

# C-BAND CAVITY BACKED HELIX ANTENNA

## MODEL 820C-SERIES



SUPPLYING HIGH PERFORMANCE FLIGHT INSTRUMENTATION, RF/MICROWAVE ASSEMBLIES, POWER AMPLIFIERS, IFF AND DATA ACQUISITION SYSTEMS FOR SEVERE ENVIRONMENTS.

### DESCRIPTION

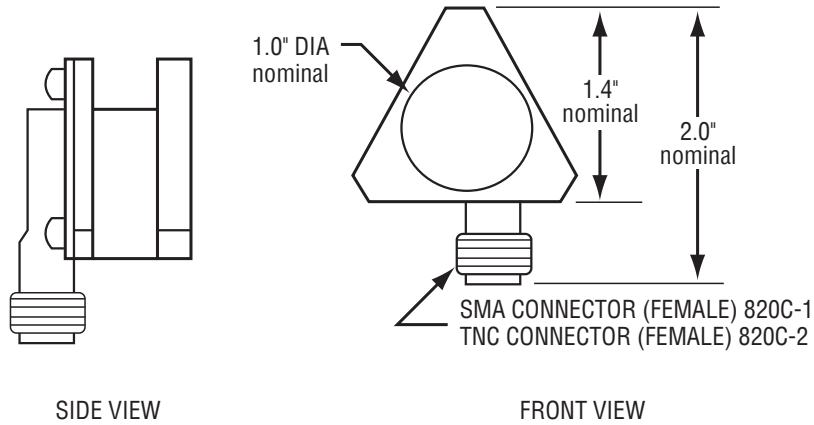
The Model 820C Antenna series is used as part of light weight C-Band tracking systems which can be installed in any large group of vehicles. The antenna is an optical-quartz loaded, cavity backed helix radiator which produces a right-hand circular polarized radiation pattern. The use of quartz material provides for high and low temperature stability with no degradation in electrical performance. Flush mounting is normally used on reentry vehicles with no performance deterioration as a result of reentry heat. The low thermal conductivity of the quartz material limits heat transfer from the face of the antenna so that very little reentry heat is conducted to the antenna connector. This permits the use of standard mating connectors.

Companion power dividers Models 853-2C, 854-3C and 855-4C are used for arraying two, three and four antennas about the missile, for X-Band operation a Model 830X-1 is available.

### FEATURES

- This series is part of light weight C-Band tracking systems.
- Optical-quartz loaded, cavity-backed helix radiator which produces a right-hand circular polarized radiation pattern.
- High (>1000°F) and low temperature (< -60°F) stability with no degradation in electrical performance.
- Uses standard mating connectors.





### ELECTRICAL

- Frequency Range: 5.4 to 5.9 GHz
- Impedance: 50 ohms
- VSWR: 2.5:1 maximum over full band. Units can be tuned for 1.5:1 maximum VSWR over any specified 100 MHz portion of band.
- Polarization: Right-hand circular
- Power: 1.5 kW peak
- Gain: 6.0 dB
- Beamwidth: 130°
- Temperature: 3 minute duration; 926.7°C (1700°F) at front surface. 15 minute duration; 537.8°C (1000°F) at front surface. Steady state exposure: -45°F to +350°F.
- Vibration (random): 50 g's RMS
- Shock: 300 g's

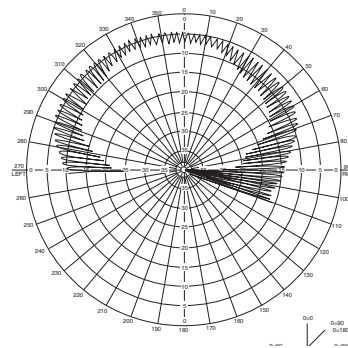
### PHYSICAL

- Size: 2" width x 1.27" height (5.08 x 3.23 cm)
- Weight: With flange, 3.0 oz. (85 grams); W/out flange, 2.5 oz. (70.9 grams)

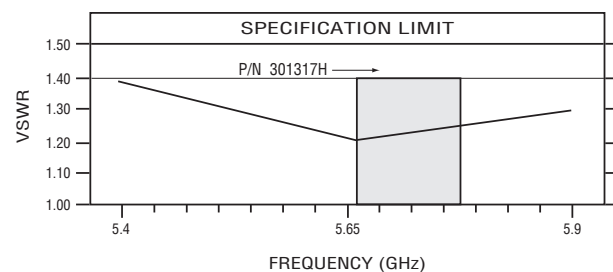
### PRODUCT NUMBERS

- P/N 301317-1 - 820C-1: 5.4 to 5.9 GHz., SMA female connector, stainless steel base.
- P/N 301317-2 - 820C-1: 5.4 to 5.9 GHz., SMA female connector, stainless steel base, without top mounting flange.
- P/N 301317H - 820C-1: 5.67 to 5.785 GHz., SMA female connector, stainless steel base.
- P/N 301715-1 - 820C-2: 5.4 to 5.9 GHz., TNC female connector, stainless steel base.
- P/N 308151-1 - 820C-2: 5.4 to 5.9 GHz., TNC female connector, invar base, extended temperature range enhancements.

### VERTICAL YAW PLANE



TYPICAL VSWR VS FREQUENCY



**Ultra**  
ELECTRONICS

making a difference

Ultra Electronics  
HERLEY  
3061 Industry Drive  
Lancaster, PA USA 17603  
Tel: +1 717 397 2777  
www.ultra-herley.com  
www.ultra-electronics.com

Ultra Electronics reserves the right to vary these specifications without notice.  
© Ultra Electronics Limited 2015.  
Printed in USA  
August 2015