Equipment Manual
Log-Periodic Antenna

Model 3146

ETS™
EMC TEST SYSTEMS, L.P. – An ESCO Company
E M C O

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USA
2205 Kramer Lane, Austin, Texas 78758-4047
P.O. Box 80589 Austin, Texas 78708-0589
Tel 512.835.4684 Fax 512.835.4729

FINLAND
Euroshield OY
Fankkeen Teollisuusalue
27510, Eura, Finland
Tel 358.2.838.3300 Fax 358.2.865.1233

E-MAIL & INTERNET
support@emctest.com
http://www.emctest.com

REV B - PN 399043

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WARRANTY

The Electro-Mechanics Company (EMCO) warrants that our products are free from defects in materials and workmanship for a period of two years from the date of shipment. If you notify us of a defect within the warranty period, we will, at our option, either repair or replace those products which prove to be defective. If applicable, we will also recalibrate the product

There will be no charge for warranty services performed at the location we designate. You must however, prepay inbound shipping costs and any duties or taxes. We will pay outbound shipping costs for a carrier of our choice, exclusive of any duties or taxes. You may request warranty services to be performed at your location, but it is our option to do so. If we determine that warranty service can only be performed at your location, you will not be charged for our travel related costs.

This warranty does not apply to:

1. Normal wear and tear of materials
2. Consumable items such as fuses, batteries, etc.
3. Products which have been improperly installed, maintained, or used.
4. Products which have be operated outside of specifications.
5. Products which have been modified without authorization.
6. Calibration of products, unless necessitated by defects.

THIS WARRANTY IS EXCLUSIVE. NO OTHER WARRANTY, WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

THE REMEDIES PROVIDED BY THIS WARRANTY ARE YOUR SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT ARE WE LIABLE FOR ANY DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO, DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

Please contact our Sales Department for a Return Material Authorization Number before shipping equipment to us.

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DESCRIPTION AND USE OF THE EMCO MODEL 3146 LOG-PERIODIC ANTENNA

Description

The EMCO Model 3146 Log-Periodic Antenna is a broadband, linearly polarized antenna designed to operate over the frequency range of 200-1000 MHz.

Size considerations are of primary concern in this design. This, as well as an all aluminum construction, makes it easily portable and suitable for use in applications where space is limited, such as shielded rooms. The antenna comes completely assembled and no adjustment is necessary.

Each unit is fully calibrated for use in measurement applications. They are also suitable for susceptability testing and are capable of handling up to 1 kW of power.

Specifications

Frequency Range:	200 - 1100 MHz
Nominal Impedance:	50 Ω
Connector:	Type N
Average VSWR:	less than 2:1
Assembled Dimensions:	
Length:	29.5" (75 cm)
Maximum Width:	29.5" (75 cm)
Depth:	2.5" (6.4 cm)
Weight:	4.5 lbs (2 kg)

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EMCO Calibration of Log Periodic Dipole Antennas

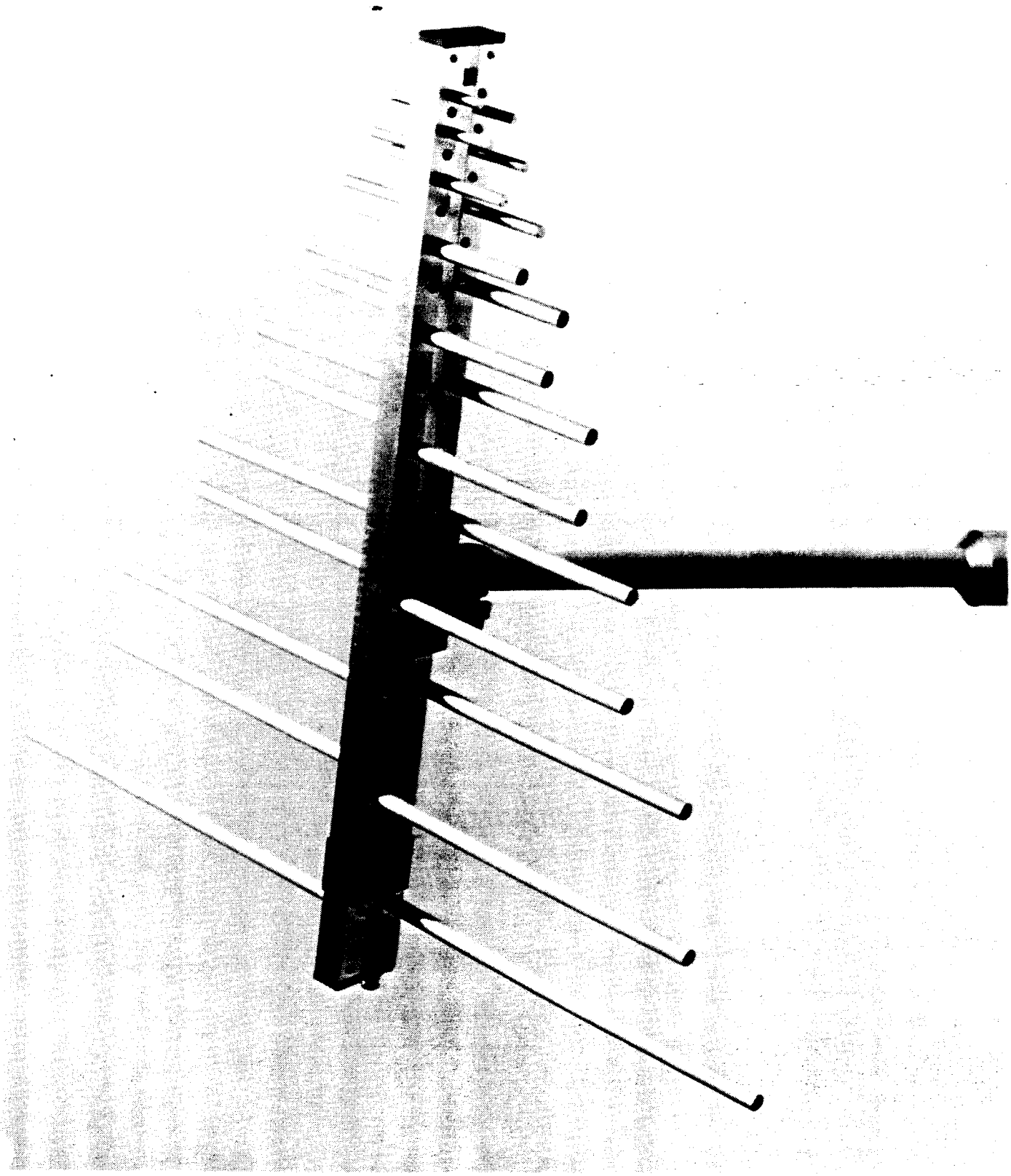
This EMCO Log Periodic antenna was calibrated at a spacing of 1 meter (m) per ARP-958. This document shows that R, the 1m spacing, should be measured tip-to-tip.

This antenna was also calibrated at spacings of 3m and 10m per ANSI C63.5. This document states that "The spacing R between log-periodic array antenna is measured from the projection onto the ground plane of the midpoint of the longitudinal axis of each antenna."

The ARP and ANSI specifications disagree because they were written for different purposes. It seems unlikely at this time that they will ever agree.

Therefore, when calibrating log-periodic array antennas, we measure R, the spacing between antennas, tip-to-tip for the 1m calibration (ARP 958 applications) and midpoint-to-midpoint for the 3m and 10m calibrations (ANSI C63.5 applications). It is important in compliance testing to measure the spacing as it is measured for calibration.

If you would like to discuss this matter, or if you have any other questions, please do not hesitate to contact EMCO.



EMCO Model 3146 Log Periodic Antenna 200 MHz - 1 GHz

Model 3146
Typical Antenna Calibration
and Power Requirements
at 1 Meter Spacing
1000 Watts Maximum Continuous Power

				Field Strengths (E)				
Freq.	A.F.	Gain (dBi)	Gain (Num)	1 V/M	10 V/M	20 V/M	100 V/M	200 V/M
200	17.0	-0.8	0.84	0.040	4.0	15.9	397.9	*
225	14.8	2.5	1.76	0.019	1.9	7.6	189.5	757.8
250	14.3	3.9	2.44	0.014	1.4	5.5	136.8	547.1
275	14.9	4.1	2.57	0.013	1.3	5.2	129.8	519.1
300	16.8	3.0	1.97	0.017	1.7	6.8	168.9	675.6
325	17.5	2.9	1.97	0.017	1.7	6.8	169.1	676.4
350	18.7	2.4	1.73	0.019	1.9	7.7	192.2	768.8
375	17.5	4.2	2.62	0.013	1.3	5.1	127.0	508.0
400	17.1	5.2	3.27	0.010	1.0	4.1	101.8	407.2
425	17.4	5.4	3.45	0.010	1.0	3.9	96.6	386.5
450	18.4	4.9	3.07	0.011	1.1	4.3	108.5	434.0
475	19.8	3.9	2.48	0.013	1.3	5.4	134.4	537.7
500	20.5	3.7	2.34	0.014	1.4	5.7	142.5	570.2
525	19.2	5.4	3.48	0.010	1.0	3.8	95.8	383.4
550	19.5	5.5	3.56	0.009	0.9	3.7	93.6	374.3
575	19.7	5.7	3.72	0.009	0.9	3.6	89.6	358.6
600	20.7	5.1	3.22	0.010	1.0	4.1	103.7	414.6
625	21.5	4.6	2.90	0.011	1.1	4.6	114.8	459.4
650	22.0	4.5	2.80	0.012	1.2	4.8	119.1	476.6
675	21.6	5.2	3.31	0.010	1.0	4.0	100.8	403.0
700	21.6	5.5	3.56	0.009	0.9	3.7	93.7	374.8
725	22.1	5.3	3.40	0.010	1.0	3.9	98.0	392.0
750	22.7	5.0	3.17	0.011	1.1	4.2	105.1	420.5
775	22.8	5.2	3.31	0.010	1.0	4.0	100.8	403.0
800	22.6	5.7	3.69	0.009	0.9	3.6	90.3	361.2
825	22.6	5.9	3.93	0.008	0.8	3.4	84.9	339.6
850	23.2	5.6	3.63	0.009	0.9	3.7	91.8	367.4
875	24.0	5.1	3.20	0.010	1.0	4.2	104.2	416.8
900	24.4	4.9	3.09	0.011	1.1	4.3	108.0	432.0
925	24.3	5.2	3.34	0.010	1.0	4.0	99.9	399.6
950	23.9	5.9	3.86	0.009	0.9	3.5	86.4	345.5
975	24.4	5.6	3.62	0.009	0.9	3.7	92.0	368.1
1000	25.1	5.1	3.24	0.010	1.0	4.1	102.8	411.1

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Model 3146 Typical Antenna Calibration and Power Requirements at 3 Meter Spacing
1000 Watts Maximum Continuous Power

				Field Strength (E)			
Freq.	A.F.	Gain (dBi)	Gain (Num)	1 V/m	10 V/m	20 V/m	100 V/m
200	12.7	3.5	2.25	0.133	13.3	53.2	*
225	12.2	5.1	3.20	0.094	9.4	37.5	937.0
250	13.3	4.9	3.07	0.098	9.8	39.1	977.8
275	14.3	4.7	2.95	0.102	10.2	40.7	*
300	15.5	4.3	2.66	0.113	11.3	45.1	*
325	15.0	5.4	3.51	0.086	8.6	34.2	855.8
350	15.4	5.7	3.71	0.081	8.1	32.4	809.1
375	16.1	5.6	3.62	0.083	8.3	33.1	828.1
400	17.1	5.2	3.27	0.092	9.2	36.6	916.2
425	17.6	5.2	3.29	0.091	9.1	36.4	910.6
450	18.0	5.3	3.37	0.089	8.9	35.6	890.6
475	18.7	5.0	3.19	0.094	9.4	37.6	939.1
500	19.3	4.9	3.08	0.097	9.7	38.9	973.2
525	19.3	5.3	3.40	0.088	8.8	35.3	882.7
550	19.6	5.4	3.48	0.086	8.6	34.5	861.8
575	19.9	5.5	3.55	0.084	8.4	33.8	844.9
600	20.0	5.8	3.78	0.079	7.9	31.8	794.0
625	20.3	5.8	3.83	0.078	7.8	31.4	784.1
650	20.8	5.7	3.69	0.081	8.1	32.5	813.4
675	21.9	4.9	3.09	0.097	9.7	38.9	971.7
700	22.1	5.0	3.17	0.095	9.5	37.8	946.1
725	22.1	5.3	3.40	0.088	8.8	35.3	882.0
750	21.9	5.8	3.81	0.079	7.9	31.5	787.0
775	22.0	6.0	3.98	0.075	7.5	30.2	754.3
800	22.0	6.3	4.24	0.071	7.1	28.3	707.9
825	23.2	5.3	3.42	0.088	8.8	35.1	877.4
850	23.5	5.3	3.39	0.089	8.9	35.4	885.7
875	23.9	5.2	3.27	0.092	9.2	36.7	916.4
900	23.9	5.4	3.46	0.087	8.7	34.6	866.2
925	24.0	5.5	3.58	0.084	8.4	33.6	839.1
950	24.3	5.5	3.52	0.085	8.5	34.1	852.5
975	24.9	5.1	3.23	0.093	9.3	37.2	929.2
1000	25.2	5.0	3.17	0.095	9.5	37.9	946.5

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