

# 20-200-2

# CHELTON

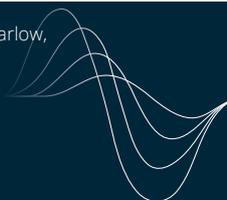
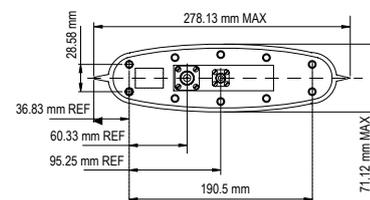
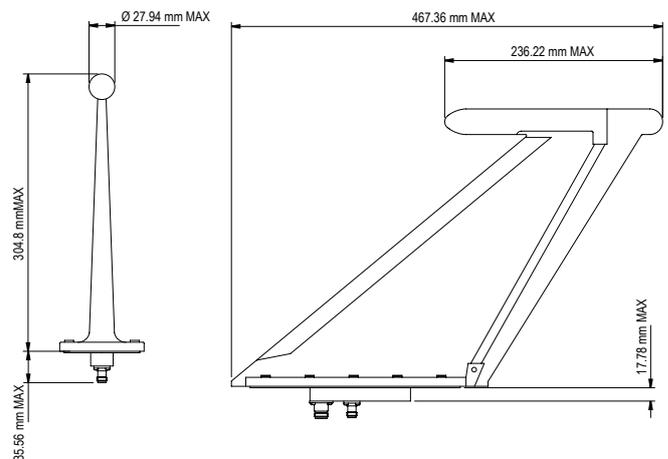
## Wide-band VHF/UHF/L-Band Antenna

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 matching at low frequencies. This is progressively reduced with increasing frequency and, at UHF frequencies, is bypassed. At UHF frequencies, the top tube 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 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



## Wide-band VHF/UHF/L-Band Antenna

### ELECTRICAL

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

### MECHANICAL

|               |                  |
|---------------|------------------|
| <b>Height</b> | 304.80 mm        |
| <b>Length</b> | 467.36 mm        |
| <b>Width</b>  | 91.44 mm         |
| <b>Weight</b> | 1.8 kg (maximum) |

### ENVIRONMENTAL

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

