



FCC CFR47 PART 15 SUBPART C

BLUETOOTH

CERTIFICATION TEST REPORT

FOR

Tablet with 802.11abgn, BT3.0

MODEL NUMBER: GT-P6210

FCC ID: A3LGTP6210

REPORT NUMBER: 11I14021-3

ISSUE DATE: OCTOBER 04, 2011

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: Tablet with 802.11abgn, BT3.0

MODEL: GT-P6210

SERIAL NUMBER: 001 AND 02058

DATE TESTED: SEPTEMBER 8 – OCTOBER 3, 2011

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

Compliance Certification Services (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:



FRANK IBRAHIM
EMC SUPERVISOR
UL CCS



DAVID GARCIA
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 a tablet PC with an 802.11a/b/g/n transceiver and Bluetooth transceiver.

The radio module is manufactured by CSR.

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	10.11	10.26
2402 - 2480	Enhanced 8PSK	9.25	8.41

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an 802.11 a/b/g/n and a Bluetooth antenna, with a maximum gain as stated in the table below;

Frequency	Eff. (%)	Ave. Gain (dBi)	Peak Gain (dBi)	Directivity (dBi)
1574 MHz	46	-3.40	1.35	4.75
1574.4 MHz	46	-3.40	1.34	4.74
1574.8 MHz	46	-3.40	1.34	4.74
1575.2 MHz	46	-3.38	1.45	4.83
1575.6 MHz	46	-3.39	1.45	4.84
1576 MHz	46	-3.39	1.44	4.83
1596 MHz	45	-3.45	1.05	4.50
1598.2 MHz	45	-3.48	1.02	4.50
1600.4 MHz	45	-3.48	1.00	4.48
1602.6 MHz	45	-3.48	1.00	4.48
1604.8 MHz	45	-3.43	0.99	4.42
1607 MHz	45	-3.50	0.98	4.48
2400 MHz	45	-3.50	0.29	3.79
2445 MHz	44	-3.52	0.20	3.72
2447 MHz	44	-3.52	0.07	3.59
2475 MHz	44	-3.55		3.55
2484 MHz	44	-3.60	0.10	3.70
2500 MHz	41	-3.83		3.83

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was HCI Stack 4.0 (Software version : 26A).

The EUT driver software installed in the equipment during testing was BT: HW REV1.2 SW : P6200.002.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

For the fundamental investigation, since the EUT is a portable device that has three orientations; therefore X, Y and Z orientations have been investigated, also with AC/DC adapter, and earphone, and the worst case was found to be at X orientation with AC Adapter

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	GB4943-2001	N/A	N/A

I/O CABLES (CONDUCTED SETUP)

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US 115V	Un-shielded	2.0 m	NA
2	RF	1	SMA	Shielded	0.6 m	NA
3	RF	1	EUT	Un-shielded	0.2 m	NA
4	Mini USB	1	USB	shielded	1m	NA

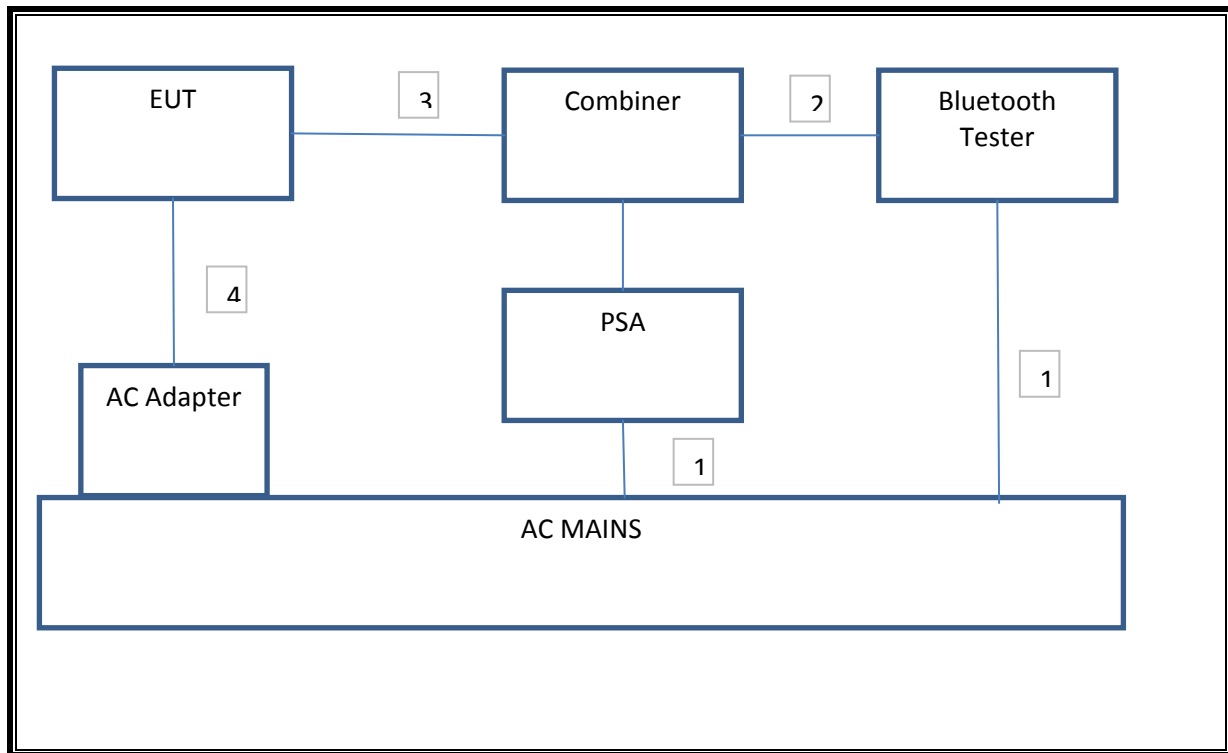
I/O CABLES (RADIATED SETUP)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	DC	Un-shielded	2m	NA
2	Audio	1	Earphone	Un-shielded	2m	Volume Control on Cable

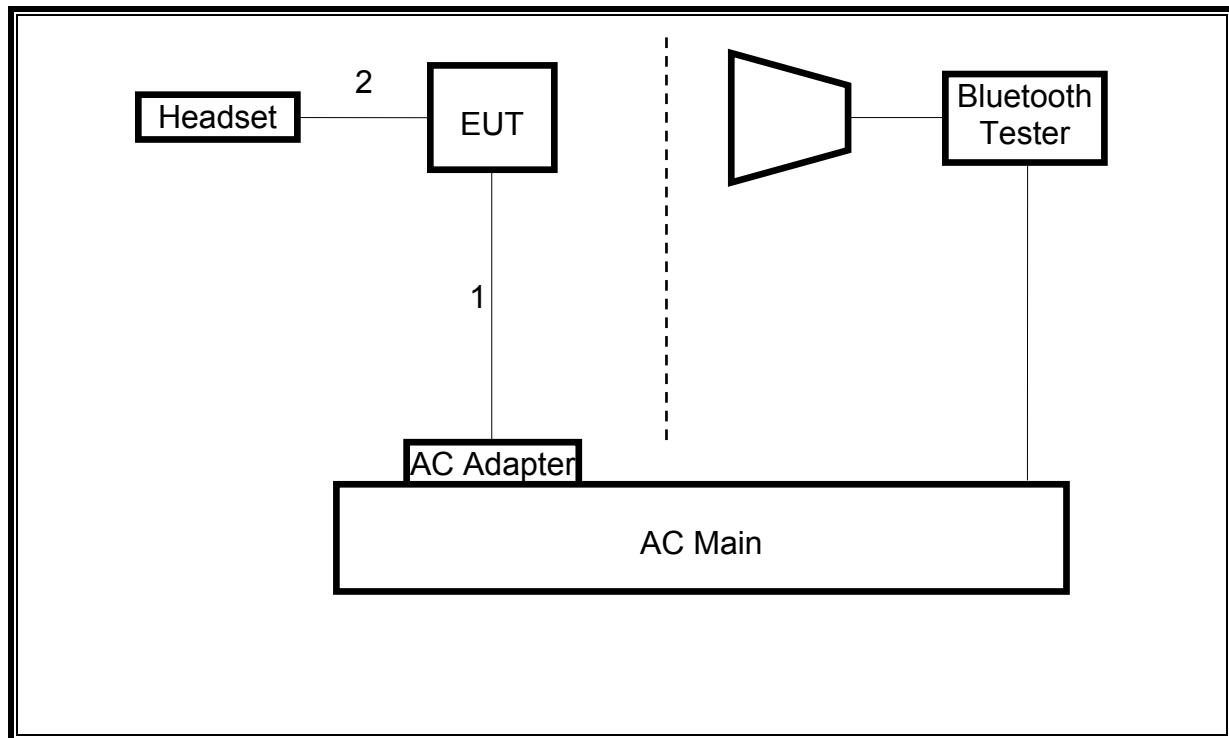
TEST SETUP

The EUT is connected to Bluetooth tester via a directional coupler during the tests.

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, 26.5 GHz	Agilent / HP	E4440A	C01176	08/04/11	08/04/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	12/17/10	12/17/11
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	07/06/11	07/06/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/16/11	07/16/12
Antenna, Horn, 18 GHz	EMCO	3115	C00872	06/29/11	06/29/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	01/27/11	01/27/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	07/18/11	07/18/12
Power Meter	Agilent / HP	437B		07/28/11	07/28/12
Power Sensor, 18 GHz	Agilent / HP	8481A	N02782	07/29/11	07/29/13
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/10	11/10/11
Antenna, Horn, 26.5 GHz	ARA	MMH-1826/B	C00589	07/28/11	07/28/12

7. ANTENNA PORT TEST RESULTS

7.1. BASIC DATA RATE GFSK MODULATION

7.1.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

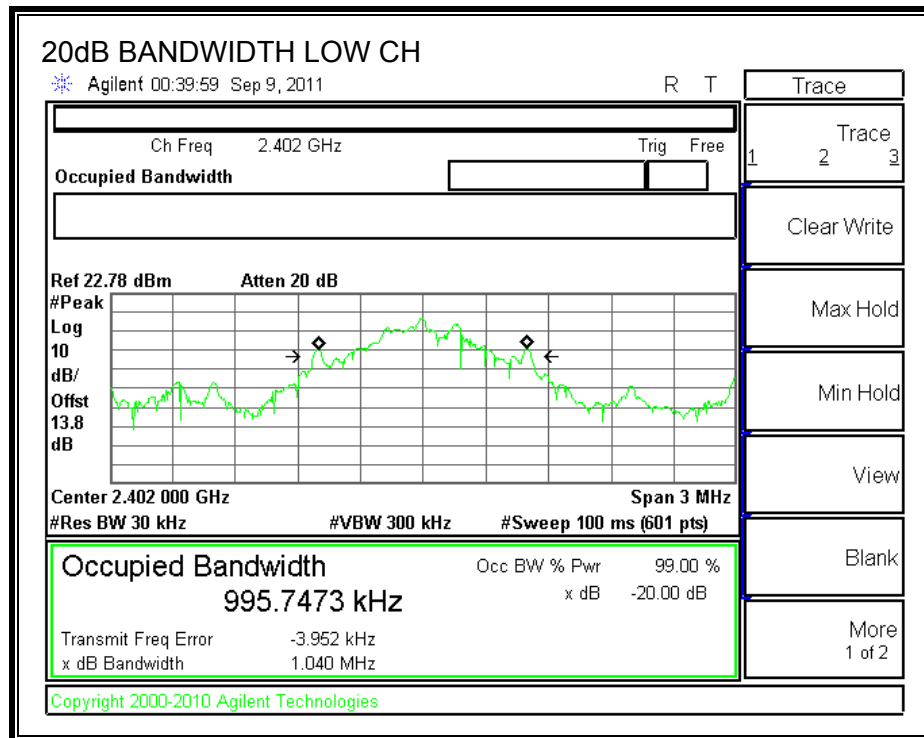
TEST PROCEDURE

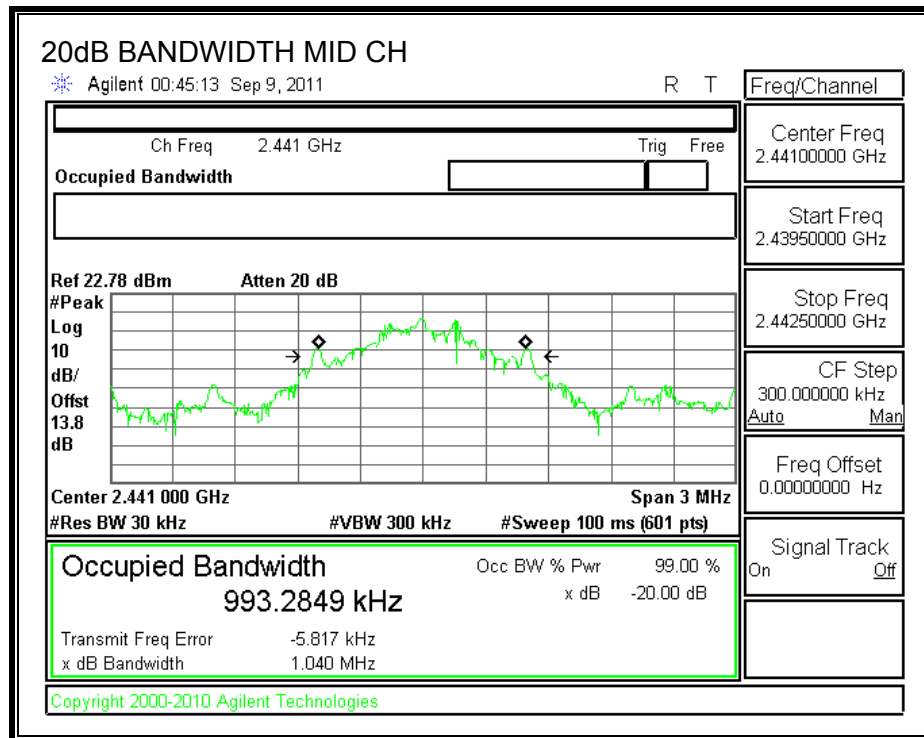
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

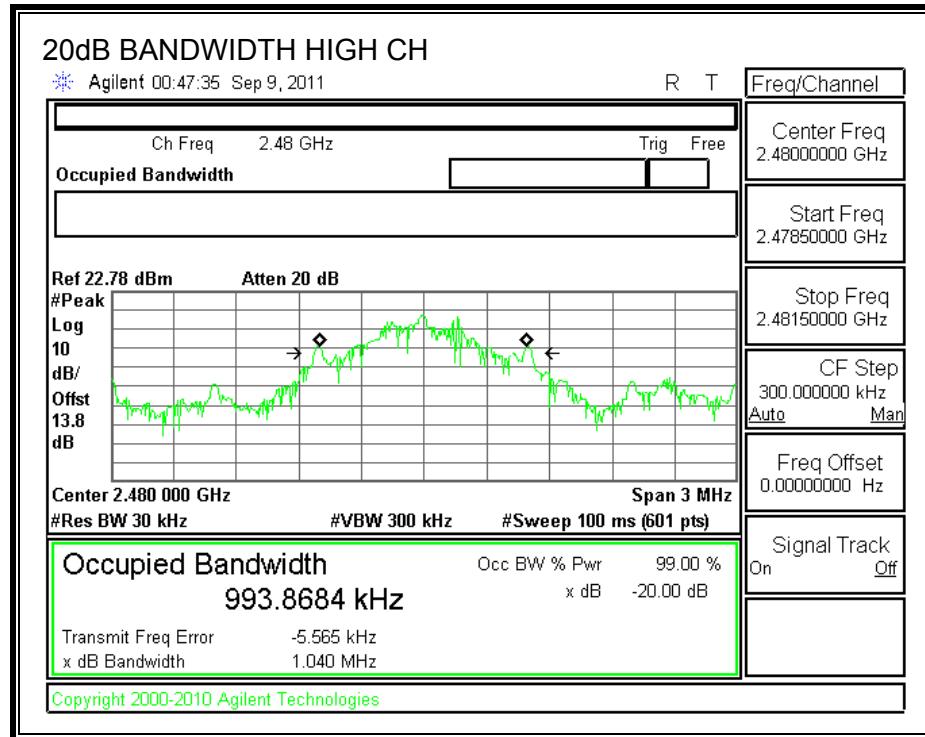
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	1.04
Middle	2441	1.04
High	2480	1.04

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.

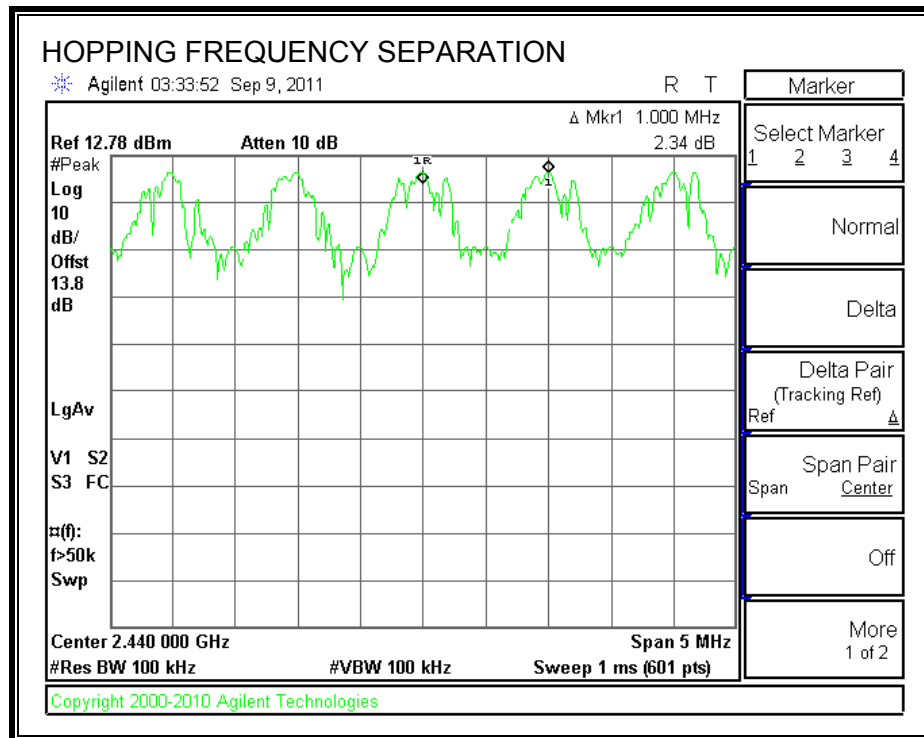
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

RESULTS

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.

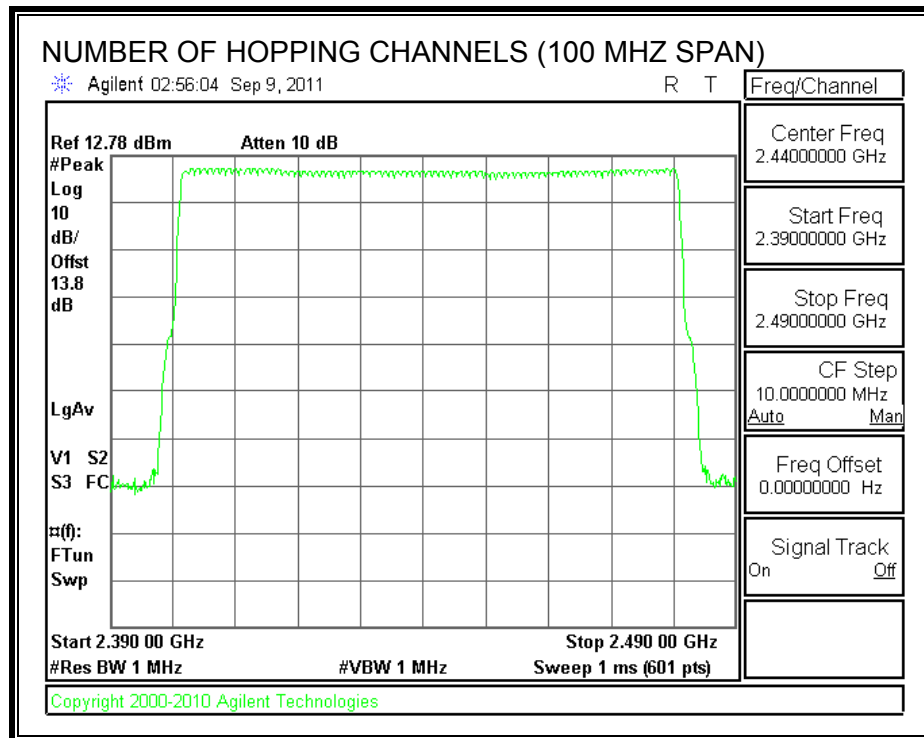
TEST PROCEDURE

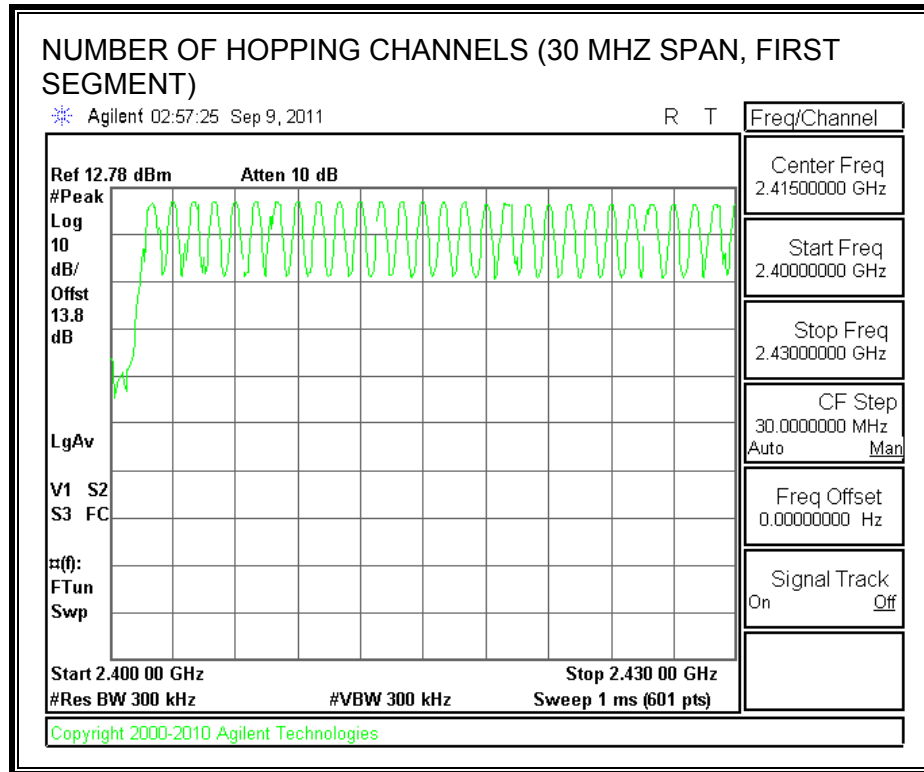
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

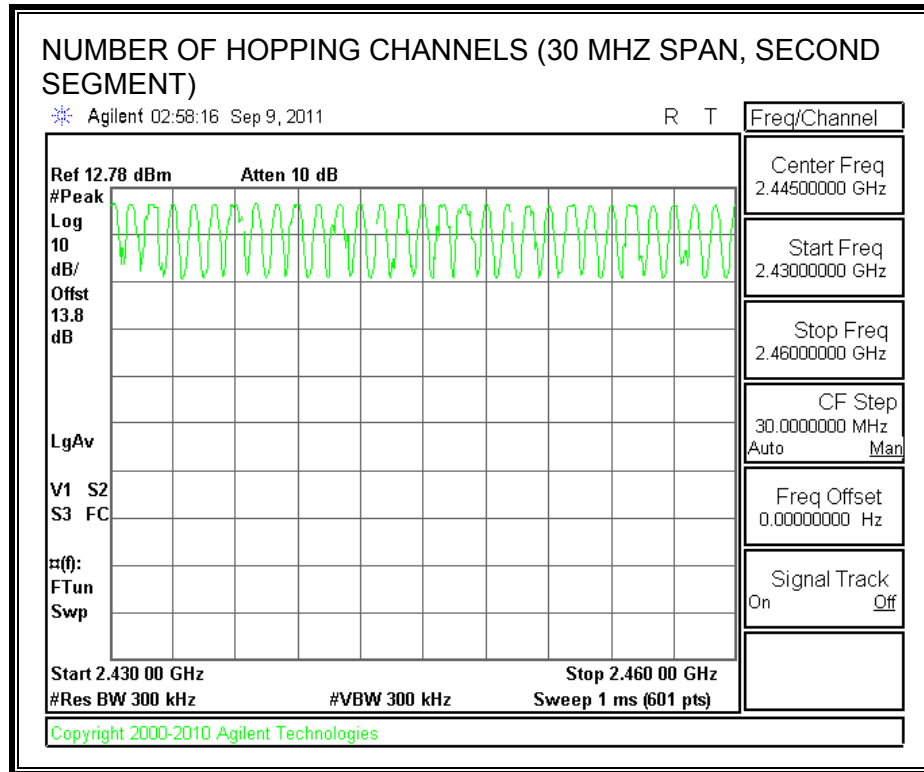
RESULTS

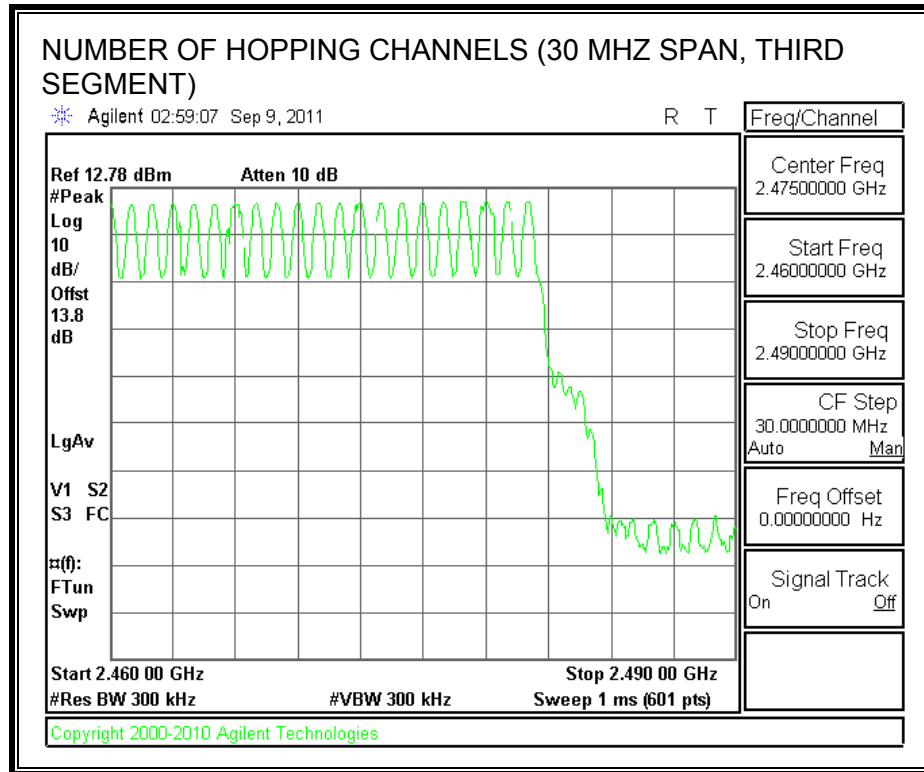
79 Channels observed.

NUMBER OF HOPPING CHANNELS









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 $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

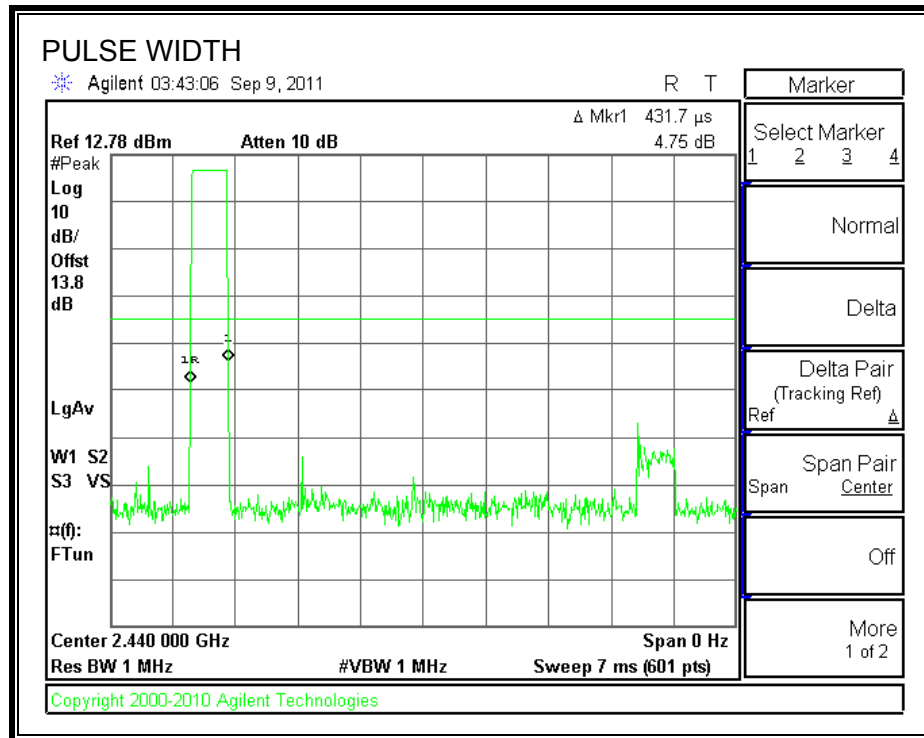
RESULTS

GFSK Mode

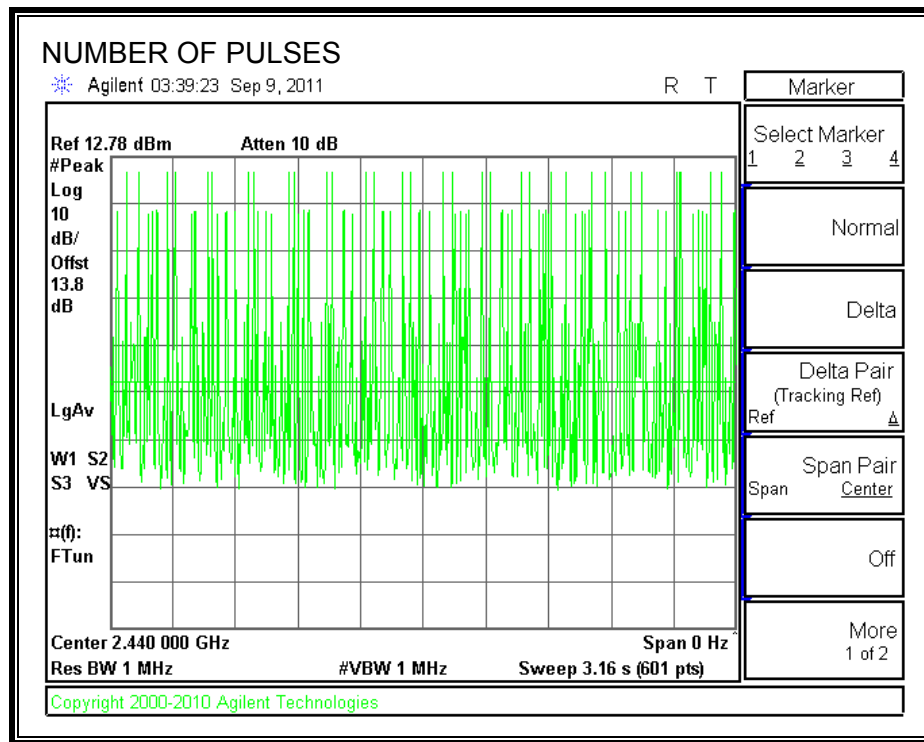
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.4317	32	0.138	0.4	-0.262
DH3	1.68	16	0.269	0.4	-0.131
DH5	2.928	11	0.322	0.4	-0.078

DH1

PULSE WIDTH

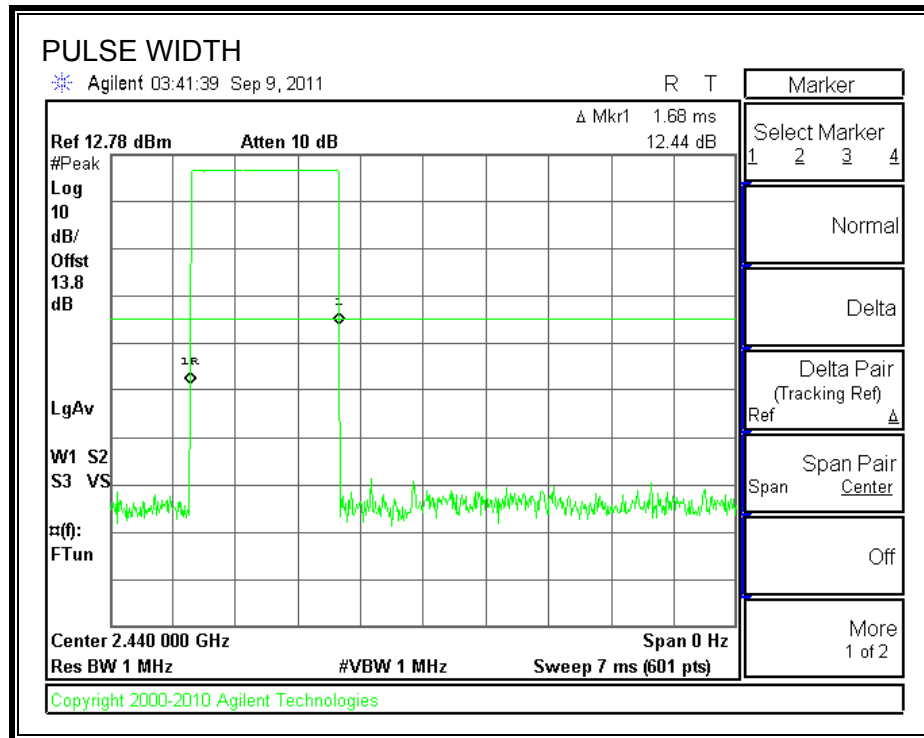


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

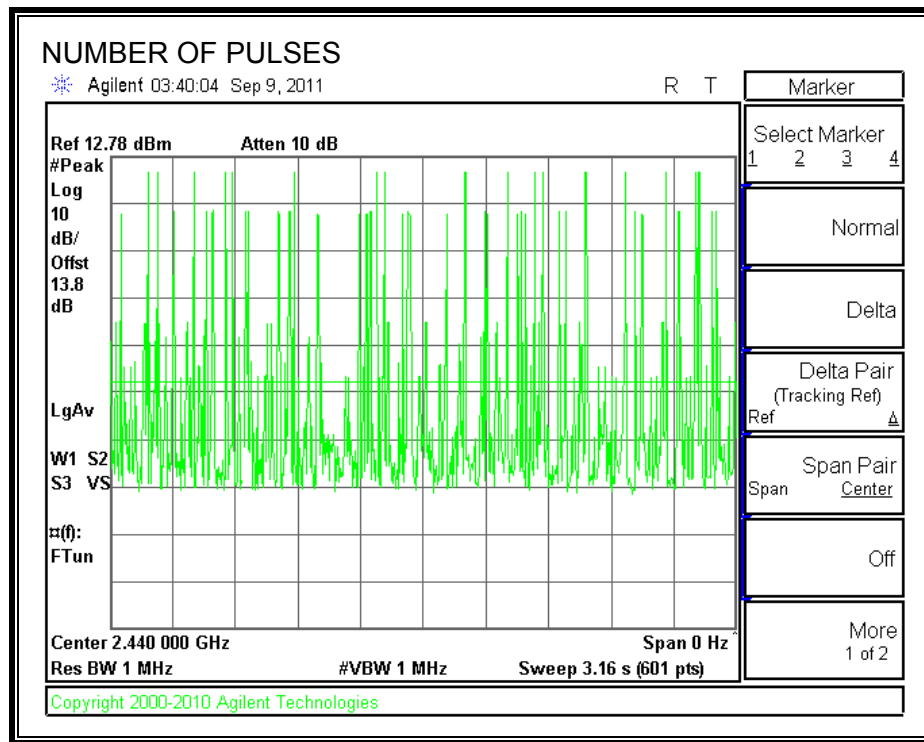


DH3

PULSE WIDTH

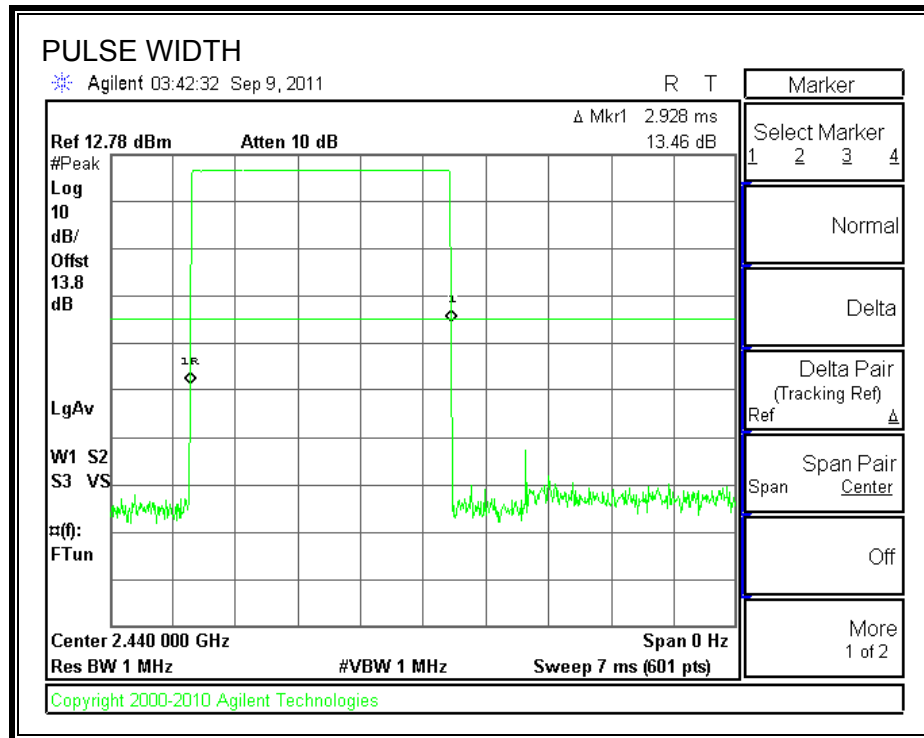


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

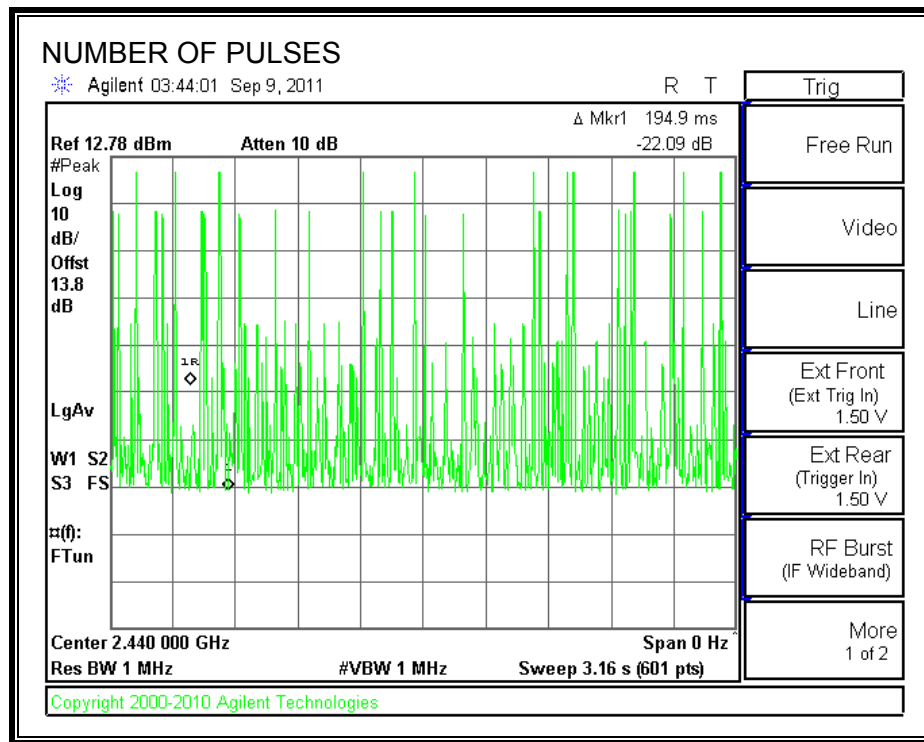


DH5

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



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.

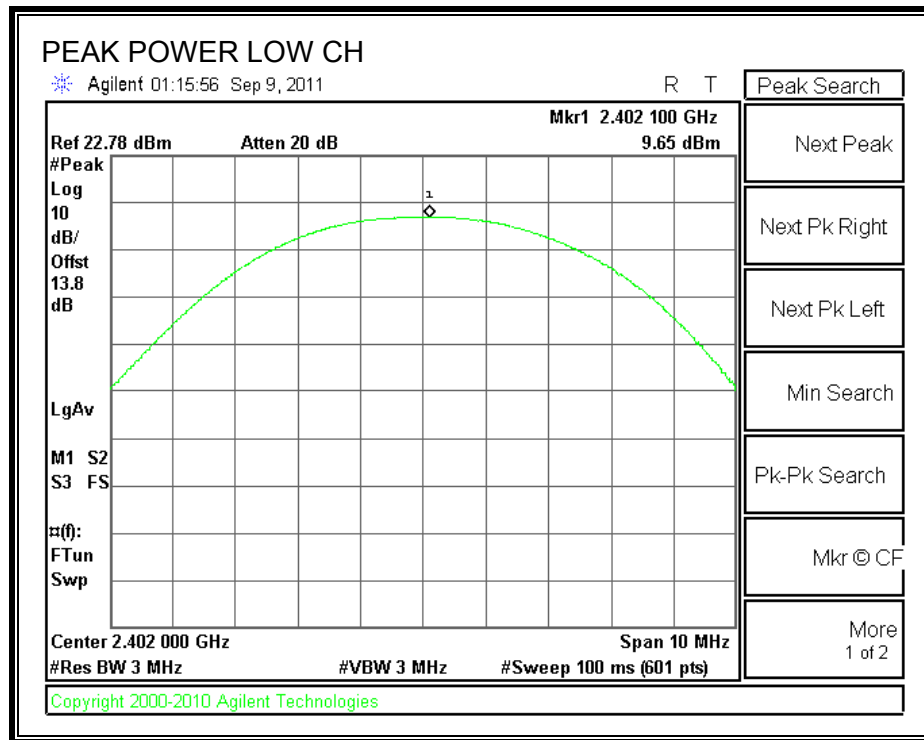
TEST PROCEDURE

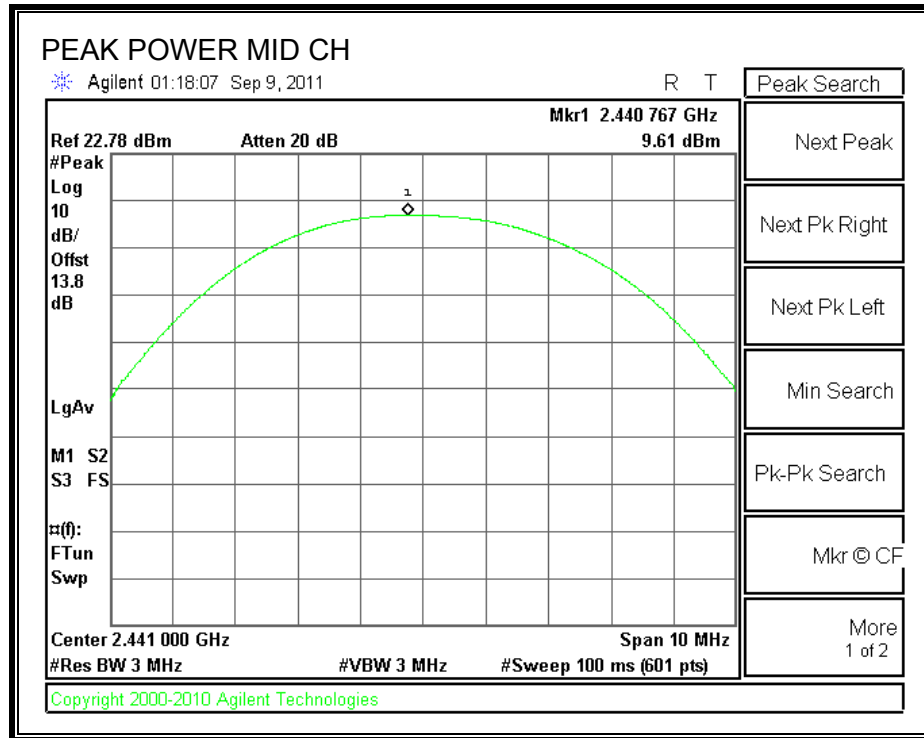
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

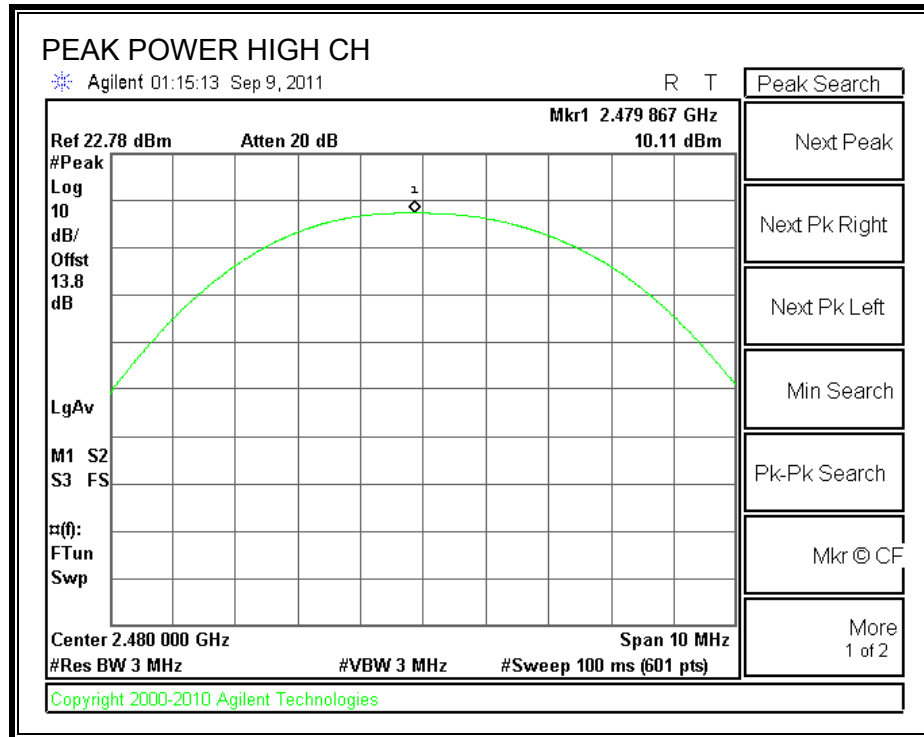
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.65	30	-20.35
Middle	2441	9.61	30	-20.39
High	2480	10.11	30	-19.89

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 11.88 dB (including 10 dB pad and 1.88 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	8.29
Middle	2441	8.25
High	2480	8.82

7.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

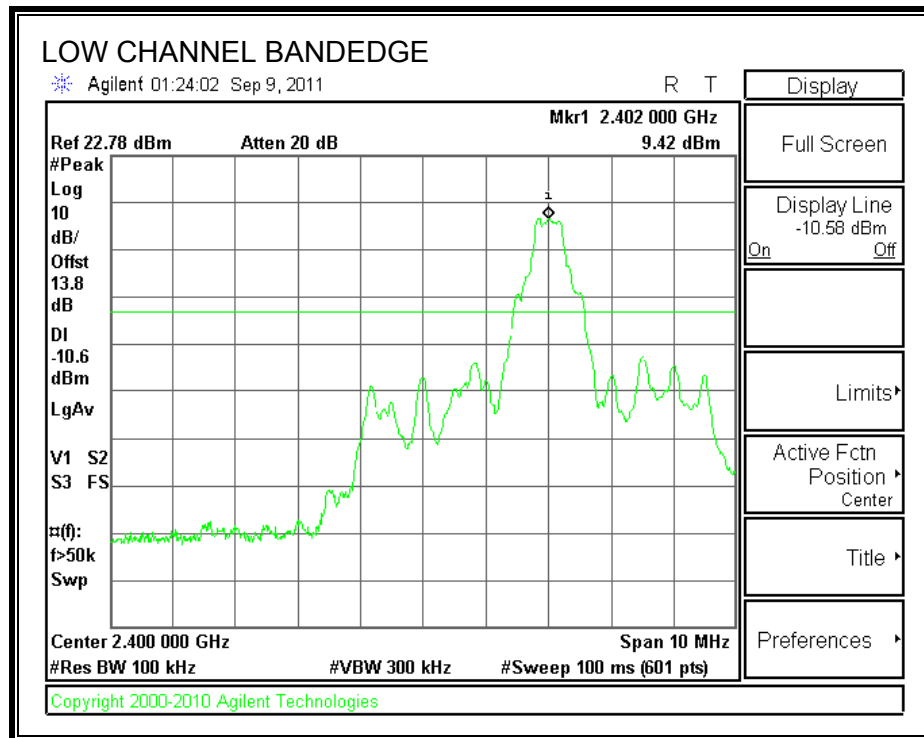
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

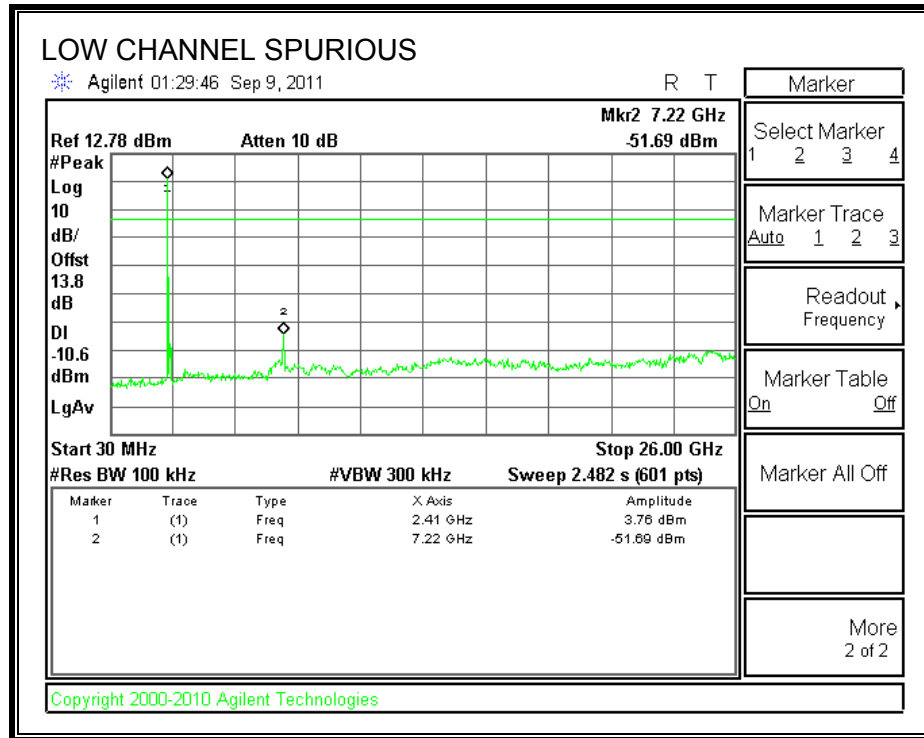
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

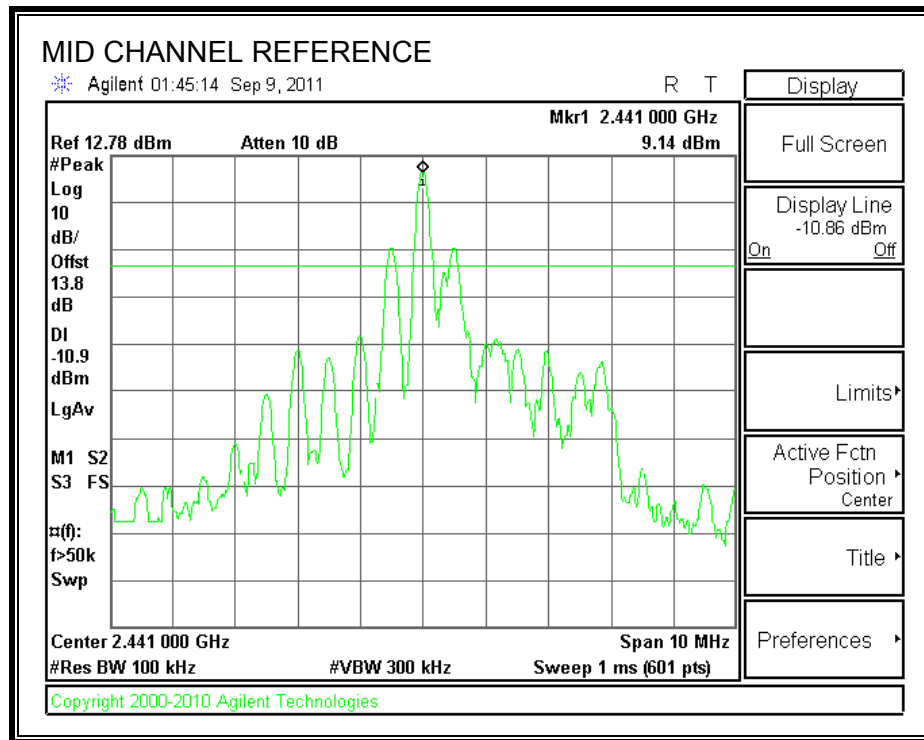
RESULTS

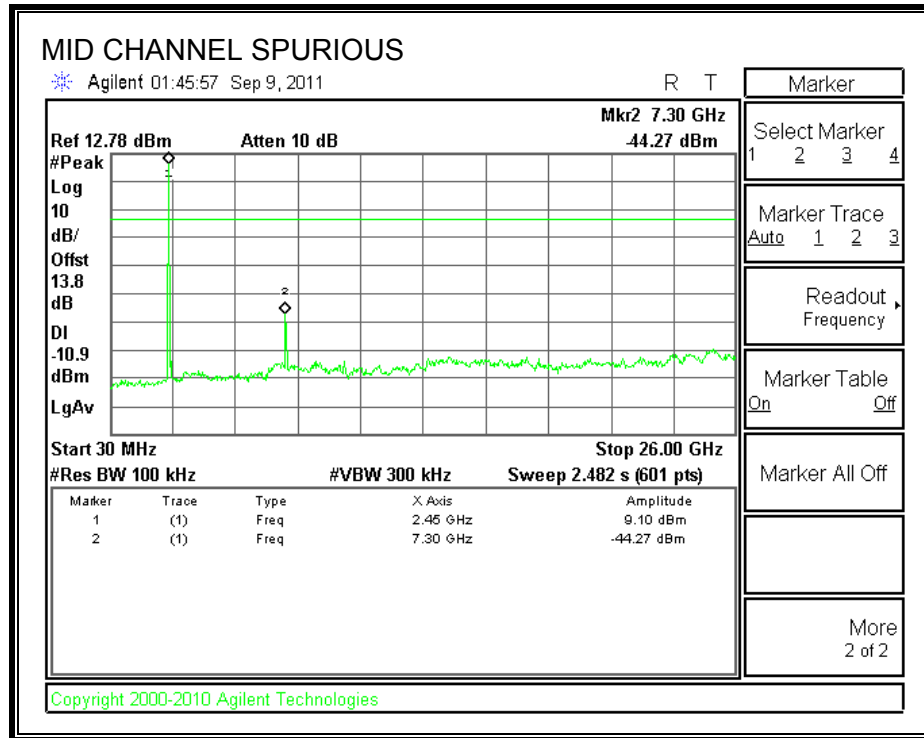
SPURIOUS EMISSIONS, LOW CHANNEL



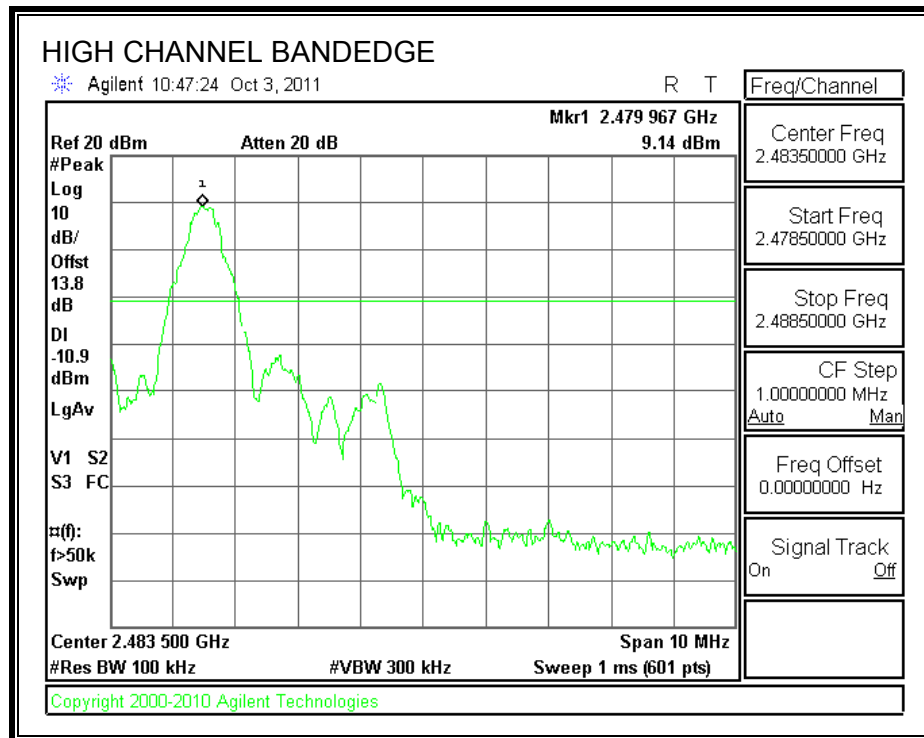


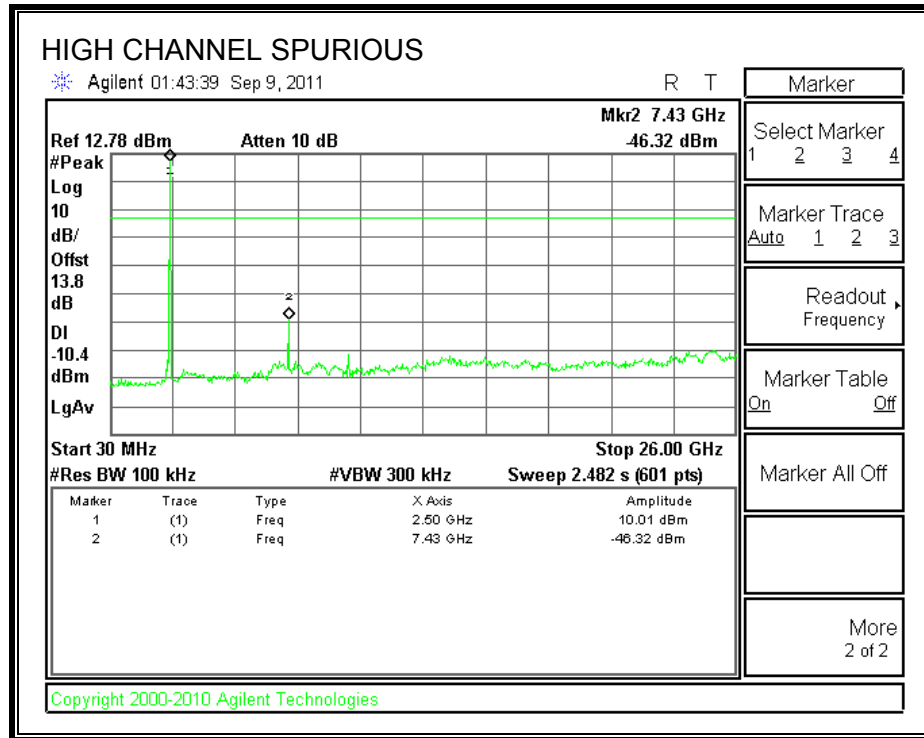
SPURIOUS EMISSIONS, MID CHANNEL



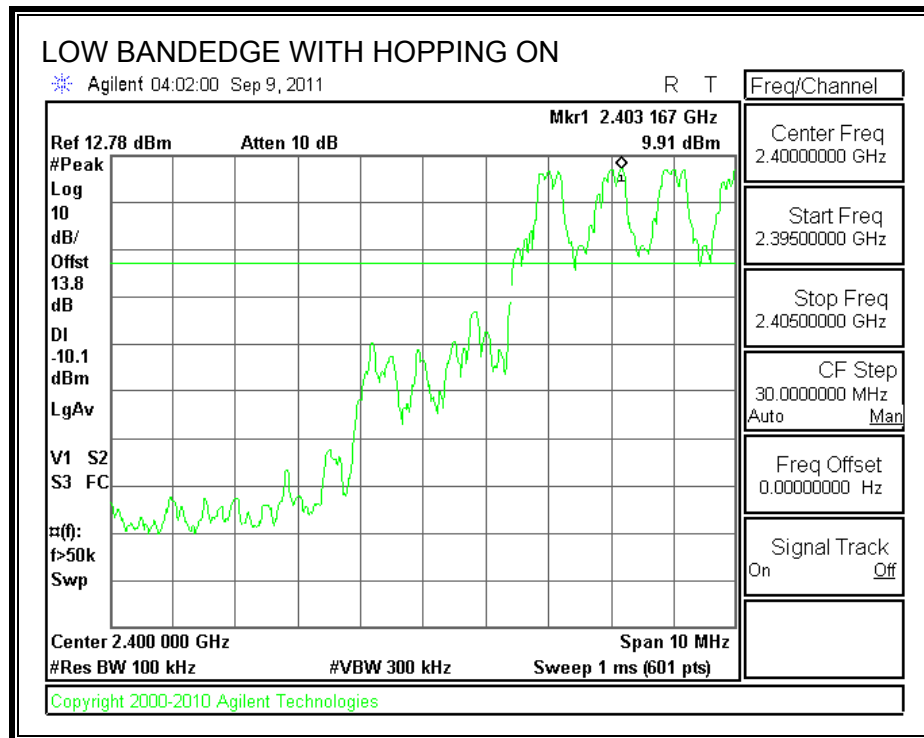


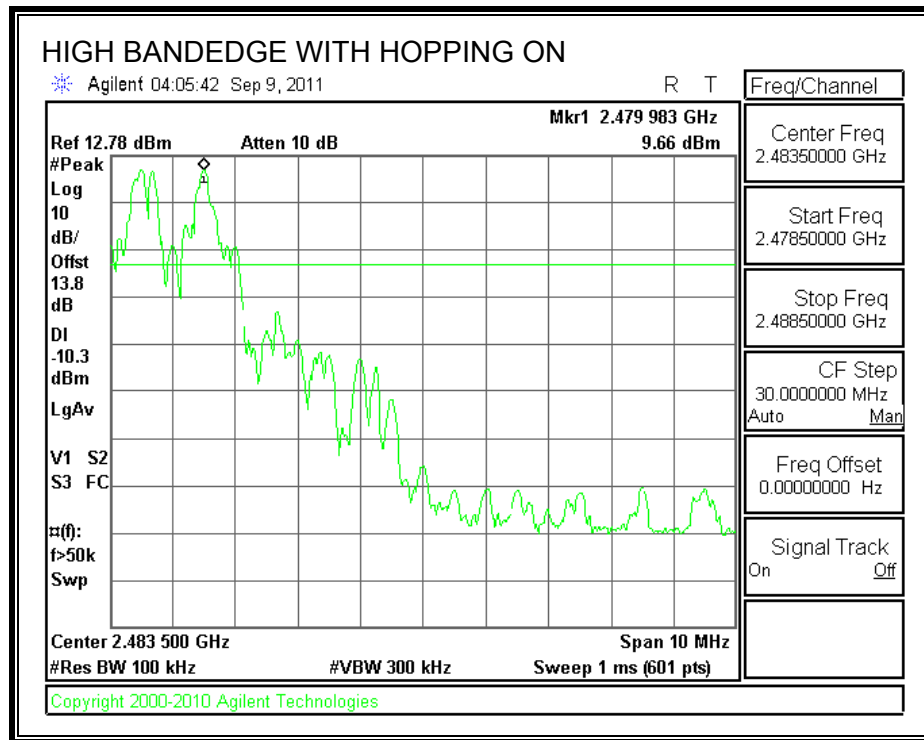
SPURIOUS EMISSIONS, HIGH CHANNEL





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.

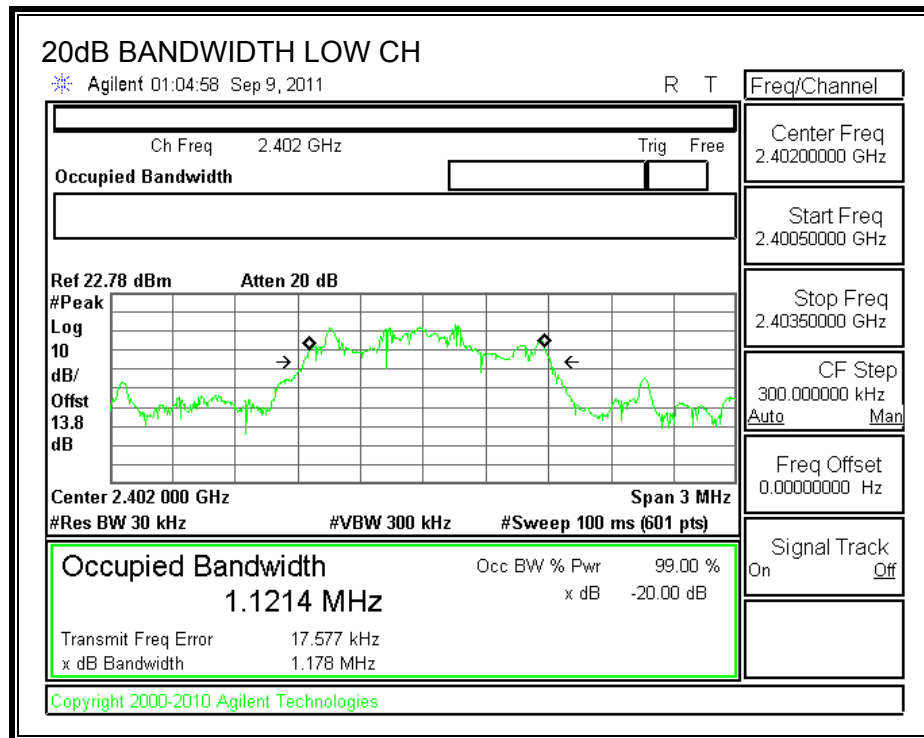
TEST PROCEDURE

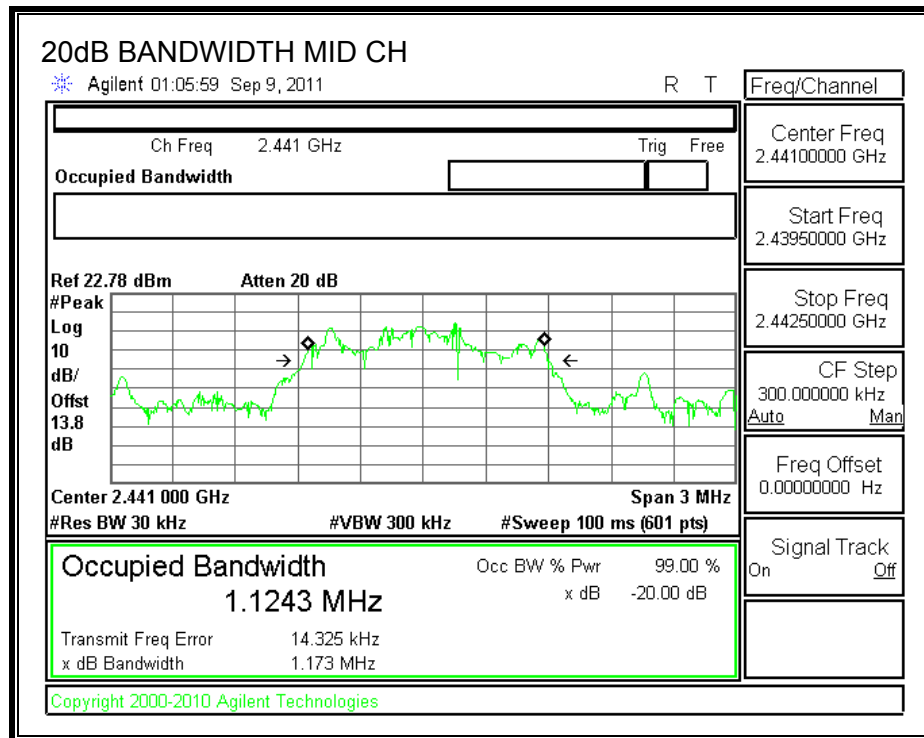
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

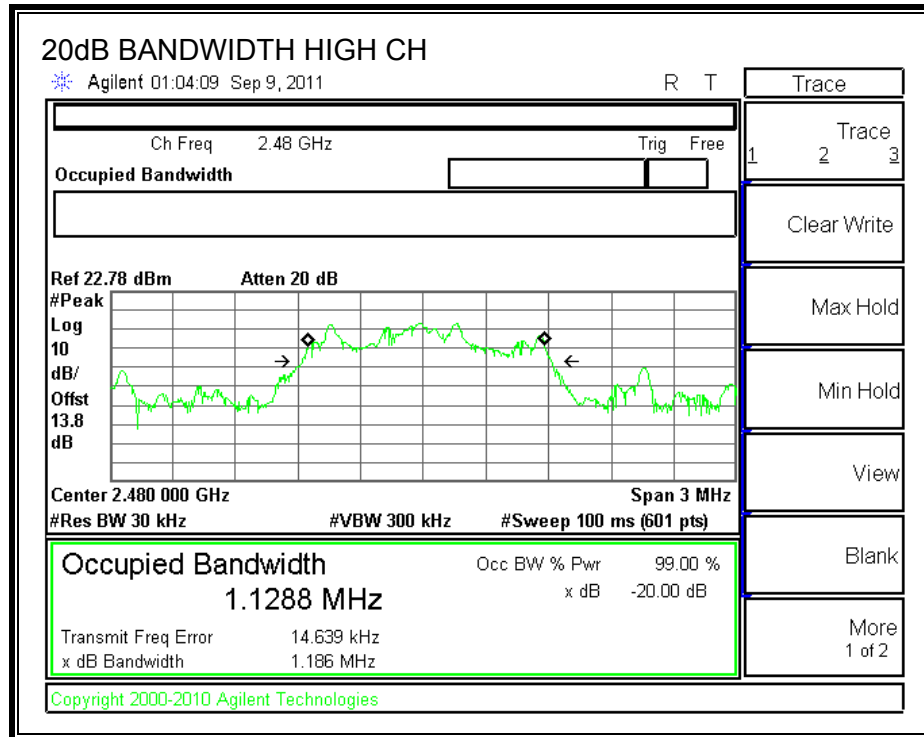
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	1.178
Middle	2441	1.173
High	2480	1.186

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.

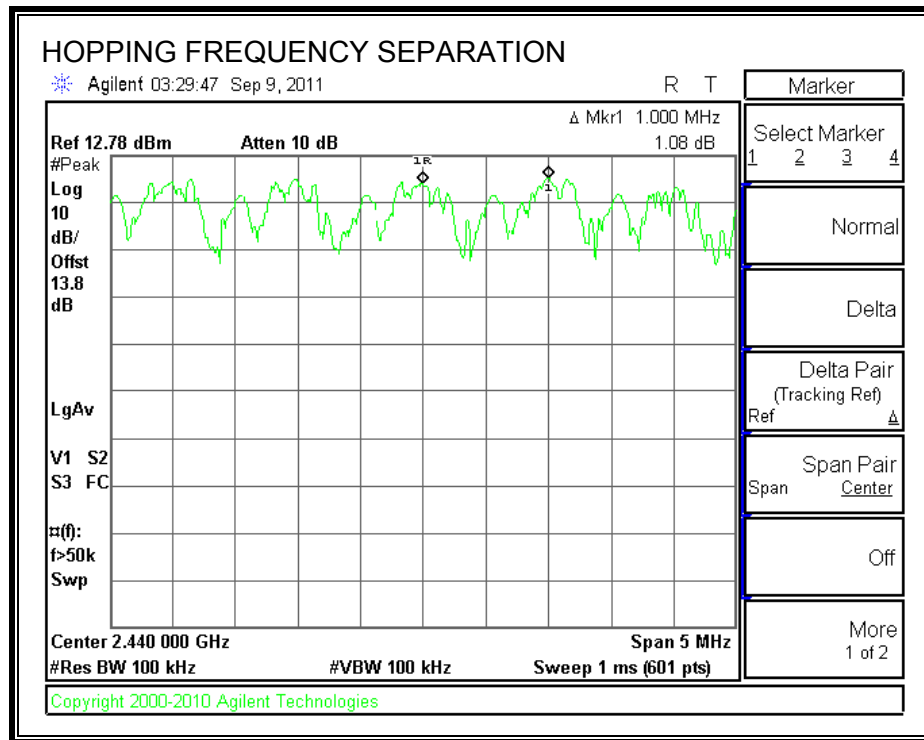
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

TEST PROCEDURE

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

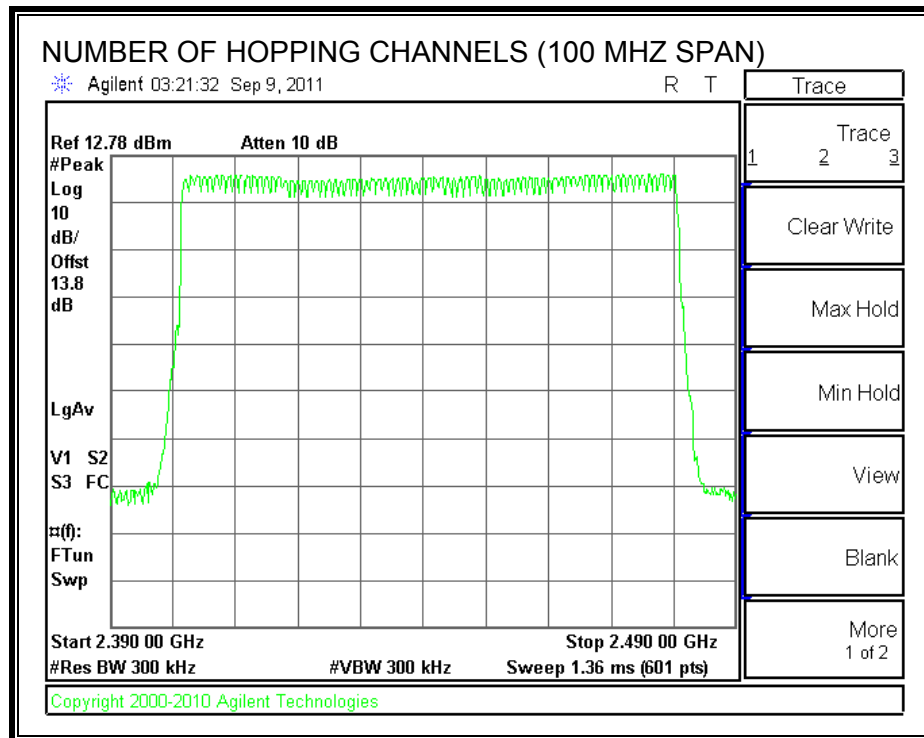
TEST PROCEDURE

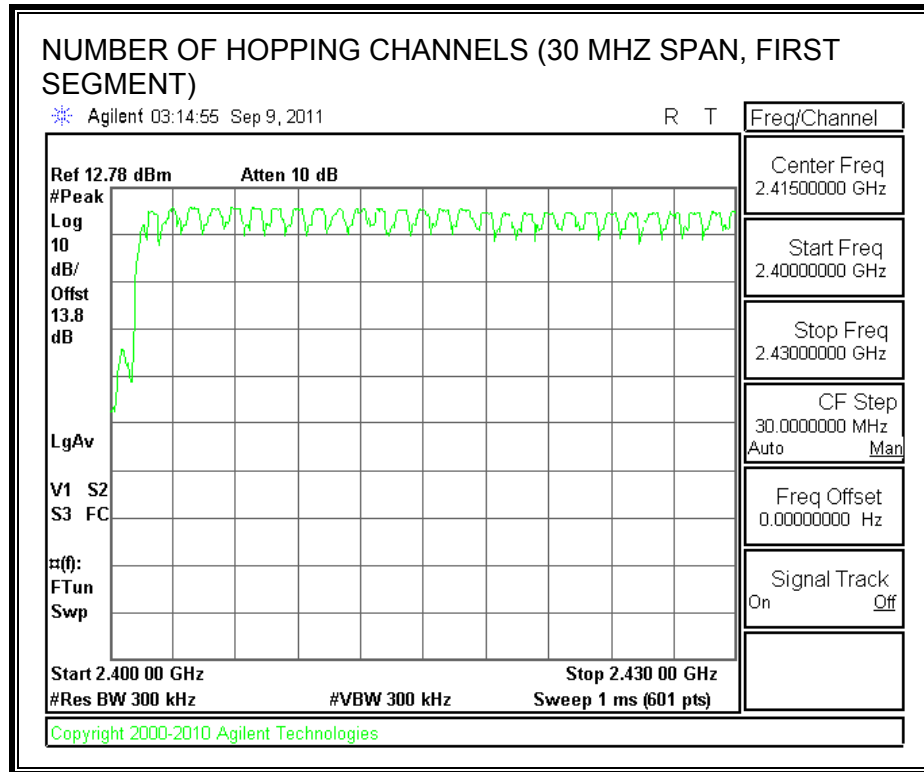
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

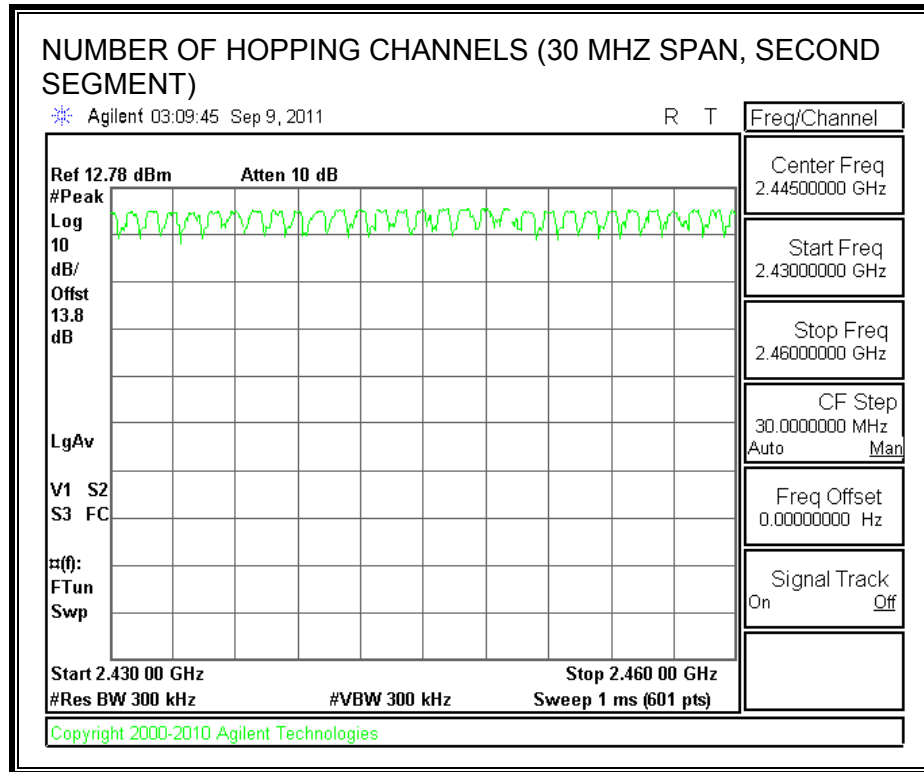
RESULTS

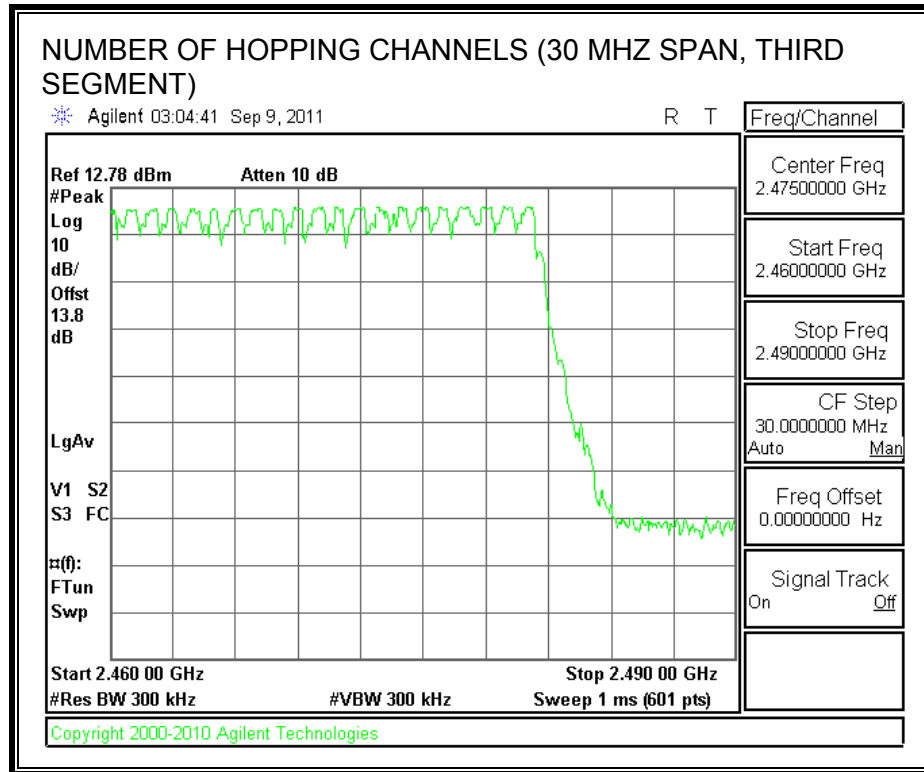
79 Channels observed.

NUMBER OF HOPPING CHANNELS









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 $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

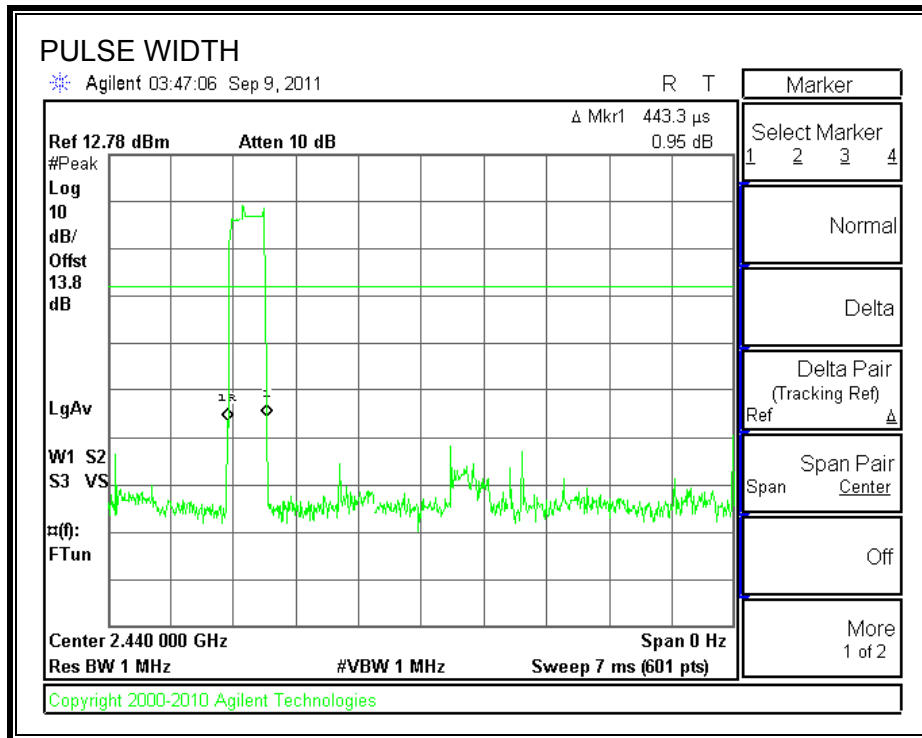
RESULTS

8PSK Mode

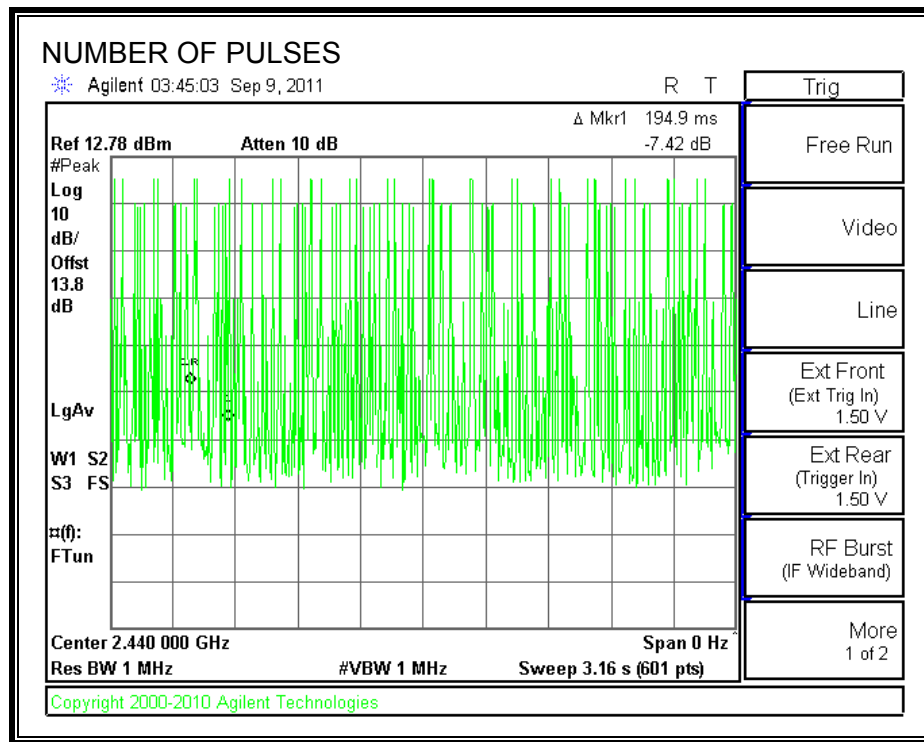
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
DH1	0.4433	31	0.137	0.4	-0.263
DH3	1.68	17	0.286	0.4	-0.114
DH5	2.94	13	0.382	0.4	-0.018

DH1

PULSE WIDTH

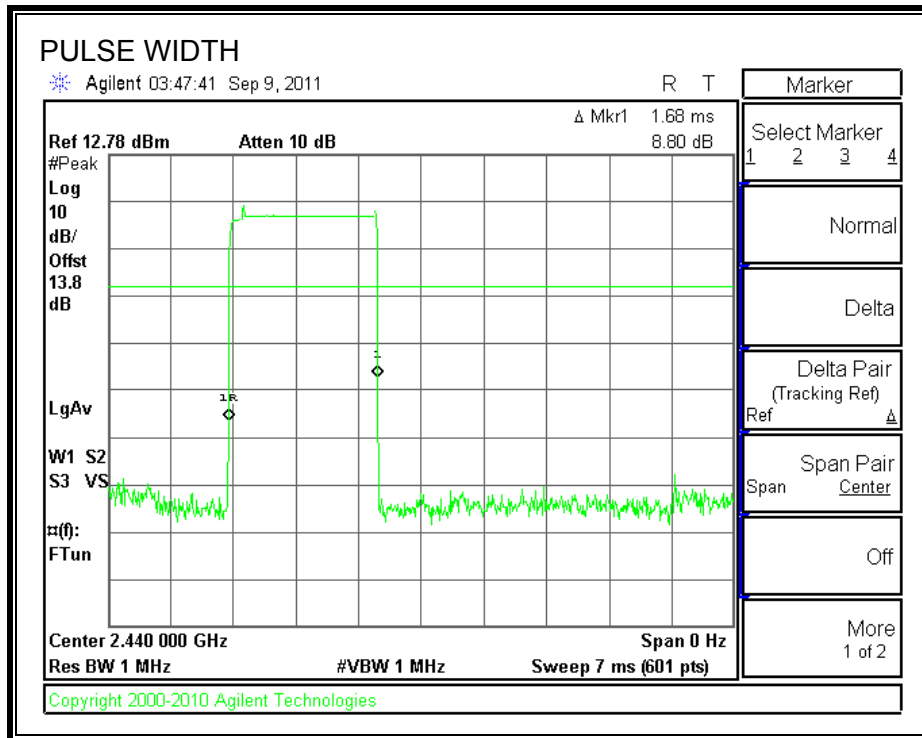


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

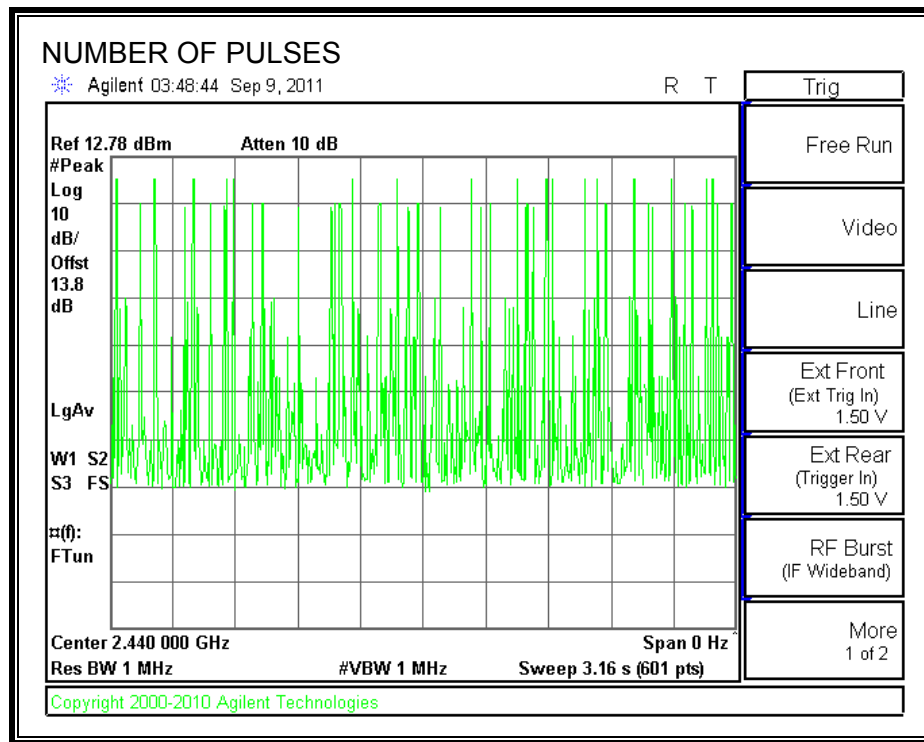


DH3

PULSE WIDTH

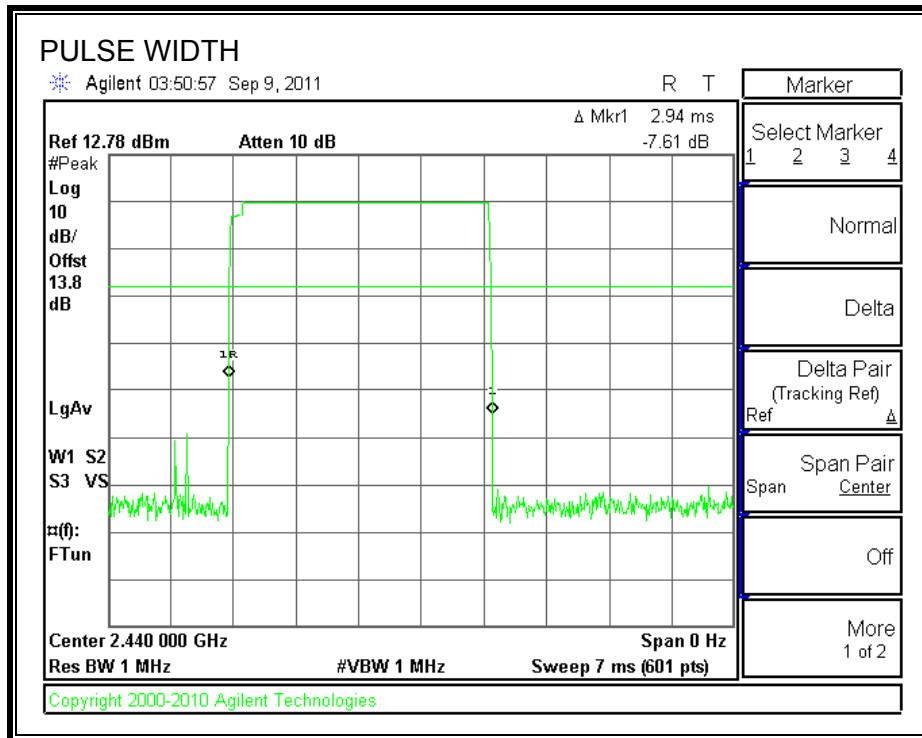


NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

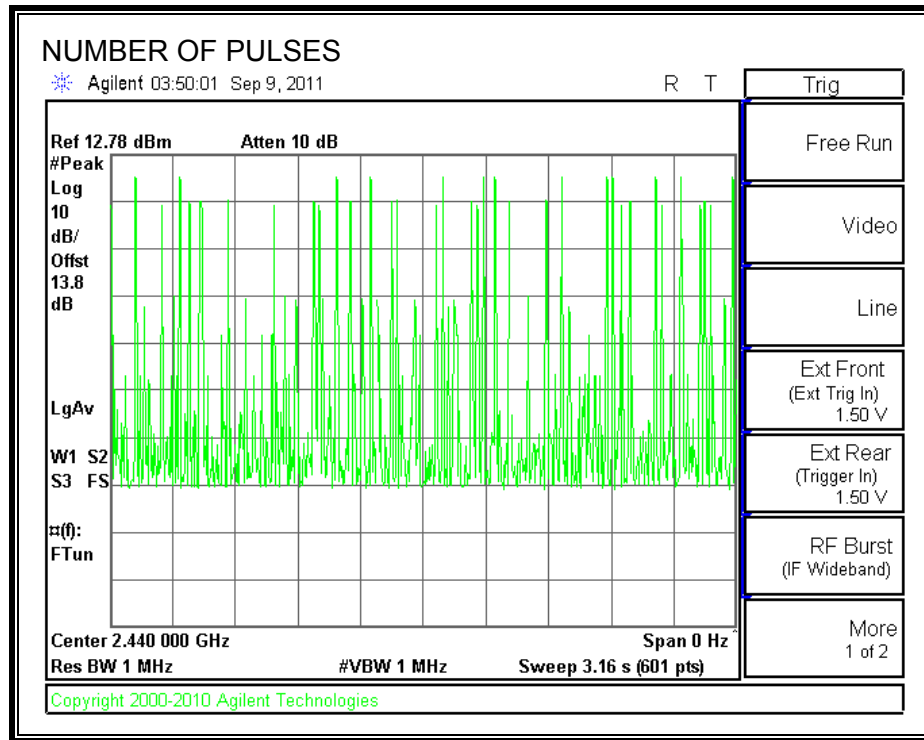


DH5

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



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.

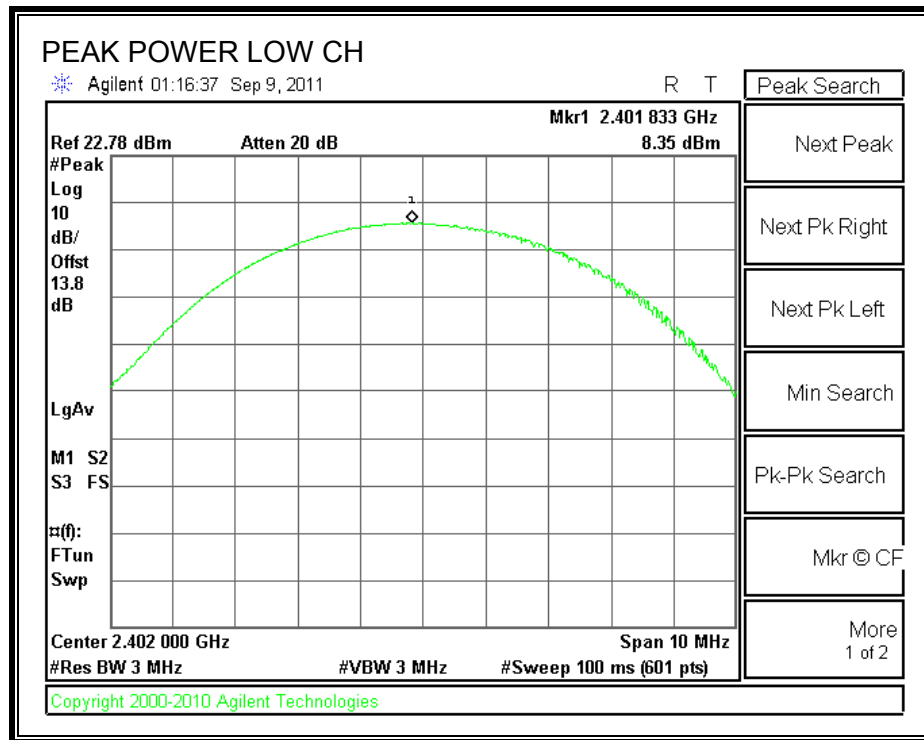
TEST PROCEDURE

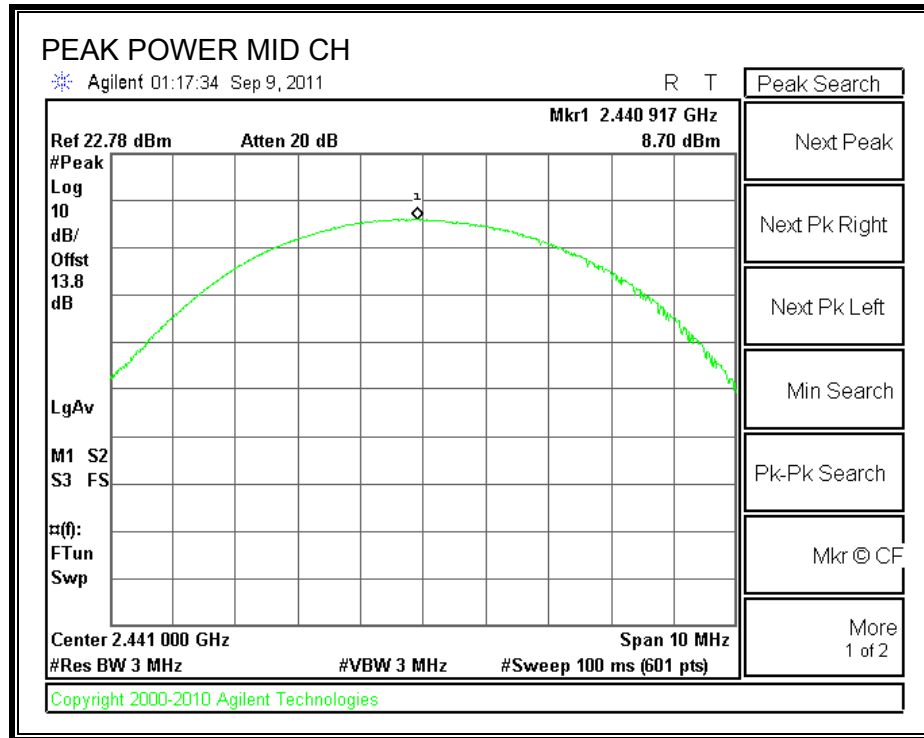
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

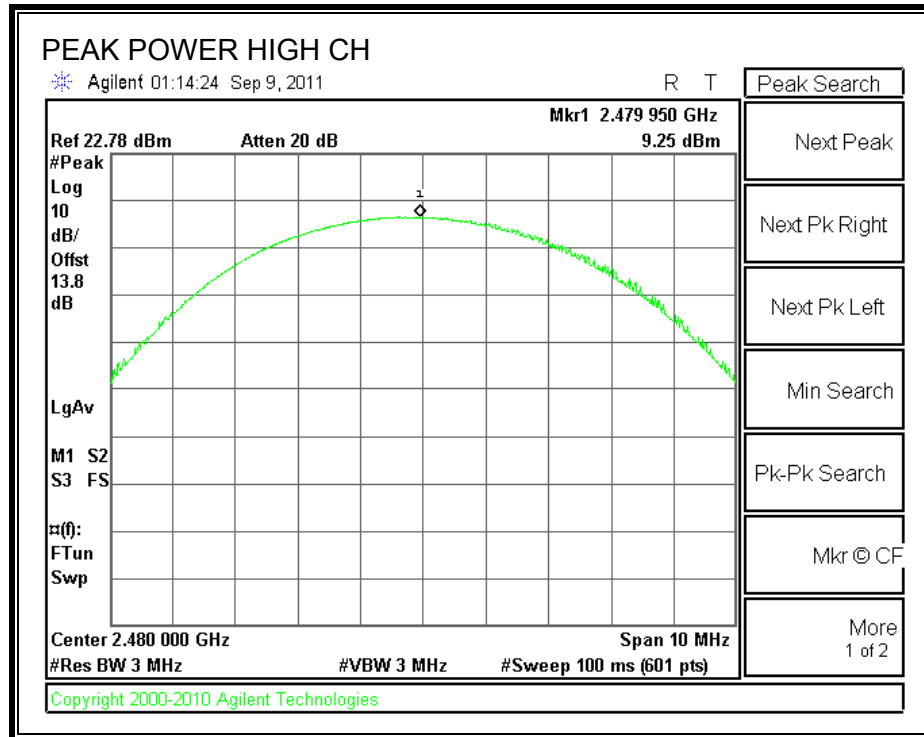
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.35	30	-21.65
Middle	2441	8.70	30	-21.30
High	2480	9.25	30	-20.75

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 11.88 dB (including 10 dB pad and 1.88dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Frequency (MHz)	Average Power (dBm)
2402	5.46
2441	5.94
2480	6.67

7.2.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -20 dBc

TEST PROCEDURE

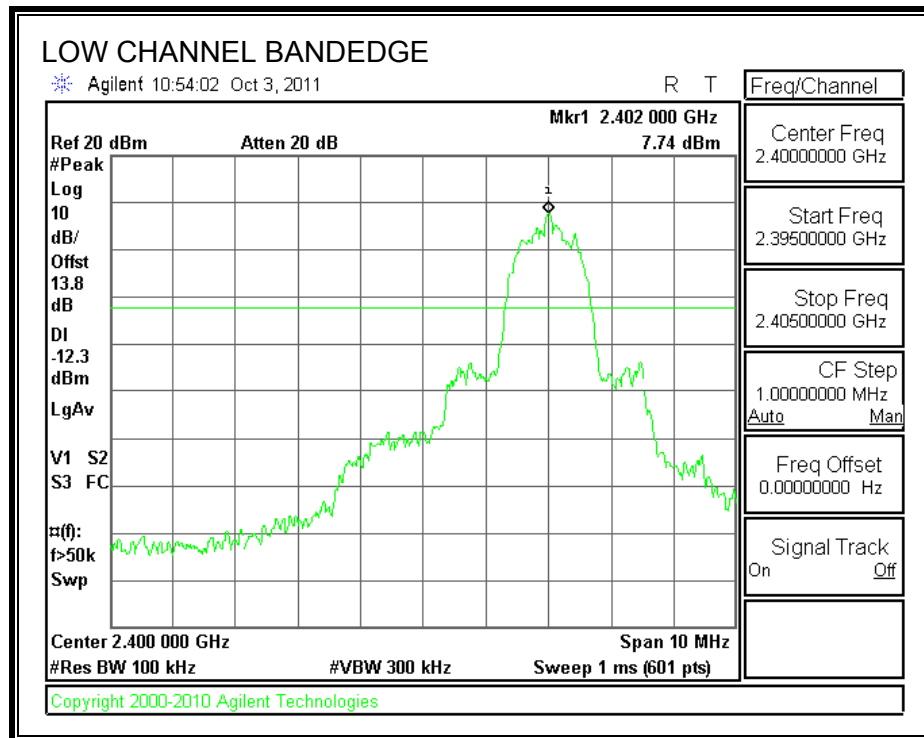
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

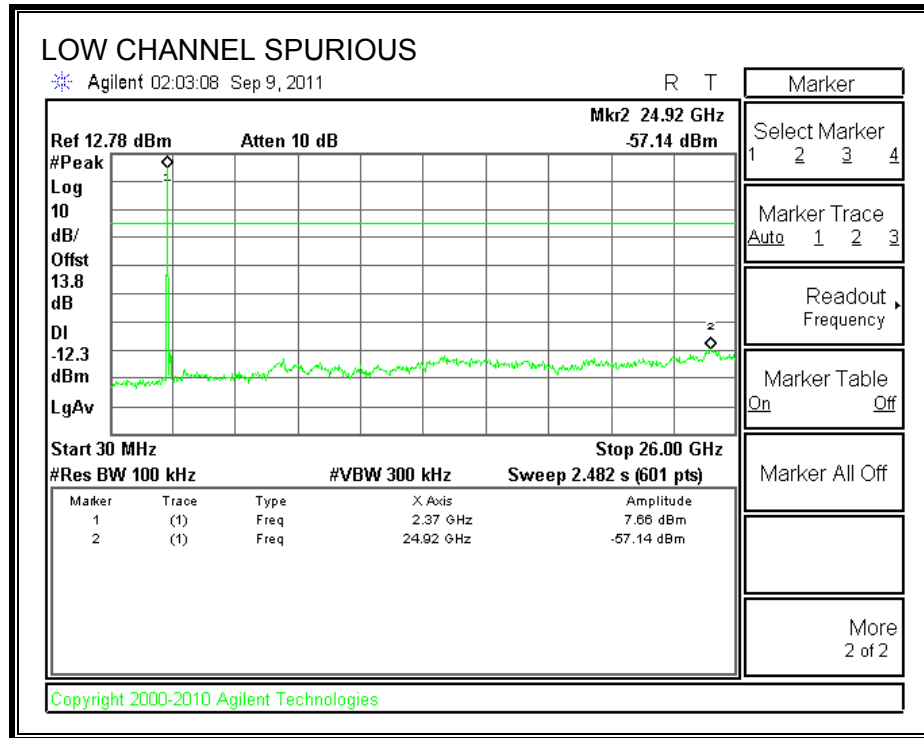
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

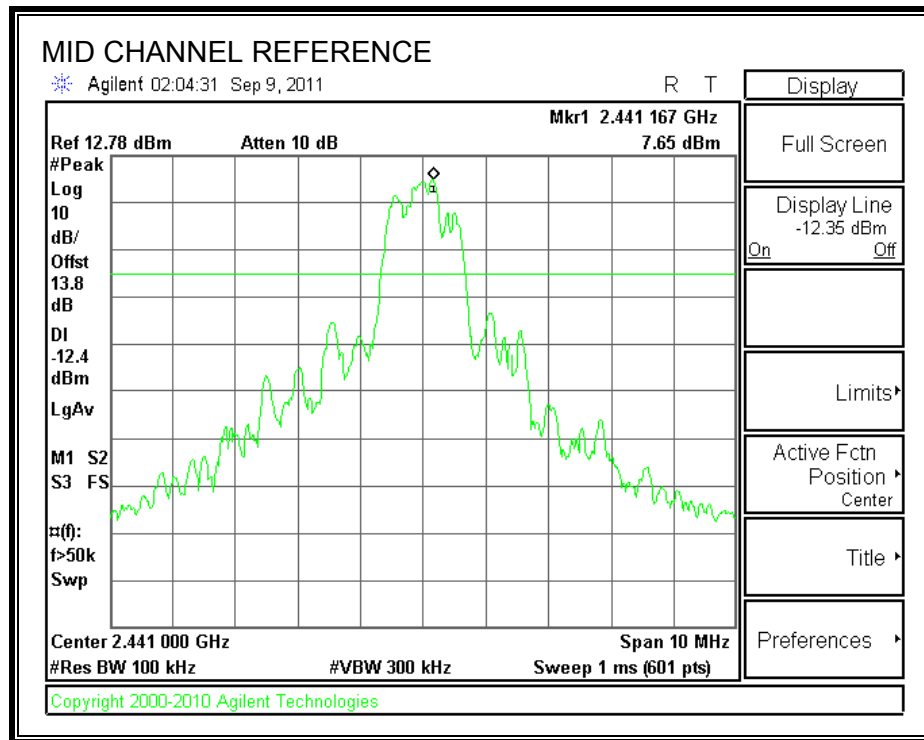
RESULTS

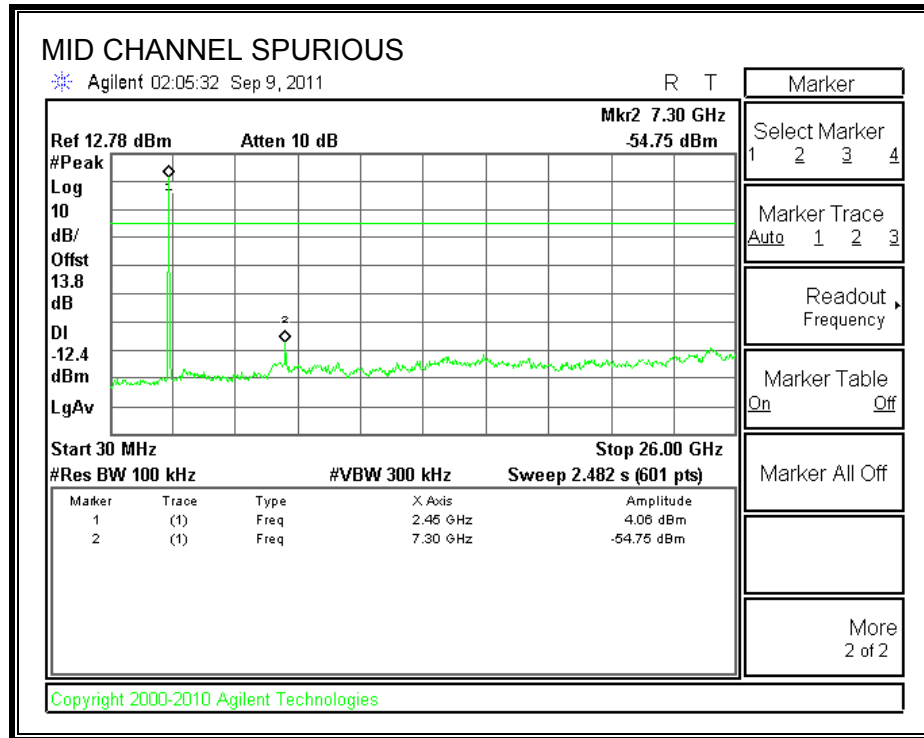
SPURIOUS EMISSIONS, LOW CHANNEL



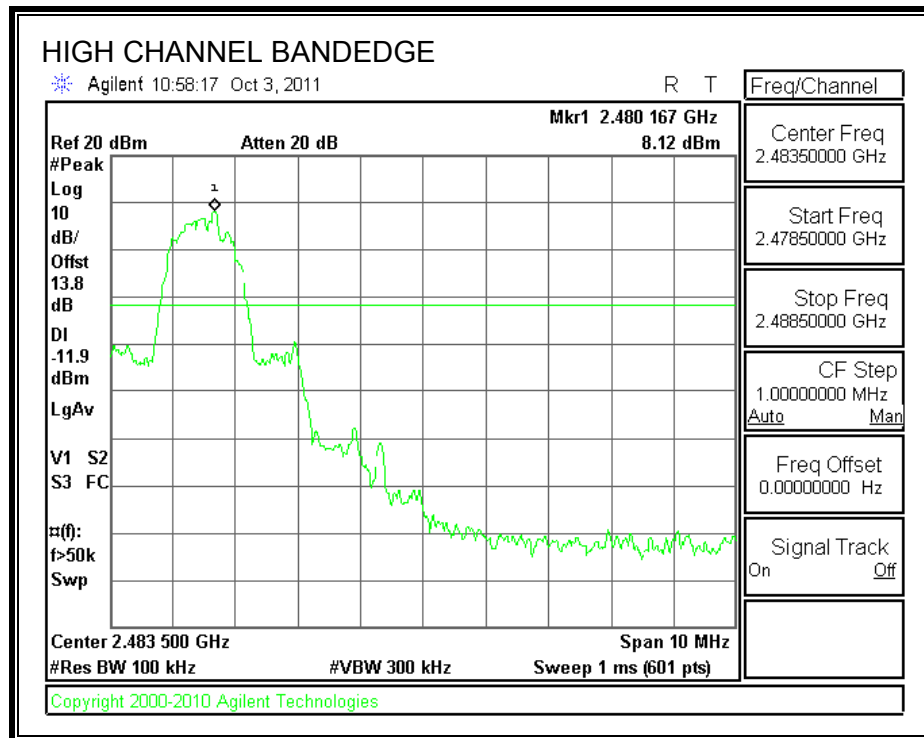


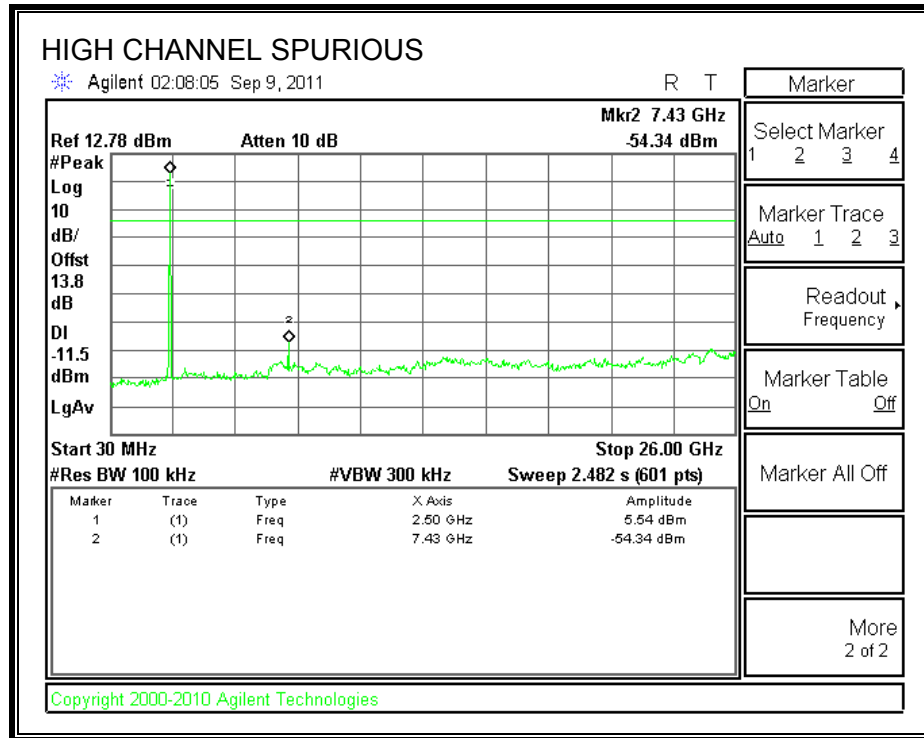
SPURIOUS EMISSIONS, MID CHANNEL



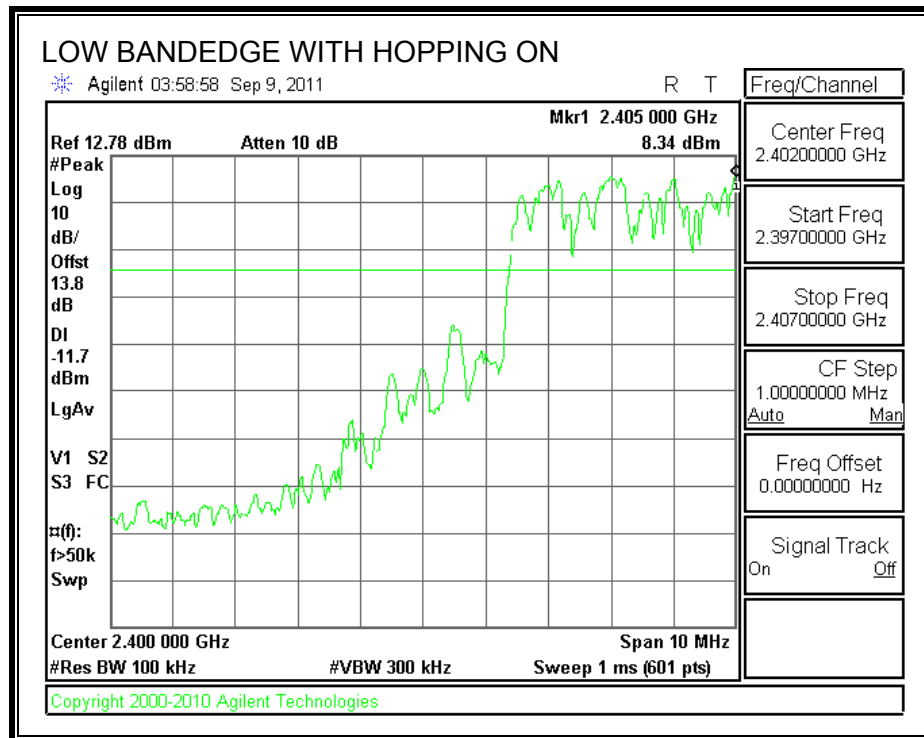


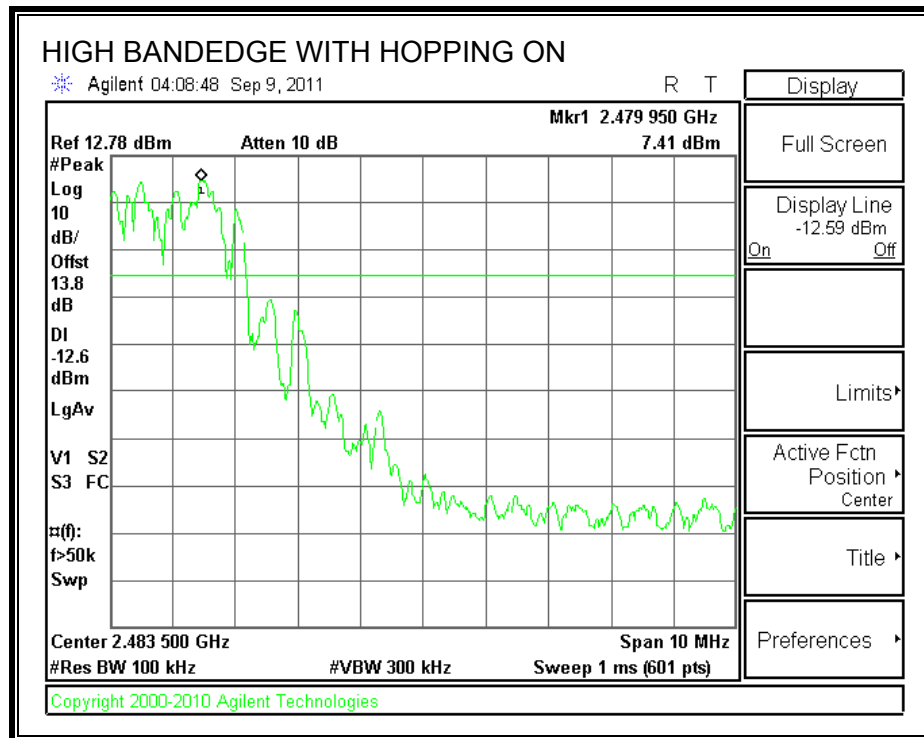
SPURIOUS EMISSIONS, HIGH CHANNEL





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.

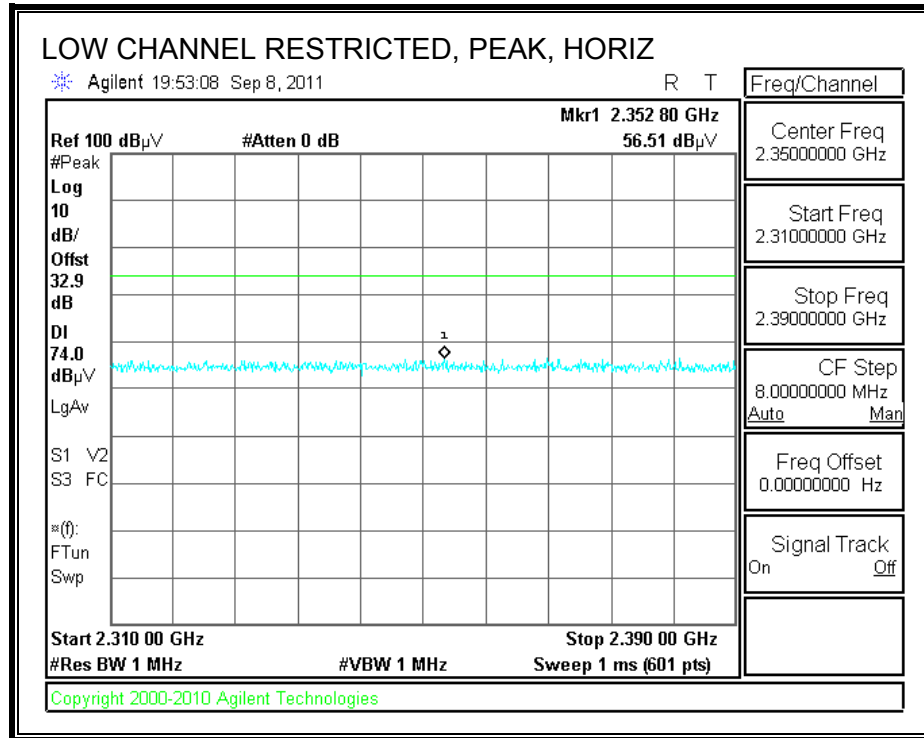
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

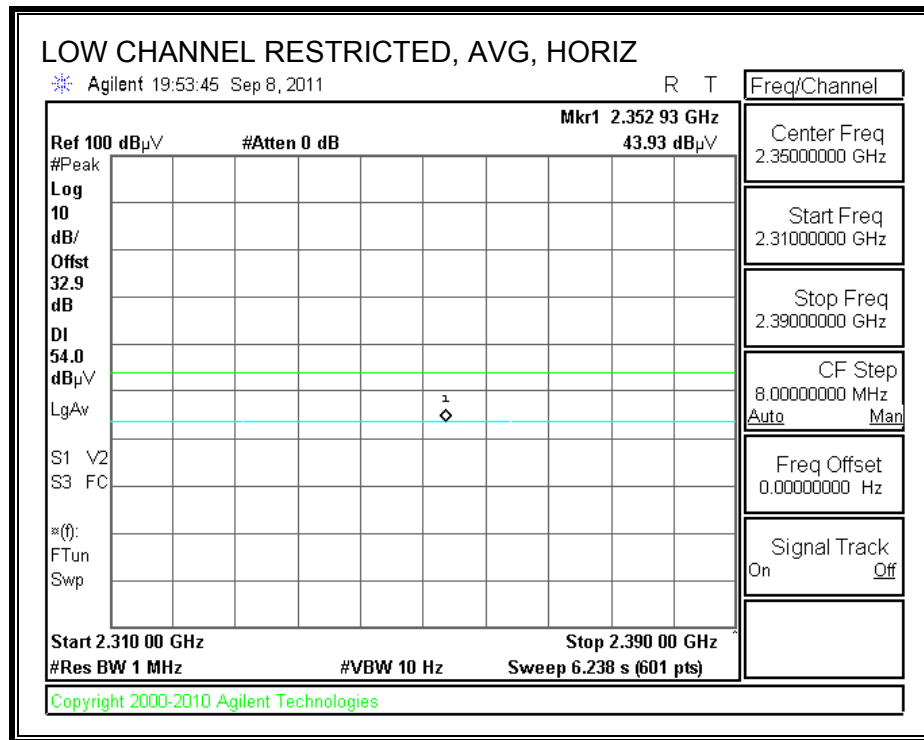
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

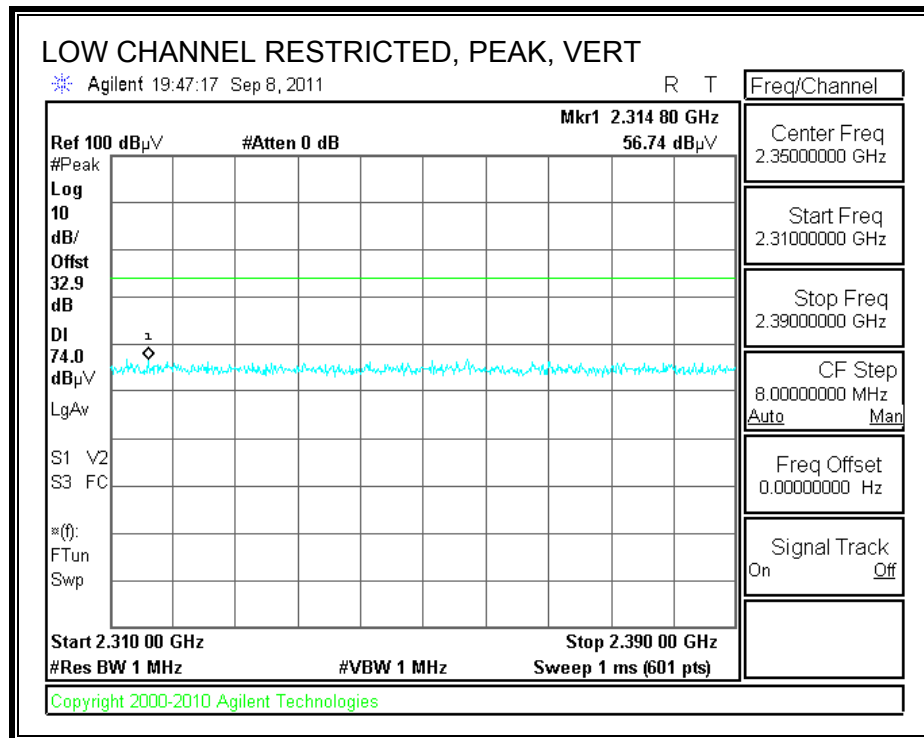
8.2.1. BASIC DATA RATE GFSK MODULATION

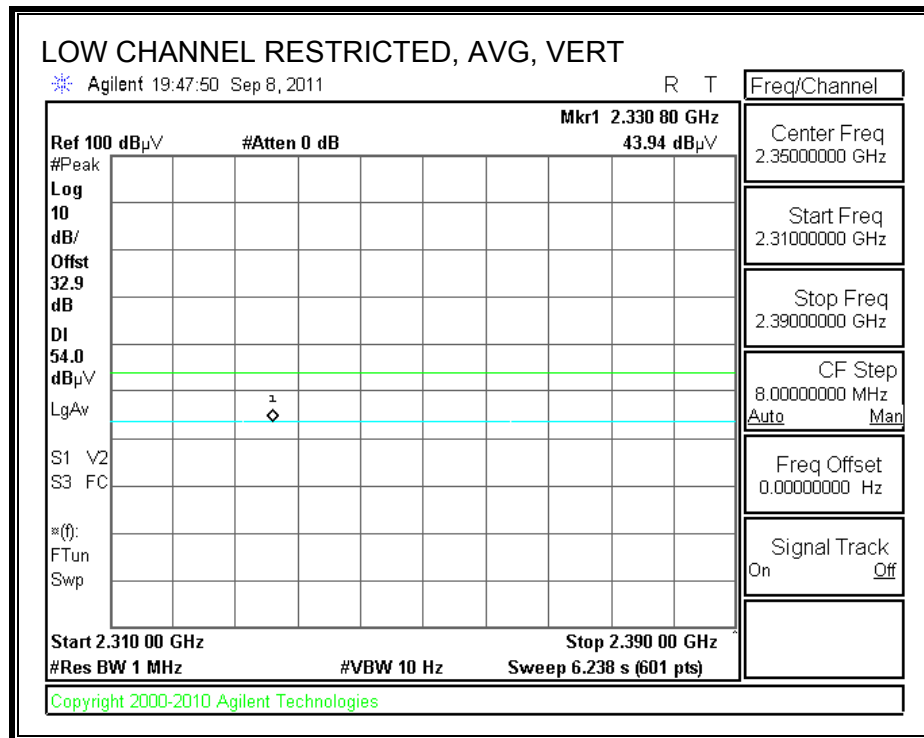
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



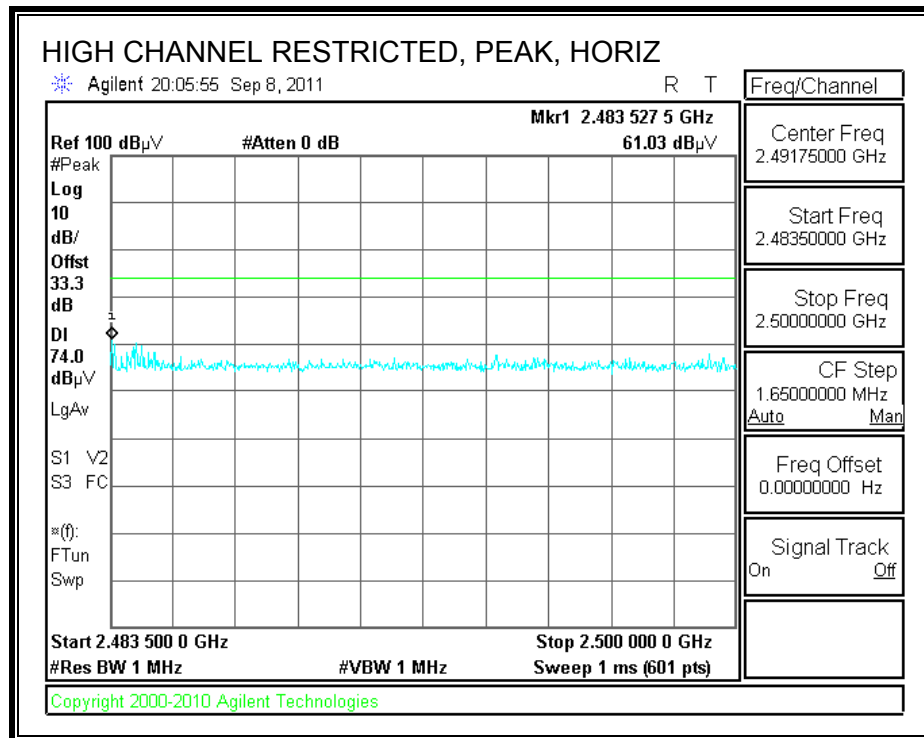


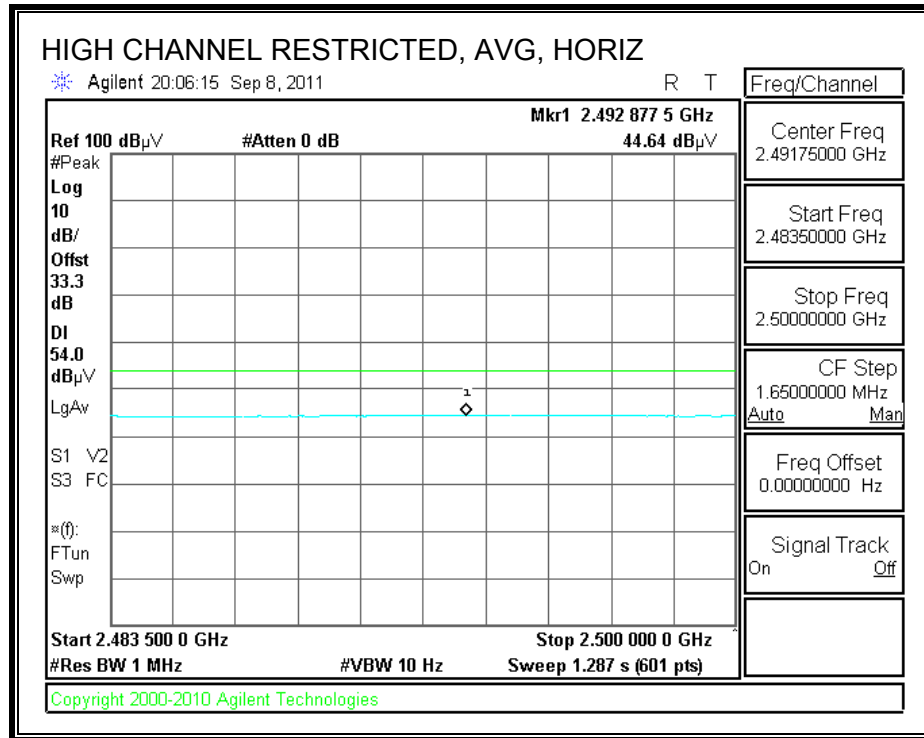
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



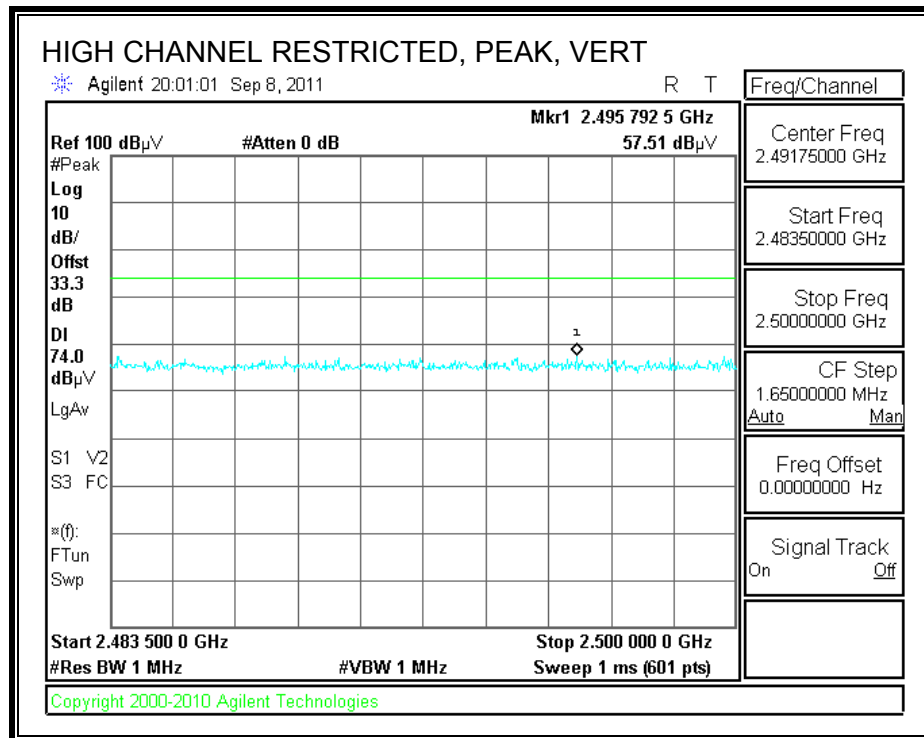


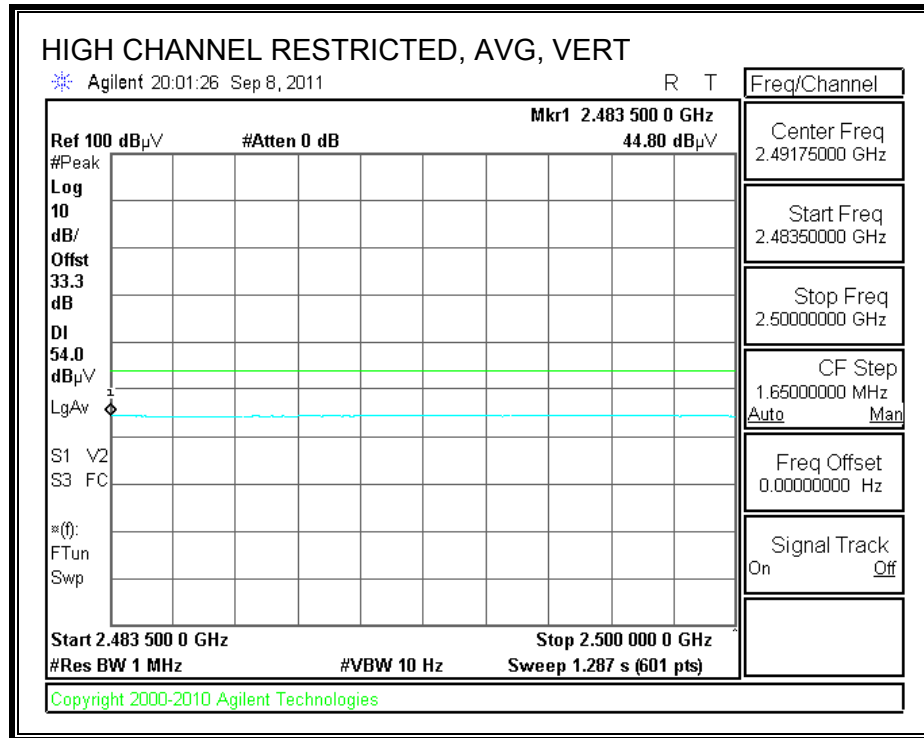
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 09/08/11
Project #: 11114021
Company: Samsung
Test Target:
Mode Oper: Tx On , BT, GFSK.

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	

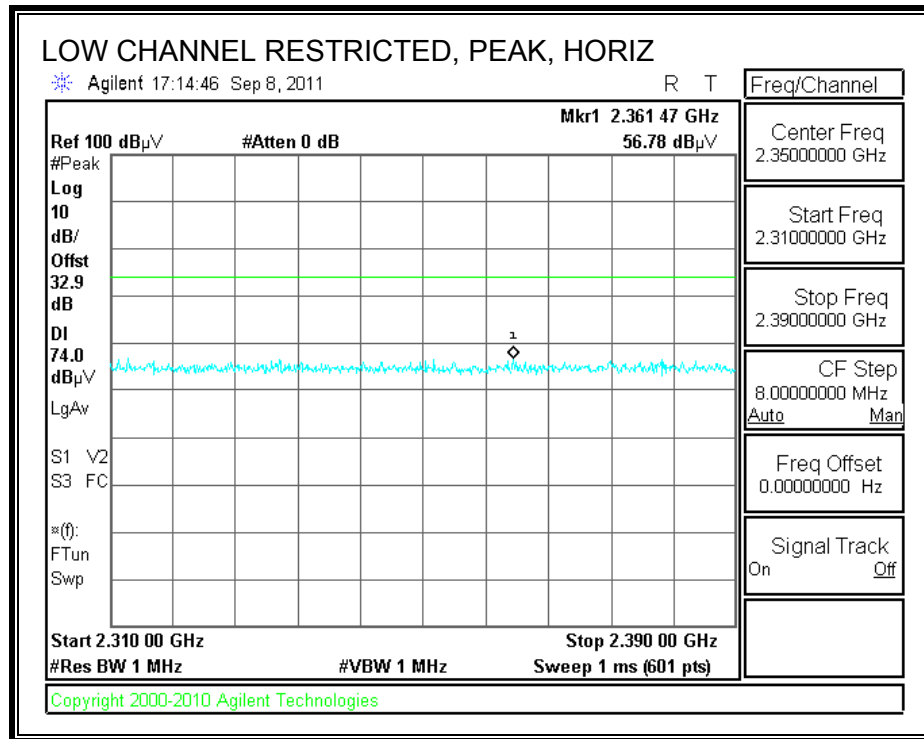
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
High Ch.													
4.960	3.0	40.9	34.8	6.3	-35.5	0.0	0.0	46.5	74.0	-27.5	V	P	
4.960	3.0	32.8	34.8	6.3	-35.5	0.0	0.0	38.4	54.0	-15.6	V	A	
4.960	3.0	39.7	34.8	6.3	-35.5	0.0	0.0	45.4	74.0	-28.6	H	P	
4.960	3.0	30.0	34.8	6.3	-35.5	0.0	0.0	35.7	54.0	-18.3	H	A	
Mid Ch.													
4.882	3.0	39.5	34.7	6.2	-35.5	0.0	0.0	44.9	74.0	-29.1	V	P	
4.882	3.0	29.2	34.7	6.2	-35.5	0.0	0.0	34.6	54.0	-19.4	V	A	
4.882	3.0	38.3	34.7	6.2	-35.5	0.0	0.0	43.8	74.0	-30.2	H	P	
4.882	3.0	26.6	34.7	6.2	-35.5	0.0	0.0	32.1	54.0	-21.9	H	A	
Low Ch.													
4.804	3.0	40.1	34.6	6.2	-35.5	0.0	0.0	45.4	74.0	-28.6	V	P	
4.804	3.0	29.3	34.6	6.2	-35.5	0.0	0.0	34.6	54.0	-19.4	V	A	
4.804	3.0	38.3	34.6	6.2	-35.5	0.0	0.0	43.6	74.0	-30.4	H	P	
4.804	3.0	27.2	34.6	6.2	-35.5	0.0	0.0	32.4	54.0	-21.6	H	A	

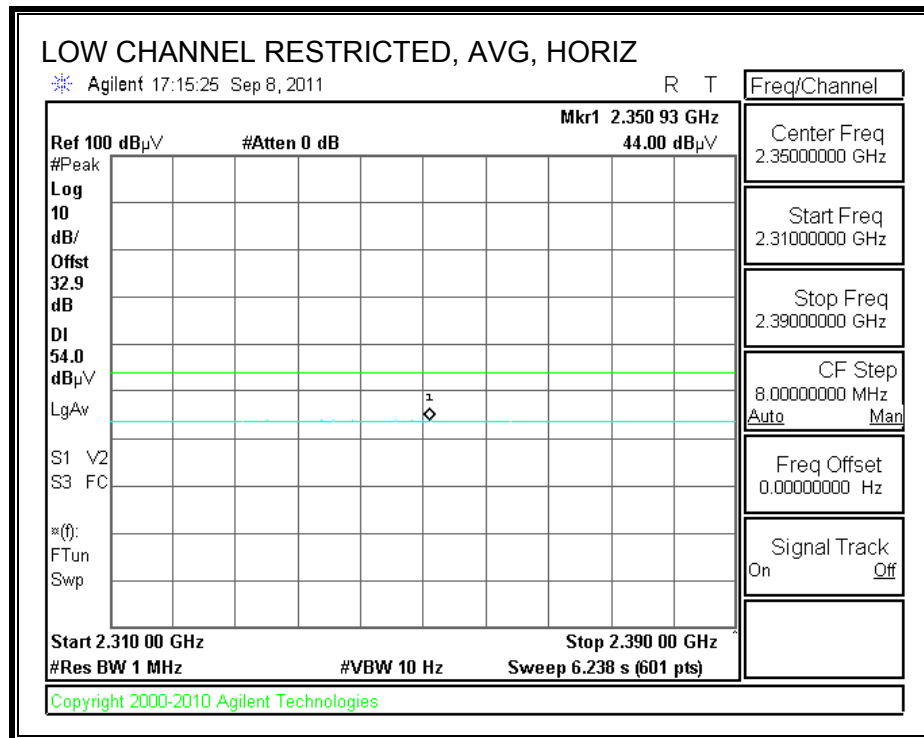
Rev. 4.1.2.7

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

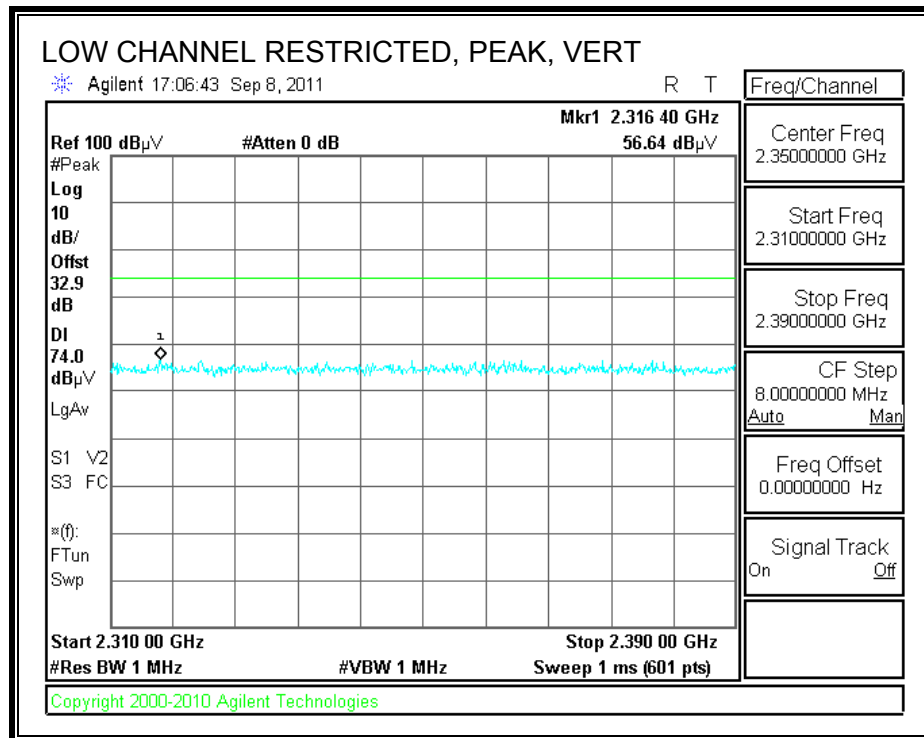
8.2.2. ENHANCED DATA RATE 8PSK MODULATION

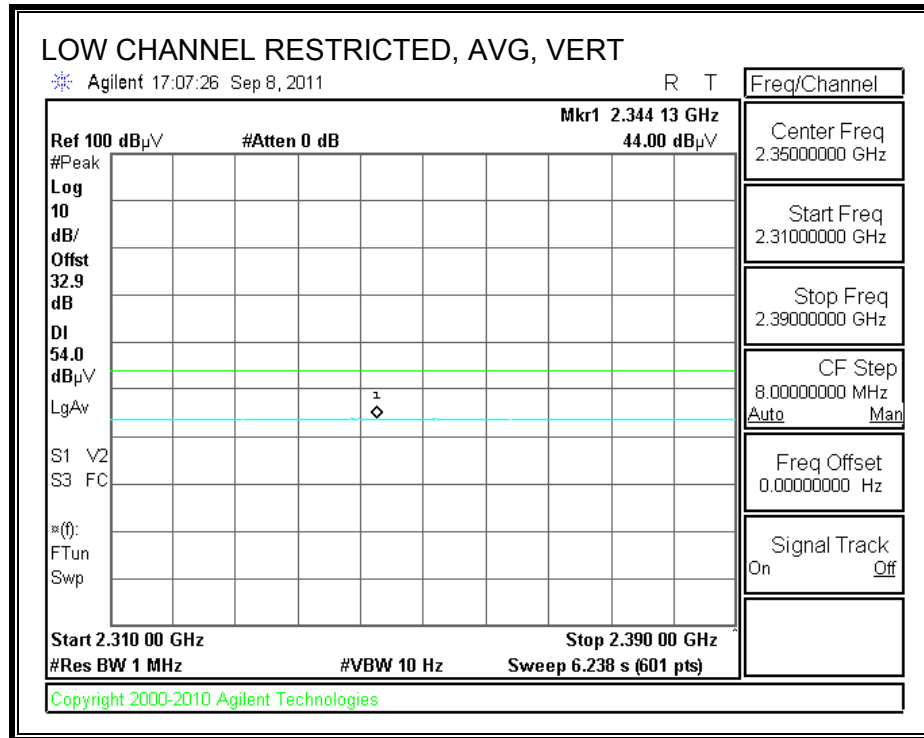
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



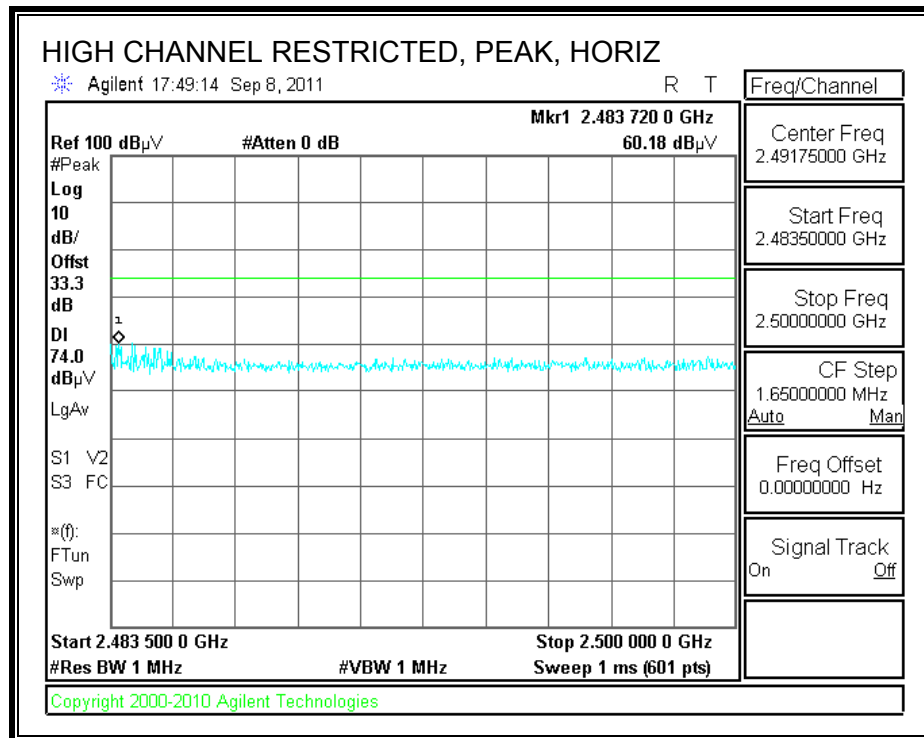


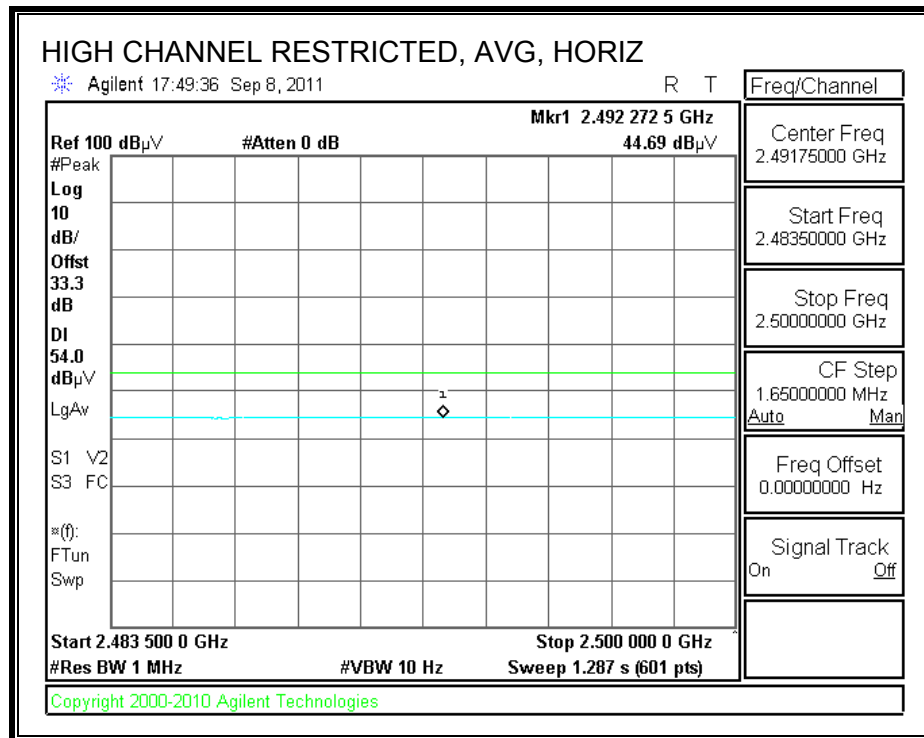
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



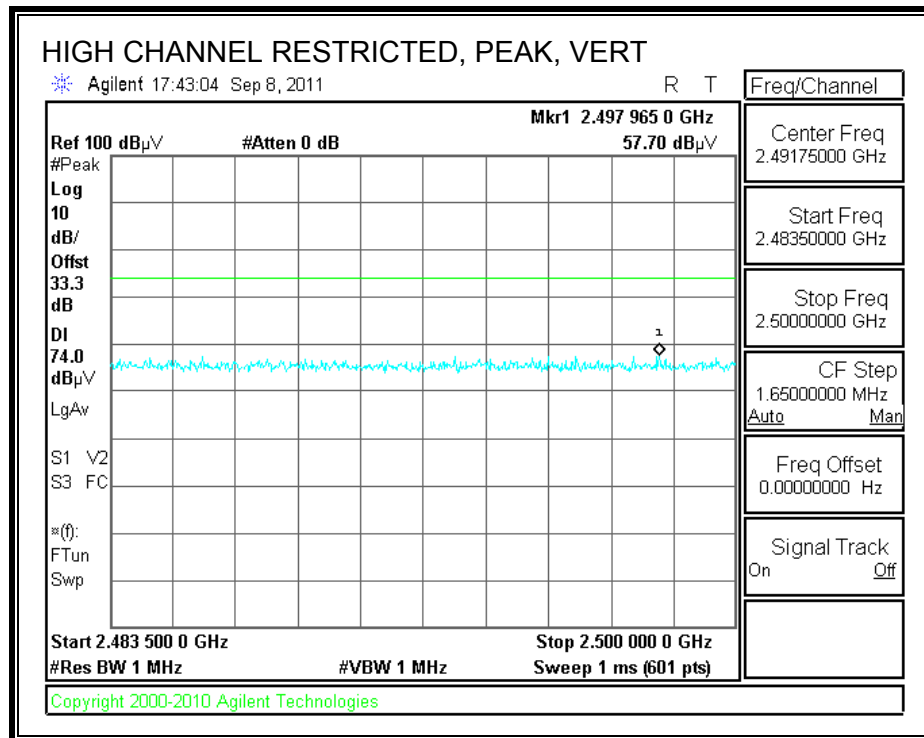


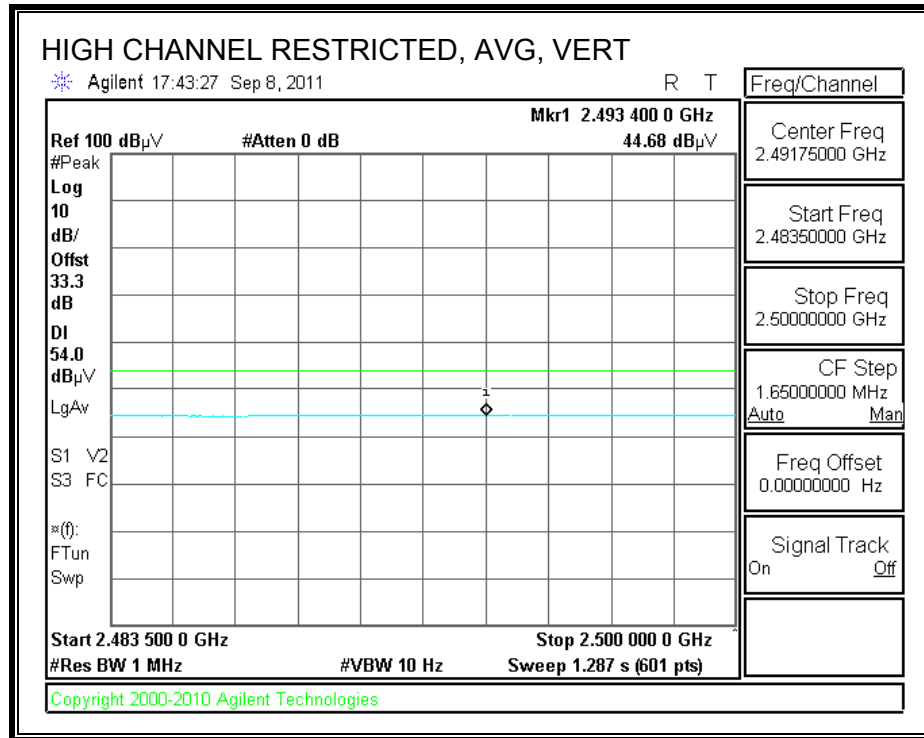
RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 09/08/11
Project #: 11I14021
Company: Samsung
Test Target:
Mode Oper: Tx On , BT, 8PSK.

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	

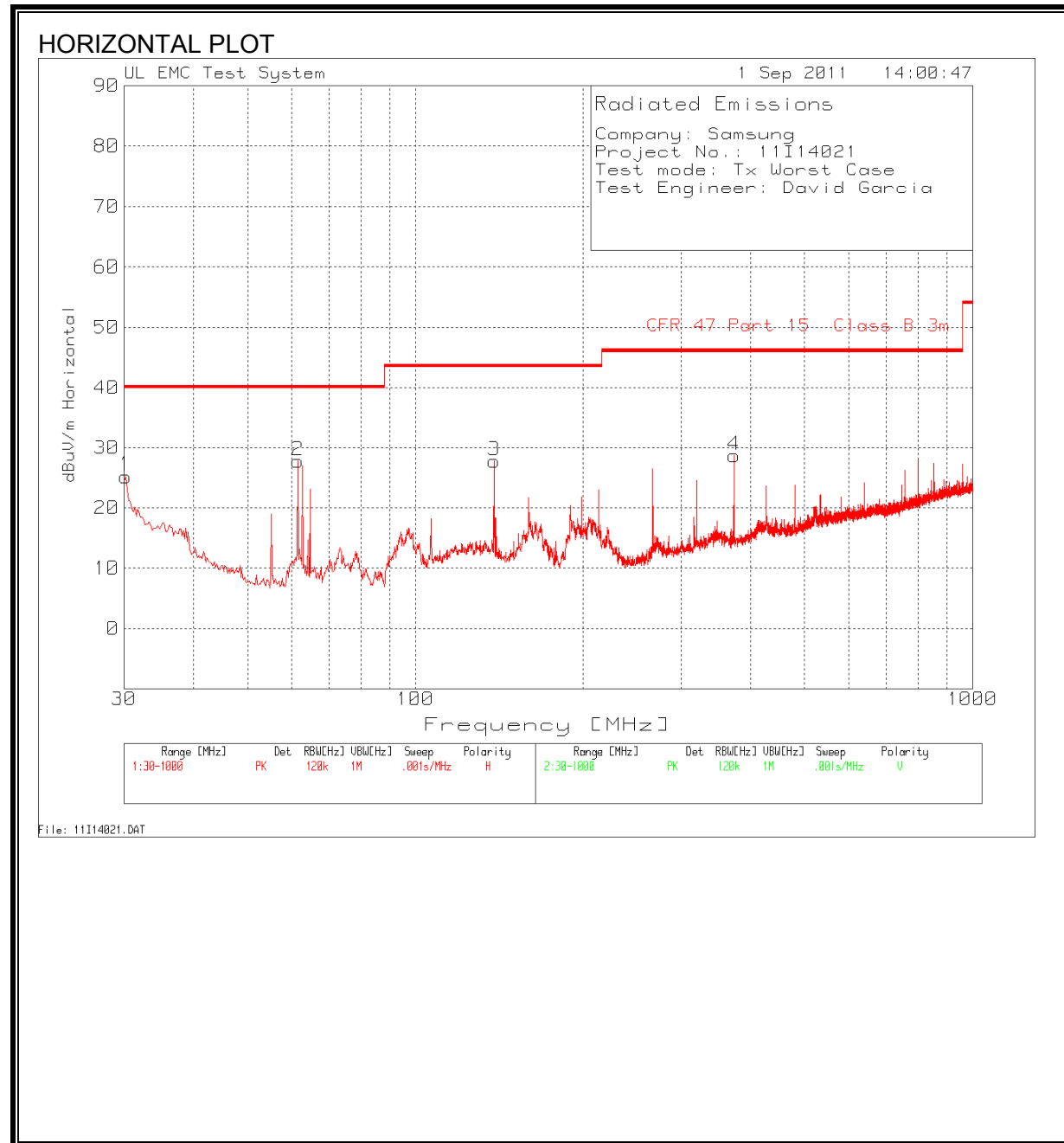
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch.													
4.804	3.0	38.4	34.6	6.2	-35.5	0.0	0.0	43.7	74.0	-30.3	V	P	
4.804	3.0	26.5	34.6	6.2	-35.5	0.0	0.0	31.8	54.0	-22.2	V	A	
4.804	3.0	38.9	34.6	6.2	-35.5	0.0	0.0	44.2	74.0	-29.8	H	P	
4.804	3.0	26.3	34.6	6.2	-35.5	0.0	0.0	31.6	54.0	-22.4	H	A	
Mid Ch.													
4.882	3.0	38.3	34.7	6.2	-35.5	0.0	0.0	43.8	74.0	-30.2	V	P	
4.882	3.0	27.6	34.7	6.2	-35.5	0.0	0.0	33.1	54.0	-20.9	V	A	
4.882	3.0	38.6	34.7	6.2	-35.5	0.0	0.0	44.1	74.0	-29.9	H	P	
4.882	3.0	25.9	34.7	6.2	-35.5	0.0	0.0	31.4	54.0	-22.6	H	A	
High Ch.													
4.960	3.0	41.1	34.8	6.3	-35.5	0.0	0.0	46.8	74.0	-27.2	V	P	
4.960	3.0	29.5	34.8	6.3	-35.5	0.0	0.0	35.2	54.0	-18.8	V	A	
4.960	3.0	38.2	34.8	6.3	-35.5	0.0	0.0	43.8	74.0	-30.2	H	P	
4.960	3.0	27.4	34.8	6.3	-35.5	0.0	0.0	33.1	54.0	-20.9	H	A	

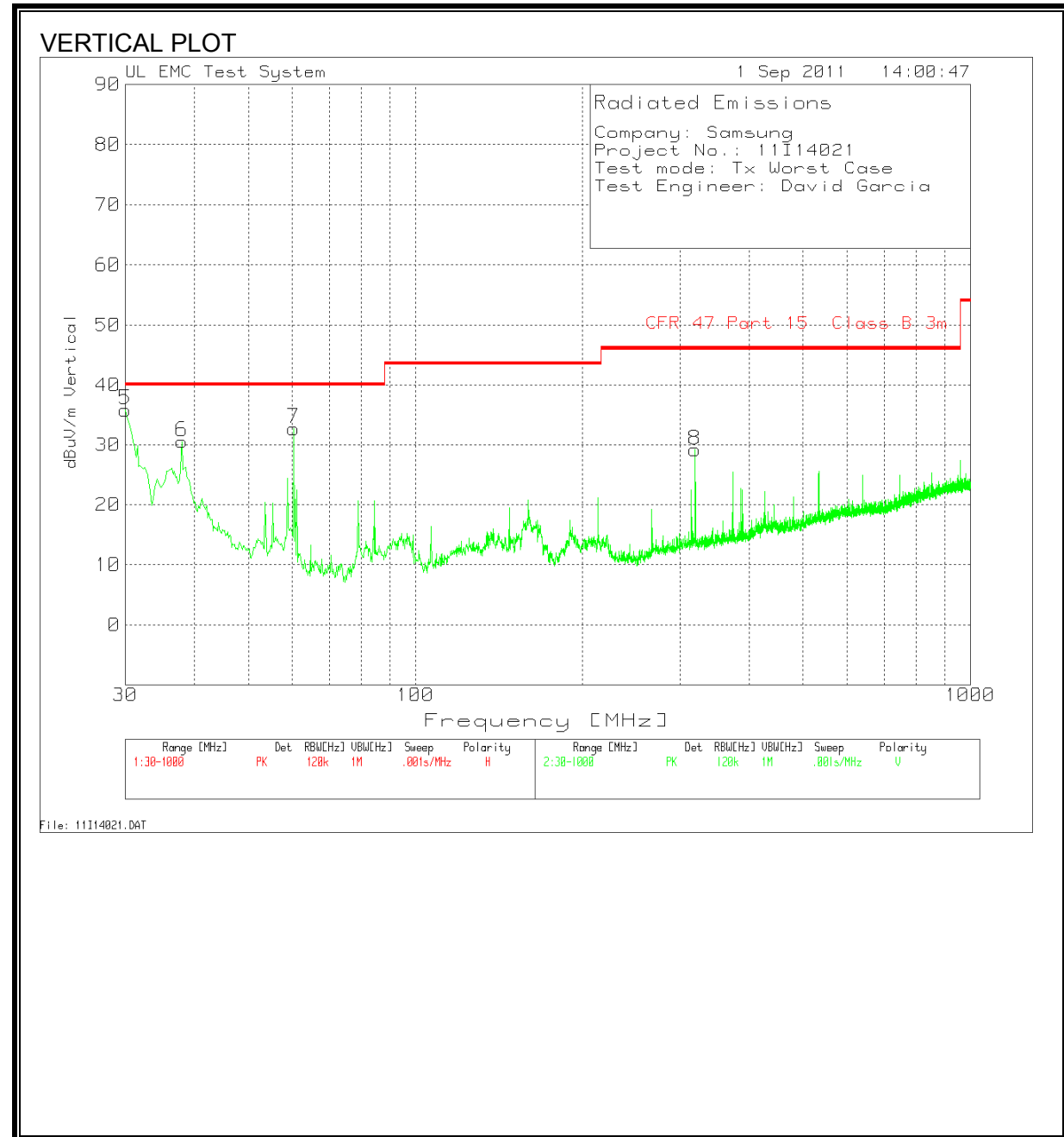
Rev. 4.1.2.7

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)





HORIZONTAL AND VERTICAL DATA

Company: Samsung										
Project No.: 11I14021										
Test mode: Tx Worst Case										
Test Engineer: David Garcia										
Test	Meter		3m below	3m T15	3m Bilog		CFR 47 Part		Height	
Frequency	Reading	Detector	1GHz	PreAmp	T185 below		15 Class B		[cm]	Polarity
			Cable.TXT	below	1GHz.TXT	dBuV/m	3m	Margin		
			[dB]	[dB]	[dB]					
30.1938	33.02	PK	0.6	-28.3	19.9	25.22	40	-14.78	99	Horz
61.5967	47.05	PK	0.9	-28.2	8	27.75	40	-12.25	99	Horz
138.3593	41.28	PK	1.2	-27.9	13.2	27.78	43.5	-15.72	176	Horz
373.2994	39.8	PK	2	-27.7	14.6	28.7	46	-17.3	99	Horz
30	43.58	PK	0.6	-28.3	20	35.88	40	-4.12	101	Vert
37.9476	42.96	PK	0.7	-28.2	15.1	30.56	40	-9.44	101	Vert
60.4337	52.15	PK	0.9	-28.2	7.9	32.75	40	-7.25	176	Vert
319.2166	41.02	PK	1.8	-27.4	13.8	29.22	46	-16.78	176	Vert

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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.

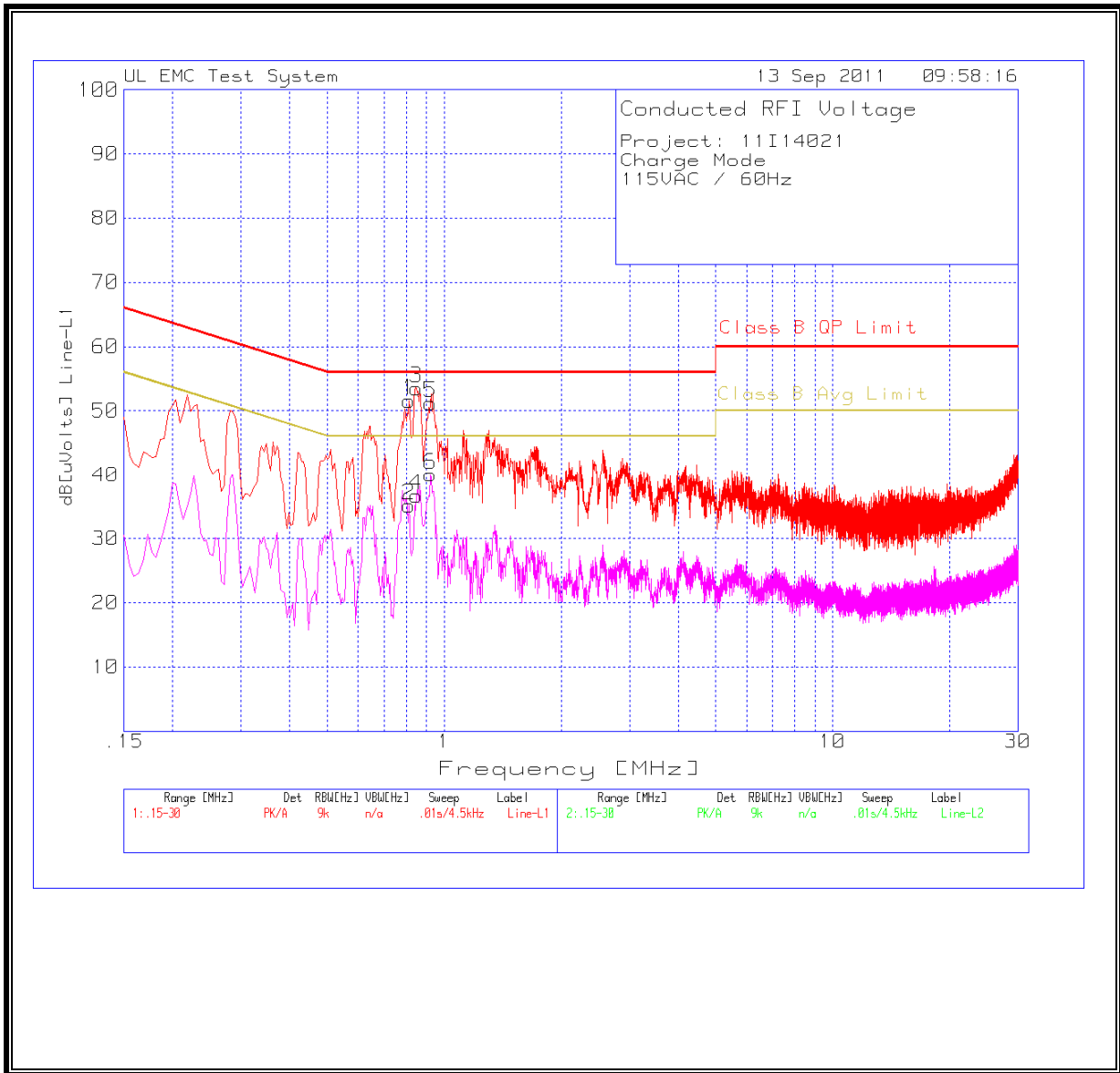
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Project: 11I14021									
Charge Mode									
115VAC / 60Hz									
Line-L1 .15 - 30MHz									
Test Freq. (MHz)	Meter Reading	Detector	LISN [dB]	Conducted Emission Cable [dB]	Correct Reading (dBuVolts)	Class B Quasi-peak Limit	Quasi-Peak Margin	Class B Average Limit	Average Margin
0.8115	51.54	PK	0	0	51.54	56	-4.46	--	--
0.8115	35.11	Av	0	0	35.11	--	--	46	-10.89
0.8475	53.52	PK	0	0	53.52	56	-2.48	--	--
0.8475	36.63	Av	0	0	36.63	--	--	46	-9.37
0.9195	51.23	PK	0	0	51.23	56	-4.77	--	--
0.9195	40.01	Av	0	0	40.01	--	--	--	--
Line-L2 .15 - 30MHz									
Test Freq. (MHz)	Meter Reading	Detector	LISN [dB]	Conducted Emission Cable [dB]	Correct Reading (dBuVolts)	Class B Quasi-peak Limit	Quasi-Peak Margin	Class B Average	Average Margin
0.816	48.88	PK	0	0	48.88	56	-7.12	--	--
0.816	30.08	Av	0	0	30.08	--	--	46	-15.92
0.843	50.32	PK	0	0	50.32	56	-5.68	--	--
0.843	32.36	Av	0	0	32.36	--	--	46	-13.64
0.924	49.07	PK	0	0	49.07	56	-6.93	--	--
0.924	33.95	Av	0	0	33.95	--	--	46	-12.05

LINE 1 RESULTS



LINE 2 RESULTS

