

## 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

148 Sixth Street, Thomson Avenue, Harwell Campus, Oxfordshire OX11 0TR, UK  
t +44 1235 887 444 e info@helixgeospace.com w helixgeospace.com

### Electrical Specifications

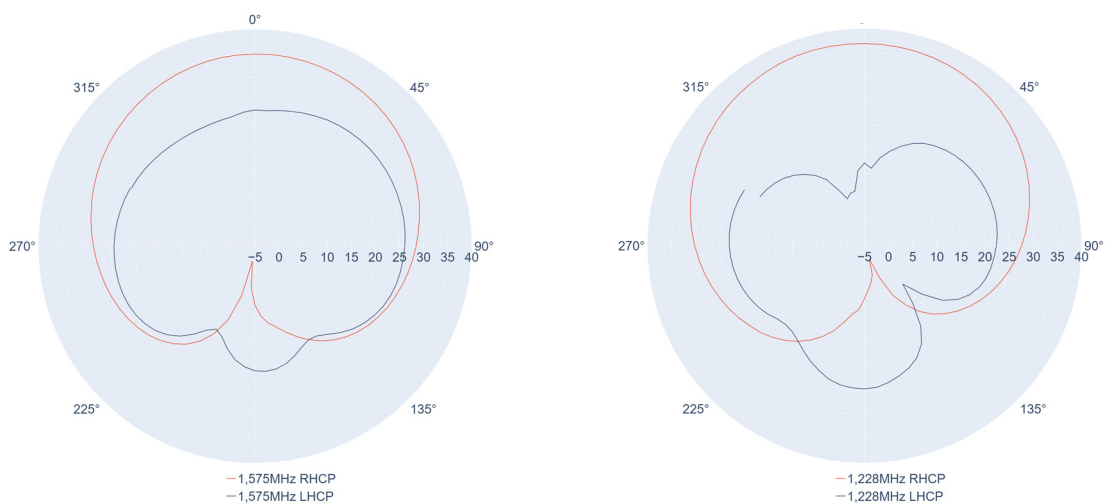
	Min	Typical	Max	Units
Frequency L1	1565.42	1575.42	1585.42	MHz
Frequency L2	1217.6	1227.6	1237.6	MHz
Polarisation		RHCP		
Antenna element peak gain L1		36		@zenith dBic
Antenna element peak gain L2		37		@zenith dBic
Efficiency			>60	Total Spherical
Bandwidth (3db) L1	1565.42		1585,42	MHz
Bandwidth (3db) 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




### 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

