



GE Energy

Functional Testing Specification

Parts & Repair Services
Louisville, KY

CAN-GEB-4006L5307

Test Procedure for a 4006L5307 card

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A	Initial release	Steve Pharris	7/26/13
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DATE 7/26/13	DATE	DATE	DATE 8/1/2013

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1. SCOPE

1.1 This is a functional testing procedure for a 4006L5307 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		Tenma Dual Power Supply
1		Rainbow Box
1		DS3800 Connector Box

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6. **Note: The Rev A version of this test is not a fully functional test due to equipment not on hand to test using a processor emulator. If you are reading this stop and get quality.**


7. **Testing Process**

7.1 **Setup**

- 7.1.1 Unless otherwise stated H and L are TTL High and Low logic levels
- 7.1.2 Connect Rainbow box to DS3800 connector box
- 7.1.3 Set power supplies for + and – 15VDC and 5VDC
- 7.1.4 Connect PA1 to PA9
- 7.1.5 Connect common from supplies and DMM to PA1
- 7.1.6 Connect +5VDC to PA3
- 7.1.7 Connect +15VDC to PA5
- 7.1.8 Connect -15VDC to PA7
- 7.1.9 Remove EEPROM from U3

7.2 **Testing Procedure**

- 7.2.1 Apply power
- 7.2.2 Verify 12Mhz @ U1 Pin 19 (Only works with processor installed)
- 7.2.3 Remove power
- 7.2.4 Remove processor at U1
- 7.2.5 Using a small jumper wire connect U1P10 to U1P11
- 7.2.6 Connect PA13 to SW81
- 7.2.7 Verify PA14 switches from +12VDC to -12VDC as SW81 is toggled
- 7.2.8 Remove small jumper from U1 socket
- 7.2.9 Connect U1P30 to SW82
- 7.2.10 Verify PA12 inversely follows SW82 **(Do this quickly. It sources a lot of current on the 5VDC line)**
- 7.2.11 Remove connections at PA13, SW81, and SW82
- 7.2.12 Connect PA11 to SW81
- 7.2.13 Verify U1P9 follows SW81
- 7.2.14 Remove PA11 to SW81 connection
- 7.2.15 Connect the following and set switches as instructed
 - PA15-SW81-H
 - PA16-SW82-L
 - PA17-SW83-H

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PA18-SW84-L

7.2.16 Verify the following:

U1P12 = H

U1P13 = L

U1P14 = H

U1P15 = L

7.2.17 Reverse SW81-SW84 and verify opposite state from previous step

7.2.18 Remove connections made in step **7.2.15**

7.2.19 Connect U1P28 to SW81

7.2.20 Verify U3P22 follows SW81

7.2.21 Verify U3P20 = L

7.2.22 Remove all connections from rainbow box EXCEPT POWER IN (PA1, PA3, PA5, PA7, and PA9)

7.2.23 Make the following connections and set switches as follows:

SW81-PA44-H

SW82-PA46-L

SW83-PA47-H

SW84-PA48-L

SW85-PA49-H

SW86-PA50-L

SW87-PA51-H

SW88-PA52-L

U3P10-SW94-L

U3P9-SW95-L

U3P8-SW96-L

U1P17-SW91-L

U1P16-SW92-H

U1P24-Tie H

7.2.24 Verify the following:


PA19=H

PA20=L

PA21=H

PA22=L

PA23=H

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PA24=L

PA25=H

PA26=L

7.2.25 Reverse SW81 thru SW88

7.2.26 Toggle SW92 L then H

7.2.27 Verify points listed in step **7.2.24** are reversed

7.2.28 MOVE ONLY THE FOLLOWING CONNECTIONS

PA44-PA53

PA46-PA54

PA47-PA55

PA48-PA56

PA49-PA57

PA50-PA58

PA51-PA59

PA52-PA60

7.2.29 Set SW94-H

7.2.30 Toggle SW92 L then H

7.2.31 Verify PA27-PA34 = L, H, L, H, L, H, L, H, respectively

7.2.32 Reverse SW81-SW88

7.2.33 Toggle SW92 L then H

7.2.34 Verify PA27-PA34 = H, L, H, L, H, L, H, L, respectively

7.2.35 MOVE ONLY THE FOLLOWING CONNECTIONS

PA53-PA61

PA54-PA62

PA55-PA63

PA56-PA64

PA57-PA65

PA58-PA66

PA59-PA67

PA60-PA68

7.2.36 Set SW94-L

7.2.37 Set SW95-H

7.2.38 Toggle SW92 L then H

7.2.39 Verify PA35-PA42 = H, L, H, L, H, L, H, L, respectively

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- 7.2.40** Reverse SW81-SW88
- 7.2.41** Toggle SW92 L then H
- 7.2.42** Verify PA35-PA42 = L, H, L, H, L, H, L, H, respectively
- 7.2.43** Set SW81 thru SW88 to L
- 7.2.44** Cycle +5VDC power
- 7.2.45** Verify all red LED's illuminate
- 7.2.46** Set SW81 thru SW88 to H
- 7.2.47** Cycle +5VDC power
- 7.2.48** Verify all red LED's are now off
- 7.2.49** Set SW81 thru SW88 L, H, L, H, L, H, L, H, respectively
- 7.2.50** Cycle +5VDC power
- 7.2.51** Verify LED's 1, 3, 5, and 7 are illuminated and all others are off
- 7.2.52** Reverse SW81-SW88
- 7.2.53** Cycle +5VDC power
- 7.2.54** Verify LED's 2, 4, 6, and 8 are illuminated and all others are off
- 7.2.55** Set SW95-L
- 7.2.56** Set SW81-H
- 7.2.57** Set SW96-H
- 7.2.58** Verify LED9 (Amber IMOK) is illuminated
- 7.2.59** Set SW96-L
- 7.2.60** Verify LED9 (Amber IMOK) is off
- 7.2.61** Check for +9.99VDC at PA2, PA4, PA6, and PA8

7.3 *TEST COMPLETE*****

8. Notes

- 8.1** None at this time.

9. Attachments

- 9.1** None at this time.