



VeraPhase® 6000 Antenna High Precision Full GNSS Spectrum Antenna

The patented VeraPhase® 6000 antenna is a full GNSS spectrum antenna plus L-band correction services. It has consistent performance (gain, axial ratio, PCV, and PCO) across the full bandwidth of the antenna. It provides the lowest axial ratios (horizon to horizon, over all azimuths) across all GNSS frequencies (<0.5dB at zenith, <2 dB typ. at horizon). It has an exceptional front to back ratios, high efficiency (>70%), a tight PCV, 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, more economical, and requires less power. The antenna has been calibrated by GEO++ and the type mean calibration files are available in the IGS and NGS databases.

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 has a robust pre-filtered LNA, 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 2.0dB.

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

Applications

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

Features

- Low axial ratios from horizon to horizon
- Very Tight Phase Center Variation (<1mm)
- Low current (35mA)
- Invariant performance from: +2.7 to 24 VDC
- Space in housing for integrated PPP, RTK

Benefits

- Consistent performance across all frequencies
- Broadest tracking elevation (0° - 180°)
- Extreme precision
- Excellent multipath rejection
- IP67, REACH, and RoHS compliant
- Reduced time to market



VeraPhase 6000 Dimensions (mm)
Conical Radome also available



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, (refer to table below for other elevations)
Phase Centre Variation	± 1 mm across all frequencies (see graphs on following pages)
Phase Centre Offset (RMS)	± 0.2 mm across all frequencies
IGS model available	Yes
NGS model available	Yes

Electrical

Available LNA Configurations	35 dB, 50 dB or 15dB OEM
Gain Variation with Temperature.	3dB max over operational temperature range
LNA Gain Flatness	1.5 dB over frequency range
P1dB Output	+12 dBm
Bandwidth	1164 – 1300 MHz plus 1559 – 1610 MHz plus 1525 – 1559 MHz,
LNA Noise Figure	2.0dB typ. at 25°C
VSWR (at LNA output)	<1.5:1 max.
Supply Voltage Range	+2.7 to 24VDC nominal
Supply Current	<35mA (35dB gain) <45 mA (50dB gain)
Out of Band Rejection	<800MHz >60dB <900MHz 45dB <1000MHz 15dB (min) 1430MHz 25dB >1690MHz 25dB (min) >1710MHz >60dB
Group Delay variation	<5 ns

Mechanicals & Environmental

Mechanical Size	See drawing on page 1
Antenna Reference Plane (ARP)	Bottom of 5/8" thread
North Orientation Indicator	Mark on radome above connector
Operating Temperature Range	-40°C to +85°C
Weight	<800g (flat radome), 820g (conical radome)
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 6000 with 35 dB LNA, flat white radome	33-603500-xx-00-11
VeraPhase 6000 with 50 dB LNA, flat white radome	33-605000-xx-00-11
VeraPhase 6000 with 35dB LNA, conical white radome	33-603500-xx-00-01
VeraPhase 6000 with 50dB LNA, conical white radome	33-605000-xx-00-01
Where xx = 01 for TNC or 14 for N-Type	

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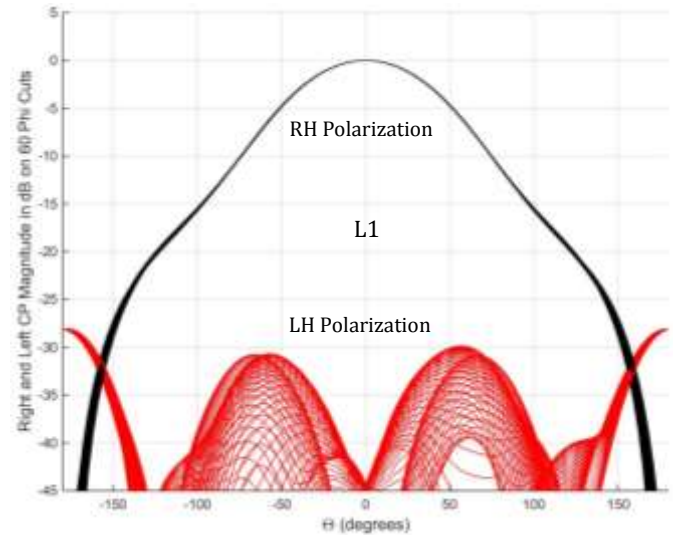
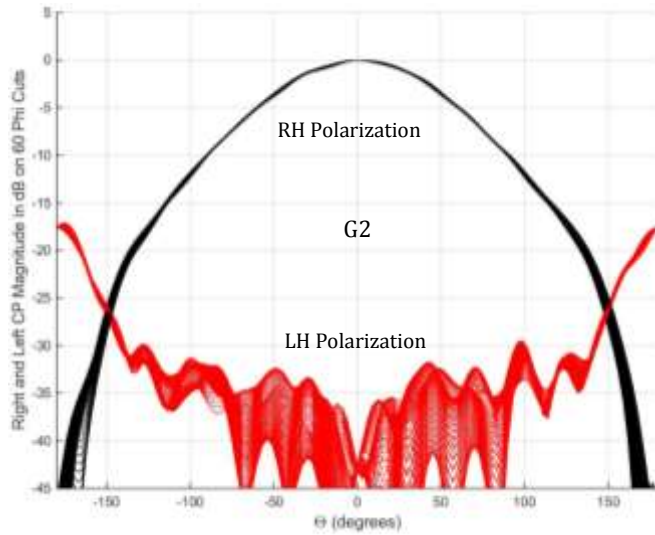
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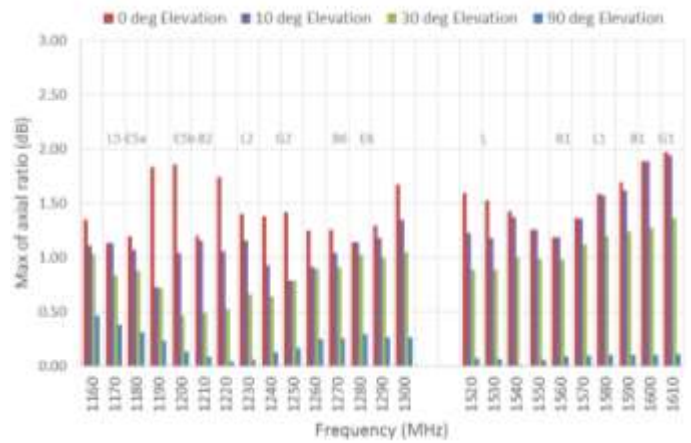
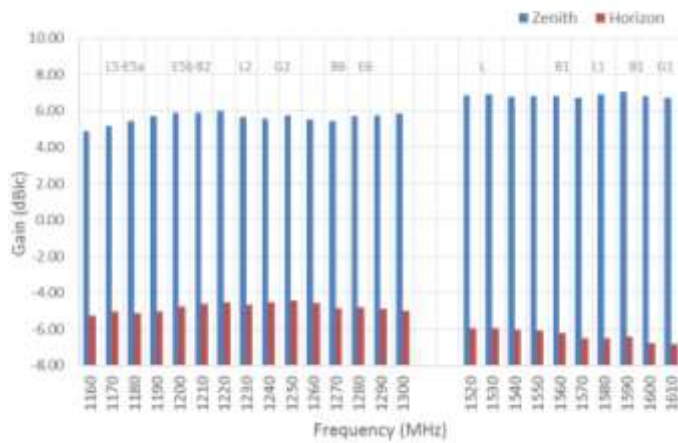
VeraPhase® 6000 – High Precision Full GNSS Spectrum Antenna

Antenna radiating performances

Normalized radiation patterns



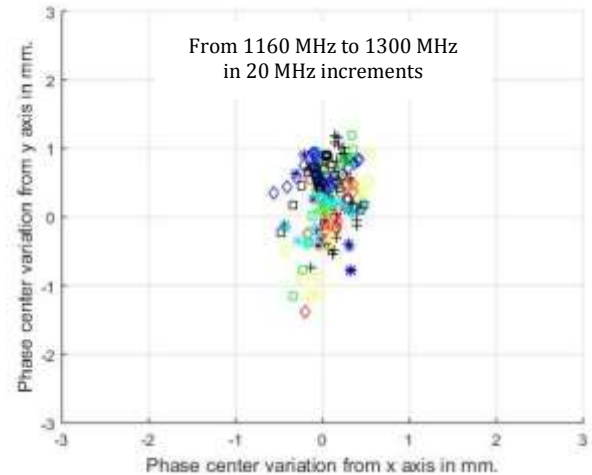
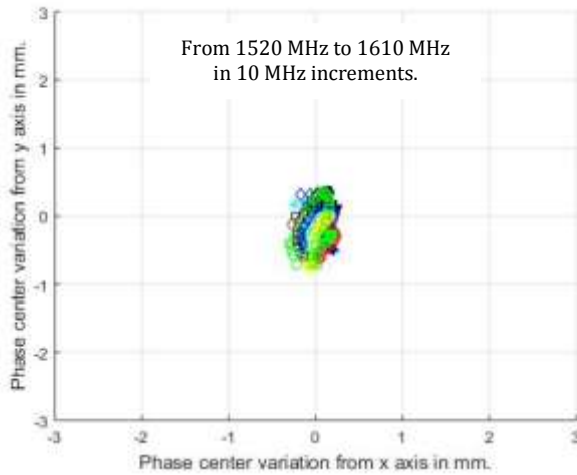
Gain and axial ratio





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Phase center variation



Axial ratio (dB) (typical) - Flat Radome							
Elevation	L5 - E5a	E5b - B2 - G3	L2 - G2	B3	E6	L1 - E1 - B1	G1
90°	0.5	0.3	0.2	0.3	0.3	0.3	0.4
30°	1.5	1.5	1.3	1	1.5	1.2	1.2
10°	2	1.8	1.4	1.8	2.2	2	2.2
Axial ratio (dB) (typical) - Conical Radome							
Elevation	L5 - E5a	E5b - B2 - G3	L2 - G2	B3	E6	L1 - E1 - B1	G1
90°	0.5	0.4	0.2	0.3	0.3	0.3	0.4
30°	1.8	1.7	1.3	1.2	1.5	1.5	1.5
10°	2.2	1.8	1.5	2	2.5	2.5	2.8

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