

GPS-L1/GLONASS-G1 Antenna

Frequency Coverage: GPS L1 | GLONASS G1

Overview

The TW1422 employ Calian's patented Accutenna® technology covering the GPS-L1, GLONASS-G1, and SBAS (WAAS, EGNOS & MSAS) frequency band (1575 to 1606 MHz). It provides truly circular response over its entire bandwidth thereby producing superior multipath signal rejection. It also offers high out-of-band signal rejection.

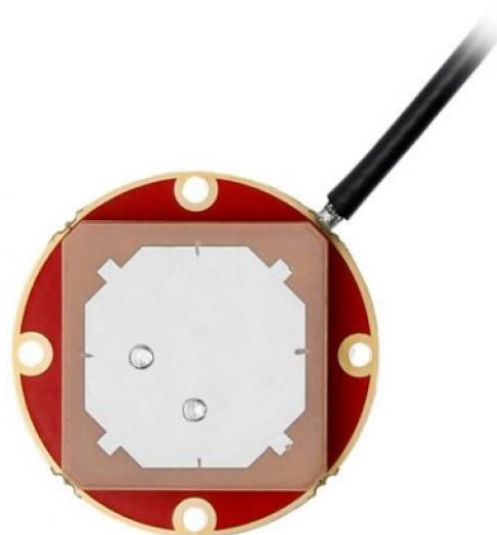
The antennas feature a novel 25 mm wideband patch element with dual-feeds that are summed in a 90° Hybrid and input to a two stage low-noise amplifier (LNA) with a mid-section SAW, and a second low noise gain stage. This configuration provides excellent axial ratio and cross-polarization rejection across the full frequency band.

The TW1422 has a pre-filter which increases the antenna's immunity to high-amplitude interfering signals, such as LTE and other cellular signals.

The built-in 35 mm circular ground plane should ideally be augmented with a local system ground plane or reflecting surface (DC connection not required).

The height of the RF shield (can) will be selected based upon the connector type. Connectors which require RG174 cable will be used with the taller can. Connectors which require micro-coax cable will be used with the shorter can.

OEM antennas are easily detuned by the local environment. Calian offers custom tuning services for optimized integration into OEM end-user modules.



Applications

- High Accuracy GPS & GLONASS
- Precision agriculture, mining, and construction
- Avionics
- Law enforcement and public safety
- Fleet management and asset tracking

Features

- Compact Dual-feed Patch Element
- ≤ 3 dB Axial Ratio at zenith
- LNA gain (26 dB typ.)
- Wide Supply voltage, 2.5V to 16V
- ESD circuit protection (15 kV)
- Temperature Compensated Gain

Benefits

- Great multipath rejection
- Increase system accuracy
- Improved carrier phase linearity
- Excellent signal-to-noise ratio
- Great out-of-band signal rejection
- Compact form factor
- RoHS compliant

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

Revision:

34

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Antenna - Measured with a 100 mm ground plane

Technology Dual-feed RHCP ceramic patch

| | | Gain | Axial Ratio |
|---------------------------------------|-----|---------------------|--------------|
| | | dBic typ. at Zenith | dB at Zenith |
| GNSS | | | |
| GPS / QZSS | L1 | 4.5 | ≤ 3 |
| | L2 | - | - |
| | L5 | - | - |
| GLONASS | G1 | 4.5 | ≤ 3 |
| | G2 | - | - |
| | G3 | - | - |
| Galileo | E1 | - | - |
| | E5A | - | - |
| | E5B | - | - |
| | E6 | - | - |
| BeiDou | B1 | - | - |
| | B2 | - | - |
| | B2a | - | - |
| | B3 | - | - |
| IRNSS / NavIC | L5 | - | - |
| QZSS | L6 | - | - |
| L-Band Services (1525 MHz - 1559 MHz) | | - | - |
| Satellite Communications | | | |
| Iridium | | - | - |
| Globalstar | | - | - |
| Other | | | |
| Axial Ratio at 10° | - | Efficiency | - |
| PC Variation | - | | |

Mechanicals

| | |
|----------------------|--------------------------|
| Size | 35 mm (dia.) x 7.5 mm |
| Weight | 18 g |
| Radome | - |
| Mount | Adhesive 4 · M2 screws |
| Available Connectors | Refer to Ordering Guide |

Environmental

| | |
|-----------------------|--|
| Operating Temperature | -40 °C to +85 °C |
| Storage Temperature | -55 °C to +95 °C |
| Vibration | MIL-STD-810D |
| Shock | Vertical axis: 50 G, other axes: 30 G |
| Salt Fog | - |
| IP Rating | - |
| Compliance | IPC-A-610, FCC, RED / CE Mark, RoHS, REACH |

Warranty

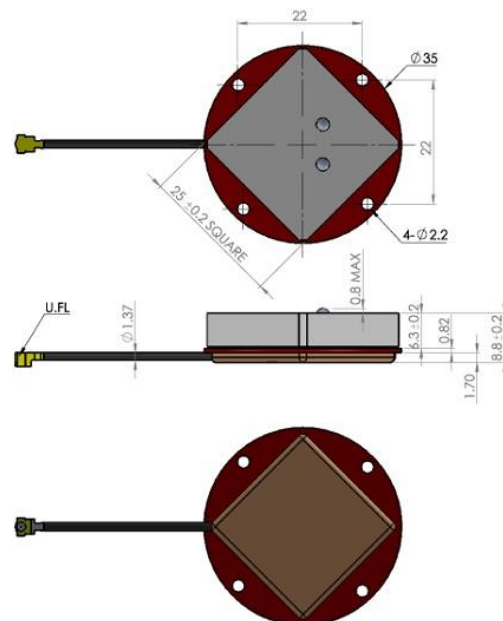
| | |
|------------------|--------------------------|
| Parts and Labour | 1-year standard warranty |
|------------------|--------------------------|

Low Noise Amplifier (LNA) - Measured at 3 V and 25°C

| Upper Band | Lower Band |
|--|------------|
| Frequency Bandwidth | |
| 1575 - 1606 MHz | - |
| Out-of-band Rejection | |
| > 60 dB @ < 1500 MHz > 55 dB @ < 1550 MHz > 65 dB @ > 1640 MHz | - |

| | |
|------------------------|--|
| Architecture | Pre-filtered |
| Gain | 26 dB typ., 23 dB min. |
| Noise Figure | 3.5 dB typ. |
| VSWR | < 1.5:1 typ., 1.8:1 max. |
| Supply Voltage Range | 2.5 to 16 VDC nominal, up to 50mV p-p ripple |
| Supply Current | 10 mA typ., 15 mA max. |
| ESD Circuit Protection | 15 kV air discharge |
| P 1dB Output | - |
| Group Delay | - |
| PCO | - |

Mechanical Diagram



Ordering Information

Part Number 33-1422-xx-yyyy-zz

Where xx = connector type yyyy = cable length (in mm) and zz = reserved for Calian's use

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