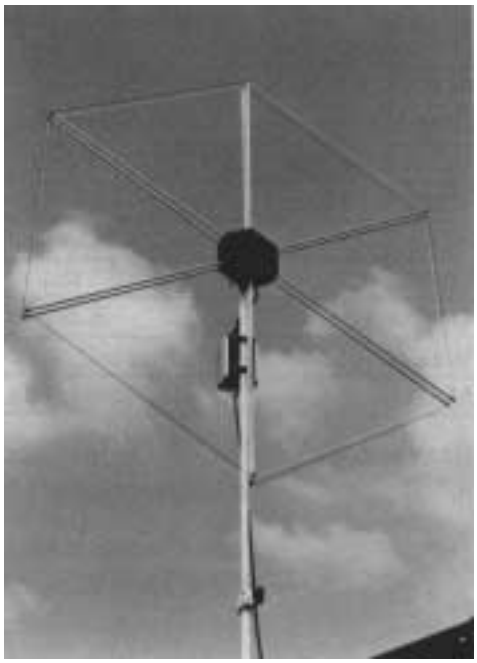
ANTENNA RESEARCH

UNTUNED LOOPS

Antenna Research offers a complete range of untuned loop antennas and antenna arrays for indoor and outdoor surveillance, emission testing, direction finding and other applications. Owing to its classic figure of eight directivity, a loop antenna is ideally suited for direction finding in either single or closed loop setups. Phased arrays are also easy to construct with these antennas.

PLA series passive loop antennas and **ALA series** active loop antennas are available in diameter sizes ranging from 0.1 to 2 meters. The **PLA-030** is capable of handling 1 kW input power and is impedance matched to operate over 1 kHz to 30 MHz in two bands. Models **PLA-030** and **ALA-030** are designed for the shielded room testing requirements of MIL-STD 285 and NSA 65-6. The excellent sensitivity of these antennas makes it possible to measure 100 dB attenuation using **the ALA-030** and **the PLA-030** pair with less than 50 W input power. Models **PLA-205** and **PLA-1030** are passive loop antennas that are applicable for FCC or TEMPEST testing. These models are designed to provide maximum response for measuring low signal levels.



DFL-530/A

Whereas single loops, ie **ALA series** active loop antennas, are limited in their inductance proportional to size, an array of loops can be configured to occupy the same area but significantly reduce the self inductance, thus delivering much greater signal power to the active device. Our **DFL series** loop antennas are designed to produce the spatial transformer action of such an array. **DFL series** antennas become not simply the equal of the active dipole but appreciably more sensitive in the HF ranges. For the size of the loop, **DFL antennas** are the optimum choice for HF applications.

Our **MLR series** untuned loop antennas and **MAA series** loop antenna arrays are ideally suited for HF receive applications. A loop antenna has an almost hemispherical overhead radiation pattern allowing excellent skywave communication. It offers excellent low angle reception at ground level subject only to good conductivity ground conditions and a clear horizon. A loop antenna is an electrical dual of a dipole or a whip but it has significantly better reception of short hop transmissions owing to the loop's absence of a null in the vertical direction. Loop antenna arrays have narrower beamwidth and, correspondingly, higher gain at higher frequencies, which is beneficial for long haul communication.

HF receive loop antennas and multiloop arrays may be integrated with solid state low noise preamplifiers similar to the ones used in our **BBH series** active loop antennas. The single loop antenna element in an **MLR-230 array** is electrically small for frequencies up to 30 MHz. It is made of aluminum tubing and is two meters in diameter. Each element can be mounted on a tripod or on a vertical mast with a base. Several **MLR-230 loop** elements may be assembled in an array for uni or bidirectional end-fire radiation beam patterns. Two, four or eight elements may be arranged in a linear array interconnected via transmission line to produce a unidirectional beam pattern. The bidirectional radiation beam is derived using a separate set of hybrids and delay lines. The inherently low interference between loop elements makes it possible to set up cross arrays for omnidirectional coverage. Multicouplers such as our model **MC-112** may be used for operating up to eight receivers from a single array.

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UNTUNED LOOPS

SPECIFICATIONS: IMPEDANCE: 50 OHMS DIRECTIONALITY: UNI/BI

	FREQUENCY	NUMBER OF ELEMENTS	LOOP SIZE	INPUT POWER	CONNECTOR RF	ANTENNA TYPE
ALA-030	1 kHz - 30 MHz	1	12"	N/A	BNC female	Active Receive Only
DFL-530/A	50 kHz - 30 MHz	1	1 m	N/A	BNC female	
MLR-230	2 - 32 MHz	1	2m dia.	N/A	N female	
PLA-030	9 kHz - 30 MHz	1	12"	1 kW	N female	Passive
PLA-205	20 Hz - 5 MHz	1	24" x 24"	5 W	BNC female	
PLA-1030	9 kHz - 30 MHz	1	24" x 24"	5 W	BNC female	
MAA-2304*	2 - 32 MHz	4	2m dia	1 kW	N female	Array
MAA-2308**	2 - 32 MHz	8	2m dia	1 kW	N female	

*** Directive gain of 4 element array, MAA-2305, is 2 to 11 dBi.**

**** Beamwidth for 8 element array, MAA-2308, is 85° to 53° over the band (directive gain of 5 to 14 dBi).**

DFL-530/A

Mounting brackets are supplied with the antenna for mounting on a tube (Mast), outside diameter 16 - 35mm (5/8 - 1 3/8"). Expected to survive winds up to 100 mph and operate in the temperature range -40 to +65°C.

ALA-030, PLA-030, PLA-205 AND PLA-1030

These antennas may be used for broadband surveillance and other receive applications. The **PLA-030** has two operating bands with the impedance matching optimized for the H-field antenna factor. These antennas may be mounted on any tripod or mast with a 1/4-20 stud.

MLR AND MAA SERIES

These antennas may be mounted on our heavy duty transportable tripod (TP-8) or any other metal tripod with foot pads or a vertical mast with base.

TYPICAL H-FIELD ANTENNA FACTOR (dBAV^{-1}M^{-1})

FREQUENCY	ALA-030	PLA-030	PLA-1030	DFL-530/A
1 kHz	5.5			
3 kHz	-3.0	46.7		
10 kHz	-14.5	36.0	39.4	
30 kHz	-24.9	25.5	29.2	
50 kHz	-29.2	21.1	24.6	-35.0
80 kHz	-34.1	16.4	20.0	-36.0
100 kHz	-35.7	14.7	18.2	-37.0
200 kHz	-41.4	8.7	12.0	-38.5
500 kHz	-48.6	2.8	4.2	-40.5
700 kHz	-51.0	1.0	1.2	-41.0
1 MHz	-55.7	.2	-1.6	-41.5
2 MHz	-61.5	-1.4	-8.1	-42.8
3 MHz	-64.7	-1.6	-11.3	-43.2
6 MHz	-65.9	-10.6	-16.9	-43.6
10 MHz	-62.8	-12.7	-19.5	-44.6
20 MHz	-54.4	-14.2	-20.2	-46.5
30 MHz	-50.1	-14.7	-19.6	-55.5

PLA-030 AND ALA-030

ALA-030 has built in rechageable Power Supply