| g GE Energy | **Functional Testing Specification** |
|---|---|
| ***Parts & Repair Services***<br>***Louisville, KY*** | **LOU-GED-DS200GSIAG1C** |

**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 | Jimmy Morgan | 11-27-2017 |
| B | | | |
| C | | | |



| PREPARED BY | REVIEWED BY | REVIEWED BY | QUALITY APPROVAL |
|---|---|---|---|
| Jimmy Morgan | | | L. Groves |
| **DATE** | **DATE** | **DATE** | **DATE** |
| 11/27/2017 | | | 11/27/2017 |

## 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 | | Oscilloscope |
| 1 | | +5vdc, -15vdc, +15vdc Power Supplies<br>(Tenma power supply) |
| 1 | | GSIAG1A test rig (including 2PL power cable) |
| | | |

## 6. Modifications/Upgrades

**6.1** None

## 7. Testing Process

### 7.1 Setup

**7.1.1** Tie all Power supply commons together for this test and use this point for all input and output references unless otherwise specified.

**7.1.2** Set power supply to output +15vdc and -15vdc

**7.1.3** Mount Card under test on GSIAG1A test rig.

**7.1.4** Connect 2PL power cable to 2PL connector on card.

**7.1.5** Connect power cable wire marked “P5” to +5vdc power supply. (2PL-5)

**7.1.6** Connect power cable wire marked “P15” to +15vdc power supply. (2PL-3)

**7.1.7** Connect power cable wire marked “N15” to -15vdc power supply. (2PL-2

**7.1.8** Connect power cable wire marked “DCOM” to common of supply. (2PL-4)

**7.1.9** Connect cable marked TP67.

**7.1.10** Connect cable marked 1PLS-31.

✍ **Note: This test does not verify operation of the processor (U3). Recommend replacement of U3 processor every time.**

### 7.2 Testing Procedure

**7.2.1** Turn power supply on and verify the following voltages on card.

| | | | |
|---|---|---|---|
| **7.2.1.1** | P5 | TP60 | 5vdc +/- 2% |
| **7.2.1.2** | P15 | TP62 | 15vdc +/-2% |
| **7.2.1.3** | N15 | TP63 | -15Vdc +/- 2% |
| **7.2.1.4** | DCOM | TP67 | 0v |

**7.2.2** Microprocessor Self-test.

**7.2.2.1** Led 1 should be pulsing to signal a fault. Press the reset button for 1-2 sec. The led should go out.

**7.2.3** Connect a jumper from GSPL-32 to TP60.

**7.2.4** Connect a jumper from GSPL-31 to TP67.

**7.2.5** Connect Oscilloscope negative to TP67.

**7.2.6** Connect Oscilloscope positive to U20 pin 11 (R52).

**7.2.7** Turn power supply on.

**7.2.8** Press the reset button (for 1-2 seconds).

**7.2.9** Verify the Oscilloscope measures a 500Khz square wave +/-10Khz.

**7.2.10** Turn power supply off.

**7.2.11** Move jumper from TP60 to TP67.

**7.2.12** Turn power supply on and press the reset button (for 1-2 seconds).

**7.2.13** Verify Oscilloscope measures 0Khz output +/- 1Khz.

**7.2.14** Turn power supply off.

**7.2.15** Remove jumpers.

**7.2.16** Connect jumper from TP60 to GSPL-37

**7.2.17** Connect jumper from TP67 to GSPL-36

**7.2.18** Move Oscilloscope probe to U18 pin 11 (R45).

**7.2.19** Turn on power supply, press the reset button (for 1-2 seconds).

**7.2.20** Verify the Oscilloscope measures a 500Khz square wave +/- 10Khz

**7.2.21** Turn power supply off.

**7.2.22** Move jumper from TP60 to TP67

**7.2.23** Turn power supply on and press the reset button (for 1-2 seconds).

**7.2.24** Verify Oscilloscope measures 0Khz output +/- 1Khz.

**7.2.25** Turn power supply off.

**7.2.26** Disconnect all jumpers (leave power cables connected).

**7.2.27** Connect a jumper from TP73 to TP60.

**7.2.28** Connect Oscilloscope to U34 pin 11 (R140)

**7.2.29** Press the reset button (for 1-2 seconds).

**7.2.30** Verify the Oscilloscope measures a 500Khz square wave +/- 10Khz.

**7.2.31** Turn power supply off.

**7.2.32** Move jumper from TP60 to TP67.

**7.2.33** Press the reset button (for 1-2 seconds).

**7.2.34** Verify the Oscilloscope measures 0Khz output +/- 1Khz.

**7.2.35** Turn power supply off.

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

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

***7.4 ***TEST COMPLETE ******

**8. Notes**

**8.1** None at this time?

**9. Attachments**

**9.1** None at this time?