



INSTRUCTION MANUAL

CONICAL LOG SPIRAL

ANTENNA

MODEL LCA-30

200 MHz - 1 GHz

INSTRUCTION MANUAL

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ANTENNA

200 MHz - 1 GHz

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MODEL LCA-30

SERIAL NO: N/A

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WARRANTY

This Model LCA-30 Conical Log Spiral Antenna is warranted for a period of 12 months (USA only) from date of shipment against defective materials and workmanship. This warranty is limited to the repair of or replacement of defective parts and is void if unauthorized repair or modification is attempted. Repairs for damage due to misuse or abnormal operating conditions will be performed at the factory and will be billed at our commercial hourly rates. Our estimate will be provided before the work is started.

DESCRIPTION AND USE ELECTRO-METRICS MODEL LCA-30 CONICAL LOG SPIRAL ANTENNA

1.0 Description

The Electro-Metrics Model LCA-30 Conical Log Spiral Antenna is a circularly polarized broadband antenna covering 200 to 1000 MHz. The Model LCA-30 performs EMI measurements and specification compliance testing to MIL-STD-826A, MIL-STD-462 plus other military, DOD, and government specifications.

The antenna is manufactured in accordance with Air Force drawings 62J4040 and 62J4041 comprising an ABS cone upon which two logarithmic spirals of 50 Ω coaxial cable are fastened. The Type "N" (female) output connector is located on the phenolic base plate of the cone. A tripod mounting adapter is attached to the antenna near its horizontal center of gravity.

Each Model LCA-30 Antenna is individually calibrated during the manufacturing process with the calibration data (at 1 meter) included in the manual as gain and antenna factors vs frequency. The antenna factor should be used in specification compliance testing to convert the receiver reading, in dB(μ V), to field intensity units, in dB(μ V)/m. The conversion is accomplished by adding the antenna factor in dB to the receiver reading in dB above 1 microvolt.

VSWR is checked for conformance to the typical characteristics shown in Figure 1.

NOTE: From 200 MHz to 300 MHz, cable placement and length can effect the published calibration factors at 1 meter. Therefore:

1. Always use the shortest coaxial cables possible,
2. For consistent results, always use the same placement of coaxial cables to/from antenna to/from receiver/transmitter.

Table 1 indicates the approximate power required when the LCA-30 Antenna is used in radiated susceptibility testing. The power levels shown are based on the typical gain of the antenna and do not include cable losses between the power source and antenna terminals.

2.0 Specifications

2.1 Electrical

Calibrated Frequency Range:	200 to 1000 MHz.
(Calibration Chart furnished with each antenna.)	
Average Power Gain:	2.75 dB.
Power Input Capability:	
Continuous Average Power	100 W
Peak Power (short term)	150 W
Average VSWR:	<2.5:1.
Axial Ratio:	<1 dB.
Average Beamwidth:	80°
Impedance:	Nominal 50Ω.
Polarization:	Circular.
Power Capability:	100 Watts.
Connector:	Type N, female, standard. Type TNC, optional.

2.2 Mechanical

Length:	813 mm (32 inches).
Diameter (maximum):	330 mm (13 inches)
Weight:	7.7 kg (17 lbs).

TABLE 1
APPROXIMATE POWER REQUIREMENTS VS FREQUENCY
FOR
FIELD STRENGTHS AT 1 METER SPACING
ELECTRO-METRICS MODEL LCA-30 LOG CONICAL ANTENNA

FREQ. (MHz)	TYP. ANT. FACT.	TYP. GAIN NUM.	TYP. GAIN dB	1 V/m PWR (W) REQ.	10 V/m PWR (W) REQ.	20 V/m PWR (W) REQ.
200	23	-6.9	0.2	0.16	16.3	65.0
225	22	-5.0	0.3	0.10	10.4	41.7
250	22	-3.6	0.4	0.08	7.6	30.4
275	20	-0.6	0.9	0.04	3.8	15.1
300	19	1.2	1.3	0.03	2.5	10.1
325	18	2.5	1.8	0.02	1.9	7.5
350	18	3.6	2.3	0.01	1.5	5.9
375	18	3.8	2.4	0.01	1.4	5.6
400	18	4.0	2.5	0.01	1.3	5.4
425	19	4.3	2.7	0.01	1.2	5.0
450	19	4.5	2.8	0.01	1.2	4.8
475	20	4.2	2.6	0.01	1.3	5.1
500	20	3.9	2.5	0.01	1.3	5.4
525	21	4.0	2.5	0.01	1.3	5.4
550	21	4.5	2.8	0.01	1.2	4.7
575	21	4.6	2.9	0.01	1.2	4.6
600	21	4.4	2.7	0.01	1.2	4.9
625	22	4.1	2.6	0.01	1.3	5.2
650	22	4.1	2.6	0.01	1.3	5.2
675	23	4.3	2.7	0.01	1.2	5.0
700	23	4.4	2.8	0.01	1.2	4.8
725	23	4.4	2.8	0.01	1.2	4.8
750	24	4.2	2.6	0.01	1.3	5.1
775	24	4.0	2.5	0.01	1.3	5.3
800	25	3.8	2.4	0.01	1.4	5.6
825	25	3.7	2.3	0.01	1.4	5.7
850	25	3.4	2.2	0.02	1.5	6.0
875	26	3.3	2.2	0.02	1.5	6.2
900	26	3.2	2.1	0.02	1.6	6.4
925	26	3.2	2.1	0.02	1.6	6.3
950	26	3.5	2.2	0.02	1.5	6.0
975	26	3.6	2.3	0.01	1.4	5.8
1000	26	4.0	2.5	0.01	1.3	5.3

ELECTRO-METRICS
GAIN AND ANTENNA FACTORS
MODEL LCA-30
LOG CONICAL ANTENNA
1 METER CALIBRATION
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