

VeraPhase® 6050 High Precision Full Spectrum GNSS Antenna + L Band

Frequency Coverage: L1/L2/L5/G1/G2/G3/E1/E5/E6/B1/B2/B3 + L-Band

Overview

The patented VeraPhase® 6050 antenna is a full GNSS spectrum plus L-band correction services antenna. 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 (<0.5 dB at zenith, <3 dB typ. at horizon).

It has an exceptional front to back ratio, 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 station 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 VP6050 provides a high receive gain over the full GNSS spectrum: Low GNSS band (1164 MHz to 1300 MHz) L-band correction services (1525 MHz to 1559 MHz) and High GNSS band (1559 MHz 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 700 MHz LTE, while still providing a noise figure of less than 2.0 dB.

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

Features

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

Benefits

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

About Tallysman: With global headquarters and manufacturing in Ottawa, Canada, Tallysman is a leading manufacturer of high-precision antennas and components for Global Navigation Satellite System (GNSS) applications. Tallysman's mission is to support the needs of a new generation of positioning systems by delivering unprecedented antenna precision at competitive prices. Learn more at www.tallysman.com

Revision:

1.4

Contact us:

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Antenna

Technology Wideband Quadrature RHCP Element

		Gain dBic typ. at Zenith	Axial Ratio dB at Zenith
GNSS			
GPS / QZSS	L1	7	0.3
	L2	6	0.2
	L5	5	0.5
GLONASS	G1	7	0.4
	G2	6	0.2
	G3	6	0.4
Galileo	E1	7	0.3
	E5A	5	0.5
	E5B	5	0.4
	E6	6	0.3
BeiDou	B1	7	0.3
	B2	6	0.4
	B2a	5	0.5
	B3	6	0.3
IRNSS / NavIC	L5	5	0.5
QZSS	L6	6	0.3
L-Band Services (1525 MHz - 1559 MHz)		7	0.3
Satellite Communications			
Iridium	-	-	-
Globalstar	-	-	-
Other			
Axial Ratio at 10°	1.4 - 2.8	Efficiency	>70%
Phase Center Var.	≤ 1 mm		

Mechanicals

Size	Flat : 167mm D x 110mm H Conical : 167mm D x 175mm H
Weight	Flat Radome 800 g Conical Radome 820 g
Mount	5/8"x 11 TPI female
Radome	Flat or Conical

Environmental

Operating Temperature	-40°C to +85°C
Storage Temperature	-
Vibration	MIL-STD-810-D - Method 514.3
Shock	Vertical axis: 50G, other axes: 30G
Salt Fog	-
IP Rating	IP65 Housing
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty:

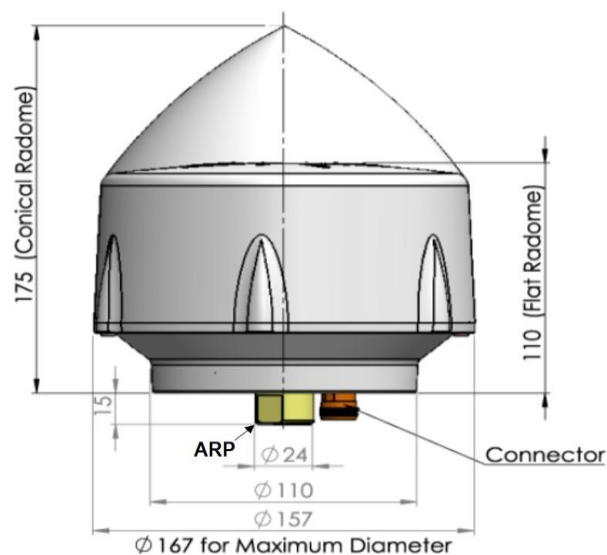
Parts and Labour	One year (Extended warranty available)
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Low Noise Amplifier (LNA) - Measured at 3V and 25°C

Frequency Bandwidth		Out of Band Rejection	
1525-1606 MHz	1165-1300 MHz	Upper Band	Lower Band
		=1400MHz 16dB =1430MHz 23dB =1462MHz 30dB <1480MHz >20dB >1690MHz >40dB =1710MHz 77dB >1710MHz >60dB =1835MHz 67dB	<800MHz >60dB <900MHz >45dB <1000MHz >20dB

Architecture	Pre-filtered
Gain	50 dB
Noise Figure	2.0dB typ. at 25°C
VSWR	<1.5:1 max
Supply Voltage Range	+2.7 to 24VDC nominal
Supply Current	<45mA (50dB gain)
ESD Circuit Protection	15 Kv air discharge
P 1dB Output	+12 dBm
Group Delay	<5 ns

Mechanical Diagram



Ordering Information

Part Number **33-6050cd-ee-ff-gg**

c = Base: 0 = Standard Base | d = Options: 0 = No options
 ee = Connector: 01 = TNC Female 14 = N-Type Female
 gg = Radome: 01 = White Conical 11 = White Flat top

Please refer to our **Ordering Guide** to review available radomes and connectors at:
<https://www.tallysman.com/resource/tallysman-ordering-guide/>

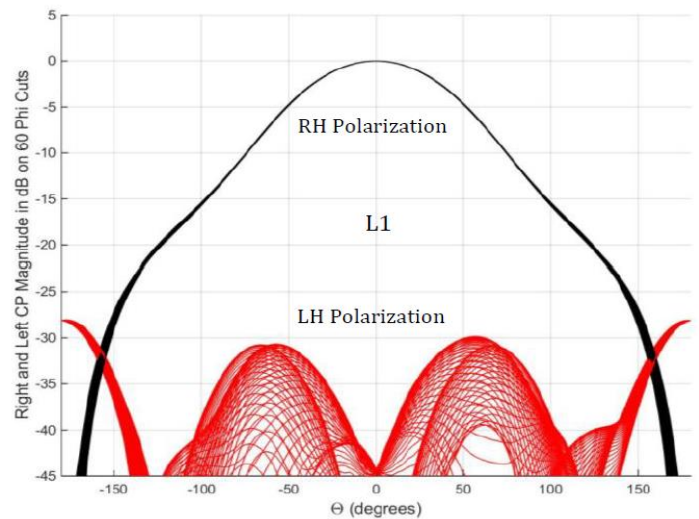
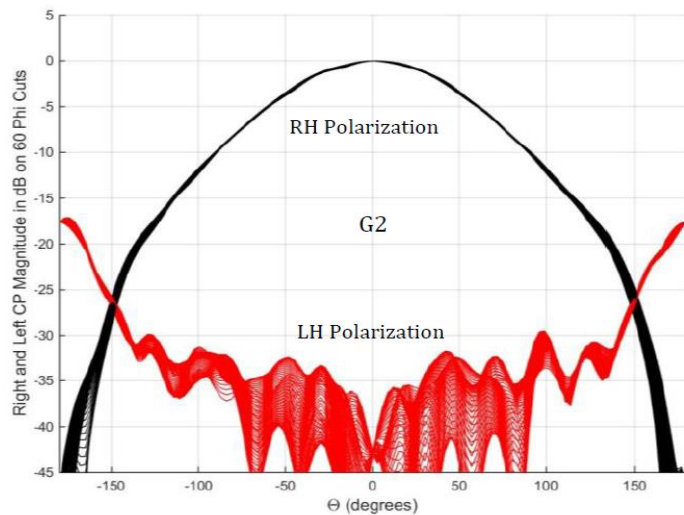
VP6050

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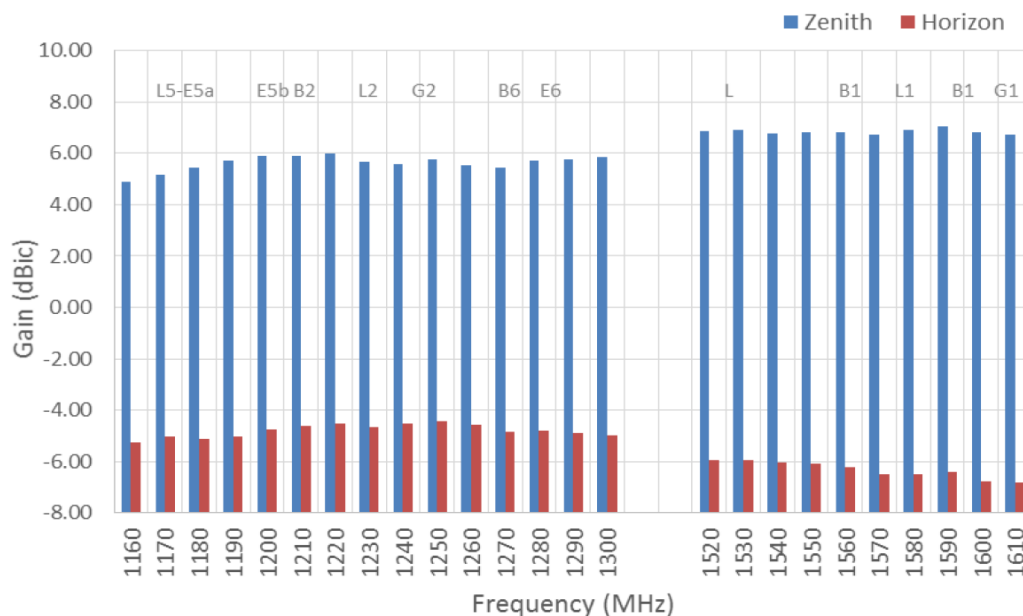
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Antenna Radiating Performances

Normalized Radiation Patterns



Gain



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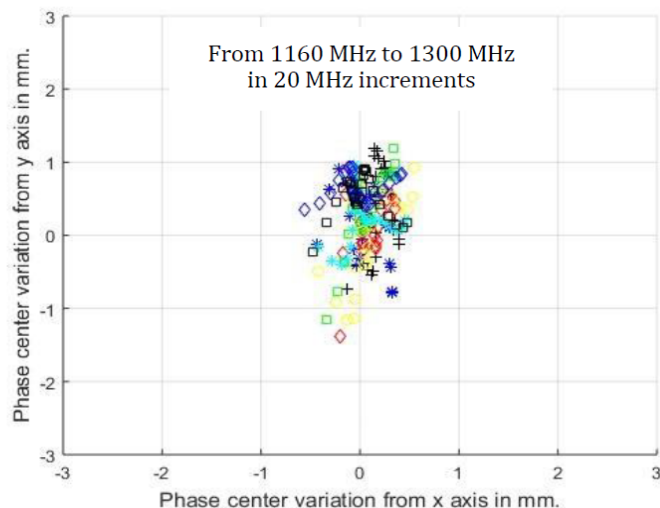
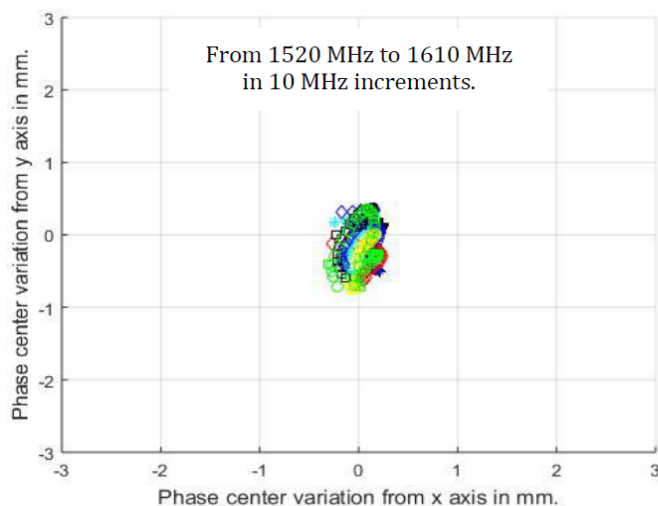
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Phase Center Variation



Axial Ratio (dB)

Axial ratio (dB) (typical) - Flat Radome							
Elevation	L5 - E5a	E5b - B2 - G3	L2 - G2	B3	E6	L1 - E1 - B1	G1
Zenith	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
Zenith	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

Mouser Electronics

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