202-993

PRELIMINARY TECHNICAL PRODUCT DATA SHEET

# GNSS-3A

## GNSS Active Antenna

### DESCRIPTION

The GNSS-3A is a professional grade, active GNSS antenna designed for long term reliability. It is small and lightweight, with exceptional protection against the elements.

Designed to support the Warfighter, the portable, yet precise GNSS antenna is built for tough applications. The radome is made of a high-grade polymer, with a design to protect from UV, rain, lightning, chemical and jet fuels The GNSS-3A is available with a bottom mount connector and multiple colors (per FED-STD-595B).

### FEATURES

- Military and Civilian Applications
- GNSS Bands:
  - GPS L1, L2, L5
  - GLONASS L1, L2 and L3
  - GALILEO E1, E5b, E6
- Waterproof
- Excellent gain
- Small Form Factor
- Bottom Mount

### OPTIONS

The GNSS-3A comes with many available options to meet specific needs. Please contact GPS Source via phone, email, or visit the website for further information on product options and specifications.

# 1 GNSS-3A Specifications

**Table 1-1. Electrical Specifications**

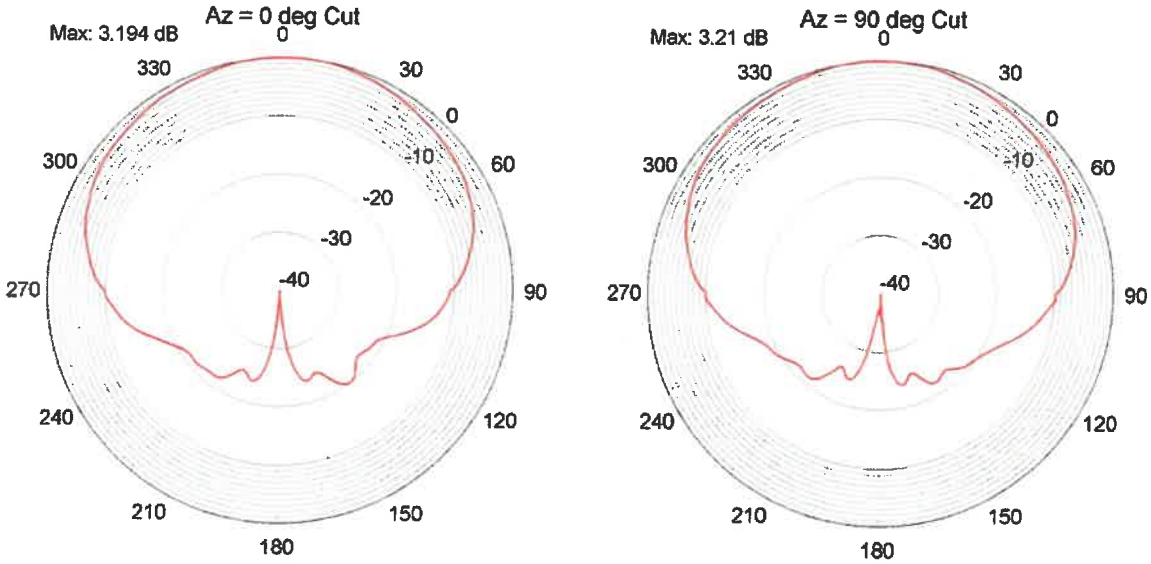
Operating Temperature -54°C to 71°C

| Parameter | | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Frequency Range (Passband)** | GNSS Upper Band | Ant: Output = 50Ω | 1559 | 1575.42 | 1610 | MHz |
| | GNSS Lower Band | | 1189 | 1227.60 | 1254 | |
| **Out Impedance** | | | | 50 | | Ω |
| **Element Gain** | GPS L1 | Output = 50Ω, 4 ft G.P. | > +3 | | | dBiC |
| | GPS L2 | | >+0 | | | |
| | GPS L5 | | >-5 | | | |
| | GLONASS L1 | | >+3 | | | |
| | GLONASS L2 | | > -3 | | | |
| | GLONASS L3 | | > -5 | | | |
| | Galileo E1 | | > +3 | | | |
| | Galileo E5 | | > -3 | | | |
| | Galileo E5b | | > +5 | | | |
| | Galileo E6 | | >-3 | | | |
| **LNA Gain** | GPS L1 | Output = 50Ω | > +30 | | | dB |
| | GPS L2 | | > +30 | | | |
| | GPS L5 | | > +30 | | | |
| | GLONASS L1 | | > +30 | | | |
| | GLONASS L2 | | > +30 | | | |
| | GLONASS L3 | | > +30 | | | |
| | Galileo E1 | | > +30 | | | |
| | Galileo E5 | | >+30 | | | |
| | Galileo E5b | | > +30 | | | |
| | Galileo E6 | | > +30 | | | |
| **Output SWR** | | Output = 50Ω | | | 2:1 | — |
| **Required DC Input Voltage** | | | 3 | | 12 | VDC |
| **LNA Current** | | Output = 50Ω | | | 50 | mA |
| **LNA OP1dB Compression** | | | | 10 | | dBm |
| **LNA OIP3** | | | | 15 | | dBm |
| **Noise Figure** | | | | | 3.0 | dB |
| **Polarization** | | Right Hand Circular | | | | |
| **Axial Ratio at Peak** | | < 2.8 dB Max | | | | |
| **Beam Width** | | 110 +/-5° at -3dB from Peak (Free Space) | | | | |
| **Altitude** | | 50,000 ft | | | | |
| **Lightning Protection** | | DC to Ground on the Antenna Element | | | | |

# 2 Performance Data

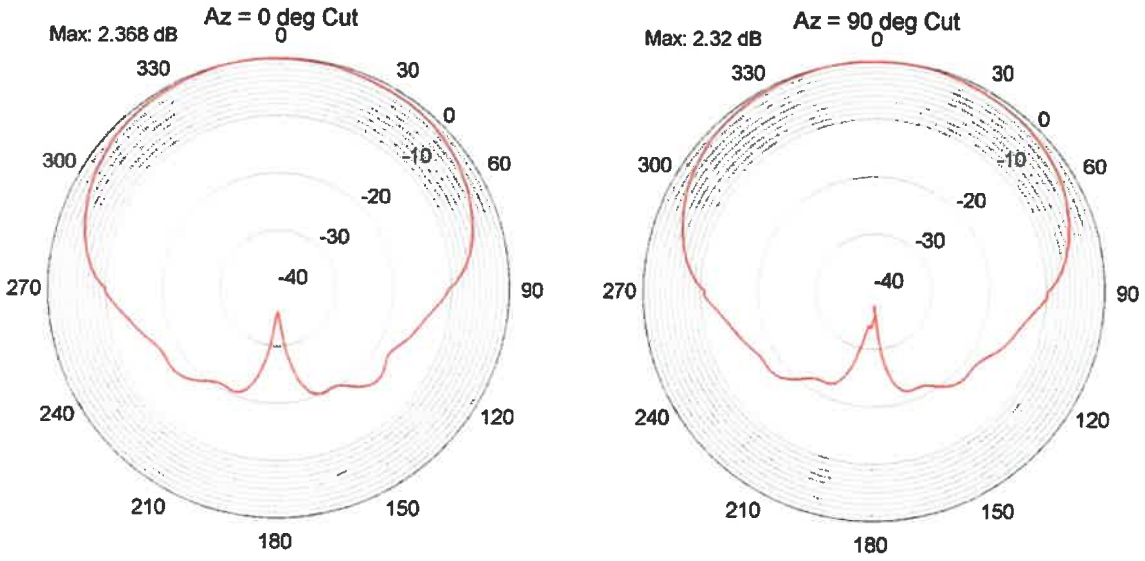
## 2.1 L1 Center Frequency

**Figure 2-1. Far Field Plots No Ground Plane**




## 2.2 L2 Center Frequency

**Figure 2-2. Far Field Plots No Ground Plane**



# 3 Environmental and EMI/EMC Requirements

The GNSS-3A has been designed to meet the following requirements.

**Table 3-1. MIL-STD-810 & 461F Requirements**

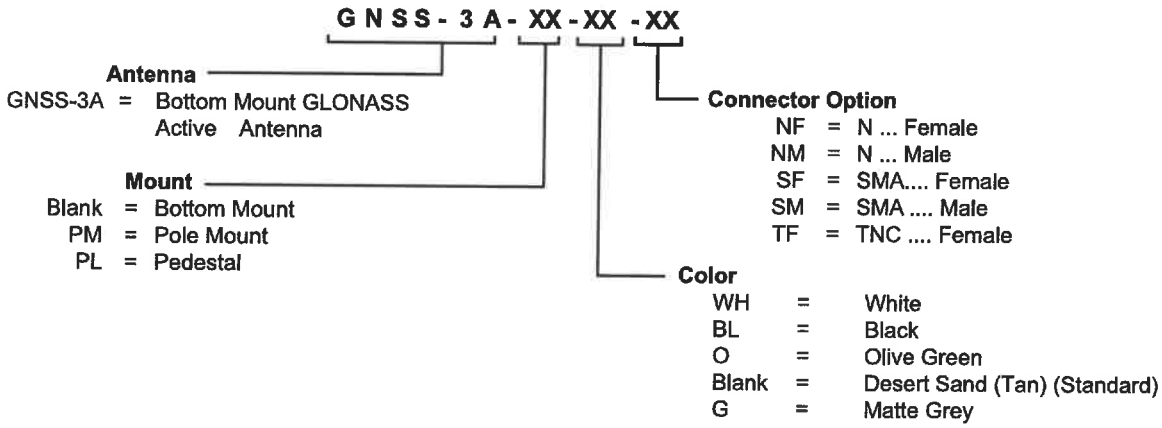
| Environment | MIL-STD-Requirements | |
|---|---|---|
| Mechanical Vibration | 810G | Mtd 514.6, Proc. I |
| Functional Shock | 810G | Mtd 516.6, Proc. I |
| Crash Hazard Shock | 810G | Mtd 516.6, Proc. V |
| High Temperature | 810G | Mtd 501.5, Proc. I & II |
| Low Temperature | 810G | Mtd 502.5, Proc. I & II |
| Temperature Shock | 810G | Mtd 503.5, Proc. I-C |
| Altitude | 810G | Mtd. 500.5, Proc. II & III |
| Humidity | 810G | Mtd 507.5, Proc. II |
| Salt Fog | 810G | Mtd 509.5 |
| Fungus | 810G | Mtd 508.6 |
| Sand and Dust: | 810G | Mtd 510.5, Proc. I & II |
| Conducted Emissions | 461F | CE106 |
| Radiated Emissions | 461F | RE102 |
| Radiated Susceptibility | 461F | RS103 |

# 4 Product Options

**Table 4-1. GNSS-3A Available Options**

| Type | Options | |
|---|---|---|
| Connector | N | Male and Female |
| | SMA | Male and Female |
| | TNC | Female |
| Mount | Bottom | |
| Color (FED-STD-595B) | White | Gloss |
| | Black | Matte |
| | Olive Green | Matte |
| | Desert Sand (Standard) | Matte |
| | Gray | Matte |

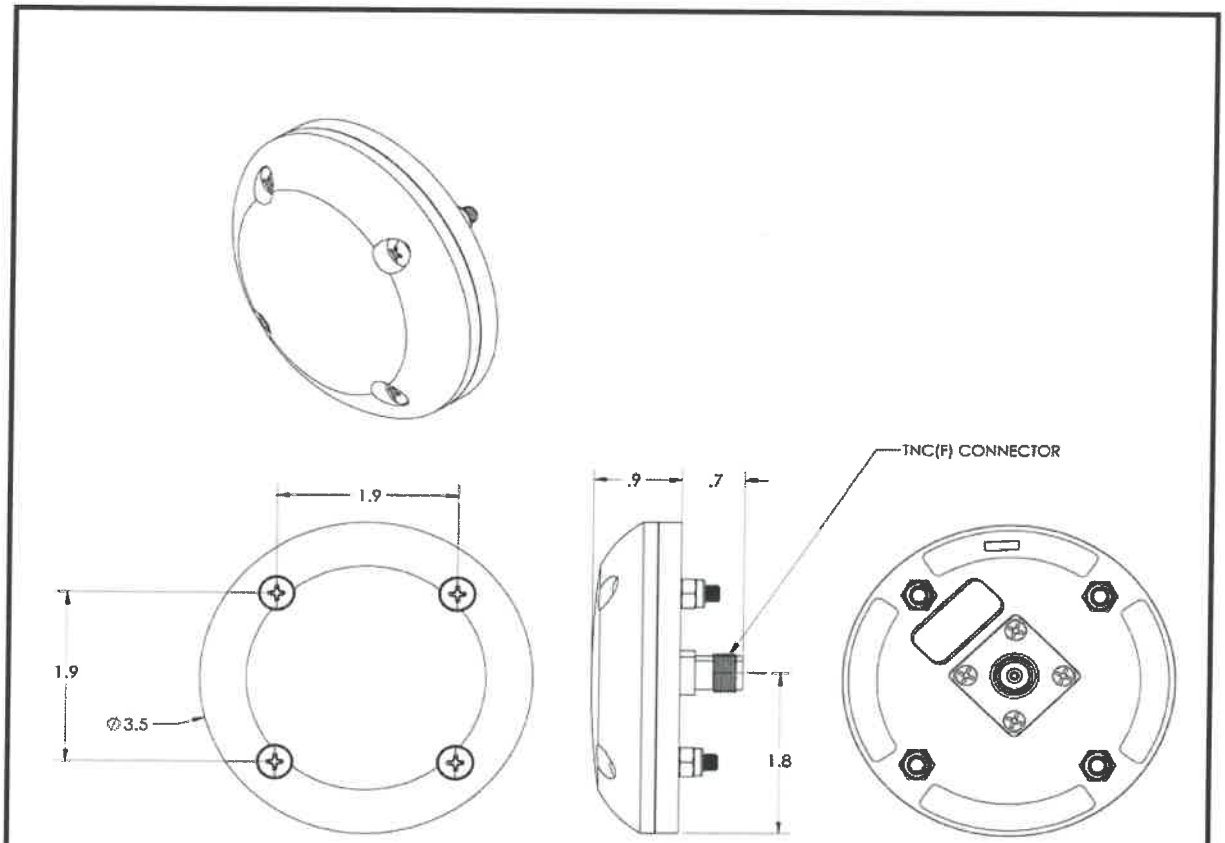
# 5 Product Code Decoder




Note: To have product/part codes customized to meet exact needs, contact GPS Source at GPSS-Sales@gd-ms.com or visit the website at www.gpssource.com.

# 6 Mechanical Drawing

## 6.1 GNSS-3A GNSS Active Antenna




| | | | | | |
|---|---|---|---|---|---|
| GPS Source Part No.<br>**GNSS-3A** | Finish<br>**N/A** | Size<br>**C** | Mass<br>.59 lbs | Tolerances<br>Linear<br>.X = ± .1<br>.XX = ± .01<br>.XXX = ± .005 | Angular<br>±1°<br>RADII<br>See Linear |
| Description<br>**GNSS ACTIVE BOTTOM MOUNT TNC(F) ANTENNA** | Material<br>SEE BOM | 3rd Angle Projection | | | |
| Dimensions are in inches unless otherwise specified. IAW ASME Y14.5M - 1994 | | | | | |




AS9100 and ISO 9001 Compliant Company