When precision matters.™

VeraPhase™ 6000Antenna
High Precision Full GNSS Constellation Antenna

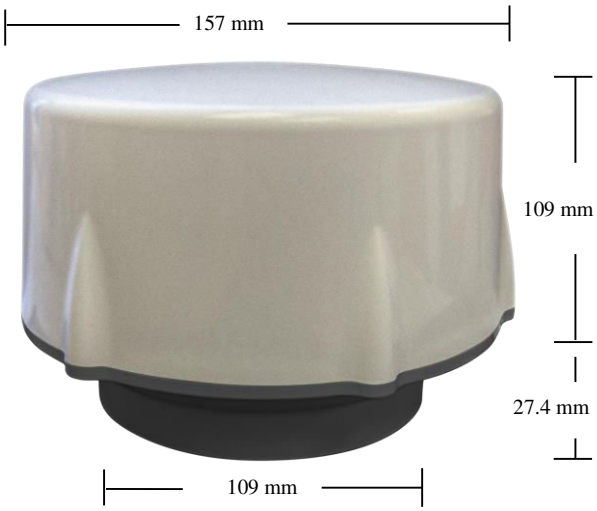
The patented *VeraPhase*™ 6000 antenna Series is a full GNSS Constellation antenna that provides the lowest axial ratios (horizon to horizon, over all azimuths) across all GNSS frequencies (<0.5dB at zenith, <2 dB at horizon). It provides exceptional front to back ratios, high efficiency (>70%), a tight PCV (± 1mm), and near constant PCO for all azimuth and elevation angles, over all in-band frequencies. The performance of the VeraPhase™ rivals any geodetic / reference antennas including choke ring antennas but is lighter, smaller, and more economical.

The VP6000 provides high receive gain over the full GNSS spectrum: Low GNSS band (1164MHz to 1300MHz) L-band correction services (1525MHz to 1559MHz) and High GNSS band (1559MHz to 1610 MHz). It is available with a number of robust pre-filtered LNA variants, each with high IP3 to minimize de-sensing from high-level out-of-band signals, including 700MHz LTE, while still providing a noise figure of less than 2.2dB.

An uncommitted PCB is available within the base of the antenna for integration of a custom system board such as a dual band or RTK GNSS receiver or other applications.

For reference station installations the VP6000 is available with a conical radome to discourage birds and to shed ice and snow, and a robust, precise monument mount is also available.

The VP6000 is also available with a robust rubber bumper for field use.



VeraPhase 6000 Dimensions (mm)

Applications

- Survey
- RTK / PPP systems
- Custom OEM Products
- GNSS Reference Stations
- High Precision GNSS systems

Features

- Axial ratio: 2 dB max from horizon to horizon
- Very Tight Phase Center Variation (<1mm)
- Invariant performance from: +2.7 to 24 VDC
- Space in housing for integrated L1/L2 receivers RTK or other OEM system.

Benefits

- Broadest tracking elevation (0° - 180°)
- Extreme precision
- Excellent multipath rejection
- Great signal to noise ratio
- IP67, REACH, and RoHS compliant
- Reduce time to market

VeraPhase™ 6000 – High Precision Full GNSS Constellation Antenna

Specifications (Measured @ Vcc = 3V, and Temperature=25°C)

Antenna

Antenna Gain	5 dBic to 7 dBic (all Frequency Bands)
Efficiency	>70%
Axial Ratio, over full bandwidth	< 0.5 dB at zenith, 2dB max at horizon
Practical tracking elevation	0° - 180°
Phase Centre Variation	± 1 mm across all frequencies (see graphs on following pages)
Phase Centre Offset	± 1 mm across all frequencies

Electrical

Available LNA Configurations	35 dB, 50 dB or pre-filtered 15dB OEM pre-amp
Gain Variation with Temperature.	3dB max over operational temperature range
LNA Gain Flatness	1.5 dB over frequency range
P1dB Output	+11 dBm
Bandwidth	1164 – 1300 MHz plus 1559 – 1610 MHz plus 1525 – 1559 MHz,
LNA Noise Figure	2.2dB typ. at 25°C with pre-filter 1.5dB typ. at 25°C no pre-filter
VSWR (at LNA output)	<1.5:1 max.
Supply Voltage Range	+2.7 to 24VDC nominal
Supply Current	<40 mA
Out of Band Rejection	(see graph on following pages)
Group Delay variation	<5 ns
Other:	Capacity to include L1/L2 receiver or RTK or other OEM applications.

Mechanicals & Environmental

Mechanical Size	See drawing on page 1
Antenna Reference Plane (ARP)	Metal Antenna Base
North Orientation Indicator	Mark on radome above connector
Operating Temperature Range	-40°C to +85°C
Weight	<670 g
Mounting Thread	5/8”x 11 TPI female
Environmental	IP67, RoHS and REACH compliant
Shock	Vertical axis: 50 G, other axes: 30 G
Vibration	3 axis, sweep = 15 min, 10 to 200 Hz sweep: 3 G

Ordering Information:

VeraPhase 6000R with 50 dB LNA, Conical radome,	33-605000-aa-00-01
VeraPhase 6000S with 35dN LNA, flat white radome, and bumper	33-603501-aa-00-11
VeraPhase 6000B with 35 dB LNA, flat white radome	33-603500-aa-00-11

Where aa is connector type (01 – TNC, 14 – N-Type)

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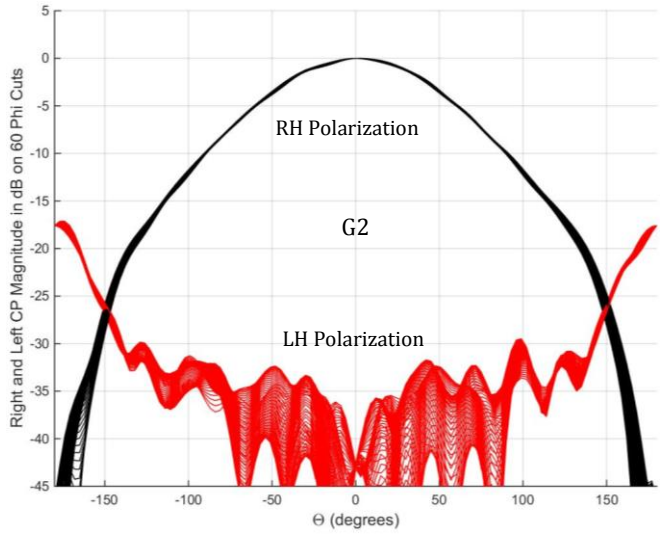
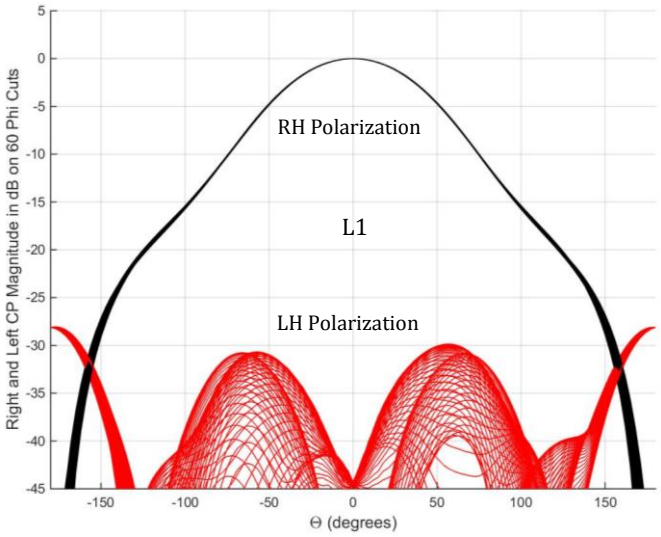
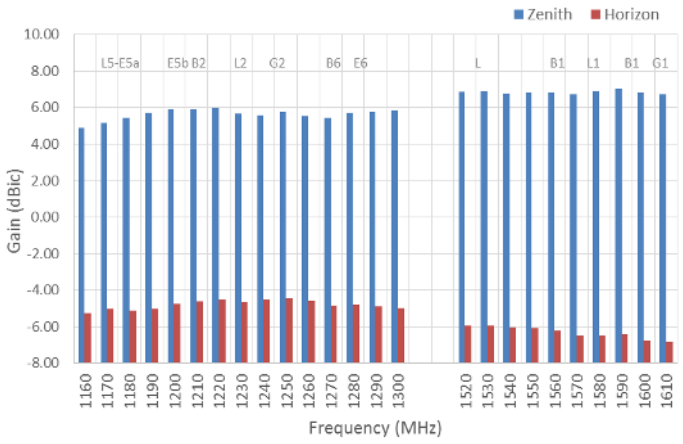
Antenna radiating performances

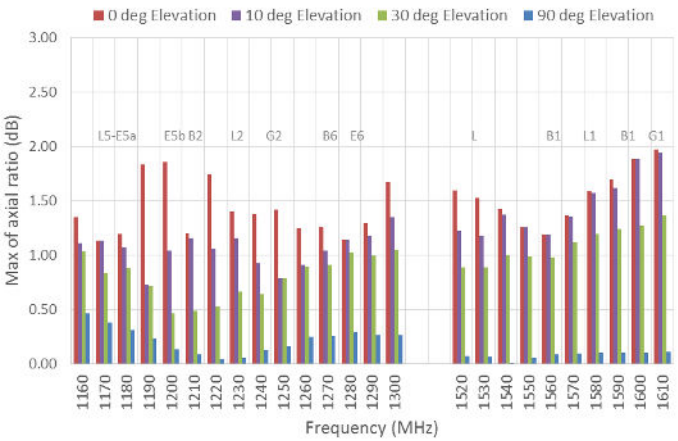
Normalized radiation patterns





Gain and axial ratio





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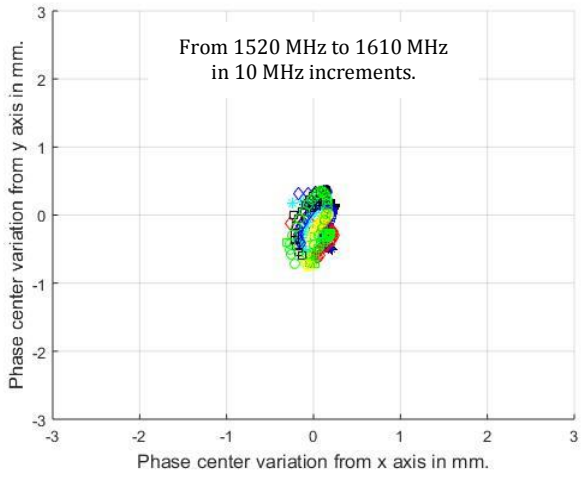
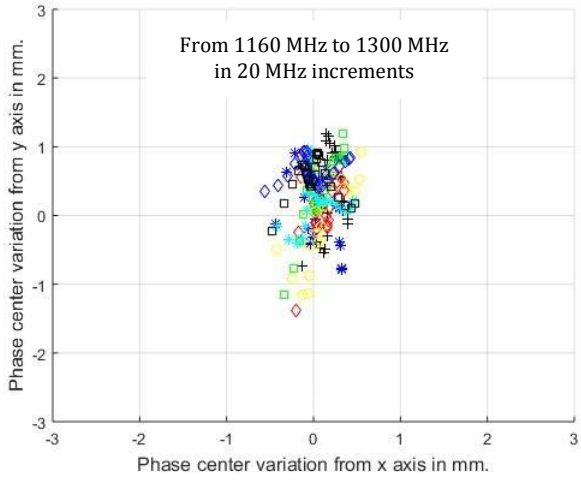
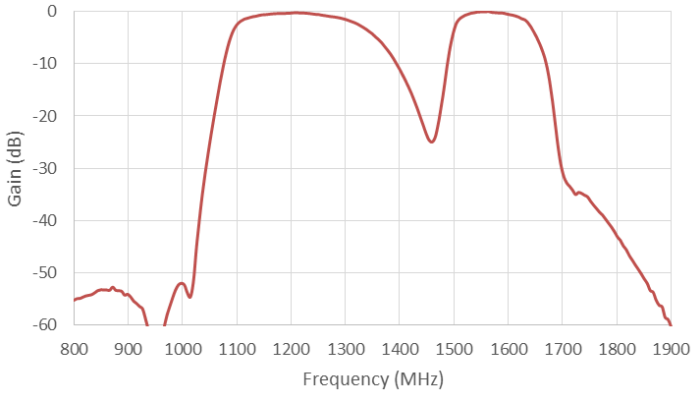
Phase center variation





LNA – Out of band rejection



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