



FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA Phone + Bluetooth & WLAN 2.4GHz b/g/n

MODEL NUMBER: SM-G355H/DS, SM-G355H

FCC ID: A3LSMG355H

REPORT NUMBER: 14I17666-2 Revision A

ISSUE DATE: May 12, 2014

Prepared for

SAMSUNG ELECTRONICS CO., LTD.

416, MAETAN 3-DONG, YEONGTONG-GU

SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

Prepared by

UL VERIFICATION SERVICES INC.

47173 BENICIA STREET

FREMONT, CA 94538, U.S.A.

TEL: (510) 771-1000

FAX: (510) 661-0888



NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	4/29/14	Initial issue	P. Zhang
A	5/12/14	Updated statement	P. Zhang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION.....	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION.....	6
4.3. MEASUREMENT UNCERTAINTY	6
5. EQUIPMENT UNDER TEST	7
5.1. DESCRIPTION OF EUT.....	7
5.2. MAXIMUM OUTPUT POWER.....	7
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	7
5.4. WORST-CASE CONFIGURATION AND MODE.....	8
5.5. DESCRIPTION OF TEST SETUP.....	9
6. TEST AND MEASUREMENT EQUIPMENT	11
7. SUMMARY TABLE	12
8. ANTENNA PORT TEST RESULTS	13
8.1. 20 dB AND 99% BANDWIDTH.....	13
8.1.1. BASIC DATA RATE GFSK MODULATION.....	13
8.1.1. ENHANCED DATA RATE 8PSK MODULATION	13
8.2. HOPPING FREQUENCY SEPARATION	22
8.3. NUMBER OF HOPPING CHANNELS.....	24
8.4. AVERAGE TIME OF OCCUPANCY.....	27
8.5. OUTPUT POWER	31
8.5.1. BASIC DATA RATE GFSK MODULATION.....	31
8.5.2. ENHANCED DATA RATE 8PSK MODULATION	31
8.6. AVERAGE POWER.....	36
8.6.1. BASIC DATA RATE GFSK MODULATION.....	36
8.6.2. DATA RATE PI/4-DQPSK MODULATION.....	36
8.6.3. ENHANCED DATA RATE 8PSK MODULATION	37
8.7. CONDUCTED SPURIOUS EMISSIONS.....	38
8.7.1. BASIC DATA RATE GFSK MODULATION.....	39
8.7.1. ENHANCED DATA RATE 8PSK MODULATION	43
9. RADIATED TEST RESULTS	47
9.1. LIMITS AND PROCEDURE	47
9.2. TRANSMITTER ABOVE 1 GHz	48

9.2.1.	BASIC DATA RATE GFSK MODULATION.....	48
9.2.2.	ENHANCED DATA RATE 8PSK MODULATION	61
9.3.	WORST-CASE BELOW 1 GHz	74
10.	AC POWER LINE CONDUCTED EMISSIONS	77
11.	SETUP PHOTOS	81

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: GSM/WCDMA Phone + Bluetooth & WLAN 2.4GHz b/g/n

MODEL: SM-G355H/DS, SM-G355H

SERIAL NUMBER: FL-164-C (Radiated), FL-164-D (Conducted)

DATE TESTED: April 25 – 29, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	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 Inc. 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 Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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:



PENG ZHANG
CONSUMER TECHNOLOGY DIVISION
PROJECT LEAD
UL Verification Services Inc.



STEVEN TRAN
CONSUMER TECHNOLOGY DIVISION
LAB ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, FCC CFR 47 Part 2, 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 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 18000 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 GSM/WCDMA Phone + Bluetooth & WLAN 2.4GHz b/g/n

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	12.87	19.36
2402 - 2480	Enhanced 8PSK	13.32	21.48

Note: GFSK, Pi/4-DQPSK, 8PSK average Power are all investigated, The GFSK & 8PSK Power are the worst case. Testing is based on this mode to showing compliance. For average power data please refer to section 8.6.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -1.4 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	G355H	N/A	N/A
Earphone	Samsung	G355H	N/A	N/A

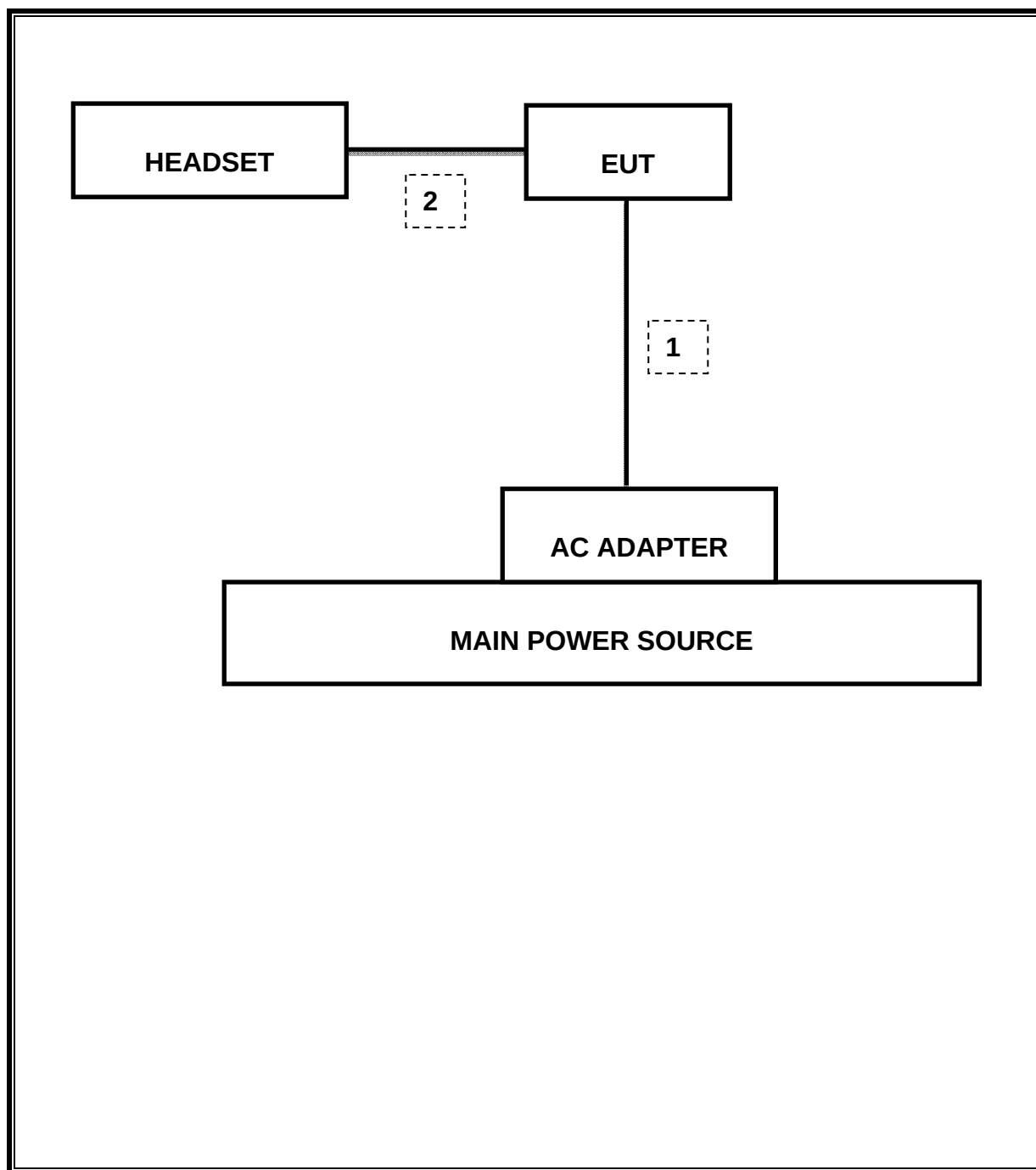
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.
EUT was set in the Hidden menu mode to enable BT communications.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	02/13/15
Antenna, Horn, 18GHz	EMCO	3115	C00783	10/25/14
Antenna, Horn, 25.5 GHz	ARA	MWH-1826/B	C00980	11/14/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/28/15
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/14
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/14
CBT Bluetooth Tester	R & S	CBT	None	07/12/14
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/15
Reject Filter, 2.4GHz	Micro-Tronics	BRM50702	N02684	CNR
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14

7. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
2.1049	RSS-GEN 4.6	Occupied Band width (99%)	N/A	Conducted	Pass	1.224 MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-34.94dBm
15.247 (b)(1)	RSS-210 A8.4	TX conducted output power	<21dBm		Pass	13.32 dBm
15.247 (a)(1)	RSS-210 A8.1(b)	Hopping frequency separation	> 25KHz		Pass	1.000 MHz
15.247 (a)(1)(iii)	RSS-210 A8.1(d)	Number of Hopping channels	More than 15 non-overlapping channels		Pass	79
15.247 (a)(1)(iii)	RSS-210 A8.1(d)	Avg Time of Occupancy	< 0.4sec		Pass	0.288 sec
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	48.59dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	52.52dBuV/m

8. ANTENNA PORT TEST RESULTS

8.1. 20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

DA 00-705: 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

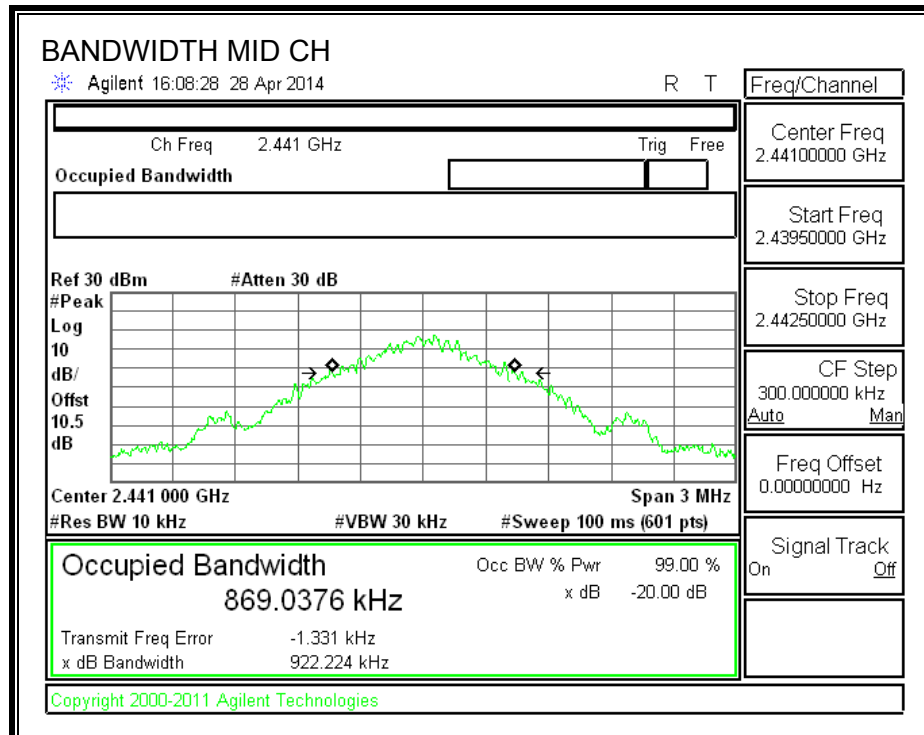
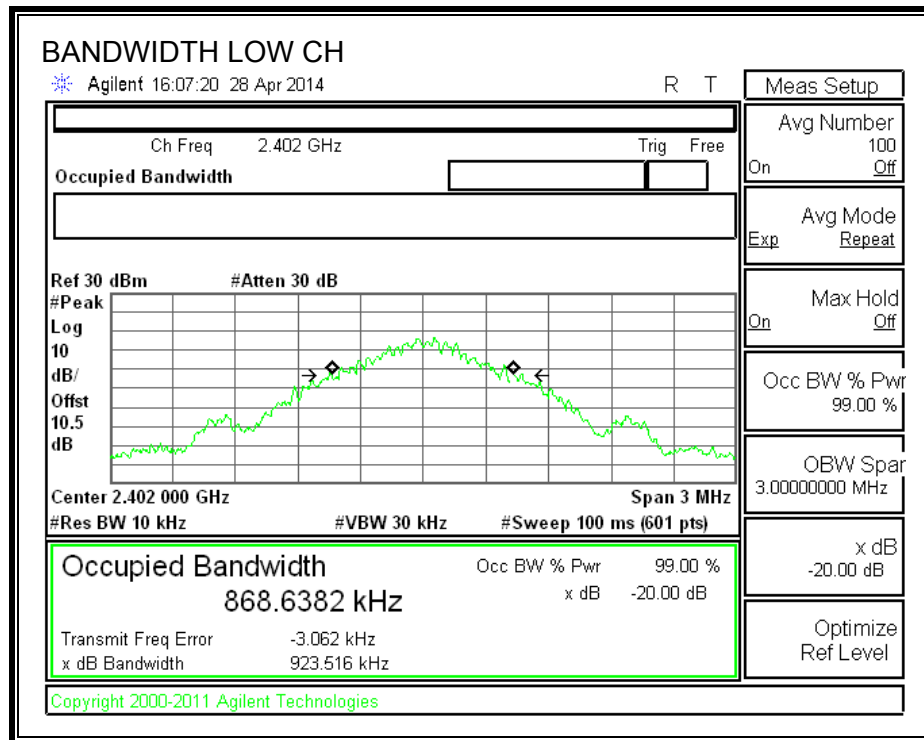
8.1.1. BASIC DATA RATE GFSK MODULATION

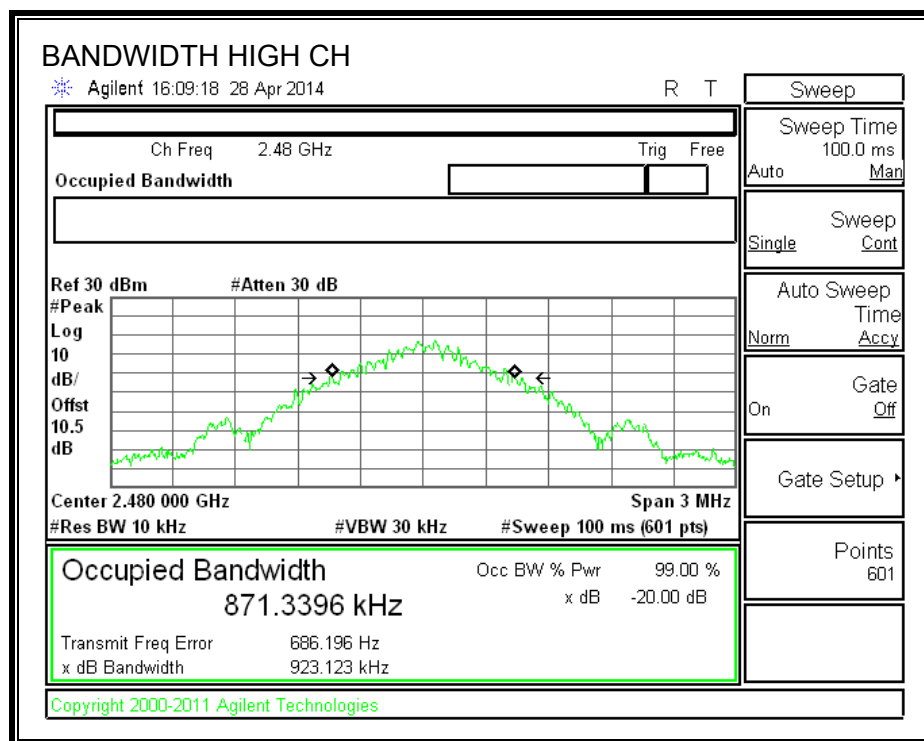
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	0.924	0.834
Middle	2441	0.922	0.826
High	2480	0.923	0.902
Worst		0.924	0.902

8.1.1. ENHANCED DATA RATE 8PSK MODULATION

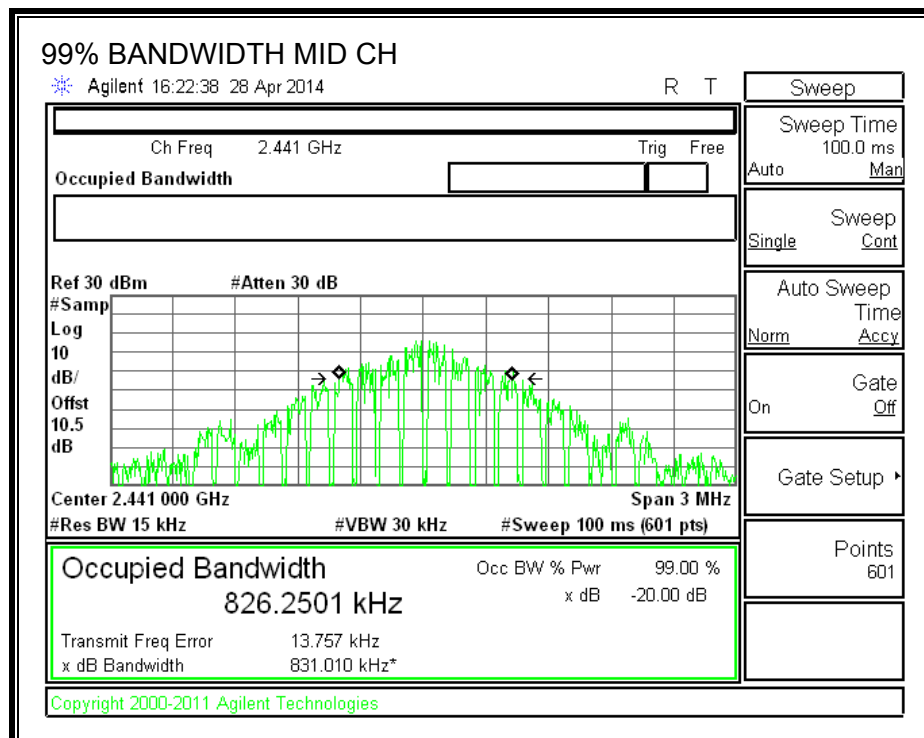
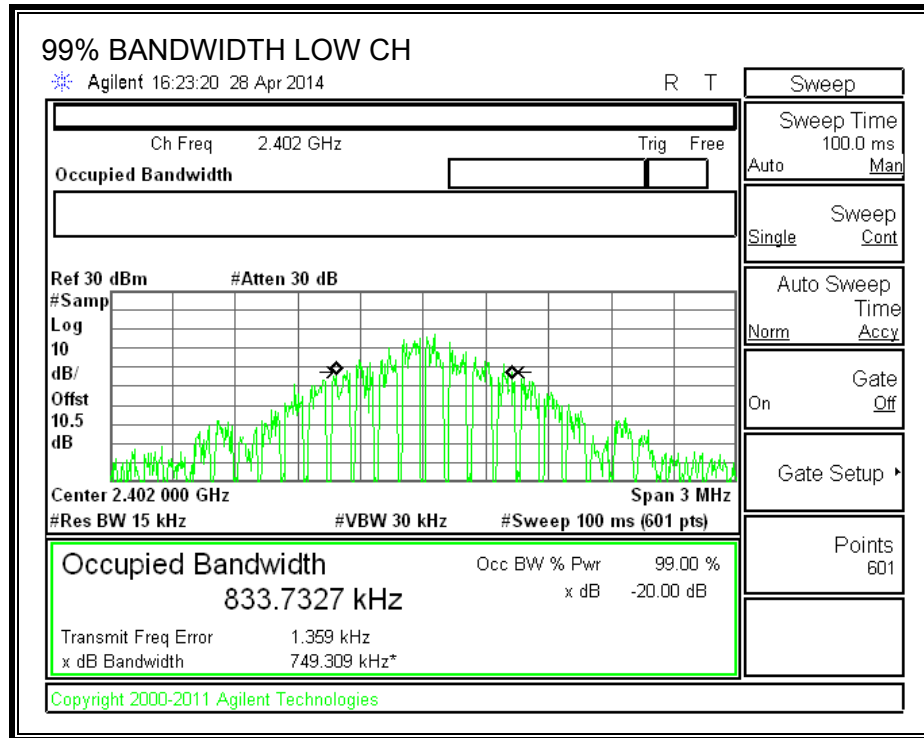
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.314	1.224
Middle	2441	1.334	1.215
High	2480	1.336	1.212
Worst		1.336	1.224

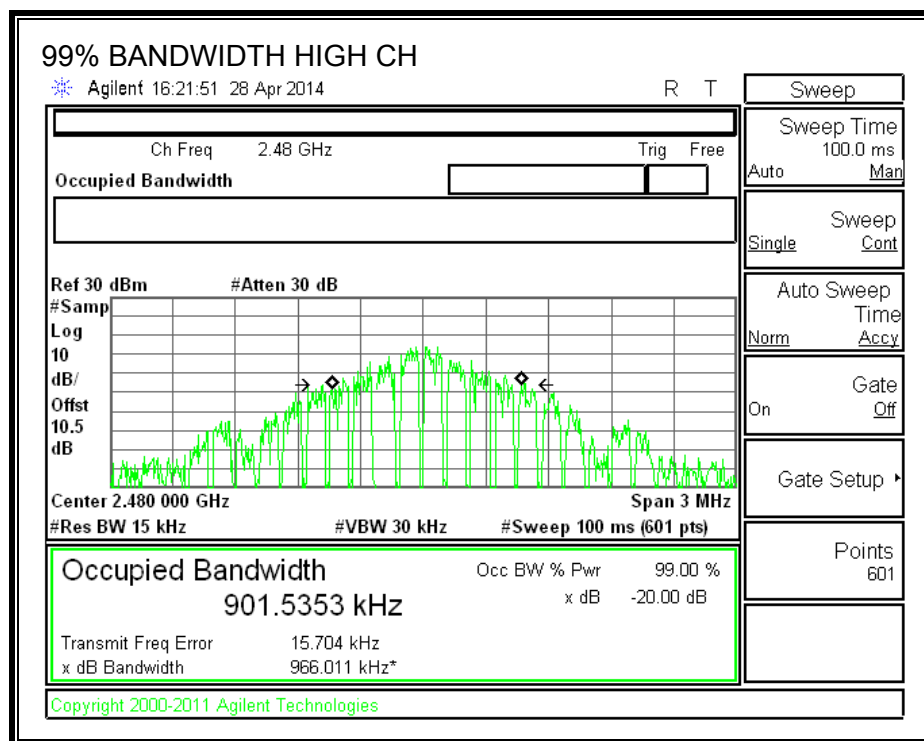
GFSK 20 dB BANDWIDTH



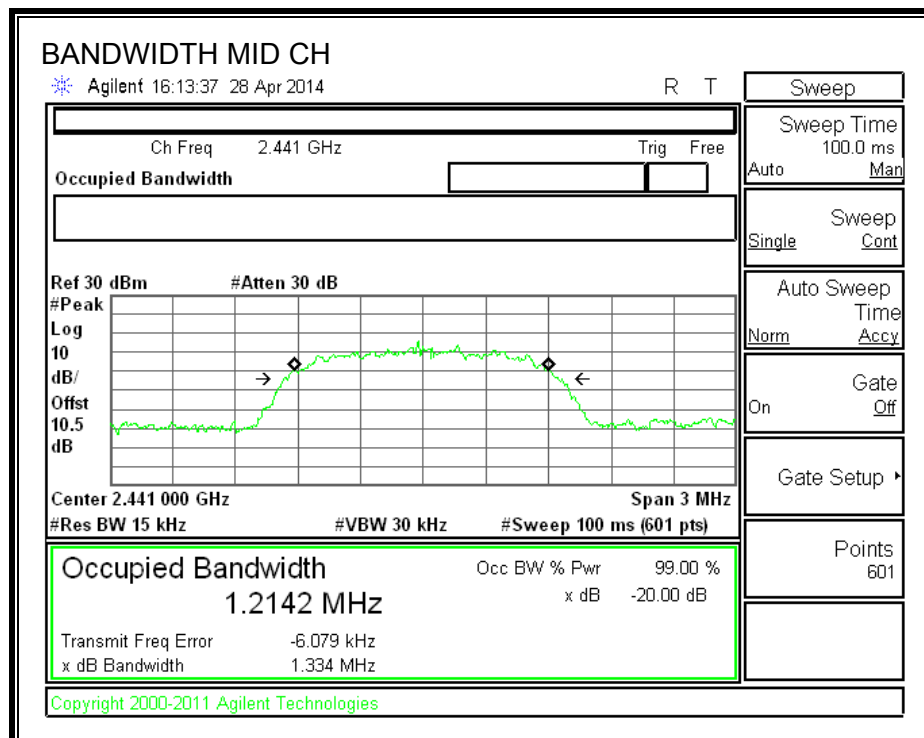
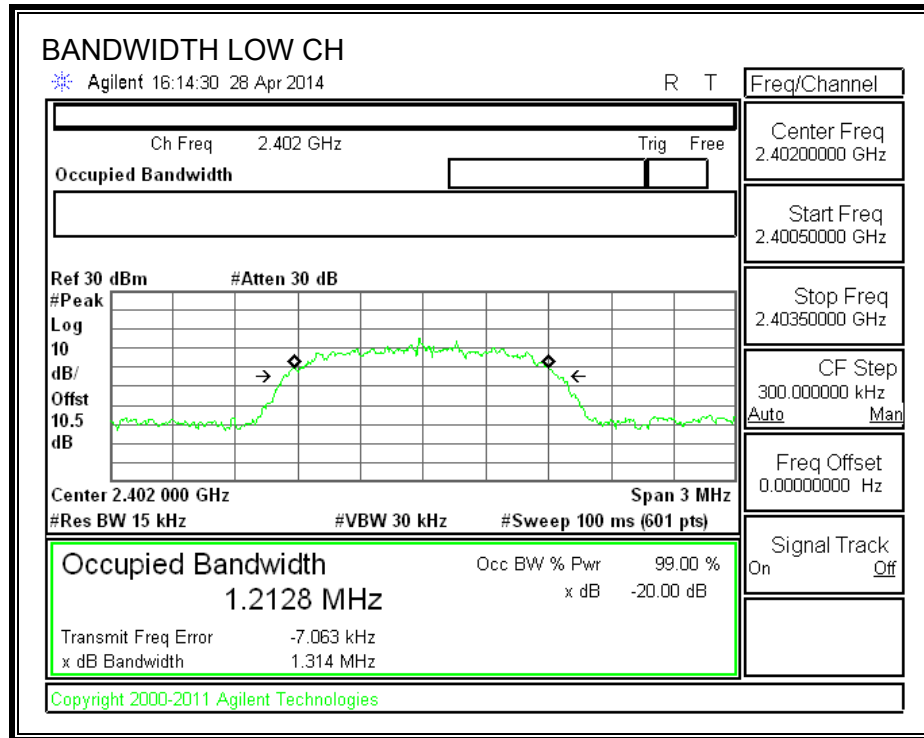


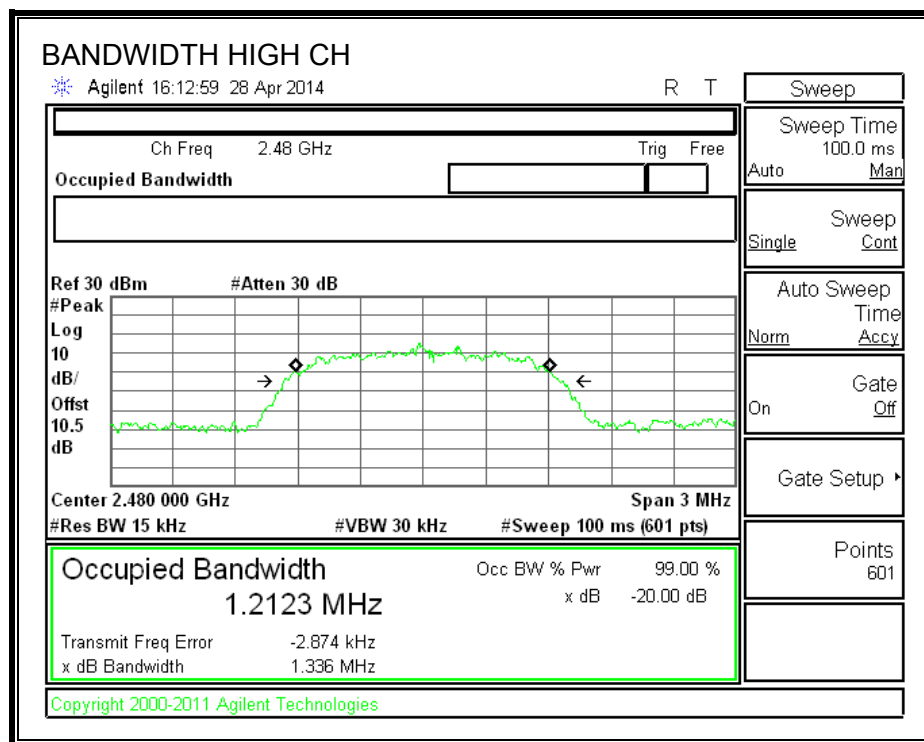
GFSK 99% BANDWIDTH



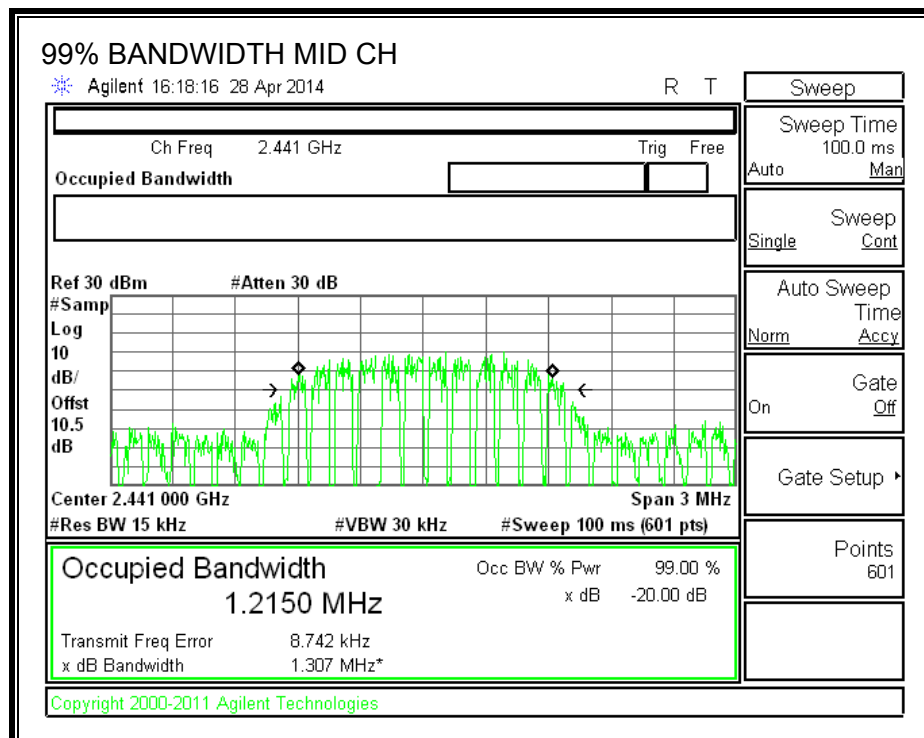
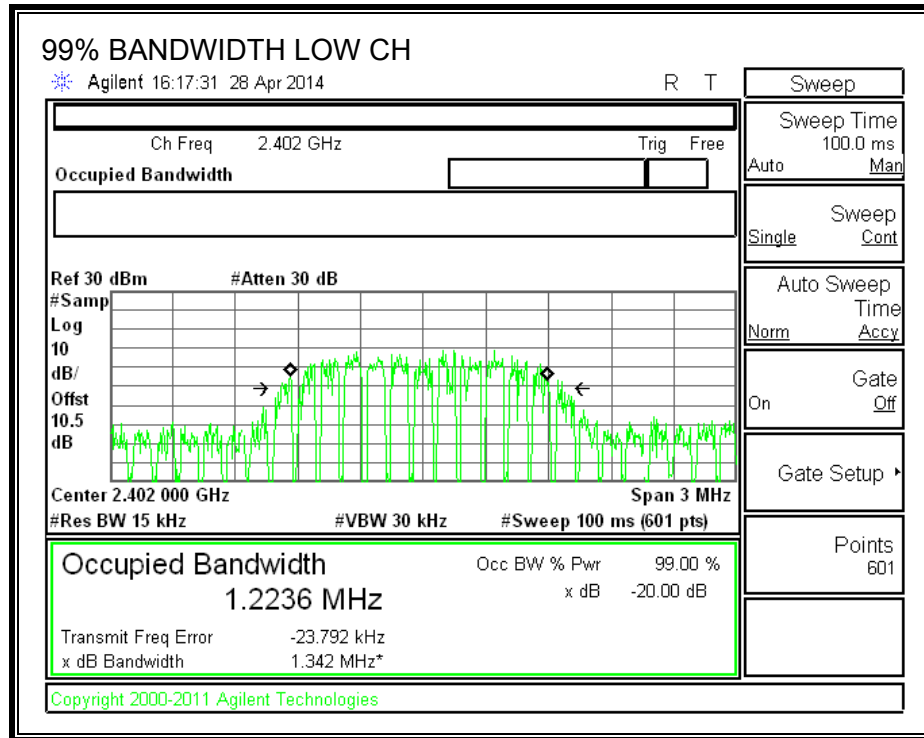


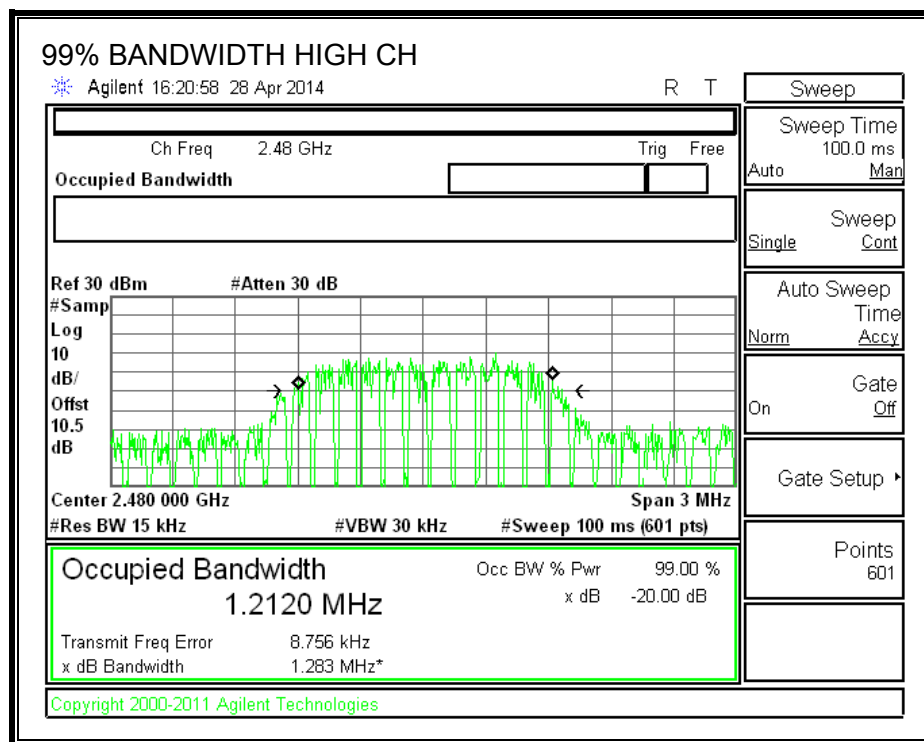
8PSK 20 dB BANDWIDTH





8PSK 99% BANDWIDTH





8.2. 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.

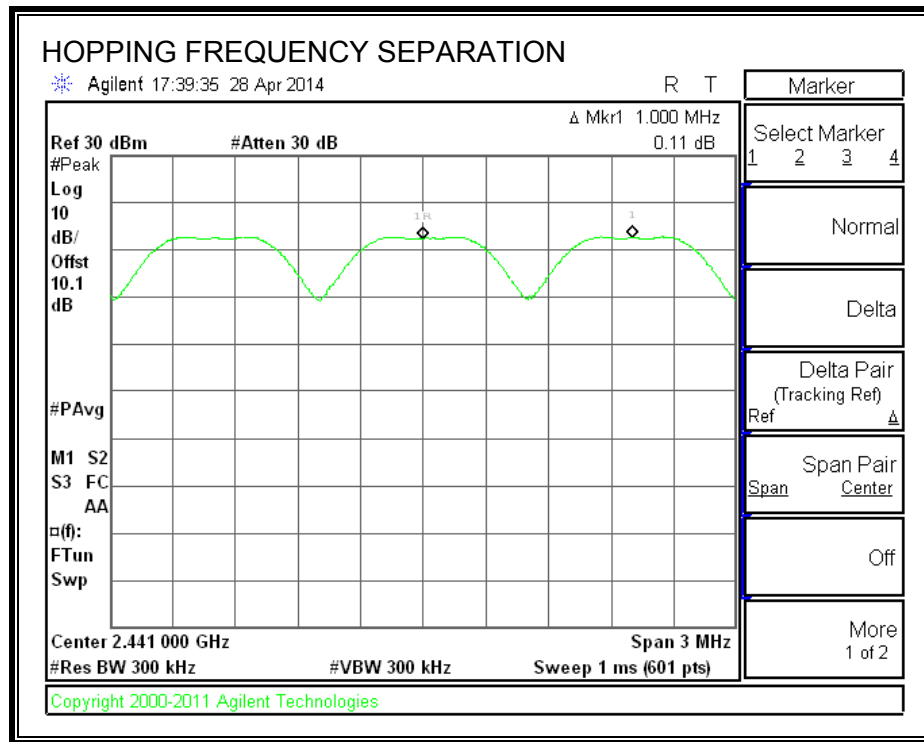
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

TEST PROCEDURE

DA 00-705: 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



8.3. 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.

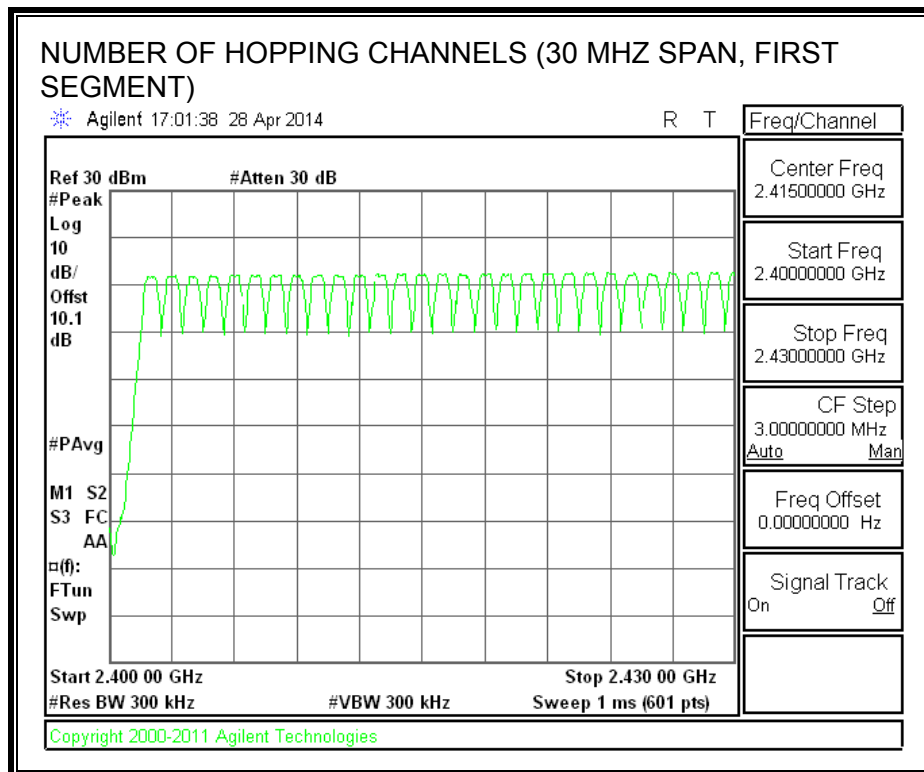
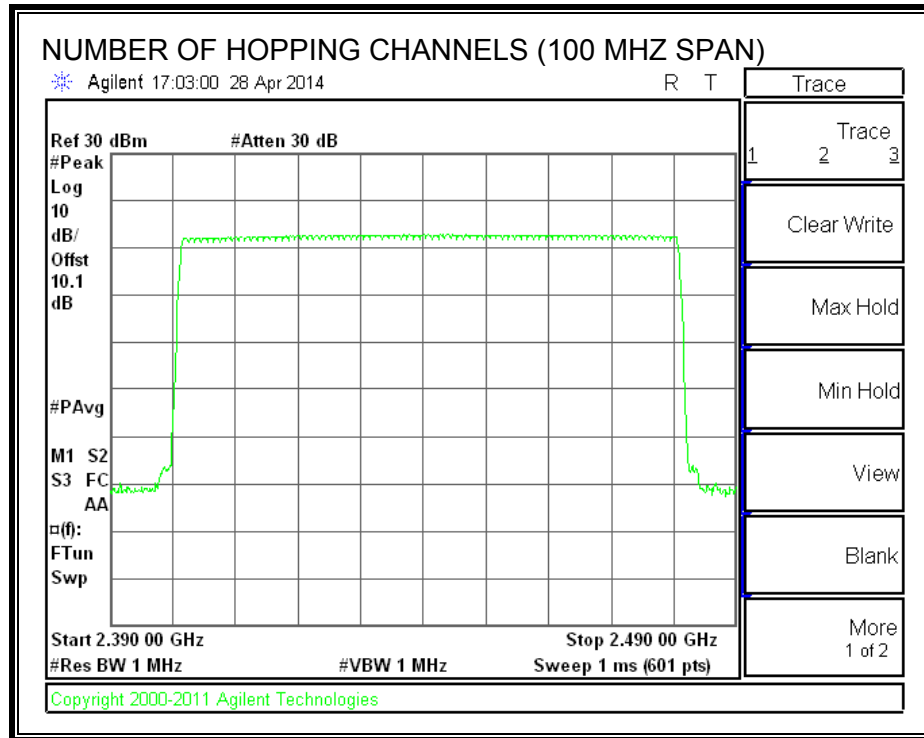
TEST PROCEDURE

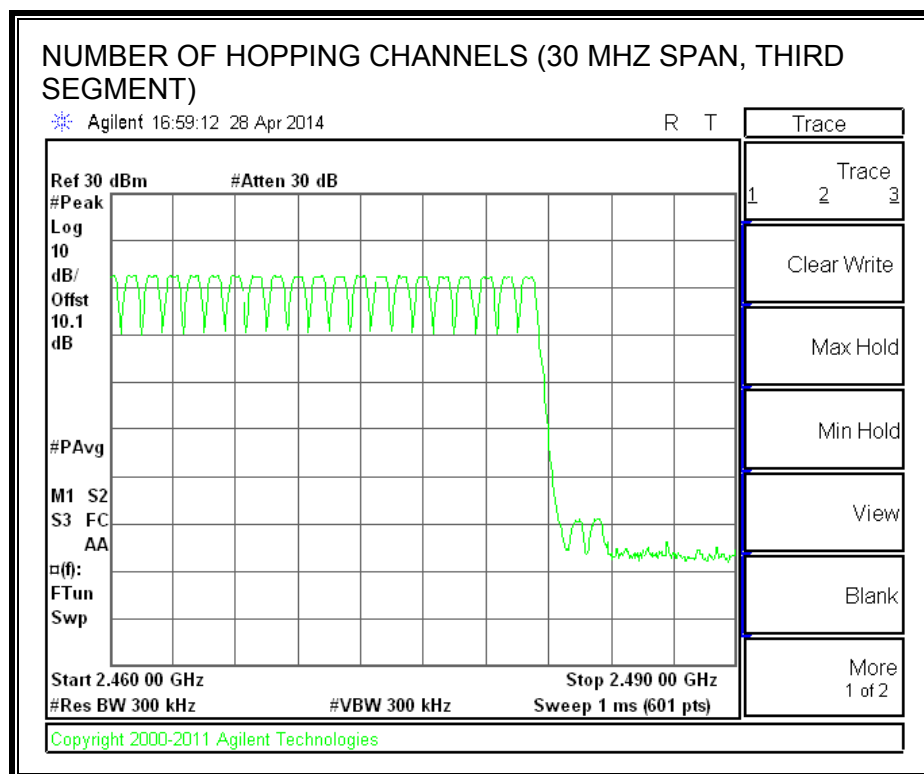
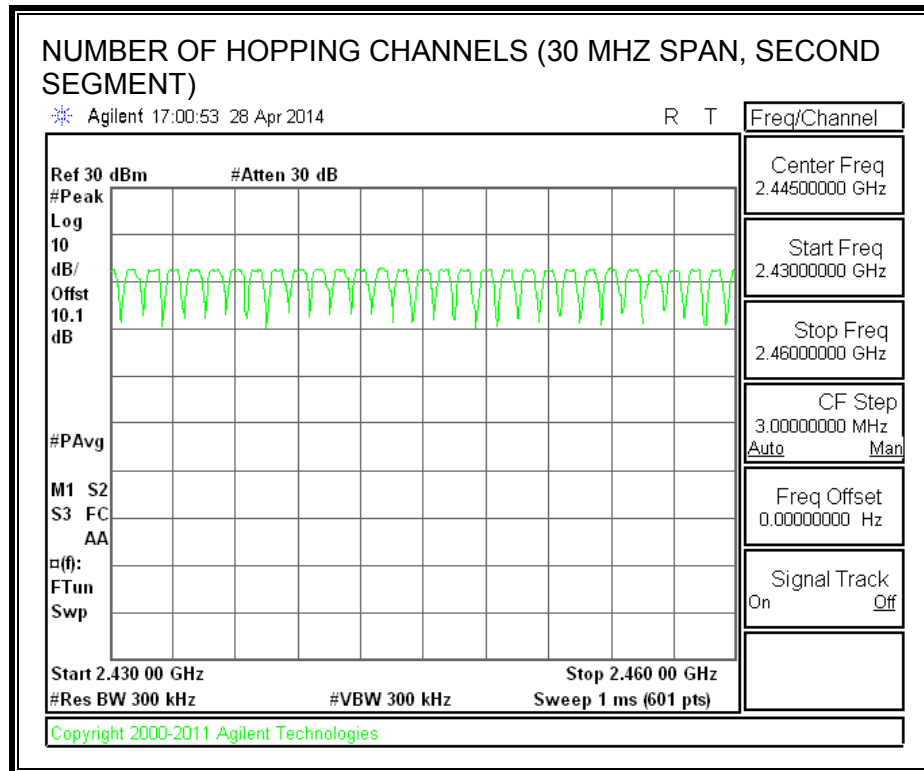
DA 00-705: The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

Normal Mode: 79 Channels observed.

NUMBER OF HOPPING CHANNELS





8.4. 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.

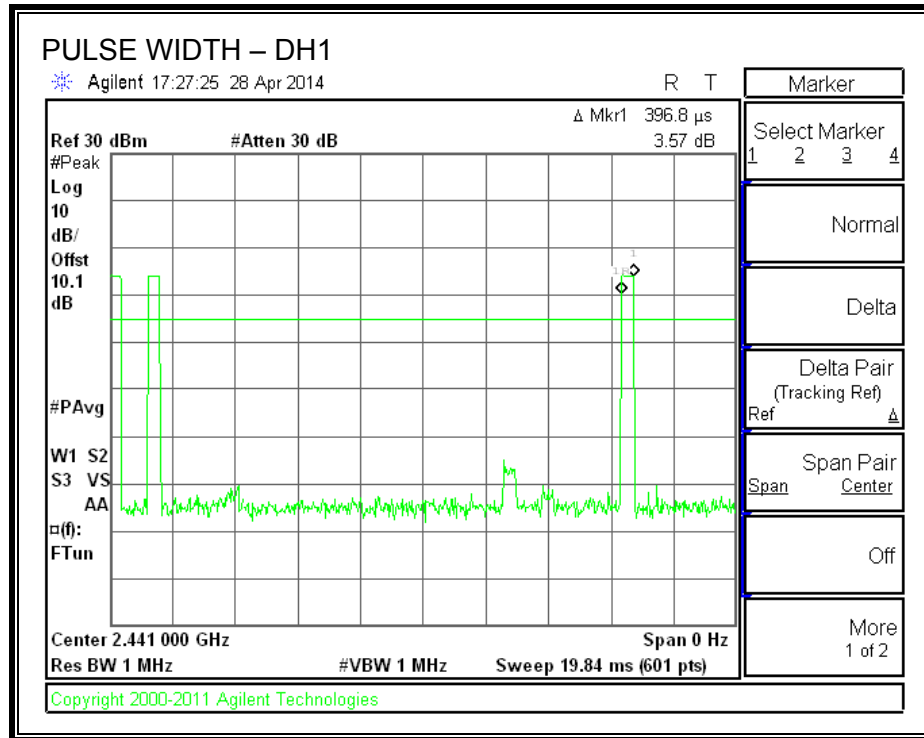
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

RESULTS

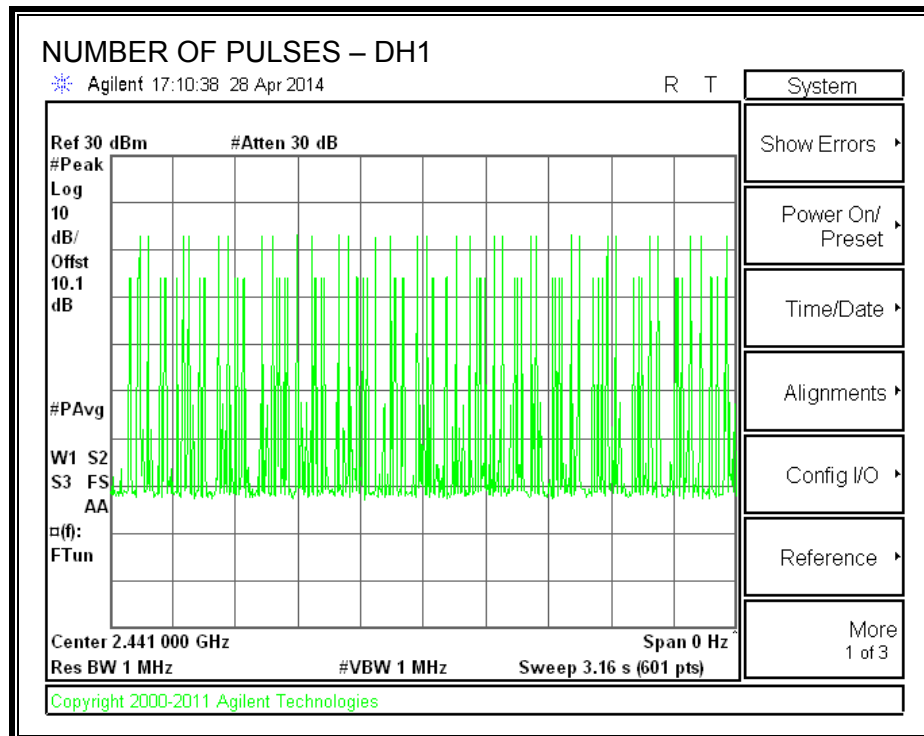
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.3968	31	0.123	0.4	-0.277
DH3	1.653	17	0.281	0.4	-0.119
DH5	2.877	10	0.288	0.4	-0.112

DH Packet	Pulse Width (msec)	Number of Pulses in 0.8	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.3968	8	0.032	0.4	-0.368
DH3	1.653	5	0.083	0.4	-0.317
DH5	2.877	3	0.086	0.4	-0.314

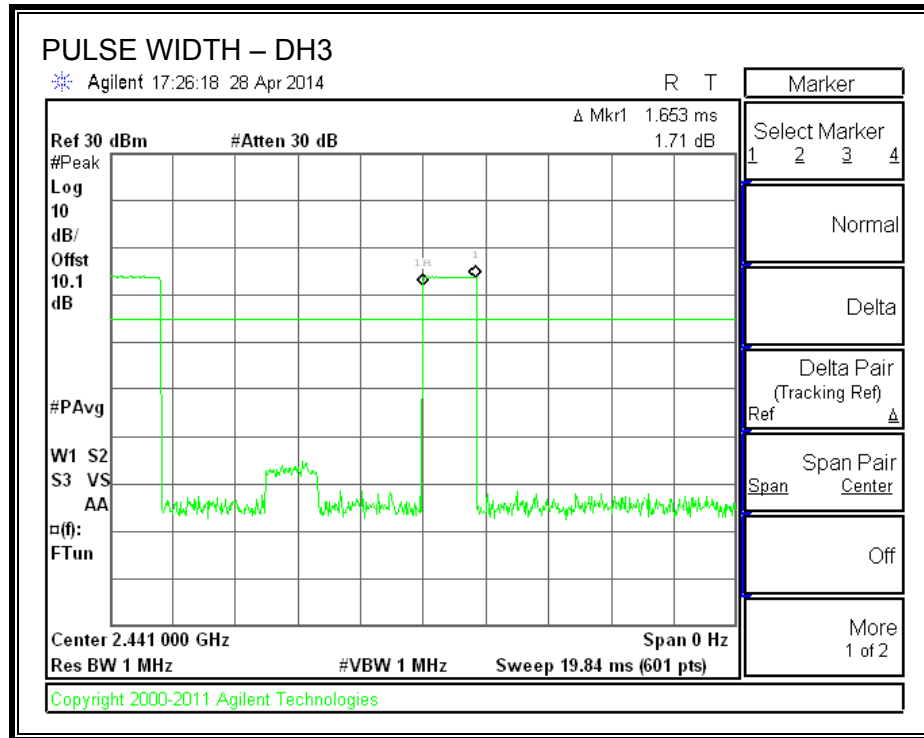
PULSE WIDTH - DH1



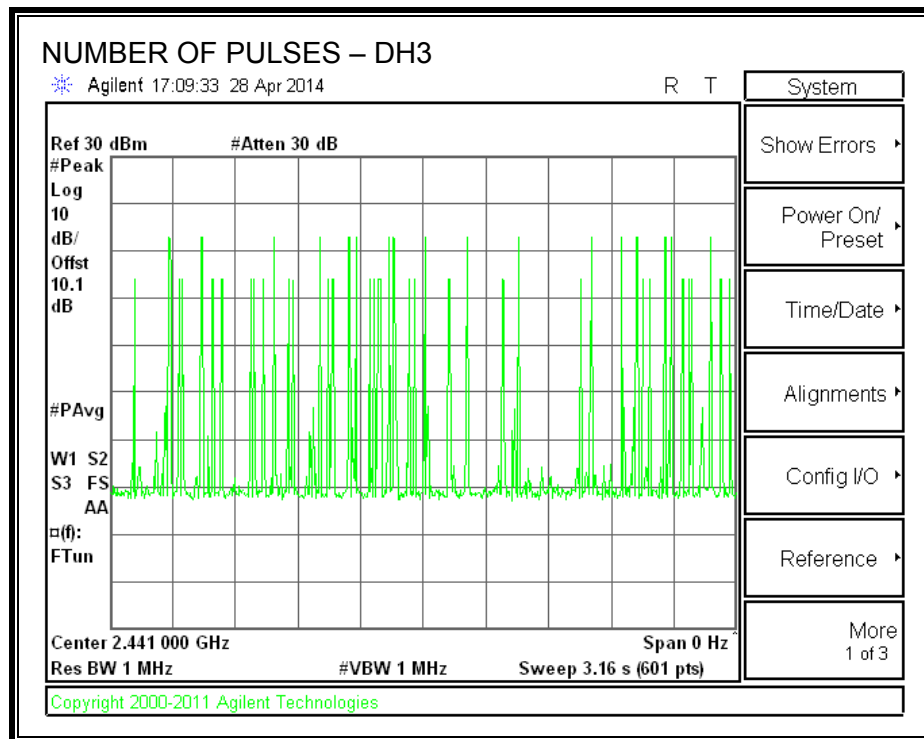
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



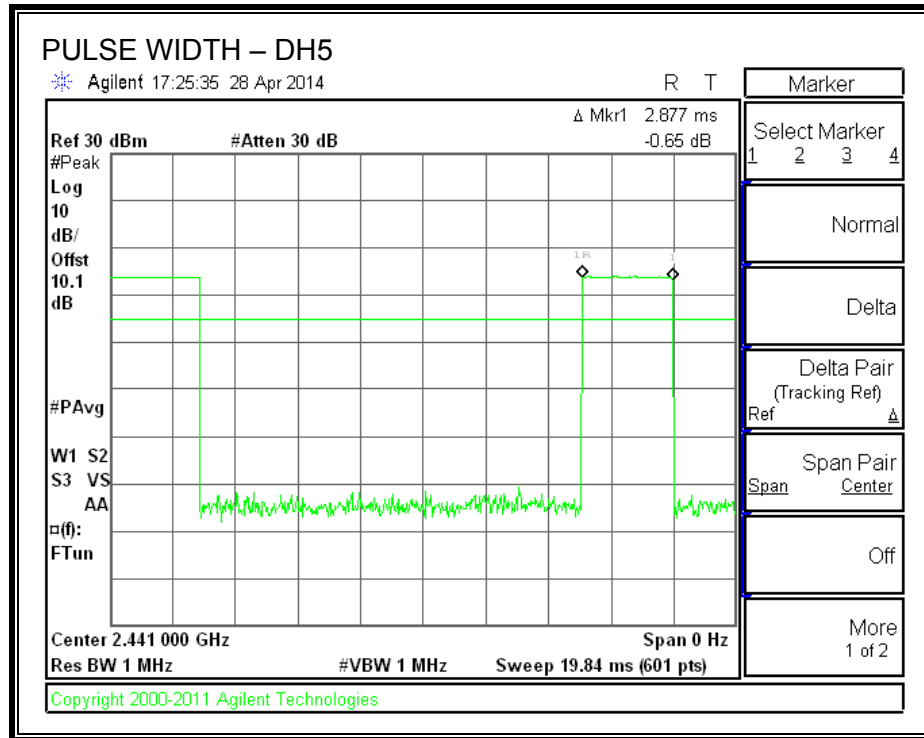
PULSE WIDTH – DH3



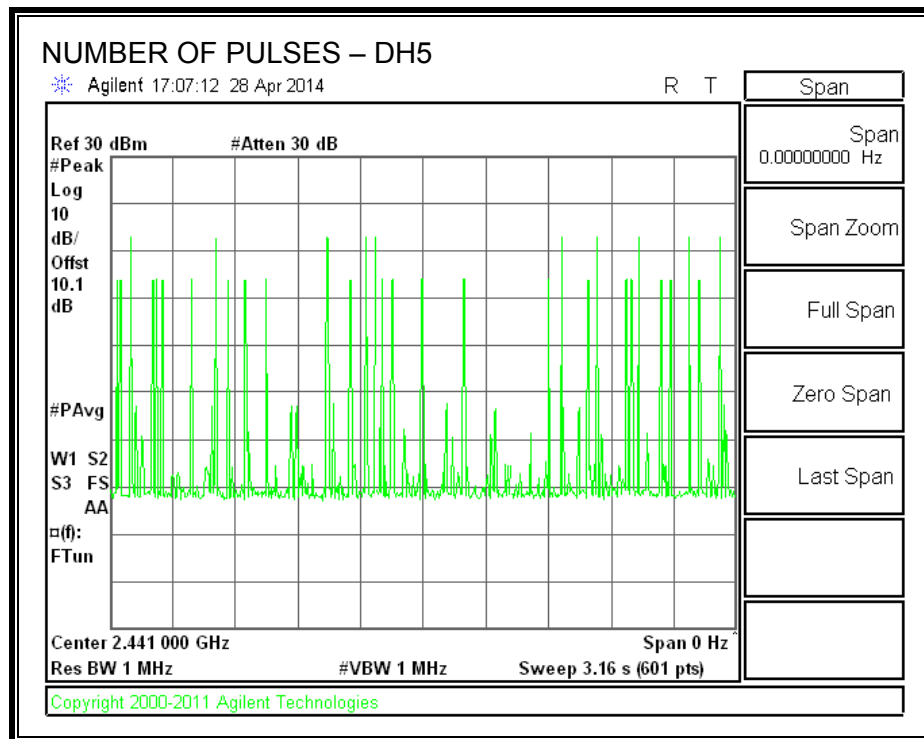
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



8.5. 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 21 dBm.

TEST PROCEDURE

DA 00-705: 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

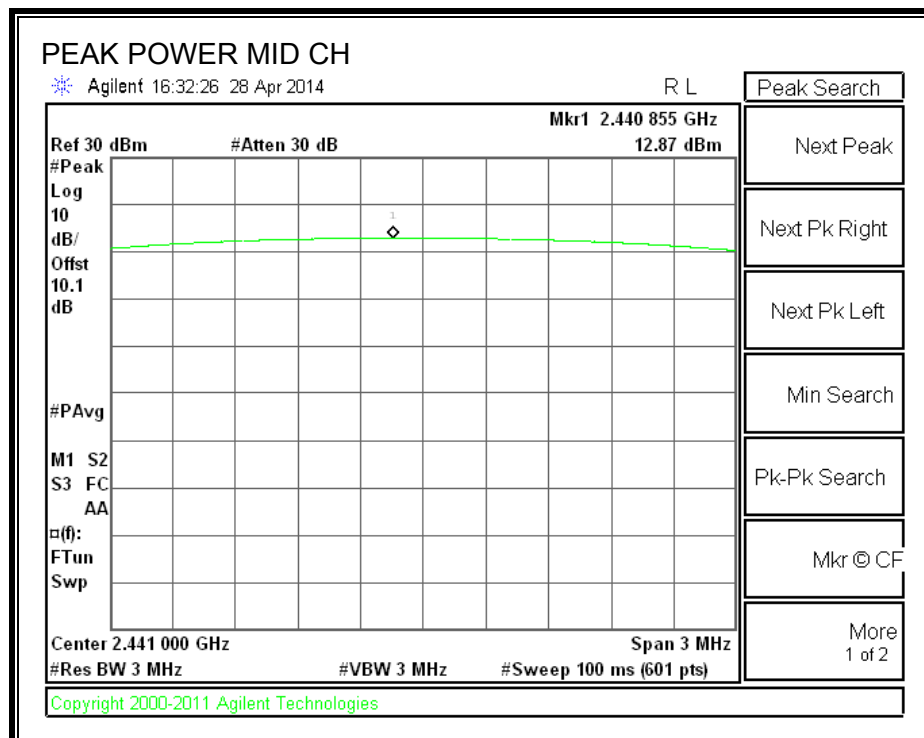
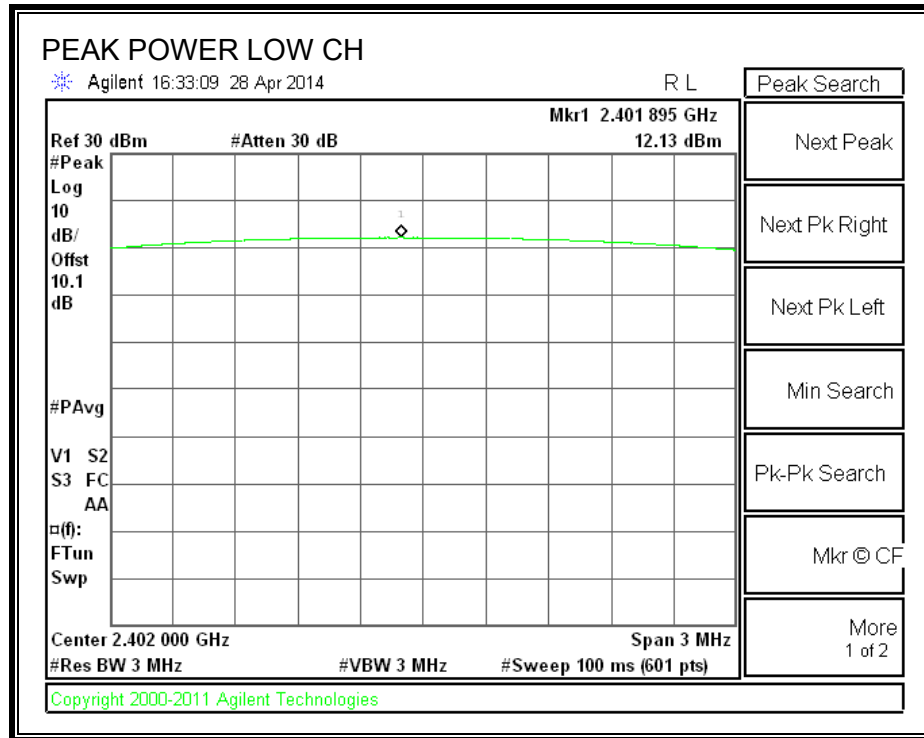
8.5.1. BASIC DATA RATE GFSK MODULATION

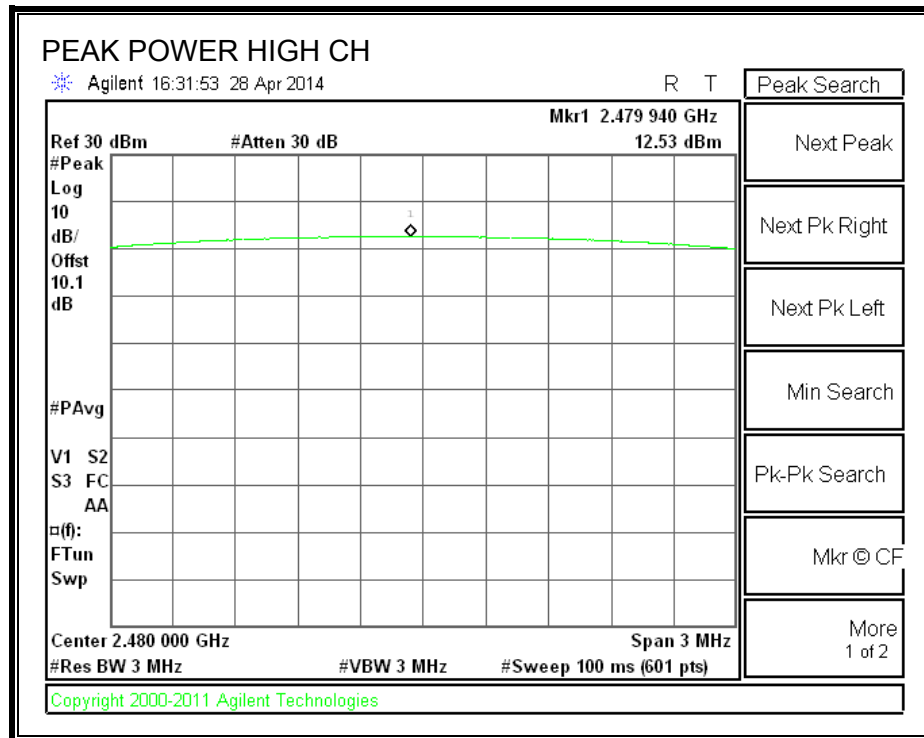
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	12.13	21	-8.87
Middle	2441	12.87	21	-8.13
High	2480	12.53	21	-8.47
Worst		12.87		-8.13

8.5.2. ENHANCED DATA RATE 8PSK MODULATION

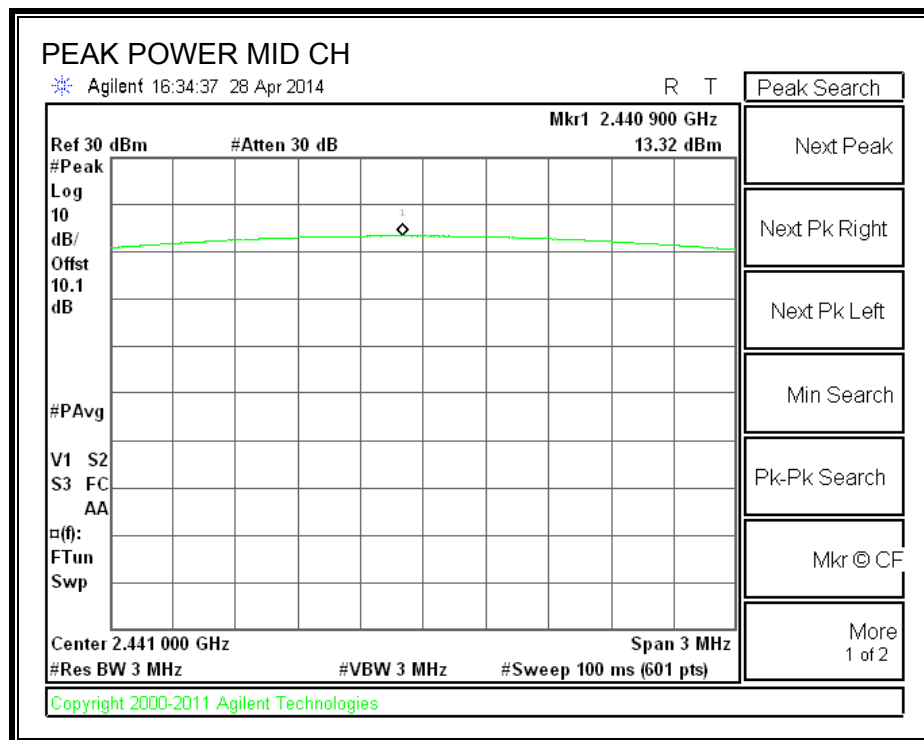
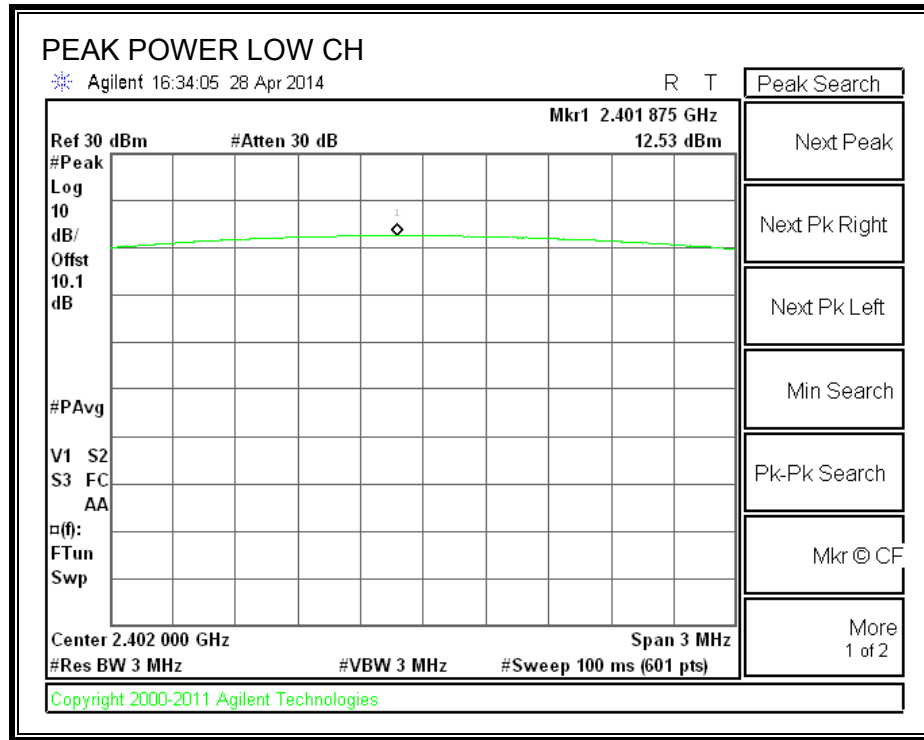
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	12.53	21	-8.47
Middle	2441	13.32	21	-7.68
High	2480	12.98	21	-8.02
Worst		13.32		-7.68

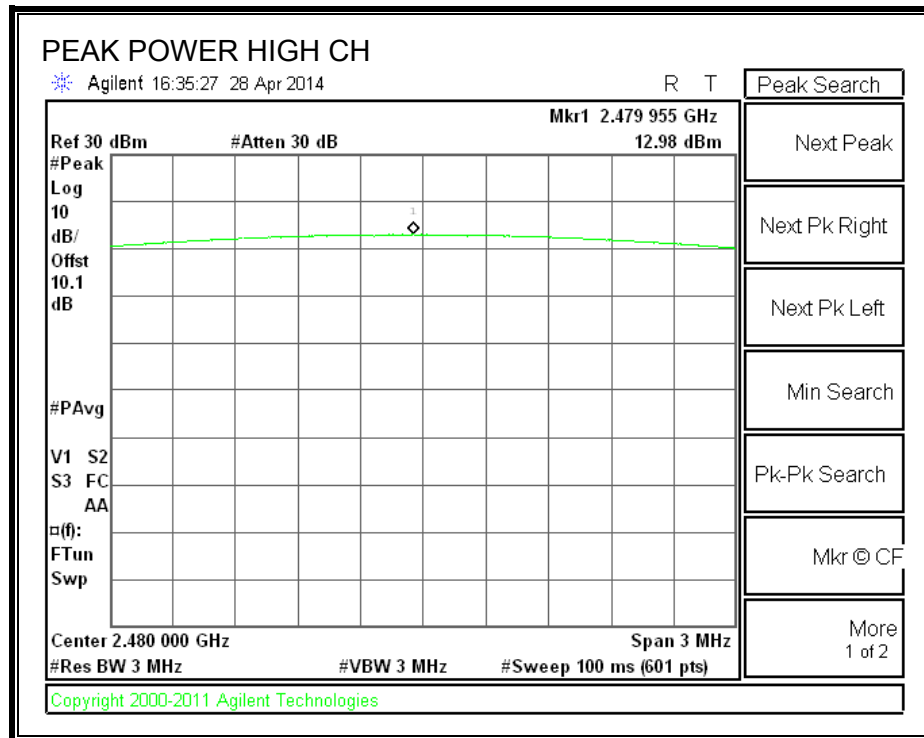
GFSK OUTPUT POWER





8PSK OUTPUT POWER





8.6. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

DA 00-705: The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.7 dB (including 10 dB pad and 0.7 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

8.6.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	11.6
Middle	2441	12.2
High	2480	12.2
Worst		12.20

8.6.2. DATA RATE PI/4-DQPSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	9.6
Middle	2441	10.2
High	2480	10.1
Worst		10.20

8.6.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	9.6
Middle	2441	10.2
High	2480	10.1
Worst		10.20

8.7. 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.

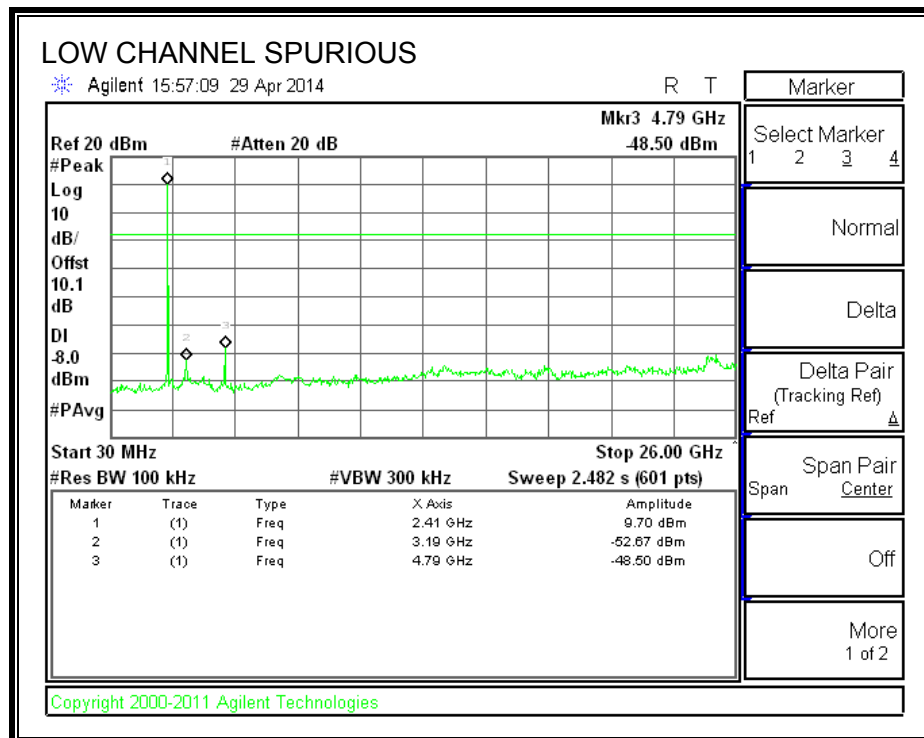
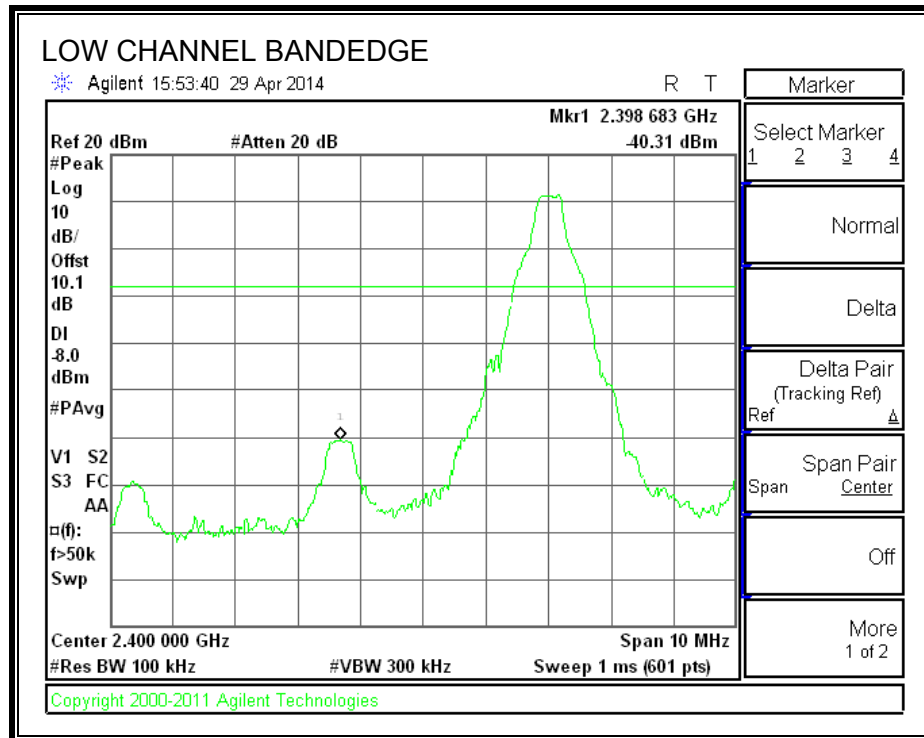
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

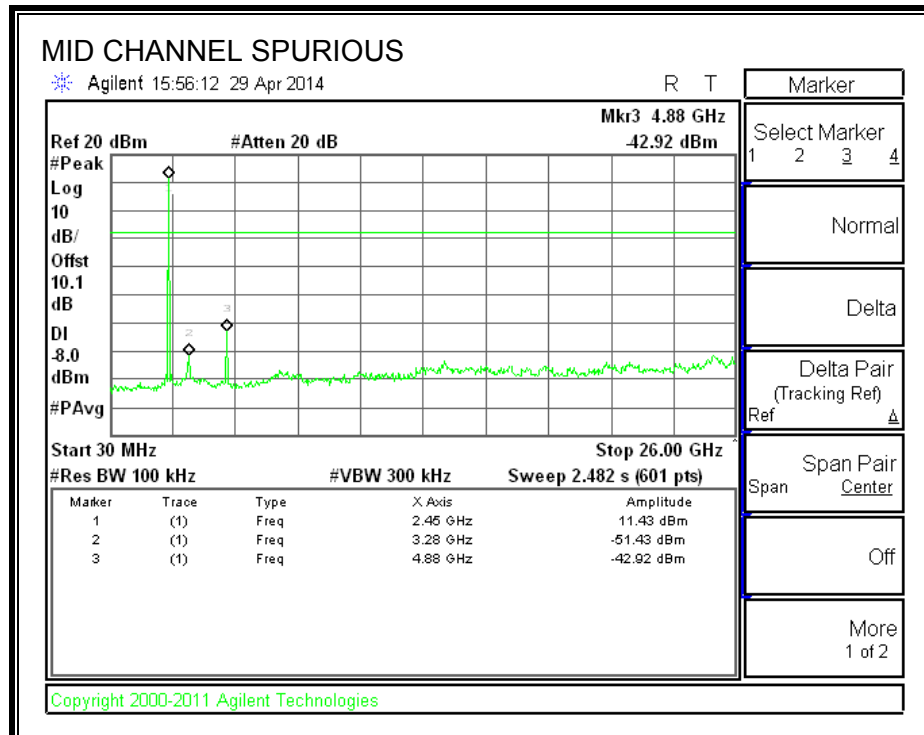
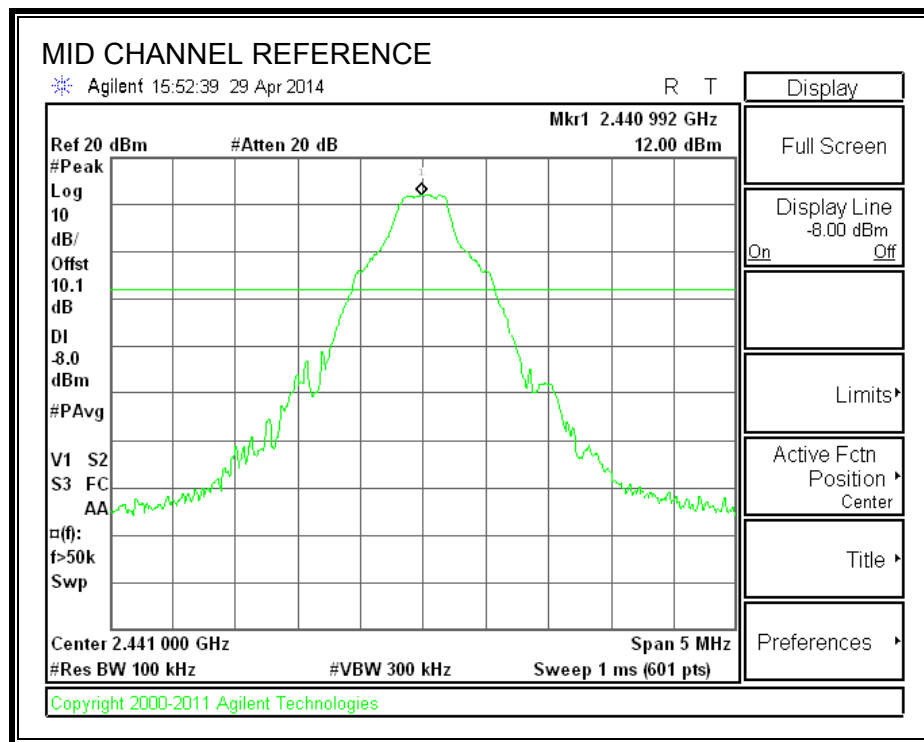
RESULTS

8.7.1. BASIC DATA RATE GFSK MODULATION

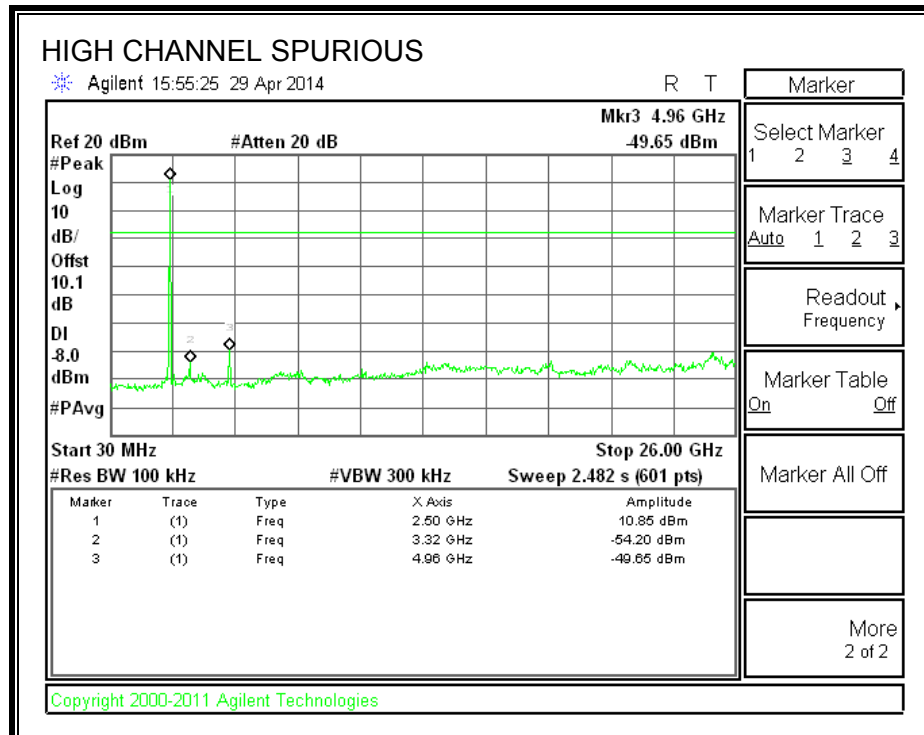
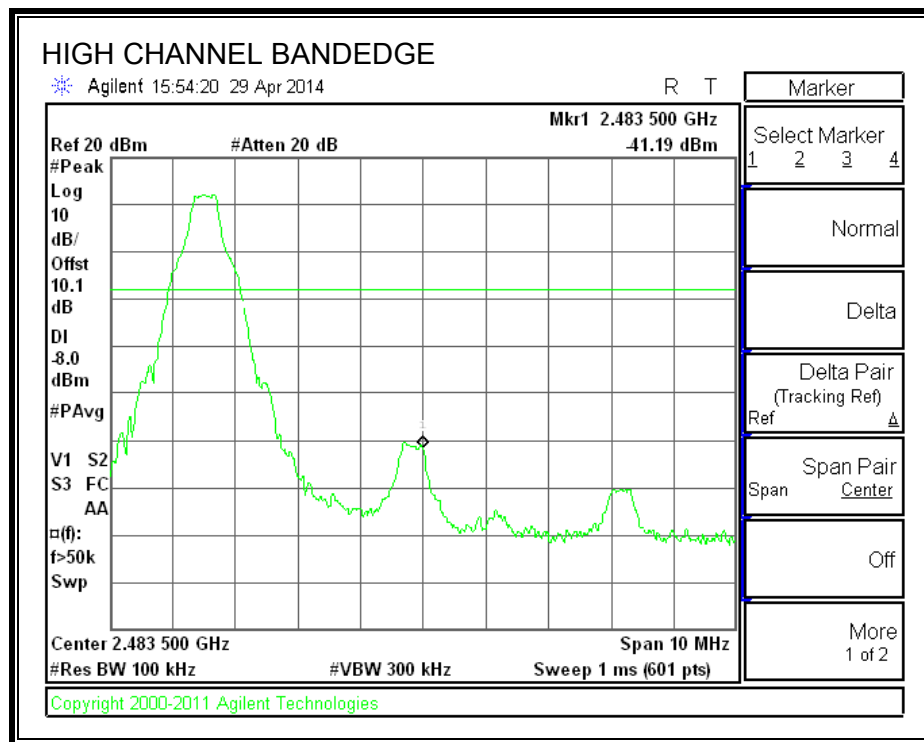
SPURIOUS EMISSIONS, LOW CHANNEL



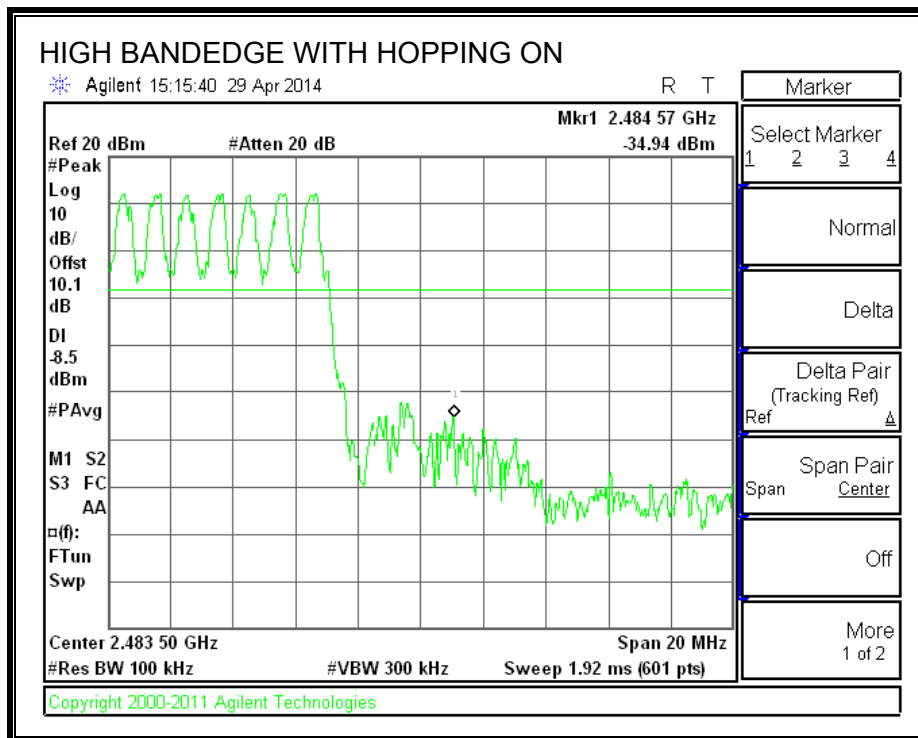
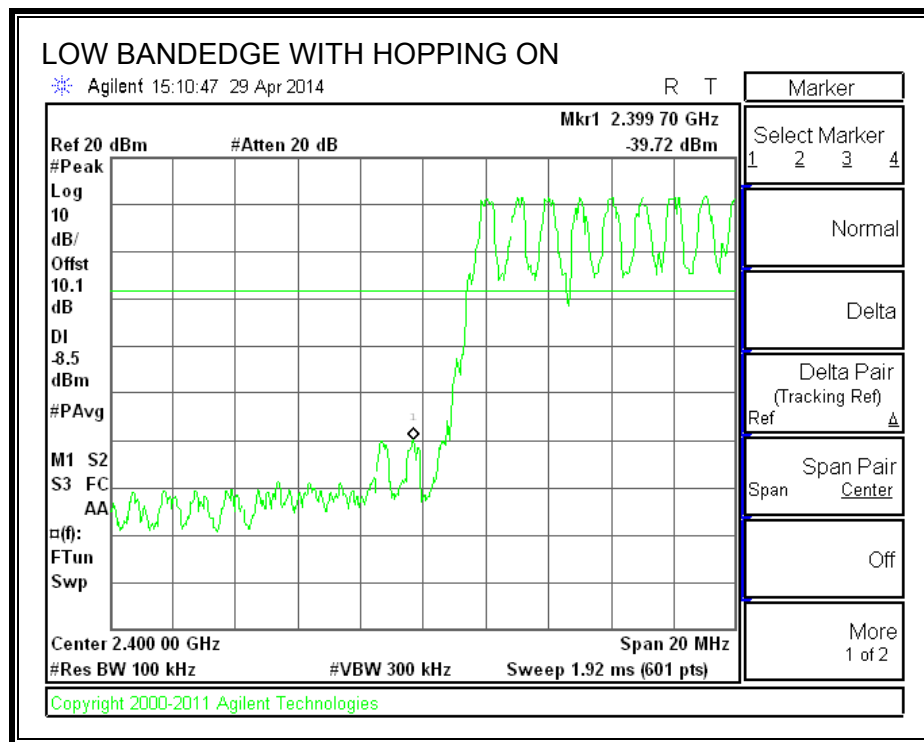
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL

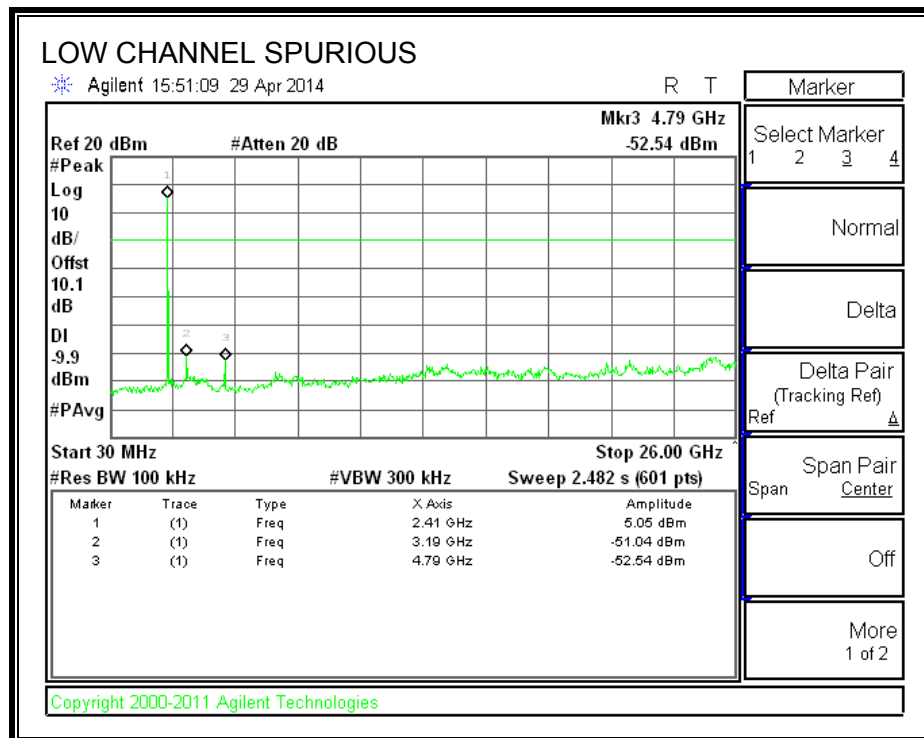
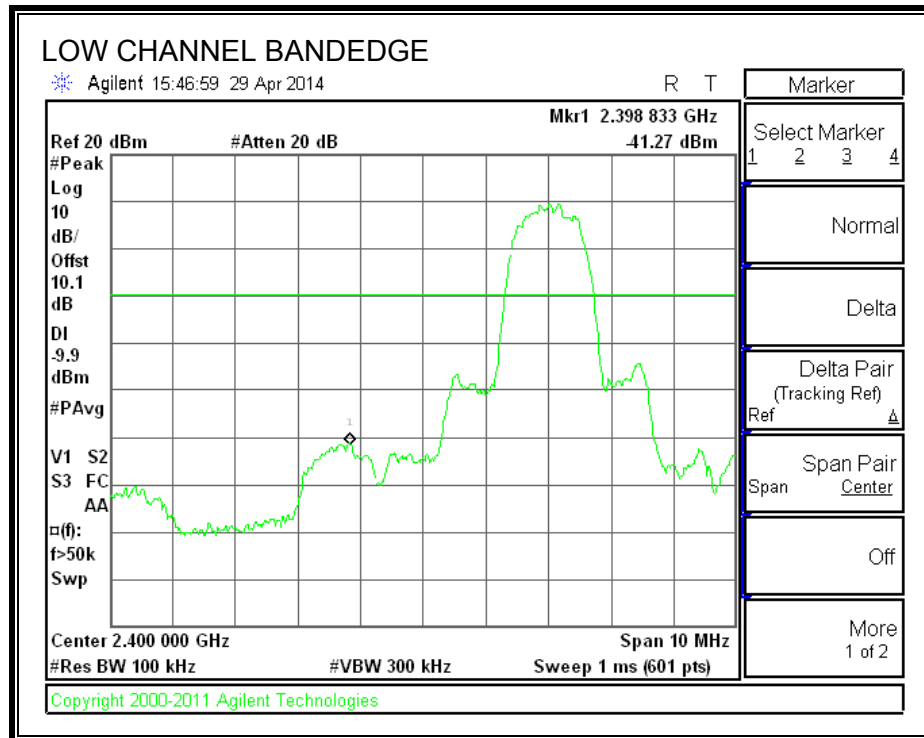


SPURIOUS BANDEDGE EMISSIONS WITH GFSK HOPPING ON

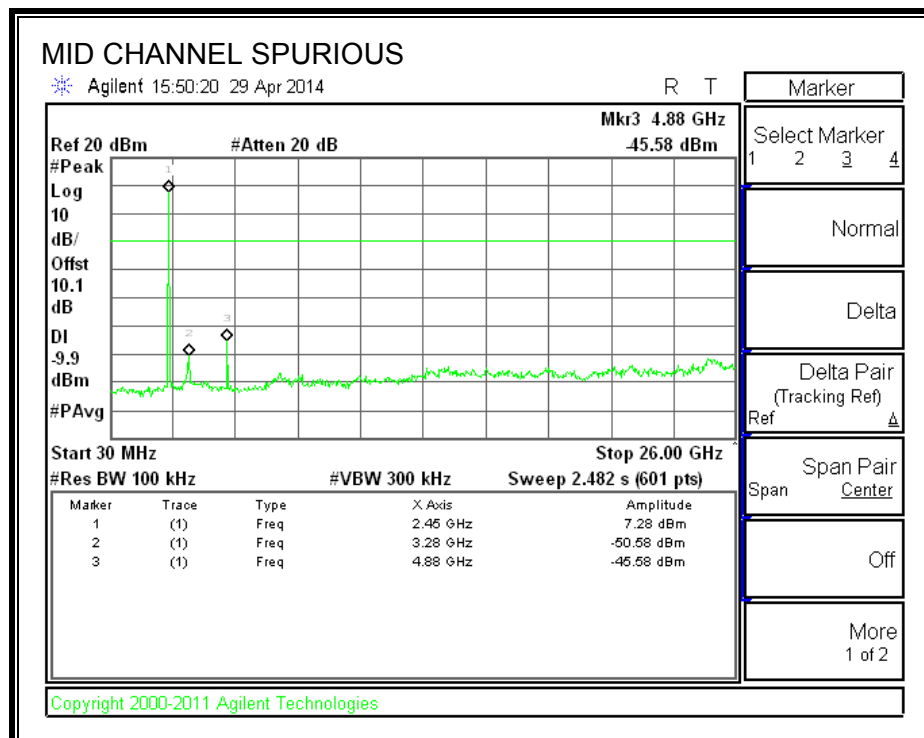
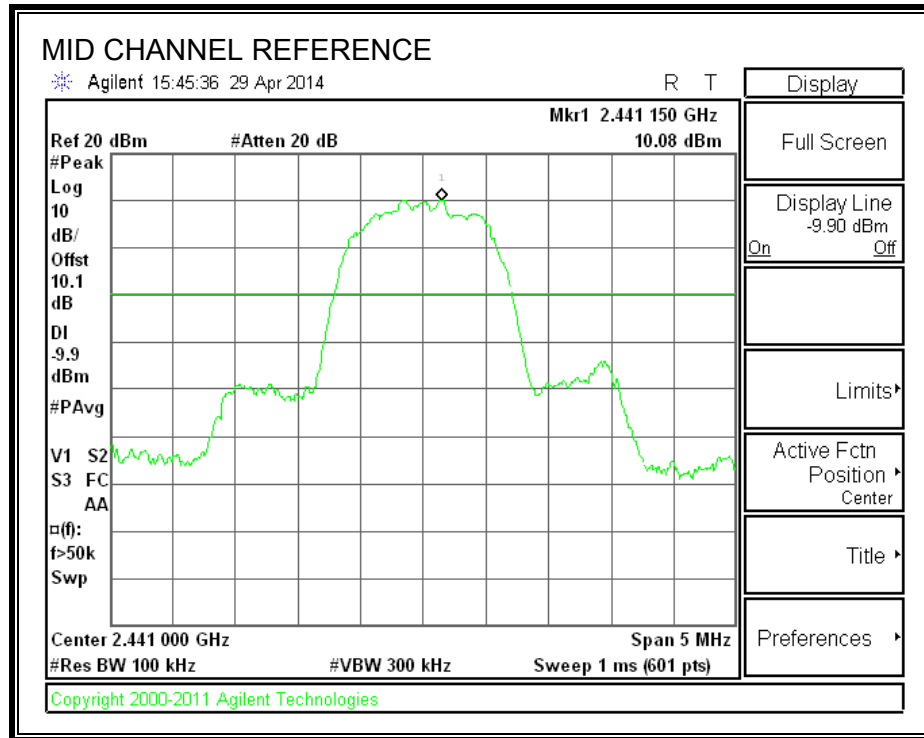


8.7.1. ENHANCED DATA RATE 8PSK MODULATION

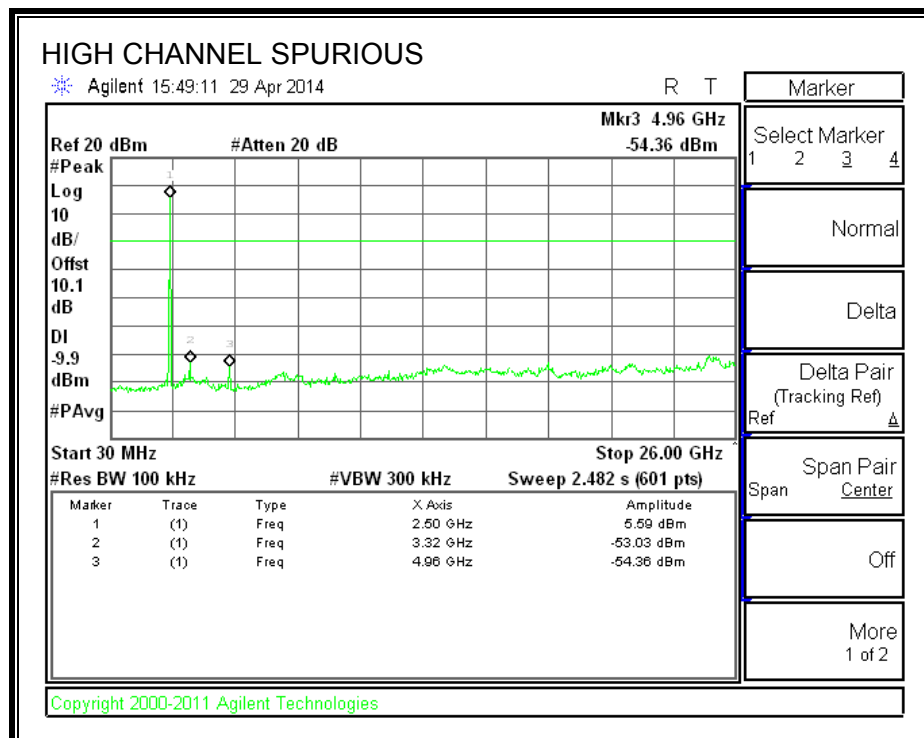
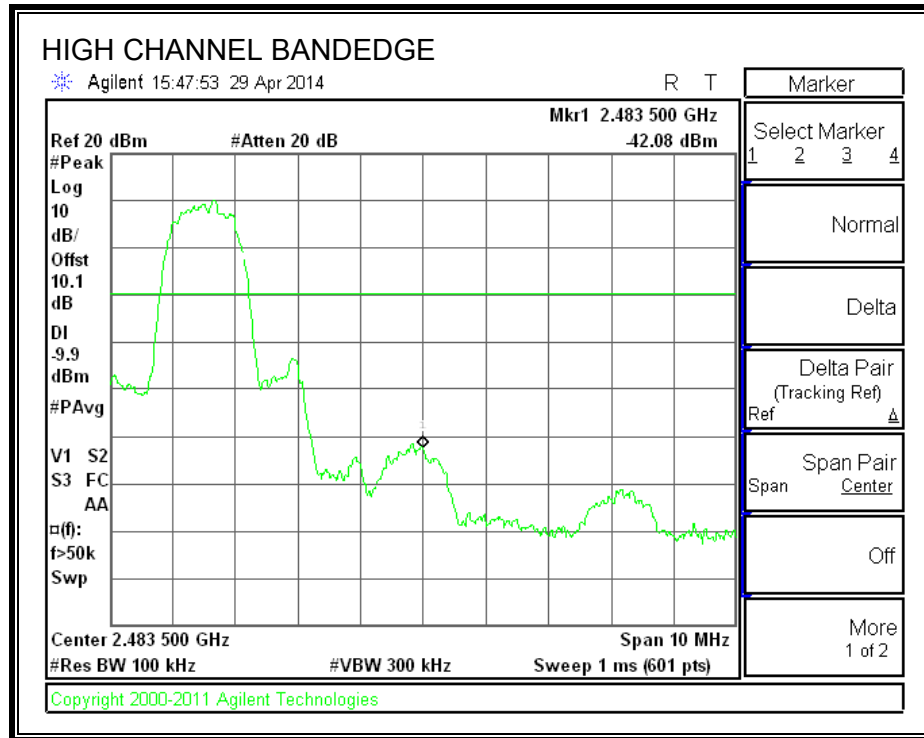
SPURIOUS EMISSIONS, LOW CHANNEL



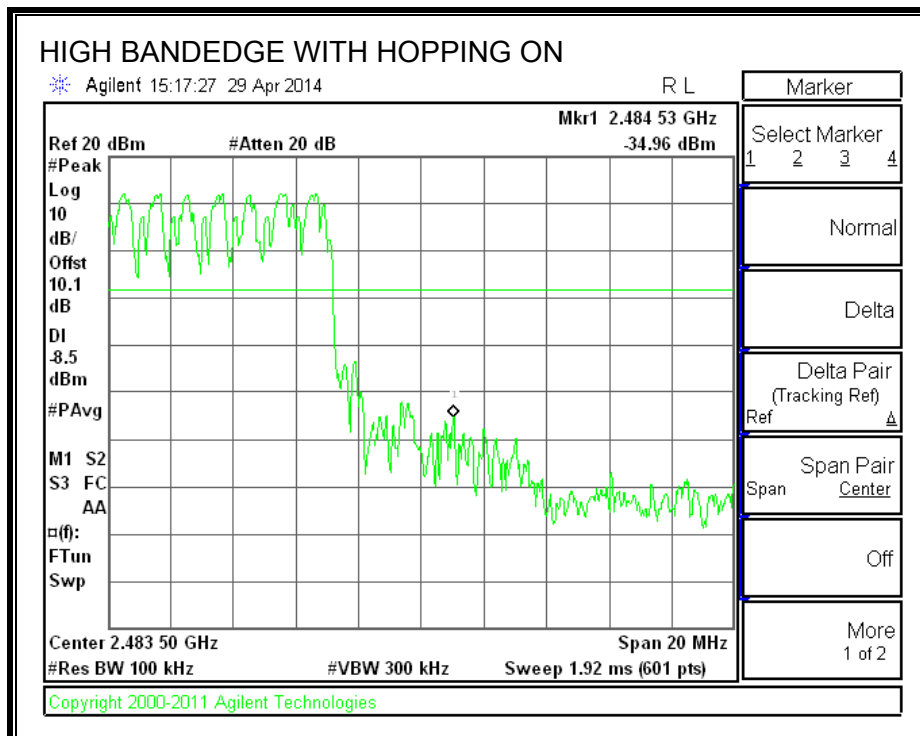
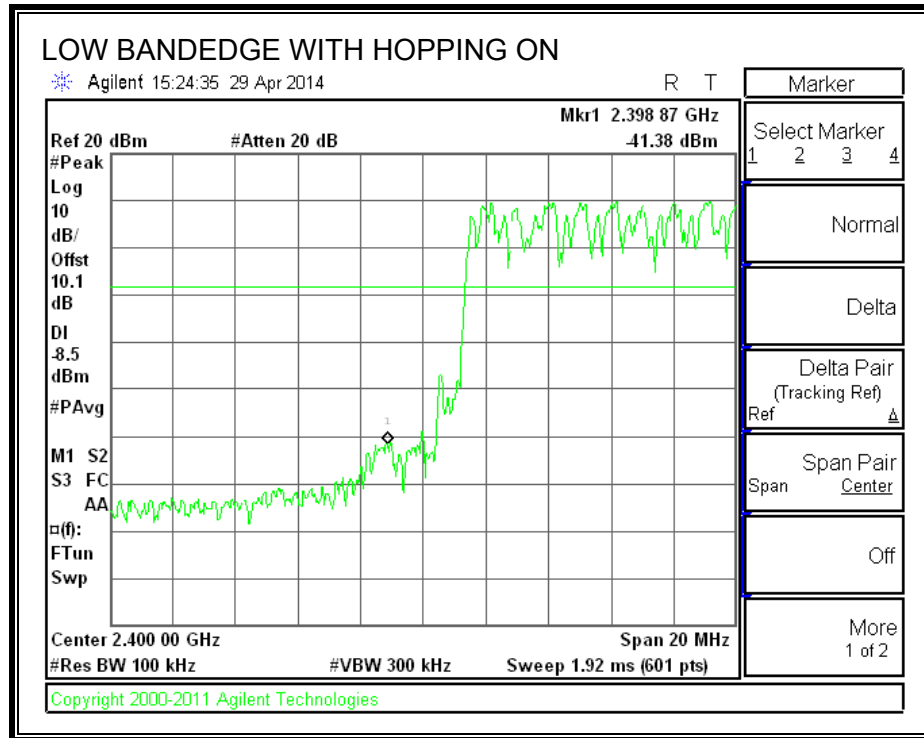
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



SPURIOUS BANDEDGE EMISSIONS WITH 8PSK HOPPING ON



9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

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

For band edge 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 1/T (on time) for average measurement. $GFSK = 1/T = 1 / 0.0029S = 350Hz$.

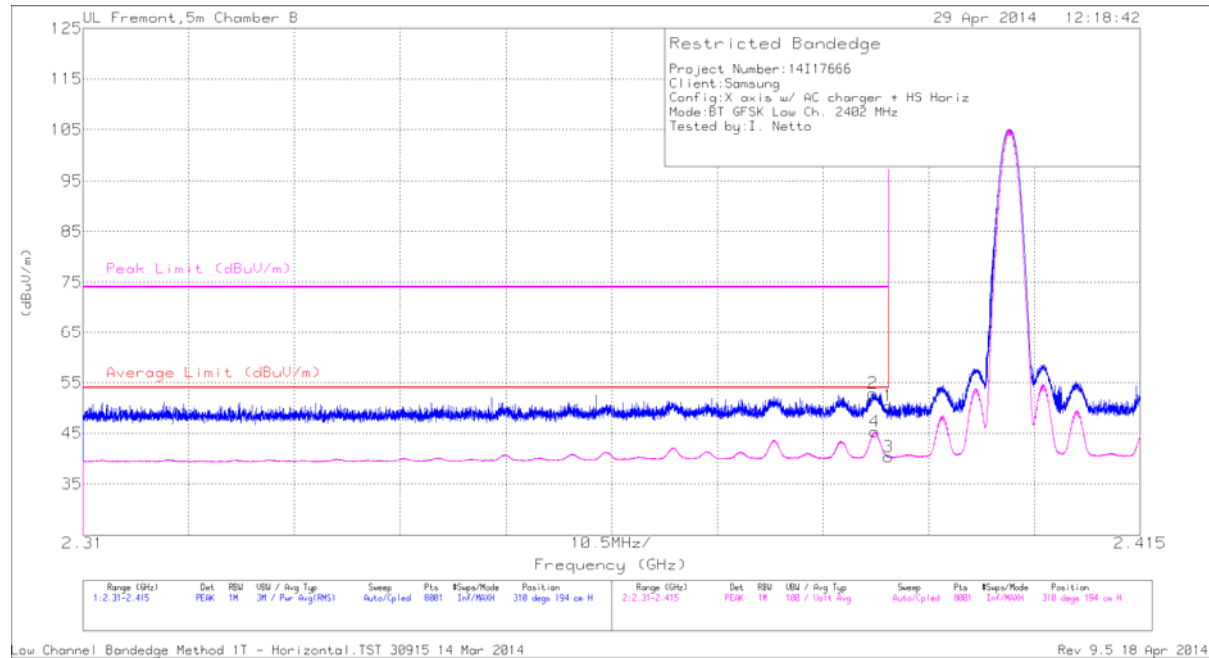
The spectrum from 1GHzHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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.

9.2. TRANSMITTER ABOVE 1 GHz

9.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



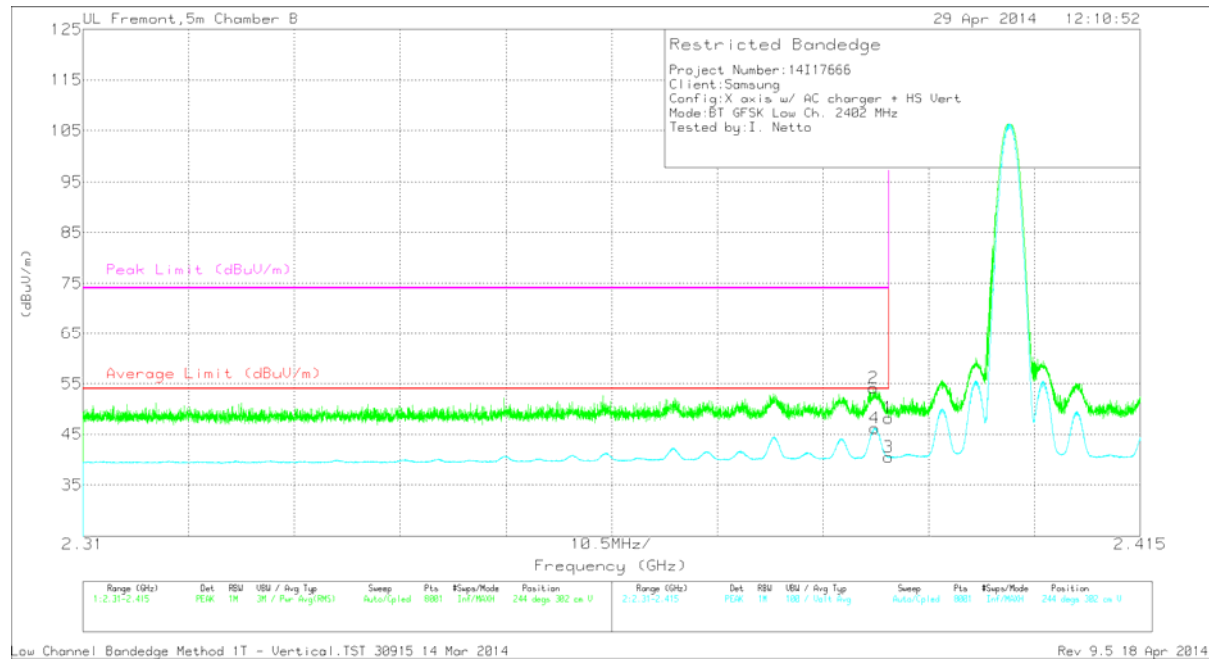
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.26	PK	32.1	-22.9	50.46	-	-	74	-23.54	310	194	H
2	* 2.388	43.73	PK	32.1	-22.9	52.93	-	-	74	-21.07	310	194	H
3	* 2.39	29.95	VB1T	32.1	-22.9	40.35	54	-13.65	-	-	310	194	H
4	* 2.389	34.9	VB1T	32.1	-22.9	45.3	54	-8.7	-	-	310	194	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



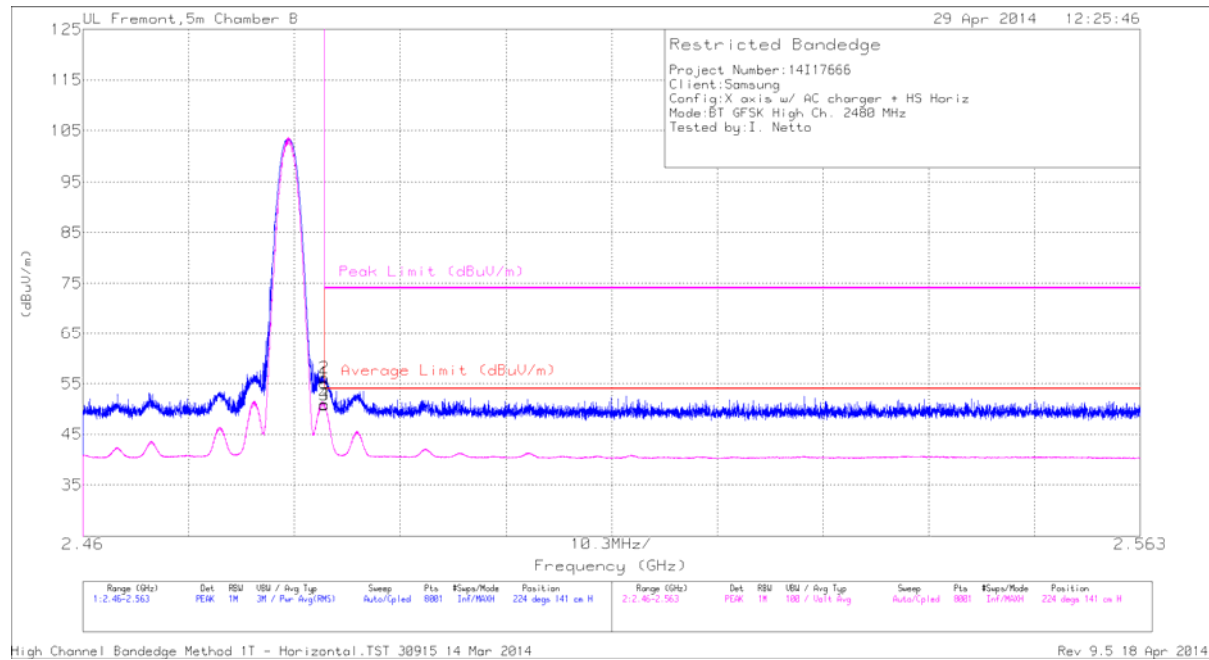
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.04	PK	32.1	-22.9	48.24	-	-	74	-25.76	244	302	V
2	* 2.389	44.96	PK	32.1	-22.9	54.16	-	-	74	-19.84	244	302	V
3	* 2.39	30.07	VB1T	32.1	-22.9	40.47	54	-13.53	-	-	244	302	V
4	* 2.389	35.82	VB1T	32.1	-22.9	46.22	54	-7.78	-	-	244	302	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



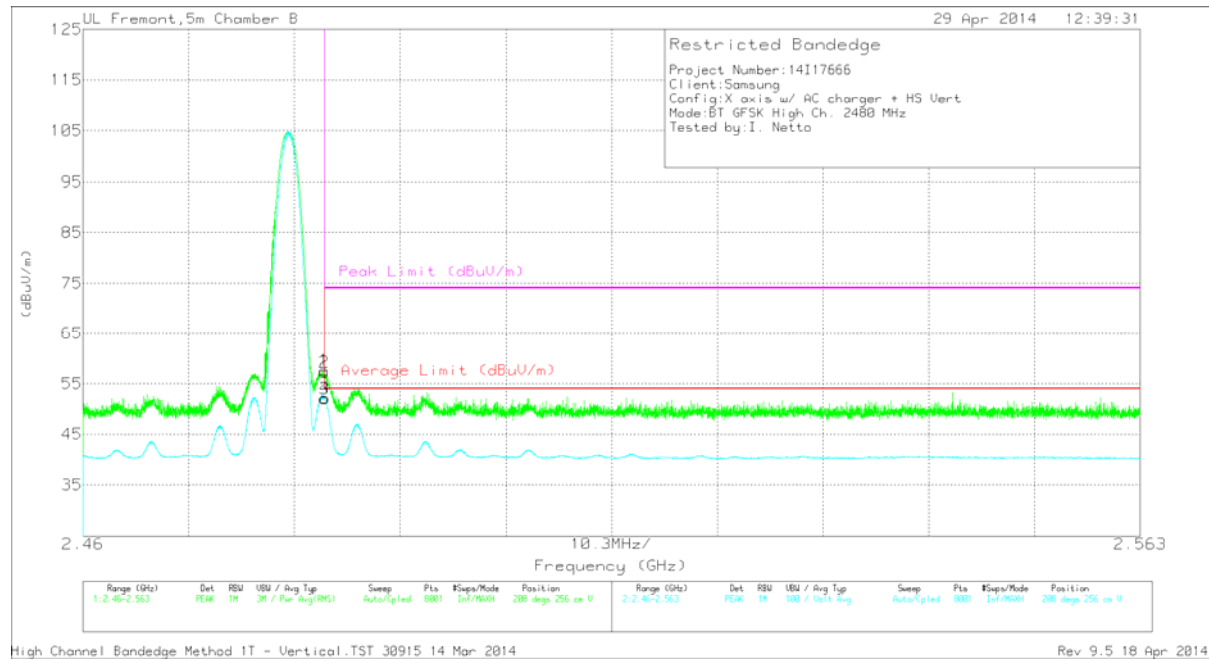
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.38	PK	32.4	-22.6	55.18	-	-	74	-18.82	224	141	H
2	* 2.484	46.31	PK	32.4	-22.6	56.11	-	-	74	-17.89	224	141	H
3	* 2.484	39.8	VB1T	32.4	-22.6	50.8	54	-3.2	-	-	224	141	H
4	* 2.484	39.97	VB1T	32.4	-22.6	50.97	54	-3.03	-	-	224	141	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.78	PK	32.4	-22.6	57.58	-	-	74	-16.42	208	256	V
2	* 2.484	47.45	PK	32.4	-22.6	57.25	-	-	74	-16.75	208	256	V
3	* 2.484	41.03	VB1T	32.4	-22.6	52.03	54	-1.97	-	-	208	256	V
4	* 2.484	41.16	VB1T	32.4	-22.6	52.16	54	-1.84	-	-	208	256	V

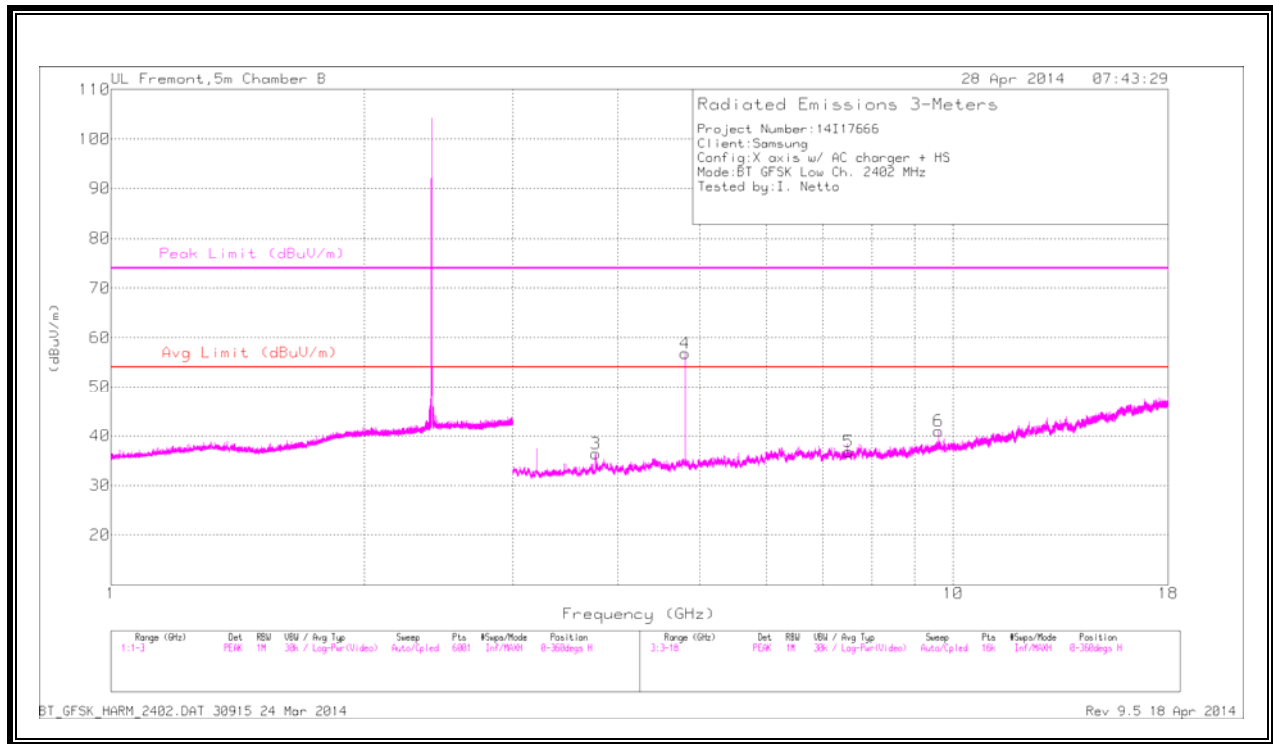
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

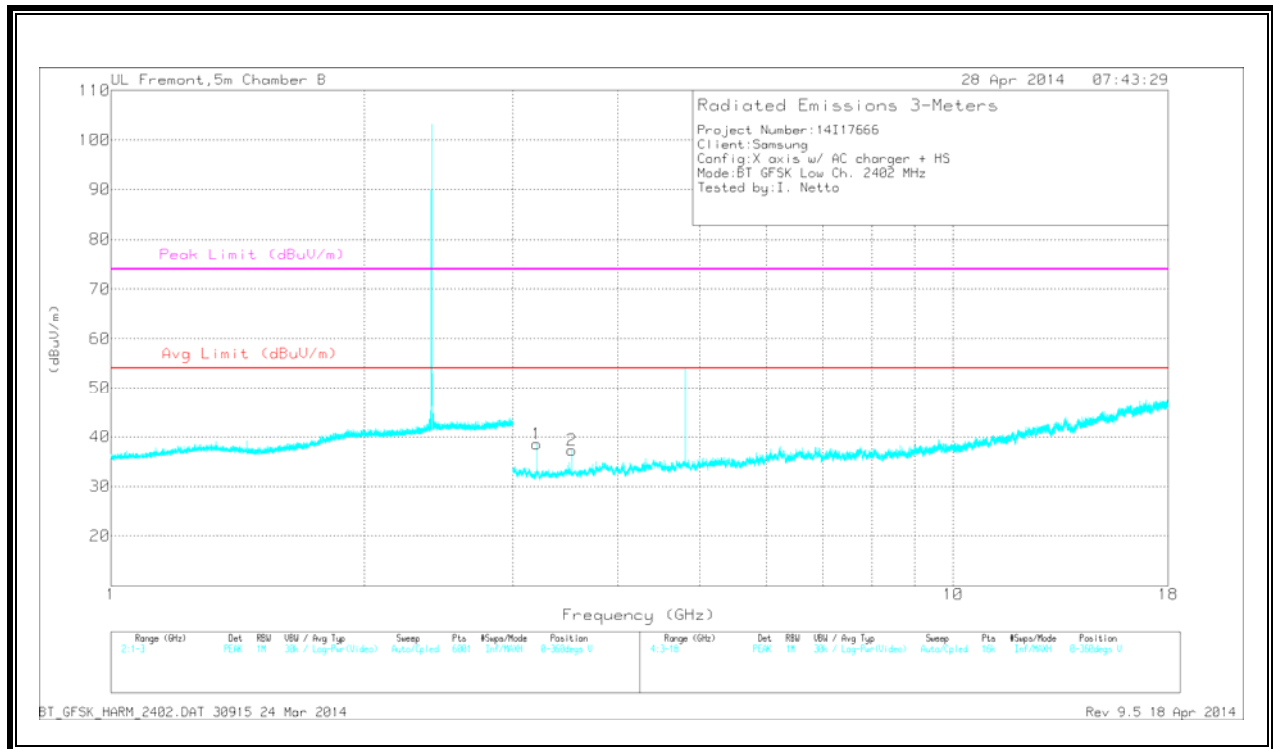
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 3.761	34.29	PK	33.5	-31.4	0	36.39	-	-	74	-37.61	0-360	202	H
4	* 4.804	51.48	PK	34.2	-28.8	0	56.88	-	-	74	-17.12	0-360	99	H
5	* 7.509	27.88	PK	35.6	-26.7	0	36.78	-	-	74	-37.22	0-360	202	H
2	* 3.524	35.8	PK	32.9	-31.4	0	37.3	-	-	74	-36.7	0-360	202	V
1	3.202	37.01	PK	32.8	-31.2	0	38.61	-	-	-	-	0-360	202	V
6	9.608	28.23	PK	36.8	-24.1	0	40.93	-	-	-	-	0-360	202	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

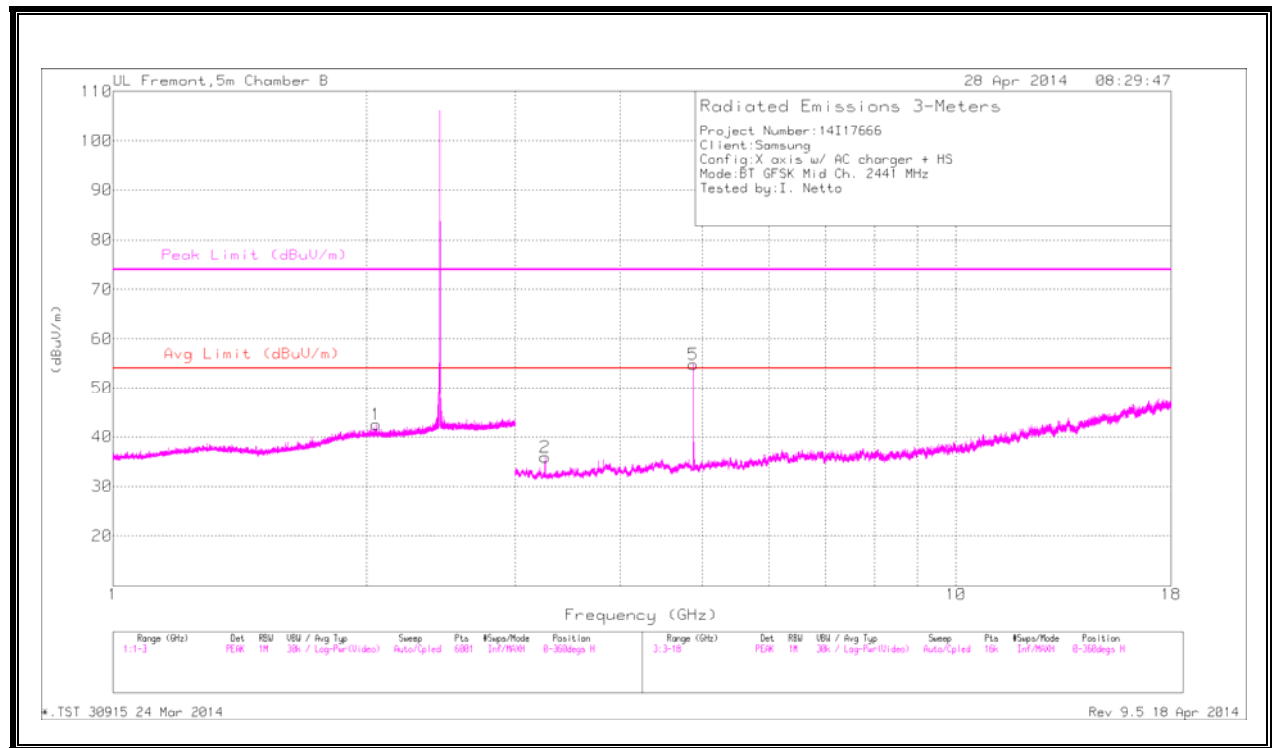
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.51	37.57	PK3	35.6	-26.8	46.37	-	-	74	-27.63	1	100	H
* 3.763	41.56	PK3	33.5	-31.4	43.66	-	-	74	-30.34	1	100	H
* 3.763	28.65	VB1T	33.5	-31.3	32.05	54	-21.95	-	-	1	100	H
* 4.804	50.07	PK3	34.2	-28.8	55.47	-	-	74	-18.53	1	100	H
* 4.804	45.92	VB1T	34.2	-28.8	52.52	54	-1.48	-	-	1	100	H
* 3.524	41.33	PK3	32.9	-31.4	42.83	-	-	74	-31.17	1	100	V
* 3.522	28.52	VB1T	32.9	-31.3	31.32	54	-22.68	-	-	1	100	V
3.203	43.48	PK3	32.8	-31.2	45.08	-	-	-	-	1	100	V
9.608	36.03	PK3	36.8	-24.1	48.73	-	-	-	-	1	100	H

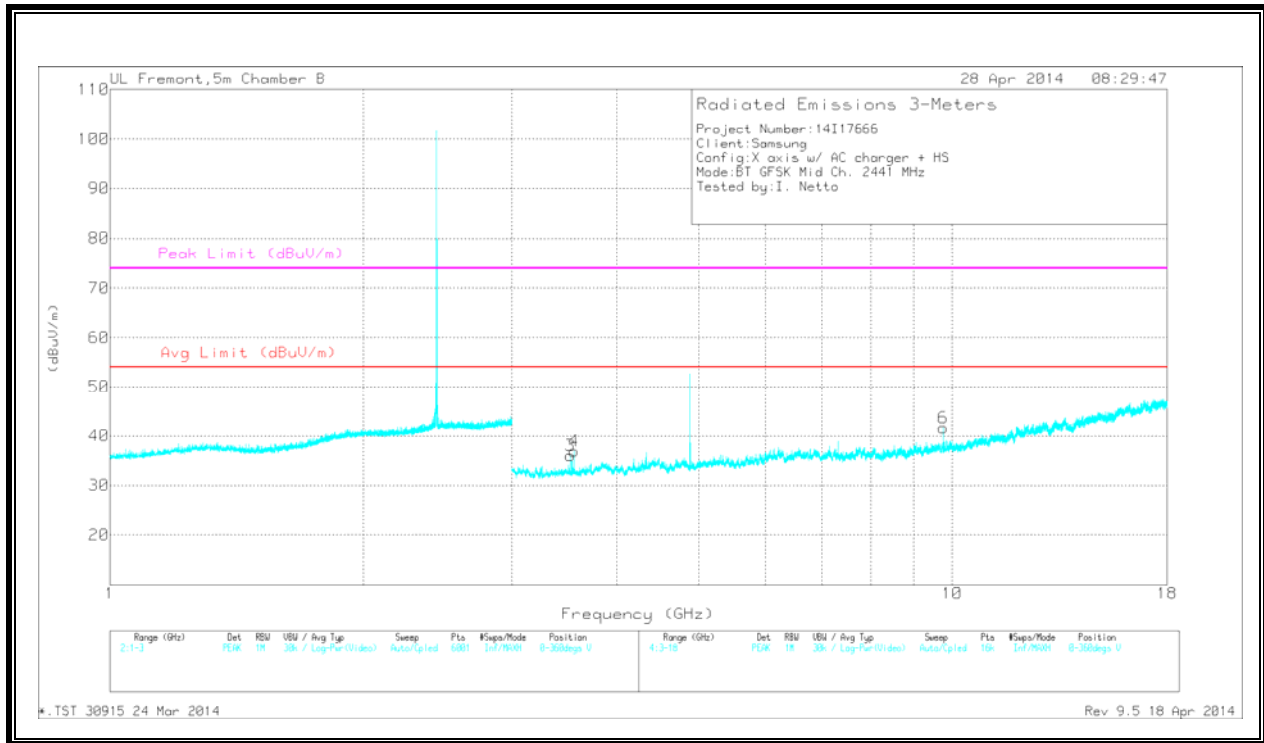
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 4.882	51.23	PK	34.2	-30.6	0	54.83	-	-	74	-19.17	0-360	99	H
3	* 3.52	34.42	PK	32.9	-31.3	0	36.02	-	-	74	-37.98	0-360	202	V
4	* 3.555	35.16	PK	33	-31.2	0	36.96	-	-	74	-37.04	0-360	202	V
1	2.052	34.67	PK	31.3	-23.5	0	42.47	-	-	-	-	0-360	202	H
2	3.255	34.06	PK	32.8	-31	0	35.86	-	-	-	-	0-360	202	H
6	9.764	28.88	PK	36.9	-24.2	0	41.58	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

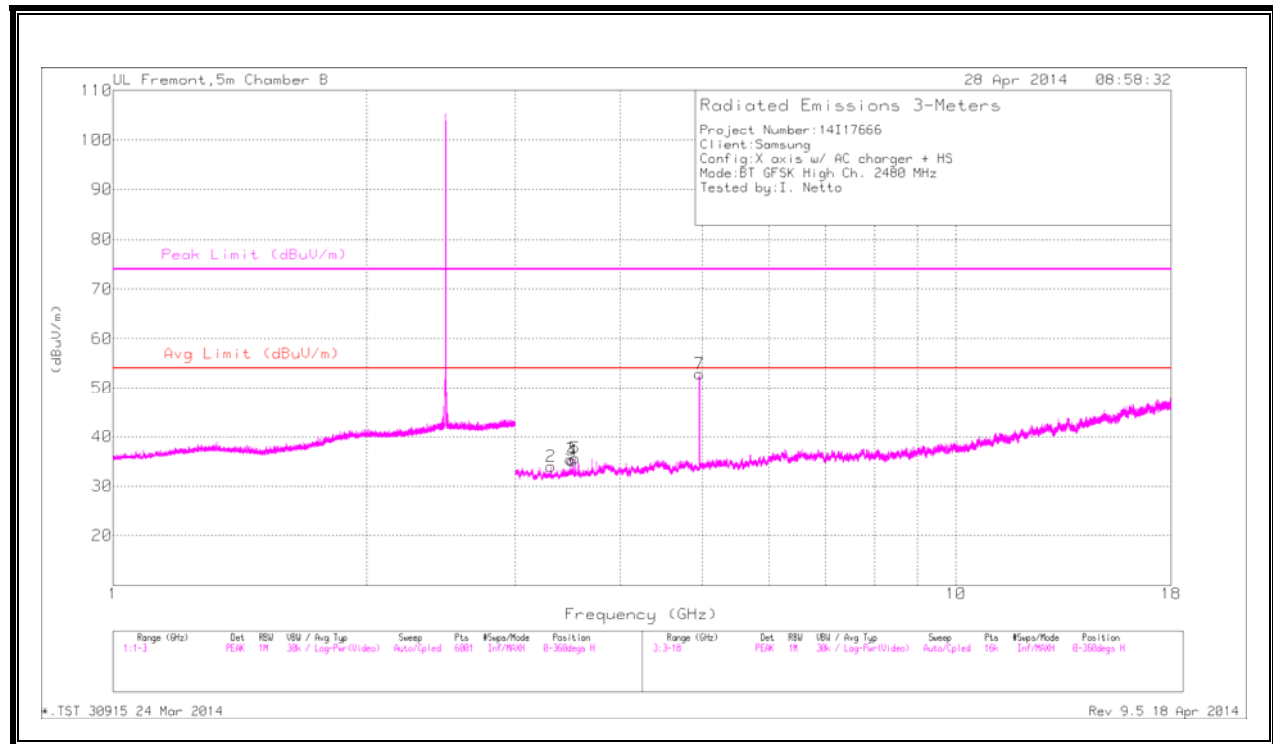
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	51.16	PK3	34.2	-30.6	54.76	-	-	74	-19.24	1	100	H
* 4.882	47.29	VB1T	34.2	-30.6	52.09	54	-1.91	-	-	1	100	H
* 3.519	41.11	PK3	32.9	-31.3	42.71	-	-	74	-31.29	1	100	V
* 3.519	28.5	VB1T	32.9	-31.3	31.3	54	-22.7	-	-	1	100	V
* 3.555	41.52	PK3	33	-31.2	43.32	-	-	74	-30.68	1	100	V
* 3.557	28.28	VB1T	33	-31.2	31.28	54	-22.72	-	-	1	100	V
2.053	42.83	PK3	31.3	-23.5	50.63	-	-	-	-	1	100	H
3.254	41.38	PK3	32.8	-31	43.18	-	-	-	-	1	100	H
9.764	36.39	PK3	36.9	-24.2	49.09	-	-	-	-	1	100	V

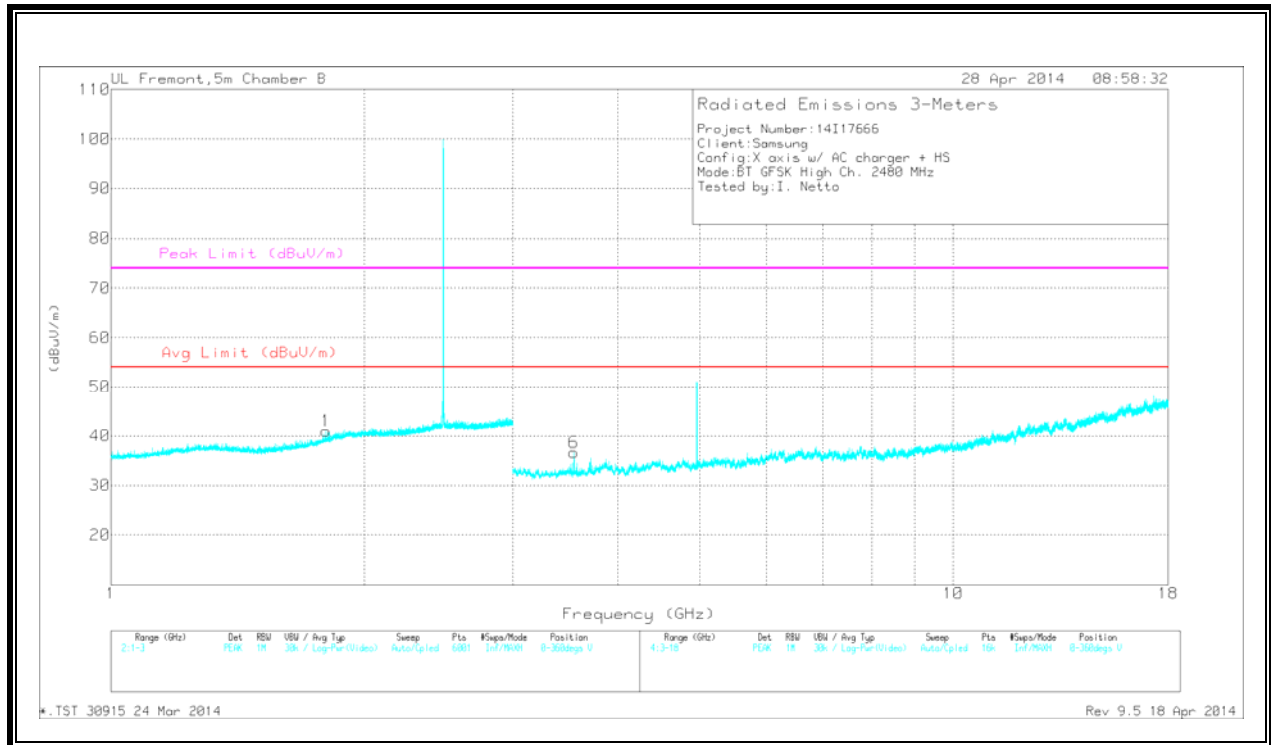
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 3.51	33.49	PK	32.8	-31.2	0	35.09	-	-	74	-38.91	0-360	201	H
5	* 3.53	34.23	PK	32.9	-31.5	0	35.63	-	-	74	-38.37	0-360	201	H
7	* 4.96	48.9	PK	34.2	-30.2	0	52.9	-	-	74	-21.1	0-360	201	H
6	* 3.544	35.14	PK	32.9	-31.4	0	36.64	-	-	74	-37.36	0-360	202	V
1	1.8	34.45	PK	30.2	-23.7	0	40.95	-	-	-	-	0-360	99	V
2	3.307	32.55	PK	32.8	-31.3	0	34.05	-	-	-	-	0-360	201	H
3	3.49	34.03	PK	32.8	-31.4	0	35.43	-	-	-	-	0-360	201	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.508	41.4	PK3	32.8	-31.2	43	-	-	74	-31	1	100	H
* 3.512	28.6	VB1T	32.8	-31.2	31.4	54	-22.6	-	-	1	100	H
* 3.531	40.91	PK3	32.9	-31.5	42.31	-	-	74	-31.69	1	100	H
* 3.531	28.41	VB1T	32.9	-31.5	31.01	54	-22.99	-	-	1	100	H
* 4.96	49.4	PK3	34.2	-30.2	53.4	-	-	74	-20.6	1	100	H
* 4.96	45.01	VB1T	34.2	-30.2	50.21	54	-3.79	-	-	1	100	H
* 3.544	41.7	PK3	32.9	-31.4	43.2	-	-	74	-30.8	1	100	V
* 3.546	28.6	VB1T	32.9	-31.3	31.4	54	-22.6	-	-	1	100	V
1.8	42.48	PK3	30.2	-23.7	48.98	-	-	-	-	1	100	V
3.306	41.08	PK3	32.8	-31.2	42.68	-	-	-	-	1	100	H
3.491	41.76	PK3	32.8	-31.4	43.16	-	-	-	-	1	100	H
3.492	28.89	VB1T	32.8	-31.3	31.59	-	-	-	-	1	100	H

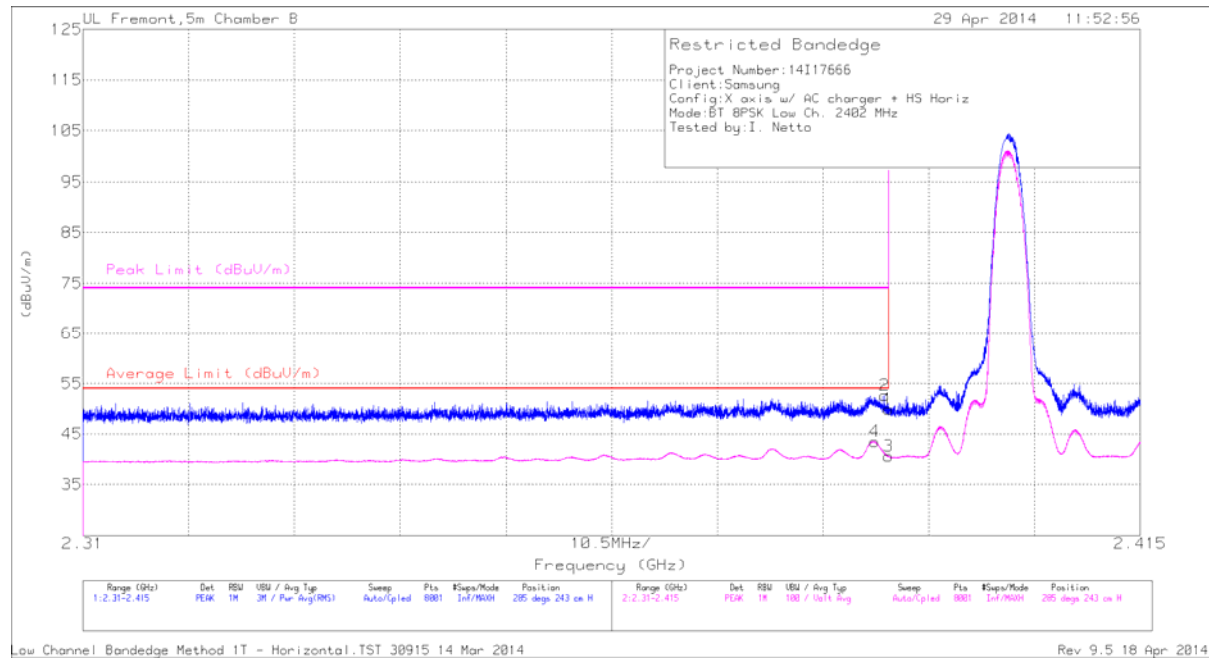
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

9.2.2. ENHANCED DATA RATE 8PSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



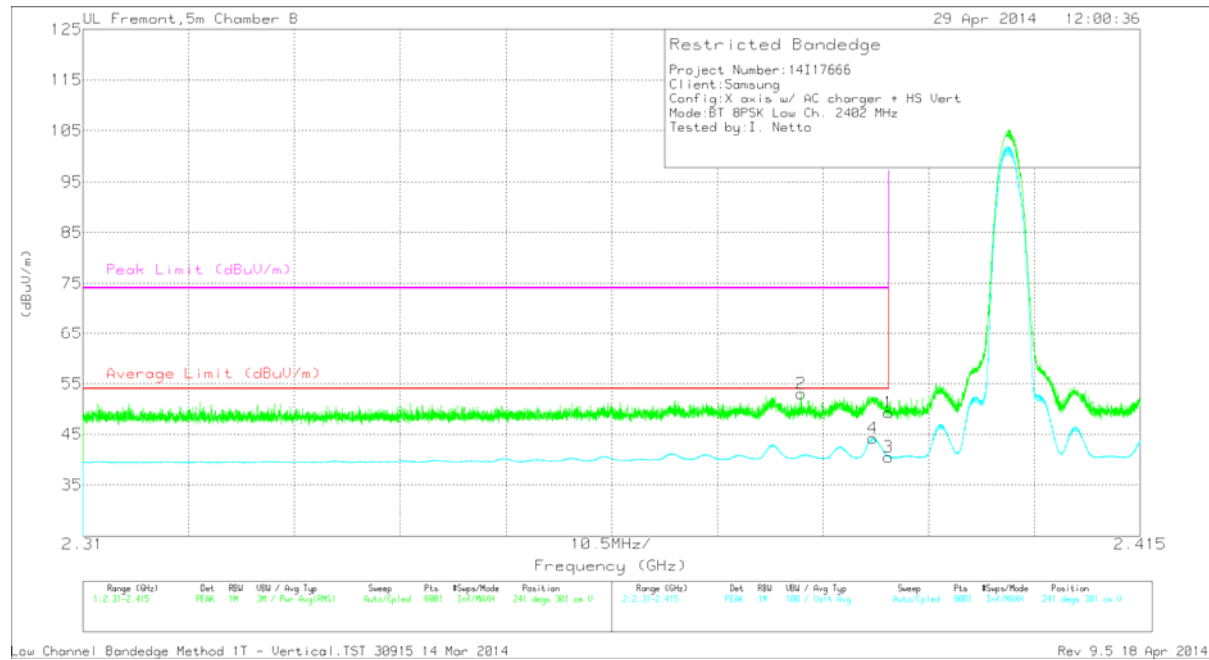
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.73	PK	32.1	-22.9	49.93	-	-	74	-24.07	285	243	H
2	* 2.39	43.42	PK	32.1	-22.9	52.62	-	-	74	-21.38	285	243	H
3	* 2.39	30.2	VB1T	32.1	-22.9	40.6	54	-13.4	-	-	285	243	H
4	* 2.389	33.12	VB1T	32.1	-22.9	43.52	54	-10.48	-	-	285	243	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



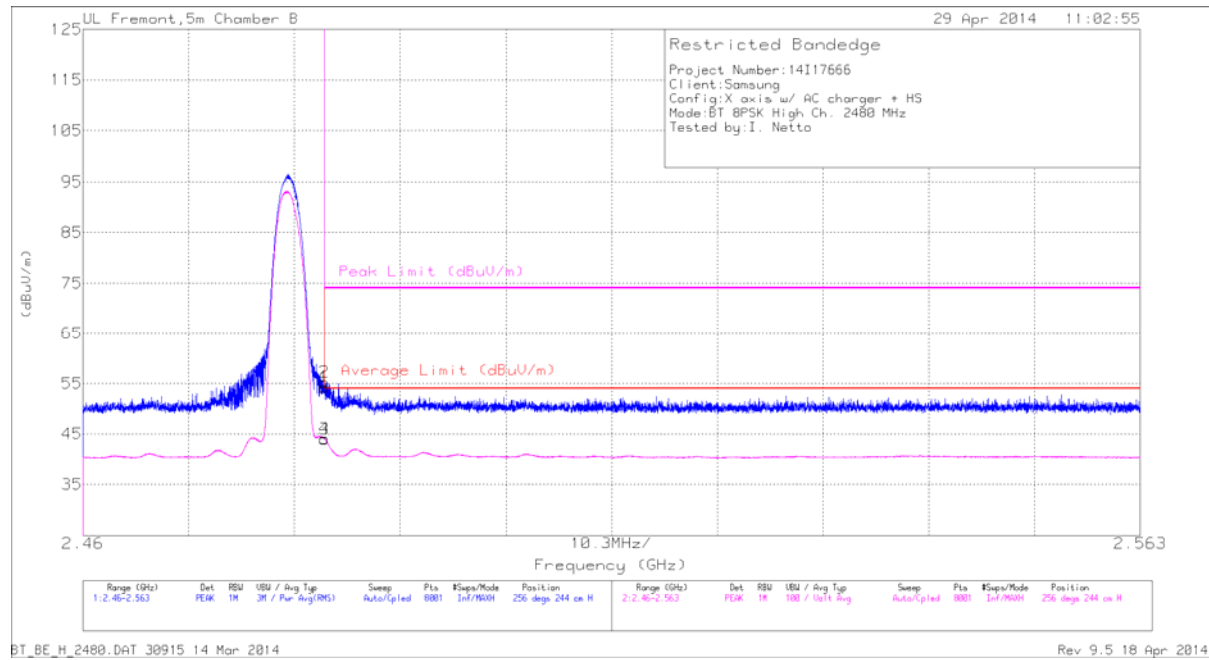
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.05	PK	32.1	-22.9	49.25	-	-	74	-24.75	241	301	V
2	* 2.381	43.89	PK	32	-22.9	52.99	-	-	74	-21.01	241	301	V
3	* 2.39	30.11	VB1T	32.1	-22.9	40.51	54	-13.49	-	-	241	301	V
4	* 2.388	33.82	VB1T	32.1	-22.9	44.22	54	-9.78	-	-	241	301	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



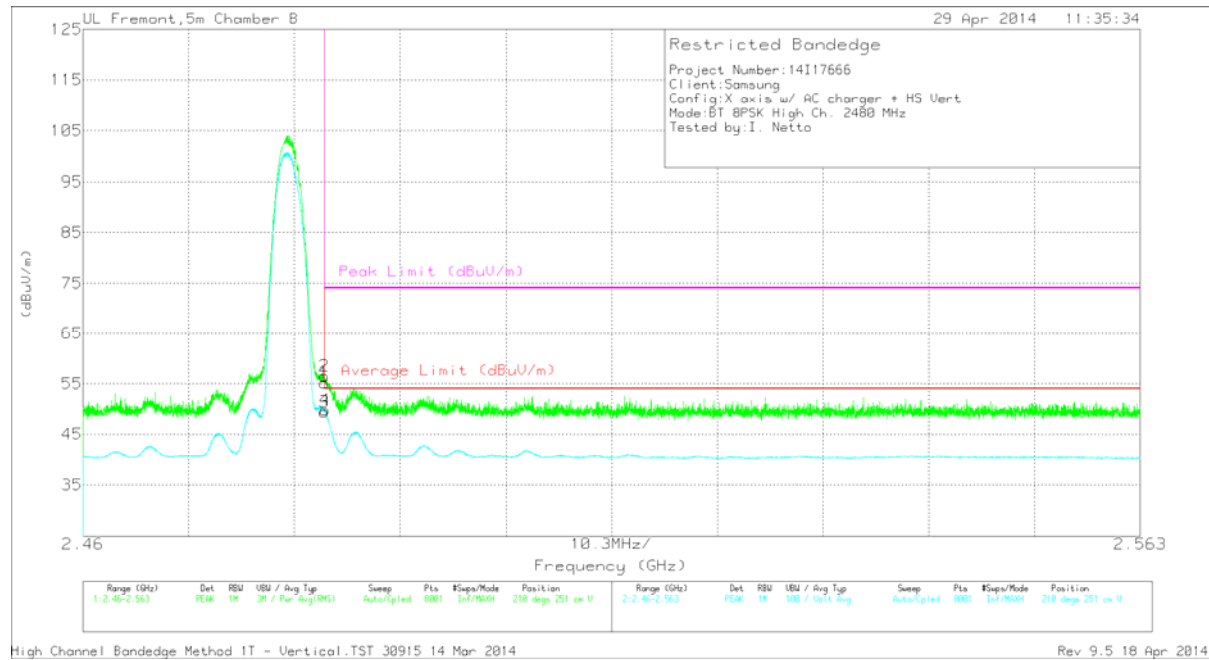
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.41	PK	32.4	-22.6	54.21	-	-	74	-19.79	256	244	H
2	* 2.484	45.4	PK	32.4	-22.6	55.2	-	-	74	-18.8	256	244	H
3	* 2.484	33	VB1T	32.4	-22.6	44	54	-10	-	-	256	244	H
4	* 2.484	33.04	VB1T	32.4	-22.6	44.04	54	-9.96	-	-	256	244	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.29	PK	32.4	-22.6	55.09	-	-	74	-18.91	210	251	V
2	* 2.484	46.7	PK	32.4	-22.6	56.5	-	-	74	-17.5	210	251	V
3	* 2.484	38.38	VB1T	32.4	-22.6	49.38	54	-4.62	-	-	210	251	V
4	* 2.484	38.76	VB1T	32.4	-22.6	49.76	54	-4.24	-	-	210	251	V

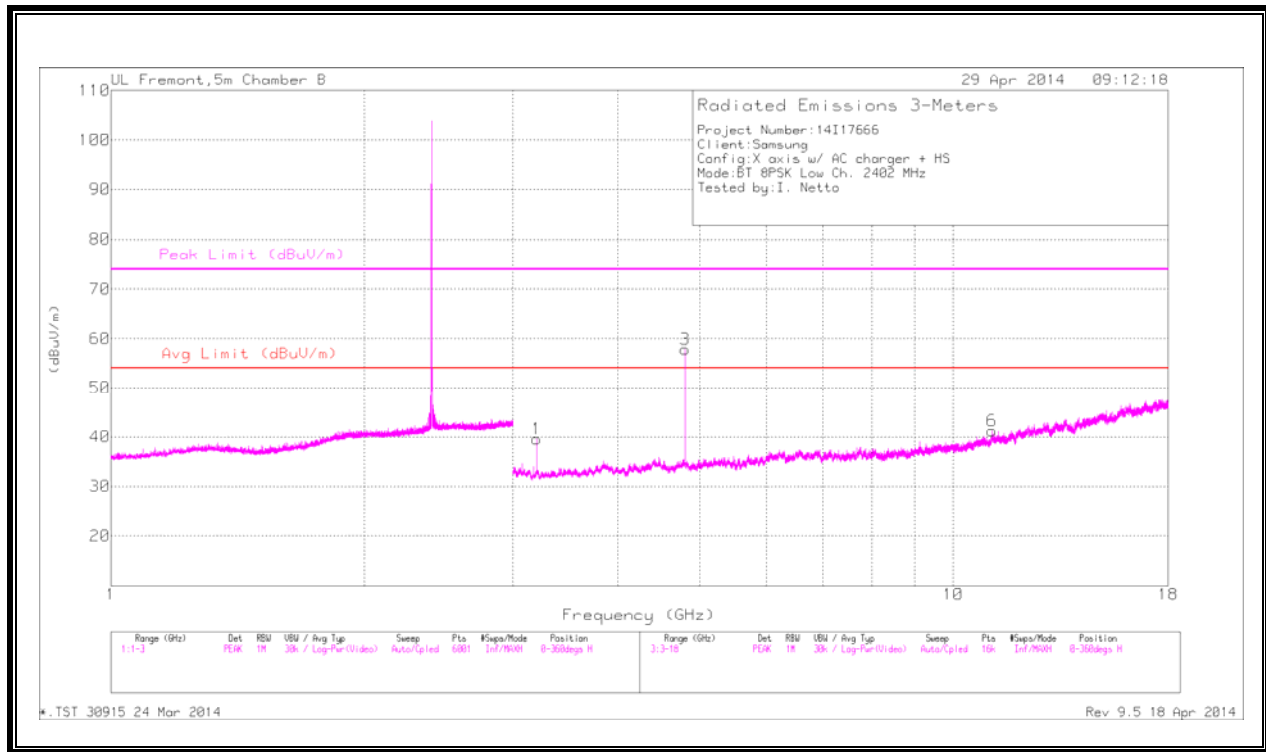
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

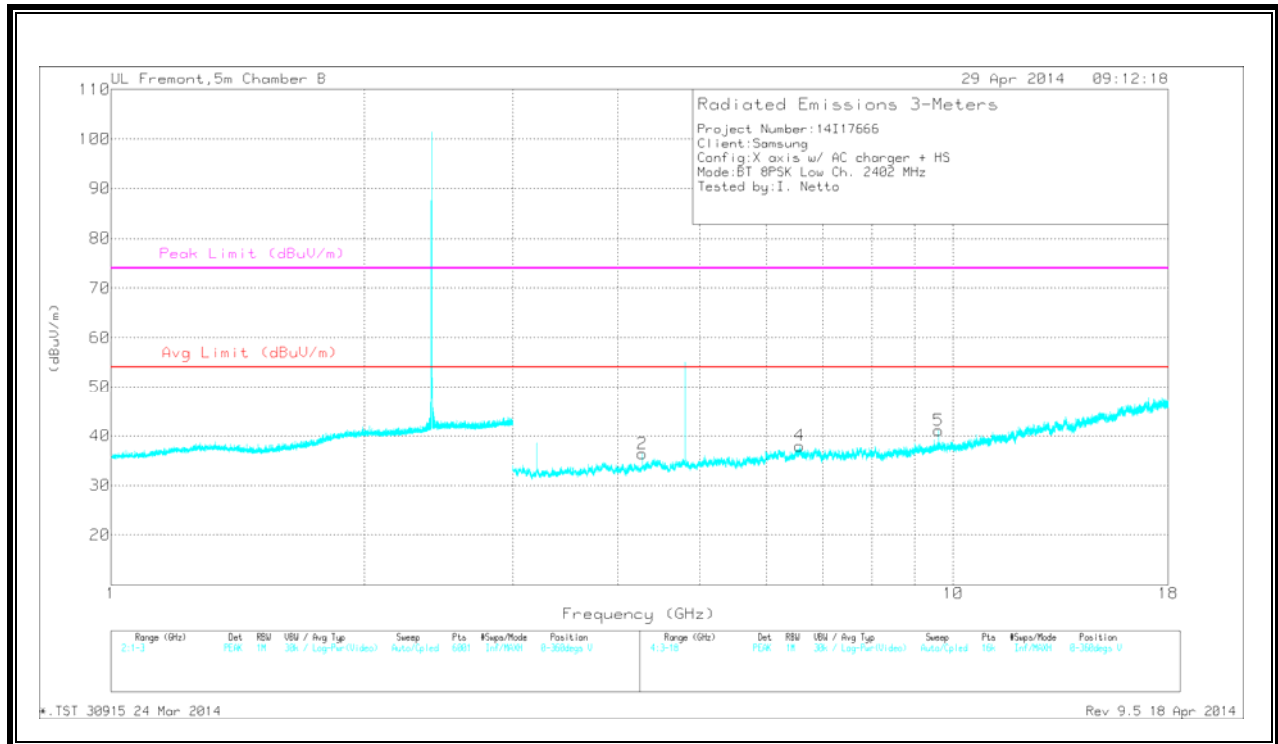
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	DC Corr (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.804	52.43	PK	34.2	-28.8	0	57.83	-	-	74	-16.17	0-360	201	H
6	* 11.124	26.2	PK	37.8	-22.8	0	41.2	-	-	74	-32.8	0-360	99	H
2	* 4.272	33.74	PK	33.7	-31	0	36.44	-	-	74	-37.56	0-360	202	V
1	3.202	37.95	PK	32.8	-31.2	0	39.55	-	-	-	-	0-360	201	H
4	6.565	29.6	PK	35.7	-27.3	0	38	-	-	-	-	0-360	99	V
5	9.608	28.39	PK	36.8	-24.1	0	41.09	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	DC Corr (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	48.83	PK3	34.2	-28.8	0	54.23	-	-	74	-19.77	135	293	H
* 11.125	35.46	PK3	37.8	-22.8	0	50.46	-	-	74	-23.54	135	293	H
* 4.274	41.27	PK3	33.7	-31	0	43.97	-	-	74	-30.03	135	293	V
3.202	46.84	PK3	32.8	-31.2	0	48.44	-	-	-	-	135	293	H
6.563	39.14	PK3	35.7	-27.3	0	47.54	-	-	-	-	135	293	V
9.609	36.51	PK3	36.8	-24.1	0	49.21	-	-	-	-	135	293	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

*.TST 30915 24 Mar 2014

Rev 9.5 18 Apr 2014

For Marker 3, 4.804MHz spur, used the following method to do averaging:

$DCCF = 20 * \log(100\text{ms} / T_{\text{on}})$

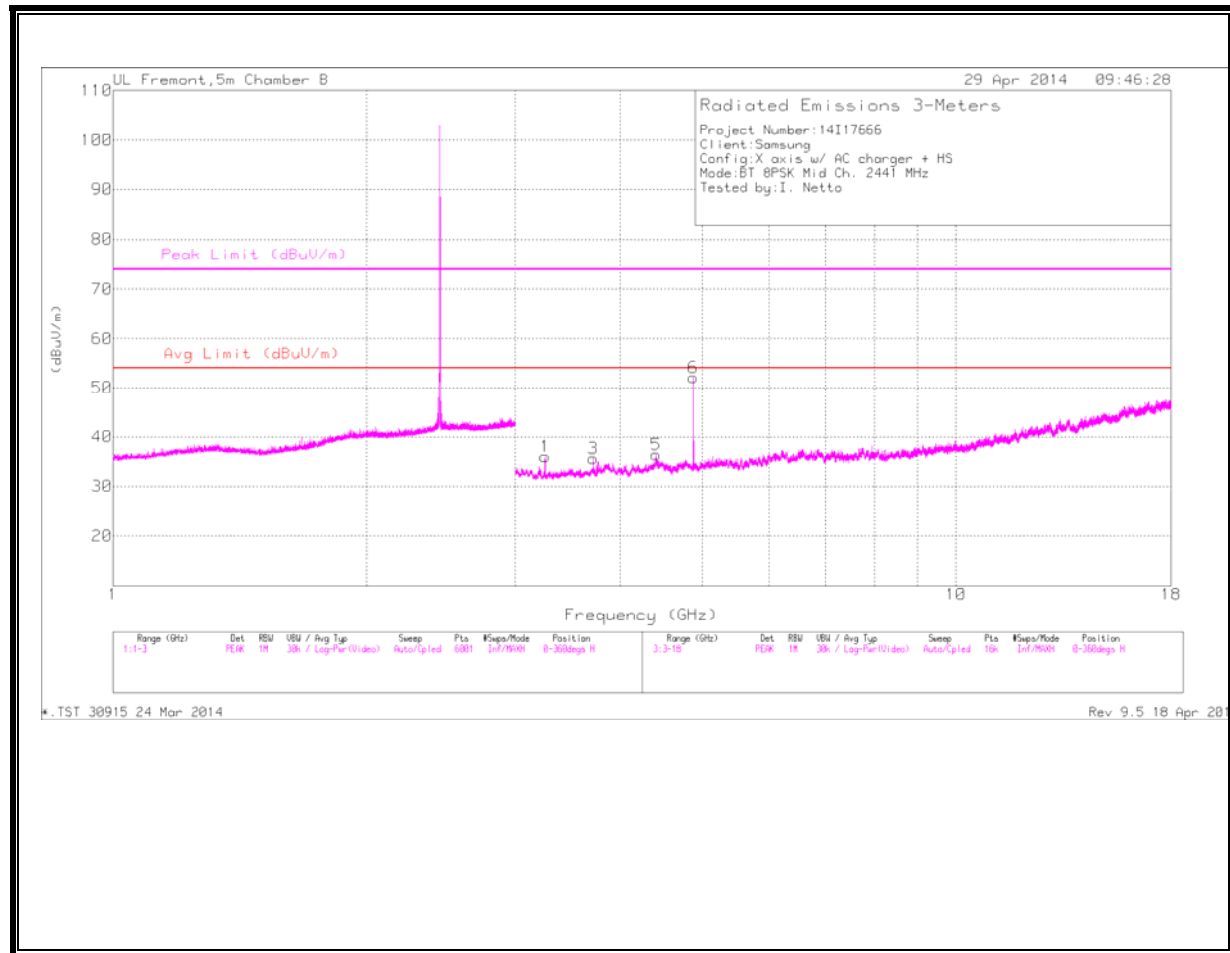
$T_{\text{on}} = 2.867\text{ms}$

$DCCF = 30.9$

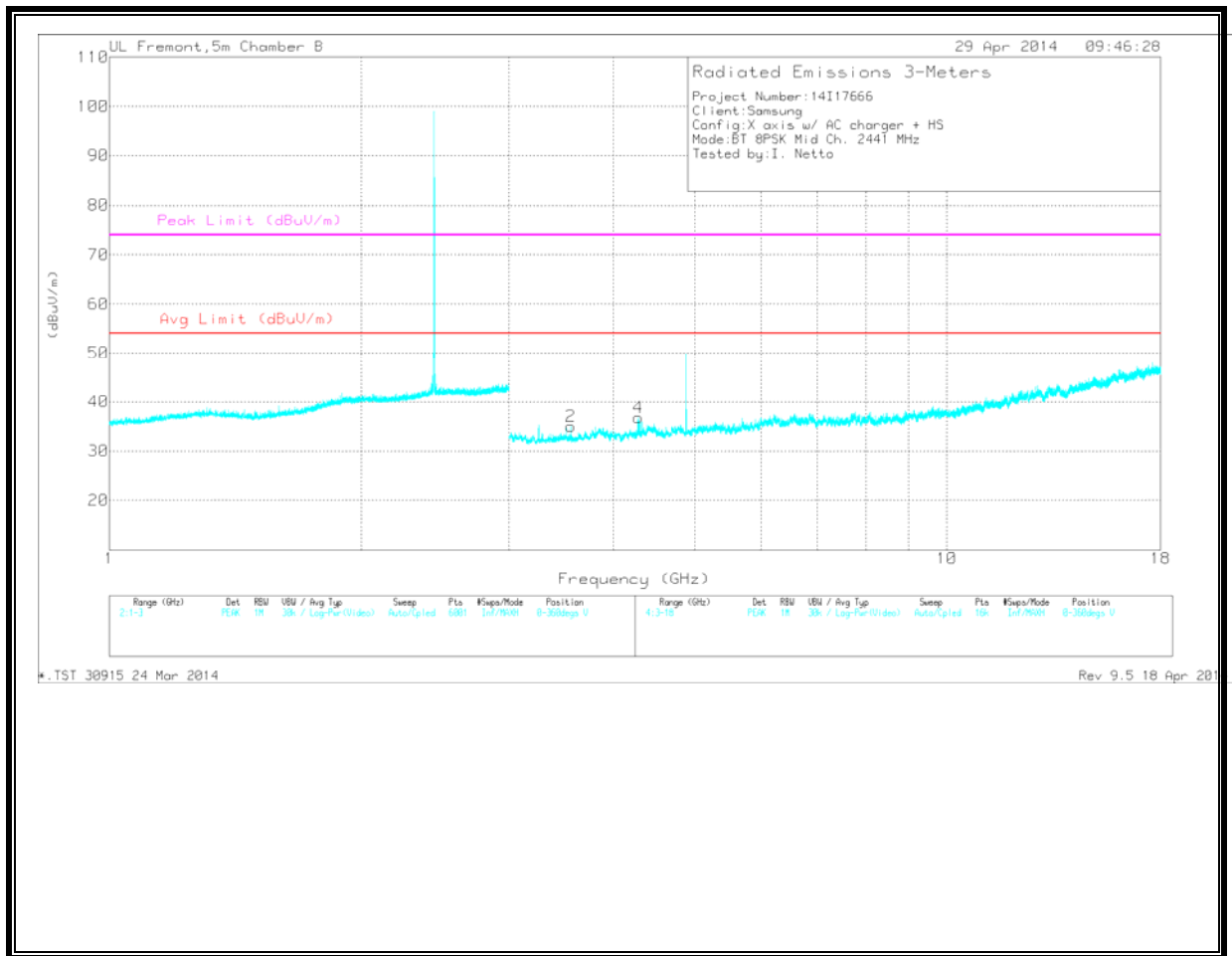
Corrected AV reading = Peak Reading – DCCF

= 54.23 – 30.9

= 23.33 dB



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 3.712	33.5	PK	33.4	-31.2	0	35.7	-	-	74	-38.3	0-360	202	H
6	* 4.882	48.51	PK	34.2	-30.6	0	52.11	-	-	74	-21.89	0-360	99	H
2	* 3.555	33.19	PK	33	-31.2	0	34.99	-	-	74	-39.01	0-360	202	V
4	* 4.28	34.12	PK	33.7	-31	0	36.82	-	-	74	-37.18	0-360	202	V
1	3.255	34.27	PK	32.8	-31	0	36.07	-	-	-	-	0-360	202	H
5	4.406	32.34	PK	33.8	-29.7	0	36.44	-	-	-	-	0-360	99	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	52.72	PK3	34.2	-30.6	0	56.32	-	-	74	-17.68	326	261	H
3.254	41.11	PK3	32.8	-31	0	42.91	-	-	-	-	326	261	H
3.255	41.98	PK3	32.8	-31	0	43.78	-	-	-	-	338	228	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

* TST 30915 24 Mar 2014

Rev 9.5 18 Apr 2014

For Marker 6, 4.882MHz spur, used the following method to do averaging:

DCCF = $20 * \log(100\text{ms} / \text{Ton})$

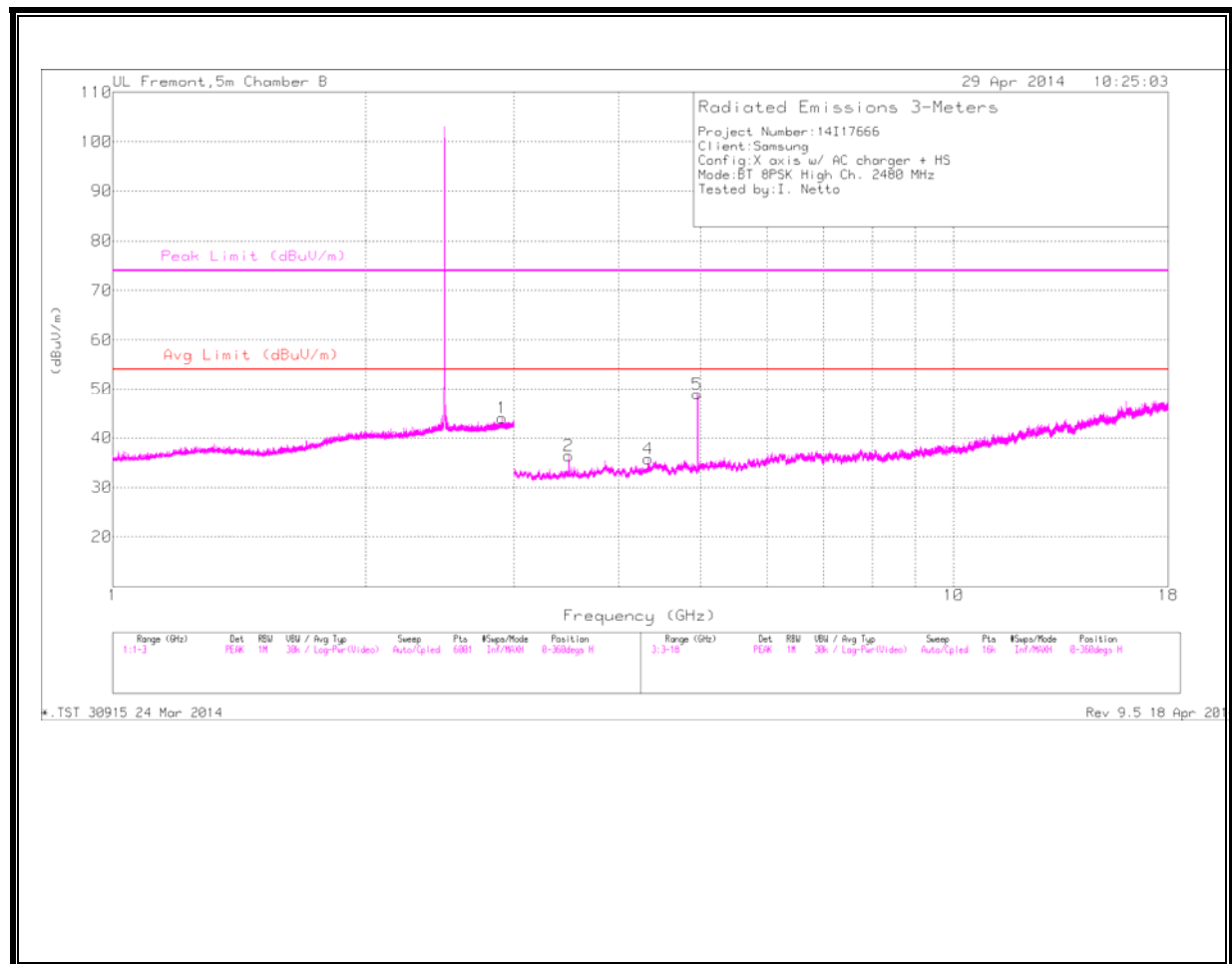
Ton = 2.867ms

DCCF = 30.9

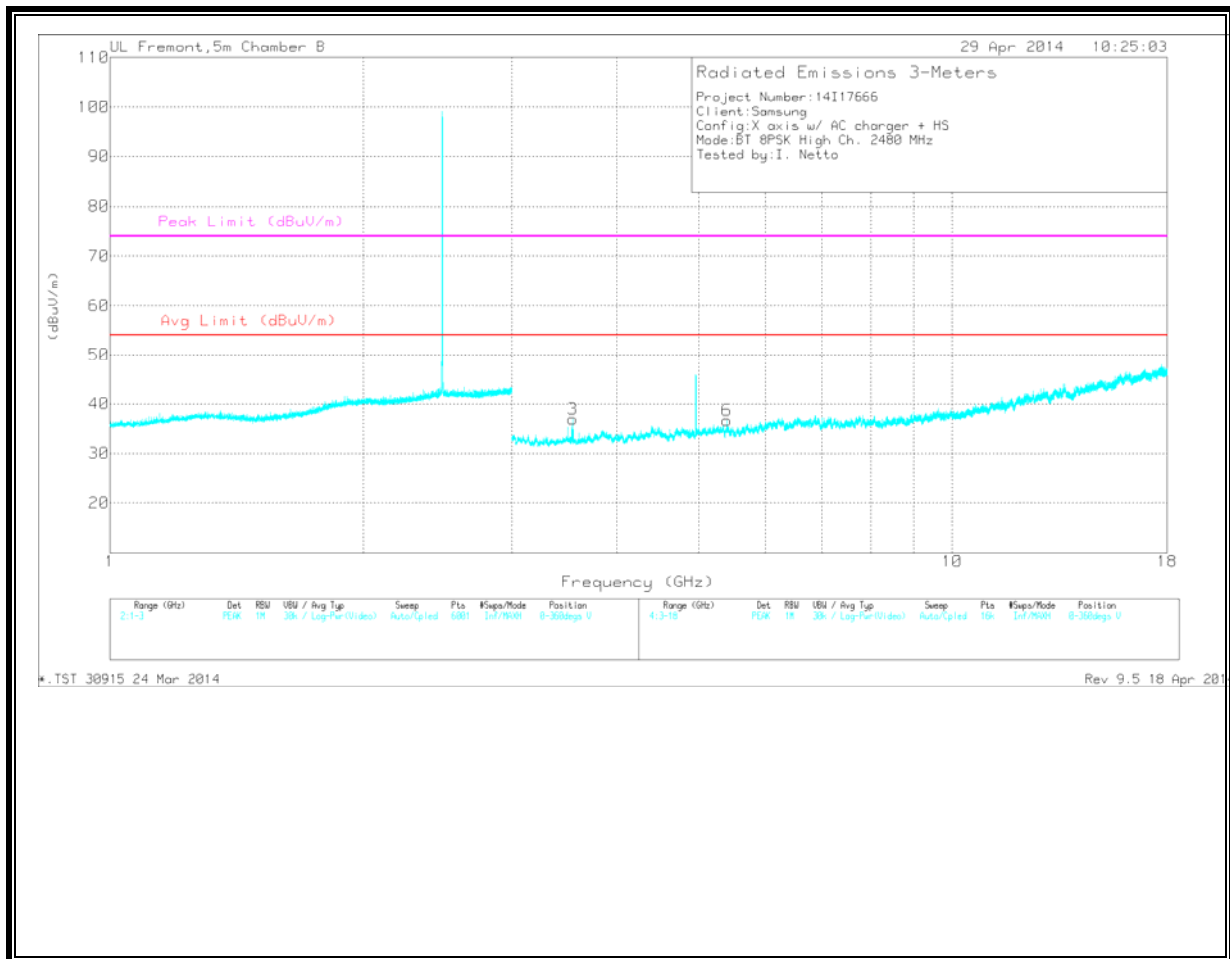
Corrected AV reading = Peak Reading – DCCF

= 56.32 – 30.9

= 25.42 dB



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 4.33	33.02	PK	33.7	-31	0	35.72	-	-	74	-38.28	0-360	202	H
5	* 4.959	44.93	PK	34.2	-30.2	0	48.93	-	-	74	-25.07	0-360	99	H
3	* 3.545	35.35	PK	32.9	-31.3	0	36.95	-	-	74	-37.05	0-360	202	V
6	* 5.405	31.05	PK	34.5	-28.9	0	36.65	-	-	74	-37.35	0-360	99	V
1	2.902	33.86	PK	32.6	-22.4	0	44.06	-	-	-	-	0-360	202	H
2	3.487	35.02	PK	32.8	-31.4	0	36.42	-	-	-	-	0-360	202	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.959	48.78	PK3	34.2	-30.2	0	52.78	-	-	74	-21.22	321	241	H
* 3.546	41.32	PK3	33	-31.3	0	43.02	-	-	74	-30.98	321	241	V
3.484	41.3	PK3	32.8	-31.4	0	42.7	-	-	-	-	321	241	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

*.TST 30915 24 Mar 2014

Rev 9.5 18 Apr 2014

For Marker 5, 4.959MHz spur, used the following method to do averaging:

$DCCF = 20 * \log(100\text{ms} / \text{Ton})$

$\text{Ton} = 2.867\text{ms}$

$DCCF = 30.9$

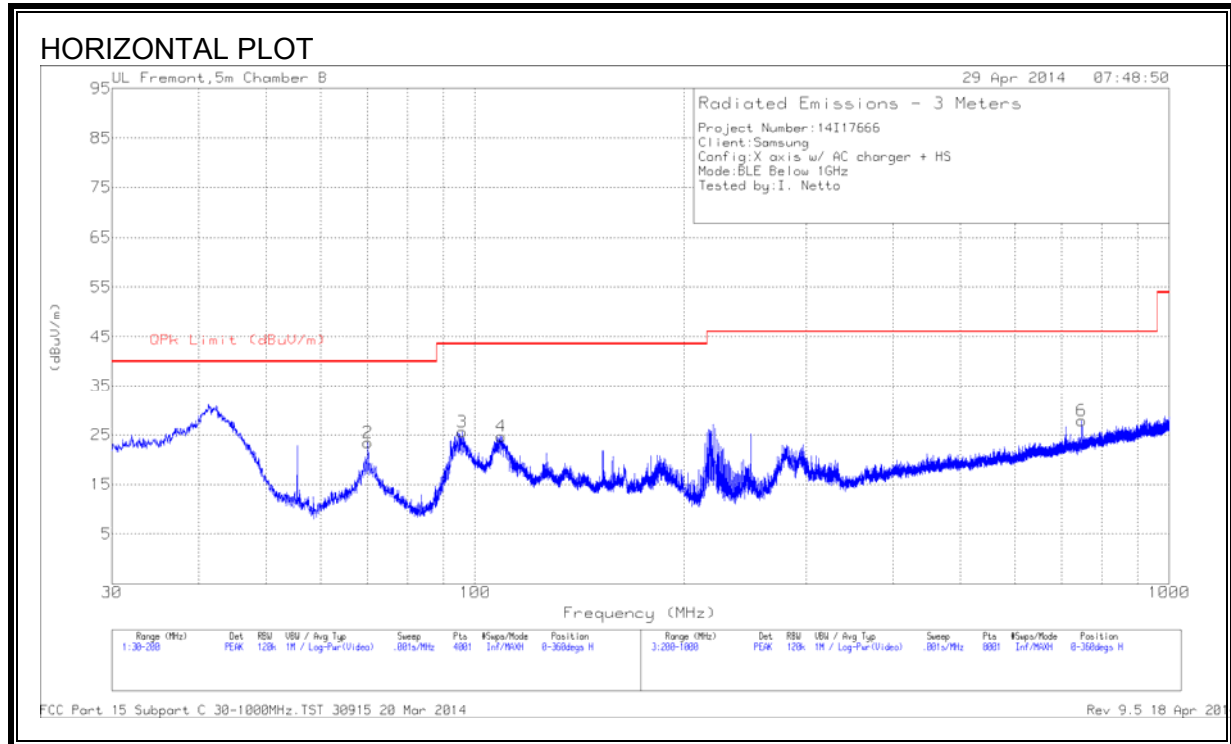
Corrected AV reading = Peak Reading – DCCF

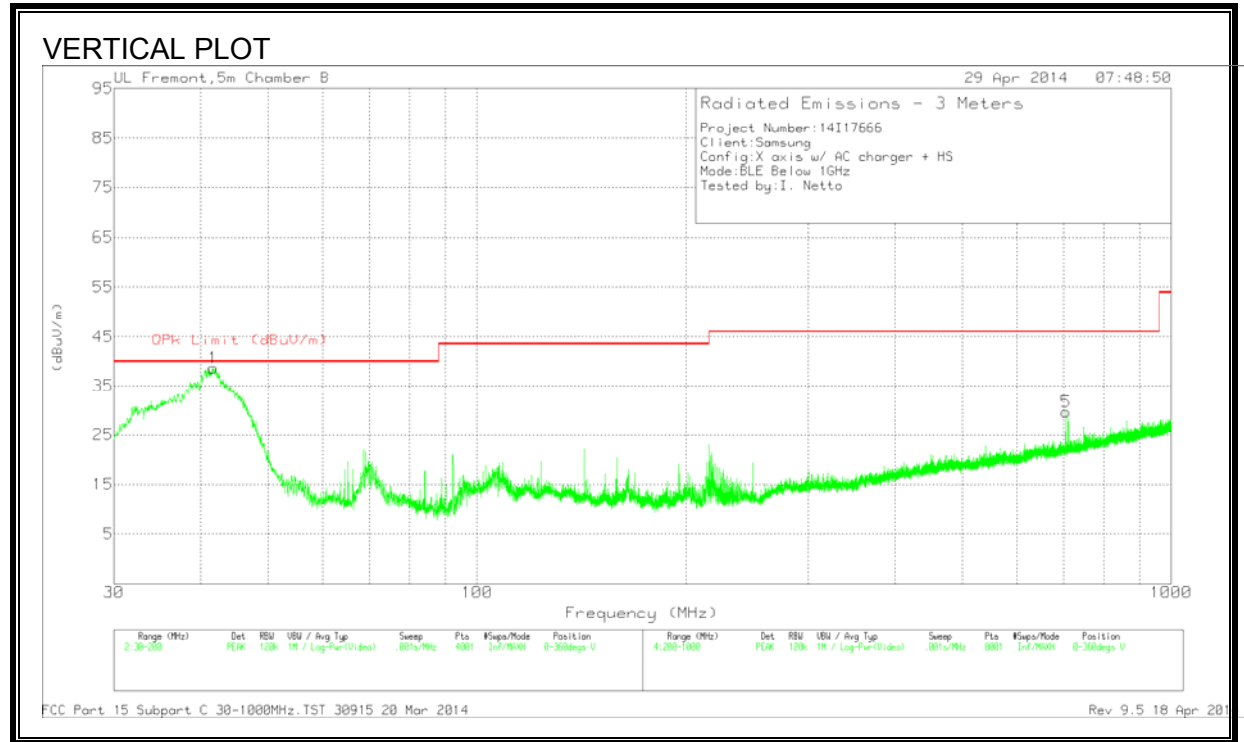
= 52.78 – 30.9

= 21.88 dB

9.3. WORST-CASE BELOW 1 GHz

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





DATA

Marker	Frequenc y (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Correcte d Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 109.135	40.28	PK	12.4	-28	24.68	43.52	-18.84	0-360	300	H
1	41.73	54.71	PK	12.7	-28.7	38.71	40	-1.29	0-360	101	V
2	70.1625	43.77	PK	8.1	-28.4	23.47	40	-16.53	0-360	200	H
3	95.875	44.64	PK	9.1	-28.1	25.64	43.52	-17.88	0-360	200	H
5	705	34.2	PK	20.2	-24.7	29.7	46.02	-16.32	0-360	300	V
6	748.8	31.5	PK	20.6	-24.2	27.9	46.02	-18.12	0-360	200	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 [*]	56 to 46 [*]
0.5-5	56	46
5-30	60	50

^{*} Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

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

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

RESULTS

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.1725	46.7	PK	1.2	0	47.9	64.8	-16.9	-	-
2	.1725	26.04	Av	1.2	0	27.24	-	-	54.8	-27.56
3	.312	39.92	PK	.5	0	40.42	59.9	-19.48	-	-
4	.312	19.89	Av	.5	0	20.39	-	-	49.9	-29.51
5	.501	33.98	PK	.3	0	34.28	56	-21.72	-	-
6	.501	22.91	Av	.3	0	23.21	-	-	46	-22.79
7	.564	40	PK	.3	0	40.3	56	-15.7	-	-
8	.564	34.55	Av	.3	0	34.85	-	-	46	-11.15
9	1.194	29.85	PK	.2	.1	30.15	56	-25.85	-	-
10	1.194	23.27	Av	.2	.1	23.57	-	-	46	-22.43
11	5.514	26.73	PK	.2	.1	27.03	60	-32.97	-	-
12	5.514	10.55	Av	.2	.1	10.85	-	-	50	-39.15
13	8.8485	26.85	PK	.2	.1	27.15	60	-32.85	-	-
14	8.8485	9.96	Av	.2	.1	10.26	-	-	50	-39.74
15	17.9295	25.75	PK	.3	.2	26.25	60	-33.75	-	-
16	17.9295	21.3	Av	.3	.2	21.8	-	-	50	-28.2
17	29.958	28.37	PK	.3	.3	28.97	60	-31.03	-	-
18	29.958	14.25	Av	.3	.3	14.85	-	-	50	-35.15

Line-L2 .15 - 30MHz

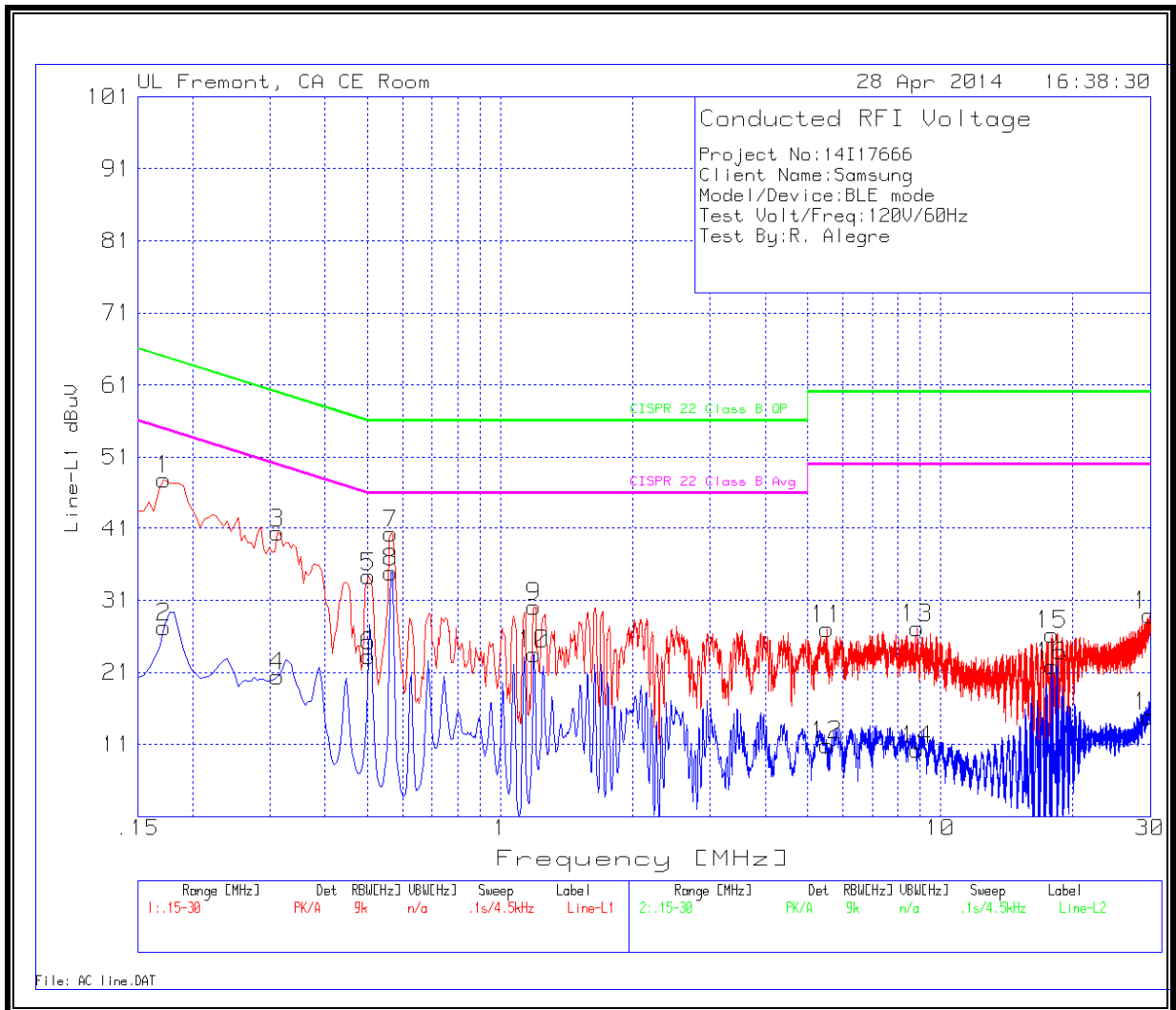
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
19	.168	47.29	PK	1.3	0	48.59	65.1	-16.51	-	-
20	.168	21.59	Av	1.3	0	22.89	-	-	55.1	-32.21
21	.3165	41.68	PK	.6	0	42.28	59.8	-17.52	-	-
22	.3165	17.17	Av	.6	0	17.77	-	-	49.8	-32.03
23	.51	33.04	PK	.4	0	33.44	56	-22.56	-	-
24	.51	19.31	Av	.4	0	19.71	-	-	46	-26.29
25	.564	41.02	PK	.3	0	41.32	56	-14.68	-	-
26	.564	29.22	Av	.3	0	29.52	-	-	46	-16.48
27	1.068	22.55	PK	.3	.1	22.95	56	-33.05	-	-
28	1.068	9.95	Av	.3	.1	10.35	-	-	46	-35.65
29	5.5815	19.66	PK	.2	.1	19.96	60	-40.04	-	-
30	5.5815	4.13	Av	.2	.1	4.43	-	-	50	-45.57
31	8.8395	30	PK	.2	.1	30.3	60	-29.7	-	-
32	8.8395	10.83	Av	.2	.1	11.13	-	-	50	-38.87
33	17.9385	25.44	PK	.3	.2	25.94	60	-34.06	-	-
34	17.9385	18.29	Av	.3	.2	18.79	-	-	50	-31.21
35	29.913	28.01	PK	.3	.3	28.61	60	-31.39	-	-
36	29.913	15.64	Av	.3	.3	16.24	-	-	50	-33.76

PK - Peak detector

Av - average detection

LINE 1 RESULTS



LINE 2 RESULTS

