g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GED-DS3800HFPG**

Test Procedure for a DS3800HFPG Card

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	J. Barton	6/19/02
B	Added section for Firmware Verification	J. Barton	06/20/02
C	Added steps 6.1.2.8, 6.1.2.9, & Special Note	C. Wade	7/22/2008
D	Removed step 6.1.3.1 & 2 about testing EEPROM in programmer to replacing U76 as a standard.	C. Wade	7/22/2008

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
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DATE	**DATE**	**DATE**	**DATE**
06/19/02	2/20/2012		06/20/02

Functional test procedure for a DS3800HFPG Processor card.

1. SCOPE

1.1 This is a functional testing procedure for a DS3800HFPG processor 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** DS3800HFPG-2AA thru 2AN
- **3.1.2** 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
		Fluke 9010A Micro-system Troubleshooter connected to a PC that has a connection to the Louisville Server
		Fluke 80186 Interface Pod
	H033783	DS3800HFPG test fixture
		Fluke software for testing a DS3800HFPG board (latest revision) located at: (J:\Biz_Data\ShopFloor\FLUKE\HFPG.H)
	H033700	Digital Siltron Unit:
		ChipWriter Computer Station
		Test Drive Firmware: (located on shop test board on complete drive), 4 – EPROM's (U70-73), labeled "TEST FIRMWARE", 1 – EEPROM (U76), labeled "TUNE UP SETTINGS".
		Test Fixture Firmware: (located on shop test board), 4 – EPROM's (U70-73), labeled "TEST FIRMWARE", 1 – EEPROM (U76), labeled "TUNE UP SETTINGS"

6. TESTING PROCESS

6.1 Testing Procedure

6.1.1 ATE Test

6.1.1.1 If received UUT came in with EEPROM U76 “TUNE UP SETTINGS”, remove it at this time and it will be tested in step 3.0. If UUT did not have EEPROM installed when received; a new (104X171GB004 or X2816) EEPROM will be installed in step 6.1.2.3.

6.1.1.2 Connect the required equipment as outlined in Figure 1.

6.1.1.3 Install Test Firmware, DO NOT Install TUNE UP SETTINGS EEPROM at this time, It will be installed later in test.

6.1.1.4 Remove CPU (U86) – 80186

6.1.1.5 Inspect socket and CPU for any bent components.

6.1.1.6 Verify all jumper settings match shop boards.

6.1.1.7 Install the UUT into the fixture and connect fluke pod to CPU socket and power on test fixture.

6.1.1.8 Connect jumper wire “DS” from back of fixture to UUT.

6.1.1.9 Load and run the test software and follow all instructions verbatim. If all tests pass, then continue to step 2.0. If test fails, move on to troubleshooting.

6.1.2 Drive Test

6.1.2.1 Remove UUT and remove all firmware installed during ATE test, and reinstall in test shop board. Drive firmware is PSP3815PDPAxxAU.

6.1.2.2 Install Customers CPU IC (80186) back into socket U87

6.1.2.3 Install Drive Test Firmware including TUNE UP SETTINGS EEPROM, (located on Drives test HFPG board).

6.1.2.4 Power up test drive.

6.1.2.5 Verify unit goes thru self-diag. cycles by watching LED’s sequence and all IMOK LEDS illuminate on both drive boards.

6.1.2.6 After sequence of self diag. completes, watch center meter (AMATURE VOLTAGE), located at top of drive unit, it will cycle from meter center to the right 6 times, then from center meter to the left 6 times.

6.1.2.7 During motor startup, left meter (FIELD AMPS), at top of drive will move to the right at 100% then drop to 70%, showing drive is in energy saving mode.

6.1.2.8 Run drive for fifteen minutes.

6.1.2.9 Cycle power on drive – Power down than up.

Special Note: We had a card in this shop that would run fine until performing this procedure; and then it would scramble the data in the EEPROM causing a failure and the drive to no longer function. Do not skip this step.

6.1.2.10 Let drive run for a 4hr. burn-in.

6.1.2.11 If drive continues to operate after burn-in test, all test passed and UUT is ready for completion.

6.1.2.12 Remove UUT and remove all test firmware and reinstall test firmware back in to drive test board.

6.1.2.13 Install complete drive test board back into drive unit.

6.1.3 EEPROM Test

6.1.3.1 Replace EEPROM with new program chip (AT28C16E).

6.1.3.2 Reprogram TUNE UP SETTINGS back to EEPROM, and verify program loaded back into EEPROM.

6.1.4 EEPROM Installation

6.1.4.1 Install EEPROM into socket U76 with correct designations and verifying all pins correctly inserted.

6.1.4.2 Affix label “TUNE UP SETTINGS” to EEPROM U76 if not already done so.

6.1.5 Firmware Verification (if applicable)

6.1.5.1 Obtain exact revision of firmware received with UUT. Located in firmware storage area.

6.1.5.2 Install Customers firmware into ChipWriter Test Station and verify EACH signature check sum matches the original test firmware of EACH EPROM individually.

6.1.5.3 If a checksum signature does not match the original, then a new EPROM should be burned from the original and labeled as such.

6.1.5.4 Install original or replaced EPROM ’s in correct sockets and verify all inserted correctly.

6.2 ***TEST COMPLETE ***

7. NOTES

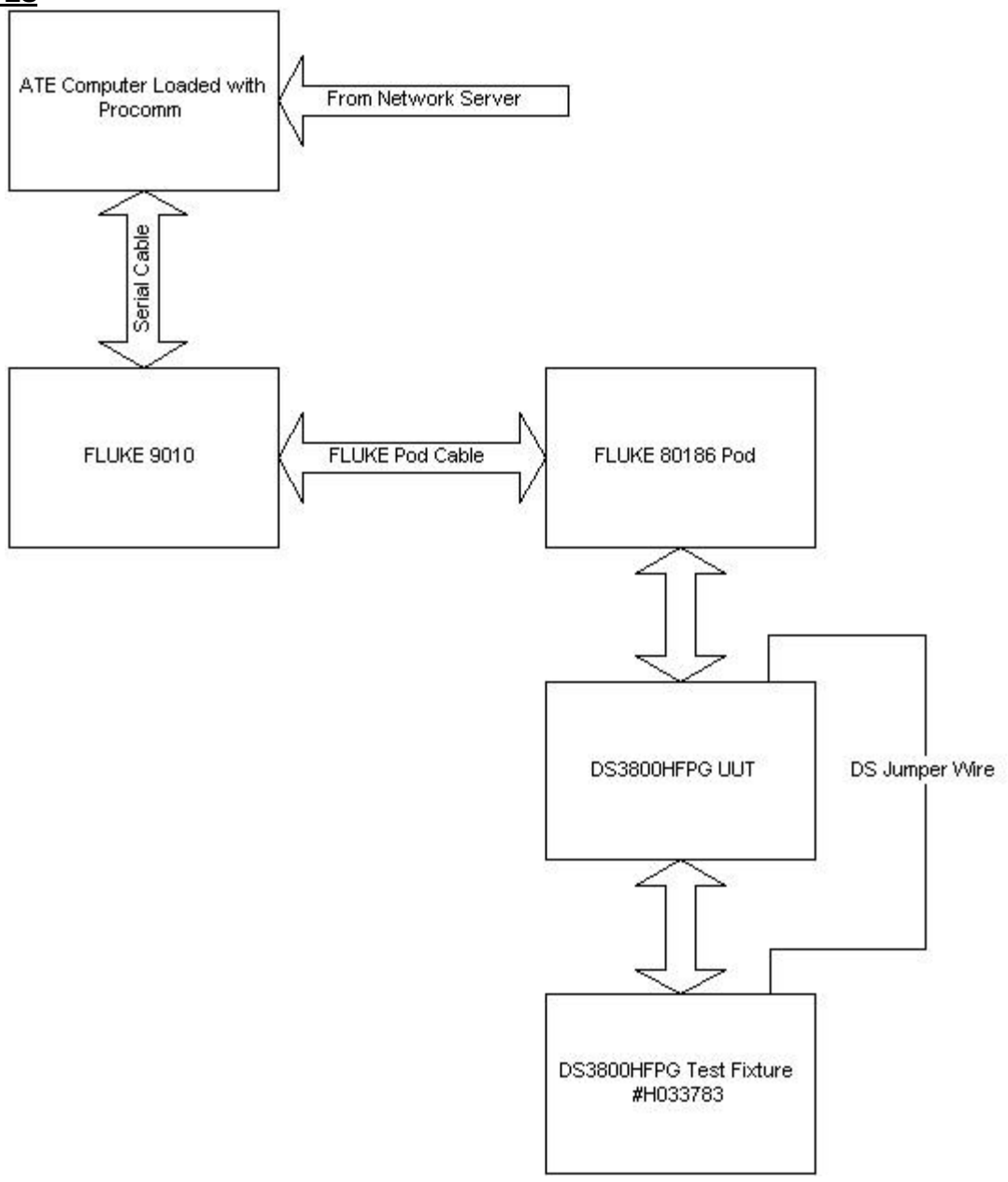

Figure 1