Registration No. 440

Certification Test Report
CFR 47 FCC Part 15, Subpart C, 15.225
Industry Canada RSS-210, Issue 7
Industry Canada RSS-Gen, Issue 2

BMI Technologies Inc. G Force Plus VUI RFID Reader
FCC ID # SYXRFVI
Industry Canada ID # 6205A-RFVI
Project Code CG-797

(Report # CG-797-RA-1-1)
Revision: 1
(This report supersedes CG-797-RA-1-0)

April 29, 2008

Prepared for:	BMI Technologies Inc.
Author:	David Raynes Senior EMC Technologist
Approved by:	Nick Kobrosly Director, Canadian Operations

Report Summary

Test Facility:	**National Technical Systems, Canada** Product Integrity Laboratory 5151-47th Street, N.E. Calgary Alberta T3J 3R2
Accreditation Numbers:	FCC 101386 IC: 3978A-1 **Accredited by Standards Council of Canada** Accredited Laboratory No. 440(Conforms with requirements of CAN−P−4D (ISO/IEC 17025)) CLIENTS SERVED: All interested parties FIELDS OF TESTING: Electrical/Electronic, Mechanical/Physical ISSUED ON: 2005−06−02 VALID TO: 2009−03−20
Applicant:	BMI Technologies Inc. 1333 – 8th Street S.W. Suite 405 Calgary, Alberta Canada T2R 1M6
Customer Representative:	Name: Clayton Johnson Phone #: 1-403-244-3901 x227 Email Address: clayton@bmitech.com

EUT Description

EUT Description	Manufacturer	Model	Revision	Serial Number
Vehicle RFID Reader	BMI Technologies Inc.	G Force Plus Vehicle User Interface	3V0	VUI-PROTO-4

Test Summary

Appendix	Test/Requirement Description	Deviations from:			Pass / Fail	Applicable FCC Rule Parts	Applicable Industry Canada Rule Parts
		Base Standard	Test Basis	NTS Procedure			
A	Radiated Emissions, 9 kHz to 30 MHz	No	No	No	Pass	FCC Subpart C 15.209	RSS-Gen Issue 2 7.2.2
B	Radiated Emissions, 30 MHz to 1000 MHz	No	No	No	Pass	FCC Subpart C 15.225	RSS 210 Issue 7 Annex A2.6
C	Transmitter Frequency Stability	No	No	No	Pass	FCC Subpart C 15.225	RSS 210 Issue 7 Annex A2.6
D	Occupied Bandwidth (99% emission bandwidth)	No	No	No	N/A	N/A	RSS-Gen Issue 2 4.6.1

Test Result: The product sample presented for testing complied with the test requirements shown above.

Prepared By: DG. Raynes 2008.04.29 16:27:58 -06'00'
_____
David Raynes
Senior EMC Technologist

gmoore Digitally signed by gmoore
DN: cn=gmoore, c=US, o=nts, email=glen.moore@ntscorp.com
Date: 2008.04.29 17:14:40 -06'00'

Reviewed By: _____
Glen Moore
EMC / Wireless Manager

Approved By: Robyn Zuehlke 2008.04.29 17:23:08 -06'00'
_____
Robyn Zuehlke
Quality Representative

Table of Contents

Register of revisions

Revision	Date	Description of Revisions
0	April 29, 2008	Draft release for Internal review
1	April 29, 2008	Released for distribution.

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe the tests applied by NTS Canada to demonstrate compliance of the BMI Technologies G Force Plus VUI RFID Reader to CFR 47 FCC Part 15, Subpart C, section 15.225, and Industry Canada RSS 210 Issue 7, Annex A2.6, for RFID transmitter.

2.0 EUT DESCRIPTION

2.1 CONFIGURATION

Description of EUT

	Name	Model	Revision	Serial Number
EUT	G Force Plus Vehicle Interface	VUI RFID Reader	3V0	VUI-PROTO-4
Classification	Low Power Transmitter			
Antenna	Integral			
Modulation	ASK	Emission Designator	118K8DCN	
EUT Size (H x W x D) (in inches)	119 mm x 79 mm x 57 mm (4 ¾ x 3 1/8 x 2 ¼ inches)			
EUT Weight (in pounds)	0.2 kg (7 oz.)			
Channels/Frequency Range	1 channel, 13.56 MHz			
Functional Description	The VUI RFID Reader was tested while in a Reader/Writer mode with worst case results reported. For Radiated emissions the EUT was checked in three orthogonal planes with the worst-case results reported.			

2.1.1 EUT POWER

Voltage	12 VDC
Number of Feeds	1 (1 Hot, 1 Return)

2.1.2 EUT MODIFICATIONS

In order to comply with the applicable requirements, one clip-on ferrite bead was installed internal to the case of the device.

Manufacturer	Part Number	Location
Steward	28A0392-0A2	Power/I-O cable

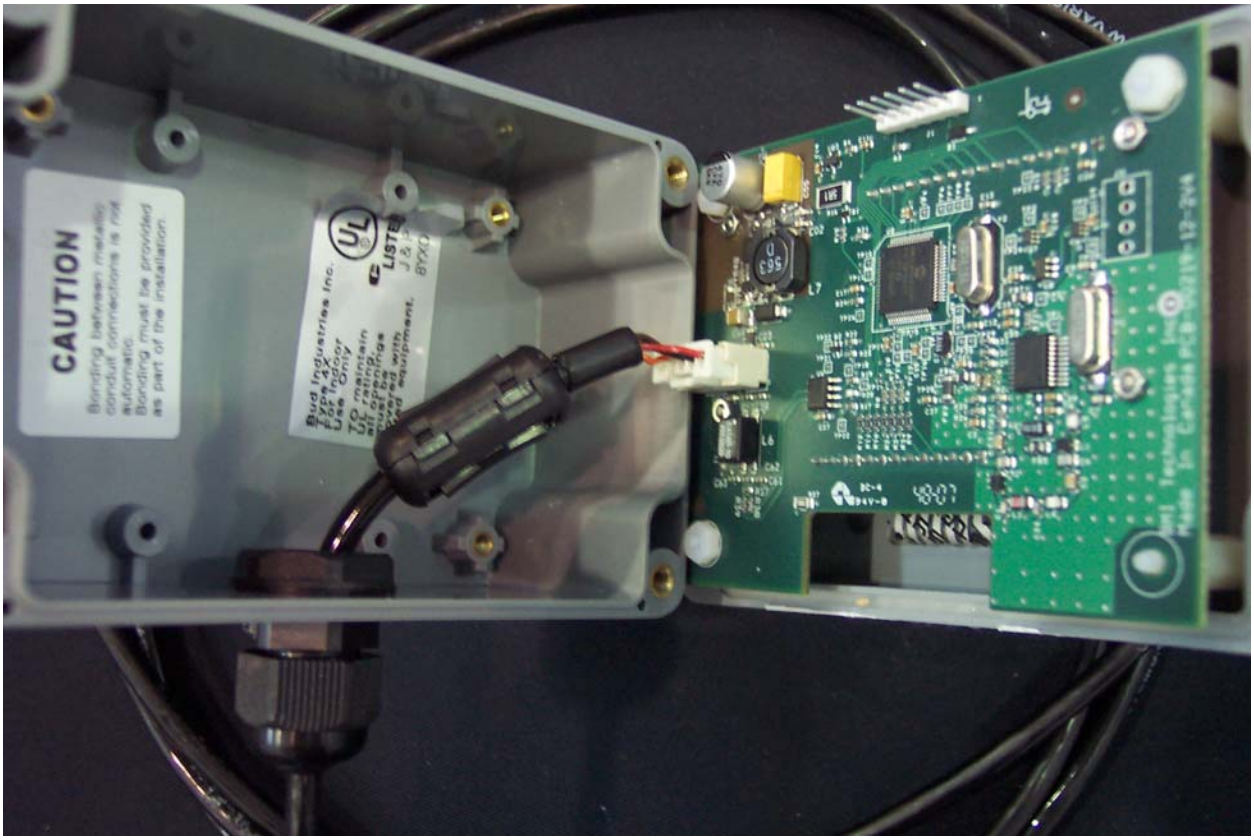

Figure 1: Installed ferrite bead.

2.2 EUT CABLES

Quantity	Model/Type	Routing		Shielded / Unshielded	Description	Cable Length (m)
		From	To			
1	Power & I/O	EUT	Vehicle Module	Shielded	Varisystems V-30	2.7

2.3 MODE OF OPERATION DURING TESTS

The VUI RFID Reader was tested while in a Reader/Writer mode with worst case results reported. For Radiated emissions the EUT was checked in three orthogonal planes with the worst-case results reported. For all test cases pre-scans were completed in all modes to determine worst-case levels.

3.0 SUPPORT EQUIPMENT

3.1 CONFIGURATION

The EUT and associated equipment were positioned on a wooden table centered on the flush-mounted turntable. The table top was 80 cm above the reference ground plane. The VUI was connected to a VM, which in turn was connected to a GSM/GPRS antenna and the power source.

3.2 TEST BED/PERIPHERAL CABLES

The test bed, which simulates the vehicle wiring harness, was placed on the ground plane, beneath the wooden table.

4.0 TEST ENVIRONMENT

4.1 NORMAL TEST CONDITIONS

Temperature:	19 – 23 °C
Relative Humidity:	26 – 35 %
Atmospheric pressure:	883 – 897 mbar
Nominal test voltage:	12 VDC

The values are the limits registered during the test period.

APPENDICES

APPENDIX A: RADIATED EMISSIONS 9 KHZ – 30 MHZ

A.1. Base Standard & Test Basis

Base Standard	FCC PART 15.205, 15.209, 15.225(b) RSS 210 Issue 7, Annex A2.6
Test Basis	ANSI C63.4-2003
Test Method	NTS Radiated Emissions 150 kHz – 30 MHz Test Method 28.1 R1

A.2. Specifications

Frequency	Part 15.209 Limit		
	Quasi-Peak	Average	Distance
MHz	dBμV/m	dBμV/m	m
0.009 – 0.090	NA	168.52 – 148.52[1]	3
0.090 – 0.110	148.52 – 146.78[1]	NA	3
0.110 – 0.490	NA	146.78 – 133.80[1]	3
0.490 – 1.705	93.80 – 82.97[1]	NA	3
1.705 – 30.0	89.54	NA	3

Note 1: decrease with the logarithm of the frequency.

Part 15.209(d)

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

§ 15.225 Operation within the band 13.110–14.010 MHz.

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

FCC 15.205 and RSS 210 Issue 7 §2.2 Restricted bands of operation.

(a) Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz
0.090 – 0.110	8.37625 – 8.38675
[1]0.495 – 0.505	8.41425 – 8.41475
2.1735 – 2.1905	12.29 – 12.293
4.125 – 4.128	12.51975 – 12.52025
4.17725 – 4.17775	12.57675 – 12.57725
4.20725 – 4.20775	13.36 – 13.41
6.215 – 6.218	16.42 – 16.423
6.26775 – 6.26825	16.69475 – 16.69525
6.31175 – 6.31225	16.80425 – 16.80475
8.291 – 8.294	25.5 – 25.67
8.362 – 8.366	

(b) The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

A.3. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
None						

A.4. Test Results

There were no emissions within 20 dB of the applicable limit.

The EUT complies with CFR 47 FCC Part 15.109, 15.205, 15.209,ICES-003 Issue 4 §5.4, and RSS 210 Issue 7, Annex A2.6 requirements.

Observations

Environmental conditions during the test:

Temperature:	19° C
Relative Humidity:	26%
Atmospheric pressure:	897 mbar

Test Data & Photographs

The test data plots and photographs collected during this test appear following this page.

Sample Calculation

Correction Factor = Antenna Correction Factor + Cable Loss
Emission Level = Measured Value + Correction Factor
Margin = Limit – Emission Level

Tested By

This testing was conducted in accordance with the ISO 17025: 2005 scope of accreditation, table 1; Quality Manual.

Name: David Raynes
Function: Senior EMC Technologist

Product Integrity Laboratory V2.5

Project Number: CG-797 **Tester:** David
Model: Microlynx Systems VUI RFID Reader **Test ID:** RE01-10m-797
Comments: Conf07: 12 VDC power supply, Key on, Con Tx. Vui oriented to Ant. VM and antenna on floor. Vui in up-right position on the side. Ferrite in inside the case.

Standard: FCC15_B **Measurement Distance:** <1GHz 3 meters; >1GHz 3 meters

Antenna Polarization	Frequency (MHz)	Measured Level (dBµV)	Measurement Detector	Correction Factors (dB/m)	Emission Level (dBµV/m)	Limit Line	Limit (dBµV/m)	Margin (dB)	Mast Height (cm)	Turntable Angle (degrees)
Parallel	13.5625	57.34	Peak	0.00	57.34	Average	103.99	46.65	100.0	327.0
Perpendicular	13.5625	46.05	Peak	0.00	46.05	Average	103.99	57.94	100.0	327.0

1. Positive Margin indicates a Pass
2. Correction Factors include all factors between the receiving antenna and the receiver, including the antenna.
3. Peak emissions with more than 10 dB margin are not selected for QP investigation.
4. EUT faces normal to antenna at 10.6° turntable position.

Table 1: Carrier

Note: The correction factors were applied internally to the receiver. See Figures 8 and 9.

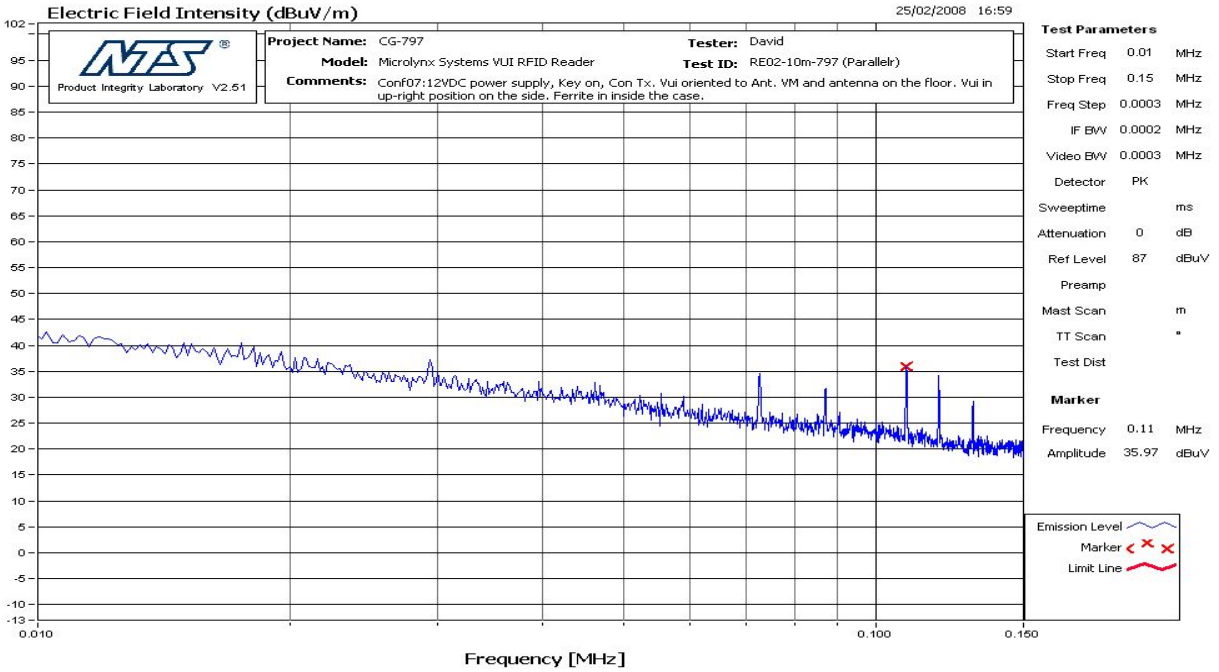

Figure 2: Radiated Emissions: 9 kHz – 150 kHz, Parallel

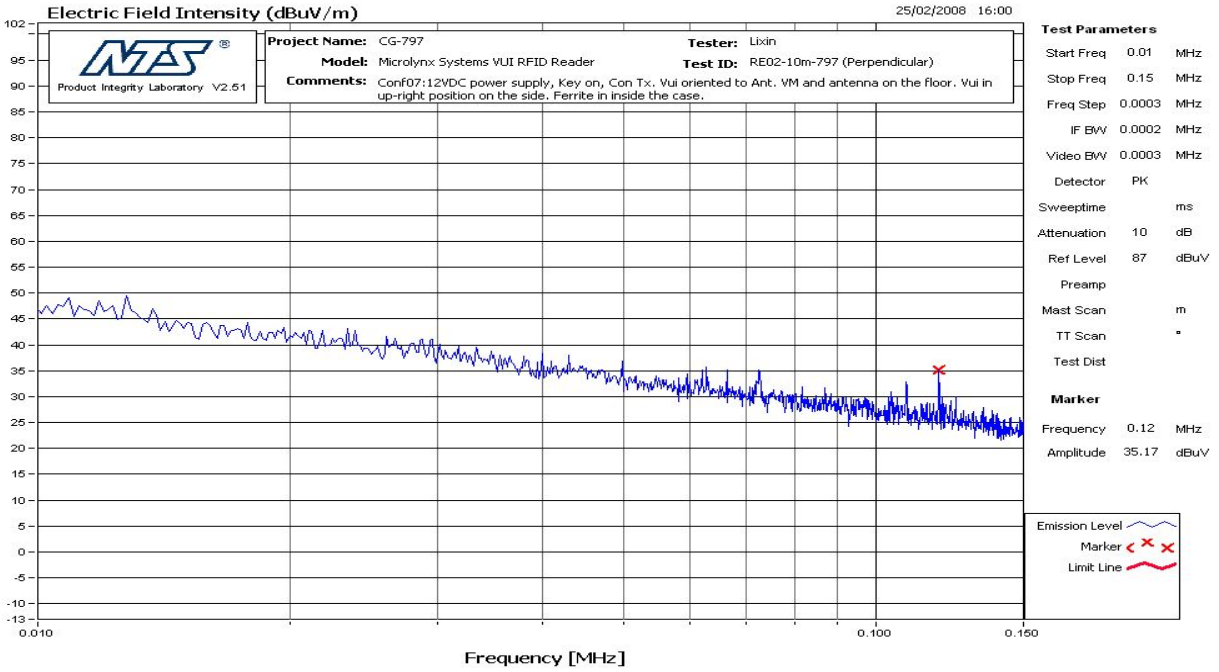

Figure 3: Radiated Emissions: 9 kHz – 150 kHz, Perpendicular

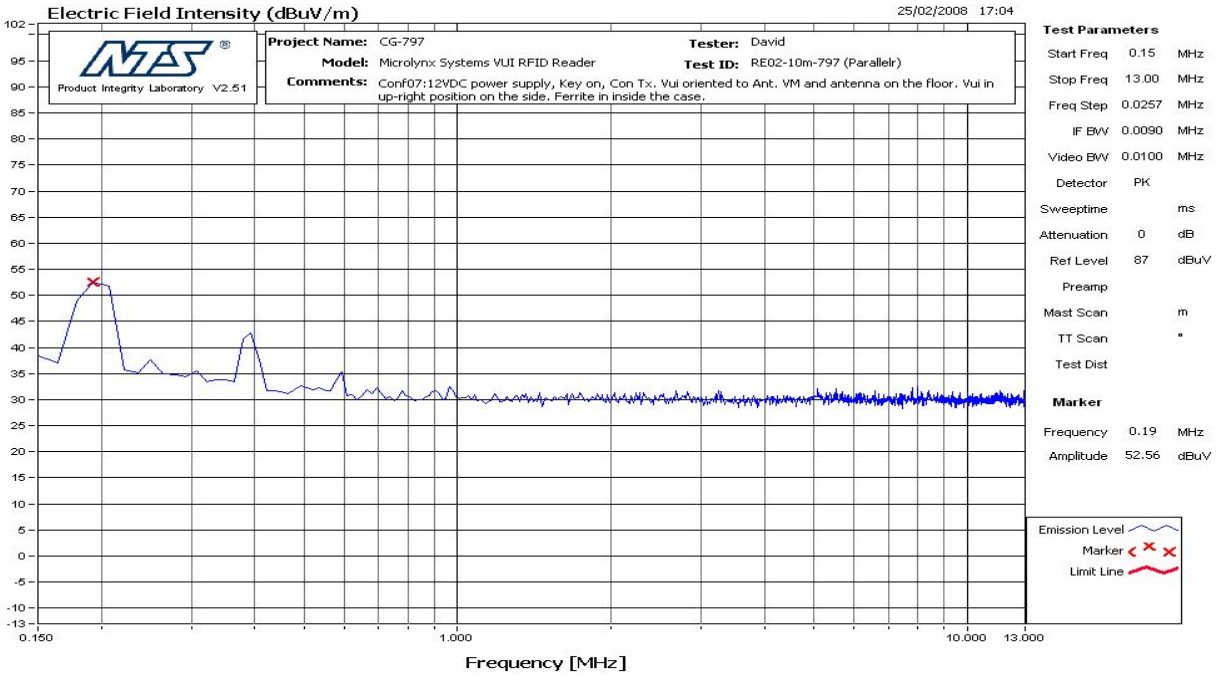

Figure 4: Radiated Emissions: 150 kHz – 13 MHz, Parallel

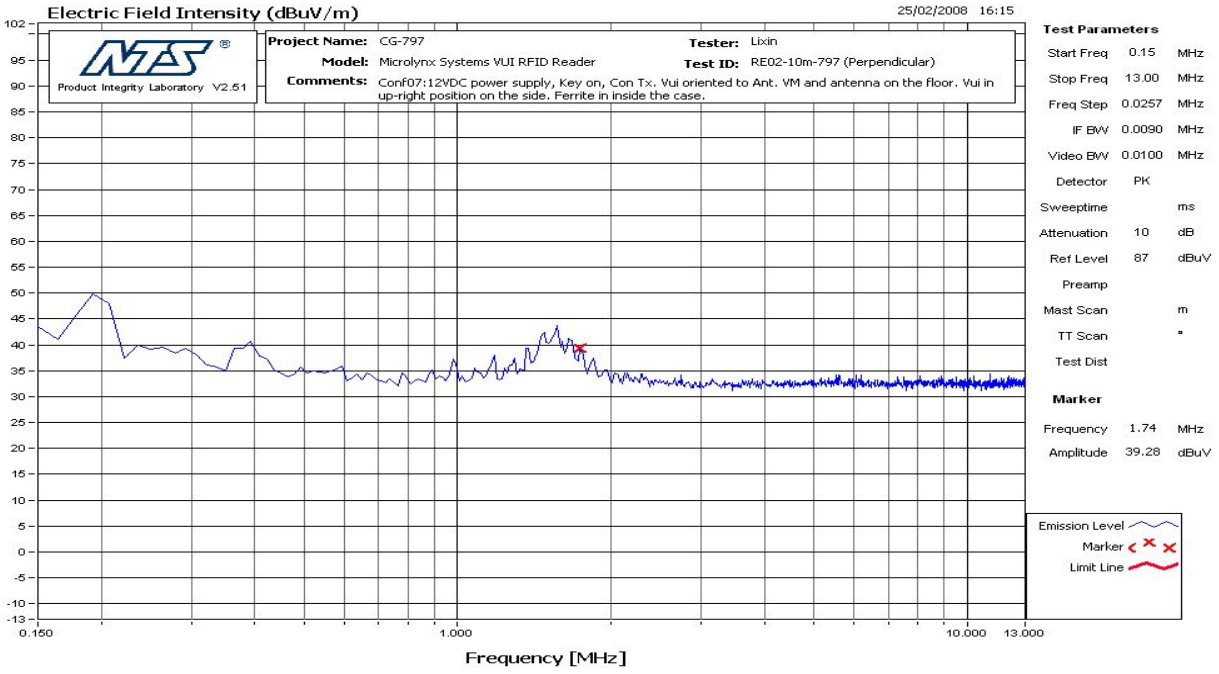

Figure 5: Radiated Emissions: 150 kHz – 13 MHz, Perpendicular

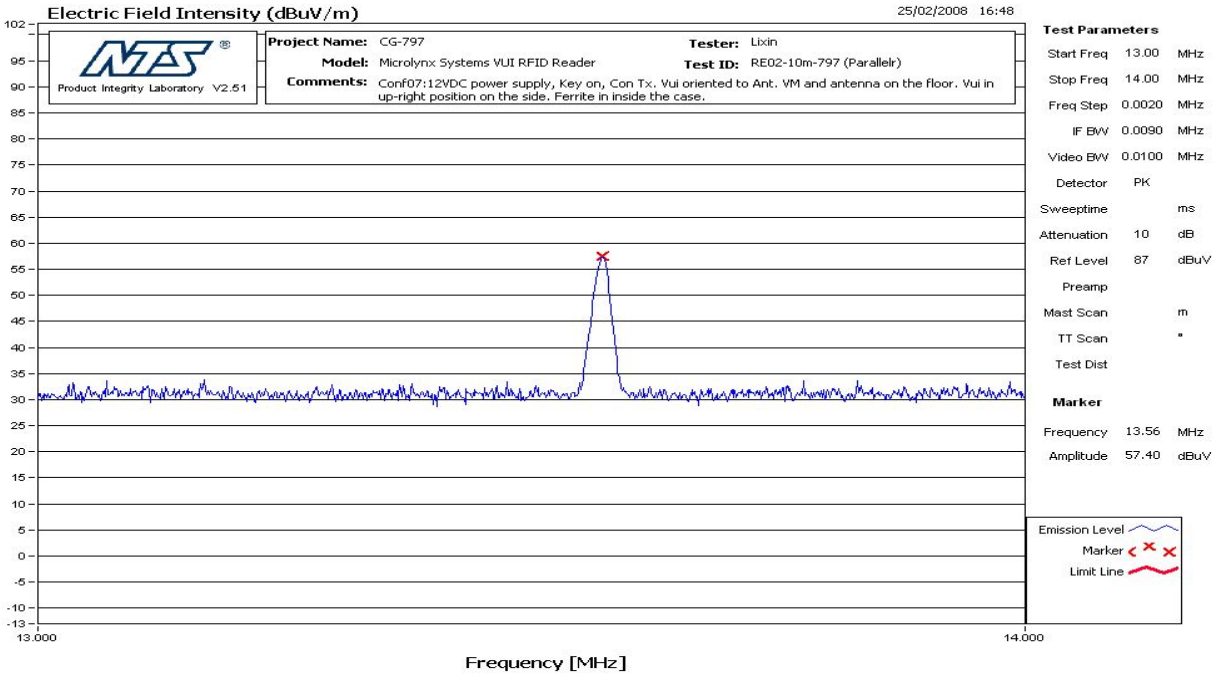

Figure 6: Radiated Emissions: 13 MHz – 14 MHz, Parallel

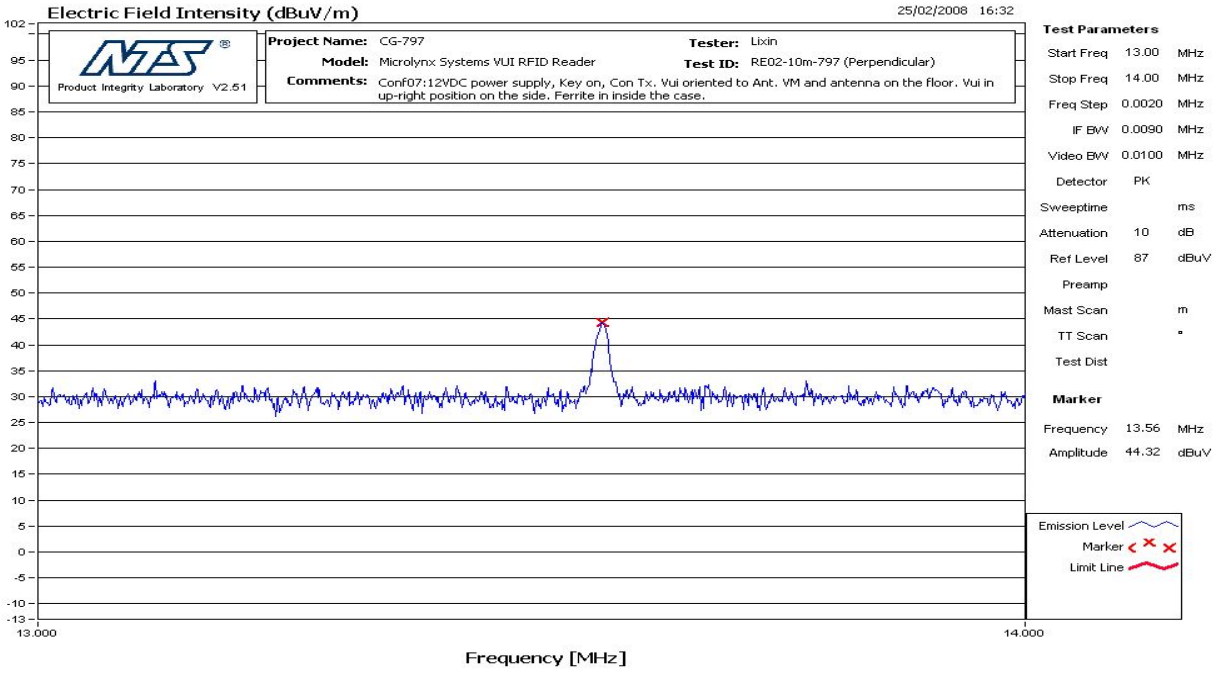

Figure 7: Radiated Emissions: 13 MHz – 14 MHz, Perpendicular

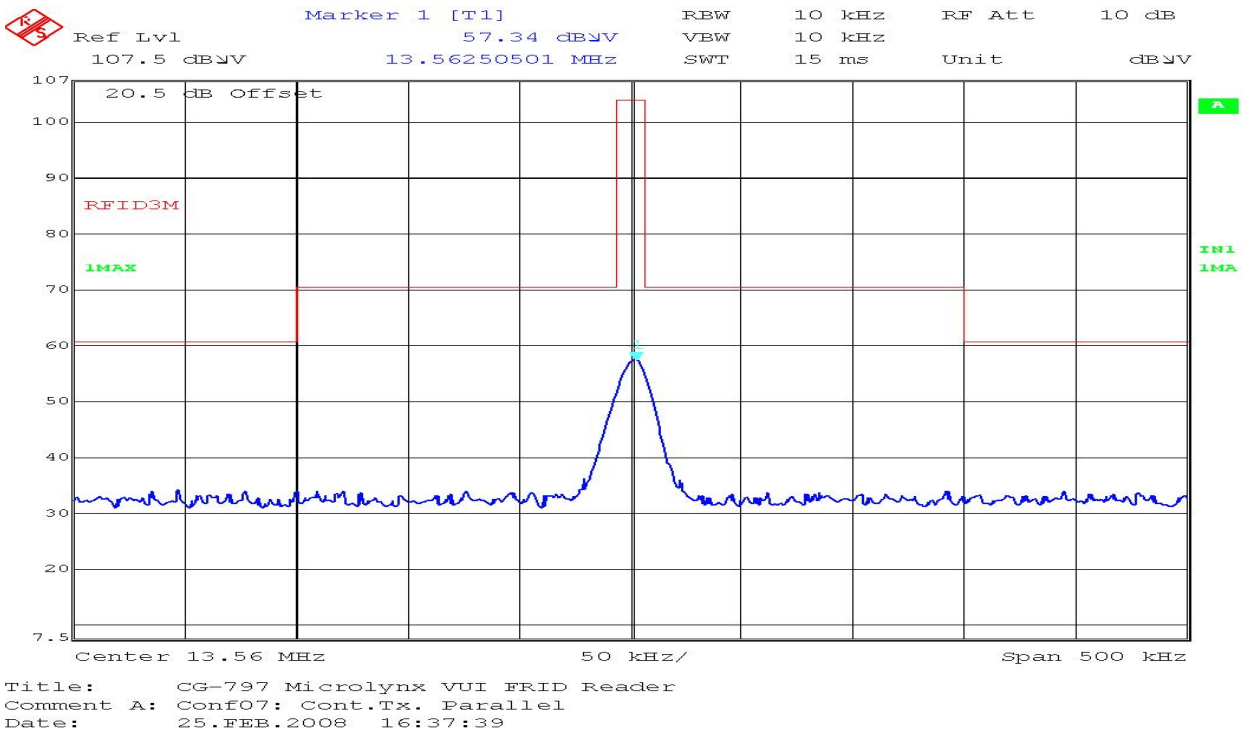

Figure 8: Radiated Emissions: 13.31 MHz – 13.81 MHz, Parallel
Note: 20.5 dB correction factor applied internally to the receiver.

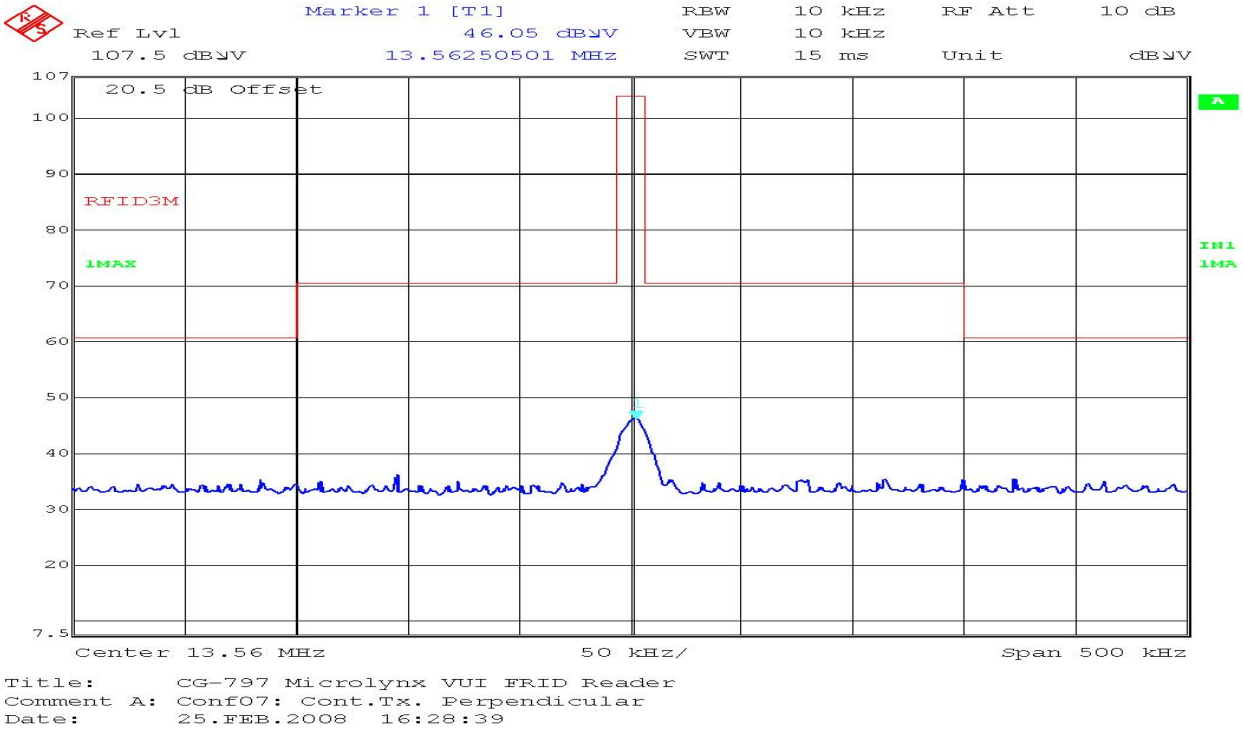

Figure 9: Radiated Emissions: 13.31 MHz – 13.81 MHz, Perpendicular
Note: 20.5 dB correction factor applied internally to the receiver.

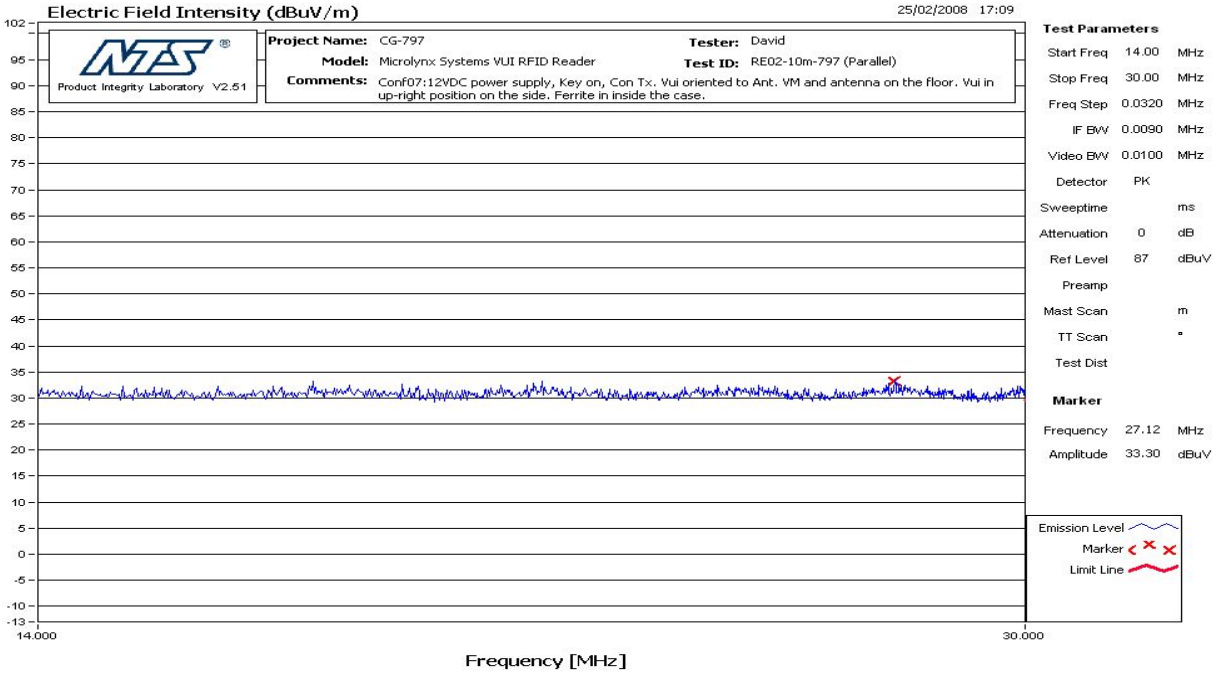

Figure 10: Radiated Emissions: 14 MHz – 30 MHz, Parallel

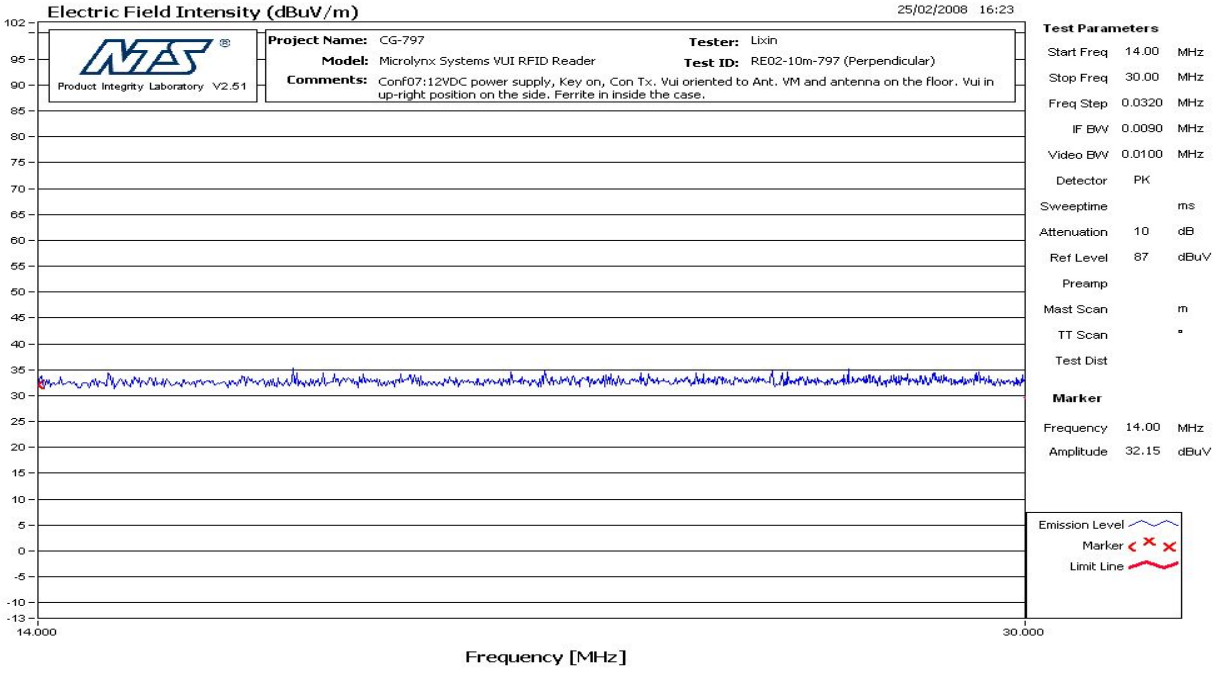

Figure 11: Radiated Emissions: 14 MHz – 30 MHz, Perpendicular

APPENDIX B: RADIATED EMISSIONS 30 MHZ – 1000 MHZ

B.1. Base Standard & Test Basis

Base Standard	FCC PART 15.109, 15.205, 15.209 ICES-003 Issue 4, §5.5, RSS 210 Issue 7, Annex A2.6
Test Basis	ANSI C63.4-2003 CISPR 16
Test Method	NTS Radiated Emissions 30 MHz – 1GHz Automated Test Method SOP CAG EMC 01

B.2. Specifications

Frequency	Part 15.209 Limit (Part 15.109 Class B)		
	Quasi-Peak	Average	Distance
MHz	dBµV/m	dBµV/m	m
30.0 – 88.0	29.54	NA	10
88.0 – 216	33.06	NA	10
216 – 960	35.56	NA	10
960 – 1000	43.52	NA	10

Part 15.209(d)

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Note: These limits are identical to the limits specified in Part 15.109 for Class B devices.

§ 15.225 Operation within the band 13.110–14.010 MHz.

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

FCC 15.205 and RSS 210 Issue 7 2.2 Restricted bands of operation:
(a) Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz
37.5 – 38.25	149.9 – 150.05	322 – 335.4
73 – 74.6	156.52475 – 156.52525	399.9 – 410
74.8 – 75.2	162.0125 – 167.17	608 – 614
108 – 121.94	167.72 – 173.2	960 – 1240
123 – 138	240 – 285	

(b) The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

Part 15.225 Operation within the band 13.553 - 13.567 MHz.**:**

(a) The field strength of any emissions within this band shall not exceed 10,000 microvolts/meter at 30 meters.

(b) The field strength of any emissions appearing outside of this band shall not exceed the general radiated emission limits shown in Section 15.209.

B.3. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
None						

B.4. Test Results

Product Integrity Laboratory V2.5

Project Number: CG-797 **Tester:** David Raynes
Model: VUI RFID Reader **Test ID:** RE02c-10m-797
Comments: 12 VDC power supply, Key on, Con Tx, VUI oriented to Ant. VM and antenna on the floor, VUI in upright position on it's side. Ferrite inside the case.

Standard: FCC15_B **Measurement Distance:** <1GHz 10 meters; >1GHz 3 meters

Antenna Polarization	Frequency (MHz)	Measured Level (dBµV)	Measurement Detector	Correction Factors (dB/m)	Emission Level (dBµV/m)	Limit Line	Limit (dBµV/m)	Margin (dB)	Mast Height (cm)	Turntable Angle (degrees)
Horizontal	379.6618	32.06	Q.Peak	-8.84	23.22	Q.Peak	35.56	12.34	239.5	271.6
Vertical	117.5437	35.39	Q.Peak	-12.64	22.75	Q.Peak	33.06	10.31	127.5	281.0
Vertical	209.9985	40.44	Q.Peak	-13.82	26.62	Q.Peak	33.06	6.44	155.2	121.9
Vertical	294.9105	37.50	Q.Peak	-10.36	27.14	Q.Peak	35.56	8.42	102.1	143.2
Vertical	335.2763	36.74	Q.Peak	-9.66	27.08	Q.Peak	35.56	8.48	102.1	74.0
Vertical	383.3834	37.22	Q.Peak	-8.34	28.88	Q.Peak	35.56	6.68	109.8	204.4

1. Positive Margin indicates a Pass
2. Correction Factors include all factors between the receiving antenna and the receiver, including the antenna.
3. Peak emissions with more than 10 dB margin are not selected for QP investigation.
4. EUT faces normal to antenna at 10.6° turntable position.

Table 2: Radiated Emissions Data, 30 MHz – 1000 MHz

The measured emission with the least margin to the limit was 26.62 dBµV/m at 209.9985 MHz, when the antenna is vertically polarized. There is a 6.44 dB margin to the FCC Part 15 Class B limit.

Product Integrity Laboratory V2.5

Project Number: CG-797 **Tester:** David Raynes
Model: VUI RFID Reader **Test ID:** RE02c-10m-797
Comments: 12 VDC power supply, Key on, Con Tx, VUI oriented to Ant. VM and antenna on the floor, VUI in upright position on it's side. Ferrite inside the case.

Standard: ICES-003 **Measurement Distance:** <1GHz 10 meters; >1GHz 3 meters

Antenna Polarization	Frequency (MHz)	Measured Level (dBµV)	Measurement Detector	Correction Factors (dB/m)	Emission Level (dBµV/m)	Limit Line	Limit (dBµV/m)	Margin (dB)	Mast Height (cm)	Turntable Angle (degrees)
Horizontal	379.6618	32.06	Q.Peak	-8.84	23.22	Q.Peak	37.00	13.78	239.5	271.6
Vertical	117.5437	35.39	Q.Peak	-12.64	22.75	Q.Peak	30.00	7.25	127.5	281.0
Vertical	209.9985	40.44	Q.Peak	-13.82	26.62	Q.Peak	30.00	3.38	155.2	121.9
Vertical	294.9105	37.50	Q.Peak	-10.36	27.14	Q.Peak	37.00	9.86	102.1	143.2
Vertical	335.2763	36.74	Q.Peak	-9.66	27.08	Q.Peak	37.00	9.92	102.1	74.0
Vertical	383.3834	37.22	Q.Peak	-8.34	28.88	Q.Peak	37.00	8.12	109.8	204.4

1. Positive Margin indicates a Pass
2. Correction Factors include all factors between the receiving antenna and the receiver, including the antenna.
3. Peak emissions with more than 10 dB margin are not selected for QP investigation.
4. EUT faces normal to antenna at 10.6° turntable position.

Table 3: Radiated Emissions Data, 30 MHz – 1000 MHz

The measured emission with the least margin to the limit was 26.62 dBµV/m at 209.9985 MHz, when the antenna is vertically polarized. There is a 3.38 dB margin to the ICES-003 Class B limit.

The EUT complies with CFR 47 FCC Part 15.109, 15.205, 15.209, ICES-003 Issue 4, §5.4, and RSS 210 Issue 7, Annex A2.6 requirements.

Observations

Environmental conditions during the test:

Temperature:	19° C
Relative Humidity:	24%
Atmospheric pressure:	887 mbar

Test Data & Photographs

The test data plots and photographs collected during this test appear following this page.

Sample Calculation

Correction Factor = Antenna Correction Factor + Cable Loss – Preamplifier Gain
Emission Level = Measured Value + Correction Factor
Margin = Limit – Emission Level

Tested By

This testing was conducted in accordance with the ISO 17025: 2005 scope of accreditation, table 1; Quality Manual.

Name: David Raynes
Function: Senior EMC Technologist

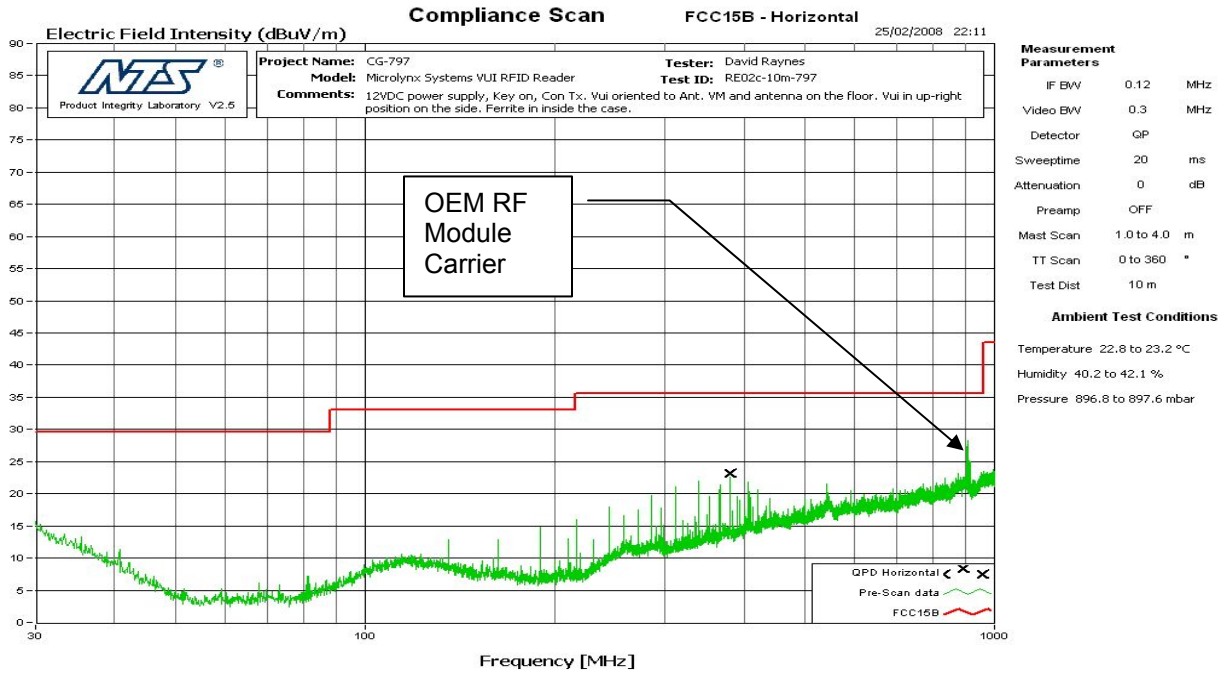

Figure 12: Radiated Emissions – Horizontal, 30 MHz – 1000 MHz

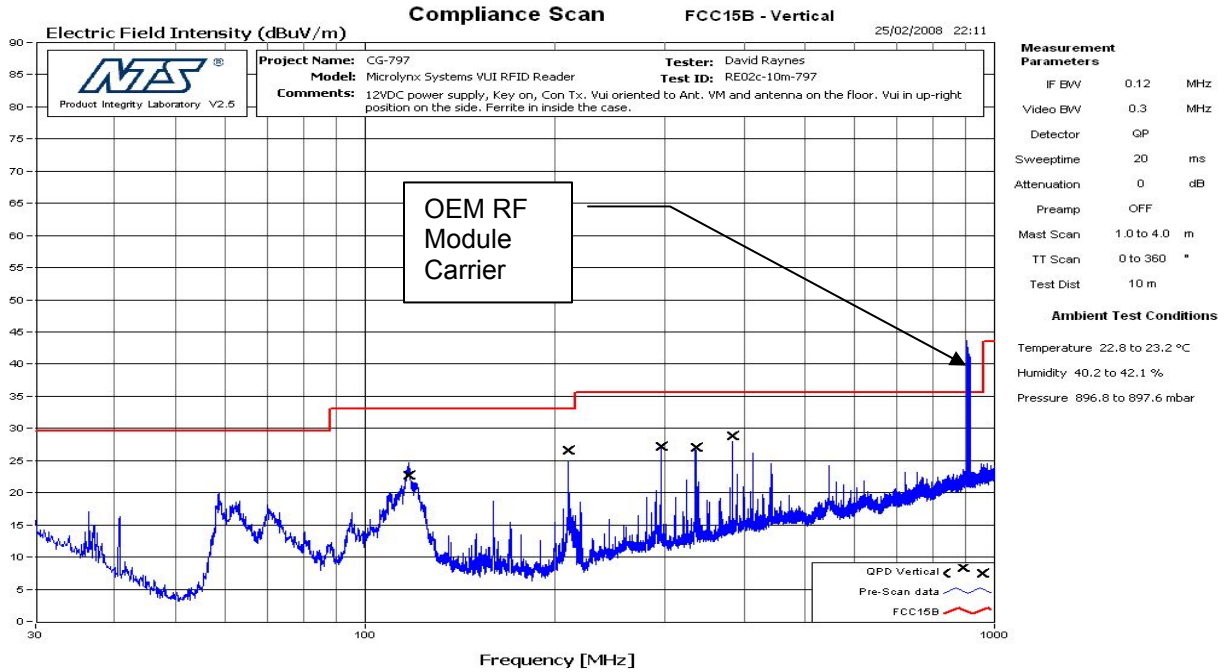

Figure 13: Radiated Emissions – Vertical, 30 MHz – 1000MHz

APPENDIX C: TRANSMITTER FREQUENCY STABILITY

C.1. Base Standard & Test Basis

Base Standard	CFR 47 FCC Part 15.225(e), RSS-Gen Issue 2 §7.2.4, RSS 210 Issue 7, Annex A2.6
Test Basis	CFR 47 FCC Part 2.1055
Test Method	CFR 47 FCC Part 2.1055

C.2. Specifications

Part 15.225(e): The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

C.3. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
None						

C.4. Test Procedure

CFR 47 FCC Part 2.1055

C.5. Test Results, Frequency vs. Voltage at 20° C

Power Supply Voltage(VDC)	Frequency (MHz)	Frequency Shift (MHz)	Maximum Allowed Frequency Shift (MHz)	Result
12.0	13.55937876	Reference	NA	NA
10.2	13.55937876	0	±0.00135594	PASS
13.8	13.55938126	+0.00000250	±0.00135594	PASS

C.6. Test Results, Frequency vs. Temperature

Temperature (°C)	Frequency (MHz)	Frequency Shift (MHz)	Maximum Allowed Frequency Shift (MHz)	Result
-30	13.55958627	+0.00020751	±0.00135594	PASS
-20	13.55958126	+0.00020250	±0.00135594	PASS
-10	13.55955621	+0.00017745	±0.00135594	PASS
0	13.55951112	+0.00013236	±0.00135594	PASS
10	13.55945852	+0.00007976	±0.00135594	PASS
20	13.55937876	Reference	NA	PASS
30	13.55935854	-0.00002022	±0.00135594	PASS
40	13.55932097	-0.00005779	±0.00135594	PASS
50	13.55931095	-0.00006781	±0.00135594	PASS

C.7. Sample Calculation

Frequency Shift = Measured Frequency – Reference Frequency

C.8. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.

Name: David Raynes
Function: Senior EMC Technologist

APPENDIX D: 99% BANDWIDTH

D.1. Base Standard & Test Basis

Base Standard	RSS-Gen Issue 2 §4.6.1
Test Basis	RSS-Gen Issue 2 §4.6.1
Test Method	RSS-Gen Issue 2 §4.6.1

D.2. Specifications

4.6.1: When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

D.3. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
None						

D.4. Test Procedure

RSS-Gen Issue 2 §4.6.1

D.5. Test Results

Frequency (MHz)	Occupied Bandwidth
13.55938377	67.64 Hz

D.6. Operating Mode During Test

The VUI RFID Reader was tested while in a Reader/Writer mode with worst case results reported.

D.7. Sample Calculation

N/A

D.8. Tested By

This testing was conducted in accordance with the ISO 17025: 2005 scope of accreditation, table 1; Quality Manual.

Name: David Raynes
Function: Senior EMC Technologist

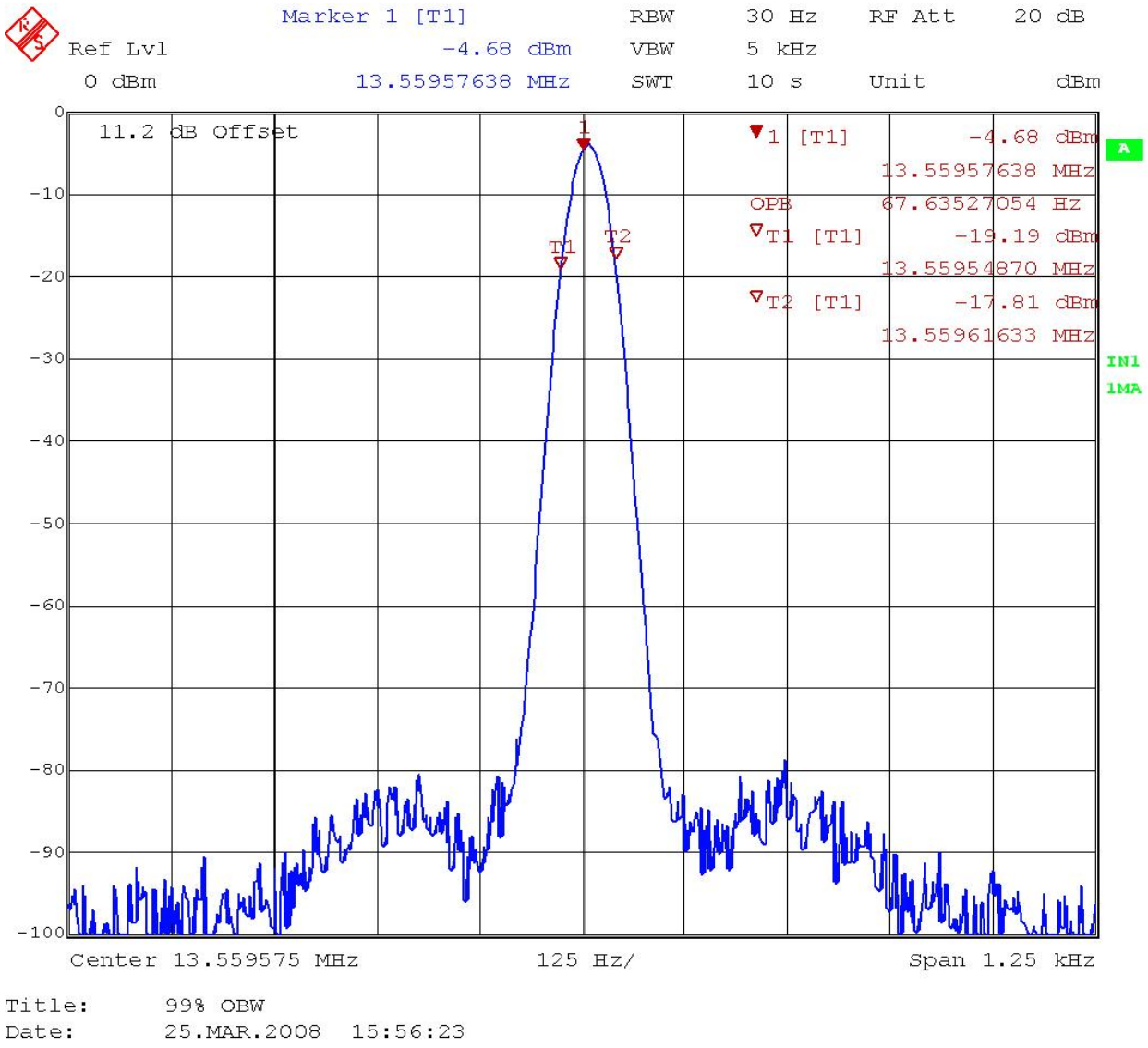

Figure 14: 99% Occupied Bandwidth

APPENDIX E: MEASUREMENT EQUIPMENT

10 m SEMI-ANECHOIC CHAMBER 9 kHz – 1 GHz Radiated Emission					
Descriptions	**Manufacturer**	**Type/Model**	**Serial #**	**Cal Due**	**Cal Date**
Test Receiver	Rohde & Schwarz	ESMI	CG0433/ CG0434	27FEB08	27FEB07
Test Receiver	Rohde & Schwarz	ESAI	CG0123/ CG0124	04MAR09	04MAR08
Bilog Antenna	Teseq	CBL 6112D	CG1177	10OCT08	10OCT07
Loop Antenna (Rx) 10 KHz – 30 MHz	Rohde & Schwarz	HFH2-Z2	CG0701	02JUL08	02JUL07
E-field link Cable 9 KHz – 35 MHz	Sucoflex	N/A	CG0667	N/A	N/A
HPIB Extender	HP	37204	CG0181	N/A	N/A
Mast Controller	EMCO	2090	CG0179	N/A	N/A
Turntable Controller	EMCO	2090	CG0178	N/A	N/A
Digital Barometer / Thermometer	Cole-Parmer	1870	CG0728	19JUN08	19JUN07
Spectrum Analyzer 9 kHz – 40 GHz	Rohde & Schwarz	FSEK-20	CG0118	19JUN08	19JUN07
EMI Receiver 9 kHz – 40 GHz	Rohde & Schwarz	ESI	CG0109	12NOV08	12NOV07
HPIB Extender	HP	37204	CG0110	N/A	N/A
Turntable and Mast Controller	EMCO	2090	CG0161	N/A	N/A

ENVIRONMENTAL CHAMBER Transmitter Frequency Stability					
Descriptions	**Manufacturer**	**Type/Model**	**Serial #**	**Cal Due**	**Cal Date**
Temperature chamber	Thermotron	HC11	321-25/1094-RF	N/A	N/A
Data acquisition / Thermocouple	Hewlett Packard	34970A	CG0016	27DEC08	27DEC07
HPIB Extender	HP	37204	CG0181	N/A	N/A
Digital Barometer / Thermometer	Cole-Parmer	1870	CG0728	19JUN08	19JUN07
Spectrum Analyzer 9 kHz – 40 GHz	Rohde & Schwarz	FSEK-20	CG0118	19JUN08	19JUN07
EMI Receiver 9 kHz – 40 GHz	Rohde & Schwarz	ESI	CG0109	12NOV08	12NOV07
HPIB Extender	HP	37204	CG0110	N/A	N/A

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