g GE Energy	**Functional Testing Specification**
Inspection & Repair Services ***Louisville, KY***	**LOU-GEF-3N8100PS103x-A** **1050 Power Supply**

Test Procedure for 3N8100PS103x Power Supply Assembly

DOCUMENT REVISION STATUS: Determined by the last entry in the "REV" and "DATE" column

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	C. Wade	10/15/2007
B			
C			

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
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DATE 15 Oct 2007	**DATE**	**DATE**	**DATE** 10/15/2007

Functional Test Procedure for 3N8100PS103x Power Supply Assembly

1. SCOPE

1.1 This specification provides the Engineering Requirements for testing the 1050 PS103 power supplies. The process applies only to 3N8100PS103x power supply models.

2. STANDARDS OF QUALITY

2.1 Refer to the current revision of the IPC-A-610 standard for workmanship standards.

3. APPLICABLE DOCUMENTS

3.1 The following document(s) shall form part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue shall apply.

3.1.1 GIT-179

4. ENGINEERING REQUIREMENTS

4.1 Description

4.1.1 The 1050 power supply provides three voltage outputs, +5V at 45 Amps, –12V at 3 Amps, and +12V at 8 Amps.

4.2 Equipment Cleaning

4.2.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to the local documented procedures for cleaning guidelines.

4.3 Equipment Inspection

4.3.1 Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:

- **4.3.1.1** Wires broken or cracked
- **4.3.1.2** Terminal strips / connectors broken or cracked
- **4.3.1.3** Loose wires
- **4.3.1.4** Components visually damaged
- **4.3.1.5** Capacitors leaking
- **4.3.1.6** Solder joints damaged or cold
- **4.3.1.7** Circuit board burned or de-laminated
- **4.3.1.8** Printed wire runs burned or damaged

EQUIPMENT REQUIRED

4.4 The following equipment is required to perform the process requirements. Equipment may be substituted provided that all accuracy's and test ratios are equivalent or better.

Qty	Reference #	Description
1	Power Supply Tester	Used for testing 1050 PS
3	Multimeter	
1	O-scope	
1	H188650	Cart for 3N8100PS103

5. Visual & Preliminary Inspections

5.1 After cleaning unit, visually check for damaged boards or parts.

5.1.1 Check the PS105, PS106, PS112, & PS113 for shorted transistors. A quick test is to check the 100-ohm resistors that are connected from base to emitter of each transistor. You should see approximately 100 ohms with a meter across these resistors.

5.1.2 Check across DC1 and PSG1, DC2 and PSG2, & DC3 and PSG3, you should see a very high resistance reading.

5.1.3 Check wire connection strips between boards, can cause a problem if corroded or in bad shape.

5.2 Connections

5.2.1 Make sure breaker is off on Power Supply Tester before hooking things up.

5.2.2 Attach +5V, +12V, -12V, & Ground Cables to the boards using wing nuts.

5.2.3 Attach cable-fanning strip 1TB-A thru 1TB-J.

5.2.4 Attach two AC power leads from tester to 1TB-M and 1TB-N.

5.2.5 Attach ground cable to 1TB-P

6. TESTING

6.1 PRE-TEST

6.1.1 Disconnect interconnect cables between PS cards and Regulator board. Remove the three fuses at center of power supply, FU2, FU3, & FU4.

6.1.2 Connect scope to 5OPL-1 and 5PL-2, ground lead on PSG connection on Regulator board.

6.1.3 See that variac is at its minimum position, fully counterclockwise.

6.1.4 Flip breaker up on power supply tester.

6.1.5 Leave "Load" switch off at this point.

6.1.6 Push "Control On" switch on tester.

6.1.7 Flip PS103 switch to "ON".

6.1.8 As you press the "PS103 On" switch you should be able to verify the square wave at 5PL-1 & 5PL-2. You may need to press the switch a few times until you can dial in the waveform on the scope. If waveform is not there, correct before going further.

6.1.9 Move scope leads to 1PL-7 & 1PL-8 and verify same square wave when "PS103 On" switch is depressed.

6.1.10 Move scope leads to 2PL-15 & 2PL-17 and verify square wave. Waveform is different then the previous two, be sure square wave is there.

6.1.11 Move scope leads to 2PL-2 & 2PL-3 and verify square wave.

6.1.12 After verifying square waves are present and in good shape, push power supply tester "OFF" button.

6.1.13 Hook up one cable at a time and re-verify square wave for each power supply section.

6.1.14 After all are hooked up and verified, power down and insert fuses, 2FU-5A, 3FU-3A, & 4FU-2A.

6.1.15 Turn on tester and flip up load switch. Turn load knobs to approximately half way.

6.2 SYSTEM TEST

6.2.1 Depress and hold "ON" push button and slowly bring variac to 115VAC. Somewhere around 80VAC the power supply should latch on when button lights up, you should hear a slight whistling noise. Watch that bus voltages do not exceed +12.5, -12.5, or +5.5 volts.

6.3 ADJUSTMENTS

6.3.1 Adjust power supply bus voltages on REG9/11 board by turning

P1 adjusts +5 volts, + or - .05
P4 adjusts +12 volts, + or - .24
P5 adjusts –12 volts, + or - .24
Do not adjust P2 at this time

5.1.1 Once voltages have been adjusted to the proper settings, increase load knob on front of power supply tester to the following current levels.

+5 volts to 45 amps
+12 volts to 8 amps
-12 volts to 3 amps

5.1.2 Then turn off power supply by pushing "PS103" off button. Turn unit back on, and than turn off. Power supply should turn on and turn off without any problems.

5.1.3 Clip scope probes on R10 and R19 of the PS105/106 board. See attached drawing showing which side of resistor and where ground is.

5.1.3.1 Both traces are reference to ground, align one on top of the other.

5.1.3.2 Return both traces to DC coupling and turn on power supply.

5.1.3.3 You should see the following waveform, see attachment 2.

5.1.3.4 P2 will adjust amplitude of waveform if needed; waveforms should be equal in amplitude.

5.1.3.5 Power down and remove scope leads.

5.2 OVERCURRENT CHECK

5.2.1 Bring power back up on unit.

5.2.2 Vary the +5 load from 10 amps to 40 amps and watch that the +5 volt bus varies by no more then .100 VDC.

5.2.3 Vary the +12 load from 2 amps to 8 amps and watch that the +12 volt bus varies by no more then .080 VDC.

5.2.4 Vary the -12 load from 1 amp to 3 amps and watch that the -12 volt bus varies by no more then .100 VDC.

5.2.5 Increase the +5 volt load current and check that the power supply trips out between 47 to 55 amps. Turn load back down and restart the power supply.

5.2.6 Follow the same procedure with the +12 and –12 volt buses. The +12 volt bus should trip between 8.8 to 11.5 amps. The –12 volt bus should trip between 3.5 to 4.9 amps.

5.3 INCOMING AC VOLTAGE CHECK

5.3.1 Vary the variac to 100VAC and set the load current to maximum, then turn the power supply on and off several times.

5.3.2 Turn the variac to 135VAC and follow the same procedure to make sure that the supply will turn on when line voltage is high or low.

5.3.3 If power supply passes all tests turn unit off. Return variac to minimum voltage, turn breaker off. Disconnect power supply.

5.3.4 End of Test

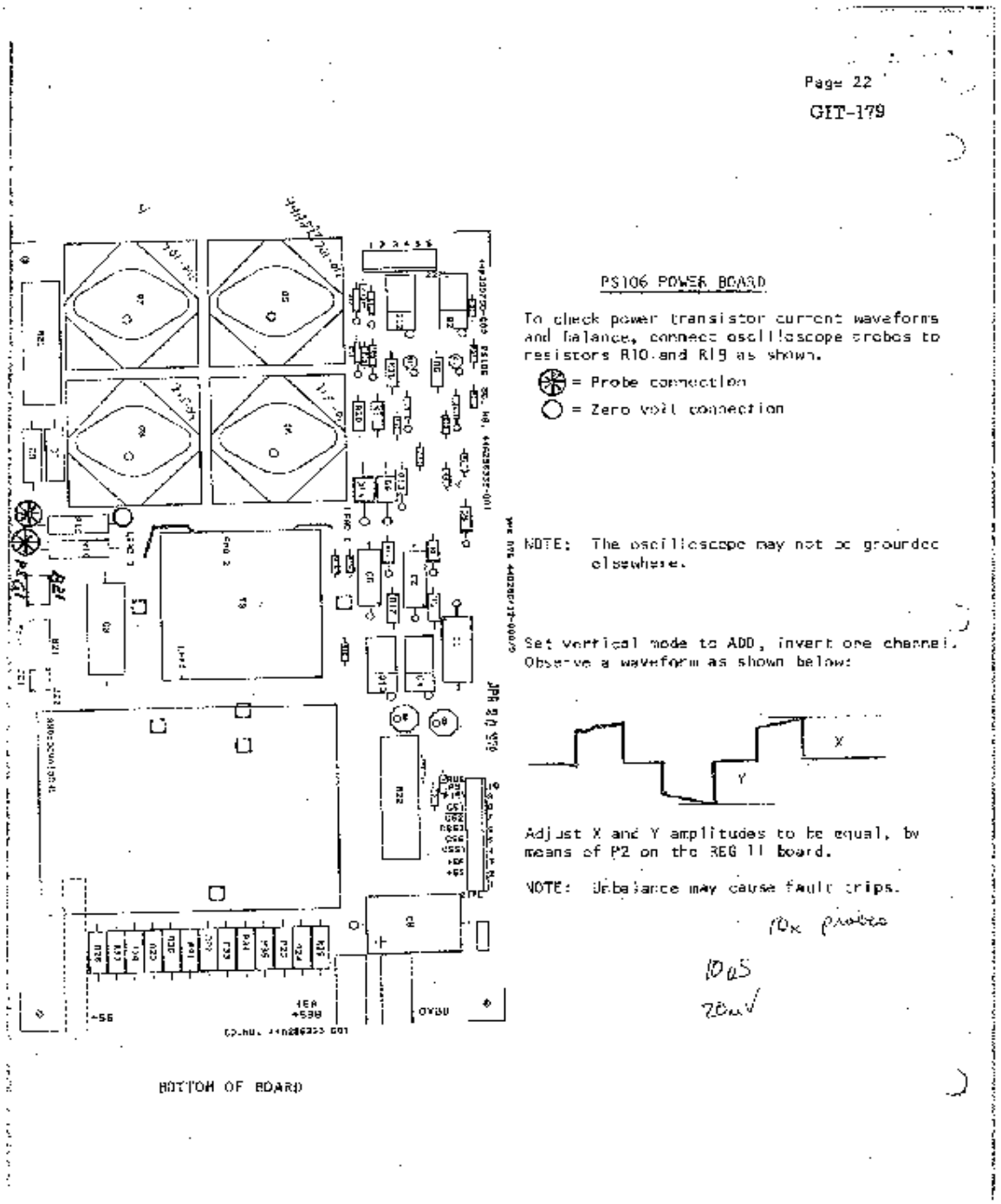
6.4 ***TEST COMPLETE ***

7. NOTES

7.1

8. REFERENCES

Attachment 1



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PS106 POWER BOARD

To check power transistor current waveforms and balance, connect oscilloscope probes to resistors R10 and R19 as shown.

= Probe connection

= Zero volt connection

NOTE: The oscilloscope may not be grounded elsewhere.

Set vertical mode to ADD, invert one channel. Observe a waveform as shown below:

X

Y

Adjust X and Y amplitudes to be equal, by means of P2 on the REG II board.

NOTE: Unbalance may cause fault trips.

10x probe

10 μS

20 mV

BOTTOM OF BOARD