



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER: SM-G510F

FCC ID: A3LSMG510F

REPORT NUMBER: 14U18192-4 REVISION A

ISSUE DATE: JULY 31, 2014

Prepared for

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	7/17/14	Initial Issue	P. Zhang
A	7/31/14	Updated 6dB plot	P. Zhang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n, ANT+ & NFC

MODEL: SM-G510F

SERIAL NUMBER: FL-253-D (CONDUCTED), FL-253-A (RADIATED)

DATE TESTED: JULY 1-17, 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.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.4-2009.

3. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street
☒ Chamber A	☐ Chamber D
☒ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F

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 18000 MHz	4.94 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n, ANT+ & NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	17.2	52.48
2412 - 2462	802.11g	13.5	22.39
2412 - 2462	802.11n HT20	12.5	17.78

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -4.74 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

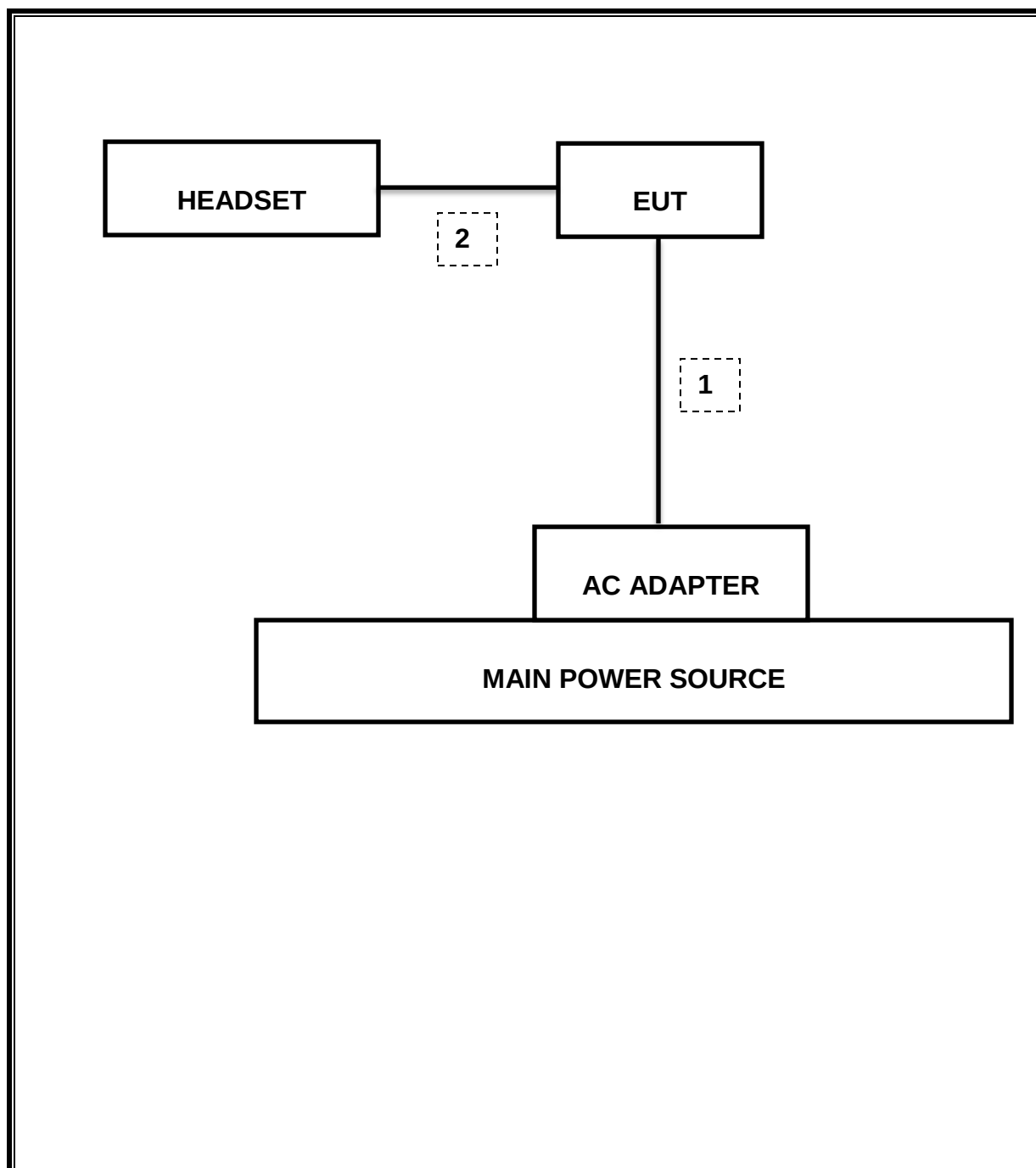
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	ETA0U81EWE	N/A	N/A
Earphone	SAMSUNG	N/A	N/A	N/A

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 exercised the radio card.



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	08/13/14
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/14
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	08/20/14
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		Pass	8.58MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-33.13dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	17.20dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-14.23dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	46.12dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	39.70dBuV/m

9. ANTENNA PORT TEST RESULTS

9.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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	9.03	0.5
Mid	2437	8.58	0.5
High	2462	11.15	0.5
Worst		8.58	

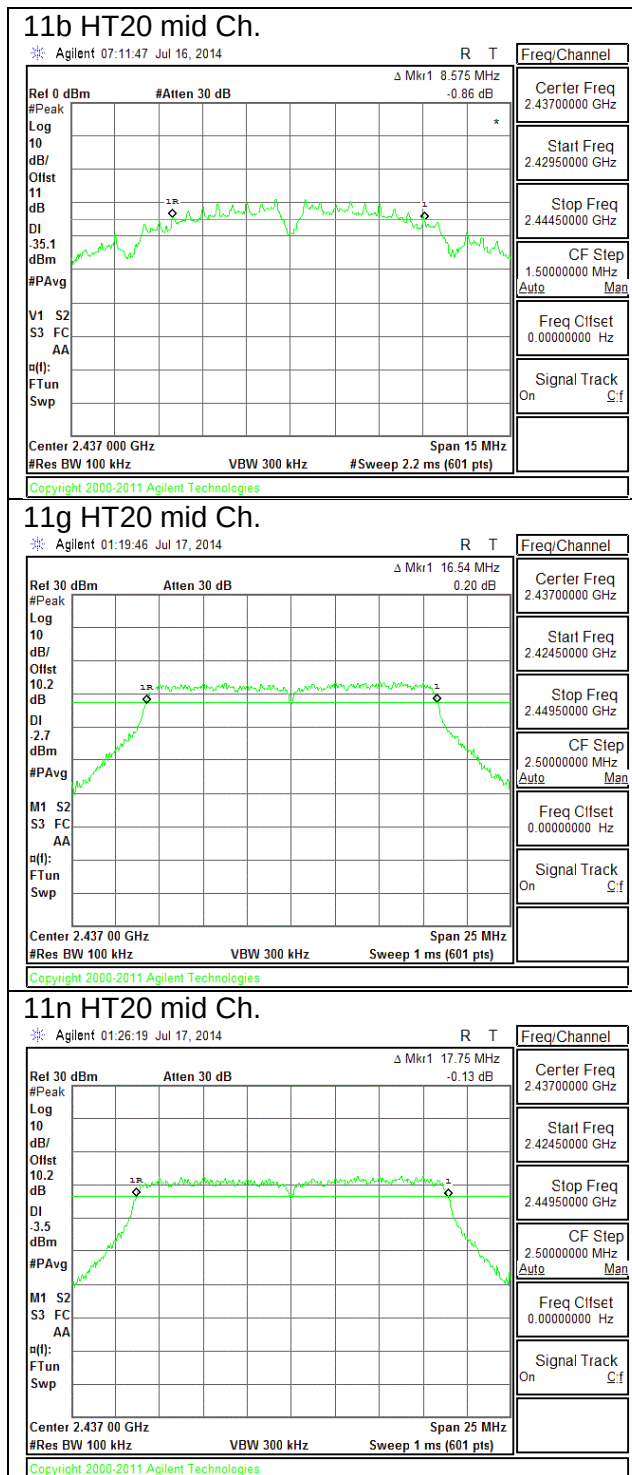
9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.62	0.5
Mid	2437	16.54	0.5
High	2462	16.54	0.5
Worst		16.54	

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	17.67	0.5
Mid	2437	17.75	0.5
High	2462	17.71	0.5
Worst		17.67	

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	13.31
Mid	2437	13.37
High	2462	13.47
Worst		13.47

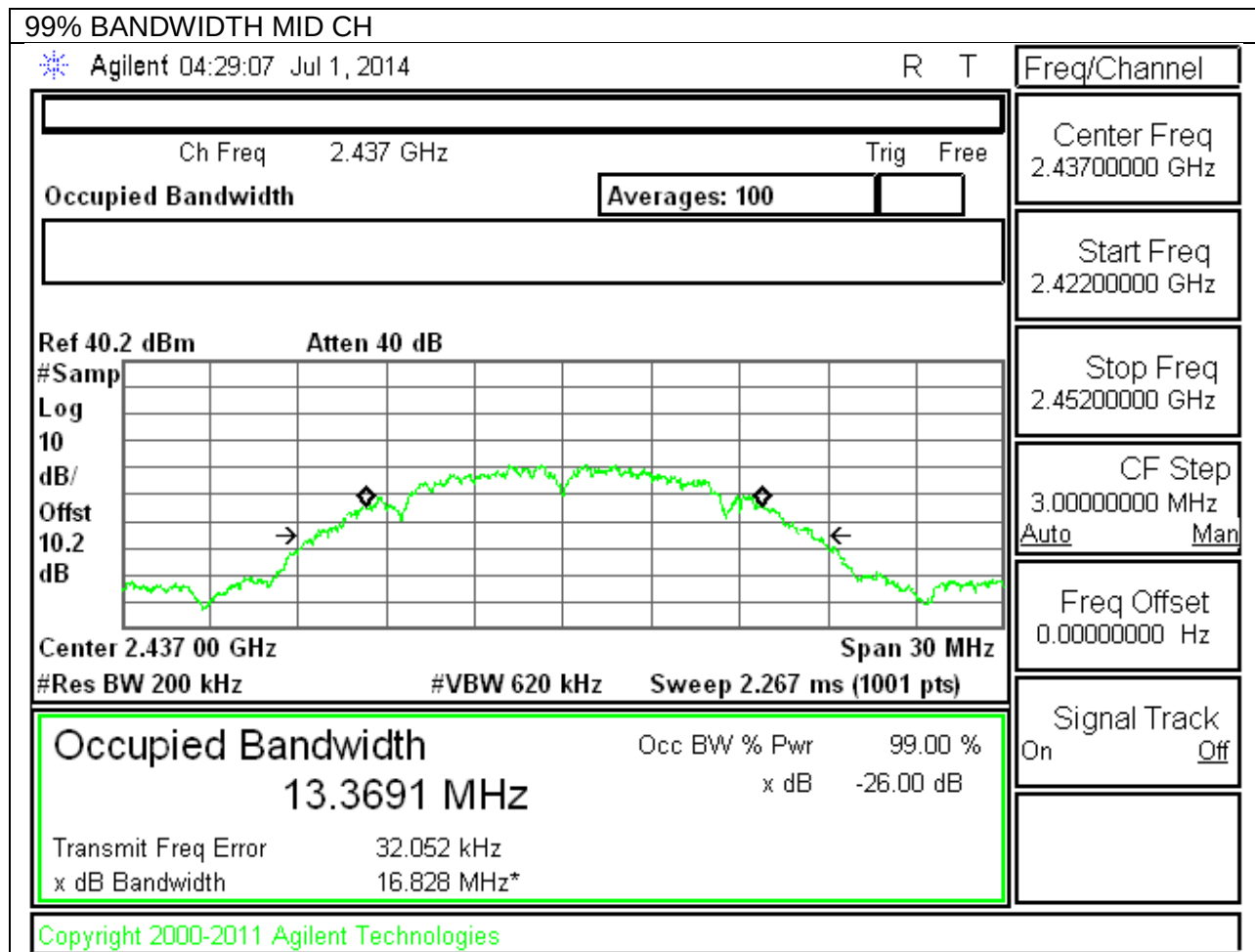
9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.47
Mid	2437	16.48
High	2462	16.37
Worst		16.48

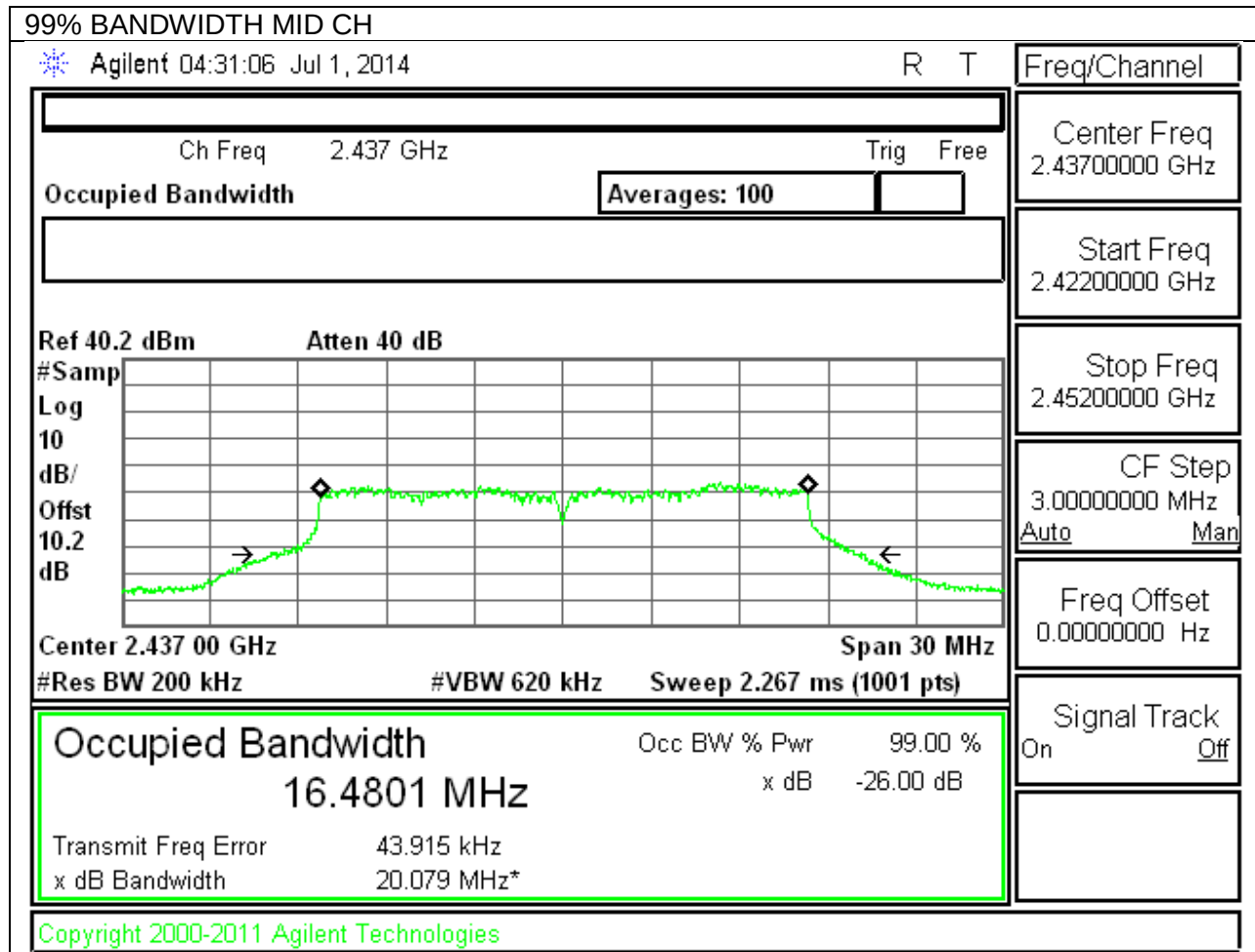
9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

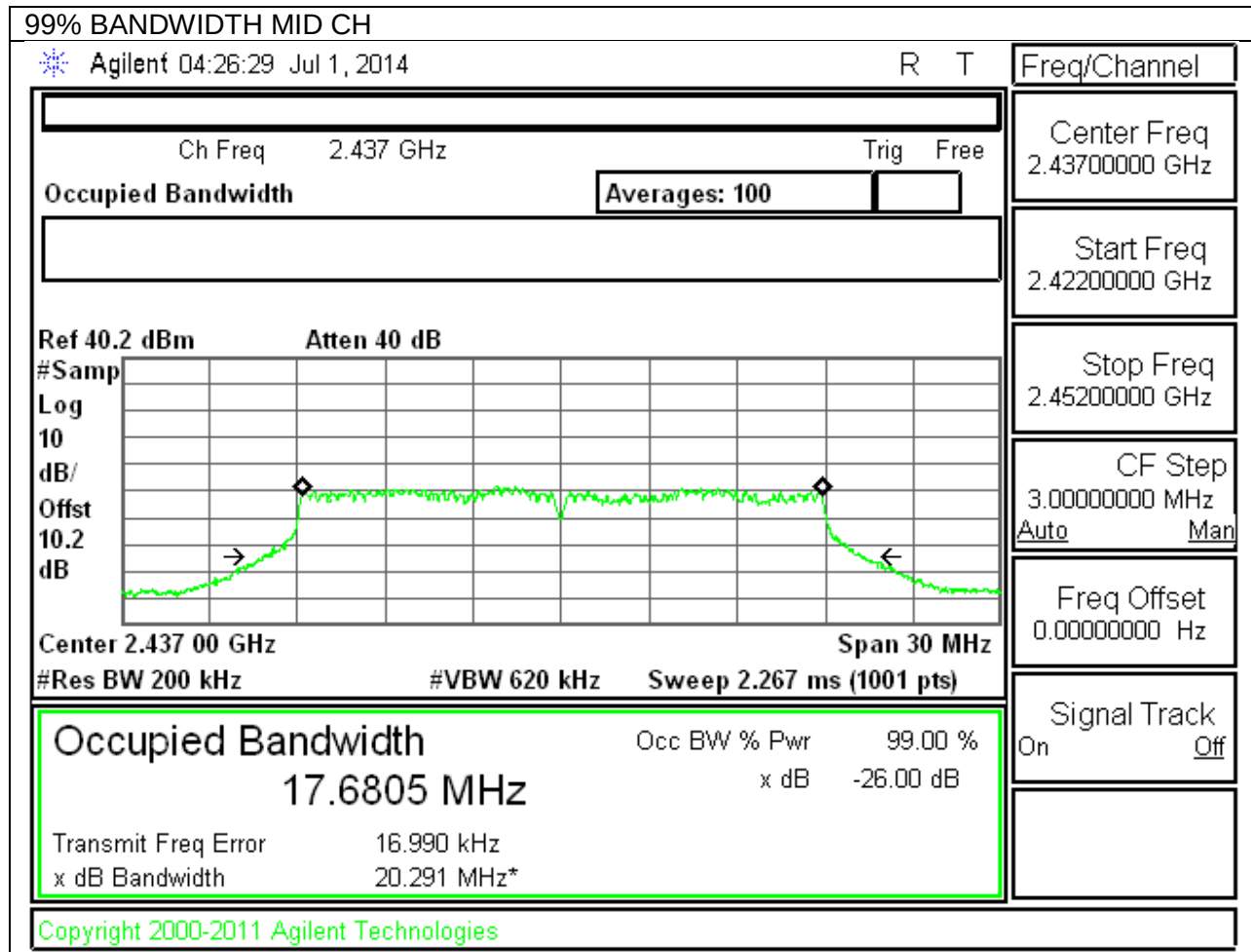
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.67
Mid	2437	17.68
High	2462	17.77
Worst		17.77

802.11b 99% BANDWIDTH



802.11g 99% BANDWIDTH





9.3. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

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.

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	-4.74	30.00	30	36	30.00
Mid	2437	-4.74	30.00	30	36	30.00
High	2462	-4.74	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	17.00	17.00	30.00	-13.00
Mid	2437	17.20	17.20	30.00	-12.80
High	2462	16.80	16.80	30.00	-13.20
Worst			17.20		

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	-4.74	30.00	30	36	30.00
Mid	2437	-4.74	30.00	30	36	30.00
High	2462	-4.74	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	13.30	13.30	30.00	-16.70
High	2462	13.50	13.50	30.00	-16.50
Worst			13.50		

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	-4.74	30.00	30	36	30.00
Mid	2437	-4.74	30.00	30	36	30.00
High	2462	-4.74	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	12.30	12.30	30.00	-17.70
Mid	2437	12.50	12.50	30.00	-17.50
High	2462	12.50	12.50	30.00	-17.50
Worst			12.50		

9.4. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

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	-14.23	8.0	-22.2
Mid	2437	-14.27	8.0	-22.3
High	2462	-14.47	8.0	-22.5

9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

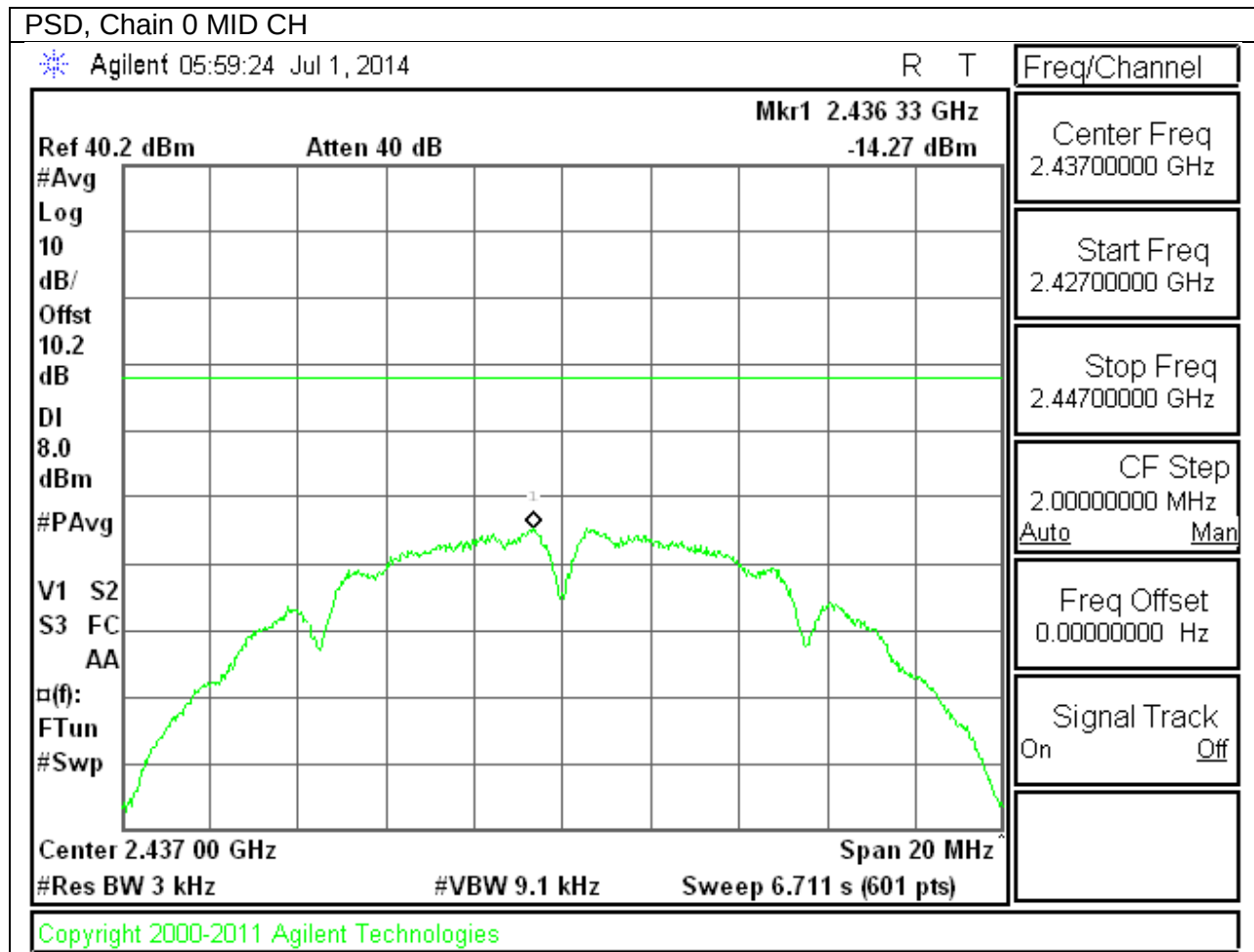
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-21.01	8.0	-29.0
Mid	2437	-21.01	8.0	-29.0
High	2462	-20.66	8.0	-28.7

9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

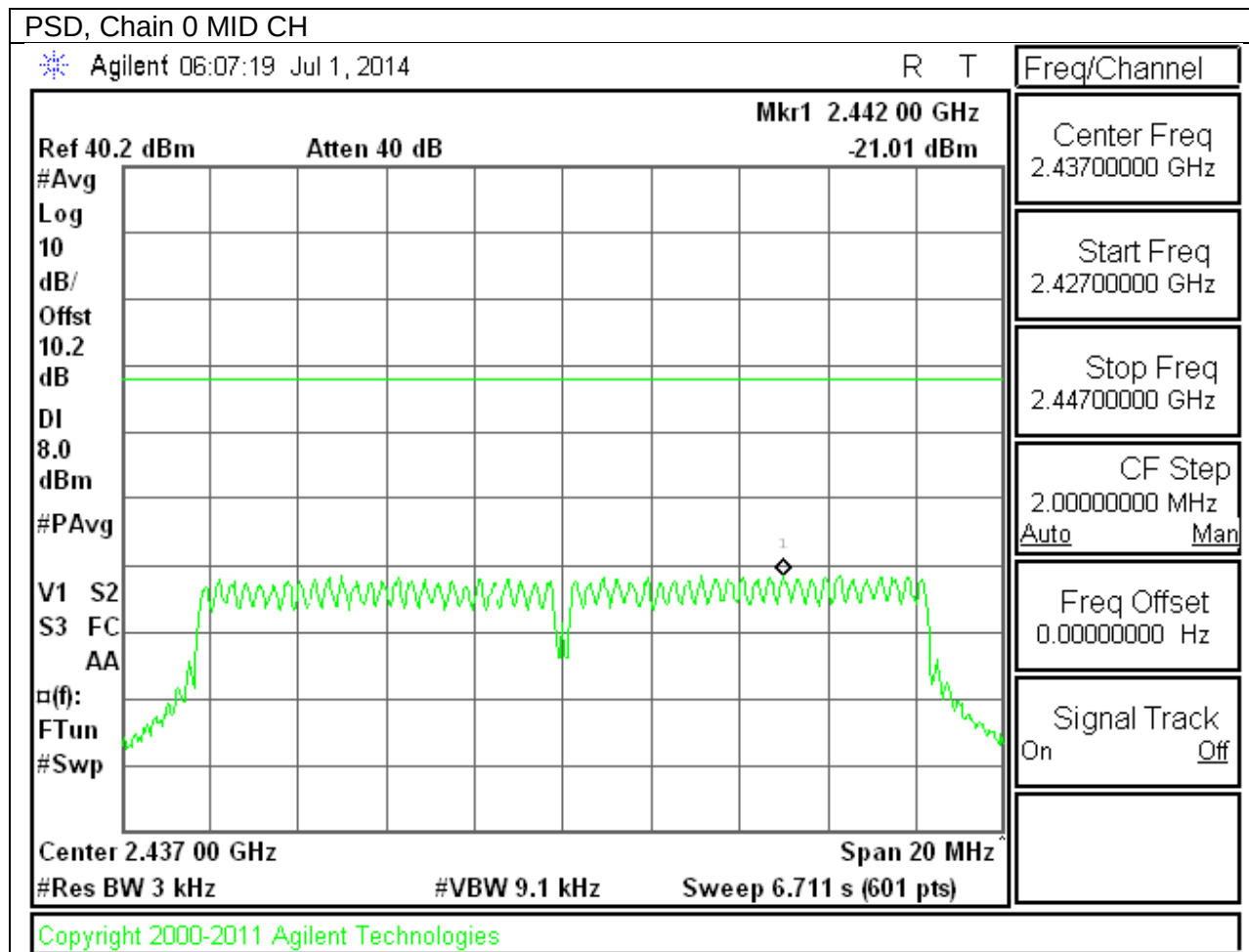
PSD Results

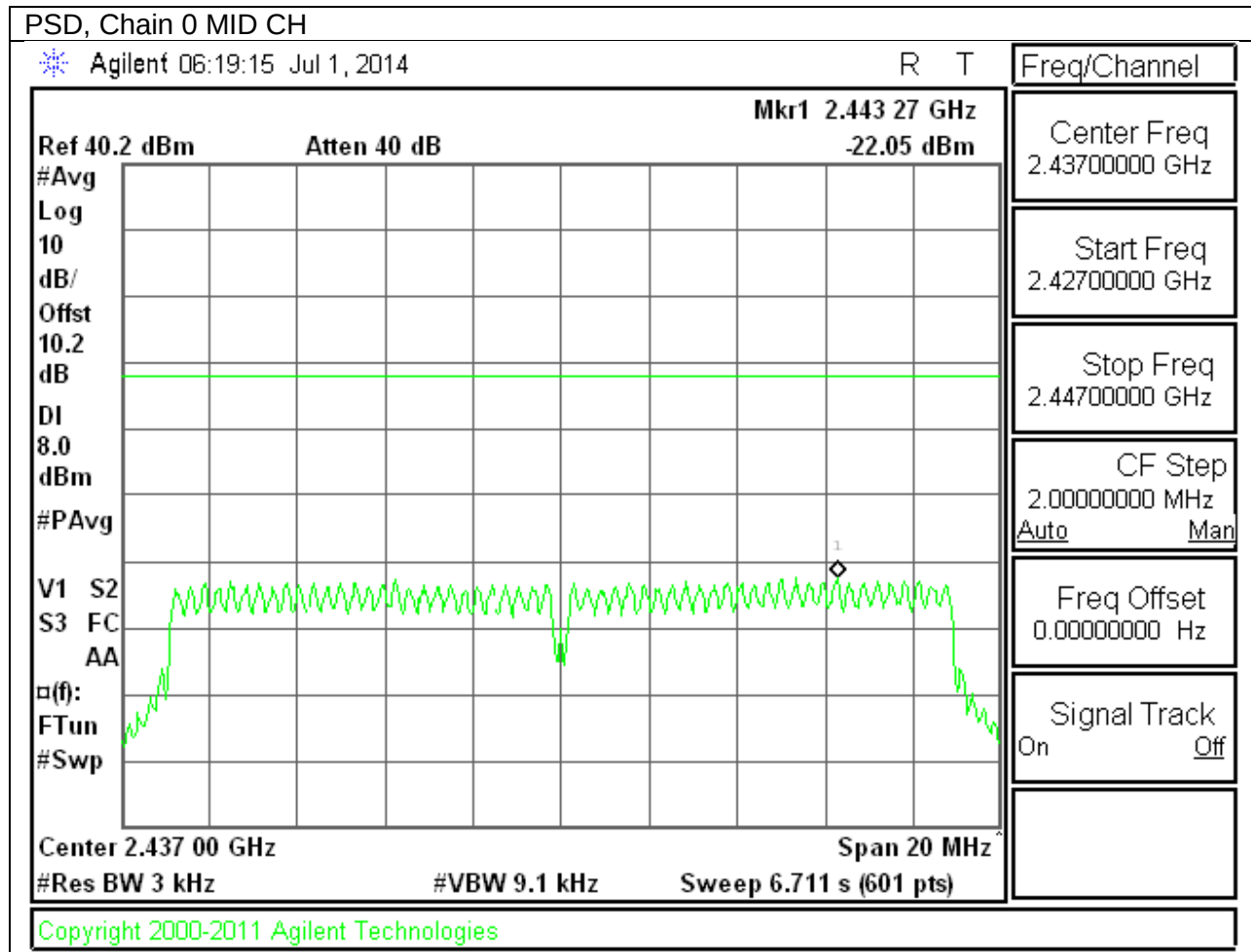
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-22.47	8.0	-30.5
Mid	2437	-22.05	8.0	-30.1
High	2462	-21.78	8.0	-29.8

802.11b PSD, Chain 0



802.11g PSD, Chain 0





9.5. OUT-OF-BAND EMISSIONS

LIMITS

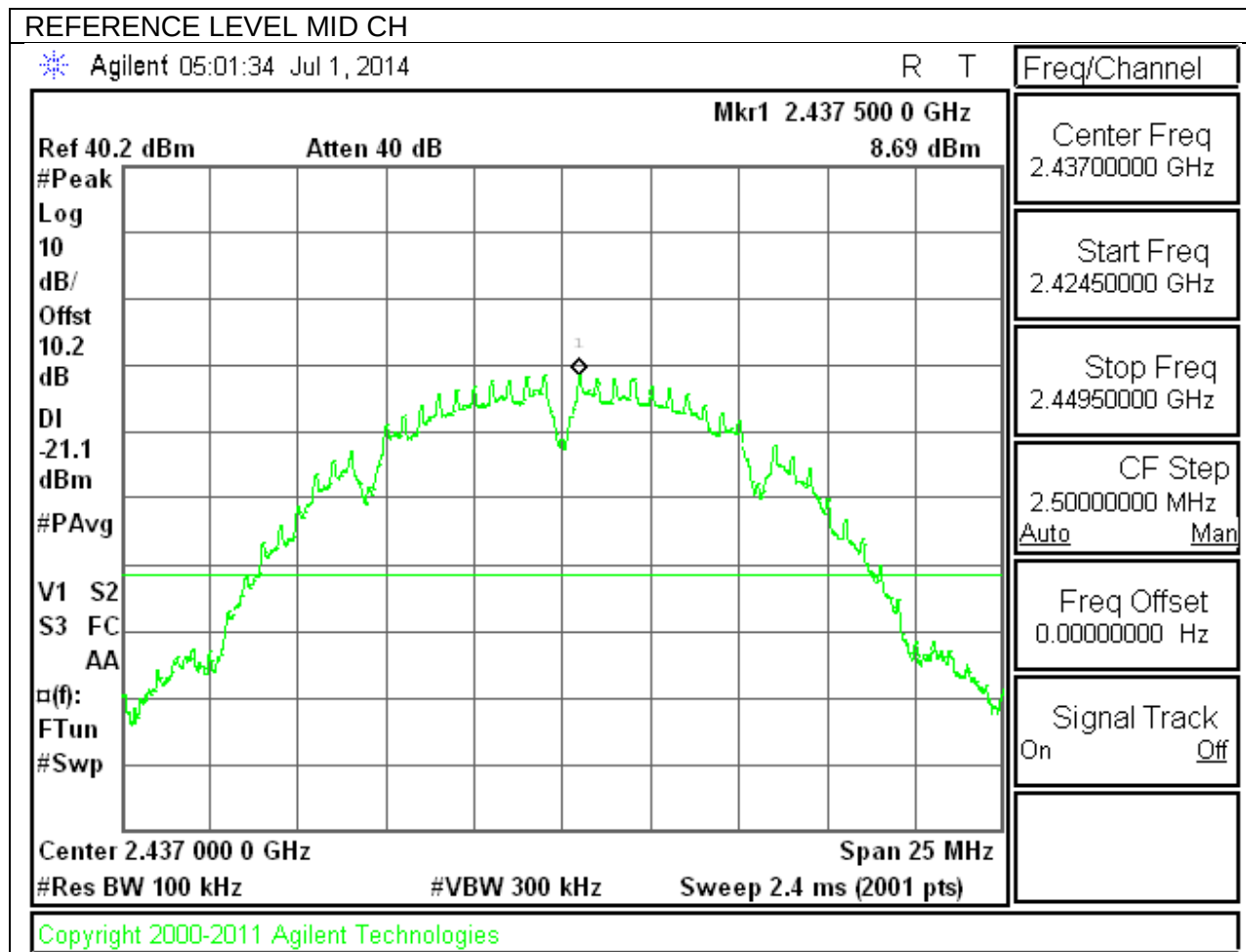
FCC §15.247 (d)

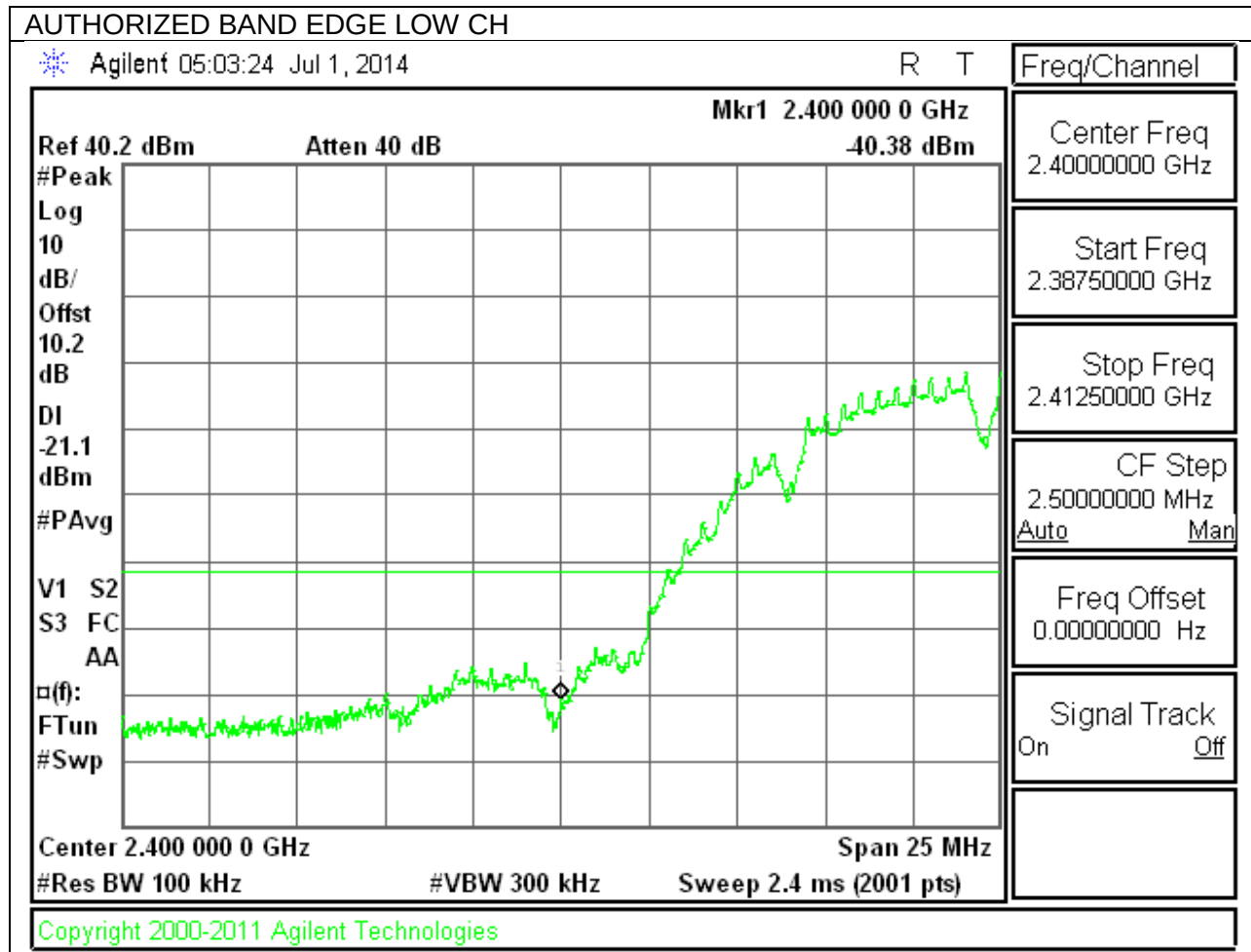
IC RSS-210 A8.5

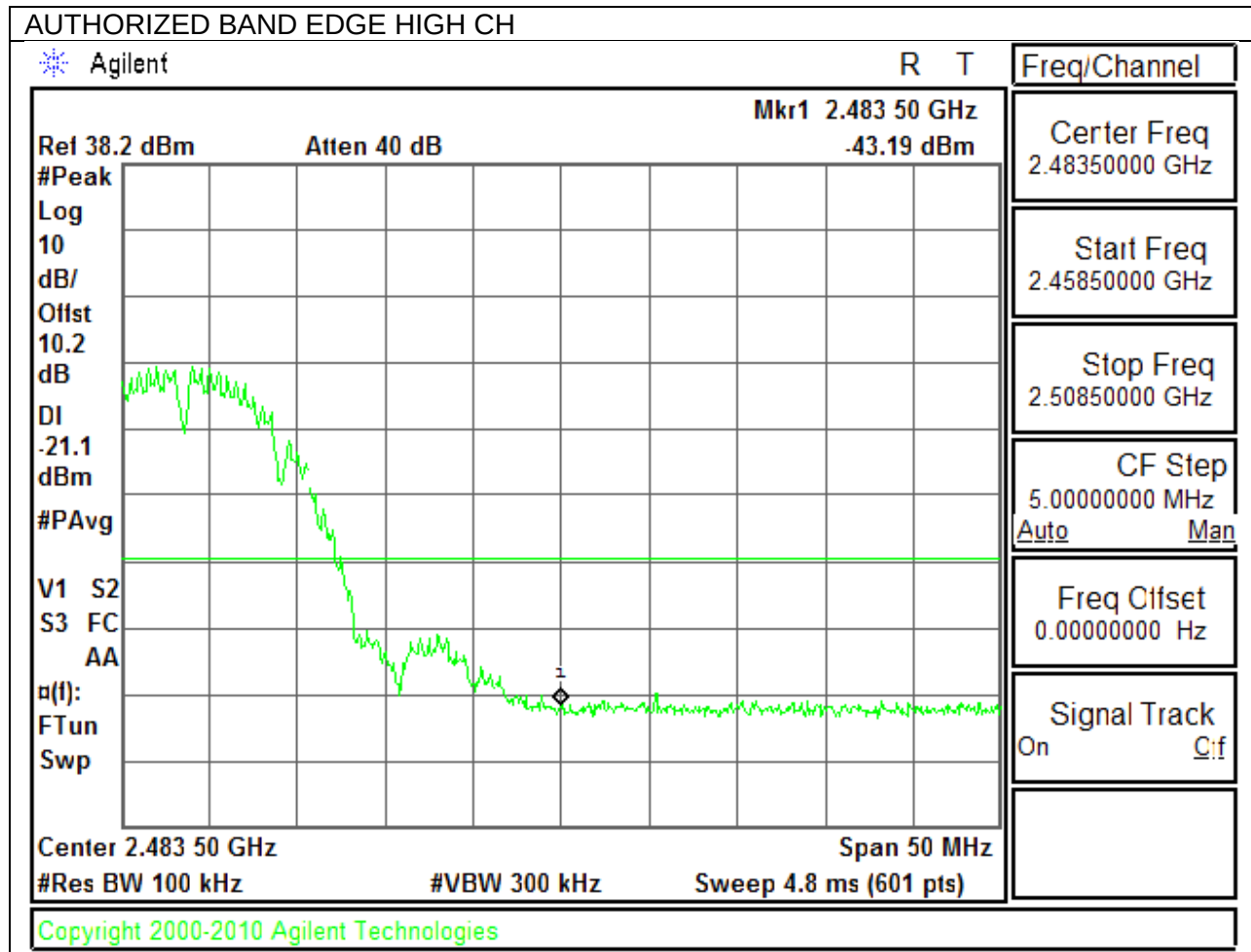
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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.

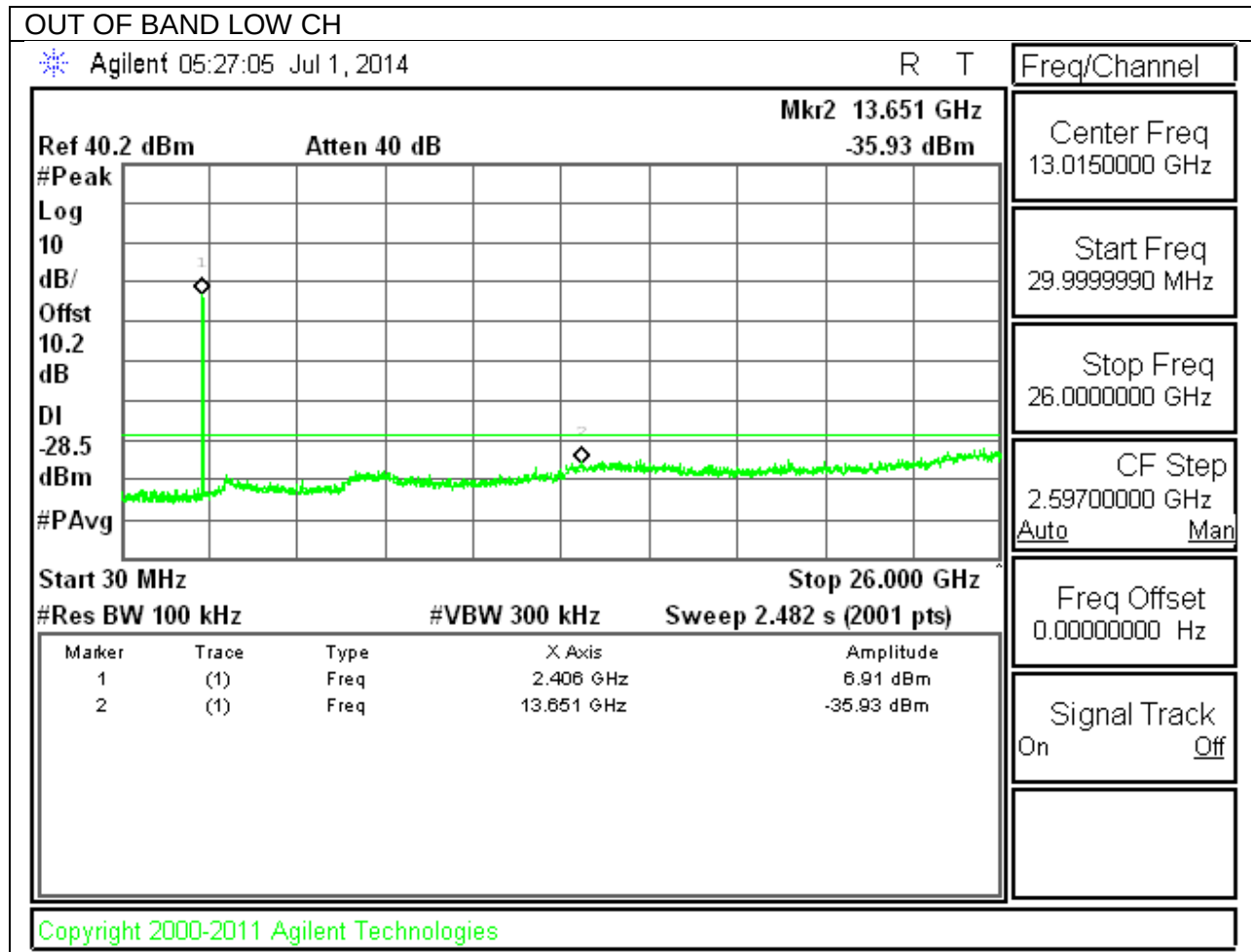
TEST PROCEDURE

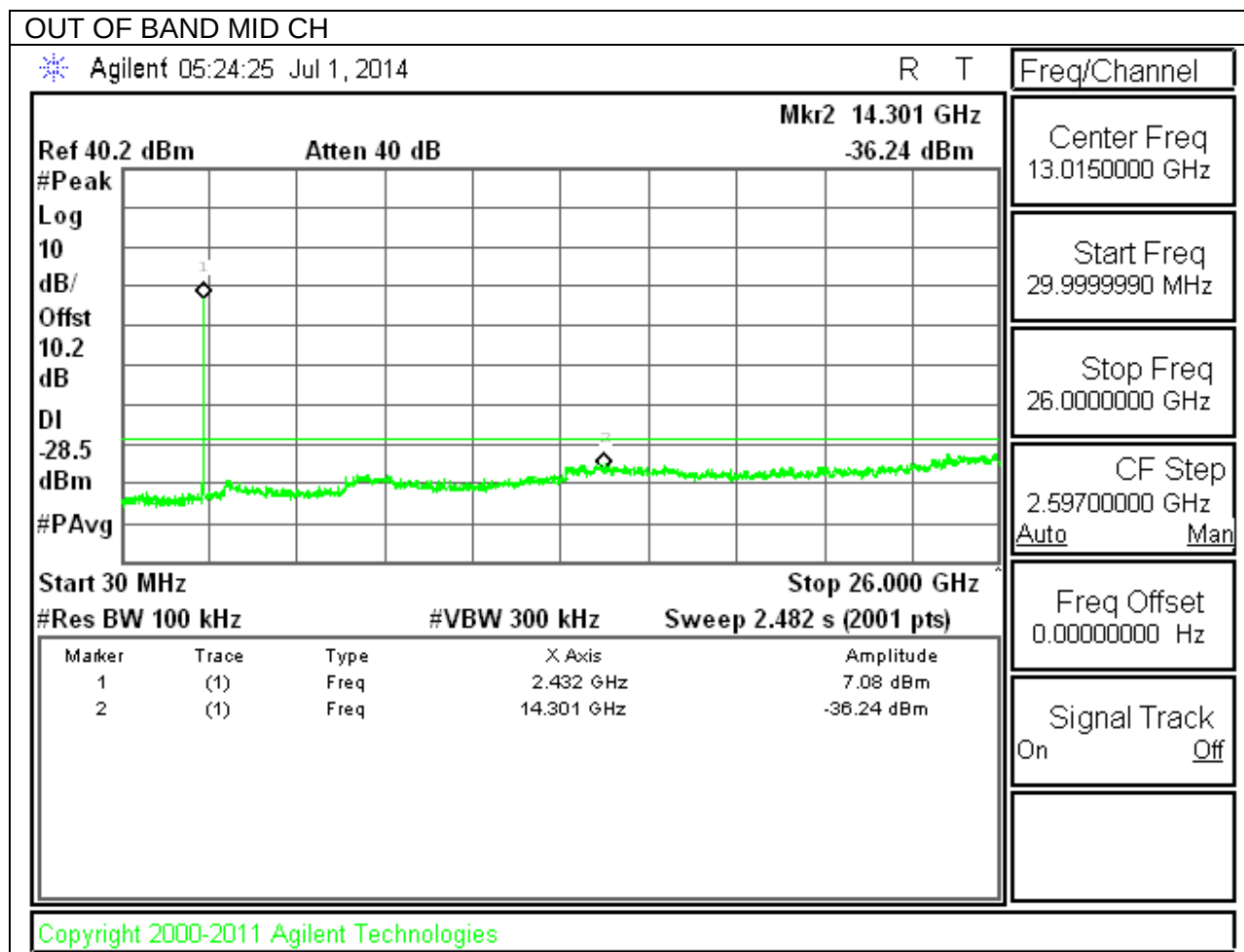
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS**9.5.1. 802.11b MODE IN THE 2.4 GHz BAND****IN-BAND REFERENCE LEVEL**









OUT OF BAND HIGH CH

Agilent 05:29:29 Jul 1, 2014

R T

Freq/Channel

Ref 40.2 dBm

Atten 40 dB

Mkr2 13.612 GHz

-33.13 dBm

#Peak

Log

10

dB/

Offst

10.2

dB

DI

-28.5

dBm

#PAvg

Start 30 MHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 26.000 GHz

Sweep 2.482 s (2001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 GHz	6.54 dBm
2	(1)	Freq	13.612 GHz	-33.13 dBm

Center Freq
13.0150000 GHz

Start Freq
29.9999990 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

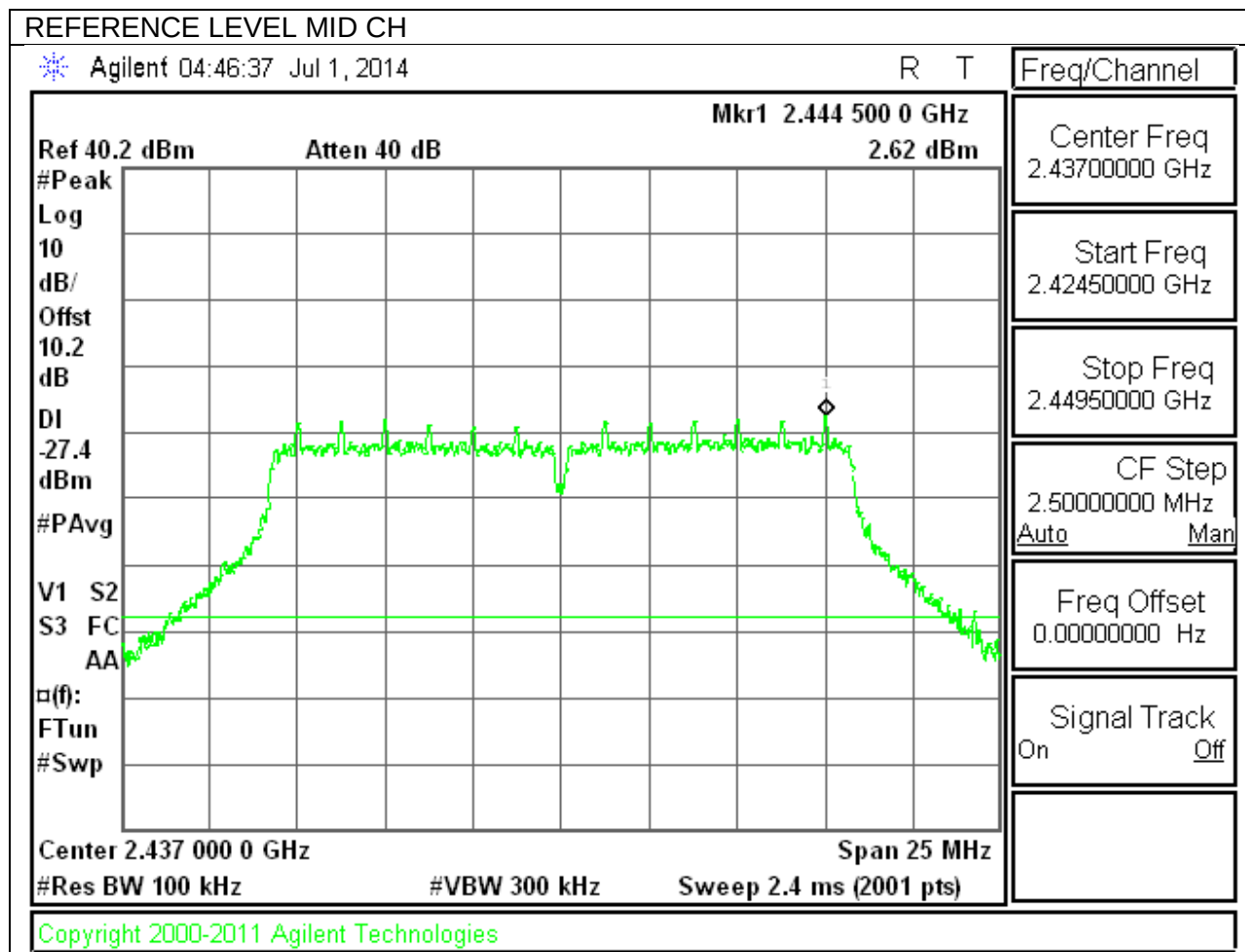
Freq Offset
0.0000000 Hz

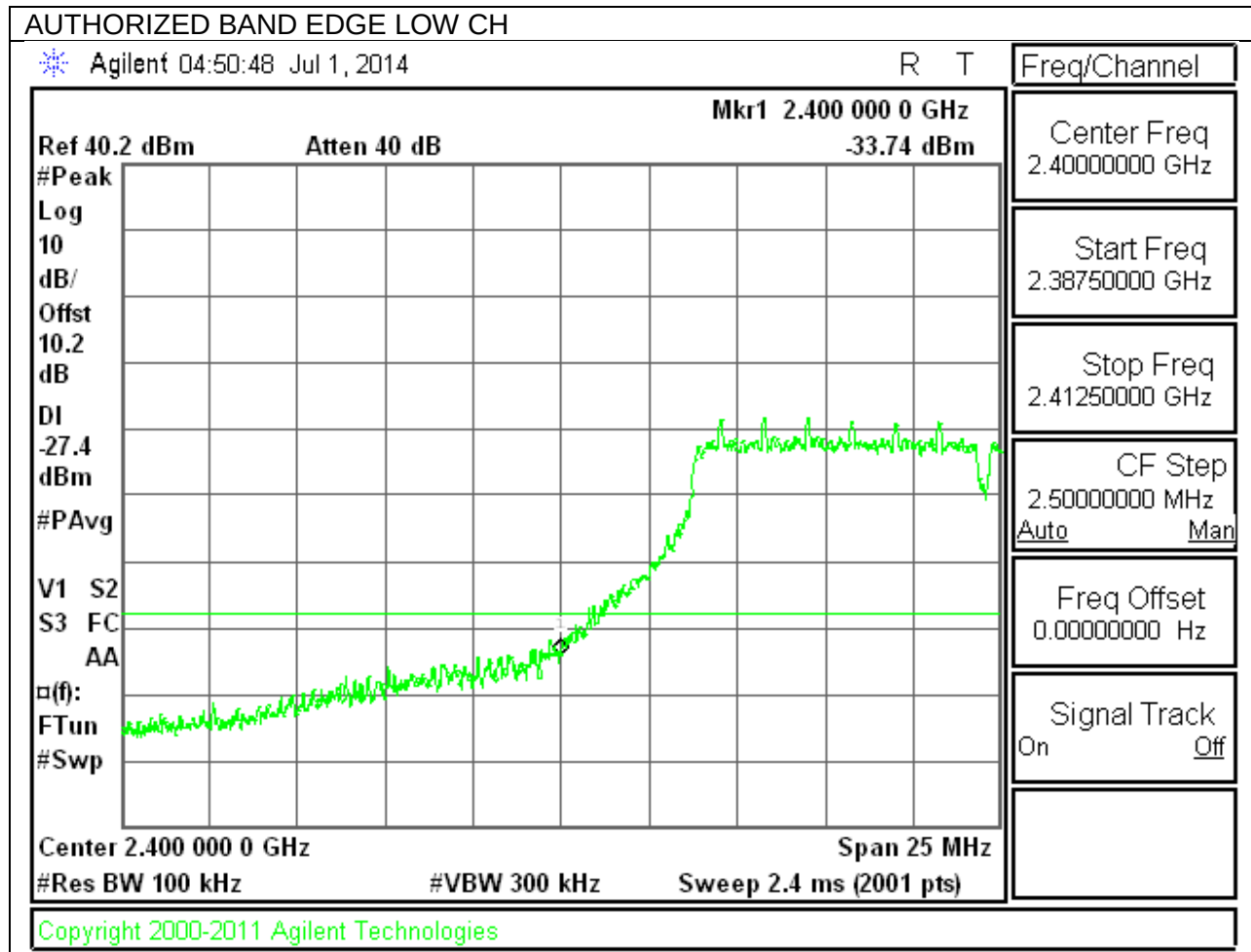
Signal Track
On Off

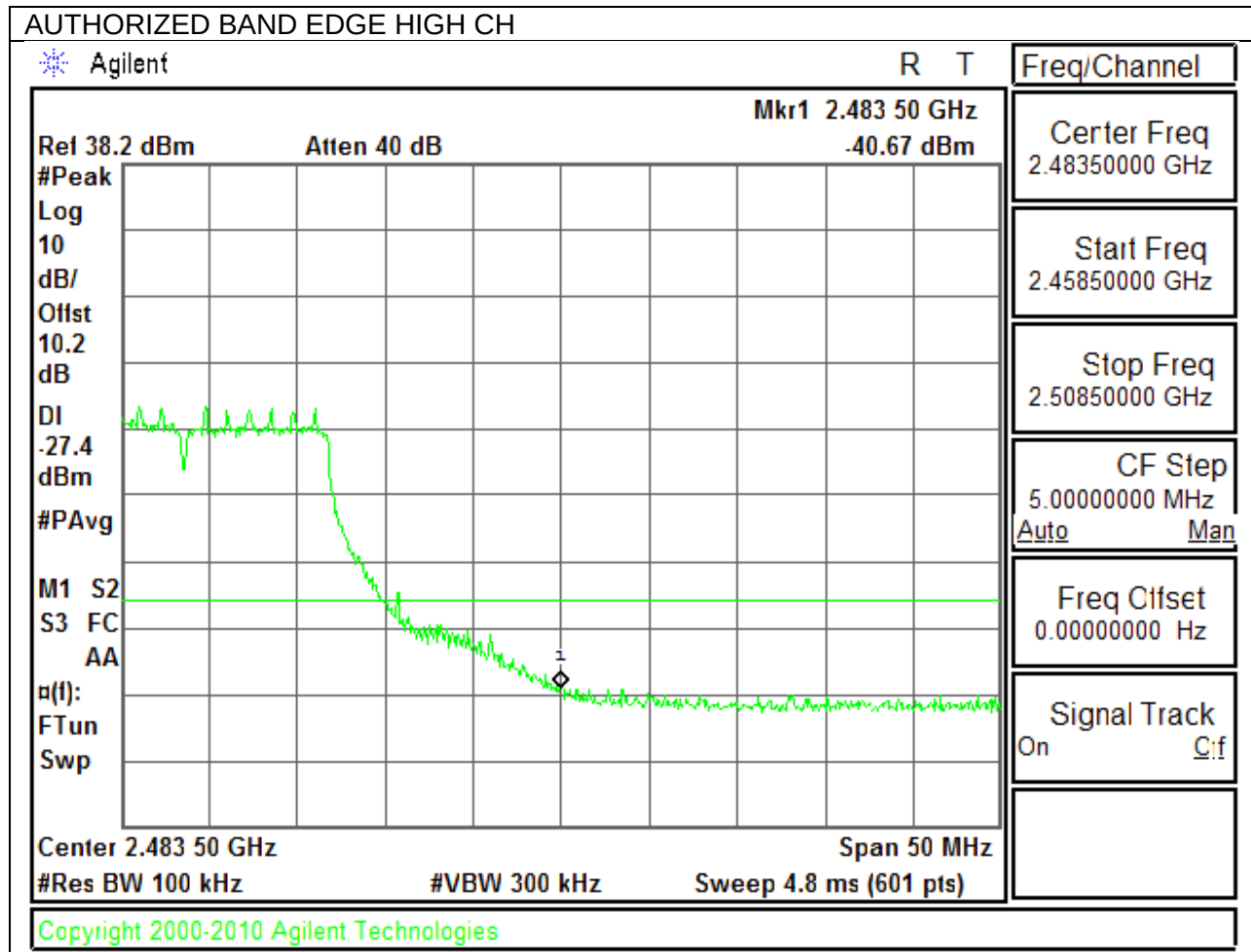
Copyright 2000-2011 Agilent Technologies

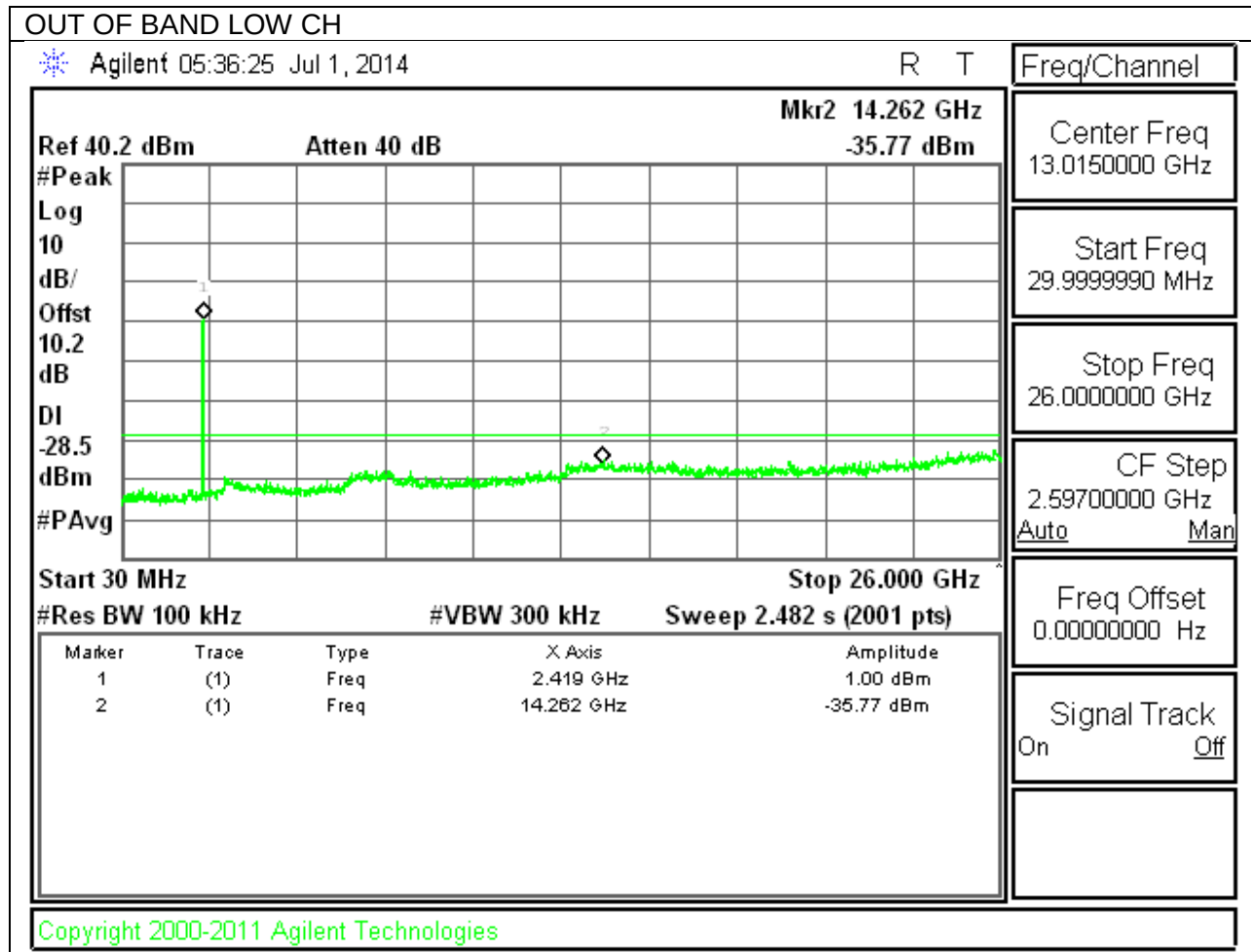
9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

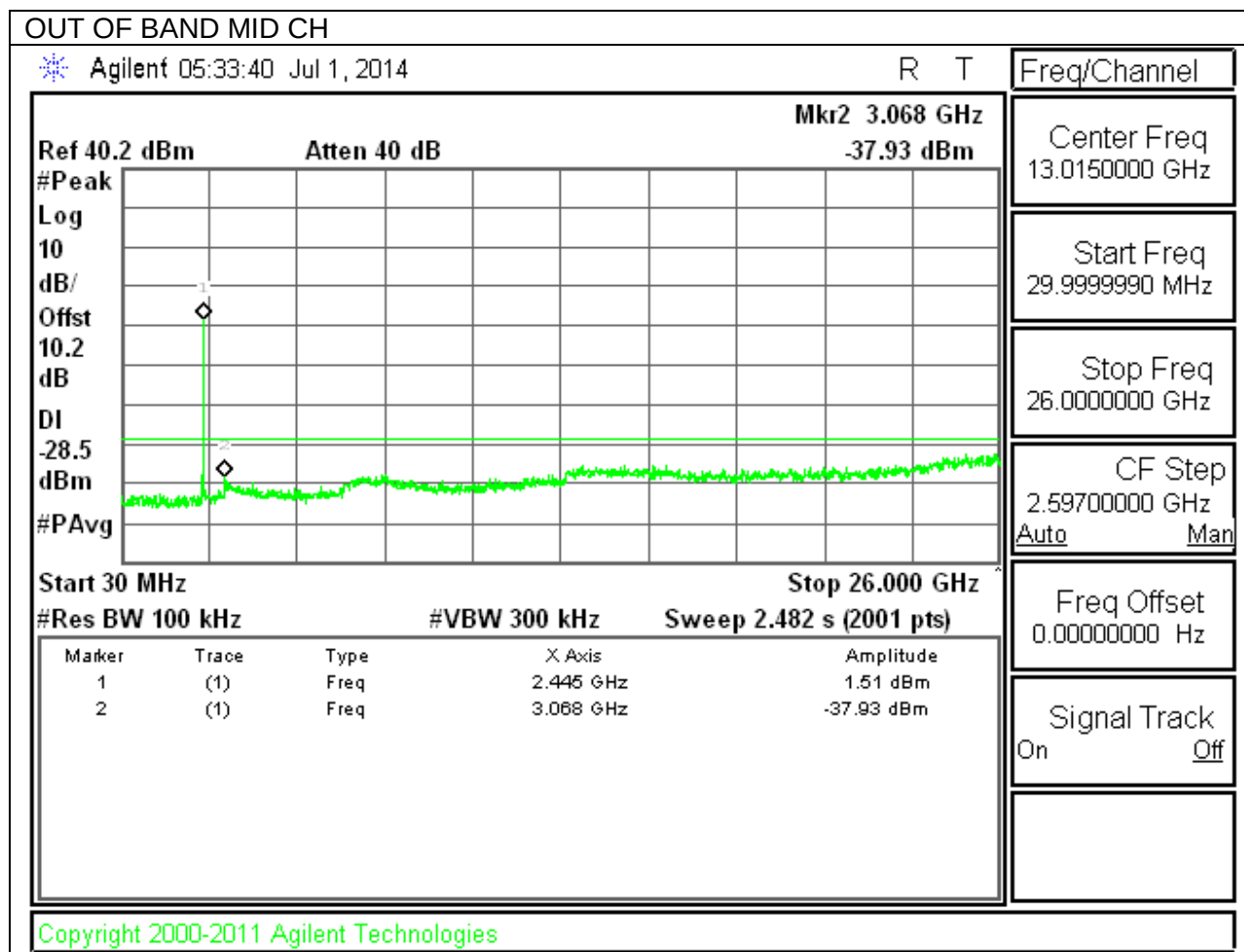
IN-BAND REFERENCE LEVEL











OUT OF BAND HIGH CH

Agilent 05:39:26 Jul 1, 2014

R T

Freq/Channel

Ref 40.2 dBm

Atten 40 dB

Mkr2 13.249 GHz

-35.63 dBm

#Peak

Log

10

dB/

Offst

10.2

dB

DI

-28.5

dBm

#PAvg

Start 30 MHz

Stop 26.000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (2001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 GHz	0.85 dBm
2	(1)	Freq	13.249 GHz	-35.63 dBm

Center Freq
13.0150000 GHz

Start Freq
29.9999990 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

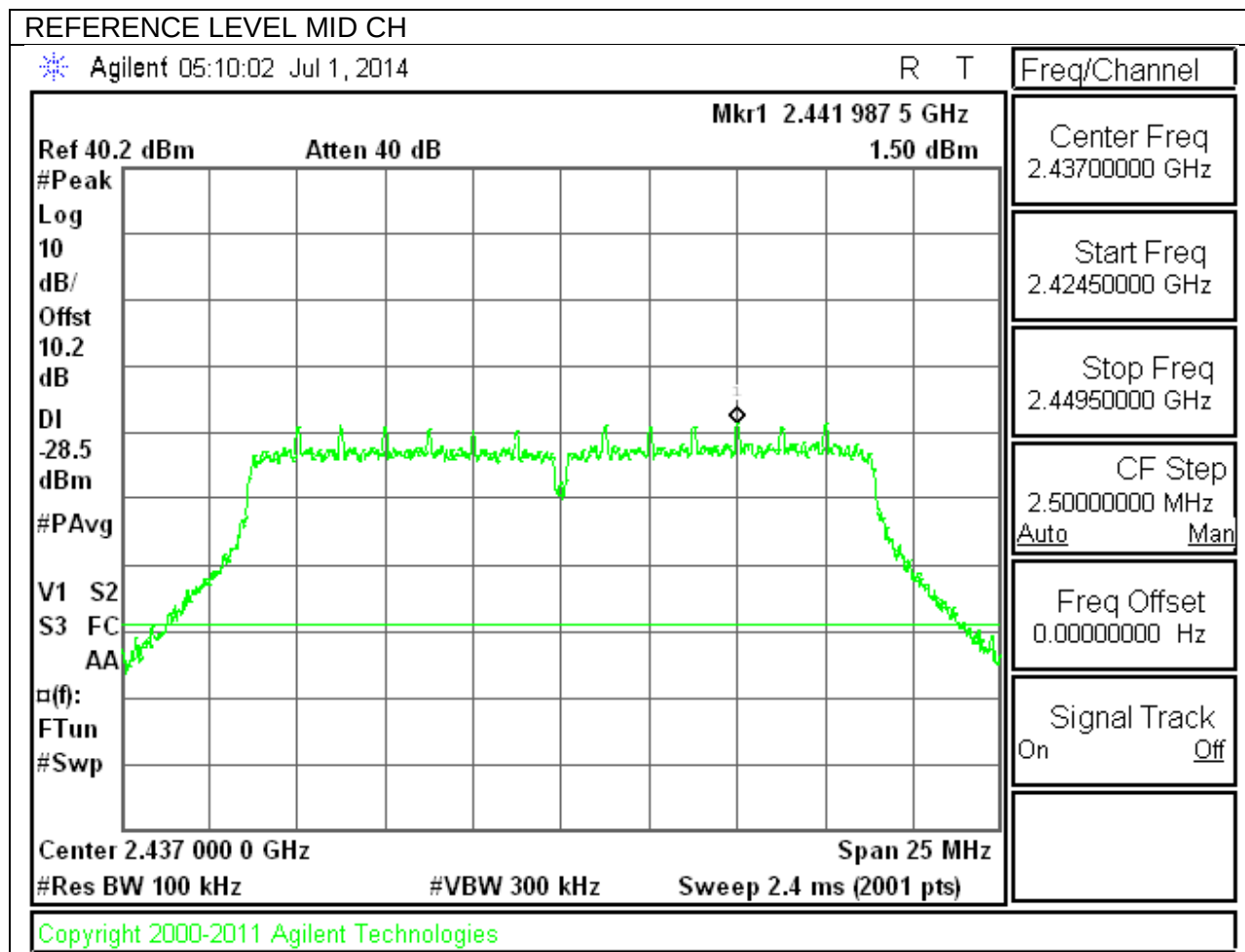
Freq Offset
0.0000000 Hz

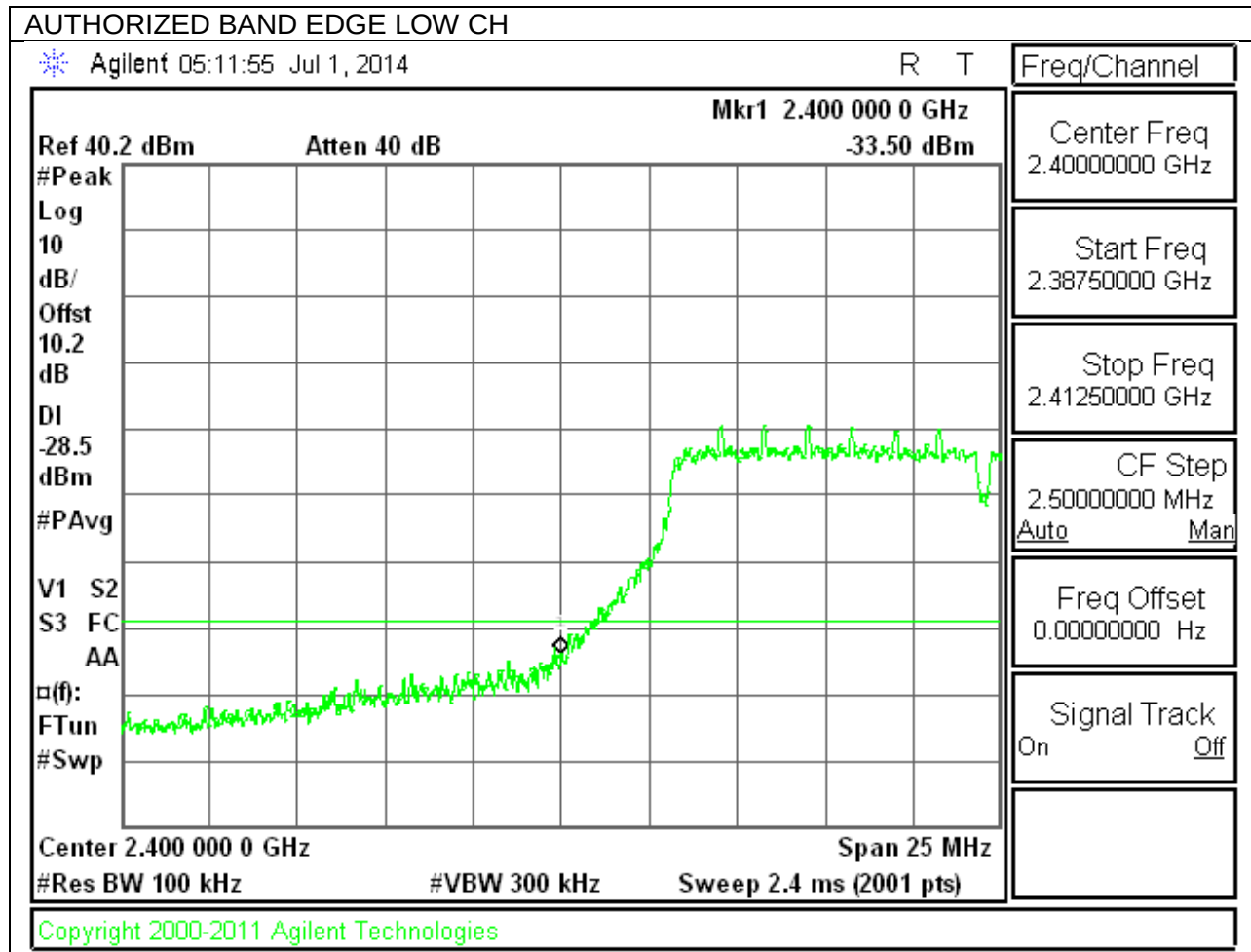
Signal Track
On Off

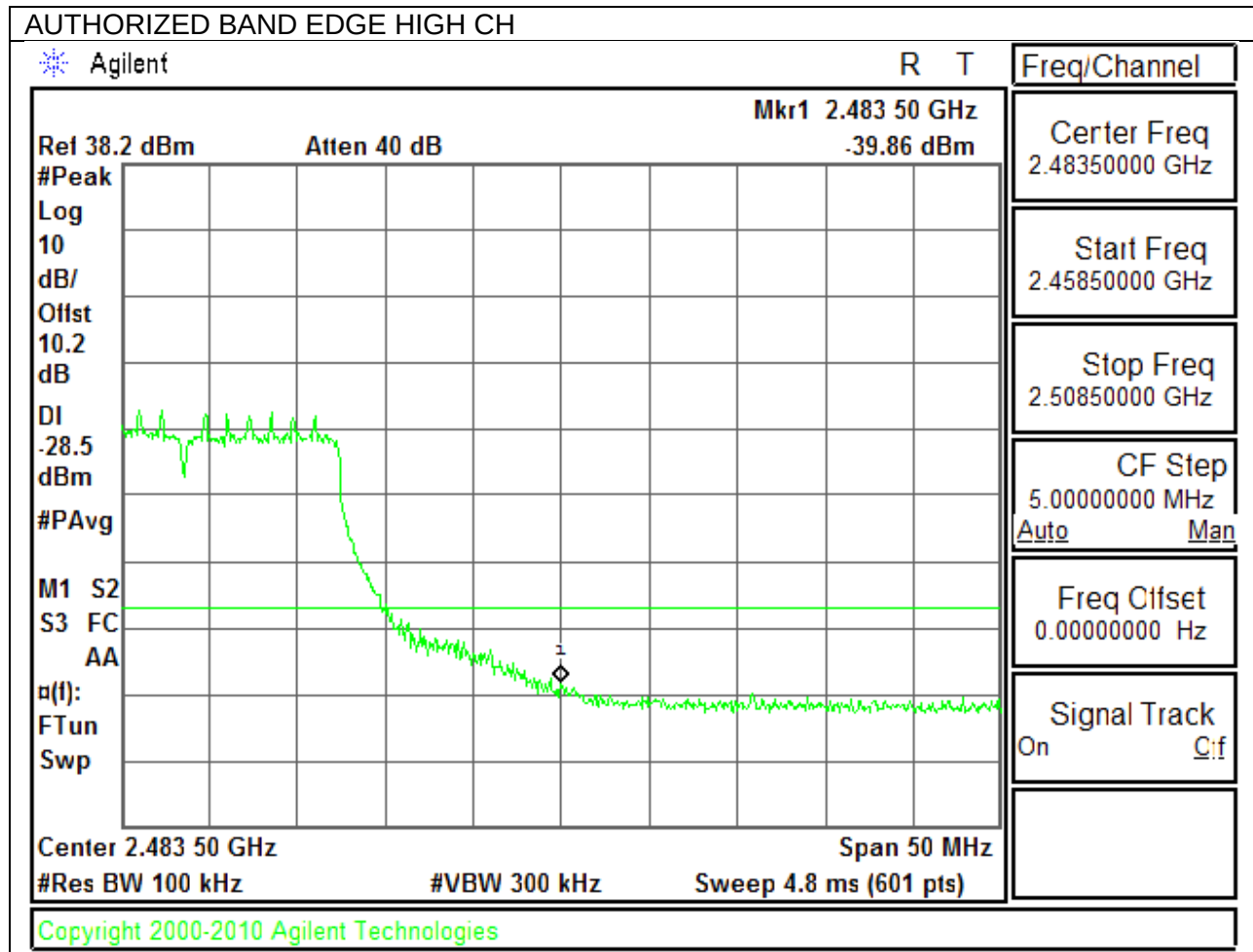
Copyright 2000-2011 Agilent Technologies

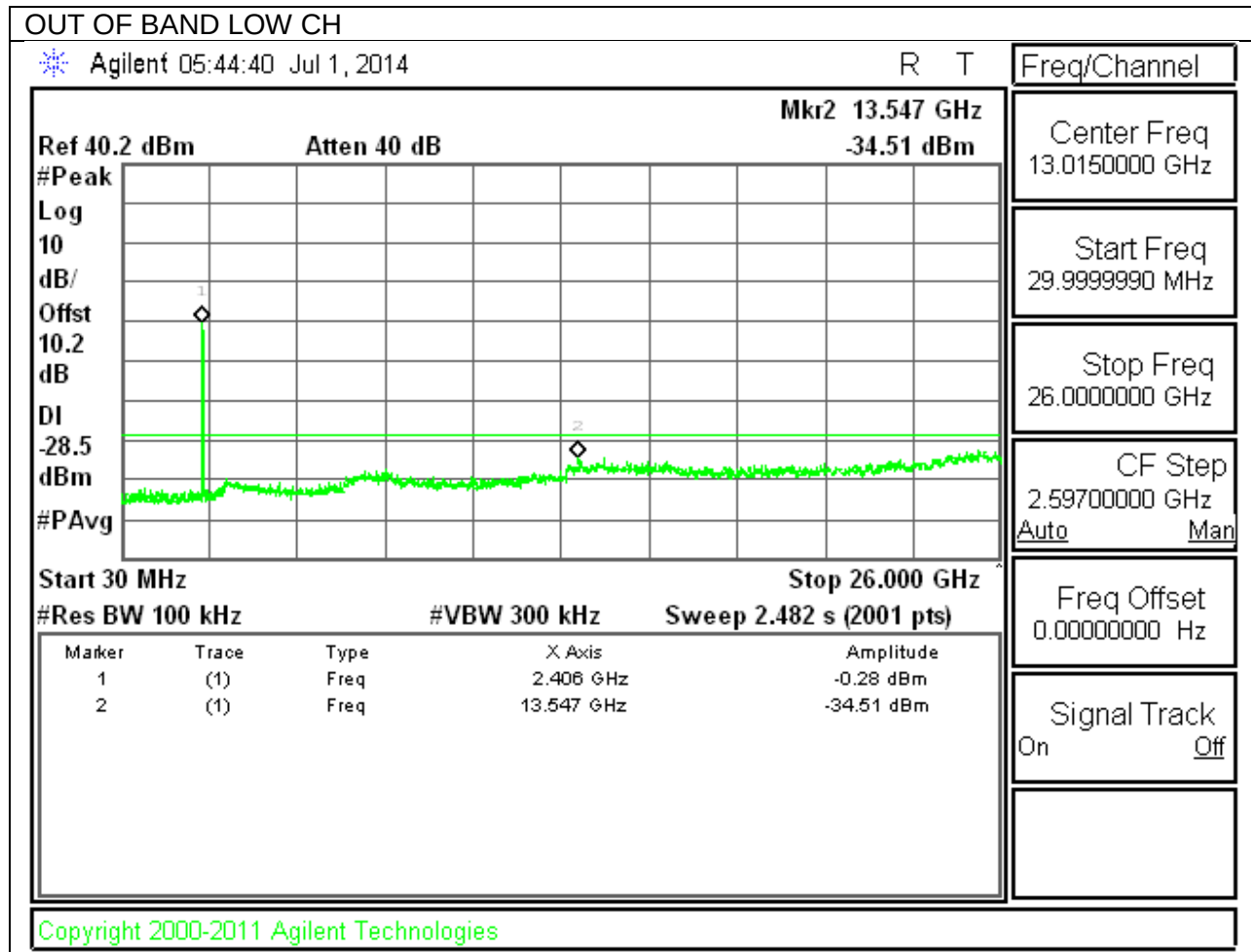
9.5.3. 802.11n MODE IN THE 2.4 GHz BAND

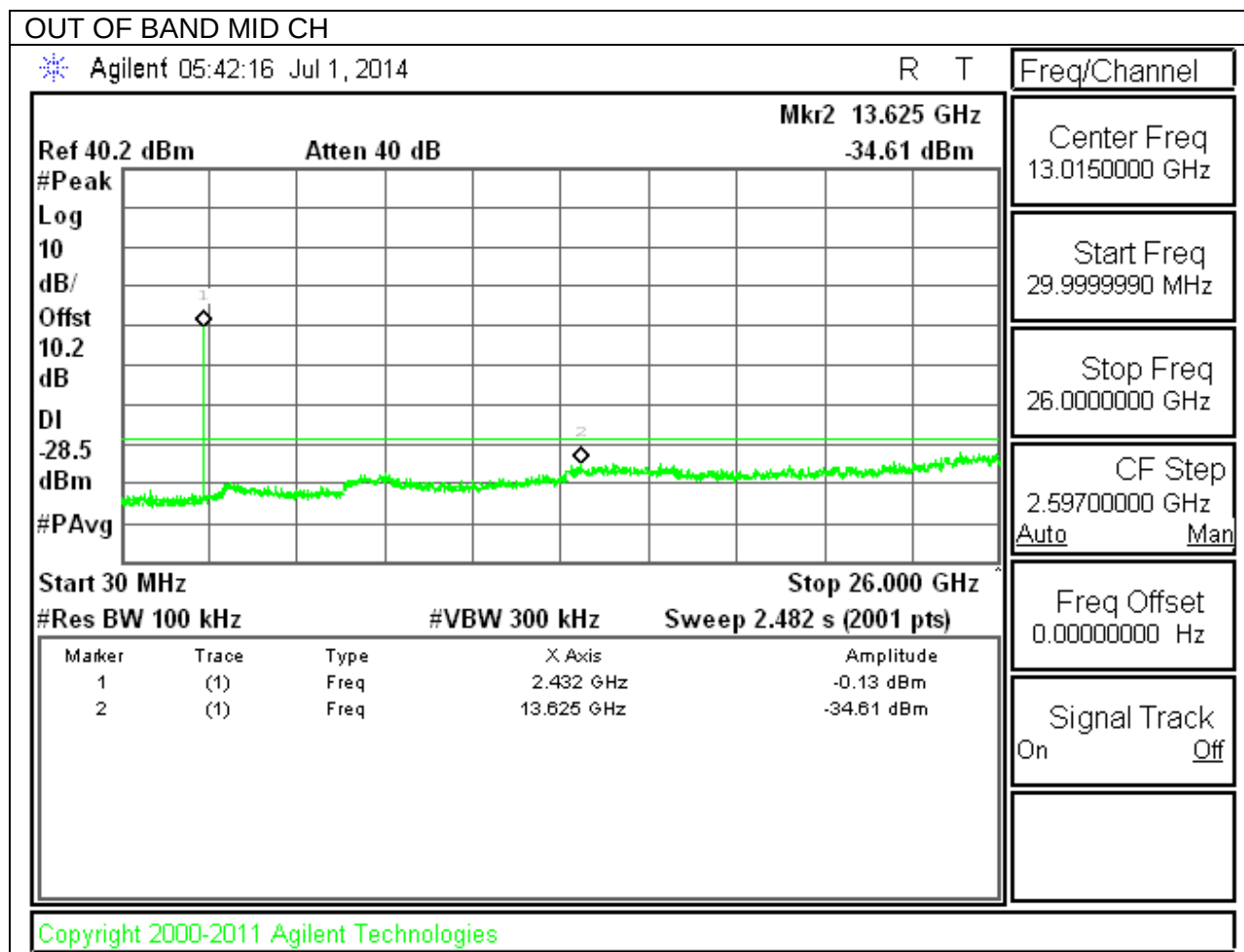
IN-BAND REFERENCE LEVEL











OUT OF BAND HIGH CH

Agilent 05:49:32 Jul 1, 2014

R T

Freq/Channel

Ref 40.2 dBm

Atten 40 dB

Mkr2 3.198 GHz

-37.47 dBm

#Peak

Log

10

dB/

Offst

10.2

dB

DI

-28.5

dBm

#PAvg

Start 30 MHz

Stop 26.000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (2001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.471 GHz	0.21 dBm
2	(1)	Freq	3.198 GHz	-37.47 dBm

Center Freq
13.0150000 GHz

Start Freq
29.9999990 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Freq Offset
0.0000000 Hz

Signal Track
On Off

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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

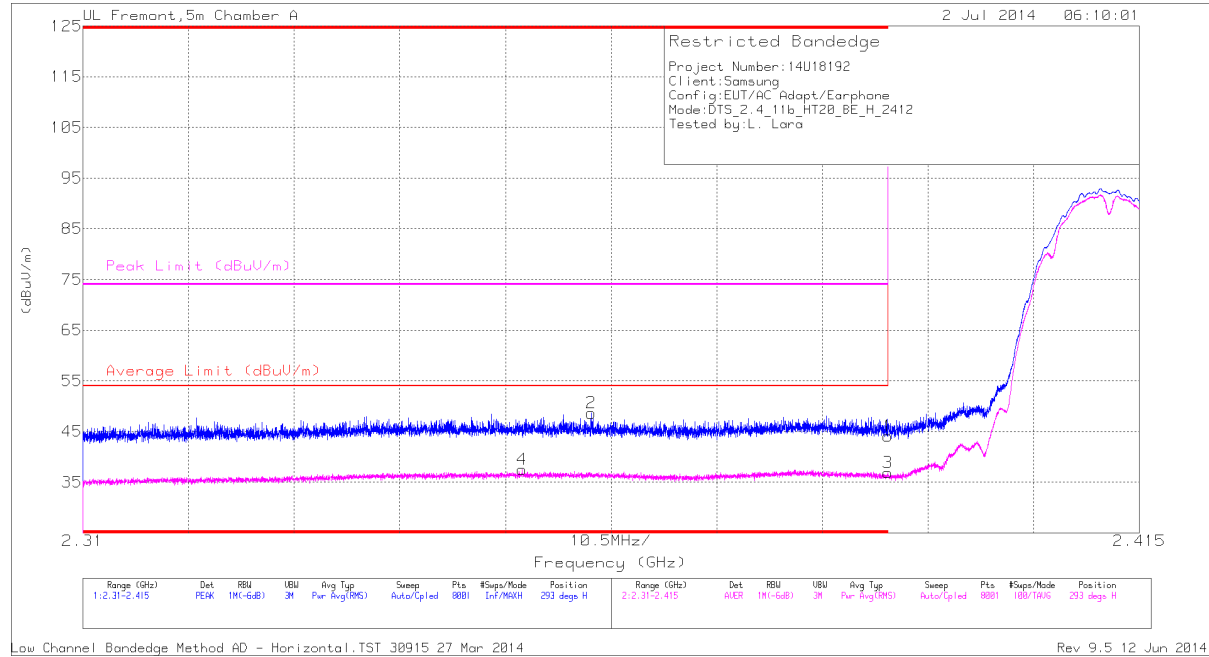
The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

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 = 0dB (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**

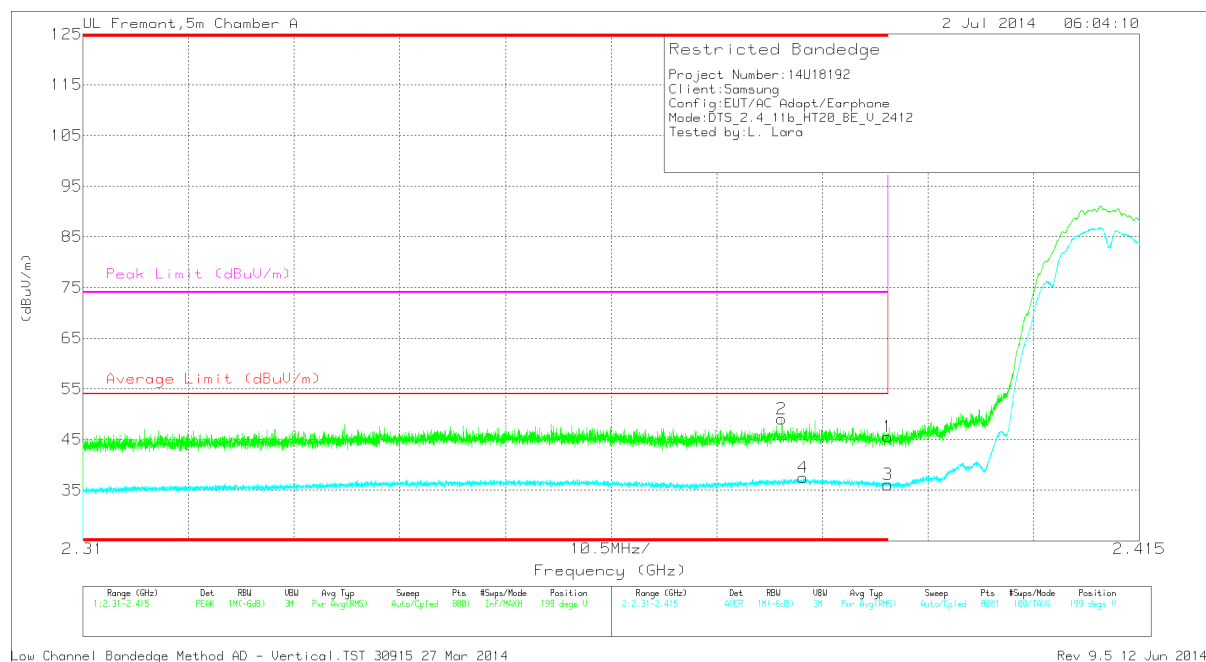
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	36.3	PK	32.2	-24.4	44.1	-	-	74	-29.9	293	301	H
2	* 2.361	40.42	PK	32	-23.8	48.62	-	-	74	-25.38	293	301	H
3	* 2.39	29.09	RMS	32.2	-24.4	36.89	54	-17.11	-	-	293	301	H
4	* 2.354	29.27	RMS	31.9	-23.7	37.47	54	-16.53	-	-	293	301	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL



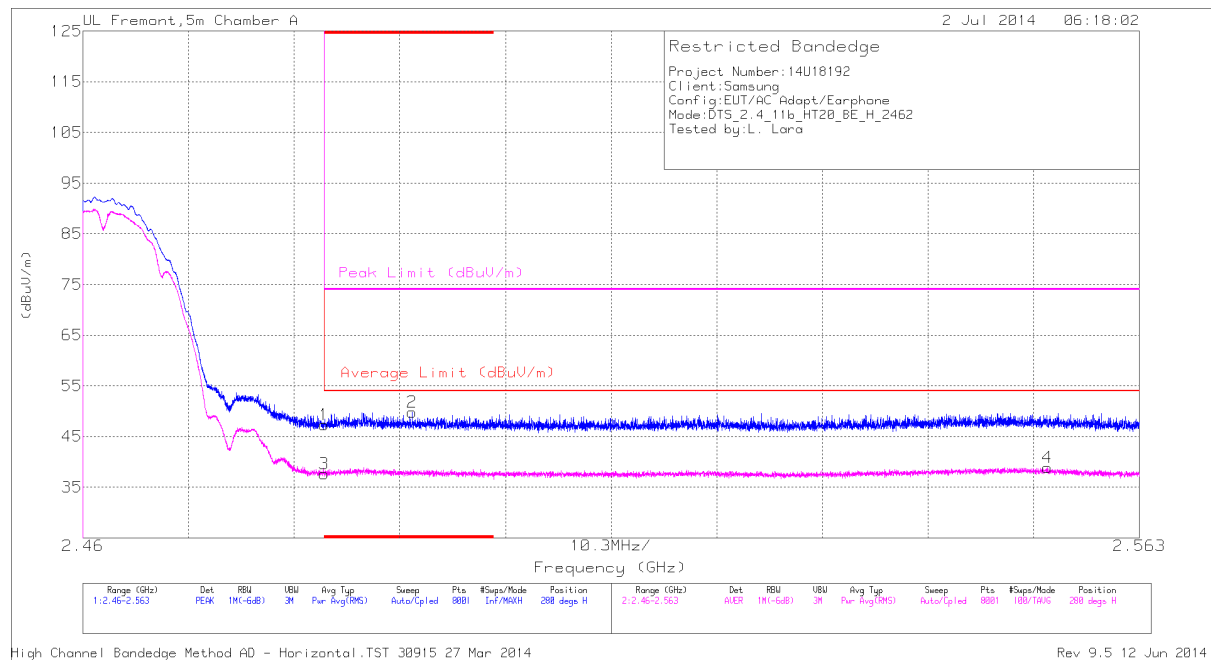
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.78	PK	32.2	-24.4	45.58	-	-	74	-28.42	199	262	V
2	* 2.379	40.54	PK	32.2	-23.7	49.04	-	-	74	-24.96	199	262	V
3	* 2.39	28.28	RMS	32.2	-24.4	36.08	54	-17.92	-	-	199	262	V
4	* 2.382	28.86	RMS	32.2	-23.6	37.46	54	-16.54	-	-	199	262	V

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

PK - Peak detector

RMS - RMS detection

HORIZONTAL



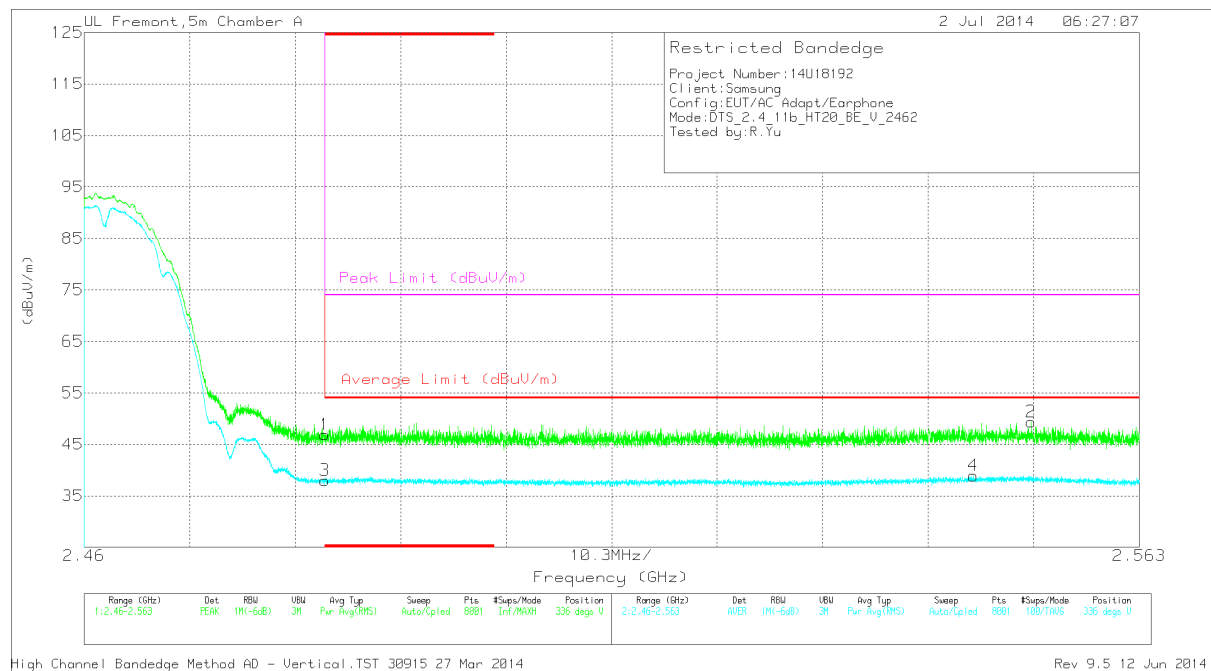
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.08	PK	32.7	-23.5	0	47.28	-	-	74	-26.72	280	361	H
2	* 2.492	40.53	PK	32.8	-23.5	0	49.83	-	-	74	-24.17	280	361	H
3	* 2.484	28.09	RMS	32.7	-23.5	.3	37.59	54	-16.41	-	-	280	361	H
4	2.554	28.91	RMS	32.9	-23.2	.3	38.91	54	-15.09	-	-	280	361	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	37.7	PK	32.7	-23.5	0	46.9	-	-	74	-27.1	336	368	V
3	* 2.484	28.51	RMS	32.7	-23.5	.3	38.01	54	-15.99	-	-	336	368	V
4	2.547	28.91	RMS	32.9	-23.2	.3	38.91	54	-15.09	-	-	336	368	V
2	2.552	39.57	PK	32.9	-23.1	0	49.37	-	-	74	-24.63	336	368	V

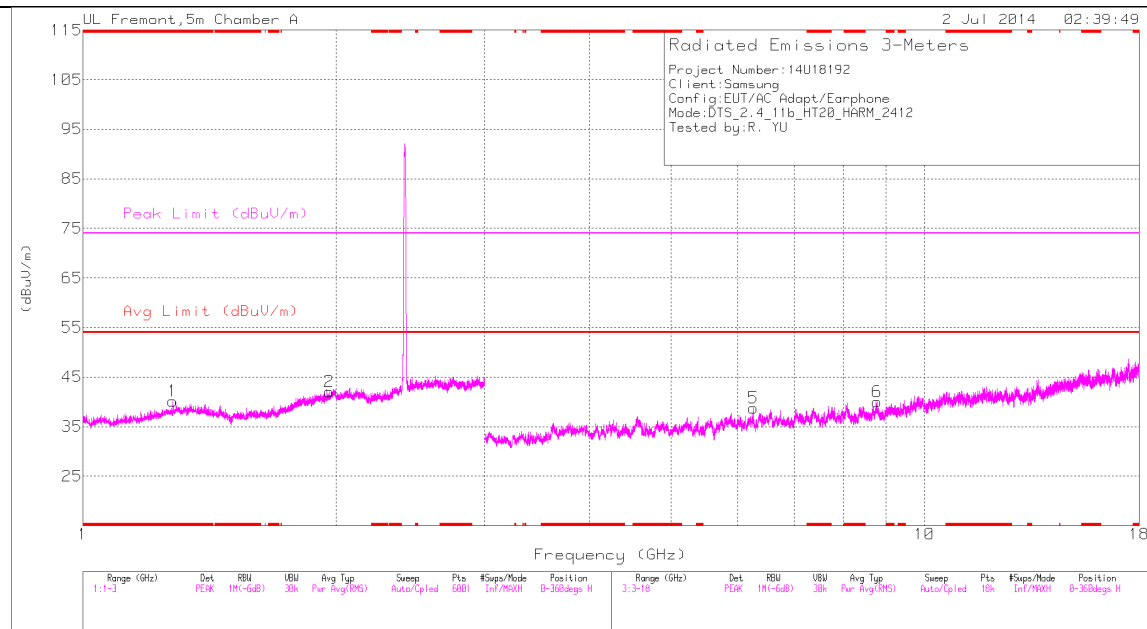
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL

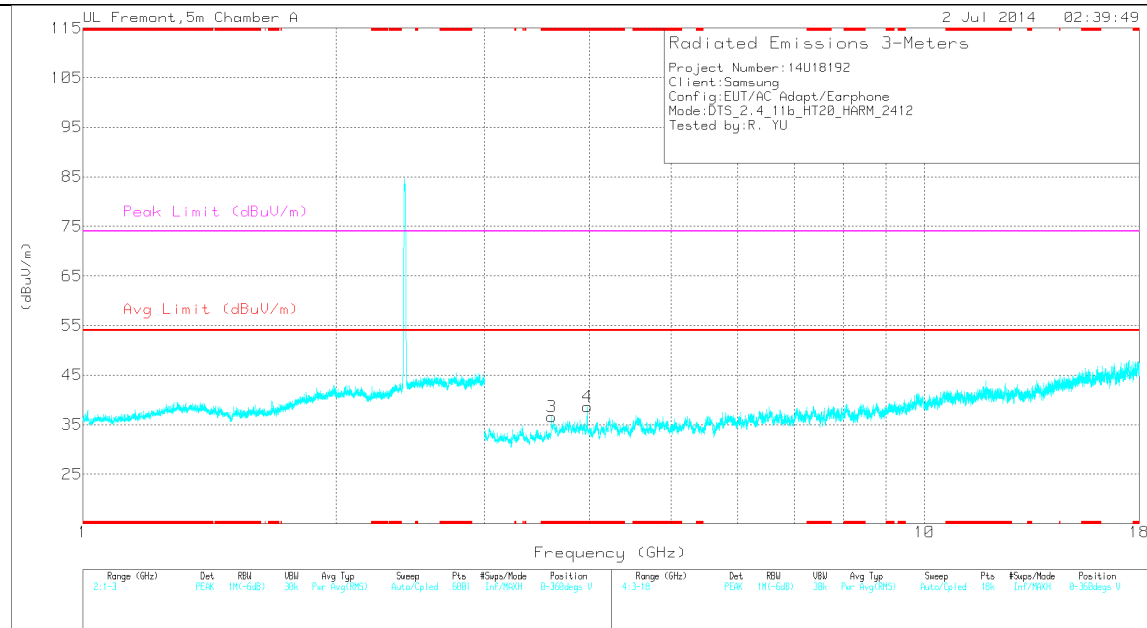


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 12 Jun 2014

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



FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 12 Jun 2014

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/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	* 1.279	37.14	PK	30	-27	40.14	-	-	74	-33.86	0-360	201	H
3	* 3.606	33.87	PK	33.2	-30.5	36.57	-	-	74	-37.43	0-360	201	V
4	* 3.974	35.2	PK	33.7	-30.3	38.6	-	-	74	-35.4	0-360	201	V
2	1.96	35.2	PK	31.9	-25	42.1	-	-	-	-	0-360	100	H
5	6.259	30.92	PK	35.4	-27.6	38.72	-	-	-	-	0-360	100	H
6	8.789	27.77	PK	35.8	-23.6	39.97	-	-	-	-	0-360	201	H

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

PK - Peak detector

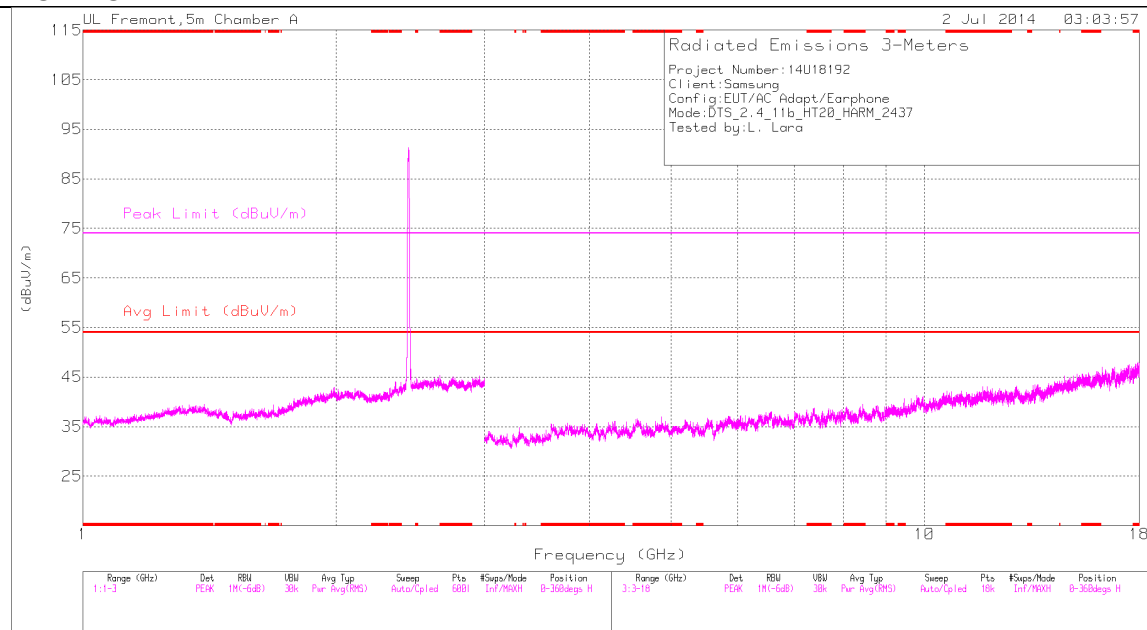
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.281	42.94	PK2	30.1	-26.9	46.14	-	-	74	-27.86	360	202	H
* 3.607	39.93	PK2	33.2	-30.6	42.53	-	-	74	-31.47	360	202	V
* 3.973	39.34	PK2	33.7	-30.3	42.74	-	-	74	-31.26	360	202	V

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

PK2 - KDB558074 Method: Maximum Peak

MID CHANNEL HORIZONTAL

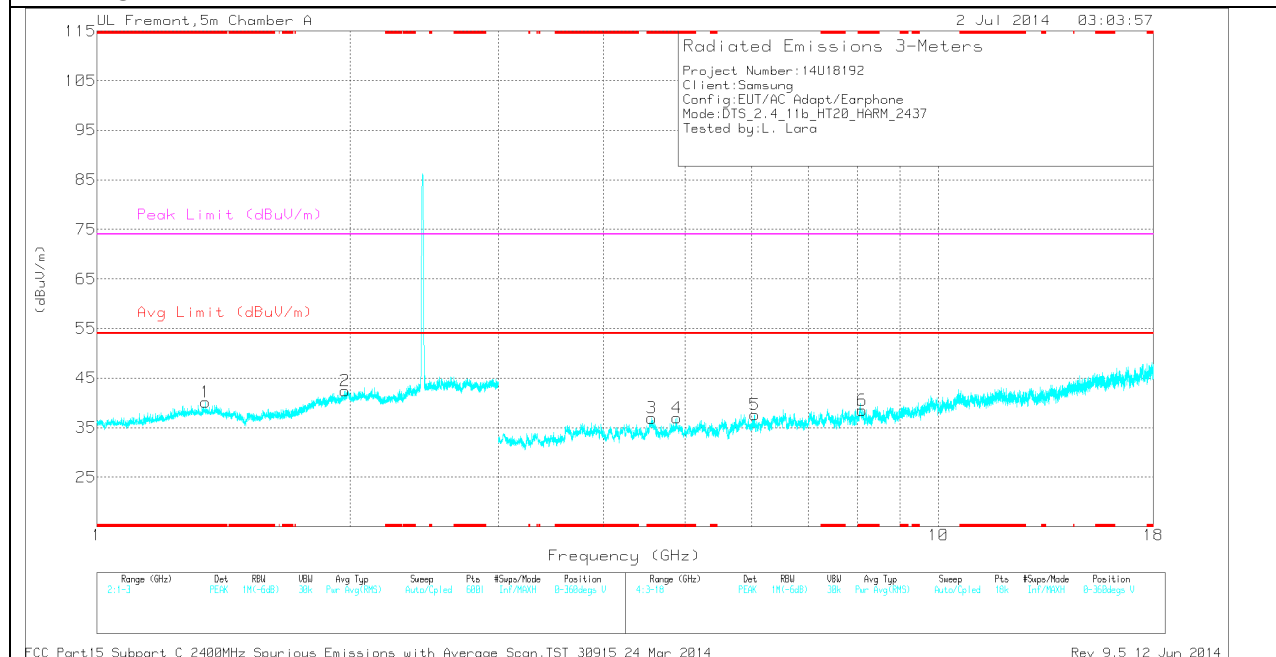


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 12 Jun 2014

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.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/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	* 1.347	36.55	PK	30	-26.4	40.15	-	-	74	-33.85	0-360	100	V
3	* 4.567	31.41	PK	33.9	-28.4	36.91	-	-	74	-37.09	0-360	201	V
4	* 4.887	31.7	PK	34	-28.7	37	-	-	74	-37	0-360	201	V
6	* 8.12	27.69	PK	35.5	-24.7	38.49	-	-	74	-35.51	0-360	100	V
2	1.971	35.34	PK	32	-24.9	42.44	-	-	-	-	0-360	201	V
5	6.046	30.43	PK	35.3	-28.1	37.63	-	-	-	-	0-360	201	V

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

PK - Peak detector

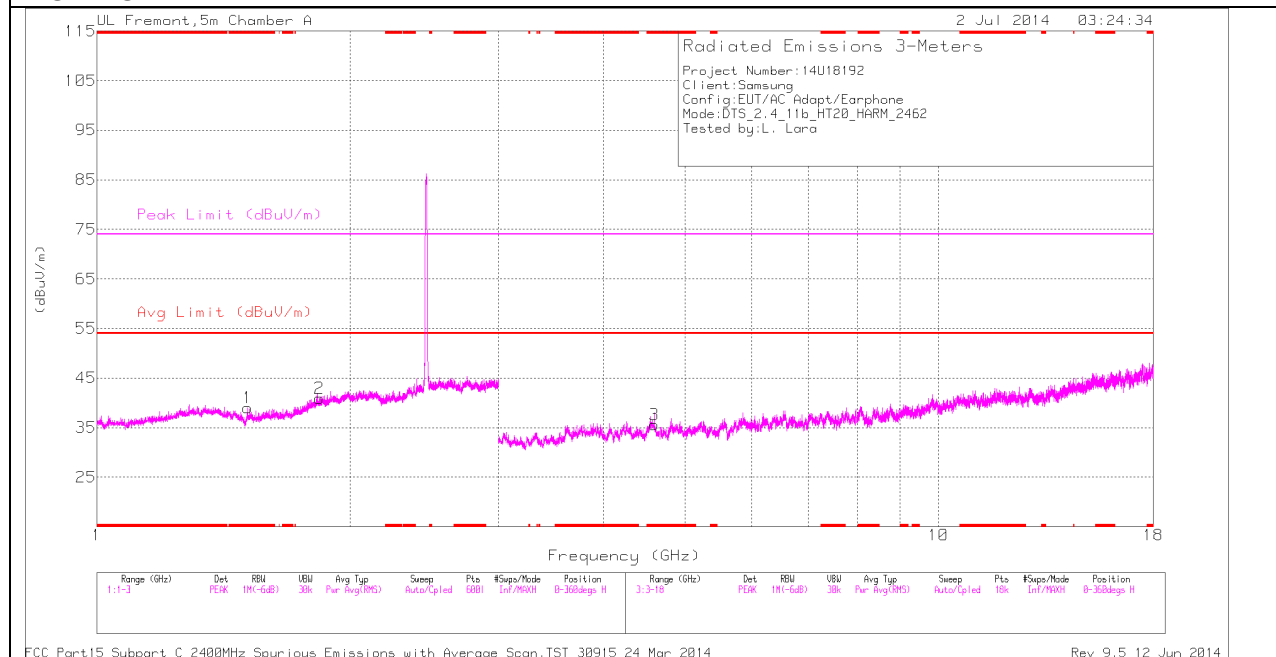
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.347	43.31	PK2	30	-26.4	46.91	-	-	74	-27.09	360	100	V
* 4.568	39.5	PK2	33.9	-28.4	45	-	-	74	-29	360	202	V
* 4.887	38.75	PK2	34	-28.7	44.05	-	-	74	-29.95	360	202	V
* 8.118	35.52	PK2	35.5	-24.6	46.42	-	-	74	-27.58	360	100	V

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

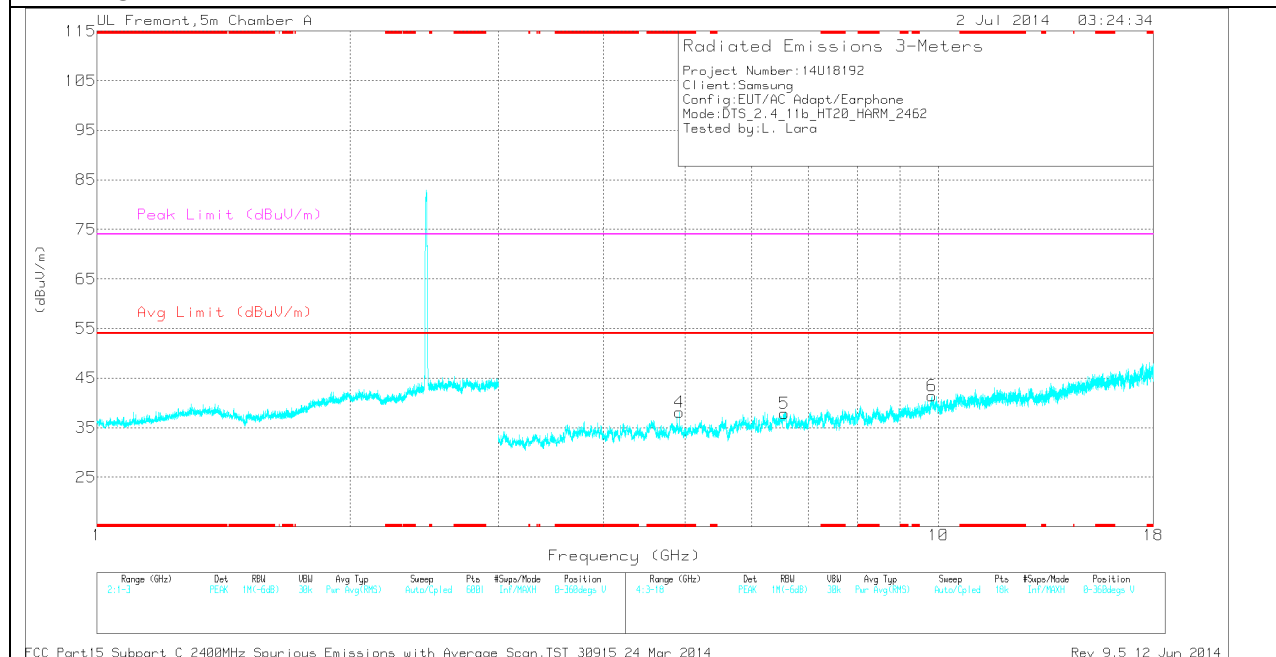
PK2 - KDB558074 Method: Maximum Peak

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.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/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	* 1.51	36.34	PK	28.7	-26	39.04	-	-	74	-34.96	0-360	201	H
3	* 4.597	30.67	PK	34	-29.1	35.57	-	-	74	-38.43	0-360	201	H
4	* 4.924	33.27	PK	33.9	-29	38.17	-	-	74	-35.83	0-360	201	V
2	1.839	35.36	PK	31	-25.4	40.96	-	-	-	-	0-360	100	H
5	6.562	29.1	PK	35.5	-26.7	37.9	-	-	-	-	0-360	201	V
6	9.826	26.91	PK	36.9	-22.4	41.41	-	-	-	-	0-360	100	V

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

PK - Peak detector

Radiated Emissions

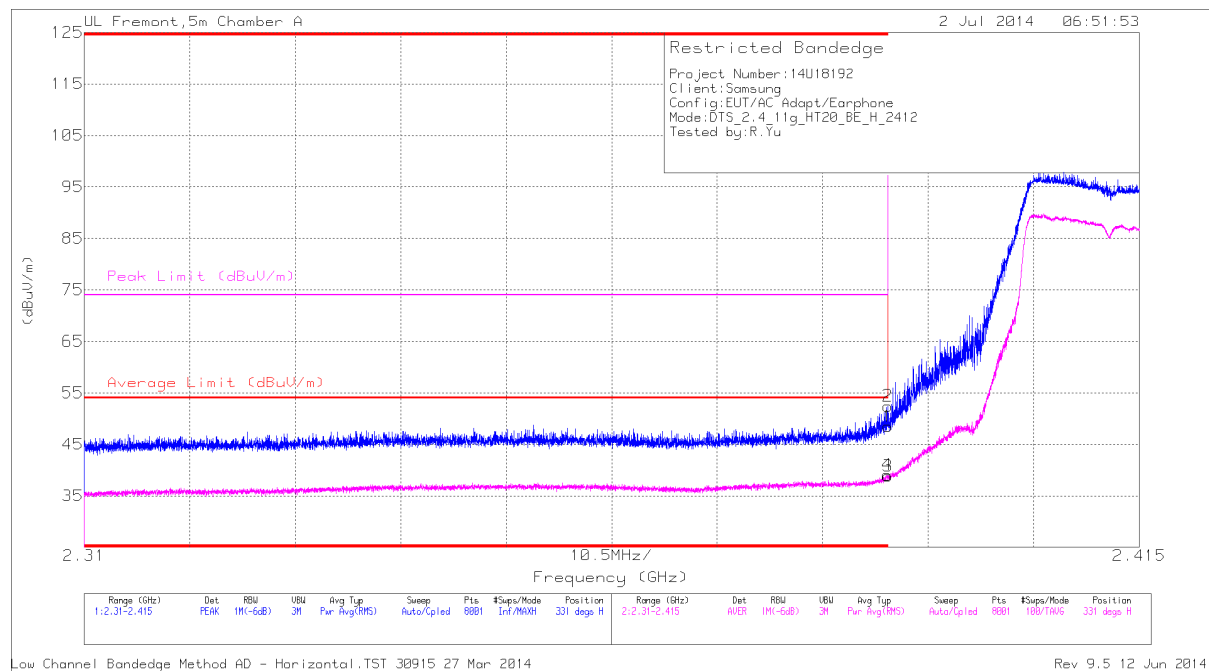
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.509	43.17	PK2	28.7	-26.1	45.77	-	-	74	-28.23	359	202	H
* 4.596	38.71	PK2	34	-29.1	43.61	-	-	74	-30.39	359	202	H
* 4.925	37.55	PK2	33.9	-29	42.45	-	-	74	-31.55	359	202	V

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

PK2 - KDB558074 Method: Maximum Peak

10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL



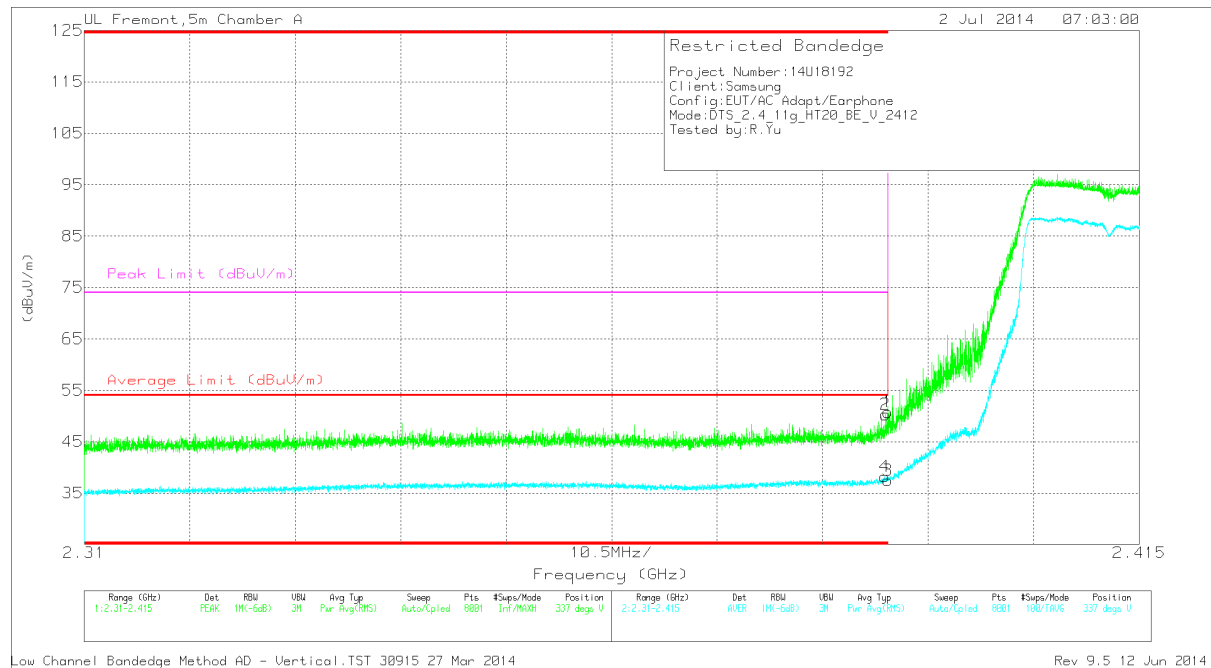
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.67	PK	32.2	-24.4	0	48.47	-	-	74	-25.53	331	300	H
2	* 2.39	44.63	PK	32.2	-24.4	0	52.43	-	-	74	-21.57	331	300	H
3	* 2.39	30.71	RMS	32.2	-24.4	.3	38.81	54	-15.19	-	-	331	300	H
4	* 2.39	30.94	RMS	32.2	-24.4	.3	39.04	54	-14.96	-	-	331	300	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cb/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	* 2.39	42.98	PK	32.2	-24.4	0	50.78	-	-	74	-23.22	337	383	V
2	* 2.39	42.49	PK	32.2	-24.4	0	50.29	-	-	74	-23.71	337	383	V
3	* 2.39	29.37	RMS	32.2	-24.4	.3	37.47	54	-16.53	-	-	337	383	V
4	* 2.39	30.13	RMS	32.2	-24.4	.3	38.23	54	-15.77	-	-	337	383	V

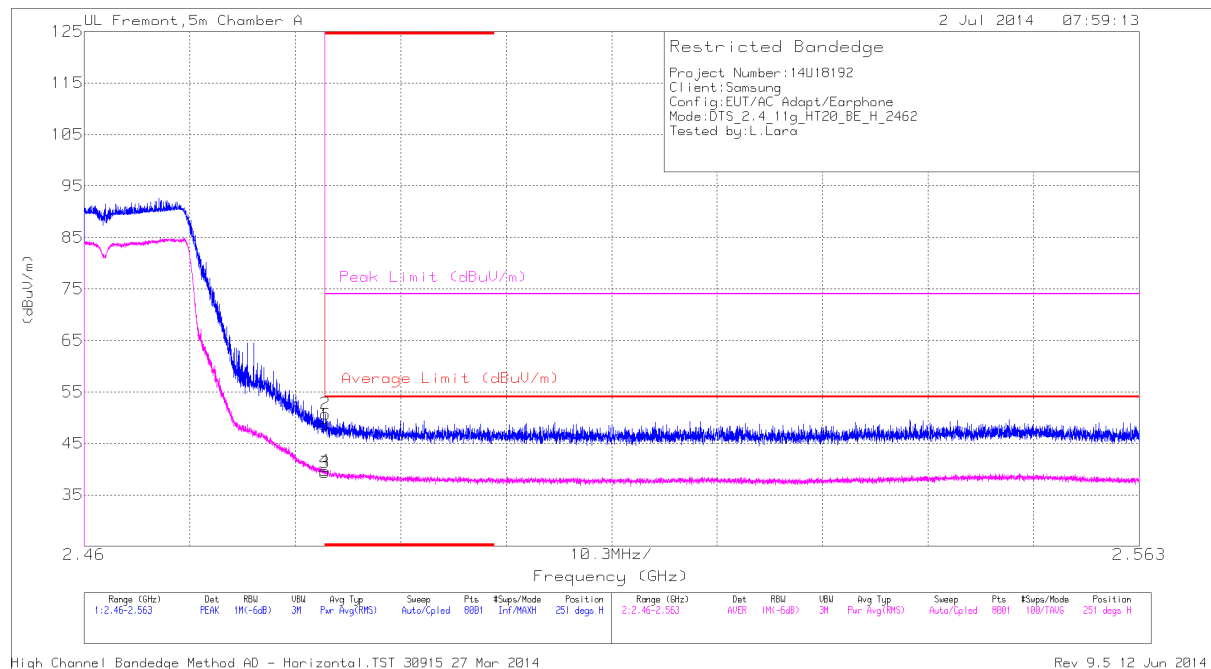
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL



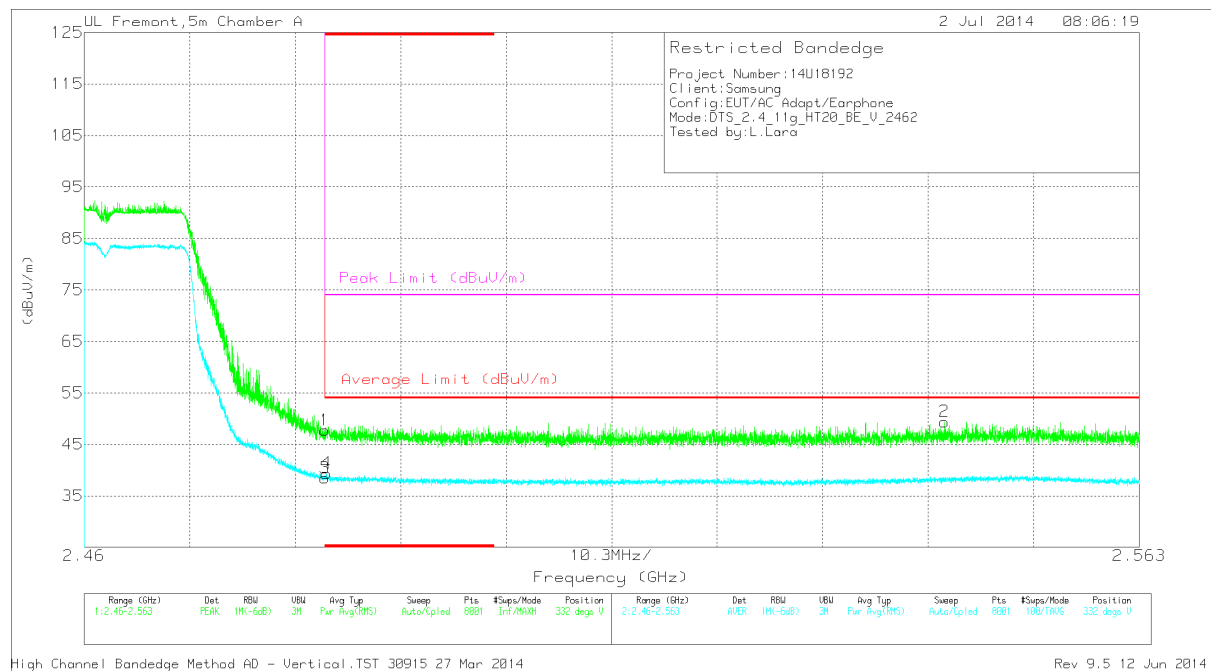
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT136 (dB/m)	Amp/Cbl/Fitter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.41	PK	32.7	-23.5	0	48.61	-	-	74	-25.39	251	279	H
2	* 2.484	41.55	PK	32.7	-23.5	0	50.75	-	-	74	-23.25	251	279	H
3	* 2.484	29.83	RMS	32.7	-23.5	.3	39.33	54	-14.67	-	-	251	279	H
4	* 2.484	30.2	RMS	32.7	-23.5	.3	39.7	54	-14.3	-	-	251	279	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT136 (dB/m)	Amp/Ch/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dB uV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degrees)	Height (cm)	Polarity
1	* 2.484	38.54	PK	32.7	-23.5	0	47.74	-	-	74	-26.26	332	369	V
3	* 2.484	28.98	RMS	32.7	-23.5	.3	38.48	54	-15.52	-	-	332	369	V
4	* 2.484	29.87	RMS	32.7	-23.5	.3	39.37	54	-14.63	-	-	332	369	V
2	2.544	39.81	PK	32.9	-23.3	0	49.41	-	-	74	-24.59	332	369	V

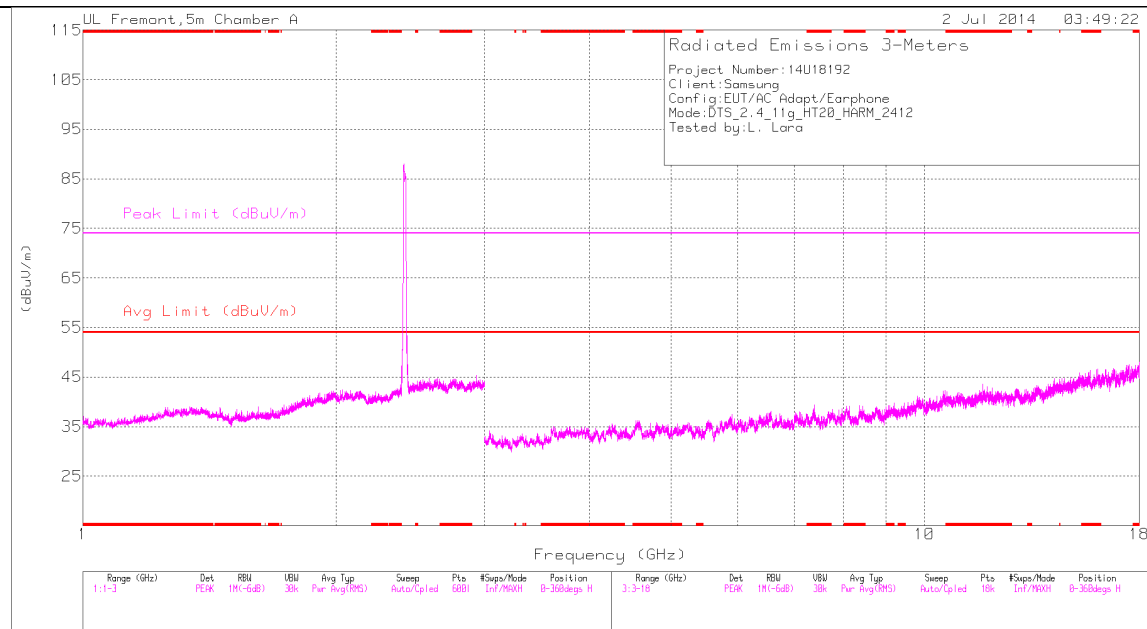
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL

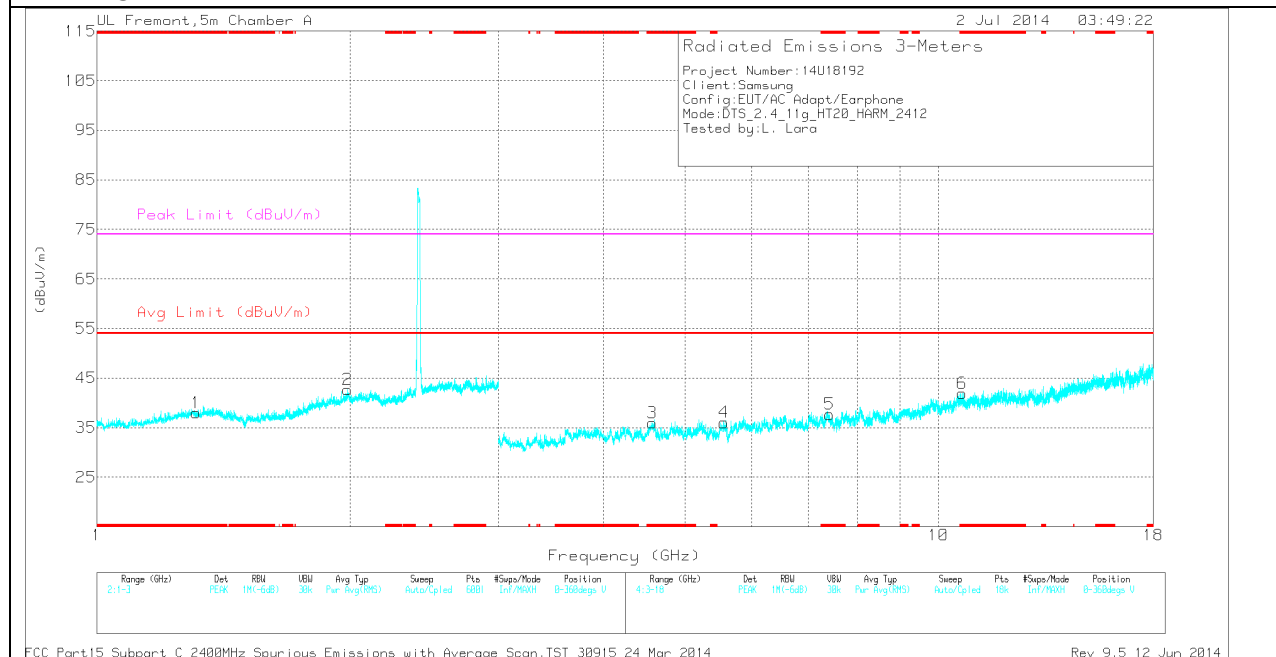


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 12 Jun 2014

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.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.312	34.74	PK	30.2	-26.9	0	38.04	-	-	74	-35.96	0-360	100	V
3	* 4.569	30.58	PK	33.9	-28.5	0	35.98	-	-	74	-38.02	0-360	100	V
5	* 7.425	27.67	PK	35.3	-25.3	0	37.67	-	-	74	-36.33	0-360	201	V
6	* 10.673	26	PK	37.8	-21.9	0	41.9	-	-	74	-32.1	0-360	201	V
2	1.985	35.07	PK	32	-24.4	0	42.67	-	-	-	-	0-360	201	V
4	5.557	29.62	PK	34.4	-28	0	36.02	-	-	-	-	0-360	100	V

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

PK - Peak detector

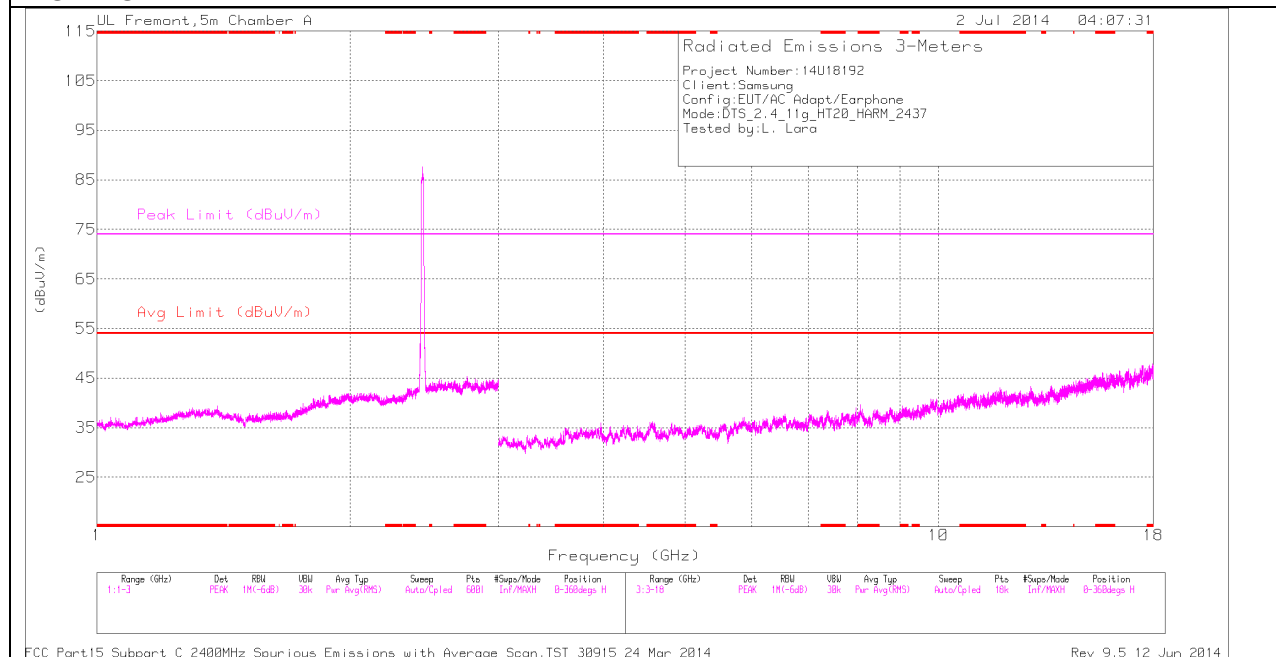
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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
* 1.311	42.97	PK2	30.2	-26.9	0	46.27	-	-	74	-27.73	359	100	V
* 4.569	38.39	PK2	33.9	-28.5	0	43.79	-	-	74	-30.21	359	100	V
* 7.426	35.22	PK2	35.3	-25.3	0	45.22	-	-	74	-28.78	359	202	V
* 10.673	33.32	PK2	37.8	-21.9	0	49.22	-	-	74	-24.78	359	202	V

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

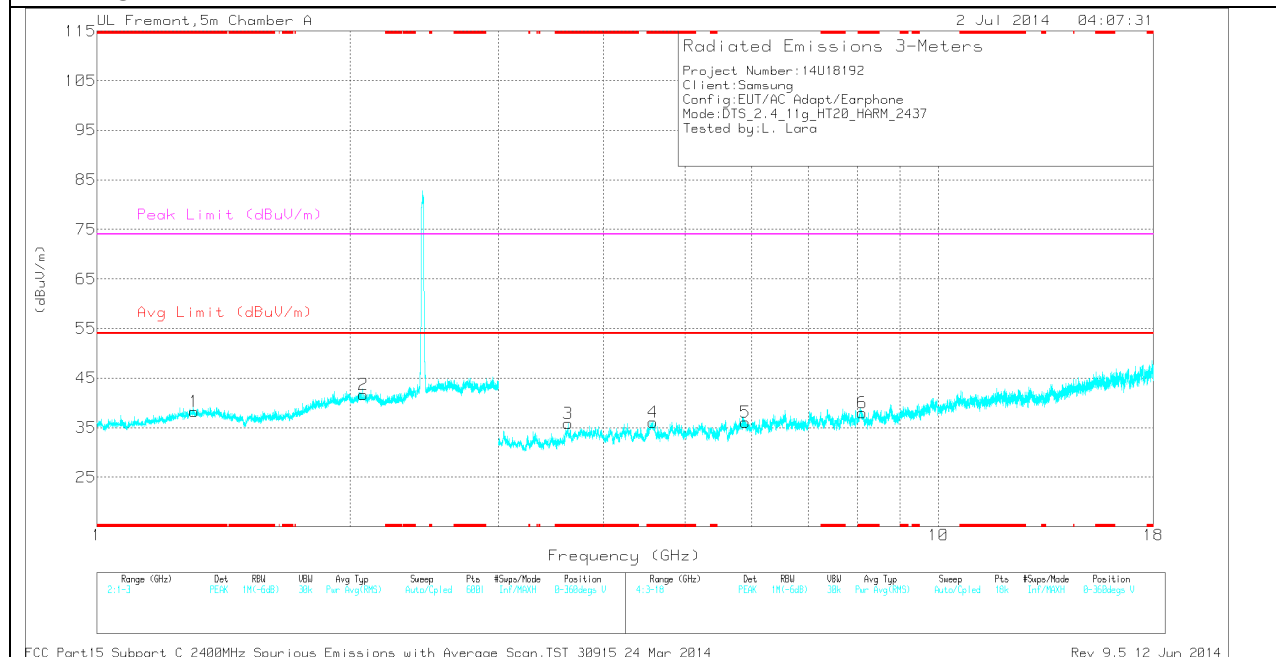
PK2 - KDB558074 Method: Maximum Peak

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.

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cb/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	* 1.306	34.99	PK	30.2	-26.9	0	38.29	-	-	74	-35.71	0-360	100	V
3	* 3.63	33.19	PK	33.2	-30.6	0	35.79	-	-	74	-38.21	0-360	100	V
4	* 4.579	30.63	PK	34	-28.6	0	36.03	-	-	74	-37.97	0-360	100	V
6	* 8.113	27.03	PK	35.5	-24.5	0	38.03	-	-	74	-35.97	0-360	201	V
2	2.072	34.43	PK	31.8	-24.6	0	41.63	-	-	-	-	0-360	100	V
5	5.899	29.01	PK	35	-27.9	0	36.11	-	-	-	-	0-360	201	V

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

PK - Peak detector

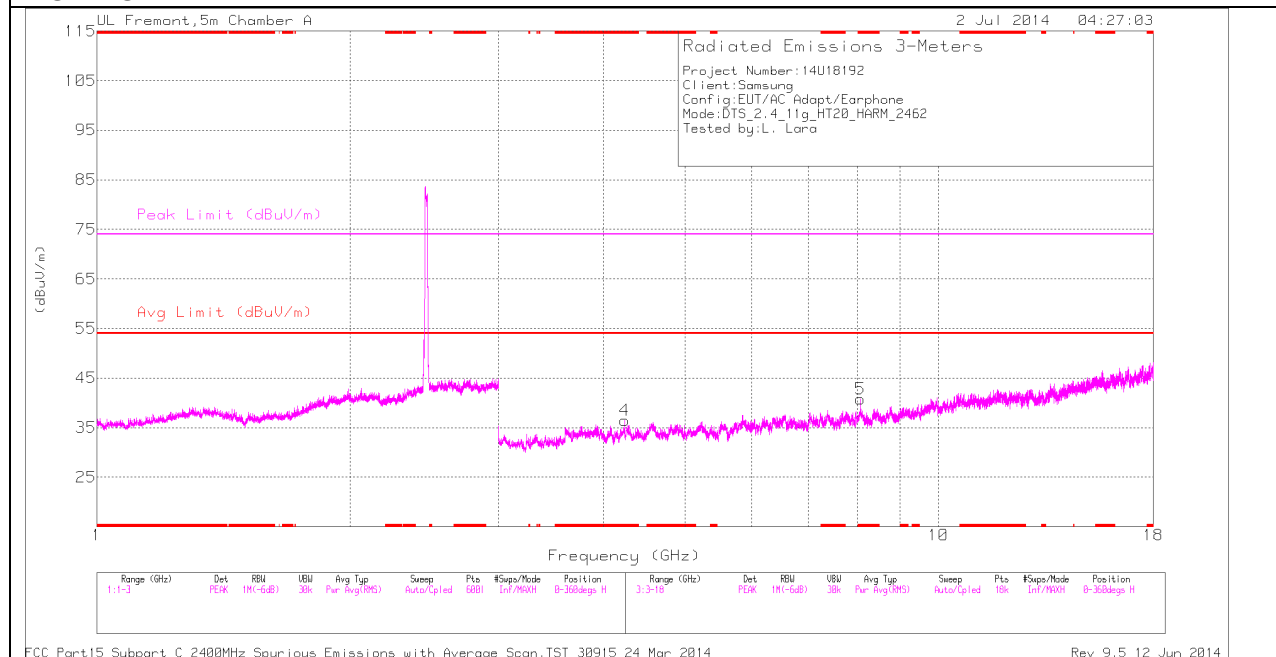
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cb/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
* 1.304	43.31	PK2	30.2	-26.8	0	46.71	-	-	74	-27.29	359	100	V
* 3.629	39.41	PK2	33.2	-30.5	0	42.11	-	-	74	-31.89	359	100	V
* 4.58	38.58	PK2	34	-28.6	0	43.98	-	-	74	-30.02	359	100	V
* 8.113	35.24	PK2	35.5	-24.5	0	46.24	-	-	74	-27.76	359	202	V

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

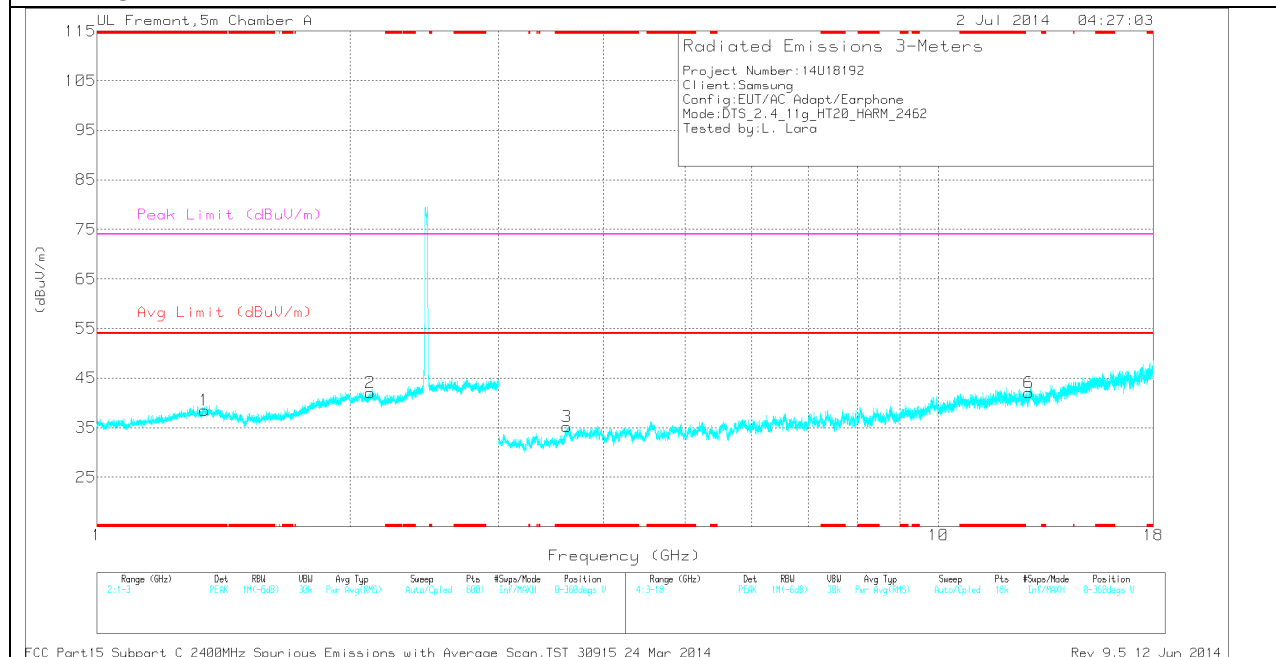
PK2 - KDB558074 Method: Maximum Peak

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.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.343	34.74	PK	30.1	-26.3	0	38.54	-	-	74	-35.46	0-360	201	V
4	* 4.237	32.51	PK	33.9	-29.9	0	36.51	-	-	74	-37.49	0-360	100	H
5	* 8.071	29.03	PK	35.5	-23.8	0	40.73	-	-	74	-33.27	0-360	201	H
3	* 3.619	32.58	PK	33.2	-30.6	0	35.18	-	-	74	-38.82	0-360	100	V
2	2.113	34.59	PK	31.7	-24.2	0	42.09	-	-	-	-	0-360	100	V
6	12.794	26.18	PK	39	-23.1	0	42.08	-	-	-	-	0-360	201	V

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

PK - Peak detector

Radiated Emissions

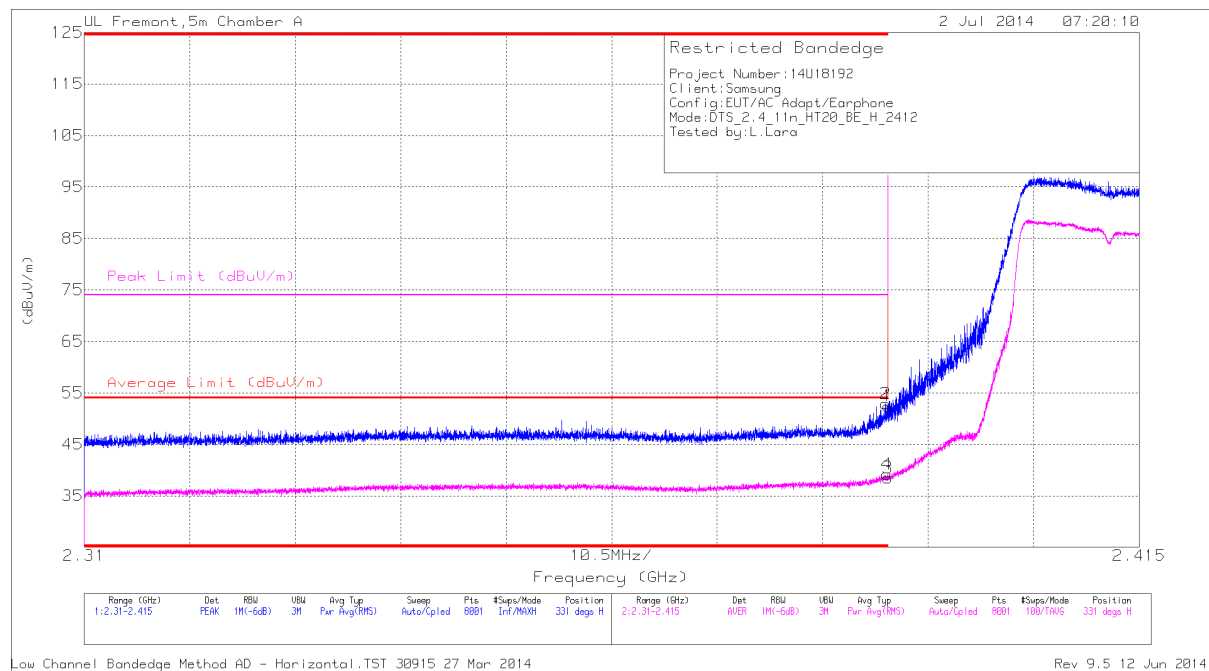
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.341	43.6	PK2	30.1	-26.3	0	47.4	-	-	74	-26.6	359	202	V
* 4.235	38.04	PK2	33.9	-29.8	0	42.14	-	-	74	-31.86	359	100	H
* 8.072	36.31	PK2	35.5	-23.8	0	48.01	-	-	74	-25.99	359	202	H
* 3.619	39.43	PK2	33.2	-30.6	0	42.03	-	-	74	-31.97	359	100	V

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

PK2 - KDB558074 Method: Maximum Peak

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

HORIZONTAL



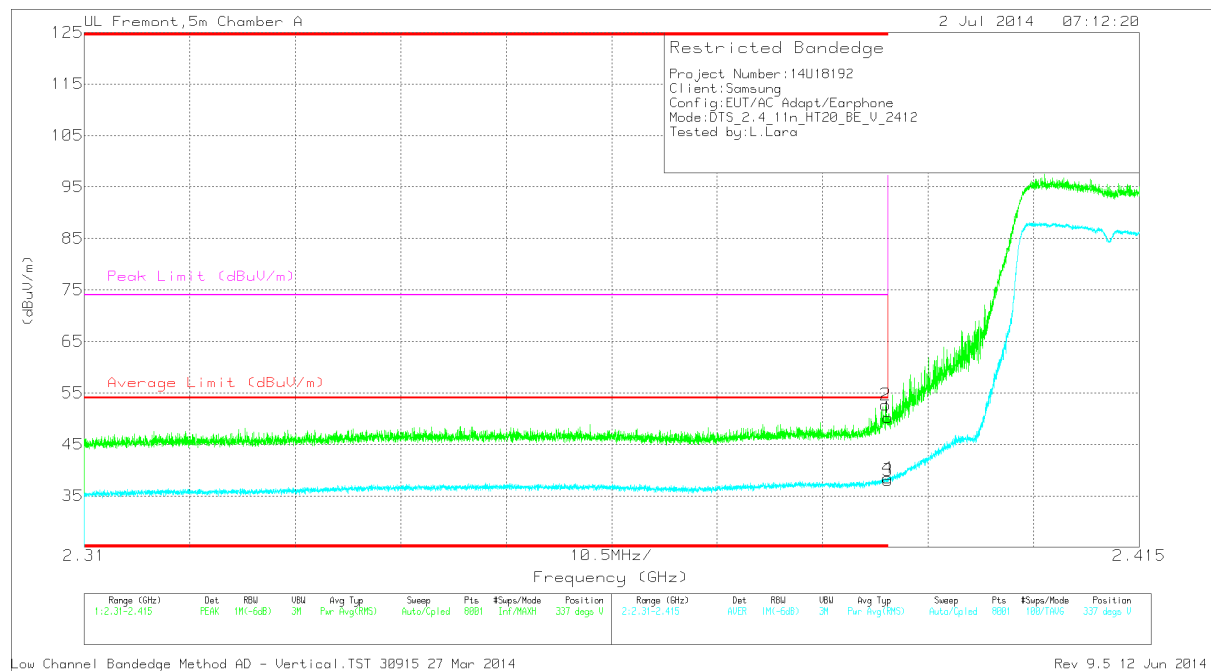
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.66	PK	32.2	-24.4	0	52.46	-	-	74	-21.54	331	300	H
2	* 2.39	45.09	PK	32.2	-24.4	0	52.89	-	-	74	-21.11	331	300	H
3	* 2.39	30.4	RMS	32.2	-24.4	.3	38.5	54	-15.5	-	-	331	300	H
4	* 2.39	31.09	RMS	32.2	-24.4	.3	39.19	54	-14.81	-	-	331	300	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	42.38	PK	32.2	-24.4	0	50.18	-	-	74	-23.82	337	376	V
2	* 2.39	44.87	PK	32.2	-24.4	0	52.67	-	-	74	-21.33	337	376	V
3	* 2.39	29.91	RMS	32.2	-24.4	.3	38.01	54	-15.99	-	-	337	376	V
4	* 2.39	30.38	RMS	32.2	-24.4	.3	38.48	54	-15.52	-	-	337	376	V

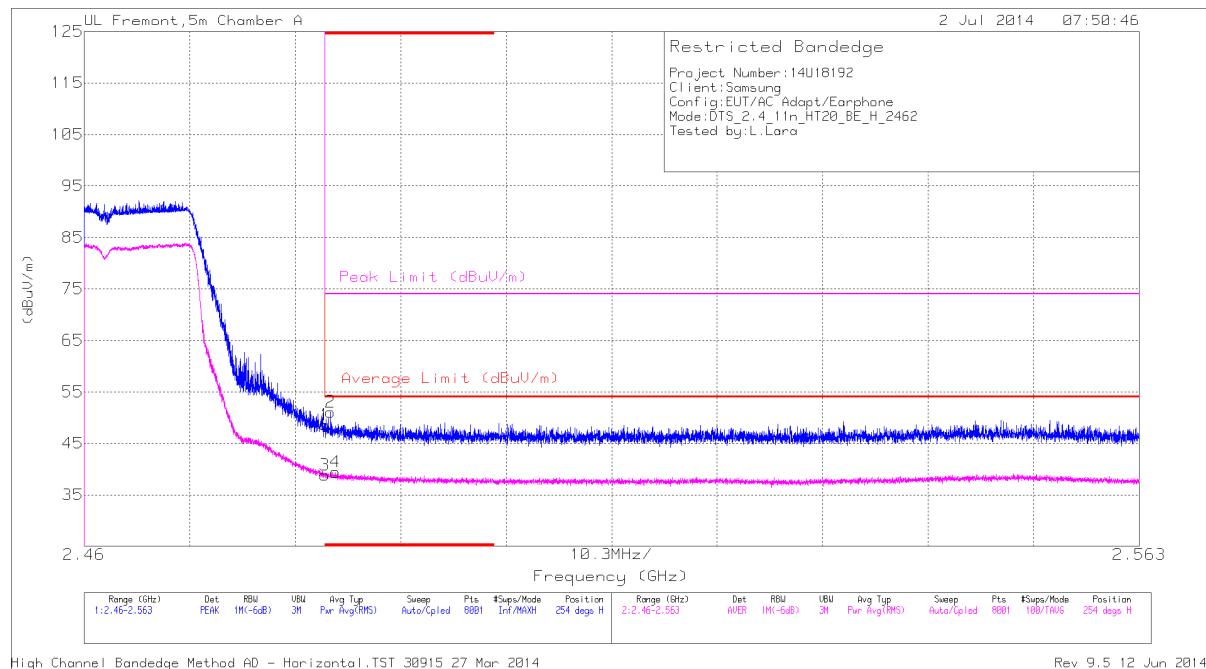
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL



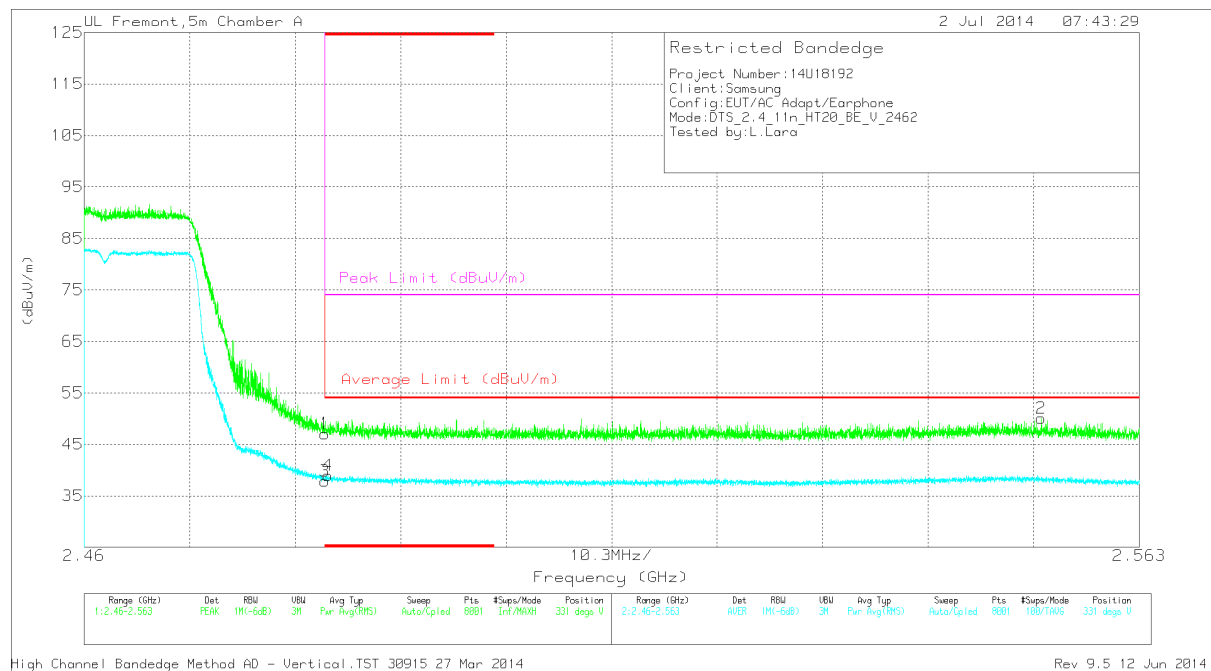
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT136 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.39	PK	32.7	-23.5	0	48.59	-	-	74	-25.41	254	234	H
2	* 2.484	41.88	PK	32.7	-23.5	0	51.08	-	-	74	-22.92	254	234	H
3	* 2.484	29.32	RMS	32.7	-23.5	.3	38.82	54	-15.18	-	-	254	234	H
4	* 2.485	29.9	RMS	32.7	-23.5	.3	39.4	54	-14.6	-	-	254	234	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	37.88	PK	32.7	-23.5	0	47.08	-	-	74	-26.92	331	368	V
3	* 2.484	28.34	RMS	32.7	-23.5	.3	37.84	54	-16.16	-	-	331	368	V
4	* 2.484	29.47	RMS	32.7	-23.5	.3	38.97	54	-15.03	-	-	331	368	V
2	2.553	40.37	PK	32.9	-23.2	0	50.07	-	-	74	-23.93	331	368	V

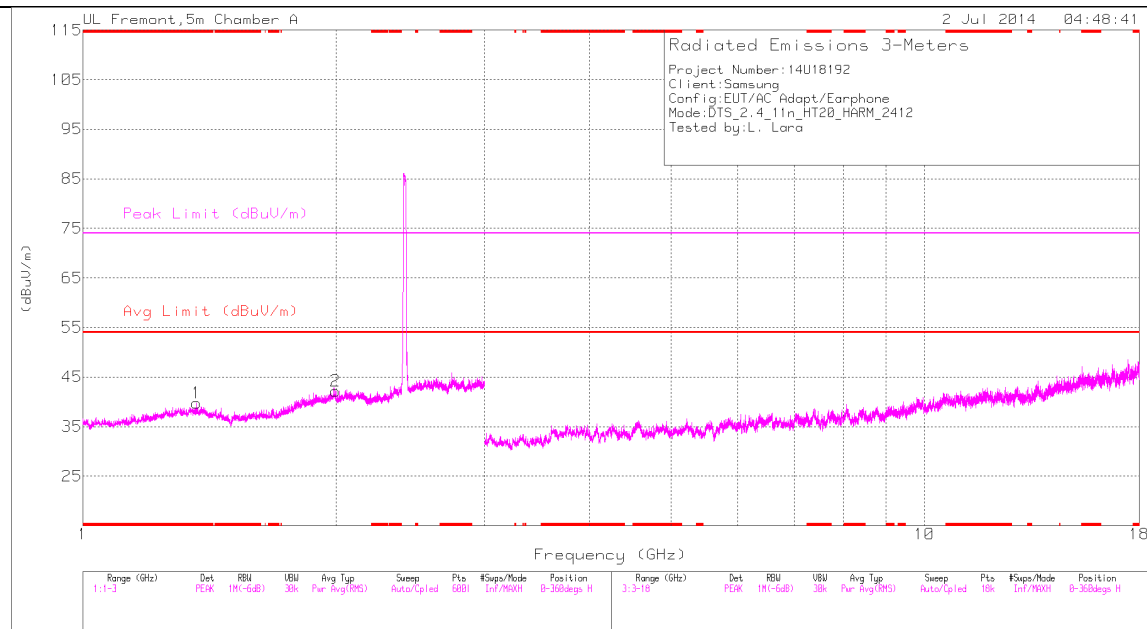
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL

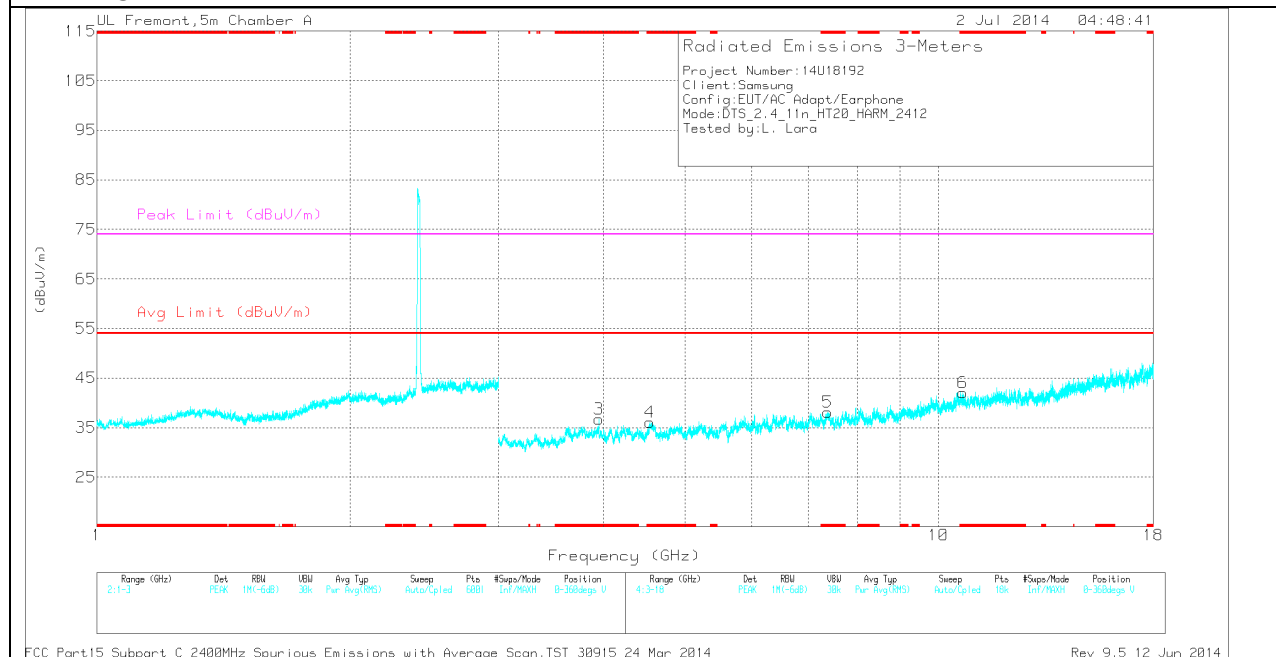


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 12 Jun 2014

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.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.364	36.37	PK	30	-26.6	0	39.77	-	-	74	-34.23	0-360	100	H
3	* 3.947	33.4	PK	33.7	-30.4	0	36.7	-	-	74	-37.3	0-360	100	V
4	* 4.54	30.71	PK	33.9	-28.5	0	36.11	-	-	74	-37.89	0-360	201	V
5	* 7.387	27.15	PK	35.3	-24.3	0	38.15	-	-	74	-35.85	0-360	201	V
6	* 10.682	26.71	PK	37.8	-22.5	0	42.01	-	-	74	-31.99	0-360	201	V
2	1.995	34.82	PK	32.1	-24.8	0	42.12	-	-	-	-	0-360	100	H

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

PK - Peak detector

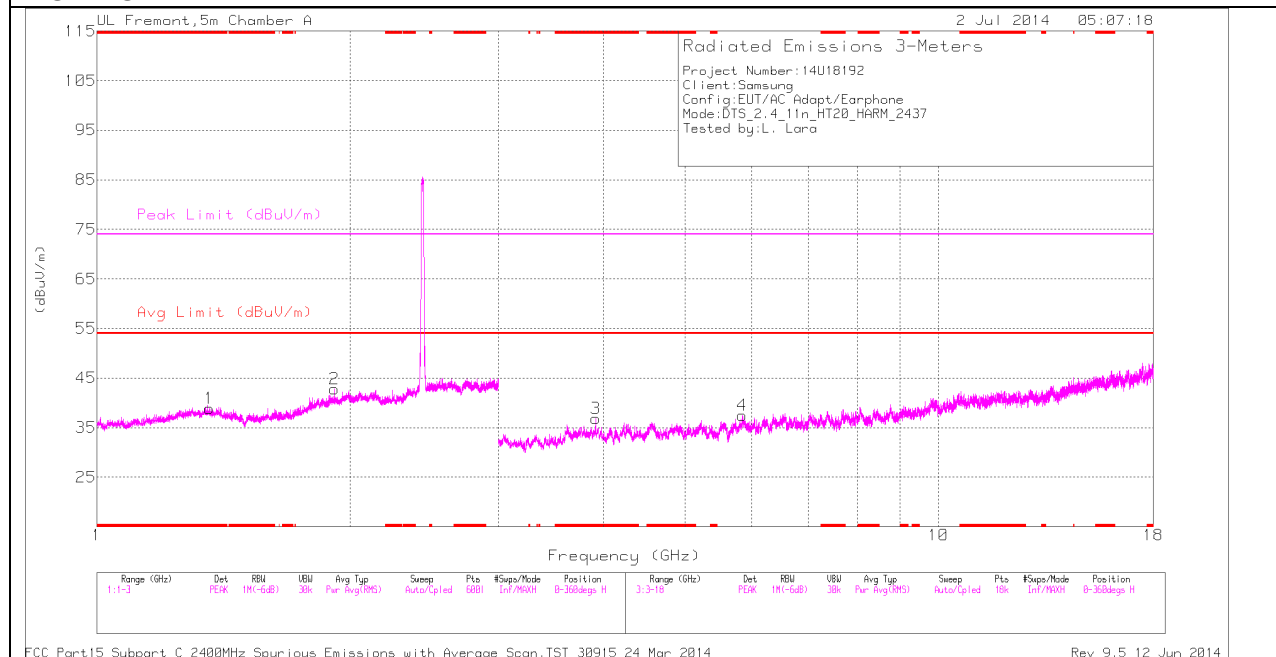
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
* 1.363	43.7	PK2	30	-26.6	0	47.1	-	-	74	-26.9	360	100	H
* 3.947	38.75	PK2	33.7	-30.3	0	42.15	-	-	74	-31.85	360	100	V
* 4.541	38.01	PK2	33.9	-28.5	0	43.41	-	-	74	-30.59	360	202	V
* 7.386	35.08	PK2	35.3	-24.3	0	46.08	-	-	74	-27.92	360	202	V
* 7.386	35.39	PK2	35.3	-24.3	0	46.39	-	-	74	-27.61	360	202	V
* 10.681	32.86	PK2	37.8	-22.5	0	48.16	-	-	74	-25.84	360	202	V

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

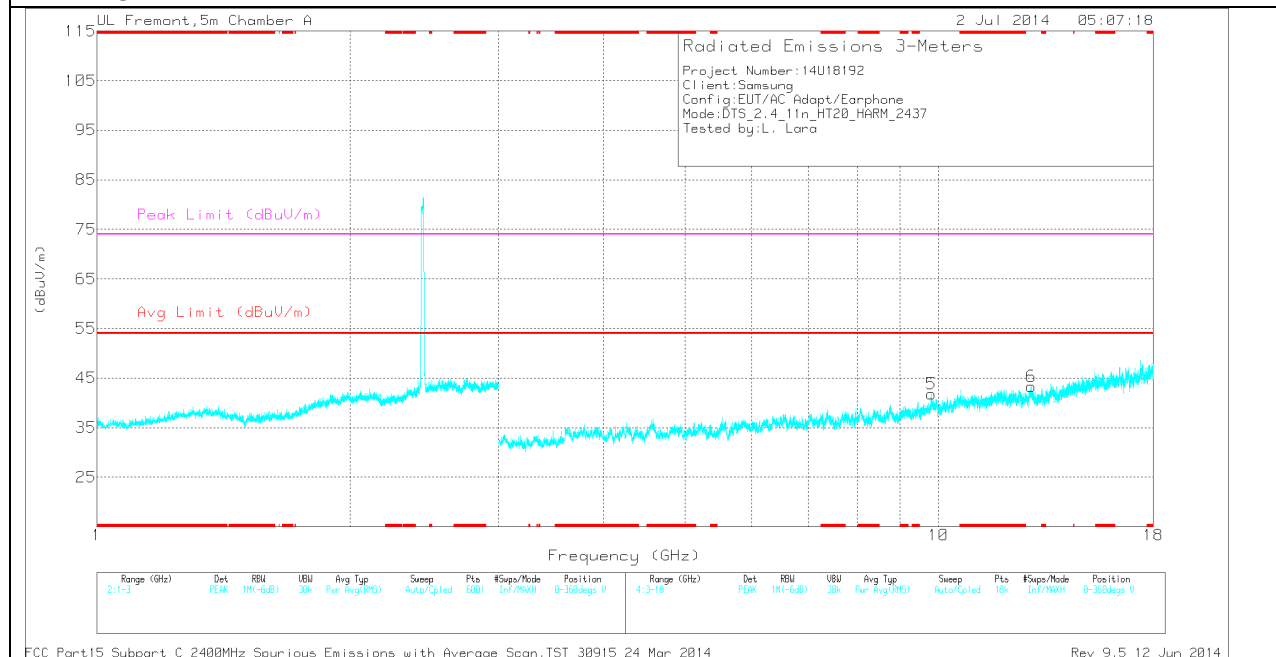
PK2 - KDB558074 Method: Maximum Peak

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.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.36	35.47	PK	30	-26.6	0	38.87	-	-	74	-35.13	0-360	202	H
3	* 3.913	33.29	PK	33.8	-30.3	0	36.79	-	-	74	-37.21	0-360	100	H
2	1.916	36.35	PK	31.7	-25.2	0	42.85	-	-	-	-	0-360	202	H
4	5.847	30.22	PK	34.9	-27.6	0	37.52	-	-	-	-	0-360	100	H
5	9.812	27.3	PK	36.9	-22.4	0	41.8	-	-	-	-	0-360	100	V
6	12.882	25.84	PK	39	-21.5	0	43.34	-	-	-	-	0-360	100	V

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

PK - Peak detector

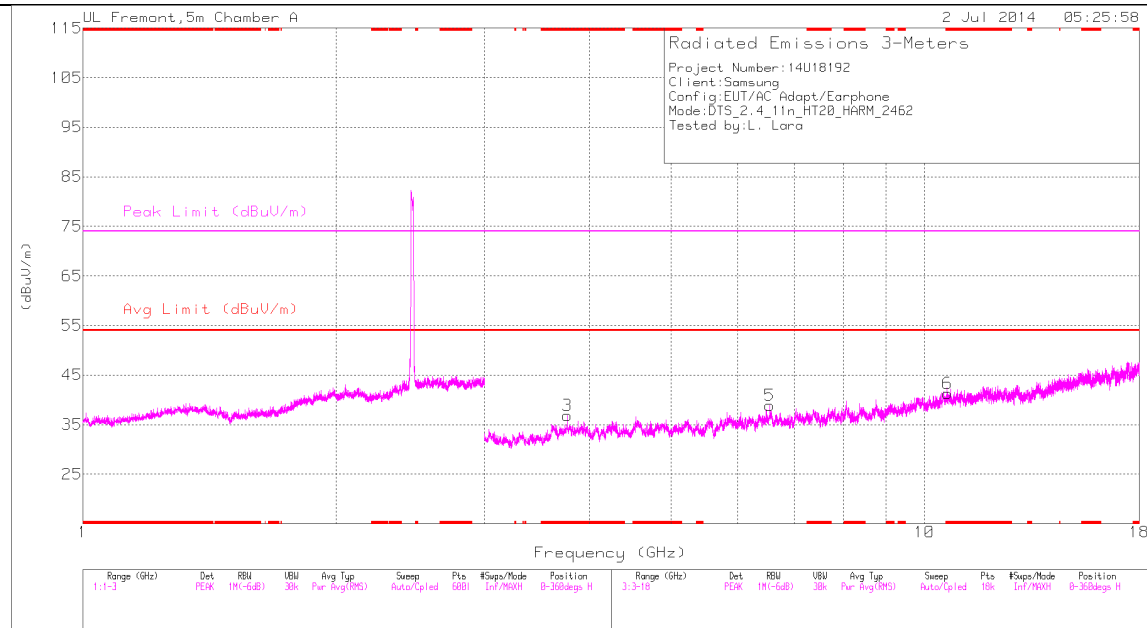
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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
* 1.358	43.05	PK2	30	-26.6	0	46.45	-	-	74	-27.55	359	203	H
* 3.912	39.53	PK2	33.8	-30.2	0	43.13	-	-	74	-30.87	359	100	H

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

PK2 - KDB558074 Method: Maximum Peak

HIGH CHANNEL HORIZONTAL

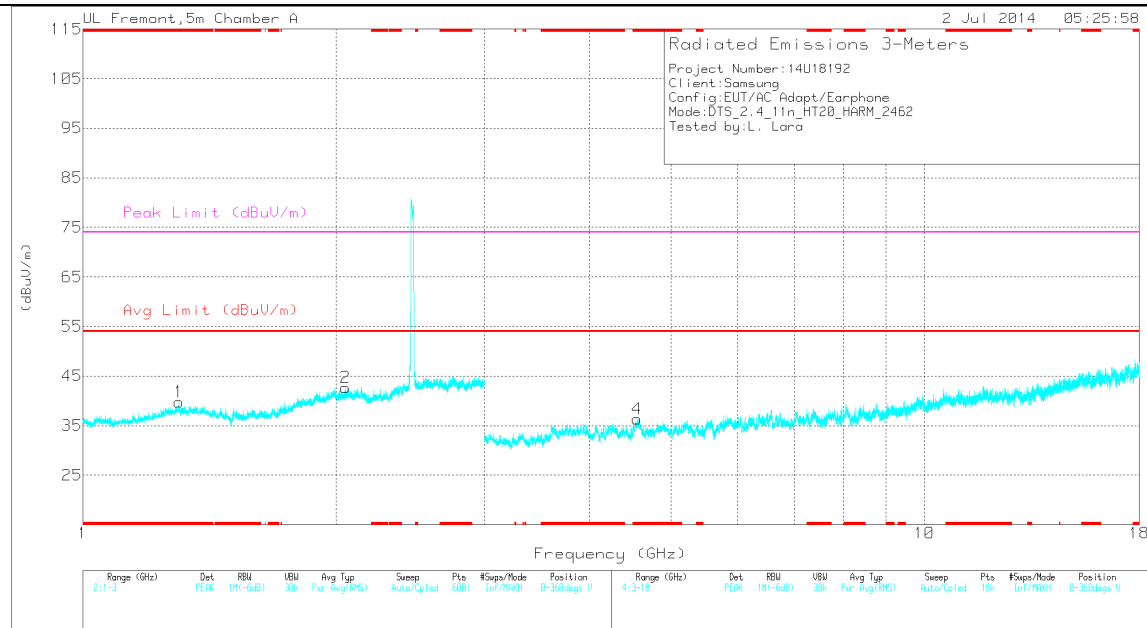


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 12 Jun 2014

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.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.3	36.21	PK	30.2	-26.6	0	39.81	-	-	74	-34.19	0-360	201	V
3	* 3.766	33.52	PK	33.5	-30.2	0	36.82	-	-	74	-37.18	0-360	201	H
6	* 10.66	25.82	PK	37.8	-22.3	0	41.32	-	-	74	-32.68	0-360	201	H
4	* 4.552	30.84	PK	33.9	-28.4	0	36.34	-	-	74	-37.66	0-360	201	V
2	2.053	35.15	PK	31.9	-24.4	0	42.65	-	-	-	-	0-360	100	V
5	6.551	29.96	PK	35.5	-26.6	0	38.86	-	-	-	-	0-360	100	H

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

PK - Peak detector

Radiated Emissions

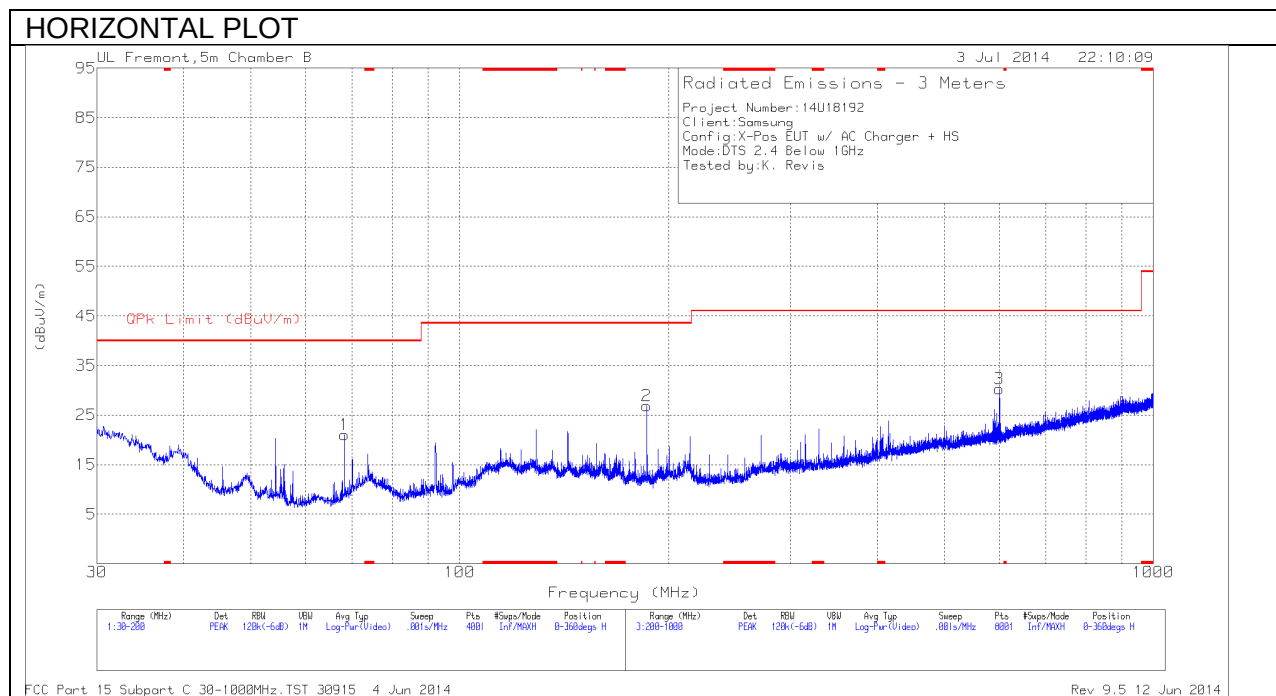
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.299	43.48	PK2	30.2	-26.6	0	47.08	-	-	74	-26.92	359	202	V
* 3.765	39.04	PK2	33.5	-30.1	0	42.44	-	-	74	-31.56	359	202	H
* 10.658	33.41	PK2	37.8	-22.5	0	48.71	-	-	74	-25.29	359	202	H
* 4.551	38.38	PK2	33.9	-28.5	0	43.78	-	-	74	-30.22	359	202	V

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

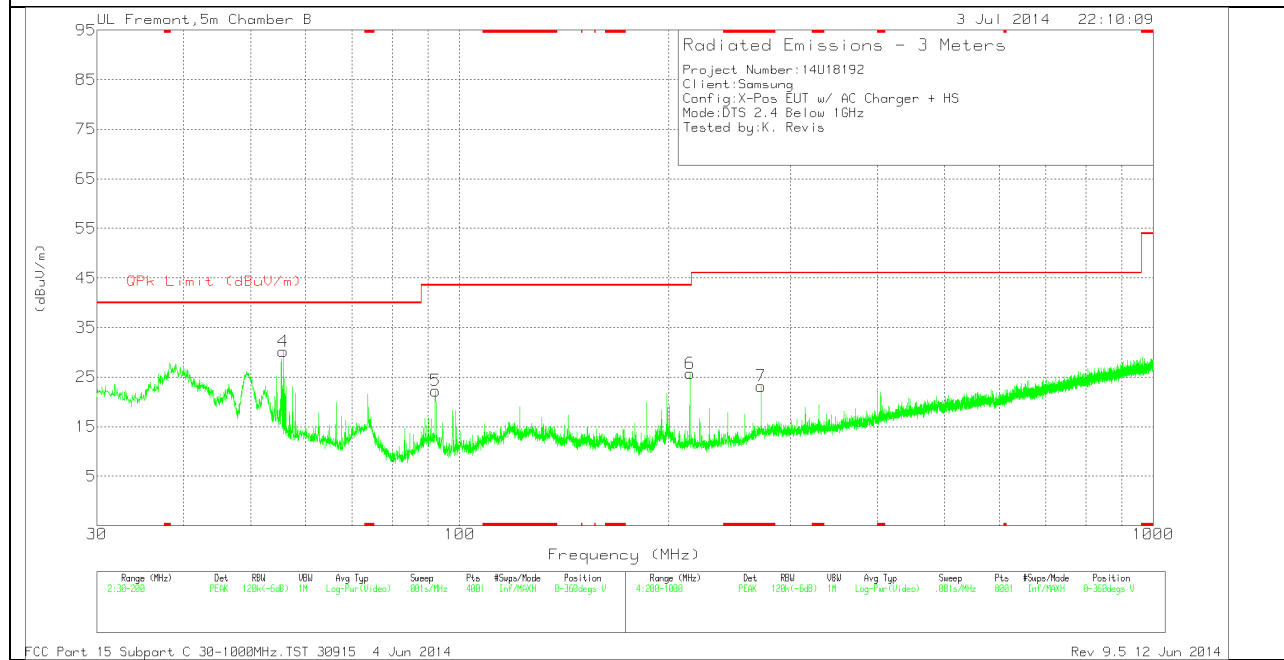
PK2 - KDB558074 Method: Maximum Peak

10.3. WORST-CASE BELOW 1 GHz

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



VERTICAL PLOT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	* 272	36.03	PK	13.3	-26.2	0	23.13	46.02	-22.89	0-360	200	V
4	55.67	51.51	PK	7.2	-28.5	0	30.21	40	-9.79	0-360	101	V
1	68.2075	41.35	PK	8	-28.3	0	21.05	40	-18.95	0-360	300	H
5	92.305	42.14	PK	8.2	-28.1	0	22.24	43.52	-21.28	0-360	101	V
2	186.145	42.94	PK	10.9	-27	0	26.84	43.52	-16.68	0-360	100	H
6	214.8	41.88	PK	10.6	-26.8	0	25.68	43.52	-17.84	0-360	200	V
3	600.2	37.2	PK	18.4	-25.3	0	30.3	46.02	-15.72	0-360	200	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.

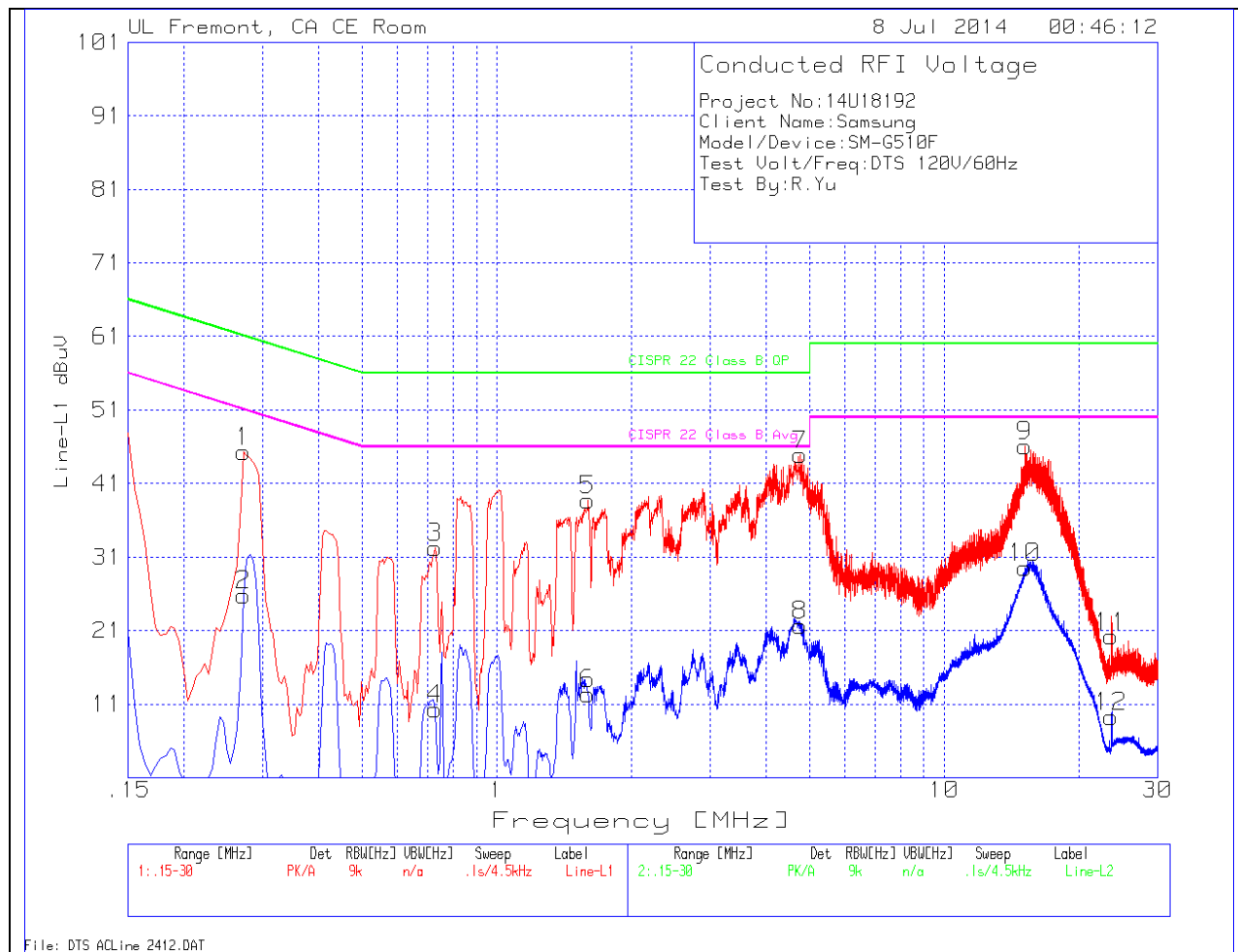
6 WORST EMISSIONS

Line-L1 .15 - 30MHz

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	.2715	44.67	PK	.6	0	45.27	61.1	-15.83	-	-
2	.2715	25.17	Av	.6	0	25.77	-	-	51.1	-25.33
3	.726	31.98	PK	.3	0	32.28	56	-23.72	-	-
4	.726	9.98	Av	.3	0	10.28	-	-	46	-35.72
5	1.599	38.43	PK	.2	.1	38.73	56	-17.27	-	-
6	1.599	12.11	Av	.2	.1	12.41	-	-	46	-33.59
7	4.758	44.56	PK	.2	.1	44.86	56	-11.14	-	-
8	4.758	21.35	Av	.2	.1	21.65	-	-	46	-24.35
9	15.171	45.62	PK	.3	.2	46.12	60	-13.88	-	-
10	15.171	29	Av	.3	.2	29.5	-	-	50	-20.5
11	23.6535	19.68	PK	.3	.2	20.18	60	-39.82	-	-
12	23.6535	8.77	Av	.3	.2	9.27	-	-	50	-40.73

Line-L2 .15 - 30MHz

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)
13	.2445	24.6	PK	.8	0	25.4	61.9	-36.5	-	-
14	.2445	.07	Av	.8	0	.87	-	-	51.9	-51.03
15	.8385	41.8	PK	.3	.1	42.2	56	-13.8	-	-
16	.8385	23.7	Av	.3	.1	24.1	-	-	46	-21.9
17	1.878	38.84	PK	.2	.1	39.14	56	-16.86	-	-
18	1.878	15.87	Av	.2	.1	16.17	-	-	46	-29.83
19	2.553	39.17	PK	.2	.1	39.47	56	-16.53	-	-
20	2.553	19.17	Av	.2	.1	19.47	-	-	46	-26.53
21	5.0145	42.7	PK	.2	.1	43	60	-17	-	-
22	5.0145	22.36	Av	.2	.1	22.66	-	-	50	-27.34
23	6.1755	34.57	PK	.2	.1	34.87	60	-25.13	-	-
24	6.1755	17.3	Av	.2	.1	17.6	-	-	50	-32.4

LINE 1 RESULTS

LINE 2 RESULTS