g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GE-IS215UCVD-A**

Test Procedure for a Universal Controller Assy, UCVD

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DATE	**DATE**	**DATE**	**DATE**
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1. SCOPE

1.1 This is a functional testing procedure for a Mark VI/Innovation Universal Controller Assy.

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 N:\Design Folders\IS2\IS215\UCVD

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, 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		Chip ID pc (for the "Roger" test)
1		Mark VI test rack Sim70 (optional, for H2 units only)
1		Innovation rack for Sim5x

6. TESTING PROCESS

6.1 Setup

6.1.1 Setup is called out in each step.

Note: This test currently covers only IS215UCVD. We no longer repair DS215UCVA or UCVB, nor do we repair IS215UCVC due to lack of parts availability. There is a separate test for UCVE assemblies, because of the number of differences involved in testing.

The UCVD comes in several variations, based on the various networking configurations it's expected to handle. These all test similarly, with minor differences pertaining only to the different network schemes. Be aware that H1 & H2 are practically identical, but the H1 is used in Innovation Series products, while H2 goes into Mark VI systems. You may also wish to test H2's in the Mark VI rack as well as the Innovation rack used for the other UCVD's, since that's ultimately the application it will see, but this isn't a requirement yet. See the table below for a breakdown of the configurations:

UCVDH#GE	ISBus	DLAN	Sim #
H1 & H2	1	None	SIM052
H3	2	None	SIM053
H5	1	1	SIM051
H7	None	1	SIM055
H9	None	2	SIM056

6.2 Testing Procedure

6.2.1 Initial Inspection: Look the card over very closely. Physical damage & corrosion have been found on these units, along with missing hardware. Most failures in these cards are related to either the processor or Genius sections, for which we have no repair at this time. These units will require either exchange or RLR.

6.2.2 Clearing the Flash: The flash must be cleared prior to testing. Remove J4. It can be found on the outside corner of the processor card, opposite side of the board from P1, adjacent a metal bracket that holds the cards together. Slide unit into the rack, then power it up. Wait until all the status led's flash in unison. This will indicate that the flash has been cleared successfully. Re-install J4.

6.2.3 "Roger" Test: The Chip ID reader PC also contains the test programs for the UCV series controllers, written by an engineer at GE Salem by the name of Roger Thompson,

hence the name “Roger” tests. Whenever you hear another tech refer to the Roger Test, you’ll know what they’re talking about. This test consists of the Innovation rack, which sits just beneath the Genius modules and the OC2000 panels. There should be an SIOB card already in the rack, in the last slot. You will eventually need it in another step of this test, so go ahead and locate it, but don’t slide it in yet. When you connect the Roger test serial cable, which is the one with **red** electrical tape on it, to COM1 of the unit under test, you’ll most likely need to use the adapter cable for compact d-shell connectors. There is also a loopback cable that plugs into COM2 that has one end closed off with certain pins shorted together. This needs to be in place, too. Connect the Ethernet cable from the pc to the Unit Data Highway (UDH) hub, which is the lower of the two hubs located to the left of the Innovation fixtures, and also the Ethernet cable from the unit under test back up to the hub. Make sure the DLAN cable and its adapter with 93-ohm terminator and/or the ISBus loopback cables are connected, depending on which configuration you have. Connect any Genius cables at this time as well, either just one or two, depending on configuration. Now, on the main menu of the Roger Test PC you’ll see the option for testing the different UCV’s. Select the one you need (remember H2 = H1) and follow the instructions closely. If you have a unit that has DLAN, you’ll be prompted to set the DLAN drop # dipswitch to a certain setting. Do as instructed. The only exceptions to the instructions are when it asks if you want to the program reboot the unit you will answer “NO”, and then you’ll cycle power manually.

6.2.4 **Repeat step 6.2.2:** Clear flash before proceeding.

6.2.5 **Backplane testing, using Sloader (Serial Loader):** Switch the serial cable over from the **red** one of the Roger test pc, to the **white** taped one of the Innovation simulator pc. You are done with the Roger test pc. Call up the program on the Innovation pc called Sloader. This is a serial loader program that will set up the TCP/IP address in the unit’s flash memory so that the pc can find the unit on the Ethernet. When that program opens, there will be a **Platform** drop-down menu from which you can select the unit you have on hand. Once you’ve done this, click on **TCP/IP settings**, and correct both **IP Address** and **Router IP** boxes to **192.168.101.5**x (5x means whatever Sim # you have, say **52** for H1/H2 units, **53** for H3 units, **51** for H5 units, **55** for H7 units, or **56** for H9 units). Then click **OK**. If you have a DLAN unit, set the dipswitch for the same 5x number at this time. Now click on **Serial Port Settings**, and select **COM1** and **19200** bps, then click **OK**. Now, check the white boxes next to **Configure TCP/IP**, **Load Flash File System**, and **Display Summary Information**. Click on **Start Command**, and

follow the instructions given in the dialog box. The first and last ones will be to *Cycle Power on Target*, which means cycle power on the unit. The second time you cycle power, while the unit is OFF, slide the SIOB card into position.

6.2.6 Backplane testing, using GE Control Systems Solutions Toolbox: If Toolbox is already open, check to make sure the Sim file for your particular unit is up already. If not, then open up another instance of Toolbox and open the file you need. You may be prompted for a password. If so, enter **gesalem9**. It will then bring up another window, basically asking for the privilege level you want, select **Change All Parameters**. Now power up the unit. Once it boots up, highlight **SIM5x** on the left side (5x being whatever Sim file you're working with), click on **Device**, then **Download**, and **Product Code**. When it's done, it will prompt you for a reboot. Click NO and then cycle power to the rack. Once unit has finished booting up again, click on the button in the upper toolbar that has a checkmark on it. The window below should ultimately reflect "**Validation complete with 0 errors & 0 warnings**". Next, click on the Build button, which has a hammer and ruler on it, and the lower window should display "**xx records with 0 errors-SUCCESS**" (xx records can be any number). Go online by clicking the button on the upper right of the toolbar with two mating yellow plugs. You should see a small window on the lower right side of the screen with *NO CODE*. Now go to the Download button, the one with the red arrow pointing downward, click OK, then look for the box that said *No Code* to turn green and display *Equal*. Look for the BACC led on the SIOB card to be lit, indicating backplane communications have been achieved. Now click on **Hardware and I/O Definitions**, **VME7: VME Interface**, and **SIOB1**. You should now see some sort of activity in the *Value* column indicating activity. It won't be much, because at this time we have no items connected to the card to indicate, but there will be a little drift in the voltages you see.

6.2.7 Clear Flash to Default: This is very important. The unit MUST be reset to factory default flash settings to prevent conflicts in the field, or possible corruption when the customer goes to set the unit up for their needs. Return to step 6.2.2 once again for this procedure.

Note: The technician, lead tech, or MSO determines burn-in requirement on an as-needed basis, or per customer request.

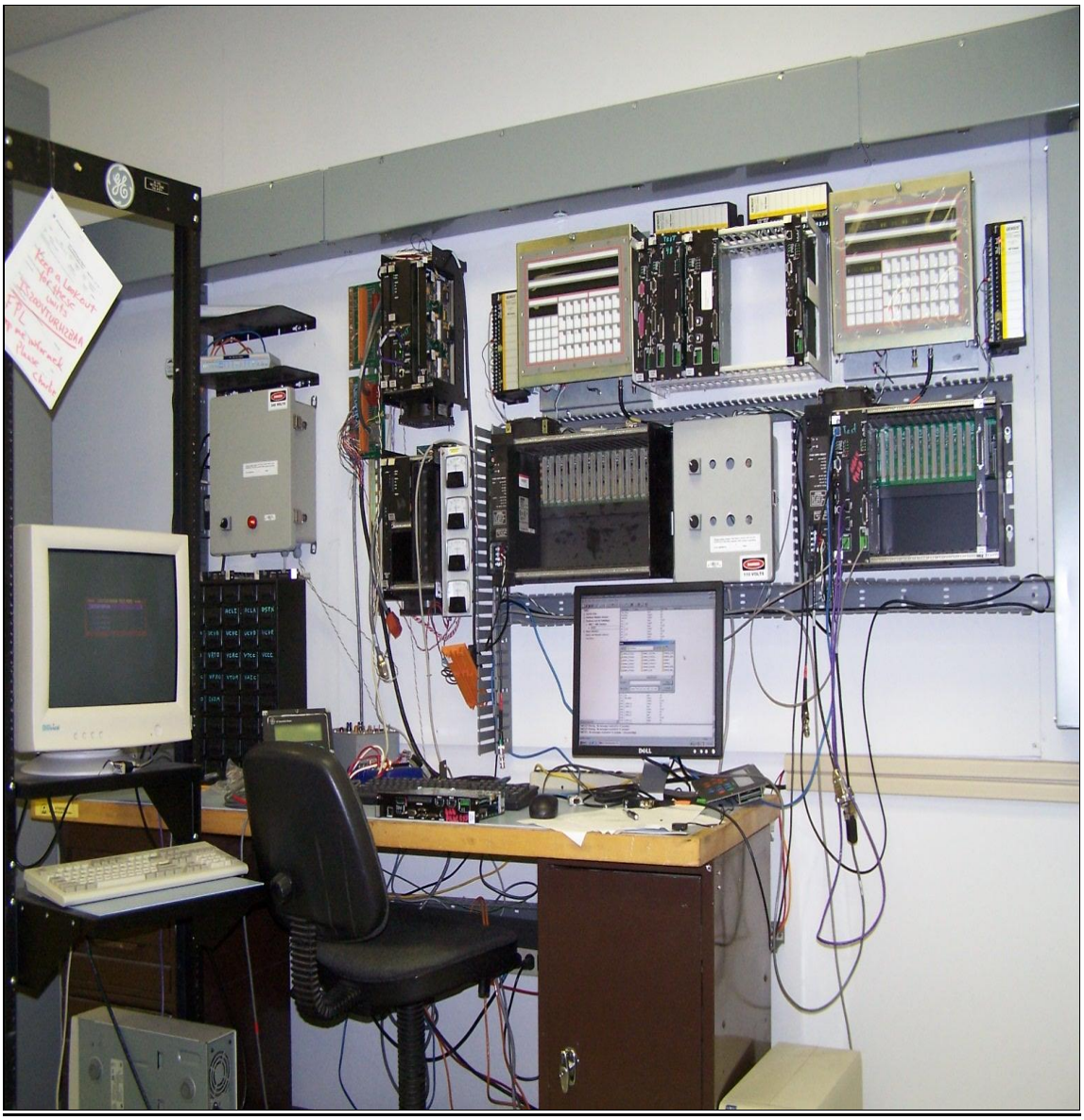
6.3 ***TEST COMPLETE ***

7. NOTES

7.1

8. ATTACHMENTS

8.1



UCVD test station, showing Roger test pc, Innovation pc, Genius modules, OC2000 panels, IP routers, and Innovation racks