FCC CFR47 PART 15 SUBPART C
CERTIFICATION TEST REPORT

FOR

802.11 a/b/g/n WLAN, BT 2.1 and RF4CE SATELLITE SETTOP BOX

MODEL NUMBER: ID:075

FCC ID: DKNCB1138

REPORT NUMBER: 13U16072-2 Revision A

ISSUE DATE: OCTOBER 23, 2013

Prepared for
ECHOSTAR
90 INVERNESS CIRCLE EAST
ENGLEWOOD, CO 80112, U.S.A.

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	10/14/13	Initial Issue	T. Chan
A	10/23/13	Update to KDB version reference	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: ECHOSTAR CORPORATION
90 INVERNESS CIRCLE EAST
ENGLEWOOD, CO 80112, U.S.A.

EUT DESCRIPTION: 802.11 a/b/g/n WLAN, BT 2.1 and RF4CE Satellite SetTop Box

MODEL NUMBER: ID:075

SERIAL NUMBER: 200101R01292Y00112H (Conducted), 200101R01292Y0110H (Radiated)

DATE TESTED: SEPTEMBER 24 – 25, 2013

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 based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:

Thu Chan
WiSE Operations Manager
UL Verification Services Inc.

Tested By:

MONA HUA
WiSE Lab Technician
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street
☐ Chamber A	☒ Chamber D
☐ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F

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

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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
Radiated Emissions, 1-26GHz (worst case, Ground Plane)	± 5.7dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11 a/b/g/n WLAN, BT 2.1 and RF4CE Satellite SetTop Box operates in the 2400-2483.5MHz, 5150-5250MHz and 5725-5825 bands.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Output Power (dBm)	Output Power (mW)
2425-2475	4.58	2.87

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Frequency (MHz)	Antenna Gain (dBi)
2425-2475	2.0

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was FCC Test Script version: SW0906 v.1.

5.5. WORST-CASE CONFIGURATION AND MODE

The EUT supports only one orientation; therefore, X orientation (Lay down) was investigated and is considered the worst case.

The worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the in RF4CE mode and channel with the highest output power.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Remote Control	Echostar	21.0 IR/UHF PRO	158925	DKNFSK03
Laptop	HP	8570W	NA	DoC
AC Adapter	HP	HSTNN-DA25	WBXYE0AAR3A168	DoC

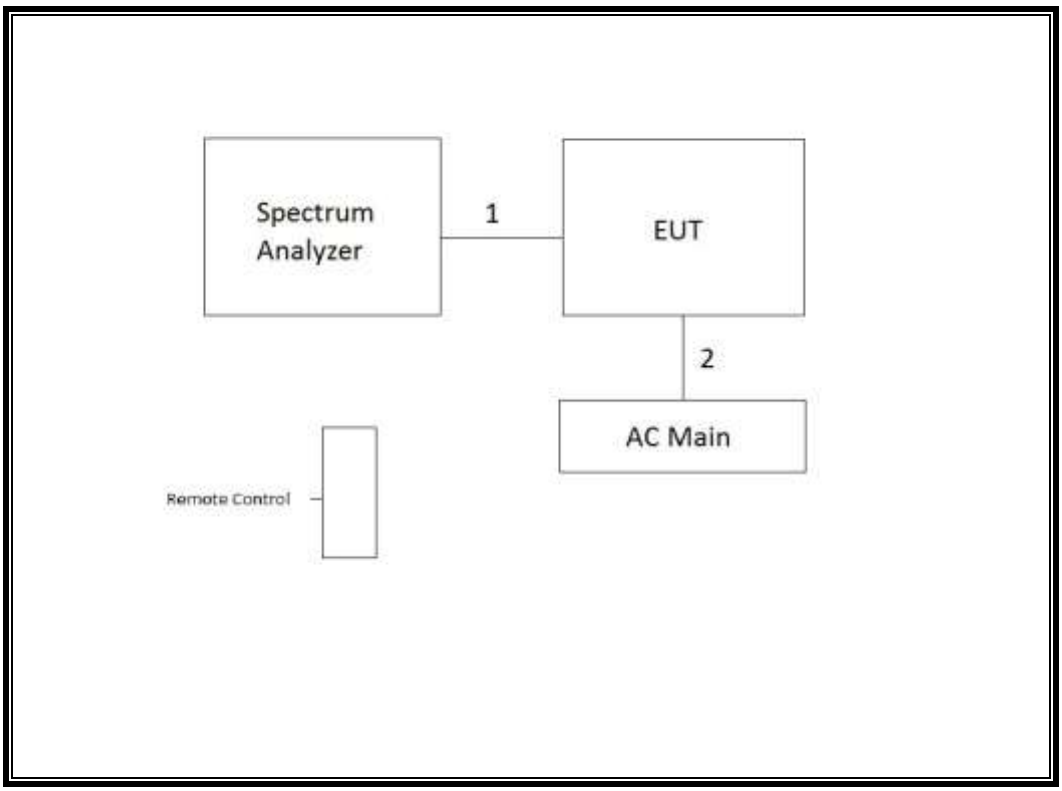
I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	SMA	COAX	0.1m	To Spectrum Analyzer
2	AC	1	AC	Un-Shielded	1.5m	NA

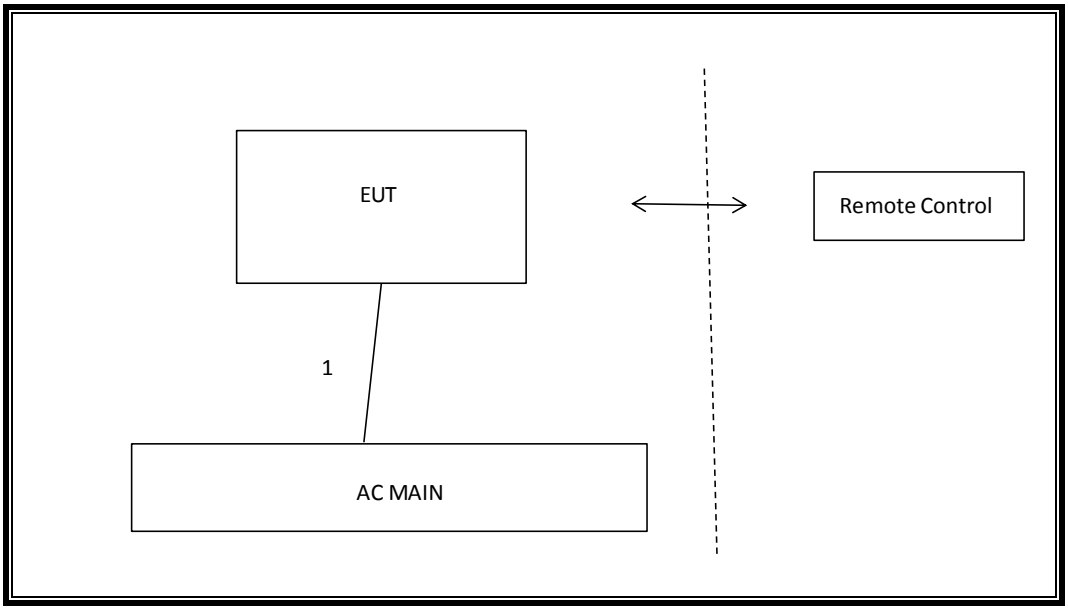
I/O CABLES (RADIATED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-Shielded	1.5m	NA

SETUP DIAGRAM FOR CONDUCTED TESTS



SETUP DIAGRAM FOR RADIATED TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Horn Antenna 1-18GHz	ETS Lindgren	3117	F00132	02/19/14
Preamplifier, 1300 MHz	Sonoma	310	79146	11/06/13
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB3	F00027	03/07/14
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	01/14/14
Peak / Average Power Sensor	Agilent / HP	E9323A	F00026	04/03/14
P-Series single channel Power Meter	Agilent / HP	N1911A	F00153	04/05/14
Spectrum Analyzer, 44GHz	Agilent	N9030A	F00129	02/22/14
Spectrum Analyzer, 40 GHz	Agilent / HP	8564E	C00951	07/29/14
PreAmplifier, 1-26.5GHz	Agilent	8449B	F00167	03/23/14
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/13
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/09/14

7. ANTENNA PORT TEST RESULTS

7.1. MEASUREMENT METHODS

Duty Cycle: KDB 789033

6 dB BW: KDB 558074 D01.

Output Power: KDB 558074 D01.

Power Spectral Density: KDB 558074 D01.

Out-of-band emissions in non-restricted bands: KDB 558074 D01.

Out-of-band emissions in restricted bands: KDB 558074 D01.

7.2. ON TIME, DUTY CYCLE

LIMITS

None; for reporting purposes only.

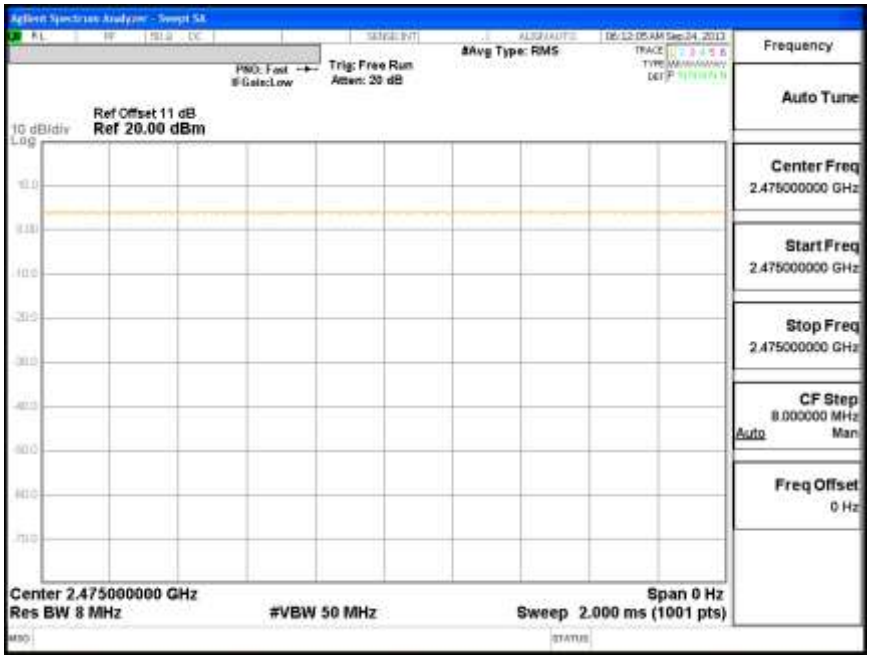
PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
2.4 GHz						
	1.00	1.00	1.000	100.0%	0.00	0.010

DUTY CYCLE



7.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

TEST PROCEDURE

KDB 558074 D01 v01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

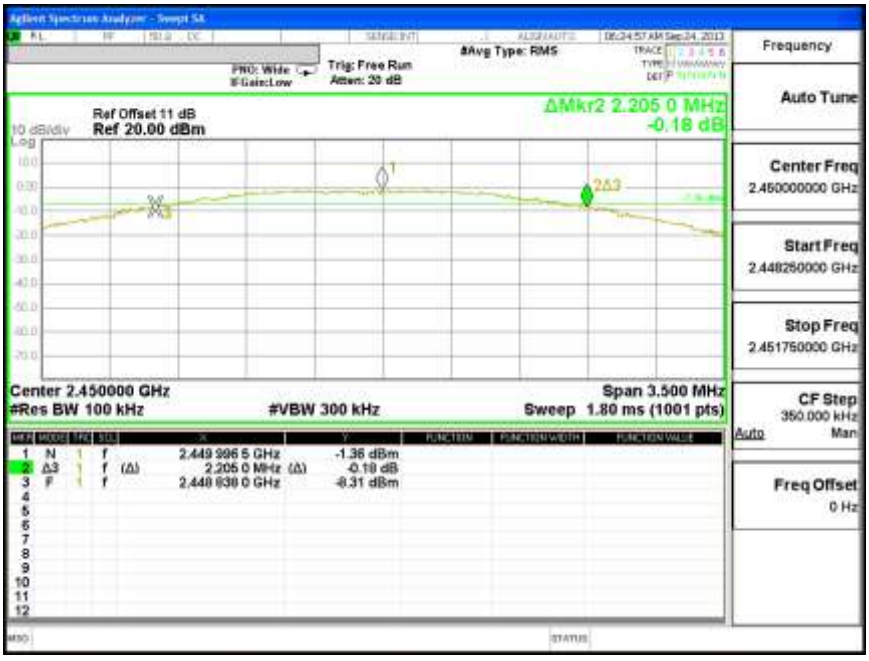
RESULTS

Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
2425	2.233	0.5
2450	2.205	0.5
2475	2.236	0.5

6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH

6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH

7.4. 99% BANDWIDTH

LIMIT

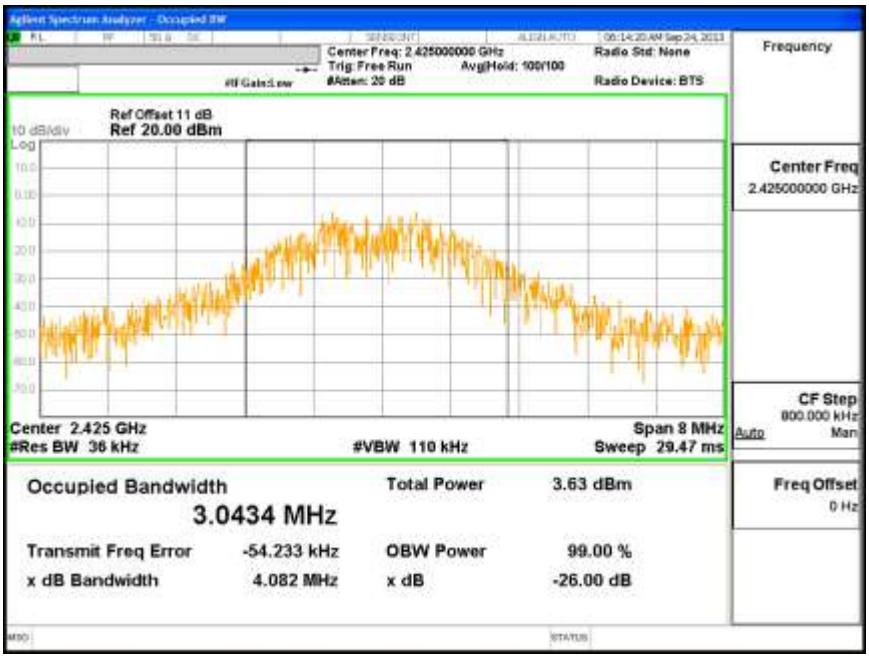
None; for reporting purposes only.

RESULTS

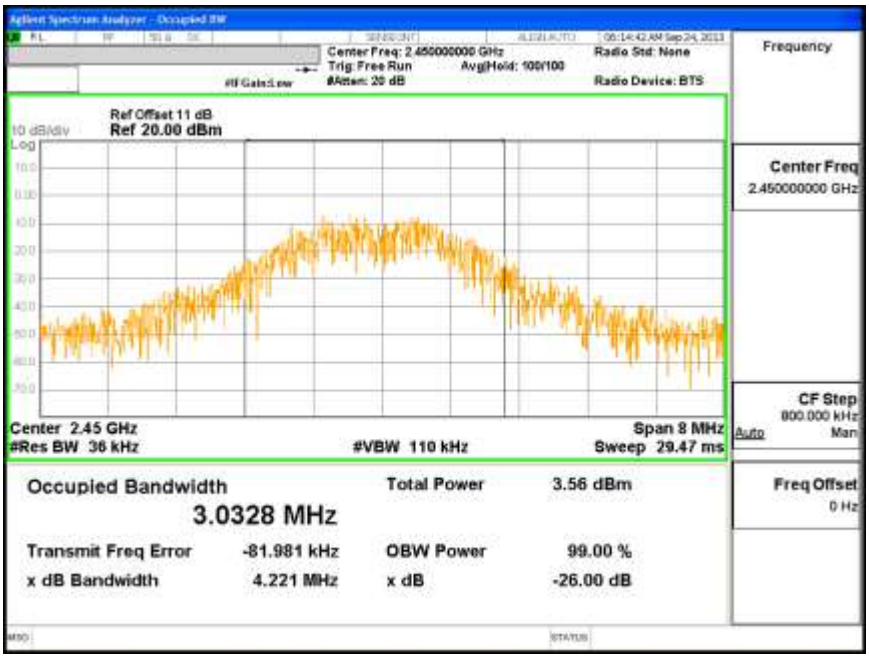
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2425	3.0434
Middle	2450	3.0328
High	2475	2.9233

99% BANDWIDTH

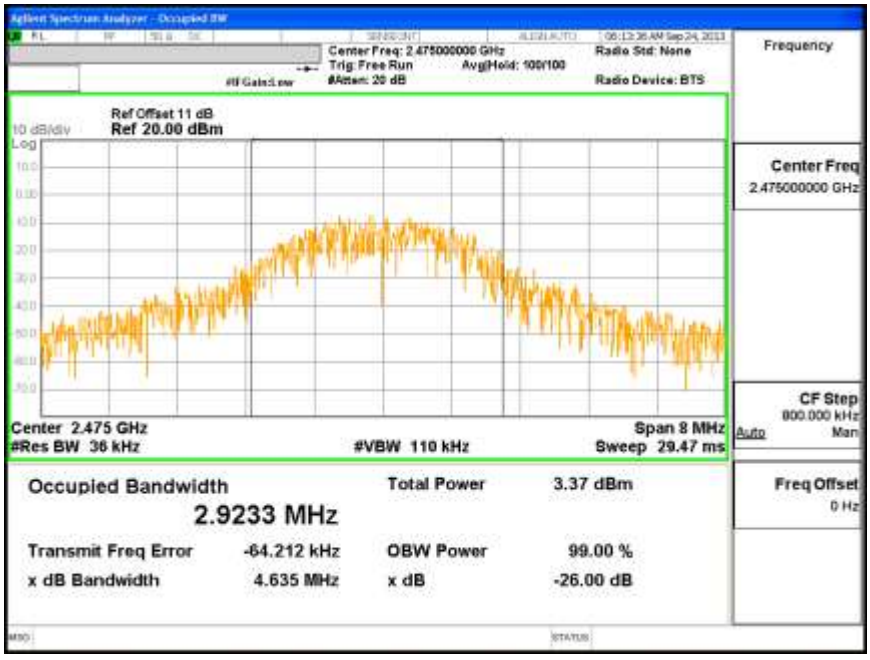
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



7.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

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.

RESULTS

Channel	Frequency (MHz)	Average Power (dBm)
Low	2425	4.35
Middle	2450	4.32
High	2475	4.40

7.6. OUTPUT POWER

LIMIT

FCC §15.247

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

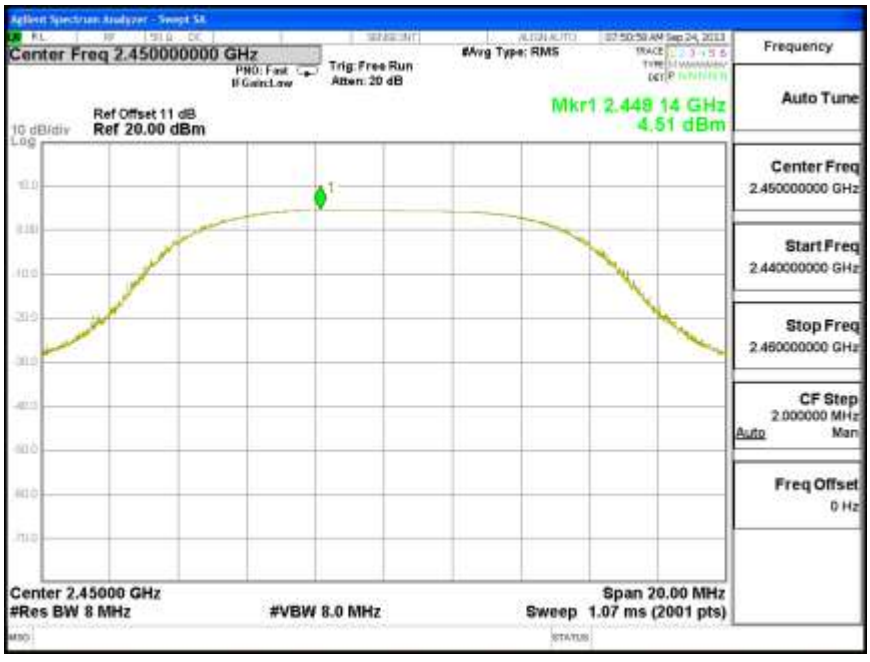
RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2425	4.580	30	-25.42
Middle	2450	4.510	30	-25.49
High	2475	4.400	30	-25.60

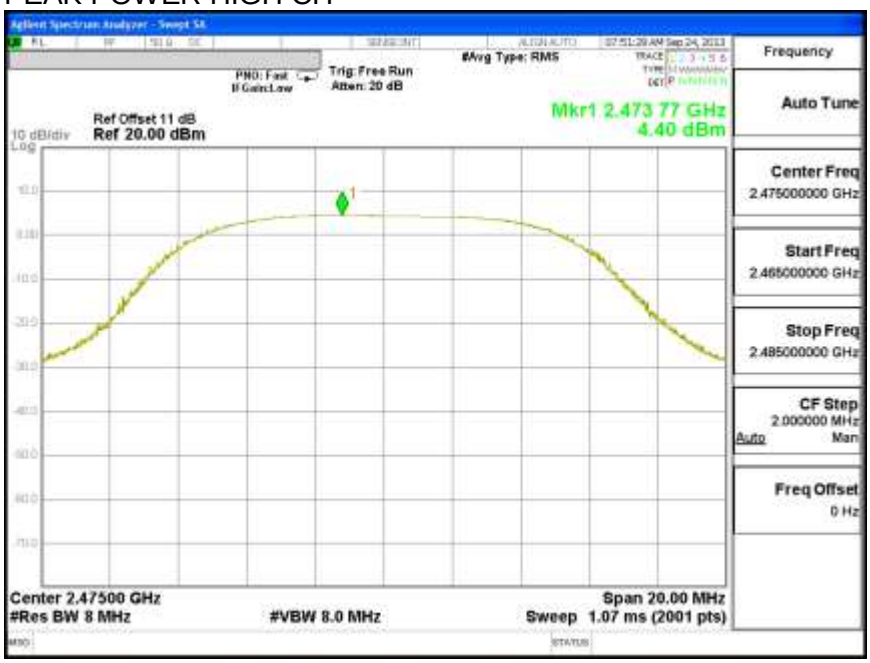
OUTPUT POWER

PEAK POWER LOW CH

PEAK POWER MID CH



PEAK POWER HIGH CH



7.7. PSD

LIMITS

FCC §15.247

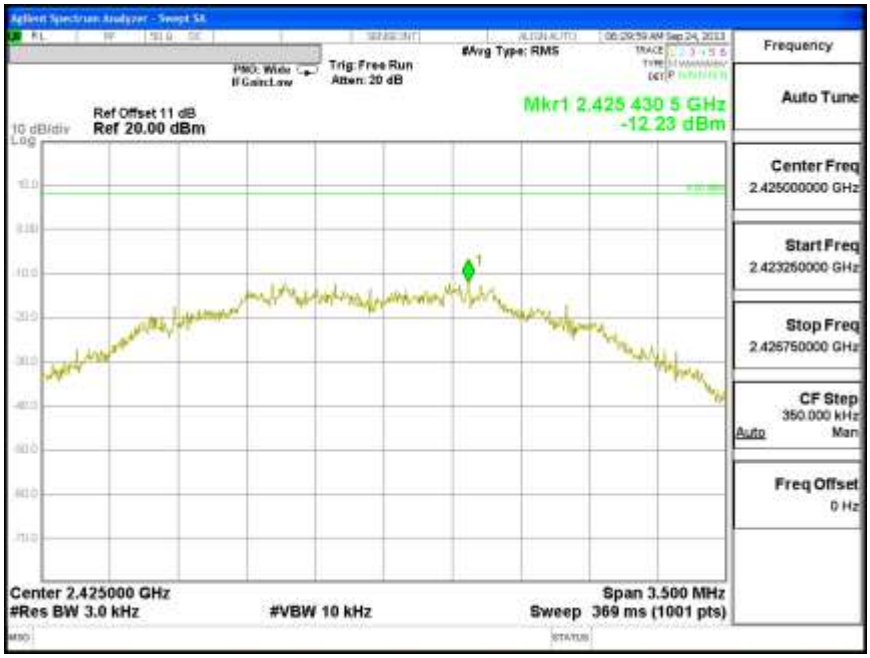
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

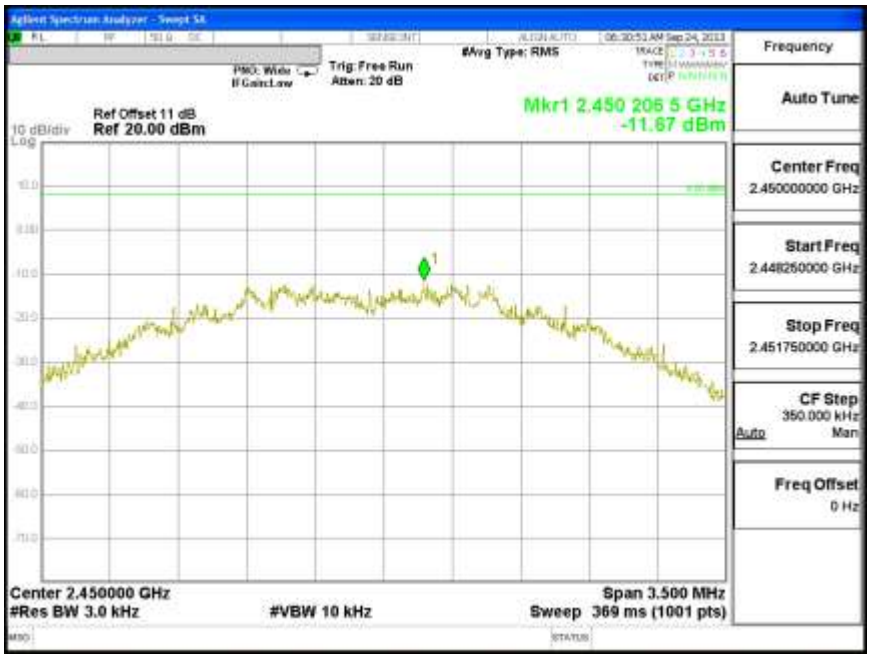
Frequency (MHz)	Meas (dBm)	Limit (dBm)	Margin (dB)
2425	-12.23	8.0	-20.2
2450	-11.67	8.0	-19.7
2475	-11.16	8.0	-19.2

PSD

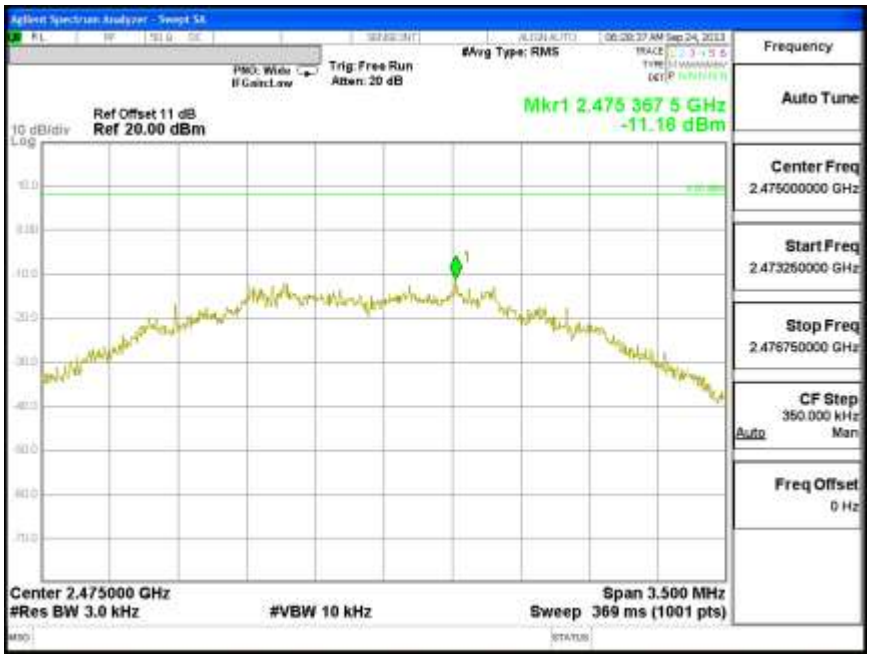
PSD LOW CH



PSD MID CH



PSD HIGH CH



7.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

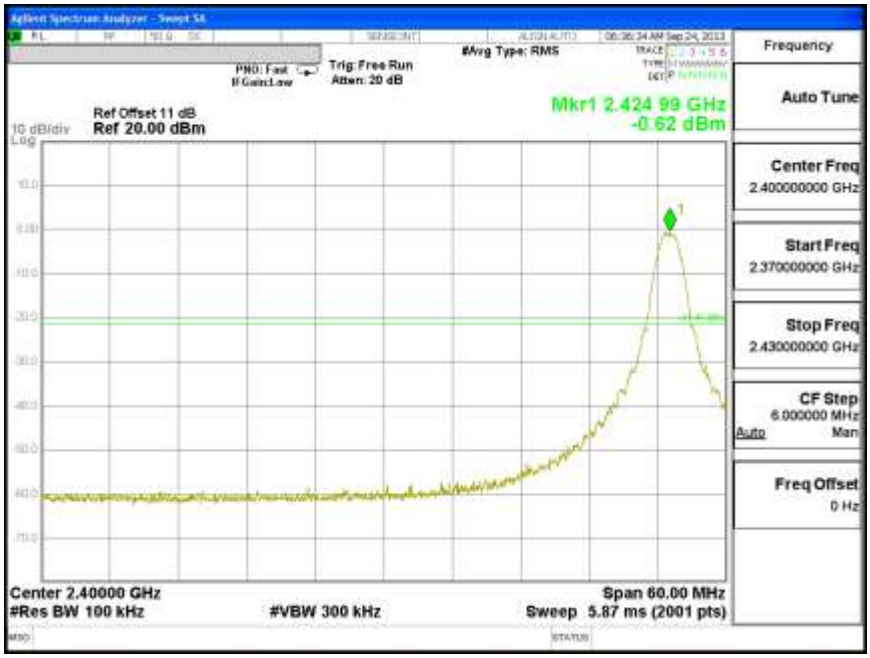
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

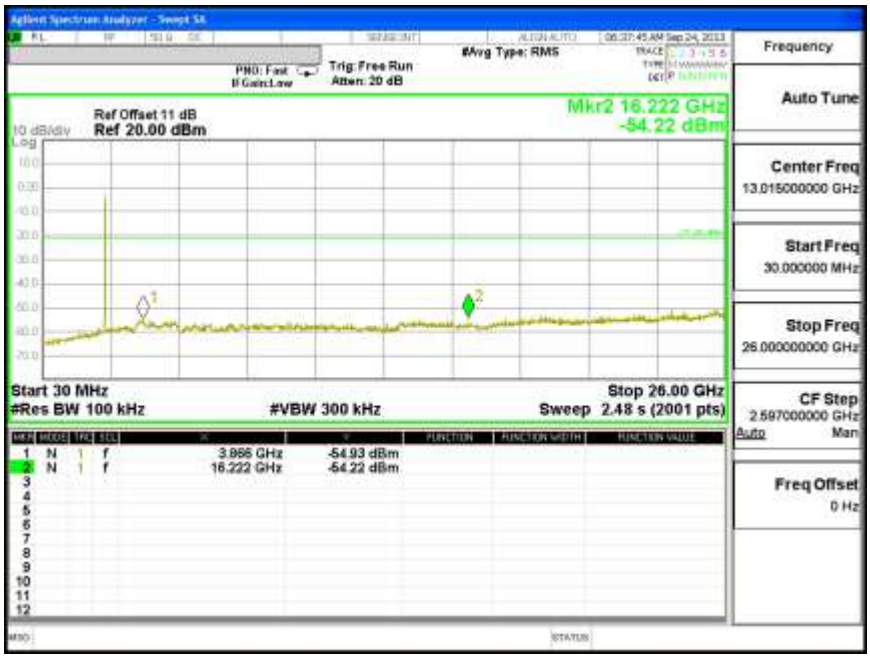
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

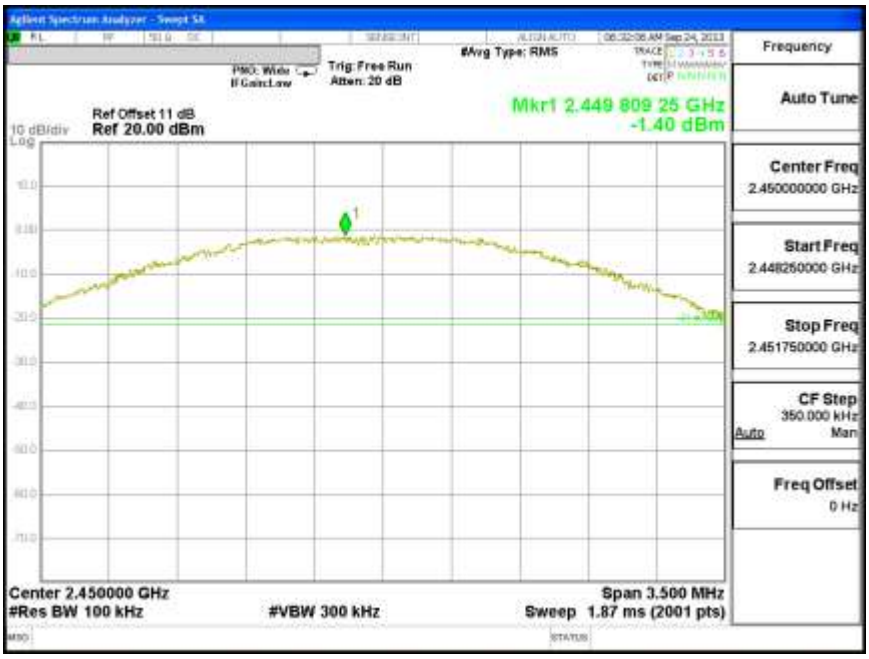


LOW CHANNEL SPURIOUS

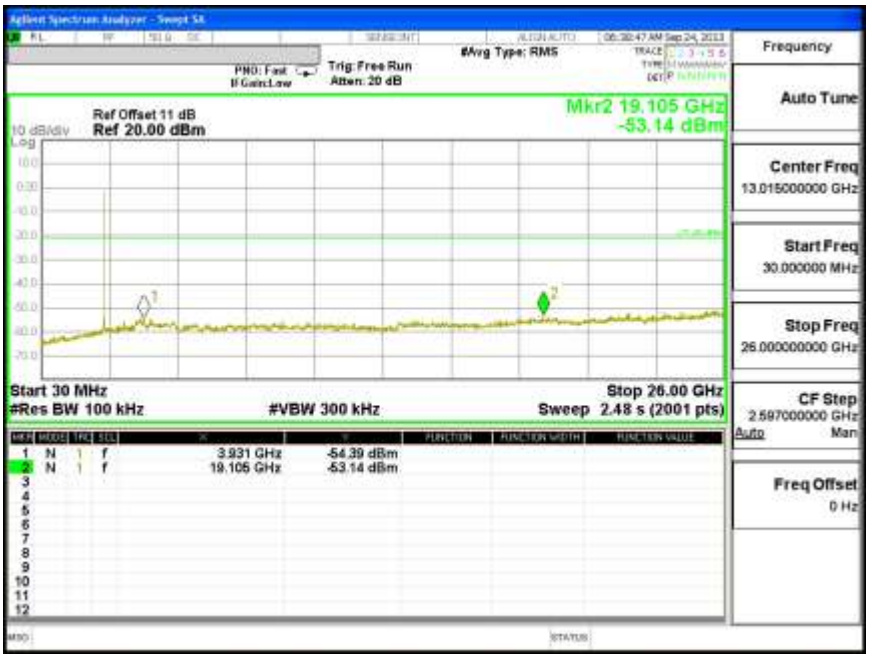


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL REFERENCE

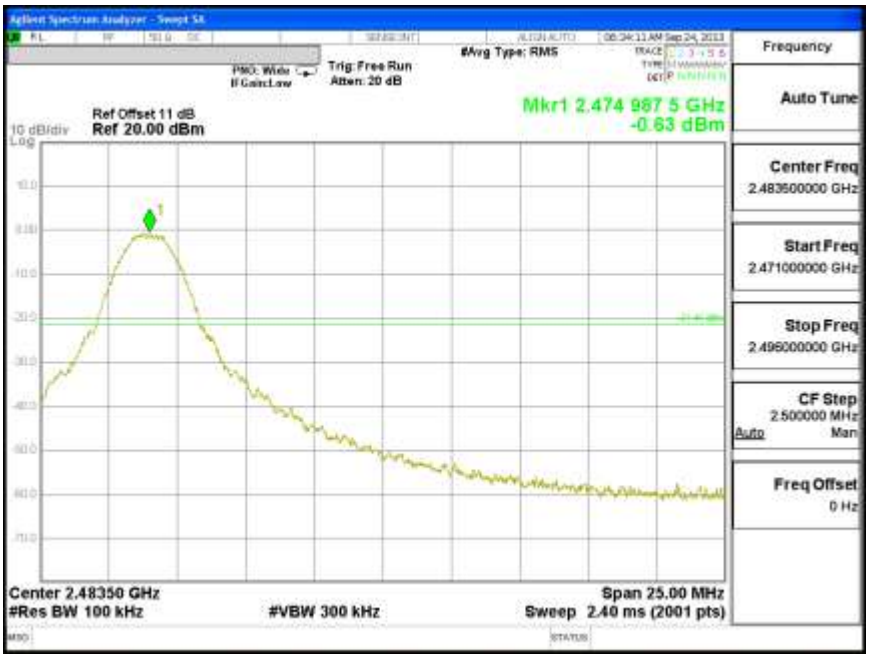


MID CHANNEL SPURIOUS

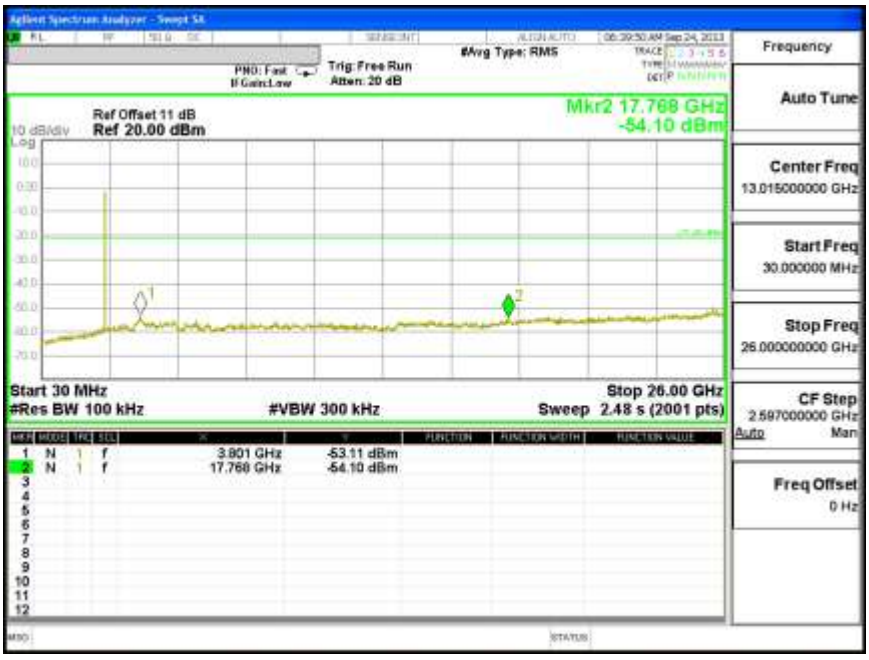


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE



HIGH CHANNEL SPURIOUS



8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

TEST PROCEDURE

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

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

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

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

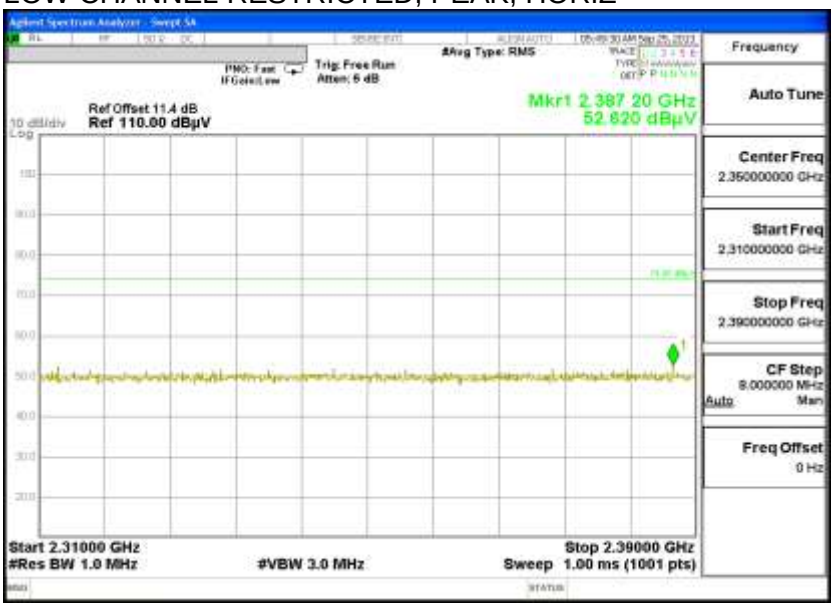
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

RESULTS

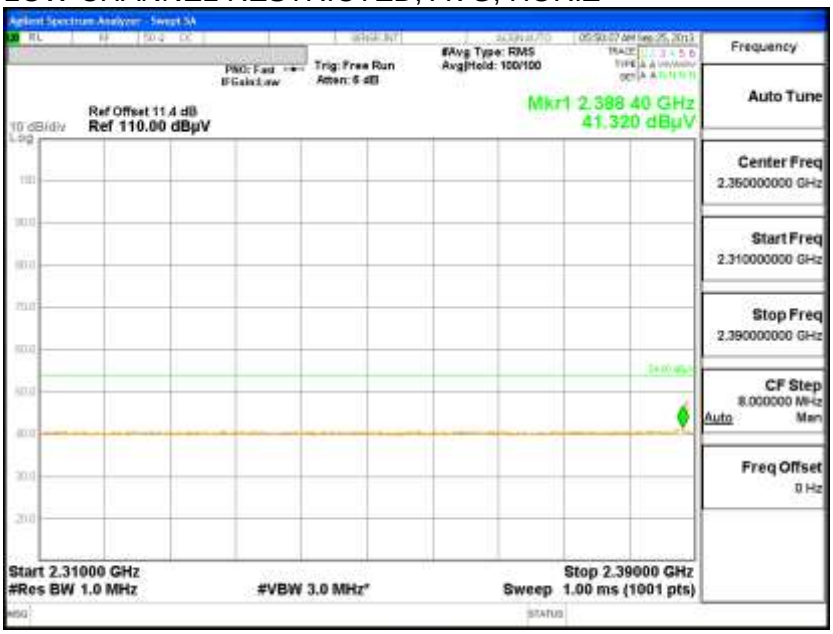
8.2. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEDGE (LOW CHANNEL)

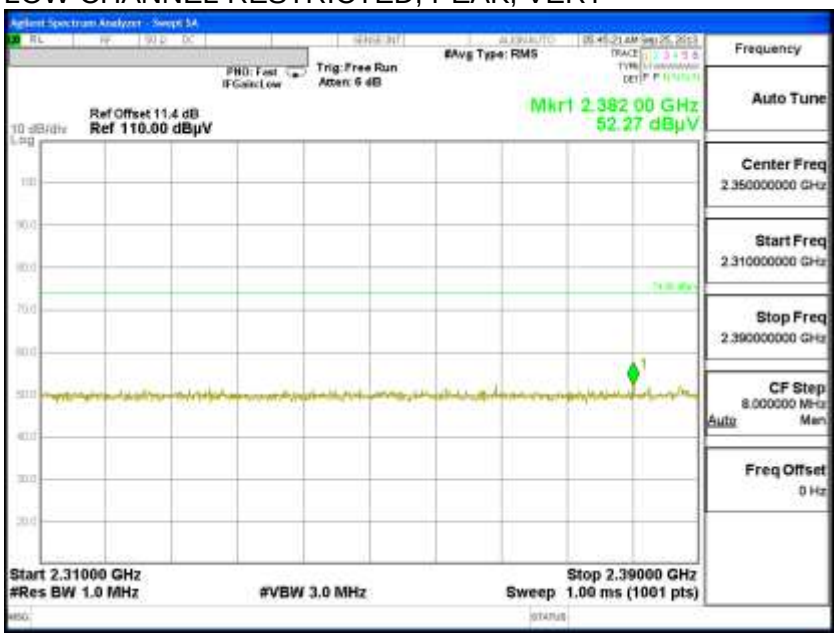
LOW CHANNEL RESTRICTED, PEAK, HORIZ



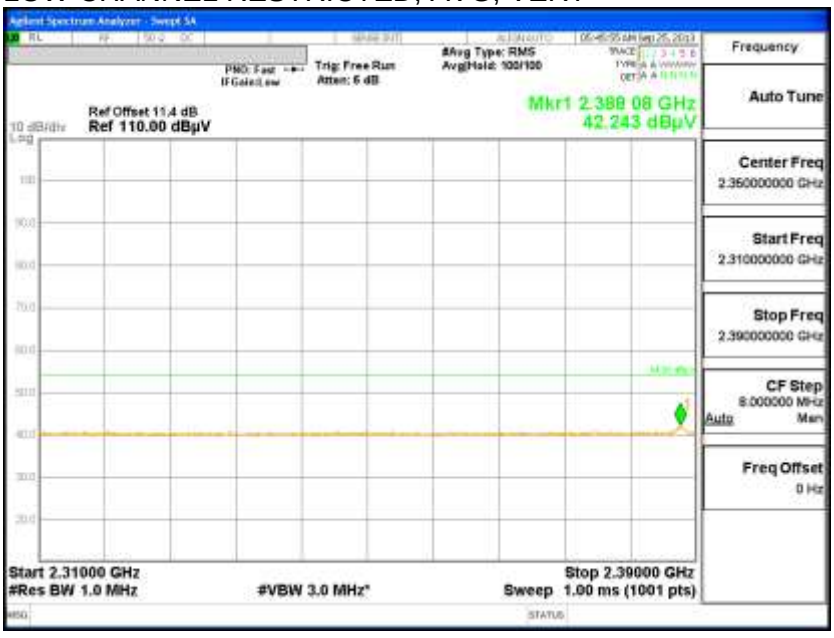
LOW CHANNEL RESTRICTED, AVG, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT

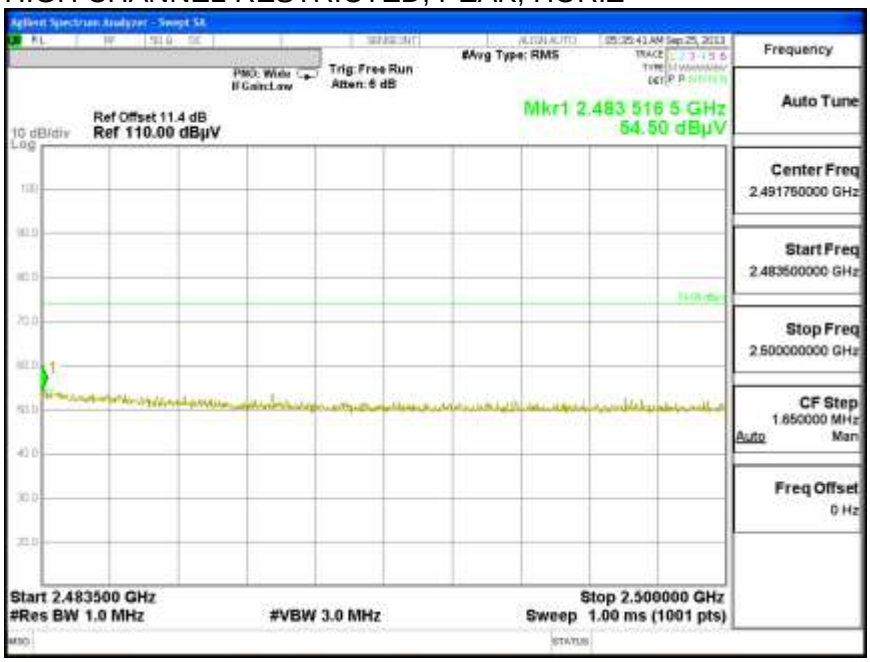


LOW CHANNEL RESTRICTED, AVG, VERT

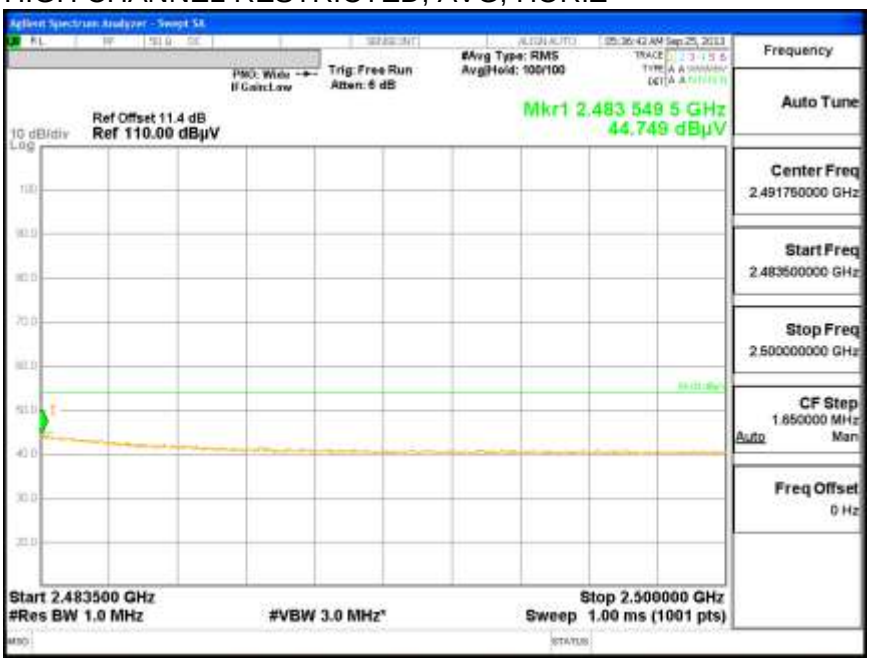


RESTRICTED BANDEDGE (HIGH CHANNEL)

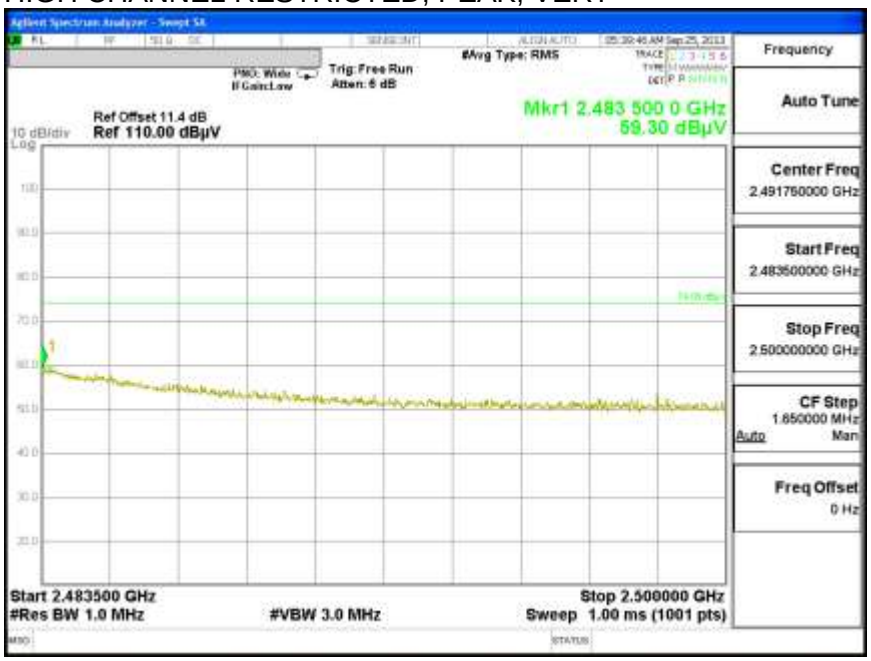
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



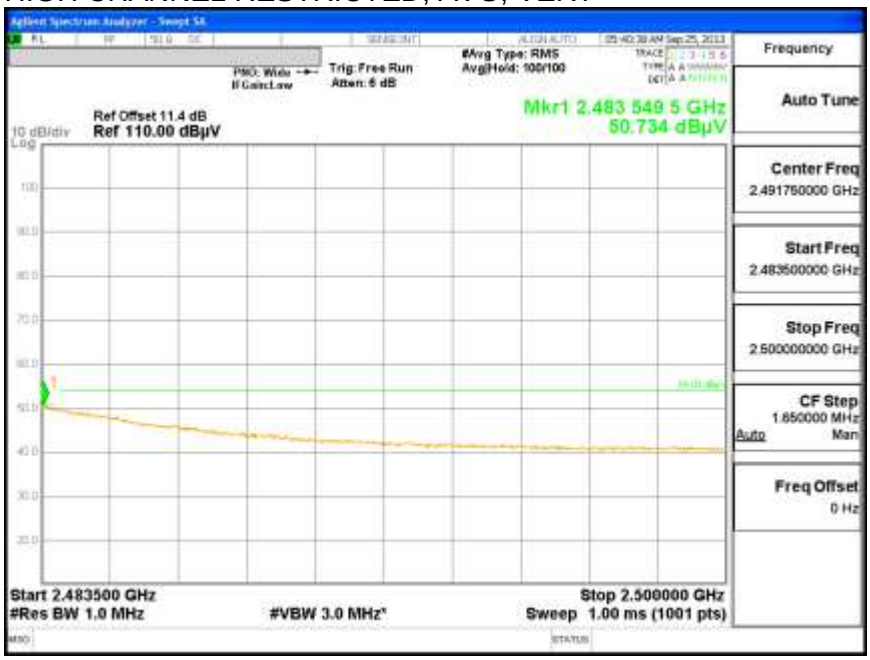
HIGH CHANNEL RESTRICTED, AVG, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT

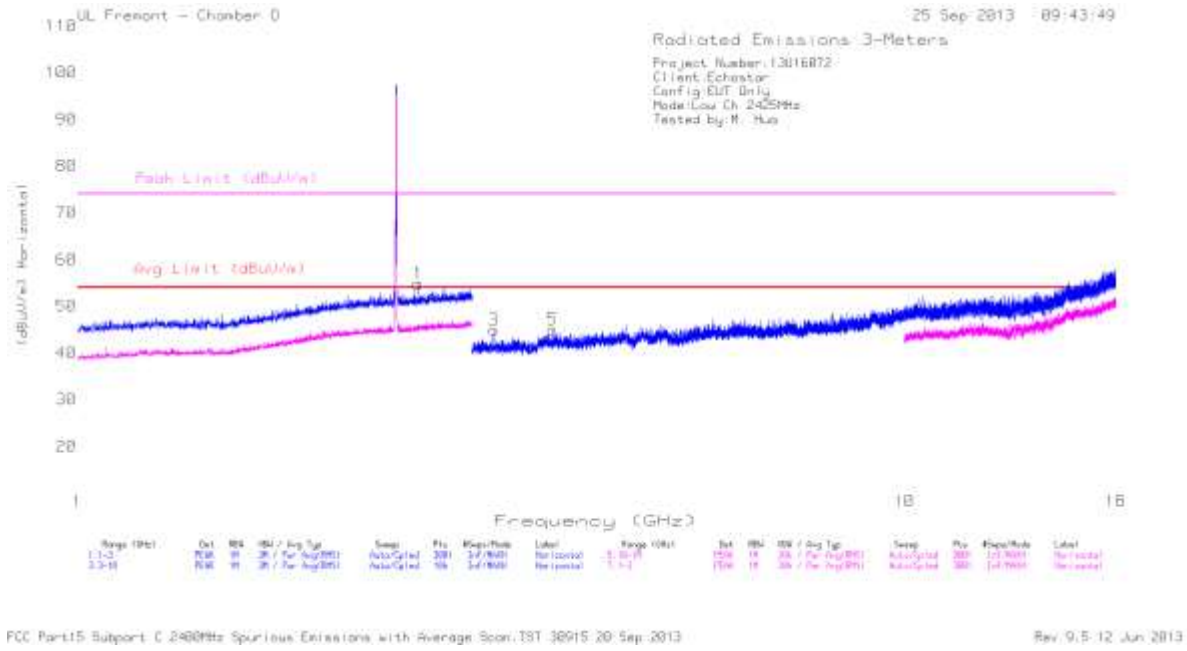


HIGH CHANNEL RESTRICTED, AVG, VERT

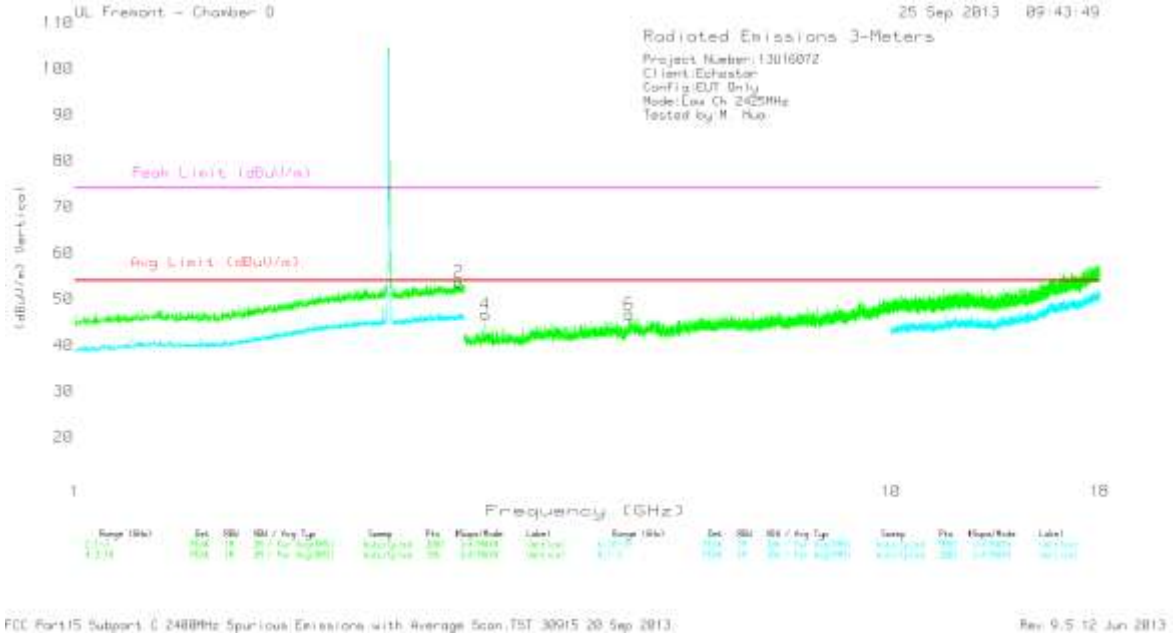


LOW CHANNEL

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (db/m)	Amp/Cbl/Pad	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.581	43	PK	32.6	-20.8	54.80	-	-	74	-19.2	0-360	100	H
2	2.953	40.98	PK	33.1	-20.4	53.68	53.97	0.29	74	-20.32	0-360	100	V
3*	3.185	40.6	PK	33.2	-28.9	44.90	-	-	-	-	0-360	100	H
4*	3.185	42.34	PK	33.2	-28.9	46.64	-	-	-	-	0-360	100	V
5*	3.751	40.23	PK	33.8	-29	45.03	-	-	-	-	0-360	201	H
6	4.777	40.45	PK	34.4	-28.1	46.75	53.97	-7.22	74	-27.25	0-360	201	V

PK - Peak detector

*Not in restricted band

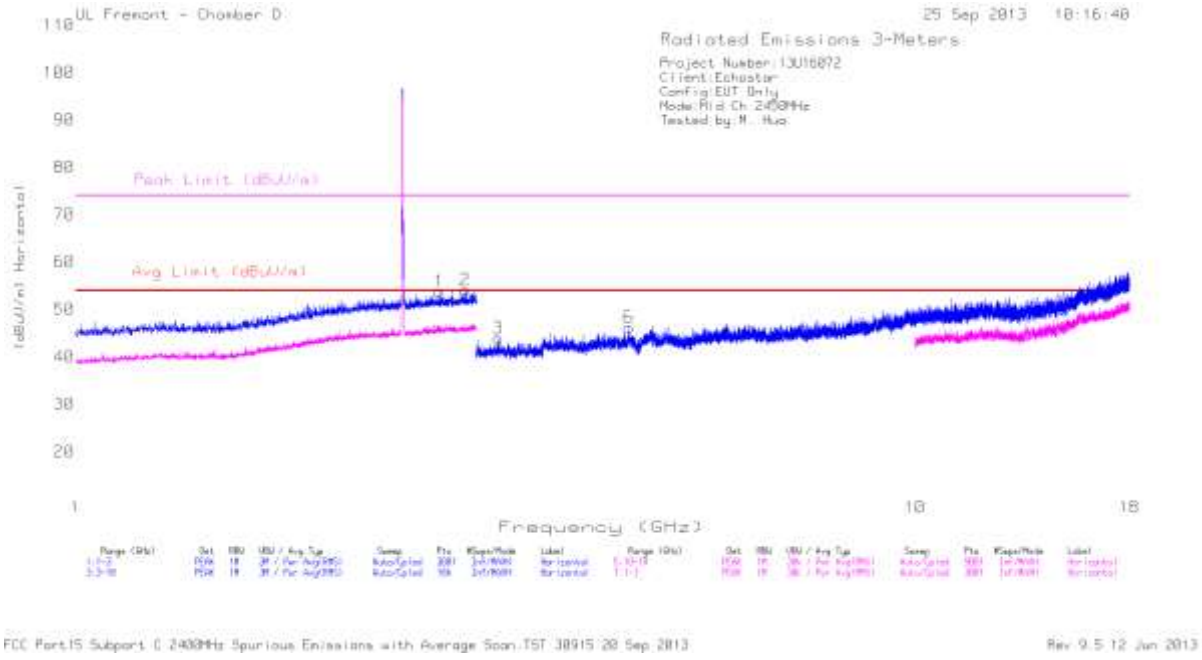
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (db/m)	Amp/Cbl/ Pad	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.577	29.49	MAv1	32.6	-20.9	41.19	53.97	-12.78	-	-	83	322	H
3.748	29.01	MAv1	33.8	-29	33.81	53.97	-20.16	-	-	104	119	H
4.776	33.02	MAv1	34.4	-28.1	39.32	53.97	-14.65	-	-	285	166	V

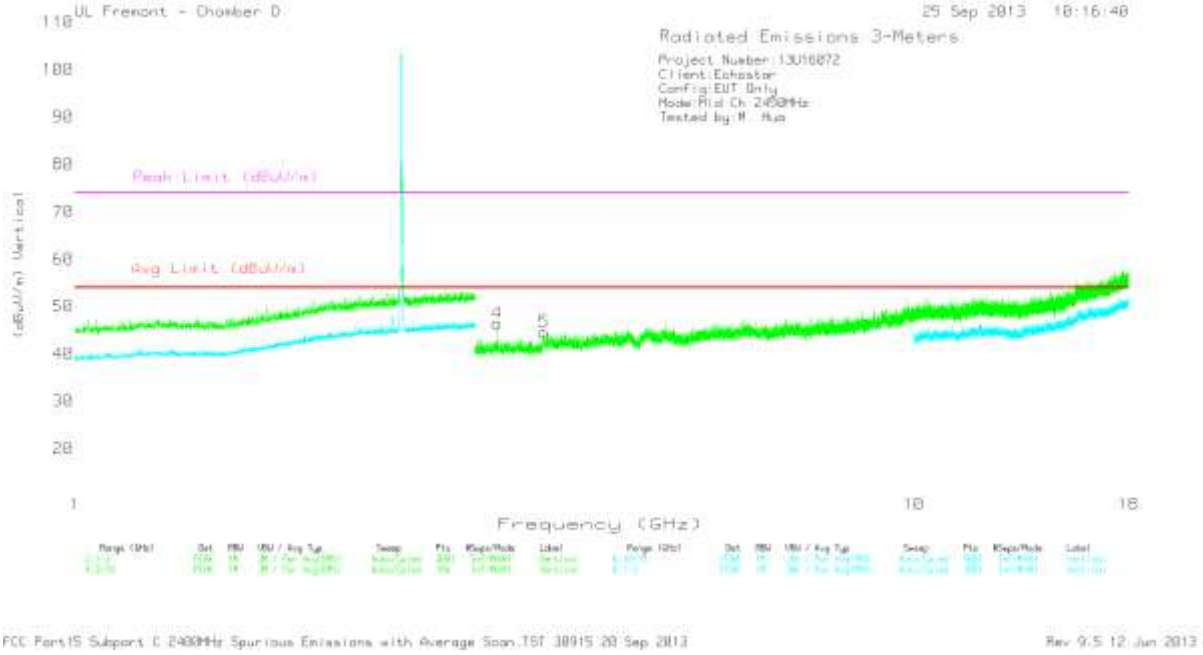
MAv1 - KDB558074 D01 V03r01 Option 1 Maximum RMS Average

MID CHANNEL

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (db/m)	Amp/Cbl/Pad	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.709	41.74	PK	32.8	-20.8	53.74	53.97	-0.23	74	-20.26	0-360	100	H
2*	2.912	41.58	PK	33	-20.5	54.08	-	-	-	-	0-360	100	H
3*	3.185	39.58	PK	33.2	-28.9	43.88	-	-	-	-	0-360	201	H
4*	3.185	42.15	PK	33.2	-28.9	46.45	-	-	-	-	0-360	100	V
5	3.621	39.75	PK	33.5	-28.7	44.55	53.97	-9.42	74	-29.45	0-360	100	V
6	4.558	38.8	PK	34.2	-26.8	46.2	53.97	-7.77	74	-27.8	0-360	201	H

PK - Peak detector

*Not in restricted band

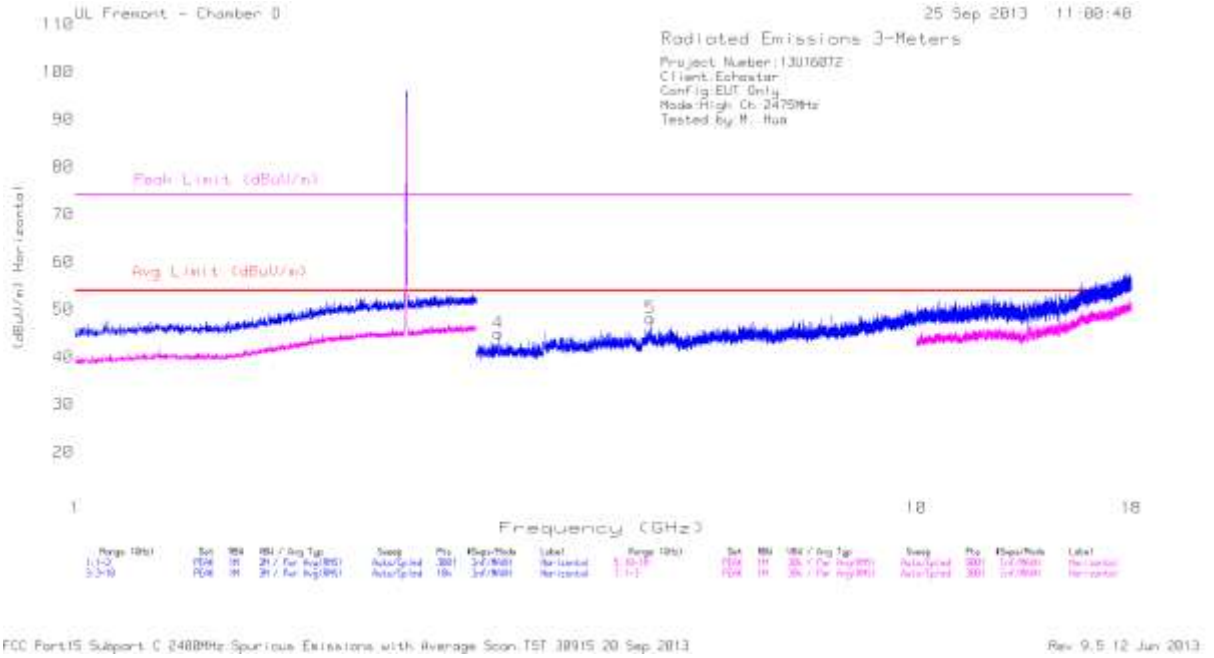
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (db/m)	Amp/Cbl/ Pad	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.712	29.63	MAv1	32.8	-20.8	41.63	53.97	-12.34	-	-	186	385	H
3.621	28.82	MAv1	33.5	-28.7	33.62	53.97	-20.35	-	-	177	133	V
4.559	27.88	MAv1	34.2	-26.8	35.28	53.97	-18.69	-	-	214	387	H

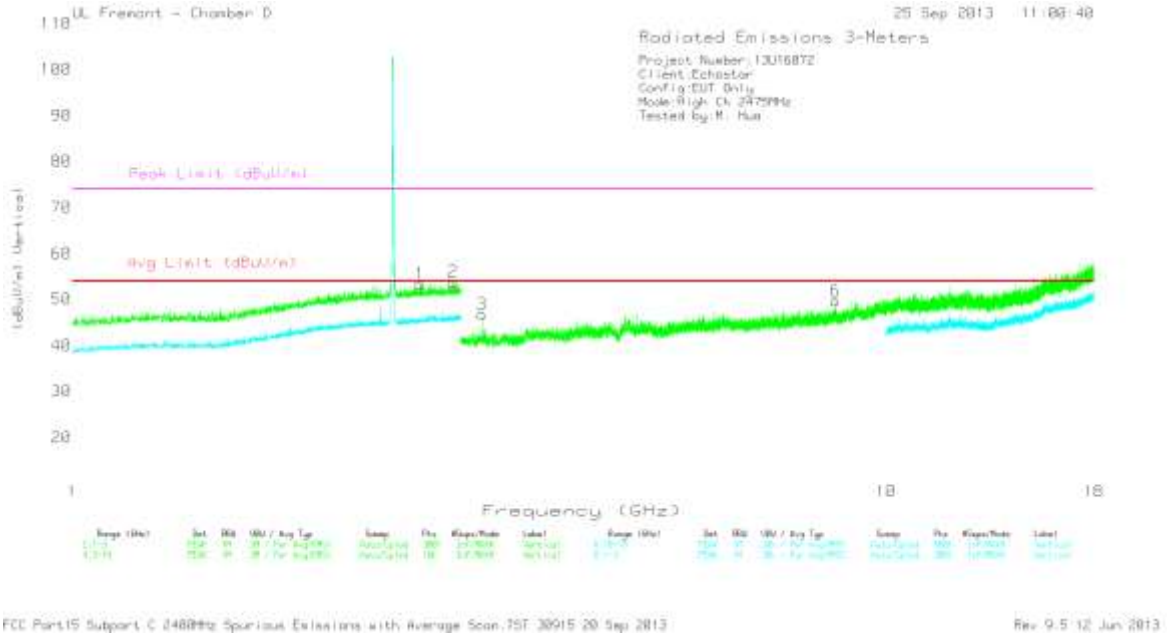
MAv1 - KDB558074 D01 V03r01 Option 1 Maximum RMS Average

HIGH CHANNEL

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (db/m)	Amp/Cbl/Pad	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.676	41.3	PK	32.8	-20.7	53.4	53.97	-.57	74	-20.6	0-360	100	V
2*	2.936	41.23	PK	33	-20.4	53.83	-	-	-	-	0-360	100	V
3*	3.185	42.46	PK	33.2	-28.9	46.76	-	-	-	-	0-360	100	V
4*	3.185	40.68	PK	33.2	-28.9	44.98	-	-	-	-	0-360	201	H
5	4.828	40.85	PK	34.4	-27.1	48.15	53.97	-5.82	74	-25.85	0-360	201	H
6*	8.668	36.09	PK	36.3	-22.7	49.69	-	-	-	-	0-360	201	V

PK - Peak detector

*Not in restricted band

Radiated Emissions

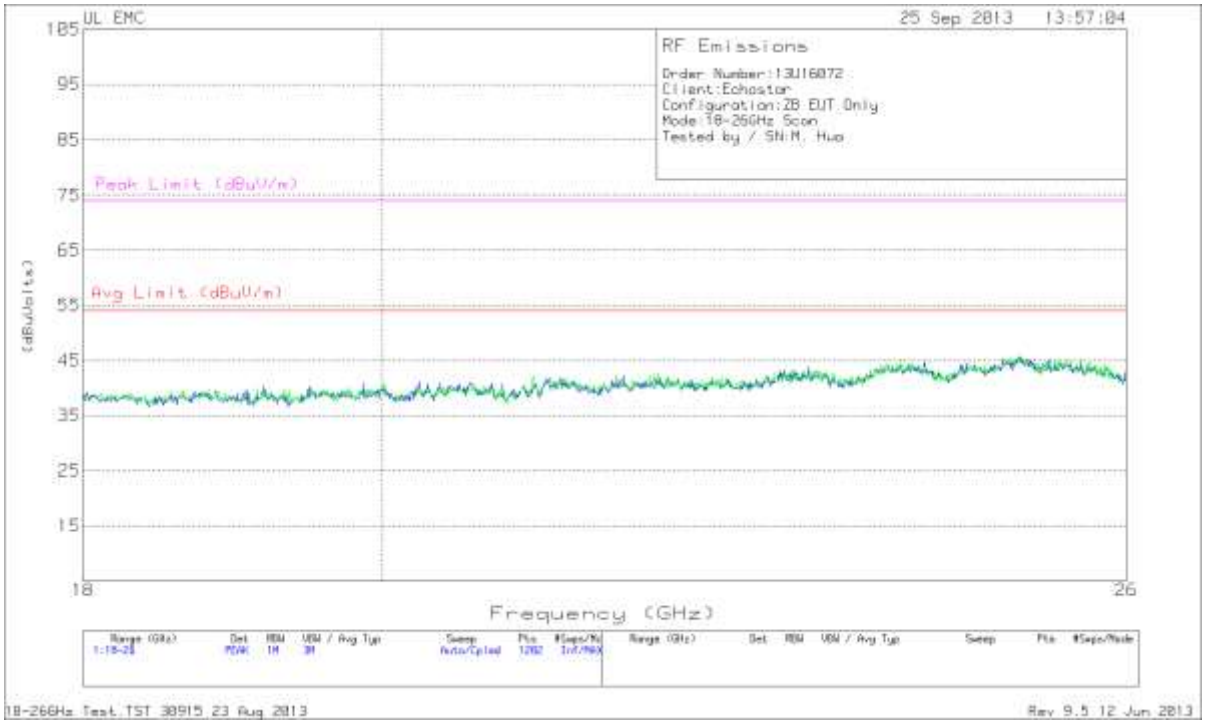
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (db/m)	Amp/Cbl/ Pad	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.672	29.66	MAv1	32.7	-20.7	41.66	53.97	-12.31	-	-	151	146	V
4.824	28.02	MAv1	34.4	-27.1	35.32	53.97	-18.65	-	-	0	127	H

MAv1 - KDB558074 D01 V03r01 Option 1 Maximum RMS Average

8.3. WORST-CASE ABOVE 18 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE)

HORIZONTAL & VERTICAL PLOT



DATA

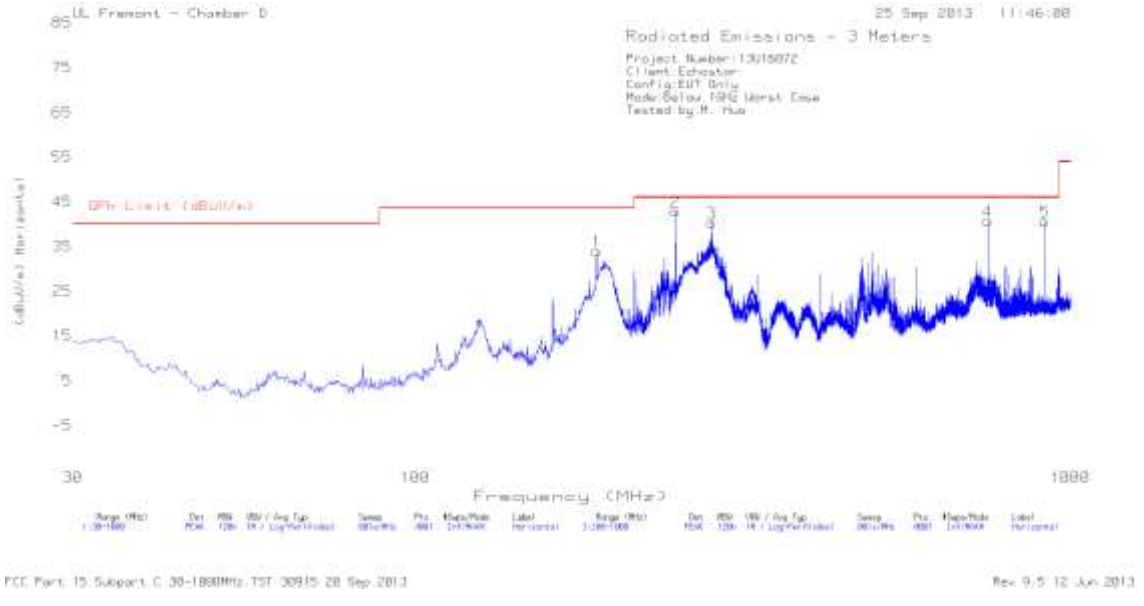
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	21.097	42.73	PK	32.7	-23.6	-9.5	42.33	54	-11.66	74	-31.66
2	25.041	44.00	PK	34.1	-22.6	-9.5	46.00	54	-8.00	74	-28.00

PK - Peak detector

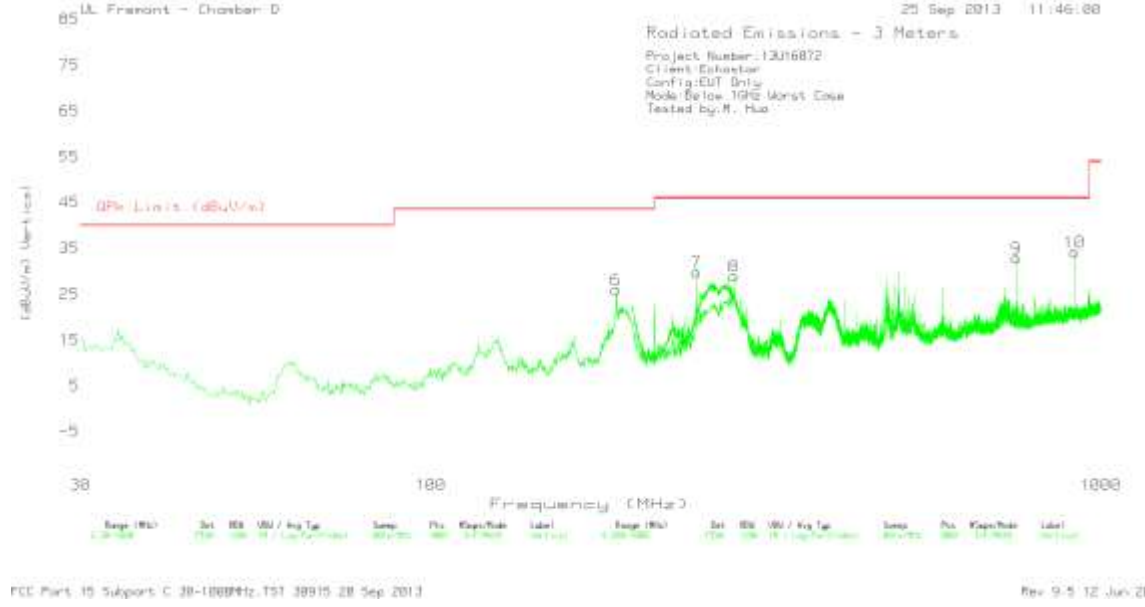
8.4. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T407 dB/m	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	189.08	53.66	PK	11.4	-31.1	33.96	43.52	-9.56	0-360	98	H
2	249.22	62.23	PK	11.5	-30.9	42.83	46.02	-3.19	0-360	98	H
3	283.4125	57.69	PK	13.4	-30.8	40.29	46.02	-5.73	0-360	98	H
4	747.8	49.85	PK	20.6	-29.8	40.65	46.02	-5.37	0-360	98	H
5	913.9125	47.29	PK	22.1	-28.8	40.59	46.02	-5.43	0-360	98	H
6	189.08	45.69	PK	11.4	-31.1	25.99	43.52	-17.53	0-360	100	V
7	249.22	49.14	PK	11.5	-30.9	29.74	46.02	-16.28	0-360	100	V
8	283.4125	46.34	PK	13.4	-30.8	28.94	46.02	-17.08	0-360	100	V
9	747.8	42.02	PK	20.6	-29.8	32.82	46.02	-13.2	0-360	100	V
10	913.9125	40.84	PK	22.1	-28.8	34.14	46.02	-11.88	0-360	100	V

PK - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T407 dB/m	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
249.2325	47.35	QP	11.5	-30.9	27.95	46.02	-18.07	234	399	H
278.6488	53.25	QP	13.4	-30.8	35.85	46.02	-10.17	4	103	H

QP – Quasi Peak

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

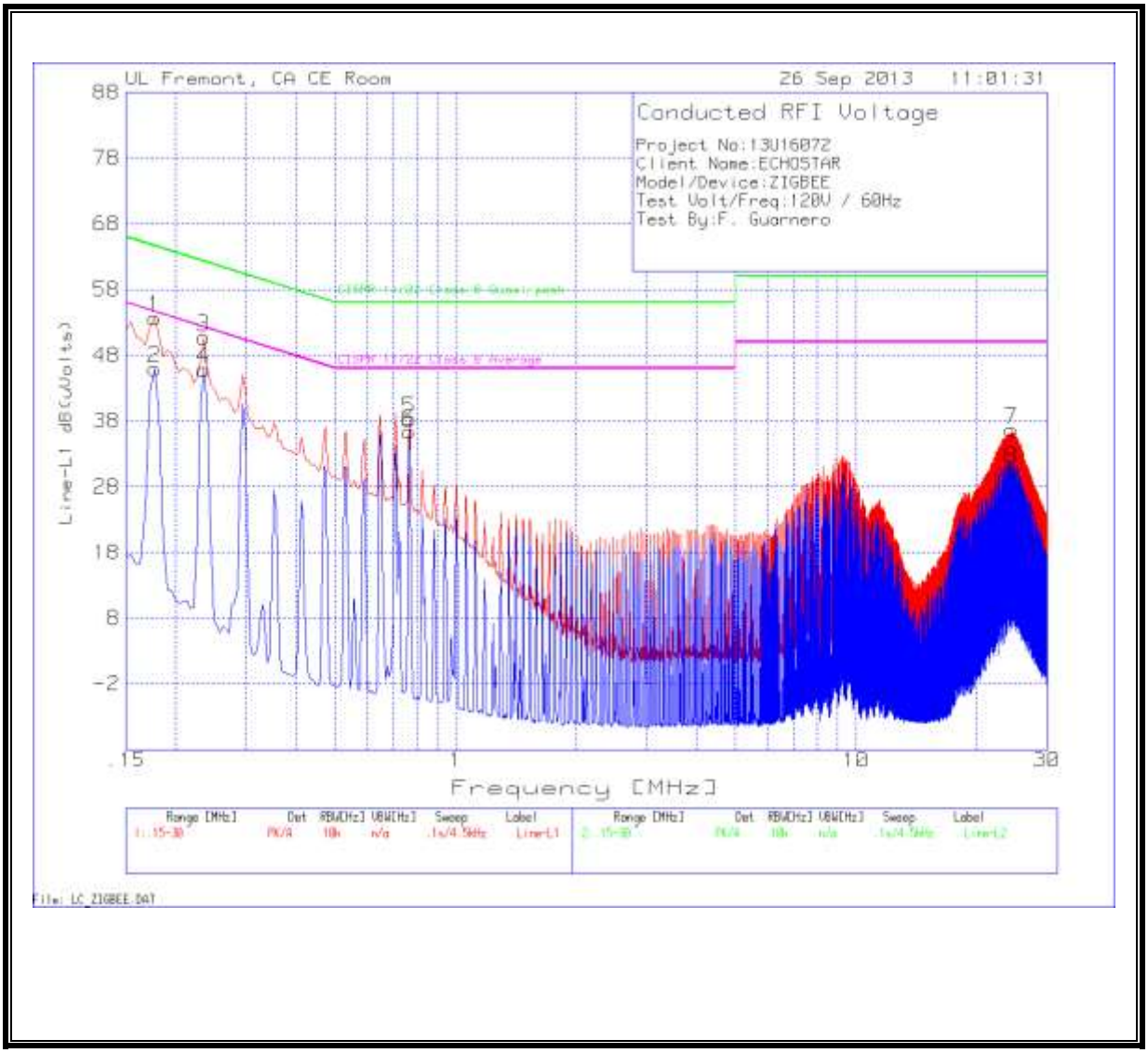
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

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

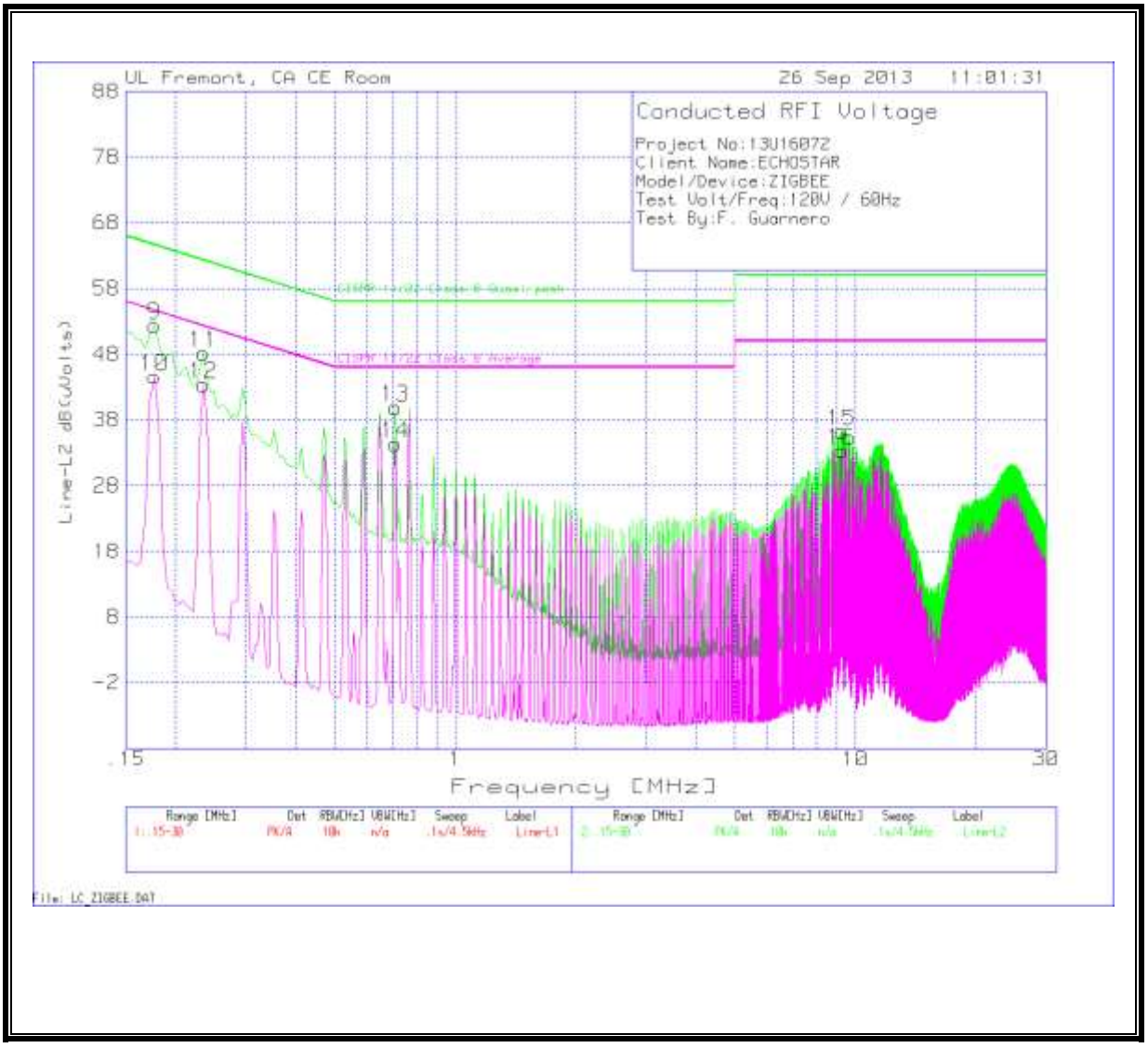
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

LINE 1 RESULTS



LINE 2 RESULTS



DATA

Line-L1 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
1	.177	53.56	PK	.1	0	53.66	64.6	-10.94	-	-
2	.177	45.82	Av	.1	0	45.92	-	-	54.6	-8.68
3	.2355	50.68	PK	.1	0	50.78	62.3	-11.52	-	-
4	.2355	45.7	Av	.1	0	45.8	-	-	52.3	-6.5
5	.7665	38.18	PK	.1	0	38.28	56	-17.72	-	-
6	.7665	36.34	Av	.1	0	36.44	-	-	46	-9.56
7	24.495	36.09	PK	.4	.2	36.69	60	-23.31	-	-
8	24.495	29.98	Av	.4	.2	30.58	-	-	50	-19.42

Line-L2 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
9	.177	52.29	PK	.1	0	52.39	64.6	-12.21	-	-
10	.177	44.51	Av	.1	0	44.61	-	-	54.6	-9.99
11	.2355	48.04	PK	.1	0	48.14	62.3	-14.16	-	-
12	.2355	43.27	Av	.1	0	43.37	-	-	52.3	-8.93
13	.708	39.84	PK	.1	0	39.94	56	-16.06	-	-
14	.708	34.29	Av	.1	0	34.39	-	-	46	-11.61
15	9.267	36.04	PK	.1	.1	36.24	60	-23.76	-	-
16	9.267	33.17	Av	.1	.1	33.37	-	-	50	-16.63