



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

**BT3.0, 802.11 B/G/N 1X1 HT20, GSM/WCDMA 850/1900MHZ, BAR PHONE WITH
HOTSPOTS AND VOIP SUPPORTED**

MODEL NUMBER: GT-B7810L

FCC ID: A3LGTB7810L

REPORT NUMBER: 12I14521-2

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Prepared for
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NVLAP LAB CODE 200065-0

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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: BT3.0, 802.11b/g/n 1x1 HT20, GSM/WCDMA 850/1900MHz, Bar
Phone with HOTSPOTS and VOIP supported

MODEL: GT-B7810L

SERIAL NUMBER: FJ-171-D (Conducted) & FJ-171-C (Radiated)

DATE TESTED: JULY 16 - 19, 2012

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.

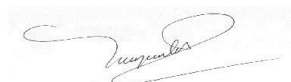
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this 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:



TIM LEE
STAFF ENGINEER
UL CCS



VIEN TRAN
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, and FCC CFR 47 Part 15.

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:

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

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 BT3.0, 802.11b/g/n 1x1 HT20, GSM/WCDMA 850/1900MHz, Bar Phone with HOTSPOTS and VOIP supported.

The unit supports AFH mode. The manufacturer attested the following.

- It is in compliance with Bluetooth Specification 1.2 or later specification.
- The number of hopping channel in AFH mode is 20 channels
- The output power do not transmit over than 125 mW
- The channel separation is based upon 2/3 of 20 dB channel bandwidth

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	Basic GFSK	10.45	11.09
2402 - 2480	Enhanced 8PSK	10.20	10.47

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of 4.0 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was BT Test Engineering Mode.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1 GHz and power line conducted emission tests were performed with the EUT transmitting at the channel with highest output power as worst-case scenario.

The fundamental frequency was investigated for the EUT in three orthogonal orientations X,Y, and Z (battery-operated), also for EUT with AC/DC adapter and with headset connected; it was found that the worst-case orientation among them was X orientation with AC/DC adapter and with headset. All final radiated emission testing was performed using the worst-case orientation.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	ETA0U10JBS	FJ-066B	DoC
Headset	Samsung	EHS61ASFWE	FJ-171-A	N/A
Bluetooth Tester	R & S	CBT	1153.9000.35	DoC

I/O CABLES (CONDUCTED SETUP)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF in	1	Antenna Port	Un-Shielded	0.1m	NA
2	RF in/Out	1	Spectrum Analyzer	Un-Shielded	none	NA
3	RF In/Out	1	BT Tester	Un-Shielded	0.5m	NA

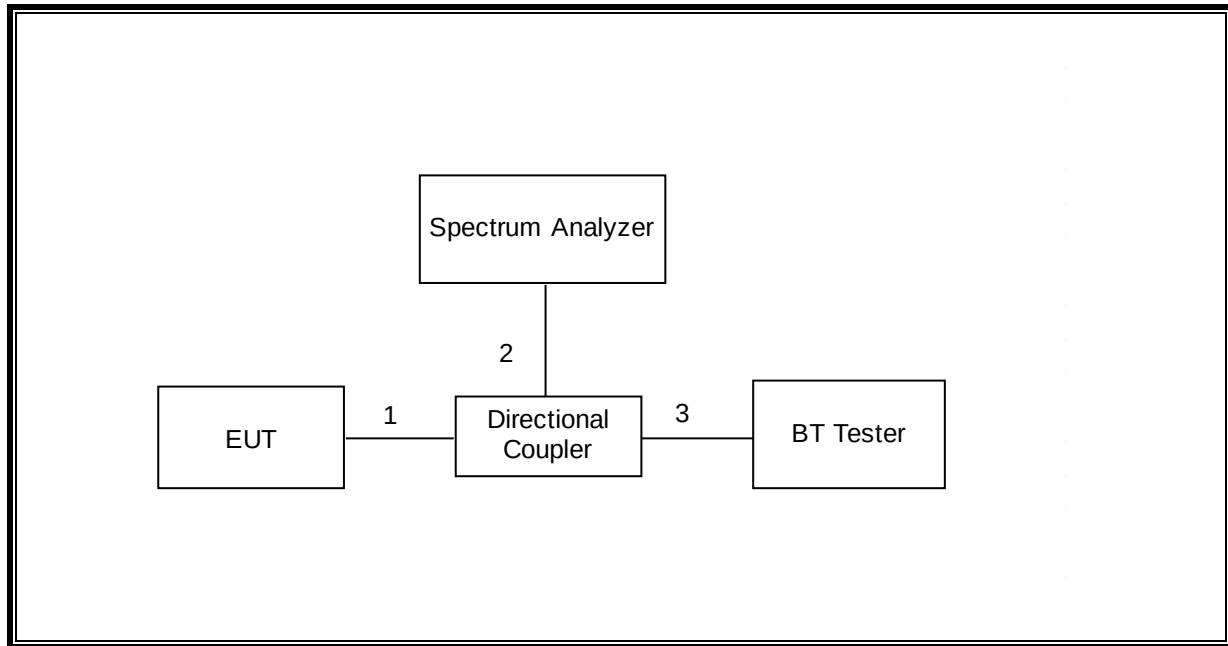
I/O CABLES (RADIATED SETUP)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115AC	Unshielded	1m	N/A
2	DC	1	DC	Unshielded	1m	NA
3	Audio	1	Mini-Jack	Unshielded	1.2 m	NA

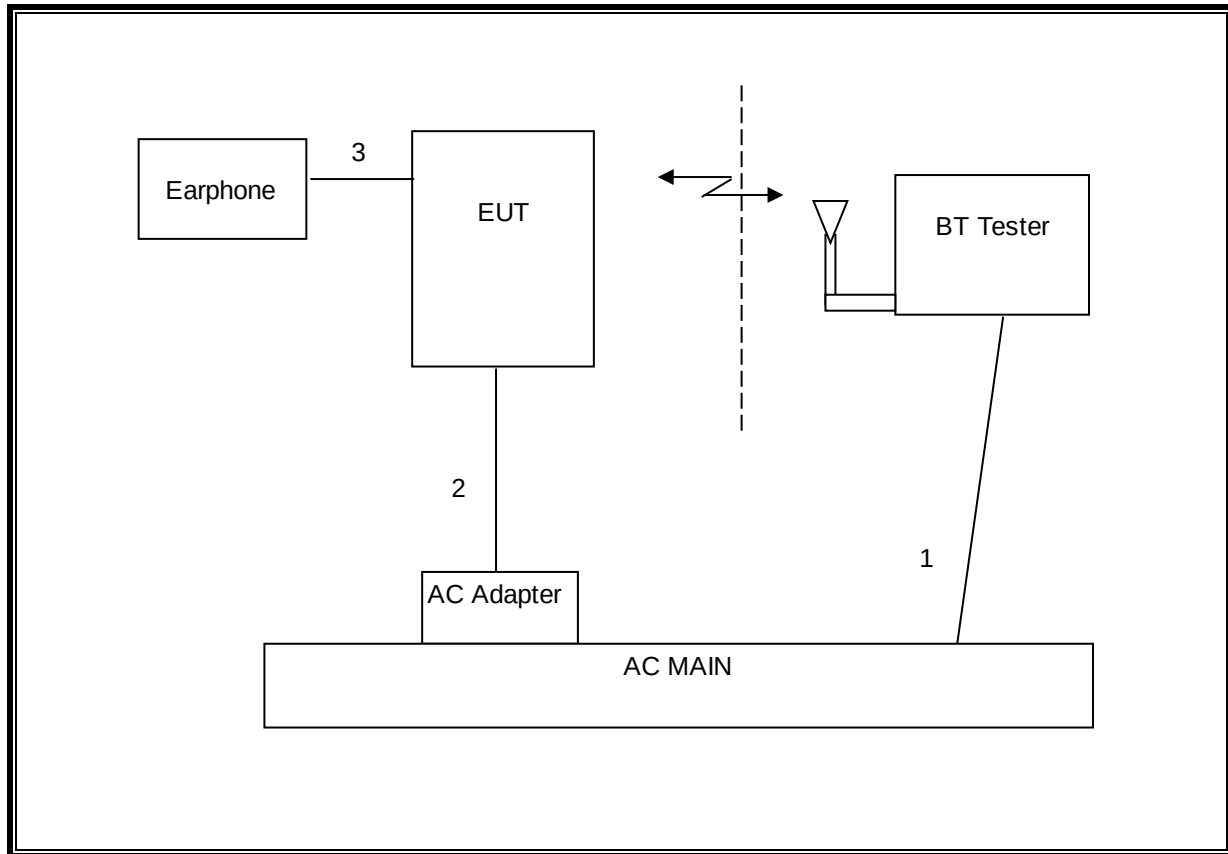
TEST SETUP

The EUT is a standalone device.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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 Date	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/15/11	12/15/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	09/02/11	09/02/12
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/19/11	08/19/13
Antenna, Horn, 18 GHz	EMCO	3115	C00872	09/20/11	09/20/12
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	07/28/11	07/28/12
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/12	06/14/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C00989	01/26/12	01/26/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	11/11/11	11/11/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	11/11/11	11/11/12
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/11	08/02/12
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRC13192	N02683	CNR	CNR
LISN, 30 MHz	FCC	50/250-25-2	C00626	12/13/11	12/13/12
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/11	12/13/12
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/11	12/13/12
Bluetooth Tester	R & S	1153.9000.35	C01119	05/15/12	05/15/13

7. ANTENNA PORT TEST RESULTS

7.1. BASIC DATA RATE GFSK MODULATION

7.1.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

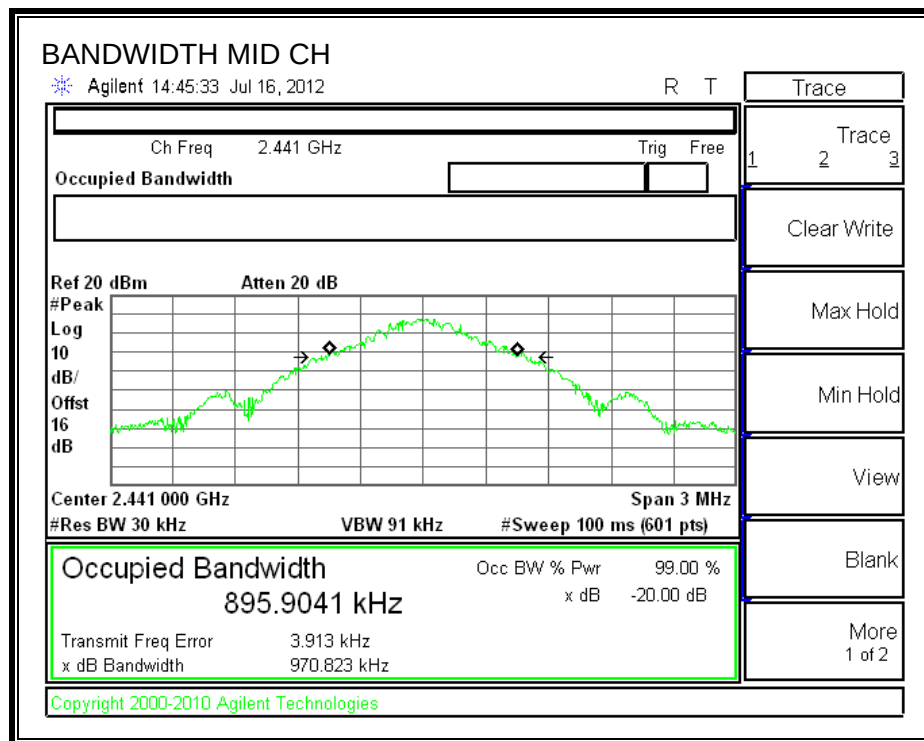
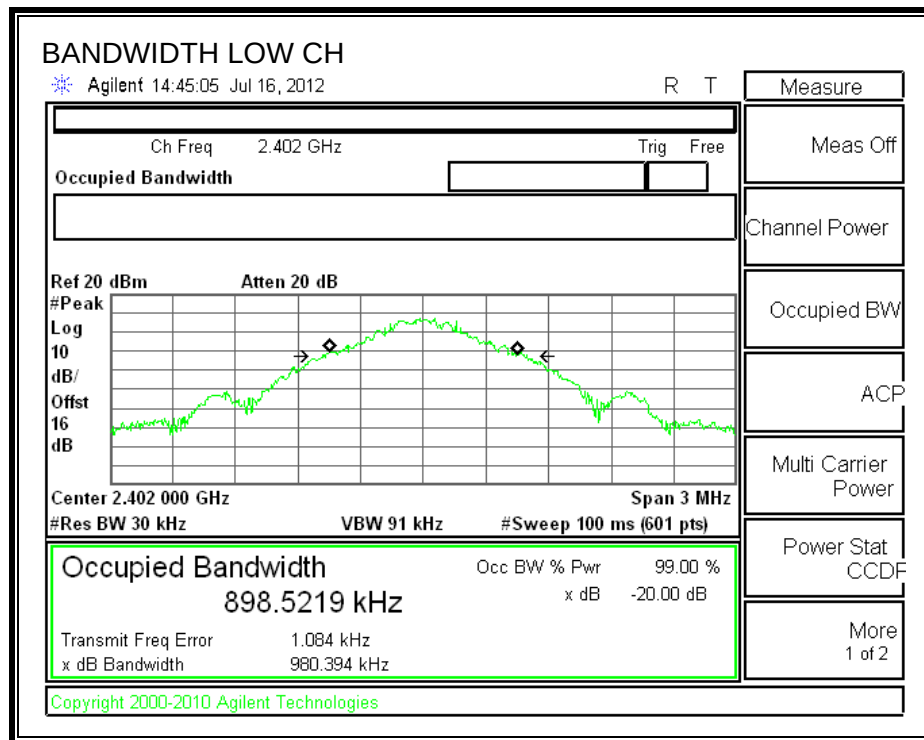
TEST PROCEDURE

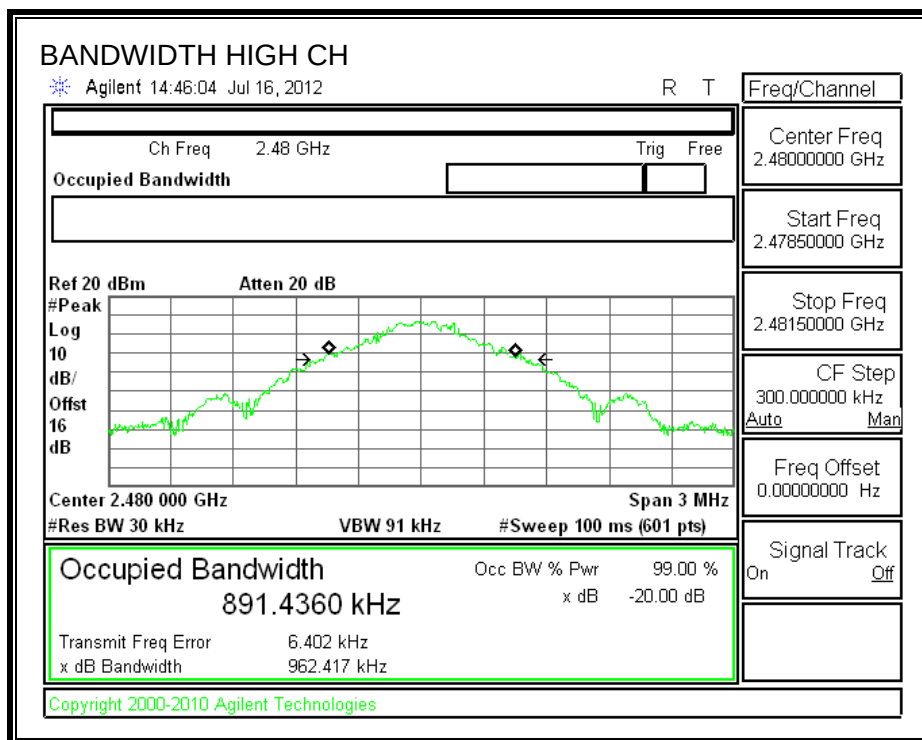
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	0.980
Middle	2441	0.970
High	2480	0.962

20 dB BANDWIDTH





7.1.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

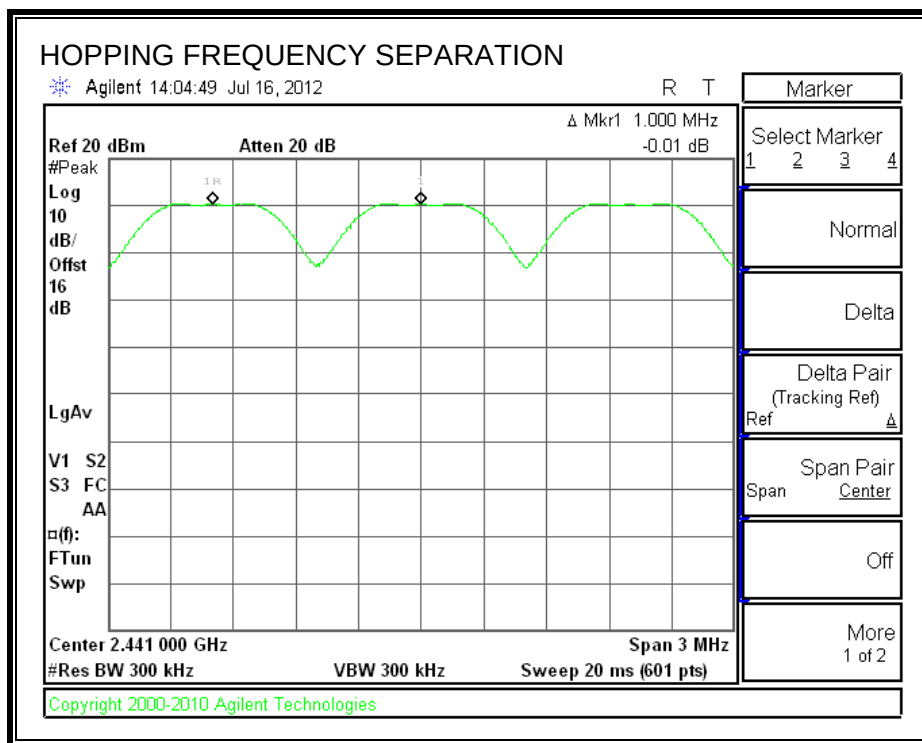
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

HOPPING FREQUENCY SEPARATION



7.1.3. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

TEST PROCEDURE

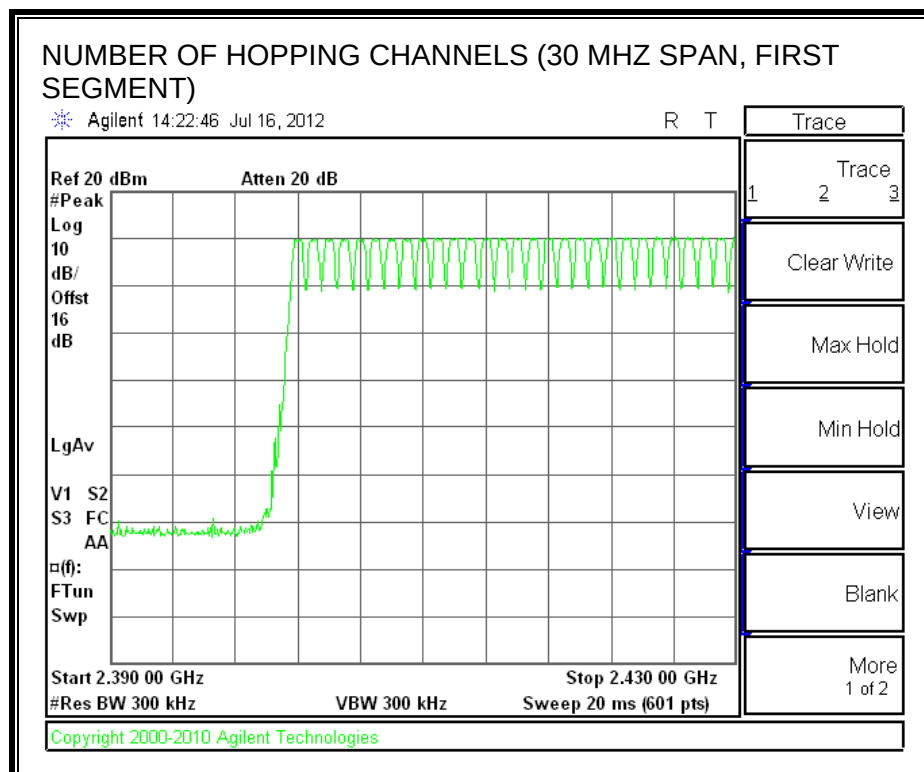
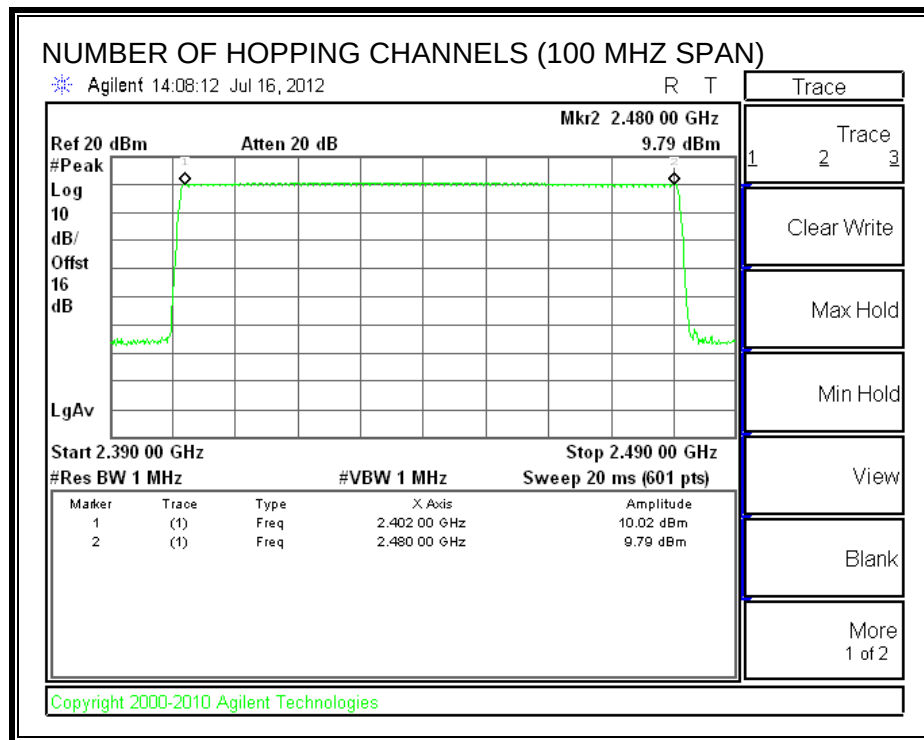
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

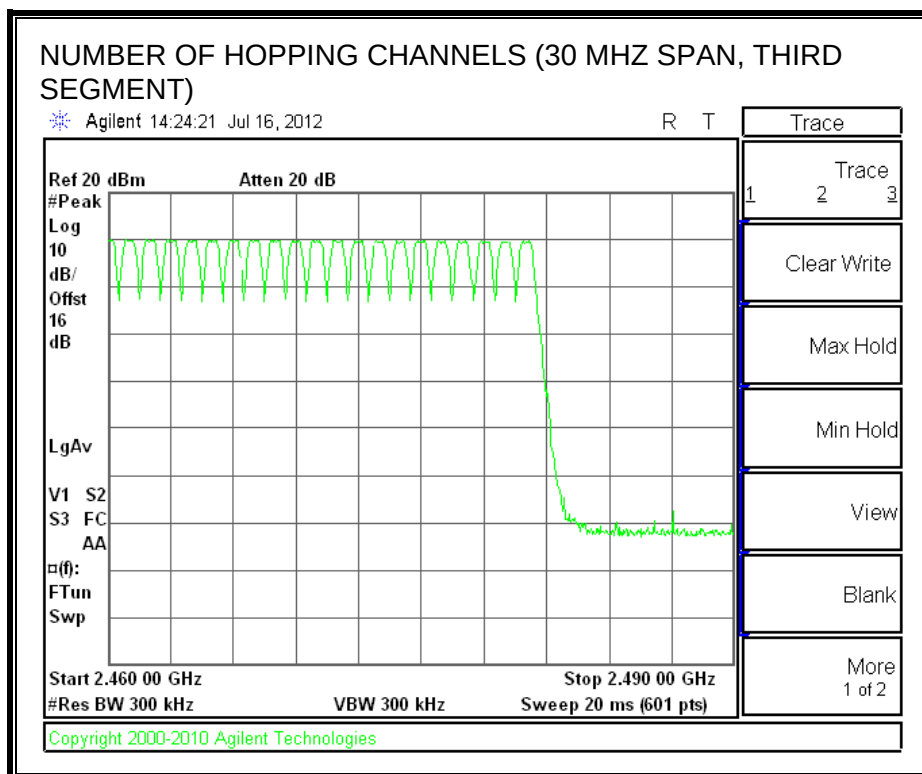
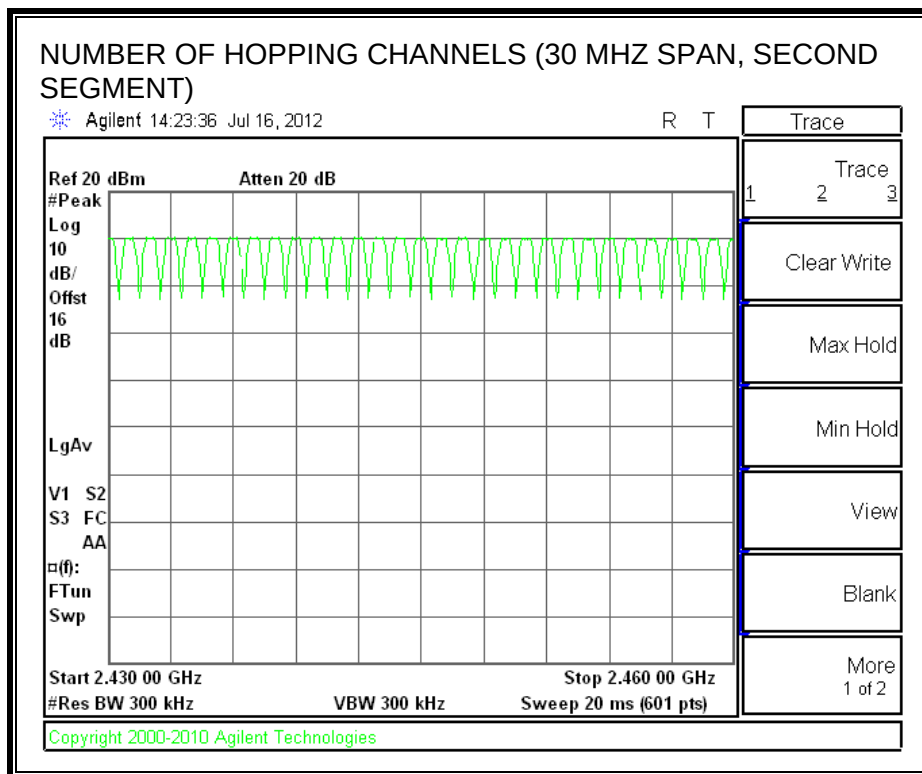
RESULTS

Normal mode: 79 Channels observed.

AFH mode: 20 channels as declared by the manufacturer.

NUMBER OF HOPPING CHANNELS (NORMAL MODE)





7.1.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

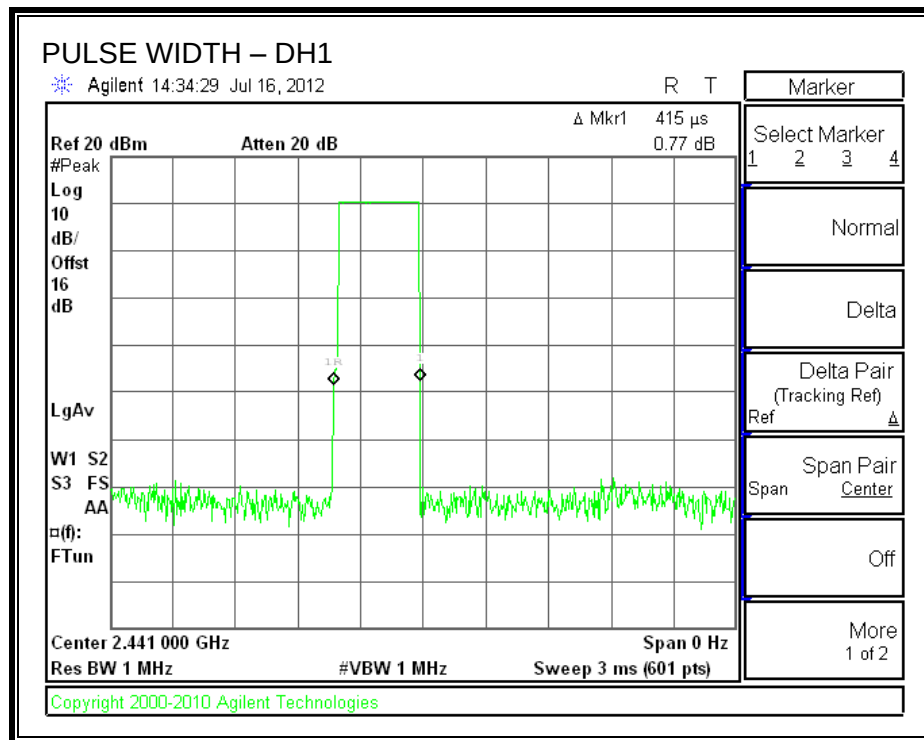
The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

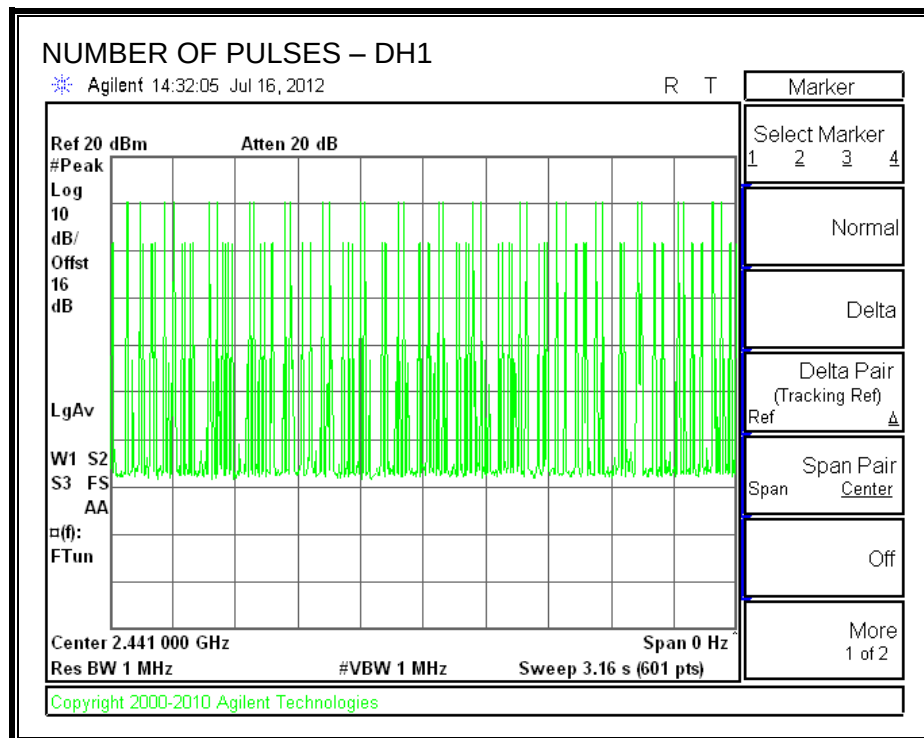
RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
DH1	0.415	32	0.133	0.4	-0.267
DH3	1.667	14	0.233	0.4	-0.167
DH5	2.90	12	0.348	0.4	-0.052

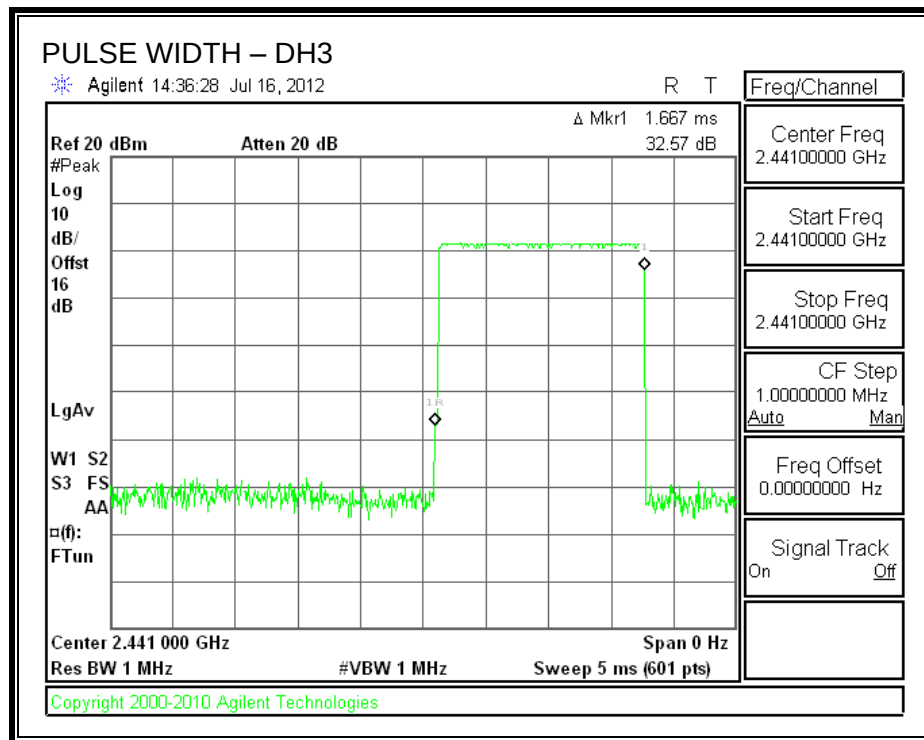
PULSE WIDTH - DH1



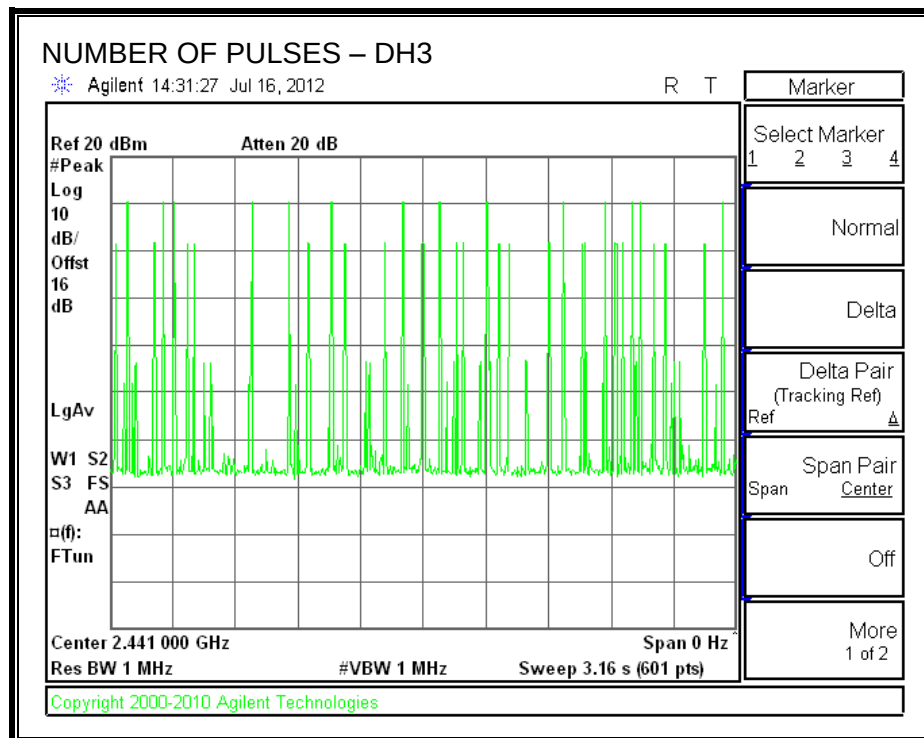
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH1



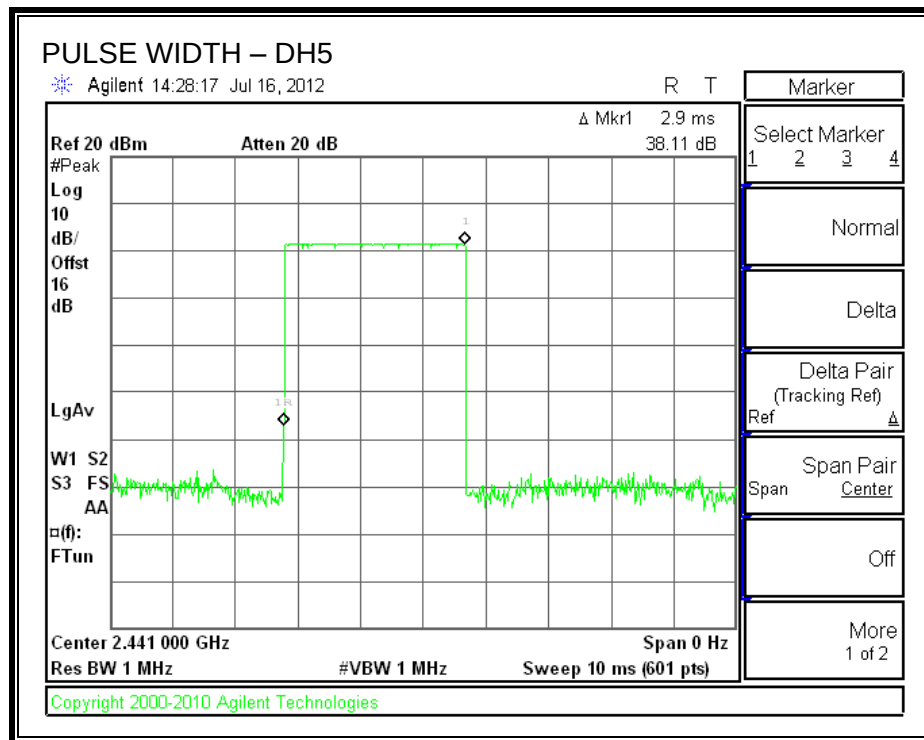
PULSE WIDTH – DH3



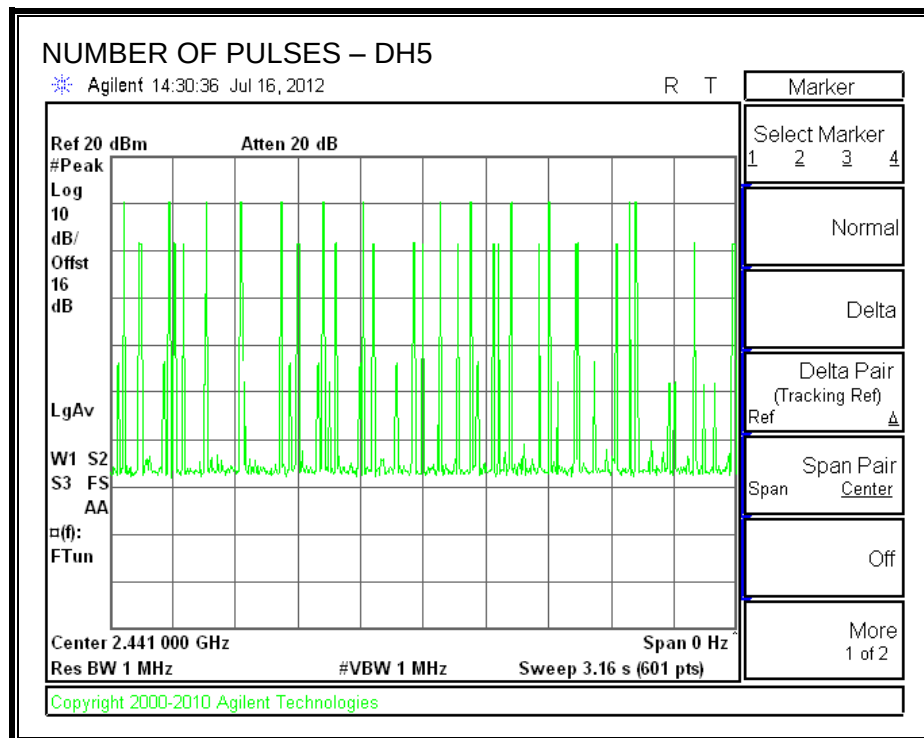
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



7.1.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.

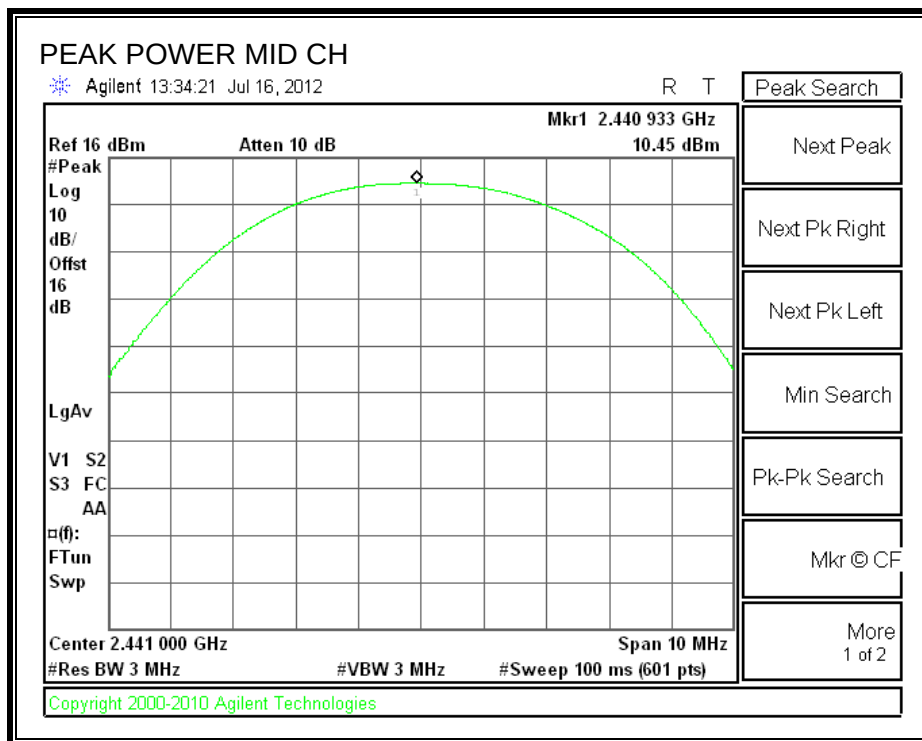
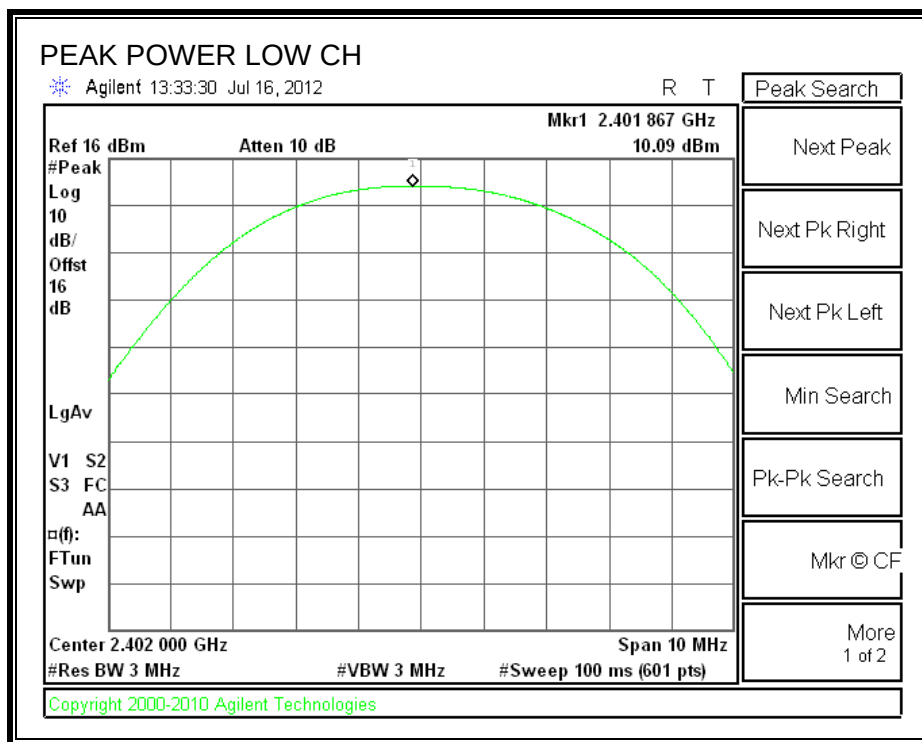
TEST PROCEDURE

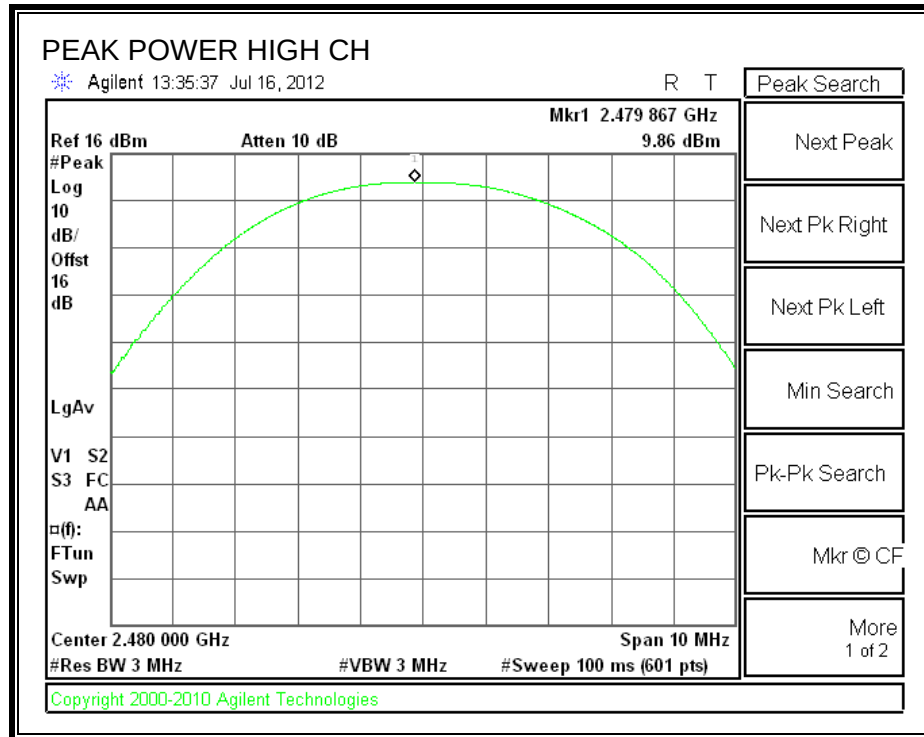
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.09	30.00	-19.91
Middle	2441	10.45	30.00	-19.55
High	2480	9.86	30.00	-20.14

OUTPUT POWER





7.1.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	9.40
Middle	2441	9.80
High	2480	9.20

7.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Limit = -20 dBc

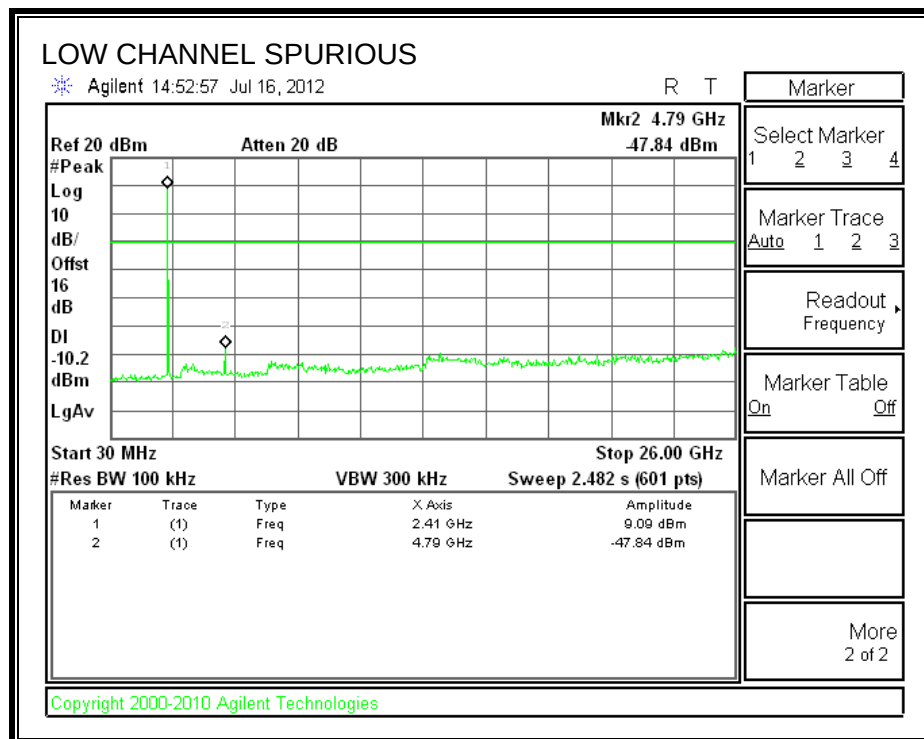
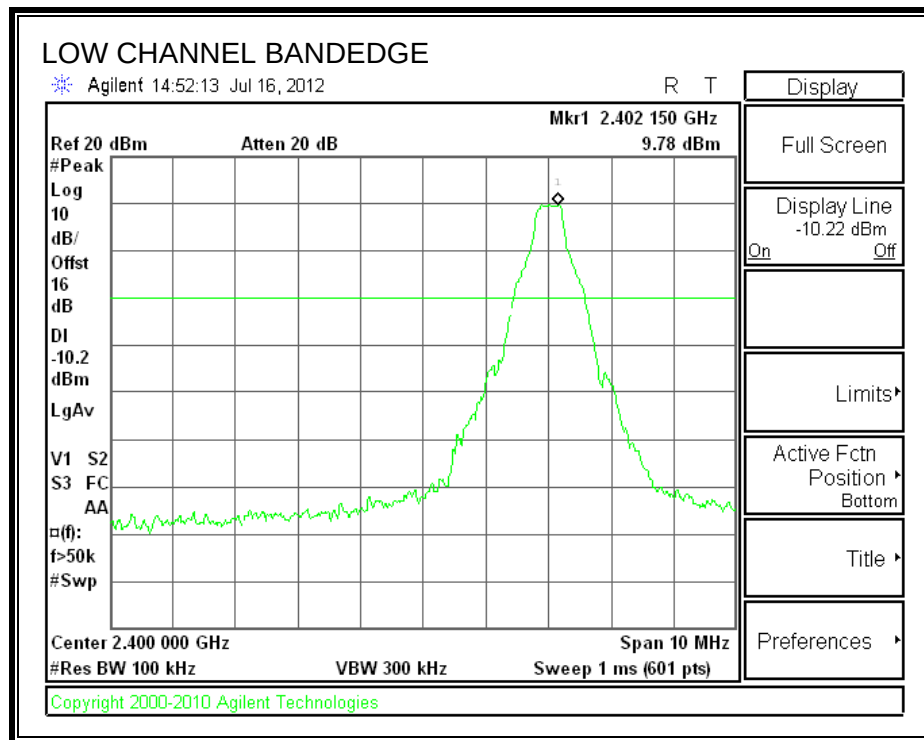
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

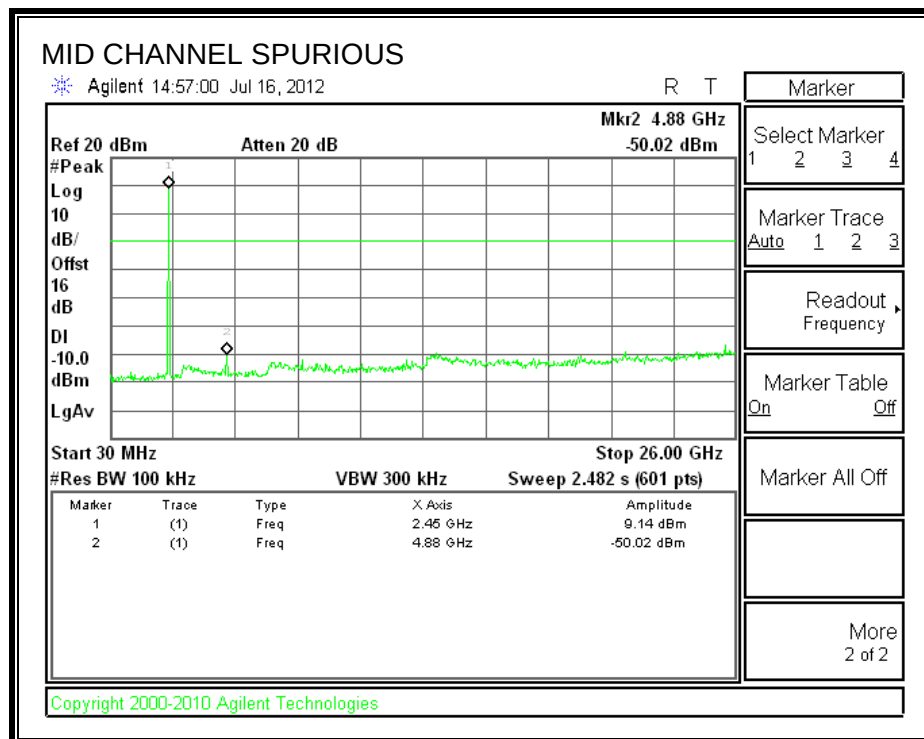
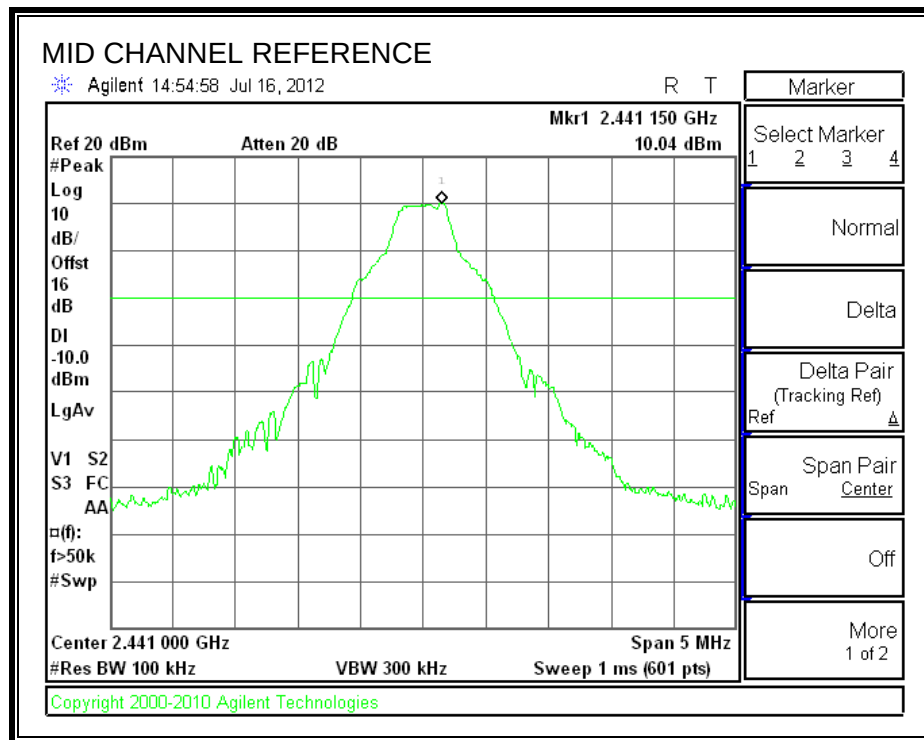
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The band edges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

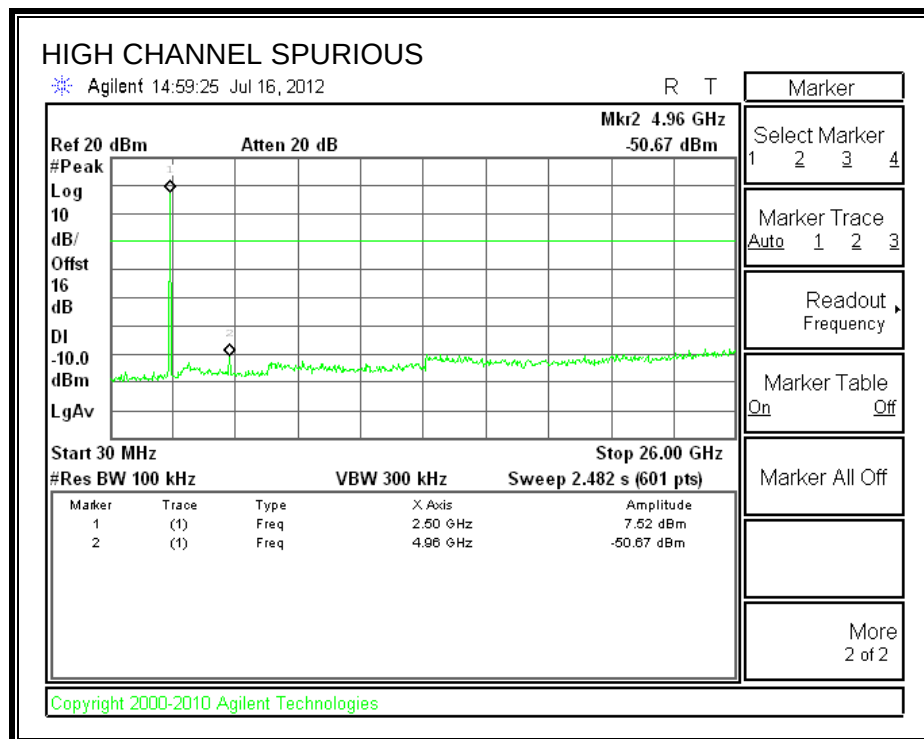
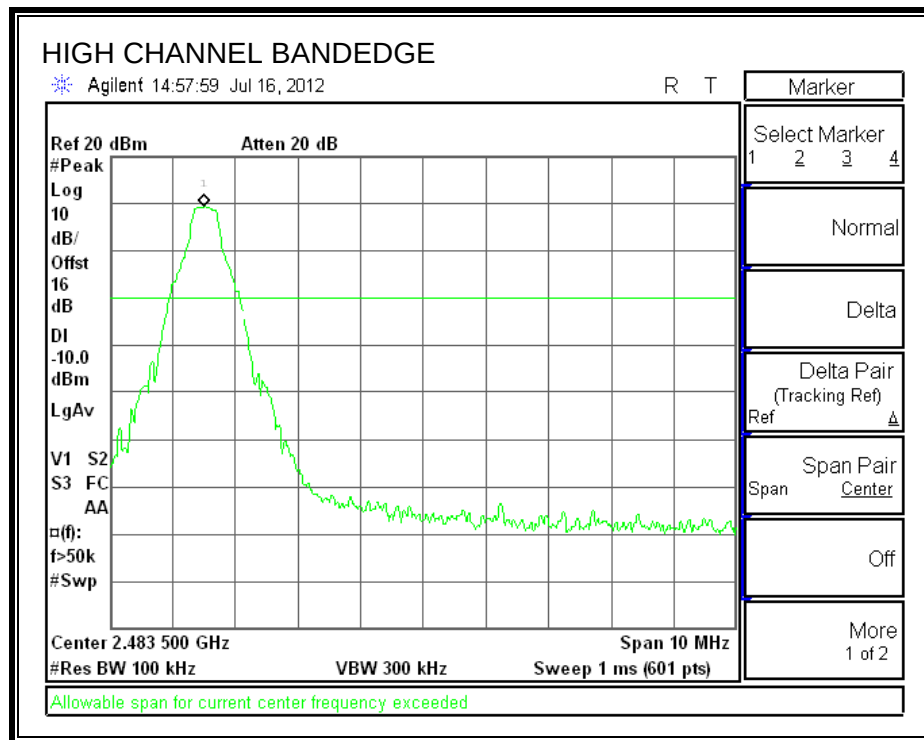
SPURIOUS EMISSIONS, LOW CHANNEL



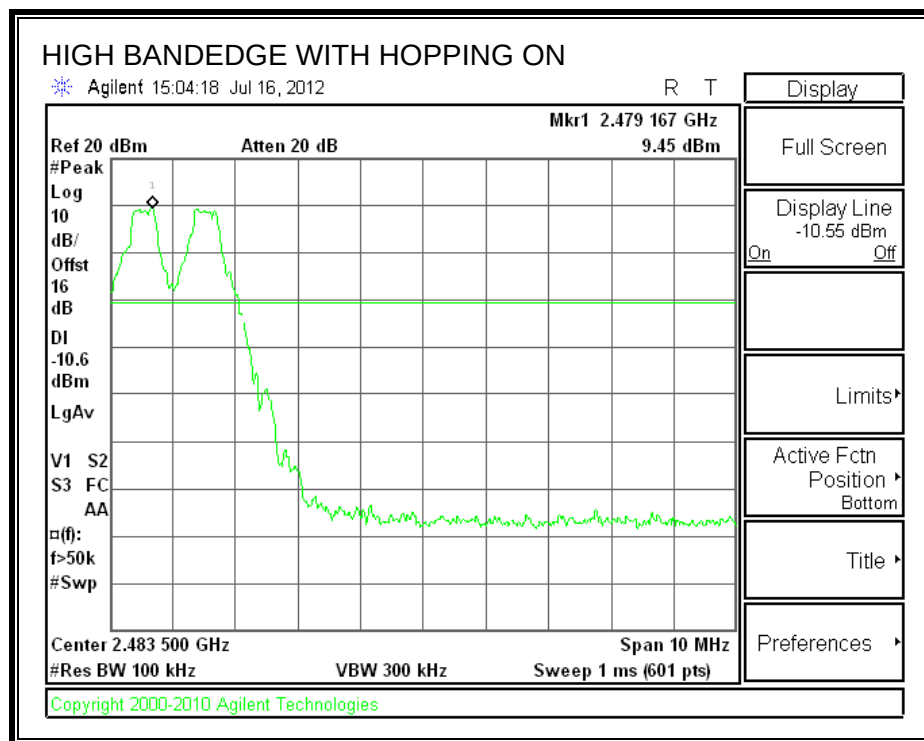
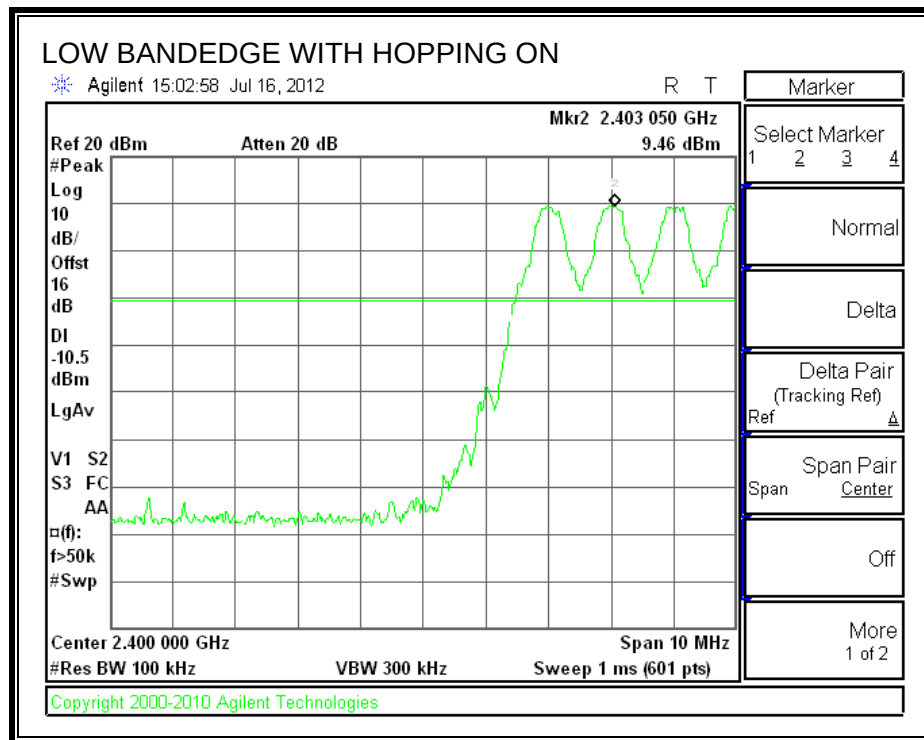
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



7.2. ENHANCED DATA RATE 8PSK MODULATION

7.2.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

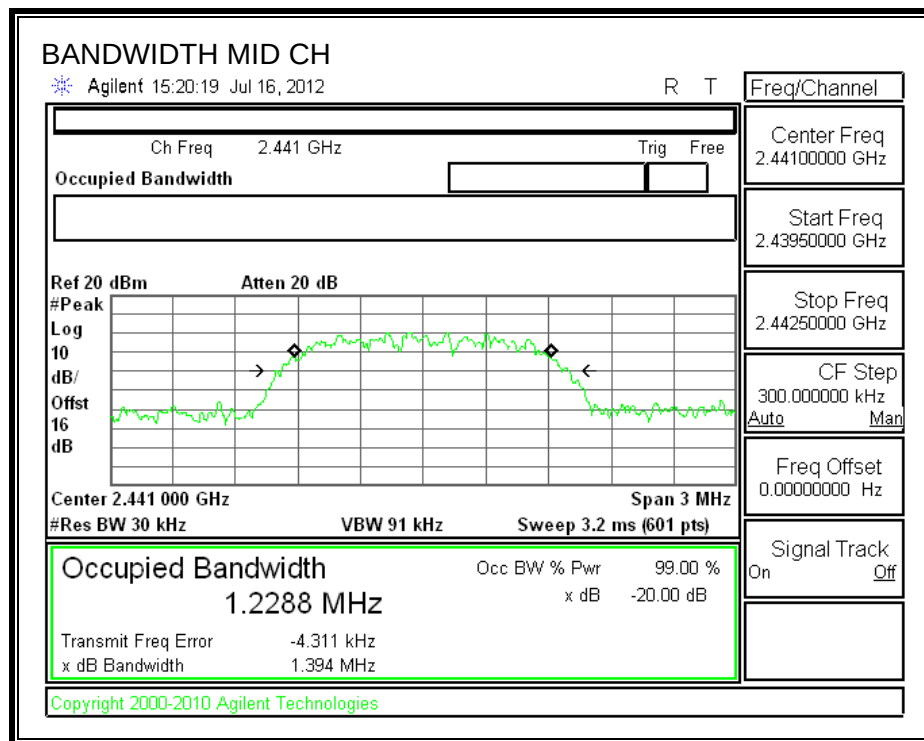
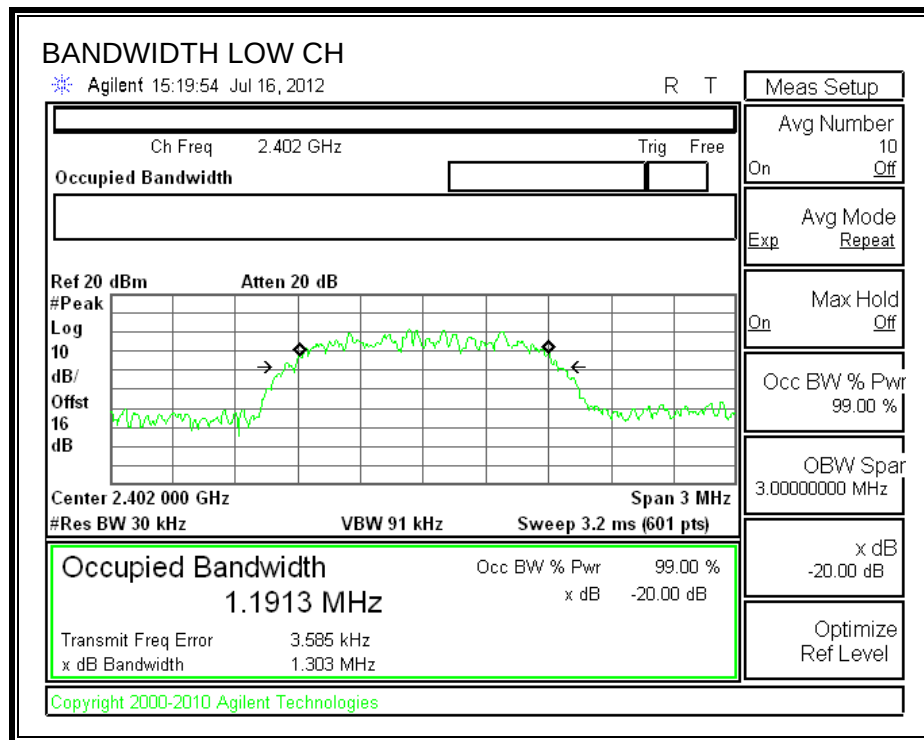
TEST PROCEDURE

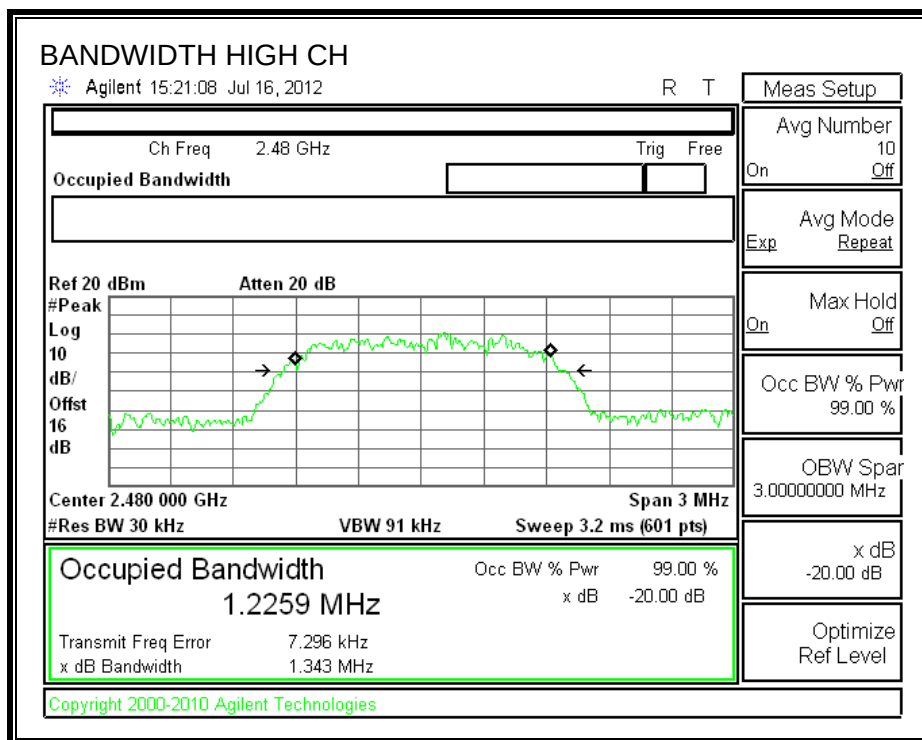
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	1.303
Middle	2441	1.394
High	2480	1.343

20 dB BANDWIDTH





7.2.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

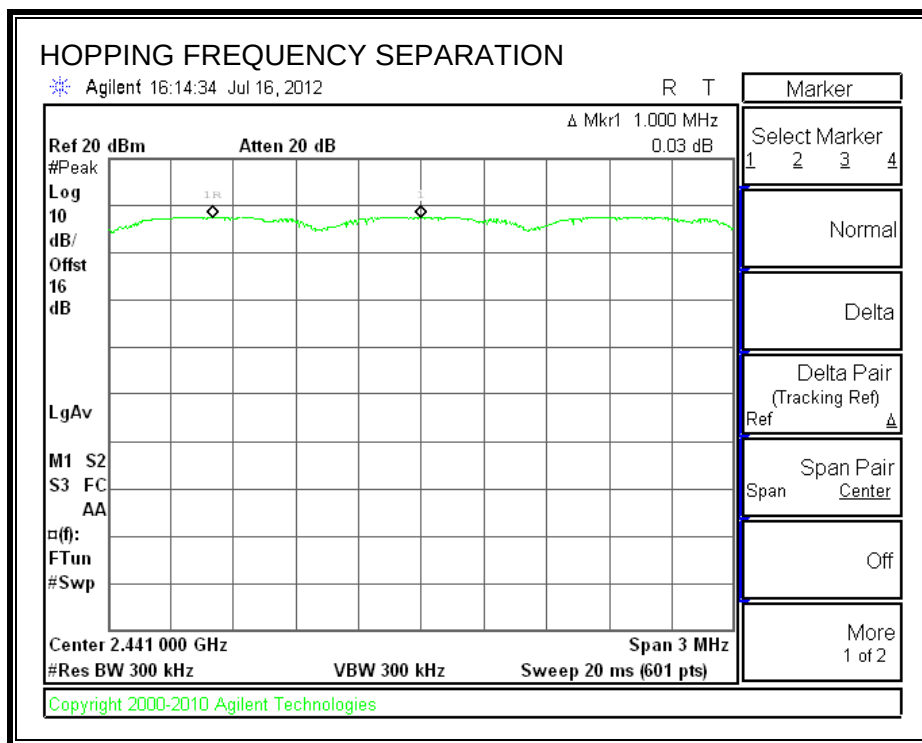
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

HOPPING FREQUENCY SEPARATION



7.2.3. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

TEST PROCEDURE

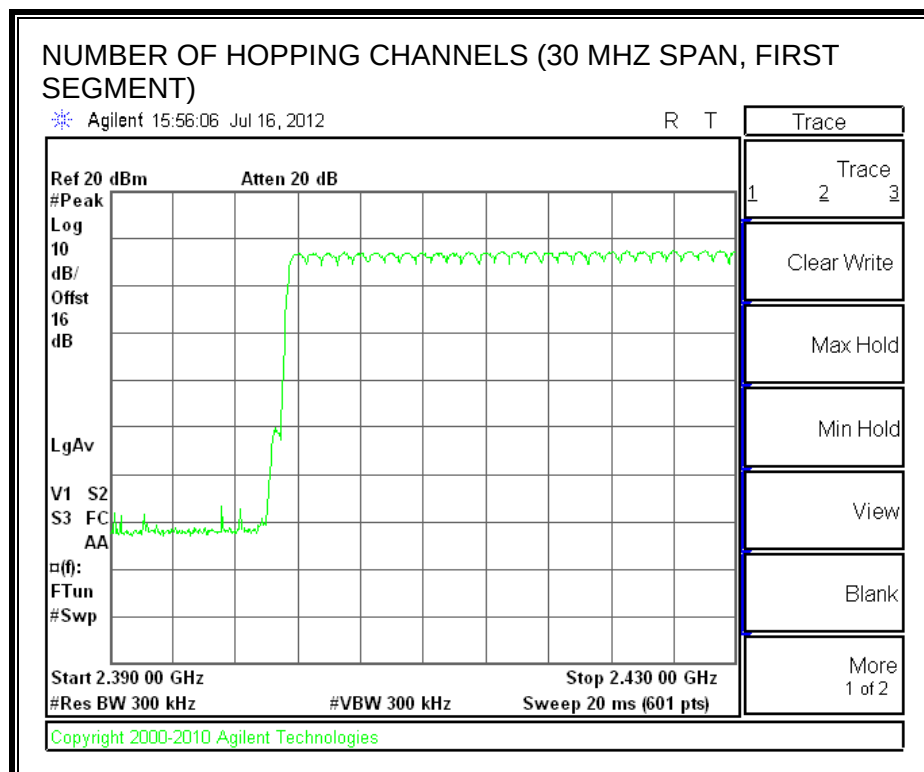
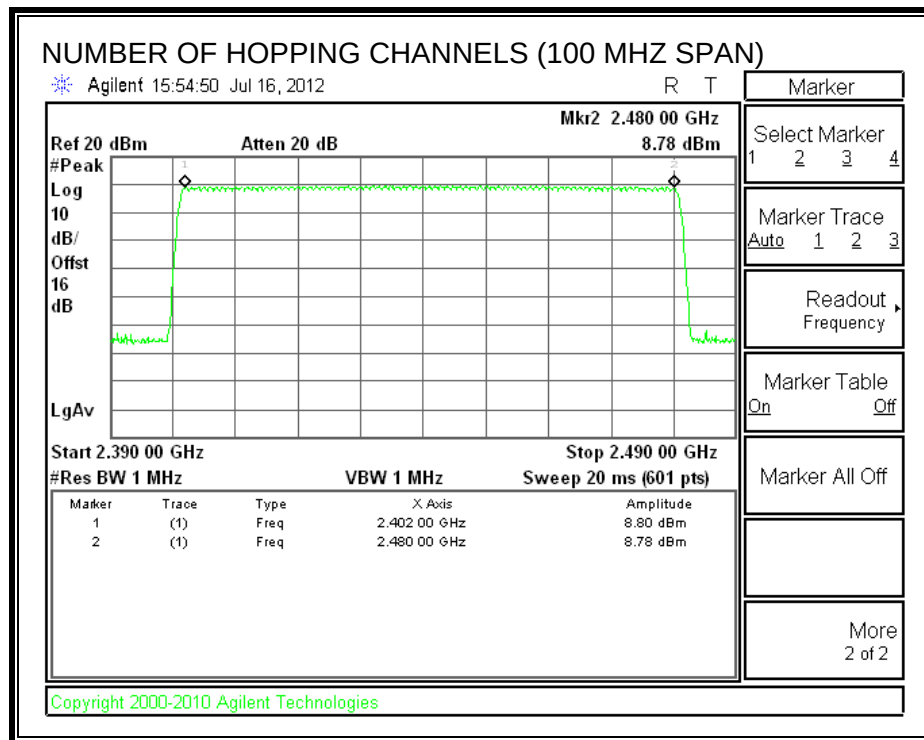
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

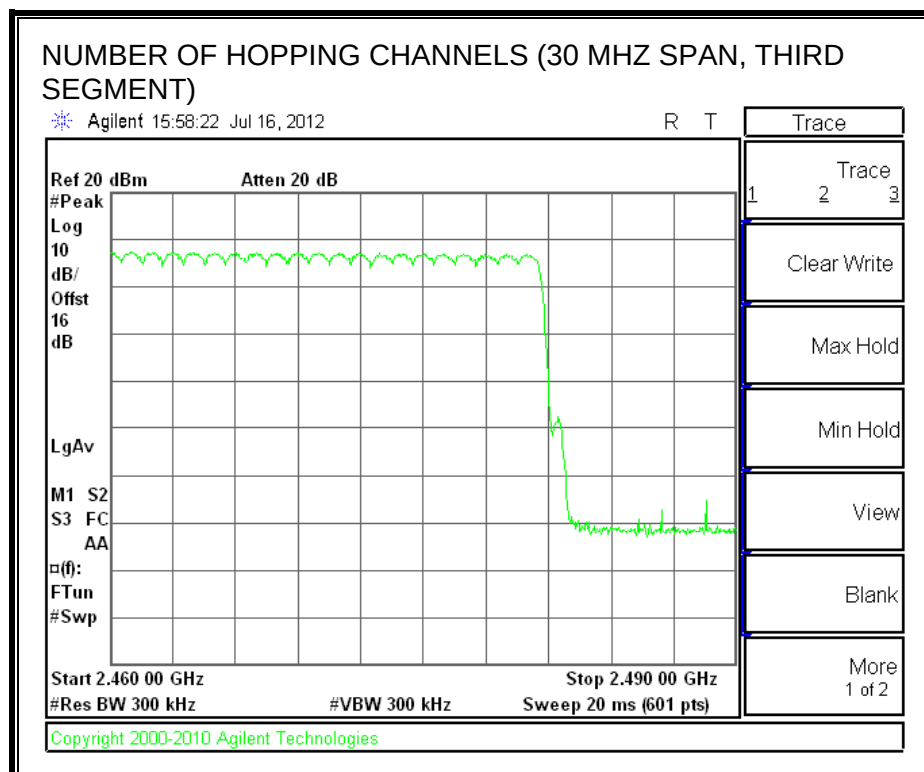
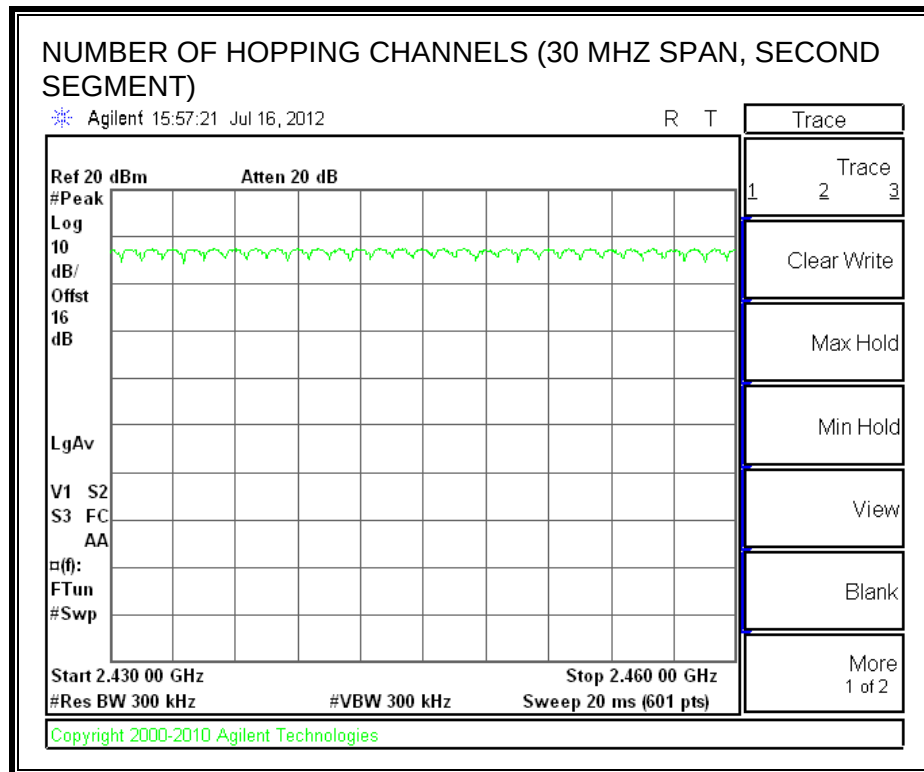
RESULTS

Normal mode: 79 Channels observed.

AFH mode: 20 channels as declared by the manufacturer.

NUMBER OF HOPPING CHANNELS (NORMAL MODE)





7.2.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

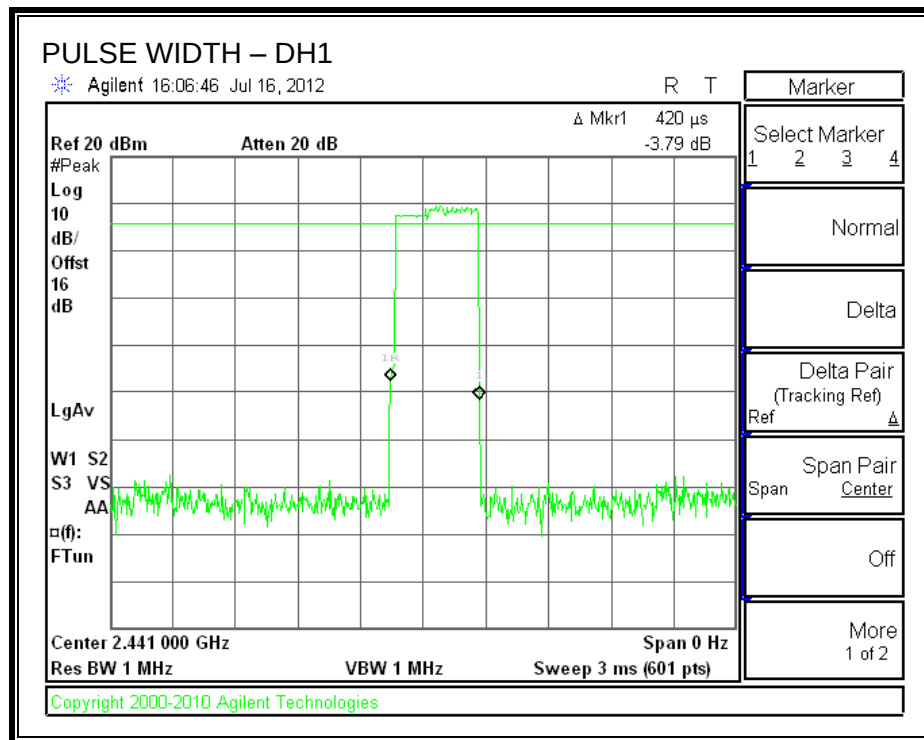
The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

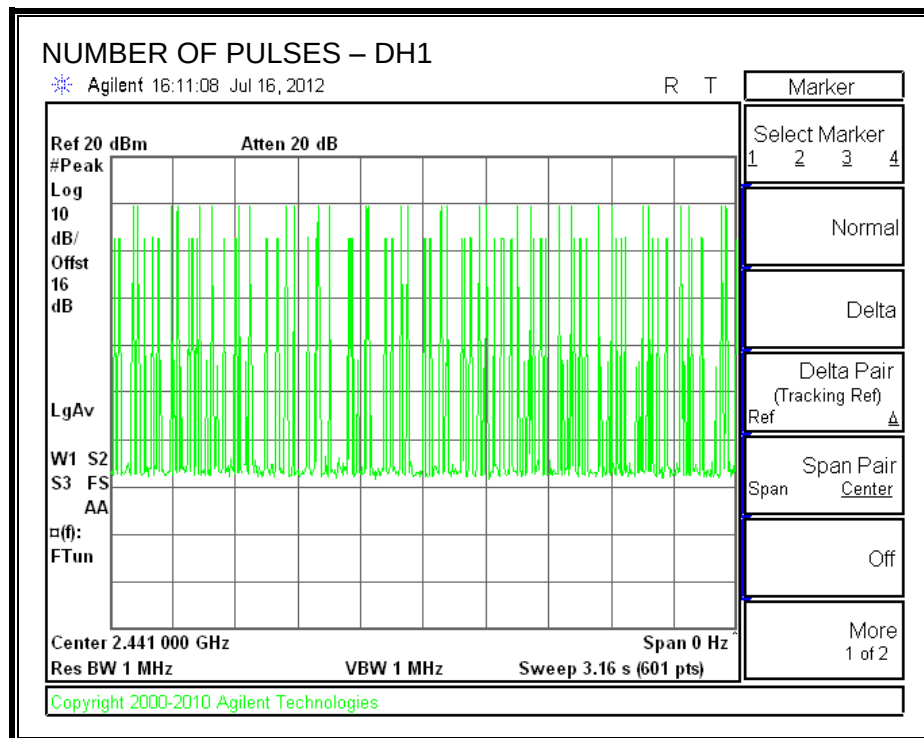
RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
DH1	0.420	32	0.134	0.4	-0.266
DH3	1.667	14	0.233	0.4	-0.167
DH5	2.933	10	0.293	0.4	-0.107

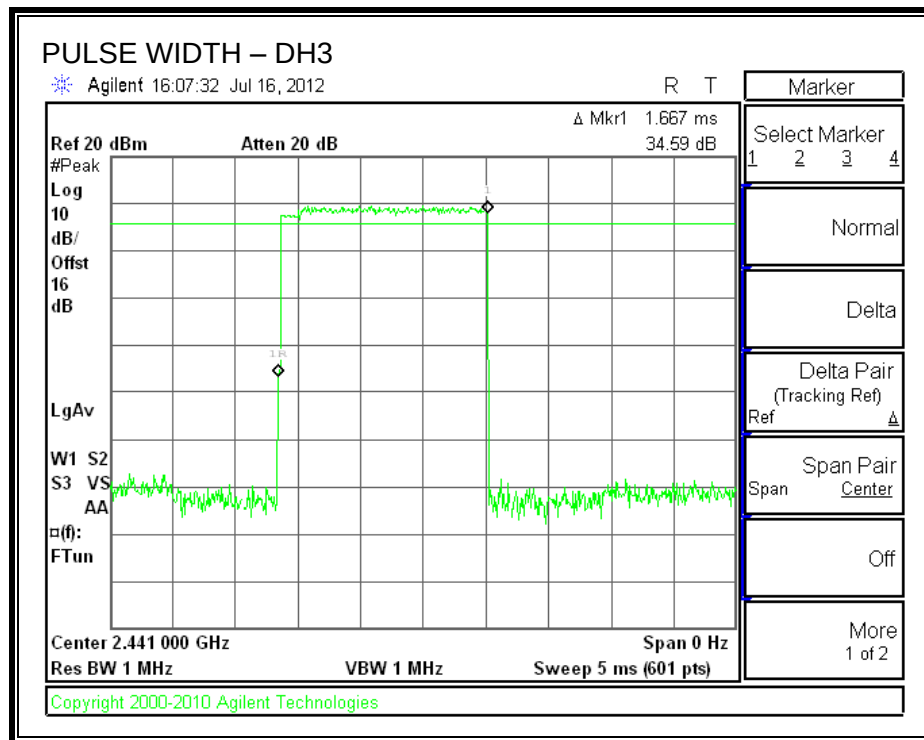
PULSE WIDTH - DH1



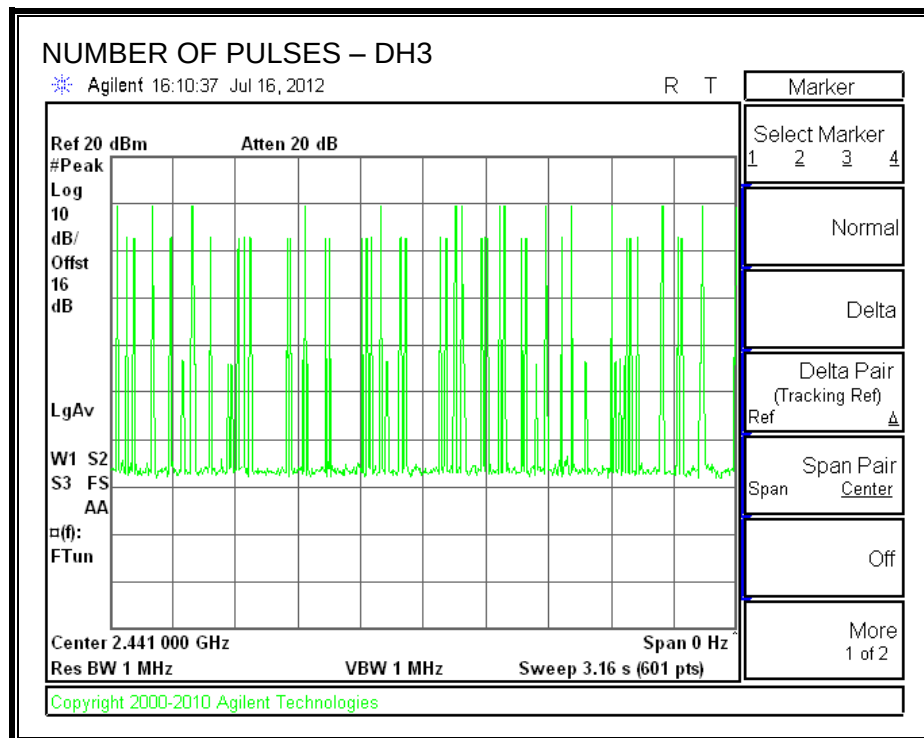
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD - DH1



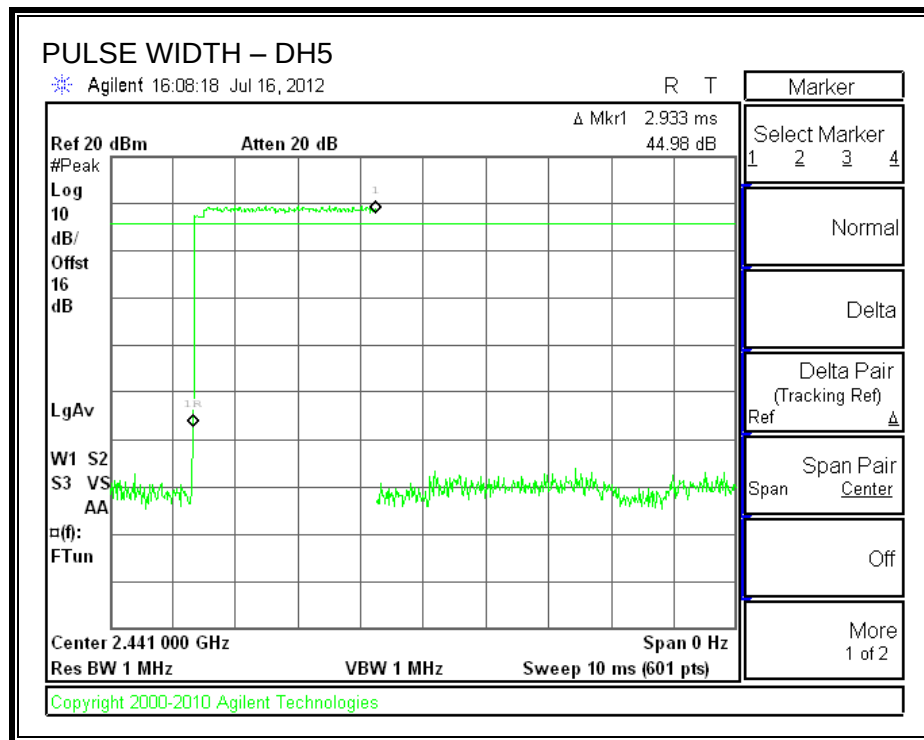
PULSE WIDTH – DH3



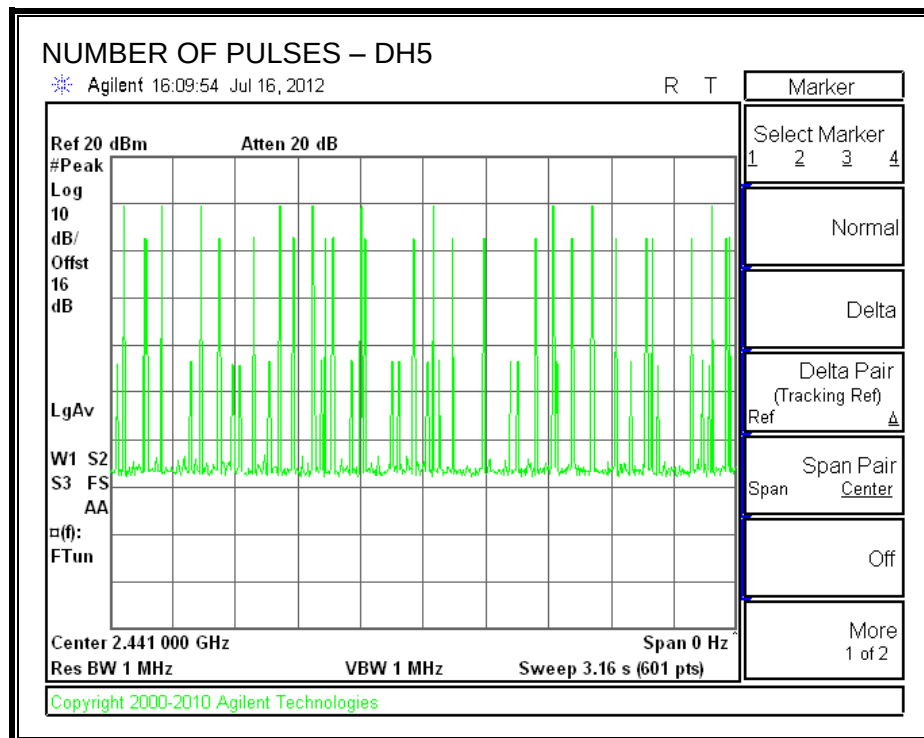
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



7.2.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.

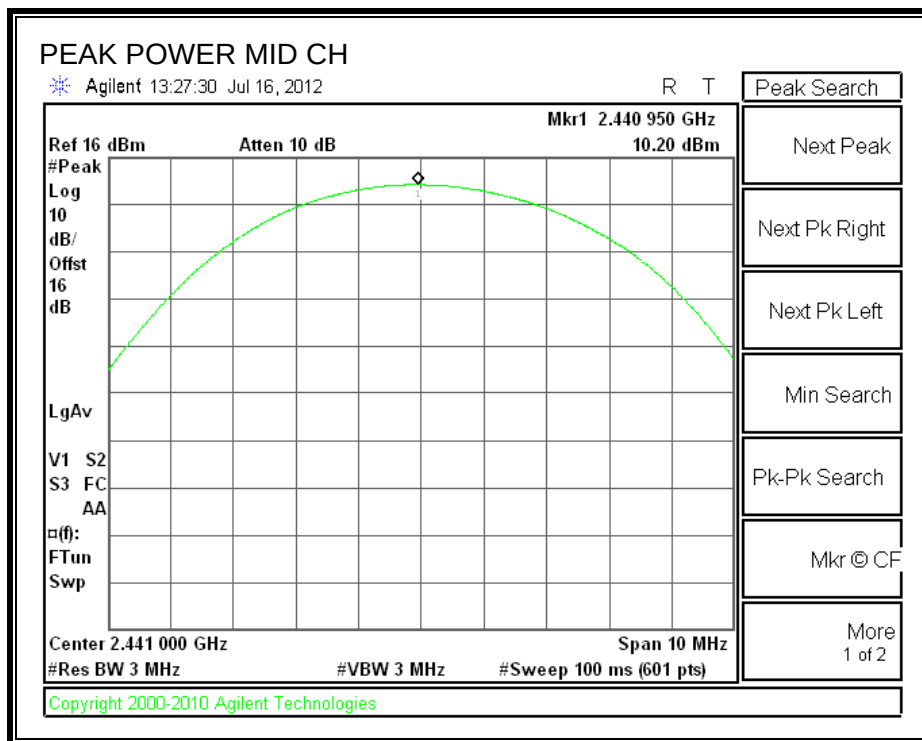
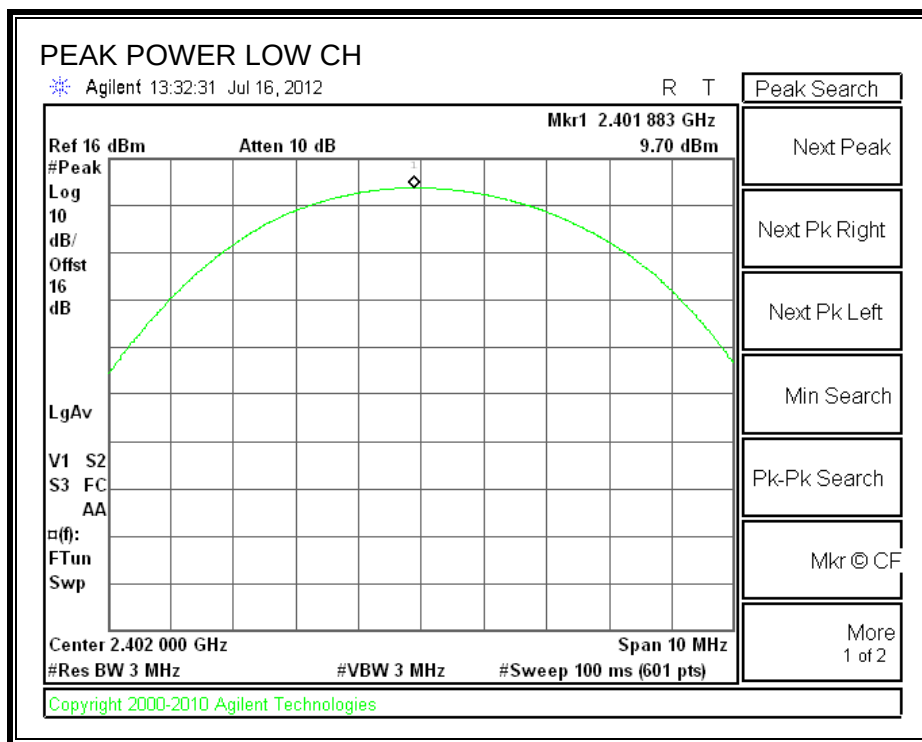
TEST PROCEDURE

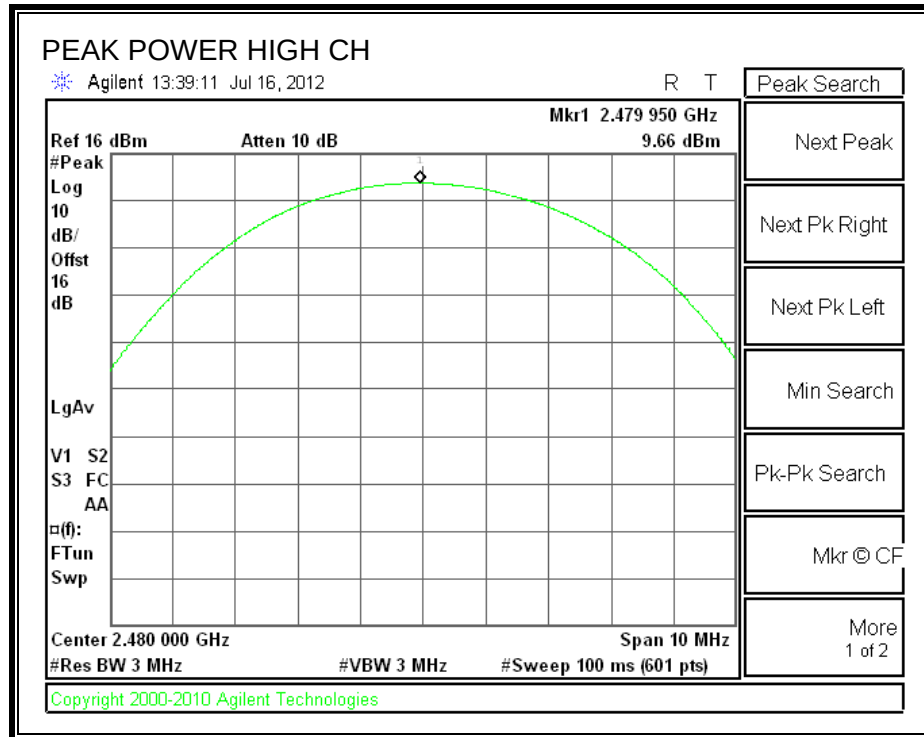
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.70	30.00	-20.30
Middle	2441	10.20	30.00	-19.80
High	2480	9.66	30.00	-20.34

OUTPUT POWER





7.2.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Frequency (MHz)	Average Power (dBm)
2402	6.50
2441	6.90
2480	6.30

7.2.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Limit = -20 dBc

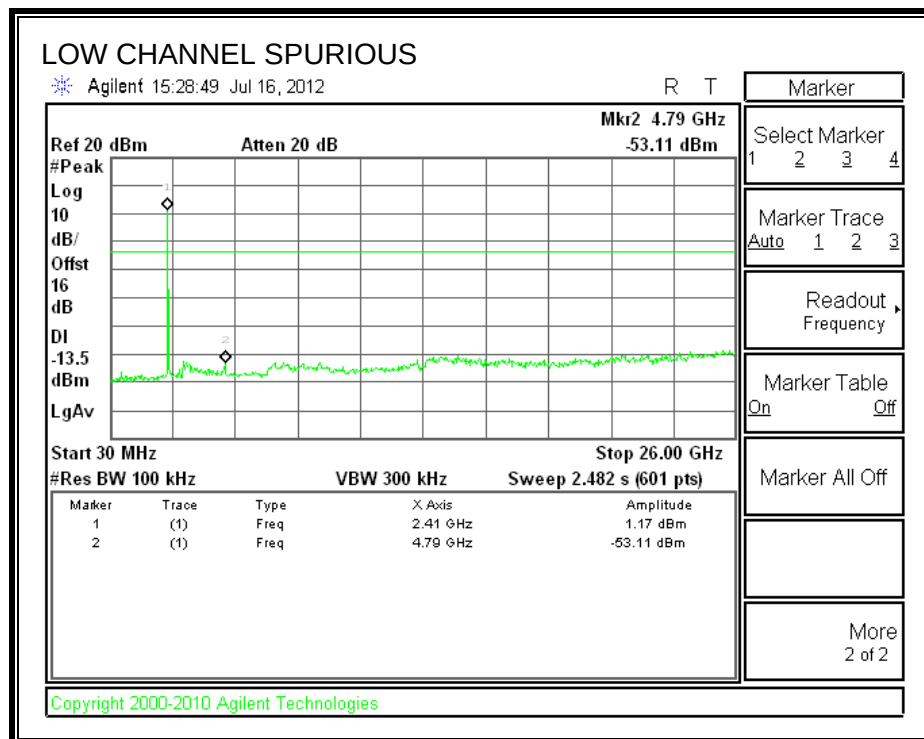
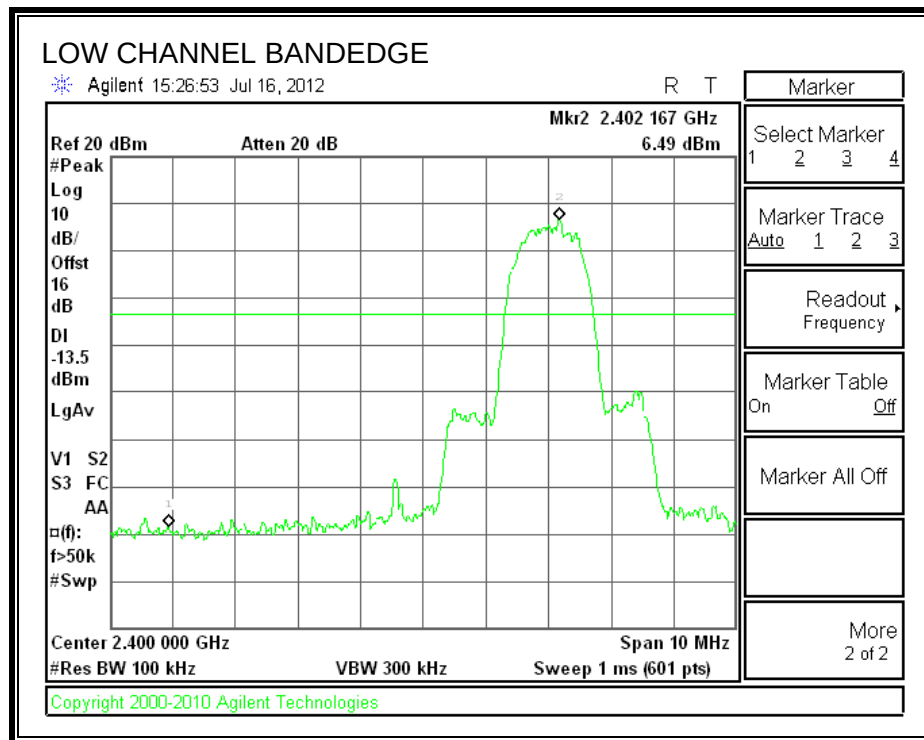
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

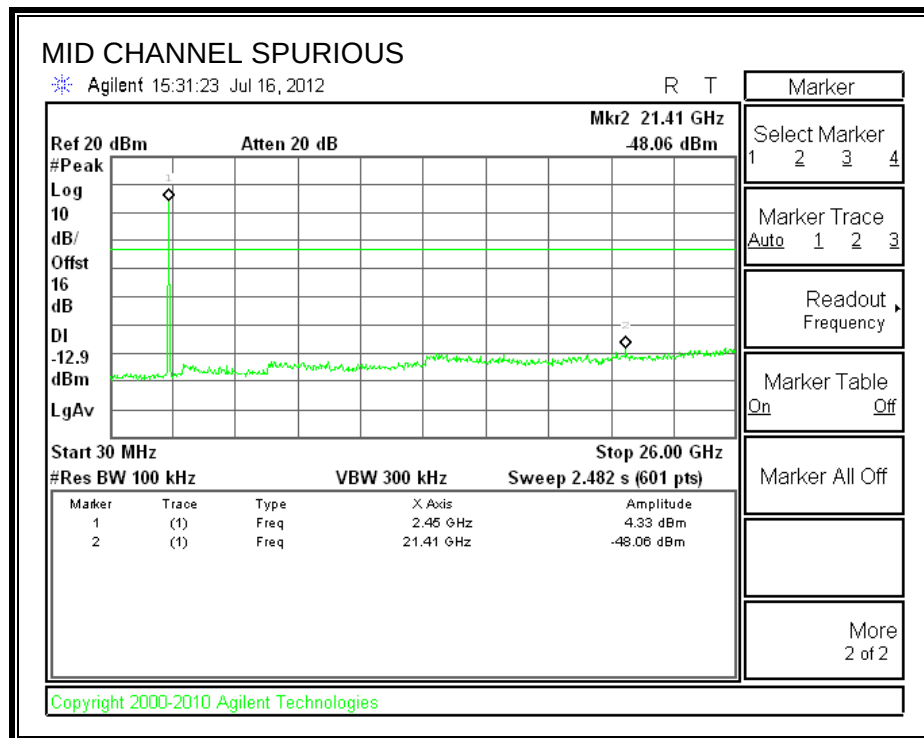
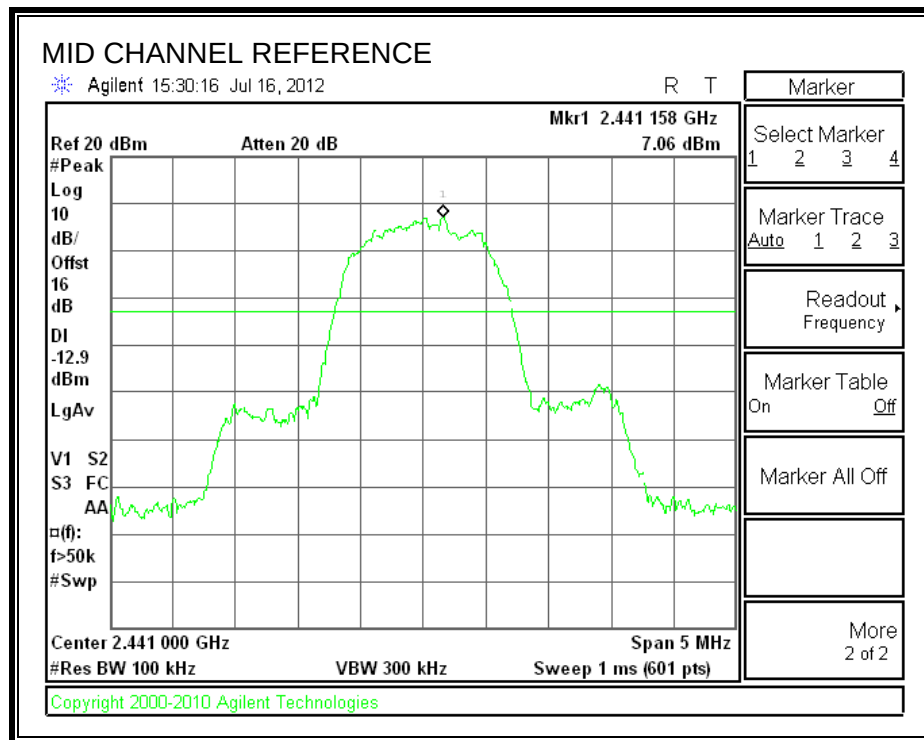
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

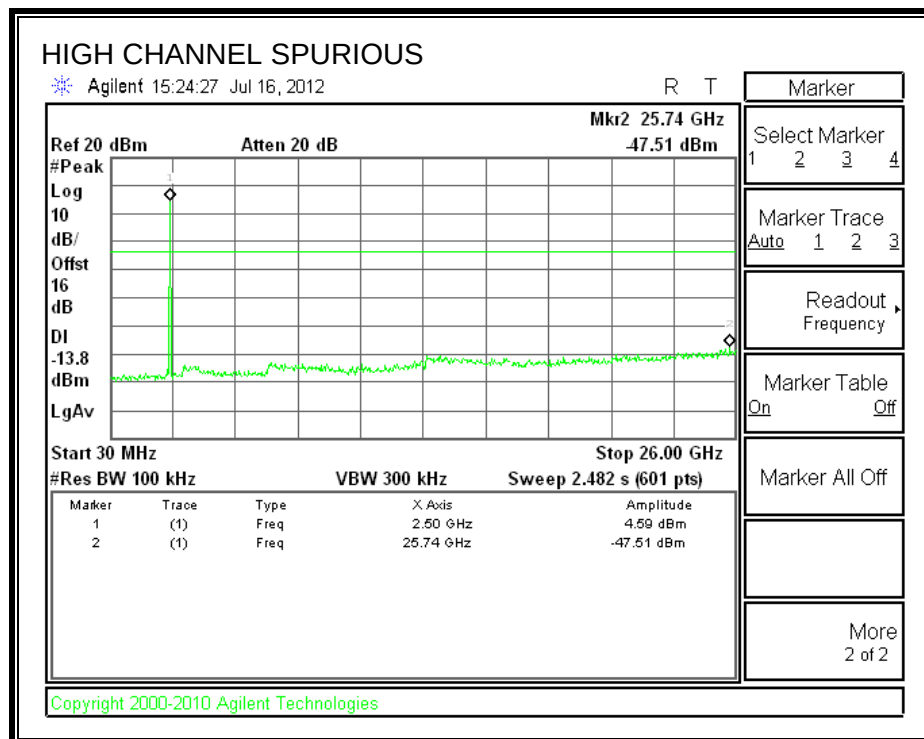
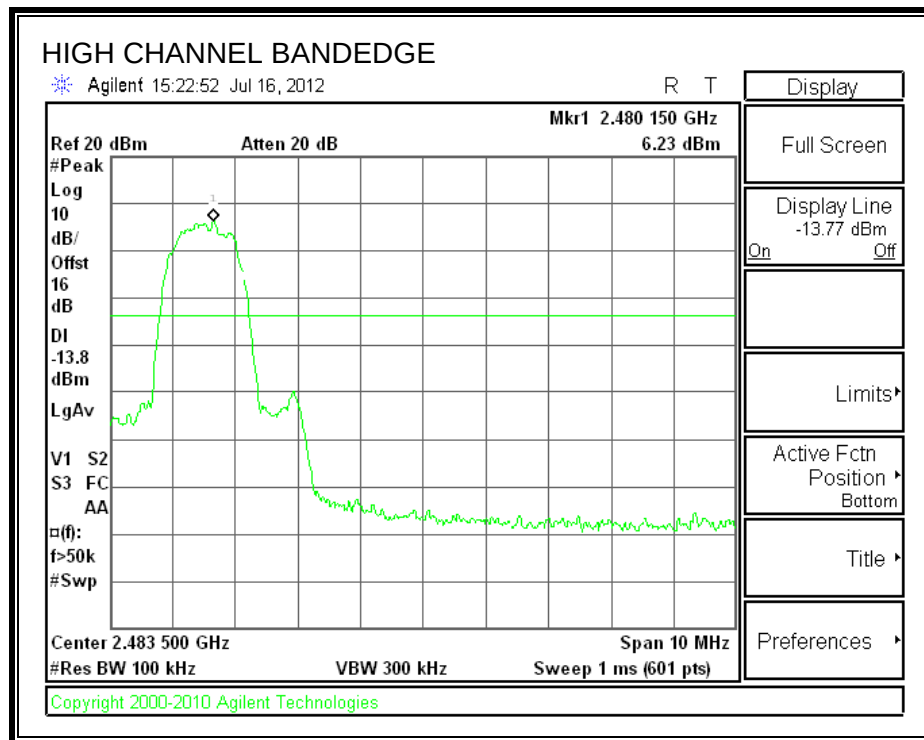
SPURIOUS EMISSIONS, LOW CHANNEL



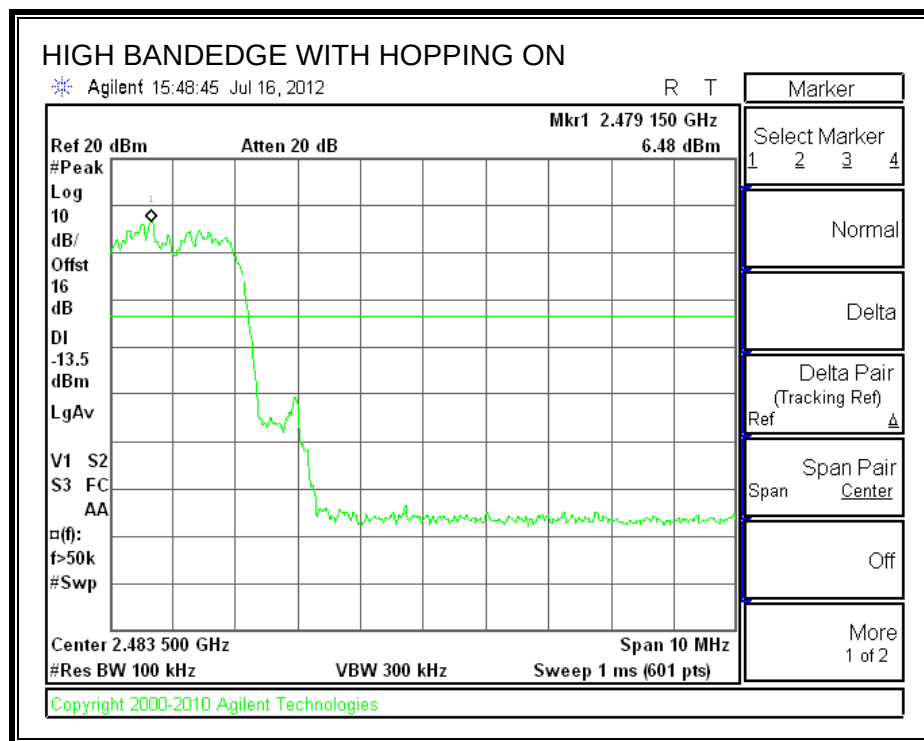
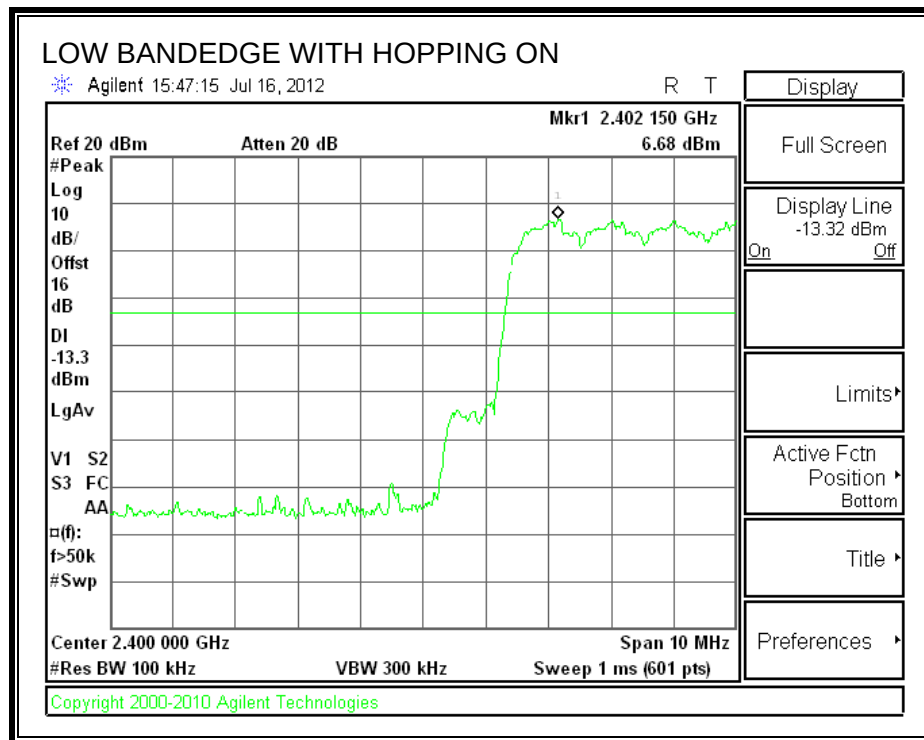
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

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

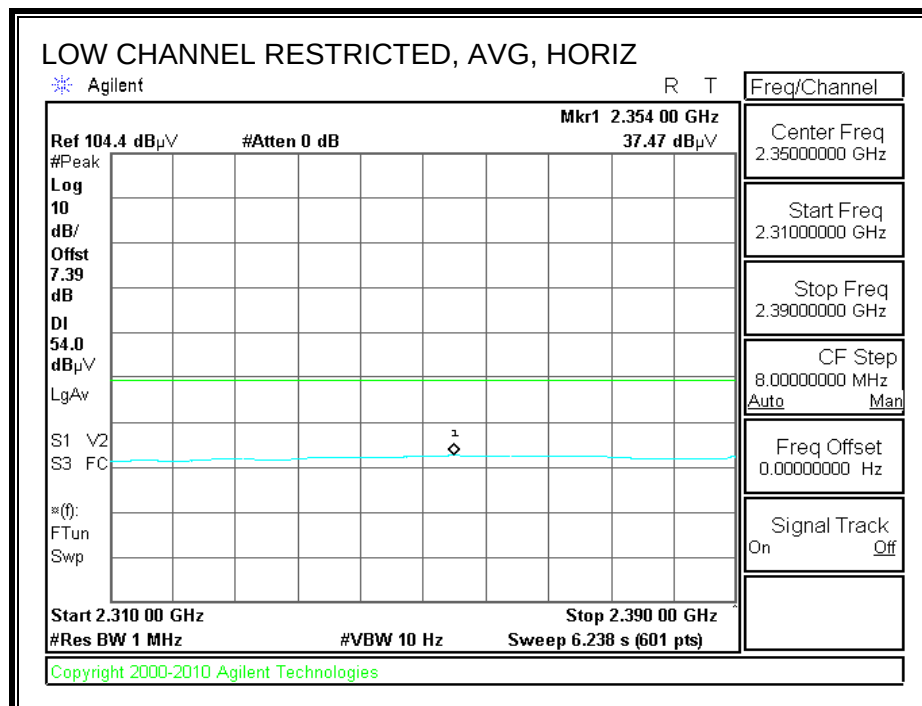
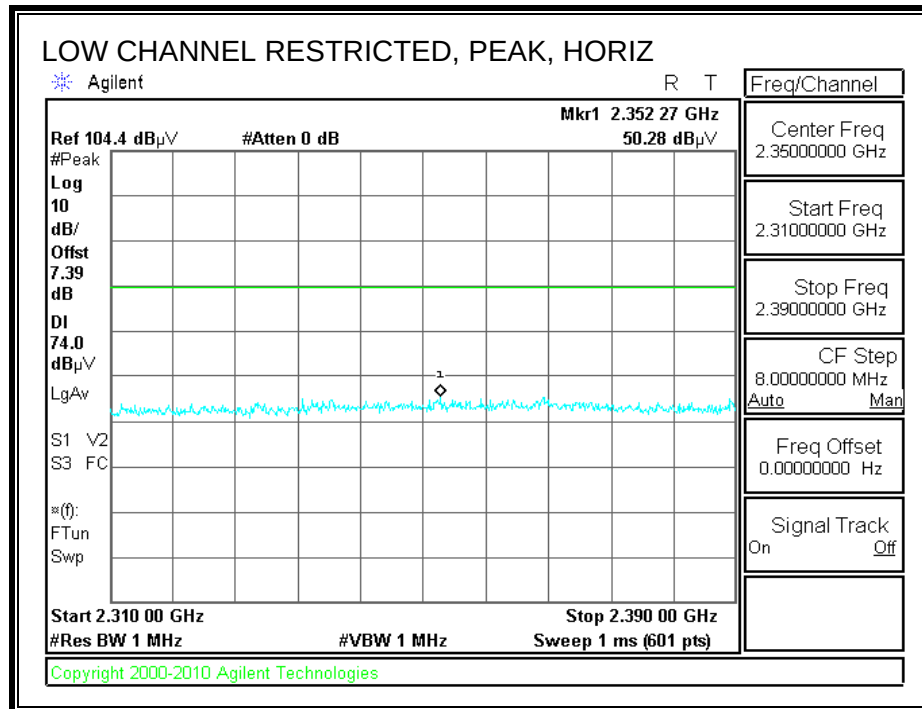
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The 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.

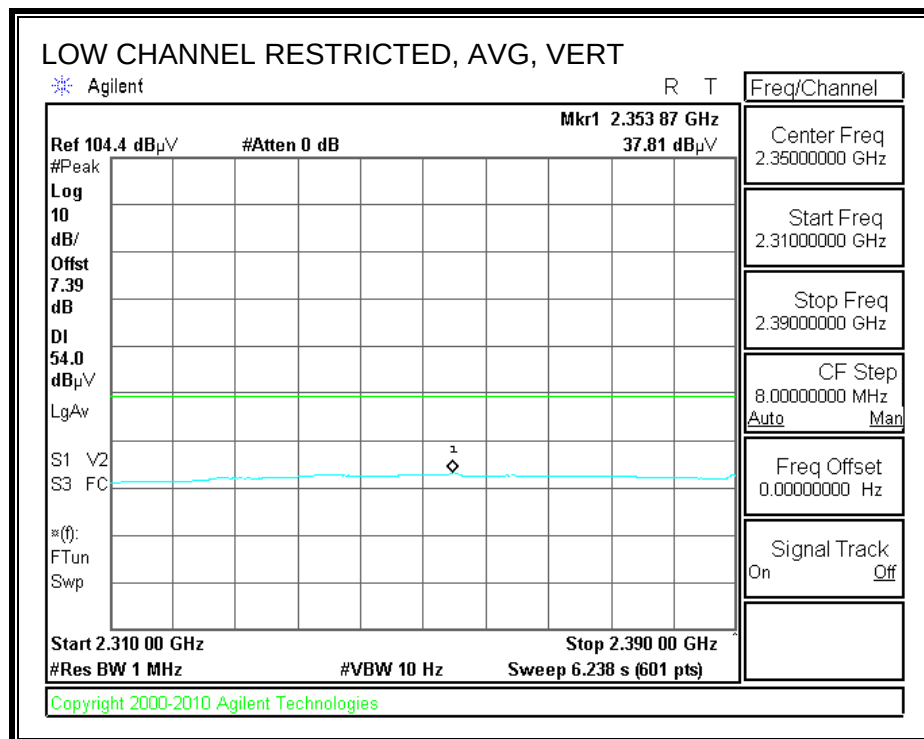
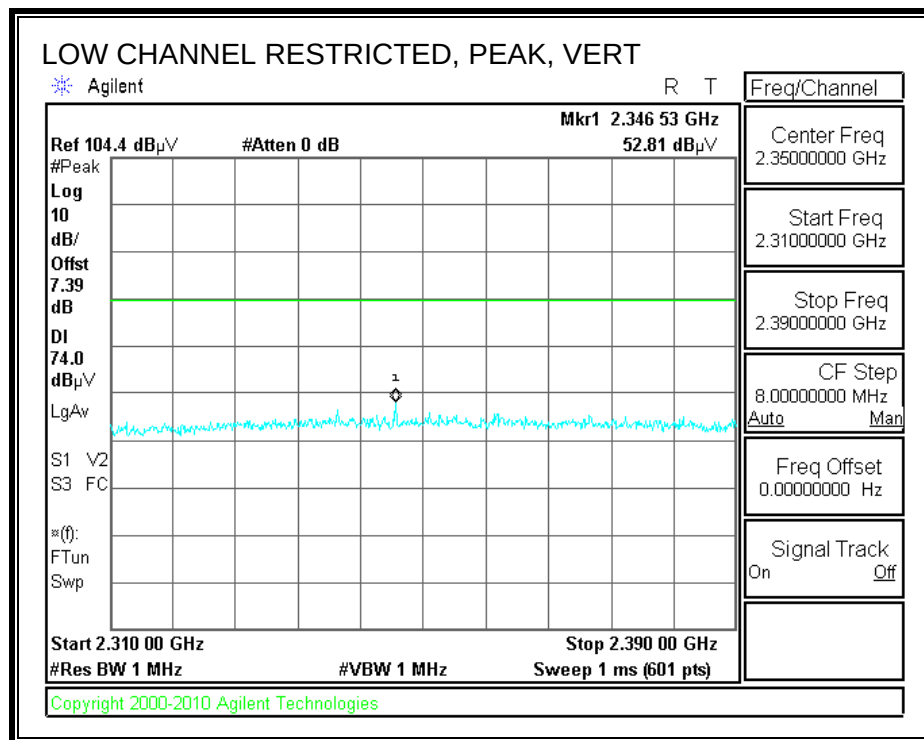
8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. BASIC DATA RATE GFSK MODULATION

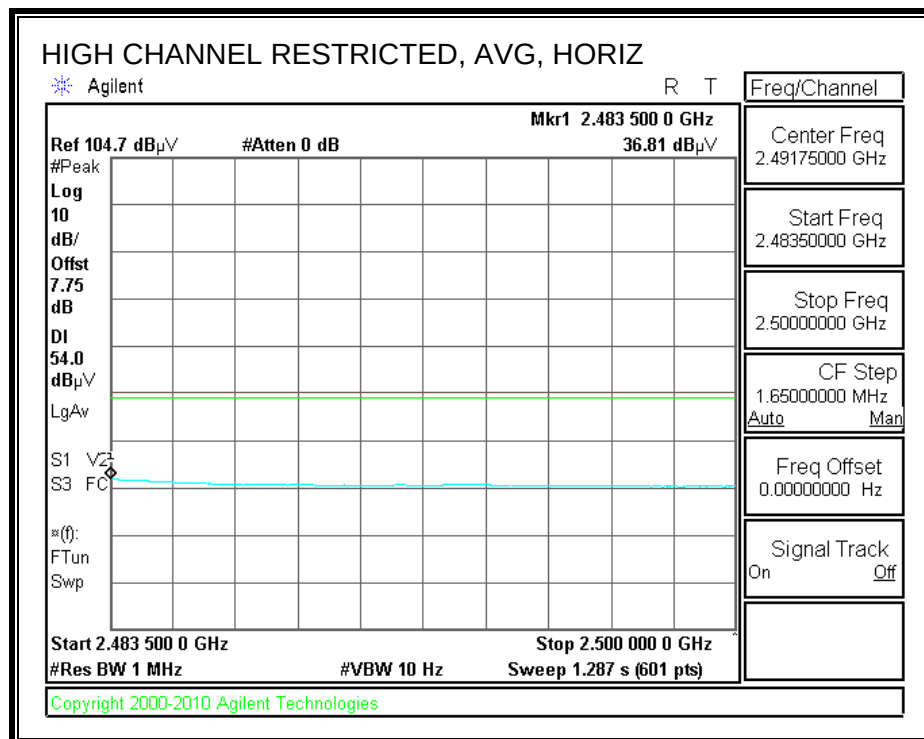
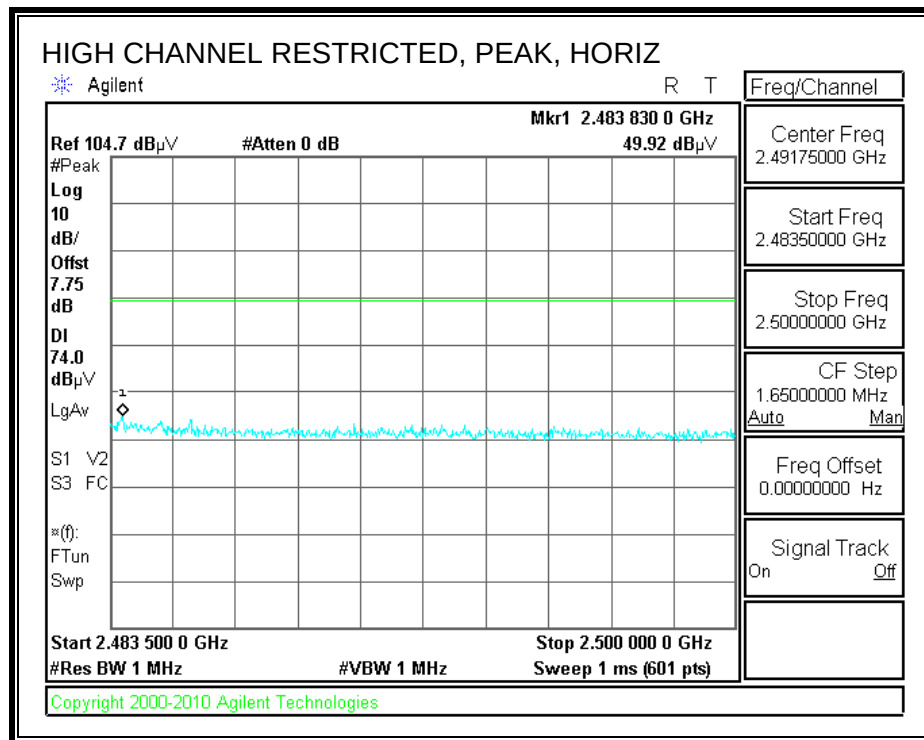
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



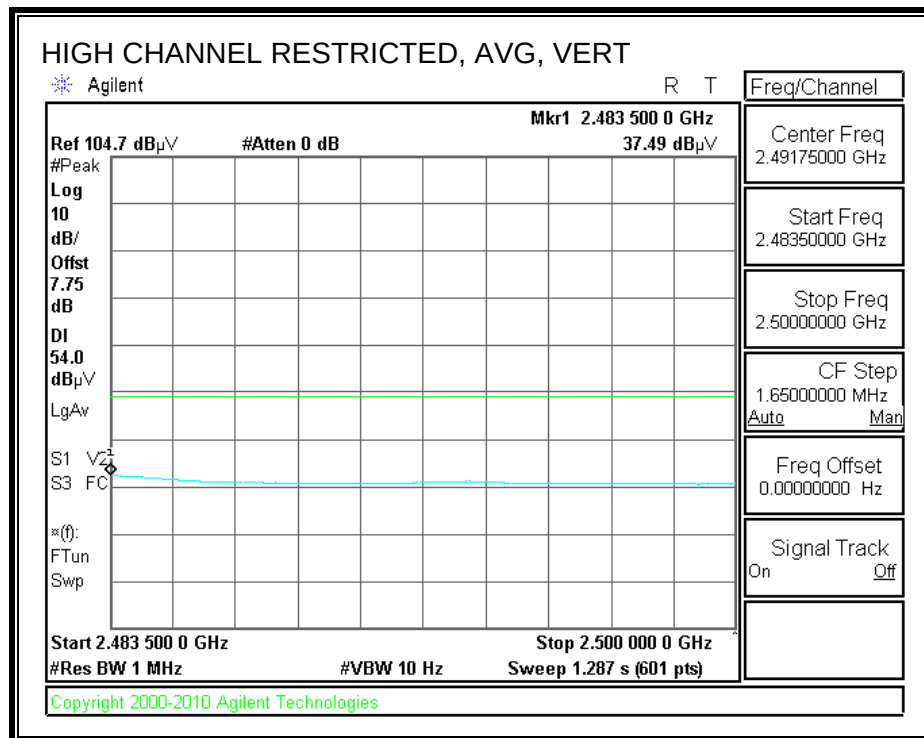
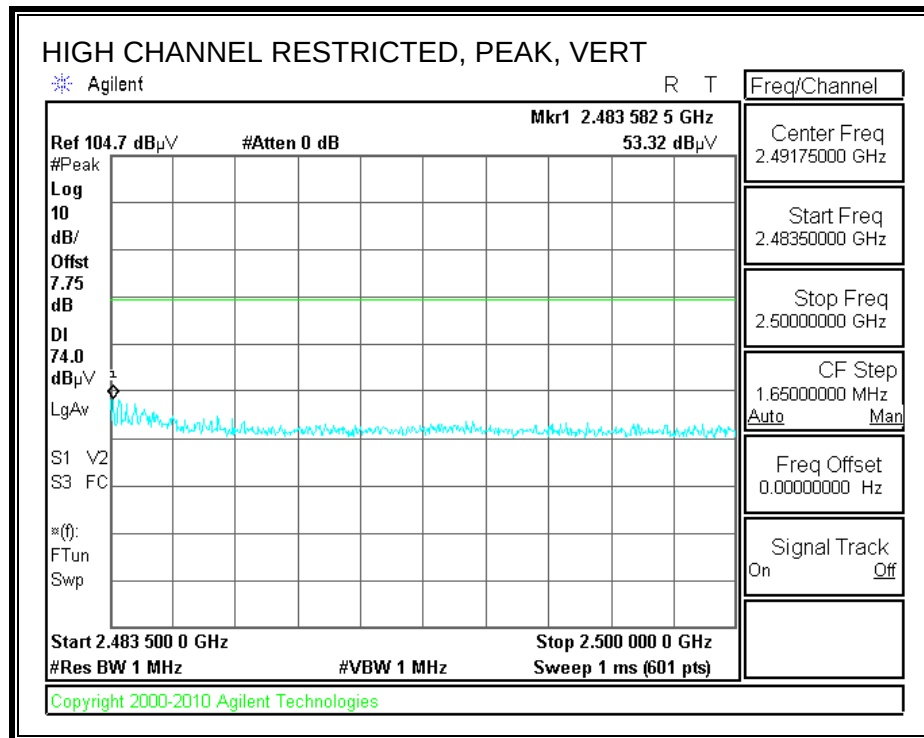
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 07/19/12
Project #: 12I14521
Company: Samsung
Test Target: FCC 15.247
Mode Oper: Tx GFSK Mode

f Measurement Frequency Amp Preamp Gain Average Field Strength Limit
Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit
Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit
AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit
CL Cable Loss HPF High Pass Filter

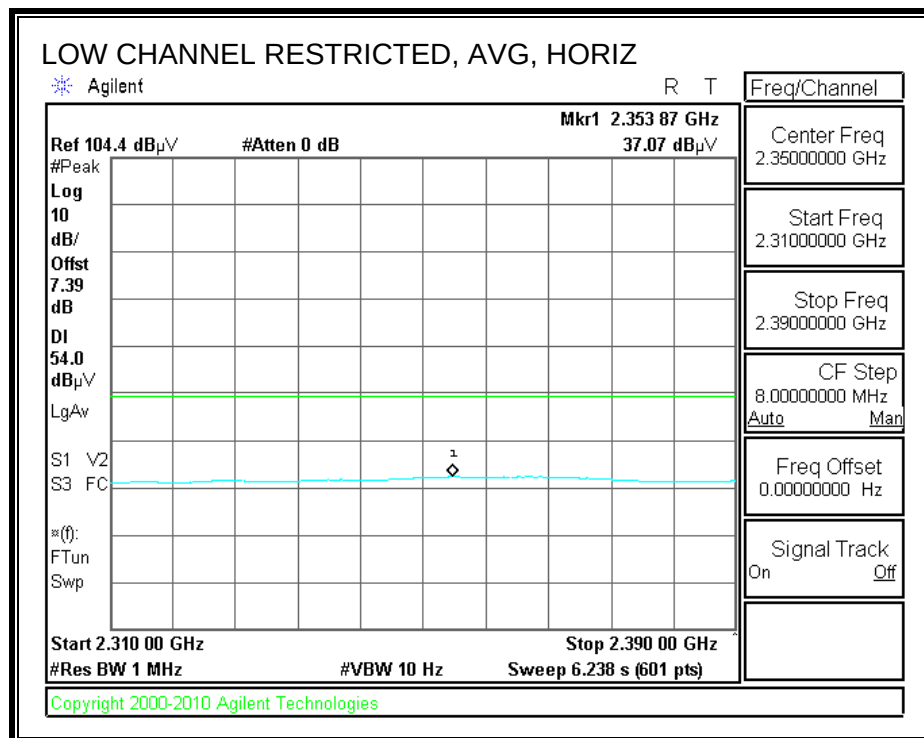
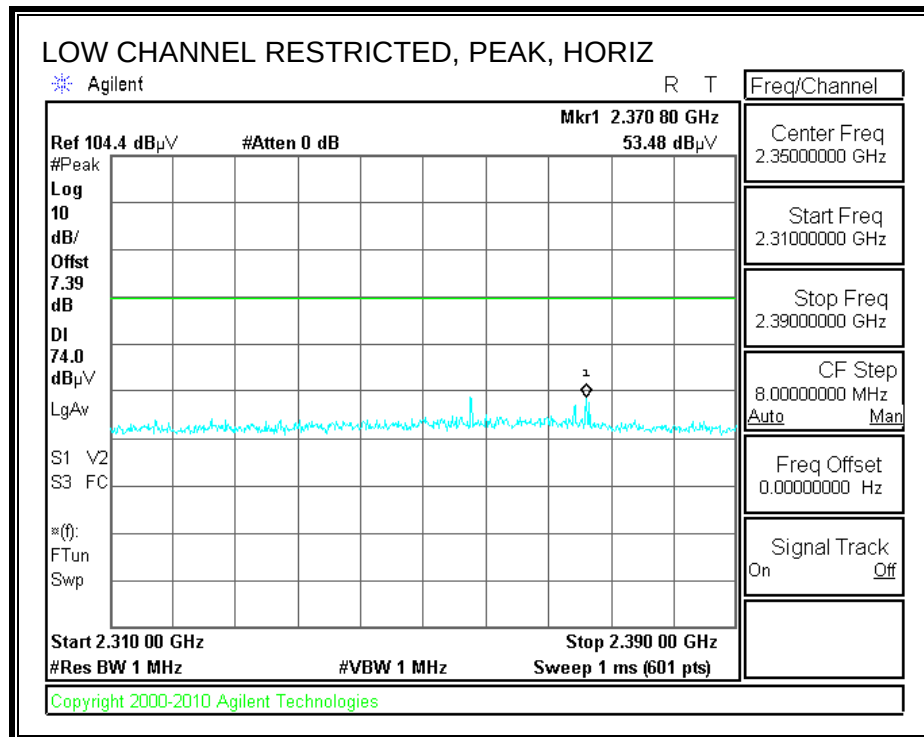
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2402MHz															
4.804	3.0	40.1	33.1	6.8	-34.1	0.0	0.0	45.9	74.0	-28.1	V	P	98.0	21.0	
4.804	3.0	30.1	33.1	6.8	-34.1	0.0	0.0	35.9	54.0	-18.1	V	A	98.0	21.0	
12.010	3.0	33.3	39.4	11.9	-32.5	0.0	0.0	52.1	74.0	-21.9	V	P	122.0	151.0	
12.010	3.0	21.2	39.4	11.9	-32.5	0.0	0.0	39.9	54.0	-14.1	V	A	122.0	151.0	
4.804	3.0	39.5	33.1	6.8	-34.1	0.0	0.0	45.3	74.0	-28.7	H	P	100.0	251.0	
4.804	3.0	31.8	33.1	6.8	-34.1	0.0	0.0	37.6	54.0	-16.4	H	A	100.0	251.0	
12.010	3.0	34.3	39.4	11.9	-32.5	0.0	0.0	53.1	74.0	-20.9	H	P	121.0	183.0	
12.010	3.0	21.3	39.4	11.9	-32.5	0.0	0.0	40.1	54.0	-13.9	H	A	121.0	183.0	
MID CHANNEL, 2441MHz															
4.882	3.0	38.0	33.2	6.8	-34.0	0.0	0.0	43.9	74.0	-30.1	V	P	100.0	344.0	
4.882	3.0	28.8	33.2	6.8	-34.0	0.0	0.0	34.7	54.0	-19.3	V	A	100.0	344.0	
7.323	3.0	38.4	36.3	9.1	-33.1	0.0	0.0	50.7	74.0	-23.3	V	P	183.0	207.0	
7.323	3.0	28.7	36.3	9.1	-33.1	0.0	0.0	41.0	54.0	-13.0	V	A	183.0	207.0	
4.882	3.0	36.9	33.2	6.8	-34.0	0.0	0.0	42.9	74.0	-31.1	H	P	100.0	121.0	
4.882	3.0	26.2	33.2	6.8	-34.0	0.0	0.0	32.1	54.0	-21.9	H	A	100.0	121.0	
7.323	3.0	37.5	36.3	9.1	-33.1	0.0	0.0	49.8	74.0	-24.2	H	P	151.0	36.0	
7.323	3.0	27.7	36.3	9.1	-33.1	0.0	0.0	40.0	54.0	-14.0	H	A	151.0	36.0	
HIGH CHANNEL, 2480MHz															
4.960	3.0	34.4	33.2	6.9	-34.0	0.0	0.0	40.5	74.0	-33.5	V	P	98.0	345.0	
4.960	3.0	24.0	33.2	6.9	-34.0	0.0	0.0	30.0	54.0	-24.0	V	A	98.0	345.0	
7.440	3.0	37.5	36.5	9.1	-33.0	0.0	0.0	50.1	74.0	-23.9	V	P	100.0	133.0	
7.440	3.0	26.9	36.5	9.1	-33.0	0.0	0.0	39.5	54.0	-14.5	V	A	100.0	133.0	
4.960	3.0	35.4	33.2	6.9	-34.0	0.0	0.0	41.5	74.0	-32.5	H	P	106.0	220.0	
4.960	3.0	24.6	33.2	6.9	-34.0	0.0	0.0	30.7	54.0	-23.3	H	A	106.0	220.0	
7.440	3.0	35.3	36.5	9.1	-33.0	0.0	0.0	47.8	74.0	-26.2	H	P	98.0	106.0	
7.440	3.0	25.1	36.5	9.1	-33.0	0.0	0.0	37.6	54.0	-16.4	H	A	98.0	106.0	

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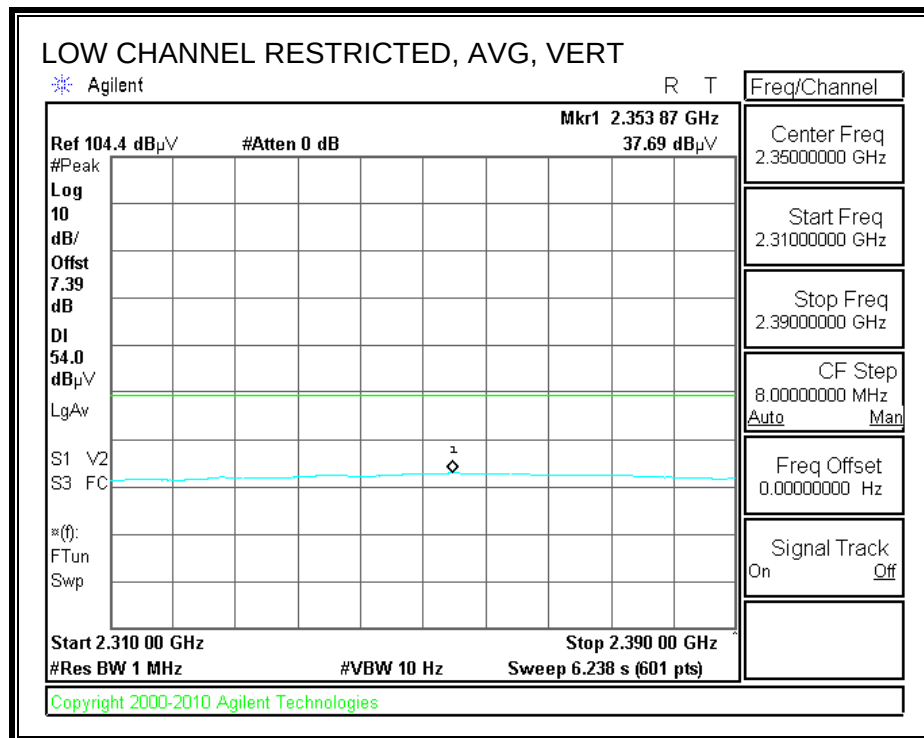
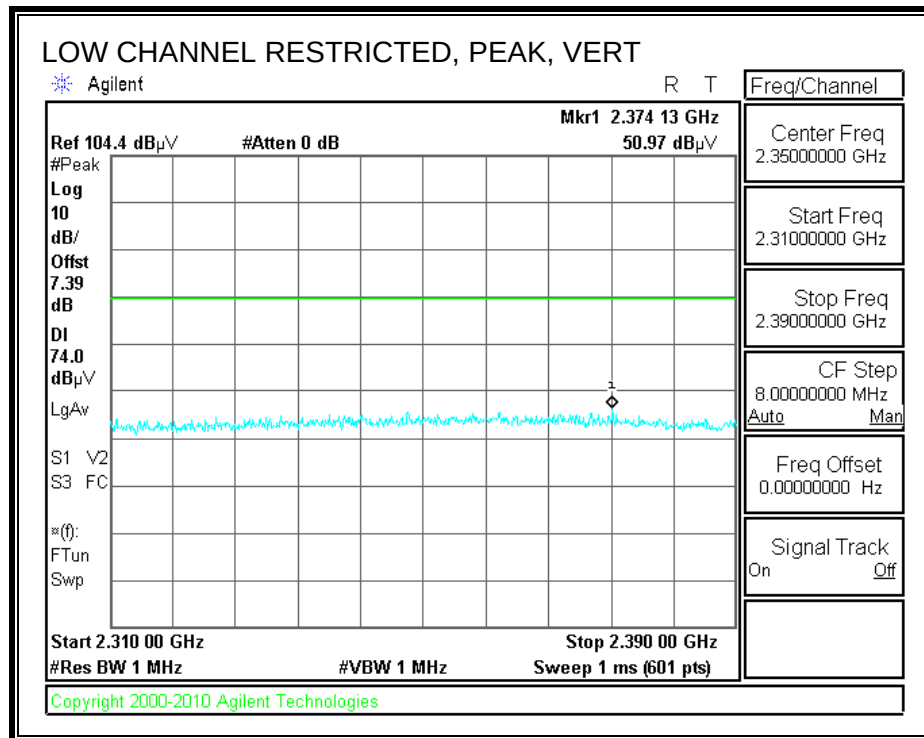
Note: No other emissions were detected above the system noise floor.

8.2.2. ENHANCED DATA RATE 8PSK MODULATION

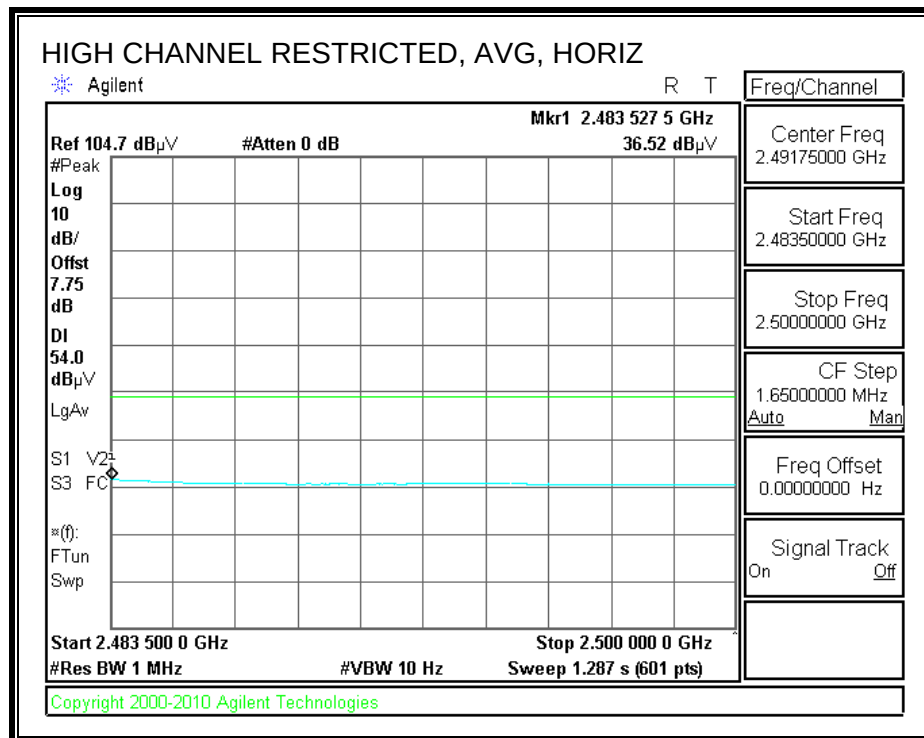
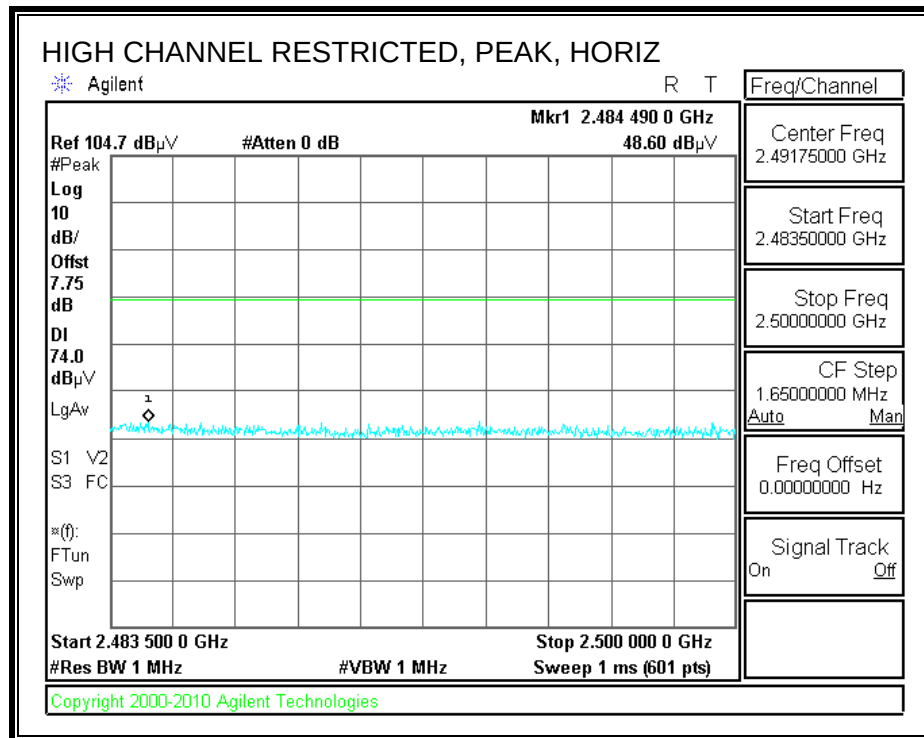
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



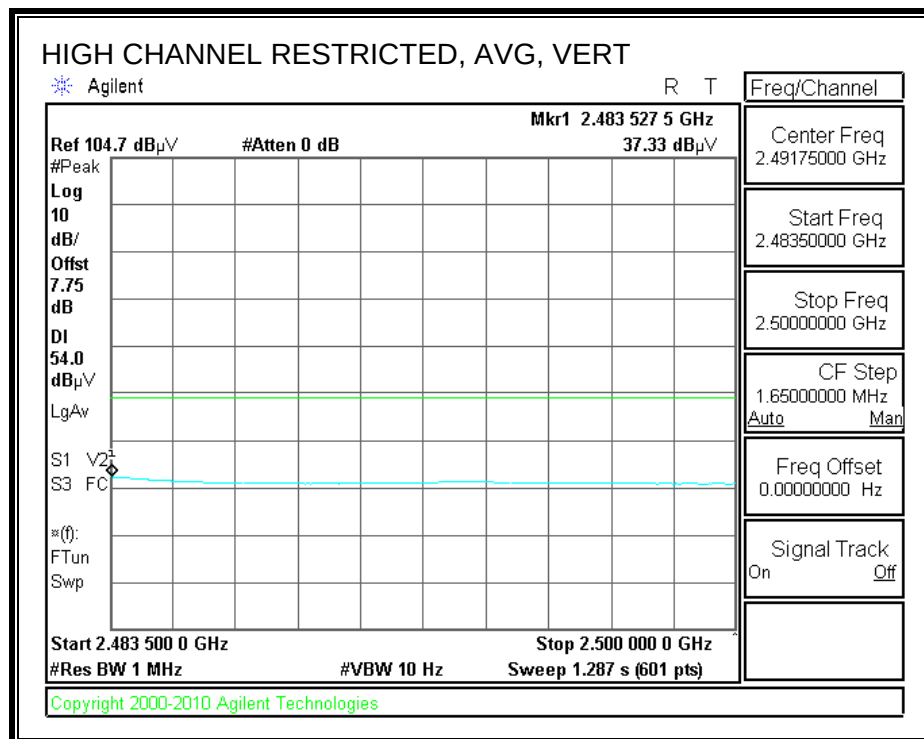
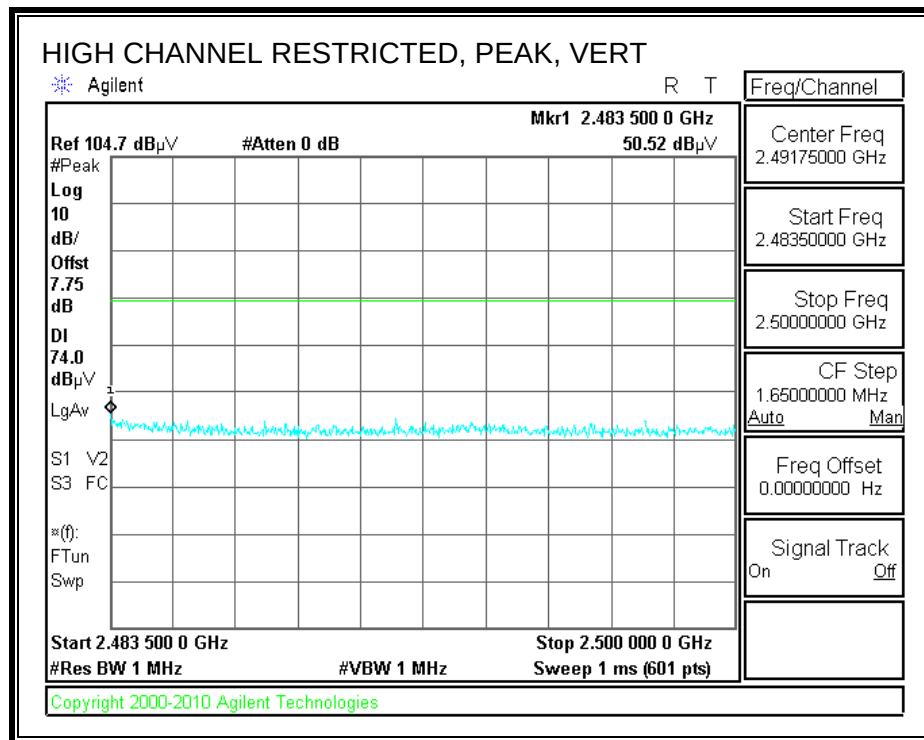
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 07/19/12
Project #: 12I14521
Company: Samsung
Test Target: FCC 15.247
Mode Oper: Tx 8PSK Mode

f Measurement Frequency Amp Preamp Gain Average Field Strength Limit
Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit
Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit
AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit
CL Cable Loss HPF High Pass Filter

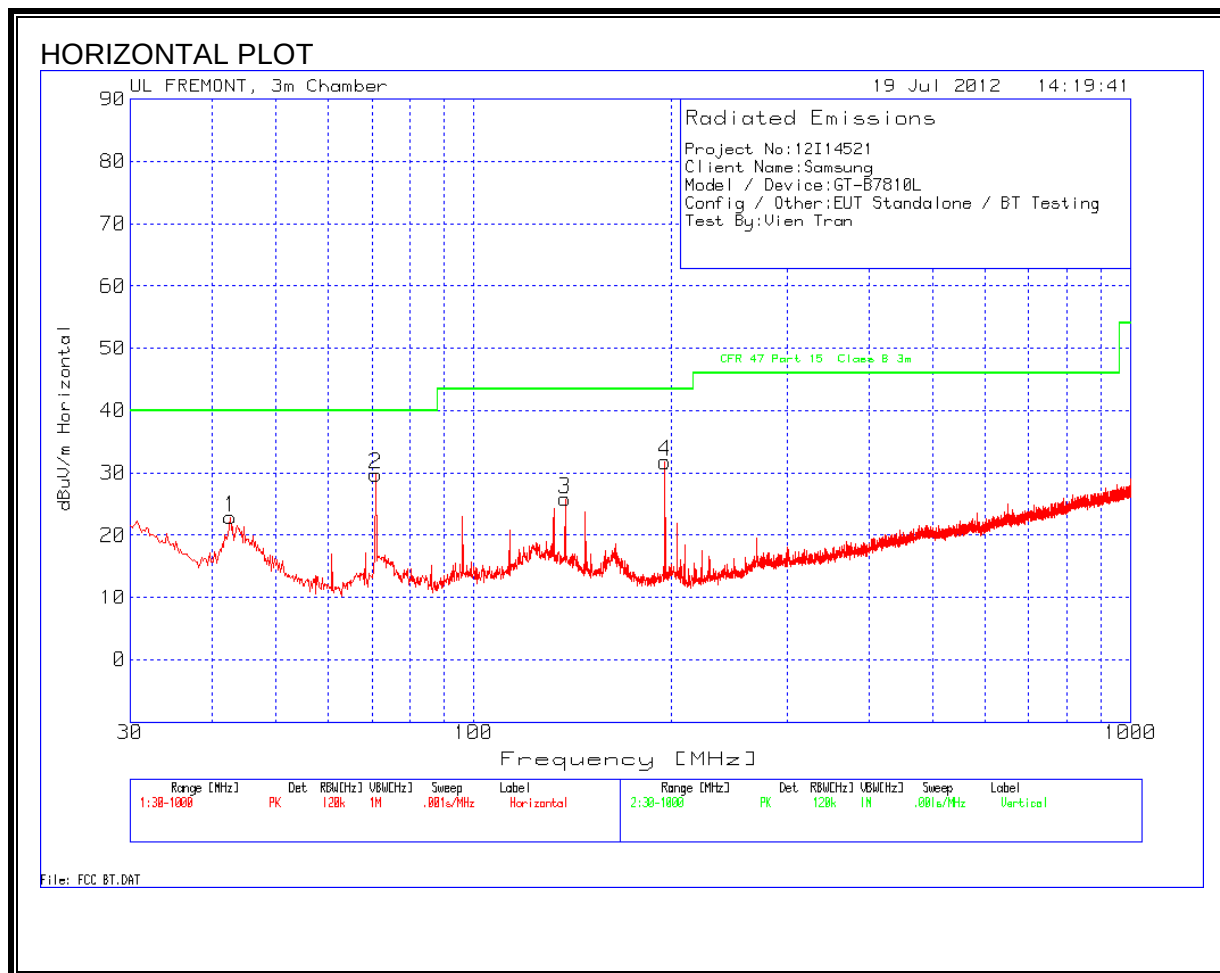
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2402MHz															
4.804	3.0	37.9	33.1	6.8	-34.1	0.0	0.0	43.7	74.0	-30.3	V	P	100.0	10.0	
4.804	3.0	27.2	33.1	6.8	-34.1	0.0	0.0	33.0	54.0	-21.0	V	A	100.0	10.0	
12.010	3.0	33.0	39.4	11.9	-32.5	0.0	0.0	51.8	74.0	-22.2	V	P	103.0	18.0	
12.010	3.0	21.1	39.4	11.9	-32.5	0.0	0.0	39.8	54.0	-14.2	V	A	103.0	18.0	
4.804	3.0	35.8	33.1	6.8	-34.1	0.0	0.0	41.6	74.0	-32.4	H	P	100.0	240.0	
4.804	3.0	24.3	33.1	6.8	-34.1	0.0	0.0	30.1	54.0	-23.9	H	A	100.0	240.0	
12.010	3.0	33.3	39.4	11.9	-32.5	0.0	0.0	52.1	74.0	-21.9	H	P	193.0	253.0	
12.010	3.0	21.1	39.4	11.9	-32.5	0.0	0.0	39.9	54.0	-14.1	H	A	193.0	253.0	
MID CHANNEL, 2441MHz															
4.882	3.0	36.4	33.2	6.8	-34.0	0.0	0.0	42.3	74.0	-31.7	V	P	98.0	340.0	
4.882	3.0	25.9	33.2	6.8	-34.0	0.0	0.0	31.9	54.0	-22.1	V	A	98.0	340.0	
7.323	3.0	34.5	36.3	9.1	-33.1	0.0	0.0	46.8	74.0	-27.2	V	P	160.0	16.0	
7.323	3.0	22.9	36.3	9.1	-33.1	0.0	0.0	35.2	54.0	-18.8	V	A	160.0	16.0	
4.882	3.0	36.6	33.2	6.8	-34.0	0.0	0.0	42.6	74.0	-31.4	H	P	101.0	206.0	
4.882	3.0	25.2	33.2	6.8	-34.0	0.0	0.0	31.2	54.0	-22.8	H	A	101.0	206.0	
7.323	3.0	34.1	36.3	9.1	-33.1	0.0	0.0	46.4	74.0	-27.6	H	P	108.0	358.0	
7.323	3.0	22.0	36.3	9.1	-33.1	0.0	0.0	34.3	54.0	-19.7	H	A	108.0	358.0	
HIGH CHANNEL, 2480MHz															
4.960	3.0	35.2	33.2	6.9	-34.0	0.0	0.0	41.3	74.0	-32.7	V	P	100.0	343.0	
4.960	3.0	23.4	33.2	6.9	-34.0	0.0	0.0	29.5	54.0	-24.5	V	A	100.0	343.0	
7.440	3.0	34.5	36.5	9.1	-33.0	0.0	0.0	47.0	74.0	-27.0	V	P	137.0	120.0	
7.440	3.0	22.0	36.5	9.1	-33.0	0.0	0.0	34.5	54.0	-19.5	V	A	137.0	120.0	
4.960	3.0	35.0	33.2	6.9	-34.0	0.0	0.0	41.1	74.0	-32.9	H	P	100.0	0.0	
4.960	3.0	23.2	33.2	6.9	-34.0	0.0	0.0	29.2	54.0	-24.8	H	A	100.0	0.0	
7.440	3.0	34.8	36.5	9.1	-33.0	0.0	0.0	47.4	74.0	-26.6	H	P	100.0	0.0	
7.440	3.0	22.2	36.5	9.1	-33.0	0.0	0.0	34.7	54.0	-19.3	H	A	100.0	0.0	

Rev. 4.1.2.7

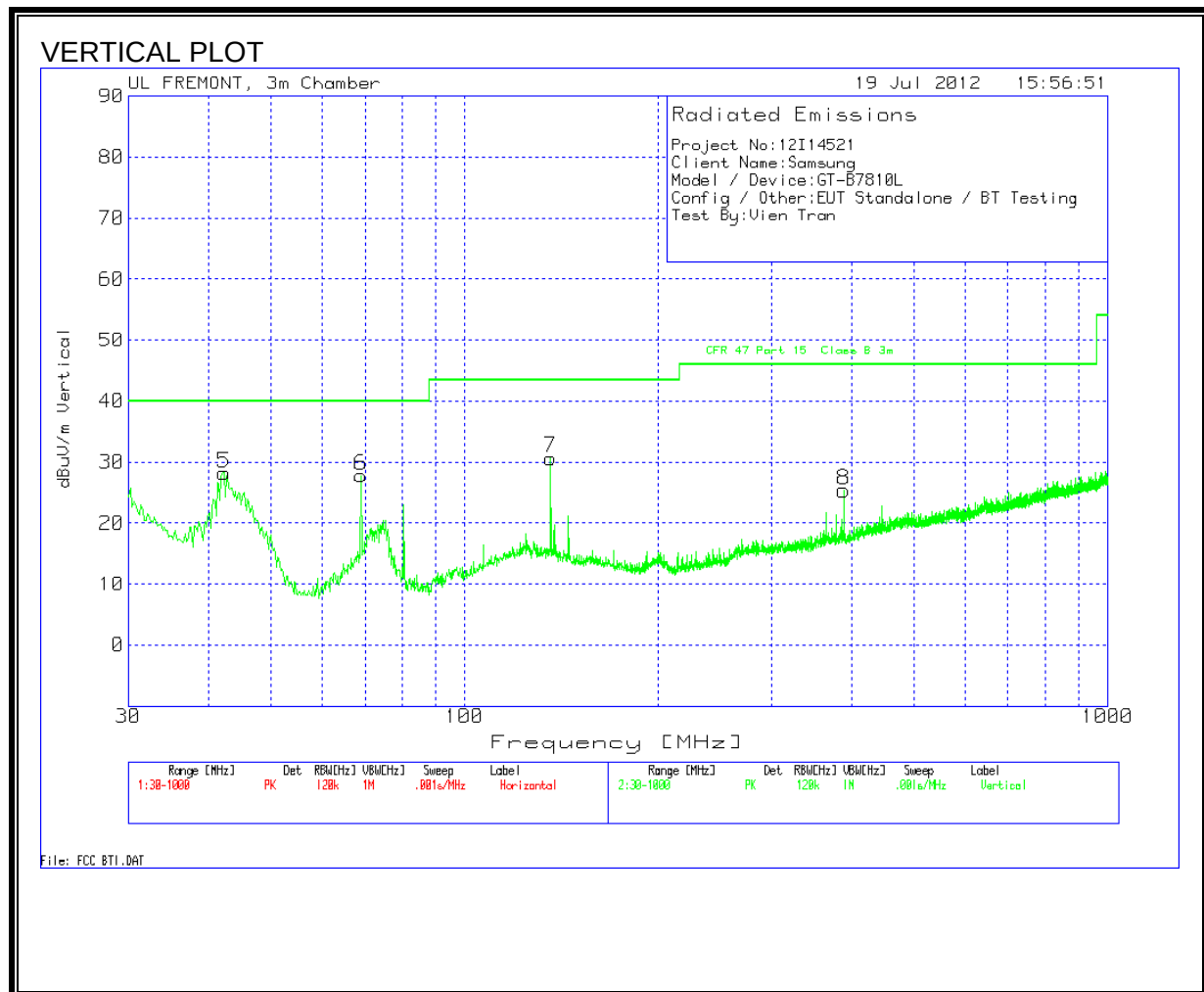
Note: No other emissions were detected above the system noise floor.

8.3. 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)



HORIZONTAL & VERTICAL DATA

Project No:12I14521									
Client Name:Samsung									
Model / Device:GT-B7810L									
Config / Other:EUT Standalone / BT Testing									
Test By:Vien Tran									
Horizontal 30 - 1000MHz									
Test Frequency	Meter Reading	Detector	25MHz-1GHz Chambr 3m Amplified (dB)	Antenna T185 (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
42.5999	38.39	PK	-27.4	11.9	22.89	40.0	-17.11	201	Horz
70.9013	48.76	PK	-27.1	8.1	29.76	40.0	-10.24	400	Horz
137.7778	39.00	PK	-26.5	13.3	25.80	43.5	-17.70	201	Horz
195.5436	46.11	PK	-25.9	11.6	31.81	43.5	-11.69	201	Horz
Vertical 30 - 1000MHz									
Test Frequency	Meter Reading	Detector	25MHz-1GHz Chambr 3m Amplified (dB)	Antenna T185 (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
42.2122	43.43	PK	-27.4	12.2	28.23	40.0	-11.77	100	Vert
68.9628	46.8	PK	-27.1	8.1	27.8	40.0	-12.2	201	Vert
136.0332	43.75	PK	-26.5	13.4	30.65	43.5	-12.85	100	Vert
388.6131	35.8	PK	-25.5	15.1	25.4	46.0	-20.6	100	Vert
PK - Peak detector									
QP - Quasi-Peak detector									
LnAv - Linear Average detector									
LgAv - Log Average detector									
Av - Average detector									
CAV - CISPR Average detector									
RMS - RMS detection									
CRMS - CISPR RMS detection									
Text File: FCC BT.TXT									
File: FCC BT.DAT									

9. 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.

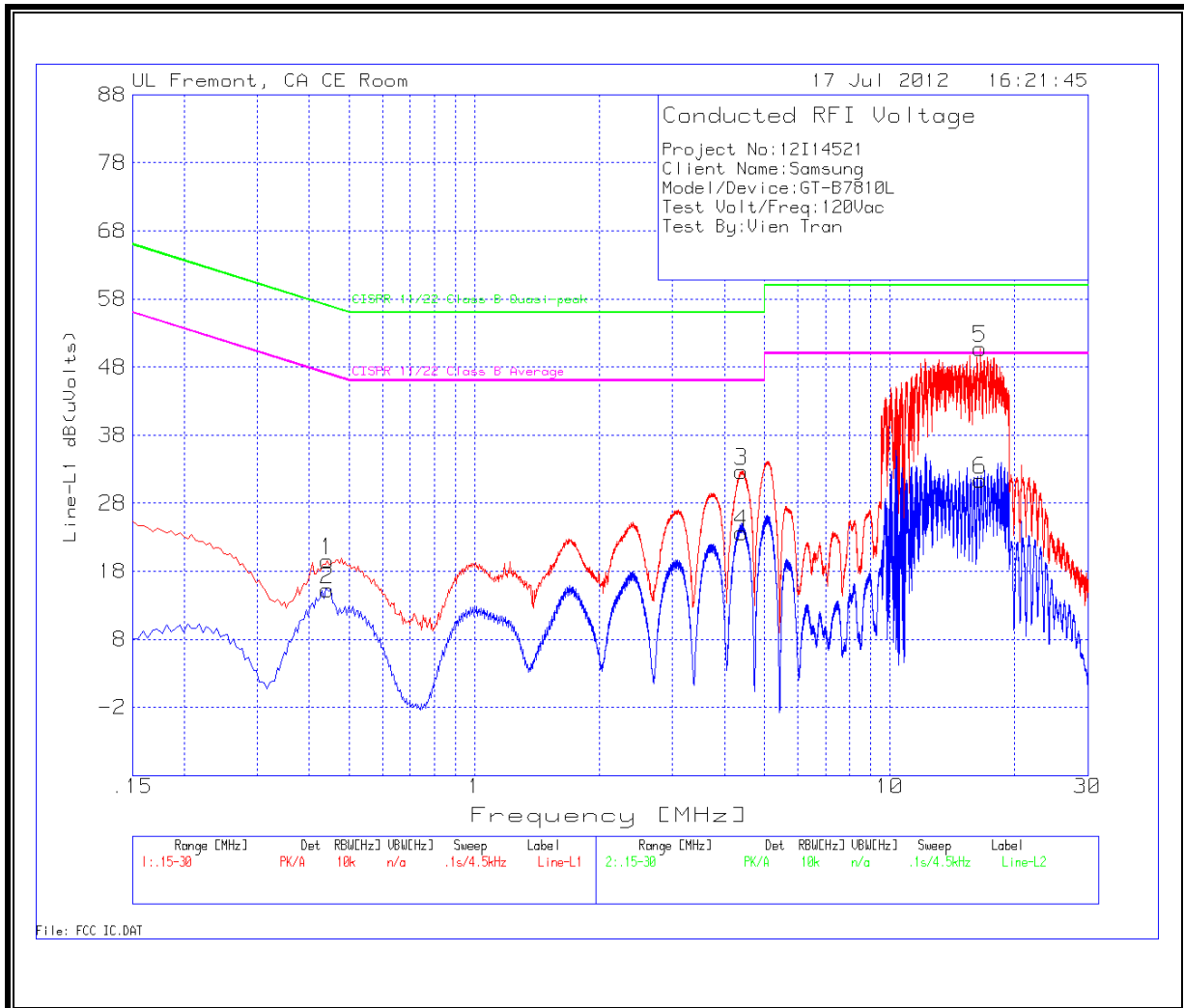
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Project No: 12I14521									
Client Name: Samsung									
Model/Device: GT-B7810L									
Test Volt/Freq: 120Vac									
Test By: Vien Tran									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	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
0.4425	19.41	PK	0.1	0	19.51	57	-37.49	-	-
0.4425	15.16	Av	0.1	0	15.26	-	-	47.0	-31.74
4.3935	32.53	PK	0.1	0.1	32.73	56	-23.27	-	-
4.3935	23.5	Av	0.1	0.1	23.70	-	-	46.0	-22.3
16.5345	50.31	PK	0.2	0.2	50.71	60	-9.29	-	-
16.5345	31.02	Av	0.2	0.2	31.42	-	-	50.0	-18.58
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	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
0.4155	37.06	PK	0.1	0	37.2	57.5	-20.34	-	-
0.4155	24.32	Av	0.1	0	24.4	-	-	47.500	-23.08
4.7400	42.83	PK	0.1	0.1	43.0	56	-12.97	-	-
4.7400	25.76	Av	0.1	0.1	26.0	-	-	46.000	-20.04
18.1770	54.10	PK	0.2	0.2	54.5	60	-5.5	-	-
18.1770	31.84	Av	0.2	0.2	32.2	-	-	50.000	-17.76
PK - Peak detector									
QP - Quasi-Peak detector									
LnAv - Linear Average detector									
LgAv - Log Average detector									
Av - Average detector									
CAV - CISPR Average detector									
RMS - RMS detection									
CRMS - CISPR RMS detection									
Text File: FCC IC.TXT									
File: FCC IC.DAT									

LINE 1 RESULTS



LINE 2 RESULTS

