

VC6050



VeraChoke® Multi-Constellation Full-Band Antenna

Frequency Coverage: GPS L1, L2, L5 | QZSS L6 | GALILEO E1, E5a, E5b, E6 | BEIDOU B1, B2a, B2b, B3 | GLONASS G1, G2, G3 | NavIC L5 + L-Band

Overview

The patented VeraChoke® VC6050 antenna is a full GNSS spectrum antenna. It has consistent performance (gain, axial ratio, PCV, and PCO) across the full bandwidth of the antenna. It provides the lowest axial ratios (zenith to the horizon, over all azimuths) across all GNSS frequencies (< 0.3 dB at zenith, < 3.0 dB typ. at horizon). It has an exceptional front to back ratio, high efficiency (> 80%), a tight PCV, and near constant PCO for all azimuth and elevation angles, over all in-Band frequencies.

The VC6050 provides a high receive gain over the full GNSS spectrum: Low GNSS band (1160 MHz to 1300 MHz), L-Band correction services (1539 MHz to 1559 MHz) and High GNSS band (1559 MHz to 1606 MHz).

It has a robust pre-filtered LNA, based on ceramic filters to minimize performance variation with temperature, with high IP3 to minimize de-sensing from high-level out-of-band signals, including 700 MHz LTE, while still providing a low noise figure.

The VC6050 is compatible with the short SCIGN radome and requires a SCIGN mount adapter if the tall SCIGN radome is selected (SCIGN radomes sold separately).



Applications

- Survey Base Stations
- RTK / PPP systems
- High-Precision GNSS systems
- Reference Networks
- Monitoring Stations

Features

- Low axial ratios from zenith to horizon
- Calibrated by Geo++®
- Very tight phase centre variation (< 1.0 mm)
- Low current (35 mA)
- Invariant performance from 2.7 to 24 VDC
- IP67, REACH, and RoHS compliant

Benefits

- Consistent performance across all frequencies
- Extreme precision
- Excellent multipath rejection

About Calian: With global headquarters and manufacturing in Ottawa, Canada, Calian is a leading manufacturer of high-precision antennas and components for Global Navigation Satellite System (GNSS) applications. Calian'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.calian.com/gnss

Revision: 202507

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Antenna

Technology Wideband Quadrature RHCP Element

		Gain dBic typ. at Zenith	Axial Ratio dB at Zenith
GNSS			
GPS / QZSS	L1	8	0.2
	L2	8	0.3
	L5	8	0.3
GLONASS	G1	8	0.3
	G2	8	0.3
	G3	8	0.3
Galileo	E1	8	0.2
	E5A	8	0.3
	E5B	8	0.3
	E6	8	0.3
BeiDou	B1	8	0.2
	B2b	8	0.3
	B2a	8	0.3
	B3	8	0.3
IRNSS / NavIC	L5	8	0.3
QZSS	L6	8	0.3
L-Band Services (1525 MHz - 1559 MHz)		8	0.3
Satellite Communications			
Iridium	-	-	-
Globalstar	-	-	-
Other			
Axial Ratio at 10°	2.0 - 3.5 dB	Efficiency	> 80%
PC Variation	0.5 mm		

Mechanicals

Size	Antenna: 378 mm (dia.) x 150.8 mm (h.) SCIGN radome: 415.2 mm (dia.) x 299.3 mm (h.)
Weight	5.4 kg
Radome	Integrated, SCIGN Radome sold separately
Mount	5/8" x 11 TPI (female)
Available Connectors	type-N (female)

Environmental

Operating Temperature	-60 °C to +85 °C
Storage Temperature	-60 °C to +95 °C
Vibration	MIL-STD-810E - Method 514.5
Shock	-
Salt Fog	MIL-STD-810G - Method 509.6
IP Rating	IP67
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty

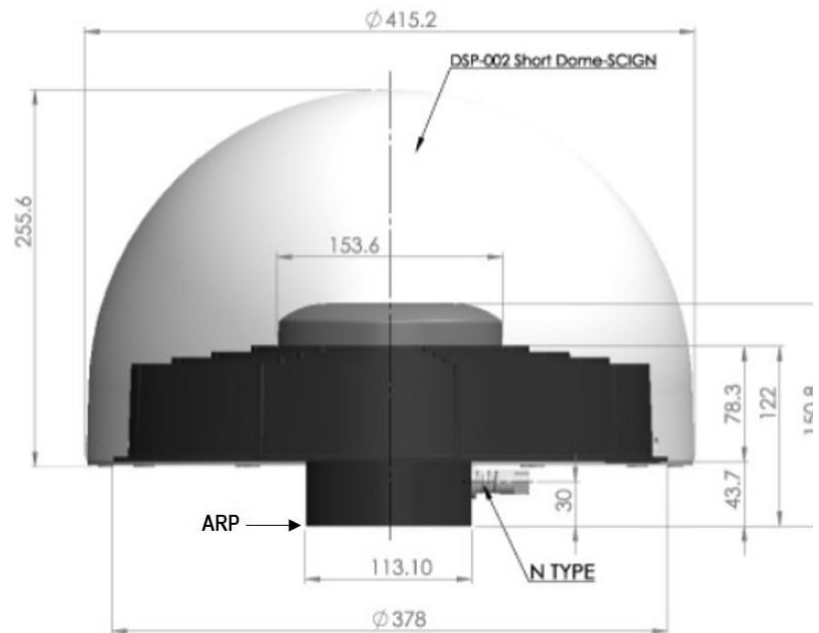
Parts and Labour	3-year standard warranty
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Low Noise Amplifier (LNA) - Measured at 3V and 25°C

Frequency Bandwidth		Out of Band Rejection	
1539 - 1606 MHz	1160 - 1300 MHz	Upper Band	Lower Band
		16dB @ 1400 MHz 23dB @ 1430 MHz 30dB @ 1462 MHz > 20 dB @ < 1480 MHz > 40 dB @ > 1690 MHz 77 dB @ 1710 MHz 60 dB @ > 1710 MHz 67 dB @ 1835 MHz	> 60 dB @ < 800 MHz > 45 dB @ < 900 MHz > 20 dB @ < 1000 MHz

Architecture	eXtended Filtering
Gain	50 dB
Noise Figure	2.0 dB typ.
VSWR	< 1.5:1 max
Supply Voltage Range	2.7 to 24 VDC nominal
Supply Current	45 mA max.
ESD Circuit Protection	15 kV air discharge
P 1dB Output	12 dBm typ.
Group Delay	10 ns max.
PCO	-

Mechanical Diagram



Ordering Information

Part Number	33-VC6050-14
14 = type-N connector Short SCIGN radomes available	

Please refer to our **Ordering Guide** to review available radomes and connectors at:
<https://at.callan.com/gnss/information-support/part-number-ordering-guide/>

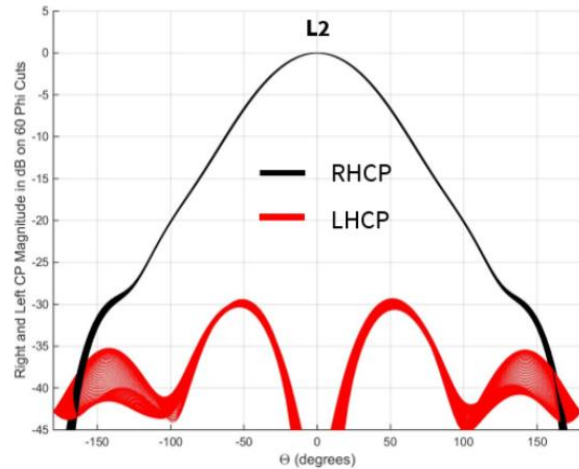
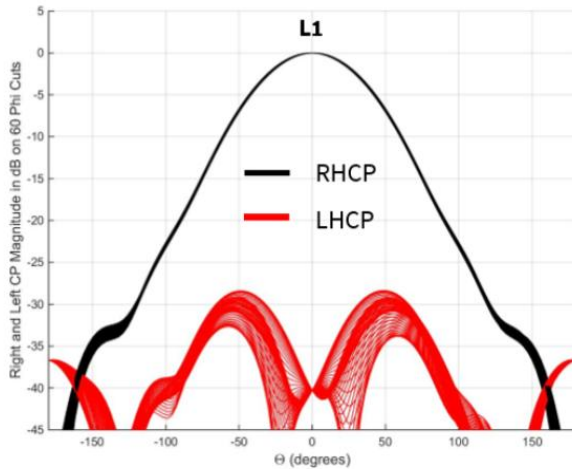
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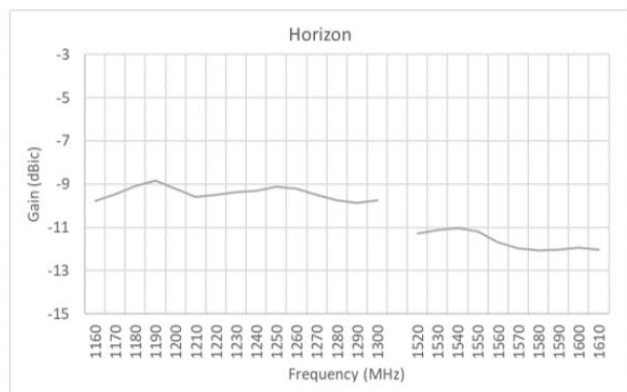
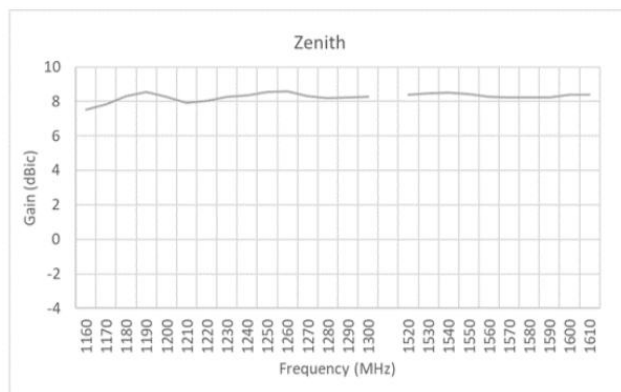
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Normalized Radiation Patterns



Gain



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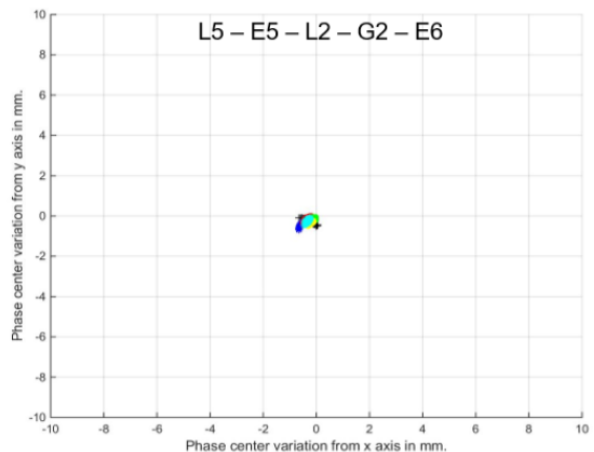
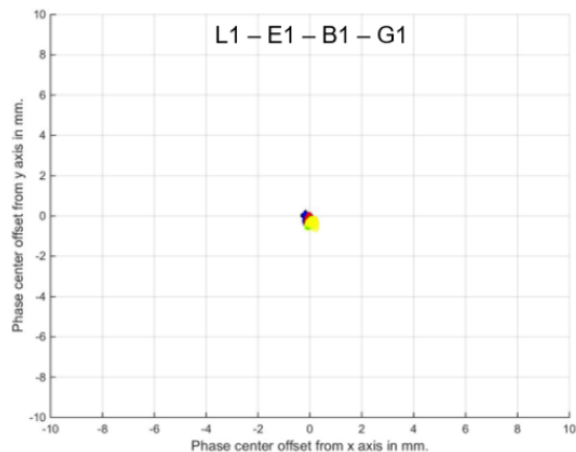
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Phase Center Variation



Axial Ratio

Typical (dB)

Elevation	L5 - E5a	E5b - B2 - G3	L2 - G2	B3	E6	L1 - E1 - B1	G1
Zenith	0.3	0.3	0.3	0.3	0.3	0.2	0.3
30°	2	1.8	1.8	1.8	2	2	2.5
10°	2.5	2.25	2	2	2	3	3.5