# TW3967LGXF

TALLYSMAN®
A CALIAN® COMPANY

## TW3967LGXF Embedded Low-Gain Extended-Filter Triple-Band GNSS Antenna + L-Band

**Frequency Coverage:** GPS/QZSS-L1/L2/L5, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b, BeiDou-B1/B2/B2a, NavIC-L5 +L-band correction services

The TW3967LGXF is an embedded precision-tuned triple-band Accutenna® technology antenna providing coverage for triple-band GPS/QZSS-L1/L2/L5, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b, BeiDou-B1/B2/B2a, NavIC-L5, including the satellite-based augmentation system (SBAS) available in the region of operation [WAAS (North America), EGNOS (Europe), MSAS (Japan), or GAGAN (India)], plus L-Band correction services. It is especially designed for precision triple-frequency positioning.

The radio frequency spectrum has become more congested as new LTE bands are activated and their signals or harmonic frequencies [e.g. 800MHz x 2 = 1600MHz (GLONASS-G1)] can affect GNSS antennas and receivers. In North America, planned Ligado signals at 1525 - 1536 MHz can especially impact GNSS antennas that support space-based L-band correction services (1539 - 1559 MHz). New LTE signals in Europe [Band 32 (1452 - 1496 MHz)] and Japan [Bands 11 and 21 (1476 – 1511 MHz)] have also been observed to interfere with GNSS signals. In addition, Inmarsat satellite communication (uplink: 1626.5 - 1660.5 MHz) can also affect GNSS signals. The new Tallysman XF antennas have been designed to mitigate out-of-band signals and prevent GNSS antenna saturation. Tallysman's custom XF filtering mitigates all existing signals and new Ligado and LTE signals, enabling the antennas and attached GNSS receivers to perform optimally.

Ideal for autonomous vehicle tracking and guidance, precision agriculture, and other applications where precision matters, The TW3972LGXF provides superior multipath signal rejection, a linear phase response, and tight phase centre variation (PCV).

The TW3967LGXF features a precision-tuned, twin circular dual-feed, stacked patch element. The signals from the two orthogonal feeds are combined in a hybrid combiner, amplified in a wideband LNA, then band-split for narrow filtering in each band and further amplified prior to recombination at the output. The antenna also has a strong pre-filter to mitigate inter-modulated signal interference from Ligado, LTE and other cellular bands. The TW3967LGXF offers excellent axial ratio and a tightly grouped phase centre variation.

The standard TW3967 antenna (28 dB gain) and the extended-filter TW3967XF antenna (28 dB gain) are also available.

### Applications

- Autonomous vehicle tracking and guidance
- Triple-frequency RTK and PPP receivers
- Precision GNSS position
- Precision agriculture
- Network timing & synchronization
- Safety & security

### Features

- Very low noise preamp (< 2.0 dB typ.)
- Low axial ratio (< 2.0 dB typ.)
- Tight phase centre variation
- Low-gain LNA (20 dB typ.)
- Low current (45 mA typ.)
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 16 VDC
- REACH and RoHS compliant

### Benefits

- Excellent interference mitigation
- Excellent multipath rejection
- Increased system accuracy
- Excellent signal-to-noise ratio

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

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Revision: 1.6

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+L-band correction services

## Antenna

**Technology** Dual-feed stacked RHCP ceramic patch

| | | Gain | Axial Ratio |
|---|---|---|---|
| | | dBic typ. at Zenith | dB at Zenith |
| **GNSS** | | | |
| **GPS / QZSS** | L1 | 4.0 | < 1.0 |
| | L2 | 4.0 | < 1.0 |
| | L5 | -1.5 | < 1.5 |
| **GLONASS** | G1 | 2.5 | < 1.5 |
| | G2 | 2.5 | < 1.5 |
| | G3 | 2.5 | < 1.5 |
| **Galileo** | E1 | 4.0 | < 1.0 |
| | E5a | -1.5 | < 1.5 |
| | E5b | 2.5 | < 1.5 |
| | E6 | - | - |
| **BeiDou** | B1 | 4.0 | < 1.0 |
| | B2 | 2.5 | < 1.5 |
| | B2a | -1.5 | < 1.5 |
| | B3 | - | - |
| **IRNSS / NavIC** | L5 | -1.5 | < 1.5 |
| **QZSS** | L6 | - | - |
| **L-band correction services** | | 3.5 | < 1.0 |
| **Satellite Communications** | | | |
| **Iridium** | | - | - |
| **Globalstar** | | - | - |
| **Other** | | | |
| **Axial Ratio at 10°** | - | **Efficiency** | - |
| **Phase Centre Variation** | ± 10 mm | | |

## Mechanicals

| | |
|---|---|
| **Mechanical Size** | 60 mm (dia.) x 14.9 mm (h.)<br>[100 mm ground plane recommended] |
| **Weight** | 70 g (excluding cable) |
| **Available Connectors** | see Ordering Guide |
| **Radome / Enclosure** | - |
| **Mount** | 5 x M2 screws |

## Environmental

| | |
|---|---|
| **Operating Temperature** | -40 °C to + 85 °C |
| **Storage Temperature** | -55 °C to + 95 °C |
| **Mechanical Vibration** | MIL-STD-810D Method 514.4 and 514.5 |
| **Shock and Drop** | Vertical axis: 50 G, other axes: 30 G |
| **Salt Fog** | - |
| **Low Pressure - Altitude** | - |
| **IP Rating (housing)** | Not Applicable |
| **Compliance** | IPC-A-610, FCC, RED / CE Mark, RoHS, REACH |

## Warranty:

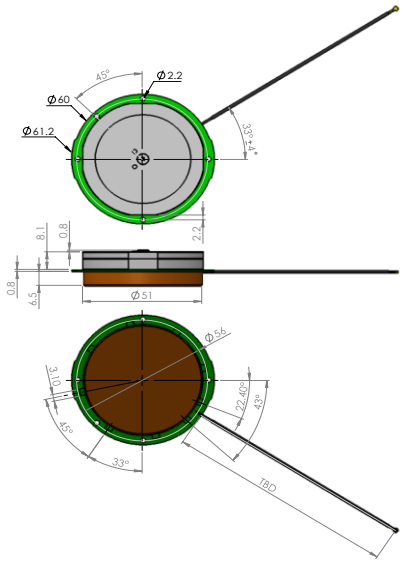
| | |
|---|---|
| **Parts and Labour** | **1-year standard warranty** |

## Low Noise Amplifier (LNA) - Measured at 3.0 VDC and 25°C

| Frequency Bandwith | | Out-of-Band Rejection |
|---|---|---|
| **Lower Band** | **1160 - 1255 MHz** | **≥ 70 dB @ ≤ 1050 MHz**<br>**≥ 65 dB @ ≤ 1125 MHz**<br>**≥ 70 dB @ ≥ 1350 MHz** |
| **L-band corrections services** | **1539 - 1559 MHz** | **≥ 65 dB @ ≤ 1500 MHz**<br>**≥ 45 dB @ ≤ 1525 MHz**<br>**≥ 05 dB @ ≤ 1536 MHz**<br>**≥ 30 dB @ ≥ 1626 MHz**<br>**≥ 65 dB @ ≥ 1650 MHz** |
| **Upper Band** | **1559 - 1606 MHz** | |

| | |
|---|---|
| **Architecture** | Pre-filter → LNA stage 1 → filter → LNA stage 2 |
| **Gain** | 20 dB typ. |
| **Noise Figure** | 2.0 dB typ. @ 25 °C |
| **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** | 45 mA typ. @ 25 °C, |
| **ESD Circuit Protection** | 15 kV air discharge |
| **P 1dB Output** | 5.1 dBm typ. |
| **Group Delay Variation** | 12 ns @ (L1+G1) \| 7 ns @ (L5+L2+G2) |
| **Group Delay** | |

## Mechanical Diagram




## Ordering Information

**Part Number** **33-3967LGXF-xx-yy-zzzz**

Where xx = connector type, yy = shape and colour of radome and zzzz = cable length in mm (where applicable)

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



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