g GE Energy ***Parts & Repair Services*** ***Louisville, KY***	**Functional Testing Specification** **LOU-GED-DS3800NTRA**

Test Procedure for a DS3800NTRA

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	J. Wychulis	6/1/2009
B	Complete Rewrite of Procedure	Steve Pharris	11/03/09
C	Improved reliability of test	Steve Pharris	7/22/11
D	Eliminate redundancy and added cal steps for pots	Steve Pharris	6/18/2012
E	Added Note Step for earlier Rev boards	Steve Pharris	12/4/2012

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
J. Wychulis	Steve Pharris		Charlie Wade
DATE	**DATE**	**DATE**	**DATE**
6/1/2009	7/22/2011		6/1/2009

1. SCOPE

1.1 This is a functional testing procedure for a DS3800NTRA.

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		Rainbow box
1	H033767	DS3800 Connection Box
1	H033772	DS3800 Power Supply
1		Tenma Dual Power Supply
1	H188505	Fluke 5500A Calibrator
1		O-Scope
1		10K ohm Resistor

6. TESTING PROCESS

6.1 Setup

6.1.1 **NOTE: Unless otherwise stated (H) is a TTL High and (L) is a TTL Low**

6.1.2 Attach Daughter Card

6.1.3 Set daughter card up as follows

R26=10K

R27=47.5K

R107=82.5K

C17=2.74K

R115=82.5K

6.1.4 Set Pots on Daughter card as follows

R1=CW

R2=CCW

R3=CW

R4=CW

R5=CW

R6=Set to read 9.2K between DA16 and DA22

R7=CW

R8=CCW

R9=500 ohms from CW

R10=CW

R11=CCW

6.1.5 Set jumpers as follows

BJ9 towards DCOM

BJ10 towards DCOM

All other jumpers towards P5

6.1.6 Make the following connections

PA1-PA9

6.2 Testing Procedure

6.2.1 Apply power to UUT

6.2.2 Verify PA11=-15VDC

6.2.3 Verify PA12= 0VDC

6.2.4 Verify PA76= 2.3Mhz with O-Scope

6.2.5 Connect PA56-L

6.2.6 Connect PA22-H

6.2.7 Verify PA19=H

6.2.8 Remove PA56

6.2.9 Verify PA19=L

6.2.10 Move PA22-PA28

6.2.11 Connect PA64-L

6.2.12 Verify PA19=H

6.2.13 Remove PA64

6.2.14 Verify PA19=L

6.2.15 Move PA28-PA17

6.2.16 Verify PA18=L

6.2.17 Connect PA54-L

6.2.18 Verify PA18=H

6.2.19 Remove PA54

6.2.20 Remove PA17

6.2.21 (At this point the only jumper remaining should be PA1 to PA9)

6.2.22 Set PS1 for -10VDC and connect to PA36

6.2.23 Connect PA52-L

6.2.24 Adjust R13 for 10VDC at PA30

6.2.25 Connect PA72-L

6.2.26 Verify PA30=-10VDC

6.2.27 Move PA36-PA24

6.2.28 Connect PA72-H

6.2.29 Verify PA30=10VDC

6.2.30 Verify PA29=PA30

6.2.31 Connect PA54-L

6.2.32 Verify PA29=0VDC

6.2.33 Remove PA24

6.2.34 Verify infinite resistance from PA16-Com

6.2.35 Remove connection at PA54

6.2.36 Verify PA16-Com = 50 ohms +/- 15%

6.2.37 Reconnect PA54

6.2.38 Connect PA39 to 5VDC (PA3)

6.2.39 Verify PA37 and PA31 = 5VDC

6.2.40 Move PA39-PA40

6.2.41 Connect PA50-L

6.2.42 Verify PA32=5VDC

6.2.43 Move PA40-PA42

6.2.44 Verify PA38=4.5VDC

6.2.45 Verify PA34=5VDC

6.2.46 Remove PA54

6.2.47 Verify PA34=0VDC

6.2.48 Connect PA23 to PA1 through 10Kohm resistor

6.2.49 Verify PA23 approx. = 6VDC

6.2.50 Connect PA53-L

6.2.51 Verify PA23=0VDC

6.2.52 Remove PA23

6.2.53 Move PA53-PA54

6.2.54 Set PS2 for 10VDC and connect to PA4

6.2.55 Verify PA6 = -1.5VDC

6.2.56 Remove PA52

6.2.57 Verify PA6 = 1.5VDC

6.2.58 Move PA4-PA66

6.2.59 Verify PA57 = -10VDC

6.2.60 Move PA66-PA27

6.2.61 Verify PA26= -10VDC

6.2.62 Connect PA52-L

6.2.63 Apply 0VDC to PA4

6.2.64 Verify TP8=0V

6.2.65 Apply 10VDC to PA4

6.2.66 Adjust R14 for -10VDC at TP8

6.2.67 Apply -10VDC to PA4

6.2.68 Verify TP8=10VDC

6.2.69 Remove PA52

6.2.70 Verify TP8=-10VDC

6.2.71 Remove PA4

6.2.72 Connect the following points to Low PA59, PA58, PA51, and PA50

6.2.73 Remove PA54

6.2.74 Verify PA48=0VDC

6.2.75 Apply 10VDC to PA15

6.2.76 Verify PA48=-10VDC

6.2.77 Connect PA54-L

6.2.78 Connect PA51-H

6.2.79 Verify PA48=2.5VDC

6.2.80 Connect PA54-H

6.2.81 Verify PA48= -10VDC

6.2.82 Connect PA52-L

6.2.83 Connect PA72-SW81 and set to-H

6.2.84 Connect PA36-5VDC

6.2.85 Verify PA30= -5VDC

6.2.86 Set SW81-L

6.2.87 Verify PA30=5VDC

6.2.88 Set SW81-H

6.2.89 Verify PA24=0VDC

6.2.90 Set SW81-L

6.2.91 Verify PA24=5VDC

6.2.92 Set SW81-H

6.2.93 Connect PA46 to PA63

6.2.94 Verify PA46 = -7.5VDC

6.2.95 Verify OSB LED is on

6.2.96 Connect PA44-L

6.2.97 Verify OSB LED turns off

6.2.98 Verify PA68=L

6.2.99 Remove voltage at PA36

6.2.100 Verify ZS LED illuminates

6.2.101 Reconnect PA36-5VDC

6.2.102 Verify ZS LED turns off

6.2.103 Verify PA69=L

6.2.104 Connect PA76-PA74

6.2.105 Adjust R12 for 0VDC at PA2

6.2.106 Set BJ5, BJ7, and BJ8 to DCOM (on daughter card)

6.2.107 Apply 5V 1Khz sine wave to PA14 using fluke calibrator

6.2.108 Verify PA2= -11VDC. **(If fails move jumpers BJ1, BJ2, BJ3, and BJ4 on Daughter Card.)**

6.2.109 Connect PA31-L

6.2.110 Verify IMOK LED illuminates

6.2.111 Remove PA31

6.2.112 Verify IMOK LED remains illuminated

6.2.113 Seal all pots

6.3 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time.

8. ATTACHMENTS

8.1 None at this time.