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

Gravity Probe B Relativity Mission

BOARD-LEVEL TEST PROCEDURE FOR THE GYROSCOPE SUSPENSION SYSTEM (GSS) LOW VOLTAGE AMPLIFIER (LVA) BOARD

PWA 8A01882 Rev B **S/N:** ☐

GP-B Procedure
P0608 Rev –

May 10, 2000

Prepared by: William Bencze — Date
RE, LVA

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	1-May-00	B. Bencze

2.0 Scope:

This procedure details the board-level electrical functional tests on the GSS Low Voltage Amplifier (LVA) card. No mechanical or thermal stress testing shall be performed at this time.

This test plan has been written to be run with the GSS "Gold System" test fixture – an electrically and interface equivalent of the GSS flight units. In General, the Device Under Test (DUT) shall be inserted into the Gold System in place of the equivalent Gold System card, any additional electrical connections to the Gold System shall be made, and a set of software-based and possibly manual tests will be run on the board. Upon successful completion of this procedure, this board is considered electrically functional.

All data recorded during this test is recorded in this document; each test of a board will use its own copy of this procedure, and will be identified by serial number on the cover sheet.

3.0 Reference Documents

3.1. GSS Gold System Hardware and Software Configuration Standard, P0663

3.2. PWA Drawing, GSS Low Voltage Amplifier board, 8A01882

3.3. PWB Drawing, GSS Low Voltage Amplifier board, 8A01890

3.4. 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. Lo Van Ho

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.

7.5. In this document, “Perform Flight S/W system test commands:” means to prepare the test system software as described in P0670 Board-Level Test Software Operational Procedure, and then issue the listed commands according to the procedure described in P0670.

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 Equipment Pretest Requirements:

9.1. The GSS Gold System in which this board is to be tested must have passed successfully the P0663 – Gold System Certification Procedure prior to the start of this test. Record the Gold System serial number and date of its certification, below

GSS Gold System	SN:	
	Date of Certification	
	Configuration (circle one)	Full Partial

10.0 Additional 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. Dynamic Signal Analyzer	HP	3562A	3005A05537	
3. SMA-to-BNC patch cable, 3'	Stanford	NA	NA	NA
4. BNC-to-ponona mini-clip test cable, 3'	Stanford	NA	NA	NA
5. Signal Generator	SRS			
6. Oscilloscope	Tek			
7. 10x Scope probe	Tek	NA	NA	NA

11.0 Device Under Test (DUT):

Record the serial number of the Device Under Test, or DUT.

PWA 8A01882GSS LVA Card	SN:	

Test Operator:	Name:	

Start of test:	Date:	

12.0 Pre-test visual inspection.

Note: All handling of this PWA 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.

P/F	Test/Activity	Notes
	12.1. Remove PWA from storage container.	
	12.2. Verify that no parts are missing, unless called out in the assembly drawing.	
	12.3. Verify that the following capacitors are installed in the proper orientation: C28, C30, C31	
	12.4. Verify the correct installation of the jumper wires as specified in the assembly drawing: Pin 2/3 of JP1, JP2. [PWA note 25]	
	12.5. Verify the proper orientation of pin 1 of all DIP packages: (18 Places)	
	12.6. Verify capacitors FN 4 are bonded to the PWB (12 places) [PWA Note 27]	
	12.7. Verify proper clocking of transistor cans to PWB silkscreen, FN 30, FN 31, FN 32.	
	12.8. Verify that both the mid-board and end-of-board stiffeners are installed.	

13.0 Pre-Insertion Static Electrical Tests:

Note: All handling of this PWA 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.

13.1. Power circuits isolation check

A. Set meter to "ohms", record indicated resistance between the indicated circuit points.
B. Note orientation of (+) and (-) leads on meter.
C. Use gold-tipped Pomona test probes for all measurements.
D. After leads are in contact with the PWA, wait 30 seconds for meter reading to stabilize before recording measurement.

P/F	Test/Activity	Pass Criteria	Measurement
	13.1.1. C28 pos lead (+) to C28 neg lead (-)	> 1 kohm	Value
	13.1.2. C30 pos lead (+) to C30 neg lead (-)	> 100 kohm	Value
	13.1.3. C31 pos lead (+) to C31 neg lead (-)	> 100 kohm	Value
	13.1.4. CN1 pin 6 (+) to C28 neg lead (-)	> 100 kohm	Value
	13.1.5. CN1 pin 8 (+) to C28 neg lead (-)	> 100 kohm	Value

14.0 In-System Testing – Flight Configuration

Note: Tests run in this section are run with the hardware in "flight" configuration: no external test equipment or cables. The tests here use only the onboard diagnostic facilities of the GSS hardware. These will be the equivalent of the on-orbit tests of this system.

15.0 This section not applicable

15.0 In-System Testing – Ground Test Configuration

Note: Tests run in this section require the addition of test cables and external test hardware. They are used to verify the board functioning of the board in fine detail, and are only used at the time of board-level test and acceptance. These may be considered "Engineering Confidence Tests".

15.1. Gold System Configuration

This board-level test does not require any of the services of the aft GSS unit or many of the services of the forward GSS unit. The gold system will be partially disassembled to facilitate this test.

P/F	Test/Activity	Notes
	15.1.1. Remove all gold system function cards from the forward GSS enclosure; return them to their protective ESD packaging.	
	15.1.2. Install FRM emulator card (PC630) into its proper slot in the forward enclosure per P0663.	
	15.1.3. Install DUT into its proper slot in the forward enclosure per P0663. *(note: no FSU covers are needed for this test)*	

15.2. Install jumpers on PC620A as follows:

(Note: This connects the D/A SMA connectors to the LVA inputs)

P/F	Test/Activity	Notes
	15.2.1. JP6-P4 to JP4-P2 (DA_X1 to X1_MUX_OUT)	
	15.2.2. JP6-P6 to JP4-P4 (DA_X2 to X2_MUX_OUT)	
	15.2.3. JP6-P8 to JP4-P6 (DA_Y1 to Y1_MUX_OUT)	
	15.2.4. JP6-P2 to JP4-P8 (DA_Y2 to Y2_MUX_OUT)	
	15.2.5. JP6-P12 to JP4-P10 (DA_Z1 to Z1_MUX_OUT)	
	15.2.6. JP6-P14 to JP4-P12 (DA_Z2 to Z2_MUX_OUT)	

15.3. Signal Analyzer Setup:

P/F	Test/Activity	Notes
	15.3.1. CAL: AUTO=OFF	
	15.3.2. MEAS MODE: SWEPT SINE	
	15.3.3. MEAS MODE: LOG FREQ	
	15.3.4. FREQ: START=0.01 Hz	
	15.3.5. FREQ: SPAN=6 DECADES	
	15.3.6. FREQ: RESLTN = 4.17 PT/DEC	
	15.3.7. SOURCE: LEVEL=0.1V	
	15.3.8. SEL MEAS: FREQ RESPONSE	
	15.3.9. INPUT COUPLE: CH1=DC	
	15.3.10. INPUT COUPLE: CH2=DC	
	15.3.11. MEAS DISP: FREQ RESP	
	15.3.12. Connect the SOURCE and CHANNEL1 BNCs on the front panel with a short patch cable	
	15.3.13. Tee-in BNC-to-SMA patch cable to the SOURCE.	
	15.3.14. Connect a BNC-to-clip cable to CHANNEL2	

15.4. Function generator setup

P/F	Test/Activity	Notes
	15.4.1. Freq: 10 Hz	
	15.4.2. Amplitude: 20 Vpp	
	15.4.3. Waveform: Triangle	

15.5. Power on:

P/F	Test/Activity	Notes
	15.5.1. Apply power to the FSU enclosure.	

15.6. Channel X1 test

P/F	Test/Activity	Notes
	15.6.1. Connect analyzer SOURCE to **DA_X1** on PC620 test card.	
	15.6.2. Connect CHANNEL 2, negative clip (black) t an AGND testpoint on PC620	
	15.6.3. Connect CHANNEL 2, positive (red) clip to testpoint **TP51** (X1_LV_MON) on PC620.	

P/F	Test/Activity	Notes
	15.6.4. Set JP15 on PC620 to the 1-2 position (the LED will turn on)	
	15.6.5. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.6.6. Plot the transfer function on a bed plotter. Mark the plot "**X1 DC**" and attach to this procedure.	
	15.6.7. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	0.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

P/F	Test/Activity	Notes
	15.6.8. Connect **DA_X1** on PC620 to the signal generator.	
	15.6.9. Connect testpoint monitor cable to scope.	
	15.6.10. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= + 8.5 V	
	Negative	<= + 8.5 V	

P/F	Test/Activity	Notes
	15.6.11. Probe the gold system backplane, **JP1 Pin 14** with a 10x probe connected to the scope.	
	15.6.12. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= +45 V	
	Negative	<= -45 V	

P/F	Test/Activity	Notes
	15.6.13. Set JP15 on PC620 to the 2-3 position (the LED will turn off)	
	15.6.14. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.6.15. Plot the transfer function on a bed plotter. Mark the plot "**X1 LPF**" and attach to this procedure.	
	15.6.16. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	-20.0 dB ± 0.2 db	
	0.550 Hz ± 0.010 Hz	-3.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

15.7. Channel X2 test

P/F	Test/Activity	Notes
	15.7.1. Connect analyzer SOURCE to **DA_X2** on PC620 test card.	
	15.7.2. Connect CHANNEL 2, negative clip (black) t an AGND testpoint on PC620	
	15.7.3. Connect CHANNEL 2, positive (red) clip to testpoint **TP55** (X2_LV_MON) on PC620.	

P/F	Test/Activity	Notes
	15.7.4. Set JP15 on PC620 to the 1-2 position (the LED will turn on)	
	15.7.5. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.7.6. Plot the transfer function on a bed plotter. Mark the plot "**X2 DC**" and attach to this procedure.	
	15.7.7. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	0.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

P/F	Test/Activity	Notes
	15.7.8. Connect DA_X1 on PC620 to the signal generator.	
	15.7.9. Connect testpoint monitor cable to scope.	
	15.7.10. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= + 8.5 V	
	Negative	<= + 8.5 V	

P/F	Test/Activity	Notes
	15.7.11. Probe the gold system backplane, **JP1 Pin 16** with a 10x probe connected to the scope.	
	15.7.12. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= +45 V	
	Negative	<= -45 V	

P/F	Test/Activity	Notes
	15.7.13. Set JP15 on PC620 to the 2-3 position (the LED will turn off)	
	15.7.14. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.7.15. Plot the transfer function on a bed plotter. Mark the plot "**X2 LPF**" and attach to this procedure.	
	15.7.16. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	-20.0 dB ± 0.2 db	
	0.550 Hz ± 0.010 Hz	-3.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

15.8. Channel Y1 test

P/F	Test/Activity	Notes
	15.8.1. Connect analyzer SOURCE to **DA_Y1** on PC620 test card.	
	15.8.2. Connect CHANNEL 2, negative clip (black) t an AGND testpoint on PC620	
	15.8.3. Connect CHANNEL 2, positive (red) clip to testpoint **TP59** (Y1_LV_MON) on PC620.	

P/F	Test/Activity	Notes
	15.8.4. Set JP15 on PC620 to the 1-2 position (the LED will turn on)	
	15.8.5. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.8.6. Plot the transfer function on a bed plotter. Mark the plot "**Y1 DC**" and attach to this procedure.	
	15.8.7. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	0.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

P/F	Test/Activity	Notes
	15.8.8. Connect **DA_Y1** on PC620 to the signal generator.	
	15.8.9. Connect testpoint monitor cable to scope.	
	15.8.10. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= + 8.5 V	
	Negative	<= + 8.5 V	

P/F	Test/Activity	Notes
	15.8.11. Probe the gold system backplane, **JP2 Pin 14** with a 10x probe connected to the scope.	
	15.8.12. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= +45 V	
	Negative	<= -45 V	

P/F	Test/Activity	Notes
	15.8.13. Set JP15 on PC620 to the 2-3 position (the LED will turn off)	
	15.8.14. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.8.15. Plot the transfer function on a bed plotter. Mark the plot "**Y1 LPF**" and attach to this procedure.	
	15.8.16. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	-20.0 dB ± 0.2 db	
	0.550 Hz ± 0.010 Hz	-3.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

15.9. Channel Y2 test

P/F	Test/Activity	Notes
	15.9.1. Connect analyzer SOURCE to **DA_Y2** on PC620 test card.	
	15.9.2. Connect CHANNEL 2, negative clip (black) t an AGND testpoint on PC620	
	15.9.3. Connect CHANNEL 2, positive (red) clip to testpoint **TP63** (Y2_LV_MON) on PC620.	

P/F	Test/Activity	Notes
	15.9.4. Set JP15 on PC620 to the 1-2 position (the LED will turn on)	
	15.9.5. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.9.6. Plot the transfer function on a bed plotter. Mark the plot "**Y2 DC**" and attach to this procedure.	
	15.9.7. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	0.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

P/F	Test/Activity	Notes
	15.9.8. Connect **DA_Y2** on PC620 to the signal generator.	
	15.9.9. Connect testpoint monitor cable to scope.	
	15.9.10. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= + 8.5 V	
	Negative	<= + 8.5 V	

P/F	Test/Activity	Notes
	15.9.11. Probe the gold system backplane, **JP2 Pin 16** with a 10x probe connected to the scope.	
	15.9.12. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= +45 V	
	Negative	<= -45 V	

P/F	Test/Activity	Notes
	15.9.13. Set JP15 on PC620 to the 2-3 position (the LED will turn off)	
	15.9.14. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.9.15. Plot the transfer function on a bed plotter. Mark the plot "**Y2 LPF**" and attach to this procedure.	
	15.9.16. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	-20.0 dB ± 0.2 db	
	0.550 Hz ± 0.010 Hz	-3.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

15.10. Channel Z1 test

P/F	Test/Activity	Notes
	15.10.1. Connect analyzer SOURCE to **DA_Z1** on PC620 test card.	
	15.10.2. Connect CHANNEL 2, negative clip (black) t an AGND testpoint on PC620	
	15.10.3. Connect CHANNEL 2, positive (red) clip to testpoint **TP67** (Z1_LV_MON) on PC620.	

P/F	Test/Activity	Notes
	15.10.4. Set JP15 on PC620 to the 1-2 position (the LED will turn on)	
	15.10.5. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.10.6. Plot the transfer function on a bed plotter. Mark the plot "**Z1 DC**" and attach to this procedure.	
	15.10.7. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	0.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

P/F	Test/Activity	Notes
	15.10.8. Connect **DA_Z1** on PC620 to the signal generator.	
	15.10.9. Connect testpoint monitor cable to scope.	
	15.10.10. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= + 8.5 V	
	Negative	<= + 8.5 V	

P/F	Test/Activity	Notes
	15.10.11. Probe the gold system backplane, **JP3 Pin 14** with a 10x probe connected to the scope.	
	15.10.12. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= +45 V	
	Negative	<= -45 V	

P/F	Test/Activity	Notes
	15.10.13. Set JP15 on PC620 to the 2-3 position (the LED will turn off)	
	15.10.14. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.10.15. Plot the transfer function on a bed plotter. Mark the plot "**Z1 LPF**" and attach to this procedure.	
	15.10.16. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	-20.0 dB ± 0.2 db	
	0.550 Hz ± 0.010 Hz	-3.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

15.11. Channel Z2 test

P/F	Test/Activity	Notes
	15.11.1. Connect analyzer SOURCE to **DA_Z2** on PC620 test card.	
	15.11.2. Connect CHANNEL 2, negative clip (black) t an AGND testpoint on PC620	
	15.11.3. Connect CHANNEL 2, positive (red) clip to testpoint **TP71** (Z2_LV_MON) on PC620.	

P/F	Test/Activity	Notes
	15.11.4. Set JP15 on PC620 to the 1-2 position (the LED will turn on)	
	15.11.5. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.11.6. Plot the transfer function on a bed plotter. Mark the plot "**Z2 DC**" and attach to this procedure.	
	15.11.7. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	0.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

P/F	Test/Activity	Notes
	15.11.8. Connect **DA_Z2** on PC620 to the signal generator.	
	15.11.9. Connect testpoint monitor cable to scope.	
	15.11.10. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= + 8.5 V	
	Negative	<= + 8.5 V	

P/F	Test/Activity	Notes
	15.11.11. Probe the gold system backplane, **JP3 Pin 16** with a 10x probe connected to the scope.	
	15.11.12. Record the positive and negative clip points of the applied triangle wave:	

P/F	Excursion	Desired value	Actual Value
	Positive	>= +45 V	
	Negative	<= -45 V	

P/F	Test/Activity	Notes
	15.11.13. Set JP15 on PC620 to the 2-3 position (the LED will turn off)	
	15.11.14. Run a transfer function measurement using the HP dynamic signal analyzer (This operation will take a few minuets)	
	15.11.15. Plot the transfer function on a bed plotter. Mark the plot "**Z2 LPF**" and attach to this procedure.	
	15.11.16. Measure and record the following off the transfer function on the analyzer:	

P/F	Frequency	Desired value	Actual Value
	0.010 Hz ± 0.005 Hz	-20.0 dB ± 0.2 db	
	0.550 Hz ± 0.010 Hz	-3.0 dB ± 0.2 db	
	10.0 Hz ± 1.0 Hz.	0.0 dB ± 0.2 db	
	210 Hz ± 5.0 Hz	-3.0 dB ± 0.2 db	

16.0 Completion of procedure:

P/F	Test/Activity	Notes
	16.1. Turn off power to FSU and ACU enclosures.	
	16.2. Remove PWA from enclosure per P0663 and return to storage container	

I certify that the this procedure was performed in whole and that the data recorded above is complete and accurate.

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	