Excellence in Compliance Testing

Certification Test Report

FCC ID: U9O-SS200
IC: 7084A-SS200

FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210

ACS Report Number: 10-0296.W06.11.B

Manufacturer: Synapse Wireless, Inc.
Model: SS200

Test Begin Date: September 3, 2010
Test End Date: September 8, 2010

Report Issue Date: May 24, 2011

FOR THE SCOPE OF ACCREDITATION UNDER LAB Code 200612-0

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Reviewed by:

Kirby Munroe
Director, Wireless Certifications
ACS, Inc.

This report contains 22 pages

TABLE OF CONTENTS

1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Industry Canada's Radio Standards Specification RSS-210 for certification.

1.2 Product description

The Synapse Wireless SS200 USB is an IEEE 802.15.4 compliant RF module that is approved as an FCC Part 15 unlicensed transmitter. The Synapse USB SnapStick SS200 provides a wireless link between other Synapse SNAP nodes and a USB enabled device such as a PC.

1.2.1 General

Band of operation:	2405-2480GHz
Number of channels:	16
Channel spacing:	5 MHz
Modulation format:	O-QPSK
Antenna :	Johanson chip antenna, 0.5dBi gain
Operating Voltage:	5VDC (USB)

Manufacturer Information:
Synapse Wireless, Inc.
500 Discovery Drive
Huntsville, AL 35806

Test Sample Serial Number(s): 2

Test Sample Condition: The test samples were provided in good working order with no visible defects.

1.3 Test Methodology and Considerations

The EUT was evaluated connected to a laptop PC using a USB extender cable such that the EUT was positioned ~ 10cm from the laptop enclosure. The EUT was evaluated in multiple orientations for radiated emissions and the worst case data presented in this report.

For RF conducted measurements, the EUT was modified with a temporary U.FL connector to facilitate a direct connection to a spectrum analyzer.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions
5015 B.U. Bowman Drive
Buford, GA 30518
Phone: (770) 831-8048
Fax: (770) 831-8598

2.2 Laboratory Accreditations/Recognitions/Certifications

ACS is accredited to ISO/IEC 17025 by the National Institute of Standards and Technology under their National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 200612-0. Unless otherwise specified, all tests methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

The Semi-Anechoic Chamber Test Site, Open Area Test Site (OATS) and Conducted Emissions Site have been fully described, submitted to, and accepted by the FCC, Industry Canada and the Japanese Voluntary Control Council for Interference by information technology equipment.

FCC Registration Number: 894540
Industry Canada Lab Code: IC 4175A-1
VCCI Member Number: 1831

- VCCI OATS Registration Number R-1526
- VCCI Conducted Emissions Site Registration Number: C-1608

2.3 Radiated Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The Semi-Anechoic Chamber Test Site consists of a 20' x 30' x 18' shielded enclosure. The chamber is lined with Toyo Ferrite Grid Absorber, model number FFG-1000. The ferrite tile grid is 101 x 101 x 19mm thick and weighs approximately 550 grams. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber.

The turntable is 150cm in diameter and is located 160cm from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is all steel, flush mounted table installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Behind the turntable is a 3' x 6' x 4' deep shielded pit used for support equipment if necessary. The pit is equipped with 1 - 4" PVC chases from the turntable to the pit that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3-1 below:

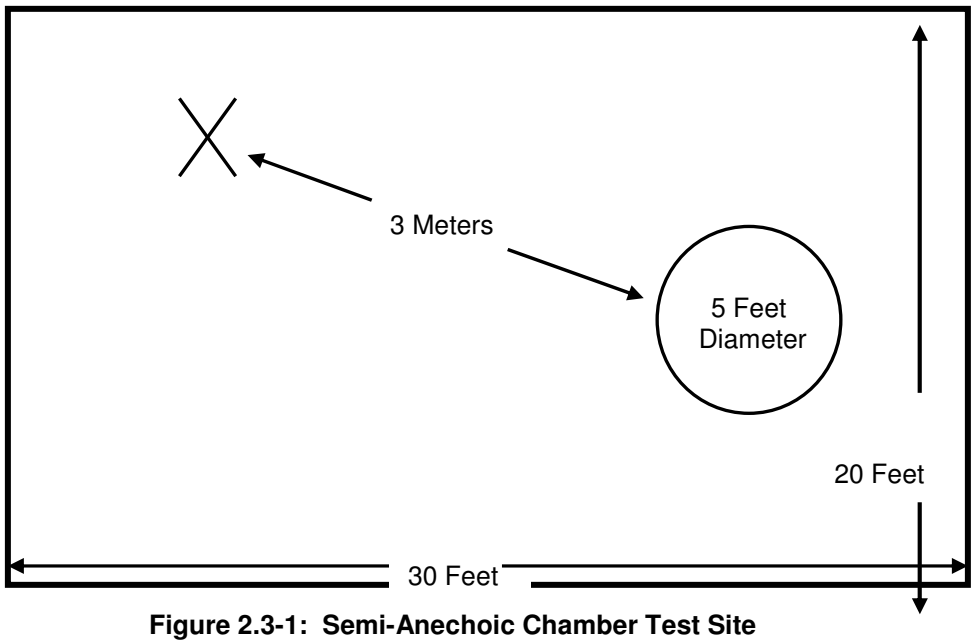

Figure 2.3-1: Semi-Anechoic Chamber Test Site

2.3.2 Open Area Tests Site (OATS)

The open area test site consists of a 40' x 66' concrete pad covered with a perforated electro-plated galvanized sheet metal. The perforations in the sheet metal are 1/8" holes that are staggered every 3/16". The individual sheets are placed to overlap each other by 1/4" and are riveted together to provide a continuous seam. Rivets are spaced every 3" in a 3 x 20 meter perimeter around the antenna mast and EUT area. Rivets in the remaining area are spaced as necessary to properly secure the ground plane and maintain the electrical continuity.

The entire ground plane extends 12' beyond the turntable edge and 16' beyond the antenna mast when set to a 10 meter measurement distance. The ground plane is grounded via 4 - 8' copper ground rods, each installed at a corner of the ground plane and bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is an all aluminum 10' flush mounted table installed in an all aluminum frame. The table is remotely operated from inside the control room located 40' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Adjacent to the turntable is a 7' x 7' square and 4' deep concrete pit used for support equipment if necessary. The pit is equipped with 5 - 4" PVC chases from the pit to the control room that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit. The pit is covered with 2 sheets of 1/4" diamond style re-enforced steel sheets. The sheets are painted to match the perforated steel ground plane; however the underside edges have been masked off to maintain the electrical continuity of the ground plane. All reflecting objects are located outside of the ellipse defined in ANSI C63.4.

A diagram of the Open Area Test Site is shown in Figure 2.3-2 below:

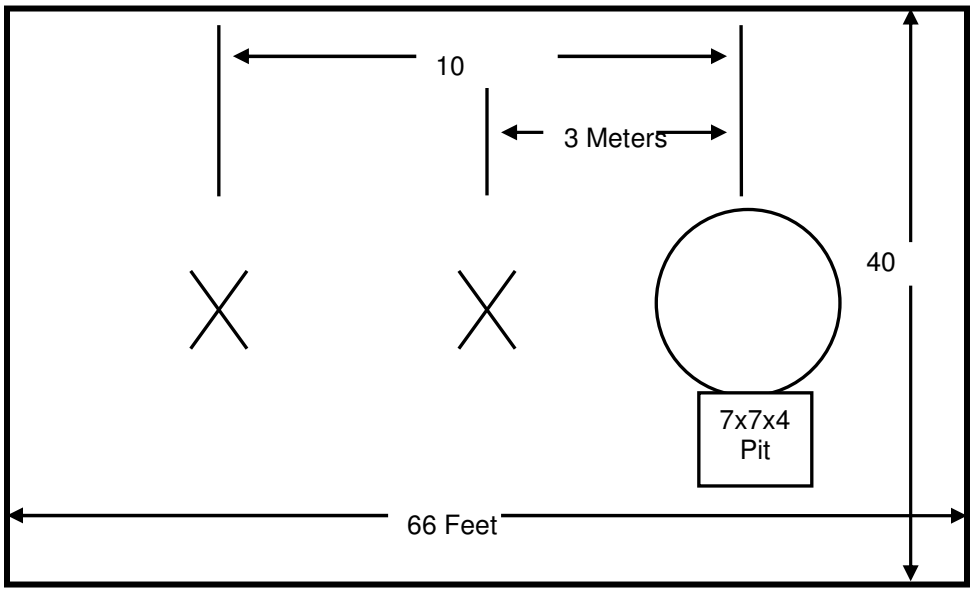

Figure 2.3-2: Open Area Test Site

2.4 Conducted Emissions Test Site Description

The AC mains conducted EMI site is located in the main EMC lab. It consists of an 8' x 8' solid aluminum horizontal group reference plane (GRP) bonded every 3" to an 8' X 8' vertical ground plane.

The site is of sufficient size to test table top and floor standing equipment in accordance with section 6.1.4 of ANSI C63.4.

A diagram of the room is shown below in figure 4.1.3-1:

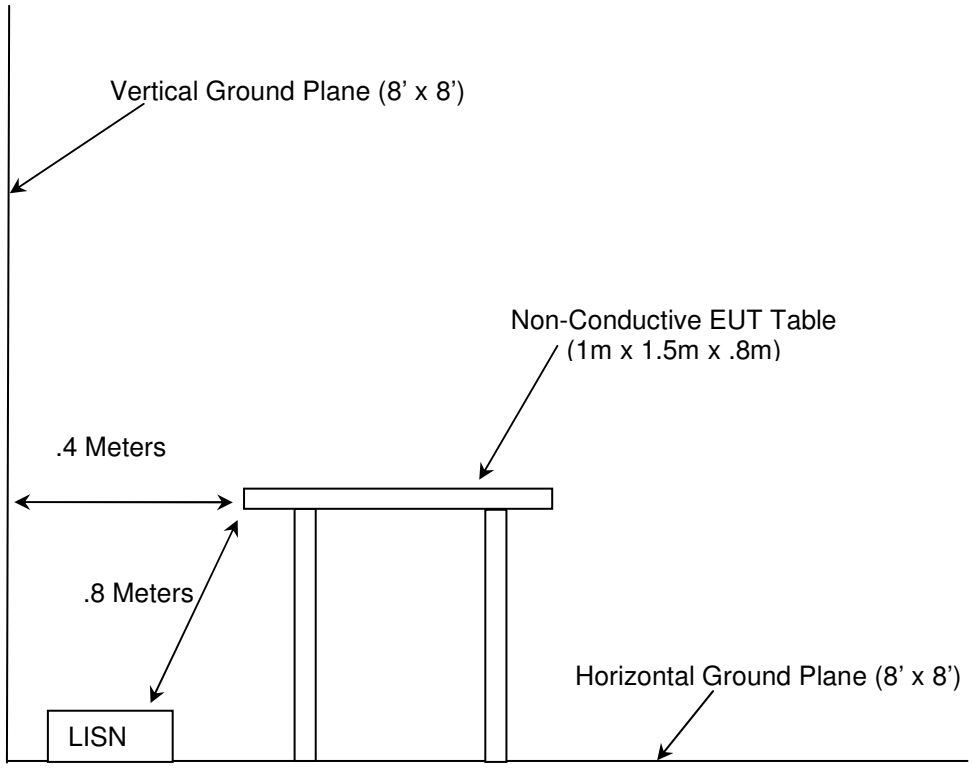

Figure 2.4-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2010
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2010
- FCC KDB Publication No. 558074 - Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247), March 2005
- Industry Canada Radio Standards Specification: RSS-210 - Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment, Issue 8, Dec 2010
- Industry Canada Radio Standards Specification: RSS-GEN – General Requirements and Information for the Certification of Radiocommunication Equipment, Issue 3, Dec 2010.

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
1	Rohde & Schwarz	ESMI - Display	Spectrum Analyzers	833771/007	9/23/2010	9/23/2012
2	Rohde & Schwarz	ESMI-Receiver	Spectrum Analyzers	839587/003	9/23/2010	9/23/2012
3	Rohde & Schwarz	ESMI-Display	Spectrum Analyzers	839379/011	2/2/2009	2/2/2011
4	Rohde & Schwarz	ESMI-Receiver	Spectrum Analyzers	833827/003	2/2/2009	2/2/2011
25	Chase	CBL6111	Antennas	1043	9/13/2010	9/13/2012
30	Spectrum Technologies	DRH-0118	Antennas	970102	4/27/2011	4/27/2013
40	EMCO	3104	Antennas	3211	2/11/2011	2/11/2013
73	Agilent	8447D	Amplifiers	2727A05624	3/21/2011	3/21/2012
152	EMCO	3825/2	LISN	9111-1905	11/2/2010	11/2/2012
153	EMCO	3825/2	LISN	9411-2268	1/13/2011	1/13/2012
167	ACS	Chamber EMI Cable Set	Cable Set	167	1/26/2011	1/26/2012
168	Hewlett Packard	19947A	Attenuators	44829	2/4/2011	2/4/2012
291	Florida RF Cables	SMRE-200W-12.0-SMRE	Cables	None	12/7/2010	12/7/2011
292	Florida RF Cables	SMR-290AW-480.0-SMR	Cables	None	12/7/2010	12/7/2011
324	ACS	Belden	Cables	8214	7/9/2010	7/9/2011
338	Hewlett Packard	8449B	Amplifiers	3008A01111	3/24/2011	3/24/2012
422	Florida RF	SMS-200AW-72.0-SMR	Cables	805	12/29/2010	12/29/2011
432	Microwave Circuits	H3G020G4	Filters	264066	7/16/2010	7/16/2011

SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model Number	Serial Number
1	Laptop	Dell	Latitude D505	CN-OH2049-48643-46F-1251
2	Power Supply	Dell	PA-1650-05D2	CN-OF7970-71615-55M-6BF4
3	Printer	Lexmark	Z12	06370524476
4	Mouse	Microsoft	37964	2392073

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

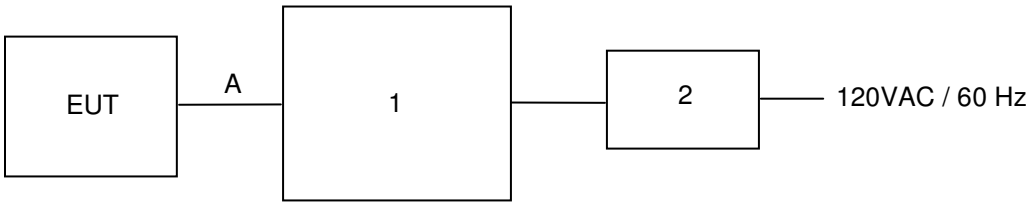

Figure 1: Intentional Radiated Emissions and RF Conducted Setup

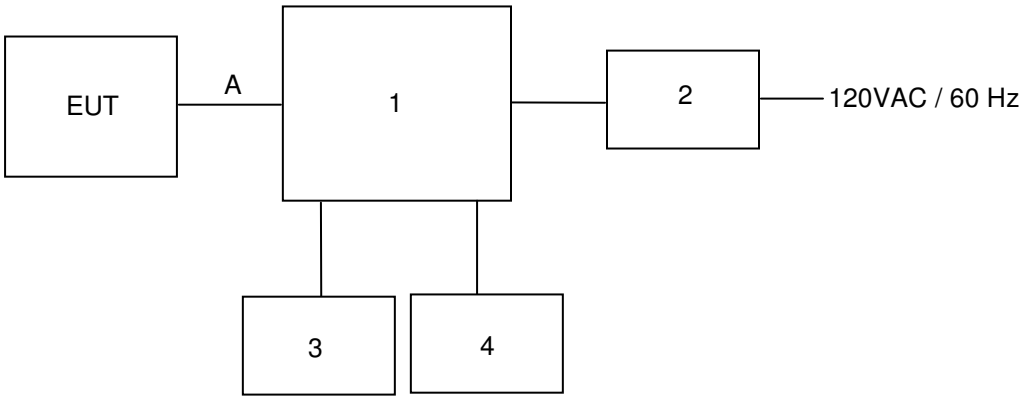

Figure 2: Unintentional Radiated Emissions and AC Power Line Conducted Emissions Setup

A – 5' Unshielded USB Cable

Note: For RF conducted measurements, the EUT was connected directly to the RF input of a spectrum analyzer.

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: Section 15.203

The antenna is an integral Johanson chip antenna with a measured gain of 0.5 dBi.

7.2 Power Line Conducted Emissions – FCC: Section 15.207 IC: RSS-Gen 7.2.4

7.2.1 Measurement Procedure

ANSI C63.4 sections 6 and 7 were the guiding documents for this evaluation. Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss
Margin = Applicable Limit - Corrected Reading

7.2.2 Measurement Results

Results of the test are shown below in and Table 7.2.2-1.

Table 7.2.2-1: Line 1 Conducted EMI Results

Frequency (MHz)	Detector	Level (dBuV)	Correction Factor (dB)	Limit (dBuV)	Margin (dB)
0.180000	QP	52.30	10.0	65	12.2
1.896000	QP	35.20	10.0	56	20.8
2.130000	QP	39.20	10.0	56	16.8
2.250000	QP	37.60	10.0	56	18.4
2.370000	QP	33.90	10.0	56	22.1
3.378000	QP	31.20	9.9	56	24.8
3.492000	QP	36.80	9.9	56	19.2
3.732000	QP	32.40	9.9	56	23.6
3.846000	QP	39.70	9.9	56	16.3
4.146000	QP	30.40	9.9	56	25.6
0.174000	AV	33.00	9.9	55	21.8
1.950000	AV	27.80	10.0	46	18.2
2.130000	AV	28.00	10.0	46	18.0
2.244000	AV	25.60	10.0	46	20.4
2.376000	AV	16.40	10.0	46	29.6
3.360000	AV	14.90	9.9	46	31.1
3.492000	AV	22.00	9.9	46	24.0
3.732000	AV	20.00	9.9	46	26.0
3.786000	AV	25.30	9.9	46	20.7
4.200000	AV	22.70	9.9	46	23.3

Table 7.2.2-2: Line 2 Conducted EMI Results

Frequency (MHz)	Detector	Level (dBuV)	Correction Factor (dB)	Limit (dBuV)	Margin (dB)
0.180000	QP	46.90	10.0	65	17.6
0.234000	QP	43.70	9.9	62	18.6
0.396000	QP	22.10	10.1	58	35.8
2.064000	QP	36.30	10.0	56	19.7
2.124000	QP	35.50	10.0	56	20.5
2.238000	QP	35.50	10.0	56	20.5
3.420000	QP	39.40	9.9	56	16.6
3.714000	QP	39.10	9.9	56	16.9
3.894000	QP	40.10	9.9	56	15.9
4.068000	QP	38.70	9.9	56	17.3
0.174000	AV	33.10	9.9	55	21.7
0.294000	AV	23.80	10.0	50	26.6
0.396000	AV	10.80	10.1	48	37.2
2.064000	AV	27.50	10.0	46	18.5
2.100000	AV	15.10	10.0	46	30.9
2.238000	AV	25.30	10.0	46	20.7
3.498000	AV	16.20	9.9	46	29.8
3.654000	AV	25.70	9.9	46	20.3
3.888000	AV	25.60	9.9	46	20.4
4.086000	AV	16.90	9.9	46	29.1

7.3 Radiated Emissions – FCC: Section 15.109(Unintentional Radiation) IC: RSS-210 6.1

7.3.1 Measurement Procedure

Radiated emissions tests were performed over the frequency range of 30MHz to 12.5GHz. Measurements of the radiated field strength were made at a distance of 3m from the boundary of the equipment under test (EUT) and the receiving antenna. The antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. Radiated measurements above 30MHz and below 1GHz were made with the Spectrum Analyzer's resolution bandwidth set to 120 KHz using a Quasi-peak detector. Above 1GHz, peak and average measurements are taken with the RBW and VBW were set to 1MHz and 3MHz respectively.

7.3.2 Measurement Results

Results of the test are given in Table 7.3.2-1:

Table 7.3.2-1: Radiated Emissions Tabulated Data

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
31.68	---------	44.16	V	-13.40	---------	30.76	--------	40.0	---------	9.2
47	---------	44.54	V	-14.40	---------	30.14	--------	40.0	---------	9.9
72.12	---------	52.56	V	-17.55	---------	35.01	--------	40.0	---------	5.0
120.85	---------	47.84	V	-11.82	---------	36.02	--------	43.5	---------	7.5
193.38	---------	36.36	H	-8.30	---------	28.06	--------	43.5	---------	15.4
196.03	---------	36.01	H	-8.46	---------	27.55	--------	43.5	---------	16.0
208.88	---------	42.43	H	-13.74	---------	28.69	--------	43.5	---------	14.8
211.55	---------	42.28	H	-13.80	---------	28.48	--------	43.5	---------	15.0
288.38	---------	41.19	H	-10.78	---------	30.41	--------	46.0	---------	15.6
667.5	---------	24.73	V	-1.93	---------	22.81	--------	46.0	---------	23.2

* Note: All emissions above 667.5 MHz were attenuated below the permissible limit.

7.4 6dB / 99% Bandwidth – FCC: Section 15.247(a)(2) IC: RSS-210 A8.2(a)

7.4.1 Measurement Procedure

The 6dB bandwidth was measured in accordance with the FCC KDB Publication No. 558074 "Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)". The RBW of the spectrum analyzer was set to 100 kHz and VBW 300 kHz. Span was set large enough to capture the entire emissions and >> RBW.

The occupied bandwidth measurement function of the analyzer was used for the 99% bandwidth.

7.4.2 Measurement Results

Results are shown below in table 7.4.2-1 and figure 7.4.2-1 to 7.4.2-6:

Table 7.4.2-1: 6dB / 99% Bandwidth

Frequency [MHz]	6dB Bandwidth [MHz]	99% Bandwidth [MHz]
2405	1.52	2.35
2440	1.55	2.39
2480	1.59	2.42

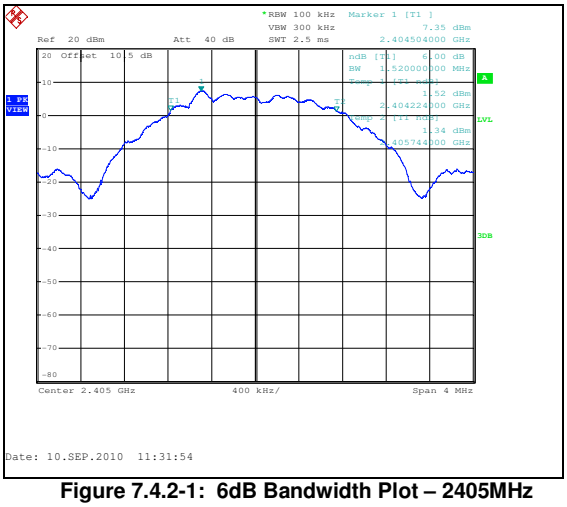

Figure 7.4.2-1: 6dB Bandwidth Plot – 2405MHz

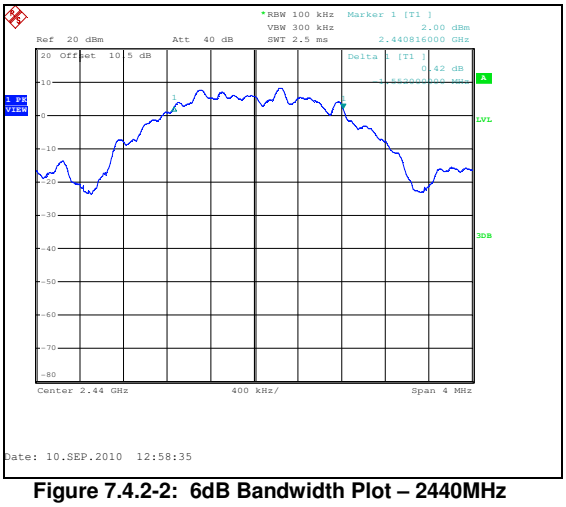

Figure 7.4.2-2: 6dB Bandwidth Plot – 2440MHz

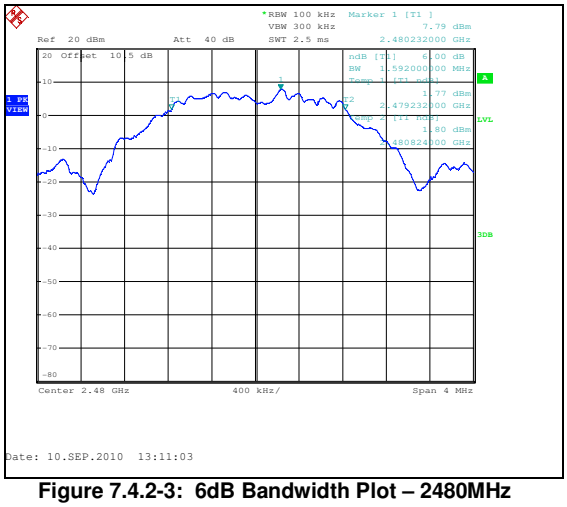

Figure 7.4.2-3: 6dB Bandwidth Plot – 2480MHz

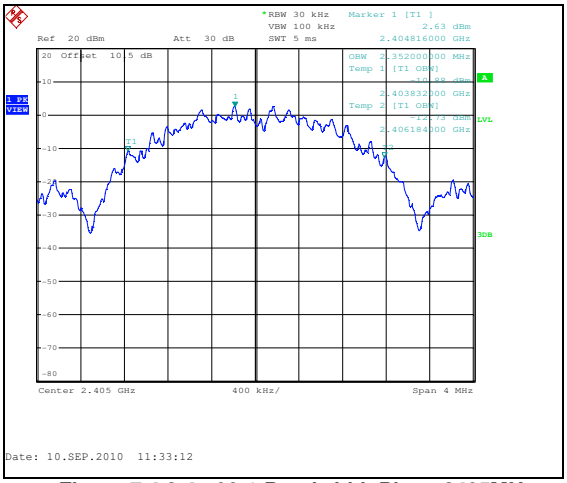

Figure 7.4.2-4: 99% Bandwidth Plot – 2405MHz

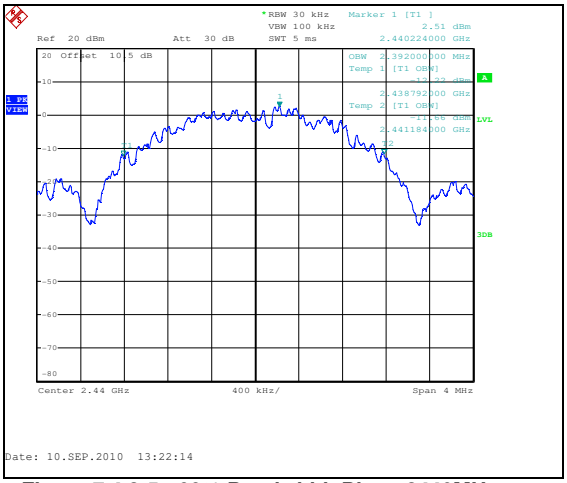

Figure 7.4.2-5: 99% Bandwidth Plot – 2440MHz

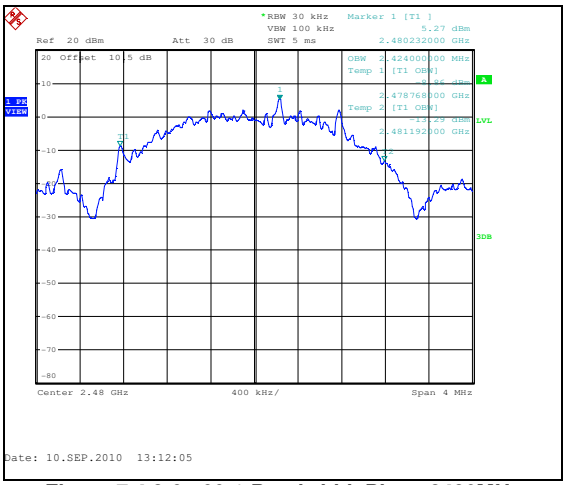

Figure 7.4.2-6: 99% Bandwidth Plot – 2480MHz

7.5 Peak Output Power Requirement - FCC Section 15.247(b)(3) IC: RSS-210 A8.4(4)

7.5.1 Measurement Procedure

The Peak Output Power was measured in accordance with the FCC KDB Publication No. 558074 "Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)" Power Option 1. The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer. Data was collected with the EUT operating at maximum power per channelization.

7.5.2 Measurement Results

Results are shown below in Table 7.5.2-1 and Figures 7.5.2-1 to 7.5.2-3.

Table 7.5.2-1: Peak Output Power

Frequency (MHz)	Output Power (dBm)
2405	10.42
2440	10.79
2480	10.54

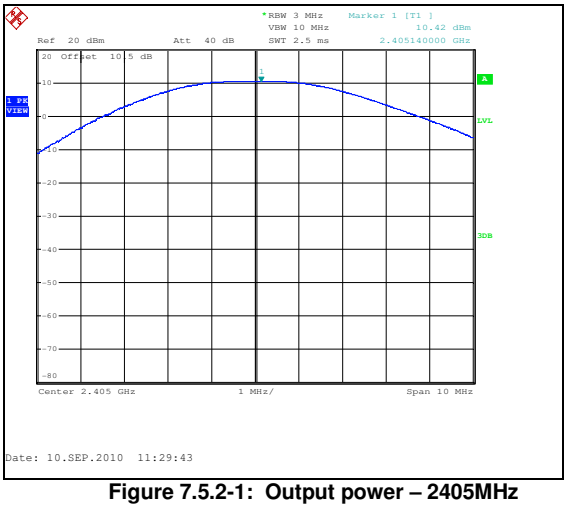

Figure 7.5.2-1: Output power – 2405MHz

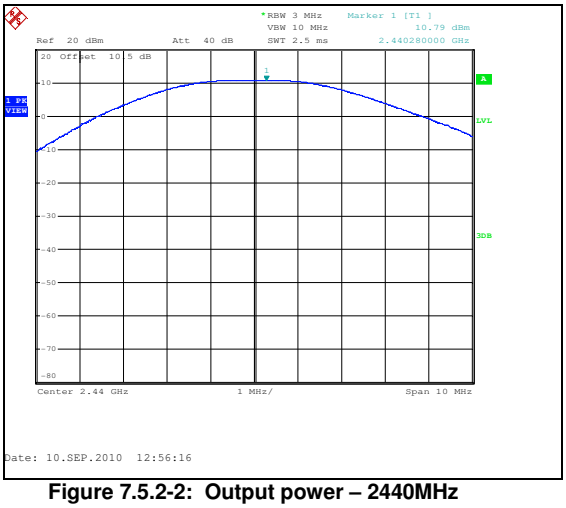

Figure 7.5.2-2: Output power – 2440MHz

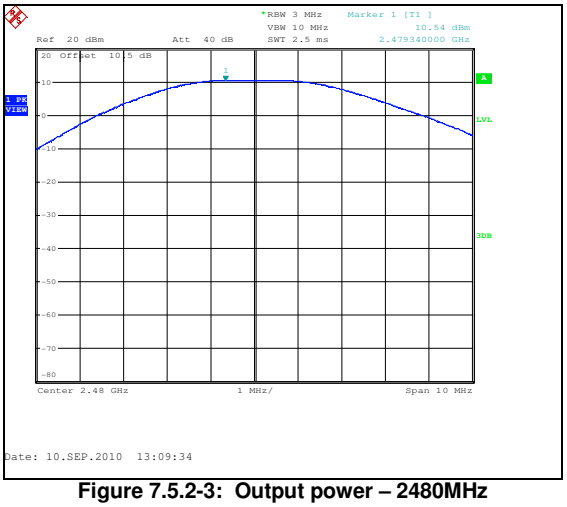

Figure 7.5.2-3: Output power – 2480MHz

7.6 Band-Edge Compliance and Spurious Emissions-FCC 15.247d IC:RSS-210 2.6, A8.5

7.6.1 Band-Edge Compliance of RF Conducted Emissions

7.6.1.1 Measurement Procedure

The EUT was investigated at the low and high channels of operation to determine band-edge compliance. Because the upper band-edge coincides with a restricted band, band-edge compliance for the upper band-edge was determined using the radiated mark-delta method. The radiated field strength of the fundamental emission was first determined and then the mark-delta method was used to determine the field strength of the band-edge emissions.

The lower band-edge compliance was determined using the marker-delta method in which the radio frequency power that is produced by the EUT is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power.

7.6.1.2 Measurement Results

Band-edge compliance is displayed in Tables 7.6.1.2-1 and Figure 7.6.1.2-1.

Table 7.6.1.2-1: Upper Band-edge Marker Delta Method - 2480MHz

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Fundamental Field Strength (dBuV/m)		Delta-Marker (dB)	Band-edge Field Strength (dBuV/m)		Margin to Limit (dBuV/m) 74	54
	pk	avg	(H/V)	(dB)	pk	avg		pk	avg	pk	avg
Fundamental Frequency											
2480	109.16	103.06	H	-4.18	104.98	87.51	35.17	69.81	52.34	4.19	1.66
2480	110.56	104.89	V	-4.18	106.38	89.34	35.55	70.83	53.79	3.17	0.21

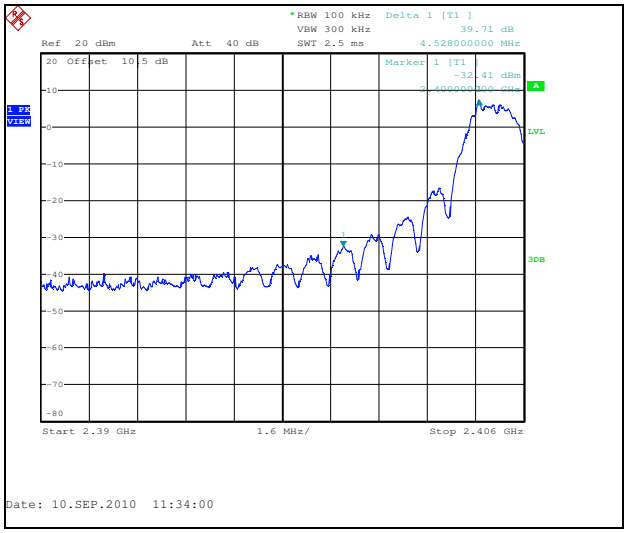

Figure 7.6.1.2-1: Lower Band-edge (Conducted)

7.6.2 RF Conducted Spurious Emissions

7.6.2.1 Measurement Procedure

The RF Conducted Spurious Emissions were measured in accordance with the FCC KDB Publication No. 558074 "Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)". The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer. The EUT was investigated for conducted spurious emissions from 30MHz to 25GHz, 10 times the highest fundamental frequency. For each measurement, the spectrum analyzer's RBW was set to 100 kHz and the VBW was set to 300 kHz. The peak detector and Max Hold function of the analyzer were utilized.

7.6.2.2 Measurement Results

RF Conducted Emissions are displayed in Figures 7.6.2.2-1 through 7.6.2.2-9.

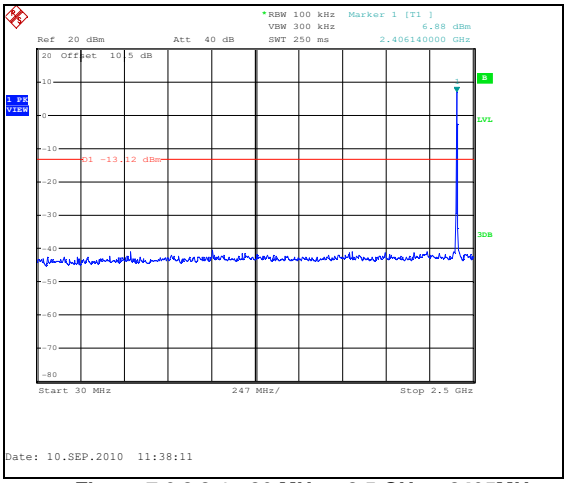

Figure 7.6.2.2-1: 30 MHz – 2.5 GHz – 2405MHz

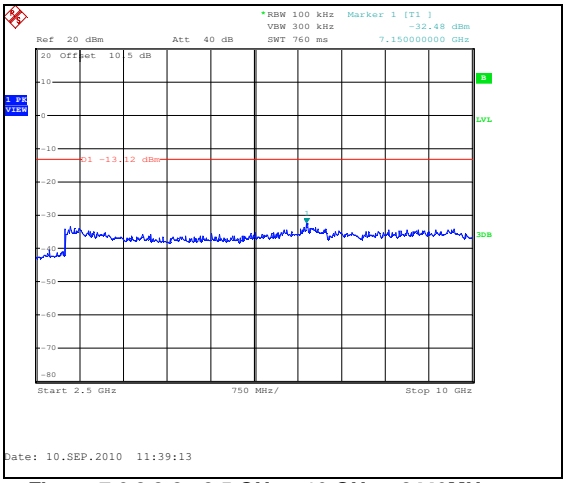

Figure 7.6.2.2-2: 2.5 GHz – 10 GHz – 2440MHz

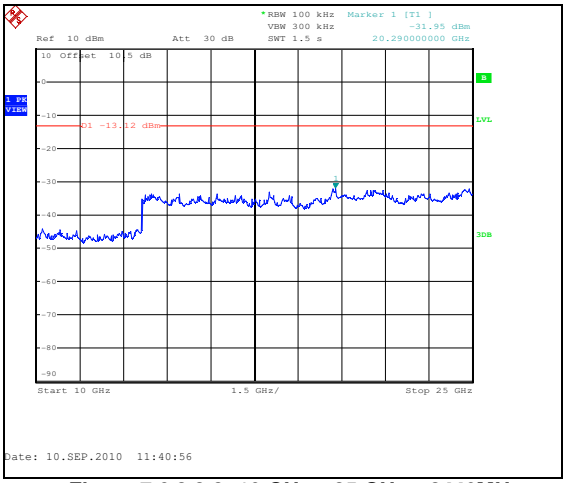

Figure 7.6.2.2-3: 10 GHz – 25 GHz – 2440MHz

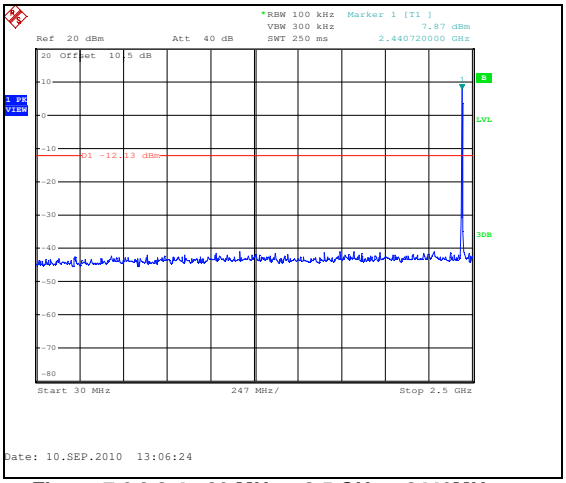

Figure 7.6.2.2-4: 30 MHz – 2.5 GHz – 2440MHz

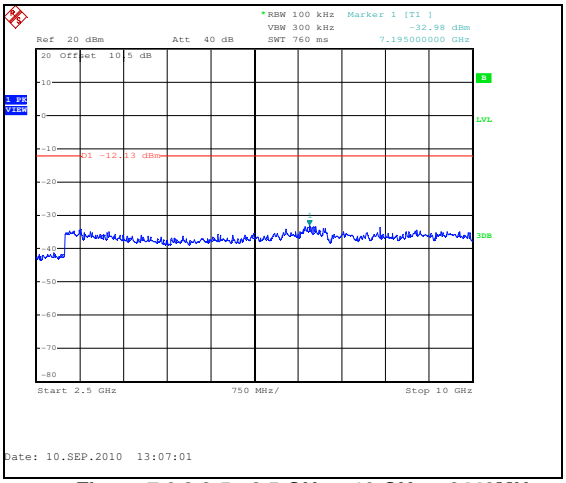

Figure 7.6.2.2-5: 2.5 GHz – 10 GHz – 2440MHz

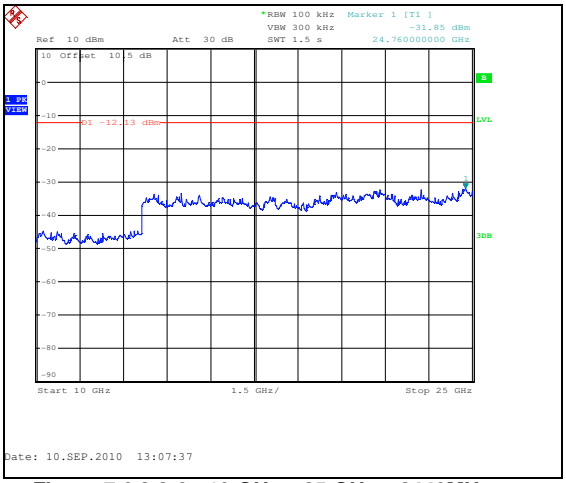

Figure 7.6.2.2-6: 10 GHz – 25 GHz – 2440MHz

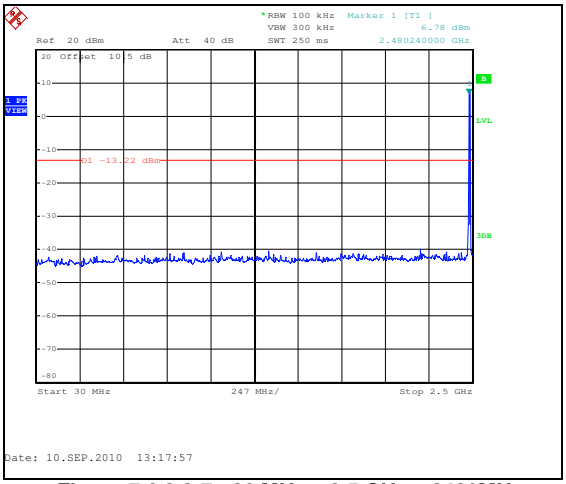

Figure 7.6.2.2-7: 30 MHz – 2.5 GHz – 2480MHz

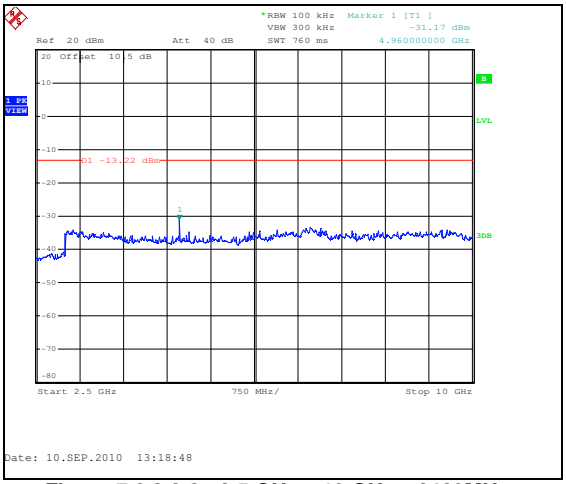

Figure 7.6.2.2-8: 2.5 GHz – 10 GHz – 2480MHz

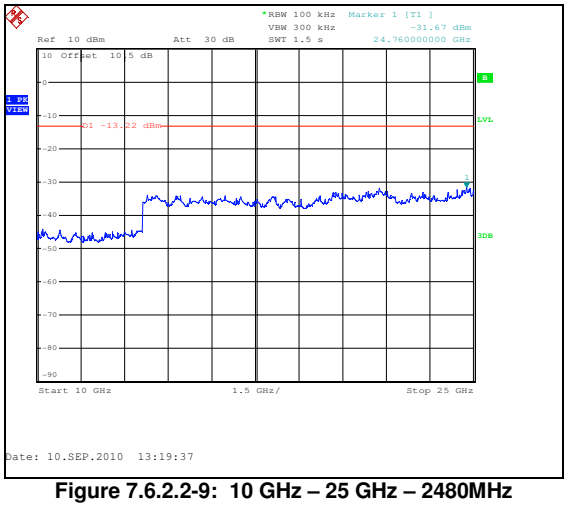

Figure 7.6.2.2-9: 10 GHz – 25 GHz – 2480MHz

7.6.3 Radiated Spurious Emissions (Restricted Bands) - FCC Sec. 15.205 IC: RSS-210 2.6

7.6.3.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 30MHz to 25 GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000MHz, peak and average measurements were made with RBW and VBW of 1 MHz and 3 MHz respectively. The average emissions were further corrected by applying the duty cycle correction of the EUT for comparison to the average limit.

Each emission found to be in a restricted band as defined by section 15.205 was compared to the radiated emission limits as defined in section 15.209.

7.6.3.2 Duty Cycle Correction

For average radiated measurements, using a 14.1% duty cycle, the measured level was reduced by a factor -17.02dB. The duty cycle correction factor is determined using the formula: 20log (14.1/100) = -17.02dB.

A detailed analysis of the duty cycle timing is provided in the Theory of Operation accompanying this report.

7.6.3.3 Measurement Results

Radiated spurious emissions found in the band of 30MHz to 25GHz are reported in the table below.

Table 7.6.3.3-1: Radiated Spurious Emissions Tabulated Data

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel - 2405MHz										
4810	53.49	45.14	H	3.17	56.66	31.29	74.0	54.0	17.3	22.7
4810	60.20	53.11	V	3.17	63.37	39.26	74.0	54.0	10.6	14.7
Middle Channel - 2440MHz										
4880	61.59	54.43	H	3.38	64.97	40.80	74.0	54.0	9.0	13.2
4880	67.10	60.65	V	3.38	70.48	47.02	74.0	54.0	3.5	7.0
7320	52.66	43.69	H	8.40	61.06	35.08	74.0	54.0	12.9	18.9
7320	57.81	49.56	V	8.40	66.21	40.95	74.0	54.0	7.8	13.1
High Channel - 2480MHz										
4960	63.57	57.25	H	3.63	67.20	43.86	74.0	54.0	6.8	10.1
4960	68.30	61.57	V	3.63	71.93	48.18	74.0	54.0	2.1	5.8
7440	52.07	43.62	H	8.58	60.65	35.18	74.0	54.0	13.4	18.8
7440	55.12	47.32	V	8.58	63.70	38.88	74.0	54.0	10.3	15.1

7.6.3.4 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak

Corrected Level: 53.49 + 3.17 = 56.66dBuV/m
Margin: 74dBuV/m – 56.66dBuV/m = 17.3dB

Example Calculation: Average

Corrected Level: 45.14 + 3.17 – 17.02 = 31.29dBuV
Margin: 54dBuV – 31.29dBuV = 22.7dB

7.7 Peak Power Spectral Density- FCC Section 15.247(e) IC: RSS-210 A8.2(b)

7.7.1 Measurement Procedure

The power spectral density was measured in accordance with the FCC KDB Publication No. 558074 "Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)". The emission peaks within the pass band were located and zoomed in on. The spectrum analyzer RBW was set to 3 kHz and VBW 10 kHz. Span was adjusted to 200 kHz and the sweep time was calculated to be 68s ~ (Span/3 kHz).

7.7.2 Measurement Results

Results are shown below in table 7.7.2-1 and figures 7.7.2-1 – 7.7.2-3:

Table 7.7.2-1: Peak Power Spectral Density

Frequency (MHz)	PSD Level (dBm)
2405	-7.01
2440	-6.19
2480	-6.06

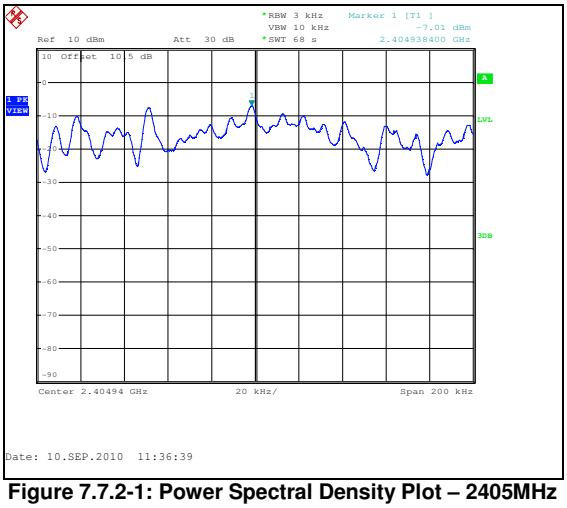

Figure 7.7.2-1: Power Spectral Density Plot – 2405MHz

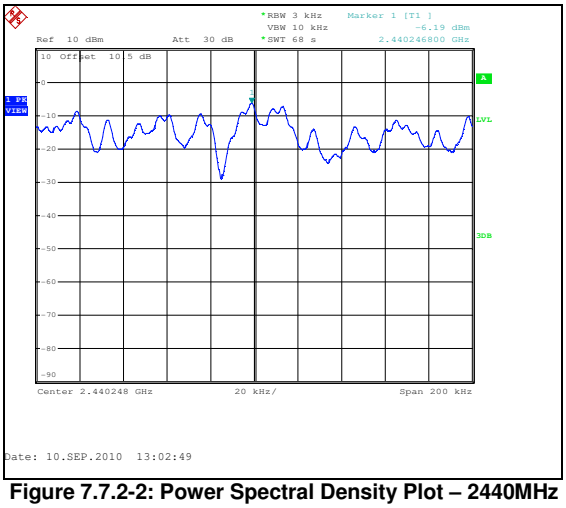

Figure 7.7.2-2: Power Spectral Density Plot – 2440MHz

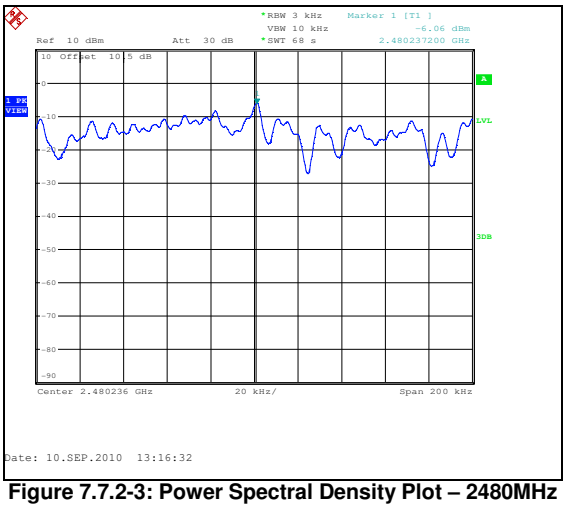

Figure 7.7.2-3: Power Spectral Density Plot – 2480MHz

8 CONCLUSION

In the opinion of ACS, Inc. the SS200, manufactured by Synapse Wireless, Inc. meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-210.

END REPORT