FCC 47 CFR PART 15 SUBPART C
CERTIFICATION TEST REPORT

FOR

BLUETOOTH & DTS/UNII a/b/g/n/ac

MODEL NUMBER: GG1

FCC ID: A4R-GG1

REPORT NUMBER: 15U19985-E1

ISSUE DATE: MAY 13, 2015

Prepared for
GOOGLE INC.
1600 AMPHITHEATRE PARKWAY
MOUNTAIN VIEW, CA 94043, U.S.A.

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	05/13/2015	Initial Issue	F. de Anda

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: GOOGLE INC.
1600 AMPHITHEATRE PARKWAY
MOUNTAIN VIEW, CA 94043, U.S.A.

EUT DESCRIPTION: BLUETOOTH & DTS/UNII a/b/g/n/ac

MODEL: GG1

SERIAL NUMBER: LWPIA0EG15040115 (CONDUCTED)
LWP1A02A15110021 (RADIATED)
LWP1A01A15070081 (RADIATED)

DATE TESTED: MARCH 17 – APRIL 06, 2015

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:

FRANCISCO DE ANDA
PROJECT LEAD
UL Verification Services Inc.

Tested By:

CLIFFORD SUSA
EMC ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, and ANSI C63.4-2009.

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
	☐ Chamber G
	☒ Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

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 Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an accessory device that incorporates 2.4GHz, 5GHz WLAN, BT and BT-LE radio with integral antenna. The EUT is provided with an AC charger and a USB cable. When connected to a PC, the USB cable provides a path for charging and data transfer.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	15.0	31.6
2412 - 2462	802.11g	15.0	31.6
2412 - 2462	802.11n HT20	15.0	31.6

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PCB antenna with a maximum gain of 4dBi in the 2.4GHz band and 5dBi in the 5GHz band.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was v1.0.

The EUT driver software installed in the support equipment during testing was ver 6.37.32.34.1

5.5. 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 following configurations were investigated and EUT powered by AC/DC adapter was the worst-case scenario. AC power line and below 1G radiated tests were conducted on configuration 1.

Configuration	Descriptions
1	EUT powered by AC/DC adapter via USB cable
2	EUT powered by host PC via USB cable

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.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Apple	Macbook Air	C02FX0VTDJDJDK	N/A
AC Adapter	Apple	A1343	ADP-85EBT	N/A

I/O CABLES

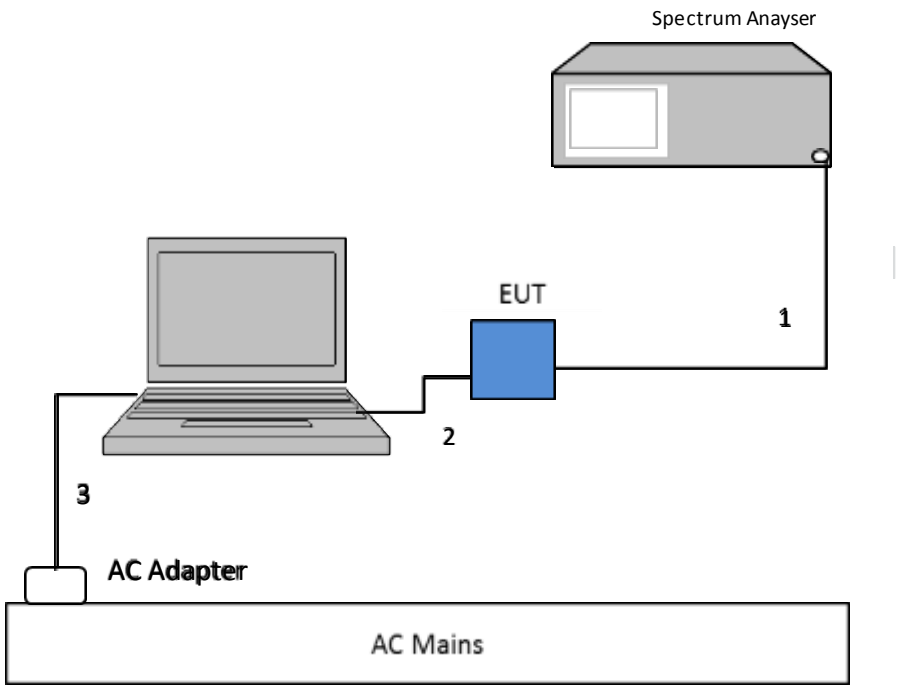
I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Antenna	1	coax	Shielded	0.2	
2	USB	1	USB	Shielded	0.5	
3	DC	1	DC	Shielded	1.5	

TEST SETUP

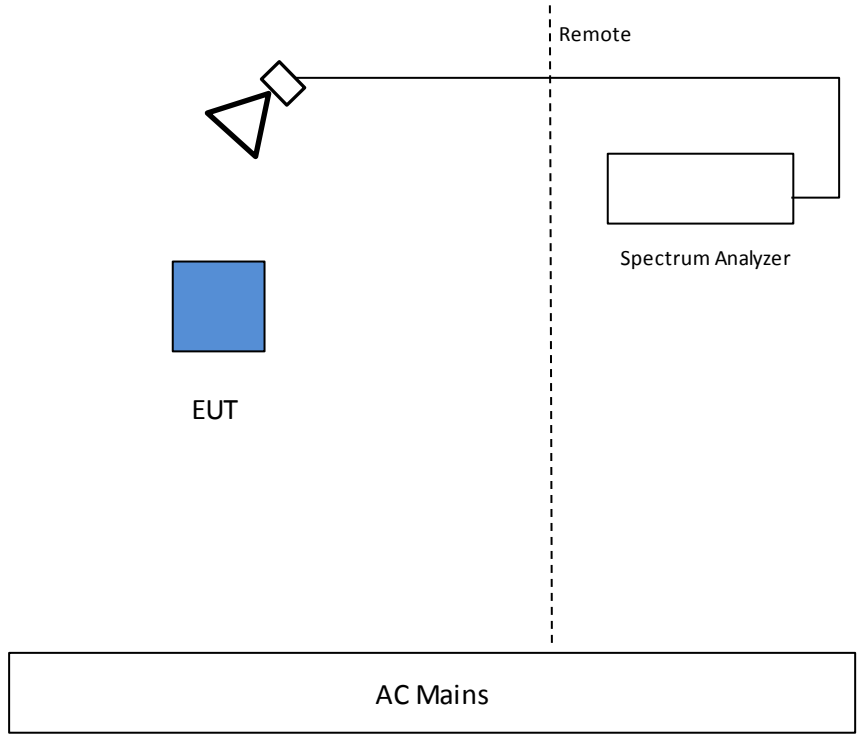
The EUT was connected to the support laptop via USB cable, test commands exercised the EUT.

SETUP DIAGRAM FOR TESTS

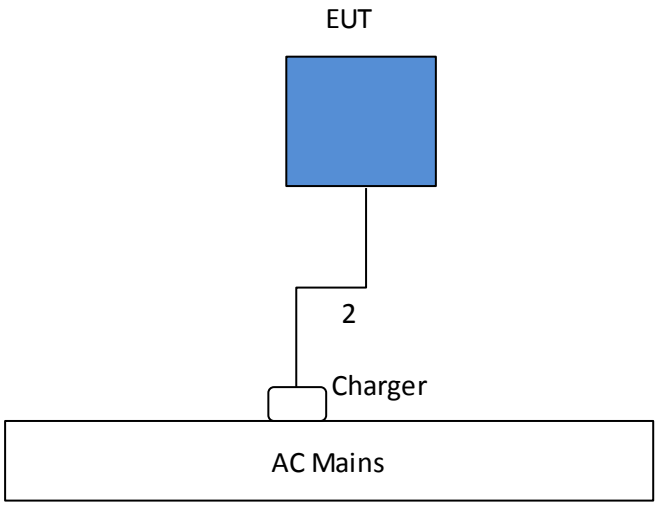
Conducted Port



Radiated > 1GHz

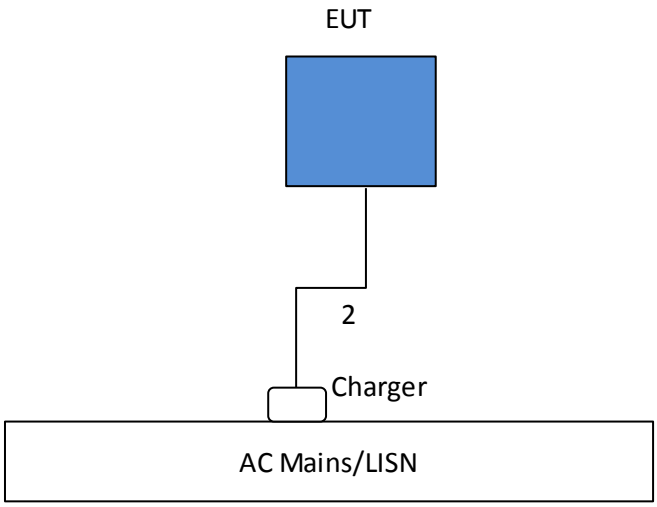


Radiated <1GHz



SETUP DIAGRAM FOR TESTS

LC EMISSIONS



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**	**T No.**	**Cal Date**	**Cal Due**
Radiated Software	UL	UL EMC	Ver 9.5, July 22, 2014		
Conducted Software	UL	UL EMC	Ver 2.1.4		
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	906	05/07/14	05/07/15
Antenna, Horn 18GHz	ETS Lindgren	3117	863	04/14/14	04/14/15
Antenna, Hybrid, 30MHz to 1GHz	Sunol Sciences	JB3	900	05/14/14	05/14/15
Amplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	495	06/05/14	06/05/15
Amplifier, 10kHz - 1GHz	Sonoma	310N	835	06/05/14	06/05/15
Spectrum Analyzer, 40GHz	HP	8564E	106	08/06/14	08/06/15
Amplifier, 26-40GHz	Miteq	NSP4000-SP2	88	09/03/14	09/03/15
Antenna, Horn 18-26GHz	ARA	MWH-1826	89	12/17/14	12/17/15
Antenna, Horn, 40GHz	ARA	MWH-2640/B	90	07/15/14	07/15/15
Amplifier, 1 - 26GHz	Agilent	8449B	404	06/05/14	06/05/15
LISN, 30MHz	FCC	50/250-25-2	24	01/16/15	01/16/16
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	917	05/08/14	05/08/15

7. MEASUREMENT METHODS

6 dB BW: KDB 558074 D01 v03r02, Section 8.1.

Output Power: KDB 558074 D01 v03r02, Section 9.2.3.2

Power Spectral Density: KDB 558074 D01 v03r02, Section 10.5.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v03r02, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r02, Section 12.1.

Band-edge: KDB 558074 D01 v03r02, Section 13.3.2.

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

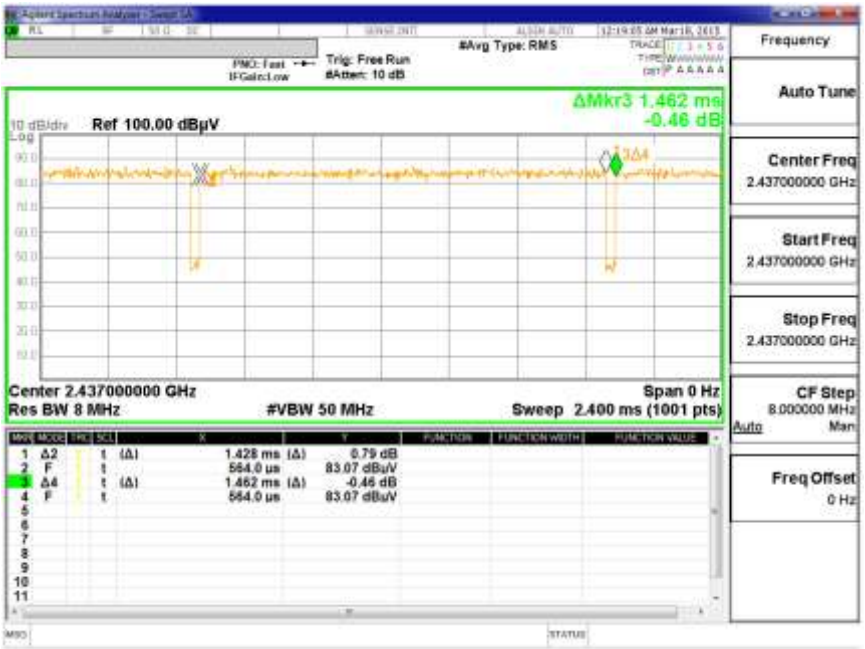
ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b 1TX	1.428	1.462	0.977	97.67%	0.10	0.700
802.11g 1TX	1.423	1.462	0.973	97.33%	0.12	0.703
802.11n HT20 1TX	1.336	1.372	0.974	97.38%	0.12	0.749

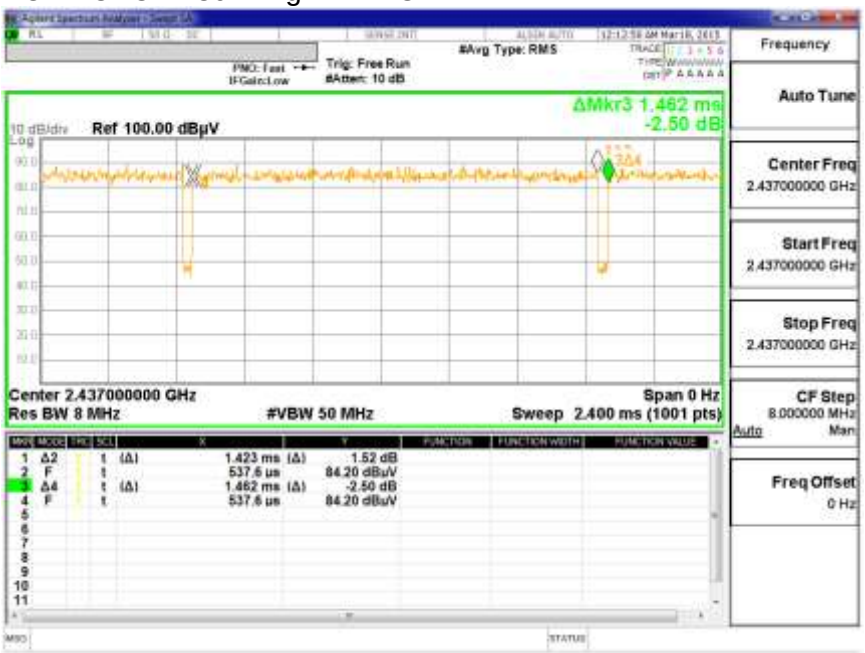
DUTY CYCLE PLOTS

2.4 GHz BAND

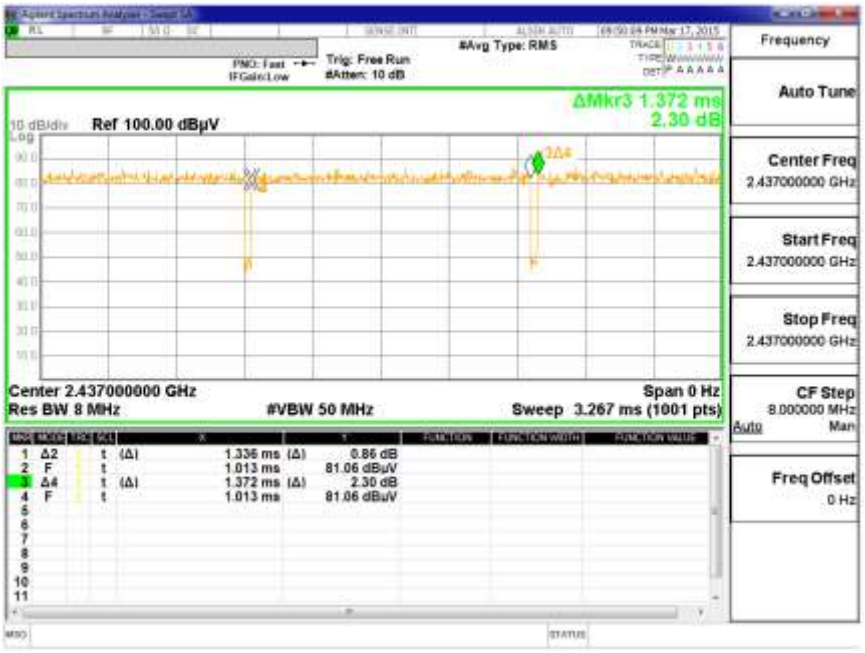
DUTY CYCLE 802.11b 1TX MODE



DUTY CYCLE 802.11g 1TX MODE



DUTY CYCLE 802.11n HT20 1TX MODE



8.2. 802.11b MODE IN THE 2.4 GHz BAND

8.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.042	0.5
Mid	2437	8.054	0.5
High	2462	8.030	0.5

6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH

6 dB BANDWIDTH MID CH

6 dB BANDWIDTH HIGH CH

8.2.2. 99% BANDWIDTH

LIMITS

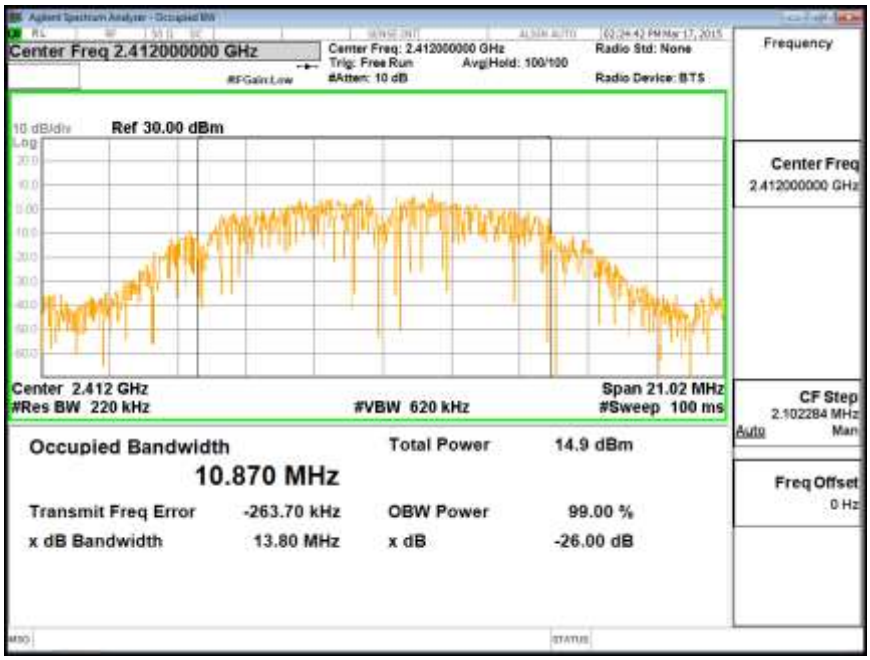
None; for reporting purposes only.

RESULTS

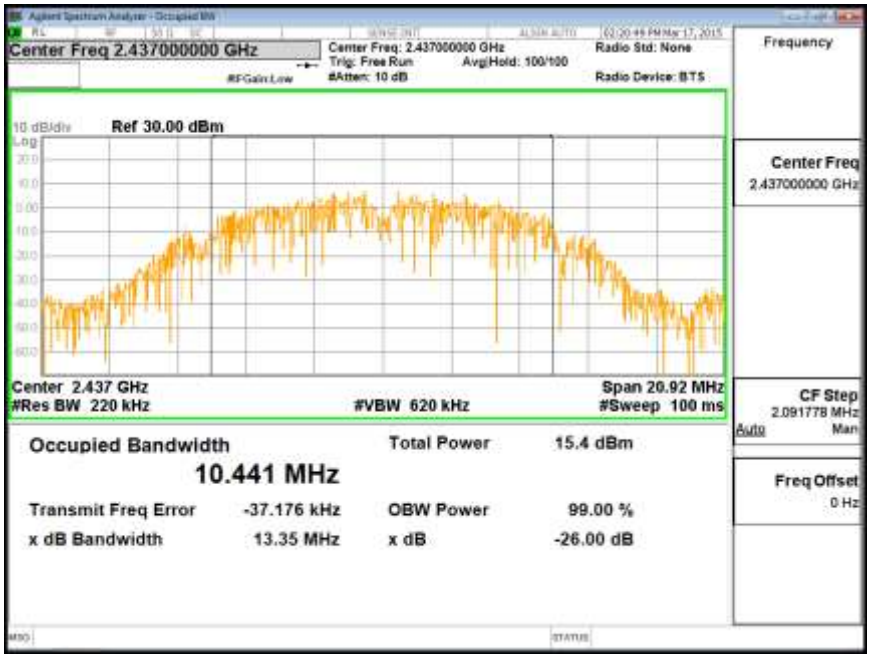
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	10.870
Mid	2437	10.441
High	2462	10.416

99% BANDWIDTH

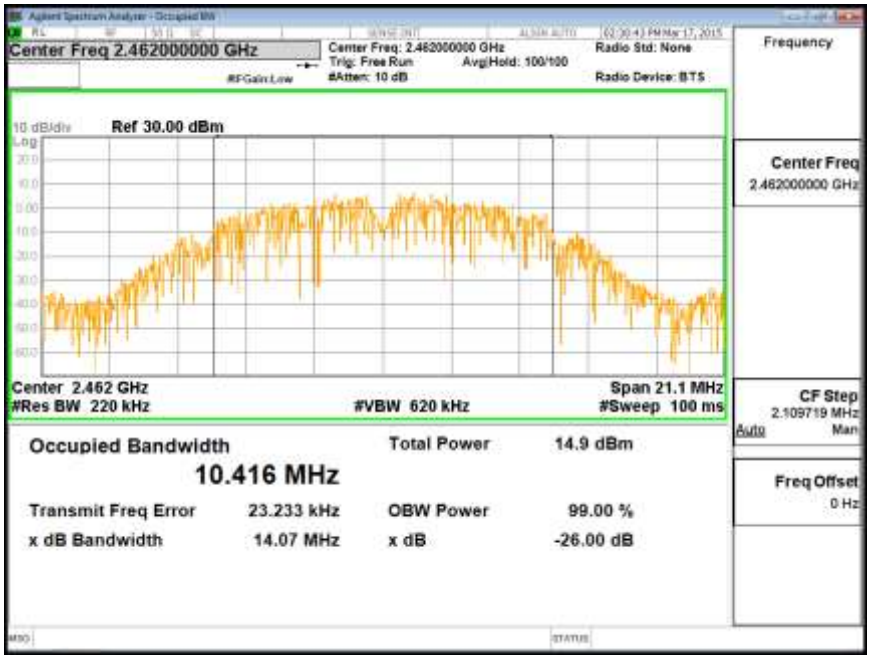
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



8.2.3. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

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

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	4.00	30.00	30	36	30.00
Mid	2437	4.00	30.00	30	36	30.00
High	2462	4.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	15.00	15.00	30.00	-15.00
Mid	2437	15.00	15.00	30.00	-15.00
High	2462	15.00	15.00	30.00	-15.00

8.2.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

RESULTS

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PSD

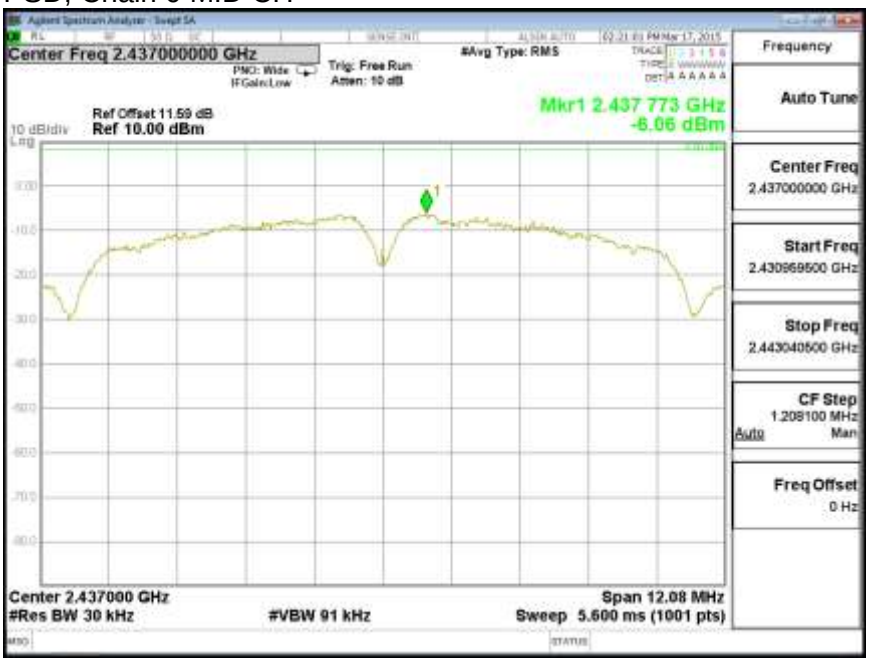
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-6.02	-5.92	8.0	-13.9
Mid	2437	-6.06	-5.96	8.0	-14.0
High	2462	-5.92	-5.82	8.0	-13.8

PSD, Chain 0

PSD, Chain 0 LOW CH

PSD, Chain 0 MID CH



PSD, Chain 0 HIGH CH

8.2.5. OUT-OF-BAND 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.

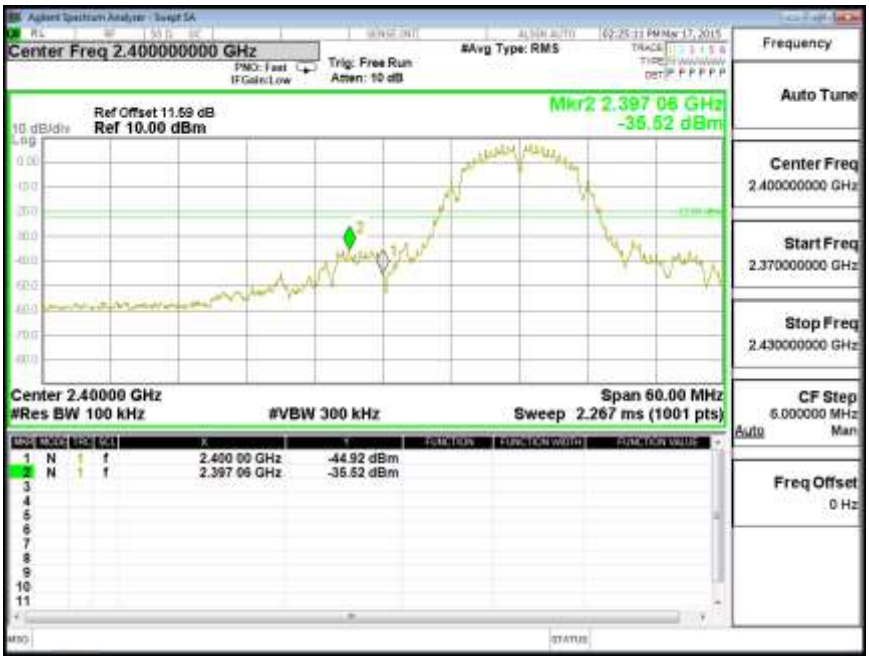
RESULTS

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH

LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH

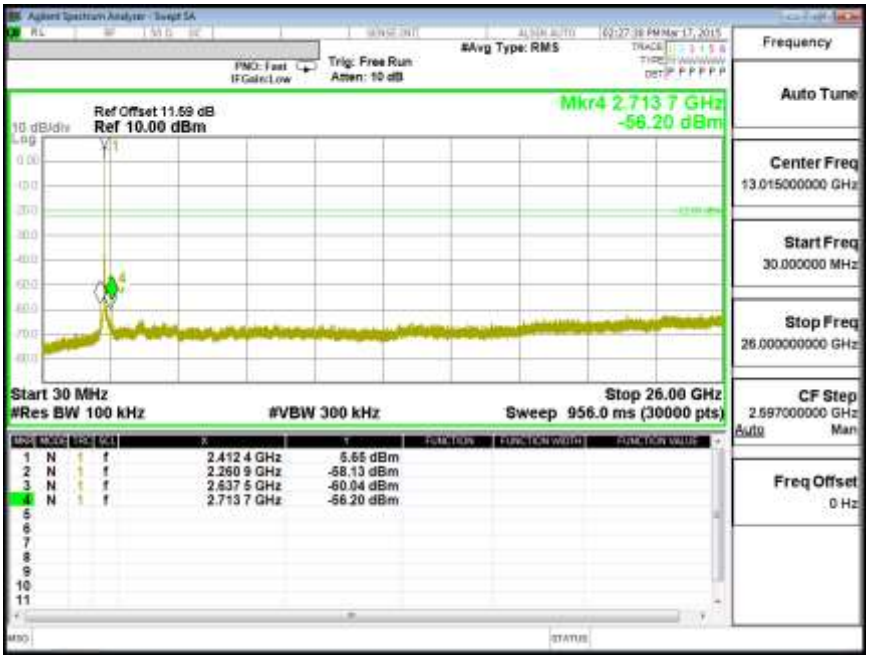


HIGH CHANNEL BANDEDGE

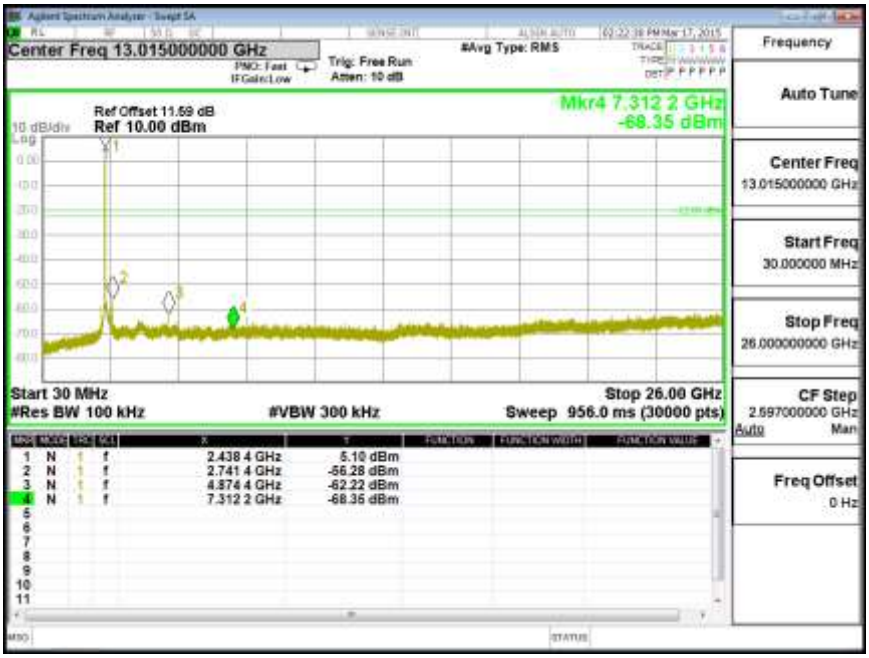
AUTHORIZED BAND EDGE HIGH CH

OUT-OF-BAND EMISSIONS

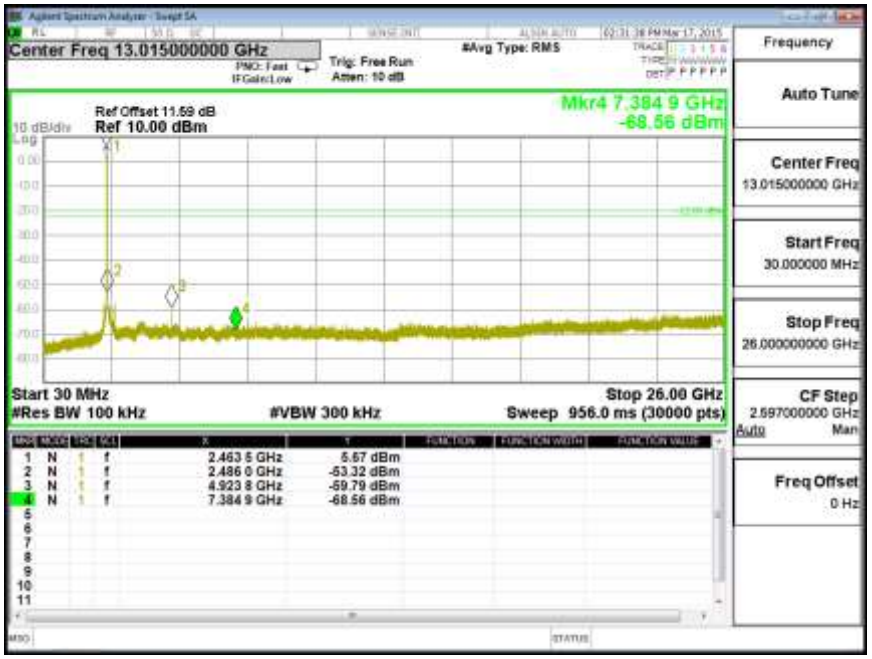
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH



8.1. 802.11g MODE IN THE 2.4 GHz BAND

8.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

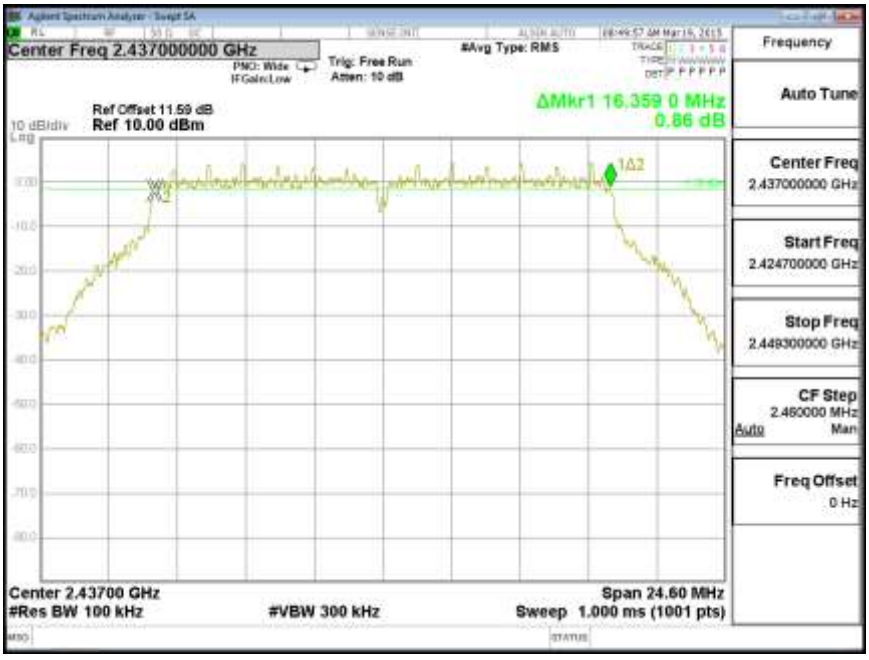
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.359	0.5
Mid	2437	16.359	0.5
High	2462	16.383	0.5

6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH

6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH

8.1.2. 99% BANDWIDTH

LIMITS

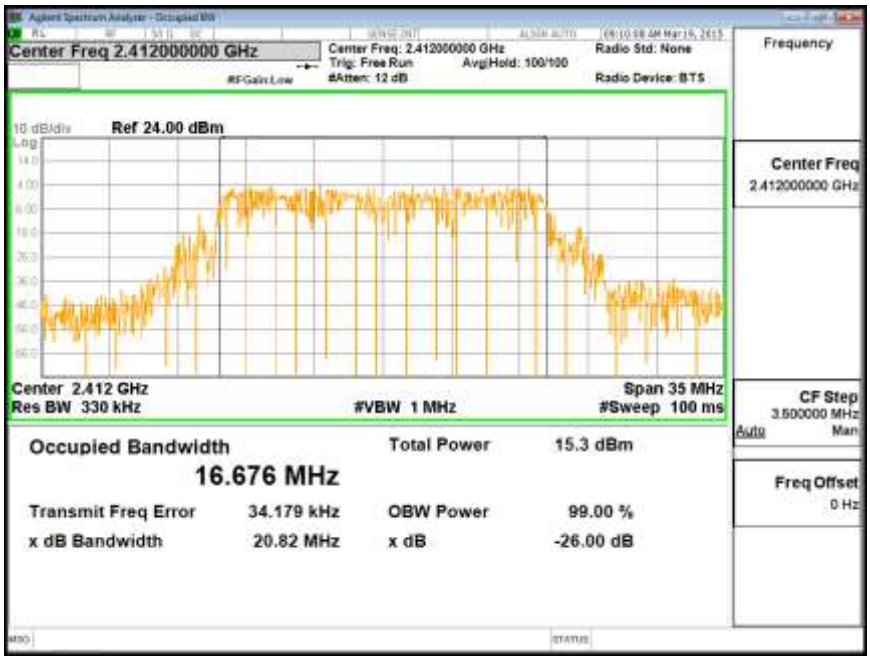
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.676
Mid	2437	16.607
High	2462	16.654

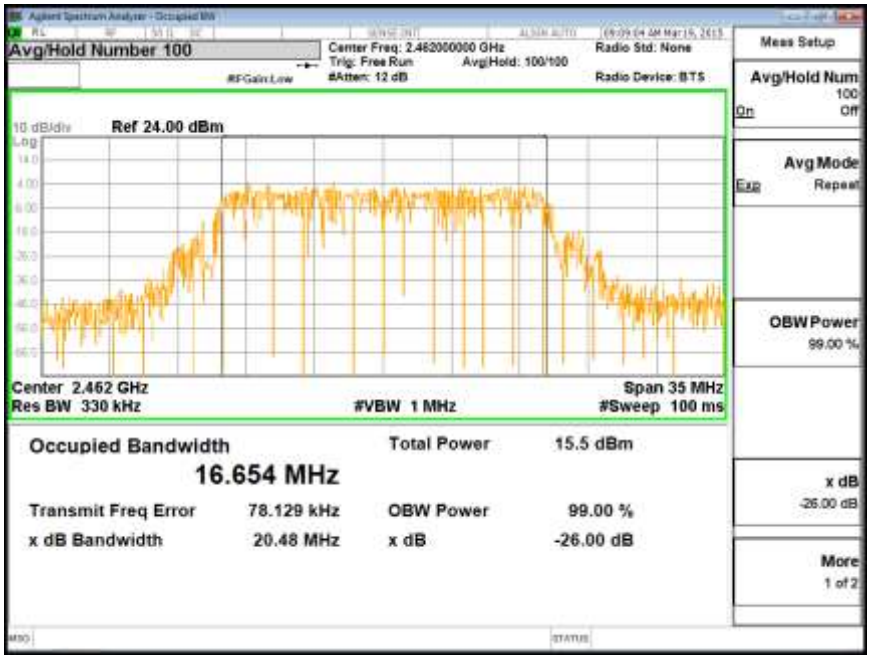
99% BANDWIDTH

BANDWIDTH LOW CH



BANDWIDTH MID CH

BANDWIDTH HIGH CH



8.1.3. OUTPUT POWER

LIMITS

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

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	4.00	30.00	30	36	30.00
Mid	2437	4.00	30.00	30	36	30.00
High	2462	4.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	15.00	15.00	30.00	-15.00
Mid	2437	14.80	14.80	30.00	-15.20
High	2462	14.90	14.90	30.00	-15.10

8.1.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

RESULTS

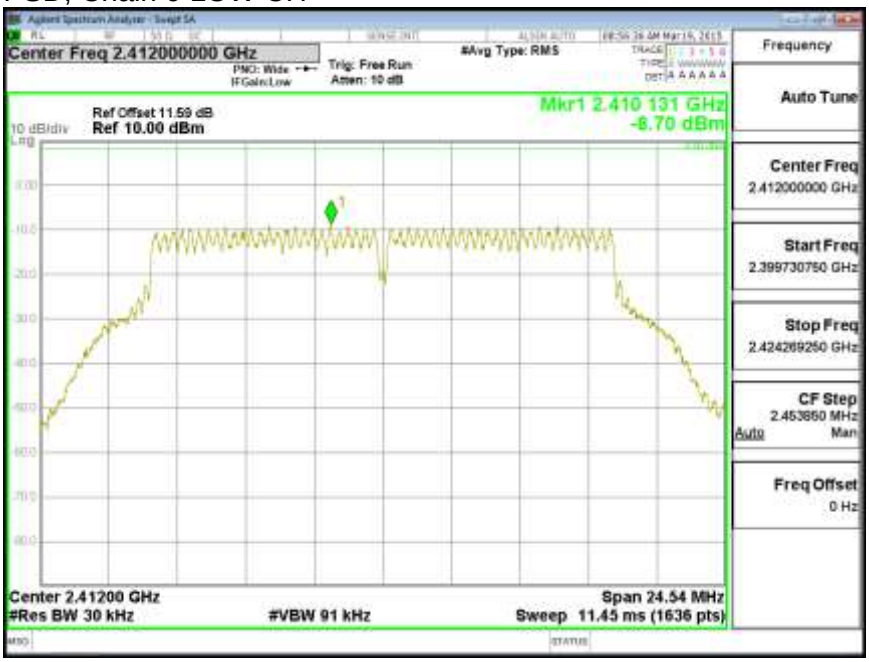
Duty Cycle CF (dB)	0.12	Included in Calculations of Corr'd PSD

PSD Results

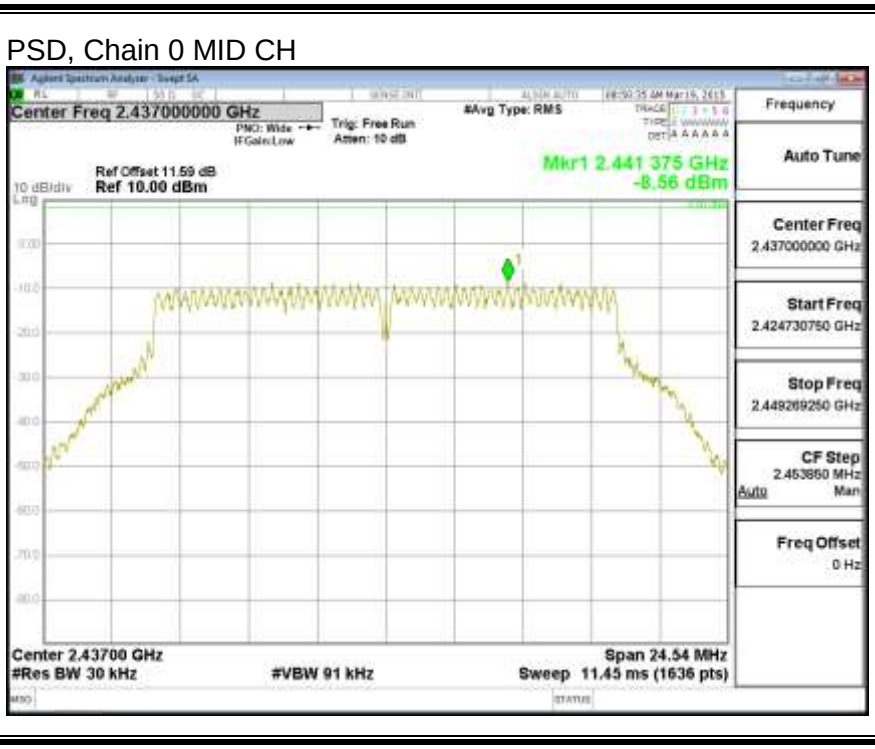
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-8.70	-8.58	8.0	-16.6
Mid	2437	-8.58	-8.46	8.0	-16.5
High	2462	-8.67	-8.55	8.0	-16.6

PSD, Chain 0

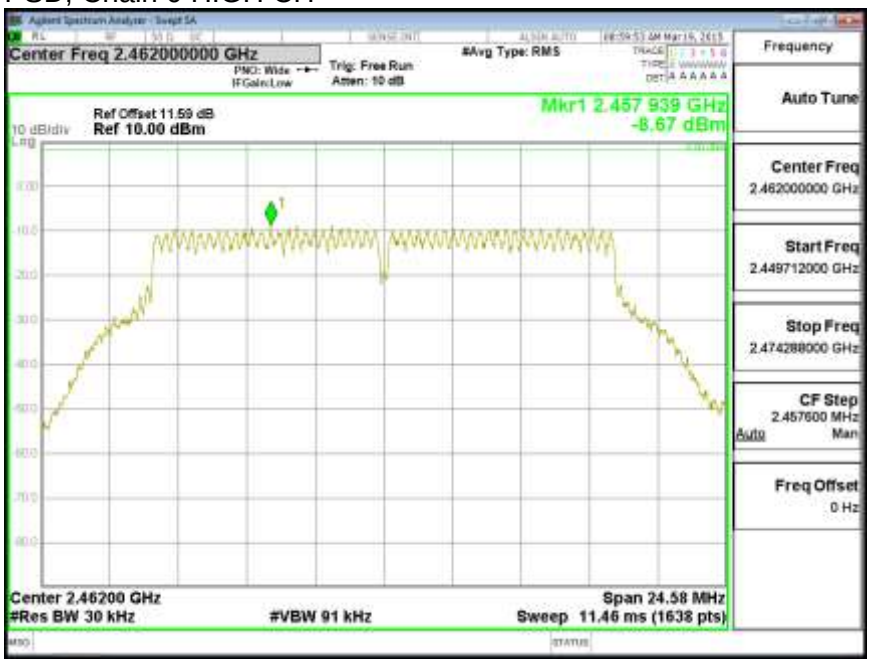
PSD, Chain 0 LOW CH



PSD, Chain 0 MID CH



PSD, Chain 0 HIGH CH



8.1.5. OUT-OF-BAND 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.

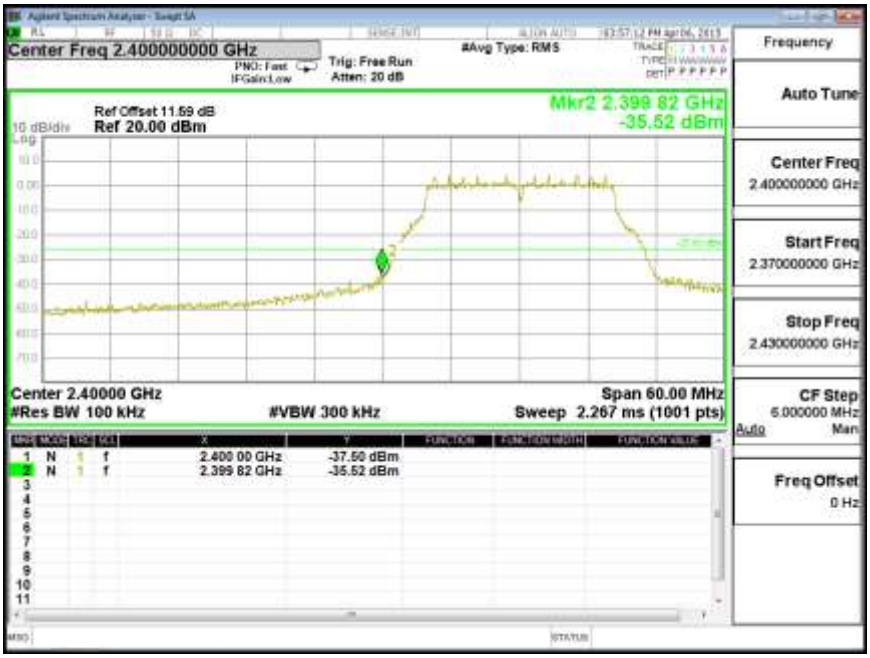
RESULTS

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL LOW CH

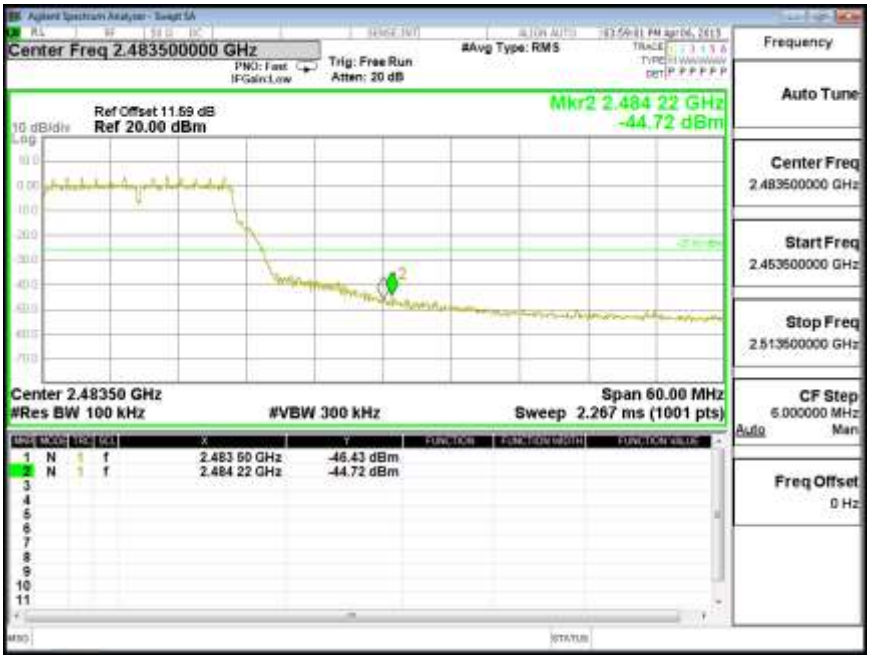
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



HIGH CHANNEL BANDEDGE

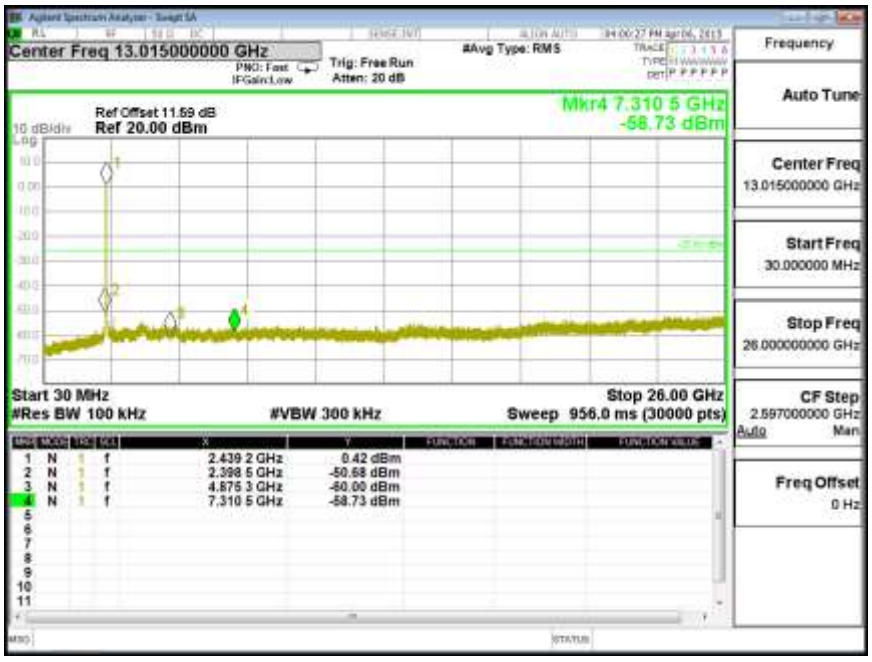
AUTHORIZED BAND EDGE HIGH CH



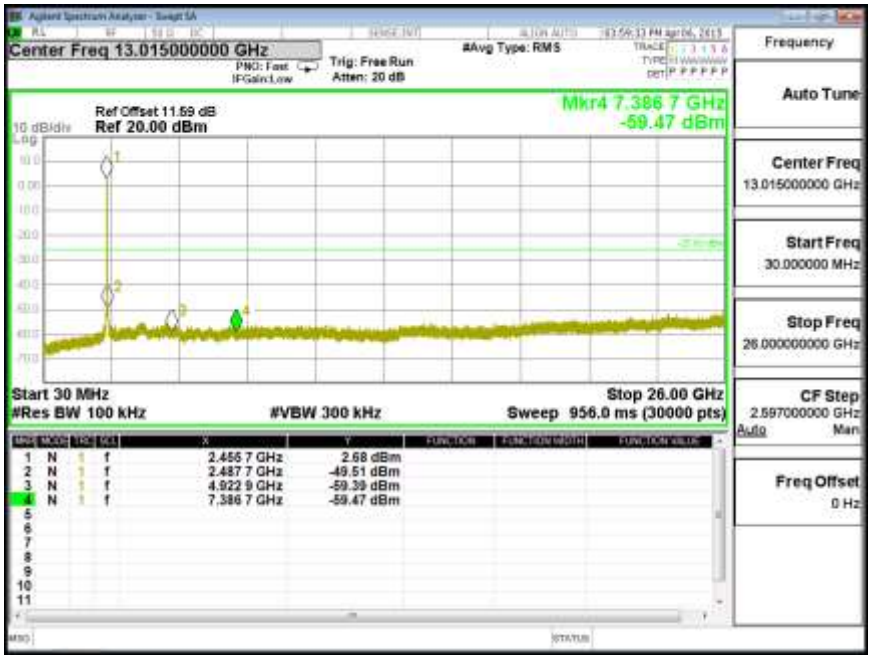
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH

OUT OF BAND MID CH



OUT OF BAND HIGH CH



8.1. 802.11n HT20 MODE IN THE 2.4 GHz BAND

8.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.582	0.5
Mid	2437	17.609	0.5
High	2462	17.582	0.5

6 dB BANDWIDTH

6 dB BANDWIDTH LOW CH

6 dB BANDWIDTH MID CH

6 dB BANDWIDTH HIGH CH

8.1.2. 99% BANDWIDTH

LIMITS

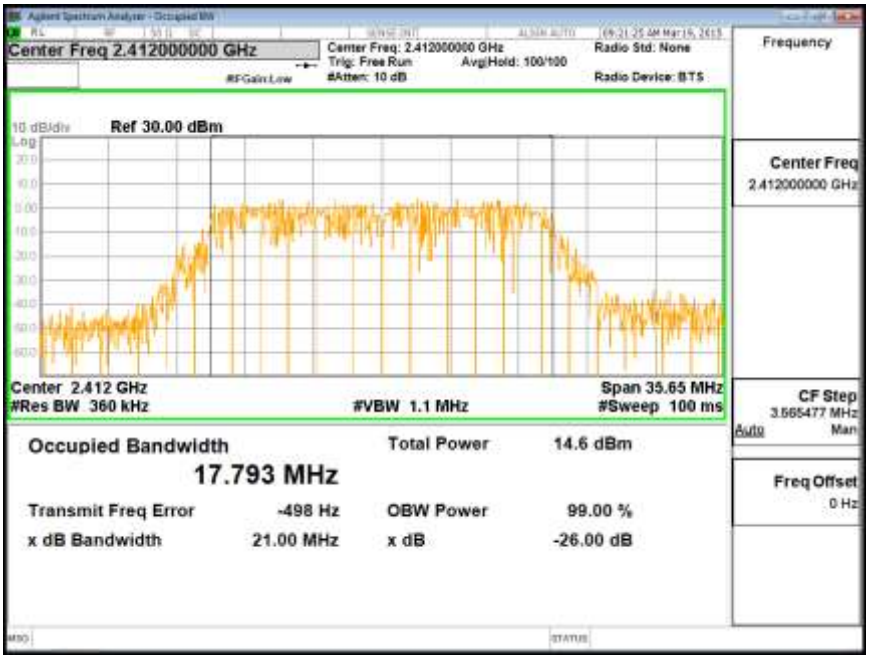
None; for reporting purposes only.

RESULTS

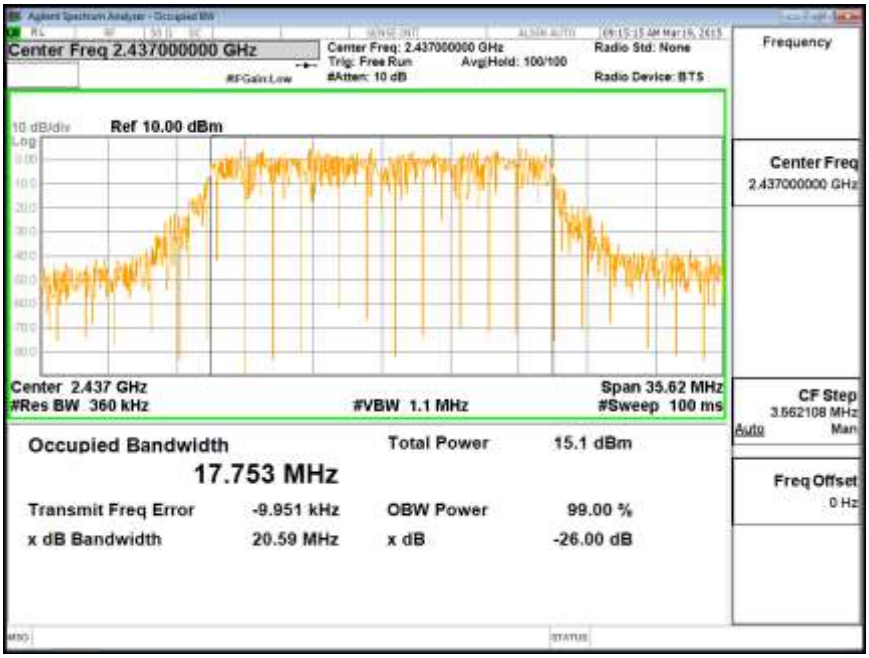
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.793
Mid	2437	17.753
High	2462	17.726

99% BANDWIDTH

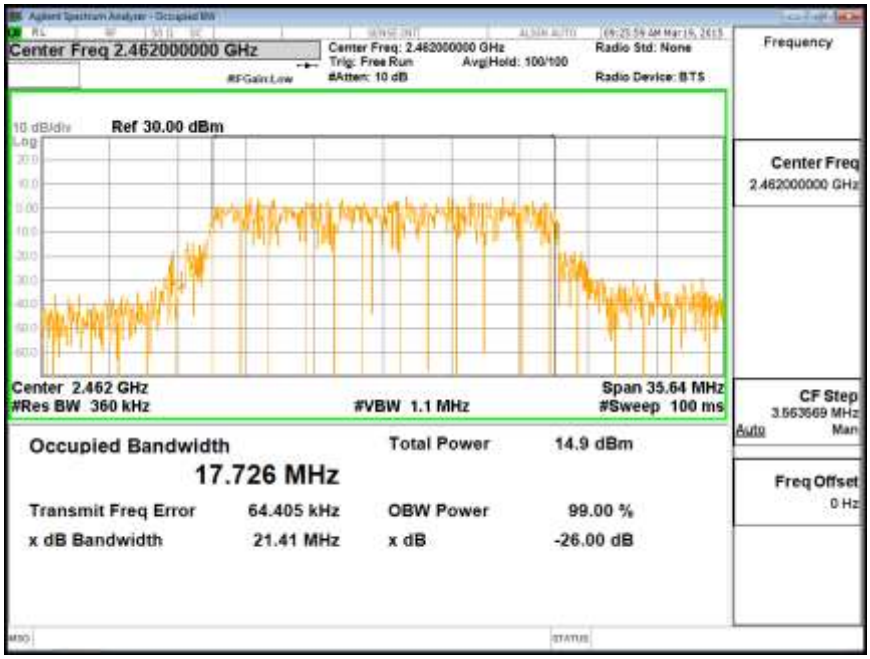
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



8.1.3. OUTPUT POWER

LIMITS

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

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	4.00	30.00	30	36	30.00
Mid	2437	4.00	30.00	30	36	30.00
High	2462	4.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	15.00	15.00	30.00	-15.00
Mid	2437	15.00	15.00	30.00	-15.00
High	2462	15.00	15.00	30.00	-15.00

8.1.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

RESULTS

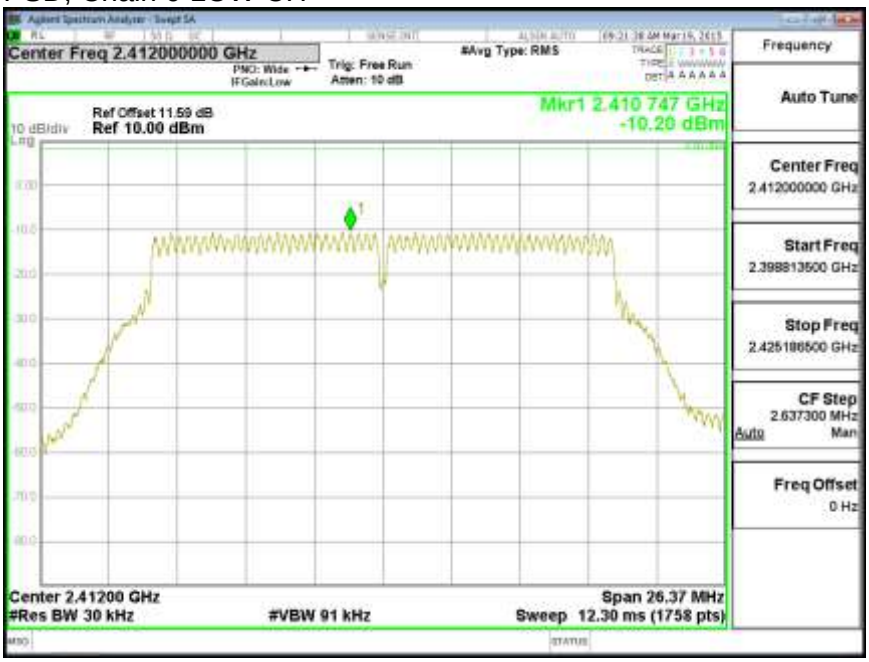
Duty Cycle CF (dB)	0.12	Included in Calculations of Corr'd PSD

PSD Results

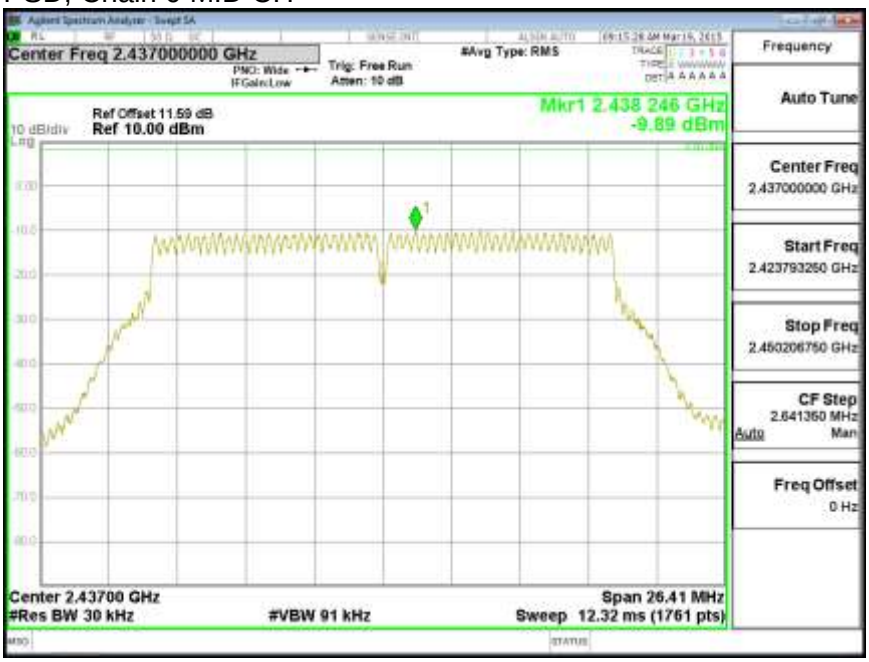
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.20	-10.08	8.0	-18.1
Mid	2437	-9.89	-9.77	8.0	-17.8
High	2462	-9.64	-9.52	8.0	-17.5

PSD, Chain 0

PSD, Chain 0 LOW CH



PSD, Chain 0 MID CH



PSD, Chain 0 HIGH CH

8.1.5. OUT-OF-BAND EMISSIONS

LIMITS

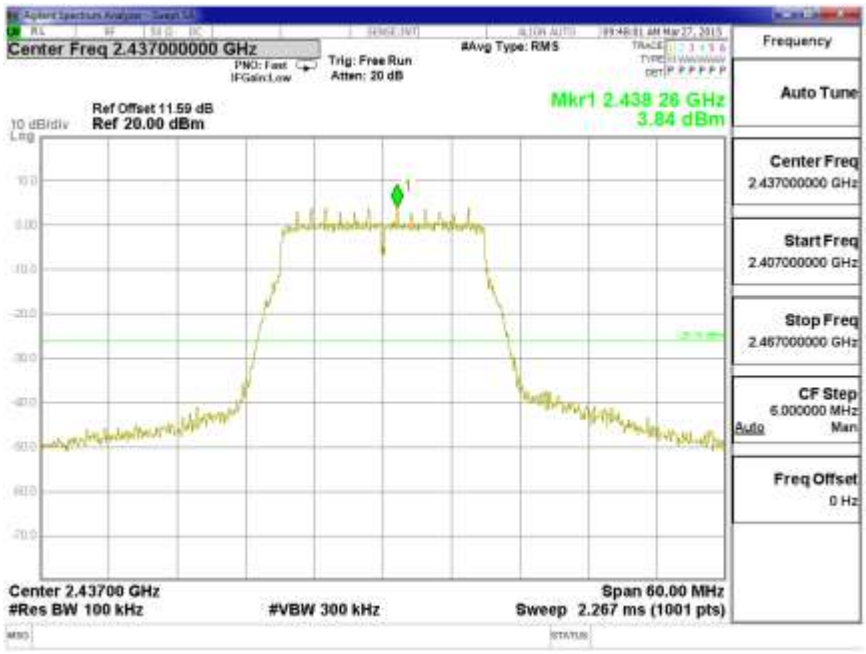
FCC §15.247 (d)

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.

RESULTS

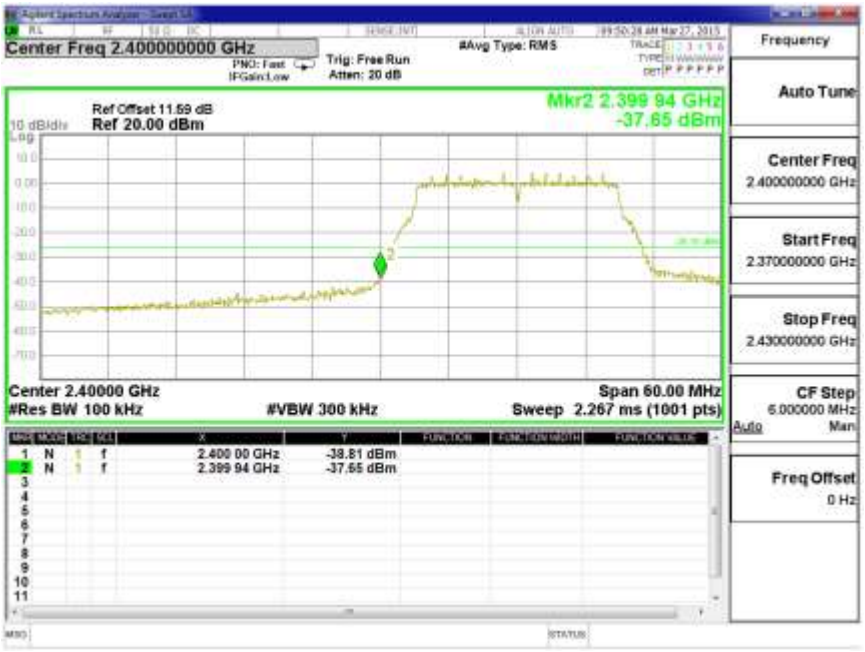
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



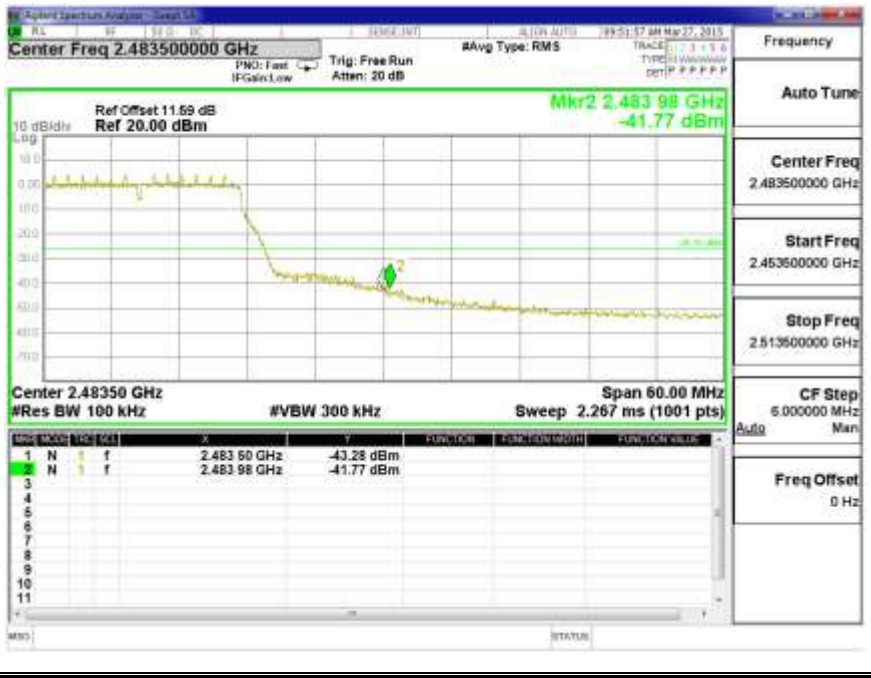
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



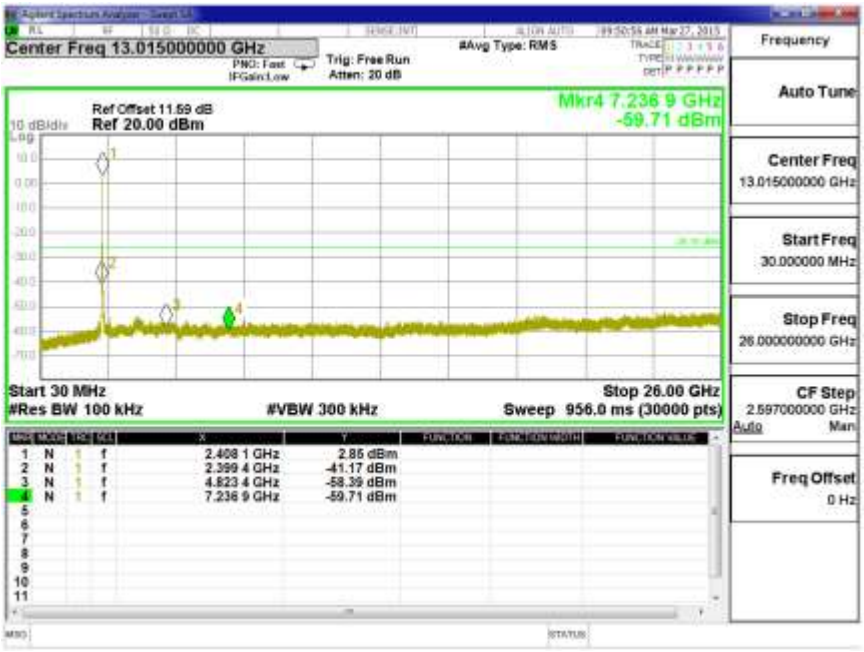
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



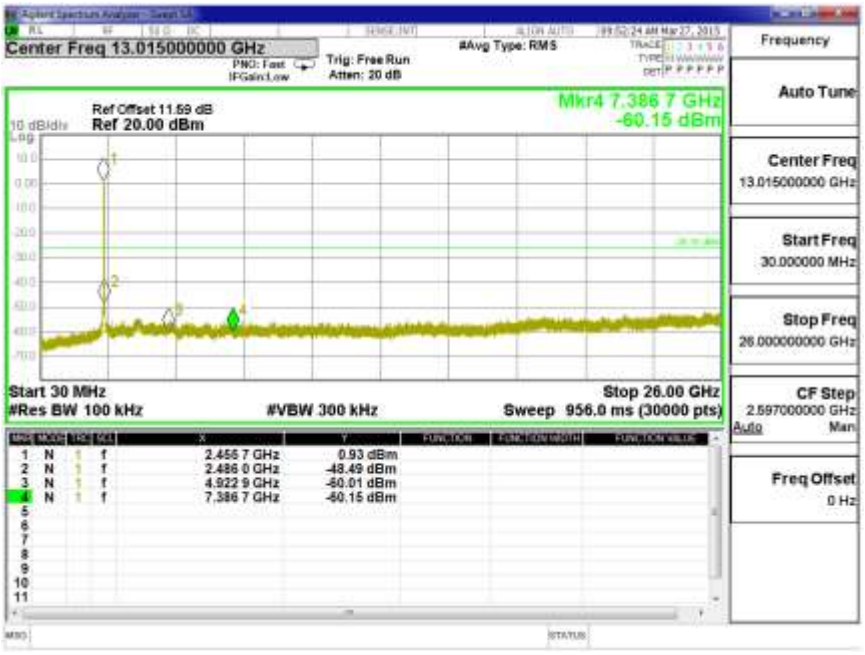
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



OUT OF BAND MID CH

OUT OF BAND HIGH CH



9. RADIATED TEST RESULTS

9.1. 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.

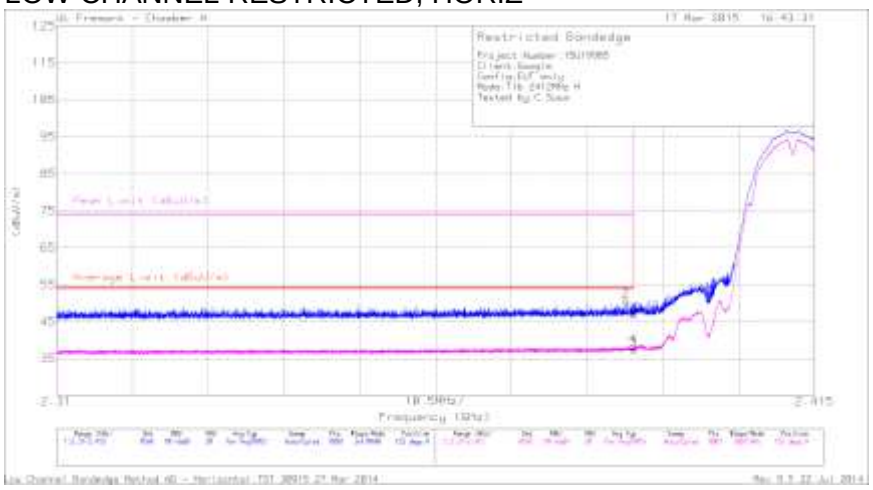
For 2.4 GHz band, the spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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.

9.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



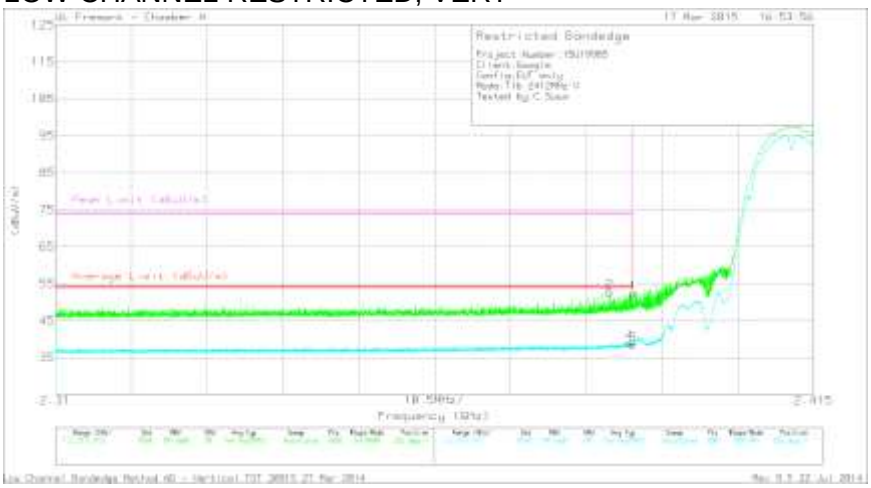
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	43.21	PK	32	-24.6	0	50.61	-	-	74	-23.39	152	215	H
1	* 2.39	39.59	PK	32	-24.6	0	46.99	-	-	74	-27.01	152	215	H
3	* 2.39	30.14	RMS	32	-24.6	.1	37.64	54	-16.36	-	-	152	215	H
4	* 2.39	30.84	RMS	32	-24.6	.1	38.34	54	-15.66	-	-	152	215	H

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

LOW CHANNEL RESTRICTED, VERT



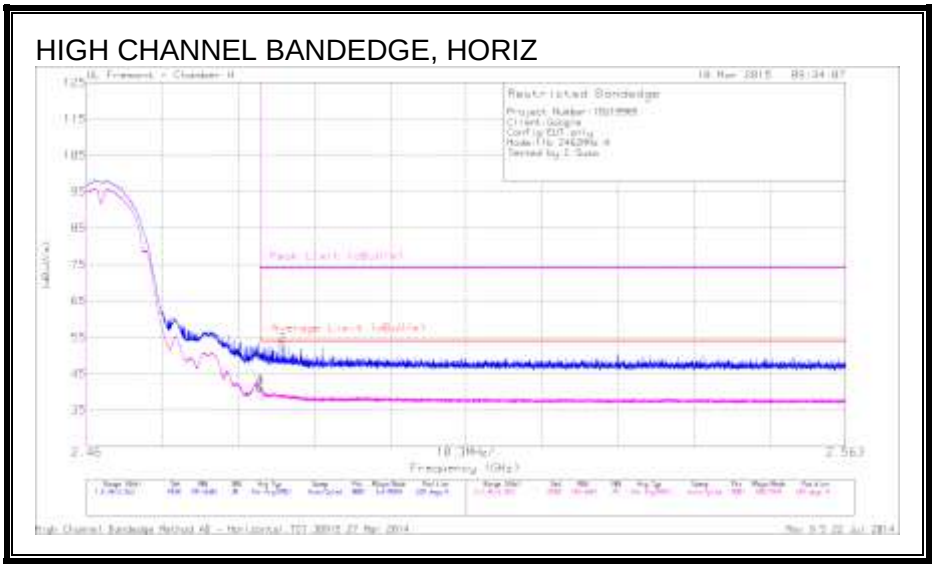
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.387	45.31	PK	32	-24.5	0	52.81	-	-	74	-21.19	262	286	V
4	* 2.389	31.57	RMS	32	-24.6	.1	39.07	54	-14.93	-	-	262	286	V
1	* 2.39	44.91	PK	32	-24.6	0	52.31	-	-	74	-21.69	262	286	V
3	* 2.39	31.08	RMS	32	-24.6	.1	38.58	54	-15.42	-	-	262	286	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)



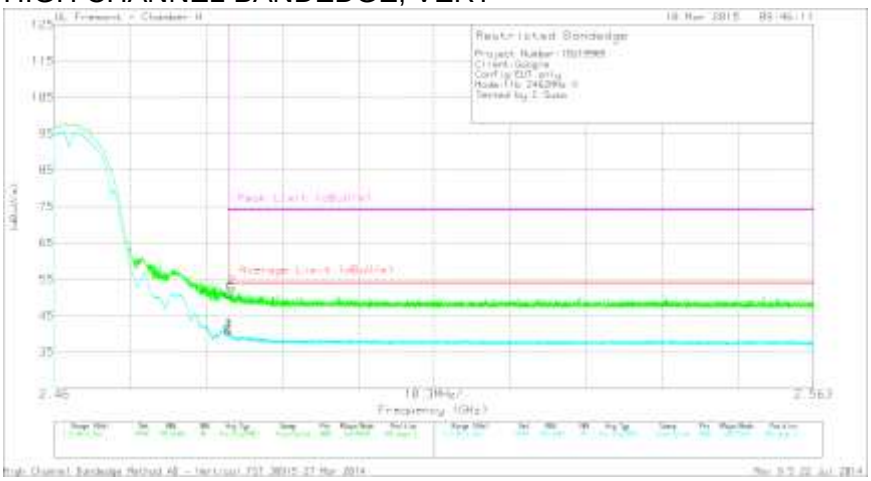
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	42.38	PK	32.2	-24.5	0	50.08	-	-	74	-23.92	339	218	H
2	* 2.487	45.11	PK	32.2	-24.5	0	52.81	-	-	74	-21.19	339	218	H
3	* 2.484	33.4	RMS	32.2	-24.5	.1	41.2	54	-12.8	-	-	339	218	H
4	* 2.484	33.64	RMS	32.2	-24.5	.1	41.44	54	-12.56	-	-	339	218	H

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

HIGH CHANNEL BANDEDGE, VERT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	DC Corr (dB)	Amp/Cbl/ Fltr/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	43.1	PK	32.2	0	-24.5	50.8	-	-	74	-23.2	105	341	V
2	* 2.484	44.96	PK	32.2	0	-24.5	52.66	-	-	74	-21.34	105	341	V
3	* 2.484	33.18	RMS	32.2	.1	-24.5	40.98	54	-13.02	-	-	105	341	V
4	* 2.484	32.91	RMS	32.2	.1	-24.5	40.71	54	-13.29	-	-	105	341	V

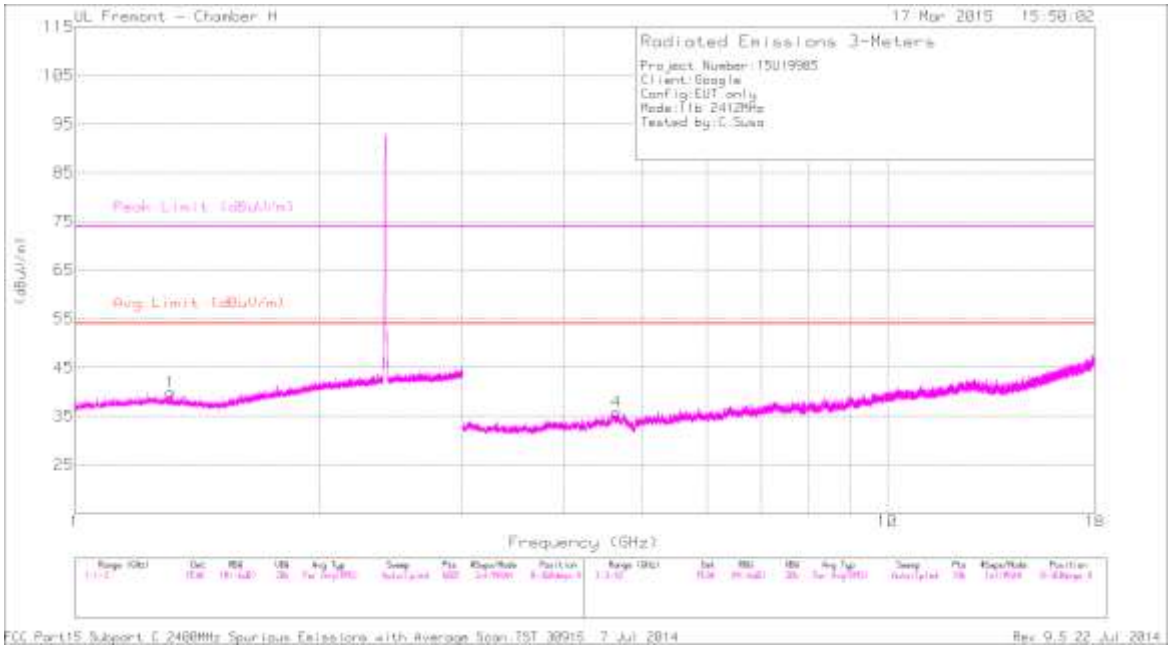
* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

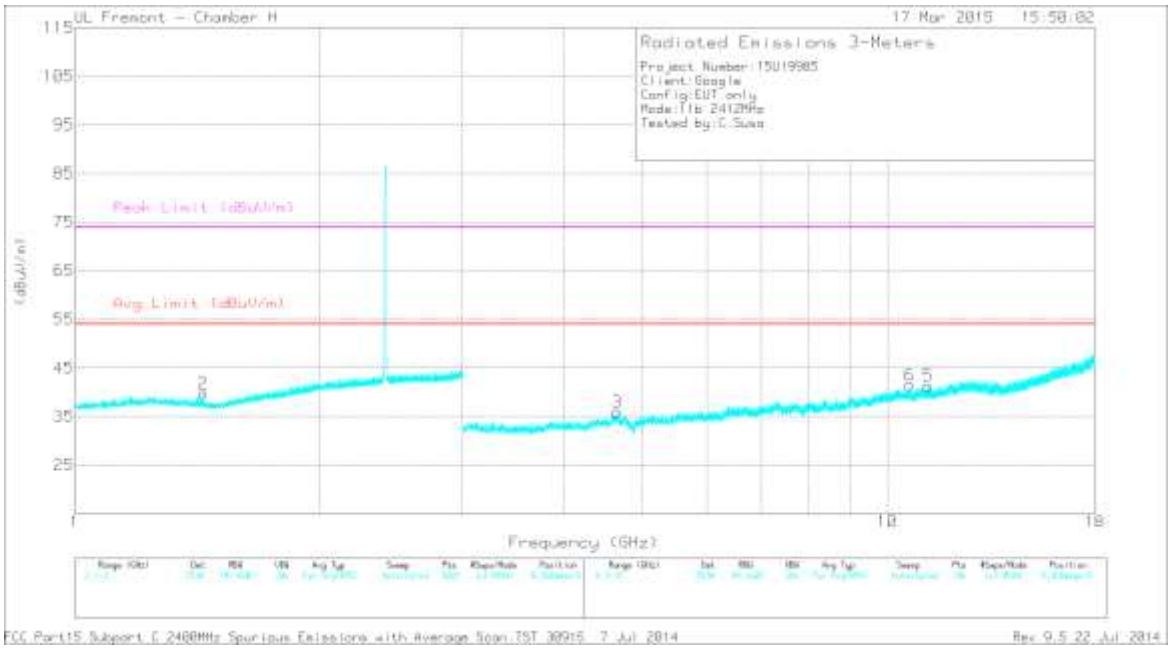
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

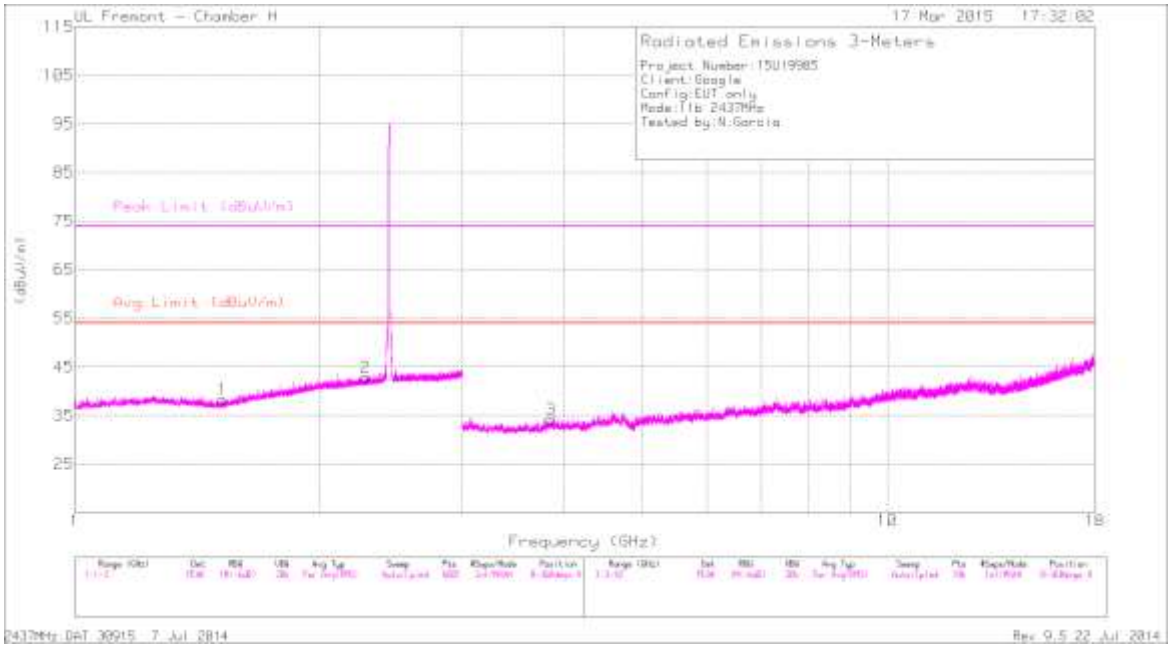
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.314	43.63	PK2	28.7	-25.8	0	46.53	-	-	74	-27.47	220	191	H
	* 1.314	32.38	MAv1	28.7	-25.8	.1	35.38	54	-18.62	-	-	220	191	H
2	* 1.439	43.89	PK2	28	-25.5	0	46.39	-	-	74	-27.61	170	213	V
	* 1.438	32.19	MAv1	28	-25.5	.1	34.79	54	-19.21	-	-	170	213	V
4	* 4.648	40.77	PK2	34.2	-31.7	0	43.27	-	-	74	-30.73	144	231	H
	* 4.648	30.02	MAv1	34.2	-31.7	.1	32.62	54	-21.38	-	-	144	231	H
3	* 4.654	40.77	PK2	34.2	-31.8	0	43.17	-	-	74	-30.83	140	226	V
	* 4.653	30.15	MAv1	34.2	-31.8	.1	32.65	54	-21.35	-	-	140	226	V
5	* 11.233	36.02	PK2	37.9	-25.5	0	48.42	-	-	74	-25.58	135	237	V
	* 11.233	24.74	MAv1	37.9	-25.5	.1	37.24	54	-16.76	-	-	135	237	V
6	* 10.644	35.16	PK2	37.6	-24.8	0	47.96	-	-	74	-26.04	232	199	V
	* 10.646	24.52	MAv1	37.6	-24.9	.1	37.32	54	-16.68	-	-	232	199	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

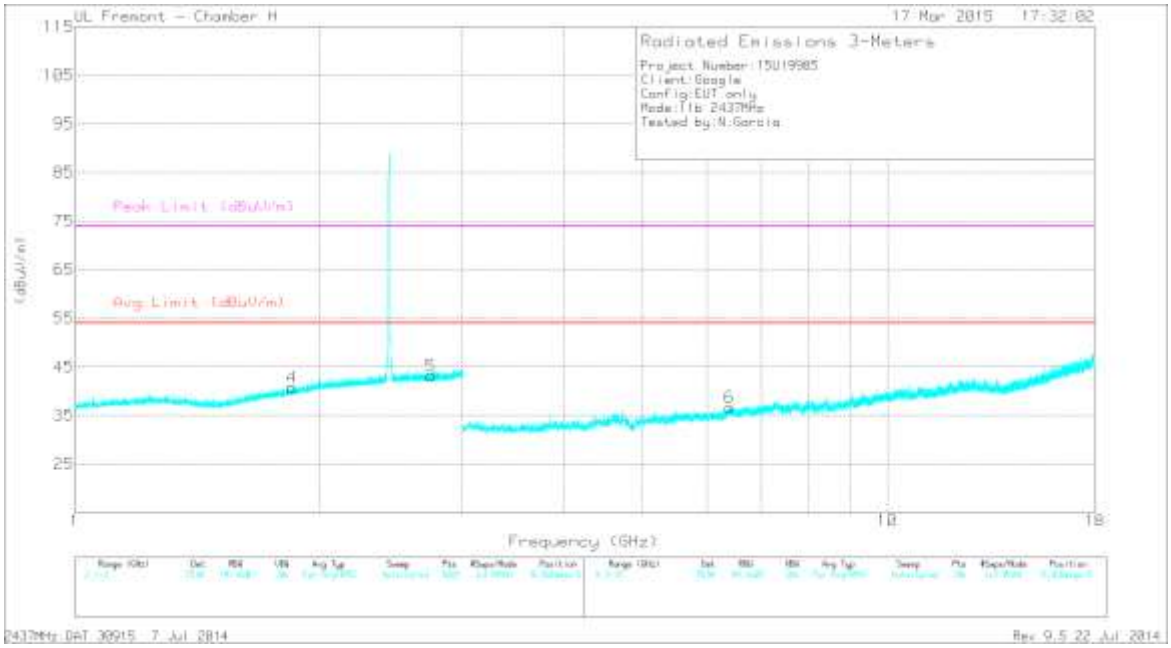
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

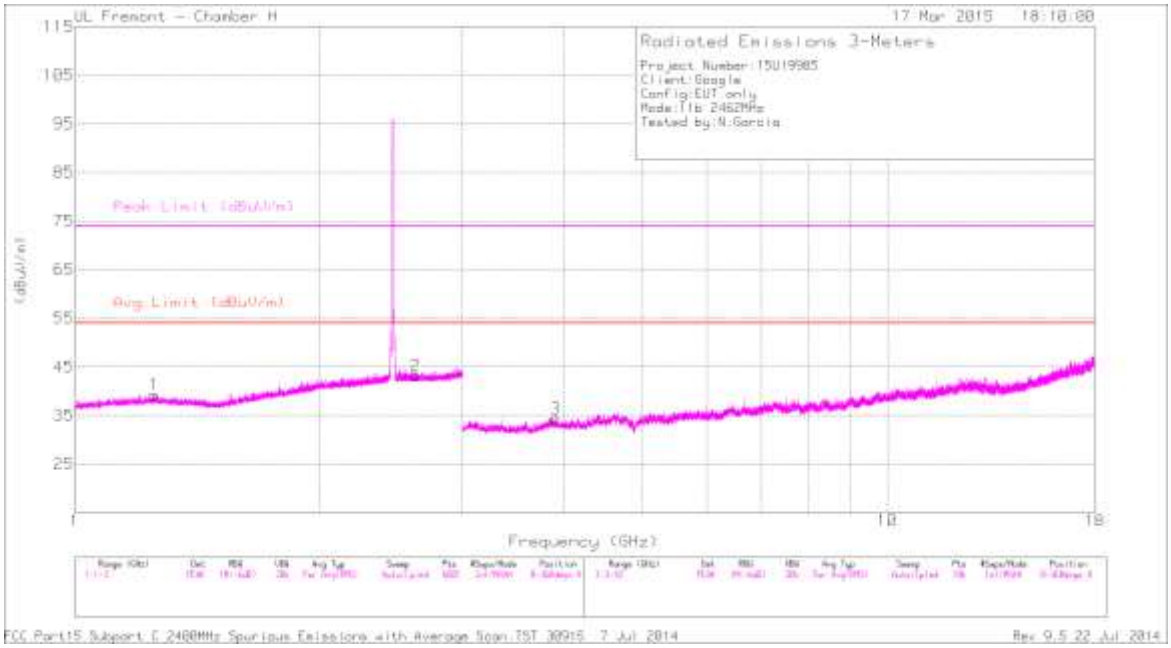
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.519	43.21	PK2	27.8	-25.4	0	45.61	-	-	74	-28.39	56	131	H
	* 1.519	32.19	MAv1	27.9	-25.4	.1	34.79	54	-19.21	-	-	56	131	H
2	* 2.279	43.39	PK2	31.8	-24.6	0	50.59	-	-	74	-23.41	26	147	H
	* 2.281	31.73	MAv1	31.8	-24.6	.1	39.03	54	-14.97	-	-	26	147	H
5	* 2.742	43.75	PK2	32.3	-24.3	0	51.75	-	-	74	-22.25	11	129	V
	* 2.746	31.66	MAv1	32.3	-24.3	.1	39.76	54	-14.24	-	-	11	129	V
3	* 3.855	41.82	PK2	33.3	-32.4	0	42.72	-	-	74	-31.28	17	137	H
	* 3.856	30.63	MAv1	33.3	-32.4	.1	31.63	54	-22.37	-	-	17	137	H
4	1.852	43.56	PK2	30.4	-25.2	0	48.76	-	-	-	-	0	101	V
	1.852	32.25	MAv1	30.4	-25.2	.1	37.55	-	-	-	-	0	101	V
6	6.392	39.34	PK2	35.5	-30	0	44.84	-	-	-	-	2	100	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

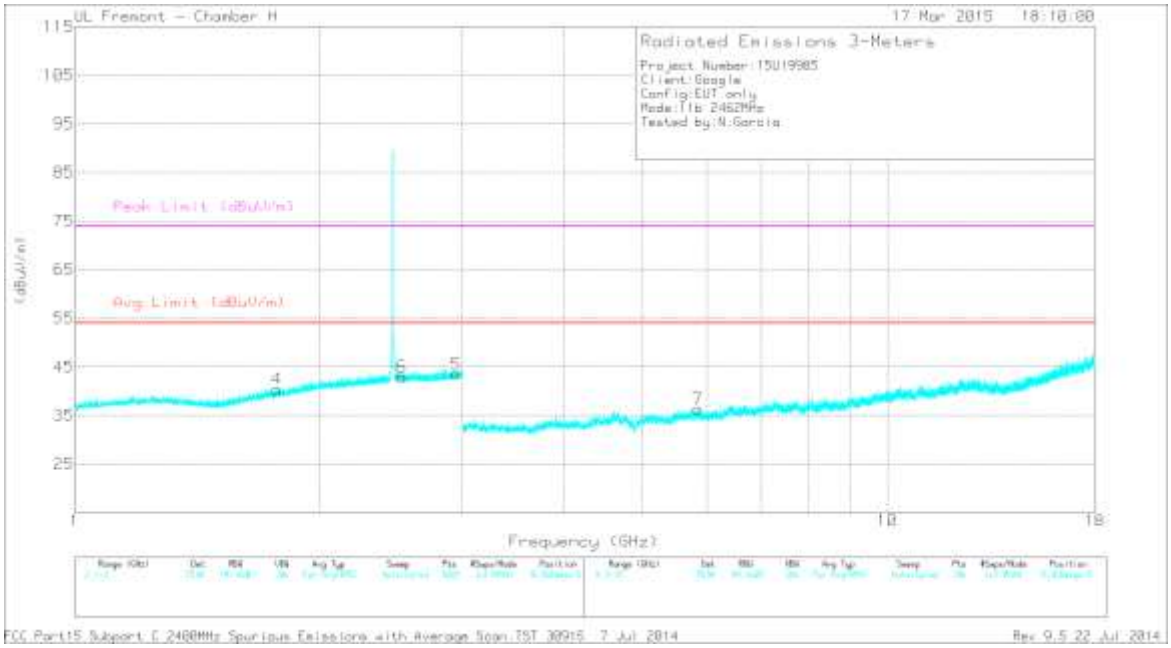
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/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
1	* 1.252	43.65	PK2	29	-25.9	0	46.75	-	-	74	-27.25	221	114	H
	* 1.254	32.41	MAv1	29	-25.9	.1	35.61	54	-18.39	-	-	221	114	H
2	2.625	43.62	PK2	32.3	-24.3	0	51.62	-	-	-	-	16	101	H
3	* 3.912	41.97	PK2	33.4	-33	0	42.37	-	-	74	-31.63	36	114	H
	* 3.912	30.71	MAv1	33.4	-33	.1	31.21	54	-22.79	-	-	36	114	H
4	1.773	43.37	PK2	29.9	-25.1	0	48.17	-	-	-	-	16	101	V
5	2.947	43.61	PK2	32.7	-24.1	0	52.21	-	-	-	-	16	101	V
6	2.526	43.04	PK2	32.2	-24.4	0	50.84	-	-	-	-	16	101	V
7	5.844	39.48	PK2	35.1	-31.2	0	43.38	-	-	-	-	16	101	V

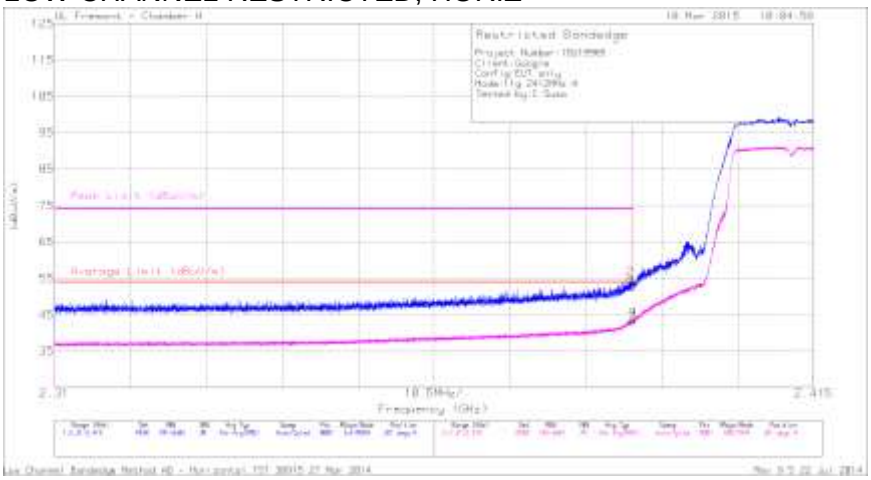
* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

9.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	45.28	PK	32	-24.6	0	52.68	-	-	74	-21.32	321	275	H
2	* 2.39	47.35	PK	32	-24.6	0	54.75	-	-	74	-19.25	321	275	H
3	* 2.39	35.95	RMS	32	-24.6	.12	43.47	54	-10.53	-	-	321	275	H
4	* 2.39	36.25	RMS	32	-24.6	.12	43.77	54	-10.23	-	-	321	275	H

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

LOW CHANNEL RESTRICTED, VERT

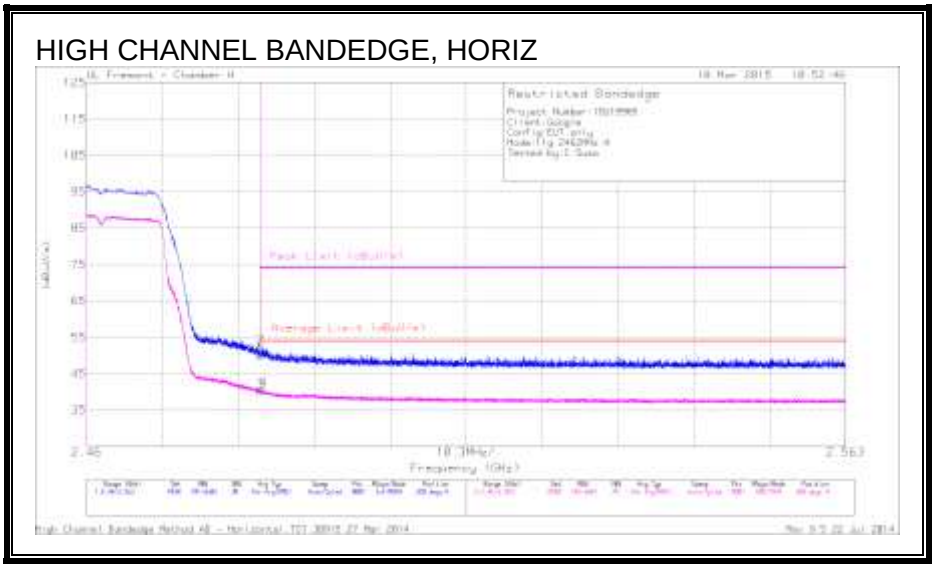
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	48.84	PK	32	-24.6	0	56.24	-	-	74	-17.76	270	292	V
2	* 2.39	50	PK	32	-24.6	0	57.4	-	-	74	-16.6	270	292	V
3	* 2.39	37.83	RMS	32	-24.6	.12	45.35	54	-8.65	-	-	270	292	V
4	* 2.39	38.58	RMS	32	-24.6	.12	46.1	54	-7.9	-	-	270	292	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)



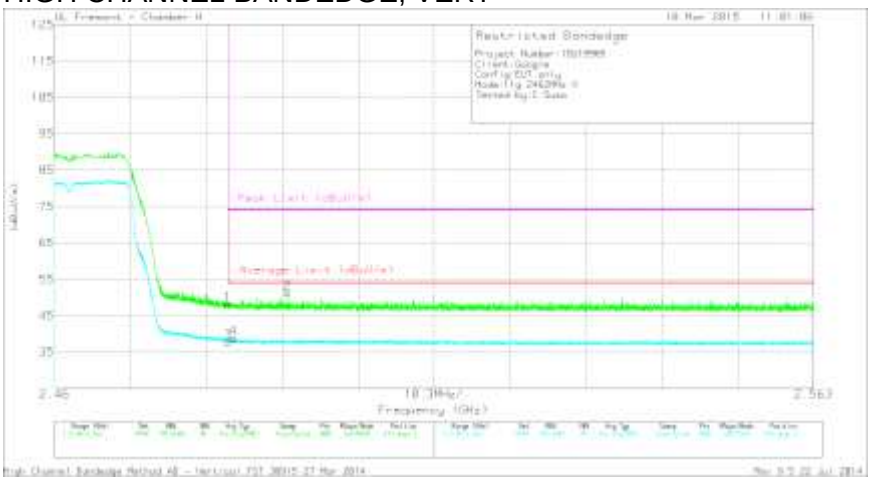
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	42.28	PK	32.2	-24.5	0	49.98	-	-	74	-24.02	320	111	H
2	* 2.484	44.73	PK	32.2	-24.5	0	52.43	-	-	74	-21.57	320	111	H
3	* 2.484	32.53	RMS	32.2	-24.5	.12	40.35	54	-13.65	-	-	320	111	H
4	* 2.484	32.98	RMS	32.2	-24.5	.12	40.8	54	-13.2	-	-	320	111	H

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

HIGH CHANNEL BANDEDGE, VERT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	40.51	PK	32.2	-24.5	0	48.21	-	-	74	-25.79	214	182	V
3	* 2.484	30.05	RMS	32.2	-24.5	.12	37.87	54	-16.13	-	-	214	182	V
4	* 2.484	31.11	RMS	32.2	-24.5	.12	38.93	54	-15.07	-	-	214	182	V
2	* 2.492	43.66	PK	32.2	-24.5	0	51.36	-	-	74	-22.64	214	182	V

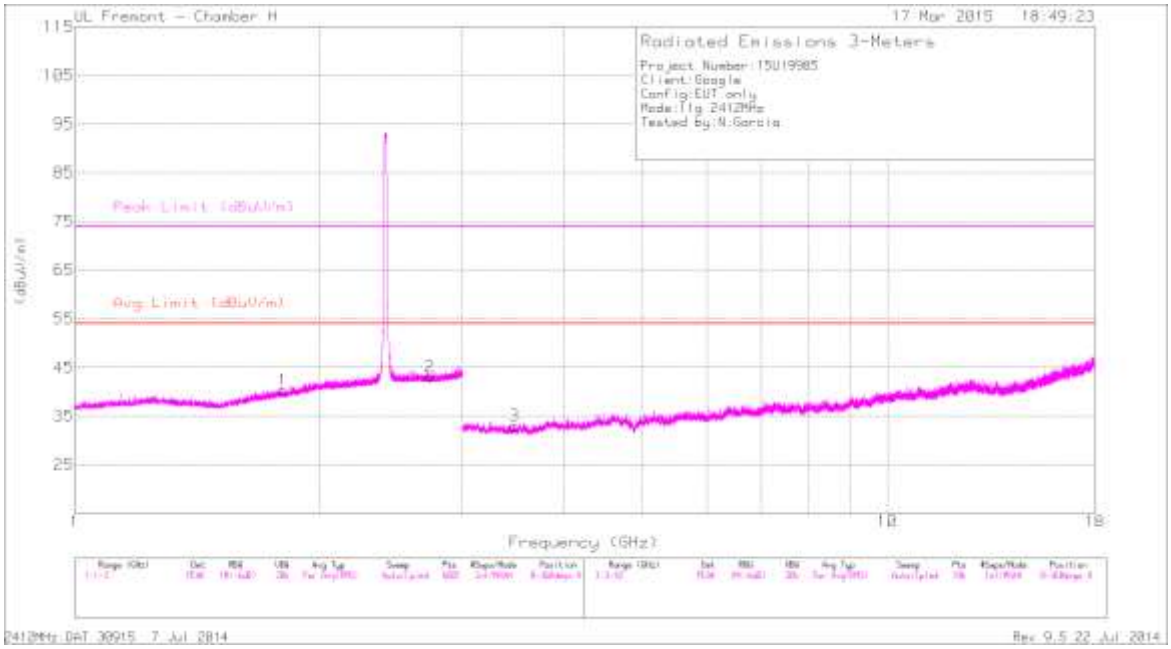
* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

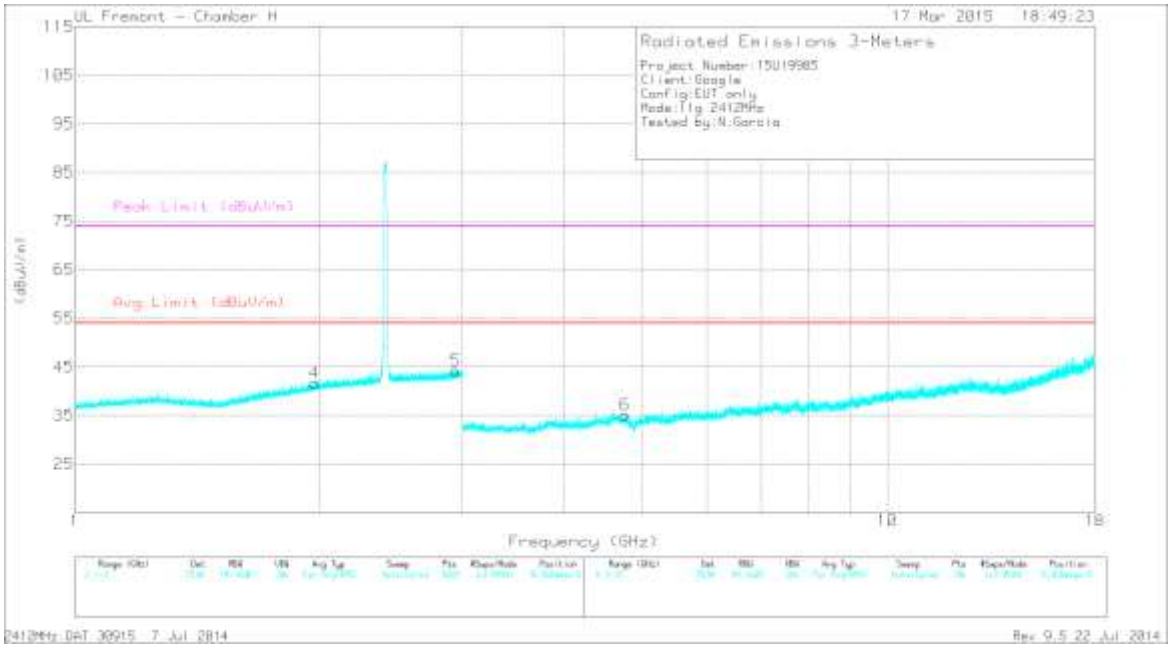
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

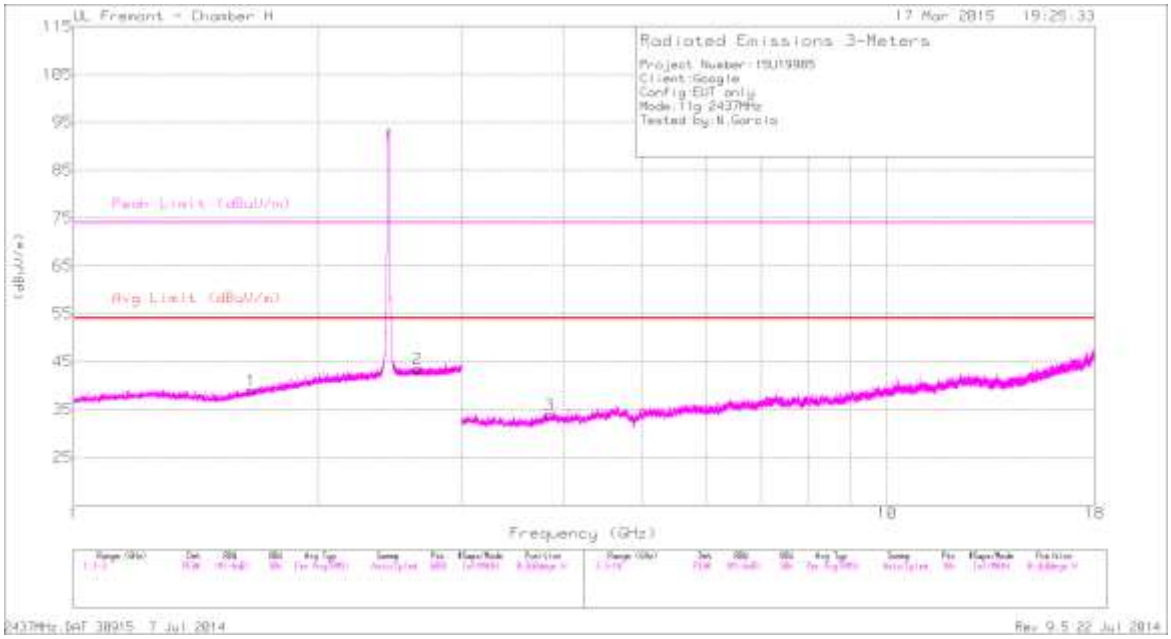
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.806	43.27	PK2	30.1	-25.2	0	48.17	-	-	-	-	1	100	H
2	* 2.735	43.04	PK2	32.3	-24.3	0	51.04	-	-	74	-22.96	12	118	H
	* 2.738	31.89	MAv1	32.3	-24.3	.12	40.01	54	-13.99	-	-	12	118	H
3	3.477	40.78	PK2	32.8	-32.9	0	40.68	-	-	-	-	1	100	H
4	1.975	43.24	PK2	31.1	-25	0	49.34	-	-	-	-	1	100	V
5	2.943	42.88	PK2	32.7	-24.1	0	51.48	-	-	-	-	1	100	V
6	* 4.756	40.26	PK2	34.3	-32.1	0	42.46	-	-	74	-31.54	40	169	V
	* 4.755	29.51	MAv1	34.3	-32.1	.12	31.83	54	-22.17	-	-	40	169	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

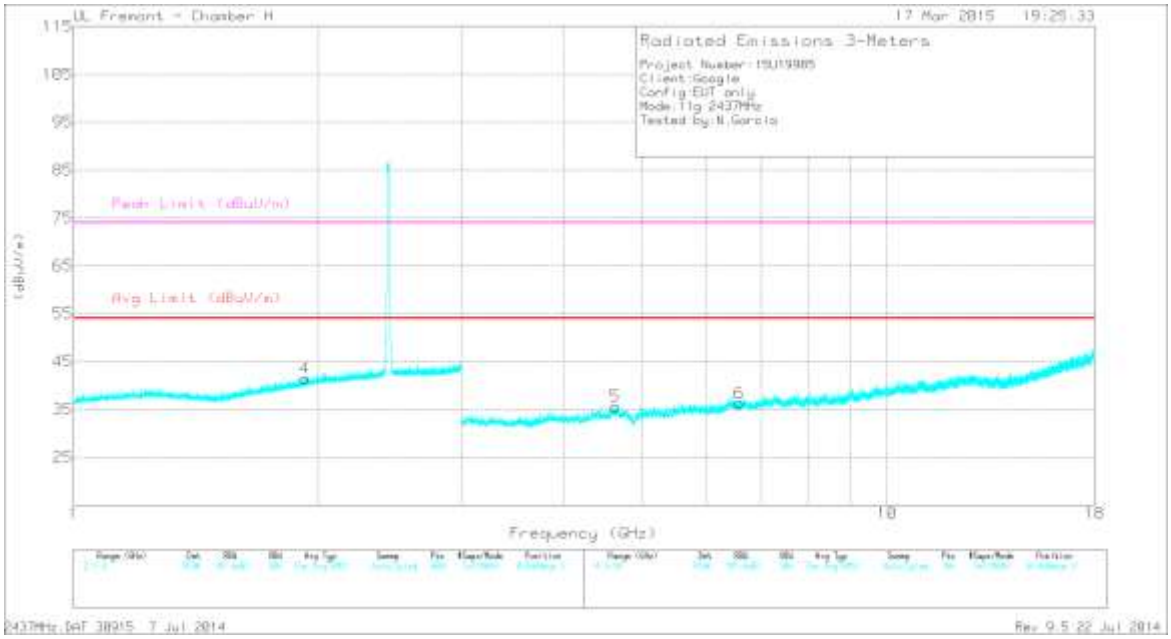
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

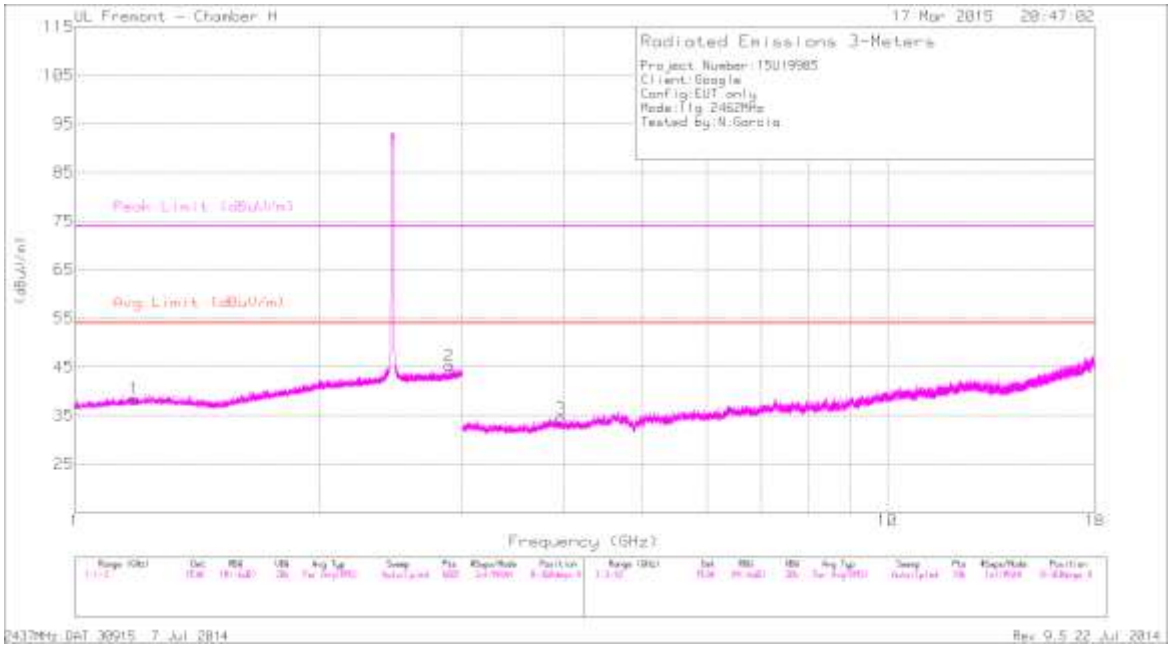
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.654	43.55	PK2	28.9	-25	0	47.45	-	-	-	-	8	100	H
2	2.651	42.77	PK2	32.3	-24.2	0	50.87	-	-	-	-	8	100	H
3	* 3.85	41.18	PK2	33.3	-32.4	0	42.08	-	-	74	-31.92	25	119	H
	* 3.848	30.5	MAv1	33.3	-32.4	.12	31.52	54	-22.48	-	-	25	119	H
4	1.924	43.37	PK2	30.8	-25.1	0	49.07	-	-	-	-	8	100	V
	1.926	31.94	MAv1	30.8	-25.1	.12	37.76	-	-	-	-	8	100	V
5	* 4.63	40.46	PK2	34.2	-32	0	42.66	-	-	74	-31.34	37	130	V
	* 4.633	29.86	MAv1	34.2	-32	.12	32.18	54	-21.82	-	-	37	130	V
6	6.577	39.87	PK2	35.7	-31.3	0	44.27	-	-	-	-	8	100	V
	6.577	28.71	MAv1	35.7	-31.3	.12	33.23	-	-	-	-	8	100	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

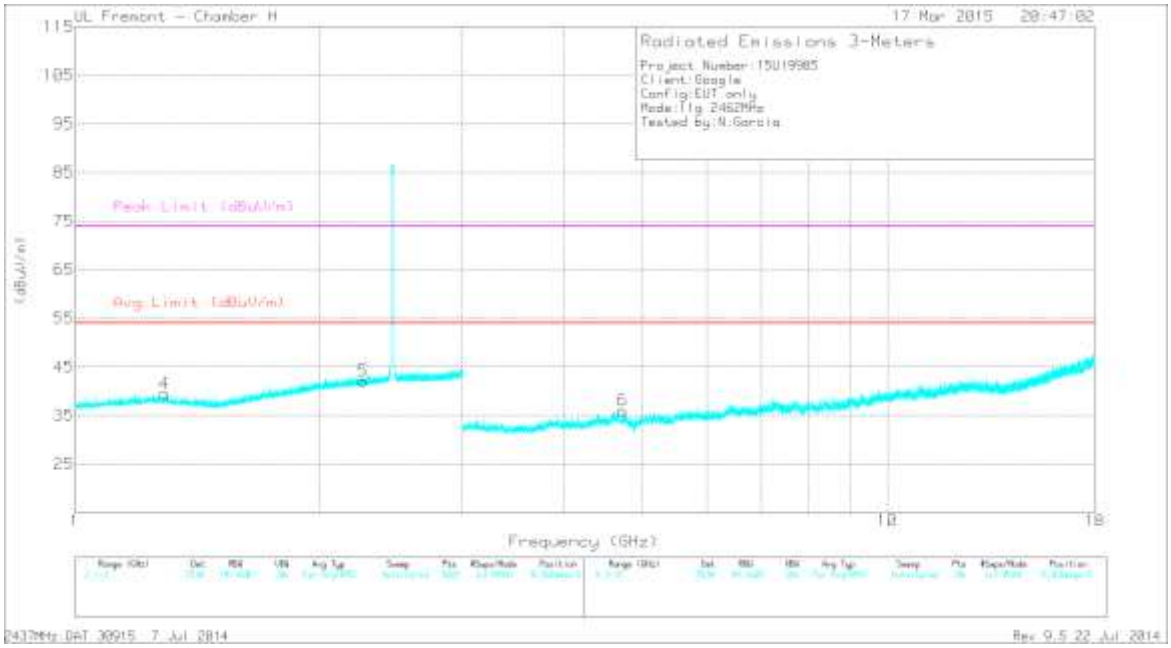
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/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
1	* 1.184	43.72	PK2	28.7	-25.9	0	46.52	-	-	74	-27.48	27	112	H
	* 1.185	32.36	MAv1	28.7	-25.9	.12	35.28	54	-18.72	-	-	27	112	H
2	* 2.89	43.31	PK2	32.6	-24.2	0	51.71	-	-	74	-22.29	35	132	H
	* 2.891	31.59	MAv1	32.6	-24.2	.12	40.11	54	-13.89	-	-	35	132	H
3	* 3.968	42.4	PK2	33.5	-33.2	0	42.7	-	-	74	-31.3	55	112	H
	* 3.966	30.54	MAv1	33.5	-33.1	.12	31.06	54	-22.94	-	-	55	112	H
4	* 1.292	44.53	PK2	28.8	-25.8	0	47.53	-	-	74	-26.47	15	122	V
	* 1.291	32.39	MAv1	28.8	-25.8	.12	35.51	54	-18.49	-	-	15	122	V
5	* 2.268	42.93	PK2	31.7	-24.6	0	50.03	-	-	74	-23.97	39	112	V
	* 2.266	31.88	MAv1	31.7	-24.6	.12	39.1	54	-14.9	-	-	39	112	V
6	* 4.724	40.51	PK2	34.3	-31.8	0	43.01	-	-	74	-30.99	14	133	V
	* 4.724	29.71	MAv1	34.3	-31.8	.12	32.33	54	-21.67	-	-	14	133	V

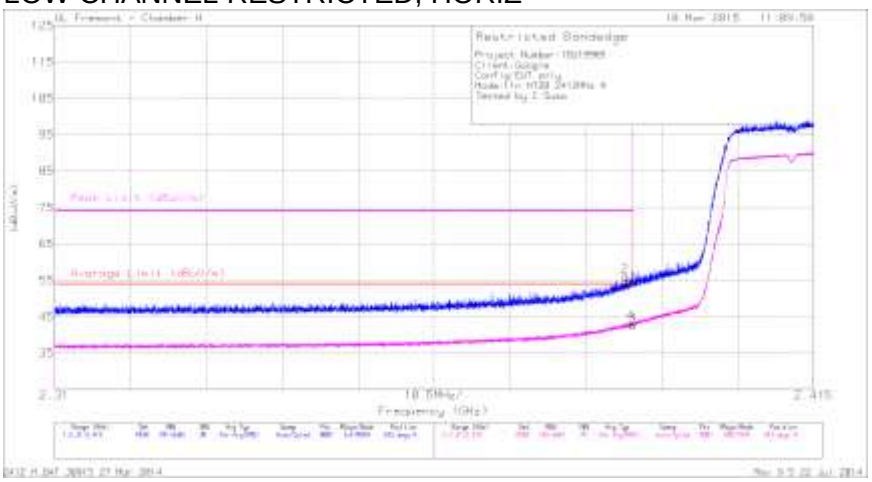
* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

9.1.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, HORIZ



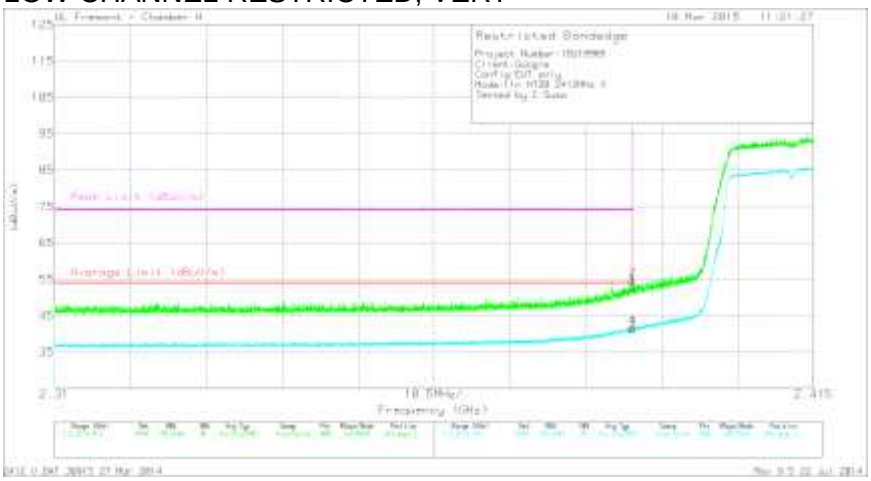
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	48.71	PK	32	-24.6	0	56.11	-	-	74	-17.89	243	110	H
1	* 2.39	46.78	PK	32	-24.6	0	54.18	-	-	74	-19.82	243	110	H
3	* 2.39	35.23	RMS	32	-24.6	.12	42.75	54	-11.25	-	-	243	110	H
4	* 2.39	35.98	RMS	32	-24.6	.12	43.5	54	-10.5	-	-	243	110	H

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

LOW CHANNEL RESTRICTED, VERT



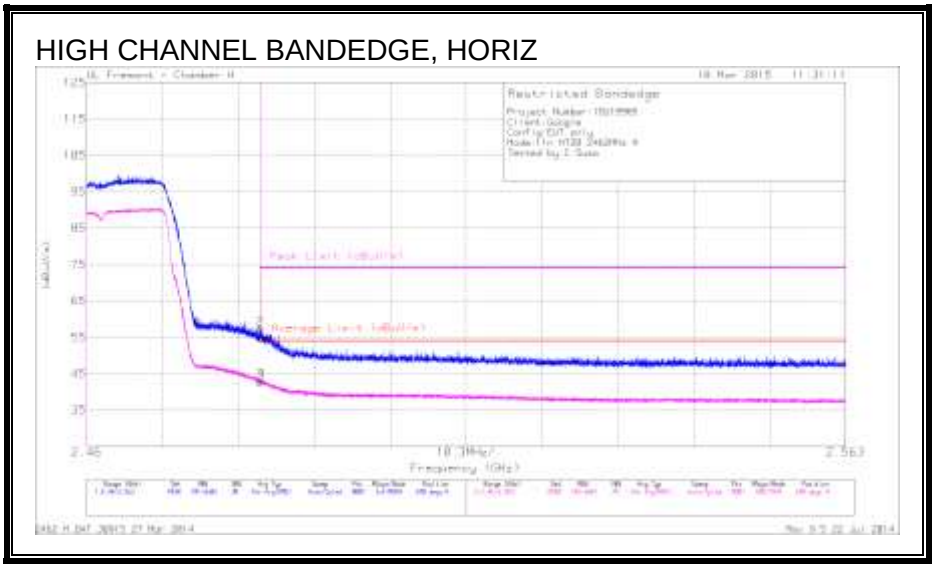
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	45.48	PK	32	-24.6	0	52.88	-	-	74	-21.12	324	197	V
2	* 2.39	47.35	PK	32	-24.6	0	54.75	-	-	74	-19.25	324	197	V
3	* 2.39	33.92	RMS	32	-24.6	.12	41.44	54	-12.56	-	-	324	197	V
4	* 2.39	34.37	RMS	32	-24.6	.12	41.89	54	-12.11	-	-	324	197	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)



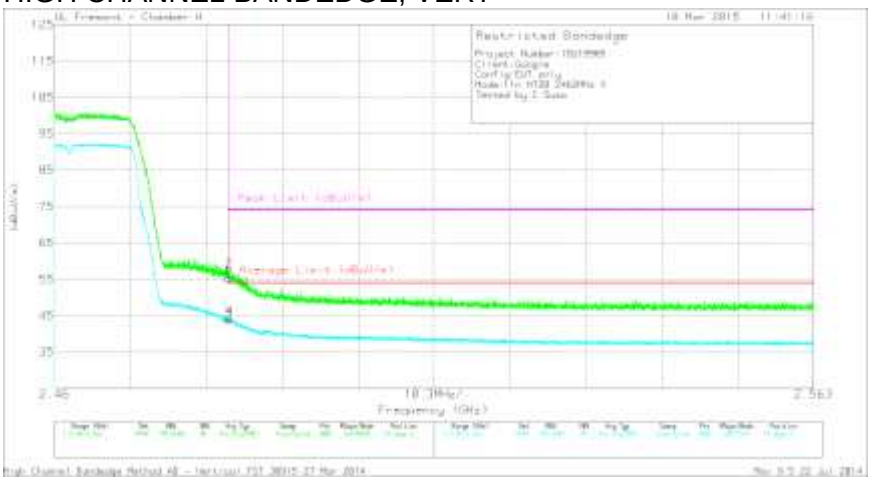
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	47.12	PK	32.2	-24.5	0	54.82	-	-	74	-19.18	240	208	H
2	* 2.484	49.66	PK	32.2	-24.5	0	57.36	-	-	74	-16.64	240	208	H
3	* 2.484	35.06	RMS	32.2	-24.5	.12	42.88	54	-11.12	-	-	240	208	H
4	* 2.484	35.48	RMS	32.2	-24.5	.12	43.3	54	-10.7	-	-	240	208	H

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

HIGH CHANNEL BANDEDGE, VERT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (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	47.54	PK	32.2	-24.5	0	55.24	-	-	74	-18.76	19	277	V
2	* 2.484	49.76	PK	32.2	-24.5	0	57.46	-	-	74	-16.54	19	277	V
3	* 2.484	36.24	RMS	32.2	-24.5	.12	44.06	54	-9.94	-	-	19	277	V
4	* 2.484	36.56	RMS	32.2	-24.5	.12	44.38	54	-9.62	-	-	19	277	V

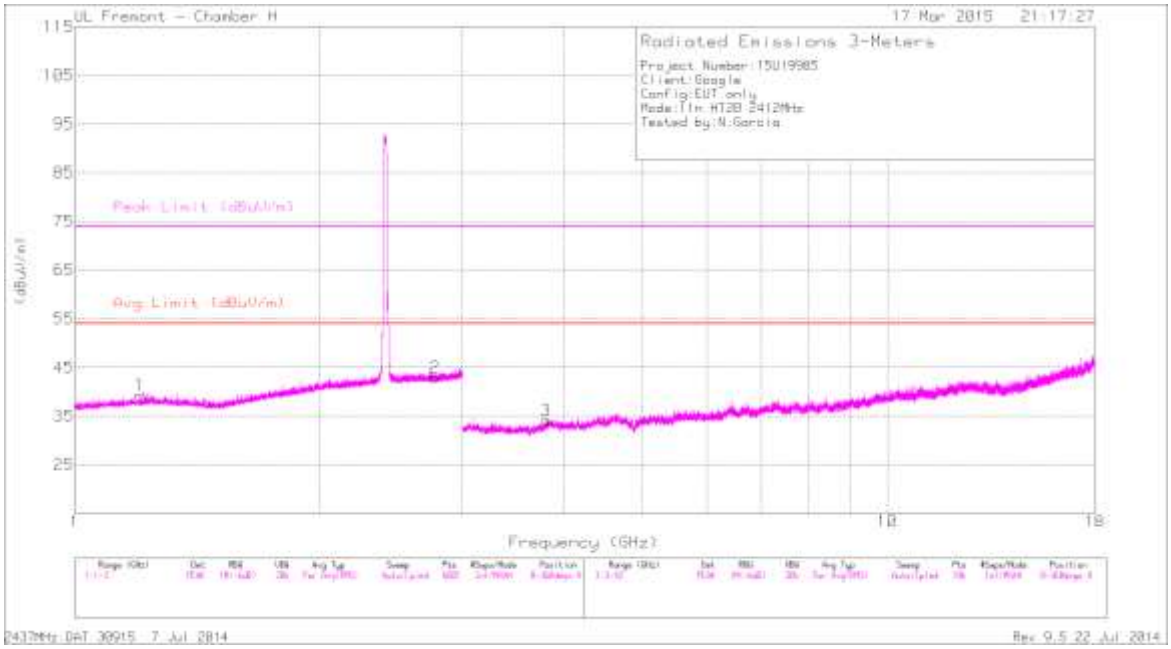
* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
RMS - RMS detection

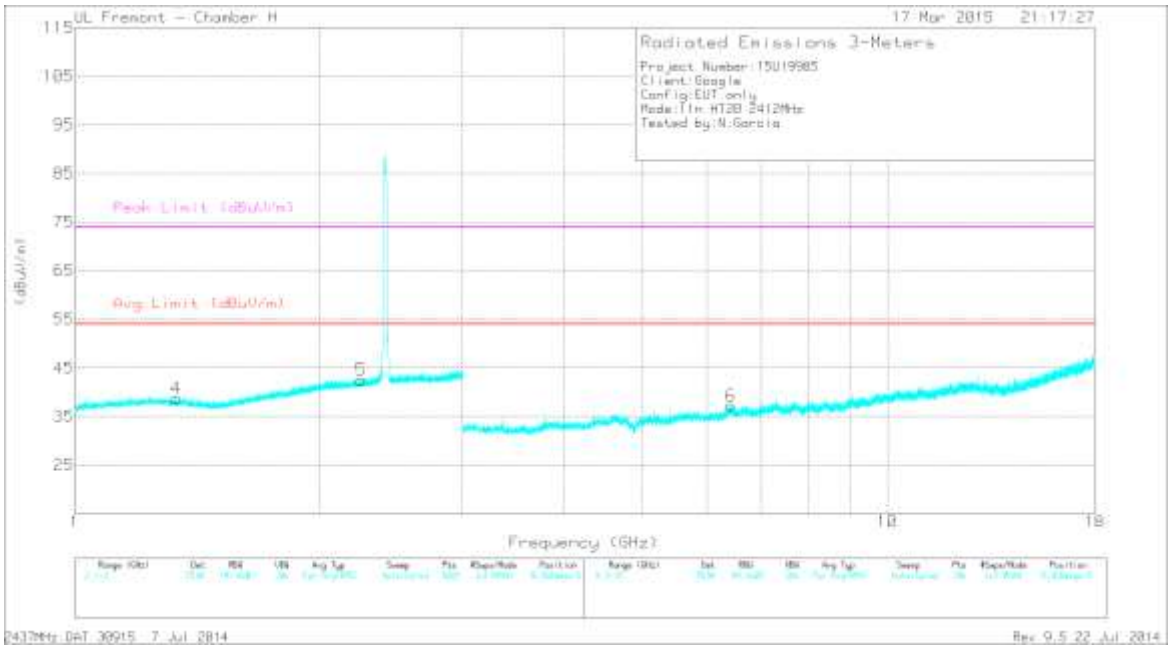
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

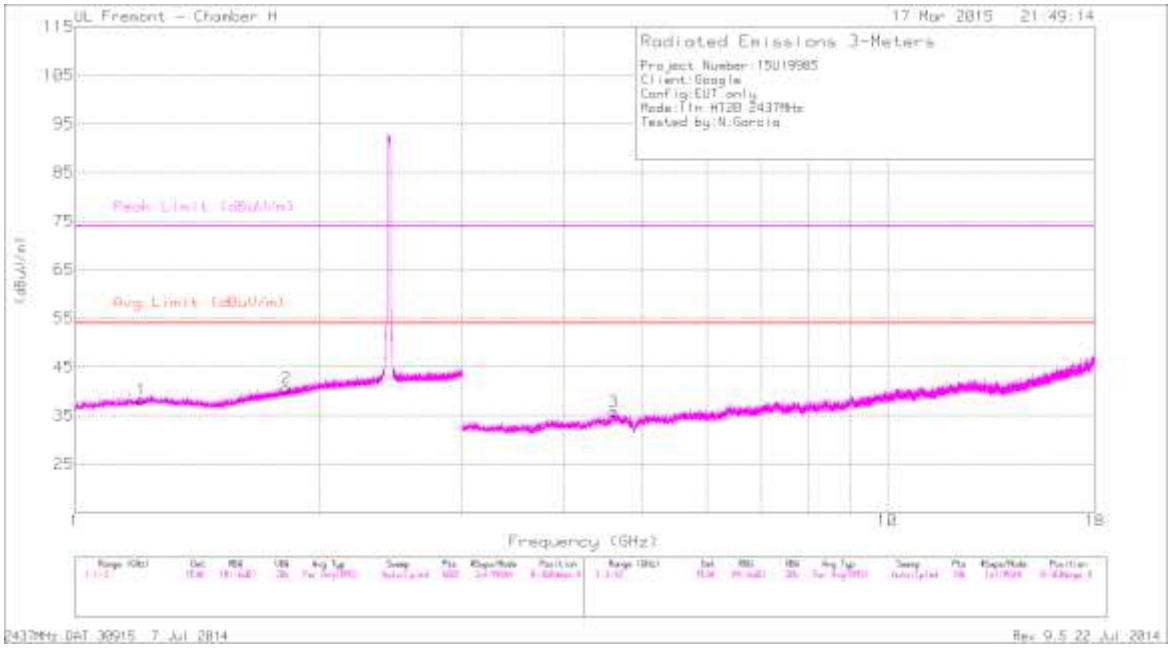
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.204	43.91	PK2	28.8	-25.9	0	46.81	-	-	74	-27.19	42	107	H
	* 1.204	32.24	MAv1	28.8	-25.9	.12	35.26	54	-18.74	-	-	42	107	H
2	* 2.775	42.77	PK2	32.4	-24.3	0	50.87	-	-	74	-23.13	45	127	H
	* 2.773	31.72	MAv1	32.3	-24.3	.12	39.84	54	-14.16	-	-	45	127	H
3	* 3.803	41.63	PK2	33.3	-32.5	0	42.43	-	-	74	-31.57	50	123	H
	* 3.803	30.29	MAv1	33.3	-32.5	.12	31.21	54	-22.79	-	-	50	123	H
4	* 1.333	43.68	PK2	28.6	-25.7	0	46.58	-	-	74	-27.42	39	136	V
	* 1.333	32.11	MAv1	28.6	-25.7	.12	35.13	54	-18.87	-	-	39	136	V
5	* 2.251	43.65	PK2	31.7	-24.6	0	50.75	-	-	74	-23.25	5	147	V
	* 2.251	31.8	MAv1	31.7	-24.6	.12	39.02	54	-14.98	-	-	5	147	V
6	6.419	40.02	PK2	35.5	-30.3	0	45.22	-	-	-	-	1	100	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

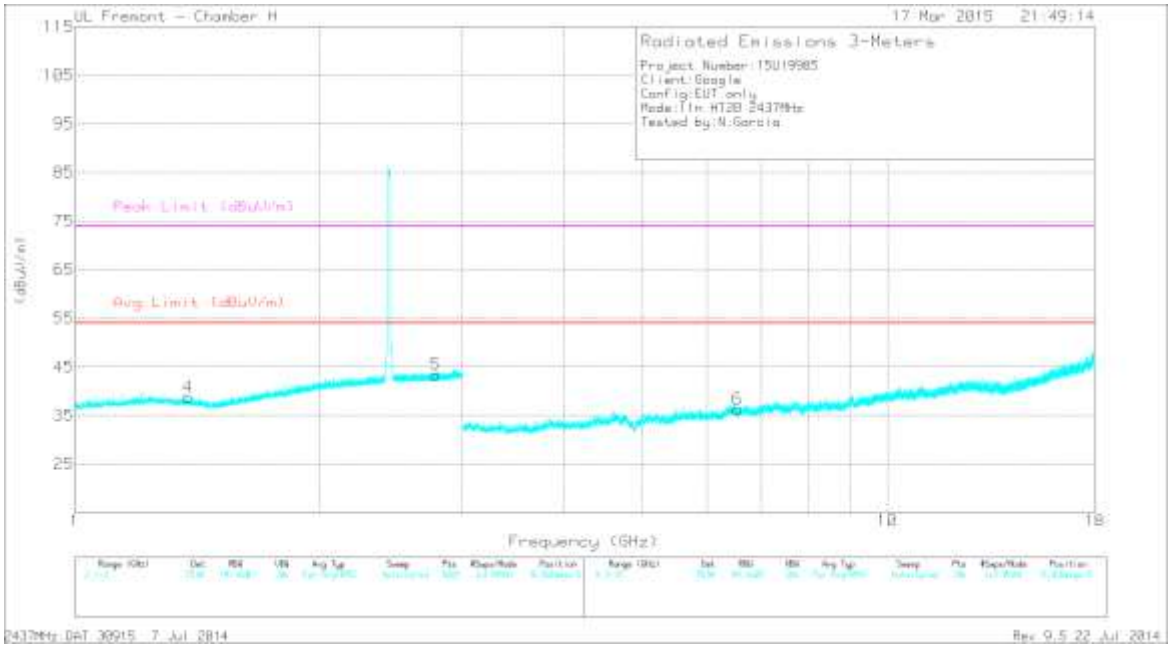
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

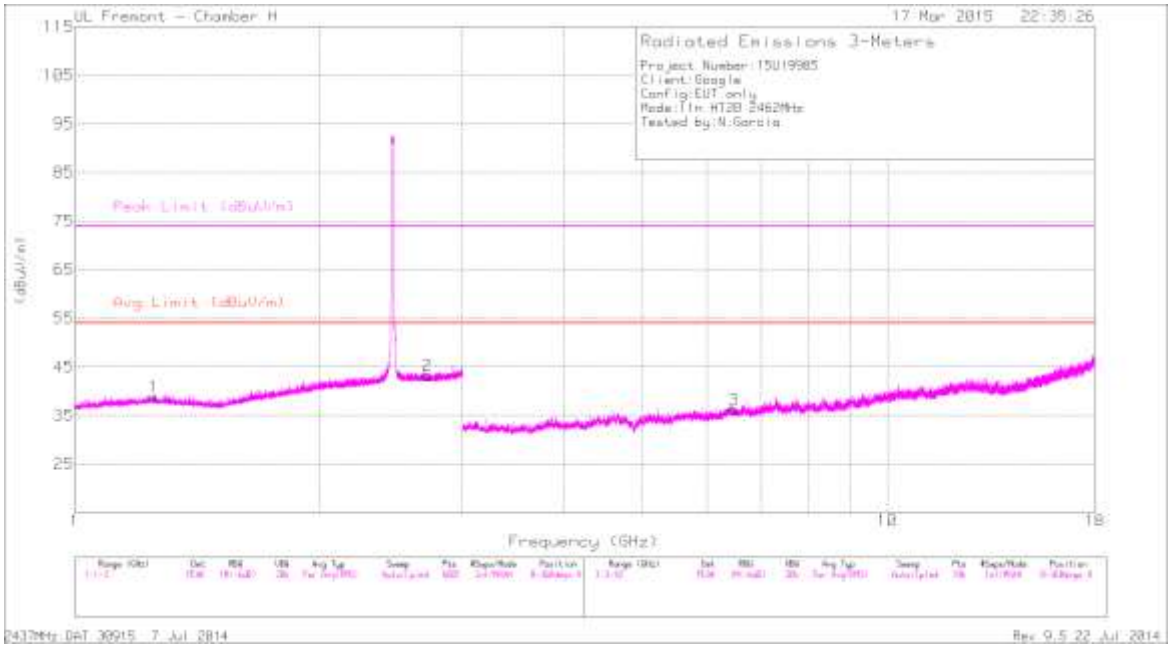
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.21	43.48	PK2	28.8	-25.9	0	46.38	-	-	74	-27.62	36	129	H
	* 1.207	32.35	MAv1	28.8	-25.9	.12	35.37	54	-18.63	-	-	36	129	H
2	1.824	44.13	PK2	30.2	-25.2	0	49.13	-	-	-	-	0	100	H
3	* 4.604	41.56	PK2	34.1	-32.4	0	43.26	-	-	74	-30.74	42	142	H
	* 4.6	31.05	MAv1	34.1	-32.4	.12	32.87	54	-21.13	-	-	42	142	H
4	* 1.38	43.72	PK2	28.3	-25.6	0	46.42	-	-	74	-27.58	66	122	V
	* 1.38	32.27	MAv1	28.3	-25.6	.12	35.09	54	-18.91	-	-	66	122	V
5	* 2.782	43.38	PK2	32.4	-24.3	0	51.48	-	-	74	-22.52	52	132	V
	* 2.779	31.72	MAv1	32.4	-24.3	.12	39.94	54	-14.06	-	-	52	132	V
6	6.542	40.18	PK2	35.6	-31.4	0	44.38	-	-	-	-	65	120	V

* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

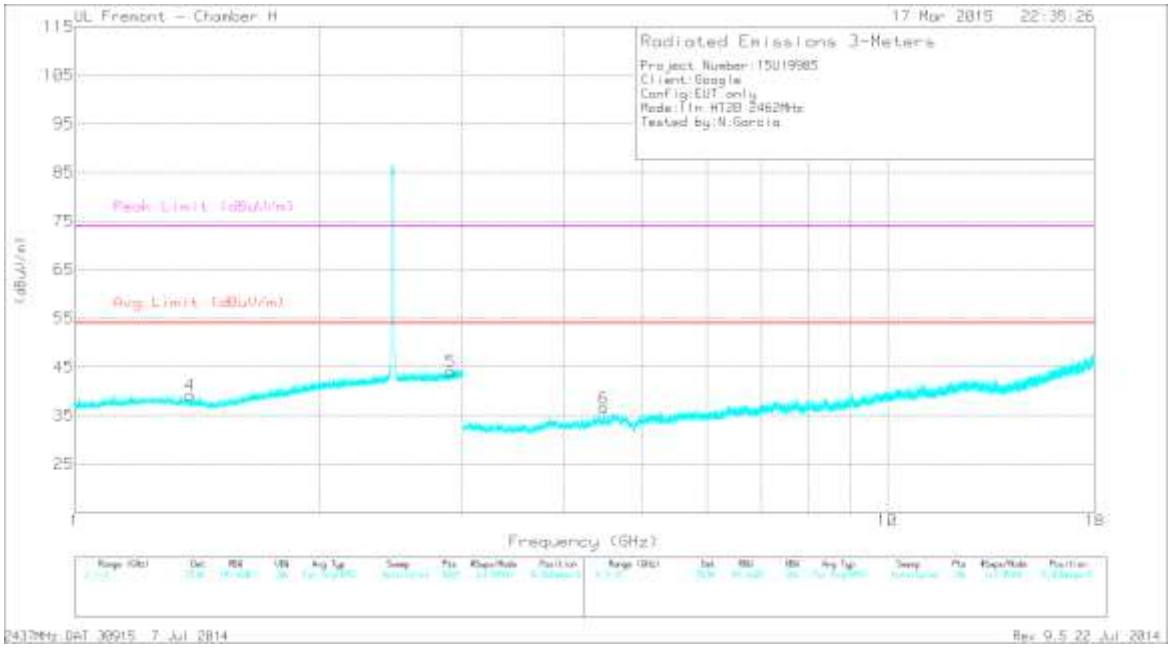
PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL

HORIZONTAL



VERTICAL



Trace Markers

Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/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
1	* 1.314	43.63	PK2	28.7	-25.8	0	46.53	-	-	74	-27.47	220	191	H
	* 1.314	32.38	MAv1	28.7	-25.8	.12	35.40	54	-18.6	-	-	220	191	H
2	* 1.439	43.89	PK2	28	-25.5	0	46.39	-	-	74	-27.61	170	213	V
	* 1.438	32.19	MAv1	28	-25.5	.12	34.81	54	-19.19	-	-	170	213	V
4	* 4.648	40.77	PK2	34.2	-31.7	0	43.27	-	-	74	-30.73	144	231	H
	* 4.648	30.02	MAv1	34.2	-31.7	.12	32.64	54	-21.36	-	-	144	231	H
3	* 4.654	40.77	PK2	34.2	-31.8	0	43.17	-	-	74	-30.83	140	226	V
	* 4.653	30.15	MAv1	34.2	-31.8	.12	32.67	54	-21.33	-	-	140	226	V
5	* 11.233	36.02	PK2	37.9	-25.5	0	48.42	-	-	74	-25.58	135	237	V
	* 11.233	24.74	MAv1	37.9	-25.5	.12	37.26	54	-16.74	-	-	135	237	V
6	* 10.644	35.16	PK2	37.6	-24.8	0	47.96	-	-	74	-26.04	232	199	V
	* 10.646	24.52	MAv1	37.6	-24.9	.12	37.34	54	-16.66	-	-	232	199	V

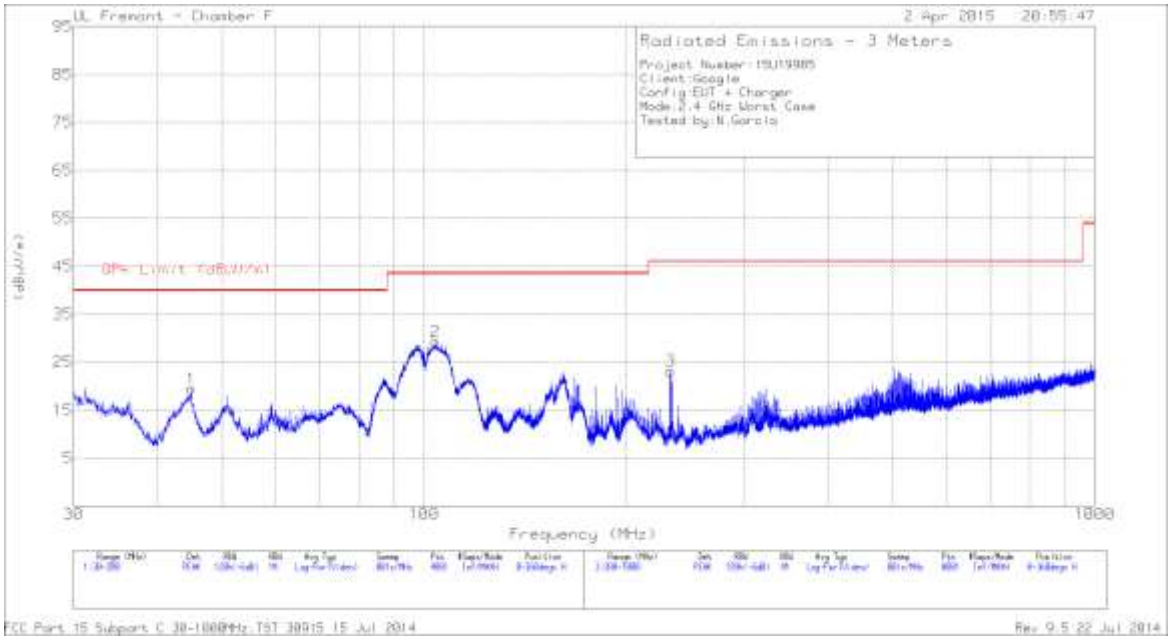
* - indicates frequency in CFR 47, Part 15 Restricted Band" and "Industry Canada RSS-Restricted Band

PK - Peak detector
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

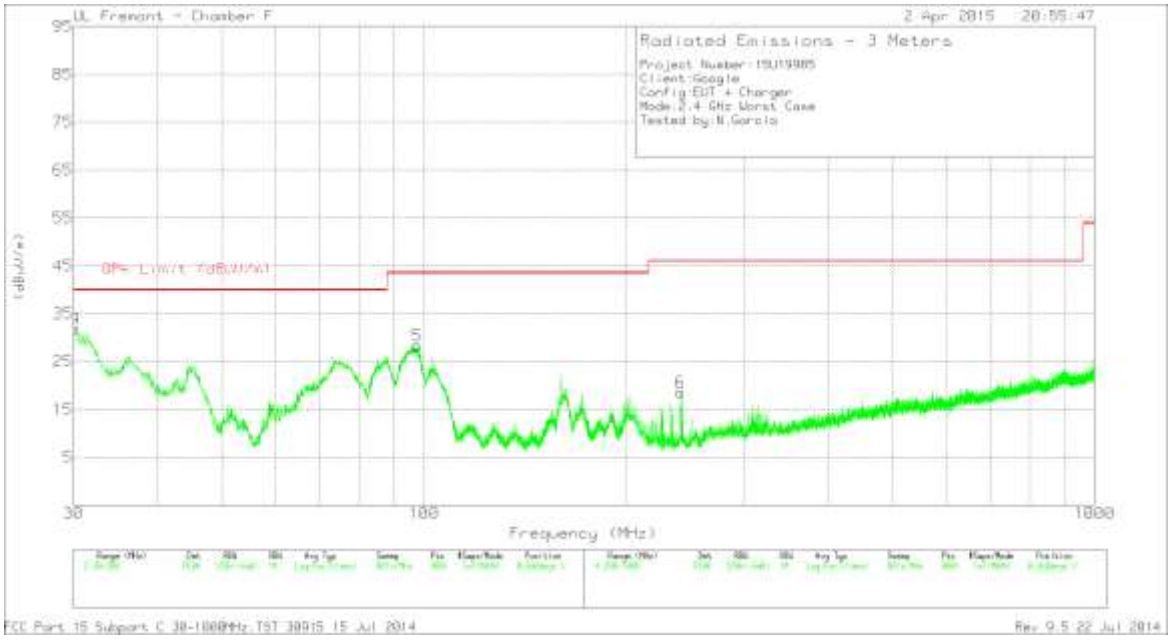
9.2. WORST-CASE BELOW 1 GHz

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

HORIZONTAL



VERTICAL



DATA

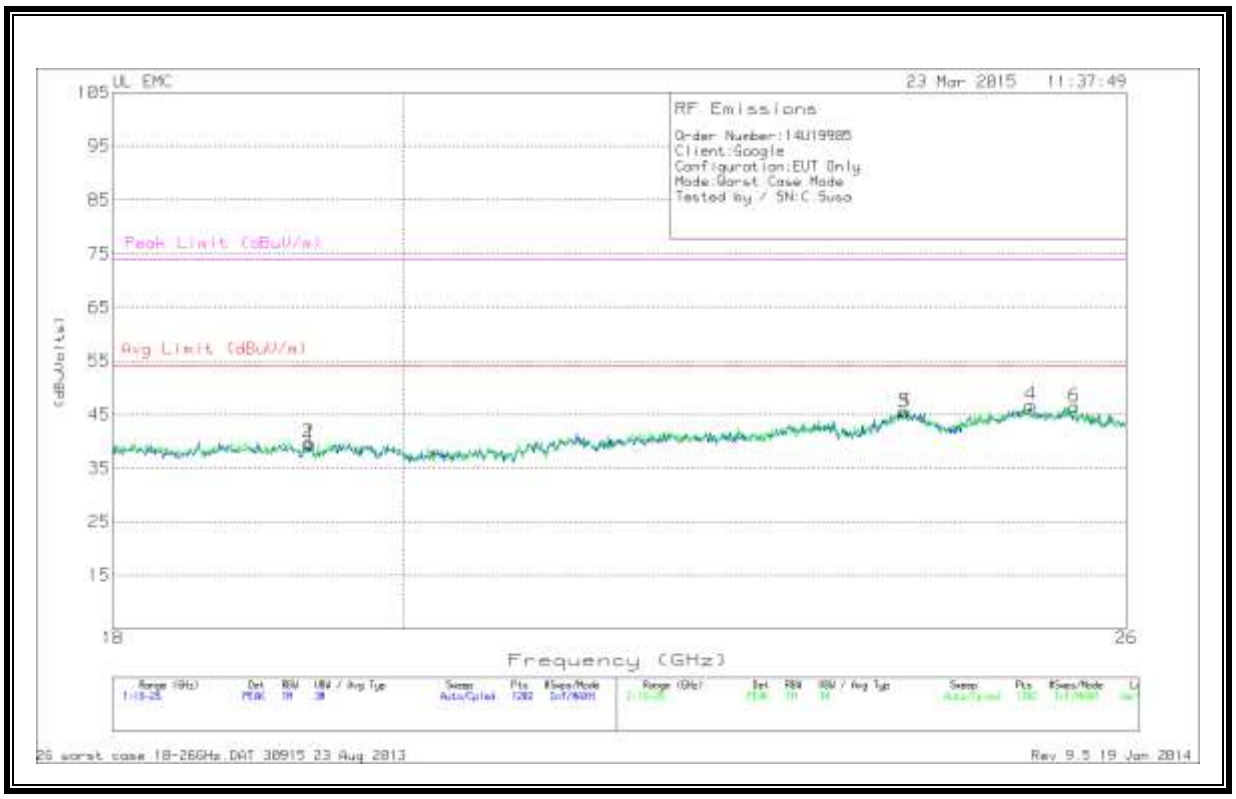
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.9175	40.55	PK	10.6	-31.7	19.45	40	-20.55	0-360	401	H
2	104.035	49.23	PK	11.2	-31.2	29.23	43.52	-14.29	0-360	301	H
4	30.17	43.17	PK	20.7	-31.9	31.97	40	-8.03	0-360	100	V
5	97.745	50.25	PK	9.5	-31.3	28.45	43.52	-15.07	0-360	100	V
3	232.9	42.37	PK	11.2	-30.4	23.17	46.02	-22.85	0-360	201	H
6	* 241.1	37.29	PK	11.6	-30.3	18.59	46.02	-27.43	0-360	99	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

9.3. WORST-CASE ABOVE 18 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION)



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	19.339	40.1	PK	32.8	-23.9	-9.5	39.5	54	-14.5	74	-34.5
3	23.982	43.5	PK	34.2	-22.7	-9.5	45.5	54	-8.5	74	-28.5
4	25.114	44.93	PK	34.5	-23.1	-9.5	46.83	54	-7.17	74	-27.17
2	19.326	40.23	PK	32.8	-23.7	-9.5	39.83	54	-14.17	74	-34.17
5	23.995	43.5	PK	34.2	-22.7	-9.5	45.5	54	-8.5	74	-28.5
6	25.514	44.3	PK	34.7	-23	-9.5	46.5	54	-7.5	74	-27.5

PK - Peak detector

10. 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

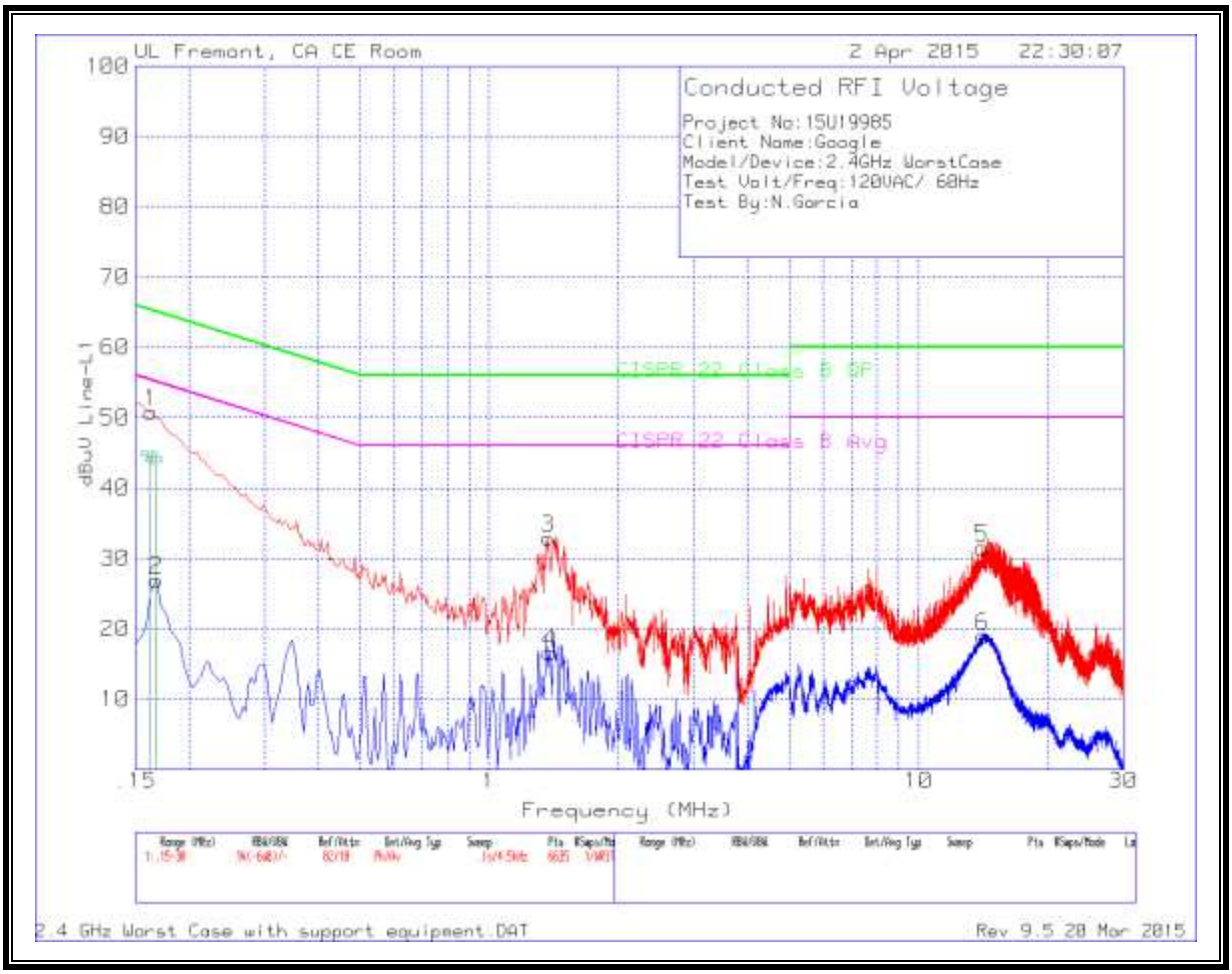
* Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4

RESULTS

LINE 1 RESULTS

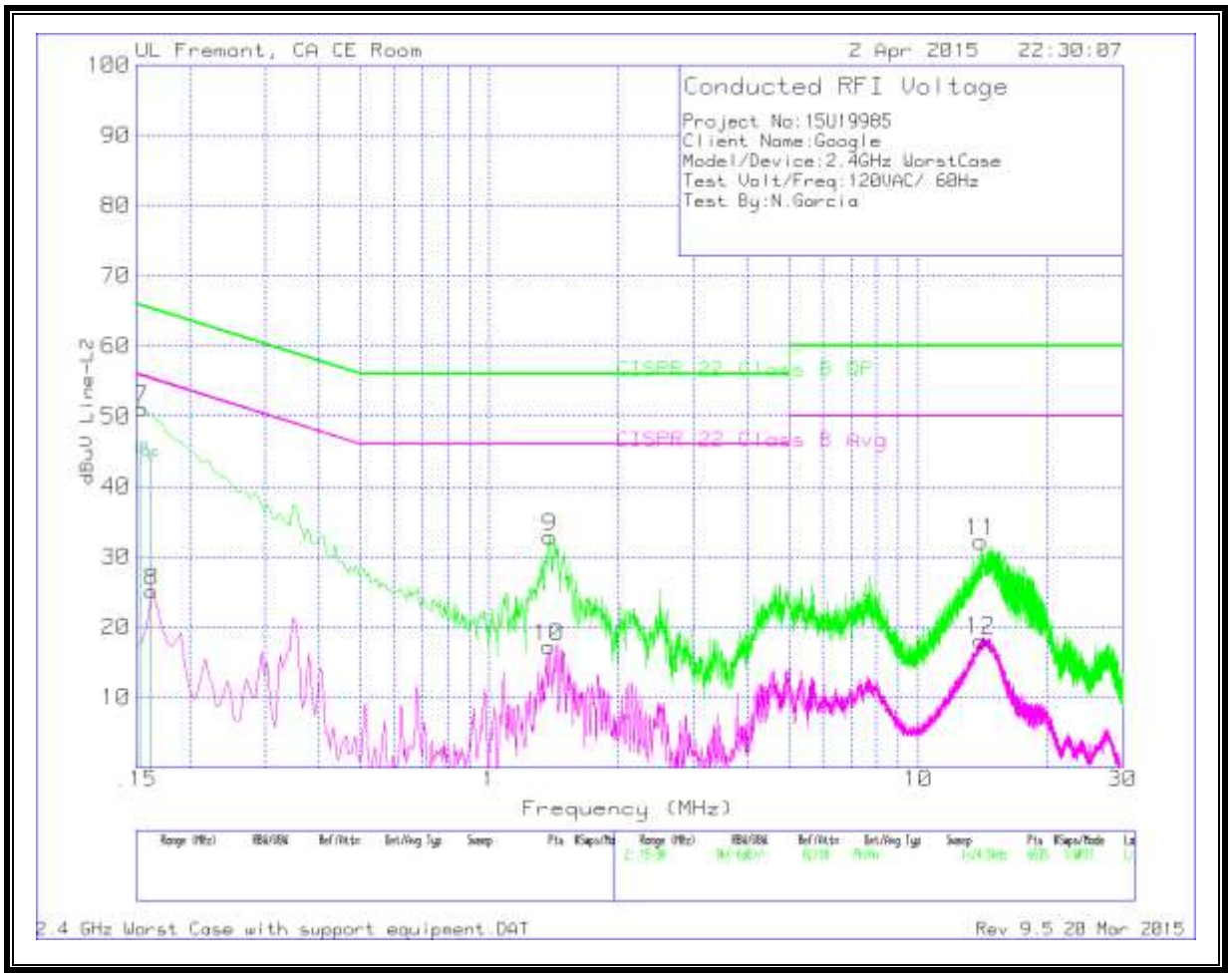


Range 1: Line-L1 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.1635	49.59	Pk	1.2	0	50.79	65.28	-14.49	55.28	--
2	.168	25.73	Av	1.2	0	26.93	65.06	--	55.06	-28.13
3	1.374	32.56	Pk	.2	.1	32.86	56	-23.14	46	--
4	1.383	16.31	Av	.2	.1	16.61	56	--	46	-29.39
5	14.046	31.09	Pk	.2	.2	31.49	60	-28.51	50	--
6	14.1045	18.53	Av	.2	.2	18.93	60	--	50	-31.07

Pk - Peak detector

Av - Average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
7	.1545	49.68	Pk	1.4	0	51.08	65.75	-14.67	55.75	--
8	.1635	23.81	Av	1.3	0	25.11	65.28	--	55.28	-30.17
9	1.383	32.54	Pk	.2	.1	32.84	56	-23.16	46	--
10	1.3785	16.9	Av	.2	.1	17.2	56	--	46	-28.8
11	14.0055	31.79	Pk	.2	.2	32.19	60	-27.81	50	--
12	13.9875	17.73	Av	.2	.2	18.13	60	--	50	-31.87