

HC871E



When precision matters.®

HC871E Embedded Dual-Band Helical Antenna

Frequency Coverage: L1/L2/G1/G2/E1/B1

Overview

The lightweight HC871E embedded helical antenna is designed and crafted for precision positioning and covers the GPS/QZSS-L1/L2, GLONASS-G1/G2, Galileo-E1, and BeiDou-B1 frequency bands.

Weighing only 10 g, the lightweight HC871E 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 HC871E features an industry-leading low current, low noise amplifier (LNA) that includes an integrated low-loss pre-filter to protect against harmonic interference from high amplitude interfering signals, such as 700 MHz band LTE and other near in-band cellular signals.

Tallysman's provides an embedded helical antenna mounting ring that traps the outer edge of the circuit board to another 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.



Applications

- Autonomous unmanned aerial vehicles (UAVs)
- Precision GNSS positioning
- Precision land survey positioning
- Mission-critical GNSS timing
- Safety & security
- Network timing & synchronization

Features

- Very low noise preamp: 2.0 dB typ.
- Axial ratio: ≤ 0.5 dB at zenith
- LNA gain: 28 dB typ.
- Low current: 15 mA typ.
- ESD circuit protection: 15 kV
- Invariant performance from: 2.2 to 16 VDC
- REACH and RoHS compliant

Benefits

- Extremely lightweight (10 g)
- Ideal for L1/L2 RTK surveying systems
- Great 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: 1.0

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Antenna

Technology Dual Frequency, RHCP Quadrifilar Helix

		Gain dBic typ. at Zenith	Axial Ratio dB at Zenith
GNSS			
GPS / QZSS	L1	1.6	≤ 0.5
	L2	1.7	≤ 0.5
	L5	-	-
GLONASS	G1	1.2	≤ 0.5
	G2	1.7	≤ 0.5
	G3	-	-
Galileo	E1	1.6	≤ 0.5
	E5A	-	-
	E5B	-	-
	E6	-	-
BeiDou	B1	1.6	≤ 0.5
	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	27.5 mm (dia.) x 49.6 mm (h.)
Weight (including O-Ring)	10 g
Available connectors	MCX
Radome	-
Mount	Tallysman compression ring

Environmental

Operating Temperature	-40 °C to +85 °C
Storage Temperature	-50 °C to +95 °C
Vibration	MIL STD 810D - 2 hr per axis (X,Y,Z)
Shock	-
Salt Fog	-
IP Rating	-
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty:

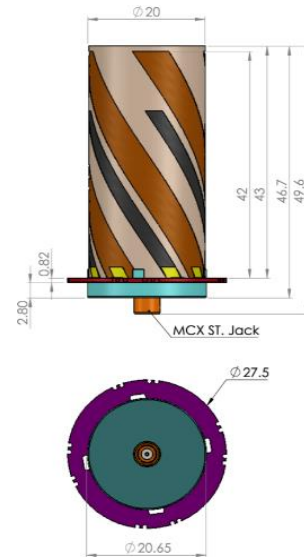
Parts and Labour	One year (extended warranty available)
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Low Noise Amplifier (LNA) - Measured at 3V and 25°C

Frequency Bandwidth		Out of Band Rejection	
		Upper Band	Lower Band
1559 - 1606 MHz	1215 - 1254 MHz	< 1400 MHz > 48 dB < 1500 MHz > 39 dB > 1625 MHz > 38 dB > 1700 MHz > 57 dB	< 1100 MHz > 46 dB < 1190 MHz > 40 dB

Architecture	pre-filter → LNA
Gain	28 dB typ. 26 dB min.
Noise Figure	2.0 dB typ.
VSWR	< 1.5:1 typ. 1.8:1 max.
Supply Voltage Range	2.2 to 12 VDC
Supply Current	15 mA typ.
ESD Circuit Protection	15 kV air discharge
P 1dB Output	10 dBm
Group Delay	15 ns @ L1 10ns @ L2

Mechanical Diagram



Ordering Information

Part Number **33-HC871E**

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