UNAVCO 2004 EarthScope Campaign Receiver Test Report

5 Victoria Andreatta February 18, 2009 GNSS Receiver Test Reports 9637

Click here to view the report, "UNAVCO 2004 GPS Campaign System Testing in Support of the Plate Boundary Observatory (PBO)," described below.

UNAVCO issued Request for Proposal (RFP) in 2004 to purchase 100 high precision campaign GPS systems for use by EarthScope investigators. The UNAVCO Facility evaluated the various receivers submitted by manufacturers in response to this RFP. This document represents the test results upon which the technical selection was be based. Manufacturers who responded to the bid specification and who were chosen for evaluations provided the systems listed in Table 1.1.1. It should be noted that these receivers mark a significant improvement in GPS technology with some having: direct Ethernet connectivity, low power consumption (< 3 watts), new observable (L2C) tracking capability, compact size, and superior tracking performance.

Table 1.1.1 - Receiver and antenna pairs tested.

- Sokkia GSR2600/SOK600
- Topcon Odyssey /TPS PG-A1 Geodetic
- Trimble R7/Trimble Zephyr Geodetic
- Topcon GB-1000/TPS PG-A1 Geodetic
- Topcon GB-1000/TPS PG-A1 Geodetic + ground plane

Each receiver/antenna pair was tested and scored independently. The technical tests can be summarized in four main categories:

1. Receiver Tracking and Data Quality Tests. These tests are based on statistics determined from UNAVCO's Translation, Editing, and Quality Checking program (TEQC), and contain information that can be determined from a single GPS file (one receiver/antenna). Included are tracking percentages, cycle slip counts, multipath statistics, and signal-to-noise ratio strength for L1 and L2.

2. Baseline processing tests. For this part of the test, short baseline processing was performed using the Bernese 4.2 processing software. These results resemble actual geodetic processing results. On very short baselines, most propagation effects cancel, putting the emphasis on receiver/antenna performance. All observation files were also run through AutoGIPSY (http://milhouse.jpl.nasa.gov/ag), JPL's automated point positioning processing software to compare repeatability's with Bernese results.

3.

Power testing was completed using custom made hardware and LabView.

4.

System weight, size, and the amount of onboard memory were also taken into account.

These test results are summarized in each section and will be used to generate a numerical ranking of relative receiver/ antenna technical performance. The results will be included in a separate and confidential response to the PBO Principal Investigators. Additionally, a series of mandatory requirements were tabulated and are presented throughout this report. The summary contains the mandatory pass/fail specifications as stated in the RFP. The appendices contain information relating to receiver interfacing and configuration, transport case photographs, and the antenna phase center patterns used in processing.

Online URL: https://kb.unavco.org/article/unavco-2004-earthscope-campaign-receiver-test-report-5.html