g GE Energy Services *Inspection and Repair Services* *Louisville, KY*	**Functional Testing Specification** **LOU–GED-68A993xxx**

Test Procedure for a SCR gate and filter card

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	D. Laemmle	6/19/02
B	Added info pertaining to indicator lamp(s) on unit under test and info to Notes section	J. Madden	3/18/04
C	Added test setup pics per Matt Trull	L. Groves	12/6/2017

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
D. Laemmle	J. Madden		Robert Durell
DATE	**DATE**	**DATE**	**DATE**
07/09/02	3/18/04		07/09/02

Functional test procedure for a SCR gate and filter card.

1. SCOPE

1.1 This is a functional testing procedure for a SCR gate and filter 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 Alteration Notice BU11604GR

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 the local documented procedures 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 or cracked
4.2.1.2 Terminal strips / connectors broken or cracked
4.2.1.3 Loose wires
4.2.1.4 Components visually damaged
4.2.1.5 Capacitors leaking
4.2.1.6 Solder joints damaged or cold
4.2.1.7 Circuit board burned or de-laminated
4.2.1.8 Printed wire runs 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	H033787	SCR GATE AND FILTER CARD TEST FIXTURE
		SCR FIRING BOX
		LAMP LOAD- 230v OR 460v PER CARD VOLTAGE RATING
		120//230 OR 12/460 TRANSFORMER PER CARD VOLTAGE RATING.

6. TESTING PROCESS

6.1 Setup

6.1.1 See notes on fixture before hooking up card.

6.1.2 Be sure that Alteration Notice BU11604GR has been performed before testing. See **Notes** section below and attached documents for more information on this alteration.

6.2 Testing Procedure

6.2.1 Hook up equipment per diagram on test fixture. Pay close attention to voltage ratings on bulbs and how to connect them (series or parallel), so as not to apply more than the specified voltage to any individual bulb, creating a failure of the bulb(s) or a physical danger to the you or any personnel in the immediate vicinity.

6.2.1 With firing box switch in boost position and firing control knob full CCW, apply power to transformer. Lamp load should not be lit. However, indicator lamp(s) on unit under test should be at full illumination.

6.2.2 Turn firing control knob on firing box slowly CW and load lamps should slowly brighten up. Indicator lamp(s) should gradually go out, and should be completely out at approximately 50% power on firing box control (maybe a little higher if using the orange replacement lamps we keep in stock for these units). The fixture can get hot and possibly suffer damage if left at full power for too long, especially with dual firing circuit cards, so observe the temperature of the fixture if running units for extended periods of time. Apply some method of cooling if you are “burning a unit in”. Return control knob to full CCW and lamps should go out.

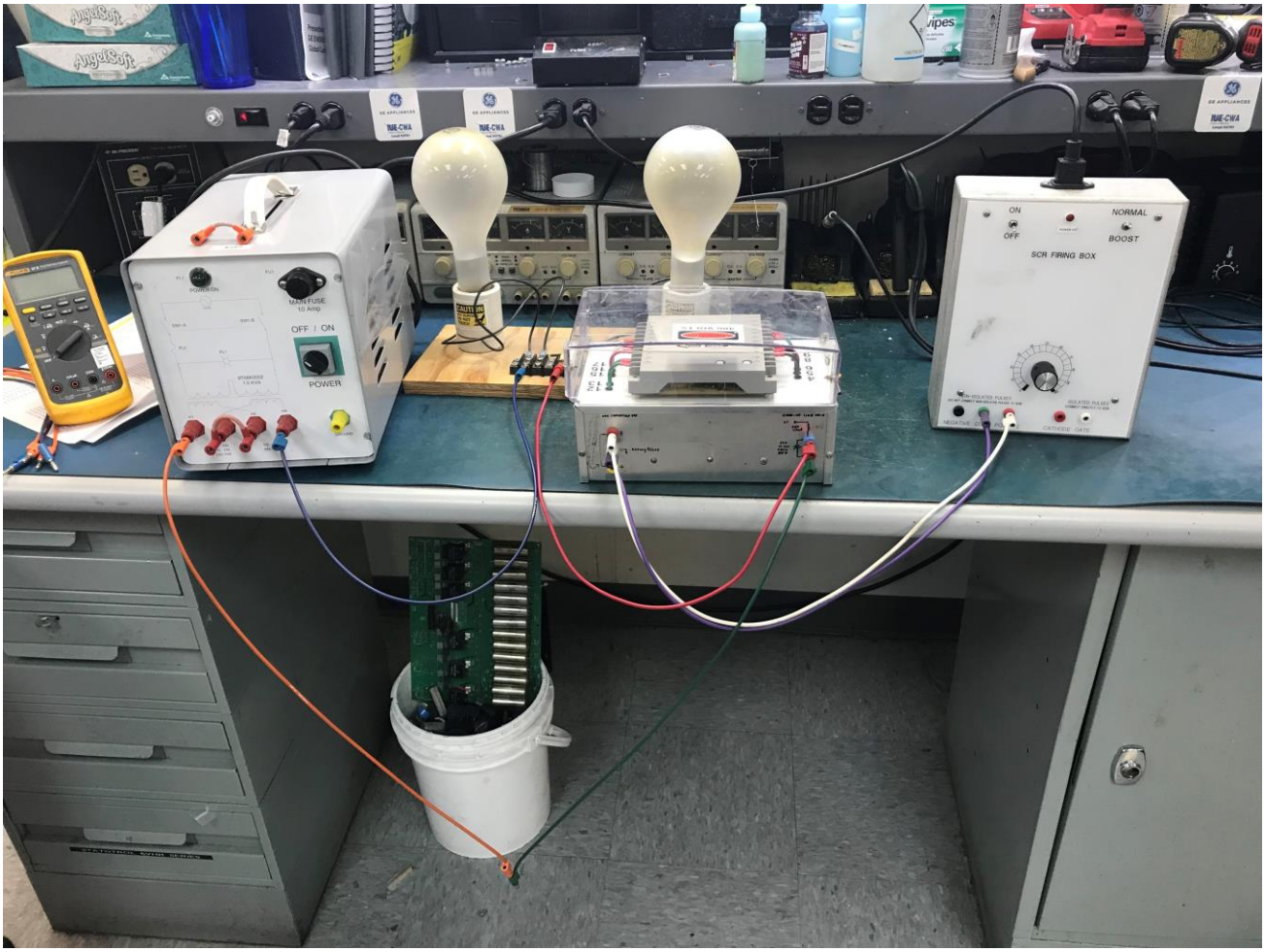
6.2.3 Switch off firing box and remove power from transformer.

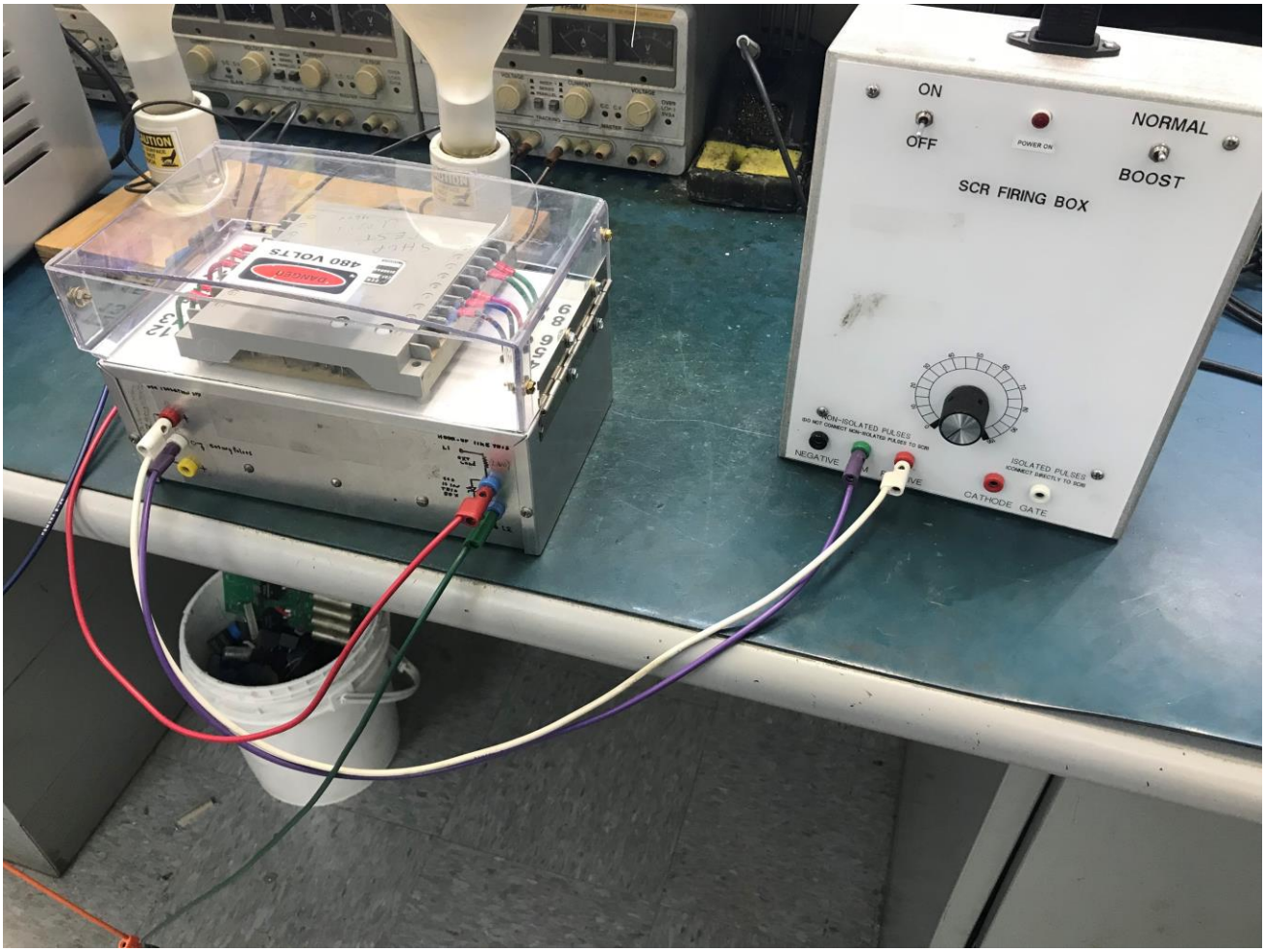
6.3 ***TEST COMPLETE ***

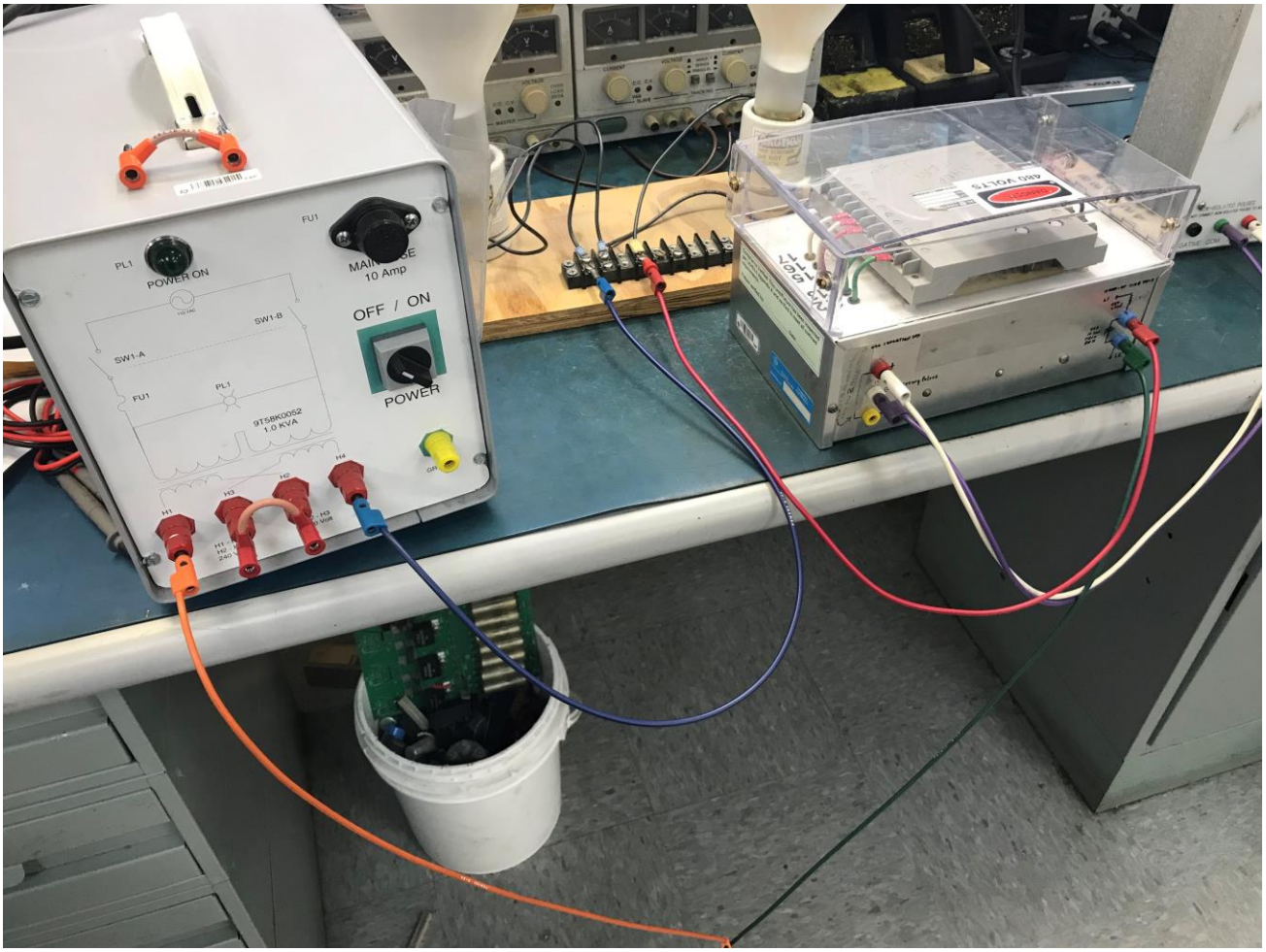
7. NOTES

If card has two firing circuits, tie them together at the firing circuit input as shown on the fixture. Removing one or the other will cut output to load lamps approximately in half.

Connections for testing:







Our firing boxes will, on occasion, be loaded to the point of cutting out or "sputtering" at high levels of output (near 100% on control knob). This is why we use the Boost setting on the firing box. Using Boost helps, but does not eliminate this altogether on some cards, dual firing circuit cards in particular. On some dual circuit cards simply firing only one circuit at a time will alleviate the symptoms. This problem is not necessarily an indication of a problem with the unit under test. Be sure to have replaced the UJT/bilateral switch transistors (2n4987) and any glass bead diodes to be sure to eliminate them as a cause of the "sputtering". If problem is affecting test too severely to ensure proper operation, try using another firing box to see if symptoms change from box to box or if they stay with the card.

When performing the alteration BU11604GR to the firing signal input circuit, on certain boards you must take care not to install the diode after a resistor that present on certain cards right next to R15. It must connect between tab 13 and the rest of the input circuit. Watch for these!

Phasing: Our benches are not always in phase with each other or with wall outlets, and running the firing box from one outlet and 230/460 power transformer from another can put these two devices out of phase, causing erratic test results. Be sure to use the same outlet cluster or power strip for both units to eliminate this problem.

3-18-04; 6:01PM;GE INDSYS ;502 493 0640 # 1/ 1

ITEM 4 FF-1012 (5-81)

ALTERATION NOTICE

T.S. for Dwg. No. _____
A.N. No. BU1604GR
DEPT. Sheet No. 1 Cont'd on Sheet EL
Date Issued _____
P.O. or S.O. _____
Acct. _____

Apparatus PWB 68A993123 DSD
Customer _____
REQ. or D.A. _____ Drafting Required _____

MATERIAL AFFECTED BY CHANGE						COST INCREASE (Decrease)	
PT.	NAME OF PART	DRAWING NO.	Sh. No.	Chg. No.	Tool or Patt. Change	MATERIAL	LABOR
1	DISPOSITION AND						
2	MOD. INST.						
3							
4							

ITEM 3

PT.	STATUS Rough–Unassem.–Assem.–Whse.–Stock	DISPOSITION OF MATERIAL Use–Change–Reorder–Stock–Scrap	Location of Material	Chg. Rem. Symb.	Resp. No.	RESPONSIBILITY NUMBERS 1. Eng. 2. Dftg. 3. Factory 4. Com. 5. Other dept. 6. Outside mfg.	TYPE OF LOSS Spoilage	Extra Cost	Obsolete
1									
2									
3									
4									

MANUFACTURING INFORMATION OR ENGINEERING INSTRUCTIONS

Item

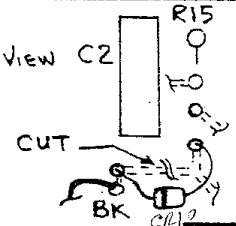
DISPOSITION:	SCP	MOD	USE	PLR	C/O	SPE	COMMENTS
FAB ____	☐	☐	☒	☐	☐	☐	68A99185G1 PWB123 FABS 158 ON HAND
PCBO/UNTST	☐	☒	☐	☐	☐	☐	SHOP TO MAKE NO MORE FABS UNTIL ARTWORK AVAIL.
PCBO/TESTED	☐	☒	☐	☐	☐	☐	
STOCK	☐	☒	☐	☐	☐	☐	
ESA/PL	☐	☐	☐	☐	☐	☒	COBBLE IF BOARDS FAIL
FINAL/ASM	☐	☐	☐	☐	☐	☒	MODULE TEST
RPO	☐	☒	☐	☐	☐	☐	
RSR	☐	☒	☐	☐	☐	☐	
FIELD	☐	☐	☒	☐	☐	☐	

ITEM 2

ITEM 1 (OR ALL)

MOD INST.
1. ADD DIODE 68A7228P3 IN FEED THRUS AS SHOWN.
2. CUT RUN ON REAR SIDE AS SHOWN
MOD. REV. TO BE H

DL6



Planned Operation _____

Notice Issued By _____ Date _____
Change Approved By (MSH)(DRB)(JCL)(WS) Date 6/25/86
Drawing Changed By M. A. CONNER Date 6/25/86

CR# 860616-ICO4

APPROX. LOSS DUE TO CHANGE	Initial Estimate	Planning
Material		
Labor		
Fac. Overhead		
Shop Cost		
Scrap Value		
Net Loss		

APPARATUS Symb. | Dept. No.

A.N. COPIES TO
Engr's _____ Planning _____
Cont. Prod. _____ Div. Prod. _____
Test _____ Inspector _____
Cost _____ Foreman _____
Mtl. List _____

PRINTS OF DWG'S TO