



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + Bluetooth, WLAN 2.4GHz b/g/n and ANT+

MODEL NUMBER: SM-G7200

FCC ID: A3LSMG7200

REPORT NUMBER: 14I19245-E4

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Prepared for

**SAMSUNG ELECTRONICS CO., LTD.
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA**

Prepared by

**UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888**



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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: GSM/WCDMA/LTE Phone + Bluetooth, WLAN 2.4GHz b/g/n, & ANT+

MODEL: SM-G7200

SERIAL NUMBER: 1984966 (RADIATED); 1984965 (CONDUCTED)

DATE TESTED: OCTOBER 27- NOVEMBER 3, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	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.

Approved & Released
For UL Verification Services Inc. By:

Tested By:



PENG ZHANG
CONSUMER TECHNOLOGY DIVISION
PROJECT LEADER
UL Verification Services Inc.



CHARLES VERGONIO
CONSUMER TECHNOLOGY DIVISION
LAB ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15.

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:

$$\begin{aligned}\text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m}\end{aligned}$$

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. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + Bluetooth, WLAN 2.4GHz b/g/n, & ANT+.

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)
2412 - 2462	802.11b	16.9	48.98
2412 - 2462	802.11g	14.2	26.30
2412 - 2462	802.11n HT20	13.2	20.89

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -4.5 dBi.

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 X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

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

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	GH44-02657A	N/A	N/A
Earphone	SAMSUNG	N/A	N/A	N/A

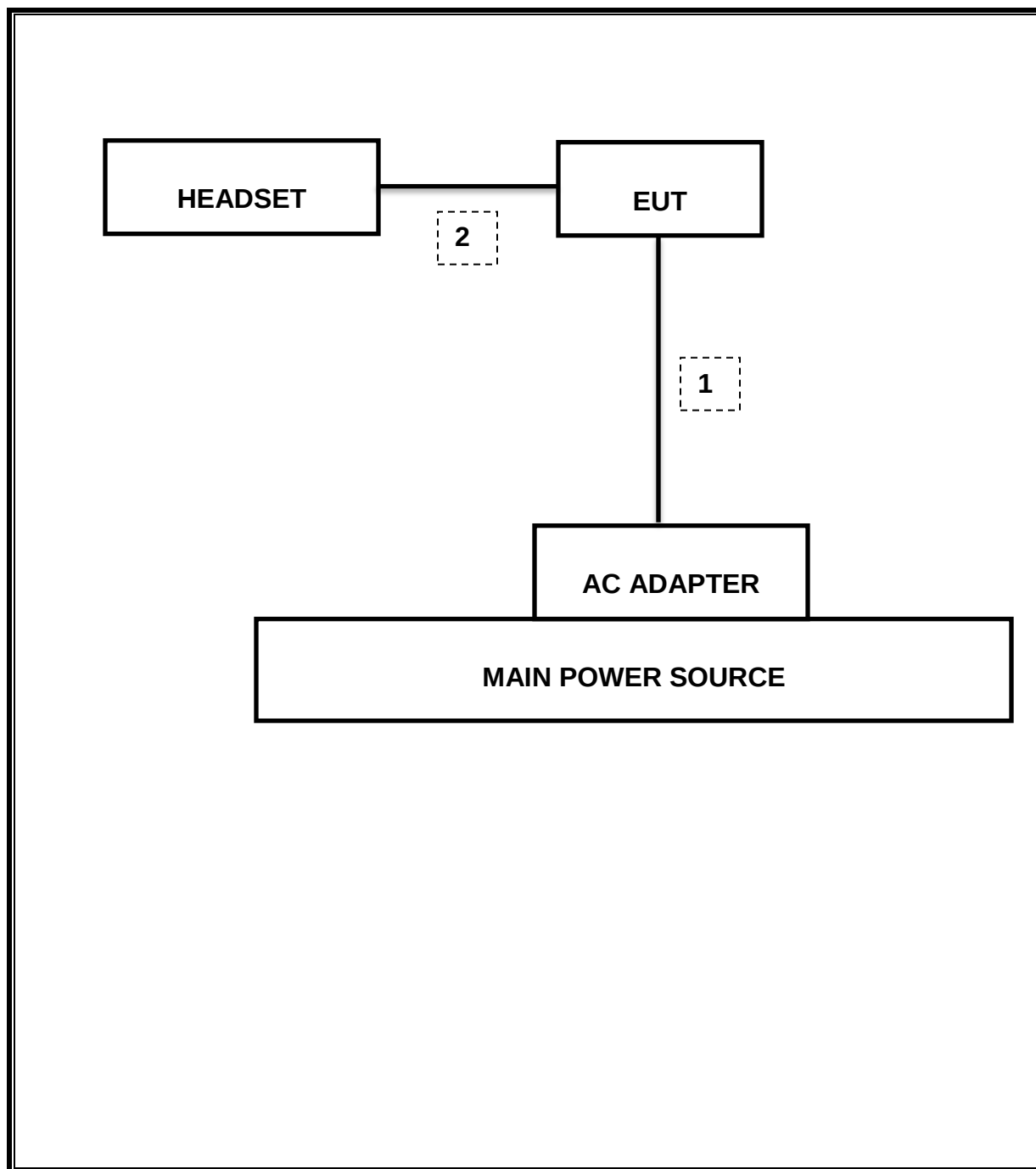
I/O CABLES

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	1m	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/14
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

7. MEASUREMENT METHODS

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

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	8.0MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-32.07dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	16.9dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-10.33dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	46.88dBuV(PK)
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	48.12dBuV/m

9. ANTENNA PORT TEST RESULTS

9.1. 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 to 100KHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.08	0.5
Mid	2437	8.05	0.5
High	2462	8.00	0.5
Worst		8.00	

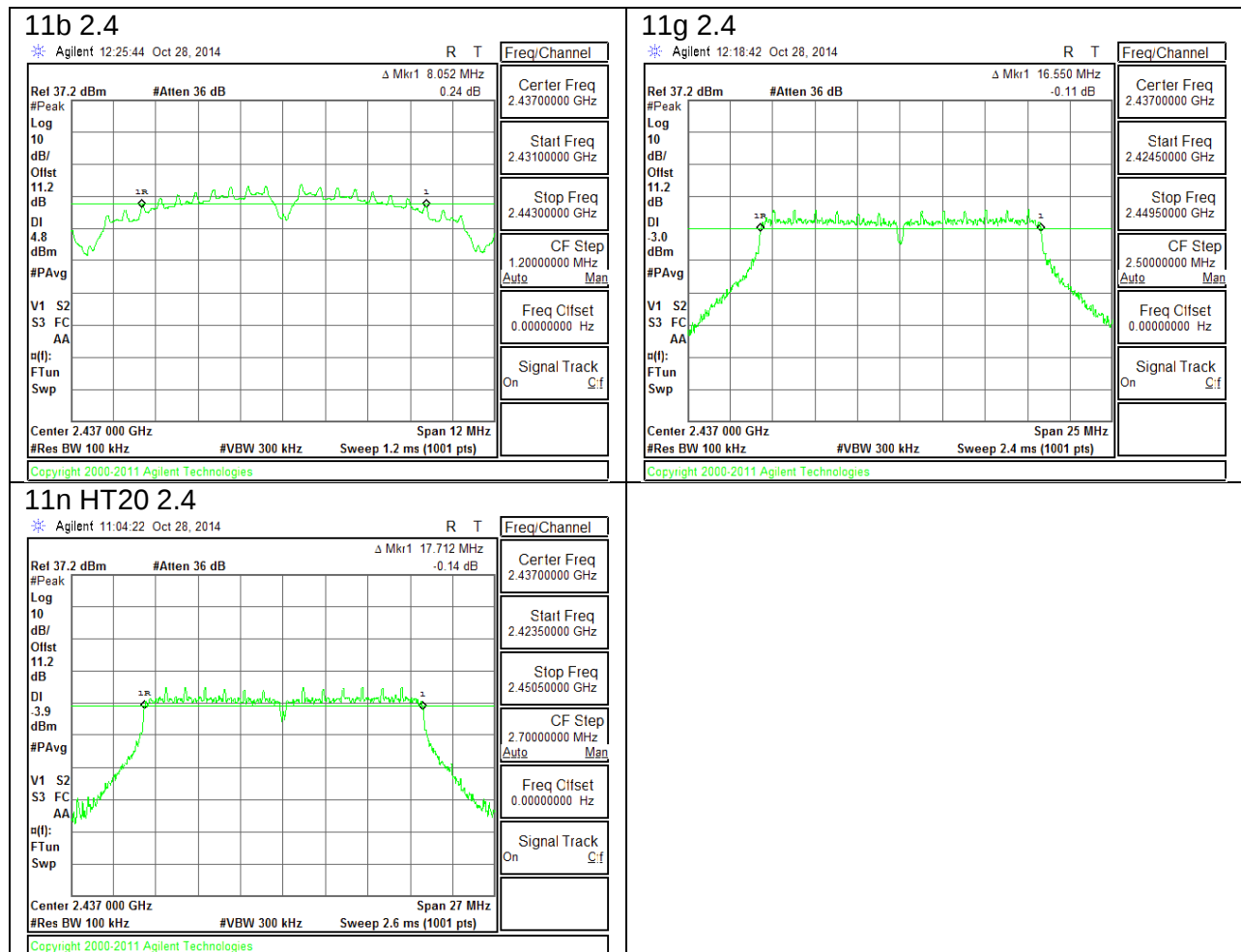
9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.55	0.5
Mid	2437	16.55	0.5
High	2462	16.55	0.5
Worst		16.55	

9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.71	0.5
Mid	2437	17.71	0.5
High	2462	17.71	0.5
Worst		17.71	

9.1.4. 6 dB BANDWIDTH MID CH PLOTS



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	12.38
Mid	2437	12.24
High	2462	12.18
Worst		12.38

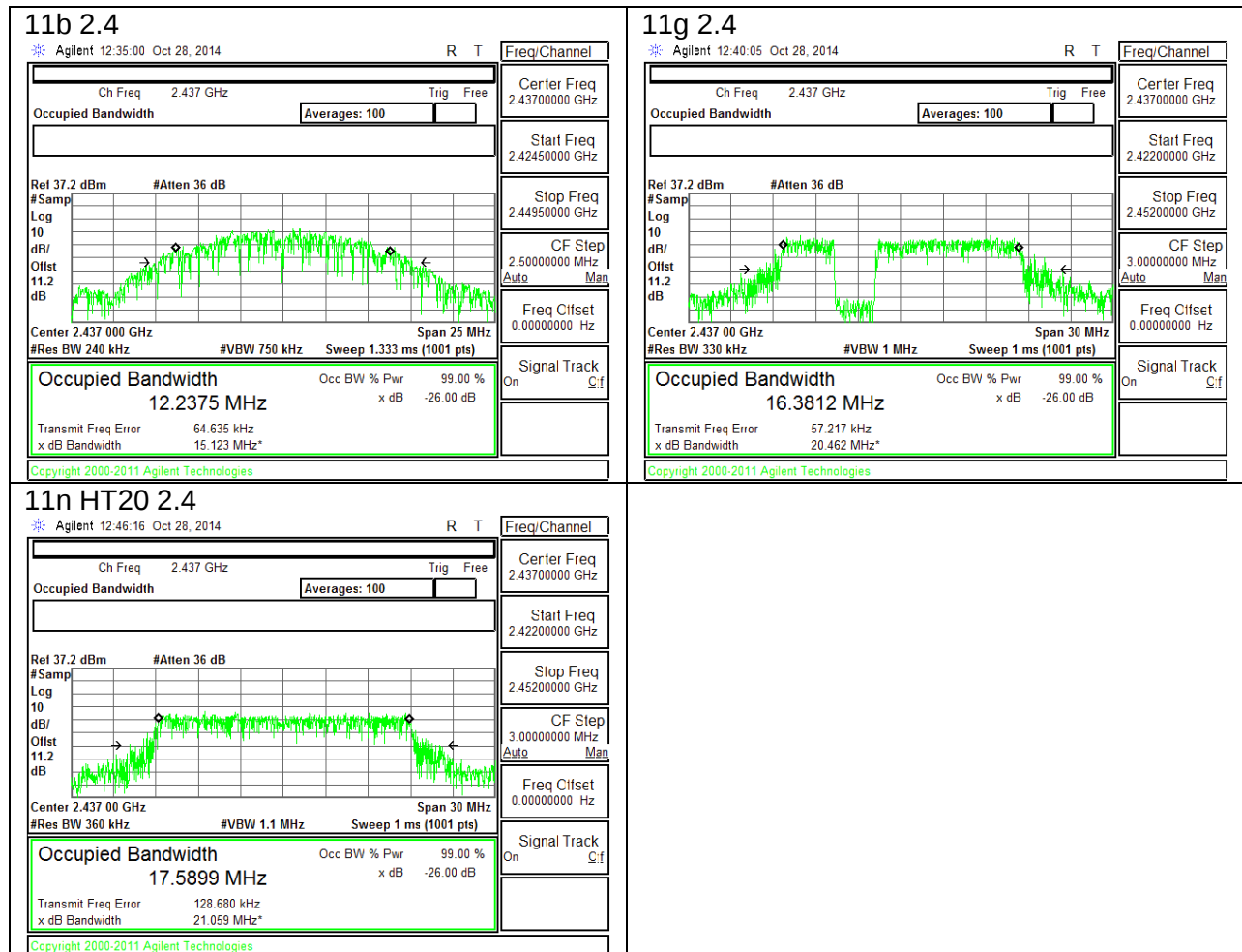
9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.33
Mid	2437	16.38
High	2462	16.39
Worst		16.39

9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.42
Mid	2437	17.59
High	2462	17.49
Worst		17.59

9.2.4. 99% BANDWIDTH MID CH PLOTS



9.3. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.50	30.00	30	36	30.00
Mid	2437	-4.50	30.00	30	36	30.00
High	2462	-4.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	16.70	16.70	30.00	-13.30
Mid	2437	16.70	16.70	30.00	-13.30
High	2462	16.90	16.90	30.00	-13.10
Worst			16.90		

9.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.50	30.00	30	36	30.00
Mid	2437	-4.50	30.00	30	36	30.00
High	2462	-4.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	14.20	14.20	30.00	-15.80
Mid	2437	14.20	14.20	30.00	-15.80
High	2462	14.00	14.00	30.00	-16.00
Worst			14.20		

9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.50	30.00	30	36	30.00
Mid	2437	-4.50	30.00	30	36	30.00
High	2462	-4.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	13.20	13.20	30.00	-16.80
Mid	2437	13.20	13.20	30.00	-16.80
High	2462	13.00	13.00	30.00	-17.00
Worst			13.20		

9.4. PSD

LIMITS

FCC §15.247

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.

RESULTS

9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.33	8.0	-18.3
Mid	2437	-11.39	8.0	-19.4
High	2462	-11.14	8.0	-19.1

9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

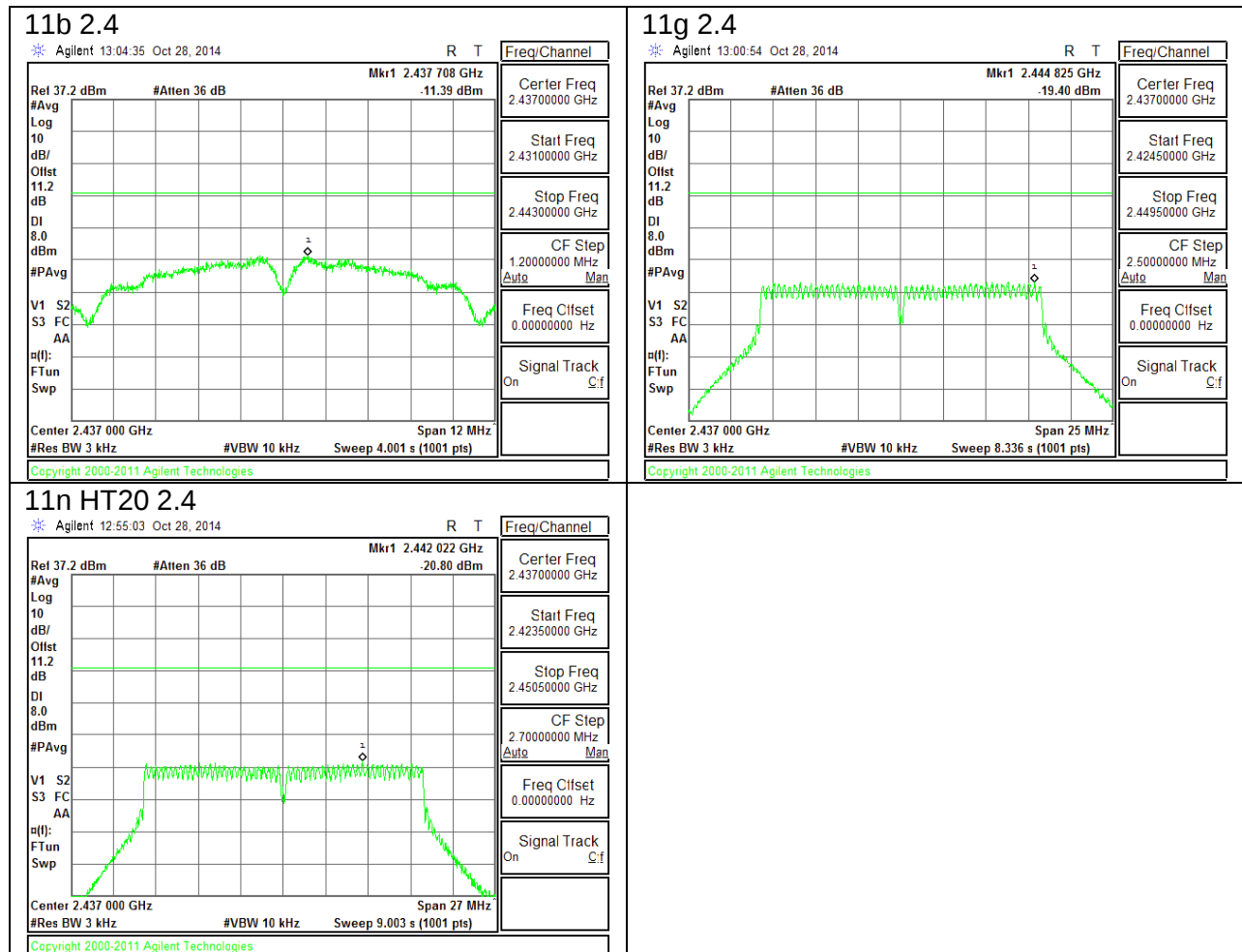
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-19.31	8.0	-27.3
Mid	2437	-19.40	8.0	-27.4
High	2462	-19.16	8.0	-27.2

9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-20.56	8.0	-28.6
Mid	2437	-20.80	8.0	-28.8
High	2462	-20.89	8.0	-28.9

9.4.4. PSD Chain 0 MID CH PLOTS



9.5. OUT-OF-BAND 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.

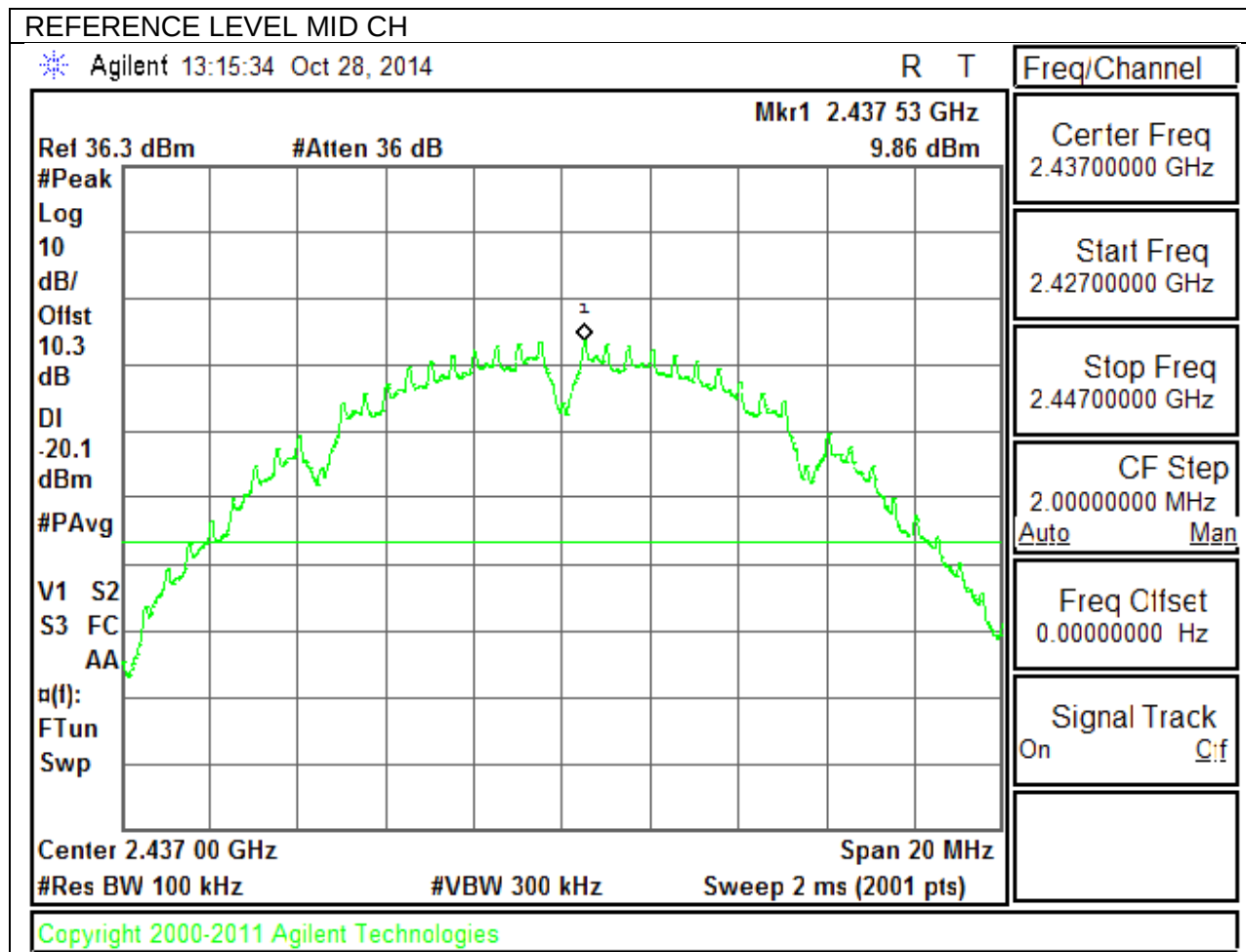
TEST PROCEDURE

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.

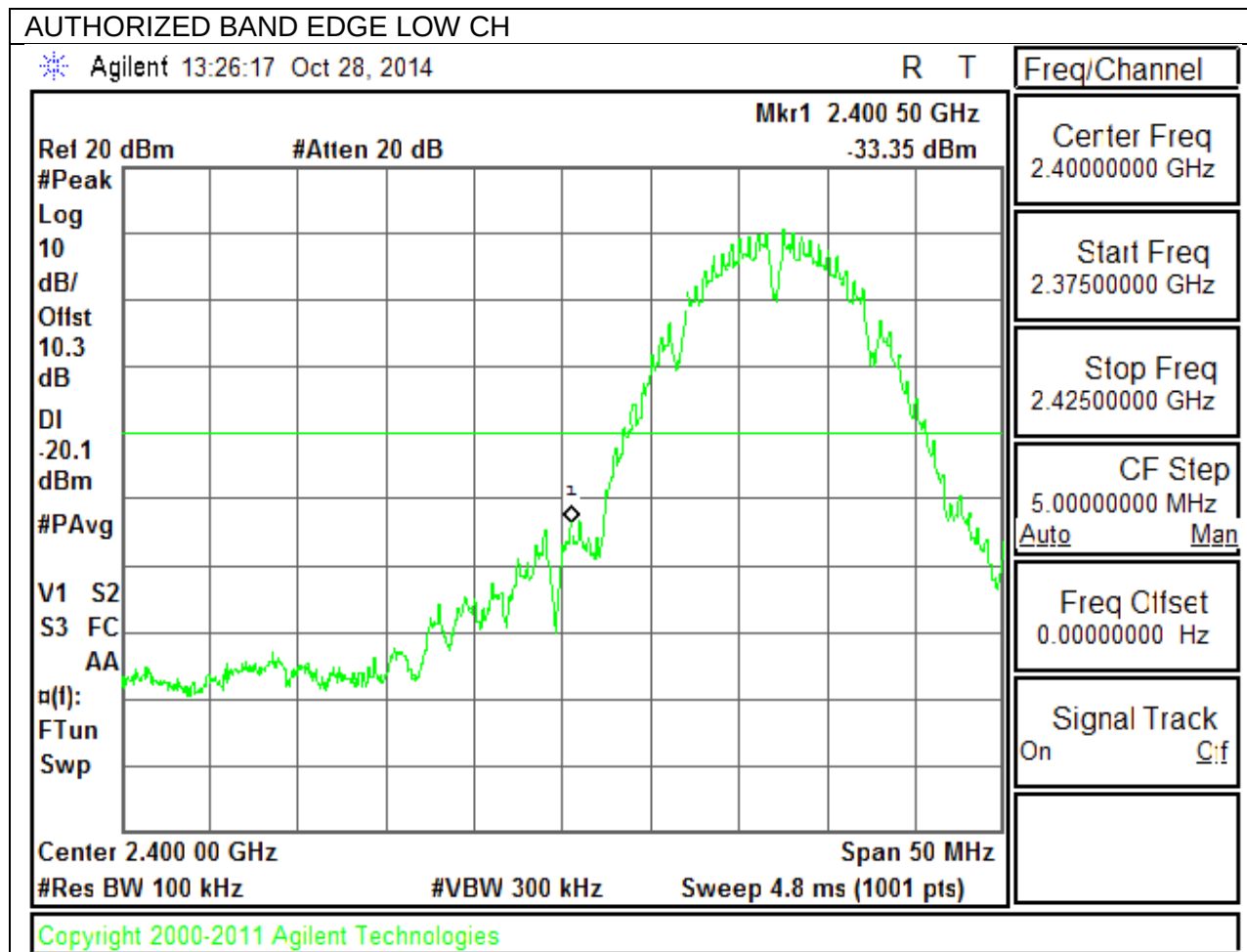
RESULTS

9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

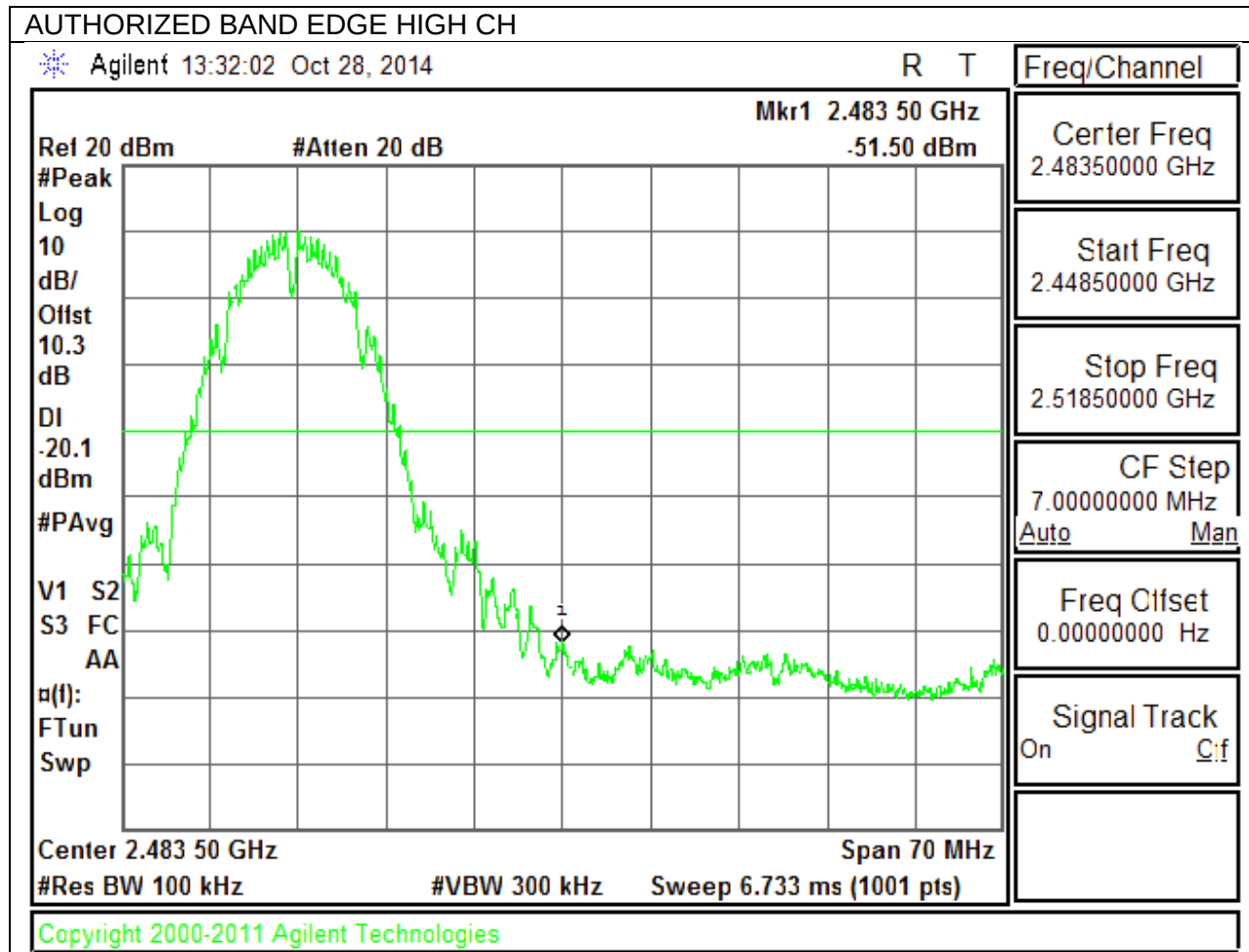
IN-BAND REFERENCE LEVEL



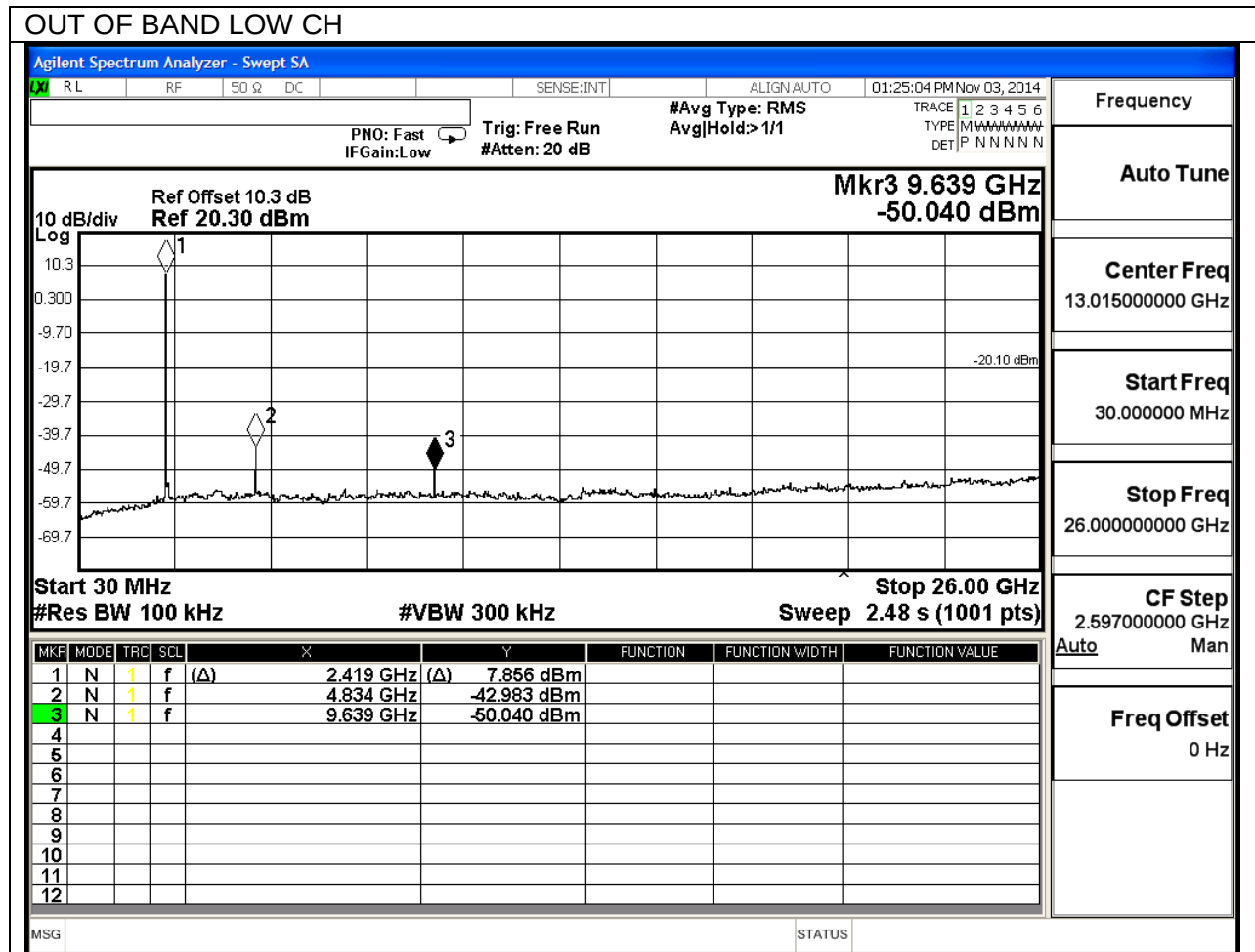
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



Agilent Spectrum Analyzer - Swept SA

R L	RF	50 Ω	DC	SENSE:INT	ALIGN:AUTO	01:26:58 PM Nov 03, 2014
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PNO: Fast IF Gain: Low Trig: Free Run #Atten: 20 dB #Avg Type: RMS Avg|Hold:>1/1

TRACE 1 2 3 4 5 6
TYPE M M M M M M M M
DET P N N N N N

Mkr3 9.743 GHz -50.374 dBm

Ref Offset 10.3 dB Ref 20.30 dB

Start 30 MHz Stop 26.00 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.48 s (1001 pts)

MKR	MODE	TRG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	(Δ) 2.445 GHz	(Δ) 7.395 dBm			
2	N	1	f	4.886 GHz	-40.418 dBm			
3	N	1	f	9.743 GHz	-50.374 dBm			
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency
Auto Tune
Center Freq 13.015000000 GHz
Start Freq 30.000000 MHz
Stop Freq 26.000000000 GHz
CF Step 2.597000000 GHz Man
Freq Offset 0 Hz

Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN:AUTO 01:28:11 PM Nov 03, 2014

PNO: Fast IFGain:Low Trig: Free Run #Atten: 20 dB #Avg Type: RMS Avg|Hold:>1/1 TRACE 1 2 3 4 5 6 TYPE M N N N N N DET P N N N N N

Ref Offset 10.3 dB
Ref 20.30 dB

Mkr3 9.847 GHz
-48.660 dBm

10 dB/div Log

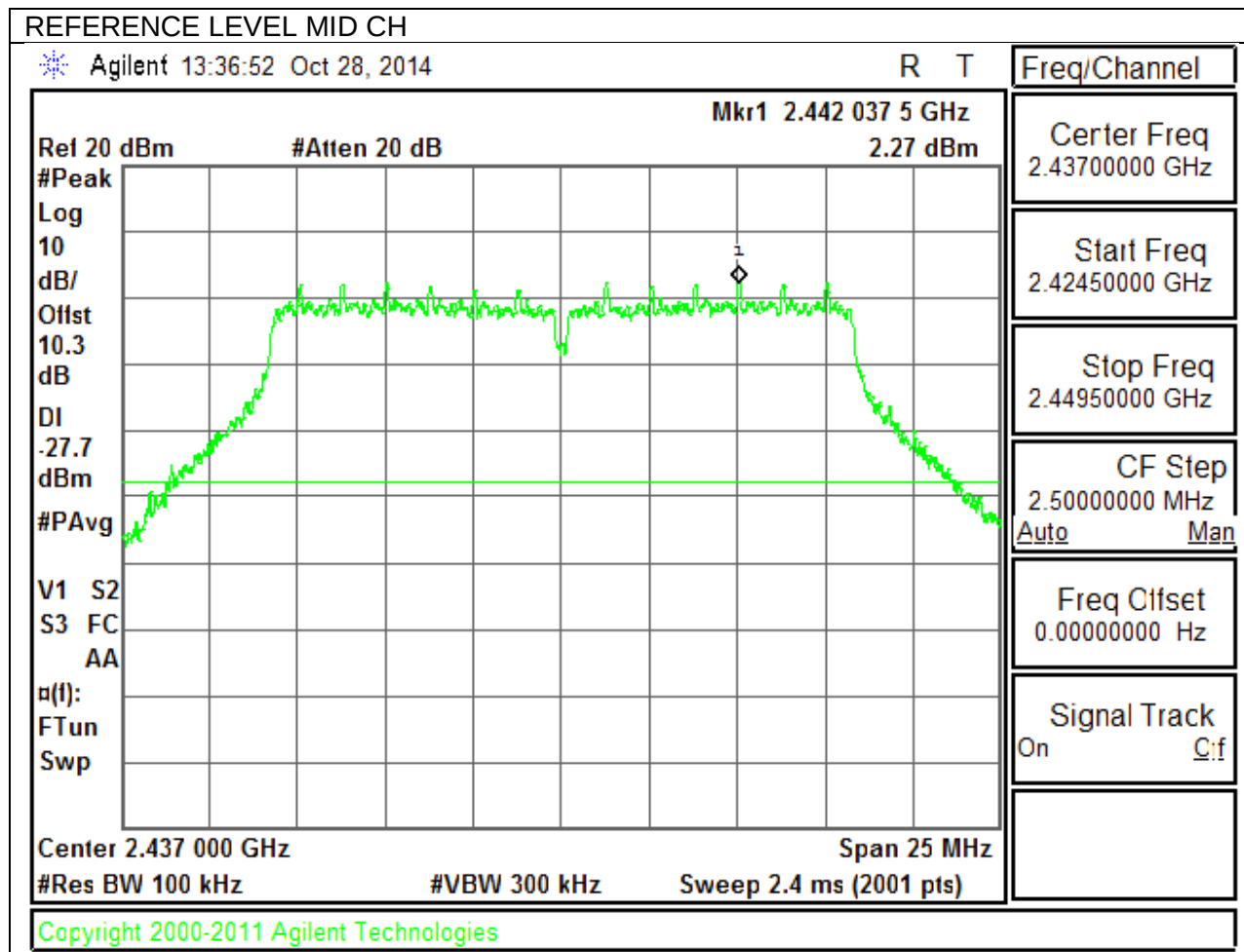
Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.00 GHz Sweep 2.48 s (1001 pts)

MKR	MODE	TRG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	(Δ) 2.471 GHz	(Δ) 8.710 dBm			
2	N	1	f	4.912 GHz	-54.741 dBm			
3	N	1	f	9.847 GHz	-48.660 dBm			
4								
5								
6								
7								
8								
9								
10								
11								
12								

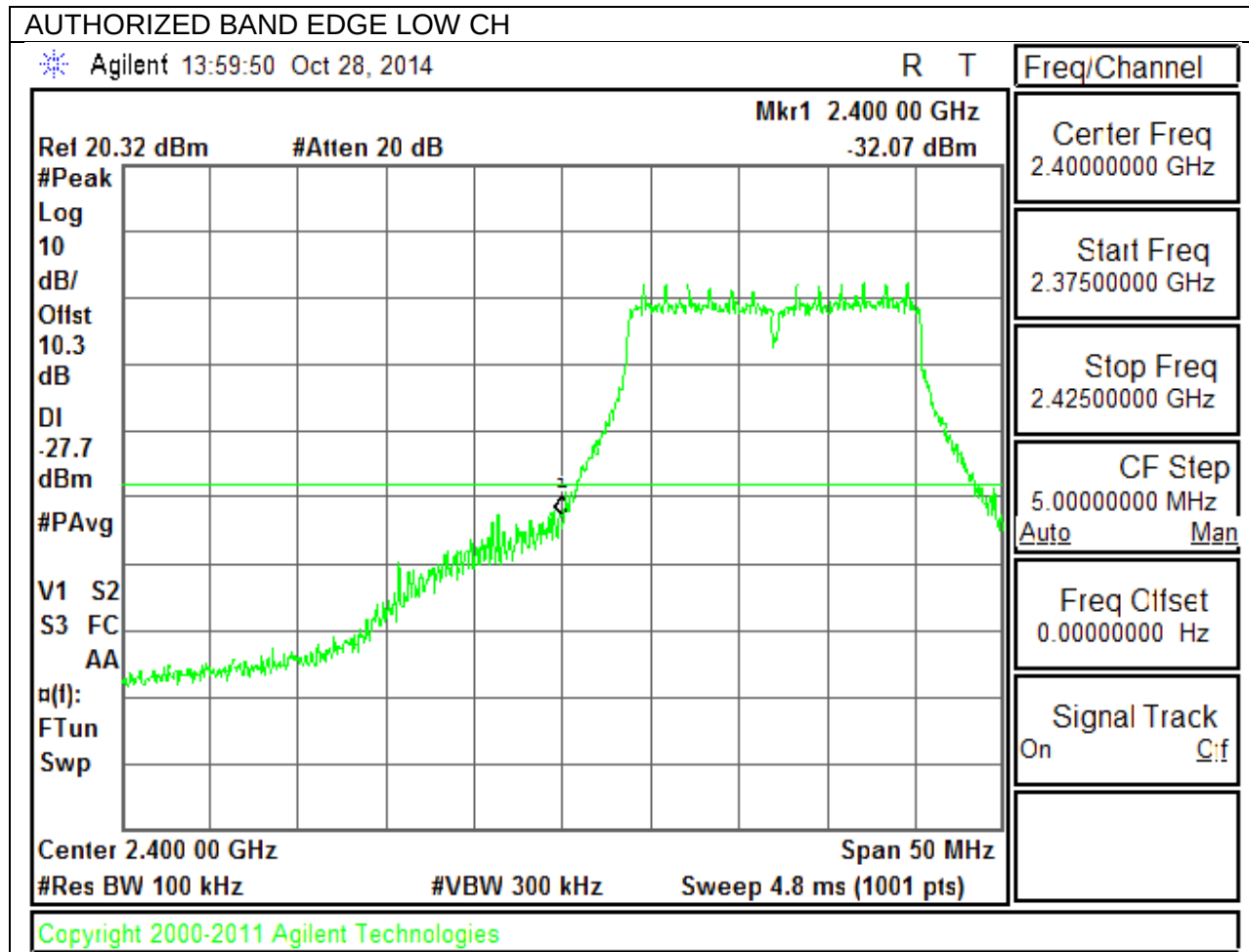
Frequency Auto Tune Center Freq 13.015000000 GHz Start Freq 30.000000 MHz Stop Freq 26.000000000 GHz CF Step 2.597000000 GHz Man Auto Freq Offset 0 Hz

9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

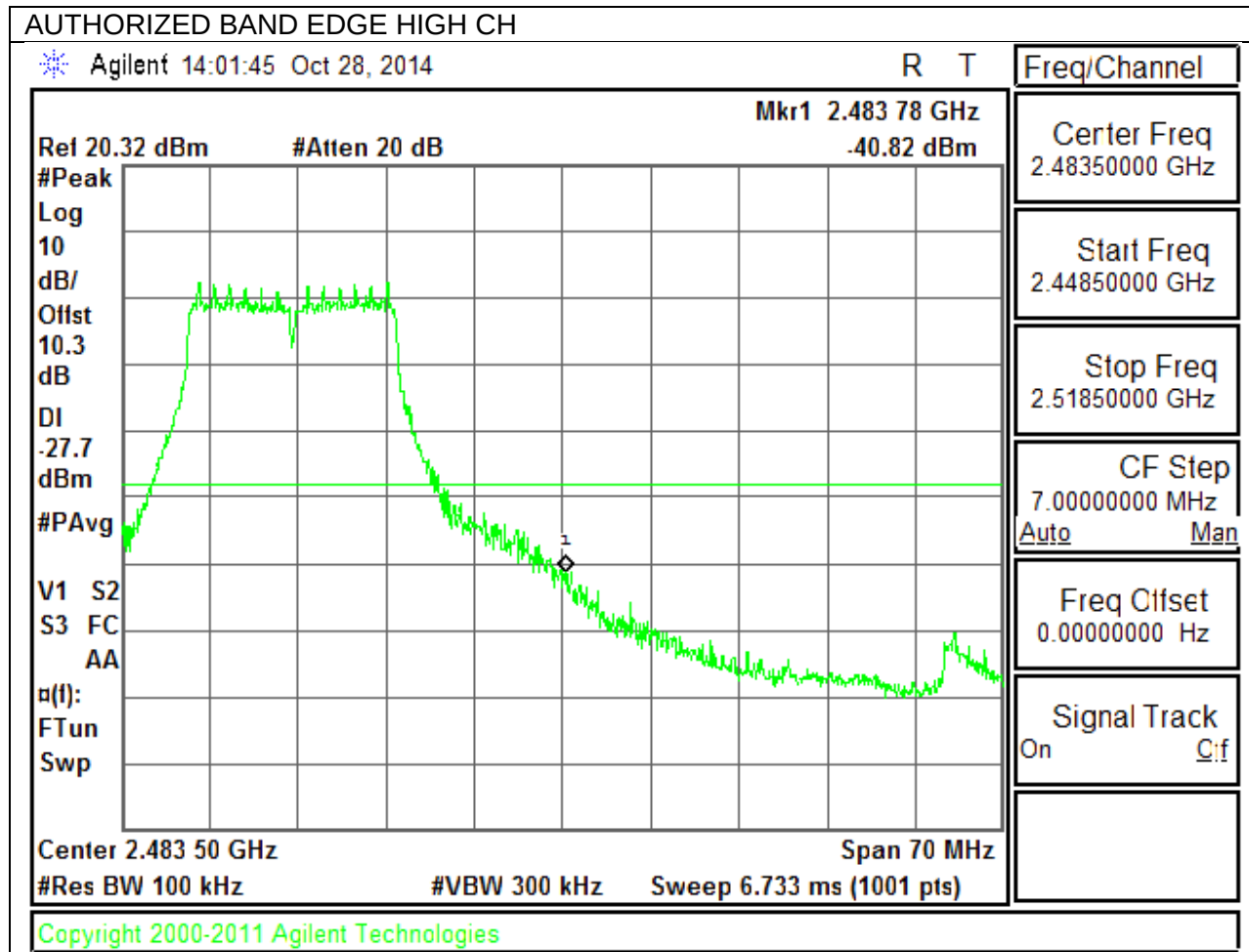
IN-BAND REFERENCE LEVEL



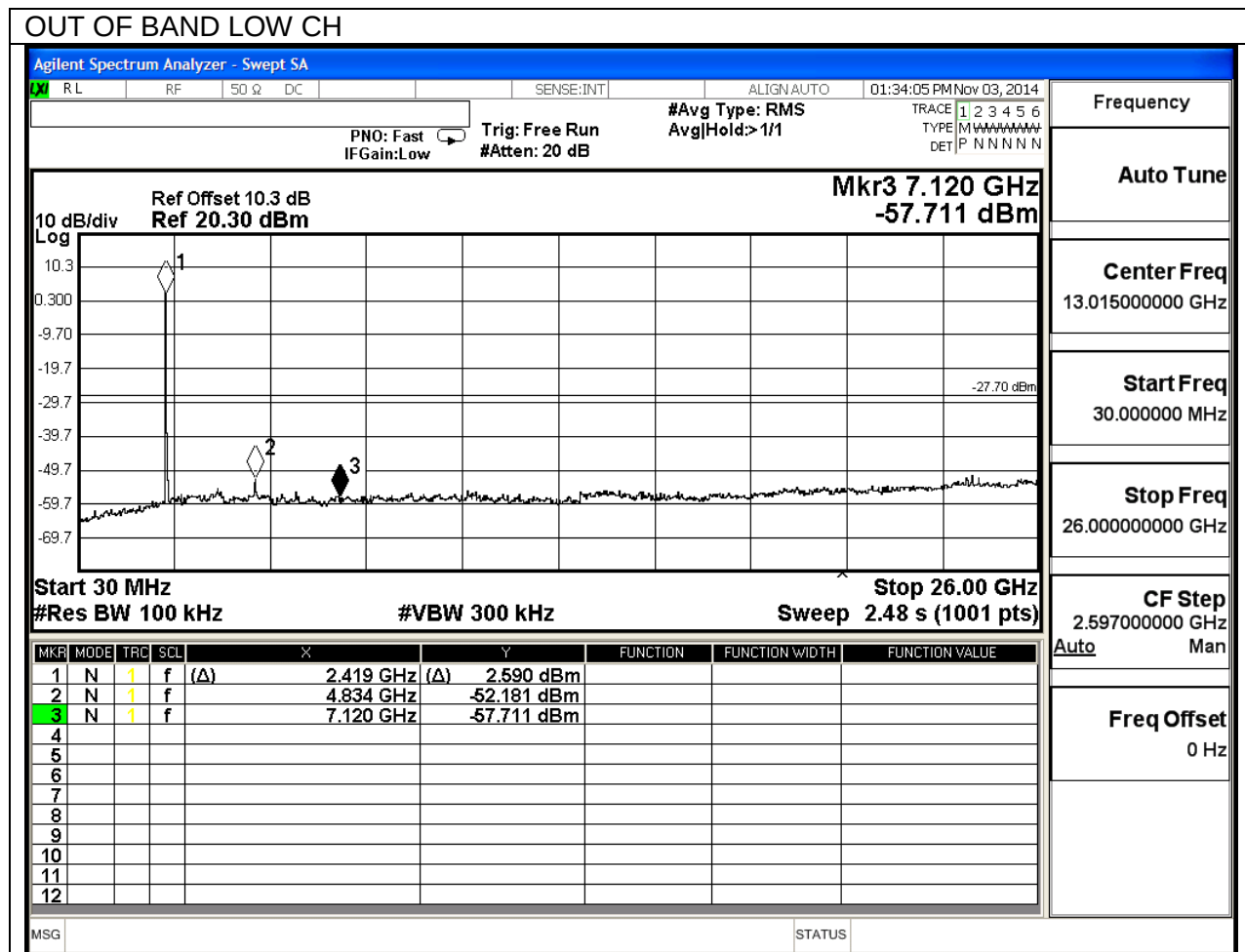
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN: AUTO 01:31:52 PM Nov 03, 2014

PNO: Fast IF Gain: Low Trig: Free Run #Atten: 20 dB #Avg Type: RMS Avg|Hold: >1/1

TRACE 1 2 3 4 5 6 TYPE M N P N N N N N DET P N N N N N

Ref Offset 10.3 dB Ref 20.30 dB Mkr3 7.302 GHz -56.053 dBm

10 dB/div Log

Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.00 GHz Sweep 2.48 s (1001 pts)

Mkr	Mode	Trc	SCL	X	Y	Function	Function Width	Function Value
1	N	1	f	(Δ) 2.445 GHz	(Δ) 1.862 dBm			
2	N	1	f	4.860 GHz	-50.618 dBm			
3	N	1	f	7.302 GHz	-56.053 dBm			
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency

Auto Tune

Center Freq 13.015000000 GHz

Start Freq 30.000000 MHz

Stop Freq 26.000000000 GHz

CF Step 2.597000000 GHz

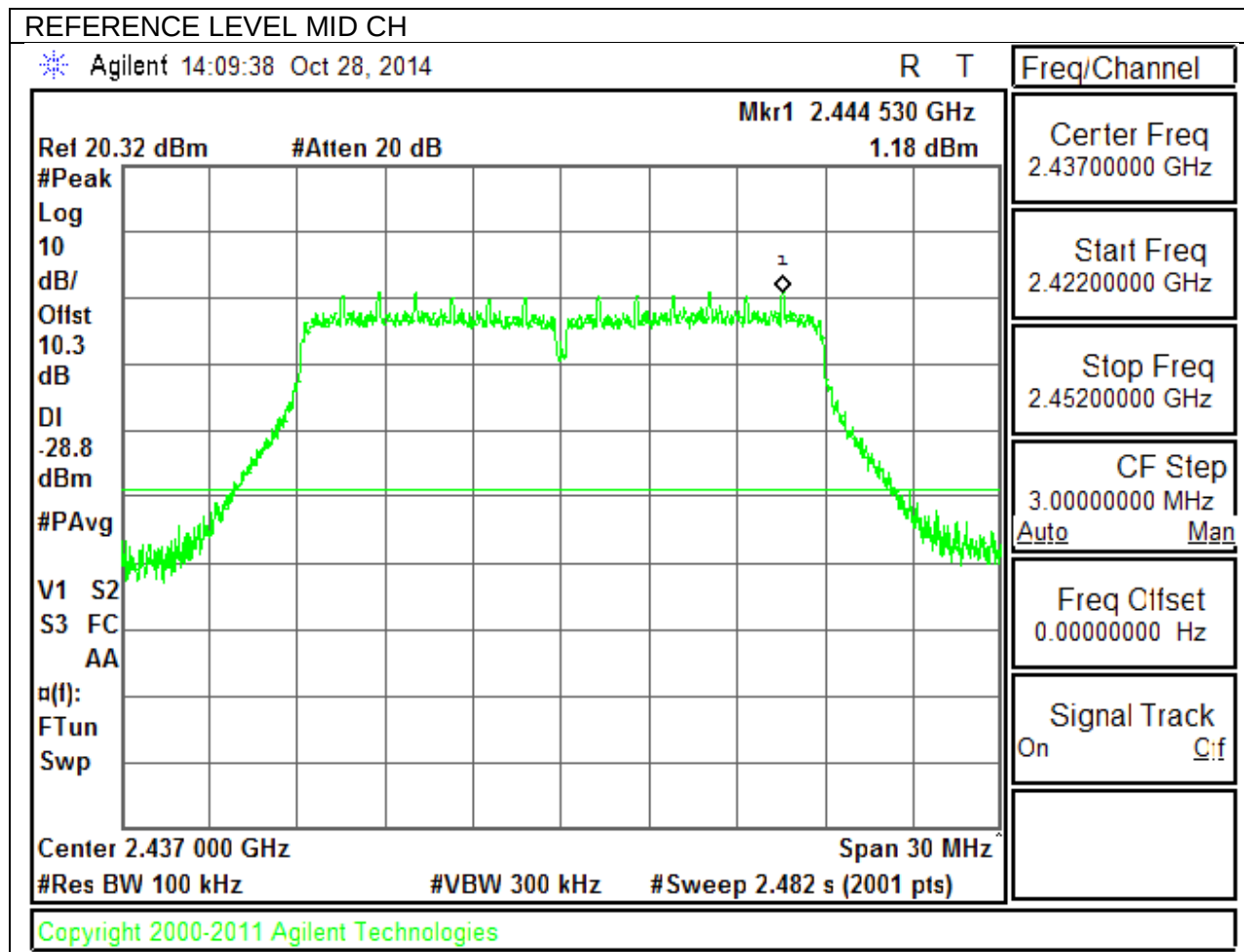
Auto Man

Freq Offset 0 Hz

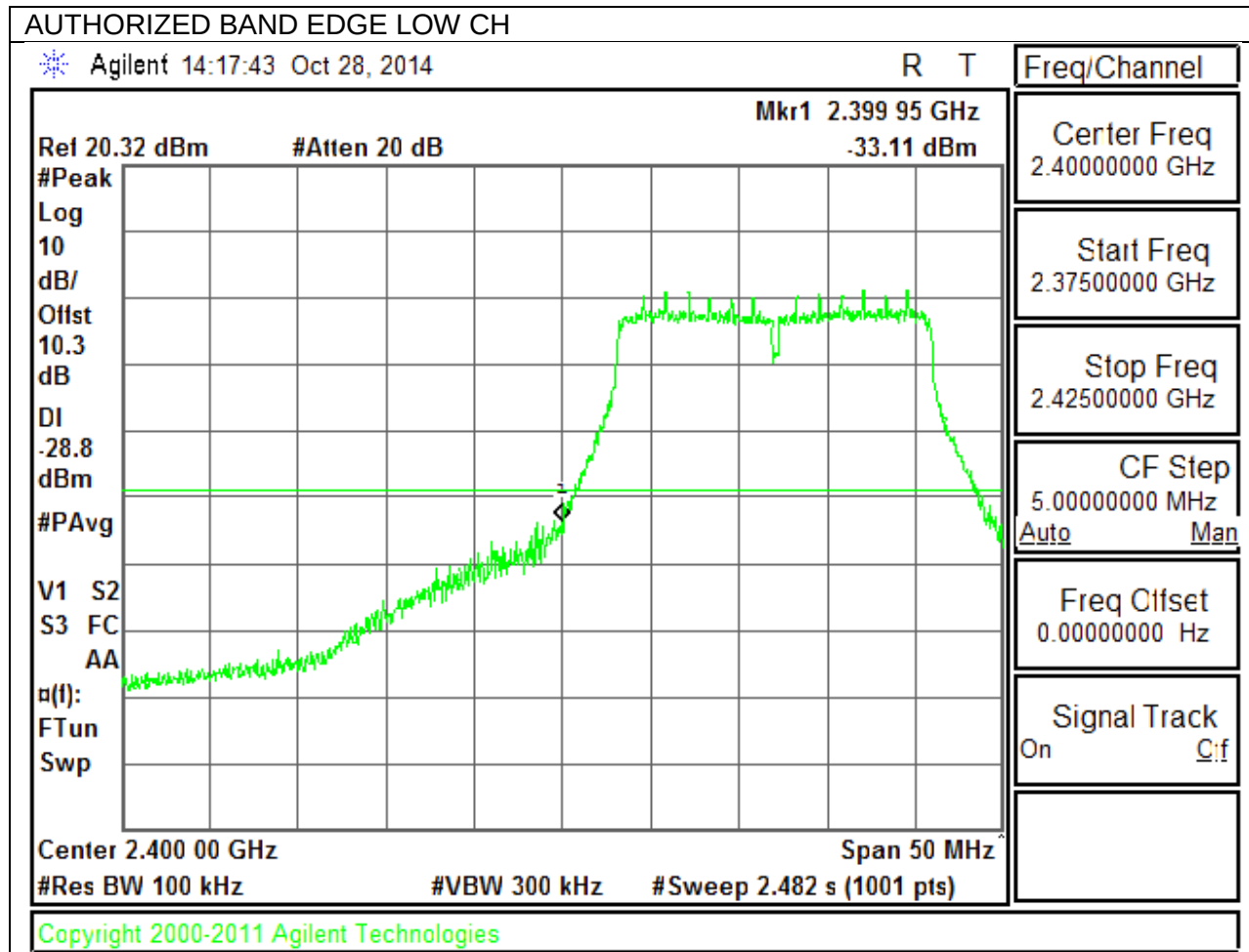
[illegible]

9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

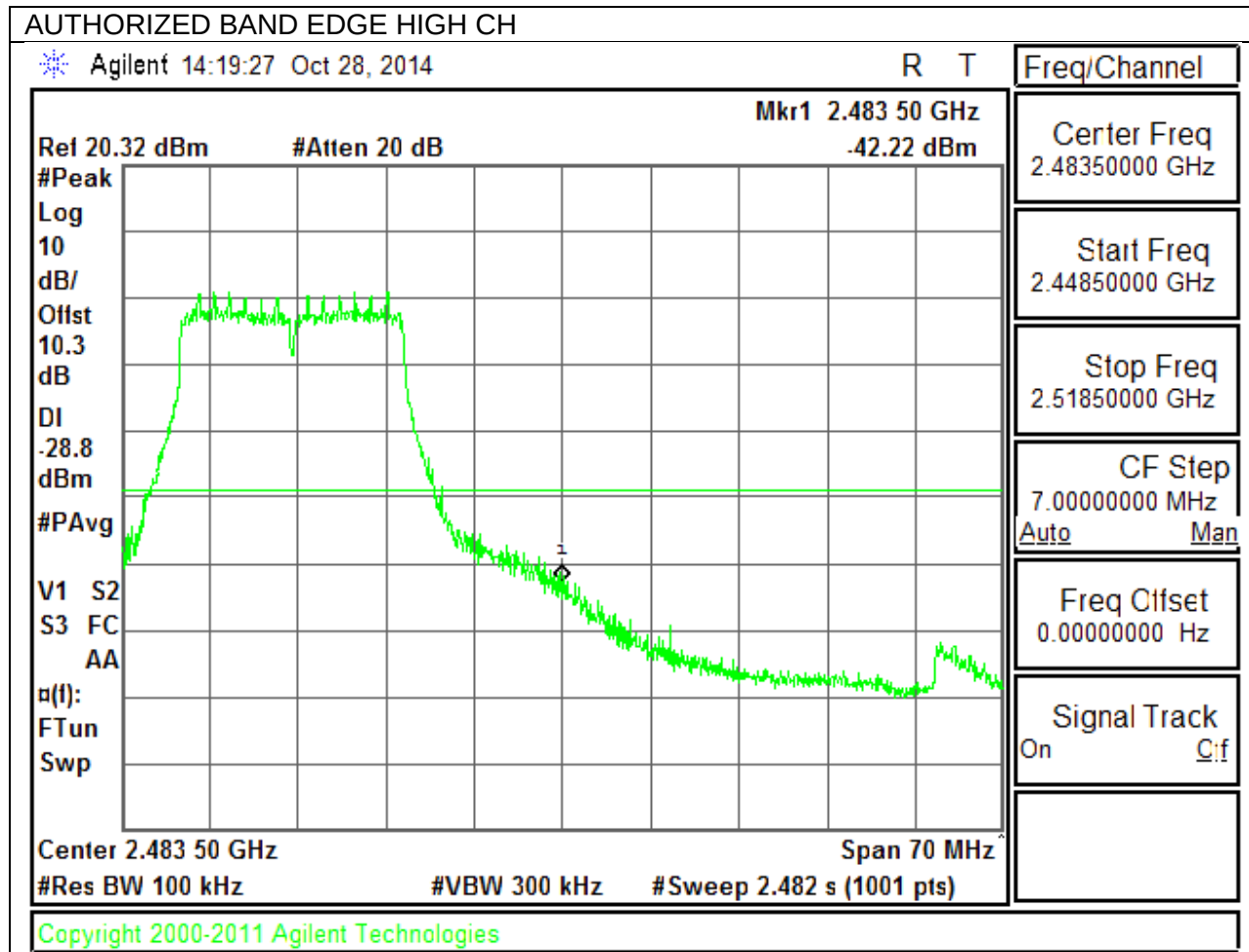
IN-BAND REFERENCE LEVEL



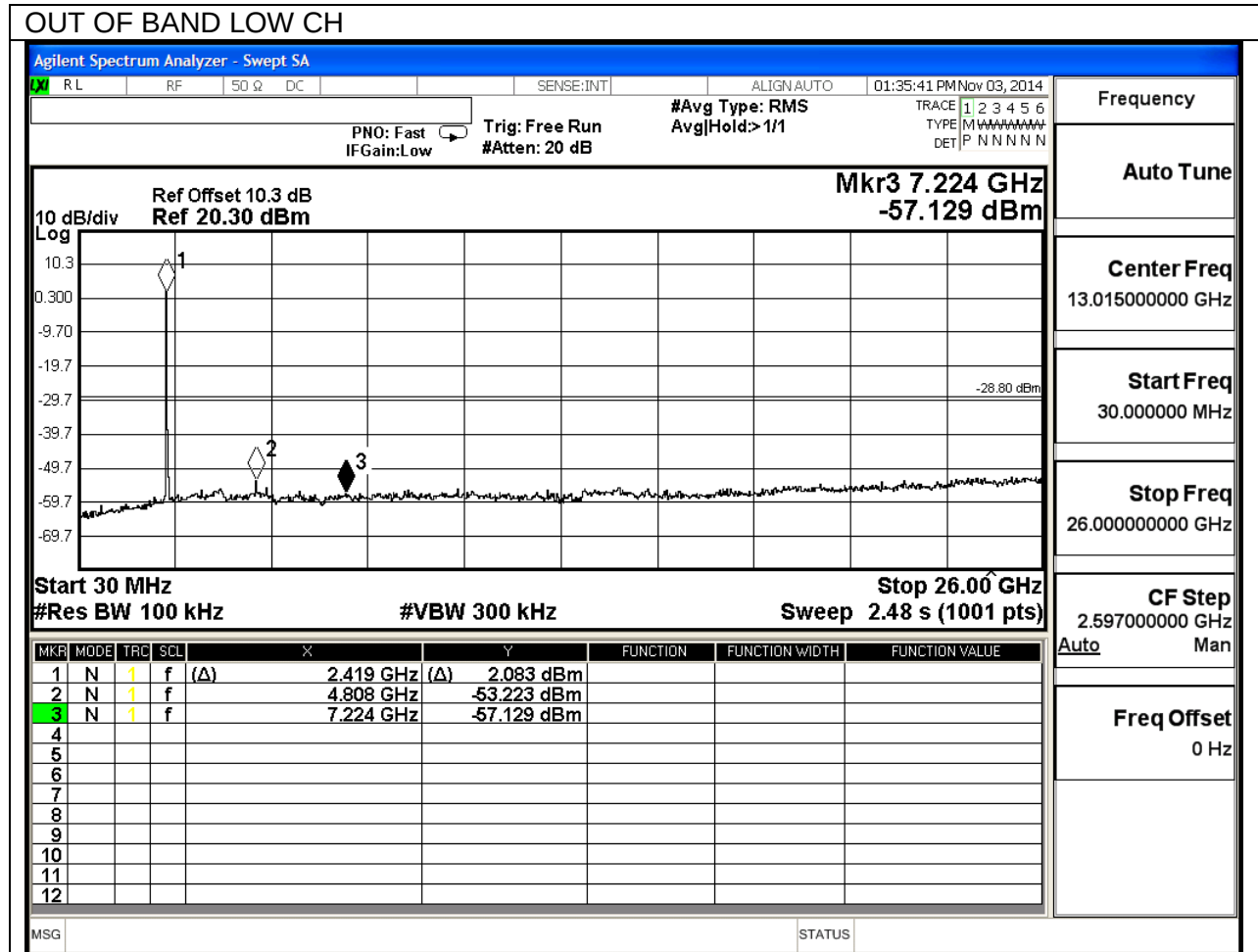
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN:AUTO 01:36:35 PM Nov 03, 2014

PNO: Fast IF Gain: Low Trig: Free Run #Atten: 20 dB #Avg Type: RMS Avg|Hold: >1/1

TRACE 1 2 3 4 5 6 TYPE M N N N N N N N DET P N N N N N N

Ref Offset 10.3 dB Mkr3 7.250 GHz
Ref 20.30 dBm -56.026 dBm

10 dB/div Log

Start 30 MHz Stop 26.00 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.48 s (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	(Δ)	2.445 GHz (Δ)	1.459 dBm		
2	N	1	f		4.886 GHz	-49.878 dBm		
3	N	1	f		7.250 GHz	-56.026 dBm		
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency

Auto Tune

Center Freq
13.015000000 GHz

Start Freq
30.000000 MHz

Stop Freq
26.000000000 GHz

CF Step
2.597000000 GHz
Auto Man

Freq Offset
0 Hz

Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN: AUTO 01:37:48 PM Nov 03, 2014

PNO: Fast IF Gain: Low Trig: Free Run #Atten: 20 dB #Avg Type: RMS Avg|Hold: >1/1

TRACE 1 2 3 4 5 6
TYPE M M M M M M M M
DET P N N N N N N

Ref Offset 10.3 dB
Ref 20.30 dBm

Mkr2 9.847 GHz
-55.814 dBm

10 dB/div
Log

Start 30 MHz
#Res BW 100 kHz

Stop 26.00 GHz
Sweep 2.48 s (1001 pts)

#VBW 300 kHz

MKR	MODE	TRG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	(Δ) 2.471 GHz	(Δ) 0.573 dBm			
2	N	1	f	9.847 GHz	-55.814 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency

Auto Tune

Center Freq
13.015000000 GHz

Start Freq
30.000000 MHz

Stop Freq
26.000000000 GHz

CF Step
2.597000000 GHz
Auto Man

Freq Offset
0 Hz

10. RADIATED TEST RESULTS

10.1. 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.

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= $10\log(1/x)$ For this sample B mode = 0.05dB (duty cycle >98%); G mode = 0.3dB; N mode = 0.32dB.

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.

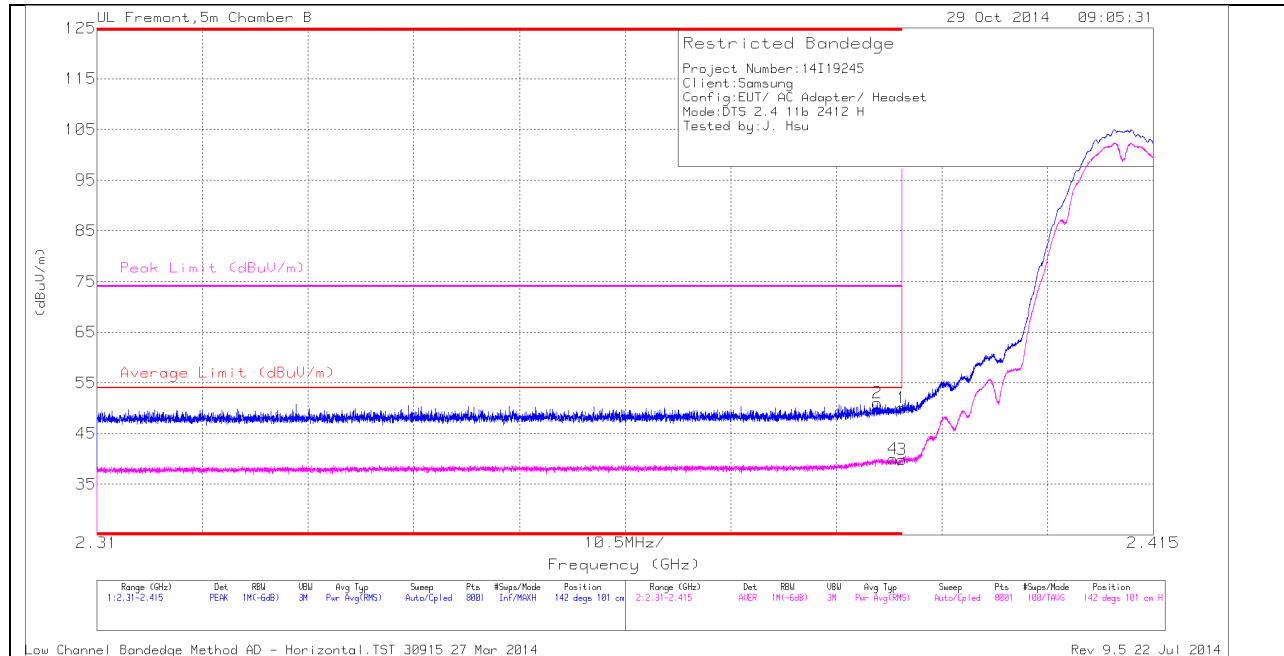
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

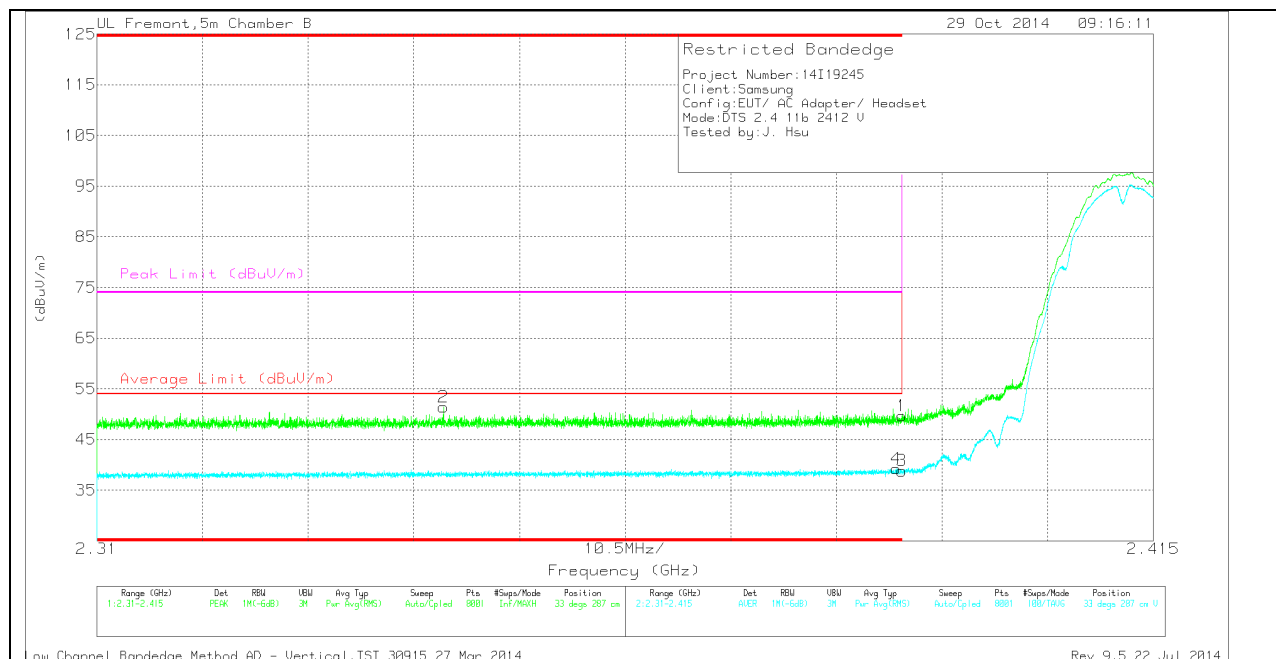
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
1	* 2.39	40.63	PK	32.1	-22.7	0	50.03	-	-	74	-23.97	142	101	H
2	* 2.388	41.66	PK	32.1	-22.7	0	51.06	-	-	74	-22.94	142	101	H
3	* 2.39	30.42	RMS	32.1	-22.7	.05	39.87	54	-14.13	-	-	142	101	H
4	* 2.389	30.61	RMS	32.1	-22.7	.05	40.06	54	-13.94	-	-	142	101	H

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.39	40.31	PK	32.1	-22.7	0	49.71	-	-	74	-24.29	33	287	V
2	* 2.344	42.33	PK	31.9	-22.8	0	51.43	-	-	74	-22.57	33	287	V
3	* 2.39	29.36	RMS	32.1	-22.7	.05	38.81	54	-15.19	-	-	33	287	V
4	* 2.389	29.8	RMS	32.1	-22.7	.05	39.25	54	-14.75	-	-	33	287	V

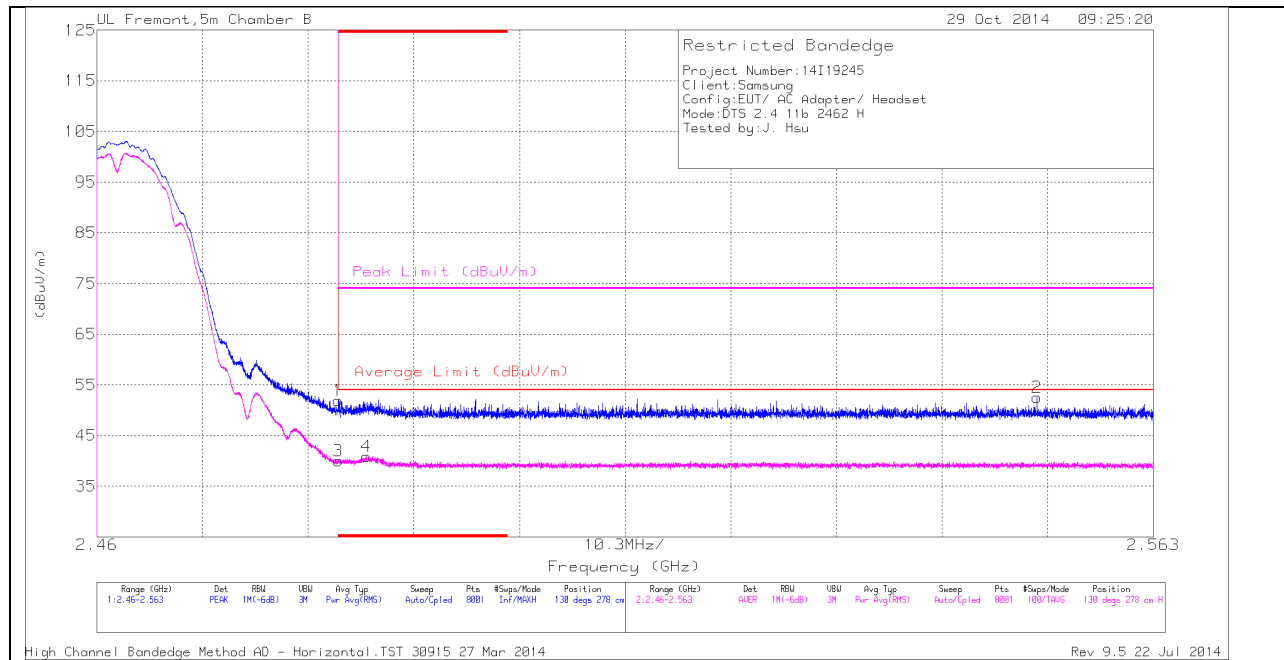
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

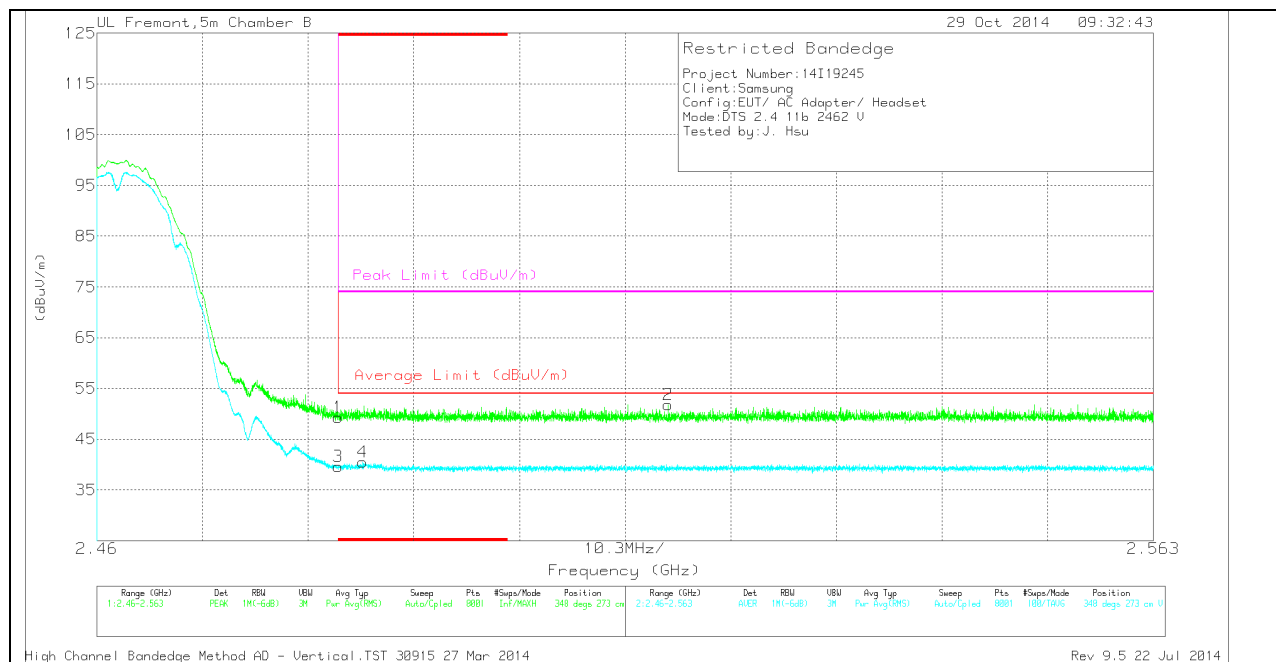
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Filter/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	42.15	PK	32.4	-22.6	0	51.95	-	-	74	-22.05	130	278	H
3	* 2.484	30.12	RMS	32.4	-22.6	.05	39.97	54	-14.03	-	-	130	278	H
4	* 2.486	30.96	RMS	32.4	-22.6	.05	40.81	54	-13.19	-	-	130	278	H
2	2.552	42.53	PK	32.5	-22.5	0	52.53	-	-	74	-21.47	130	278	H

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

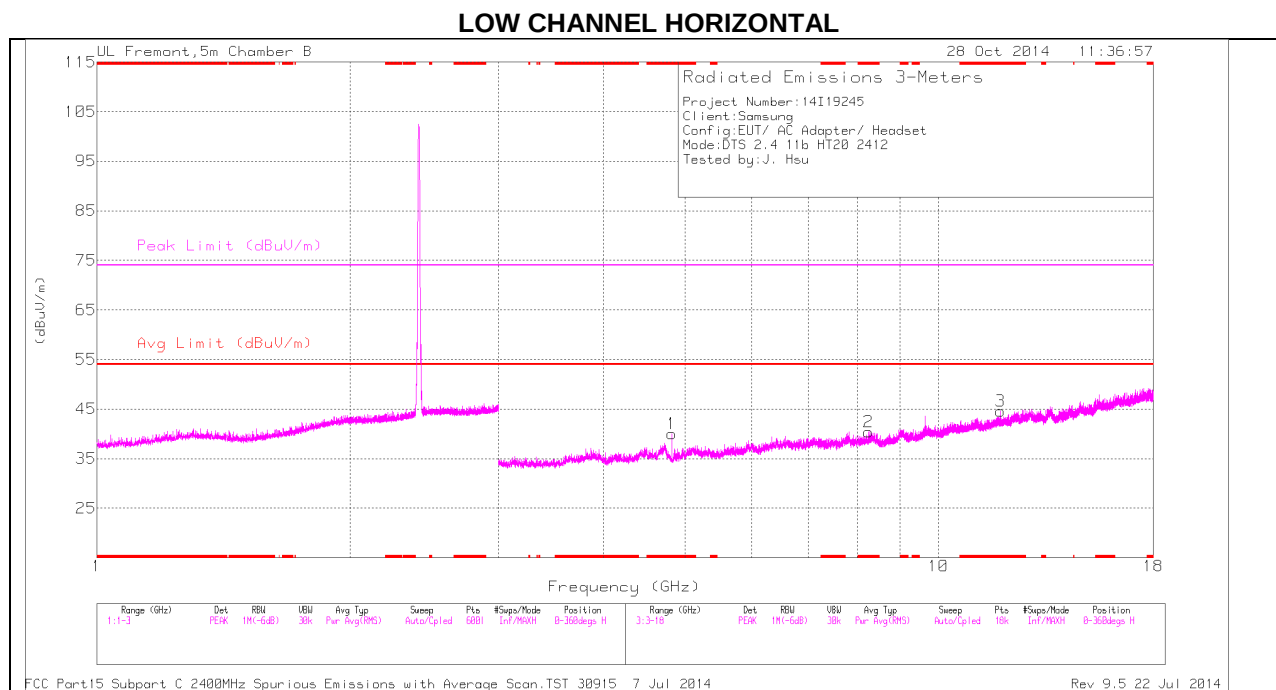
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.47	PK	32.4	-22.6	0	49.27	-	-	74	-24.73	348	273	V
3	* 2.484	29.79	RMS	32.4	-22.6	.05	39.64	54	-14.36	-	-	348	273	V
4	* 2.486	30.62	RMS	32.4	-22.6	.05	40.47	54	-13.53	-	-	348	273	V
2	2.516	41.83	PK	32.5	-22.5	0	51.83	-	-	74	-22.17	348	273	V

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

PK - Peak detector

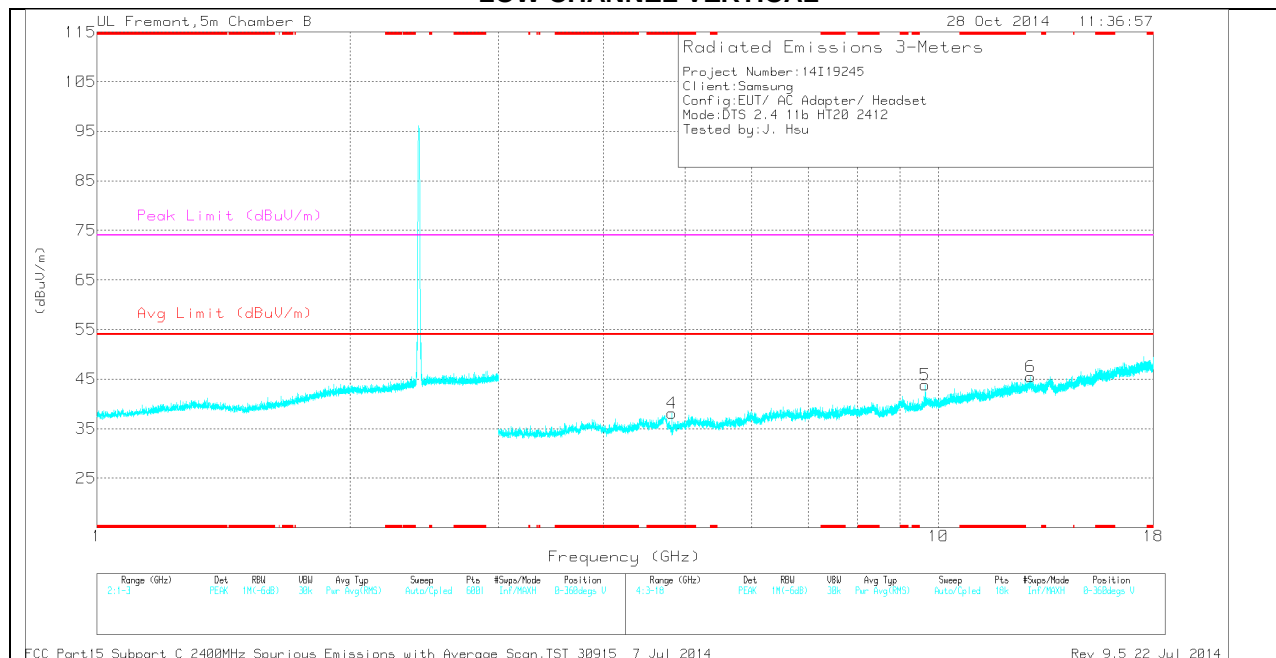
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.824	35.84	PK	34.2	-30	0	40.04	-	-	74	-33.96	0-360	199	H
2	* 8.261	31.44	PK	35.7	-26.8	0	40.34	-	-	74	-33.66	0-360	101	H
3	* 11.852	29	PK	38.4	-22.8	0	44.6	-	-	74	-29.4	0-360	199	H
4	* 4.824	33.86	PK	34.2	-30	0	38.06	-	-	74	-35.94	0-360	199	V
5	9.648	31.24	PK	36.8	-24.2	0	43.84	-	-	-	-	0-360	101	V
6	12.871	27.29	PK	39.2	-21	0	45.49	-	-	-	-	0-360	101	V

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

PK - Peak detector

Radiated Emissions

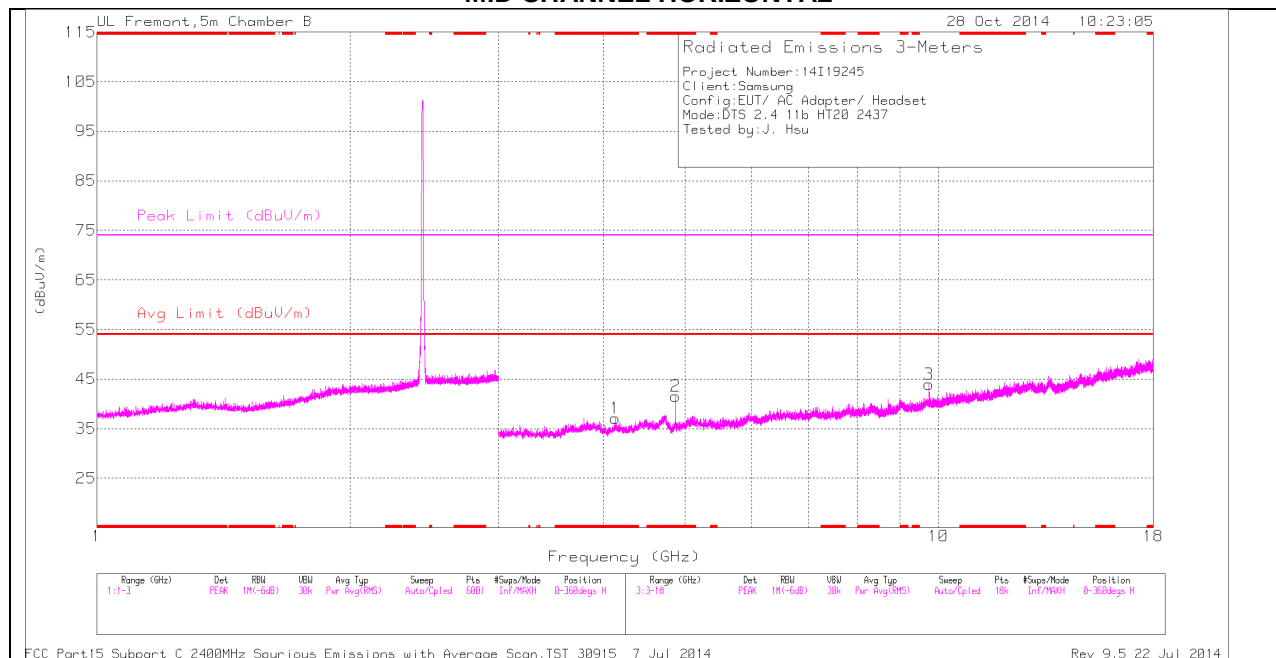
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 11.851	34.84	PK2	38.4	-22.8	0	50.44	-	-	74	-23.56	297	199	H
* 11.851	23.58	MAV1	38.4	-22.8	0	39.18	54	-14.82	-	-	297	199	H

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

PK2 - KDB558074 Method: Maximum Peak

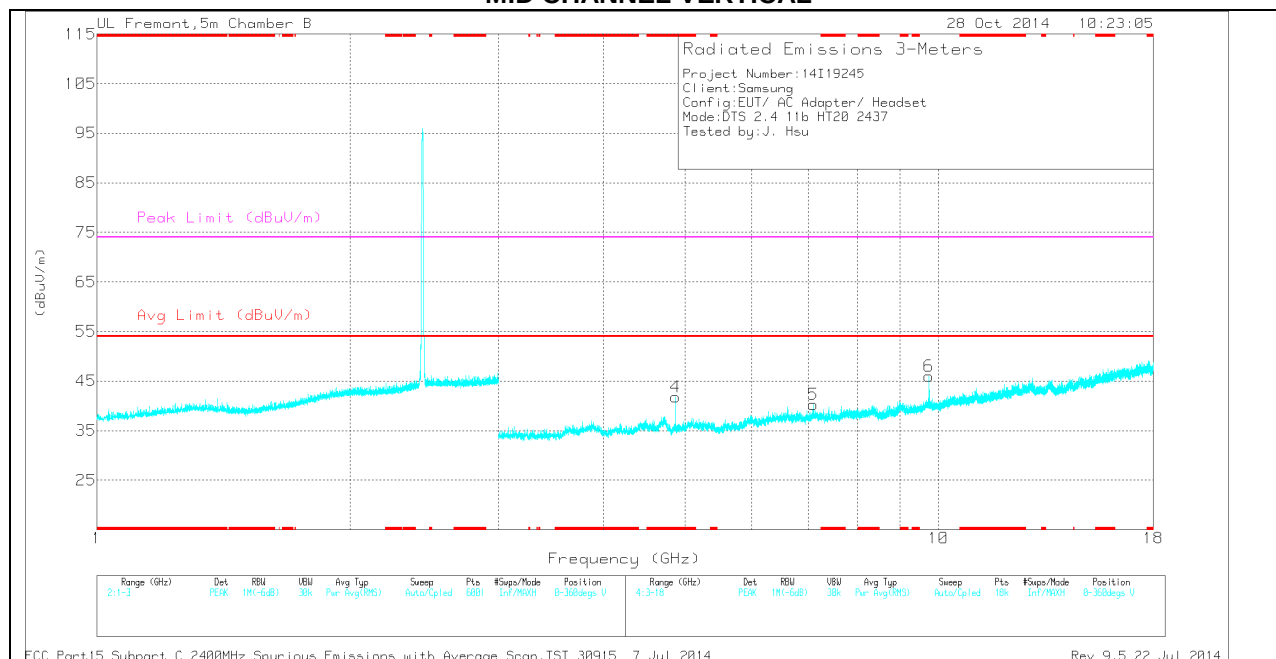
MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.132	33.84	PK	33.6	-30.3	0	37.14	-	-	74	-36.86	0-360	200	H
2	* 4.874	37.89	PK	34.2	-30.6	0	41.49	-	-	74	-32.51	0-360	200	H
4	* 4.874	38.19	PK	34.2	-30.6	0	41.79	-	-	74	-32.21	0-360	200	V
5	7.102	32.1	PK	35.6	-27.4	0	40.3	-	-	-	-	0-360	200	V
3	9.748	31.26	PK	36.9	-24.2	0	43.96	-	-	-	-	0-360	101	H
6	9.748	33.32	PK	36.9	-24.2	0	46.02	-	-	-	-	0-360	200	V

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

PK - Peak detector

Radiated Emissions

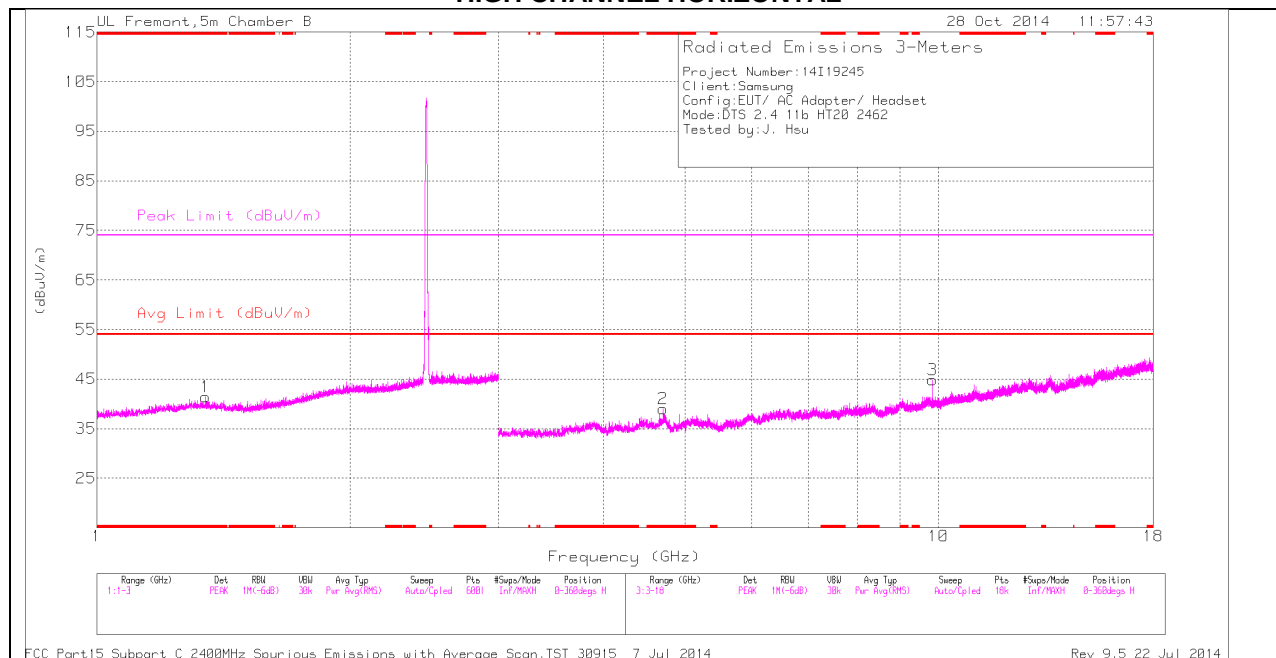
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	43.53	PK2	34.2	-30.6	0	47.13	-	-	74	-26.87	36	303	H
* 4.874	37.59	MAV1	34.2	-30.6	0	41.19	54	-12.81	-	-	36	303	H
* 4.874	44.28	PK2	34.2	-30.6	0	47.88	-	-	74	-26.12	281	251	V
* 4.874	38.82	MAV1	34.2	-30.6	0	42.42	54	-11.58	-	-	281	251	V

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

PK2 - KDB558074 Method: Maximum Peak

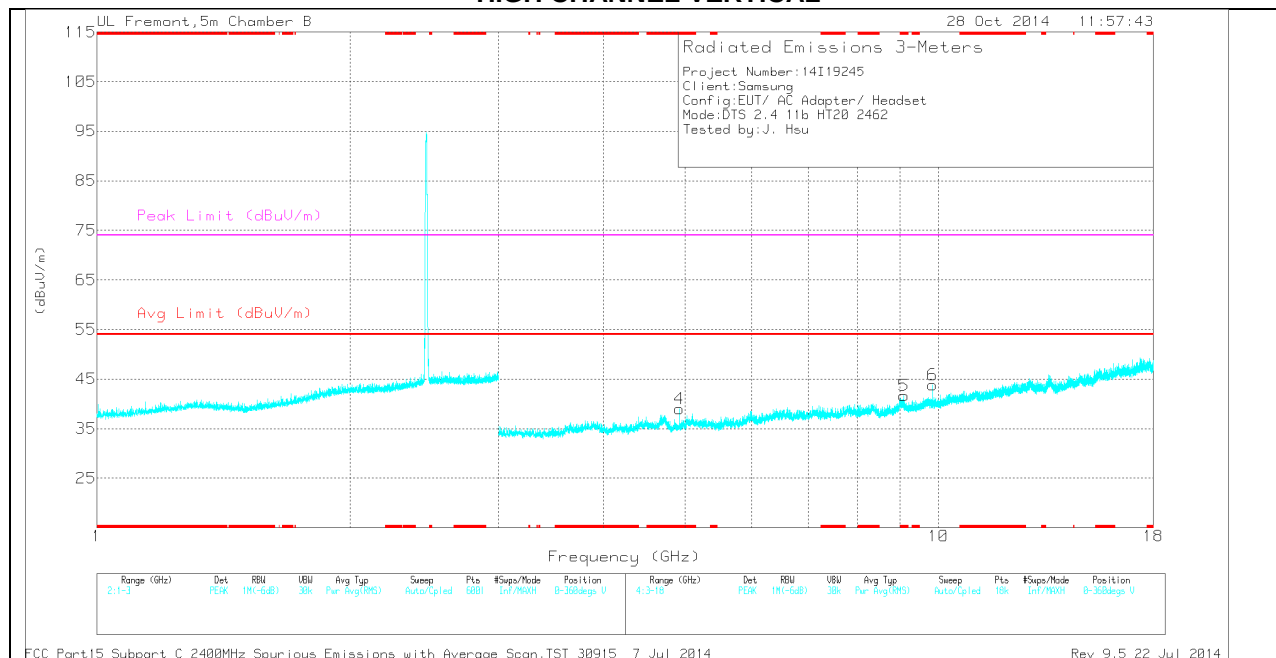
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.346	37	PK	28.7	-24.3	0	41.4	-	-	74	-32.6	0-360	200	H
2	* 4.709	34.47	PK	34.2	-29.7	0	38.97	-	-	74	-35.03	0-360	199	H
4	* 4.924	35.68	PK	34.2	-30.9	0	38.98	-	-	74	-35.02	0-360	199	V
5	* 9.1	30.38	PK	36.3	-25	0	41.68	-	-	74	-32.32	0-360	101	V
3	9.848	32.37	PK	37	-24.5	0	44.87	-	-	-	-	0-360	199	H
6	9.848	31.33	PK	37	-24.5	0	43.83	-	-	-	-	0-360	199	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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
* 9.1	36.73	PK2	36.3	-25	0	48.03	-	-	74	-25.97	359	100	V
* 9.102	25.97	MAV1	36.3	-25	0	37.27	54	-16.73	-	-	359	100	V

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

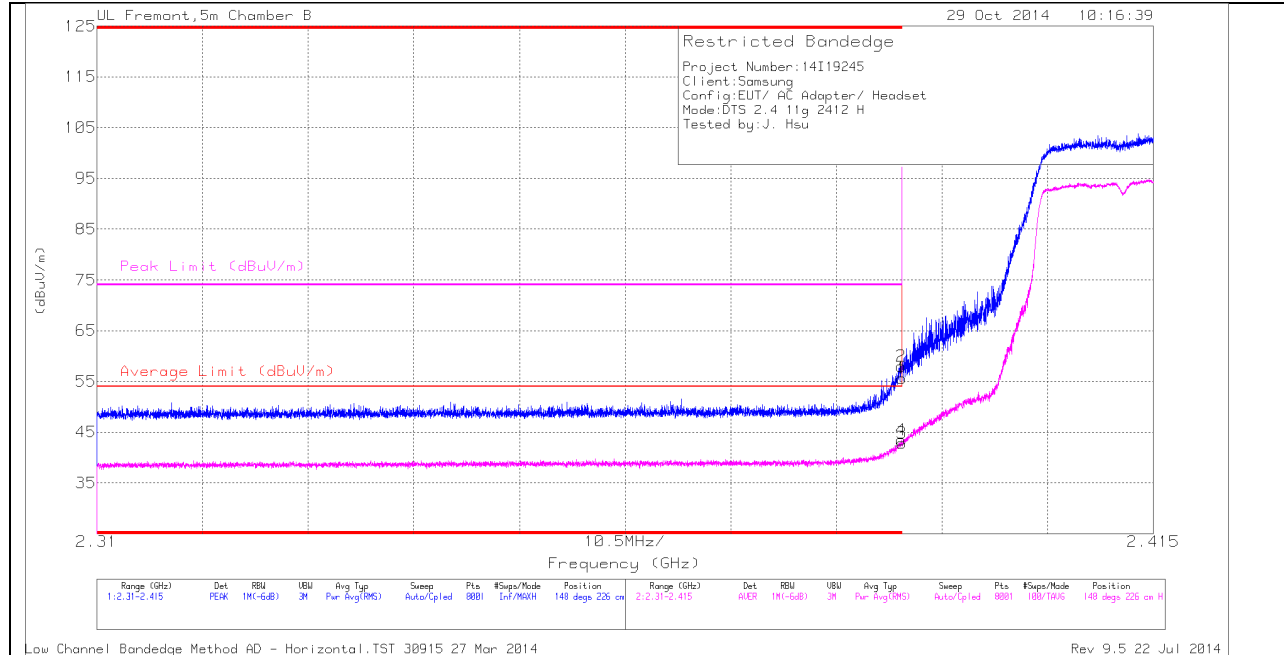
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

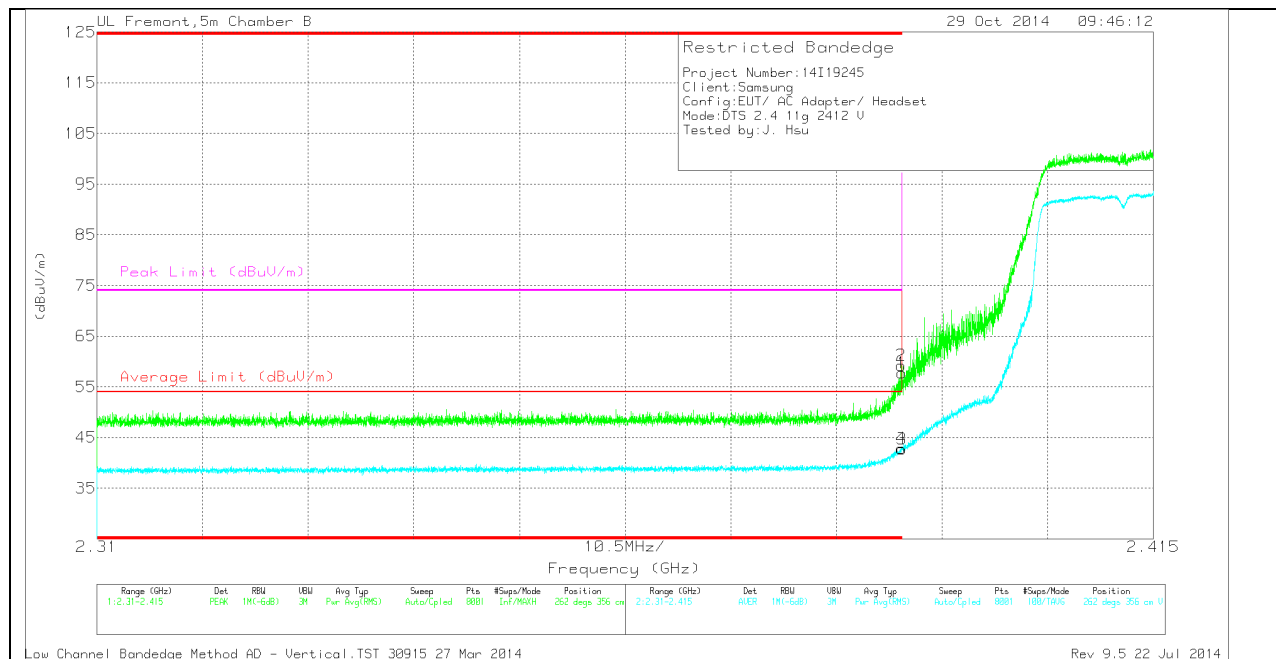
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
1	* 2.39	46.27	PK	32.1	-22.7	0	55.67	-	-	74	-18.33	148	226	H
2	* 2.39	48.63	PK	32.1	-22.7	0	58.03	-	-	74	-15.97	148	226	H
3	* 2.39	33.09	RMS	32.1	-22.7	.3	42.79	54	-11.21	-	-	148	226	H
4	* 2.39	33.73	RMS	32.1	-22.7	.3	43.43	54	-10.57	-	-	148	226	H

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filt 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	* 2.39	48.33	PK	32.1	-22.7	0	57.73	-	-	74	-16.27	262	356	V
2	* 2.39	49.78	PK	32.1	-22.7	0	59.18	-	-	74	-14.82	262	356	V
3	* 2.39	32.99	RMS	32.1	-22.7	.3	42.69	54	-11.31	-	-	262	356	V
4	* 2.39	33.17	RMS	32.1	-22.7	.3	42.87	54	-11.13	-	-	262	356	V

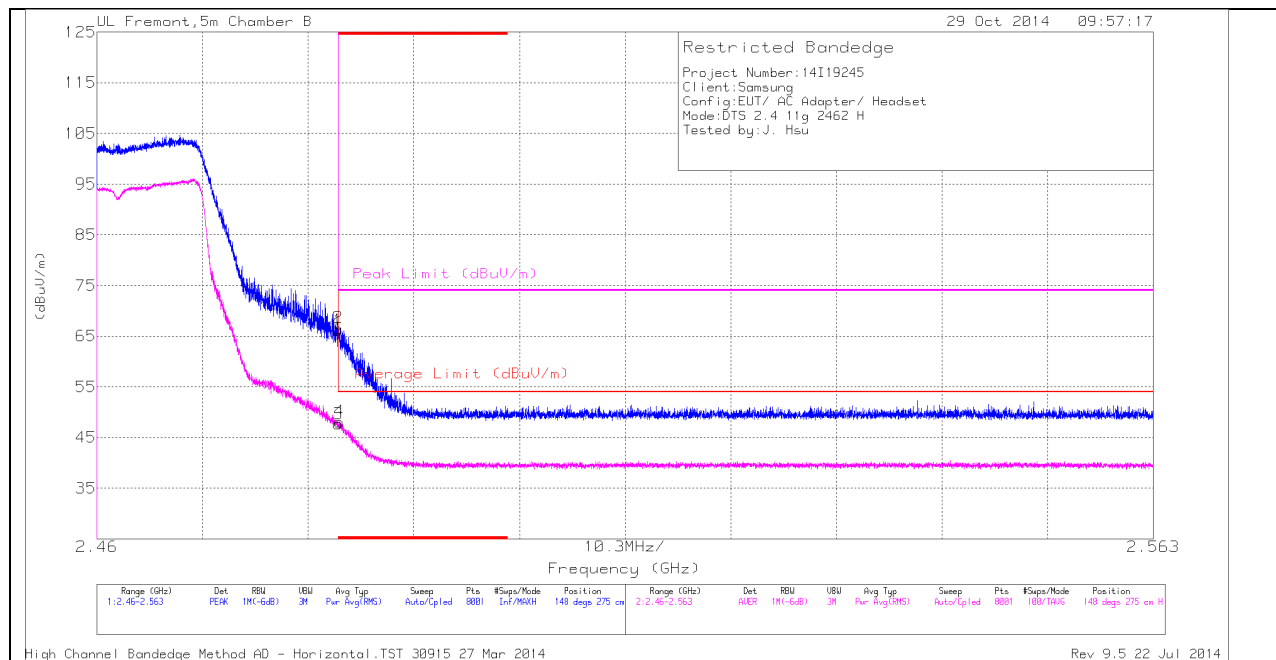
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

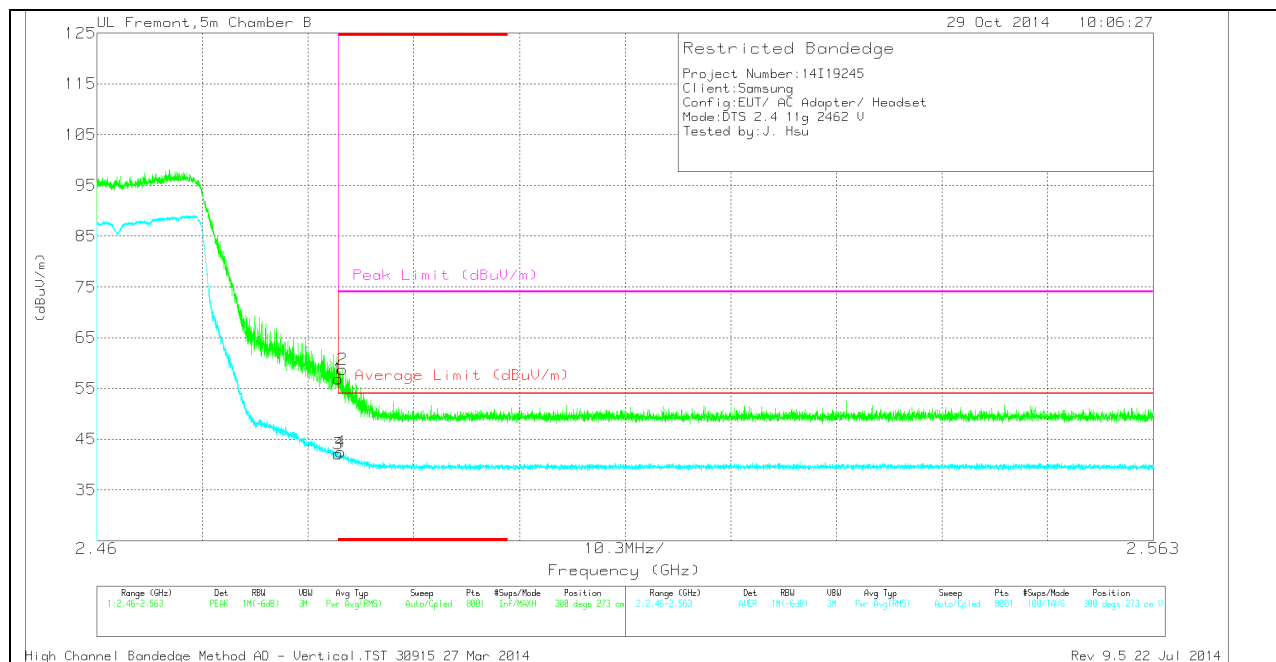
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filt 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	56.36	PK	32.4	-22.6	0	66.16	-	-	74	-7.84	148	275	H
2	* 2.484	56.82	PK	32.4	-22.6	0	66.62	-	-	74	-7.38	148	275	H
3	* 2.484	37.63	RMS	32.4	-22.6	.3	47.73	54	-6.27	-	-	148	275	H
4	* 2.484	38.02	RMS	32.4	-22.6	.3	48.12	54	-5.88	-	-	148	275	H

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

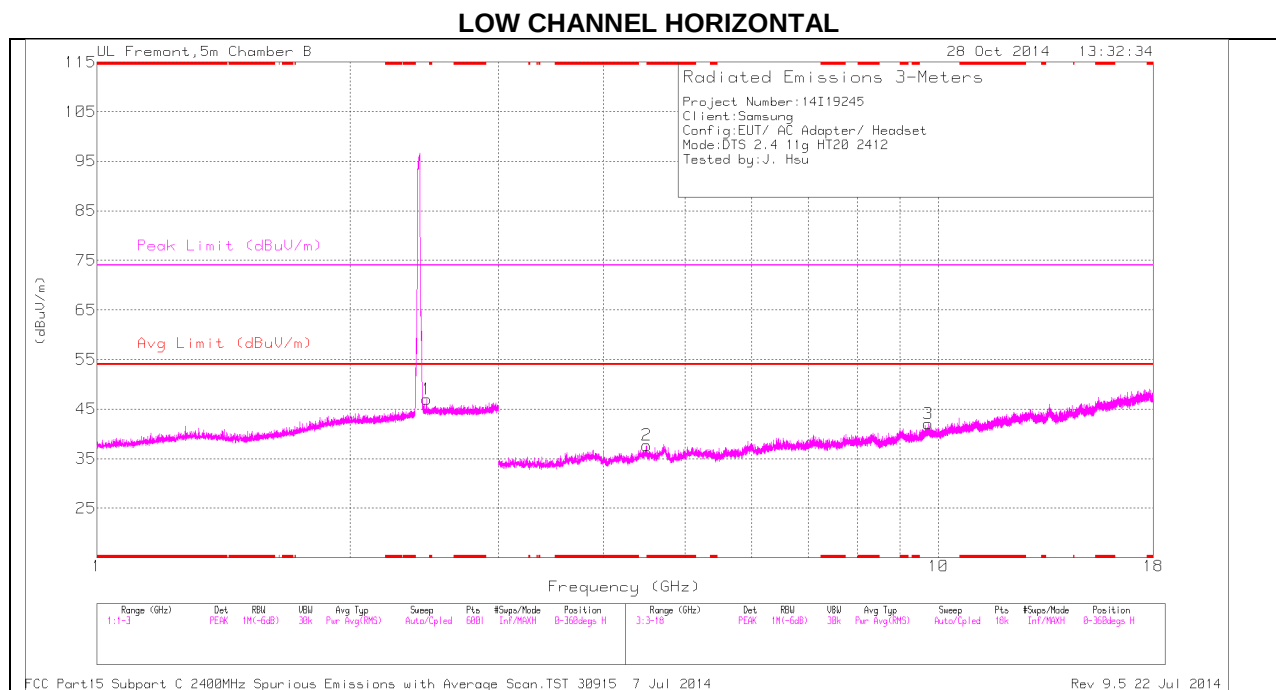
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.11	PK	32.4	-22.6	0	56.91	-	-	74	-17.09	300	273	V
2	* 2.484	48.98	PK	32.4	-22.6	0	58.78	-	-	74	-15.22	300	273	V
3	* 2.484	31.97	RMS	32.4	-22.6	.3	42.07	54	-11.93	-	-	300	273	V
4	* 2.484	32.38	RMS	32.4	-22.6	.3	42.48	54	-11.52	-	-	300	273	V

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

PK - Peak detector

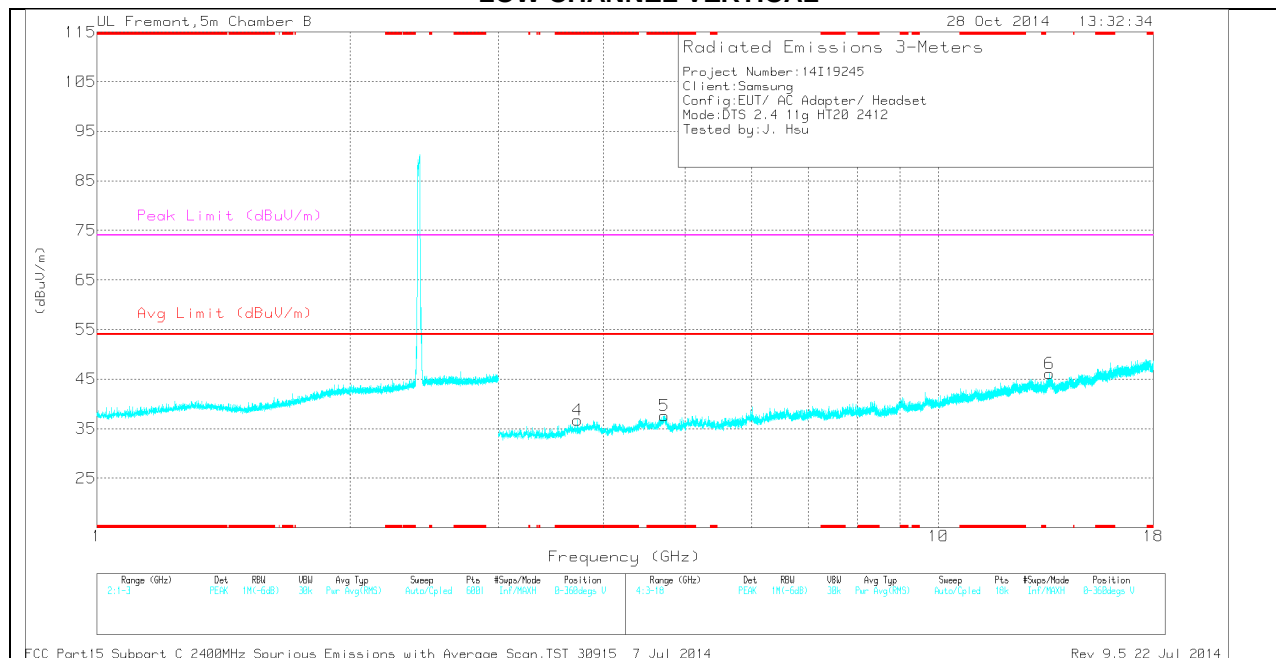
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
4	* 3.727	34.86	PK	33.4	-31.5	0	36.76	-	-	74	-37.24	0-360	101	V
5	* 4.726	32.74	PK	34.2	-29.3	0	37.64	-	-	74	-36.36	0-360	101	V
1	2.464	37.34	PK	32.3	-22.6	0	47.04	-	-	-	-	0-360	101	H
2	4.497	33.07	PK	34	-29.4	0	37.67	-	-	-	-	0-360	200	H
3	9.727	29.33	PK	36.9	-24.2	0	42.03	-	-	-	-	0-360	101	H
6	13.555	27.83	PK	38.9	-20.6	0	46.13	-	-	-	-	0-360	101	V

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

PK - Peak detector

Radiated Emissions

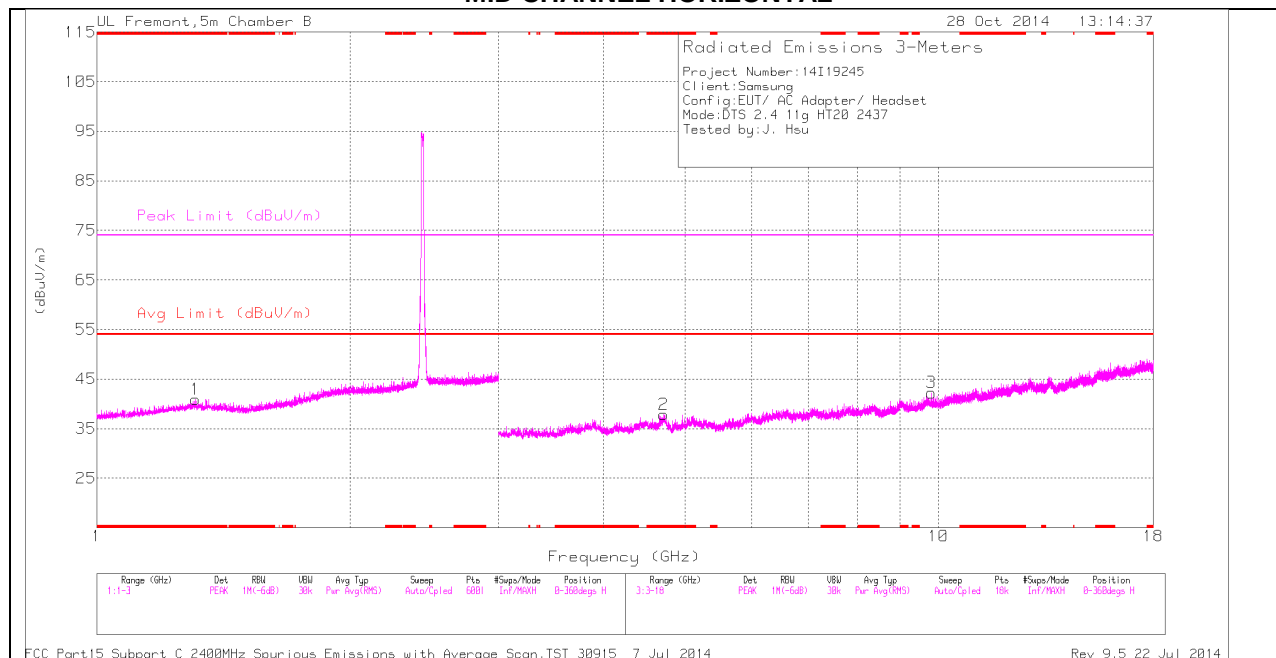
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.724	41.47	PK2	34.2	-29.3	0	46.37	-	-	74	-27.63	359	100	V
* 4.726	29.99	MAV1	34.2	-29.3	.3	35.18	54	-18.82	-	-	359	100	V

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

PK2 - KDB558074 Method: Maximum Peak

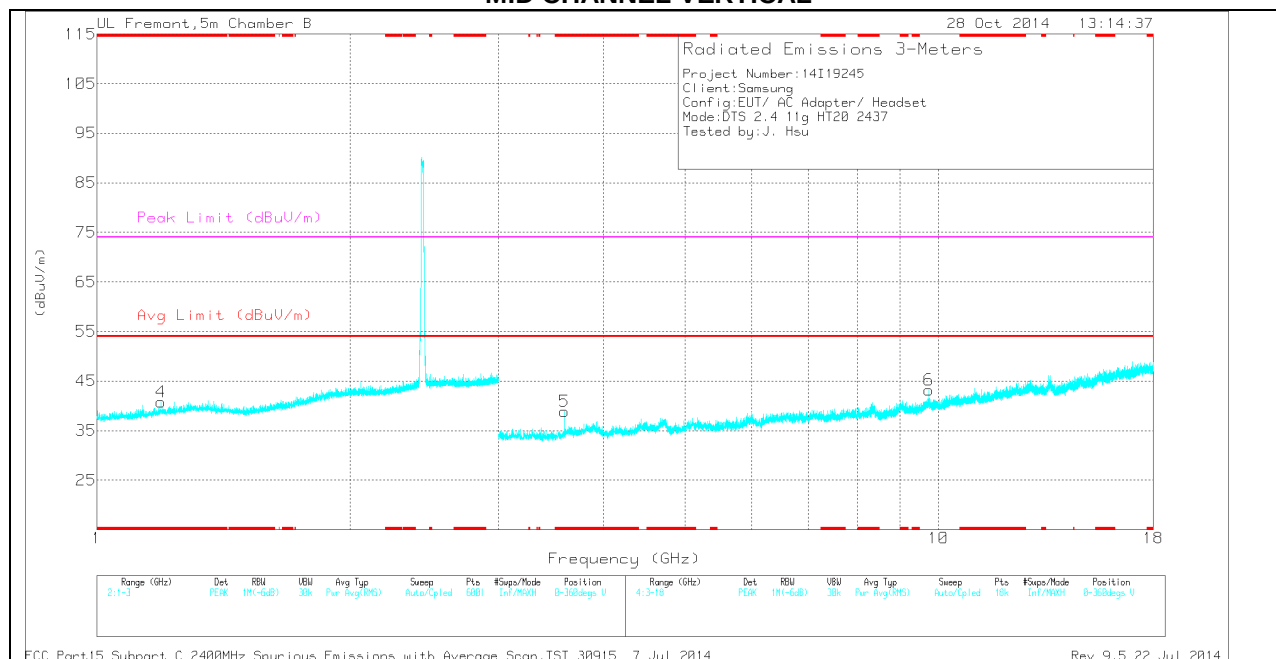
MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.31	36.44	PK	28.8	-24.3	0	40.94	-	-	74	-33.06	0-360	100	H
4	* 1.192	37.13	PK	28.1	-24.4	0	40.83	-	-	74	-33.17	0-360	101	V
2	* 4.714	33.16	PK	34.2	-29.5	0	37.86	-	-	74	-36.14	0-360	199	H
5	* 3.594	36.82	PK	33.1	-31.1	0	38.82	-	-	74	-35.18	0-360	199	V
6	9.747	30.59	PK	36.9	-24.3	0	43.19	-	-	-	-	0-360	101	V
3	9.806	29.84	PK	36.9	-24.5	0	42.24	-	-	-	-	0-360	101	H

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

PK - Peak detector

Radiated Emissions

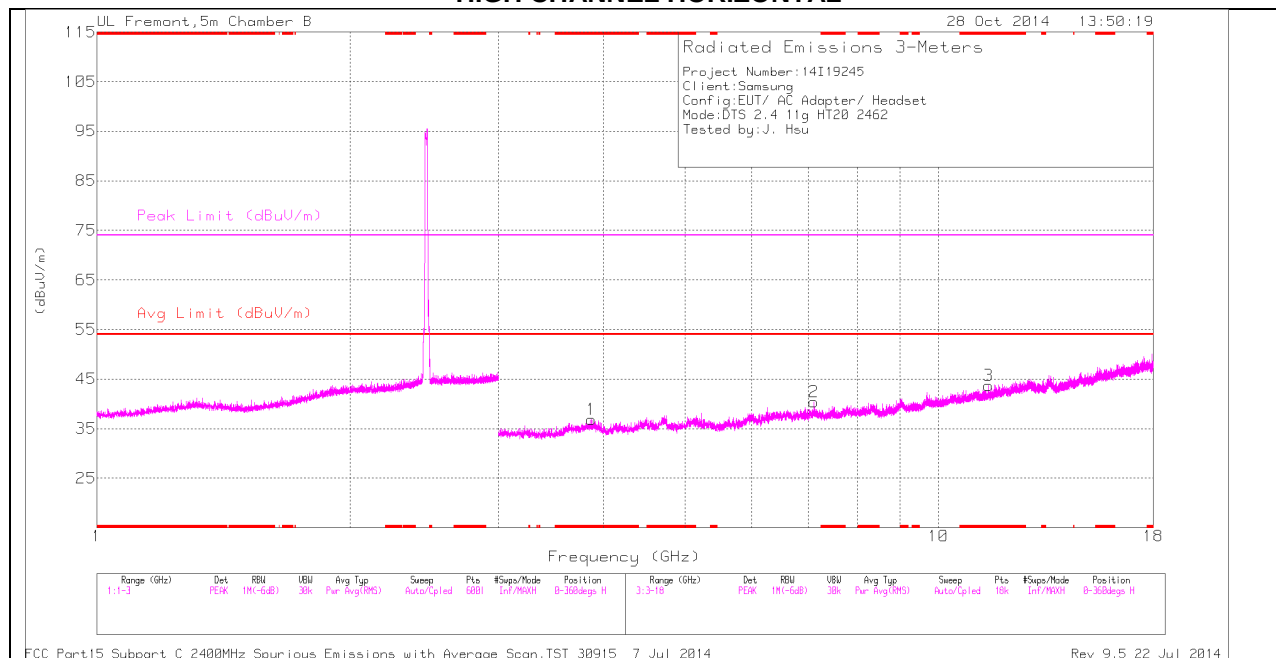
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.594	41.16	PK2	33.1	-31.1	0	43.16	-	-	74	-30.84	315	213	V
* 3.592	29.39	MAV1	33.1	-31.1	.3	31.68	54	-22.32	-	-	315	213	V

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

PK2 - KDB558074 Method: Maximum Peak

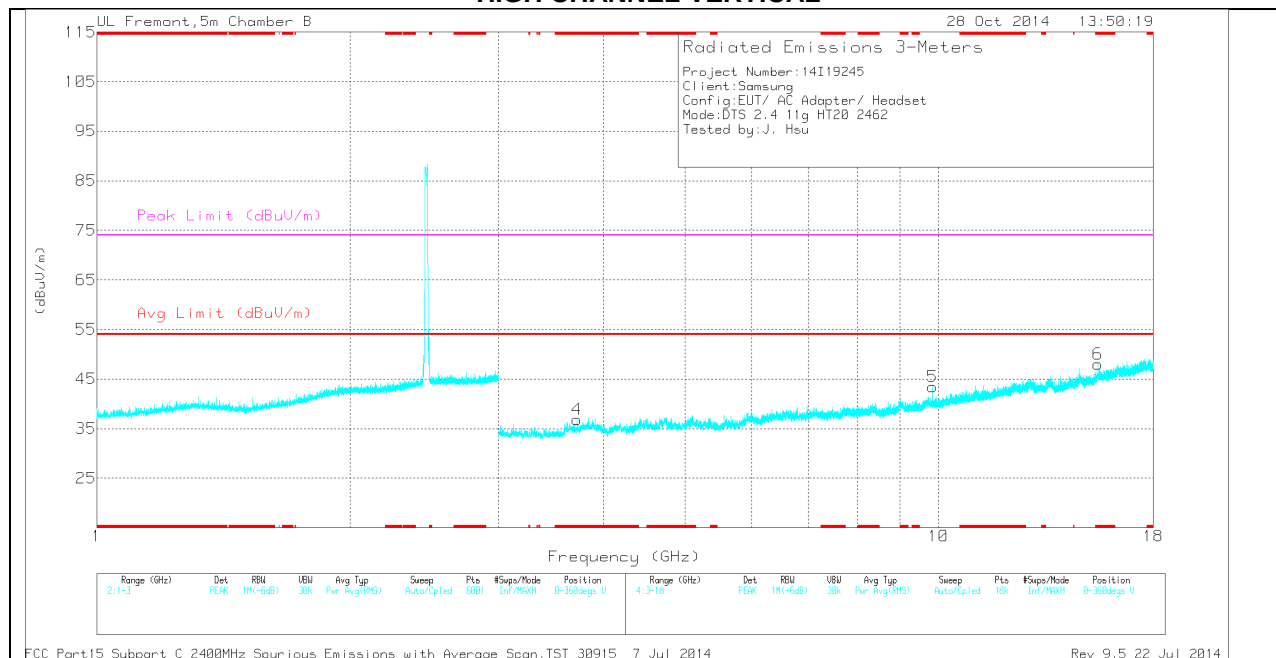
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.869	33.5	PK	33.7	-30.4	0	36.8	-	-	74	-37.2	0-360	200	H
3	* 11.477	28.27	PK	38	-22.6	0	43.67	-	-	74	-30.33	0-360	101	H
4	* 3.721	34.93	PK	33.4	-31.5	0	36.83	-	-	74	-37.17	0-360	101	V
6	* 15.474	27.95	PK	40.4	-20.3	0	48.05	-	-	74	-25.95	0-360	101	V
2	7.109	32.1	PK	35.6	-27.3	0	40.4	-	-	-	-	0-360	101	H
5	9.847	30.92	PK	37	-24.5	0	43.42	-	-	-	-	0-360	200	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /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
* 15.474	34.69	PK2	40.4	-20.3	0	54.79	-	-	74	-19.21	223	100	V
* 15.475	22.77	MAV1	40.4	-20.3	.3	43.16	54	-10.84	-	-	223	100	V

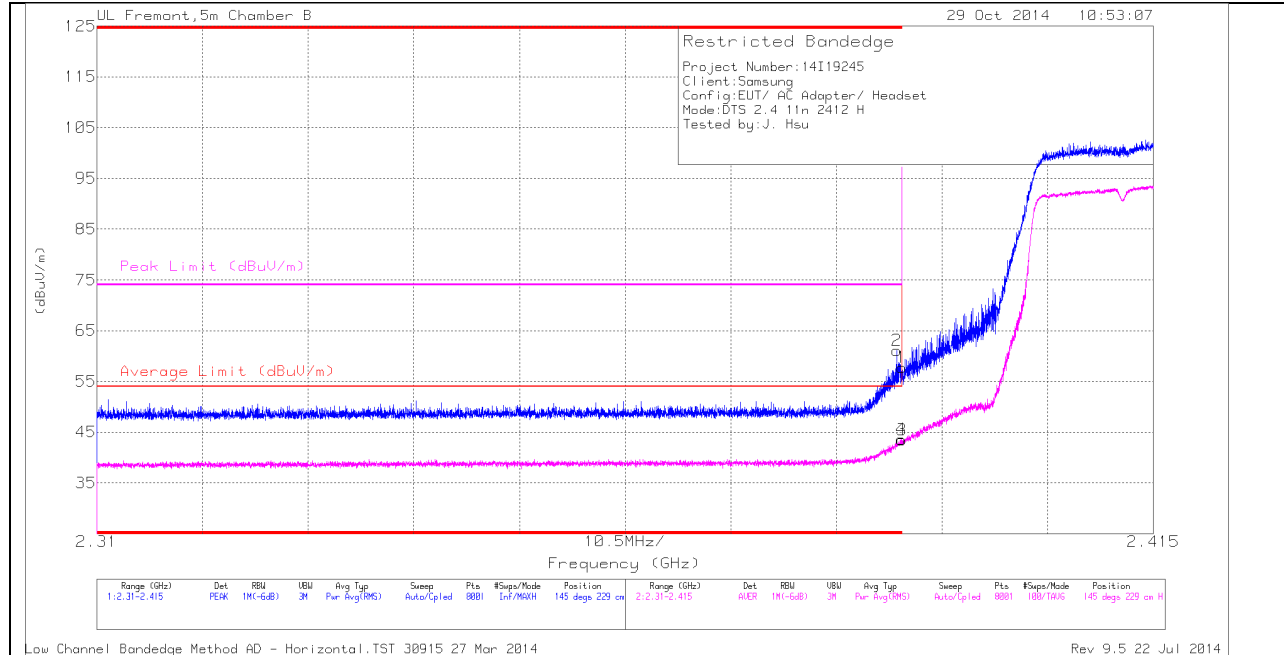
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND **RESTRICTED BANDEDGE (LOW CHANNEL)**

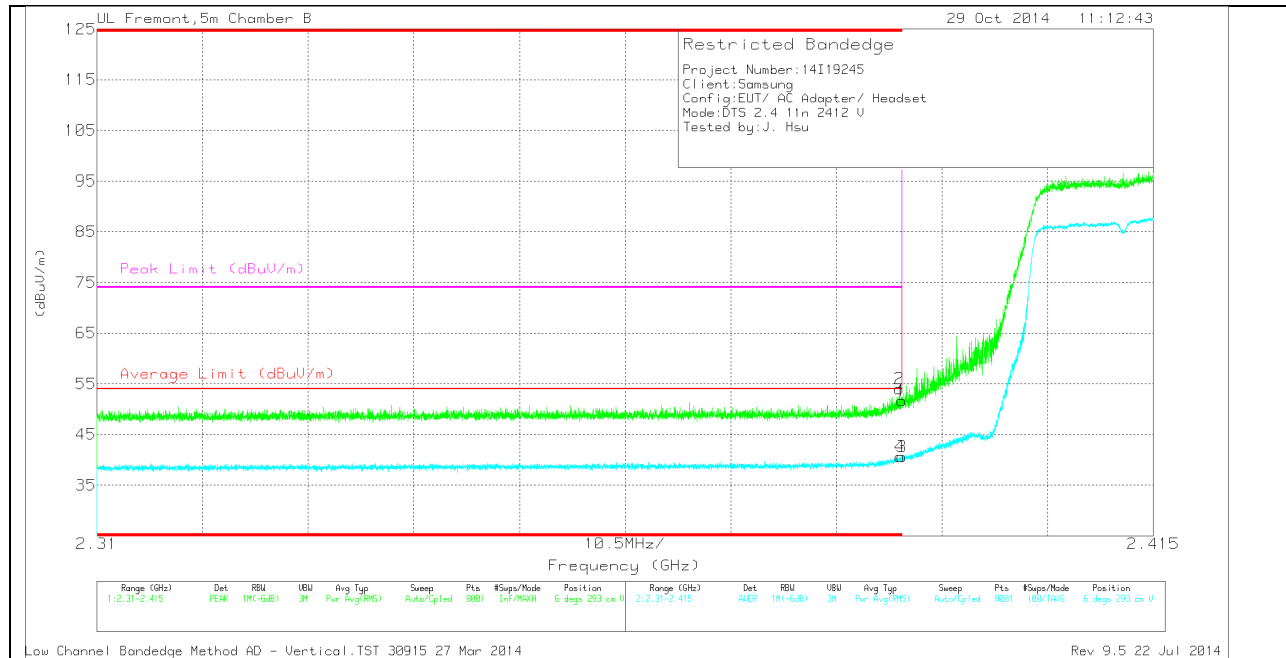
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.39	48.36	PK	32.1	-22.7	0	57.76	-	-	74	-16.24	145	229	H
2	* 2.389	51.65	PK	32.1	-22.7	0	61.05	-	-	74	-12.95	145	229	H
3	* 2.39	33.72	RMS	32.1	-22.7	.32	43.44	54	-10.56	-	-	145	229	H
4	* 2.39	33.92	RMS	32.1	-22.7	.32	43.64	54	-10.36	-	-	145	229	H

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filt 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	* 2.39	42.25	PK	32.1	-22.7	0	51.65	-	-	74	-22.35	6	293	V
2	* 2.39	44.62	PK	32.1	-22.7	0	54.02	-	-	74	-19.98	6	293	V
3	* 2.39	30.89	RMS	32.1	-22.7	.32	40.61	54	-13.39	-	-	6	293	V
4	* 2.39	30.9	RMS	32.1	-22.7	.32	40.62	54	-13.38	-	-	6	293	V

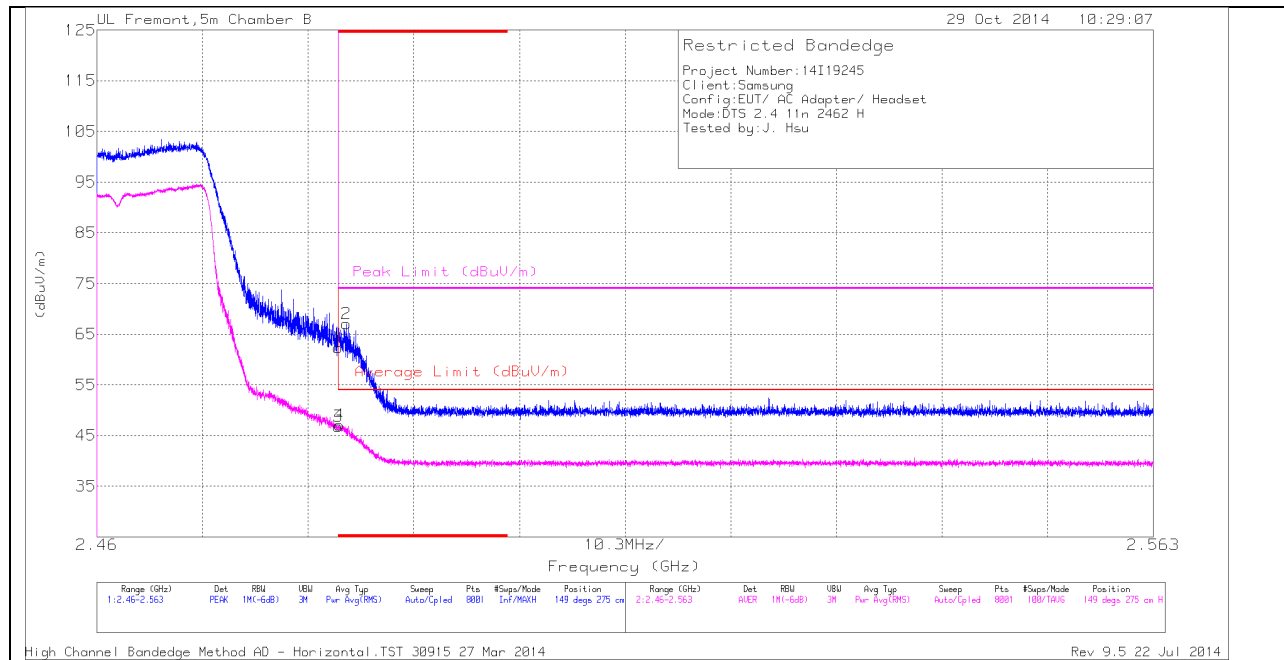
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

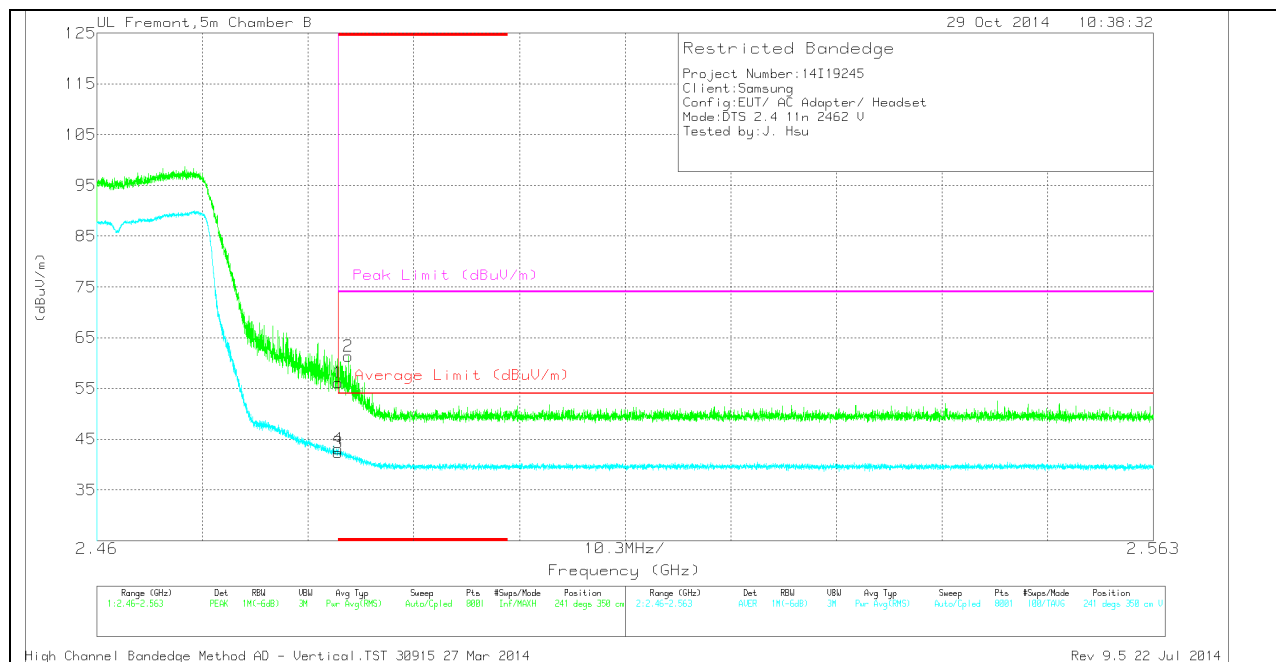
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	*2.484	52.51	PK	32.4	-22.6	0	62.31	-	-	74	-11.69	149	275	H
2	*2.484	57.22	PK	32.4	-22.6	0	67.02	-	-	74	-6.98	149	275	H
3	*2.484	36.65	RMS	32.4	-22.6	.32	46.77	54	-7.23	-	-	149	275	H
4	*2.484	36.94	RMS	32.4	-22.6	.32	47.06	54	-6.94	-	-	149	275	H

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

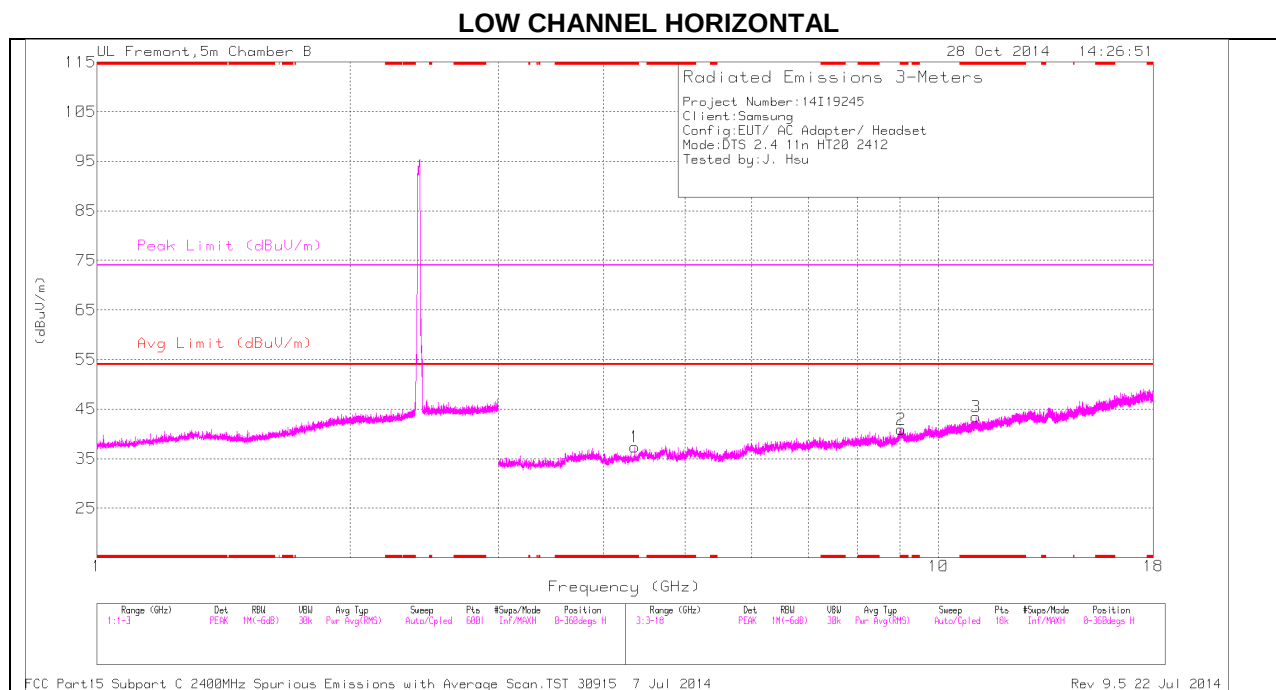
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.38	PK	32.4	-22.6	0	56.18	-	-	74	-17.82	241	350	V
2	* 2.485	51.59	PK	32.4	-22.6	0	61.39	-	-	74	-12.61	241	350	V
3	* 2.484	32.17	RMS	32.4	-22.6	.32	42.29	54	-11.71	-	-	241	350	V
4	* 2.484	32.92	RMS	32.4	-22.6	.32	43.04	54	-10.96	-	-	241	350	V

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

PK - Peak detector

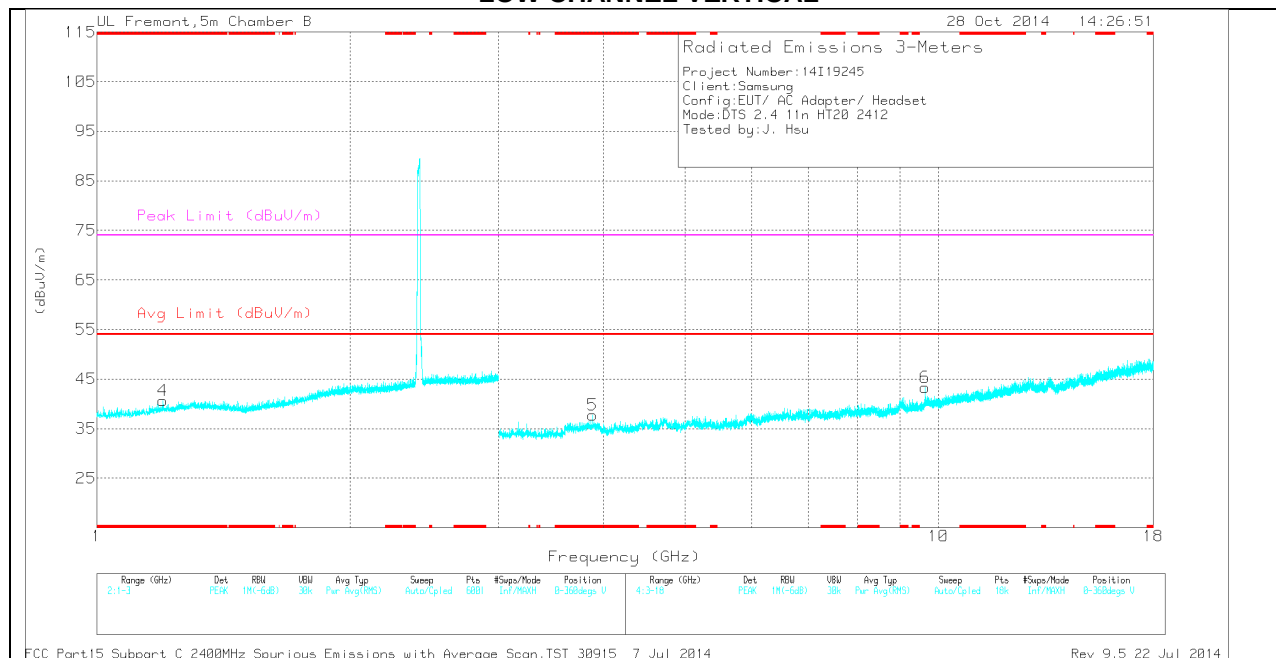
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
4	* 1.197	36.82	PK	28.2	-24.4	0	40.62	-	-	74	-33.38	0-360	101	V
1	* 4.354	34.79	PK	33.7	-31.1	0	37.39	-	-	74	-36.61	0-360	199	H
2	* 9.031	29.12	PK	36.2	-24.4	0	40.92	-	-	74	-33.08	0-360	199	H
3	* 11.073	28.14	PK	37.8	-22.5	0	43.44	-	-	74	-30.56	0-360	199	H
5	* 3.881	34.33	PK	33.8	-30.4	0	37.73	-	-	74	-36.27	0-360	199	V
6	9.648	30.75	PK	36.8	-24.2	0	43.35	-	-	-	-	0-360	101	V

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

PK - Peak detector

Radiated Emissions

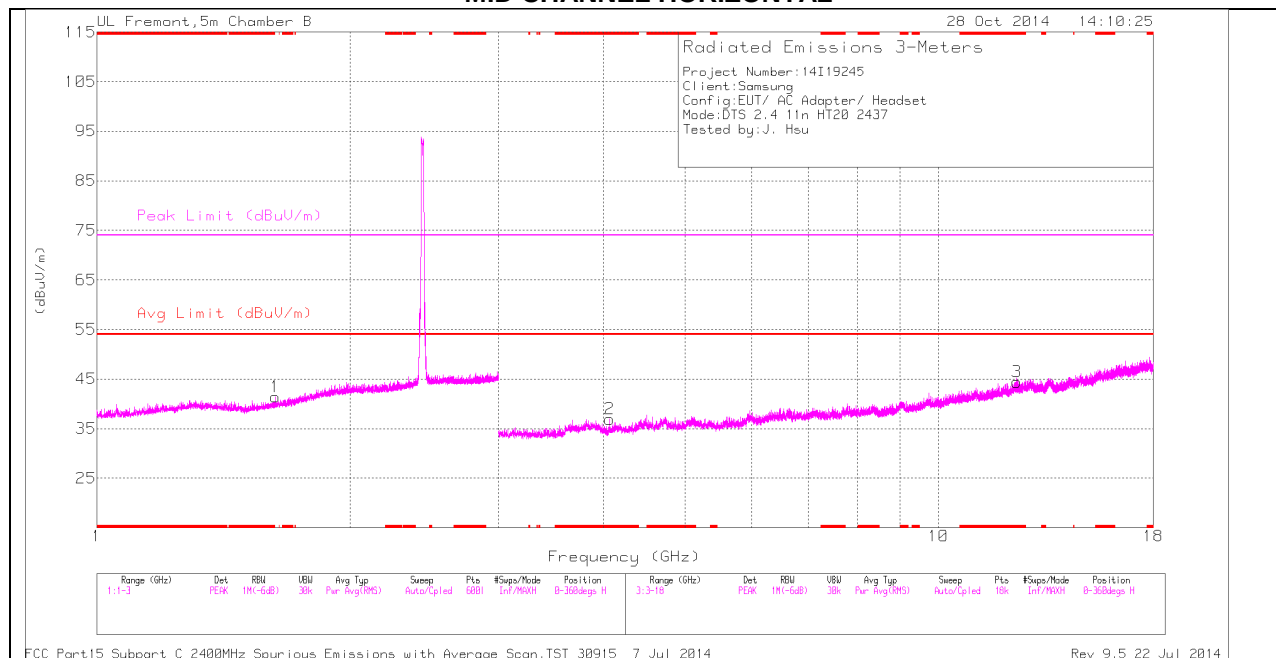
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 11.072	35.05	PK2	37.8	-22.5	0	50.35	-	-	74	-23.65	359	101	H
* 11.071	24.32	MAV1	37.8	-22.5	.32	39.94	54	-14.06	-	-	359	101	H

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

PK2 - KDB558074 Method: Maximum Peak

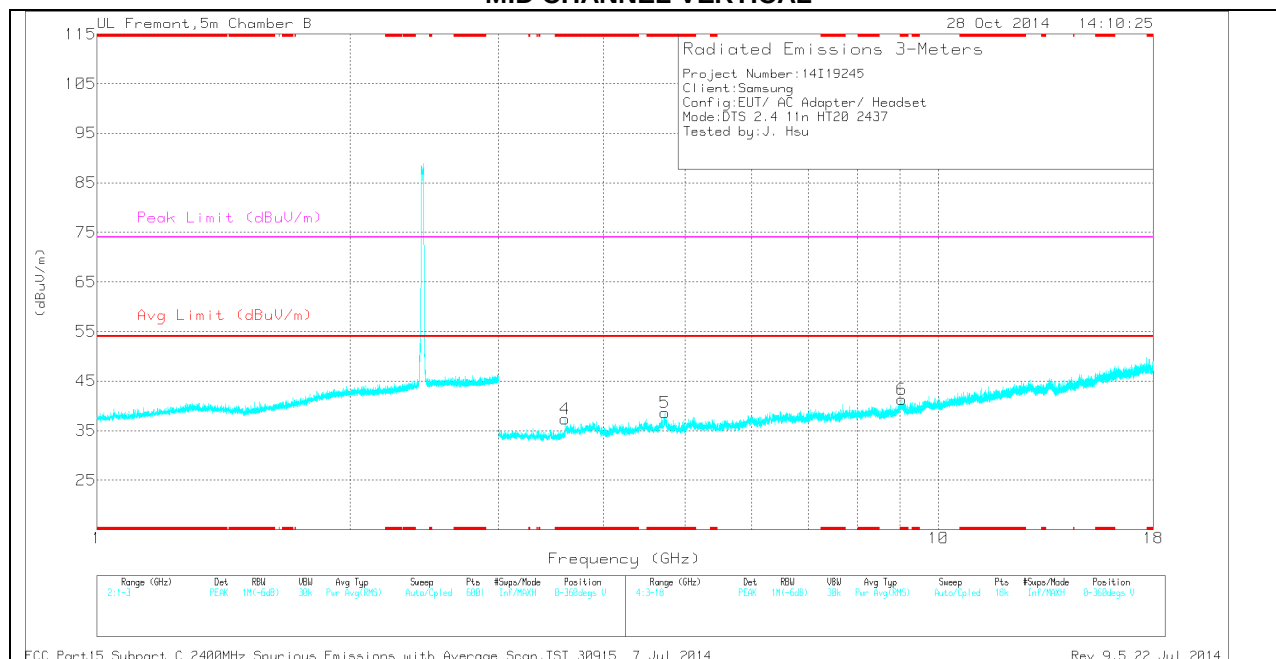
MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.069	34.31	PK	33.6	-31	0	36.91	-	-	74	-37.09	0-360	199	H
3	* 12.382	27.4	PK	39	-22	0	44.4	-	-	74	-29.6	0-360	101	H
4	* 3.6	35.26	PK	33.1	-31	0	37.36	-	-	74	-36.64	0-360	199	V
5	* 4.727	33.72	PK	34.2	-29.3	0	38.62	-	-	74	-35.38	0-360	199	V
6	* 9.047	29.48	PK	36.2	-24.4	0	41.28	-	-	74	-32.72	0-360	199	V
1	1.629	36.47	PK	28.7	-23.7	0	41.47	-	-	-	-	0-360	200	H

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

PK - Peak detector

Radiated Emissions

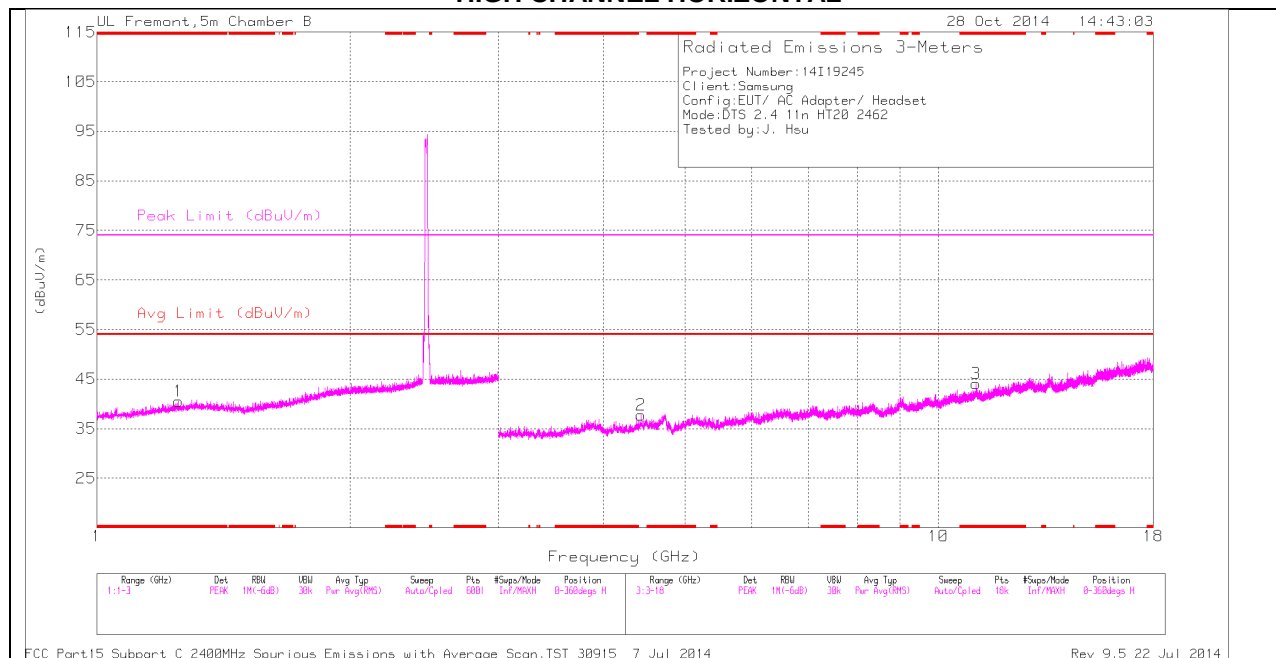
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 12.38	34.54	PK2	39	-22	0	51.54	-	-	74	-22.46	360	100	H
* 12.381	24	MAV1	39	-22	.32	41.32	54	-12.68	-	-	360	100	H

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

PK2 - KDB558074 Method: Maximum Peak

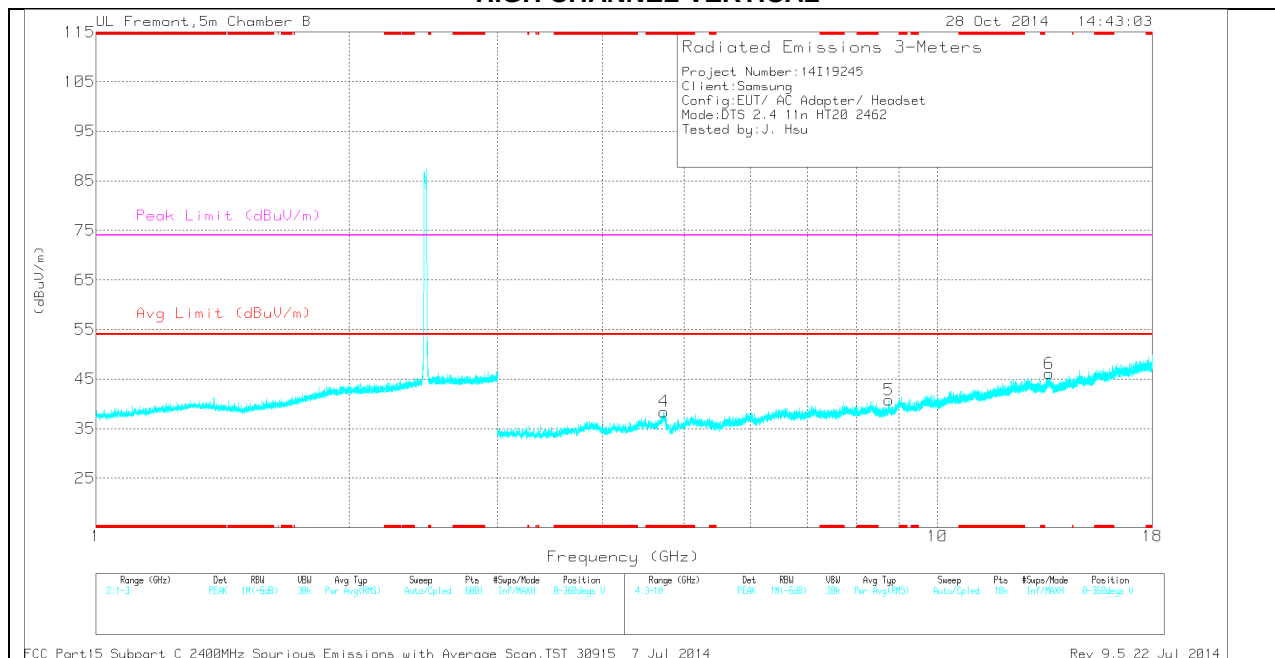
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



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 VERTICAL



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 T345 (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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.25	36.37	PK	28.5	-24.4	0	40.47	-	-	74	-33.53	0-360	200	H
3	* 11.078	28.79	PK	37.8	-22.5	0	44.09	-	-	74	-29.91	0-360	200	H
4	* 4.727	33.53	PK	34.2	-29.3	0	38.43	-	-	74	-35.57	0-360	200	V
2	4.429	33.18	PK	33.9	-29.4	0	37.68	-	-	-	-	0-360	200	H
5	8.761	30.5	PK	36	-25.7	0	40.8	-	-	-	-	0-360	200	V
6	13.574	27.69	PK	38.8	-20.4	0	46.09	-	-	-	-	0-360	101	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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
* 11.078	35.5	PK2	37.8	-22.5	0	50.8	-	-	74	-23.2	359	101	H
* 11.078	24.34	MAV1	37.8	-22.5	.32	39.96	54	-14.04	-	-	359	101	H

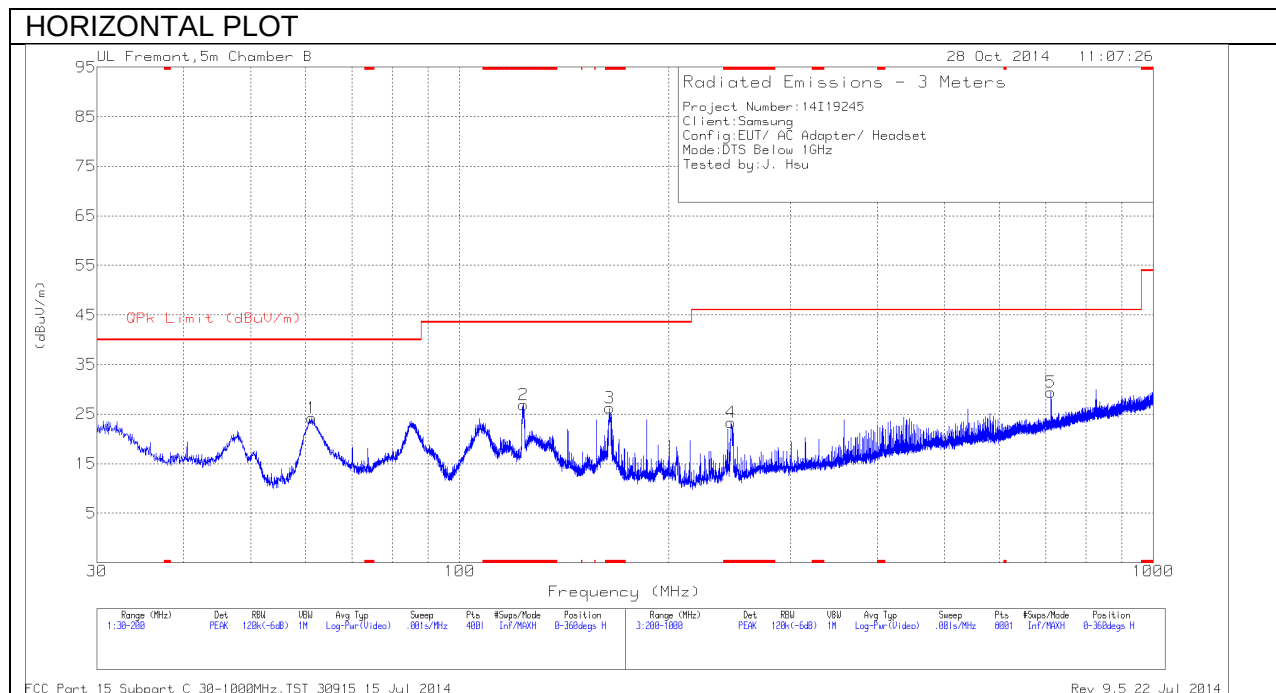
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

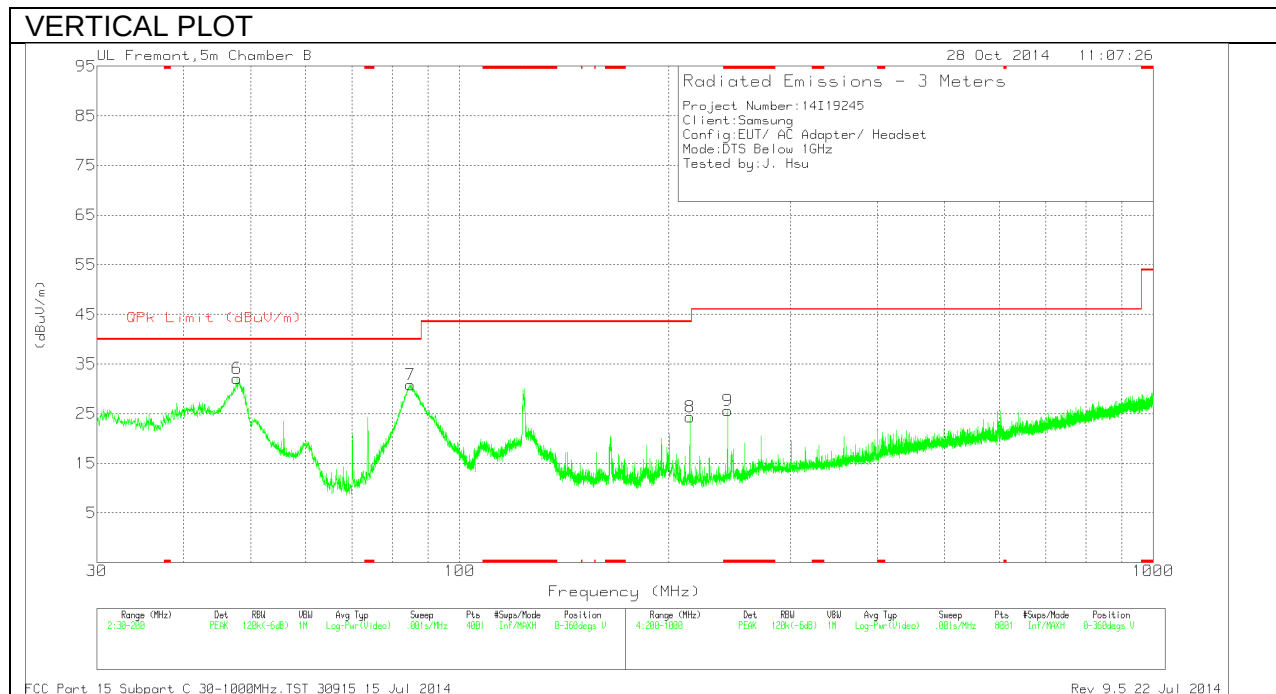
MAV1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST-CASE BELOW 1 GHz

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



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



Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 123.67	40.6	PK	14.1	-27.8	26.9	43.52	-16.62	0-360	300	H
3	* 164.64	41.7	PK	11.8	-27.3	26.2	43.52	-17.32	0-360	200	H
4	* 245.9	38.06	PK	11.7	-26.4	23.36	46.02	-22.66	0-360	101	H
9	* 243.4	40.28	PK	11.7	-26.4	25.58	46.02	-20.44	0-360	200	V
6	47.765	51.74	PK	8.9	-28.6	32.04	40	-7.96	0-360	101	V
1	61.195	45.08	PK	7.5	-28.4	24.18	40	-15.82	0-360	400	H
7	84.91	51.62	PK	7.4	-28.2	30.82	40	-9.18	0-360	101	V
8	214.8	40.57	PK	10.6	-26.8	24.37	43.52	-19.15	0-360	200	V
5	711.7	33.67	PK	20.2	-24.5	29.37	46.02	-16.65	0-360	300	H

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

PK - Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

^{*} Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4 2009.

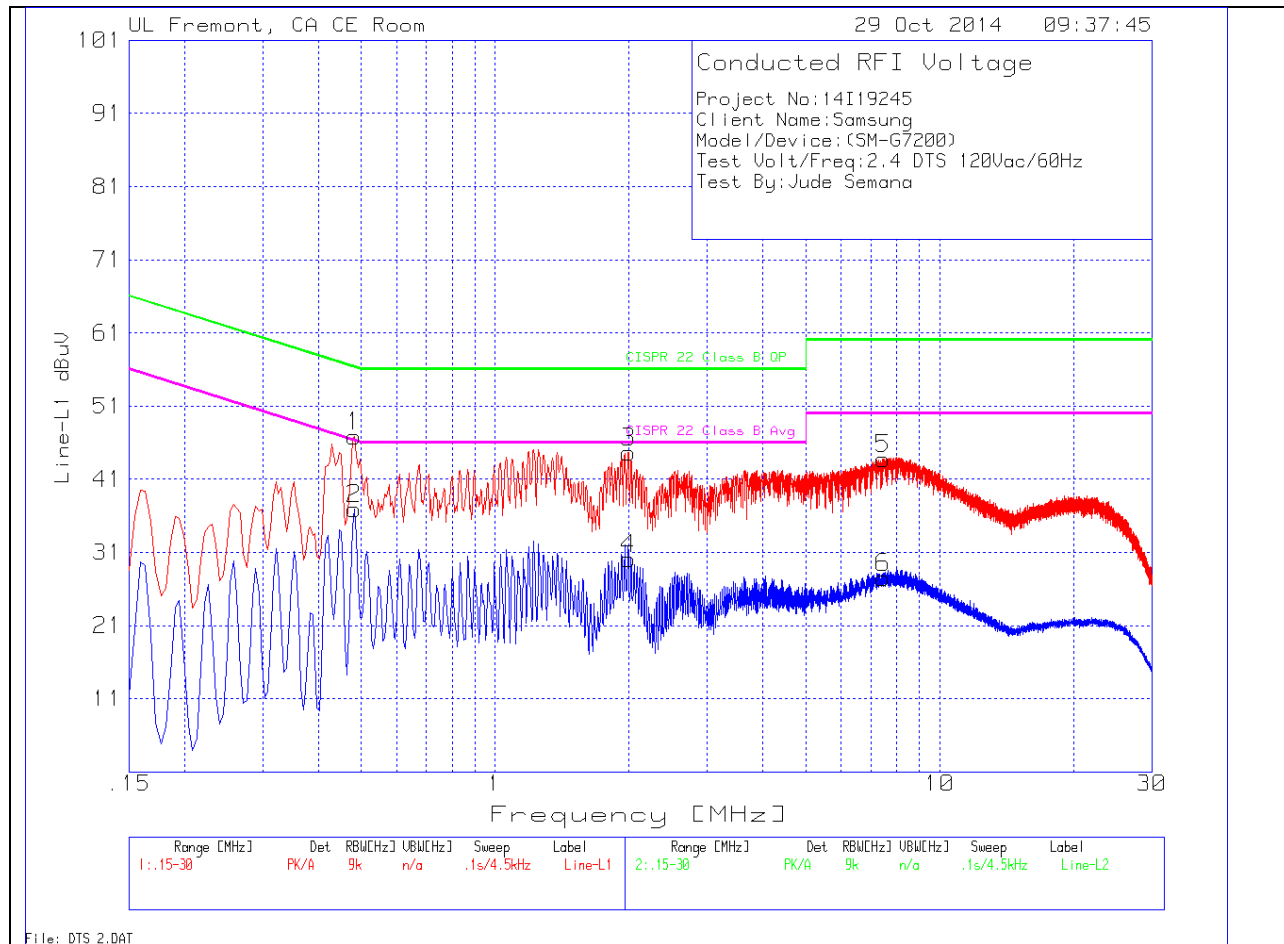
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT

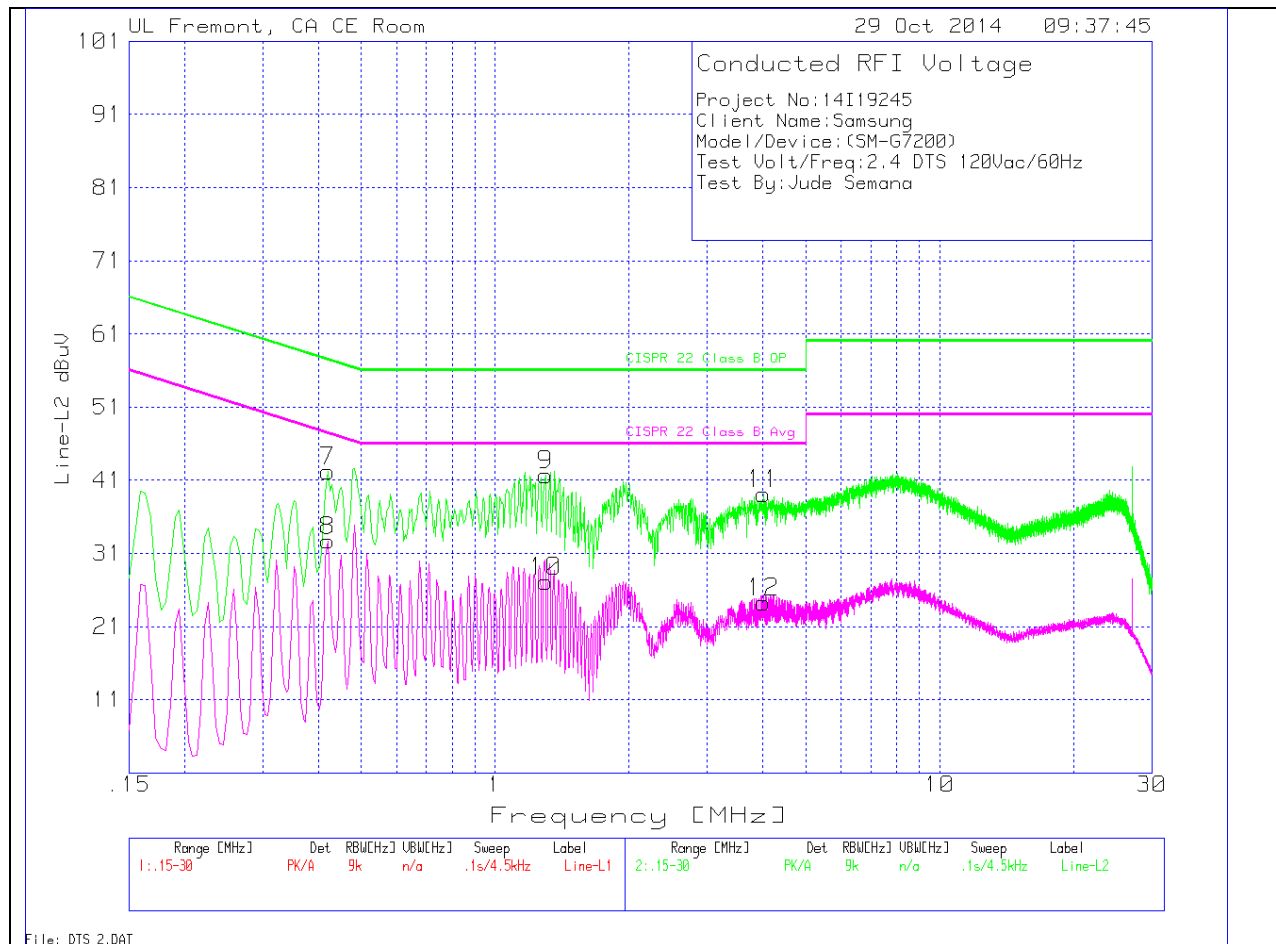


LINE 1 RESULTS

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	.483	46.48	PK	.4	0	46.88	56.3	-9.42	-	-
2	.483	36.53	Av	.4	0	36.93	-	-	46.3	-9.37
3	1.995	44.34	PK	.2	.1	44.64	56	-11.36	-	-
4	1.995	29.75	Av	.2	.1	30.05	-	-	46	-15.95
5	7.449	43.5	PK	.2	.1	43.8	60	-16.2	-	-
6	7.449	27.17	Av	.2	.1	27.47	-	-	50	-22.53

LINE 2 PLOT



LINE 2 RESULTS

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)
7	.42	41.78	PK	.4	0	42.18	57.4	-15.22	-	-
8	.42	32.33	Av	.4	0	32.73	-	-	47.4	-14.67
9	1.2975	41.44	PK	.2	.1	41.74	56	-14.26	-	-
10	1.2975	26.83	Av	.2	.1	27.13	-	-	46	-18.87
11	4.011	38.86	PK	.2	.1	39.16	56	-16.84	-	-
12	4.011	24.01	Av	.2	.1	24.31	-	-	46	-21.69