



TEST REPORT

Report Number: 100860883DEN-001

Project Number: G100860883

Report Issue Date: 8/31/2012

Product Designation: Model: AXS-FMTD

Standards: FCC 47CFR Part 15C
RSS-210 - Issue 8: 2010
RSS-GEN - Issue 3: 2010

Tested by:

Intertek Testing Services NA, Inc.
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Louisville, CO 80027

Client:

Waio Inc.
2450 Eliot Street, Suite 5
Denver, CO 80211

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the **product tested complies with the requirements of the standard(s) indicated**. The results obtained in this test report pertain only to the item(s) tested.

2 Test Summary

Section	Test full name	Test date	Result
5	Radiated Unintentional Spurious Emissions - FCC 15.239(c)/ 15.209 [Covers IC RSS-210 A2.8/ RSS-Gen 7.2.5]	08/10/2012 08/13/2012	Pass
6	200kHz Bandwidth & Band Edge – FCC 15.239(a) [Covers IC RSS-210 A2.8]	08/08/2012	Pass
7	Tx Radiated Emissions - FCC 15.239(b) [Covers IC RSS-210 A2.8]	08/07/2012 08/08/2012	Pass
8	AC Conducted Emissions - FCC 15.207 [Covers RSS-Gen 7.2.4]	08/28/2012	Pass
9	Occupied Bandwidth Measurement - RSS-Gen 4.6.1	08/17/2012	Pass

General Notes:

- The testing in this report covers the following product models: FM Radio mode of operation (88.9 MHz to 107.1 MHz). All models are electrically identical:
 - AXS-FMTD
 - AXS-FMTXD
 - CT-FMTD
- Product is RSS-210 Category 1 equipment.

Radio Notes:

- FCC CFR47 Part 15.31: Measurement Standards: In any case where the device is powered off a battery, a fresh battery was used during test. In cases where the device is powered off an AC supply, voltage was varied per Part 15.31 to find worst case emissions.
- FCC CFR47 Part 15.35: Measurement Detector Functions and Bandwidths were utilized when performing the measurements within this report.
- Testing of the product included (3) axes (product orientations).
- Testing of the product included (3) Tx channels (low, mid, high).
- No Duty Cycle Correction Factor for pulsed signals was utilized in this report.

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2.1 Test Facility

Intertek Denver's testing facilities are located at 1795 Dogwood St. Suite 200 Louisville, CO 80027. The testing facility is ISO17025:2005 accredited by A2LA, our lab code is 2506.02, our VCCI registration numbers are. R-1643, C-1752 and T-1558, our FCC designation no. US1121 and our IC lab no. 2042N.

Testing contained in this test report may not be covered under the laboratories scope of accreditation. A note will be placed in the specific test section for testing not covered under the laboratories scope.

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3 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Broadcastvision Entertainment BVE Transmitter	WAIO, Inc.	AXS-FMTD	002

Receive Date:	08/07/2012
Received Condition:	Good
Type:	Production Sample

Description of Equipment Under Test (provided by client)
The BVE Transmitter takes an audio signal (either analog stereo or optical/coax digital) and transmits via stereo FM-modulated signal (same as analog broadcast FM). The "FM" version of the product transmits within the FM band only. The "900MHz" version of the product transmits within the 900MHz ISM band using the same analog FM modulation, simply up-converted into the ISM band. Specific product mode tested in this report: FM Transmitter (88.9 MHz to 107.1 MHz) Clock Frequencies: 7.6MHz, 27MHz, 32MHz Radio: Tx Frequency 88.9MHz to 107.1MHz (extendable antenna fully extended) Product will marketed in the US and Canada.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
AC-DC Adapter Input: 120VAC	10W	60	1
AC-DC Adapter Output: 12VDC	300mA	----	----

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Product tuned to specific FM channel (low, mid, high).
2	Transmitting audio continuously via FM-modulated signal.
3	Volume level (modulation level) set to maximum recommended by the manufacturer during testing – determined by internal VU meter on the product LCD display.

3.1 Photo: Product Under Test

Model: AXS-FMTD

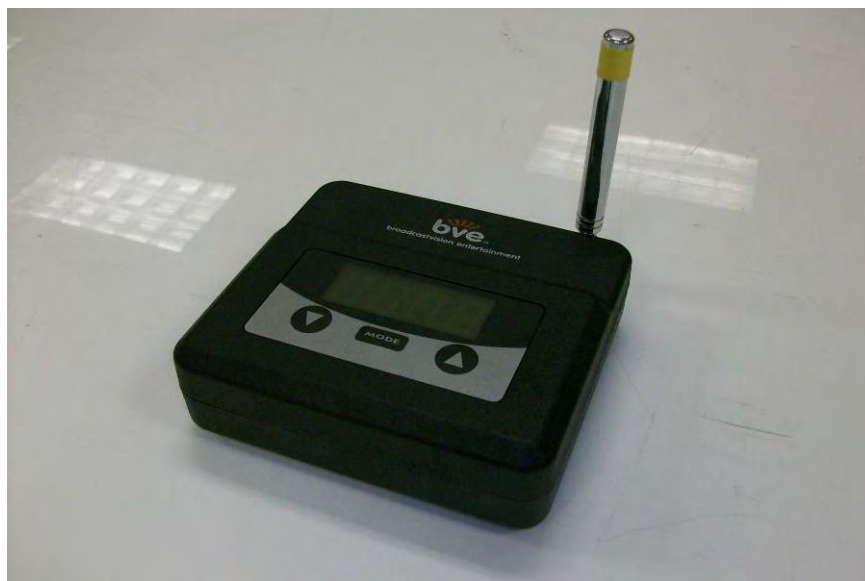


Photo: Product Under Test

There are 3 Audio connectors, choose only one to connect to an audio source – **do not use more than one of these connectors at any time:**

Optical Connect this to an optical digital audio output on a TV, CD/DVD player, etc., using a standard optical cable

3.5 mm Connect this to a line-level or headphone-level stereo signal source on a RV, CD/DVD player, Receiver, etc., using an appropriate cable

RCA Connect this to a coax digital audio output on a TV, CD/DVD player, etc.

Photo: Product Under Test

AC-DC Adapter

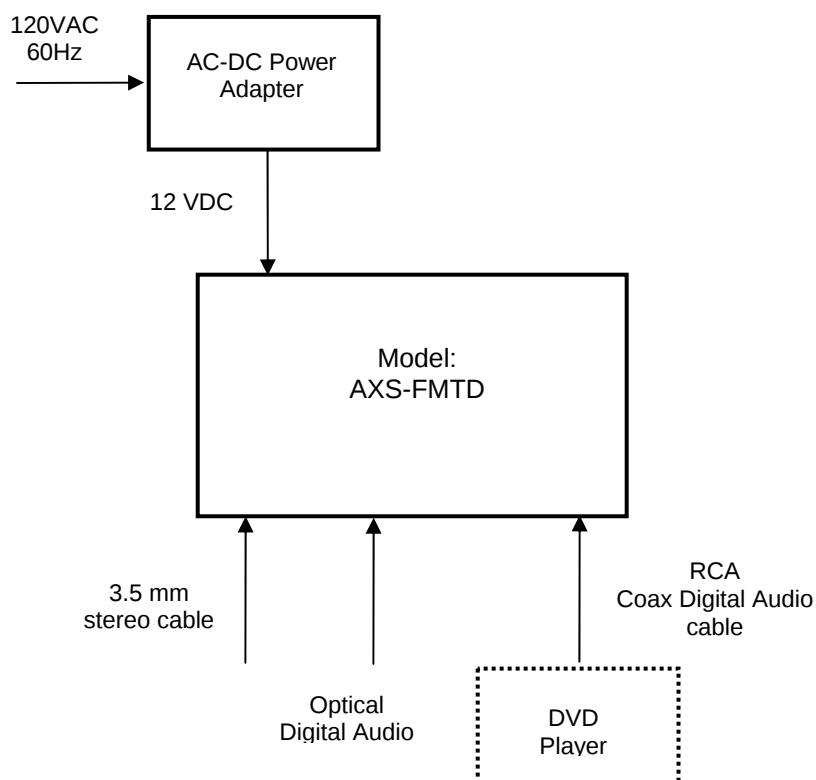


4 System setup including cable interconnection details, support equipment and simplified block diagram

4.1 Method:

Record the details of EUT cabling, document the support equipment, and show the interconnections in a block diagram.

4.2 EUT Block Diagram:



Notes:

- Items in dashed line are support equipment – not directly tested.

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4.3 Support Data:

ID	Description/ Function	Shield	Length	Connector	Connection	Ferrites
1	AC-DC Adapter Cable	no	1.5-meters	Dc power	Model AXS9FMT	no
2	RCA Coax Digital Audio Cable	yes	3-meters	RCA	DVD Player	no
3	3.5mm Analog Stereo Audio Cable	no	1-meter	3.5mm	none	no
4	Optical Digital Audio Cable	N/A	1-meter	optical	none	N/A

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
DVD Player	Unknown	Unknown	Unknown

Notes: DVD player located outside the test chamber.

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5 Radiated Unintentional & Tx Spurious Emissions

5.1 Method

Unless otherwise stated no deviations were made from FCC 15.239/ 15.209 [RSS-210 A2.8/ RSS-Gen 7.2.5].

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

5.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	06/06/2012	06/06/2013
18906	RF Pre-Amp (1-4GHz)	Mini-Circuits Lab	ZHL-42	N052792-2	06/06/2012	06/06/2013
18900	RF Pre-Amplifier (4-8 GHz)	Avantek	AFT97-8434-10F	1007	06/06/2012	06/06/2013
18901	RF Pre-Amp (8-18GHz)	Avantek	AWT-18037	1002	06/06/2012	06/06/2013
18897	Active Magnetic Loop Antenna	EMCO	6502	9205-2738	11/22/2011	11/22/2012
19936	Bilog Antenna 30MHz – 6GHz	Sunol Sciences	JB6	A050707-1	11/15/2011	11/15/2012
18887	Horn Antenna 1-18GHz	EMCO	3115	9205-3886	02/29/2012	02/29/2013
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBU	VBU

5.3 Results:

The sample tested was found to Comply.

5.4 Setup Photographs: Product Configuration – FM Mode

Test setup – Front view
(Axis 2 – Worst Case)



(Axis 1)



Photo:

Test setup – Rear view



Photo: Antenna Setup

Antenna Setup: Active Loop Antenna - 10kHz to 30MHz



Antenna Setup: BiLog Antenna - 30MHz to 1000MHz



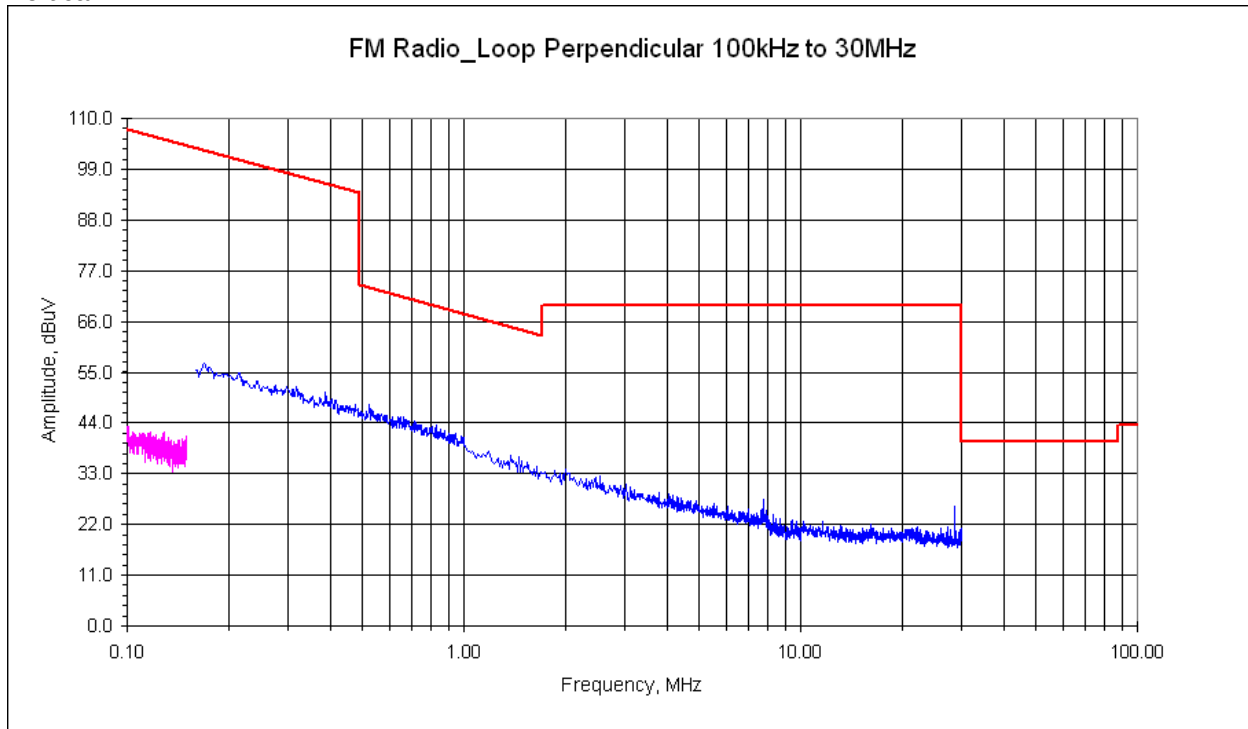
Antenna Setup: Ridged Guide Horn Antenna – Above 1GHz



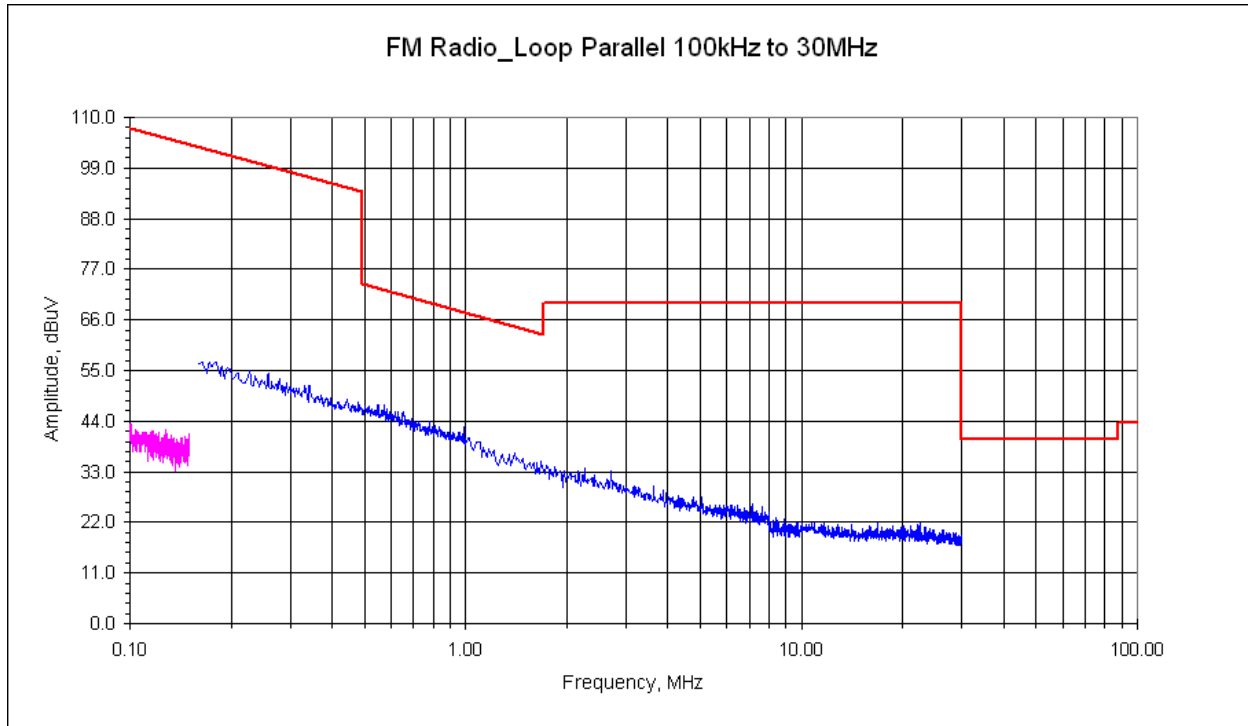
5.5 Pre-scan Plots: Reference Only – Not Final Data: FM Mode (Axis 1-Low Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (100kHz to 30MHz)

Vertical



Horizontal

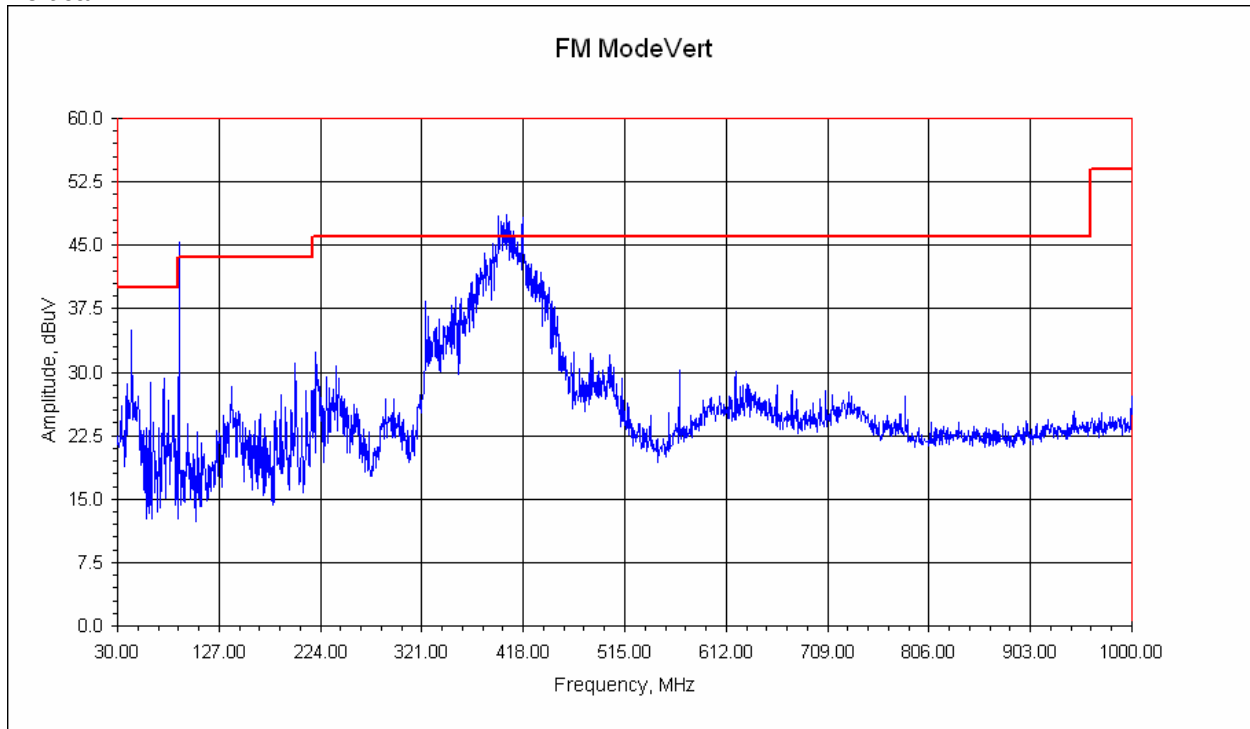


Note: Peak detector max hold measurements plotted against quasi-peak limits

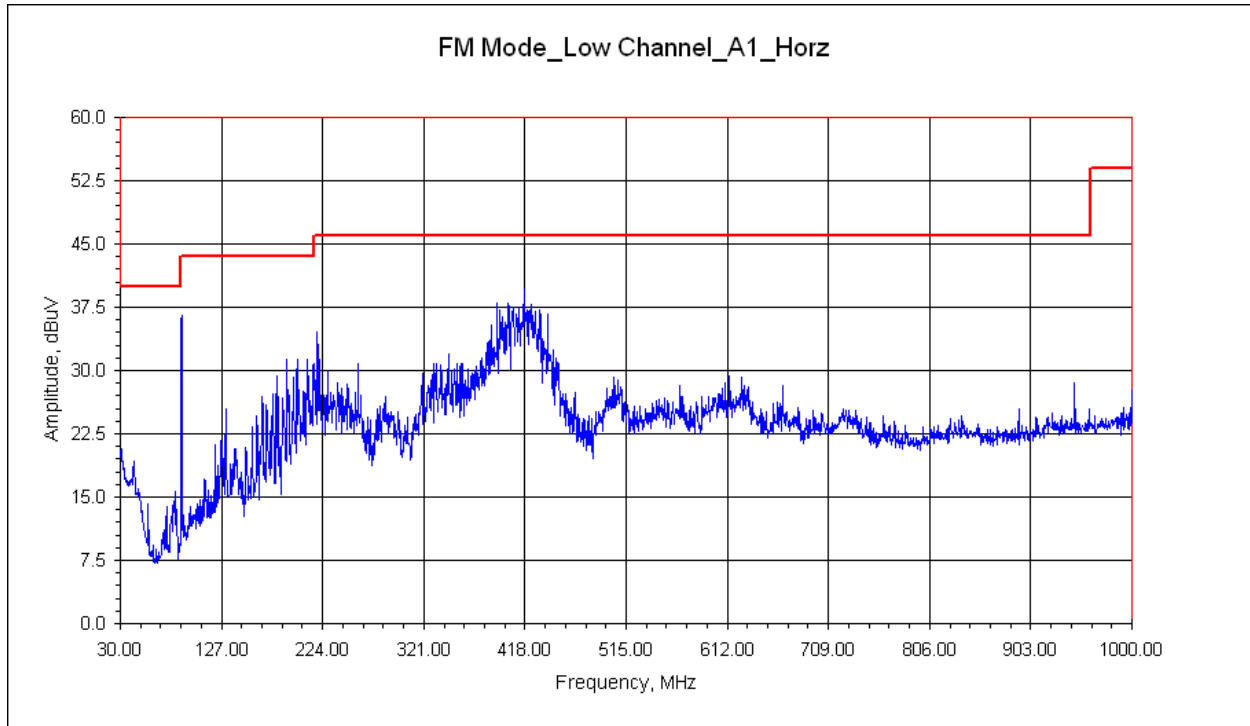
5.6 Pre-scan Plots: Reference Only – Not Final Data: FM Mode (Axis 1-Low Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (30MHz to 1000MHz)

Vertical



Horizontal

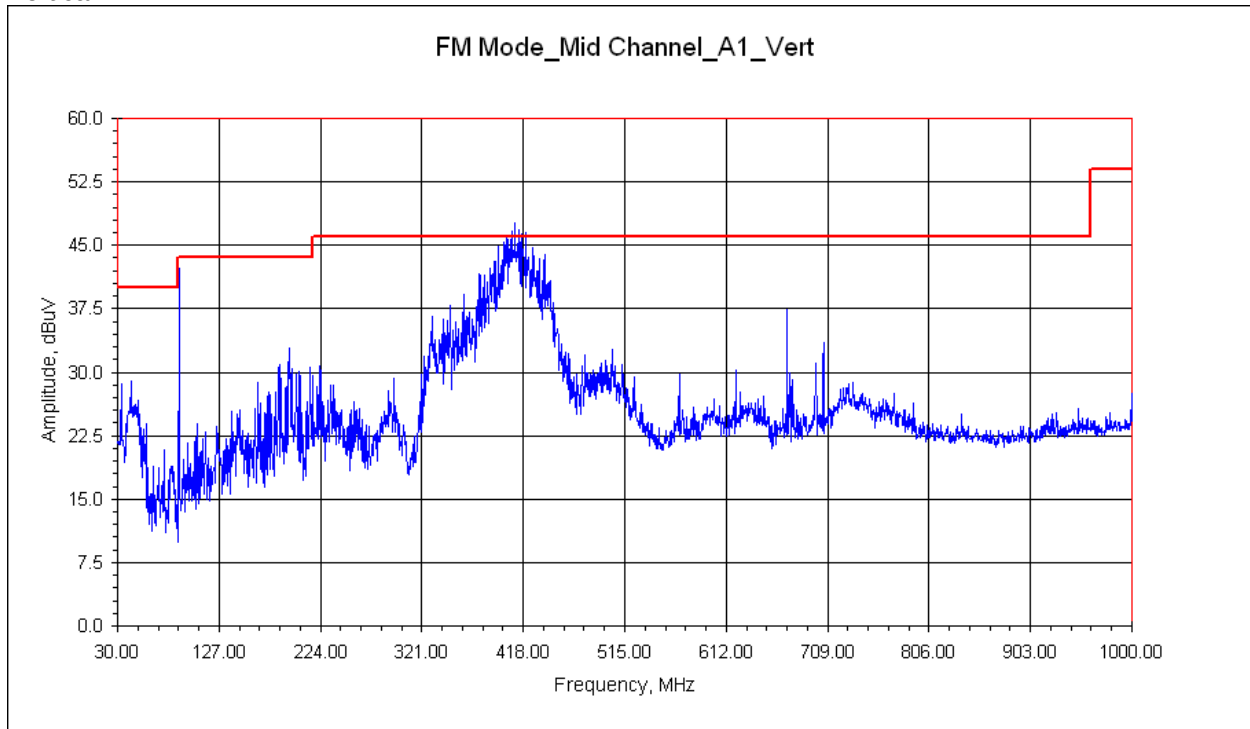


Note: Peak detector max hold measurements plotted against quasi-peak limits

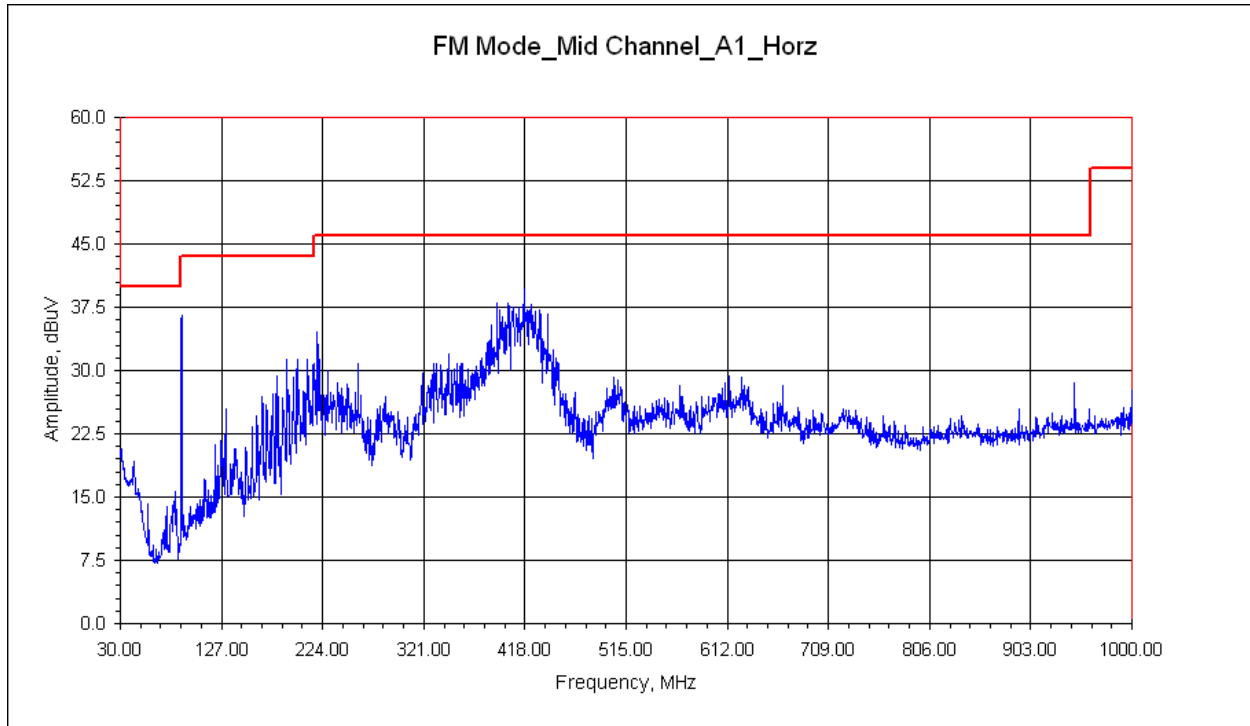
5.7 Pre-scan Plots: Reference Only – Not Final Data: FM Mode (Axis 1-Mid Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (30MHz to 1000MHz)

Vertical



Horizontal

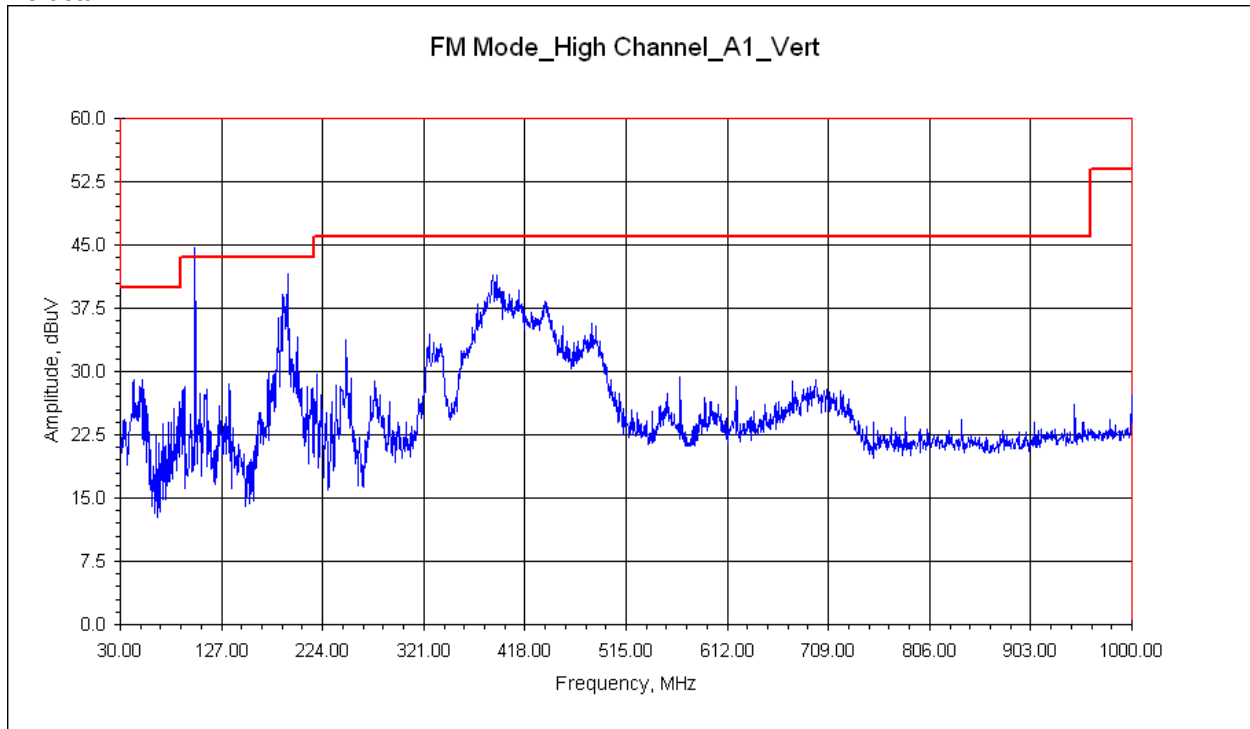


Note: Peak detector max hold measurements plotted against quasi-peak limits

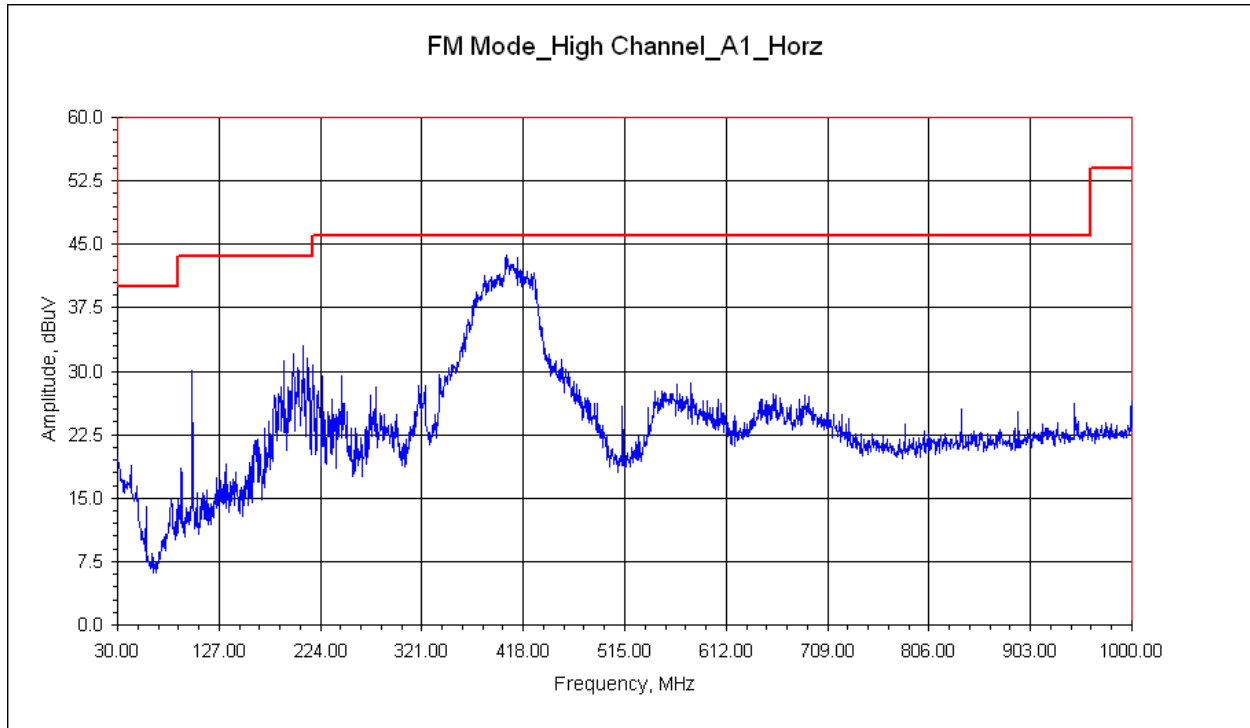
5.8 Pre-scan Plots: Reference Only – Not Final Data: FM Mode (Axis 1-High Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (30MHz to 1000MHz)

Vertical



Horizontal

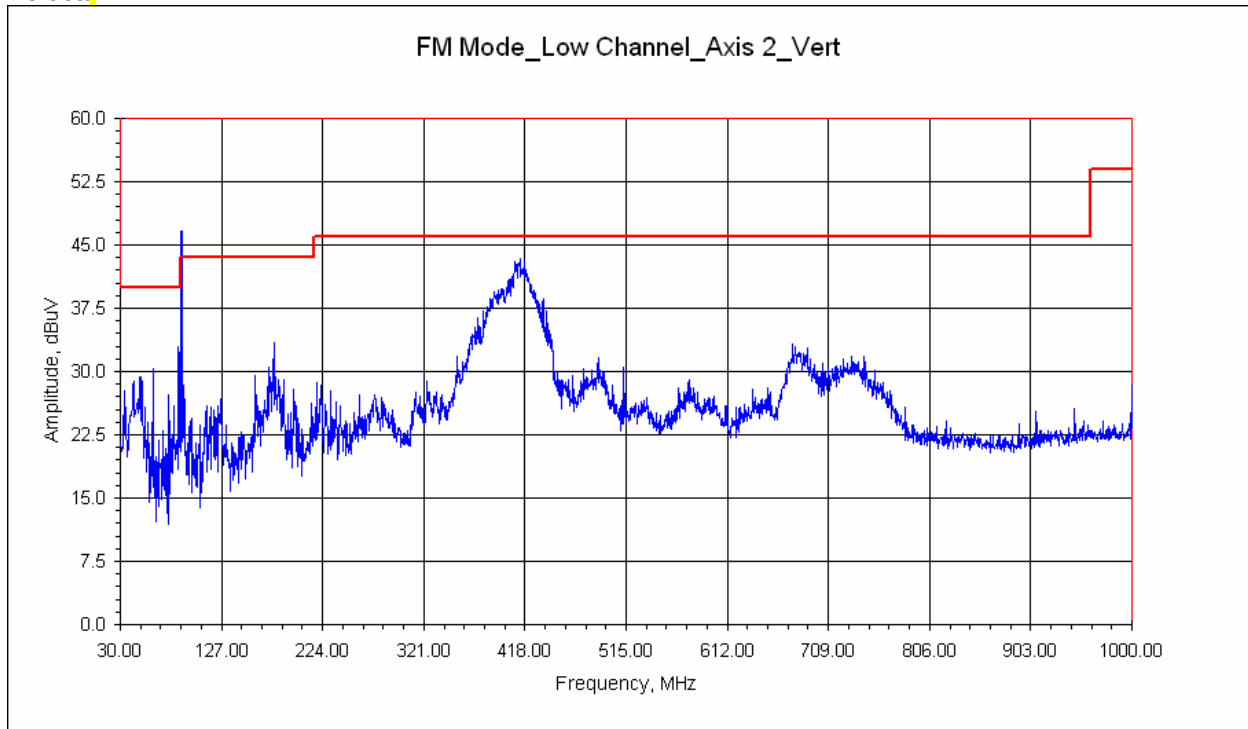


Note: Peak detector max hold measurements plotted against quasi-peak limits

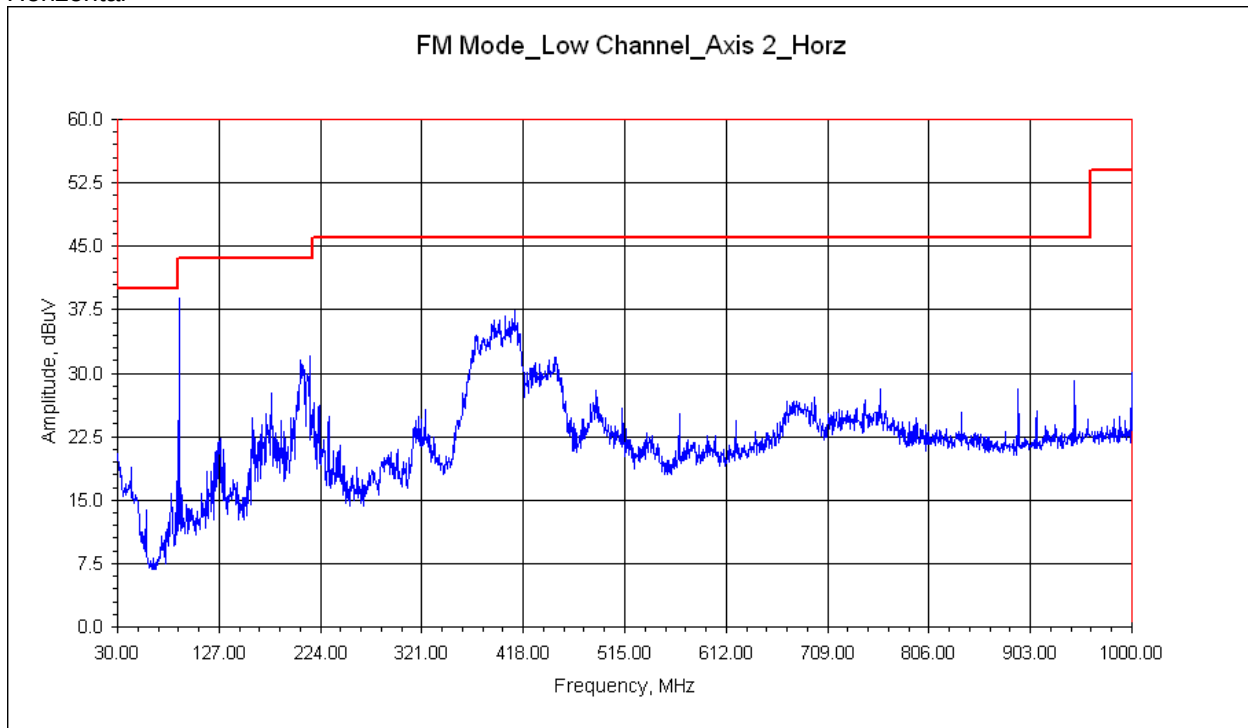
5.9 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – Low Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (30MHz to 1000MHz)

Vertical



Horizontal

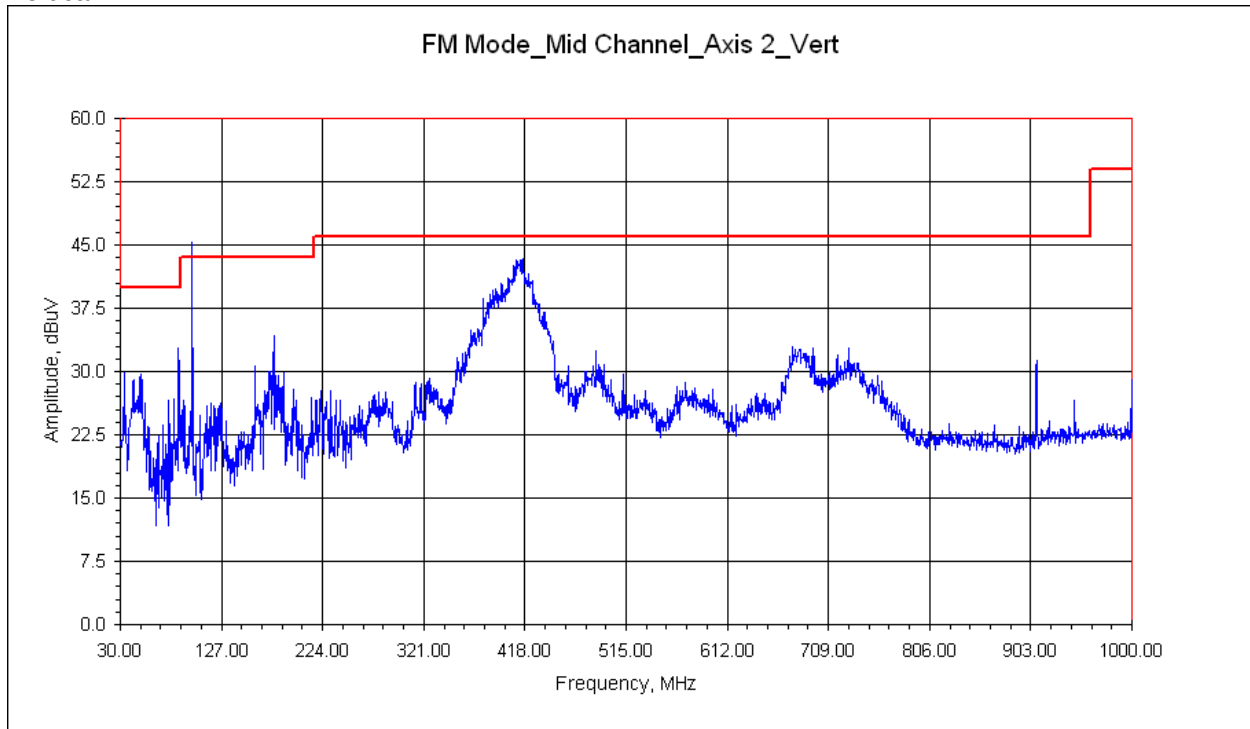


Note: Peak detector max hold measurements plotted against quasi-peak limits

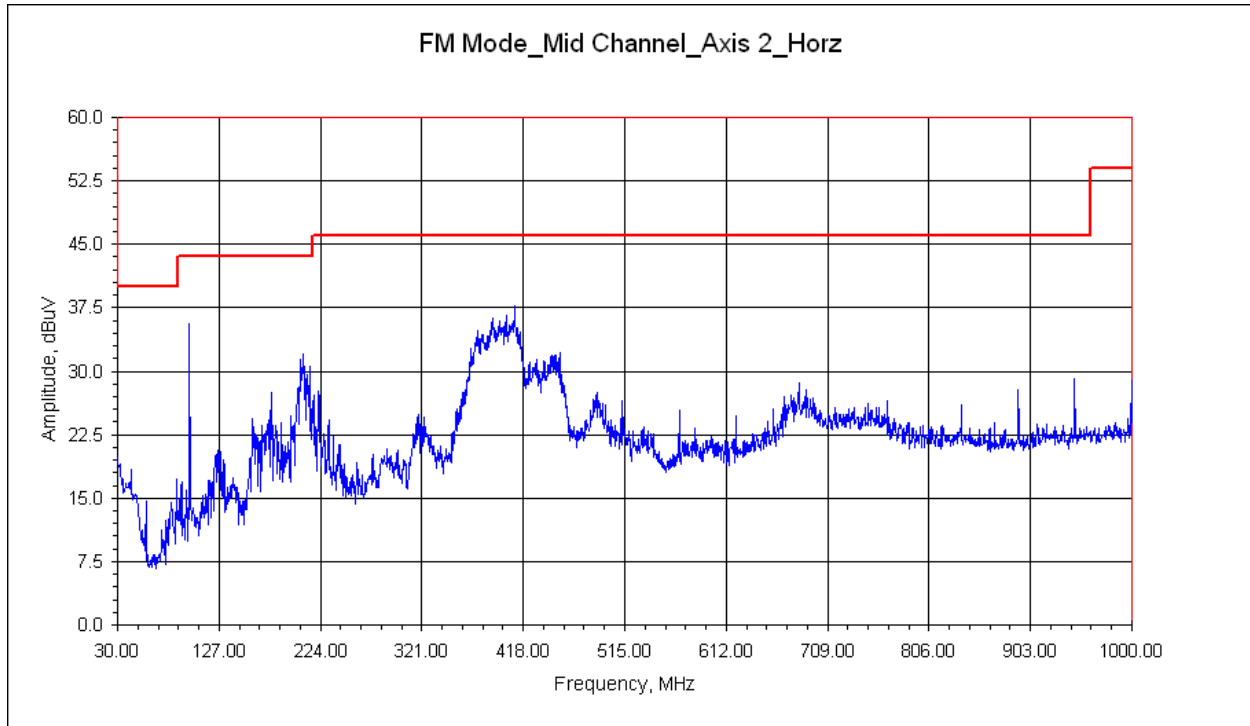
5.10 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – Mid Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (30MHz to 1000MHz)

Vertical



Horizontal

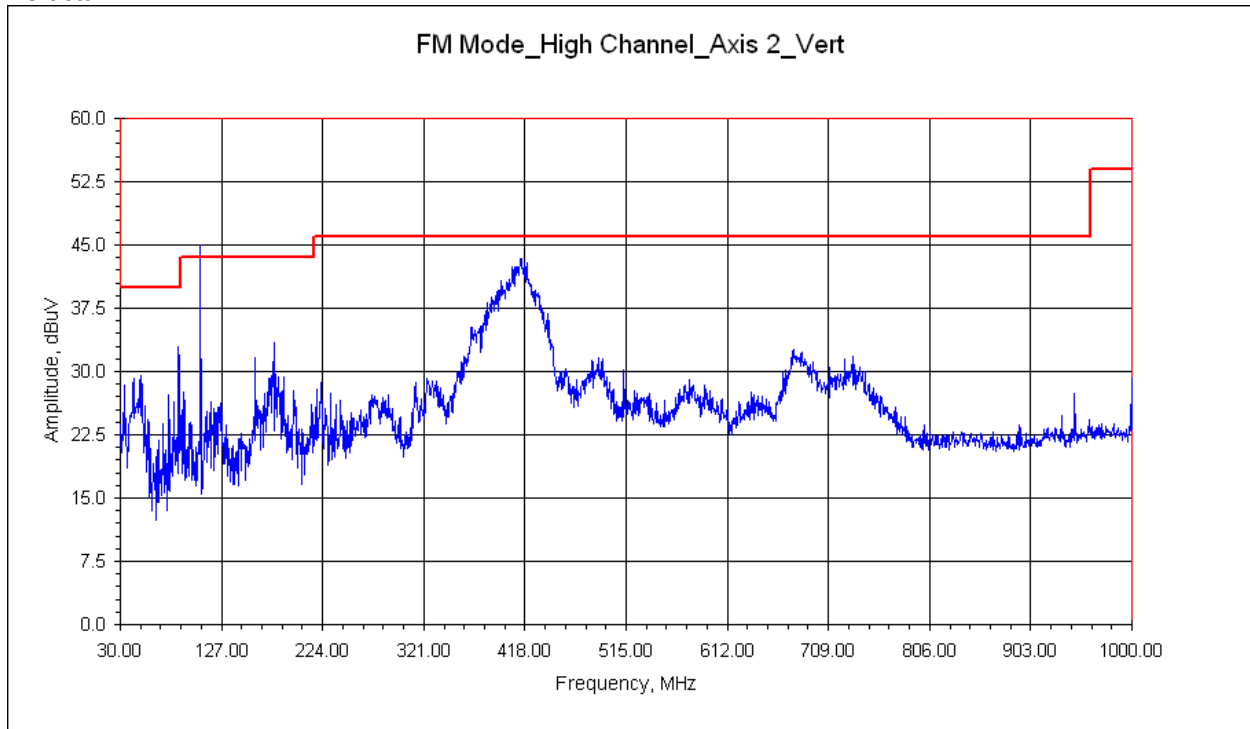


Note: Peak detector max hold measurements plotted against quasi-peak limits

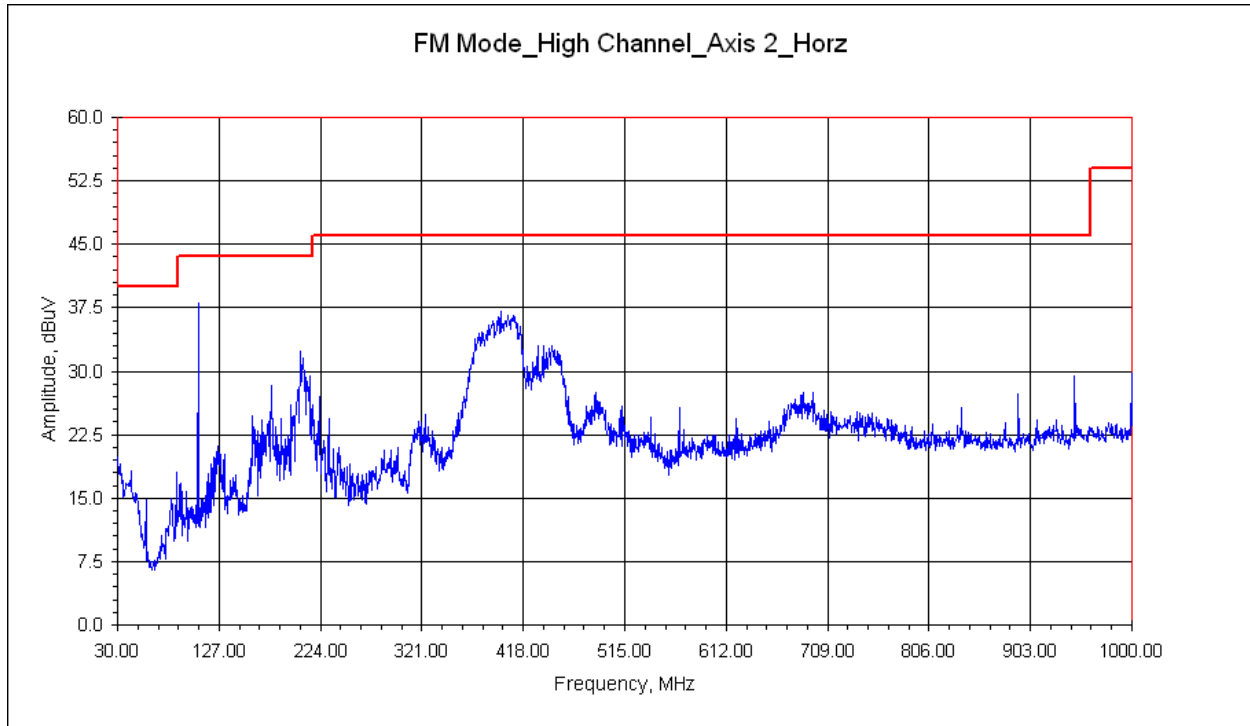
5.11 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – High Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (30MHz to 1000MHz)

Vertical



Horizontal

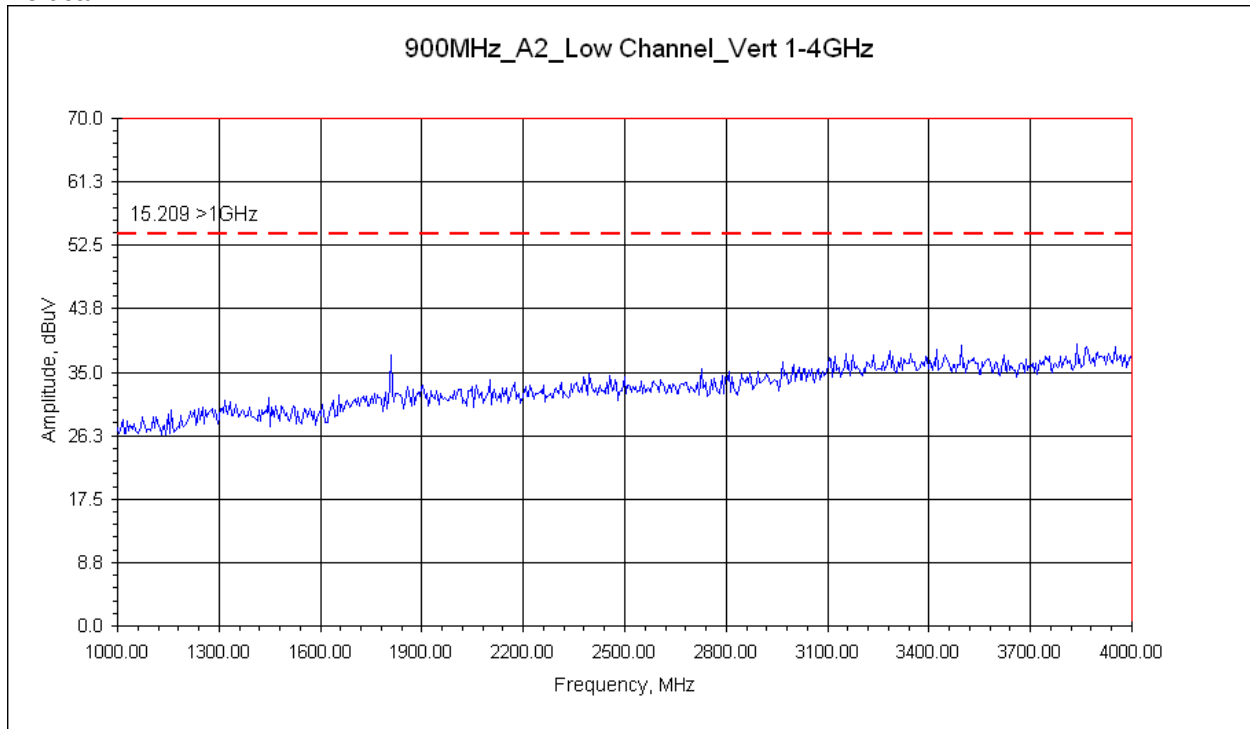


Note: Peak detector max hold measurements plotted against quasi-peak limits

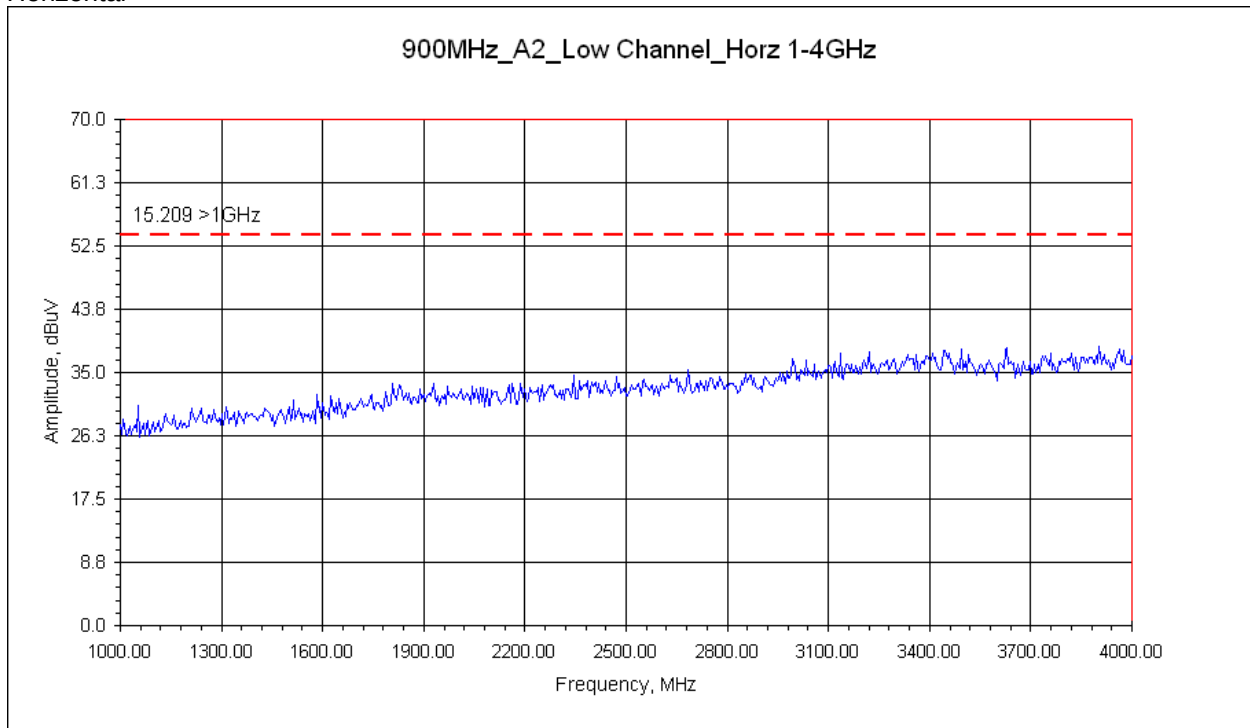
5.12 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 Low Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (1GHz to 4GHz)

Vertical



Horizontal

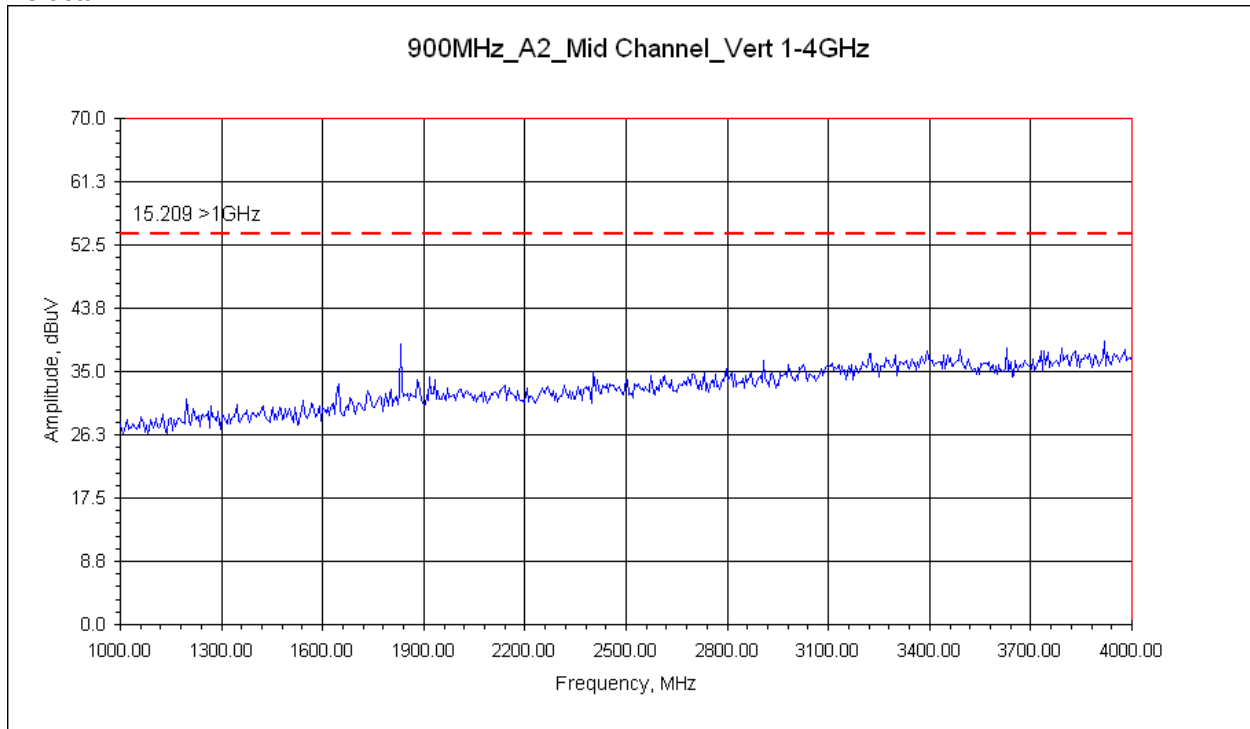


Note: Peak detector max hold measurements plotted against average limits

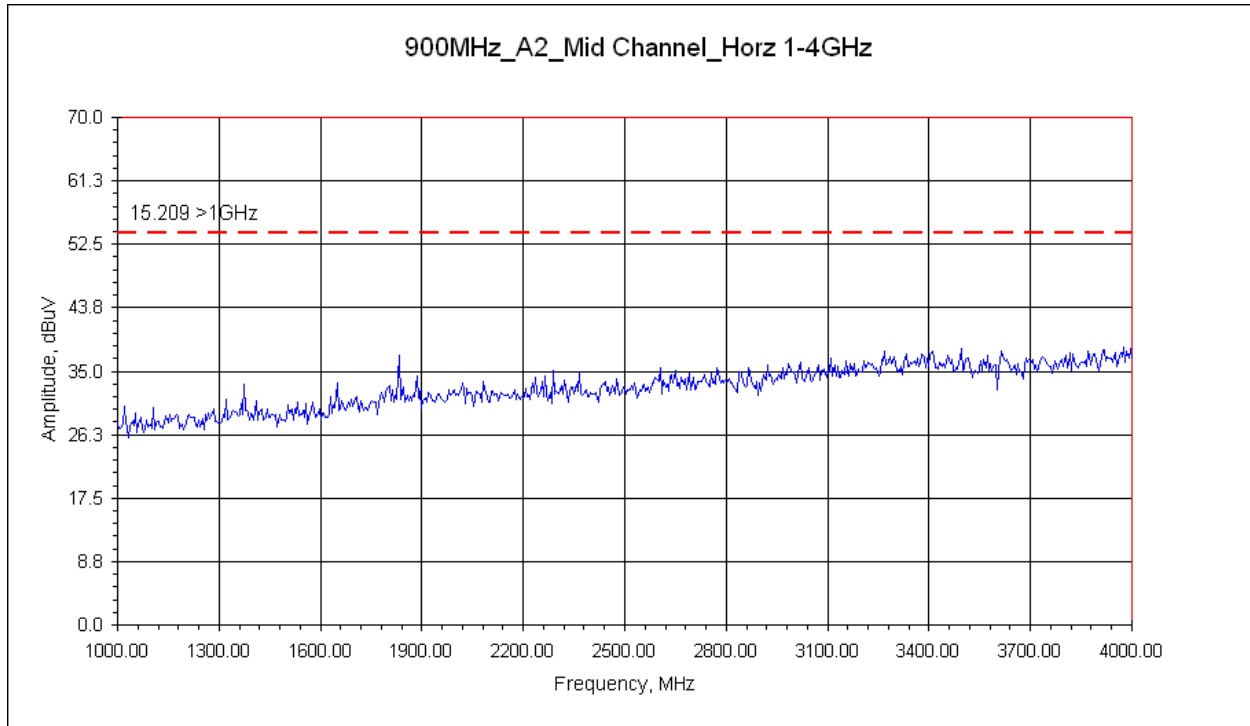
5.13 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – Mid Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (1GHz to 4GHz)

Vertical



Horizontal

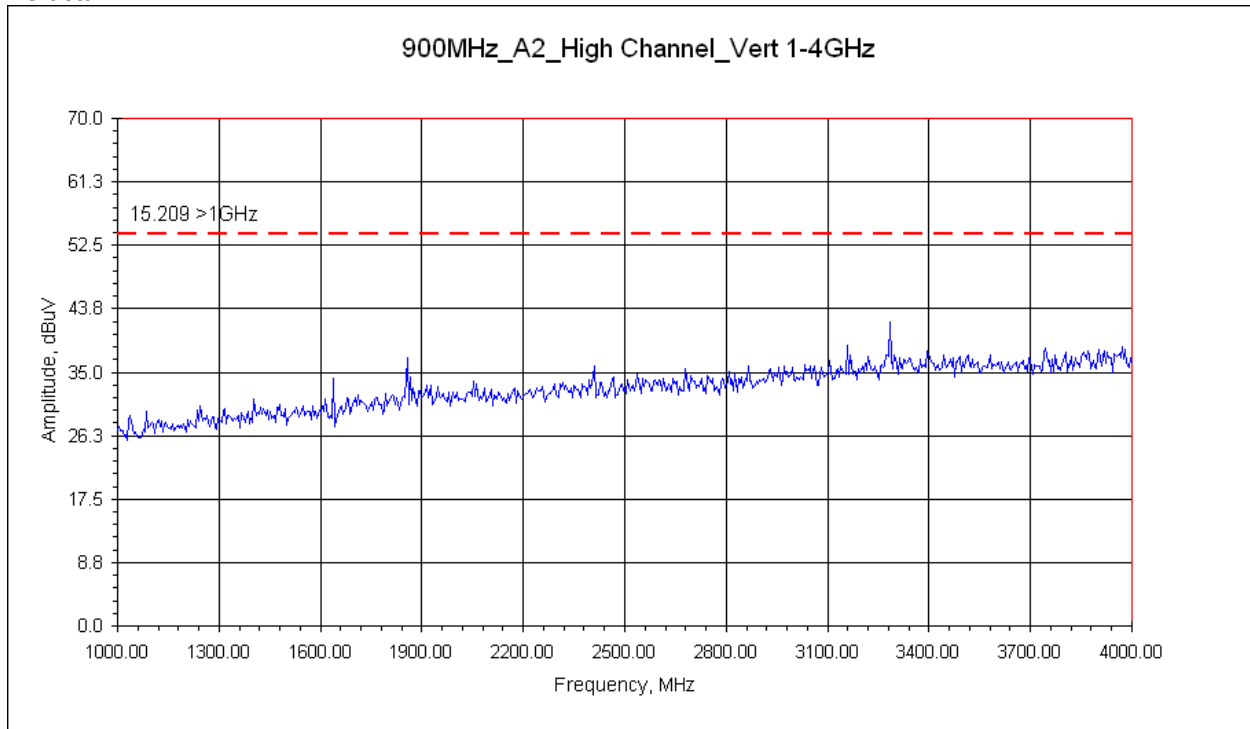


Note: Peak detector max hold measurements plotted against average limits

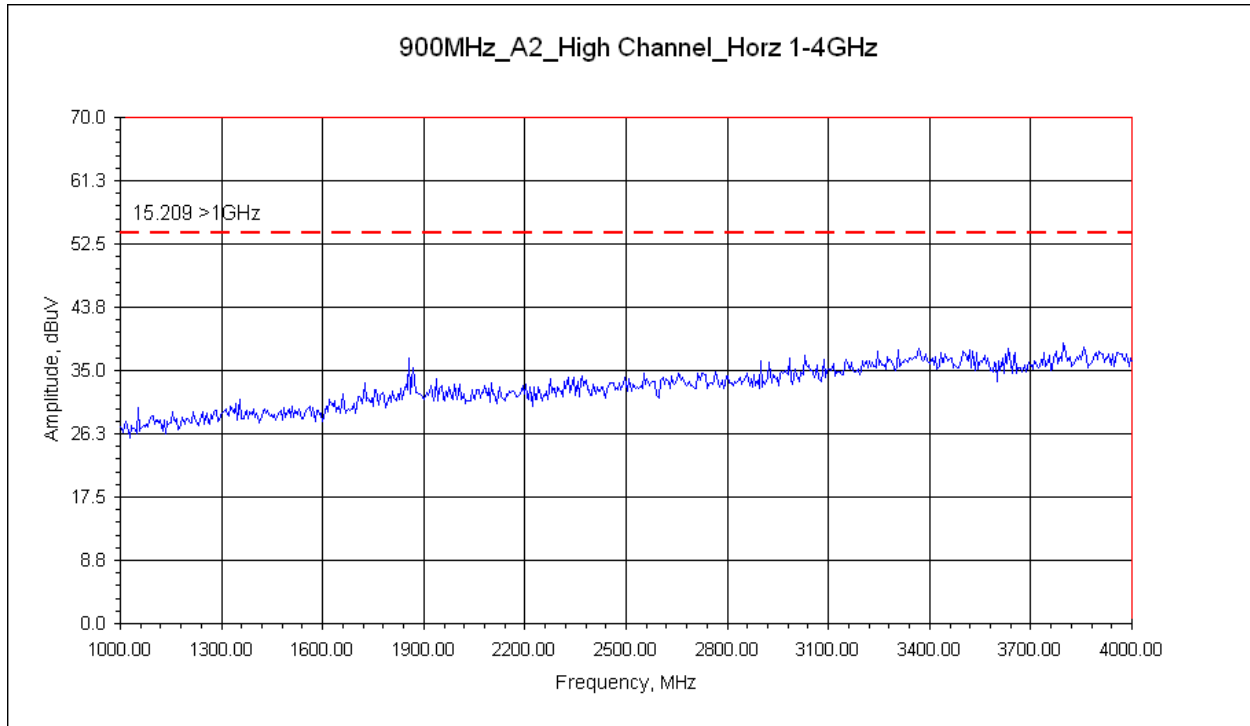
5.14 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – High Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (1GHz to 4GHz)

Vertical



Horizontal

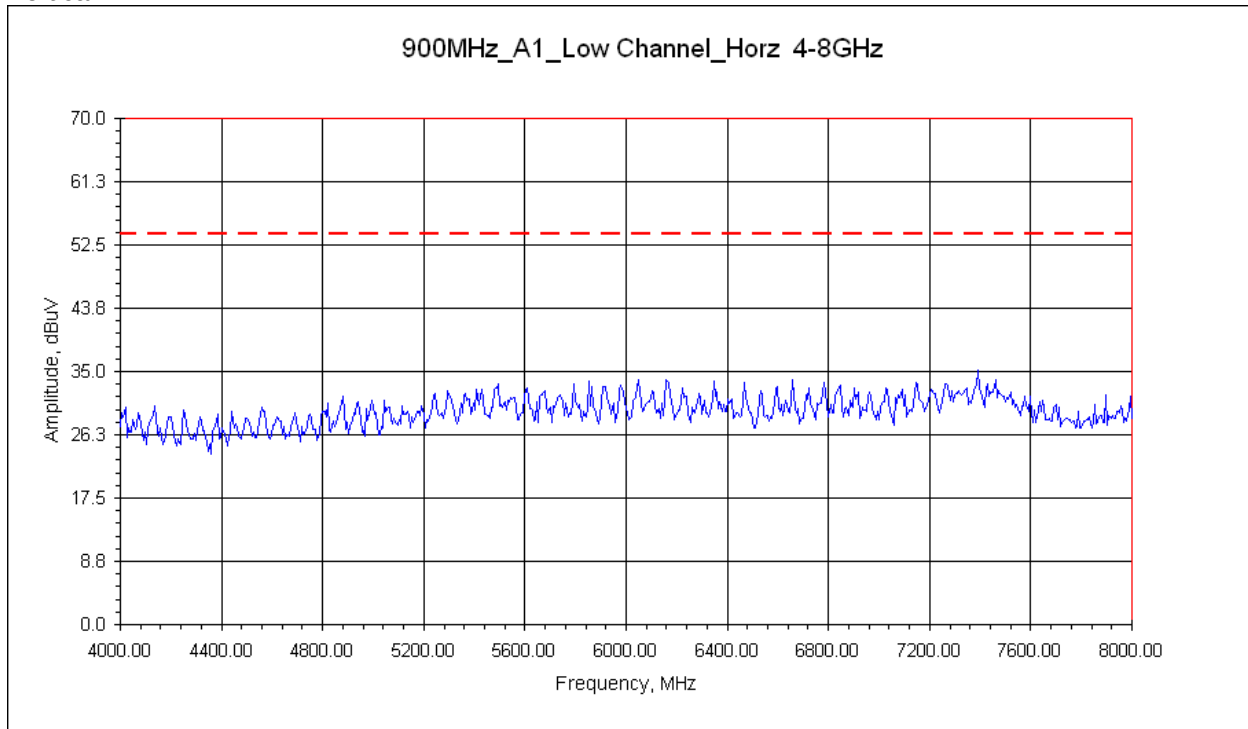


Note: Peak detector max hold measurements plotted against average limits

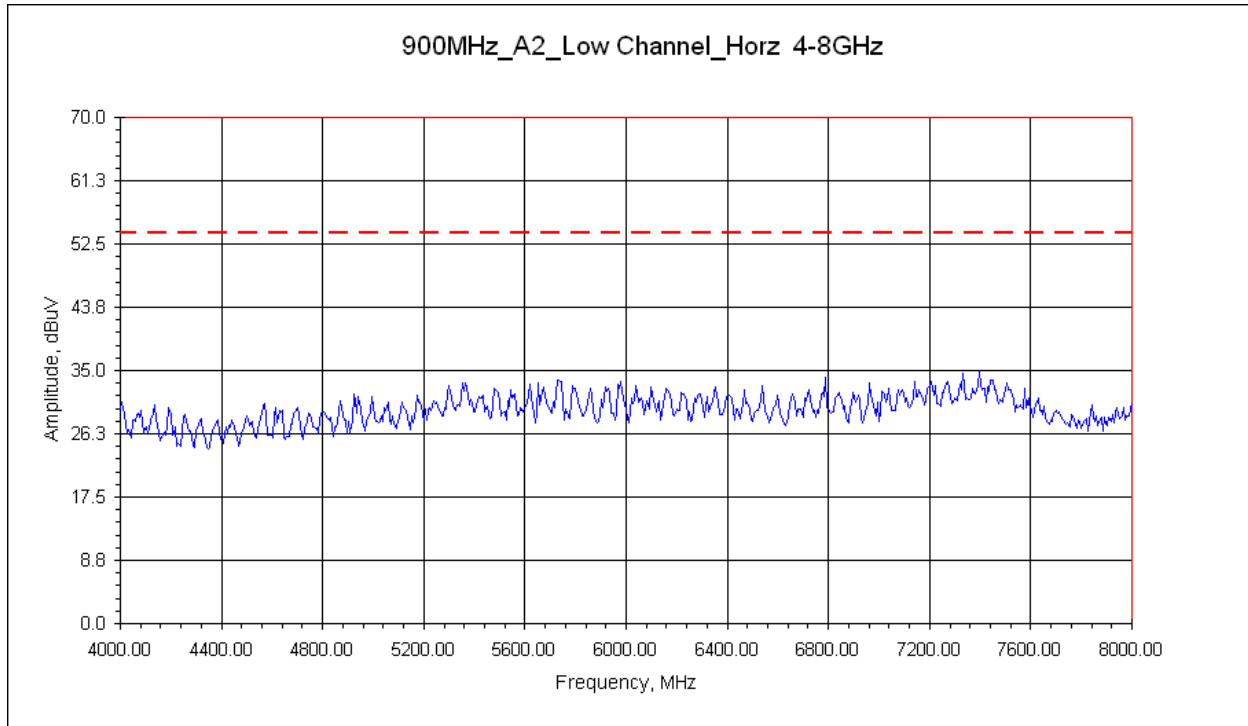
5.15 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – Low Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (4GHz to 8GHz)

Vertical



Horizontal

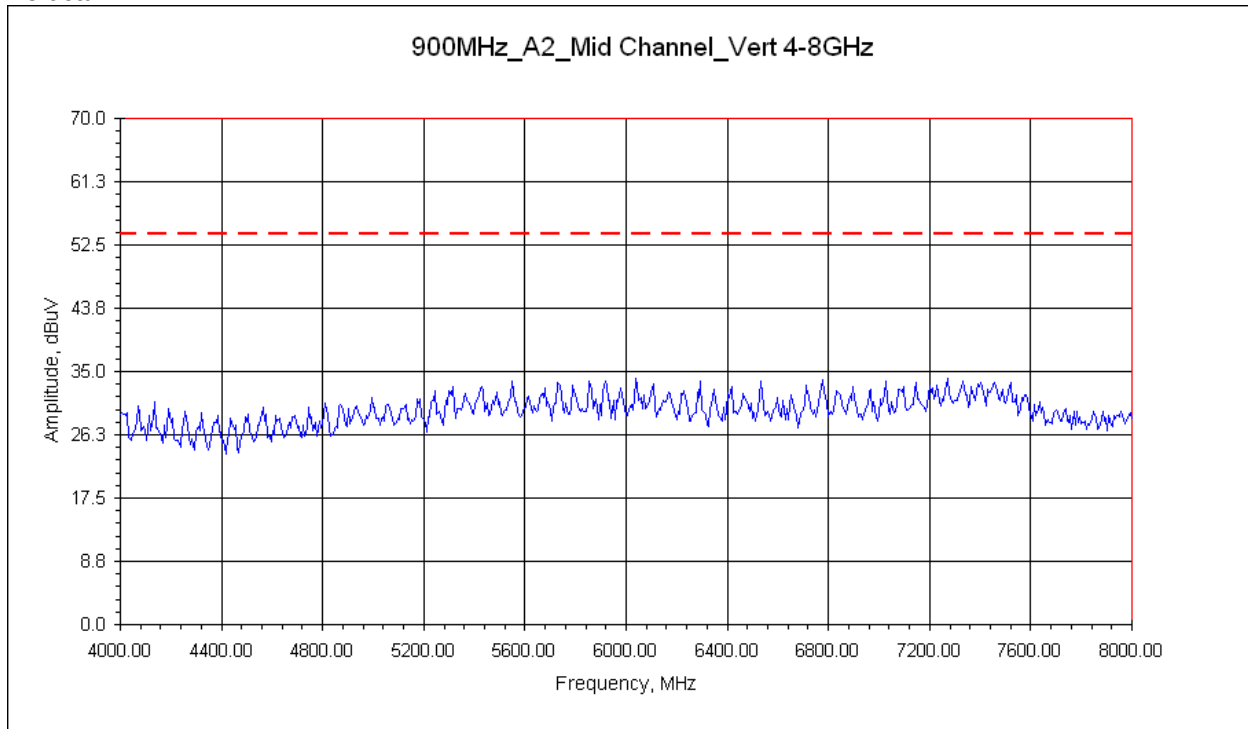


Note: Peak detector max hold measurements plotted against average limits

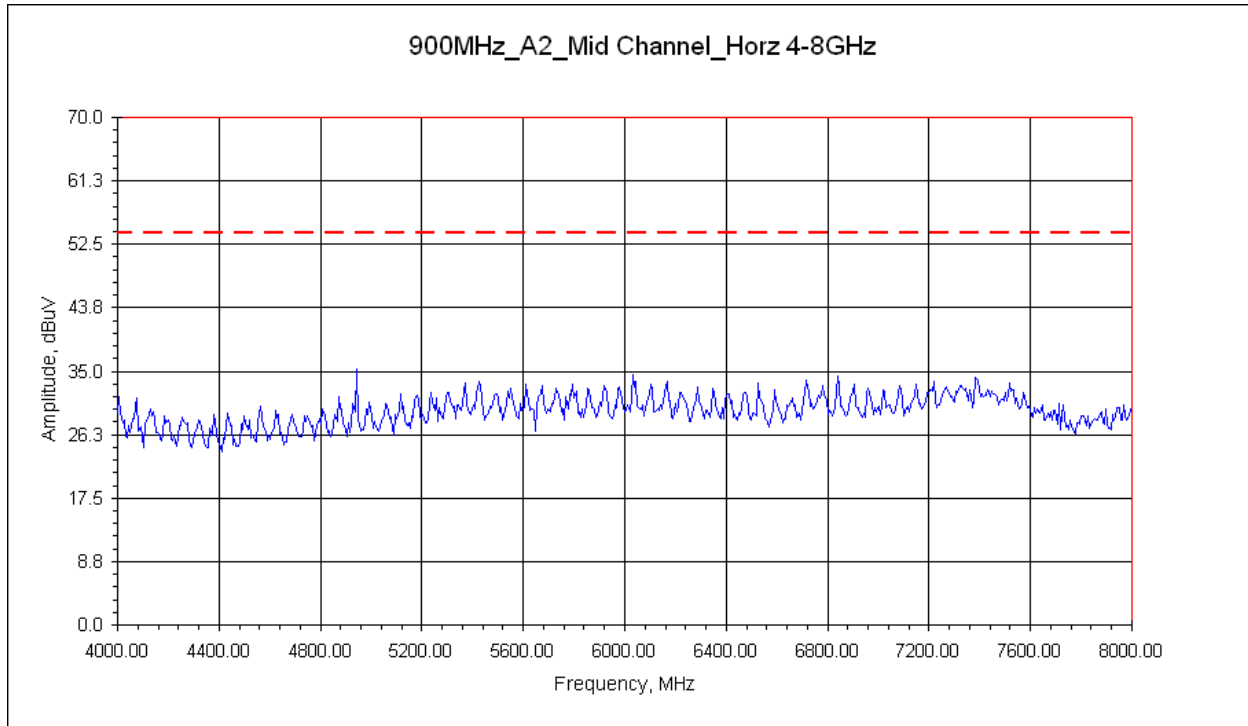
5.16 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – Mid Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (4GHz to 8GHz)

Vertical



Horizontal

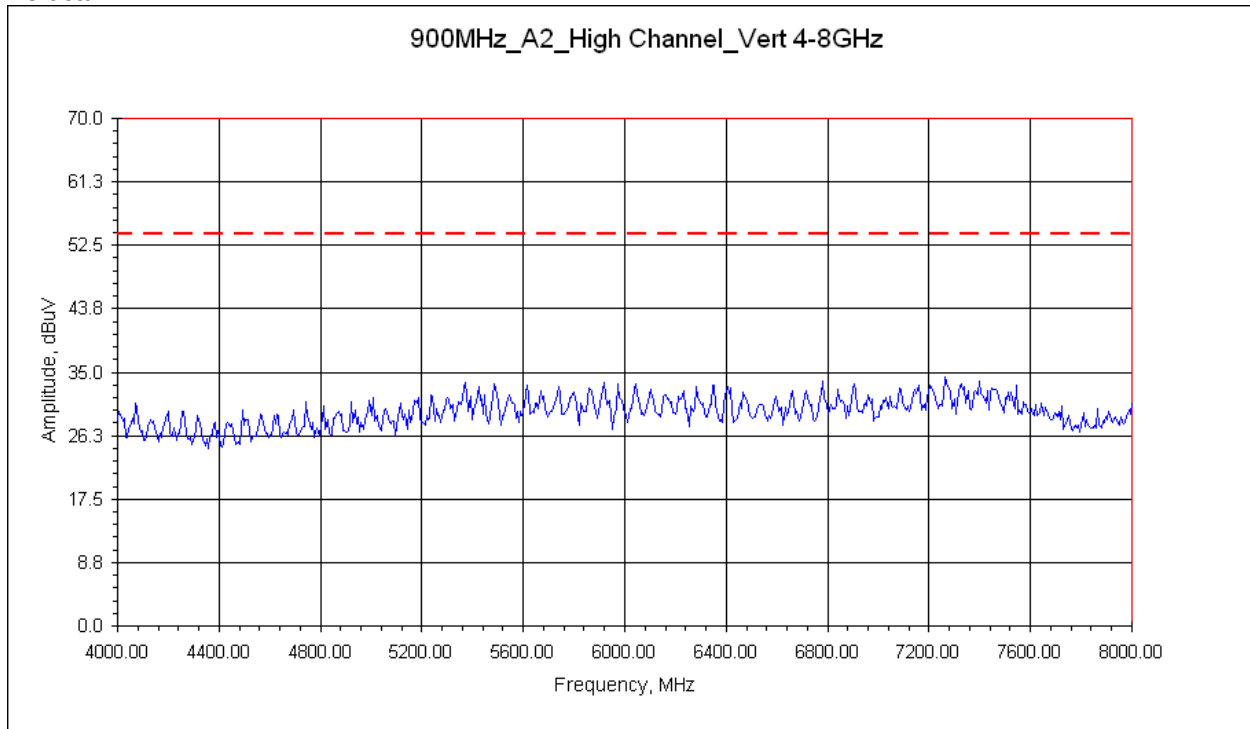


Note: Peak detector max hold measurements plotted against average limits

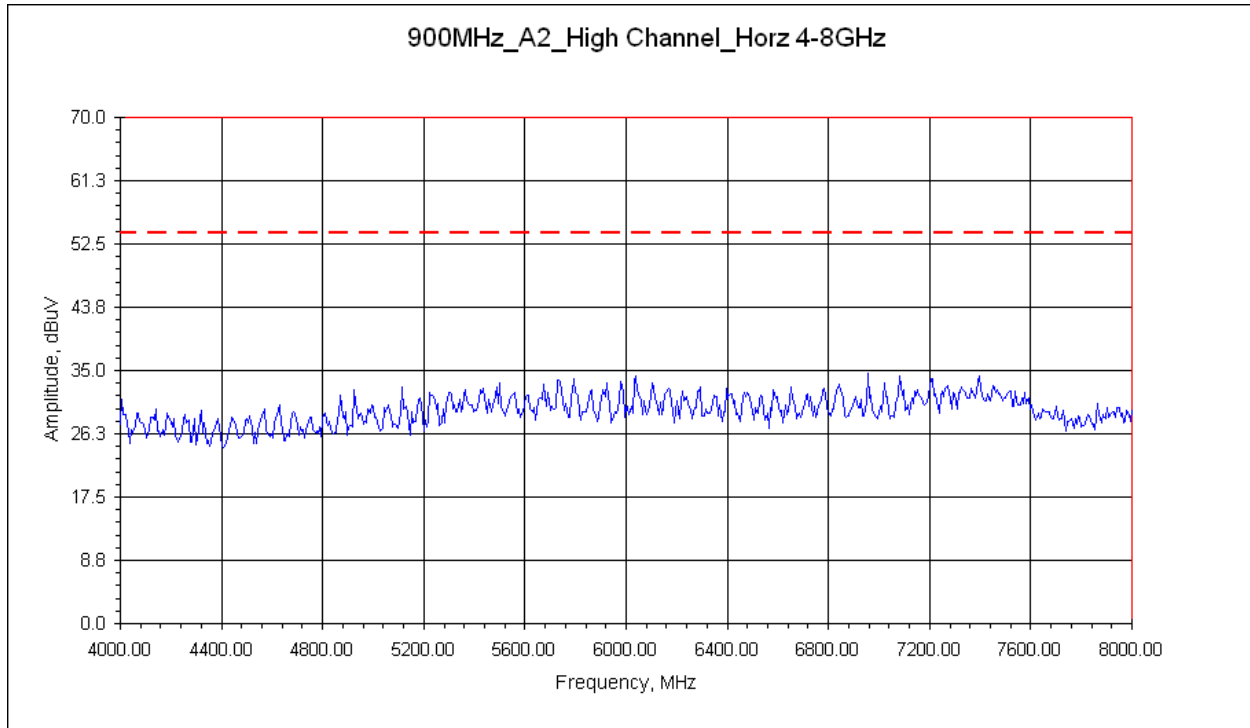
5.17 Pre-scan Plots: Reference only – Not Final Data: FM Mode (Axis 2 – High Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (4GHz to 8GHz)

Vertical



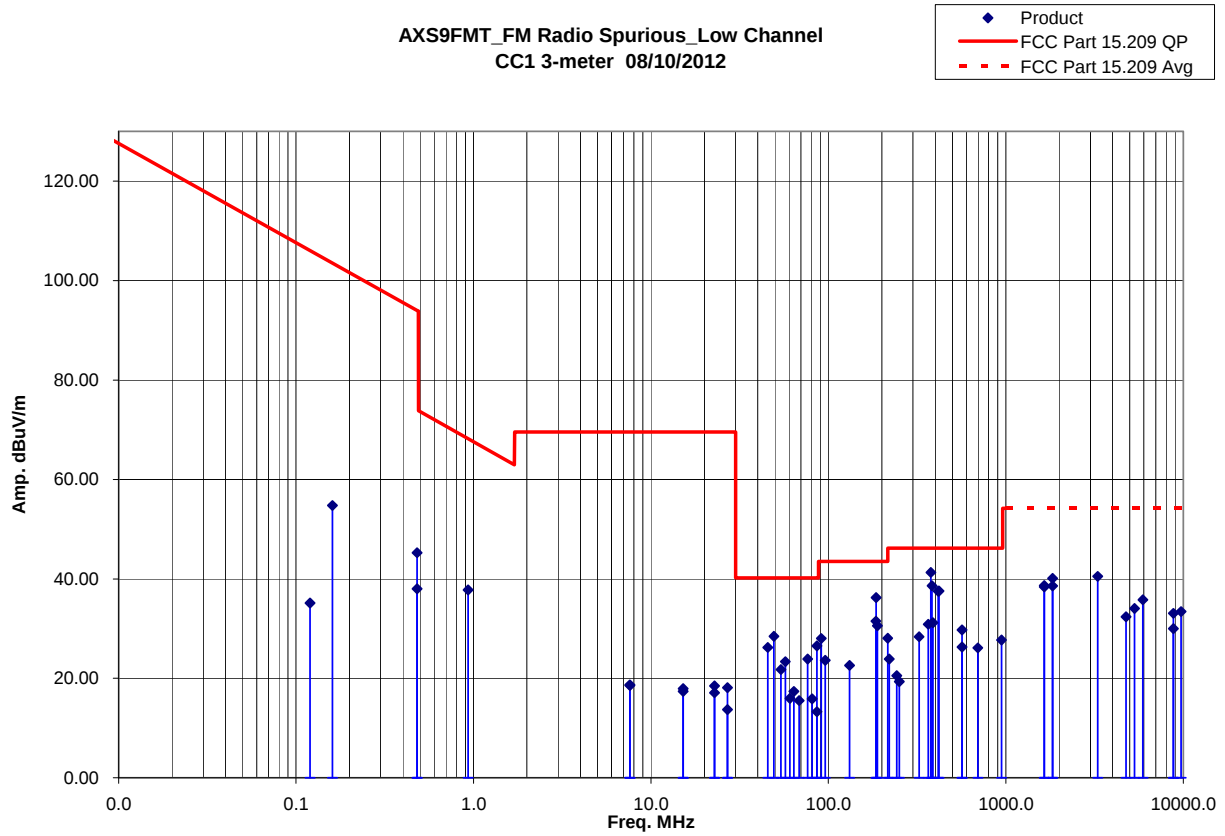
Horizontal



Note: Peak detector max hold measurements plotted against average limits

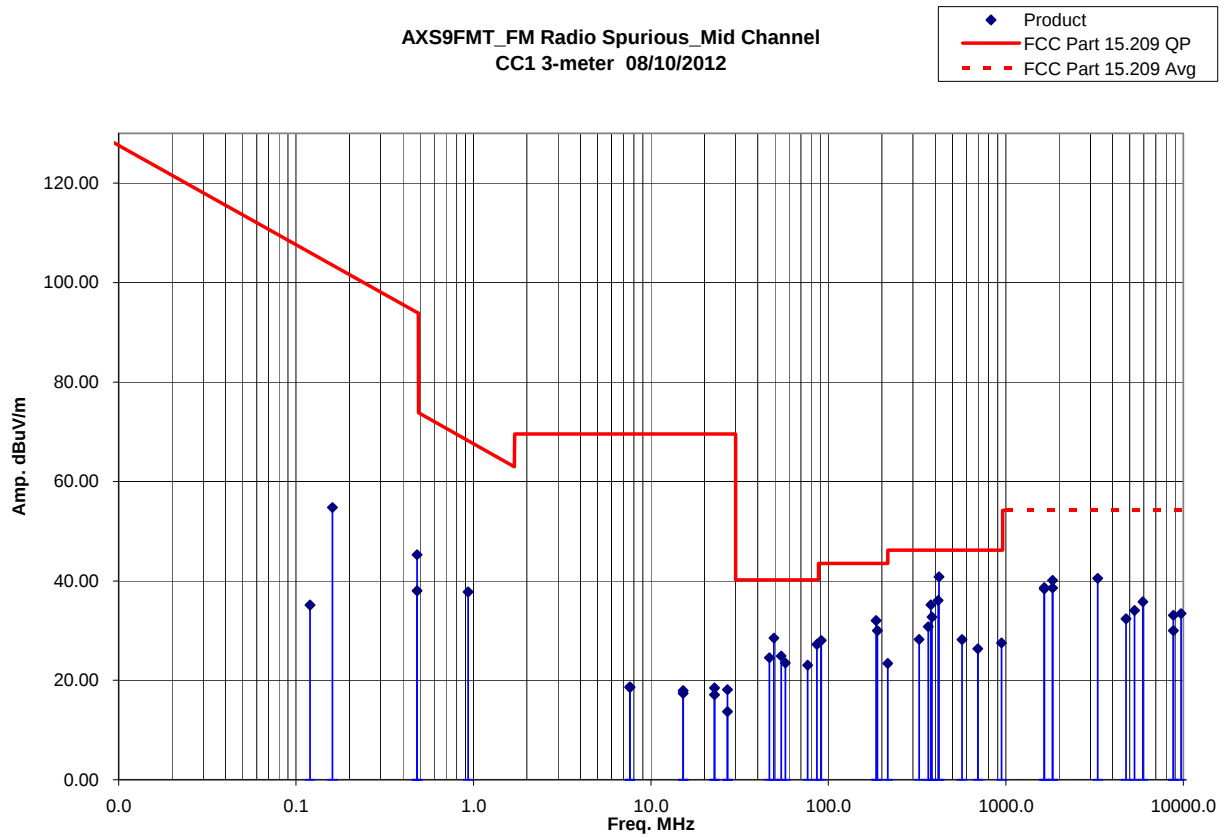
5.18 Final Plots: FM Mode (Low Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (100kHz to 10GHz)



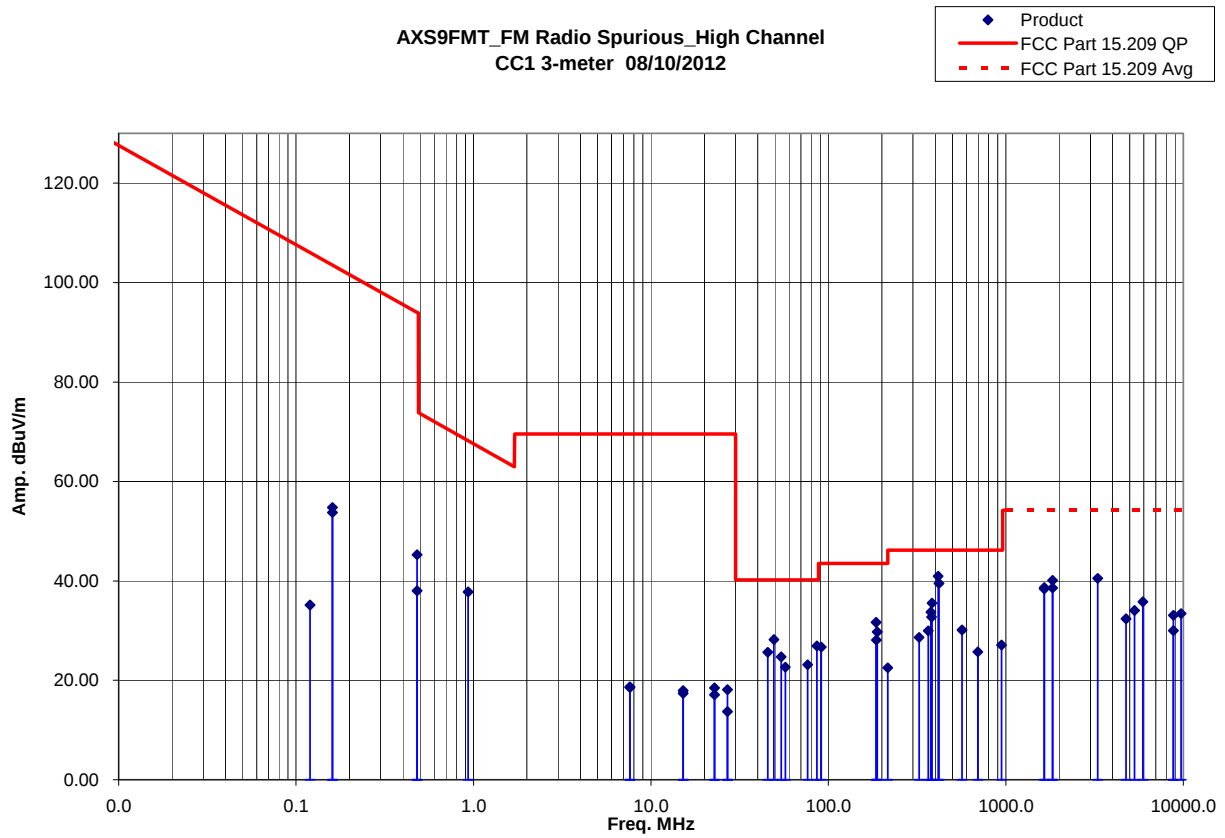
5.19 Final Plots: FM Mode (Mid Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (100kHz to 10GHz)



5.20 Test Data: FM Mode (High Channel)

Radiated Emissions – FCC 15.239/15.209 [IC RSS-210 A2.8/ RSS-Gen 7.2.5] - (100kHz to 10GHz)



5.21 Test Data: FM Mode

Radiated Electromagnetic Emissions

Test Report #: G100860883 Test Method: FCC 15.209 IC RSS-210/ RSS-GEN 7.2.5 EUT Model #: AXS9FMT EUT Serial #: 002 Manufacturer: Waio, Inc. EUT Description: Broadcastvision Entertainment (bve) Transmitter – FM & 900MHz Notes: Product Tested in the following configuration: FM Radio Active Product continuously operating/active during all testing – normal operation	Test Area: CC1 Radiated Test Date: 08/10/2012 08/13/2012 EUT Power: 120VAC/60Hz	Temperature: 22.9 °C Relative Humidity: 34.7 % Air Pressure: 83.3 kPa
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Level Key
Pk – Peak
Qp – Quasi Peak
Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209	IC RSS- Gen 7.2.5	(MHz)
FM Tx Product Option													
Loop Antenna Perpendicular: 10kHz to 30MHz Data													
27.0000	8.63	Qp	0.40	9.08	0.00	0.00	18.11	V	1.34	125.0	- 51.43	- 51.43	0.009
7.6000	7.72	Qp	0.20	10.64	0.00	0.00	18.56	V	1.17	23.0	- 50.98	- 50.98	0.009
15.2000	7.64	Qp	0.30	10.02	0.00	0.00	17.96	V	1.24	119.0	- 51.58	- 51.58	0.009
22.8000	6.78	Qp	0.30	10.04	0.00	0.00	17.12	V	1.20	172.0	- 52.42	- 52.42	0.009
0.4800	34.76	Qp	0.10	10.42	0.00	0.00	45.28	V	1.20	147.0	- 48.69	- 48.69	0.009
27.0000	8.63	Qp	0.40	9.08	0.00	0.00	18.11	V	1.34	125.0	- 51.43	- 51.43	0.009
7.6000	7.72	Qp	0.20	10.64	0.00	0.00	18.56	V	1.17	23.0	- 50.98	- 50.98	0.009
15.2000	7.64	Qp	0.30	10.02	0.00	0.00	17.96	V	1.24	119.0	- 51.58	- 51.58	0.009
22.8000	6.78	Qp	0.30	10.04	0.00	0.00	17.12	V	1.20	172.0	- 52.42	- 52.42	0.009
0.4800	34.76	Qp	0.10	10.42	0.00	0.00	45.28	V	1.20	147.0	- 48.69	- 48.69	0.009
Loop Antenna Parallel : 10kHz to 30MHz Data													
0.1200	24.83	Qp	0.02	10.32	0.00	0.00	35.17	H	1.06	23.0	- 70.49	- 70.49	0.0002
0.1600	44.39	Qp	0.03	10.36	0.00	0.00	54.78	H	1.12	36.0	- 48.46	- 48.46	0.009
0.4802	27.48	Qp	0.10	10.42	0.00	0.00	38.00	H	1.12	36.0	- 55.97	- 55.97	0.009
0.9332	27.09	Qp	0.10	10.60	0.00	0.00	37.79	H	1.19	62.0	- 30.38	- 30.38	0.009
7.6000	7.84	Qp	0.20	10.64	0.00	0.00	18.68	H	1.14	178.0	- 50.86	- 50.86	0.009
15.2000	7.07	Qp	0.30	10.02	0.00	0.00	17.39	H	1.14	209.0	- 52.15	- 52.15	0.009
22.8000	8.12	Qp	0.30	10.04	0.00	0.00	18.46	H	1.22	226.0	- 51.08	- 51.08	0.009
27.0000	4.25	Qp	0.40	9.08	0.00	0.00	13.73	H	1.18	333.0	- 55.81	- 55.81	0.009

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Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	DEG	FCC 15.209	IC RSS- Gen 7.2.5	(MHz)
FM Tx Product Option													
30MHz to 1000MHz Data - Vertical													
45.6000	43.24	Qp	0.77	10.40	28.20	0.00	26.21	V	1.00	217.0	- 13.79	- 13.79	0.120
49.3400	47.17	Qp	0.77	8.73	28.20	0.00	28.47	V	1.00	299.0	- 11.53	- 11.53	0.120
54.0000	41.37	Qp	0.77	7.80	28.18	0.00	21.76	V	1.00	119.0	- 18.24	- 18.24	0.120
57.2800	43.16	Qp	0.77	7.60	28.16	0.00	23.36	V	1.00	286.0	- 16.64	- 16.64	0.120
60.8000	35.64	Qp	0.77	7.70	28.15	0.00	15.96	V	1.00	209.0	- 24.04	- 24.04	0.120
64.0000	36.75	Qp	0.77	8.00	28.13	0.00	17.39	V	1.00	171.0	- 22.61	- 22.61	0.120
68.4000	34.63	Qp	0.77	8.24	28.11	0.00	15.53	V	1.00	136.0	- 24.47	- 24.47	0.120
76.4200	43.10	Qp	0.77	8.10	28.07	0.00	23.90	V	1.00	100.0	- 16.10	- 16.10	0.120
81.0000	35.36	Qp	0.77	7.80	28.05	0.00	15.88	V	1.00	18.0	- 24.12	- 24.12	0.120
86.2700	46.06	Qp	0.77	7.73	28.03	0.00	26.53	V	1.00	60.0	- 13.47	- 13.47	0.120
91.2000	46.90	Qp	0.77	8.34	28.00	0.00	28.01	V	1.00	97.0	- 15.51	- 15.51	0.120
96.0000	41.42	Qp	0.77	9.40	27.98	0.00	23.61	V	1.00	140.0	- 19.91	- 19.91	0.120
131.4800	36.51	Qp	0.78	13.15	27.81	0.00	22.63	V	1.00	230.0	- 20.89	- 20.89	0.120
185.8500	52.08	Qp	0.91	10.80	27.55	0.00	36.24	V	1.00	292.0	- 7.28	- 7.28	0.120
189.0000	46.19	Qp	0.92	11.00	27.53	0.00	30.57	V	1.00	287.0	- 12.95	- 12.95	0.120
216.0000	43.78	Qp	0.98	10.70	27.40	0.00	28.06	V	1.00	278.0	- 17.96	- 17.96	0.120
220.4000	39.56	Qp	0.99	10.72	27.38	0.00	23.88	V	1.00	51.0	- 22.14	- 22.14	0.120
243.0000	35.36	Qp	1.05	11.40	27.28	0.00	20.53	V	1.00	194.0	- 25.49	- 25.49	0.120
250.8000	34.10	Qp	1.07	11.42	27.24	0.00	19.34	V	1.00	192.0	- 26.68	- 26.68	0.120
324.0000	40.44	Qp	1.24	13.96	27.26	0.00	28.38	V	1.00	320.0	- 17.64	- 17.64	0.120
366.0000	42.36	Qp	1.31	14.74	27.51	0.00	30.90	V	1.00	329.0	- 15.12	- 15.12	0.120
378.0000	52.30	Qp	1.33	15.30	27.61	0.00	41.33	V	1.00	103.0	- 4.69	- 4.69	0.120
384.0000	49.65	Qp	1.34	15.30	27.65	0.00	38.64	V	1.00	339.0	- 7.38	- 7.38	0.120
416.0000	48.50	Qp	1.40	15.54	27.90	0.00	37.53	V	1.00	187.0	- 8.49	- 8.49	0.120
420.0000	48.39	Qp	1.40	15.70	27.93	0.00	37.56	V	1.00	179.0	- 8.46	- 8.46	0.120
567.0000	38.00	Qp	1.64	18.48	28.38	0.00	29.74	V	1.26	109.0	- 16.28	- 16.28	0.120
696.0000	32.96	Qp	1.85	19.60	28.28	0.00	26.13	V	1.37	163.0	- 19.89	- 19.89	0.120
945.0000	31.05	Qp	2.15	22.00	27.50	0.00	27.70	V	1.15	152.0	- 18.32	- 18.32	0.120
30MHz to 1000MHz Data - Horizontal													
86.2600	32.81	Qp	0.77	7.73	28.03	0.00	13.28	H	1.87	299.0	- 26.72	- 26.72	0.120
185.3100	47.34	Qp	0.91	10.80	27.55	0.00	31.50	H	1.92	281.0	- 12.02	- 12.02	0.120
388.0100	42.20	Qp	1.35	15.30	27.68	0.00	31.17	H	1.76	266.0	- 14.85	- 14.85	0.120
567.0000	34.58	Qp	1.64	18.48	28.38	0.00	26.32	H	1.61	277.0	- 19.70	- 19.70	0.120
86.2600	32.81	Qp	0.77	7.73	28.03	0.00	13.28	H	1.87	299.0	- 26.72	- 26.72	0.120
185.3100	47.34	Qp	0.91	10.80	27.55	0.00	31.50	H	1.92	281.0	- 12.02	- 12.02	0.120
388.0100	42.20	Qp	1.35	15.30	27.68	0.00	31.17	H	1.76	266.0	- 14.85	- 14.85	0.120
567.0000	34.58	Qp	1.64	18.48	28.38	0.00	26.32	H	1.61	277.0	- 19.70	- 19.70	0.120
86.2600	32.81	Qp	0.77	7.73	28.03	0.00	13.28	H	1.87	299.0	- 26.72	- 26.72	0.120

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	DEG	FCC 15.209	IC RSS- Gen 7.2.5	(MHz)
FM Tx Product Option													
1GHz to 10GHz													
1648.3000	46.47	Av	2.87	25.99	36.68	0.00	38.65	V	1.40	243.0	- 15.35	- 15.35	1.000
1832.3000	46.57	Av	3.05	27.42	36.93	0.00	40.11	V	1.45	244.0	- 13.89	- 13.89	1.000
3296.4000	41.41	Av	4.22	31.82	36.92	0.00	40.53	V	1.64	260.0	- 13.47	- 13.47	1.000
4762.8000	33.00	Av	5.14	33.30	39.08	0.00	32.36	V	1.47	172.0	- 21.64	- 21.64	1.000
5314.1000	32.49	Av	5.43	34.44	38.32	0.00	34.04	V	1.00	0.0	- 19.96	- 19.96	1.000
8800.0000	36.00	Av	7.24	37.48	47.63	0.00	33.09	V	1.00	0.0	- 20.91	- 20.91	1.000
8800.0000	32.90	Av	7.24	37.48	47.63	0.00	29.99	V	1.00	0.0	- 24.01	- 24.01	1.000
9716.2000	36.57	Av	7.63	37.92	48.71	0.00	33.42	V	1.00	0.0	- 20.58	- 20.58	1.000

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBuV)		(dB)		(dB)		(dB)		(dB)		(dBuV/m)	(dBuV/m)		(dBuV/m)		
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

Notes:

- 1) The following product options were tested: FM Radio mode of operation.
- 2) Per client, the product is never operated in receive/standby-mode only. Therefore, all unintentional radiated emissions testing was performed with the product configured for normal operation – with the transmit function active.
- 3) All measurements taken at a 3-meter test distance (antenna-to-product). The product was tested from 100kHz to 10GHz. Note that testing above 1.2 GHz was optional for the FM mode of operation, whereby the highest clock/ frequency used or generated in the product is 107.9MHz.
- 4) Peak measurements above 1 GHz were not taken because the peak prescan (Sections 5.9 – 5.17) margin exceeds 36 dB.

Deviations, Additions, or Exclusions: None

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6 200kHz Bandwidth & Band Edge

6.1 Method

Unless otherwise stated no deviations were made from FCC 15.239(a) [RSS-210 A2.8].

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

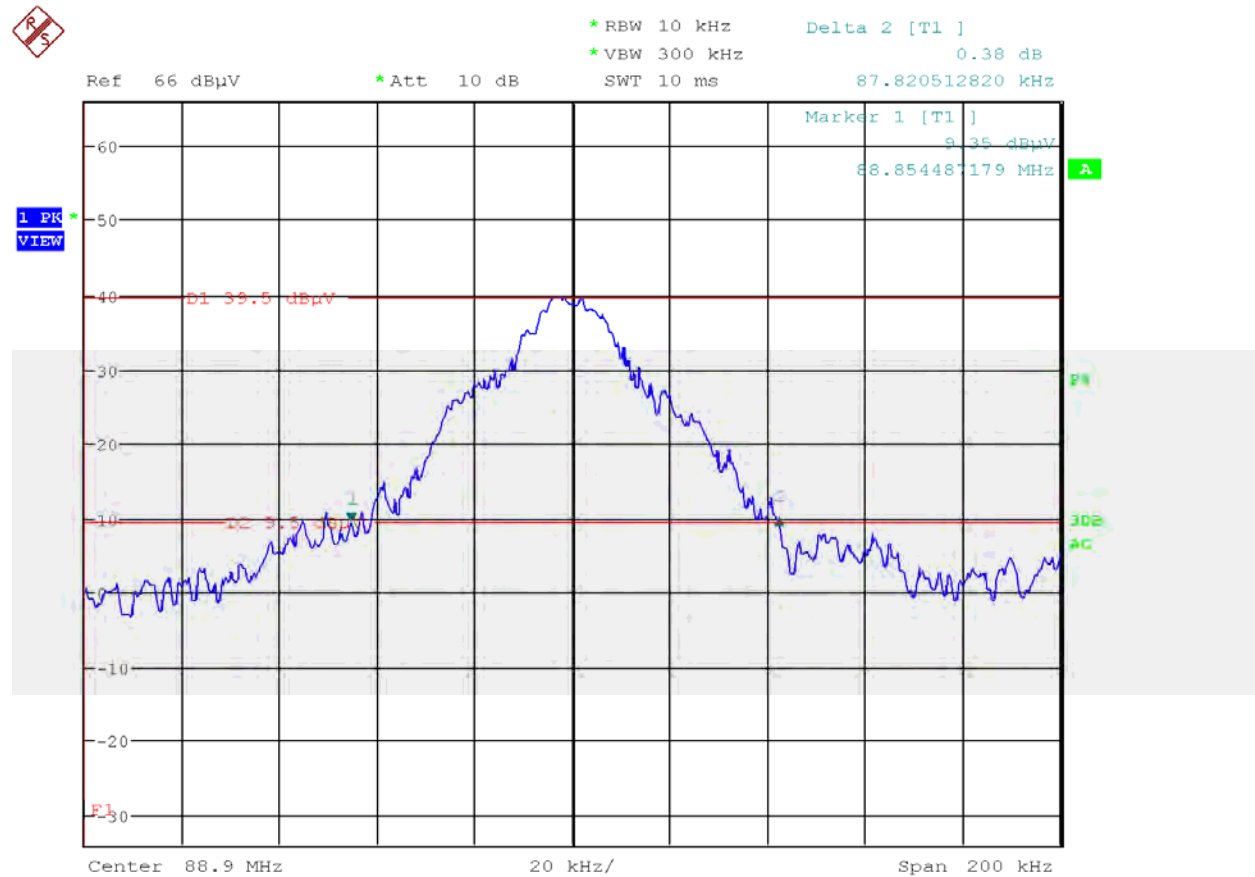
6.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	06/06/2012	06/06/2013
19936	Bilog Antenna 30MHz – 6GHz	Sunol Sciences	JB6	A050707-1	11/15/2011	11/15/2012
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBV	VBV

6.3 Results:

The sample tested was found to Comply.

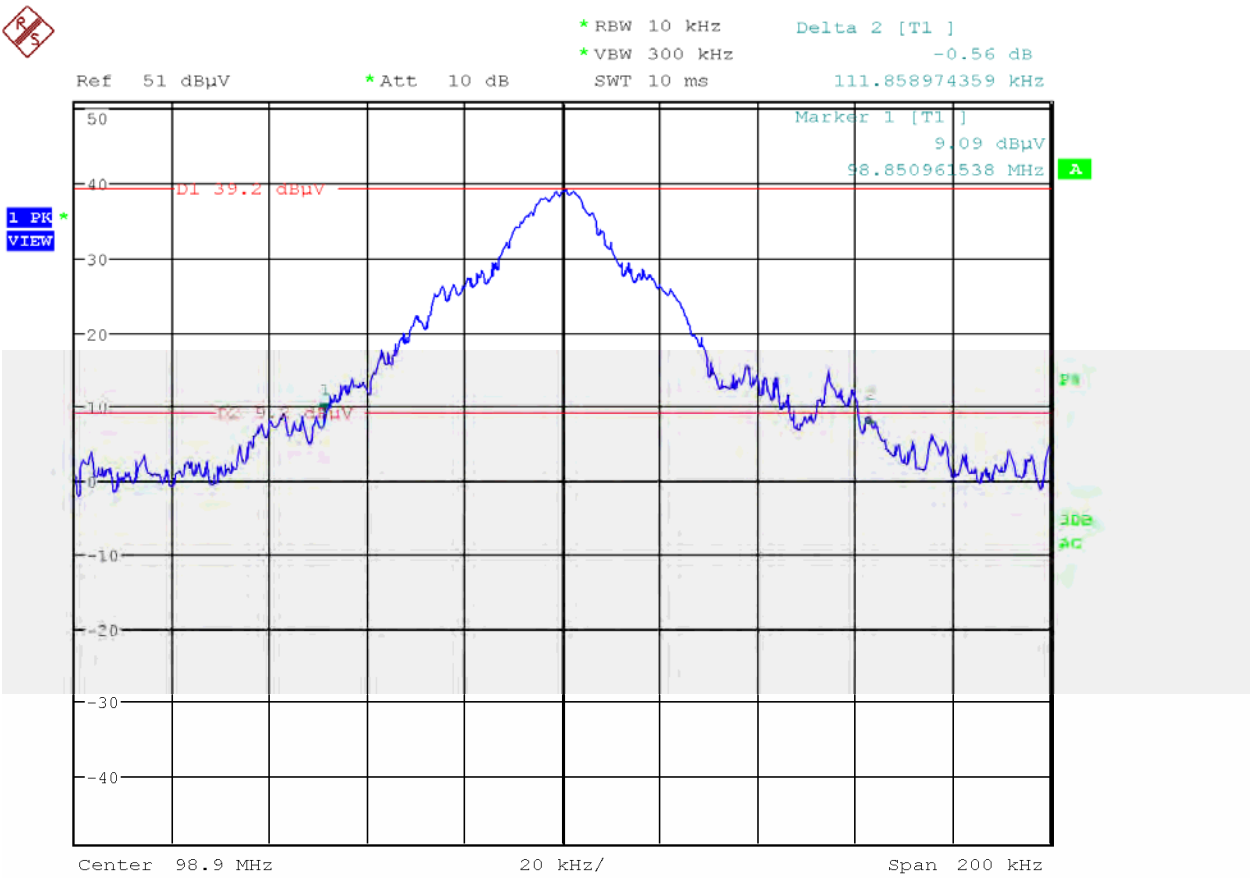
6.4 Plots: FM Mode 200kHz Bandwidth (Low Channel)



Date: 8.AUG.2012 14:42:12

Above represents - 30dB Bandwidth (200kHz span)

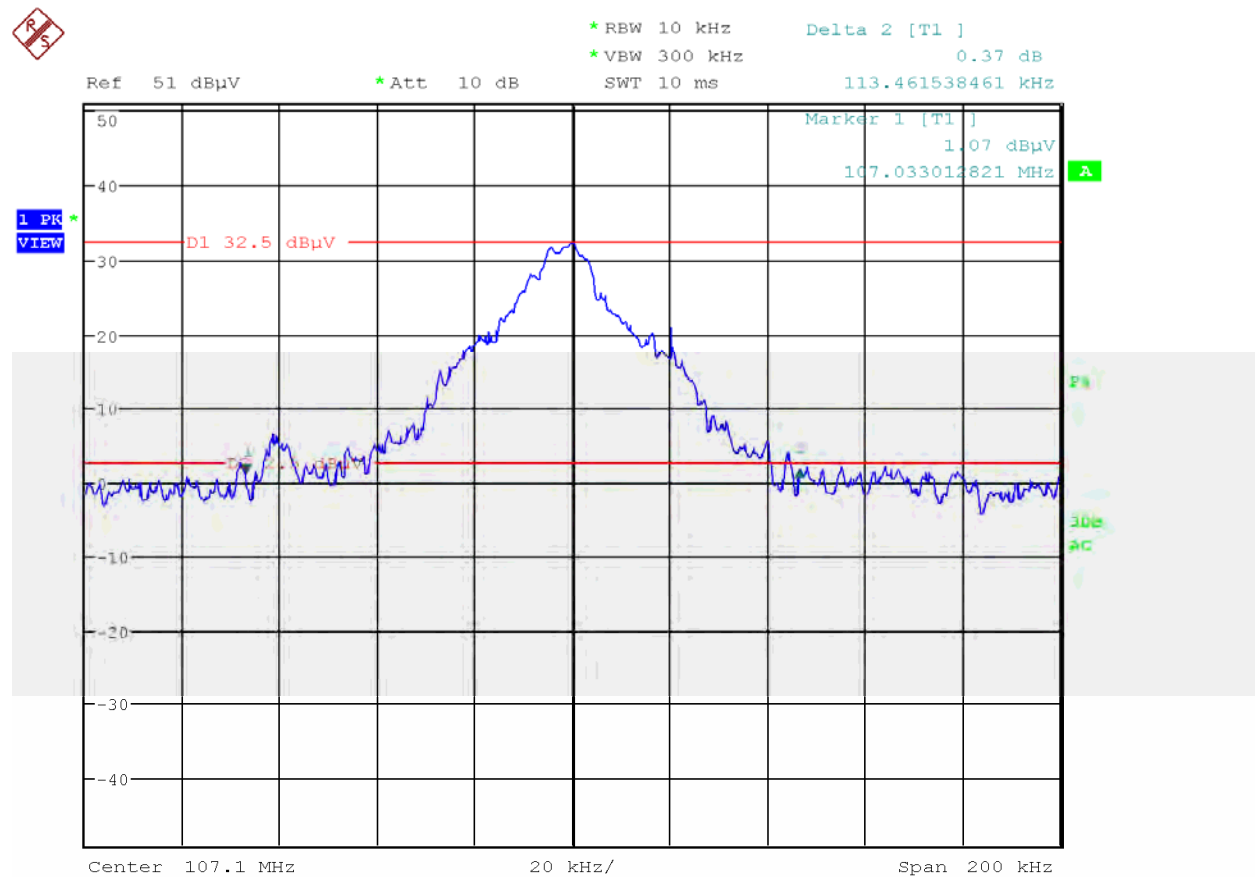
Plots: FM Mode 200kHz Bandwidth (Mid Channel)



Date: 8.AUG.2012 15:49:48

Above represents -30dB Bandwidth (200kHz span)

6.5 Plots: FM Mode 200kHz Bandwidth (High Channel)



Date: 8.AUG.2012 15:55:32

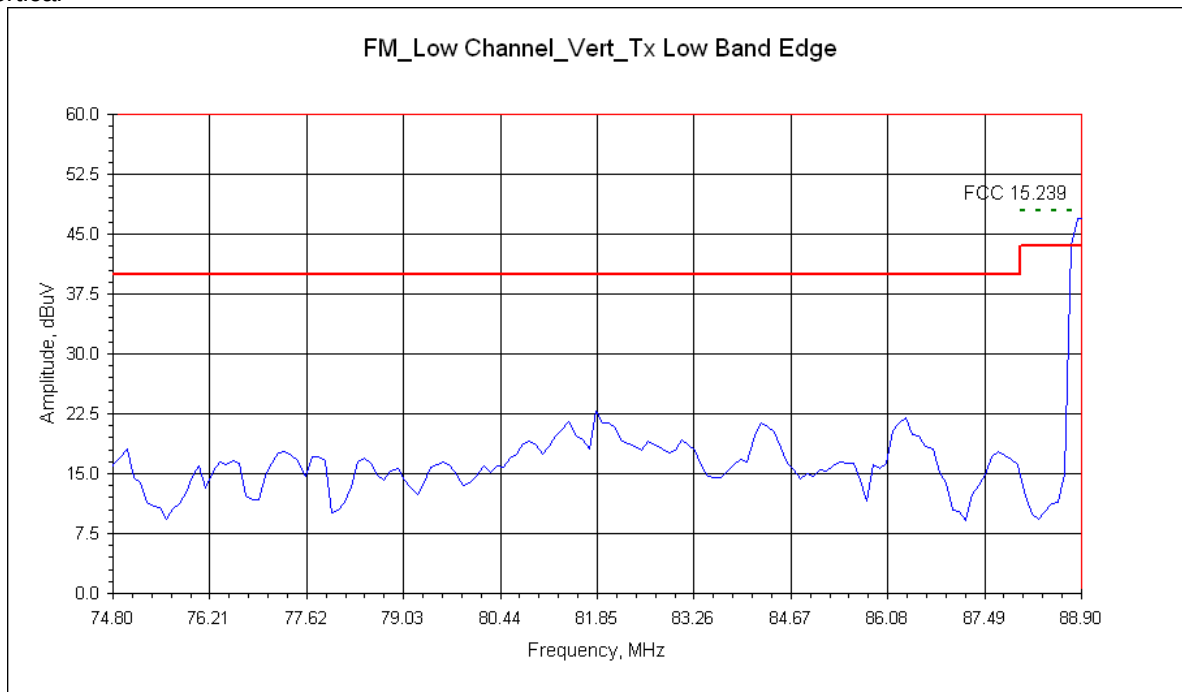
Above represents -30dB Bandwidth (200kHz span)

Notes:

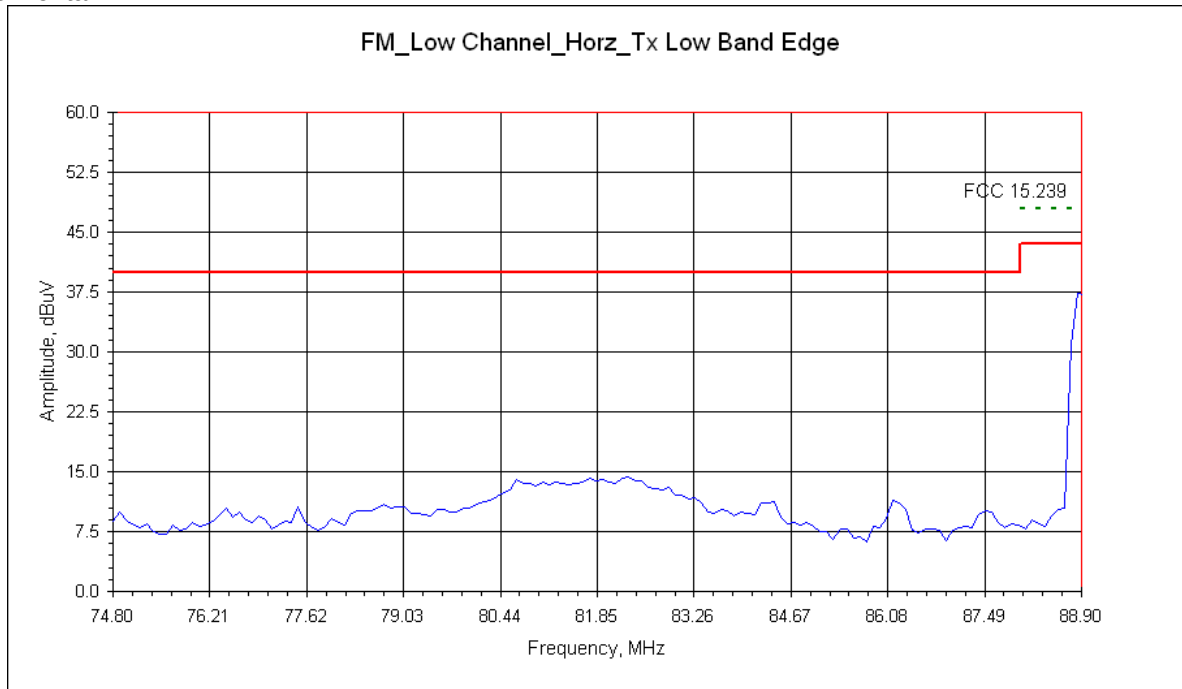
- 1) Refer to Section 8 for Occupied Bandwidth measurements.

6.6 Plots: Band Edge – FM Mode (Low Channel)

Vertical

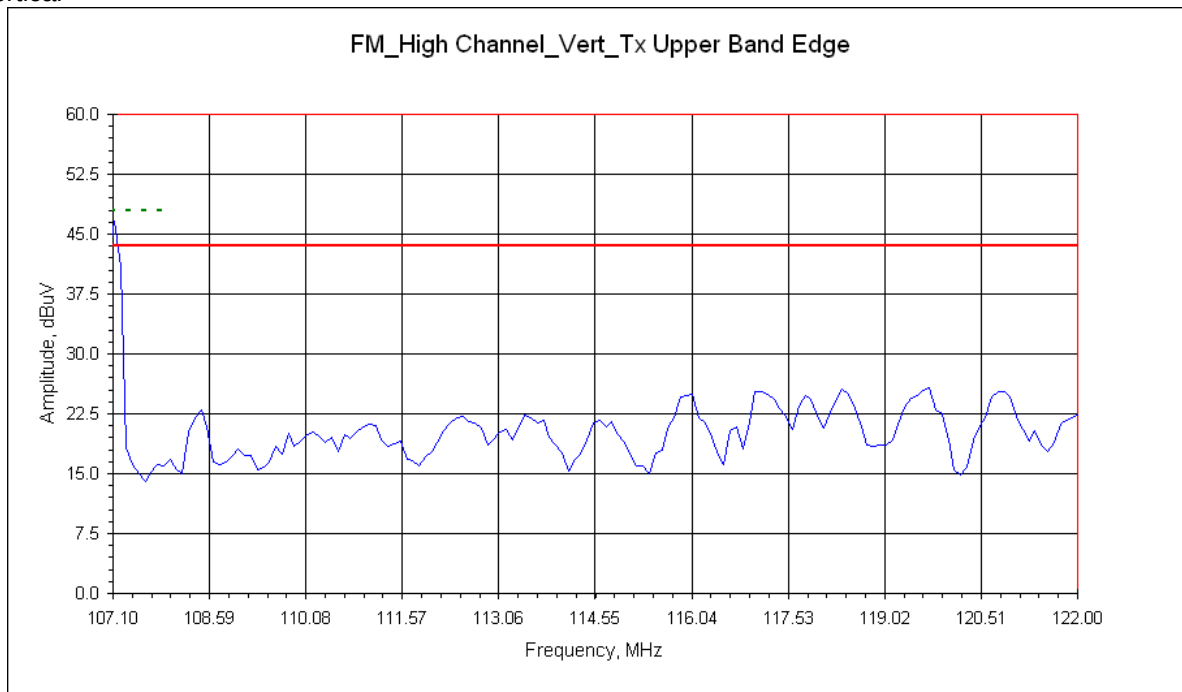


Horizontal

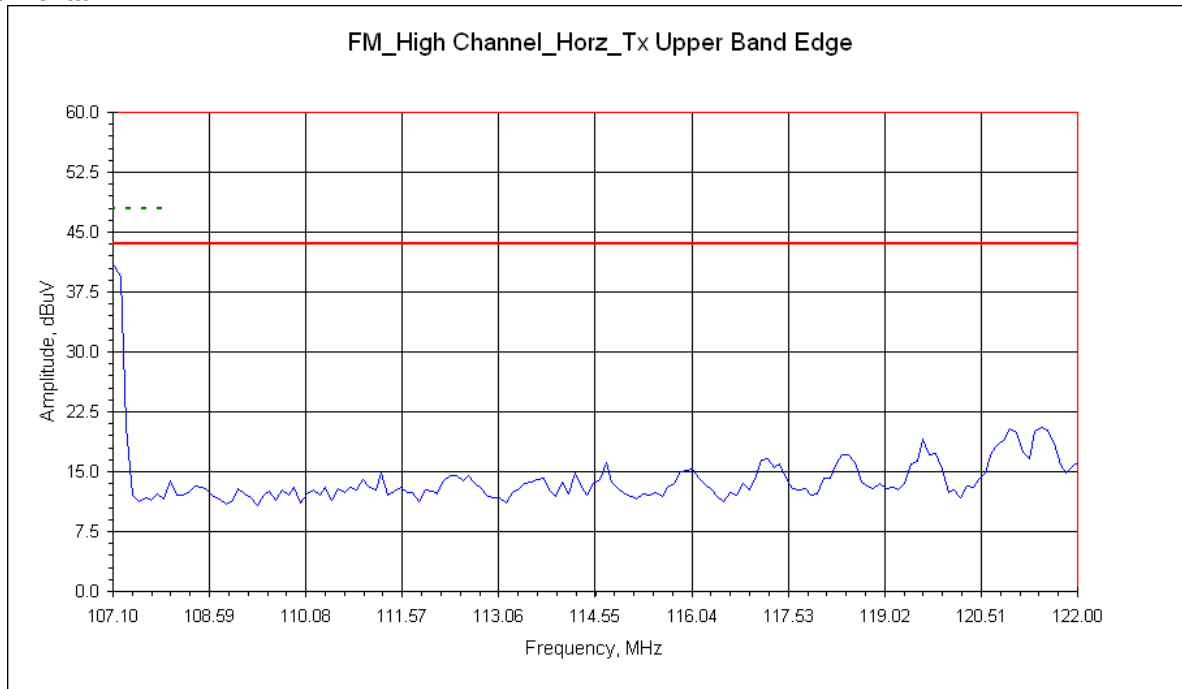


6.7 Plots: Band Edge – FM Mode (High Channel)

Vertical



Horizontal



Intertek	
Report Number: 100860883DEN-001	Issued:8/31/2012

7 Radiated Tx Intentional Emissions – Fundamental & Harmonics of the Fundamental

7.1 Method

Unless otherwise stated no deviations were made from FCC 15.239 [IC RSS-210 A2.8].

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

7.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	06/06/2012	06/06/2013
18906	RF Pre-Amp (1-4GHz)	Mini-Circuits Lab	ZHL-42	N052792-2	06/06/2012	06/06/2013
19936	Bilog Antenna 30MHz – 6GHz	Sunol Sciences	JB6	A050707-1	11/15/2011	11/15/2012
18887	Horn Antenna 1-18GHz	EMCO	3115	9205-3886	02/29/2012	02/29/2013
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBV	VBV

7.3 Results:

The sample tested was found to Comply.

7.4 Product Test Orientations: FM Mode

Axis 1



Axis 2 (worst-case)



Axis 3



7.5 Setup Photographs: FM Mode

Test setup – Front view

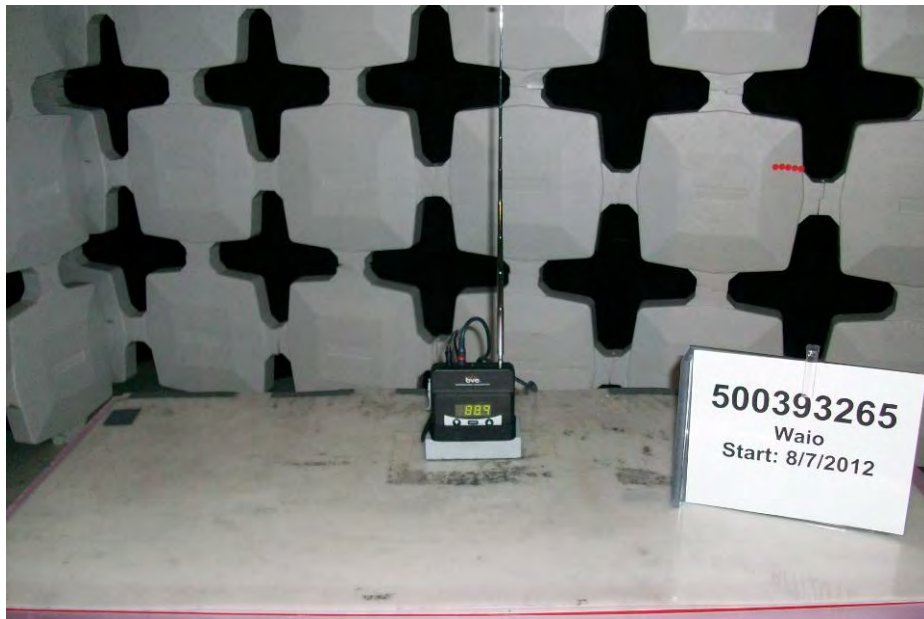


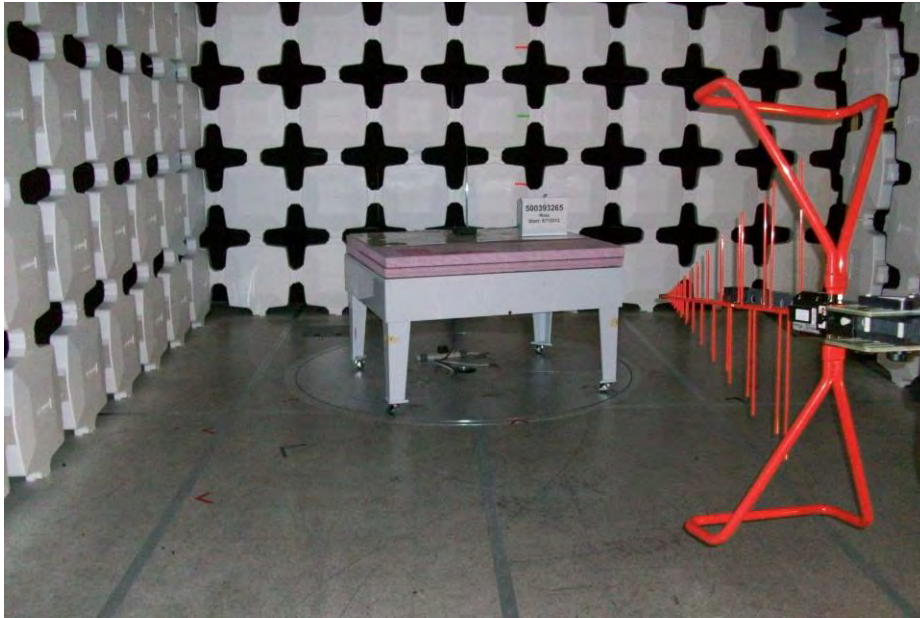
Photo: FM Mode

Test setup – Rear view



Photo: Antenna Setup

Antenna Setup: BiLog Antenna – 30MHz to 1000MHz



Antenna Setup: Horn Antenna – Above 1GHz



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7.6 Test Data: FM Mode [Low Channel]

Tx Intentional Radiated Electromagnetic Emissions

Test Report #: **G100860883** Test Area: **CC1 Radiated** Temperature: 23.1 °C
 Test Method: **FCC 15.239(b)/15.209** Test Date: 08/08/2012 Relative Humidity: 21.5 %
 IC RSS-210 A2.8/RSS-Gen
 EUT Model #: **AXS9FMT** EUT Power: 120VAC/60Hz Air Pressure: 83.8 kPa
 EUT Serial #: **002**

Manufacturer: **Waio, Inc.**

EUT Description: **Broadcastvision Entertainment – Transmitter – FM & 900MHz**

Notes: **Product Tested in the following configuration: FM Radio**

Product continuously operating/active during all testing – normal operation

Low FM Channel

Level Key
Pk – Peak
Qp – Quasi Peak
Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 IC RSS-210	FCC 15.239/209 IC RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 1 – Low Channel													
Fundamental Measurement													
88.9000	52.07	Pk	0.77	7.99	28.01	0.00	32.82	H	1.93	117.0	- 35.14	67.96	0.120
88.9000	51.16	Av	0.77	7.99	28.01	0.00	31.91	H	1.93	117.0	- 16.05	47.96	0.120
88.9000	64.22	Pk	0.77	7.99	28.01	0.00	44.97	V	1.13	165.0	-22.99	67.96	0.120
88.9000	63.60	Av	0.77	7.99	28.01	0.00	44.35	V	1.13	165.0	- 3.61	47.96	0.120
Harmonics measurements – Vertical Antenna													
177.8000	30.66	Qp	0.89	11.10	27.59	0.00	15.06	V	1.03	15.9	- 28.46	43.52	0.120
266.7000	23.20	Qp	1.10	12.80	27.16	0.00	9.94	V	1.94	186.1	- 36.08	46.00	0.120
355.6000	37.40	Qp	1.30	14.60	27.43	0.00	25.86	V	1.21	239.7	- 20.16	46.00	0.120
444.5000	26.59	Qp	1.44	16.87	28.11	0.00	16.79	V	1.21	292.5	- 29.23	46.00	0.120
533.4000	25.08	Qp	1.59	17.94	28.41	0.00	16.20	V	1.63	158.0	- 29.82	46.00	0.120
622.3000	27.38	Qp	1.73	18.54	28.33	0.00	19.31	V	1.80	132.8	- 26.71	46.00	0.120
711.2000	24.03	Qp	1.87	19.55	28.25	0.00	17.20	V	1.16	164.7	- 28.82	46.00	0.120
800.1000	24.30	Qp	1.97	20.70	27.96	0.00	19.02	V	1.44	199.6	- 27.00	46.00	0.120
889.0000	25.12	Qp	2.08	21.20	27.68	0.00	20.73	V	1.20	161.6	- 25.29	46.00	0.120
Harmonics measurements – Horizontal Antenna													
177.8000	29.99	Qp	0.89	11.10	27.59	0.00	14.39	H	1.58	278.5	- 29.13	43.52	0.120
266.7000	22.81	Qp	1.10	12.80	27.16	0.00	9.55	H	1.12	177.8	- 36.47	46.00	0.120
355.6000	36.61	Qp	1.30	14.60	27.43	0.00	25.07	H	1.10	270.4	- 20.95	46.00	0.120
444.5000	24.04	Qp	1.44	16.87	28.11	0.00	14.24	H	2.18	23.7	- 31.78	46.00	0.120
533.4000	28.95	Qp	1.59	17.94	28.41	0.00	20.07	H	1.71	213.7	- 25.95	46.00	0.120
622.3000	34.20	Qp	1.73	18.54	28.33	0.00	26.13	H	1.40	314.8	- 19.89	46.00	0.120
711.2000	26.26	Qp	1.87	19.55	28.25	0.00	19.43	H	1.20	113.9	- 26.59	46.00	0.120
800.1000	24.82	Qp	1.97	20.70	27.96	0.00	19.54	H	1.94	137.3	- 26.48	46.00	0.120
889.0000	27.25	Qp	2.08	21.20	27.68	0.00	22.86	H	1.00	146.9	- 23.16	46.00	0.120

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Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 IC RSS-210	FCC 15.239/209 IC RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 2 – Low Channel													
Fundamental Measurement													
88.9000	53.38	Pk	0.77	7.99	28.01	0.00	34.13	H	1.93	145.0	- 33.83	67.96	0.120
88.9000	52.18	Av	0.77	7.99	28.01	0.00	32.93	H	1.93	145.0	- 15.03	47.96	0.120
88.9000	61.85	Pk	0.77	7.99	28.01	0.00	42.60	V	3.08	10.0	-25.36	67.96	0.120
88.9000	61.08	Av	0.77	7.99	28.01	0.00	41.83	V	3.08	10.0	-6.13	47.96	0.120
Harmonics measurements – Vertical Antenna													
177.8000	38.83	Qp	0.89	11.10	27.59	0.00	23.23	V	1.00	315.0	- 20.29	43.52	0.120
266.7000	42.38	Qp	1.10	12.80	27.16	0.00	29.12	V	1.81	144.0	- 16.90	46.00	0.120
355.6000	53.97	Qp	1.30	14.60	27.43	0.00	42.43	V	1.44	254.0	- 3.59	46.00	0.120
444.5000	35.26	Qp	1.44	16.87	28.11	0.00	25.46	V	1.62	80.0	- 20.56	46.00	0.120
533.4000	37.69	Qp	1.59	17.94	28.41	0.00	28.81	V	1.00	332.0	- 17.21	46.00	0.120
622.3000	32.08	Qp	1.73	18.54	28.33	0.00	24.01	V	1.07	321.0	- 22.01	46.00	0.120
711.2000	30.12	Qp	1.87	19.55	28.25	0.00	23.29	V	1.00	187.0	- 22.73	46.00	0.120
800.1000	34.04	Qp	1.97	20.70	27.96	0.00	28.76	V	1.27	227.0	- 17.26	46.00	0.120
889.0000	26.43	Qp	2.08	21.20	27.68	0.00	22.04	V	1.21	0.0	- 23.98	46.00	0.120
Harmonics measurements – Horizontal Antenna													
177.8000	35.87	Qp	0.89	11.10	27.59	0.00	20.27	H	1.67	122.0	- 23.25	43.52	0.120
266.7000	33.11	Qp	1.10	12.80	27.16	0.00	19.85	H	1.13	278.0	- 26.17	46.00	0.120
355.6000	47.35	Qp	1.30	14.60	27.43	0.00	35.81	H	1.11	138.0	- 10.21	46.00	0.120
444.5000	34.19	Qp	1.44	16.87	28.11	0.00	24.39	H	1.68	253.0	- 21.63	46.00	0.120
533.4000	29.60	Qp	1.59	17.94	28.41	0.00	20.72	H	1.49	180.0	- 25.30	46.00	0.120
622.3000	30.66	Qp	1.73	18.54	28.33	0.00	22.59	H	1.70	298.0	- 23.43	46.00	0.120
711.2000	28.89	Qp	1.87	19.55	28.25	0.00	22.06	H	1.12	321.0	- 23.96	46.00	0.120
800.1000	29.20	Qp	1.97	20.70	27.96	0.00	23.92	H	1.36	177.0	- 22.10	46.00	0.120
889.0000	26.92	Qp	2.08	21.20	27.68	0.00	22.53	H	1.36	177.0	- 23.49	46.00	0.120

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Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 IC RSS-210	FCC 15.239/209 IC RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 3 – Low Channel													
Fundamental Measurement													
88.9000	67.10	Pk	0.77	7.99	28.01	0.00	47.85	V	1.32	136.0	-20.11	67.96	0.120
88.9000	66.28	Av	0.77	7.99	28.01	0.00	47.03	V	1.32	136.0	- 0.63	47.96	0.120
88.9000	60.48	Pk	0.77	7.99	28.01	0.00	41.23	H	1.80	355.0	- 26.73	67.96	0.120
88.9000	59.22	Av	0.77	7.99	28.01	0.00	39.97	H	1.80	355.0	- 7.99	47.96	0.120
Harmonics measurements – Vertical Antenna													
177.8000	39.61	Qp	0.89	11.10	27.59	0.00	24.01	V	1.03	330.0	- 19.51	43.52	0.120
266.7000	32.75	Qp	1.10	12.80	27.16	0.00	19.49	V	1.02	317.0	- 26.53	46.00	0.120
355.6000	46.29	Qp	1.30	14.60	27.43	0.00	34.75	V	1.49	70.0	- 11.27	46.00	0.120
444.5000	33.10	Qp	1.44	16.87	28.11	0.00	23.30	V	1.11	117.0	- 22.72	46.00	0.120
533.4000	32.56	Qp	1.59	17.94	28.41	0.00	23.68	V	1.12	52.0	- 22.34	46.00	0.120
622.3000	30.84	Qp	1.73	18.54	28.33	0.00	22.77	V	1.00	149.0	- 23.25	46.00	0.120
711.2000	31.70	Qp	1.87	19.55	28.25	0.00	24.87	V	2.00	84.0	- 21.15	46.00	0.120
800.1000	29.43	Qp	1.97	20.70	27.96	0.00	24.15	V	2.24	84.0	- 21.87	46.00	0.120
889.0000	27.92	Qp	2.08	21.20	27.68	0.00	23.53	V	1.18	190.0	- 22.49	46.00	0.120
Harmonics measurements – Horizontal Antenna													
177.8000	38.28	Qp	0.89	11.10	27.59	0.00	22.68	H	1.82	240.0	- 20.84	43.52	0.120
266.7000	37.90	Qp	1.10	12.80	27.16	0.00	24.64	H	1.16	339.0	- 21.38	46.00	0.120
355.6000	50.74	Qp	1.30	14.60	27.43	0.00	39.20	H	1.06	334.0	- 6.82	46.00	0.120
444.5000	34.55	Qp	1.44	16.87	28.11	0.00	24.75	H	1.84	136.0	- 21.27	46.00	0.120
533.4000	37.82	Qp	1.59	17.94	28.41	0.00	28.94	H	1.59	154.0	- 17.08	46.00	0.120
622.3000	36.64	Qp	1.73	18.54	28.33	0.00	28.57	H	1.39	240.0	- 17.45	46.00	0.120
711.2000	33.87	Qp	1.87	19.55	28.25	0.00	27.04	H	1.20	258.0	- 18.98	46.00	0.120
800.1000	33.36	Qp	1.97	20.70	27.96	0.00	28.08	H	1.01	183.0	- 17.94	46.00	0.120
889.0000	28.73	Qp	2.08	21.20	27.68	0.00	24.34	H	1.54	130.0	- 21.68	46.00	0.120

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBμV)		(dB)		(dB)		(dB)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

7.7 Test Data: FM Mode [Mid Channel]

Tx Intentional Radiated Electromagnetic Emissions

Test Report #: G100860883	Test Area: CC1 Radiated	Temperature: <u>23.1</u> °C
Test Method: FCC 15.239(b)/209 IC RSS-210 A2.8/RSS-Gen	Test Date: <u>08/08/2012</u>	Relative Humidity: <u>21.5</u> %
EUT Model #: AXS9FMT	EUT Power: <u>120VAC/60Hz</u>	Air Pressure: <u>83.8</u> kPa
EUT Serial #: 002		

Manufacturer: Waio, Inc.

EUT Description: Broadcastvision Entertainment – Transmitter – FM & 900MHz

Notes: **Product Tested in the following configuration: FM Radio**

Product continuously operating/active during all testing – normal operation

Mid FM Channel

Level Key
Pk – Peak
Qp – Quasi Peak
Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 RSS-210	FCC 15.239/209 RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 1 – Mid Channel													
Fundamental Measurement													
98.9000	61.29	Pk	0.77	10.07	27.97	0.00	44.16	V	1.00	202.0	-23.80	67.96	0.120
98.9000	60.07	Av	0.77	10.07	27.97	0.00	42.94	V	1.00	202.0	- 5.02	47.96	0.120
98.9000	52.28	Pk	0.77	10.07	27.97	0.00	35.15	H	2.14	138.0	-32.81	67.96	0.120
98.9000	51.48	Av	0.77	10.07	27.97	0.00	34.35	H	2.14	138.0	- 13.61	47.96	0.120
Harmonics measurements – Vertical Antenna													
197.8000	33.34	Qp	0.94	11.78	27.49	0.00	18.57	V	1.11	354.4	- 24.95	43.52	0.120
296.7000	28.20	Qp	1.18	13.40	27.16	0.00	15.61	V	1.46	138.0	- 30.41	46.00	0.120
395.6000	32.59	Qp	1.36	15.30	27.74	0.00	21.51	V	2.16	359.9	- 24.51	46.00	0.120
494.5000	24.37	Qp	1.52	17.43	28.29	0.00	15.04	V	1.00	93.8	- 30.98	46.00	0.120
593.4000	23.19	Qp	1.68	18.53	28.36	0.00	15.05	V	1.09	249.9	- 30.97	46.00	0.120
692.3000	21.62	Qp	1.84	19.54	28.28	0.00	14.72	V	1.53	347.0	- 31.30	46.00	0.120
791.2000	25.62	Qp	1.96	20.58	27.99	0.00	20.17	V	1.46	181.2	- 25.85	46.00	0.120
890.1000	24.66	Qp	2.08	21.21	27.67	0.00	20.28	V	1.21	154.3	- 25.74	46.00	0.120
989.0000	21.45	Qp	2.20	22.12	27.35	0.00	18.42	V	1.47	265.6	- 35.56	54.00	0.120
Harmonics measurements – Horizontal Antenna													
197.8000	34.67	Qp	0.94	11.78	27.49	0.00	19.90	H	1.68	295.2	- 23.62	43.52	0.120
296.7000	28.24	Qp	1.18	13.40	27.16	0.00	15.65	H	1.00	147.9	- 30.37	46.00	0.120
395.6000	35.52	Qp	1.36	15.30	27.74	0.00	24.44	H	1.00	266.7	- 21.58	46.00	0.120
494.5000	25.55	Qp	1.52	17.43	28.29	0.00	16.22	H	1.82	239.3	- 29.80	46.00	0.120
593.4000	27.91	Qp	1.68	18.53	28.36	0.00	19.77	H	1.55	340.0	- 26.25	46.00	0.120
692.3000	25.55	Qp	1.84	19.54	28.28	0.00	18.65	H	1.21	99.5	- 27.37	46.00	0.120
791.2000	25.20	Qp	1.96	20.58	27.99	0.00	19.75	H	1.96	114.3	- 26.27	46.00	0.120
890.1000	26.15	Qp	2.08	21.21	27.67	0.00	21.77	H	1.00	141.4	- 24.25	46.00	0.120
989.0000	21.80	Qp	2.20	22.12	27.35	0.00	18.77	H	1.38	270.7	- 35.21	54.00	0.120

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Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 RSS-210	FCC 15.239/209 RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 2 – Mid Channel													
Fundamental Measurement													
98.9000	58.64	Pk	0.77	10.07	27.97	0.00	41.51	V	3.23	360.0	- 26.45	67.96	0.120
98.9000	58.00	Av	0.77	10.07	27.97	0.00	40.87	V	3.23	360.0	- 7.09	47.96	0.120
98.9000	56.37	Pk	0.77	10.07	27.97	0.00	39.24	H	2.09	117.0	- 32.72	67.96	0.120
98.9000	55.56	Av	0.77	10.07	27.97	0.00	38.43	H	2.09	117.0	- 9.53	47.96	0.120
Harmonics measurements – Vertical Antenna													
197.8000	23.01	Qp	0.94	11.78	27.49	0.00	8.24	V	1.00	337.2	- 35.28	43.52	0.120
296.7000	29.98	Qp	1.18	13.40	27.16	0.00	17.39	V	1.51	167.7	- 28.63	46.00	0.120
395.6000	39.50	Qp	1.36	15.30	27.74	0.00	28.42	V	1.15	132.5	- 17.60	46.00	0.120
494.5000	27.96	Qp	1.52	17.43	28.29	0.00	18.63	V	1.09	327.5	- 27.39	46.00	0.120
593.4000	30.15	Qp	1.68	18.53	28.36	0.00	22.01	V	1.00	320.0	- 24.01	46.00	0.120
692.3000	22.91	Qp	1.84	19.54	28.28	0.00	16.01	V	2.11	123.2	- 30.01	46.00	0.120
791.2000	30.07	Qp	1.96	20.58	27.99	0.00	24.62	V	1.32	270.2	- 21.40	46.00	0.120
890.1000	24.65	Qp	2.08	21.21	27.67	0.00	20.27	V	1.22	278.3	- 25.75	46.00	0.120
989.0000	21.66	Qp	2.20	22.12	27.35	0.00	18.63	V	1.56	299.1	- 35.35	54.00	0.120
Harmonics measurements – Horizontal Antenna													
197.8000	25.43	Qp	0.94	11.78	27.49	0.00	10.66	H	1.42	255.5	- 32.86	43.52	0.120
296.7000	27.70	Qp	1.18	13.40	27.16	0.00	15.11	H	1.05	93.1	- 30.91	46.00	0.120
395.6000	38.69	Qp	1.36	15.30	27.74	0.00	27.61	H	2.22	275.1	- 18.41	46.00	0.120
494.5000	22.25	Qp	1.52	17.43	28.29	0.00	12.92	H	1.68	184.5	- 33.10	46.00	0.120
593.4000	26.32	Qp	1.68	18.53	28.36	0.00	18.18	H	1.84	277.4	- 27.84	46.00	0.120
692.3000	22.56	Qp	1.84	19.54	28.28	0.00	15.66	H	1.71	305.4	- 30.36	46.00	0.120
791.2000	27.43	Qp	1.96	20.58	27.99	0.00	21.98	H	1.17	286.5	- 24.04	46.00	0.120
890.1000	22.55	Qp	2.08	21.21	27.67	0.00	18.17	H	1.46	228.3	- 27.85	46.00	0.120
989.0000	21.57	Qp	2.20	22.12	27.35	0.00	18.54	H	1.88	333.8	- 35.44	54.00	0.120

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 RSS-210	FCC 15.239/209 RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 3 – Mid Channel													
Fundamental Measurement													
98.9000	62.45	Pk	0.77	10.07	27.97	0.00	45.32	H	2.14	144.0	-22.34	67.96	0.120
98.9000	61.09	Av	0.77	10.07	27.97	0.00	43.96	H	2.14	144.0	- 4.00	47.96	0.120
98.9000	63.76	Pk	0.77	10.07	27.97	0.00	46.63	V	1.14	145.0	-21.33	67.96	0.120
98.9000	62.31	Av	0.77	10.07	27.97	0.00	45.18	V	1.14	145.0	- 2.78	47.96	0.120
Harmonics measurements – Vertical Antenna													
197.8000	40.79	Qp	0.94	11.78	27.49	0.00	26.02	V	1.00	329.0	- 17.50	43.52	0.120
296.7000	37.67	Qp	1.18	13.40	27.16	0.00	25.08	V	1.00	246.0	- 20.94	46.00	0.120
395.6000	47.19	Qp	1.36	15.30	27.74	0.00	36.11	V	1.28	123.0	- 9.91	46.00	0.120
494.5000	30.78	Qp	1.52	17.43	28.29	0.00	21.45	V	1.14	191.0	- 24.57	46.00	0.120
593.4000	32.25	Qp	1.68	18.53	28.36	0.00	24.11	V	1.61	286.0	- 21.91	46.00	0.120
692.3000	27.81	Qp	1.84	19.54	28.28	0.00	20.91	V	1.00	131.0	- 25.11	46.00	0.120
791.2000	31.15	Qp	1.96	20.58	27.99	0.00	25.70	V	1.46	109.0	- 20.32	46.00	0.120
890.1000	28.01	Qp	2.08	21.21	27.67	0.00	23.63	V	1.27	269.0	- 22.39	46.00	0.120
989.0000	23.66	Qp	2.20	22.12	27.35	0.00	20.63	V	1.56	300.0	- 33.35	54.00	0.120
Harmonics measurements – Horizontal Antenna													
197.8000	43.15	Qp	0.94	11.78	27.49	0.00	28.38	H	1.76	304.0	- 15.14	43.52	0.120
296.7000	39.71	Qp	1.18	13.40	27.16	0.00	27.12	H	1.00	163.0	- 18.90	46.00	0.120
395.6000	49.76	Qp	1.36	15.30	27.74	0.00	38.68	H	1.00	226.0	- 7.34	46.00	0.120
494.5000	35.13	Qp	1.52	17.43	28.29	0.00	25.80	H	1.71	147.0	- 20.22	46.00	0.120
593.4000	36.73	Qp	1.68	18.53	28.36	0.00	28.59	H	1.47	228.0	- 17.43	46.00	0.120
692.3000	31.69	Qp	1.84	19.54	28.28	0.00	24.79	H	1.16	135.0	- 21.23	46.00	0.120
791.2000	34.35	Qp	1.96	20.58	27.99	0.00	28.90	H	1.06	184.0	- 17.12	46.00	0.120
890.1000	28.38	Qp	2.08	21.21	27.67	0.00	24.00	H	1.48	172.0	- 22.02	46.00	0.120
989.0000	24.31	Qp	2.20	22.12	27.35	0.00	21.28	H	1.89	146.0	- 32.70	54.00	0.120

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBμV)		(dB)		(dB)		(dB)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

7.8 Test Data: FM Mode [High Channel]

Tx Intentional Radiated Electromagnetic Emissions

Test Report #: G100860883	Test Area: CC1 Radiated	Temperature: <u>23.1</u> °C
Test Method: FCC 15.239(b)/15.209 IC RSS-210 A2.8/RSS-Gen	Test Date: <u>08/08/2012</u>	Relative Humidity: <u>21.5</u> %
EUT Model #: AXS9FMT	EUT Power: <u>120VAC/60Hz</u>	Air Pressure: <u>83.8</u> kPa
EUT Serial #: 002		

Manufacturer: **Waio, Inc.**

EUT Description: **Broadcastvision Entertainment – Transmitter – FM & 900MHz**

Notes: **Product Tested in the following configuration: FM Radio**

Product continuously operating/active during all testing – normal operation

High FM Channel

Level Key
Pk – Peak
Qp – Quasi Peak
Av – Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 RSS-210	FCC 15.239/209 RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 1 – High Channel													
Fundamental Measurement													
107.1000	54.89	Pk	0.77	12.22	27.93	0.00	39.95	V	1.00	163.0	- 28.01	67.96	0.120
107.1000	53.24	Av	0.77	12.22	27.93	0.00	38.30	V	1.00	163.0	- 9.66	47.96	0.120
107.1000	52.21	Pk	0.77	12.22	27.93	0.00	37.27	H	2.74	128.0	- 30.69	67.96	0.120
107.1000	51.35	Av	0.77	12.22	27.93	0.00	36.41	H	2.74	128.0	- 11.55	47.96	0.120
Harmonics measurements – Vertical Antenna													
214.2000	32.99	Qp	0.98	10.67	27.41	0.00	17.22	V	1.84	336.3	- 26.30	43.52	0.120
321.3000	29.55	Qp	1.24	13.85	27.25	0.00	17.39	V	1.00	266.4	- 28.63	46.00	0.120
428.4000	32.29	Qp	1.42	15.97	28.00	0.00	21.68	V	1.11	122.7	- 24.34	46.00	0.120
535.5000	32.13	Qp	1.59	18.02	28.40	0.00	23.34	V	1.22	341.8	- 22.68	46.00	0.120
642.6000	25.34	Qp	1.76	19.20	28.32	0.00	17.99	V	1.13	283.9	- 28.03	46.00	0.120
749.7000	28.64	Qp	1.91	20.20	28.12	0.00	22.63	V	1.00	38.0	- 23.39	46.00	0.120
856.8000	21.41	Qp	2.04	21.33	27.78	0.00	17.00	V	1.35	239.8	- 29.02	46.00	0.120
963.9000	21.44	Qp	2.17	22.07	27.43	0.00	18.24	V	1.54	359.9	- 35.74	54.00	0.120
1071.0000	22.04	Qp	2.23	22.34	27.38	0.00	19.23	V	1.55	316.0	- 34.77	54.00	1.000
Harmonics measurements – Horizontal Antenna													
214.2000	34.17	Qp	0.98	10.67	27.41	0.00	18.40	H	1.56	282.0	- 25.12	43.52	0.120
321.3000	35.17	Qp	1.24	13.85	27.25	0.00	23.01	H	1.02	141.4	- 23.01	46.00	0.120
428.4000	32.01	Qp	1.42	15.97	28.00	0.00	21.40	H	2.19	108.9	- 24.62	46.00	0.120
535.5000	33.45	Qp	1.59	18.02	28.40	0.00	24.66	H	1.51	208.1	- 21.36	46.00	0.120
642.6000	32.40	Qp	1.76	19.20	28.32	0.00	25.05	H	1.41	307.9	- 20.97	46.00	0.120
749.7000	30.00	Qp	1.91	20.20	28.12	0.00	23.99	H	1.24	130.5	- 22.03	46.00	0.120
856.8000	22.78	Qp	2.04	21.33	27.78	0.00	18.37	H	1.02	169.8	- 27.65	46.00	0.120
963.9000	21.45	Qp	2.17	22.07	27.43	0.00	18.25	H	1.86	270.1	- 35.73	54.00	0.120
1071.0000	22.31	Qp	2.23	22.34	27.38	0.00	19.50	H	1.73	270.0	- 34.50	54.00	1.000

Intertek

Report Number: 100860883DEN-001

Issued:8/31/2012

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 RSS-210	FCC 15.239/209 RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 2 – High Channel													
Fundamental Measurement													
107.1000	56.86	Pk	0.77	12.22	27.93	0.00	41.92	H	2.78	284.0	- 26.04	67.96	0.120
107.1000	56.16	Av	0.77	12.22	27.93	0.00	41.22	H	2.78	284.0	- 6.74	47.96	0.120
107.1000	57.54	Pk	0.77	12.22	27.93	0.00	42.60	V	3.02	12.0	- 25.36	67.96	0.120
107.1000	57.00	Av	0.77	12.22	27.93	0.00	42.06	V	3.02	12.0	- 5.90	47.96	0.120
Harmonics measurements – Vertical Antenna													
214.2000	32.18	Qp	0.98	10.67	27.41	0.00	16.41	V	1.74	18.5	- 27.11	43.52	0.120
321.3000	33.68	Qp	1.24	13.85	27.25	0.00	21.52	V	1.36	154.4	- 24.50	46.00	0.120
428.4000	31.02	Qp	1.42	15.97	28.00	0.00	20.41	V	1.66	150.3	- 25.61	46.00	0.120
535.5000	36.97	Qp	1.59	18.02	28.40	0.00	28.18	V	1.09	340.9	- 17.84	46.00	0.120
642.6000	25.54	Qp	1.76	19.20	28.32	0.00	18.19	V	1.07	35.7	- 27.83	46.00	0.120
749.7000	33.09	Qp	1.91	20.20	28.12	0.00	27.08	V	1.41	281.6	- 18.94	46.00	0.120
856.8000	22.39	Qp	2.04	21.33	27.78	0.00	17.98	V	1.25	230.8	- 28.04	46.00	0.120
963.9000	21.97	Qp	2.17	22.07	27.43	0.00	18.77	V	1.69	187.6	- 35.21	54.00	0.120
1071.0000	22.34	Qp	2.23	22.34	27.38	0.00	19.53	V	1.72	184.0	- 34.47	54.00	1.000
Harmonics measurements – Horizontal Antenna													
214.2000	33.69	Qp	0.98	10.67	27.41	0.00	17.92	H	1.67	238.8	- 25.60	43.52	0.120
321.3000	33.40	Qp	1.24	13.85	27.25	0.00	21.24	H	1.09	271.8	- 24.78	46.00	0.120
428.4000	29.75	Qp	1.42	15.97	28.00	0.00	19.14	H	1.98	103.9	- 26.88	46.00	0.120
535.5000	26.43	Qp	1.59	18.02	28.40	0.00	17.64	H	1.54	159.8	- 28.38	46.00	0.120
642.6000	26.20	Qp	1.76	19.20	28.32	0.00	18.85	H	1.25	227.2	- 27.17	46.00	0.120
749.7000	28.32	Qp	1.91	20.20	28.12	0.00	22.31	H	1.11	90.8	- 23.71	46.00	0.120
856.8000	21.92	Qp	2.04	21.33	27.78	0.00	17.51	H	1.54	242.3	- 28.51	46.00	0.120
963.9000	21.56	Qp	2.17	22.07	27.43	0.00	18.36	H	1.54	242.3	- 35.62	54.00	0.120
1071.0000	21.92	Qp	2.23	22.34	27.38	0.00	19.11	H	1.53	248.0	- 34.89	54.00	1.000

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.239/209 RSS-210	FCC 15.239/209 RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 3 – High Channel													
Fundamental Measurement													
107.1000	61.61	Pk	0.77	12.22	27.93	0.00	46.67	V	1.14	137.0	-21.29	67.96	0.120
107.1000	60.75	Av	0.77	12.22	27.93	0.00	45.81	V	1.14	137.0	- 2.15	47.96	0.120
107.1000	62.59	Pk	0.77	12.22	27.93	0.00	47.65	H	2.68	154.0	- 20.31	67.96	0.120
107.1000	62.02	Av	0.77	12.22	27.93	0.00	47.08	H	2.68	154.0	- 0.88	47.96	0.120
Harmonics measurements – Vertical Antenna													
214.2000	37.83	Qp	0.98	10.67	27.41	0.00	22.06	V	1.18	328.0	- 21.46	43.52	0.120
321.3000	47.23	Qp	1.24	13.85	27.25	0.00	35.07	V	1.62	249.0	- 10.95	46.00	0.120
428.4000	38.69	Qp	1.42	15.97	28.00	0.00	28.08	V	1.00	360.0	- 17.94	46.00	0.120
535.5000	37.45	Qp	1.59	18.02	28.40	0.00	28.66	V	1.08	40.0	- 17.36	46.00	0.120
642.6000	29.31	Qp	1.76	19.20	28.32	0.00	21.96	V	2.15	67.0	- 24.06	46.00	0.120
749.7000	36.15	Qp	1.91	20.20	28.12	0.00	30.14	V	1.53	91.0	- 15.88	46.00	0.120
856.8000	24.04	Qp	2.04	21.33	27.78	0.00	19.63	V	2.15	117.0	- 26.39	46.00	0.120
963.9000	23.51	Qp	2.17	22.07	27.43	0.00	20.31	V	1.75	83.0	- 33.67	54.00	0.120
1071.0000	21.97	Qp	2.23	22.34	27.38	0.00	19.16	V	1.74	94.0	- 34.84	54.00	1.000
Harmonics measurements – Horizontal Antenna													
214.2000	47.21	Qp	0.98	10.67	27.41	0.00	31.44	H	1.68	269.0	- 12.08	43.52	0.120
321.3000	48.53	Qp	1.24	13.85	27.25	0.00	36.37	H	1.00	331.0	- 9.65	46.00	0.120
428.4000	40.90	Qp	1.42	15.97	28.00	0.00	30.29	H	1.97	139.0	- 15.73	46.00	0.120
535.5000	43.02	Qp	1.59	18.02	28.40	0.00	34.23	H	1.58	150.0	- 11.79	46.00	0.120
642.6000	34.38	Qp	1.76	19.20	28.32	0.00	27.03	H	1.41	251.0	- 18.99	46.00	0.120
749.7000	36.70	Qp	1.91	20.20	28.12	0.00	30.69	H	1.14	140.0	- 15.33	46.00	0.120
856.8000	25.18	Qp	2.04	21.33	27.78	0.00	20.77	H	1.57	64.0	- 25.25	46.00	0.120
963.9000	23.83	Qp	2.17	22.07	27.43	0.00	20.63	H	2.01	144.0	- 33.35	54.00	0.120
1071.0000	22.89	Qp	2.23	22.34	27.38	0.00	20.08	H	1.84	142.0	- 33.92	54.00	1.000

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBμV)		(dB)		(dB)		(dB)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

Notes:

- 1) The product was fully tested in (3) Axes. Refer to photos for details. Axis 2 Low Channel was worst-case for both the fundamental and harmonics of the fundamental.
- 2) The product was tested in the following product options: FM Radio mode of operation.
- 3) All measurements were taken at 3-meter test distance (antenna-to-product). Measurements of the fundamental were taken with an average detector (average limit). Measurements of the harmonics were taken with a quasi-peak detector.

Intertek	
Report Number: 100860883DEN-001	Issued:8/31/2012

Deviations, Additions, or Exclusions: None

Intertek	
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8 AC Mains Conducted Emissions

8.1 Method

Unless otherwise stated no deviations were made from FCC 15.207 [IC RSS-Gen 7.2.4].

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

8.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18885	Transient Limiter	Hewlett-Packard	11947A	3107A00700	05/03/2012	05/03/2013
18914	Single Phase LISN	EMCO	3816/NM	9408-1003	04/05/2012	04/05/2013
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V002	VBV	VBV

8.3 Results:

The product tested was found to comply.

8.4 Setup Photographs: FM Mode

Test Setup (Front View)



Setup Photographs: FM Mode

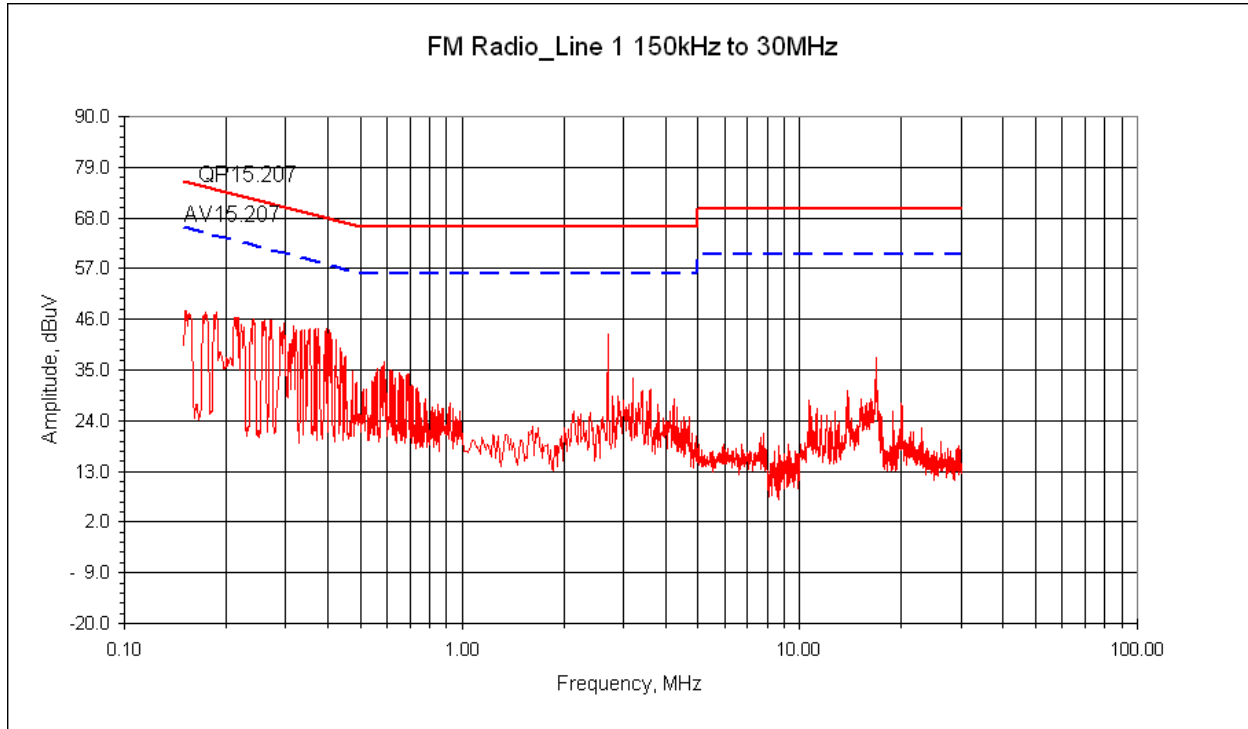
Test Setup (Side View)



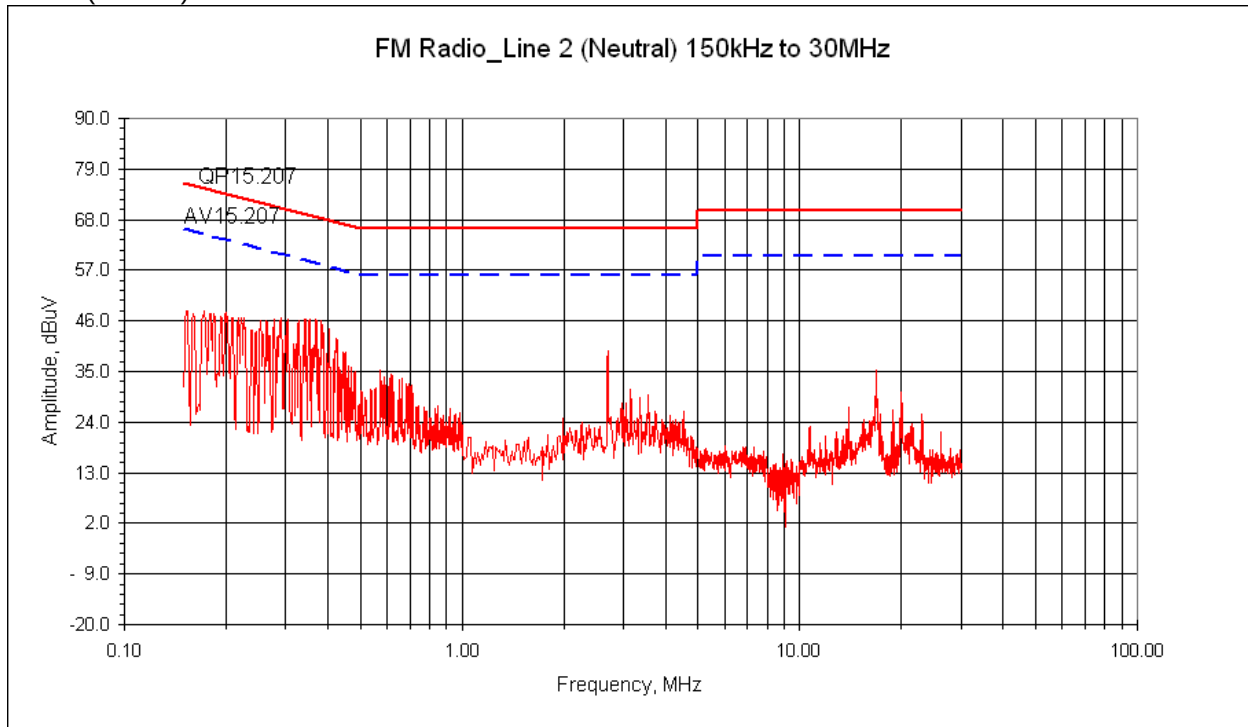
8.5 Pre-scan Plots: Reference Only – Not Final Data: FM Mode

Radiated Emissions – FCC 15.207 [IC RSS-Gen 7.2.4] - (150kHz to 30MHz)

Line 1



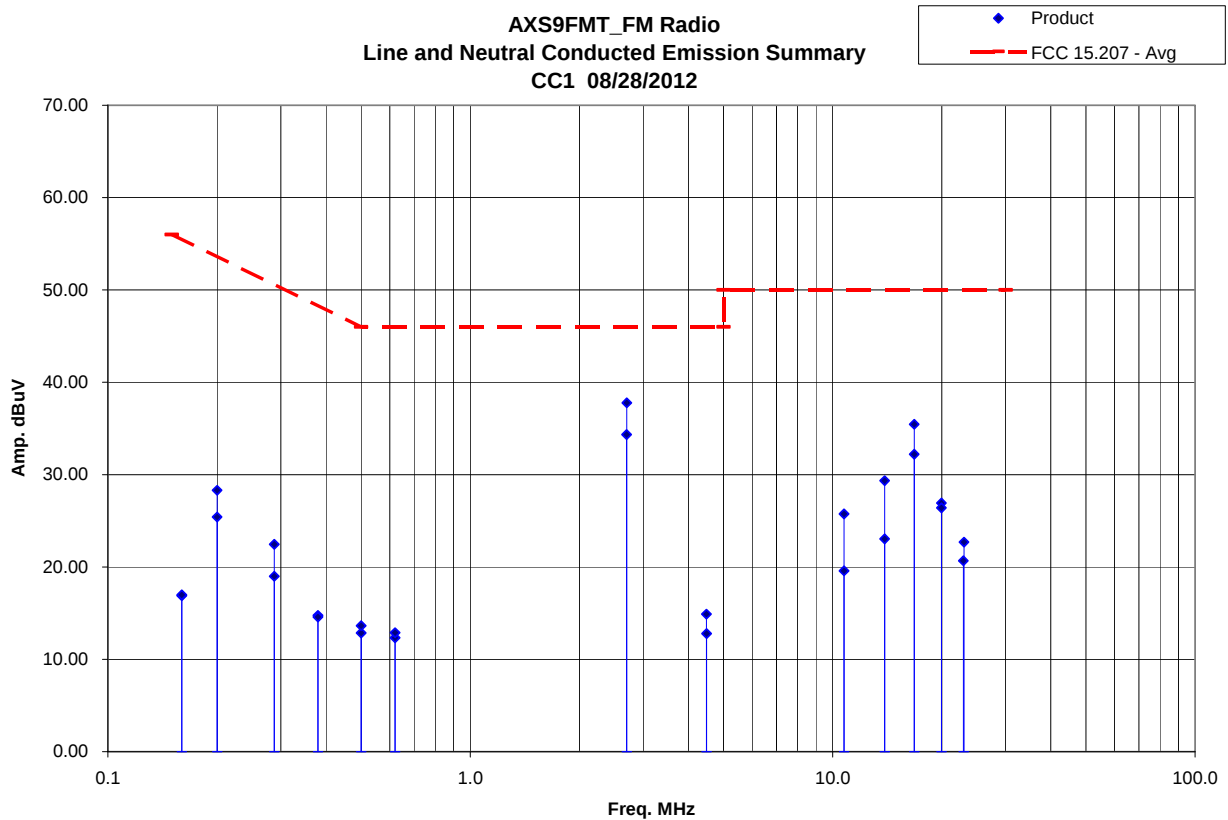
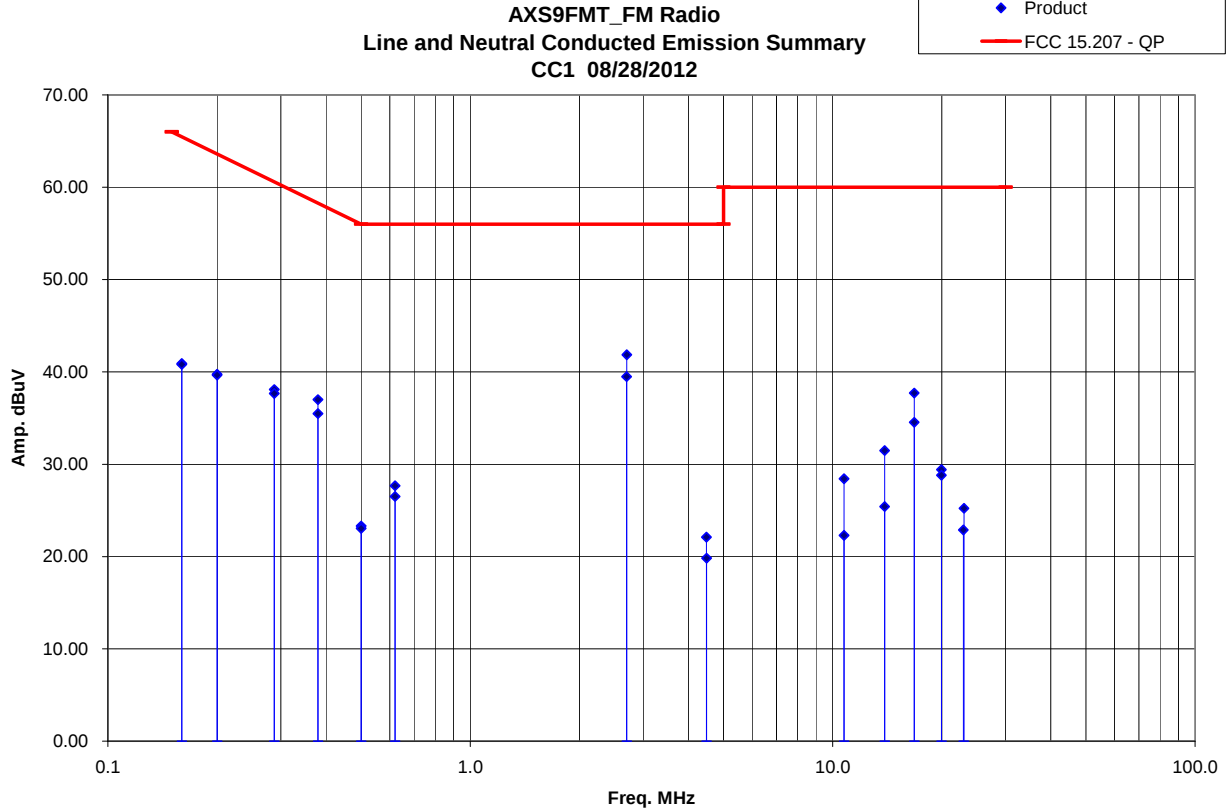
Line 2 (Neutral)



Note: Peak measurements plotted against Average and QP limits

8.6 Final Plots: FM Mode

Conducted Emissions – FCC 15.207 [IC RSS-Gen 7.2.4] - (150kHz to 30MHz)



8.7 Test Data: FM Mode

AC Conducted Electromagnetic Emissions

Test Report #:	G100860883	Test Area:	CC1 Conducted	Temperature:	23.9	C
Test Method:	FCC 15.207/ RSS-Gen, Section 7.2.4	Test Date:	18-Aug 2012	Relative Humidity:	29.1	%
EUT Model #:	AXS9FMT	EUT Power:	115VAC/60Hz	Air Pressure:	83.2	kPa
EUT Serial #:	002					
Manufacturer:	Waio, Inc.					
EUT Description:	Broadcastvision Entertainment (bve) Transmitter [900MHz & FM]					
Notes:	Product continuously active during testing – normal operation					
	Product Configuration: FM Tx mode of operation					

FREQ	LEVEL	DET	CABLE	LISN	PREAMP	ATTEN	FINAL	TEST POINT	DELTA1	DELTA2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	Line 1 Line 2 (Neutral)	FCC15.207 RSS-Gen Average	FCC15.207 RSS-Gen QP	(MHz)
AXS9FMT – FM Mode of operation @ 115VAC/60Hz											
Line 1 Data											
0.160	6.90	Av	0.10	0.04	0.00	9.95	16.99	Line 1	- 48.48	NA	0.009
0.160	30.72	Qp	0.10	0.04	0.00	9.95	40.81	Line 1	NA	- 34.66	0.009
0.200	18.22	Av	0.10	0.03	0.00	9.95	28.30	Line 1	- 35.31	NA	0.009
0.200	29.57	Qp	0.10	0.03	0.00	9.95	39.65	Line 1	NA	- 33.96	0.009
0.288	12.37	Av	0.10	0.03	0.00	9.96	22.45	Line 1	- 38.13	NA	0.009
0.288	27.59	Qp	0.10	0.03	0.00	9.96	37.67	Line 1	NA	- 32.91	0.009
0.380	4.51	Av	0.10	0.03	0.00	9.96	14.60	Line 1	- 43.68	NA	0.009
0.380	25.40	Qp	0.10	0.03	0.00	9.96	35.49	Line 1	NA	- 32.79	0.009
0.500	3.55	Av	0.10	0.02	0.00	9.96	13.64	Line 1	- 42.36	NA	0.009
0.500	12.96	Qp	0.10	0.02	0.00	9.96	23.05	Line 1	NA	- 42.95	0.009
0.620	2.79	Av	0.10	0.02	0.00	9.97	12.88	Line 1	- 43.12	NA	0.009
0.620	17.58	Qp	0.10	0.02	0.00	9.97	27.67	Line 1	NA	- 38.33	0.009
2.703	27.57	Av	0.20	0.03	0.00	9.97	37.78	Line 1	- 18.22	NA	0.009
2.703	31.65	Qp	0.20	0.03	0.00	9.97	41.86	Line 1	NA	- 24.14	0.009
4.481	4.58	Av	0.30	0.04	0.00	9.97	14.89	Line 1	- 41.11	NA	0.009
4.481	11.79	Qp	0.30	0.04	0.00	9.97	22.10	Line 1	NA	- 43.90	0.009
10.751	14.97	Av	0.67	0.12	0.00	9.99	25.75	Line 1	- 34.25	NA	0.009
10.751	17.64	Qp	0.67	0.12	0.00	9.99	28.42	Line 1	NA	- 41.58	0.009
13.920	18.33	Av	0.90	0.13	0.00	10.00	29.36	Line 1	- 30.64	NA	0.009
13.920	20.46	Qp	0.90	0.13	0.00	10.00	31.49	Line 1	NA	- 38.51	0.009
16.800	24.19	Av	1.10	0.16	0.00	10.01	35.46	Line 1	- 24.54	NA	0.009
16.800	26.45	Qp	1.10	0.16	0.00	10.01	37.72	Line 1	NA	- 32.28	0.009
19.968	15.07	Av	1.10	0.22	0.00	10.02	26.41	Line 1	- 33.59	NA	0.009
19.968	17.47	Qp	1.10	0.22	0.00	10.02	28.81	Line 1	NA	- 41.19	0.009
22.943	9.33	Av	1.10	0.22	0.00	10.03	20.69	Line 1	- 39.31	NA	0.009
22.943	11.53	Qp	1.10	0.22	0.00	10.03	22.89	Line 1	NA	- 47.11	0.009

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AXS9FMT – FM Mode of operation @ 115VAC/60Hz

Line 2 (Neutral) Data

0.160	6.79	Av	0.10	0.04	0.00	9.95	16.88	Line 2	- 48.59	NA	0.009
0.160	30.82	Qp	0.10	0.04	0.00	9.95	40.91	Line 2	NA	- 34.56	0.009
0.200	15.34	Av	0.10	0.03	0.00	9.95	25.42	Line 2	- 38.19	NA	0.009
0.200	29.67	Qp	0.10	0.03	0.00	9.95	39.75	Line 2	NA	- 33.86	0.009
0.288	8.93	Av	0.10	0.03	0.00	9.96	19.01	Line 2	- 41.57	NA	0.009
0.288	28.02	Qp	0.10	0.03	0.00	9.96	38.10	Line 2	NA	- 32.48	0.009
0.380	4.68	Av	0.10	0.02	0.00	9.96	14.76	Line 2	- 43.51	NA	0.009
0.380	26.92	Qp	0.10	0.02	0.00	9.96	37.00	Line 2	NA	- 31.27	0.009
0.500	2.78	Av	0.10	0.02	0.00	9.96	12.87	Line 2	- 43.13	NA	0.009
0.500	13.21	Qp	0.10	0.02	0.00	9.96	23.30	Line 2	NA	- 42.70	0.009
0.620	2.24	Av	0.10	0.02	0.00	9.97	12.33	Line 2	- 43.67	NA	0.009
0.620	16.41	Qp	0.10	0.02	0.00	9.97	26.50	Line 2	NA	- 39.50	0.009
2.701	24.16	Av	0.20	0.03	0.00	9.97	34.36	Line 2	- 21.64	NA	0.009
2.701	29.30	Qp	0.20	0.03	0.00	9.97	39.50	Line 2	NA	- 26.50	0.009
4.486	2.48	Av	0.30	0.04	0.00	9.97	12.79	Line 2	- 43.21	NA	0.009
4.486	9.52	Qp	0.30	0.04	0.00	9.97	19.83	Line 2	NA	- 46.17	0.009
10.751	8.81	Av	0.67	0.12	0.00	9.99	19.60	Line 2	- 40.40	NA	0.009
10.751	11.49	Qp	0.67	0.12	0.00	9.99	22.28	Line 2	NA	- 47.72	0.009
13.921	12.01	Av	0.90	0.14	0.00	10.00	23.05	Line 2	- 36.95	NA	0.009
13.921	14.37	Qp	0.90	0.14	0.00	10.00	25.41	Line 2	NA	- 44.59	0.009
16.801	20.93	Av	1.10	0.17	0.00	10.01	32.21	Line 2	- 27.79	NA	0.009
16.801	23.25	Qp	1.10	0.17	0.00	10.01	34.53	Line 2	NA	- 35.47	0.009
19.966	15.60	Av	1.10	0.22	0.00	10.02	26.94	Line 2	- 33.06	NA	0.009
19.966	18.07	Qp	1.10	0.22	0.00	10.02	29.41	Line 2	NA	- 40.59	0.009
23.041	11.20	Av	1.10	0.35	0.00	10.03	22.69	Line 2	- 37.31	NA	0.009
23.041	13.75	Qp	1.10	0.35	0.00	10.03	25.24	Line 2	NA	- 44.76	0.009

Example calculation:

Measured Level	+	Transducer, Cable Loss & Amplifier corrections	=	Corrected Reading	Specification Limit	-	Corrected Reading	=	Delta Specification
(dB μ V)		(dB)		(dB μ V/m)	(dB μ V/m)		(dB μ V/m)		
14.0		14.9		28.9	40.0		28.9		-11.1

Notes:

- 1) The product was tested in the following product options: FM Radio mode of operation.

Deviations, Additions, or Exclusions: None

Intertek	
Report Number: 100860883DEN-001	Issued:8/31/2012

9 Occupied Bandwidth (OBW)

9.1 Method

Unless otherwise stated no deviations were made from RSS-Gen, Section 4.6.1.

This testing was performed at Intertek Denver, located at 1795 Dogwood St. Suite 200, Louisville, CO 80027.

9.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	06/06/2012	06/06/2013
19936	Bilog Antenna 30MHz – 6GHz	Sunol Sciences	JB6	A050707-1	11/15/2011	11/15/2012
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBU	VBU

9.3 Results:

The product tested was found to comply.

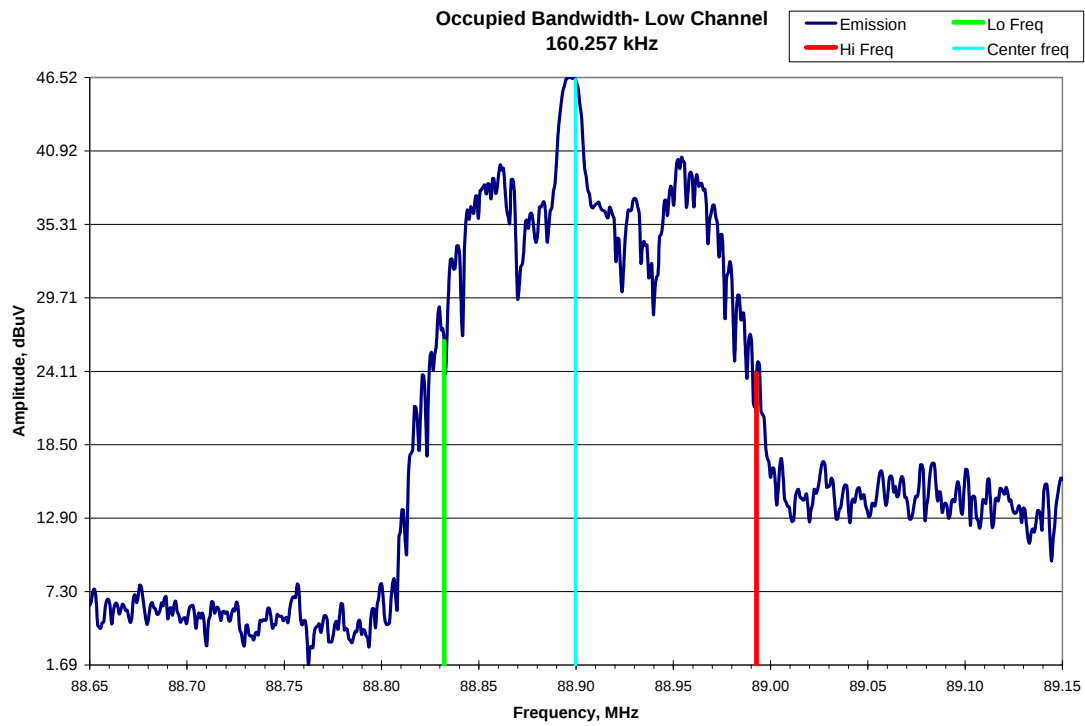
9.4 Setup Photographs: FM Mode

9.5 Final Plots: FM Mode

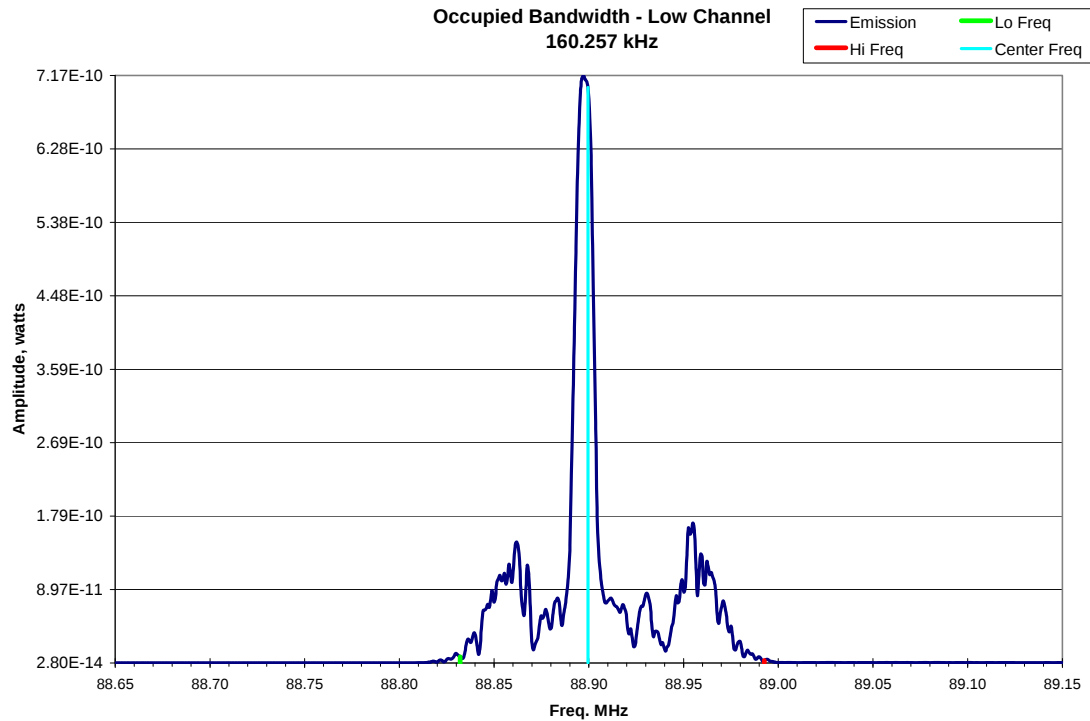
FM Radio Occupied Bandwidth - (RSS-GEN, Section 4.6.1)

FM Low Channel – 88.9 MHz

Field Strength Graph

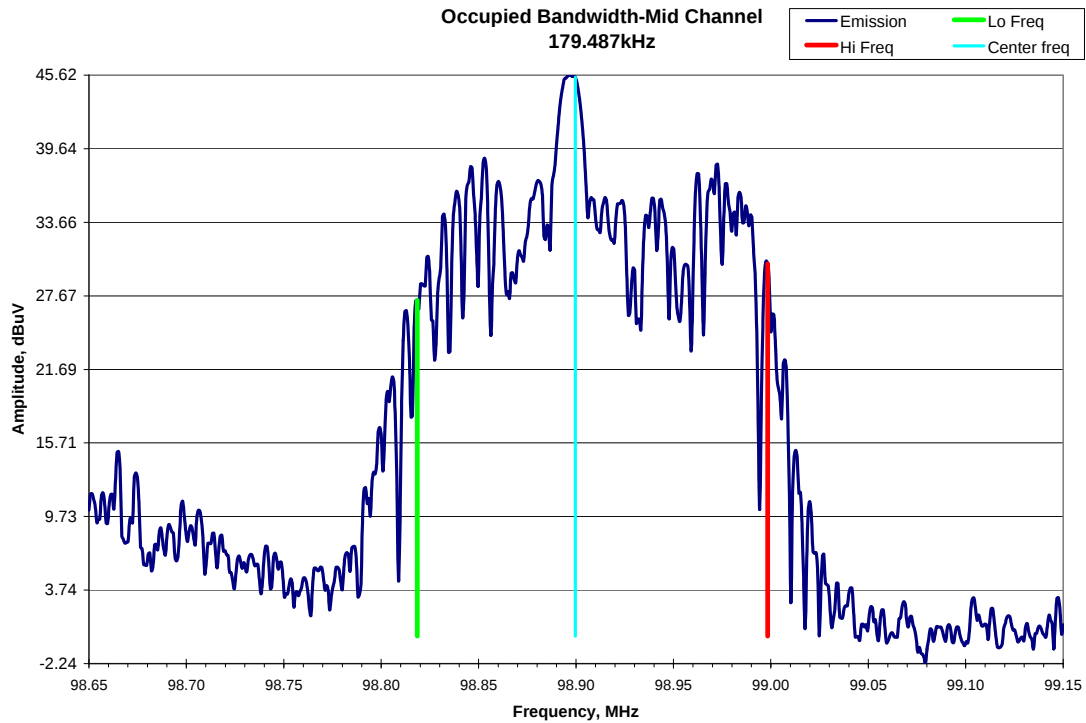


Power Graph

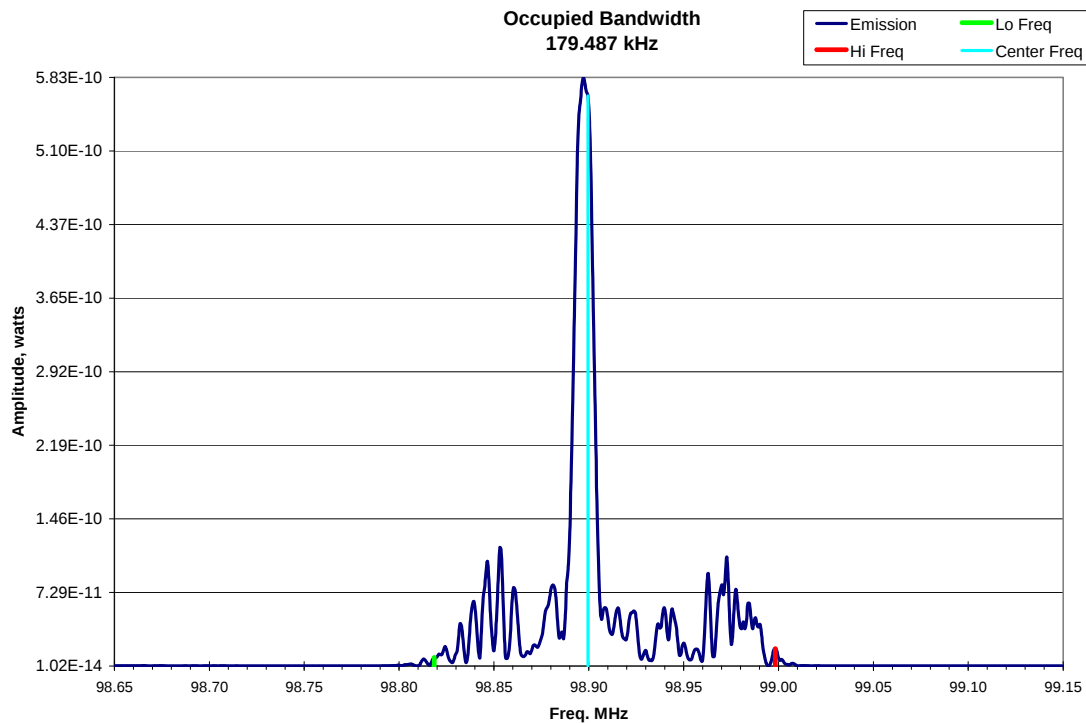


Occupied Bandwidth - (RSS-GEN, Section 4.6.1)
FM Mid Channel – 98.9MHz

Field Strength Graph

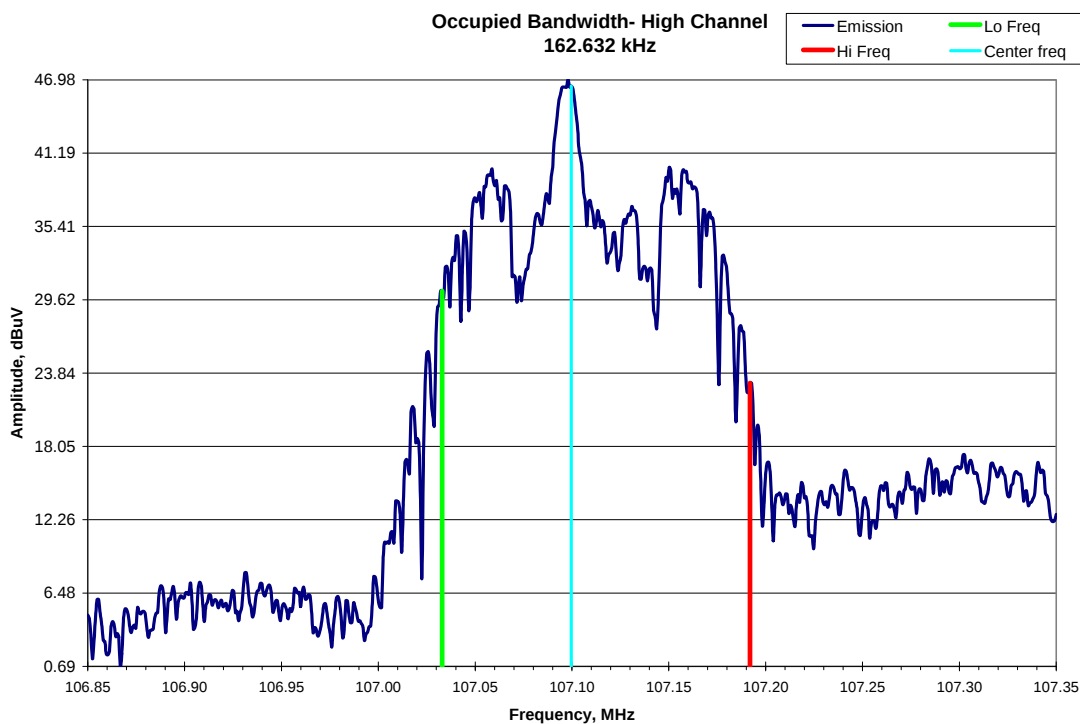


Power Graph

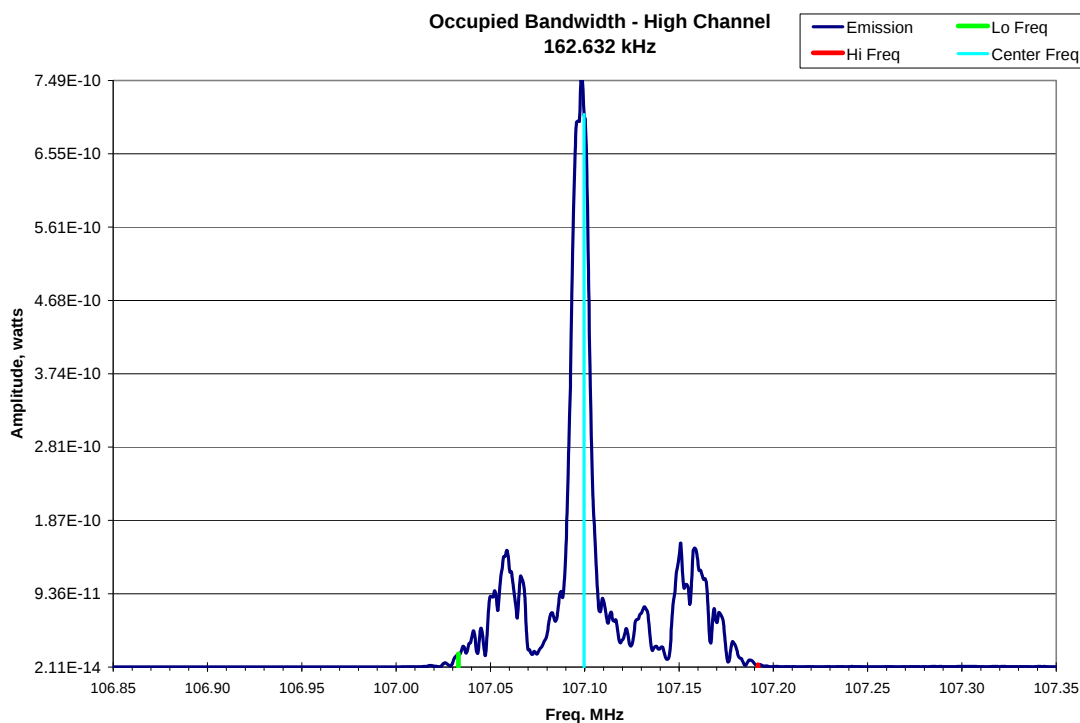


**Occupied Bandwidth - (RSS-GEN, Section 4.6.1)
FM High Channel – 107.1 MHz**

Field Strength Graph



Power Graph



Notes: Worst-case Occupied Band Width was Mid Channel – 179.487kHz

Deviations, Additions, or Exclusions: None

Intertek	
Report Number: 100860883DEN-001	Issued:8/31/2012

10 Product Modifications required to pass

The following document describes the product modifications required to pass the Tx Spurious and Unintentional Radiated Emissions testing. Refer to Waio AXS9FMT – Report on Added Capacitors – document date: 2012-08-14.



Waio AXS9FMT – Report on Added Capacitors

Document Date: 2012-08-14

SUMMARY

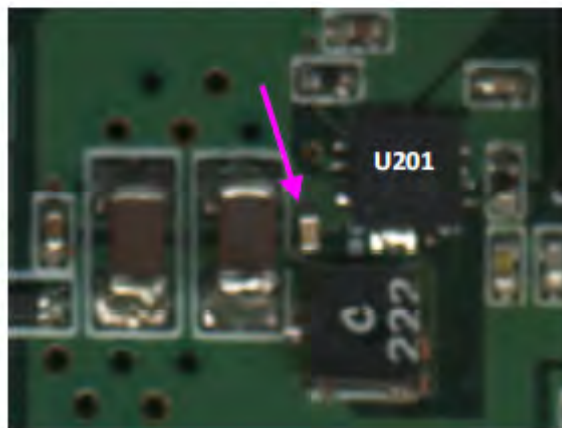
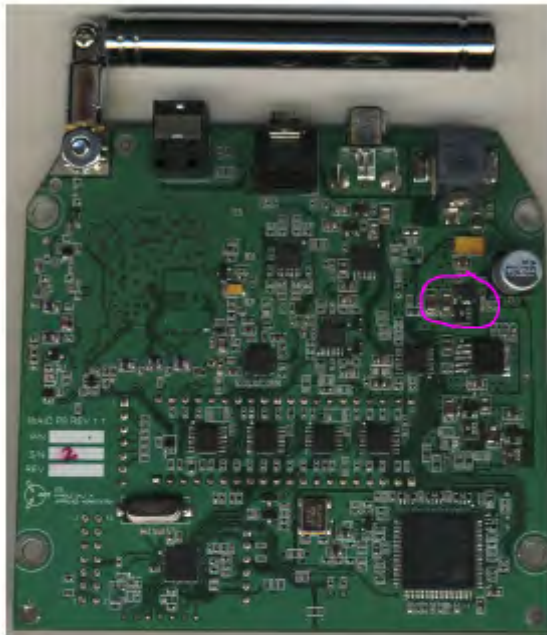
In FCC testing at Intertek on 2012-08-11, excessive spurious emissions were measured at multiple frequencies near 49MHz and near 365MHz.

Small-value capacitors were added to the PCB on the outputs of all switching regulators – these caused the emissions to fall below limits with good margin.

DETAILS

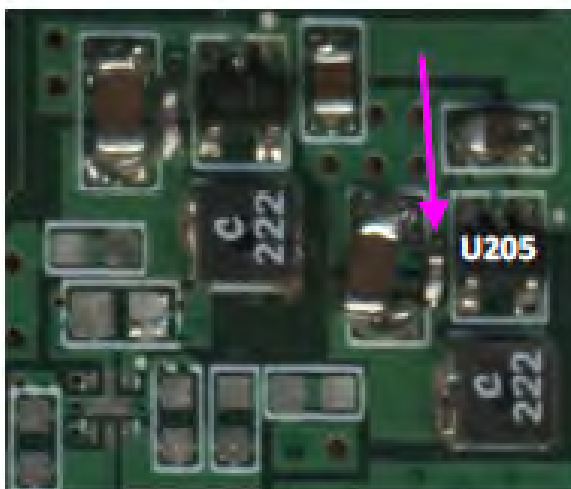
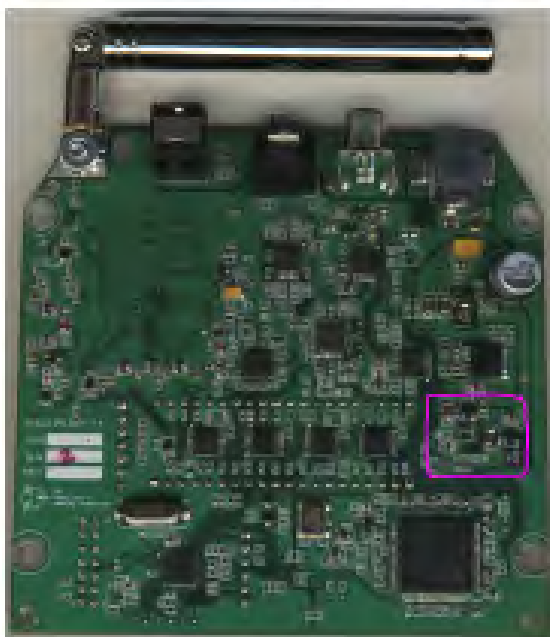
1. 1.0nF 0402 ceramic capacitor added to output of U201 regulator circuit

The capacitor was added in the location indicated in the photos below:



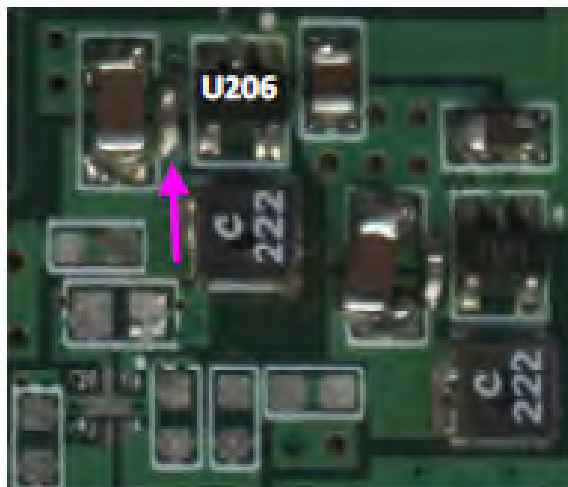
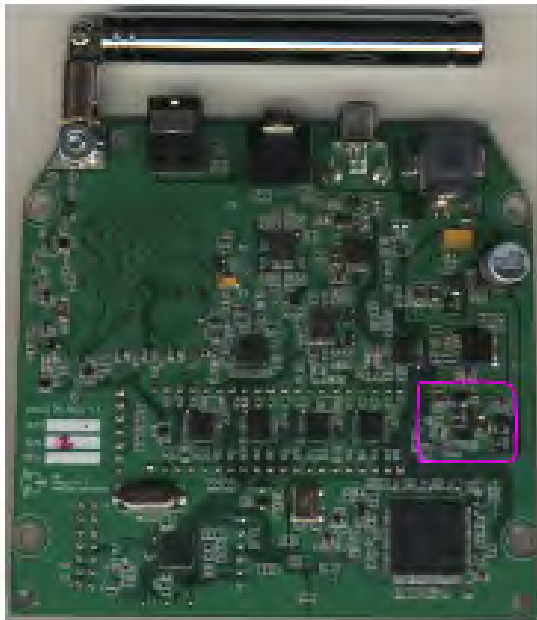
2. 47nF 0402 ceramic capacitor added to output of U205 regulator circuit

The capacitor was added in the location indicated in the photos below:



3. 47nF 0402 ceramic capacitor added to output of U206 regulator circuit

The capacitor was added in the location indicated in the photos below:



11 Measurement Uncertainty

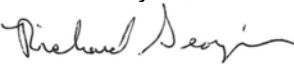
The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of $k = 2$, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty $\pm$	Notes
Radiated emissions, 10kHz to 1000 MHz	4.4 dB	
Radiated emissions, 1 to 18 GHz	4.7 dB	
AC mains Conducted emissions, 9kHz to 30 MHz	3.14 dB	
Disturbance Power 30 to 1000 MHz	3.3 dB	
Telecom Port Conducted emissions, Voltage 150 kHz to 30 MHz	3.11 dB	
Harmonics	-	Meets the requirements specified by the standard.
Flicker	-	Meets the requirements specified by the standard.
ESD	4.4 %	
Radiated RF field immunity 80MHz to 2.7GHz	2.2 dB	
EFT	4.3 %	
Surge	4.3 %	
Conducted RF immunity	2.1 dB	
Power frequency magnetic field immunity	2.3 dB	
Voltage dips / interruptions immunity	0.3 mV	

12 Revision History

Revision Level	Date	Report Number	Notes
0	8/31/2012	100860883DEN-001	Original Issue
1	03/10/2013	100860883DEN-001	1. Added corrected product model numbers declared by client to be identical to the product tested. Update required for TCB review and submittal. Original product model: AXS9FMT Modified product models: AXS-FMTD, AXS-FMTXD, AXS-98FMTD, CT-FMTD (page 1 – product designator, Page 3 – general note 1 Revised by: Randy Thompson  Reviewed by: Richard Georgerian 
2	03/14/2013	100860883DEN-001	Moved the similar product AXS-98FMTD from the FM report (100860883DEN-001).to the 900 MHz report (100860883DEN-002). Revised by: Mike Kanda  Reviewed by: Richard Georgerian 
3	03/15/2013	100860883DEN-001	1. Added Peak measurements to all fundamental frequency measurements in Section 7. 2. “The “FM/900MHz” version of the product transmits in either band (selectable via the user interface)” was removed from the Description of Equipment Under Test (Section 3). This mode is not an available feature. 3. Frequency Range changed from 88.1 MHz - 107.9 MHz to 88.9 MHz – 107.1 MHz. 4. Added to the notes of Section 5 – “Peak measurements above 1 GHz were not taken because the peak prescan (Sections 5.9 – 5.17) margin exceeds 36 dB.” Revised by: Mike Kanda  by: Richard Georgerian 