FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

Phone with Bluetooth, DTS/UNII a/b/g/n, ANT+ & NFC

FCC ID: A3LSMA500FU

REPORT NUMBER: 14U19260-E3, REVISION B

ISSUE DATE: December 8, 2014

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	11/7/14	Initial issue	P. Zhang
A	12/1/14	Updated page 32	P. Zhang
B	12/8/14	Updated company address; section 10.3	P. Zhang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	Phone with Bluetooth, DTS/UNII a/b/g/n, ANT+ & NFC
MODEL:	SM-A500FU
SERIAL NUMBER:	1989213 (CONDUCTED); 1989211 (RADIATED)
DATE TESTED:	NOVEMBER 3-7, 2014

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C 15.247	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, and FCC CFR 47 Part 15.247.

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 26000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%

5. EQUIPMENT UNDER TEST

5.1. GENERAL DESCRIPTION OF EUT

<table>
<tr><td>EUT DESCRIPTION</td><td>Phone with Bluetooth, DTS/UNII a/b/g/n, ANT+ & NFC</td></tr>
<tr><td>MODEL NUMBER</td><td>SM-A500FU</td></tr>
<tr><td>RADIO TYPE</td><td>WLAN 2.4GHz b/g/nHT20</td></tr>
<tr><td>MODULATION TYPE</td><td>DSSS: CCK, DQPSK, DBPSK
OFDM: 64QAM, 16QAM, QPSK, BPSK</td></tr>
<tr><td>OPERATING FREQUENCY</td><td>2412 ~ 2462 MHz</td></tr>
<tr><td>NUMBER OF CHANNEL</td><td>802.11b/g/nHT20: 11</td></tr>
<tr><td>CHANNEL SPACING</td><td>5 MHz</td></tr>
<tr><td>MAX OUTPUT POWER</td><td>
<table>
<tr><th>Frequency Range (MHz)</th><th>Mode</th><th>Output Power (dBm)</th><th>Output Power (mW)</th></tr>
<tr><td>2412 - 2462</td><td>802.11b</td><td>17.04</td><td>50.58</td></tr>
<tr><td>2412 - 2462</td><td>802.11g</td><td>13.19</td><td>20.84</td></tr>
<tr><td>2412 - 2462</td><td>802.11n HT20</td><td>12.17</td><td>16.48</td></tr>
</table>
</td></tr>
<tr><td>ANTENNA TYPE</td><td>FPCB</td></tr>
<tr><td>ANTENNA GAIN</td><td>-4.08 dBi</td></tr>
</table>

5.2. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203 an intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

*The antennas of this device are permanently attached.

**The device Complies with the requirements of §15.203.

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

5.4. DESCRIPTION OF TEST SETUP

5.5. SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	EP-TA50EWE	N/A	N/A
Headset	SAMSUNG	EHS64AVFWE	N/A	N/A

I/O CABLES

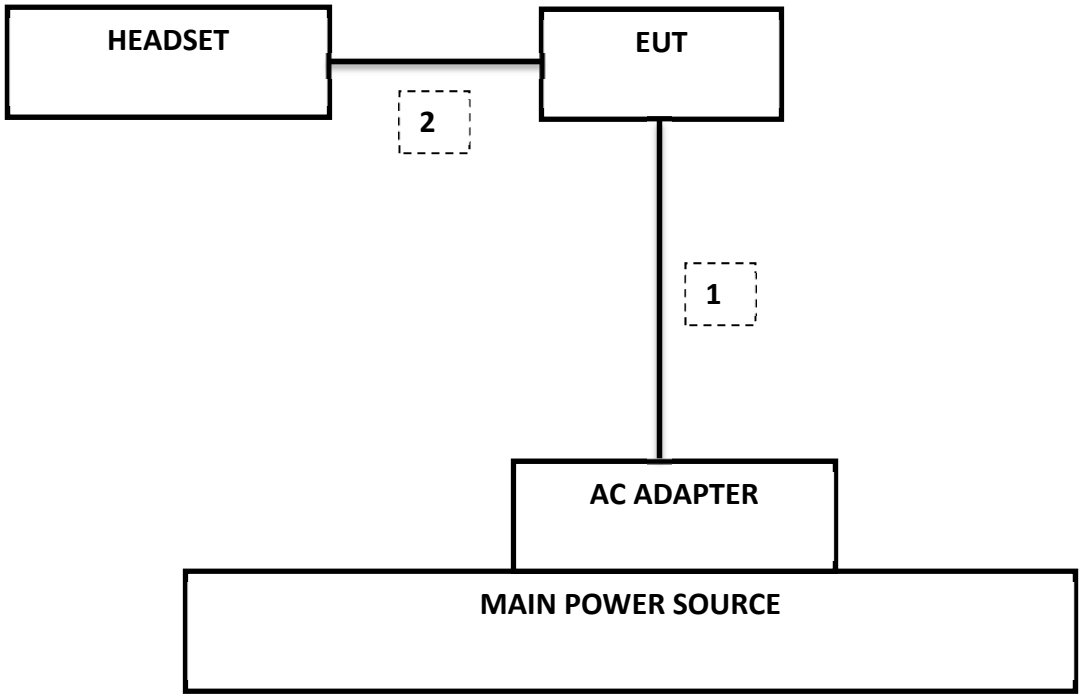
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	DC Power	1	Mini-USB	Shielded	1.2m
2	Audio	Audio	1	Mini-Jack	Unshielded	1m

5.6. TEST SETUP

The EUT is a stand-alone unit during the tests. Test software EUT was set in the Samsung Keystring menu to exercise the radio card.

5.7. SETUP DIAGRAM FOR TESTS

Radiated



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	C00946	11/12/14
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/15
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
NOTE: The calibration interval of the above test instrument is 12 months and the calibrations are traceable to NIST USA.				

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02: Measurement Procedure AVGPM-G is used for power and AVGPSD-3 is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

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)
2400MHz Bands						
802.11b	8.39	9	0.986	98.6%	0.00	0.010
802.11g	1.31	1	0.929	92.9%	0.32	0.763
802.11n HT20	1.29	1.39	0.93	92.8%	0.32	0.78

9. SUMMARY

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-210 A8.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	9.99MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-30.37dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	17.04dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-11.22dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10		Pass	41.72dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	45.08dBuV/m

WLAN 2.4GHz 802.11 b/g/nHT20 Channels and Frequency List

Channel	Frequency (MHz)
1	**2412**
2	2417
3	2422
4	2427
5	2432
6	**2437**
7	2442
8	2447
9	2452
10	2457
11	**2462**

10. ANTENNA PORT TEST RESULTS

6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

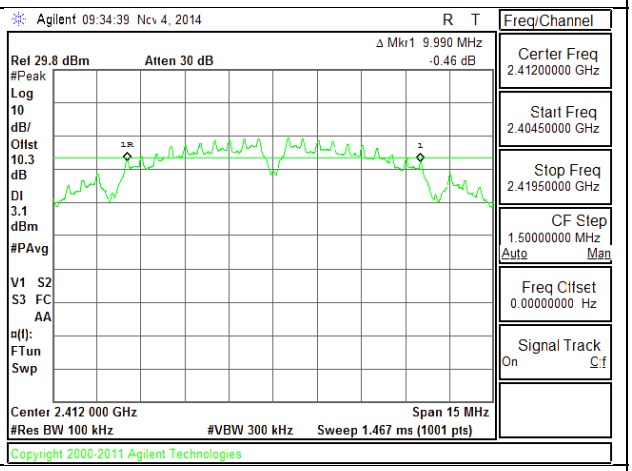
RESULTS

10.1. 6 dB BANDWIDTH PLOTS AND TABLE

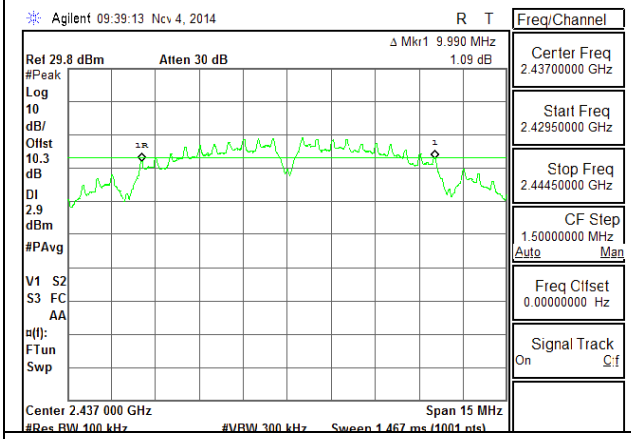
802.11b TEST RESULT TABLE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.990	0.5
Middle	2437	9.990	0.5
High	2462	10.02	0.5
Worst			

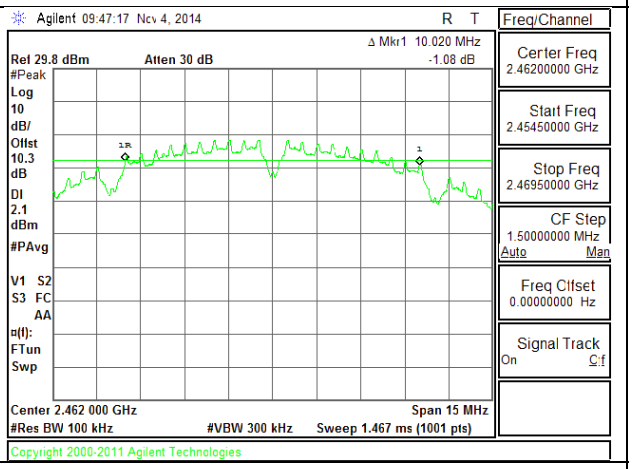
LOW CHANNEL



MID CHANNEL



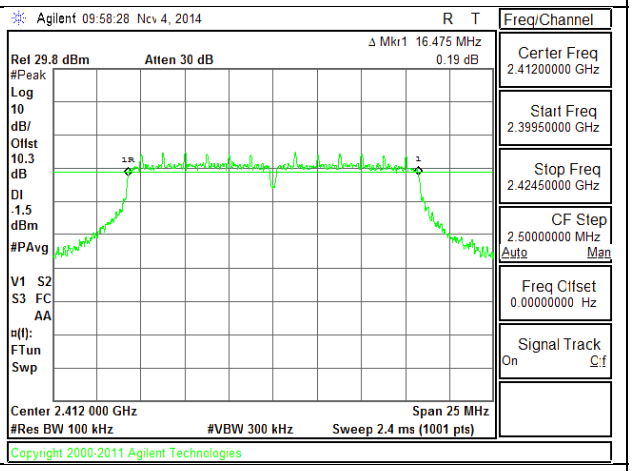
HIGH CHANNEL



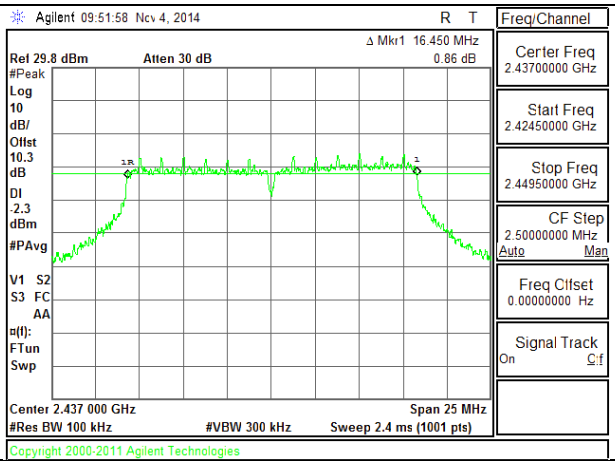
802.11g TEST RESULT TABLE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.475	0.5
Middle	2437	16.450	0.5
High	2462	16.375	0.5
Worst			

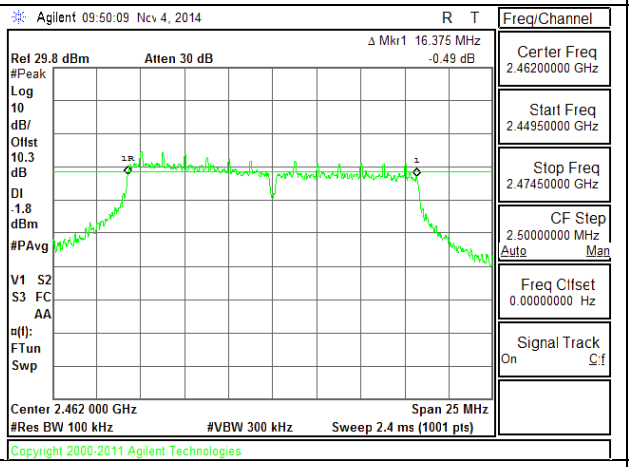
LOW CHANNEL



MID CHANNEL



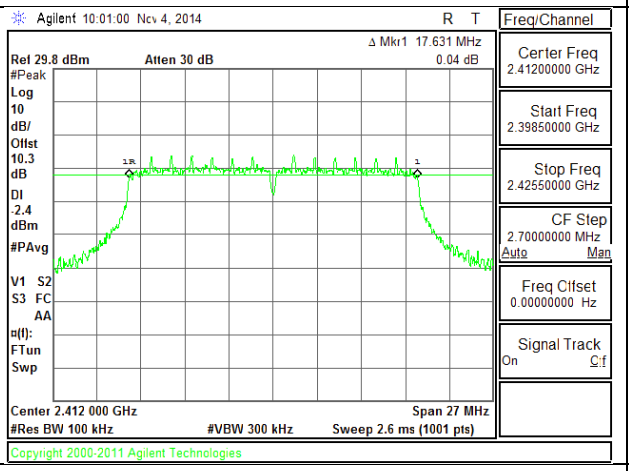
HIGH CHANNEL



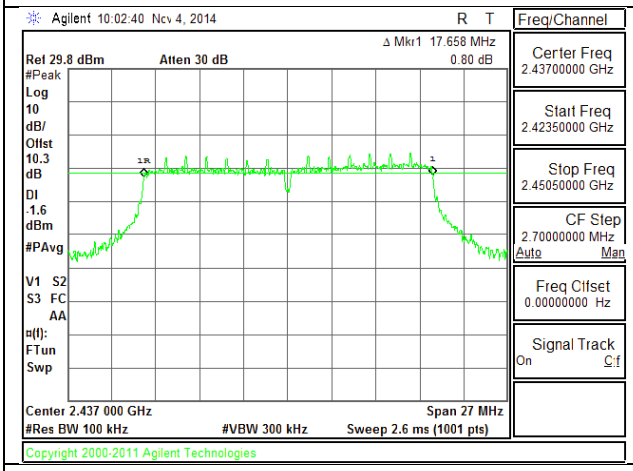
802.11n HT20 TEST RESULT TABLE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.631	0.5
Middle	2437	17.658	0.5
High	2462	17.469	0.5
Worst			

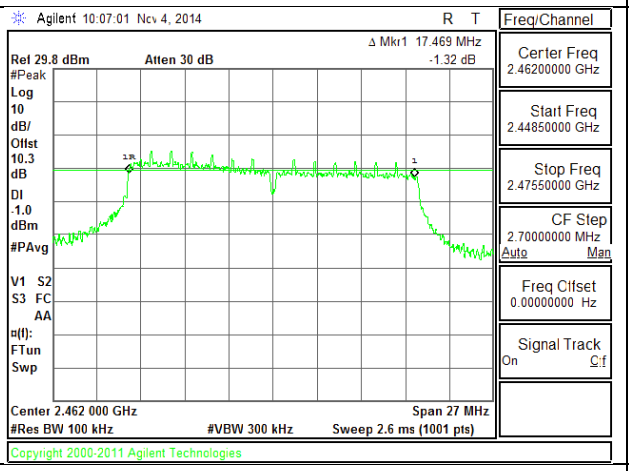
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

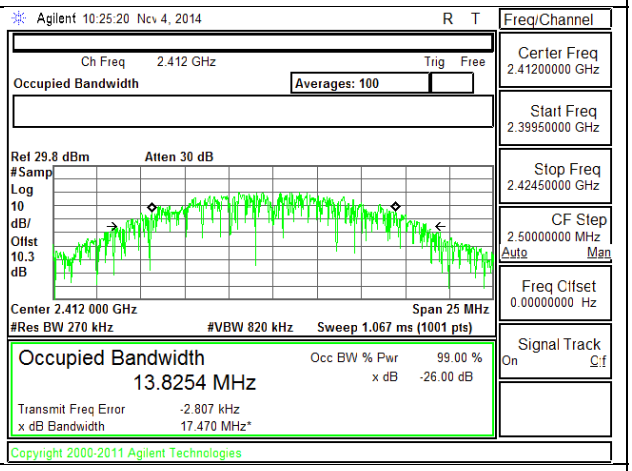
RESULTS

99% BANDWIDTH PLOTS AND TABLE

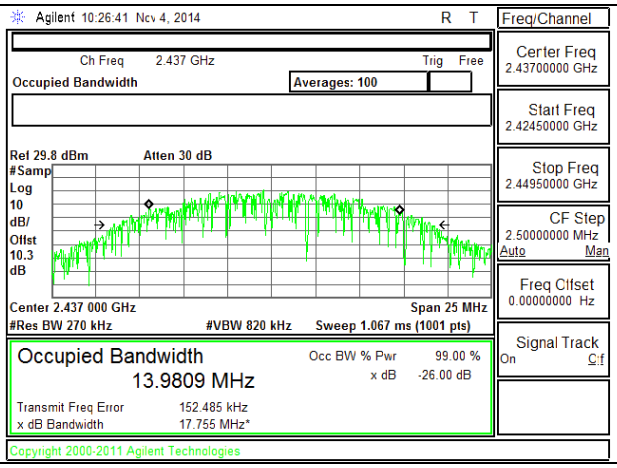
802.11b TEST RESULT TABLE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.8254
Middle	2437	13.9809
High	2462	14.382
Worst		0

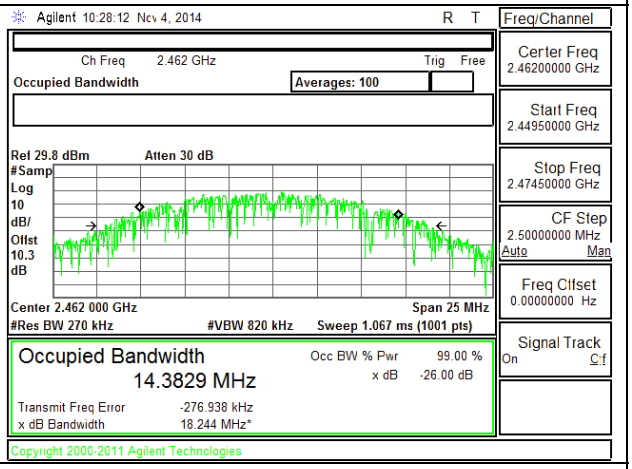
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

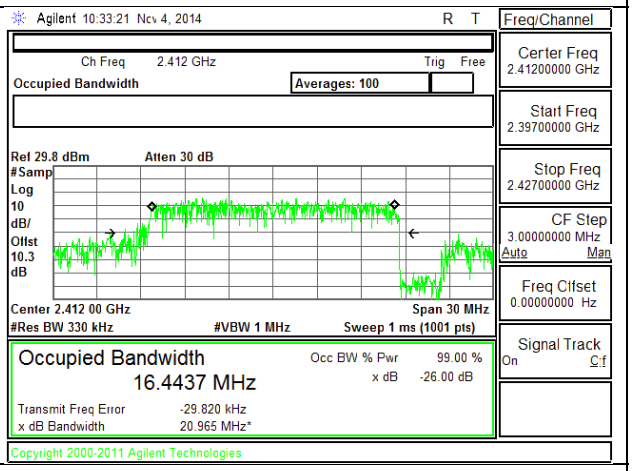


NOTE:

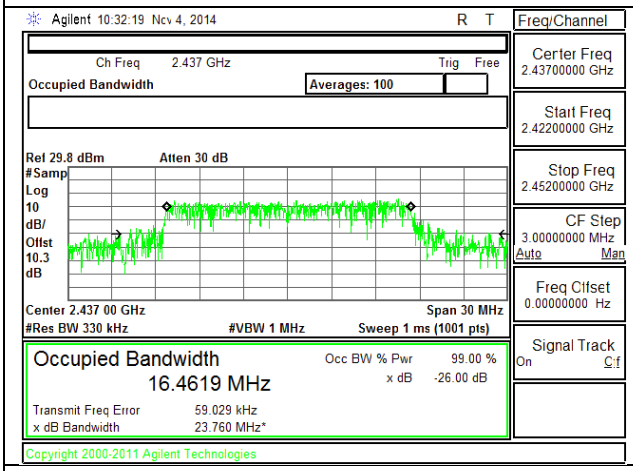
802.11g TEST RESULT TABLE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.4437
Middle	2437	16.4619
High	2462	16.5482
Worst		0

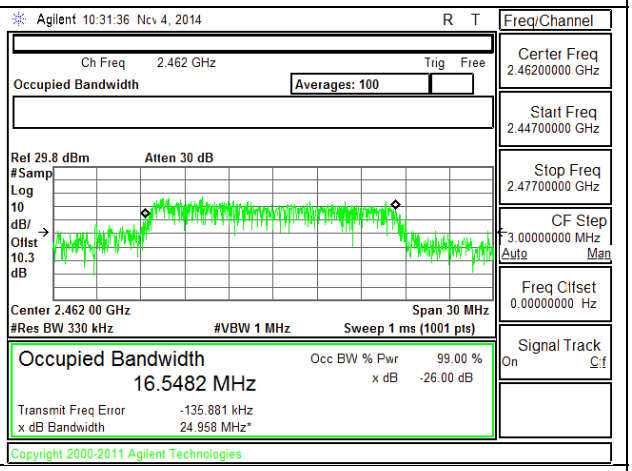
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

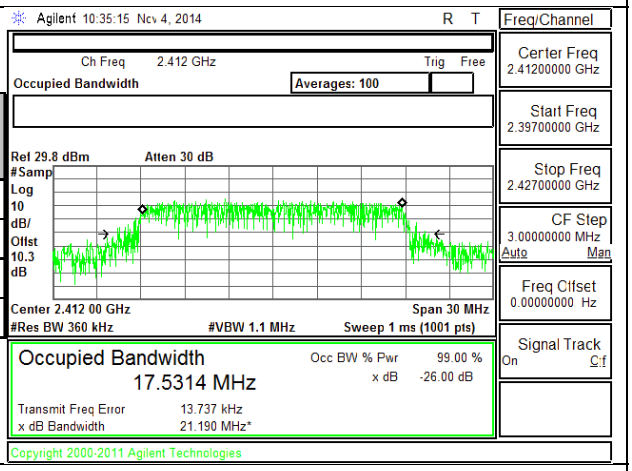


NOTE:

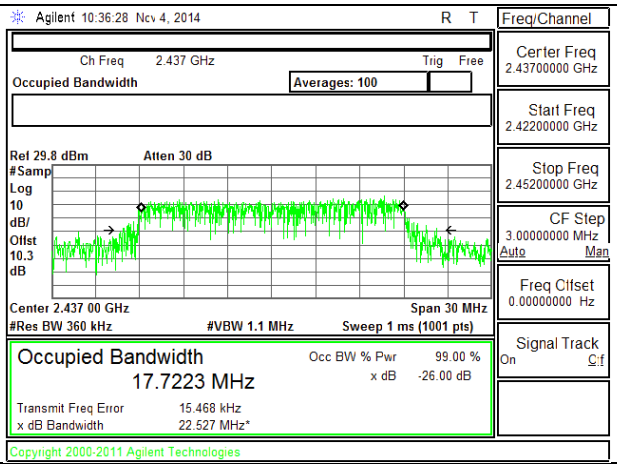
802.11n HT20 TEST RESULT TABLE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.5314
Middle	2437	17.7223
High	2462	17.6259
Worst		17.7223

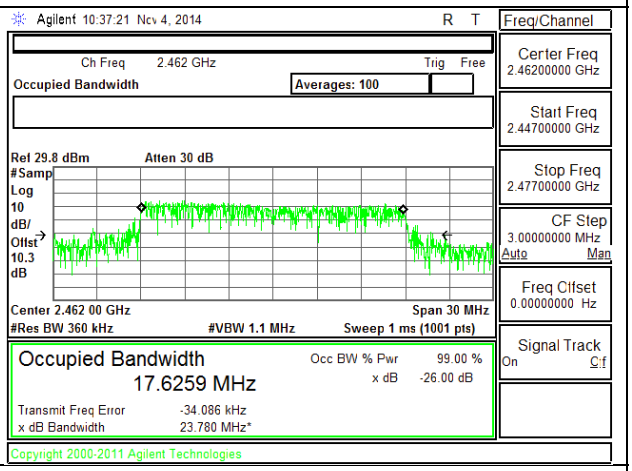
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

10.3. OUTPUT POWER

LIMITS

FCC §15.247

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

TEST PROCEDURE

KDB 558074 D01 DTS Meas Guidance v03r02: Measurement Procedure AVGPM-G is used for power.

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.2 dB (including 10 dB pad and 0.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

OUTPUT POWER TEST RESULT

802.11b TEST RESULT TABLE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.08	30.00	30	36	30.00
Mid	2437	-4.08	30.00	30	36	30.00
High	2462	-4.08	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dBm)
Low	2412	16.98	16.98	30.00	-13.02
Mid	2437	17.04	17.04	30.00	-12.96
High	2462	16.84	16.84	30.00	-13.16
Worst			17.04		

802.11g TEST RESULT TABLE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.08	30.00	30	36	30.00
Mid	2437	-4.08	30.00	30	36	30.00
High	2462	-4.08	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dBm)
Low	2412	12.70	12.70	30.00	-17.30
Mid	2437	13.19	13.19	30.00	-16.81
High	2462	12.72	12.72	30.00	-17.28
Worst			13.19		

NOTE:

802.11n HT20 TEST RESULT TABLE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.08	30.00	30	36	30.00
Mid	2437	-4.08	30.00	30	36	30.00
High	2462	-4.08	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dBm)
Low	2412	11.93	11.93	30.00	-18.07
Mid	2437	12.17	12.17	30.00	-17.83
High	2462	12.06	12.06	30.00	-17.94
Worst			12.17		

NOTE:

10.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Power Spectral Density was performed utilizing the “Method PKPSD (Peak PSD)” under KDB558074 D01 DTS Meas Guidance v03r02.

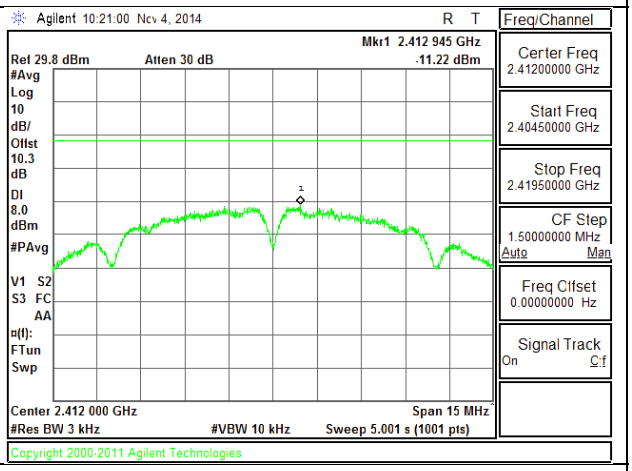
RESULTS

POWER SPECTRAL DENSITY PLOTS AND TABLE

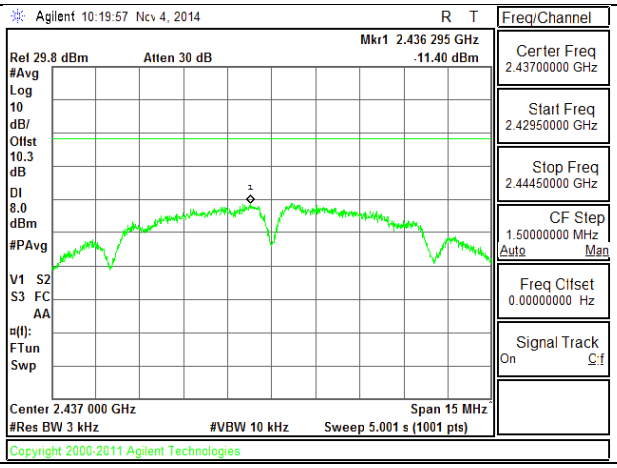
802.11b TEST RESULT TABLE

Channel	Frequency (MHz)	Chain 0 (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.22	8	-19.22
Middle	2437	-11.4	8	-19.4
High	2462	-12.05	8	-20.05

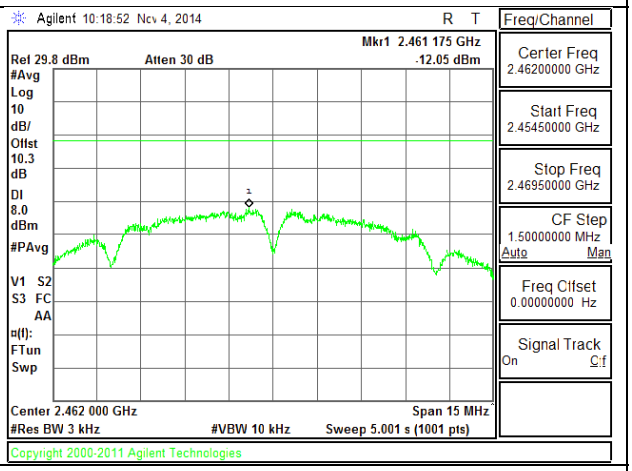
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

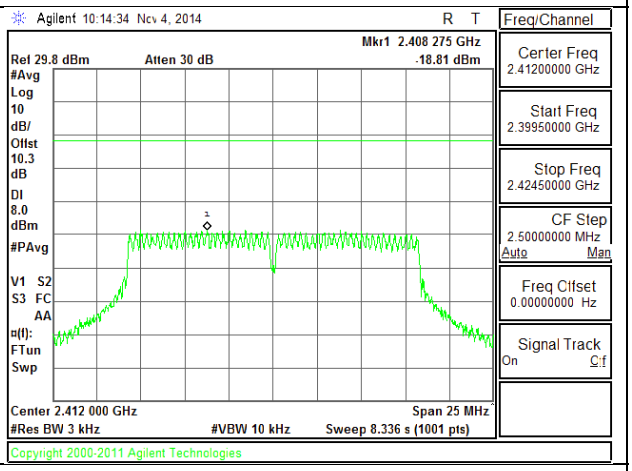


NOTE:

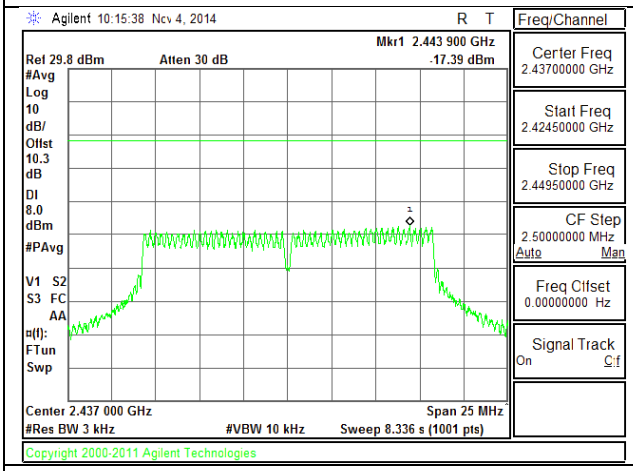
802.11g TEST RESULT TABLE

Channel	Frequency (MHz)	Chain 0 (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-18.81	8	-26.81
Middle	2437	-17.39	8	-25.39
High	2462	-17.21	8	-25.21

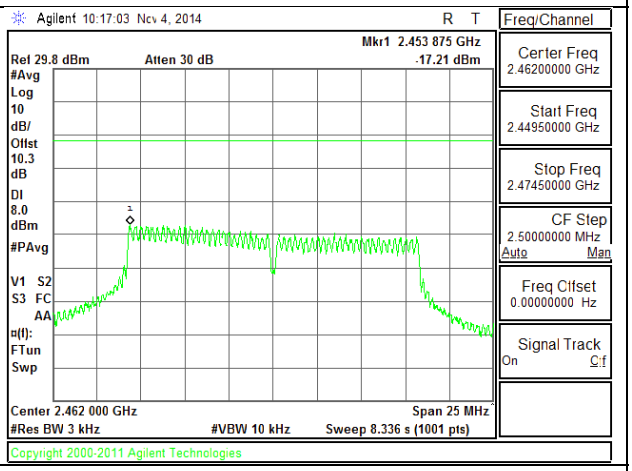
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

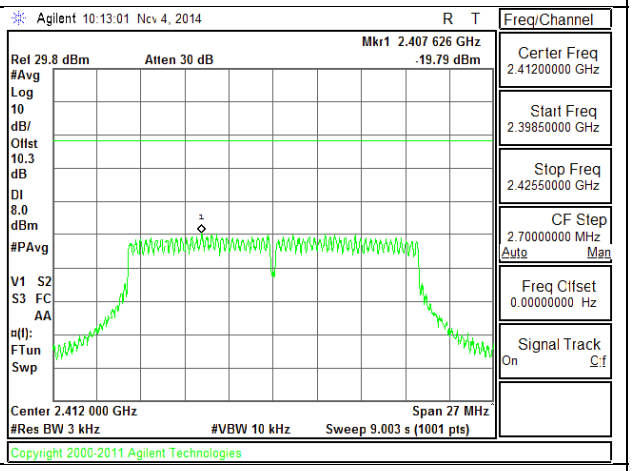


NOTE:

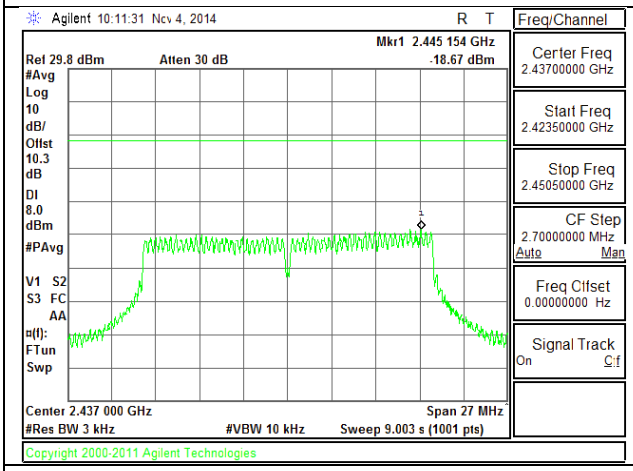
802.11n HT20 TEST RESULT TABLE

Channel	Frequency (MHz)	Chain 0 (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-17.79	8	-25.79
Middle	2437	-18.67	8	-26.67
High	2462	-17.77	8	-25.77

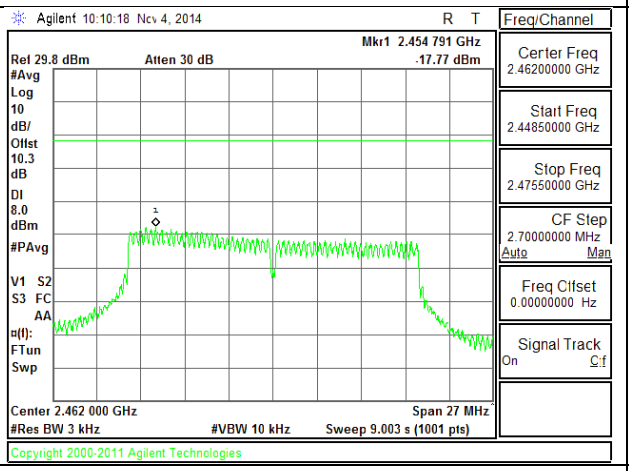
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

10.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

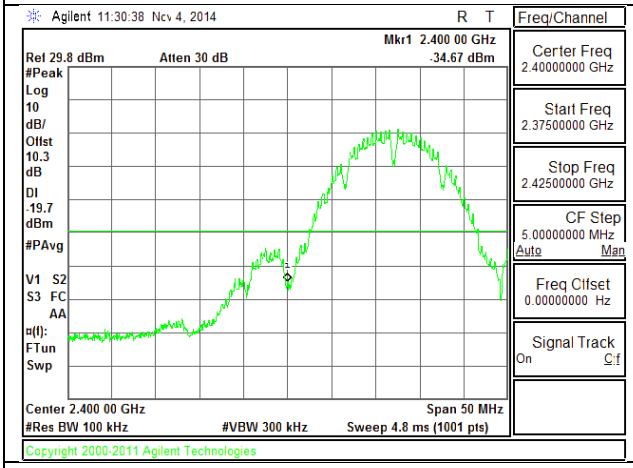
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

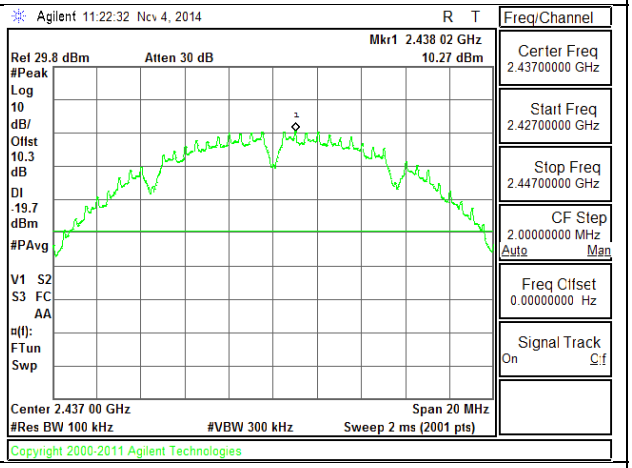
BANDEDGE AND SPURIOUS EMISSIONS PLOTS

802.11b – CHAIN 0

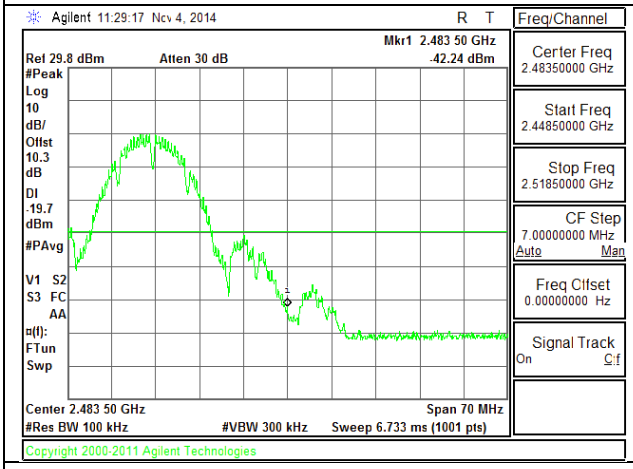
LOW CHANNEL BANDEDGE



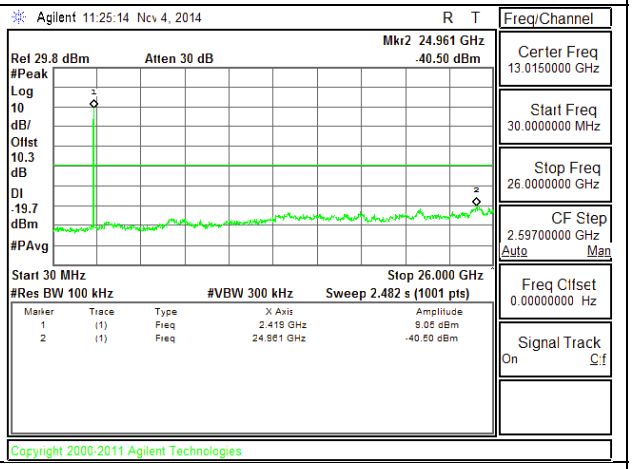
MID CHANNEL REFERENCE



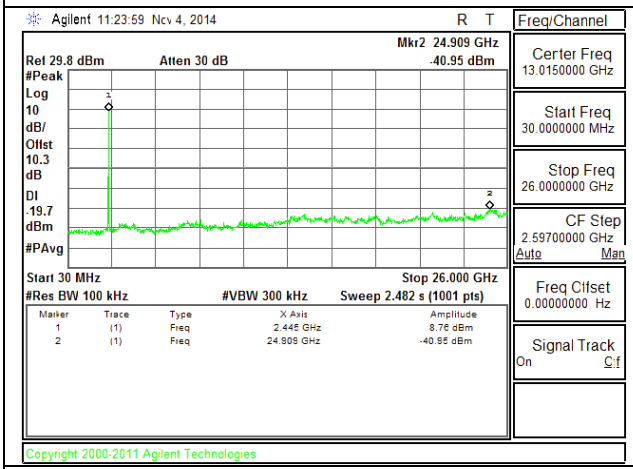
HIGH CHANNEL BANDEDGE



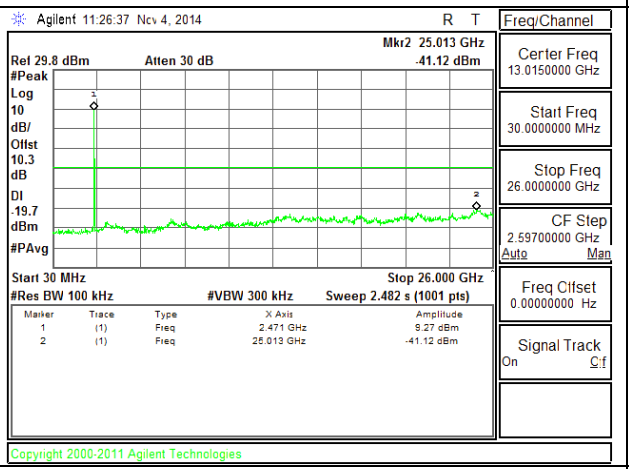
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS

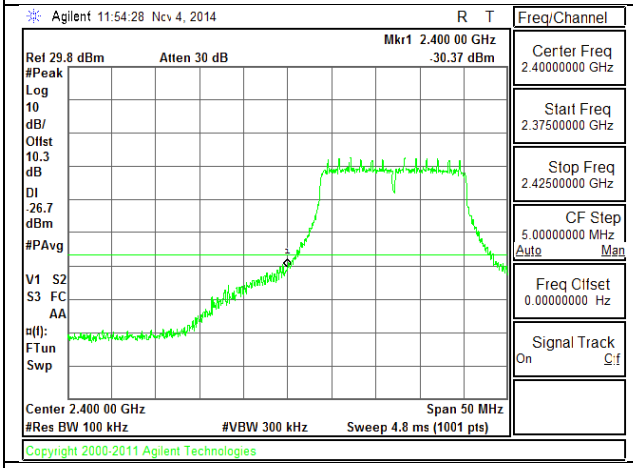


NOTE:

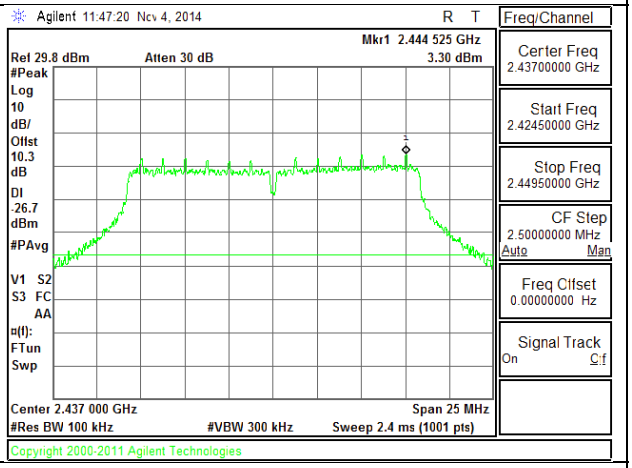
BANDEDGE AND SPURIOUS EMISSIONS PLOTS

802.11g – CHAIN 0

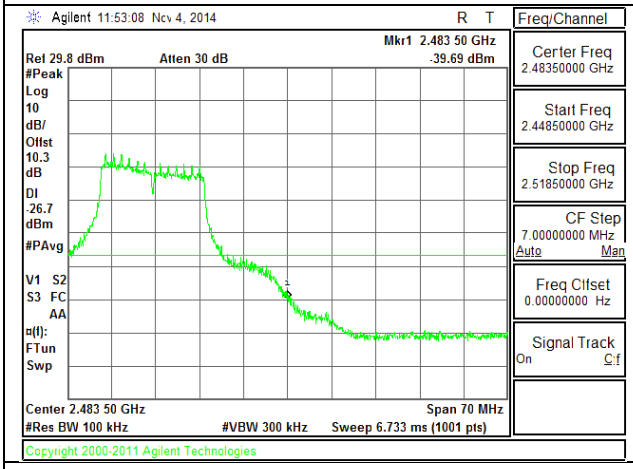
LOW CHANNEL BANDEDGE



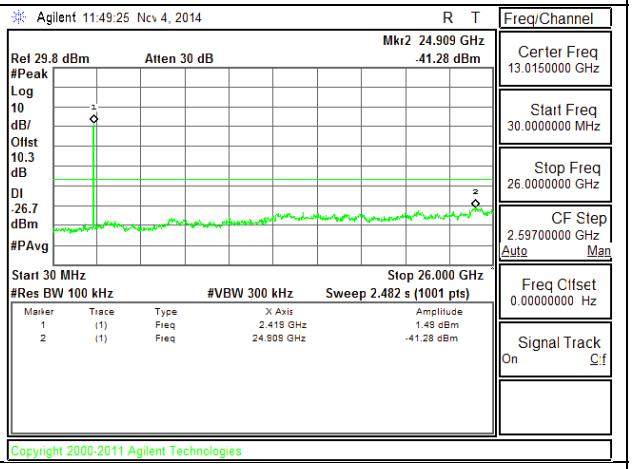
MID CHANNEL REFERENCE



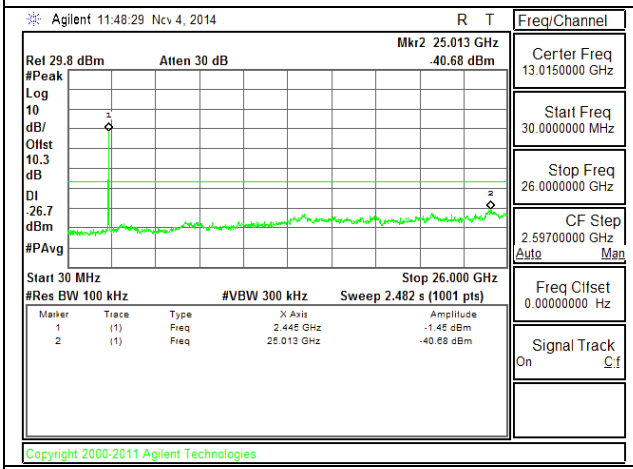
HIGH CHANNEL BANDEDGE



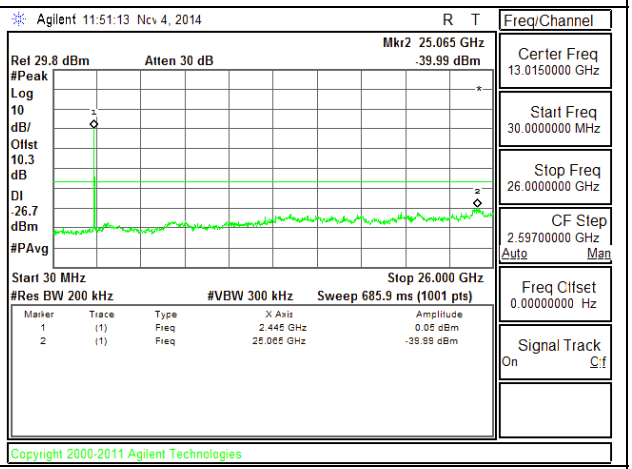
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS

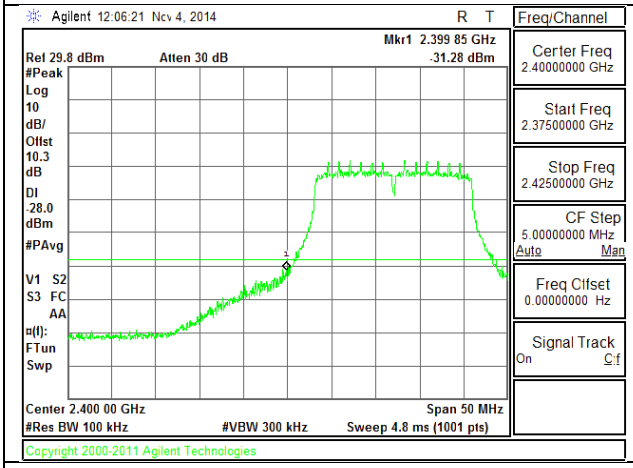


NOTE:

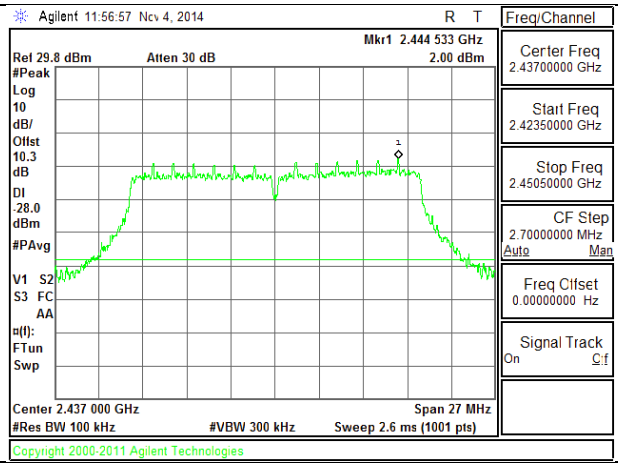
BANDEDGE AND SPURIOUS EMISSIONS PLOTS

802.11n HT20 – CHAIN 0

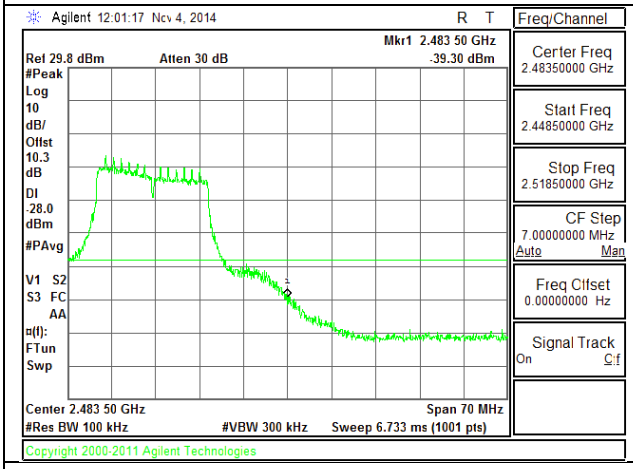
LOW CHANNEL BANDEDGE



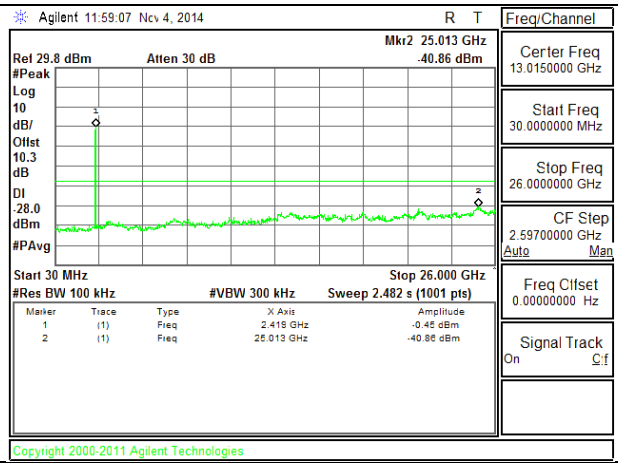
MID CHANNEL REFERENCE



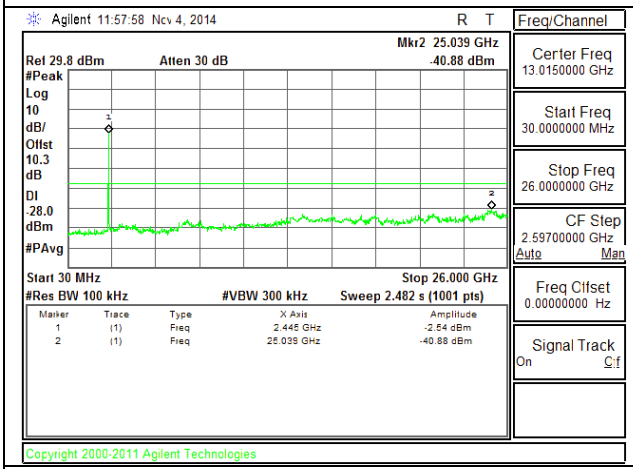
HIGH CHANNEL BANDEDGE



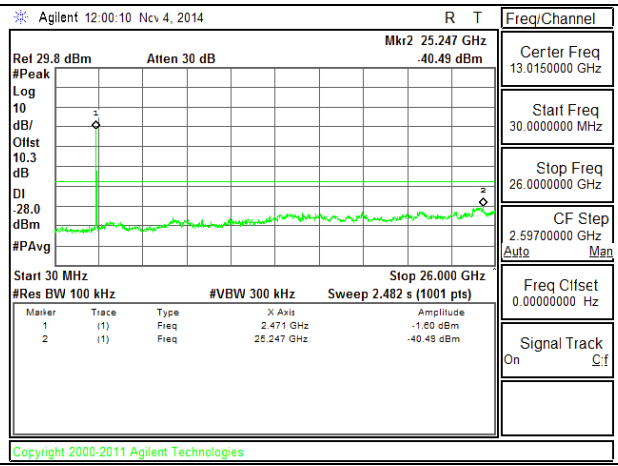
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



NOTE:

11. RADIATED TEST RESULTS

LIMITS AND PROCEDURE
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. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

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.

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 for average measurements. Duty cycle factor= 10log (1/x) For this sample b mode = 0dB (duty cycle >98%); g/n mode = .32dB.

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.

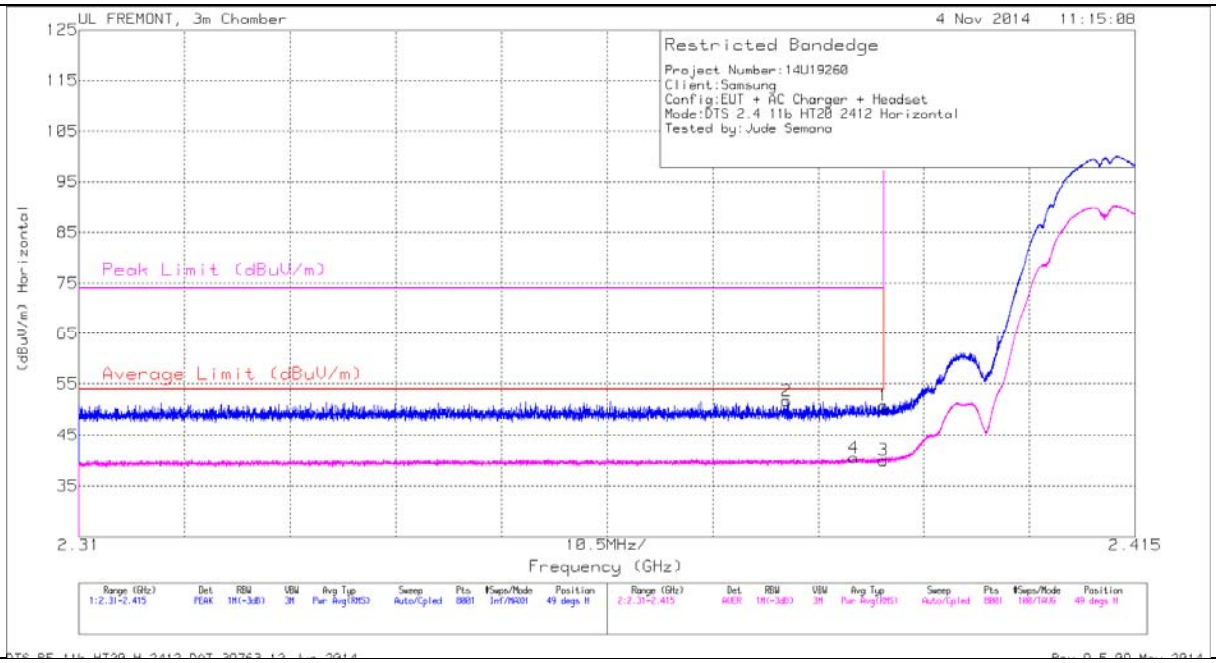
RESULTS

11.1. TRANSMITTER ABOVE 1 GHz

802.11b mode

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



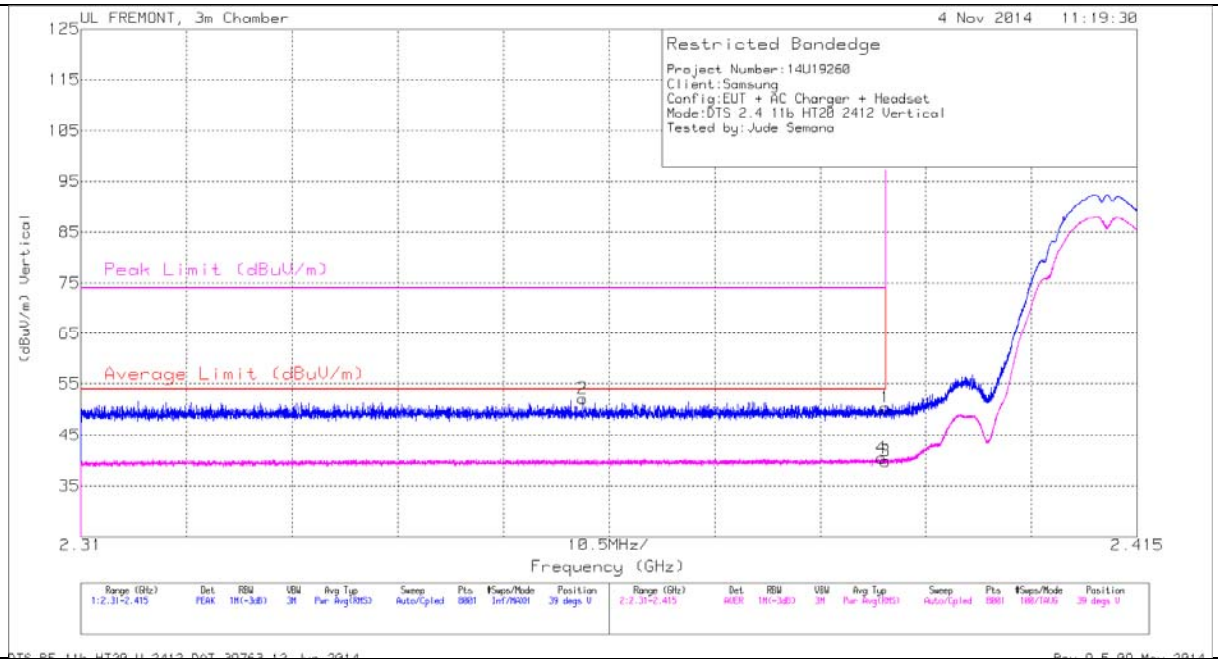
HORIZONTAL VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.38	42.68	PK	32.1	-23.1	0	51.68	-	-	74	-22.32	49	322	H
4	2.387	31.52	RMS	32.1	-23.1	0	40.52	54	-13.48	-	-	49	322	H
1	2.39	41.74	PK	32.1	-23.1	0	50.74	-	-	74	-23.26	49	322	H
3	2.39	31.02	RMS	32.1	-23.1	0	40.02	54	-13.98	-	-	49	322	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (LOW CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



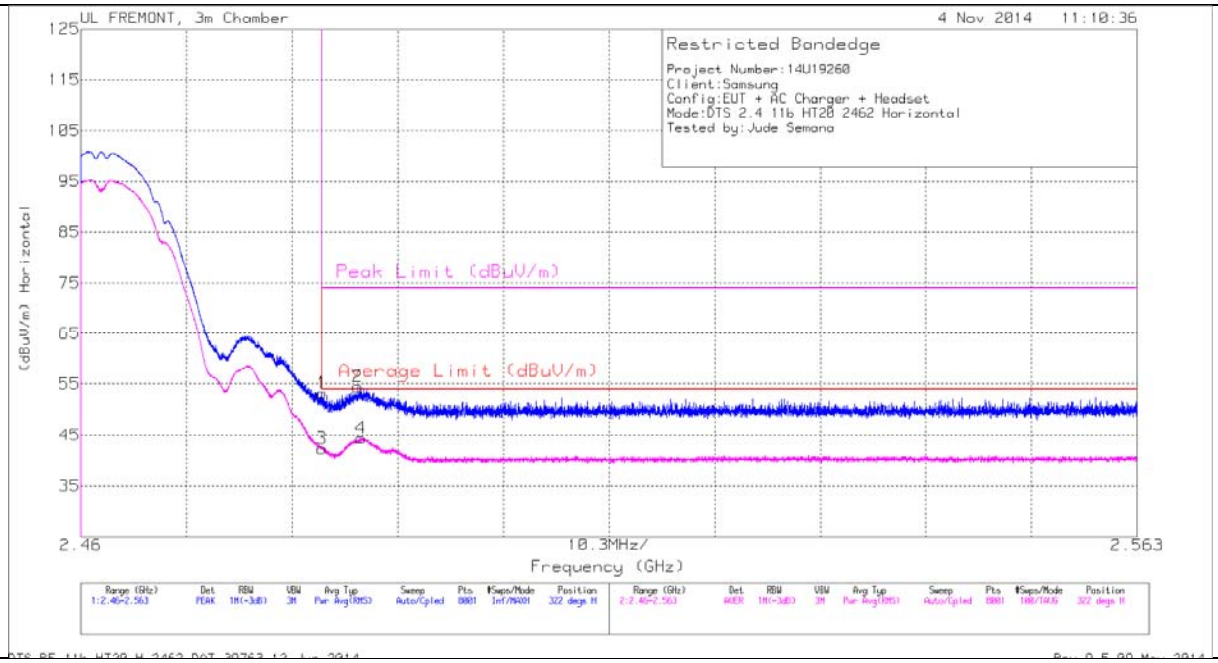
VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.36	43.23	PK	32	-23.1	0	52.13	-	-	74	-21.87	39	396	V
1	2.39	41.42	PK	32.1	-23.1	0	50.42	-	-	74	-23.58	39	396	V
3	2.39	30.88	RMS	32.1	-23.1	0	39.88	54	-14.12	-	-	39	396	V
4	2.39	31.48	RMS	32.1	-23.1	0	40.48	54	-13.52	-	-	39	396	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



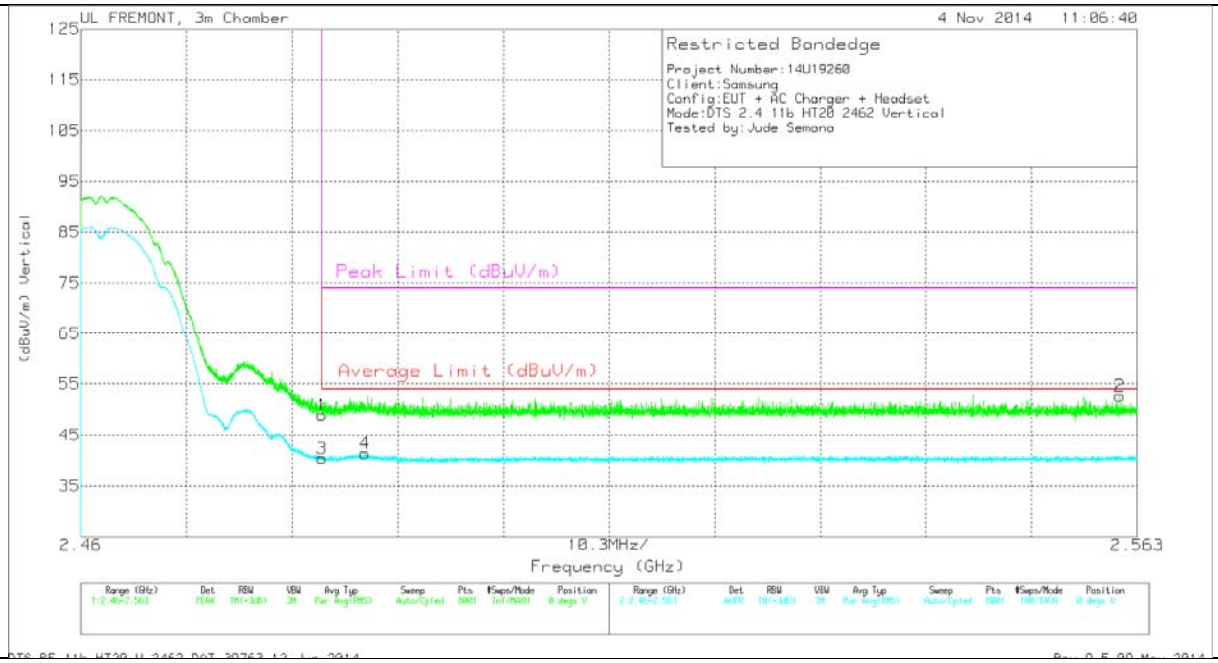
HORIZONTAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.484	43.73	PK	32.3	-22.8	0	53.23	-	-	74	-20.77	322	253	H
3	2.484	32.86	RMS	32.3	-22.8	0	42.36	54	-11.64	-	-	322	253	H
2	2.487	44.99	PK	32.3	-22.8	0	54.49	-	-	74	-19.51	322	253	H
4	2.487	34.88	RMS	32.3	-22.8	0	44.38	54	-9.62	-	-	322	253	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL PEAK AND AVERAGE DATA

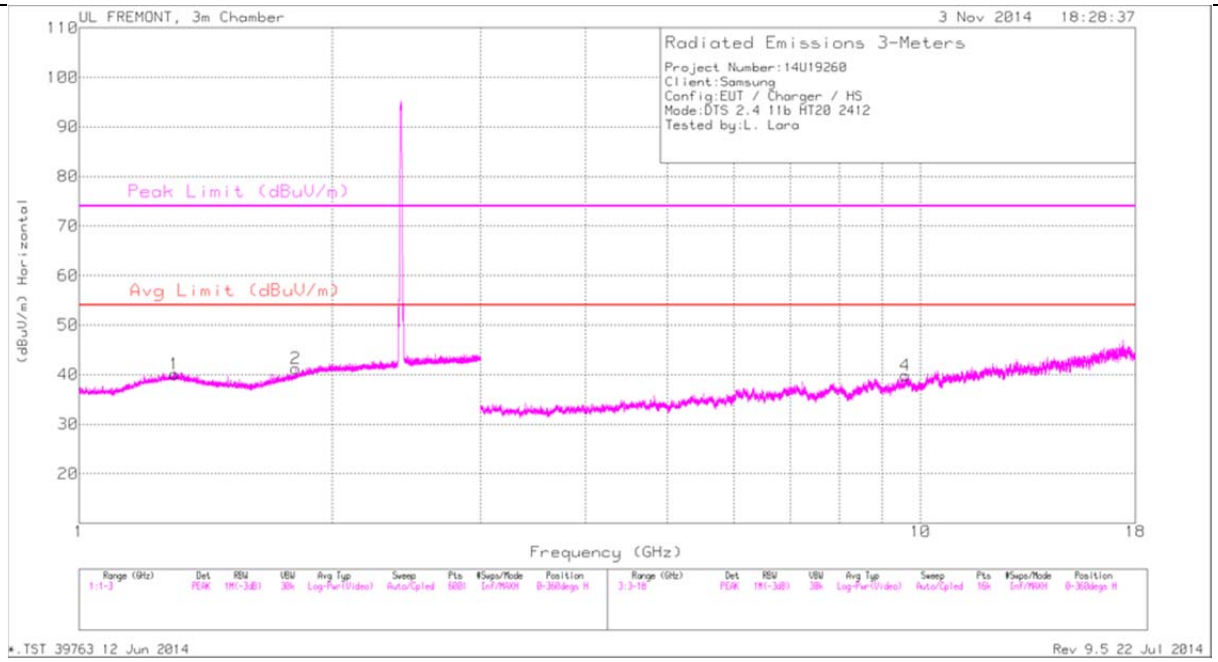
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	39.38	PK	32.3	-22.8	0	48.88	-	-	74	-25.12	0	116	V
3	2.484	30.87	RMS	32.3	-22.8	0	40.37	54	-13.63	-	-	0	116	V
4	2.488	31.84	RMS	32.3	-22.8	0	41.34	54	-12.66	-	-	0	116	V
2	2.561	42.94	PK	32.4	-22.7	0	52.64	-	-	74	-21.36	0	116	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

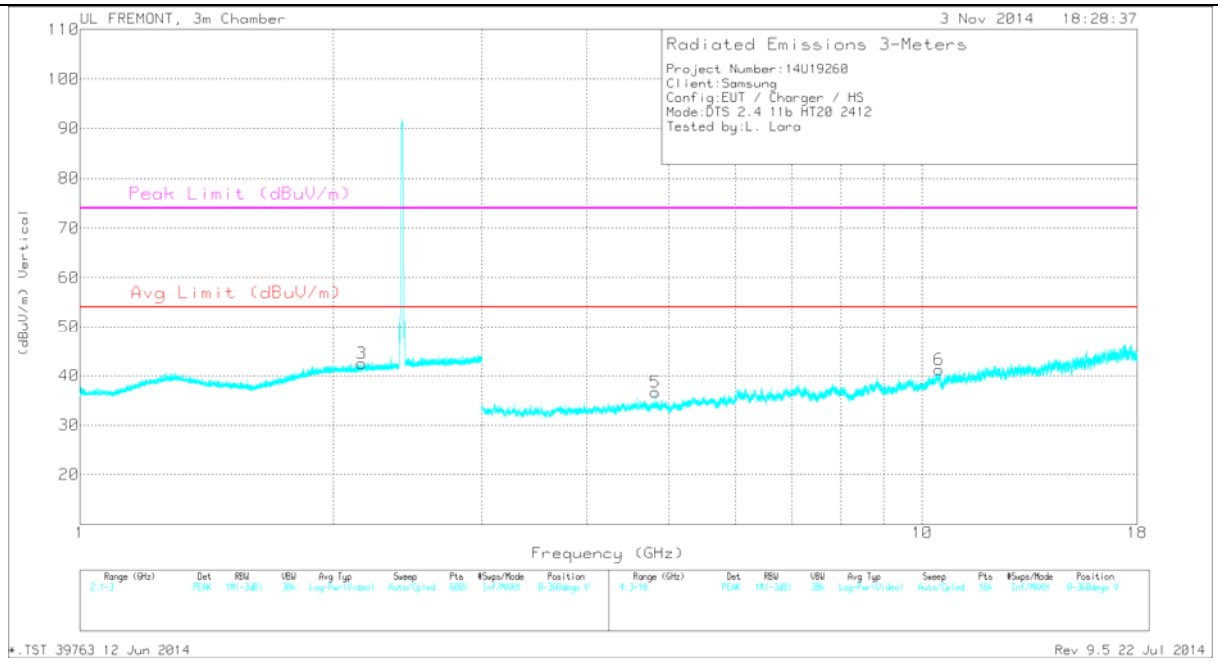
HARMONICS AND SPURIOUS EMISSIONS

SPURIOUS (LOW CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.299	33.71	PK	30.2	-23.8	40.11	-	-	74	-33.89	0-360	200	H
2	1.81	34.29	PK	30.3	-23.3	41.29	-	-	-	-	0-360	100	H
3	2.158	33.86	PK	31.6	-22.9	42.56	-	-	-	-	0-360	200	V
5	4.823	32.95	PK	34	-30.3	36.65	-	-	74	-37.35	0-360	200	V
4	9.599	28.69	PK	36.7	-25.6	39.79	-	-	-	-	0-360	100	H
6	10.463	28.93	PK	37.4	-25.1	41.23	-	-	-	-	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 T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4.824	41.2	PK2	34	-30.3	44.9	-	-	74	-29.1	360	200	V
4.824	30.84	MAv1	34	-30.3	34.54	54	-19.46	-	-	360	200	V

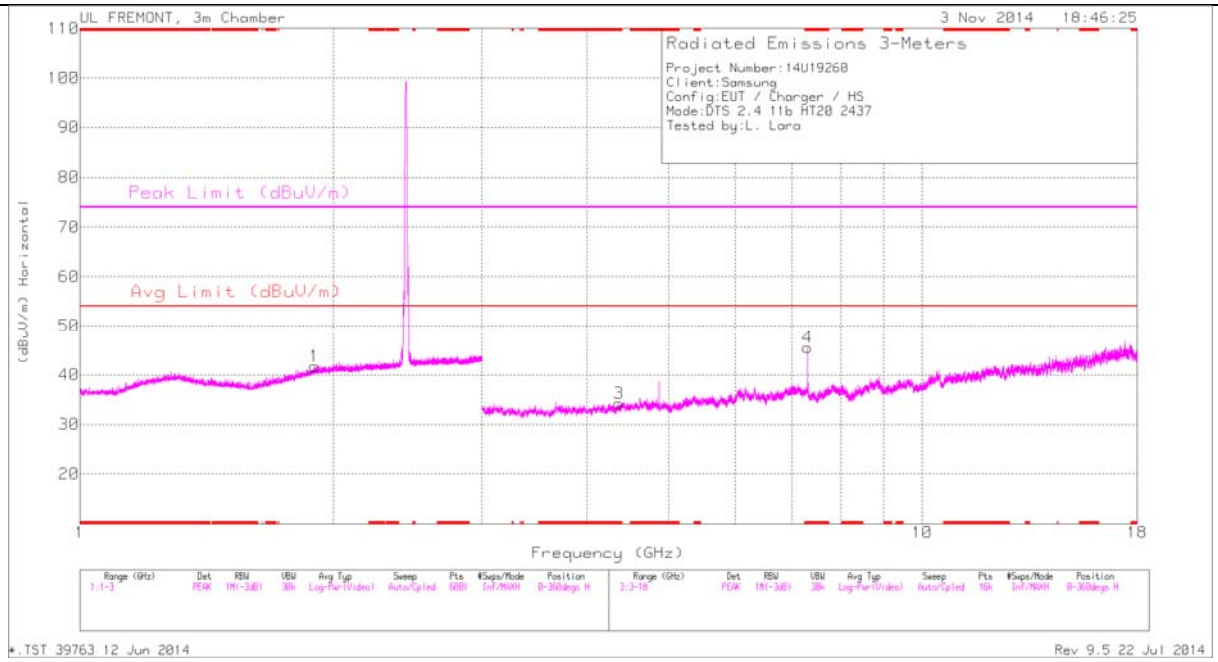
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

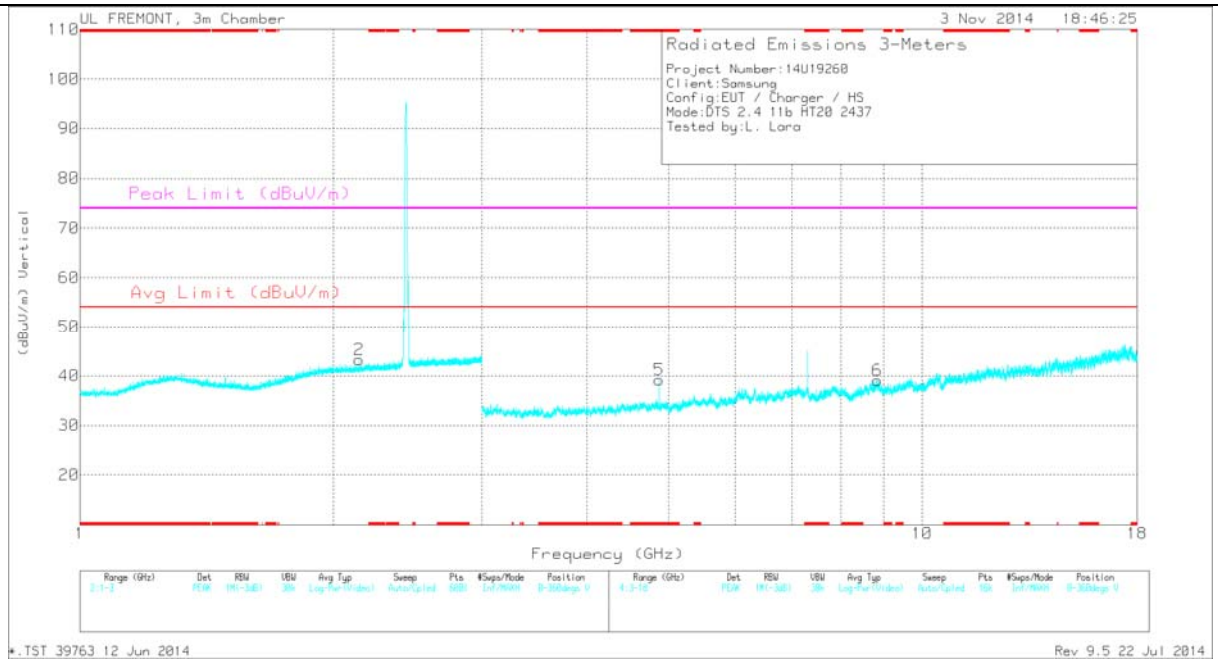
MAv1 - KDB558074 Option 1 Maximum RMS Average

SPURIOUS (MID CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.362	31.04	PK	33.6	-30.4	34.24	-	-	74	-39.76	0-360	100	H
4	* 7.311	38.53	PK	35.6	-28.6	45.53	-	-	74	-28.47	0-360	200	H
5	* 4.874	35.35	PK	34	-30.1	39.25	-	-	74	-34.75	0-360	200	V
1	1.9	33.81	PK	31.2	-23.3	41.71	-	-	-	-	0-360	100	H
2	2.146	34.67	PK	31.6	-23	43.27	-	-	-	-	0-360	100	V
6	8.84	29.71	PK	36	-26.6	39.11	-	-	-	-	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 T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.313	40.71	PK2	35.6	-28.6	47.71	-	-	74	-26.29	360	200	H
* 7.312	30.85	MAv1	35.6	-28.6	37.85	54	-16.15	-	-	360	200	H
* 4.873	40.79	PK2	34	-30.1	44.69	-	-	74	-29.31	360	200	V
* 4.874	30.77	MAv1	34	-30.1	34.67	54	-19.33	-	-	360	200	V

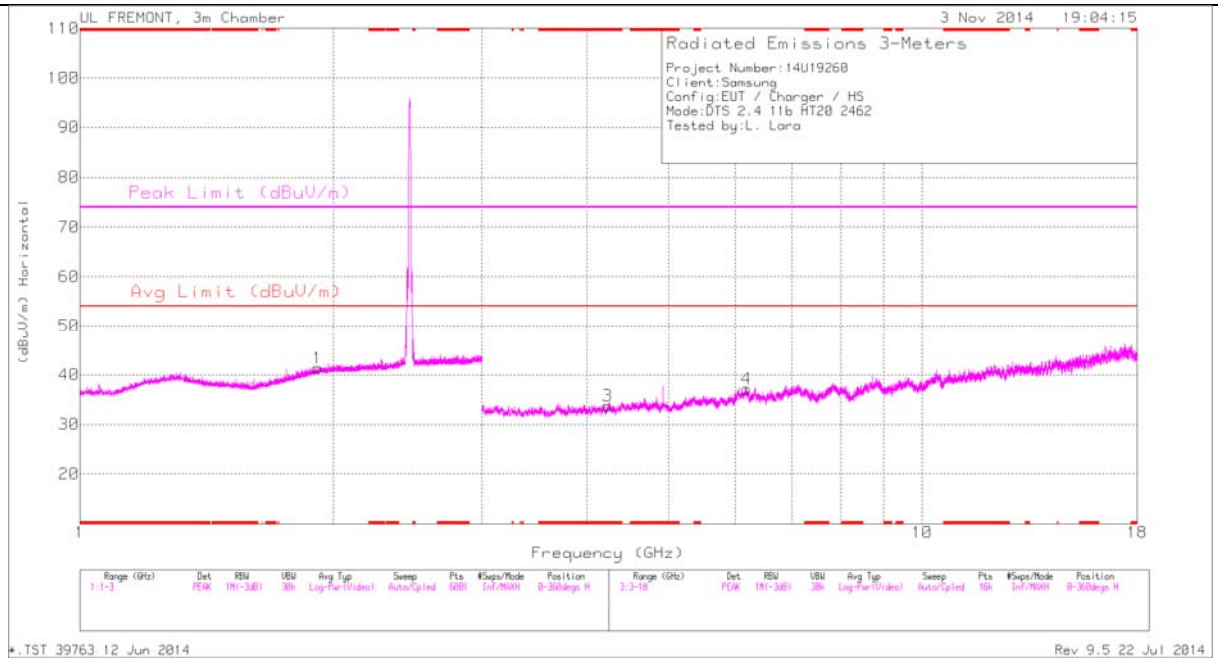
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

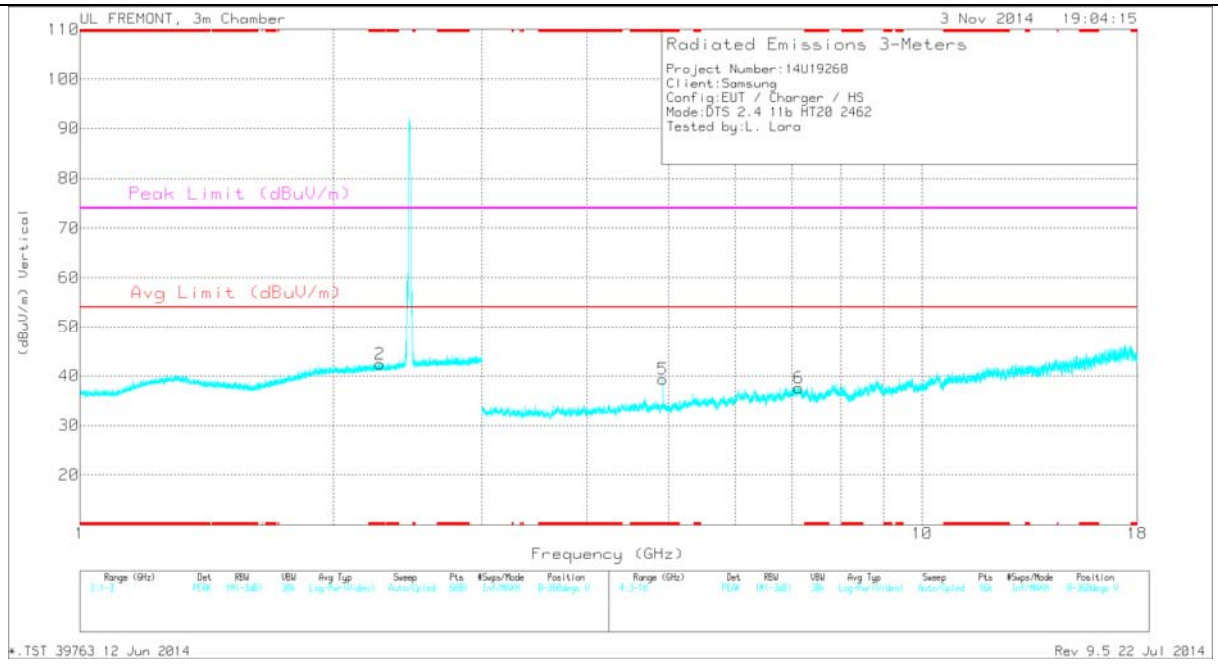
MAv1 - KDB558074 Option 1 Maximum RMS Average

SPURIOUS (HIGH CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.271	33.54	PK	31.8	-23	42.34	-	-	74	-31.66	0-360	100	V
3	* 4.231	31.16	PK	33.5	-30.9	33.76	-	-	74	-40.24	0-360	100	H
5	* 4.924	35.69	PK	34	-30.4	39.29	-	-	74	-34.71	0-360	200	V
1	1.914	33.37	PK	31.3	-23.3	41.37	-	-	-	-	0-360	200	H
4	6.188	31.98	PK	35.3	-30.1	37.18	-	-	-	-	0-360	100	H
6	7.141	30.2	PK	35.6	-28.2	37.6	-	-	-	-	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 T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	42.88	PK2	34	-30.4	46.48	-	-	74	-27.52	360	200	V
* 4.924	34.16	MAv1	34	-30.4	37.76	54	-16.24	-	-	360	200	V

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

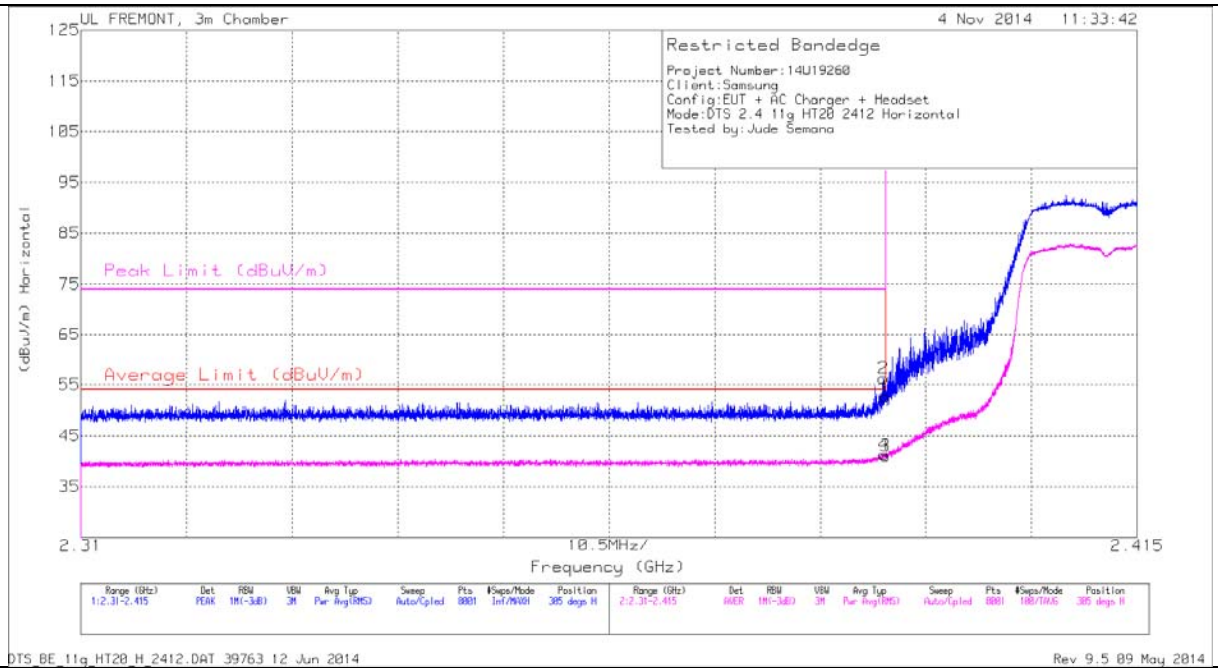
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

802.11g mode

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



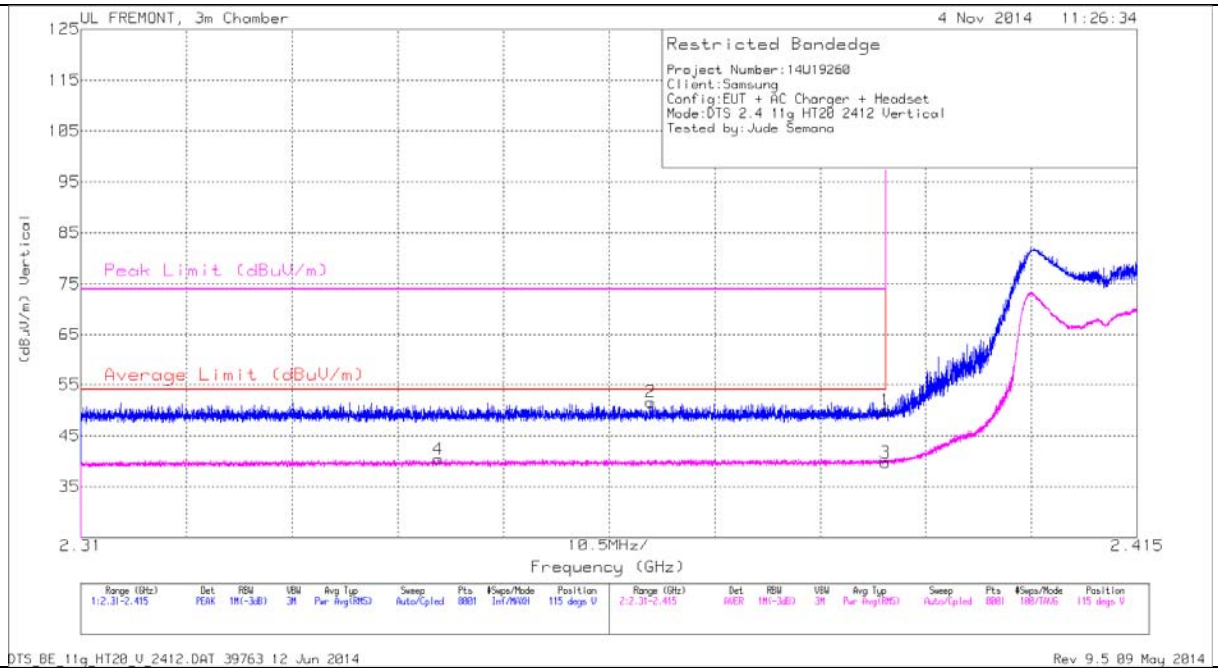
HORIZONTAL VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.39	43.7	PK	32.1	-23.1	0	52.7	-	-	74	-21.3	305	103	H
2	2.39	47.26	PK	32.1	-23.1	0	56.26	-	-	74	-17.74	305	103	H
3	2.39	32.01	RMS	32.1	-23.1	0.32	41.01	54	-12.99	-	-	305	103	H
4	2.39	32.29	RMS	32.1	-23.1	0.32	41.29	54	-12.71	-	-	305	103	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (LOW CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



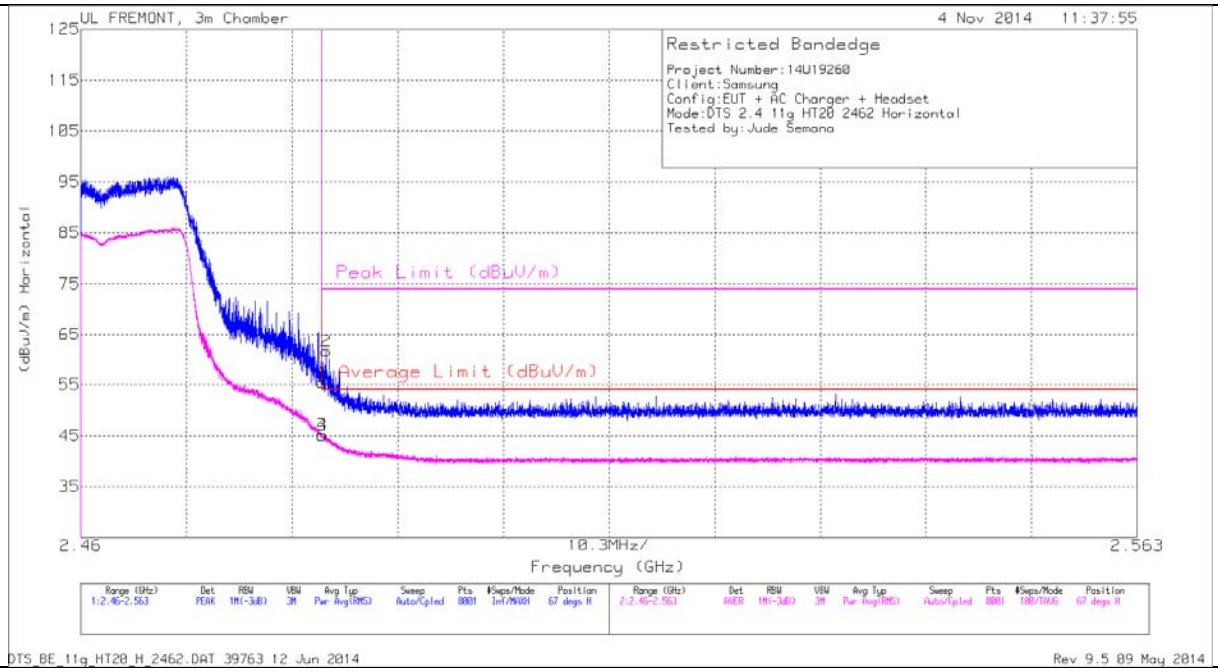
VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.346	31.5	RMS	32	-23.1	0.32	40.4	54	-13.6	-	-	115	148	V
2	2.367	42.71	PK	32	-23.1	0	51.61	-	-	74	-22.39	115	148	V
1	2.39	41	PK	32.1	-23.1	0	50	-	-	74	-24	115	148	V
3	2.39	30.68	RMS	32.1	-23.1	0.32	39.68	54	-14.32	-	-	115	148	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



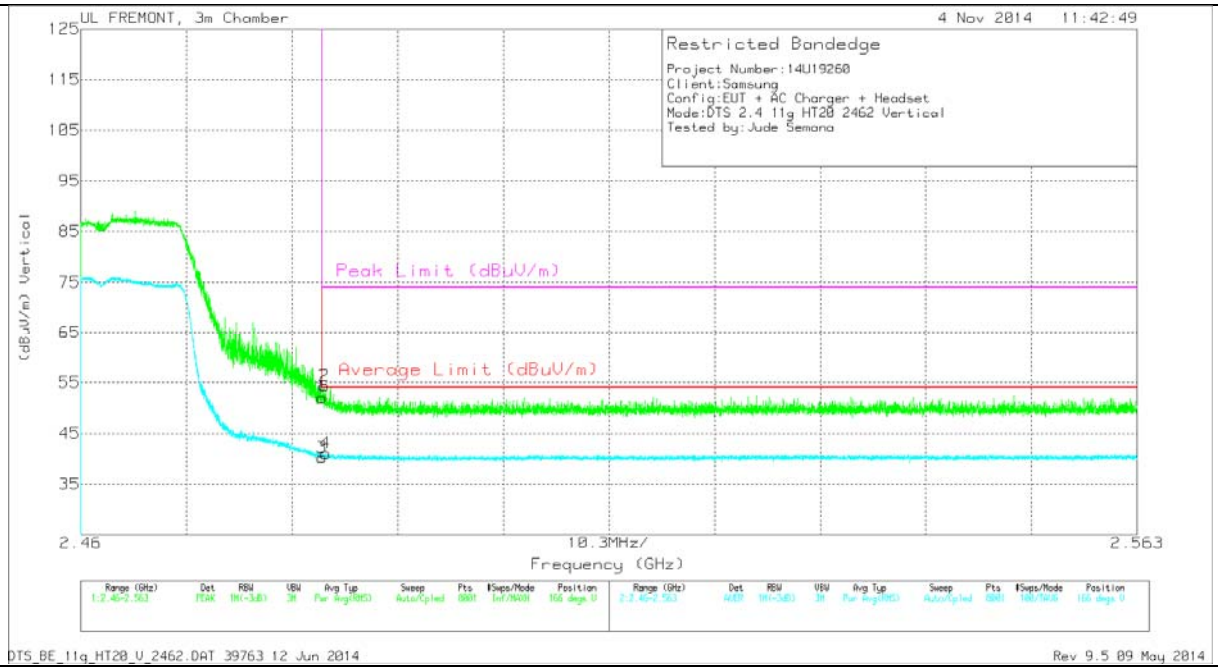
HORIZONTAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	2.484	45.91	PK	32.3	-22.8	0	55.41	-	-	74	-18.59	67	103	H
2	2.484	52.17	PK	32.3	-22.8	0	61.67	-	-	74	-12.33	67	103	H
3	2.484	35.58	RMS	32.3	-22.8	0.32	45.08	54	-8.92	-	-	67	103	H
4	2.484	35.58	RMS	32.3	-22.8	0.32	45.08	54	-8.92	-	-	67	103	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL PEAK AND AVERAGE DATA

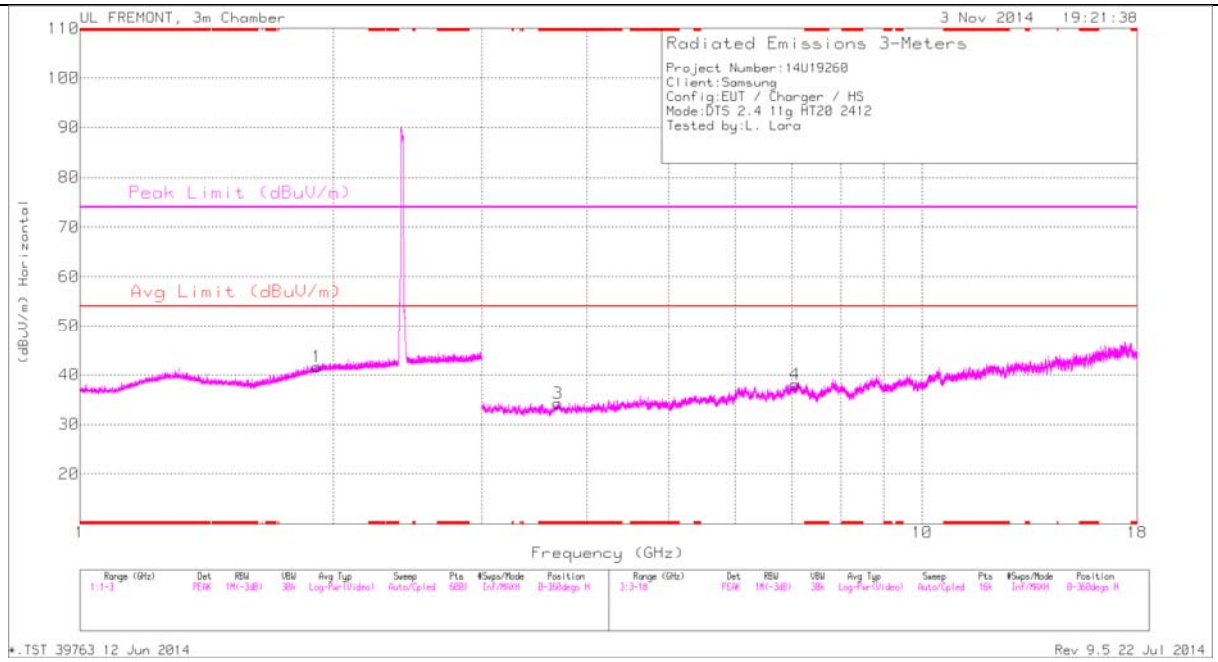
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	42.53	PK	32.3	-22.8	0	52.03	-	-	74	-21.97	166	260	V
2	2.484	44.89	PK	32.3	-22.8	0	54.39	-	-	74	-19.61	166	260	V
3	2.484	30.75	RMS	32.3	-22.8	0.32	40.25	54	-13.75	-	-	166	260	V
4	2.484	31.58	RMS	32.3	-22.8	0.32	41.08	54	-12.92	-	-	166	260	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

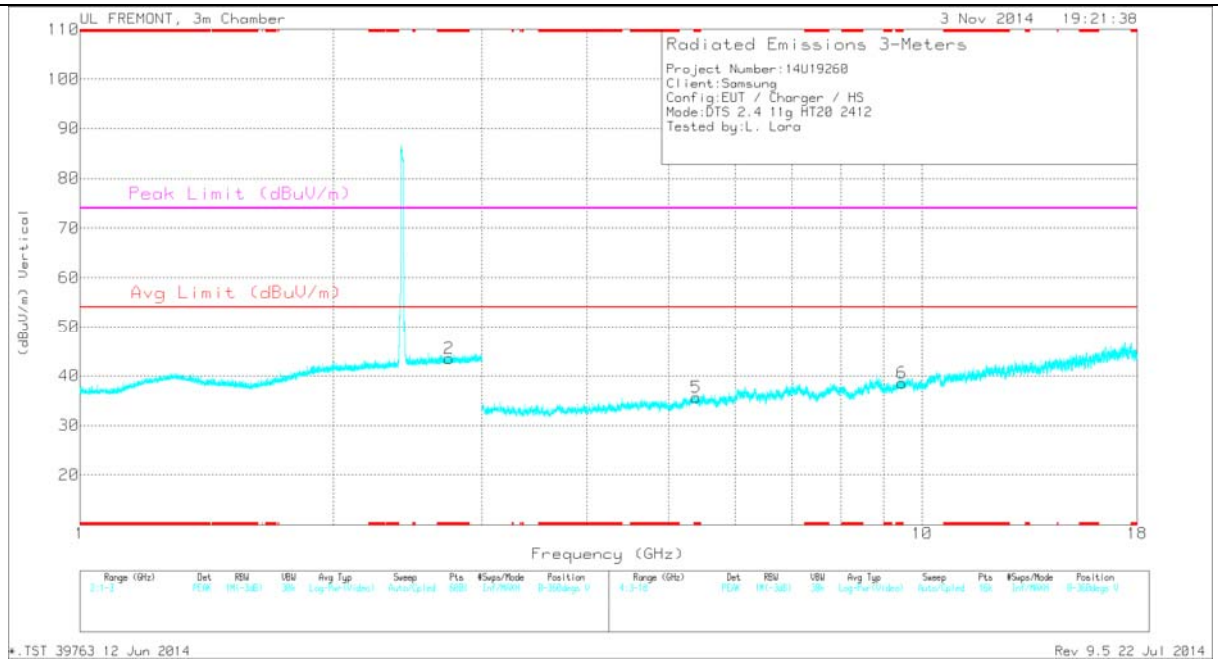
HARMONICS AND SPURIOUS EMISSIONS

SPURIOUS (LOW CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.742	33.16	PK	32.7	-22.8	0	43.48	-	-	74	-30.52	0-360	200	V
3	* 3.691	31.39	PK	33.2	-30.8	0	34.21	-	-	74	-39.79	0-360	100	H
5	* 5.389	31.28	PK	34.6	-30.6	0	35.7	-	-	74	-38.3	0-360	200	V
6	* 9.465	27.7	PK	36.5	-26	0	38.62	-	-	74	-35.38	0-360	100	V
1	1.913	33.16	PK	31.3	-23.3	0	41.58	-	-	-	-	0-360	100	H
4	7.059	30.45	PK	35.6	-28.4	0	38.07	-	-	-	-	0-360	100	H

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

PK - Peak detector

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.742	33.16	PK	32.7	-22.8	0	43.48	-	-	74	-30.52	0-360	200	V
3	* 3.691	31.39	PK	33.2	-30.8	0	34.21	-	-	74	-39.79	0-360	100	H
5	* 5.389	31.28	PK	34.6	-30.6	0	35.7	-	-	74	-38.3	0-360	200	V
6	* 9.465	27.7	PK	36.5	-26	0	38.62	-	-	74	-35.38	0-360	100	V
1	1.913	33.16	PK	31.3	-23.3	0	41.58	-	-	-	-	0-360	100	H
4	7.059	30.45	PK	35.6	-28.4	0	38.07	-	-	-	-	0-360	100	H

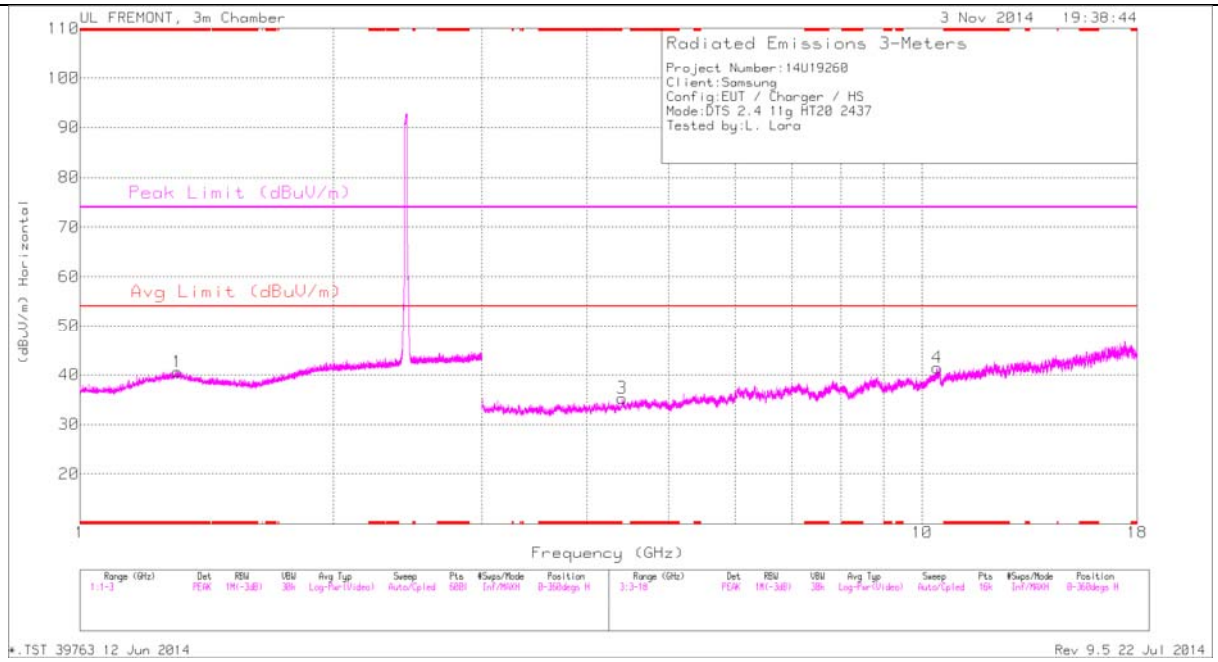
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

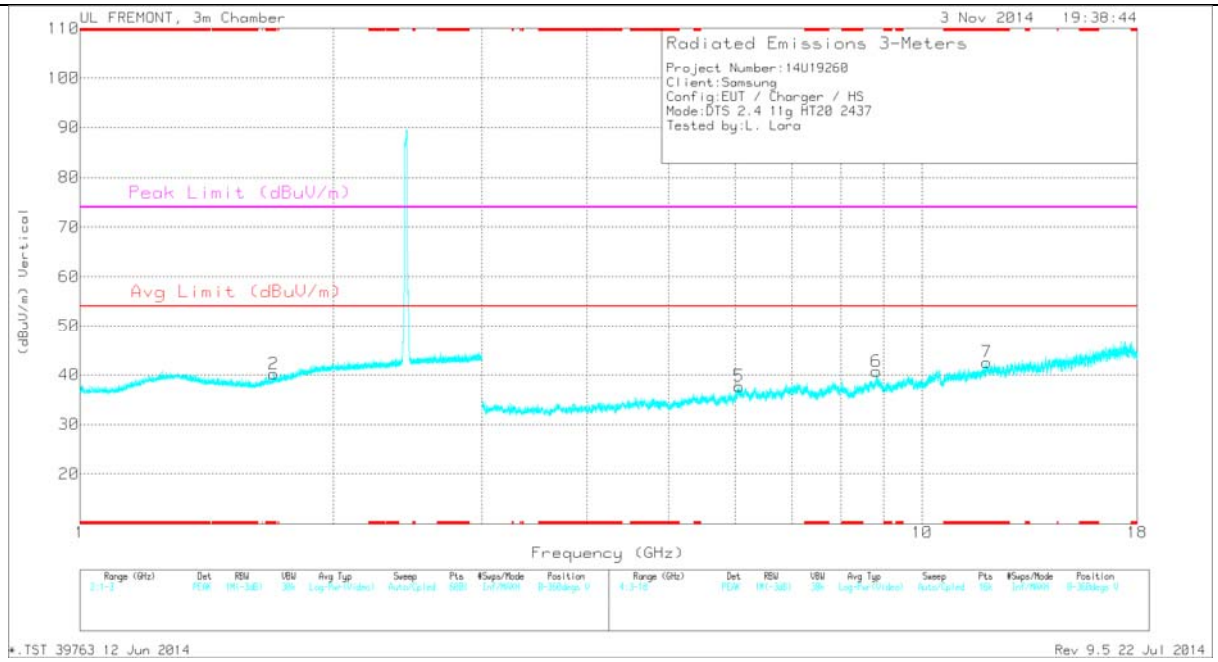
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

SPURIOUS (MID CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.305	33.73	PK	30.2	-23.8	0	40.55	-	-	74	-33.45	0-360	100	H
2	* 1.697	34.22	PK	29	-23.4	0	40.24	-	-	74	-33.76	0-360	200	V
7	* 11.934	29.25	PK	39	-26.1	0	42.57	-	-	74	-31.43	0-360	200	V
3	4.403	31.31	PK	33.7	-30.1	0	35.33	-	-	-	-	0-360	100	H
5	6.055	31.12	PK	35.3	-29.1	0	37.74	-	-	-	-	0-360	100	V
6	8.823	30.85	PK	36	-26.6	0	40.67	-	-	-	-	0-360	100	V
4	10.411	28.71	PK	37.4	-25.1	0	41.43	-	-	-	-	0-360	100	H

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

PK - Peak detector

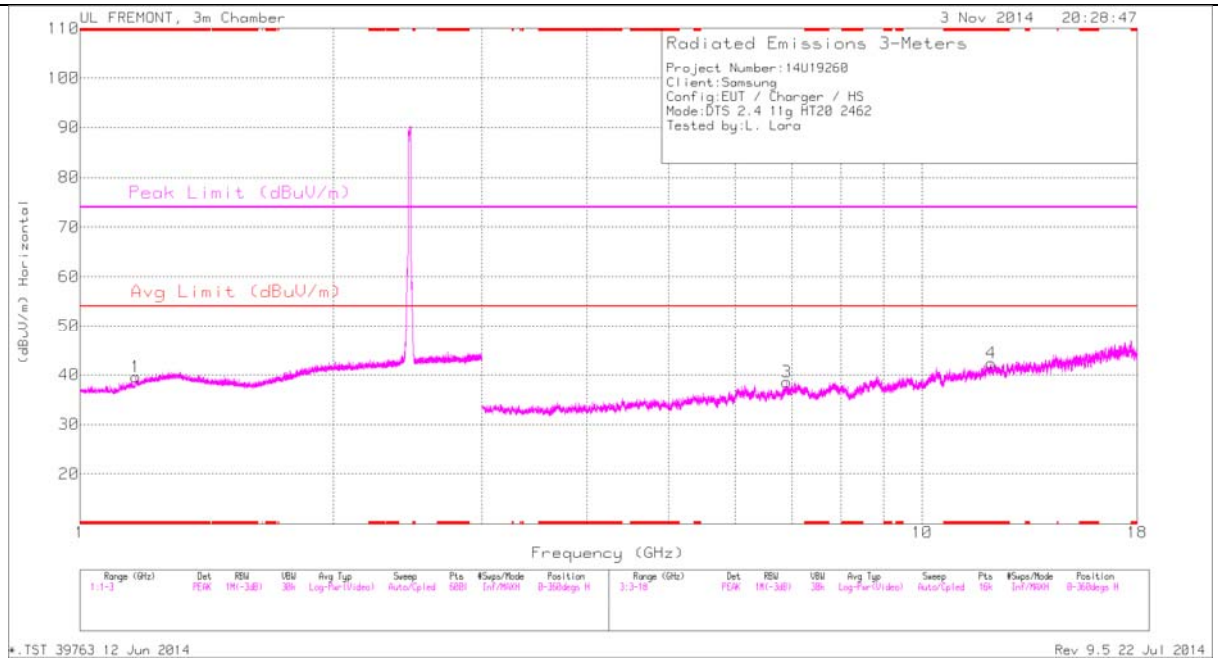
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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)	Azimuth (Degs)	Height (cm)	Polarity
* 11.935	38.2	PK2	39	-26.1	0	51.52	-	-	74	-22.48	228	200	V
* 11.934	26.8	MAv1	39	-26.1	0.32	39.7	54	-14.3	-	-	228	200	V

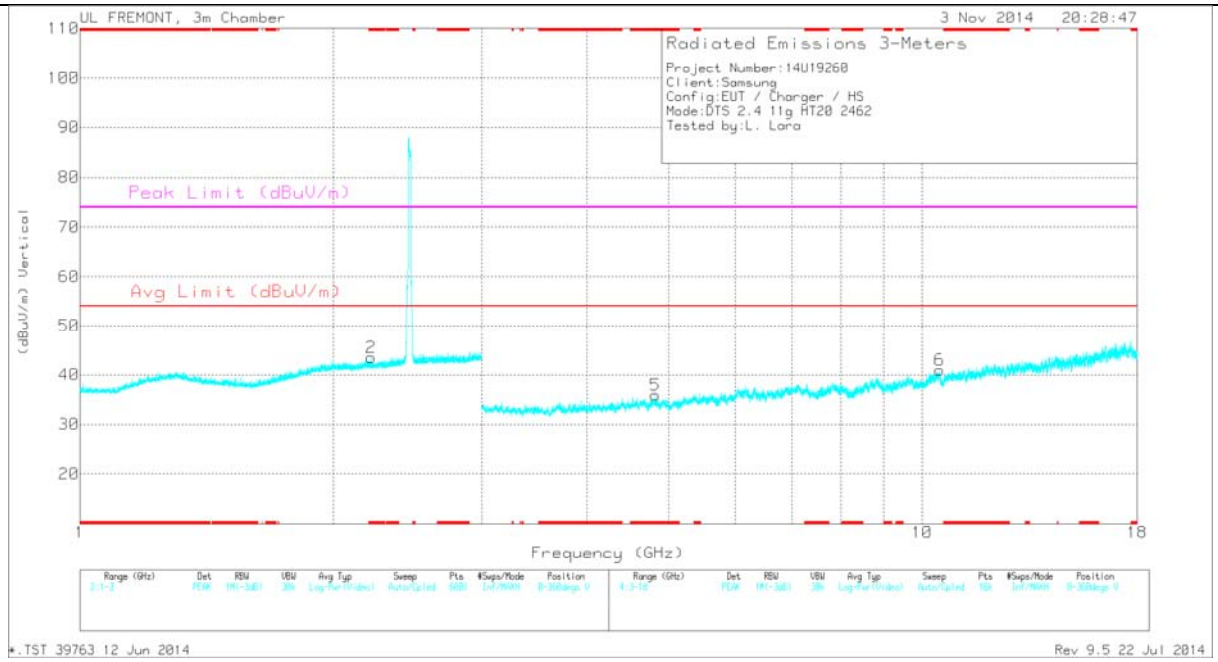
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK3 - FHSS Method: Maximum Peak
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

SPURIOUS (HIGH CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.166	34.42	PK	28.6	-23.8	0	39.64	-	-	74	-34.36	0-360	200	H
2	* 2.217	34.26	PK	31.7	-22.9	0	43.48	-	-	74	-30.52	0-360	200	V
4	* 12.083	29.22	PK	39.1	-26.4	0	42.34	-	-	74	-31.66	0-360	200	H
5	* 4.821	31.8	PK	34	-30.3	0	35.92	-	-	74	-38.08	0-360	200	V
3	6.902	31.07	PK	35.6	-28.5	0	38.59	-	-	-	-	0-360	100	H
6	10.493	28.66	PK	37.5	-25.6	0	40.98	-	-	-	-	0-360	100	V

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

PK - Peak detector

Radiated Emissions

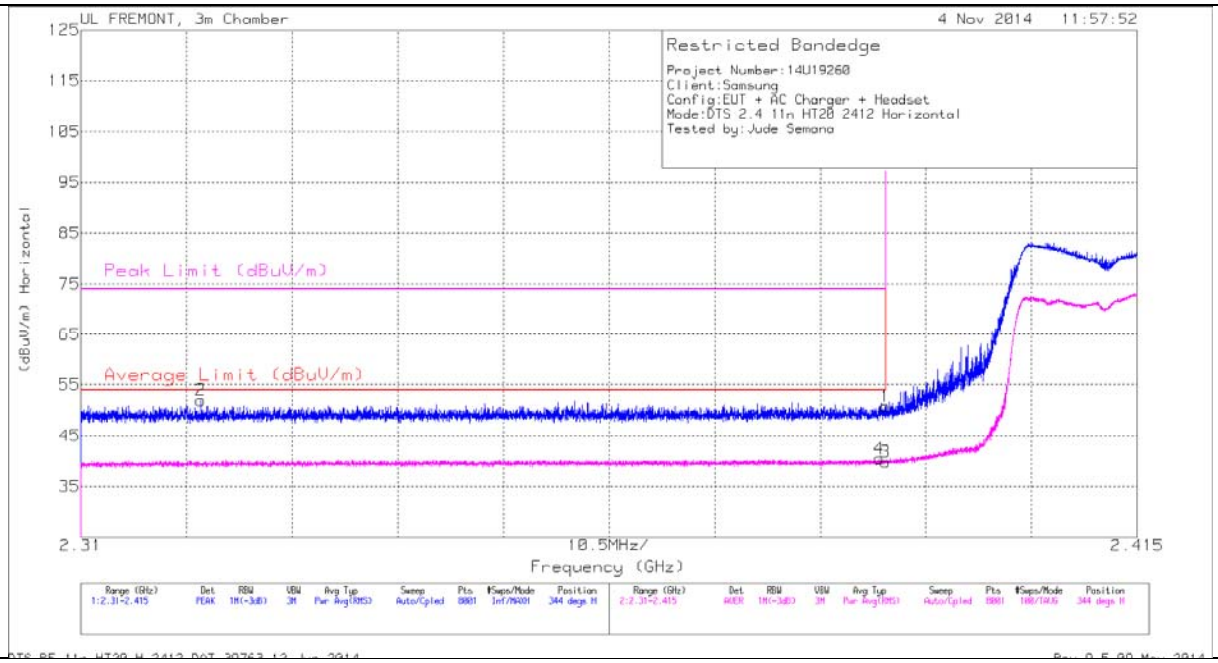
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.821	40.69	PK2	34	-30.3	0	44.81	-	-	74	-29.19	139	195	V
* 4.82	28.5	MAv1	34	-30.3	0.32	32.2	54	-21.8	-	-	139	195	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK3 - FHSS Method: Maximum Peak
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

802.11n HT20 mode

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



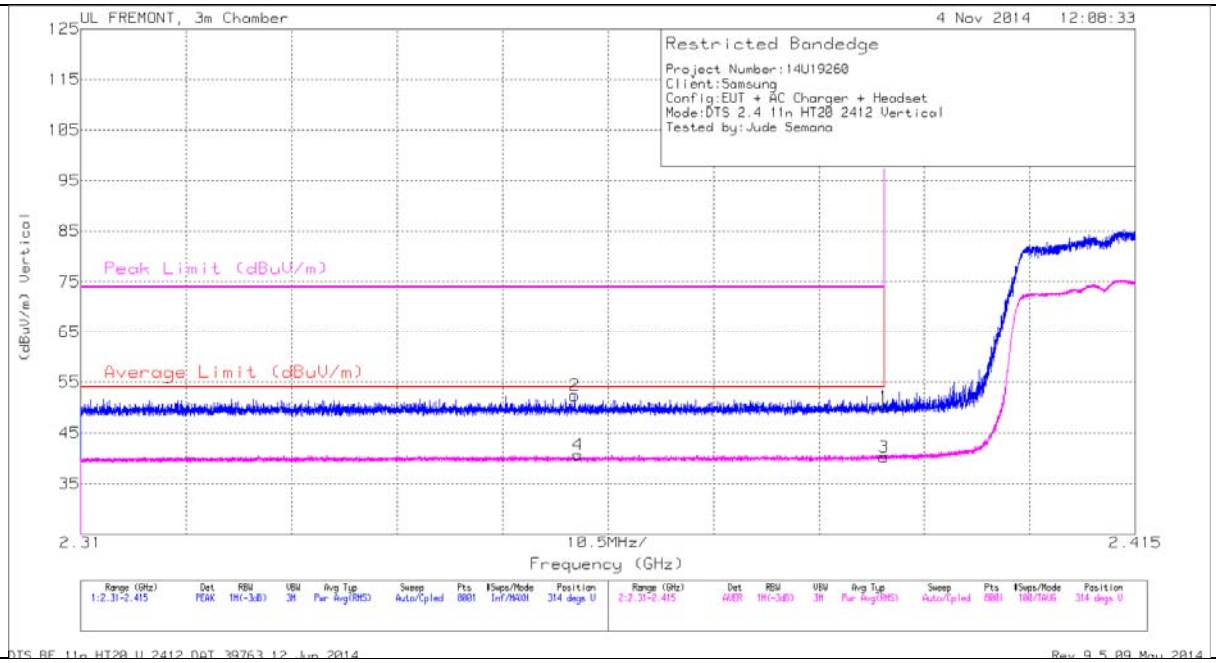
HORIZONTAL VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.322	43.17	PK	31.9	-23.1	0	51.97	-	-	74	-22.03	344	222	H
4	2.389	31.5	RMS	32.1	-23.1	0.32	40.5	54	-13.5	-	-	344	222	H
1	2.39	41.8	PK	32.1	-23.1	0	50.8	-	-	74	-23.2	344	222	H
3	2.39	30.82	RMS	32.1	-23.1	0.32	39.82	54	-14.18	-	-	344	222	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (LOW CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



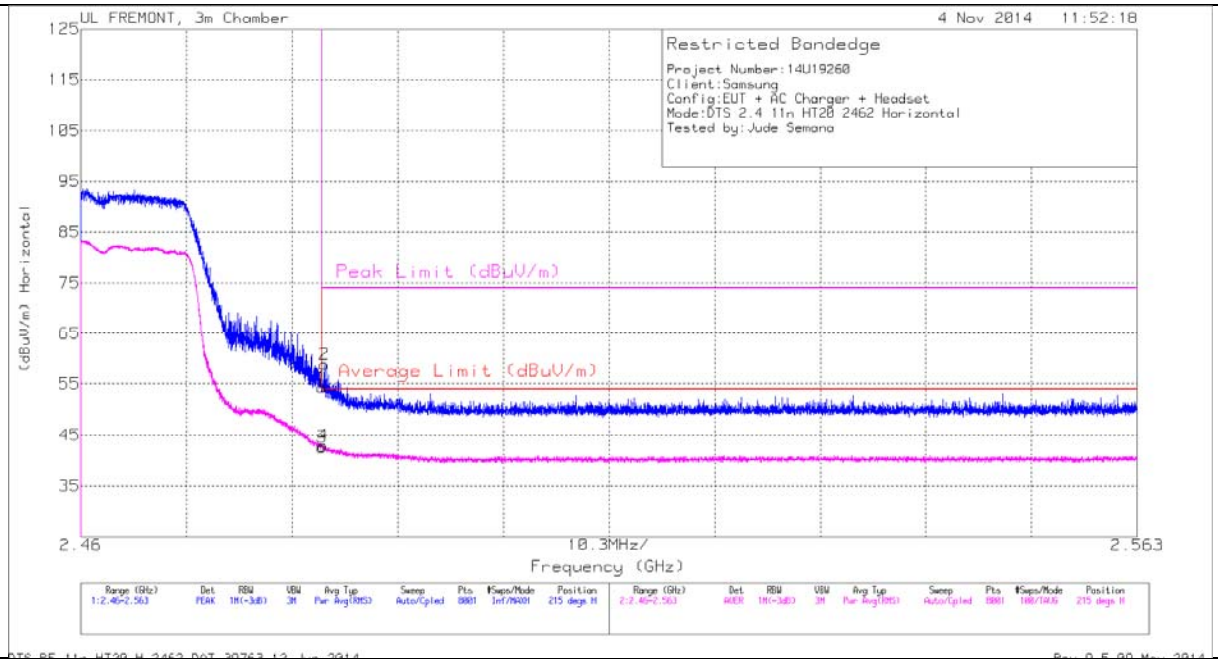
VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.359	43.47	PK	32	-23.1	0	52.37	-	-	74	-21.63	314	148	V
4	2.36	31.46	RMS	32	-23.1	.32	40.66	54	-13.34	-	-	314	148	V
1	2.39	41.09	PK	32.1	-23.1	0	50.09	-	-	74	-23.91	314	148	V
3	2.39	30.89	RMS	32.1	-23.1	.32	40.19	54	-13.81	-	-	314	148	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



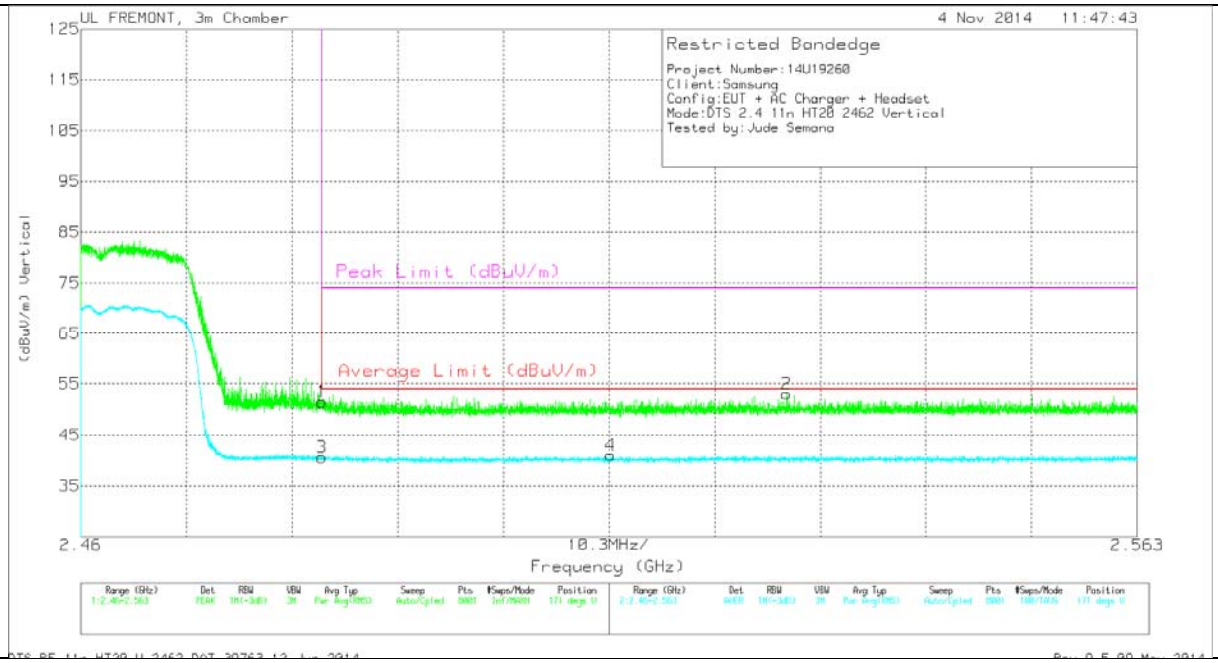
HORIZONTAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	2.484	44.89	PK	32.3	-22.8	0	54.39	-	-	74	-19.61	215	100	H
2	2.484	49.34	PK	32.3	-22.8	0	58.84	-	-	74	-15.16	215	100	H
3	2.484	33.1	RMS	32.3	-22.8	0.32	42.6	54	-11.4	-	-	215	100	H
4	2.484	33.34	RMS	32.3	-22.8	0.32	42.84	54	-11.16	-	-	215	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL PEAK AND AVERAGE DATA

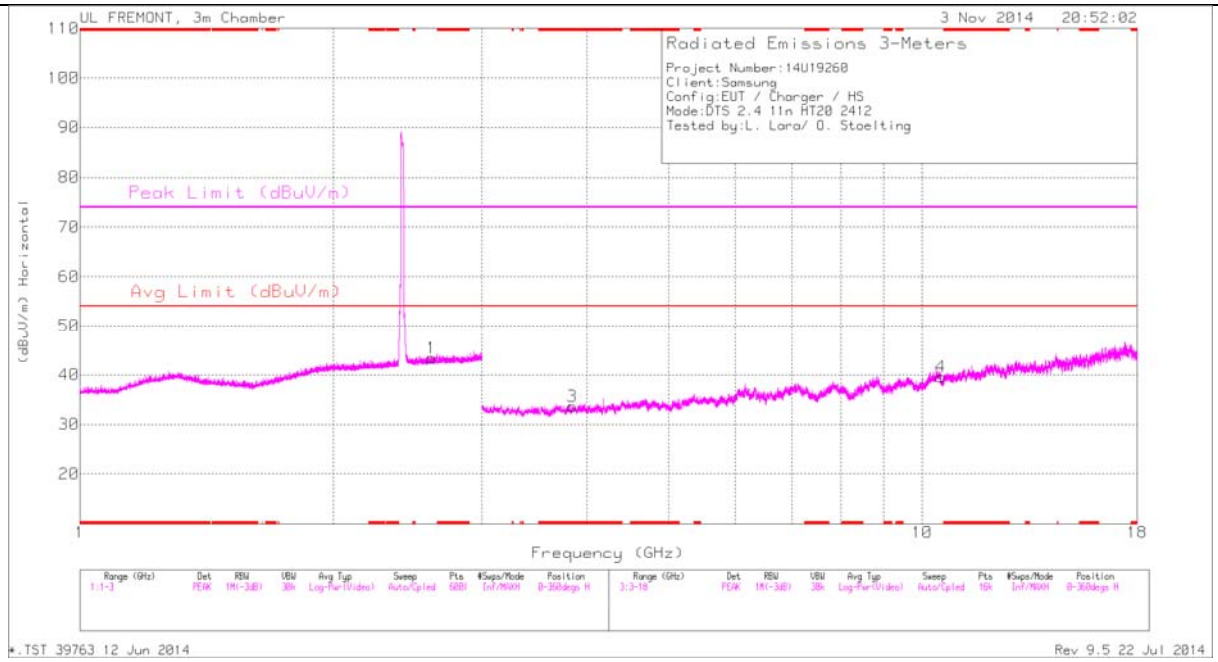
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	42.03	PK	32.3	-22.8	0	51.53	-	-	74	-22.47	171	106	V
3	2.484	31.1	RMS	32.3	-22.8	0.32	40.6	54	-13.4	-	-	171	106	V
4	2.512	31.51	RMS	32.3	-22.8	0.32	41.01	54	-12.99	-	-	171	106	V
2	2.529	43.26	PK	32.4	-22.6	0	53.06	-	-	74	-20.94	171	106	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

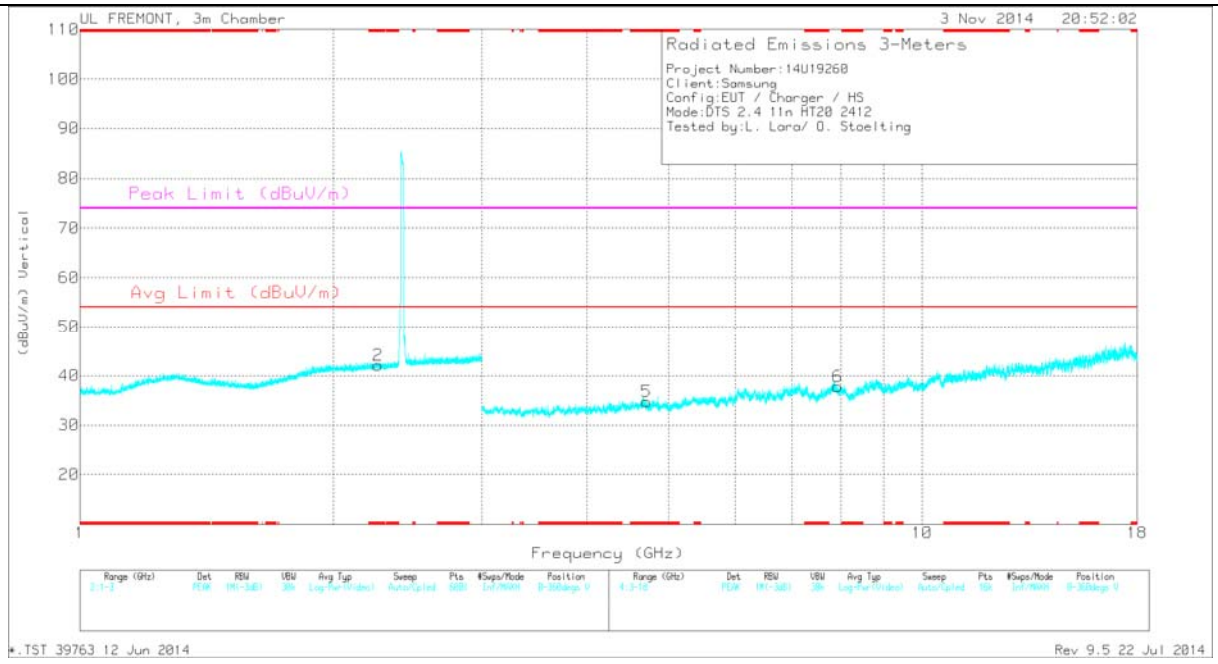
HARMONICS AND SPURIOUS EMISSIONS

SPURIOUS (LOW CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.26	32.98	PK	31.8	-23	0	42.13	-	-	74	-31.87	0-360	100	V
3	* 3.841	31.21	PK	33.2	-31.1	0	33.66	-	-	74	-40.34	0-360	100	H
5	* 4.703	31.35	PK	34.1	-31	0	34.8	-	-	74	-39.2	0-360	100	V
1	2.613	33.28	PK	32.5	-22.7	0	43.43	-	-	-	-	0-360	100	H
6	7.939	29.72	PK	35.8	-28.1	0	37.77	-	-	-	-	0-360	200	V
4	10.529	26.89	PK	37.6	-25.3	0	39.54	-	-	-	-	0-360	200	H

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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)	Azimuth (Degs)	Height (cm)	Polarity
* 4.705	40.85	PK2	34.1	-31	0	44.3	-	-	74	-29.7	0	100	V
* 4.702	29.54	MAv1	34.1	-30.9	0.32	32.74	54	-21.26	-	-	0	100	V

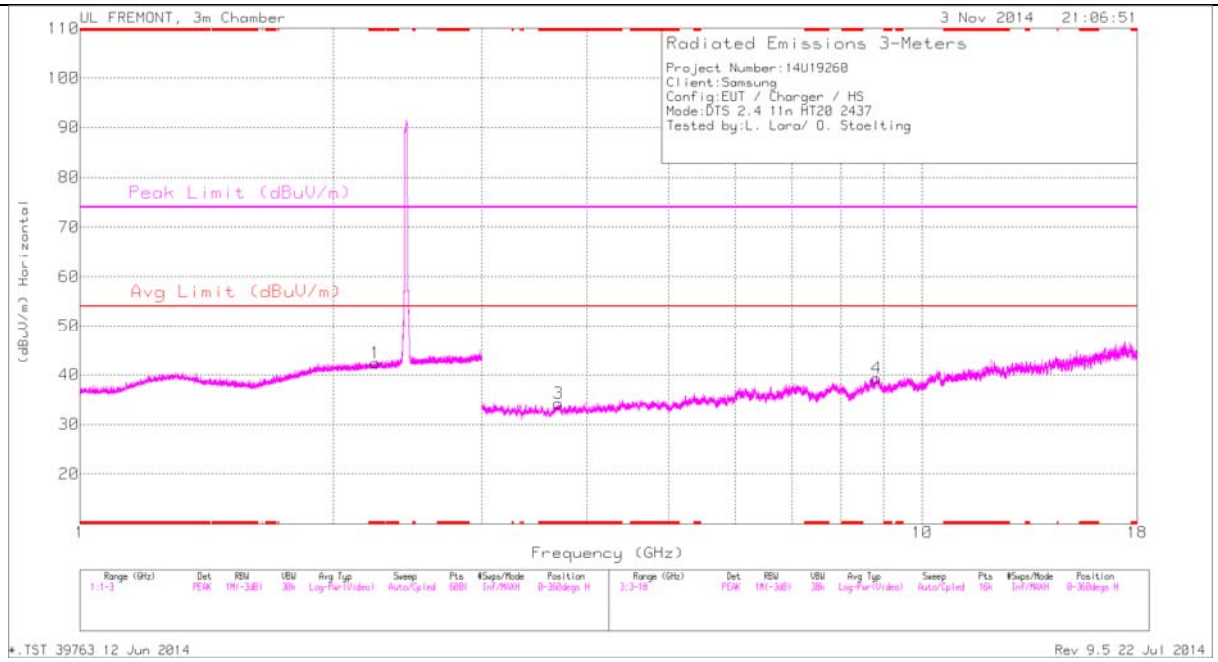
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

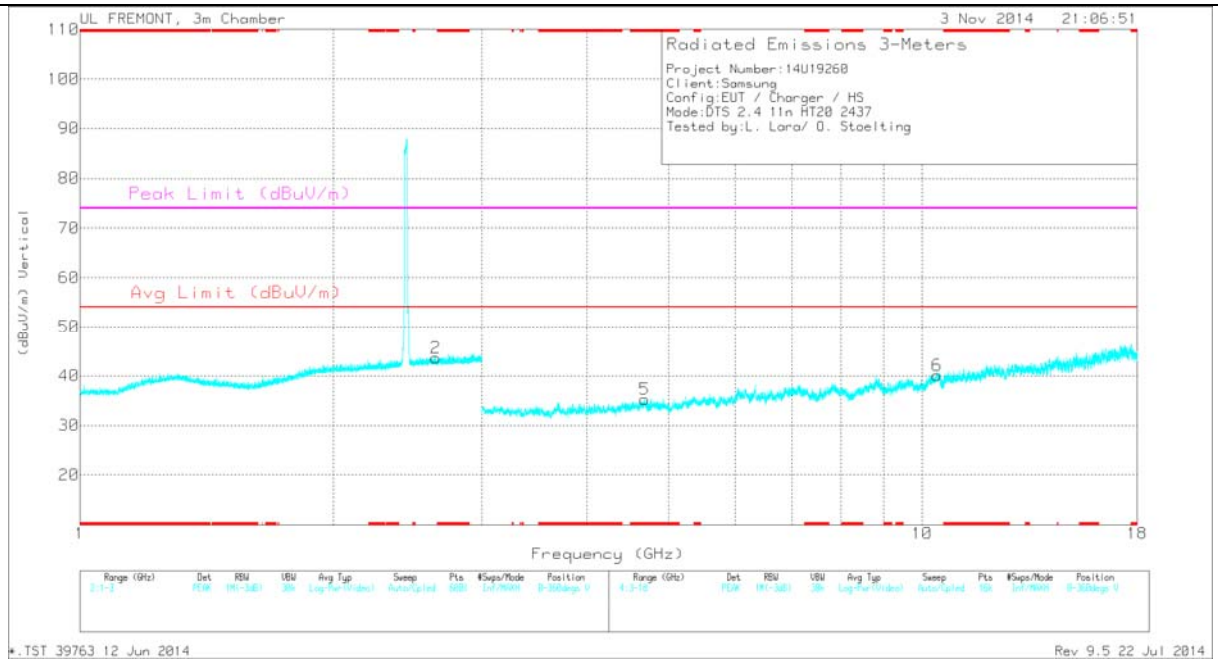
MAv1 - KDB558074 Option 1 Maximum RMS Average

SPURIOUS (MID CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.245	33.23	PK	31.8	-23	0	42.38	-	-	74	-31.62	0-360	100	H
3	* 3.697	31.49	PK	33.2	-30.8	0	34.24	-	-	74	-39.76	0-360	100	H
5	* 4.683	31.54	PK	34.1	-30.7	0	35.29	-	-	74	-38.71	0-360	100	V
2	2.645	33.54	PK	32.6	-22.8	0	43.69	-	-	-	-	0-360	200	V
4	8.836	29.53	PK	36	-26.5	0	39.38	-	-	-	-	0-360	100	H
6	10.421	27.45	PK	37.4	-25.1	0	40.1	-	-	-	-	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 T119 (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)	Azimuth (Degs)	Height (cm)	Polarity
* 4.682	41.1	PK2	34.1	-30.7	0	44.85	-	-	74	-29.15	0	100	V
* 4.682	29.3	MAv1	34.1	-30.7	0.32	32.7	54	-21.3	-	-	0	100	V

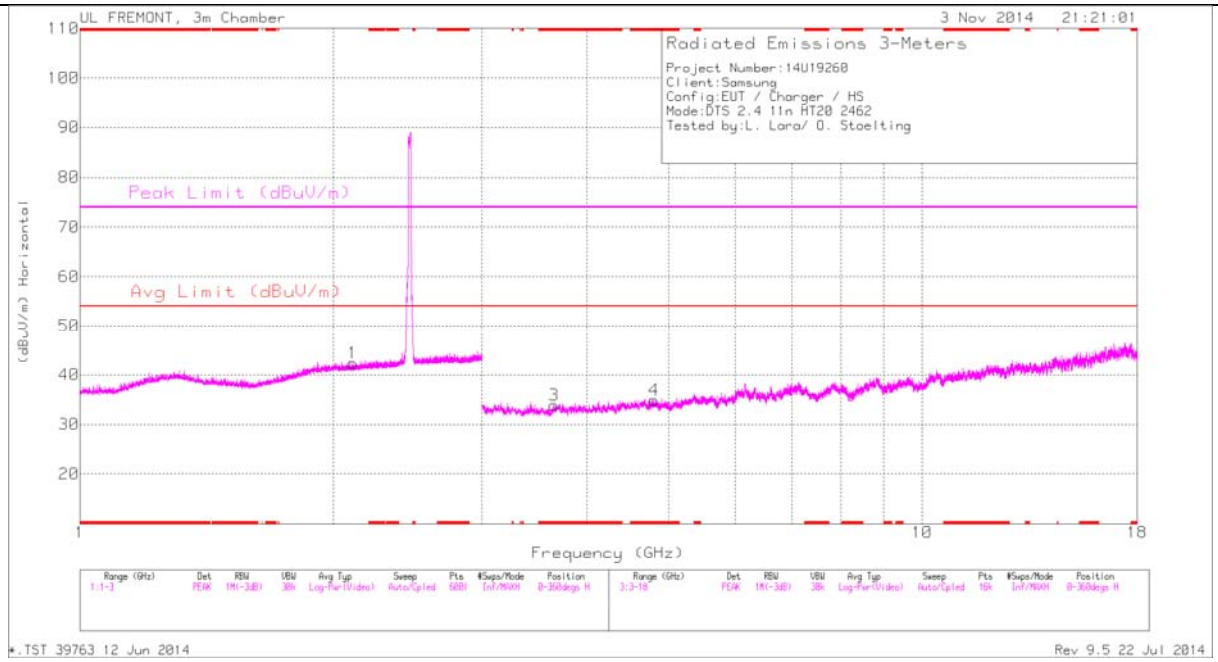
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

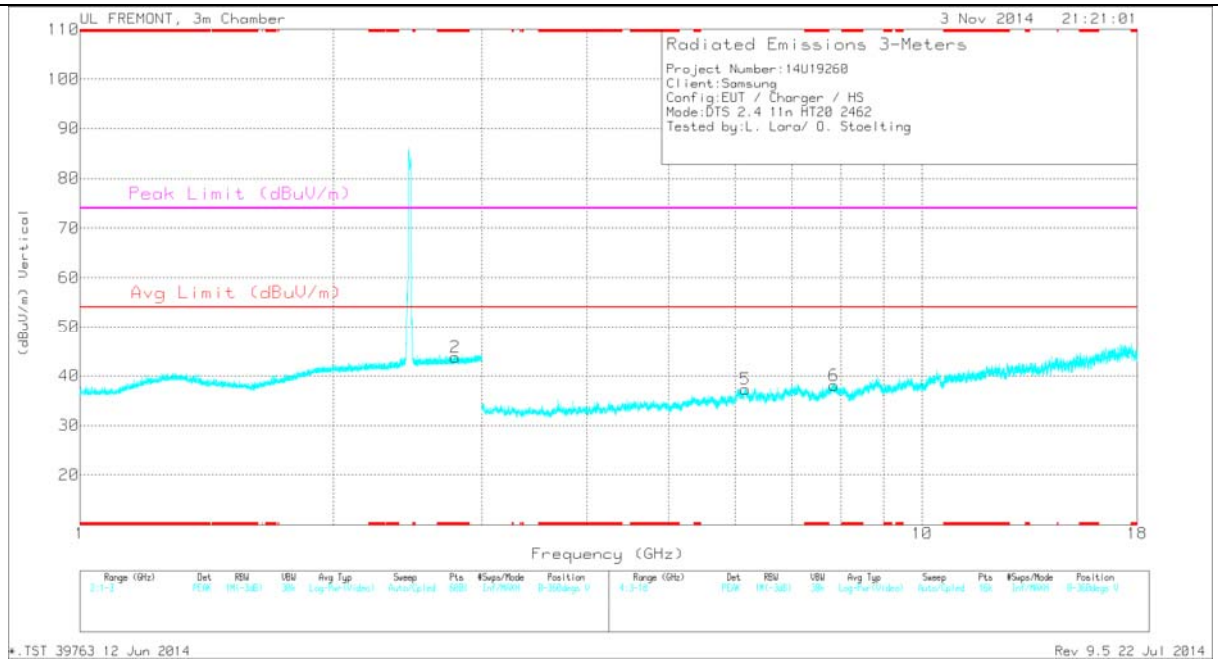
MAv1 - KDB558074 Option 1 Maximum RMS Average

SPURIOUS (HIGH CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



Note: Emission was scanned up to 26GHz; 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/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.792	33.57	PK	32.7	-22.8	0	43.82	-	-	74	-30.18	0-360	100	V
3	* 3.652	31.65	PK	33.1	-31.2	0	33.9	-	-	74	-40.1	0-360	200	H
4	* 4.802	30.71	PK	34.1	-30.3	0	34.86	-	-	74	-39.14	0-360	100	H
1	2.108	33.55	PK	31.5	-23	0	42.4	-	-	-	-	0-360	200	H
5	6.162	31.41	PK	35.3	-29.8	0	37.26	-	-	-	-	0-360	200	V
6	7.861	29.19	PK	35.8	-27.3	0	38.04	-	-	-	-	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 T119 (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)	Azimuth (Degs)	Height (cm)	Polarity
* 4.803	40.44	PK2	34.1	-30.3	0	44.59	-	-	74	-29.41	0	100	H
* 4.803	29.24	MAv1	34.1	-30.3	0.32	33.04	54	-20.96	-	-	0	100	H

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

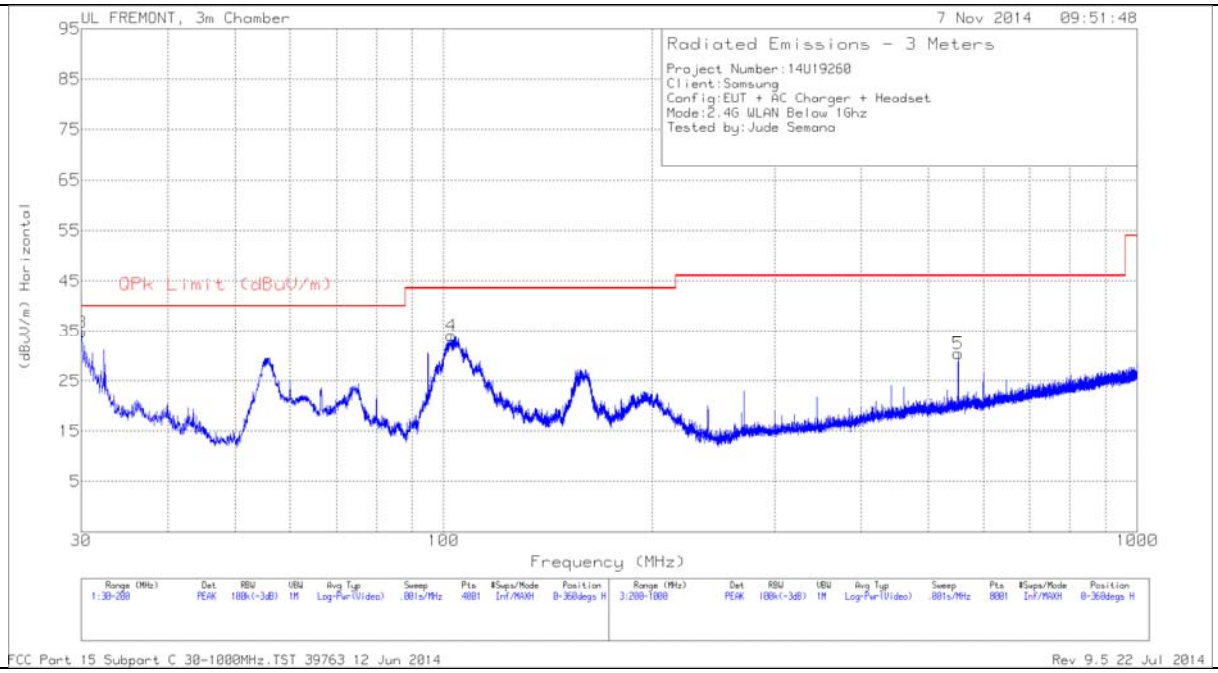
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

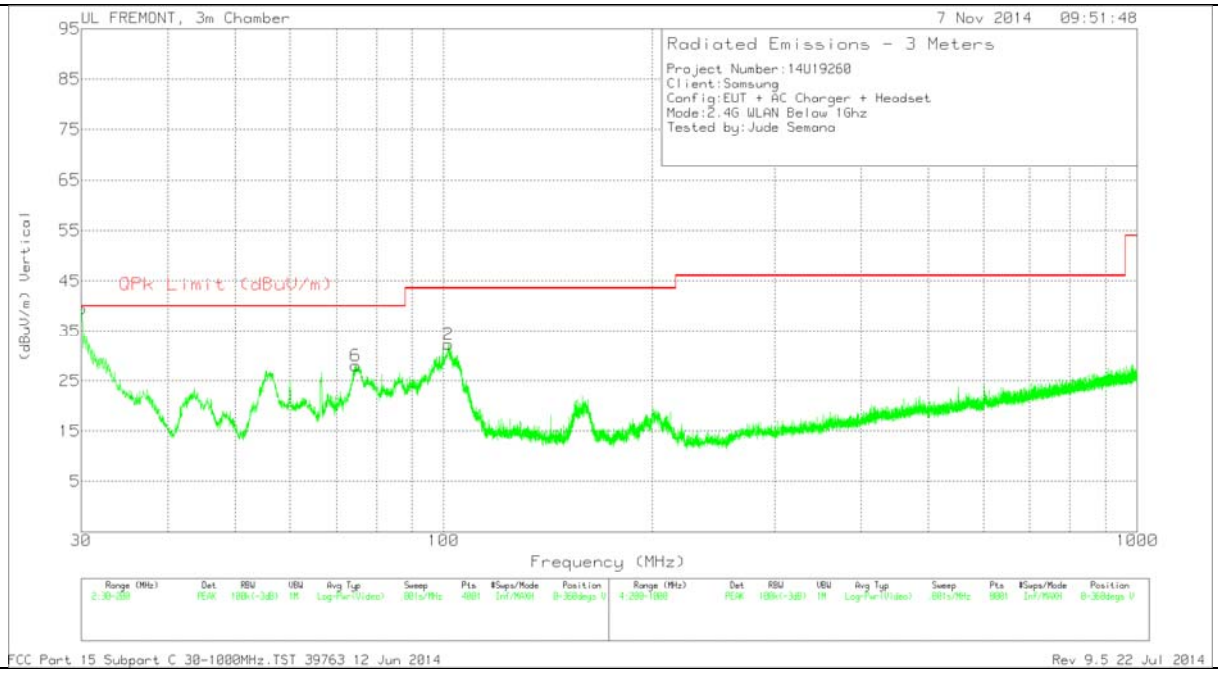
11.2. TRANSMITTER BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



Note: --

BELOW 1 GHz TABLE

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	30.0425	41.26	PK	21	-27.5	34.76	40	-5.24	0-360	200	H
1	30.0425	46.03	PK	21	-27.5	39.53	40	-.47	0-360	100	V
6	74.6675	47.13	PK	8	-27.1	28.03	40	-11.97	0-360	100	V
2	101.5275	48.82	PK	10.3	-26.8	32.32	43.52	-11.2	0-360	100	V
4	102.5475	50.3	PK	10.6	-26.8	34.1	43.52	-9.42	0-360	200	H
5	552	38.12	PK	18.1	-25.8	30.42	46.02	-15.6	0-360	200	H

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

PK - Peak detector

Note: --

12. AC POWER LINE CONDUCTED EMISSIONS

LIMITS AND PROCEDURE

LIMITS

FCC §15.207 (a)

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.

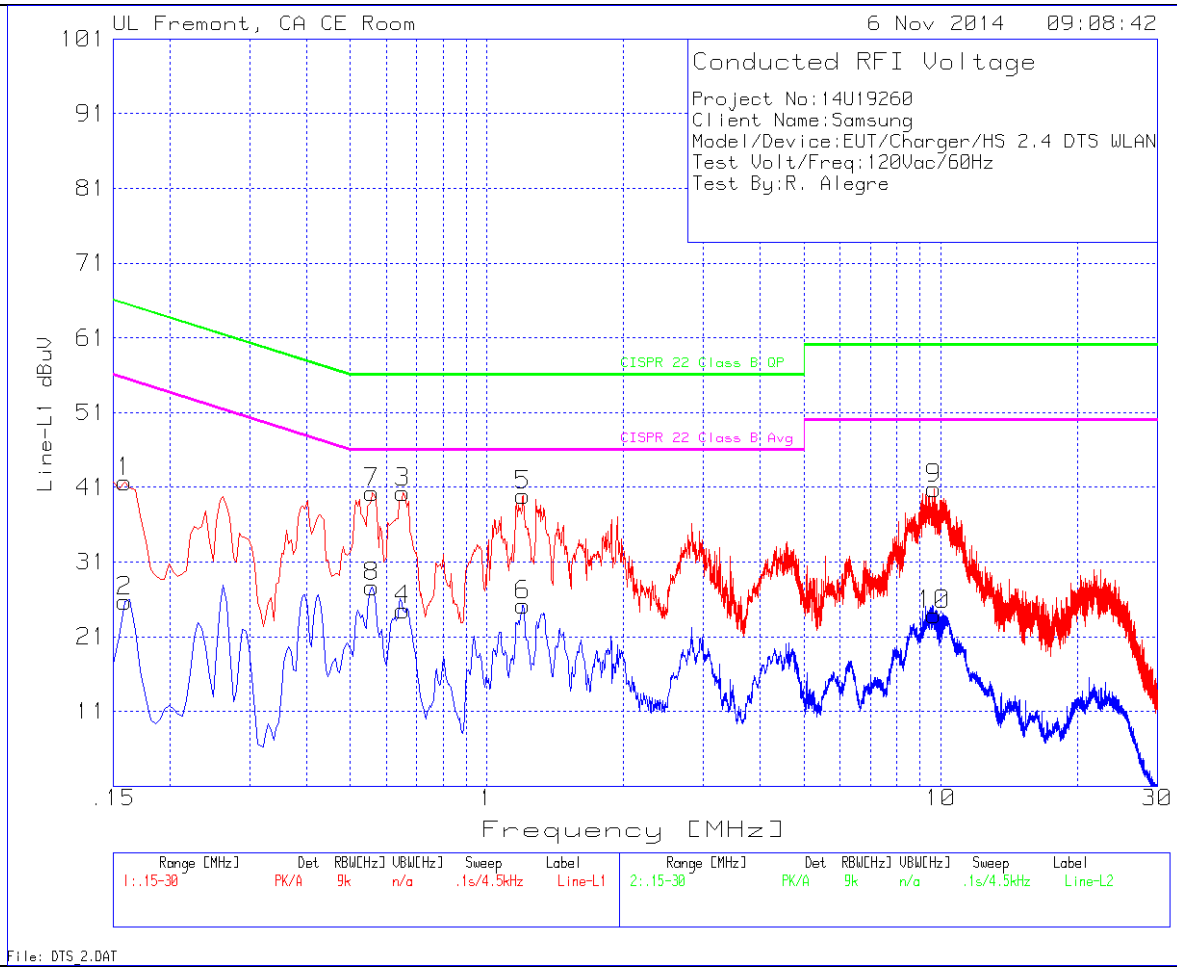
TEST PROCEDURE

ANSI C63.4 - 2009

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT

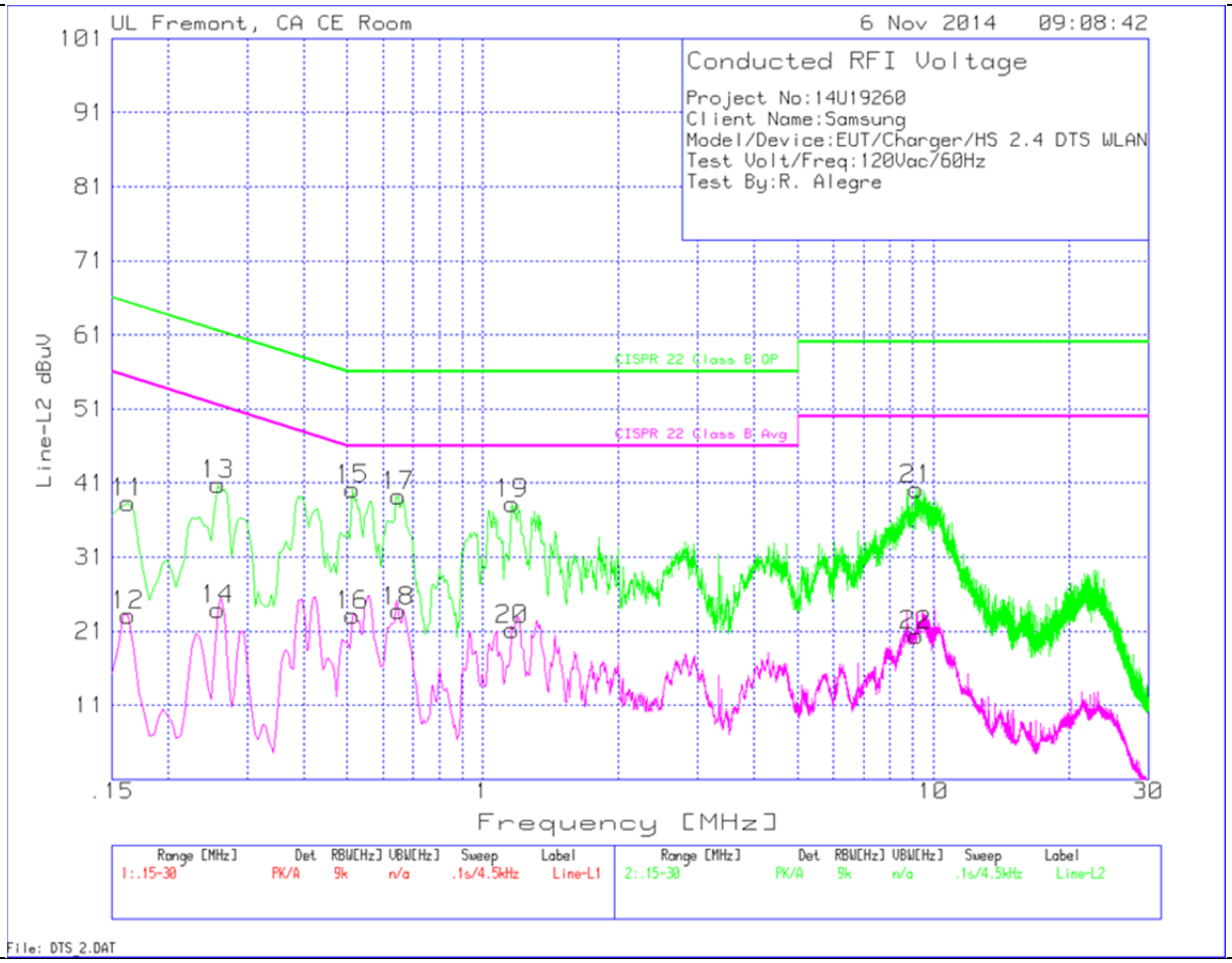


LINE 1 DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.159	40.42	PK	1.3	0	41.72	65.5	-23.78	-	-
2	.159	24.44	Av	1.3	0	25.74	-	-	55.5	-29.76
7	.5595	39.94	PK	.3	0	40.24	56	-15.76	-	-
8	.5595	27.37	Av	.3	0	27.67	-	-	46	-18.33
3	.654	39.98	PK	.3	0	40.28	56	-15.72	-	-
4	.654	24.21	Av	.3	0	24.51	-	-	46	-21.49
5	1.203	39.68	PK	.2	0	39.88	56	-16.12	-	-
6	1.203	25	Av	.2	0	25.2	-	-	46	-20.8
9	9.6495	40.39	PK	.2	.2	40.79	60	-19.21	-	-
10	9.6495	23.46	Av	.2	.2	23.86	-	-	50	-26.14

LINE 2 PLOT



LINE 2 DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
11	.1635	37.04	PK	1.3	0	38.34	65.3	-26.96	-	-
12	.1635	21.79	Av	1.3	0	23.09	-	-	55.3	-32.21
13	.258	40.1	PK	.7	0	40.8	61.5	-20.7	-	-
14	.258	23.15	Av	.7	0	23.85	-	-	51.5	-27.65
15	.5145	39.72	PK	.4	0	40.12	56	-15.88	-	-
16	.5145	22.76	Av	.4	0	23.16	-	-	46	-22.84
17	.6495	38.93	PK	.3	0	39.23	56	-16.77	-	-
18	.6495	23.41	Av	.3	0	23.71	-	-	46	-22.29
19	1.1625	37.93	PK	.3	0	38.23	56	-17.77	-	-
20	1.1625	20.93	Av	.3	0	21.23	-	-	46	-24.77
21	9.141	39.74	PK	.2	.2	40.14	60	-19.86	-	-
22	9.141	20.02	Av	.2	.2	20.42	-	-	50	-29.58