

**LASER INTERFEROMETER GRAVITATIONAL WAVE
OBSERVATORY**

-LIGO-

CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Document Type Technical	DCC Number LIGO-T020073-A-C	June 6, 2002
Micro-Seismic System Post Processor Acceptance Test Procedure		
Sander Liu		

Distribution of this draft: NSF reviewers, LIGO scientists
This is an internal working note of the LIGO Laboratory

California Institute of Technology
LIGO Project – MS 18-33
Pasadena, CA 91125
Phone (626) 395-2129
Fax (626) 304-9834
E-mail: info@ligo.caltech.edu

Massachusetts Institute of Technology
LIGO Project – MS 20B-145
Cambridge, MA 01239
Phone (617) 253-4824
Fax (617) 253-7014
E-mail: info@ligo.mit.edu

www: <http://www.ligo.caltech.edu/>

MICRO-SEISMIC SYSTEM POST PROCESSOR ACCEPTANCE TEST PROCEDURE

Serial Number: _____

Date Tested: _____

Tested By: _____

1.0 INTRODUCTION

The Micro-Seismic System Post Processor receives its seismic signals (X, Y, Z) from the Remote Interface Box, processes them through two stages of amplifications (a gain of 10 through the differential line receiver and another gain of 10 through a non-inverting amplifier). 850 Hz Anti-alias low pass filters were then used to remove high frequency components from the signals before driving a differential line driver stages.

The unit also processes the mass position signal from sensor U, V and W without the second stage amplification and filtering for monitoring purposes.

An on board DC to DC converter converts the incoming +24V power supply into +/- 12V for internal consumption.

2.0 EQUIPMENT

The following equipment, or their equivalent, shall be used to perform this acceptance test:

1. Tektronix Model TDS3032 300 MHz Oscilloscope with two probes
2. Stanford Research Model SR785 Dynamic Signal Analyzer
3. B&K Precision Model 1760 Triple Output DC Power Supply

3.0 TEST EQUIPMENT SET UP

All test equipment shall be properly calibrated according to manufacturer's operation manuals, where applicable, prior to use.

Set up the equipment as shown in Figure 1 below.

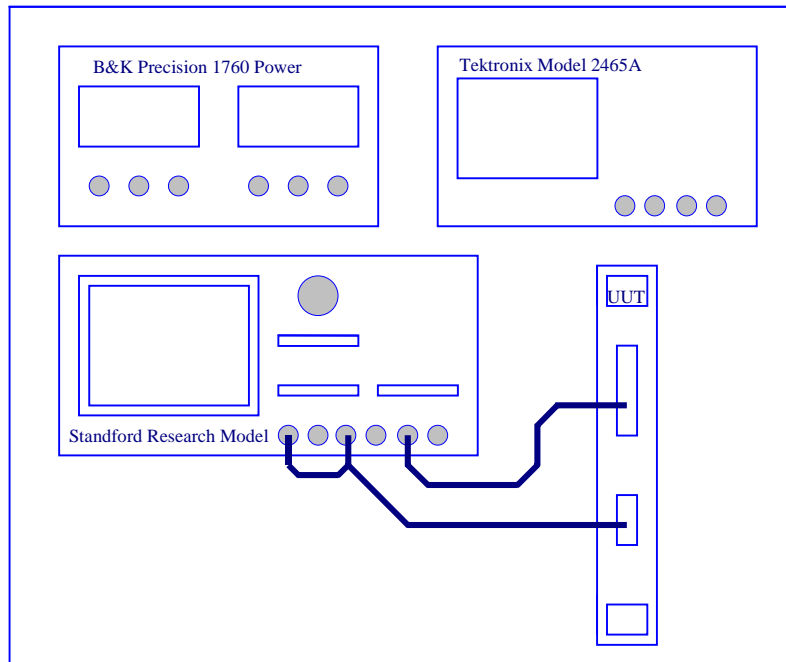


FIGURE 1. MICRO-SEISMIC POST PROCESSOR ACCEPTANCE TEST SETUP

4.0 TEST PROCEDURE

- 4.1 Perform visual inspection on the Unit Under Test (UUT) to make sure that it is in good order.
- 4.2 Set the power supply to +24 Vdc.
- 4.3 With the power supply turned OFF, connect the cable to the UUT (Unit Under Test) as shown.
- 4.4 Turn on the power to all equipment.
- 4.5 Allow the equipment to warm up for approximate 5 minutes then record the following:

TABLE 1. POWER SUPPLY

+24 Vdc POWER SUPPLY		
	NOMINAL	ACTUAL
+24V	200mA	

4.6 Measure voltages across capacitors C56 and C58 and record their respective value in Table 2 below:

TABLE 2. ON BOARD POWER SUPPLIES

ACROSS CAPACITOR	NOMINAL	ACTUAL
C56	+12V	
C58	-12V	

4.7 Sequentially apply a short to the input of X, Y and Z and null their respective outputs to zero volt by adjusting their corresponding trimming potentiometer as defined below:

TABLE 4. OUTPUT OFFSET

SHORT PINS	POTENTIOMETER	OUTPUT
J1-1 TO J1-9	R7	
J1-2 TO J1-10	R16	
J1-3 TO J1-11	R25	

4.8 Select the sweep SINE wave function for the Dynamic Signal Analyzer and set its amplitude to 10 mVp-p.

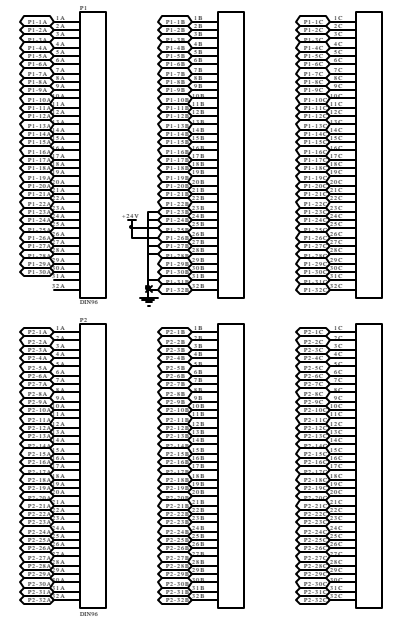
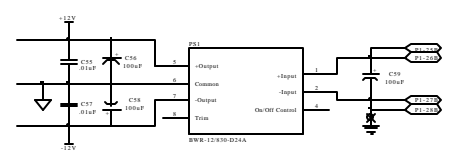
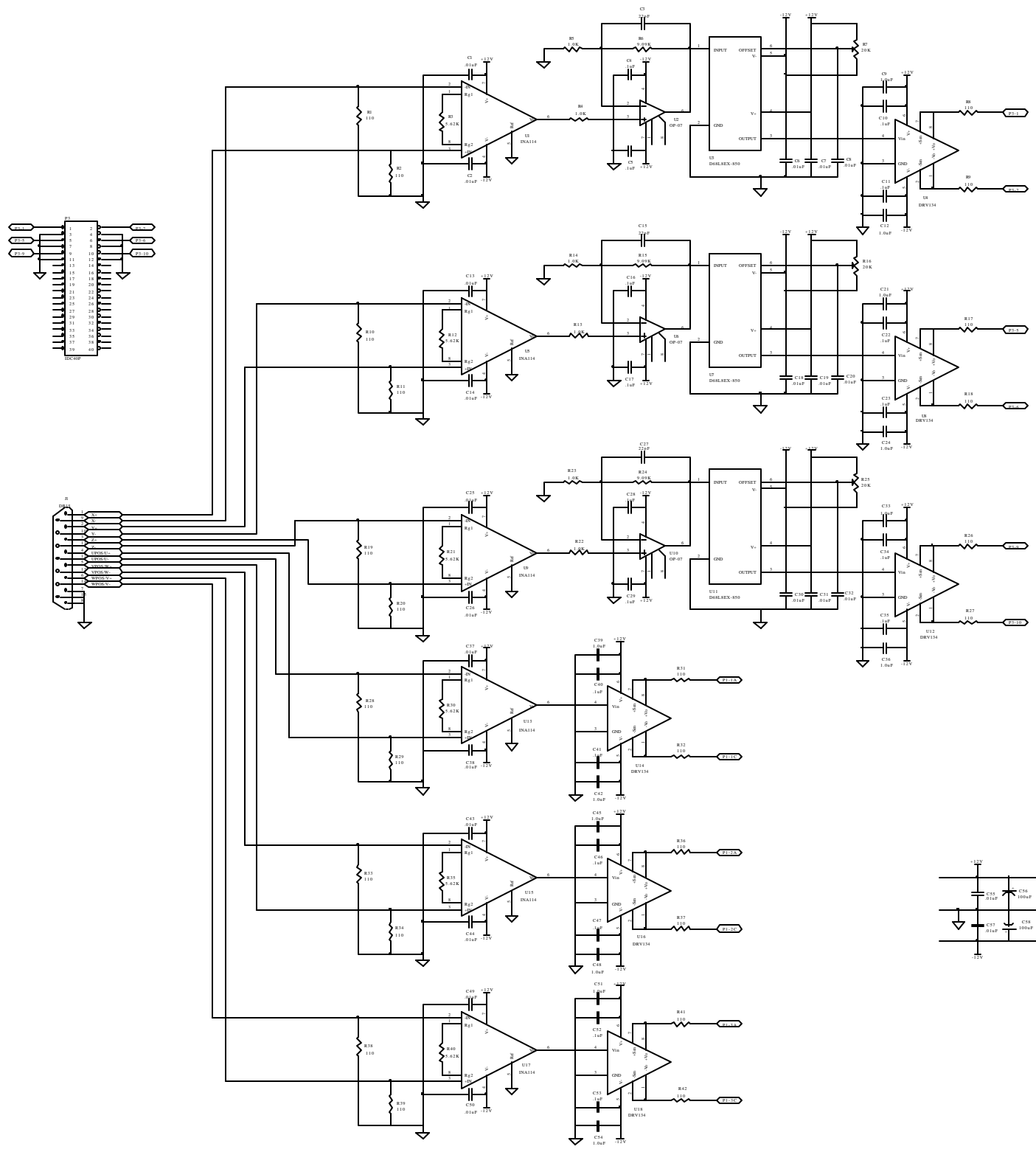
4.9 Measure the frequency response of each channel and record the Table 3 below:

TABLE 5. FREQUENCY RESPONSE MEASUREMENT

INPUT		OUTPUT		
FUNCTION	PIN	PIN	-3dB	-90dB
X+	J1-1	P3-1		
X-	J1-9	P3-2		
Y+	J1-2	P3-5		
Y-	J1-10	P3-6		
Z+	J1-3	P3-9		
Z-	J1-11	P3-10		
UPOS/U+	J1-4	P1-1A		
UPOS/U-	J1-12	P1-1C		
WPOS/W+	J1-5	P1-2A		
WPOS/W-	J1-13	P1-2C		
VPOS/V+	J1-6	P1-3A		
VPOS/V-	J1-14	P1-3C		

5.0 CONCLUSION

This concludes the acceptance test procedure for the micro-Seismic System Post Processor.



SEISMIC SIGNAL POST PROCESSOR		
Doc No	LIGO-D020194-00-C	Rev
Issue		A
Author		
Checked		
Approved		