



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

**BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT**

FOR

802.11abgn 2X2 MIMO + BT/BLE RADIO MODULE

MODEL NUMBER: DWM-W095A

**FCC ID: EW4DWMW095A
IC: 4250A-DWMW095A**

REPORT NUMBER: 13J14910-1_Revision A

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Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: MITSUMI ELECTRIC CO., LTD.
1601, SAKAI, ATSUGI-SHI,
KANAGAWA- KEN, 243-8533 JAPAN

EUT DESCRIPTION: 802.11abgn 2X2 MIMO + BT/BLE RADIO MODULE

MODEL: DWM-W095A

SERIAL NUMBER: B4-29

DATE TESTED: MARCH 29 – JULY 02, 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 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.

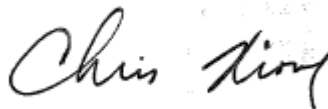
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section.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



FRANK IBRAHIM
WISE PROGRAM MANAGER
UL Verification Services Inc.



CHRIS XIONG
EMC ENGINEER
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.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsenc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11abgn 2X2 MIMO + BT/BLE Radio Module

The radio module is manufactured by Mitsumi.

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	BT LOW ENERGY	9.51	8.93

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of 3.0 dBi

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during was testing
BCM4324B3_002.004.006.0012.0017.hcd.

The test utility software used during testing was Bluetool, rev.1.6.1.5.

5.5. WORST-CASE CONFIGURATION

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.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Fujitsu	Q2010	R6609927	DoC
AC Adaptor	Fujitsu	SEC80N2-16	N/A	DoC
USB to UART Card	Mitsumi	SKCL-F4	N/A	N/A
DC Power Supply	Lamda	LA-300	LA3-AA30-103 2676	N/A

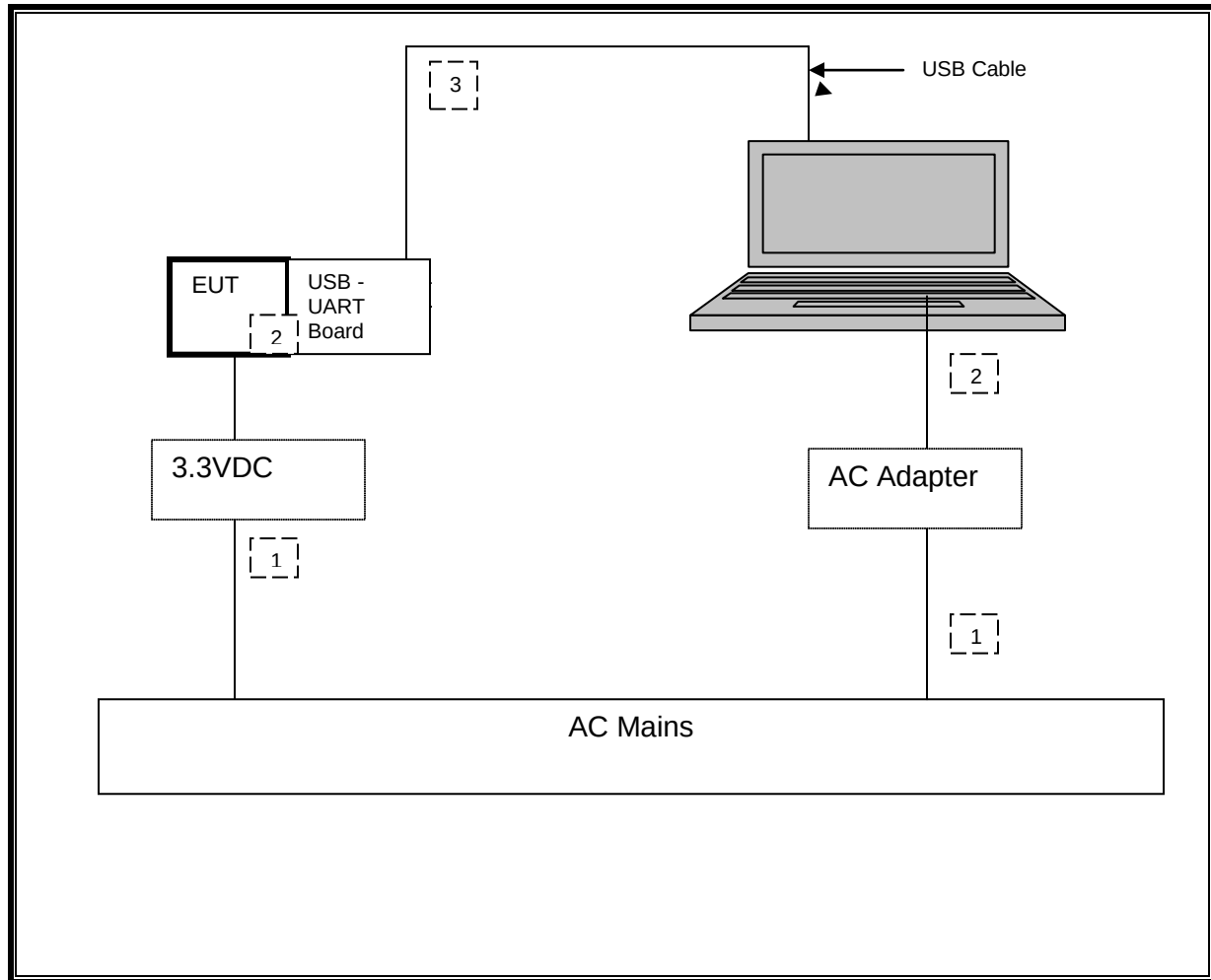
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US 115V	Shielded	1.5m	NA
2	DC	2	DC	Un-shielded	1.5m	NA
3	USB	1	USB	Un-shielded	1.0m	NA

TEST SETUP

The EUT was tested as an external module that installed on an USB to UART board connected to a host Laptop PC via USB cable. Test software exercised the radio card.

SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List					
Description	Manufacturer	Model	Asset	Cal Date	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00996	05/11/12	05/11/13
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01161	05/02/12	05/02/13
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/08/12	08/08/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/12	08/14/13
Antenna, Horn, 18 GHz	ETS	3117	C01006	12/11/12	12/11/13
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00946	11/12/12	11/12/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	03/23/13	03/23/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/19/12	10/19/13
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/11	12/13/13
Peak Power Sensor	HP	E9327A	C00964	12/13/12	12/13/13
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRC13192	N02683	CNR	CNR
LISN, 30 MHz	FCC	50/250-25-2	N02396	08/08/12	08/08/13

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

7.1.1. ON TIME AND DUTY CYCLE RESULTS – DECIMAL POINT

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
BLE	409.10	625.10	0.6545	65.45%	1.84

7.1.2. MEASUREMENT METHOD

6 dB BW: KDB 558074 D01 v02, Section 7.1, Option 1.

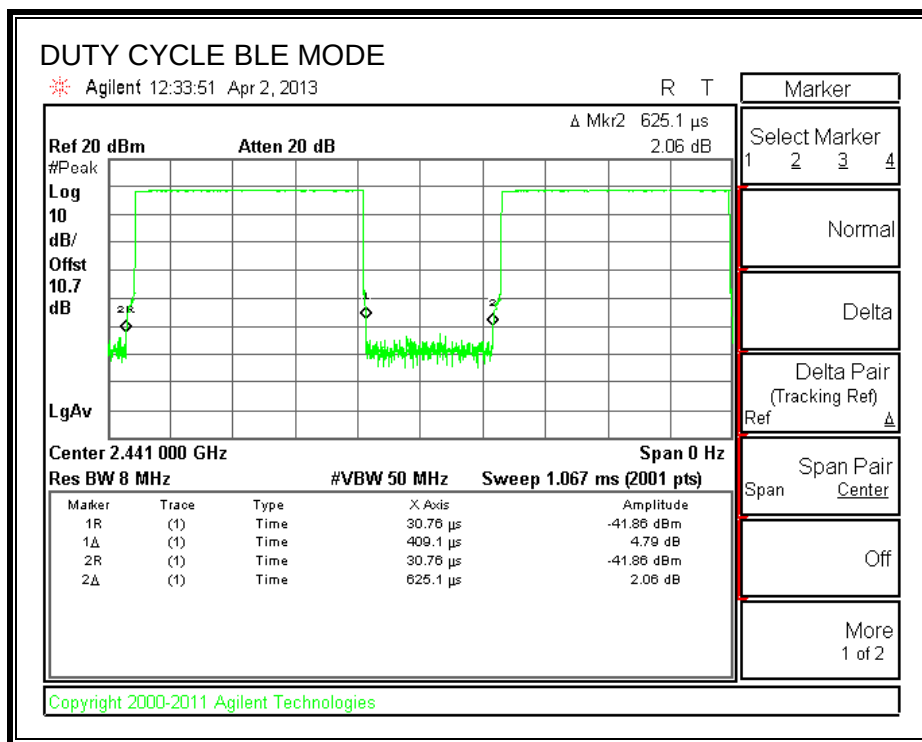
Output Power: KDB 558074 D01 v02, Section 8.1.1, Option 1.

Power Spectral Density: KDB 558074 D01 v02, Section 9.1, Option 1.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v02, Section 10.1.

Out-of-band emissions in restricted bands: KDB 558074 D01 v02, Sections 10.2.1.

7.1.3. DUTY CYCLE PLOTS



7.2. 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.

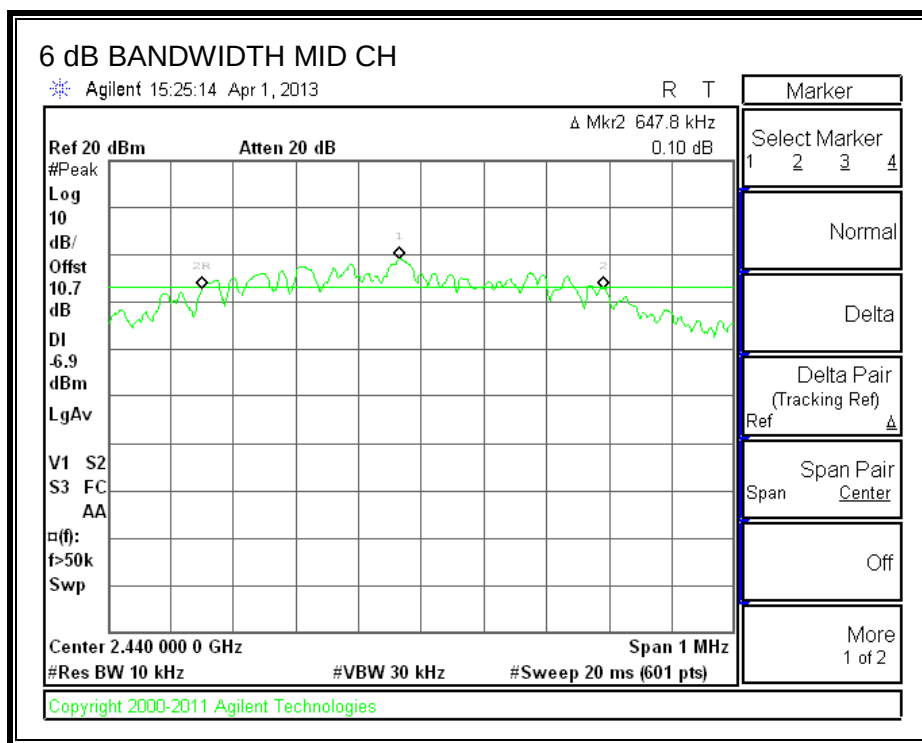
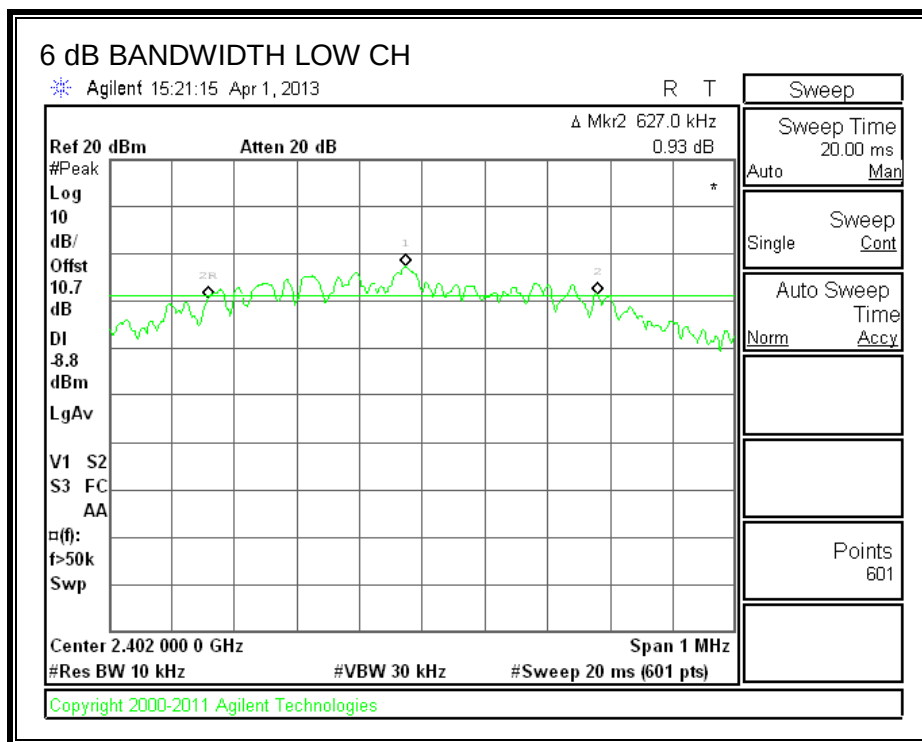
TEST PROCEDURE

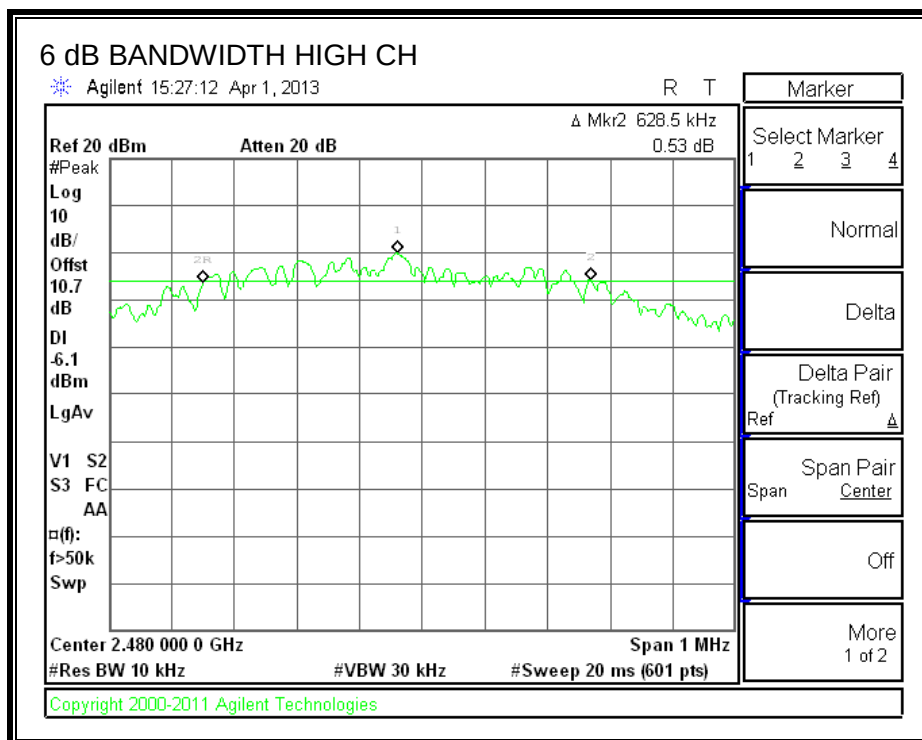
KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6270	0.5
Middle	2440	0.6478	0.5
High	2480	0.6285	0.5

6 dB BANDWIDTH





7.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

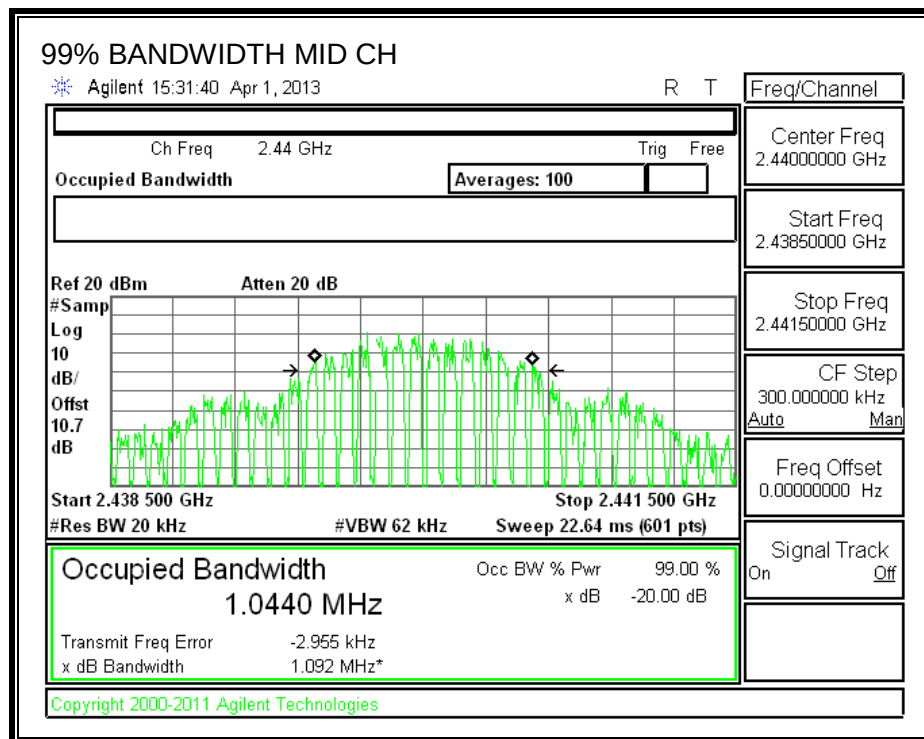
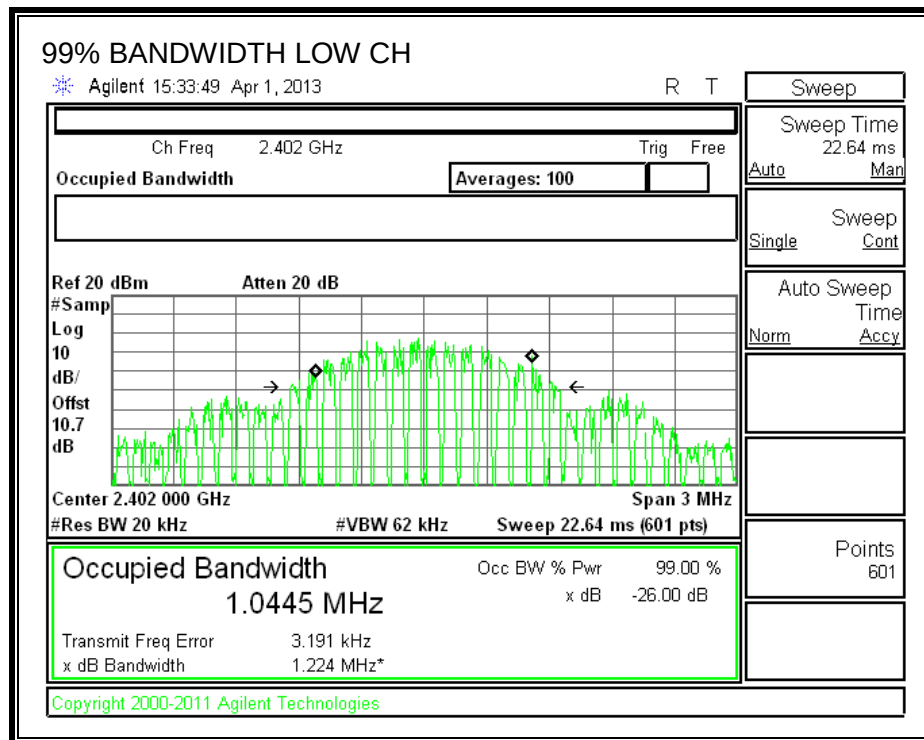
TEST PROCEDURE

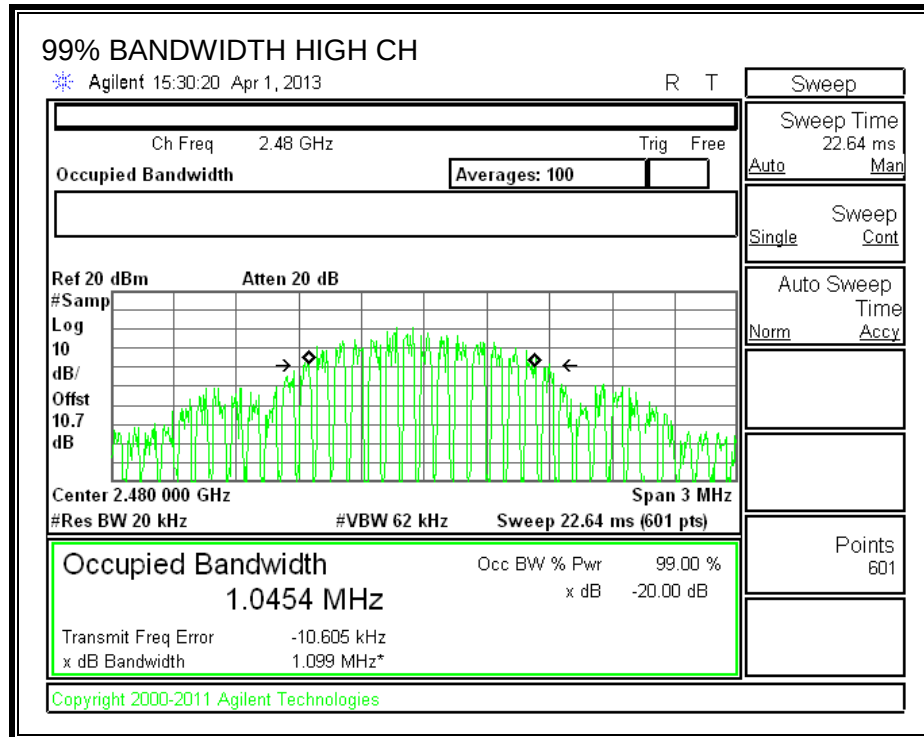
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0445
Middle	2440	1.0440
High	2480	1.0454

99% BANDWIDTH





7.4. 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.

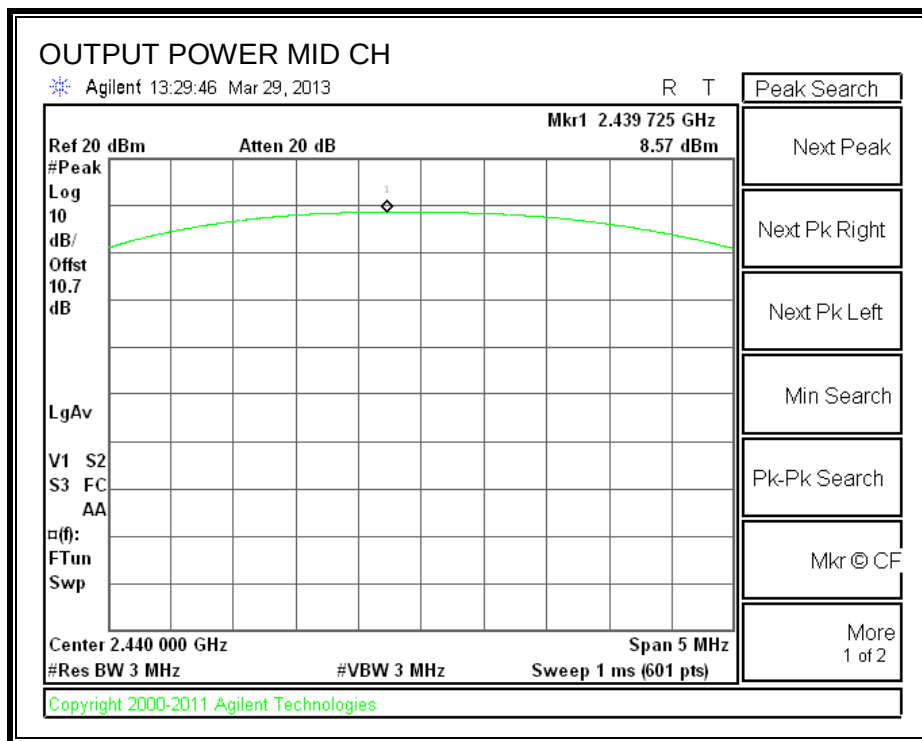
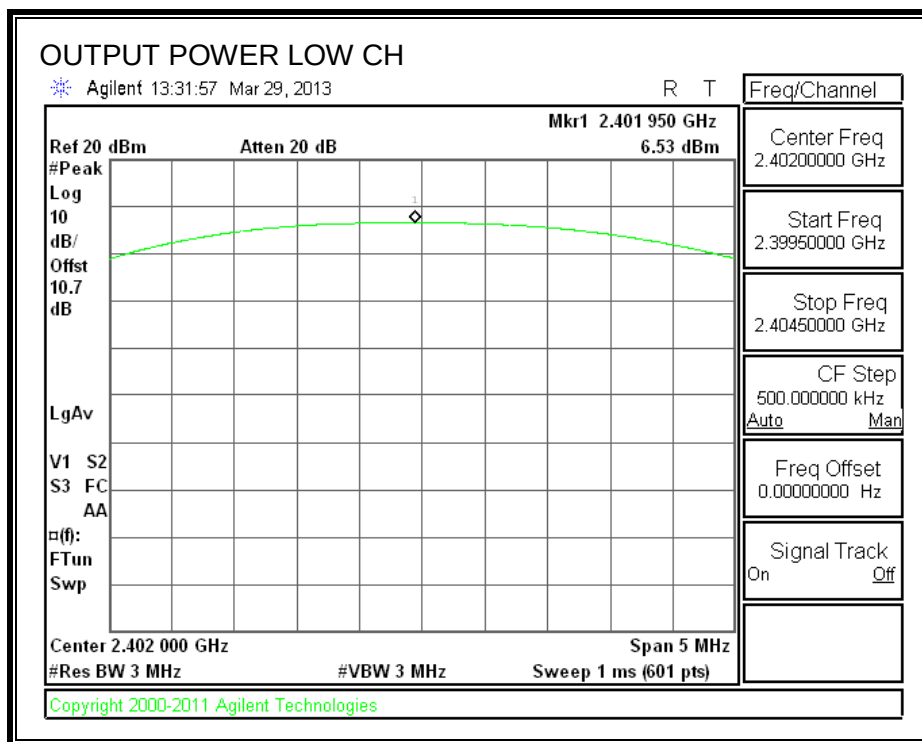
TEST PROCEDURE

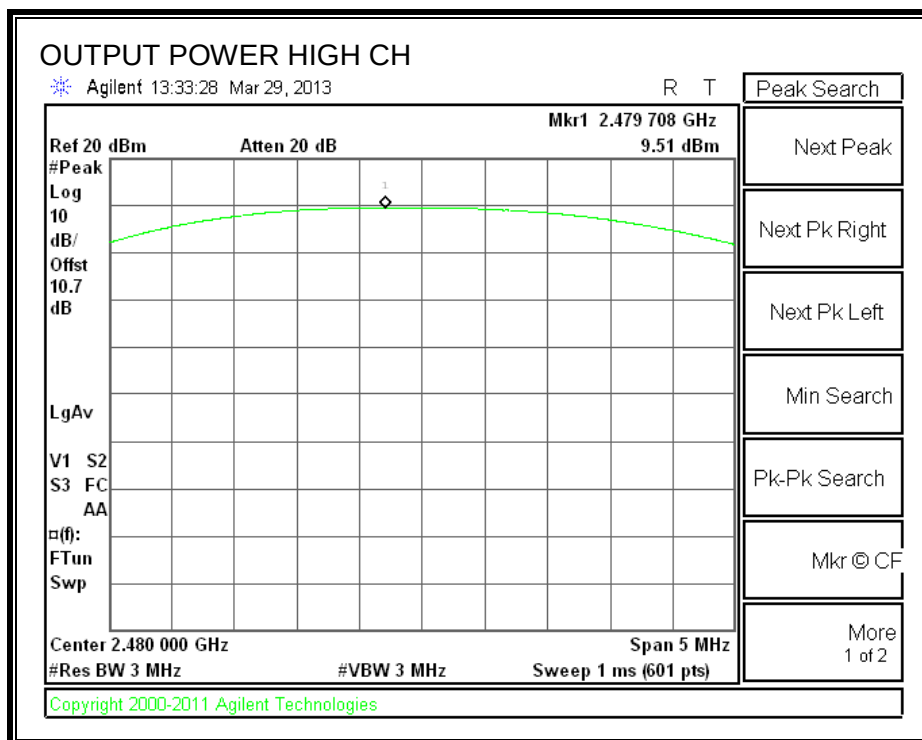
KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	6.53	30	-23.47
Middle	2440	8.57	30	-21.43
High	2480	9.51	30	-20.49

OUTPUT POWER





7.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

A broadband power meter was used to measure the average power.

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.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	4.73
Middle	2441	5.79
High	2480	6.18

7.6. 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.

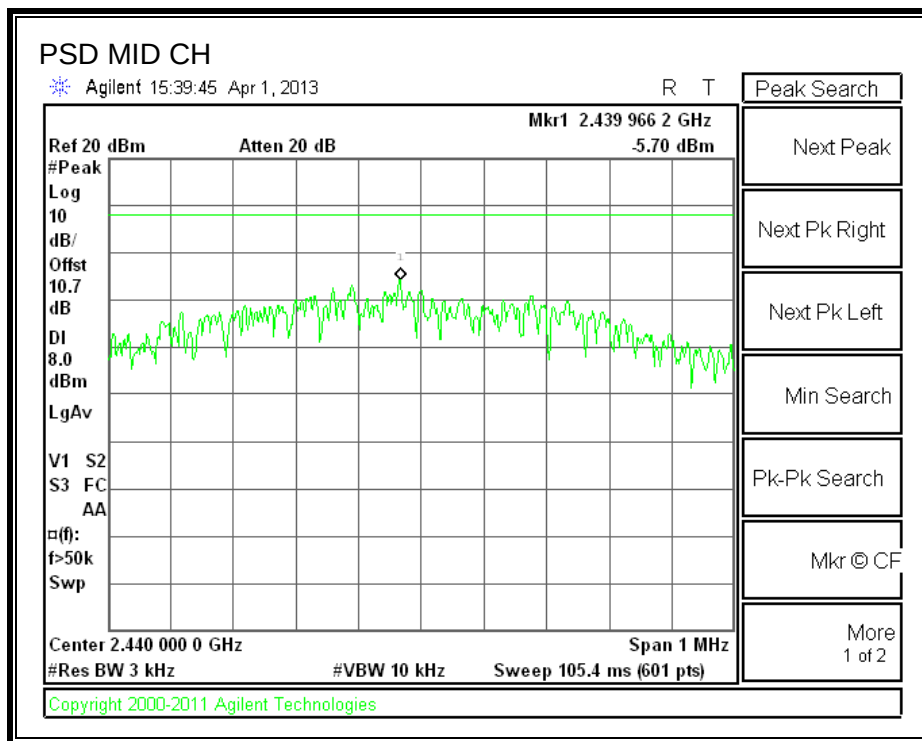
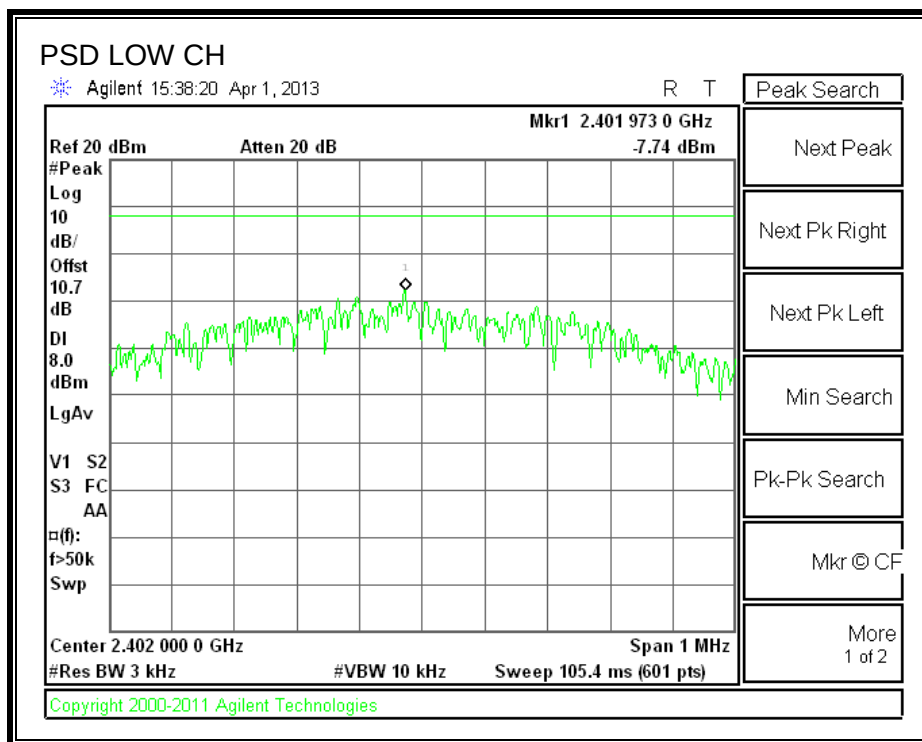
TEST PROCEDURE

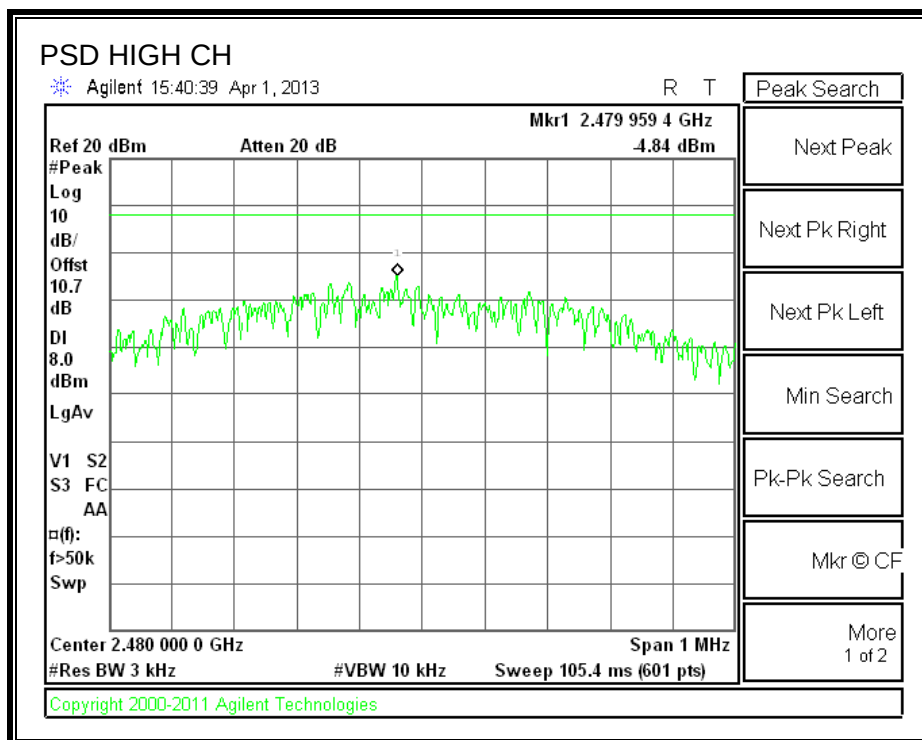
KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-7.74	8	-15.74
Middle	2440	-5.70	8	-13.70
High	2480	-4.84	8	-12.84

POWER SPECTRAL DENSITY





7.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

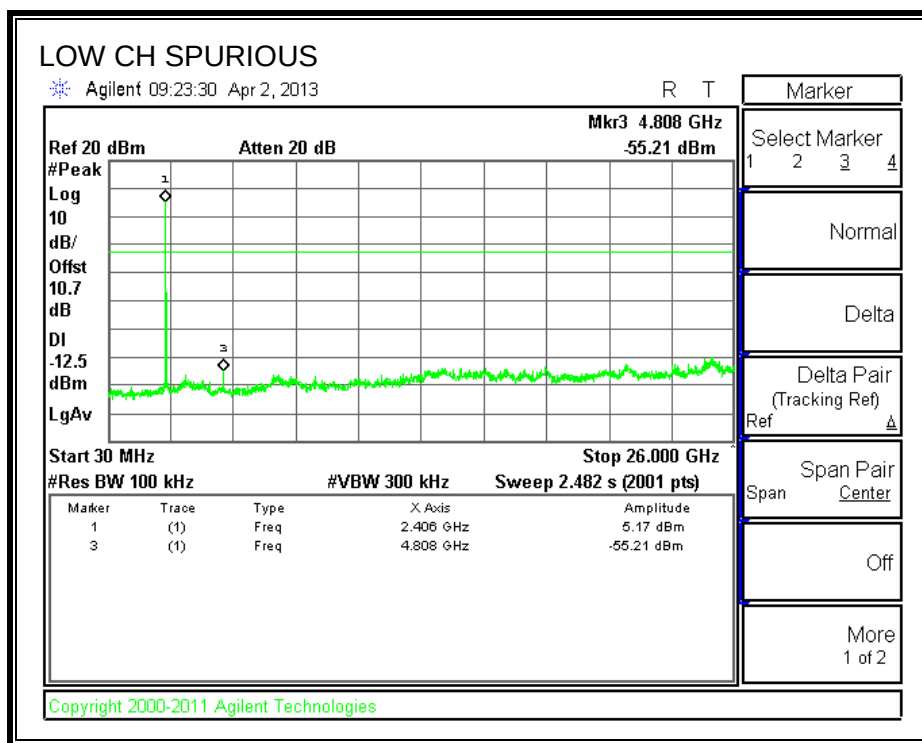
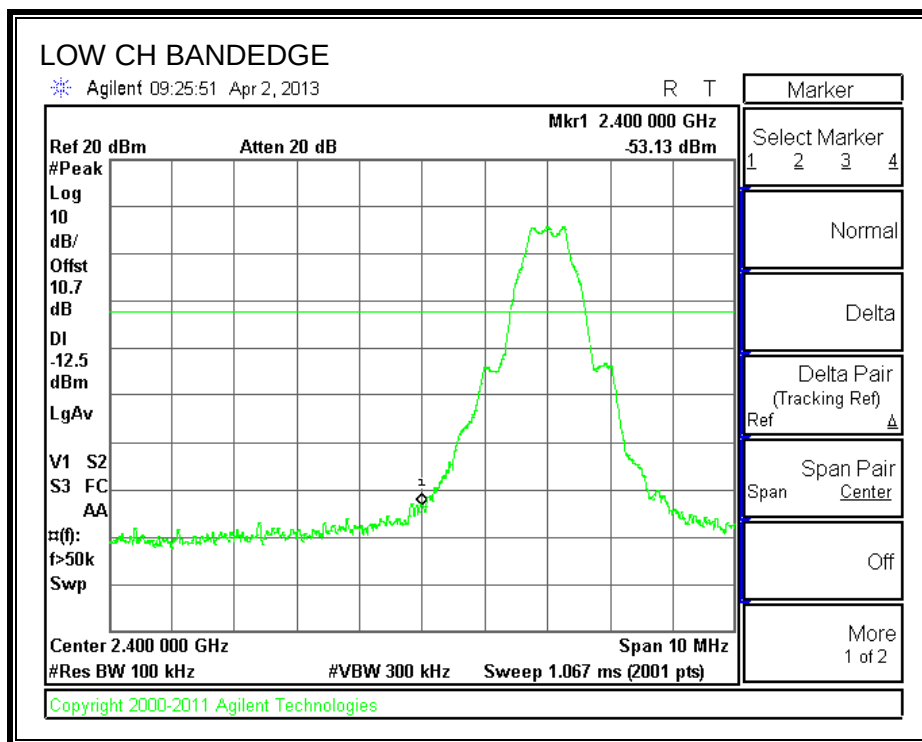
IC RSS-210 A8.5

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

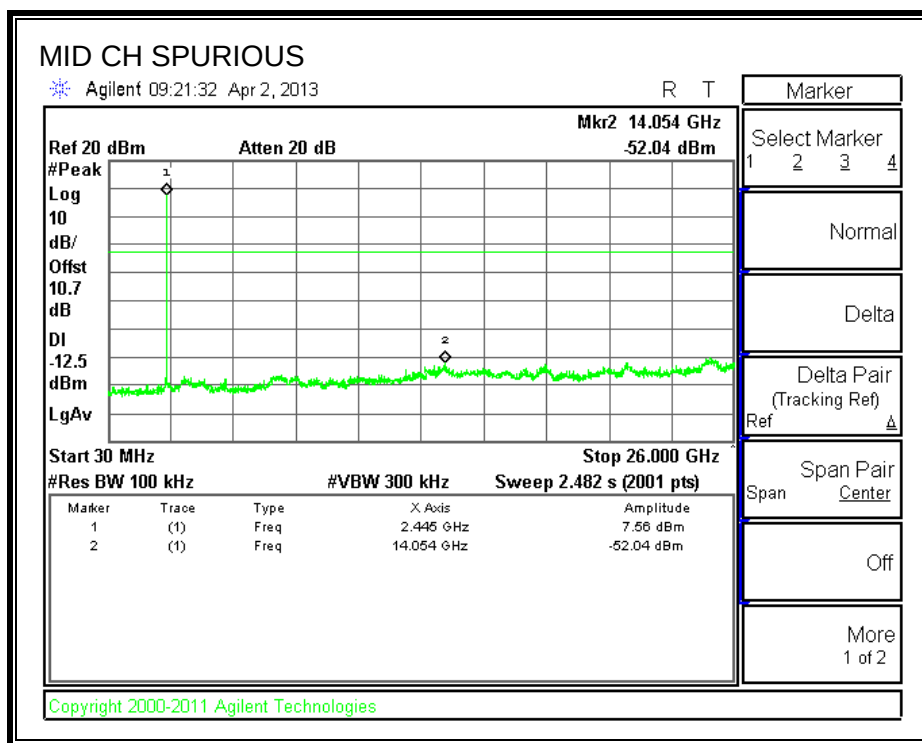
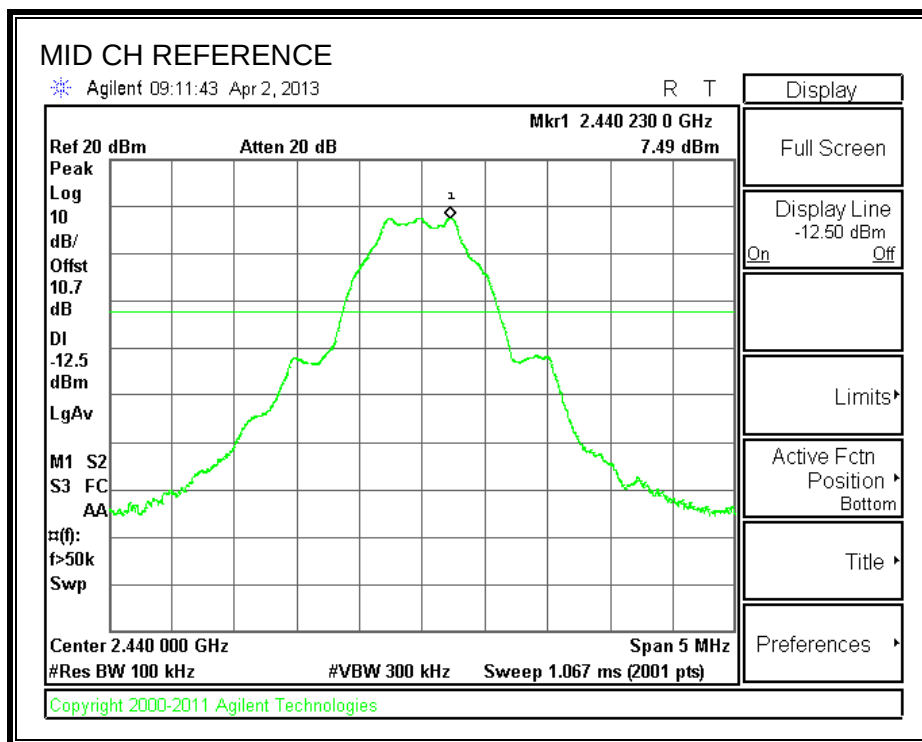
TEST PROCEDURE

KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

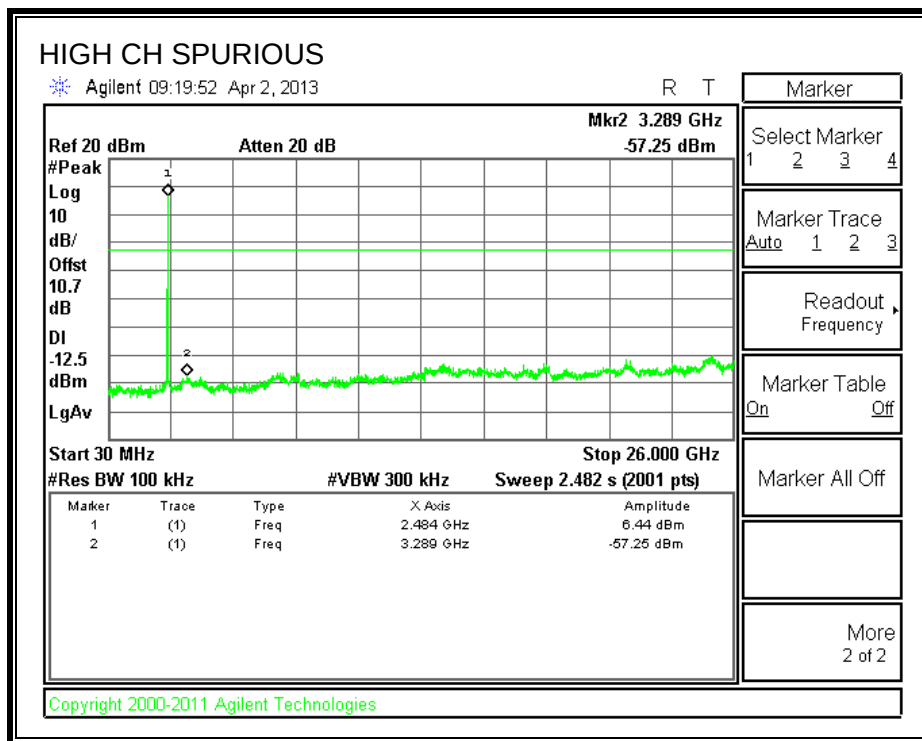
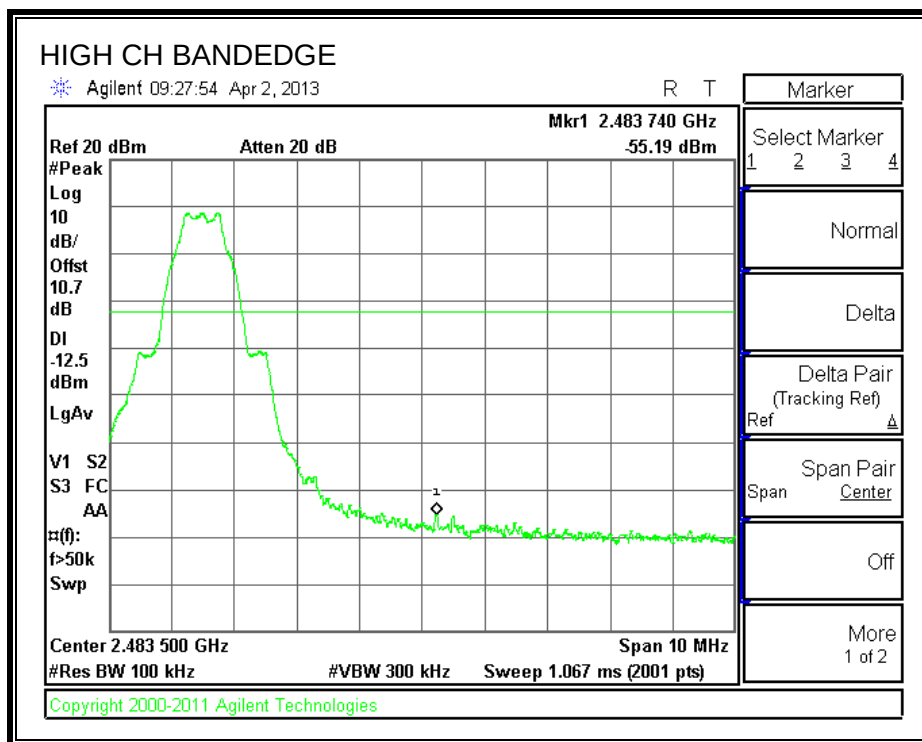
SPURIOUS EMISSIONS, LOW CHANNEL



SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



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.

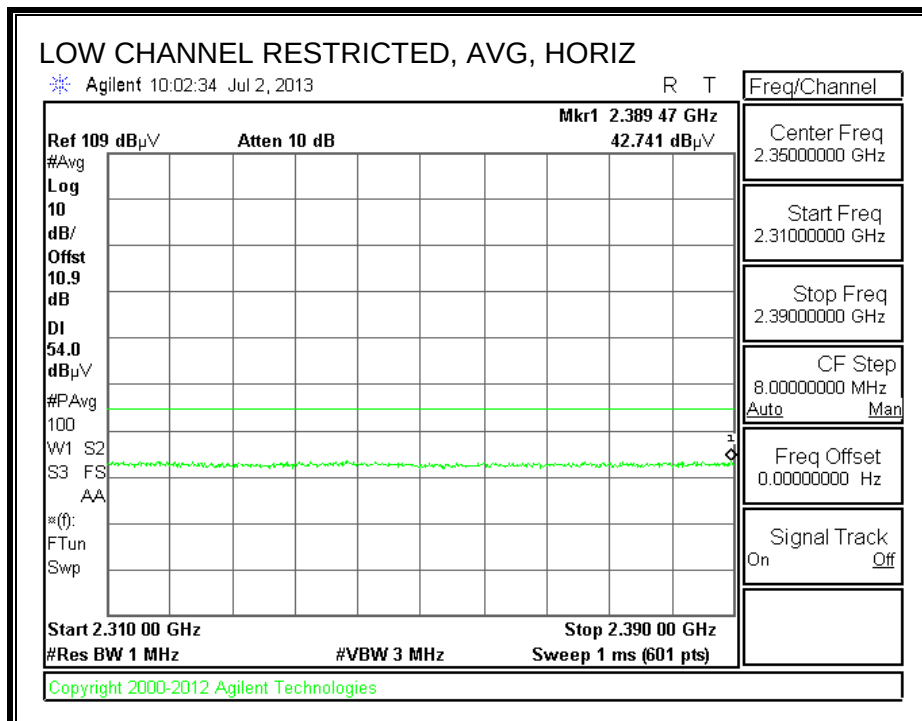
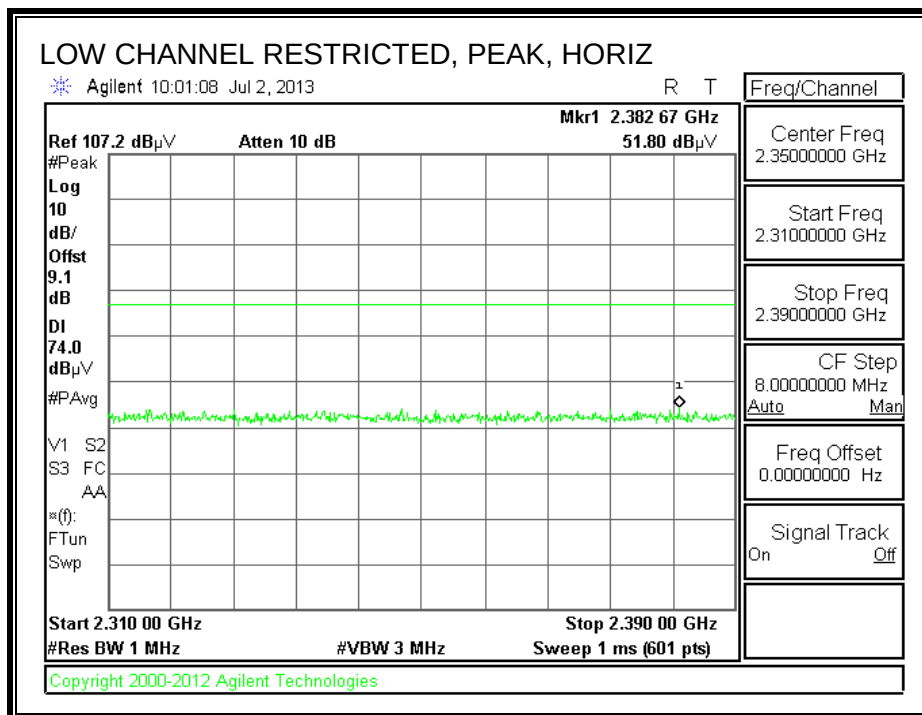
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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.

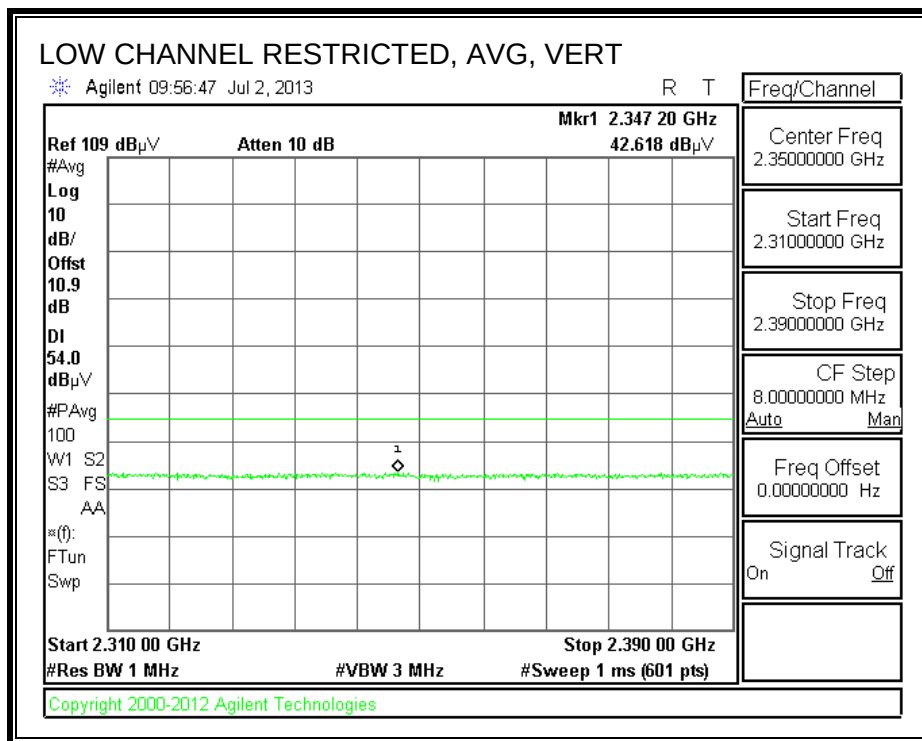
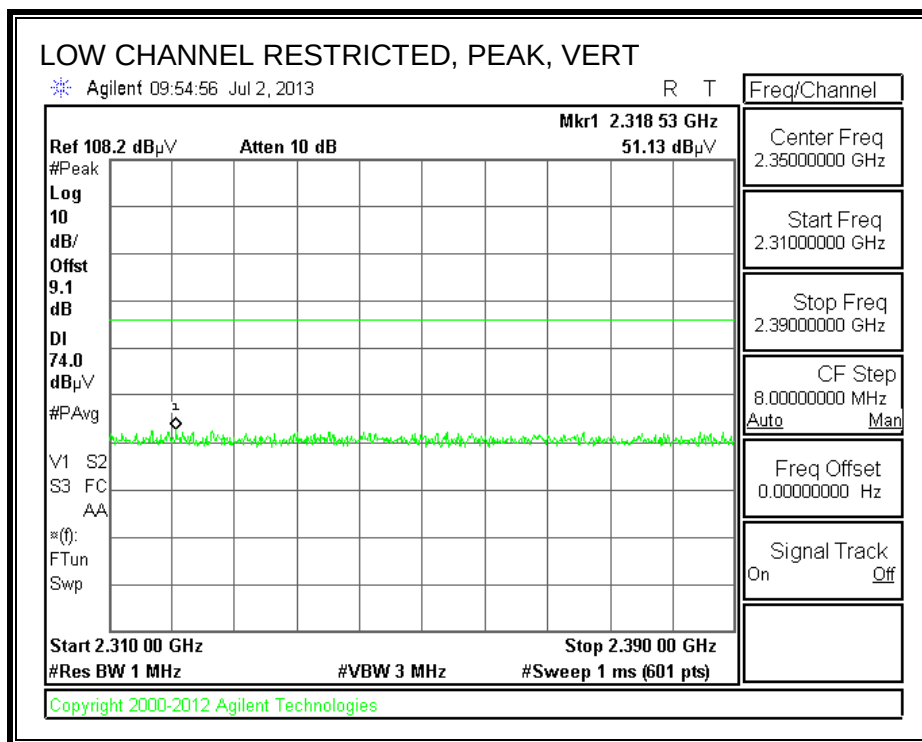
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

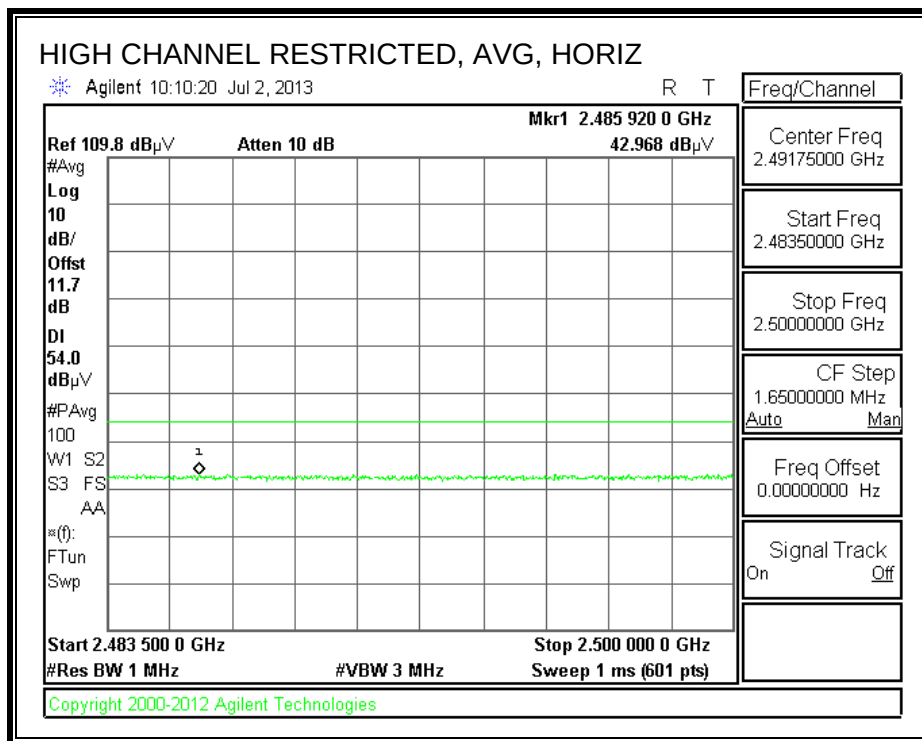
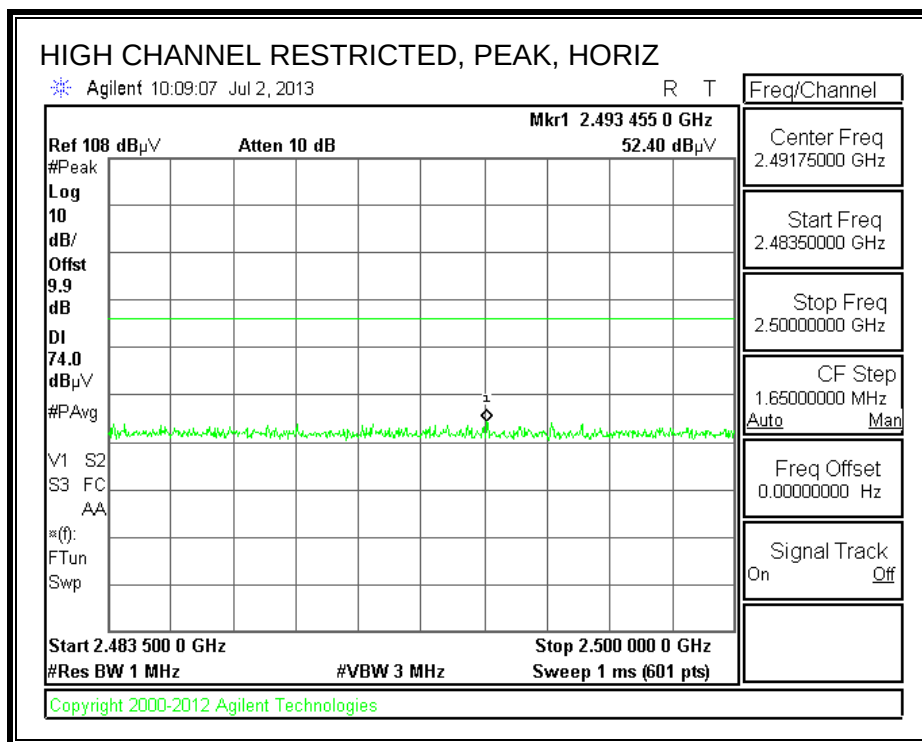
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



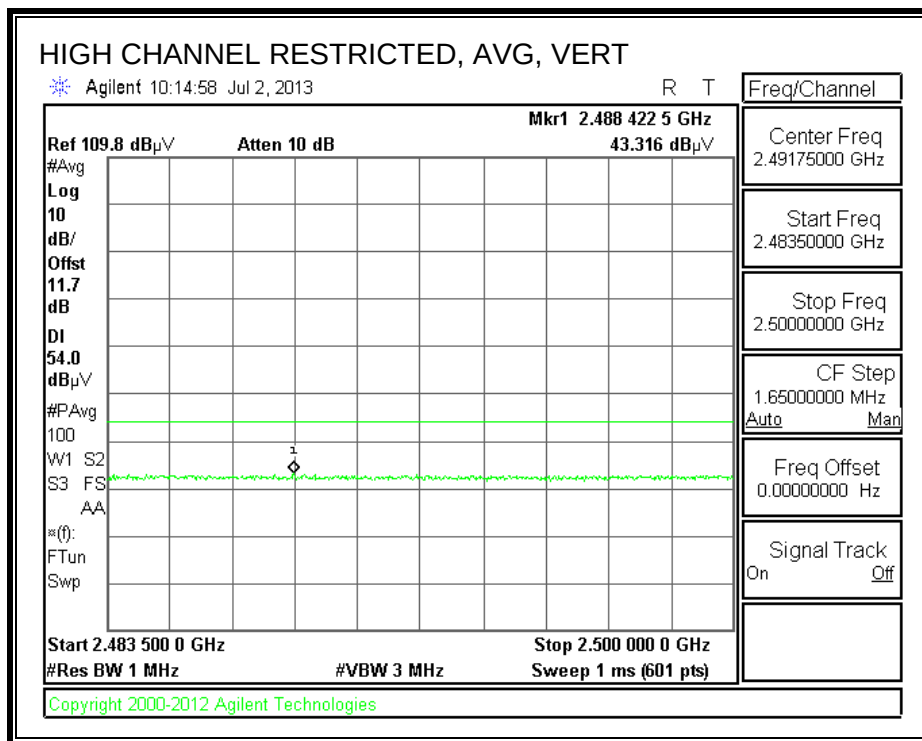
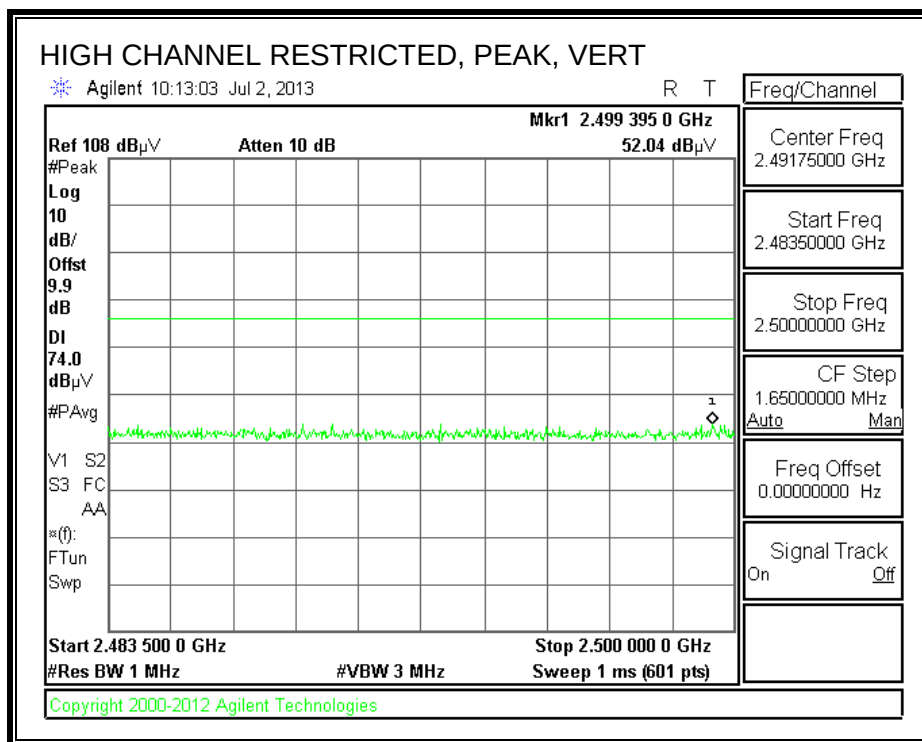
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANEDGE (HIGH CHANNEL, HORIZONTAL)

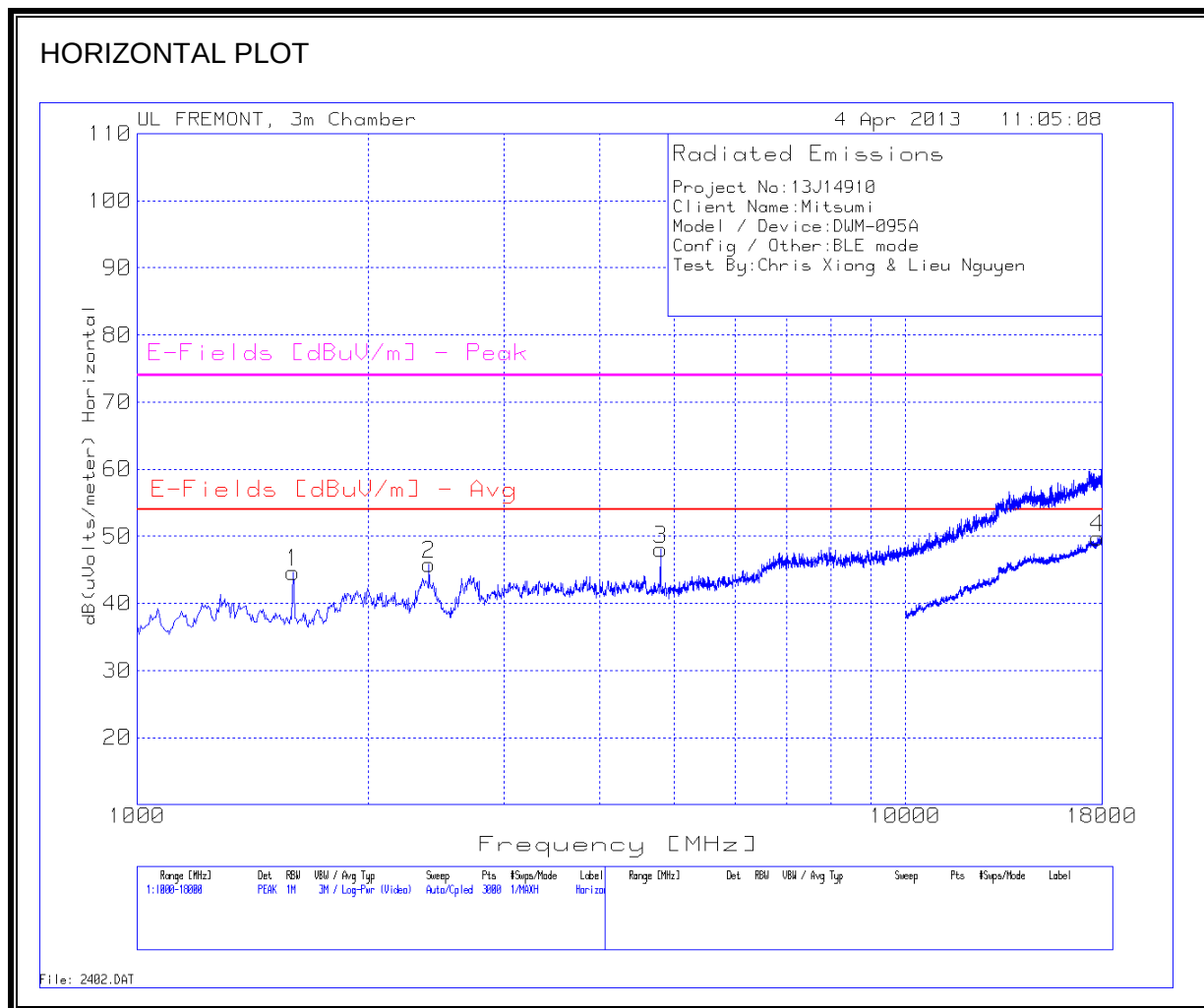


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

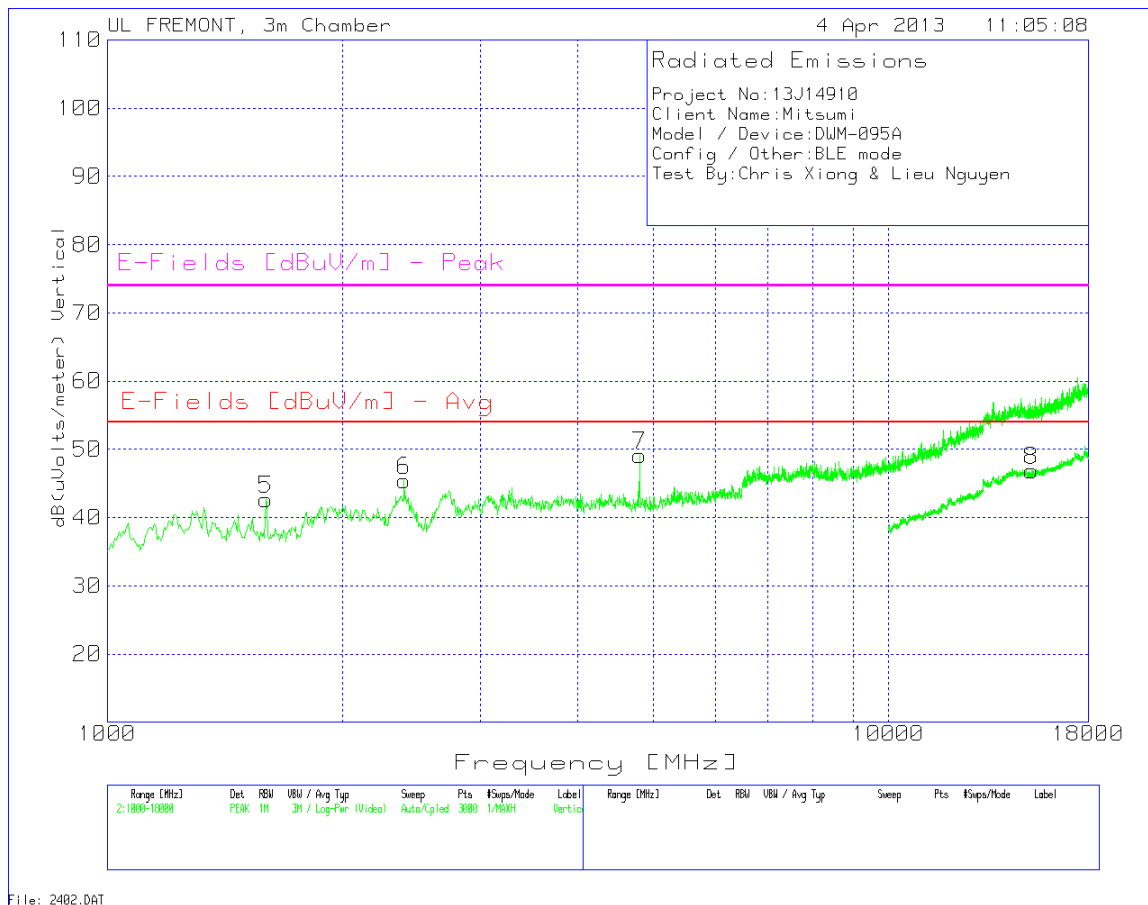


HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL



VERTICAL PLOT

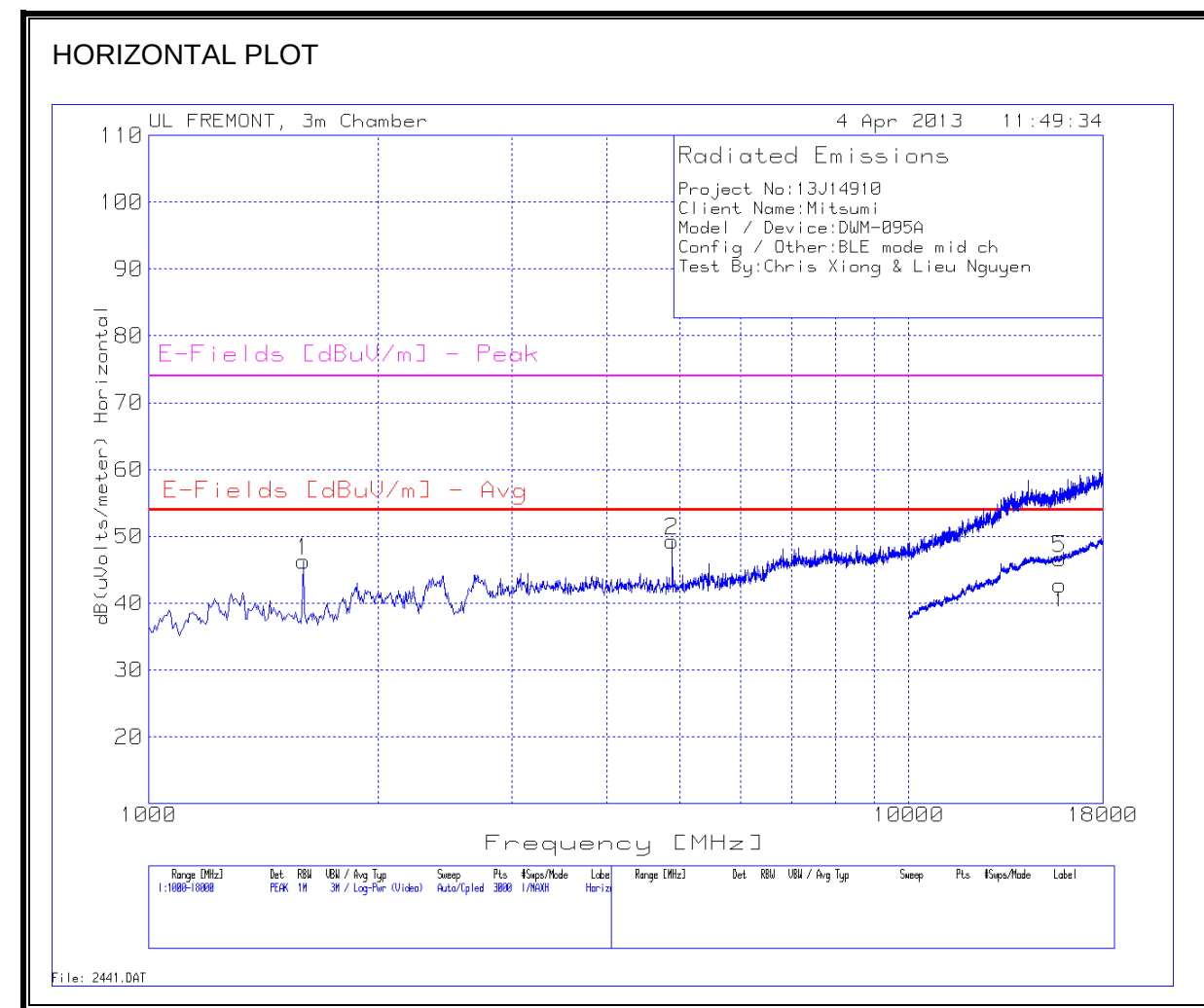


HORIZONTAL AND VERTICAL DATA

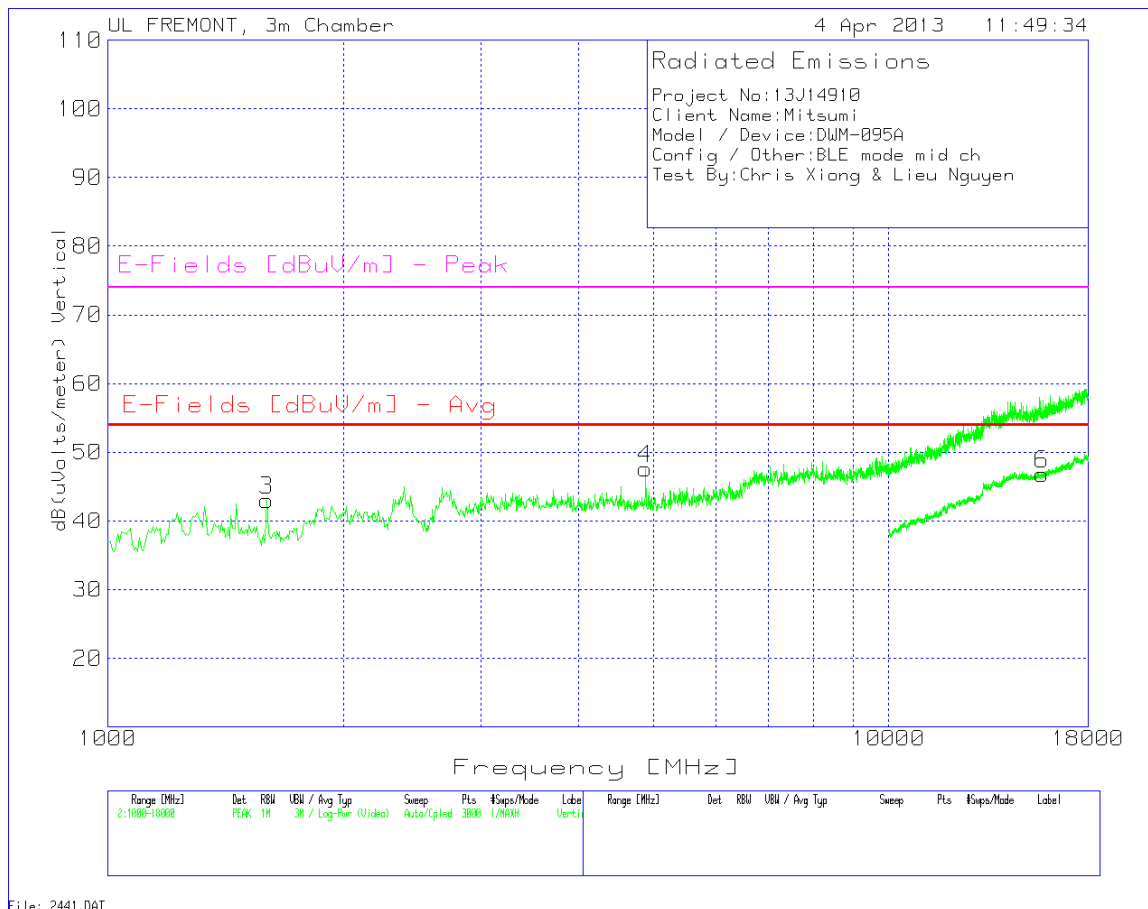
Project No:13J14910											
Client Name:Mitsumi											
Model / Device:DWM-095A											
Config / Other:BLE mode											
Test By:Chris Xiong & Lieu Nguyen											
Horizontal 1000 - 18000MHz											
Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
1	1594.604	48	PK	28.1	-31.9	0.5	44.7	53.97	-9.27	74	-29.3
2	2398.734	42.96	PK	32.1	-29.7	0.5	45.86	53.97	-8.11	74	-28.14
3	4799.8	38.73	PK	34.1	-25.2	0.5	48.13	53.97	-5.84	74	-25.87
Vertical 1000 - 18000MHz											
Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
5	1594.604	45.95	PK	28.1	-31.9	0.5	42.65	53.97	-11.32	74	-31.35
6	2398.734	42.5	PK	32.1	-29.7	0.5	45.4	53.97	-8.57	74	-28.6
7	4799.8	39.78	PK	34.1	-25.2	0.5	49.18	53.97	-4.79	74	-24.82
Horizontal 10000 - 18000MHz											
Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
4	17780.11	21.9	PK	41.5	-14.1	0.5	49.8	53.97	-4.17	74	-24.2
Vertical 10000 - 18000MHz											
Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
8	15225.387	22.76	PK	39.9	-16.3	0.5	46.86	53.97	-7.11	74	-27.14

Note: No emissions found above noise floor from 18 – 26GHz.

MID CHANNEL



VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:13J14910											
Client Name:Mitsumi											
Model / Device:DWM-095A											
Config / Other:BLE mode mid ch											
Test By:Chris Xiong & Lieu Nguyen											

Horizontal 1000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
1	1594.604	49.65	PK	28.1	-31.9	0.5	46.35	53.97	-7.62	74	-27.65
2	4879.081	39.97	PK	34	-25.2	0.5	49.27	53.97	-4.7	74	-24.73

Vertical 1000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
3	1594.604	46.26	PK	28.1	-31.9	0.5	42.96	53.97	-11.01	74	-31.04
4	4879.081	38.36	PK	34	-25.2	0.5	47.66	53.97	-6.31	74	-26.34

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
5	15793.103	22.19	PK	40.4	-16.4	0.5	46.69	53.97	-7.28	74	-27.31

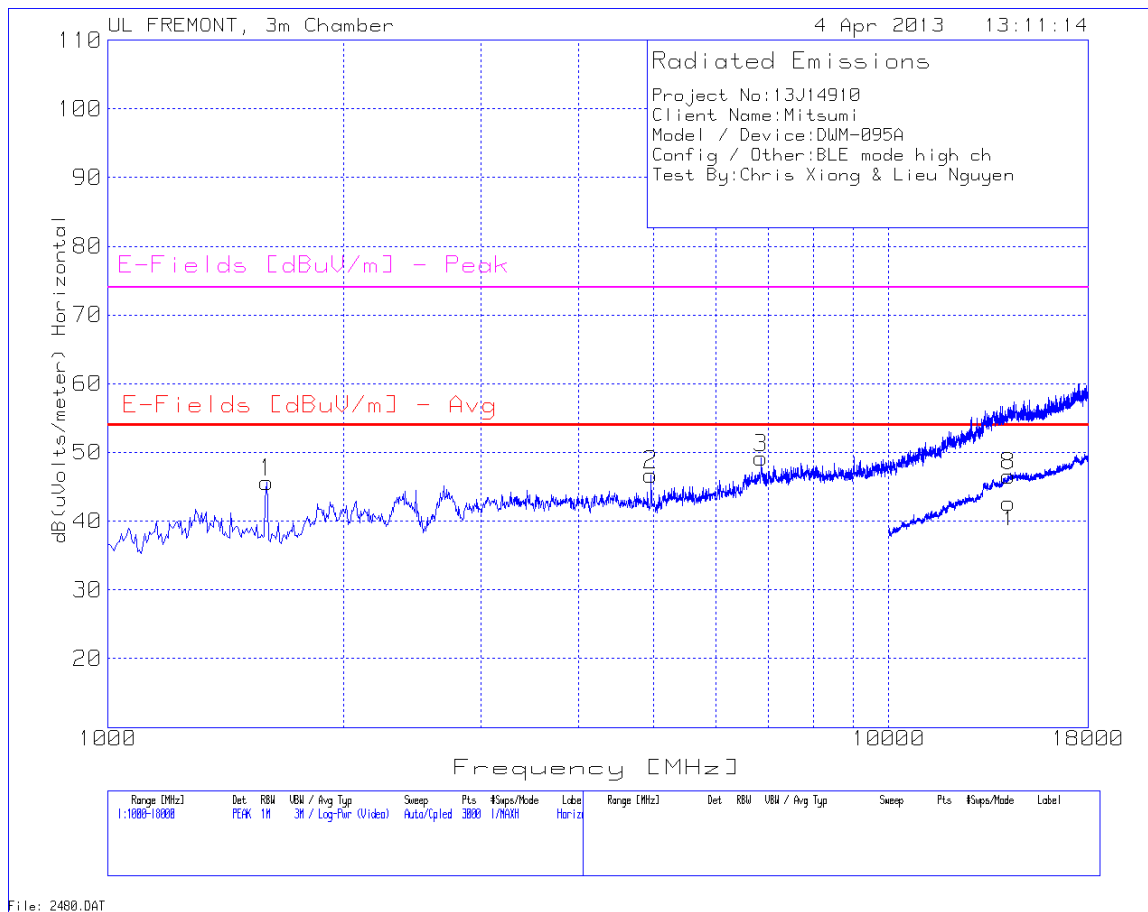
Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
6	15697.151	22.45	PK	40.4	-16.5	0.5	46.85	53.97	-7.12	74	-27.15

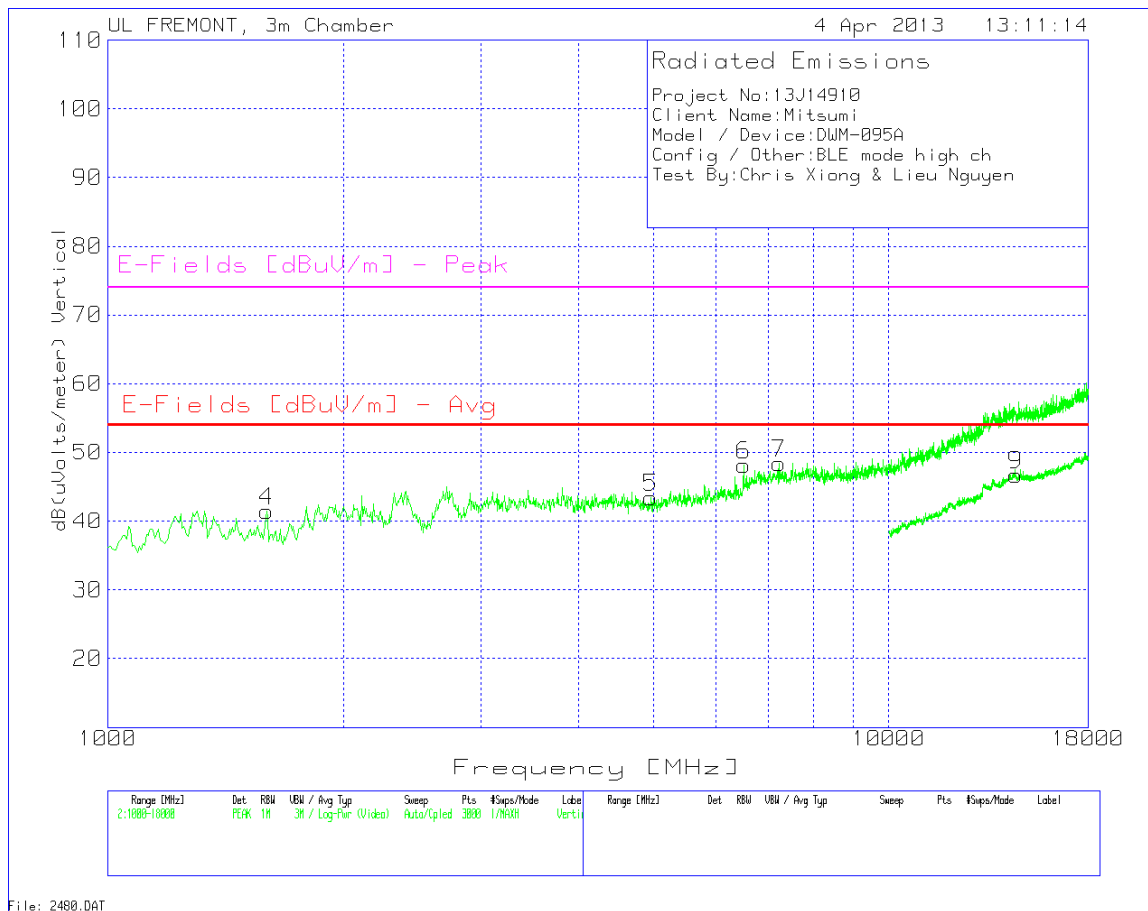
Note: No emissions found above noise floor from 18 – 26GHz.

HIGH CHANNEL

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:13J14910											
Client Name:Mitsumi											
Model / Device:DWM-095A											
Config / Other:BLE mode high ch											
Test By:Chris Xiong & Lieu Nguyen											

Horizontal 1000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
1	1594.604	48.94	PK	28.1	-31.9	0.5	45.64	53.97	-8.33	74	-28.36
2	4958.361	37.27	PK	34	-25	0.5	46.77	53.97	-7.2	74	-27.23
3	6866.755	36.33	PK	35.6	-23.2	0.5	49.23	53.97	-4.74	74	-24.77

Vertical 1000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
4	1594.604	44.76	PK	28.1	-31.9	0.5	41.46	53.97	-12.51	74	-32.54
5	4958.361	33.94	PK	34	-25	0.5	43.44	53.97	-10.53	74	-30.56
6	6521.319	35.6	PK	35.6	-23.6	0.5	48.1	53.97	-5.87	74	-25.9
7	7240.506	35.41	PK	35.6	-23.1	0.5	48.41	53.97	-5.56	74	-25.59

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
8	14249.875	22.65	PK	39.2	-15.8	0.5	46.55	53.97	-7.42	74	-27.45

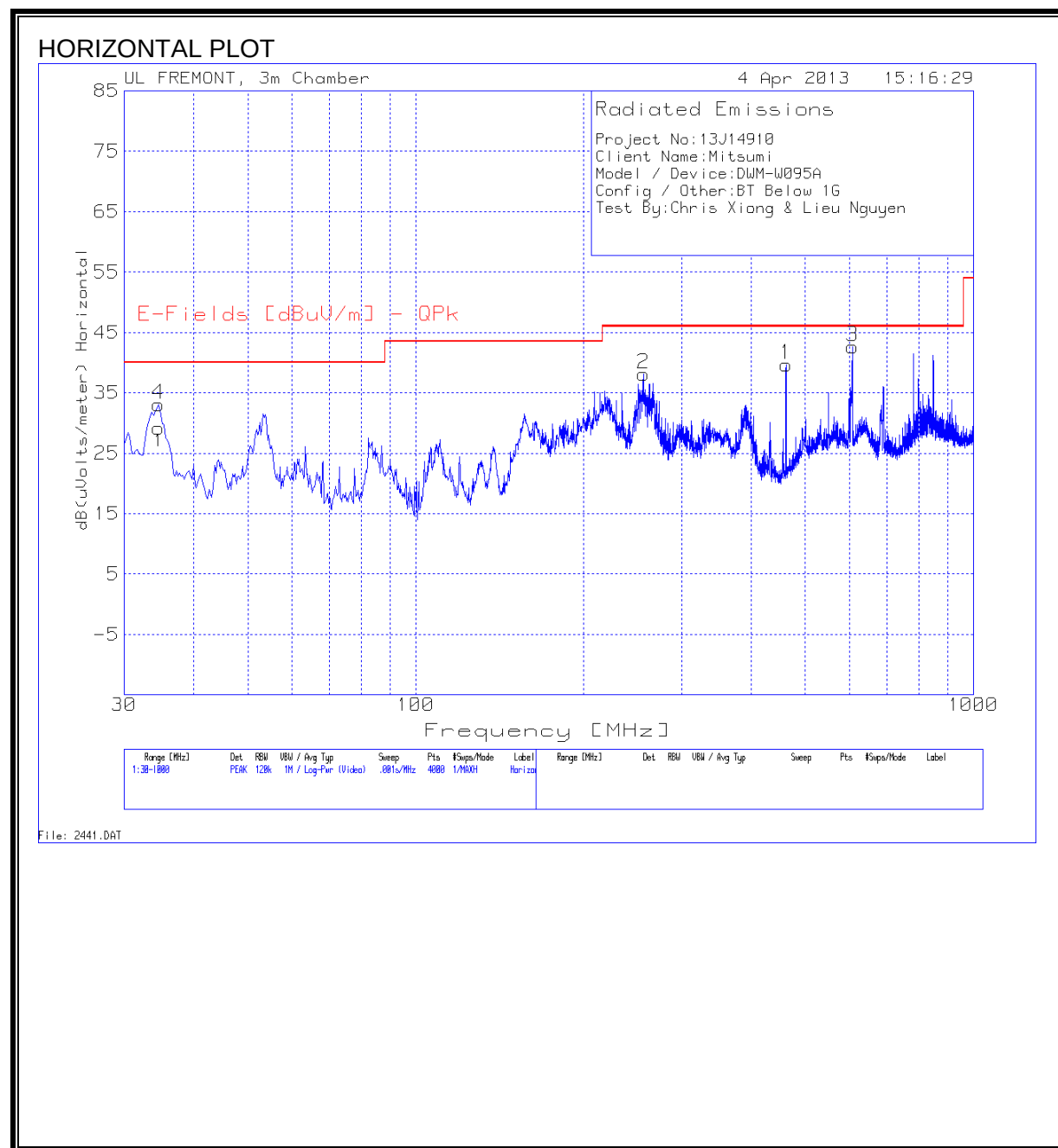
Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T166 BRF (dB)	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)
9	14557.721	22.56	PK	39.7	-16	0.5	46.76	53.97	-7.21	74	-27.24

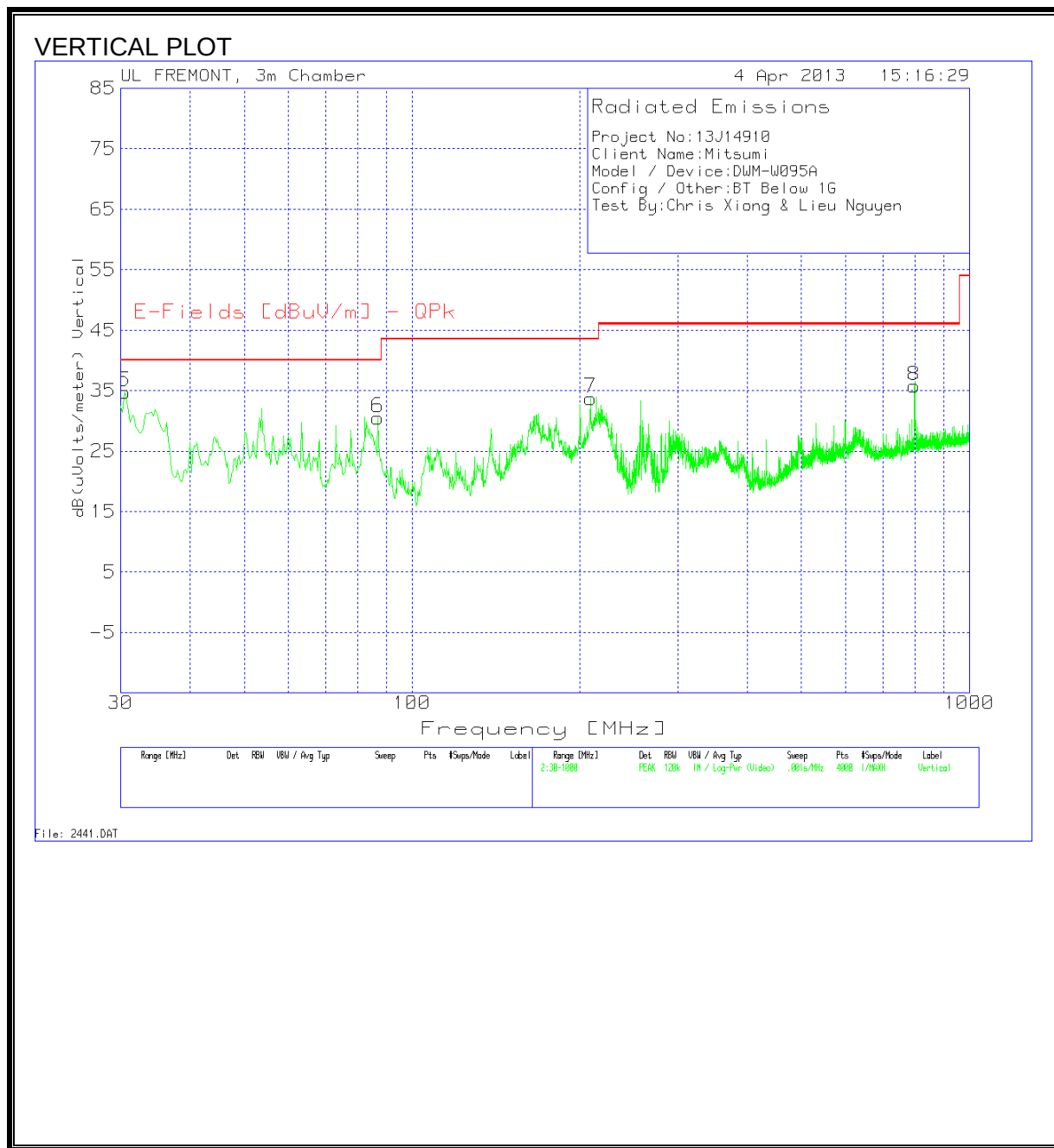
Note: No emissions found above noise floor from 18 – 26GHz.

8.3. WORST-CASE BELOW 1 GHz

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



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



Project No:13J14910										
Client Name:Mitsumi										
Model / Device:DWM-W095A										
Config / Other:BT Below 1G										
Test By:Chris Xiong & Lieu Nguyen										
Horizontal 30 - 1000MHz										
Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T130 Ant Factor [dB/m]	T64 preamp/ cable loss [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - QPk	Margin (dB)	Height [cm]	Polarity
1	461.5688	47.46	PK	17.2	-25	39.66	46.02	-6.36	101	Horz
2	256.3253	52.44	PK	11.7	-26	38.14	46.02	-7.88	101	Horz
3	607.2021	47.55	PK	18.8	-23.7	42.65	46.02	-3.37	101	Horz
4	34.604	43.1	PK	17.6	-27.6	33.1	40	-6.9	101	Horz
Vertical 30 - 1000MHz										
Marker No.	Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T130 Ant Factor [dB/m]	T64 preamp/ cable loss [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - QPk	Margin (dB)	Height [cm]	Polarity
5	30.4846	42	PK	20.5	-27.7	34.8	40	-5.2	100	Vert
6	86.9448	50.39	PK	7.3	-27.2	30.49	40	-9.51	100	Vert
7	209.3155	49.56	PK	10.5	-26.3	33.76	43.52	-9.76	100	Vert
8	796.4527	37.33	PK	21.3	-22.9	35.73	46.02	-10.29	100	Vert
PK - Peak detector										

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

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

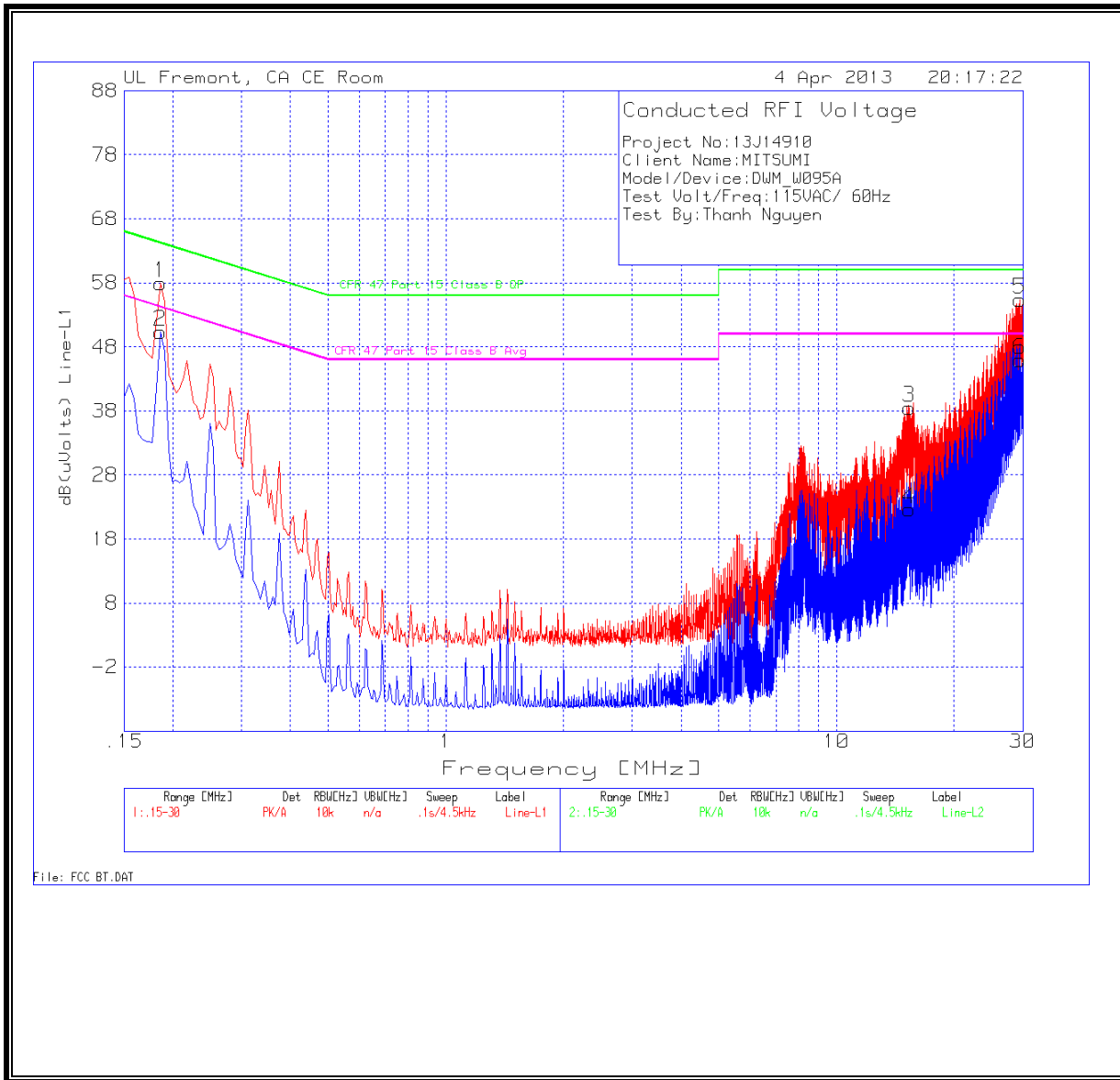
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Project No:13J14910									
Client Name:MITSUMI									
Model/Device:DWM_W095A									
Test Volt/Freq:115VAC/ 60Hz									
Test By:Thanh Nguyen									
Line-L1 .15 - 30MHz									
Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
0.186	57.82	PK	0.1	0	57.92	64.2	-6.28	-	-
0.186	50.2	Av	0.1	0	50.3	-	-	54.2	-3.9
15.369	38.04	PK	0.2	0.2	38.44	60	-21.56	-	-
15.369	22.27	Av	0.2	0.2	22.67	-	-	50	-27.33
29.3955	54.63	PK	0.5	0.3	55.43	60	-4.57	-	-
29.3955	45.19	Av	0.5	0.3	45.99	-	-	50	-4.01
Line-L2 .15 - 30MHz									
Test Frequency (MHz)	Meter Reading (dBμV)	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
0.186	56.75	PK	0.1	0	56.85	64.2	-7.35	-	-
0.186	52.66	Av	0.1	0	52.76	-	-	54.2	-1.44
15.5085	38.9	PK	0.2	0.2	39.3	60	-20.7	-	-
15.5085	27.99	Av	0.2	0.2	28.39	-	-	50	-21.61
29.895	53.75	PK	0.5	0.3	54.55	60	-5.45	-	-
29.895	44.48	Av	0.5	0.3	45.28	-	-	50	-4.72

LINE 1 RESULTS



LINE 2 RESULTS

