

S-BAND CAVITY BACKED HELIX ANTENNA

MODEL 815S



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

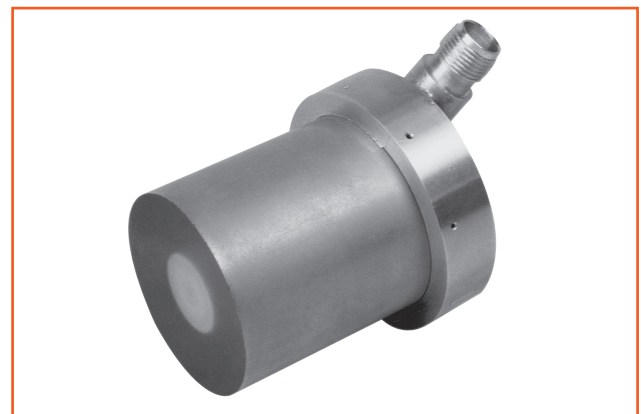
DESCRIPTION

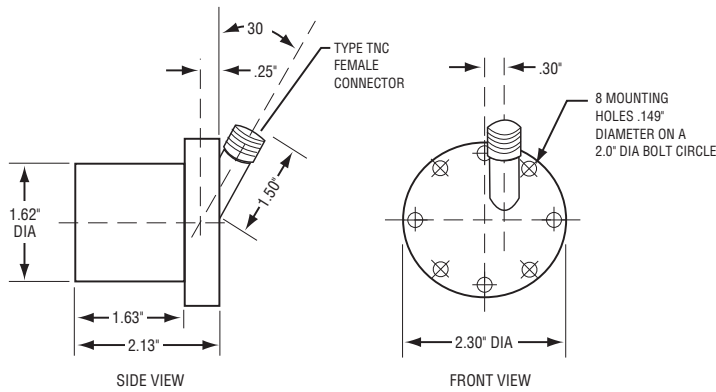
The Model 815S Cavity Backed Helix Antenna was developed as part of an S-Band radar transponder system for use in Nike Tomahawk missile. It has also flown on the Apollo re-entry vehicles and the GEOS-6 satellite.

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. Low thermal conductivity of the quartz material controls the heat transfer from the face of the antenna window so that very little reentry heat is conducted to the antenna connector. This permits the use of standard mating connectors. The companion power dividers are Models 850-2S, 851-3S and 852-4S (two, three and four-way respectively).

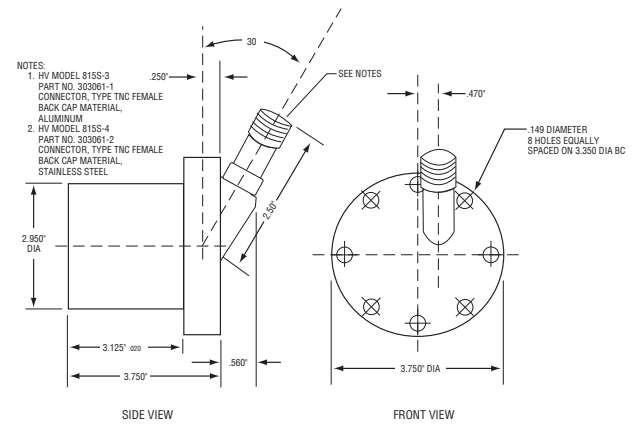
FEATURES

- Developed as part of an S-Band radar transponder system
- Optical quartz-loaded, cavity-backed helix radiator which produces right-hand circular polarized radiation pattern
- High and low temperature stability with no degradation in electrical performance
- Uses standard mating connectors





Outline drawing shown is for 815S and 815S-1



Outline drawing shown is for 815S-3 and 815S-4

ELECTRICAL

- Frequency Range: Tabulated
- Impedance: 50 ohms
- VSWR: $\leq 1.5:1$ for p/n 300814G and 304006-1; $\leq 2.5:1$ for p/n 303060-1, 303061-1 and 303061-3
- Polarization: Right-hand circular
- Power: 1.5 kW peak
- Environment: Nike Tomahawk requirements
- Beamwidth: Approximately 130° , 3 dB down

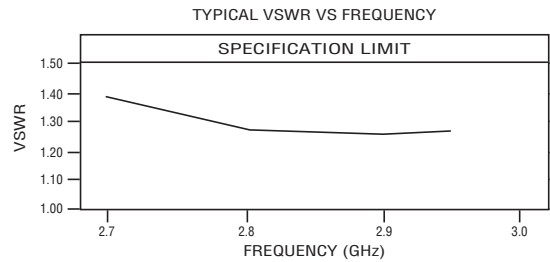
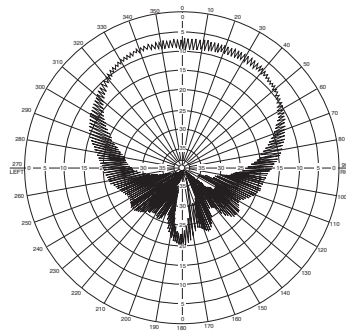
PRODUCT NUMBERS

- P/N 300814G - 815S: 2.7 to 2.95 GHz., TNC connector, aluminum base.
- P/N 304006-1 - 815S-1: 2.2 to 2.3 GHz., SMA connector, aluminum base.
- P/N 303060-1 - 815S-2: 1.8 to 2.3 GHz., SMA connector, aluminum base.
- P/N 303061-1 - 815S-3: 1.8 to 2.3 GHz., TNC connector, aluminum base.
- P/N 303061-3 - 815S-4: 1.8 to 2.3 GHz., TNC connector, invar base, extended temperature range enhancements.

PHYSICAL

- Size: 815S and 815S-1
Aperture; 1.62"
Back Cap; 2.30"
Length; 2.13"
- 815S-2 and 815S-3 and 815S-4
Aperture; 2.95"
Back Cap; 3.75"
Length; 3.75"
- Weight: 815S-2, 38.5 ounces
815S-3, 38.5 ounces
815S-4, 51.7 ounces
- Operating Temperature:
815S-4 tested and qualified to 5000°F on the aperture (front face) for use on the Apollo re-entry vehicle. Steady state exposure: -45°F to +180°F

TYPICAL RADIATION PATTERN



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

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