Radio & Antenna Information- 5140-5150 MHz

A

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TRANSMITTER EQUIPMENT CHARACTERISTICS

1. NOMENCLATURE, MANUFACTURER'S MODEL NO. QSX-VDR2-1100-05-04-05AB-LD-VP SOQPSK	**2. MANUFACTURER'S NAME** Quasonix, Inc.
3. TRANSMITTER INSTALLATION	**4. TRANSMITTER TYPE** Digital Telemetry
5. TUNING RANGE 4400.0 MHz to 4950.0 MHz, 5091.0 MHz to 5150.0 MHz	**6. METHOD OF TUNING** Synthesizer
7. RF CHANNELING CAPABILITY 0.500 MHz	**8. EMISSION DESIGNATOR(S) See Remarks.** SOQPSK mode 3M90G1DDN
9. FREQUENCY TOLERANCE ±20 PPM, maximum	
10. FILTER EMPLOYED *(X one)* ☒ a. YES ☐ b. NO	
11. SPREAD SPECTRUM *(X one)* ☐ a. YES ☒ b. NO	**12. EMISSION BANDWIDTH** *(X and complete as applicable)* ☐ CALCULATED ☒ MEASURED
13. MAXIMUM BIT RATE 28 Mbps for SOQPSK	a. -3 dB 1.75 MHz b. -20 dB 4.65 MHz
14. MODULATION TECHNIQUES AND CODING SOQPSK: Offset QPSK with premodulation filtering, no coding	c. -40 dB 7.15 MHz d. -60 dB 9.95 MHz e. OC-BW 3.90 MHz
	15. MAXIMUM MODULATION FREQUENCY See block 24.
16. PRE-EMPHASIS *(X one)* ☐ a. YES ☒ b. NO	**17. DEVIATION RATIO** 0.5 for SOQPSK
	18. PULSE CHARACTERISTICS
19. POWER	a. RATE NA
a. MEAN 5 W	b. WIDTH NA
b. PEP NA	c. RISE TIME NA
20. OUTPUT DEVICE Transistor, operated in class C	d. FALL TIME NA e. COMP RATIO NA
	21. HARMONIC LEVEL
22. SPURIOUS LEVEL -68 dBc within ± 100 MHz, -80 dBc outside ±100 MHz	a. 2nd -57 dBc
23. FCC TYPE ACCEPTANCE NO.	b. 3rd -57 dBc
	c. OTHER -80 dBc

24. REMARKS

In all modes and all bands, waveform filtering is applied in three steps:

- Digital premodulation filtering, scaled automatically with the bit rate.
- Multiple stages of LC and stripline filtering in the upconversion circuits.
- 7-pole Butterworth LPF after the final output stage.

Block 15: Maximum modulation frequency: SOQPSK: Fmax = 0.25 x bit rate

- All emission bandwidths in item 12, harmonic levels in item 21 and spurious levels in item 22 are measured values.
- The two different sets of emission bandwidths in item 12 are for PCM/FM and SOQPSK mode, respectively.
- For all modes, Emission Designator (Box 8) and Emission Bandwidths (Box 12) are for bit rate of 5 Mbps, and scale in direct proportion to bit rate.
- Transmit rate with LDPC encoding is 25/16 of the input rate.

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Part # 1055-034
Broadband Panel Antenna, 4.4 - 5.9 GHz, 15 dBi

Features:

- Broad Band Coverage
- 4.4 - 5.9 GHz
- 15 dBi
- Designed for C Band communication in the following markets:
  - Law Enforcement
  - Surveillance
  - UAV & UGV Ground Stations

Antenna Specifications

Parameter	Value	Units	Tolerance
Antenna Pattern	Directional Antenna		
Frequency Band	C		
Impedance	50	Ohms	
Minimum Frequency	4.4 / 4,400	GHz / MHz	
Maximum Frequency	5.9 / 5,900	GHz / MHz	
Frequency Bandwidth	1.5 / 1,500	GHz / MHz	
Maximum VSWR	1.5:1	Ratio	15 dB Return Loss
Gain	15	dBi	
Polarization	Vertical		
Maximum RF Input Power	50	Watts	
Horizontal (AZ) Beamwidth	55	Degrees	
Vertical (EL) Beamwidth	32	Degrees	

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Parameter	Value	Units	Tolerance
Ground Plane Required	No		
Color	White		
Mount Style	Panel		
RF Connector Type	Type-N(f)		
IP Rating	IP64 when RF connectors are terminated with mating connectors		
Operating Temperature Range	-40 to +185	°F	(-40 to +85 °C)
Product Length	10.180 / 258.572	inches / mm	±0.13"
Product Width	7.180 / 182.372	inches / mm	±0.13"
Product Height	2.830 / 71.882	inches / mm	±0.13"
Product Weight	16.00 / 453.59	oz / grams	

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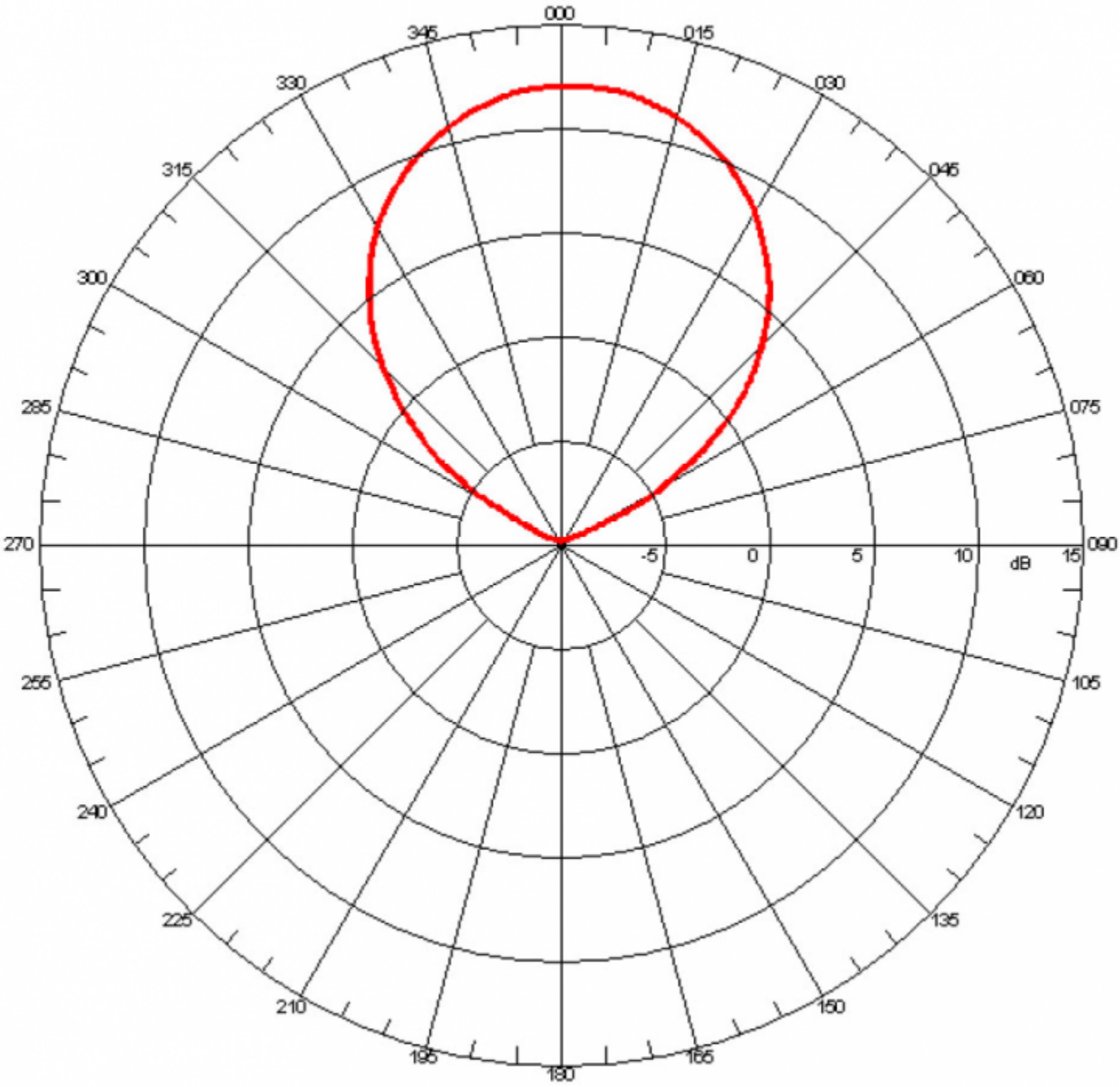

Azimuth Pattern

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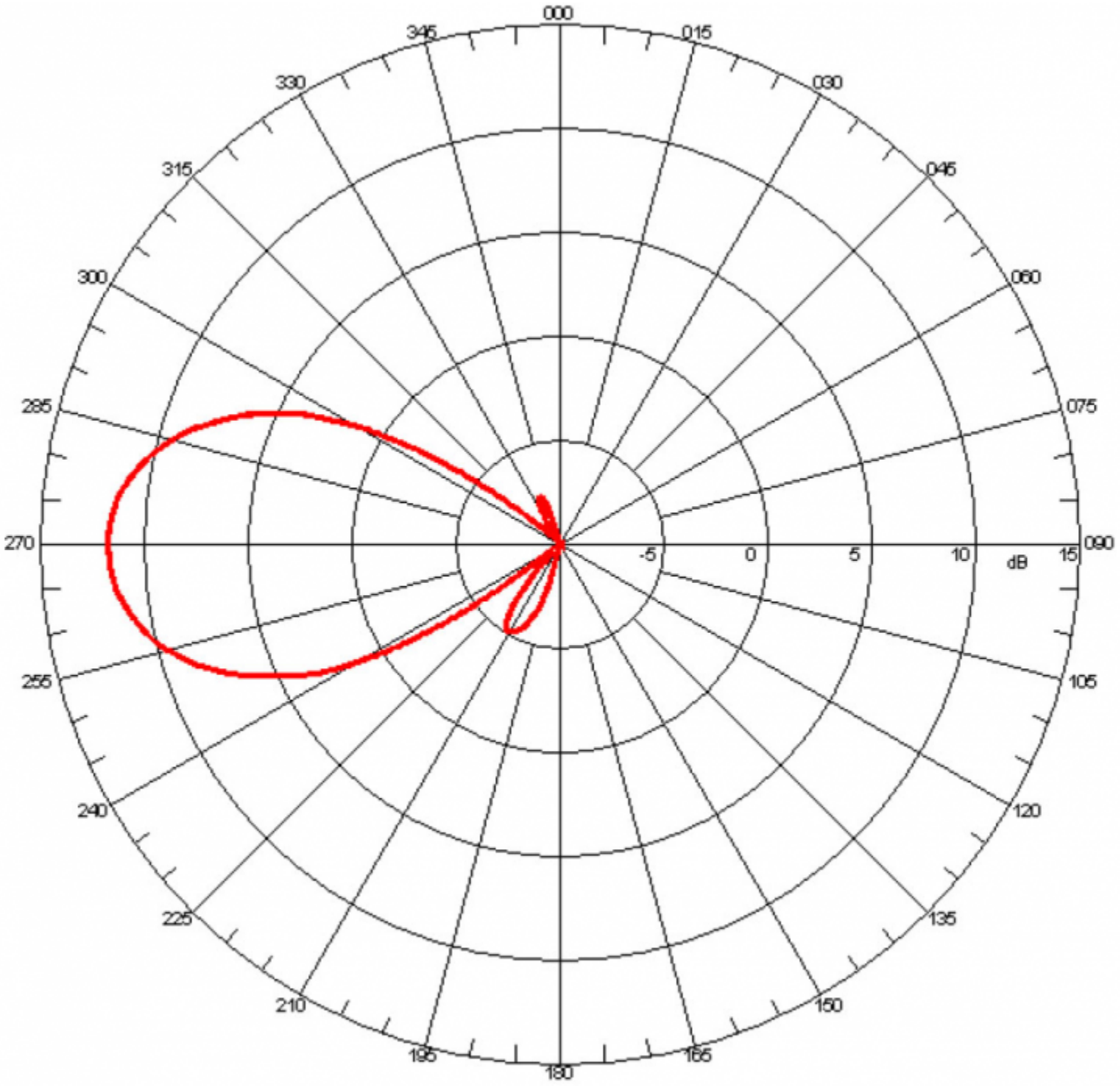

Elevation Pattern

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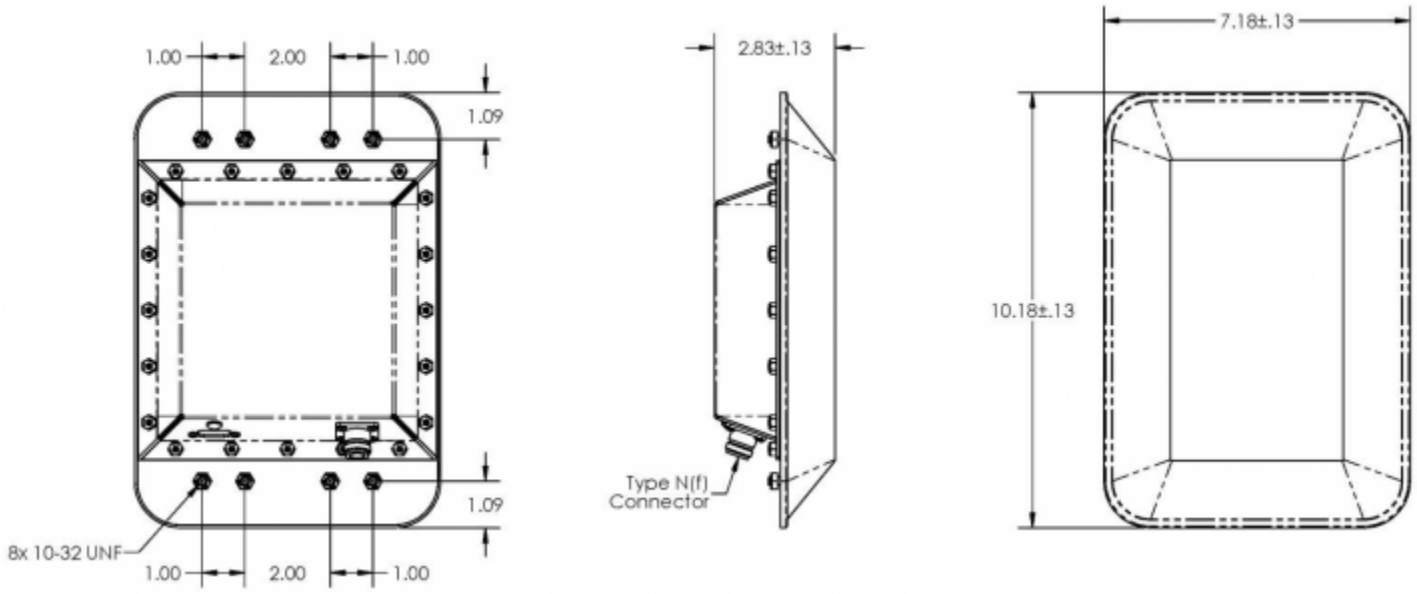

Engineering Drawing

Dimensions are in inches

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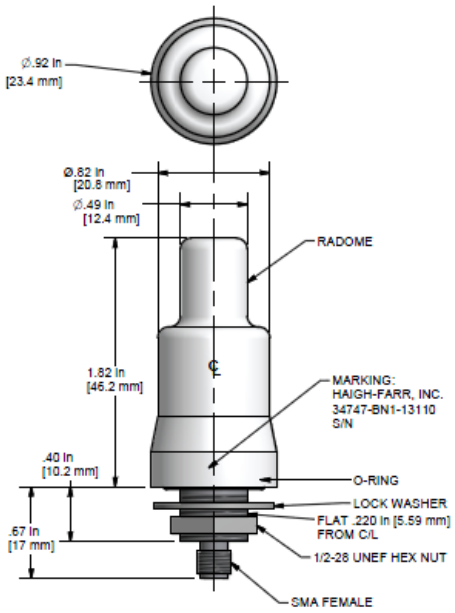
THE WORLD LEADER IN HIGH PERFORMANCE WRAPAROUND™ ANTENNAS.

BROADBAND BUTTON ANTENNA P/N BN1-13110

Model BN1-13110 is designed to operate at telemetry frequencies within L-, S-, and C-Band. Over the frequency ranges 1.4-2.7 GHz and 4.0-5.5 GHz, it provides both low VSWR and excellent omnidirectional pattern coverage.

Haigh-Farr Button antennas are designed for applications where size and weight are critical. They utilize well-proven materials and methods of construction, providing a solid package and requiring only one "D" hole installed in the vehicle for mounting. Superb protection is obtained through the use of a high-impact, high-temperature radome, with excellent properties in environments containing moisture and contaminants.



ELECTRICAL:

Frequency Bands:	1.4-2.7 GHz and 4.0-5.5 GHz
Power:	>30W Average
VSWR:	<1.6:1 typical, 2:1 max over operating bands
Input Impedance:	50 Ohms nominal
Polarization:	Linear, vertical
Radiation Pattern:	Omni-directional

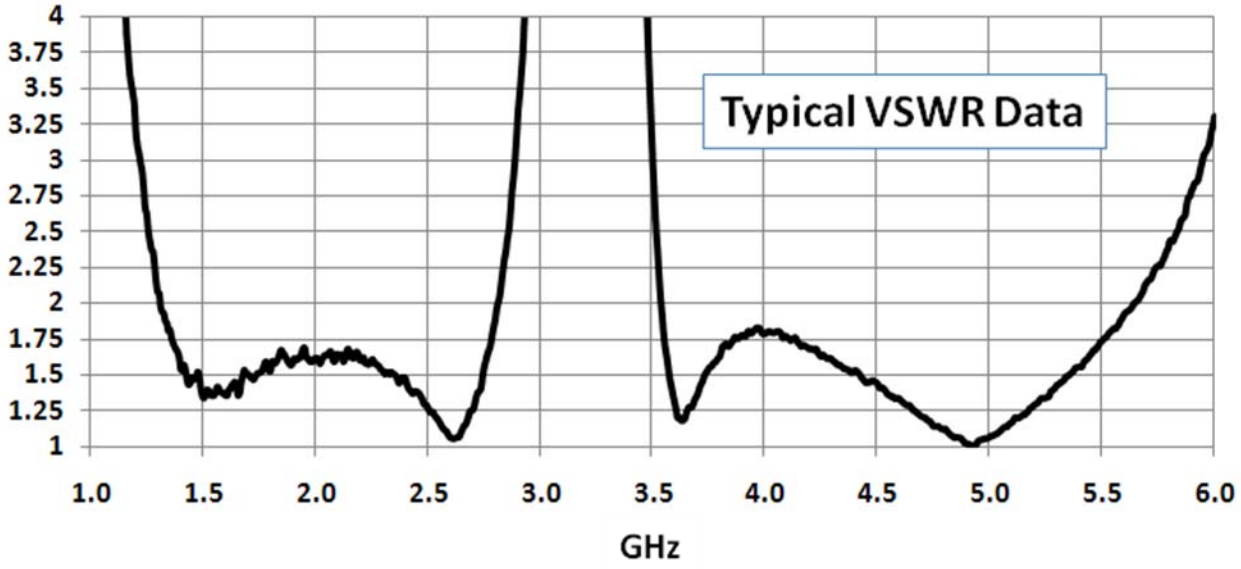
MECHANICAL:

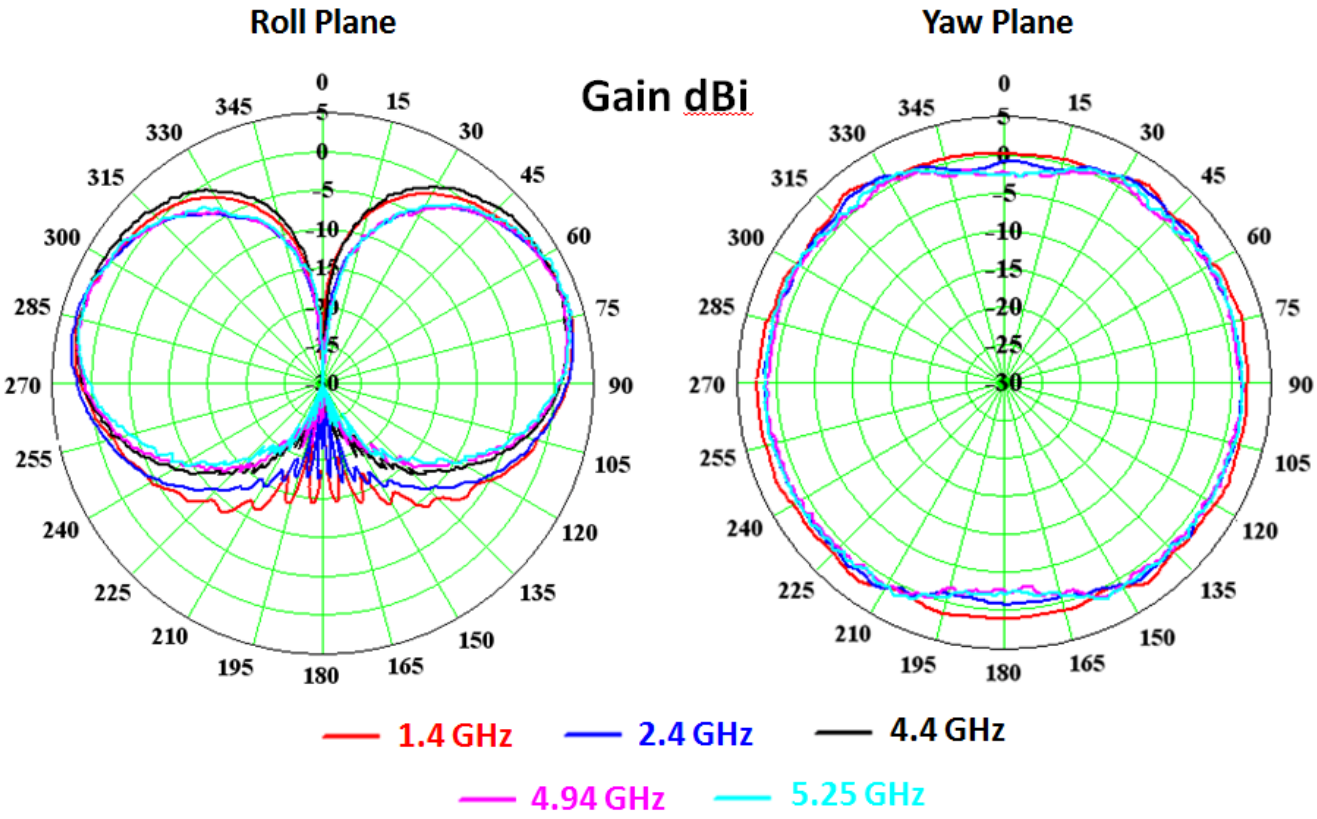
Connector:	SMA Female Standard (TNC Optional)
Dimensions:	See above drawing
Weight:	1.9 oz (55 gm)
Finish:	All exposed metallic surfaces are passivated stainless steel
Environmental:	Typical for supersonic airborne applications
Mounting:	Through "D" hole in vehicle and secured using lock washer and nut

DESIGN CAPABILITY

Haigh-Farr has an over 40 year history of designing and producing exceptionally rugged, high-performance antennas. If you don't find an antenna meeting your requirements in our standard list of products, Haigh-Farr has the experience and modeling capability to customize a solution. Adaptations of existing designs can be done with very short lead times. Contact Haigh-Farr for a review of your antenna requirements.

Haigh-Farr, Inc. 43 Harvey Road, Bedford NH 03110
Tel: 603-644-6170 Fax: 603-644-6190
E-mail: sales@haigh-farr.com Web Site: www.haigh-farr.com





Note: Measured on a 40" diameter, 6' long cylindrical ground plane. Fins and other protrusions on the vehicle will perturb the radiation pattern. The extent of any perturbations cannot be fully determined until radiation patterns are either calculated or measured on a model of the vehicle. Haigh-Farr offers engineering services, which include the calculation of radiation patterns on a specific vehicle.

Haigh-Farr, Inc. 43 Harvey Road, Bedford NH 03110
Tel: 603-644-6170 Fax: 603-644-6190
E-mail: sales@haigh-farr.com Web Site: www.haigh-farr.com