g	GE Energy	**Functional Testing Specification**
	Parts & Repair Services *Louisville, KY*	**LOU-GEF-EPM-ERM**

Test Procedure for EPM01, ERM02, ERM03 Printed Circuit Boards

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A	Initial release	C. Wade	07/01/2005
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Functional test procedure for EPM01, ERM02, & ERM03 Printed Circuit Boards

1. **SCOPE**

   1.1 This is a functional test procedure for testing the EPM01, ERM02, and ERM03 printed circuit boards. The process applies only to EPM01, ERM02, and ERM03 boards' model number 44A719337-G01, 44A719942-G02, and 44A719342-G01.

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** **44C719602** — Elementary
   - **3.1.2** **44C719603** — Elementary
   - **3.1.3** 44C720542 — Elementary
   - **3.1.4** **GEK-25382** — Maintenance & Troubleshooting
   - **3.1.5** **GEK-25381** — Startup & Adjustments
   - **3.1.6** **GEK-25391** — System Diagrams
   - **3.1.7** **GIT-200** — **TAB12** Diagnostic Software
   - **3.1.8** **GEK-84876** — Color Graphic System

4. **ENGINEERING REQUIREMENTS**

   4.1 Description
   - **4.1.1** The EPM/ERM boards have the application software residing on them. In the system they are strapped always for MB0. All 2000 control require an MB0 board, that can be an EPM01 or ERM03 or a Bubble Board. Bubble were first used, then replaced by the EPM01, which was replaced later by the ERM03.

   4.2 Equipment Cleaning
   - **4.2.1** 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.

   4.3 Equipment Inspection
   - **4.3.1** Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:
     - **4.3.1.1** Wires broken or cracked
     - **4.3.1.2** Terminal strips / connectors broken or cracked
     - **4.3.1.3** Loose wires
     - **4.3.1.4** Components visually damaged
     - **4.3.1.5** Capacitors leaking
     - **4.3.1.6** Solder joints damaged or cold
     - **4.3.1.7** Circuit board burned or de-laminated
     - **4.3.1.8** 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	MC2000 Standup Control	Test Fixture
1	EPM01/ERM03 Programmer	Programmer for EPM01/ERM02/ERM03 boards

6. TESTING PROCESS

6.1 Verification Test

6.1.1 Place master EPM01, ERM02, or ERM03 board into slot 2 and BUT into any other slot number above two.

6.1.2 Turn on tester. Test fixture should come up and LED push button should light up going from left to right. Once done all EPM01 & ERM03 board LEDs should be lit up. If not board is not being recognized and should be removed and repaired before going further. After all boards have come press the "Verify" push button and master board will begin the verification process with any card inserted into the slots to its right. When completed the Green light should come on and the board LED should also come on.

6.1.3 MC2000 Control test for EPM01 or ERM03

6.1.4 Power down and remove BUT. Install in 2000 control and load a corresponding MB3 bubble. Bring up control in the customer application environment and be sure the banner page comes up. Check on whether you can switch between status pages. If so test is complete. When completed, turn off control.

6.1.5 Be sure to reinstall KGB and verify that control is functioning.

6.2 MC2000 Control test for ERM02

6.2.1 Power Down Control install ERM02 board in Graphics Control Station Slot 2.

6.2.2 Turn control on by depressing green "Control On" push button on the NCS Station. If the LED on the ERM02 does not come on, stop the testing and troubleshooting.

6.2.3 "Power Up Diagnostics" should be displayed on screen, followed by "System Loading", which will be followed by "Mark Century 2000 Service Diagnostics Initialization" & "Make any Keyboard entry for manual/menu mode".

6.2.4 Press any key and Factory Diagnostic Screen will be displayed.

6.2.5 To select a heading on the menu page, use the cursor control up or down arrow key.

6.2.6 Go to manual testing of the ERM02 selecting "Graphic Control Station Test" and pressing enter or return. You need to go through the following Test "GCS Extended Diagnostic Test". This Test will test Keyboard Functions and Color Graphics.

6.2.7 Shut down Control and remove ERM02

*6.3 ***TEST COMPLETE ****

7. <u>**NOTES**</u>

7.1 None at this time.