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.

**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 dBi to 7 dBi (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,
  2.2dB typ. at 25°C with pre-filter 1.5dB typ. at 25°C no pre-filter
- LNA Noise Figure: <1.5:1 max.
- VSWR (at LNA output): +2.7 to 24VDC nominal
- Supply Voltage Range: <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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**VeraPhase™ 6000 – High Precision Full GNSS Constellation Antenna**

**Antenna radiating performances**

**Normalized radiation patterns**

- RH Polarization
- LH Polarization
- G2
- L1

**Gain and axial ratio**

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VeraPhase™ 6000 – High Precision Full GNSS Constellation Antenna

Phase center variation

- From 1520 MHz to 1610 MHz in 10 MHz increments.
- From 1160 MHz to 1300 MHz in 20 MHz increments.

LNA – Out of band rejection

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