GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GED-44C372658-G01C**

Test Procedure for a

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	Scott Cash	9-18-2018
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C			

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
Scott Cash			L. Groves
DATE	**DATE**	**DATE**	**DATE**
9-19-2018			9-20-2018

1. SCOPE

1.1 This is a functional testing procedure for a Card.

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 Check board's electronic folder for more information

4. ENGINEERING REQUIREMENTS

4.1 Equipment Cleaning
4.1.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to site specific SRA's for cleaning guidelines.
4.2 Equipment Inspection
4.2.1 Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:
4.2.1.1 Wires - broken, cracked, or loosely connected
4.2.1.2 Terminal strips / connectors - broken or cracked
4.2.1.3 Components - visually damaged
4.2.1.4 Capacitors - bloated or leaking
4.2.1.5 Solder joints - damaged or cold
4.2.1.6 Circuit board - burned or de-laminated
4.2.1.7 Printed wire runs / Traces - burned or damaged

5. EQUIPMENT REQUIRED

5.1 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		Fluke 87 DMM (or Equivalent)
1		Elgar 1203 SL 3 phase power supply
1		Tenma power supply
1		44C Connector Box
1		44 C Breakout Box and switch box
1		Tektronix Scope

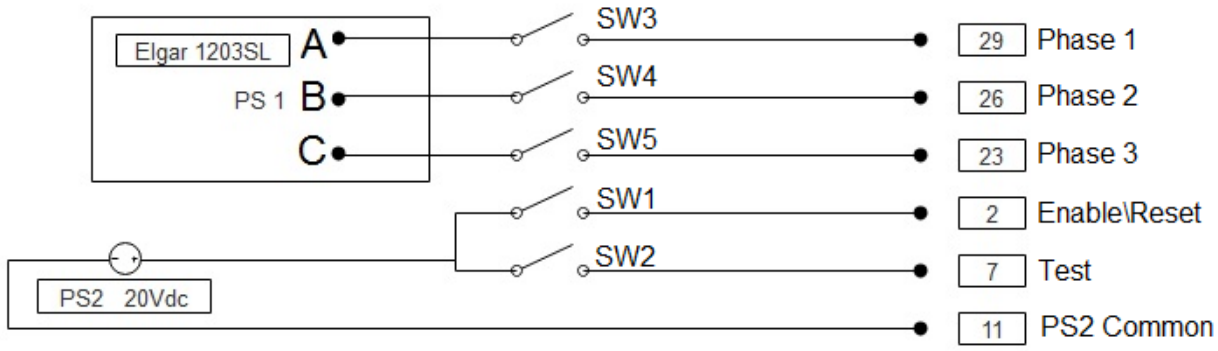
6. Modifications/Upgrades

6.1 None.

7. Testing Process

7.1 Setup

7.1.1 Connect UUT as show in the wiring diagram. The Elgar 1203 is a variable 3 phase power supply. Test unit at 60 Hz 30 Vac. **Don't** connect the Neutral or Ground from the supply to the UUT!



Note:

7.2 Testing Procedure

7.2.1 Make sure SW 1-5 are in the off position.

7.2.2 Power up and verify 30 VAC at 60 HZ on the 3 phase supply. Verify 66 VDC from TP2 to TP1. A bit high is fine, however you can adjust the power supply a bit to achieve 66 exactly.

7.2.3 Connect scope channel 1 to TP3 and TP1. TP1 is common.

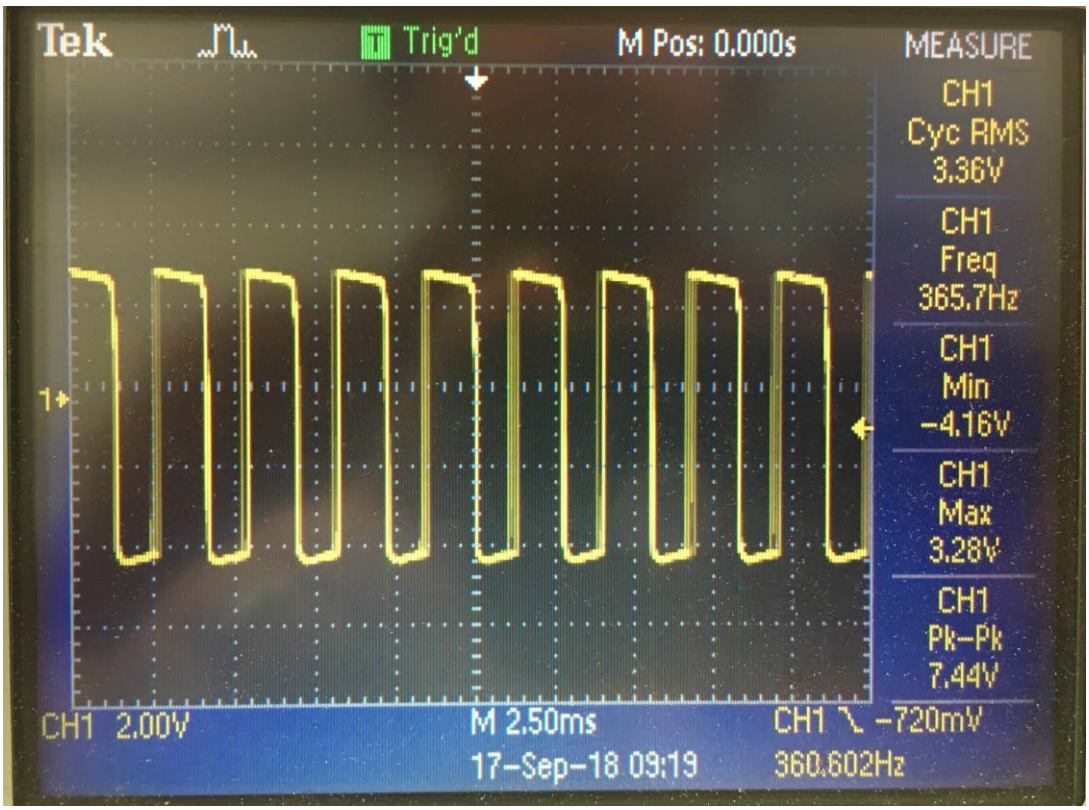
7.2.4 Turn 1P full CCW.

7.2.5 Turn on SW 3, 4 and 5. Then turn on SW 1. SW1 is enables the fault detection circuit and is used to reset faults. If you enable the 3 phases before SW1 there should be no fault at this point.

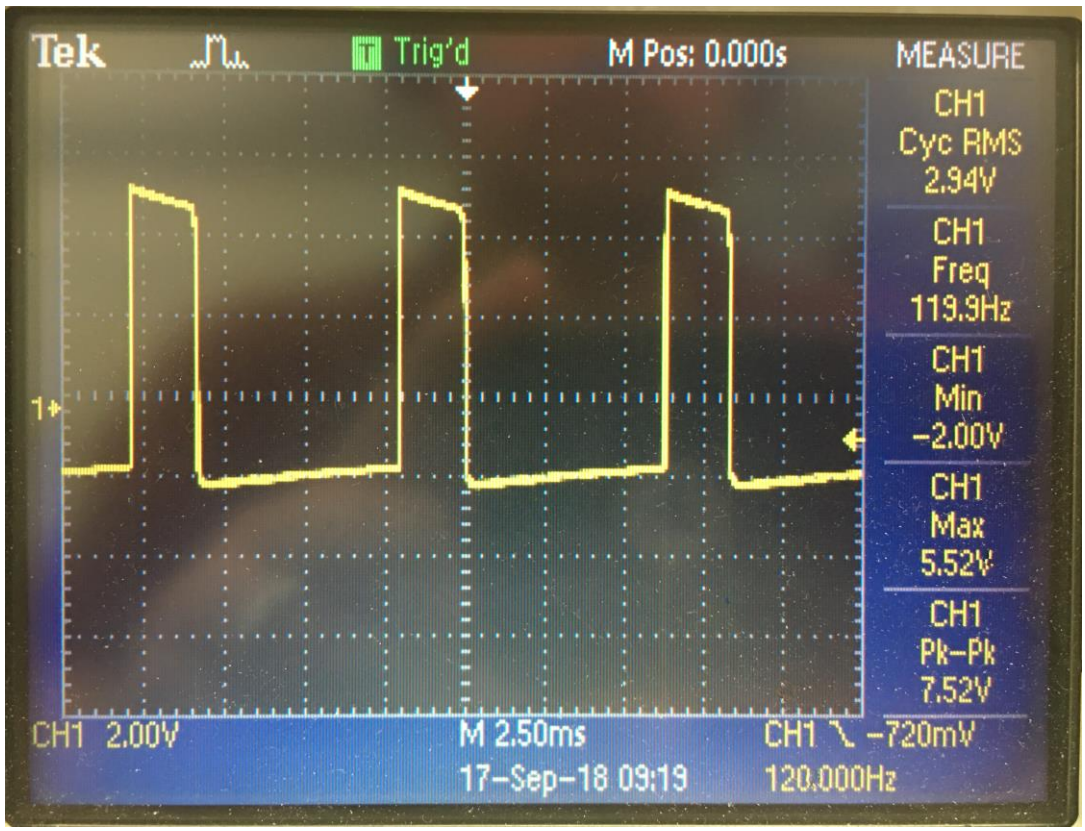
7.2.6 Turn off SW3 simulating loss of the first phase. You will not get a fault at this point because of the setting of 1 P. The scope should show a DC line.

7.2.7 Repeat for Phase 2 and 3. You should not receive a fault for loss of any phase.

7.2.8 Put a fluke 87 across capacitor 3C and adjust 1P CW till you have 900 MVAC across it. You should have a 360 HZ square wave of 6.6 to 7.6 VDC on TP3. If the scope frequency is off measure with a fluke. The triggering to get it exact is tough.



7.2.9 Turn off SW3 and you should get a fault and the square wave on TP 3 should change to a 120 HZ. Also, the AC voltage across 3C will increase.



7.2.10 Turn SW3 back on and Cycle SW1 to reset fault.

7.2.11 Repeat for phases 2 and 3 (SW4, SW5). Reset SW1 after each.

7.2.12 Put a 3.3K fuse across SW3-5 and repeat previous procedure for SW3-5, this will simulate a low phase but not missing. One resistor is sufficient as you can just move it. Should create the same fault as above.

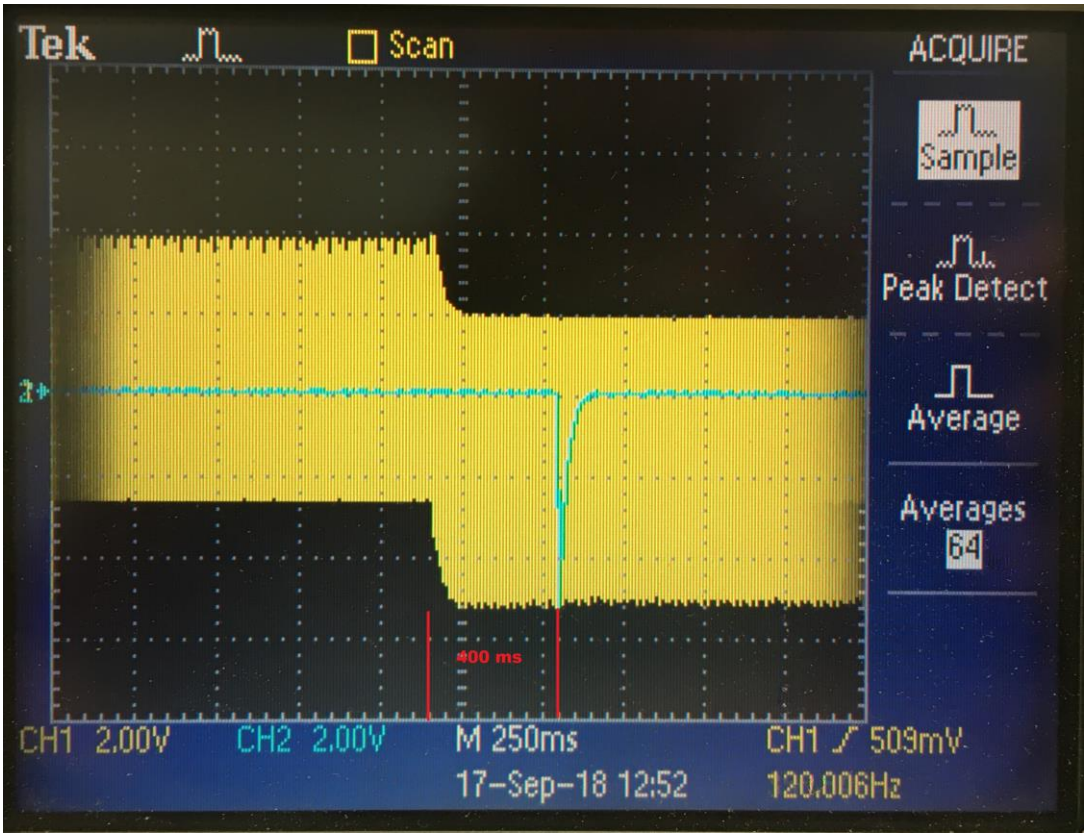
7.2.13 Cause a fault with any phase and turn on switch 2. The test LED should lite while the switch is on. Turn off switch 2 and reset the fault.

7.2.14 Remove the resistor, turn on SW3-5 and reset via SW1. If you lose the waveform turn off all switches for 10-15 seconds and turn back on. This should not happen often.

7.2.15 Connect channel one of the scope to the collector of 1Q (connects to junction of 4R and 6C), channel 2 to TP6 and the commons to TP1.

7.2.16 When you turn off a phase to create a fault there will be a delay between the phase loss and the onset of the fault light. This is what we are checking here. There should be a

350 to 450 ms delay between the two. See below.



7.2.17 You may have to do this several times to count the ms or capture it.

7.2.18 Replace 13C and component test 1 MOV and the traces to connector.

7.2.19 Test complete.

7.3 Post Testing Burn-in **Required** ___ **Yes** ___ **No**

Note: All MARK I, II, & III Turbine related cards require a post testing burn-in of 100 hours.

7.3.1 Apply BUS or Operational power to the card for a period of 100 hours.

7.3.2 Re-test card while warm using the above procedure.

7.4 ***TEST COMPLETE ***

8. Notes

8.1 None at this time?

9. Attachments

9.1 None at this time?