Global EMC Inc. Labs

EMC & RF Test Report

As per

FCC Part 15 Subpart C

Unlicensed Intentional Radiators

on the

Wiser Air

Scott Drysdale
Global EMC Inc. Laval
2972 Joseph-A-Bombardier
Laval, QC, H7P 6E3 CANADA
Ph: (450) 687- 4976

Testing produced for

See Appendix A for full customer & EUT details.

LAB REGISTRATION #6844B-1

FCC REGISTRATION REG#382292

Testing Laboratory Certificate #2555.01

Table of Contents

Report Scope

This report addresses the EMC verification testing and test results of the Wiser Air, herein referred to as EUT (Equipment Under Test) performed at Global EMC Labs.

The EUT was tested for compliance against the following standards:

FCC Part 15 Subpart C 15

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

The results contained in this report relate only to the item(s) tested.

This report does not imply product endorsement by A2LA or any other accreditation agency, any government, or Global EMC Inc.

Opinions/interpretations expressed in this report, if any, are outside the scope of Global EMC Inc accreditation. Any opinions expressed do not necessarily reflect the opinions of Global EMC Inc, unless otherwise stated.

Client	Viconics Electronics Inc.
Product	Wiser Air
Standard(s)	FCC Part 15 Subpart C 15

Summary

The results contained in this report relate only to the item(s) tested.

EUT FCC Certification #, FCC ID:	V95-WISWIFI
EUT Industry Canada Certification #, IC:	7591A-WISWIFI
EUT Passed all tests performed.	Yes (see test results summary)
Tests conducted by	Scott Drysdale

Client	Viconics Electronics Inc.
Product	Wiser Air
Standard(s)	FCC Part 15 Subpart C 15

Test Results Summary

Standard/Method	Description	Class/Limit	Result
FCC 15.203	Antenna Requirement	Unique	Pass See Note 1
FCC 15.205 RSS 247 (Table 1)	Restricted Bands for intentional operation	QuasiPeak Average	Pass See Note 1
FCC 15.207	Power line conducted emissions	QuasiPeak Average	Pass See Note 1
FCC 15.209 RSS-247 (Table 2)	Spurious Radiated emissions	QuasiPeak Average	Pass
FCC 15.247(a)2 RSS-247 A8.2(a)	6 dB Bandwidth	> 500 kHz	Pass See Note 1
FCC 15.247(b)2 RSS-247 A8.4(4)	Max output power	< 1 Watt	Pass
FCC 15.247(b)(4) RSS-247 A8.4(5)	Antenna Gain	< 6 dBi	Pass See Note 1
FCC 15.247(d) RSS-247 A8.5	Antenna conducted spurious	< 20 dBc	Pass See Note 1
FCC 15.247(e) RSS-247 A8.2(b)	Spectral Density	< 8 dBm (3 kHz BW)	Pass See Note 1
FCC 15.247(i) IC Safety code 6	Maximum Permissible Exposure	> 20 cm separation.	Pass See Note 1
Overall Result			**PASS**

Note 1: This requirement was evaluated and/or an engineering test was performed. No differences between the previous certification and the device with the shield removed.

If the product as tested or otherwise complies with the specification, the EUT is deemed to comply with the requirement and is deemed a ‘PASS’ grade. If not ‘FAIL’ grade will be issued. Note that ‘PASS’ / ‘FAIL’ grade is independent of any measurement uncertainties. A ‘PASS’ / ‘FAIL’ grade within measurement uncertainty is marked with a ‘*’.

Justifications, Descriptions, or Deviations

The following justifications for tests not performed or deviations from the above listed specifications apply:

The purpose of the test report is to document the changes between a device previously certified and the increase in spurious emissions when a shield is removed.

For the Restricted Bands of operation, the EUT is designed to only operate between 2.4 GHz and 2.4835 GHz

Applicable Standards, Specifications and Methods

ANSI C63.4:2014	- Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10:2013	- American national standard for testing unlicensed wireless devices
CFR 47 FCC 15	- Code of Federal Regulations – Radio Frequency Devices
CISPR 22:2008	- Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
ICES-003:2012	- Digital Apparatus - Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard
ISO 17025:2005	- General Requirements for the competence of testing and calibration laboratories
RSS-247:2015	- Issue 1: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Sample calculation(s)

Margin = limit – (received signal + antenna factor + cable loss – pre-amp gain)
Margin = 50.5dBuV/m – (50dBuV + 10dB + 2.5dB – 20dB)
Margin = 8.5 dB

Document Revision Status

Revision 1 - Nov 9, 2015

Revision 2 - Dec 5, 2015
Revisions as per TCB request.

Revision 3 - Dec 16, 2015
Further revisions as per TCB request to spurious data.

Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AE – Auxiallary Equipment.

BW – Bandwidth. Unless otherwise stated, this is refers to the 6 dB bandwidth.

EMC – Electro-Magnetic Compatibility

EMI – Electro-Magnetic Immunity

EUT – Equipment Under Test

ITE – Information Technology Equipment with a primary function(s) of entry, storage, display, retrieval, transmission, processing, switching, or control, of data.

LISN – Line impedance stabilization network

NCR – No Calibration Required

RF – Radio Frequency

Testing Facility

Testing for EMC on the EUT was carried out at Global EMC labs in Montréal, Québec, Canada. The testing lab consists of a 3m semi-anechoic chamber calibrated to be able to allow measurements on an EUT with a maximum width or length of up to 2m and height up to 3m. The chamber is equipped with a turn table that is capable of testing devices up to 3300lb in weight. This facility is capable of testing products that are rated for 120 Vac and 240Vac single phase, or 208 Vac 3 phase input. DC capability is also available. The chamber is equipped with an antenna mast that controls polarization and height from the control room adjoining the shielded chamber. Radiated emissions measurements are performed using a Bilog, and Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN.

Calibrations and Accreditations

The measurement site used is registered with Federal Communications Commission (FCC) and Industry Canada (IC). This site is calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 “Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz”. The semi-anechoic chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. All measuring equipment is calibrated on an annual or bi-annual basis as listed for each respective test.

Testing Environmental Conditions and Dates

Following were the environmental conditions in the facility during time of testing –

Date	Test	Init.	Temperature (ºC)	Humidity (%)	Pressure (kPa)
	all	SD	18-25ºC	30-45%	100 -103kPa

Detailed Test Results Section

Spurious Radiated Emissions

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect broadcast radio services such as television, FM radio, pagers, cellular telephones, emergency services, and so on, from unwanted interference.

Limit(s) and Method

The method is as defined in ANSI C63.4 for tests below 1GHz, and ANSI C63.10 for tests above 1GHz.

The limits, as defined in 15.247(d) for unintentional radiated emissions apply for those emissions that fall in the restricted bands, as defined in Section 15.205(a). These emissions must comply with the radiated emission limits specified in Section 15.209(a).

All unintentional emissions (including band edge) must also meet the requirements of -20 dBc or greater

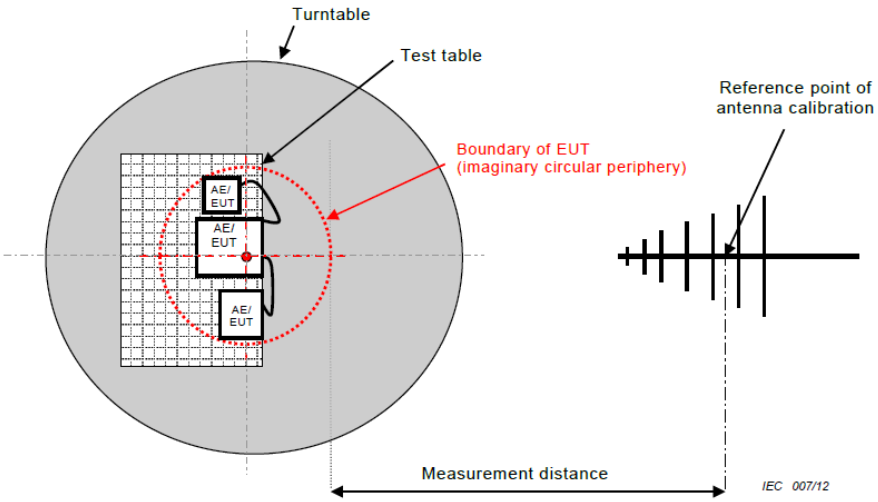
30 MHZ – 88 MHz, 100 uV/m (40.0 dBuV/m[1]) at 3 m
88 MHz – 216 MHz, 150 uV/m (43.5 dBuV/m[1]) at 3 m
216 MHz – 960 MHz, 200 uV/m (46.4 dBuV/m[1]) at 3 m
Above 960 MHz, 500 uV/m (54.0 dBuV/m[1]) at 3 m
Above 1000 MHz, 500 uV/m (54.0 dBuV/m[2]) at 3m

[1]Limit is with 120 kHz measurement bandwidth and a using a Quasi Peak detector.
[2]Limit is with 1 MHz measurement bandwidth and using an Average detector, scanned in accordance with 15.33 to above the 10th harmonic (25 GHz).

Results

The EUT passed the limits. Low, middle and high band was measured. The worst case for each mode is presented as a graph for the spectrum. The -20 dBc requirement is shown for the lower band edge at 2.4 GHz in the low band. The -20 dBc requirement is also shown for the higher band edge at 2.4835 GHz in the high band.

Typical Radiated Emissions Setup



Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is +/-4.4 dB with a 'k=2' coverage factor and a 95% confidence level.

Preliminary Graphs

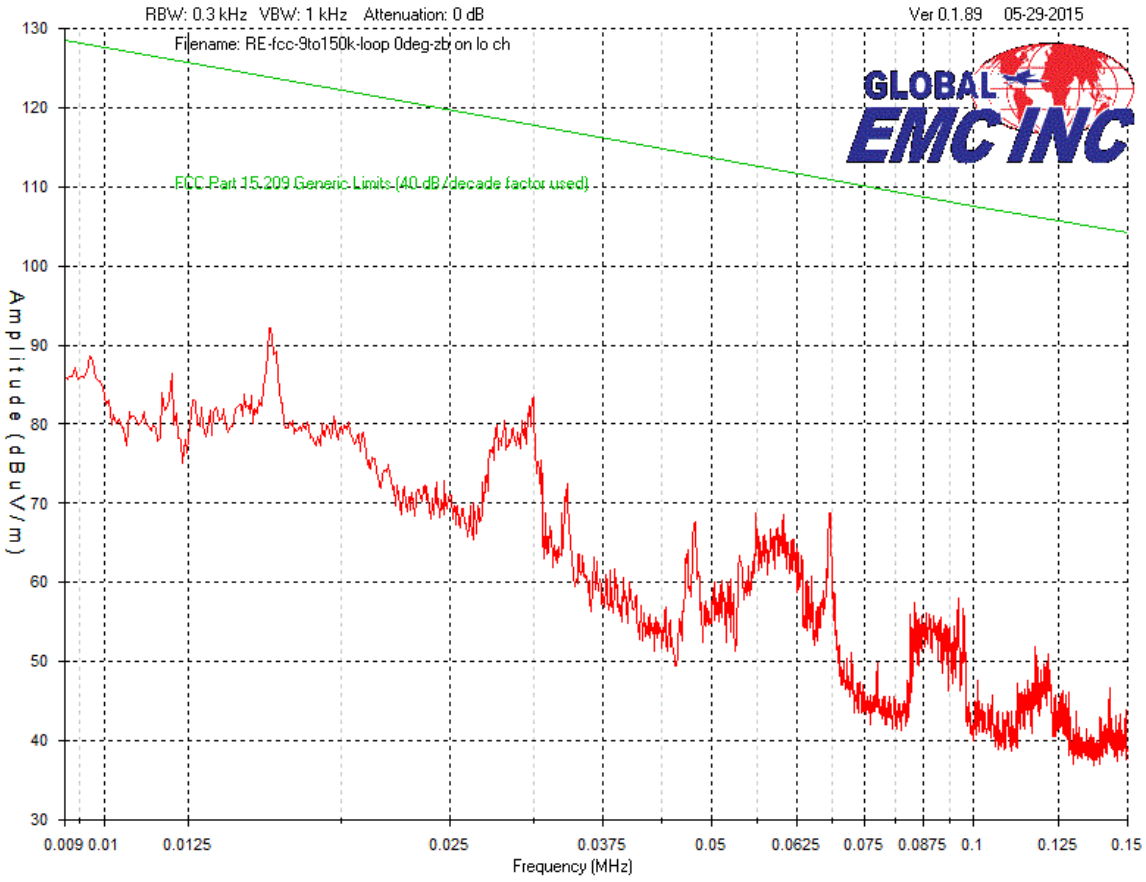
Note the graphs shown below are for graphical illustration only. For final measurements with the appropriate detector, please refer to the final measurement table where applicable. The graph shown below is a maximized peak measurement graph, measured with a resolution bandwidth greater than the final required detector and over a full 0-360 rotation. This peaking process is done as a worst case measurement. This process enables the detection of frequencies of concern for final measurement, and provides considerable time savings. Final measurements are performed over a full 0-360 degrees rotation and 1 – 4 meter height of measurement antenna.

The worst case or representative mode graphs are shown for 30 MHz to 2 GHz, however the device was scanned at low, middle, and high channel.

In accordance with FCC Part 15, Subpart A, Section 15.33, the device was scanned to a minimum of a 25 GHz, no emission were found above 18Ghz, while the noise floor was 6dB lower than the limit .

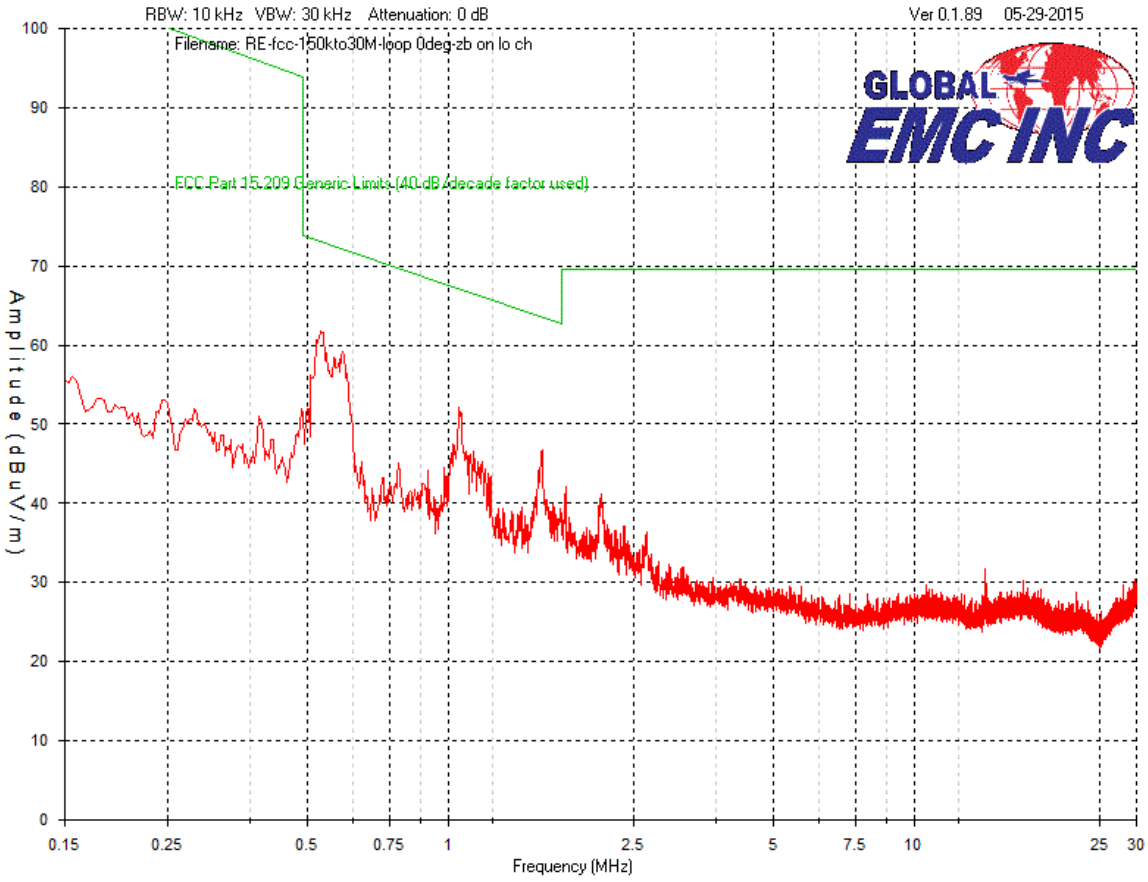
The graphs shown below shows the peak power output of the device during the radiated measurement at 300 kHz bandwidth during transmit operation of the EUT from 30 MHz – 1 GHz, since the RBW used is greater than the value required by the standard (100 kHz) this is a worst case reading and still complied with the limits. None of the spurious exceeded the 80.5 dbuV/m limit (-20dbc from max reading of 100.5 dbuV/m).

Loop @ 0 degree – Peak Emissions Graph – 9kHz to 150kHz



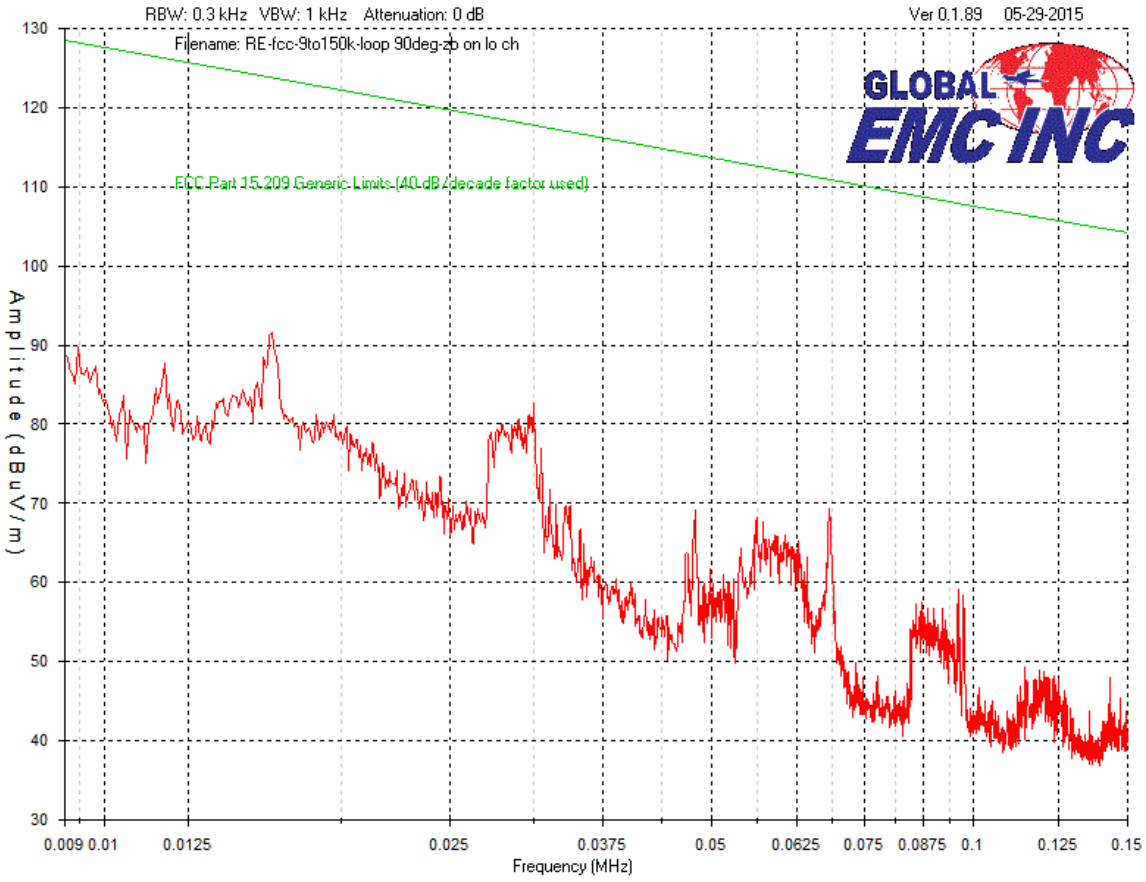
Worst case mode

Loop @ 0 degree – Peak Emissions Graph – 150kHz to 30MHz



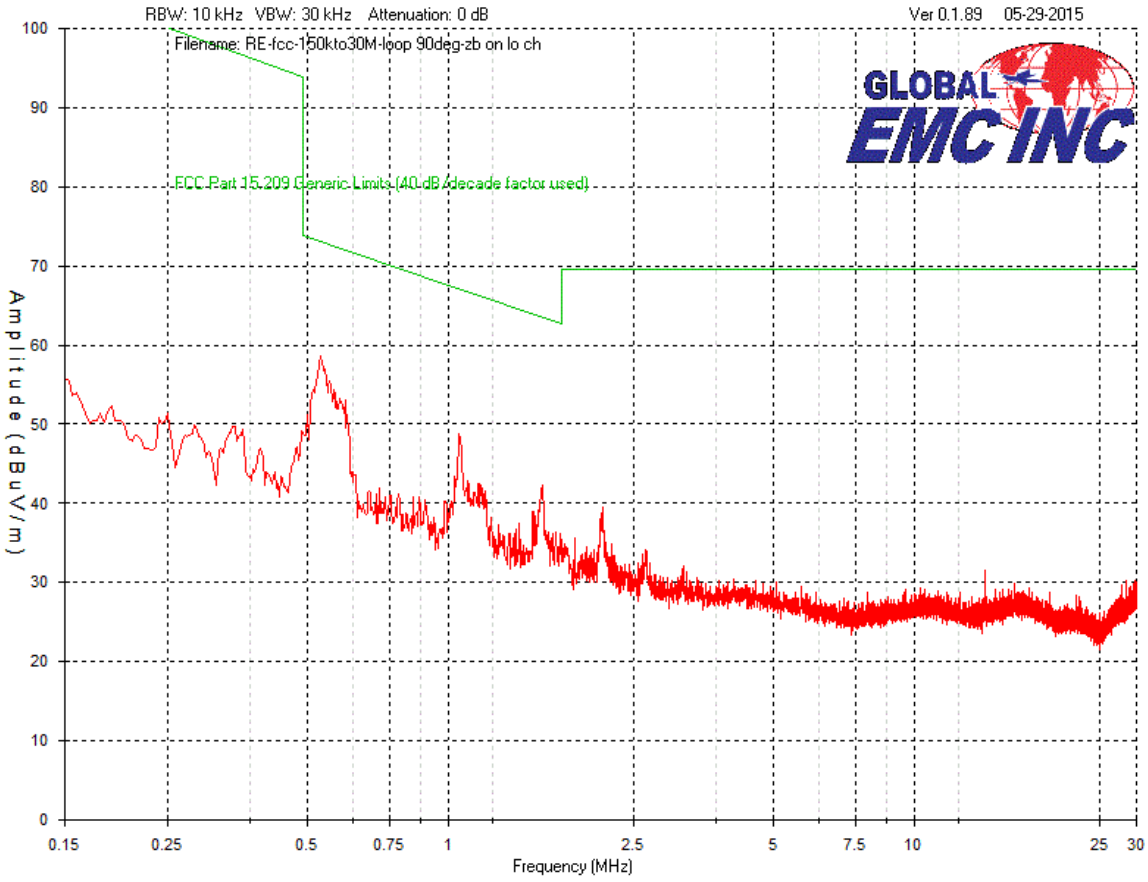
Worst case mode

Loop @ 90 degree – Peak Emissions Graph – 9kHz to 150kHz



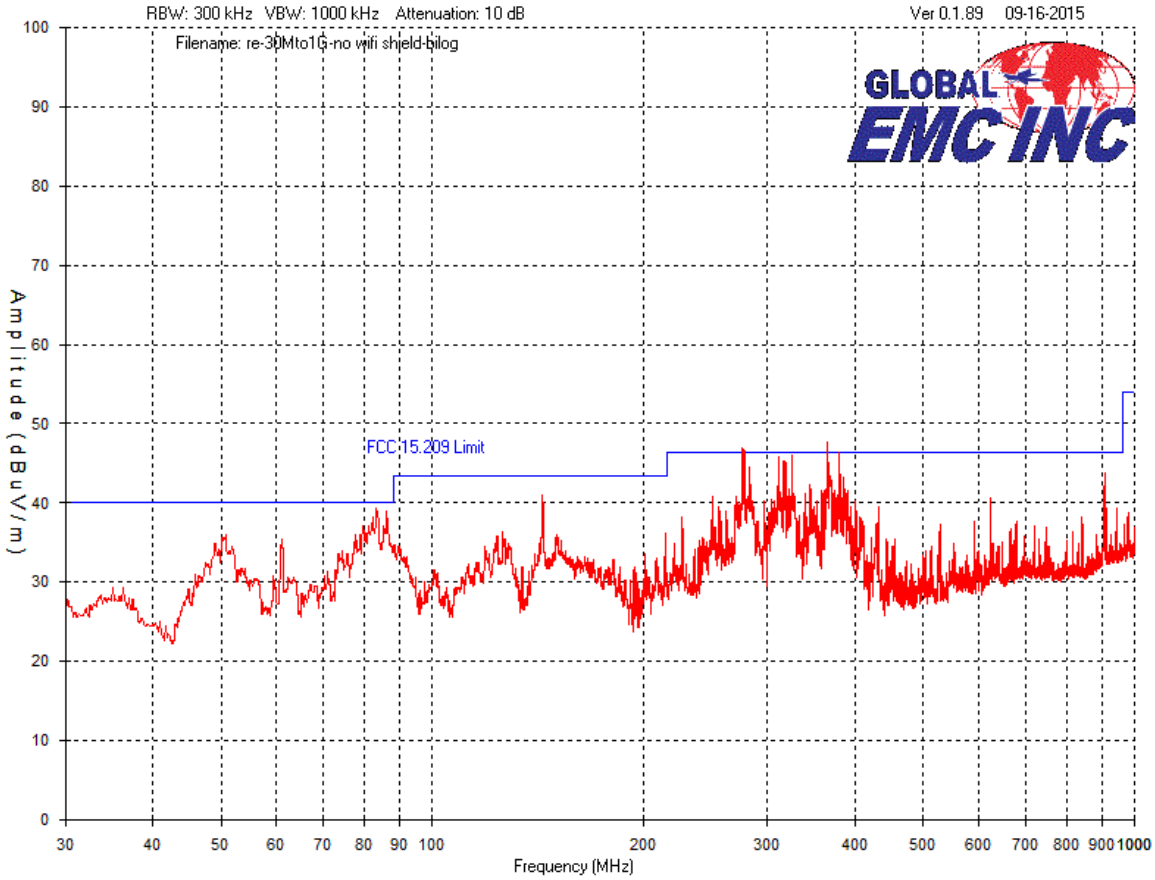
Worst Case mode

Loop @ 90 degree – Peak Emissions Graph – 150kHz to 30MHz



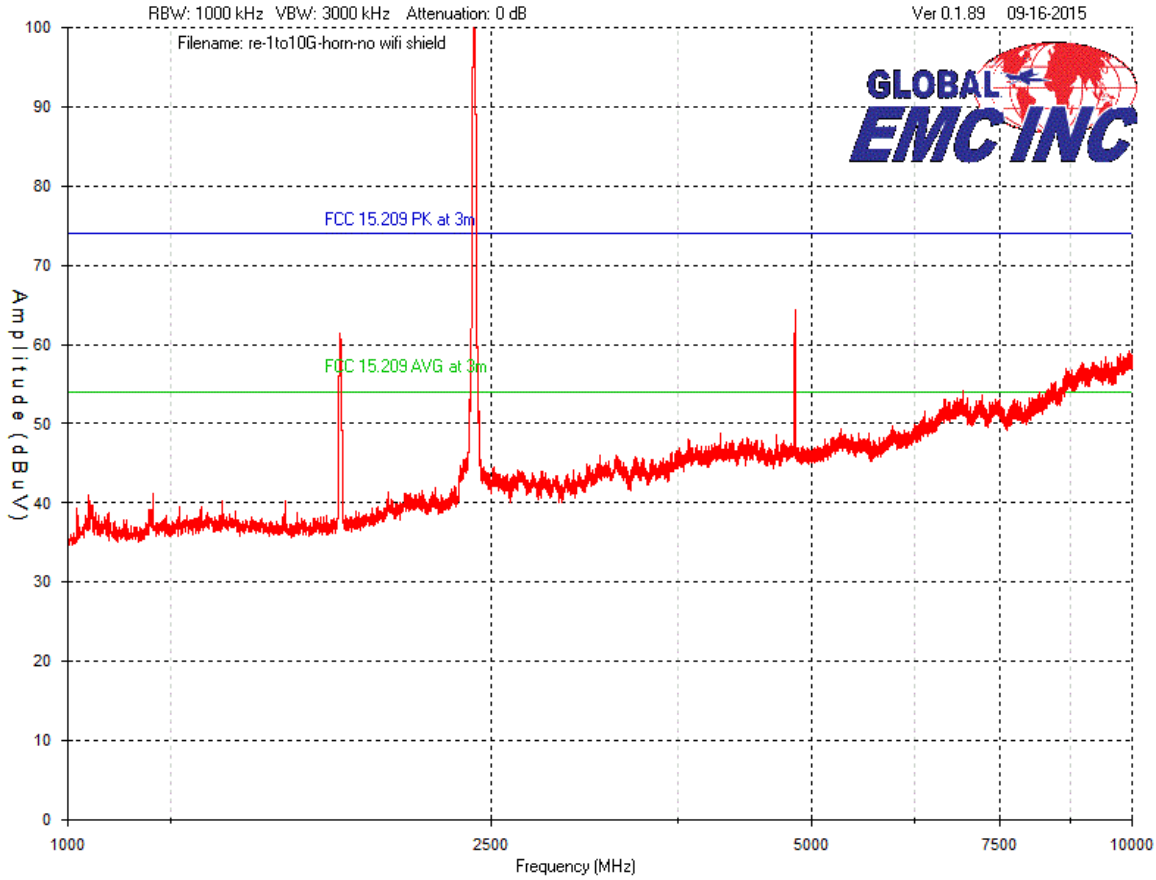
Worst Case mode

Vertical – Peak Emissions Graph – 30MHz to 1GHz

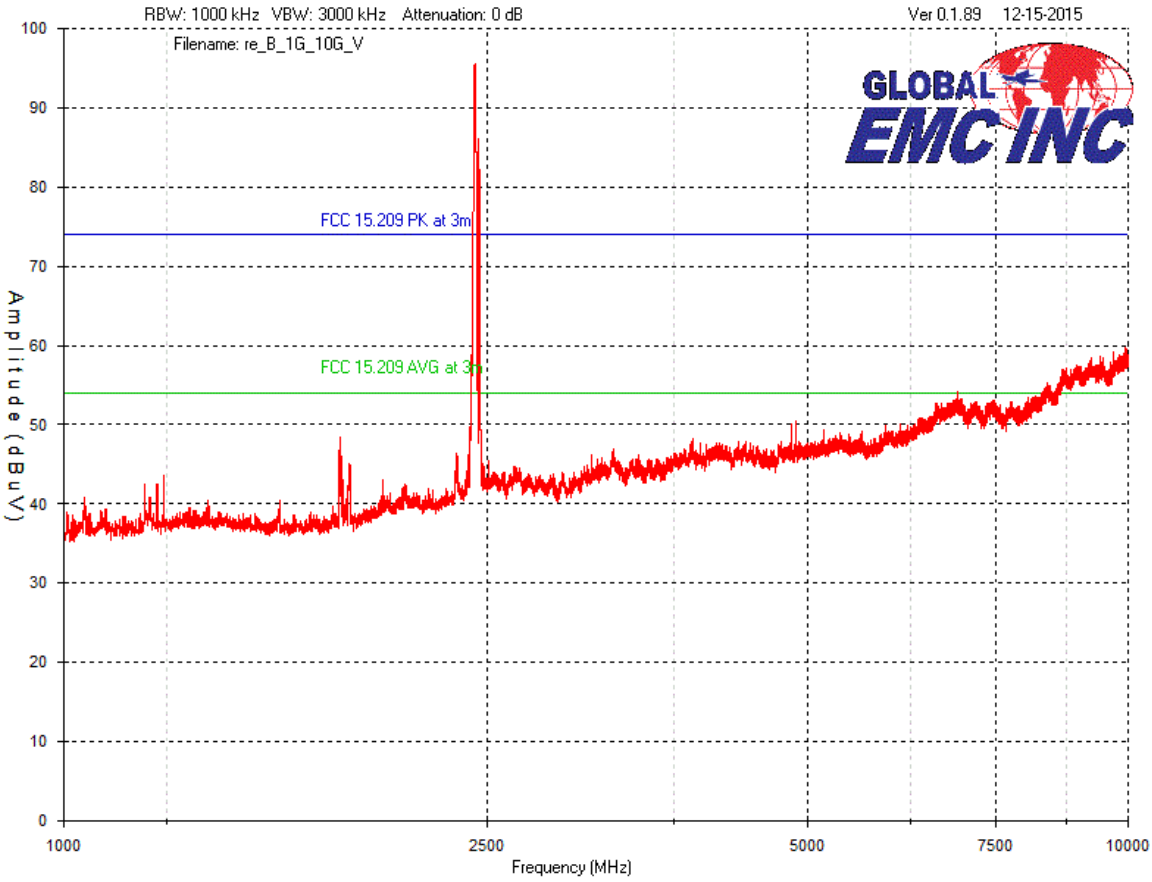


Note: No differences were observed between WiFi and Zigbee mode, worst case shown above

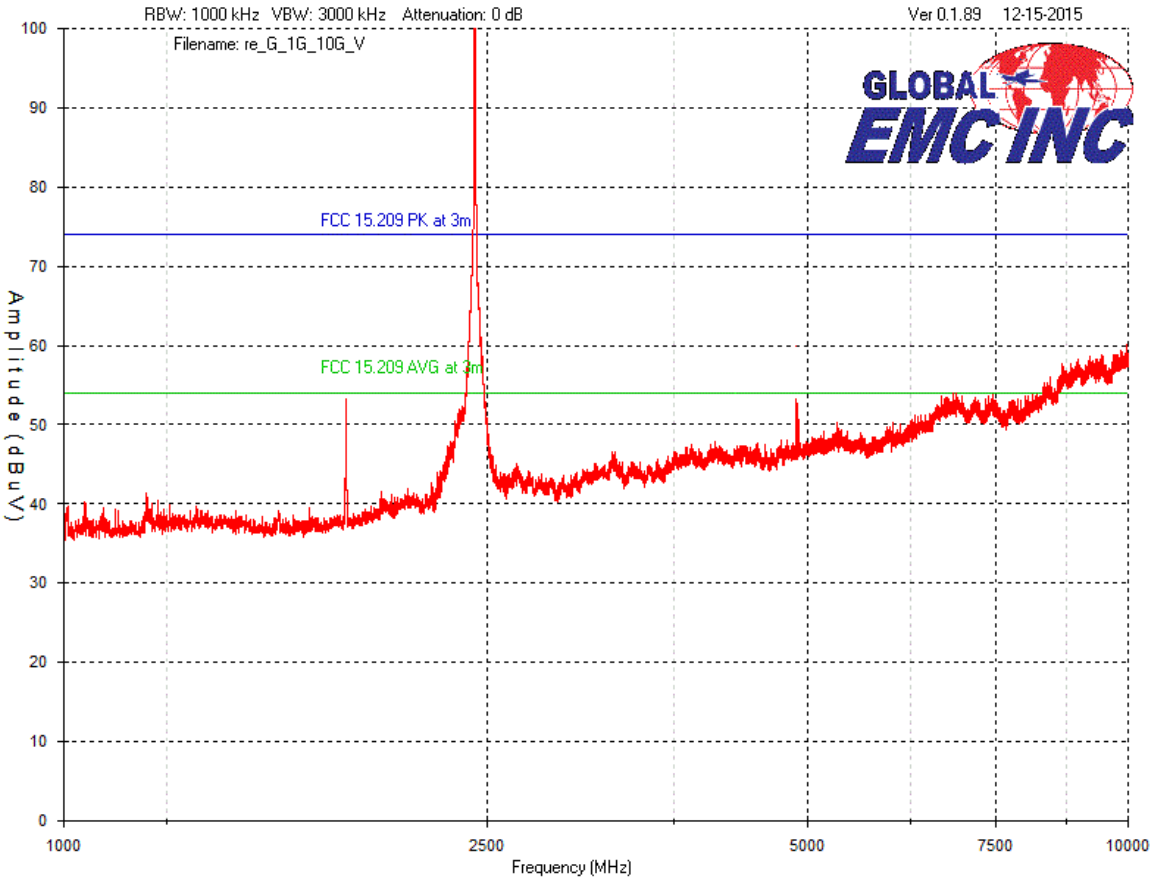
Vertical – Peak Emissions Graph –1 GHz to 10 GHz



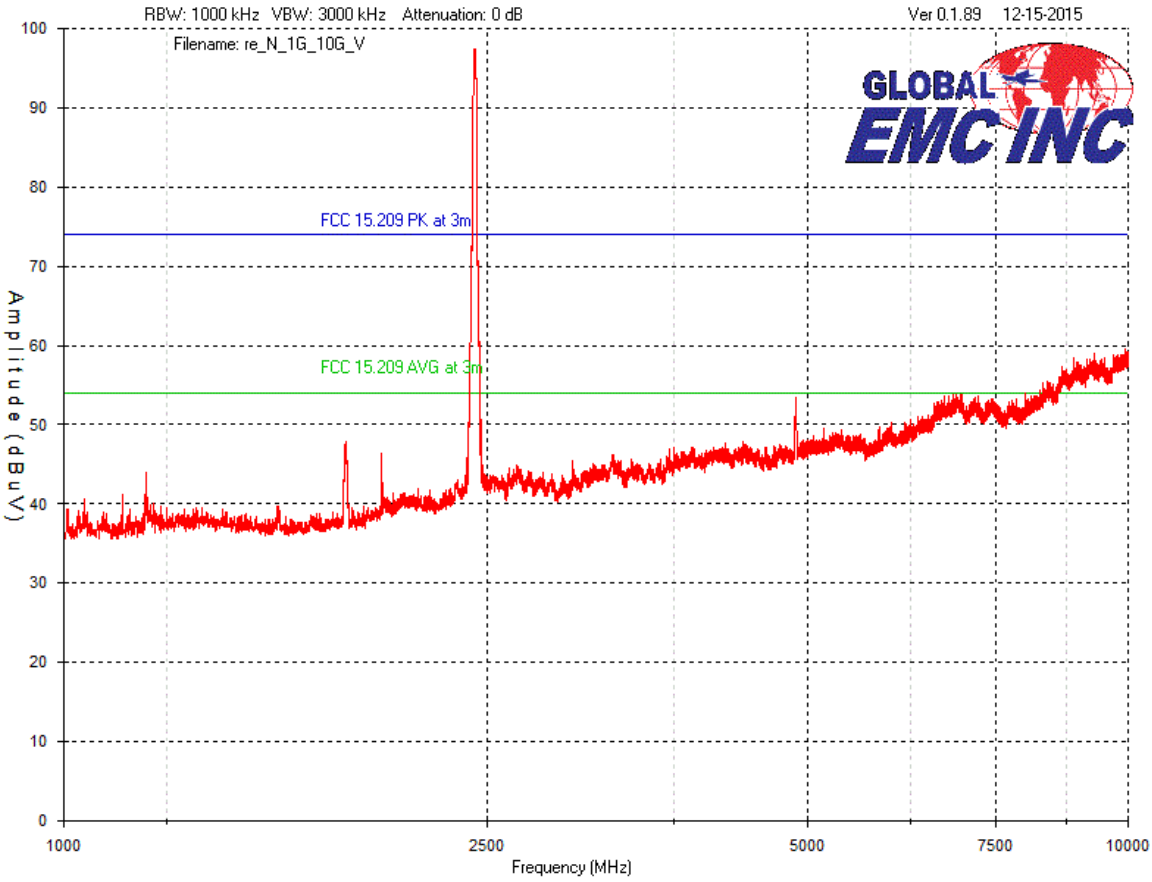
Zigbee mode shown above



Wifi – B mode shown above

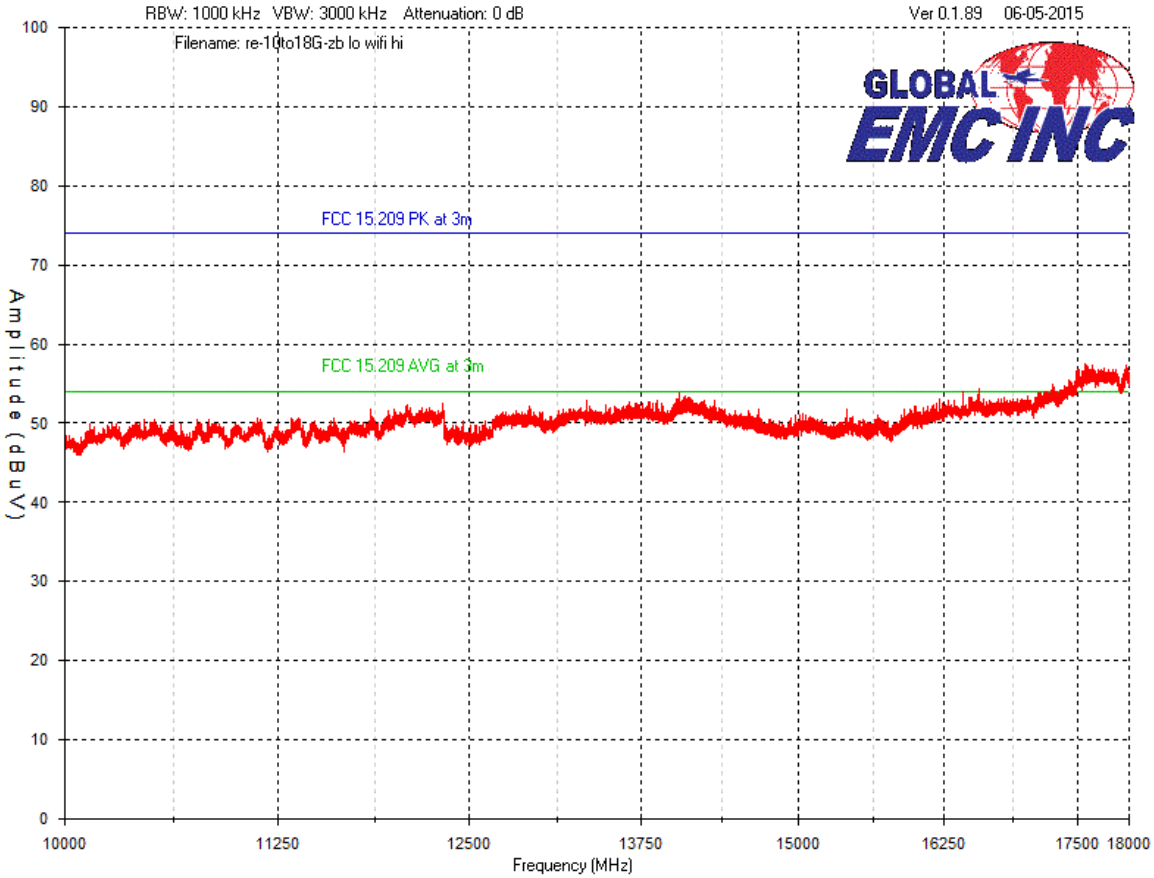


Wifi – G mode shown above



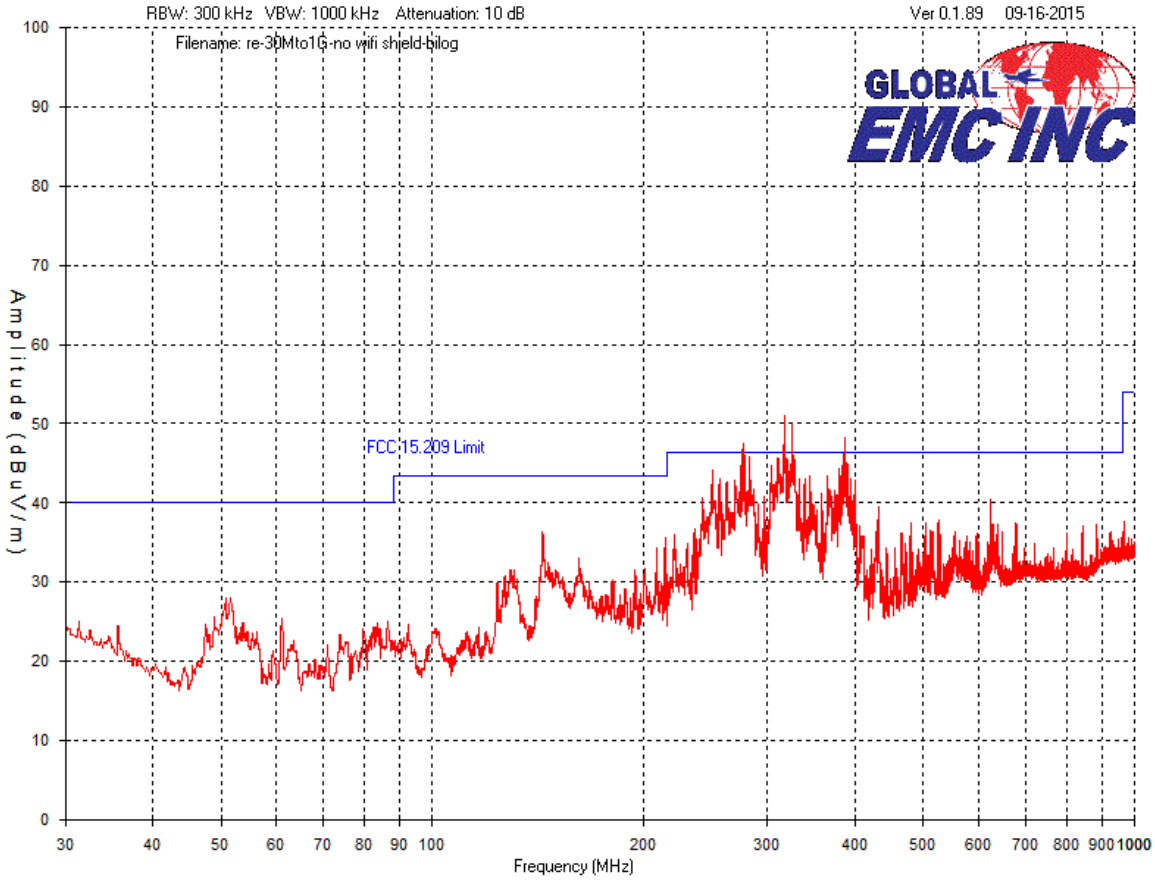
Wifi – N mode shown above

Vertical – Peak Emissions Graph –10 GHz to 18 GHz



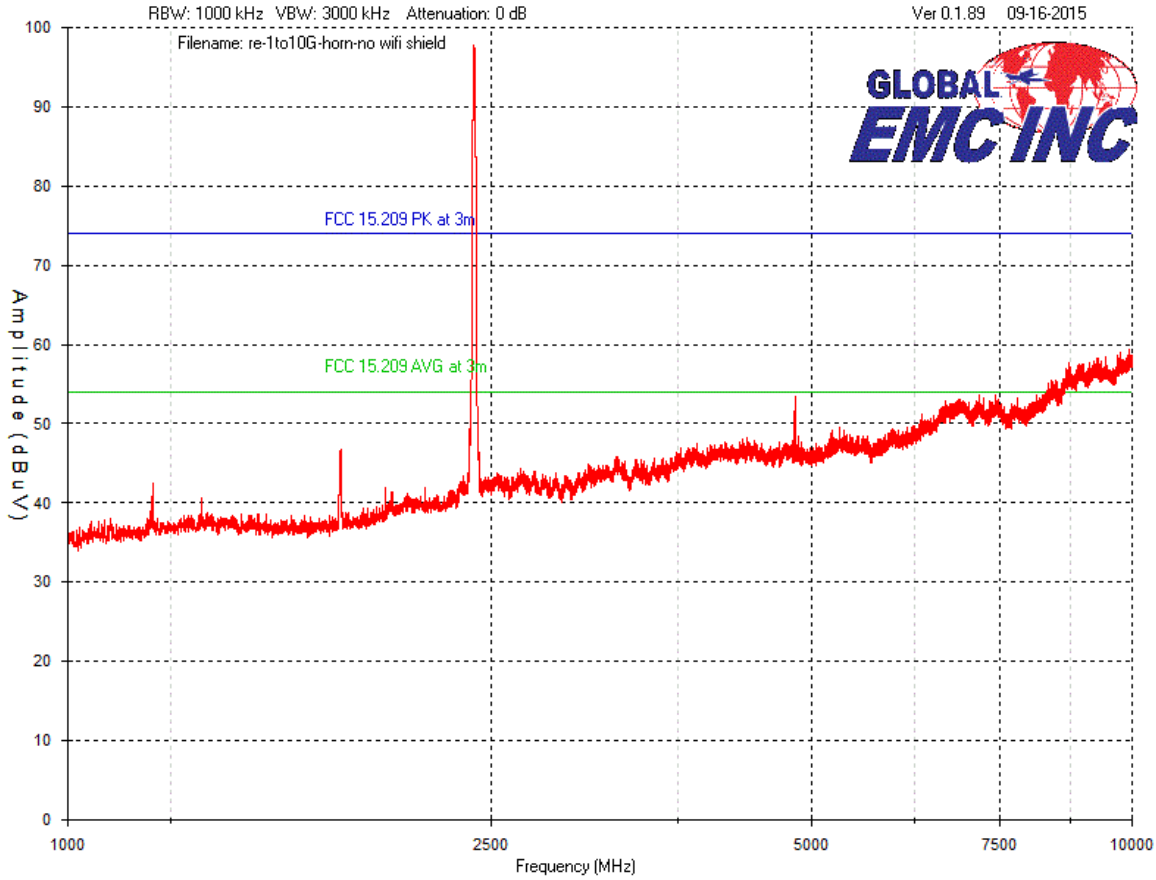
Worst case / representative measurements. No emissions detected in any mode.

Horizontal – Peak Emissions Graph – 30 MHz to 1 GHz

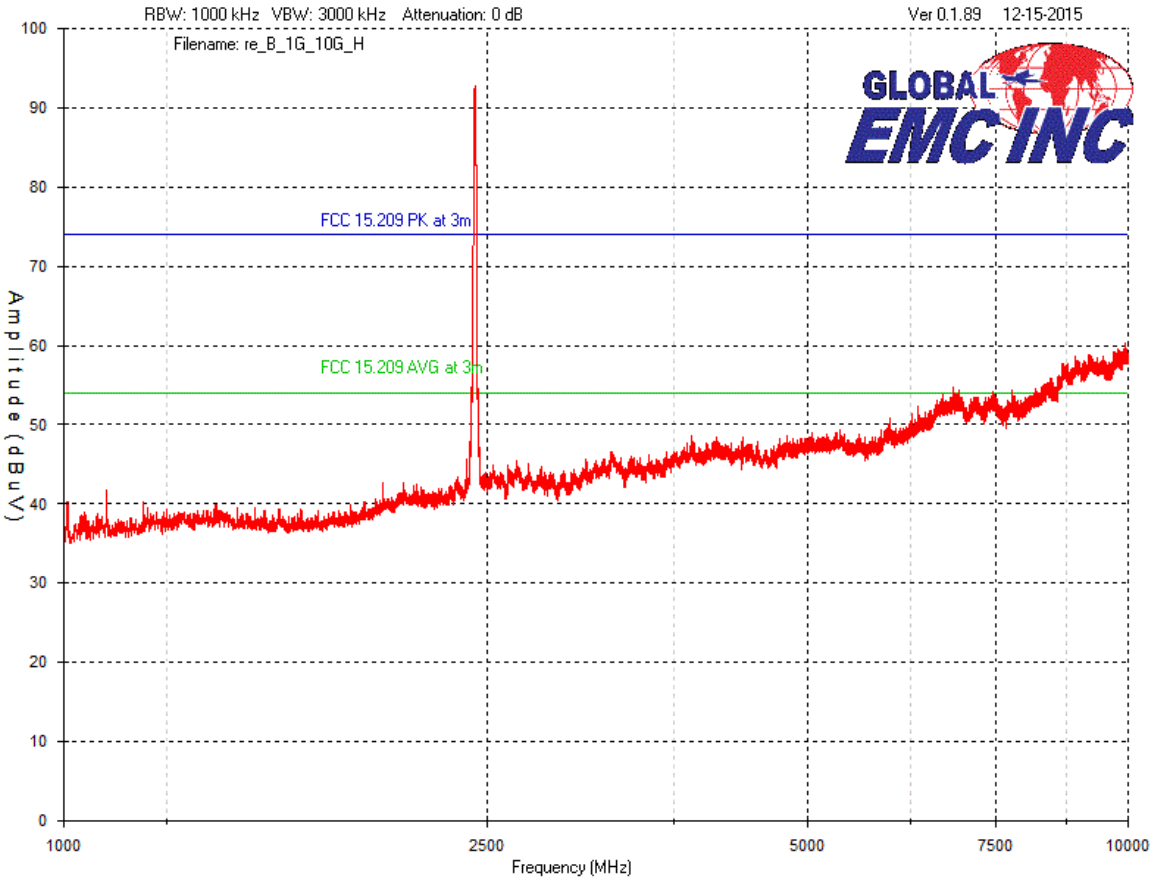


Note: No differences were observed between WiFi and Zigbee mode, worst case shown above

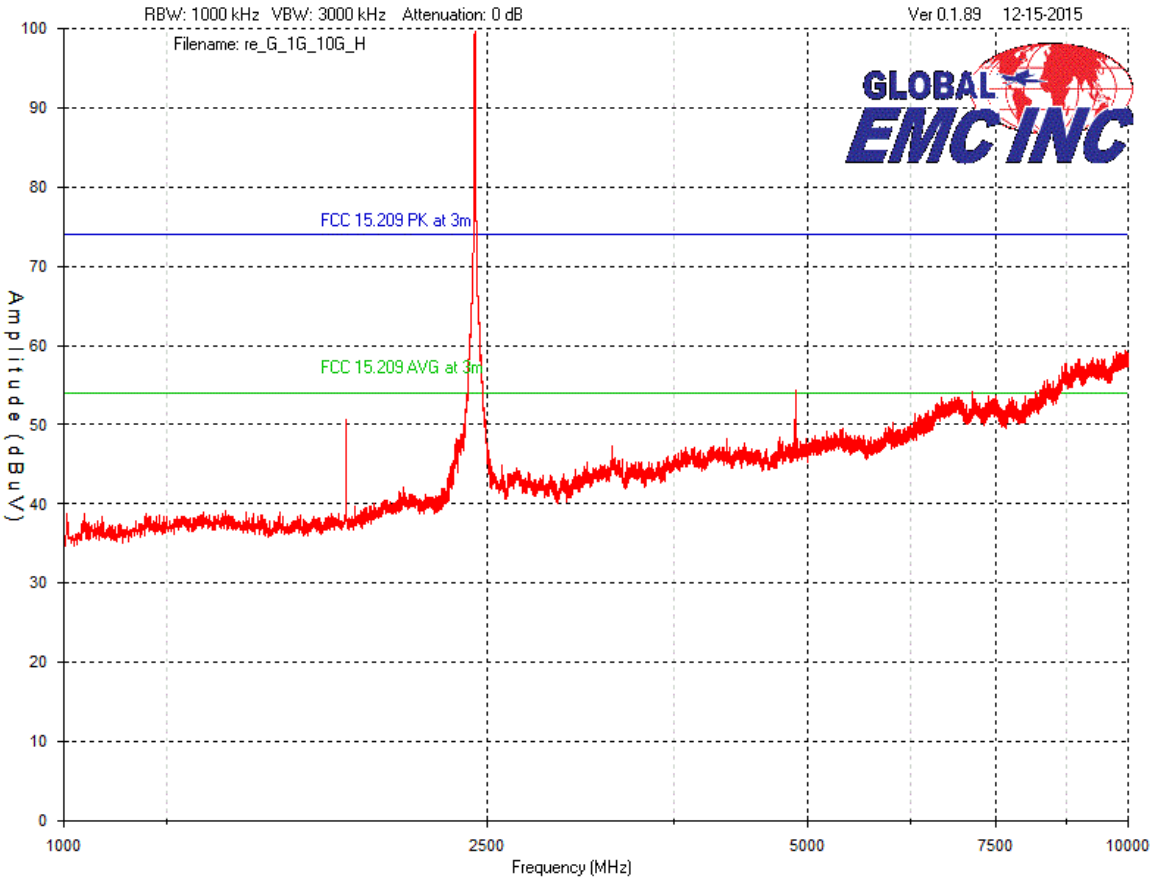
Horizontal – Peak Emissions Graph – 1 GHz to 10 GHz



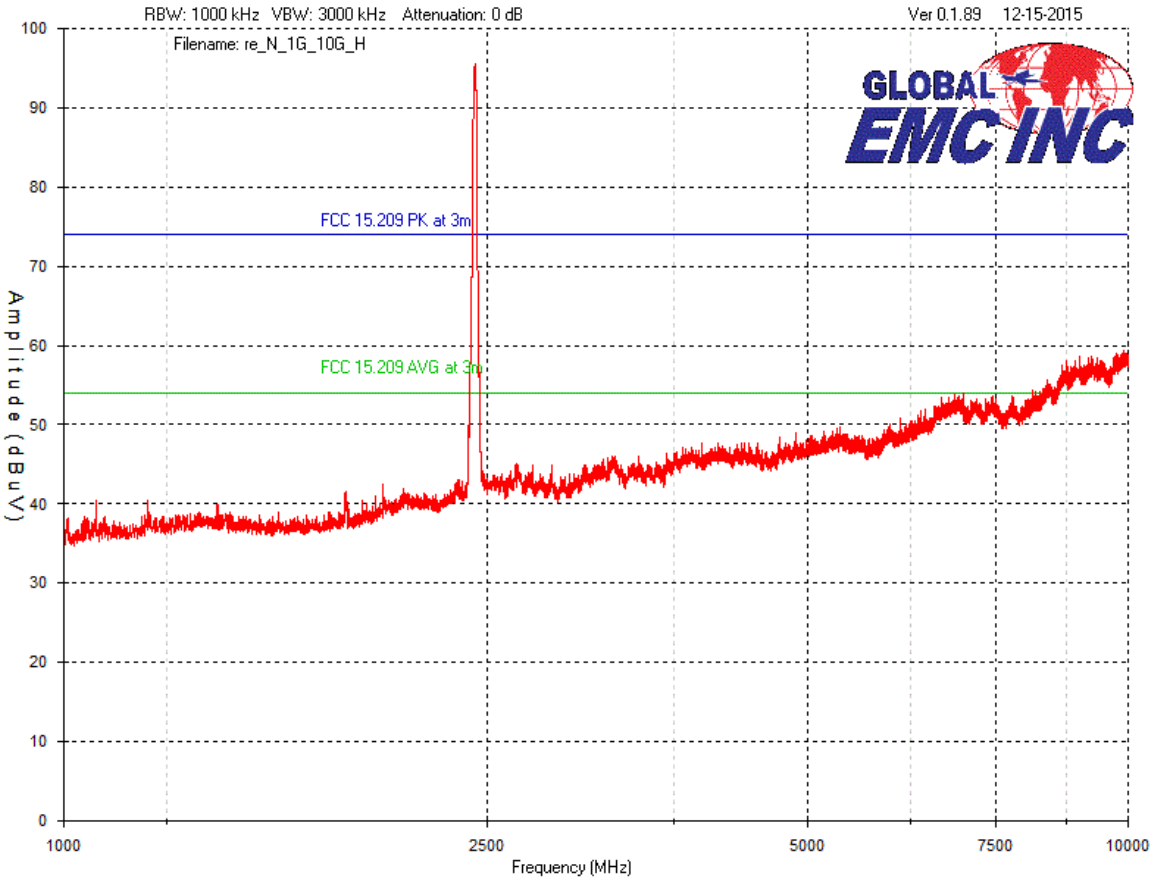
Zigbee mode shown above



Wifi – B mode shown above

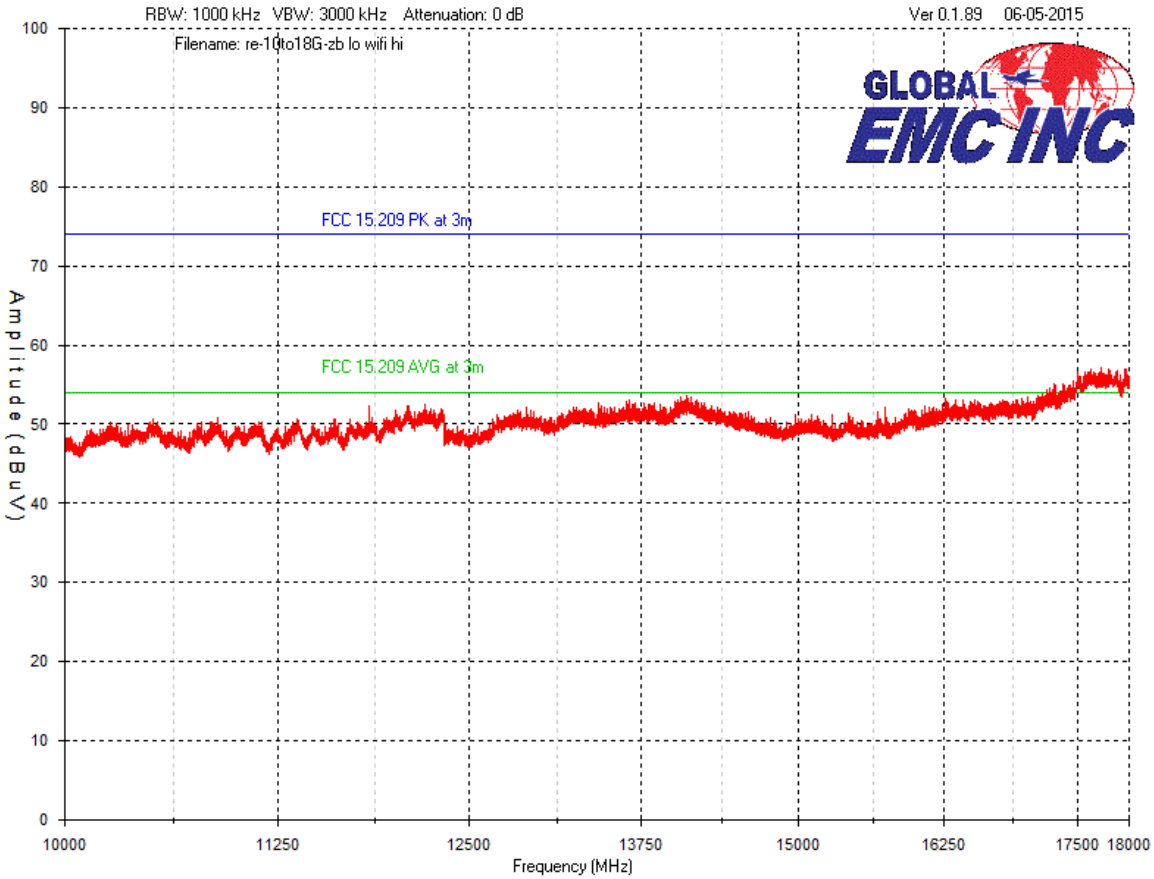


Wifi – G mode shown above



Wifi – N mode shown above

Horizontal – Peak Emissions Graph – 10 GHz to 18 GHz



Note: The EUT was configured as continuously transmitting of Zigbee and WIFI signals at low/middle/high channel. Different combinations of channels setting were investigated, only worst cases were presented.

Final Measurements

Note: In accordance with 15.247(d), only radiated emissions exceeding the 15.209 limit that occur within the bands listed in 15.205, need to be verified with a quasi-peak detector or an average detector.

For information purposes, the fundamental was measured to be 100.5 dBuV/m at 3 meters, and none of the unintentional radiated emissions that fall outside of the restricted bands exceeded the -20dBc (or 80.5 dBuV/m) requirement.

The following measurements were made at the harmonics shown in the above graphs.

Radiated Emissions Measurements
Emissions Reading Table - Vertical- Below 1 GHz

Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Att. (dB)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/ Fail
365.329	QP	54.5	15.7	3	1.8	-33.3	41.7	46.4	4.7	Pass
275.701	QP	56.4	13.1	3	1.6	-33.3	40.8	46.4	5.6	Pass
277.447	QP	56.3	13.2	3	1.7	-33.3	40.9	46.4	5.5	Pass
278.223	QP	56.1	13.2	3	1.7	-33.3	40.7	46.4	5.7	Pass
379.103	QP	52.9	15.9	3	1.8	-33.3	40.3	46.4	6.1	Pass
325.171	QP	54	14.5	3	1.7	-33.3	39.9	46.4	6.5	Pass

Emissions Reading Table - Horizontal- Below 1 GHz

Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Att. (dB)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/ Fail
317.217	QP	59.3	14.3	3	1.7	-33.3	45	46.4	1.4	Pass
324.977	QP	58	14.5	3	1.7	-33.3	43.9	46.4	2.5	Pass
386.475	QP	54.3	16.3	3	1.9	-33.3	42.2	46.4	4.2	Pass
277.835	QP	57.1	13.2	3	1.7	-33.3	41.7	46.4	4.7	Pass
276.089	QP	58.2	13.2	3	1.6	-33.3	42.7	46.4	3.7	Pass
282.685	QP	56.1	13.3	3	1.7	-33.3	40.8	46.4	5.6	Pass

Zigbee mode

Test Frequency (MHz)	Detection mode (Q-Peak)	Antenna polarity (Horz/Vert)	Raw signal dB(µV)	Antenna factor dB	Cable loss dB	Pre-Amp Gain dB	Received signal dB(µV/m)	Emission limit dB(µV/m)	Margin dB(µV)	Result
Low Channel 11										
2405	Peak	Horz	99.5	28.9	5.1	33.1	100.4	n/a	n/a	PASS
2405	Avg	Horz	97.4	28.9	5.1	33.1	98.3	n/a	n/a	PASS
2405	Peak	Vert	96.9	28.9	5.1	33.1	97.8	n/a	n/a	PASS
2405	Avg	Vert	94.9	28.9	5.1	33.1	95.8	n/a	n/a	PASS
2390	Peak	Horz	62.8	28.9	5.1	33.1	63.7	74	10.3	PASS
2390	Avg	Horz	48.1	28.9	5.1	33.1	49	54	5	PASS
2390	Peak	Vert	62.2	28.9	5.1	33.1	63.1	74	10.9	PASS
2390	Avg	Vert	48.4	28.9	5.1	33.1	49.3	54	4.7	PASS
2400	Peak	Horz	63.7	28.9	5.1	33.1	64.6	74	9.4	PASS
2400	Avg	Horz	48.8	28.9	5.1	33.1	49.7	54	4.3	PASS
2400	Peak	Vert	62.9	28.9	5.1	33.1	63.8	74	10.2	PASS
2400	Avg	Vert	51.4	28.9	5.1	33.1	52.3	54	1.7	PASS
4810	Peak	Horz	61	33.3	5.1	32.8	66.6	74	7.4	PASS
4810	Avg	Horz	46.7	33.3	5.1	32.8	52.3	54	1.7	PASS
4810	Peak	Vert	61.2	33.3	5.1	32.8	66.8	74	7.2	PASS
4810	Avg	Vert	47.1	33.3	5.1	32.8	52.7	54	1.3	PASS
7215	Peak	Vert	47.5	37.6	5.1	33	57.2	74	16.8	PASS
7215	Avg	Vert	33.8	37.6	5.1	33	43.5	54	10.5	PASS
7215	Peak	Horz	47.5	37.3	5.1	33	56.9	74	17.1	PASS
7215	Avg	Horz	33.7	37.3	5.1	33	43.1	54	10.9	PASS
Mid channel 18										
2440	Peak	Horz	99.8	28.3	5.1	33.1	100.1	n/a	n/a	PASS
2440	Avg	Horz	98.1	28.3	5.1	33.1	98.4	n/a	n/a	PASS
2440	Peak	Vert	95.9	28.4	5.1	33.1	96.3	n/a	n/a	PASS
2440	Avg	Vert	94.1	28.4	5.1	33.1	94.5	n/a	n/a	PASS
4880	Peak	Horz	43.5	33.7	6.9	32.8	51.3	74.0	22.7	PASS
4880	Avg	Horz	33.9	33.7	6.9	32.8	41.7	54.0	12.3	PASS
4880	Peak	Vert	43.8	33.7	6.9	32.8	51.6	74.0	22.4	PASS
4880	Avg	Vert	34.1	33.7	6.9	32.8	41.9	54.0	12.1	PASS
7320	Peak	Vert	46.7	37.9	8.5	33.0	60.1	74.0	13.9	PASS
7320	Avg	Vert	33.9	37.9	8.5	33.0	47.3	54.0	6.7	PASS
7320	Peak	Horz	46.9	37.5	8.5	33.0	59.9	74.0	14.1	PASS
7320	Avg	Horz	33.5	37.5	8.5	33.0	46.5	54.0	7.5	PASS
High channel 25										
2475	Peak	Horz	98.3	28.3	5.1	33.1	98.6	n/a	n/a	PASS

2475	Avg	Horz	96.6	28.3	5.1	33.1	96.9	n/a	n/a	PASS
2475	Peak	Vert	95.1	28.4	5.1	33.1	95.5	n/a	n/a	PASS
2475	Avg	Vert	93.1	28.4	5.1	33.1	93.5	n/a	n/a	PASS
2483.5	Peak	Horz	49.4	28.3	5.1	33.1	49.7	74	24.3	PASS
2483.5	Avg	Horz	33.2	28.3	5.1	33.1	33.5	54	20.5	PASS
2483.5	Peak	Vert	53.4	28.4	5.1	33.1	53.8	74	20.2	PASS
2483.5	Avg	Vert	39.9	28.4	5.1	33.1	40.3	54	13.7	PASS
4950	Peak	Horz	42.9	33.7	6.9	32.8	50.7	74	23.3	PASS
4950	Avg	Horz	36.5	33.7	6.9	32.8	44.3	54	9.7	PASS
4950	Peak	Vert	53.1	33.7	6.9	32.8	60.9	74	13.1	PASS
4950	Avg	Vert	40.1	33.7	6.9	32.8	47.9	54	6.1	PASS
7425	Peak	Vert	46.9	37.9	8.5	33	60.3	74	13.7	PASS
7425	Avg	Vert	33.5	37.9	8.5	33	46.9	54	7.1	PASS
7425	Peak	Horz	48.4	37.5	8.5	33	61.4	74	12.6	PASS
7425	Avg	Horz	33.8	37.5	8.5	33	46.8	54	7.2	PASS

Note: No emissions above the 3rd harmonic were detected. In case the peak emissions exceeding the average limits, average detector emission measurements were made to ensure compliance.

Wifi Mode

B Mode

Test Frequency (MHz)	Detection mode (Q-Peak)	Antenna polarity (Horz/Vert)	Raw signal dB(µV)	Antenna factor dB	Cable loss dB	Pre-Amp Gain dB	Received signal dB(µV/m)	Emission limit dB(µV/m)	Margin dB(µV)	Result
Low Channel 1										
2412	Peak	Horz	101.2	30.6	2.2	36.2	97.8	n/a	n/a	PASS
2412	Avg	Horz	94.7	30.6	2.2	36.2	91.3	n/a	n/a	PASS
2412	Peak	Vert	102.3	30.6	2.2	36.2	98.9	n/a	n/a	PASS
2412	Avg	Vert	97.1	30.6	2.2	36.2	93.7	n/a	n/a	PASS
2390	Peak	Horz	48.2	30.6	2.2	36.2	44.8	74	29.2	PASS
2390	Avg	Horz	36.8	30.6	2.2	36.2	33.4	54	20.6	PASS
2390	Peak	Vert	51.3	30.6	2.2	36.2	47.9	74	26.1	PASS
2390	Avg	Vert	38	30.6	2.2	36.2	34.6	54	19.4	PASS
Mid channel 6										
2437	Peak	Horz	99.7	30.6	2.2	36.2	96.3	n/a	n/a	PASS
2437	Avg	Horz	95.8	30.6	2.2	36.2	92.4	n/a	n/a	PASS
2437	Peak	Vert	101.6	30.6	2.2	36.2	98.2	n/a	n/a	PASS
2437	Avg	Vert	99	30.6	2.2	36.2	95.6	n/a	n/a	PASS
High channel 11										
2462	Peak	Horz	97.1	30.6	2.2	36.2	93.7	n/a	n/a	PASS
2462	Avg	Horz	94.9	30.6	2.2	36.2	91.5	n/a	n/a	PASS
2462	Peak	Vert	101.6	30.6	2.2	36.2	98.2	n/a	n/a	PASS
2462	Avg	Vert	96.8	30.6	2.2	36.2	93.4	n/a	n/a	PASS
2483.5	Peak	Horz	53.4	30.6	2.2	36.2	50	74	24	PASS
2483.5	Avg	Horz	41.7	30.6	2.2	36.2	38.3	54	15.7	PASS
2483.5	Peak	Vert	51.3	30.6	2.2	36.2	47.9	74	26.1	PASS
2483.5	Avg	Vert	37.9	30.6	2.2	36.2	34.5	54	19.5	PASS

G Mode

Test Frequency (MHz)	Detection mode (Q-Peak)	Antenna polarity (Horz/Vert)	Raw signal dB(µV)	Antenna factor dB	Cable loss dB	Pre-Amp Gain dB	Received signal dB(µV/m)	Emission limit dB(µV/m)	Margin dB(µV)	Result
Low Channel 1										
2412	Peak	Horz	101.1	30.6	2.2	36.2	97.7	n/a	n/a	PASS
2412	Avg	Horz	89.7	30.6	2.2	36.2	86.3	n/a	n/a	PASS
2412	Peak	Vert	102.4	30.6	2.2	36.2	99	n/a	n/a	PASS
2412	Avg	Vert	90.5	30.6	2.2	36.2	87.1	n/a	n/a	PASS
2390	Peak	Horz	69.7	30.6	2.2	36.2	66.3	74	7.7	PASS
2390	Avg	Horz	40.8	30.6	2.2	36.2	37.4	54	16.6	PASS
2390	Peak	Vert	72.9	30.6	2.2	36.2	69.5	74	4.5	PASS
2390	Avg	Vert	43.6	30.6	2.2	36.2	40.2	54	13.8	PASS
Mid channel 6										
2437	Peak	Horz	100.8	30.6	2.2	36.2	97.4	n/a	n/a	PASS
2437	Avg	Horz	96.4	30.6	2.2	36.2	93	n/a	n/a	PASS
2437	Peak	Vert	102.4	30.6	2.2	36.2	99	n/a	n/a	PASS
2437	Avg	Vert	97.8	30.6	2.2	36.2	94.4	n/a	n/a	PASS
High channel 11										
2462	Peak	Horz	95.1	30.6	2.2	36.2	91.7	n/a	n/a	PASS
2462	Avg	Horz	96.7	30.6	2.2	36.2	93.3	n/a	n/a	PASS
2462	Peak	Vert	101.5	30.6	2.2	36.2	98.1	n/a	n/a	PASS
2462	Avg	Vert	98.5	30.6	2.2	36.2	95.1	n/a	n/a	PASS
2483.5	Peak	Horz	54	30.6	2.2	36.2	50.6	74	23.4	PASS
2483.5	Avg	Horz	42.1	30.6	2.2	36.2	38.7	54	15.3	PASS
2483.5	Peak	Vert	49.9	30.6	2.2	36.2	46.5	74	27.5	PASS
2483.5	Avg	Vert	38.2	30.6	2.2	36.2	34.8	54	19.2	PASS

N Mode

Test Frequency (MHz)	Detection mode (Q-Peak)	Antenna polarity (Horz/Vert)	Raw signal dB(μV)	Antenna factor dB	Cable loss dB	Pre-Amp Gain dB	Received signal dB(μV/m)	Emission limit dB(μV/m)	Margin dB(μV)	Result
Low Channel 1										
2412	Peak	Horz	102.4	30.6	2.2	36.2	99	n/a	n/a	PASS
2412	Avg	Horz	91.6	30.6	2.2	36.2	88.2	n/a	n/a	PASS
2412	Peak	Vert	100.5	30.6	2.2	36.2	97.1	n/a	n/a	PASS
2412	Avg	Vert	89.3	30.6	2.2	36.2	85.9	n/a	n/a	PASS
2390	Peak	Horz	71.5	30.6	2.2	36.2	68.1	74	5.9	PASS
2390	Avg	Horz	41.3	30.6	2.2	36.2	37.9	54	16.1	PASS
2390	Peak	Vert	74.6	30.6	2.2	36.2	71.2	74	2.8	PASS
2390	Avg	Vert	42.7	30.6	2.2	36.2	39.3	54	14.7	PASS
High channel 11										
2462	Peak	Horz	99.4	30.6	2.2	36.2	96	n/a	n/a	PASS
2462	Avg	Horz	88.2	30.6	2.2	36.2	84.8	n/a	n/a	PASS
2462	Peak	Vert	102.1	30.6	2.2	36.2	98.7	n/a	n/a	PASS
2462	Avg	Vert	89.1	30.6	2.2	36.2	85.7	n/a	n/a	PASS
2483.5	Peak	Horz	66.6	30.6	2.2	36.2	63.2	74	10.8	PASS
2483.5	Avg	Horz	39.9	30.6	2.2	36.2	36.5	54	17.5	PASS
2483.5	Peak	Vert	65.9	30.6	2.2	36.2	62.5	74	11.5	PASS
2483.5	Avg	Vert	40.2	30.6	2.2	36.2	36.8	54	17.2	PASS

Note: During the tests, EUT was operating in a continuous transmit in which it is transmitting at a 100% duty cycle.

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date[1]	Next Calibration Date[1]	Asset #
Spectrum Analyzer Display	8566B	HP	1-28-15	1-28-17	4168
Spectrum Analyzer	8566B	HP	1-28-15	1-28-17	4169
Quasi Peak Adapter	85650A	HP	1-28-15	1-28-17	4170
BiLog Antenna	3142-C	ETS	9-8-14	9-8-16	8
Horn Antenna	ATH1G18G	AR	4-23-15	4-23-17	4003
Biconical Antenna	EM-6913	Electro-Metrics	4/28/15	4/28/17	4060
Log Periodic Antenna	LPA-25	Electro-Metrics	4/14/15	4/14/17	4087
Attenuator 3 dB	FP-50-3	Trilithic	1-28-15	1-28-17	4028
1-26.5GHz preamp	8449B	Agilent	9-9-14	9-9-16	6351
RF Cable 10m	LMR-400-10M-50OHM-MN-MN	LexTec	1-28-15	1-28-17	4025
RF Cable 7m	LMR-400-7M-50OHM-MN-MN	LexTec	1-28-15	1-28-17	4026
Emission software	0.1.87	Global EMC	1-28-15	1-28-17	58

1: For cables and attenuators, verification dates apply.

Appendix A – EUT Summary

For further details for filing purposes, refer to filing package.

General EUT Description

Client Details	
Organization / Address	Viconics Technologies Inc 9245 Langelier Blvd.
Contact	Emmanuel Stathopoulos
Phone	514-321-5660
Email	emmanuel.stathopoulos@schneider-electric.com
EUT (Equipment Under Test) Details	
EUT Name (for report title)	Wiser Air
EUT Model / SN (if known)	WISERAIR10WHTUS
EUT revision	001-0187-B1Click here...
Software version	0.9.0
Equipment category	Thermostat
EUT is powered using	Click here...
Input voltage range(s) (V)	24Vac
Frequency range(s) (Hz)	50/60Hz
Transmits RF energy? (describe)	WiFi & ZigBeeClick here...
Basic EUT functionality description	32
Frequency of all clocks present in EUT	32.7kHz, 24MHz, 32MHz crystals 600MHz Microprocessor 800MHz memory 2.4GHz Radios

Note: This represents the secondary shield being removed from the Wi-Fi module, which is previously approved under a limited modular approval.

Note the EUT is considered to have been received the date of the commencement of the first test, unless otherwise stated. For a close-up picture of the EUT, see 'Appendix B – EUT & Test Setup Photographs'

EUT Functional Description

EUT Configuration

Please see Appendix B for a picture of the unit running in normal conditions and labels.

Operational Setup

These devices are required to be attached to the EUT for its normal operation.

- None. The EUT was configured such that it provided it's own generation of data during testing. .

Modifications for Compliance

The following modifications were made during testing for the sample to achieve compliance with the testing requirements:

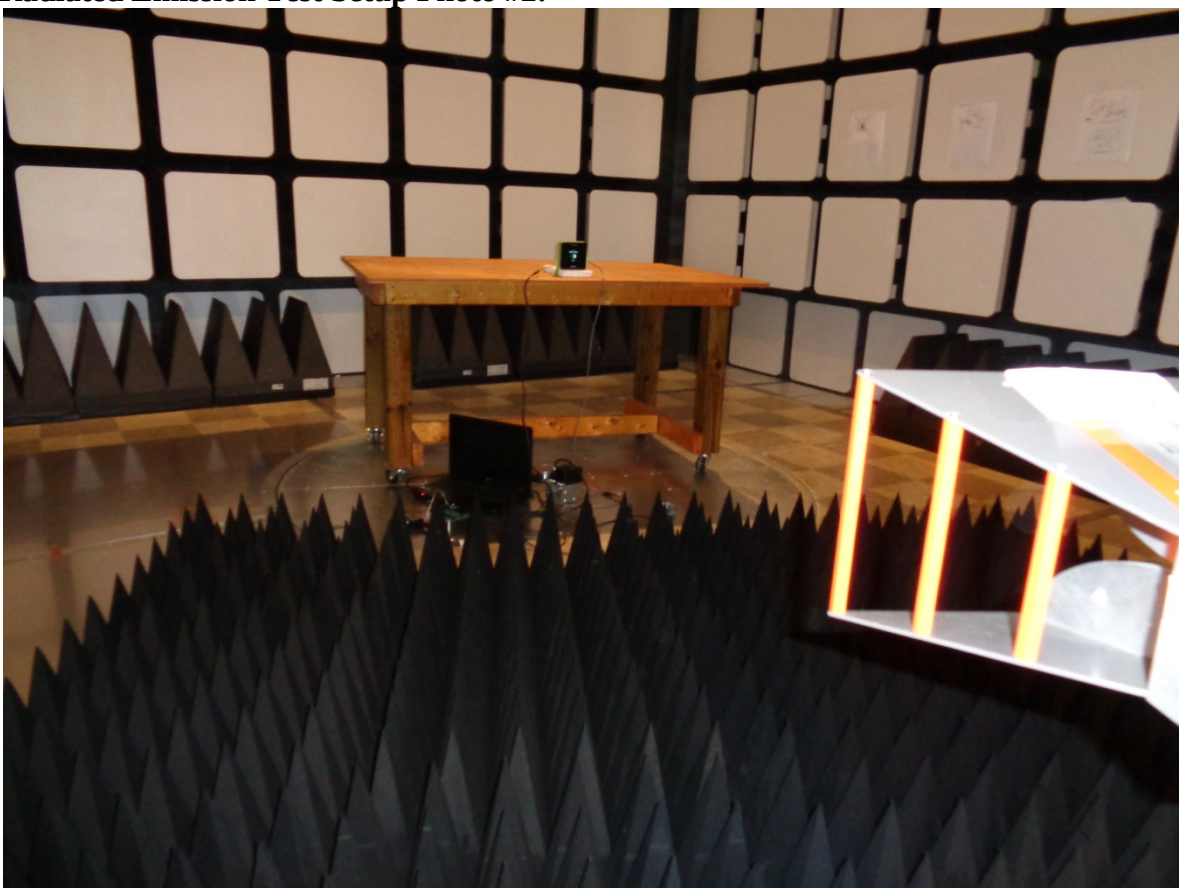
None.

Appendix B – EUT and Test Setup Photographs

Note: These photos are for information purposes only. Also refer to PDF files that are separate from this test report.

Radiated Emission Test Setup Photo #1:

Radiated Emission Test Setup Photo #2:



Note: This was additionally scanned at 1.5 meters on top of a polystyrene platform.