



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

BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT

FOR

HANDHELD COMPUTING DEVICE

MODEL NUMBER: 1572

FCC ID: C3K1572
IC: 3048A-1572

REPORT NUMBER: 13U15414-2, Revision A

ISSUE DATE: SEPTEMBER 25, 2013

Prepared for
MICROSOFT CORPORATION
ONE MICROSOFT WAY
REDMOND, WA 98052, U.S.A.

Prepared by
UL VERIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP®

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	08/29/13	Initial Issue	T. LEE
A	09/25/13	Revised sections 6.1 and 6.2.	D. Garcia

TABLE OF CONTENTS

ATTESTATION OF TEST RESULTS	4
1. TEST METHODOLOGY	5
2. FACILITIES AND ACCREDITATION	5
3. CALIBRATION AND UNCERTAINTY	5
3.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	5
3.2. <i>SAMPLE CALCULATION</i>	5
3.3. <i>MEASUREMENT UNCERTAINTY</i>	5
4. EQUIPMENT UNDER TEST	6
4.1. <i>DESCRIPTION OF EUT</i>	6
4.2. <i>MAXIMUM OUTPUT POWER</i>	6
4.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	6
4.4. <i>SOFTWARE AND FIRMWARE</i>	6
4.5. <i>WORST-CASE CONFIGURATION AND MODE</i>	6
4.6. <i>DESCRIPTION OF TEST SETUP</i>	7
4.7. <i>TEST AND MEASUREMENT EQUIPMENT</i>	9
4.7.1. <i>ON TIME, DUTY CYCLE AND MEASUREMENT METHODS LIMITS</i>	10
4.7.2. <i>ON TIME AND DUTY CYCLE RESULTS</i>	10
5. ANTENNA PORT TEST RESULTS	11
5.1. <i>6 dB BANDWIDTH</i>	11
5.2. <i>99% BANDWIDTH</i>	14
5.3. <i>OUTPUT POWER</i>	17
5.4. <i>AVERAGE POWER</i>	20
5.5. <i>POWER SPECTRAL DENSITY</i>	21
5.6. <i>CONDUCTED SPURIOUS EMISSIONS</i>	24
6. RADIATED TEST RESULTS	28
6.1. <i>LIMITS AND PROCEDURE</i>	28
6.2. <i>TX ABOVE 1 GHz FOR BLUETOOTH LOW ENERGY MODE</i>	29
7. WORST-CASE BELOW 1 GHz	43
8. AC POWER LINE CONDUCTED EMISSIONS	46
9. SETUP PHOTOS.....	51

ATTESTATION OF TEST RESULTS

COMPANY NAME: MICROSOFT CORPORATION
ONE MICROSOFT WAY,
REDMOND, WA 98052, USA

EUT DESCRIPTION: HANDHELD COMPUTING DEVICE WITH 802.11 A/B/G/N WLAN
AND BLUETOOTH RADIOS

MODEL: 1572

SERIAL NUMBER: 00107-64520-00570-AA0EM

DATE TESTED: AUGUST 14 - 23, 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 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 By: Tested By:



TIM LEE
WISE PROGRAM MANAGER
UL VERIFICATION SERVICES



THANH NGUYEN
EMC ENGINEER
UL VERIFICATION SERVICES

1. 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.

2. 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 is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

3. CALIBRATION AND UNCERTAINTY

3.1. 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.

3.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

3.3. 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%.

4. EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF EUT

The EUT is a handheld computing device with 802.11 a/b/g/n WLAN and Bluetooth radios.

4.2. 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	BLE	2.47	1.77

4.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a monopole antenna, with a maximum gain of 3.1 dBi.

4.4. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Window RT 8.1 Preview Build 943

The test utility software used during testing was Laptool 189.1.0.9.0\ WIFI Tool.exe

4.5. WORST-CASE CONFIGURATION AND MODE

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

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

4.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
USB Ethernet Adaptor	CISCO	USB 300M	CU90MC02233	DoC
Laptop	Lenovo	L420	7854CT0	DoC
AC Adaptor (laptop)	Lenovo	92P1156	111S92P1156ZDXN272091	N/A

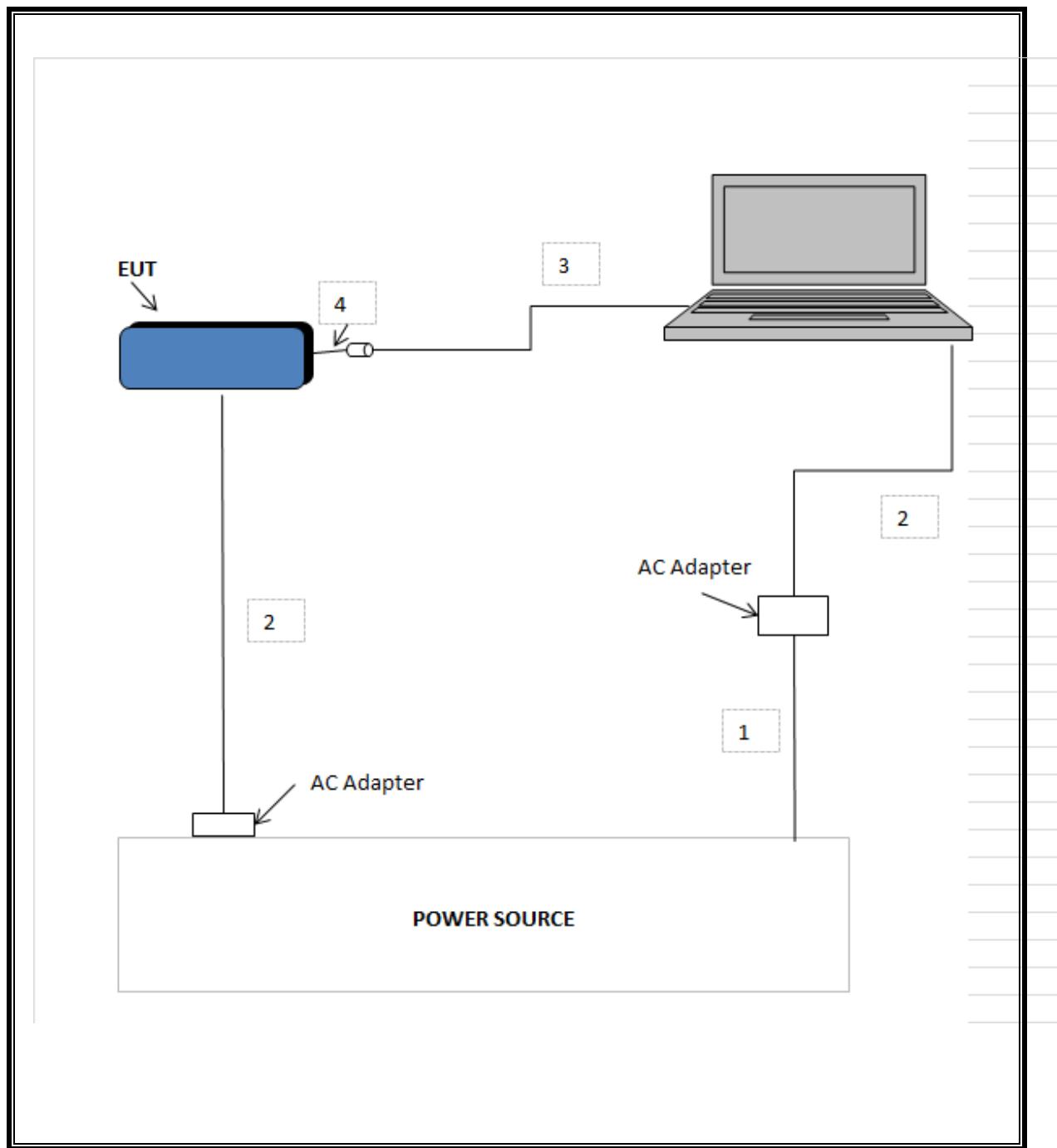
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Unshielded	1.8	AC adapter
2	USB	1	USB	Unshielded	0.1	USB to Ethernet adapter
3	DC	1	DC	Unshielded	1.8	
4	Ethernet	1	RJ 45	Unshielded	7.62	Connects to USB adapter

TEST SETUP

The EUT is a standalone wireless handheld computing device. Test software exercised the wireless module installed within the device under test.

SETUP DIAGRAM FOR TESTS



4.7. TEST AND MEASUREMENT EQUIPMENT

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

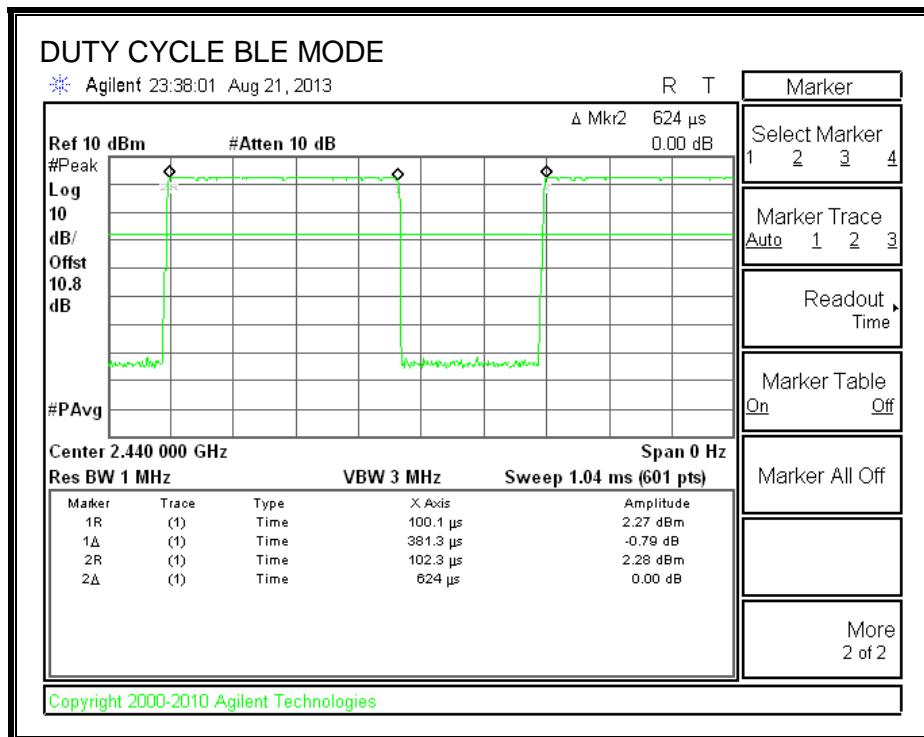
Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Antenna, Horn, 18 GHz	EMCO	3115	C00872	09/20/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	05/21/14
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRC13192	N02683	CNR
Antenna, Horn, 26.5 GHz	ARA	SWH-28	C01015	04/23/14
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	10/21/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/21/13
Bilog 30-1000MHz	Sunol	JB1	C01011	03/28/14
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	01/14/14
Power meter	Agilent	N119A	T198	12/13/13
Power Sensor	Agilent	E9323A	T397	04/02/14
Spectrum Analyzer, 26 GHz	Agilent / HP	E4440A	C01176	12/13/13

4.7.1. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS LIMITS

None; for reporting purposes only.

4.7.2. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
BLE	0.381	0.624	0.611	61.1%	2.14



5. ANTENNA PORT TEST RESULTS

5.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

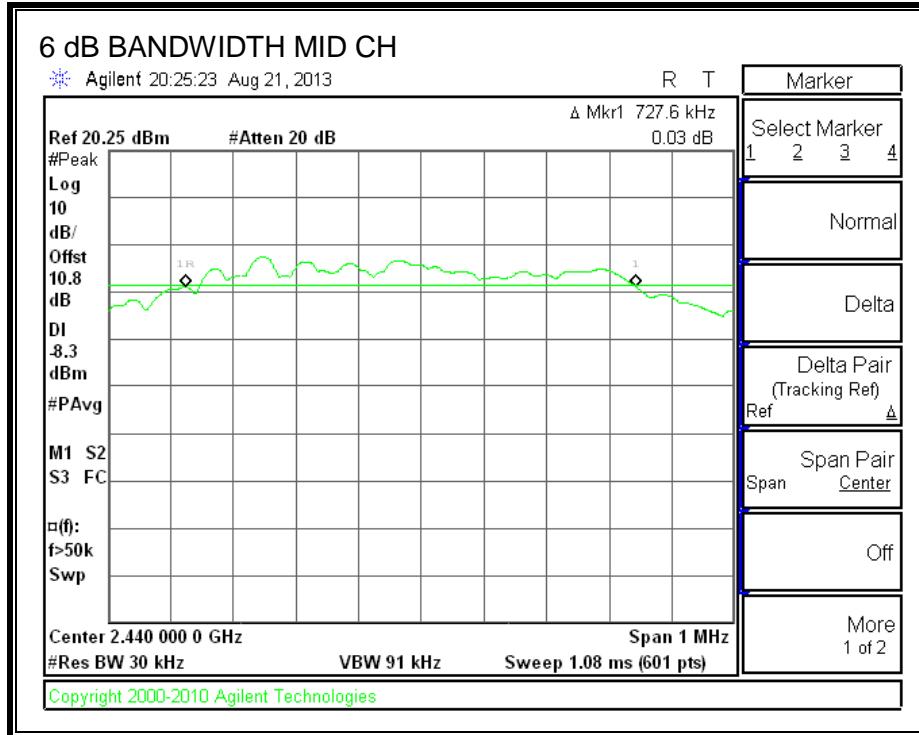
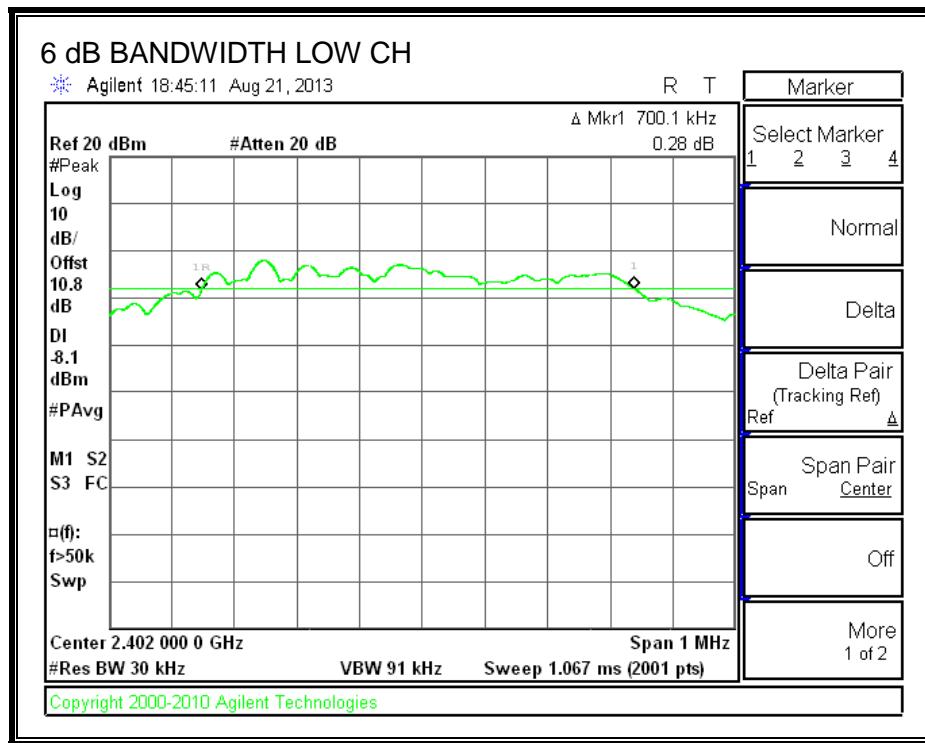
TEST PROCEDURE

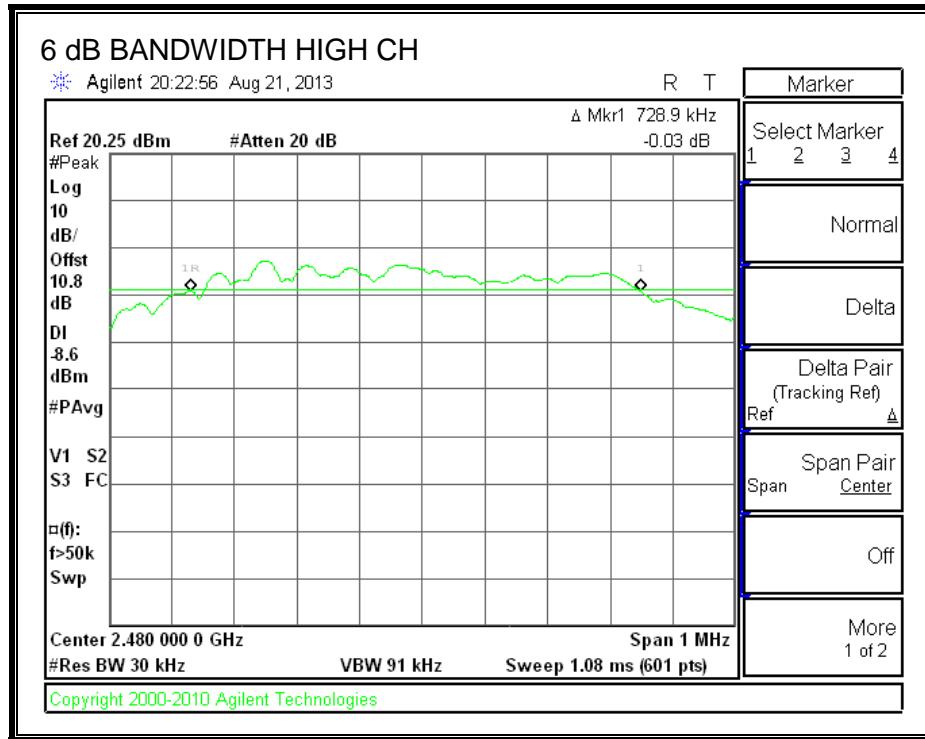
KDB 558074 D01 v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (MHz)
Low	2402	700.1000	0.5
Middle	2440	727.6000	0.5
High	2480	728.9000	0.5

6 dB BANDWIDTH





5.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

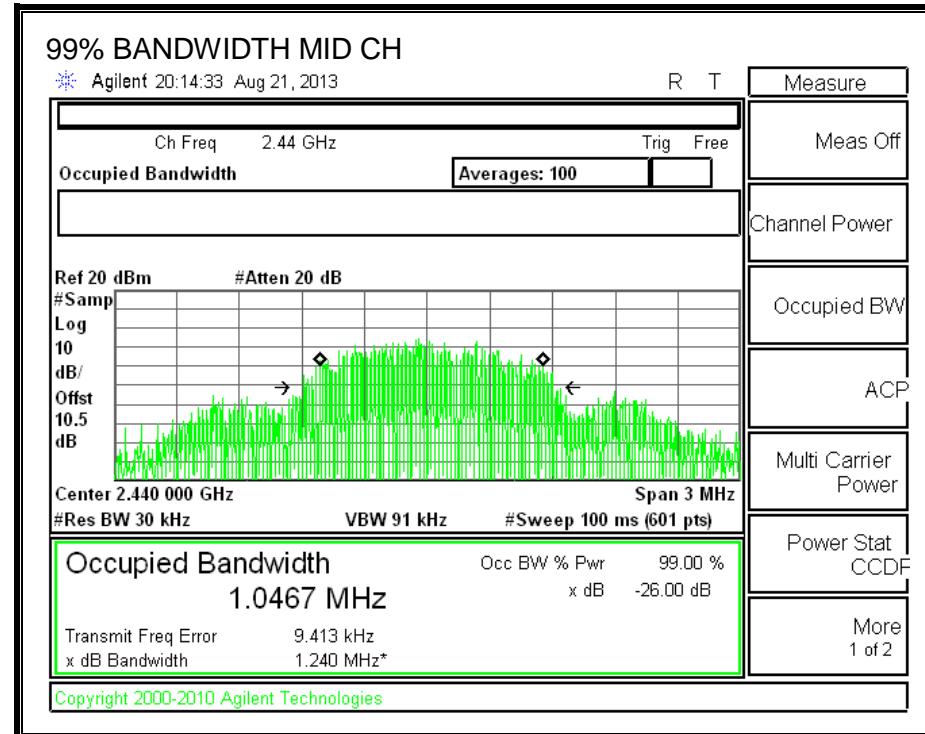
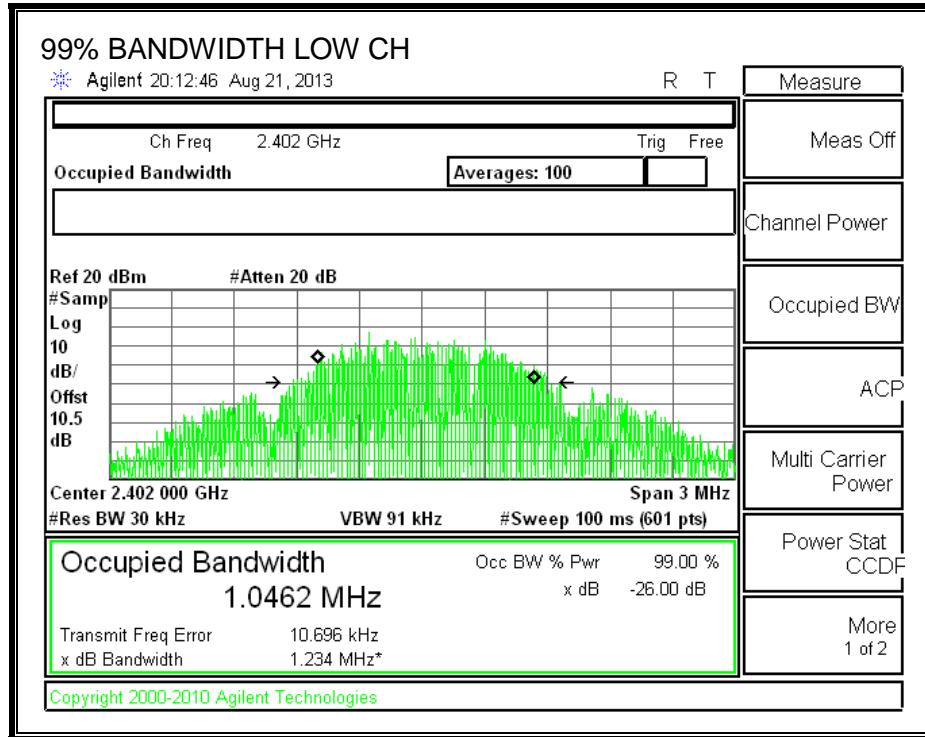
TEST PROCEDURE

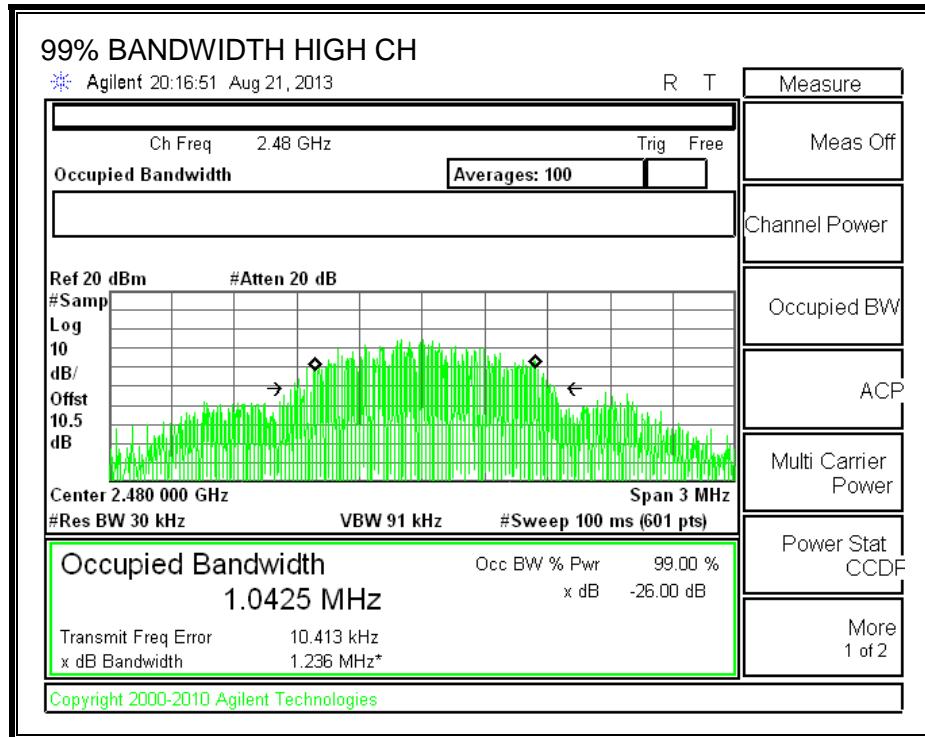
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0462
Middle	2440	1.0467
High	2480	1.0425

99% BANDWIDTH





5.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

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

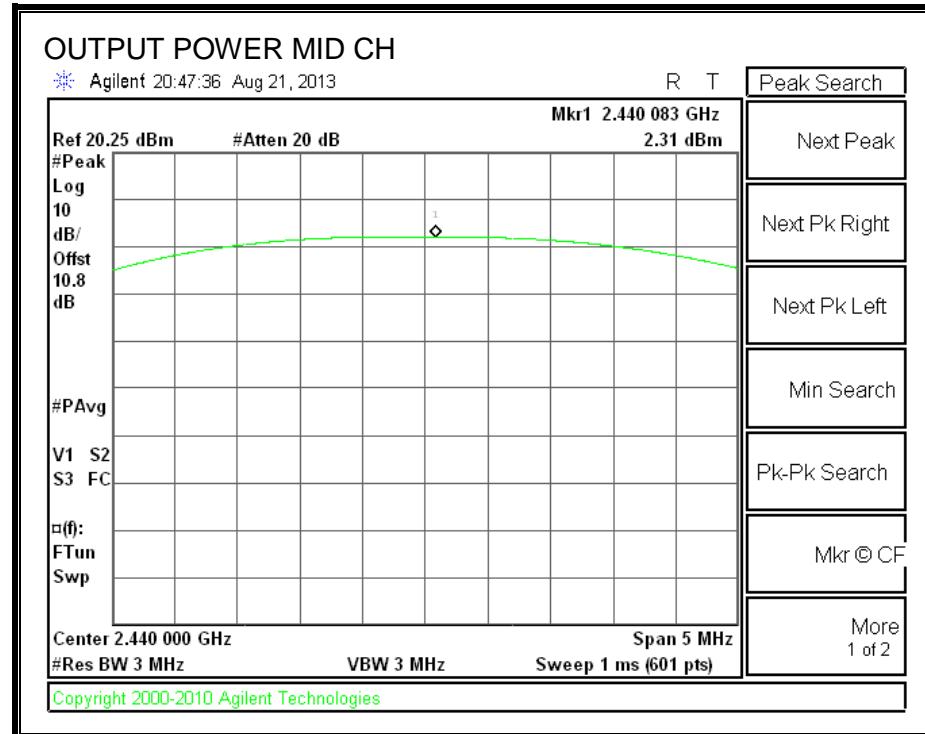
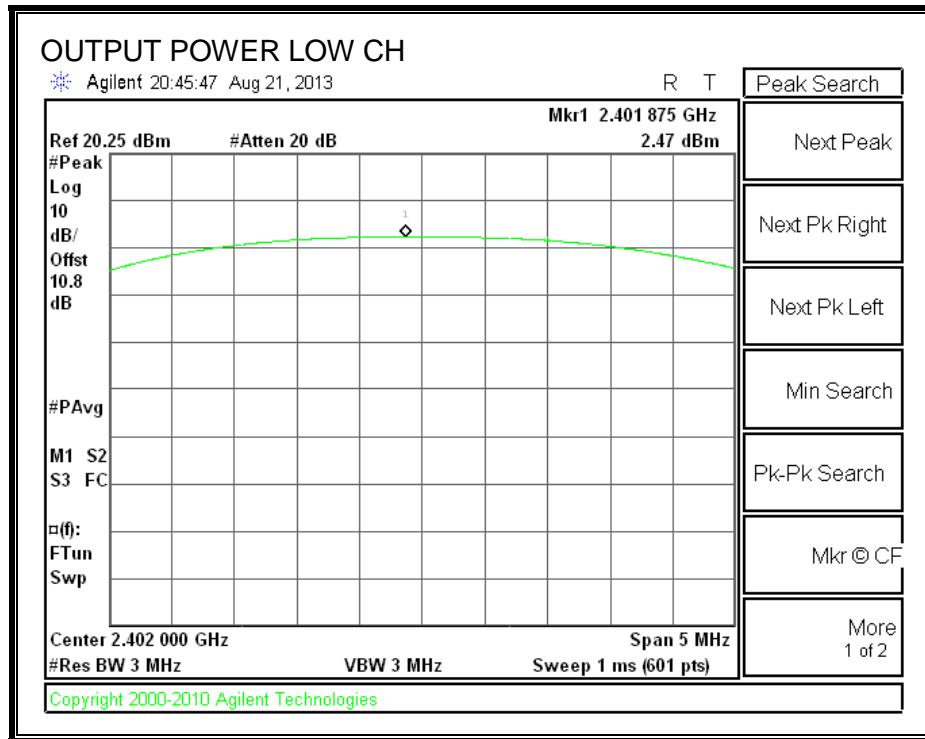
TEST PROCEDURE

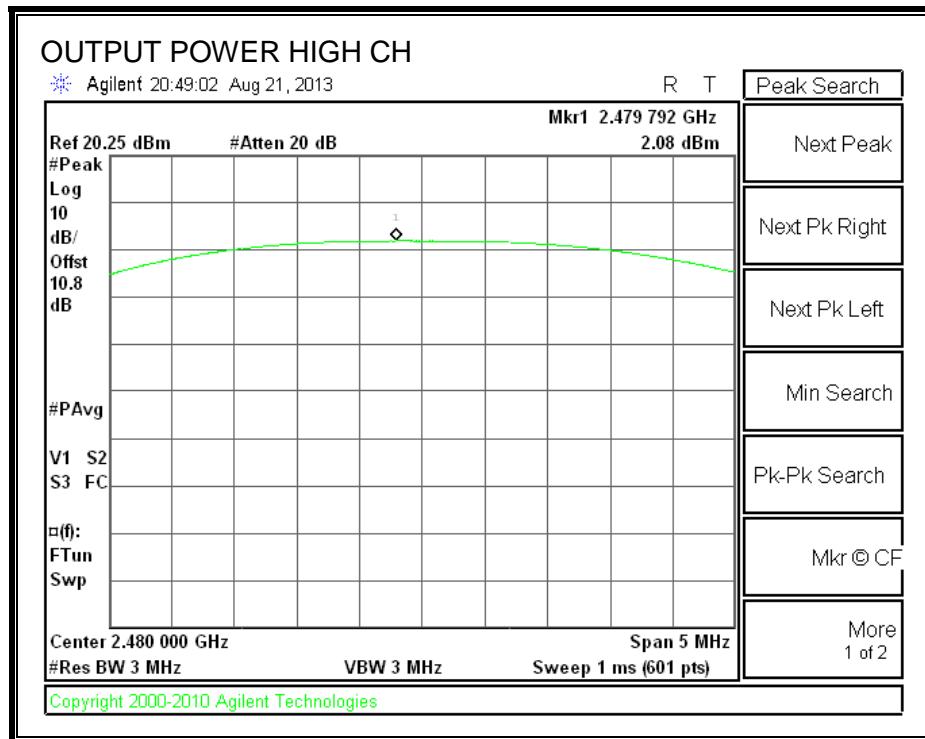
KDB 558074 D01 v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	2.47	30	-27.530
Middle	2440	2.31	30	-27.690
High	2480	2.08	30	-27.920

OUTPUT POWER





5.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.75 dB (including 10 dB pad and 0.75 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	2.29
Middle	2440	2.14
High	2480	1.96

5.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

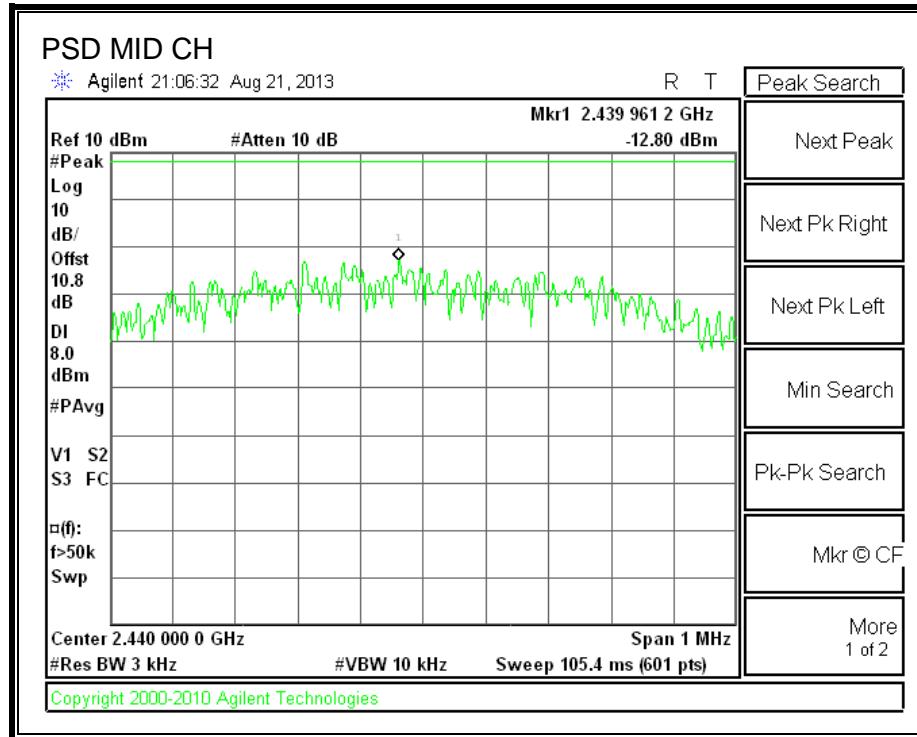
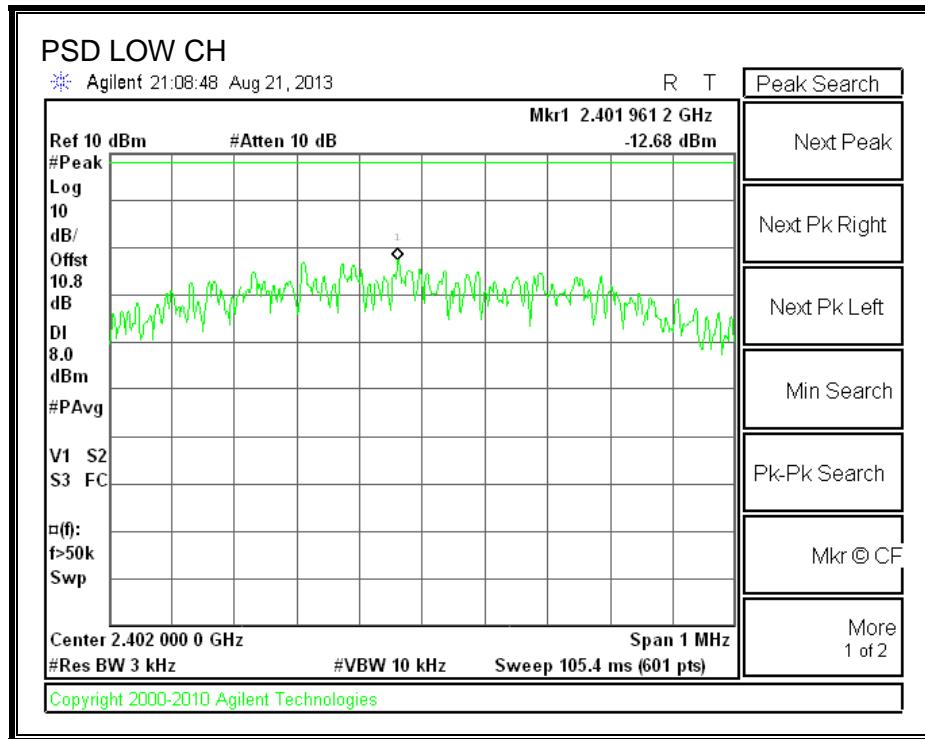
TEST PROCEDURE

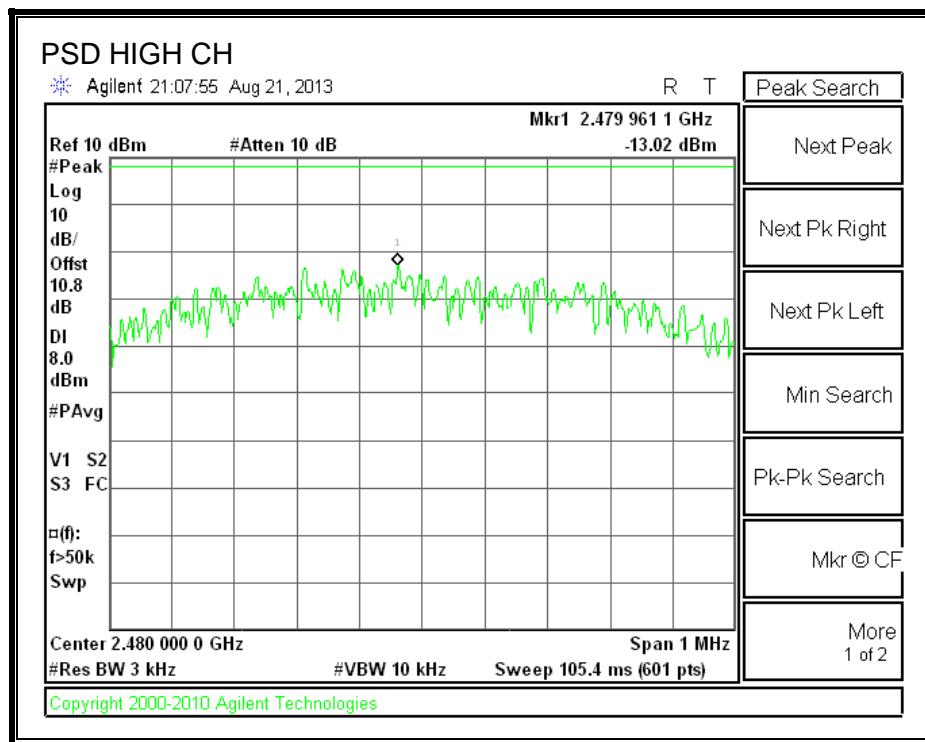
KDB 558074 D01 v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-10.85	8	-18.85
Middle	2440	-11.52	8	-19.52
High	2480	-12.27	8	-20.27

POWER SPECTRAL DENSITY





5.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

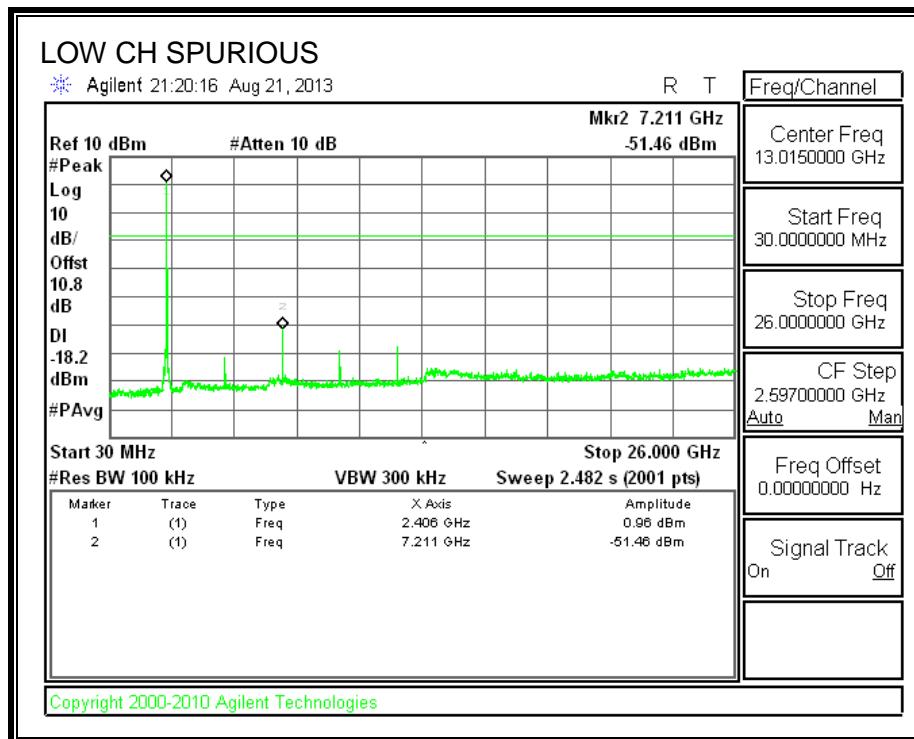
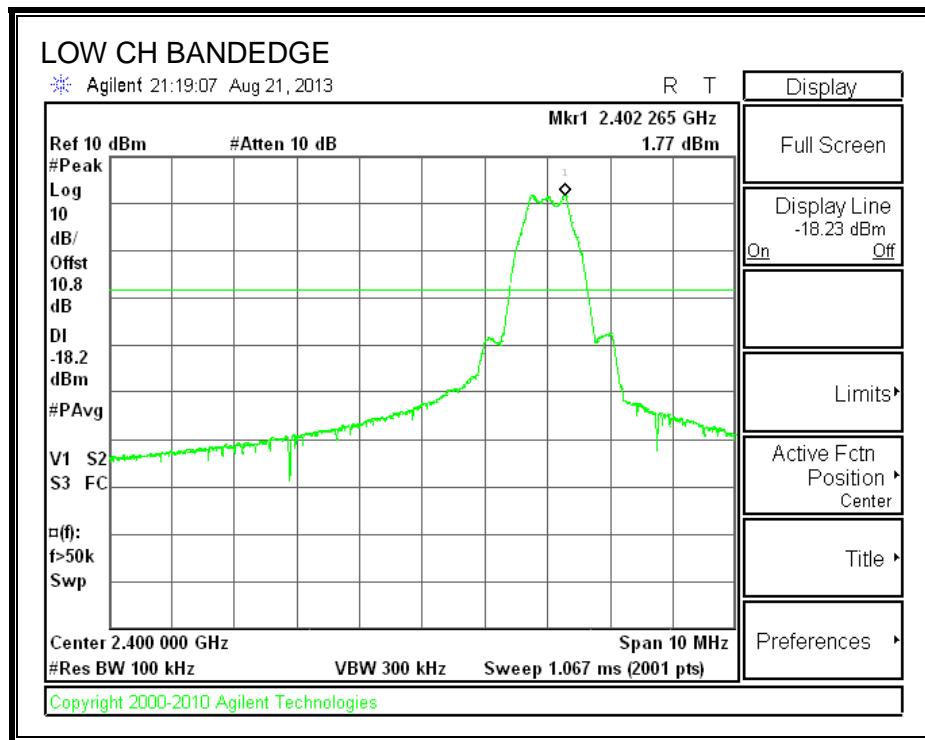
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

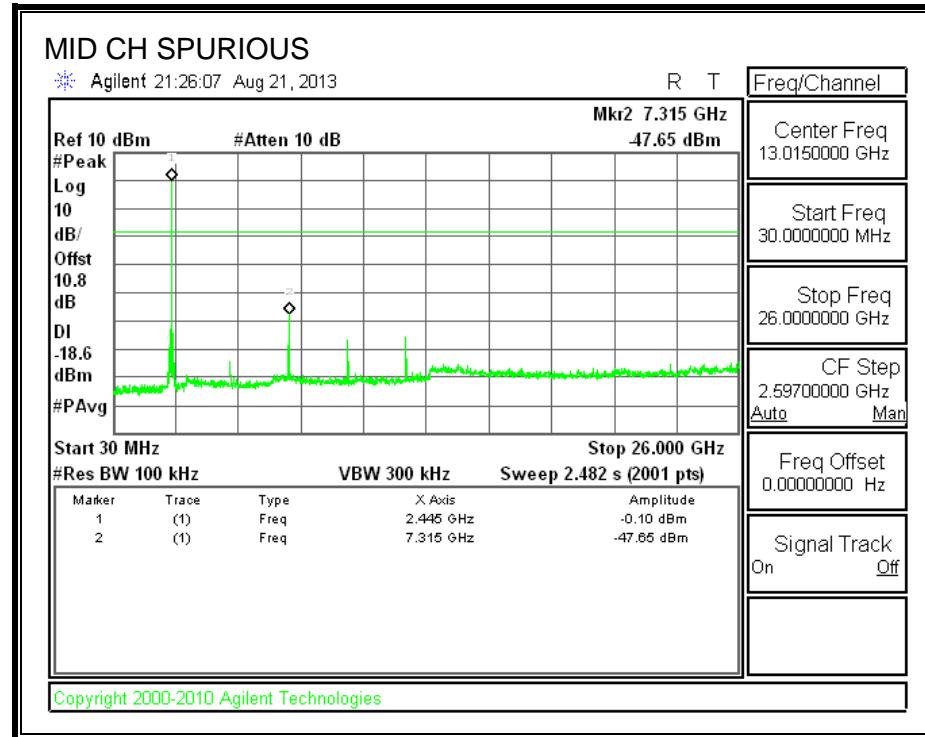
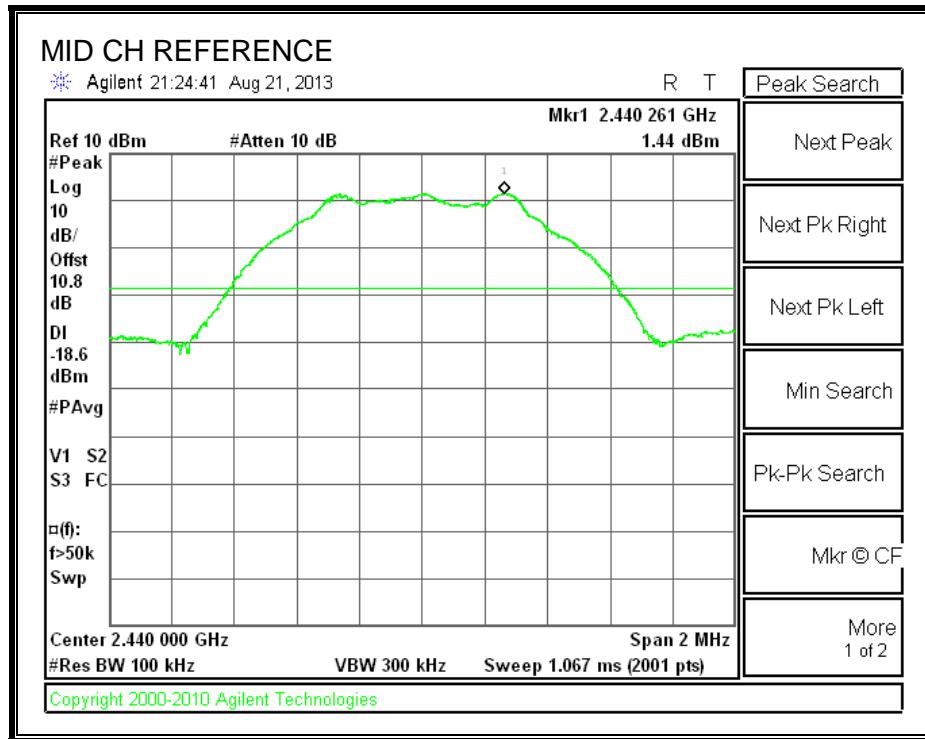
KDB 558074 D01 v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

RESULTS

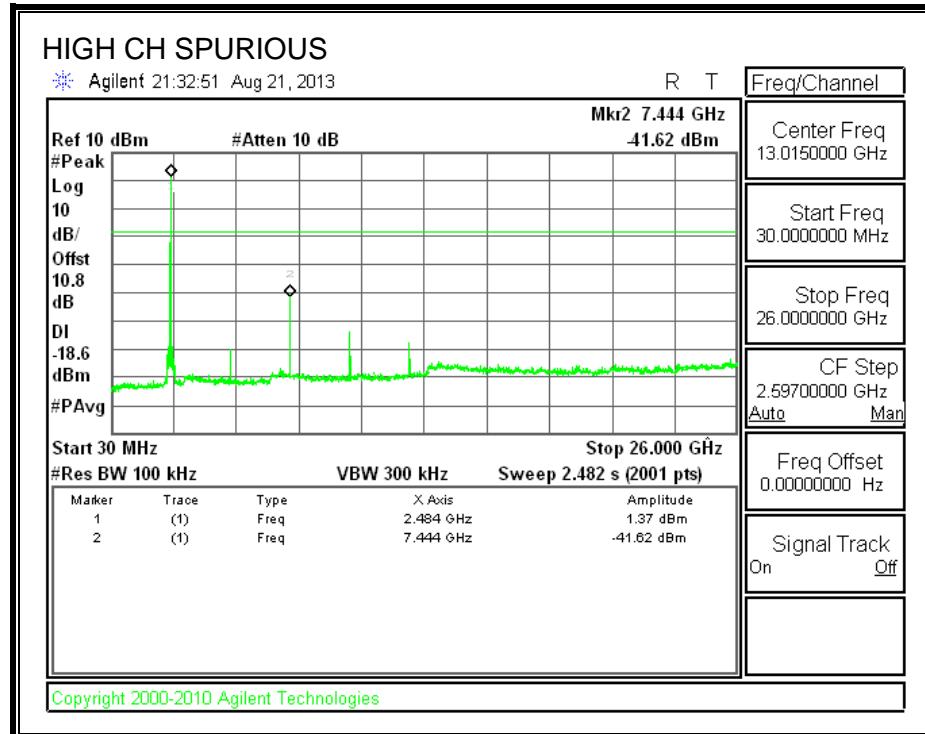
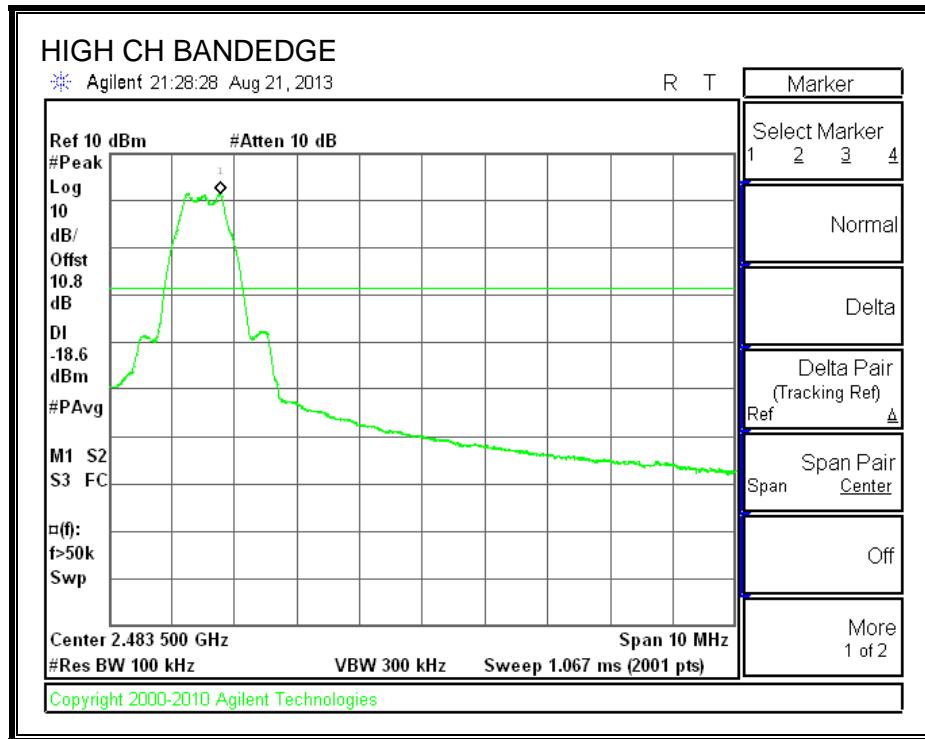
SPURIOUS EMISSIONS, LOW CHANNEL



SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



6. RADIATED TEST RESULTS

6.1. 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, video bandwidth is set to 3 MHz, then Peak detection mode is set for peak measurements and Avg detection mode is used for average measurements.

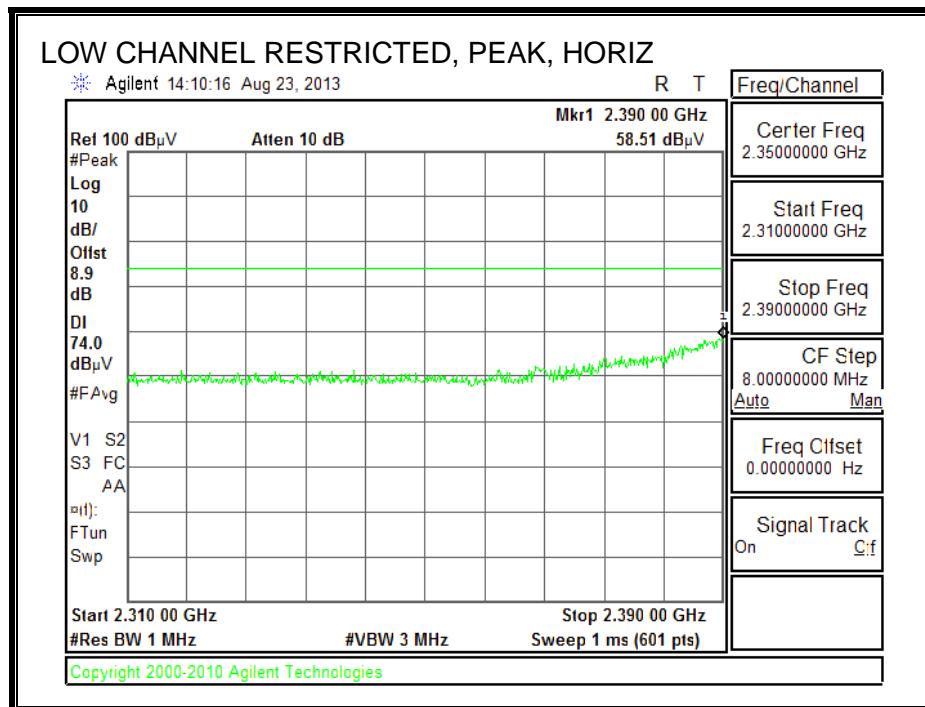
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

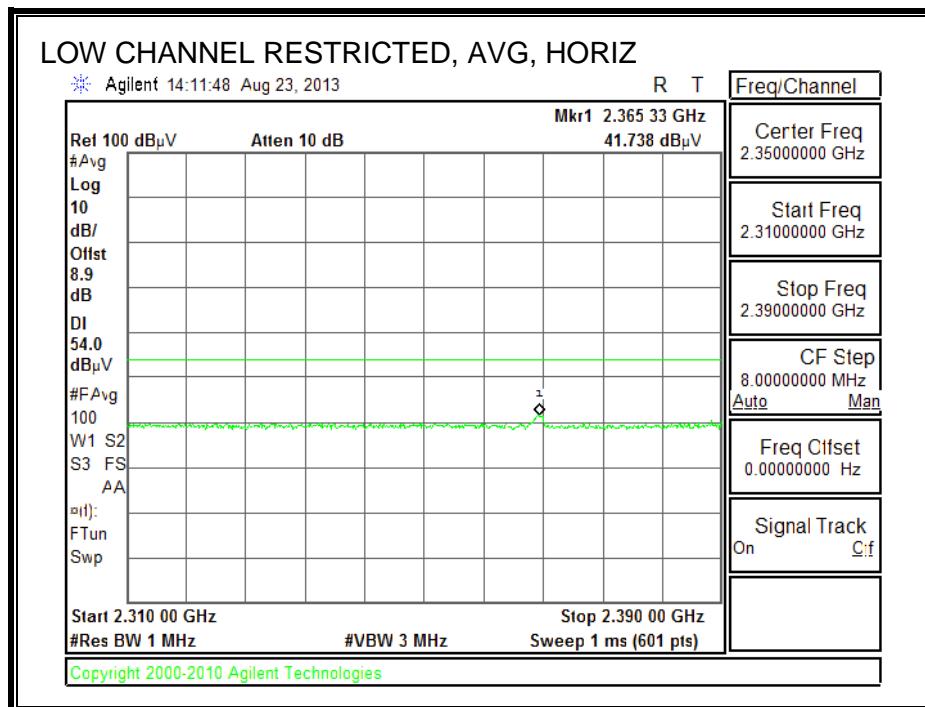
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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

6.2. TX ABOVE 1 GHz FOR BLUETOOTH LOW ENERGY MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



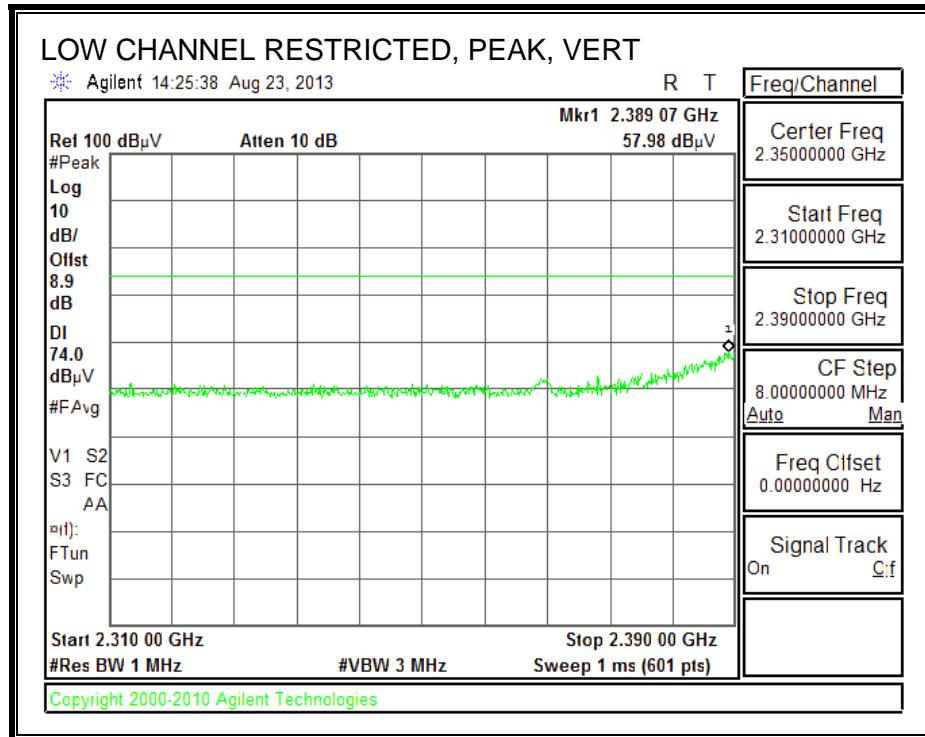


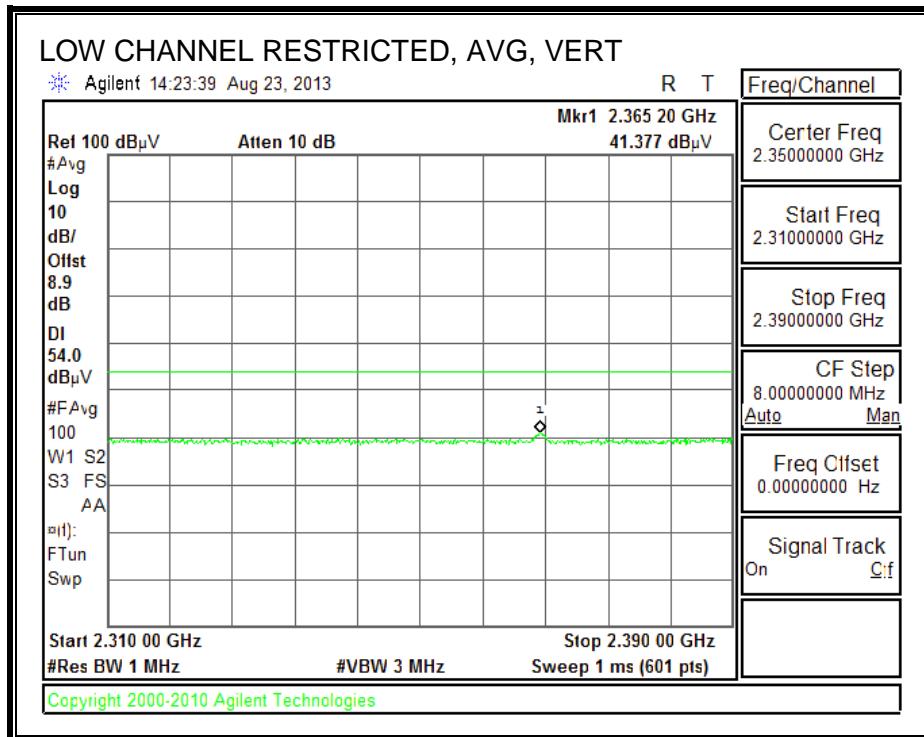
AVERAGE FIELD STRENGTH CALCULATION:

$$\begin{aligned}\text{AVG Field Strength} &= \text{Avg Reading} + \text{Duty Cycle Correction Factor} \\ &= 41.738 \text{ dBuV/m} + 2.14 \text{ dBm} \\ &= 43.868 \text{ dBuVm}\end{aligned}$$

$$\begin{aligned}\text{AVG Margin} &= \text{AVE Reading} - \text{AVE Power Limit} \\ &= 43.868 \text{ dBuV/m} - 54 \text{ dBuV/m} \\ &= -10.13 \text{ dBm}\end{aligned}$$

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



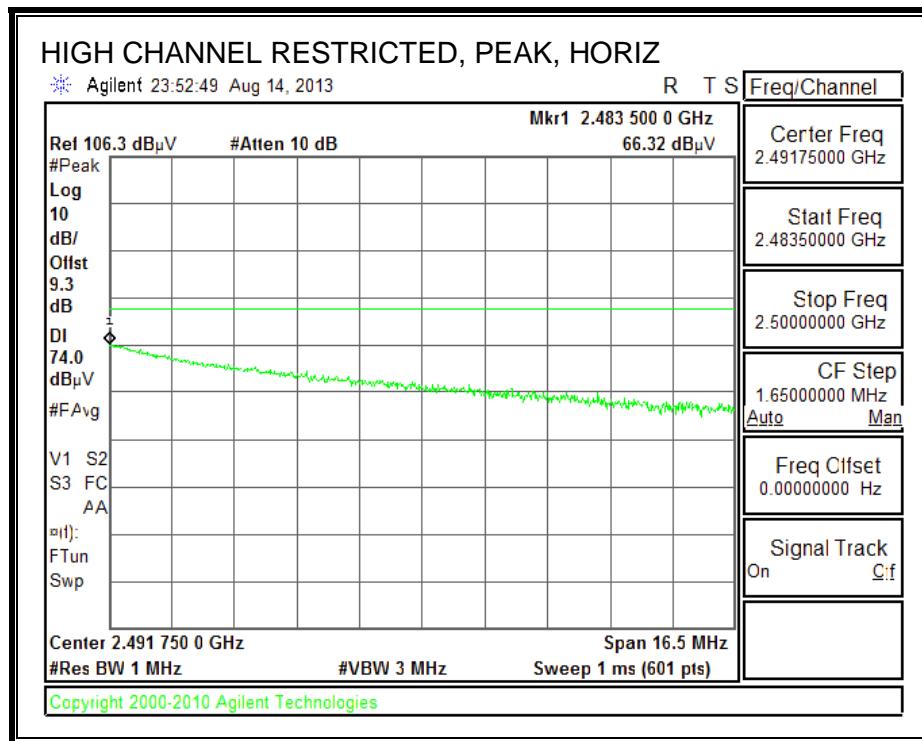


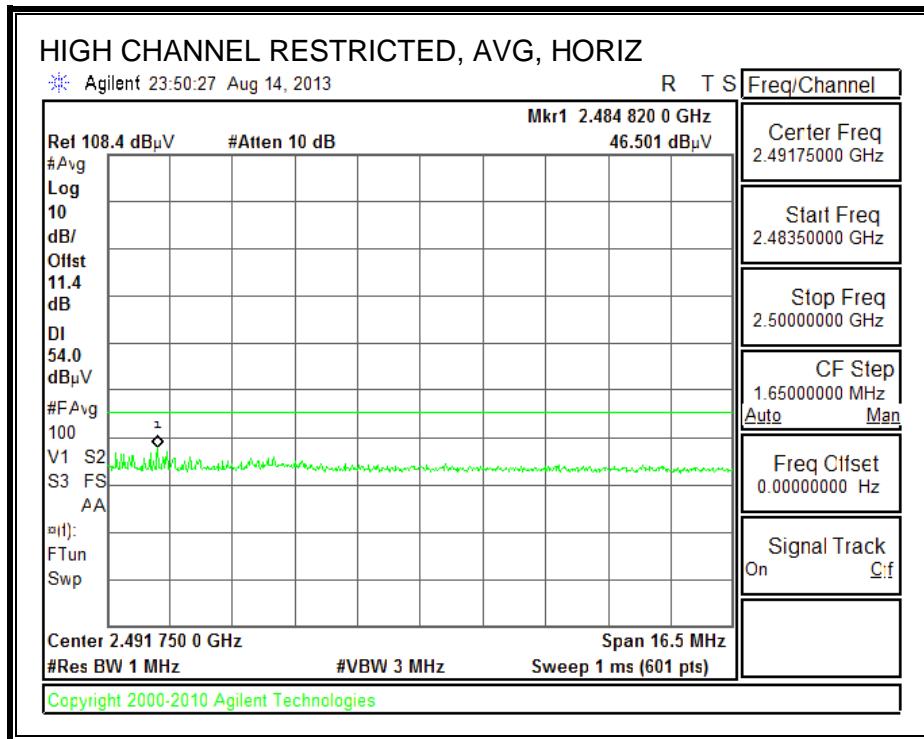
AVERAGE FIELD STRENGTH CALCULATION:

$$\begin{aligned}\text{AVG Field Strength} &= \text{Avg Reading} + \text{Duty Cycle Correction Factor} \\ &= 41.377 \text{ dBuV/m} + 2.14 \text{ dBm} \\ &= 43.517 \text{ dBuV/m}\end{aligned}$$

$$\begin{aligned}\text{AVG Margin} &= \text{AVE Reading} - \text{AVE Power Limit} \\ &= 43.517 \text{ dBuV/m} - 54 \text{ dBuV/m} \\ &= -10.48 \text{ dBm}\end{aligned}$$

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



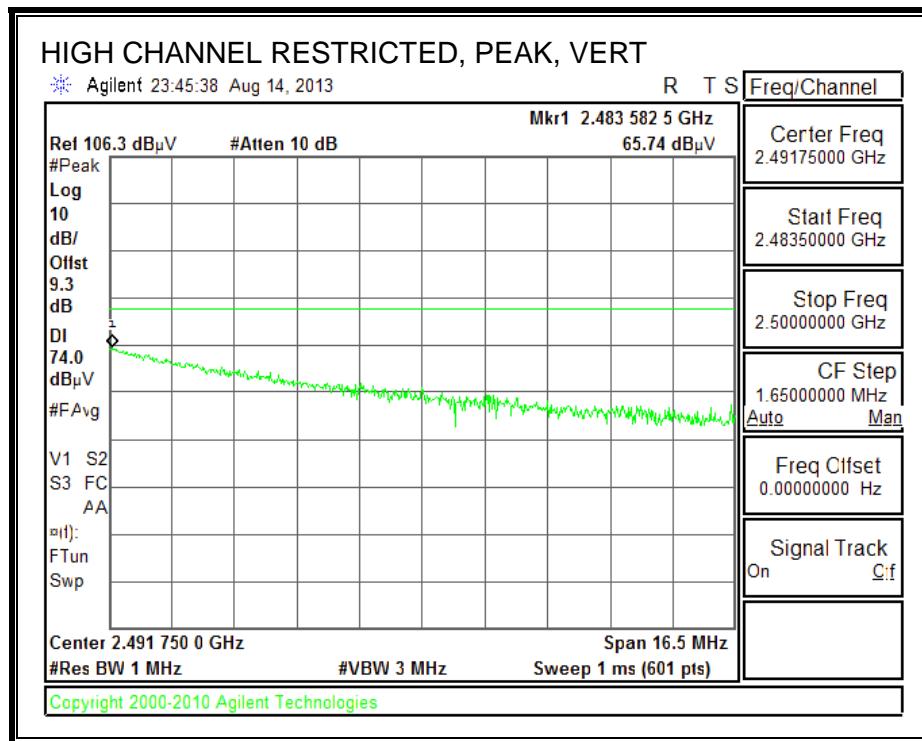


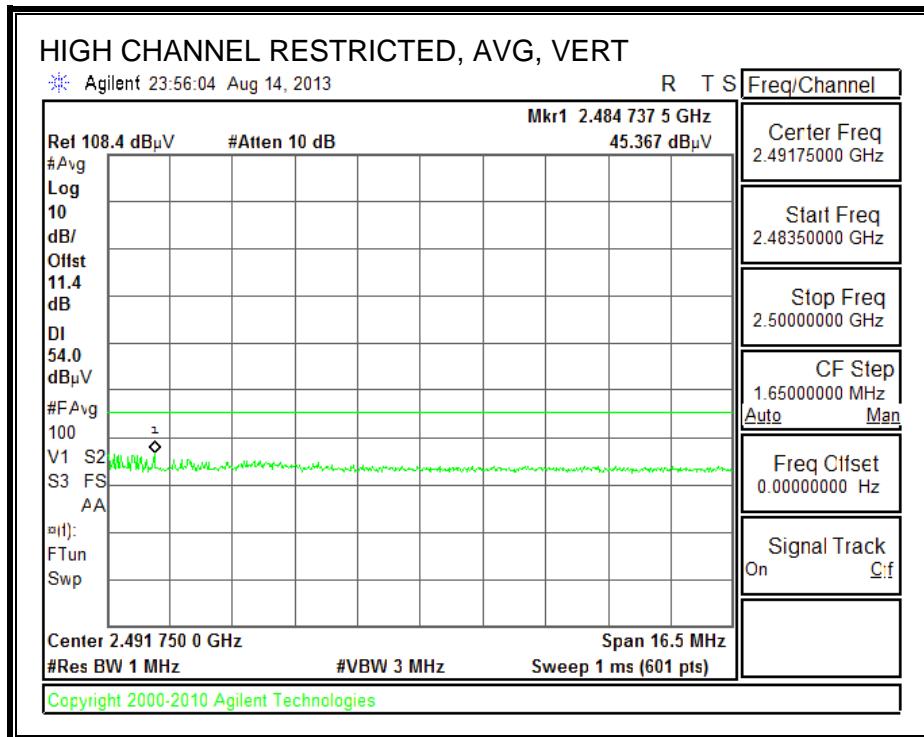
AVERAGE FIELD STRENGTH CALCULATION:

$$\begin{aligned}\text{AVG Field Strength} &= \text{Avg Reading} + \text{Duty Cycle Correction Factor} \\ &= 46.501 \text{ dBuV/m} + 2.14 \text{ dBm} \\ &= 48.641 \text{ dBuV/m}\end{aligned}$$

$$\begin{aligned}\text{AVG Margin} &= \text{AVE Reading} - \text{AVE Power Limit} \\ &= 48.641 \text{ dBuV/m} - 54 \text{ dBuV/m} \\ &= -5.36 \text{ dBm}\end{aligned}$$

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





AVERAGE FIELD STRENGTH CALCULATION:

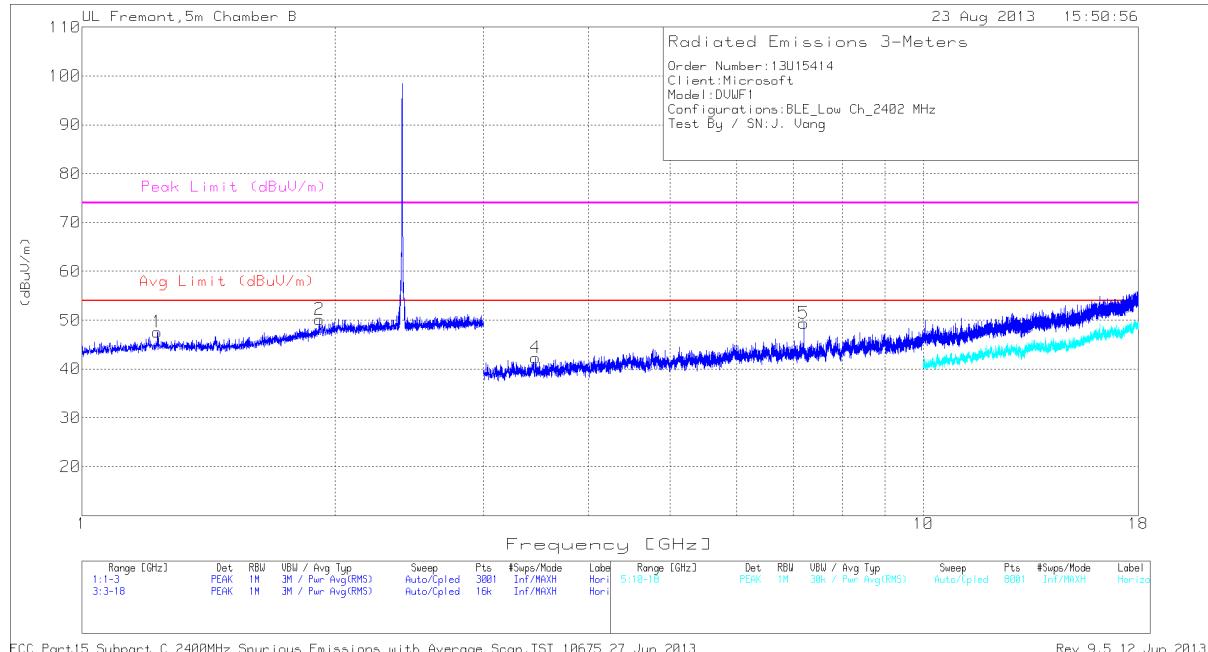
$$\begin{aligned}\text{AVG Field Strength} &= \text{Avg Reading} + \text{Duty Cycle Correction Factor} \\ &= 45.367 \text{ dBuV/m} + 2.14 \text{ dBm} \\ &= 47.507 \text{ dBuV/m}\end{aligned}$$

$$\begin{aligned}\text{AVG Margin} &= \text{AVE Reading} - \text{AVE Power Limit} \\ &= 47.507 \text{ dBuV/m} - 54 \text{ dBuV/m} \\ &= -6.49 \text{ dBm}\end{aligned}$$

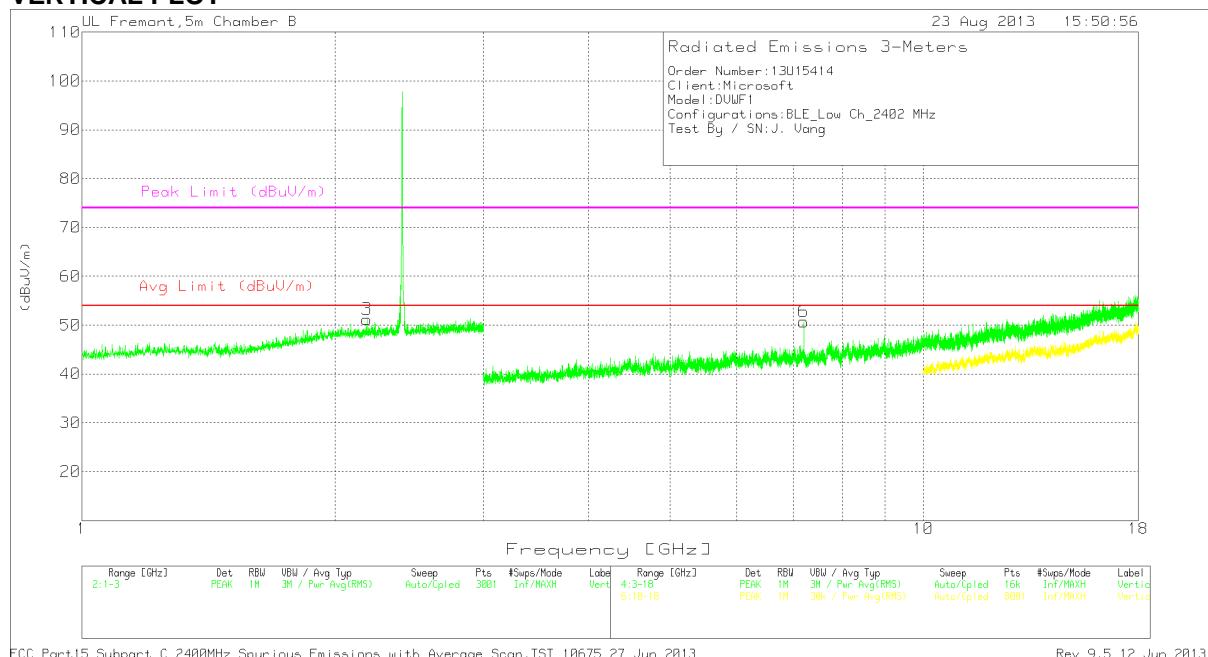
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, 2402 MHz

HORIZONTAL PLOT



VERTICAL PLOT



LOW CHANNEL DATA

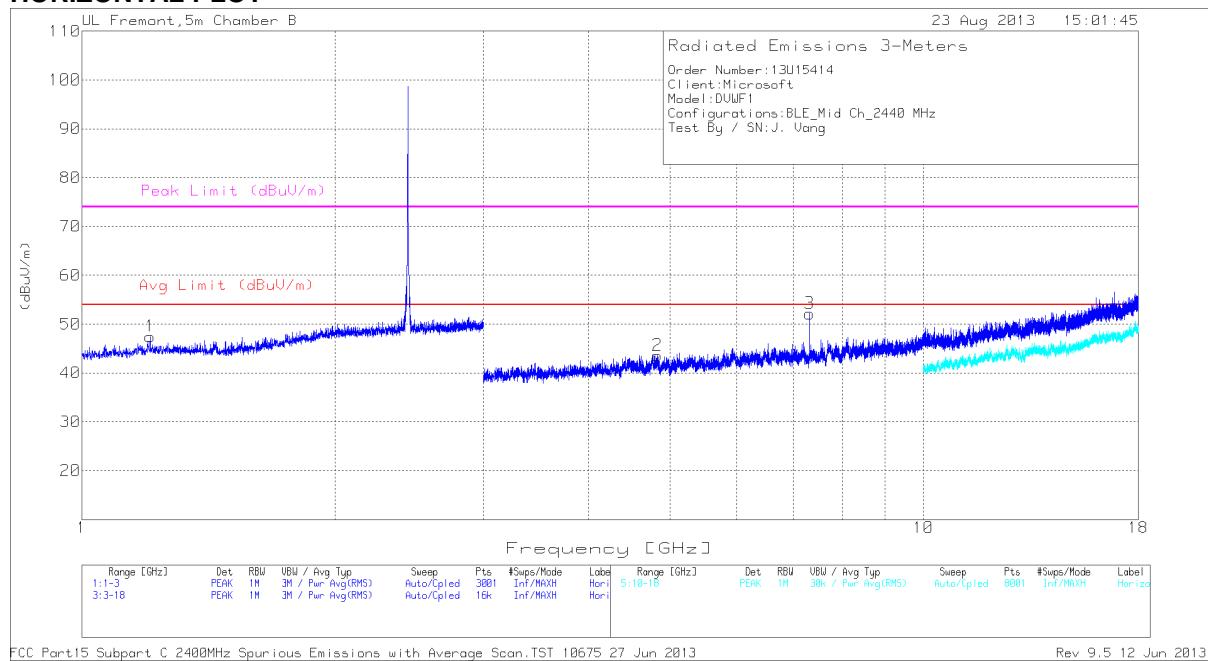
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.229	44.14	PK	28.5	-25.1	47.54	53.97	-6.43	74	-26.46	0-360	200	H
1.915*	43.05	PK	31.2	-24.1	50.15	-	-	68.2	-18.05	0-360	200	H
2.181*	42.86	PK	32	-23.7	51.16	-	-	68.2	-17.04	0-360	200	V
3.46	40.6	PK	33.2	-31.5	42.3	53.97	-11.67	74	-31.7	0-360	100	H
7.206*	40.65	PK	35.8	-27.1	49.35	-	-	68.2	-18.85	0-360	200	H
7.205*	42.11	PK	35.8	-27.2	50.71	-	-	68.2	-17.49	0-360	100	V

PK - Peak detector

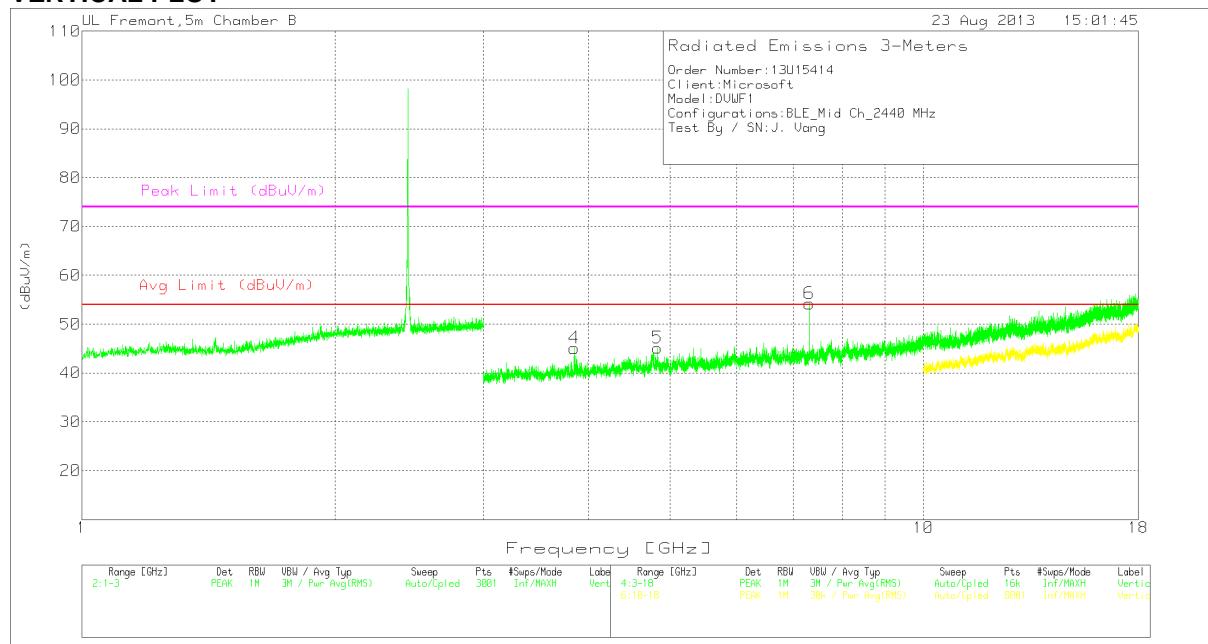
*-Non-Restrictive Band

MID CHANNEL, 2440 MHz

HORIZONTAL PLOT



VERTICAL PLOT



MID CHANNEL DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.205	44.27	PK	28.4	-25.2	47.47	53.97	-6.5	74	-26.53	0-360	100	H
4.831	38.85	PK	34.7	-30	43.55	53.97	-10.42	74	-30.45	0-360	100	H
7.32	44.44	PK	35.9	-28.2	52.14	53.97	-1.83	74	-21.86	0-360	100	H
3.847	41.98	PK	33.8	-30.7	45.08	53.97	-8.89	74	-28.92	0-360	200	V
4.831	40.42	PK	34.7	-30	45.12	53.97	-8.85	74	-28.88	0-360	100	V
7.319	46.52	PK	35.9	-28.2	54.22	53.97	0.25	74	-19.78	0-360	100	V

PK - Peak detector

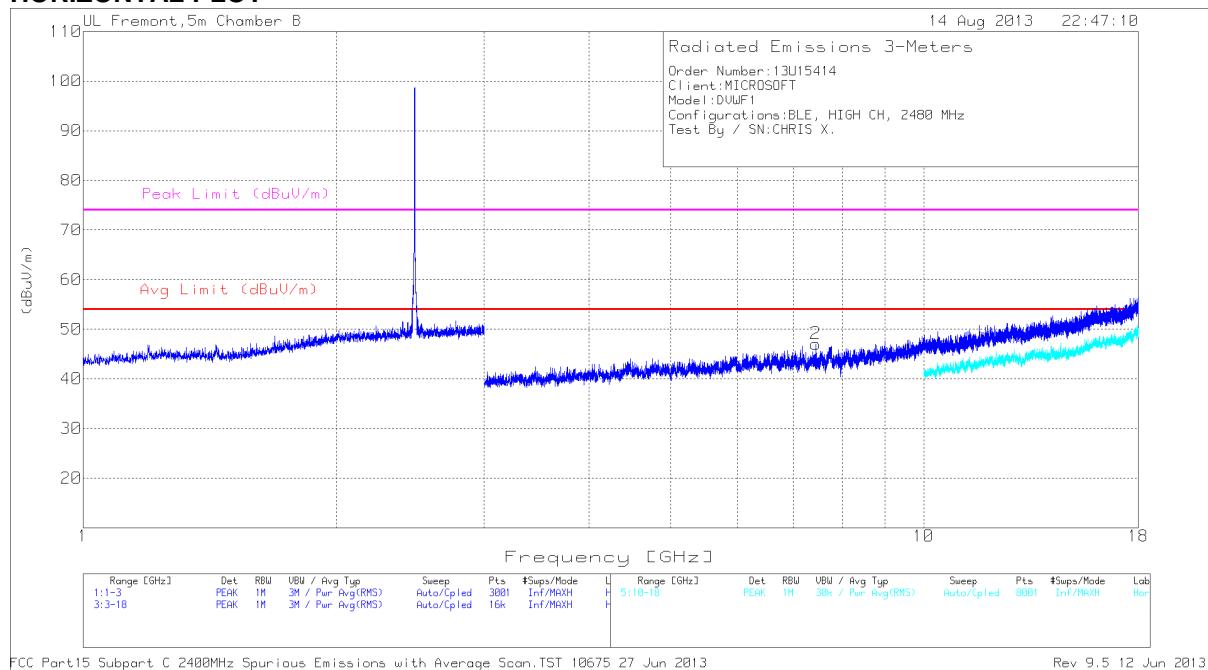
Average Measurements

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7.321	34.7	MAv1	35.9	-28.2	42.4	53.97	-11.57	-	-	334	110	H
7.321	38.21	MAv1	35.9	-28.2	45.91	53.97	-8.06	-	-	0	104	V

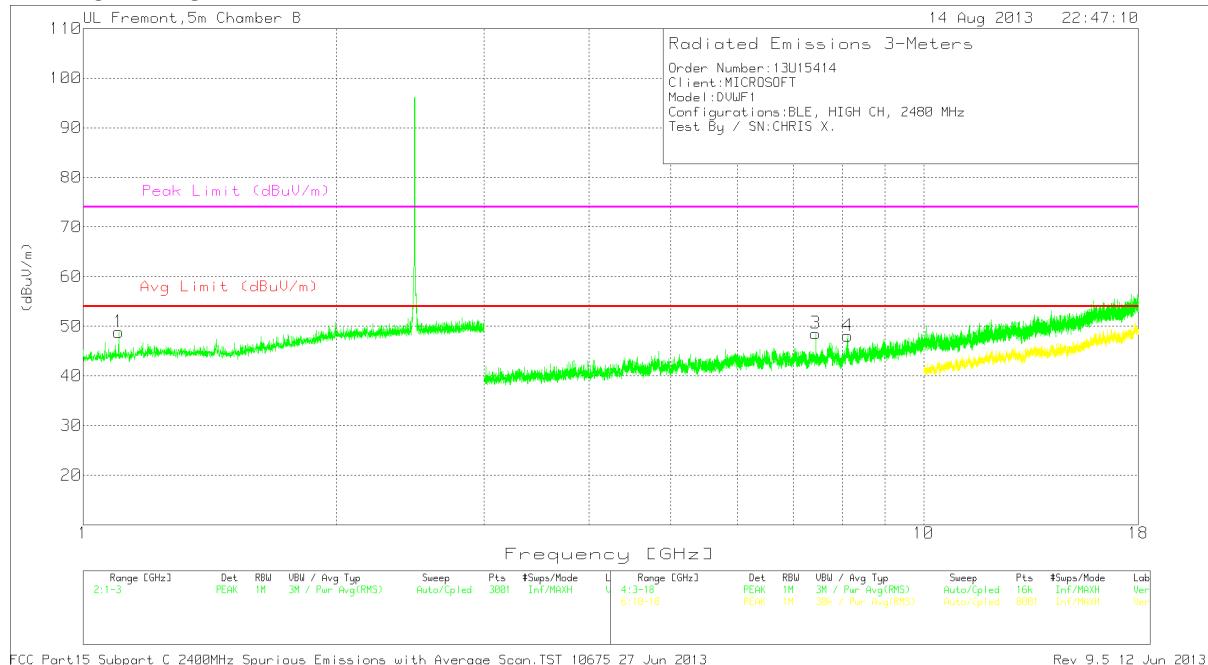
MAv1 - Maximum RMS Average

HIGH CHANNEL, 2480 MHz

HORIZONTAL PLOT



VERTICAL PLOT



HIGH CHANNEL DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.103	46.25	PK	27.9	-25.3	48.85	53.97	-5.12	74	-25.15	0-360	100	V
7.441	37.63	PK	36	-26.6	47.03	53.97	-6.94	74	-26.97	0-360	200	H
7.439	39.24	PK	36	-26.7	48.54	53.97	-5.43	74	-25.46	0-360	100	V
8.12	37.87	PK	36.1	-25.9	48.07	53.97	-5.9	74	-25.93	0-360	200	V

PK - Peak detector

Average Measurements

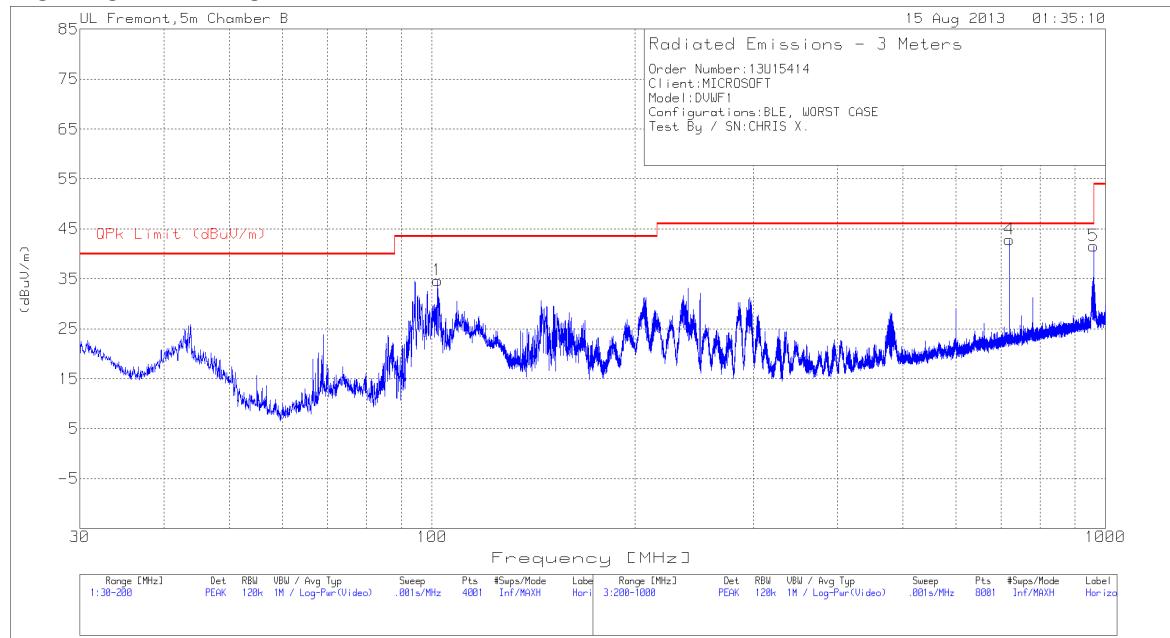
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.101	32.89	MAv1	27.9	-25.3	35.49	53.97	-18.48	74	-38.51	263	327	V
7.44	27.18	MAv1	36	-26.6	36.58	53.97	-17.39	74	-37.42	280	323	V
8.126	26.63	MAv1	36.1	-26.2	36.53	53.97	-17.44	74	-37.47	3	249	V

MAv1 - Maximum RMS Average

7. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
101.91	52.09	PK	10.6	-28	34.69	43.52	-8.83	0-360	300	H
42.325	53.35	PK	11.8	-28.7	36.45	40	-3.55	0-360	100	V
145.26	50.39	PK	12.6	-27.6	35.39	43.52	-8.13	0-360	100	V
720	47.18	PK	20.3	-24.6	42.88	46.02	-3.14	0-360	100	H
960	41.62	PK	22.7	-22.7	41.62	46.02	-4.4	0-360	100	H
720	42.77	PK	20.3	-24.6	38.47	46.02	-7.55	0-360	200	V
960	39.06	PK	22.7	-22.7	39.06	46.02	-6.96	0-360	200	V

PK - Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
960.032	41.32	QP	22.7	-22.7	41.32	53.97	-12.65	186	102	H

QP - Quasi-Peak detector

8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

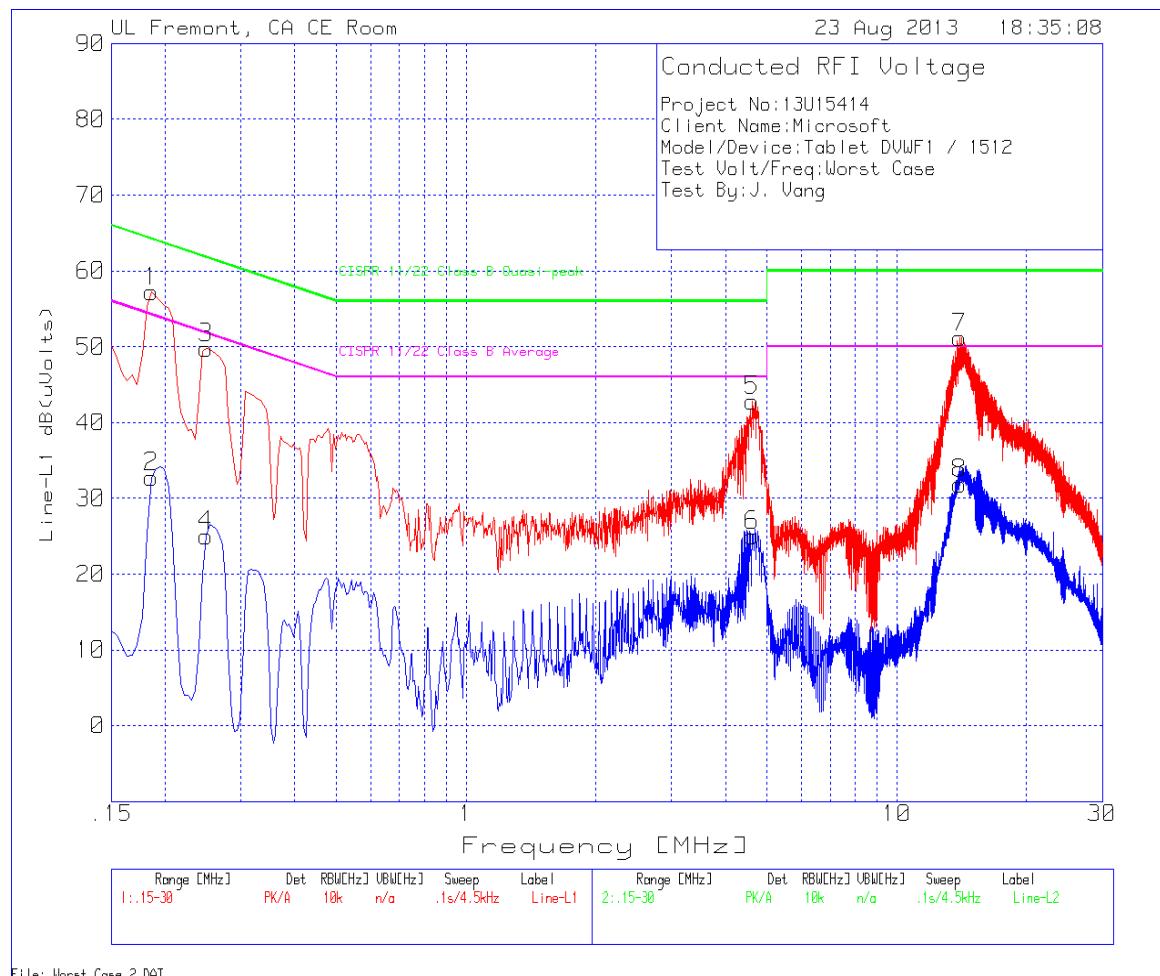
^{*} Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4

RESULTS

LINE 1 RESULTS



DATA SUMMARY

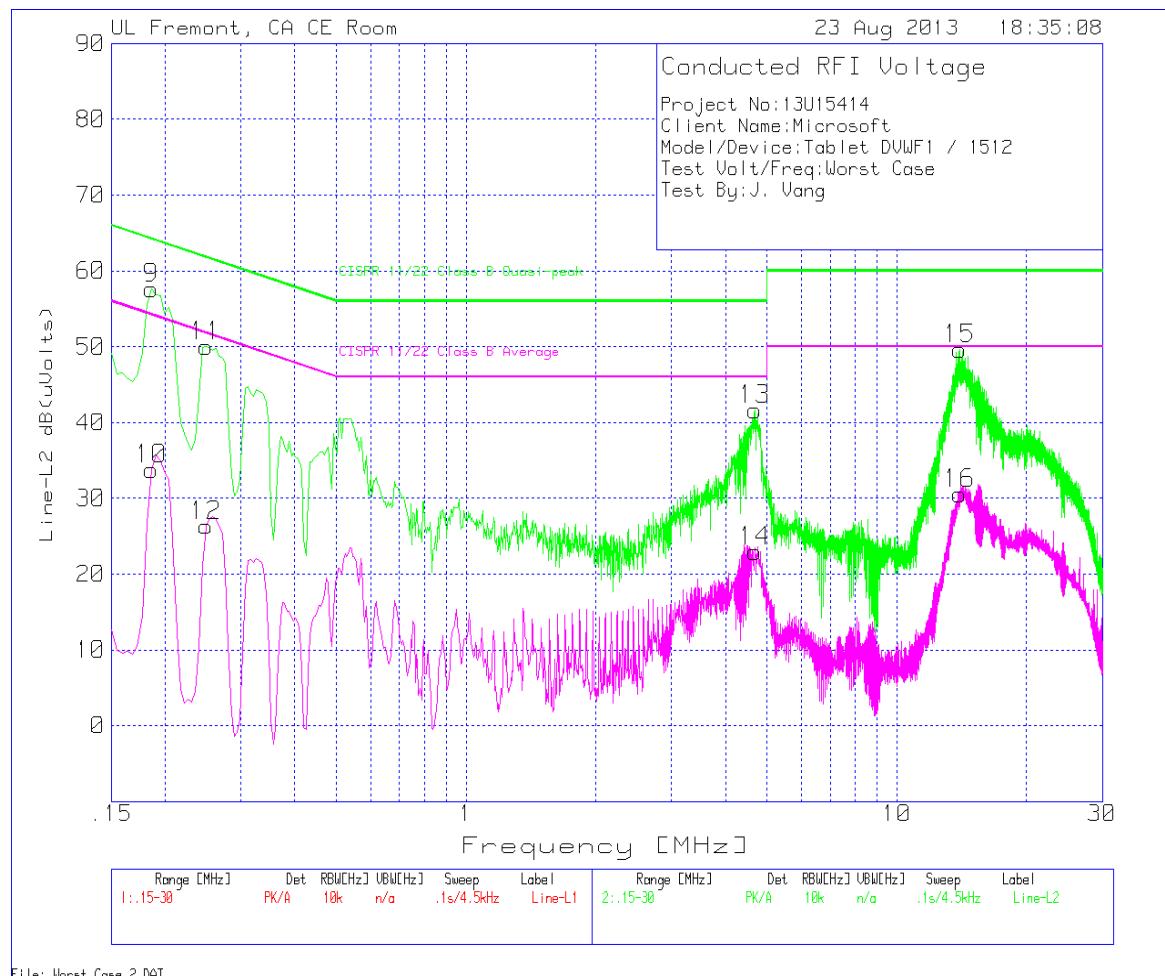
Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
1	.186	57.09	PK	.1	0	57.19	64.2	-7.01	-	-
2	.186	32.63	Av	.1	0	32.73	-	-	54.2	-21.47
3	.249	49.72	PK	.1	0	49.82	61.8	-11.98	-	-
4	.249	24.89	Av	.1	0	24.99	-	-	51.8	-26.81
5	4.623	42.61	PK	.1	.1	42.81	56	-13.19	-	-
6	4.623	24.77	Av	.1	.1	24.97	-	-	46	-21.03
7	14.0145	50.73	PK	.2	.2	51.13	60	-8.87	-	-
8	14.0145	31.43	Av	.2	.2	31.83	-	-	50	-18.17

PK - Peak detector

Av - average detection

LINE 2 RESULTS



DATA SUMMARY

Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
9	.186	57.51	PK	.1	0	57.61	64.2	-6.59	-	-
10	.186	33.68	Av	.1	0	33.78	-	-	54.2	-20.42
11	.249	49.88	PK	.1	0	49.98	61.8	-11.82	-	-
12	.249	26.27	Av	.1	0	26.37	-	-	51.8	-25.43
13	4.6905	41.47	PK	.1	.1	41.67	56	-14.33	-	-
14	4.6905	22.75	Av	.1	.1	22.95	-	-	46	-23.05
15	14.0055	49.21	PK	.2	.2	49.61	60	-10.39	-	-
16	14.0055	30.18	Av	.2	.2	30.58	-	-	50	-19.42

PK - Peak detector

Av - average detection