



TW3967XF Embedded Extended-Filter Triple-Band GNSS Antenna + L-Band

 Frequency
 GPS/QZSS-L1/L2/L5, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b, BeiDou-B1/B2/B2a, NavIC-L5

 Coverage:
 +L-band correction services

#### Overview

The TW3967XF 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-GI)] 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 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 TW3972XF provides superior multipath signal rejection, a linear phase response, and tight phase centre variation (PCV).

The TW3967XF 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 TW3967XF offers excellent axial ratio and a tightly grouped phase centre variation.

The standard TW3967 antenna (28 dB gain) and the low-gain extended-filter TW3967LGXF antenna (20 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
  Law enforcement and public safety

## Features

- Very low noise preamp (< 2.0 dB typ.)</li>
- Low axial ratio (< 2.0 dB typ.)</li>
  Tight phase centre variation
- Inght phase centre vana
   LNA gain (28 dB typ.)
- Low current (45 mA tvp.)
- 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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# TW3967XF Embedded 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

#### Antenna

Technology

Dual-feed stacked RHCP ceramic patch

			Gain	Axial Ratio
			dBic typ. at Zenith	dB at Zenith
inss				
		L1	4	< 1.0
GPS / QZSS		L2	4	< 1.0
		L5	-1.5	< 1.5
GLONASS		G1	2.5	< 1.5
		G2	2.5	< 1.5
		G3	2.5	< 1.5
		E1	4	< 1.0
Galileo		E5A	-1.5	< 1.5
Galileo		E5B	2.5	< 1.5
		E6	-	-
		B1	4	< 1.0
BeiDou		B2	2.5	< 1.5
		B2a	-1.5	< 1.5
		B3	-	-
IRNSS / NavIC		L5	-1.5	< 1.5
QZSS		L6	-	-
L-Band Services (1525 MHz - 1559 MHZ)		3.5	< 1.0	
atellite Communicatio				
Iridium		-	-	
Globalstar		-	-	
Other				
Axial Ratio at 10°	ial Ratio at 10°		Efficiency	-
PC Variation ± 10 mm		PCO		

#### Mechanicals

Size	60 mm (dia.) x 14.9 mm (h.) [100 mm ground plane recommended]
Weight	70 g (excluding cable)
Radome	-
Mount	5 x M2 screws
Available Connectors	Please refer to ordering guide

#### Environmental

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

1-year standard warranty

#### Warranty:

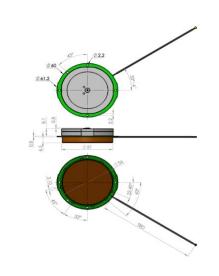
Parts and Labour

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

Frequency Bandwith		Out of Band Rejection
Lower Band	1160 - 1255 MHz	≥ 70 dB @ ≤ 1050 MHz ≥ 65 dB @ ≤ 1125 MHz ≥ 70 dB @ ≥ 1350 MHz
L-Band - Correction Services	-	-
Upper Band	1559 - 1606 MHz	≥ b5 0B @ ≤ 1500 MHz ≥ 45 dB @ ≤ 1525 MHz ≥ 05 dB @ ≤ 1536 MHz ≥ 30 dB @ ≥ 1650 MHz ≥ 65 dB @ ≥ 1650 MHz

Architecture	$Pre-filter \rightarrow LNA \text{ stage } 1 \rightarrow filter \rightarrow LNA \text{ stage } 2$
Gain	28 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	12 ns @ (L1+G1)   7 ns @ (L5+L2+G2)

## Mechanical Diagram



#### Ordering Information

Part Number

#### 33-3967XF-xx-zzzz

Where xx = connector type, 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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