Certification Test Report

BossPac Engineering & Technology
WASP

FCC ID: ZI8EA160
IC: 9648A-EA160

Project Code C-0101732

(Report C-0101732-RA-1-1)

Revision: 1

May 2, 2011

Prepared for:	BossPac Engineering & Technology
Author:	Deniz Demirci Senior Wireless / EMC Technologist
Approved by:	Nick Kobrosly Director of 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 A2LA, The American Association for Laboratory Accreditation Conforms with requirements of ISO/IEC 17025 0214.22 Electrical 0214.23 Mechanical CLIENTS SERVED: All interested parties FIELDS OF TESTING: Electrical/Electronic, Mechanical/Physical ACCREDITATION DATE: May 14, 2009 VALID TO: December 31, 2011
Applicant:	BossPac Engineering & Technology Bay 8, 1450 - 28 Ave NE Calgary, AB T2A 7W6 Canada
Customer Representative:	Name: Anthony Bastiaansen Phone #: 403) 216-1226 Email Address: tony@bosspac.com

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	20 dB Bandwidth	No	No	No	Pass	FCC Subpart C 15.215	NA
B	Occupied Bandwidth (99% emission bandwidth)	No	No	No	N/A	N/A	RSS-Gen Issue 3 4.6.1
C	Field Strength of Fundamental	No	No	No	Pass	FCC Subpart C 15.249 (a)	RSS 210 Issue 8 A2.9 (a)
D	Radiated Spurious Emissions Band Edge	No	No	No	Pass	FCC Subpart C 15.249, 15.205	RSS 210 Issue 8 A2.9
E	Radiated Spurious Emissions (Tx)	No	No	No	Pass	FCC Subpart C 15.249, 15.205	RSS 210 Issue 8 2.5, A2.9
F	Radiated Spurious Emissions (Un-intentional radiators)	No	No	No	Pass	FCC Subpart B 15.109	ICES-003 Issue 4

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

Prepared By: Digitally signed by Deniz Demirci
Date: 2011.05.27 15:12:43 -06'00'
Deniz Demirci
Senior Wireless/EMC Technologist

Reviewed By: Digitally signed by Glen Moore
DN: cn=Glen Moore, c=CA, email=glen.moore@ntscorp.com
Glen Moore
Wireless/EMC Manager

Approved By: Alex Mathews 2011.05.30 10:30:52 -06'00'
Alex Mathews
Quality Management Representative

Table of Contents

Register of revisions

Revision	Date	Description of Revisions
1	May 2, 2011	Initial release

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 WASP from BossPac Engineering & Technology to FCC Part 15 Subpart C section 15.249 and the equivalent sections of Industry Canada's RSS 210, Issue 8 and FCC Subpart B (unintentional) and ICES-003 compliance.

2.0 EUT DESCRIPTION

2.1 CONFIGURATION

EUT	Name	Model	Revision	Serial Number
	WASP	EA000160	A	N/A
Device Classification	Mobile			
Antenna	F-type integrated onto FR4 PCB, 0dBi peak gain			
Modulation	O-QPSK			
EUT Size (H x W x L) (in mm)	55 x 50 x 50			
Frequency Range	2405 MHz to 2480 MHz			
Functional Description	The WASP™ (Wireless acceleration sensor puck) is a self contained battery powered wireless vibration and temperature sensor. It reports temperature, acceleration and velocity so that an operator can make decisions pertaining to the condition of the equipment on which it is mounted. It can take measurements as often as once every 3 seconds. The unit is not a transceiver. It transmits the signal only			

2.2 EUT CABLES

Quantity	Routing		Shielded / Unshielded	Cable Length (m)
	From	To		
N/A				

2.3 EUT MODIFICATIONS

N/A

2.4 OPERATING MODE DURING TEST

The EUT was tuned to a low, middle and high channel in continuous transmit mode at maximum rated RF output power with 100% duty cycle.
The EUT was tested in 3 orthogonal planes. Worst case emissions presented.
See appendices for detailed mode of operation during tests.

3.0 SUPPORT EQUIPMENT

3.1 CONFIGURATION

N/A

3.2 TEST BED/PERIPHERAL CABLES

N/A

4.0 TEST ENVIRONMENT

Temperature:	20 – 23 °C
Relative Humidity:	28 – 35 %
Atmospheric pressure:	883 – 891 mbar
Nominal test voltage:	Battery Operated 3.6 V Li-Ion

APPENDICES

APPENDIX A: 20 DB BANDWIDTH

A.1. Base Standard & Test Basis

Base Standard	FCC PART 15.215
Test Basis	FCC PART 15.215
Test Method	FCC PART 15.215

A.2. Specifications

15.215 © Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

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 Procedure

ANSI C63.10: 2009, Radiated emission at 3 m distance

A.5. Test Results

The 20 dB bandwidth lies within the 2402 – 2483.5 MHz band. The EUT is in compliance with requirement as specified above.

Frequency (MHz)	20 dB Bandwidth (MHz)
2405.00	3.077
2443.00	3.125
2480.00	3.141

All final reported values are corrected values.

A.6. Operating Mode During Test

The EUT was tuned to a low, middle and high channel in continuous transmit mode at maximum rated RF output power with 100% duty cycle.

A.7. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.
Name: Deniz Demirci
Function: Senior Wireless / EMC Technologist

A.8. Test date

May 2, 2011

Figure 1 Low Channel 20 dB Bandwidth

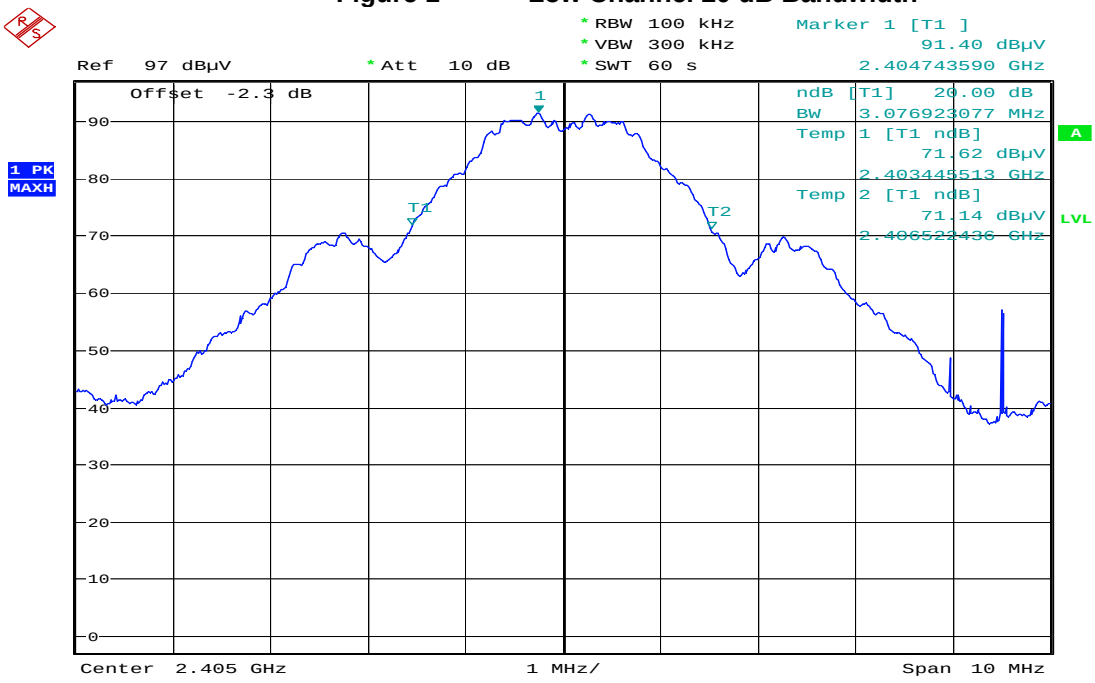

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Figure 2 Mid Channel 20 dB Bandwidth

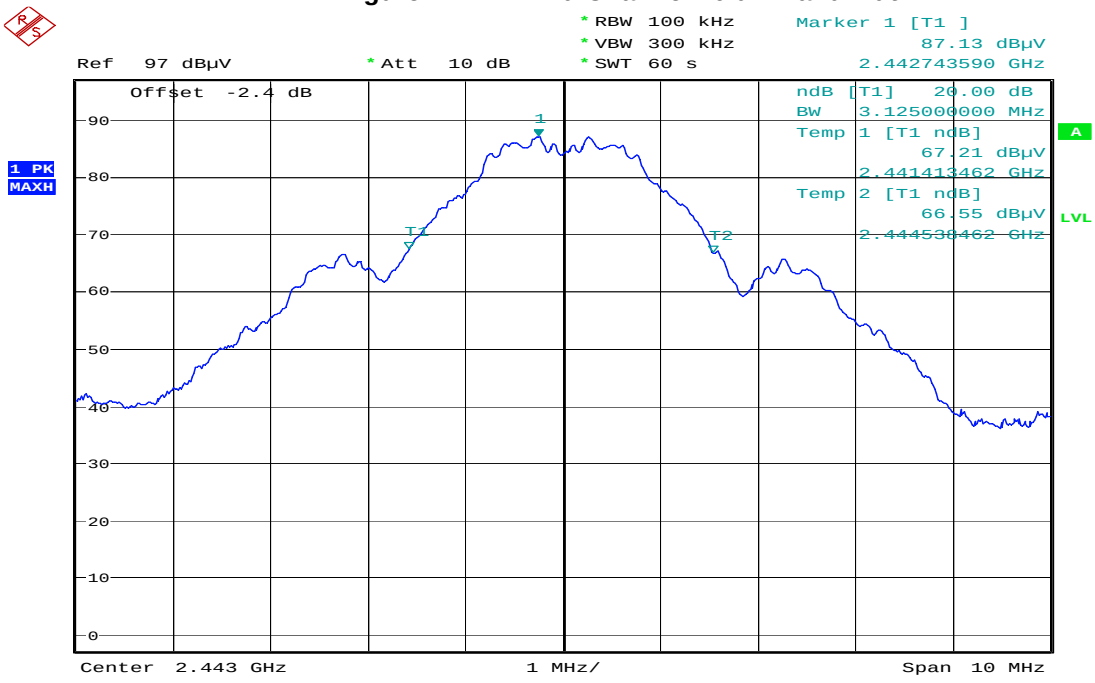

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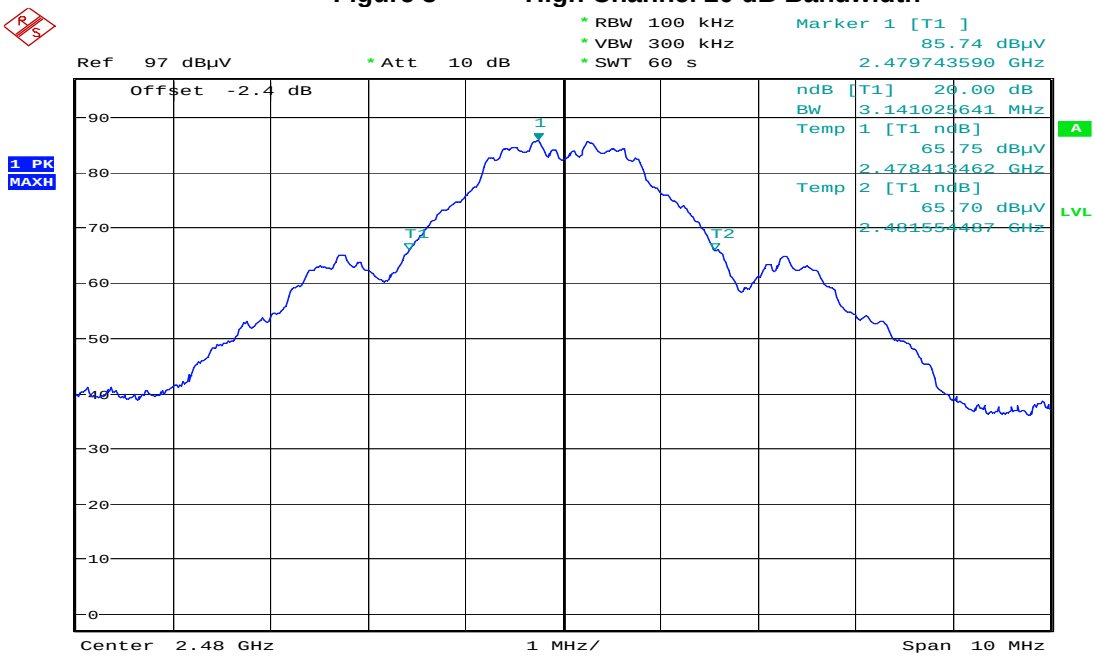
Figure 3 High Channel 20 dB Bandwidth



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APPENDIX B: OCCUPIED BANDWIDTH

B.1. Base Standard & Test Basis

Base Standard	RSS-Gen Issue 3 4.6.1
Test Basis	RSS-Gen Issue 3 4.6.1
Test Method	RSS-Gen Issue 3 4.6.1

B.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.

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 Procedure

RSS-Gen Issue 3

B.5. Test Results

Frequency (MHz)	Occupied Bandwidth (MHz)
2405.00	3.077
2443.00	3.157
2480.00	3.253

All final reported values are corrected values

B.6. Operating Mode During Test

The EUT was tuned to a low, middle and high channel in continuous transmit mode at maximum rated RF output power with 100% duty cycle.

B.7. Tested By

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

Name: Deniz Demirci
Function: Senior Wireless / EMC Technologist

B.8. Test date

May 2, 2011

Figure 4 Low Channel Occupied Bandwidth

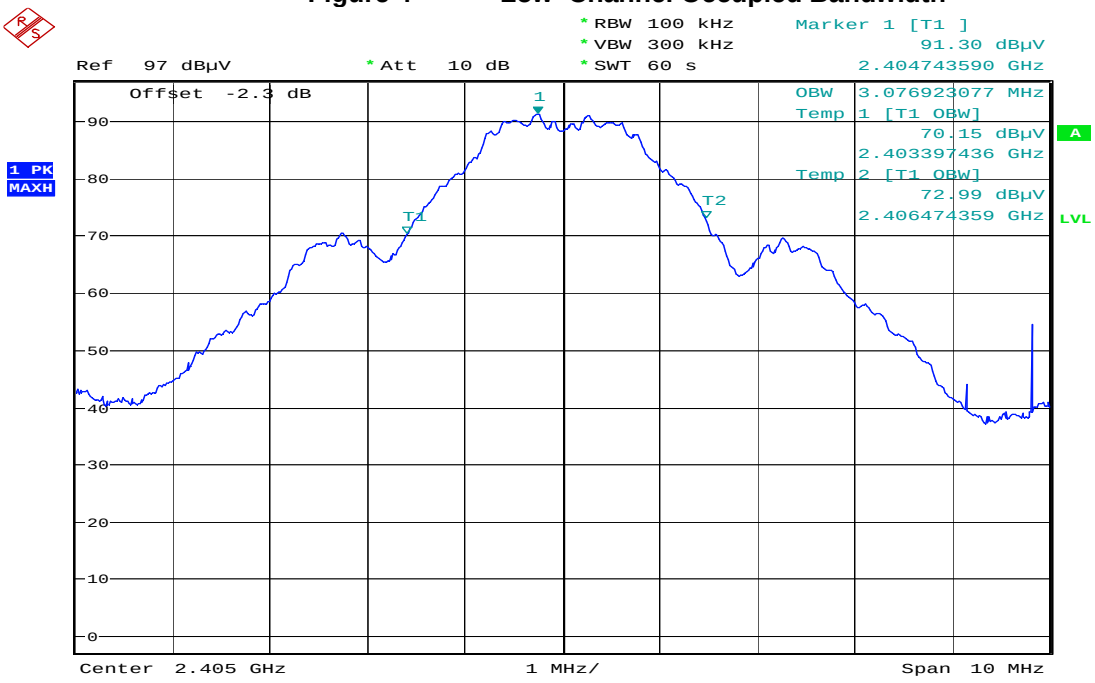

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Figure 5 Mid Channel Occupied Bandwidth

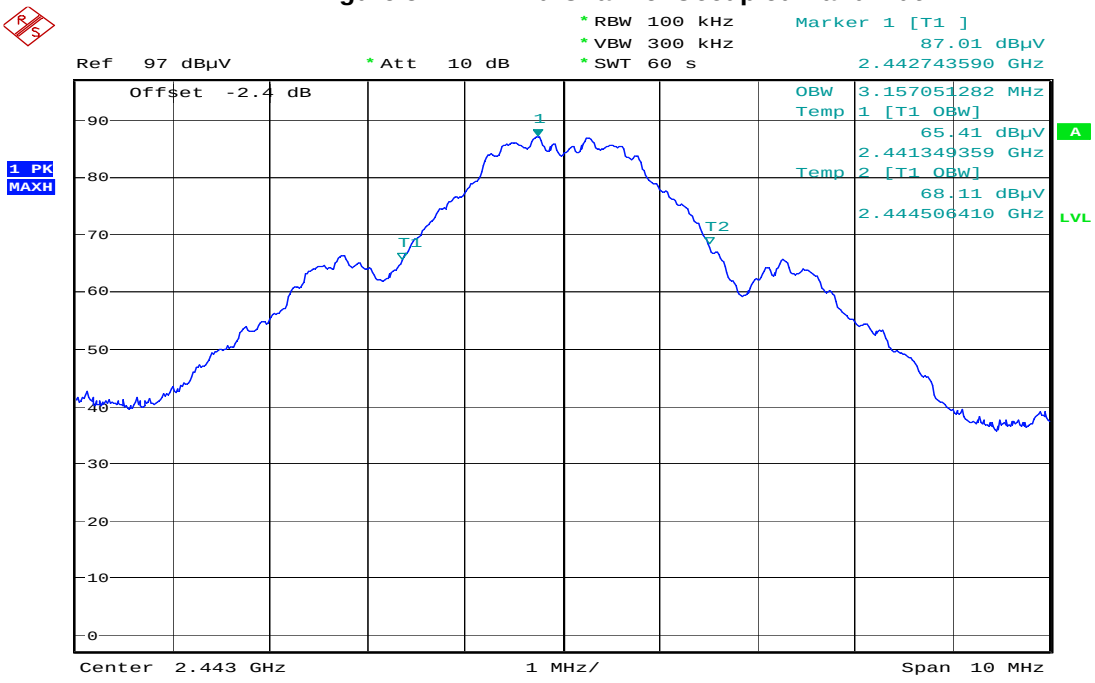

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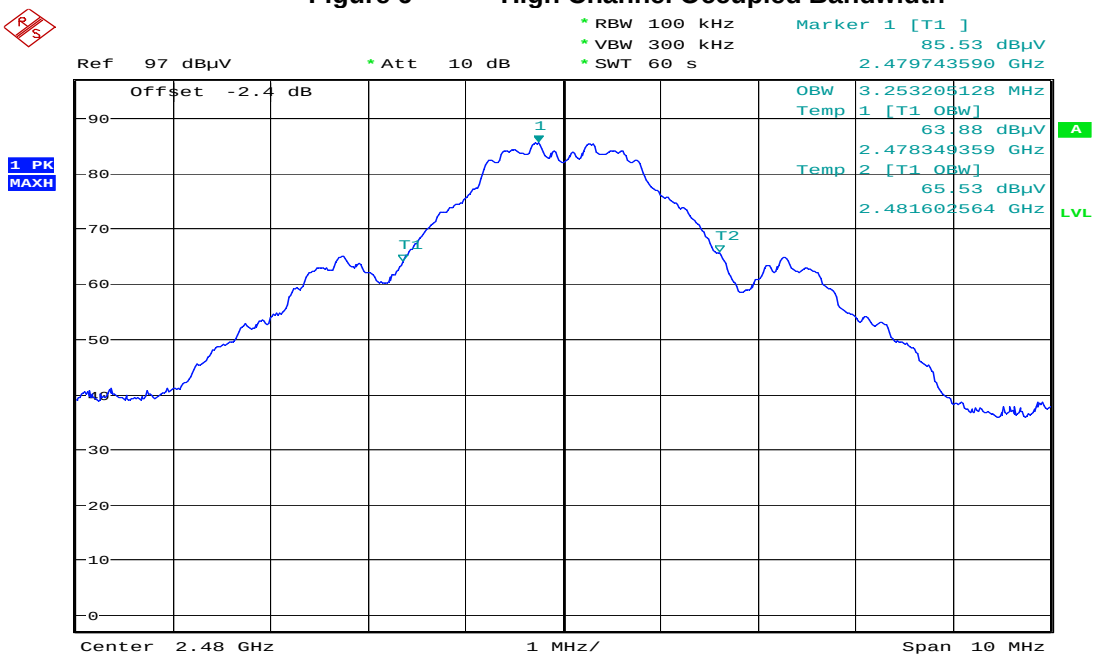
Figure 6 High Channel Occupied Bandwidth



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APPENDIX C: FIELD STRENGTH OF FUNDAMENTAL

C.1. Base Standard & Test Basis

Base Standard	FCC 15.249 (a) RSS 210 Issue 8 A2.9 (a)
Test Basis	FCC 15.249 RSS-Gen Issue 3 4.8
Test Method	NTS Calgary SOP CAG EMC 02 Emission Test Methods

C.2. Specifications

The maximum field strength shall not exceed 50 millivolts/meter at 3 m distance in the 2400 MHz –2483.5 MHz band
For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

C.3. Operating Mode During Test

The EUT was tuned to a low, middle and high channel in continuous transmit mode at maximum rated RF output power with 100% duty cycle.
The EUT was tested in 3 orthogonal planes. EUT on edge with vertical polarity receive antenna results were the worst case.

C.4. Test Results

Compliant

Channel	Frequency (MHz)	Polarity	Detector	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Low	2404.52	Vertical	Peak	93.78	113.98	20.20
	2404.98	Vertical	Average	91.04	93.98	2.94
Mid	2442.55	Vertical	Peak	90.66	113.98	23.32
	2442.98	Vertical	Average	88.01	93.98	5.97
High	2479.52	Vertical	Peak	88.78	113.98	25.20
	2479.98	Vertical	Average	85.43	93.98	8.55

The maximum (Average detector) field strength of fundamental was 91.04 dBµV/m at 3 meter distance. It has 2.94 dB margin to the limit

Note: All final reported values are corrected values

C.5. Sample Calculations

N/A

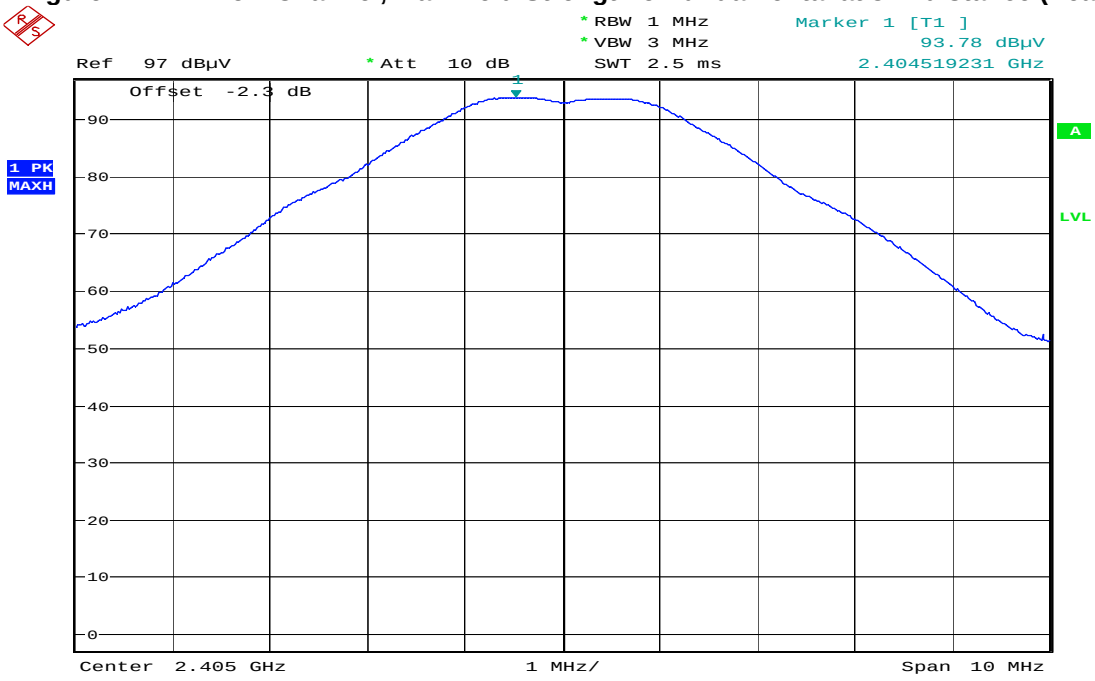
C.6. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.
Name: Deniz Demirci
Function: Senior Wireless / EMC Technologist

C.7. Test date

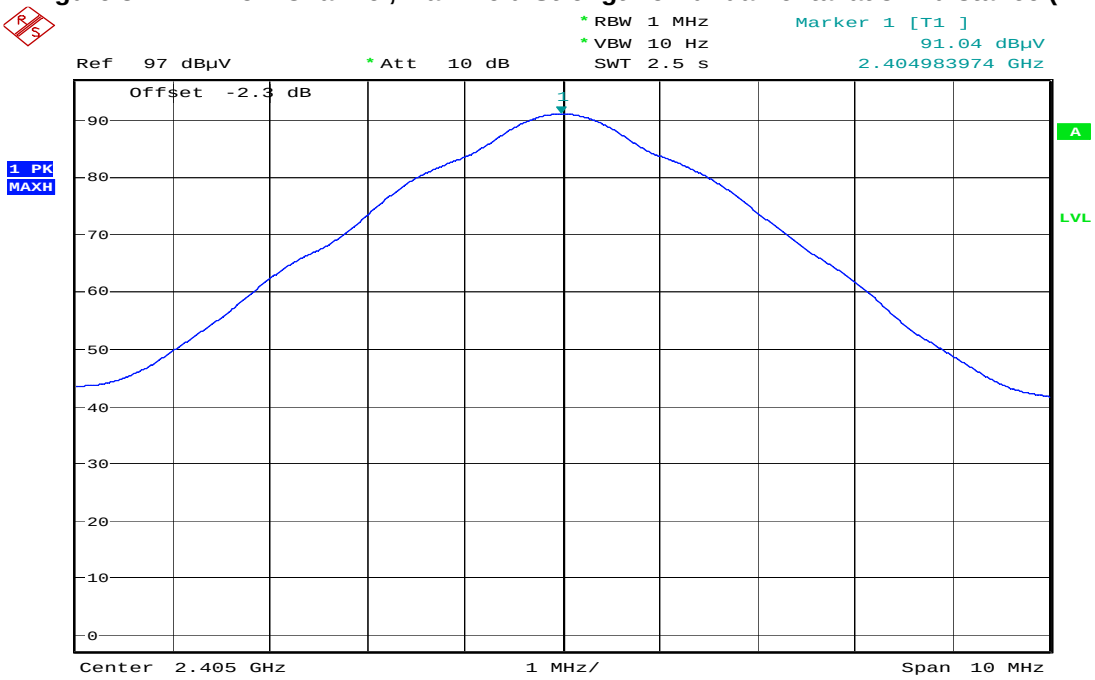
May 2, 2011

Figure 7 Low Channel, Max Field Strength of fundamental at 3 m distance (Peak detector)



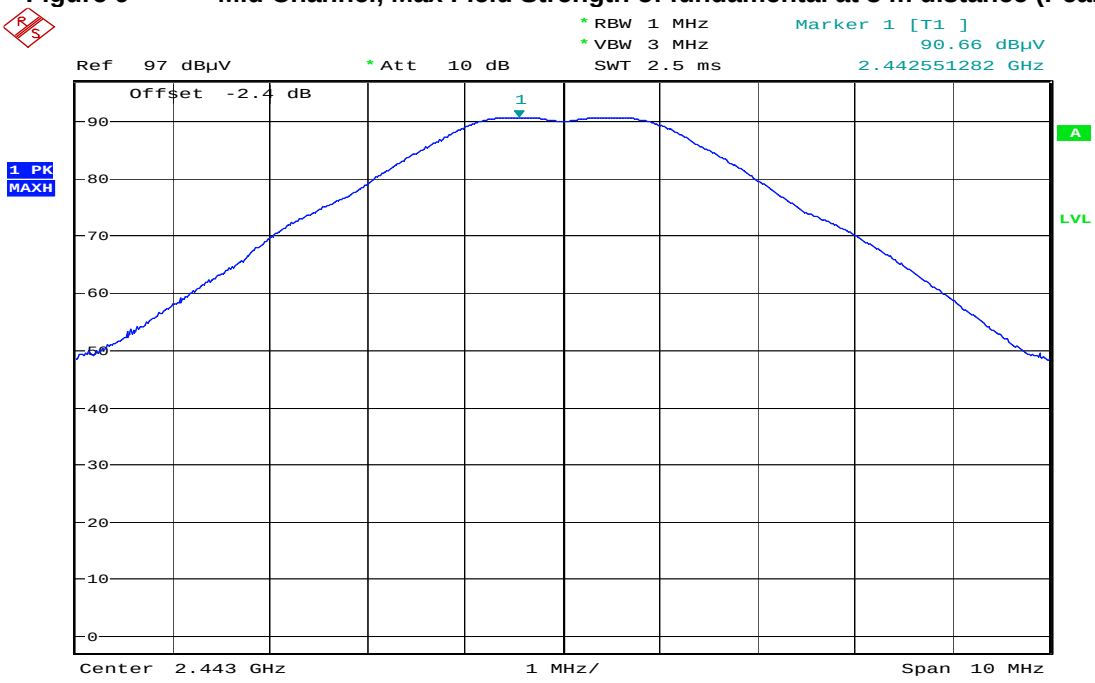
Date: 2.MAY.2011 09:38:05

Figure 8 Low Channel, Max Field Strength of fundamental at 3 m distance (Av. Detector)



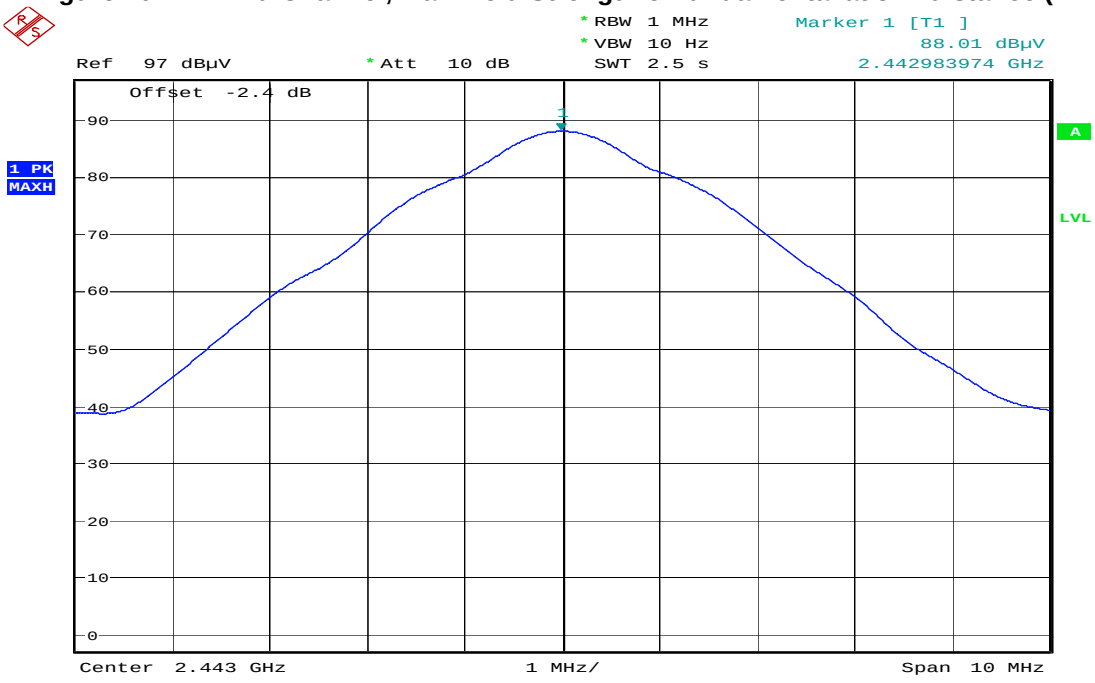
Date: 2.MAY.2011 09:39:01

Figure 9 Mid Channel, Max Field Strength of fundamental at 3 m distance (Peak detector)



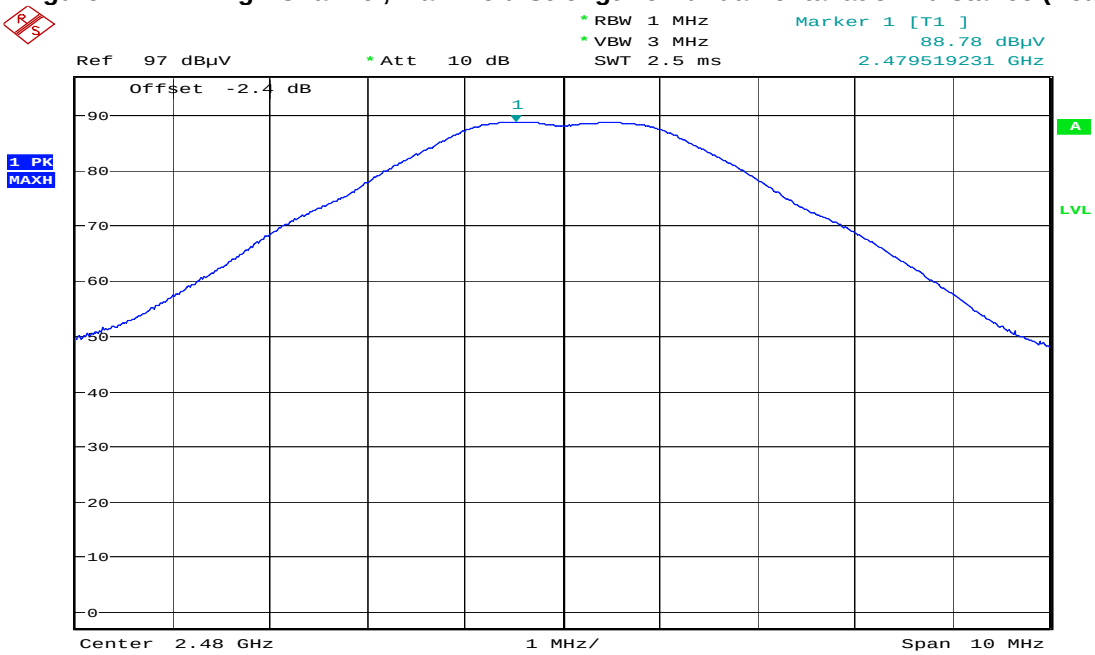
Date: 2.MAY.2011 13:29:39

Figure 10 Mid Channel, Max Field Strength of fundamental at 3 m distance (Av. Detector)



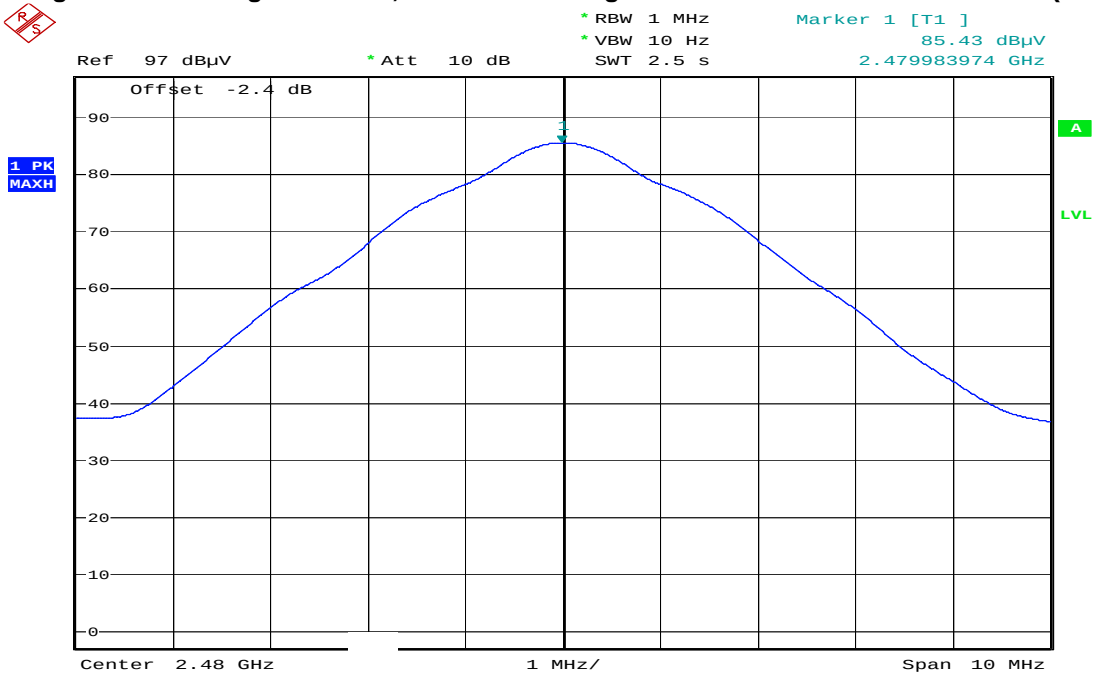
Date: 2.MAY.2011 13:30:57

Figure 11 High Channel, Max Field Strength of fundamental at 3 m distance (Peak detector)



Date: 2.MAY.2011 05:58:20

Figure 12 High Channel, Max Field Strength of fundamental at 3 m distance (Av. Detector)



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APPENDIX D: RADIATED SPURIOUS EMISSIONS BAND EDGE

D.1. Base Standard & Test Basis

Base Standard	FCC 15.249 Part 15.209 – Radio Frequency Devices, Part 15.205 – Restricted bands of operation RSS 210 Issue 8 A2.9
Test Basis	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,
Test Method	NTS Calgary SOP CAG EMC 02 Emission Test Methods

D.2. Specifications: FCC 15.205 and RSS 210 Issue 8 2.2 Restricted bands of operation.

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1]0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	N/A
13.36–13.41	N/A	N/A	N/A

(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.

D.3. Test Procedure

Radiated emission measurement at 3 meters distance.

D.4. Operating Mode During Test

The EUT was tuned to a low, middle and high channel in continuous transmit mode at maximum rated RF output power with 100% duty cycle.
The EUT was tested in 3 orthogonal planes (On Edge, Upright, Flat) EUT on edge with vertical polarity receive antenna results were the worst case. Worst case emissions presented.

D.5. Test Results

Compliant

Channel	Frequency (MHz)	Polarity	Detector	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Low (2405 MHz)	2389.62	V	Peak	42.53	73.98	31.45
	2390.00	V	Average	28.76	53.98	25.22
High (2480 MHz)	2483.50	V	Peak	63.28	73.98	10.70
	2483.50	V	Average	49.81	53.98	4.17

The maximum peak emission was 49.81 dBµV/m at 2483.5 MHz at 3 meter distance. It has 4.17 dB margin to the average limit

All final reported values are corrected values

D.6. Sample Calculations

None

D.7. Tested By

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

Name: Deniz Demirci
Function: Senior Wireless / EMC Technologist

D.8. Test date

May 2, 2011

Figure 13 Low Channel Band Edge (Peak)

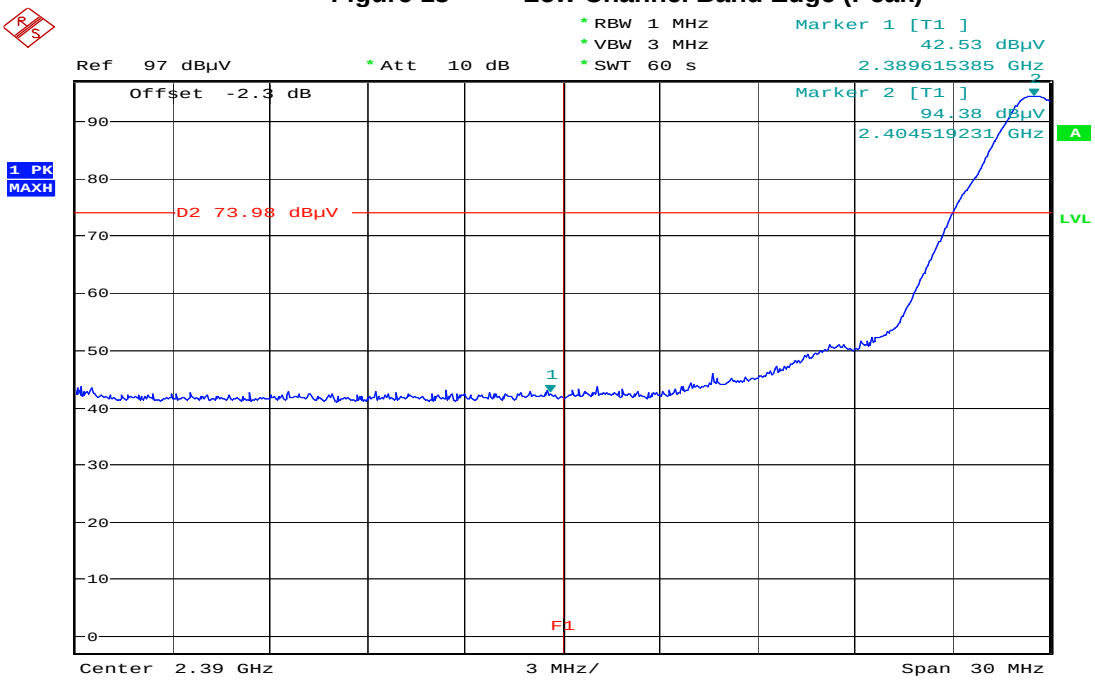

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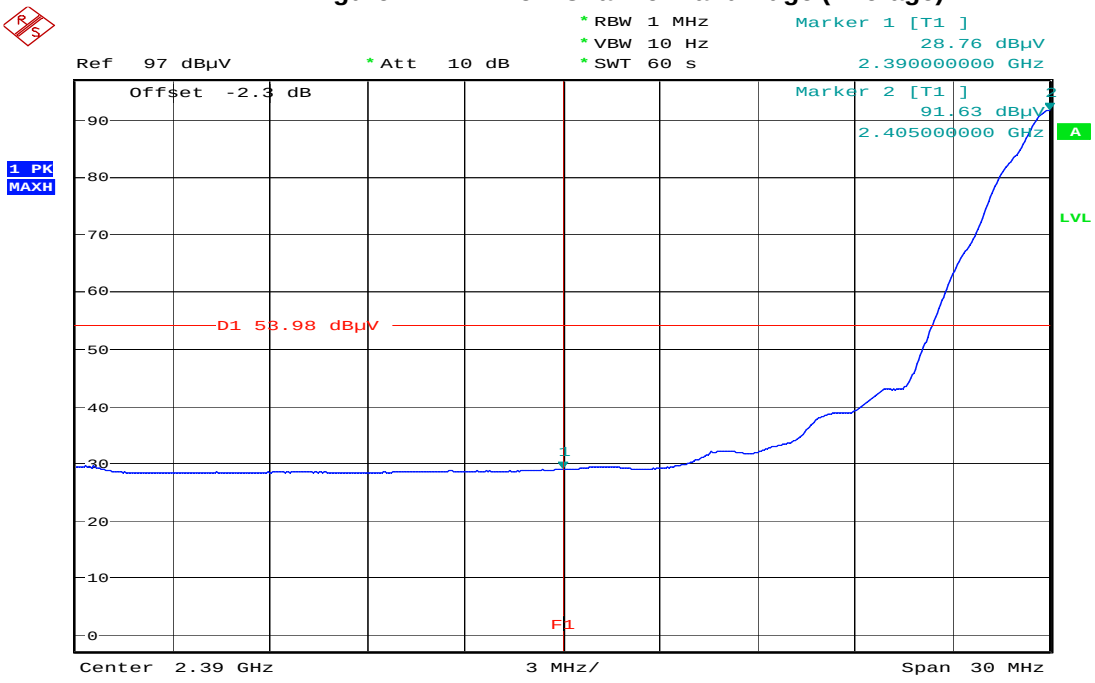
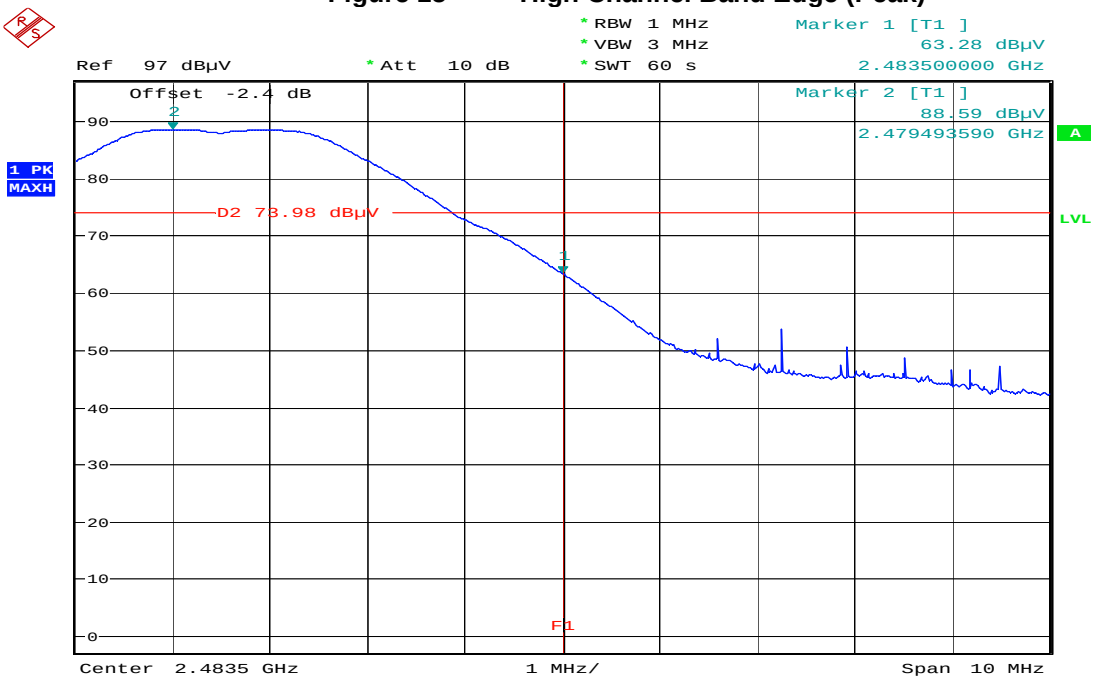
Figure 14 Low Channel Band Edge (Average)



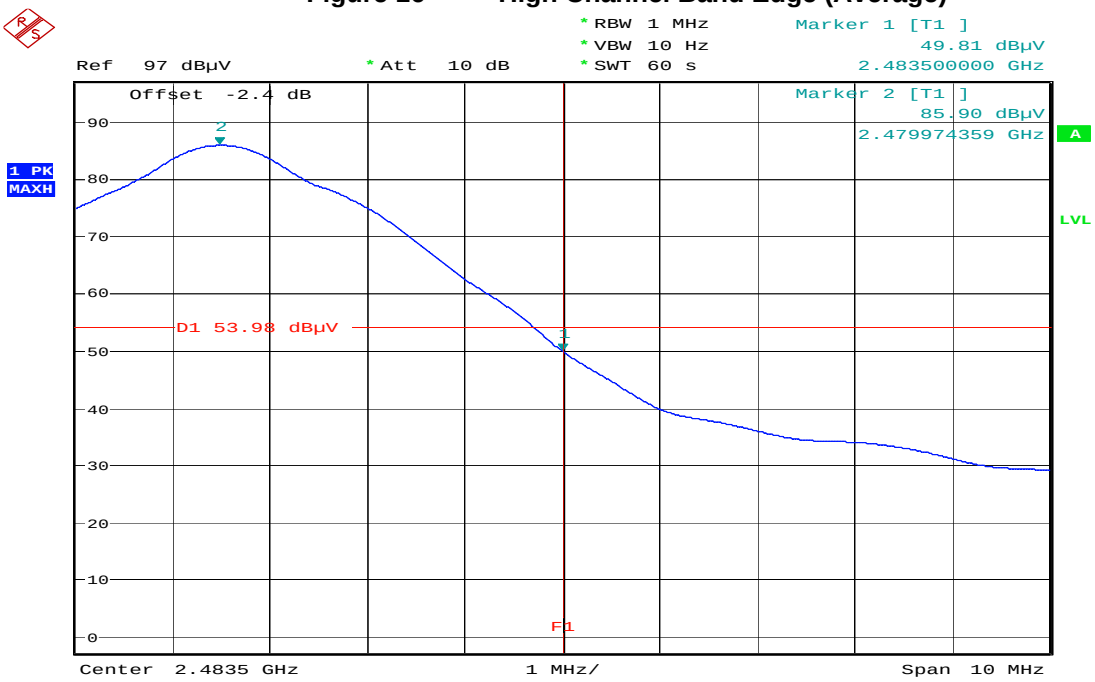
Date: 2.MAY.2011 12:24:20

Figure 15 High Channel Band Edge (Peak)



Date: 2.MAY.2011 06:09:32

Figure 16 High Channel Band Edge (Average)



Date: 2.MAY.2011 06:13:22

APPENDIX E: RADIATED SPURIOUS EMISSIONS (TX)

E.1. Base Standard & Test Basis

Base Standard	FCC 15.249 Part 15.209 – Radio Frequency Devices, RSS 210 Issue 8 A2.9, 2.5
Test Basis	ANSI C63.4: 2009 Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
Test Method	NTS Calgary SOP CAG EMC 02 Emission Test Methods

E.2. Specifications:

E.2.1. FCC 15.205 and RSS 210 Issue 8 2.2 Restricted bands of operation.

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1]0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	N/A
13.36–13.41	N/A	N/A	N/A

(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.

E.2.2. FCC 15.249 and RSS 210 Issue 8 (A2.9)

Fundamental frequency (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928	50	500
2400–2483.5	50	500
5725–5875	50	500

The field strength of harmonic emissions from intentional radiators operated in this frequency band shall comply with 500 microvolts / meter at 3 meter distance.

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209 and RSS GEN Issue 3 7.2.5, whichever is the lesser attenuation

E.3. Deviations

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

E.4. Test Procedure

30 MHz to 26 GHz Radiated Emission per SOP CAG EMC 02.

FCC 15.35©: Unless otherwise specified, e.g. §15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission

E.5. Operating Mode During Test

The EUT was tuned to a low, middle and high channel in continuous transmit mode at maximum rated RF output power with 100% duty cycle.
The EUT was tested in 3 orthogonal planes (On Edge, Upright, Flat) EUT on edge results were the worst case. Worst case emissions presented.

E.6. Test Results

Channel	Frequency (MHz)	Polarity	Detector	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Low (2405 MHz)	4810.17	Horizontal	Peak	45.73	73.98	28.25
	4810.05	Horizontal	Average	36.56	53.98	17.42
	4810.15	Vertical	Peak	46.28	73.98	27.70
	4810.05	Vertical	Average	37.11	53.98	16.87
Mid (2443 MHz)	4886.26	Horizontal	Peak	45.70	73.98	28.28
	4886.00	Horizontal	Average	35.54	53.98	18.44
	4886.55	Vertical	Peak	46.88	73.98	27.10
	4885.98	Vertical	Average	40.55	53.98	13.43
High (2480 MHz)	4960.00	Horizontal	Peak	45.19	73.98	28.79
	4959.95	Horizontal	Average	35.69	53.98	18.29
	4959.52	Vertical	Peak	48.37	73.98	25.61
	4959.85	Vertical	Average	40.70	53.98	13.28

The maximum average emission was 40.70 dBµV/m at 4959.85 MHz at 3 meter distance. It has 13.28 dB margin to the limit

Notes:

- There were no transmitter related emissions observed between 30 MHz and 1 GHz. Digital emissions are covered in Appendix F (Un-intentional radiators)
- All final reported values are corrected values
- Plots were not provided in order to reduce file size

E.7. Sample Calculations

Average Limit for above 960 MHz at 3m distance = 20*Log (500) = 53.98 dBµV/m
Peak Limit for above 960 MHz at 3m distance= Average Limit + 20 (dB) = 73.98 dBµV/m

E.8. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.
Name: Deniz Demirci
Function: Senior EMC / Wireless Technologist

E.9. Test date

May 2, 2011

APPENDIX F: RADIATED SPURIOUS EMISSIONS (UN-INTENTIONAL RADIATORS)

F.1. Base Standard & Test Basis

Base Standard	FCC Part 15.109 – Radiated Emission Limits for Un-intentional Radiators ICES-003 Issue 4 Emission test method and limits for digital apparatus
Test Basis	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, CAN/CSA-CEI/IEC CISPR 22-02
Test Method	NTS Calgary SOP CAG EMC 02 Emission Test Methods

F.2. Specifications:

FCC Part 15.109 and ICES-003

Frequency (MHz)	FCC Part 15[1] /ICES003 Class B at 10 m distance (dBµV/m)
30 – 230	30.00 QP @ 10m
230 – 1000	37.00 QP @ 10m

Note: FCC Part 15.109(g): As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in the Third Edition of International Electrotechnical Commission ("IEC"), International Special Committee on Radio Interference (CISPR) Pub. 22 (1997), "Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement."

F.3. Deviations

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

F.4. Test Procedure

Radiated Emission per SOP CAG EMC 02.

F.5. Operating Modes During Test

The EUT was tuned to a low, middle and high channel in continuous transmit mode at maximum rated RF output power with 100% duty cycle.
The EUT was tested in 3 orthogonal planes (On Edge, Upright, Flat) Worst case emissions presented.

F.6. Test Results

Product Integrity Laboratory V2.5

Project Number: C-0101732-1 **Tester:** James MacKay
Model: Boss Pac Engineering WASP **Test ID:** RE02-10m-0101732
Comments: **Conf02: EUT standing on base, transmitting at 2.443 GHz (Mid channel)
Conf03: EUT standing on base, transmitting at 2.480 GHz (High channel)

Standard: CISPR22_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	106.250	20.12	Quasi Peak	-14.42	5.70	Quasi Peak	30.00	24.30	101	360
Horizontal	124.842	20.46	Quasi Peak	-13.33	7.13	Quasi Peak	30.00	22.87	100	0
Horizontal	174.797	20.66	Quasi Peak	-15.29	5.37	Quasi Peak	30.00	24.63	100	334
Horizontal	550.052	22.31	Quasi Peak	-5.25	17.06	Quasi Peak	37.00	19.94	100	0
Vertical	631.658	28.20	Quasi Peak	-4.61	23.59	Quasi Peak	37.00	13.41	273	147
Vertical	900.524	24.59	Quasi Peak	-1.51	23.08	Quasi Peak	37.00	13.92	100	41

1. Positive Margin indicates a Pass
2. EUT faces normal to antenna at 10.6° turntable position.
3. Correction Factors include all factors between the receiving antenna and the receiver, including the antenna.

Worst case spurious emission was 23.59 dBµV/m at 631.658 MHz with vertical polarization. It has 13.41 dB margin to the FCC 15.109 and ICES-003 limits.

Notes:

1. Above 1 GHz measurements are covered in Appendix F
2. All final reported values are corrected values
3. Plots were not provided in order to reduce file size

F.7. Sample Calculations

Emission Level (dBµV/m) = Measured Level (dBµV) + Correction Factors (dB/m)
Margin (dB) = Limit (dBµV/m) - Emission Level (dBµV/m)

F.8. Tested By

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

Name: James MacKay
Function: EMC Technologist

F.9. Test date

May 2, 2011

APPENDIX G: TEST EQUIPMENT LIST

Descriptions	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
Bilog Antenna	Teseq	CBL 6112D	CG1177	14SEP12	14SEP10
Horn Antenna (Rx) 1 GHz – 18 GHz	EMCO	3115	CG0368	08SEP11	08SEP09
Standard Gain Horn (Rx) 18 GHz – 26.5 GHz	EMCO	3160-09	CG0075	N/A (1)	27NOV01
High pass filter f >1000 MHz	MicroTronics	HPM14576	CG0963	13NOV11	13NOV09
High pass filter f > 2800 MHz	MicroTronics	HPM50111	CG0964	N/A	N/A
LNA 1 GHz < f < 18 GHz	Miteq	JSD00121	CG0761	13NOV11	13NOV09
LNA 18GHz < f < 26.5GHz	Miteq	JSD00119	CG0482	02OCT11	02OCT09
EMI Test Receiver 20 Hz – 26.5 GHz	Rohde & Schwarz	ESMI	CG0433	04JUN11	04MAY10
			CG0434	04JUN11	04MAY10
Signal Analyzer 20 Hz – 26.5 GHz	Rohde & Schwarz	FSQ	CG1462	20DEC11	20DEC10
Spectrum Analyzer 30 Hz – 40 GHz	HP	8564E	CG0352	01DEC11	01DEC10

(1): As per manufacturer recommend, this item does not require periodic calibration. Its electromagnetic performance is almost exclusively depended on the physical dimension of the horn. A thorough mechanical check is all that is needed to guarantee the antenna performance

END OF DOCUMENT