



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

**802.11 B/G/N 1X1 HT20, + BT4.0 +BASIC RATES +HS+ GSM850/1900 &
WCDMA850MHZ BAR PHONE**

MODEL NUMBER: GT-S5312B

FCC ID: A3LGTS5312B

REPORT NUMBER: 13U14924-2

ISSUE DATE: APRIL 12, 2013

Prepared for

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

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	04/12/13	Initial Issue	T. LEE

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: BAR PHONE WITH WLAN, 802.11b/g/n and Bluetooth

MODEL: GT-S5312B

SERIAL NUMBER: For Emissions Unit S/N: FK-064-B, for Antenna conducted test
S/N: FK-064-B

DATE TESTED: APRIL 02-12, 2013.

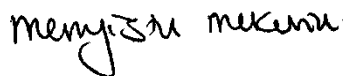
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass

UL CCS 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 CCS 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS 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 CCS By:

Tested By:



PHILIP KIM
WISE PROGRAM MANAGER
UL CCS

MENGISTU MEKURIA
EMC ENGINEER
UL CCS

TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

2. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

3. CALIBRATION AND UNCERTAINTY

3.1. 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.

3.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

3.3. 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 1000 MHz	4.94 dB

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

4. EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF EUT

The EUT is a bar-style cell phone featuring 802.11b/g/n WLAN, Bluetooth, GPS and 2.4 GHz mobile hotspot capability.

4.2. 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	17.79	60.12
2412 - 2462	802.11g	22.6	181.97
2412 - 2462	802.11n HT20	21.11	129.12

4.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PCB antenna, with a maximum gain of -5 dBi.

4.4. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was S5312B.010.

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

4.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

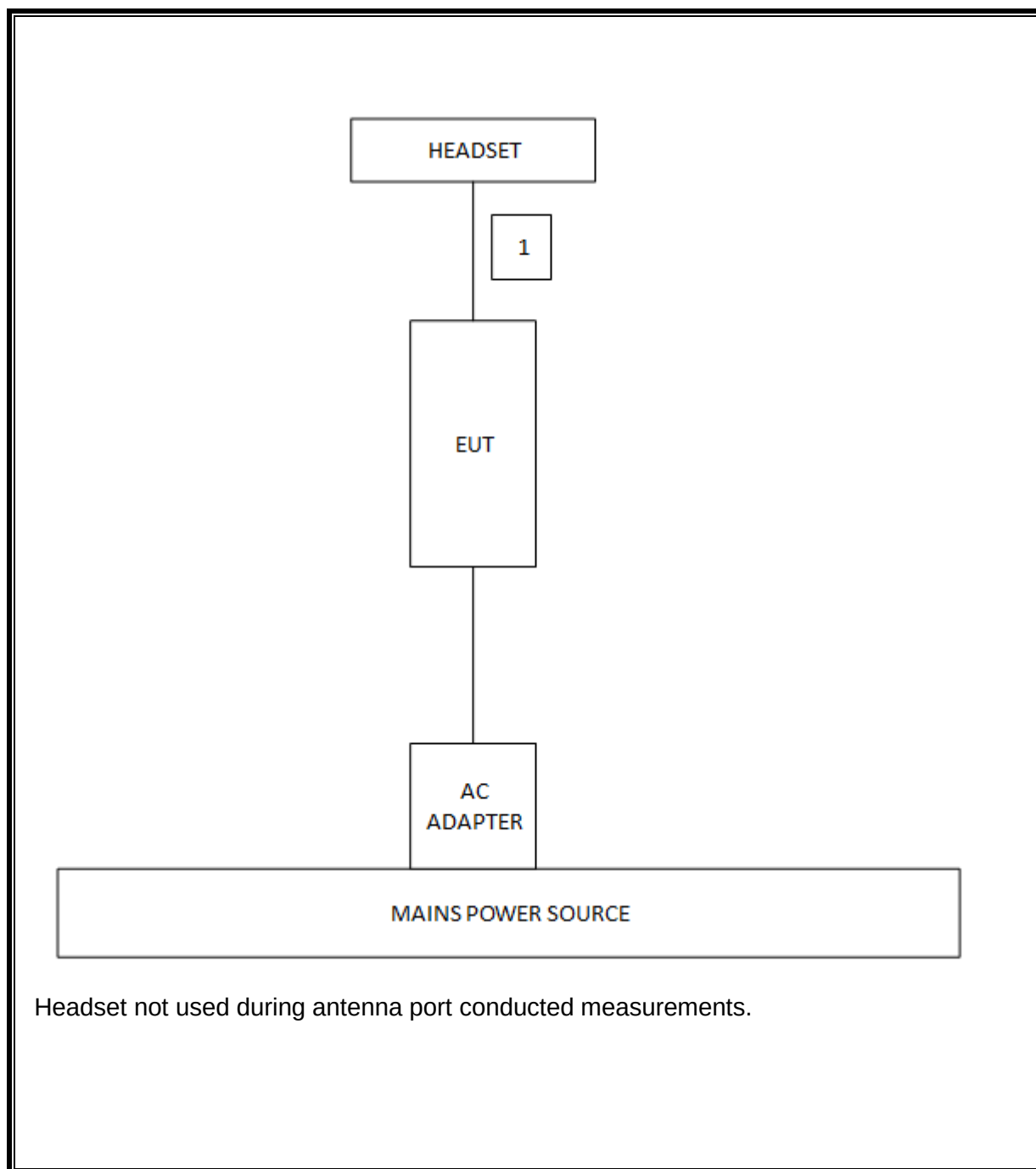
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Power Adapter	Samsung	GT-S5312B	SC1C401VS/A	n/a
Headphones	Samsung	GT-S5312B	n/a	n/a

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB	Shielded	1.6m	N/A
2	Headset	1	Audio	Shielded	1.5m	N/A

TEST SETUP

The EUT is a stand-alone unit that was tested in the worst case orientation and configuration, where applicable, during the tests. Test software exercised the radio.

SETUP DIAGRAM FOR TESTS

Headset not used during antenna port conducted measurements.

5. 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 Date	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	3/22/2012	3/22/2014
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	12/13/2012	12/13/2013
Antenna, Horn, 18 GHz	ETS	3117	C01022	2/21/2013	2/21/2014
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/2012	10/22/2013
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	2/21/2012	2/21/2014
Power Sensor, 18 GHz	Agilent / HP	8481A	N02781	9/24/2012	9/24/2013
Power Meter	Agilent / HP	437B		8/9/2012	8/9/2013
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685		CNR
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	41318	41683
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/08/12	08/08/13
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/13	01/14/14

6. MEASUREMENT METHODS

KDB 558074 Measurement Procedure PK2 is used for power and PKPSD is used for power spectral density.

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

7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

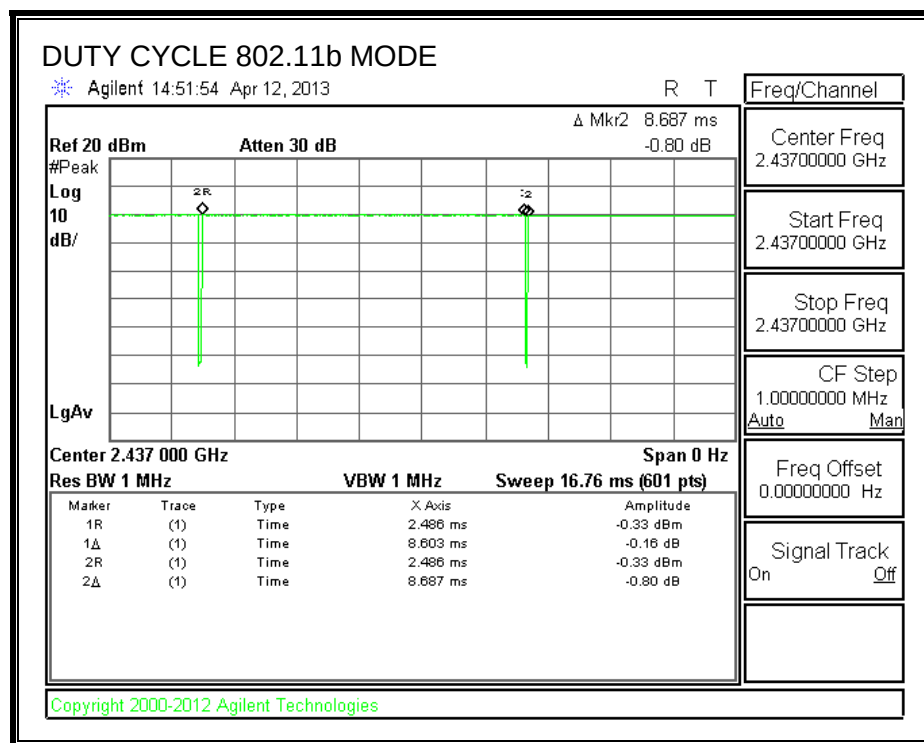
LIMITS

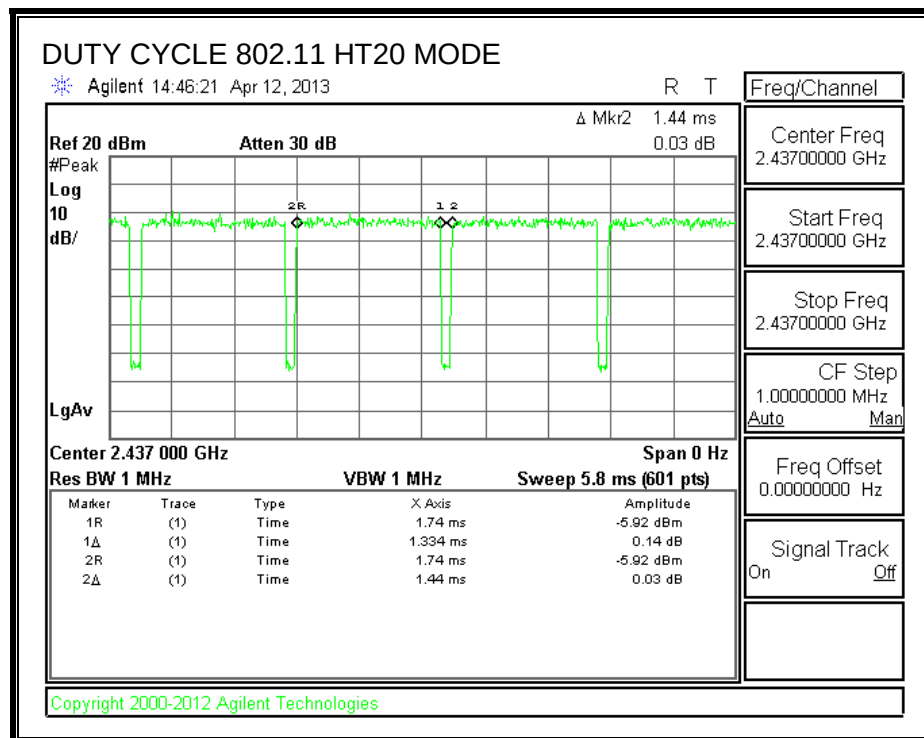
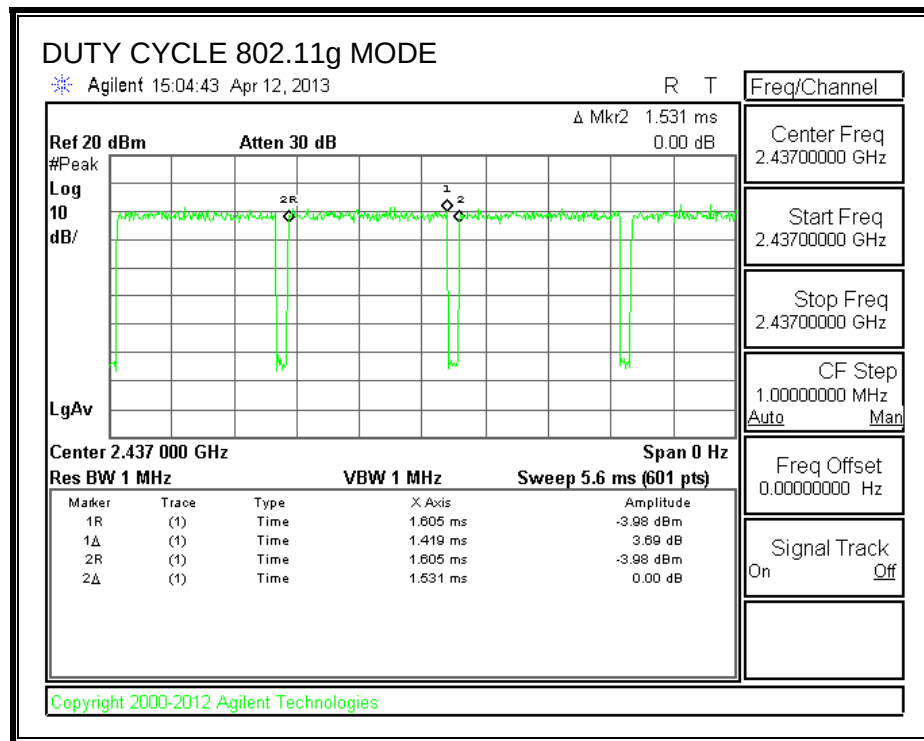
None; for reporting purposes only.

7.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11b	6.12	6.2	0.986	98.6%	0.00
802.11g	1.419	1.53	0.927	92.7%	0.33
802.11n HT20	1.334	1.440	0.926	92.6%	0.33

7.2. DUTY CYCLE PLOTS





8. ANTENNA PORT TEST RESULTS

8.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

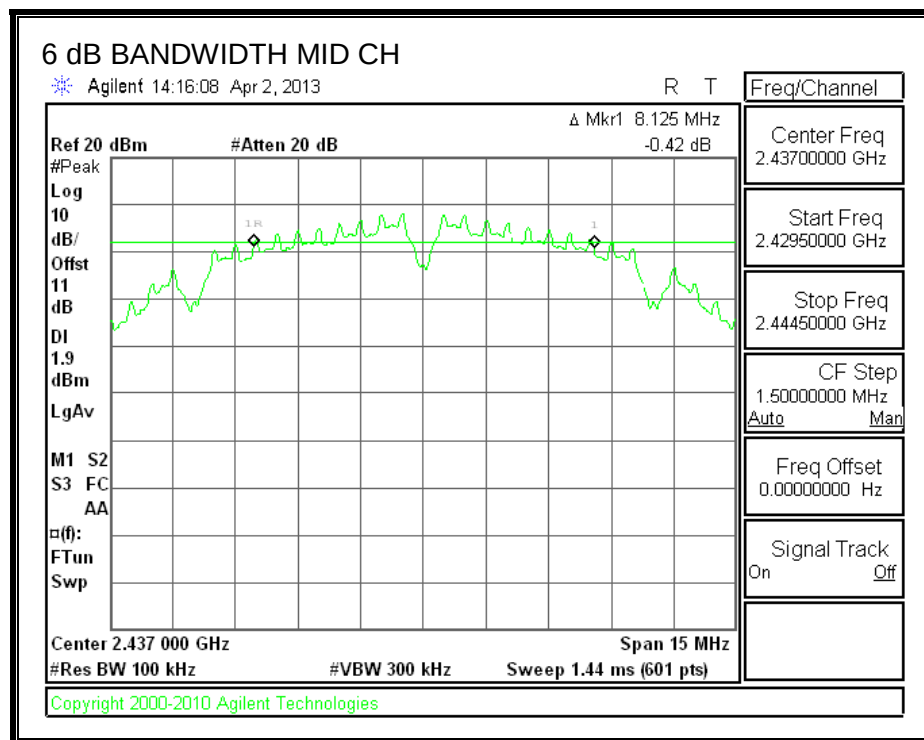
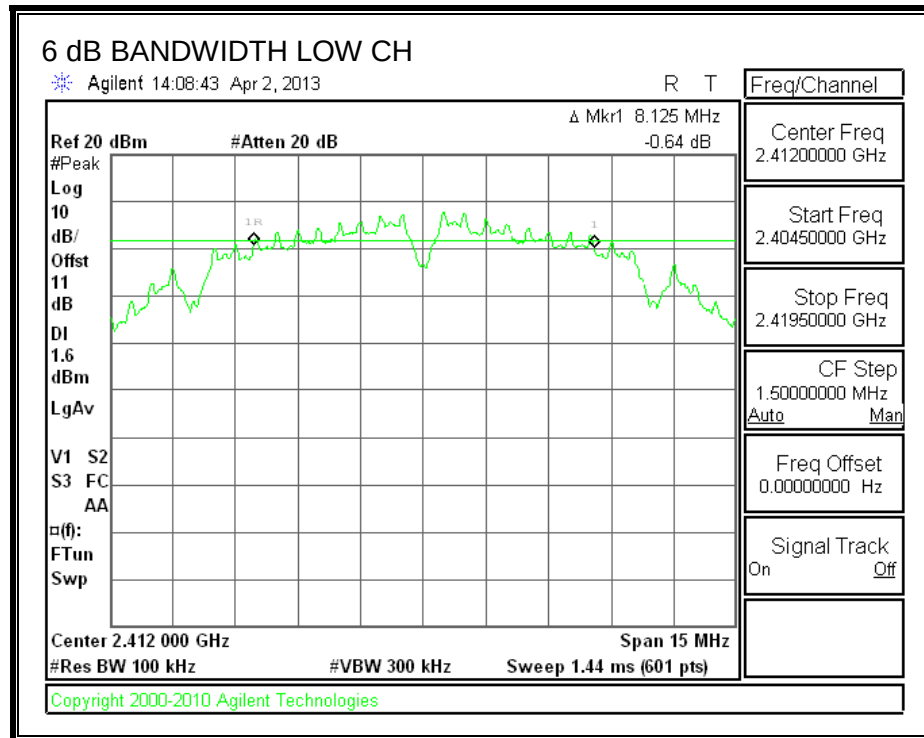
The minimum 6 dB bandwidth shall be at least 500 kHz.

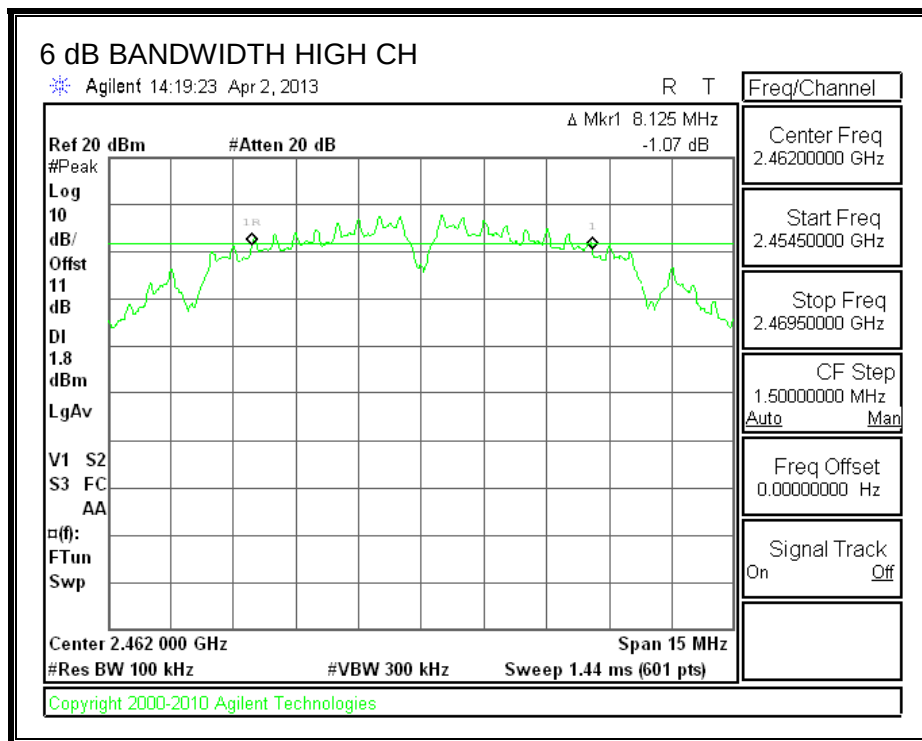
TEST PROCEDURE

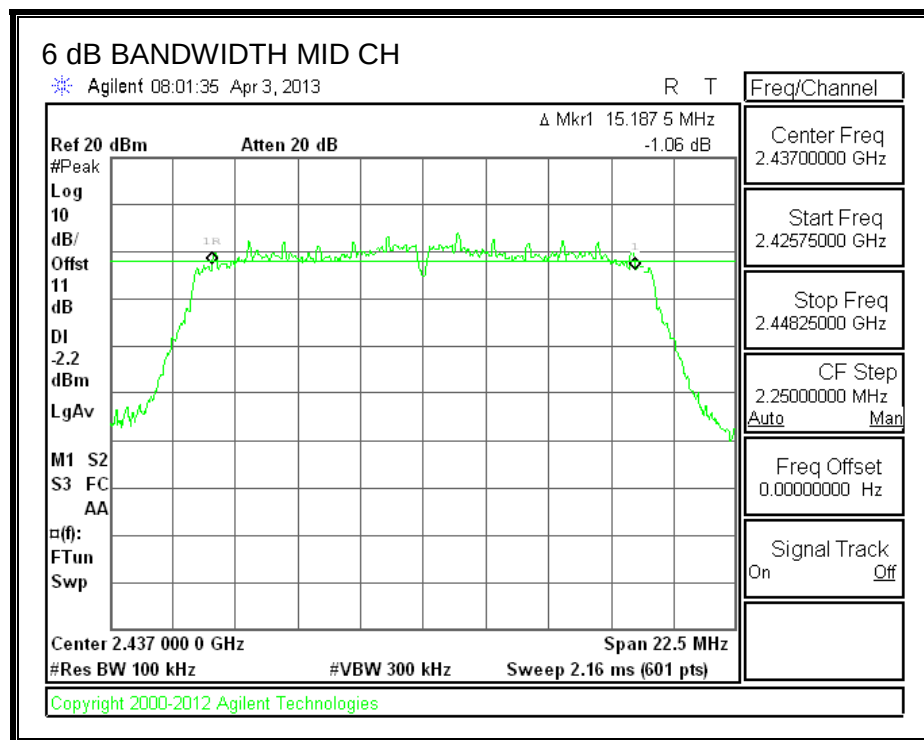
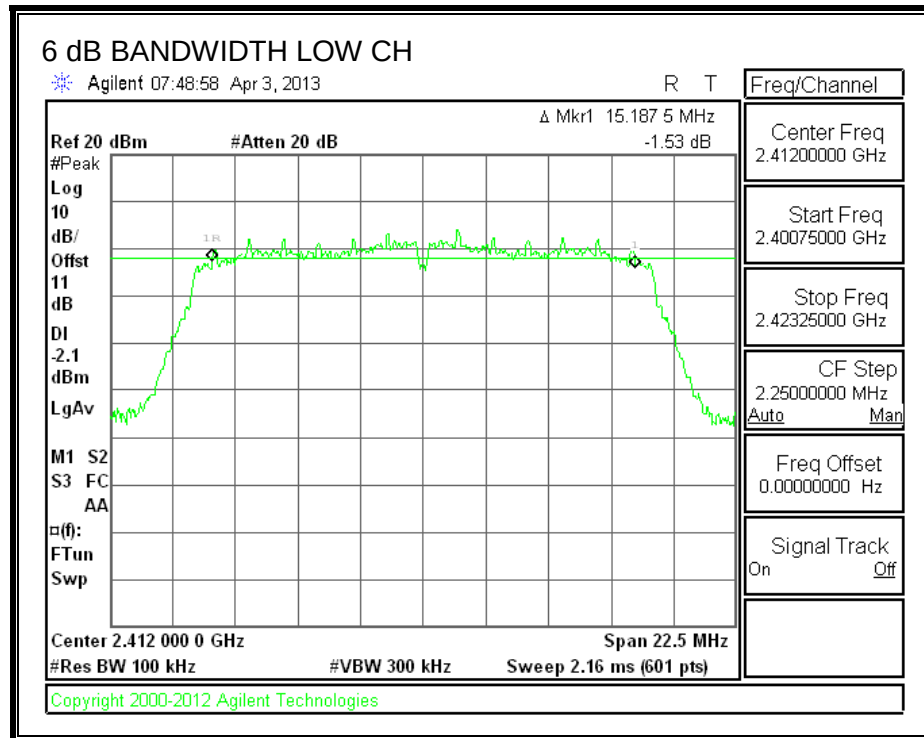
The transmitter output is connected to a spectrum analyzer with the RBW set between 1% and 5% of the EBW, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

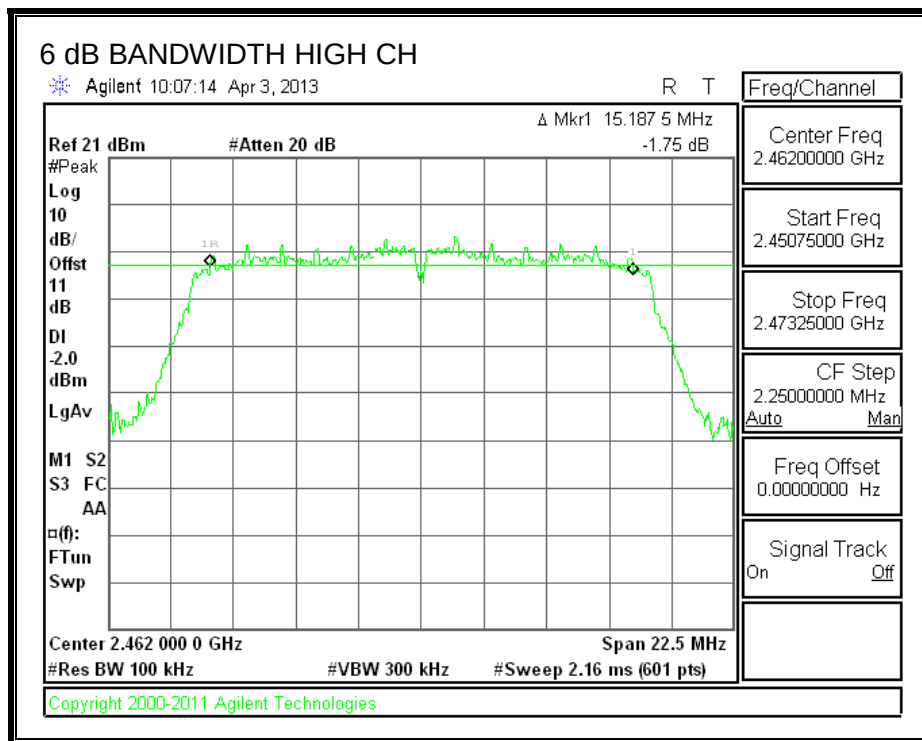
RESULTS

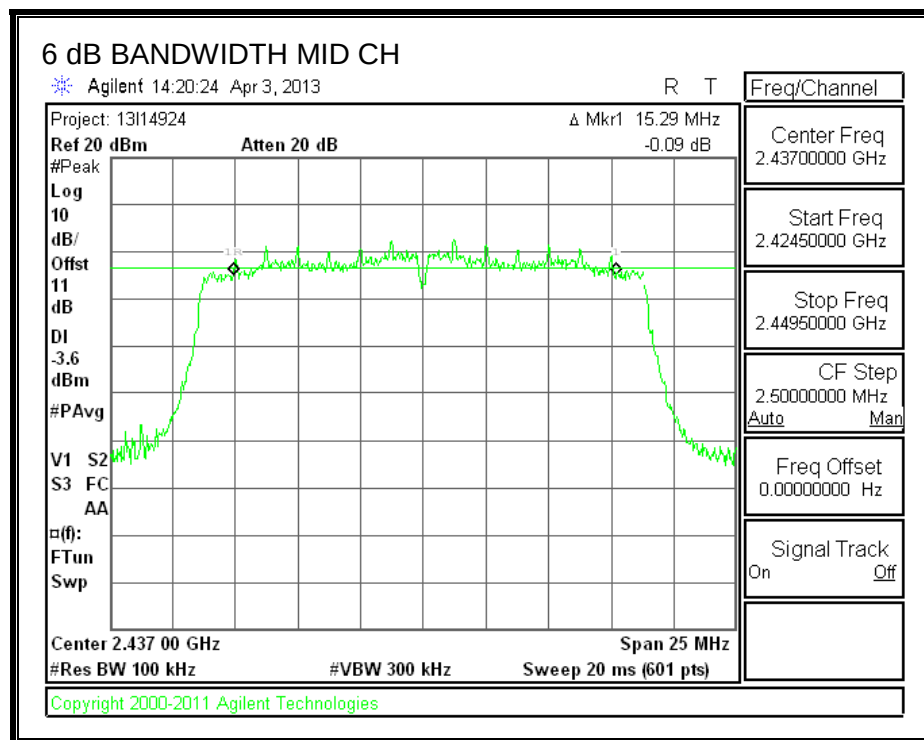
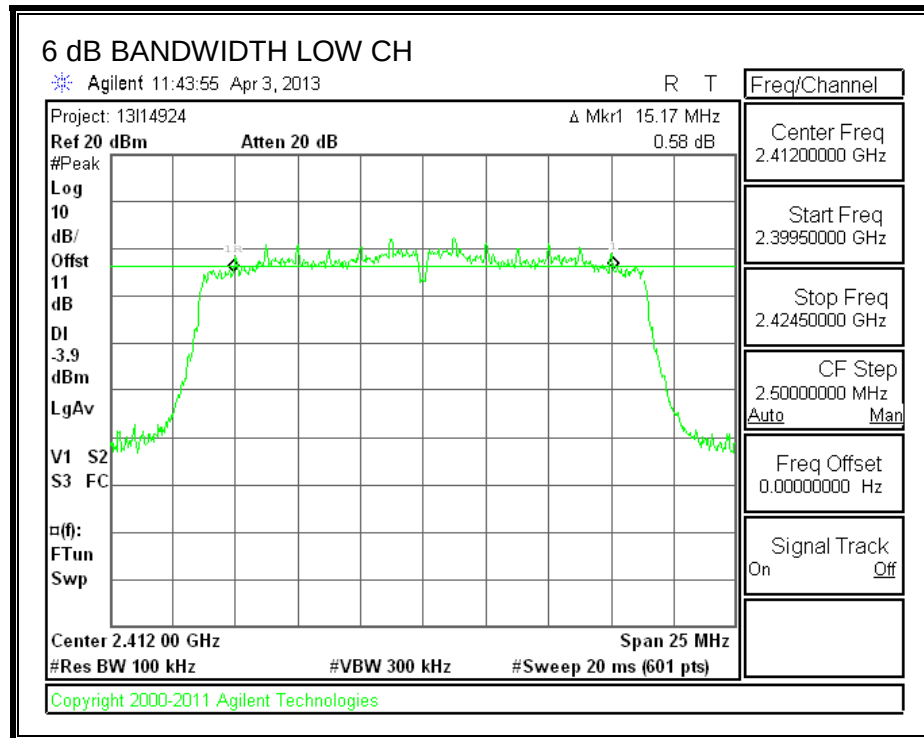
Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
802.11b	Low	2412	8.125	0.5
	Mid	2437	8.125	0.5
	High	2462	8.125	0.5
802.11g	Low	2412	15.188	0.5
	Mid	2437	15.188	0.5
	High	2462	15.188	0.5
802.11n HT20	Low	2412	15.170	0.5
	Mid	2437	15.290	0.5
	High	2462	15.210	0.5

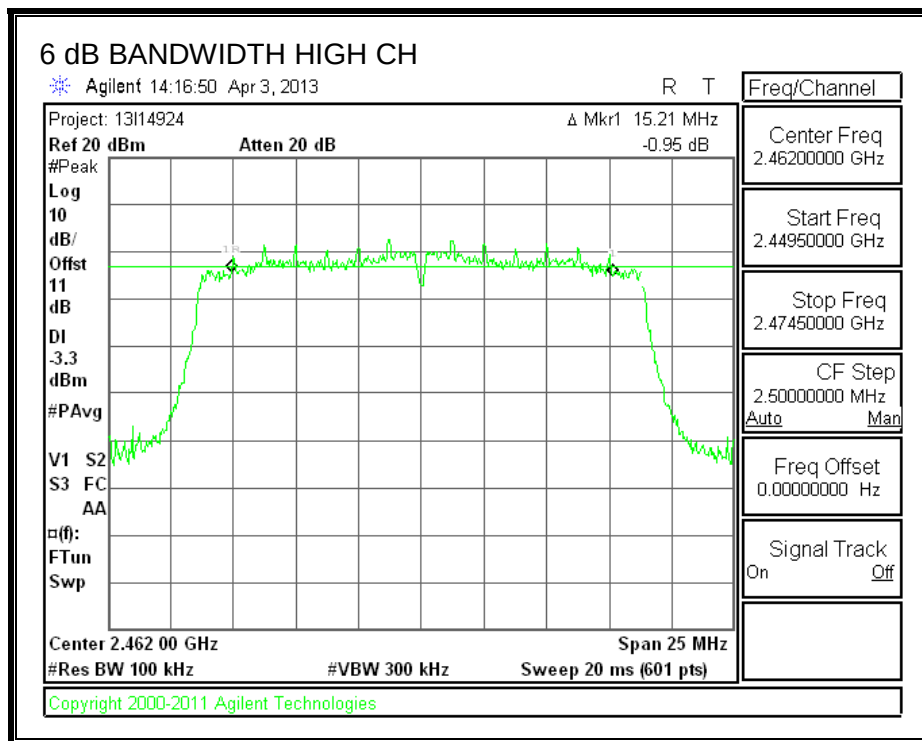












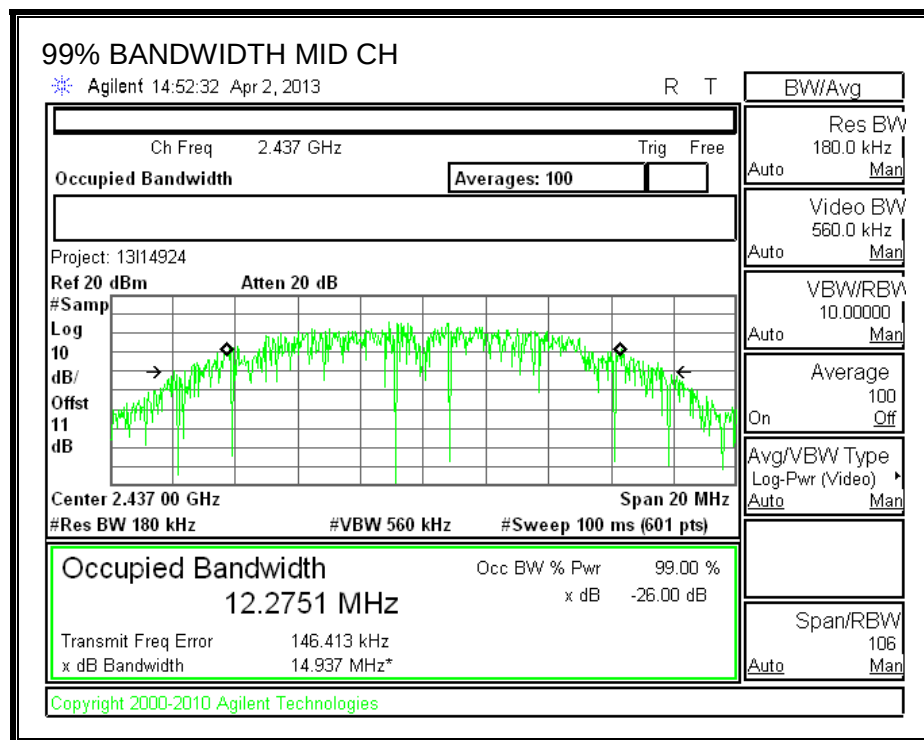
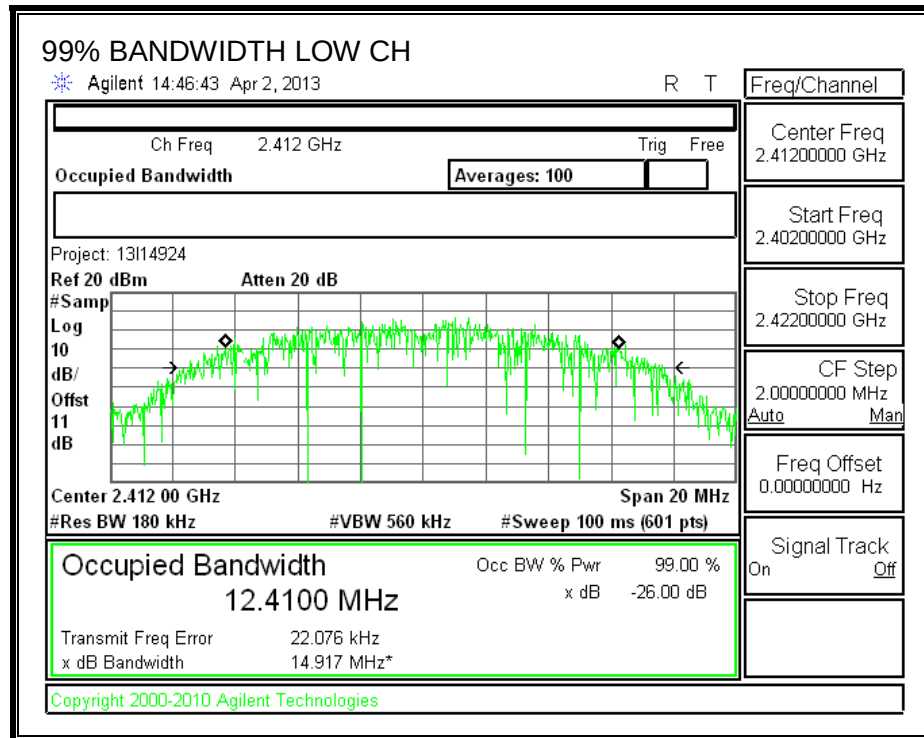
8.1.2. 99% BANDWIDTH

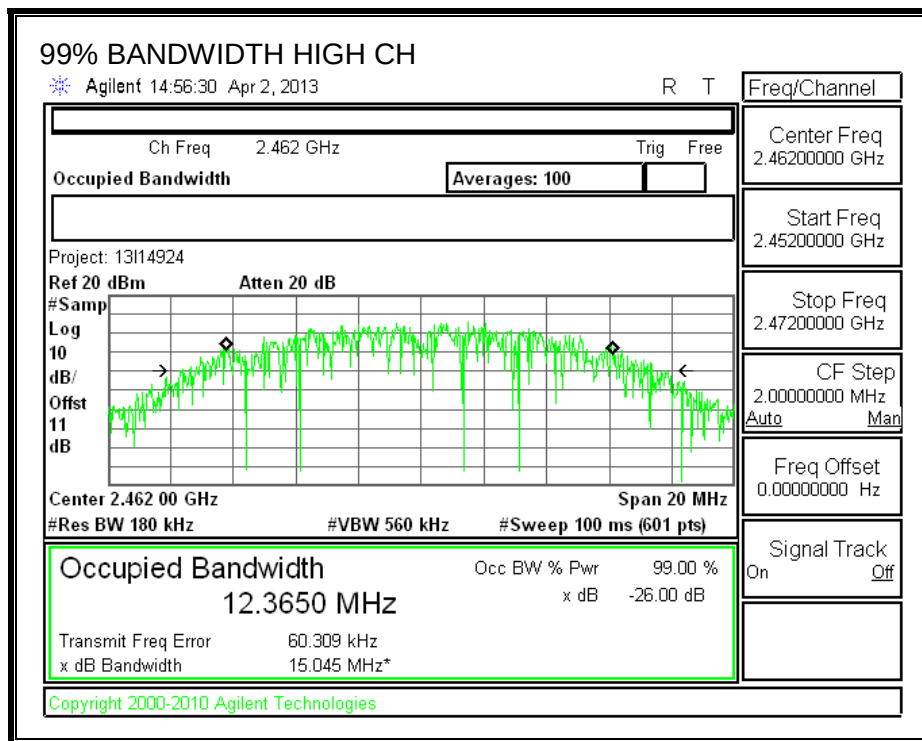
LIMITS

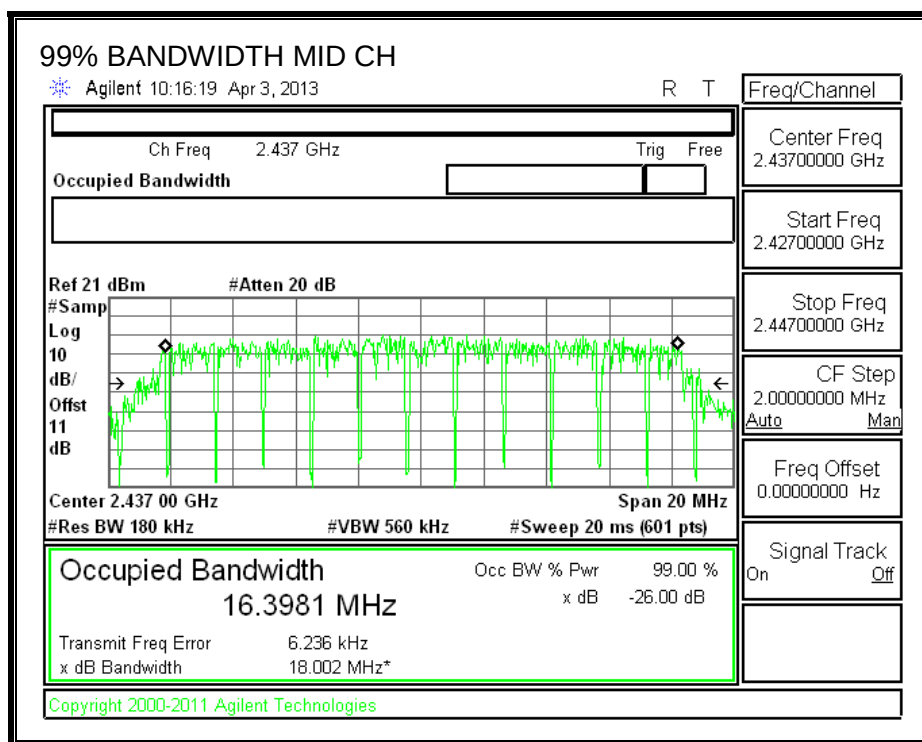
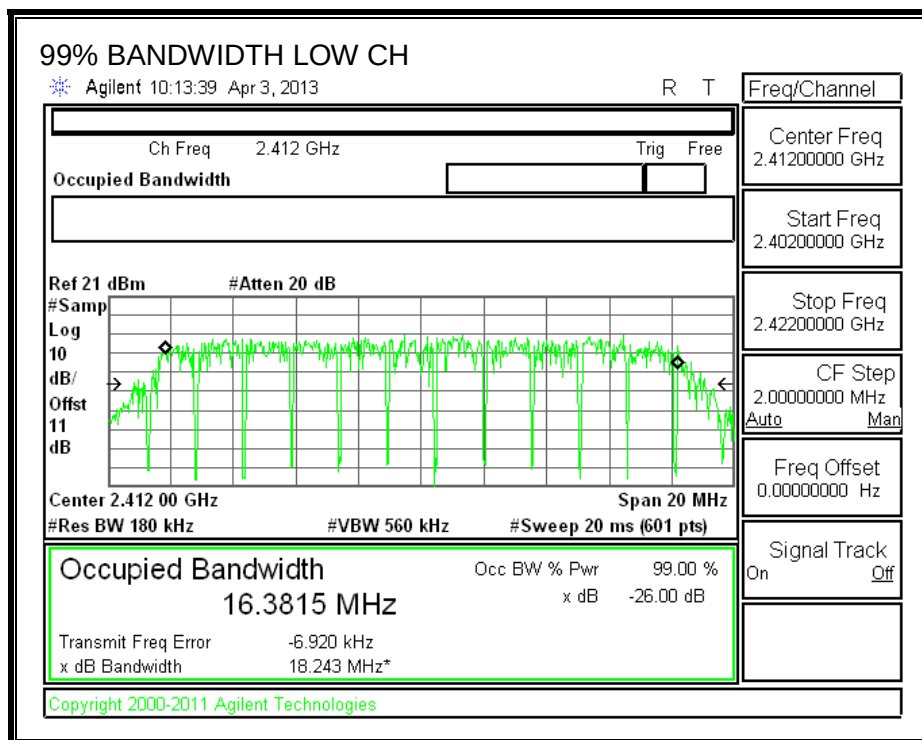
None; for reporting purposes only.

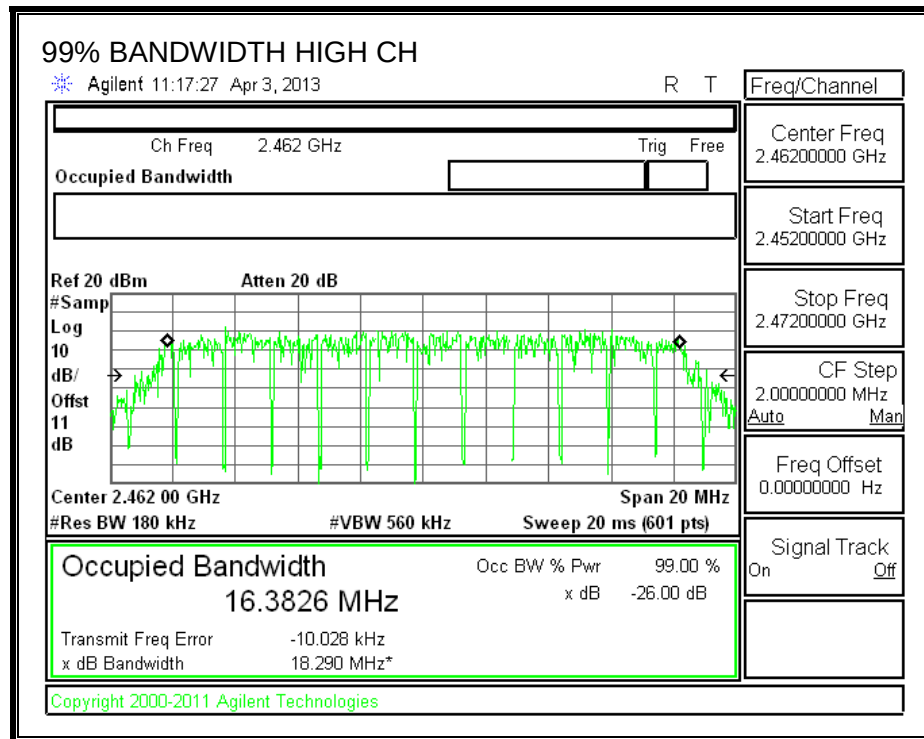
RESULTS

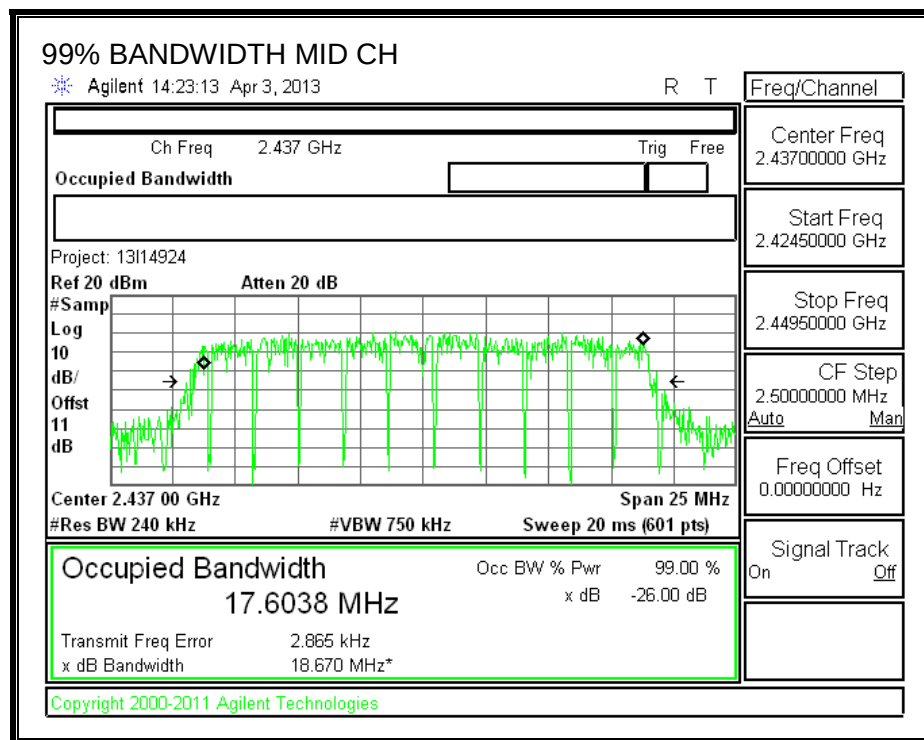
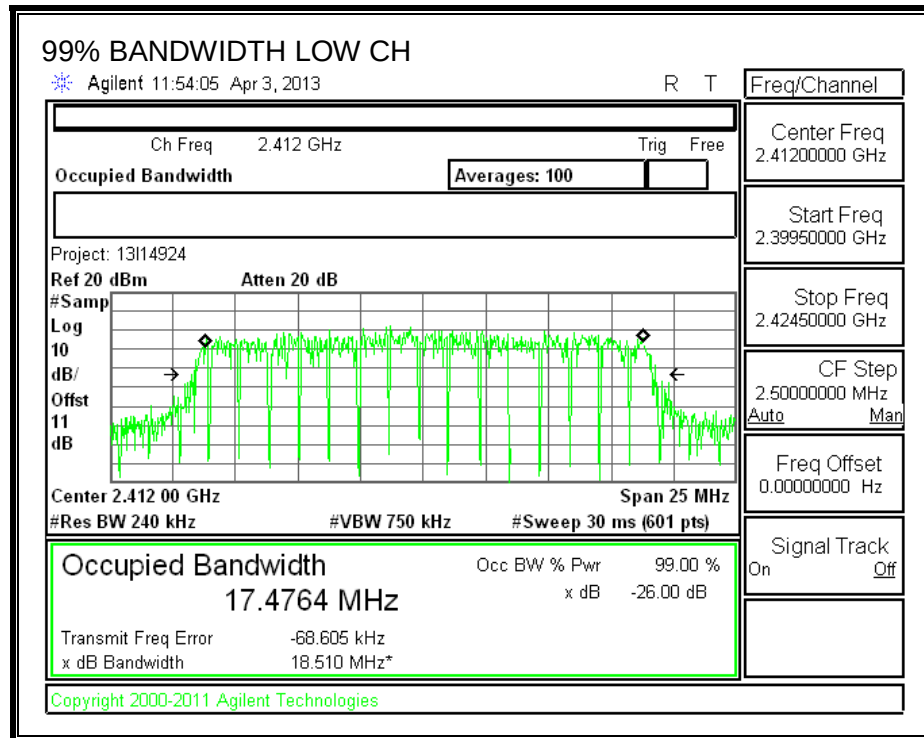
Mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)
802.11b	Low	2412	12.4100
	Mid	2437	12.2751
	High	2462	12.3650
802.11g	Low	2412	16.3815
	Mid	2437	16.3981
	High	2462	16.3826
802.11n HT20	Low	2412	17.4764
	Mid	2437	17.6038
	High	2462	17.5281

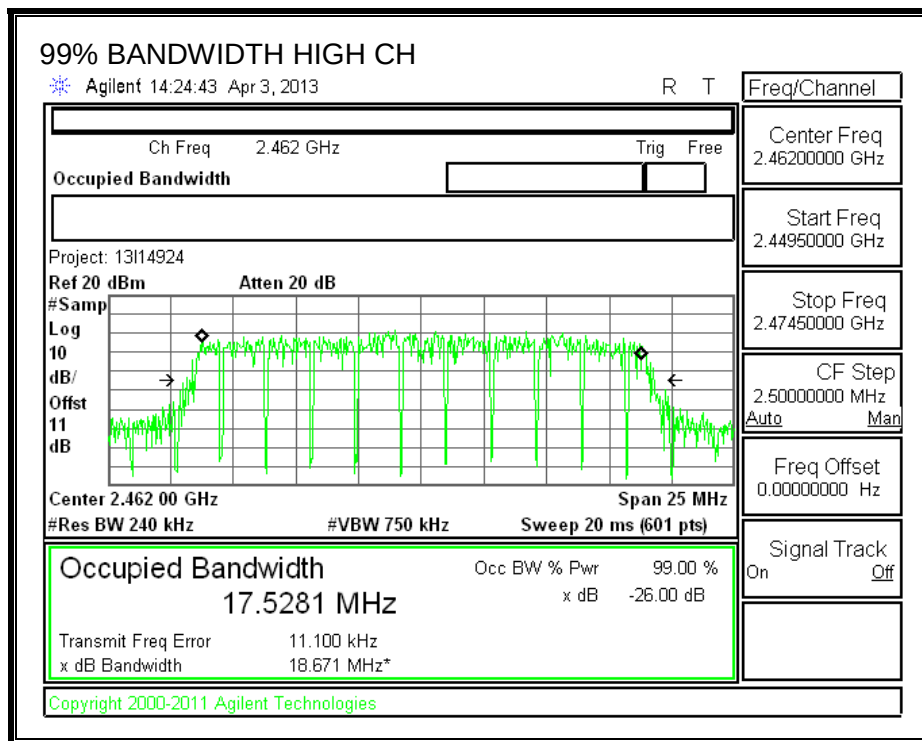












8.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

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

RESULTS

11b

Channel	Frequency (MHz)	Power (dBm)
Low	2412	15.49
Mid	2437	15.69
High	2462	15.77

11g

Channel	Frequency (MHz)	Power (dBm)
Low	2412	13.66
Mid	2437	13.90
High	2462	14.06

11n

Channel	Frequency (MHz)	Power (dBm)
Low	2412	12.55
Mid	2437	12.70
High	2462	12.83

8.1.4. 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.

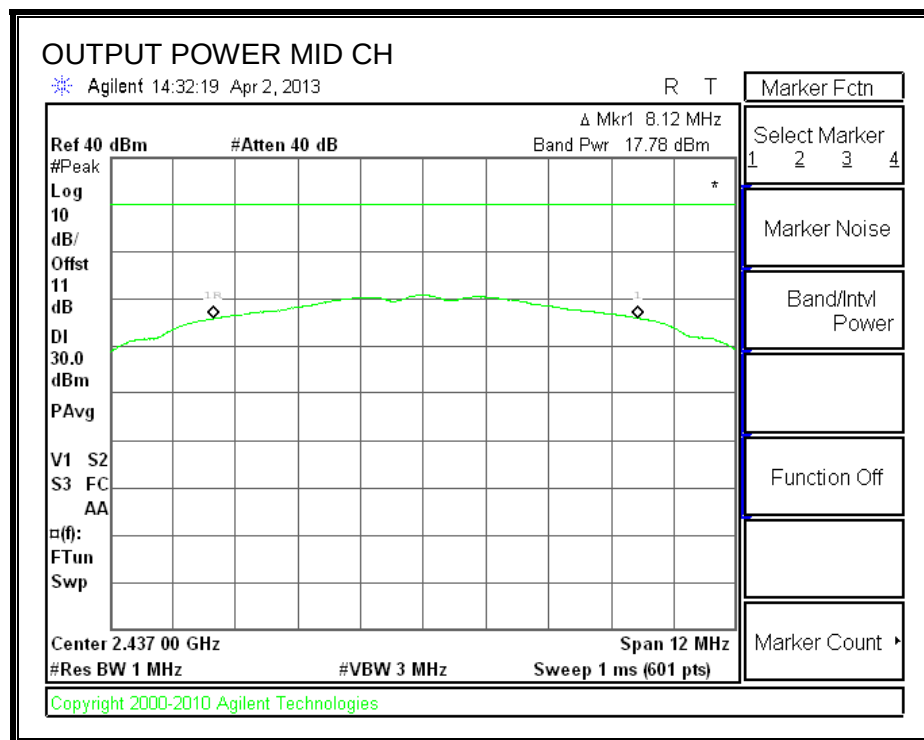
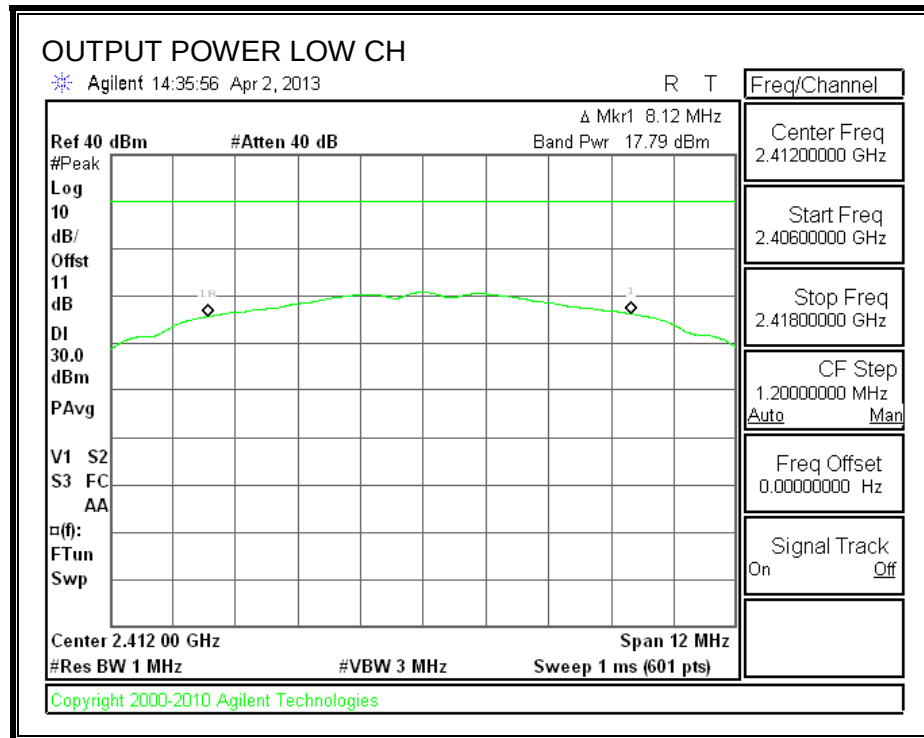
RESULTS

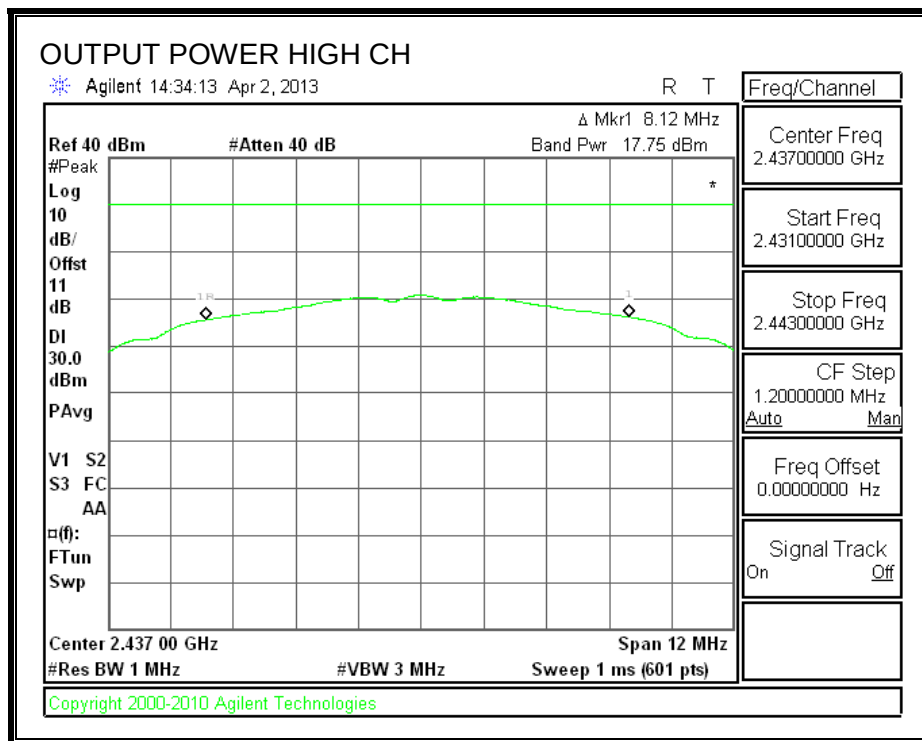
Limits

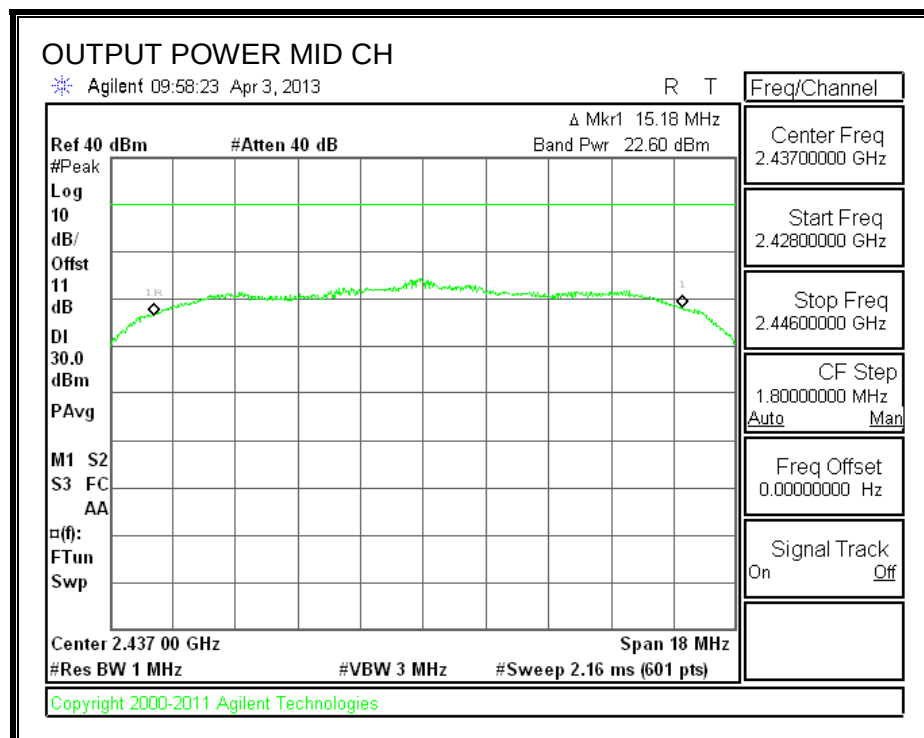
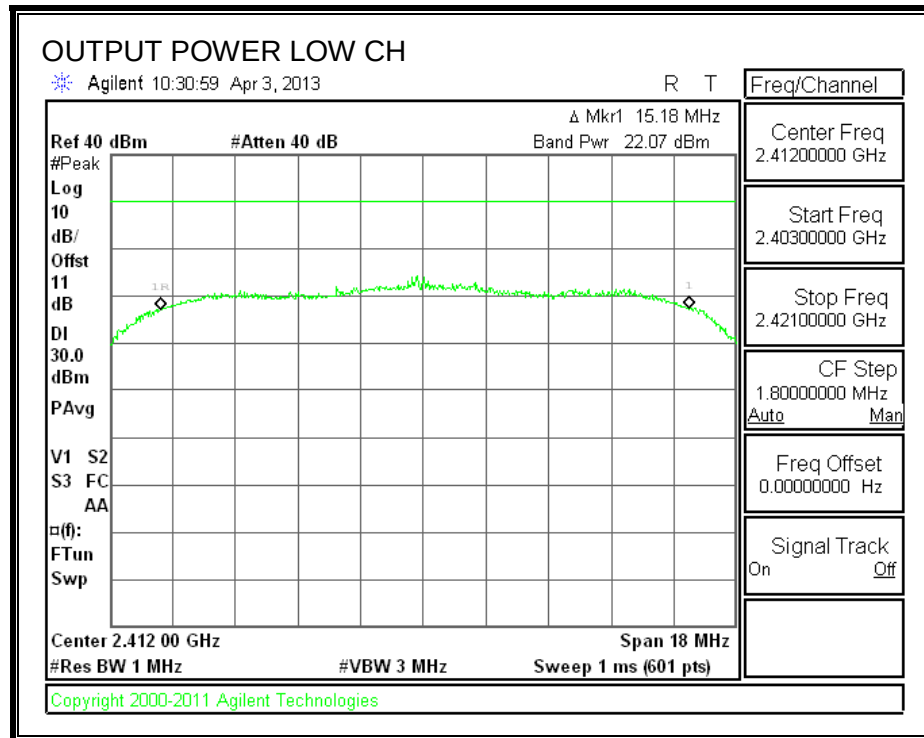
Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-5.00	30.00	30	36	30.00
Mid	2437	-5.00	30.00	30	36	30.00
High	2462	-5.00	30.00	30	36	30.00

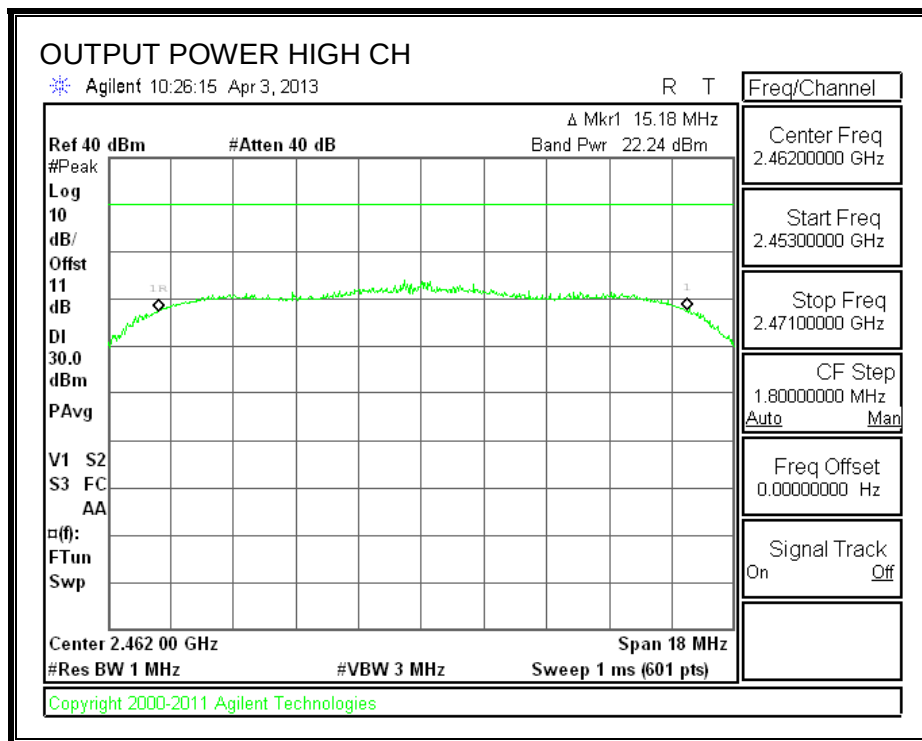
Results

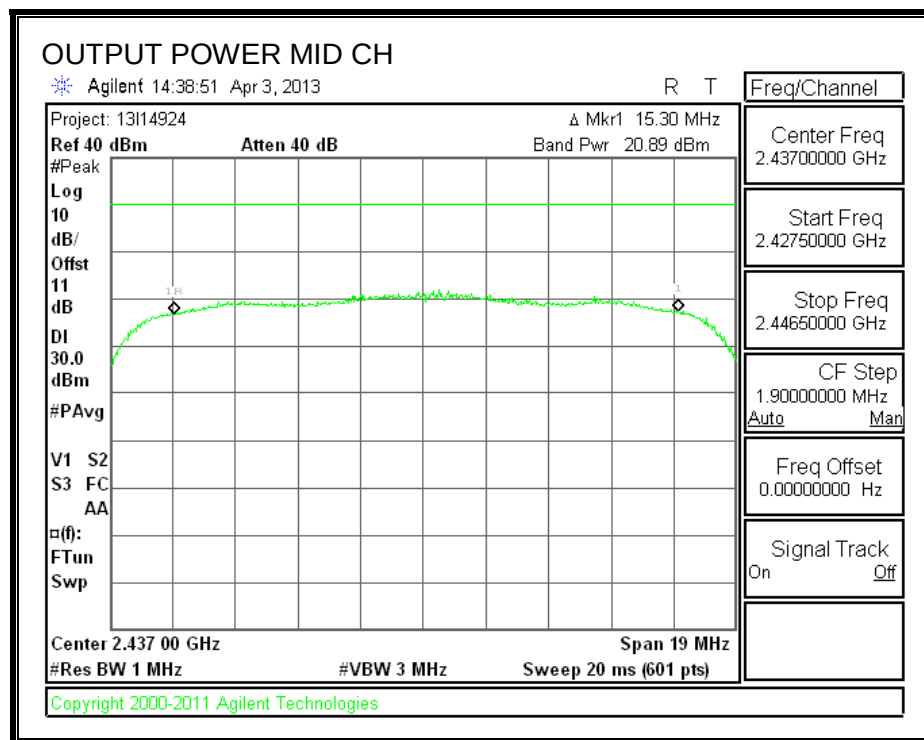
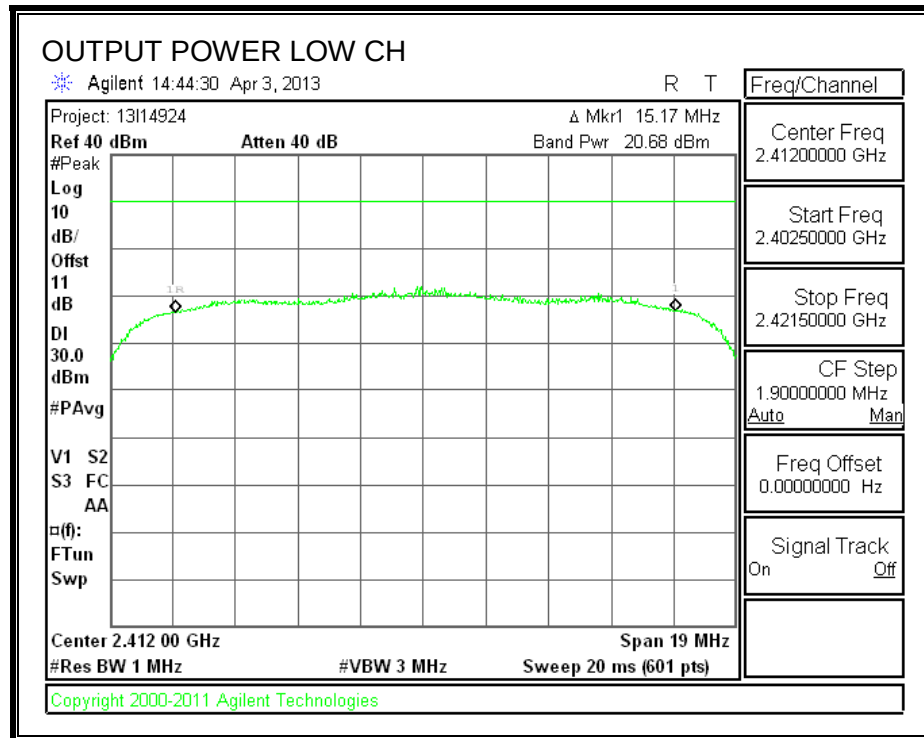
Mode	Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
802.11b	Low	2412	18.25	17.79	30.00	-12.21
	Mid	2437	18.06	17.78	30.00	-12.22
	High	2462	18.46	17.75	30.00	-12.25
802.11g	Low	2412	22.17	22.07	30.00	-7.93
	Mid	2437	22.15	22.60	30.00	-7.40
	High	2462	22.35	22.24	30.00	-7.76
802.11n HT20	Low	2412	20.95	20.68	30.00	-9.32
	Mid	2437	21.34	20.89	30.00	-9.11
	High	2462	21.30	21.11	30.00	-8.89

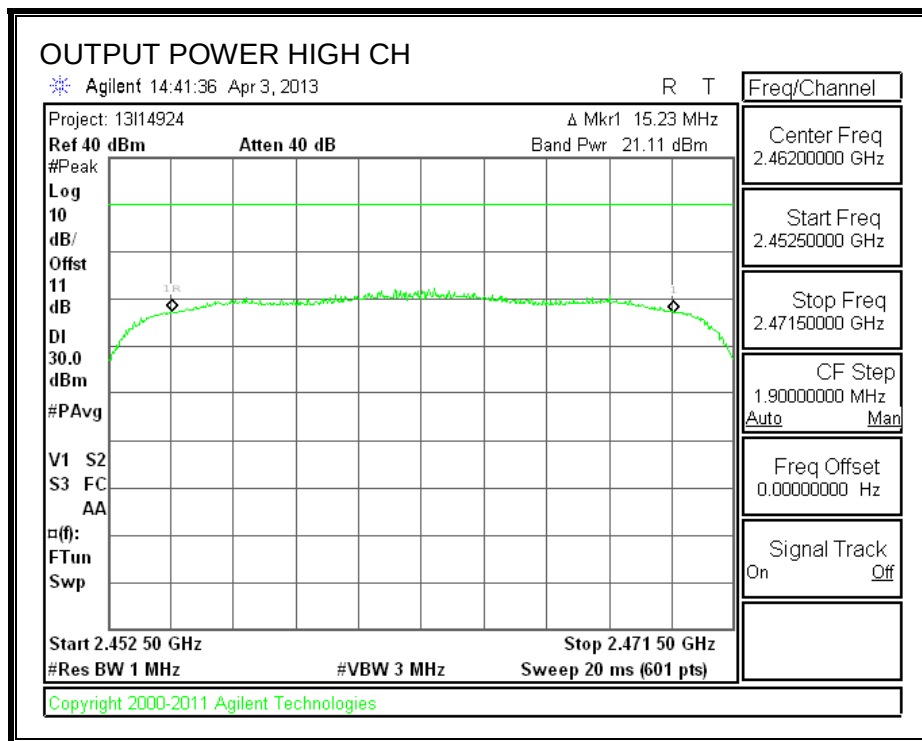












8.1.5. PSD

LIMITS

FCC §15.247

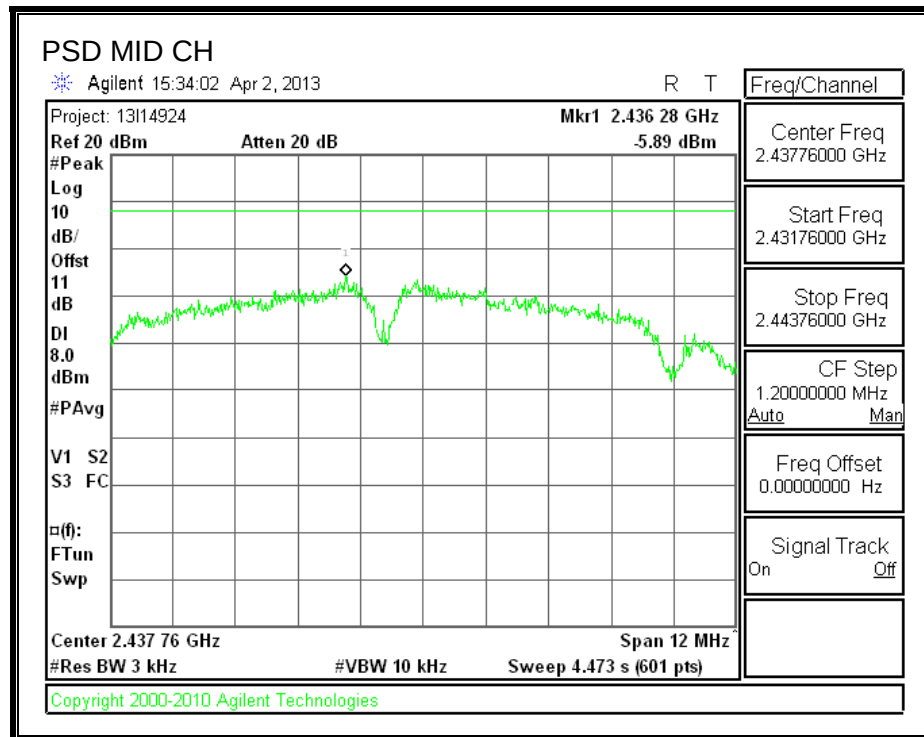
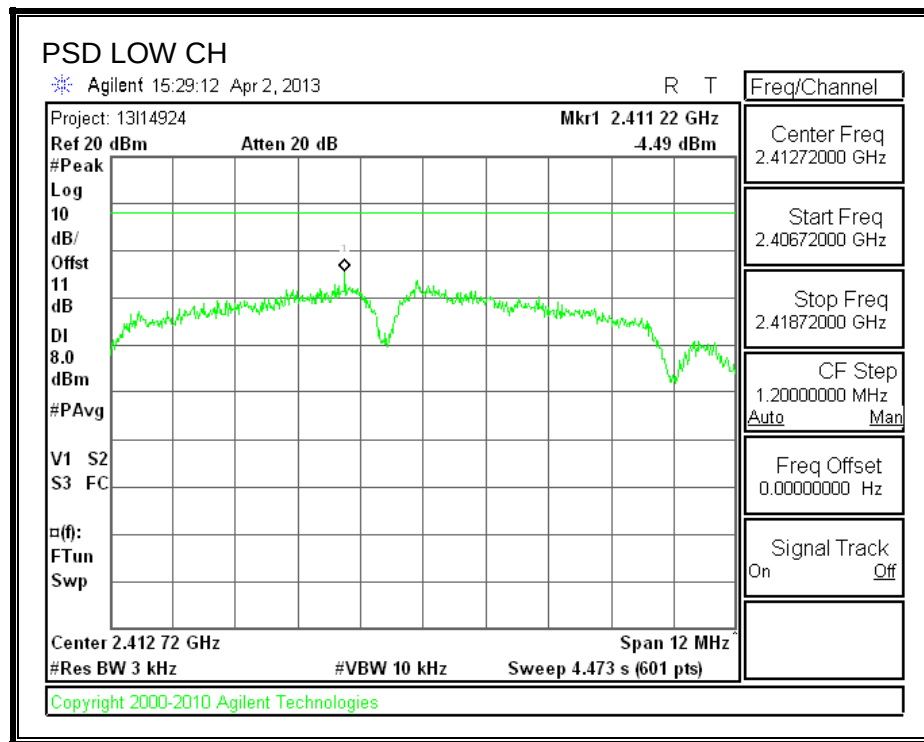
IC RSS-210 A8.2

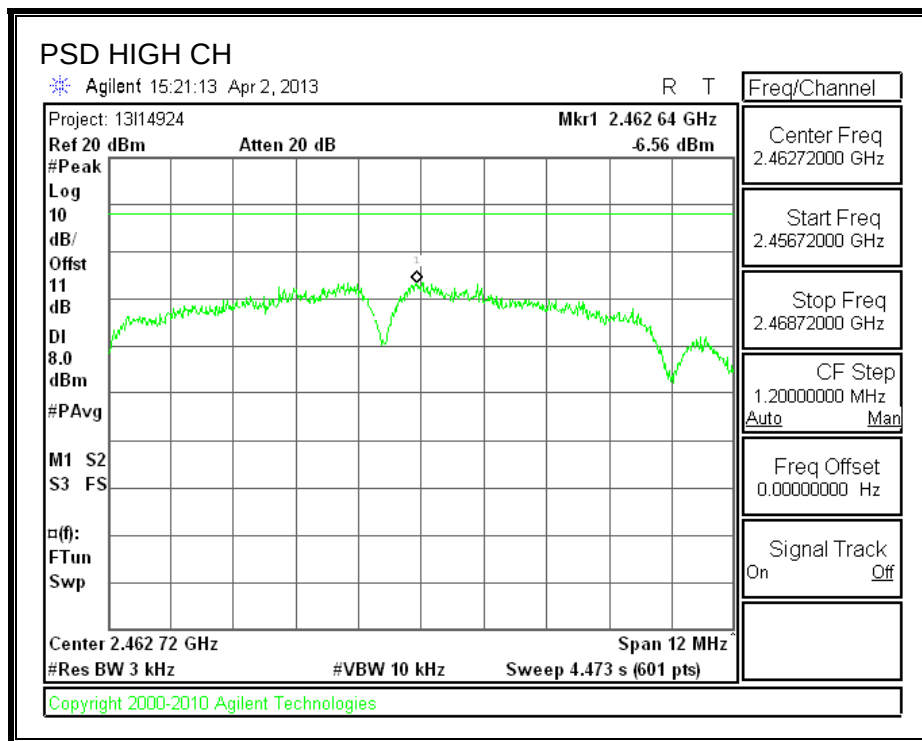
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

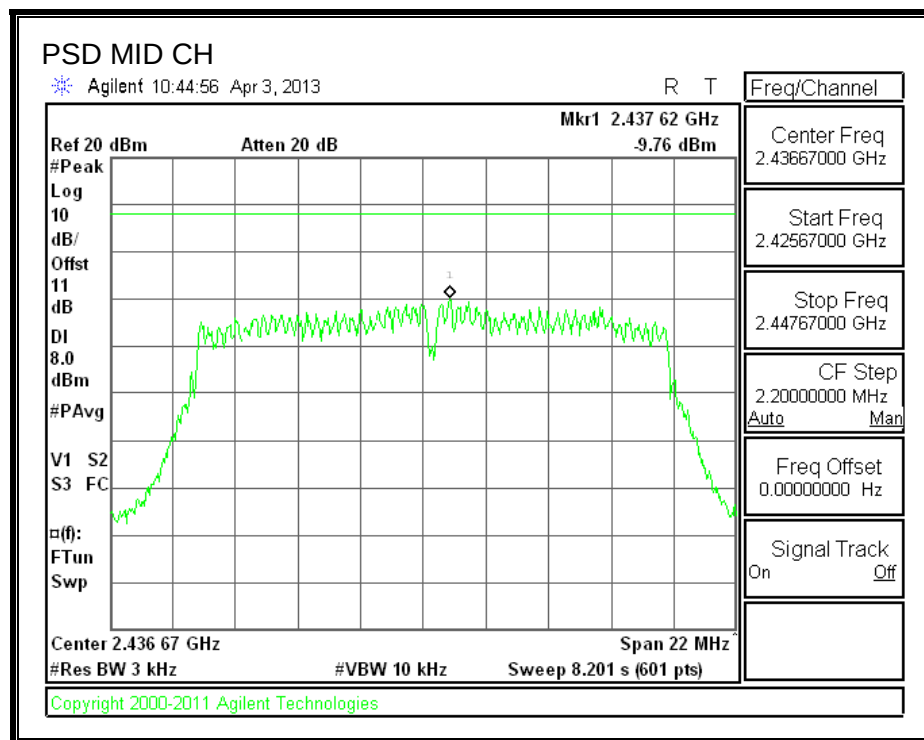
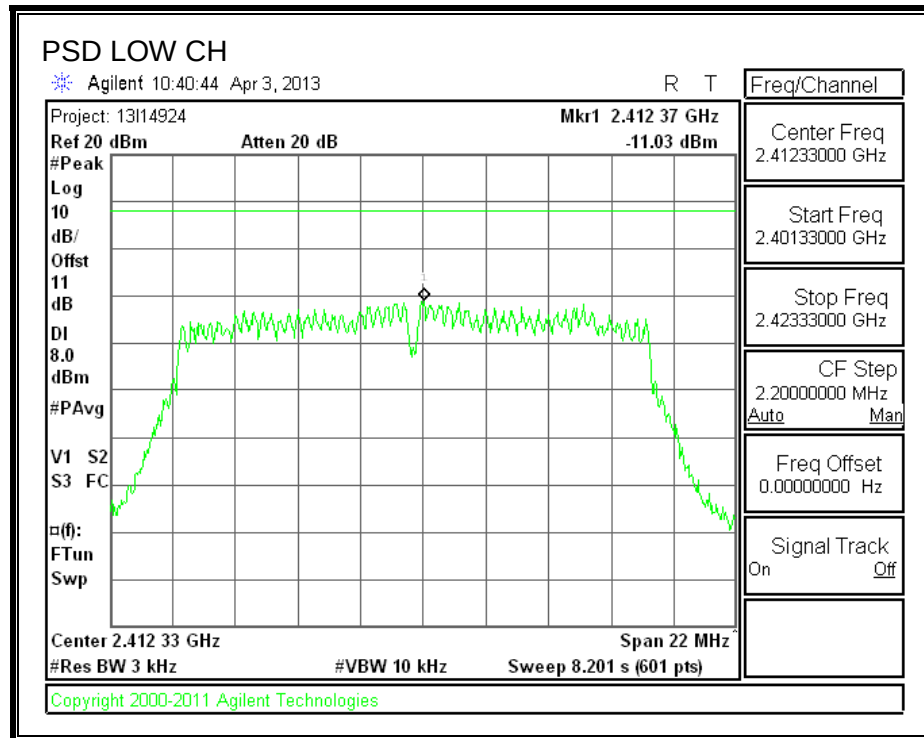
RESULTS

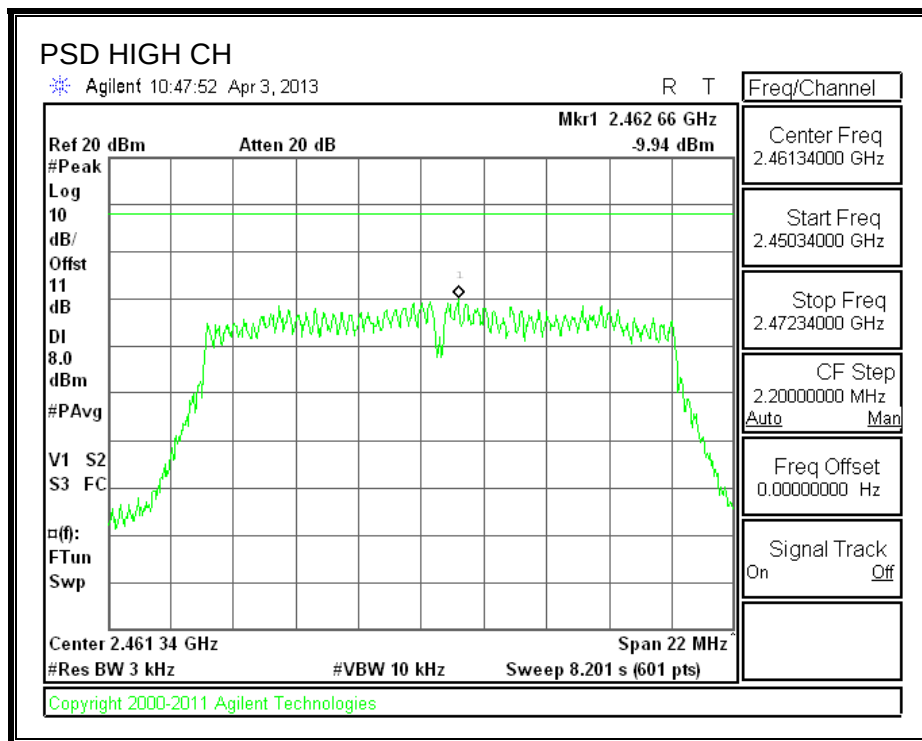
Mode	Channel	Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
802.11b	Low	2412	-4.49	8.0	-12.5
	Mid	2437	-5.89	8.0	-13.9
	High	2462	-6.56	8.0	-14.6
802.11g	Low	2412	-11.03	8.0	-19.0
	Mid	2437	-9.76	8.0	-17.8
	High	2462	-9.94	8.0	-17.9
802.11n HT20	Low	2412	-11.94	8.0	-19.9
	Mid	2437	-11.47	8.0	-19.5
	High	2462	-9.77	8.0	-17.8

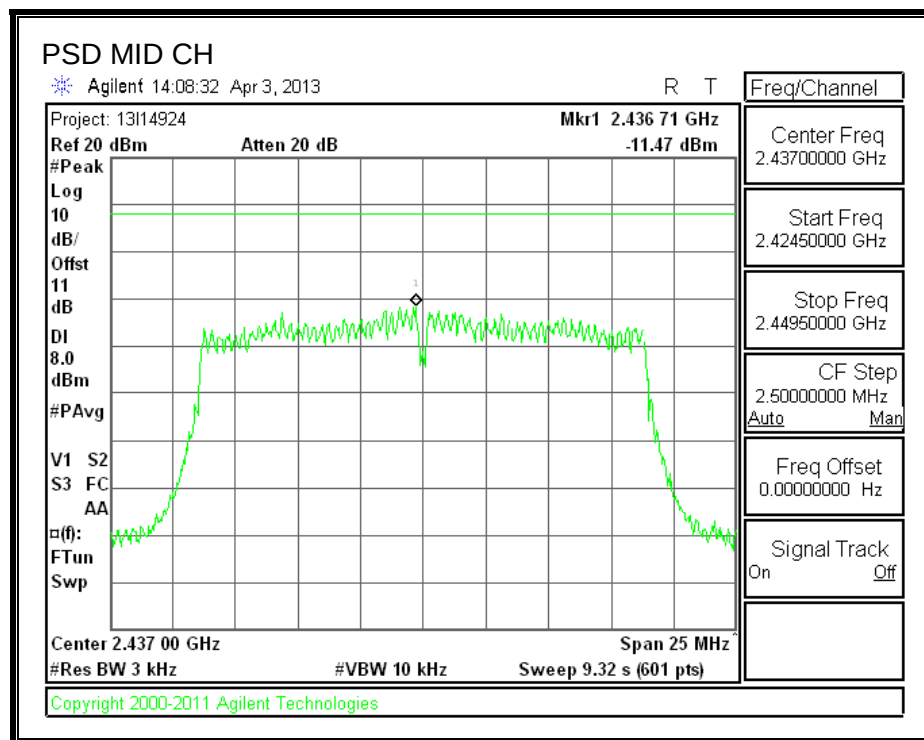
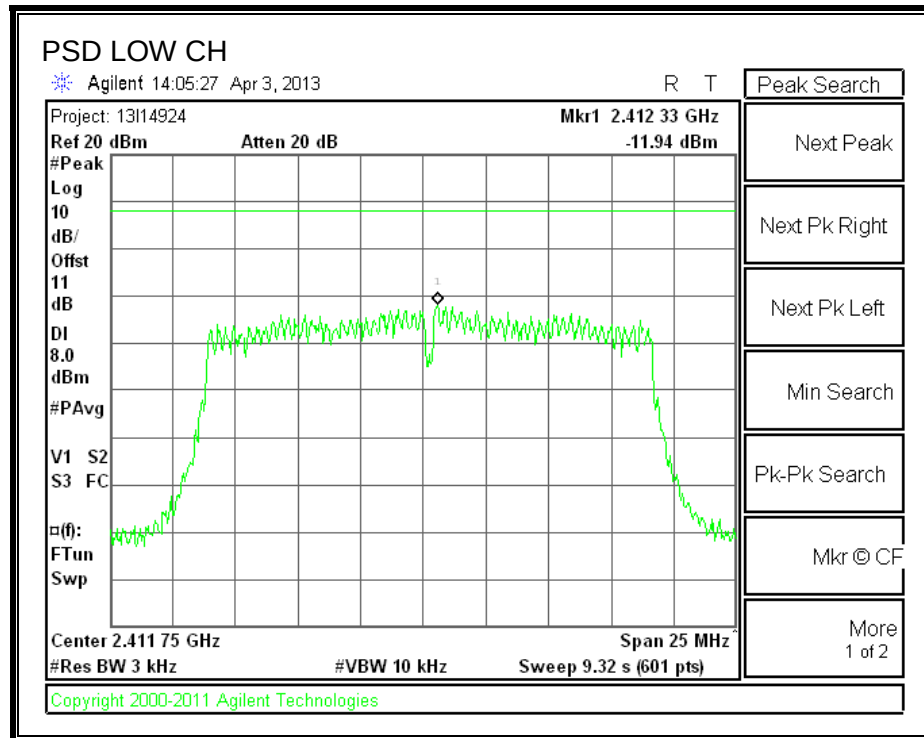
PSD, 802.11b Mode

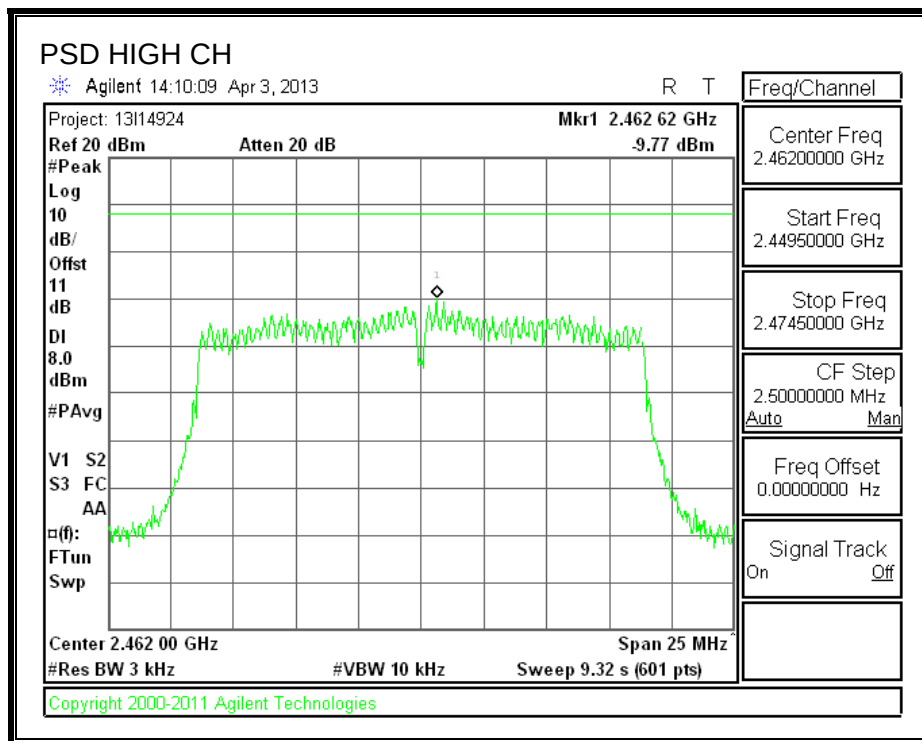












8.1.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

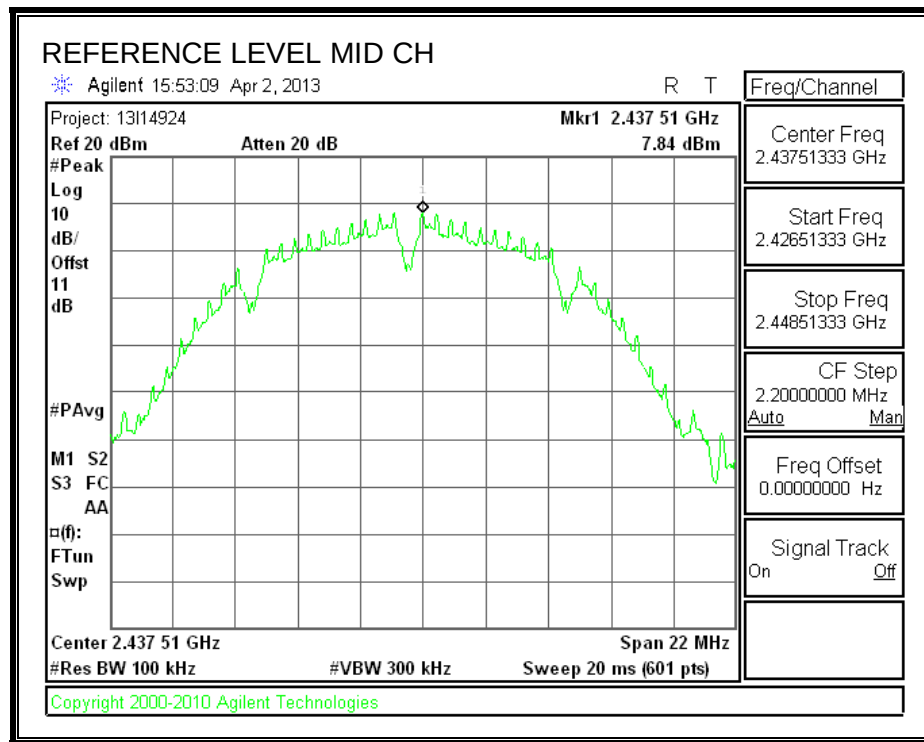
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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

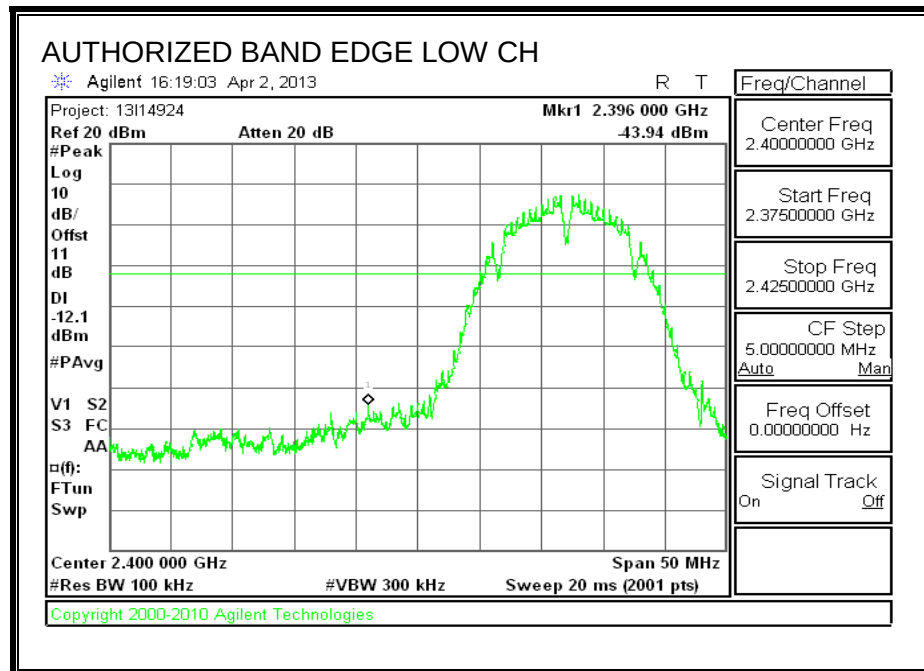
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

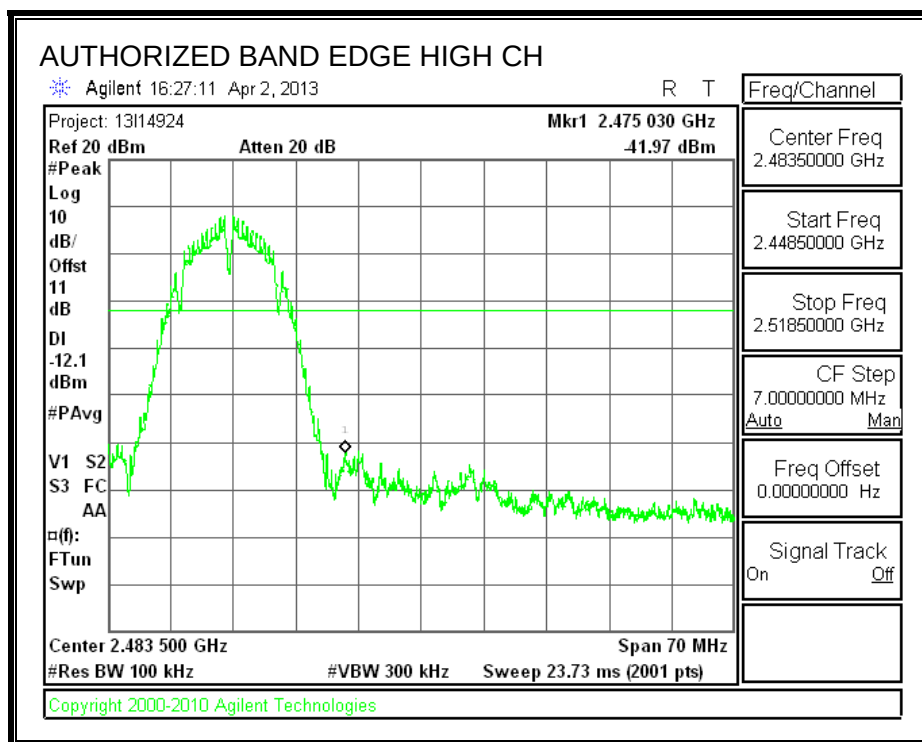
RESULTS

IN-BAND REFERENCE LEVEL, 802.11b Mode

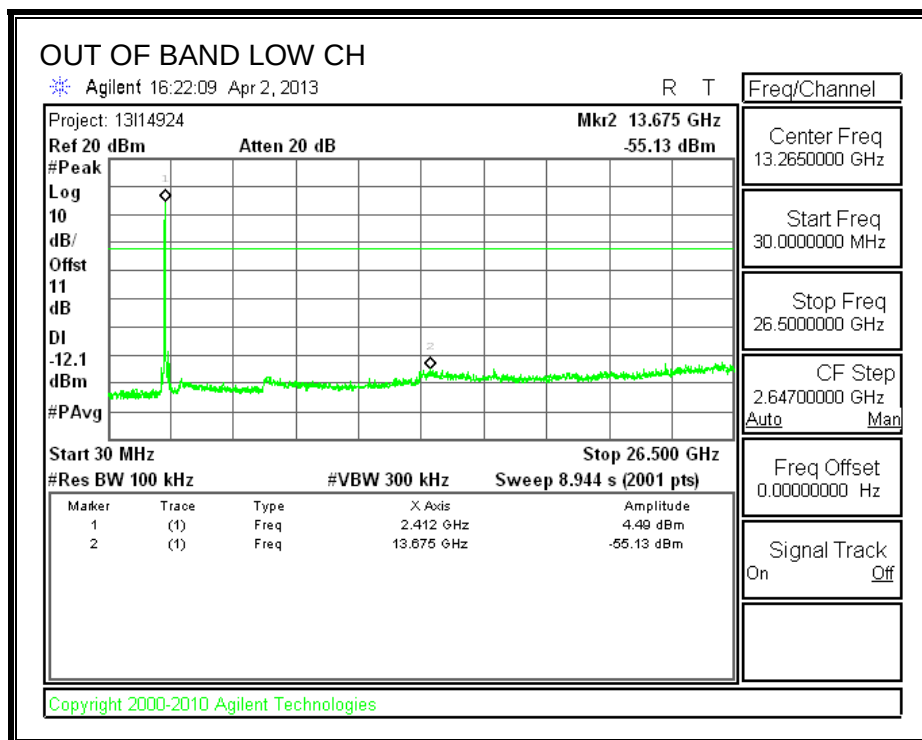


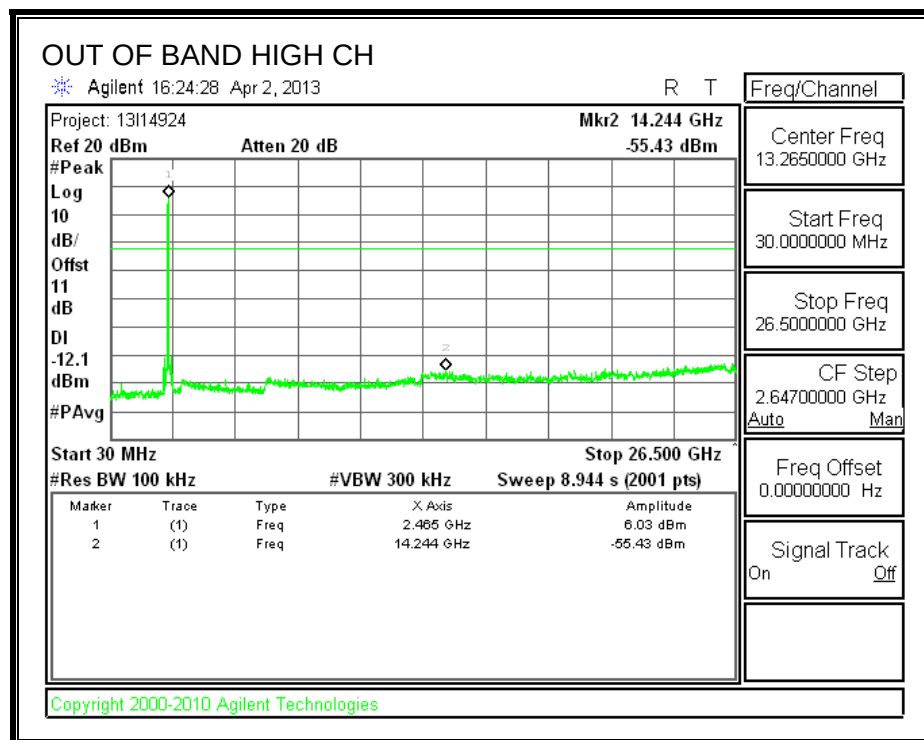
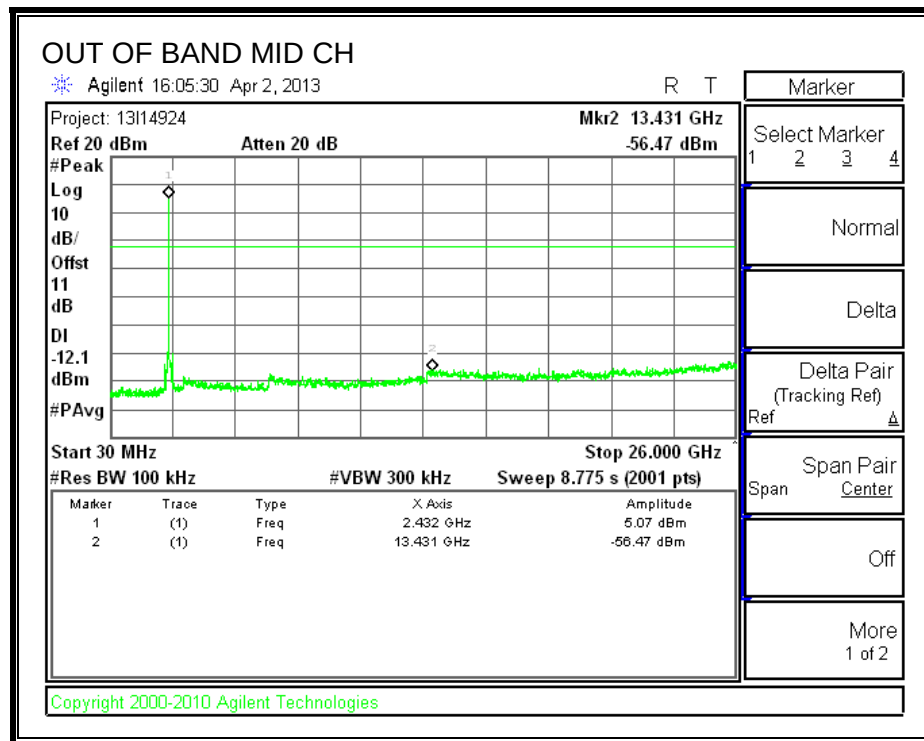
LOW CHANNEL BANDEDGE, 802.11b Mode

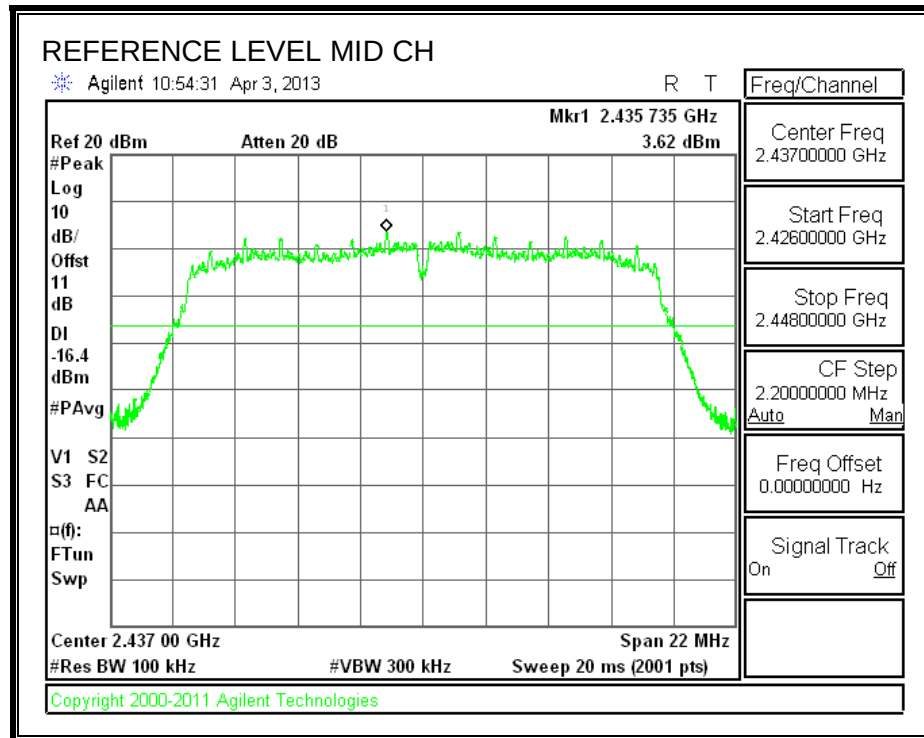


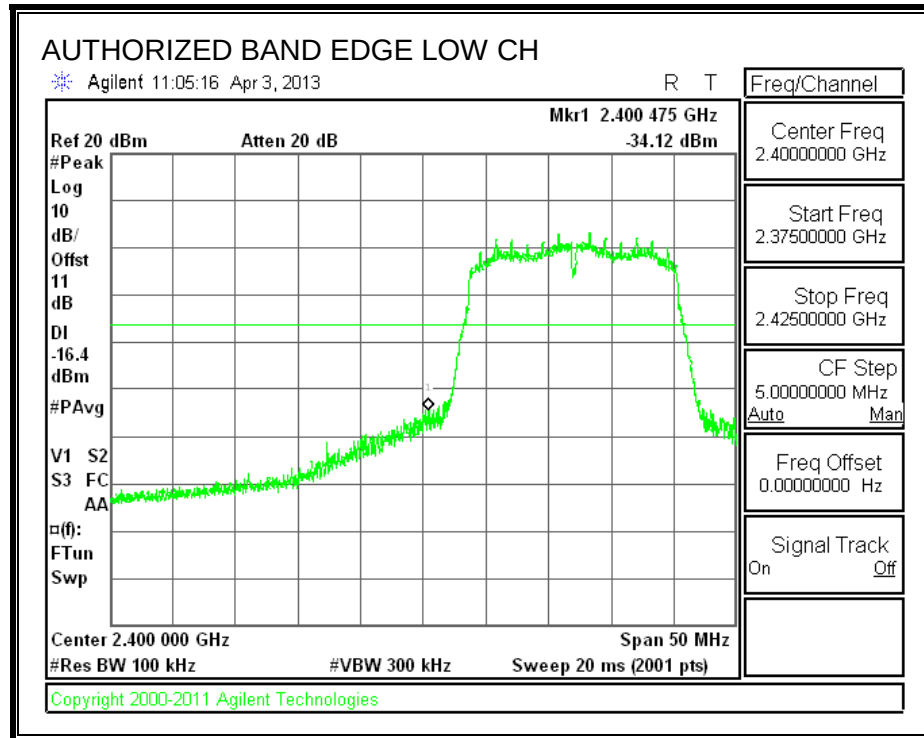


OUT-OF-BAND EMISSIONS, 802.11b Mode

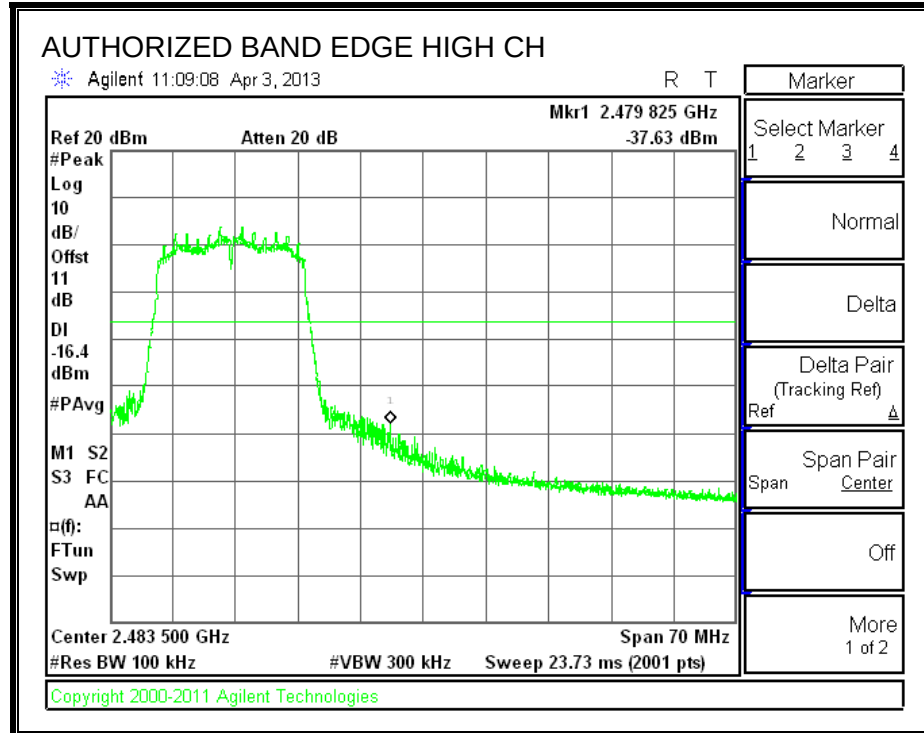


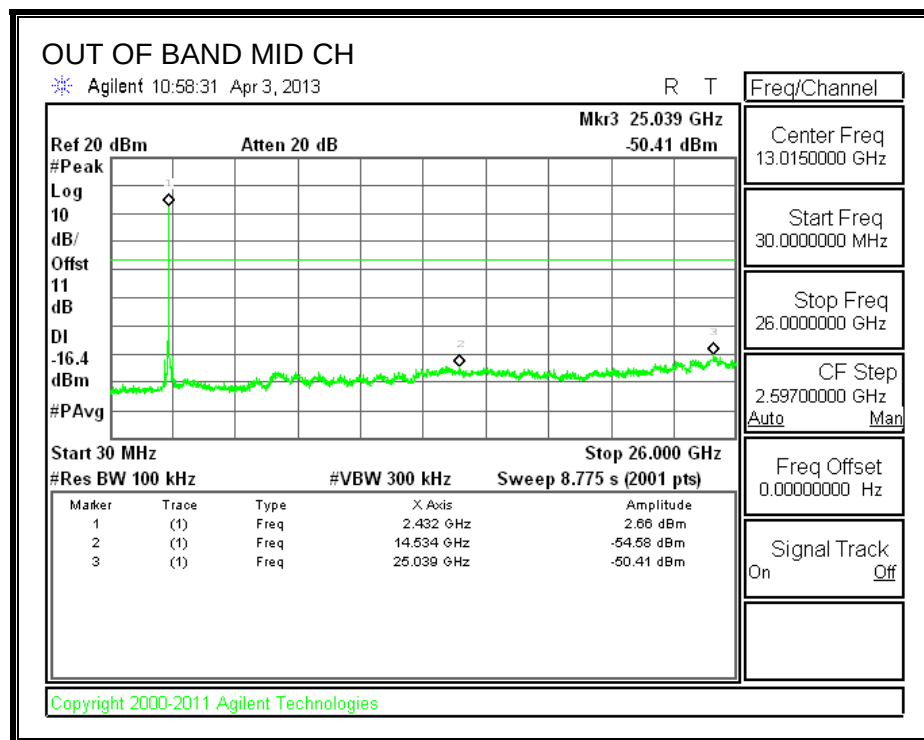
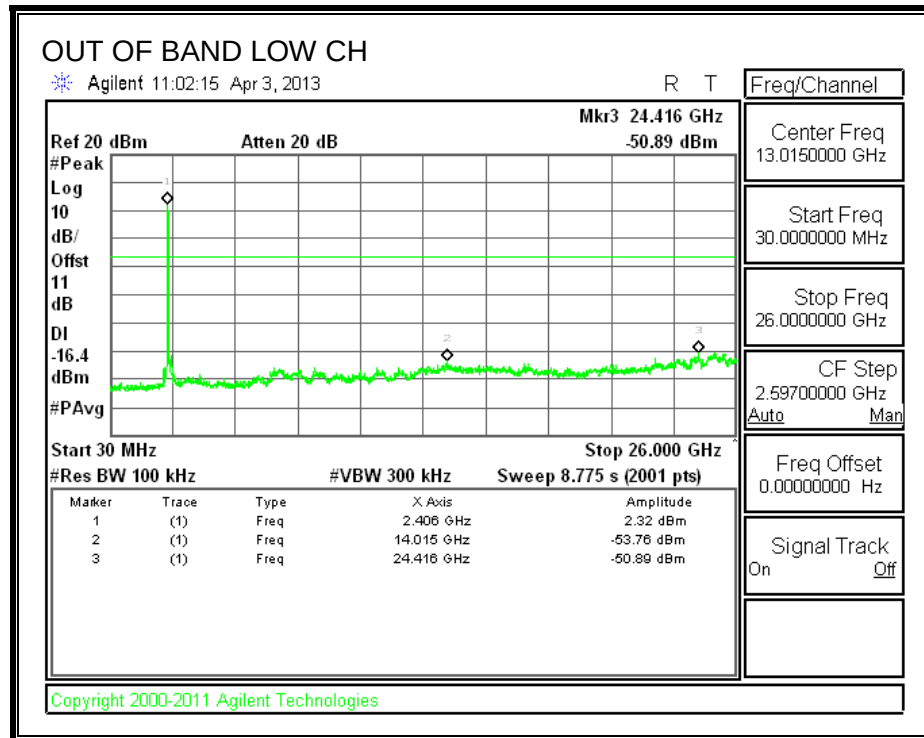


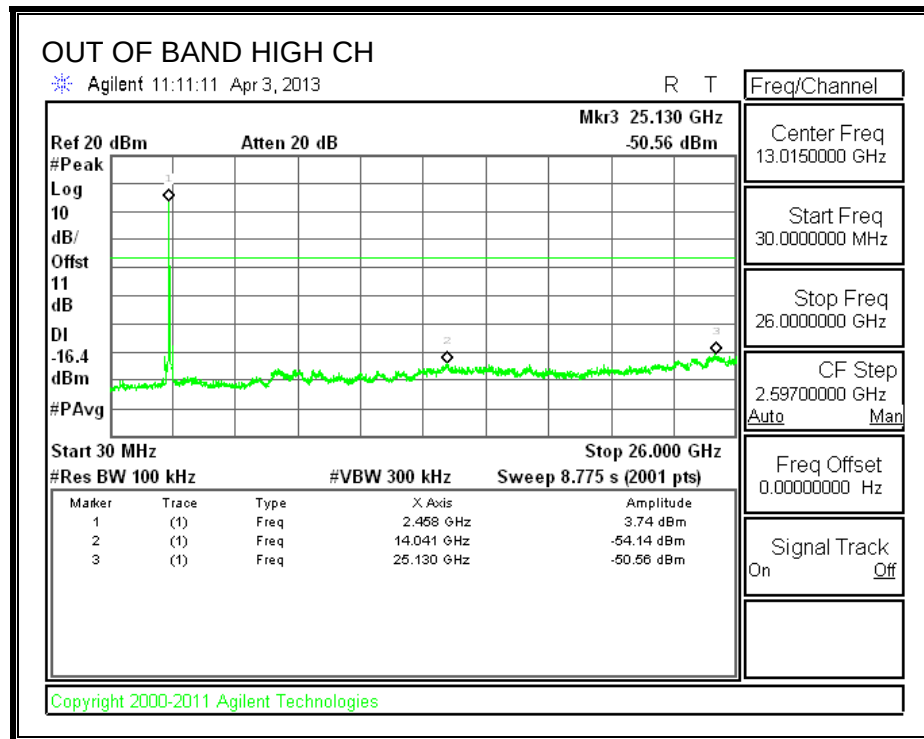




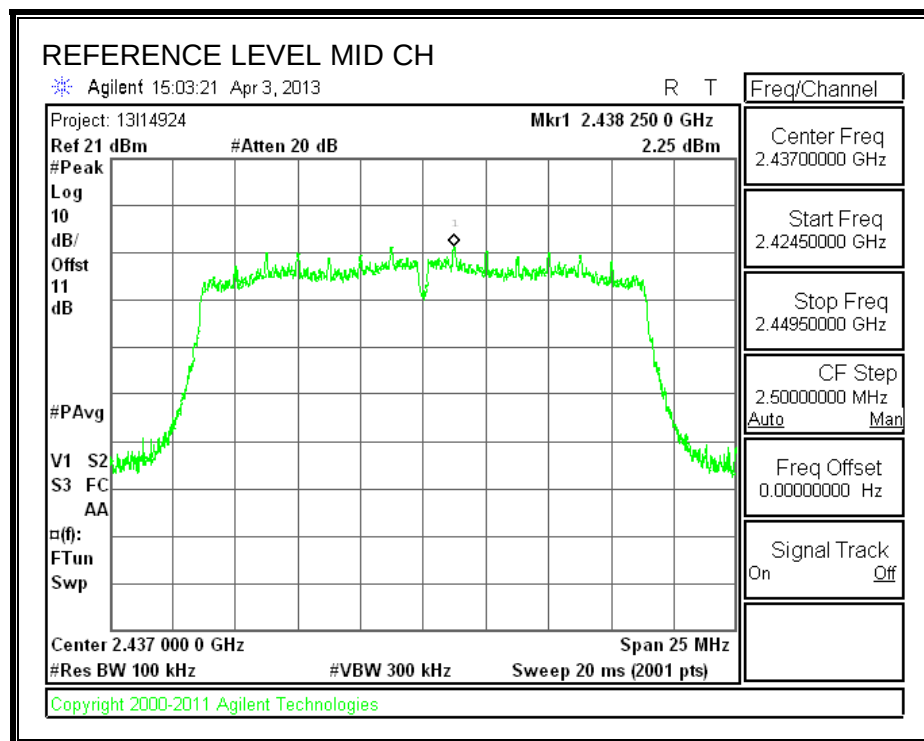
HIGH CHANNEL BANDEDGE, 802.11g Mode

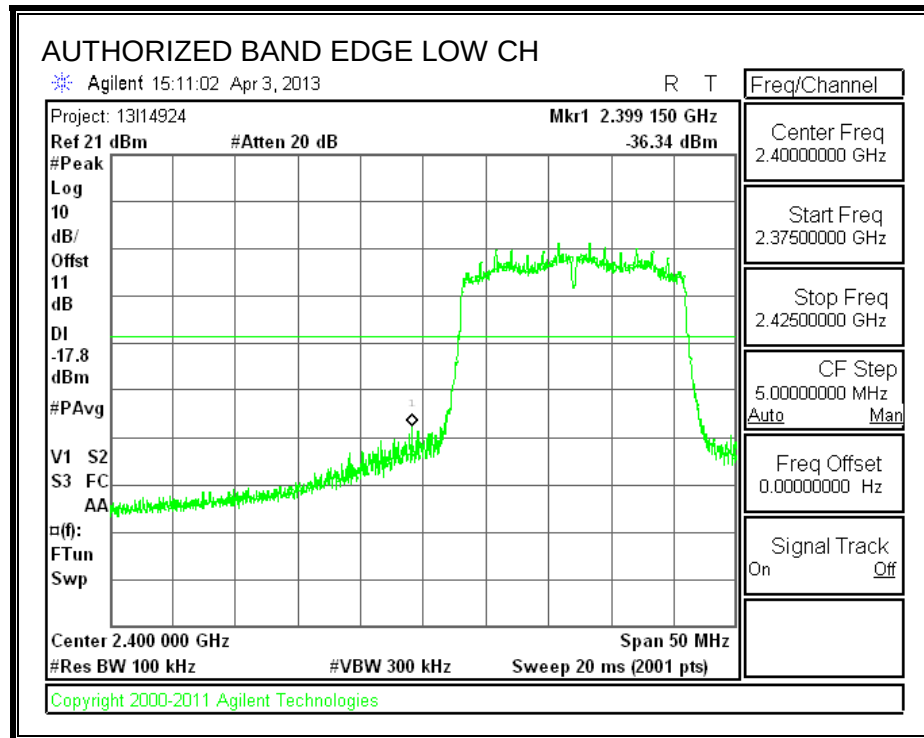




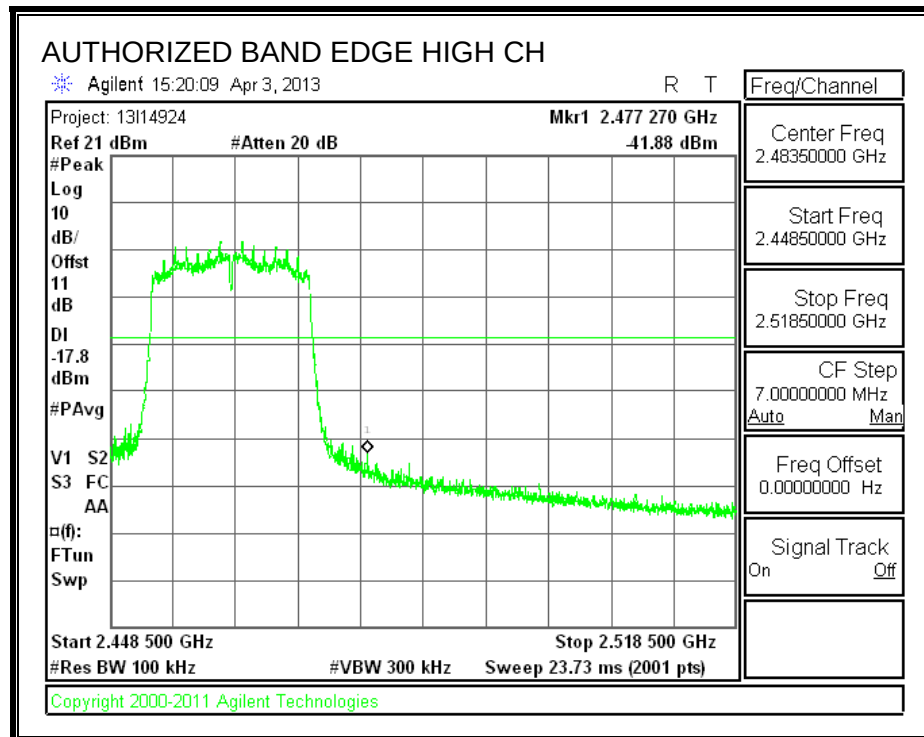


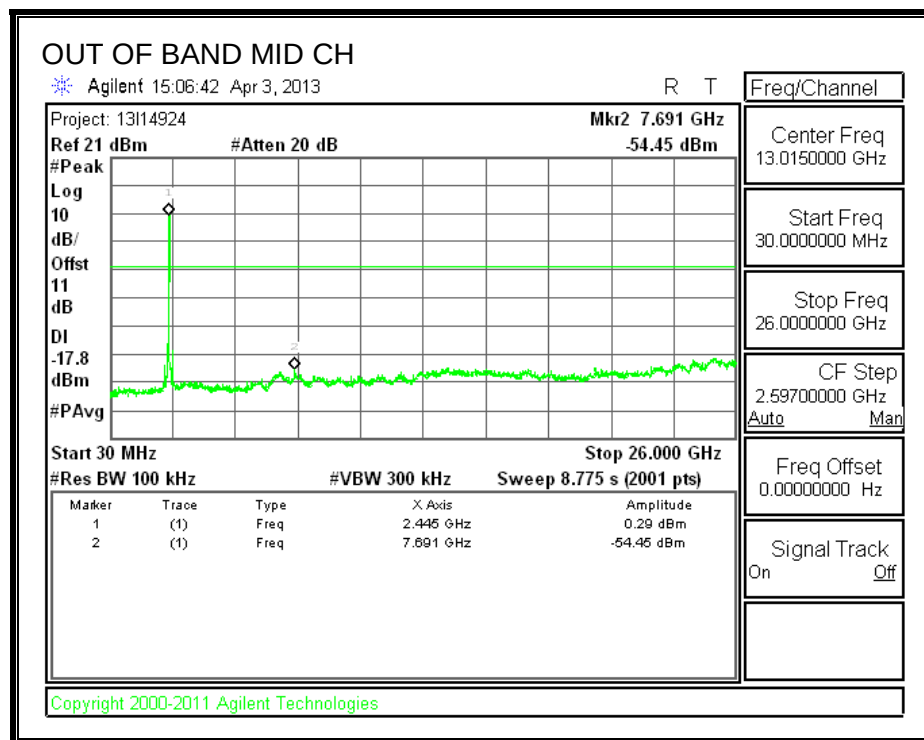
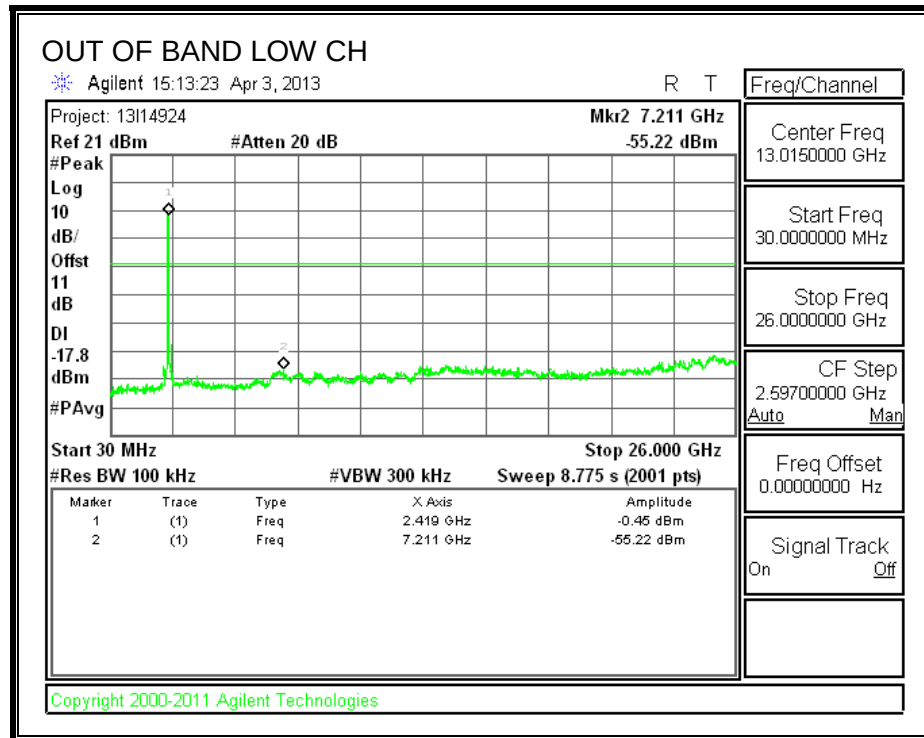
IN-BAND REFERENCE LEVEL, 802.11n HT20 Mode

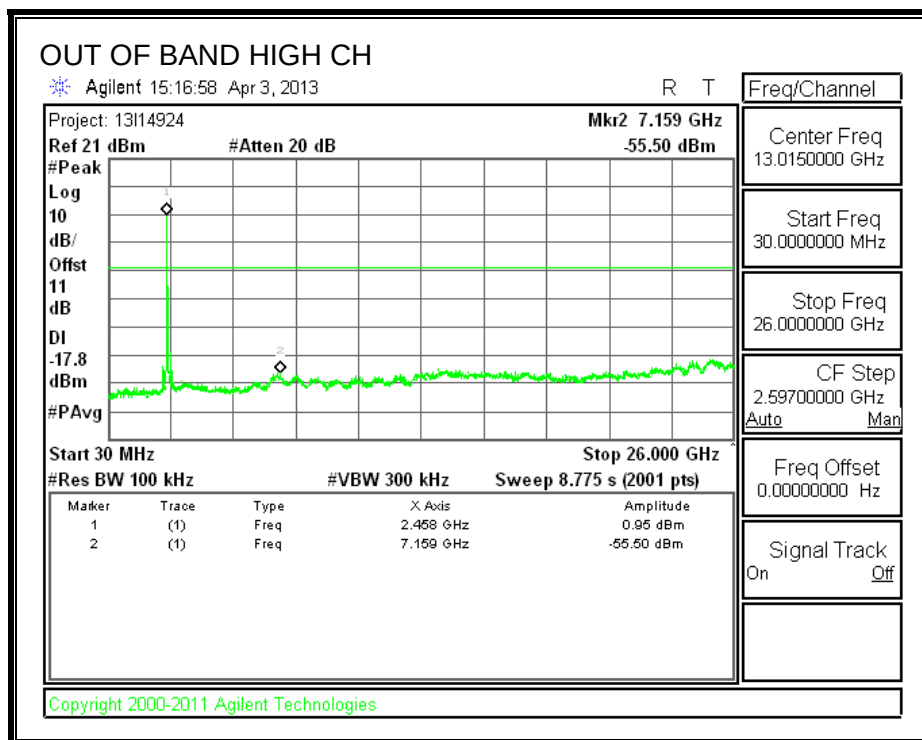




HIGH CHANNEL BANDEDGE, 802.11n HT20 Mode







9. RADIATED TEST RESULTS

9.1. 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 1 MHz for peak measurements and as applicable for average measurements.

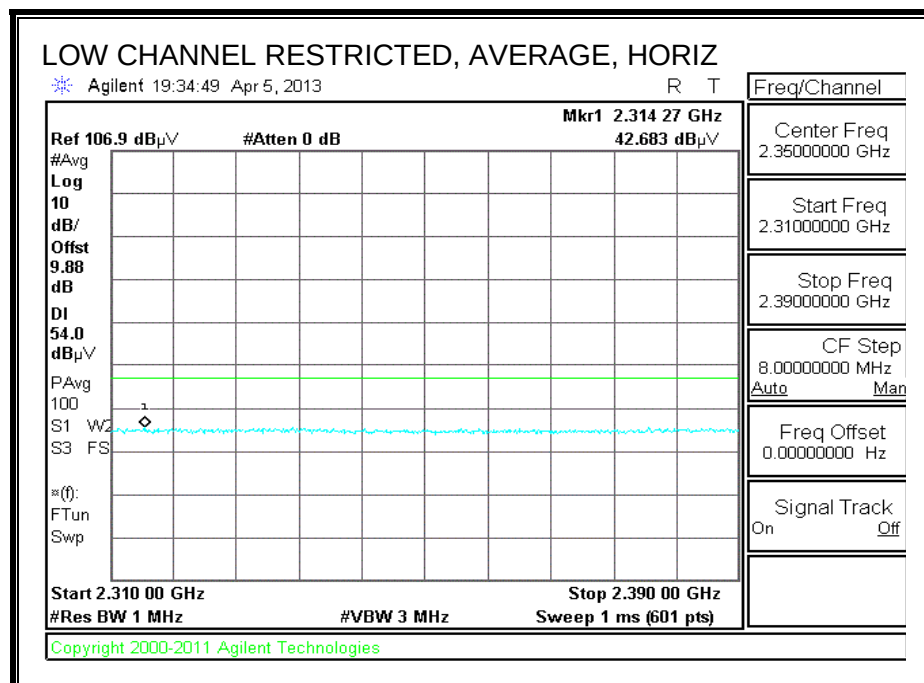
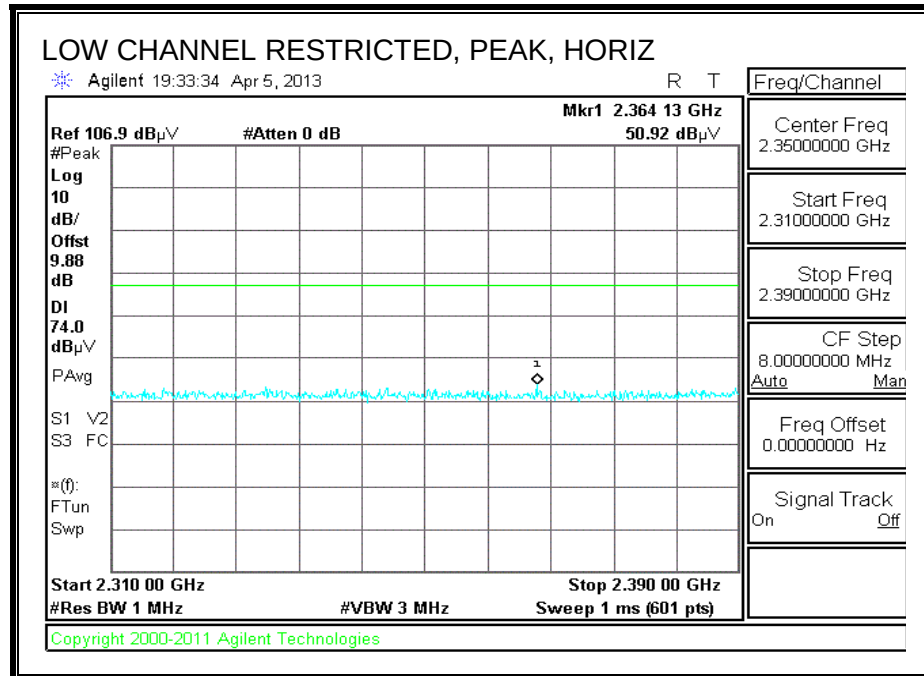
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

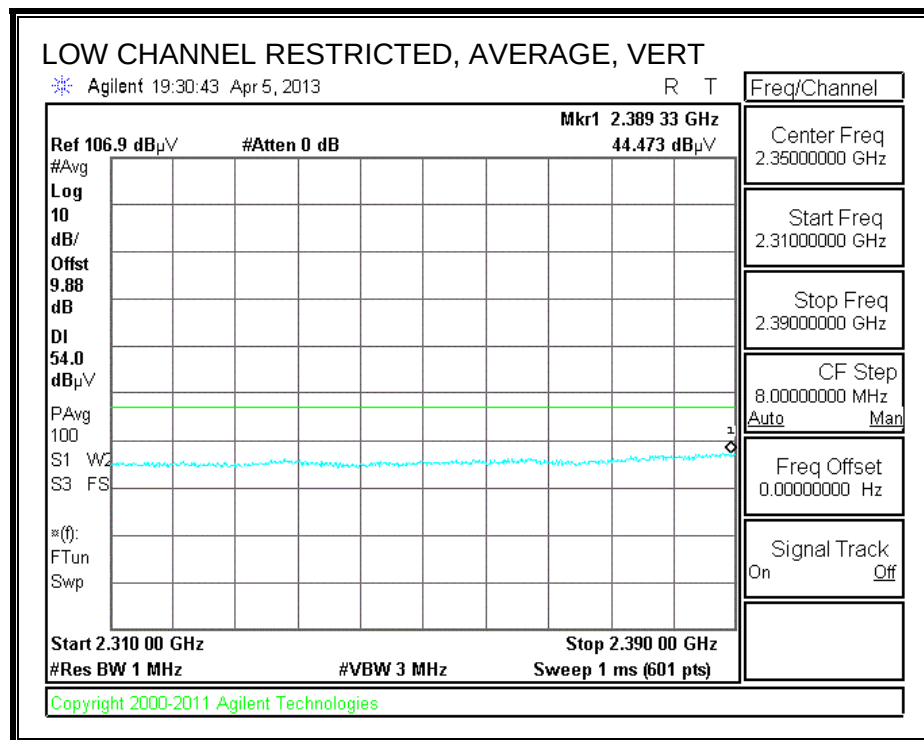
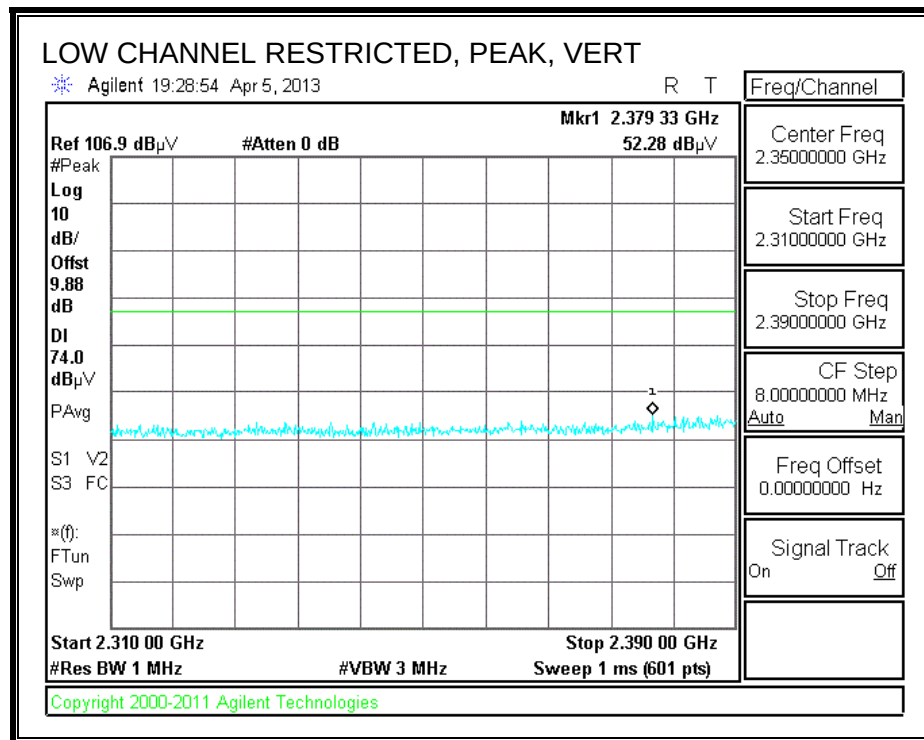
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

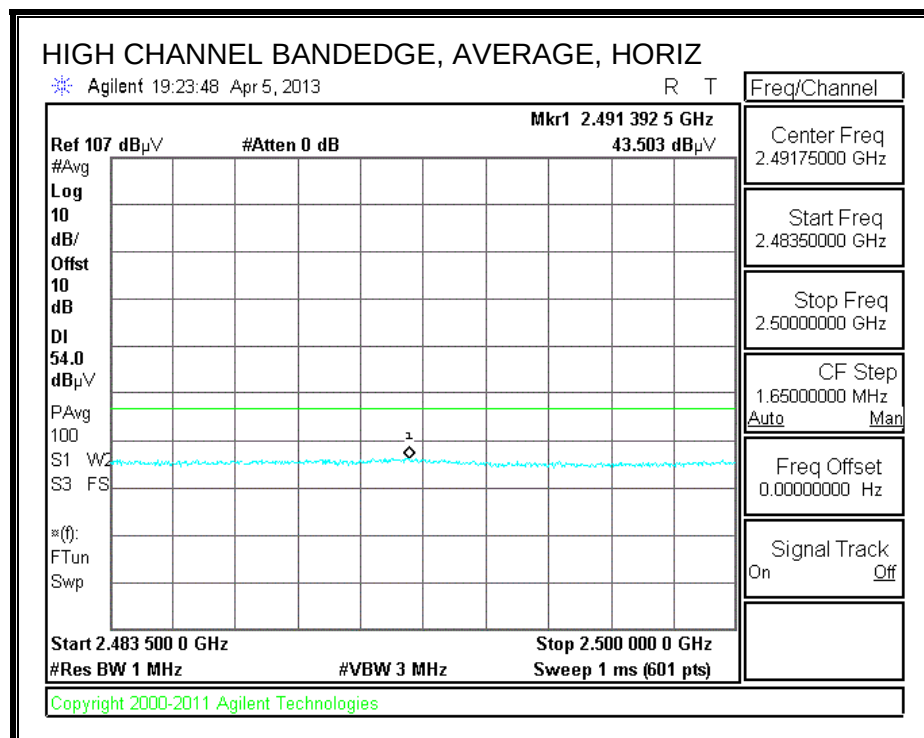
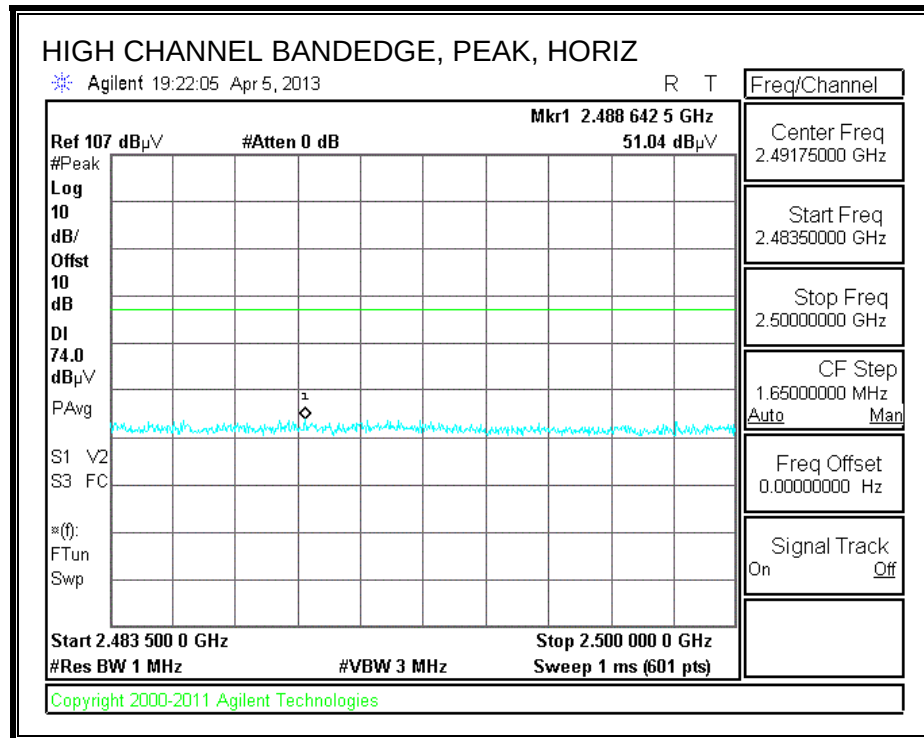
9.2. TRANSMITTER ABOVE 1 GHz

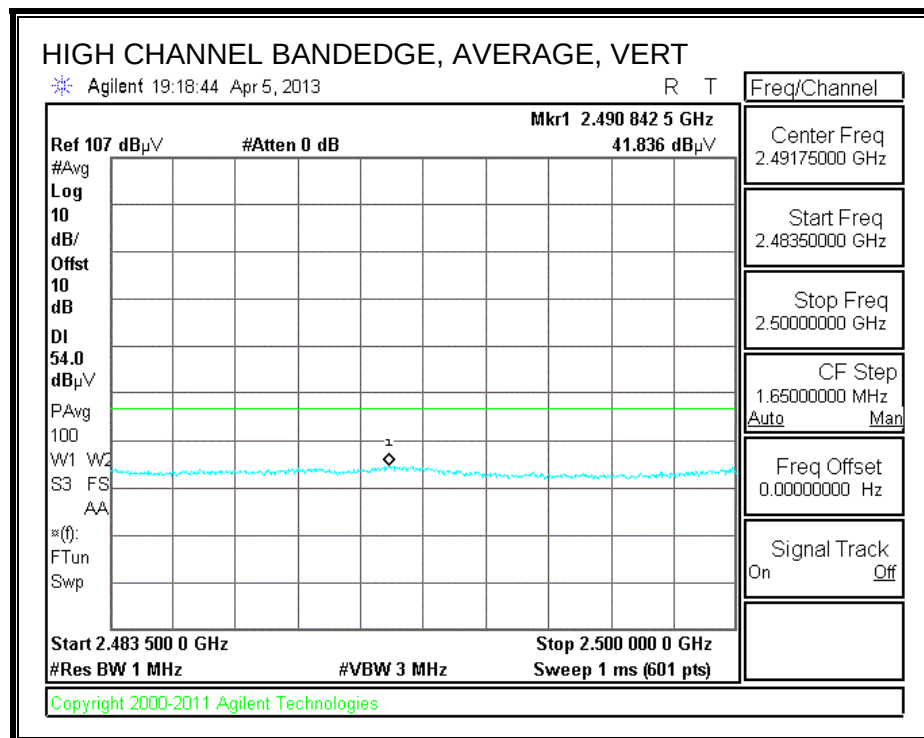
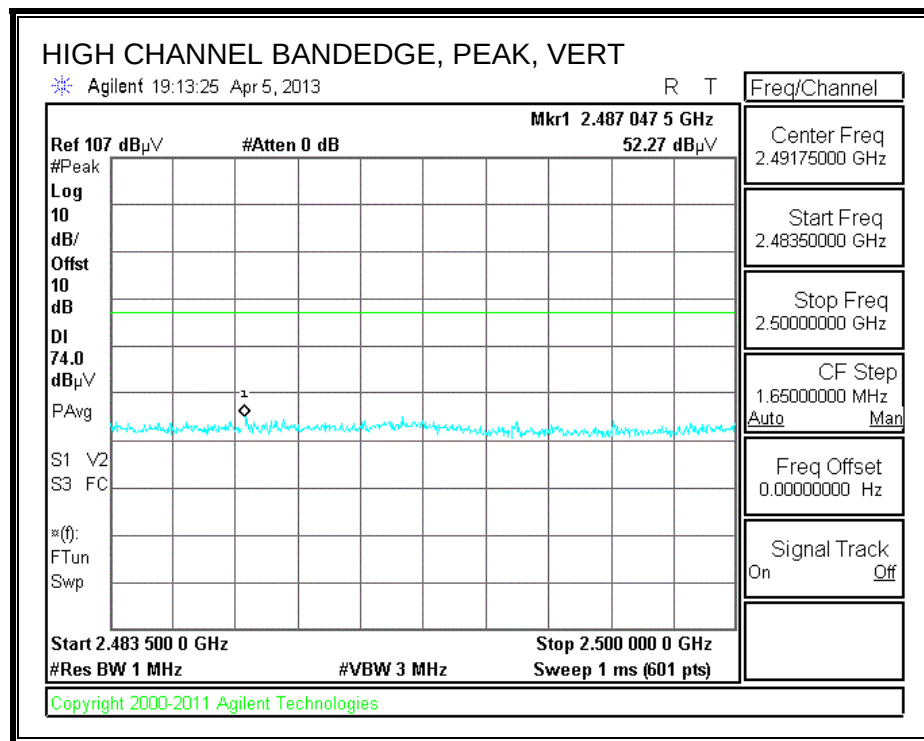
9.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

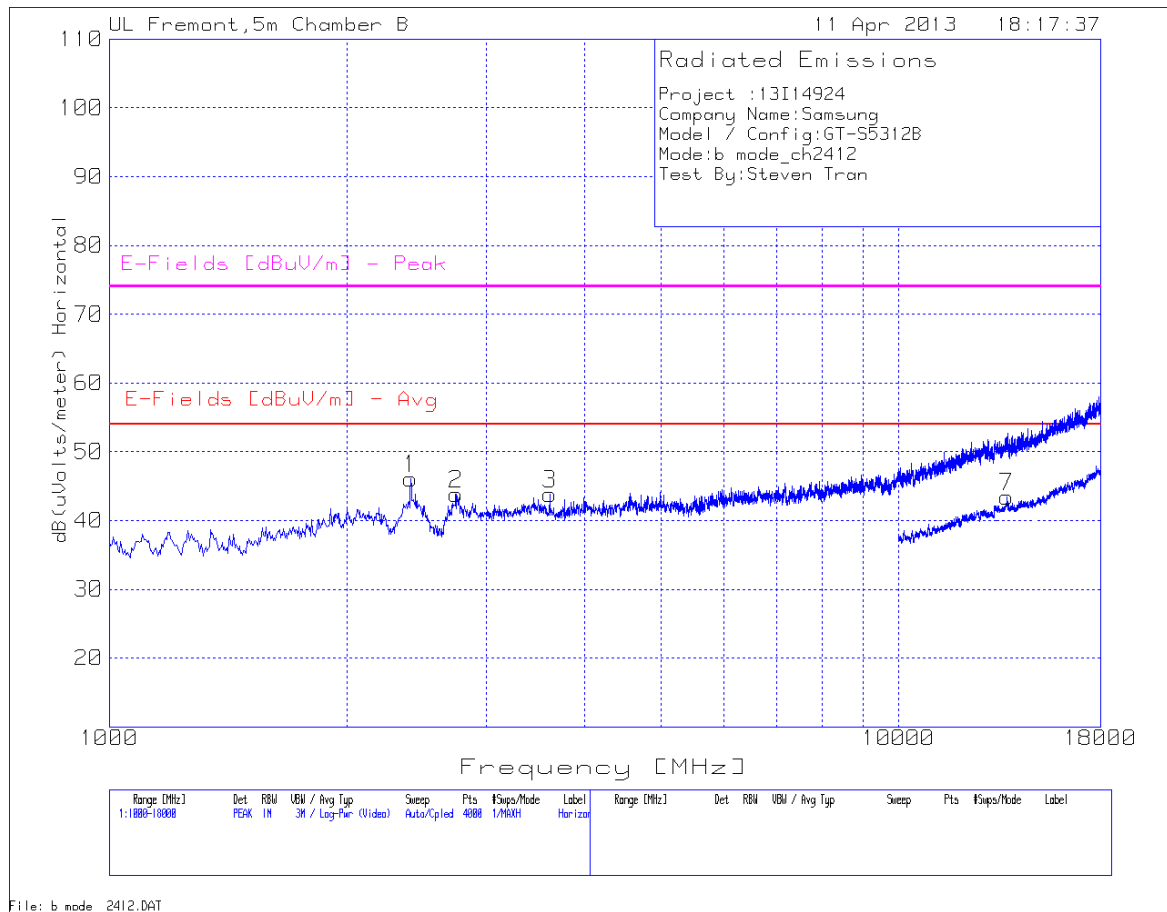




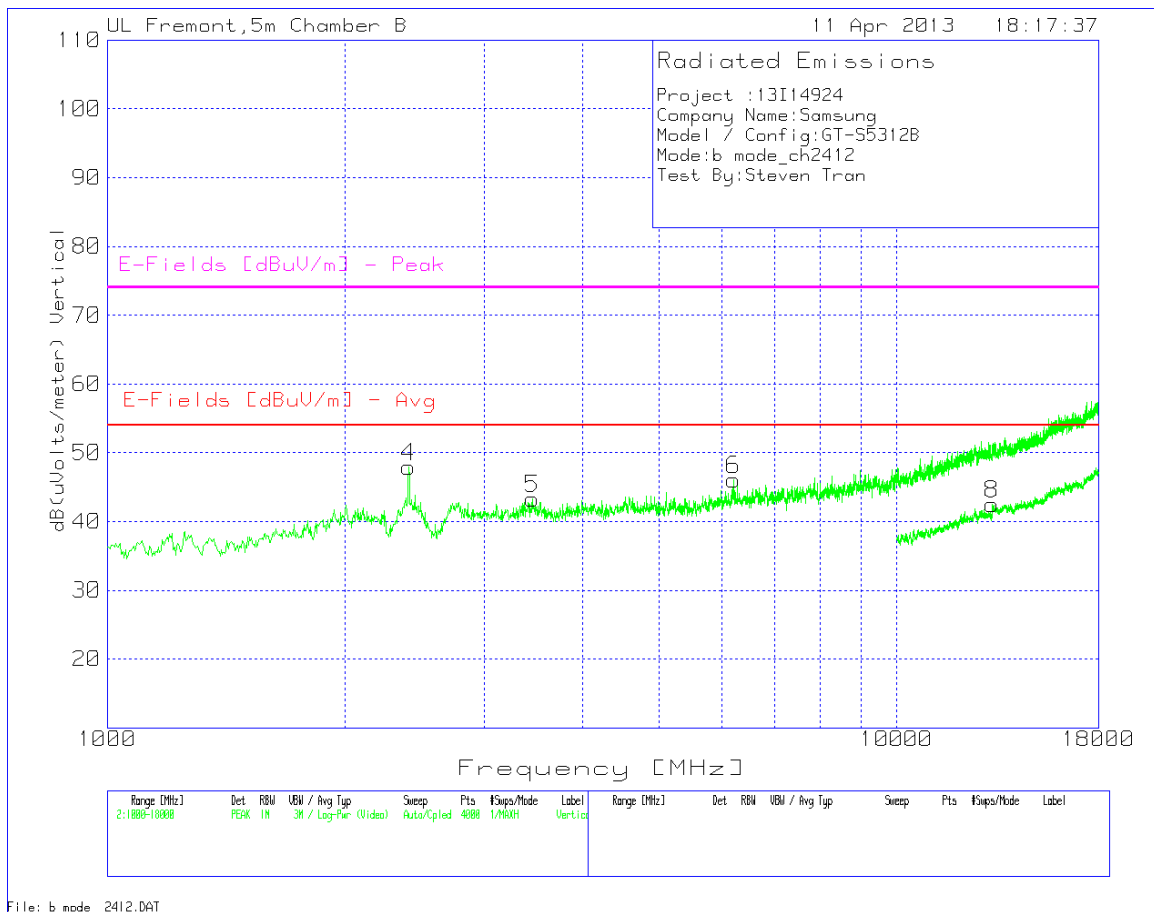




Low Channel, Horizontal



Low Channel, Vertical



Low Channel, Data

Project :13114924

Company Name:Samsung

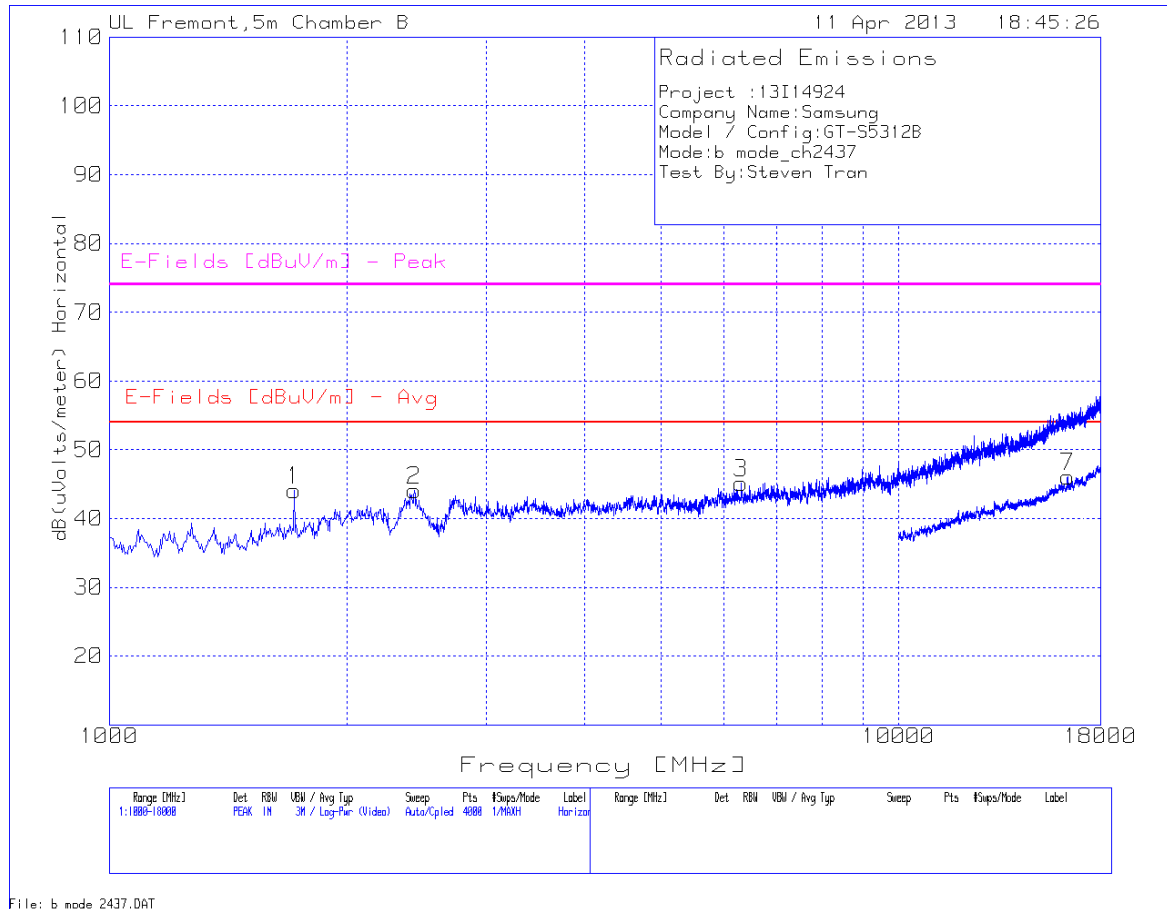
Model / Config:GT-S5312B

Mode:b mode_ch2412

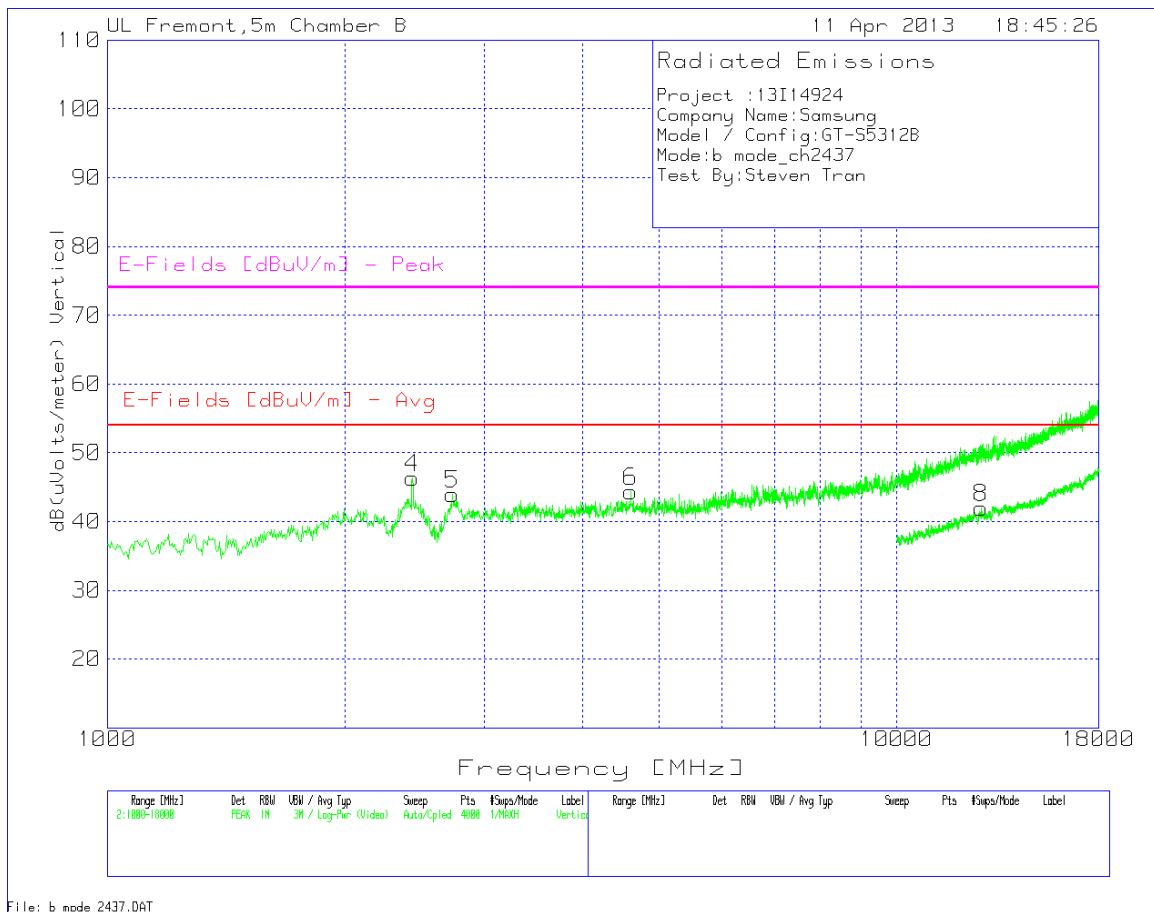
Test By:Steven Tran

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	2409.943	43.15	PK	32.4	-35	4.6	0.9	46.05	53.97	-7.92	74	-27.95	Horz
2	2753.935	40.25	PK	32.8	-35.1	5	0.9	43.85	53.97	-10.12	74	-30.15	Horz
3	3611.791	39.16	PK	33.5	-35	5.9	0.3	43.86	53.97	-10.11	74	-30.14	Horz
Vertical 1000 - 18000MHz													
4	2409.943	45.03	PK	32.4	-35	4.6	0.9	47.93	53.97	-6.04	74	-26.07	Vert
5	3454.659	39.06	PK	33.2	-35	5.7	0.4	43.36	53.97	-10.61	74	-30.64	Vert
6	6206.595	36.69	PK	36	-34.9	8.1	0.2	46.09	53.97	-7.88	74	-27.91	Vert
Horizontal 10000 - 18000MHz													
7	13706.147	23.39	PK	39.1	-32	12.5	0.4	43.39	53.97	-10.58	74	-30.61	Horz
Vertical 10000 - 18000MHz													
8	13202.399	22.59	PK	39.1	-31.8	12.2	0.4	42.49	53.97	-11.48	74	-31.51	Vert

Mid Channel, Horizontal



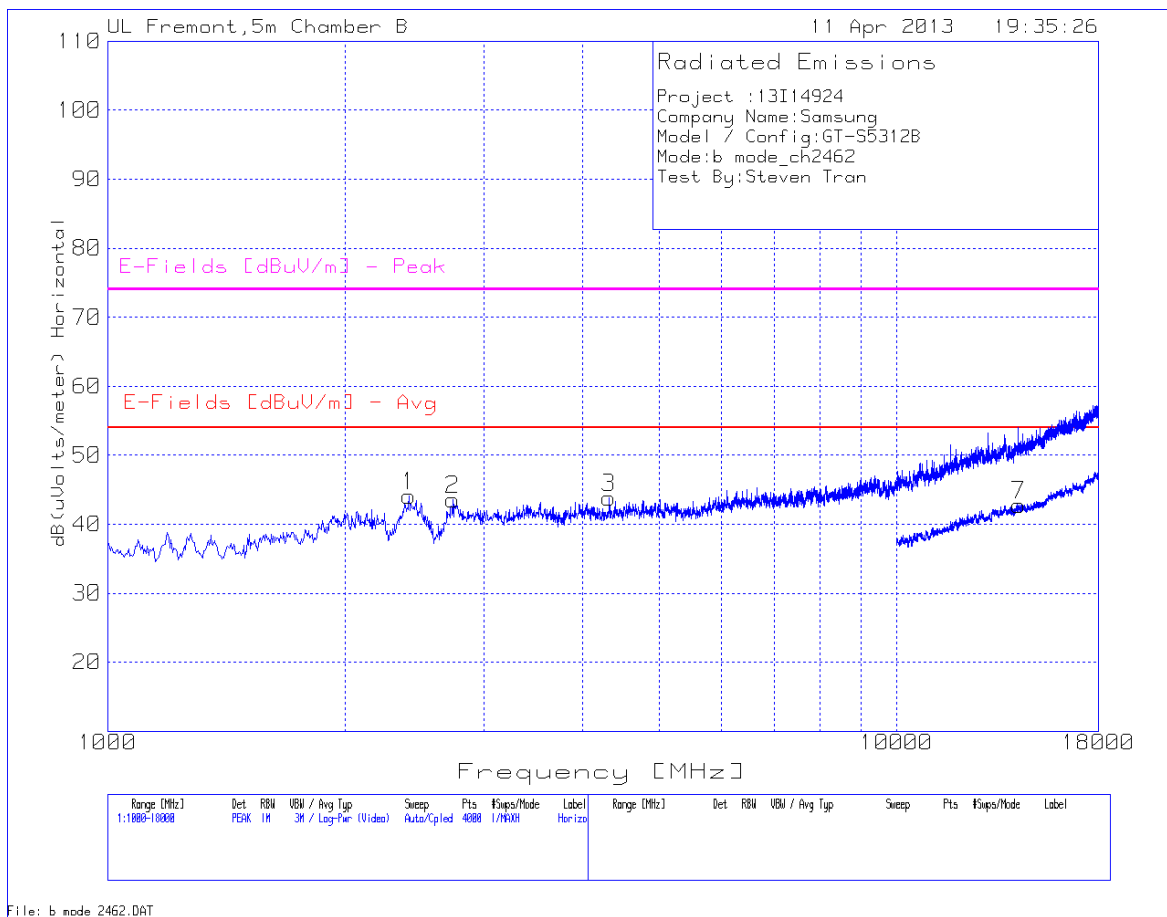
Mid Channel, Vertical



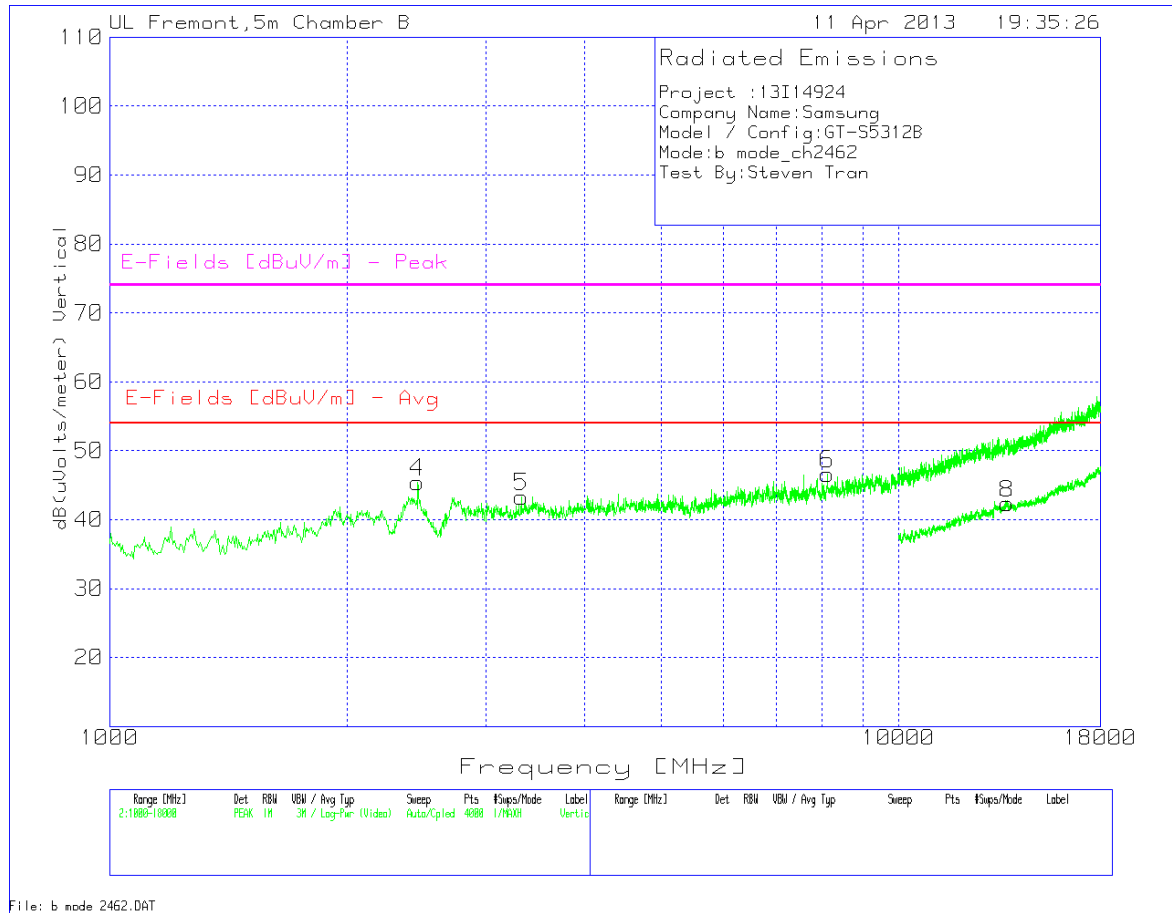
Mid Channel, Data

Project :13114924													
Company Name:Samsung													
Model / Config:GT-S5312B													
Mode:b mode_ch2437													
Test By:Steven Tran													
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BR F [dB]	dB(uV s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	1713.465	44.8	PK	29.8	-35.1	3.9	0.7	44.1	53.97	-9.87	74	-29.9	Horz
2	2435.423	41.1	PK	32.4	-35	4.7	0.9	44.1	53.97	-9.87	74	-29.9	Horz
3	6312.765	35.72	PK	36	-35	8.2	0.2	45.12	53.97	-8.85	74	-28.88	Horz
Vertical 1000 - 18000MHz													
4	2435.423	43.4	PK	32.4	-35	4.7	0.9	46.4	53.97	-7.57	74	-27.6	Vert
5	2736.947	40.4	PK	32.8	-35.1	5	0.9	44	53.97	-9.97	74	-30	Vert
6	4605.546	37.55	PK	34.6	-34.9	6.8	0.3	44.35	53.97	-9.62	74	-29.65	Vert
Horizontal 10000 - 18000MHz													
7	16368.816	22.88	PK	41.4	-32.5	13.9	0.4	46.08	53.97	-7.89	74	-27.92	Horz
Vertical 10000 - 18000MHz													
8	12798.601	22.37	PK	39.2	-32.1	12	0.5	41.97	53.97	-12	74	-32.03	Vert

High Channel, Horizontal



High Channel, Vertical

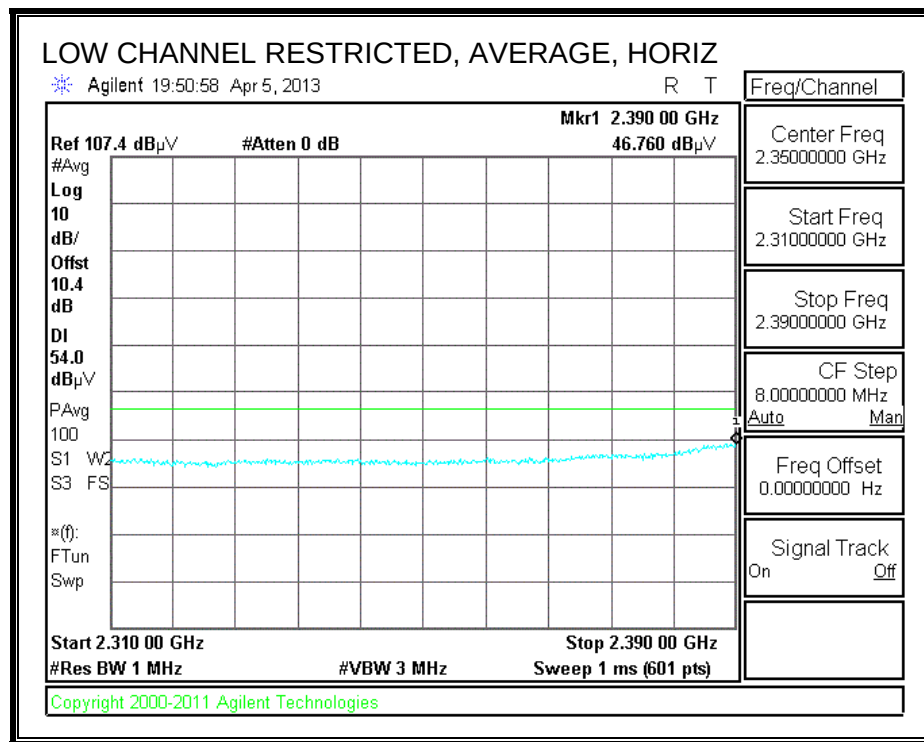
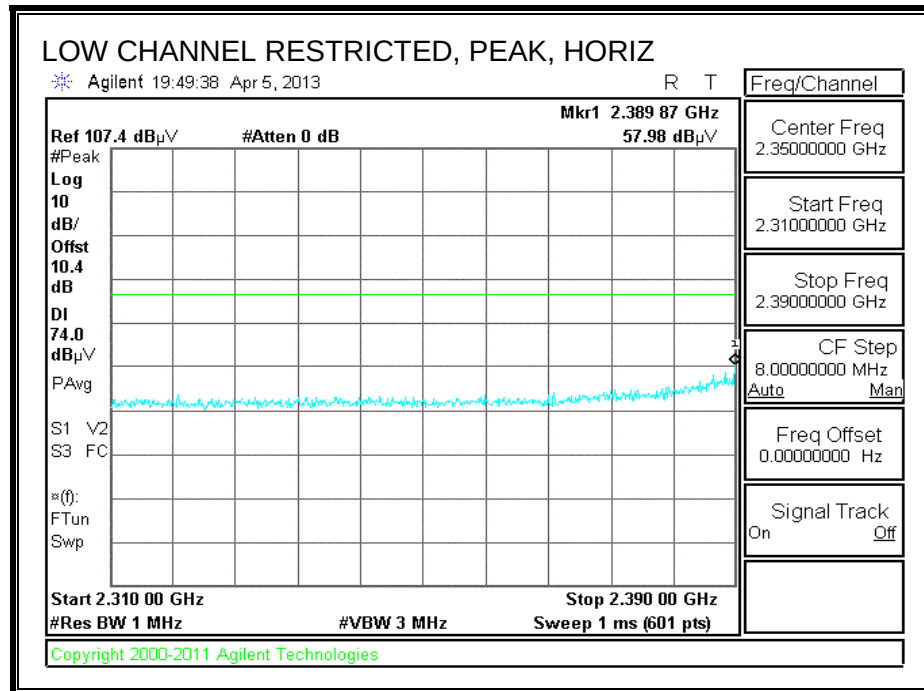


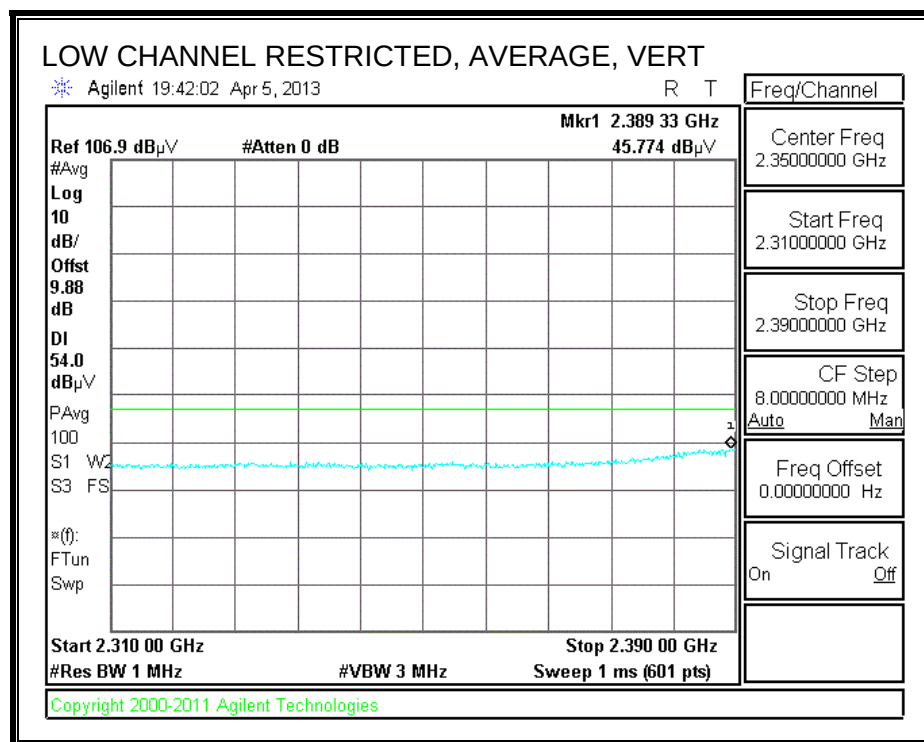
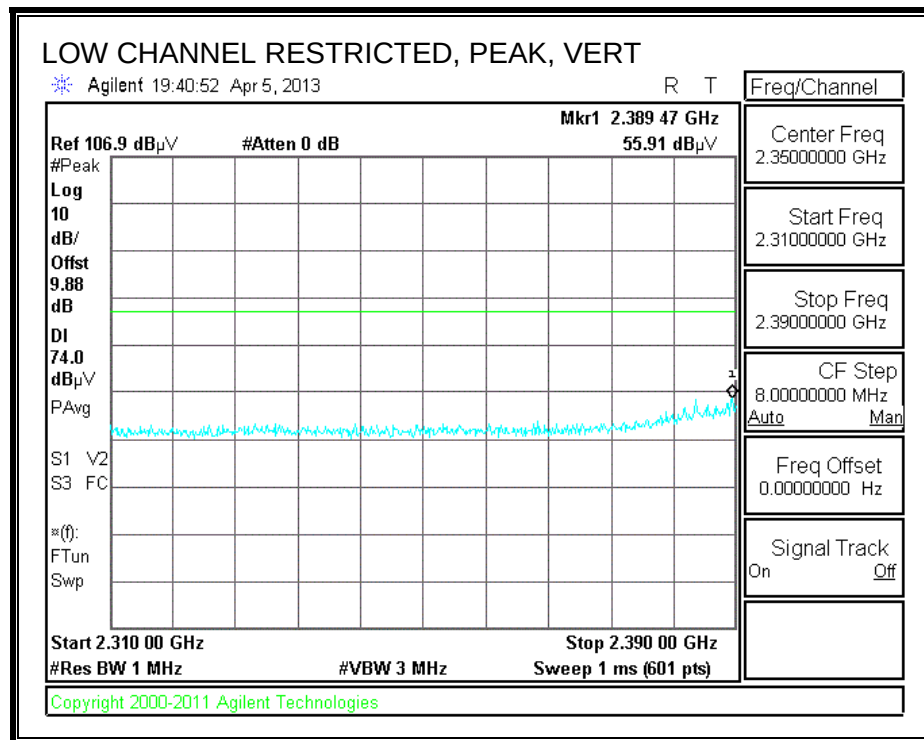
High Channel, Data

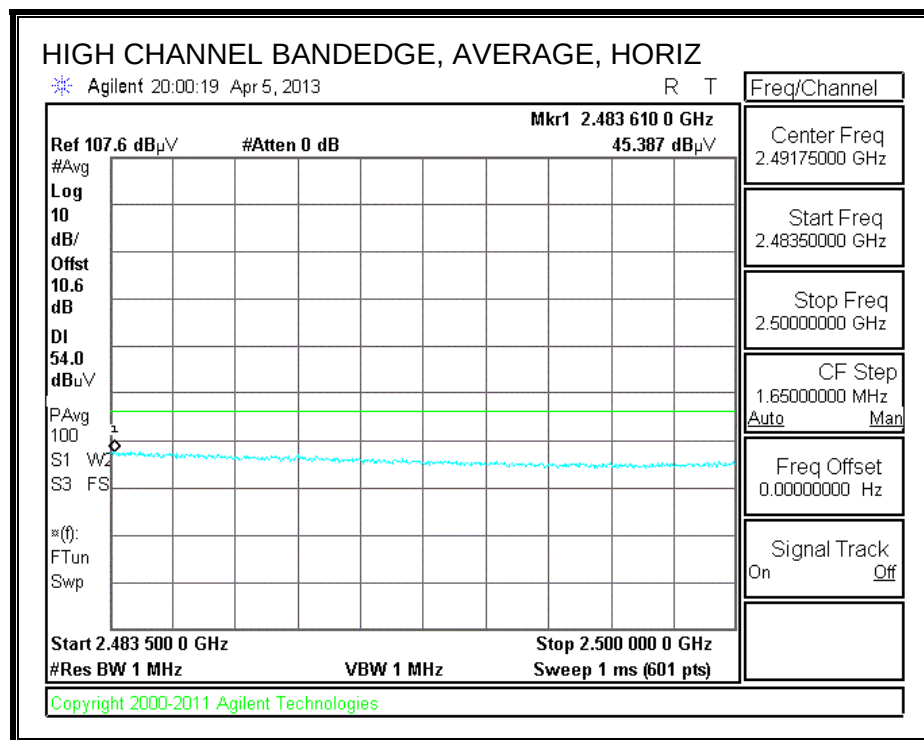
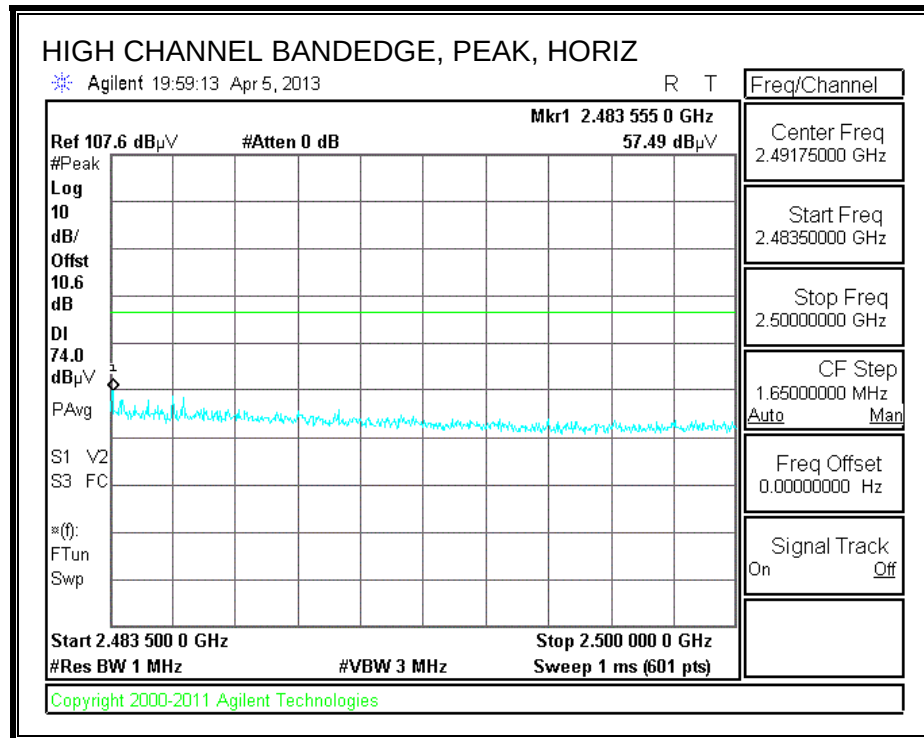
Project :13I14924													
Company Name:Samsung													
Model / Config:GT-S5312B													
Mode:b mode_ch2462													
Test By:Steven Tran													
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRf [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	2409.943	41.17	PK	32.4	-35	4.6	0.9	44.07	53.97	-9.9	74	-29.93	Horz
2	2741.194	39.99	PK	32.8	-35.1	5	0.9	43.59	53.97	-10.38	74	-30.41	Horz
3	4321.009	37.72	PK	34.2	-34.9	6.6	0.2	43.82	53.97	-10.15	74	-30.18	Horz
Vertical 1000 - 18000MHz													
4	2456.658	42.39	PK	32.4	-35	4.7	0.9	45.39	53.97	-8.58	74	-28.61	Vert
5	3323.008	38.97	PK	33.3	-35.1	5.6	0.5	43.27	53.97	-10.7	74	-30.73	Vert
6	8121.909	35.95	PK	36.1	-35.2	9.4	0.4	46.65	53.97	-7.32	74	-27.35	Vert
Horizontal 10000 - 18000MHz													
7	14289.855	22.48	PK	39.5	-32.4	12.8	0.4	42.78	53.97	-11.19	74	-31.22	Horz
Vertical 10000 - 18000MHz													
8	13722.139	22.31	PK	39.1	-32	12.5	0.4	42.31	53.97	-11.66	74	-31.69	Vert

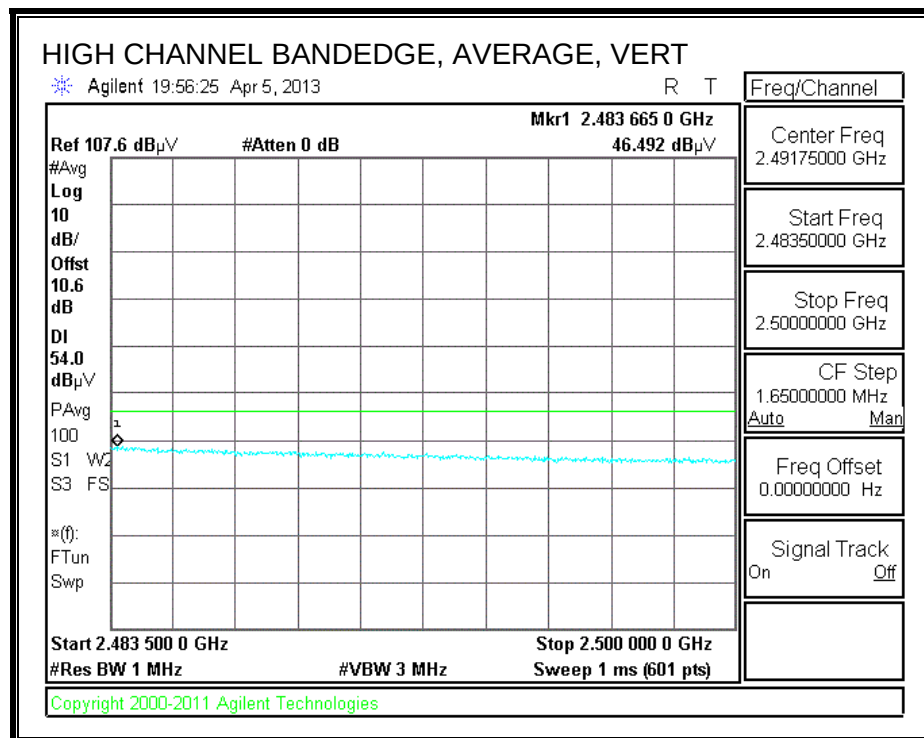
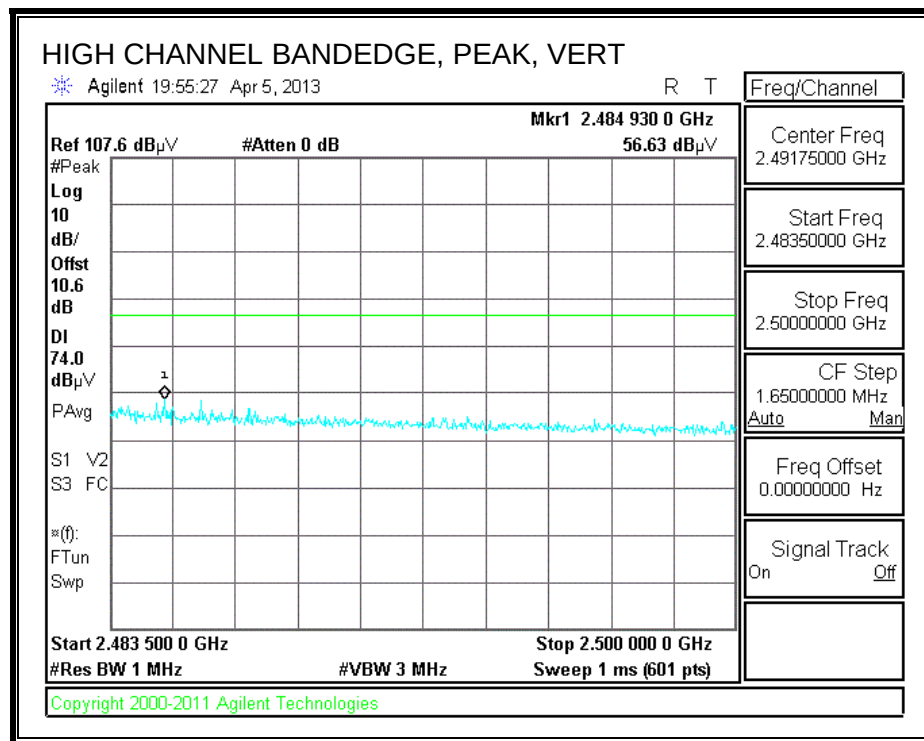
9.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

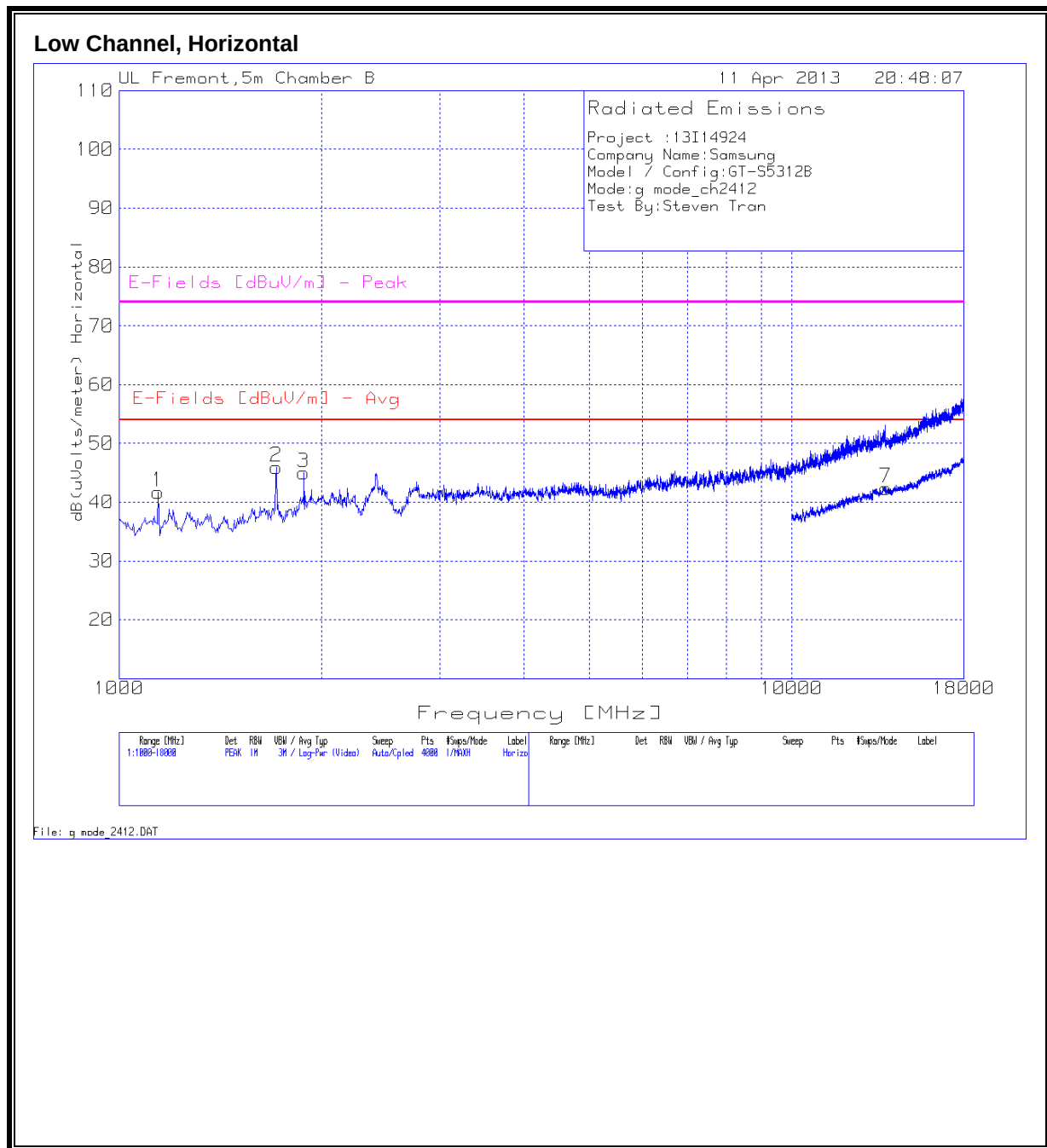
RESTRICTED BANDEDGE (LOW CHANNEL)



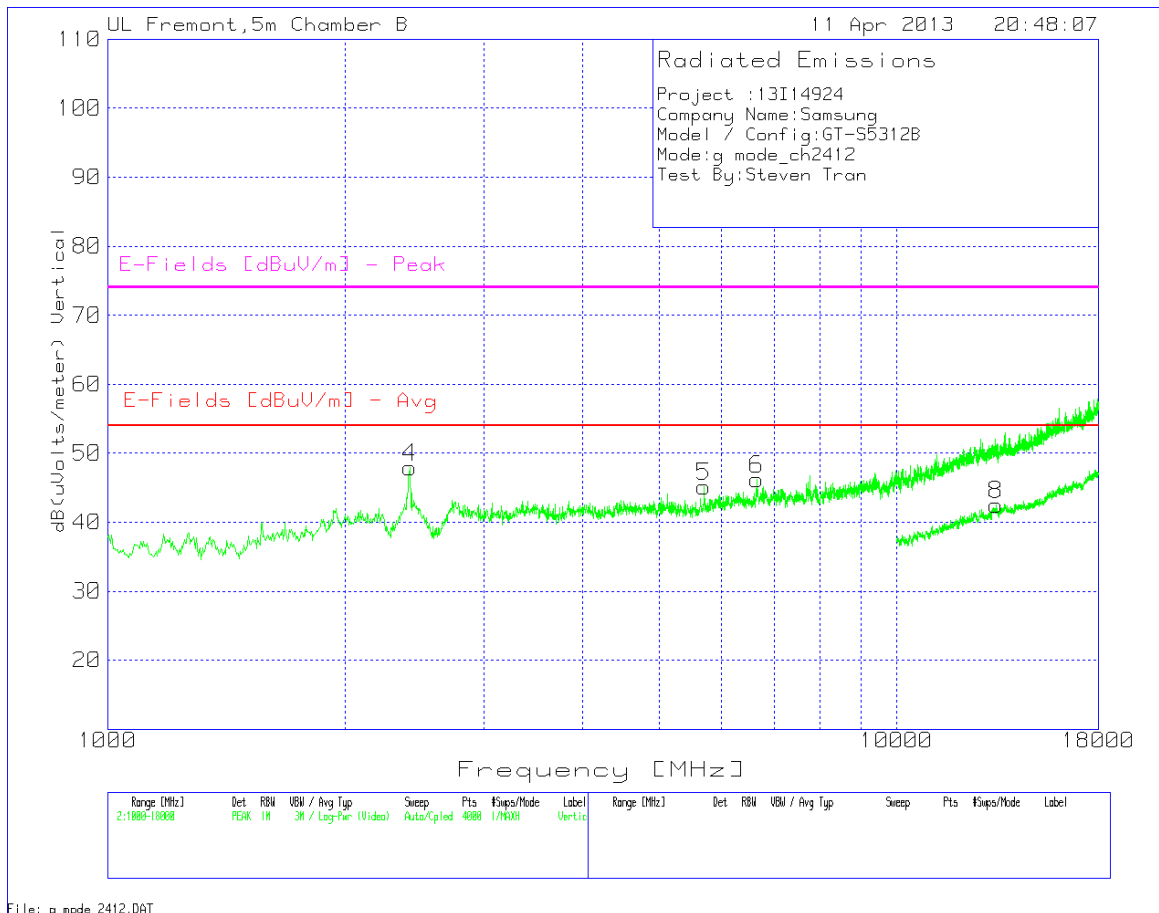








Low Channel, Vertical



Low Channel, Data

Project :13I14924

Company Name:Samsung

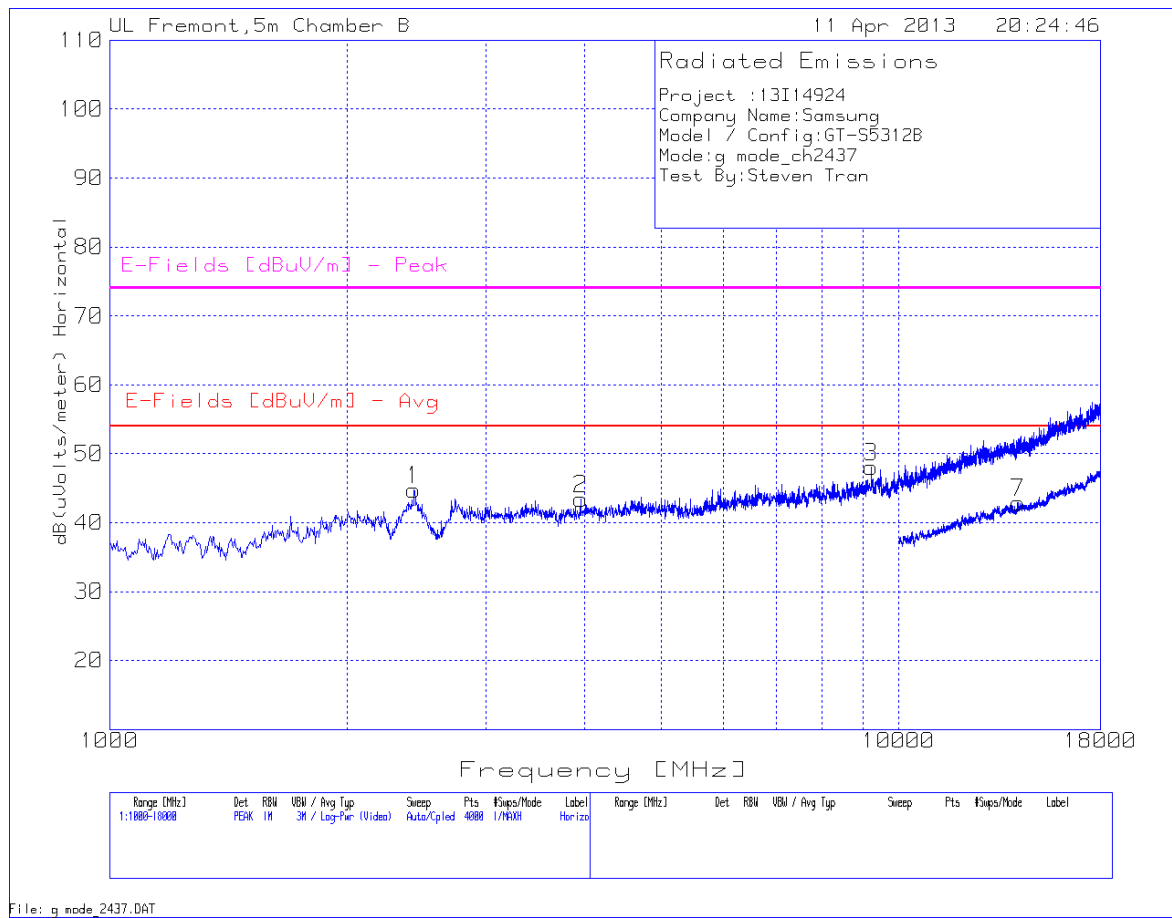
Model / Config:GT-S5312B

Mode:g mode_ch2412

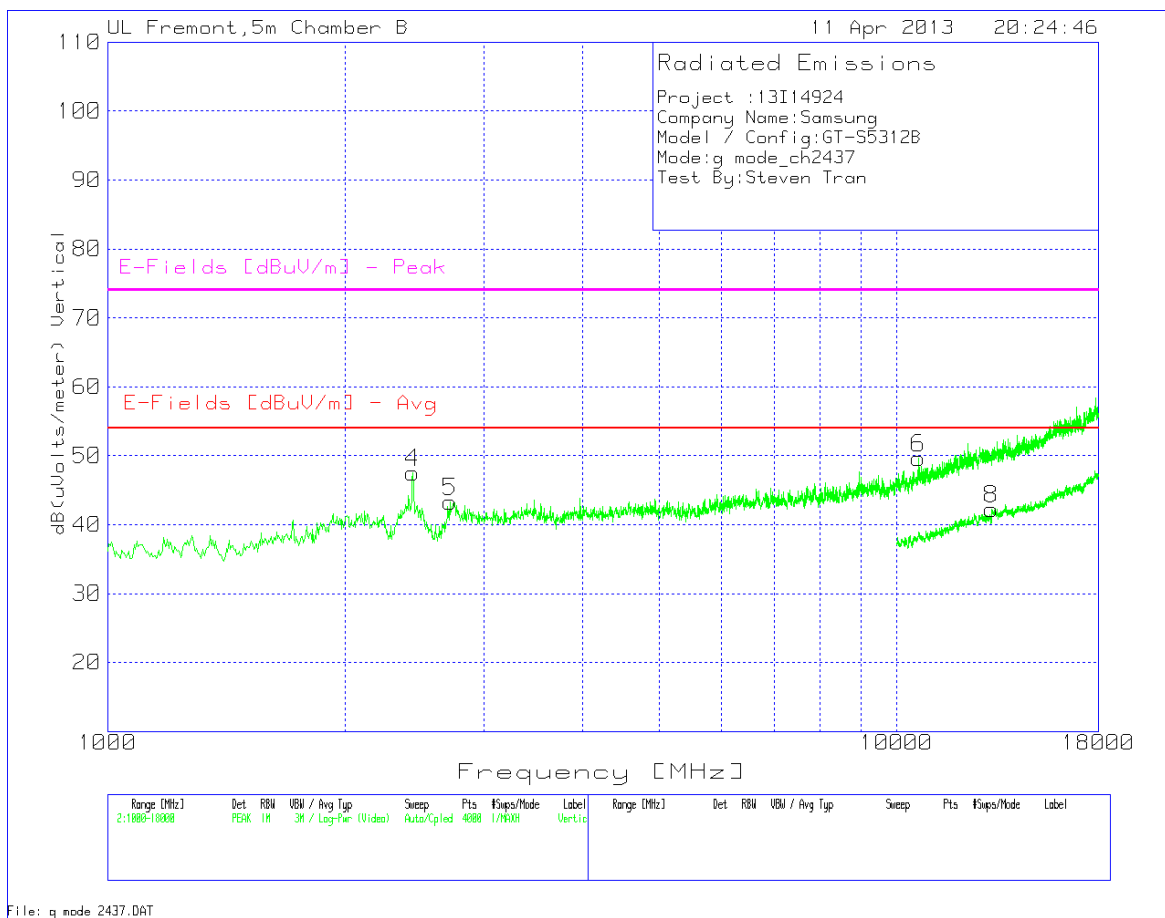
Test By:Steven Tran

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	1144.392	45.77	PK	28.1	-35.8	3.3	0.3	41.67	53.97	-12.3	74	-32.33	Horz
2	1713.465	46.66	PK	29.8	-35.1	3.9	0.7	45.96	53.97	-8.01	74	-28.04	Horz
3	1883.337	44.06	PK	31	-35	4.1	0.8	44.96	53.97	-9.01	74	-29.04	Horz
Vertical 1000 - 18000MHz													
4	2418.436	45.01	PK	32.4	-35	4.6	0.9	47.91	53.97	-6.06	74	-26.09	Vert
5	5696.977	37.11	PK	35.1	-34.9	7.7	0.2	45.21	53.97	-8.76	74	-28.79	Vert
6	6648.264	36.7	PK	35.8	-35	8.4	0.3	46.2	53.97	-7.77	74	-27.8	Vert
Horizontal 10000 - 18000MHz													
7	13794.103	22.5	PK	39.1	-32.1	12.5	0.4	42.4	53.97	-11.57	74	-31.6	Horz
Vertical 10000 - 18000MHz													
8	13374.313	22.57	PK	39.1	-31.9	12.3	0.4	42.47	53.97	-11.5	74	-31.53	Vert

Mid Channel, Horizontal



Mid Channel, Vertical

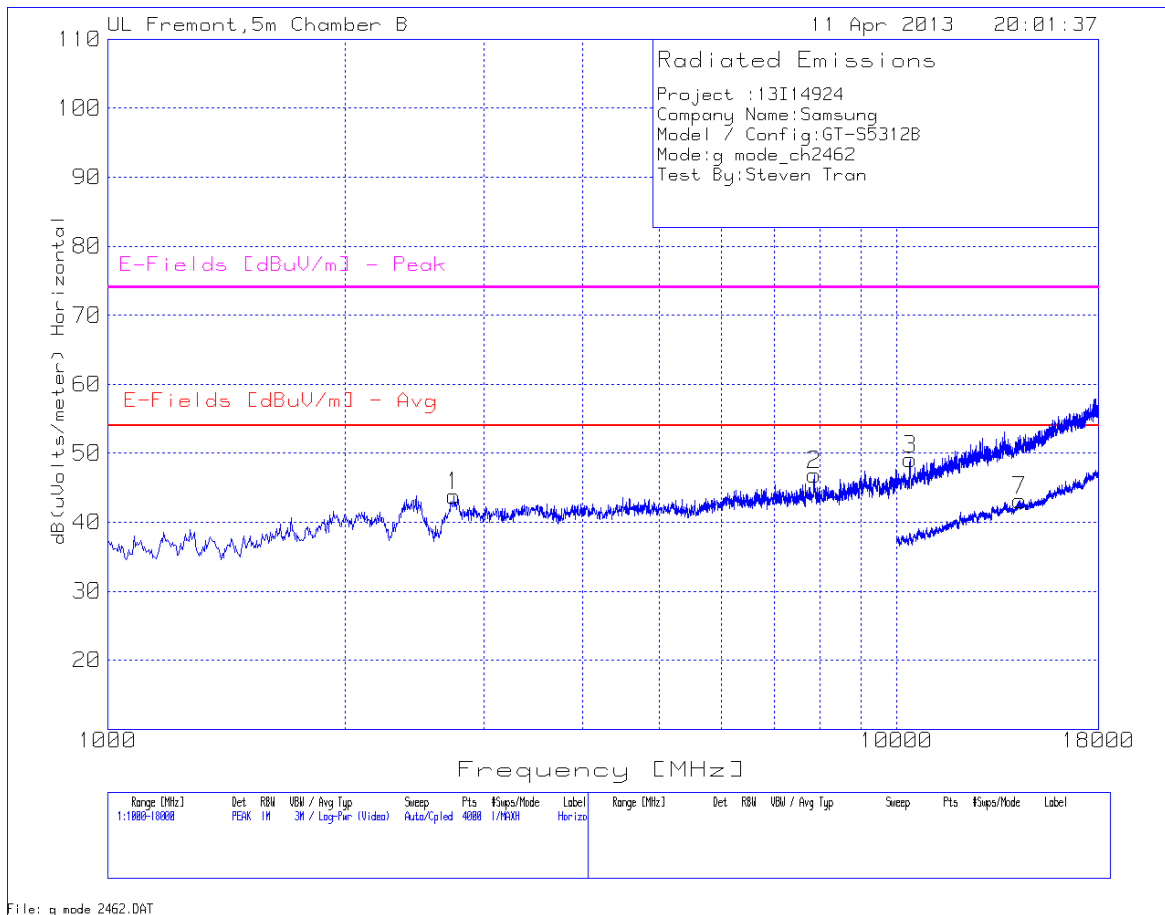


Mid Channel, Data

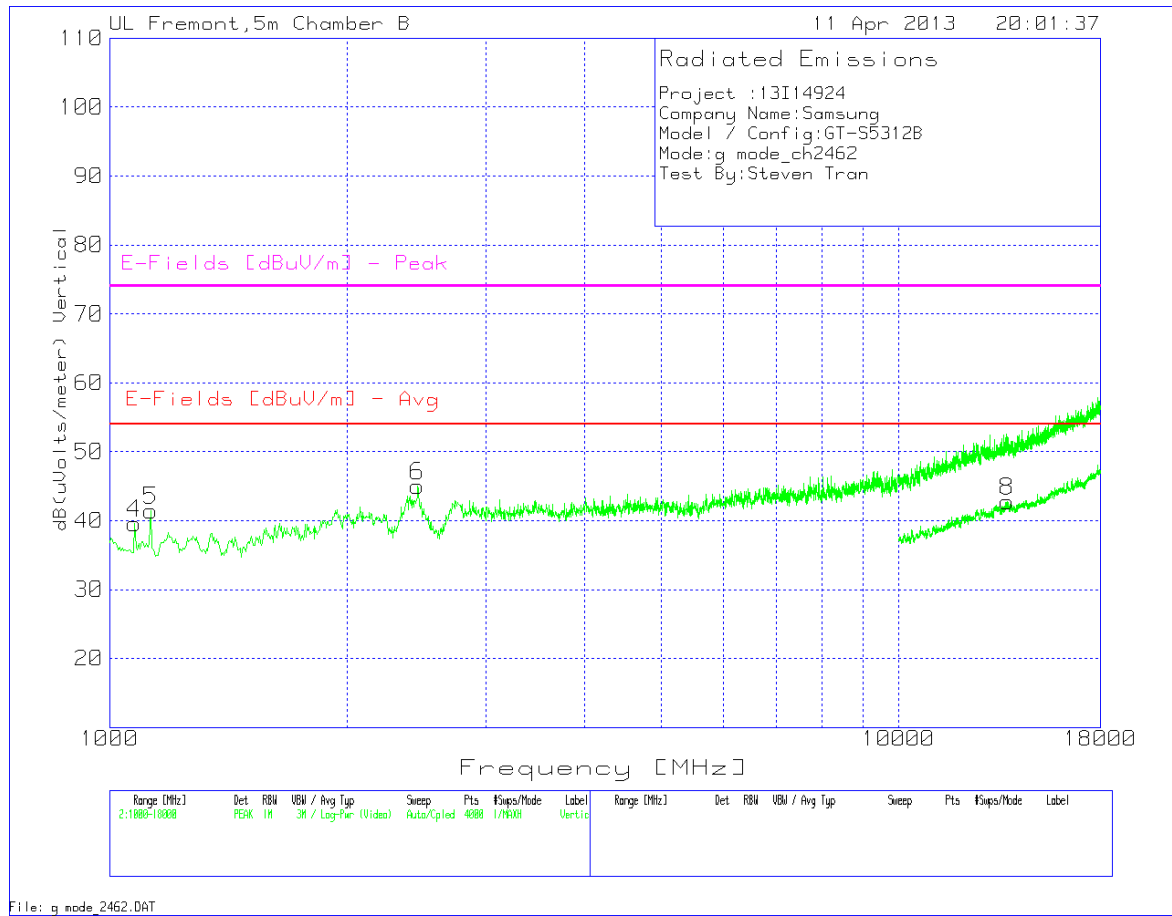
Project :1314924													
Company Name:Samsung													
Model / Config:GT-S5312B													
Mode:g mode_ch2437													
Test By:Steven Tran													

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] Avg	Margin (dB)	E-Fields [dBuV/m] Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	2431.177	41.76	PK	32.4	-35	4.7	0.9	44.76	53.97	-9.21	74	-29.24	Horz
2	3951.536	37.93	PK	33.9	-34.8	6.2	0.2	43.43	53.97	-10.54	74	-30.57	Horz
3	9230.327	35.71	PK	36.9	-35.2	10	0.6	48.01	53.97	-5.96	74	-25.99	Horz
Vertical 1000 - 18000MHz													
4	2435.423	44.57	PK	32.4	-35	4.7	0.9	47.57	53.97	-6.4	74	-26.43	Vert
5	2715.713	39.73	PK	32.8	-35.1	5	0.9	43.33	53.97	-10.64	74	-30.67	Vert
6	10653.01	34.12	PK	38.3	-34.2	10.8	0.6	49.62	53.97	-4.35	74	-24.38	Vert
Horizontal 10000 - 18000MHz													
7	14165.917	22.67	PK	39.4	-32.3	12.7	0.4	42.87	53.97	-11.1	74	-31.13	Horz
Vertical 10000 - 18000MHz													
8	13198.401	22.36	PK	39.1	-31.8	12.2	0.4	42.26	53.97	-11.71	74	-31.74	Vert

High Channel, Horizontal



High Channel, Vertical

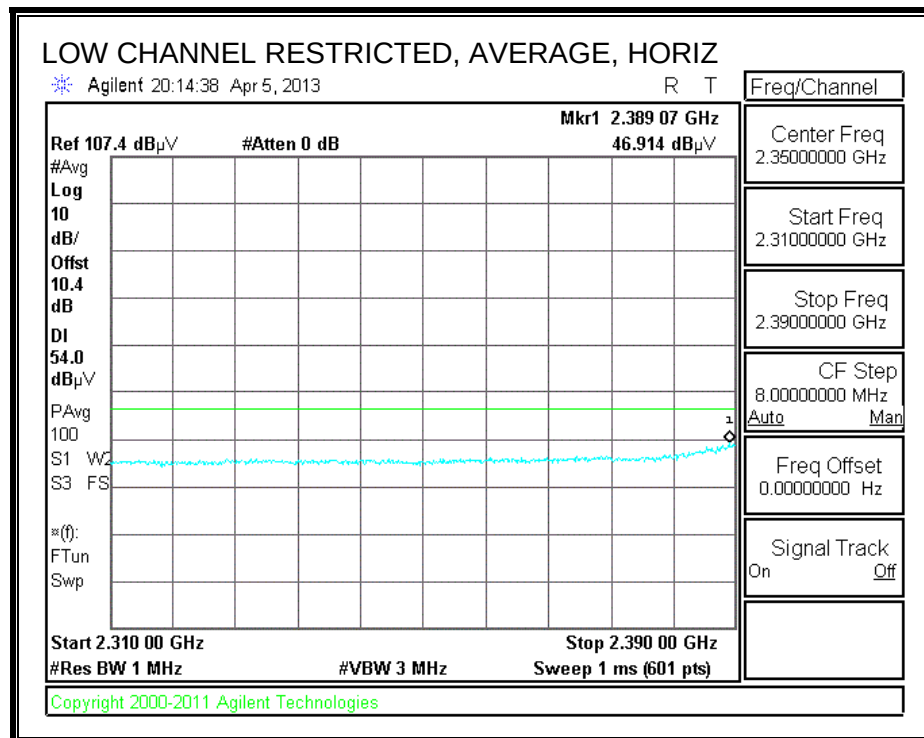
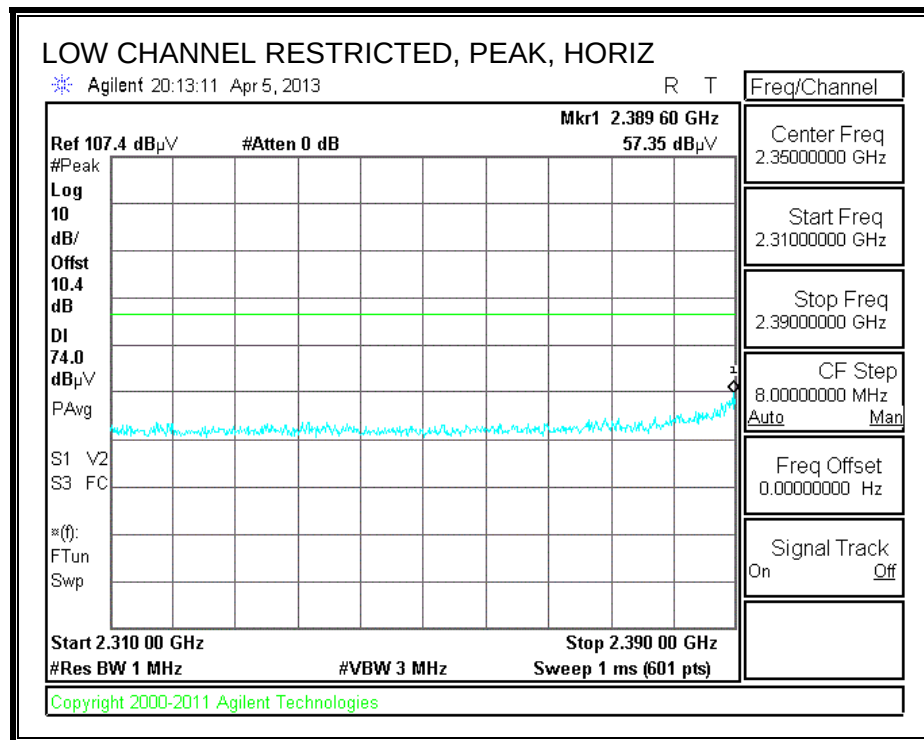


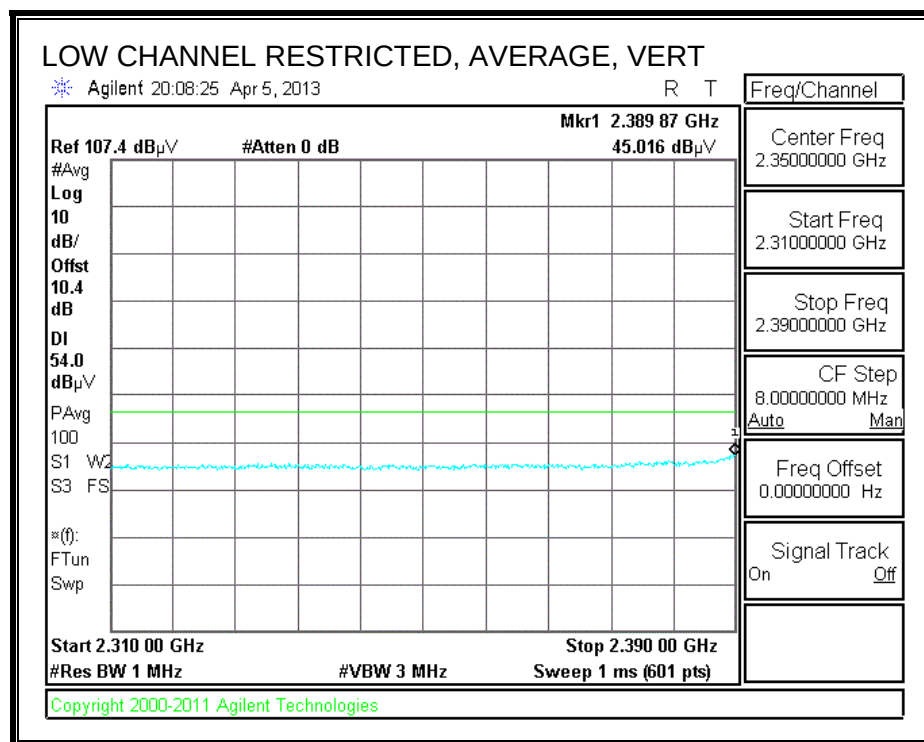
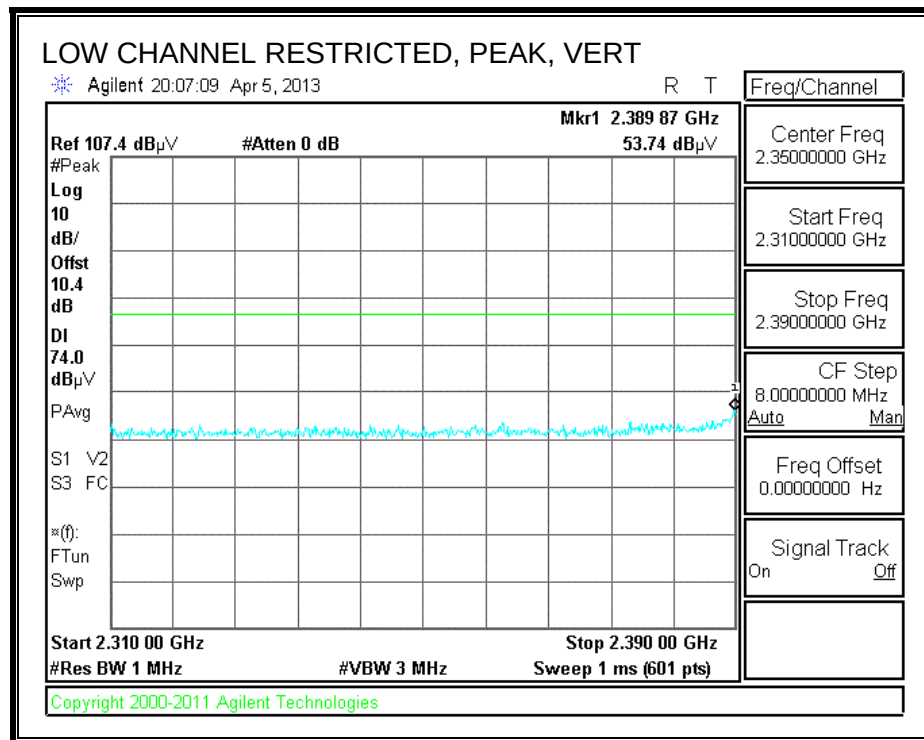
High Channel, Data

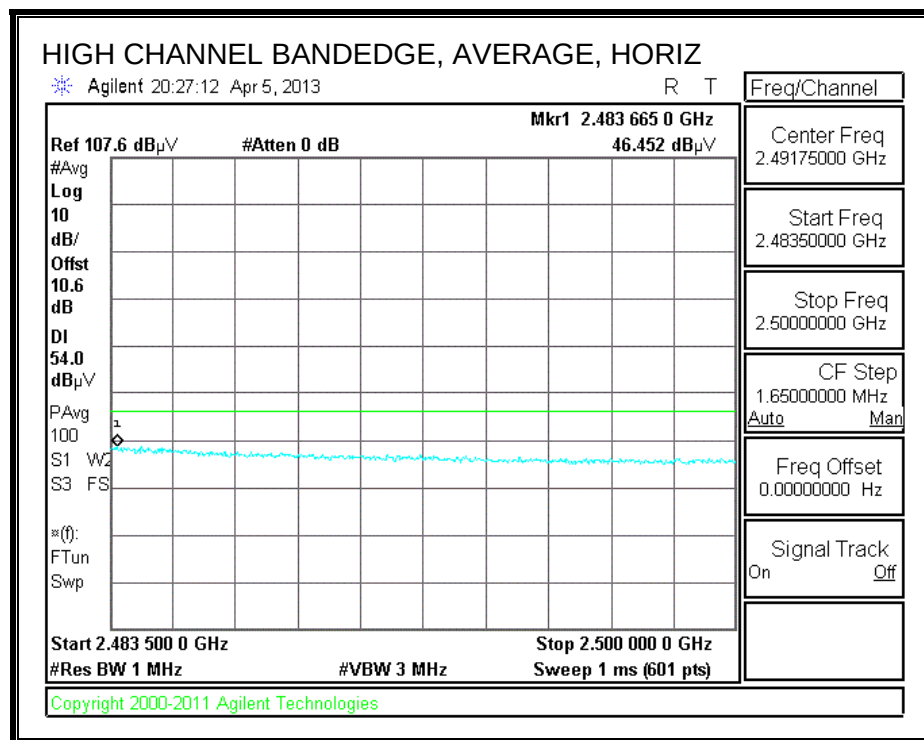
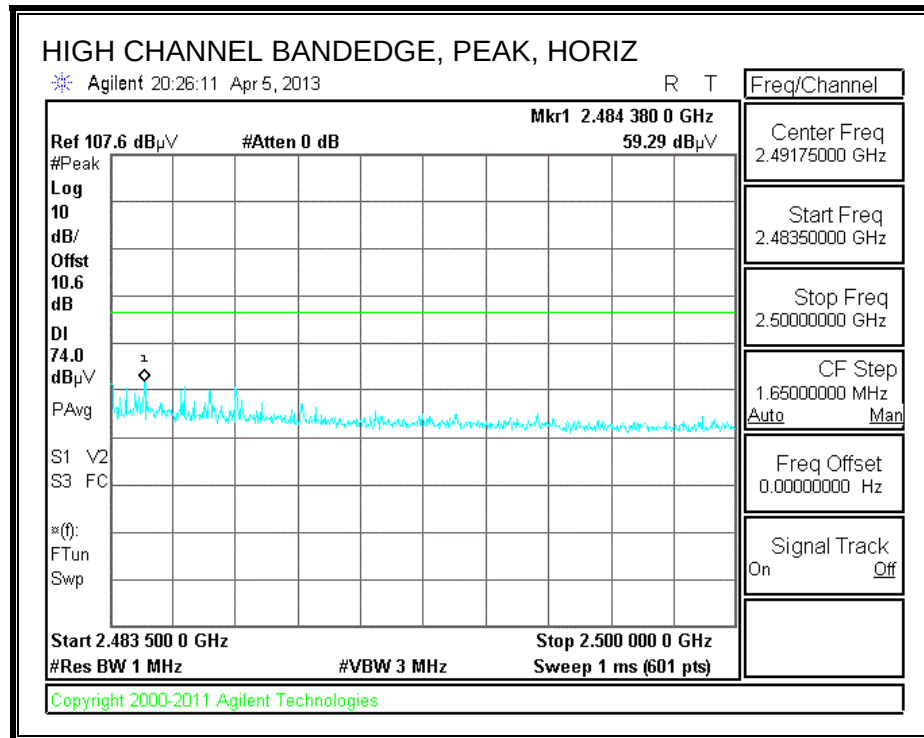
Project :13114924													
Company Name:Samsung													
Model / Config:GT-S5312B													
Mode:g mode_ch2462													
Test By:Steven Tran													
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	2749.688	40.18	PK	32.8	-35.1	5	0.9	43.78	53.97	-10.19	74	-30.22	Horz
2	7854.359	36.23	PK	36.2	-35.1	9.2	0.3	46.83	53.97	-7.14	74	-27.17	Horz
3	10393.955	34.22	PK	38.1	-34.5	10.7	0.6	49.12	53.97	-4.85	74	-24.88	Horz
Vertical 1000 - 18000MHz													
4	1076.443	44.2	PK	27.8	-35.9	3.2	0.3	39.6	53.97	-14.37	74	-34.4	Vert
5	1127.404	45.61	PK	28	-35.8	3.3	0.3	41.41	53.97	-12.56	74	-32.59	Vert
6	2456.658	42.04	PK	32.4	-35	4.7	0.9	45.04	53.97	-8.93	74	-28.96	Vert
Horizontal 10000 - 18000MHz													
7	14325.837	22.8	PK	39.6	-32.4	12.8	0.4	43.2	53.97	-10.77	74	-30.8	Horz
Vertical 10000 - 18000MHz													
8	13730.135	22.84	PK	39.1	-32.1	12.5	0.4	42.74	53.97	-11.23	74	-31.26	Vert

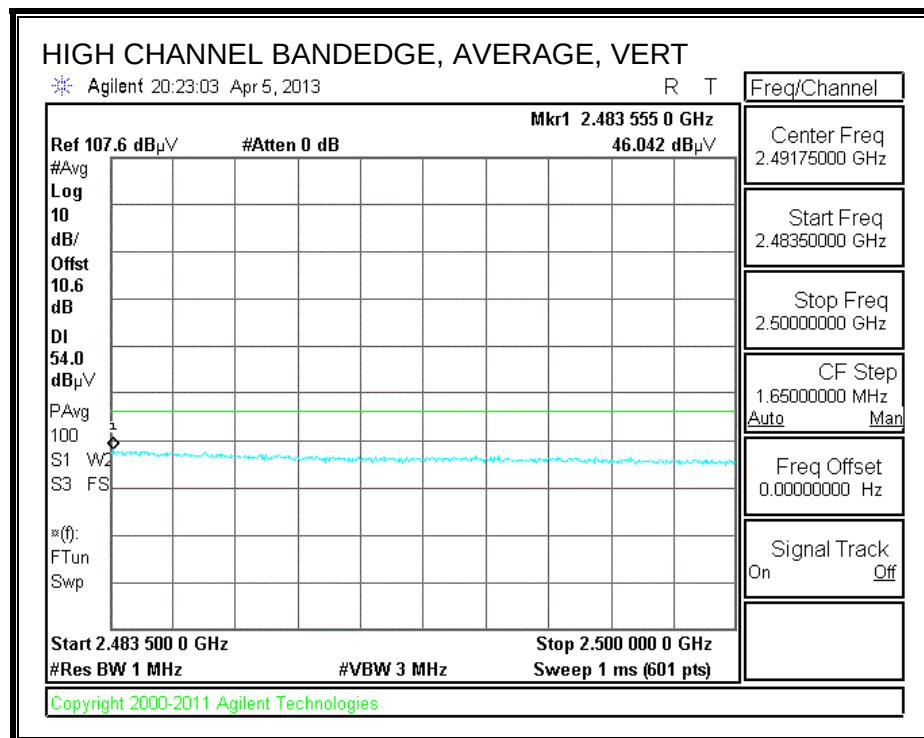
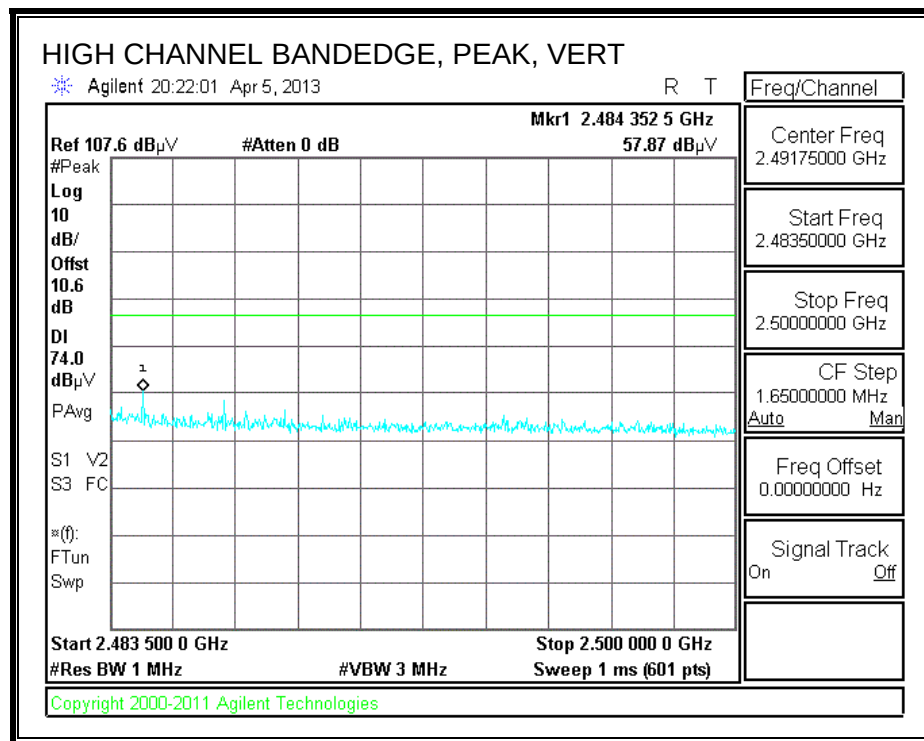
9.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

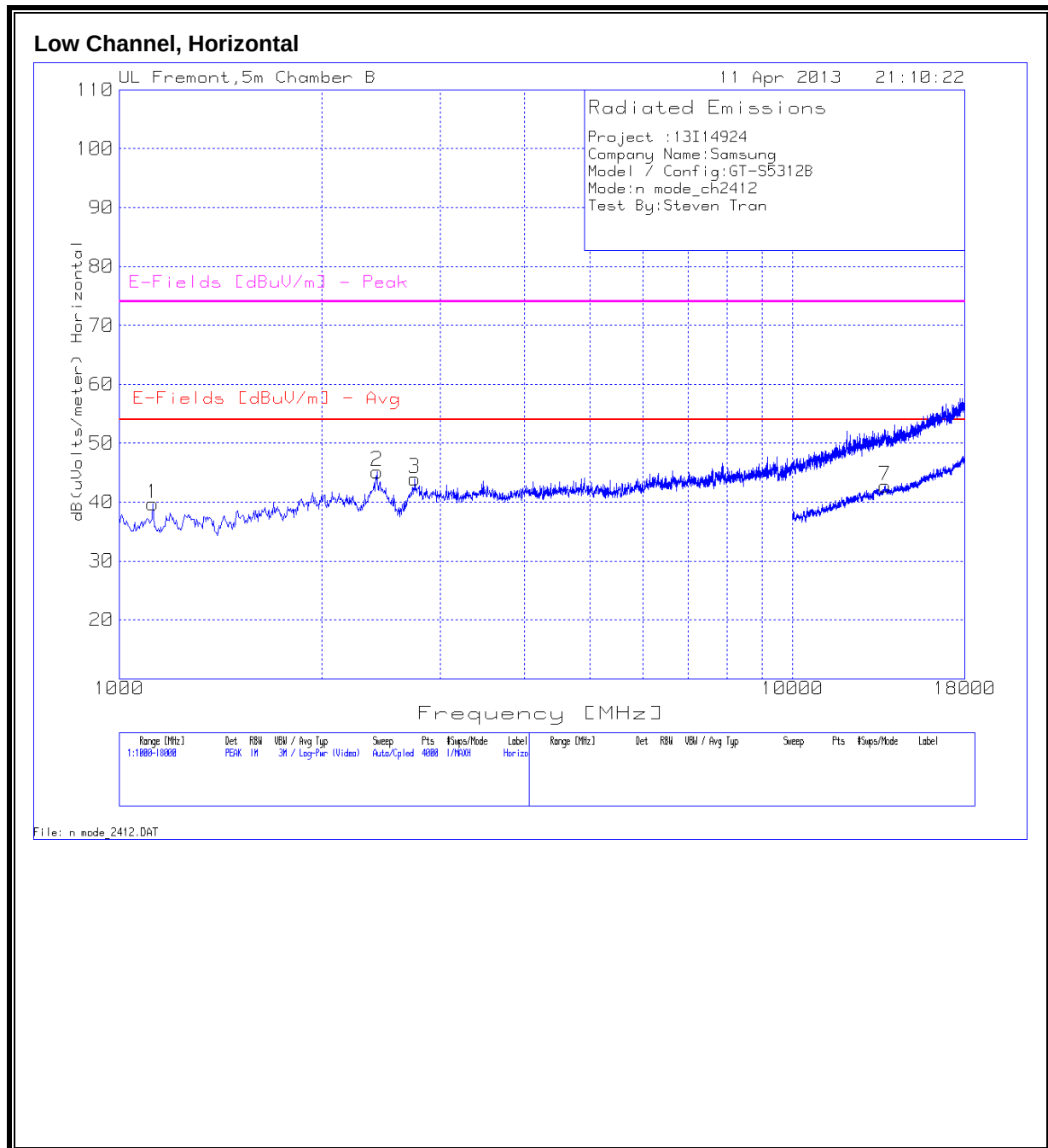
RESTRICTED BANEDGE (LOW CHANNEL)



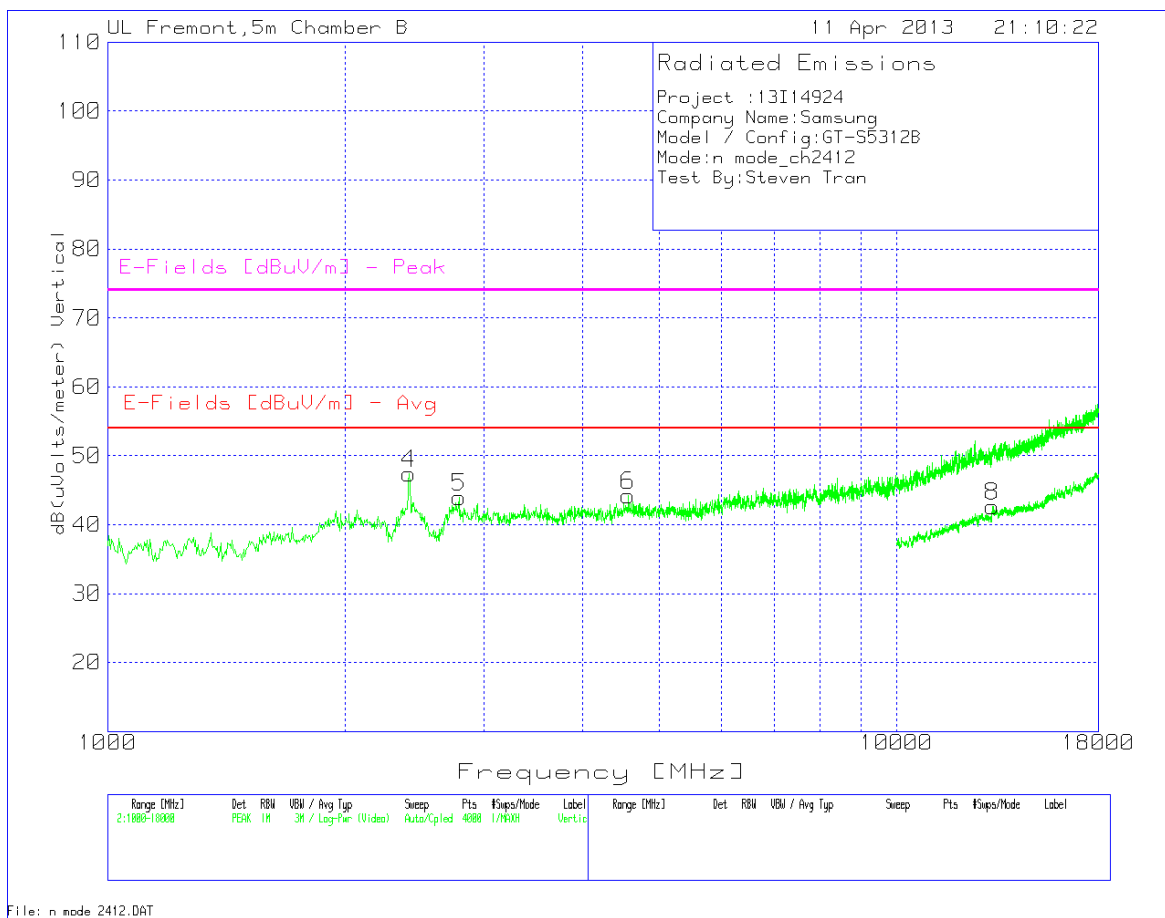








Low Channel, Vertical

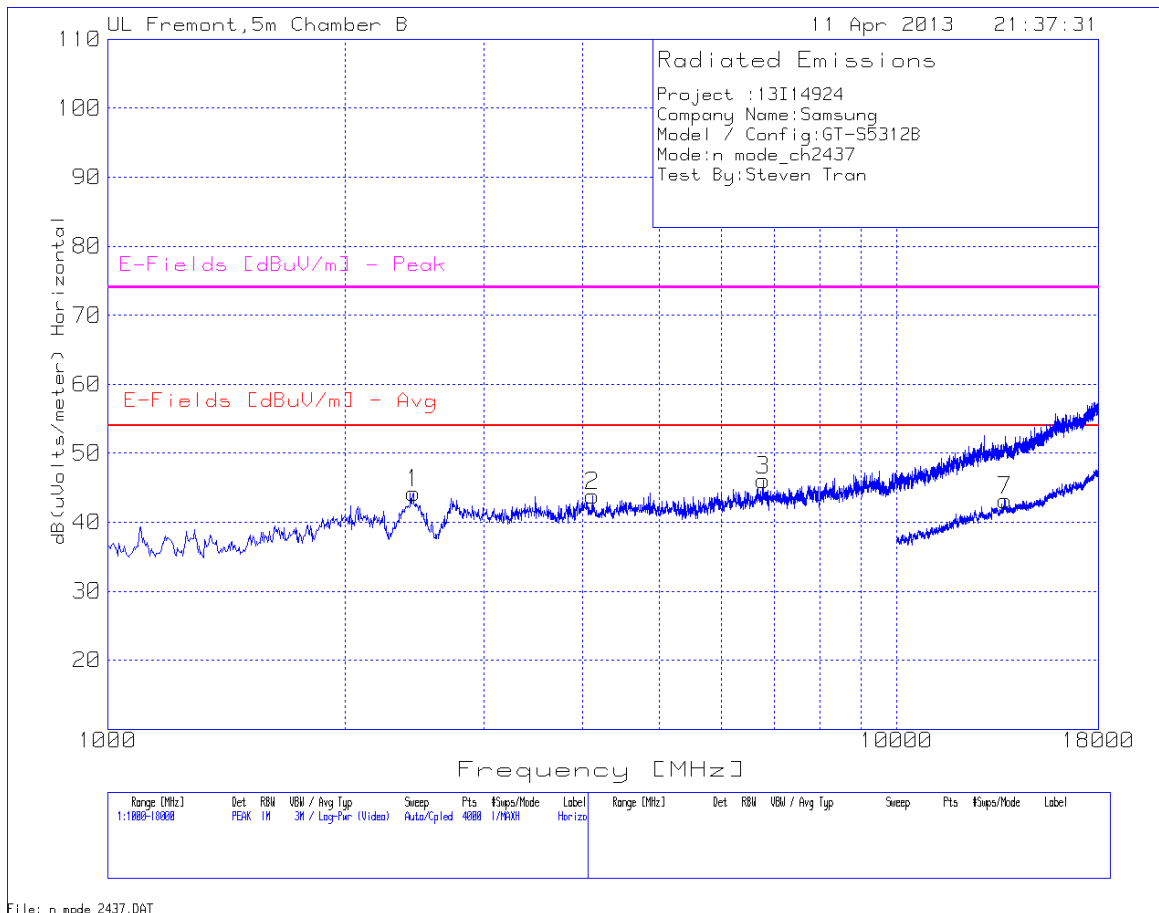


Low Channel, Data

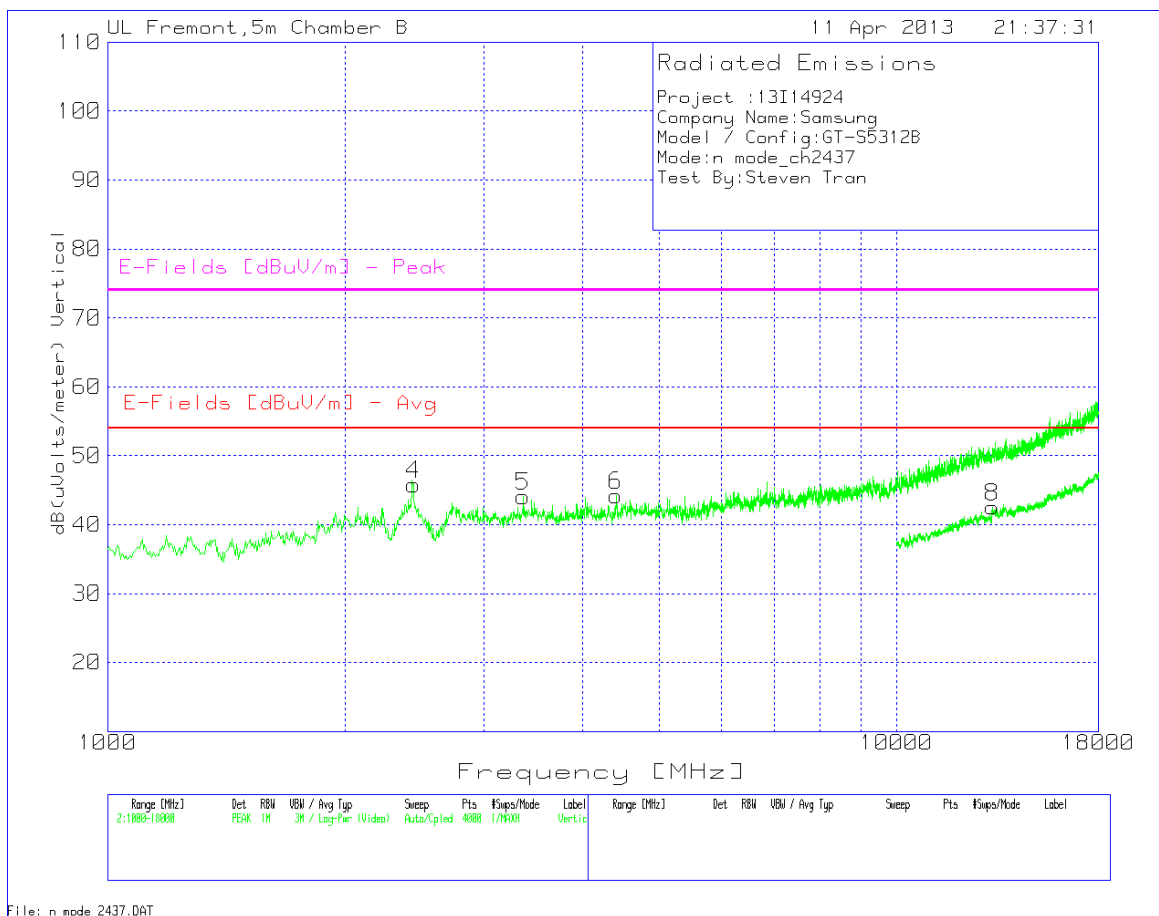
Project :13114924														
Company Name:Samsung														
Model / Config:GT-S5312B														
Mode:n mode_ch2412														
Test By:Steven Tran														

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	1123.158	43.87	PK	28	-35.8	3.3	0.3	39.67	53.97	-14.3	74	-34.33	Horz
2	2414.189	42.22	PK	32.4	-35	4.6	0.9	45.12	53.97	-8.85	74	-28.88	Horz
3	2749.688	40.39	PK	32.8	-35.1	5	0.9	43.99	53.97	-9.98	74	-30.01	Horz
Vertical 1000 - 18000MHz													
4	2409.943	44.51	PK	32.4	-35	4.6	0.9	47.41	53.97	-6.56	74	-26.59	Vert
5	2787.909	40.4	PK	32.8	-35.1	5	0.9	44	53.97	-9.97	74	-30	Vert
6	4571.571	37.48	PK	34.6	-34.9	6.8	0.2	44.18	53.97	-9.79	74	-29.82	Vert
Horizontal 10000 - 18000MHz													
7	13734.133	22.81	PK	39.1	-32.1	12.5	0.4	42.71	53.97	-11.26	74	-31.29	Horz
Vertical 10000 - 18000MHz													
8	13234.383	22.8	PK	39.1	-31.9	12.2	0.4	42.6	53.97	-11.37	74	-31.4	Vert

Mid Channel, Horizontal



Mid Channel, Vertical

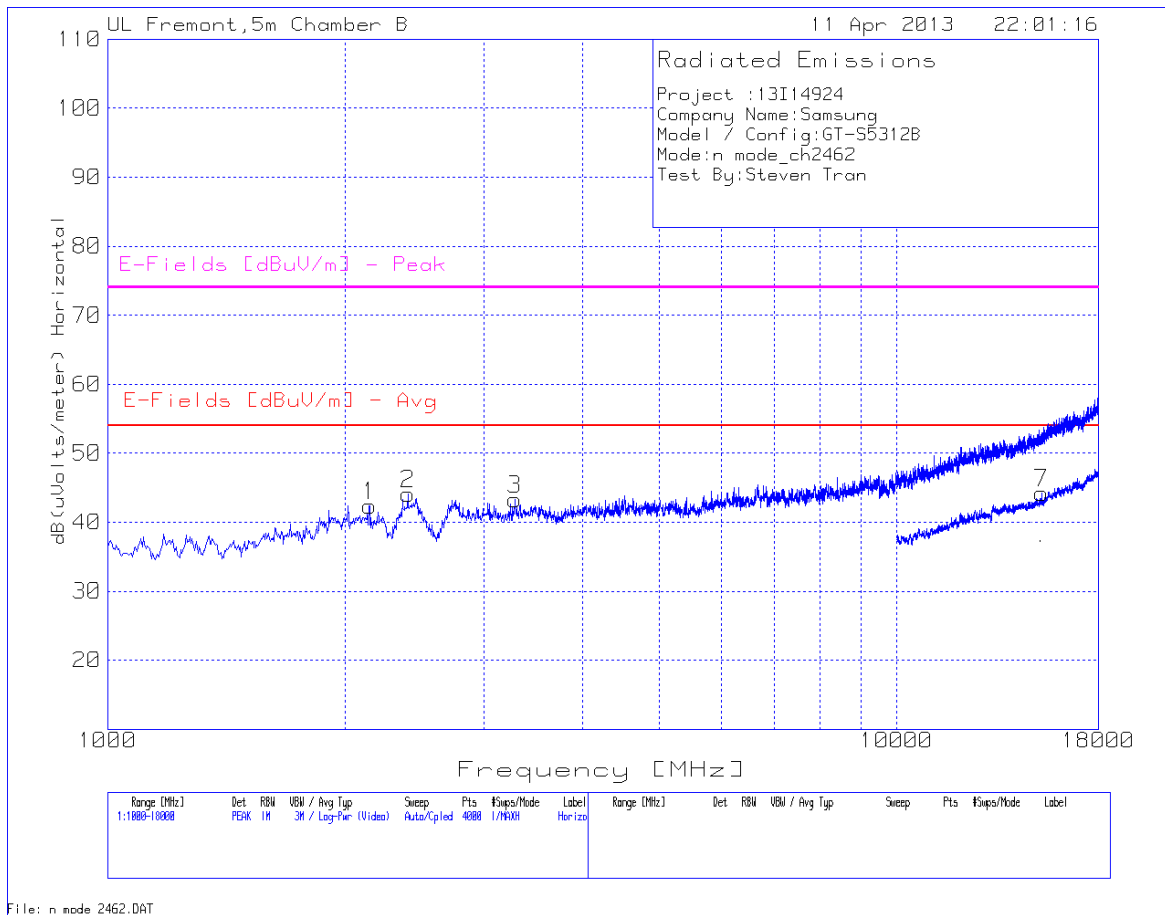


Mid Channel, Data

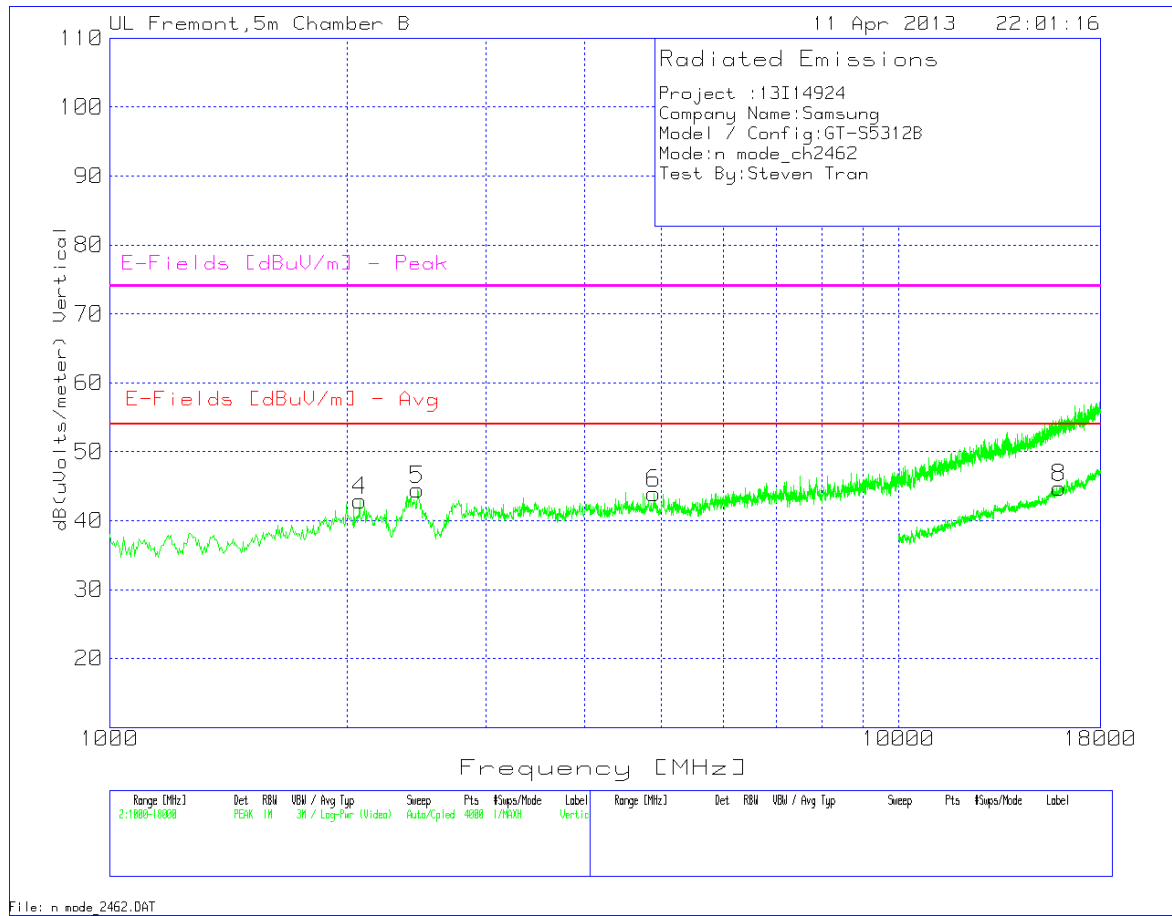
Project :13114924													
Company Name:Samsung													
Model / Config:GT-S5312B													
Mode:n mode_ch2437													
Test By:Steven Tran													

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	2439.67	41.23	PK	32.4	-35	4.7	0.9	44.23	53.97	-9.74	74	-29.77	Horz
2	4112.915	38.1	PK	34	-34.8	6.3	0.2	43.8	53.97	-10.17	74	-30.2	Horz
3	6771.421	36.5	PK	35.8	-35	8.5	0.3	46.1	53.97	-7.87	74	-27.9	Horz
Vertical 1000 - 18000MHz													
4	2439.67	42.86	PK	32.4	-35	4.7	0.9	45.86	53.97	-8.11	74	-28.14	Vert
5	3365.476	39.79	PK	33.3	-35.1	5.6	0.5	44.09	53.97	-9.88	74	-29.91	Vert
6	4405.946	37.88	PK	34.3	-34.9	6.6	0.3	44.18	53.97	-9.79	74	-29.82	Vert
Horizontal 10000 - 18000MHz													
7	13718.141	23.22	PK	39.1	-32	12.5	0.4	43.22	53.97	-10.75	74	-30.78	Horz
Vertical 10000 - 18000MHz													
8	13218.391	22.67	PK	39.1	-31.8	12.2	0.4	42.57	53.97	-11.4	74	-31.43	Vert

High Channel, Horizontal



High Channel, Vertical



High Channel, Data

Project :13114924

Company Name:Samsung

Model / Config:GT-S5312B

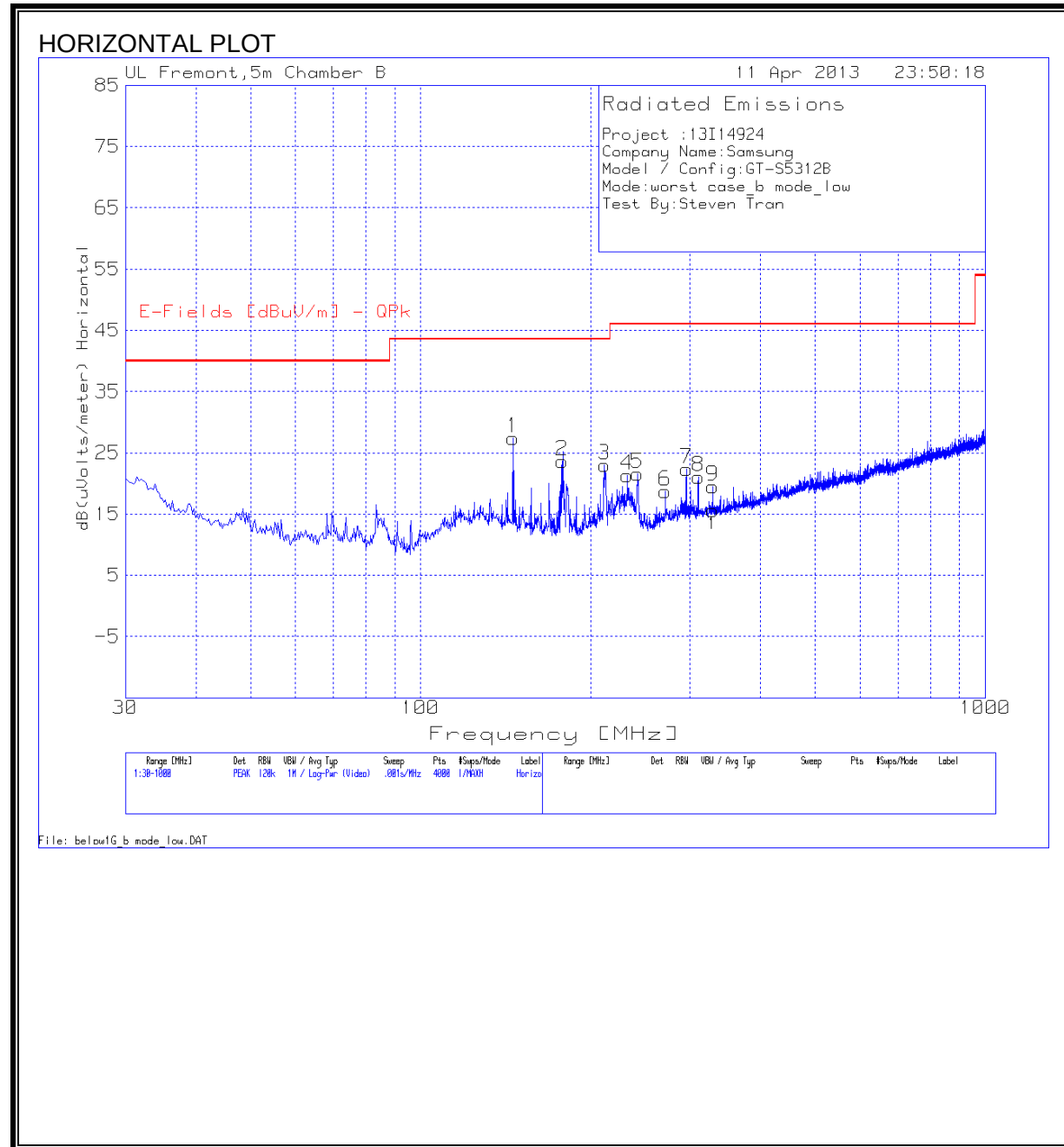
Mode:n mode_ch2462

Test By:Steven Tran

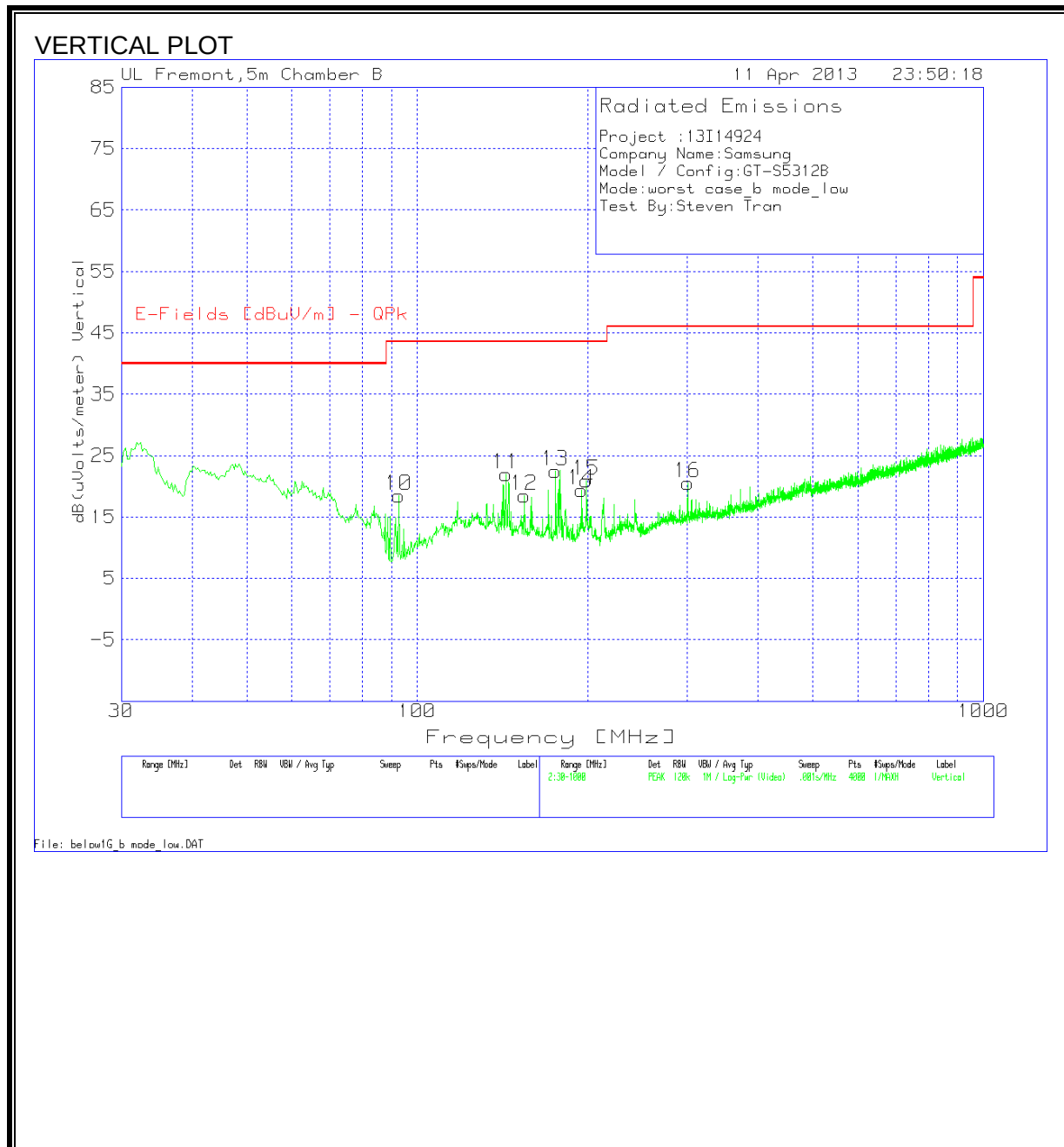
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Polarity
Horizontal 1000 - 18000MHz													
1	2150.887	40.1	PK	32	-35	4.4	0.9	42.4	53.97	-11.57	74	-31.6	Horz
2	2401.449	41.26	PK	32.3	-35	4.6	0.9	44.06	53.97	-9.91	74	-29.94	Horz
3	3280.54	39	PK	33.3	-35.1	5.5	0.6	43.3	53.97	-10.67	74	-30.7	Horz
Vertical 1000 - 18000MHz													
4	2074.444	40.82	PK	31.9	-35	4.3	0.9	42.92	53.97	-11.05	74	-31.08	Vert
5	2456.658	41.55	PK	32.4	-35	4.7	0.9	44.55	53.97	-9.42	74	-29.45	Vert
6	4894.329	36.99	PK	34.6	-34.9	7.1	0.2	43.99	53.97	-9.98	74	-30.01	Vert
Horizontal 10000 - 18000MHz													
7	15253.373	23.12	PK	40.3	-32.9	13.3	0.4	44.22	53.97	-9.75	74	-29.78	Horz
Vertical 10000 - 18000MHz													
8	15965.017	21.95	PK	41.6	-32.9	13.7	0.4	44.75	53.97	-9.22	74	-29.25	Vert

9.3. 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)



DATA

Project :13I14924

Company Name:Samsung

Model / Config:GT-S5312B

Mode:worst case_b mode_low

Test By:Steven Tran

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T243 Antenna Factor dB/m	T10 preamp/ Cable loss [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - QPk	Margin (dB)	Polarity
Horizontal 30 - 1000MHz									
1	145.8281	42.75	PK	12.5	-27.8	27.45	43.52	-16.07	Horz
2	178.0565	40.14	PK	11	-27.5	23.64	43.52	-19.88	Horz
3	211.7387	39.68	PK	10.4	-27.1	22.98	43.52	-20.54	Horz
4	232.3357	37.16	PK	11.1	-26.9	21.36	46.02	-24.66	Horz
5	242.0285	36.86	PK	11.6	-26.9	21.56	46.02	-24.46	Horz
6	271.1067	32.25	PK	13.2	-26.7	18.75	46.02	-27.27	Horz
7	295.5808	35.53	PK	13.3	-26.5	22.33	46.02	-23.69	Horz
8	310.1199	33.76	PK	13.7	-26.4	21.06	46.02	-24.96	Horz
9	329.2631	31.87	PK	13.9	-26.3	19.47	46.02	-26.55	Horz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T243 Antenna Factor dB/m	T10 preamp/ Cable loss [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - QPk	Margin (dB)	Polarity
Vertical 30 - 1000MHz									
10	92.7604	38.77	PK	8.1	-28.4	18.47	43.52	-25.05	Vert
11	143.4049	37.14	PK	12.7	-27.9	21.94	43.52	-21.58	Vert
12	154.3093	34.01	PK	12.2	-27.7	18.51	43.52	-25.01	Vert
13	175.391	38.74	PK	11.2	-27.5	22.44	43.52	-21.08	Vert
14	195.2611	34.95	PK	11.7	-27.3	19.35	43.52	-24.17	Vert
15	198.8958	35.96	PK	12.3	-27.3	20.96	43.52	-22.56	Vert
16	300.1849	33.51	PK	13.4	-26.4	20.51	46.02	-25.51	Vert

10. 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.

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

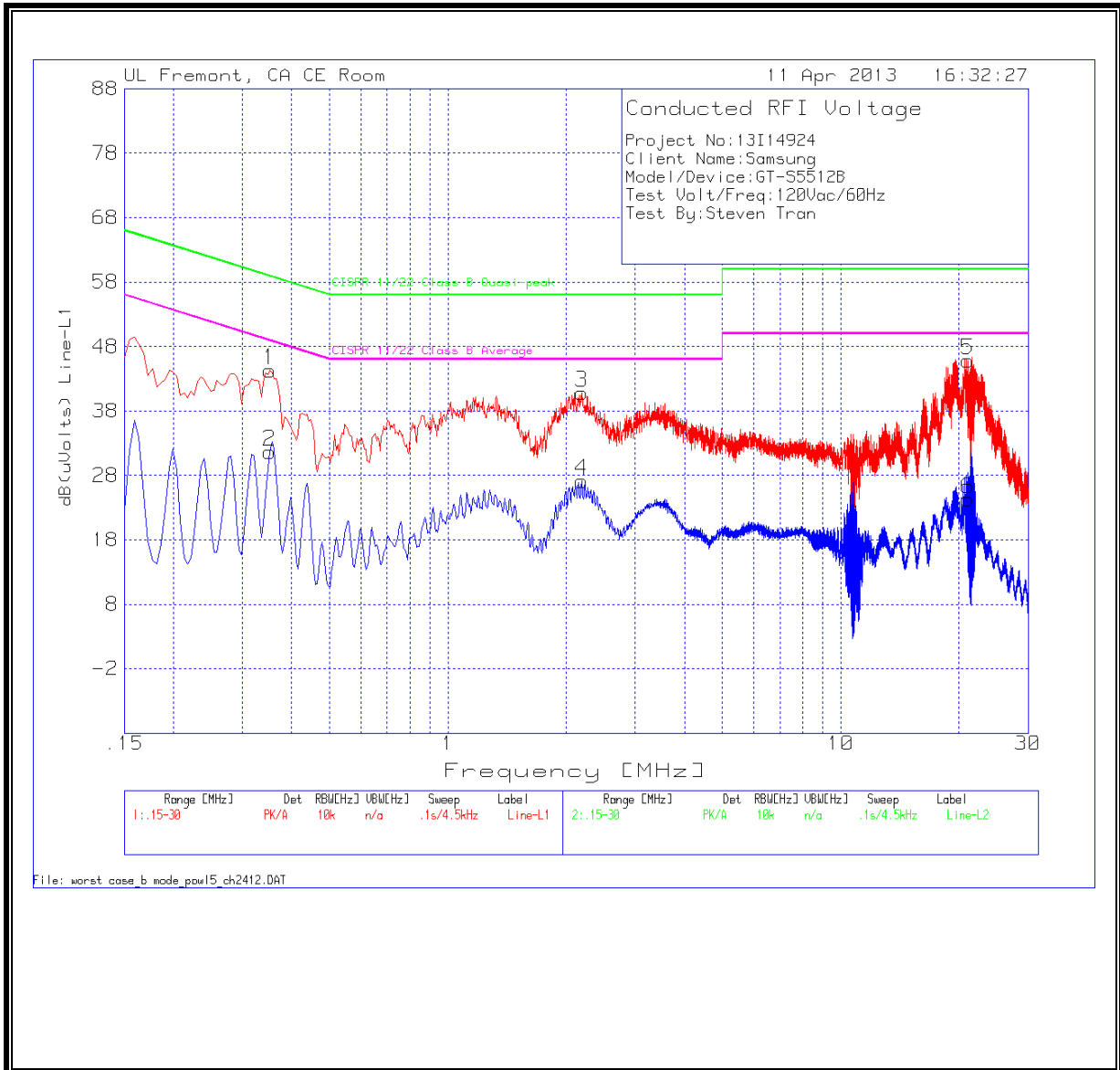
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Project No: 13I14924									
Client Name: Samsung									
Model/Device: GT-S5512B									
Test Volt/Freq: 120Vac/60Hz									
Test By: Steven Tran									
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
Line-L1 .15 - 30MHz									
0.3525	44.19	PK	0.1	0	44.29	58.9	-14.61	-	-
0.3525	31.6	Av	0.1	0	31.7	-	-	48.9	-17.2
2.1885	40.64	PK	0.1	0.1	40.84	56	-15.16	-	-
2.1885	26.92	Av	0.1	0.1	27.12	-	-	46	-18.88
21.066	45.35	PK	0.3	0.2	45.85	60	-14.15	-	-
21.066	23.83	Av	0.3	0.2	24.33	-	-	50	-25.67
Line-L2 .15 - 30MHz									
0.357	42.75	PK	0.1	0	42.85	58.8	-15.95	-	-
0.357	33.02	Av	0.1	0	33.12	-	-	48.8	-15.68
2.067	40.24	PK	0.1	0.1	40.44	56	-15.56	-	-
2.067	23.58	Av	0.1	0.1	23.78	-	-	46	-22.22
20.8545	35.24	PK	0.3	0.2	35.74	60	-24.26	-	-
20.8545	21.47	Av	0.3	0.2	21.97	-	-	50	-28.03

LINE 1 RESULTS



LINE 2 RESULTS

