g	GE Energy	**Functional Testing Specification**
	Parts & Repair Services *Louisville, KY*	**LOU-GED-IS200SCNVG1Axx**

Test Procedure for an IS200SCNVG1ADx card.

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	J. Francis	09/22/2010

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1. SCOPE

1.1 This is a functional testing procedure for an IS200SCNVG1ADx 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 the 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		ID chip programmer PC
1		Tenma Laboratory DC Power Supply
1		Function Generator
1		44VAC @ 25Khz Square wave Power Source
1		O-Scope
1		DC Millivolt Source

6. TESTING PROCESS

6.1 Setup

6.1.1 Setup is called out in each step. Revisions G1ACA & G1ACC have not been tested using this procedure.

✎ **Note: If any step during testing fails, troubleshoot and repair failed section, then proceed with testing.**

6.2 Testing Procedure

6.2.1 **Initial visual inspection of card:** Look the card over very closely.

6.2.2 **Verification of ID Chip (Hyperterminal):** Take the card over to the Chip ID programmer PC, call up the Main Menu, select ID Prom Programmer, then go through the menus until you find the one for your card. Follow the directions it gives you.

6.2.3 Do NOT apply power to the unit at this time, just making some connections first.

6.2.4 Connect 44VAC @ 25 KHz to both P1-B1 (VAC1) and P1-B2 (VAC2).

6.2.5 Connect +5VDC to P1-D32 (P5) and return to P1-B32 (DCOM).

6.2.6 Connect P1-B15 (NDRPC) to DCOM.

6.2.7 Connect P1-C21 (DRVPS) to +5VDC.

6.2.8 Apply power to unit.

6.2.9 Check across Capacitors C1, C20, C44, and C68 for +5VDC -/+0.5VDC (xP5).

6.2.10 Check across Capacitors C2, C22, C46, and C69 for +12VDC -/+0.5VDC (xP12).

6.2.11 Check across Capacitors C3, C23, C47, and C70 for –12VDC -/+0.5VDC (xN12).

6.2.12 Check across DPL-5 (+) and DPL-8 (-) for +15VDC -/+0.5VDC.

6.2.13 Check across DPL-6 (+) and DPL-8 (-) for -7VDC -/+0.5VDC.

6.2.14 Check acrossDPL-1 (+) and DPL-2 (-) for +15 VDC -/+0.5 VDC.

6.2.15 Check for 0VDC across (+) SPL-8 and (-) SPL-9.

6.2.16 Connect P1-B24 (NAD) to DCOM.

6.2.17 Check for +16VDC -/+0.5VDC across (+) SPL-8 (GA) and (-) SPL-9 (ADCOM).

6.2.18 Disconnect P1-B24 (NAD) from DCOM.

6.2.19 Check for 0VDC across (+) SPL-8 (GA) and (-) SPL-9 (ADCOM).

6.2.20 Check for 0VDC across (+) SPL-4 (GB) and (-) SPL-5 (BDCOM).

6.2.21 Connect P1-C16 (NBD) to DCOM.

6.2.22 Check for +16VDC -/+0.5VDC across (+) SPL-4 (GB) and (-) SPL-5 (BDCOM).

6.2.23 Disconnect P1-C16 (NBD) from DCOM.

6.2.24 Check for 0VDC across (+) SPL-4 (GB) and (-) SPL-6 (BDCOM).

6.2.25 Check for 0VDC across (+) SPL-1 (GC) and (-) SPL-2 (CDCOM).

6.2.26 Connect P1-C28 (NCD) to DCOM.

6.2.27 Check for +16VDC -/+0.5VDC across (+) SPL-1 (GC) and (-) SPL-2 (CDCOM).

6.2.28 Disconnect P1-C28 (NCD) from DCOM.

6.2.29 Check for 0VDC across (+) SPL-1 (GC) and (-) SPL-2 (CDCOM).

6.2.30 Connect O-Scope probe to P1-C24 (NVBC) and connect O-Scope ground to DCOM.

6.2.31 The O-Scope should display 8.4V Pk-Pk @ 976 KHz square wave.

6.2.32 Connect O-Scope probe to P1-B31 (NVAB) and connect O-Scope ground to DCOM.

6.2.33 The O-Scope should display 8.4V Pk-Pk @ 976 MHz square wave.

6.2.34 Connect O-Scope probe to P1-B26 (NASB) and connect O-Scope ground to DCOM.

6.2.35 Connect millivolt source positive lead to SAPL-1 and connect negative lead to SAPL-2.

6.2.36 With the millivolt source set to 0V the O-Scope should display a square wave at 8.8V Pk-Pk @ 1 MHz.

6.2.37 Adjust the millivolt source for –100 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.2 MHz.

6.2.38 Adjust the millivolt source for –200 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.4 MHz.

6.2.39 Adjust the millivolt source for –300 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.6 MHz.

6.2.40 Adjust the millivolt source for –400 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.8 MHz.

6.2.41 Adjust the millivolt source for –500 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 2 MHz.

6.2.42 Adjust the millivolt source for +100 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.8 MHz.

6.2.43 Adjust the millivolt source for +200 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.6 MHz.

6.2.44 Adjust the millivolt source for +300 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.4 MHz.

6.2.45 Adjust the millivolt source for +400 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.2 MHz.

6.2.46 Adjust the millivolt source for +500 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0 MHz.

6.2.47 Connect O-Scope probe to P1-C18 (NBSFB) and connect O-Scope ground to DCOM.

6.2.48 Connect millivolt source positive lead to SBPL-1 and connect negative lead to SBPL-2.

6.2.49 With the millivolt source set to 0V the O-Scope should display a square wave at 8.8V Pk-Pk @ 1 MHz.

6.2.50 Adjust the millivolt source for –100 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.2 MHz.

6.2.51 Adjust the millivolt source for –200 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.4 MHz.

6.2.52 Adjust the millivolt source for –300 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.6 MHz.

6.2.53 Adjust the millivolt source for –400 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.8 MHz.

6.2.54 Adjust the millivolt source for –500 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 2 MHz.

6.2.55 Adjust the millivolt source for +100 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.8 MHz.

6.2.56 Adjust the millivolt source for +200 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.6 MHz.

6.2.57 Adjust the millivolt source for +300 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.4 MHz.

6.2.58 Adjust the millivolt source for +400 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.2 MHz.

6.2.59 Adjust the millivolt source for +500 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0 MHz.

6.2.60 Connect O-Scope probe to P1-C30 (NCSFB) and connect O-Scope ground to DCOM.

6.2.61 Connect millivolt source positive lead to SCPL-1 and connect negative lead to SCPL-2.

6.2.62 With the millivolt source set to 0V the O-Scope should display a square wave at 8.8V Pk-Pk @ 1 MHz.

6.2.63 Adjust the millivolt source for –100 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.2 MHz.

6.2.64 Adjust the millivolt source for –200 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.4 MHz.

6.2.65 Adjust the millivolt source for –300 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.6 MHz.

6.2.66 Adjust the millivolt source for –400 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.8 MHz.

6.2.67 Adjust the millivolt source for –500 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 2 MHz.

6.2.68 Adjust the millivolt source for +100 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.8 MHz.

6.2.69 Adjust the millivolt source for +200 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.6 MHz.

6.2.70 Adjust the millivolt source for +300 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.4 MHz.

6.2.71 Adjust the millivolt source for +400 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.2 MHz.

6.2.72 Adjust the millivolt source for +500 mVDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0 MHz.

6.2.73 Connect O-Scope probe to P1-B18 (NVDBCE) and connect O-Scope ground to DCOM.

6.2.74 Connect millivolt source positive lead to TP4 and connect negative lead to DCPL-6.

6.2.75 With the millivolt source set to 0V the O-Scope should display a square wave at 8.8V Pk-Pk @ 175 Hz.

6.2.76 Adjust the millivolt source for +1 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.2 MHz.

6.2.77 Adjust the millivolt source for +2 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.4 MHz.

6.2.78 Adjust the millivolt source for +3 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.6 MHz.

6.2.79 Adjust the millivolt source for +4 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.8 MHz.

6.2.80 Adjust the millivolt source for +5 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1 MHz.

6.2.81 Adjust the millivolt source for +6 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.2 MHz.

6.2.82 Adjust the millivolt source for +7 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.4 MHz.

6.2.83 Adjust the millivolt source for +8 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.6 MHz.

6.2.84 Adjust the millivolt source for +9 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.8 MHz.

6.2.85 Adjust the millivolt source for +10 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 2 MHz.

6.2.86 Check across TP3 and DPL-12 for approximately 2.5 M Ohm.

6.2.87 Connect O-Scope probe to P1-B20 (NVDC) and connect O-Scope ground to DCOM.

6.2.88 Connect millivolt source positive lead to DCPL-8 and connect negative lead to TP4.

6.2.89 With the millivolt source set to 0V the O-Scope should display a square wave at 8.8V Pk-Pk @ 175 Hz.

6.2.90 Adjust the millivolt source for +1 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.2 MHz.

6.2.91 Adjust the millivolt source for +2 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.4 MHz.

6.2.92 Adjust the millivolt source for +3 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.6 MHz.

6.2.93 Adjust the millivolt source for +4 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 0.8 MHz.

6.2.94 Adjust the millivolt source for +5 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1 MHz.

6.2.95 Adjust the millivolt source for +6 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.2 MHz.

6.2.96 Adjust the millivolt source for +7 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.4 MHz.

6.2.97 Adjust the millivolt source for +8 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.6 MHz.

6.2.98 Adjust the millivolt source for +9 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 1.8 MHz.

6.2.99 Adjust the millivolt source for +10 VDC, the O-Scope should display a square wave at 8.8V Pk-Pk @ 2 MHz.

6.2.100 Check across TP4 and DCPL-1 for approximately 1.8 M Ohm.

6.2.101 Check across DPL-12 (+) and DPL-9 (-) FOR 18.6 VDC.

6.2.102 Connect P1-B28 (NDBD) to DCOM.

6.2.103 Check across DPL-12 (+) and DPL-9 (-) FOR 18.1 VDC.

6.2.104 Disconnect P1-B28 (NDBD) from DCOM.

6.2.105 Check across DPL-12 (+) and DPL-9 (-) FOR 18.6 VDC.

6.2.106 Connect O-Scope probe to P1-B22 (DBF) and O-Scope ground to DCOM. O-Scope should display 0V.

6.2.107 Connect P1-B28 (NDBD) to DCOM. O-Scope should read +5VDC.

6.2.108 Disconnect P1-B28 (NDBD) to DCOM. O-Scope should read 0V.

6.2.109 Connect O-Scope probe to P1-B29 (DBTF) and O-Scope ground to DCOM. O-Scope should display +5 VDC.

6.2.110 Connect DPL-1 and DPL-2 O-Scope should display 0V.

6.2.111 Disconnect DPL-1 and DPL-2 O-Scope should display +5 VDC.

6.3 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time.

8. ATTACHMENTS

8.1 None at this time.