Test Procedure for a DS3800NTRB

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PREPARED BY JC Wychulis	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL Charlie Wade
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1. SCOPE

1.1 This is a functional testing procedure for a DS3800NPRB 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.

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		Signal Generator
1		Rainbow box
1	H033772	DS3800 P/S Box
1	H033767	DS3800 Connector Box
1		O-Scope
1		Multimeter

6. TESTING PROCESS

6.1 Setup

6.1.1 Hook together the Rainbow box, P/S Box, and the connector Box.

6.1.2 Connections:

39 to 6

13 to P15

12 to N15

33 to 18.2K Resistor to common

250 Ohm 3 Watt Resistor from common to PA60(60)

6.1.3 Daughter Board

R1 CCW	R2 CCW	R3 Adjust for –2 on TP2	R4 CCW
R5 CW	R6 CW	R7 CCW	R8 CCW
R9 CCW	R10 CW	R11 CW	R21 150K
R61 1K	R131 475K	R22, R134, C29 Jumper	C14 Open

6.2 Testing Procedure (Torque Modifiers)

Special Note: STABLE = < 100MV P-P ripple.

6.2.1 Apply 1V to PA23. TA24 should read –1V +- .02V and be stable. Be sure jumper is installed on J1 terminals 1 & 2.

6.2.2 Take PA70 to logic 1. PA24 should read 10V +- .05v and be stable. Be sure jumper is installed on J1 terminals 2 & 3. PA24 should read 1 V +- .05V and be stable.

6.2.3 Take PA70 to logic 0. PA24 should read -1V +- .03V and be stable. (Use scope to check stability).

6.2.4 Apply 0V to PA23. PA24 should read 0V +- .02V and stable.

6.2.5 Apply 5V +- .01V to PA2. Take PA80 to logic 0. PA62 should read –5V +- .02V and be stable.

6.2.6 Take PA80 to logic 1. PA62 should read 5V +- .02V and be stable. Apply 0V to PA2.

6.2.7 Apply 0V +- .0005V to PA14. Adjust 12 for 0V +- .01V on PA48.

6.2.8 Apply 10V +- .01V to PA14. PA48 should read –10V +- .02V and be stable. Apply 0V on PA14.

6.2.9 Connect PA30 and PA29 to common. Apply 5V +- .1V to PA28 and PA32. PA26 should read 2.5V +- .5V and be stable.

6.2.10 Apply –10V +- .1V to PA32. PA26 should read –5V +- .5V and be stable.

6.2.11 Apply –10V +- .1V to PA28. PA26 should read 10V +- .5V and be stable.

6.2.12 Apply 5V +- .1V to PA32. PA26 should read –5V +- .5V and be stable.

6.2.13 Apply 0V to PA28, PA29, PA30, and PA32.

6.3 Testing Procedure (Backup Tach)

6.3.1 Apply a square wave signal of 1KHz from –10 V to +10V (20V P-P) to PA22. Signal generator common to PA34. TA5 should be a pulse train at 1KHz between –15V and 4.5V +- .5V. TA17 should be a pulse train at 1KHz between 0V and 6.2V +- .5V. PA35 should be a pulse train at 1KHz between 0V and –5.0V +- 1V. Remove 1KHz signal from PA22.

6.3.2 Apply 0V +- .1V to PA22. Apply 5V +- .1V to TA17, momentarily take PA74 to common (reset with switch 1). OSA light will be off. NEQ light will be off. PA1 should be logic 0. TA8 should be logic 1. TA15 should be logic 1.

6.3.3 Apply 11V +- .1V to TA17. OSA light will be on. TA8 will be logic 0. PA71 will be logic 1

6.3.4 Apply 0V +- .1V to TA17. Apply -10V +- .1V to PA51. Apply –10V +- .1V to PA52. Momentarily close SW1 for at least 10 mSec and release. OSA and NEQ lights will be off. TA8 and TA15 should be logic 1. PA71 should be logic 0.

6.3.5 Apply –9.3V +- .1V to PA52. NEQ light will be on. TA15 should be logic 0. PA71 will be logic 1. Apply 0V to PA52 & PA51

6.4 Testing Procedure (Field Program)

6.4.1 Take PA64 to logic 1. Take PA69 to logic 0. Turn R13 on card completely CW. Apply 8.25V +- .02V to PA49. TA28 should read –10V +- .2V and be stable.

6.4.2 Take PA69 to logic 1. TA28 should read 0V +- .5V and be stable.

6.4.3 Apply 0V +- .1V to PA49. Apply 12.1V +- .1V to PA53. TA28 should read –10V +- .2V and be stable. TA27 should read 9.5V +- .5V and be stable.

6.4.4 Take PA64 to logic 0. TA28 should read 0V +- .5V and be stable.

6.4.5 Apply 0V +- .1V to PA53. Take PA76 to logic 1. TA6 should read –1.86 +- .2V and be stable.

6.4.6 Take PA76 to logic 0. TA6 should read –1.45 +- .1V and be stable. TA27 should read .98 +- .2V and be stable.

6.4.7 Apply –5V +-.1V to PA46. TA27 should read 4.5V +- .3V and be stable. PA40 should read 4.2V +- .4V and be stable.

6.4.8 Apply –10V +- .1V to PA46. PA40 should read 2V +- .3V and be stable.

6.4.9 Apply –8V +- .1V to PA46. TA20 should read 3.18 +- .3V and be stable.

6.4.10 Take PA78 to logic 0 and PA76 to logic 1. PA15 should read –2.7V +- .1V and be stable.

6.4.11 Apply –12V +- .1V to PA46. TA20 should read 0V +- .7V and be stable. PA15 should read -.85 +- .1V and be stable.

6.4.12 Apply –2V +- .1V to PA21. TA25 should be logic 1. PA72 should be logic 0. TA1 should be logic 1. FL light should be out. TA23 should read –15V +- .1V. PA60 should read 0V +- .1V.

6.4.13 Apply 1V +- .1V to PA21. TA25 should read –15V +- 1V. PA72 should be logic 1. TA1 should be logic 0 and FL lamp is "ON". TA23 should read +.6 +- .2V.

6.4.14 Apply 0V +- .05V to PA21. TA23 should read 1V +- .1V. PA60 should read 28V +-2V. Apply 0V to PA2.

6.5 Testing Procedure (Voltage Limit and Field Current Reg)

6.5.1 Apply –5V +- .1V to PA4. Apply 0V +- .1V to PA50. TA14 should read 5V +- .2V and be stable. TA13 should read 0V +- .6V

6.5.2 Apply –6V +- .1V to PA4. TA13 should read –6.4V +- .4V and be stable.

6.5.3 Apply –10V +- .1V to PA50. TA13 should read 0V +-.6V.

6.5.4 Apply 0V +- .1V to PA4. Apply 0V +- .1V to PA50. Apply –12.5V +- .1V to PA16. Take PA76 to logic 0. PA15 should read 0V +- .5V and be stable.

6.5.5 Apply 0V +- .1V to PA16. Apply –12.5V +- .1V to PA21. PA15 should read 0V +-.5V and be stable.

6.5.6 Apply 5V +- .1V to PA8. Apply 0V +- .1V to PA44. PA47 should read –5V +- .3V and be stable.

6.5.7 Apply 2V +- .1V to PA44. PA47 should read –3V +- .3V and be stable. Apply 0V to PA50, PA21, PA8, and PA44.

6.6 Testing Procedure (Torque Reference Switch)

6.6.1 Check logic inputs and analog outputs per Table below.

Logic Inputs			Analog Output
PA69	PA64	PA68	PA33
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	-7.5V +- .2V
1	0	1	7.5V +- .2V
1	1	0	0
1	1	1	0

0 = Logic level 0.

1 = Logic level 1.

6.6.2 After verifying the above table remove logic inputs to PA69, PA64, & PA68.

6.7 Testing Procedure (Zero Error and Saturation Detectors)

6.7.1 Apply 0V +- .1V to PA42. TA7 should read 5V +- 1V. PA67 and TA3 should be logic 0. OM lamp should be on.

6.7.2 Apply 7V +- .1V to PA42. TA7 should read –15V +- 1V. PA67 and TA3 should be logic 1. OM lamp should be out.

6.7.3 Apply -.7V +- .1V to PA42. TA7 should read –15V +- 1V. PA67 and TA3 should be logic 1. OM lamp should be out.

6.7.4 Apply 0V +- .1V to PA66. PA67 and TA3 should be logic 1. OM lamp should be out. Apply 0V to PA42.

6.7.5 Apply 11.5V +- .1V to TA11 and 0V to PA2. TA21 should read –15V +- 1V. IMOK light should be off.

6.7.6 Apply 0V +- .1V to TA11. Apply –11.5V +- .1V to TA22. TA21 should read –15V +- 1V. IMOK light should be off.

6.7.7 Apply 0V +- .1V to TA22. TA21 should read –14V +- 1V. IMOK light should be on. Remove all power and seal pots R12 and R13.

*6.8 ***TEST COMPLETE ***

7. NOTES

7.1 None

8. ATTACHMENTS

8.1 None