

**FCC PART 15 SUBPART B & C
TEST REPORT***for***RADIO DATA LINK****Model: PRT-900**

Prepared for

BRAYDEN AUTOMATION CORPORATION
1807 E. MULBERRY STREET
FORT COLLINS, COLORADO 80524

Prepared by: _____

JOEY MADLANGBAYAN

Approved by: _____

JOHN ETHINGTON

COMPATIBLE ELECTRONICS INC.
19121 EL TORO ROAD
LAKE FOREST (SILVERADO), CALIFORNIA 92676
(949) 589-0700

DATE: JULY 23, 2005

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	16	2	2	2	13	16	51

This report shall not be reproduced except in full, without the written approval of Compatible Electronics.



TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
1. PURPOSE	5
2. ADMINISTRATIVE DATA	6
2.1 Location of Testing	6
2.2 Traceability Statement	6
2.3 Cognizant Personnel	6
2.4 Date Test Sample was Received	6
2.5 Disposition of the Test Sample	6
2.6 Abbreviations and Acronyms	6
3. APPLICABLE DOCUMENTS	7
4. DESCRIPTION OF TEST CONFIGURATION	8
4.1 Description of Test Configuration - EMI	8
4.1.1 Photograph Test Configuration - EMI	8
4.1.2 Cable Construction and Termination	9
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	10
5.1 EUT and Accessory List	10
5.2 EMI Test Equipment	11
5.3 EMI Measurement and Control Software Information	12
6. TEST SITE DESCRIPTION	13
6.1 Test Facility Description	13
6.2 EUT Mounting, Bonding and Grounding	13
6.3 Facility Environmental Characteristics	13
7. TEST PROCEDURES	14
7.1 RF Emissions	14
7.1.1 Conducted Emissions Test	14
7.1.2 Radiated Emissions Test	15
8. TEST PROCEDURE DEVIATIONS	16
9. CONCLUSIONS	16



LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Accreditations and Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams, Charts, and Photos <ul style="list-style-type: none">• Test Setup Diagrams• Antenna and Amplifier Gain Factors• Radiated and Conducted Emissions Photos
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Test Site



GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., 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 in any form unless done so in full with the written permission of Compatible Electronics.

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

Device Tested: Radio Data Link
Model: PRT-900
S/N: None

Product Description: This a 916MHz range transmitter system used for the purpose of recording electric usage meter readings across short distances without having to physically connect wires. It consists of a TX/antenna unit and a TX base unit.

Modifications: The EUT was not modified during the testing.

Manufacturer: Brayden Automation Corporation
1807 E. Mulberry Street
Fort Collins, Colorado 80524

Test Dates: June 28 & 29, 2005

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

Test Procedure: ANSI C63.4: 2003

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	Complies with the Class B limits of CFR Title 47, Part 15 Subpart C Section 15.207.
2	Radiated RF Emissions, 9 kHz - 9165 MHz.	Complies with the limits of CFR 22 Title 47 Part 15 Subpart B (Class B devices) and Subpart C sections 15.205, 15.209 and 15.249.



1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on Radio Data Link Model: PRT-900. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. 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 Code of Federal Regulations Title 47, Part 15 Subpart B and Subpart C sections 15.205, 15.209 and 15.249.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 19121 El Toro Road, Lake Forest (Silverado), California 92676.

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

Mike McCarthy	Engineer
William Brayden	President

Compatible Electronics Inc.

Joey Madlangbayan	Test Engineer
Scott McCutchan	Lab Manager – Lake Forest (Silverado) Division

2.4 Date Test Sample was Received

The test sample was received on June 28, 2005.

2.5 Disposition of the Test Sample

The test sample remains at Compatible Electronics as of July 23, 2005.

2.6 Abbreviations and Acronyms

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

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
PCB	Printed Circuit Board
TX	Transmit
RX	Receive



3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4: 2003	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

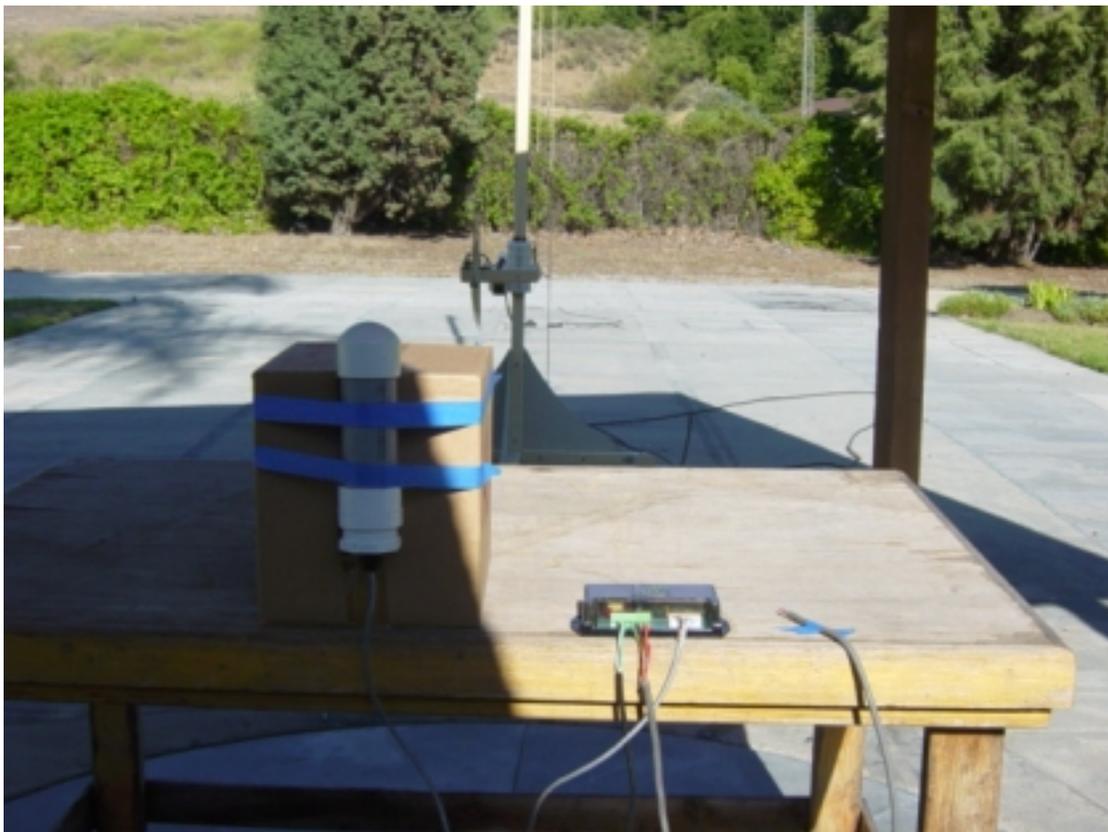
4.1 Description of Test Configuration - EMI

The Radio Data Link Model: PRT-900 (EUT) was setup in a tabletop configuration. The TX/antenna unit was vertically mounted on a non-conductive surface to simulate an actual installation position and connected to its TX base unit via a short 1 meter cable. The EUT was continuously transmitting a data stream to the remote receiver (RX) unit. The receiver (RX) unit was used to verify operation.

The antenna consists of a short wire soldered to the PCB board assembly.

It was determined that the emissions were at their highest level when the EUT was setup in the above configuration. The cables were moved to maximize the emissions. The final conducted as well as radiated data was taken in the above configuration. The cables were routed as shown in the photographs in Appendix D. Please see Appendix E for the test data.

4.1.1 Photograph Test Configuration - EMI



4.1.2 Cable Construction and Termination

Cable 1

This is a 1.5 meter foil shielded cable connecting the TX base unit to the TX/antenna unit. It is hardwired into the TX/Antenna unit and base unit at both ends of the cable. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the TX/antenna unit only via drain wire.

Cable 2

This is a 1 meter foil shielded cable that is connected to the TX base unit and left not terminated. It is hardwired into the TX base unit. The shield of the cable was grounded to the TX base unit only via drain wire.



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

#	EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER	FCC ID
1	RADIO DATA LINK TX/ANTENNA UNIT (EUT)	BRAYDEN AUTOMATION CORPORATION	PRT-900	NONE	TIT-PRT-900
2	TX/BASE UNIT	BRAYDEN AUTOMATION CORPORATION	PRT-2	NONE	NONE

ACCESSORY EQUIPMENT REMOTELY LOCATED

3	RX/ANTENNA UNIT	BRAYDEN AUTOMATION CORPORATION	PRR-900	NONE	NONE
4	RX/BASE UNIT	BRAYDEN AUTOMATION CORPORATION	PRR-2	NONE	NONE



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Analyzer Spectrum – RF Section	Hewlett Packard	8566B	2637A03816	2/2/05	2/2/06
Analyzer Spectrum – Display Section	Hewlett Packard	85662A	2648A13730	2/2/05	2/2/06
Analyzer Spectrum - Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00530	2/2/05	2/2/06
Antenna. Active Loop	Com Power	AL-130	17089	9/3/04	9/3/05
Antenna. Horn	Com-Power	AH-118	1319	5/14/04	5/14/06
Antenna. Biconical	Com Power	AB-100	14022	3/11/05	3/11/06
Antenna. Log Periodic	Com Power	AL-100	16016	4/4/05	4/4/06
Transient Limiter	Com Power	Hz-560	N/A	4/7/05	4/7/06
Computer Test Station	Hewlett Packard	Pavilion 4530	US91925466	N.C.R.	N/A
Generator Comb - Radiated	Com Power	CG-520	25164	N.C.R.	N/A
Hygrometer	Abbeon	HTAB169B	N/A	N.C.R.	N/A
Keyboard Test Station	Hewlett Packard	5183-7399	B91617825	N.C.R.	N/A
LISN EUT Side	Com Power	LI-215	12079	5/12/05	5/12/06
LISN Accessory Side	Com Power	LI-215	12073	5/12/05	5/12/06
Mast Antenna	Com Power	AM-400	N/A	N.C.R.	N/A
Monitor Test Station	Sony	CPD-100ES	7862A008	N.C.R.	N/A
Mouse Test Station	Hewlett Packard	M-S34	LZC911S8069	N.C.R.	N/A
Preamplifier	Com Power	PA-103	1541	1/22/05	1/22/06
Preamplifier	Com Power	PA-122	2120	3/3/05	3/3/06
Printer Test Station	Hewlett Packard	DeskJet 697C	US9341D07G	N.C.R.	N/A
AC Power Supply/Analyser	Agilent Technologies	6813B	US38390530	5/26/05	5/26/06



5.3 EMI Measurement and Control Software Information

LAB(S)	SOFTWARE TITLE	MANUFACTURER	VERSION
H & J	Compatible Electronics Data Capture Program	Compatible Electronics	3.1
H & J	Compatible Electronics Emissions Program	Compatible Electronics	2.3 (SR21)



6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 of this report for EMI 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 grounded only through the safety ground in its power cord.

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 spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. A quasi-peak and/or average measurement was taken only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. 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: 2003. 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 test 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 complies with the Class B limits of CFR Title 47, Part 15 Subpart C Section 15.207.



7.1.2 Radiated Emissions Test

The spectrum analyzer was used as a measuring meter. A preamplifier was used to increase the sensitivity of the instrument. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. A quasi-peak measurement was taken only for those readings, which are marked accordingly on the data sheets. The following antennas and measurement bandwidths were used as specified in the following table.

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
0.09 to 30	Active Loop Antenna	9 kHz
30 to 299.999	Biconical Antenna	120 kHz
300 to 1000	Log Periodic Antenna	120 kHz
1000 to 91650	Horn Antenna	1 MHz

The final data was taken with a frequency span of 1 MHz, but the frequency span was reduced during the preliminary investigations as deemed necessary to distinguish between emissions from the EUT and any ambients.

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: 2003. 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. 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). To ensure accurate results, the gunsight method was used when measuring with the horn antenna and the Active Loop antenna was rotated in its vertical and horizontal axis.

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 to obtain final test data. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the limits of CFR 22 Title 47 Part 15 Subpart B (Class B devices) and Subpart C sections 15.205, 15.209 and 15.249.



8. TEST PROCEDURE DEVIATIONS

The test procedure was not deviated from during the testing.

9. CONCLUSIONS

The Radio Data Link Model: PRT-900 meets all of the **Class B** specification limits defined in the Code of Federal Regulations Title 47, Part 15 Subpart B and Subpart C sections 15.107, 15.205, 15.209 and 15.249.



APPENDIX A

***LABORATORY ACCREDITATIONS AND
RECOGNITIONS***



LABORATORY ACCREDITATIONS AND RECOGNITIONS



For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

Silverado/Lake Forest Division: <http://ts.nist.gov/ts/hdocs/210/214/scopes/2005270.htm>

Brea Division: <http://ts.nist.gov/ts/hdocs/210/214/scopes/2005280.htm>

Agoura Division: <http://ts.nist.gov/ts/hdocs/210/214/scopes/2000630.htm>



Compatible Electronics has been accredited by ANSI and appointed by the FCC to serve as a Telecommunications Certification Body (TCB). Compatible Electronics ANSI TCB listing can be found at: http://www.ansi.org/public/ca/ansi_cp.html



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA). Compatible Electronics NIST US/EU CAB listing can be found at: <http://ts.nist.gov/ts/hdocs/210/gsig/emc-cabs-mar02.pdf>



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). Compatible Electronics NIST US/APEC CAB listing can be found at: <http://ts.nist.gov/ts/hdocs/210/gsig/apec/bsmi-cabs-may02.pdf>



Compatible Electronics has been validated by NEMKO against ISO/IEC 17025 under the NEMKO EMC Laboratory Authorization (ELA) program to all EN standards required by the European Union (EU) EMC Directive 89/336/EEC. Please follow the link to the Compatible Electronics' web site for each of our facilities NEMKO ELA certificate and scope of accreditation. <http://www.celectronics.com/certs.htm>

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



Compatible Electronics VCCI listing can be found at: http://www.vcci.or.jp/vcci_e/member/tekigo/setsubi_index_id.html

Just type "Compatible Electronics" into the Keyword search box.



Compatible Electronics FCC listing can be found at: https://gullfoss2.fcc.gov/prod/oet/index_ie.html

Just type "Compatible Electronics" into the Test Firms search box.



Compatible Electronics IC listing can be found at: http://spectrum.ic.gc.ca/~cert/labs/oats_lab_c_e.html



APPENDIX B

MODIFICATIONS TO THE EUT



MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass the Title 47 CFR FCC Subpart B and Subpart C Part 15.249 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.

Modifications: No modifications were made to the EUT during the test.



APPENDIX C

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



ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

RADIO DATA LINK
Model: PRT-900
S/N: NONE

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

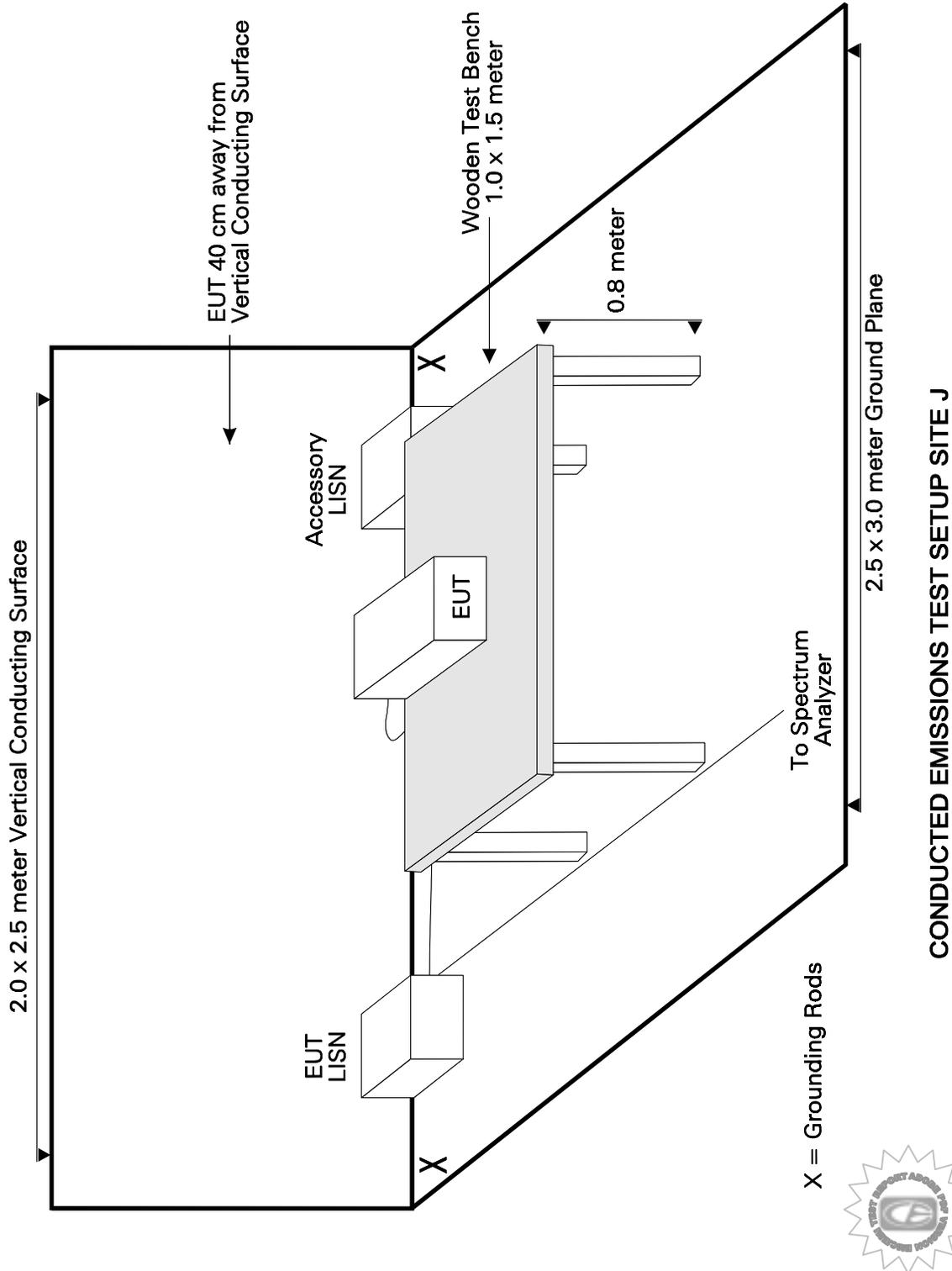
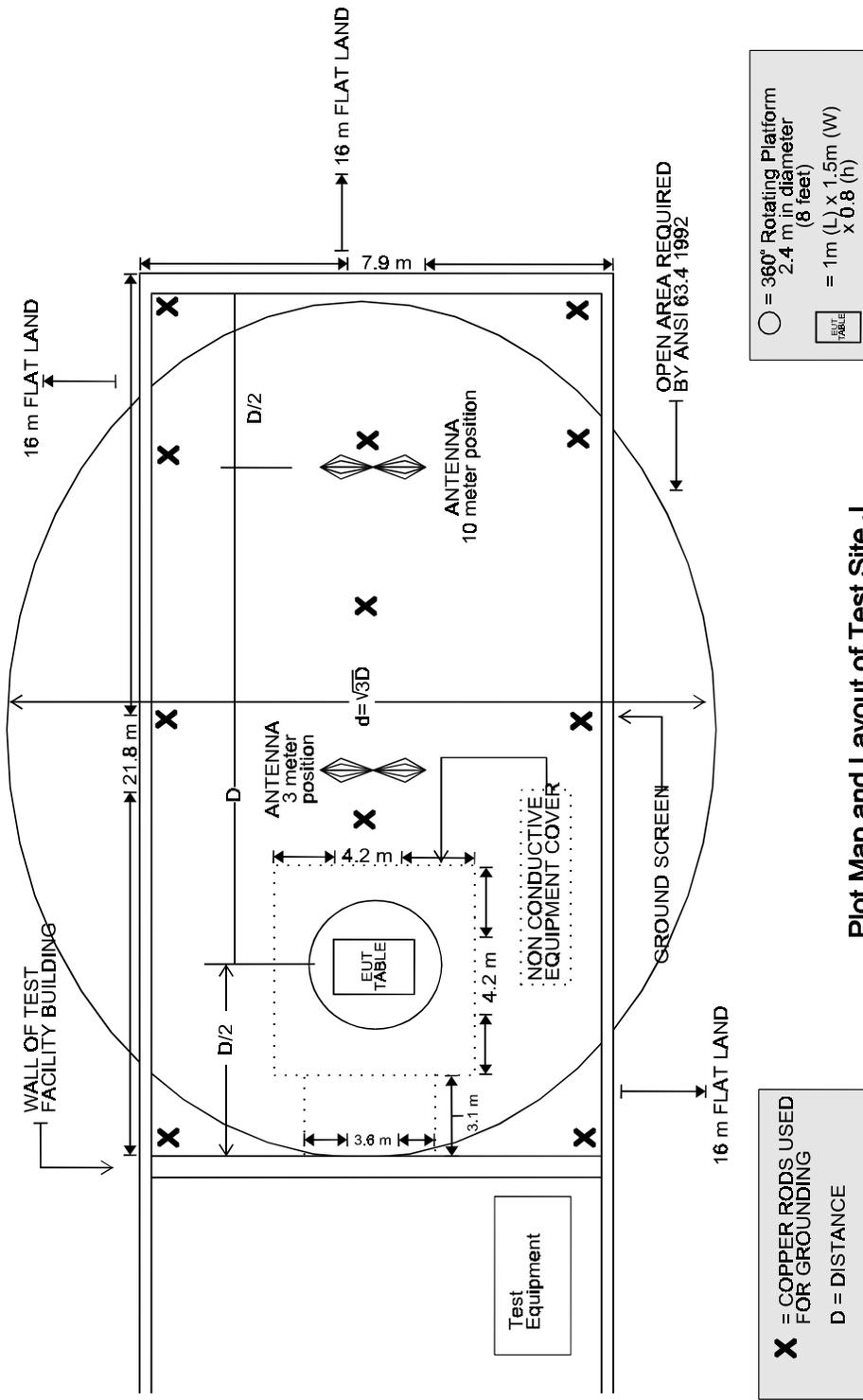


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE



Plot Map and Layout of Test Site J



COM-POWER AL-130**LAB J – LOOP ANTENNA (E-FIELD)****S/N: 17089****CALIBRATION DATE: SEPTEMBER 3, 2004**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
0.009	10.7	1.0	10.5
0.01	10.6	2.0	10.9
0.02	9.7	3.0	10.7
0.03	11.3	4.0	10.5
0.04	11.0	5.0	11.1
0.05	9.5	6.0	11.3
0.06	10.2	7.0	10.8
0.07	10.0	8.0	10.8
0.08	9.7	9.0	11.2
0.09	9.8	10.0	10.8
0.1	9.8	12.0	10.4
0.2	7.4	14.0	10.1
0.3	9.9	15.0	9.9
0.4	9.9	16.0	10.0
0.5	10.0	18.0	10.1
0.6	10.5	20.0	10.2
0.7	10.1	25.0	8.5
0.8	10.1	30.0	8.9
0.9	10.5	-	-



COM-POWER AB-100**LAB J - BICONICAL ANTENNA**

S/N: 14022

CALIBRATION DATE: MARCH 11, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30.0	9.9	120.0	10.7
35.0	13.0	125.0	10.4
40.0	13.0	140.0	11.9
45.0	11.6	150.0	12.4
50.0	11.4	160.0	12.8
60.0	10.9	175.0	13.6
70.0	9.5	180.0	12.7
80.0	9.2	200.0	14.4
90.0	8.0	250.0	17.5
100.0	10.7	300.0	19.2



COM-POWER AL-100**LAB J - LOG PERIODIC ANTENNA**

S/N: 16016

CALIBRATION DATE: APRIL 4, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.3	350	15.1
400	18.1	450	16.0
500	16.9	550	15.7
600	18.7	650	17.9
700	18.8	750	18.9
800	20.8	850	19.9
900	20.5	950	22.6
1000	24.1	-	-



COM-POWER AL-118**LAB J - HORN ANTENNA****S/N: 1319****CALIBRATION DATE: MAY 14, 2004**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1000	24.74	10000	39.63
1500	25.39	10500	40.07
2000	27.90	11000	40.60
2500	28.44	11500	41.90
3000	30.01	12000	41.09
3500	30.61	12500	41.49
4000	30.72	13000	40.68
4500	31.22	13500	41.05
5000	33.03	14000	42.03
6000	33.84	14500	45.60
6500	34.70	15000	40.35
7000	36.51	15500	40.19
7500	37.61	16000	39.83
8000	37.63	16500	40.65
8500	38.12	17000	44.76
9000	38.33	17500	47.21
9500	39.54	18000	42.59



COM-POWER PA-103**LAB J - PREAMPLIFIER**

S/N: 1541

CALIBRATION DATE: JANUARY 22, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	30.9	300	30.6
40	31.1	350	30.6
50	31.4	400	30.6
60	31.5	450	30.7
70	30.9	500	30.3
80	30.5	550	30.4
90	29.3	600	30.2
100	26.8	650	30.1
125	28.7	700	29.5
150	30.3	750	30.1
175	30.7	800	29.8
200	31.0	850	29.3
225	30.8	900	29.4
250	31.0	950	29.8
275	30.9	1000	29.3



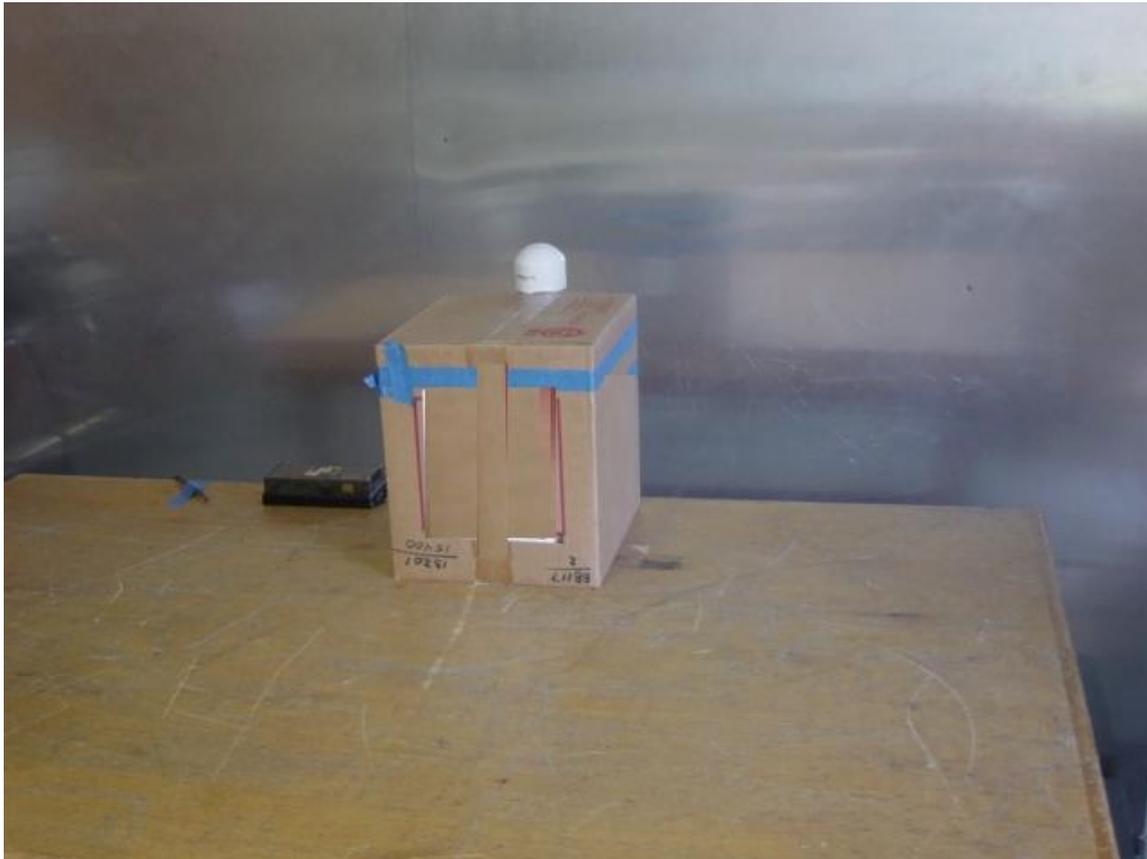
COM-POWER PA-122**LAB J – HI-FREQUENCY PREAMPLIFIER**

S/N: 25196

CALIBRATION DATE: MARCH 3, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1000	33.2	6000	27.7
1100	32.1	6500	28.1
1200	32.0	7000	28.4
1300	31.9	7500	28.4
1400	31.8	8000	28.2
1500	31.7	8500	28.2
1600	31.5	9000	28.7
1700	31.2	9500	27.9
1800	31.0	10000	27.3
1900	30.8	11000	27.2
2000	30.8	12000	29.3
2500	30.1	13000	28.7
3000	29.9	14000	28.8
3500	29.4	15000	29.1
4000	28.7	16000	27.6
4500	28.3	17000	25.7
5000	27.9	18000	24.3
5500	27.4		





FRONT VIEW

**BRAYDEN AUTOMATION CORPORATION
RADIO DATA LINK**

Model: PRT-900

FCC SUBPART B & C - CONDUCTED EMISSIONS - 06-29-05

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





REAR VIEW

BRAYDEN AUTOMATION CORPORATION
RADIO DATA LINK
Model: PRT-900

FCC SUBPART B & C - CONDUCTED EMISSIONS - 06-29-05

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



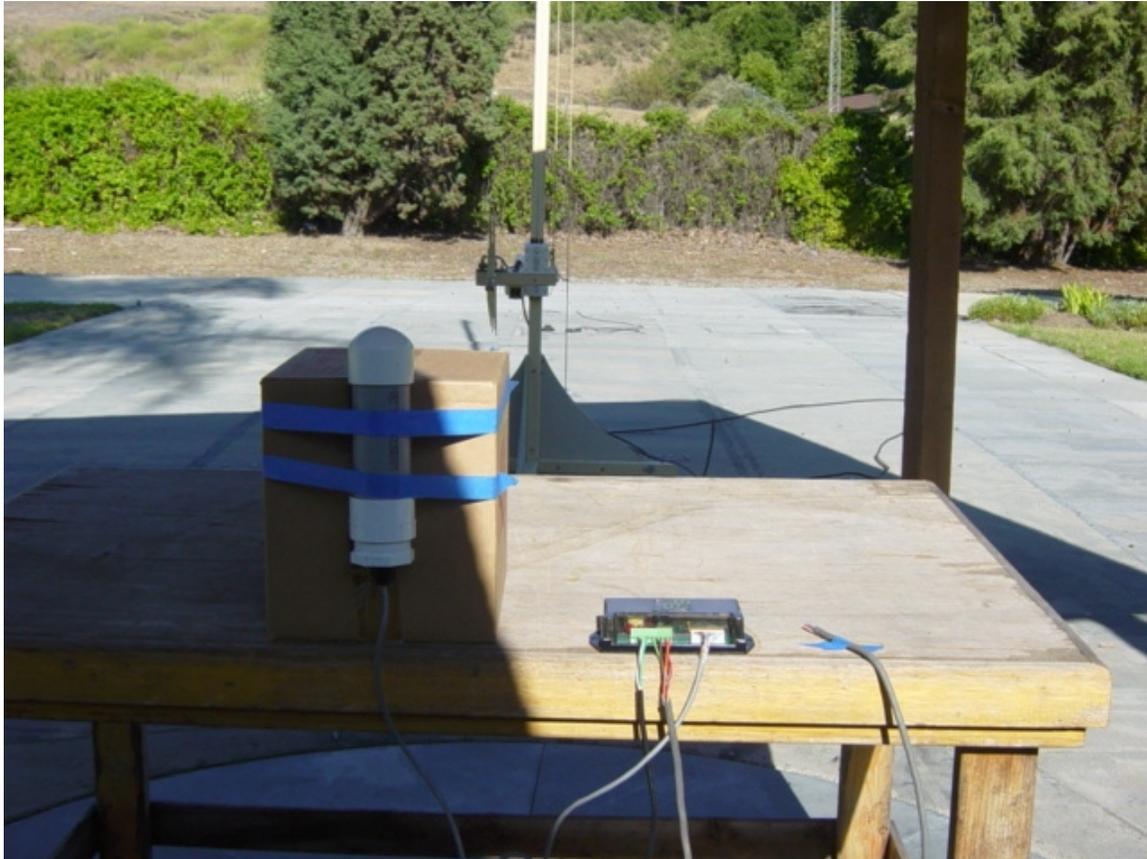


FRONT VIEW

BRAYDEN AUTOMATION CORPORATION
RADIO DATA LINK
Model: PRT-900
FCC SUBPART B & C - RADIATED EMISSIONS - 06-28-05

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





REAR VIEW

BRAYDEN AUTOMATION CORPORATION
RADIO DATA LINK
Model: PRT-900

FCC SUBPART B & C - RADIATED EMISSIONS - 06-28-05

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



APPENDIX E

DATA SHEETS



RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1833.0000	49.0	A	H	1.5	90			27.1	1.6	31.0		0.0	46.7	-7.3	54.0	
1833.0000	57.6	45.6 A	V	1.5	180			27.1	1.6	31.0		0.0	43.3	-10.7	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2749.5000	45.9	A	H	1.5	0			29.2	2.0	30.0		0.0	47.1	-6.9	54.0	
2749.5000	45.6	A	V	1.5	90			29.2	2.0	30.0		0.0	46.8	-7.2	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3666.0000	45.1	A	H	1.5	90			30.6	2.8	29.2		0.0	49.4	-4.6	54.0	
3666.0000	50.9	38.9 A	V	1.5	90			30.6	2.8	29.2		0.0	43.2	-10.8	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4582.5000	46.5	34.5 A	H	1.5	180			31.5	2.6	28.2		0.0	40.3	-13.7	54.0	
4582.5000	47.8	35.8 A	V	1.5	180			31.5	2.6	28.2		0.0	41.6	-12.4	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
5499.0000		A	H					33.9	2.8	27.4					54.0	No emissions found
5499.0000		A	V					33.9	2.8	27.4					54.0	No emissions found

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
6415.5000		A	H					34.5	3.1	28.0					54.0	No emissions found
6415.5000		A	V					34.5	3.1	28.0					54.0	No emissions found

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
7332.0000		A	H					37.2	3.5	28.4					54.0	No emissions found
7332.0000		A	V					37.2	3.5	28.4					54.0	No emissions found

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
8248.5000		A	H					37.8	3.9	28.2					54.0	No emissions found
8248.5000		A	V					37.8	3.9	28.2					54.0	No emissions found

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.249 AND 15.205)

COMPANY	Brayden Automation	DATE	6/28/05
EUT	Radio Data Uplink	DUTY CYCLE	25%
MODEL	PRT-900	PEAK TO AVG	-12 dB
S/N	NONE	TEST DIST.	3 Meters
TEST ENGINEER	Joey Madlangbayan	LAB	J

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
9165.0000		A	H					38.7	4.3	28.5					54.0	No emissions found
9165.0000		A	V					38.7	4.3	28.5					54.0	No emission found

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING



COMPATIBLE ELECTRONICS

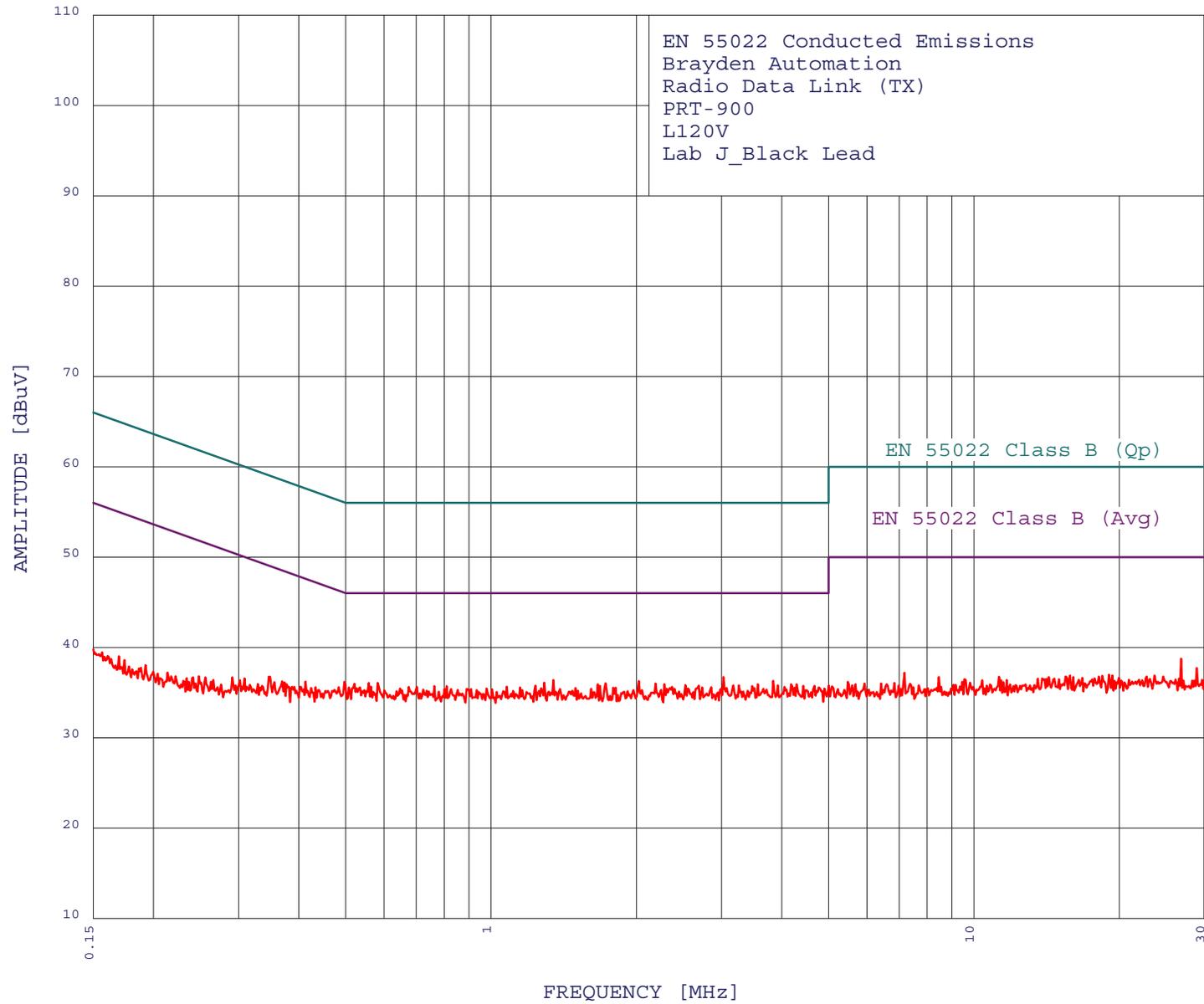
Test Location : Compatible Electronics **Page** : 1/1
Customer : Mike McCarthy **Date** : 06/28/2005
Manufacturer : Brayden Automation **Time** : 05:20:53 PM
Eut name : Radio Data Link **Lab** : J
Model : PRT-900 **Test Distance** : 3.00 Meters
Serial # : None
Specification : FCC Pt. 15 - Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : Spurious Emissions 9kHz-9165MHz Temp: 21C Humid: 50%
 Test Engineer: J. Madlangbayan

Pol	Freq MHz	Reading dBuV	Cable loss dB	Antenna factor dB	Amplifier gain dB	Corr'd rdg = R dBuV/m	Limit = L dBuV/m	Delta R-L dB
1V	64.000	39.30	0.90	9.10	31.25	18.06	40.00	-21.94
2V	84.067	37.10	1.10	7.15	29.99	15.35	40.00	-24.65
3V	92.067	39.80	1.12	8.52	28.76	20.69	43.50	-22.81
4H	136.067	34.80	1.45	12.65	29.44	19.45	43.50	-24.05
5H	144.072	38.40	1.48	12.56	29.95	22.49	43.50	-21.01
6H	176.072	36.60	1.61	15.27	30.71	22.77	43.50	-20.73
7V	312.092	33.30	2.35	13.76	30.60	18.81	46.00	-27.19

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

6/29/2005

8:39:25



COMPATIBLE
ELECTRONICS



EN 55022 Conducted Emissions
Brayden Automation
Radio Data Link (TX)
PRT-900
L120V

Lab J Black Lead

TEST ENGINEER : J. Madlangbayan

7 highest peaks above -50.00 dB of EN 55022 Class B (Avg) limit line

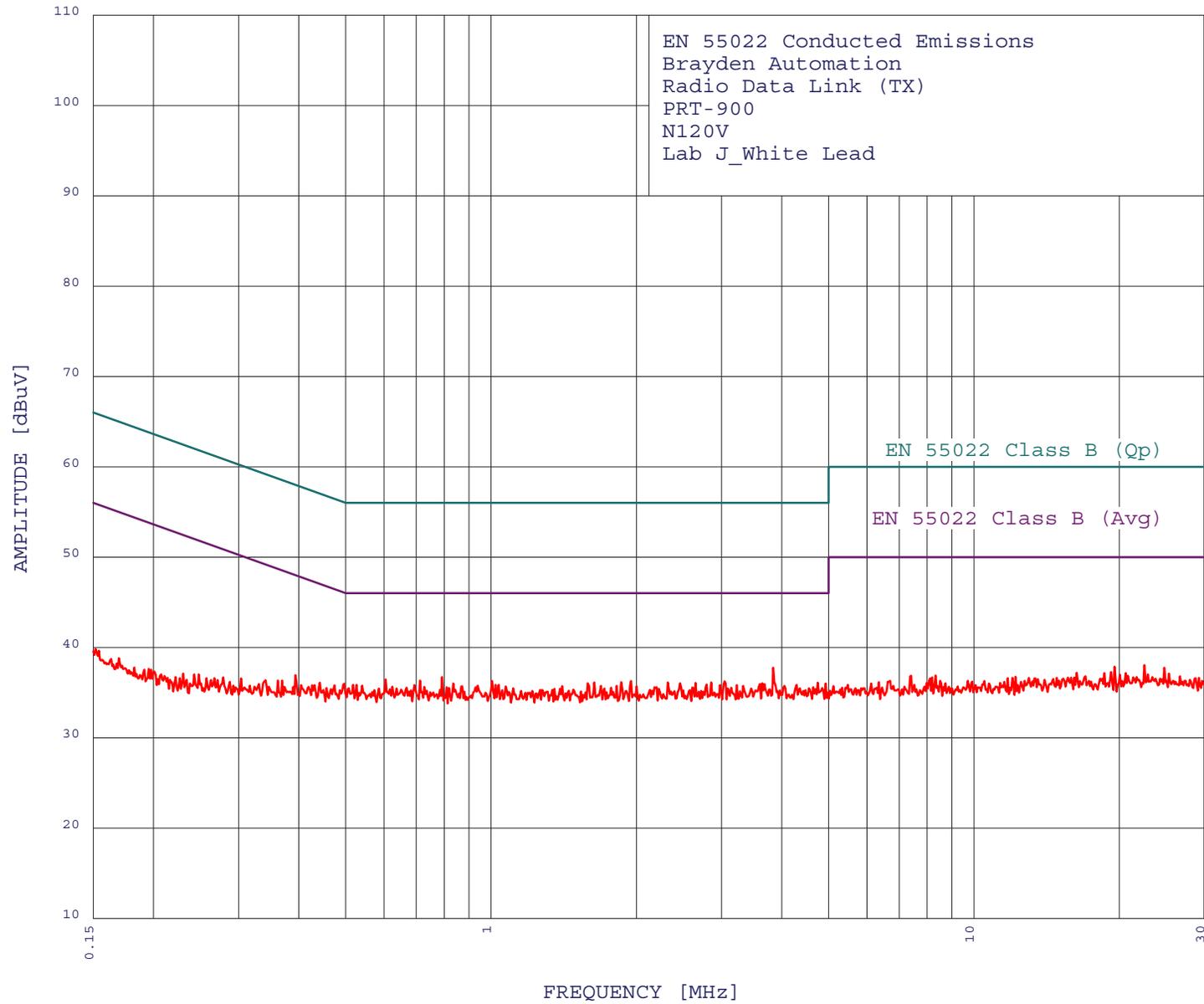
Peak criteria : 2.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	3.027	36.71	46.00	-9.29
2	1.345	36.39	46.00	-9.61
3	3.841	36.31	46.00	-9.69
4	2.023	36.26	46.00	-9.74
5	0.497	36.17	46.05	-9.88
6	26.855	38.74	50.00	-11.26
7	0.150	39.77	56.00	-16.23

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

6/29/2005

8:46:26



COMPATIBLE
ELECTRONICS



EN 55022 Conducted Emissions
Brayden Automation
Radio Data Link (TX)
PRT-900
N120V

Lab J White Lead

TEST ENGINEER : J. Madlangbayan

7 highest peaks above -50.00 dB of EN 55022 Class B (Avg) limit line

Peak criteria : 2.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	3.841	37.74	46.00	-8.26
2	0.792	36.71	46.00	-9.29
3	0.605	36.45	46.00	-9.55
4	0.713	36.32	46.00	-9.68
5	1.950	36.26	46.00	-9.74
6	1.006	36.26	46.00	-9.74
7	0.150	39.55	56.00	-16.45
