19-450

CHELTON

UHF and GPS SatCOM Antenna

The 19-450 UHF and GPS SatCOM Antenna is a combined UHF satellite communications and Global Positioning System (GPS) antenna. The antenna is low profile in construction and intended for airborne applications.

The UHF section provides essentially hemispherical satellite communications coverage. The GPS section provides nominal hemispherical coverage in the GPS L1 and L2 frequency bands to allow reception of microwave signals from a number of satellites.

A variant of the **19-450**, the **19-450N**, offers alternative types of connector.

The UHF section comprises two independent elements:

- A circularly polarized turnstile antenna comprising a pair of quadrature connected broadband horizontal crossed dipoles, fed via a pair of Roberts baluns. The antenna is polarized Right Hand Circular (RHCP) according to IEEE definition.
- A vertically polarized, reactively matched, broadband, folded monopole.

Low angle (0° to 35° nominal) coverage is provided by the vertical element, and high angle (35° to 90° nominal) coverage is provided by the circularly polarized element. In this way, essentially full



hemispheric coverage is achieved for satellite communications. Both elements are dc grounded to provide a degree of lightning protection.

The GPS section is a stacked patch arrangement giving right-hand circularly polarised radiation.

The **19-450** utilizes a one-piece vertical shell moulded under heat and pressure for high strength and resistance to moisture ingress.

The horizontal element is contained within a circular fibreglass moulding, which is securely and permanently fitted to the vertical shell.

An aluminium alloy base plate provides for fixing the antenna to the airframe. Careful design of internal ribs and base-to-shell load transfer ensures very high side loading acceptance.

The GPS element is mounted rigidly on the top face of the antenna.

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UHF and GPS SatCOM Antenna

ELECTRICAL

MECHANICAL Dimensions

Weight

Mounting

Frequency	240 MHz - 400 MHz		
Gain	Low Angle: Average within 2 dB of a quarter wave stub		
	High Angl band) at z	e: +4.5 dBiC minimu enith	m (average full
Polarisation	Low Angle: Essentially vertical when mounted vertically		
	High Angl	e: Predominantly RH	ICP at zenith
Power Rating	200 W ma	IX	
Impedance	50 ohm nominal		
VSWR	Low Angle: 2:5:1 max		
	High Angle: 2:0:1 max		
Isolation	≥ 15	dBBetween Low a	ind High Angle
	≥ 30	dBBetween Low A	ngle and GPS
	≥ 30	dBBetween High /	Angle and GPS
Connectors	Туре	Low Angle	High Angle
	19-450 19-450N	TNC Type Female N Type Female	N Type Female N Type Female

H 228.60 mm, W 403.86 mm

8 holes fixed location

ENVIRONMENTAL

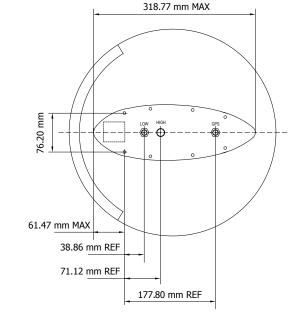
High Temperature	MIL-STD-810D, Method 501.2, Procedures l and ll
remperature	Operational: +71°C
	Storage: +85°C
Low Temperature	MIL-STD-810D, Method 501.2, Procedures I and II
remperature	Operational: -51°C Storage: -62°C
Altitude and Rate of Change	MIL-STD-810D, Method 500.2, Procedure II 30,000 ft and 2,000 ft/minute
Shock	MIL-STD-810C, Method 516.2, Procedure I 15 g, 11 ms, sine
Vibration	MIL-STD-810E, Method 514.4, Procedure I, Category 6
Humidity	MIL-STD-810D, Method 507.2, Procedure III 95% RH, 60°C - 30°C, 10 cycles
Salt Fog	MIL-STD-810D, Method 509.2, Procedure I

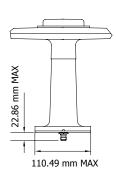
GPS SatCOM

Frequency	L1 band:1565 MHz - 1586 MHz L2 band:1217 MHz - 1238 MHz
Gain	+4 dBiC typical at zenith
Polarisation	Predominantly RHCP at zenith
Impedance	50 ohm nominal
VSWR	2.0:1 max
Connectors	TNC Type Female

403.86 mm MAX

4 kg





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