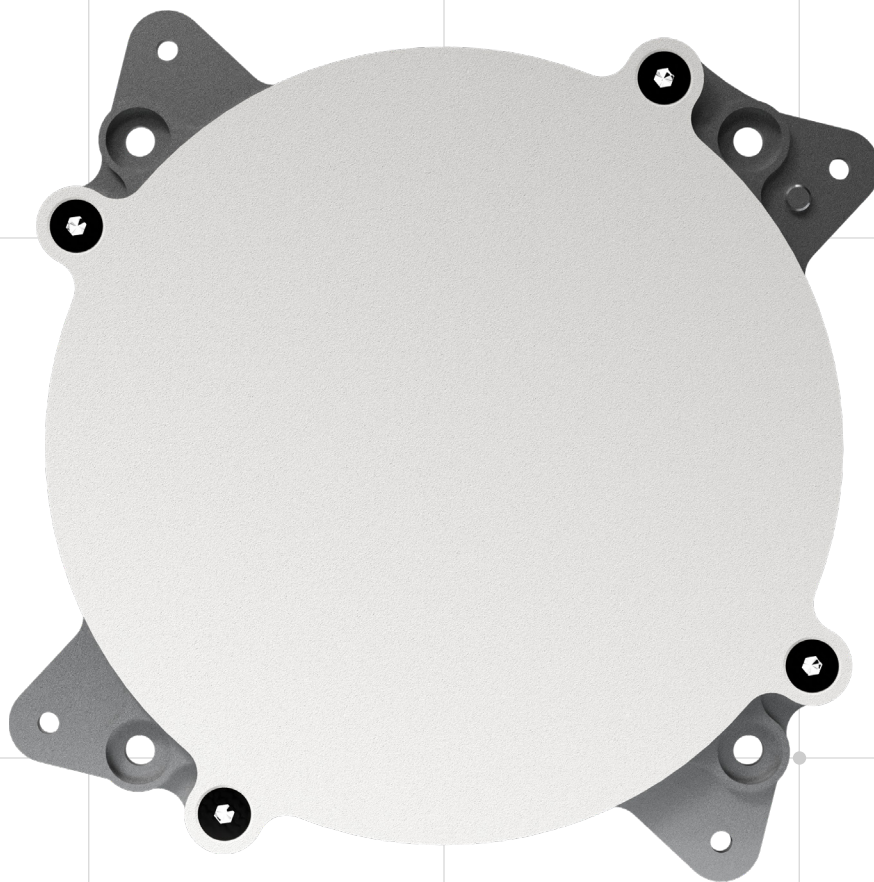


GNSS All-Bands Antenna With LNA Integrated Board



Anywaves' all-bands GNSS antenna is designed for LEO platforms, covering all GNSS constellations from 1.16 to 1.61 GHz. With a stable phase center and circular polarization, it ensures reliable, continuous

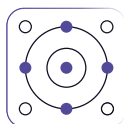
positioning. TRL 8 qualified and developed under the ESA Navisp program, it delivers high accuracy and robustness.

Rx

Hemispherical Coverage

Active Integrated Antenna

Size < 1U



Integrated Active Electronic Board With Amplification and Filtering



Very stable phase center



Test Hat Compatible



ITAR-free:

Suitable for international programs without export restrictions.



Robust design:

Radome protection ensures reliable operation in harsh environments (temperature, ESD).

Benefits

anywaves.com

ANYWAVES

Navigation Antennas

GNSS All-Bands Antenna with LNA Integrated Board



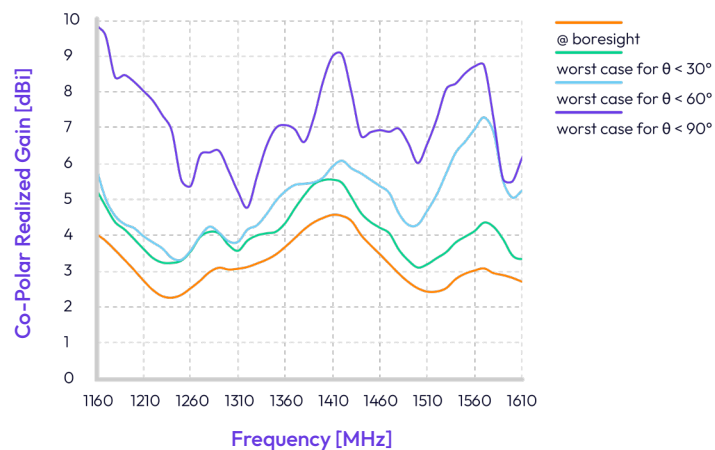
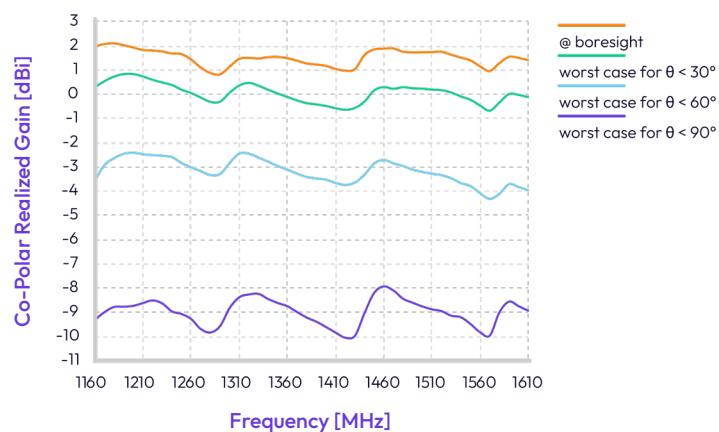
Rx

Hemispherical Coverage

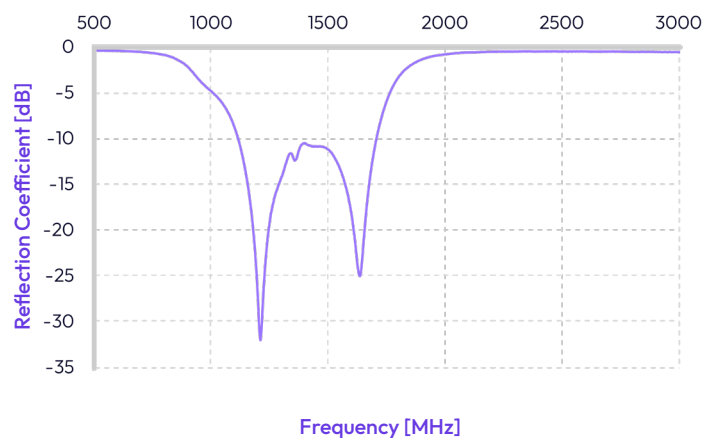
Active Integrated Antenna

Size < 1U

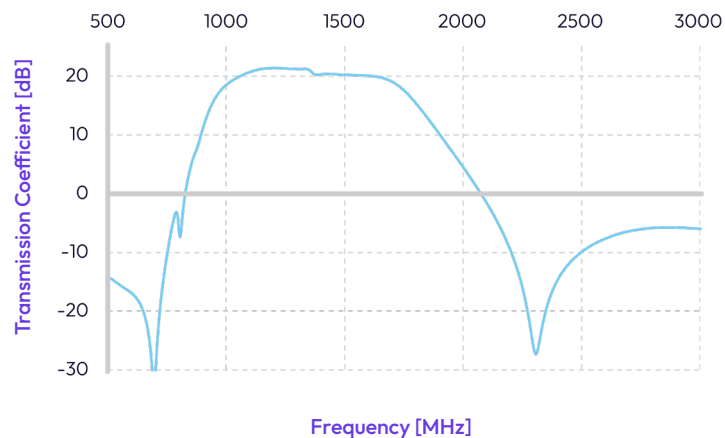
Typical Measured Performance



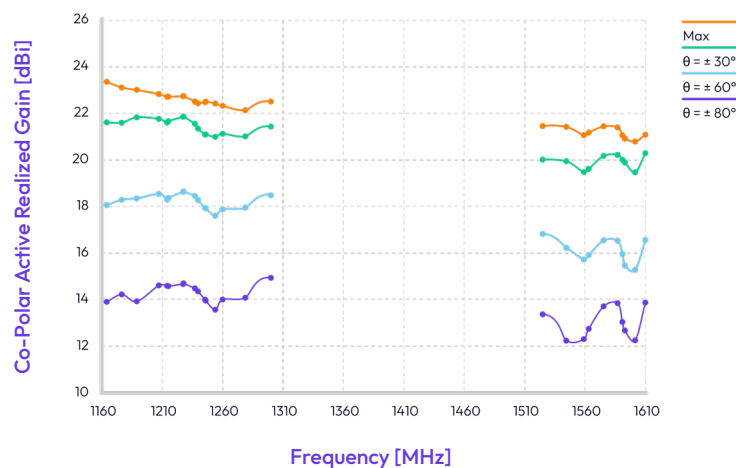
Output Reflection Coefficient



LNA Block Transmission Coefficient



Co-Polar Active Realized Gain



Mission Profile

Orbit — LEO (<1200 km)

Lifetime — 7 years in orbit
+ 1 year on ground



Rx

Hemispherical Coverage

Active Integrated Antenna

Size < 1U

Measured Performance [LNA Block]

Frequency	Min: 1160 MHz Typical: 1600 MHz
Gain Lower GNSS Band	Min: 20.5 dB Typical: 21.3 dB Max: 22 dB
Gain Upper GNSS Band	Min: 19.6 dB Typical: 20.5 dB Max: 21 dB
Gain Flatness	Typical: 1.2 dBpp
Gain Slope	Min: -0.006 dB/MHz Max: 0 dB/MHz
Gain Stability Over T°C	Typical: ± 0.6 dB
Noise Figure at Ambient T°C	Min: 1.7 dB Typical: 1.8 dB Max: 2 dB
Input Return Loss	Min: -12 dB
Output Return Loss	Min: -15 dB
Group Delay Variation	Min: -0.2 ns ^{pp} Max: 0.2 ns ^{pp}
Group Delay Variation Slope	Min: -0.01 ns/MHz Max: 0 ns/MHz
DC Input	Min: 5.5 V Typical: 6 V Max: 6.5 V
Power Consumption	Min: 302 mW Typical: 366 mW Max: 429 mW

Typical Measured Performances [Antenna]

Frequency Band	1 160 MHz to 1 610 MHz: GPS L1/L2/L5, Galileo E1/E5a/E5b/E6 Glonass G1/G2/G3, Beidou B1/B2a/B2/B3 Inmarsat L-band: 1 525 – 1 559 MHz
Polarization	Right Hand Circular Polarization
Axial Ratio	< 4.5 dB from 0° to $\pm 30^\circ$ < 7 dB from 0° to $\pm 60^\circ$ < 9 dB from 0° to $\pm 90^\circ$
Realized Gain	Gain @ boresight > 0.5 dBi Gain @ $\pm 30^\circ$ > -1 dBi Gain @ $\pm 60^\circ$ > -5 dBi
Phase Center Position (PCO) Variation (Maximum Variation vs Frequency)	Variation within a sphere of radius < 2 mm
Phase Center Variation (PCV) (Maximum Variation vs Elevation)	< 1 mm ($\pm 30^\circ$ FoV) < 2 mm ($\pm 60^\circ$ FoV)

Physical Characteristics

Envelope Size [Antenna + LNA BLock]	L 100 x W 100 x H 58 mm3
Mass [Antenna + LNA BLock]	285g $\pm$ 10%
Connectors	RF: Coaxial SMA female (50 Ω) DC: Micro Sub-D (9 pins)
Mechanical Interface	4 x M3 (unthreaded hole)
Qualification Temperature	- 120°C / + 120°C
Protective Radome	PEEK coated with SG121FD white paint (on Flight Models only) resistant to thermal and radiation environments and preventing electrostatic discharges.
Acceptance Tests	Flight Models - Radio Frequency - Mechanical - Thermal Engineering Models - Radio Frequency Only

Thermal Qualification

LNA Block Operating Mode	Min: -40°C Max: 85°C
LNA Block Non Operating Mode	Min: -55°C Max: 105°C
LNA Block Cold Startup	Min: -45°C
Antenna Block Operating mode	Min: -120°C Max: 120°C

Mechanical Qualification [Antenna + LNA BLock]

Qualification - QSL	25g 20Hz - 0.1 g ² /Hz 100 - 0.5 800 - 0.5 2000 - 0.08 gRMS 24.78
Qualification - Random PSD	
Qualification - Shocks	Shock testing (Q=10) 100 Hz - 60 g 1000 Hz - 1600 g 10000 Hz - 1600 g

Radiation Robustness

DCDC parts TID Radiation Tolerant	Up to 40krad (TID)
SEE Radiation Tolerant	Up to 62.5MeV-cm ² /mg
RF Section (GaAs) Technology Intrinsically Tolerant	Up to 300 krad (TID)