g GE Energy Services	**Functional Testing Specification**
Inspection & Repair Services ***Louisville, KY***	**LOU-GED-193X251xx**

Test Procedure for a 193X251AA or ABG01 Card

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release – Re-Write of 224X695AA	JLM	3/17/04
B	Test Enhancement, added two tables	R. Johnson	3/11/2010
C			

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
JLM	R. Johnson		Robert Durell
DATE	**DATE**	**DATE**	**DATE**
3/17/04	3/10/2010		3/19/04

Functional test procedure for a Card

1. SCOPE

1.1 This is a functional testing procedure for a 193X251AA OR ABG01Card.

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 224X695AA Test Instruction**
- **3.1.2 36C762880AD sheets 1-3**

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		Fluke 85 DMM (or Equivalent)
1		Oscilloscope
1		Fluke 715 precision voltage calibrator
3		20Vdc power supplies (2 dual supplies will do)
1		193X thin card pin-out box—has blue banana jacks

6. TESTING PROCESS

6.1 Setup

6.1.1 Tab 31 to +20v, tab 2 to –20v, tab 15 to common, and leave tab 10 tied to common for duration of testing as well.

Note: Pay close attention to input polarities on this test. Many "failures" are in reality a switched polarity that technician missed when inputting a test voltage causing unit to not respond as expected.

6.2 Testing Procedure

6.2.1 *Initial output*: With tab 17 to com, output on tabs 21 & 22 should be +1.83V (+/- .11V). Tabs 21 or 22 should not deviate from one another by more than .22V. Tabs 23 & 24 should null between 0 & +/-.05V.

6.2.2 *Lockouts:* Connect 1.82k-ohm loads between tab 23 to com and tab 24 to com. These loads will stay in place until step 6.2.6. Apply +.5V to tab 17. Tab 22 should null between 0 & -.8V and tab 23 should be greater than 5V. Reversing polarity to tab 17 should make tabs 21 & 22 swap, and also tabs 23 & 24 should swap (See table 1).

6.2.3 *Gain Linearity:* Apply +8V to tab 17; tab 21 output shall go to 10V (+/- 1V). Reversing polarity at tab 17 to –8V should bring tab 22 to within .3V of what tab 21 was putting out (10V +/- 1.3V) (See table 1).

	Outputs			
Inputs Pin 17	Pin 21	Pin 22	Pin 23	Pin 24
+.5V	2.37V	-.39V	6.54V	.021V
-.5V	-0.338V	2.36V	0V	6.32V
+8V	-10.4V	-.5V	6.52V	.021V
-8V	-.487V	10.45V	0V	6.23V

Table 1

6.2.4 *Current lockouts:* With +8V to tab 17, tab 23 output should be >5V as in 6.2.2. A signal of -.3V applied to tab 25 should cause tab 23 to null tab 24 to go to >5V. Next, with –8V at tab 17, apply +.3V to tab 25, and tab 24 should null and tab 23 should go to >5V. Remove voltage from tab 25.

6.2.5 *Feedback Input & Bias:* Apply 10V to tab 17. Tab 23 should be >5V and tab 24 should be null. Apply –8.25V to tab 18 and it should null both tabs 23 & 24. Switching input from tab 18 over to tab 20 should produce the same result. Now remove 1.82k-ohm loads from tabs 23 & 24. You are done with them.

6.2.6 *Initializer:* With +3V to tab 17 and –3V to tab 16, tab 21 should go to >11V.

6.2.7 *Armature Isolation:* Applying +2V to tab 28 should make tab 29 go to -9.5V (+/- .14V). Applying +10V to both tabs 27 & 28 should cause tab 29 to null between 0 & +/- .24V. Need to check to see if the Op Amp output will swing or not, see table 2.

Input Pin 27	+10V	Com	+10V	Com
Input Pin 28	Com	+10V	+10V	Com
Output Pin 29	+15V	-14V	0V	0V

Table 2

6.2.8 *FET Gate Supply:* Output at tab 5 should be between -19V & -20V. Applying +7.5V +-.5V (should turn on about 7.6V) to tab 6 should make tab 5 null to between 0 & -.5V. Remove voltage from tab 6.

6.2.9 *DFP:* Applying +20V to tab 11 should cause tab 8 to go to >17.5V between .3 and 1.0 seconds later.

6.2.10 *Oscillator:* Observe tab 12 with an o-scope set to 5V/div and .2msec/div. There should be a series of pulses 9.8KHz to 11.2KHz (count the freq. with your Fluke 85 meter) and more than 15Vpeak (see fig. 1). A signal +1.8V +-.25V on tab 13 will take output at tab 12 to saturation of more than +19V.

6.3 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time.

8. Oscilloscope Verification Examples:

8.1 None at this time.

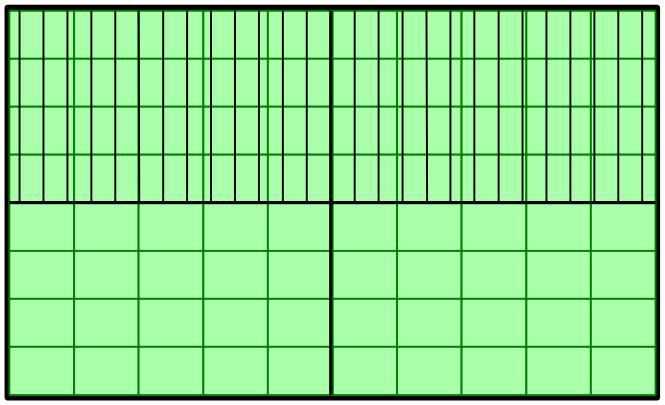

Fig. 1

Fig. 2