres.

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