

UNAVCO Resources: GNSS Antennas


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Dual frequency (L1/L2) Choke Ring Antennas provide geodetic-quality GNSS measurements for surveying, mapping, and research applications. Typical dual-frequency choke ring antennas maintain a stable phase center that has less than 1 mm of drift. The choke ring antenna is based on the geodetic research standard and features aluminum choke rings and a Dorne Margolin antenna element. These antennas are durable, have a low power consumption, and have excellent multipath rejection characteristics. Less-expensive but also high-precision options are now available as well. The UNAVCO Facility currently supports the following GNSS antennas.

GPS/GNSS Antennas Used by UNAVCO

	Trimble Choke Ring	<ul style="list-style-type: none"> • NGS antenna calibration (Trimble GNSS Choke Ring, TRM59800.00 SCIT) • NGS antenna calibration (TRM29659.00 SCIT) • Note: Trimble GNSS Choke Ring TRM59800.80 is a TRM29659.00 reworked with a wide-band low noise amplifier (LNA) for GNSS. The TRM59800.00 and TRM59800.80 elements are identical in construction, the two antenna types are assumed to show similar phase center corrections. The TRM59800.80 calibrations are copies of the TRM59800.00 calibrations.
	Ashtech Choke Ring	<ul style="list-style-type: none"> • NGS antenna calibration (ASH701945G_M SCIT) • NGS antenna calibration (ASH701945E_M SCIT) • NGS antenna calibration (ASH701945C_M SCIT) • NGS antenna calibration (ASH701945B_M SCIT) • NGS antenna calibration (ASH700936D_M NONE) • Preliminary Report on Data Quality with a Trimble 5700 GPS Receiver and an Ashtech Choke Ring Antenna (2002)
	Trimble Zephyr Geodetic	<ul style="list-style-type: none"> • NGS antenna calibration (TRM41249.00 NONE) • NGS antenna calibration (TRM57971.00_NONE) • Trimble Zephyr Geodetic - Dimensions (from Trimble) • The Design and Performance of the Zephyr Geodetic Antenna (Trimble publication)
	Trimble Zephyr	<ul style="list-style-type: none"> • NGS antenna calibration (TRM39105.00)
	Topcon PG-A1	<ul style="list-style-type: none"> • NGS antenna calibration (TPSPG_A1+GP) • Topcon PG-A1 Antenna Dimensions (.pdf)
no photo available	AOA TurboRogue SNR-800	<ul style="list-style-type: none"> • NGS antenna calibration (AOAD/M_T)
no photo available	Trimble L1/L2 microcentered geodetic with groundplane	<ul style="list-style-type: none"> • NGS antenna calibration (TRM33429.20+GP)
no photo available	Trimble Permanent L1/L2	<ul style="list-style-type: none"> • NGS antenna calibration (TRM23903.00)
no photo available	Trimble Geodetic Compact L1/L2	<ul style="list-style-type: none"> • NGS antenna calibration (w/ ground plane) (TRM22020.00+GP) • NGS antenna calibration (w/o ground plane) (TRM22020.00-GP)

no photo available	Trimble 4000SST L1/L2 Geodetic	<ul style="list-style-type: none"> • NGS antenna calibration (TRM14532.00)
no photo available	Trimble 4000SSE Kinematic L1/L2	<ul style="list-style-type: none"> • NGS antenna calibration (TRM14532.10)
	UNAVCO/Micro Pulse L1	<ul style="list-style-type: none"> • NGS antenna calibration (MPL1370W) • UNAVCO/Micro Pulse L1 - How to make UNAVCO's L1 antenna

Setting up GPS/GNSS Antennas

- [Introduction to GNSS Antenna Set-up Methods for Campaigns](#)
An introduction for inexperienced surveyors including antenna height measurement methods and general survey tips.
- [How to use declination to align the GNSS antenna to true north](#)
Antennas are typically aligned to true north to keep measurements both within and between campaign surveys consistent, and so that the location of the antenna phase center is modeled correctly.
- [Geographic Magnetic Calculator](#)
Link to software you can download and use to calculate the declination in your study area.

Development and Testing of GPS/GNSS Antennas

- [Choke Ring Antenna Calibrations](#)
- [Equipment Power Usage Testing](#)
- [Antenna Phase Center Plots \(.pdf\)](#) (L1 and L2 phase center plots for the Dorne Margolin, Trimble Zephyr Geodetic, Trimble Zephyr, and Leica Choke Ring antennas)
- [Iridium & GPS Antenna Interference Test \(2008\)](#)
- [Assessing the Impact of the SCIGN Radome on Geodetic Parameter Estimates \(2007\)](#)
- [Development of an antenna and multipath calibration system for Global Positioning System sites \(2004\)](#)
- [UNAVCO 2004 GPS Campaign System Testing in Support of the Plate Boundary Observatory \(PBO\) \(2004\)](#)
- [UNAVCO 2003 GPS Receiver and Antenna Testing in Support of the Plate Boundary Observatory \(PBO\) \(2003\)](#)
- [Multipath characteristics of GPS signals as determined from the Antenna and Multipath Calibration System \(2002\)](#)
- [Preliminary report on data quality with a Trimble 5700 GPS receiver and an Ashtech Choke Ring Antenna \(2002\)](#)
- [Ashtech and Trimble Choke Ring SNR Analysis \(2001\)](#)
- [AMCS Antenna Rotation Test \(2001\)](#)
- [UNAVCO testing of the SCIGN radome \(2001\)](#)
- [GPS Receiver and Antenna Testing Report for SuomiNet \(2000\)](#)
- [GPS Calibration System for High-Accuracy Geodetic Measurements \(poster, 1999\)](#)
- [The Effect of Antenna Covers on GPS Baseline Solutions \(1997\)](#)
- [An Improved GPS Geodetic Antenna \(1996\)](#)
- [1995 UNAVCO Antenna Height Tests](#)
- [The Role of Multipath in Antenna Height Tests at Table Mountain \(paper, 1995\)](#)
- [UNAVCO Academic Research Infrastructure \(ARI\) Receiver and Antenna Test Report \(1995\)](#)
- [UNAVCO Equipment Group Antenna Testing Procedures \(historical\)](#)

Posted by: [Beth Bartel](#) - Wed, Feb 24, 2010 at 9:20 PM. This article has been viewed 72331 times.

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