



FCC CFR47 PART 15 SUBPART C

**BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT**

FOR

BAR PHONE WITH 802.11B/G/N WLAN AND BLUETOOTH

MODEL NUMBER: GT-S5312L

FCC ID: A3LGTS5312L

REPORT NUMBER: 13U14925- 1

ISSUE DATE: MARCH 21, 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
	04/16/13	Initial Issue	P. Kim

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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-S5312L

SERIAL NUMBER: FK-065-C (EMISSION) AND FK-065-D (CONDUCTION)

DATE TESTED: MARCH 16- 22, 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

THANH NGUYEN
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

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

3. 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>.

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 1000 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 bar-style cell phone featuring 802.11b/g/n WLAN, Bluetooth, GPS and 2.4 GHz mobile hotspot capability.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BT LE	8.10	6.46

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was REV.5 and the software was S5312L.

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

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung Electronics	GT-S5312B	FK-065-A	DoC
Headset	Samsung Electronics	GT-S5312L	FK-064-B	DoC

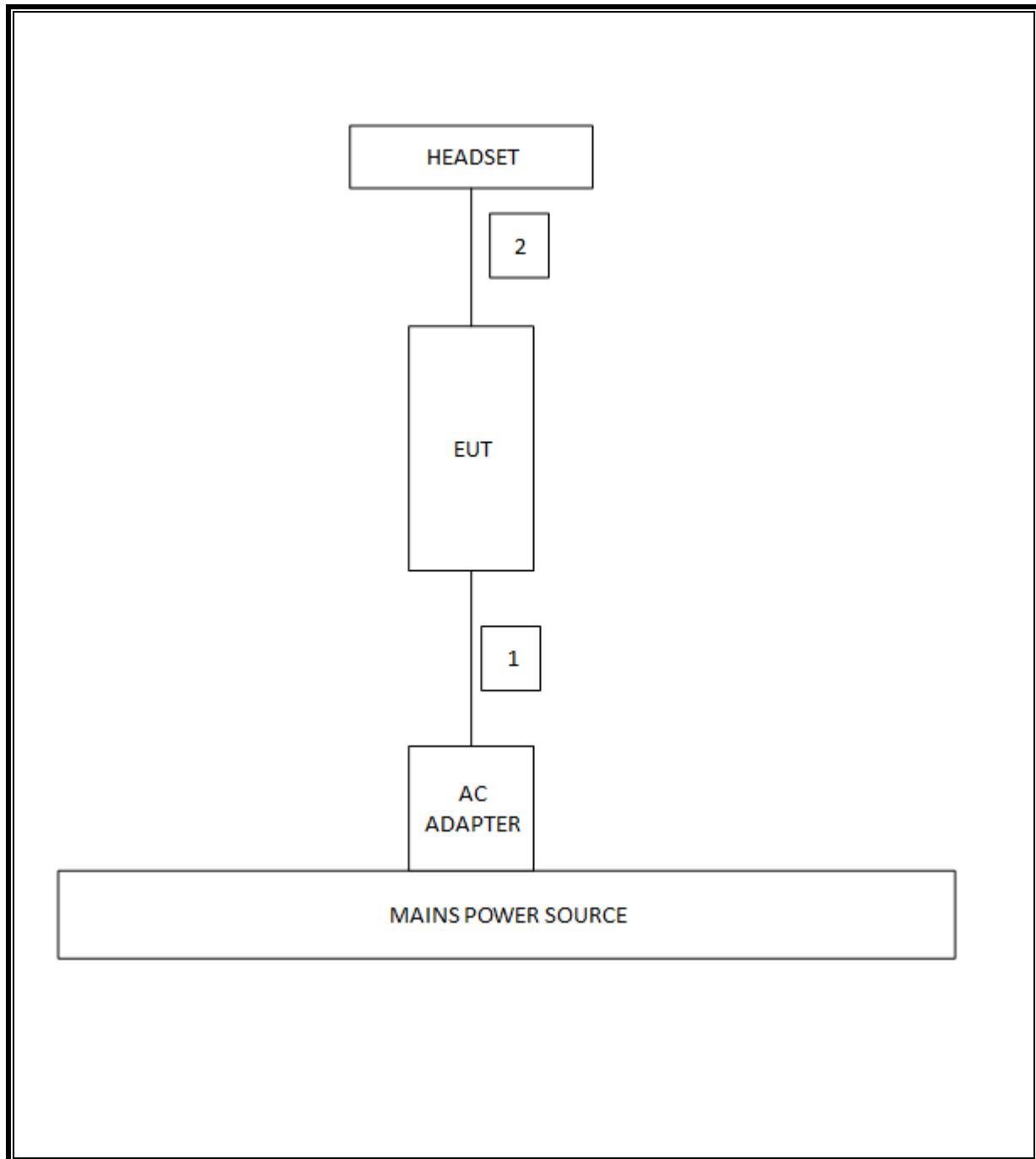
I/O CABLES

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



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
Antenna, Horn, 18 GHz	EMCO	3115	C00872	09/20/13
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	07/28/13
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	10/21/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/21/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	02/21/14
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRC13192	N02683	CNR
Bilog 30-2000MHz	Sunol	JB1	C01071	07/26/13
Power meter	HP	437B	T226	06/25/13
Power Sensor	HP	8481A	T233	06/26/13
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	01/14/14
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	03/07/14

7. 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.

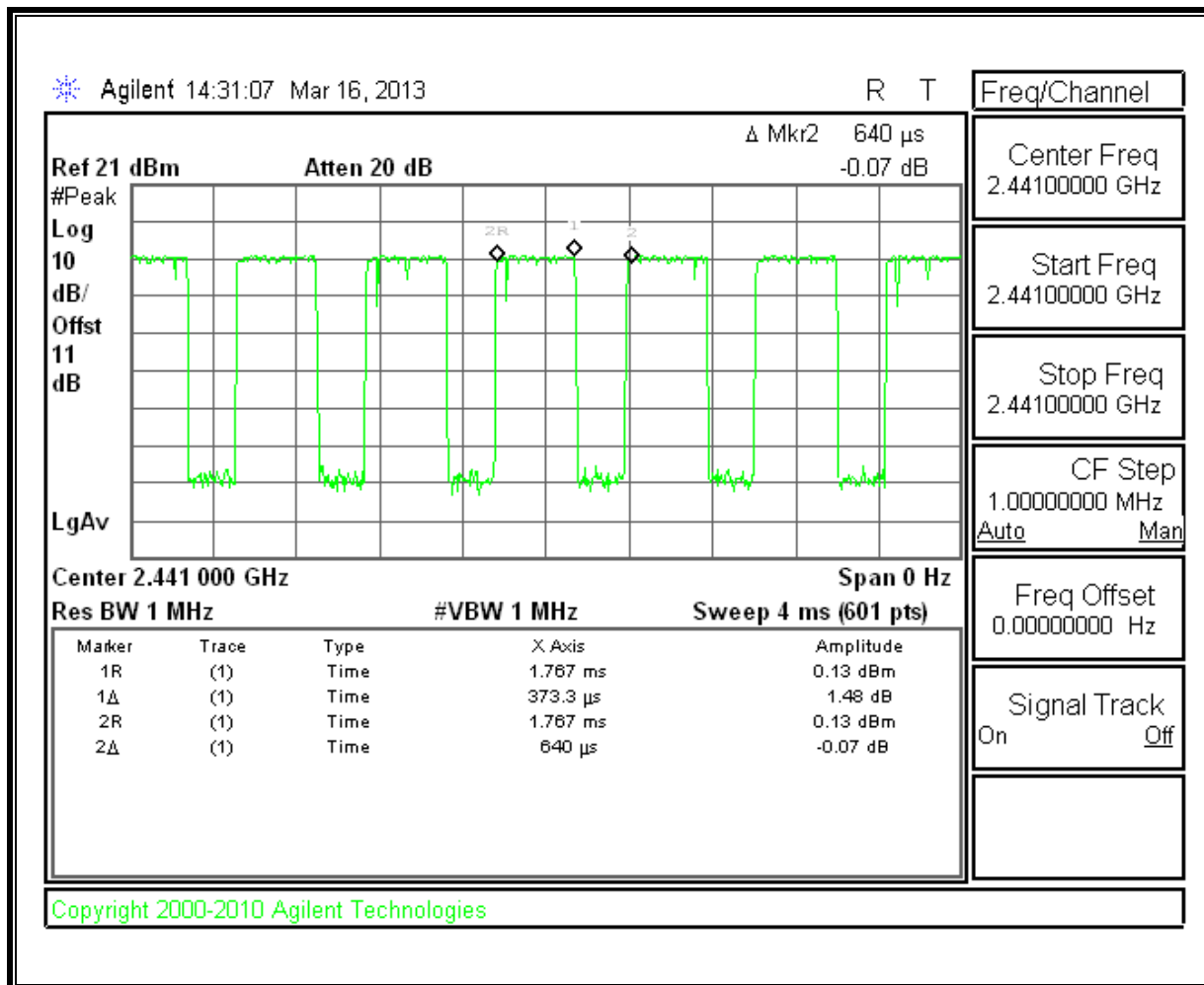
7.1. DUTY CYCLE

LIMITS

None; for reporting purposes only.

RESULTS

Mode	Tx on (msec)	Tx on + Tx off (msec)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
BT LE	0.3733	0.64	58.33	2.34



8. ANTENNA PORT TEST RESULTS FOR BLUETOOTH LOW ENERGY

8.1. 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.

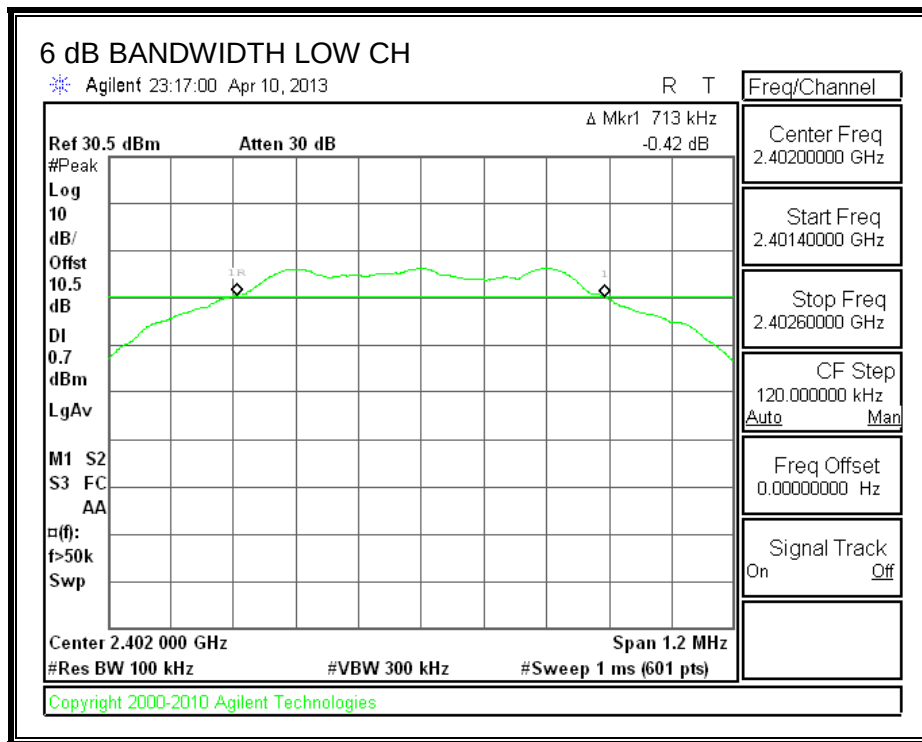
TEST PROCEDURE

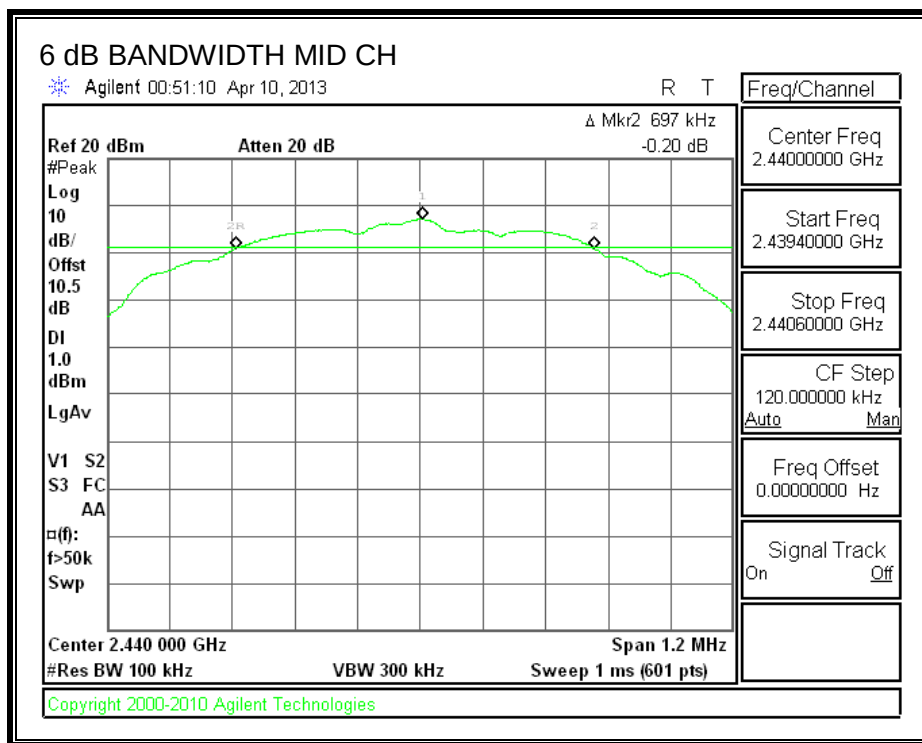
The transmitter output is connected to a spectrum analyzer with the RBW set between 1% and 5% of the EBW, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

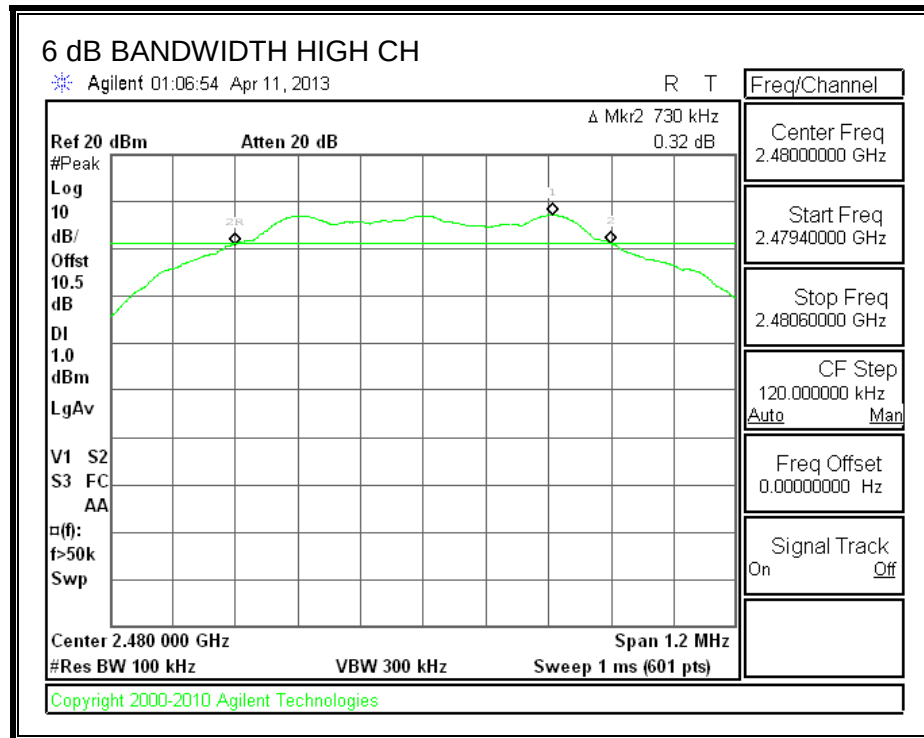
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.7130	0.5
Middle	2440	0.6970	0.5
High	2480	0.7300	0.5

6 dB BANDWIDTH







8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

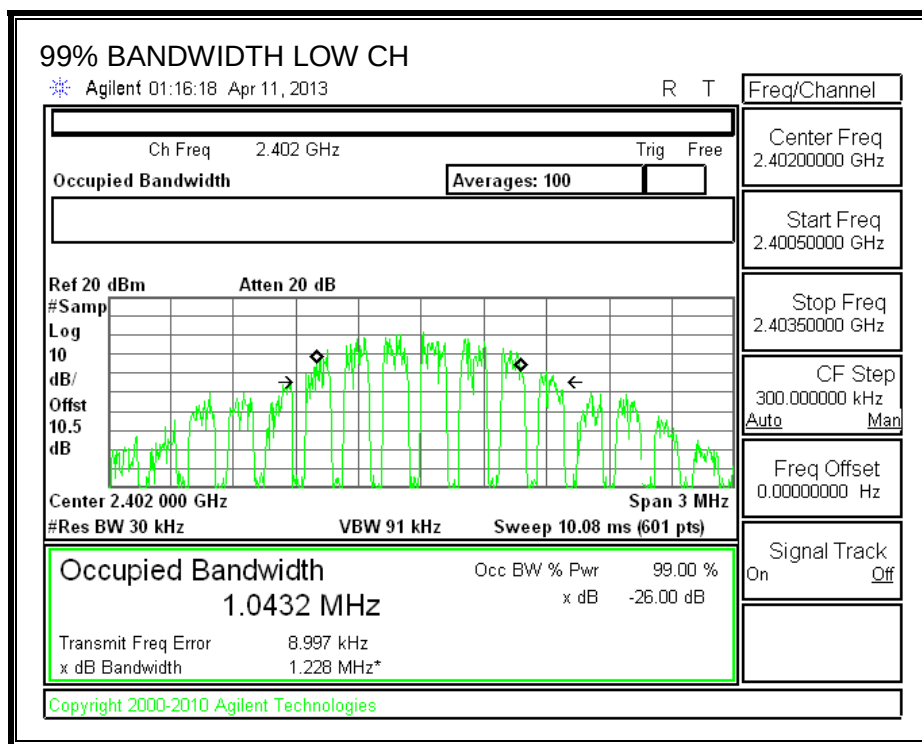
TEST PROCEDURE

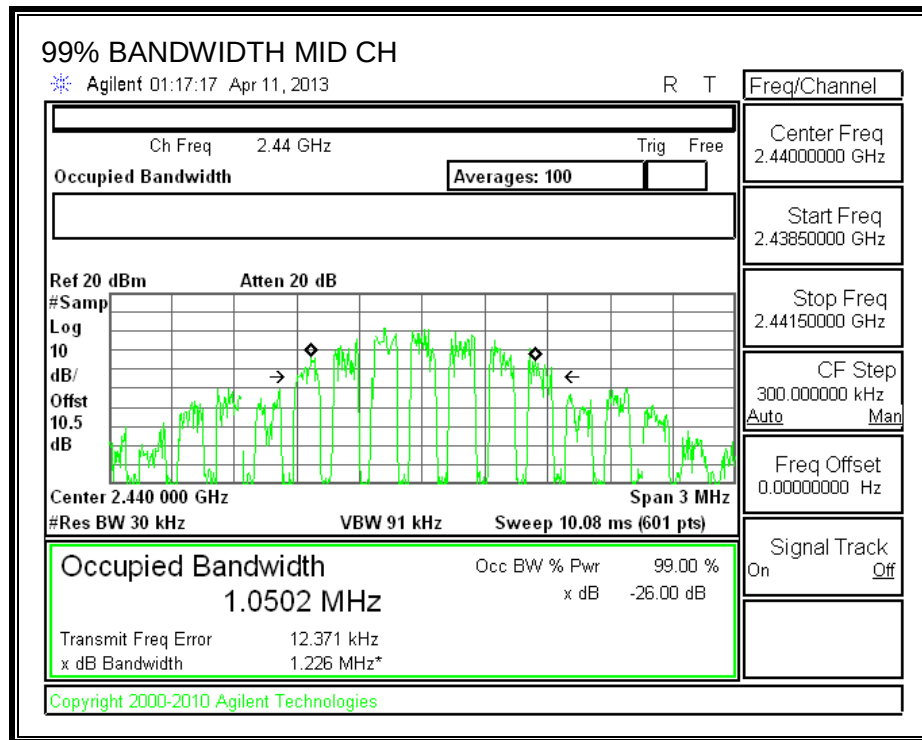
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

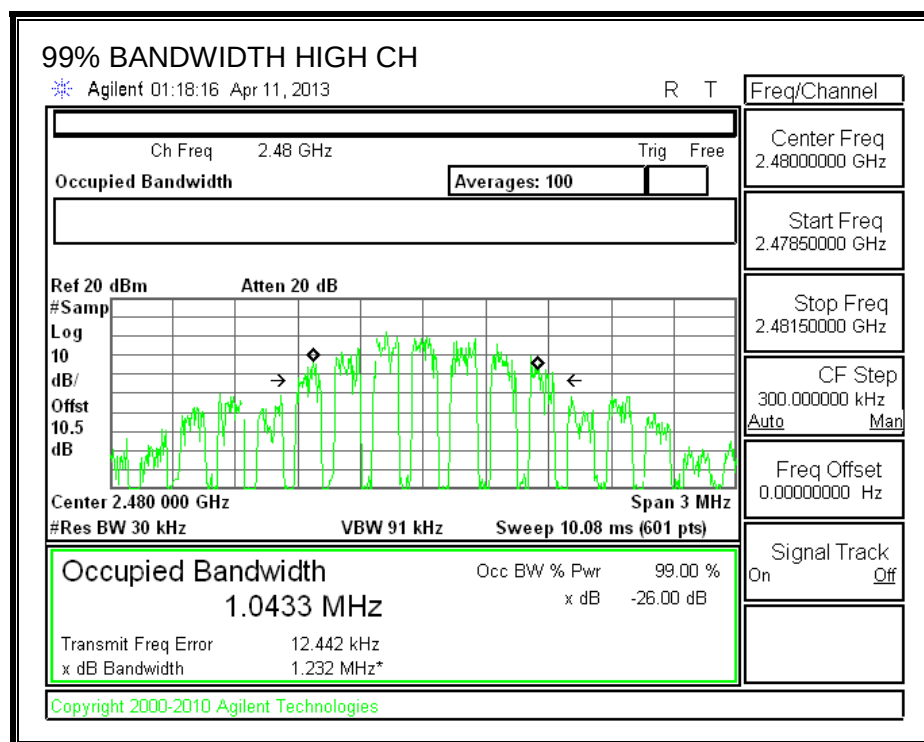
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.2280
Middle	2440	1.2260
High	2480	1.2320

99% BANDWIDTH







8.3. 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.

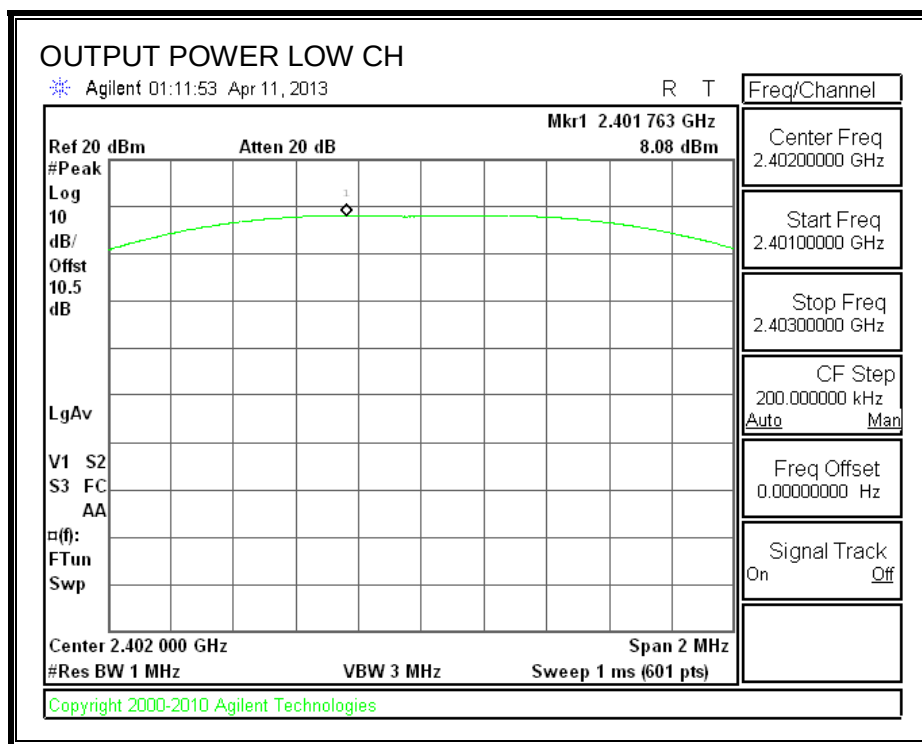
DIRECTIONAL ANTENNA GAIN

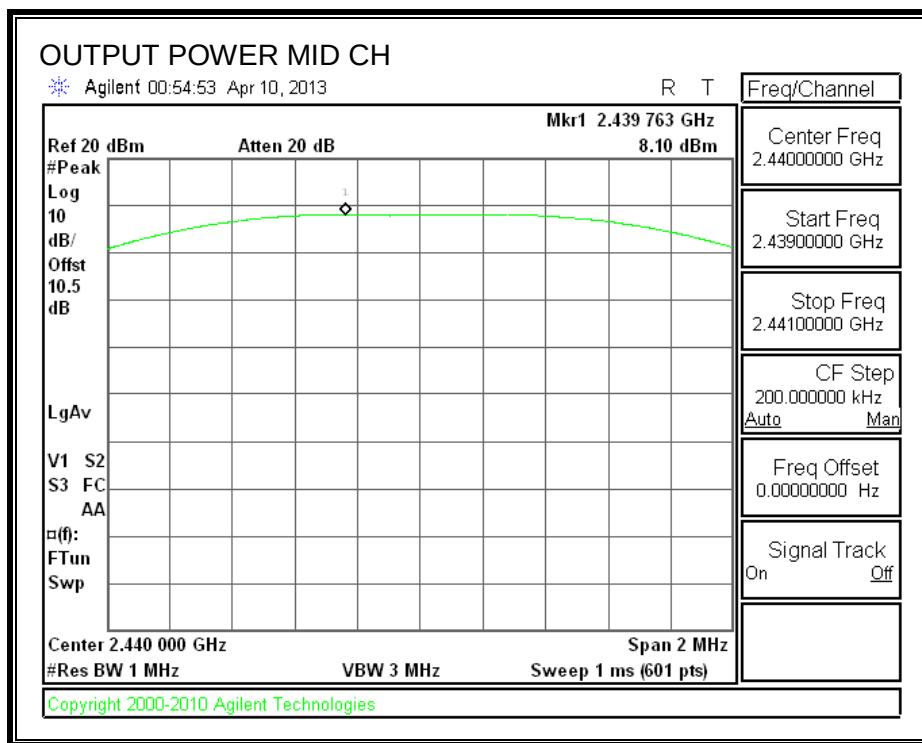
There is only one transmitter output therefore the directional gain is equal to the antenna gain.

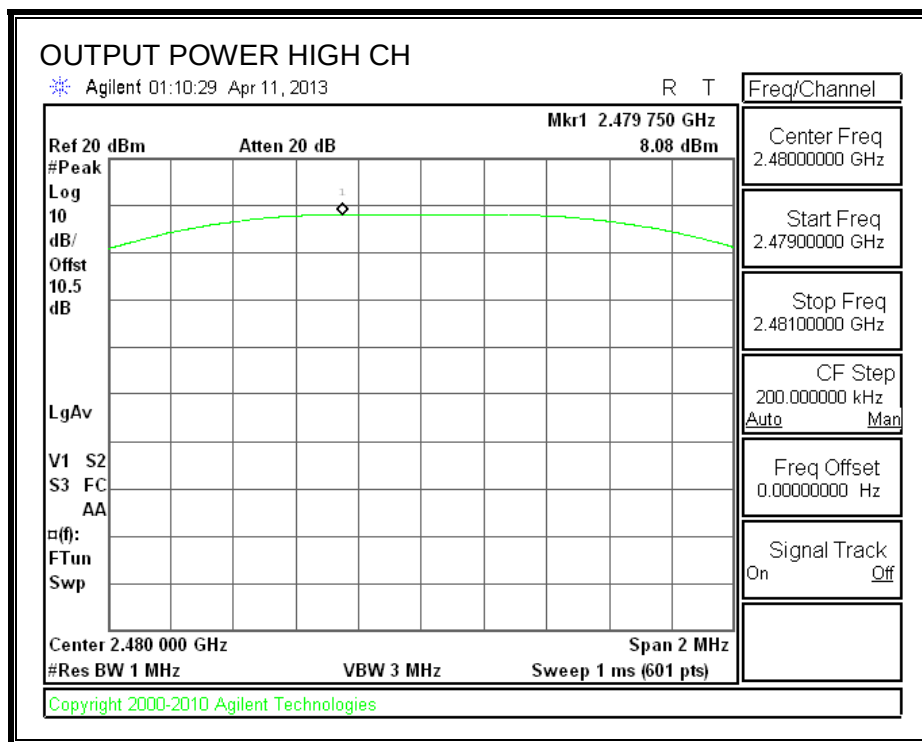
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.08	30	-21.920
Middle	2440	8.10	30	-21.900
High	2480	8.08	30	-21.920

OUTPUT POWER







8.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11.7 dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	7.60
Middle	2440	8.59
High	2480	8.47

8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

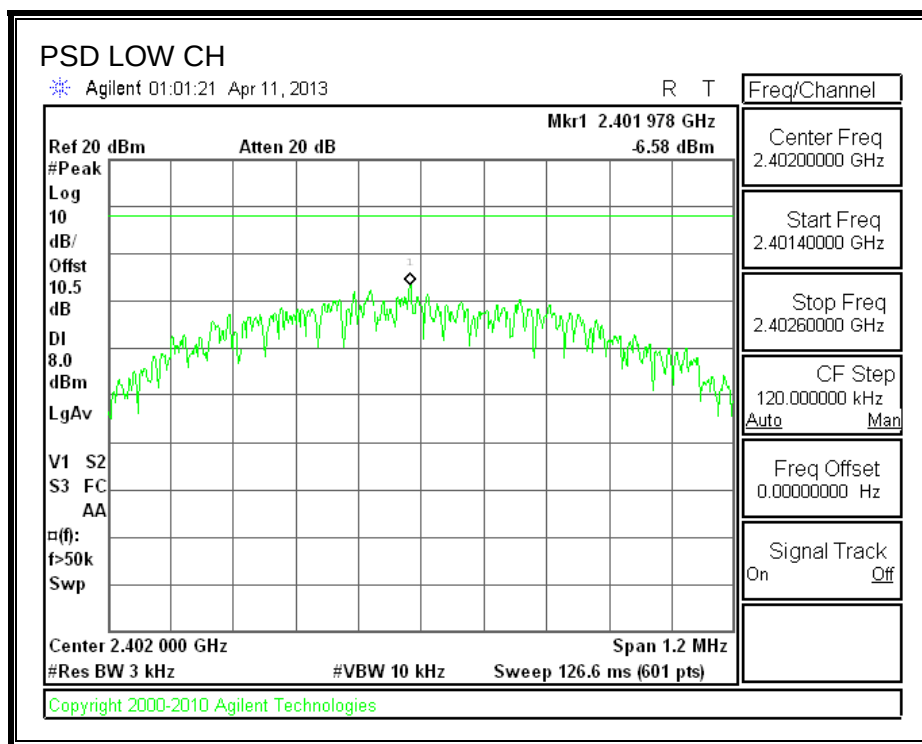
IC RSS-210 A8.2

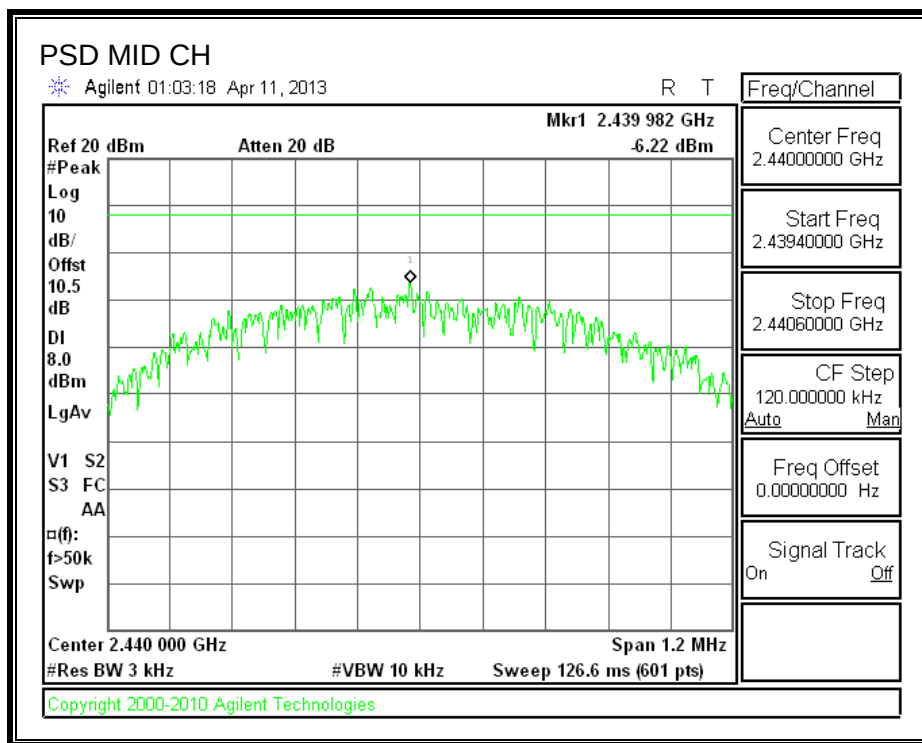
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

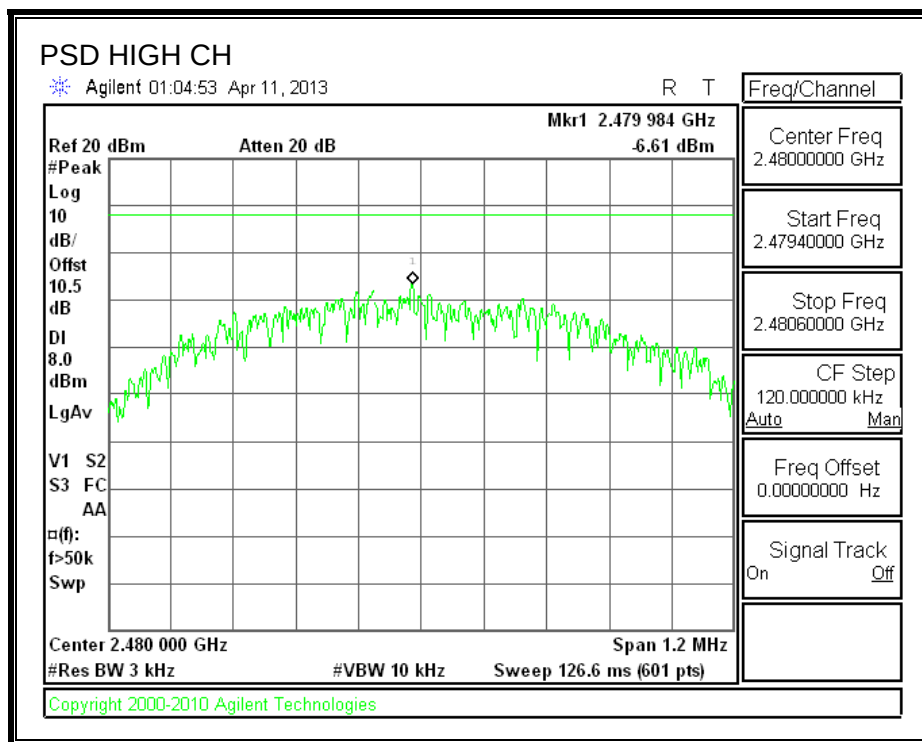
RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-6.58	8	-14.58
Middle	2440	-6.22	8	-14.22
High	2480	-6.61	8	-14.61

POWER SPECTRAL DENSITY







8.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

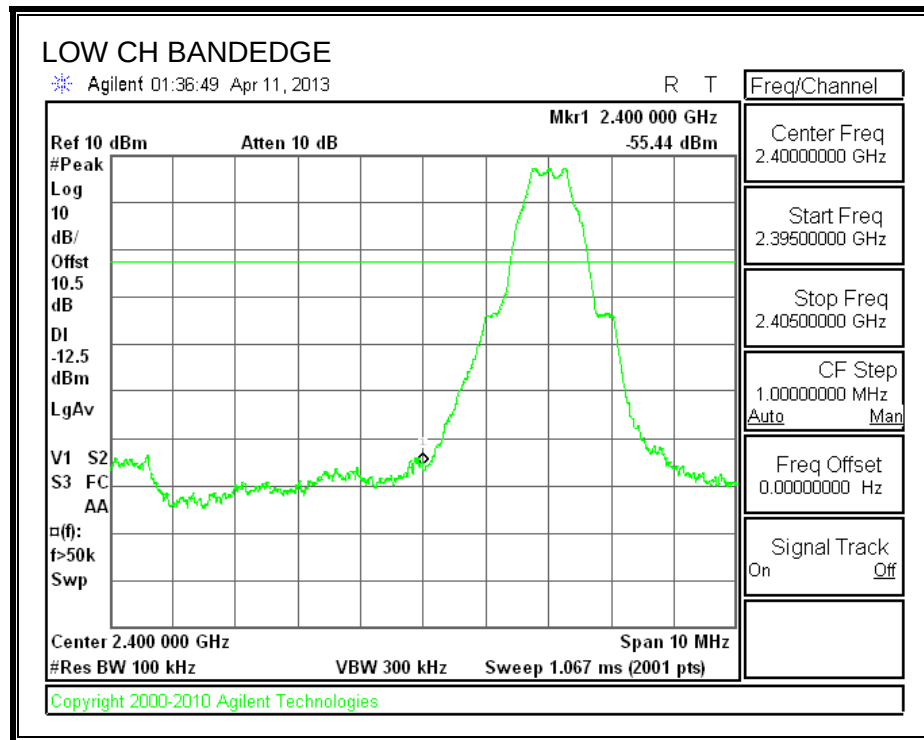
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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

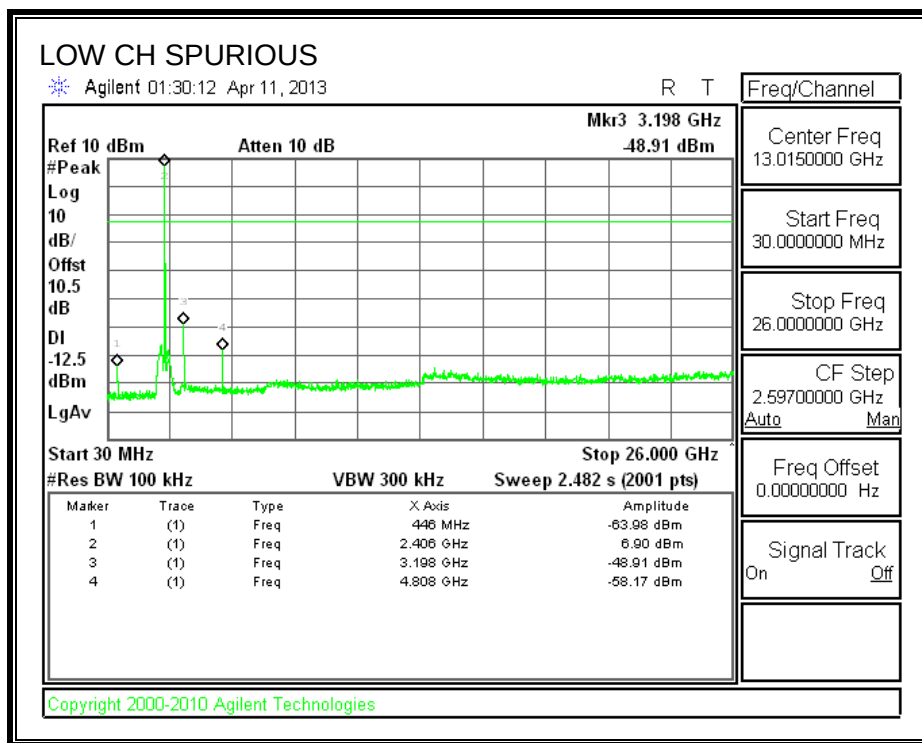
TEST PROCEDURE

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.

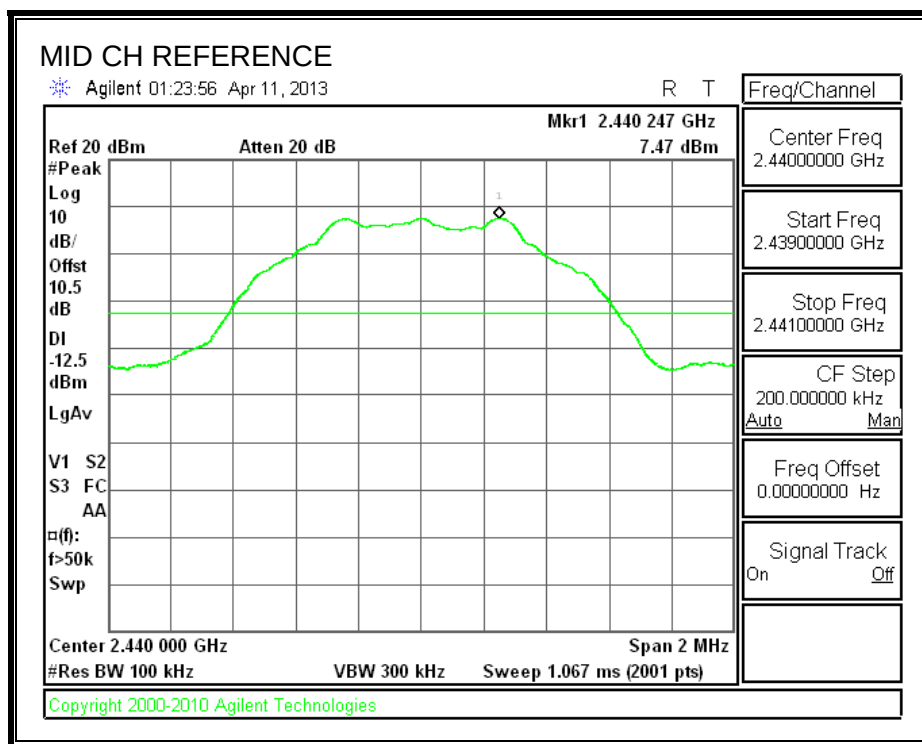
RESULTS

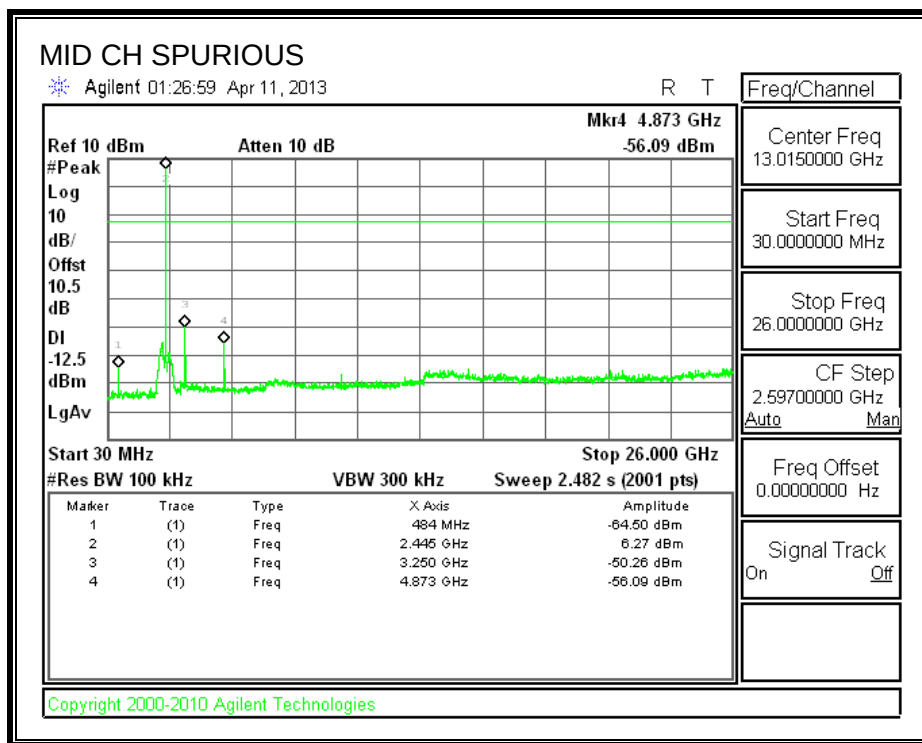
SPURIOUS EMISSIONS, LOW CHANNEL



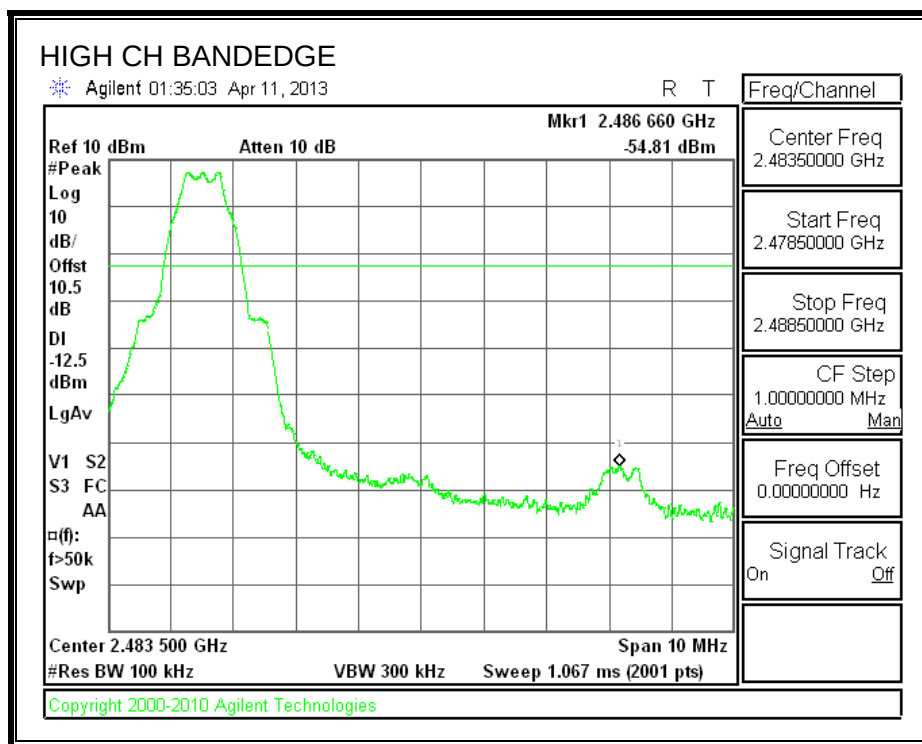


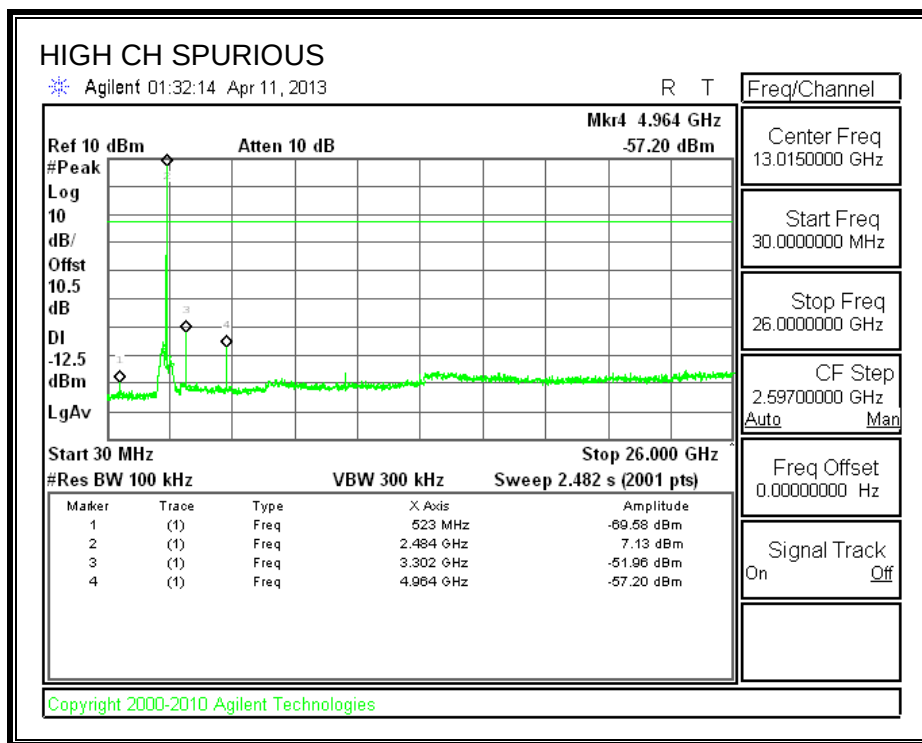
SPURIOUS EMISSIONS, MID CHANNEL





SPURIOUS EMISSIONS, HIGH CHANNEL





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

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

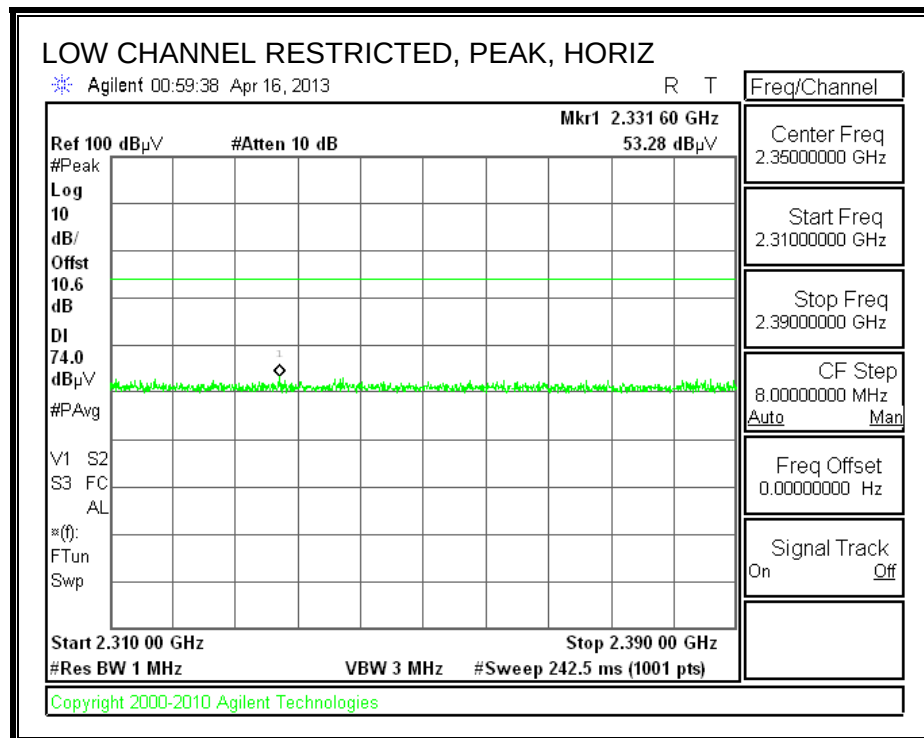
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

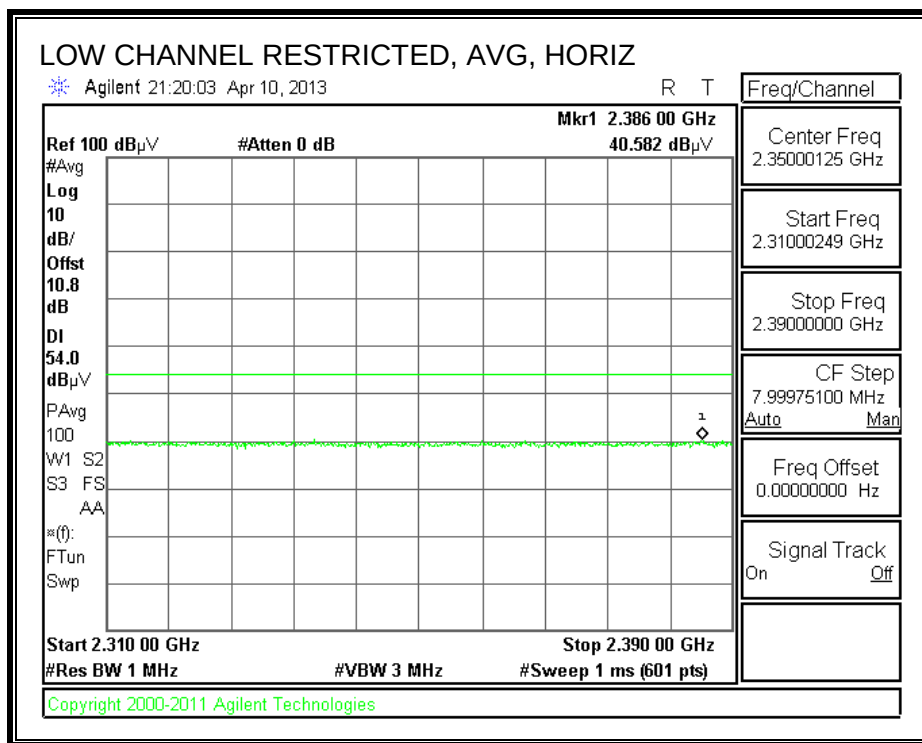
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

9.2. TRANSMITTER ABOVE 1 GHz

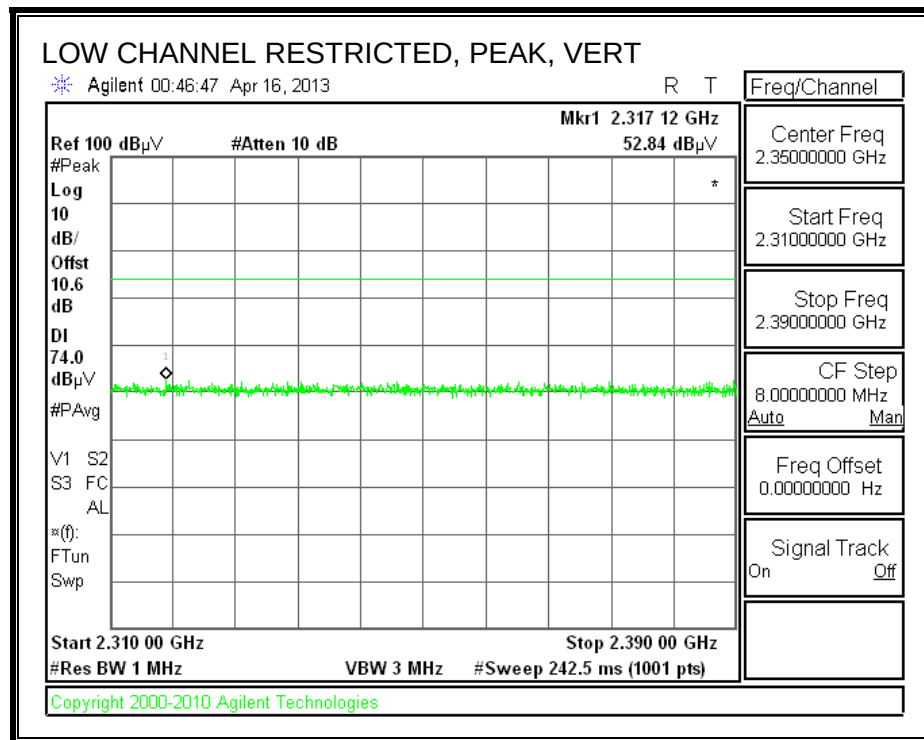
9.2.1. TX ABOVE 1 GHz FOR BLUETOOTH LOW ENERGY MODE

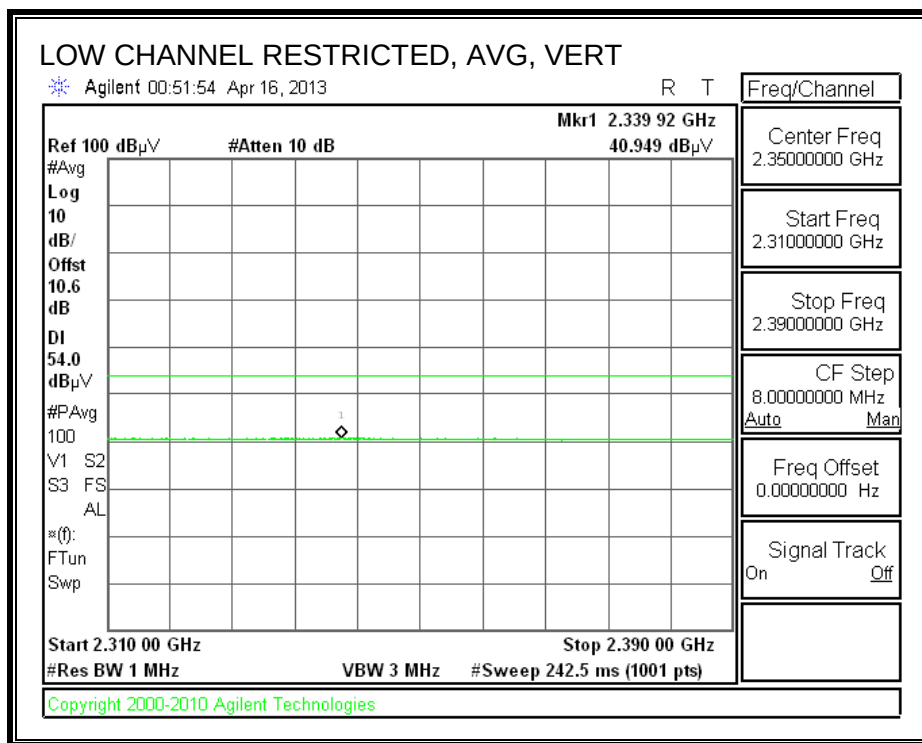
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



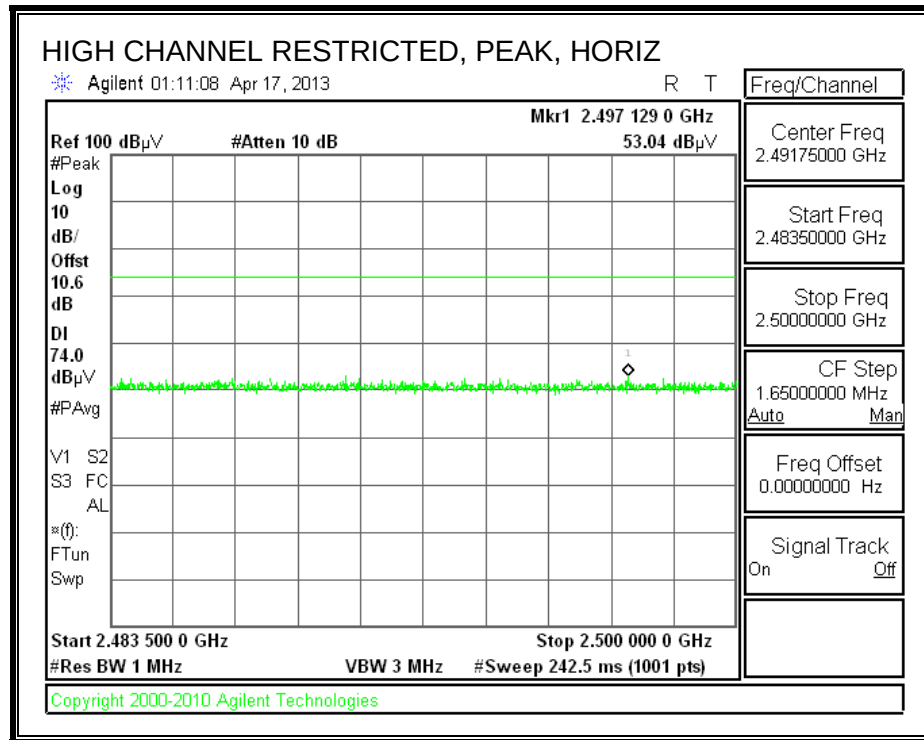


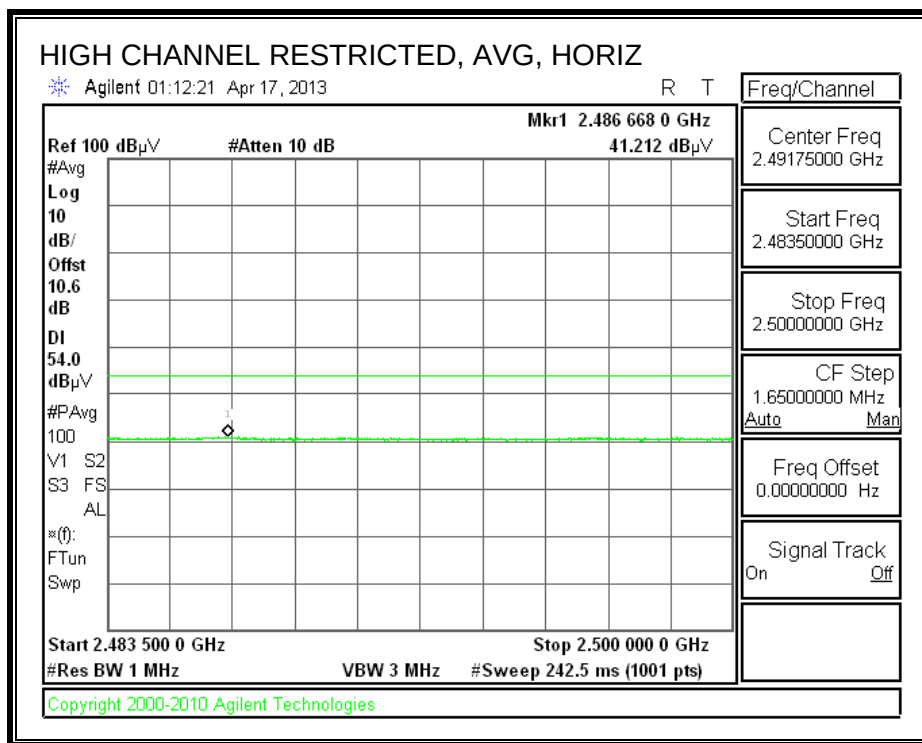
The true value= 40.814 dBuV+Duty cycle factor=40.582+2.34=42.922 dBuV

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

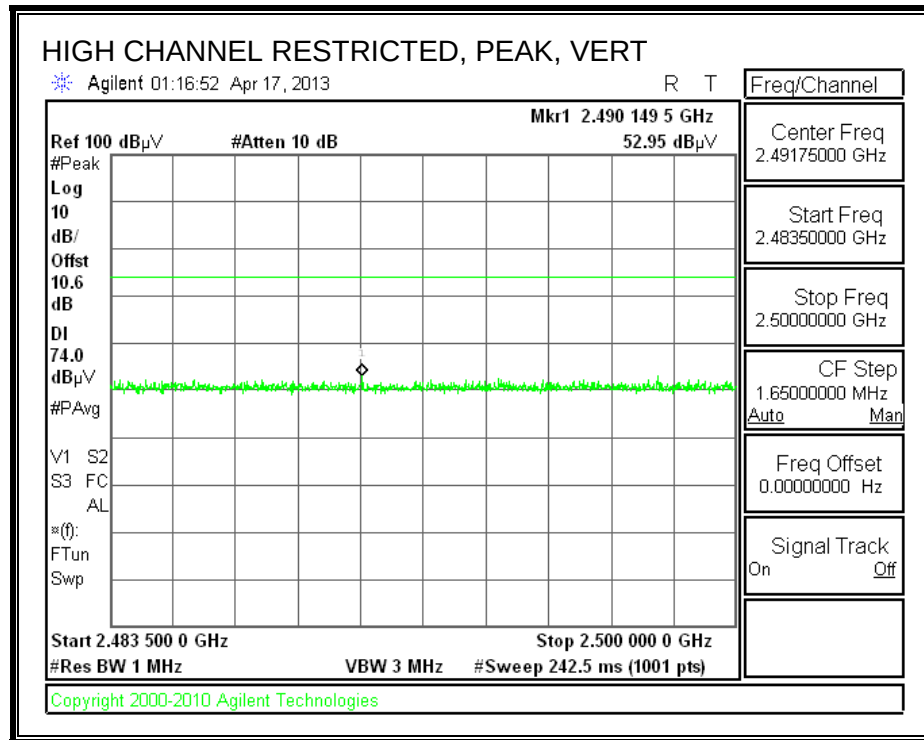


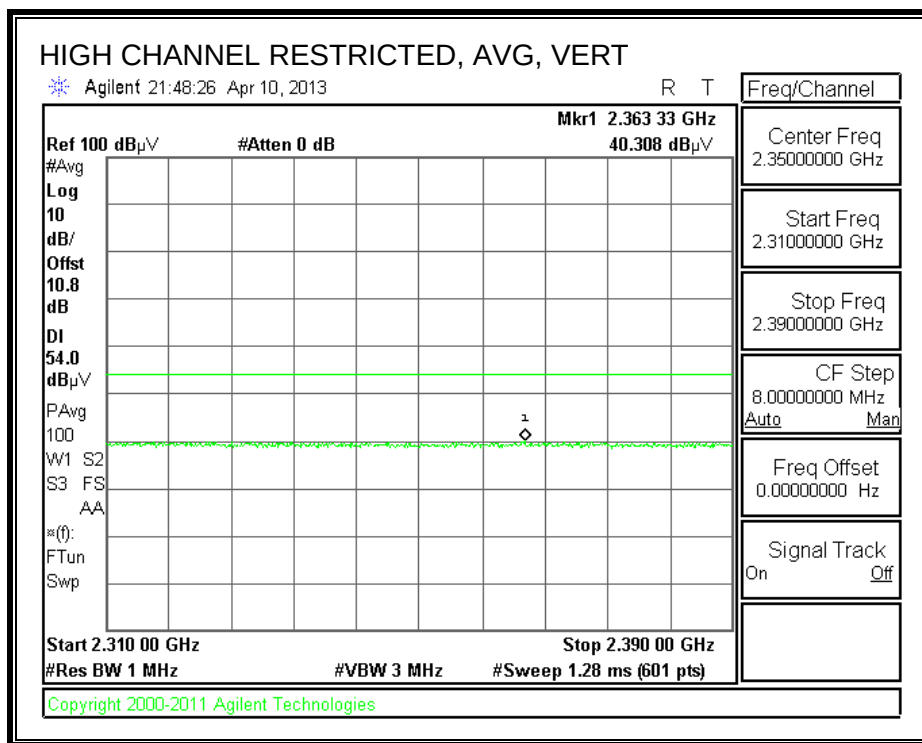
The true value= 40.963 dBuV+Duty cycle factor=40.949+2.34= 43.289dBuV

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

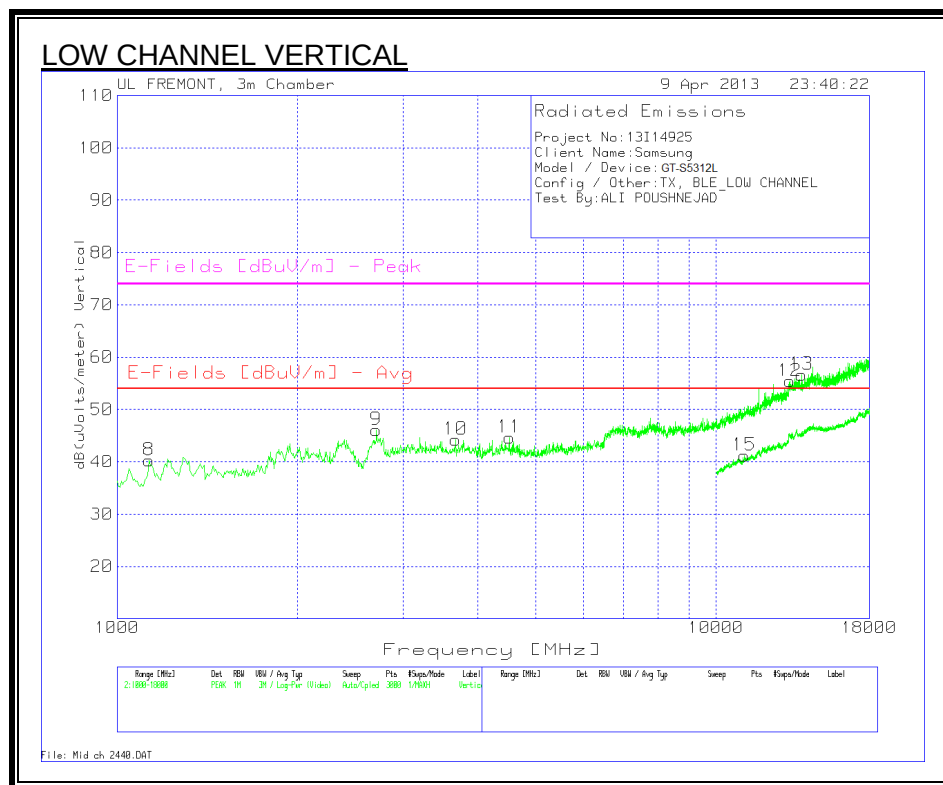
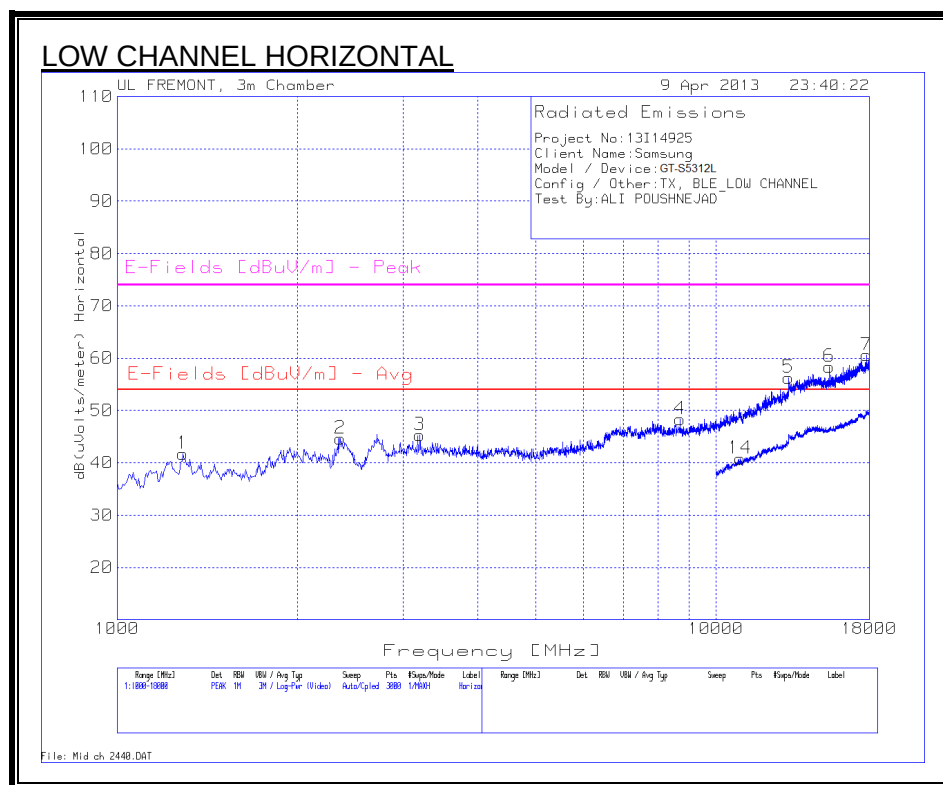


The true value= 40.479 dBuV+Duty cycle factor=41.212+2.34=41.255dBuV

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



The true value= 40.684 dBuV+Duty cycle factor=40.308+2.34=42.846dBuV

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL

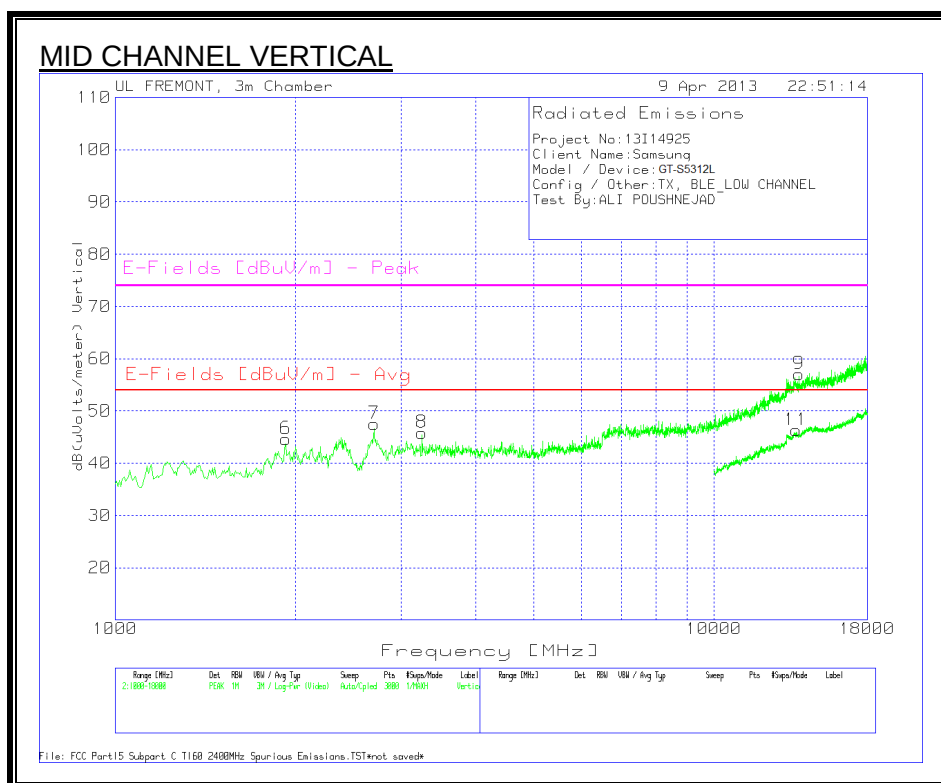
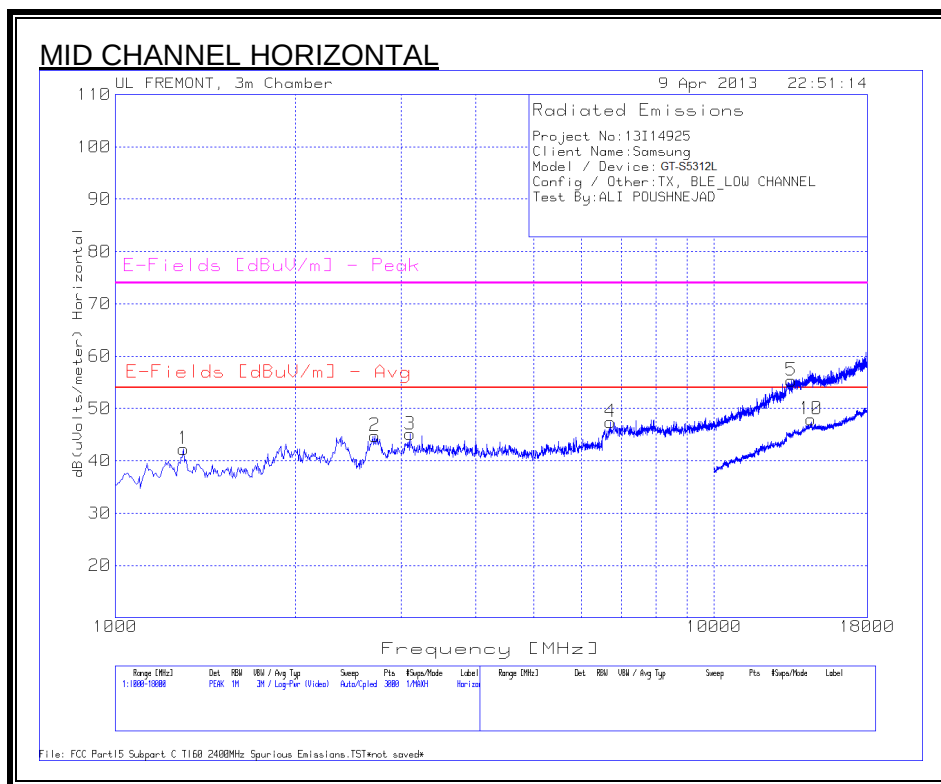
Project No:	13114925											
Client Name:	Samsung											
Model / Device:	GT-S5312L											
Config / Other:	TX, BLE_LOW CHANNEL											
Test By:	ALI POU SHNEJAD											

Horizontal 1000 - 18000MHz												
Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	
1	1288.807	44.29	PK	30.1	-33	0.4	41.79	53.97	-12.18	74	-32.21	
2	2359.094	41.45	PK	32	-29.7	0.9	44.65	53.97	-9.32	74	-29.35	
3	3202.865	40.11	PK	32.9	-28.1	0.4	45.31	53.97	-8.66	74	-28.69	
4	8707.195	34.1	PK	35.9	-22.1	0.4	48.3	53.97	-5.67	74	-25.7	
5	13220.52	33.44	PK	39.1	-16.7	0.4	56.24	53.97	2.27	74	-17.76	
6	15451.7	34.16	PK	40.2	-16.4	0.4	58.36	53.97	4.39	74	-15.64	
7	17824.45	32.45	PK	41.5	-14	0.6	60.55	53.97	6.58	74	-13.45	

Vertical 1000 - 18000MHz												
Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	
8	1130.247	45.56	PK	27.8	-33.4	0.3	40.26	53.97	-13.71	74	-33.74	
9	2710.193	41.64	PK	32.6	-29	0.9	46.14	53.97	-7.83	74	-27.86	
10	3672.885	37.56	PK	33.2	-26.8	0.3	44.26	53.97	-9.71	74	-29.74	
11	4516.656	36.08	PK	33.9	-25.6	0.2	44.58	53.97	-9.39	74	-29.42	
12	13282.81	32.6	PK	39.1	-16.7	0.4	55.4	53.97	1.43	74	-18.6	
13	13894.4	33.31	PK	38.8	-15.9	0.4	56.61	53.97	2.64	74	-17.39	

Horizontal 10000 - 18000MHz												
Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	
14	10971.51	22.11	PK	37.9	-19.9	0.7	40.81	53.97	-13.16	74	-33.19	

Vertical 10000 - 18000MHz												
Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	
15	11151.42	22.25	PK	37.9	-19.6	0.7	41.25	53.97	-12.72	74	-32.75	



MID CHANNEL

Project No:13I14925

Client Name:Samsung

Model / Device:GT-S5312L

Config / Other:TX, BLE_MID CHANNEL

Test By:ALI Poushnejad

Horizontal 1000 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
1	1300.133	44.5	PK	30.2	-32.9	0.4	42.2	53.97	-11.77	74	-31.8
2	2715.856	40.23	PK	32.6	-29	0.9	44.73	53.97	-9.24	74	-29.27
3	3106.596	39.7	PK	33.1	-28.3	0.6	45.1	53.97	-8.87	74	-28.9
4	6702.532	34.97	PK	35.6	-23.4	0.3	47.47	53.97	-6.5	74	-26.53
5	13469.69	32.42	PK	39	-16.5	0.4	55.32	53.97	1.35	74	-18.68

Vertical 1000 - 18000MHz

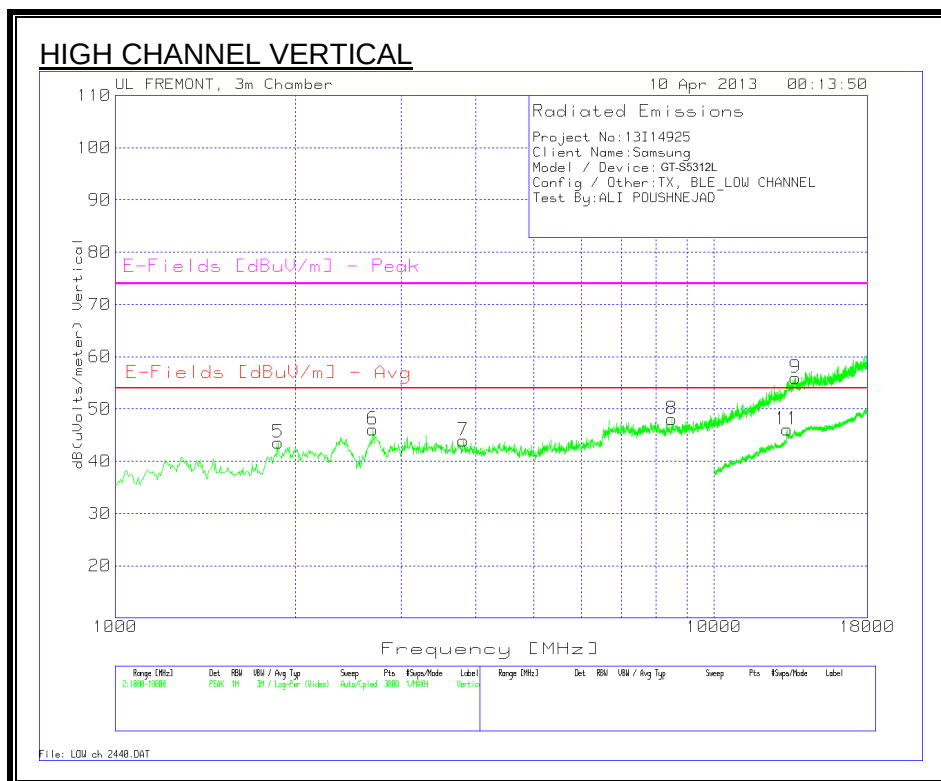
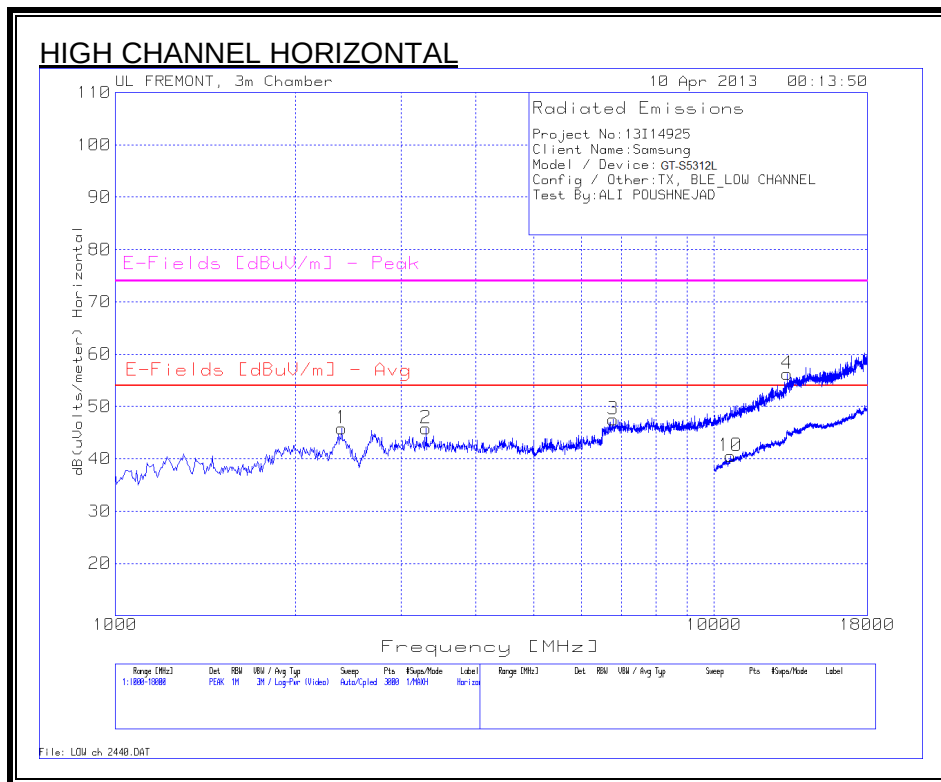
Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
6	1928.714	42.33	PK	31.3	-30.8	0.9	43.73	53.97	-10.24	74	-30.27
7	2704.53	42.14	PK	32.6	-29	0.9	46.64	53.97	-7.33	74	-27.36
8	3253.831	39.88	PK	32.9	-27.9	0.5	45.38	53.97	-8.59	74	-28.62
9	13854.76	33.35	PK	38.8	-15.9	0.4	56.65	53.97	2.68	74	-17.35

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
10	14509.75	23.49	PK	39.6	-16	0.4	47.49	53.97	-6.48	74	-26.51

Vertical 10000 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
11	13702.15	22.69	PK	38.8	-16	0.4	45.89	53.97	-8.08	74	-28.11



HIGH CHANNEL

Project No:13I14925

Client Name:Samsung

Model / Device:DT-S5512L

Config / Other:TX, BLE_LOW CHANNEL

Test By:ALI POUSHNEJAD

Horizontal 1000 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
1	2387.408	42.49	PK	32.1	-29.7	0.9	45.79	53.97	-8.18	74	-28.21
2	3304.797	40.13	PK	32.9	-27.8	0.6	45.83	53.97	-8.14	74	-28.17
3	6776.149	34.88	PK	35.6	-23.3	0.3	47.48	53.97	-6.49	74	-26.52
4	13237.51	33.41	PK	39.1	-16.7	0.4	56.21	53.97	2.24	74	-17.79

Vertical 1000 - 18000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
5	1872.085	42.83	PK	30.9	-31	0.8	43.53	53.97	-10.44	74	-30.47
6	2693.205	41.54	PK	32.6	-29	0.9	46.04	53.97	-7.93	74	-27.96
7	3808.794	36.73	PK	33.2	-26.5	0.5	43.93	53.97	-10.04	74	-30.07
8	8508.994	34.06	PK	35.8	-22.1	0.3	48.06	53.97	-5.91	74	-25.94
9	13662.23	32.95	PK	38.8	-16.1	0.4	56.05	53.97	2.08	74	-17.95

Horizontal 10000 - 18000MHz

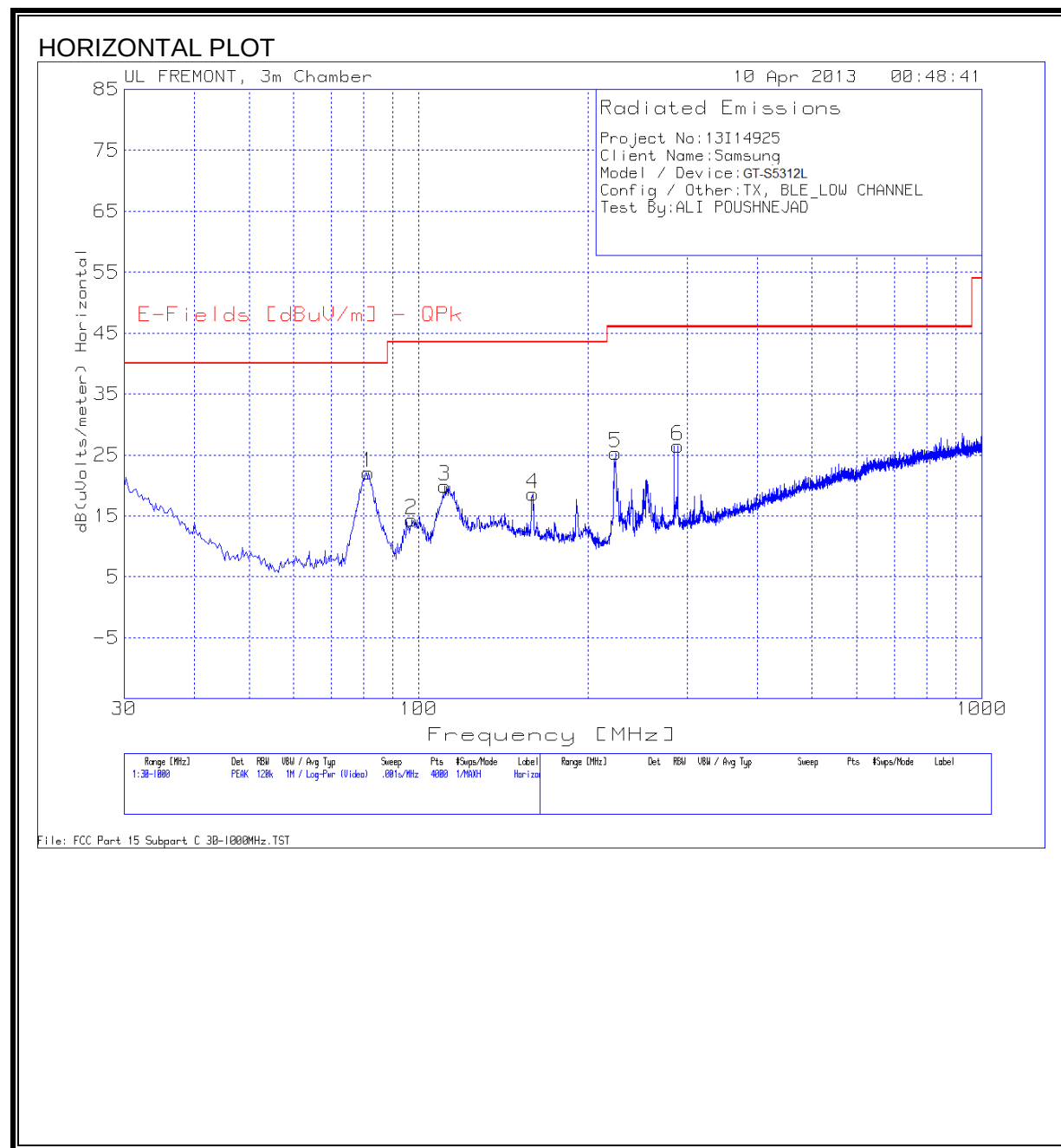
Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
10	10659.67	22.39	PK	37.8	-20.3	0.7	40.59	53.97	-13.38	74	-33.41

Vertical 10000 - 18000MHz

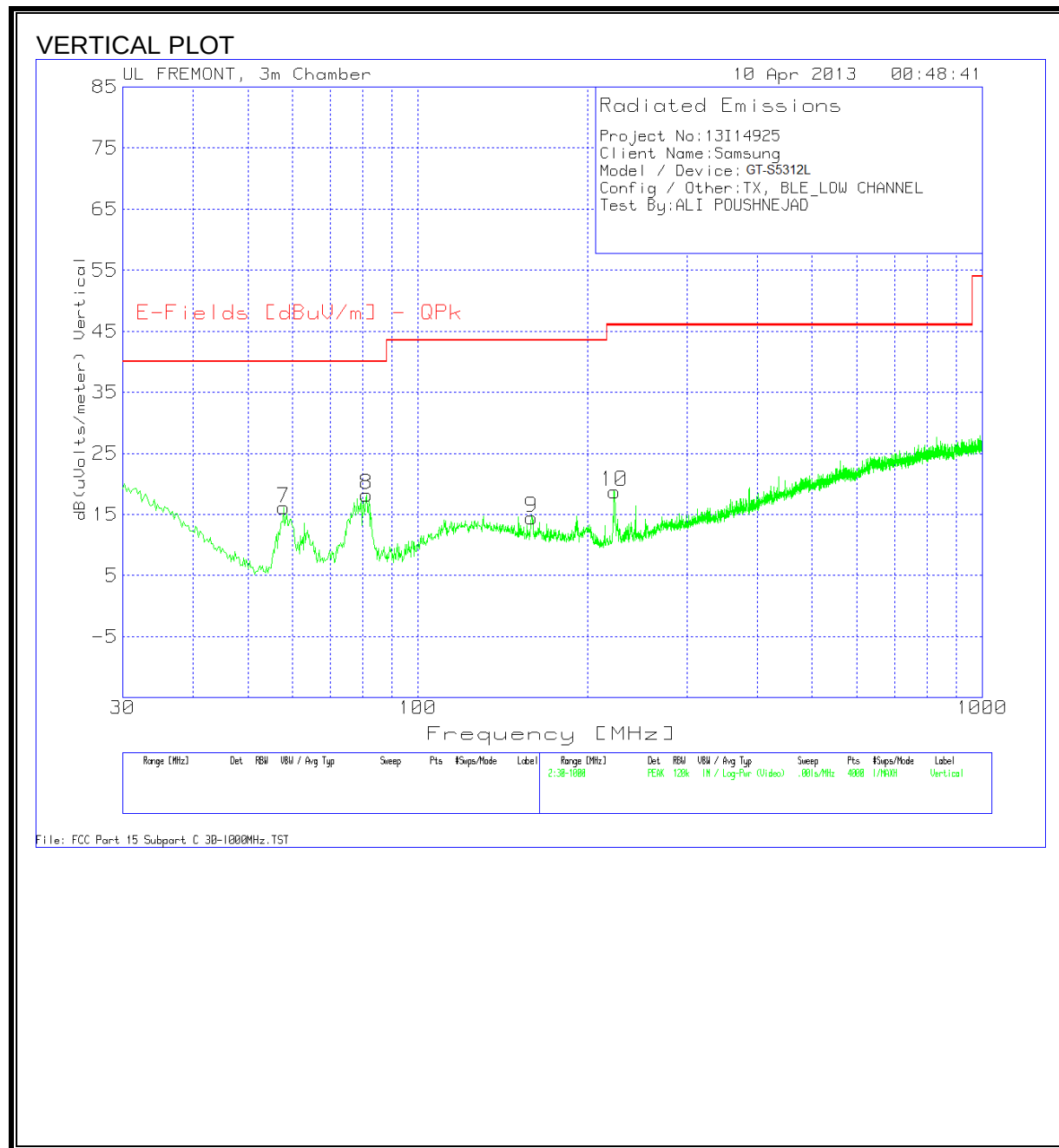
Marker No.	Test Frequency	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T160 BRF [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
11	13222.39	23.26	PK	39.1	-16.7	0.4	46.06	53.97	-7.91	74	-27.94

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)



EMISSIONS DATA

Project No:13I14925										
Client Name:Samsung										
Model / Device:GT-S5312L										
Config / Other:TX, BLE_LOW CHANNEL										
Test By:ALI POUSHNEJAD										
Horizontal 30 - 1000MHz										
Marker No	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T130 Ant Factor [dB/m]	T64 preamp/cable loss	dB(uVolts/meter)	E-Fields [dBuV/m] - QPk	Margin (dB)	Height [cm]	Polarity
1	81.3715	41.9	PK	7.3	-27.1	22.1	40	-17.9	400	Horz
2	97.3645	32.1	PK	9.4	-27.1	14.4	43.52	-29.12	201	Horz
3	111.4189	33.86	PK	12.8	-26.8	19.86	43.52	-23.66	400	Horz
4	159.398	33.14	PK	12.1	-26.6	18.64	43.52	-24.88	101	Horz
5	223.8546	40.48	PK	10.9	-26	25.38	46.02	-20.64	101	Horz
6	288.7959	39.07	PK	13.3	-25.9	26.47	46.02	-19.55	101	Horz
Vertical 30 - 1000MHz										
Marker No	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T130 Ant Factor [dB/m]	T64 preamp/cable loss	dB(uVolts/meter)	E-Fields [dBuV/m] - QPk	Margin (dB)	Height [cm]	Polarity
7	57.8666	36.3	PK	7.2	-27.4	16.1	40	-23.9	199	Vert
8	81.1292	37.98	PK	7.3	-27.1	18.18	40	-21.82	199	Vert
9	159.1556	29.04	PK	12.1	-26.6	14.54	43.52	-28.98	299	Vert
10	222.8853	33.91	PK	10.8	-26	18.71	46.02	-27.31	199	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

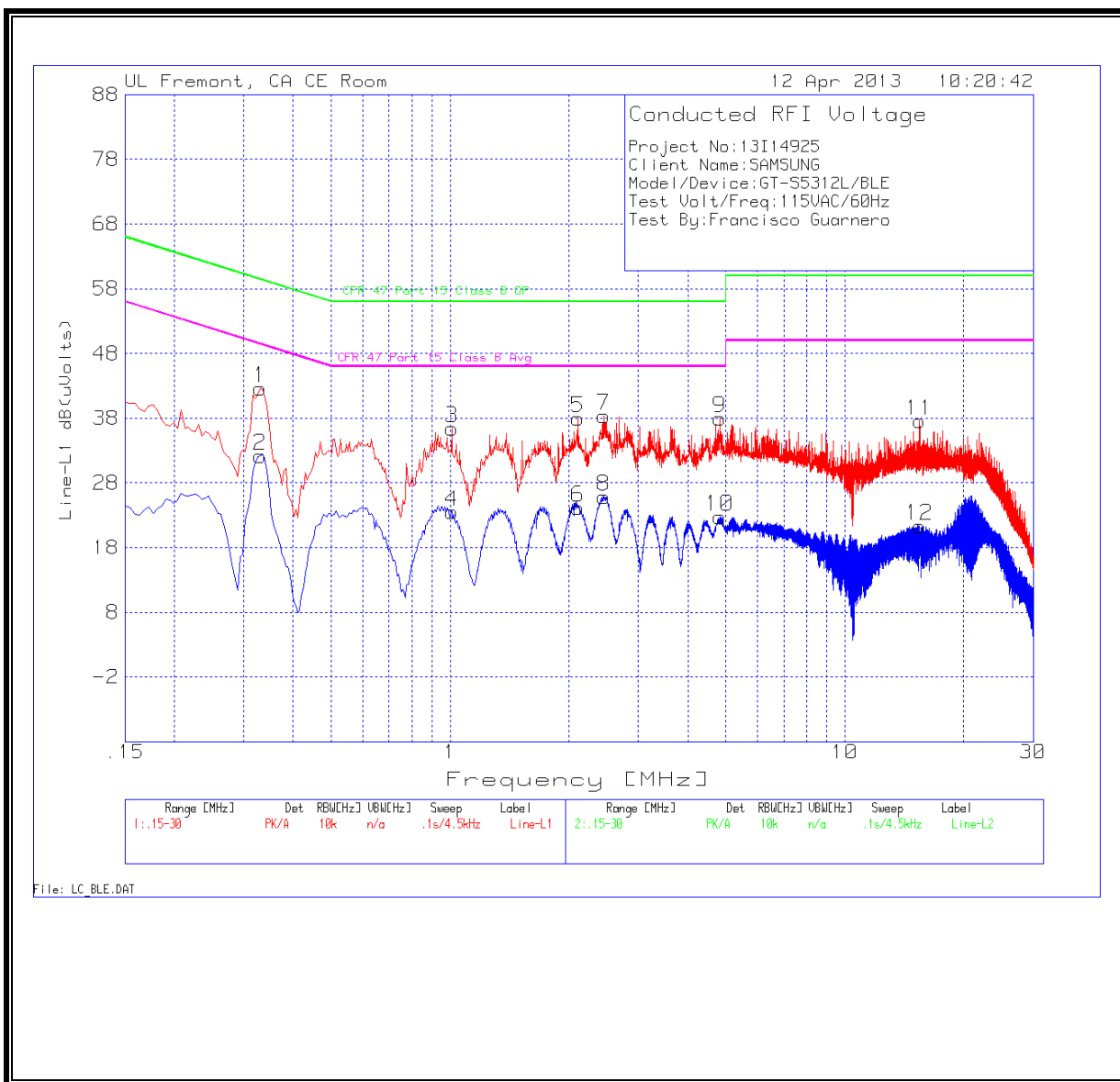
ANSI C63.4

RESULTS

6 WORST EMISSIONS

Project No:13I14925									
Client Name:SAMSUNG									
Model/Device:GT-S5312L/BLE									
Test Volt/Freq:115VAC/60Hz									
Test By:Francisco Guarnero									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.33	42.49	PK	0.1	0	42.59	59.5	-16.91	-	-
0.33	32.11	Av	0.1	0	32.21	-	-	49.5	-17.29
1.0095	36.33	PK	0.1	0	36.43	56	-19.57	-	-
1.0095	23.38	Av	0.1	0	23.48	-	-	46	-22.52
2.1075	37.78	PK	0.1	0.1	37.98	56	-18.02	-	-
2.1075	23.96	Av	0.1	0.1	24.16	-	-	46	-21.84
2.454	38.2	PK	0.1	0.1	38.4	56	-17.6	-	-
2.454	25.71	Av	0.1	0.1	25.91	-	-	46	-20.09
4.821	37.77	PK	0.1	0.1	37.97	56	-18.03	-	-
4.821	22.57	Av	0.1	0.1	22.77	-	-	46	-23.23
15.4635	37.13	PK	0.2	0.2	37.53	60	-22.47	-	-
15.4635	21	Av	0.2	0.2	21.4	-	-	50	-28.6
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.3345	39.26	PK	0.1	0	39.36	59.3	-19.94	-	-
0.3345	30.06	Av	0.1	0	30.16	-	-	49.3	-19.14
1.239	30.35	PK	0.1	0.1	30.55	56	-25.45	-	-
1.239	11.3	Av	0.1	0.1	11.5	-	-	46	-34.5
1.995	32.03	PK	0.1	0.1	32.23	56	-23.77	-	-
1.995	15.77	Av	0.1	0.1	15.97	-	-	46	-30.03
2.463	34.24	PK	0.1	0.1	34.44	56	-21.56	-	-
2.463	15.69	Av	0.1	0.1	15.89	-	-	46	-30.11
4.5105	34.87	PK	0.1	0.1	35.07	56	-20.93	-	-
4.5105	16.45	Av	0.1	0.1	16.65	-	-	46	-29.35
18.6675	38.53	PK	0.3	0.2	39.03	60	-20.97	-	-
18.6675	19.05	Av	0.3	0.2	19.55	-	-	50	-30.45

LINE 1 RESULTS



LINE 2 RESULTS

