Antenna Authority, Inc.

DF Antennas Our Specialty!

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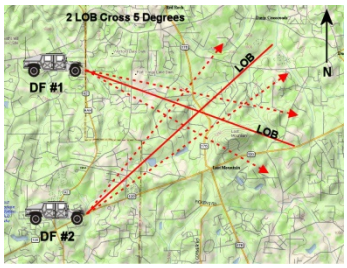


MANUAL
Product Code --- Model LPD-600

Frequency range 600 MHz to 18 GHz

Manual version 4 Dated 12/1/2021

GENERAL DESCRIPTION

Log Periodic Dipole Array (LPDA)

The geometrical configuration of the Log Periodic antenna enables the characteristics to repeat periodically with the logarithm of the frequency. Since the variation of performance characteristics is small throughout one period, and because of the repetitive nature of the antenna, the variation in performance will be small throughout all periods. This result in an antenna with input impedance, gain characteristics, and radiation patterns essentially independent of frequency.

The LPD-600 is a lightweight, medium-gain, log periodic antenna. It is manufactured on printed circuit board, and designed for reception or transmission of linearly polarized radio signals over the useful frequency range of 600 MHz to 18 GHz. Precision construction of the elements results in excellent VSWR and optimal phase relationship. The log periodic array design is very broadband with 50 ohm nominal impedance and a unidirectional radiation pattern. It is compact, rugged, and weather resistant and incorporates a handle, cable strain relief, and a ¼"-20 threaded insert for mounting on a camera tripod.

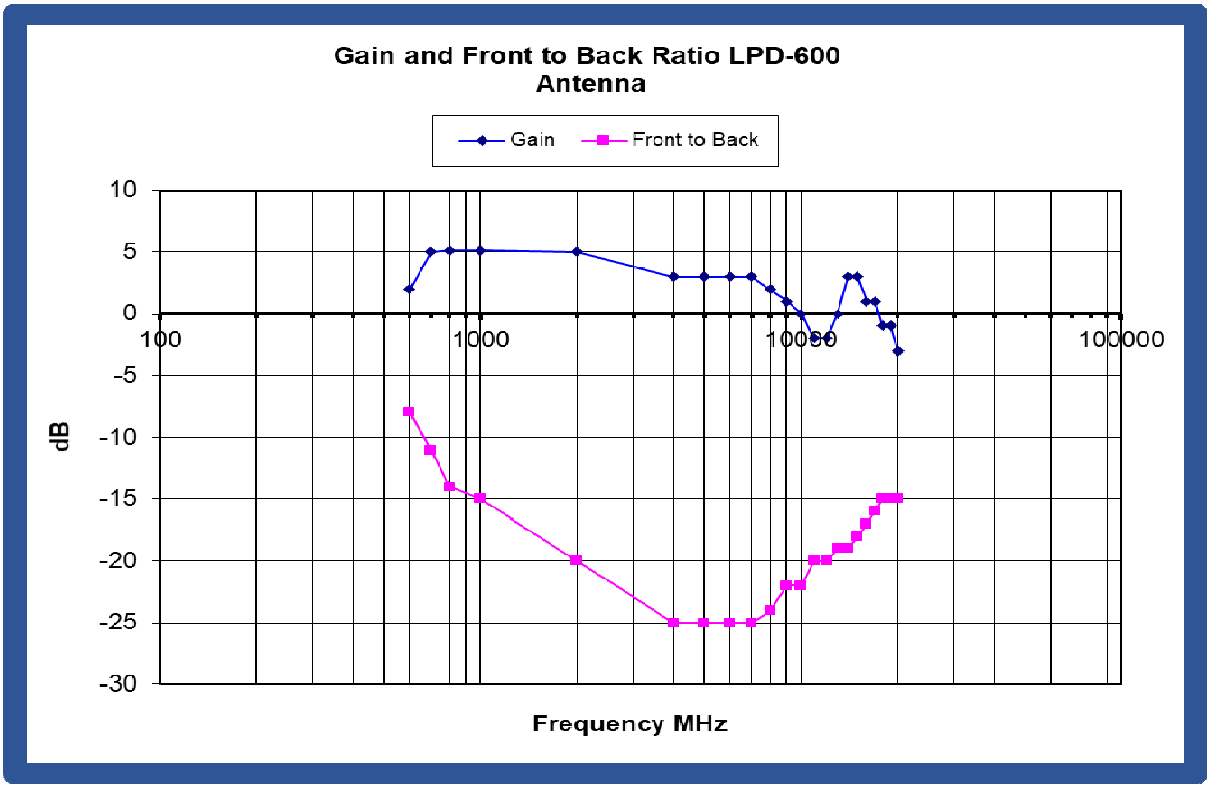
The antenna is constructed of lightweight copper clad PC board and corrosion-resistant aluminum, providing years of trouble free performance. It is manufactured on FR4 .063" fiberglass board and is triangular in shape. It has a transposed strip line feed arrangement which provides an end fire pattern. Its maximum gain is off the tip of the structure in the direction of the boom axis.

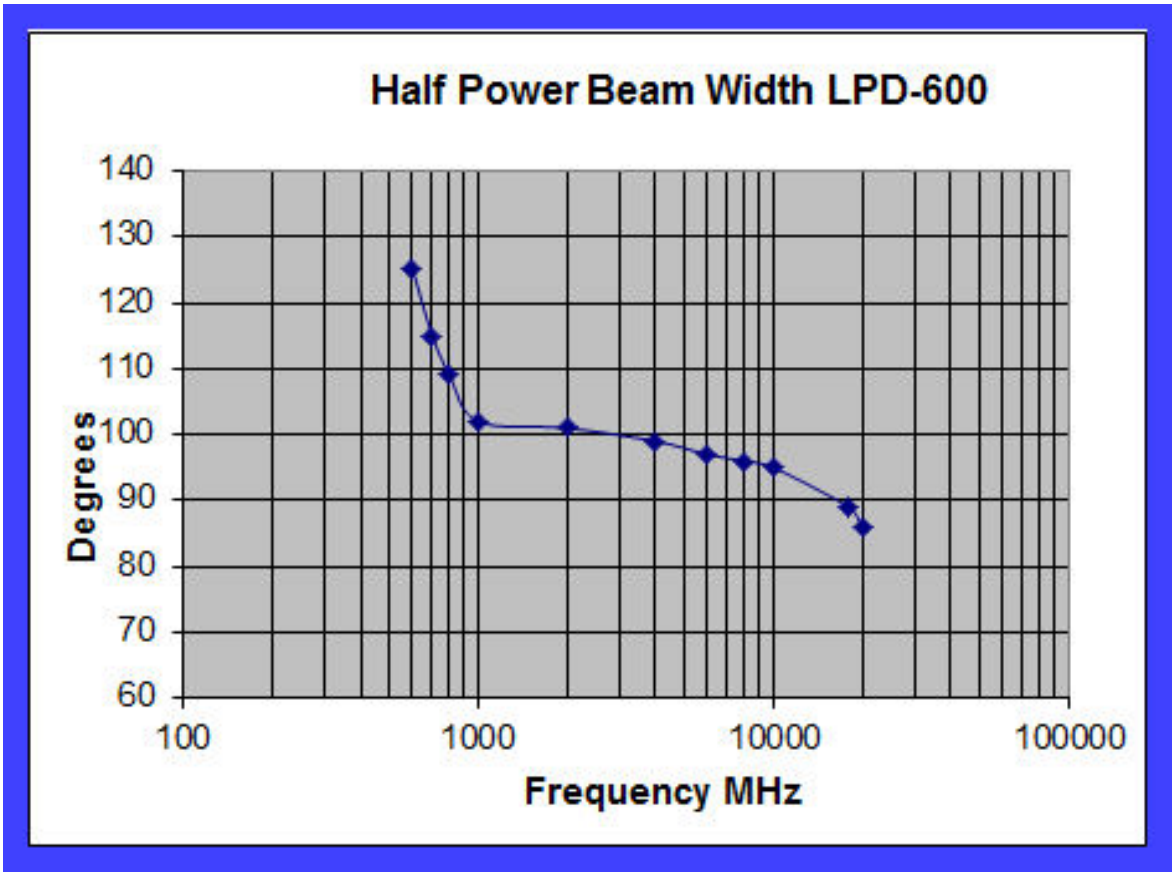
The gain of the antenna varies across the band from 0 dBi to +6 dBi A good front-to-back ratio is maintained at about 8 to 30 db and thereby maintains a unidirectional radiation pattern useful for radio direction finding. Representative gain, front-to-back and half power beam width radar pattern curves are shown below.

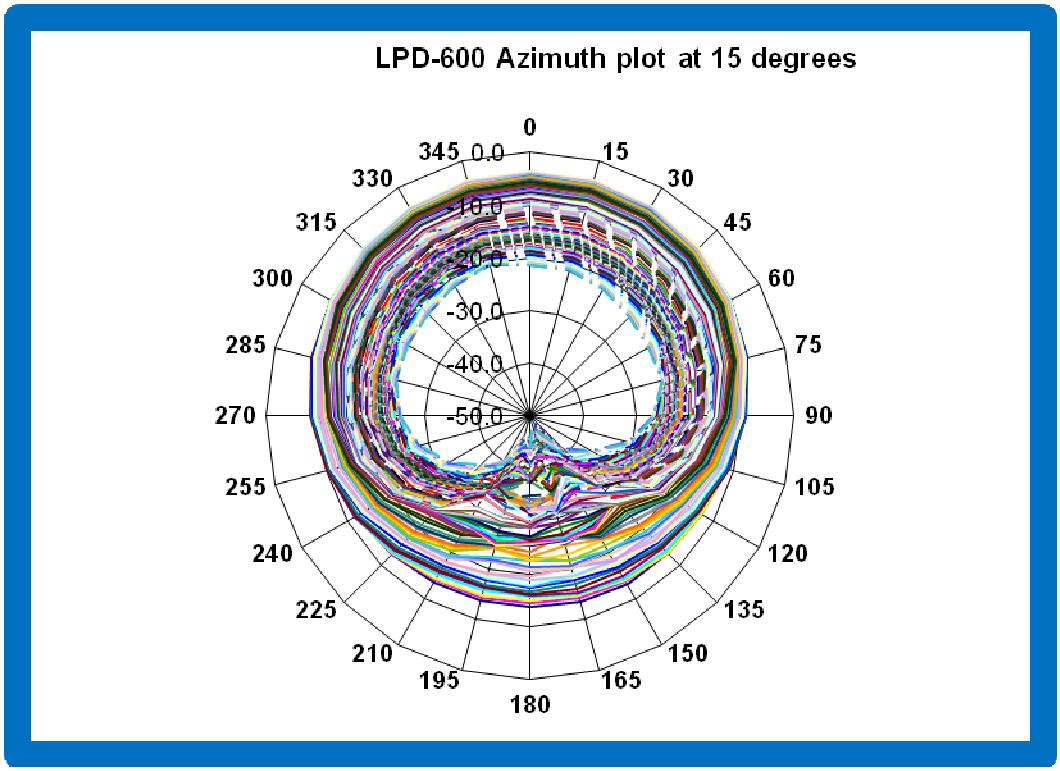
The LPD-600 is intended to be used as a receiving antenna, however, it may be used for transmitting at low power levels. Power is limited primarily by the power dissipation capability of the circuit board. **Do not exceed 1/2 Watt CW input power. Exercise caution when applying power if the antenna housing is wet**.

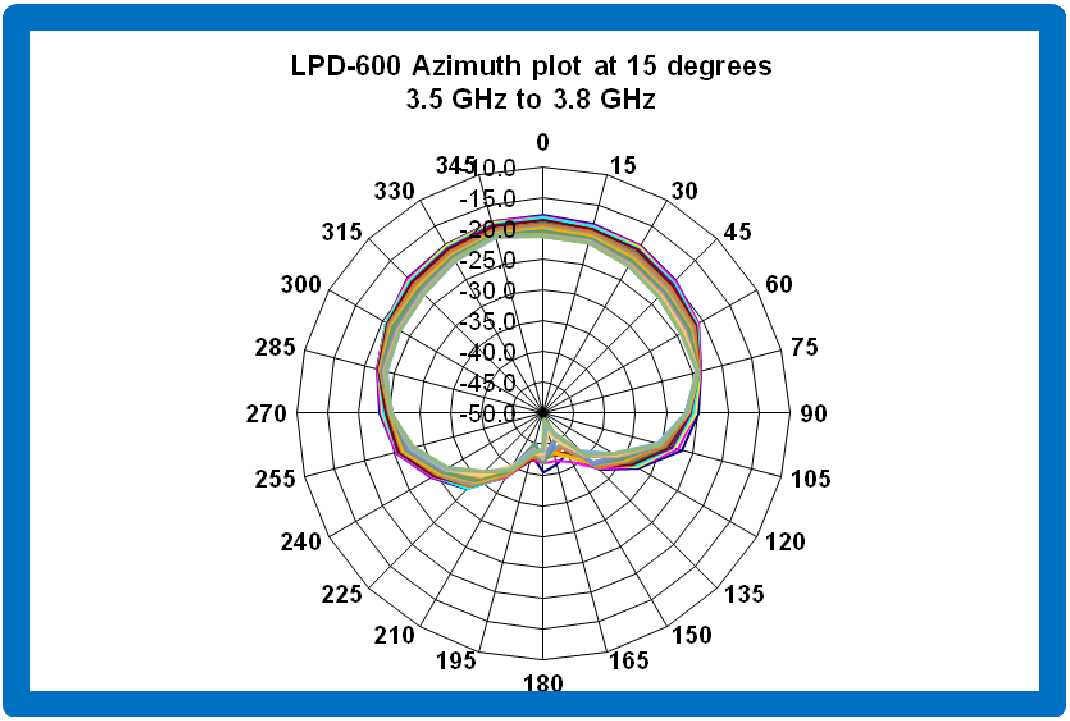
Connecting the coax

The LPD-600 is provided with a standard microwave SMA connector. The SMA connector is fragile and can sustain damage if subjected to over flexing or abuse. Attach cables slowly, making sure the threads are straight and do not over tighten the 5/16 inch shell.


Gain and Front to Back Ratio LPD-600 Antenna
Gain
Front to Back
10
5
0
-5
-10
-15
-20
-25
-30
dB
100
1000
10000
100000
Frequency MHz


Half Power Beam Width LPD-600
140
130
120
110
100
90
80
70
60
Degrees
100
1000
10000
100000
Frequency MHz


LPD-600 Azimuth plot at 15 degrees
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
0.0
-10.0
-20.0
-30.0
-40.0
-50.0

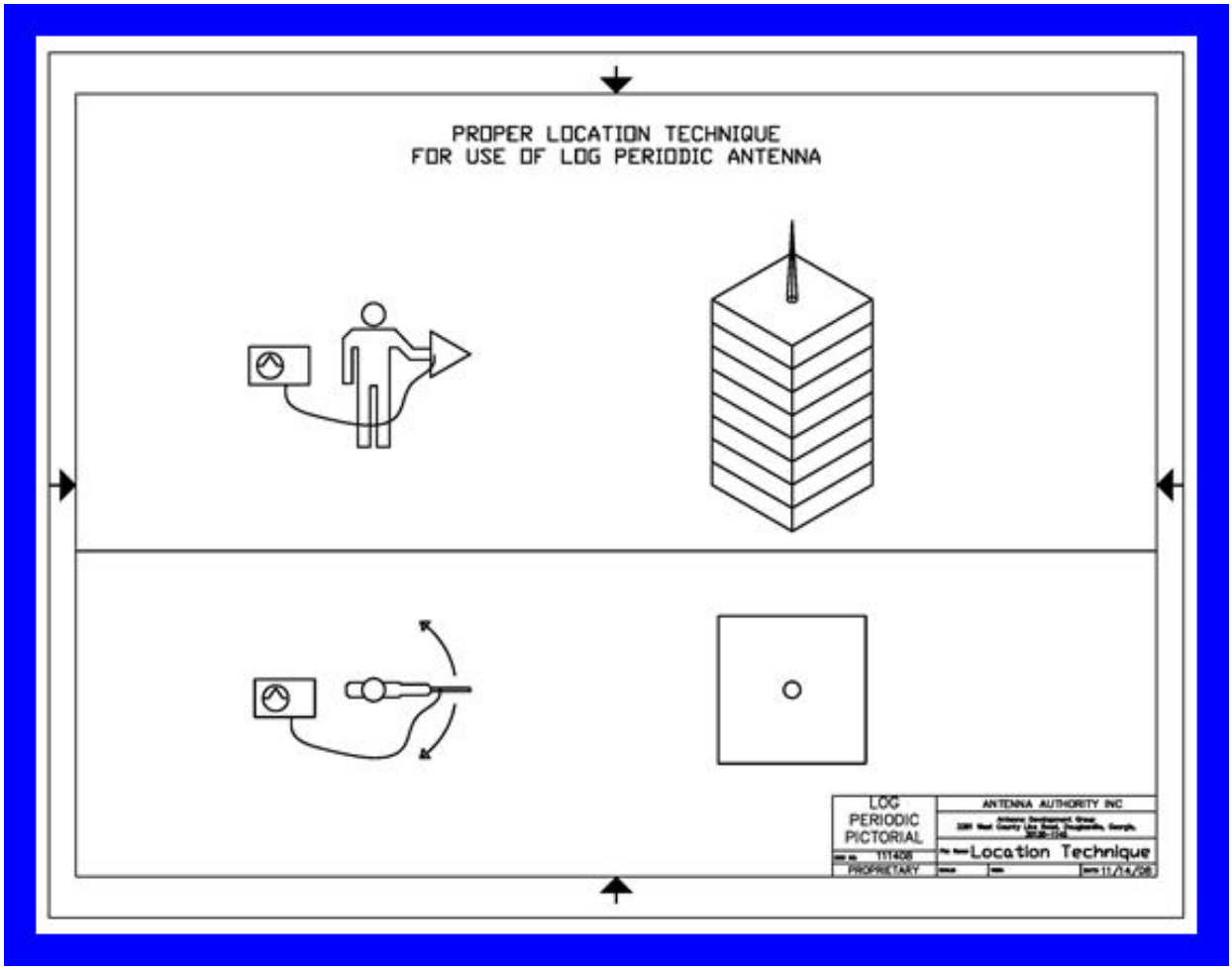

LPD-600 Azimuth plot at 15 degrees
3.5 GHz to 3.8 GHz
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0

Examples of how to use the Portable Log Periodic Antenna.

The log periodic antenna is linearly polarized. Hold the antenna vertical, for vertically polarized signals. Typically this will be a whip antenna and most of your signals will be vertical. Orient the antenna horizontally for horizontal signals. Since circularly polarized signals have both polarizations it does not matter how you hold the antenna.

Swing the antenna back and forth in azimuth across the suspect target direction and look for a maximum in the signal level. The log periodic antenna has a broad pattern so there will not be a direct sharp peak but will cover 90 degrees or more. The target direction will be in the middle of the broad peak. In some situations, the null off the back of the antenna may provide a more accurate indication of the signal direction.

If the receiver has an active Automatic Gain Control (AGC), it will be more difficult because the receiver regulates internal gain circuits to hold the signal level constant. Most radios do not allow you to turn off the AGC. If your target is an FM signal it will be even more difficult because in the FM mode most receivers use limiting to hold the level constant. In this case, getting the signal “into the noise” is the best option where the AGC circuits are running at maximum and can no longer drive the signal into limiting. A spectrum analyzer is often a better choice for displaying the signal level visually, rather than relying on an aural indication.



LPD-600 TECHNICAL SPECIFICATIONS

ELECTRICAL

Frequency Range:	600 MHz to 18 GHz
Radiation Pattern:	Unidirectional in the H and E planes
Front-to-Back Ratio:	8 to 25 dB
Power Gain:	0-5 to +5 dBi
Polarization:	linear
Impedance:	50 Ohm, nominal
VSWR:	1.5: 1 max
Transmitting Power:	1/2 Watt CW Maximum
Connector:	SMA

MECHANICAL

Dimensions:	12 inches long by 9 inches wide, triangularly shaped with handle and ¼"-20 threaded insert
Weight:	7 oz without cabling
Material:	FR-4, double sided 0.063 inch thick 2 oz. copper

MAINTENANCE AND TROUBLE-SHOOTING

The design of the LPD-600 is such that little or no maintenance is required under normal usage. The housing should be kept reasonably clean and dry and the connector must be kept free of any debris.

If the antenna is suspected of failure, some simple tests will usually isolate the problem. First, visually inspect the connector at the rear and be sure the cabling is seated properly. Any unseen damage to the connector or feed line may be revealed using an ohm meter. The center pin of the connector to shield of the SMA should be about 50 ohms. Field repairs can be accomplished as necessary or return the product for service

ORDERING INFORMATION

Antenna: Model No. LPD-600

Shipped with: Antenna LPD-600, Coax cable, Shipping case, and Manual

One year warranty on parts and labor
Specifications subject to change without notice
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