g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GED-DS2020ERCA**

Test Procedure for a energy recovery module DS2020ERCA

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	G. Chandler	9/13/2010
B	Clarified testing on steps 6.1.2.5/6.1.2.6/6.1.2.7	C. Wade	3/12/2012
C			

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
G. Chandler	J. Archibald		Charlie Wade
DATE	**DATE**	**DATE**	**DATE**
9/13/2010	3/12/2012		9/13/2010

1. SCOPE

1.1 This is a functional testing procedure for an energy recovery module DS2020ERCA.

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** MRP Bill of Materials: DS2020ERCAG1
- **3.1.2** Assembly Drawing: 246B2337
- **3.1.3** Elementary Diagram: 246B2325 Sheet 1AA for reference only.
- **3.1.4** 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)
		LCR-103

6. TESTING PROCESS

6.1 Setup

6.1.1 Replace two output diodes and GTO.

6.1.2 All parts should be mounted per assembly drawing.

6.1.2.1 Cat # nameplate (#157) is stamped DS2020ERCAG1

6.1.2.2 Four labels that are stamped per list below.

6.1.2.2.1 "High Voltage on Cover"

6.1.2.2.2 "VXDC"

6.1.2.2.3 "EN"

6.1.2.2.4 "EP"

6.1.2.3 Circuit board (#12), stamp should show "DS200GGDAG1A".

6.1.2.4 One LEM Sensor (#7), stamped "LT 200-S/SP1".

6.1.2.5 LCR-103 Testing

6.1.2.5.1 One capacitor C1 (#6), bus mounted, axial type, "1uf 2000V"

6.1.2.5.2 One capacitor C2 (#5), metal can type, "0.1uf 2000V"

6.1.2.5.3 Two resistors (#8), metal can type, "22 ohm".

6.1.2.5.4 Six resistors (#9), metal can type "2 ohm".

6.1.2.6 Diodes will be tested and replaced if required.

6.1.2.6.1 Two diodes CR1-CR2 (#3), "68A9517P20".

6.1.2.6.2 One diode CR3 (#10), "25EXH11 or 41A296304BFP1".

6.1.2.7 GTO shall be replaced

6.1.2.7.1 One GTO Q1 (#2), "DG306AE25 or DG306SE25".

6.1.2.8 Heat-sink clamp spring gauge reading per assembly drawing.

6.1.2.9 One Lexan Barrier (#800)

6.1.2.10 Five Nylon Screws (#816) and standoffs (#815)

6.1.2.11 Four Red Ball Insulators (#11)

6.1.2.12 13 wires mounted per label and assembly drawing.

6.1.2.13 All fasteners and wire terminals shall be tight

6.2 Electrical Testing

6.2.1 Locate seven electrical terminals per assembly drawing for reference.

EP
EN
VXDC
CR3C
C2-1
C2-2
Q1C

6.2.2 Using DMM diode range, verify diode junction from;

6.2.2.1 EP(+) to VXDC(-) has forward voltage drop (CR1 oriented OK)

6.2.2.2 EN(+) to EP(-) has forward voltage drop (CR2 oriented OK)

6.2.3 Verify resistance (Ohms);

6.2.3.1 CR3C(+) to VXDC(-) is 11.4 to 12.6 ohms (R1-R6 in series)

6.2.3.2 C2-1(+) to EN(-) is 10.4 to 11.6 ohms (R7 & R8 in parallel)

6.2.3.3 EP(+) to EN(-) is 67.5K to 82.5K (R9)

6.2.4 Verify continuity;

6.2.4.1 On the circuit board TB2 to EP is short circuit (Q1 cathode lead)

6.2.4.2 Q1C to C2-2 is short circuit (This wire only checked here)

6.2.4.3 VXDC(+) to EP(-) is open circuit (Q1 not shorted)

6.3 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time.

8. ATTACHMENTS

8.1 None at this time.