HC977E

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CALIAN
Confidence. Engineered.

Embedded Multi-Constellation Triple-Band Antenna

Frequency Coverage: GPS L1, L2, L5 | GALILEO E1, E5a, E5b | BEIDOU B1, B2a, B2b | GLONASS G1, G2, G3 | NavIC L5 + L-Band

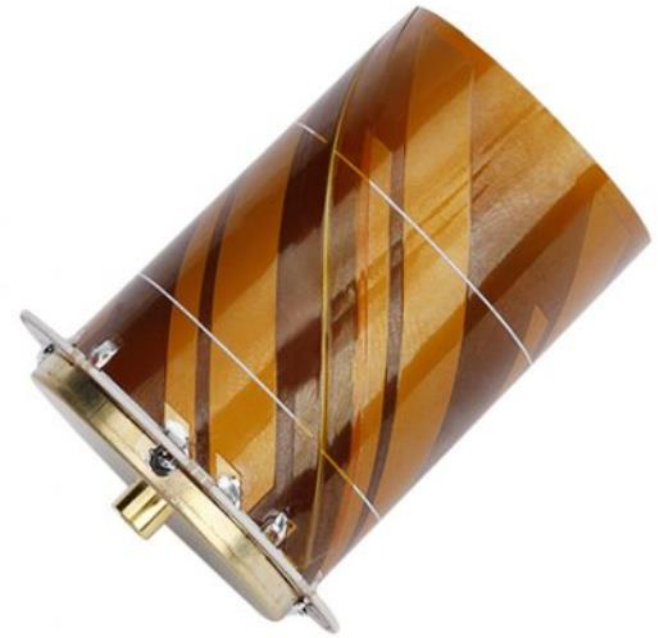
The patented HC977E embedded helical antenna is designed for precision positioning, covering the GPS/QZSS-L1/L2/L5, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b, BeiDou-B1/B2/B2a, and NavIC-L5 frequency bands, including the satellite-based augmentation system (SBAS) available in the region of operation [WAAS (North America), EGNOS (Europe), MSAS (Japan), or GAGAN (India)], as well as L-Band correction services.

Weighing only 8 g, the light and compact HC977E features a precision-tuned helix element that provides excellent axial ratios and operates without the requirement of a ground plane, making it ideal for a wide variety of applications, including unmanned aerial vehicles (UAVs).

The HC977E 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 nearby in-Band cellular signals.

Tallysman provides an optional mounting ring for embedded helical antennas, which traps the outer edge of the antenaa circuit board to the host circuit board or to any flat surface. To facilitate a successful installation and optimum antenna performance, Tallysman also provides an Embedded Helical Antenna Installation Guide.

Mounting instructions available on our product page.



Applications

- Autonomous unmanned aerial vehicles (UAVs)
- Precision GNSS positioning
- Precision land survey positioning
- Mission-critical GNSS timing
- Network timing and synchronization
- Sea and land container tracking
- Fleet management and asset tracking
- Marine and avionics systems
- Law enforcement and public safety

Features

- Very low noise preamp (2.0 dB typ.)
- Axial ratio (≤ 0.5 dB at zenith)
- LNA gain (28 dB typ., 35 dB typ.)
- Low current (15 mA typ., 21 mA typ.)
- ESD circuit protection (15 kV)
- Invariant performance from 2.5 to 16 VDC
- REACH, and RoHS compliant

Benefits

- Extremely light (8 g)
- Ideal for RTK and PPP surveying systems
- Excellent RH circular polarized signal reception
- Great multipath rejection
- Increased system accuracy
- Excellent signal-to-noise ratio
- Industrial temperature range

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

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Antenna

Technology	Triple-frequency, RHCP quadrifilar helix

		Gain	Axial Ratio
		dBic typ. at Zenith	dB at Zenith
GNSS			
GPS / QZSS	L1	2.5	≤ 0.5
	L2	2.0	≤ 0.5
	L5	1.0	≤ 0.5
GLONASS	G1	1.5	≤ 0.5
	G2	1.1	≤ 0.5
	G3	2.6	≤ 0.5
Galileo	E1	2.5	≤ 0.5
	E5A	1.1	≤ 0.5
	E5B	2.2	≤ 0.5
	E6	-	-
BeiDou	B1	2.5	≤ 0.5
	B2b	2.7	≤ 0.5
	B2a	1.0	≤ 0.5
	B3	-	-
IRNSS / NavIC	L5	1.0	≤ 0.5
QZSS	L6	-	-
L-Band Services		1.5	≤ 0.5
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Other			
Axial Ratio at 10°	-	Efficiency	-
PC Variation	± 3.0 mm (all freq.)	PCO (z-axis, mm)	-

Mechanicals

Mechanical Size	38.7 mm (dia.) x 49.7 mm (h.)
Weight	8 g
Radome	-
Mount	Helical mounting ring P/N 23-0220-0
Available Connectors	MCX (female)

Environmental

Operating Temperature	-40 °C to + 85 °C
Storage Temperature	-50 °C to + 95 °C
Vibration	MIL-STD-810-G - Test Method 514.6
Shock	-
Salt Fog	-
IP Rating	-
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty:

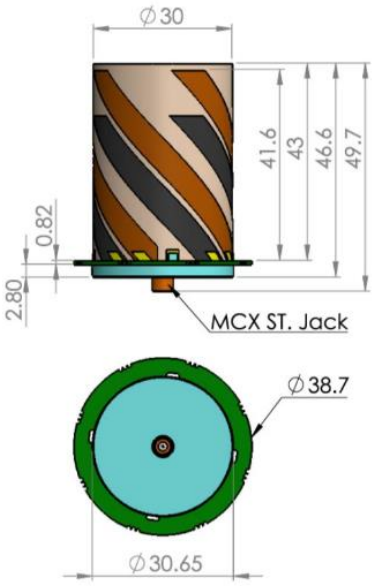
Parts and Labour	1-year standard warranty

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

Frequency Bandwith		Out of Band Rejection
Lower Band	1160 - 1255 MHz	> 63 dB @ < 1000 MHz > 38 dB @ < 1100 MHz > 57 dB @ < 1325 MHz
L-Band Corr.	1539 - 1559 MHz	> 36 dB @ < 1400 MHz > 44 dB @ < 1450 MHz > 28 dB @ > 1700 MHz
Upper Band	1559 - 1606 MHz	

Architecture	Pre-filtered
Gain	28 dB typ., 35 dB typ.
Noise Figure	2.0 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	15 mA typ. (28 dB), 21 mA typ. (35 dB)
ESD Circuit Protection	15 kV air discharge
P 1dB Output	11 dBm typ.
Group Delay	2 ns @ L1 | 5 ns @ L2

Mechanical Drawing - Units in 'mm'



Ordering Information

Part Number **33-HC977E-GG**

where GG = gain (28 or 35 dB)

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