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Lab Number:	10LB048
Project Number:	10RT02887
File Number:	MC15465
Date:	July 22, 2010
Models:	Reader Models R22-4012 (DC) (FCC ID: URGR224012)

Electromagnetic Compatibility Test Report

For

RadarFind Corp.

Raleigh, NC

Test Report Details

Tests Performed By:	**Underwriters Laboratories Inc. 12 Laboratory Dr. Research Triangle Park, NC 27709**
Tests Performed For:	**RadarFind Corporation A TeleTracking Technologies Company 2100 Gateway Centre Blvd., Suite 150 Morrisville, NC 27560**
Applicant Contact:	**Mr. Steve Snell**
Title:	**Director, Hardware Engineering**
Phone:	**(919) 228-2170**
E-mail:	**ssnell@radarfind.com**
Test Report Date:	**July 15, 2010**
Product Type:	**Low-Powered Transmitter**
Product standards	**FCC Part 15, Subpart C, 15.249**
Model Number:	**Reader Models R22-4012 (DC)**
Sample Serial Number:	**Unserialized production samples**
EUT Category:	**Frequency Hopping Spread Spectrum Transmitter**
Testing Start Date:	**July 6, 2010**
Date Testing Complete:	**July 12, 2010**
Overall Results:	**Compliant**

Underwriters Laboratories Inc. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. Underwriters Laboratories Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Underwriters Laboratories Inc. issued reports. This report shall not be used to claim, constitute or imply product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the US government.

This report may contain test results that are not covered by the NVLAP or A2LA accreditation. The scope of accreditation is limited to the specific tests that are listed on the NVLAP and/or A2LA websites referenced at the end of this report.

Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
8-19-2010	Model Number Corrected	J. Marley	M. Nolting

1.0 G E N E R A L - Product Description

1.1 Equipment Description

This equipment functions as a device tracking system consisting of readers and tags operating in the 902-928 MHz ISM band under FCC Part 15.249.

1.2 Equipment Marking Plate

Documented in Original FCC Submission.

1.3 Device Configuration During Test

1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Reader	RadarFind Corp.	R22-4012	DC Powered Reader (via AC adapter)
Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, or **SIM** - Simulator (Not Subjected to Test)				

1.3.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	AC	N	N	For Reader Only.
2	Antenna	N/E	—	—	

Note:
AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

1.3.3 EUT Internal Operating Frequencies:

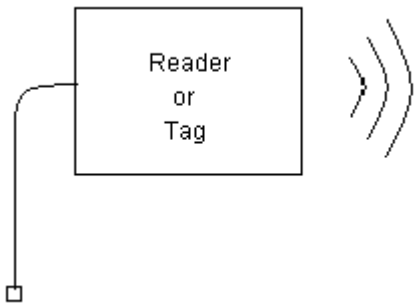
Frequency (MHz)	Description
902-928	Operating Frequency Band.

1.3.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	120Vac	-	-	60Hz	Single Phase	Reader

1.4 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



1.5 Description of X and Y Axis Product Orientations

X-Orientation (upright) Y-Orientation (on side)

EUT is measured with Horizontal and Vertical antenna position in each orientation to cover the typical installations and directions of maximum antenna gain. From the original testing the upright orientation was worst case for the reader.

1.6 EUT Configurations

Mode #	Description
1	Reader (DC Powered) connected to AC via adapter.

1.7 EUT Operation Modes

Mode #	Description
1	Readers are set to continuously operate at maximum power level moving between the following six operating frequencies/modes for the purposes of test.

TX Antenna	Frequency	Baud Rate	Deviation	Length
Vertical	909 MHz	200,000 bit/s	± 297 kHz	400 ms TX
Horizontal	909 MHz	200,000 bit/s	± 297 kHz	400 ms TX
Vertical	905 MHz	200,000 bit/s	± 297 kHz	0.3 ms TX, 3 ms idle (10% duty cycle)
Horizontal	905 MHz	200,000 bit/s	± 297 kHz	0.3 ms TX, 3 ms idle (10% duty cycle)
Vertical	918 MHz	200,000 bit/s	± 297 kHz	400 ms TX
Horizontal	918 MHz	200,000 bit/s	± 297 kHz	400 ms TX

Mode #	Description
2	Tags are set to continuously operate at maximum power level moving between the following six operating frequencies/modes for the purposes of test. • 905 MHz • 909 MHz • 912 MHz • 915 MHz • 918 MHz • 927 MHz.

2.0 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by Underwriters Laboratories Inc. in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

2.1 Deviations from standard test methods

None

2.2 Device Modifications Necessary for Compliance

None

2.3 Reference Standards

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart C, 15.249	Code of Federal Regulations, Part 15, Radio Frequency Devices	2009

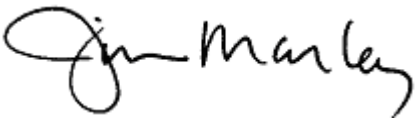
2.4 Results Summary

Requirement – Test	Result (Compliant / Non-Compliant)*
Radiated Power / Radiated Spurious Emissions	Compliant
Conducted Emissions – AC	Compliant

2.5 Test Scope

These tests are performed in support of a Class III Permissive Change. Other test items from previous certification are considered to remain valid.

Test Engineer:



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3.0 Calibration of Equipment Used for Measurement

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or the manufacturers' recommendation, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST); therefore, all test data recorded in this report is traceable to NIST.

4.0 EMISSIONS TEST RESULTS

The emissions tests were performed according to following regulations:

---------- United States ----------

Code of Federal Regulations Title 47	Part 15, Subpart C, Radio Frequency Devices

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be verified at the time the test is conducted.

Ambient Temperature, °C	22.5 ± 2.5	Relative Humidity, %	45 ± 15	Barometric Pressure, mBar	950 ± 150

Sample Calculations

Radiated Field Strength and Conducted Emissions data contained within this report are calculated as follows:

Radiated Field Strength
Field Strength (dBuV/m) = Meter Reading (dBuV) + Antenna Factor (dB/m) - Amp Gain (dB) + Cable Loss (dB)

Conducted Emissions
Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable/Attenuator Loss (dB) + LISN Voltage Correction Factor (dB)

4.1 Test Conditions and Results – RADIATED POWER / RADIATED SPURIOUS EMISSIONS

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable, and with EUT oriented in each of three orthogonal axes as noted.

Basic Standard	FCC Part 15, Subpart C, 15.249 (Restricted Bands, FCC Part 15.209 General Limits Apply)	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30 MHz – 9.30 GHz	(3 meter measurement distance)

Limits – FCC Part 15.249(a) (EIRP Limit, not Point-to-Point operation)

Frequency (MHz)	Limit (dBµV/m)		
	Fundamental	Harmonics	
	Peak or Quasi-Peak	Peak	Average
902 – 928	94.0	74.0	54.0

Limits – FCC Part 15.249(c) Spurious Other than Harmonics

Frequency (MHz)	Limit (dBµV/m)
30 – 10th harmonic	50 dB below fundamental (or 15.209 limit, whichever is higher)

Limits – FCC Part 15.209 (General Limits)

Frequency (MHz)	Limit (dBµV/m)	
	Quasi-Peak	Average
30 - 88	40.0	NA
88 - 216	43.5	NA
216 - 960	46.0	NA
960 - 1000	54.0	NA
1000 - EUT 10th harmonic	NA	54.0 (peak limit 74.0)
Supplementary information: None		

Table 1 Radiated Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	(E) 1 (Reader – DC Powered)	1
Supplementary information: None		

Table 2 Radiated Emissions Test Equipment

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	30-1000 MHz Range				
AT0021	Biconical Antenna, 30 to 200 MHz	Schaffner, EMC	VBA6106A	12/23/09	12/31/10
AT0022	Log-periodic Antenna, 200 MHz to 1000 MHz	Chase	UPA6109	12/22/09	12/31/10
	1-10 GHz				
AT0032	Horn Antenna 1 to 10 GHz	EMC Test Syst.	3115	9/25/09	9/30/10
	Gain-Loss Chains				
SAC_C (Biconical 3m location)	(1) ATA084: Attenuator (2) ATA124: Amplifier (3) ATA167: Cable (4) ATA132: Cable (5) ATA229: DC Bias Tee (6) ATA199: Cable	(1) Pasternack (2) Miteq (3) Eupen (4) UL (5) Miteq (6) Micro-Coax	(1) PE7002-6 (2) AM-3A-000110-N (3) CMS/RG 214 (4) UFA210A-0-6000-50U-50U (5) BT2000-C (6) UFB293C-0-0720-5GU50U)	06/03/10	08/31/10
SAC_D (Log-Periodic 3m location)	(1) ATA085: Attenuator (2) ATA125: Amplifier (3) ATA225: Cable (4) ATA189: Cable (5) ATA115: DC Bias Tee (6) ATA198: Cable	(1) Pasternack (2) Miteq (3) EUPEN (4) EUPE (5) Miteq (6) Micro-Coax	(1) PE7002-6 (2) AM-3A-000110-N (3) CMS/RG 214 (4) CMS/RG 214 (5) AM-1523-7687 (6) UFB293C-0-0720-5GU50U	02/17/10	08/31/10
SAC_E_HORN (Horn 3m location)	(1) ATA144: Amplifier (2) ATA207: Cable (3) ATA096: Cable (4) ATA199: Cable	(1) Miteq (2) Micro-Coax (3) Micro-Coax (4) Micro-Coax	(1) AFS42-00101800-25-N-42MF (2) UFB293C-1-3360-50U50U (3) UTiFLEX (4) UFB293C-0-0720-5GU50U	08/24/09	08/31/10
	Receiver & Software				
SA0123	Spectrum Analyzer / Receiver	HP	8566B	05/27/10	05/31/11
AMP005	Pre-amplifier	HP	8449B Opt H02 (calibrated with ATA091 6dB atten)	05/27/10	05/31/11
SAR003	Spectrum Analyzer / Receiver	Rohde & Schwarz	1088.7490K40	1/18/10	1/31/11
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Additional Equipment used				
HI0034	Environmental meter (T/H/P)	Control Company	99760-00	10/19/09	10/31/10
MG1180	Tape Measure	Lufkin	HI-VIZ	8/8/08	8/31/11

4.1.1 Radiated Spurious Emissions – Reader – DC Powered

Figure 1 Test setup photo for Radiated Emissions (Reader, X, Y Orientations)

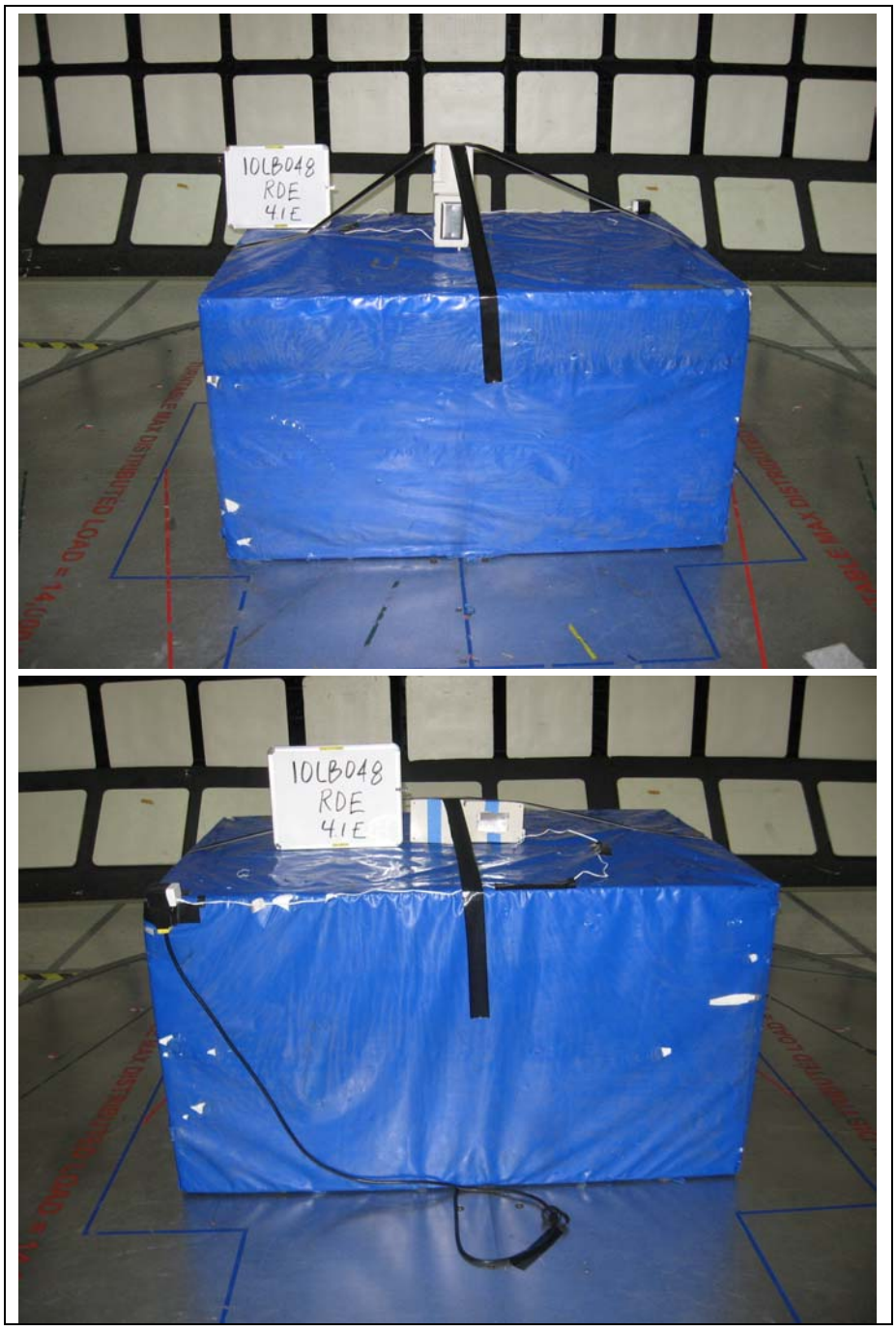

Figure 2 Radiated Emissions Graph 902-920 MHz (Reader, X-Orientation)

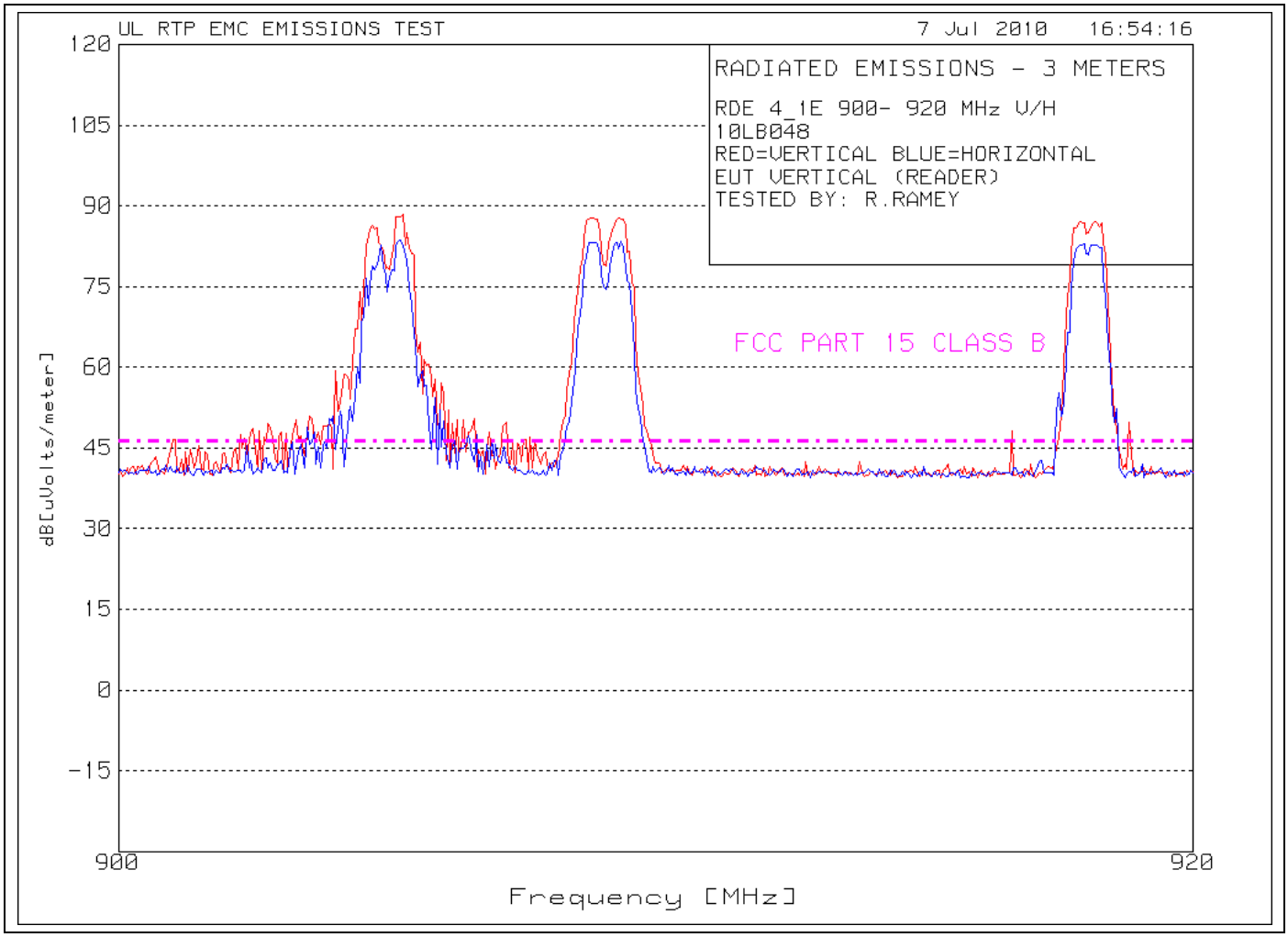

Table 3 Radiated Emissions Data Points (Reader, X-Orientation)

RDE 4_1E 900- 920 MHz V/H
10LB048
RED=VERTICAL BLUE=HORIZONTAL
EUT VERTICAL (READER)
TESTED BY: R.RAMEY

Marker Number	Test Freq. [MHz]	Meter Reading [dBuV]	Det. Type	Cbl/Amp Factor [dB]	Ant. Factor [dB]	Field Strength [dBuV/m]	15.249 Limit [dBuV/m]	Margin [dB]	Height [cm]	Pol. [V/H]
Vertical 900 - 920MHz										
1	905.2505	53.24	pk	12	23.1	88.34	94	-5.66	102	Vert
2	909.2585	52.8	pk	12	23	87.8	94	-6.2	102	Vert
3	918.1563	52.17	pk	12	22.8	86.97	94	-7.03	102	Vert
Horizontal 900 - 920MHz										
4	905.2104	48.49	pk	12	23.1	83.59	94	-10.41	199	Horz
5	909.2986	48.41	pk	12	23	83.41	94	-10.59	199	Horz
6	918.1162	48	pk	12	22.8	82.8	94	-11.2	199	Horz

Test Freq. [MHz]	Meter Reading [dBuV]	Det. Type	Cbl/Amp Factor [dB]	Ant. Factor [dB]	Field Strength [dBuV/m]	15.249 Limit [dBuV/m]	Margin [dB]	Azim [deg]	Height [cm]	Pol. [V/H]
Vertical 900 - 920MHz										
905.2204	48.77	qp	12	23.1	83.87	94	-10.13	51	163	Vert
905.2204	53.15	pk	12	23.1	88.25	94	-5.75	51	163	Vert
909.2545	50.58	qp	12	23	85.58	94	-8.42	43	169	Vert
909.2545	52.49	pk	12	23	87.49	94	-6.51	43	169	Vert
918.1583	52.01	pk	12	22.8	86.81	94	-7.19	67	150	Vert
918.1583	50.02	qp	12	22.8	84.82	94	-9.18	67	150	Vert
Horizontal 900 - 920MHz										
905.2064	46.38	qp	12	23.1	81.48	94	-12.52	37	136	Horz
905.2064	50.26	pk	12	23.1	85.36	94	-8.64	37	136	Horz
909.2184	47.67	qp	12	23	82.67	94	-11.33	36	199	Horz
909.2184	49.53	pk	12	23	84.53	94	-9.47	36	199	Horz
918.1543	48.13	qp	12	22.8	82.93	94	-11.07	48	131	Horz
918.1543	49.8	pk	12	22.8	84.6	94	-9.4	48	131	Horz

pk - Peak detector
qp - Quasi-Peak detector

Figure 3 Radiated Emissions Graph 30-1000 MHz (Reader, X-Orientation)

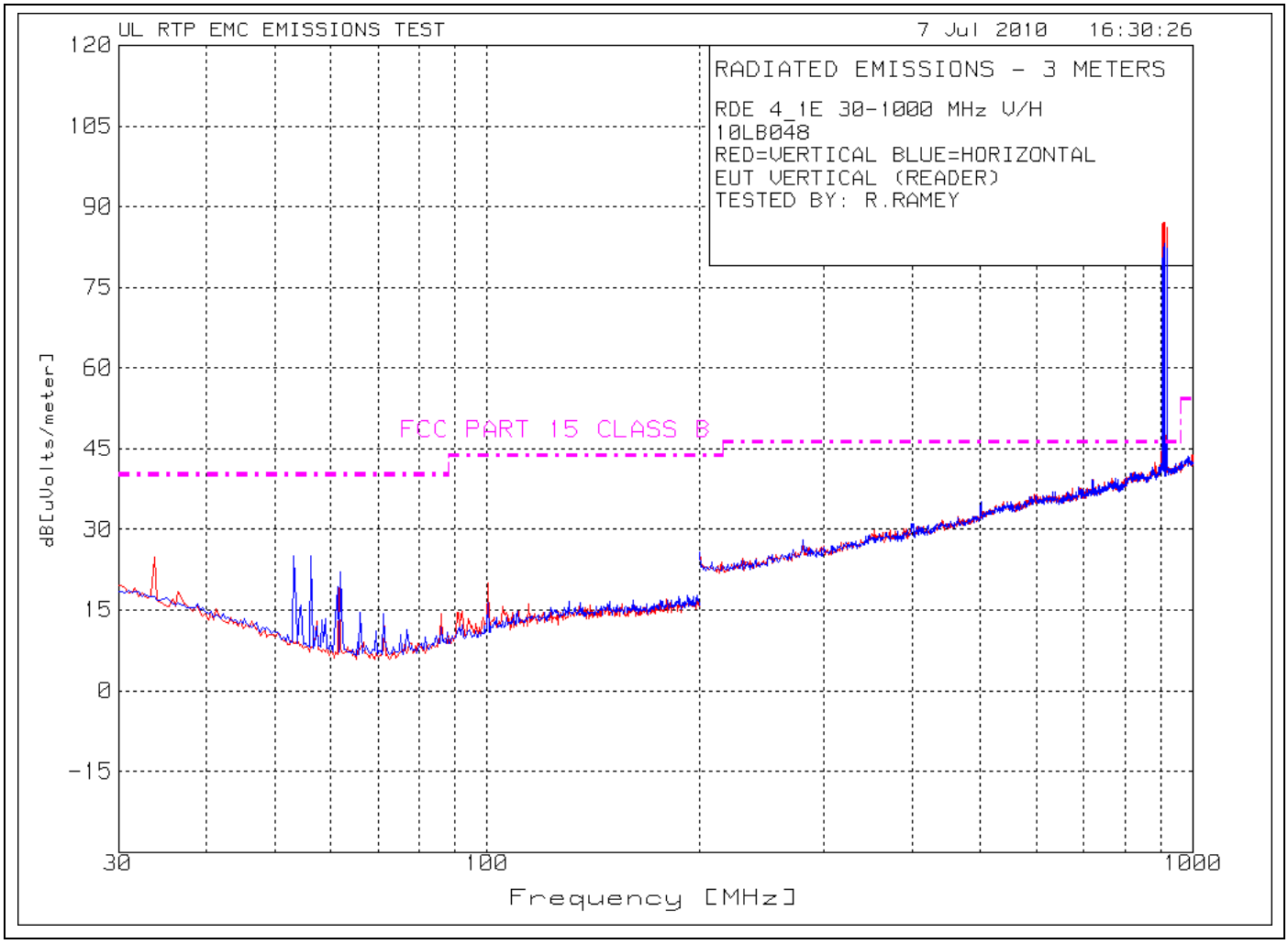

Table 4 Radiated Emissions Data Points (Reader, X-Orientation)

RDE 4_1E 30-1000 MHz V/H
10LB048
RED=VERTICAL BLUE=HORIZONTAL
EUT VERTICAL (READER)
TESTED BY: R.RAMEY

Marker Number	Test Freq. [MHz]	Meter Reading [dBuV]	Det. Type	Cbl/Amp Factor [dB]	Ant. Factor [dB]	Field Strength [dBuV/m]	FCC-B Limit [dBuV/m]	Margin [dB]	Height [cm]	Pol. [V/H]
Vertical 30 - 200MHz										
1	33.7475	34.83	pk	-26.6	16.6	24.83	40	-15.17	98	Vert
6	100.1804	35.72	pk	-26.6	10.8	19.92	43.5	-23.58	98	Vert
Horizontal 30 - 200MHz										
2	53.1663	42.87	pk	-26.7	9	25.17	40	-14.83	102	Horz
3	56.2325	43.72	pk	-26.5	7.8	25.02	40	-14.98	102	Horz
4	62.024	42.12	pk	-26.5	6.5	22.12	40	-17.88	400	Horz
5	66.1122	35.05	pk	-26.6	6.2	14.65	40	-25.35	102	Horz

pk - Peak detector

Figure 4 Radiated Emissions Graph 1-10 GHz (Reader, X-Orientation)

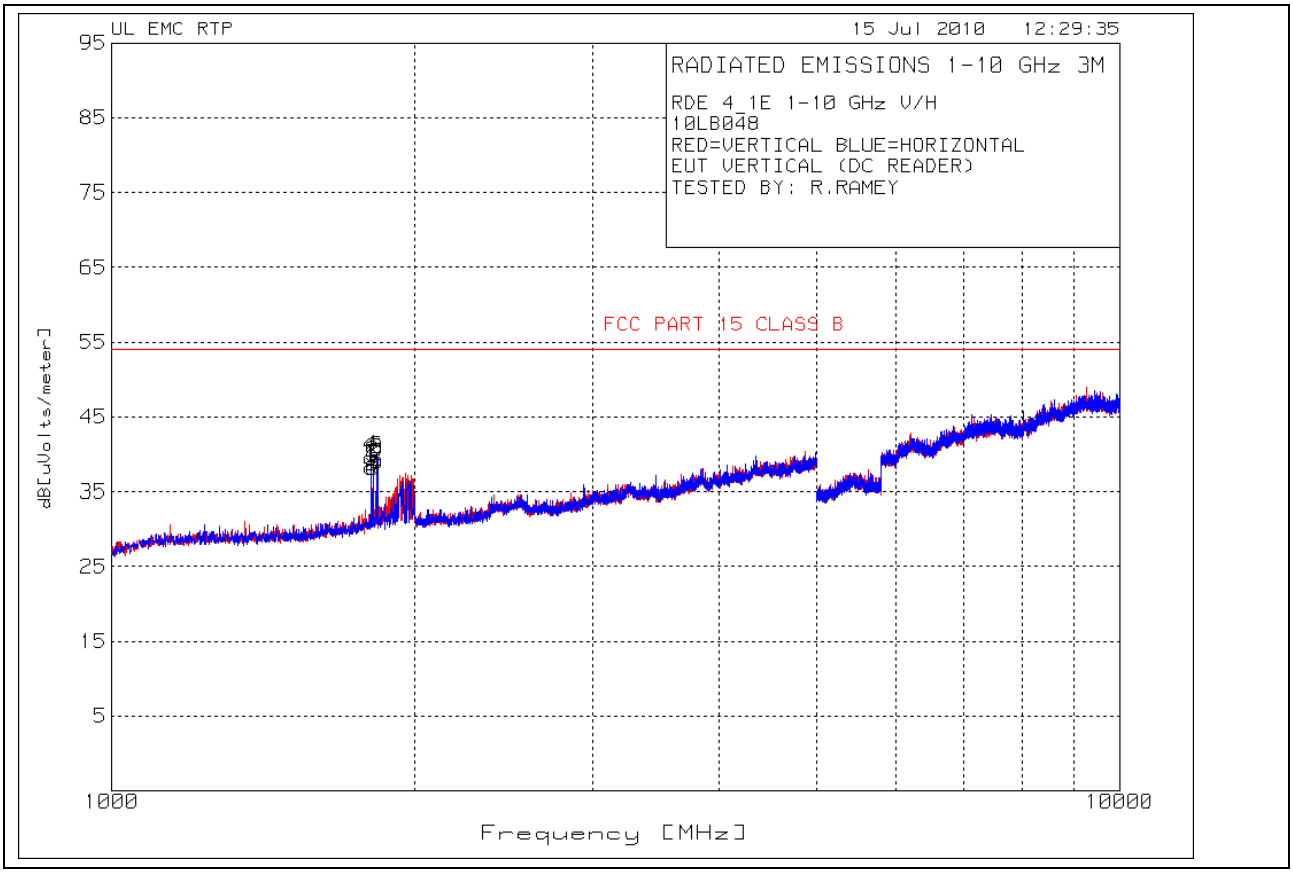

Table 5 Radiated Emissions Data Points (Reader, X-Orientation)

RDE 4_1E 1-10 GHz V/H
10LB048
RED=VERTICAL BLUE=HORIZONTAL
EUT VERTICAL (DC READER)
TESTED BY: R.RAMEY

Marker Number	Test Freq. [MHz]	Meter Reading [dBuV]	Det. Type	Cbl/Amp Factor [dB]	Ant. Factor [dB]	Field Strength [dBuV/m]	15.209 Limit [dBuV/m]	Margin [dB]	Height [cm]	Pol. [V/H]
Vertical 1000 - 2000MHz										
1	1809.5	74.3	pk	-62.9	26.9	38.3	54	-15.7	149	Vert
2	1816.5	74.8	pk	-62.9	26.9	38.8	54	-15.2	149	Vert
3	1835	74.9	pk	-62.8	27	39.1	54	-14.9	149	Vert
Horizontal 1000 - 2000MHz										
4	1810	75.6	pk	-62.9	26.9	39.6	54	-14.4	149	Horz
5	1818	74.3	pk	-62.9	26.9	38.3	54	-15.7	149	Horz
6	1834.5	75.2	pk	-62.8	27	39.4	54	-14.6	149	Horz

pk - Peak detector

Figure 5 Radiated Emissions Graph 902-920 MHz (Reader, Y-Orientation)

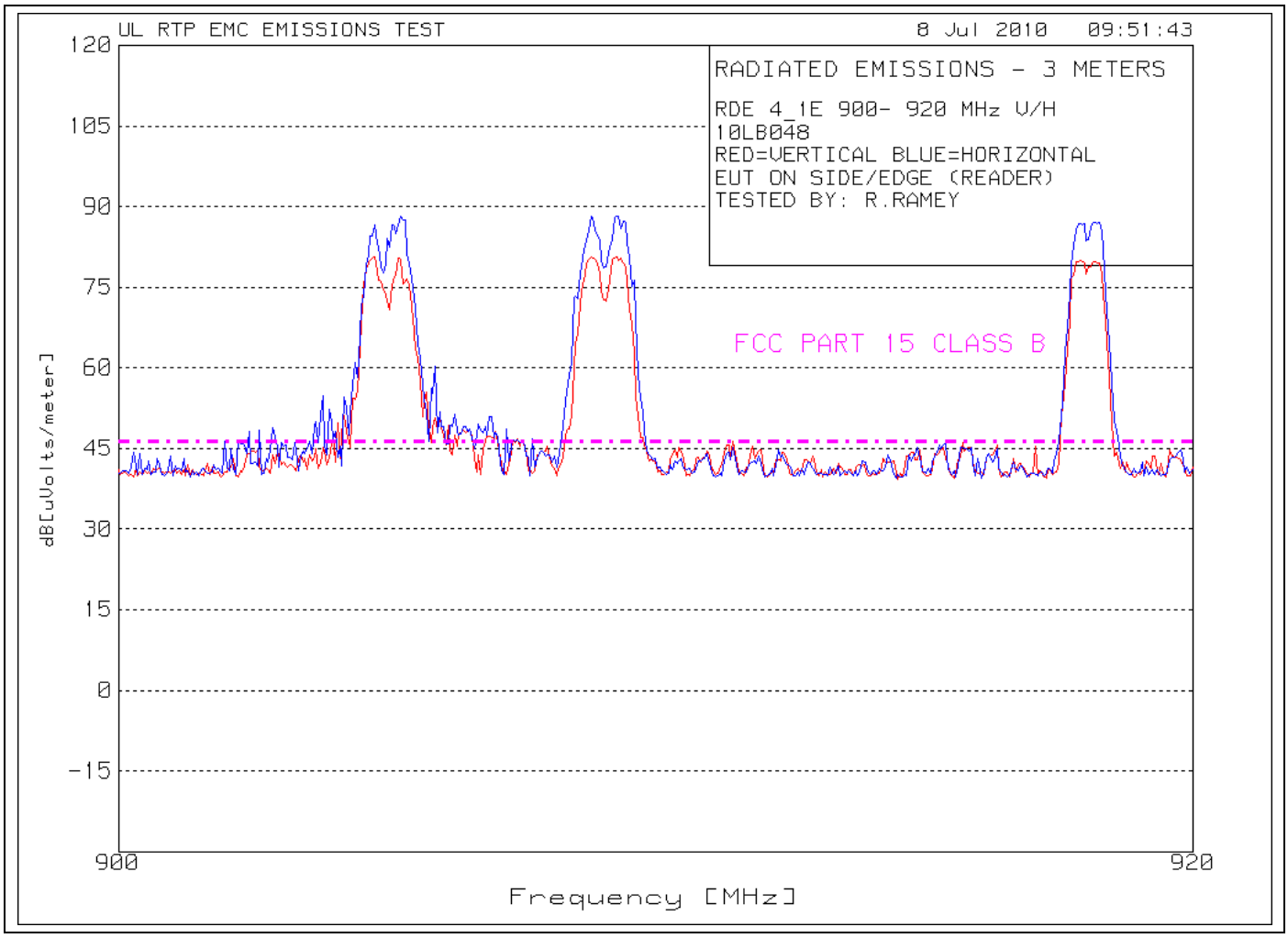

Table 6 Radiated Emissions Data Points (Reader, Y-Orientation)

RDE 4_1E 900- 920 MHz V/H
10LB048
RED=VERTICAL BLUE=HORIZONTAL
EUT ON SIDE/EDGE (READER)
TESTED BY: R.RAMEY

Test Freq. [MHz]	Meter Reading [dBuV]	Det. Type	Cbl/Amp Factor [dB]	Ant. Factor [dB]	Field Strength [dBuV/m]	15.249 Limit [dBuV/m]	Margin [dB]	Azim [deg]	Height [cm]	Pol. [V/H]
Vertical 900 - 920MHz										
905.1954	43.75	qp	12	23.1	78.85	94	-15.15	53	119	Vert
905.2054	49.03	pk	12	23.1	84.13	94	-9.87	360	126	Vert
909.2655	39.22	qp	12	23	74.22	94	-19.78	0	107	Vert
909.2655	47.66	pk	12	23	82.66	94	-11.34	360	107	Vert
917.8672	40.05	qp	12	22.8	74.85	94	-19.15	360	112	Vert
917.9118	48.02	pk	12	22.8	82.82	94	-11.18	360	121	Vert
Horizontal 900 - 920MHz										
905.1954	52.76	pk	12	23.1	87.86	94	-6.14	44	261	Horz
905.1954	48.49	qp	12	23.1	83.59	94	-10.41	44	261	Horz
908.7244	52.65	qp	12	23	87.65	94	-6.35	57	100	Horz
908.7244	54.67	pk	12	23	89.67	94	-4.33	57	100	Horz
917.9073	52.63	pk	12	22.8	87.43	94	-6.57	47	252	Horz
917.9073	50.74	qp	12	22.8	85.54	94	-8.46	47	252	Horz

pk - Peak detector
qp - Quasi-Peak detector

Figure 6 Radiated Emissions Graph 30-1000 MHz (Reader, Y-Orientation)

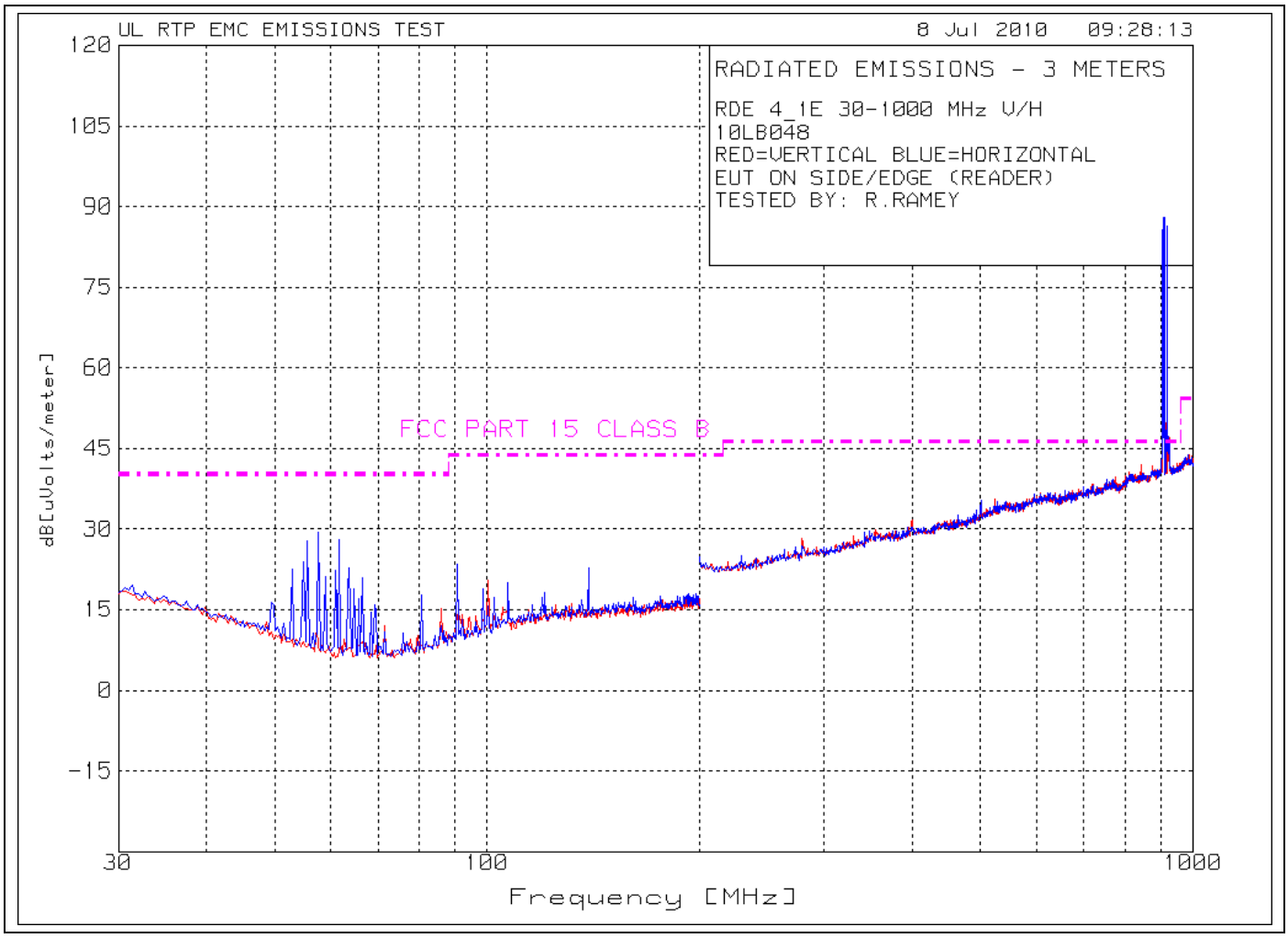

Table 7 Radiated Emissions Data Points (Reader, Y-Orientation)

RDE 4_1E 30-1000 MHz V/H
10LB048
RED=VERTICAL BLUE=HORIZONTAL
EUT ON SIDE/EDGE (READER)
TESTED BY: R.RAMEY

Marker Number	Test Freq. [MHz]	Meter Reading [dBuV]	Det. Type	Cbl/Amp Factor [dB]	Ant. Factor [dB]	Field Strength [dBuV/m]	FCC-B Limit [dBuV/m]	Margin [dB]	Height [cm]	Pol. [V/H]
Horizontal 30 - 200MHz										
1	54.8697	42.22	pk	-26.6	8.3	23.92	40	-16.08	400	Horz
2	55.5511	46.65	pk	-26.8	8	27.85	40	-12.15	400	Horz
3	57.5952	48.56	pk	-26.6	7.4	29.36	40	-10.64	400	Horz
4	61.6834	48.04	pk	-26.6	6.6	28.04	40	-11.96	400	Horz
5	63.7275	43.06	pk	-26.7	6.3	22.66	40	-17.34	400	Horz
6	66.4529	41.42	pk	-26.7	6.2	20.92	40	-19.08	400	Horz

Figure 7 Radiated Emissions Graph 1-10 GHz (Reader, Y-Orientation)

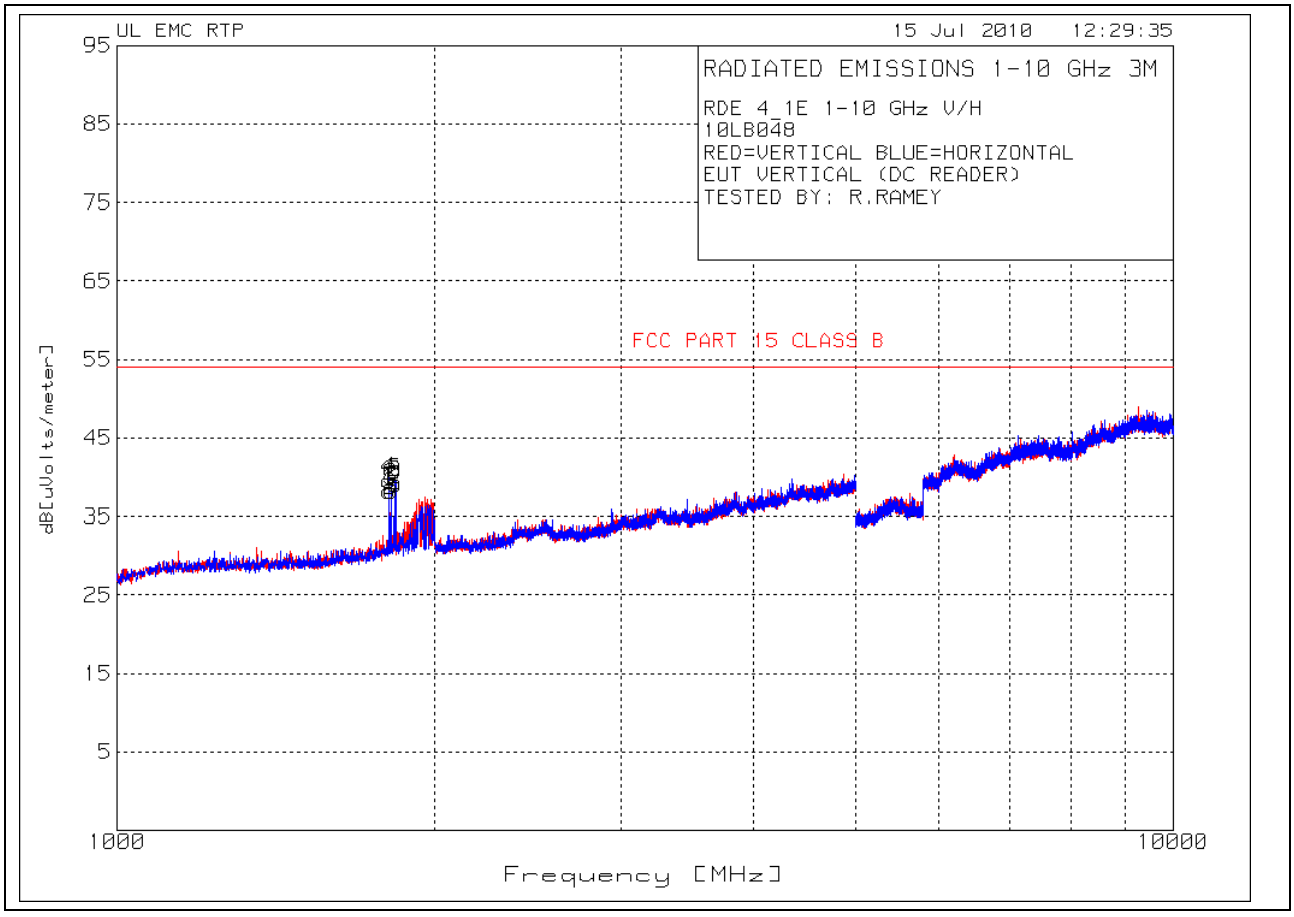

Table 8 Radiated Emissions Data Points (Reader, Y-Orientation)

RDE 4_1E 1-10 GHz V/H
10LB048
RED=VERTICAL BLUE=HORIZONTAL
EUT ON SIDE (DC READER)
TESTED BY: R.RAMEY

Marker Number	Test Freq. [MHz]	Meter Reading [dBuV]	Det. Type	Cbl/Amp Factor [dB]	Ant. Factor [dB]	Field Strength [dBuV/m]	15.209 Limit [dBuV/m]	Margin [dB]	Height [cm]	Pol. [V/H]
Vertical 1000 - 2000MHz										
1	1208	72.8	pk	-63.9	25.1	34	54	-20	175	Vert
2	1809	78.9	pk	-62.9	26.9	42.9	54	-11.1	175	Vert
3	1817	79.8	pk	-62.9	26.9	43.8	54	-10.2	149	Vert
4	1834.5	79.8	pk	-62.8	27	44	54	-10	149	Vert
Horizontal 1000 - 2000MHz										
5	1809	75.5	pk	-62.9	26.9	39.5	54	-14.5	149	Horz
6	1818	76.5	pk	-62.9	26.9	40.5	54	-13.5	149	Horz
7	1835	78.3	pk	-62.8	27	42.5	54	-11.5	149	Horz

pk - Peak detector

4.2 Test Conditions and Results – MAINS TERMINAL – CONDUCTED EMISSIONS

Test Description	Measurements were made on a ground plane. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.		
Basic Standard		FCC Part 15, Subpart B/ 15.207	
UL LPG		80-EM-S0026	
		Frequency range on each side of line	Measurement Point
Fully configured sample scanned over the following frequency range		150kHz to 30MHz	Mains
Limits – 15.107 / 15.207			
Frequency (MHz)	Limit (dBµV)		
	Quasi-Peak	Average	
0.15 - 0.5	66 to 56	56 to 46	
0.5 - 5	56	46	
5 - 30	60	50	
Supplementary information: None			

Table 9 Conducted Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1 (DC Reader powered by AC adapter)	1
Supplementary information: None		

Table 10 Conducted Emissions Test Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
SAR003	Spectrum Analyzer / Receiver	Rohde & Schwarz	1088.7490K40	1/18/10	1/31/11
ATA013, ATA509	Coaxial Cables	-	-	3/1/10	3/31/11
HI0034	Temp/Humid/Pressure Meter	Cole-Parmer	99760-00	10/19/09	10/31/10
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
	Transient Limiter				
ATA001	Transient Limiter, 0.009 to 100 MHz	Electro-Metrics	EM-7600	3/1/10	3/31/11
	LISNs				
ATA066	LISN, 50-ohm/50-uH, 24A	Solar Electronics	9629-50-TS-24-BNC	3/1/10	3/31/11
ATA067	LISN, 50-ohm/50-uH, 24A	Solar Electronics	9629-50-TS-24-BNC	3/1/10	3/31/11

Figure 8 Test Setup for Conducted Emissions – DC Reader

Figure 9 Conducted Emissions Graph – DC Reader - Line

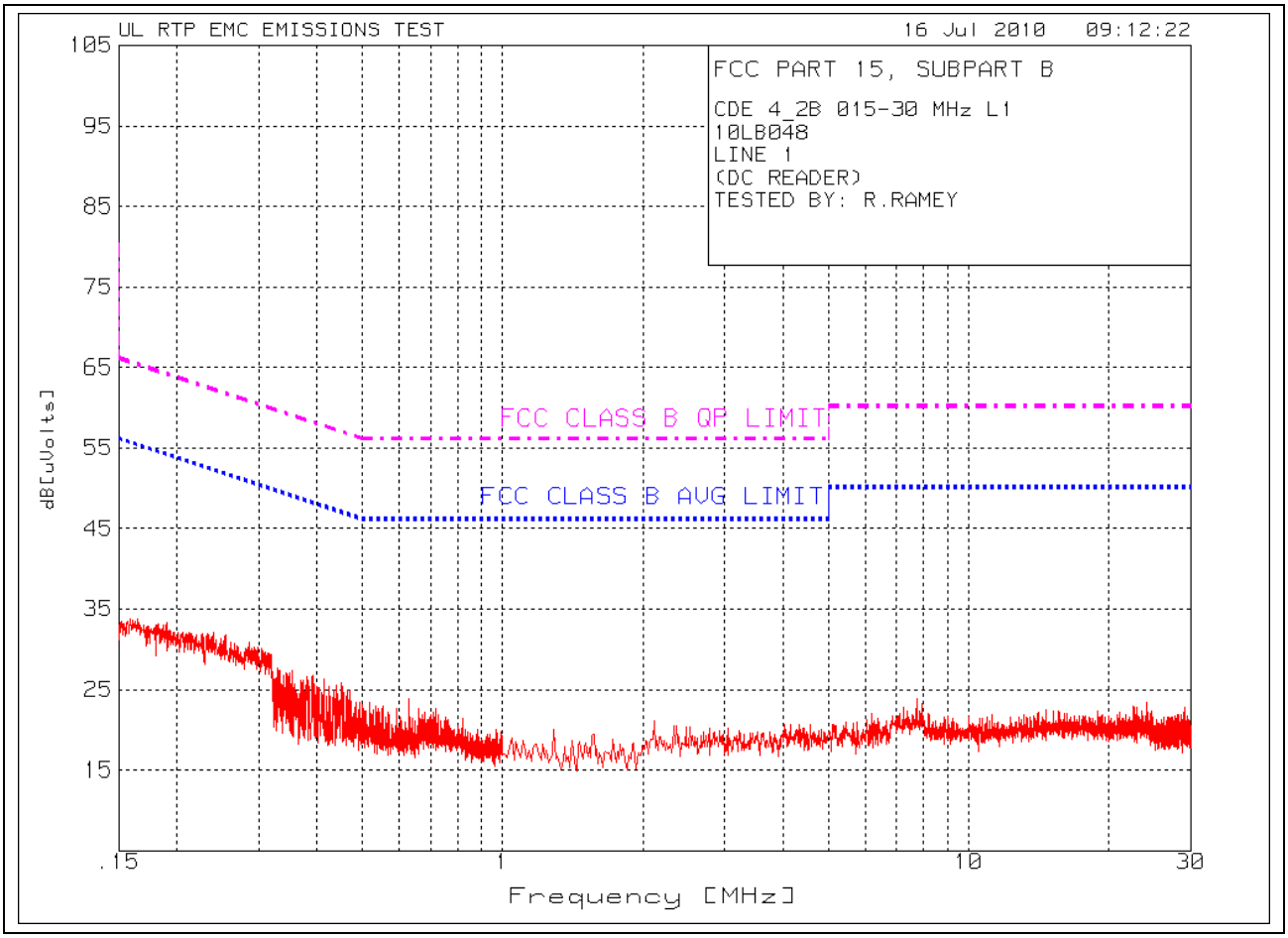

Table 11 Conducted Emissions Data Points – DC Reader - Line

CDE 4_2B 015-30 MHz L1
10LB048
LINE 1
(DC READER)
TESTED BY: R.RAMEY

Marker No.	Test Freq. [MHz]	Meter Reading [dB(uV)]	Det. Type	Gain/Loss Factor [dB]	LISN Factor [dB]	Corr'd 1 Voltage [dBuV]	FCC-B QuasiPk Limit [dBuV]	QuasiPk Margin [dB]	FCC-B Average Limit [dBuV]	Average Margin [dB]
Range: 1 .15 - 1MHz										
1	.16599	22.44	pk	10.8	.1	33.34	65.2	-31.86	55.2	-21.86
2	.25442	20.91	pk	10.9	0	31.81	61.6	-29.79	51.6	-19.79
3	.38129	15.77	pk	10.9	0	26.67	58.3	-31.63	48.3	-21.63
4	.63469	10.71	pk	10.9	0	21.61	56	-34.39	46	-24.39
Range: 2 1 - 30MHz										
5	2.11405	10.01	pk	11.1	0	21.11	56	-34.89	46	-24.89
6	7.73069	12.63	pk	11.2	0	23.83	60	-36.17	50	-26.17

pk - Peak detector

Figure 10 Conducted Emissions Graph – DC Reader - Neutral

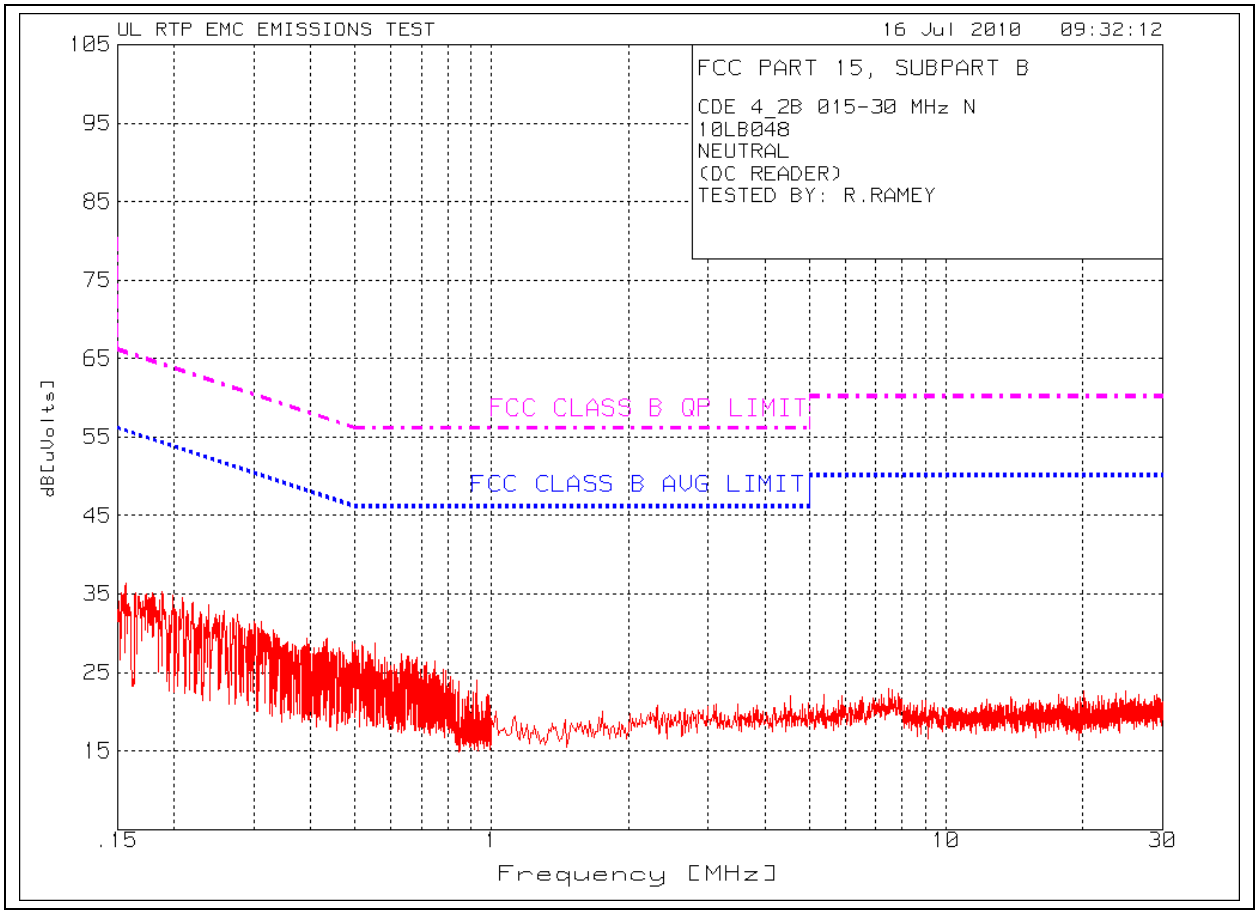

Table 12 Conducted Emissions Data Points – DC Reader - Neutral

CDE 4_2B 015-30 MHz N
10LB048
NEUTRAL
(DC READER)
TESTED BY: R.RAMEY

Marker No.	Test Freq. [MHz]	Meter Reading [dB(uV)]	Det. Type	Gain/Loss Factor [dB]	LISN Factor [dB]	Corr'd 1 Voltage [dBuV]	FCC-B QuasiPk Limit [dBuV]	QuasiPk Margin [dB]	FCC-B Average Limit [dBuV]	Average Margin [dB]
Range: 1 .15 - 1MHz										
1	.1568	25.4	pk	10.8	.1	36.3	65.6	-29.3	55.6	-19.3
2	.2466	21.45	pk	10.9	0	32.35	61.9	-29.55	51.9	-19.55
3	.53435	16.74	pk	10.9	0	27.64	56	-28.36	46	-18.36
Range: 2 1 - 30MHz										
4	2.32293	9.65	pk	11.2	0	20.85	56	-35.15	46	-25.15
5	7.59144	11.53	pk	11.2	0	22.73	60	-37.27	50	-27.27
6	20.13605	10.98	pk	11.5	.1	22.58	60	-37.42	50	-27.42

pk - Peak detector

Appendix A

Accreditations and Authorizations

NVLAP Lab code: 200246-0

NVLAP: The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. Accreditation criteria are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. For a full scope listing see http://ts.nist.gov/ts/htdocs/210/214/scopes/2002460.htm

FCC: Details of the measurement facilities used for these tests have been filed with the Federal Communications Commission's Laboratory in Columbia, Maryland (Ref. No. 91039).

Industry Canada Industrie Canada

Industry of Canada: Accredited by Industry Canada for performance of radiated measurements. Our test site complies with RSP 100, Issue 7, Section 3.3. File #: 2180C

VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.:

- Test Station 5 (Location A) C-2427, R-722
- Test Station 4 (Location E) C-743, T-236
- Test Station 1 (Location D) C-742, T-235
- Test Station 6 (Location C) C-744, T-237

ICASA: ICASA (Independent Communications Authority of South Africa) has appointed UL as a Designated Test Laboratory to test Telecommunications equipment for type approval in compliance with CISPR 22 to assist in fulfilling its mandate under section 54(1) of the Telecommunications Act, 1996 (Act 103 of 1996).

NIST/CAB: Validated by the European Commission as a U.S. Conformity Assessment Body (CAB) of the U.S.-EU Mutual Recognition Agreement (MRA) for the Electromagnetic Compatibility - Council Directive 2004/108/EC, Annex III (2-3). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.
NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).
NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6.