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Gravity Probe B Relativity Mission

**PROCEDURE FOR**

**Science Telescope Wide Field Scan Measurements at Room Temperature**

**GP-B P0225 Rev -**

**January 15, 1998**

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Prepared by: Suwen Wang  
Engineer

Date

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Approved by: John Lipa  
Manager, Telescope Development

Date

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Approved by: B. Taller  
Quality Assurance

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Approved by: J. Turneure  
Hardware Manager

Date

## GP-B Procedure Document 225

### Science Telescope Wide Field Scan Measurements at Room Temperature

RE: Suwen Wang  
ESTIMATED DURATION: 2 days.

Objective:

To Raster scan the star beam on the telescope with a range of 260 arc sec and grid size of 5.2 arc sec at room temperature.

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.

Ground Support Equipment required:

- See P0224.

Expendable Materials required:

- None.

Initial Configuration:

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

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 P0224.
- 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: \_\_\_\_\_

Table 1. Instrument Parameter Settings  
(Tolerances at ~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	