Parts & Repair Services *Louisville, KY*	**Functional Testing Specification** **LOU-GED-DS3800NIFB**

Test Procedure for a

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PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
Jimmy Morgan			
DATE 3-8-2021	**DATE**	**DATE**	**DATE**

1. SCOPE

1.1 This is a functional testing procedure for a DS3800NIFB 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)
2		Tenma dc supply or similar
1		Function Generator
1		Rainbow box and DS3800 Breakout Box
1		Oscilloscope

6. Modifications/Upgrades

6.1 Fill out if applicable.

7. Testing Process

7.1 Setup

7.2 Numbers in brackets [] will refer to the rainbow box jacks.

7.2.1 Make the following connections to power the card.

7.2.1.1 +15v to [5] -15v to [7] Acom to 9.

7.2.1.2 +5 to [3] , Dcom(5v ground) to [1] GND to [65] (IMOK)

7.2.1.2.1 Card should be powered and the IMOK light should illuminate.

7.3 Testing Procedure

7.3.1 Pulse speed test

7.3.2 On Daughter card, set R5 to max CCW

7.3.2.1 Connect Function Generator + to [15] and ground to [9] then apply a 5v 3khz sine wave. You should be able to see a 4v negative square wave on Pin(3) of U5. And the positive half on Pin(2) of U8. The frequency of the outputs will follow the inputs from 3Khz to 8Khz

7.3.2.2 Connect second function generator + to [16] and ground to [1] and apply a 5v 3Khz square wave.

7.3.2.2.1 Using your multimeter Verify voltage at [38] is approx. 6.5Vdc.

7.3.2.2.2 Turn R5 on The daughter card CW until the overspeed led illuminates, this should occur around 9.6Vdc on the multimeter.

7.3.2.2.3 Turn R5 2 turns CCW then reset system power to reset the fault condition.

7.3.2.2.4 Measure [37] on the test box and adjust R1 on the daughter card, This verifies that the Speed meter Driver is functioning properly. The values are not important as each card will be different based on customer configuration, we are only looking for a change in output.

7.3.2.2.5 On the daughter card, turn R4 CCW until the overspeed illuminates, then turn it 2 turns CW and reset system power to clear the fault.

7.3.2.2.6 Verify the following in the LVSH and power applied reset. Use [1] for ground

7.3.2.2.6.1 [54] 5VDC , [34] < .7VDC , [66] 1.3VDC , [70] 5VDC

7.3.2.3 Line to Neutral Display test

7.3.2.3.1 Using [9] as ground, Apply a 5v sine wave to [22] and verify the output on [14] follows.

7.3.2.3.2 Repeat the previous step using [6] as an input.

7.3.2.4 Test Oscillator

7.3.2.4.1 Apply a ground [1] to pin [63].

7.3.2.4.2 With your o-scope referencing [1] as com, check TP1 on the top of the card for a 5v 60HZ sine wave.

7.3.2.4.3 Turn on SW1 and check for the same wave in the above step at [59,36,57,58,44,60,56,55,62,61]

7.3.2.4.4 Remove the ground from [63]

7.3.2.5 Ground detector test

7.3.2.5.1 Apply a 0v 60hz sine wave to [19] , ground to [9]

7.3.2.5.2 While monitoring [78] with a multimeter, increase the sine voltage to 2.5v, The output should jump from -5v to -7v

7.3.2.5.3 Repeat the above two steps using[23] as in input and [67] as the output

7.3.2.6 Differential Amplifier

7.3.2.6.1 Apply a 1Khz 5vp-p sine wave on [47] while monitoring [46] with the o-scope. The output should follow the input. Repeat this step using [51] as the input.

7.3.2.7 Signal Amplifier

7.3.2.7.1 Apply a 1khz 5v p-p sine wave on [2] while monitoring [39] as the output. The output should follow the input. Repeat this using [12] as the input.

7.3.2.8 Load Voltage Circuit

7.3.2.8.1 With a small voltage source apply 0vdc to [48] while monitoring [52] with your multimeter. Slowly increase the input voltage, around 1-2v the output should change to -4.5vdc

7.3.2.8.2 Repeat the above step using [4] as the input and [64] as the output.

7.3.2.8.3 Next, apply 0vdc to [68] and monitor [52].

7.3.2.8.4 Slowly increase voltage 1-2v until the output switches from -4.5vdc to -1vdc

7.3.2.8.5 Repeat the above 2 steps using [69] as the input and [64] as the output.

1.1 Post Testing Burn-in **Required** **___ Yes** **__x_ No**

1.2 ***TEST COMPLETE ***

2. Notes

2.1 None at this time?

3. Attachments

3.1 None at this time?