



W. W. Hansen Experimental Physics Laboratory
STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305 - 4085

Gravity Probe B Relativity Mission

PROCEDURE FOR
Science Telescope Narrow Field Scan Measurements at Room Temperature

GP-B P0227 Rev -

January 15, 1998

Prepared by: Suwen Wang
Engineer

Date

Approved by: John Lipa
Manager, Telescope Development

Date

Approved by: B. Taller
Quality Assurance

Date

Approved by: J. Turneure
Hardware Manager

Date

GP-B Procedure Document 227

Science Telescope Narrow Field Scan Measurements at Room Temperature

R. E.: Suwen Wang
ESTIMATED DURATION: 2 days.

Objective:

To Raster scan the star beam on the telescope with a range of 10 arc sec and grid size of 0.2 arc sec at room temperature.

Success Criteria:

No major reproducible glitches in the data.

Requirements:

- Procedure to be performed by certified personnel only.
- Certified personnel include:
Suwen Wang

Authority to redline this procedure:

Suwen Wang

Precautions:

- Science Telescope is well protected in the test probe in this procedure. No direct or indirect mechanical contact will be made to the telescope. Therefore, no special caution is needed in handling in this procedure.
- No special electrostatic handling precaution required.

Calibration:

- The scan data related to verifying the telescope performance specifications is in a format of relative numbers. Therefore, no calibration is required for the procedure.

Initial Configuration:

- Telescope under test:
Dwg No: 25091-201 Rev - _____.
Telescope Serial No. _____.
- Telescope probe being attached to Artificial Star #2.
- Procedure Start Date: _____.

Ground Support Equipment required:

- Telescope room temperature readout electronics.
- Centris 650 computer with data acquisition system.

Expendable Materials required:

- None.

1. Procedure for a scan:

- 1.1. Ensure that all the connectors for the telescope readout electronics are in place.
- 1.2. Connect the output of the telescope readout detectors to channels 0 through 8 differential on the National Instrument A/D card and the trigger signal to the trigger input of the same A/D card.
- 1.3. Check the settings of various instruments per table below.
- 1.4. Perform the procedures described per P0226.
- 1.5. The scan takes about one day.
- 1.6. After the scan is complete, transfer the data from the Mac computer to a PC.
- 1.7. Use SigmaPlot v.2.00 software to plot the scan data in both 3D mesh plot and 2D contour plot.
- 1.8. Room temperature wide field scan complete.

Signed: _____ Date: _____

2. Completion status:

Success: _____

Fail: _____

Symptoms if fail: _____

Table 1. Instrument Parameter Settings
(Tolerances are 10% unless otherwise noted)

Instrument/Parameter Name	Setting	Inspector Stamp
Star Suspension	55 psi front, 35 psi back	
Star Chamber Pressure	500 torr nominal	
Star Laser Diode Current	11.0 mA (+/- 0.1 mA)	
Star Focus Adjustment	At focal point (6 turns out)	
Telescope Probe Pressure	At vacuum (< 1 torr)	
Telescope Temperature	295 K	