



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8**

CERTIFICATION TEST REPORT

FOR

**Tablet with cellular GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-
HSDPA/CDMA1xRTT/1x Advanced/EV-DO Rev 0, A, B/LTE/IEEE 802.11a/b/g/n
(MIMO 2x2) and Bluetooth radio**

Model: A1475

FCC ID: BCGA1475

IC: 579C-A1475

REPORT NUMBER: 13U15555-10

ISSUE DATE: SEPTEMBER 17, 2013

Prepared for
**APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.**

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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
<u>---</u>	<u>09/17/13</u>	<u>Initial Issue</u>	<u>T. Chan</u>

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

EUT DESCRIPTION: Tablet with cellular GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-HSDPA/CDMA1xRTT/1x Advanced/EV-DO Rev 0, A, B/LTE/IEEE 802.11a/b/g/n (MIMO 2x2) and Bluetooth radio

MODEL: A1475

SERIAL NUMBER: DLXL104WFMNF

DATE TESTED: AUGUST 20 – AUGUST 28, 2013

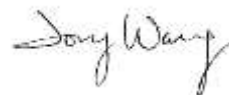
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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

Tested By:



Thu Chan
WiSE Operations Manager
UL Verification Services Inc.

TONY WANG
WiSE Lab Technician
UL Verification Services Inc.

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.

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

47173 Benicia Street	47266 Benicia Street
<input type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D
<input type="checkbox"/> Chamber B	<input checked="" type="checkbox"/> Chamber E
<input type="checkbox"/> Chamber C	<input checked="" type="checkbox"/> Chamber F

UL Verification Services Inc. 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

Tablet with cellular GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-HSDPA/CDMA1xRTT/1x Advanced/EV-DO Rev 0, A, B/LTE/IEEE 802.11a/b/g/n (MIMO 2x2) and Bluetooth radio

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	14.44	27.80
2402 - 2480	QPSK	12.50	17.78
2402 - 2480	Enhanced 8PSK	12.78	18.97

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PiFA antenna, with a maximum gain as below table.

Frequency (MHz)	Antenna Gain (dBi)
2402 -2480	0.5

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Broadcom Bluetool 1.5.6.2.

5.5. WORST-CASE CONFIGURATION AND MODE

The EUT is a portable device that has three orientations; therefore, X (Lay down), Y (Landscape) and Z orientations (Standup) have been investigated, and the worst case was found to be at X (Lay down) position without AC Adapter and Headset.

Worst-case data rates from the base line scans of output powers were:

GFSK: 1Mbps

8PSK: 3Mbps

The worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was including headset, AC charger and the mode and channel with the highest output power.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC/DC adapter	Apple	A1401	60812	NA
Earphone	Apple	NA	NA	NA

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	SMA	Un-Shielded	0.1m	To Spectrum Analyzer

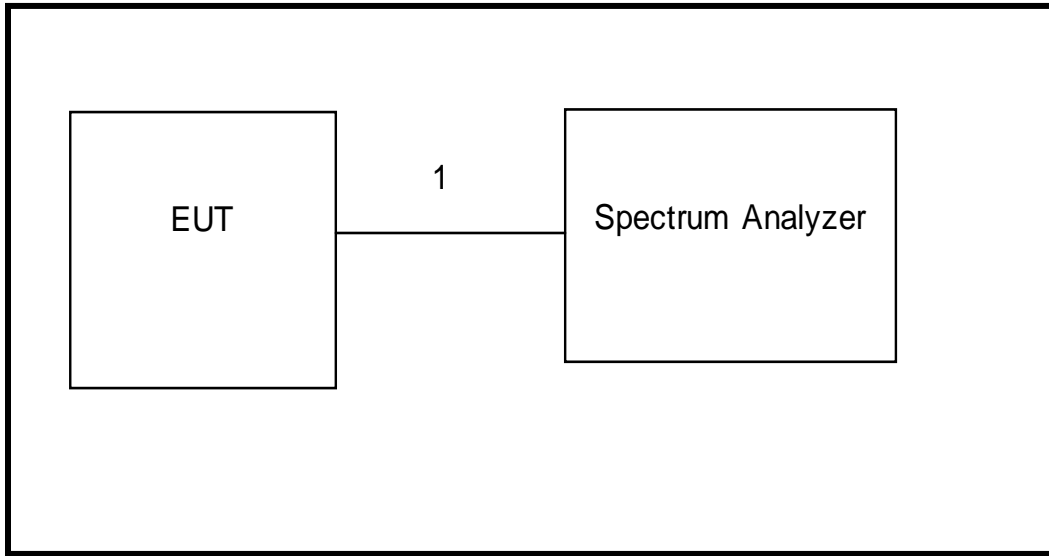
I/O CABLES (RADIATED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Audio	1	Jack	Un-Shielded	0.5m	NA

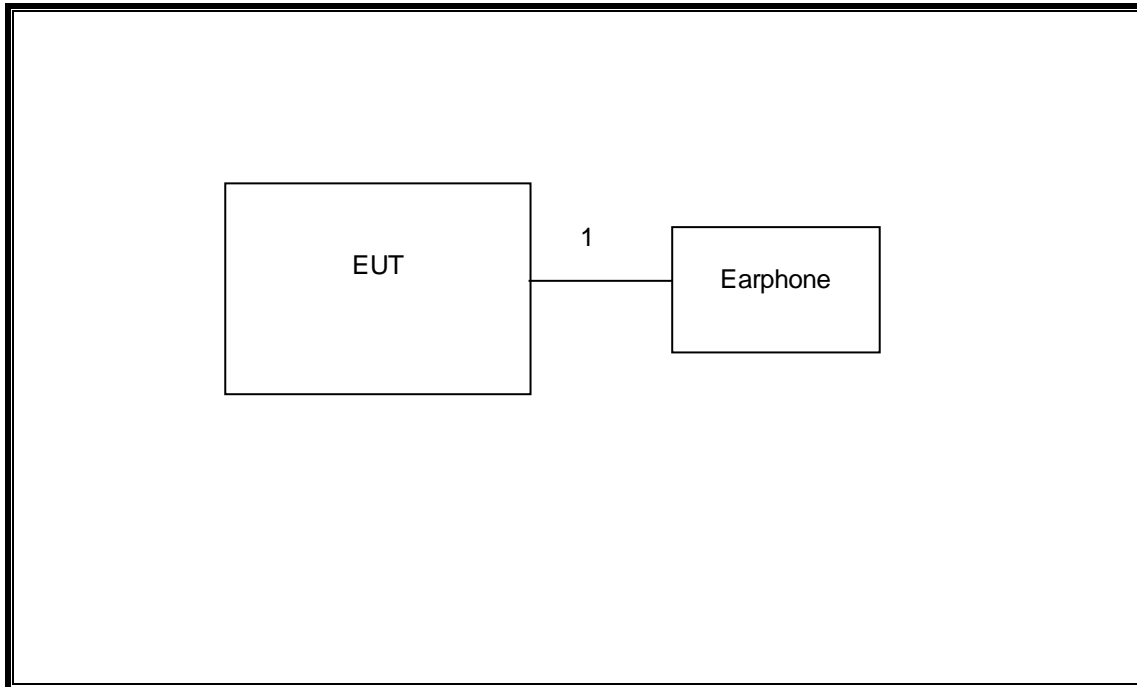
I/O CABLES (AC POWER CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US115	Un-Shielded	2m	NA
2	DC	1	USB	Un-Shielded	2m	NA
3	Audio	1	Jack	Un-Shielded	0.5m	NA

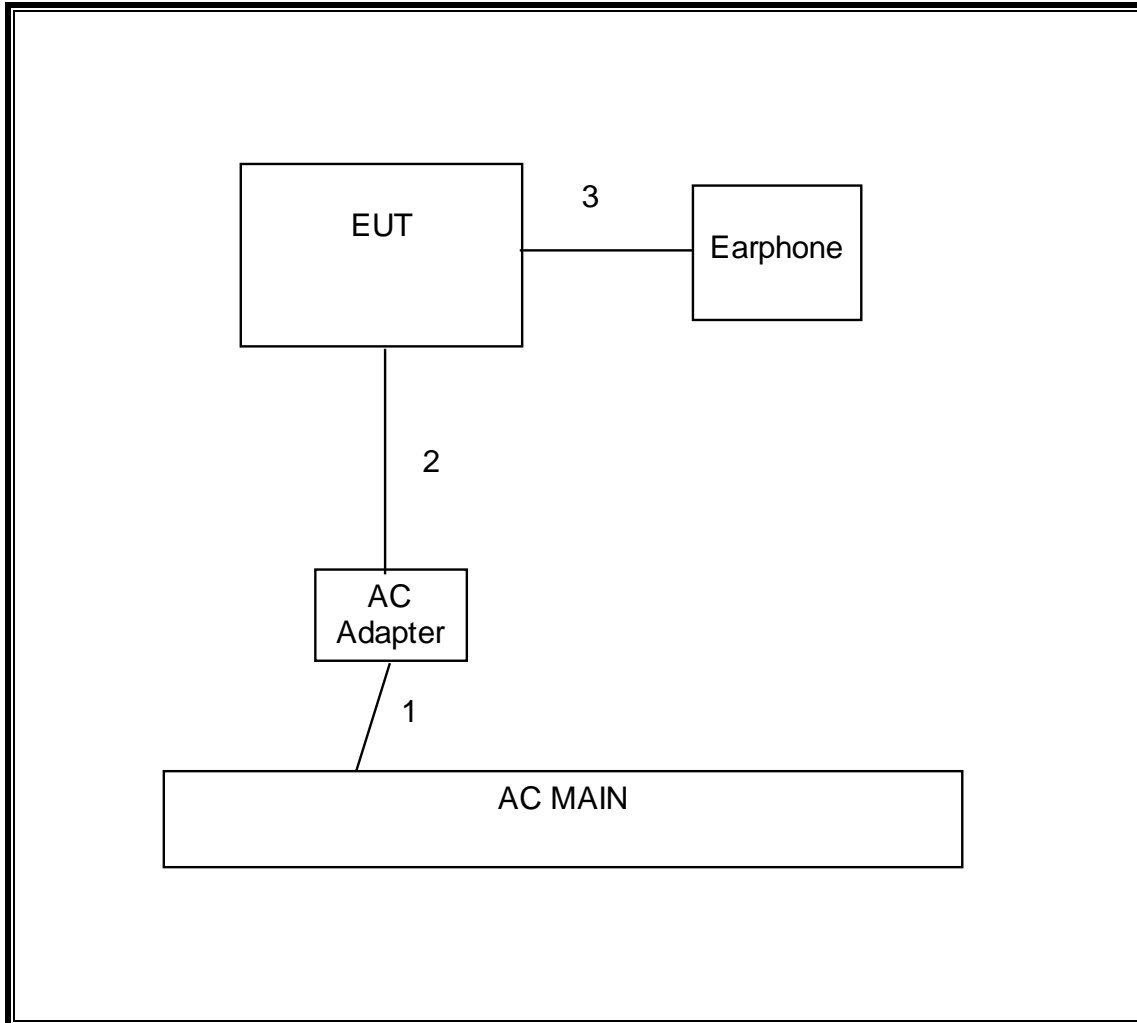
SETUP DIAGRAM FOR CONDUCTED TESTS



SETUP DIAGRAM FOR RADIATED TESTS



SETUP DIAGRAM FOR AC POWER CONDUCTED 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
Horn Antenna 1-18GHz	ETS Lindgren	3117	F00132	02/19/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/28/14
Antenna, Horn, 26.5 GHz	ARA	SWH-28	C01015	05/06/14
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB3	F00027	03/07/14
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	01/14/14
Peak / Average Power Sensor	Agilent / HP	E9323A	F00026	04/03/14
P-Series single channel Power Meter	Agilent / HP	N1911A	F00153	04/05/14
Spectrum Analyzer, 44GHz	Agilent	E4446A	C01159	04/10/14
Spectrum Analyzer, 44GHz	Agilent	N9030A	F00129	02/22/14
PreApmplifier, 1-26.5GHz	Agilent	8449B	C01052	10/22/13
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/09/14

7. ANTENNA PORT TEST RESULTS

7.1. 20 dB AND 99% 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

GFSK

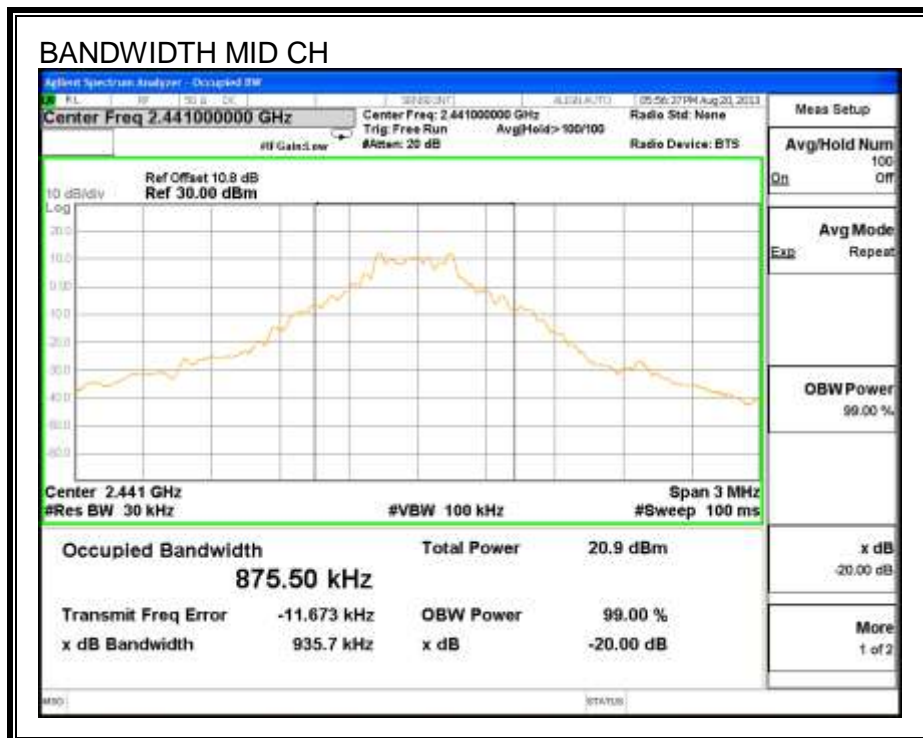
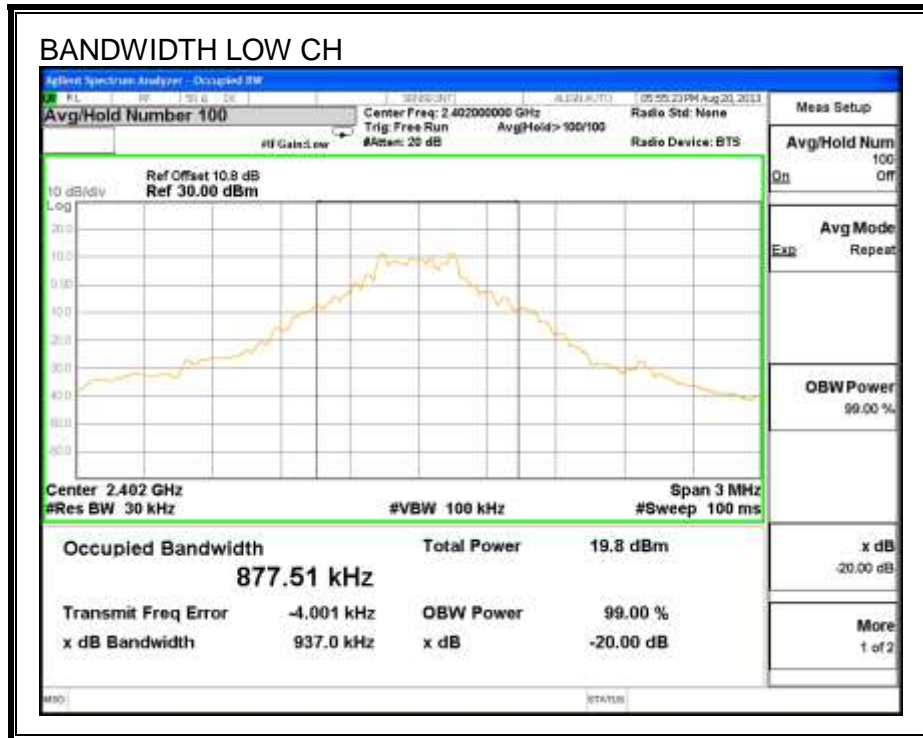
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	2402	937.00	901.61
Middle	2441	935.70	847.45
High	2480	931.70	915.56

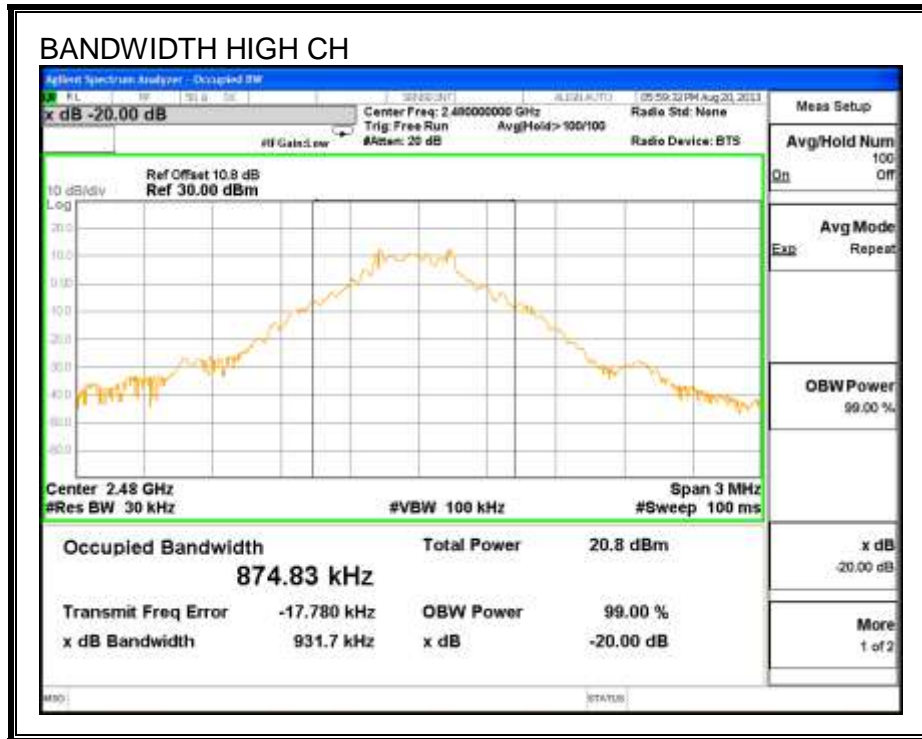
8PSK

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.367	1.2867
Middle	2441	1.366	1.2763
High	2480	1.356	1.2726

GFSK

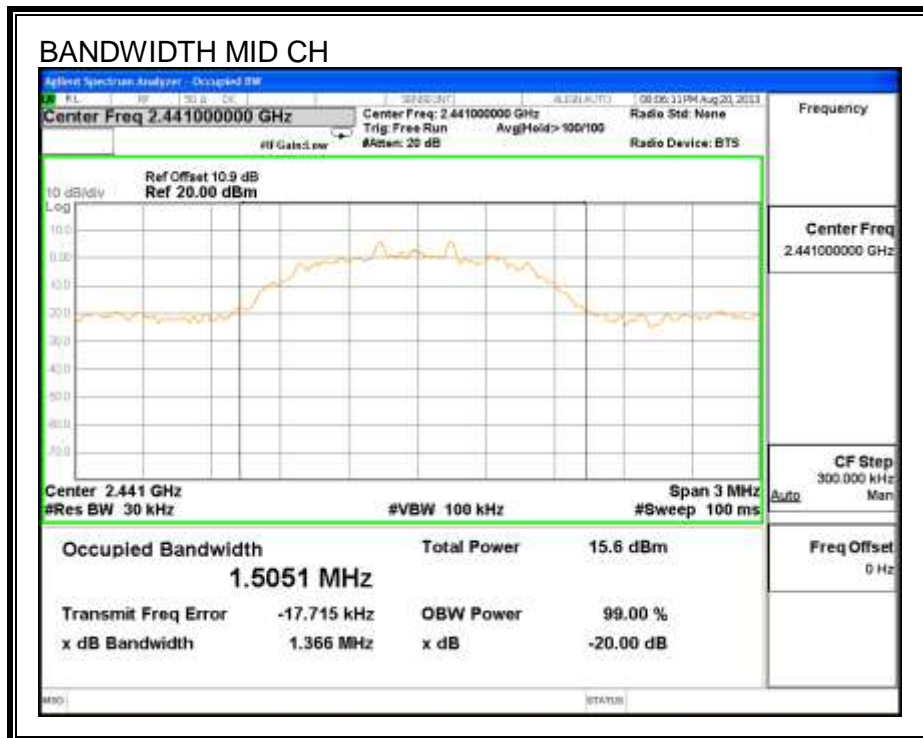
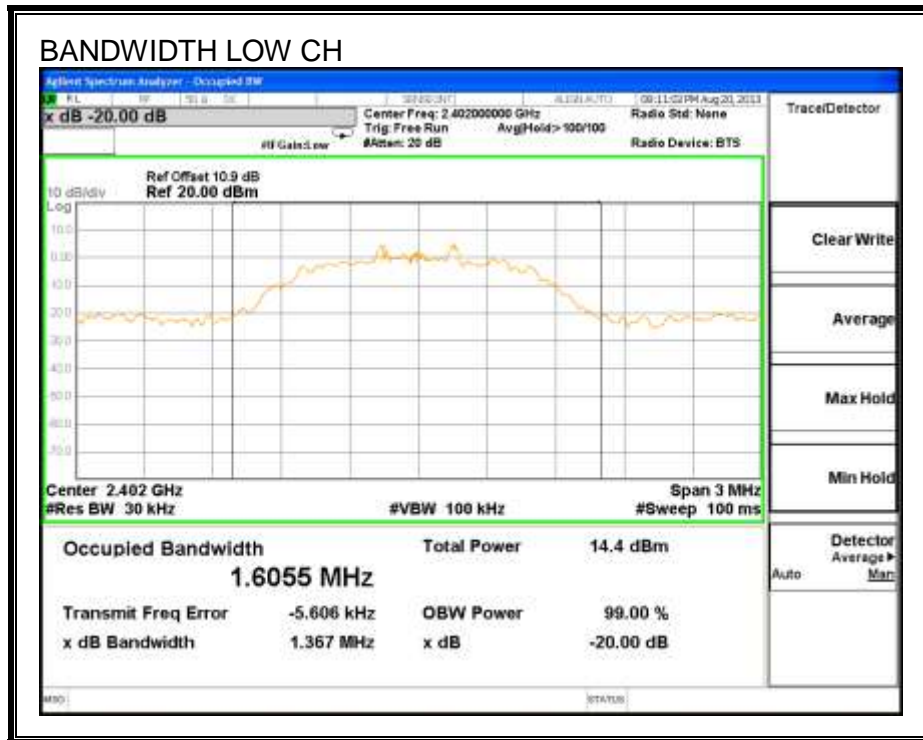
20 dB BANDWIDTH

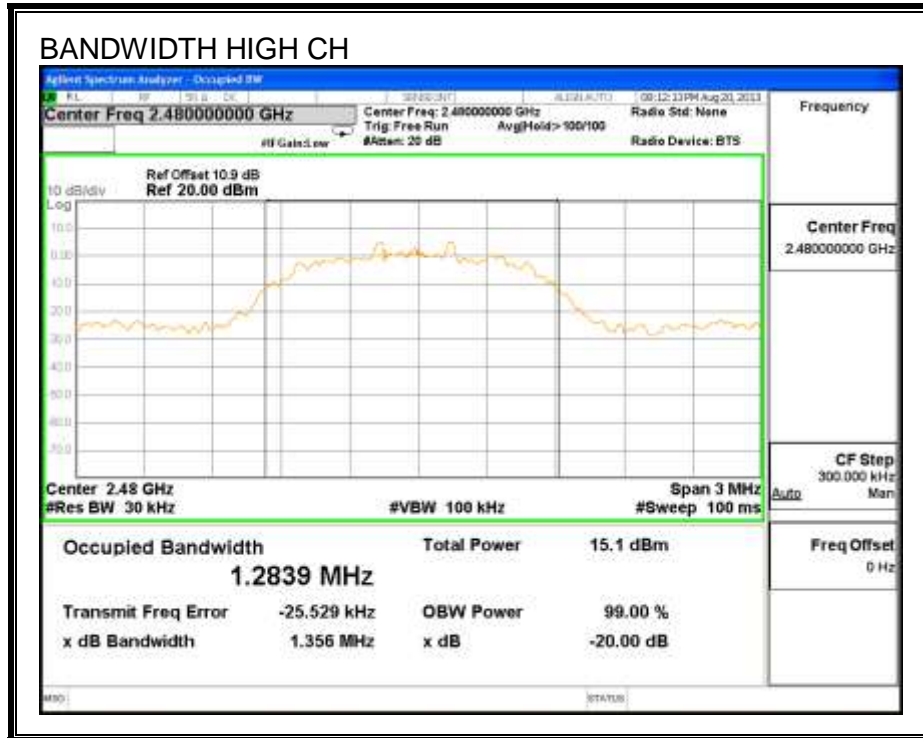




8PSK

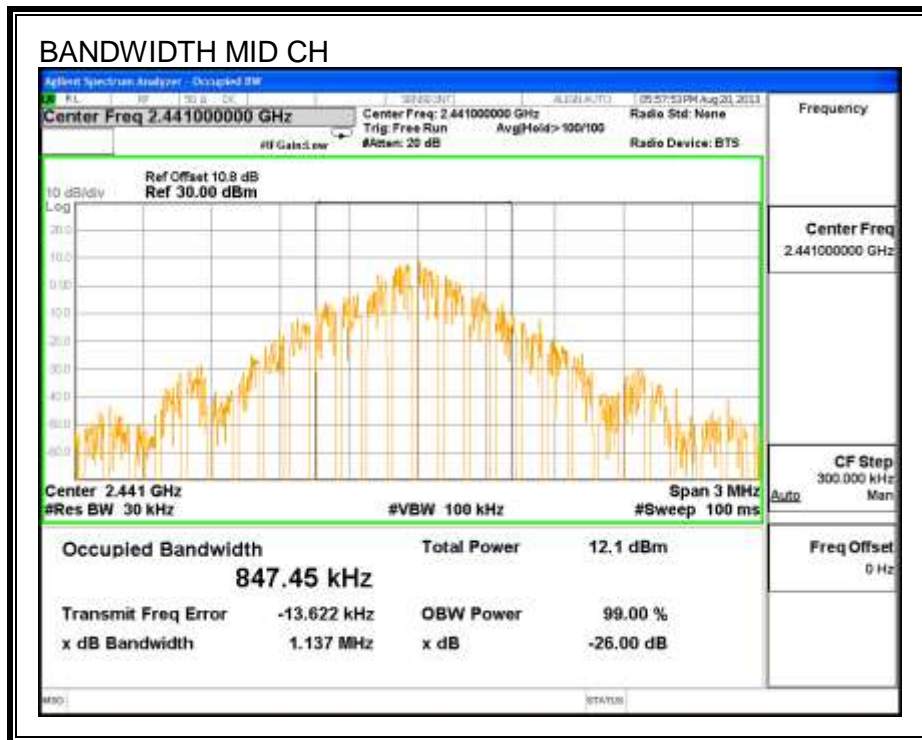
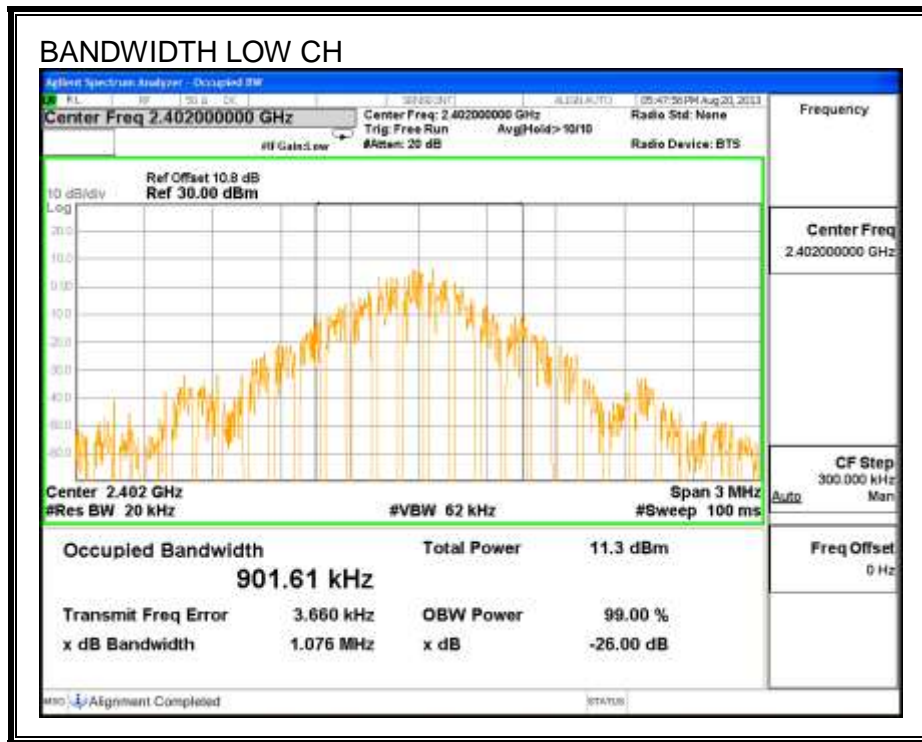
20 dB BANDWIDTH

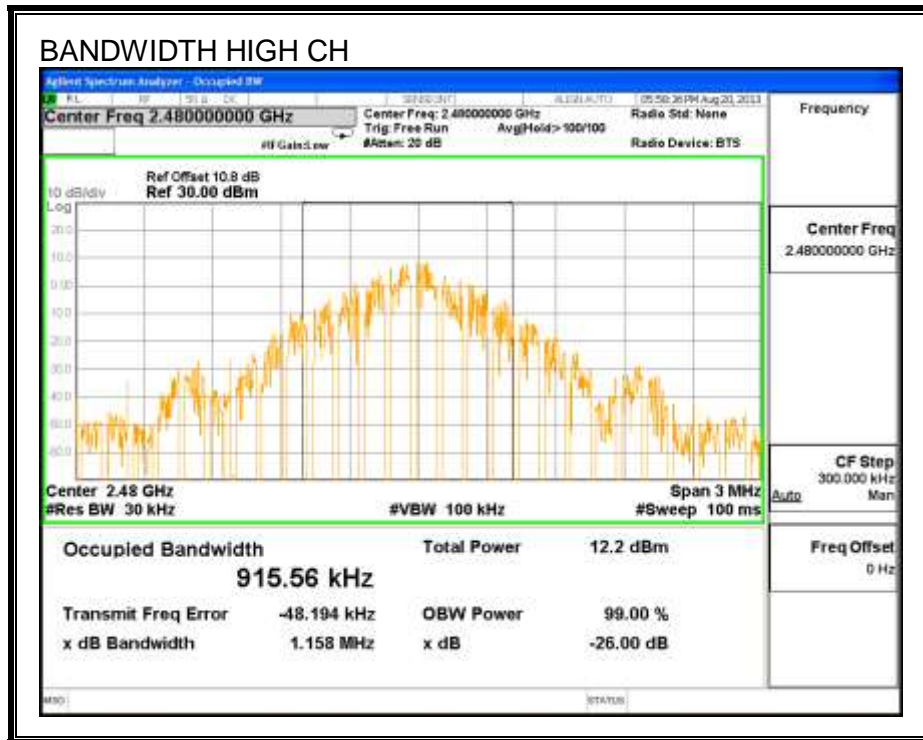




GFSK

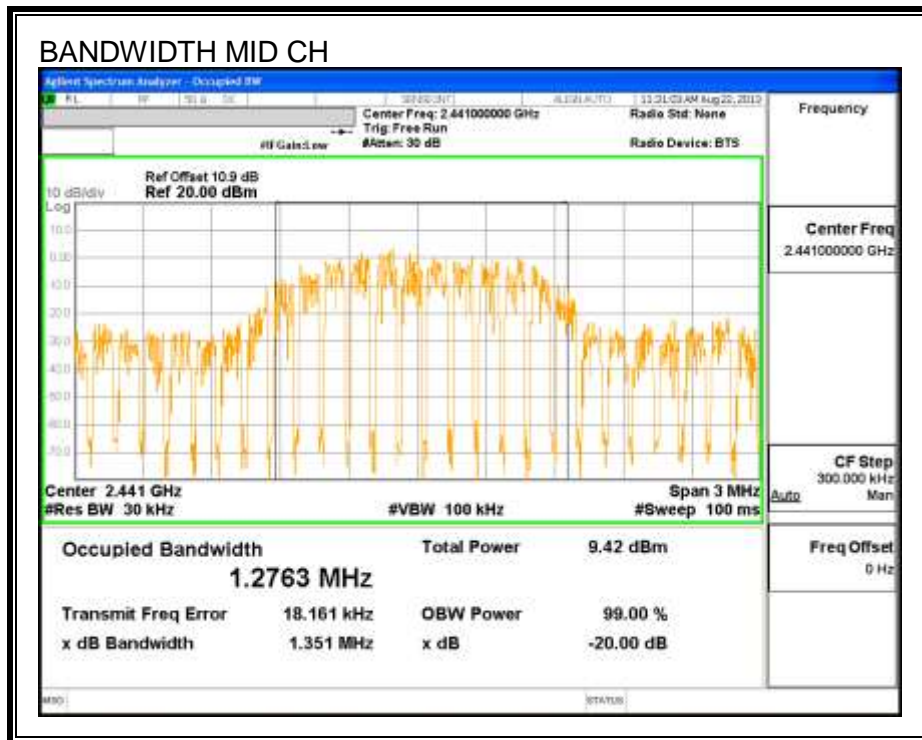
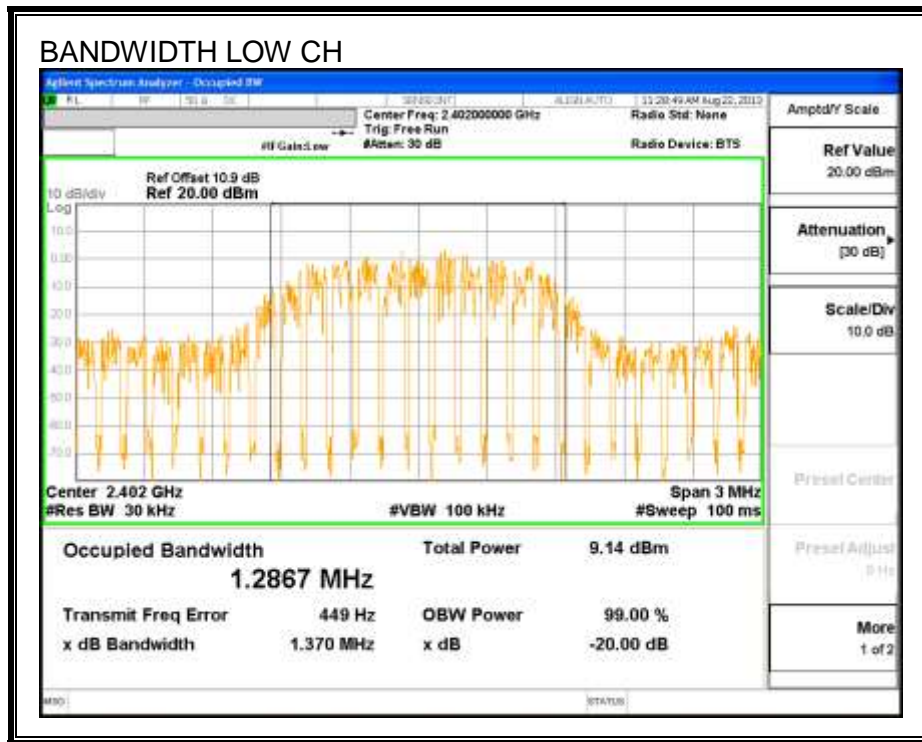
99% BANDWIDTH

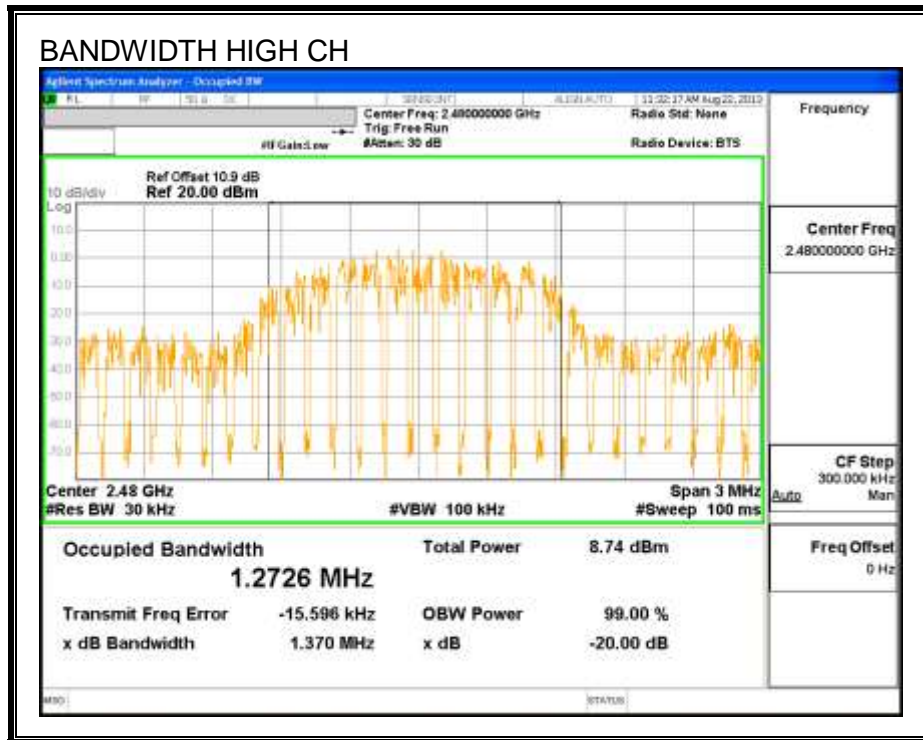




8PSK

99% BANDWIDTH





7.2. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

IC RSS-210 A8.1 (b)

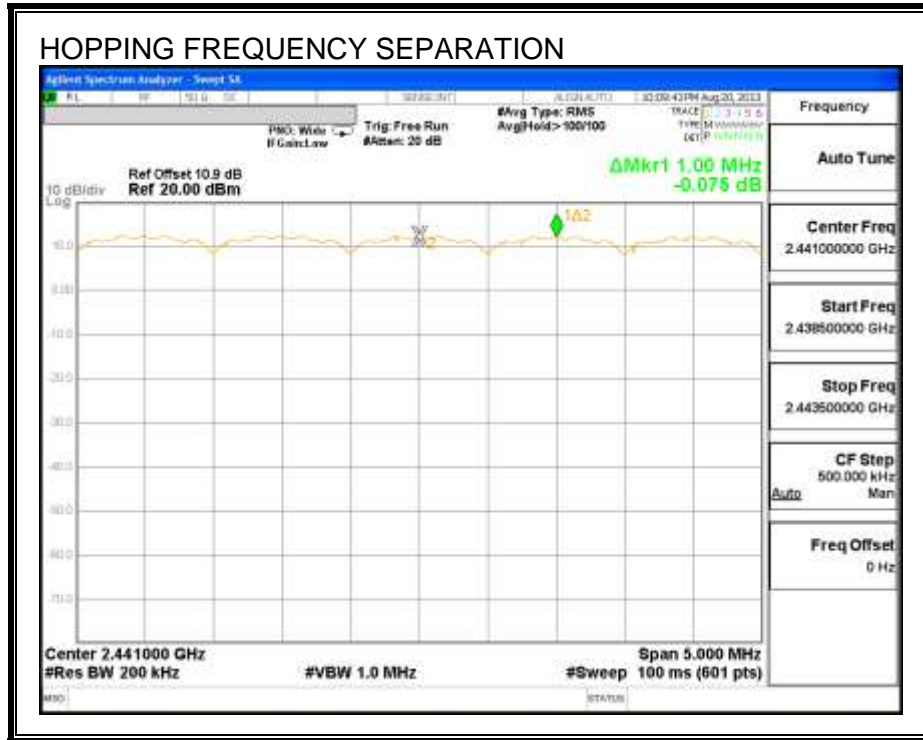
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

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.

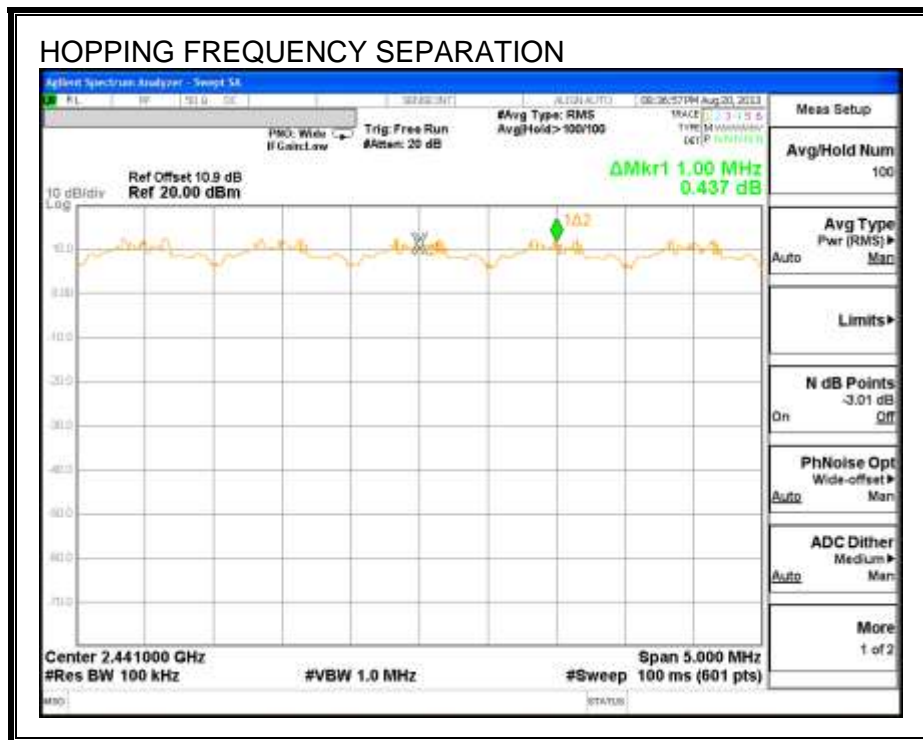
TEST PROCEDURE

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.

GFSK



8PSK



7.3. NUMBER OF HOPPING CHANNELS

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

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

TEST PROCEDURE

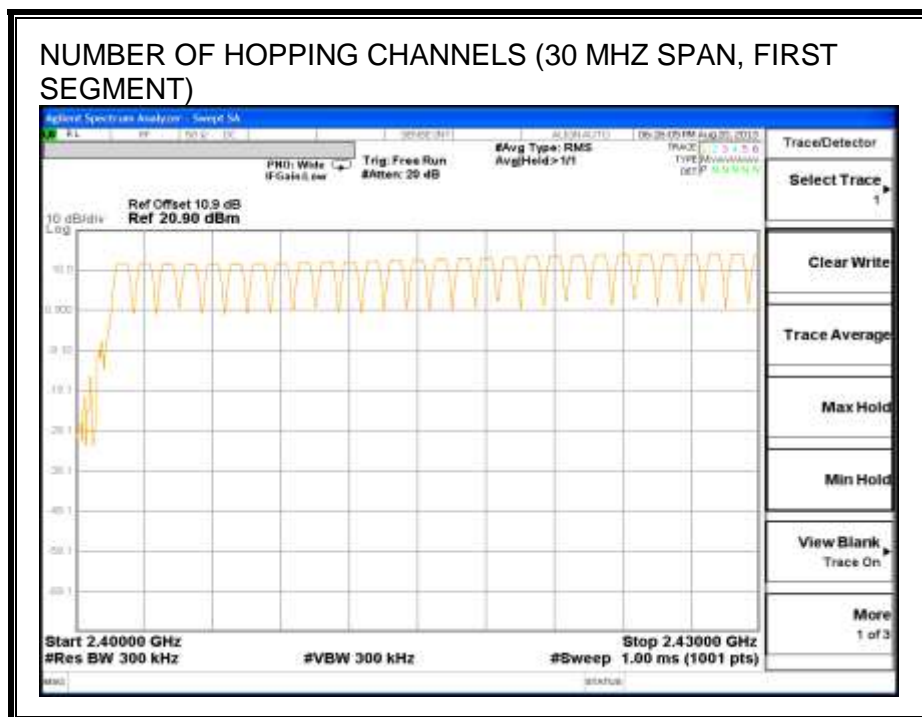
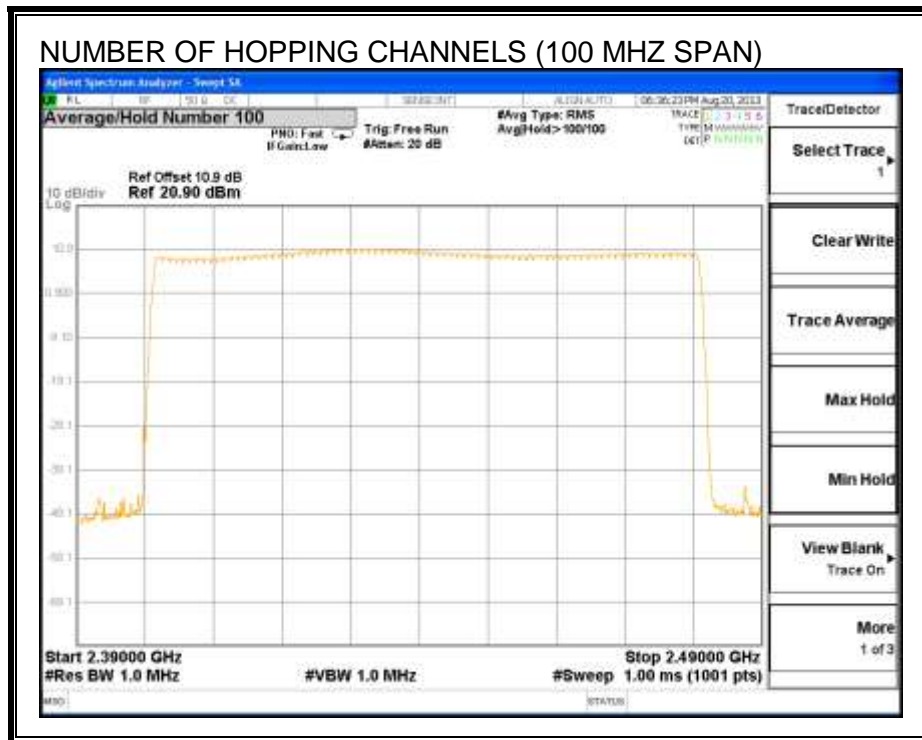
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

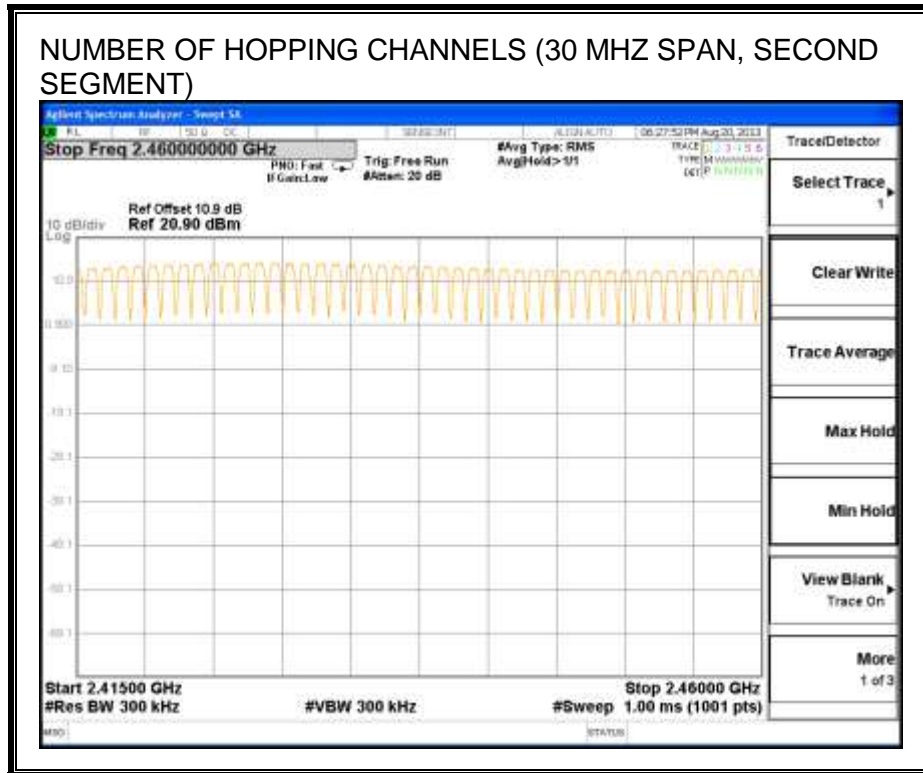
79 Channels observed.

GFSK

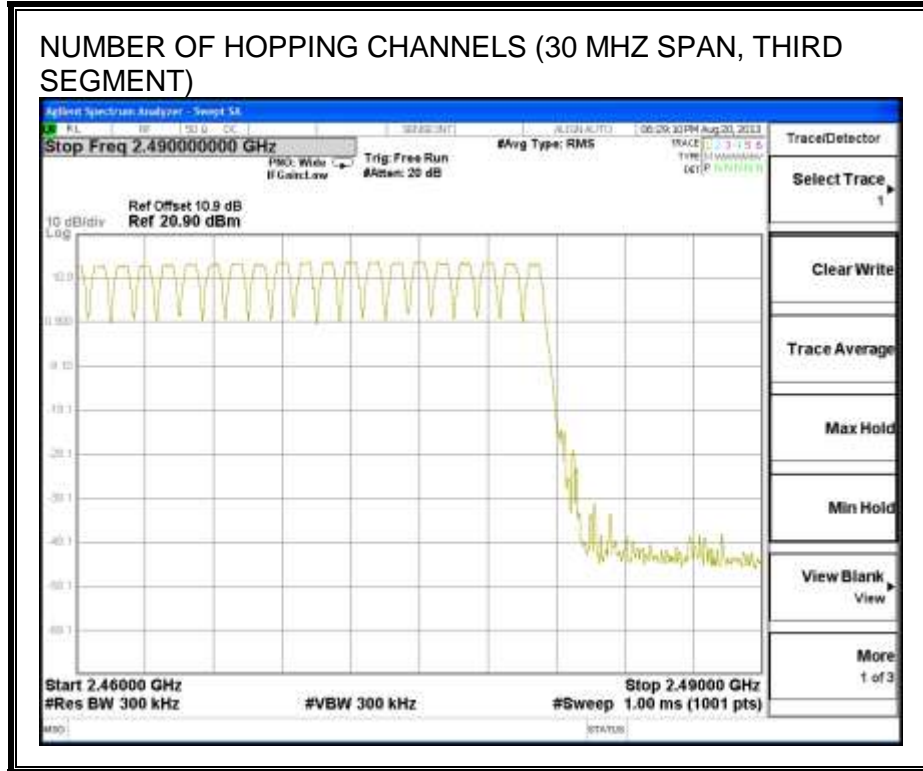
NUMBER OF HOPPING CHANNELS



NUMBER OF HOPPING CHANNELS (30 MHz SPAN, SECOND SEGMENT)

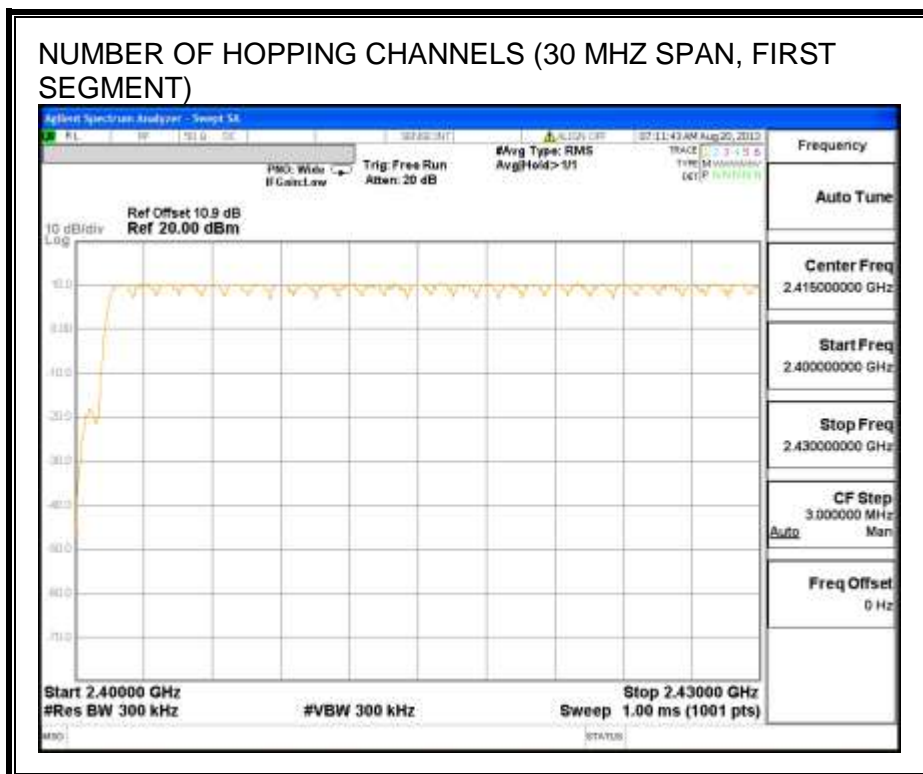
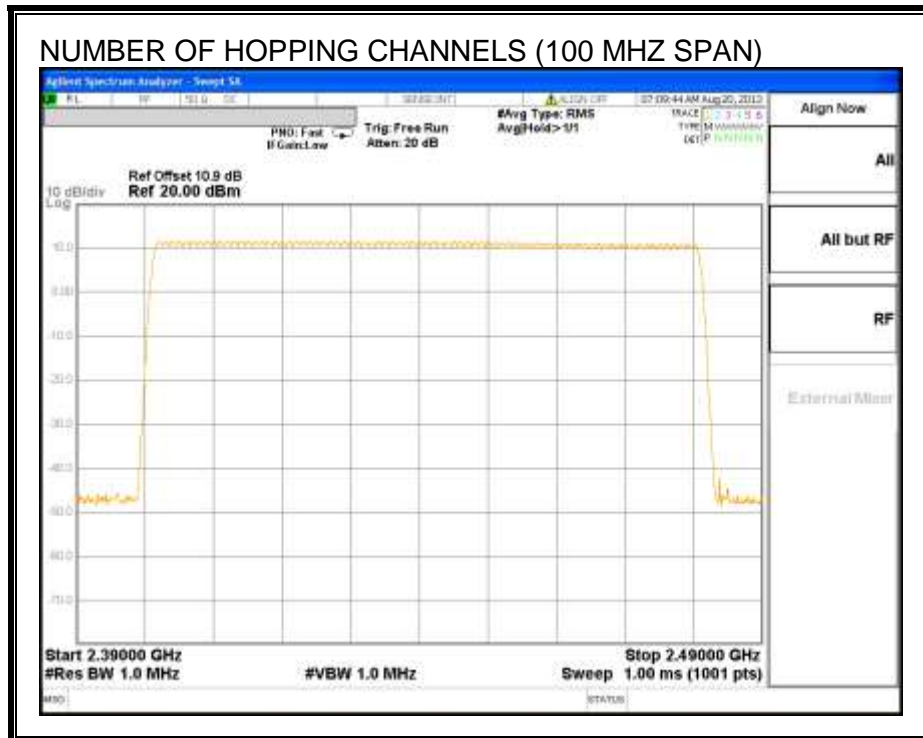


NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)

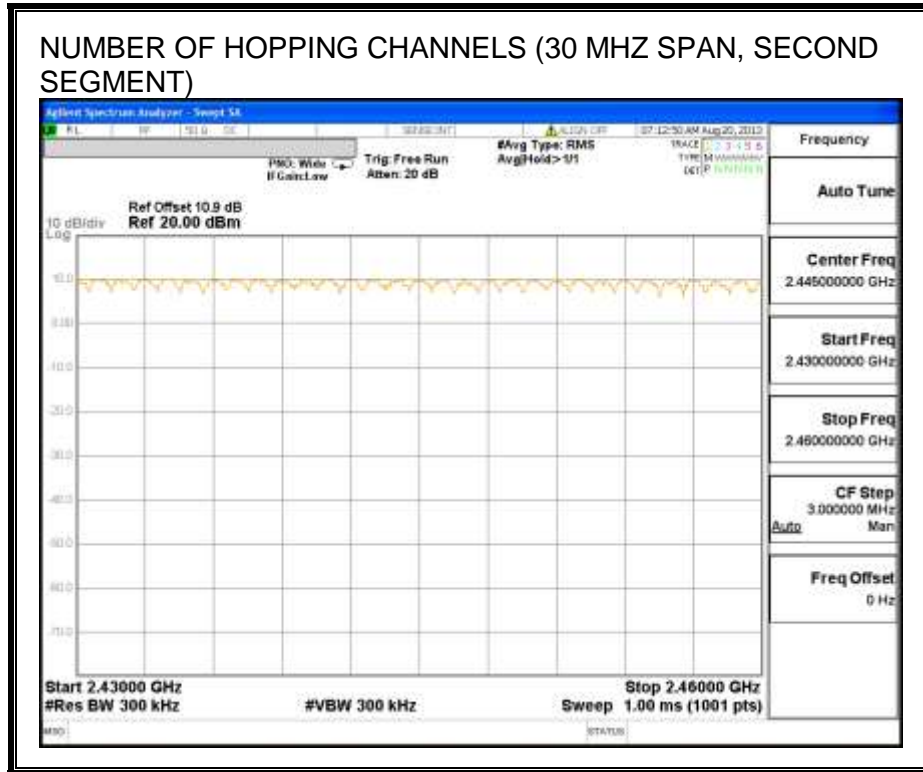


8PSK

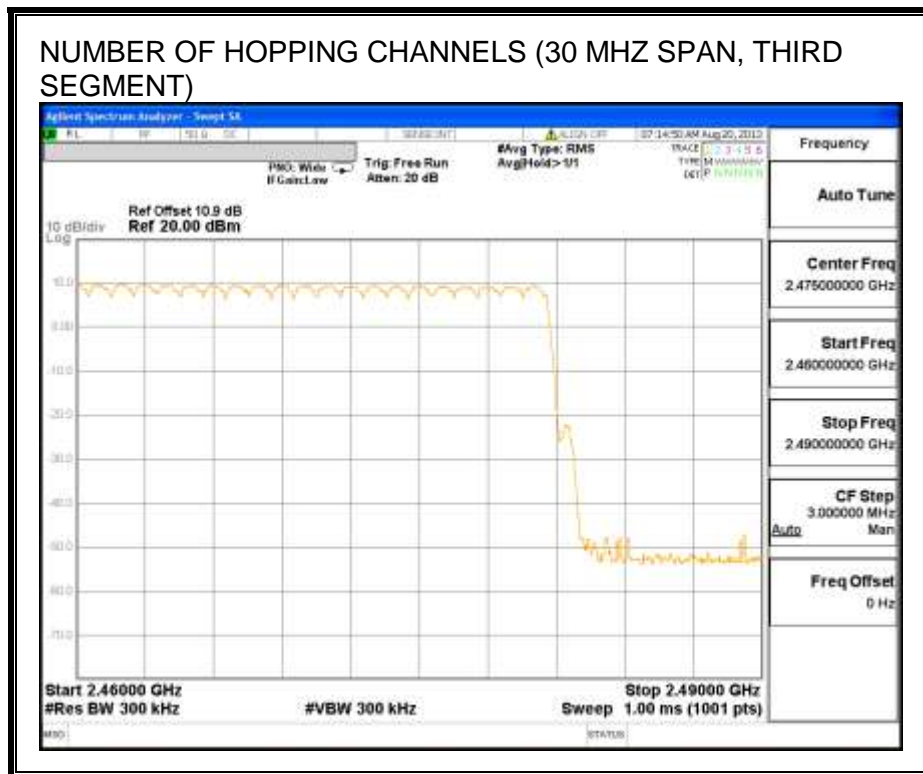
NUMBER OF HOPPING CHANNELS



NUMBER OF HOPPING CHANNELS (30 MHz SPAN, SECOND SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)



7.4. AVERAGE TIME OF OCCUPANCY

LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

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

RESULT

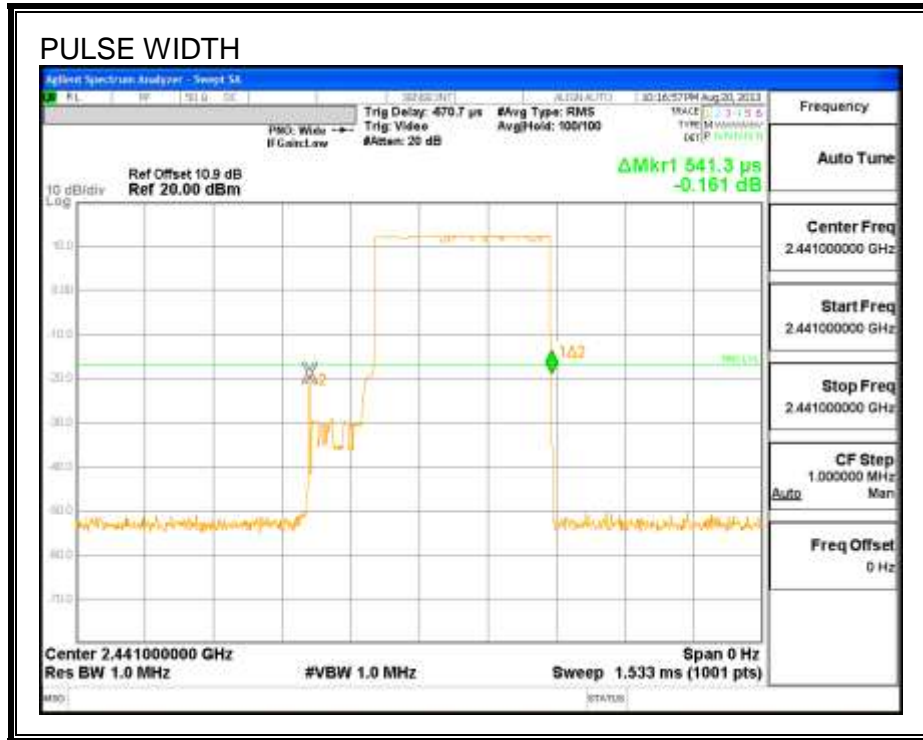
GFSK

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.541	30	0.162	0.4	-0.238
DH3	1.104	19	0.210	0.4	-0.190
DH5	2.900	12	0.348	0.4	-0.052

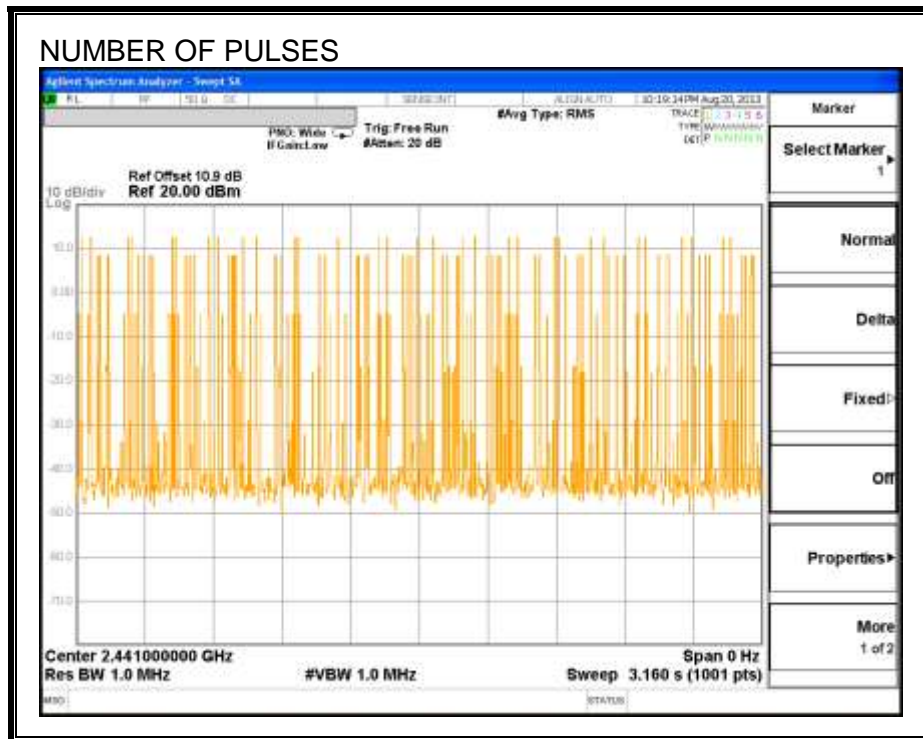
8PSK

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
DH1	0.4224	31	0.131	0.4	-0.269
DH3	1.6770	17	0.285	0.4	-0.115
DH5	2.9250	13	0.380	0.4	-0.020

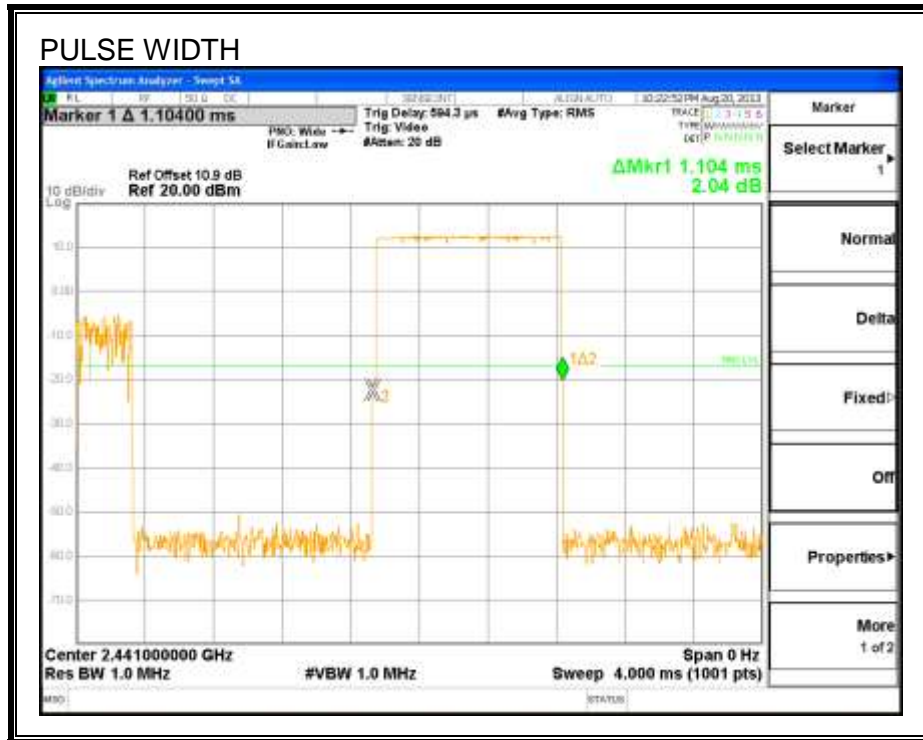
GFSK, DH1



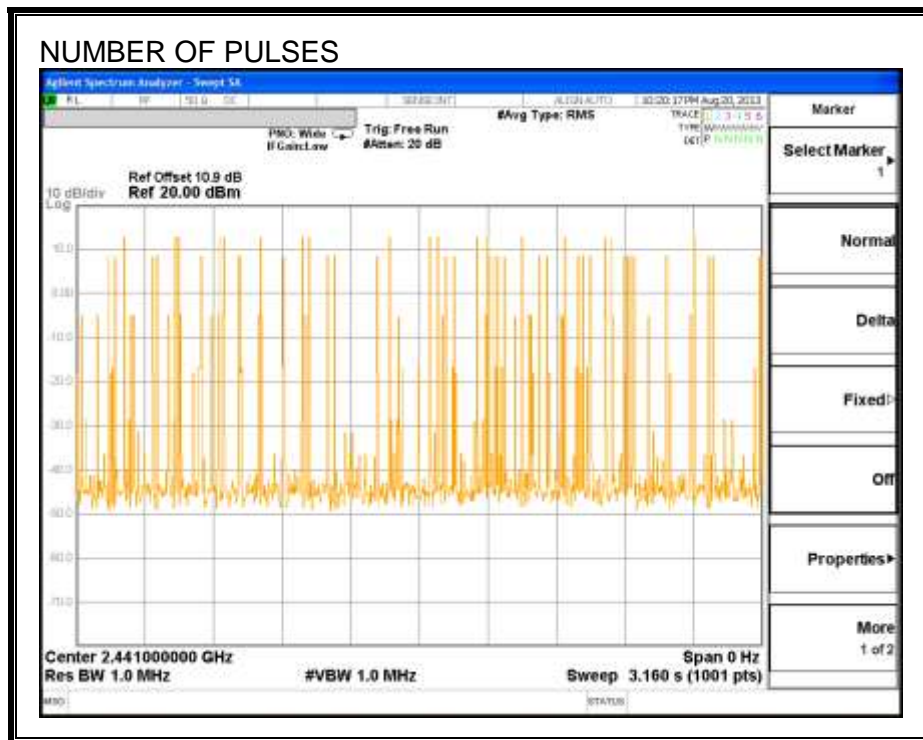
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



PULSE WIDTH GFSK DH3



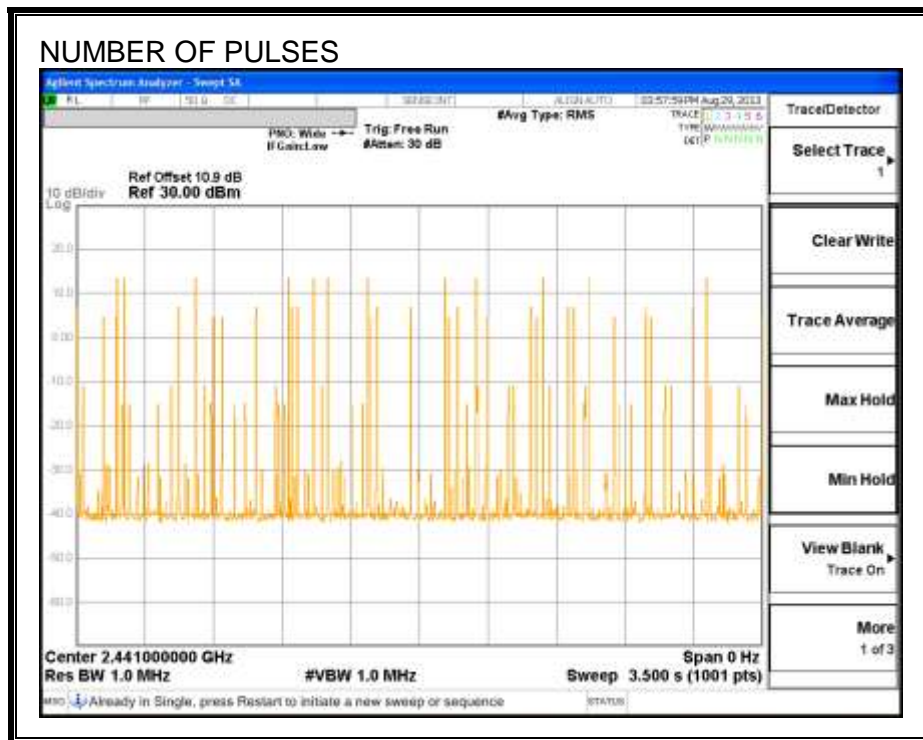
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



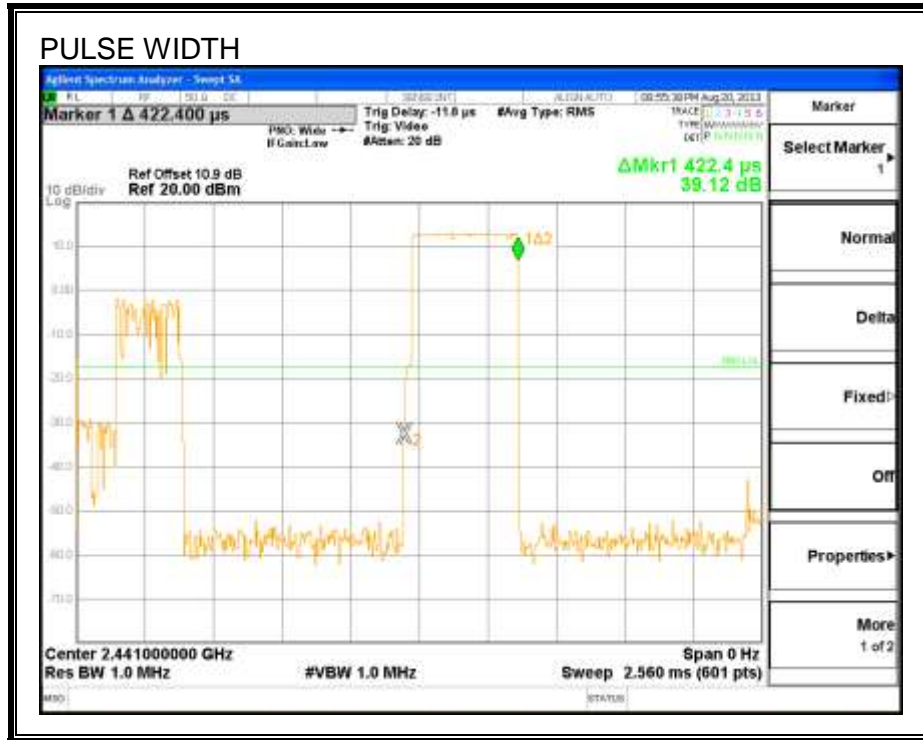
PULSE WIDTH GFSK DH5



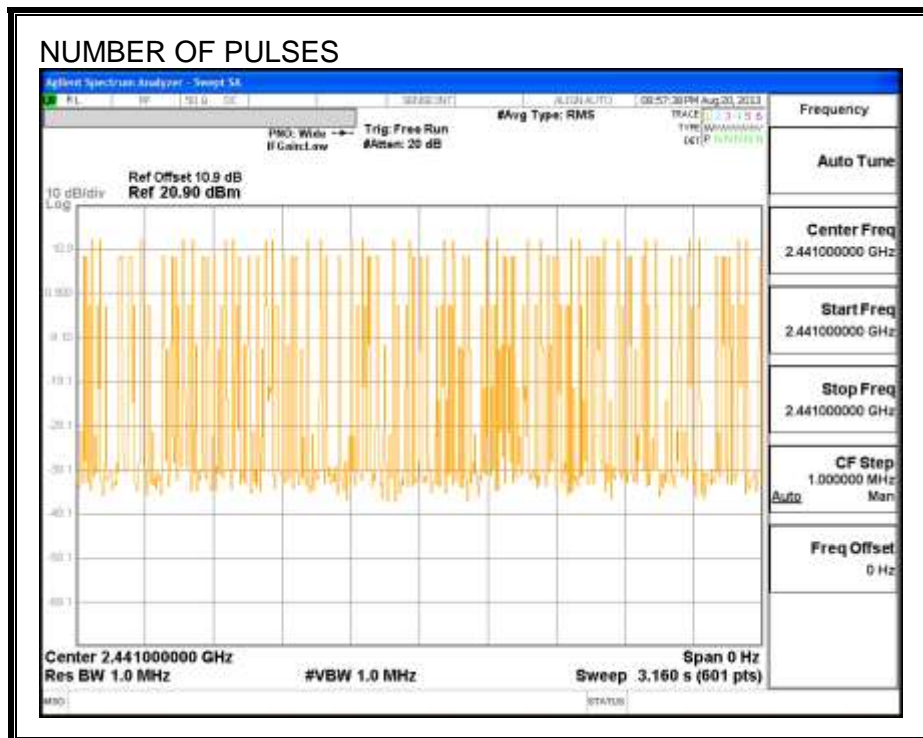
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



8PSK, DH1



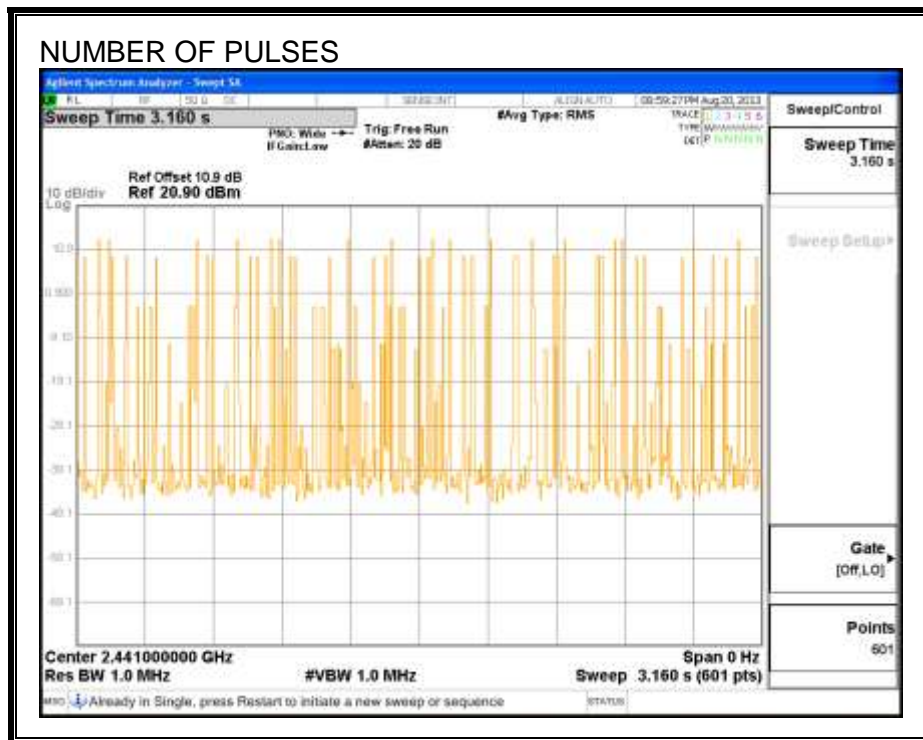
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



PULSE WIDTH 8PSK DH3



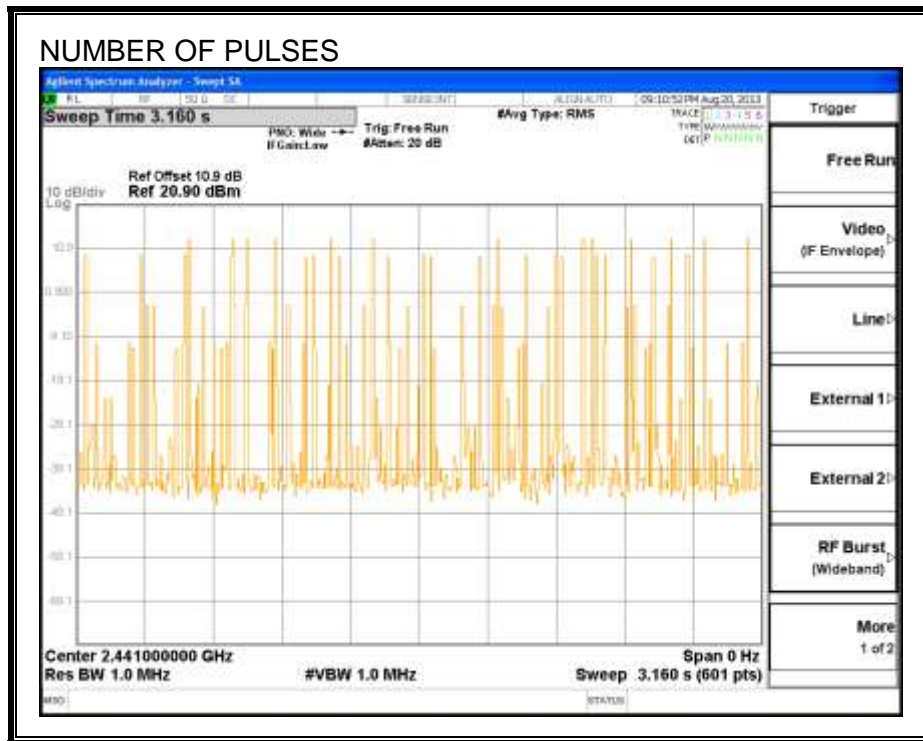
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



PULSE WIDTH 8PSK DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD



7.5. OUTPUT POWER

LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

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 analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

GFSK

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.83	30	-16.17
Middle	2441	13.99	30	-16.01
High	2480	14.44	30	-15.56

QPSK

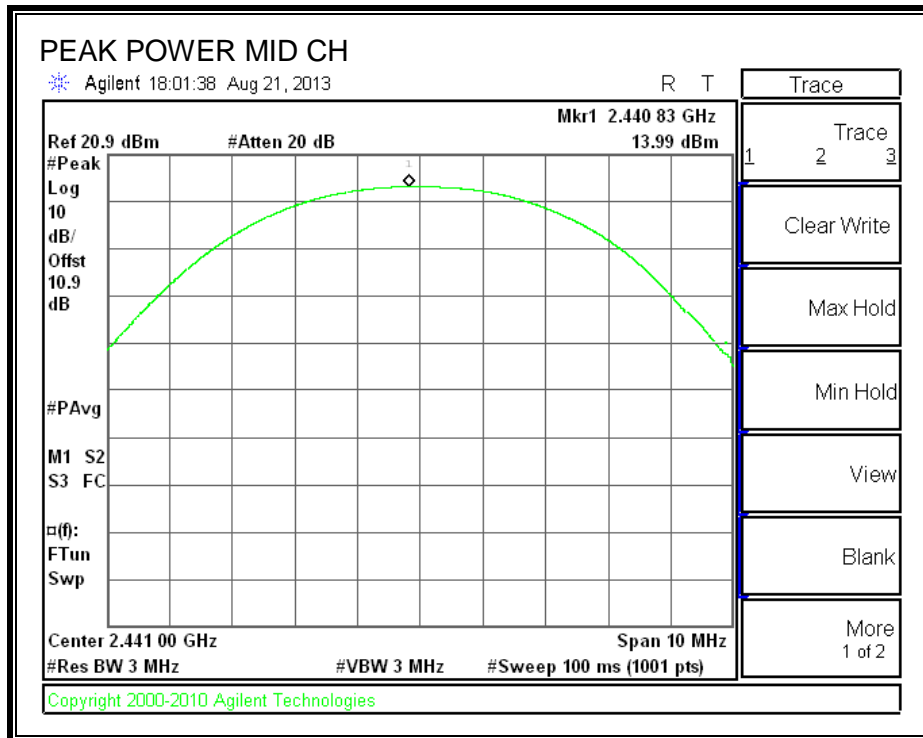
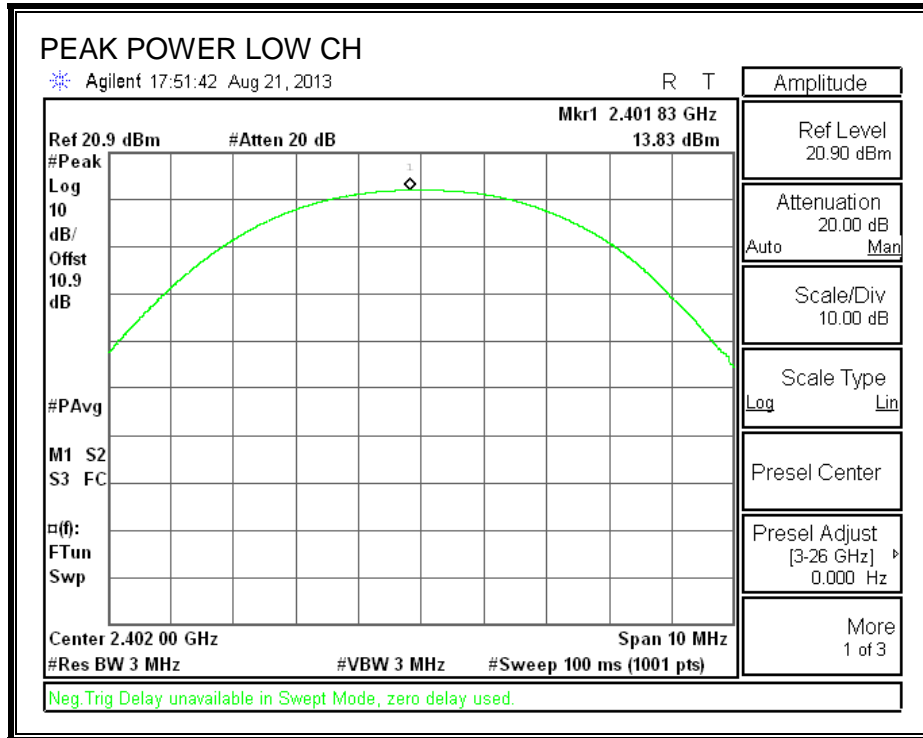
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.60	20.97	-9.37
Middle	2441	12.50	20.97	-8.47
High	2480	12.26	20.97	-8.71

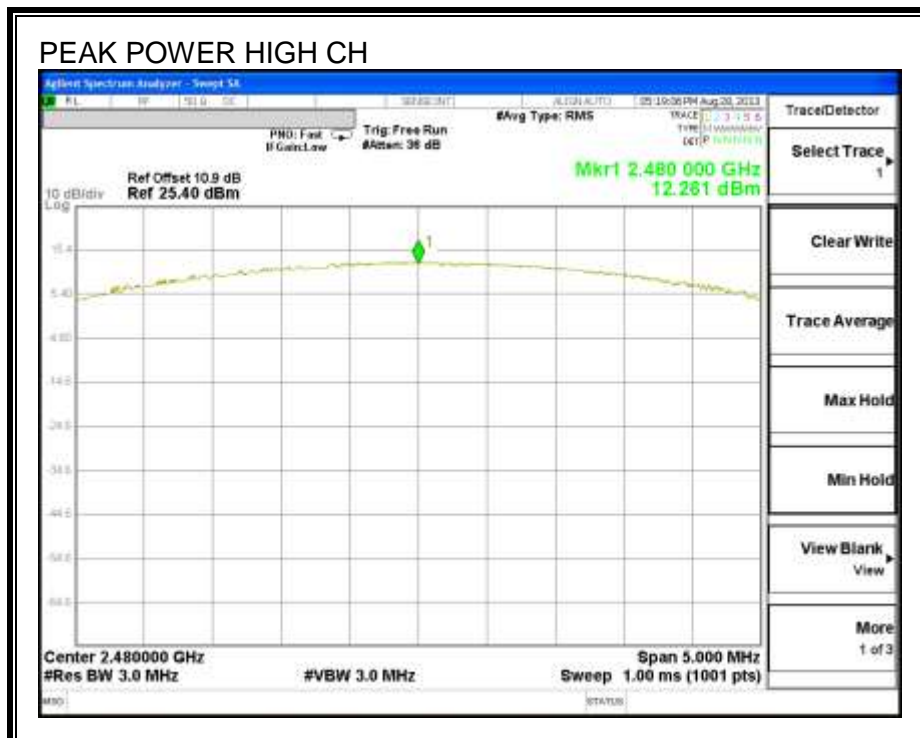
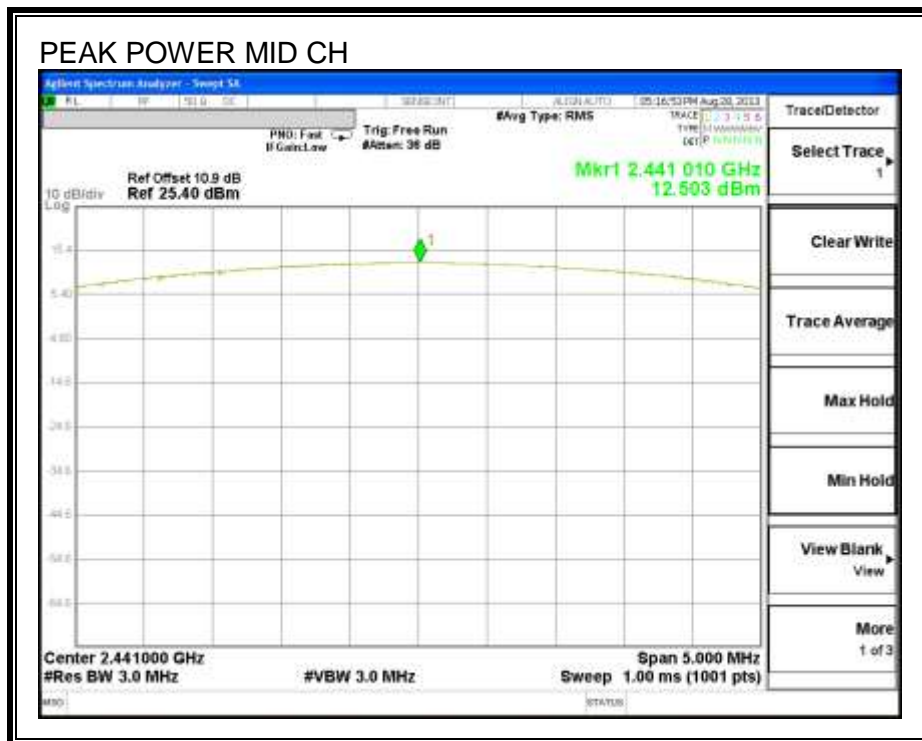
8PSK

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	12.26	20.97	-8.71
Middle	2441	12.78	20.97	-8.19
High	2480	12.10	20.97	-8.87

GFSK

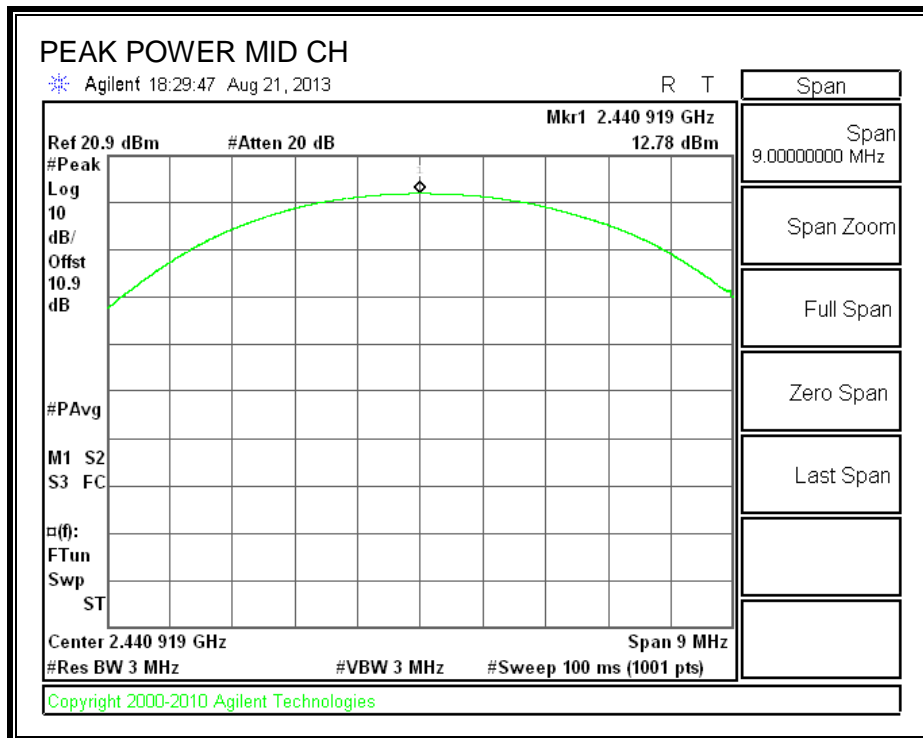
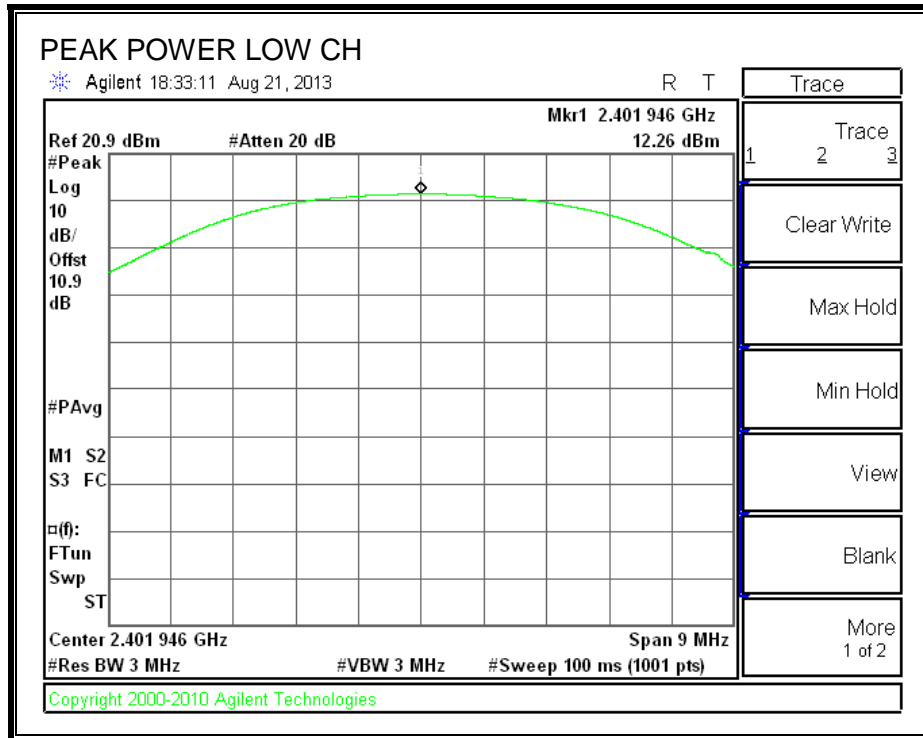
OUTPUT POWER

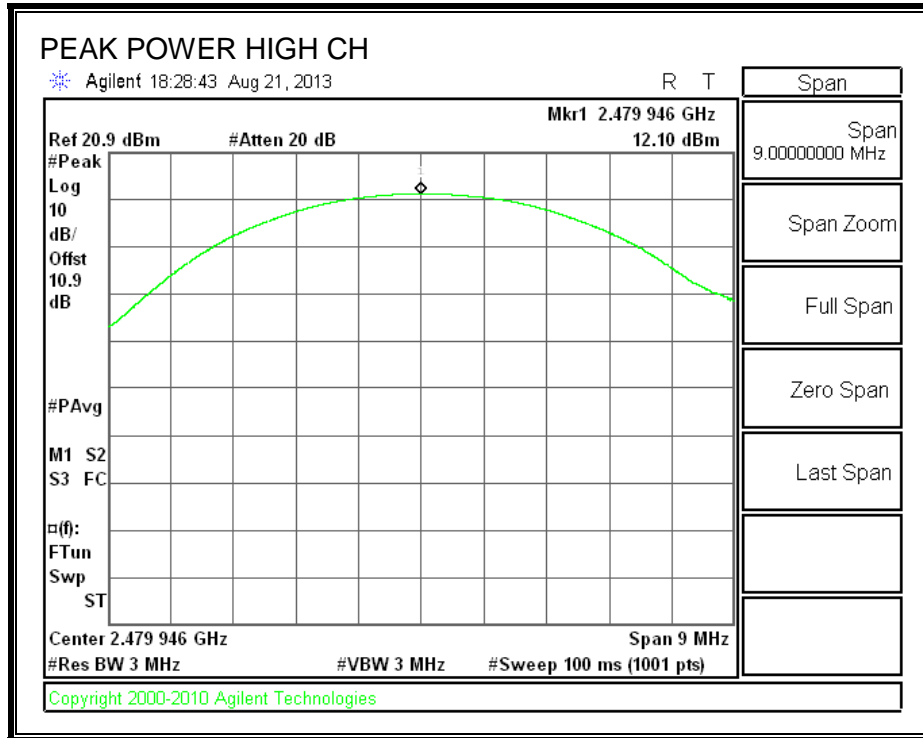




8PSK

OUTPUT POWER





7.6. 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 10.9 dB (including 10 dB pad and 0.9 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

GFSK

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	12.71
Middle	2441	12.94
High	2480	12.80

QPSK

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	10.77
Middle	2441	11.32
High	2480	11.09

8PSK

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	11.14
Middle	2441	11.48
High	2480	11.05

7.7. 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.

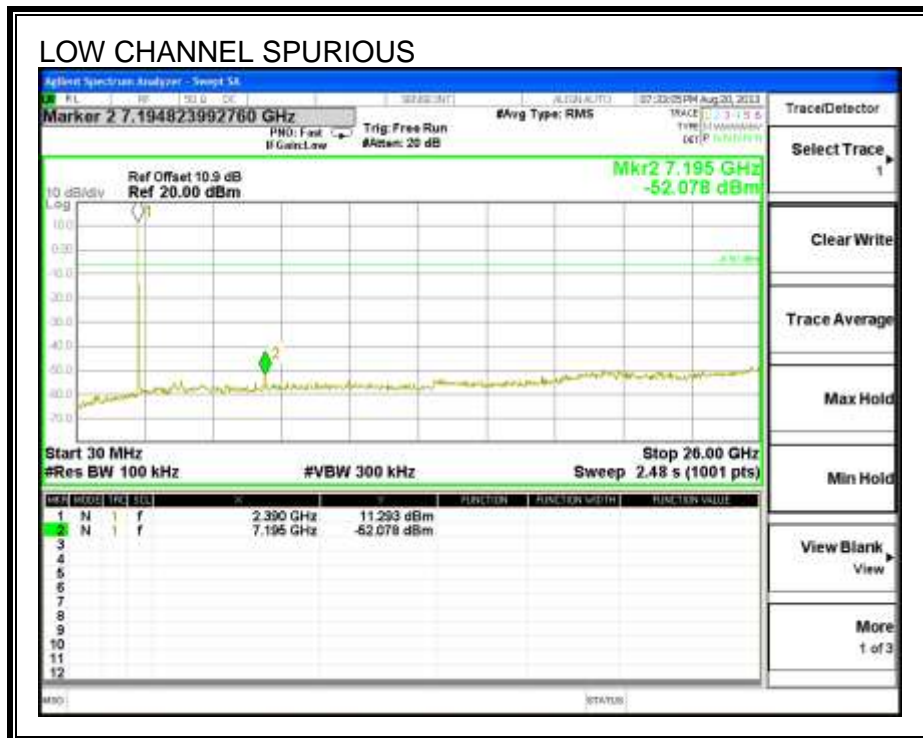
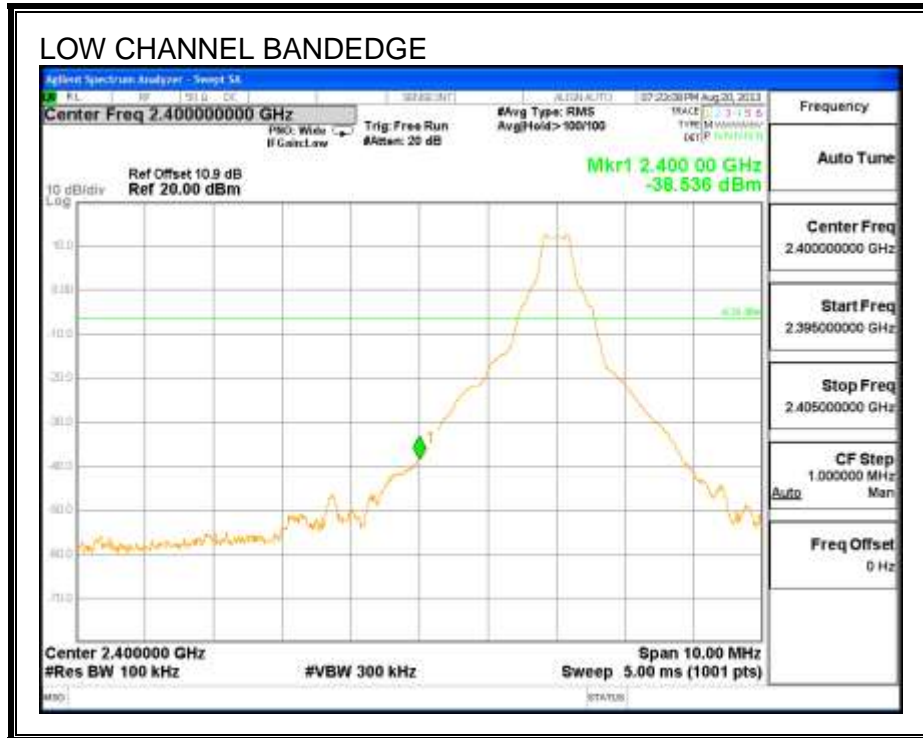
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

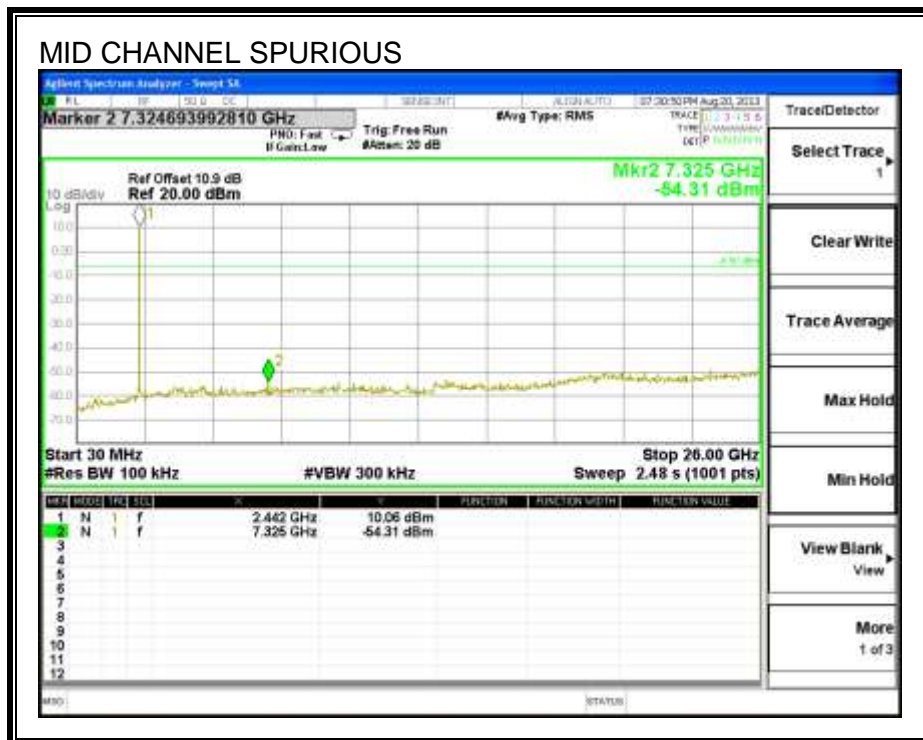
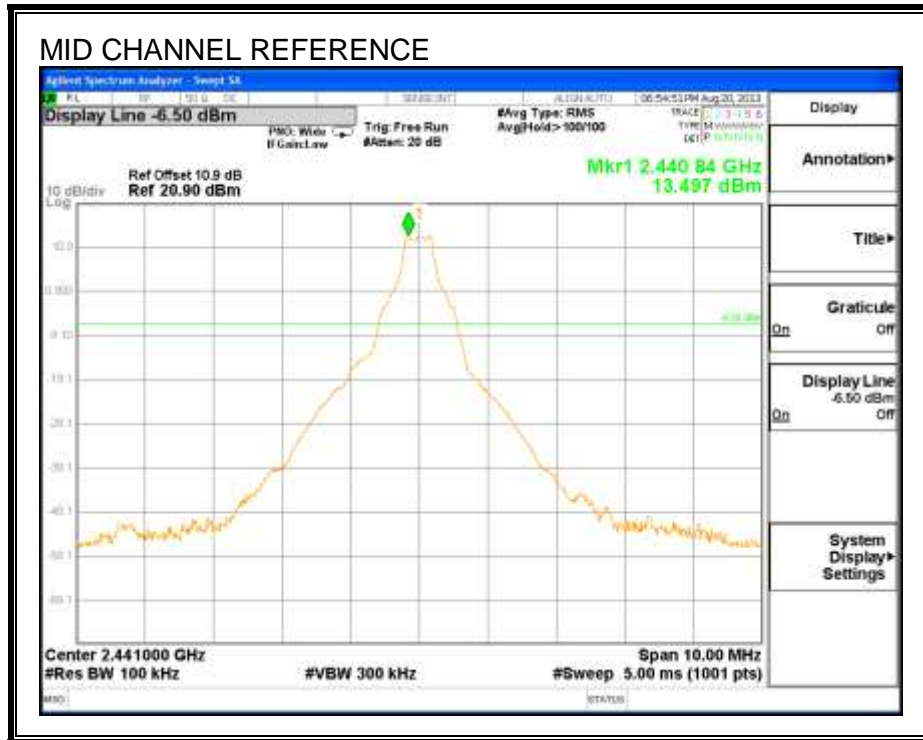
RESULTS

GFSK

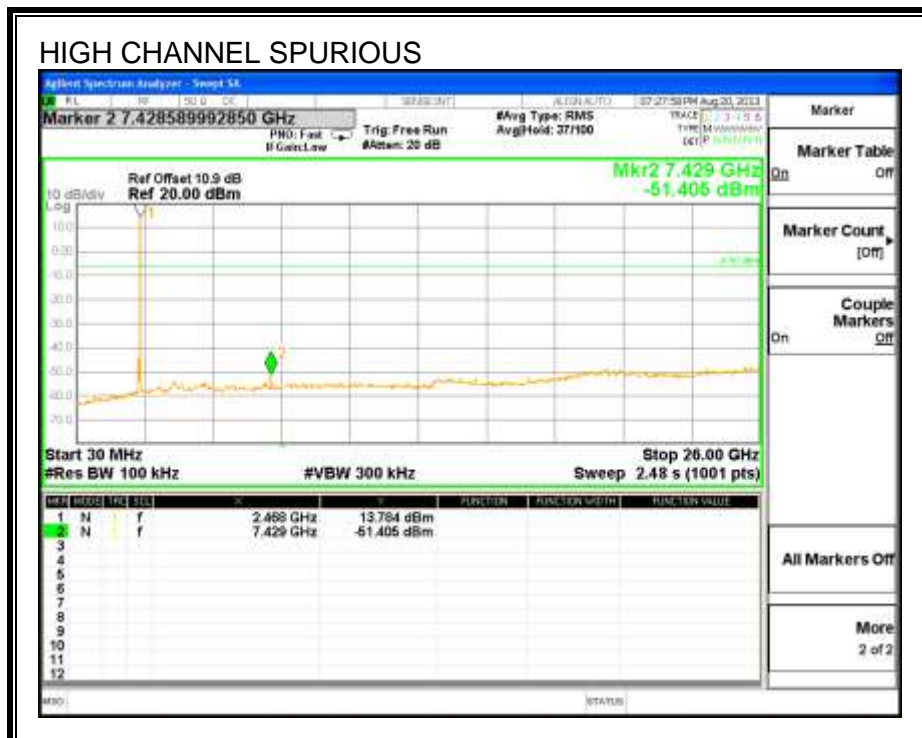
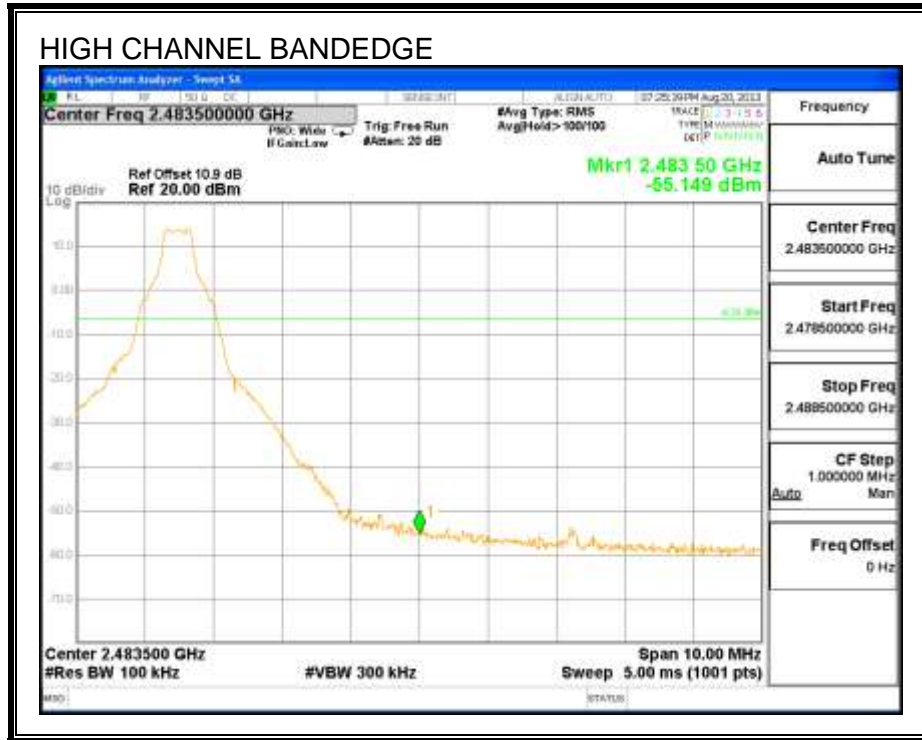
SPURIOUS EMISSIONS, LOW CHANNEL



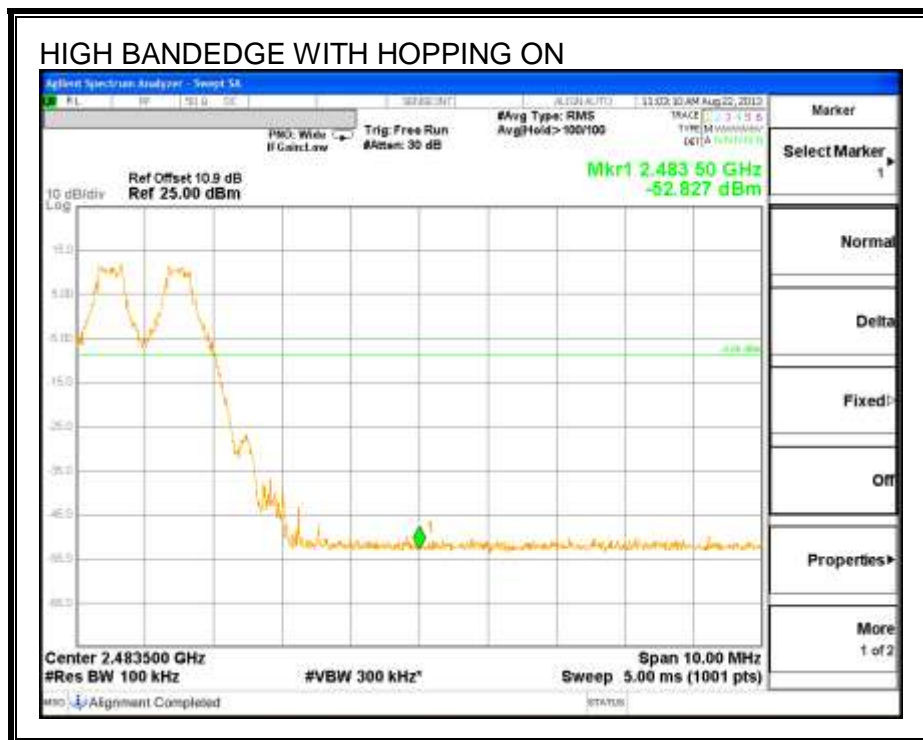
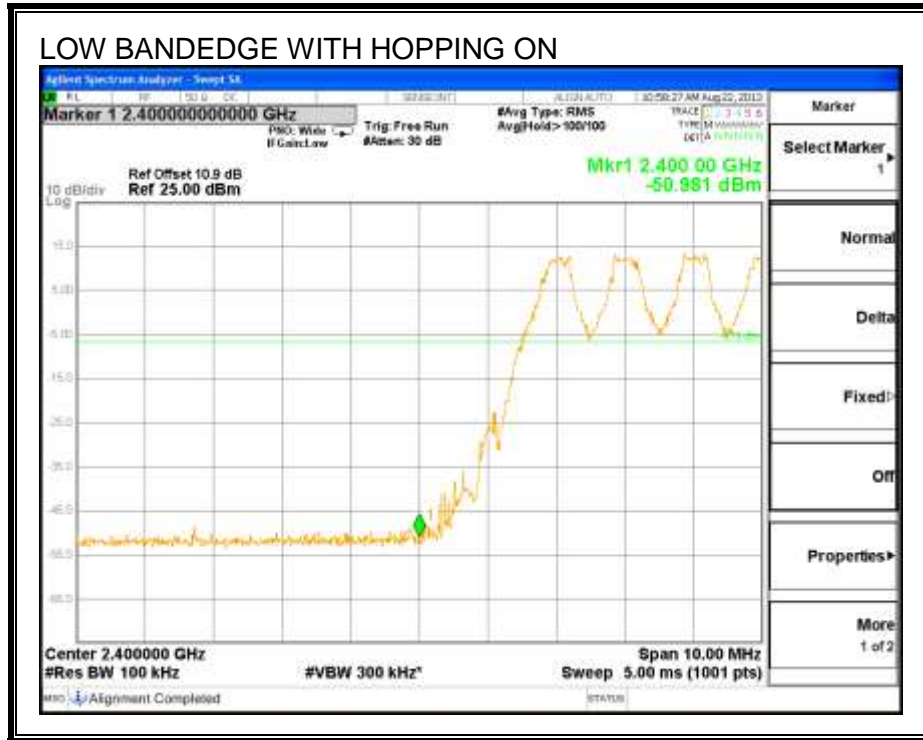
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL

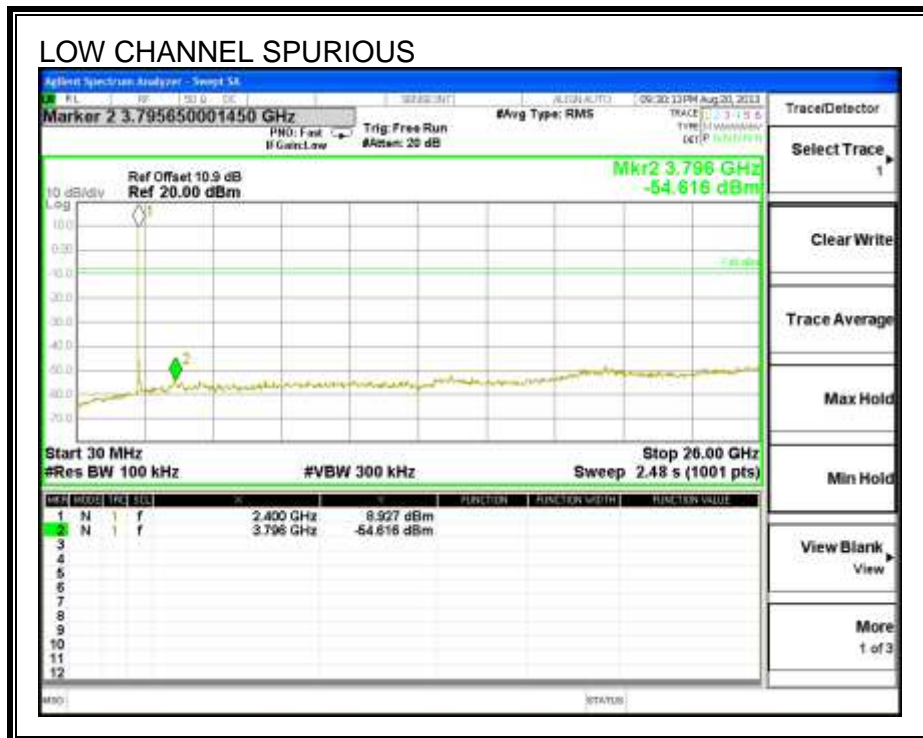
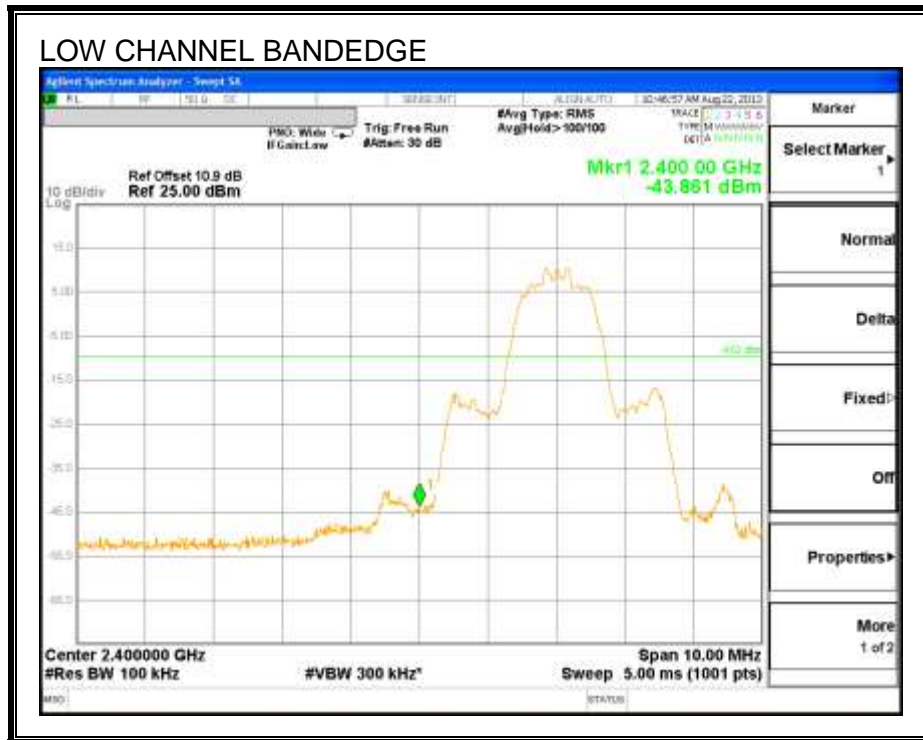


SPURIOUS BANDEGE EMISSIONS WITH HOPPING ON

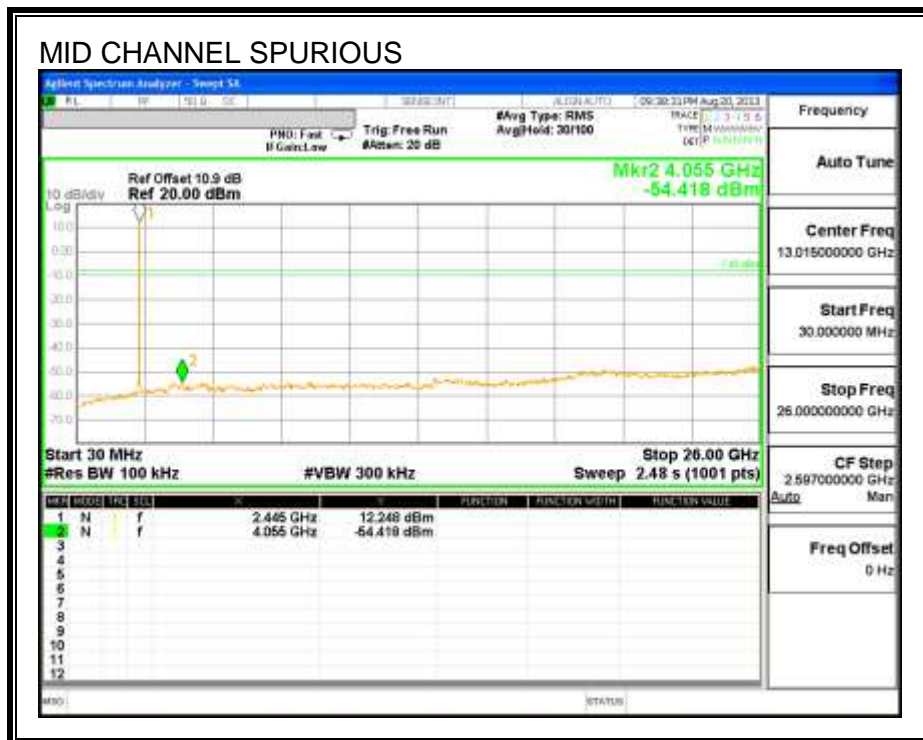
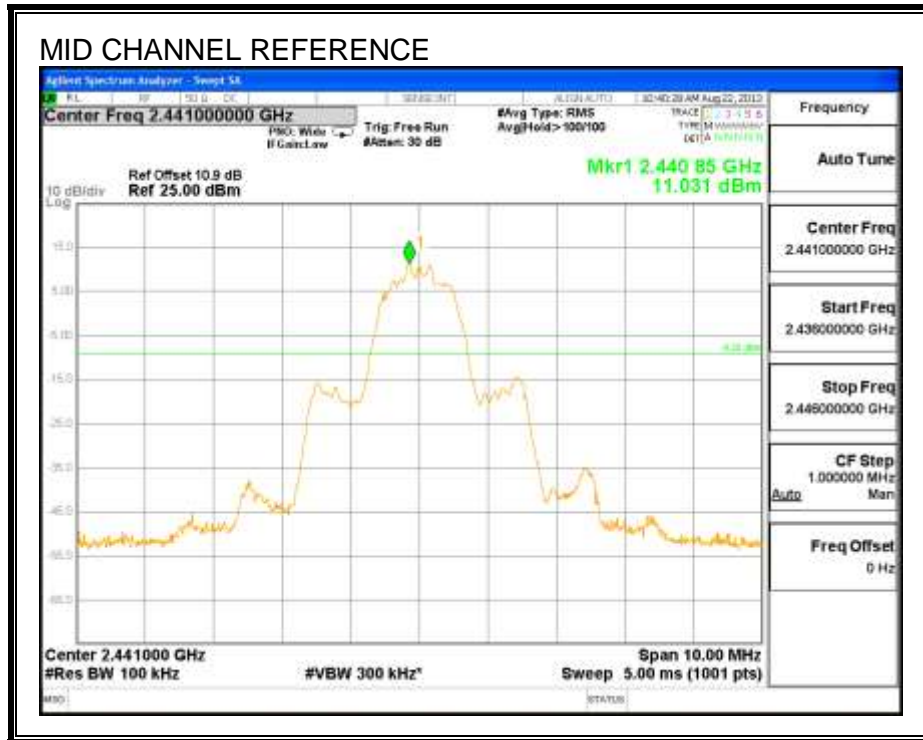


8PSK

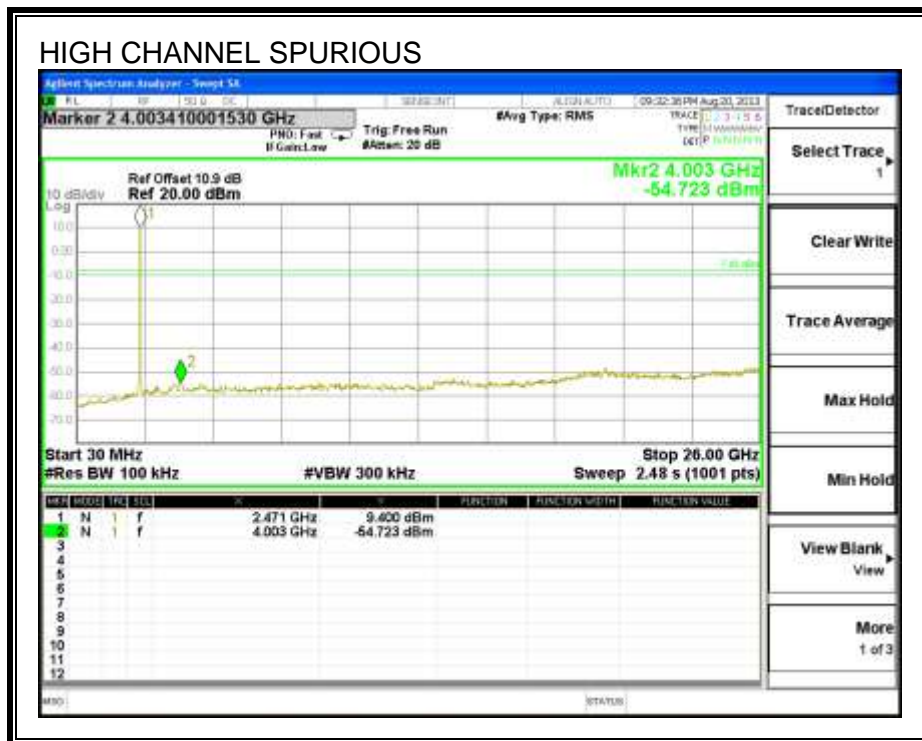
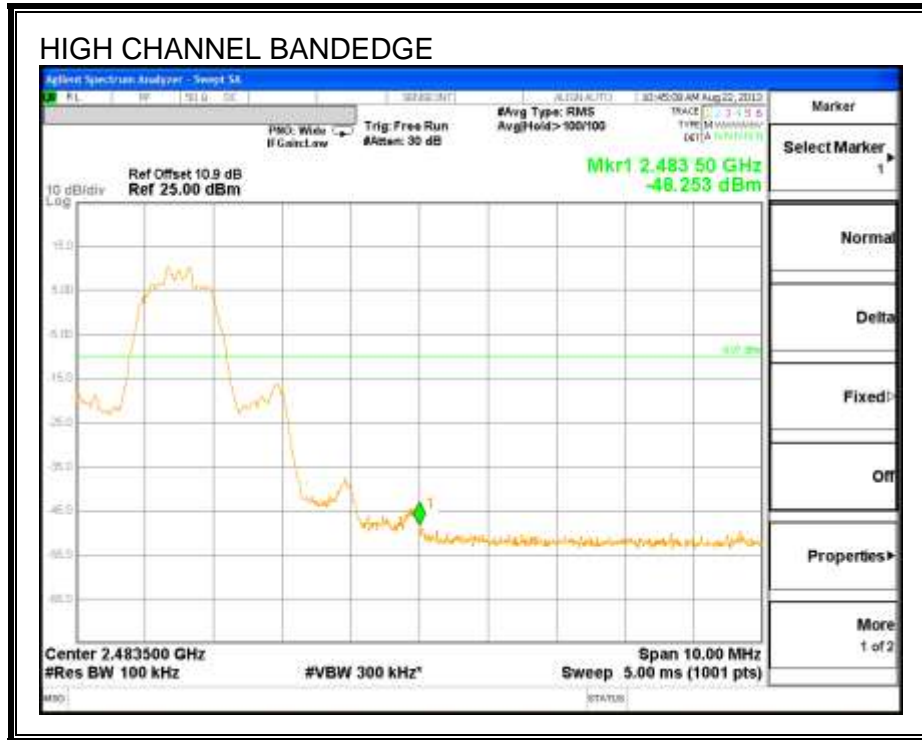
SPURIOUS EMISSIONS, LOW CHANNEL



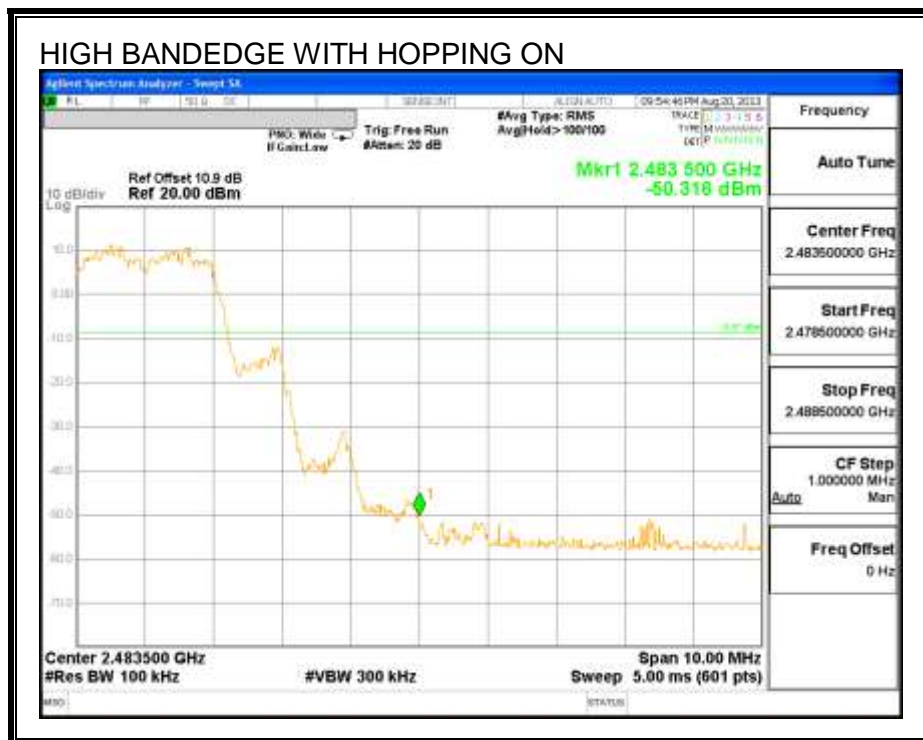
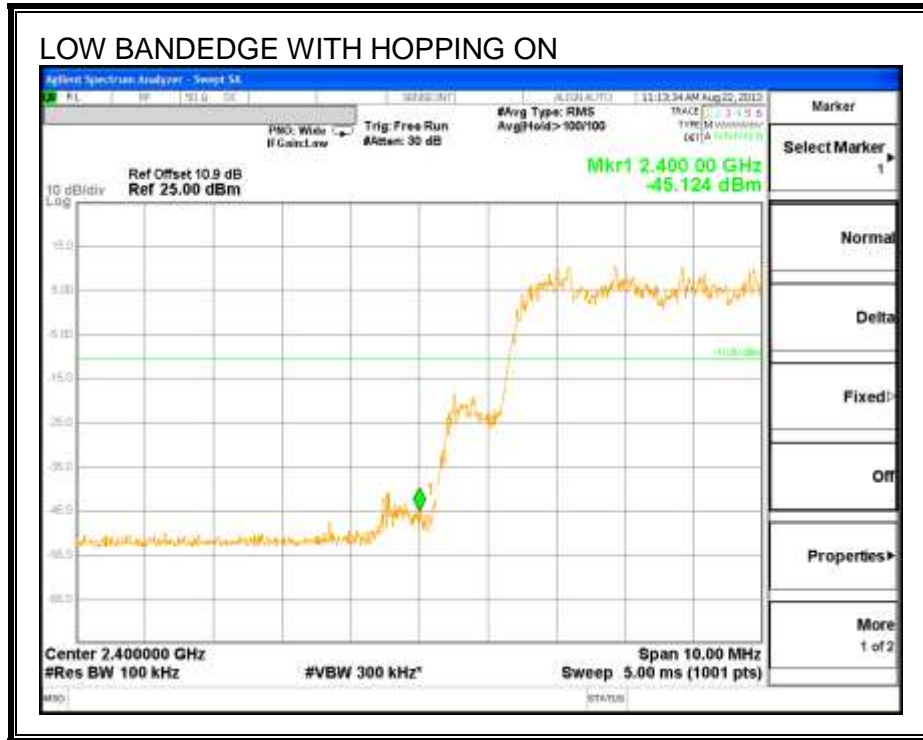
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



SPURIOUS BANDEGE EMISSIONS WITH HOPPING ON



8. RADIATED TEST RESULTS

8.1. 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.

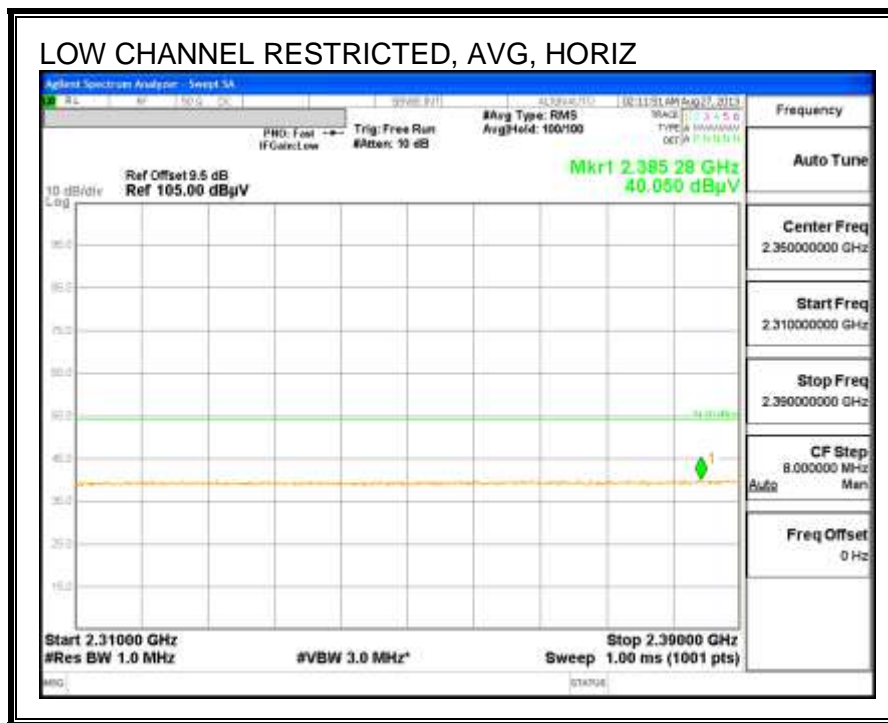
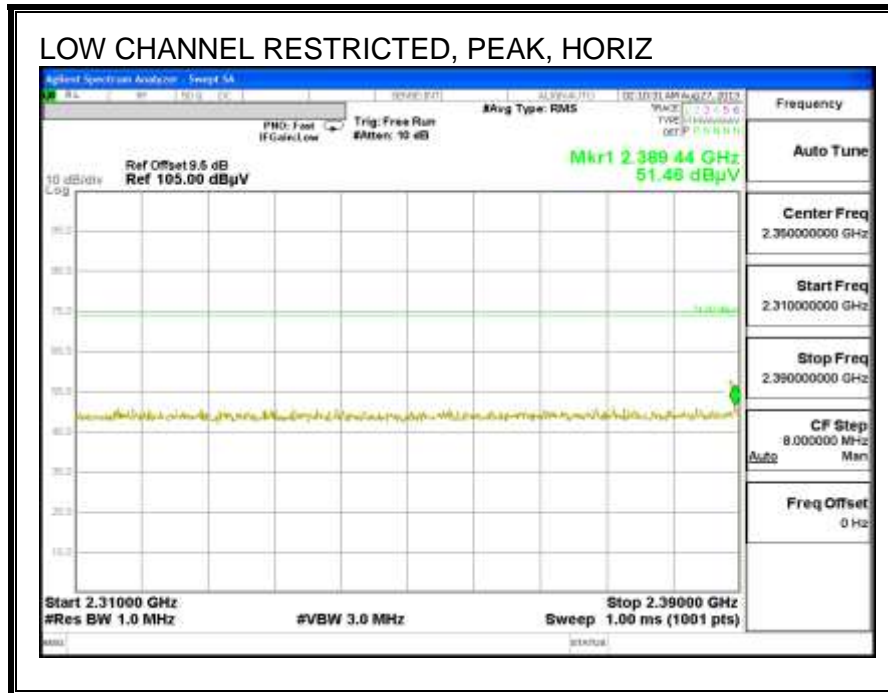
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

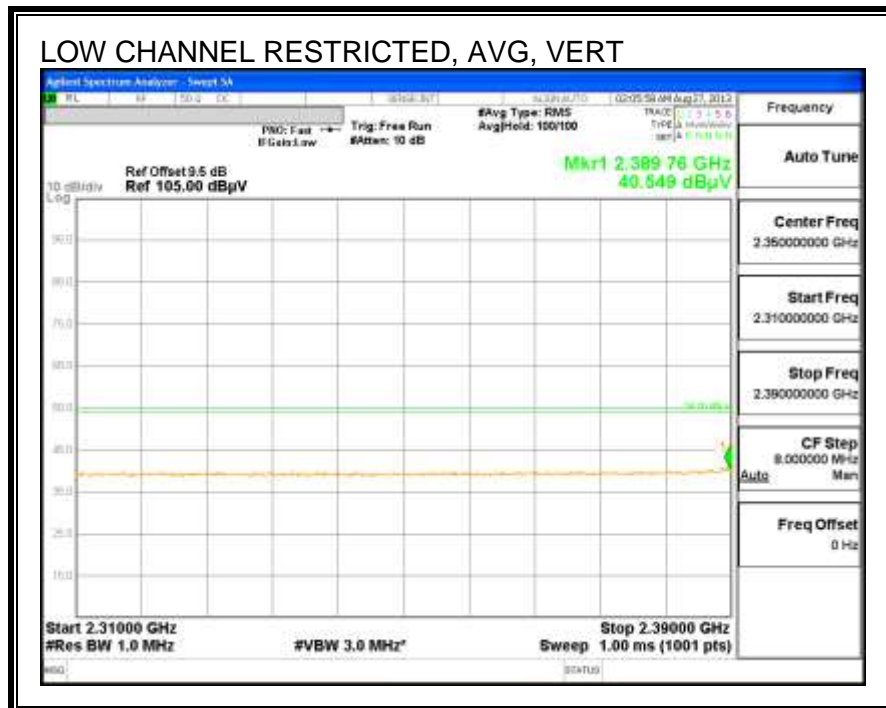
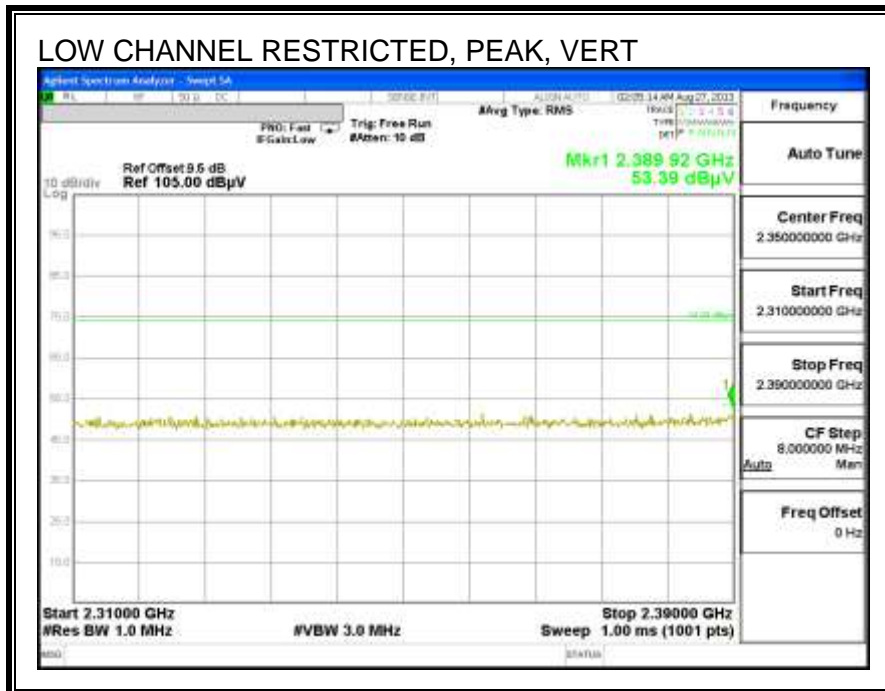
RESULTS

8.2. TRANSMITTER ABOVE 1 GHz

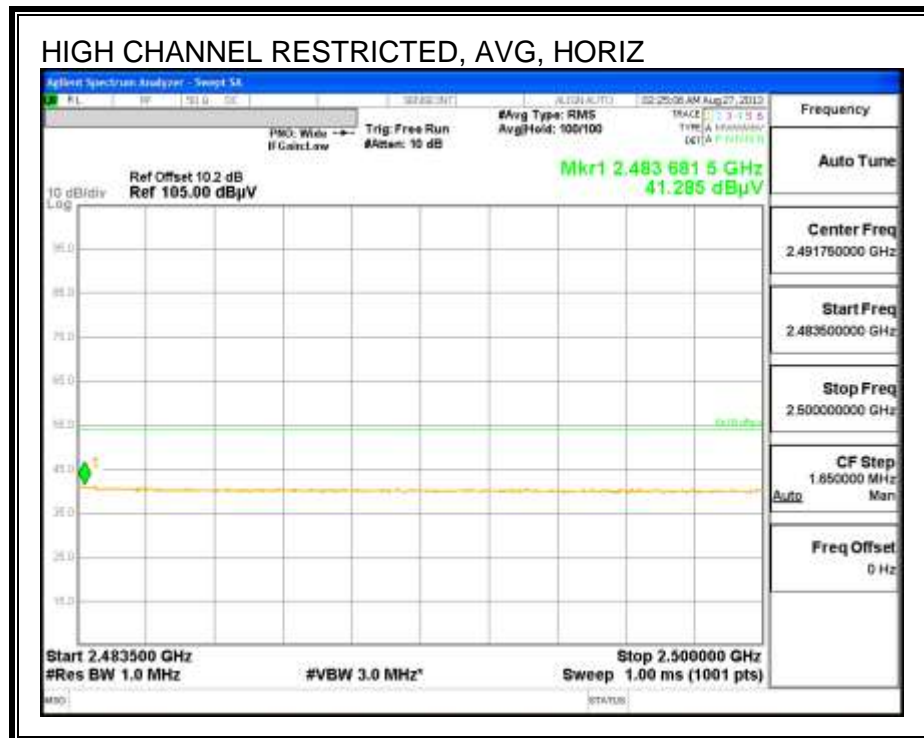
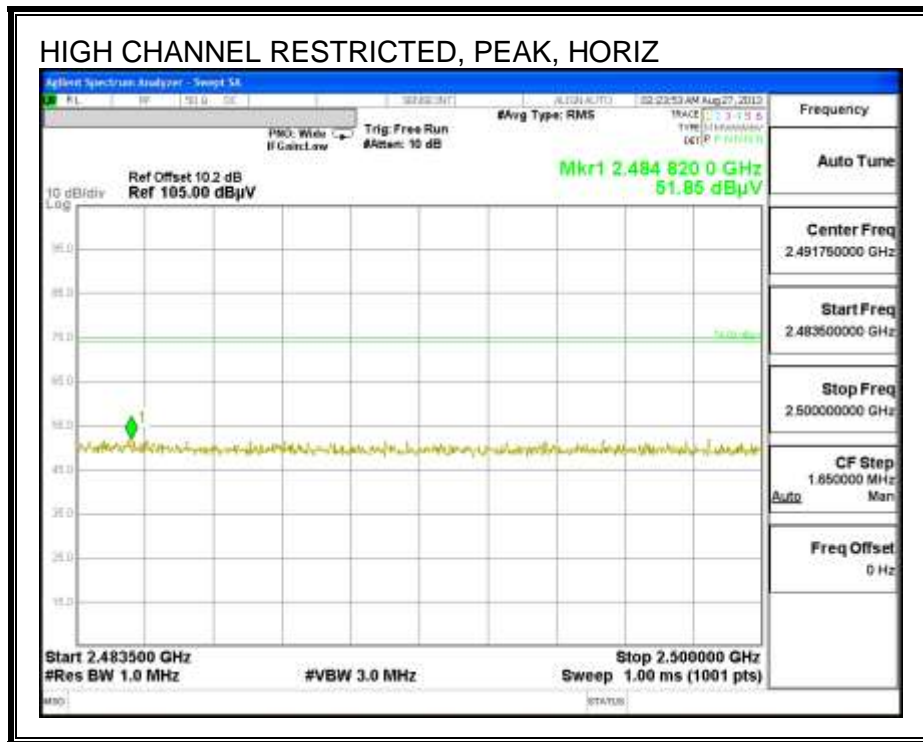
8.2.1. BASIC DATA RATE GFSK MODULATION

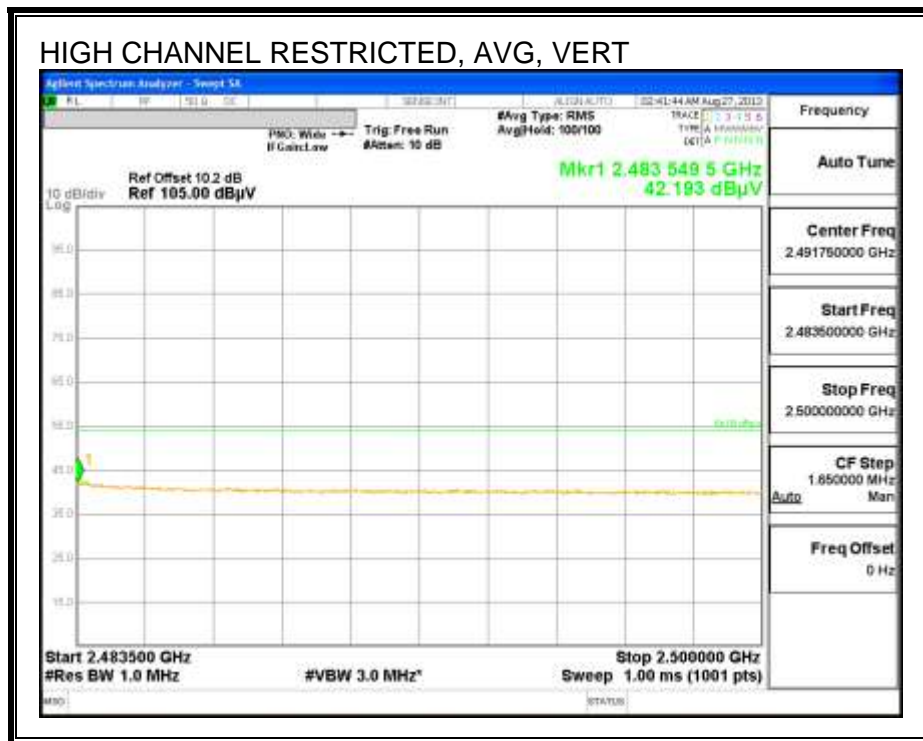
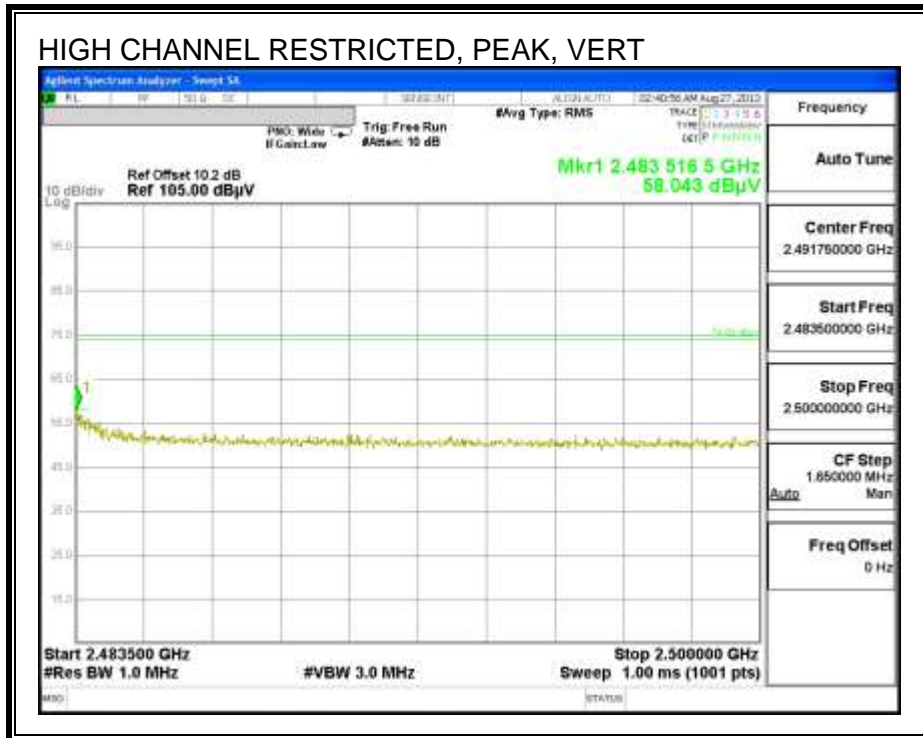
RESTRICTED BANDEDGE (LOW CHANNEL)



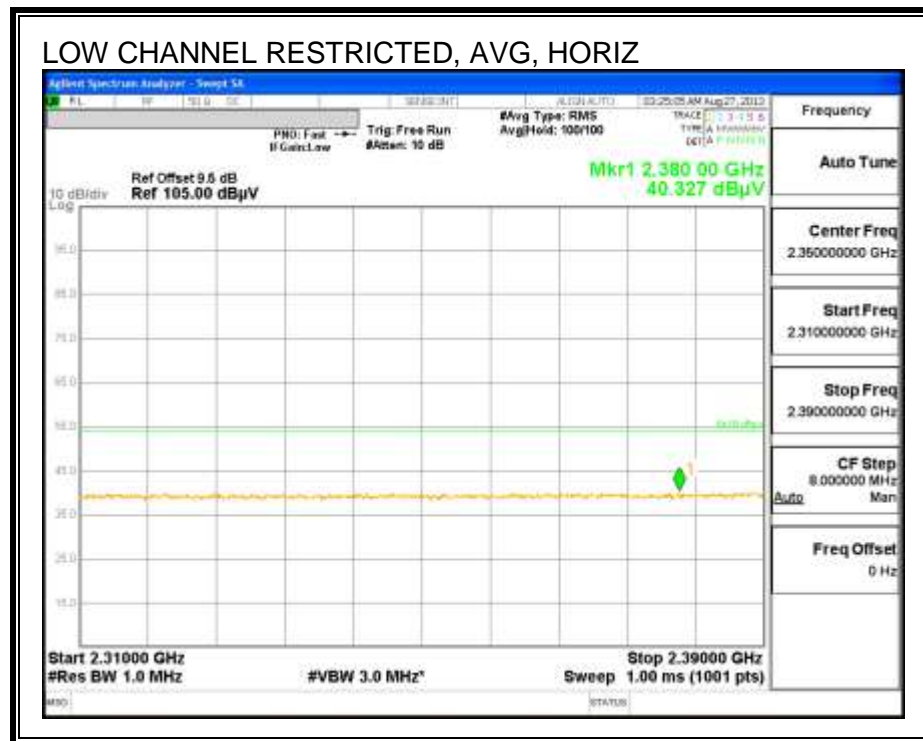
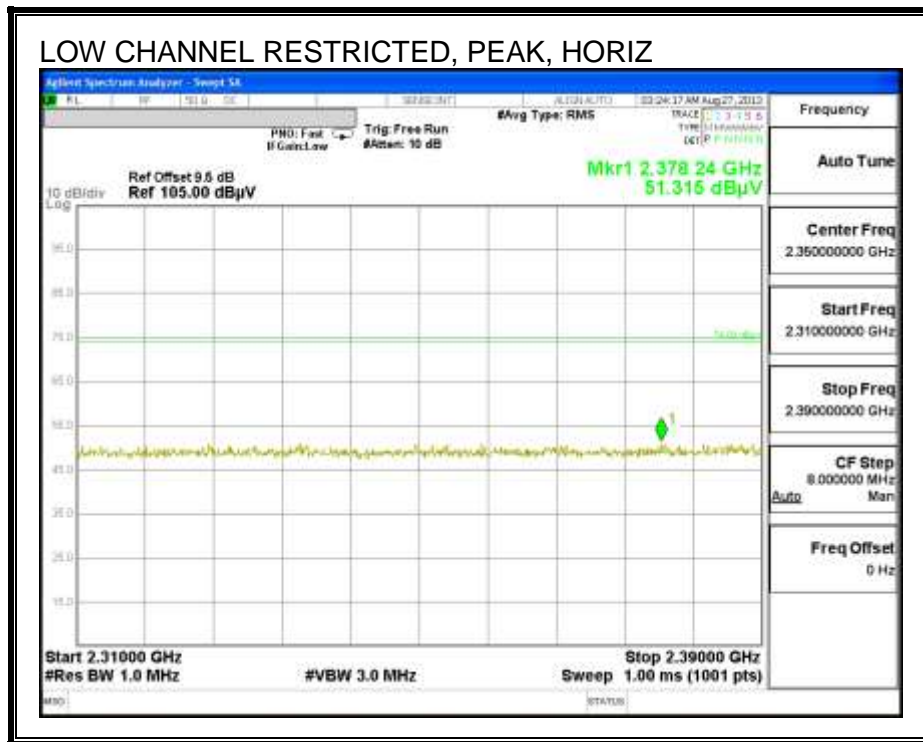


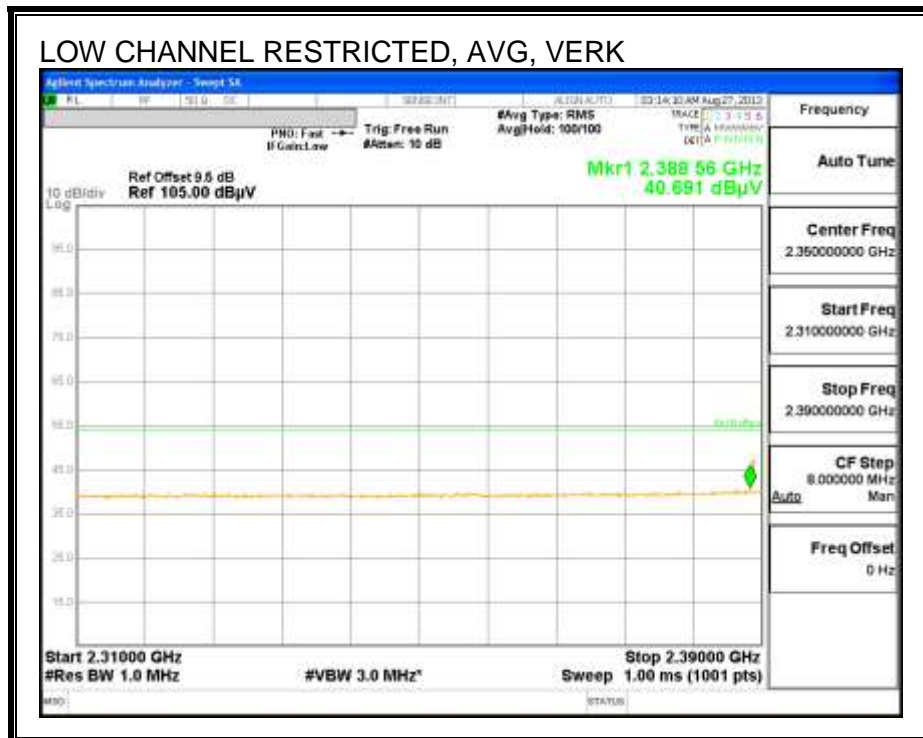
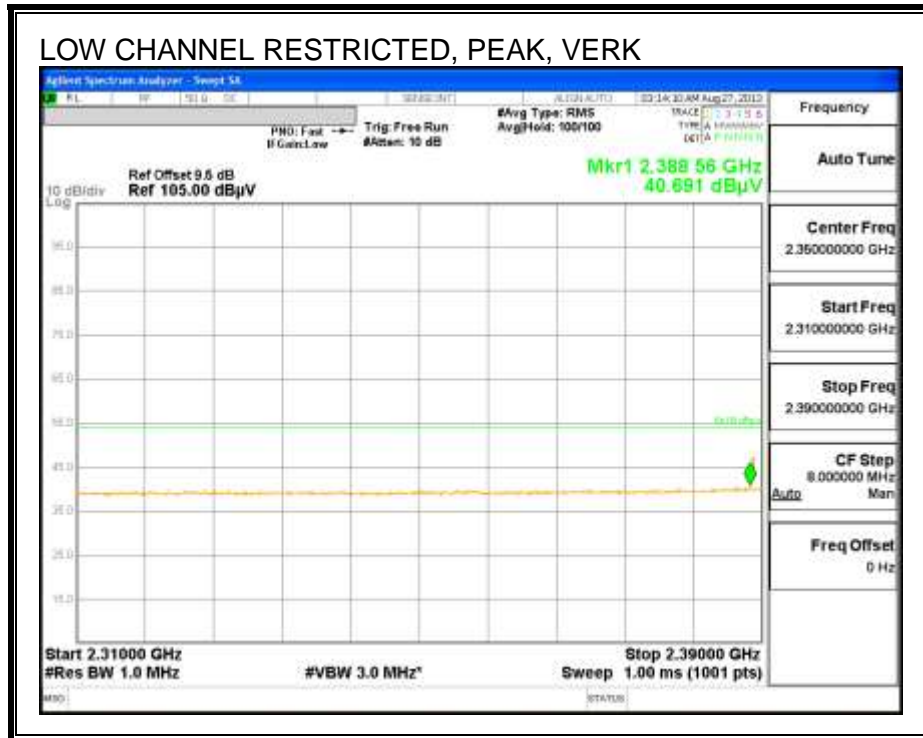
RESTRICTED BANDEDGE (HIGH CHANNEL)



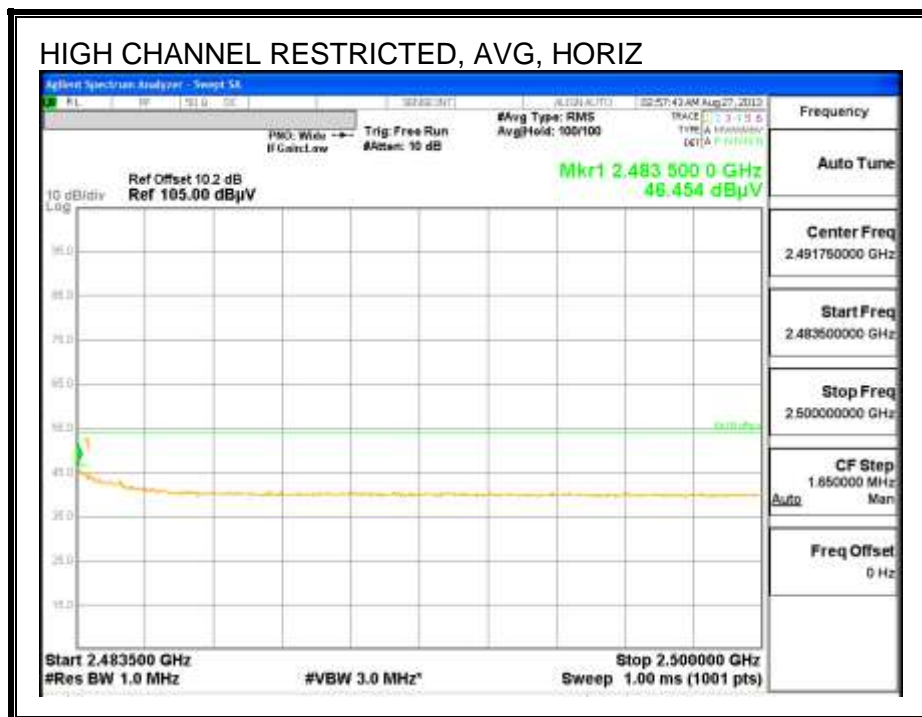
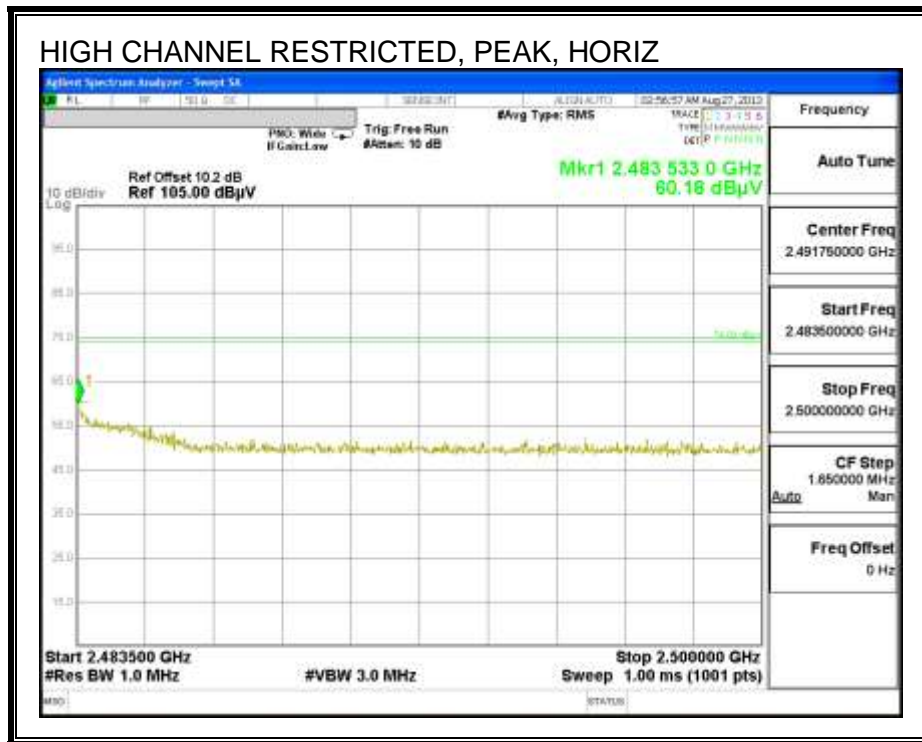


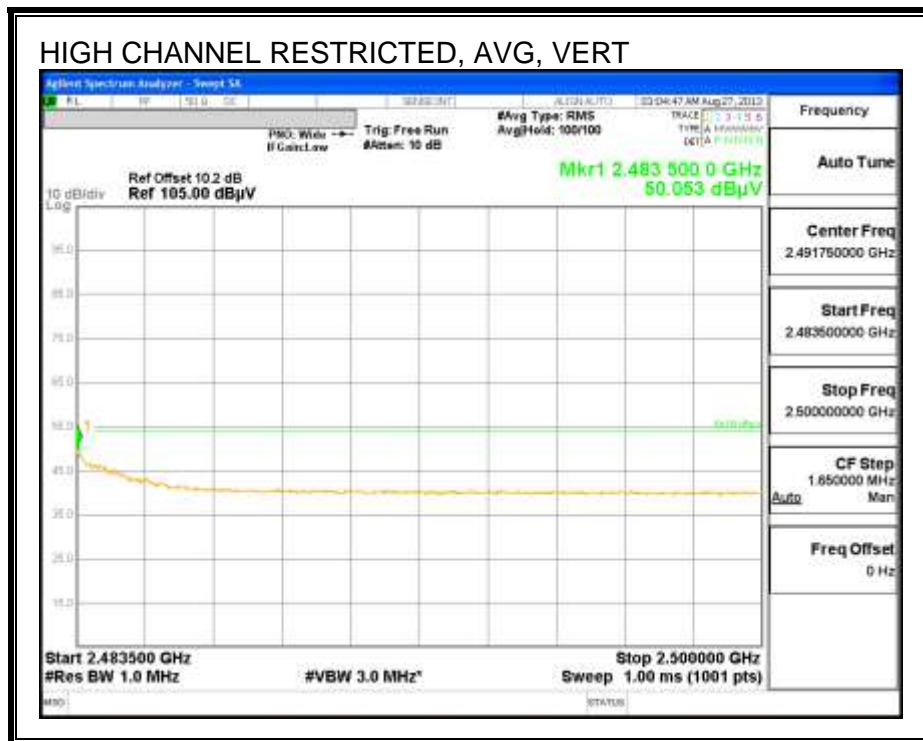
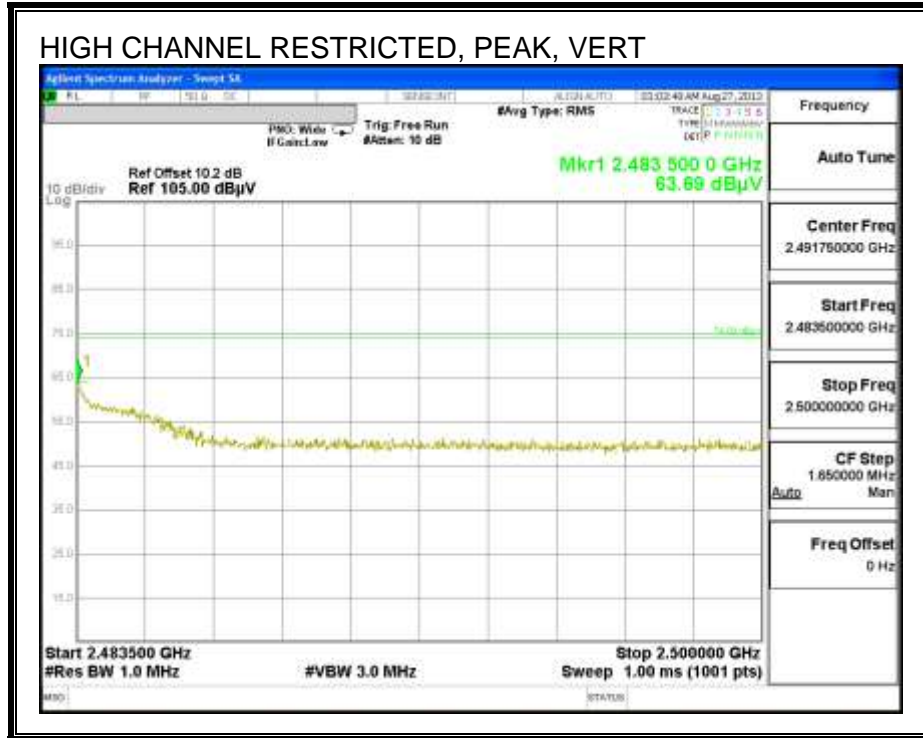
8.2.2. ENHANCED DATA RATE 8PSK MODULATION





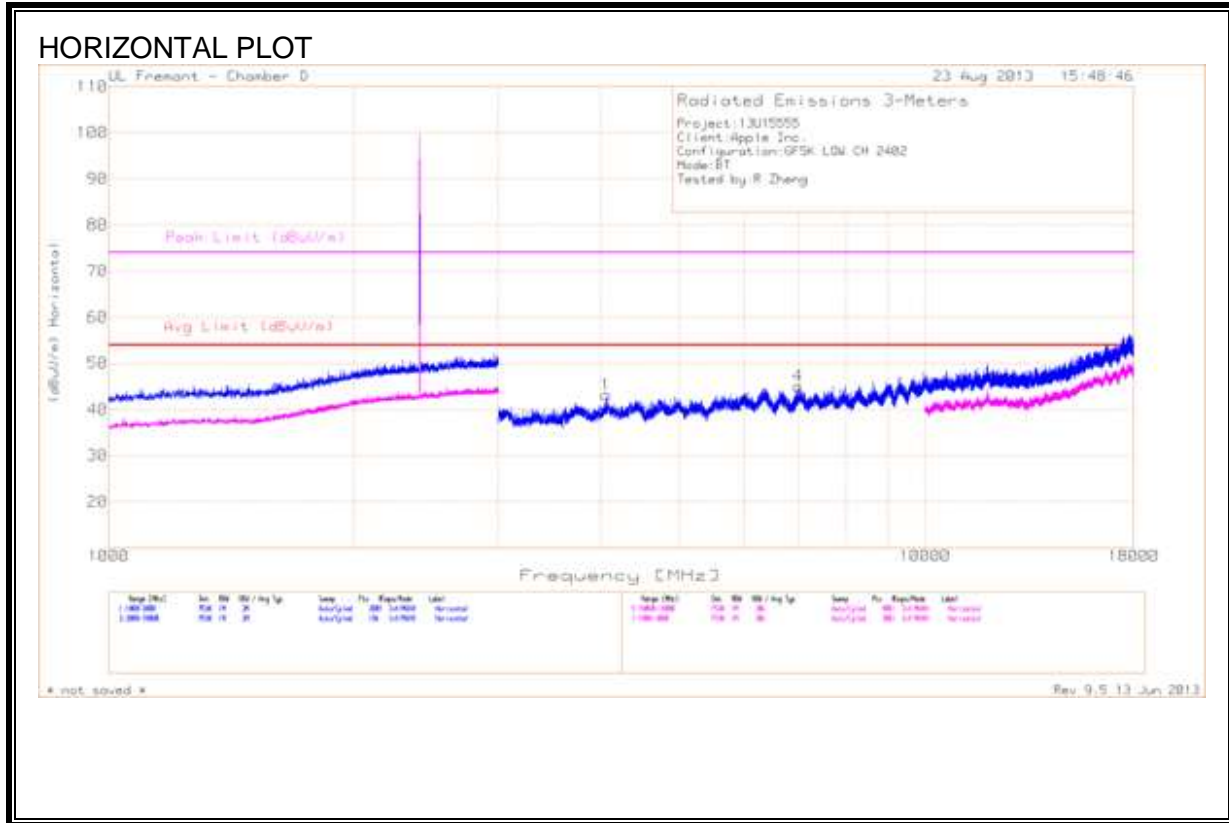
RESTRICTED BANEDGE (HIGH CHANNEL)



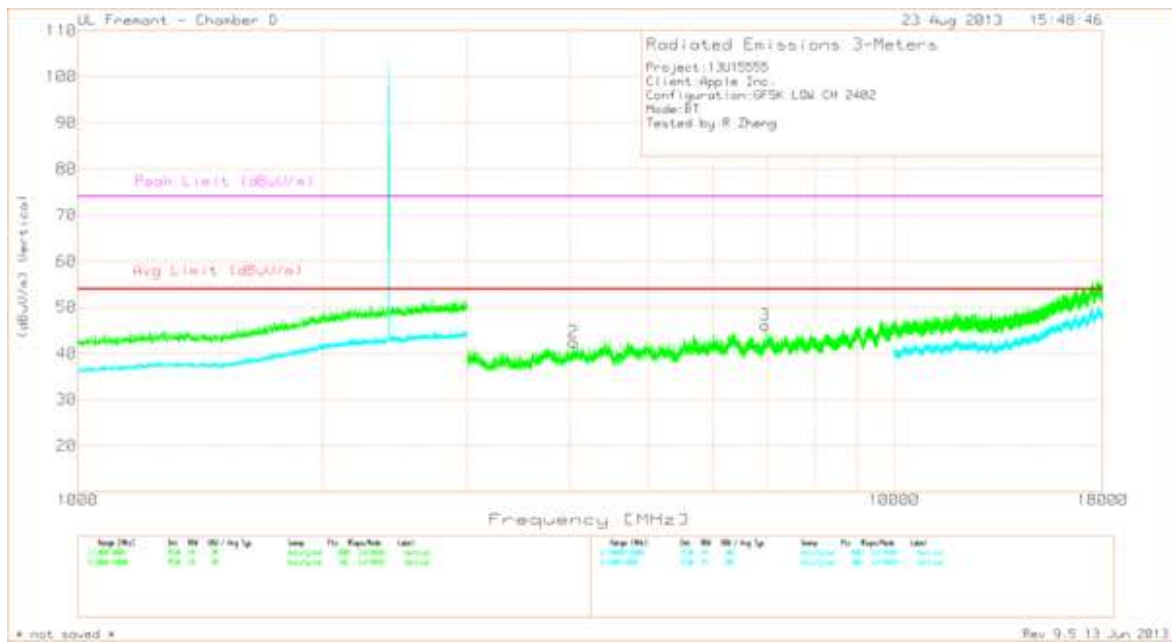


GFSK HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL



VERTICAL PLOT

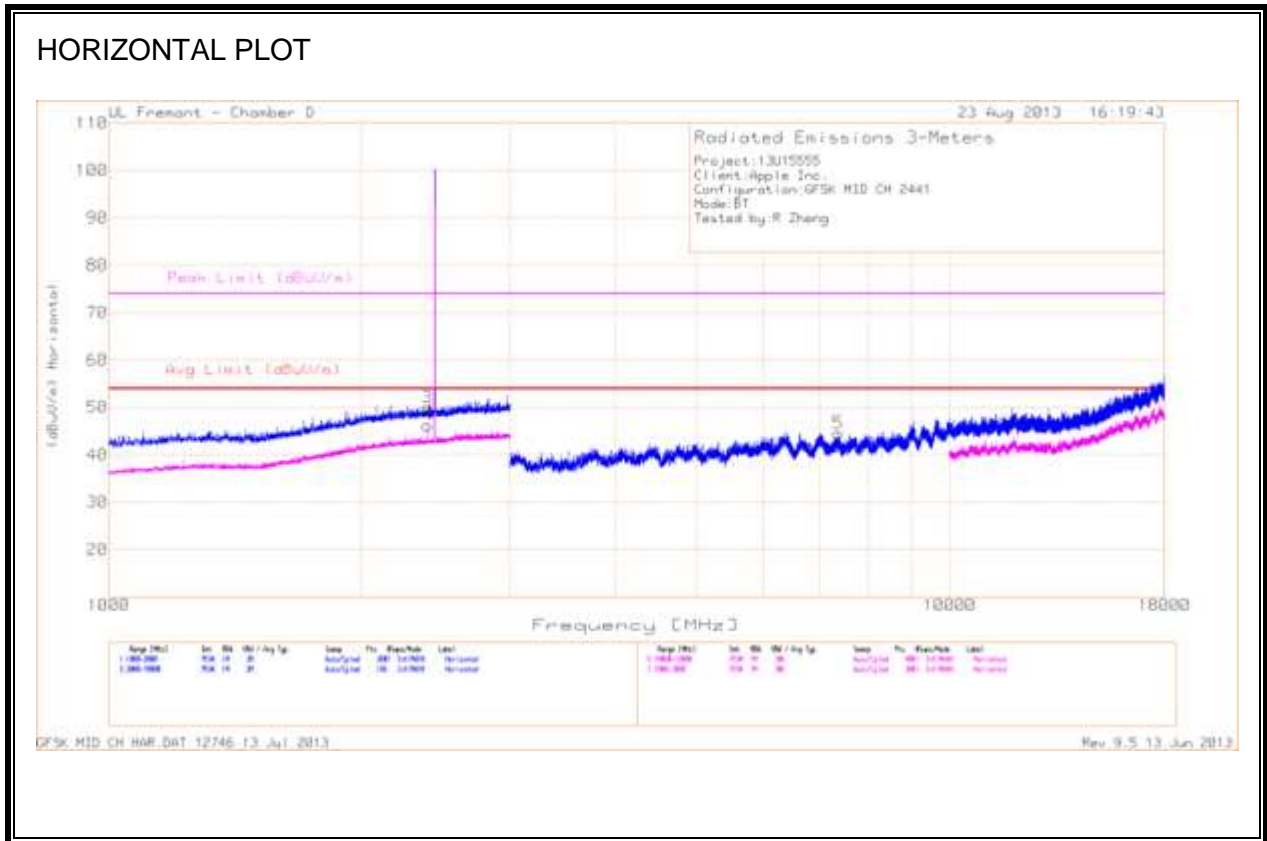


DATA

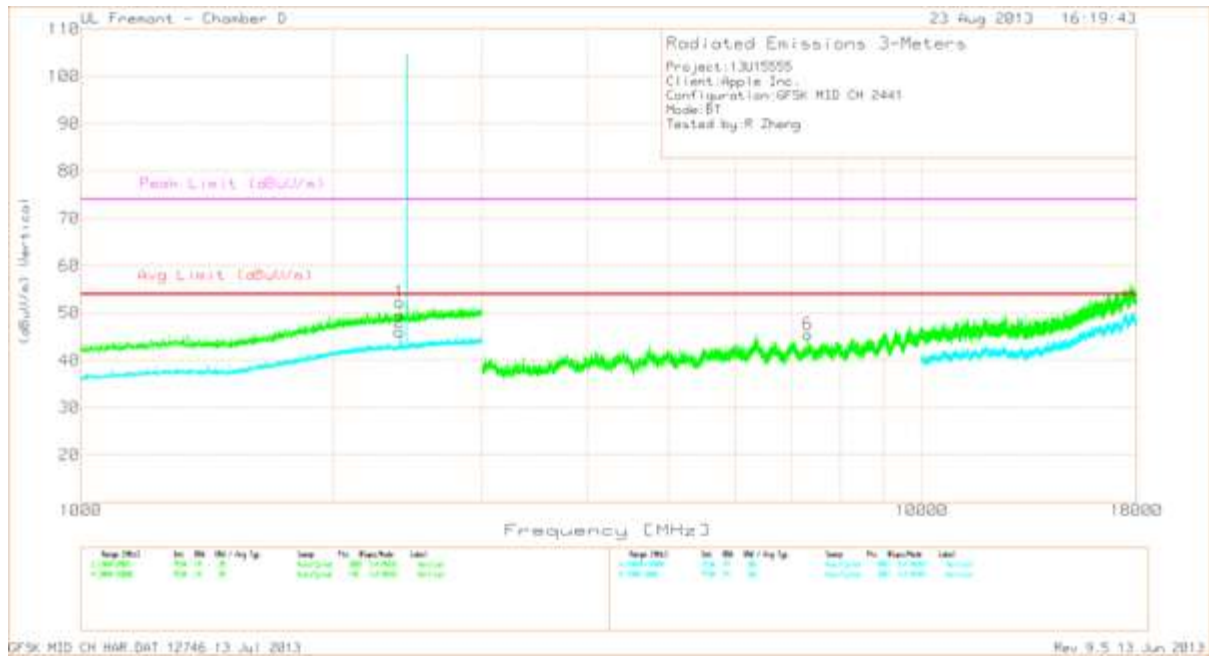
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T344 Ant Factor [dB/m]	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	4.07	40.53	PK	33.8	-31.2	43.13	54	-10.87	74	-30.87	100	H
4	*6.993	37.56	PK	35.9	-28.4	45.06					100	H
2	4.049	39.51	PK	33.8	-30.8	42.51	54	-11.49	74	-31.49	200	V
3	*6.957	38.95	PK	35.9	-28.7	46.15					100	V

*Not in Restricted Bands

MID CHANNEL



VERTICAL PLOT

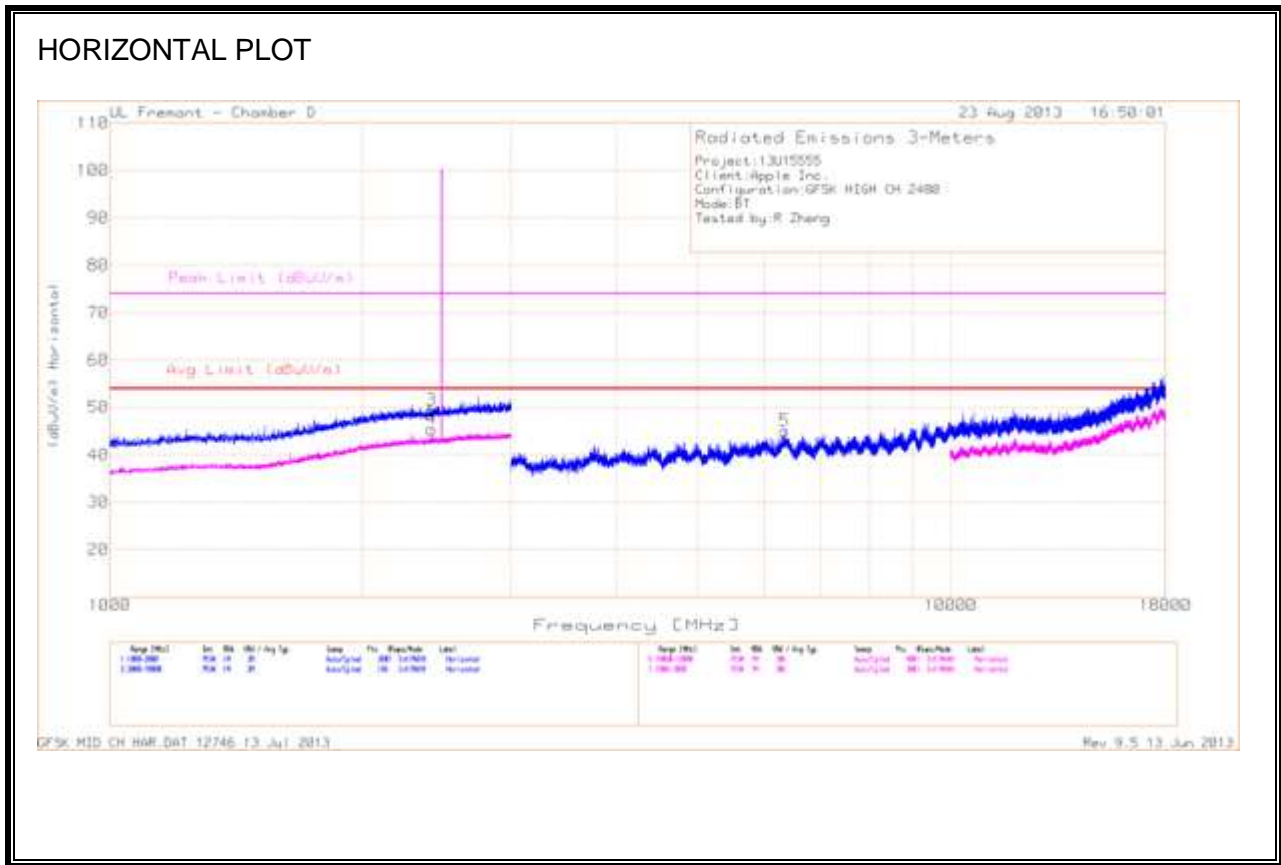


DATA

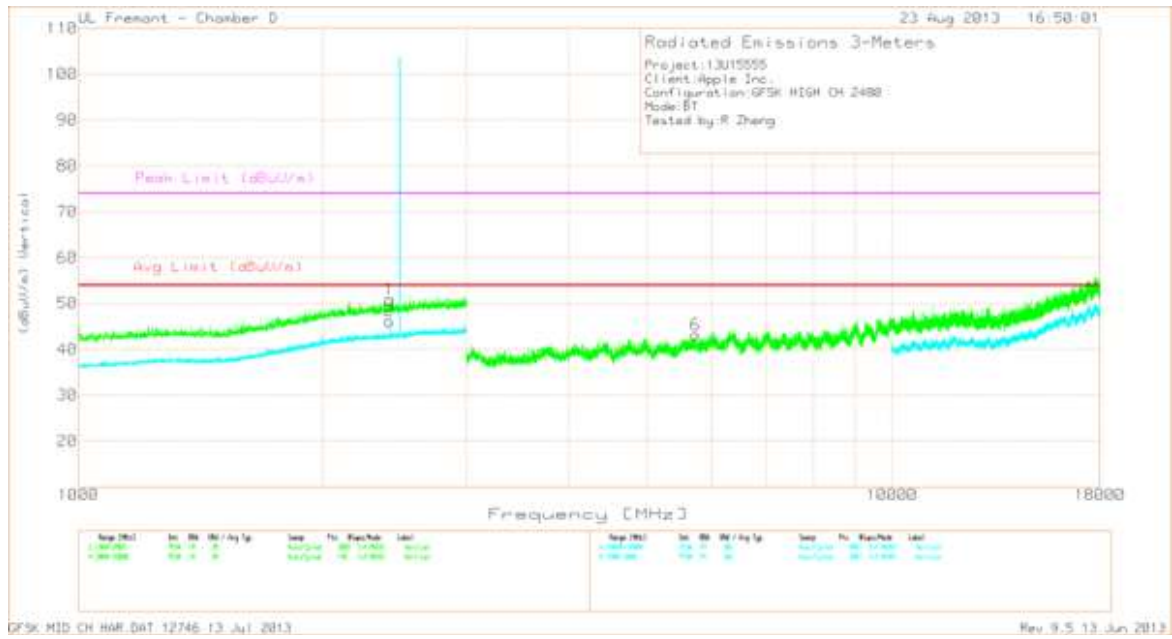
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T344 Ant Factor [dB/m]	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
3	2.390	41.89	PK	32.4	-24.3	49.99	54	-4.01	74	-24.01	100	H
1	*2.395	44.17	PK	32.4	-24.3	52.27					201	V
5	7.369	37.02	PK	35.9	-28.4	44.52	54	-9.48	74	-29.48	201	H
6	7.323	37.95	PK	35.9	-28.4	45.45	54	-8.55	74	-28.55	200	V
4	2.390	38.11	AVG	32.4	-24.3	46.21	54	-7.79	74	-27.79	100	H
2	2.390	38.02	AVG	32.4	-24.3	46.12	54	-7.88	74	-27.88	201	V

*Not in Restricted Bands

HIGH CHANNEL



VERTICAL PLOT



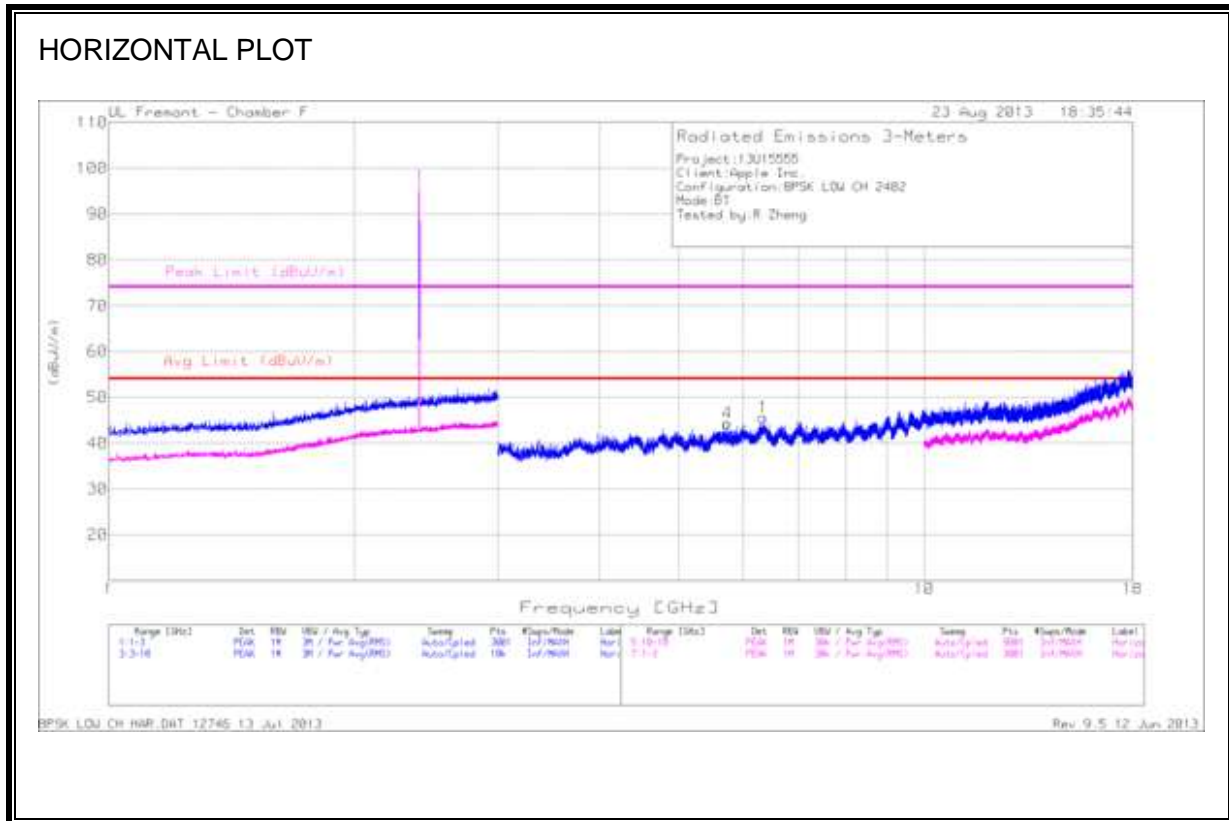
DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T344 Ant Factor [dB/m]	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
3	*2.413	41.31	PK	32.4	-24.3	49.41					201	H
1	*2.413	42.75	PK	32.4	-24.3	50.85					201	V
5	*6.35	38.22	PK	35.9	-29.1	45.02					100	H
6	*5.737	38.06	PK	35.3	-30.2	43.16					201	V
4	*2.413	37.31	AVG	32.4	-24.3	45.41					100	H
2	*2.412	38.08	AVG	32.4	-24.3	46.18					201	V

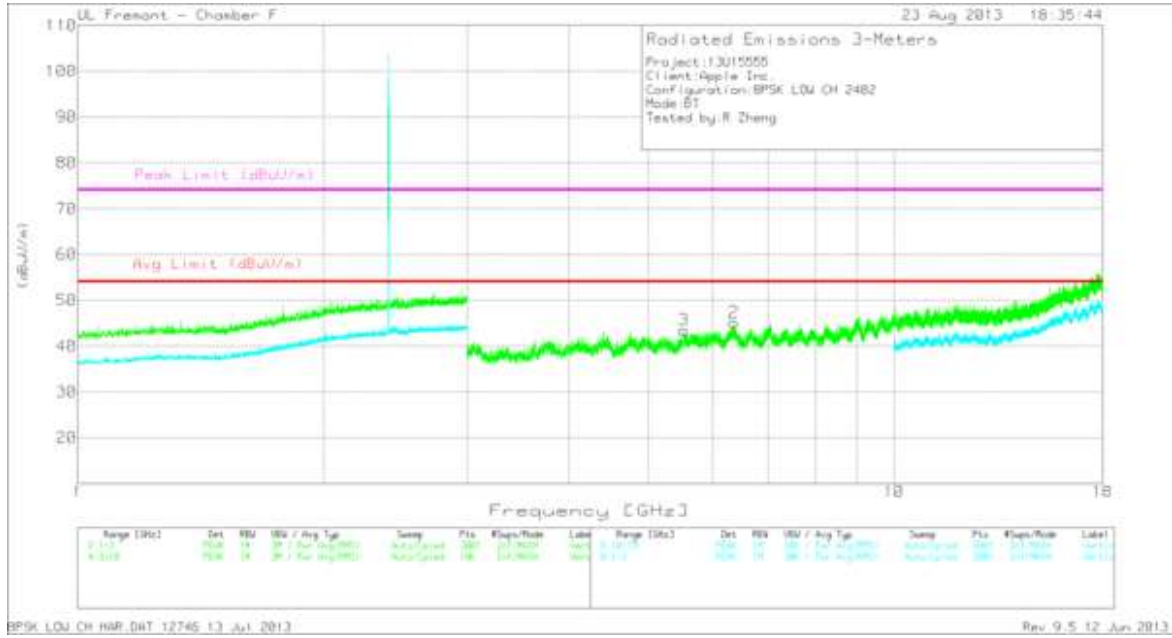
*Not in Restricted Bands

8PSK HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL



VERTICAL PLOT



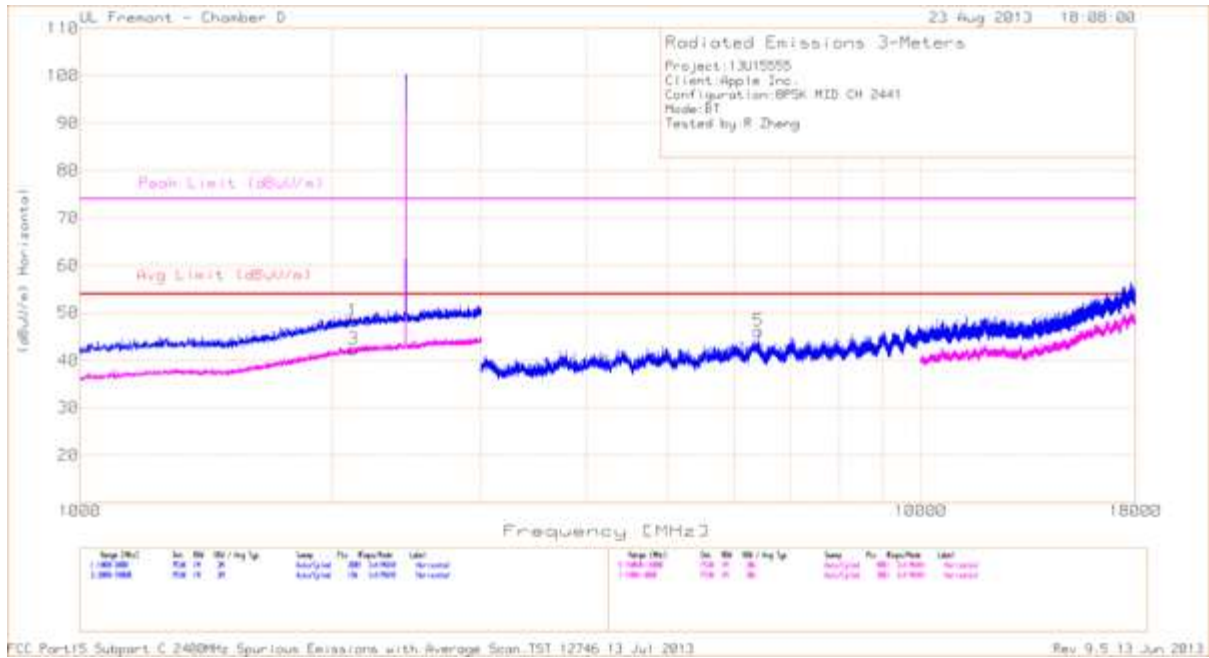
DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T344 Ant Factor [dB/m]	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*6.346	38.71	PK	35.9	-29	45.61					0-360	201	H
4	*5.734	39.36	PK	35.3	-30.3	44.36					0-360	201	H
2	*6.366	38.29	PK	35.9	-29	45.19					0-360	100	V
3	*5.527	39.61	PK	34.9	-31	43.51					0-360	100	V

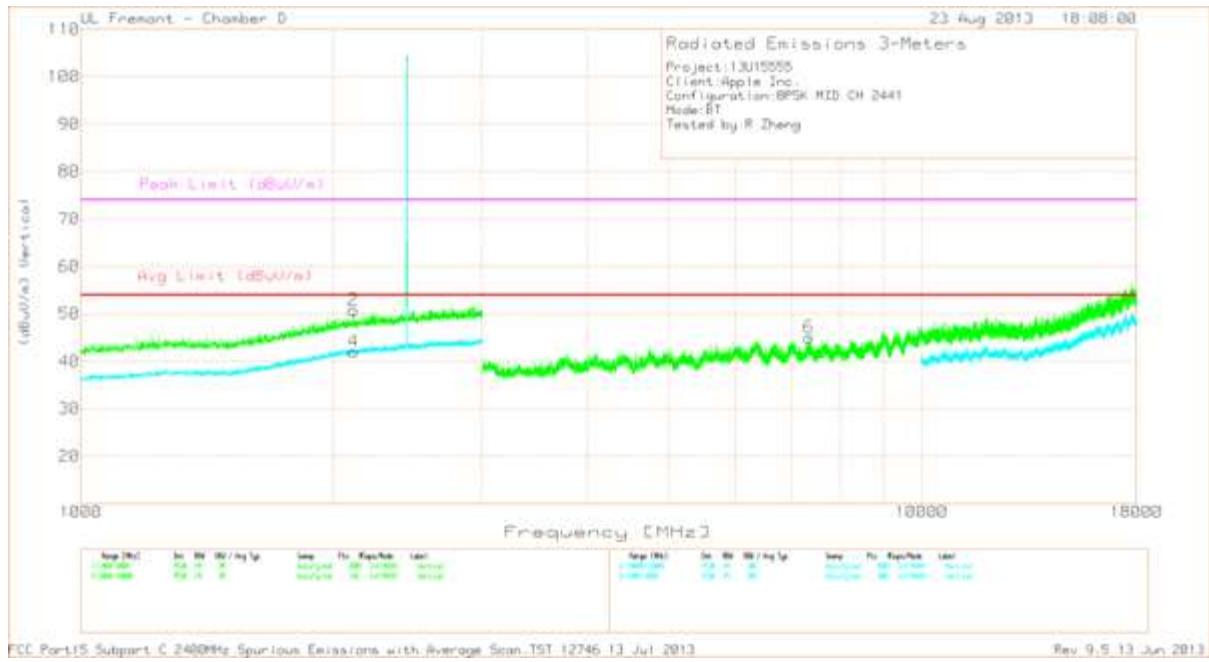
*Not in Restricted Band

MID CHANNEL

HORIZONTAL PLOT



VERTICAL PLOT

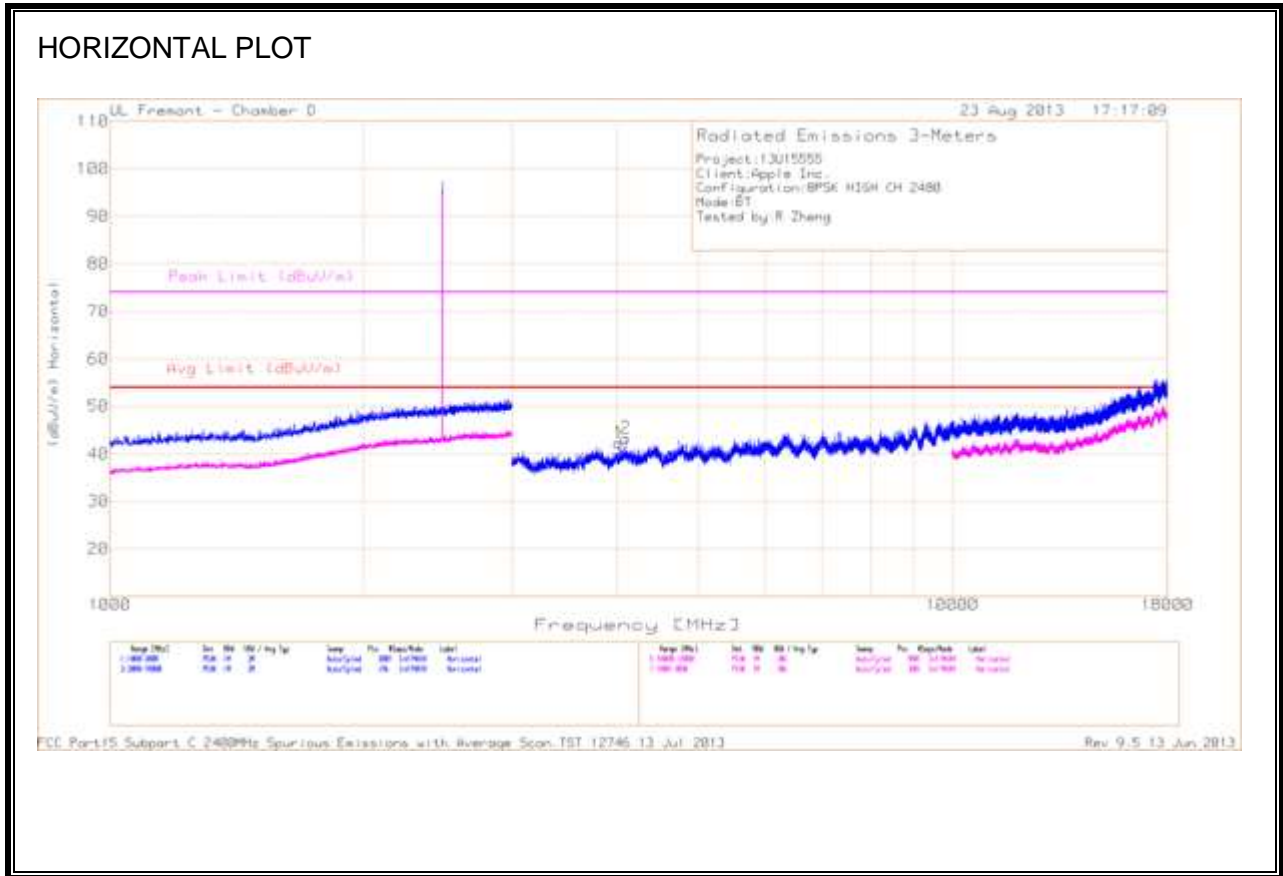


DATA

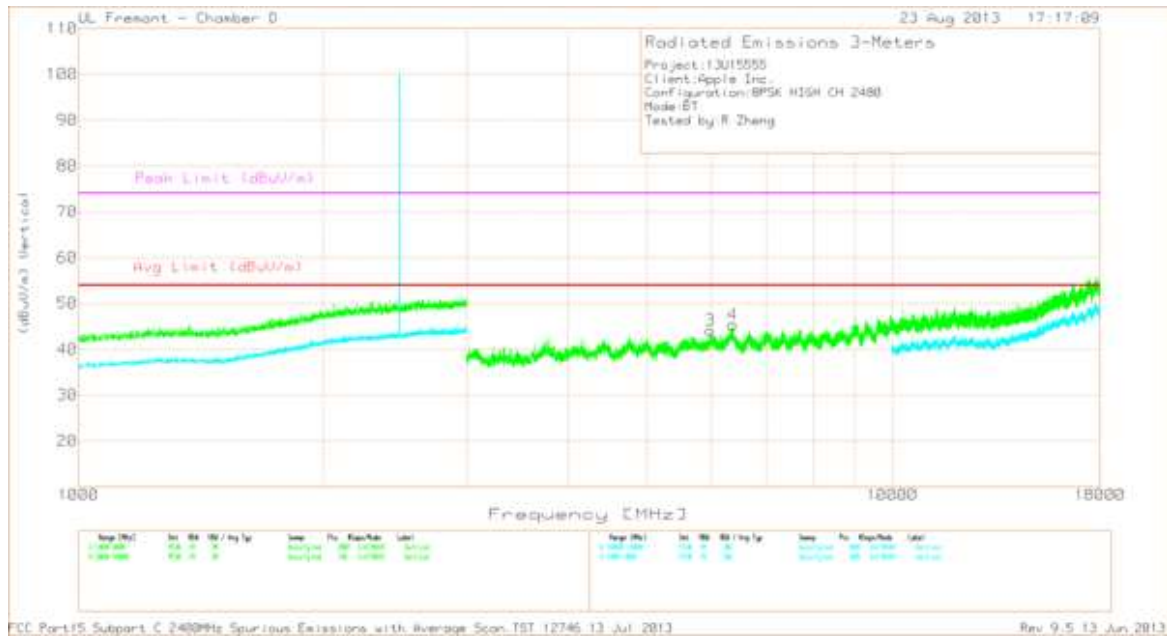
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T344 Ant Factor [dB/m]	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	*2.111	40.83	PK	32	-24.5	48.33					100	H
2	*2.111	43.25	PK	32	-24.5	50.75					201	V
5	*6.412	39.71	PK	35.9	-29.4	46.21					200	H
6	7.346	37.42	PK	35.9	-28.3	45.02	54	-8.98	74	-28.98	100	V
3	*2.114	34.87	AVG	32	-24.5	42.37					201	H
4	*2.11	34.54	AVG	32	-24.5	42.04					100	V

*Not in Restricted Band

HIGH CHANNEL



VERTICAL PLOT



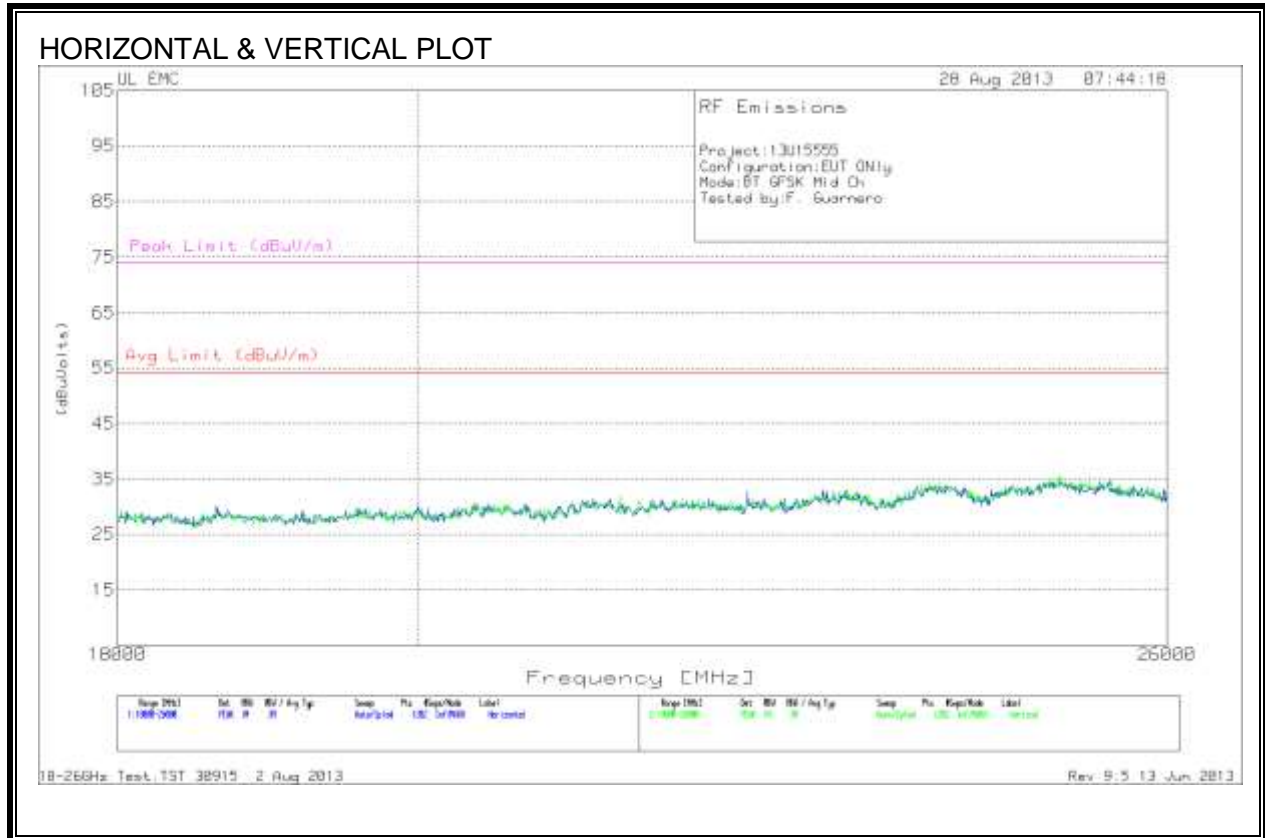
DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T344 Ant Factor [dB/m]	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	4.017	39.96	PK	33.8	-31.5	42.26	54	-11.74	74	-31.74	100	H
2	4.094	40.93	PK	33.8	-31.4	43.33	54	-10.67	74	-30.67	100	H
3	*5.98	38.62	PK	35.7	-30.2	44.12					100	V
4	*6.372	38.49	PK	35.9	-29	45.39					201	V

*Not in Restricted Band

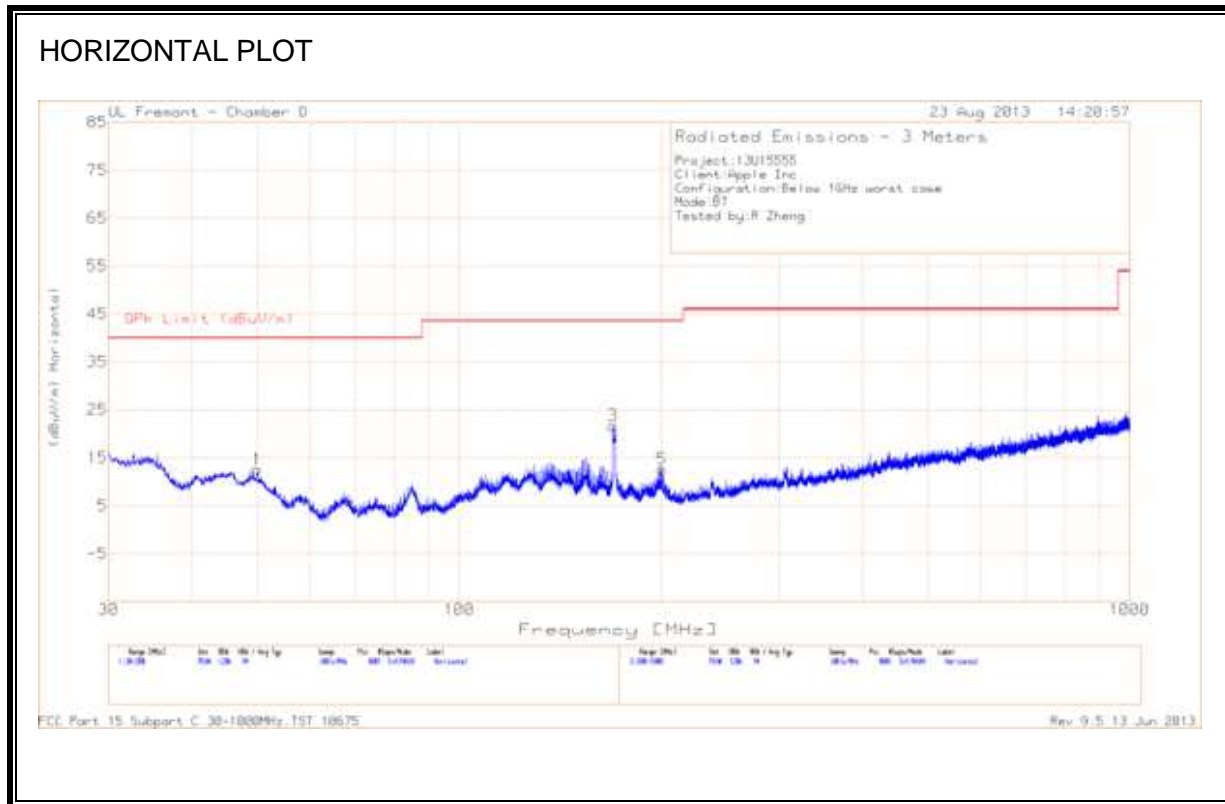
8.3. WORST-CASE ABOVE 18 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE)

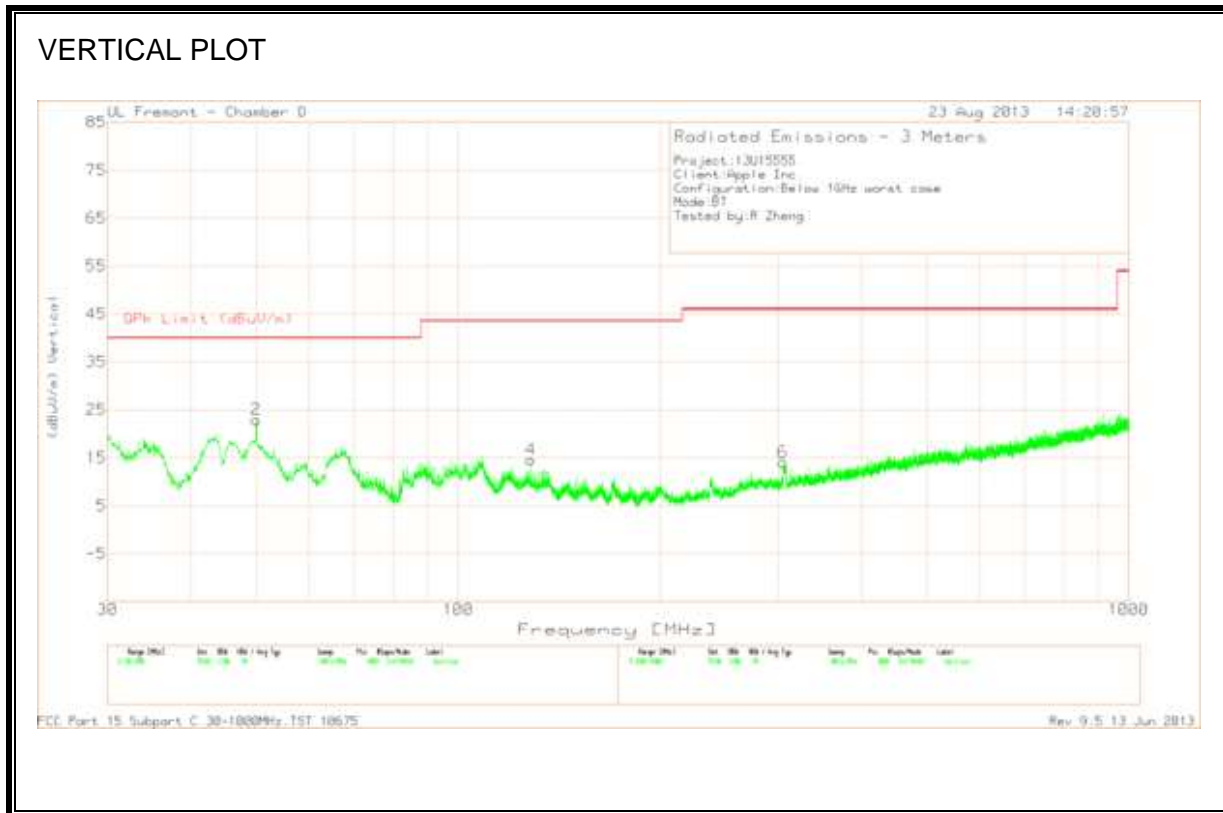


8.4. WORST-CASE BELOW 1 GHz

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



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



DATA

Frequency (MHz)	Meter Reading (dBuV)	Det	AFT408 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
49.975	36.61	PK	7.9	-31.9	12.61	40	-27.39	200	H
169.6125	41.29	PK	11.7	-31.3	21.69	43.52	-21.83	98	H
200.6	31.74	PK	12	-31.1	12.64	43.52	-30.88	100	H
50.0175	46.98	PK	7.9	-31.9	22.98	40	-17.02	100	V
128.345	32.25	PK	13.8	-31.4	14.65	43.52	-28.87	100	V
305.2	31.48	PK	13.3	-30.7	14.08	46.02	-31.94	299	V

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

Line-L1 .15 - 30MHz

Trace Markers

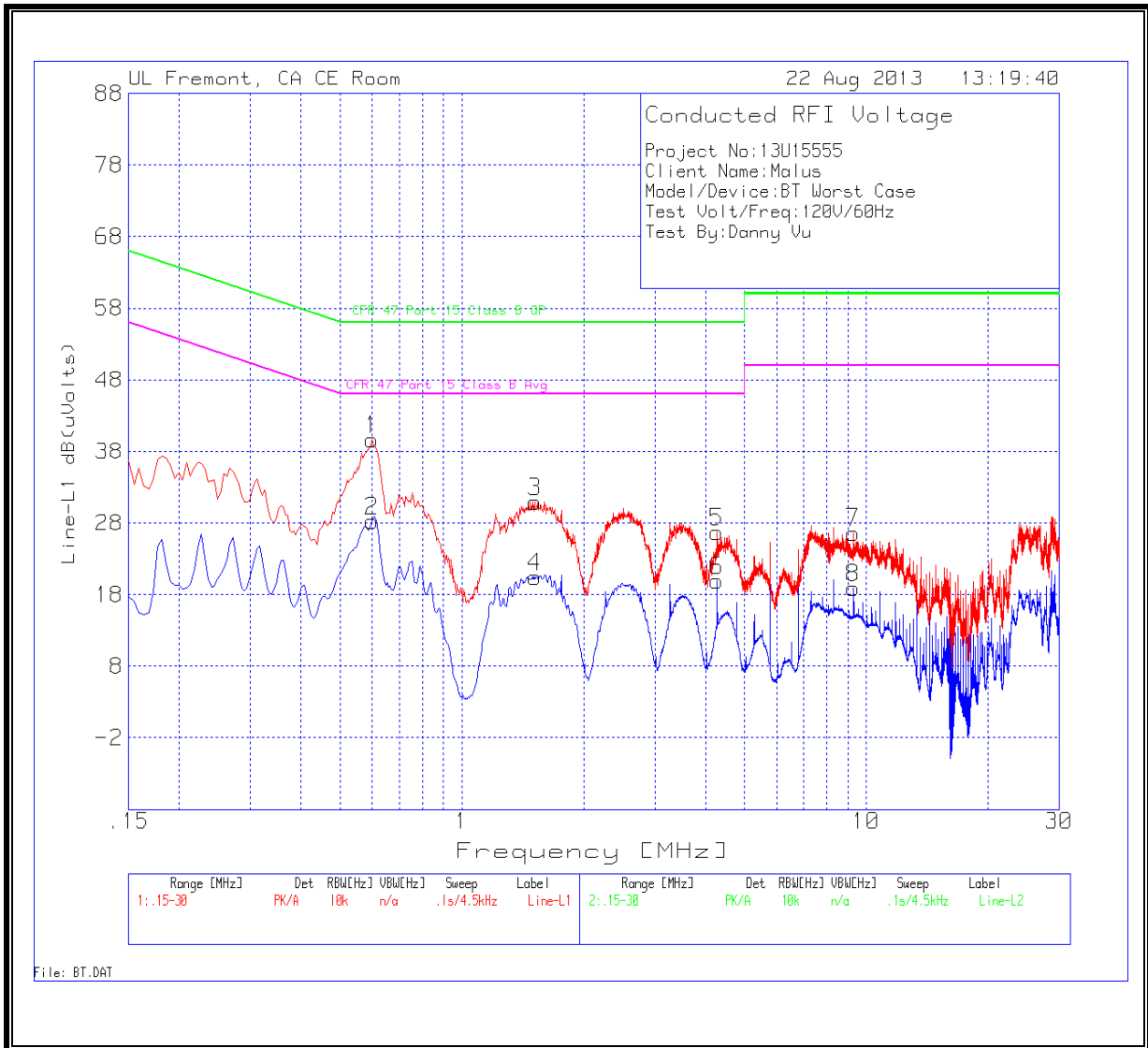
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dB(uVolts)	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
1	.6	39.55	PK	.1	0	39.65	56	-16.35	-	-
2	.6	28.12	Av	.1	0	28.22	-	-	46	-17.78
3	1.5135	30.72	PK	.1	.1	30.92	56	-25.08	-	-
4	1.5135	20.24	Av	.1	.1	20.44	-	-	46	-25.56
5	4.2765	26.52	PK	.1	.1	26.72	56	-29.28	-	-
6	4.2765	19.69	Av	.1	.1	19.89	-	-	46	-26.11
7	9.312	26.45	PK	.1	.1	26.65	60	-33.35	-	-
8	9.312	18.7	Av	.1	.1	18.9	-	-	50	-31.1

Line-L2 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dB(uVolts)	CFR 47 Part 15 Class B QP	Margin to Limit (dB)	CFR 47 Part 15 Class B Avg	Margin to Limit (dB)
9	.6045	34.02	PK	.1	0	34.12	56	-21.88	-	-
10	.6045	24.17	Av	.1	0	24.27	-	-	46	-21.73
11	1.518	24.76	PK	.1	.1	24.96	56	-31.04	-	-
12	1.518	12.19	Av	.1	.1	12.39	-	-	46	-33.61
13	4.281	18.24	PK	.1	.1	18.44	56	-37.56	-	-
14	4.281	4.97	Av	.1	.1	5.17	-	-	46	-40.83
15	9.5325	28.01	PK	.1	.2	28.31	60	-31.69	-	-
16	9.5325	17.19	Av	.1	.2	17.49	-	-	50	-32.51

LINE 1 RESULTS



LINE 2 RESULTS

