



FCC 47 CFR PART 15 SUBPART E

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n, ANT+ and NFC

MODEL NUMBER: SM-A500G/DS, SM-A500G

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n, ANT+ and NFC
MODEL: SM-A500G/DS, SM-A500G
SERIAL NUMBER: 1962761 (Conducted), 1962762 (Radiated)
DATE TESTED: SEPTEMBER 22-25, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	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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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 C63.4-2009.

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 40000 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 a GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n, ANT+ and NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180-5240	802.11a	12.49	17.74
5180-5240	802.11n HT20	11.04	12.71
5190-5230	802.11n HT40	10.61	11.51
5260-5320	802.11a	12.1	16.22
5260-5320	802.11n HT20	11.87	15.38
5270-5310	802.11n HT40	10.94	12.42
5500-5700	802.11a	12.41	17.42
5500-5700	802.11n HT20	11.49	14.09
5510-5670	802.11n HT40	11.41	13.84

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -6.85 dBi for UNII band.

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 orthogonal orientations X,Y,Z, it was determined that the X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in the X orientation.

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

802.11a mode: 6 Mbps

802.11n HT20mode: MCS0

802.11n HT40mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	ETA0U83EWE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

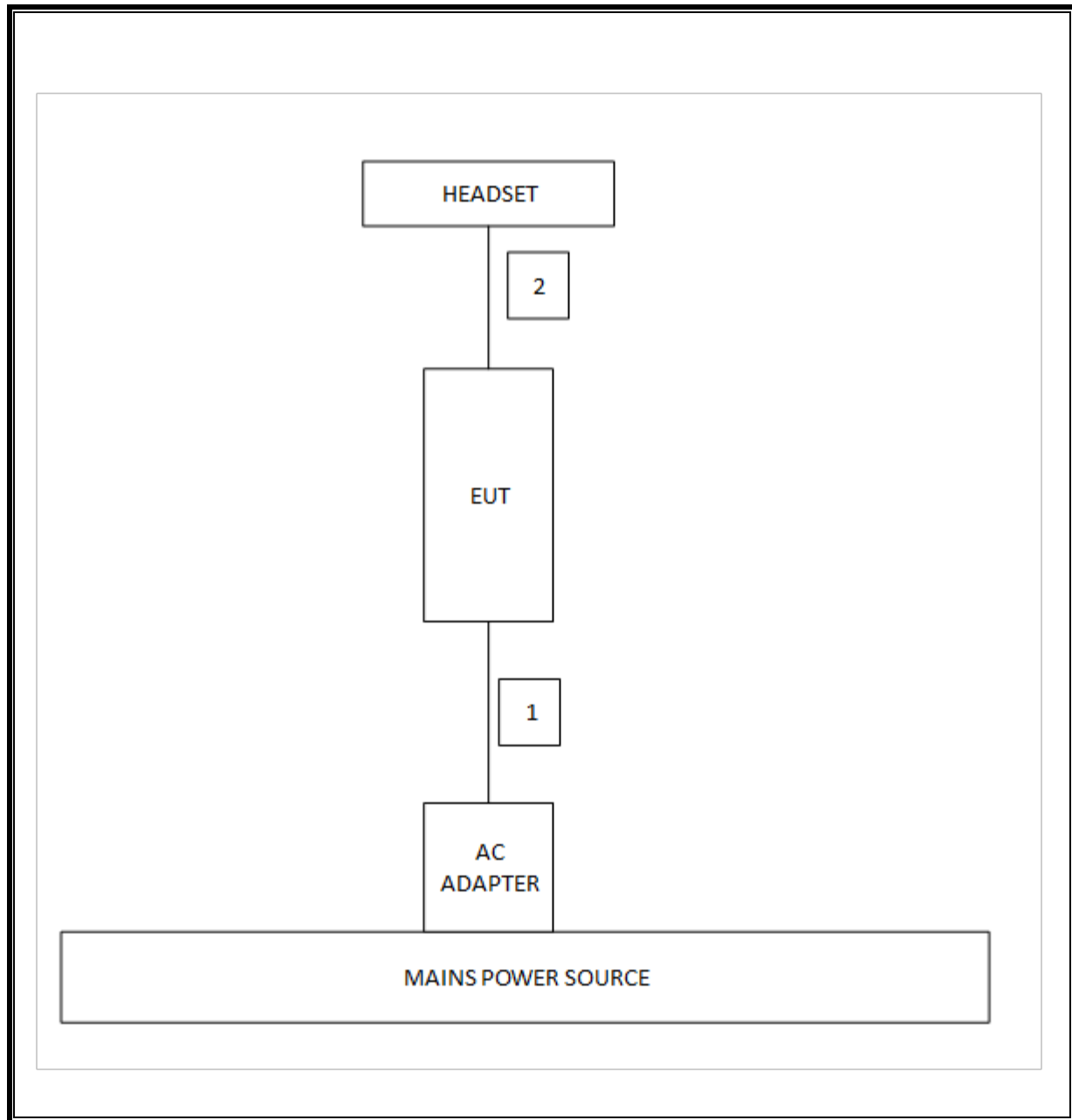
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1.0m	N/A

TEST SETUP

The EUT is setup as a stand-alone device.

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	12/20/14
Spectrum Analyzer, 9KHz-40GHz	HP	8564E	C00986	04/01/15
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	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/15
Antenna, Horn, 18- 26 GHz	ARA	MWH-1826/B	F00196	05/13/15
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/15
RF Preamplifier, 100KHz -> 1300MHz	HP	TBD	C00825	06/01/15
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/15
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 3GHz	Micro-Tronics	LPS17541	F00219	05/23/15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	F00222	05/22/15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	F00224	05/22/15

7. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)	Occupied Band width (26dB)	N/A	Conducted	Pass	67.1MHz
15.407 (a)(1)	TX Cond. Power 5.15-2.25	<17dBm or 4+10Log(OBW)		Pass	12.49dBm
15.407 (a)(2)	TX Cond. Power 5.25-5.35 & 5.47-5.725	<24dBm or 11+10Log(OBW)		Pass	12.41dBm
15.407 (a)(5)	PSD	<4dBm for 5.2 and <11dBm for 5.3, 5.5		Pass	1.33dBm
15.407 (a)(6)	Peak Excursion Ratio	13dB		Pass	11.71dB
15.207 (a)	AC Power Line conducted emissions	Section 10	Radiated	Pass	29.9dBuV(AV)
15.407 (b) & 15.209	Radiated Spurious Emission	< 54dBuV/m		Pass	49.8.0 dBuV/m
15.407 (h)(2)	Dynamic Frequency Selection	N/A	Radiated / Conducted	Pass	N/A

8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

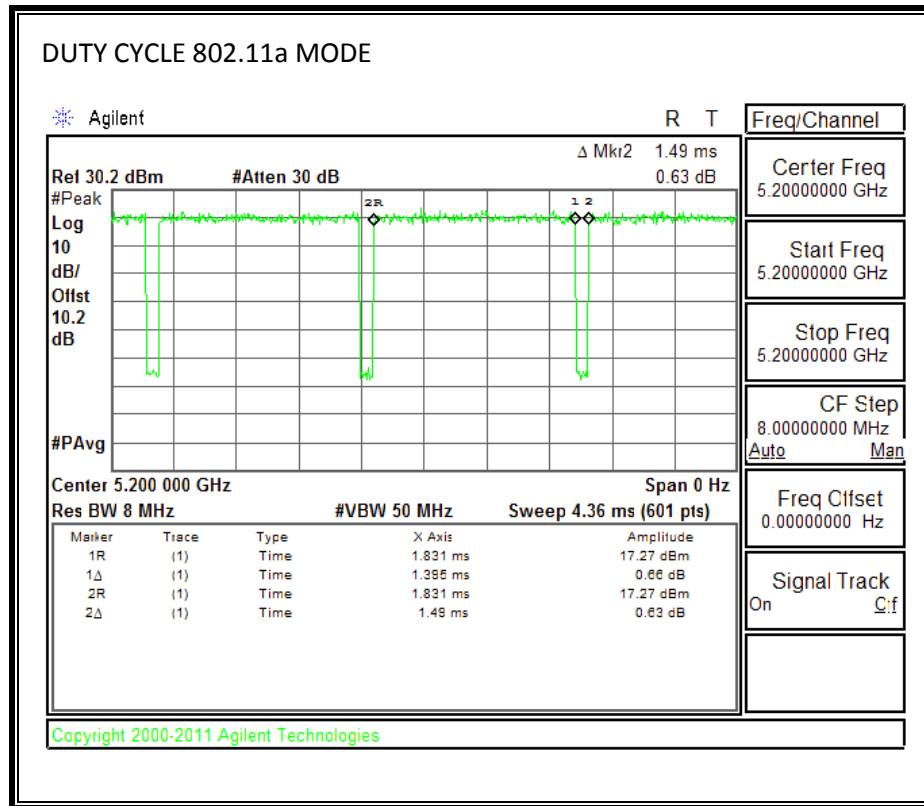
PROCEDURE

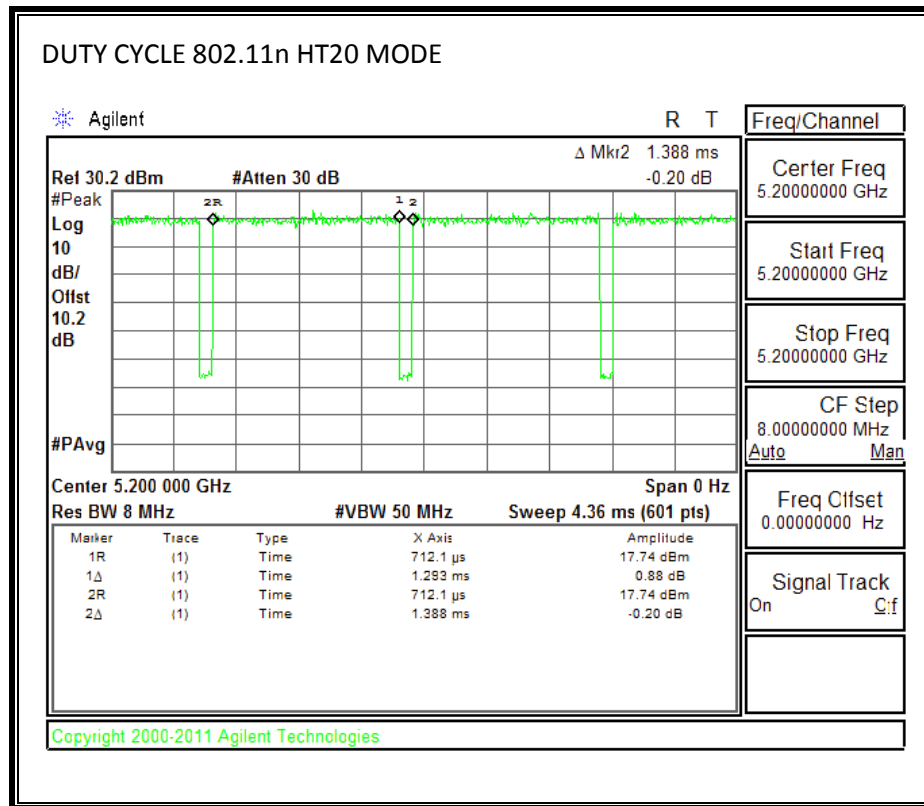
KDB 789033 Zero-Span Spectrum Analyzer Method.

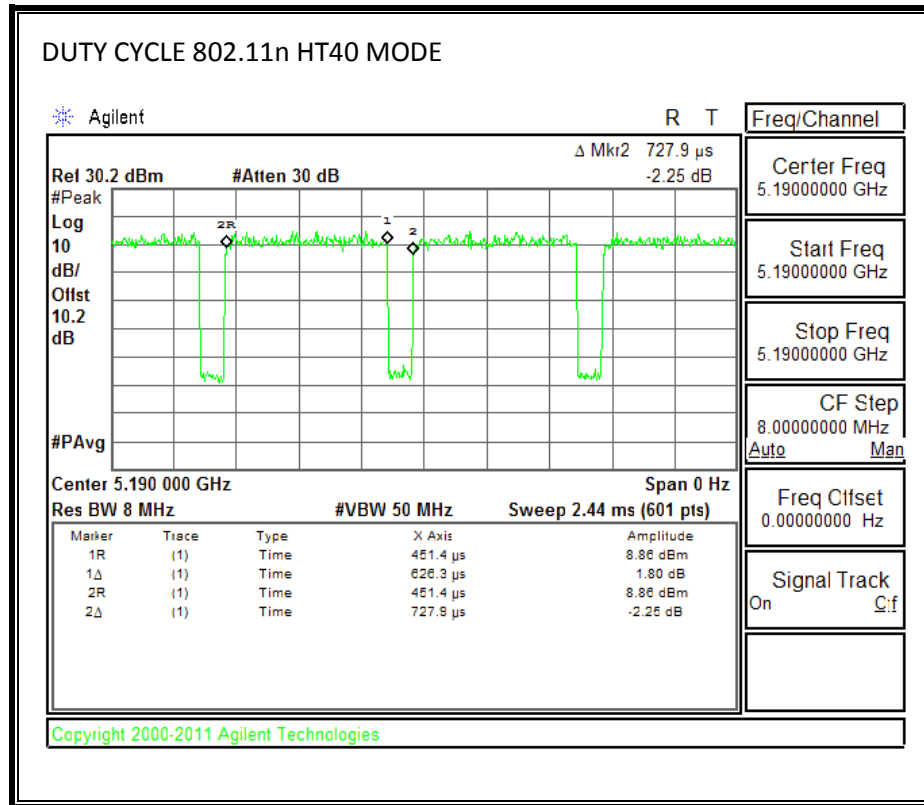
8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11a	1.40	1.49	0.936	93.6%	0.29	0.717
802.11n HT20	1.29	1	0.932	93.2%	0.31	0.773
802.11n HT40	0.63	1	0.861	86.1%	0.65	1.597

8.2. DUTY CYCLE PLOTS







9. MEASUREMENT METHOD

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. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.1.1. 802.11a MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	34.20
Mid	5200	35.40
High	5240	37.70
Worst		37.70

10.1.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	49.08
Mid	5200	38.58
High	5240	34.60
Worst		49.08

10.1.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5190	45.660
Mid	5230	47.100
Worst		47.100

10.1.4. 802.11a MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	36.00
Mid	5300	36.65
High	5320	38.05
Worst		38.05

10.1.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	26.58
Mid	5300	27.54
High	5320	28.74
Worst		28.74

10.1.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	45.960
High	5310	48.300
Worst		48.300

10.1.7. 802.11a MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	36.450
Mid	5580	38.700
High	5700	41.100
Worst		41.100

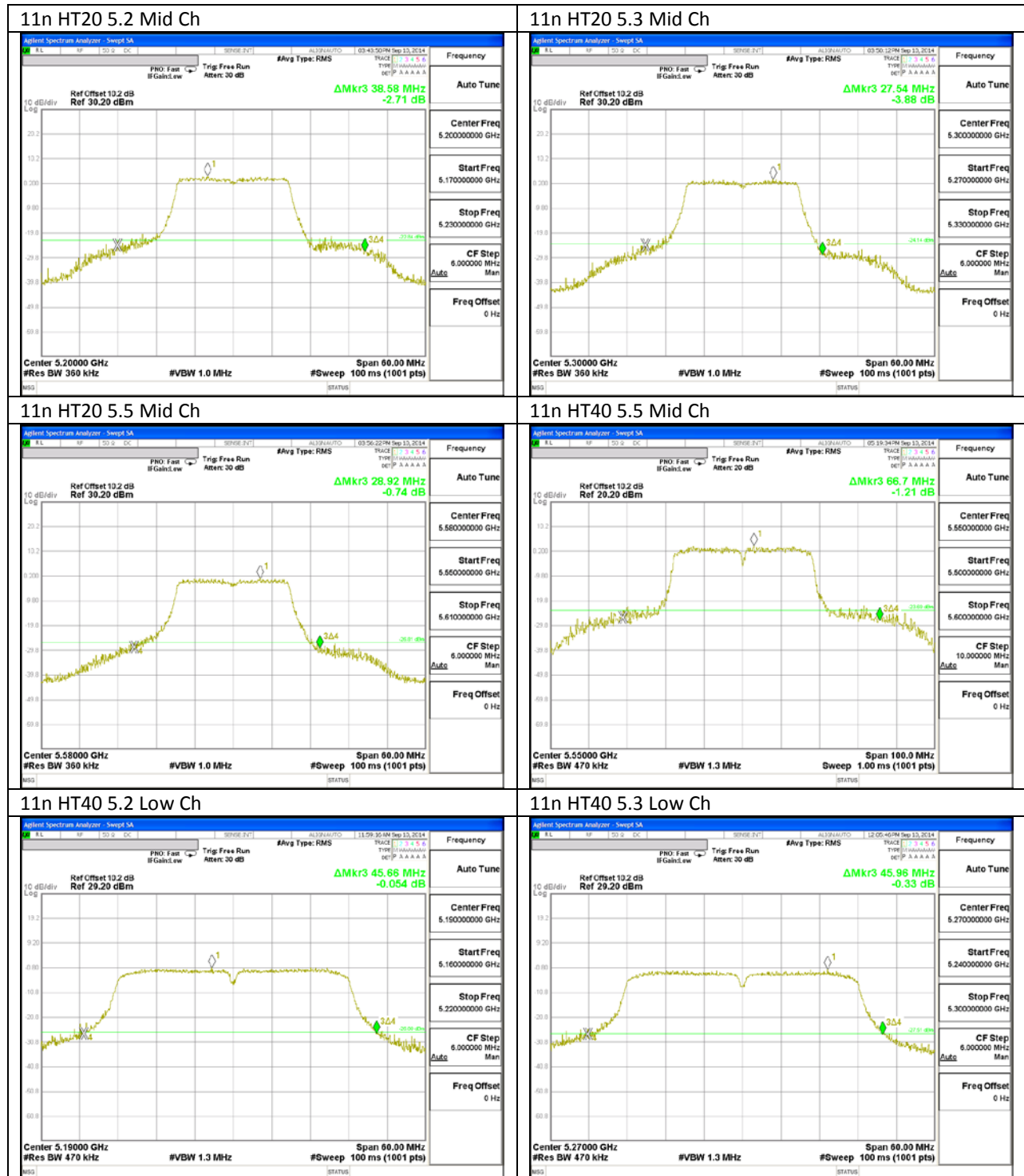
10.1.8. 802.11n HT20 MODE IN THE 5.5 GHz BAND

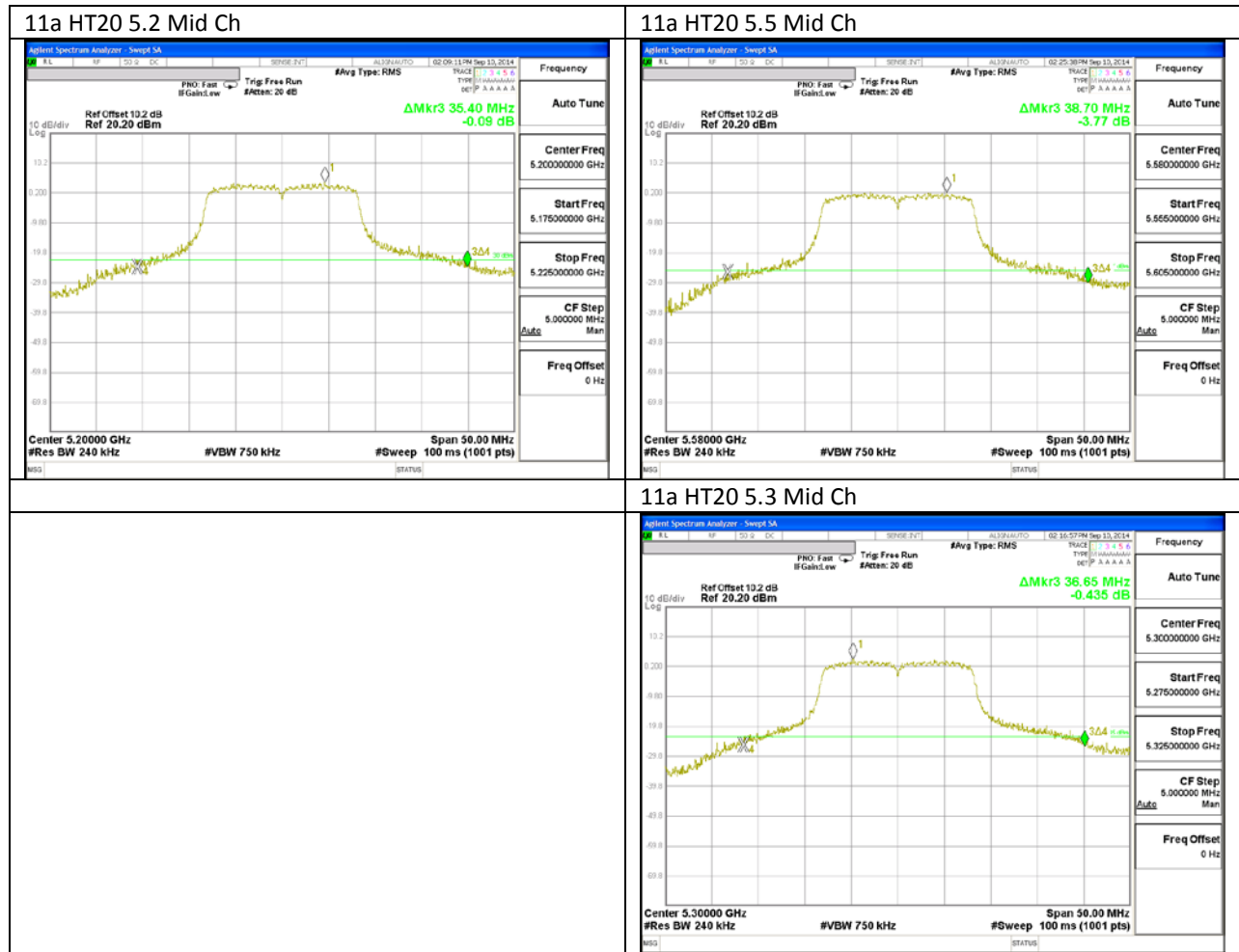
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	47.880
Mid	5580	28.920
High	5700	40.860
Worst		47.880

10.1.9. 802.11n HT40 MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	48.500
Mid	5550	66.700
High	5670	67.100
Worst		67.100

10.1.10. 26 dB BANDWIDTH PLOTS





10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.2.1. 802.11a MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.64
Mid	5200	16.67
High	5240	16.56
Worst		16.67

10.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.97
Mid	5200	17.83
High	5240	17.95
Worst		17.97

10.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.320
Mid	5230	36.190
Worst		36.320

10.2.4. 802.11a MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.71
Mid	5300	16.79
High	5320	16.79
Worst		16.79

10.2.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.96
Mid	5300	17.96
High	5320	18.00
Worst		18.00

10.2.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.14
High	5310	36.16
Worst		36.16

10.2.7. 802.11a MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.460
Mid	5580	16.590
High	5700	16.880
Worst		16.880

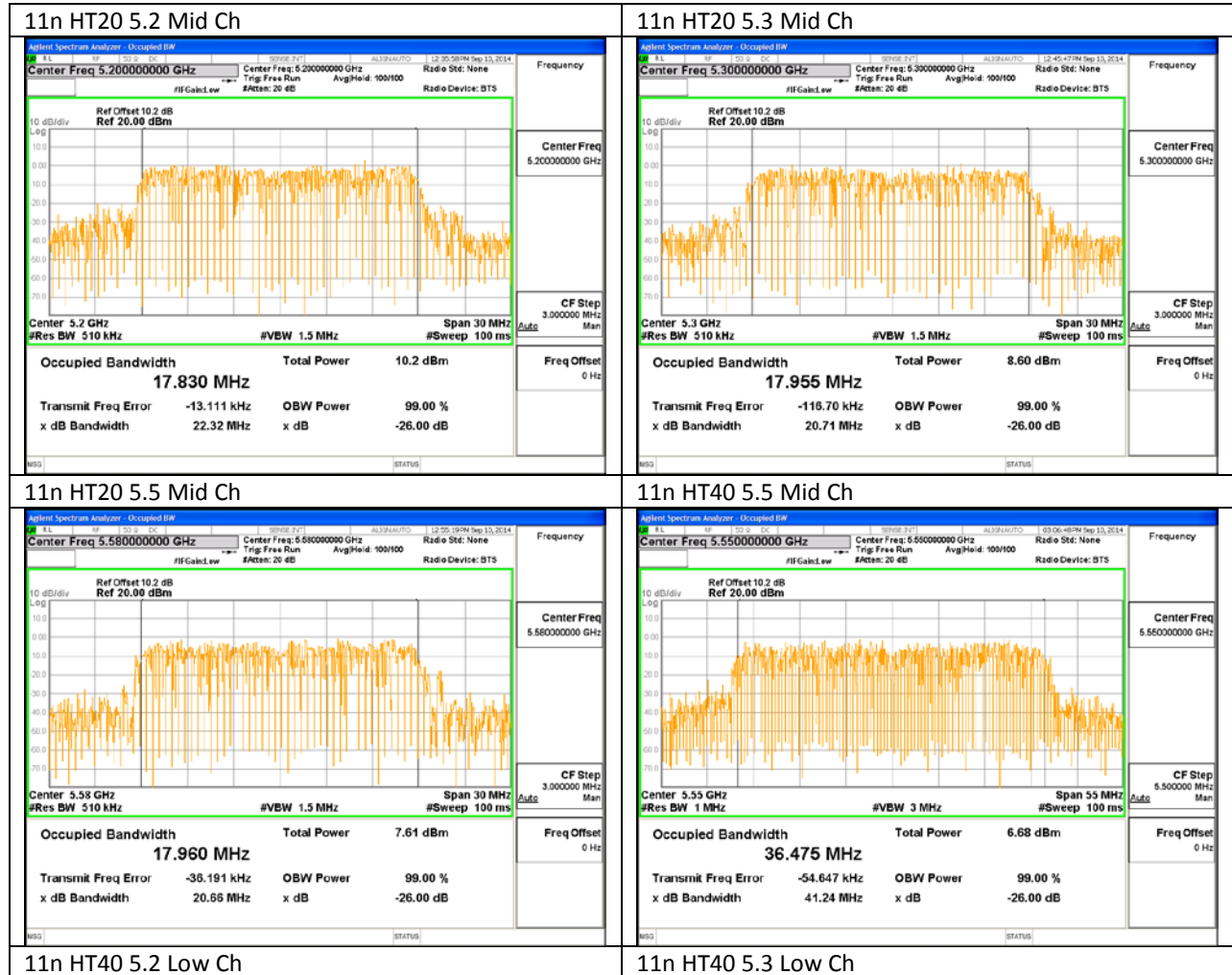
10.2.8. 802.11n HT20 MODE IN THE 5.5 GHz BAND

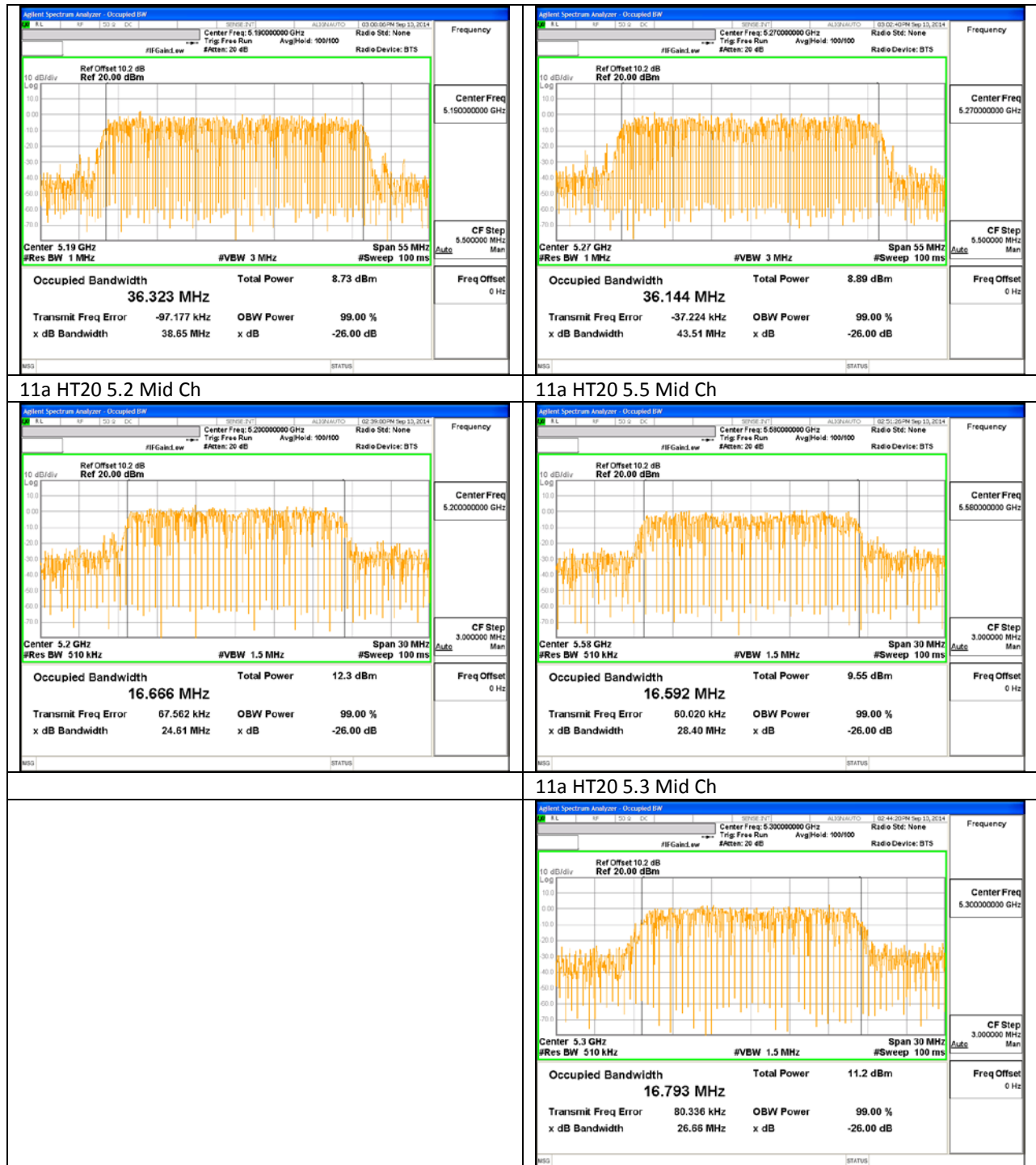
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	17.730
Mid	5580	17.960
High	5700	18.090
Worst		18.090

10.2.9. 802.11n HT40 MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.16
Mid	5550	36.48
High	5670	36.30
Worst		36.48

10.2.10. 99% BANDWIDTH PLOTS





10.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

10.3.1. 802.11a MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5180	13.50
Mid	5200	13.50
High	5240	13.50
Worst		13.50

10.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5180	12.10
Mid	5200	12.10
High	5240	12.30
Worst		12.30

10.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5190	11.0
Mid	5230	11.3
Worst		11.3

10.3.4. 802.11a MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5260	13.50
Mid	5300	13.50
High	5320	13.50
Worst		13.50

10.3.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5260	12.00
Mid	5300	12.00
High	5320	12.10
Worst		12.10

10.3.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5270	11.5
High	5310	11.5
Worst		11.5

10.3.7. 802.11a MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5500	13.5
Mid	5580	13.5
High	5700	13.5
Worst		13.5

10.3.8. 802.11n HT20 MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5500	12.5
Mid	5580	12.3
High	5700	12.5
Worst		12.5

10.3.9. 802.11n HT40 MODE IN THE 5.5 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5510	11.5
Mid	5550	11.5
High	5670	11.5
Worst		11.5

10.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

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 50 mW or $4 \text{ dBm} + 10 \log B$, 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.

IC RSS-210 A9.2 (1)

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 MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

Test Methodology

RESULTS

10.4.1. 802.11a MODE IN THE 5.2 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5180	34.200	16.640	-6.85
Mid	5200	35.400	16.670	-6.85
High	5240	37.700	16.560	-6.85

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	17.00	22.21	29.06	17.00	4.00	10.00	4.00
Mid	5200	17.00	22.22	29.07	17.00	4.00	10.00	4.00
High	5240	17.00	22.19	29.04	17.00	4.00	10.00	4.00

Duty Cycle CF (dB)	0.29	Included in Calculations of Corr'd Power & PSD
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	11.861	12.15	17.00	-4.85
Mid	5200	12.197	12.49	17.00	-4.51
High	5240	11.963	12.25	17.00	-4.75

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	0.870	1.16	4.00	-2.84
Mid	5200	1.040	1.33	4.00	-2.67
High	5240	0.880	1.17	4.00	-2.83

10.4.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5180	49.080	17.960	-6.85
Mid	5200	38.580	17.830	-6.85
High	5240	34.680	17.940	-6.85

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	17.00	22.54	29.39	17.00	4.00	10.00	4.00
Mid	5200	17.00	22.51	29.36	17.00	4.00	10.00	4.00
High	5240	17.00	22.54	29.39	17.00	4.00	10.00	4.00

Duty Cycle CF (dB)	0.31	Included in Calculations of Corr'd Power & PPSP
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	10.732	11.04	17.00	-5.96
Mid	5200	10.338	10.65	17.00	-6.35
High	5240	10.661	10.97	17.00	-6.03

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-0.780	-0.47	4.00	-4.47
Mid	5200	-1.230	-0.92	4.00	-4.92
High	5240	-0.910	-0.60	4.00	-4.60

10.4.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5190	45.66	36.320	-6.85
Mid	5230	47.1	36.190	-6.85

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5190	17.00	23.00	29.85	17.00	4.00	10.00	4.00
Mid	5230	17.00	23.00	29.85	17.00	4.00	10.00	4.00
Duty Cycle CF (dB)		0.65	Included in Calculations of Corr'd Power & PSD					

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	9.688	10.34	17.00	-6.66
Mid	5230	9.963	10.61	17.00	-6.39

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5190	-4.720	-4.07	4.00	-8.07
Mid	5230	-4.140	-3.49	4.00	-7.49

10.4.4. 802.11a MODE IN THE 5.3 GHZ BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5260	36.00	16.710	-6.85
Mid	5300	36.65	16.790	-6.85
High	5320	38.05	16.790	-6.85

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	5260	24.00	23.23	29.23	23.23	11.00	11.00	11.00
Mid	5300	24.00	23.25	29.25	23.25	11.00	11.00	11.00
High	5320	24.00	23.25	29.25	23.25	11.00	11.00	11.00

Duty Cycle CF (dB)	0.29	Included in Calculations of Corr'd Power & PPSP
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	11.805	12.10	23.23	-11.13
Mid	5300	11.734	12.02	23.25	-11.23
High	5320	11.423	11.71	23.25	-11.54

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	0.170	0.46	11.00	-10.54
Mid	5300	0.500	0.79	11.00	-10.21
High	5320	0.180	0.47	11.00	-10.53

10.4.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5260	26.58	17.960	-6.85
Mid	5300	27.54	17.960	-6.85
High	5320	28.74	18.000	-6.85

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	5260	24.00	23.54	29.54	23.54	11.00	11.00	11.00
Mid	5300	24.00	23.54	29.54	23.54	11.00	11.00	11.00
High	5320	24.00	23.55	29.55	23.55	11.00	11.00	11.00

Duty Cycle CF (dB)	0.31	Included in Calculations of Corr'd Power & PPSP
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	11.026	11.34	23.54	-12.21
Mid	5300	11.201	11.51	23.54	-12.03
High	5320	11.563	11.87	23.55	-11.68

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	-0.650	-0.34	11.00	-11.34
Mid	5300	-0.600	-0.29	11.00	-11.29
High	5320	-0.090	0.22	11.00	-10.78

10.4.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5270	46.0	36.1	-6.85
High	5310	48.3	36.2	-6.85

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	5270	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5310	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.65	Included in Calculations of Corr'd Power & PPSD
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	10.29	10.94	24.00	-13.07
High	5310	10.29	10.94	24.00	-13.06

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5270	-4.32	-3.67	11.00	-14.67
High	5310	-4.39	-3.74	11.00	-14.74

10.4.7. 802.11a MODE IN THE 5.5 GHZ BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5500	36.45	16.460	-6.85
Mid	5580	38.70	16.590	-6.85
High	5700	41.10	16.880	-6.85

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	23.16	29.16	23.16	11.00	11.00	11.00
Mid	5580	24.00	23.20	29.20	23.20	11.00	11.00	11.00
High	5700	24.00	23.27	29.27	23.27	11.00	11.00	11.00

Duty Cycle CF (dB)	0.29	Included in Calculations of Corr'd Power & PPSD
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	12.120	12.41	23.16	-10.75
Mid	5580	12.049	12.34	23.20	-10.86
High	5700	12.096	12.39	23.27	-10.89

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	0.880	1.17	11.00	-9.83
Mid	5580	1.020	1.31	11.00	-9.69
High	5700	0.990	1.28	11.00	-9.72

10.4.8. 802.11n HT20 MODE IN THE 5.5 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5500	47.88	17.730	-6.85
Mid	5580	28.92	17.960	-6.85
High	5700	40.86	18.090	-6.85

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	23.49	29.49	23.49	11.00	11.00	11.00
Mid	5580	24.00	23.54	29.54	23.54	11.00	11.00	11.00
High	5700	24.00	23.57	29.57	23.57	11.00	11.00	11.00

Duty Cycle CF (dB)	0.31	Included in Calculations of Corr'd Power & PPSD
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Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	10.838	11.15	23.49	-12.34
Mid	5580	10.966	11.28	23.54	-12.27
High	5700	11.182	11.49	23.57	-12.08

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	-0.870	-0.56	11.00	-11.56
Mid	5580	-0.560	-0.25	11.00	-11.25
High	5700	-0.600	-0.29	11.00	-11.29

10.4.9. 802.11n HT40 MODE IN THE 5.5 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5510	48.50	36.160	-6.85
Mid	5550	66.70	36.470	-6.85
High	5670	67.10	36.290	-6.85

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	5510	24.00	24.00	30.00	24.00	11.00	11.00	11.00
Mid	5550	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5670	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.65	Included in Calculations of Corr'd Power & PPSP
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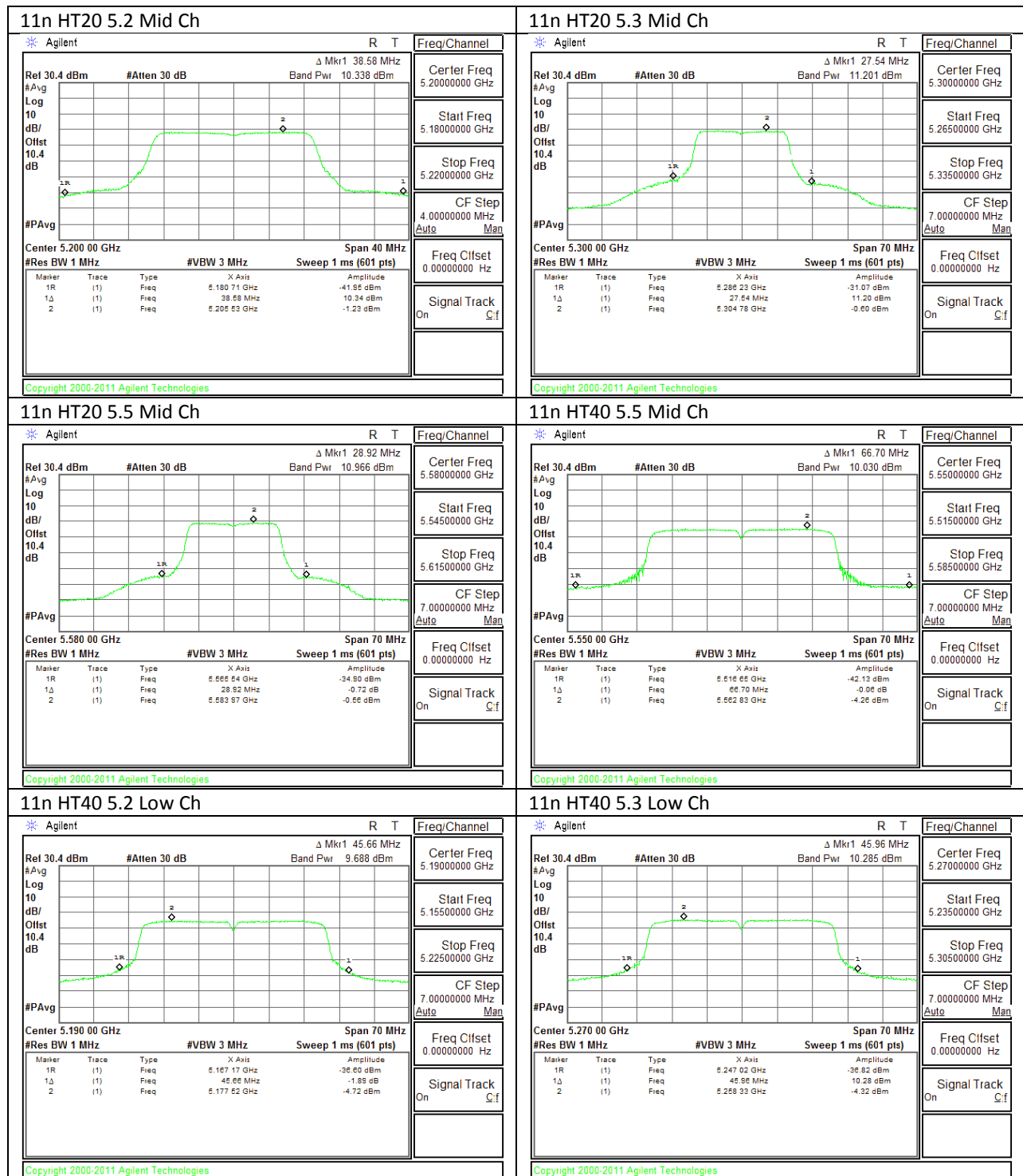
Output Power Results

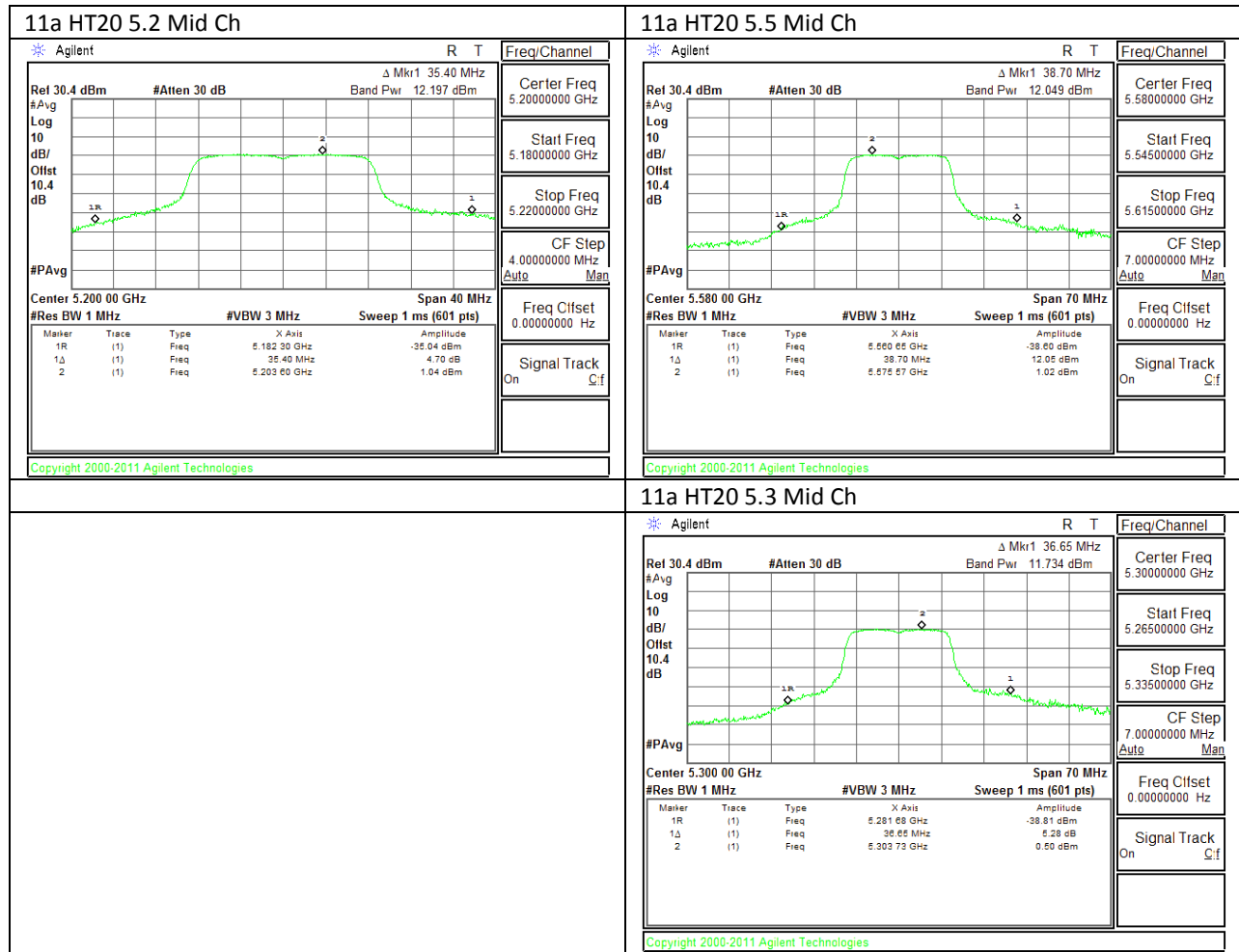
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	9.745	10.40	24.00	-13.61
Mid	5550	10.030	10.68	24.00	-13.32
High	5670	10.757	11.41	24.00	-12.59

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5510	-4.760	-4.11	11.00	-15.11
Mid	5550	-4.260	-3.61	11.00	-14.61
High	5670	-3.640	-2.99	11.00	-13.99

10.4.10. OUTPUT POWER AND PPSD PLOTS, Chain 0





10.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

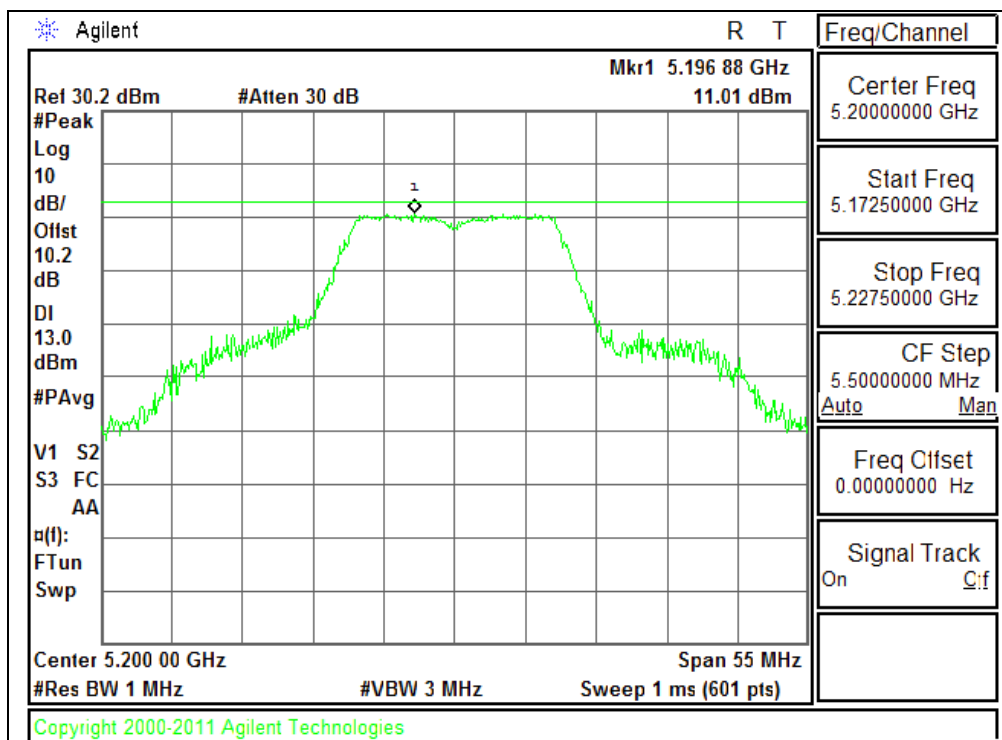
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

10.5.1. 802.11a MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	11.100	1.33	0.29	9.48	13	-3.52

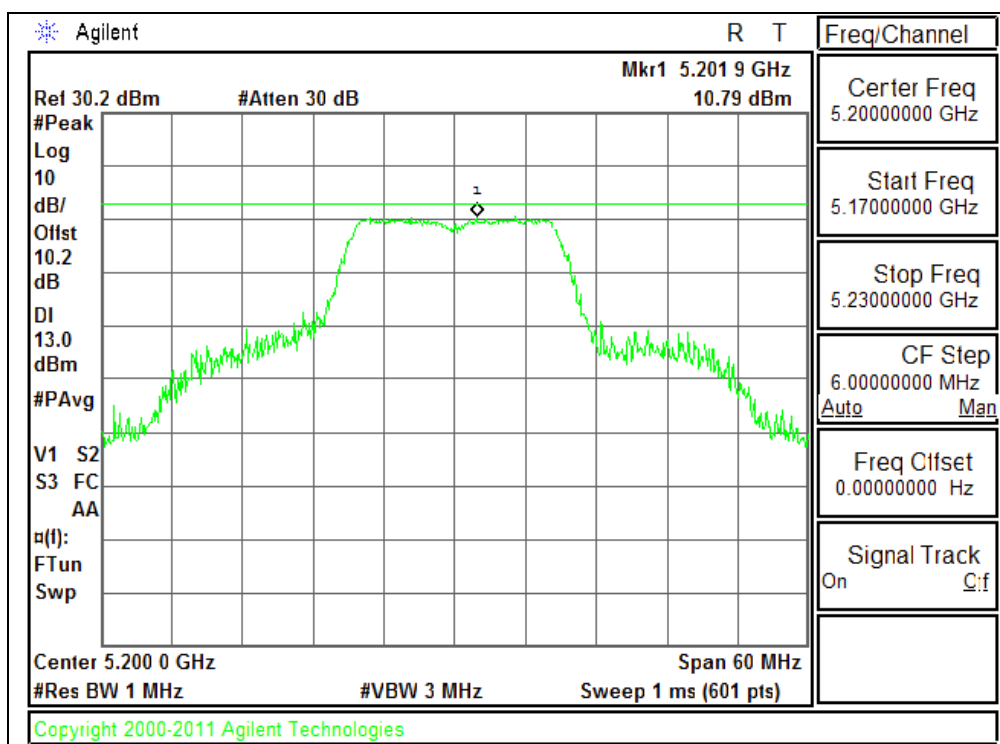
PEAK EXCURSION



10.5.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	10.790	-1.23	0.31	11.71	13	-1.29

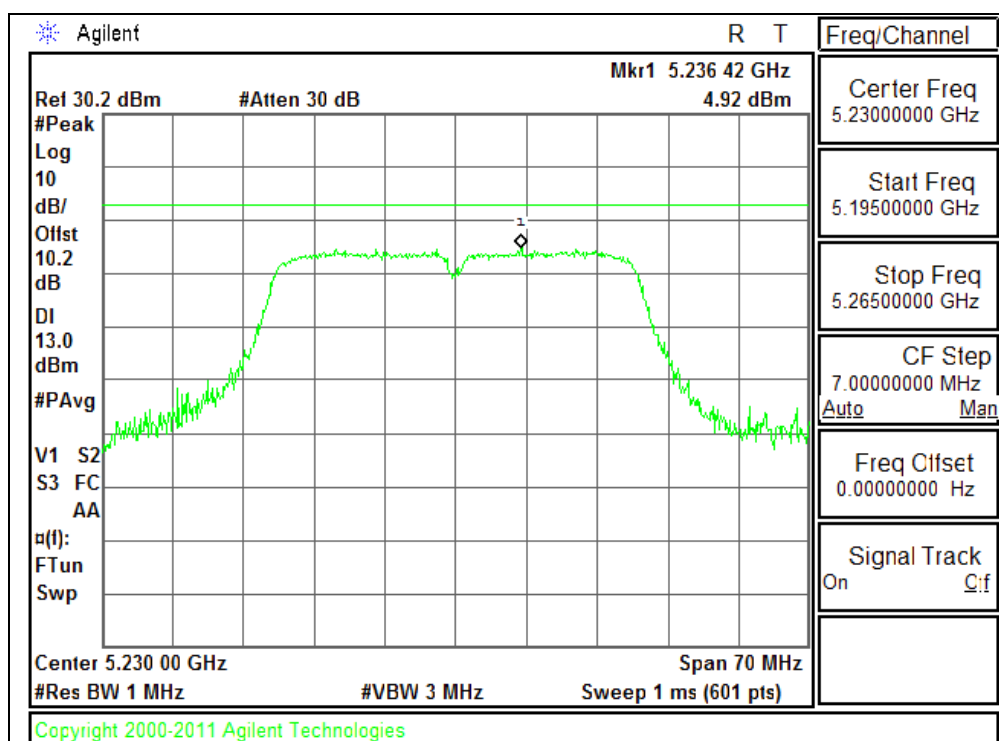
PEAK EXCURSION



10.5.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5230	4.920	-3.49	0.65	7.76	13	-5.24

PEAK EXCURSION



11. TRANSMITTER ABOVE 1 GHz

LIMITS

FCC §15.205 and §15.209

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. 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):

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 1GHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

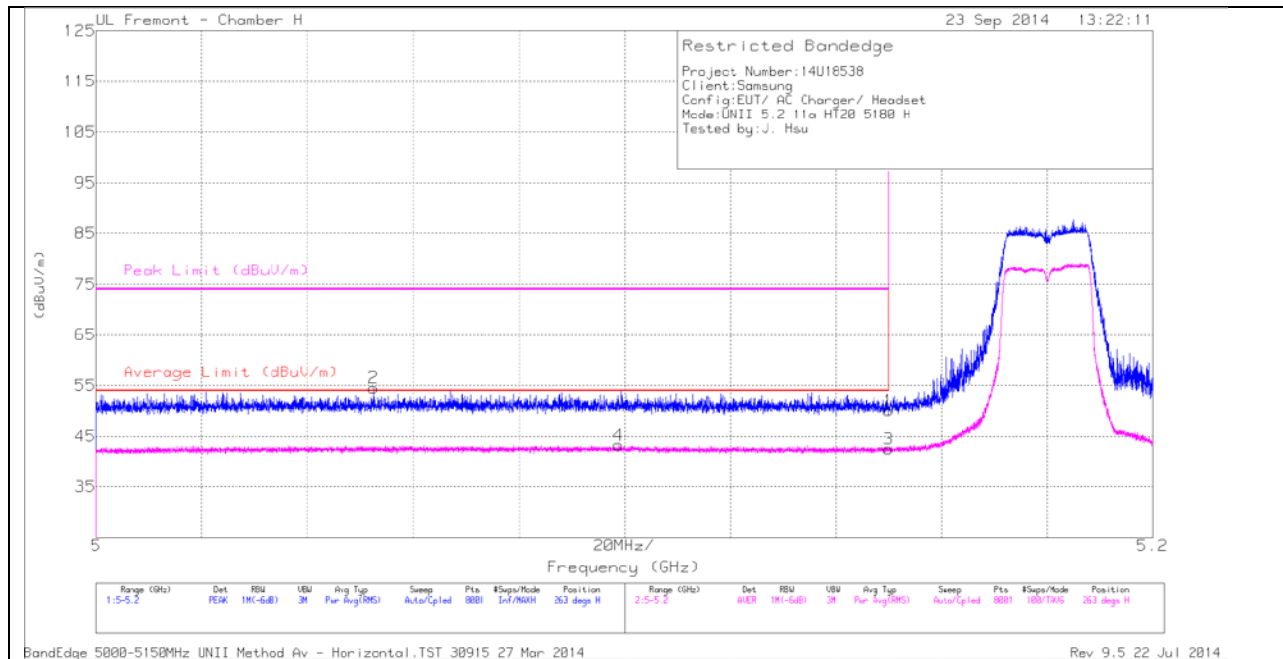
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

11.1. 5.2 GHz

11.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

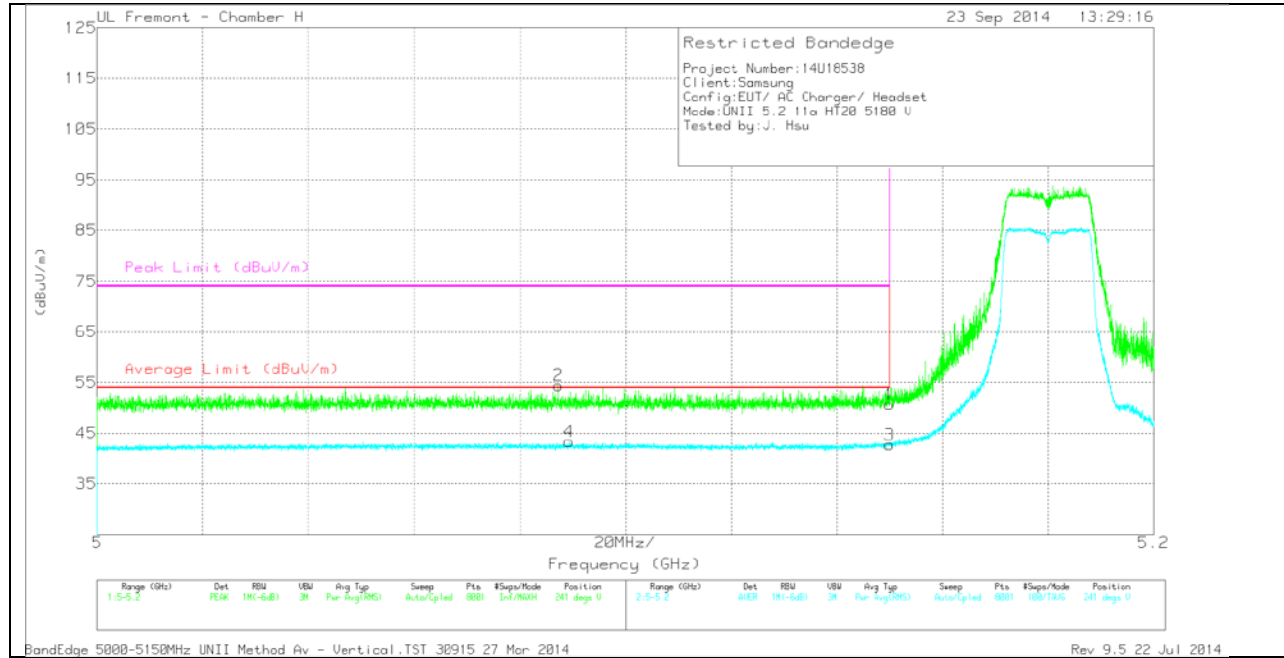
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fit 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	38.29	PK	34.5	-22.8	0	49.99	-	-	74	-24.01	263	191	H
2	* 5.052	43.06	PK	34.4	-22.9	0	54.56	-	-	74	-19.44	263	191	H
3	* 5.15	30.47	RMS	34.5	-22.8	.29	42.46	54	-11.54	-	-	263	191	H
4	* 5.099	31.28	RMS	34.5	-22.8	.29	43.27	54	-10.73	-	-	263	191	H

VERTICAL PEAK AND AVERAGE PLOT

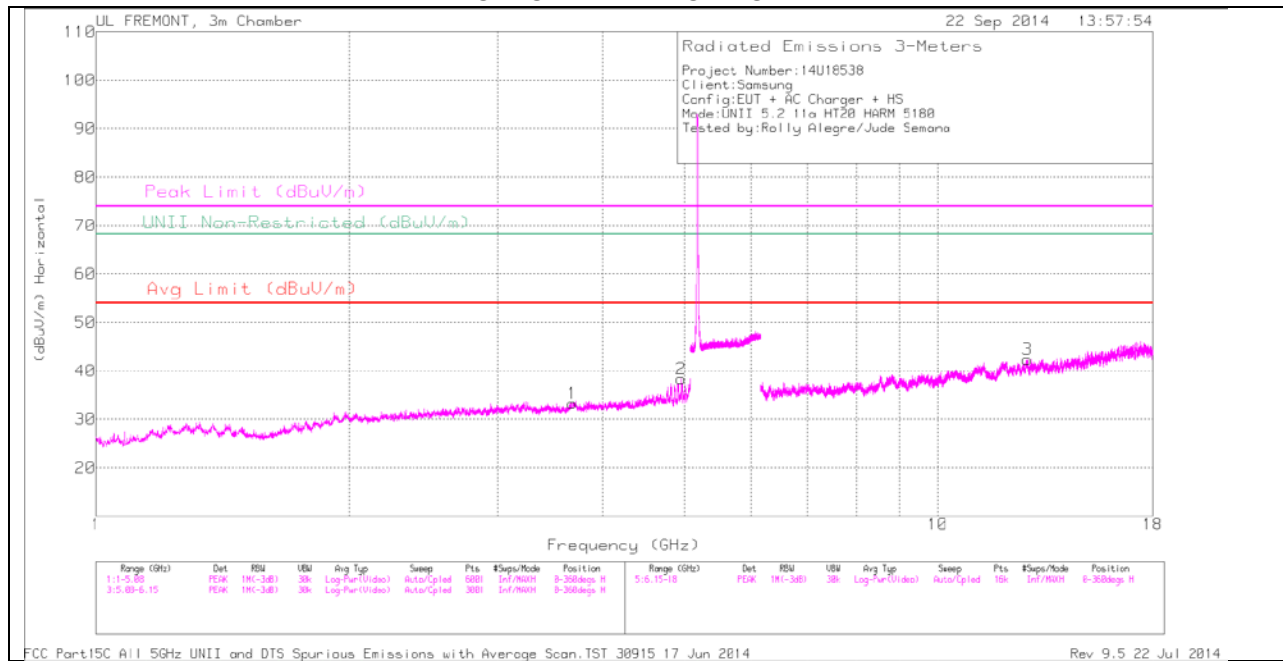


VERTICAL DATA

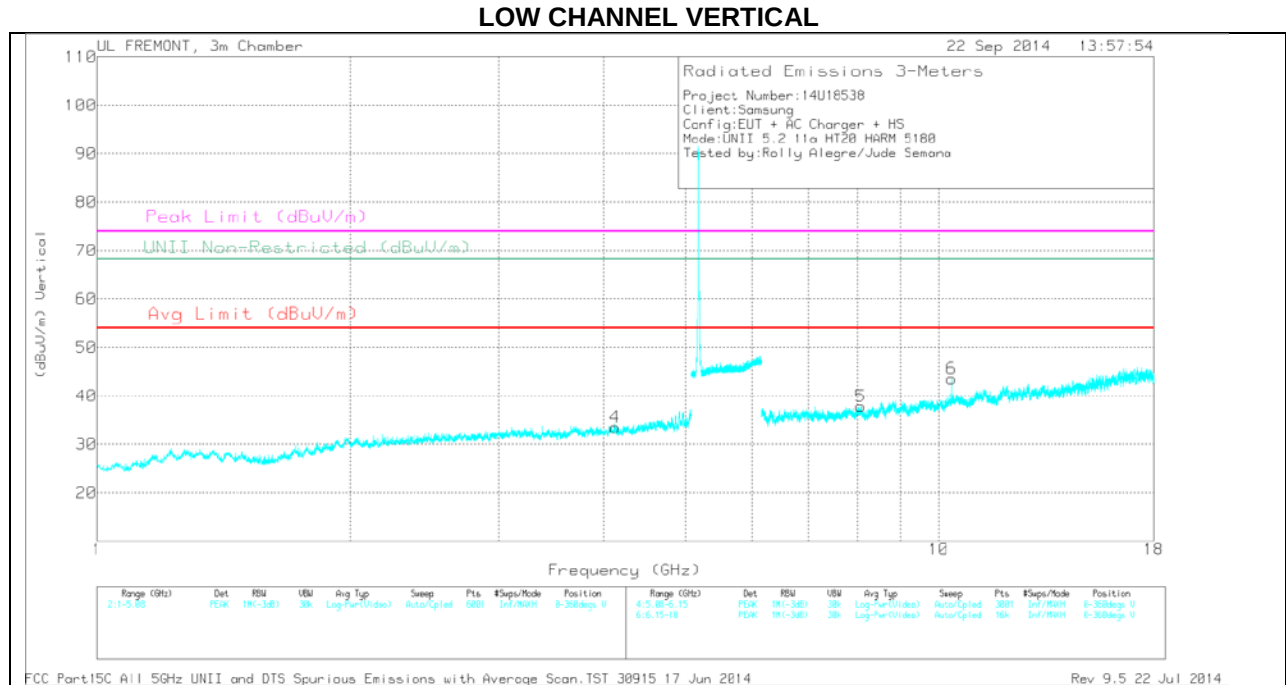
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 5.087	42.91	PK	34.4	-22.9	0	54.41	-	-	74	-19.59	241	321	V
4	* 5.089	31.52	RMS	34.4	-22.9	.29	43.31	54	-10.69	-	-	241	321	V
1	* 5.15	38.93	PK	34.5	-22.8	0	50.63	-	-	74	-23.37	241	321	V
3	* 5.15	30.68	RMS	34.5	-22.8	.29	42.67	54	-11.33	-	-	241	321	V

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.



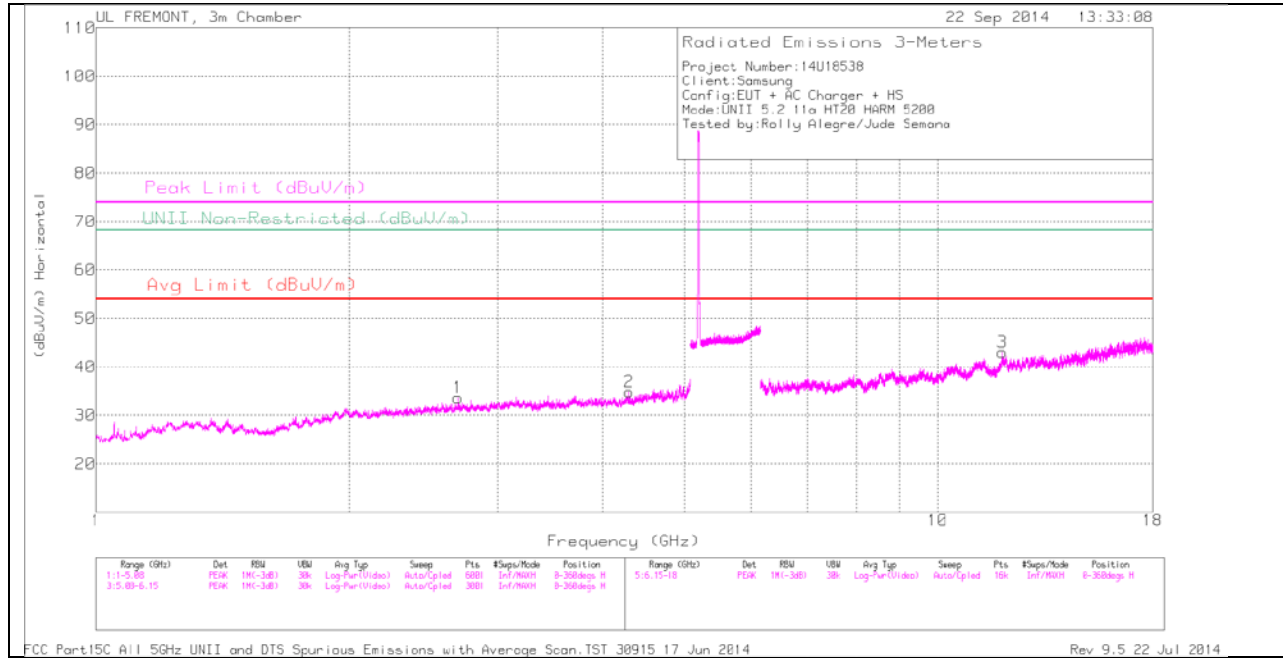
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

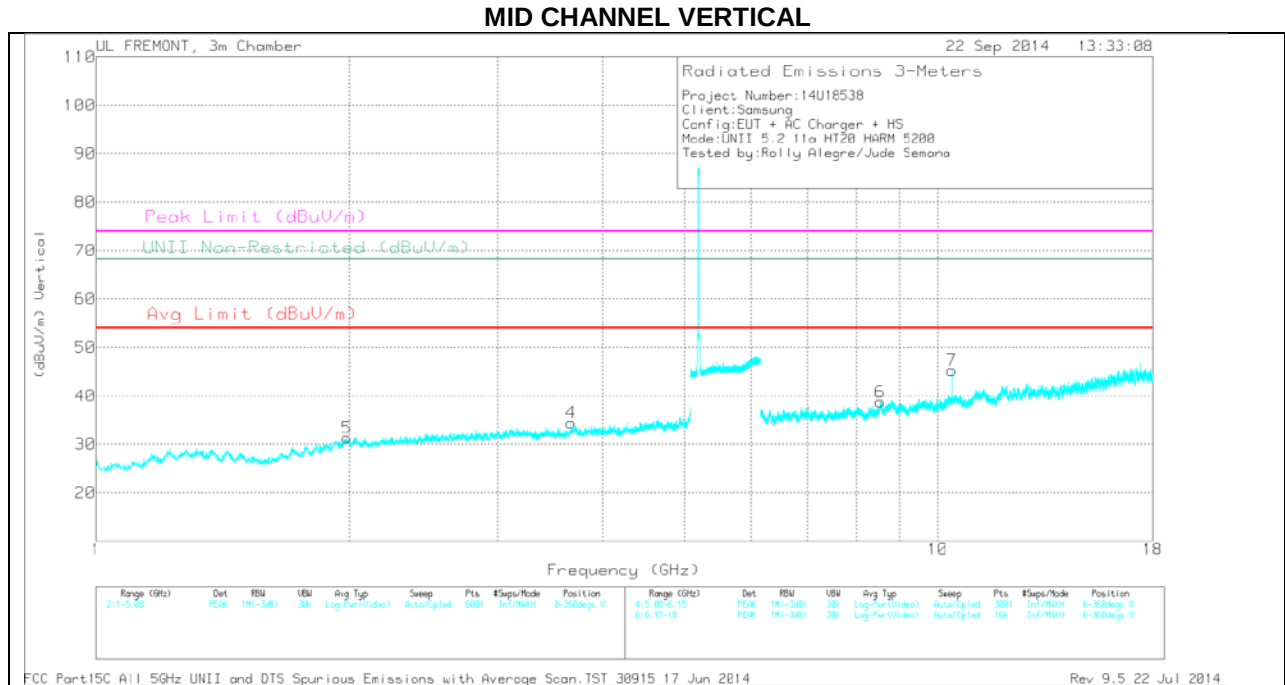
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Filtr/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
1	** 3.681	30.63	PK	33.2	-30.5	0	33.33	-	-	74	-40.67	-	-	0-360	100	H
4	** 4.123	31.07	PK	33.5	-31	0	33.57	-	-	74	-40.43	-	-	0-360	200	V
2	** 4.958	33.92	PK	34	-29.5	0	38.42	-	-	74	-35.58	-	-	0-360	200	H
5	** 8.072	29.33	PK	35.7	-27.2	0	37.83	-	-	74	-36.17	-	-	0-360	100	V
6	10.36	31.6	PK	37.3	-25.4	0	43.5	-	-	-	-	68.2	-24.7	0-360	200	V
3	12.787	29.07	PK	39.2	-25.9	0	42.37	-	-	-	-	68.2	-25.83	0-360	100	H

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.

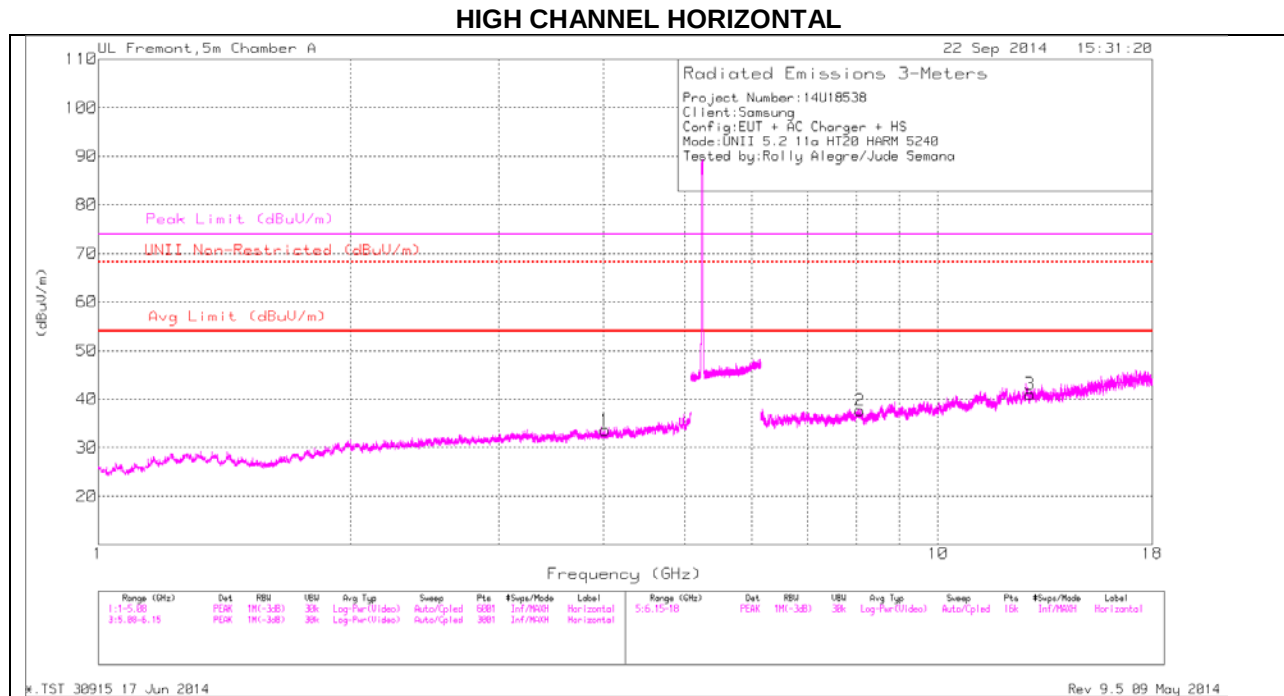


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

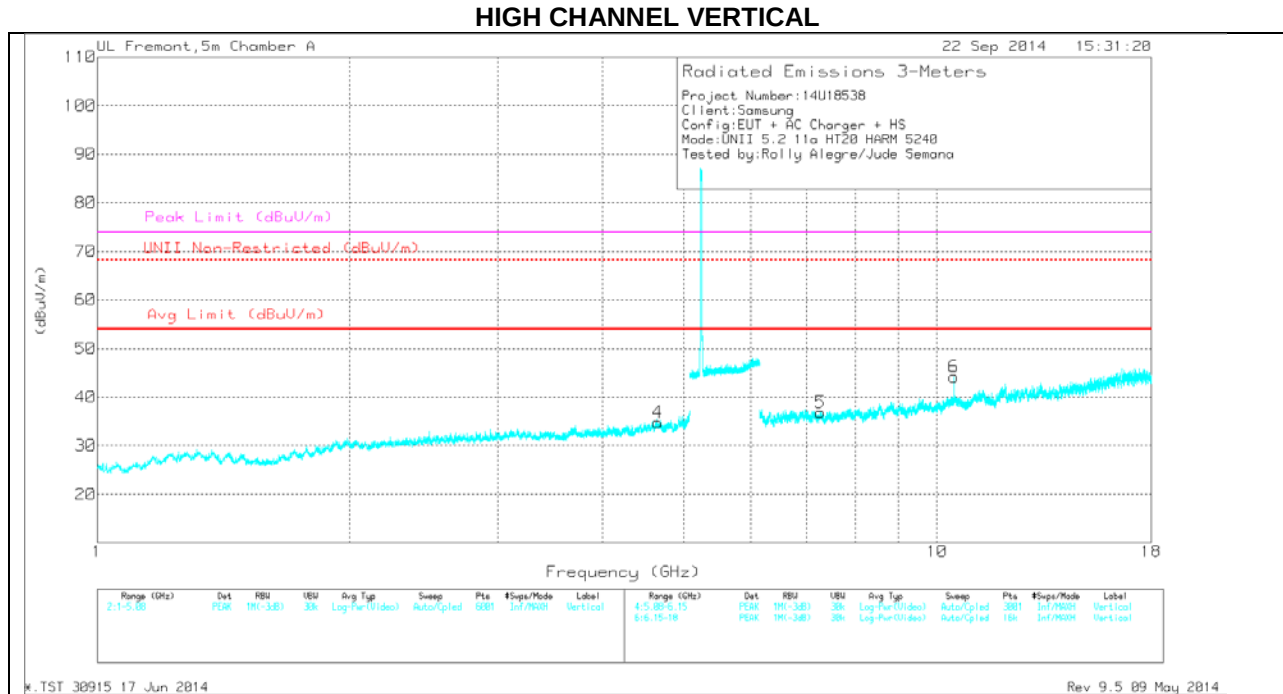
MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/F ttr/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
1	** 2.692	33.33	PK	32.6	-32.3	0	33.63	-	-	74	-40.37	-	-	0-360	100	H
2	** 4.299	31.6	PK	33.6	-30.3	0	34.9	-	-	74	-39.1	-	-	0-360	200	H
4	** 3.668	32.01	PK	33.2	-30.7	0	34.51	-	-	74	-39.49	-	-	0-360	100	V
3	** 11.929	30.21	PK	39	-26.2	0	43.01	-	-	74	-30.99	-	-	0-360	100	H
5	1.986	31.91	PK	31.5	-32	0	31.41	-	-	-	-	68.2	-36.79	0-360	100	V
6	8.548	28.97	PK	35.8	-26	0	38.77	-	-	-	-	68.2	-29.43	0-360	100	V
7	10.399	33.81	PK	37.3	-25.8	0	45.31	-	-	-	-	68.2	-22.89	0-360	200	V



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



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

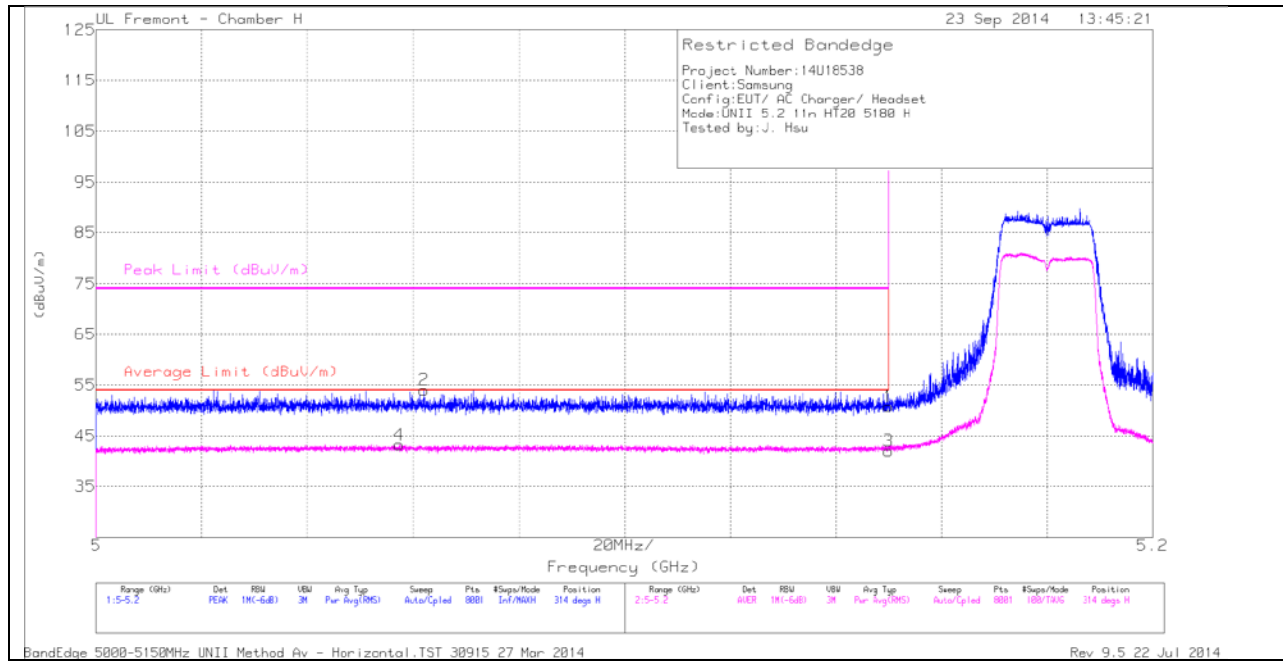
HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Ftr/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
1	* 4.015	31.82	PK	33.4	-31.6	0	33.62	-	-	74	-40.38	-	-	0-360	200	H
4	* 4.652	31.2	PK	34.1	-30.5	0	34.8	-	-	74	-39.2	-	-	0-360	200	V
2	* 8.073	29.28	PK	35.7	-27.3	0	37.68	-	-	74	-36.32	-	-	0-360	200	H
3	12.866	28.82	PK	39.2	-27	0	41.02	-	-	-	-	68.2	-27.18	0-360	200	H
5	* 7.265	30.54	PK	35.6	-29.3	0	36.84	-	-	74	-37.16	-	-	0-360	200	V
6	10.479	32.38	PK	37.5	-25.7	0	44.18	-	-	-	-	68.2	-24.02	0-360	200	V

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

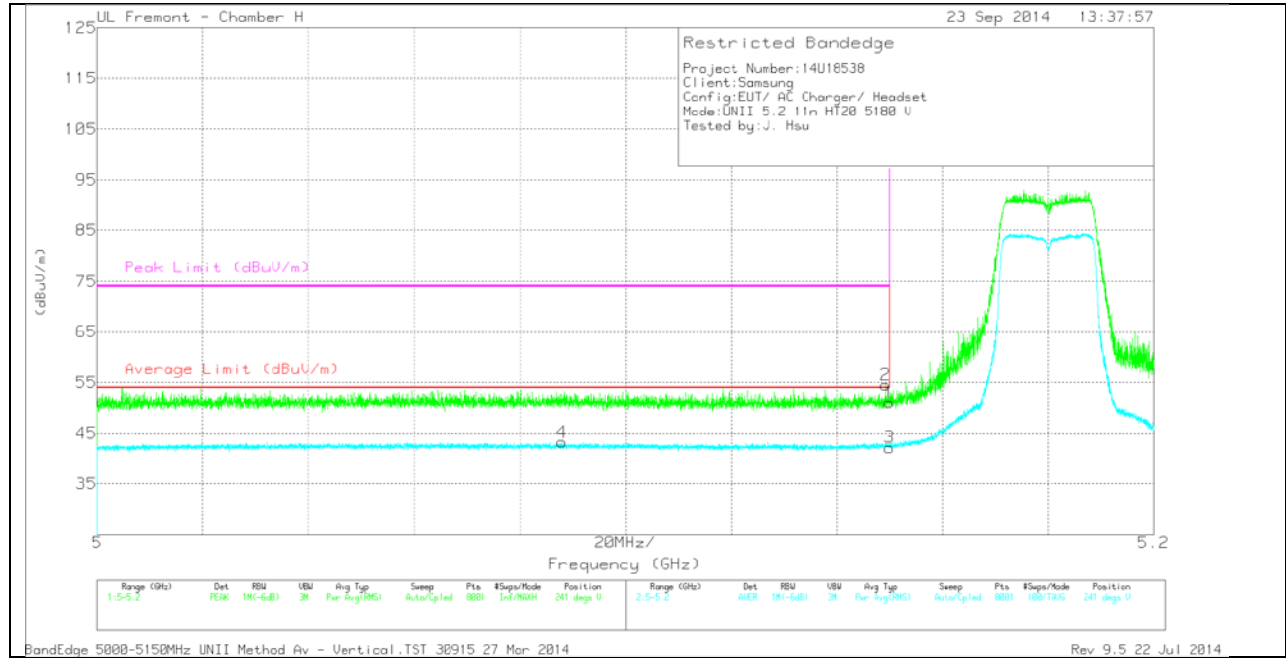
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T63 (dB/m)	Amp/Cbl/Fit 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
4	* 5.057	31.35	RMS	34.4	-22.8	.31	43.26	54	-10.74	-	-	314	289	H
2	* 5.062	42.55	PK	34.4	-22.9	0	54.05	-	-	74	-19.95	314	289	H
1	* 5.15	39.05	PK	34.5	-22.8	0	50.75	-	-	74	-23.25	314	289	H
3	* 5.15	30.02	RMS	34.5	-22.8	.31	42.03	54	-11.97	-	-	314	289	H

VERTICAL PEAK AND AVERAGE PLOT

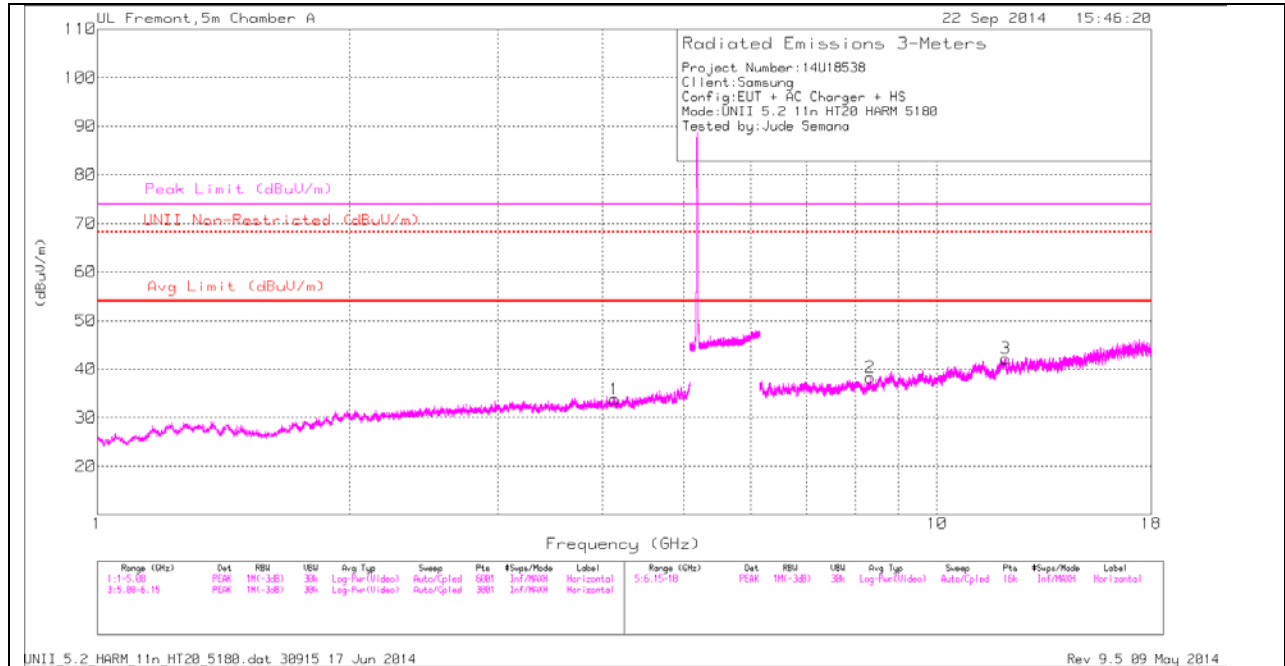


VERTICAL DATA

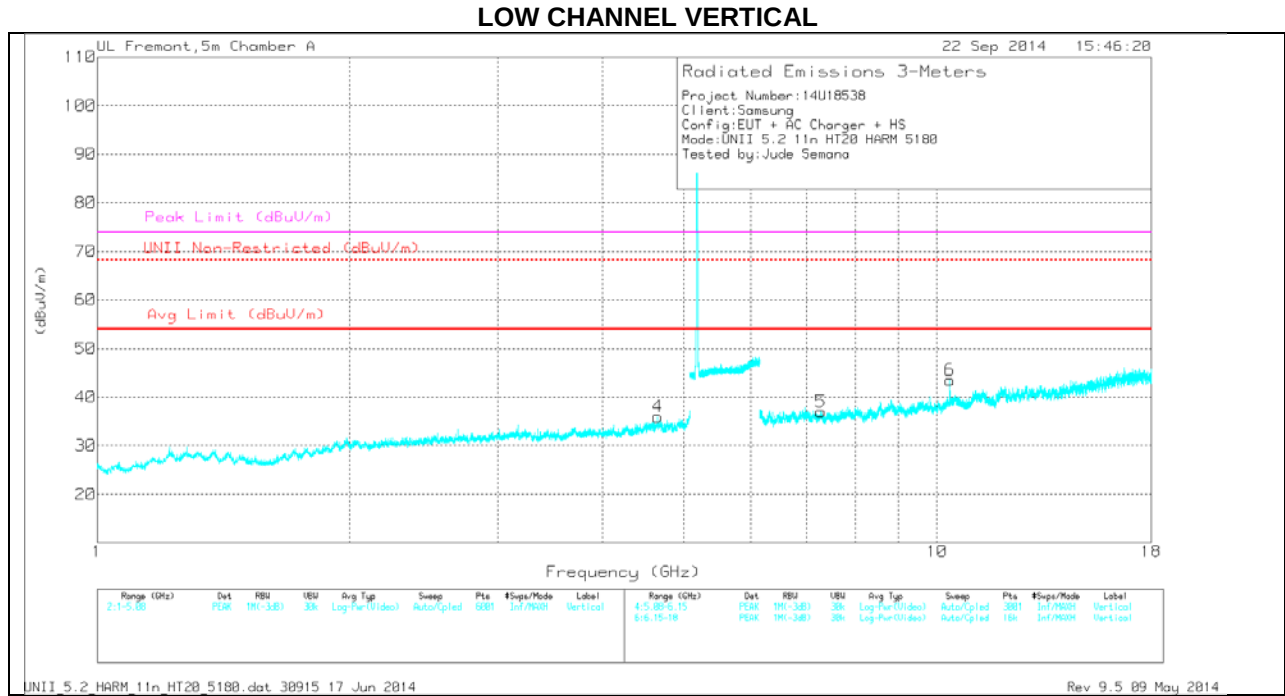
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 5.088	31.43	RMS	34.4	-22.9	.31	43.24	54	-10.76	-	-	241	318	V
2	* 5.149	42.83	PK	34.5	-22.8	0	54.53	-	-	74	-19.47	241	318	V
1	* 5.15	39.33	PK	34.5	-22.8	0	51.03	-	-	74	-22.97	241	318	V
3	* 5.15	30.15	RMS	34.5	-22.8	.31	42.16	54	-11.84	-	-	241	318	V

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.



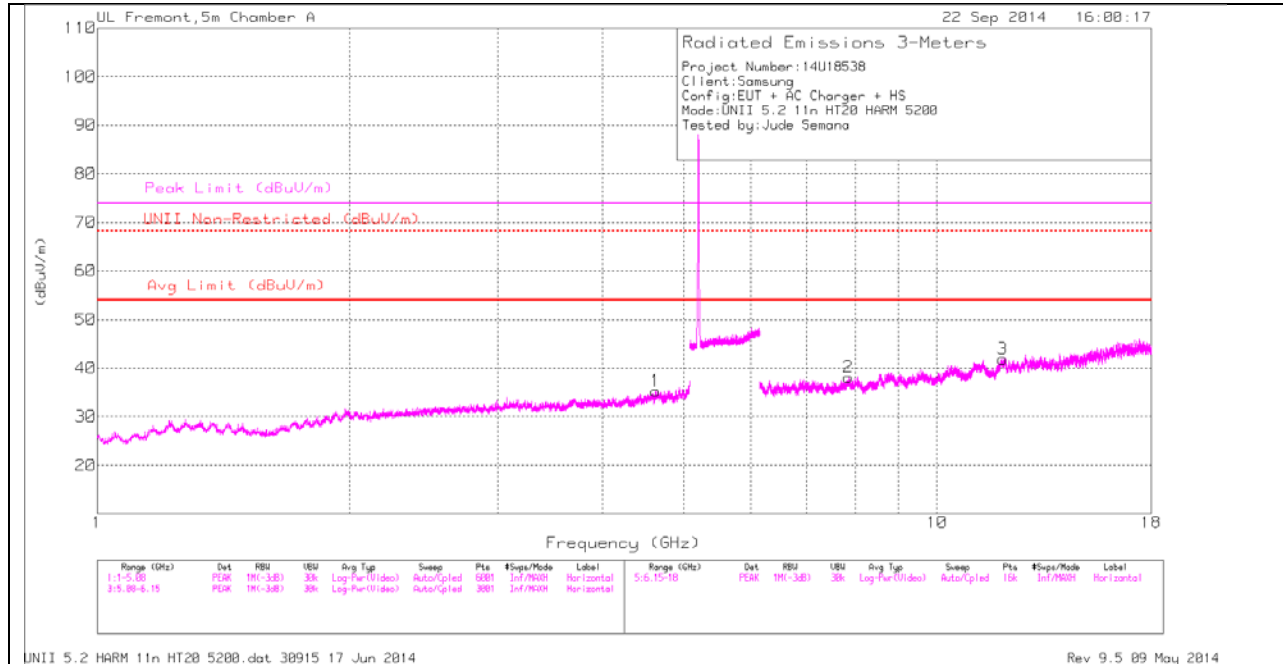
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

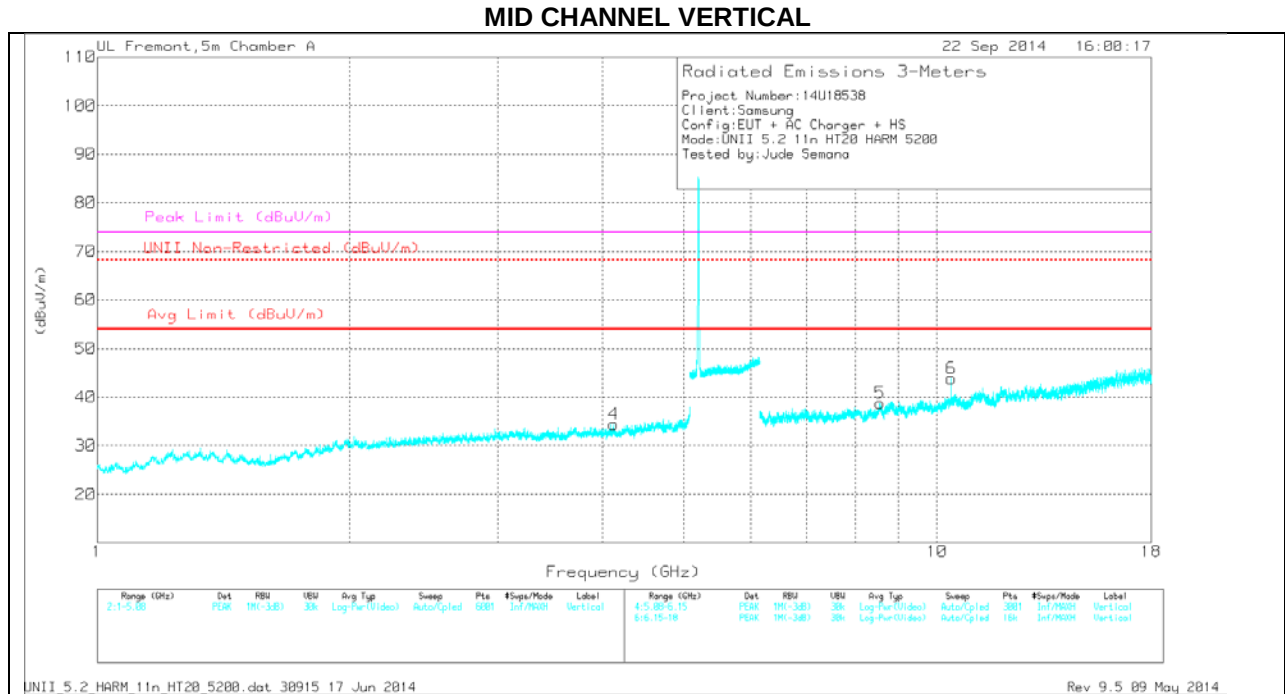
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Filtr/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
1	* 4.133	31.61	PK	33.5	-31.3	0	33.81	-	-	74	-40.19	-	-	0-360	200	H
4	* 4.652	32.41	PK	34.1	-30.5	0	36.01	-	-	74	-37.99	-	-	0-360	200	V
2	* 8.33	28.98	PK	35.8	-26.5	0	38.28	-	-	74	-35.72	-	-	0-360	200	H
3	* 12.074	29.48	PK	39.1	-26.4	0	42.18	-	-	74	-31.82	-	-	0-360	100	H
5	* 7.276	30.68	PK	35.6	-29.3	0	36.98	-	-	74	-37.02	-	-	0-360	200	V
6	10.36	31.6	PK	37.3	-25.4	0	43.5	-	-	-	-	68.2	-24.7	0-360	200	V

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.



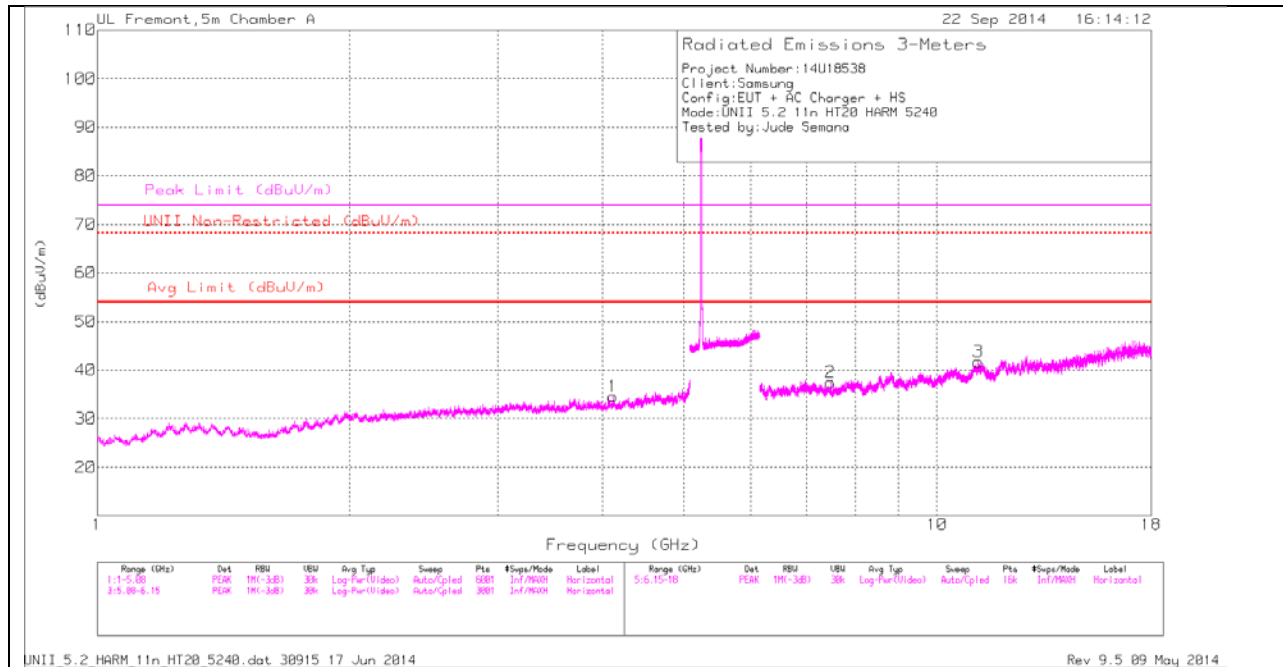
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

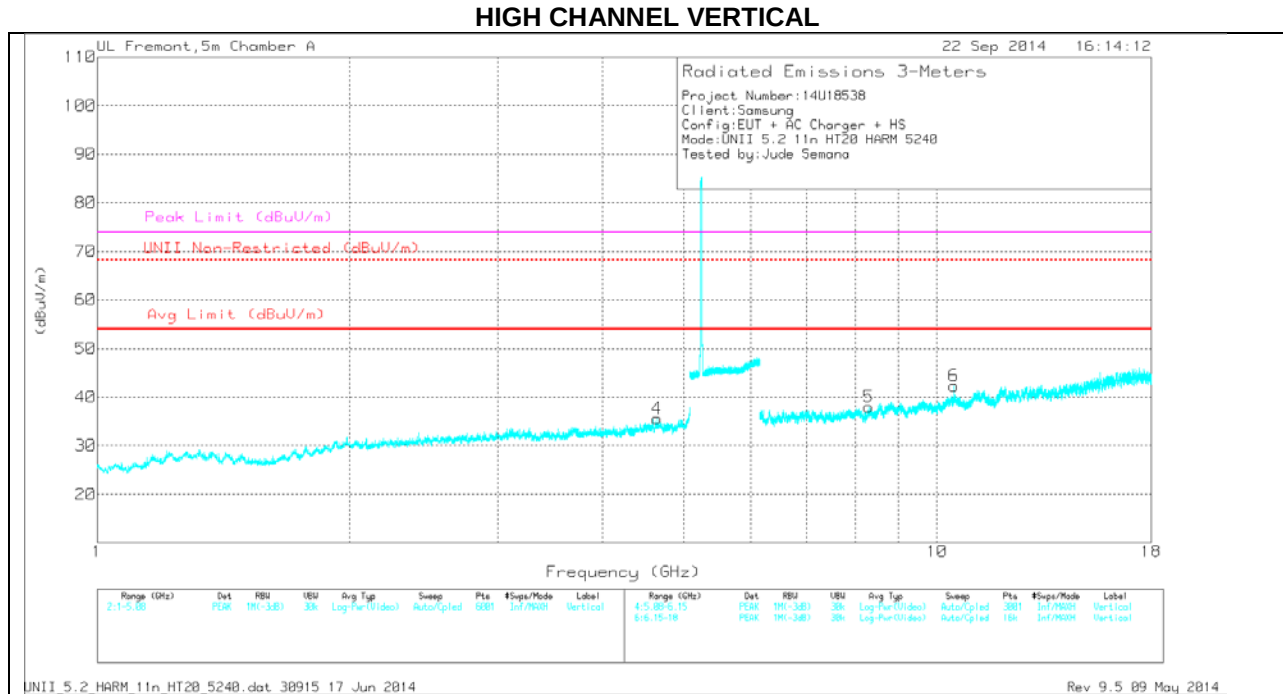
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Ftr/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
1	* 4.627	31.37	PK	34	-30.1	0	35.27	-	-	74	-38.73	-	-	0-360	200	H
4	* 4.123	31.9	PK	33.5	-31	0	34.4	-	-	74	-39.6	-	-	0-360	100	V
2	7.845	30.1	PK	35.8	-27.8	0	38.1	-	-	-	-	68.2	-30.1	0-360	100	H
3	* 11.975	29.17	PK	39	-26.3	0	41.87	-	-	74	-32.13	-	-	0-360	100	H
5	8.554	29.07	PK	35.8	-26.1	0	38.77	-	-	-	-	68.2	-29.43	0-360	200	V
6	10.399	32.36	PK	37.3	-25.8	0	43.86	-	-	-	-	68.2	-24.34	0-360	200	V

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.



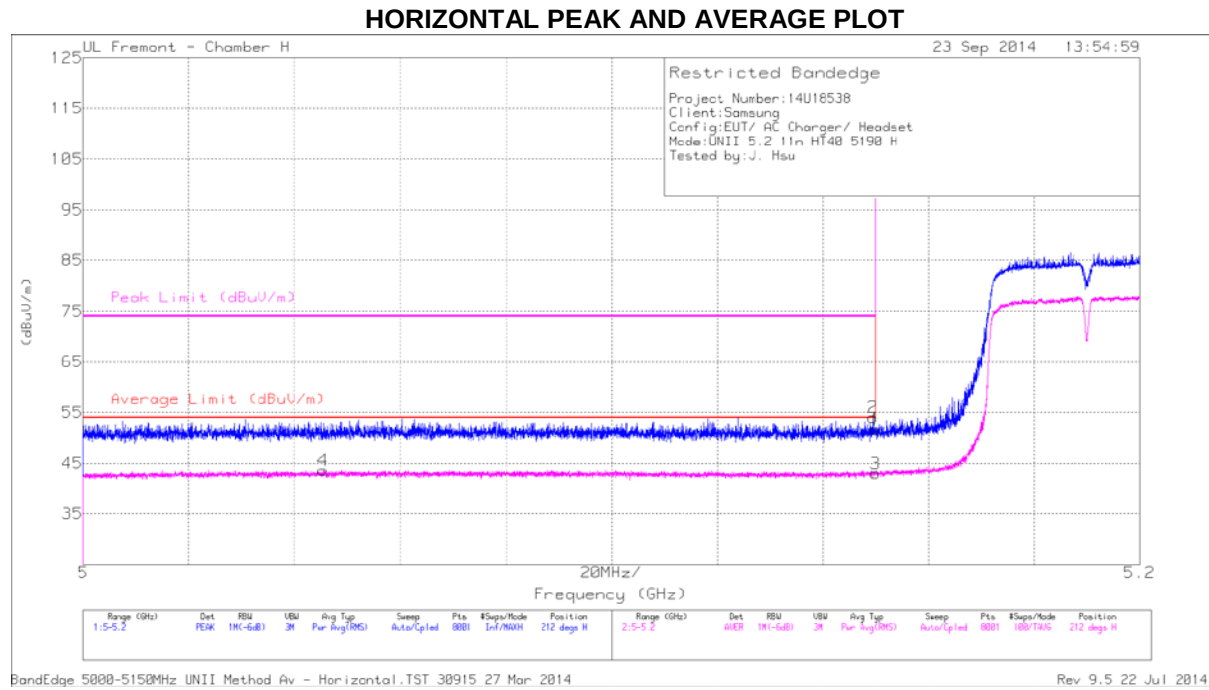
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Filtr/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
1	* 4.114	31.92	PK	33.5	-30.8	0	34.62	-	-	74	-39.38	-	-	0-360	100	H
4	* 4.643	31.7	PK	34.1	-30.2	0	35.6	-	-	74	-38.4	-	-	0-360	200	V
2	* 7.471	30.7	PK	35.7	-28.9	0	37.5	-	-	74	-36.5	-	-	0-360	200	H
3	* 11.198	29.75	PK	37.9	-25.9	0	41.75	-	-	74	-32.25	-	-	0-360	100	H
5	* 8.293	29.17	PK	35.8	-27	0	37.97	-	-	74	-36.03	-	-	0-360	100	V
6	10.48	30.55	PK	37.5	-25.7	0	42.35	-	-	-	-	68.2	-25.85	0-360	200	V

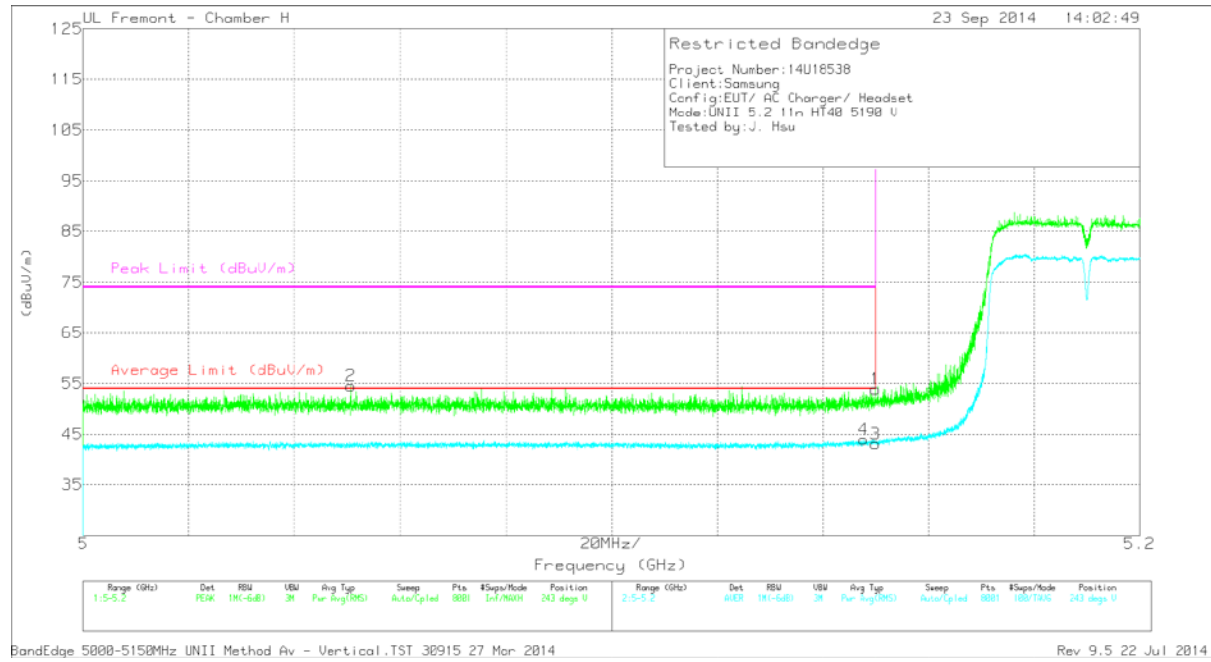
11.1.1. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fitter/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
4	* 5.045	31.48	RMS	34.4	-22.9	.66	43.64	54	-10.36	-	-	212	289	H
1	* 5.15	39.99	PK	34.5	-22.8	0	51.69	-	-	74	-22.31	212	289	H
2	* 5.15	42.34	PK	34.5	-22.8	0	54.04	-	-	74	-19.96	212	289	H
3	* 5.15	30.58	RMS	34.5	-22.8	.66	42.94	54	-11.06	-	-	212	289	H

VERTICAL PEAK AND AVERAGE PLOT

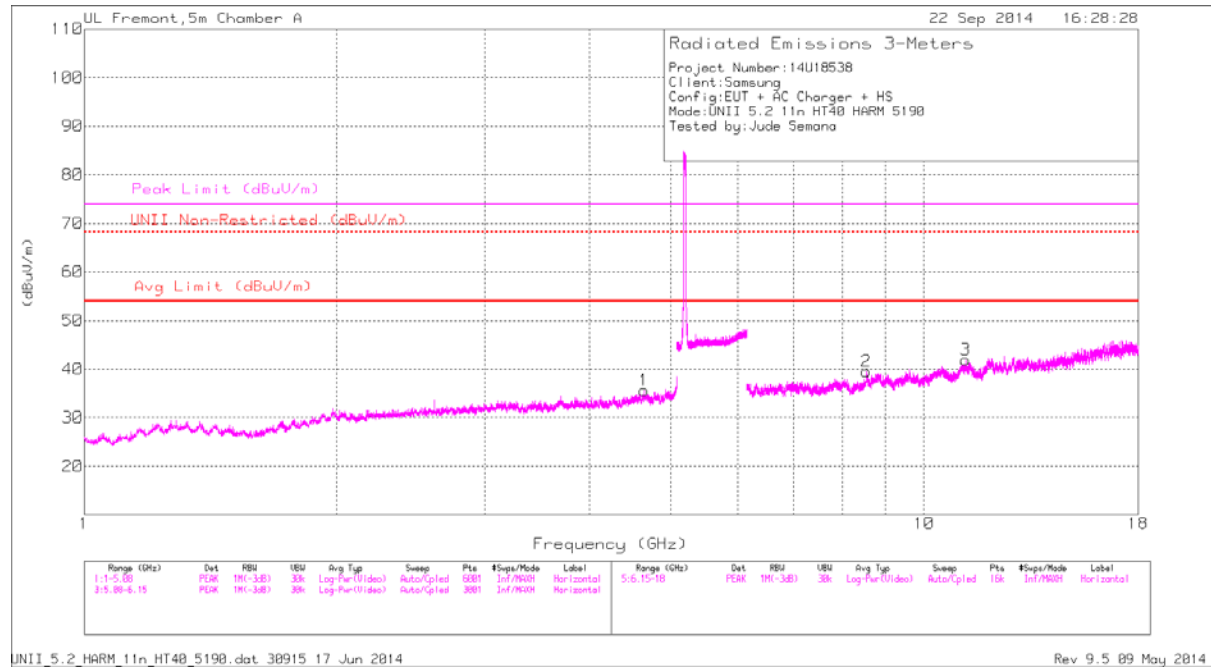


Trace Markers

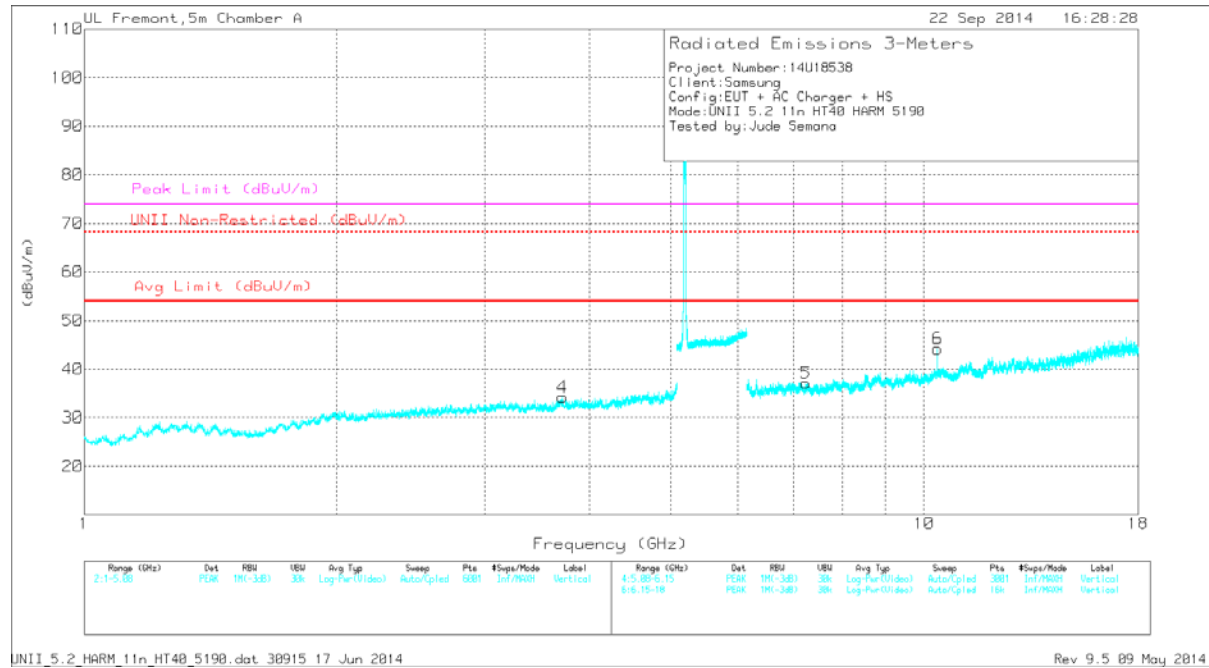
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 5.051	43	PK	34.4	-22.9	0	54.5	-	-	74	-19.5	243	318	V
4	* 5.148	31.63	RMS	34.5	-22.8	.66	43.99	54	-10.01	-	-	243	318	V
1	* 5.15	42.16	PK	34.5	-22.8	0	53.86	-	-	74	-20.14	243	318	V
3	* 5.15	30.68	RMS	34.5	-22.8	.66	43.04	54	-10.96	-	-	243	318	V

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL

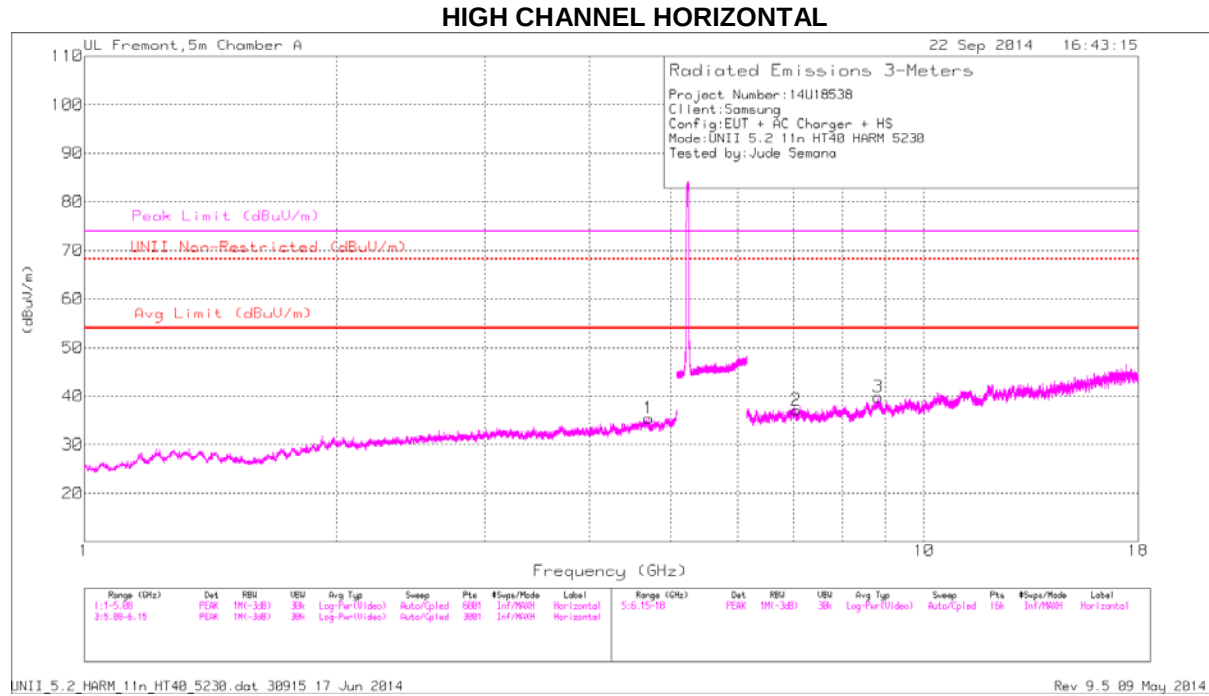


LOW CHANNEL VERTICAL

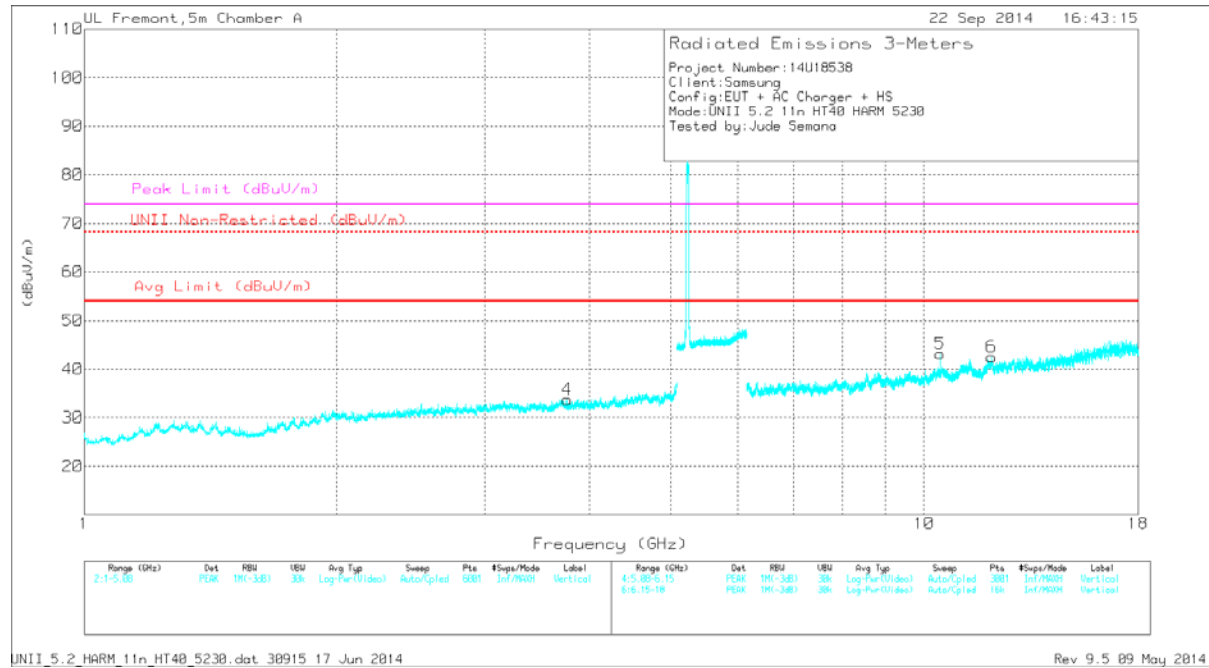


LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Ftr/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
1	* 4.645	31.73	PK	34.1	-30.2	0	35.63	-	-	74	-38.37	-	-	0-360	200	H
4	* 3.713	32	PK	33.2	-31	0	34.2	-	-	74	-39.8	-	-	0-360	100	V
2	8.542	29.85	PK	35.8	-26.1	0	39.55	-	-	-	-	68.2	-28.65	0-360	200	H
3	* 11.208	29.92	PK	37.9	-25.9	0	41.92	-	-	74	-32.08	-	-	0-360	100	H
5	7.233	30.71	PK	35.6	-29.2	0	37.11	-	-	-	-	68.2	-31.09	0-360	200	V
6	10.379	32.48	PK	37.3	-25.6	0	44.18	-	-	-	-	68.2	-24.02	0-360	200	V



HIGH CHANNEL VERTICAL



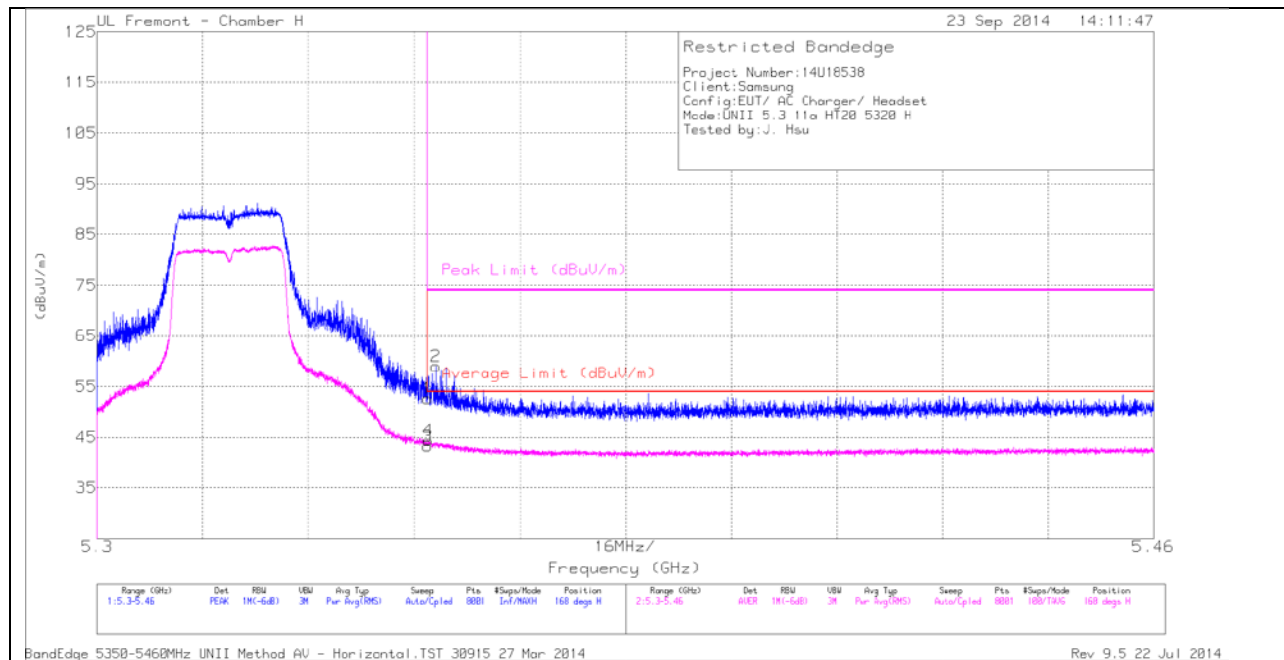
HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Chl/ Ftr/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
1	* 4.703	32.07	PK	34.1	-30.7	0	35.47	-	-	74	-38.53	-	-	0-360	200	H
4	* 3.76	32.33	PK	33.2	-31.8	0	33.73	-	-	74	-40.27	-	-	0-360	200	V
2	7.048	30.33	PK	35.6	-28.8	0	37.13	-	-	-	-	68.2	-31.07	0-360	200	H
3	8.821	29.59	PK	36	-25.7	0	39.89	-	-	-	-	68.2	-28.31	0-360	200	H
5	10.459	31.46	PK	37.4	-25.7	0	43.16	-	-	-	-	68.2	-25.04	0-360	200	V
6	* 12.039	29.65	PK	39.1	-26.2	0	42.55	-	-	74	-31.45	-	-	0-360	200	V

11.2. 5.3 GHz

11.2.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND AUTHORIZED BANDEDGE (HIGH CHANNEL)

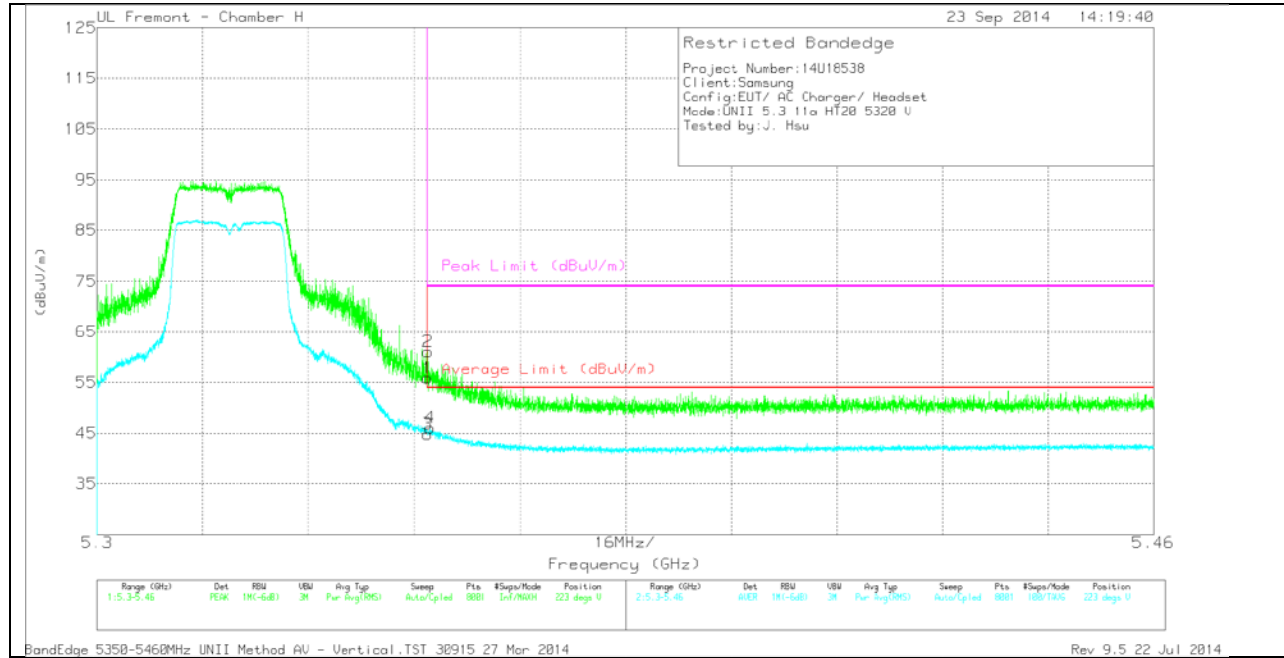
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Rtr/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	40.46	PK	34.9	-22.7	0	52.66	-	-	74	-21.34	168	307	H
3	* 5.35	30.72	RMS	34.9	-22.7	.29	43.21	54	-10.79	-	-	168	307	H
4	* 5.35	31.82	RMS	34.9	-22.7	.29	44.31	54	-9.69	-	-	168	307	H
2	* 5.351	46.74	PK	34.9	-22.7	0	58.94	-	-	74	-15.06	168	307	H

VERTICAL PEAK AND AVERAGE PLOT

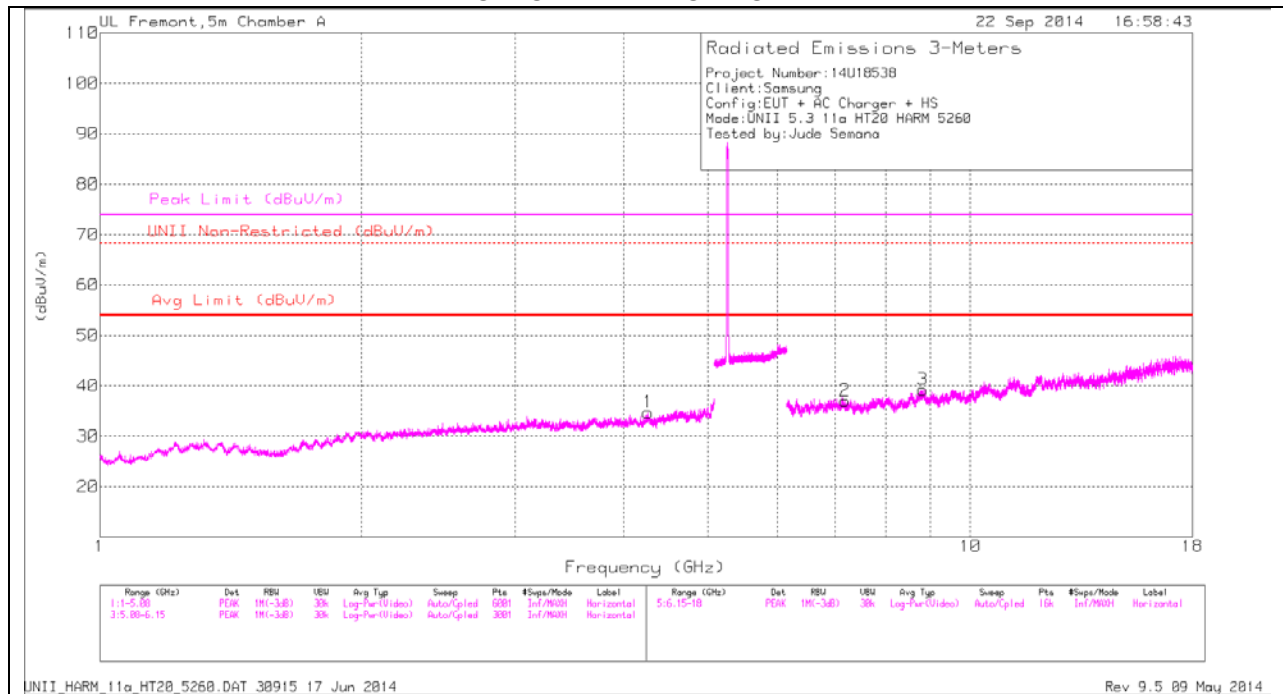


VERTICAL DATA

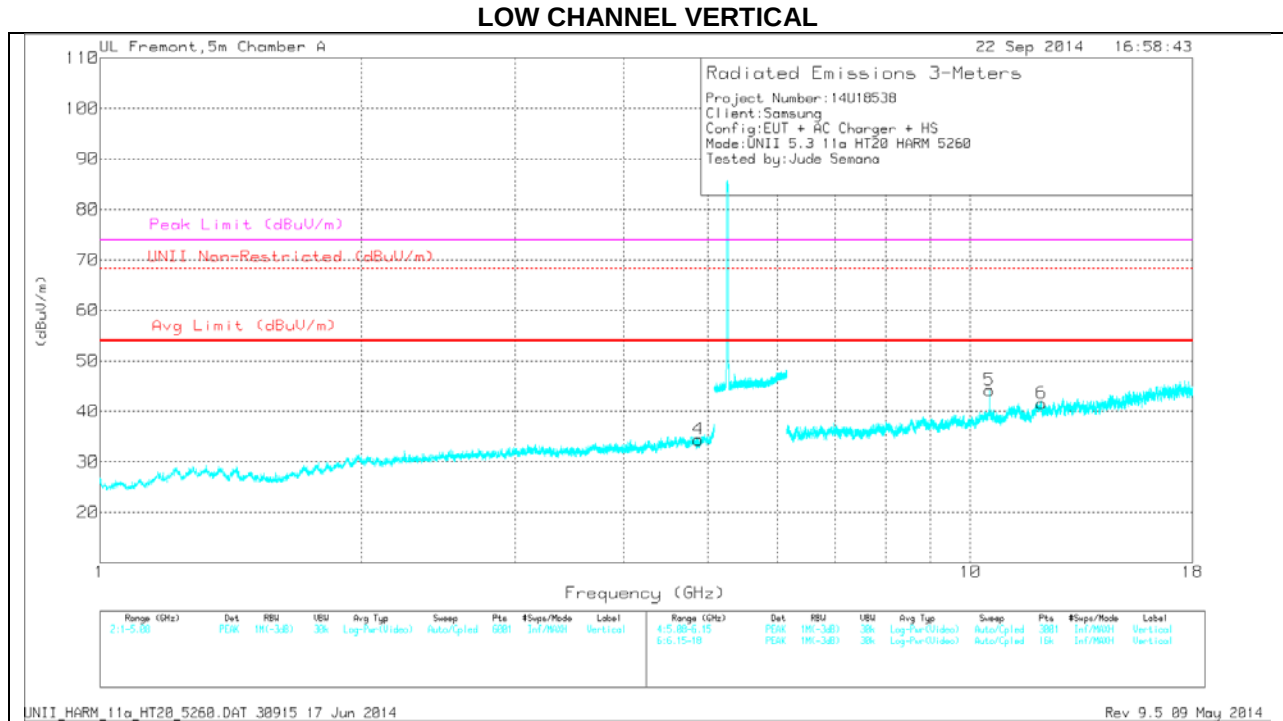
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	43.71	PK	34.9	-22.7	0	55.91	-	-	74	-18.09	223	309	V
2	* 5.35	48.86	PK	34.9	-22.7	0	61.06	-	-	74	-12.94	223	309	V
3	* 5.35	32.37	RMS	34.9	-22.7	.29	44.86	54	-9.14	-	-	223	309	V
4	* 5.35	33.53	RMS	34.9	-22.7	.29	46.02	54	-7.98	-	-	223	309	V

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.

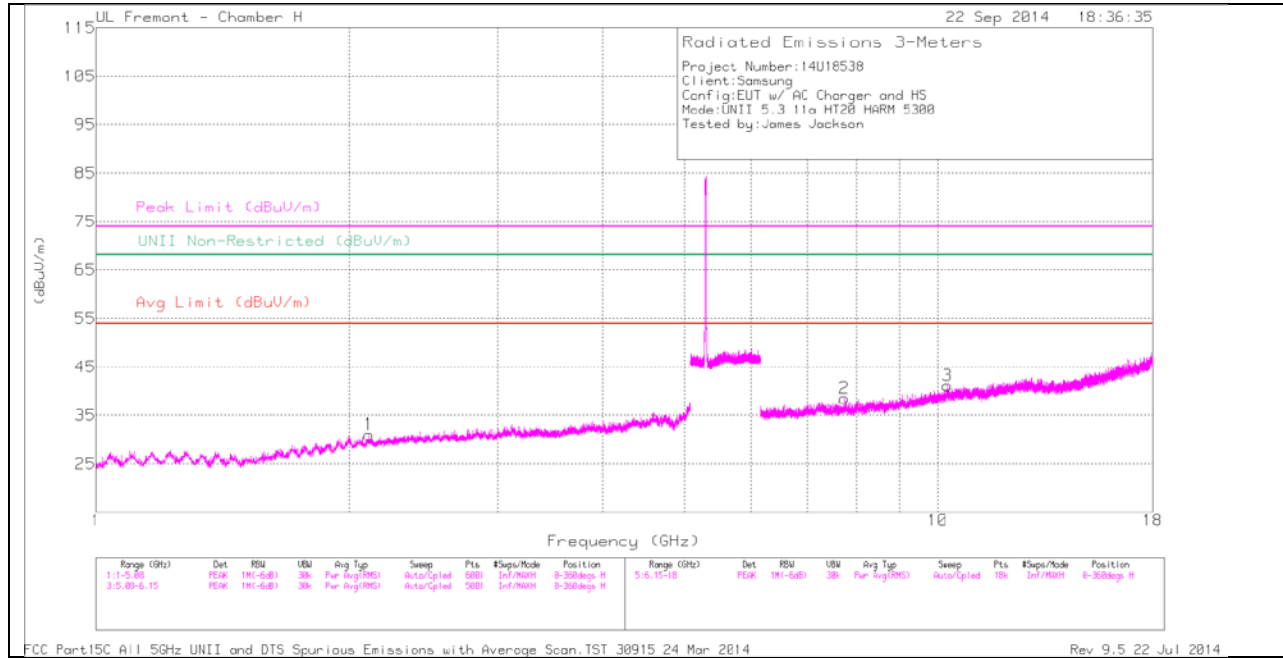


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

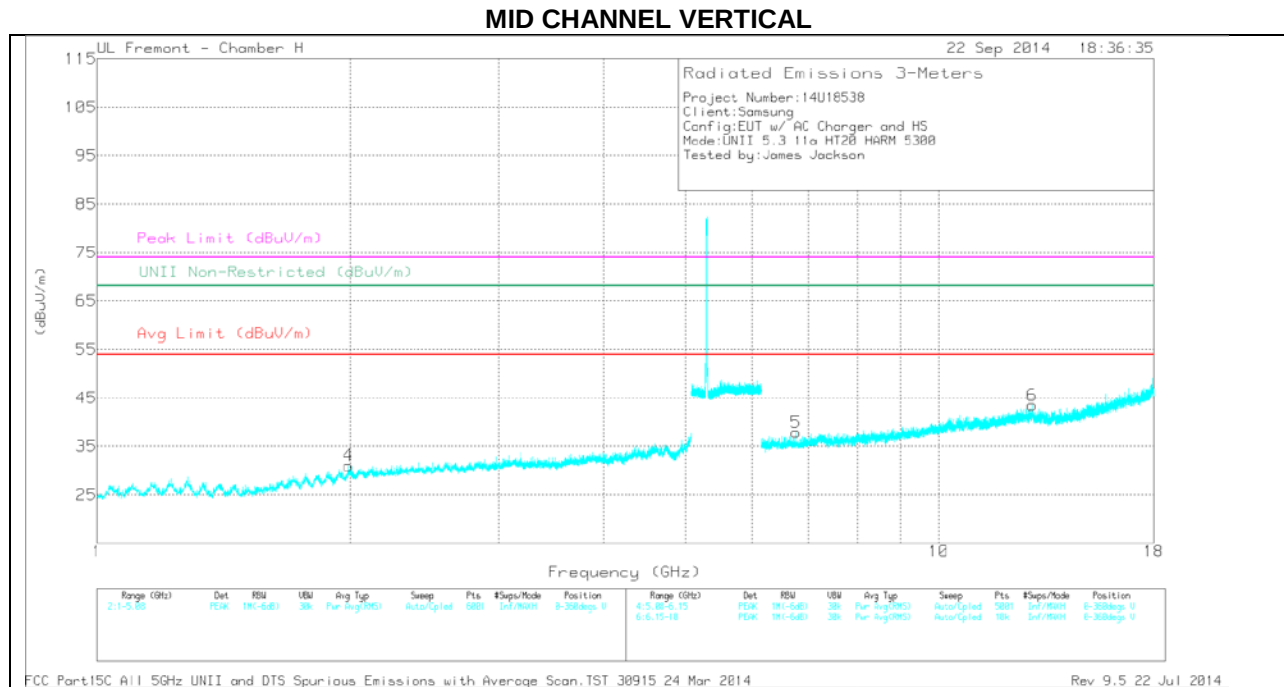
LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Af T119 (dB/m)	Amp/Cbl/Fil tr/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
1	* 4.263	31.72	PK	33.5	-30.5	0	34.72	-	-	74	-39.28	-	-	0-360	100	H
4	* 4.873	30.62	PK	34	-30.2	0	34.42	-	-	74	-39.58	-	-	0-360	200	V
2	7.179	30.4	PK	35.6	-29	0	37	-	-	-	-	68.2	-31.2	0-360	200	H
3	8.821	28.94	PK	36	-25.7	0	39.24	-	-	-	-	68.2	-28.96	0-360	100	H
5	10.52	31.67	PK	37.5	-25	0	44.17	-	-	-	-	68.2	-24.03	0-360	200	V
6	* 12.072	28.9	PK	39.1	-26.4	0	41.6	-	-	74	-32.4	-	-	0-360	100	V

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.



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

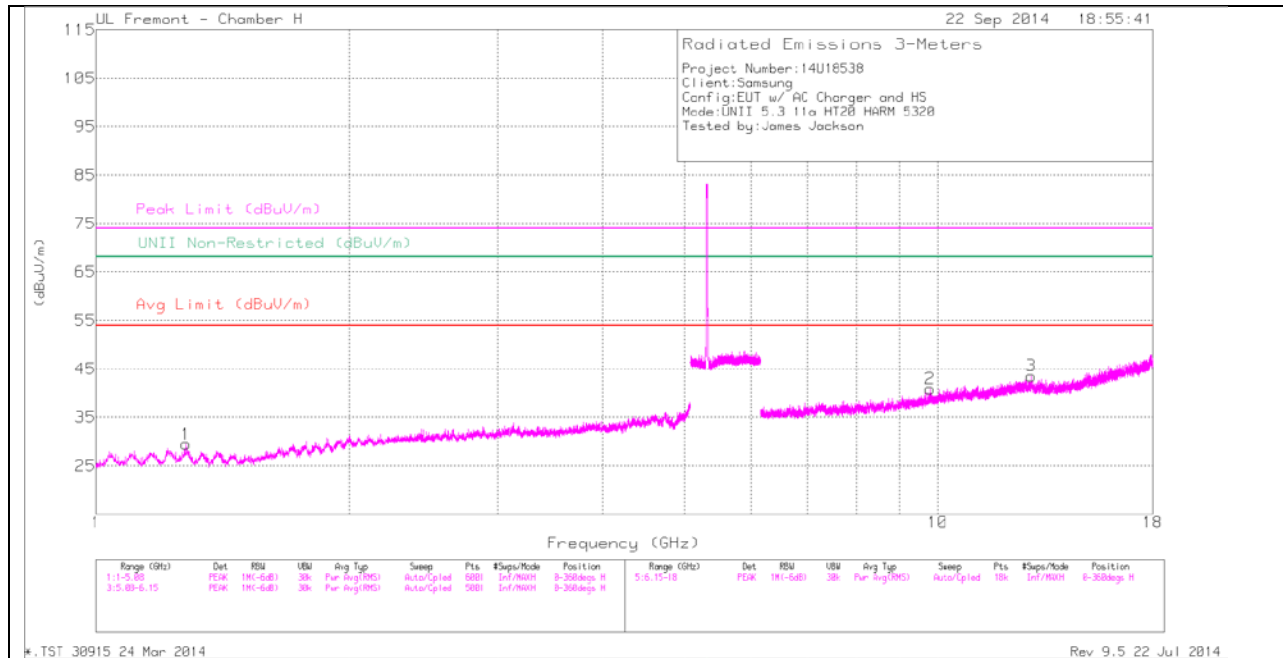
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.989	34.39	PK	31.2	-34.5	0	31.09	-	-	-	-	68.2	-37.11	0-360	201	V
1	2.108	34.09	PK	31.5	-34.5	0	31.09	-	-	-	-	68.2	-37.11	0-360	98	H
5	6.765	32.56	PK	35.8	-30.5	0	37.86	-	-	-	-	68.2	-30.34	0-360	201	V
2	7.754	32	PK	36.1	-29.5	0	38.6	-	-	-	-	68.2	-29.6	0-360	100	H
3	10.265	28.7	PK	37.4	-25	0	41.1	-	-	-	-	68.2	-27.1	0-360	201	H
6	12.915	28.98	PK	39.2	-24.7	0	43.48	-	-	-	-	68.2	-24.72	0-360	100	V

PK - Peak detector

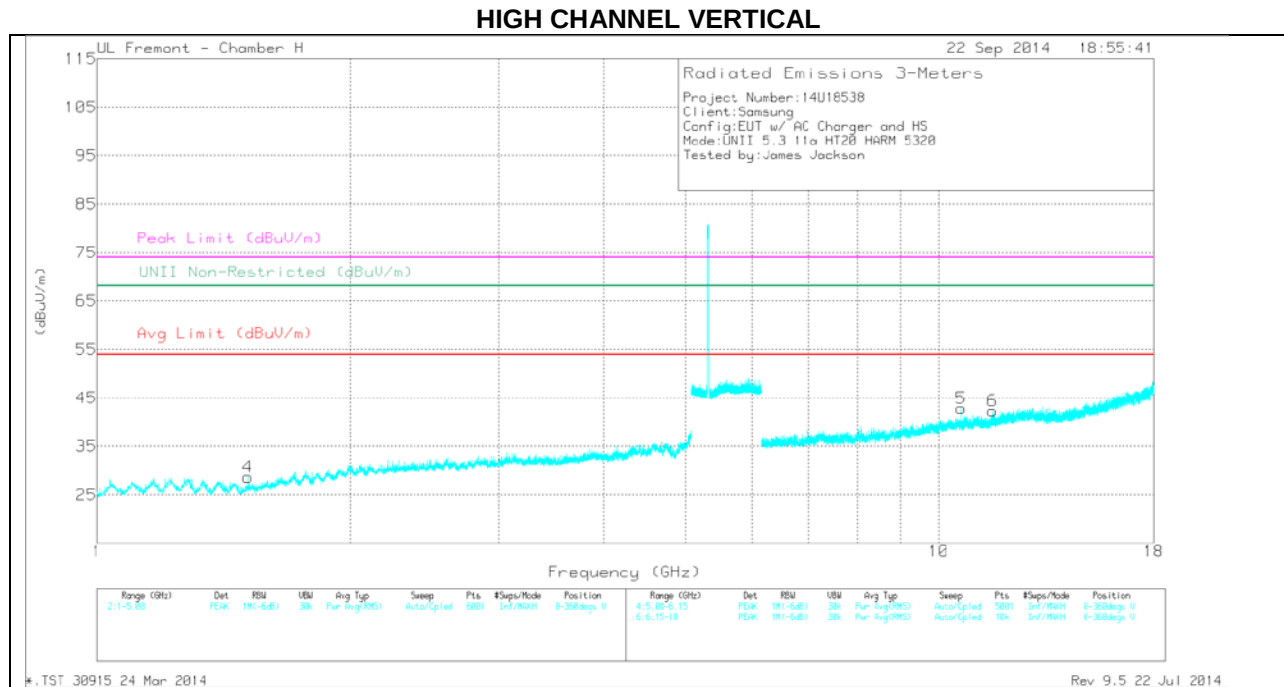
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Ftr/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
1.988	41.62	PK1	31.2	-34.5	0	38.32	-	-	-	-	68.2	-29.88	1	202	V
2.109	42.28	PK1	31.5	-34.5	0	39.28	-	-	-	-	68.2	-28.92	1	100	H
6.765	38.72	PK1	35.8	-30.5	0	44.02	-	-	-	-	68.2	-24.18	1	202	V
7.753	39.38	PK1	36.1	-29.5	0	45.98	-	-	-	-	68.2	-22.22	1	100	H
10.266	36.03	PK1	37.4	-25	0	48.43	-	-	-	-	68.2	-19.77	1	202	H
12.914	36.22	PK1	39.2	-24.7	0	50.72	-	-	-	-	68.2	-17.48	1	100	V

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.



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

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filr/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
1	* 1.279	36.22	PK	28.8	-35.6	0	29.42	-	-	74	-44.58	-	-	0-360	100	H
4	* 1.51	35.93	PK	27.8	-35.1	0	28.63	-	-	74	-45.37	-	-	0-360	100	V
5	* 10.64	30.95	PK	37.6	-25.7	0	42.85	-	-	74	-31.15	-	-	0-360	201	V
6	* 11.59	29.19	PK	38.2	-25.1	0	42.29	-	-	74	-31.71	-	-	0-360	100	V
2	9.785	30.14	PK	37	-26.2	0	40.94	-	-	-	-	68.2	-27.26	0-360	201	H
3	12.909	29.16	PK	39.2	-24.8	0	43.56	-	-	-	-	68.2	-24.64	0-360	201	H

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filr/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
* 1.279	43.71	PK1	28.8	-35.6	0	36.91	-	-	74	-37.09	-	-	0	100	H
* 1.508	43.24	PK1	27.8	-35.1	0	35.94	-	-	74	-38.06	-	-	0	100	V
* 10.64	36.58	PK1	37.6	-25.7	0	48.48	-	-	74	-25.52	-	-	0	202	V
9.784	36.48	PK1	37	-26.3	0	47.18	-	-	-	-	68.2	-21.02	0	202	H
12.91	36.72	PK1	39.2	-24.7	0	51.22	-	-	-	-	68.2	-16.98	0	202	H

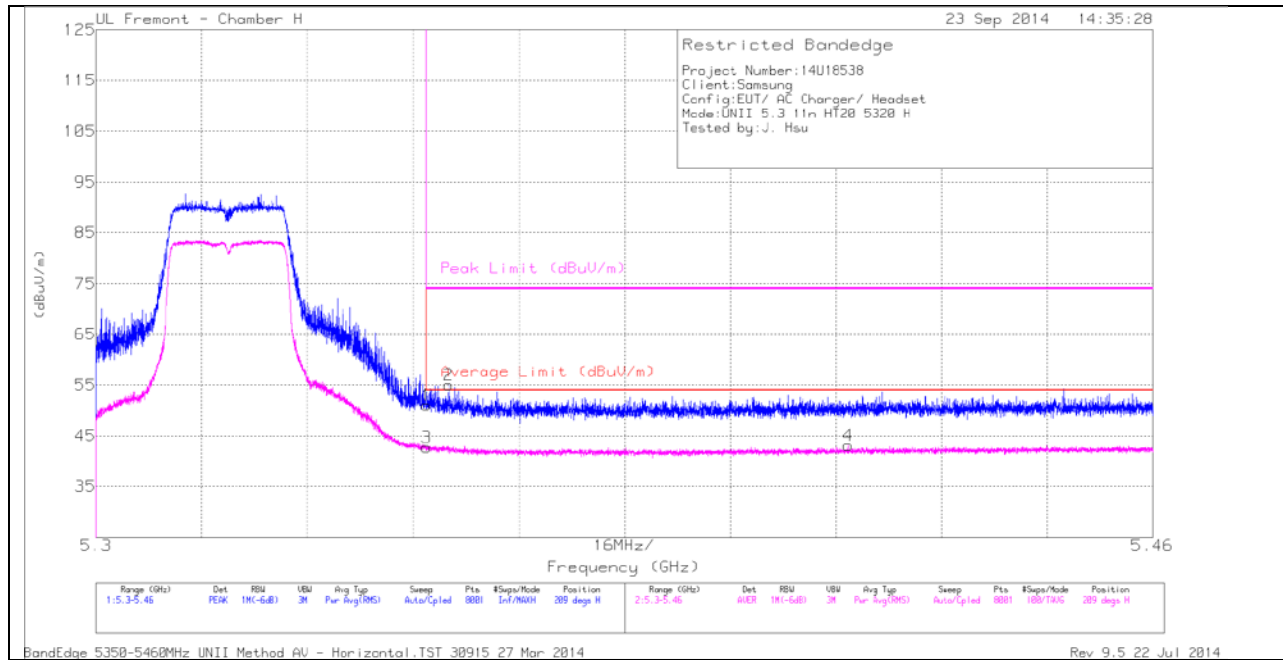
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK1 - KDB789033 Method: Peak

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

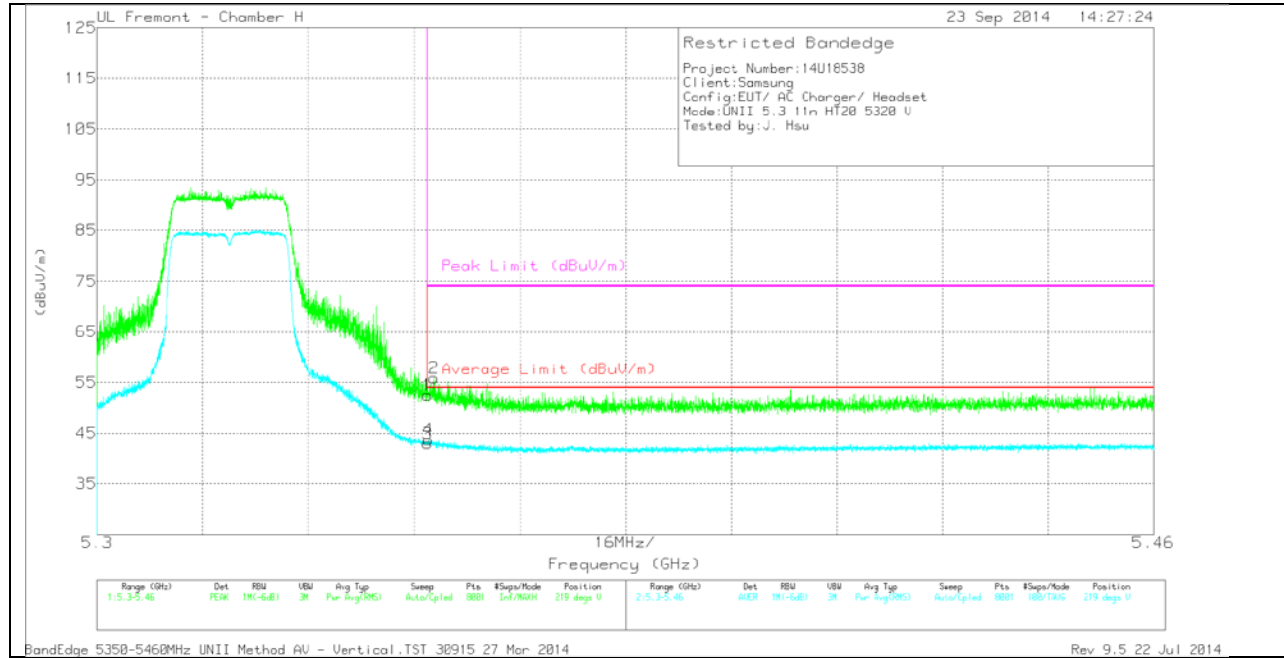
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fit 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	38.86	PK	34.9	-22.7	0	51.06	-	-	74	-22.94	209	280	H
3	* 5.35	30.25	RMS	34.9	-22.7	.31	42.76	54	-11.24	-	-	209	280	H
2	* 5.353	42.8	PK	34.9	-22.7	0	55	-	-	74	-19	209	280	H
4	* 5.414	30.25	RMS	35	-22.5	.31	43.06	54	-10.94	-	-	209	280	H

VERTICAL PEAK AND AVERAGE PLOT

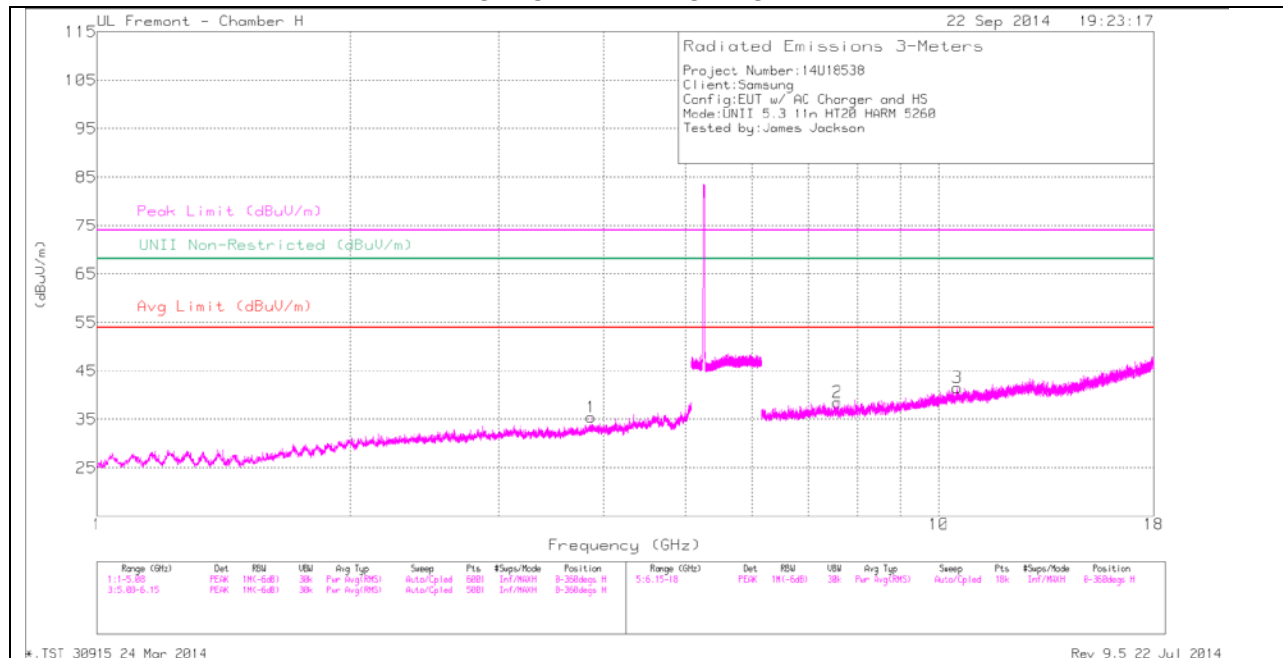


VERTICAL DATA

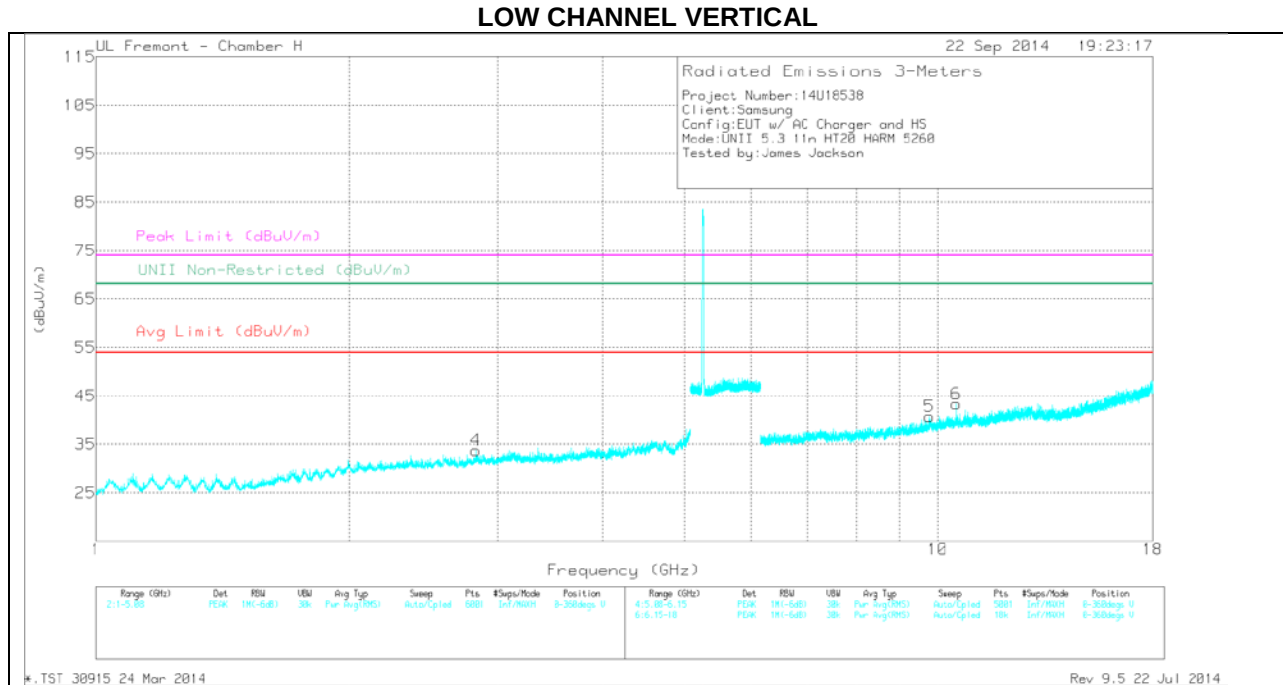
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	40.27	PK	34.9	-22.7	0	52.47	-	-	74	-21.53	219	279	V
3	* 5.35	30.5	RMS	34.9	-22.7	.31	43.01	54	-10.99	-	-	219	279	V
4	* 5.35	31.15	RMS	34.9	-22.7	.31	43.66	54	-10.34	-	-	219	279	V
2	* 5.351	43.65	PK	34.9	-22.7	0	55.85	-	-	74	-18.15	219	279	V

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.



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 T863 (dB/m)	Amp/Cbl/Filtr/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
1	* 3.861	34.91	PK	33.3	-32.8	0	35.41	-	-	74	-38.59	-	-	0-360	201	H
4	* 2.825	34.2	PK	32.5	-33	0	33.7	-	-	74	-40.3	-	-	0-360	100	V
2	* 7.583	31.7	PK	36.1	-29.2	0	38.6	-	-	74	-35.4	-	-	0-360	201	H
5	9.78	30.21	PK	36.9	-26.3	0	40.81	-	-	-	-	68.2	-27.39	0-360	201	V
3	10.52	29.56	PK	37.6	-25.6	0	41.56	-	-	-	-	68.2	-26.64	0-360	201	H
6	10.52	31.39	PK	37.6	-25.6	0	43.39	-	-	-	-	68.2	-24.81	0-360	201	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/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
* 3.861	41.72	PK1	33.3	-32.8	0	42.22	-	-	74	-31.78	-	-	0	202	H
* 2.825	41.45	PK1	32.5	-33	0	40.95	-	-	74	-33.05	-	-	0	100	V
* 7.582	38.6	PK1	36.1	-29.2	0	45.5	-	-	74	-28.5	-	-	0	202	H
9.78	36.56	PK1	36.9	-26.3	0	47.16	-	-	-	-	68.2	-21.04	0	202	V
10.52	36.59	PK1	37.6	-25.6	0	48.59	-	-	-	-	68.2	-19.61	0	202	H
10.52	38.67	PK1	37.6	-25.6	0	50.67	-	-	-	-	68.2	-17.53	128	247	V
10.52	30.7	AD1	37.6	-25.7	-31	42.91	-	-	-	-	-	-	128	247	V

FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013