

HC977



When precision matters.®

HC977 Triple-Band Helical Antenna + L-band

Frequency Coverage: L1/L2/L5/G1/G2/G3/E1/E5a/E5b/B1/B2/B2a + L-band

Overview

The lightweight HC977 helical antenna is designed and crafted for precision positioning and covers the GPS/QZSS-L1/L2/L5, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b, and BeiDou-B1/B2/B2a frequency bands, as well as L-band correction services.

Weighing only 42 g, the HC977 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 HC977 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.

The HC977 is protected by a robust, military-grade plastic enclosure with an integrated SMA connector for screw-on mounting that securely seals the unit with an O-ring, complying with IP67 standards. The enclosure also provides three threaded holes in the base for secure attachment of the unit.

*The HC977 replaces the HC975.



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: 1.6 dB
- Axial ratio: ≤ 0.5 dB at zenith
- LNA gain: 28 dB typ. or 35 dB typ.
- Low current: 15 mA typ. or 21 mA typ.
- ESD circuit protection: 15 kV
- Invariant performance from: 2.2 to 16 VDC
- IP67, REACH, and RoHS compliant

Benefits

- Extremely lightweight (42 g)
- Ideal for L1/L2/L5, E1/E5a/E5b 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 Triple frequency, RHCP quadrifilar helix

		Gain dBic typ. at Zenith	Axial Ratio dB at Zenith
GNSS			
GPS / QZSS	L1	2.5	≤ 0.5
	L2	2.0	≤ 0.5
	L5	0.3	≤ 0.5
GLONASS	G1	1.4	≤ 0.5
	G2	0.5	≤ 0.5
	G3	2.1	≤ 0.5
Galileo	E1	2.5	≤ 0.5
	E5A	0.3	≤ 0.5
	E5B	2.2	≤ 0.5
	E6	-	-
BeiDou	B1	2.5	≤ 0.5
	B2	2.2	≤ 0.5
	B2a	0.3	≤ 0.5
	B3	-	-
IRNSS / NavIC	L5	0.3	≤ 0.5
QZSS	L6	-	-
L-Band Services (1525 MHz - 1559 MHz)		1.5	≤ 0.5
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Other			
Axial Ratio at 10°	-	Efficiency	-
PC Variation	-		

Mechanicals

Size	44.2 mm (dia.) x 62.4 mm (h.)
Weight (including O-Ring)	42 g
Available connectors	SMA
Radome	Radome and Base: EXL9330
Mount	3 M2.5 screws

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	IP67 (housing)
Compliance	IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty:

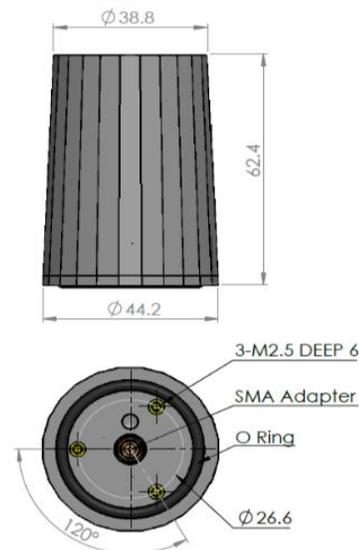
Parts and Labour	One year (extended warranty available)
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Low Noise Amplifier (LNA) - Measured at 3V and 25°C

Frequency Bandwith		Out of Band Rejection	
		Upper Band	Lower Band
1525 - 1606 MHz	1164 - 1254 MHz	< 1400 MHz > 36 dB < 1450 MHz > 44 dB > 1700 MHz > 28 dB	< 1000 MHz > 63 dB < 1100 MHz > 38 dB < 1325 MHz > 57 dB

Architecture	pre-filter → LNA
Gain	28 dB typ. or 35 dB typ.
Noise Figure	1.6 dB typ.
VSWR	< 1.5:1 typ. 1.8:1 max.
Supply Voltage Range	2.2 to 16 VDC
Supply Current	15 mA typ. (28 dB) 21 mA typ. (35 dB)
ESD Circuit Protection	15 kV air discharge
P 1dB Output	L1 - 22.7 dBm L2, L5 - 25.1 dBm
Group Delay	2 ns @ L1 5 ns @ L2

Mechanical Diagram



Ordering Information

Part Number **33-HC977-xx**

where xx = Gain in dB

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