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DF Antennas Our Specialty!
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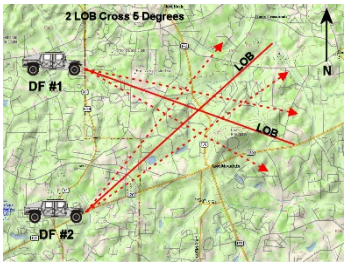
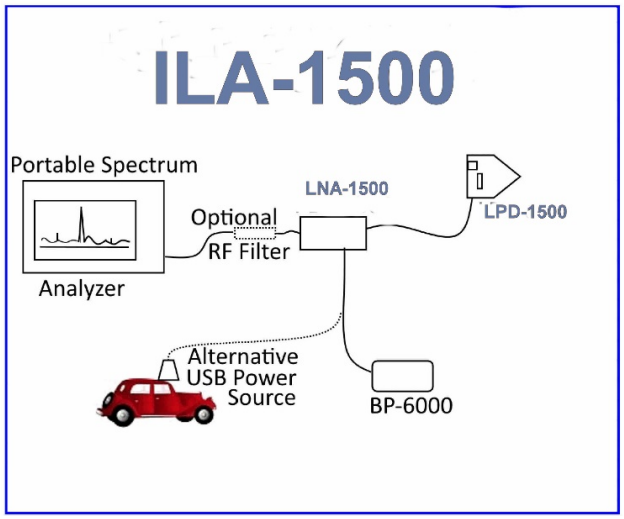


PRODUCT SPECIFICATIONS for ILA-1500-KIT
INTERFERENCE LOCATOR ANTENNA KIT

FOR USE WITH
CELL PHONE INTERFERENCE
GPS INTERFERENCE
SATELLITE CELL PHONES INTERFERENCVE
SATELLITE CELL PHONES

This portable antenna system is ideal for detecting any L band signal source. The modular design makes it possible to adapt a spectrum analyzer or receiver for specific customer requirements in order to find even the weakest signal in demanding scenarios. This system consists of a log periodic antenna (LPD-1500), low noise amplifier (LNA-1500), and battery pack BP-6000. It requires 5 VDC which is the typical output for USB connector. It comes with a 6000 mAh battery pack that will run the system for up to 24 hours or it can operate directly off of a typical USB charging port with a 12v to USB adapter. It also comes with belt clip and LED indicator. Battery pack may look different due to improvements in batteries over the years.

Many interference sources and GPS-Cell jammers are a serious problem, whether they are fixed or mobile they can be a safety hazard to airports and marine ports and need to be located quickly and efficiently. Identifying the physical location of a signal source is a difficult but frequently performed task in the field of radio monitoring and radio location. The technical solutions employ a range from simple portable device to large permanently installed systems. The ILA-1500 portable antenna system is a compact and efficient solution for pinpointing the original signals.



The model LNA-1500 is a broadband solid-state low noise 50-ohm input, 50-ohm output amplifier covering the frequency range of 500 to 2500 MHz. It is a class A solid-state linear amplifier for good reliability and has a maximum RF output of +18 dBm with low harmonic and intermodulation distortion. This model will amplify inputs of AM FM SSB and other complex modulations with minimum distortion and provides 30 dB of gain.

The unit is unconditionally stable and will not oscillate for any possible combination of source and load and is protected against failure due to output load mismatch. It will also tolerate up to 0 dBm input for all load conditions.

The availability of portable cell phone and GPS jammers can be a serious problem. Whether they are fixed or mobile they can be a safety hazard to airports and marine ports and they need to be located quickly and efficiently.

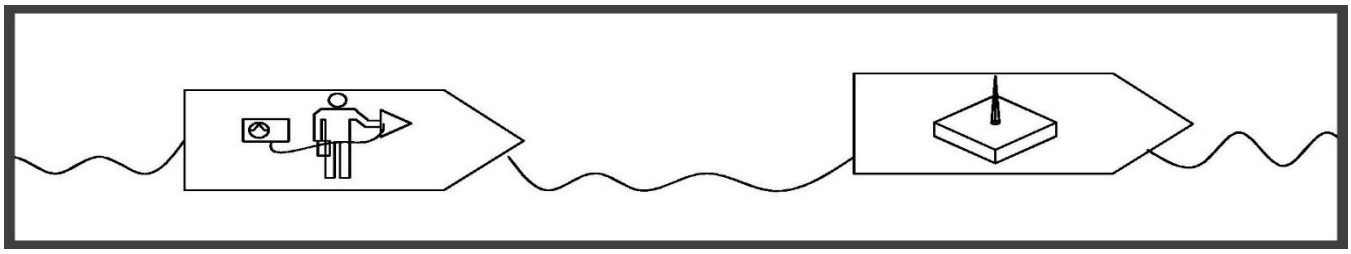
In addition to intended interference, there are spurious signals created in normal transmitters which may reradiate in these bands because of corrosion, poor design, or other problems.

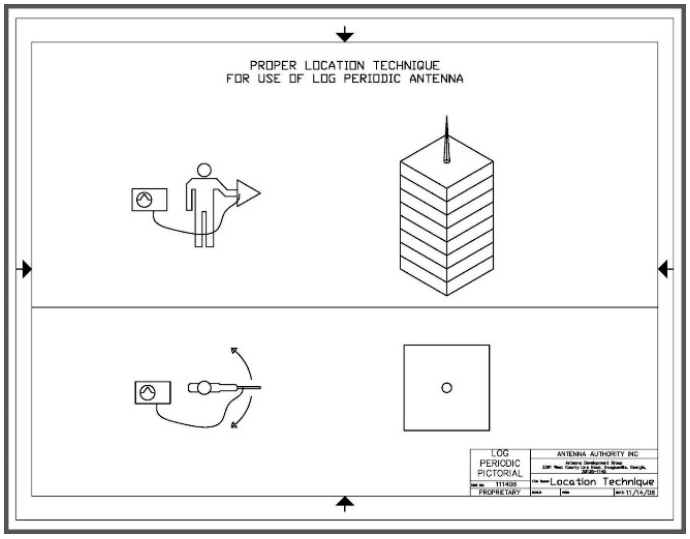
A SAT phone may also be located using this unit whether it be on land or at sea.

Once the interfering signal is identified, this relatively inexpensive high gain log periodic antenna and low noise amplifier can be used with a portable spectrum analyzer or receiver to home in directly to the source of the interference. Alternately, the user may draw lines of bearing (LOB) on a map from various locations by car, boat, or on foot to produce a ‘fix’ location on a map.

Identifying the physical location of a signal source is a difficult task to perform. GPS signals are very weak so it does not take a very strong signal to override the GPS information if the interference signal source is close to the receiver. In addition, intermod products from high power transmitters close to the interfering source can overload the LNA so it is often necessary to add a band filter between the antenna and the LNA in order to more easily identify the source.

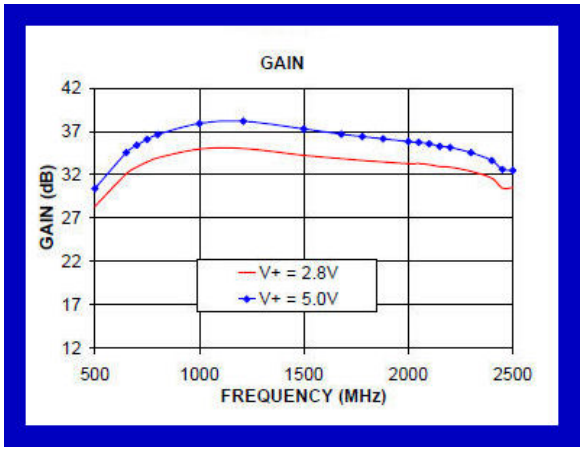
Satellite phones operate at high frequencies in the L band and their horizontal propagation distances are relatively short and generally along a ‘line of sight’. The phones are also quite low-power (generally one watt or less) and the fact that they are usually handheld makes the range quite short across the ground. The low height, even when on a boat on the water would not be more than 6 to 20 feet above “ground level”. Because of the curvature of the earth this may limit the maximum horizontal range to 6 or 8 miles.

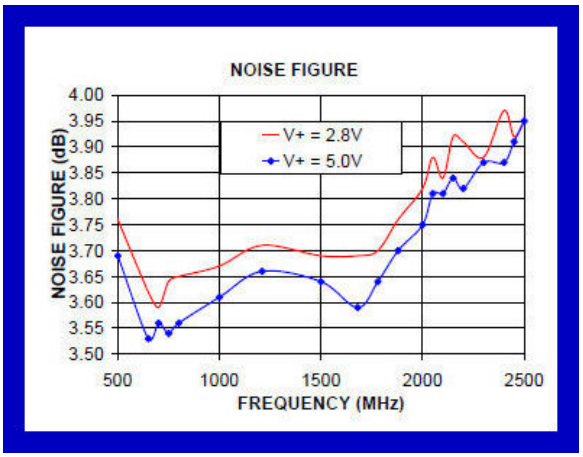




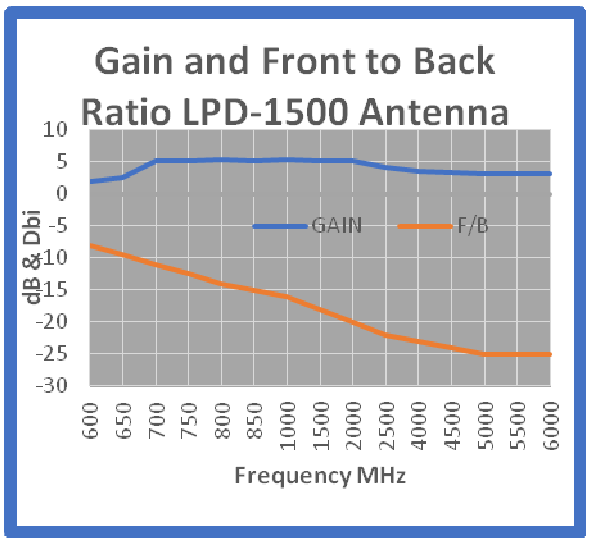
For the final actual location of the interfering signal, a typical homing technique by rotating the antenna to determine the direction of the highest signal strength will allow the user to follow the signal direction until the source is found. However, due to bearing errors, building reflections, and multipath, you will generally have to perform the final location on foot.

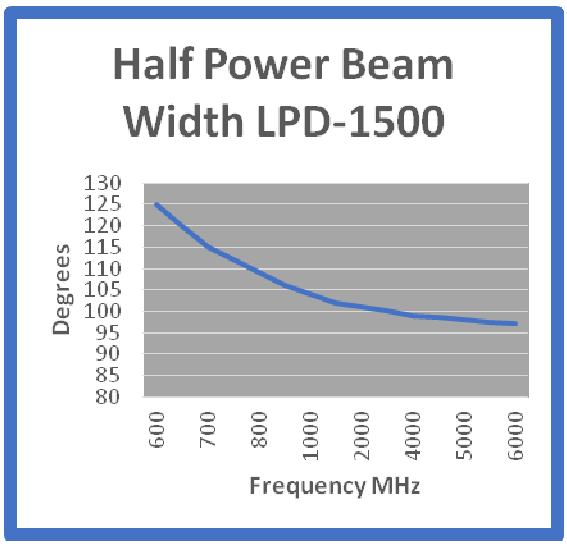
The gain and noise figure graphs for LNA-1500 Amplifier

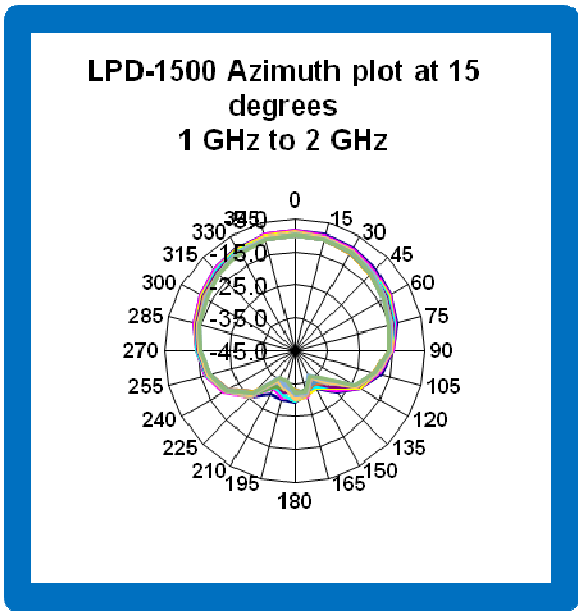


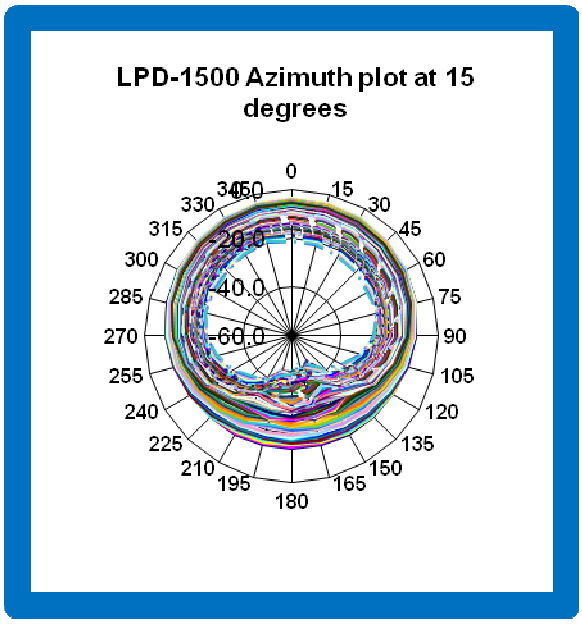


The gain and radar pattern graphs for LPD-1500 Antenna







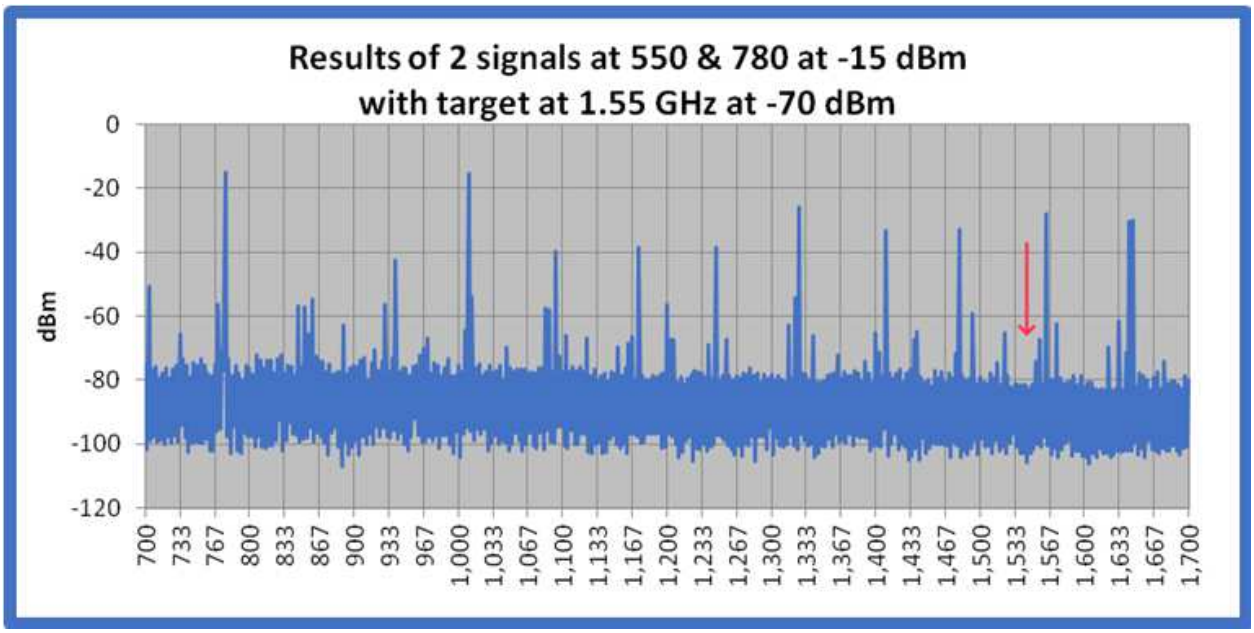


When the BP-6000 is plugged into a USB port the battery pack will ‘pass through’ the 5 VDC to the output USB type A connectors. The battery status is indicated by five small blue lights on the side of the pack. When you are using power, these lights illuminate. All five LEDs indicates that the battery is fully charged. When you get down to one LED, the battery is almost depleted and should be recharged.

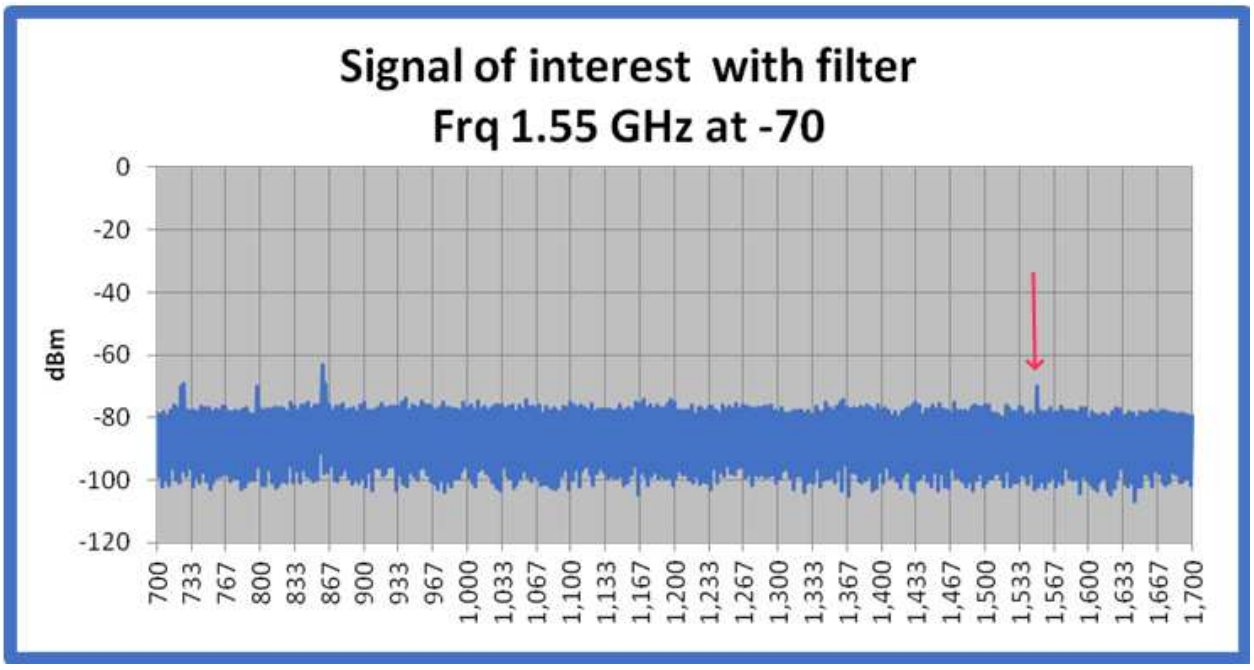
This BP-6000 features an impressive 6000+ mAh capacity – adequate for 3 days of operation (and can be used to charge your most power-hungry smartphone). It includes two charging ports, so you can charge up to two devices at the same time. Charging the battery pack is as simple as plugging it’s (micro USB) charging cable into any USB charging port. It will automatically begin charging without having to press or hold any buttons.

As battery performance improves over the years the battery pack type, size, and specifications may change.

When there are two or more high level signals in the passband of the signal of interest, significant intermodulation products may be created. This would be the case if you are near a television or other broadcast station. A narrowband filter is extremely helpful in eliminating those intermod signals. Note in the graphs below before and after adding a narrowband filter. The two interfering signals are at about 776 MHz and 1010 MHz at -15 DBM. The target signal is at 1.55 GHz and -70 DBM. Notice the two interfering signals generate products that completely obliterate the target signal by saturating the analyzer and reducing potential gain. Adding the filter reduces the intermod and the lower level interfering signal can be identified.



Band Pass Filter



Electrical Specifications

Frequency Coverage LPD	500-2500 MHz
Antenna Gain	0 to 6 dBi
Front to Back Ratio	8 to 30 dB
LNA Amplifier Gain	30.8 dB typical
DC voltage	5 Volts
Current	100 mA
IP3	27 dBm
1 dB compression	17 dBm
Noise Figure	<= 3.5 dB
Connectors	SMA

Electrical Specifications Battery Pack

Run time LNA-1500	24+ Hours
Voltage:	5 VDC
Current	1 Amp
Battery Power Capacity	6000 mAh
Connector power out	USB A
Connector power in charging	MICRO USB

Mechanical Specifications

Amplifier Dimensions:	Width: 2.5", Length: 4.2", Height: 1"
Amplifier Weight:	9 oz
Antenna Dimensions:	Width: 8.5", Length: 12", Height: 1"
Environments:	Operating: -40°C to +85°C

Ordering Information

Amplifier with portable power Model No. ILA-1500

Supplied with

Antenna	LPD-1500
Amplifier	LNA-1500

Battery Pack BP-6000
1500-1650 MHz Band Pass Filter
Coax
Automotive Charger
BP-6000 Charging Cable
LNA-1500 Power Cable
Waterproof Shipping Case

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

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