FCC 47 CFR PART 15 SUBPART E

CERTIFICATION TEST REPORT

FOR

802.11 b/g/n 3x3 CLIENT DEVICE

MODEL NUMBER: S100

FCC ID: SBVRM010
IC ID: 5373A-RM010

REPORT NUMBER: 14U19239-E2 REVISION B

ISSUE DATE: Aug 28, 2015

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
-	6/21/15	Initial issue	P. Zhang
A	8/27/15	Updated Section 5.3	P. Zhang
B	8/28/15	Updated Section 5.3	P. Zhang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Sonos, Inc.

EUT DESCRIPTION: 802.11 b/g/n 3x3 CLIENT DEVICE

MODEL: S100

SERIAL NUMBER: 5C-AA-FD-08-03-E6-1

DATE TESTED: June 1 – June 18, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Pass
INDUSTRY CANADA RSS-247 Issue 1	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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TEST ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2009 for FCC and ANSI C63.10-2013 for IC, RSS-GEN Issue 4, RSS-247 Issue 1.
Testing for radiated emissions above 1GHz was performed with the EUT elevated at 1.5m instead of 0.8m. 1.5m is the required height in ANSI C63.10:2013 as referenced by RSS GEN issue 4. This test height has been permitted by FCC as discussed in FCC/TCB conference call in December 2014.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☒ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☒ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☐ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11 b/g/n 3x3 CLIENT DEVICE

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted output power as follows:

Frequency Range (MHz)	Mode	Total Output Power (dBm)	Total Output Power (mW)
5180-5240	802.11n HT20	17.84	60.81
5260-5320	802.11n HT20	20.76	119.12
5500-5700	802.11n HT20	19.49	88.92
5745-5825	802.11n HT20	19.32	85.51

The transmitter has average conducted output power as follows:

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Avg Pwr (dBm) Antenna 0A	Avg Pwr (dBm) Antenna 1A	Avg Pwr (dBm) Antenna 2A
UNII-5.2	802.11n HT20	MCS9	36	5180	9.5	9.5	10.5
			40	5200	10.9	11.2	12.7
			48	5240	11.2	12.3	12.9
UNII-5.3	802.11n Ht20	MCS9	52	5260	14.9	15.4	16.3
			60	5300	14.8	14.3	15.9
			64	5320	14.4	14.0	15.4
UNII-5.5	802.11n HT20	MCS9	100	5500	13.5	13.3	14.1
			116	5580	13.6	13.3	15.4
			140	5700	13.3	13.1	14.2
UNII-5.8	802.11n HT20	MCS9	149	5745	13.2	12.9	14.4
			157	5785	13.6	13.6	14.5
			165	5825	13.2	13.9	14.2

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes Six FPCB antennas for diversity and MIMO requirements, only three of them will be operated at a time with maximum gain list below:

BAND	Frequency (MHz)	Antenna/ Chain	Antenna Gain (dBi)
5 GHz/WiFi	5150 - 5850 MHz	ANT A - 0	1.5
		ANT A - 1	1.8
		ANT A - 2	3.8
		ANT B - 0	2.5
		ANT B - 1	3.5
		ANT B - 2	4.5

EUT have three orientations: left vertical, horizontal and right vertical.

For left vertical, EUT operate ANT A-1; ANT A-2; ANT A-0;
For right vertical, EUT operate ANT B-1; ANT B-2; ANT B-0;
For horizontal, EUT operate ANT B-0; ANT A-2; ANT A-1;

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three positions: horizontal, left vertical and right vertical. It was determined that the Left vertical orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in the Left vertical orientation.

For conducted portion, the antenna gain calculated based on highest gain among three orientations.

Based on the baseline scan, the worst-case data rates were:

802.11n HT20mode: MCS9

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC line cord	Sonos	N/A	N/A	N/A

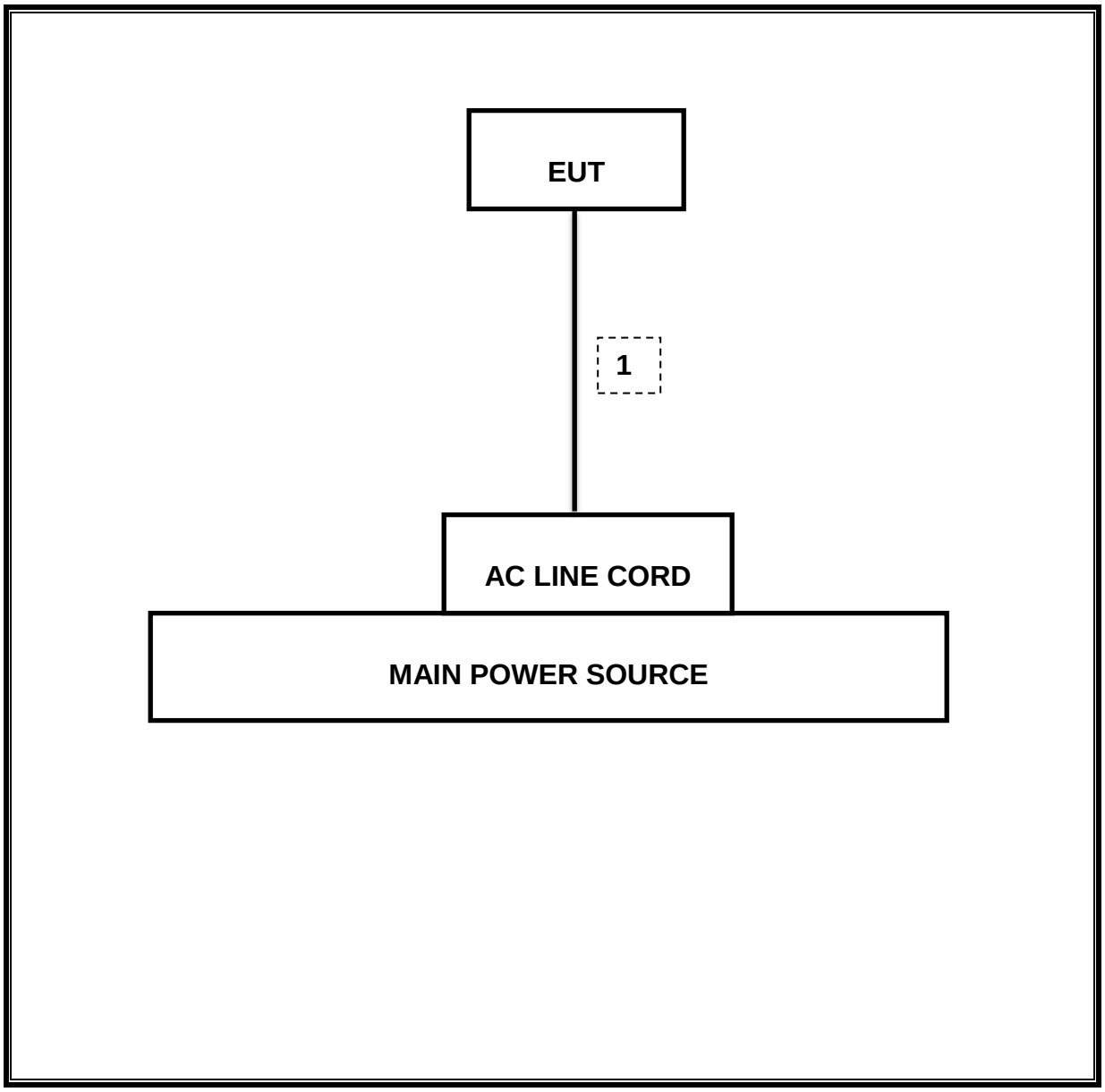
I/O CABLES

Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Ethernet cable	1	RJ-45	Twised pair	1.5m	N/A

TEST SETUP

The EUT is installed in a host laptop computer during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
Spectrum Analyzer,9KHz-40GHz	HP	8564E	C00986	04/01/16
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/13/15
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/16
Antenna, Horn,18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/15
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/15
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/16
RF Preamplifier, 100KHz -> 1300MHz	HP	8447D	T10	01/06/16
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/15
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 40GHz	Miteq	NSP4000-SP2	C00990	08/20/15
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	T420	04/29/16
High Pass Filter 3GHz	Micro-Tronics	HPS17543	T426	04/29/16
High Pass Filter 6GHz	Micro-Tronics	HPS17542	T424	04/29/16

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. SUMMARY TABLE

FCC Part Section	RSS Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.407 (a)	RSS-247	Occupied Band width (26dB)	N/A	Conducted	Pass	24 MHz
15.407	RSS-247 6.2.4	6dB Band width (5.8Ghz)	500KHz		Pass	16.98 MHz
15.407 (a)(2)	RSS-247 6.2	TX Cond. Power5.15-2.25, 5.25-5.35 & 5.47-5.725	<24dBm or 11+10Log(OBW)		Pass	20.76 dBm
15.407 (a)(3)	RSS-247 6.2.4	TX Cond. Power 5.725-5.825	< 30dBm or 17+10Log(OBW)		Pass	19.32 dBm
15.407 (a)(5)	RSS-247 6.2	PSD (5.2,5.3,5.5GHz)	<11dBm		Pass	9.4 dBm
15.407 (a)(5)	RSS-247 6.2.4	PSD (5.8GHz)	30dBm per 500kHz		Pass	7.62 dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	50.91 dBuV
15.407 (b) & 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	52.6 dBuV/m
15.407 (h)(2)	RSS-247 6.3	Dynamic Frequency Selection	N/A	Radiated / Condcuted	Pass	N/A

8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

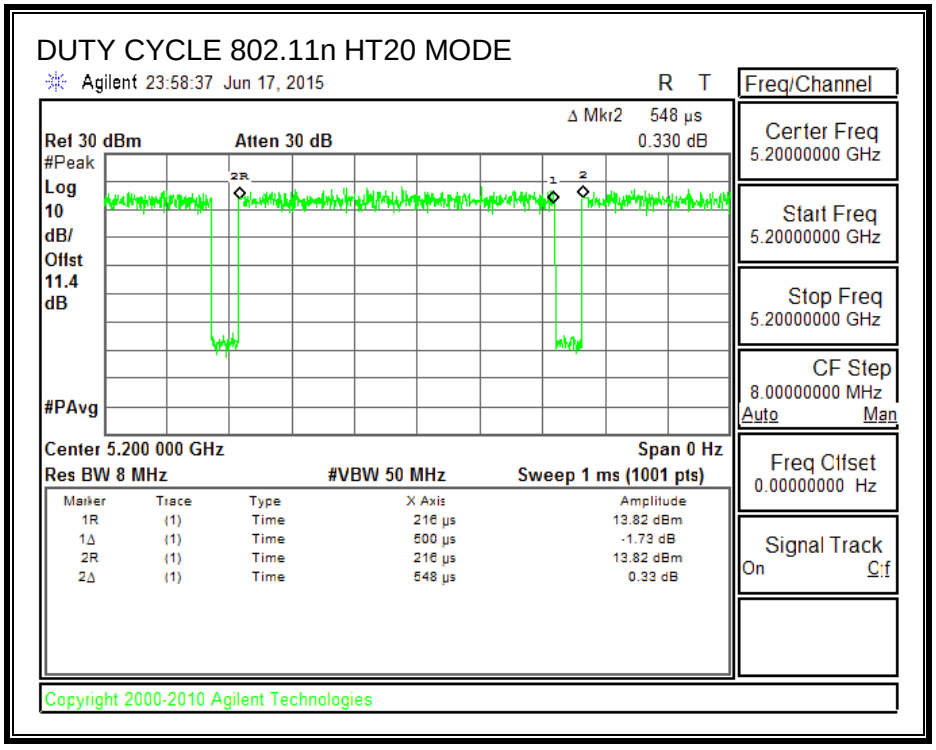
PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11n HT20	0.50	1	0.912	91.2%	0.40	2.000

8.2. DUTY CYCLE PLOTS



9. MEASUREMENT METHOD

789033 D02 General UNII Test Procedures New Rules v01

The Duty Cycle is less than 98% and consistent therefore KDB 789033 Method SA-2 is used for .power and PPSD

The Duty Cycle is less than 98% and consistent, KDB 789033 Method AD with Power RMS Averaging and duty cycle correction is used.

10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.407
RSS-247 6.2.4

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

RESULTS

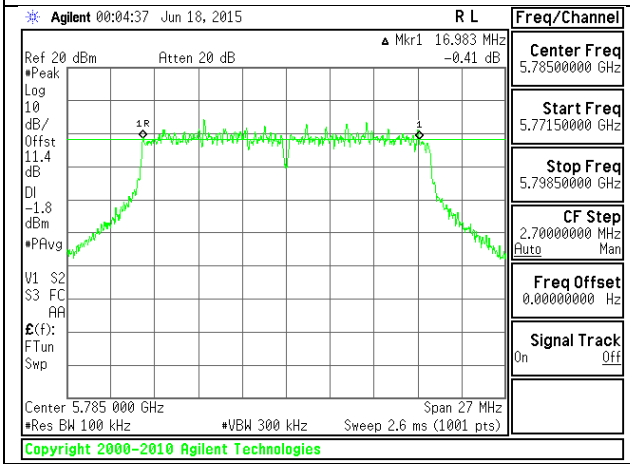
10.1.1. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth CHAIN 0(MHz)	6 dB Bandwidth CHAIN 1(MHz)	6 dB Bandwidth CHAIN 2(MHz)	Minimum Limit (MHz)
Low	5745	17.55	17.69	17.63	0.5
Mid	5785	16.98	17.31	17.50	0.5
High	5825	17.15	17.50	17.58	0.5
Worst		16.98	17.31	17.50	

10.1.2. 6 dB BANDWIDTH MID CH PLOTS

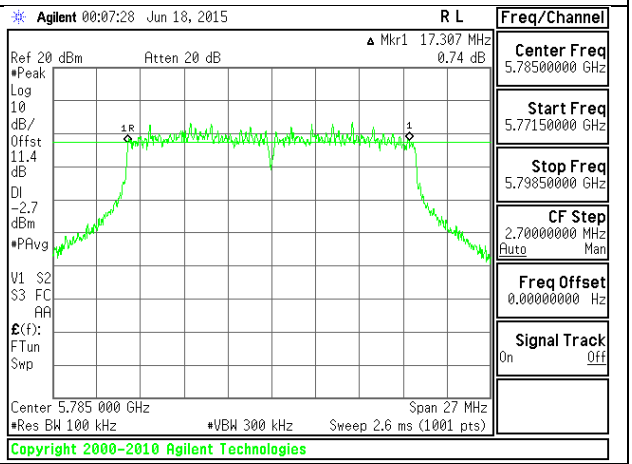
CHAIN 0

11n HT20 5.8 Mid Ch



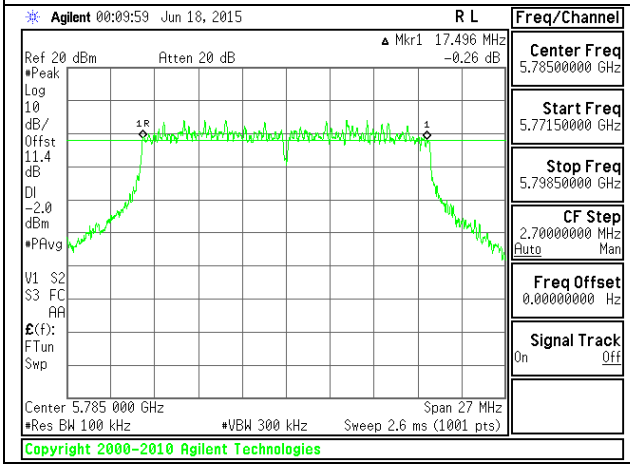
CHAIN 1

11n HT20 5.8 Mid Ch



CHAIN 2

11n HT20 5.8 Mid Ch



10.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.2.1. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5180	21.6	22.2	22.0
Mid	5200	21.8	22.6	22.1
High	5240	22.1	22.0	22.0

10.2.1. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5260	22.1	22.7	24.0
Mid	5300	22.2	22.1	22.4
High	5320	21.9	22.9	22.5

10.2.2. 802.11n HT20 MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5500	22.1	22.3	22.2
Mid	5580	22.4	22.0	23.5
High	5700	22.0	22.3	22.2

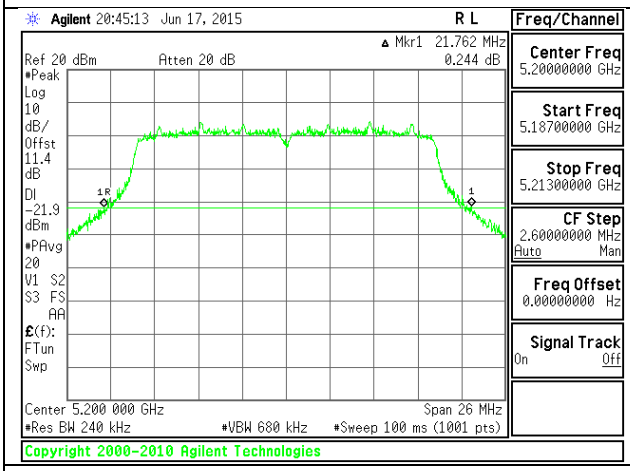
10.2.3. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5745	22.0	22.6	22.5
Mid	5785	21.8	22.0	22.6
High	5825	22.5	22.2	22.2

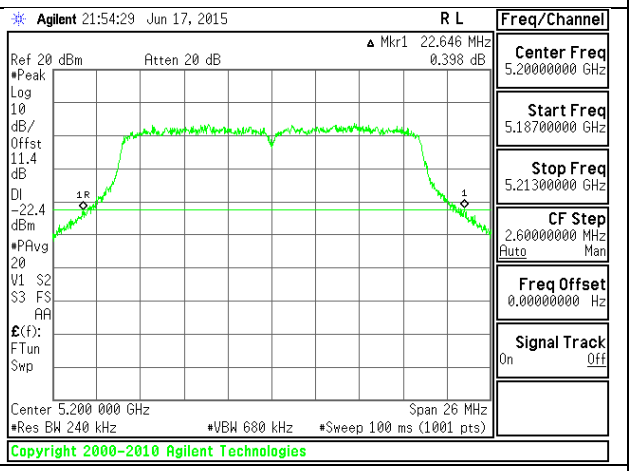
10.2.1. 26 dB BANDWIDTH PLOTS

UNII 5.2 GHz

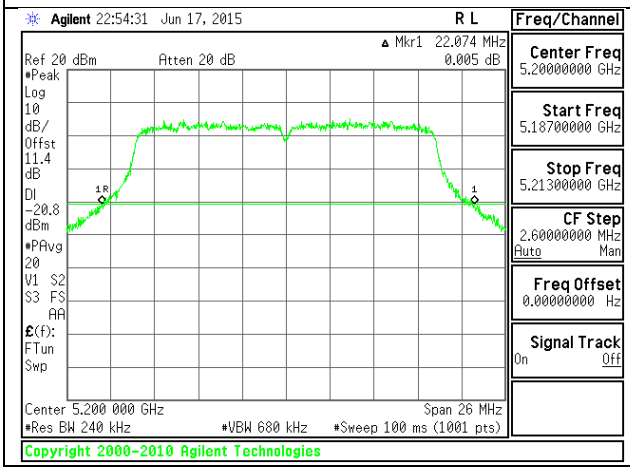
11n HT20 5.2 Mid Channel Chain 0



11n HT20 5.2 Mid Channel Chain 1

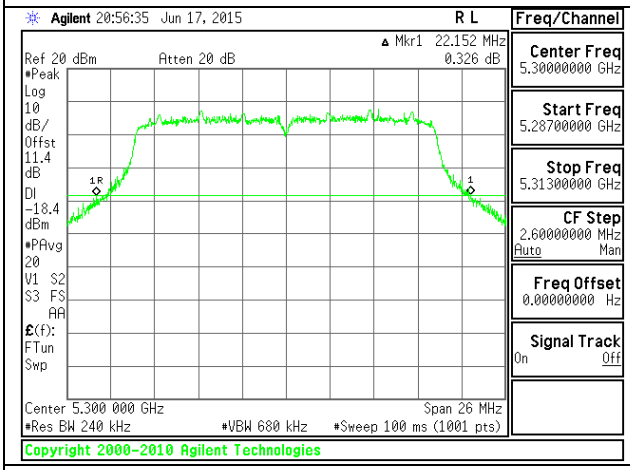


11n HT20 5.2 Mid Channel Chain 2

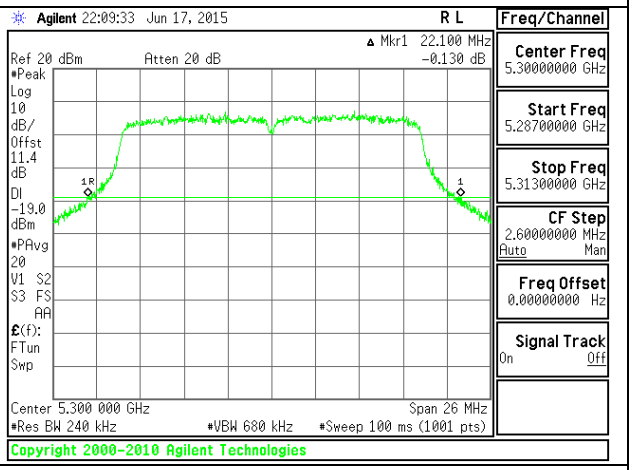


UNII 5.3 GHz

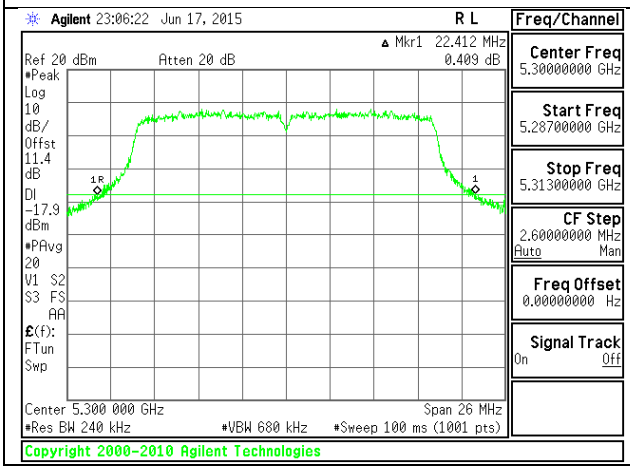
11n HT20 5.3 Mid Channel Chain 0



11n HT20 5.3 Mid Channel Chain 1

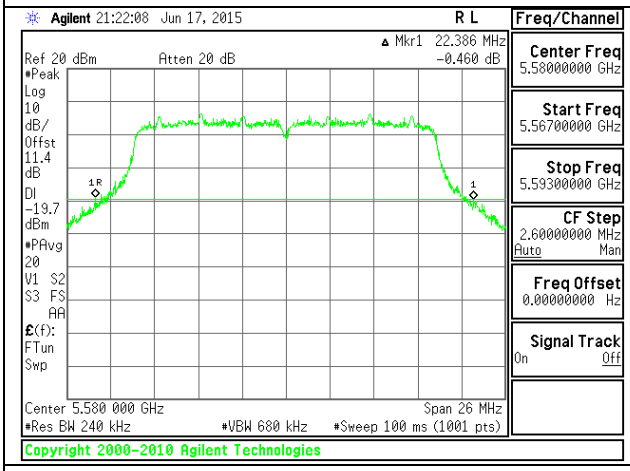


11n HT20 5.3 Mid Channel Chain 2

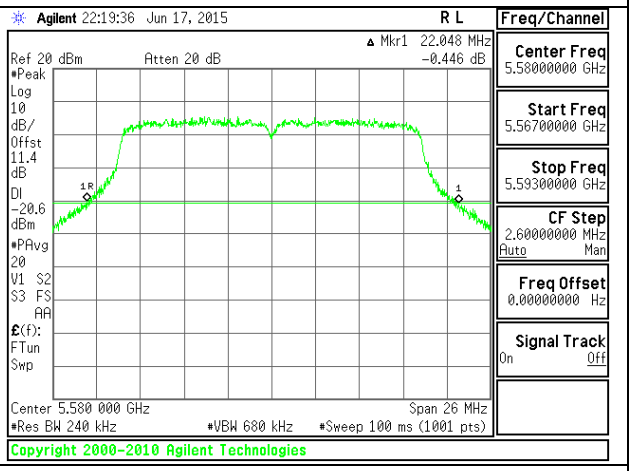


UNII 5.5 GHz

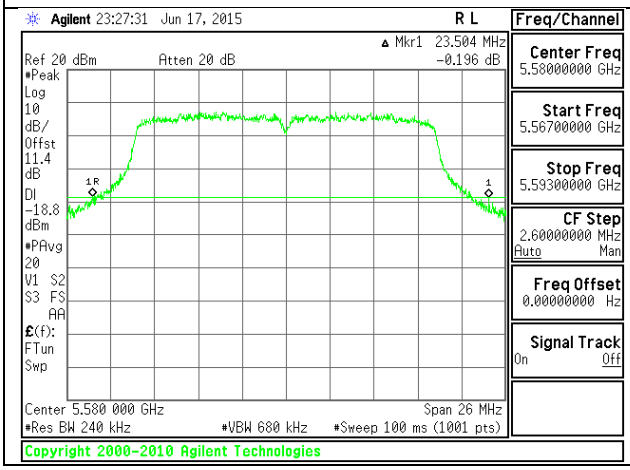
11n HT20 5.5 Mid Channel Chain 0



11n HT20 5.5 Mid Channel Chain 1

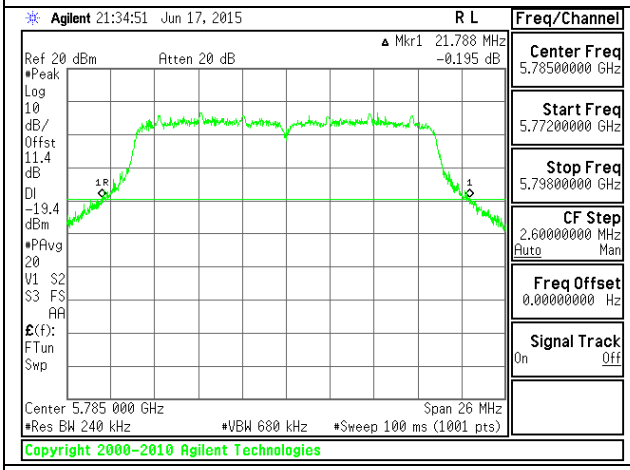


11n HT20 5.5 Mid Channel Chain 2

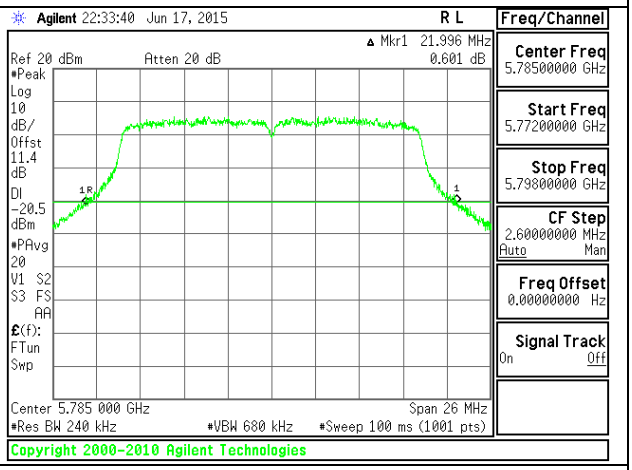


UNII 5.8 GHz

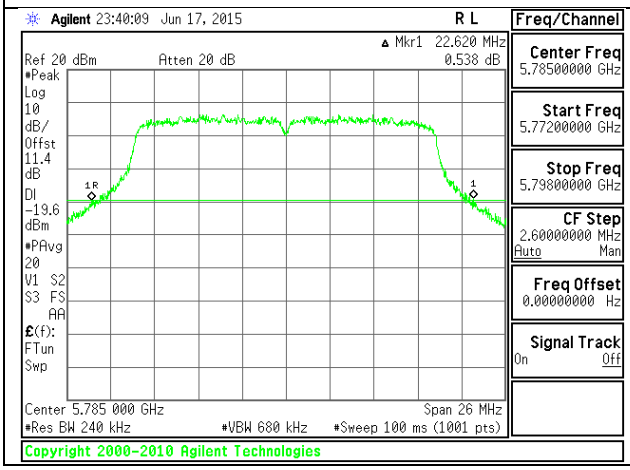
11n HT20 5.8 Mid Channel Chain 0



11n HT20 5.8 Mid Channel Chain 1



11n HT20 5.8 Mid Channel Chain 2



10.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.3.1. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5180	17.9	17.9	17.9
Mid	5200	17.9	17.9	17.9
High	5240	17.9	17.9	17.9

10.3.2. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5260	17.9	17.9	18.0
Mid	5300	17.9	17.9	17.9
High	5320	17.9	17.9	17.9

10.3.3. 802.11n HT20 MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5500	17.9	17.9	17.9
Mid	5580	17.9	17.9	17.9
High	5700	17.9	17.9	17.9

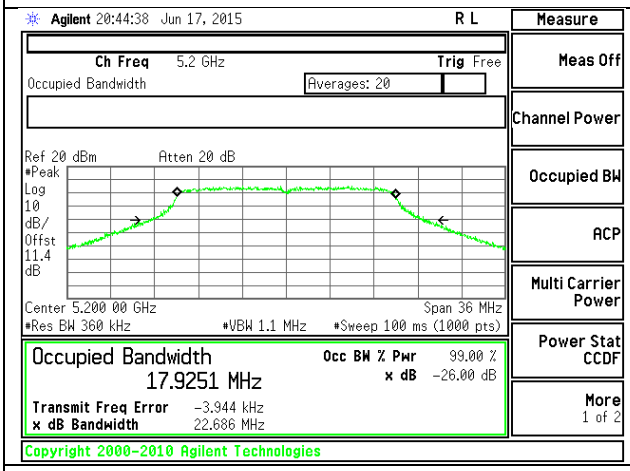
10.3.4. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5745	17.9	17.9	17.9
Mid	5785	17.9	17.8	17.9
High	5825	17.9	17.9	17.9

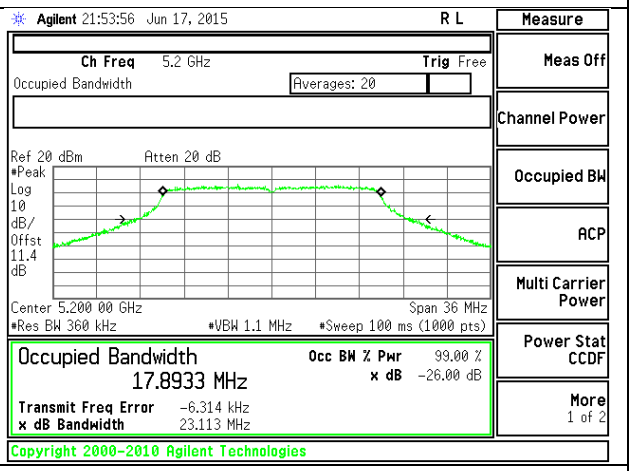
10.3.1. 99% BANDWIDTH PLOTS

UNII 5.2 GHz

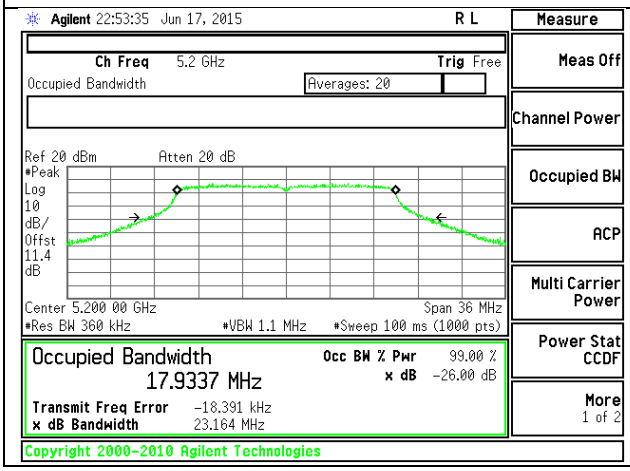
11n HT20 5.2 Mid Channel Chain 0



11n HT20 5.2 Mid Channel Chain 1

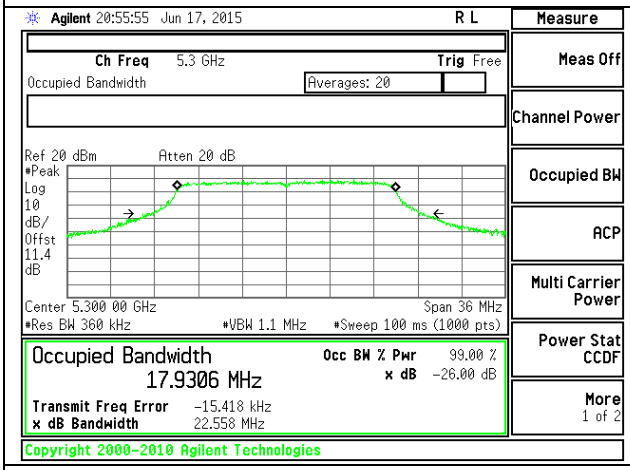


11n HT20 5.2 Mid Channel Chain 2

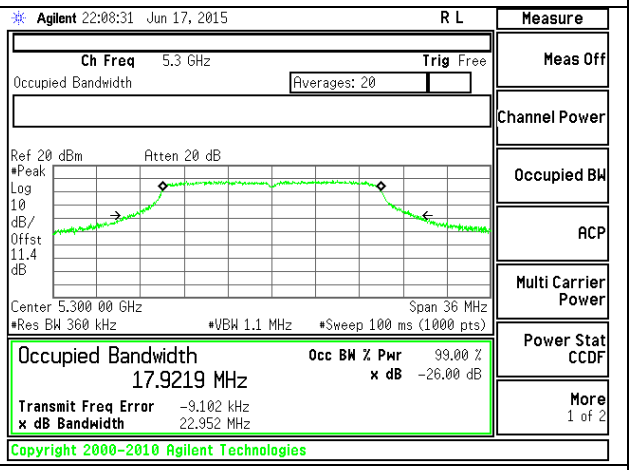


UNII 5.3 GHz

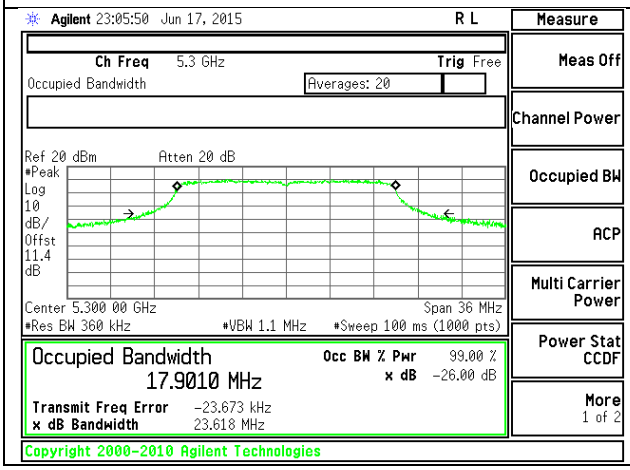
11n HT20 5.3 Mid Channel Chain 0



11n HT20 5.3 Mid Channel Chain 1

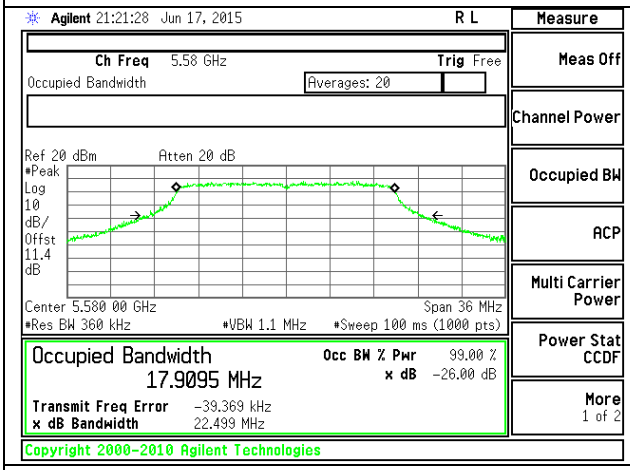


11n HT20 5.3 Mid Channel Chain 2

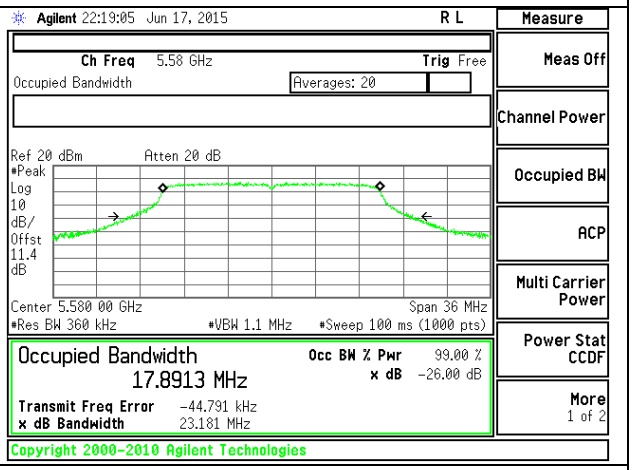


UNII 5.5 GHz

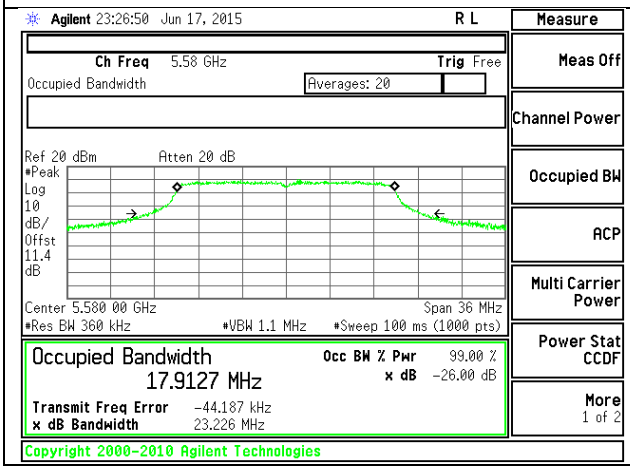
11n HT20 5.5 Mid Channel Chain 0



11n HT20 5.5 Mid Channel Chain 1

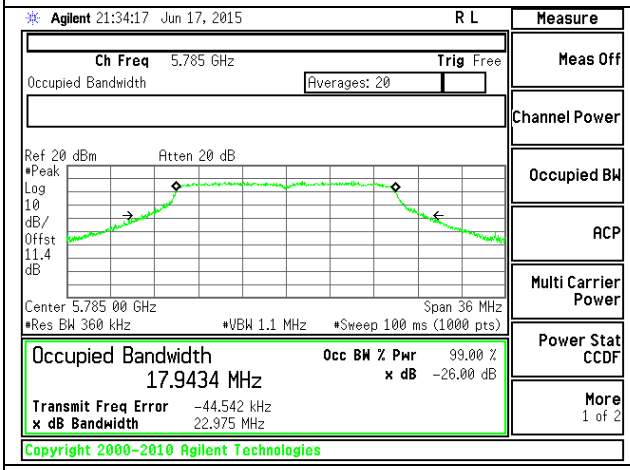


11n HT20 5.5 Mid Channel Chain 2

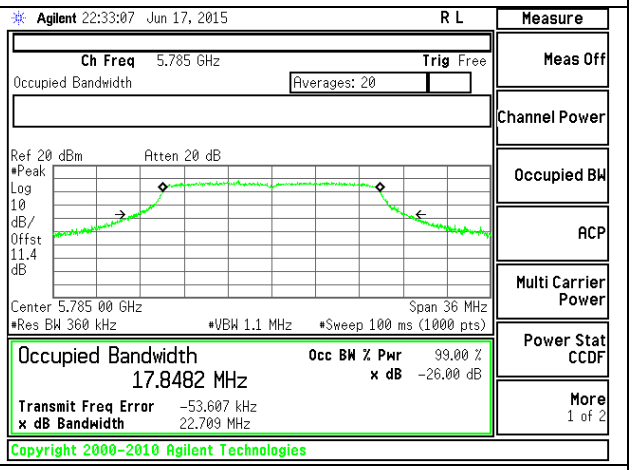


UNII 5.8 GHz

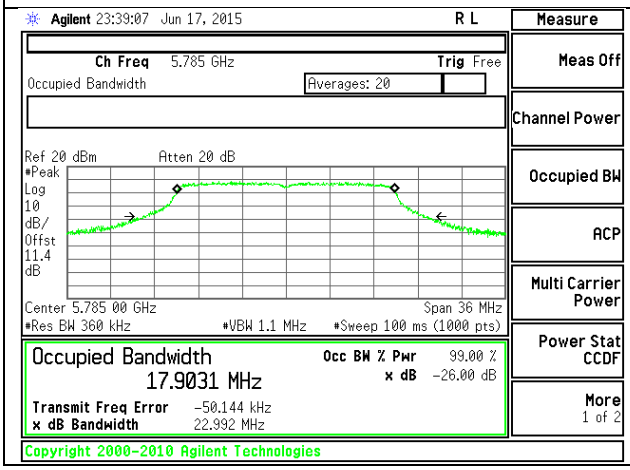
11n HT20 5.8 Mid Channel Chain 0



11n HT20 5.8 Mid Channel Chain 1



11n HT20 5.8 Mid Channel Chain 2



10.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1) (2) (3)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

RSS-247
Band 5150-5250 MHz:
The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 $\log_{10}$B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
Band 5250-5350 MHz:
The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
Bands 5470-5600 MHz and 5650-5725 MHz:
The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
Band 5725-5850 MHz:
The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBiare used, both the maximum conducted output power and the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixedpoint-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint[Footnote3] systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Horizontal 0B1A2A

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.50	1.80	3.80	2.78

Left vertical 0A 1A 2A

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
1.50	1.80	3.80	2.49

Right vertical 0B 1B 2B

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.50	3.50	4.50	3.34

Worst case antenna gain would be 3.34 dBi.

5.2GHz UNII TEST RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
Low	5180	21.63	17.85	3.34	3.34
Mid	5200	21.76	17.89	3.34	3.34
High	5240	21.99	17.86	3.34	3.34

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	24.00	22.52	29.52	22.52	11.00	10.00	10.00
Mid	5200	24.00	22.53	29.53	22.53	11.00	10.00	10.00
High	5240	24.00	22.52	29.52	22.52	11.00	10.00	10.00

Duty Cycle CF (dB)	0.40	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	9.27	9.81	10.91	15.22	22.52	-7.29
Mid	5200	11.16	11.77	13.01	17.22	22.53	-5.31
High	5240	11.46	12.82	13.49	17.84	22.52	-4.68

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-2.31	1.75	-0.62	5.10	10.00	-4.90
Mid	5200	-0.15	0.17	1.32	5.66	10.00	-4.34
High	5240	-0.03	1.11	1.74	6.17	10.00	-3.83

5.3GHz UNII TEST RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
Low	5280	22.07	17.85	3.34	3.34
Mid	5300	22.10	17.84	3.34	3.34
High	5320	22.54	17.85	3.34	3.34

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5280	24.00	23.52	29.52	23.52	11.00	11.00	11.00
Mid	5300	24.00	23.51	29.51	23.51	11.00	11.00	11.00
High	5320	24.00	23.52	29.52	23.52	11.00	11.00	11.00

Duty Cycle CF (dB)	0.40	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5280	14.95	15.06	16.57	20.76	23.52	-2.75
Mid	5300	14.65	14.79	16.34	20.50	23.51	-3.01
High	5320	14.73	14.44	15.67	20.15	23.52	-3.37

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5280	3.39	4.23	4.92	9.40	11.00	-1.60
Mid	5300	3.02	3.18	4.57	8.82	11.00	-2.18
High	5320	3.04	2.79	3.86	8.43	11.00	-2.57

5.5GHz UNII TEST RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
Low	5500	22.07	17.89	3.34	3.34
Mid	5580	22.04	17.89	3.34	3.34
High	5700	22.05	17.89	3.34	3.34

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5500	24.00	23.53	29.53	23.53	11.00	11.00	11.00
Mid	5580	24.00	23.53	29.53	23.53	11.00	11.00	11.00
High	5700	24.00	23.53	29.53	23.53	11.00	11.00	11.00

Duty Cycle CF (dB)	0.40	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	13.48	13.37	14.20	18.87	23.53	-4.66
Mid	5580	13.56	13.59	15.50	19.49	23.53	-4.04
High	5700	13.55	13.53	14.61	19.10	23.53	-4.43

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	1.78	1.57	2.53	7.15	11.00	-3.85
Mid	5580	1.77	1.80	3.77	7.72	11.00	-3.28
High	5700	1.78	1.86	2.90	7.38	11.00	-3.62

5.8GHz UNII TEST RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
Low	5745	22.04	17.85	3.34	3.34
Mid	5785	21.78	17.84	3.34	3.34
High	5805	22.17	17.87	3.34	3.34

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5745	30.00	29.52	35.52	29.52	17.00	17.00	17.00
Mid	5785	30.00	29.51	35.51	29.51	17.00	17.00	17.00
High	5805	30.00	29.52	35.52	29.52	17.00	17.00	17.00

Duty Cycle CF (dB)	0.40	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	13.64	13.37	14.85	19.17	29.52	-10.34
Mid	5785	13.81	13.82	14.75	19.32	29.51	-10.19
High	5805	13.32	14.47	14.32	19.24	29.52	-10.28

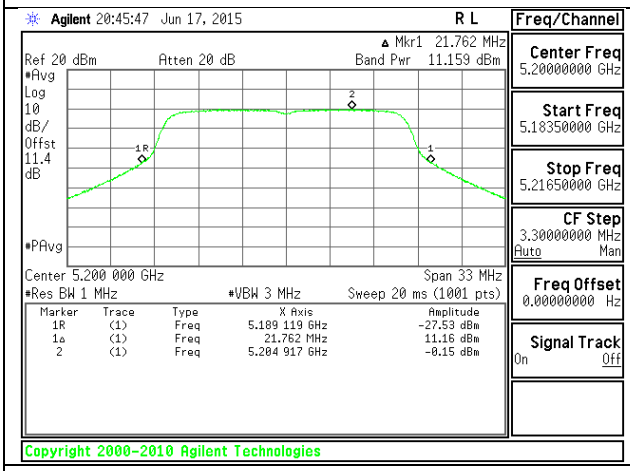
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5745	1.84	1.71	3.09	7.43	17.00	-9.57
Mid	5785	2.09	2.08	3.09	7.62	17.00	-9.38
High	5805	1.61	2.82	2.65	7.56	17.00	-9.44

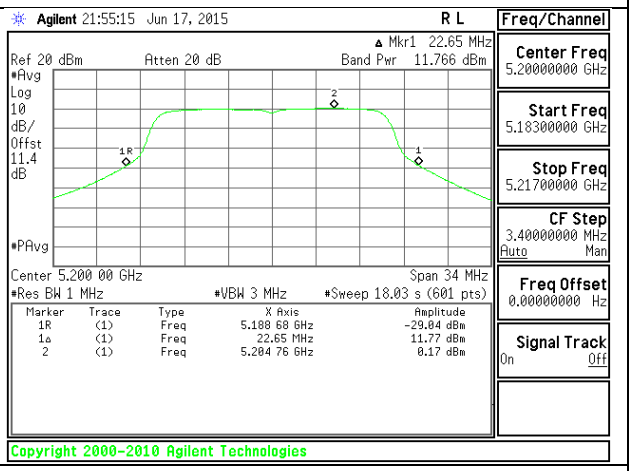
10.4.1. OUTPUT POWER AND PPSD PLOTS

UNII 5.2 GHz

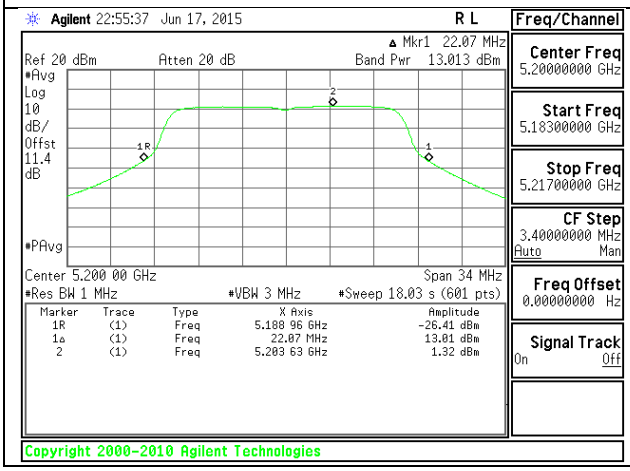
11n HT20 5.2 Mid Channel Chain 0



11n HT20 5.2 Mid Channel Chain 1

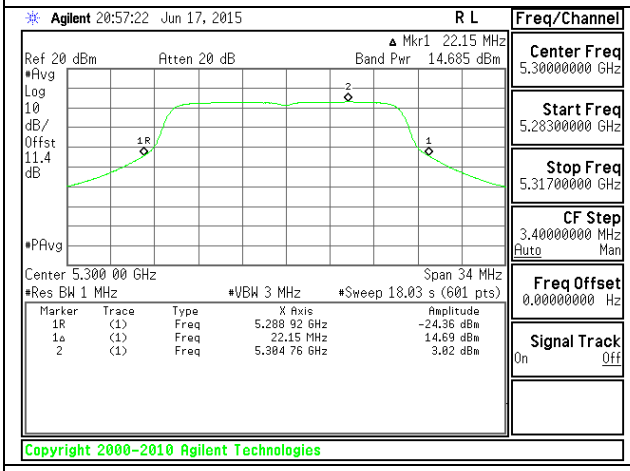


11n HT20 5.2 Mid Channel Chain 2

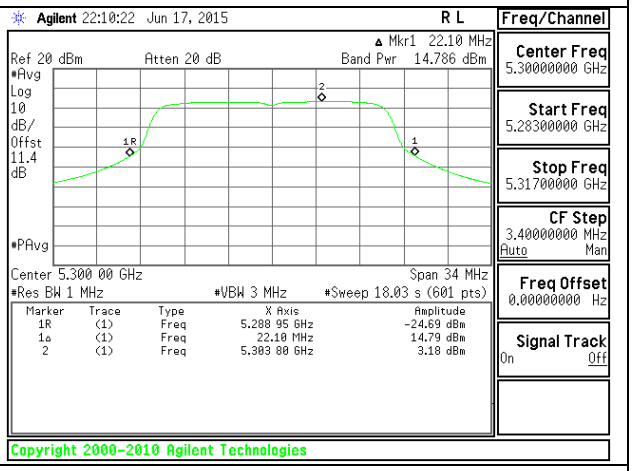


UNII 5.3 GHz

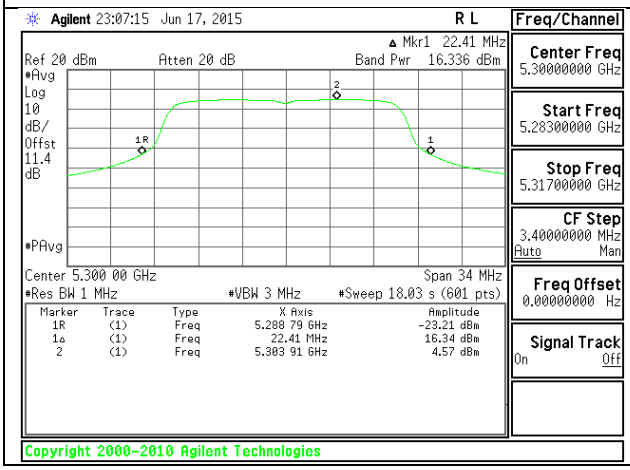
11n HT20 5.3 Mid Channel Chain 0



11n HT20 5.3 Mid Channel Chain 1

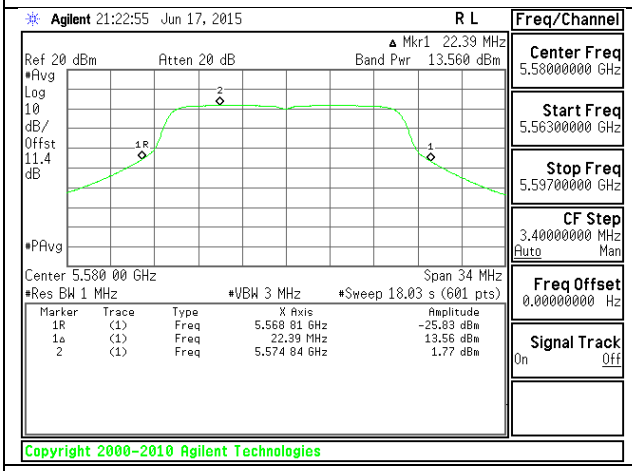


11n HT20 5.3 Mid Channel Chain 2

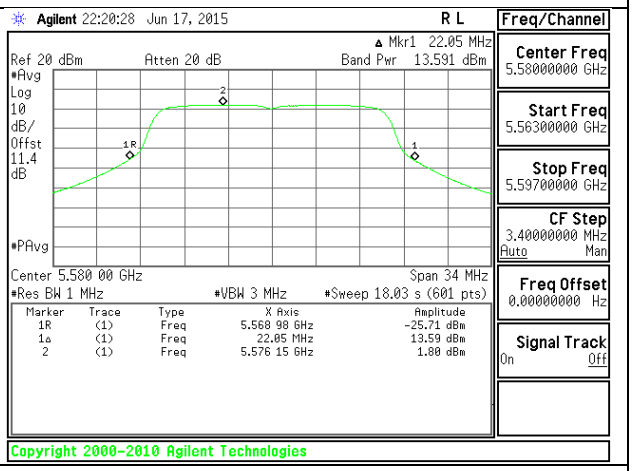


UNII 5.5 GHz

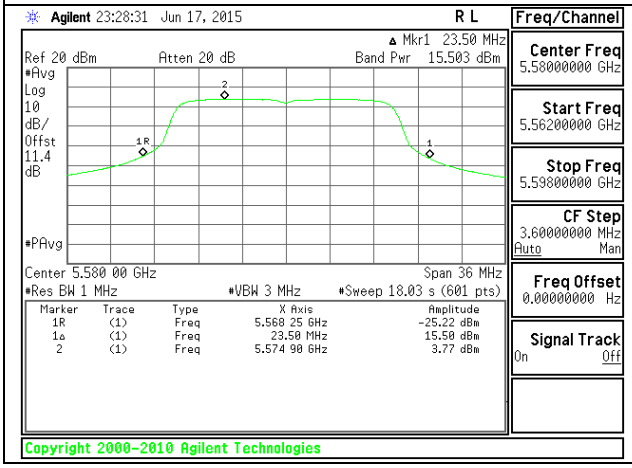
11n HT20 5.5 Mid Channel Chain 0



11n HT20 5.5 Mid Channel Chain 1

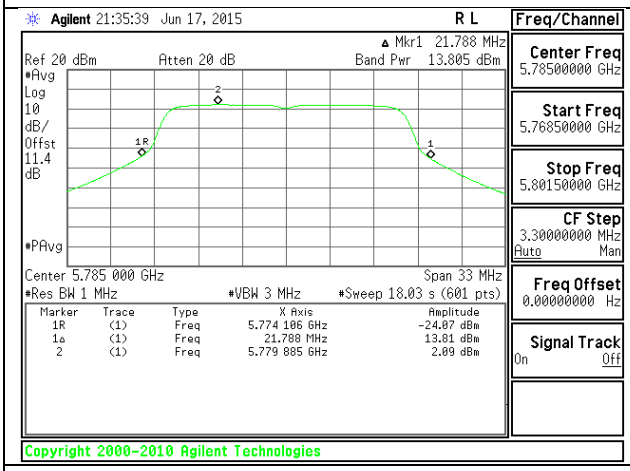


11n HT20 5.5 Mid Channel Chain 2

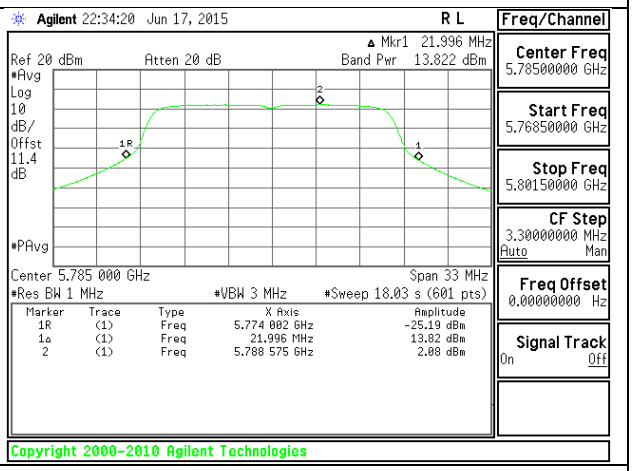


UNII 5.8 GHz

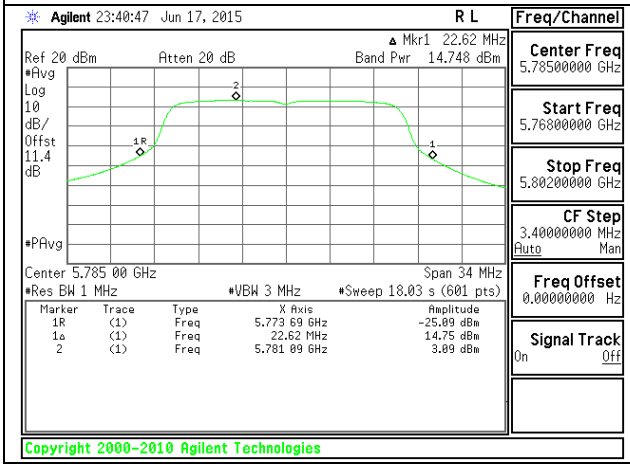
11n HT20 5.8 Mid Channel Chain 0



11n HT20 5.8 Mid Channel Chain 1



11n HT20 5.8 Mid Channel Chain 2



11. TRANSMITTER ABOVE 1 GHz

LIMITS

FCC §15.205 and §15.209
RSS-GEN 8.9 (Transmitter)
RSS-GEN 7 (Receiver)
RSS-247 6 (Transmitter)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Reference to KDB 789033 UNII part H) 6) d) Method VB:
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor to the reading offset for average measurements.

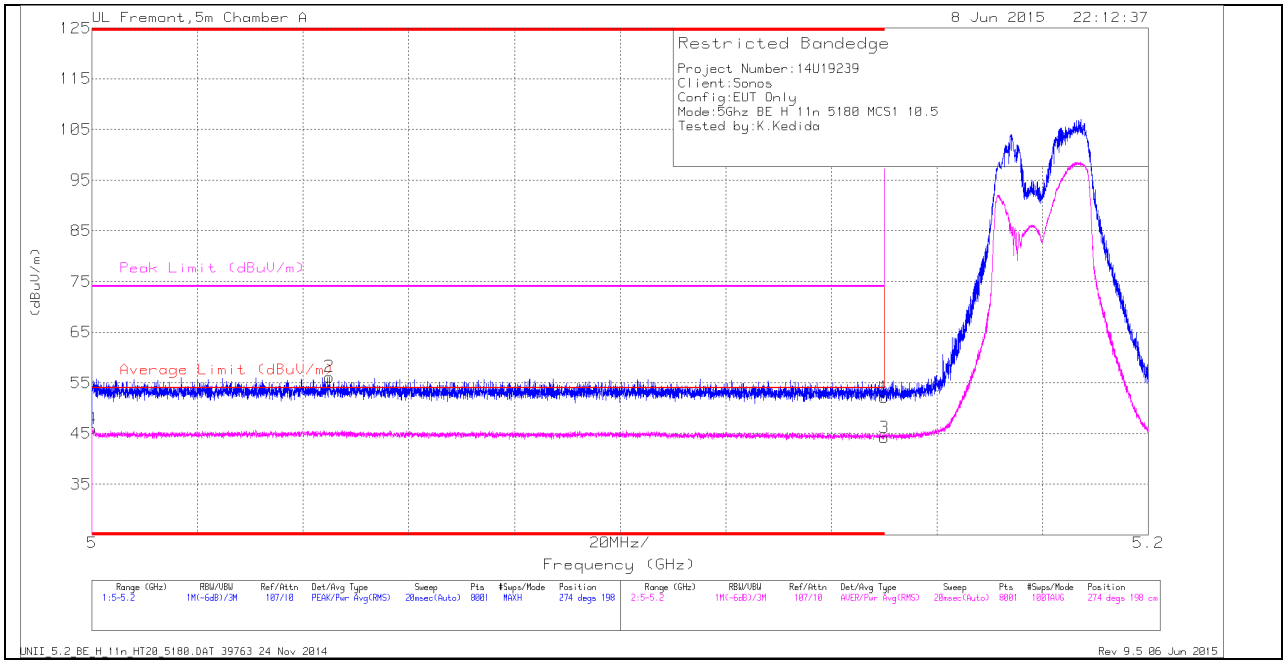
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

11.1. 5.2 GHz

11.1.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	36.42	Pk	34.2	-18.5	0	52.12	-	-	74	-21.88	274	198	H
2	* 5.045	40.39	Pk	34	-18.2	0	56.19	-	-	74	-17.81	274	198	H
3	* 5.15	28.46	RMS	34.2	-18.5	.4	44.38	54	-9.62	-	-	274	198	H
4	* 5	30.1	RMS	34	-18.1	.4	46.22	54	-7.78	-	-	274	198	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

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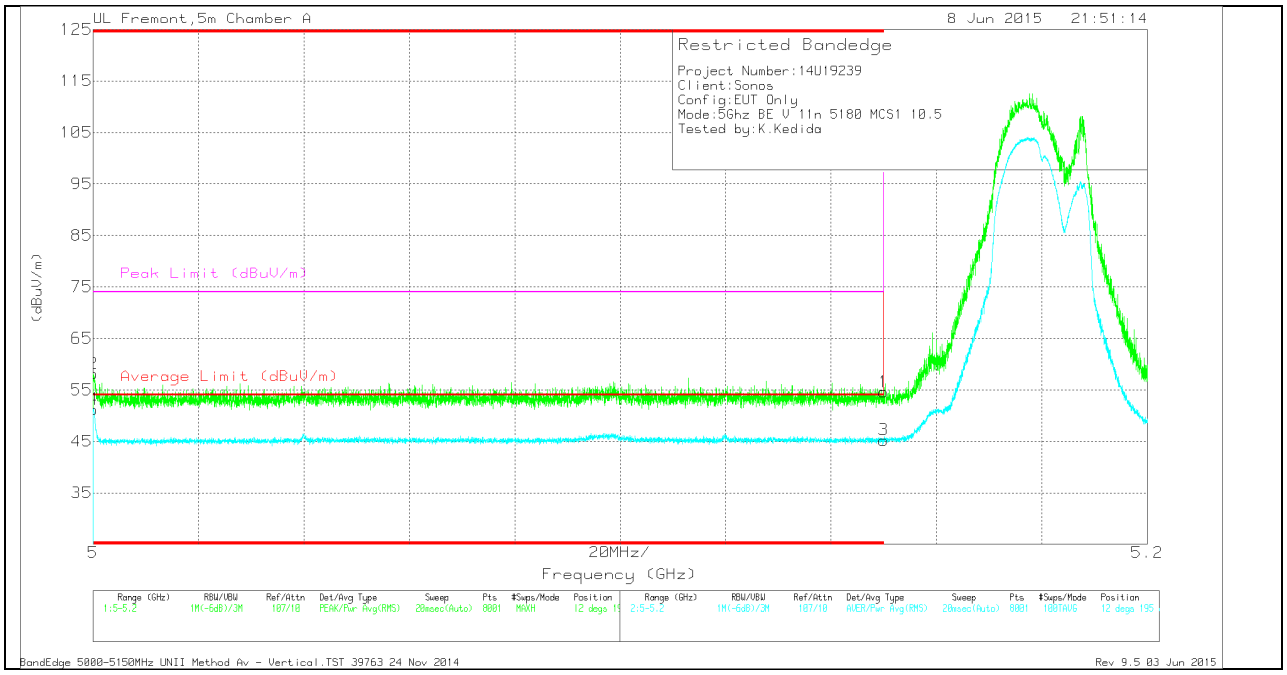
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 5	42.22	Pk	34	-18.1	0	58.12	-	-	74	-15.88	12	195	V
4	* 5	35.33	RMS	34	-18.1	.4	51.45	54	-2.55	-	-	12	195	V
1	* 5.15	38.88	Pk	34.2	-18.5	0	54.58	-	-	74	-19.42	12	195	V
3	* 5.15	29.55	RMS	34.2	-18.5	.4	45.47	54	-8.53	-	-	12	195	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

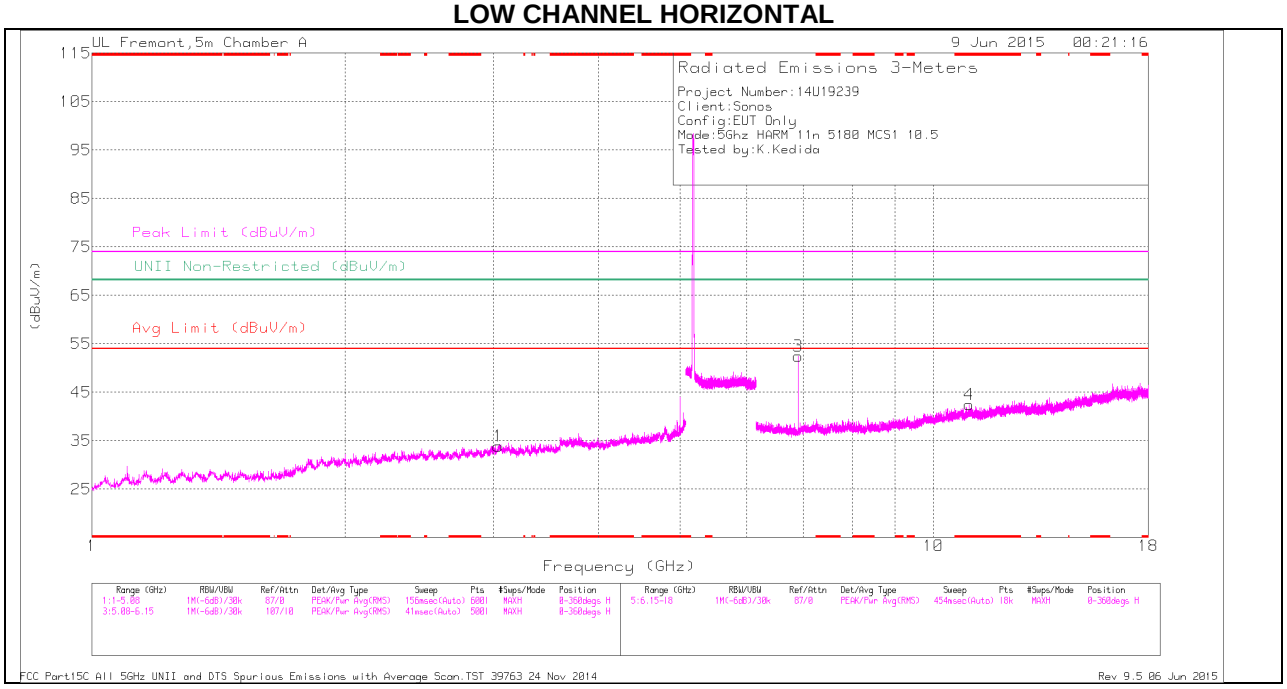
RMS - RMS detection

BandEdge 5000-5150MHz UNII Method Av - Vertical.TST 39763 24 Nov 2014

Rev 9.5 03 Jun 2015

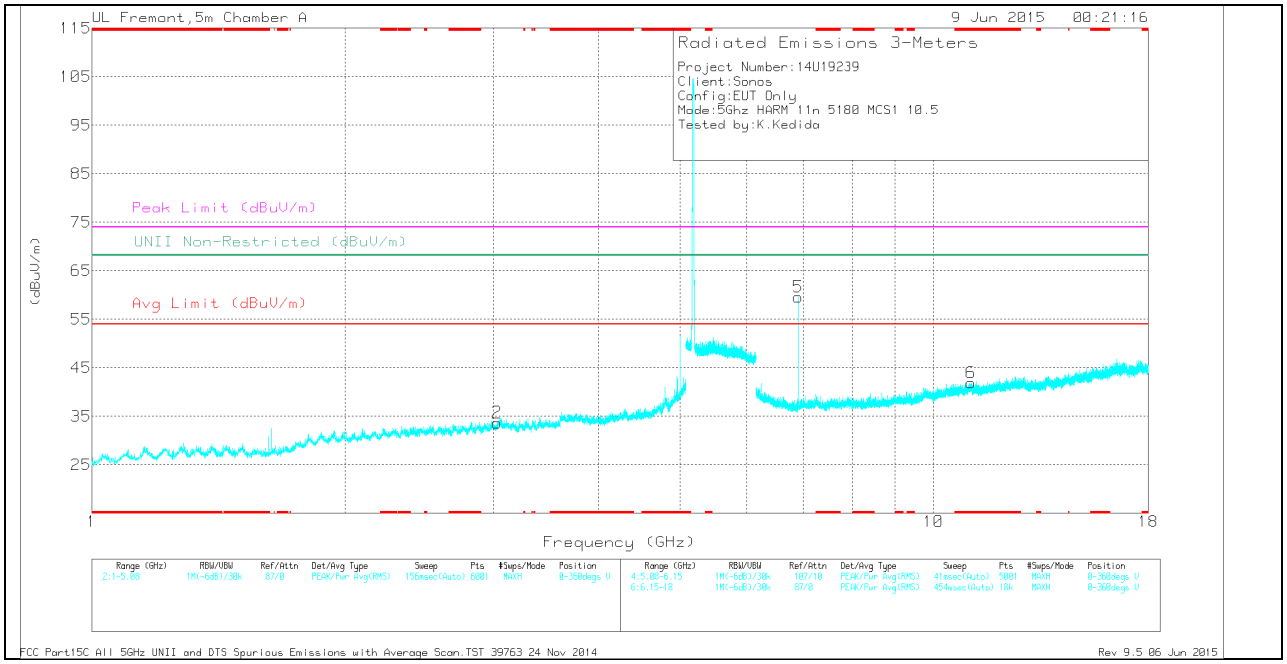
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 11.03	27.52	Pk	37.9	-23	42.42	-	-	74	-31.58	68.2	-25.78	0-360	201	H
6	* 11.083	26.86	Pk	37.9	-22.8	41.96	-	-	74	-32.04	68.2	-26.24	0-360	200	V
2	3.031	33.89	Pk	32.9	-33.1	33.69	-	-	74	-40.31	68.2	-34.51	0-360	100	V
1	3.039	34.02	Pk	32.9	-33	33.92	-	-	74	-40.08	68.2	-34.28	0-360	201	H
3	6.906	44.66	Pk	35.6	-27.8	52.46	-	-	74	-21.54	68.2	-15.74	0-360	201	H
5	6.906	51.82	Pk	35.6	-27.8	59.62	-	-	74	-14.38	68.2	-8.58	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6.906	46.68	PK3	35.6	-27.8	54.48	-	-	74	-19.52	68.2	-13.72	201	213	H
6.907	43.6	ADR	35.6	-27.8	51.4	-	-	-	-	-	-	201	213	H
6.907	52.24	PK3	35.6	-27.8	60.04	-	-	74	-13.96	68.2	-8.16	32	102	V
6.907	50.62	ADR	35.6	-27.8	58.42	-	-	-	-	-	-	32	102	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - U-NII: Maximum Peak

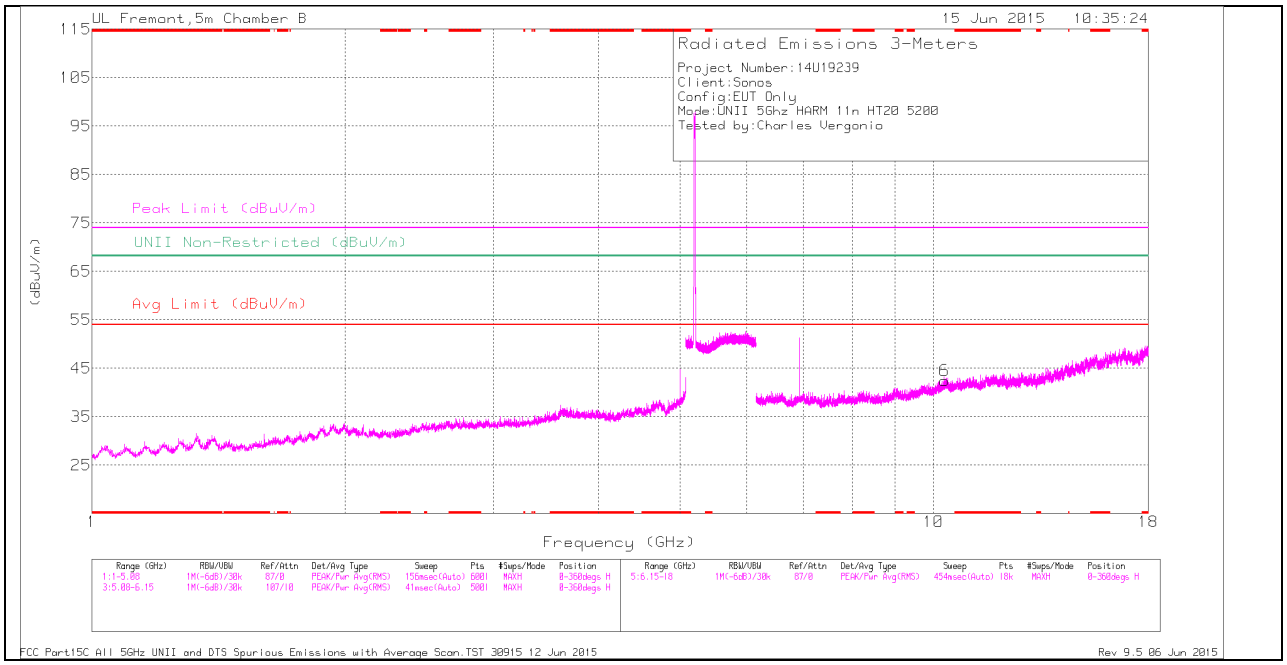
ADR - U-NII AD primary method, RMS average

ADV - U-NII AD primary method, Linear Voltage Average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 39763 24 Nov 2014

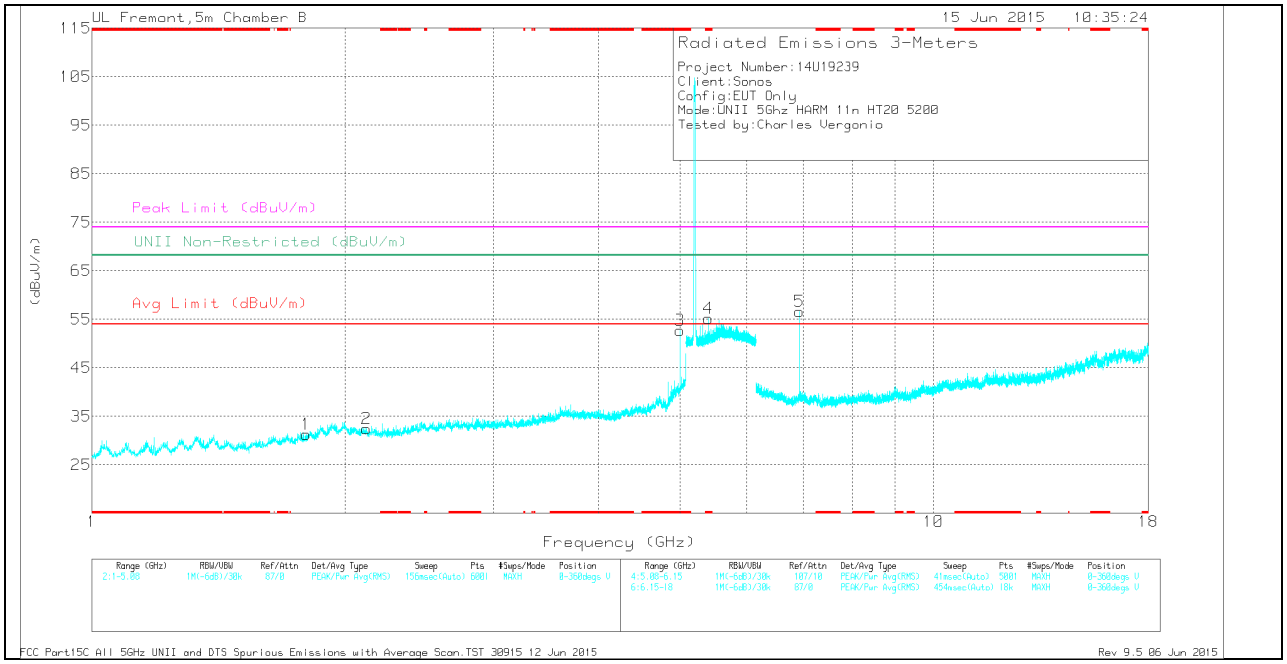
Rev 9.5 06 Jun 2015

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 5	46.08	Pk	34	-27.4	0	52.68	-	-	74	-21.32	-	-	0-360	199	V
4	* 5.4	40.1	Pk	34.5	-19.4	0	55.2	-	-	74	-18.8	-	-	0-360	102	V
1	1.798	33.53	Pk	30.7	-32.9	0	31.33	-	-	-	-	68.2	-36.87	0-360	101	V
2	2.12	33	Pk	31.6	-32.1	0	32.5	-	-	-	-	68.2	-35.7	0-360	199	V
5	6.933	46.9	Pk	36.1	-26.4	0	56.6	-	-	-	-	68.2	-11.6	0-360	102	V
6	10.306	27.44	Pk	37.4	-22.4	0	42.44	-	-	-	-	68.2	-25.76	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	49.42	PK3	34	-27.4	0	56.02	-	-	74	-17.98	-	-	82	207	V
* 5	44.17	ADR	34	-27.4	.4	50.99	54	-3.01	-	-	-	-	82	207	V
* 5.4	45.46	PK3	34.5	-19.4	0	60.56	-	-	74	-13.44	-	-	81	378	V
* 5.4	33.97	ADR	34.5	-19.4	.4	49.29	54	-4.71	-	-	-	-	81	378	V
6.933	48.37	PK3	36.1	-26.4	0	58.07	-	-	-	-	68.2	-10.13	96	103	V
6.933	45.59	ADR	36.1	-26.4	.4	55.51	-	-	-	-	-	-	96	103	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

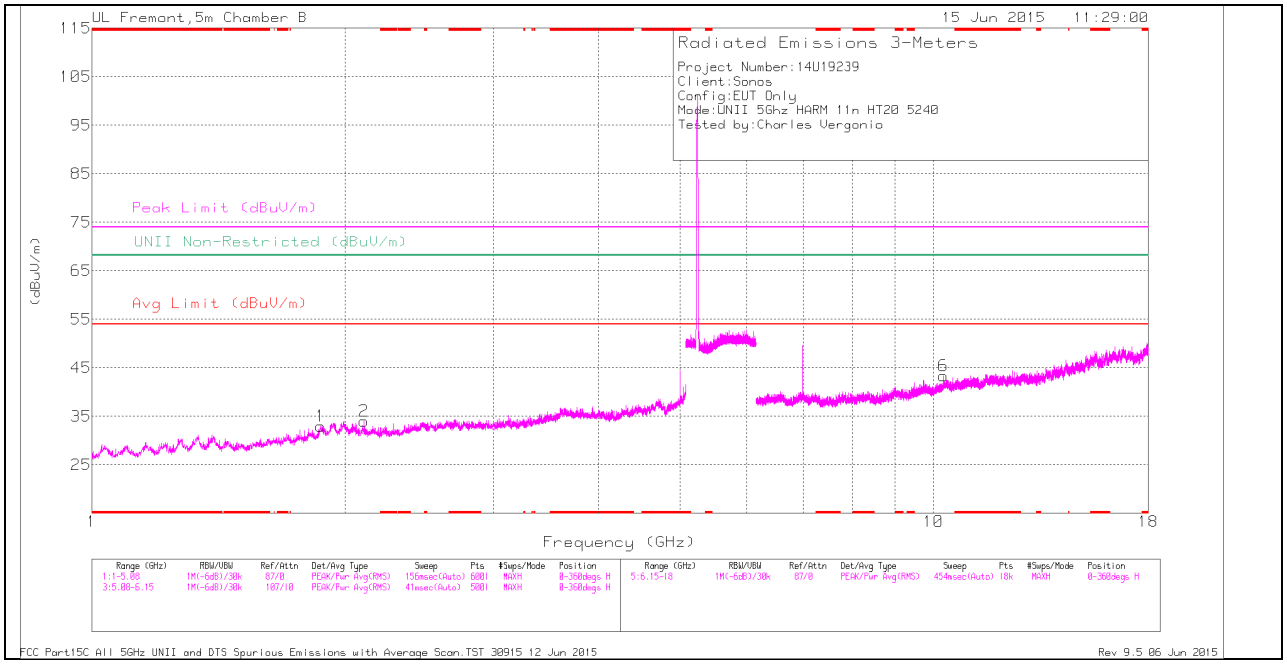
PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

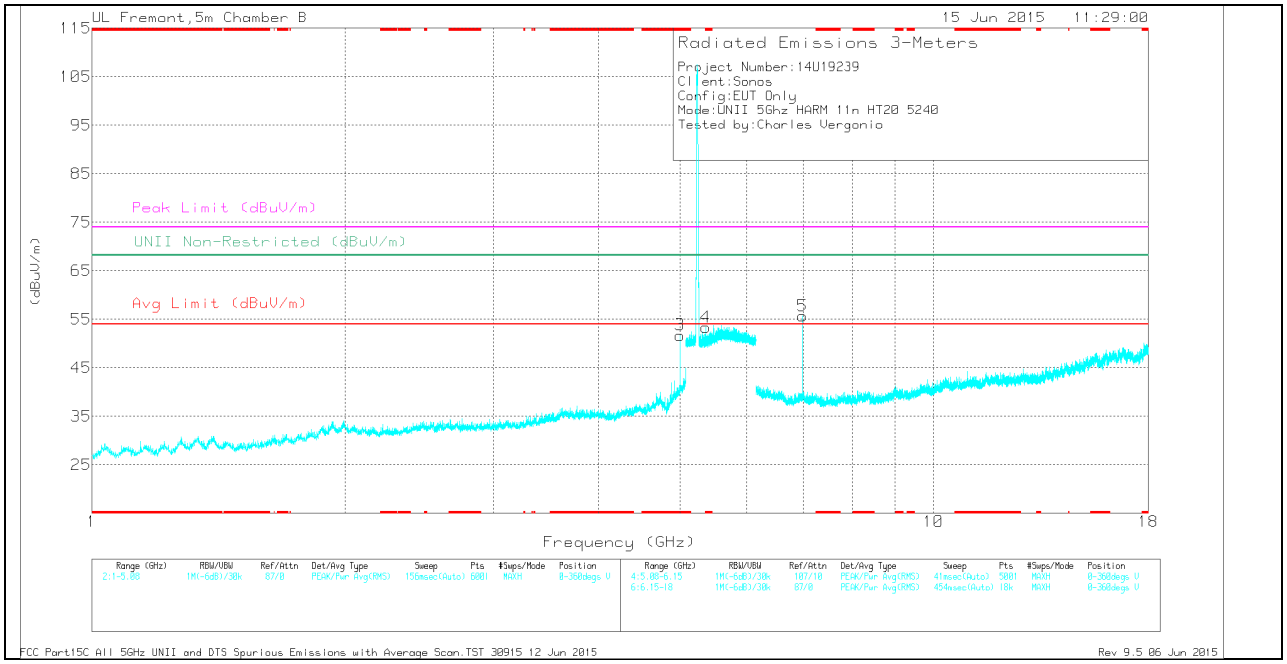
Rev 9.5 06 Jun 2015

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 5	45.14	Pk	34	-27.4	0	51.74	-	-	74	-22.26	-	-	0-360	199	V
4	* 5.36	38.23	Pk	34.4	-19.3	0	53.33	-	-	74	-20.67	-	-	0-360	199	V
1	1.869	33.63	Pk	31.5	-32.2	0	32.93	-	-	-	-	68.2	-35.27	0-360	200	H
2	2.105	34.61	Pk	31.8	-32.4	0	34.01	-	-	-	-	68.2	-34.19	0-360	200	H
5	6.987	45.85	Pk	36	-26.2	0	55.65	-	-	-	-	68.2	-12.55	0-360	101	V
6	10.27	28.6	Pk	37.4	-22.6	0	43.4	-	-	-	-	68.2	-24.8	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	49.97	PK3	34	-27.3	0	56.67	-	-	74	-17.33	-	-	85	222	V
* 5	44.85	ADR	34	-27.4	.4	51.67	54	-2.33	-	-	-	-	85	222	V
* 5.36	45.53	PK3	34.4	-19.3	0	60.63	-	-	74	-13.37	-	-	83	363	V
* 5.36	34.93	ADR	34.4	-19.3	.4	50.25	54	-3.75	-	-	-	-	83	363	V
6.987	48.95	PK3	36	-26.2	0	58.75	-	-	-	-	68.2	-9.45	96	103	V
6.987	46.22	ADR	36	-26.2	.4	56.24	-	-	-	-	-	-	96	103	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

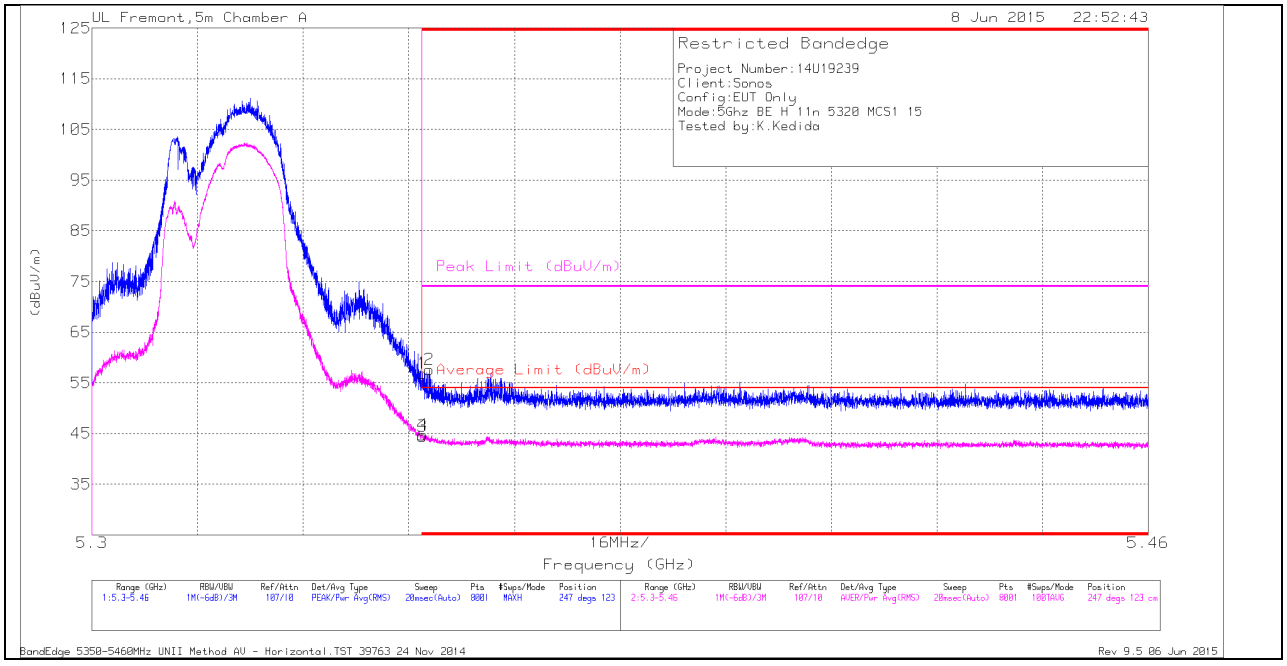
Rev 9.5 06 Jun 2015

11.1. 5.3 GHz

11.1.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	41.51	Pk	34.6	-19.2	0	56.91	-	-	74	-17.09	247	123	H
2	* 5.351	42.25	Pk	34.6	-19.2	0	57.65	-	-	74	-16.35	247	123	H
3	* 5.35	28.8	RMS	34.6	-19.2	.4	44.42	54	-9.58	-	-	247	123	H
4	* 5.35	29.08	RMS	34.6	-19.2	.4	44.7	54	-9.3	-	-	247	123	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

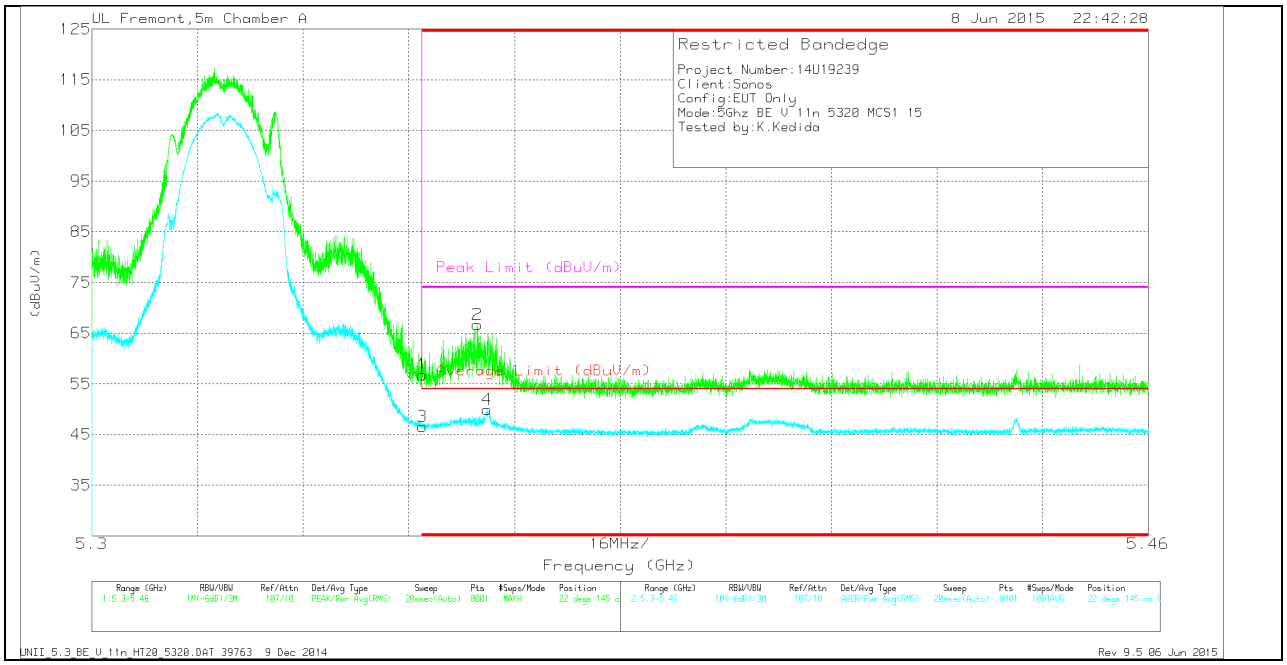
Pk - Peak detector

RMS - RMS detection

BandEdge 5350-5460MHz UNII Method AV - Horizontal.TST 39763 24 Nov 2014

Rev 9.5 06 Jun 2015

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	41.41	Pk	34.6	-19.2	0	56.81	-	-	74	-17.19	22	145	V
2	* 5.358	51.39	Pk	34.6	-19.3	0	66.69	-	-	74	-7.31	22	145	V
3	* 5.35	31.15	RMS	34.6	-19.2	.4	46.77	54	-7.23	-	-	22	145	V
4	* 5.36	34.57	RMS	34.6	-19.3	.4	50.09	54	-3.91	-	-	22	145	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

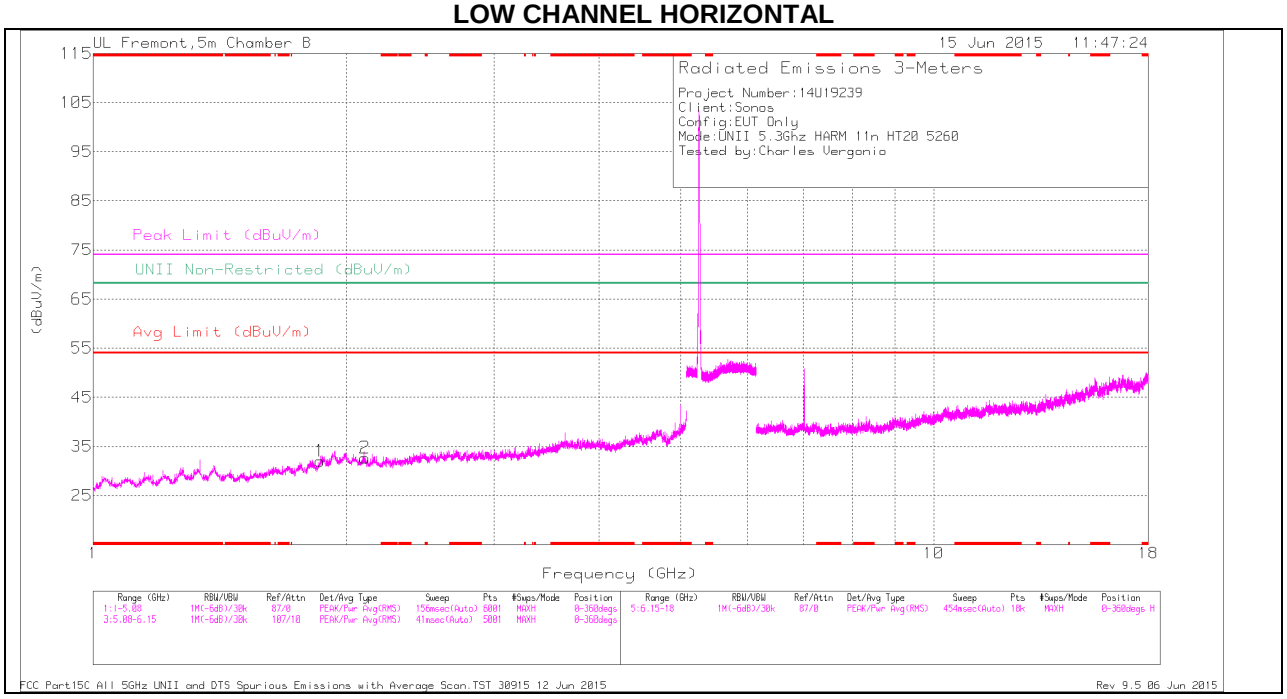
RMS - RMS detection

UNII_5.3_BE_V_11n_HT20_5320.DAT 39763 9 Dec 2014

Rev 9.5 06 Jun 2015

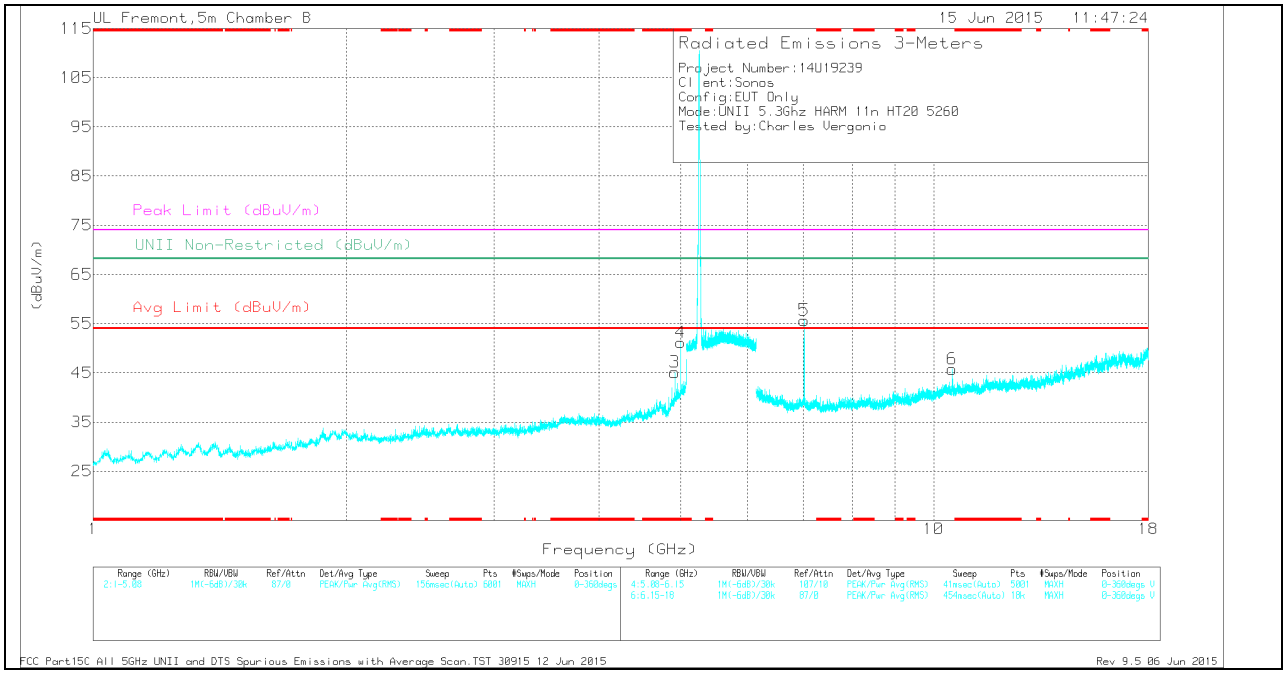
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.92	39.4	Pk	34.1	-28.4	0	45.1	-	-	74	-28.9	-	-	0-360	101	V
4	* 5	44.55	Pk	34	-27.4	0	51.15	-	-	74	-22.85	-	-	0-360	101	V
1	1.863	32.92	Pk	31.4	-32.3	0	32.02	-	-	-	-	68.2	-36.18	0-360	199	H
2	2.106	33.38	Pk	31.7	-32.4	0	32.68	-	-	-	-	68.2	-35.52	0-360	101	H
5	7.013	46.37	Pk	36	-26.7	0	55.67	-	-	-	-	68.2	-12.53	0-360	101	V
6	10.519	31.15	Pk	37.5	-22.9	0	45.75	-	-	-	-	68.2	-22.45	0-360	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.92	45.94	PK3	34.1	-28.4	0	51.64	-	-	74	-22.36	-	-	81	390	V
* 4.92	37.98	ADR	34.1	-28.4	.4	43.9	54	-10.1	-	-	-	-	81	390	V
* 5	51.54	PK3	34	-27.4	0	58.14	-	-	74	-15.86	-	-	89	241	V
* 5	44.77	ADR	34	-27.4	.4	51.59	54	-2.41	-	-	-	-	89	241	V
7.013	48.99	PK3	36	-26.7	0	58.29	-	-	-	-	68.2	-9.91	93	101	V
7.013	46.62	ADR	36	-26.7	.4	56.14	-	-	-	-	-	-	93	101	V
10.519	36.37	PK3	37.5	-22.9	0	50.97	-	-	-	-	68.2	-17.23	93	101	V
10.52	24.56	ADR	37.5	-22.9	.4	39.38	-	-	-	-	-	-	93	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

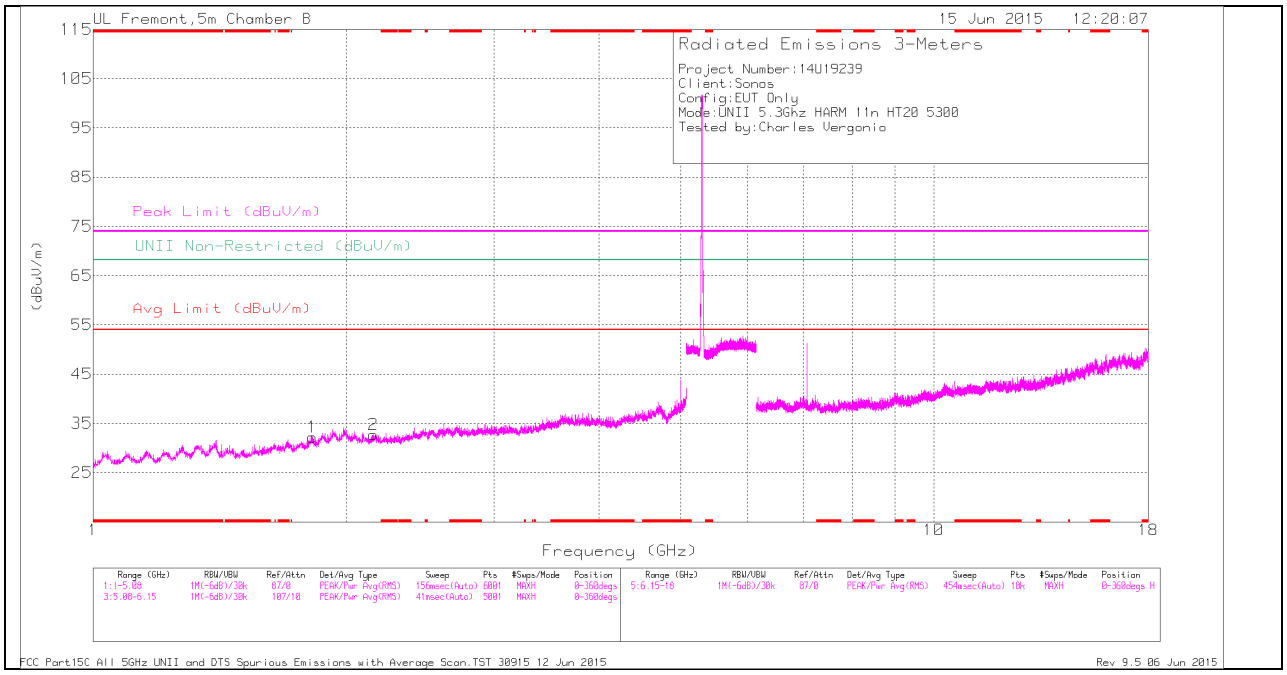
PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

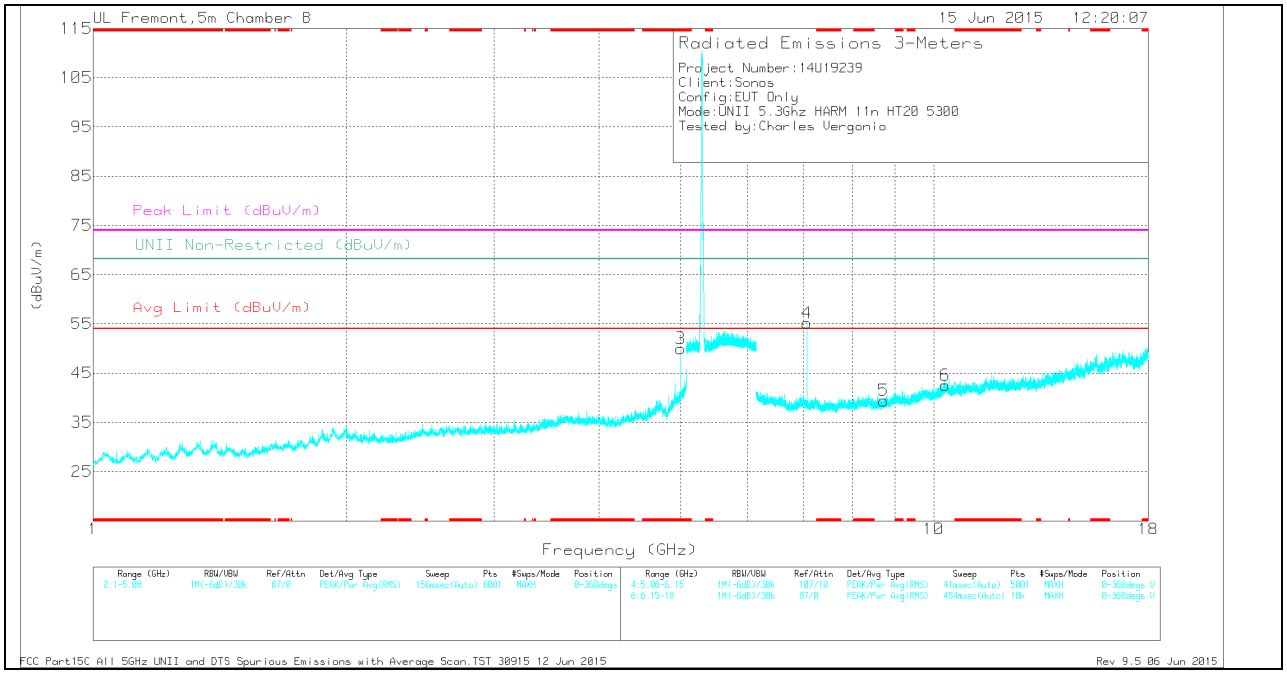
Rev 9.5 06 Jun 2015

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 5	43.36	Pk	34	-27.4	0	49.96	-	-	74	-24.04	-	-	0-360	101	V
1	1.824	33.85	Pk	31	-32.7	0	32.15	-	-	-	-	68.2	-36.05	0-360	199	H
2	2.155	32.9	Pk	31.4	-31.6	0	32.7	-	-	-	-	68.2	-35.5	0-360	101	H
4	7.066	46.89	Pk	35.8	-27.5	0	55.19	-	-	-	-	68.2	-13.01	0-360	101	V
5	8.721	28.91	Pk	35.8	-25.3	0	39.41	-	-	-	-	68.2	-28.79	0-360	199	V
6	10.324	27.52	Pk	37.4	-22.4	0	42.52	-	-	-	-	68.2	-25.68	0-360	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	49.71	PK3	34	-27.3	0	56.41	-	-	74	-17.59	-	-	90	245	V
* 5	44.1	ADR	34	-27.4	.4	50.92	54	-3.08	-	-	-	-	90	245	V
7.067	49.38	PK3	35.8	-27.5	0	57.68	-	-	-	-	68.2	-10.52	93	103	V
7.067	46.69	ADR	35.8	-27.5	.4	55.21	-	-	-	-	-	-	93	103	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

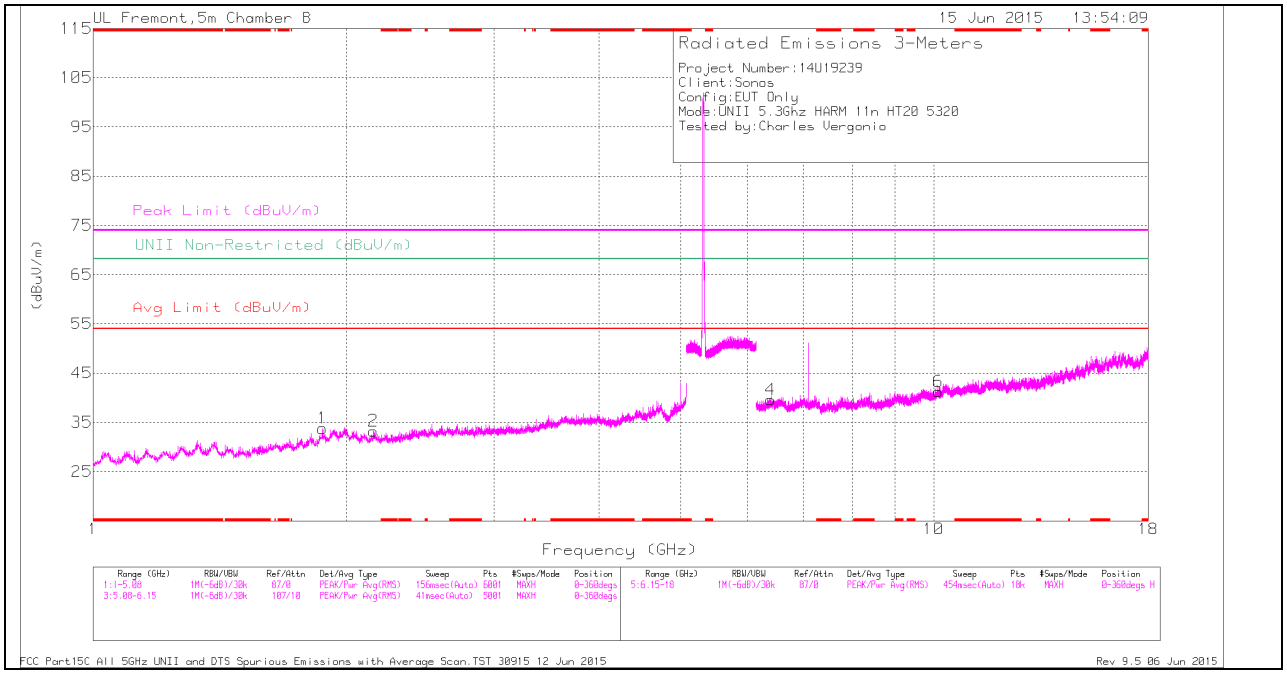
PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

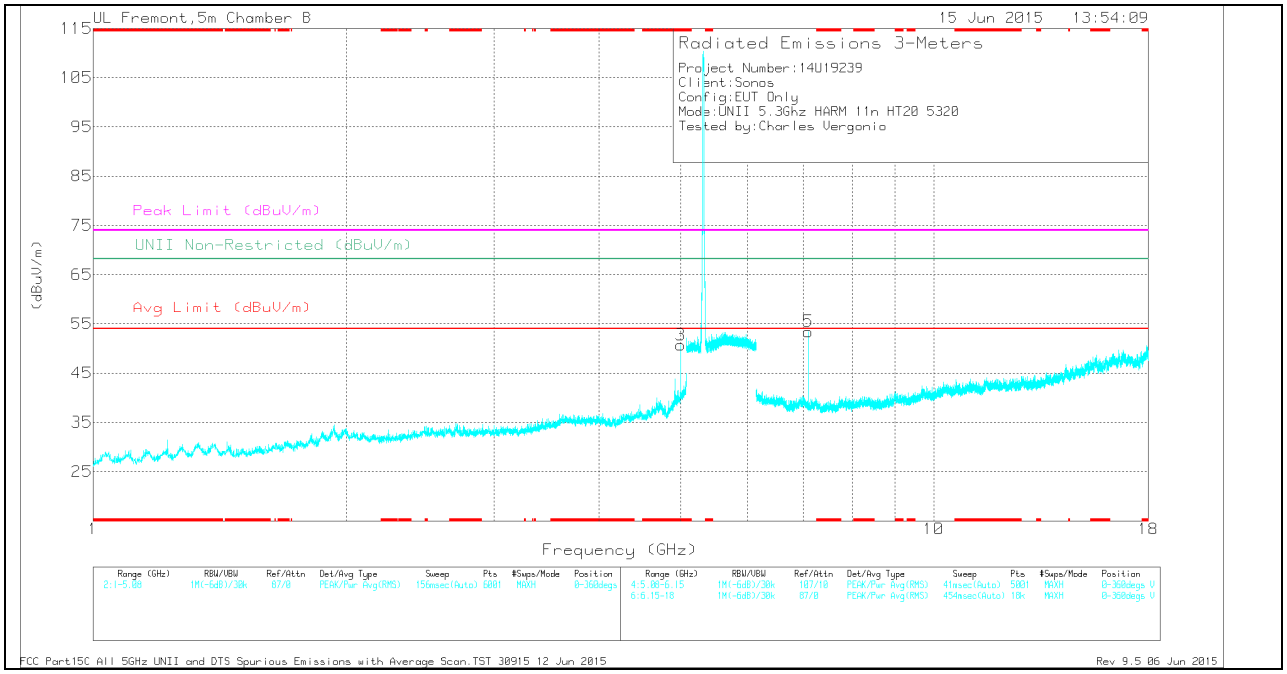
Rev 9.5 06 Jun 2015

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 5	44.08	Pk	34	-27.4	0	50.68	-	-	74	-23.32	-	-	0-360	199	V
1	1.876	34.29	Pk	31.5	-32	0	33.79	-	-	-	-	68.2	-34.41	0-360	199	H
2	2.156	33.44	Pk	31.4	-31.6	0	33.24	-	-	-	-	68.2	-34.96	0-360	199	H
4	6.398	31.46	Pk	35.7	-27.6	0	39.56	-	-	-	-	68.2	-28.64	0-360	101	H
5	7.093	45.63	Pk	35.6	-27.8	0	53.43	-	-	-	-	68.2	-14.77	0-360	101	V
6	10.13	26.94	Pk	37.2	-22.9	0	41.24	-	-	-	-	68.2	-26.96	0-360	199	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	50.17	PK3	34	-27.4	0	56.77	-	-	74	-17.23	-	-	85	227	V
* 5	44.45	ADR	34	-27.4	.4	51.27	54	-2.73	-	-	-	-	85	227	V
7.093	48.37	PK3	35.6	-27.8	0	56.17	-	-	-	-	68.2	-12.03	94	110	V
7.093	45.57	ADR	35.6	-27.8	.4	53.59	-	-	-	-	-	-	94	110	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

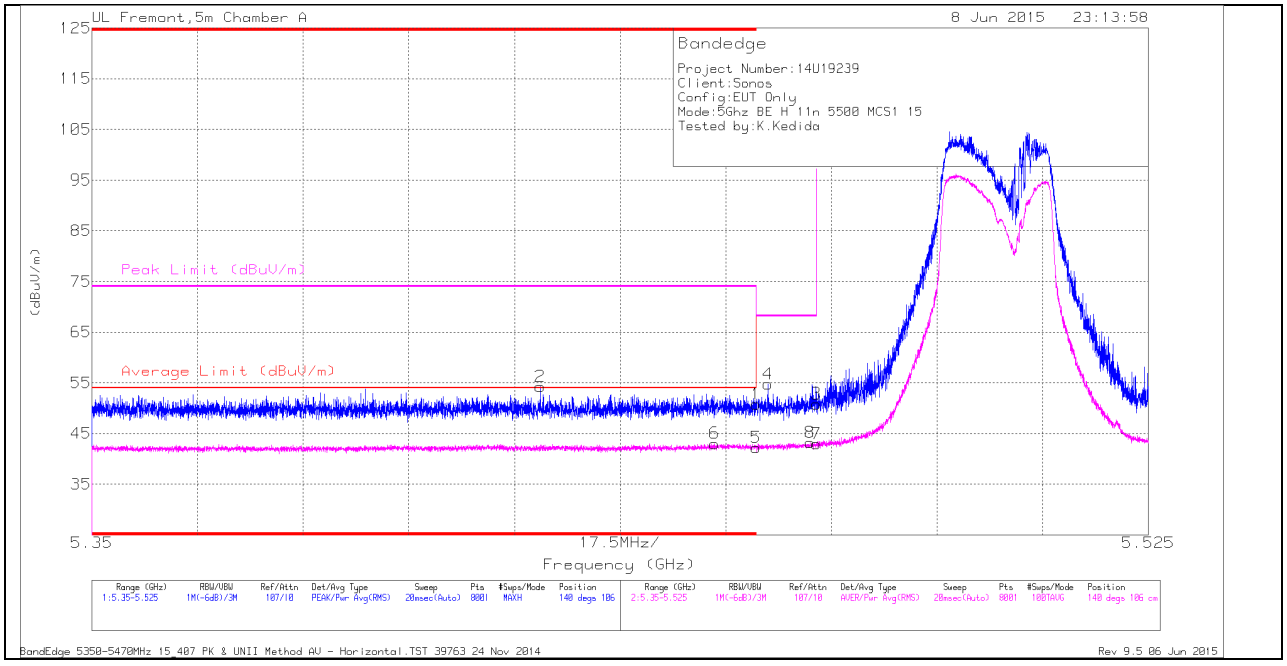
FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

Rev 9.5 06 Jun 2015

11.2. 5.5-5.6 GHz

11.2.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.5 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.46	36.21	Pk	34.5	-19.9	0	50.81	-	-	74	-23.19	140	106	H
2	* 5.424	39.38	Pk	34.6	-19.7	0	54.28	-	-	74	-19.72	140	106	H
5	* 5.46	27.4	RMS	34.5	-19.9	.4	42.22	54	-11.78	-	-	140	106	H
6	* 5.453	28.11	RMS	34.5	-19.8	.4	43.03	54	-10.97	-	-	140	106	H
4	5.462	40.11	Pk	34.5	-19.9	0	54.71	-	-	68.2	-13.49	140	106	H
8	5.469	28.45	RMS	34.5	-19.9	.4	43.27	-	-	-	-	140	106	H
3	5.47	36.25	Pk	34.5	-19.9	0	50.85	-	-	68.2	-17.35	140	106	H
7	5.47	28.13	RMS	34.5	-19.9	.4	42.95	-	-	-	-	140	106	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

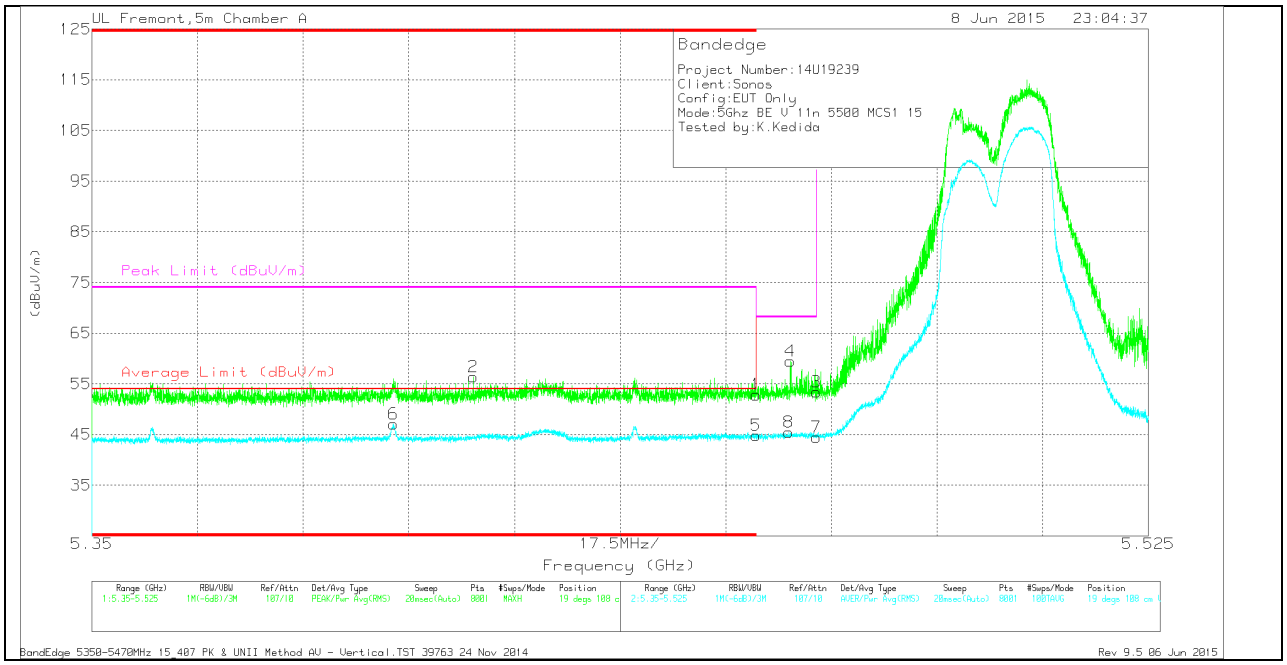
Pk - Peak detector

RMS - RMS detection

BandEdge 5350-5470MHz 15_407 PK & UNII Method AV - Horizontal.TST 39763 24 Nov 2014

Rev 9.5 06 Jun 2015

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.46	38.24	Pk	34.5	-19.9	0	52.84	-	-	74	-21.16	19	108	V
2	* 5.413	41.42	Pk	34.6	-19.6	0	56.42	-	-	74	-17.58	19	108	V
5	* 5.46	30.05	RMS	34.5	-19.9	.4	44.87	54	-9.13	-	-	19	108	V
6	* 5.4	31.72	RMS	34.6	-19.5	.4	47.04	54	-6.96	-	-	19	108	V
8	5.465	30.63	RMS	34.5	-19.9	.4	45.45	-	-	-	-	19	108	V
4	5.466	44.85	Pk	34.5	-19.9	0	59.45	-	-	68.2	-8.75	19	108	V
3	5.47	38.84	Pk	34.5	-19.9	0	53.44	-	-	68.2	-14.76	19	108	V
7	5.47	29.6	RMS	34.5	-19.9	.4	44.42	-	-	-	-	19	108	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

BandEdge 5350-5470MHz 15_407 PK & UNII Method AV - Vertical.TST 39763 24 Nov 2014

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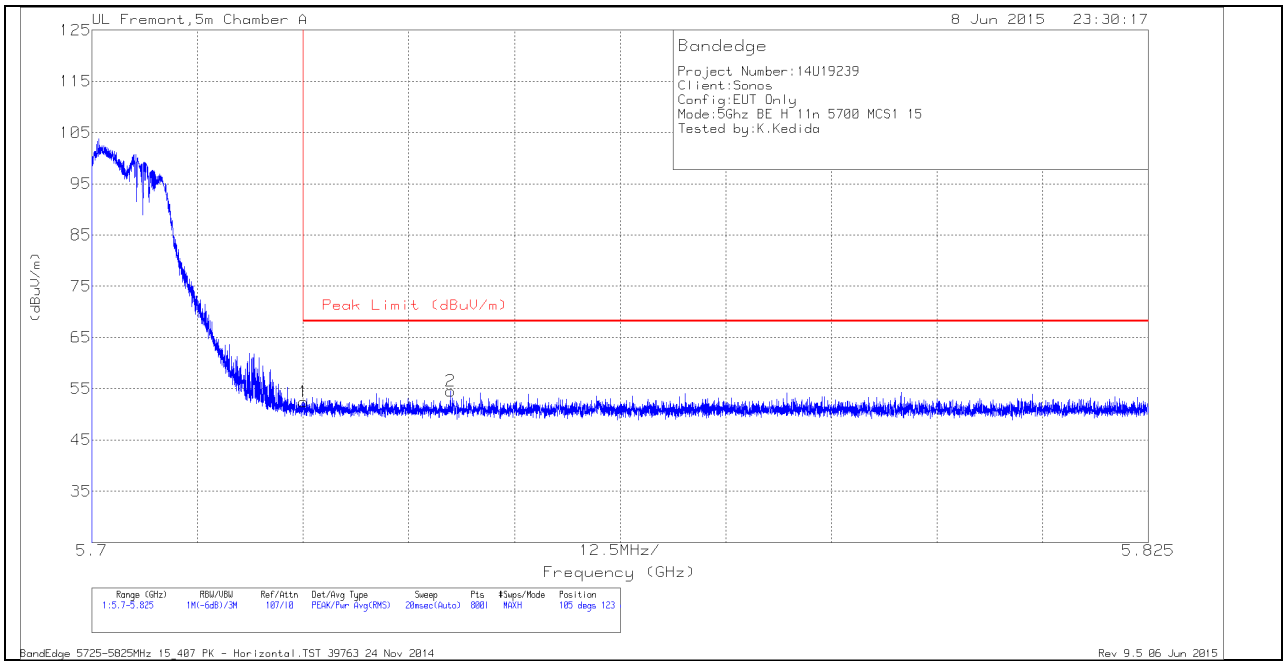
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	38.14	Pk	34.7	-20.4	52.44	68.2	-15.76	105	123	H
2	5.742	40.13	Pk	34.8	-20.4	54.53	68.2	-13.67	105	123	H

Pk - Peak detector

BandEdge 5725-5825MHz 15_407 PK - Horizontal.TST 39763 24 Nov 2014

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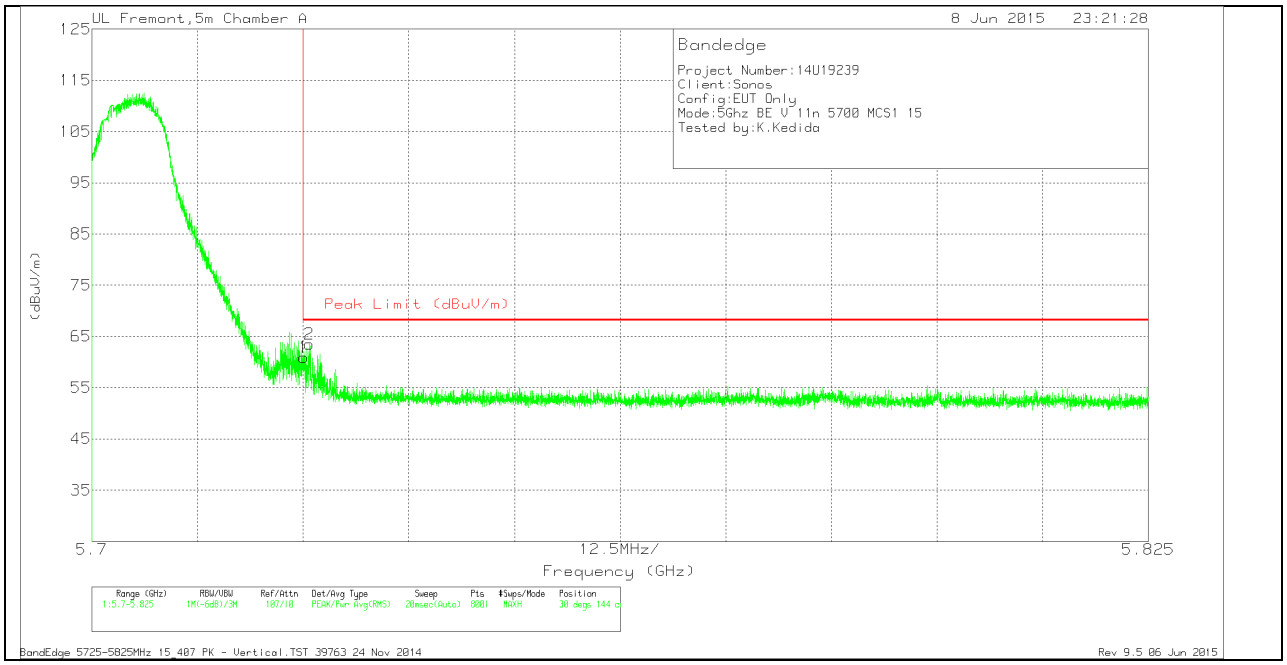
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	46.68	Pk	34.7	-20.4	60.98	68.2	-7.22	30	144	V
2	5.726	49.17	Pk	34.7	-20.4	63.47	68.2	-4.73	30	144	V

Pk - Peak detector

BandEdge 5725-5825MHz 15_407 PK - Vertical.TST 39763 24 Nov 2014

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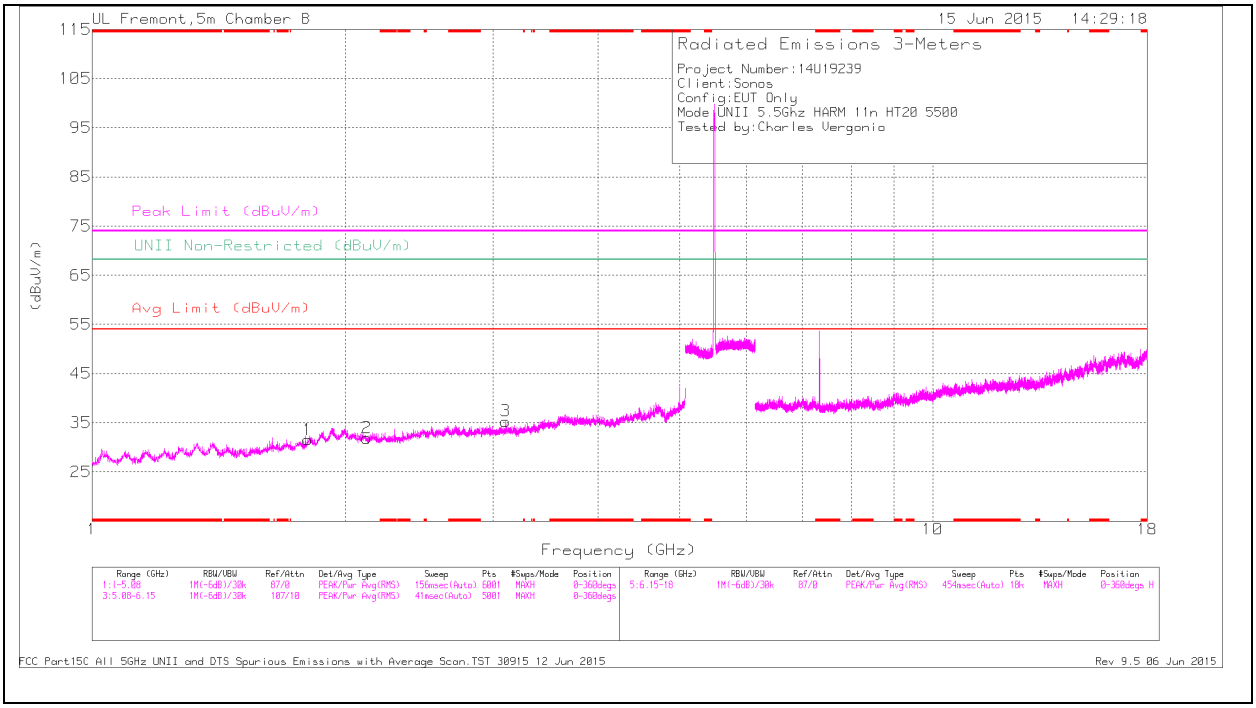
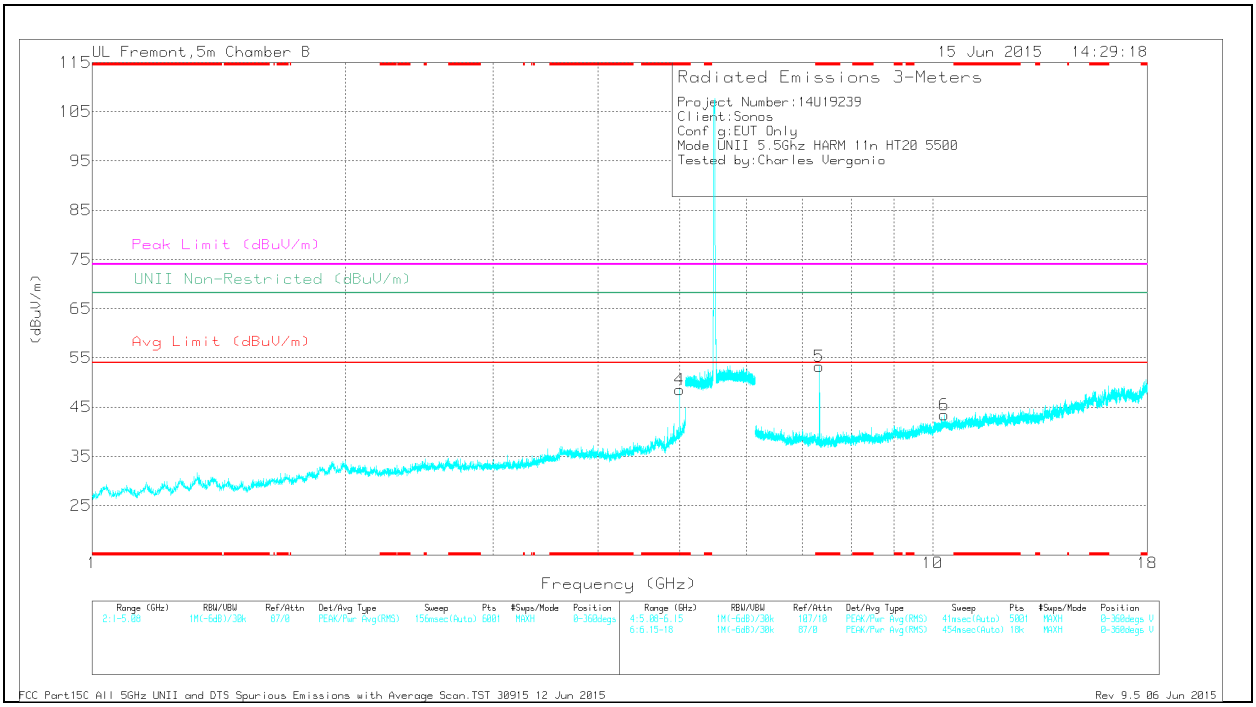
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 5	41.95	Pk	34	-27.4	0	48.55	-	-	74	-25.45	-	-	0-360	199	V
5	* 7.333	45.47	Pk	35.3	-27.5	0	53.27	-	-	74	-20.73	-	-	0-360	101	V
1	1.805	33.51	Pk	30.8	-32.8	0	31.51	-	-	-	-	68.2	-36.69	0-360	200	H
2	2.123	32.39	Pk	31.6	-32.1	0	31.89	-	-	-	-	68.2	-36.31	0-360	200	H
3	3.105	33.61	Pk	32.7	-31	0	35.31	-	-	-	-	68.2	-32.89	0-360	101	H
6	10.317	28.5	Pk	37.4	-22.5	0	43.4	-	-	-	-	68.2	-24.8	0-360	199	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	47.28	PK3	34	-27.3	0	53.98	-	-	74	-20.02	-	-	82	199	V
* 5	41.08	ADR	34	-27.4	.4	47.9	54	-6.1	-	-	-	-	82	199	V
* 7.333	47.67	PK3	35.3	-27.5	0	55.47	-	-	74	-18.53	-	-	318	101	V
* 7.333	44.58	ADR	35.3	-27.5	.4	52.6	54	-1.4	-	-	-	-	318	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

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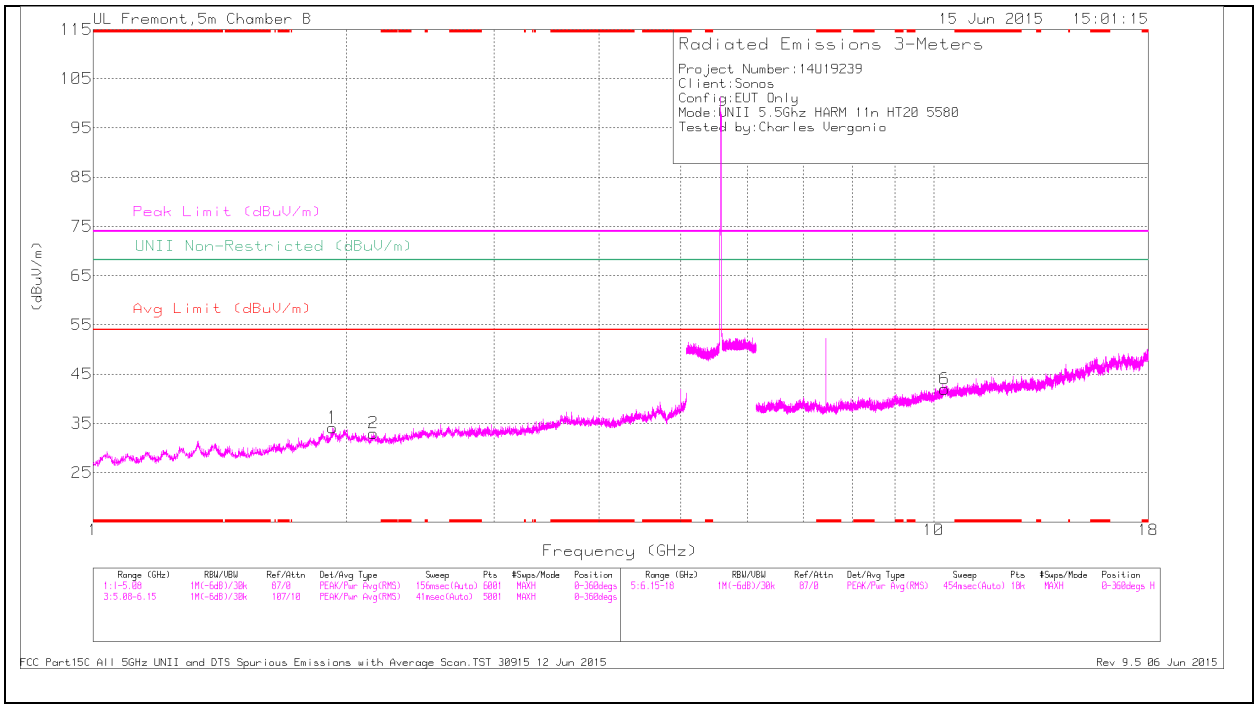
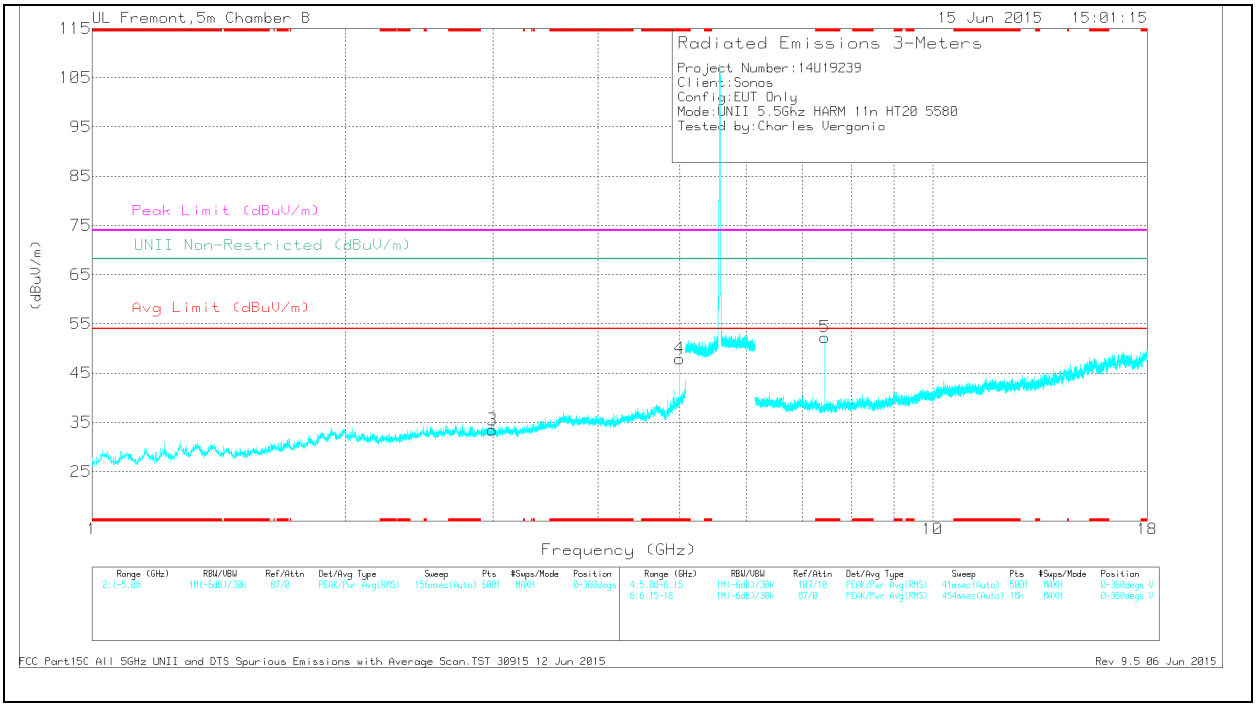
MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 5	41.34	Pk	34	-27.4	0	47.94	-	-	74	-26.06	-	-	0-360	200	V
5	* 7.44	43.6	Pk	35.3	-26.6	0	52.3	-	-	74	-21.7	-	-	0-360	101	V
1	1.926	33.93	Pk	31.9	-31.7	0	34.13	-	-	-	-	68.2	-34.07	0-360	199	H
2	2.157	33.21	Pk	31.4	-31.6	0	33.01	-	-	-	-	68.2	-35.19	0-360	199	H
3	2.996	31.88	Pk	32.5	-30.9	0	33.48	-	-	-	-	68.2	-34.72	0-360	200	V
6	10.302	26.98	Pk	37.4	-22.4	0	41.98	-	-	-	-	68.2	-26.22	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	46.74	PK3	34	-27.3	0	53.44	-	-	74	-20.56	-	-	81	159	V
* 5	40.5	ADR	34	-27.4	.4	47.32	54	-6.68	-	-	-	-	81	159	V
* 7.44	46.48	PK3	35.3	-26.6	0	55.18	-	-	74	-18.82	-	-	315	101	V
* 7.44	43.35	ADR	35.3	-26.6	.4	52.27	54	-1.73	-	-	-	-	315	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

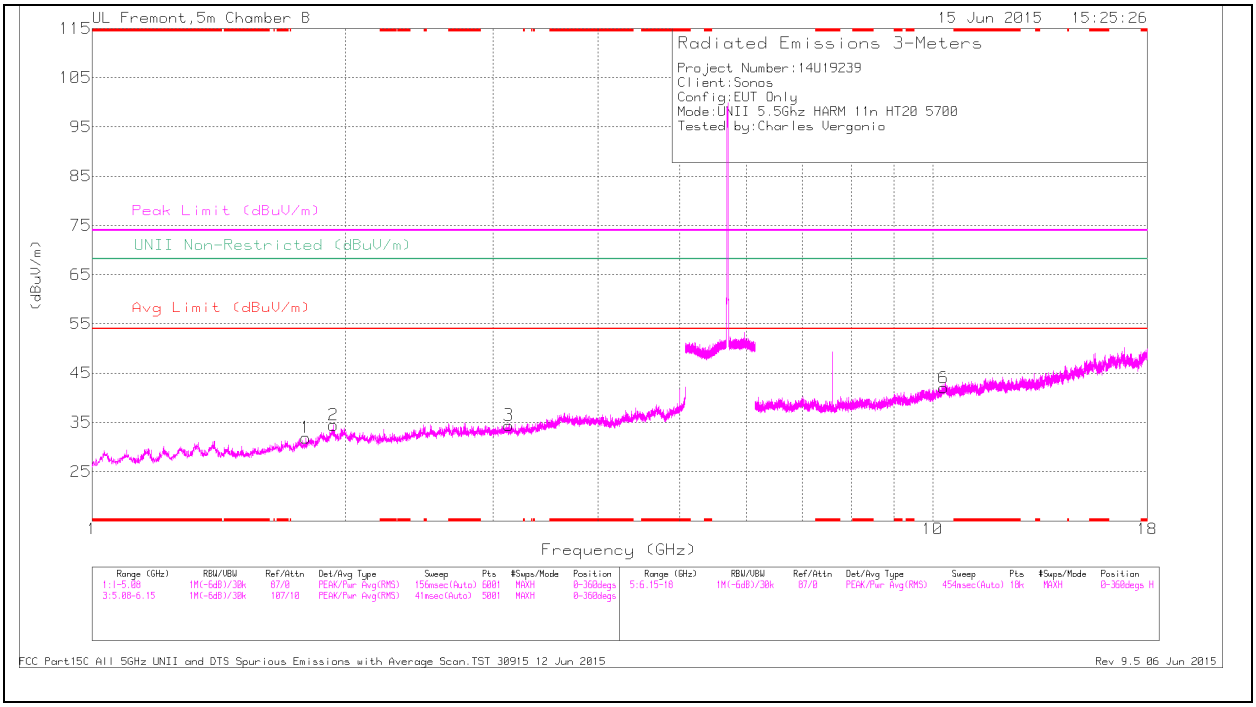
PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

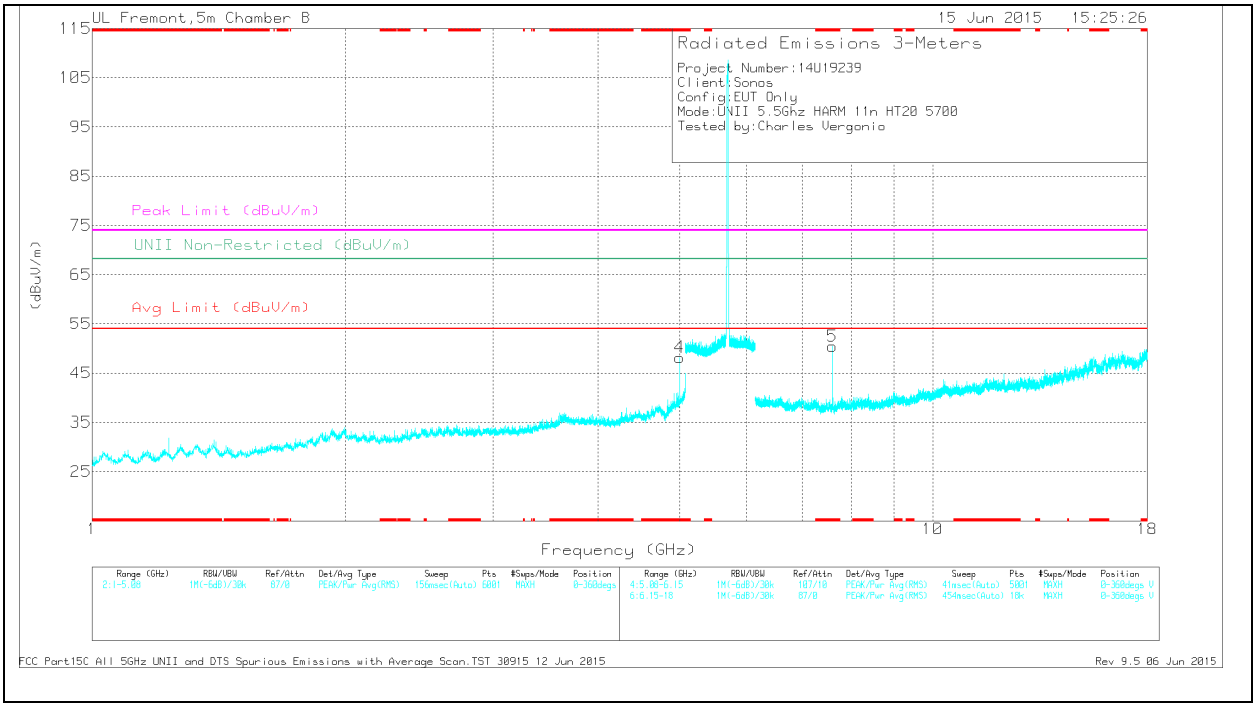
Rev 9.5 06 Jun 2015

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 5	41.58	Pk	34	-27.4	0	48.18	-	-	74	-25.82	-	-	0-360	101	V
5	* 7.6	41.14	Pk	35.4	-26.1	0	50.44	-	-	74	-23.56	-	-	0-360	199	V
1	1.797	34.07	Pk	30.7	-32.9	0	31.87	-	-	-	-	68.2	-36.33	0-360	199	H
2	1.936	34.04	Pk	32	-31.6	0	34.44	-	-	-	-	68.2	-33.76	0-360	199	H
3	3.131	32.39	Pk	32.6	-30.6	0	34.39	-	-	-	-	68.2	-33.81	0-360	101	H
6	10.306	26.99	Pk	37.4	-22.4	0	41.99	-	-	-	-	68.2	-26.21	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	47.28	PK3	34	-27.4	0	53.88	-	-	74	-20.12	-	-	91	247	V
* 5	41.05	ADR	34	-27.4	.4	47.87	54	-6.13	-	-	-	-	91	247	V
* 7.6	45.42	PK3	35.4	-26.1	0	54.72	-	-	74	-19.28	-	-	99	215	V
* 7.6	41.92	ADR	35.4	-26.1	.4	51.44	54	-2.56	-	-	-	-	99	215	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

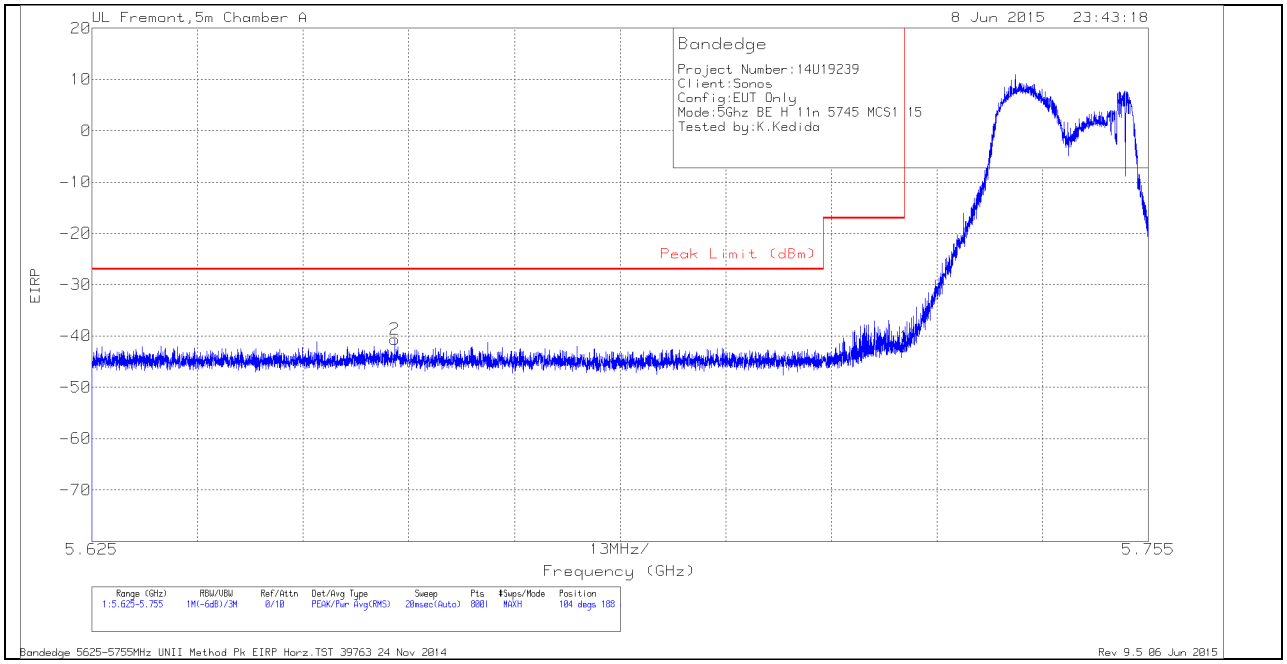
FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

Rev 9.5 06 Jun 2015

11.3. 5.8 GHz

11.3.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.662	-66.78	Pk	34.6	-20.3	11.8	-40.68	-27	-13.68	104	188	H
1	5.725	-68.22	Pk	34.7	-20.4	11.8	-42.12	-17	-25.12	104	188	H

Pk - Peak detector

Bandedge 5625-5755MHz UNII Method Pk EIRP Horz.TST 39763 24 Nov 2014

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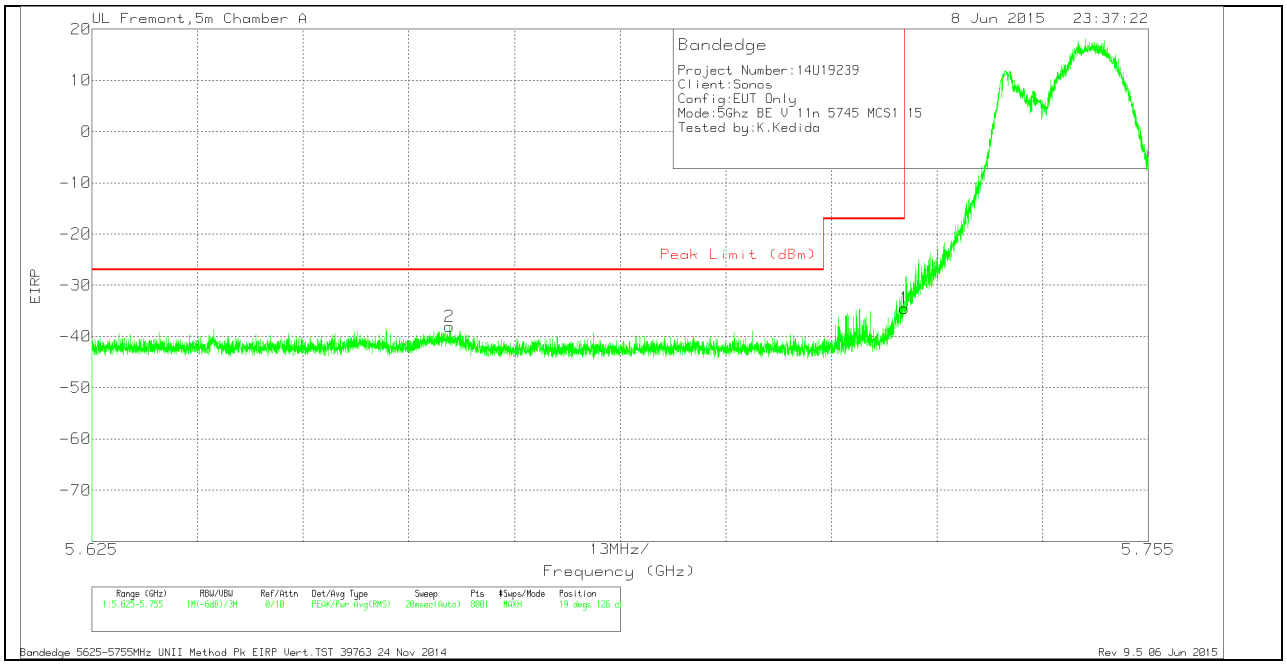
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.669	-64.15	Pk	34.6	-20.3	11.8	-38.05	-27	-11.05	19	126	V
1	5.725	-60.65	Pk	34.7	-20.4	11.8	-34.55	-17	-17.55	19	126	V

Pk - Peak detector

Bandedge 5625-5755MHz UNII Method Pk EIRP Vert.TST 39763 24 Nov 2014

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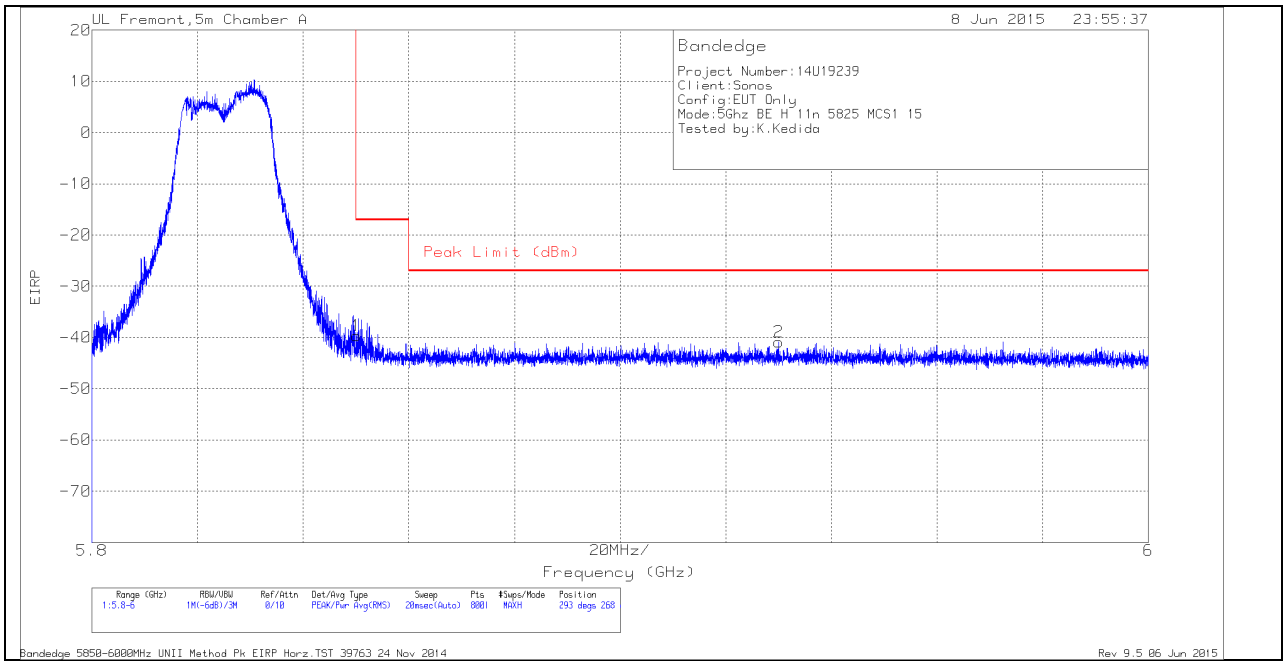
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

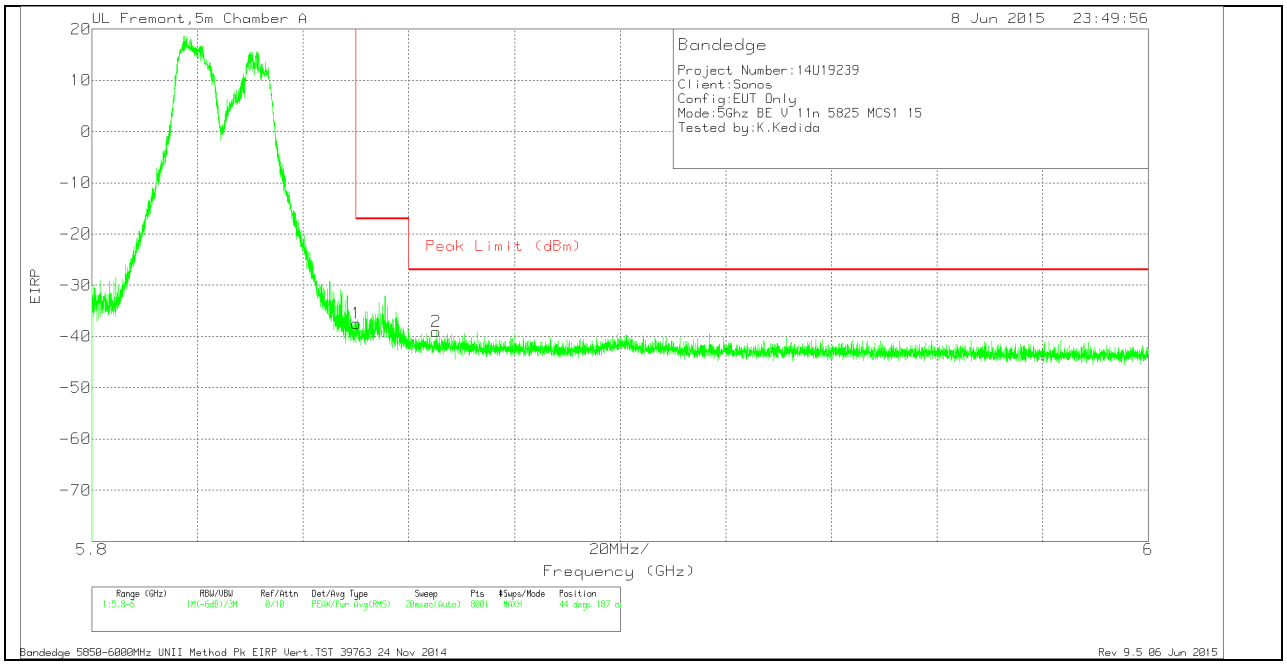
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.12	Pk	35.1	-20.4	11.8	-39.62	-17	-22.62	293	268	H
2	5.93	-67.65	Pk	35.2	-20.2	11.8	-40.85	-27	-13.85	293	268	H

Pk - Peak detector

Bandedge 5850-6000MHz UNII Method Pk EIRP Horz.TST 39763 24 Nov 2014

Rev 9.5 06 Jun 2015

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-63.94	Pk	35.1	-20.4	11.8	-37.44	-17	-20.44	44	187	V
2	5.865	-65.58	Pk	35.1	-20.4	11.8	-39.08	-27	-12.08	44	187	V

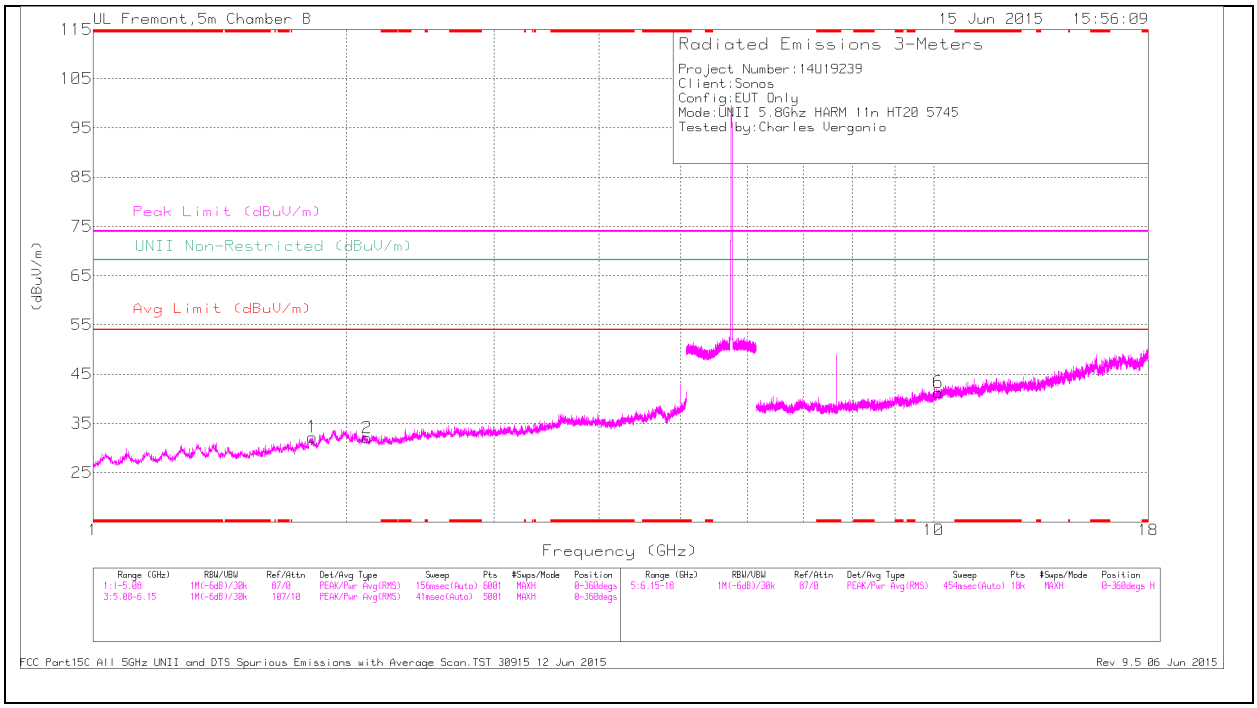
Pk - Peak detector

Bandedge 5850-6000MHz UNII Method Pk EIRP Vert.TST 39763 24 Nov 2014

Rev 9.5 06 Jun 2015

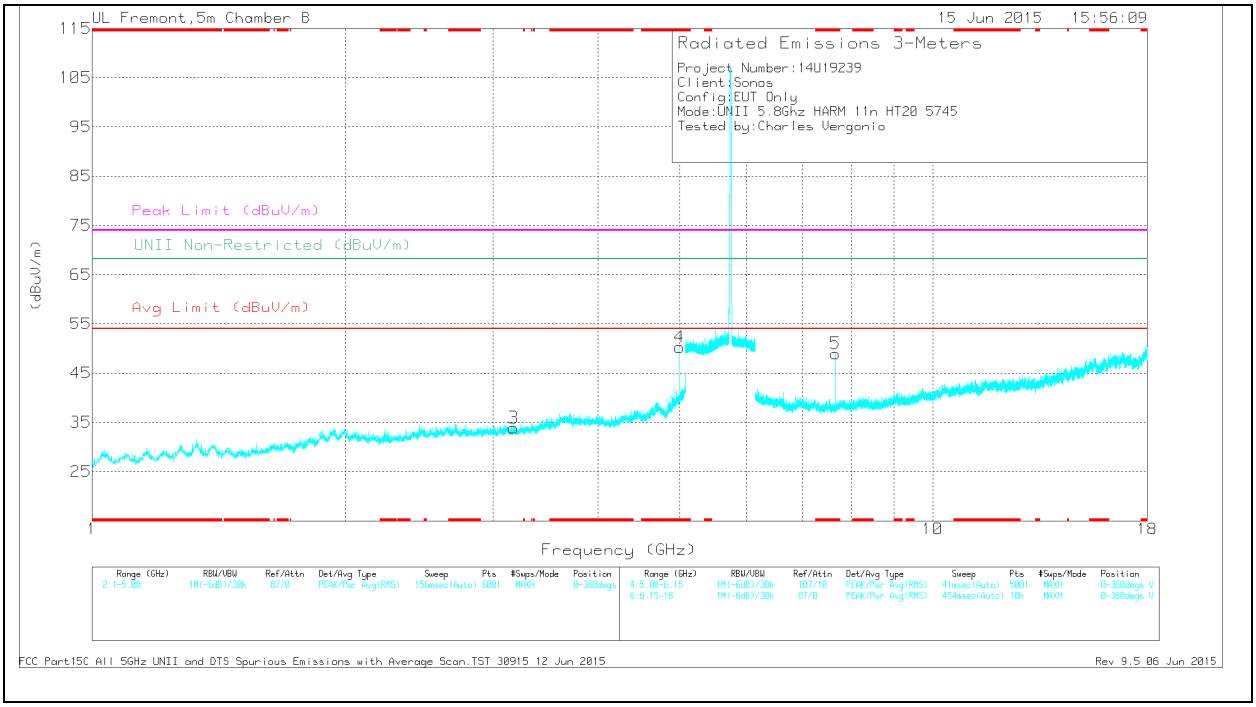
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 5	43.68	Pk	34	-27.4	0	50.28	-	-	74	-23.72	-	-	0-360	199	V
5	* 7.66	40.27	Pk	35.5	-26.8	0	48.97	-	-	74	-25.03	-	-	0-360	199	V
1	1.824	33.93	Pk	31	-32.7	0	32.23	-	-	-	-	68.2	-35.97	0-360	101	H
2	2.119	32.45	Pk	31.7	-32.1	0	32.05	-	-	-	-	68.2	-36.15	0-360	101	H
3	3.172	31.97	Pk	32.5	-30.6	0	33.87	-	-	-	-	68.2	-34.33	0-360	199	V
6	10.129	26.99	Pk	37.2	-22.9	0	41.29	-	-	-	-	68.2	-26.91	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	49.42	PK3	34	-27.4	0	56.02	-	-	74	-17.98	-	-	85	230	V
* 5	43.83	ADR	34	-27.4	.4	50.65	54	-3.35	-	-	-	-	85	230	V
* 7.66	44.39	PK3	35.4	-26.8	0	52.99	-	-	74	-21.01	-	-	85	200	V
* 7.66	40.09	ADR	35.4	-26.8	.4	48.91	54	-5.09	-	-	-	-	85	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

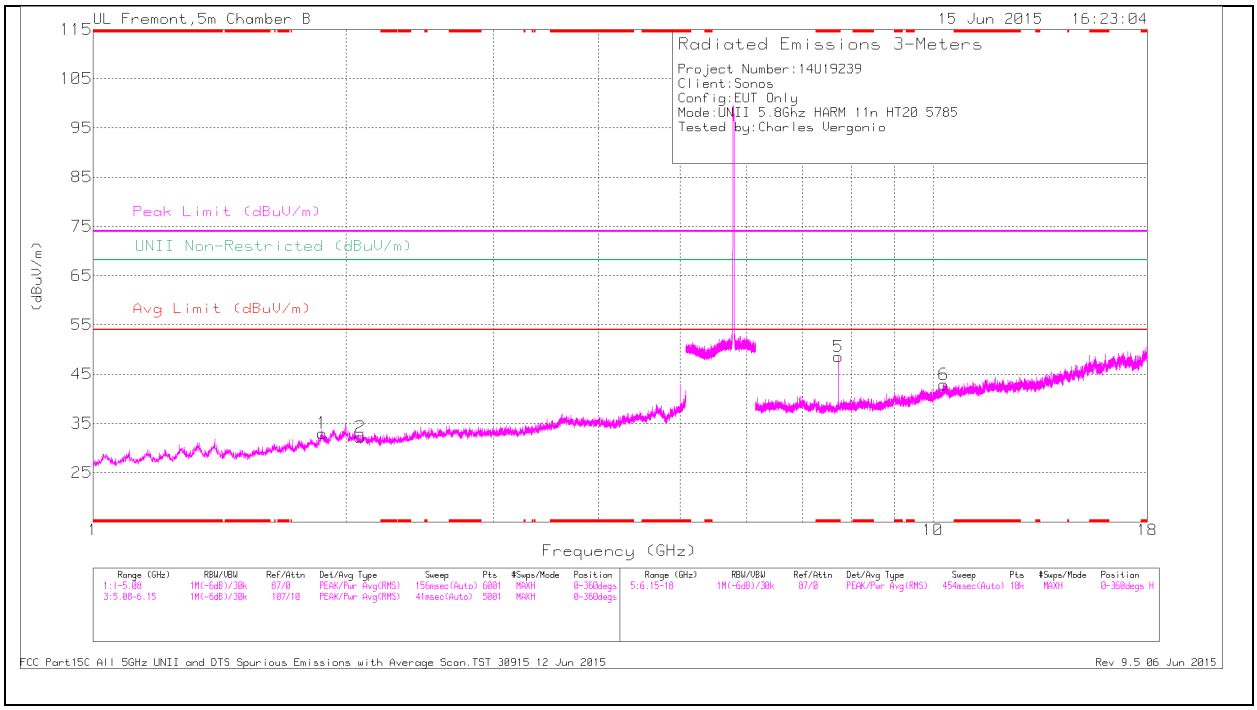
PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

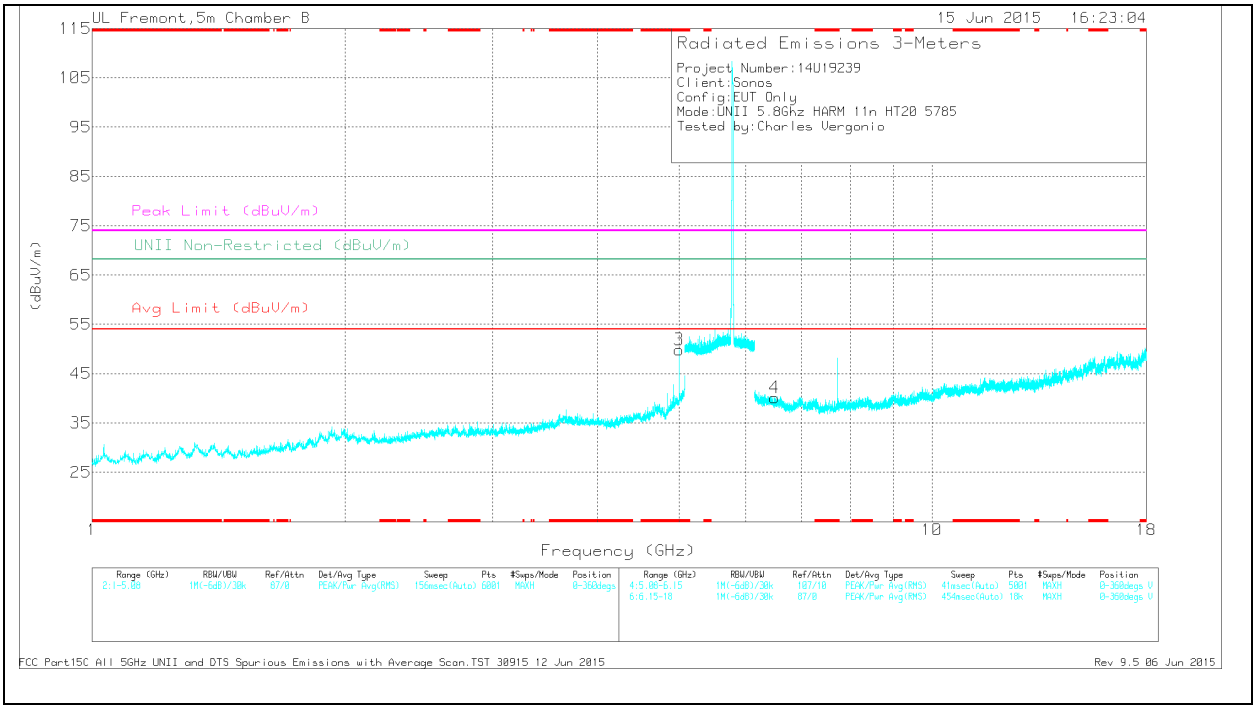
Rev 9.5 06 Jun 2015

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 5	43.26	Pk	34	-27.4	0	49.86	-	-	74	-24.14	-	-	0-360	199	V
5	* 7.713	39.11	Pk	35.5	-26.1	0	48.51	-	-	74	-25.49	-	-	0-360	101	H
1	1.875	33.59	Pk	31.5	-32.1	0	32.99	-	-	-	-	68.2	-35.21	0-360	199	H
2	2.081	32.85	Pk	31.9	-32.6	0	32.15	-	-	-	-	68.2	-36.05	0-360	199	H
4	6.495	32.52	Pk	35.8	-28.2	0	40.12	-	-	-	-	68.2	-28.08	0-360	199	V
6	10.301	27.87	Pk	37.4	-22.4	0	42.87	-	-	-	-	68.2	-25.33	0-360	199	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	49.53	PK3	34	-27.4	0	56.13	-	-	74	-17.87	-	-	86	230	V
* 5	43.77	ADR	34	-27.4	.4	50.59	54	-3.41	-	-	-	-	86	230	V
* 7.713	44.52	PK3	35.5	-26.1	0	53.92	-	-	74	-20.08	-	-	273	146	H
* 7.713	39.96	ADR	35.5	-26.1	.4	49.58	54	-4.42	-	-	-	-	273	146	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

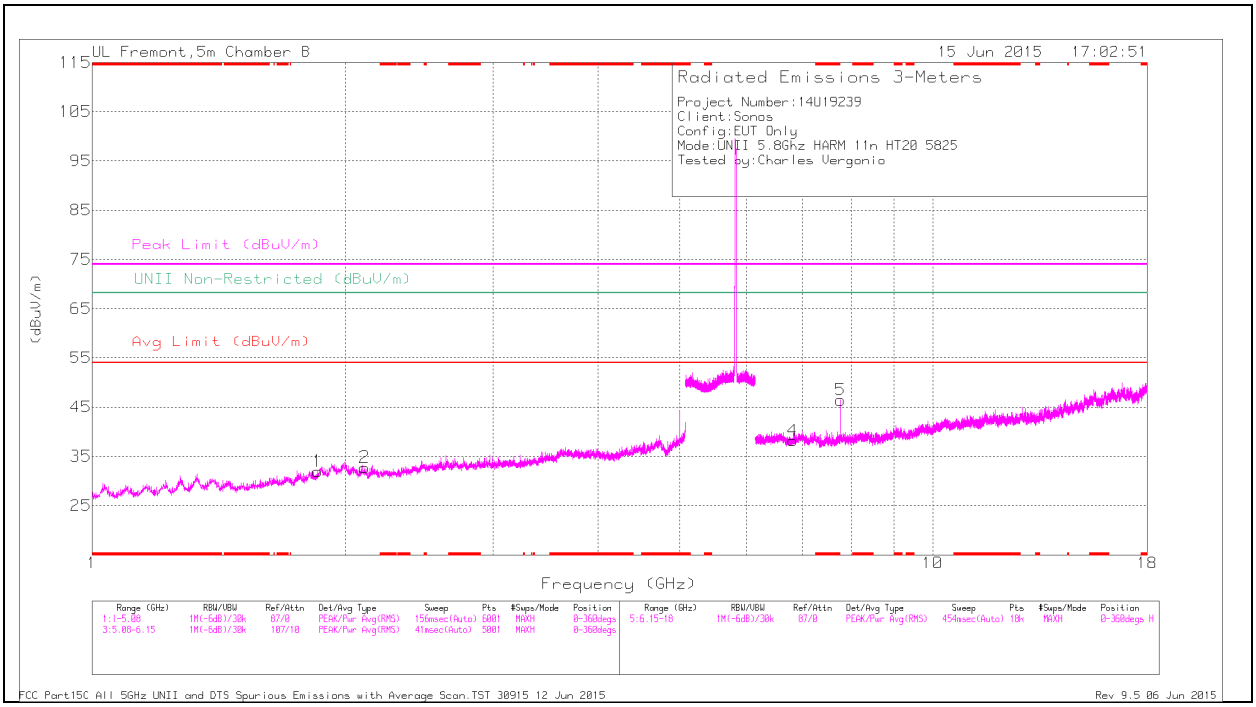
PK3 - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

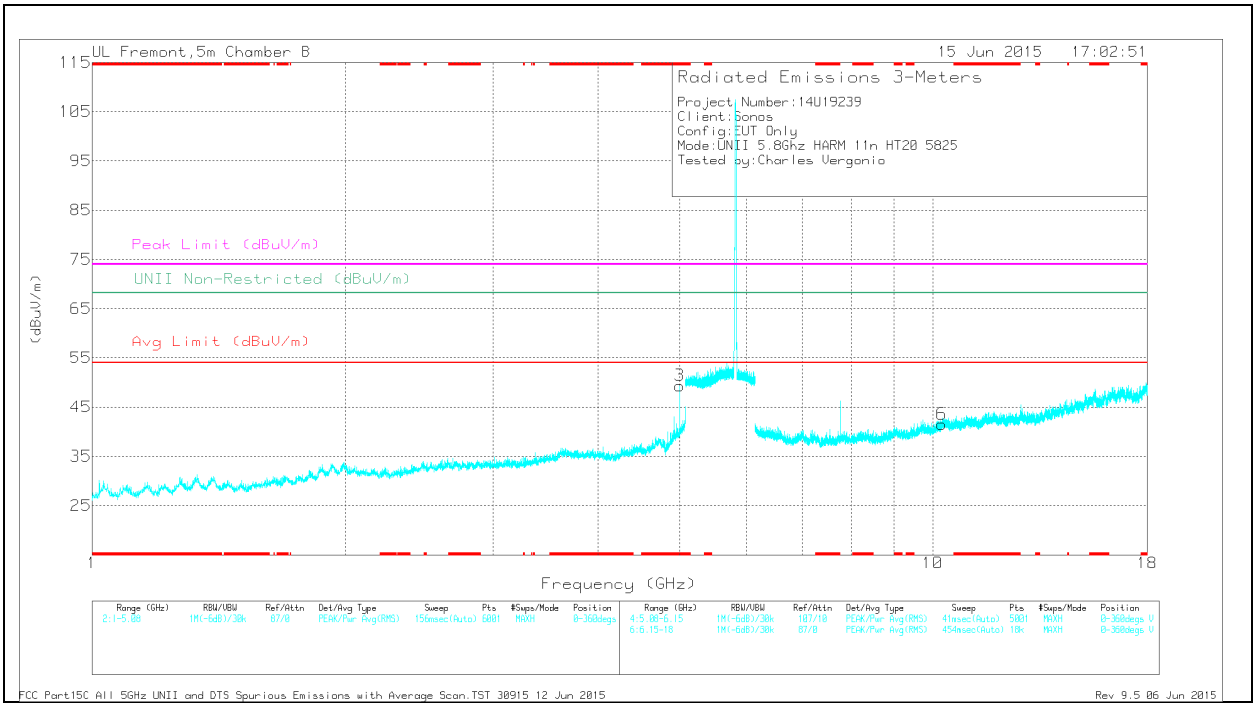
Rev 9.5 06 Jun 2015

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 5	42.77	Pk	34	-27.4	0	49.37	-	-	74	-24.63	-	-	0-360	101	V
1	1.855	33.05	Pk	31.3	-32.4	0	31.95	-	-	-	-	68.2	-36.25	0-360	101	H
2	2.11	33.33	Pk	31.7	-32.3	0	32.73	-	-	-	-	68.2	-35.47	0-360	199	H
4	6.818	29.87	Pk	36	-27.7	0	38.17	-	-	-	-	68.2	-30.03	0-360	200	H
5	7.767	36.75	Pk	35.5	-25.8	0	46.45	-	-	-	-	68.2	-21.75	0-360	101	H
6	10.25	27.26	Pk	37.4	-23.1	0	41.56	-	-	-	-	68.2	-26.64	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5	49.93	PK3	34	-27.4	0	56.53	-	-	74	-17.47	-	-	89	245	V
* 5	43.72	ADR	34	-27.4	.4	50.54	54	-3.46	-	-	-	-	89	245	V
7.767	42.36	PK3	35.5	-25.8	0	52.06	-	-	-	-	68.2	-16.14	261	102	H
7.767	36.52	ADR	35.5	-25.8	.4	46.44	-	-	-	-	-	-	261	102	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - U-NII: Maximum Peak

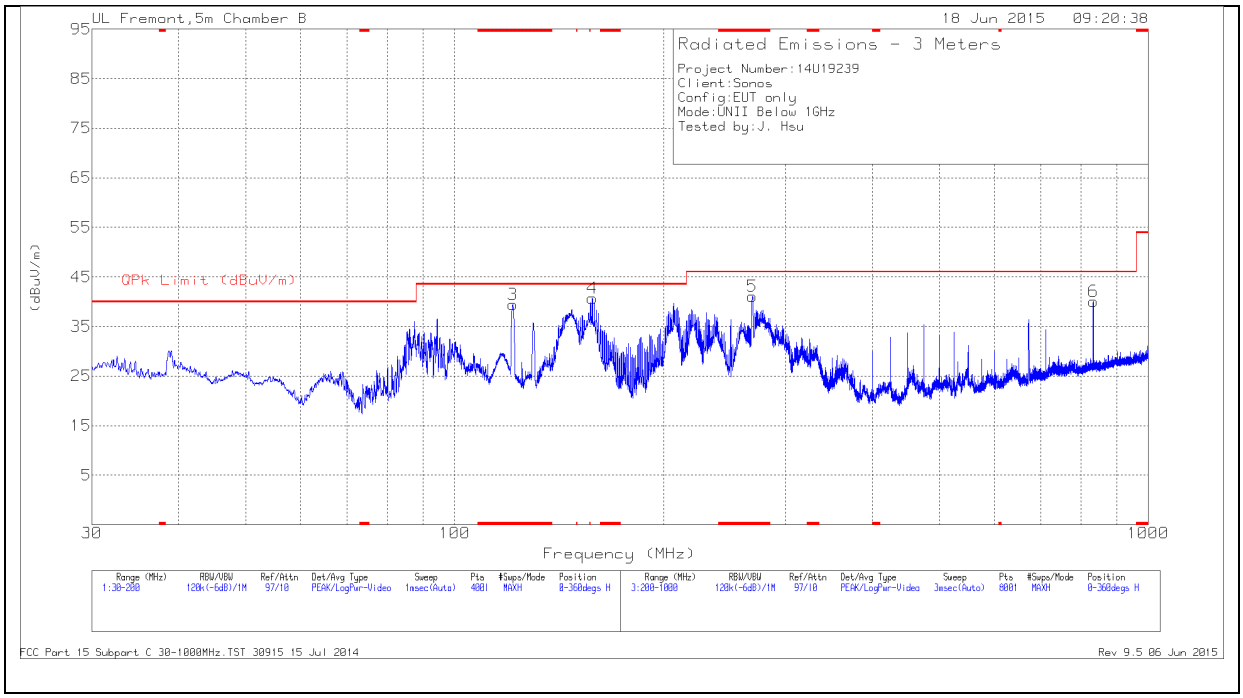
ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 12 Jun 2015

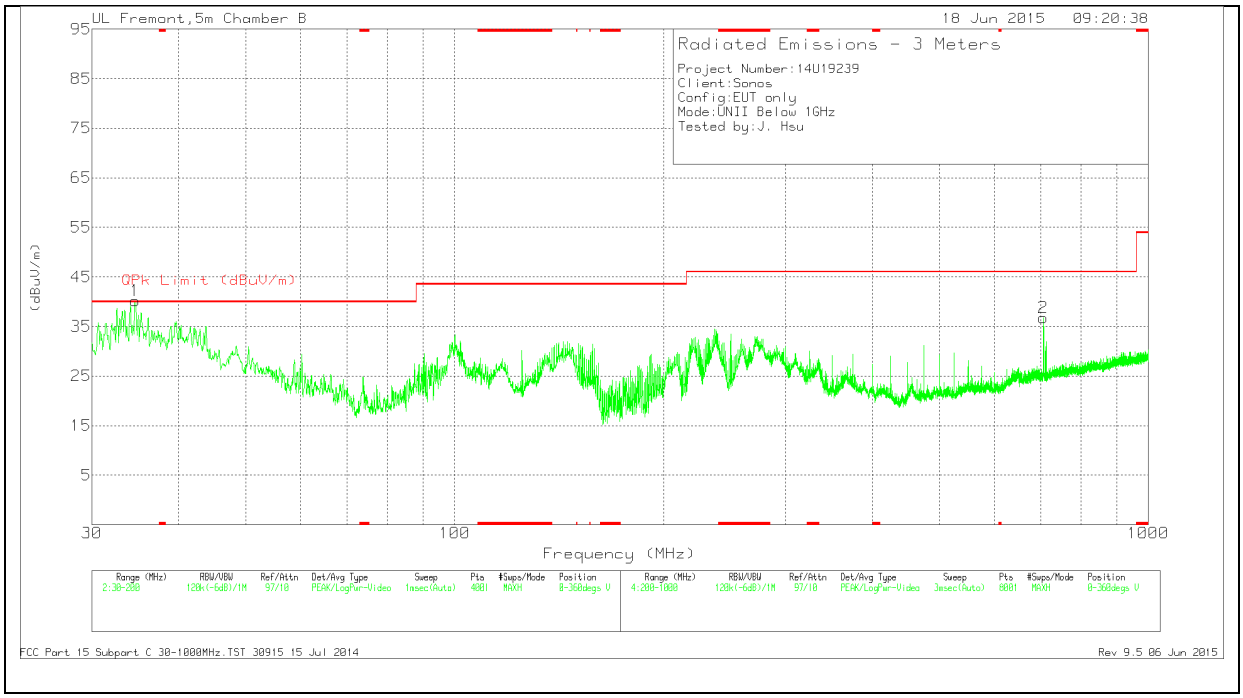
Rev 9.5 06 Jun 2015

12. WORST-CASE BELOW 1 GHz (in the 5.3 GHz Band)

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



Below 1G Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 121.2263	53.11	Pk	14.1	-27.8	39.41	43.52	-4.11	0-360	399	H
5	* 268.8	54.02	Pk	13.2	-26.1	41.12	46.02	-4.9	0-360	399	H
1	34.6325	51.15	Pk	17.8	-28.7	40.25			0-360	101	V
4	157.9675	55.66	Pk	12.3	-27.3	40.66	43.52	-2.86	0-360	101	H
2	705.5	40.78	Pk	20.3	-24.3	36.78	46.02	-9.24	0-360	101	V
6	833	41.52	Pk	21.9	-23.3	40.12	46.02	-5.9	0-360	299	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 120.3815	36.37	Qp	14.1	-27.8	22.67	43.52	-20.85	199	225	H
* 268.7904	42.75	Qp	13.2	-26.1	29.85	46.02	-16.17	240	193	H
34.6291	47.44	Qp	17.8	-28.7	36.54	40	-3.46	233	139	V
158.0553	53.01	Qp	12.3	-27.3	38.01	43.52	-5.51	165	115	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Qp - Quasi-Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

Rev 9.5 06 Jun 2015

13. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

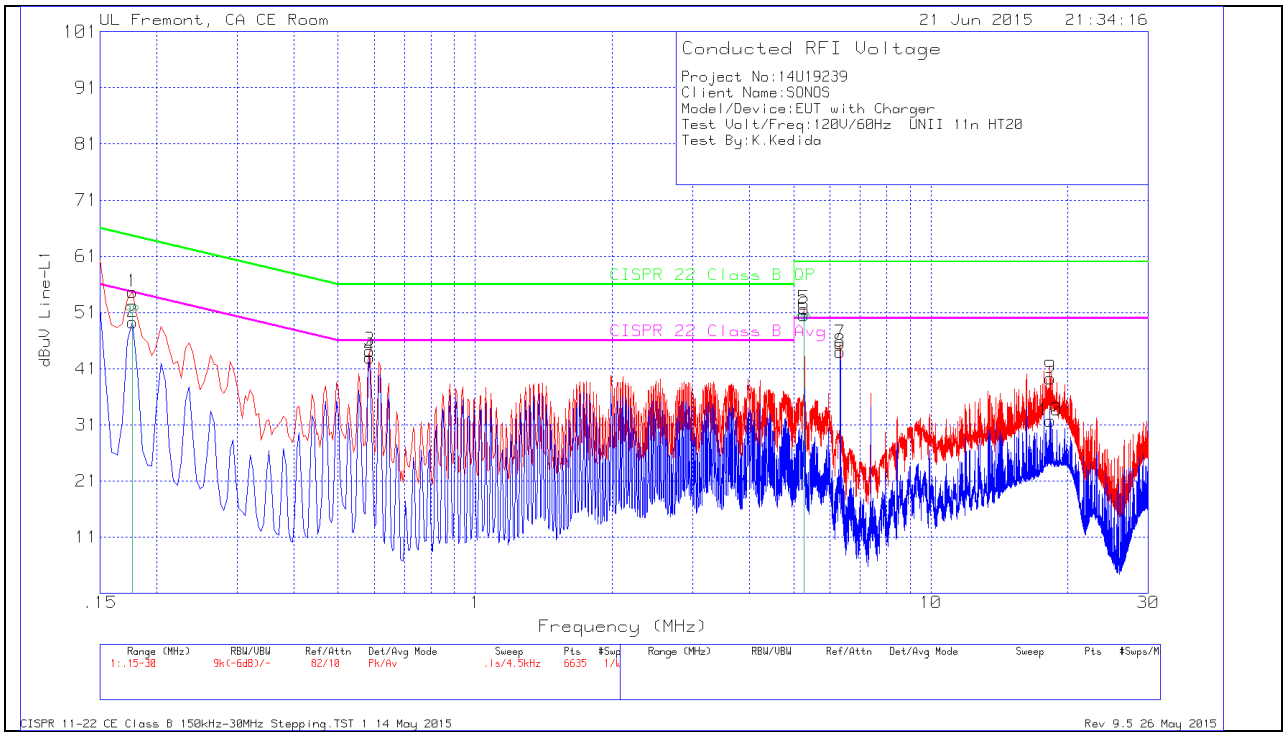
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.177	53.59	Pk	1.1	0	54.69	64.63	-9.94		
2	.177	48.22	Av	1.1	0	49.32	-	-	54.63	-5.31
3	.5865	43.9	Pk	.3	0	44.2	56	-11.8		
4	.5865	42.75	Av	.3	0	43.05	-	-	46	-2.95
5	5.271	51.35	Pk	.2	.1	51.65	60	-8.35		
6	5.271	50.26	Av	.2	.1	50.56	-	-		
7	6.324	45.21	Pk	.2	.1	45.51	60	-14.49		
8	6.324	43.7	Av	.2	.1	44	-	-	50	-6
9	18.303	38.83	Pk	.3	.2	39.33	60	-20.67		
10	18.303	31.24	Av	.3	.2	31.74	-	-	50	-18.26

Peak/Average/RMS Emissions

Range 1: Line-L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
.177	47.78	Ca	1.1	0	48.88	-	-	54.63	-5.75
5.271	49.01	Ca	.2	.1	49.31	-	-	50	-.69

Ca - CISPR average detection

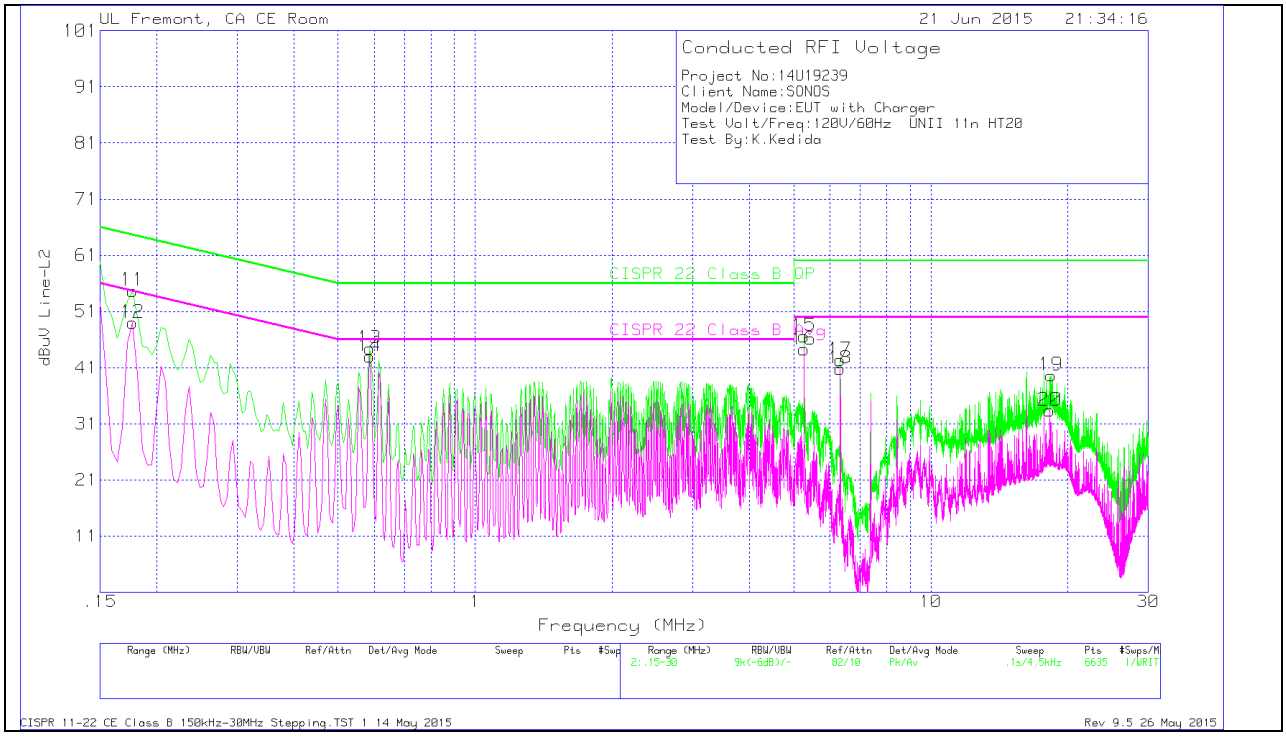
Quasi-Peak Emissions

Range 1: Line-L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
.177	49.81	Qp	1.1	0	50.91	64.63	-13.72	-	-
5.271	49.11	Qp	.2	.1	49.41	60	-10.59	-	-

Qp - Quasi-Peak detector

LINE 2 PLOT



LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
11	.177	53.51	Pk	1.2	0	54.71	64.63	-9.92		
12	.177	47.8	Av	1.2	0	49	-	-	54.63	-5.63
13	.5865	44.12	Pk	.3	0	44.42	56	-11.58		
14	.5865	42.69	Av	.3	0	42.99	-	-	46	-3.01
15	5.271	46.33	Pk	.2	.1	46.63	60	-13.37		
16	5.271	43.96	Av	.2	.1	44.26	-	-	50	-5.74
17	6.324	42.07	Pk	.2	.1	42.37	60	-17.63		
18	6.324	40.52	Av	.2	.1	40.82	-	-	50	-9.18
19	18.366	39.11	Pk	.3	.2	39.61	60	-20.39		
20	18.2445	32.87	Av	.3	.2	33.37	-	-	50	-16.63

Peak/Average/RMS Emissions

Range 2: Line-L2 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
.177	47.47	Ca	1.2	0	48.67	-	-	54.63	-5.96

Ca - CISPR average detection

Quasi-Peak Emissions

Range 2: Line-L2 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
.177	49.61	Qp	1.2	0	50.81	64.63	-13.82	-	-

Qp - Quasi-Peak detector

15. ART POWER SETTINGS TABLE

Channel	Frequency	FCC (Region 1)		
		11b	11g	11n
36	5180			10.5
40	5200			11
44	5220			12
48	5240			12
52	5260			15
56	5280			15
60	5300			15
64	5320			15
100	5500			15
104	5520			15
108	5540			15
112	5560			15
116	5580			15
120	5600			NA
124	5620			NA
128	5640			NA
132	5660			15
136	5680			15
140	5700			15
144	5720			
149	5745			15
153	5765			15
157	5785			15
161	5805			15
165	5825			15

END OF REPORT