

TW3867XF

TW3867XF Extended-Filter Embedded Dual-Band GNSS Antenna

Frequency Coverage: GPS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, BeiDou-B1

The TW3867XF is a precision-tuned dual-band Accutenna[®] technology antenna providing coverage for GPS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, and BeiDou-B1, including the satellite-based augmentation system (SBAS) available in the region of operation [WAAS (North America), EGNOS (Europe), MSAS (Japan), or GAGAN (India)].

The TW3867XF features an industry-leading low current, low-noise amplifier (LNA) that includes an integrated low-loss pre-filter to prevent harmonic interference from high-amplitude signals, such as 700 MHz band LTE and other near-band cellular signals. As the radio frequency spectrum has become more congested, the signals and harmonic frequencies of new LTE bands [e.g. 800MHz x 2 = 1600MHz (GLONASS-G1)] can affect GNSS antennas and receivers. In North America, planned Ligado signals at 1525 - 1536 MHz could 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 train control sensors, autonomous vehicle tracking and guidance, precision agriculture, and other applications where precision matters, The TW3867XF provides superior multipath signal rejection, a linear phase response, and tight phase centre variation (PCV).

The TW3867XF 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 TW3867XF offers excellent axial ratio and a tightly grouped phase centre variation.

This antenna is available in other formats: TW3872EXF (37 dB) - embedded, and TW3872XF antenna (37 dB) - housed.



Applications

- Autonomous vehicle tracking and guidance
- Positive Train Control (PTC)
- Positive Train Location (PTL)
- Precision GNSS position
- Precision agriculture
- Triple-frequency RTK and PPP receivers
- Law enforcement and public safety

Features

- Very low noise preamp (< 2.5 dB typ.)
- Low axial ratio (< 2.0 dB typ.)
- Tight phase centre variation
- High-gain LNA (28 dB typ.)
- Low current (24 mA typ.)
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 16 VDC
- REACH, RoHS, and S-9401.V1.0 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

Revision: 1.1

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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	-	-
GLONASS	G1	2.5	< 1.5
	G2	2.5	< 1.5
	G3	-	-
Galileo	E1	4.0	< 1.0
	E5a	-	-
	E5b	-	-
	E6	-	-
BeiDou	B1	4.0	< 1.0
	B2	-	-
	B2a	-	-
	B3	-	-
IRNSS / NavIC	L5	-	-
QZSS	L6	-	-
L-band correction services		-	-
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.) [100 mm ground plane recommended]
Weight	70 g (excluding cable)
Available Connectors	see Ordering Guide
Radome / Enclosure	-
Mount	5x 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:

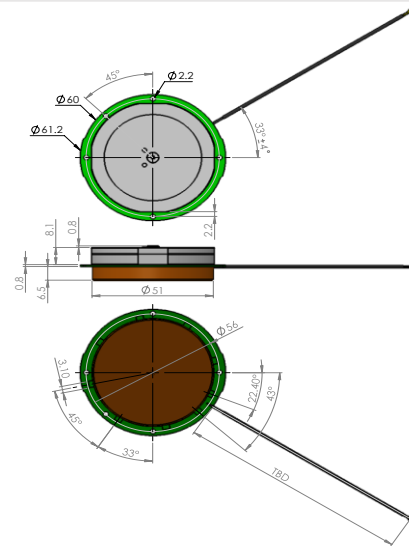
Parts and Labour **1-year standard warranty**

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

Frequency Bandwidth	Out-of-Band Rejection
Lower Band	1217 - 1255 MHz
	≥ 90 dB @ ≤ 1100 MHz ≥ 90 dB @ ≤ 1125 MHz ≥ 80 dB @ ≥ 1350 MHz
Upper Band	1559 - 1606 MHz
	≥ 70 dB @ ≤ 1500 MHz ≥ 50 dB @ ≤ 1525 MHz ≥ 40 dB @ ≤ 1536 MHz ≥ 95 dB @ = 1650 MHz ≥ 75 dB @ ≥ 1660 MHz

Architecture	Pre-filter → LNA stage 1 → filter → LNA stage 2
Gain	28 dB typ. 25 dB min.
Noise Figure	2.5 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	24 mA typ. @ 25 °C
ESD Circuit Protection	15 kV air discharge
P 1dB Output	5.5 dBm typ.
Group Delay Variation	-

Mechanical Diagram



Ordering Information

Part Number **33-3867XF-xx-yyyy**

where xx = connector type, yyyy = cable length in mm

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