



GE Energy

## Functional Testing Specification

Parts & Repair Services  
Louisville, KY

LOU-GED-IS200AVSCG1A

## Test Procedure for an IS200AVSCG1A SCR Control Card

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DATE 08/06/2012	DATE	DATE	DATE 8/8/2012

<p><b>LOU-GED-IS200AVSCG1A</b> <b>REV. A</b></p>	<p><b>g</b></p> <p><b>GE Energy</b> <i>Parts &amp; Repair Services</i> <i>Louisville, KY</i></p>	<p><b>Page 2 of 7</b></p>
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## 1. SCOPE

1.1 This is a functional testing procedure for an IS200AVSCG1A SCR Control 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
2		Tenma 72-2080 DC Power Supplies
1	H188503	Function Generator or Equivalent
1	H188907	Function Generator Amplifier Box
1	H188819	Three Phase Variac
3		2.21K Ohm 1W Resistor
2		24VDC LED
1	H188641	Fluke Multimeter or Equivalent

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## 6. Modifications/Upgrades

6.1 Check Orange Book for any modifications or upgrades.

## 7. Testing Process

### 7.1 Setup

- 7.1.1 Images of set up and equipment are on last pages.
- 7.1.2 Connect variac to 240VAC and set output for 100VAC between phases. Make sure variac is turned off after setting voltages.
- 7.1.3 Set one of the power supplies to output +30VDC and -30VDC and connect to corresponding yellow, black and orange jacks on generator amplifier. Make sure power supply is off after voltages are set.
- 7.1.4 Set the function generator to output 27KHz and connect to corresponding purple and black jacks labeled function generator on generator amp. Connect meter to green and black jacks labeled GROUND and OUTPUT on generator amp. Turn on power supply and generator and using the amplitude adjustment on generator, set the meter to 13VAC. Make sure variac, power supply and function generator are off before making connections to card.
- 7.1.5 Make sure variac is off and connect output to card with A to L1, B to L2 and C to L3. Connect the green and black generator amp output jacks to CVPPL on card to be tested. Connect a shorting jumper between STMP1 and STMP2.
- 7.1.6 Set the other power supply for zero volts out. Connect the three 2.21K ohm resistors in a pull up configuration to the output. Connect one resistor to CVPL-5, connect an LED between one resistor and CVPL-3 and another LED between the last resistor and CVPL-1. Connect the power supply common to CVPL-6, 4, and 2.

**Special Note: Refer to photos at end of test for guides to set up**

### 7.2 Testing Procedure

- 7.2.1 Turn on generator and power supply. The SCOK LED will blink and then turn off and TMPOK will be on. The two LEDs on the pull up resistors will be on. Using positive lead of C14 as common, verify +12 to +14VDC on the positive lead of C13, -12 to -14VDC on the negative lead of C14, +26-28VDC on the cathode of D4 and +4.7-5.1VDC on the center lead of C17.
- 7.2.2 Turn on the three phase power and the SCOK LED will come on.
- 7.2.3 Connect scope common to DCOM (positive of C14). Connect scope probe to G1PL-1. Turn on the power supply with pull up resistors, increase voltage and at +10VDC in you

should see the waveform as seen in attachment 9.1. Probe is set at X10. Verify wave form is present at G2PL-1 and G3PL-1.

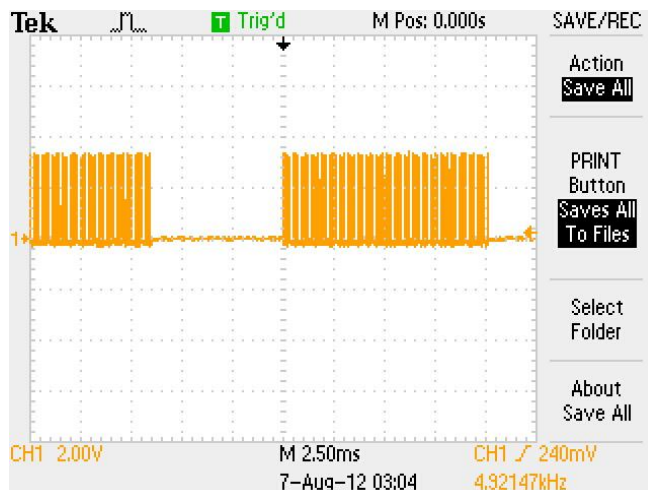
- 7.2.4** With scope probe on any GxPL-1 pin, remove phase A from the variac and verify waveform ceases and SCOK LED is off. Replace Phase A and repeat with Phases B and C with identical results. Turn all power off after completing this portion of test.
- 7.2.5** The under voltage test will require connecting a positive and negative 13VDC, +30VDC and +5VDC directly to card and all must be adjustable. Remove all connections except the three phase to L1, L2 and L3. Set the power supplies to operate in independent mode and set one to obtain +13VDC on one side and the other side for -13VDC. Set the other power supply to output +30VDC on one side and +5VDC on the other. Connect the commons of power supplies together and make a common connection to the positive lead of C14. Connect +13V to the positive of C13, -13VDC to the negative lead of C14, +30VDC to cathode of D4 and +5VDC to lead of R11 that is closet to pin 11 of U13.
- 7.2.6** You are checking to see that the SCOK LED turns off as you lower the voltages one at a time. The LED should turn off at a certain voltage.
- 7.2.7** LED is off when +13DC is between +10.5V and +11V
- 7.2.8** LED is off when -13VDC is between -10.4V and -10.8V.
- 7.2.9** LED is off when +30VDC is between +20V and +25V
- 7.2.10** LED is off when +5VDC is between +4.4V and 4.6V.

### 7.3 \*\*\*TEST COMPLETE\*\*\*

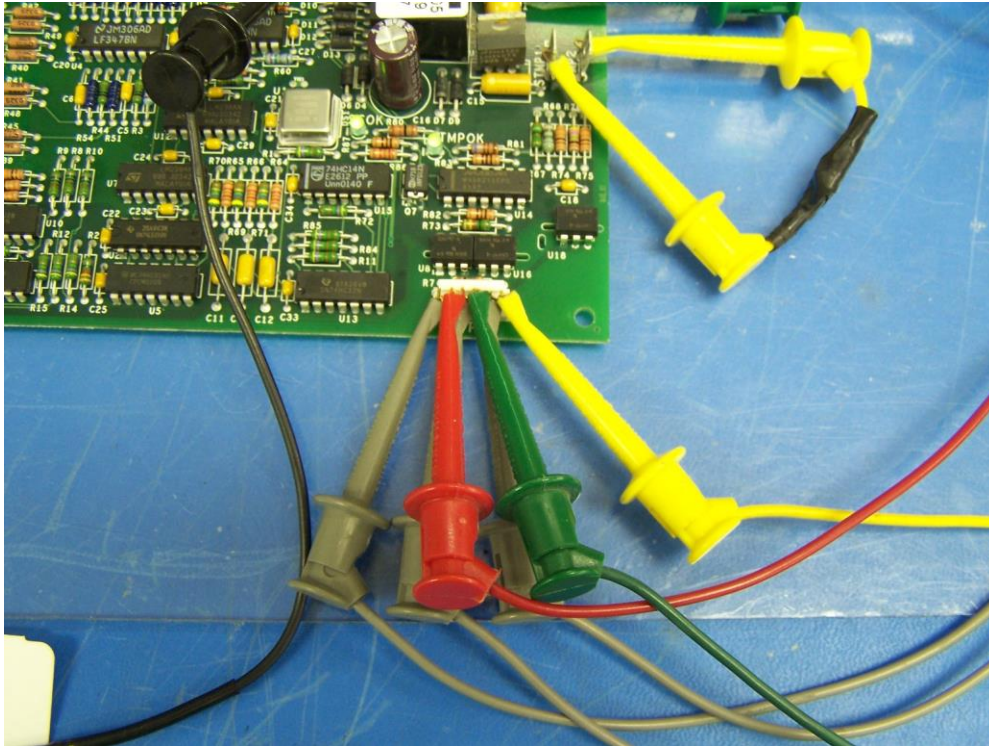
## 8. Notes

8.1 None at this time.

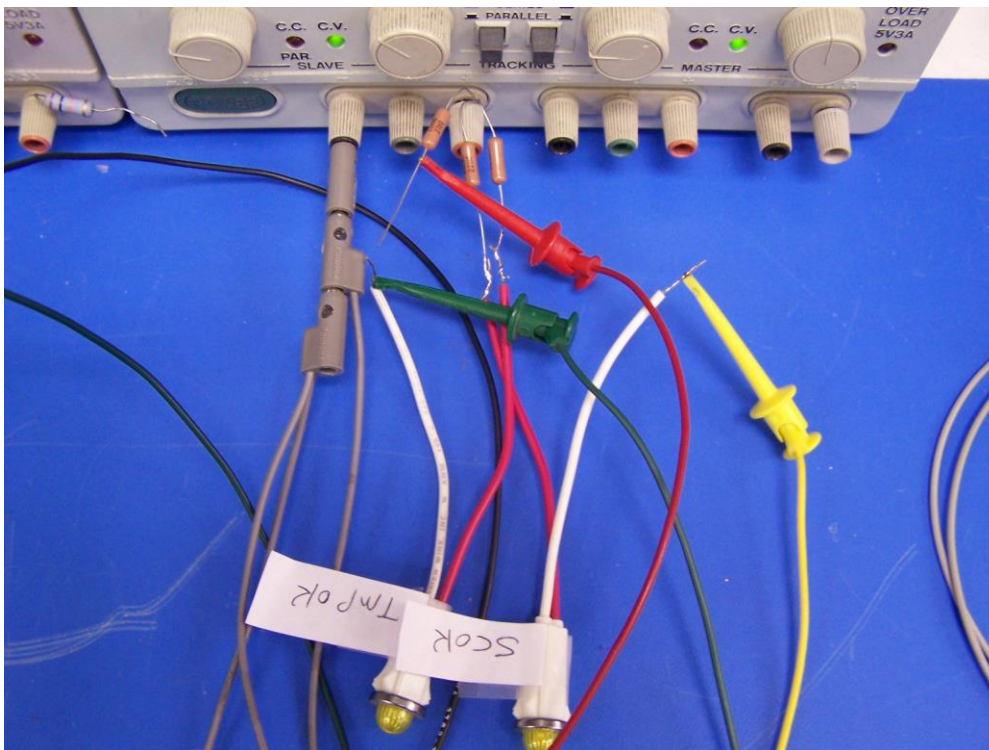
## 9. Attachments



9.1

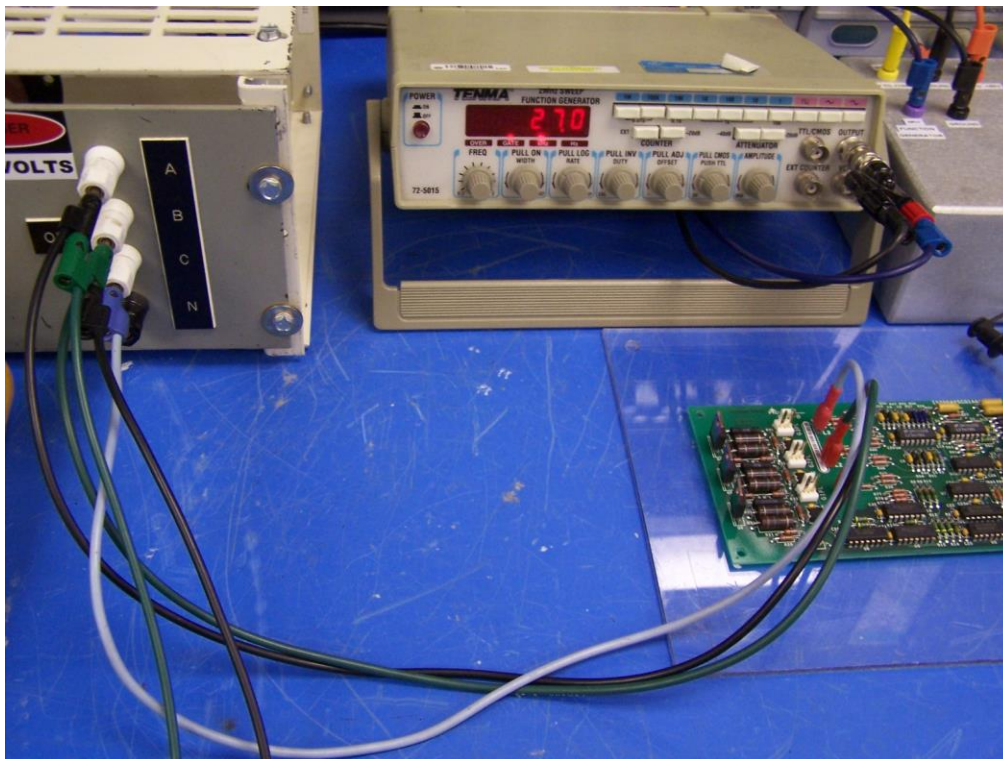


9.2



9.3

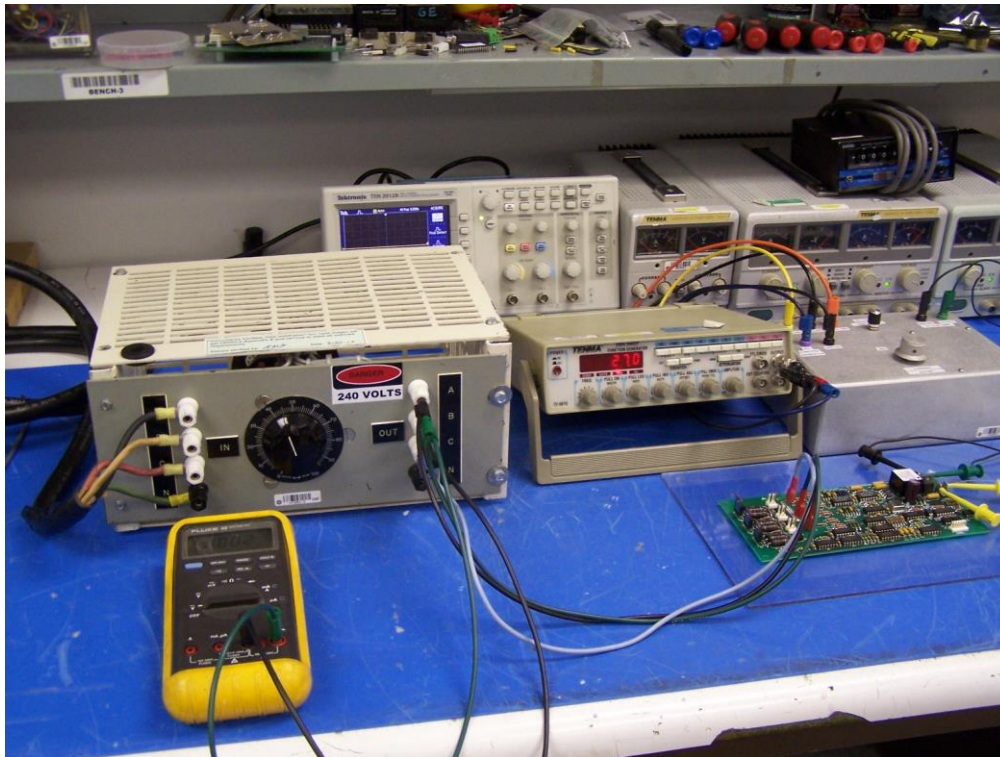




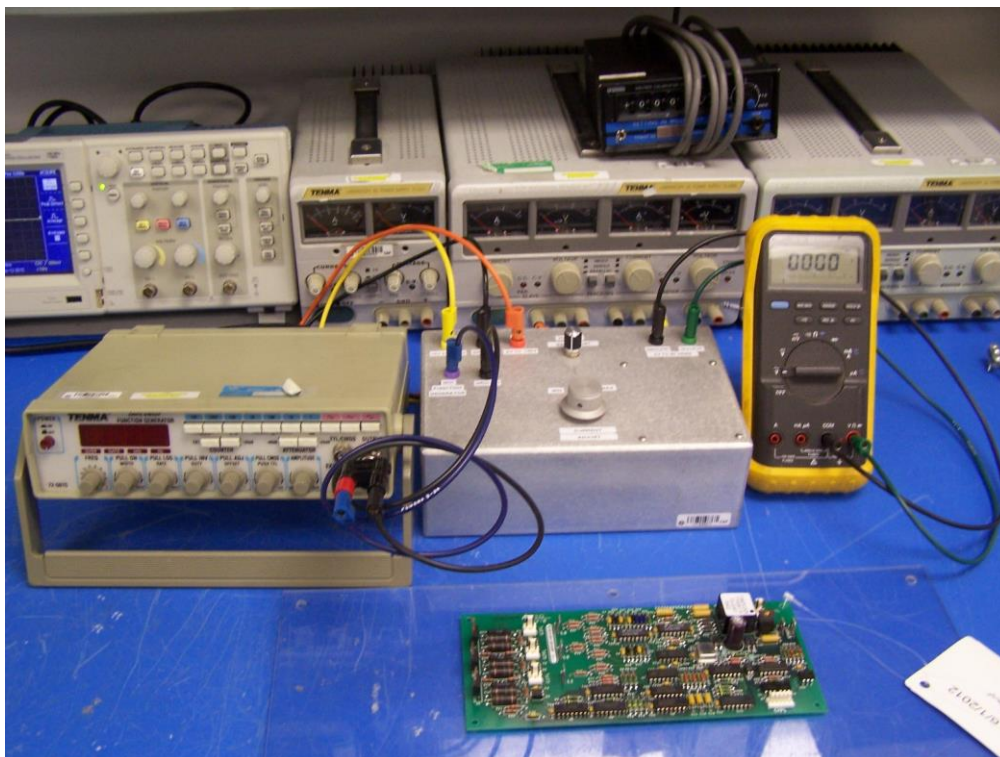
9.4



9.5



9.6



9.7