



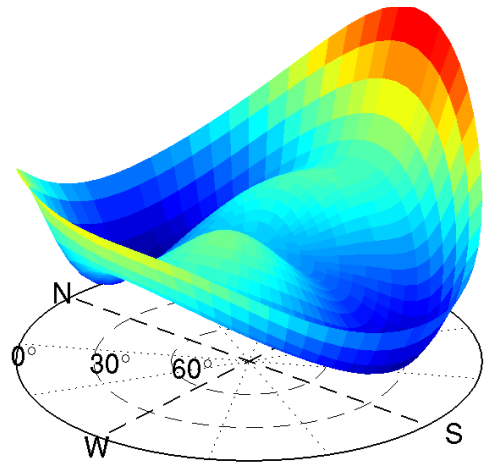
Antenna Calibration

NOAA's National Geodetic Survey (NGS) conducts antenna calibrations in order to provide more accurate and uniform access to the **National Spatial Reference System (NSRS)**. A wide variety of **Global Navigation Satellite System (GNSS)** antennas are available. In order to properly utilize the wide variety of antennas, the characteristics of these antennas must be accurately and consistently measured to ensure the physical position of the points being positioned may be unambiguously determined.

When using antenna calibrations, GNSS users can determine position at the finest level possible, sometimes at the millimeter level. Antenna calibrations are an essential component of GNSS data processing and are used by vendor-supplied software, as well as **NGS' Online Positioning User Service (OPUS)**.



Absolute antenna calibration at NGS' Corbin, Virginia, facility. A robot, foreground, rotates the tested antenna through multiple orientations to measure phase delays.



Calibration values are shown for a sample antenna, GPS L1 frequency. Calibration values are specific to the GNSS antenna model and signal frequency, and vary with satellite direction and elevation.

NGS serves the high-precision needs of the U.S. surveying and geodesy communities by conducting multi-frequency GNSS **antenna calibrations** that are:

- free of charge,
- publicly distributed via the NGS website,
- compatible with International GNSS Service (IGS) values.

For more information, contact NGS:

- **On the Web**
geodesy.noaa.gov/ANTCAL
- **By email**
ngs.antcal@noaa.gov

Calibrate