

HGL GPS L1/L2 Antenna

The Helix Geospace GPS L1/L2 Antenna is a dielectric loaded decafilax helix, which uses patented Dielectrix™ antenna technology to provide the highest available efficiency per unit of size/volume.

These antennas have excellent co-to-cross polarisation and therefore provide useful discrimination of multi-path (reflected polarisation-reversed) signals. They are balanced and isolated from platform ground, ensuring high immunity to common-mode noise and very low proximity de-tuning caused by nearby objects.

HGL Dielectrix antennas deliver predictable installed performance that belies the small size, due to operation of the dielectric-core material (patent-protected).

The product will be available encapsulated with an over-moulded protective radome, or unencapsulated as appropriate for direct integration into devices.



Key Features

Tuned to GPS L1 and L2 frequencies:
(L2) 1,226 MHz (1,217.61,237.6) and (L1) 1,565.42-1,585.42 MHz

- Intrinsic band-pass filter response, tightly tuned to L1 and L2 frequency bands– immune to out of band interference
- Focused phase centering that is highly accurate and reproducible – a key requirement for autonomous positioning in a multi-constellation environment
- Small antenna per dB of gain
- Immune to static discharge and lightning splashes
- Typical gain at zenith: 37 dBic at L2 and 36 dBic at L1
- RHCP polarization with 30dB co-to-cross polarization discrimination - exceptional rejection of multi-path (reflected) signals
- Low de-tuning due to objects in the near-field – Ideal for hand-held and vehicle-mounted applications
- Cardioid radiation pattern - optimal reception of signals from lowelevation satellites, and when antenna is in a dynamic application (e.g. maritime, airborne and vehicle applications)
- Balanced antenna – resilient to common-mode noise (e.g. vehicle chassis ground fluctuations due to in-car compute and electric drive-train noise)
- Robust – withstands shock and vibration
- Wide operating temperature range (-40 to +85 deg C)
- SMA or U.FL connector option
- Multi-constellation, covers BeiDou B1, Galileo E1, GLONASS G1 and SBAS.

Applications

Helix Geospace HGL series antennas are ideally suited for PNT (Position, Navigation and Timing) applications in which resilience, position accuracy and compact form factor are essential.

- Precision location and navigation
- Precision timing for network sync and crypto
- Defence/security/CNI/first responder
- UAS/UAV autonomous vehicles and drones
- Asset tracking and fleet vehicle tracking
- Internet of Things
- Personal safety devices, geofencing
- Hand-held and wearable location devices
- Industrial/oil & gas/mining
- AgTech, precision farming, animal tracking.



Antenna technology provides unrivaled efficiency per unit volume.

Helix Geospace provides custom tuning services to optimise and tune antenna performance when integrated into customers enclosure.

Helix Geospace

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Electrical Specifications

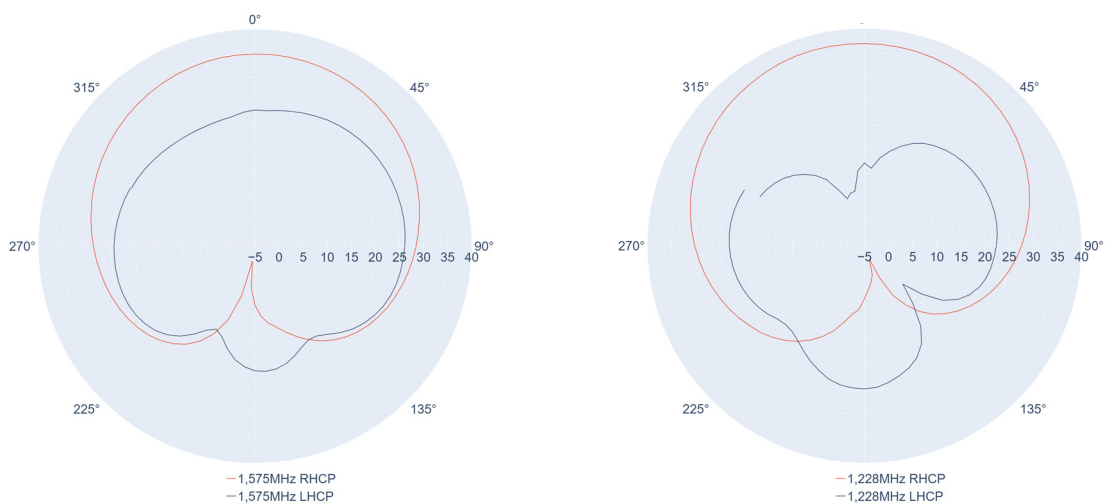
	Min	Typical	Max	Units
Frequency L1	1565.42	1575.42	1585.42	MHz
Frequency L2	1217.6	1227.6	1237.6	MHz
Polarisation		RHCP		
Antenna element peak gain L1		36		@zenith dBic
Antenna element peak gain L2		37		@zenith dBic
Efficiency			>60	Total Spherical
Bandwidth (3db) L1	1565.42		1585,42	MHz
Bandwidth (3db) L2	1217.6		1237.6	MHz
Axial ratio			<3dB	dB
Impedance		50		Ohms
Operating temp range	-40		+85	C
RF connector		SMA		
Out of band rejection			>50	dB
Noise figure		1.5		dB
Power supply	1.8	3.3	5	V
Current draw		9		mA




Mechanical Specifications

	Min	Typical	Max	Units
Dimensions SMA NOM	L 48 x ø 15			mm
Dimensions SMA OM		TBC		mm
Weight SMA NOM	32			grams
Weight SMA OM		TBC		grams
IP rating (overmould)		67		IP
Additional sealing (overmould)		O-ring		

Radiation Patterns

The following radiation patterns have been measured WITHOUT a ground plane.



Part number	Antenna	Connector	Dimensions mm	Weight g
HGL-L1L2-S-OMFT-A4-C 	Active Over-moulded plastic radome - Rated: IP67	SMA Male	TBC	TBC
HGL-L1L2-S-0000-A4-C 	Active	SMA Male	L 48 x ø 15	25
HGL-L1L2-U-0000-A4-C 	Active	U.FL	TBC	TBC

HGL-L1L2-S-0000-A4-C dimensions

