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Gravity Probe B Relativity Mission

**PROCEDURE
FOR
DETECTOR PACKAGE ASSEMBLY
ESD PRECAUTIONS**

GP-B P0357 Rev-

January 01, 1998

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Detector Circuit Design

Date

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PROCEDURE FOR DETECTOR PACKAGE ASSEMBLY

ESD PRECAUTIONS

These procedures will be incorporated in the general handling and transport of the (detector mount assembly) DMA in order to minimize the possibility of damaging the circuit from electrostatic discharge. The circuit contains a number of sensitive components including the MOS capacitors.

- Before touching the DUT, test the wrist using GAM-2A tester
- The detector circuit, on the .365 inch sapphire disk from Goddard, is first checked for continuity. This test is performed in the GelPak which was used to ship the part. The person conducting this test will use a wrist or ankle strap to ground. The DUT (device under test) and meter used in this test should be on a conducting mat which is connected to ground.
- The ESD station should be certified.
- No special precautions are required in the assembly of the thermal isolator and connector cable.
- A shorting plug will mate with the connector and remain on the package until testing. The first alignment requires transporting the assembly and circuit in a clean box to Lockheed. Standard Antistatic Procedure: Before removing the parts, the clean box should be placed on a conductive mat and the outside of the box handled by a person with wrist or ankle strap to ground. Before removing the DMA the operator should first make contact with the shorting plug. Once the DMA is in place for alignment a wire from the shorting plug connector shell to ground should be made for the duration of the process. This low impedance connection to ground will protect the circuit from discharge. However the circuit is still susceptible through the wires and direct contact should be avoided. This procedure will be used in the following steps and will be referred to as the “standard antistatic procedure”. All electrical equipment used in the alignment process should be grounded. This requires a three-pronged plug.

- Wire bonding is then done at Stanford and the operator and equipment should remain grounded at all times.
- Electrical and continuity tests: These tests are performed to check continuity on the assembled package. These tests should be performed using the standard antistatic procedure. Before removing the shorting plug, contact should be made again to the connector and the meter. Replace the shorting plug after testing. DMA/DPA is connected to warm electronics that have been powered down and connector cable and pins discharged to ground.
- Integration to the package, mounting to the telescope: Use the standard antistatic procedure. The shorting plugs remain in place.
- Integration with the QB: A grounding wire connects to the shorting plugs (through the mounting holes) and DMA case ground. This wire is then connected to the QBS which is grounded.
- Integration with the probe: Use the standard antistatic procedure with shorting plugs in place. These shorting plugs should be tied together with the DMA case ground cable to ground.
- Mating connectors: Tophat connectors I8 and I9 will have shorting plugs to ground. The shorting plugs on the DMA cable are removed and mated with the I8 and I9. The I8 and I9 plugs will remain in place after connecting to the DMA cable.
- All cables that are to be connected to DPA/DMA are to be discharged to ground prior to mating, and connected equipment is to be in a verifiable off state.