

**FCC PART 15 SUBPART B and C
TEST REPORT***for***NODE TRANSCEIVER****MODEL: PRN-1000**

Prepared for

BRAYDEN AUTOMATION CORPORATION
6230 AVIATION CIRCLE
LOVELAND, COLORADO 80538Prepared by: 

KYLE FUJIMOTO

Approved by: 

JAMES ROSS

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: MAY 4, 2013

	REPORT BODY	APPENDICES					TOTAL
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GENERAL REPORT SUMMARY

Compatible Electronics Inc. generates this electromagnetic emission test report, which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested: Node Transceiver
Model: PRN-1000
S/N: N/A

Product Description: See Expository Statement

Modifications: The EUT was not modified in order to meet the specifications.

Customer: Brayden Automation Corporation
6230 Aviation Circle
Loveland, Colorado 80538

Test Date(s): April 15 and 18, 2013

Test Specifications: Emissions requirements
CFR Title 47, Part 15, Subpart B and Subpart C, Sections 15.205, 15.209, and 15.249

Test Procedure: ANSI C63.4

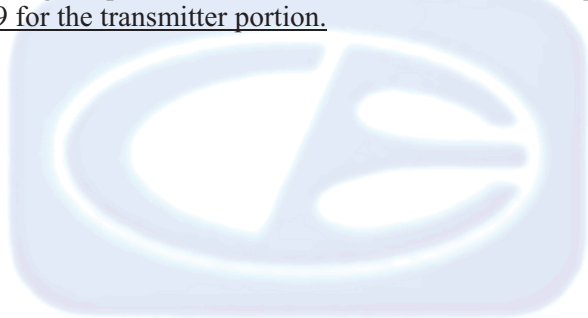
Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions 150 kHz to 30 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.249.
2	Radiated RF Emissions 10 kHz to 9300 MHz (Transmitter and Digital Portion)	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Node Transceiver, Model: PRN-1000 (EUT). The Emissions measurements were performed according to the measurement procedure described in ANSI C63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B for the digital portion; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249 for the transmitter portion.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The Emissions tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Brayden Automation Corporation

William H. Brayden President

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer

James Ross Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to the initial test date of April 15, 2013.

2.5 Disposition of the Test Sample

The test sample has not been returned to Brayden Automation Corporation as of the date of the test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

FCC	Federal Communications Commission
RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
ITE	Information Technology Equipment
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
N/A	Not Applicable
Ltd.	Limited
Inc.	Incorporated
NCR	No Calibration Required

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this Emissions Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4: 2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The Node Transceiver, Model: PRN-1000 (EUT) was mounted vertically and connected to a node main board. The node main board was also connected to a 4 push button LED PCB. The EUT was continuously transmitting and receiving.

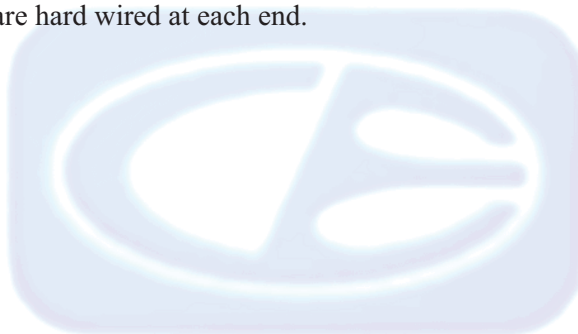
The EUT is DC powered, however it gets its power from the node main board which can be connected to the AC public mains.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The final emissions data was taken in this mode of operation and any cables were maximized. All initial investigations were performed with the measurement receiver in manual mode scanning the frequency range continuously. Photographs of the test setup are in Appendix D of this report.

4.1.1 Cable Construction and Termination

Cable 1 This is a 1-meter shielded cable connecting the TB2 port of the node main board to the EUT. The cable is hard wired at each end. The cable was bundled to a length of 40-centimeters.

Cables 2-5 These are 3-centimeter unshielded cables connecting the node main board to the four push button PCB. The cables are hard wired at each end.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
NODE TRANSCEIVER (EUT)	BRAYDEN AUTOMATION CORPORATION	PRN-1000	N/A	TITPRN-1000
HUB MAIN BOARD	BRAYDEN AUTOMATION CORPORATION	PRN-1	N/A	N/A
4 PUSH BUTTON LED PCB	BRAYDEN AUTOMATION CORPORATION	N/A	N/A	N/A

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED IN LAB B					
Computer	Compaq	CQ5210F	CNX9360CF9	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MD	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	November 19, 2012	2 Years
GENERAL TEST EQUIPMENT USED IN LAB D					
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MG	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8568B	2517A01563	May 30, 2012	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A15285	May 30, 2012	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	May 30, 2012	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
Biconical Antenna	Com Power	AB-900	43028	May 24, 2012	1 Year
Log Periodic Antenna	Com Power	AL-100	16252	May 24, 2012	1 Year
Preamplifier	Com-Power	CPPA-102	1017	December 27, 2012	1 Year
Preamplifier	Com-Power	PA-118	181656	December 28, 2012	1 Year
Loop Antenna	Com-Power	AL-130	17089	January 29, 2013	2 Years
Horn Antenna	Com-Power	AH-118	071175	February 29, 2012	2 Years
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
LISN (EUT)	Com Power	LI-215	12078	June 20, 2011	2 Years
LISN (Accessory)	Com Power	LI-215	12076	June 20, 2011	2 Years
Transient Limiter	Seward	252A910	1	November 7, 2012	1 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1.2 of this report for Emissions test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature, and barometric pressure.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The measurement receiver was used as a measuring meter. The data was collected with the measurement receiver in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the measurement receiver's input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the measurement receiver. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

The EUT (via the PRN-1) complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.207, 15.209 and 15.249.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer, along with the quasi-peak adapter, and EMI Receiver were used as a measuring meter. Amplifiers were used to increase the sensitivity of the instrument. The Com-Power Preamplifier Model: CPPA-102 was used for frequencies from 30 MHz to 1 GHz, the Com-Power Microwave Preamplifier Model: PA-118 was used for frequencies from 1 GHz to 9.3 GHz. The spectrum analyzer and EMI Receiver were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer and EMI receiver records the highest measured reading over the sweeps.

The quasi-peak function was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the spectrum analyzer to keep the amplitude reading calibrated.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antennas

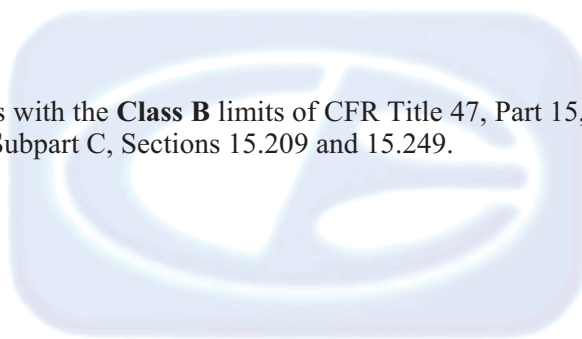
The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gun sight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the vertical axis in order to ensure accurate results.

Radiated Emissions (Spurious and Harmonics) Test (continued)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3-meter test distance from 30 MHz to 9.3 GHz and at a 10-meter distance from 10 kHz to 30 MHz to obtain the final test data.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.249.



7.1.3 RF Emissions Test Results

Table 1.0 CONDUCTED EMISSION RESULTS
Node Transceiver, Model: PRN-1000

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
0.637 (WL) (Rx Mode)	40.64	46.00	-5.36
0.637 (WL) (Tx Mode)	40.24	46.00	-5.76
0.637 (BL) (Rx Mode)	39.88	46.00	-6.12
0.641 (BL) (Tx Mode)	38.28	46.00	-7.72
0.532 (WL) (Rx Mode)	37.12	46.00	-8.88
1.106 (WL) (Tx Mode)	36.67	46.00	-9.33

Table 2.0 RADIATED EMISSION RESULTS
Node Transceiver, Model: PRN-1000

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
921.37 (V)	93.92 (QP)	94	-0.08
912.37 (V)	93.89 (QP)	94	-0.11
903.37 (V)	93.86 (QP)	94	-0.14
912.37 (H)	89.04 (QP)	94	-4.96
903.37 (H)	87.97 (QP)	94	-6.03
921.37 (H)	85.28 (QP)	94	-8.72

Notes:

- * The complete emissions data is given in Appendix E of this report.
- (BL) Black Lead
- (WL) White Lead
- (H) Horizontal
- (V) Vertical
- (QP) Quasi-Peak

8. CONCLUSIONS

The Node Transceiver, Model: PRN-1000 (EUT), as tested, meets all of the Class B specification limits defined in CFR Title 47, Part 15, Subpart B for the digital portion; and the limits defined in Subpart C, sections 15.205, 15.209, and 15.249 for the transmitter portion.



APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP LAB CODES 200063-0,
200528-0, 200527-0

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025. Please follow the link to the NIST/NVLAP site for each of our facilities' NVLAP certificate and scope of accreditation

NVLAP listing links[Agoura Division](#) / [Brea Division](#) / [Silverado/Lake Forest Division](#)

.Quote from ISO-ILAC-IAF Communiqué on 17025:

"A laboratory's fulfillment of the requirements of ISO/IEC 17025:2005 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

**ANSI listing** [CETCB](#)

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).

US/EU MRA list [NIST MRA site](#)

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

APEC MRA list [NIST MRA site](#)

We are also listed for IT products by the following country/agency:

**VCCI Support member:** Please visit http://www.vcci.jp/vcci_e/**FCC Listing, from FCC OET site**[FCC test lab search](https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm) <https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>

Compatible Electronics IC listing can be found at:

<http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home>

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 and/or FCC **Class B** specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.



APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Node Transceiver
Model: PRN-1000
S/N: N/A

ALSO APPROVED UNDER THIS REPORT:

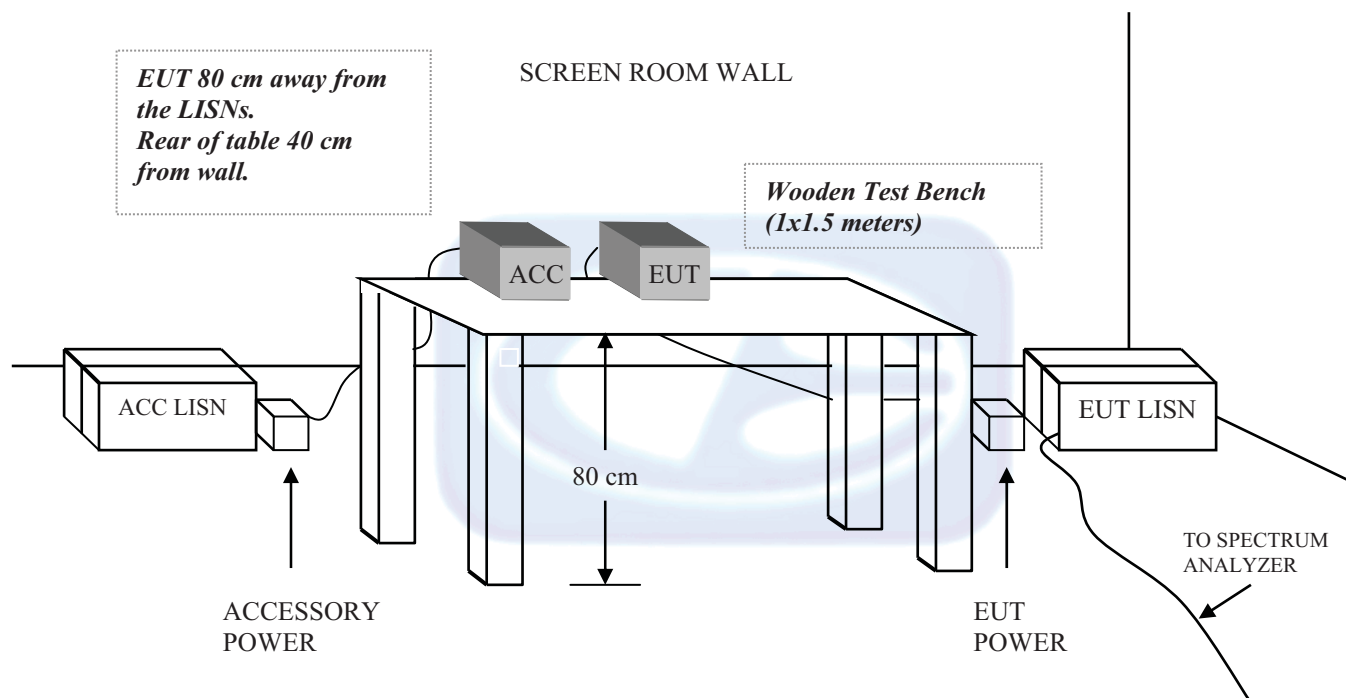
There were no additional models covered under this report.



APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP



COM-POWER AL-130**LOOP ANTENNA**

S/N: 17089

CALIBRATION DATE: JANUARY 29, 2013

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-42.5	9
0.01	-42.3	9.2
0.02	-42.1	9.4
0.03	-41.4	10.1
0.04	-41.8	9.7
0.05	-42.4	9.1
0.06	-42.3	9.2
0.07	-42.5	9
0.08	-42.4	9.1
0.09	-42.5	9
0.1	-42.5	9
0.2	-42.7	8.8
0.3	-42.6	8.9
0.4	-42.5	9
0.5	-42.7	8.8
0.6	-42.7	8.8
0.7	-42.5	9
0.8	-42.3	9.2
0.9	-42.2	9.3
1	-42.2	9.3
2	-41.8	9.7
3	-41.7	9.8
4	-41.7	9.8
5	-41.5	10
6	-41.6	9.9
7	-41.4	10.1
8	-41	10.5
9	-40.8	10.7
10	-41.3	10.2
15	-41.4	10.1
20	-41.2	10.3
25	-42.6	8.9
30	-41.7	9.8

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 43028

CALIBRATION DATE: MAY 24, 2012

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.80	120	13.20
35	11.20	125	13.30
40	11.90	140	11.60
45	10.70	150	11.80
50	11.40	160	12.70
60	10.30	175	14.80
70	7.60	180	15.70
80	5.70	200	15.80
90	7.90	250	14.80
100	10.70	300	19.80

COM-POWER AL-100**LOG PERIODIC ANTENNA****S/N: 16252****CALIBRATION DATE: MAY 24, 2012**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.00	700	20.30
350	13.20	750	20.80
400	14.50	800	21.00
450	15.40	850	23.30
500	15.80	900	21.70
550	16.60	950	24.20
600	18.90	1000	24.30
650	19.10		

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: FEBRUARY 29, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.6	10.0	37.7
1.5	22.0	10.5	38.4
2.0	28.7	11.0	38.0
2.5	29.3	11.5	38.2
3.0	30.6	12.0	39.0
3.5	30.4	12.5	42.4
4.0	31.1	13.0	40.8
4.5	33.4	13.5	40.0
5.0	35.3	14.0	39.7
5.5	35.1	14.5	43.5
6.0	36.9	15.0	42.7
6.5	37.4	15.5	39.7
7.0	37.6	16.0	39.2
7.5	36.2	16.5	39.7
8.0	38.4	17.0	42.2
8.5	39.3	17.5	47.6
9.0	37.4	18.0	51.2
9.5	38.0		

COM-POWER CPPA-102**PREAMPLIFIER****S/N: 1017****CALIBRATION DATE: DECEMEBER 27, 2012**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1	36.9	225	38.14
3	38.1	250	38.15
5	38.1	275	38.14
8	38.2	300	38.18
10	38.3	350	38.22
20	38.2	400	38.26
30	38.3	450	37.53
40	38.2	500	38.24
50	38.5	550	38.53
60	38.5	600	38.69
70	38.4	650	38.66
80	38.4	700	38.58
90	38.5	750	38.37
100	38.4	800	38.23
125	38.6	850	37.68
150	38.4	900	37.38
175	38.5	950	36.82
200	38.5	1000	36.14

COM-POWER PA-118**PREAMPLIFIER****S/N: 181656****CALIBRATION DATE: DECEMBER 28, 2012**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.68	6.0	25.75
1.1	25.08	6.5	25.28
1.2	25.70	7.0	24.83
1.3	25.98	7.5	24.49
1.4	26.11	8.0	24.38
1.5	26.23	8.5	25.06
1.6	26.34	9.0	25.55
1.7	26.39	9.5	25.32
1.8	26.44	10.0	25.25
1.9	26.45	11.0	24.99
2.0	26.48	12.0	25.08
2.5	26.59	13.0	24.44
3.0	26.67	14.0	25.02
3.5	26.66	15.0	26.12
4.0	26.82	16.0	25.67
4.5	26.46	17.0	24.33
5.0	26.22	18.0	26.75
5.5	25.98		



FRONT VIEW

BRAYDEN AUTOMATION CORPORATION
NODE TRANSCEIVER
MODEL: PRN-1000
FCC SUBPART B AND C – RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400



REAR VIEW

BRAYDEN AUTOMATION CORPORATION
NODE TRANSCEIVER
MODEL: PRN-1000
FCC SUBPART B AND C – RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

BRAYDEN AUTOMATION CORPORATION
NODE TRANSCEIVER
MODEL: PRN-1000
FCC SUBPART B AND C – CONDUCTED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

**BRAYDEN AUTOMATION CORPORATION
NODE TRANSCEIVER
MODEL: PRN-1000
FCC SUBPART B AND C – CONDUCTED EMISSIONS**

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249

Brayden Automation Corporation
Node Transceiver
Model: PRN-1000

Date: 04/15/2013
Lab: D
Tested By: Kyle Fujimoto

Low Channel - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
903.37	94.49	V	94	0.49	Peak	1	90	
903.37	93.86	V	94	-0.14	QP	1	90	
1806.74	40.81	V	74	-33.19	Peak	1.25	225	
1806.74	34.17	V	54	-19.83	Avg	1.25	225	
2710.11	39.49	V	74	-34.51	Peak	1.35	235	
2710.11	28.91	V	54	-25.09	Avg	1.35	235	
3613.48	41.27	V	74	-32.73	Peak	1.25	245	
3613.48	29.25	V	54	-24.75	Avg	1.25	245	
4516.85	44.53	V	74	-29.47	Peak	1.35	255	
4516.85	32.71	V	54	-21.29	Avg	1.35	255	
5420.22	49.03	V	74	-24.97	Peak	1.25	165	
5420.22	36.27	V	54	-17.73	Avg	1.25	165	
6323.59	52.15	V	74	-21.85	Peak	1.35	175	
6323.59	41.07	V	54	-12.93	Avg	1.35	175	
7226.96	53.61	V	74	-20.39	Peak	1.45	185	
7226.96	41.67	V	54	-12.33	Avg	1.45	185	
8130.33	56.02	V	74	-17.98	Peak	1.55	165	
8130.33	45.49	V	54	-8.51	Avg	1.55	165	
9033.7	48.04	V	74	-25.96	Peak	1.65	175	
9033.7	37.59	V	54	-16.41	Avg	1.65	175	

FCC 15.249

Brayden Automation Corporation
Node Transceiver
Model: PRN-1000

Date: 04/15/2013
Lab: D
Tested By: Kyle Fujimoto

Low Channel - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
903.37	88.54	H	94	-5.46	Peak	1	90	
903.37	87.97	H	94	-6.03	QP	1	90	
1806.74	35.76	H	74	-38.24	Peak	1.25	90	
1806.74	24.61	H	54	-29.39	Avg	1.25	90	
2710.11	44.31	H	74	-29.69	Peak	1.25	45	
2710.11	28.31	H	54	-25.69	Avg	1.25	45	
3613.48	41.42	H	74	-32.58	Peak	1.45	90	
3613.48	29.77	H	54	-24.23	Avg	1.45	90	
4516.85	46.18	H	74	-27.82	Peak	1.35	135	
4516.85	35.07	H	54	-18.93	Avg	1.35	135	
5420.22	48.59	H	74	-25.41	Peak	1.25	145	
5420.22	36.38	H	54	-17.62	Avg	1.25	145	
6323.59	53.82	H	74	-20.18	Peak	1.35	155	
6323.59	41.25	H	54	-12.75	Avg	1.35	155	
7226.96	54.31	H	74	-19.69	Peak	1.25	165	
7226.96	43.67	H	54	-10.33	Avg	1.25	165	
8130.33	51.07	H	74	-22.93	Peak	1.15	175	
8130.33	37.87	H	54	-16.13	Avg	1.15	175	
9033.7	49.05	H	74	-24.95	Peak	1.25	135	
9033.7	37.89	H	54	-16.11	Avg	1.25	135	

FCC 15.249

Brayden Automation Corporation
Node Transceiver
Model: PRN-1000

Date: 04/15/2013
Lab: D
Tested By: Kyle Fujimoto

Middle Channel - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
912.37	94.52	V	94	0.52	Peak	1	90	
912.37	93.89	V	94	-0.11	QP	1	90	
1824.74	36.23	V	74	-37.77	Peak	1	150	
1824.74	27.15	V	54	-26.85	Avg	1	150	
2737.11	37.73	V	74	-36.27	Peak	1.25	165	
2737.11	25.51	V	54	-28.49	Avg	1.25	165	
3649.48	40.66	V	74	-33.34	Peak	1.35	175	
3649.48	25.33	V	54	-28.67	Avg	1.35	175	
4561.85	43.46	V	74	-30.54	Peak	1.25	225	
4561.85	29.26	V	54	-24.74	Avg	1.25	225	
5474.22	42.55	V	74	-31.45	Peak	1.35	165	
5474.22	30.71	V	54	-23.29	Avg	1.35	165	
6386.59	46.41	V	74	-27.59	Peak	1.25	175	
6386.59	34.29	V	54	-19.71	Avg	1.25	175	
7298.96	45.74	V	74	-28.26	Peak	1.35	185	
7298.96	33.91	V	54	-20.09	Avg	1.35	185	
8211.33	51.31	V	74	-22.69	Peak	1.25	165	
8211.33	38.21	V	54	-15.79	Avg	1.25	165	
9123.7	49.74	V	74	-24.26	Peak	1.15	175	
9123.7	38.04	V	54	-15.96	Avg	1.15	175	

FCC 15.249

Brayden Automation Corporation
Node Transceiver
Model: PRN-1000

Date: 04/15/2013
Lab: D
Tested By: Kyle Fujimoto

Middle Channel - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
912.37	89.41	H	94	-4.59	Peak	1	90	
912.37	89.04	H	94	-4.96	QP	1	90	
1824.74	30.61	H	74	-43.39	Peak	1.25	135	
1824.74	20.12	H	54	-33.88	Avg	1.25	135	
2737.11	42.79	H	74	-31.21	Peak	1.35	145	
2737.11	37.38	H	54	-16.62	Avg	1.35	145	
3649.48	38.37	H	74	-35.63	Peak	1.25	165	
3649.48	25.92	H	54	-28.08	Avg	1.25	165	
4561.85	45.08	H	74	-28.92	Peak	1.35	175	
4561.85	30.36	H	54	-23.64	Avg	1.35	175	
5474.22	42.68	H	74	-31.32	Peak	1.45	185	
5474.22	30.74	H	54	-23.26	Avg	1.45	185	
6386.59	45.71	H	74	-28.29	Peak	1.35	195	
6386.59	34.47	H	54	-19.53	Avg	1.35	195	
7298.96	46.13	H	74	-27.87	Peak	1.45	215	
7298.96	34.06	H	54	-19.94	Avg	1.45	215	
8211.33	50.05	H	74	-23.95	Peak	1.55	235	
8211.33	38.15	H	54	-15.85	Avg	1.55	235	
9123.7	50.71	H	74	-23.29	Peak	1.45	225	
9123.7	38.33	H	54	-15.67	Avg	1.45	225	

FCC 15.249

Brayden Automation Corporation
Node Transceiver
Model: PRN-1000

Date: 04/15/2013
Lab: D
Tested By: Kyle Fujimoto

High Channel - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
921.37	94.68	V	94	0.68	Peak	1	90	
921.37	93.92	V	94	-0.08	QP	1	90	
1842.74	34.39	V	74	-39.61	Peak	1.25	135	
1842.74	20.74	V	54	-33.26	Avg	1.25	135	
2764.11	41.39	V	74	-32.61	Peak	1.35	145	
2764.11	29.35	V	54	-24.65	Avg	1.35	145	
3685.48	41.01	V	74	-32.99	Peak	1.25	165	
3685.48	29.93	V	54	-24.07	Avg	1.25	165	
4606.85	46.19	V	74	-27.81	Peak	1.35	175	
4606.85	33.44	V	54	-20.56	Avg	1.35	175	
5528.22	47.01	V	74	-26.99	Peak	1.25	185	
5528.22	37.14	V	54	-16.86	Avg	1.25	185	
6449.59	53.11	V	74	-20.89	Peak	1.35	165	
6449.59	41.74	V	54	-12.26	Avg	1.35	165	
7370.96	54.05	V	74	-19.95	Peak	1.45	175	
7370.96	41.71	V	54	-12.29	Avg	1.45	175	
8292.33	47.77	V	74	-26.23	Peak	1.65	185	
8292.33	37.98	V	54	-16.02	Avg	1.65	185	
9213.7	50.22	V	74	-23.78	Peak	1.45	175	
9213.7	38.06	V	54	-15.94	Avg	1.45	175	

FCC 15.249

Brayden Automation Corporation
Node Transceiver
Model: PRN-1000

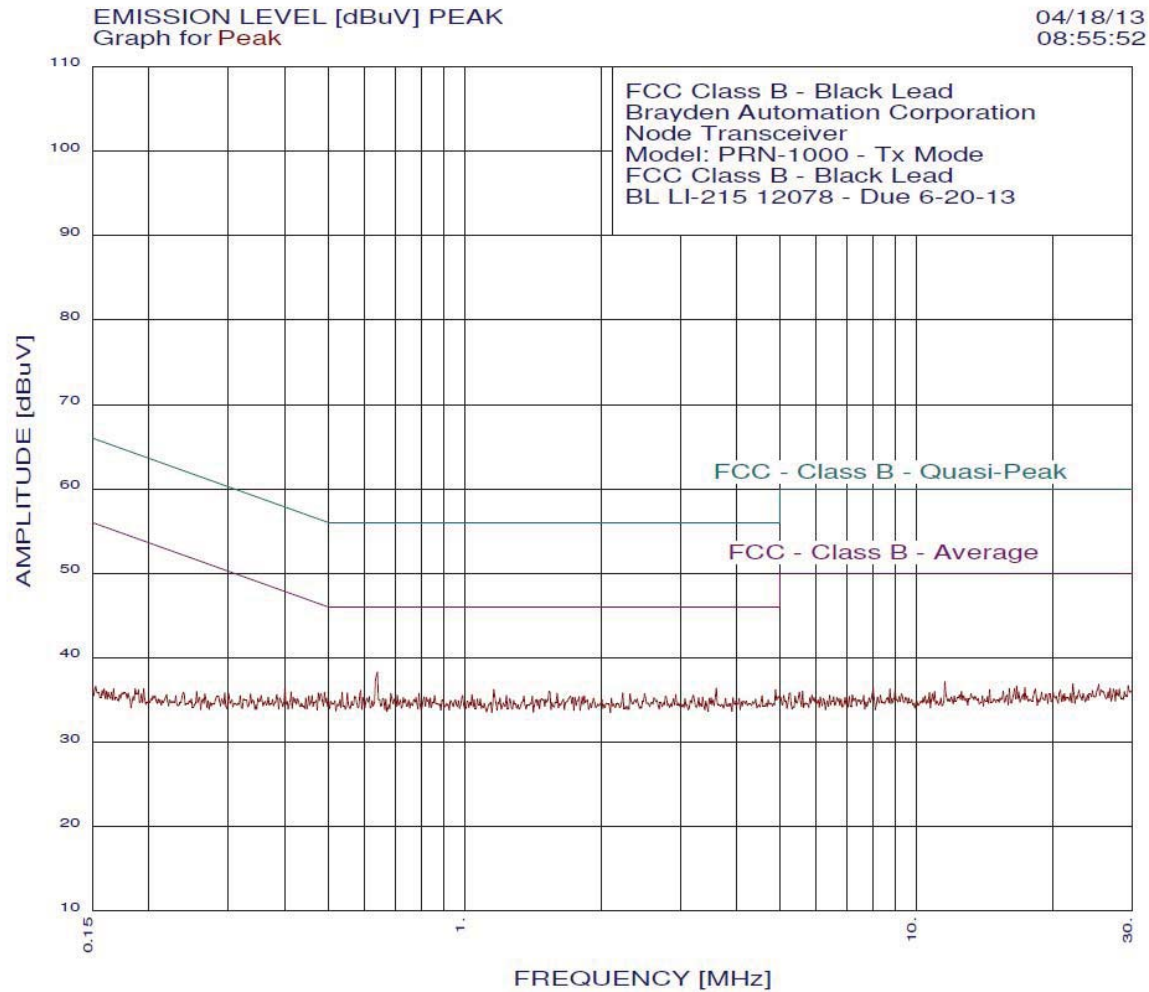
Date: 04/15/2013
Lab: D
Tested By: Kyle Fujimoto

High Channel - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
921.37	85.98	H	94	-8.02	Peak	1	90	
921.37	85.28	H	94	-8.72	QP	1	90	
1842.74	32.41	H	74	-41.59	Peak	1.25	135	
1842.74	20.49	H	54	-33.51	Avg	1.25	135	
2764.11	38.63	H	74	-35.37	Peak	1.35	145	
2764.11	24.86	H	54	-29.14	Avg	1.35	145	
3685.48	37.78	H	74	-36.22	Peak	1.25	165	
3685.48	26.77	H	54	-27.23	Avg	1.25	165	
4606.85	44.93	H	74	-29.07	Peak	1.35	175	
4606.85	34.92	H	54	-19.08	Avg	1.35	175	
5528.22	42.91	H	74	-31.09	Peak	1.45	185	
5528.22	31.88	H	54	-22.12	Avg	1.45	185	
6449.59	46.77	H	74	-27.23	Peak	1.55	165	
6449.59	34.61	H	54	-19.39	Avg	1.55	165	
7370.96	46.63	H	74	-27.37	Peak	1.65	175	
7370.96	34.11	H	54	-19.89	Avg	1.65	175	
8292.33	49.73	H	74	-24.27	Peak	1.75	155	
8292.33	37.82	H	54	-16.18	Avg	1.75	155	
9213.7	49.21	H	74	-24.79	Peak	1.85	145	
9213.7	37.68	H	54	-16.32	Avg	1.85	145	

Test Location : Compatible Electronics **Page** : 1/1
Customer : Brayden Automation Corporation **Date** : 04 / 17 / 2013
Manufacturer : Brayden Automation Corporation **Time** : 02:42:21 PM
Eut name : Node Transceiver **Lab** : D
Model : PRN-1000 **Test Distance** : 3.00
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : Spurious Emissions - 10 kHz to 1 GHz - Tx and Rx Modes
Polarity: Horizontal and Vertical
Clock(s): 16 MHz
Test Engineer: Kyle Fujimoto

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
1V	48.002	50.00	0.74	11.12	38.44	23.42	40.00	-16.58
2V	60.008	39.20	0.60	10.30	38.50	11.60	40.00	-28.40
3H	80.012	39.30	0.80	5.70	38.40	7.40	40.00	-32.60
4V	112.008	35.50	1.05	12.20	38.50	10.25	43.50	-33.25
5H	144.012	34.20	1.25	11.68	38.45	8.68	43.50	-34.82
6V	192.008	37.30	1.40	15.76	38.50	15.96	43.50	-27.54
7H	240.036	38.20	1.62	15.00	38.15	16.67	46.00	-29.33
8V	430.788	35.00	2.30	15.05	37.81	14.54	46.00	-31.46
9V	526.798	37.10	2.80	16.23	38.40	17.73	46.00	-28.27
10V	539.486	38.40	2.80	16.43	38.47	19.16	46.00	-26.84
11V	567.214	34.60	2.90	17.39	38.59	16.31	46.00	-29.69



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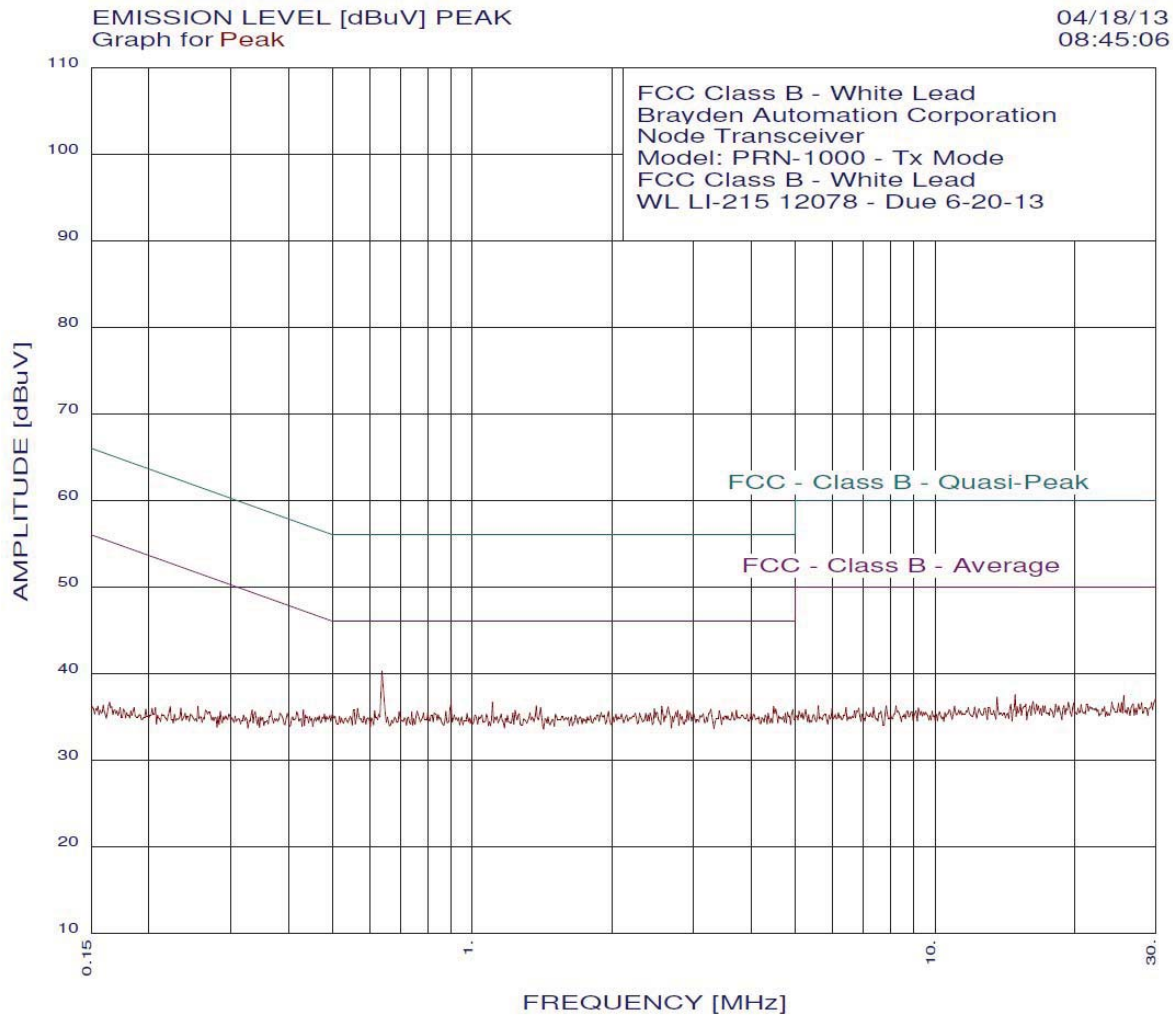
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FCC Class B - Black Lead
Brayden Automation Corporation
Node Transceiver
Model: PRN-1000 - Tx Mode
FCC Class B - Black Lead
BL LI-215 12078 - Due 6-20-13
Test Engineer : Kyle Fujimoto

39 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.641	38.28	46.00	-7.72
2	3.605	36.35	46.00	-9.65
3	1.160	36.22	46.00	-9.78
4	4.877	36.20	46.00	-9.80
5	0.589	36.09	46.00	-9.91
6	1.536	36.05	46.00	-9.95
7	0.535	35.90	46.00	-10.10
8	2.238	35.81	46.00	-10.19
9	0.550	35.80	46.00	-10.20
10	0.686	35.76	46.00	-10.24
11	1.603	35.76	46.00	-10.24
12	0.792	35.74	46.00	-10.26
13	0.489	35.91	46.18	-10.27
14	2.501	35.72	46.00	-10.28
15	2.322	35.71	46.00	-10.29
16	2.932	35.63	46.00	-10.37
17	1.038	35.60	46.00	-10.40
18	0.709	35.56	46.00	-10.44
19	3.209	35.54	46.00	-10.46
20	0.858	35.53	46.00	-10.47
21	1.236	35.52	46.00	-10.48
22	0.990	35.50	46.00	-10.50
23	4.552	35.49	46.00	-10.51
24	1.840	35.48	46.00	-10.52
25	1.412	35.44	46.00	-10.56
26	1.352	35.44	46.00	-10.56
27	2.781	35.43	46.00	-10.57
28	0.570	35.40	46.00	-10.60
29	0.614	35.39	46.00	-10.61
30	1.790	35.38	46.00	-10.62
31	1.717	35.37	46.00	-10.63
32	0.474	35.81	46.45	-10.63
33	3.365	35.35	46.00	-10.65
34	0.814	35.34	46.00	-10.66
35	0.595	35.29	46.00	-10.71
36	3.924	35.26	46.00	-10.74
37	0.731	35.25	46.00	-10.75
38	0.779	35.24	46.00	-10.76
39	0.839	35.23	46.00	-10.77



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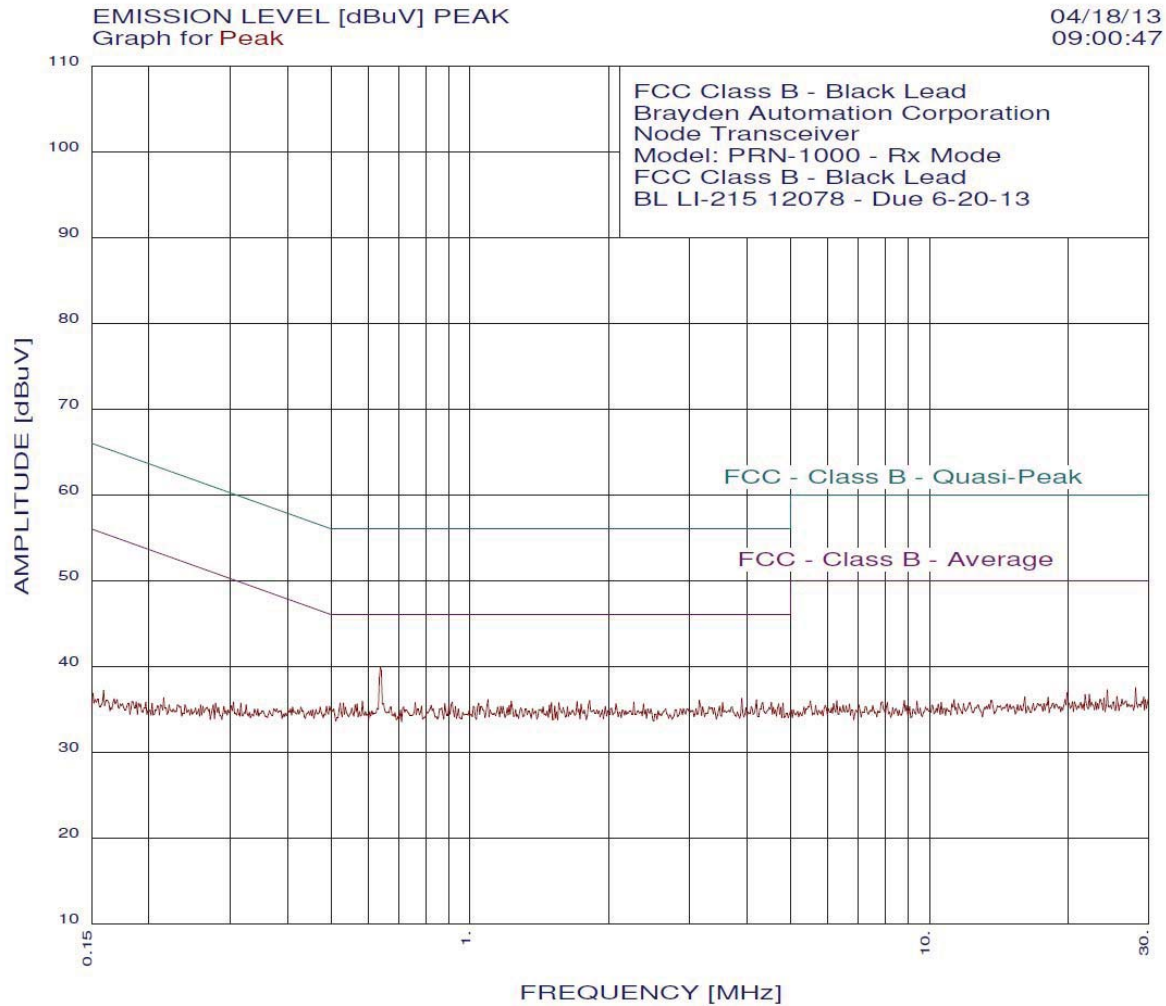
04/18/13 08:45:06

FCC Class B - White Lead
Brayden Automation Corporation
Node Transceiver
Model: PRN-1000 - Tx Mode
FCC Class B - White Lead
WL LI-215 12078 - Due 6-20-13
Test Engineer : Kyle Fujimoto

39 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.637	40.24	46.00	-5.76
2	1.106	36.67	46.00	-9.33
3	0.899	36.46	46.00	-9.54
4	1.374	36.23	46.00	-9.77
5	2.568	36.19	46.00	-9.81
6	4.480	36.17	46.00	-9.83
7	2.651	36.09	46.00	-9.91
8	1.404	36.04	46.00	-9.96
9	0.564	35.93	46.00	-10.07
10	2.475	35.89	46.00	-10.11
11	3.277	35.84	46.00	-10.16
12	4.928	35.79	46.00	-10.21
13	0.555	35.73	46.00	-10.27
14	3.722	35.71	46.00	-10.29
15	1.236	35.71	46.00	-10.29
16	2.916	35.69	46.00	-10.31
17	2.781	35.69	46.00	-10.31
18	3.419	35.66	46.00	-10.34
19	0.614	35.65	46.00	-10.35
20	0.759	35.61	46.00	-10.39
21	0.876	35.57	46.00	-10.43
22	1.971	35.56	46.00	-10.44
23	0.694	35.53	46.00	-10.47
24	0.739	35.52	46.00	-10.48
25	4.799	35.48	46.00	-10.52
26	1.899	35.46	46.00	-10.54
27	1.223	35.40	46.00	-10.60
28	2.423	35.38	46.00	-10.62
29	4.748	35.38	46.00	-10.62
30	2.250	35.37	46.00	-10.63
31	4.361	35.37	46.00	-10.63
32	0.974	35.34	46.00	-10.66
33	2.811	35.29	46.00	-10.71
34	1.154	35.28	46.00	-10.72
35	1.512	35.26	46.00	-10.74
36	1.072	35.26	46.00	-10.74
37	1.456	34.95	46.00	-11.05
38	0.479	35.29	46.36	-11.07
39	0.431	35.77	47.24	-11.47



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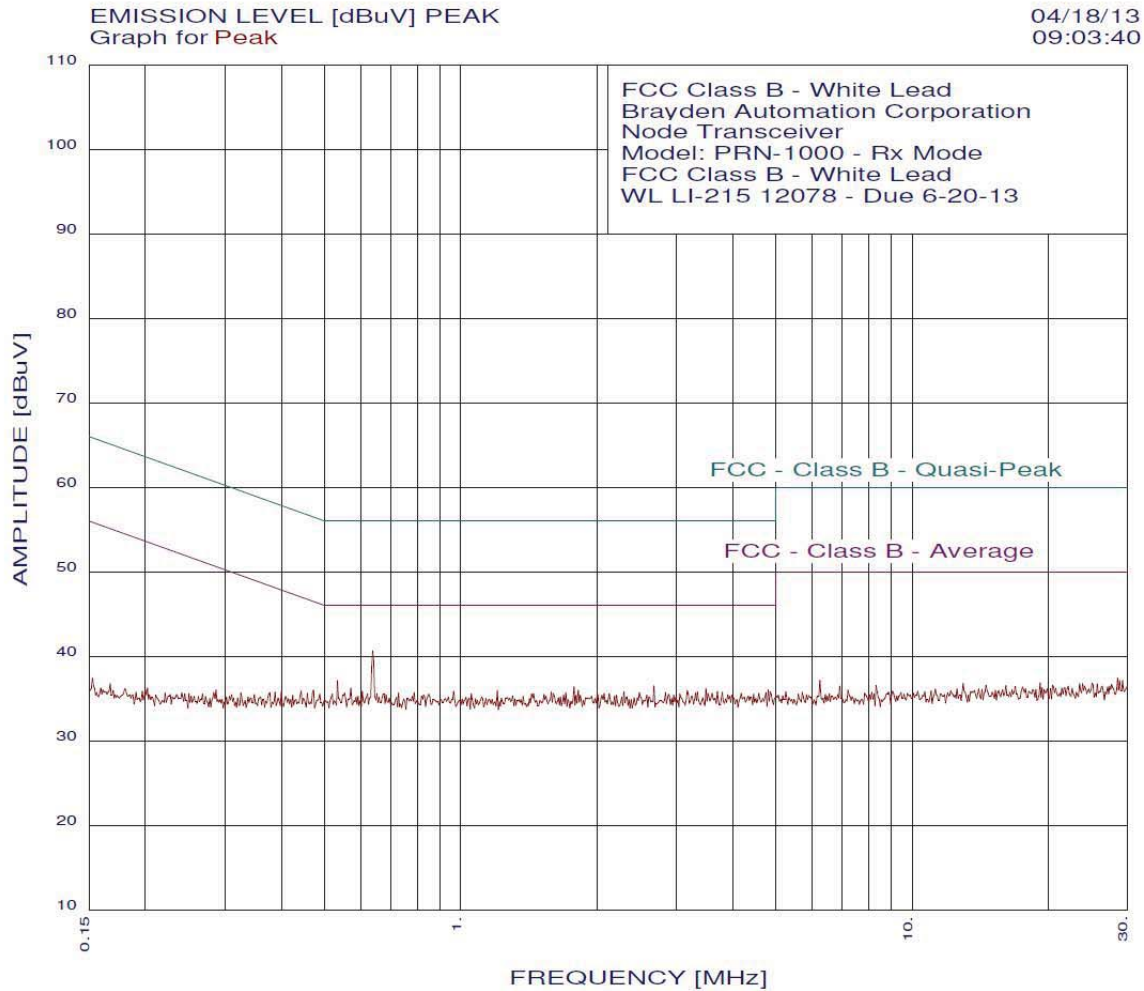
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FCC Class B - Black Lead
Brayden Automation Corporation
Node Transceiver
Model: PRN-1000 - Rx Mode
FCC Class B - Black Lead
BL LI-215 12078 - Due 6-20-13
Test Engineer : Kyle Fujimoto

39 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.637	39.88	46.00	-6.12
2	3.903	36.26	46.00	-9.74
3	1.094	36.11	46.00	-9.89
4	4.204	36.07	46.00	-9.93
5	3.158	36.04	46.00	-9.96
6	1.820	35.98	46.00	-10.02
7	1.230	35.92	46.00	-10.08
8	0.583	35.89	46.00	-10.11
9	1.708	35.87	46.00	-10.13
10	0.914	35.82	46.00	-10.18
11	2.274	35.81	46.00	-10.19
12	4.528	35.78	46.00	-10.22
13	4.339	35.78	46.00	-10.22
14	1.560	35.76	46.00	-10.24
15	3.547	35.75	46.00	-10.25
16	1.504	35.75	46.00	-10.25
17	0.759	35.75	46.00	-10.25
18	0.521	35.71	46.00	-10.29
19	1.043	35.70	46.00	-10.30
20	0.530	35.70	46.00	-10.30
21	4.799	35.69	46.00	-10.31
22	0.881	35.62	46.00	-10.38
23	2.384	35.61	46.00	-10.39
24	2.077	35.60	46.00	-10.40
25	0.567	35.60	46.00	-10.40
26	4.696	35.59	46.00	-10.41
27	1.745	35.57	46.00	-10.43
28	0.822	35.44	46.00	-10.56
29	0.899	35.42	46.00	-10.58
30	1.528	35.35	46.00	-10.65
31	3.492	35.35	46.00	-10.65
32	1.178	35.32	46.00	-10.68
33	0.929	35.31	46.00	-10.69
34	1.016	35.30	46.00	-10.70
35	1.971	35.30	46.00	-10.70
36	1.629	35.26	46.00	-10.74
37	0.716	35.26	46.00	-10.74
38	1.441	35.24	46.00	-10.76
39	3.311	35.24	46.00	-10.76



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04/18/13 09:03:40

FCC Class B - White Lead
Brayden Automation Corporation
Node Transceiver
Model: PRN-1000 - Rx Mode
FCC Class B - White Lead
WL LI-215 12078 - Due 6-20-13
Test Engineer : Kyle Fujimoto

39 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.637	40.64	46.00	-5.36
2	0.532	37.12	46.00	-8.88
3	2.679	36.49	46.00	-9.51
4	1.781	36.36	46.00	-9.64
5	0.570	36.24	46.00	-9.76
6	3.492	36.17	46.00	-9.83
7	4.799	35.98	46.00	-10.02
8	1.820	35.96	46.00	-10.04
9	3.175	35.92	46.00	-10.08
10	1.204	35.90	46.00	-10.10
11	0.605	35.85	46.00	-10.15
12	0.963	35.84	46.00	-10.16
13	3.702	35.81	46.00	-10.19
14	4.851	35.79	46.00	-10.21
15	2.298	35.78	46.00	-10.22
16	1.586	35.76	46.00	-10.24
17	3.346	35.75	46.00	-10.25
18	3.800	35.72	46.00	-10.28
19	0.788	35.70	46.00	-10.30
20	2.840	35.69	46.00	-10.31
21	2.488	35.69	46.00	-10.31
22	4.748	35.68	46.00	-10.32
23	1.708	35.66	46.00	-10.34
24	0.552	35.63	46.00	-10.37
25	0.728	35.62	46.00	-10.38
26	2.134	35.57	46.00	-10.43
27	2.077	35.56	46.00	-10.44
28	4.182	35.56	46.00	-10.44
29	1.449	35.55	46.00	-10.45
30	1.055	35.55	46.00	-10.45
31	0.621	35.55	46.00	-10.45
32	0.518	35.51	46.00	-10.49
33	3.059	35.50	46.00	-10.50
34	0.471	35.99	46.49	-10.50
35	2.885	35.49	46.00	-10.51
36	0.849	35.48	46.00	-10.52
37	2.013	35.46	46.00	-10.54
38	1.528	35.46	46.00	-10.54
39	3.903	35.44	46.00	-10.56
