

20-200-1

CHELTON

Wide-band VHF/UHF/L-Band Antenna

The 20-200-1 Wide-band VHF/UHF/L-Band Antenna is a broadband passive blade antenna intended for use over the full VHF and UHF communications bands 30 MHz to 88 MHz, 108 MHz to 174 MHz and 225 MHz to 400 MHz, together with the frequency band 960 MHz to 1220 MHz.

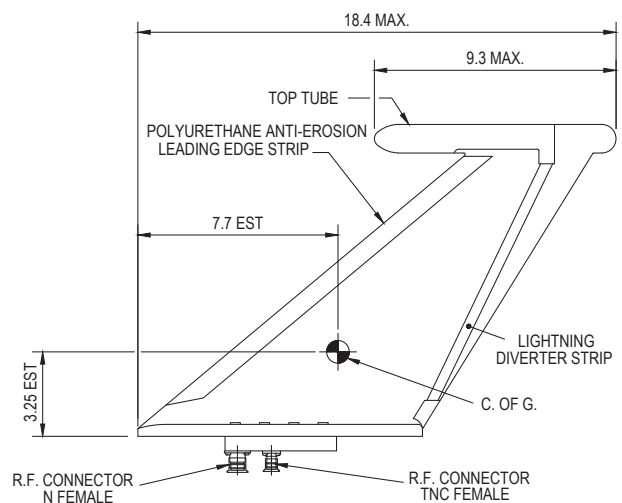
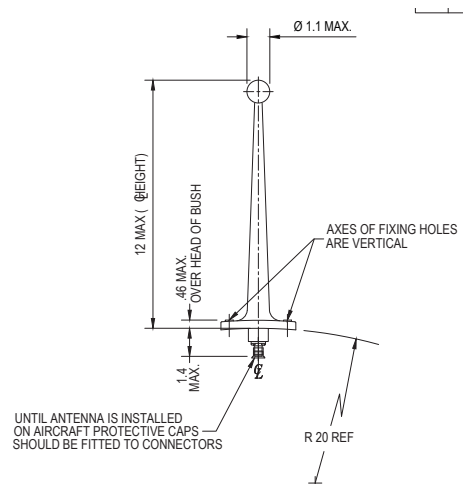
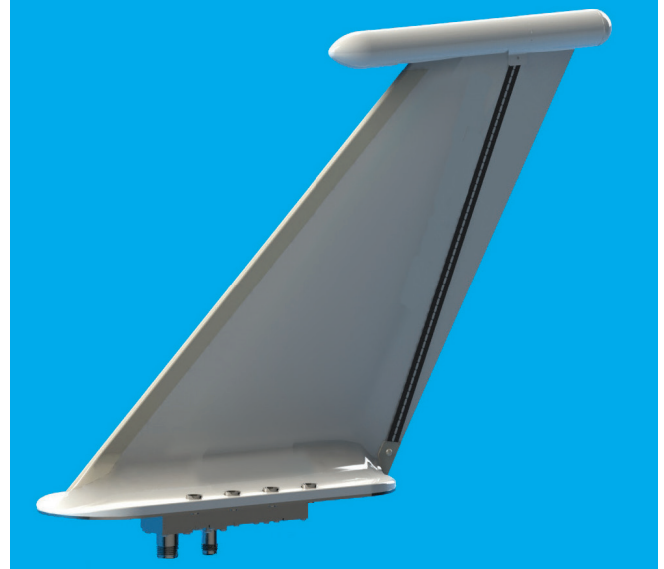
The antenna is fitted with a small, capacitively coupled, top tube which enhances low frequency performance while providing protection to the radiating structure in the event of a lightning strike.

The antenna is essentially configured as a broadband fan for VHF and UHF frequencies. Selective resistive loading is applied to preserve match at low frequencies. This is progressively reduced with increasing frequency and, at UHF frequencies, is bypassed. The capacitively coupled top tube enhances performance at low frequencies, and at UHF frequencies, is electrically decoupled to preserve pattern integrity.

The L-band function is served by an elevated feed monopole.

Decoupling techniques are incorporated in the VHF/UHF element to avoid deleterious interaction.

Both radiating elements, together with certain passive matching networks, are implemented on a common PCB. The frequency dependent resistive network



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ELECTRICAL

Frequency	30 MHz - 88 MHz
	108 MHz - 174 MHz
	225 MHz - 400 MHz
	960 MHz - 1220 MHz
Gain	dBi MHz
	≥ -22.5 30
	≥ -15.0 88
	≥ -10.5 108
	≥ -1 174
	≥ 0* 225 - 400
	≥ 0* 960 - 1220
*average	
Polarisation	Predominantly vertical (when mounted vertically)
Radiation Pattern	Omnidirectional in azimuth (nominal)
Power Rating	35 W CW max 30 MHz - 88 MHz
	120 W CW max 108 MHz - 174 MHz
	1.5 kW peak 960 MHz - 1220 MHz
	0.04 duty cycle
Impedance	≥ -22.5 30
	≥ -15.0 88
	≥ -10.5 108
	≥ -1 174
	≥ 0* 225 - 400
	≥ 0* 960 - 1220
	*average
Impedance	50 ohm (nominal)
VSWR	≤ 2.5:1 30 MHz - 50 MHz
	≤ 2.7:1 50 MHz - 88 MHz
	≤ 2.5:1 108 MHz - 136 MHz
	≤ 2.25:1 136 MHz - 174 MHz
	≤ 2.25:1 225 MHz - 400 MHz
	≤ 2.0:1 960 MHz - 1000 MHz
	≤ 1.8:1 1000 MHz - 1100 MHz
	≤ 2.0:1 1100 MHz - 1220 MHz
Isolation	≥ 60 dB 30 MHz - 400 MHz
	≥ 60 dB 960 MHz - 1220 MHz
Connectors	VHF/UHF: TNC Type Female
	L-Band:N Type Female

MECHANICAL

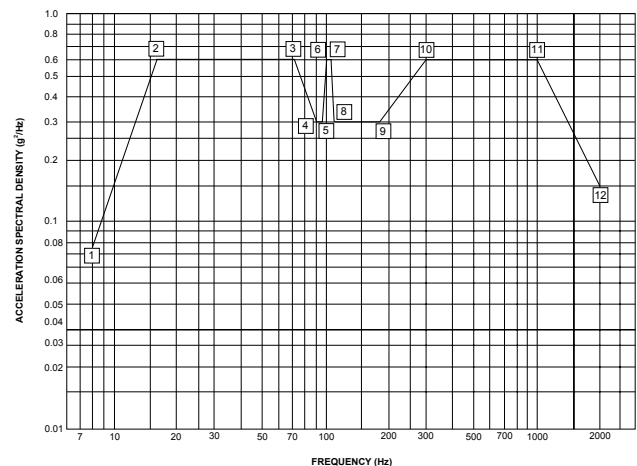
Dimensions (LxWxH)	467.36 x 91.44 x 304.80 mm
Weight	1.8 kg (maximum)

is fitted to the base of the antenna to aid dissipation. Series low and high pass filters are fitted to the underside of the baseplate to provide isolation between the VHF/UHF and L-band functions.

These filters are designed to exhibit a Tchebyscheff response and are constructed with low loss components to maintain gain performance.

ENVIRONMENTAL

	MIL-T-5422, Para 4.1, Class 2
Temperature	Operational: -54°C to +71°C
	Intermittent: +71°C to +95°C
	Storage: -62°C to +71°C
Altitude	70,000 feet
Humidity	MIL-STD-810D, Method 507.2, Procedure III
Shock	MIL-T-5422, Para 4.3
Salt Fog	MIL-STD-810D, Method 509.2, Procedure I
Vibration	MIL-STD-810D, Method 514.3, Procedure I
	See profile below



POINT	FREQUENCY (Hz)	LEVEL (g²/Hz)	POINT	FREQUENCY (Hz)	LEVEL (g²/Hz)
1	8	0.076	7	105	0.6
2	16	0.6	8	110	0.3
3	72	0.6	9	180	0.3
4	90	0.3	10	300	0.6
5	95	0.3	11	1000	0.6
6	100	0.6	12	2000	0.15

Random Vibration Spectrum, Endurance Level



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