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Gravity Probe B Relativity Mission

PRE-ASSEMBLY COMPONENT MATCHING PROCEDURE FOR THE HVA PWA OPTOCOUPLERS

GP-B Procedure
P0716 Rev A
August 21, 2000

Prepared by: Jay Dusenbury — Date
PWA Responsible Engineer

Approved by: William Bencze — Date
RE, Gyroscope Suspension System (GSS) Group

Approved by: Dorrene Ross — Date
GP-B Quality Assurance

Table of Contents:

1.0 Revision History

Rev Level	Comments/notes	Date	Revised By
-	First release of this test procedure	18-Jul-00	-
A	Modified to test **Agilent 5962-9085401HPC** optocouplers as a replacement to the 4N22A devices which failed HV testing in the Engineering Unit.	21-Aug-00	J. Dusenbury

2.0 Scope:

This procedure details the required component characterization and matching requirements for the **Agilent 5962-9085401HPC** optocouplers for the HVA assembly, PWA 8A01879.

All data recorded during this test is recorded the body of this document.

3.0 Reference Documents

3.1. Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies, and Equipment, MIL-STD-1686

4.0 Test Facilities

HEPL Room 127, Stanford University

5.0 QA Provisions:

5.1. This procedure shall be conducted on a formal basis to its latest approved and released version. The QA Program Engineer (D. Ross) and the ONR representative (E. Ingraham) shall be notified 24 hours prior to he start of this procedure. QA may monitor the execution of all or part of this procedure should they elect to do so.

Date/time:_____	Date/time:_____
GP-B QA (D. Ross)	ONR (E. Ingraham)

5.2. Upon completion of this procedure, the GSS manager and the GP-B QA manager shall certify her/his concurrence that the procedure was performed and accomplished in accordance with the prescribed instructions by signing and dating his approval at the end of this procedure.

6.0 Test Personnel

This test procedure is to be conducted only by the following personnel:

6.1. William Bencze

6.2. Jay Dusenbury

6.3. Lo Van Ho

6.4. Son Tran

7.0 General Instructions

7.1. Redlines can be initiated by the test personnel listed in Section 6.0 and must be approved by QA.

7.2. Test operators shall read this procedure in its entirety and resolve any apparent ambiguities prior to beginning this test.

7.3. Any nonconformance or test anomaly should be reported by a Discrepancy Report. Refer to the Quality Plan, P0108, for guidance. Do not alter or break test configuration if a test failure occurs; notify quality assurance.

7.4. Only the following persons have the authority to exit/terminate this test or perform a retest: Test operators listed in Section 6.0 and GP-B QA.

8.0 Hardware Safety Requirements:

8.1. This assembly is ESD sensitive; special care shall be exercised per the “Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies, and Equipment”, MIL-STD-1686

8.2. Ensure that power is removed from cable assemblies before connecting or disconnecting cable connectors.

8.3. Examine all mating connectors before attempting to mate them. Remove any foreign particles. Look for any damaged pins or sockets. Do not force the coupling action if excessive resistance is encountered. Ensure that key-ways are aligned when mating connectors.

9.0 Test Equipment

The following support hardware, test equipment, or software will be used and the applicable information for the instruments shall be recorded below. Hand-written additions to this list may be made in the space provided.

Equipment Description	Make	Model	SN	Cal Due
1. Multimeter	Fluke			
2. Multimeter	Fluke			
3. HVA Opto test fixture	SU	-	-	-

10.0 Device Under Test:

5962-9085401HPC	Qty:	
Test Operator:	Name:	
Start of test:	Date: Time:	

11.0 Device characterization.

Note: All handling of these parts shall be performed using ESD control methods, as outlined in MIL-STD-1686. Unit shall be inspected at an ESD certified station. Wrist straps and/or heel grounding straps shall be used.

11.1. Affix a unique serial number to each device

11.2. Apply DC voltage through a 10K resistor and current meter to the photodiode cathode at pin 2, with pin 3 connected to circuit ground. With Vcc at pin 8 connected to emitter at pin 6, and the collector at pin 5 connected to circuit ground, measure the output current using a 8.81 Vdc source, 2K resistor, and current meter in series with the emitter pin 6.

1.1. Set the DC voltage so that the input photodiode current is **0.827** ma (voltage is approx. **9.74** Vdc).

1.2. Measure the output phototransistor current. Record current in data table, below.

1.3. Enter Opto Isolator identity and output current data in the table below.

1.4. Repeat for each device.

Data sheet for optocouplers:

SN	Current	SN	Current	SN	Current	SN	Current

Parts kit selection:

11.3. Sort devices into kits by selecting devices with nearly identical characteristic currents. In each kit,

11.3.1. OP1 and OP2 shall be matched as closely as possible

11.3.2. OP3 and OP4 shall be matched as closely as possible

11.4. Record the serial numbers for the devices in the table below.

11.5. Bag the two pairs of devices into separate kits; mark the bag with the kit number and serial numbers of the devices in the kit.

Kit Number	OP1 SN	OP2 SN	OP3 SN	OP4 SN
	Matched pair		Matched Pair	
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				

12.0 Completion of Procedure:

		P/F	Notes
12.1.	Return characterized devices and kits to GP-B bonded stores.		

The results obtained in the performance of this test procedure are acceptable.

Test Engineer		Date	

This is to certify that the information obtained under this test procedure is as represented and the documentation is completed and correct.

GSS Representative		Date	
Quality Assurance		Date	