FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

MEDIA STREAMING DEVICE

FCC ID: A4RH2G2-2A

REPORT NUMBER: 14U18503-E1, REVISION A

ISSUE DATE: SEPTEMBER 23, 2014

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
--	9/09/14	Initial Issue	G. Victorine
A	09/23/14	TCB comment; Sec. 5.5, remove last paragraph	G. Victorine

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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: MEDIA STREAMING DEVICE

UNIQUE IDENTIFIER: FCC ID: A4RH2G2-2A

SERIAL NUMBER: 4728102ZZB82 (CONDUCTED); 4729102ZZCA9 (RADIATED)

DATE TESTED: AUGUST 13, 2014 – AUGUST 20, 2014

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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

Approved & Released For
UL Verification Services Inc. By:

GARY VICTORINE
PROJECT LEADER
UL Verification Services Inc.

Tested By:

TRI PHAM
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, ANSI C63.4-2009, and ANSI C63.10-2009.

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

36.5 dBµV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBµV/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 802.11b/g/n HT20 media streaming device.

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	22.53	179.06
2412 - 2462	802.11g	23.3	213.80
2412 - 2462	802.11n HT20	22.99	199.07

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an IFA PCB antenna, with a maximum gain of 1.9 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 20140723.101134

The EUT driver version installed during testing was SD8801-0.0.0.p0-C3X15C047-GPL-(FP66).

The test utility software used during testing was Labtool, version 14.1.36.26

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 fundamental of the EUT was investigated in three orthogonal orientations flatbed, landscape and portrait, it was determined that flatbed orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in flatbed 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	Lenovo	X201	R9-9Z7VN 10/12	DoC
Laptop AC adapter	Lenovo	42T4418	11S42T4418Z1ZGWG0CF5M2 REV.F	N/A
EUT AC adapter	Google	MST3K-US	S004ABU0510085	DoC

I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Antenna	1	SMA	Un-shielded	0.1	to spectrum analyzer
2	USB cable	1	USB	Shielded	2.5	
3	USB spliter cable	1	Mini USB	Shielded	0.15	None
4	USB cable	1	USB-A to micro	Shielded	1.5	Ferrite at EUT end

TEST SETUP

For conducted port tests, the EUT was connected to a host Laptop via USB cable adapter and spectrum analyzer to antenna port. For radiated and line conducted tests, the EUT was put into transmit mode while powered from an AC adapter. Test software exercised the EUT.

SETUP DIAGRAM FOR CONDUCTED PORT TESTS

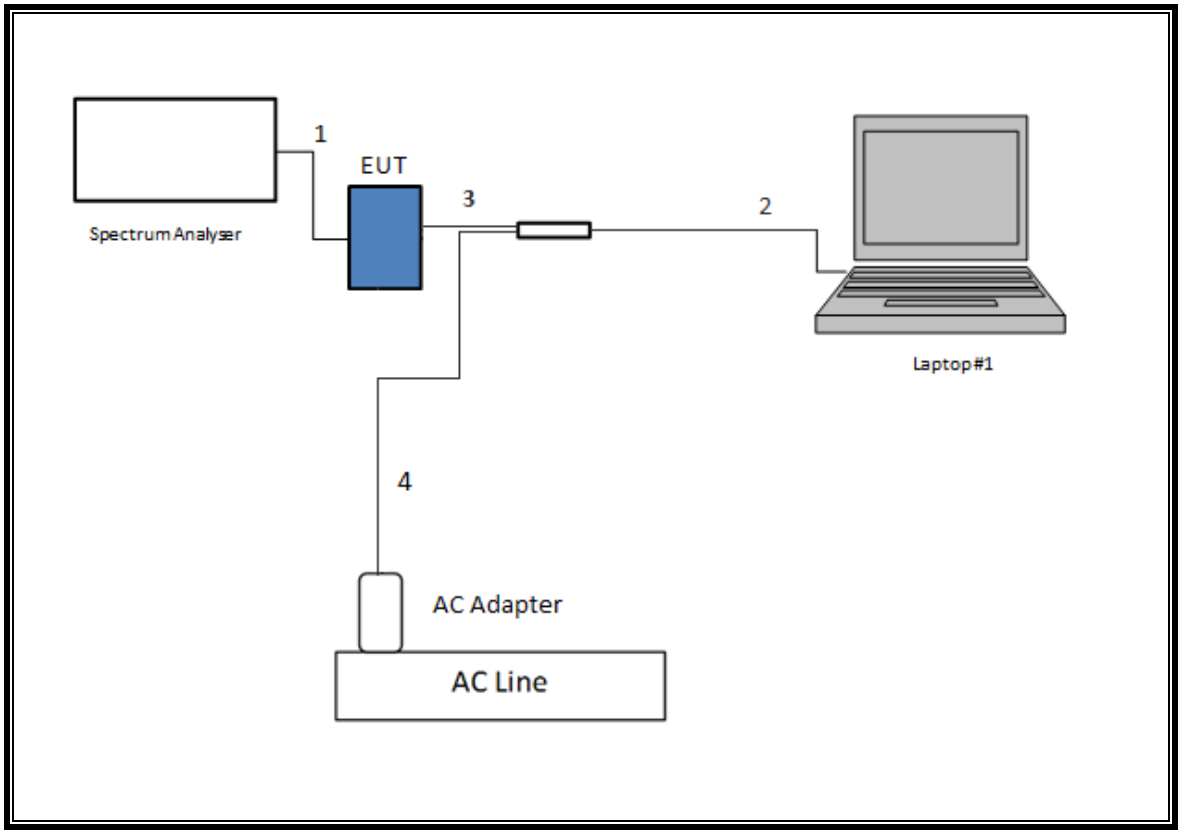
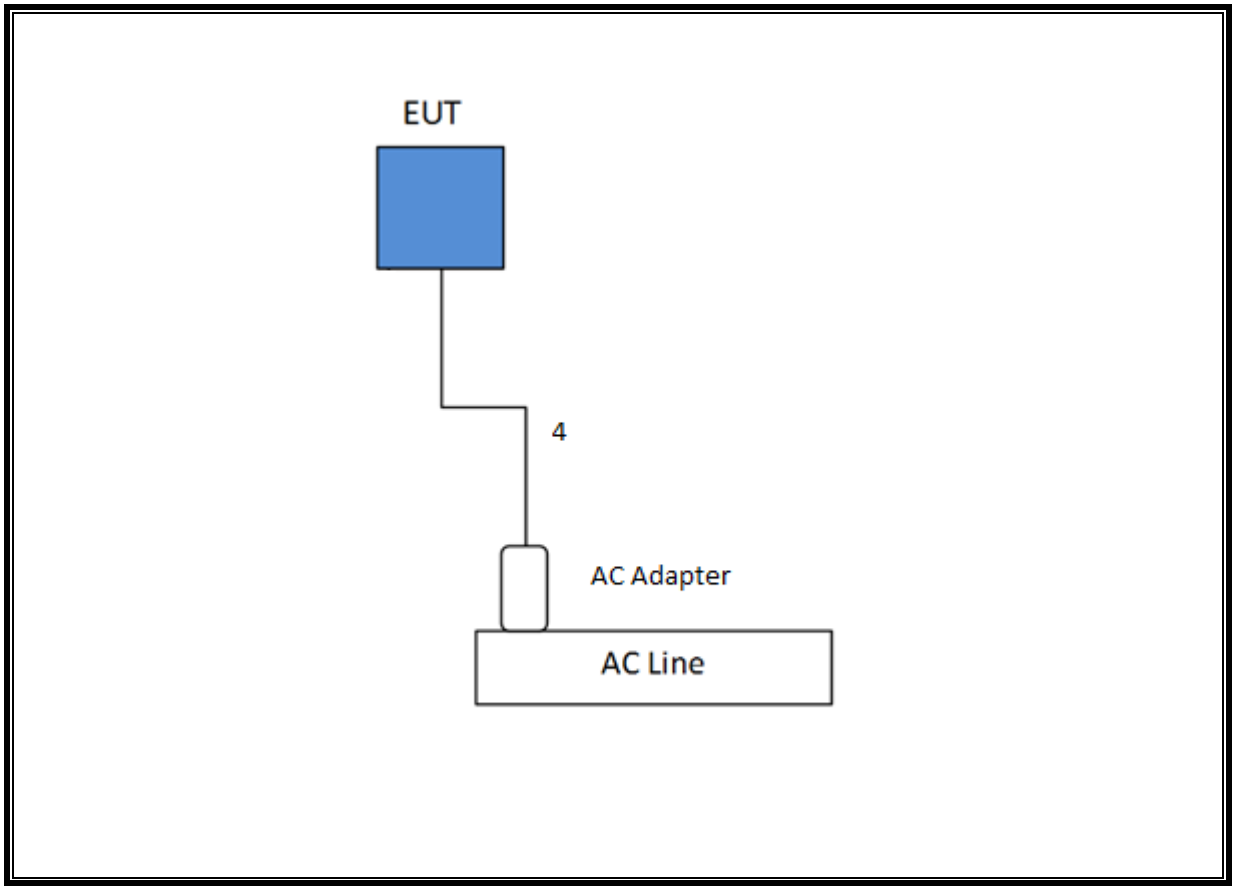


DIAGRAM FOR RADIATED AND LINE CONDUCTED EMISSIONS TESTS



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 Date**	**Cal Due**
Antenna, Horn, 1-18GHz	ETS Lindgren	3117	F00133	2/25/2014	2/25/2015
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB3	F00168	3/28/2014	3/28/2015
RF PreAmplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	F00353	8/24/2013	8/24/2014
Amplifier	Sonoma	310	F00008	5/28/2014	5/28/2015
PXA Signal Analyzer	Agilent	N9030A-544	RENTAL	5/2/2014	5/2/2015
Single Channel PK Power Meter	Agilent	N1911A	F00024	3/7/2014	3/7/2015
Wideband Power Sensor, 30MHz video bandwidth	Agilent	N1921A	F00360	9/30/2013	9/30/2014
Antenna, Horn, 18 GHz	ETS Lindgren	3117	C01005	3/20/2014	3/20/2015
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	4/22/2014	4/22/2015
RF PreAmplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	F00354	8/24/2013	8/24/2014
Preamp, 1000MHz	Sonoma	310N	N02891	12/30/2013	12/30/2014
Antenna, Horn 1-18GHz	ETS Lindgren	3117		4/14/2014	4/14/2015
Antenna, Broadband Hybrid, 30MHz to 2000	Sunol Sciences	JB3		5/14/2014	5/14/2015
RF Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-	F00001	6/5/2014	6/5/2015
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A		5/17/2014	5/17/2015
Antenna, Horn 1-18GHz	ETS Lindgren	3117		4/14/2014	4/14/2015
Antenna, Broadband Hybrid, 30MHz to 2000	Sunol Sciences	JB3		5/14/2014	5/14/2015
RF Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-	F00005	8/24/2013	8/24/2014
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A		5/7/2014	5/7/2015

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

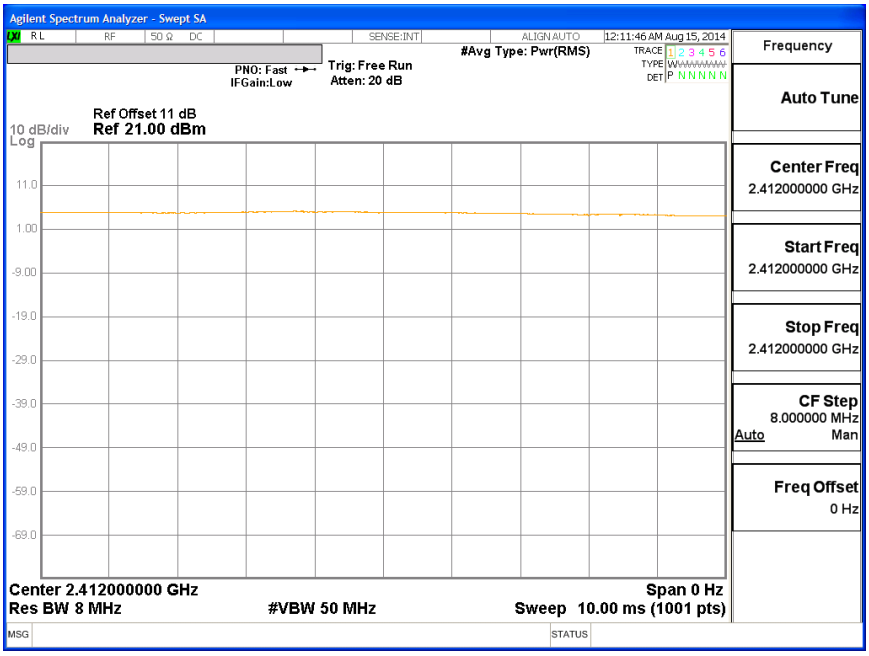
7.1.1. ON TIME AND DUTY CYCLE RESULTS

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	1.000	1.000	1.000	100.00%	0.00	0.010
802.11g 1TX	3.145	3.170	0.992	99.21%	0.00	0.010
802.11n HT20 1TX	2.925	2.945	0.993	99.32%	0.00	0.010

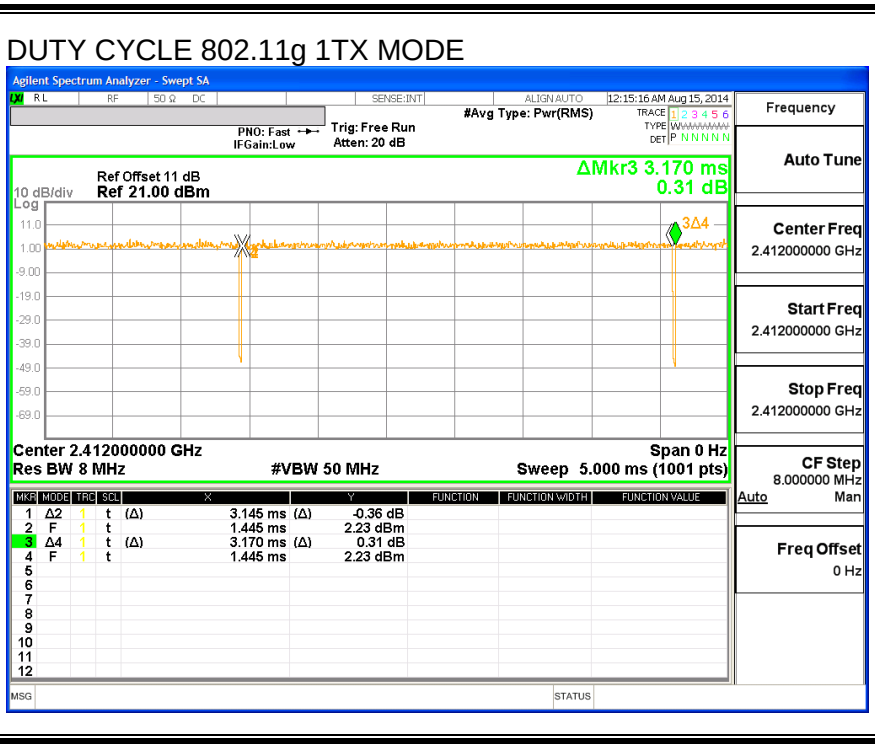
7.1.2. DUTY CYCLE PLOTS

2.4 GHz BAND

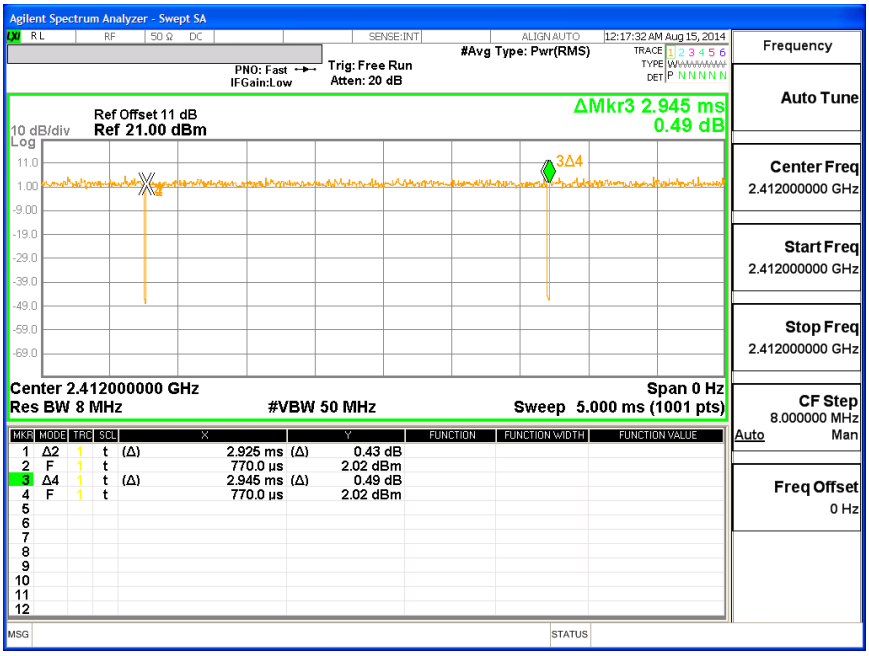
DUTY CYCLE 802.11b 1TX MODE



DUTY CYCLE 802.11g 1TX MODE



DUTY CYCLE 802.11n HT20 1TX MODE



7.2. MEASUREMENT METHODS

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

Output Power: KDB 558074 D01 v03r02, Section 9.1.2.

Power Spectral Density: KDB 558074 D01 v03r02, Section 10.2.

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.

7.3. 802.11b MODE IN THE 2.4 GHz BAND

7.3.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

NCC LP0002 §3.10.1 (6.2.1)

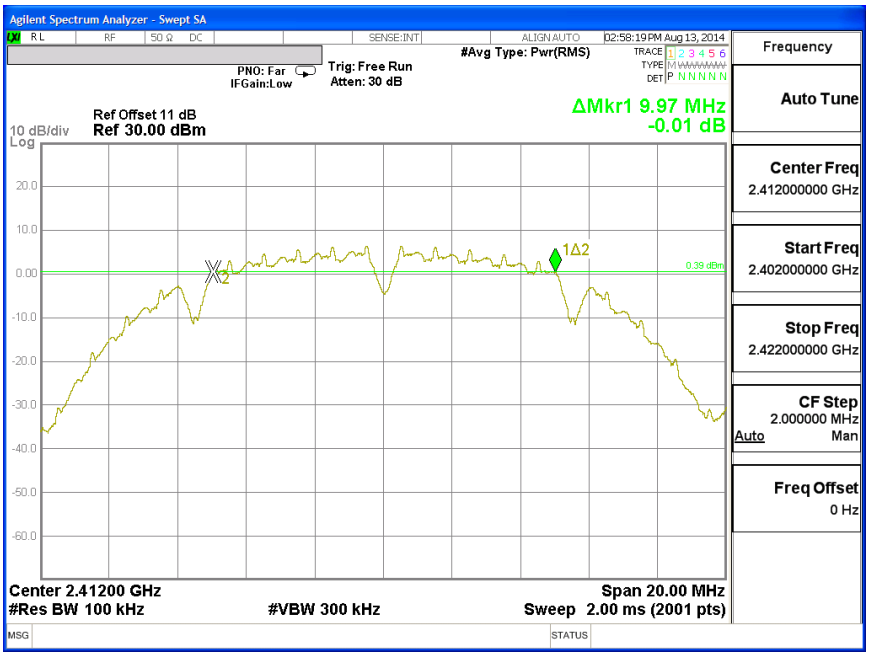
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

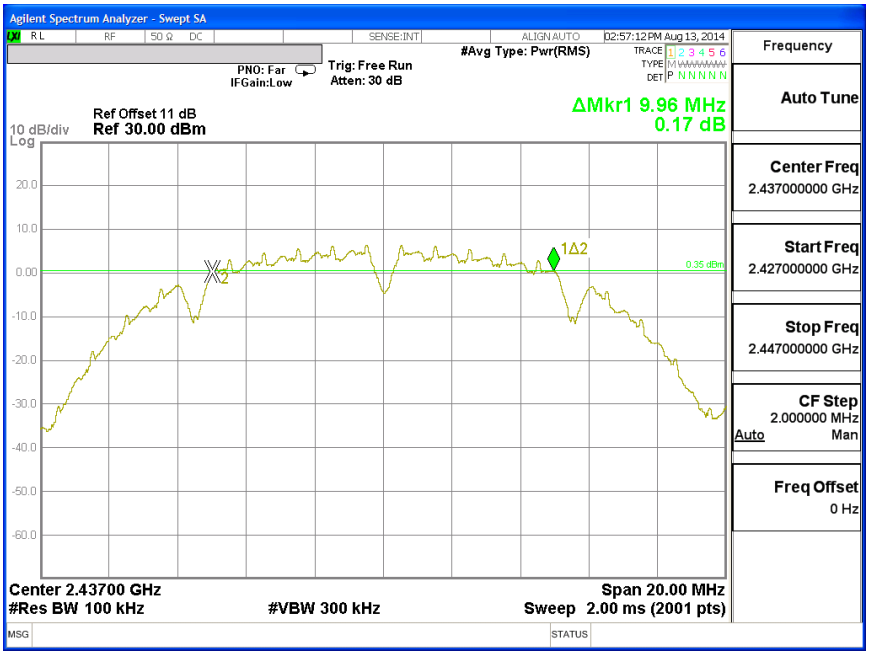
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.970	0.5
Mid	2437	9.960	0.5
High	2462	9.940	0.5

6 dB BANDWIDTH

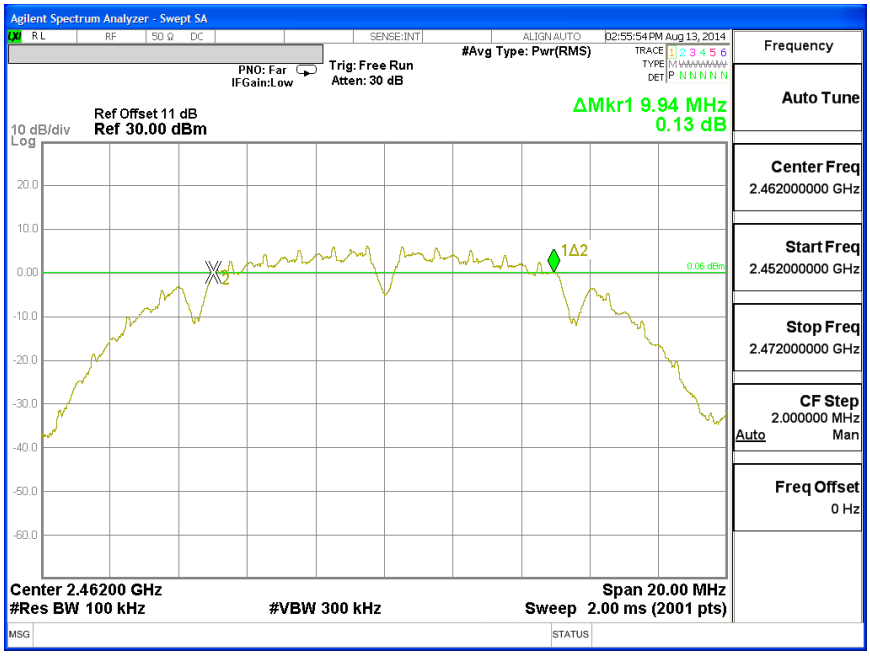
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



7.3.2. 99% BANDWIDTH

LIMITS

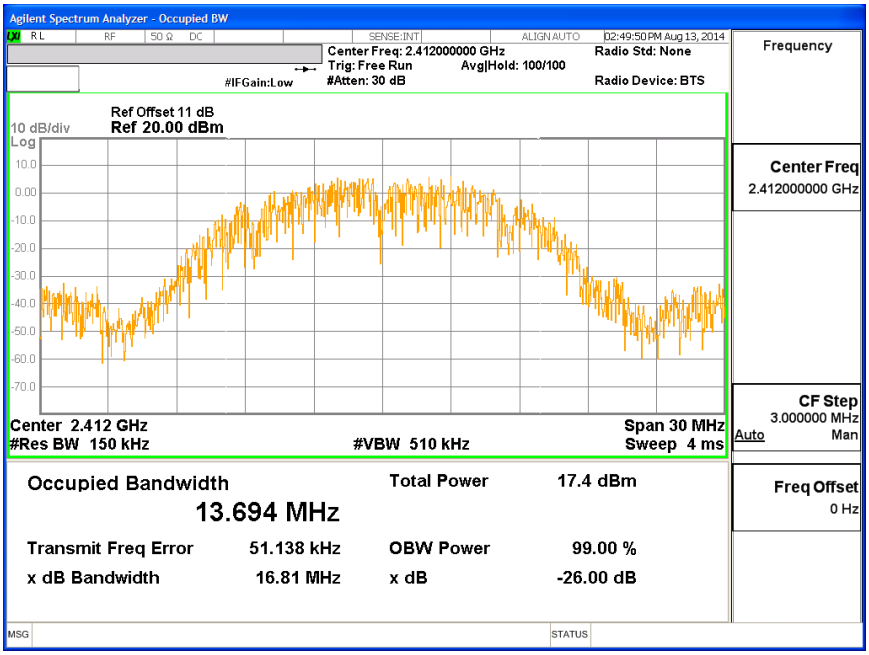
None; for reporting purposes only.

RESULTS

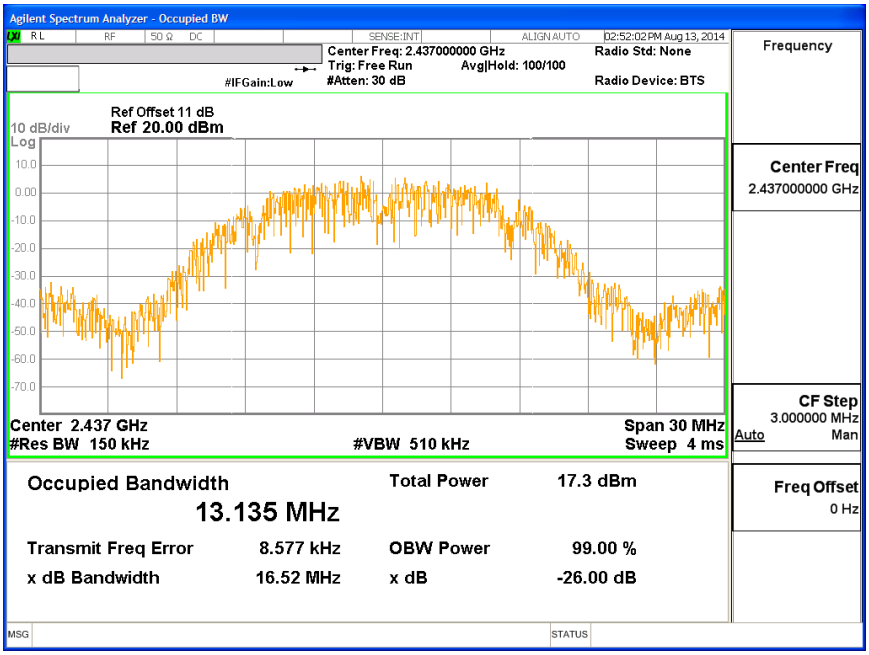
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.6940
Mid	2437	13.1350
High	2462	13.9640

99% BANDWIDTH

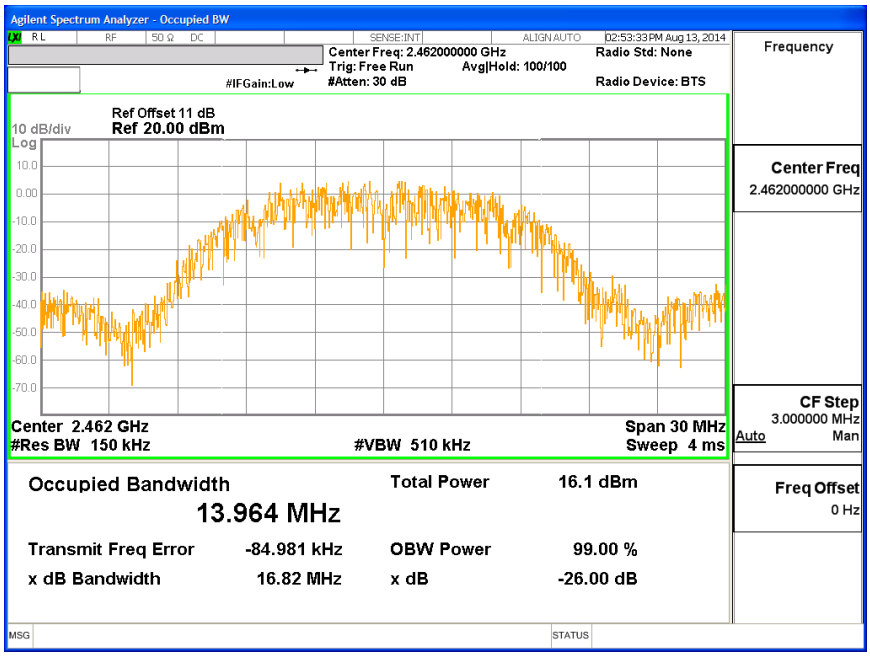
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



7.3.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	19.05
Mid	2437	18.74
High	2462	16.57

7.3.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

NCC LP0002 §3.10.1

For systems using digital modulation in the 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	1.90	30.00	30	36	30.00
Mid	2437	1.90	30.00	30	36	30.00
High	2462	1.90	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	22.53	22.53	30.00	-7.47
Mid	2437	22.19	22.19	30.00	-7.81
High	2462	20.46	20.46	30.00	-9.54

7.3.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

NCC LP0002 §3.10.1 (6.2.2)

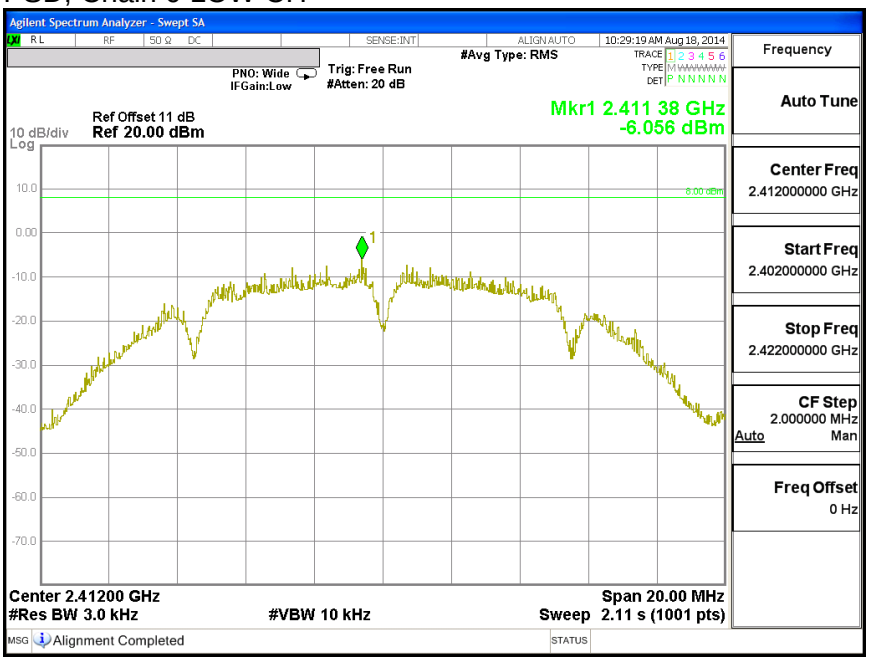
RESULTS

PSD Results

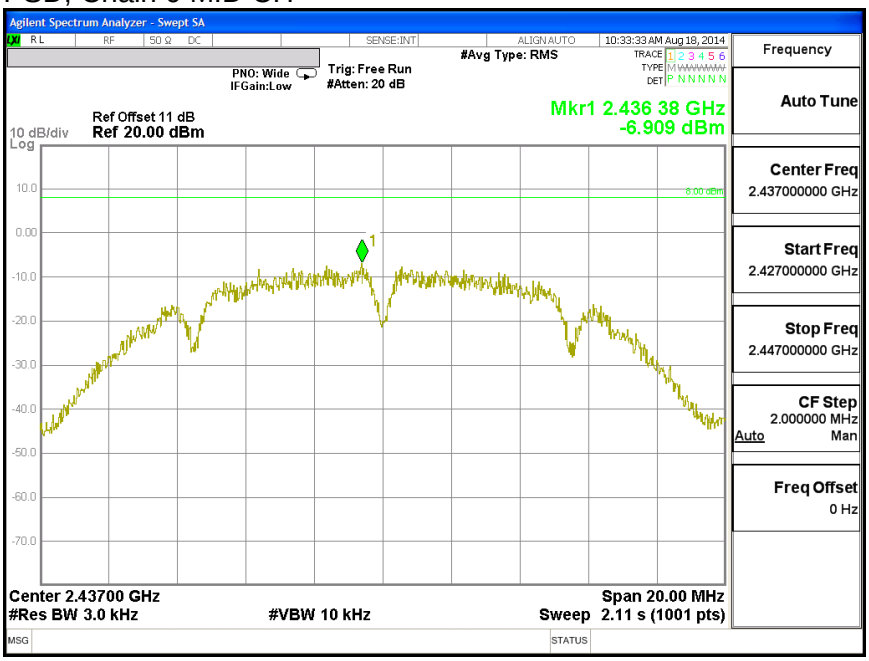
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-6.06	8.0	-14.1
Mid	2437	-6.91	8.0	-14.9
High	2462	-9.95	8.0	-17.9

PSD, Chain 0

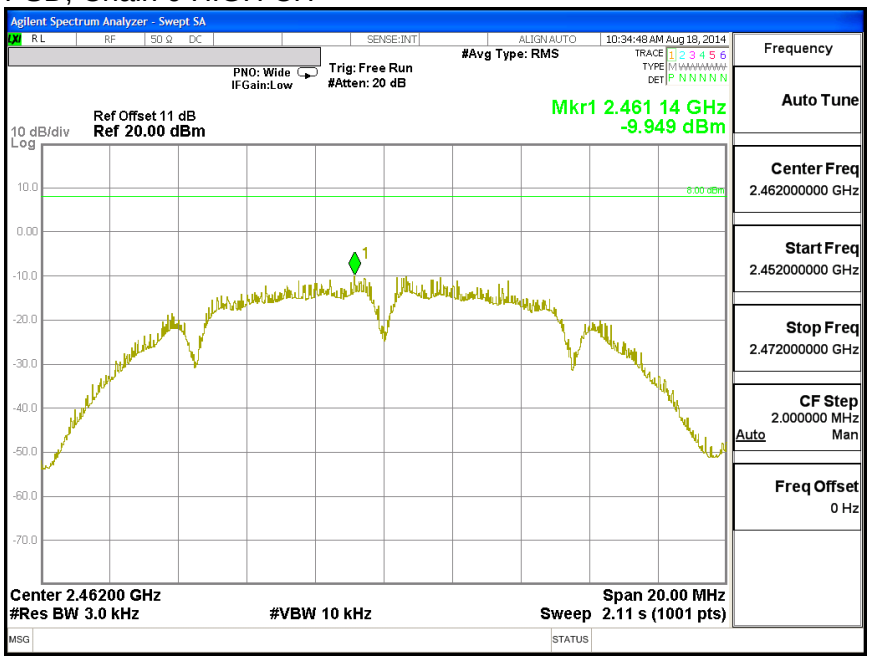
PSD, Chain 0 LOW CH



PSD, Chain 0 MID CH



PSD, Chain 0 HIGH CH



7.3.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

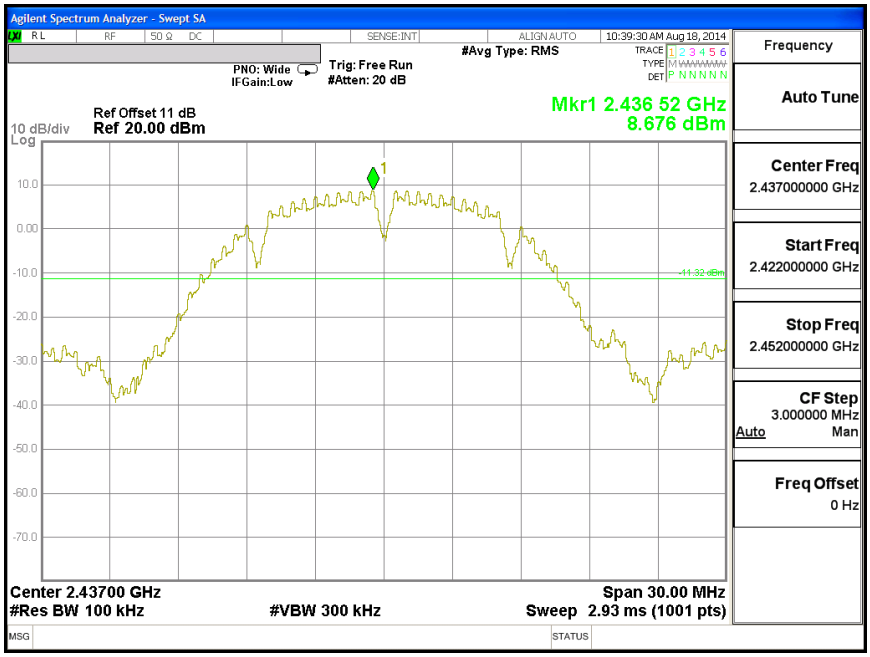
NCC LP0002 §3.10.1 (5.1)

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

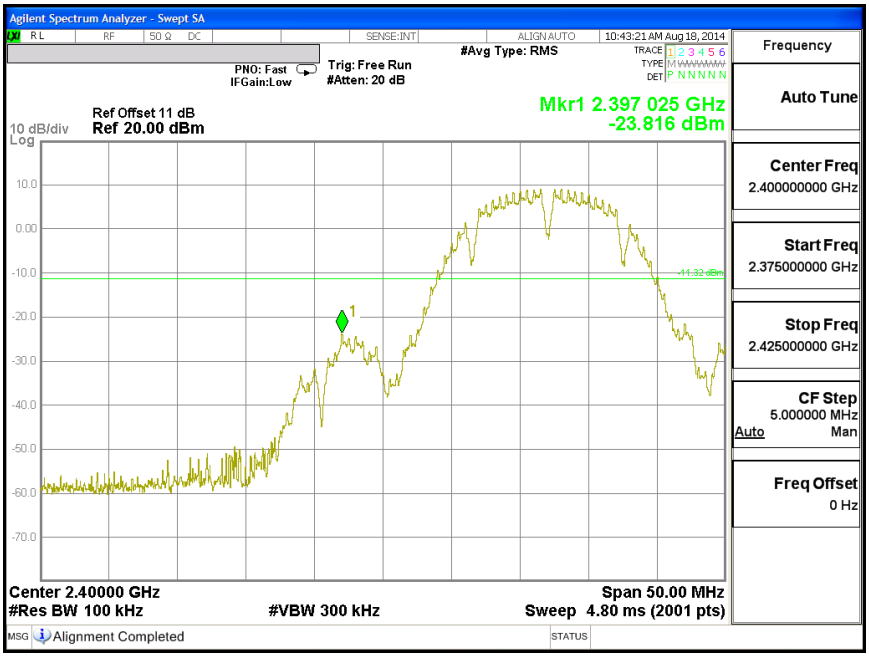
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



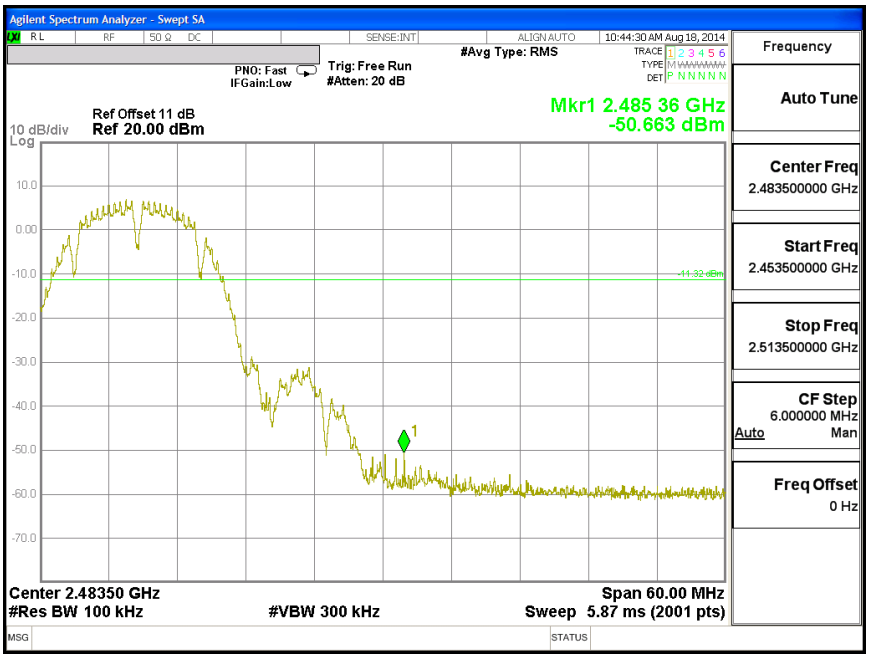
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



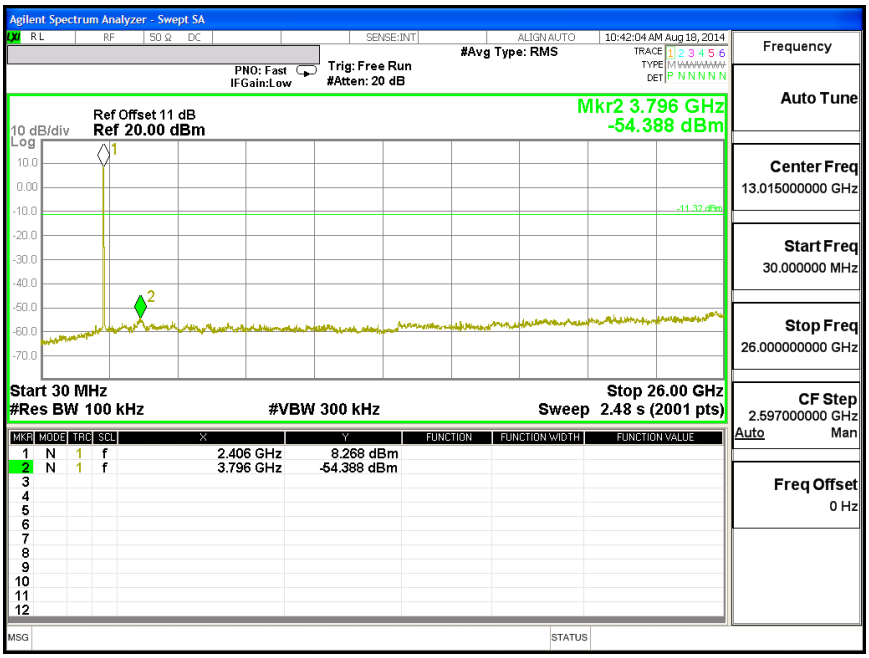
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

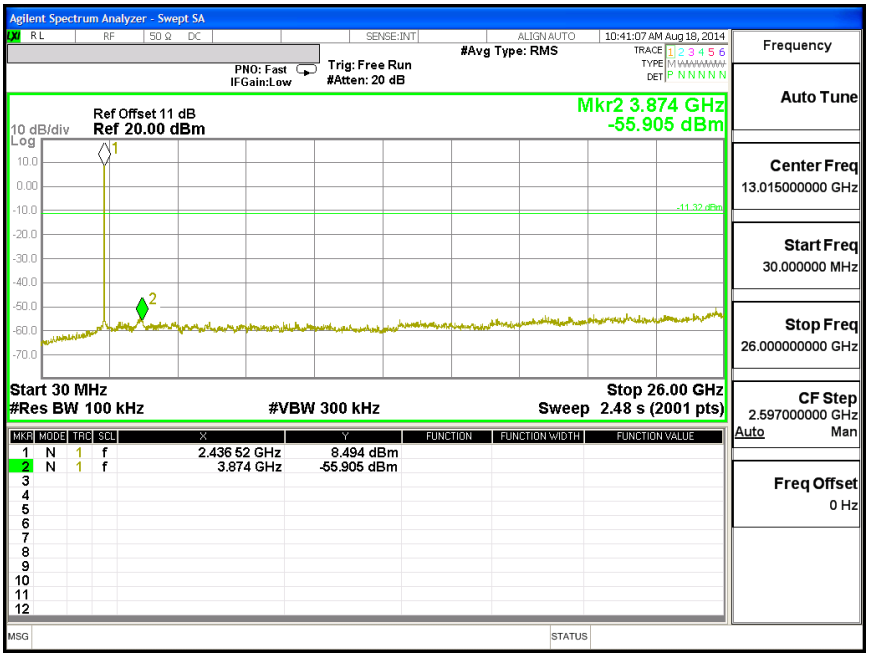


OUT-OF-BAND EMISSIONS

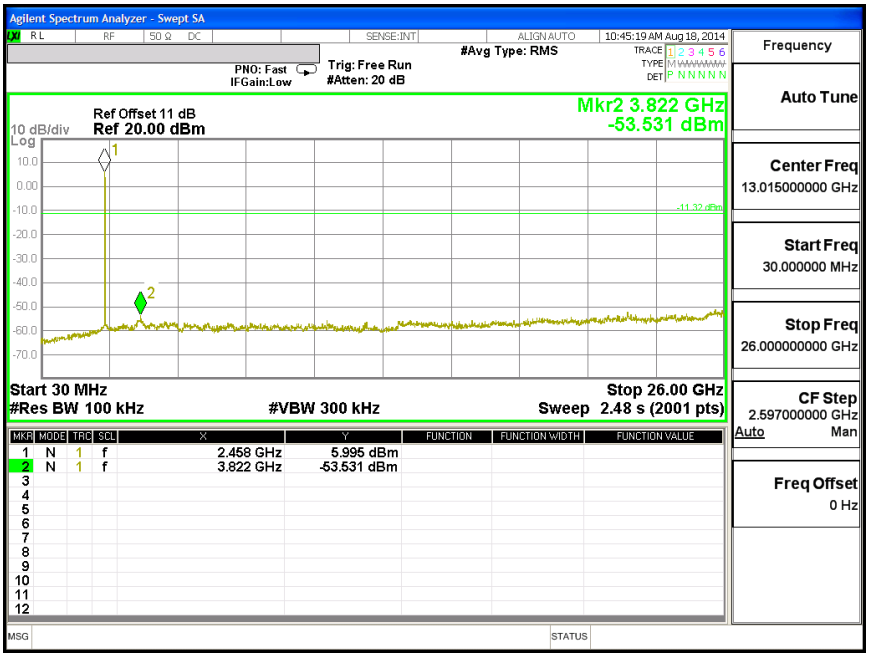
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH



7.4. 802.11g MODE IN THE 2.4 GHz BAND

7.4.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

NCC LP0002 §3.10.1 (6.2.1)

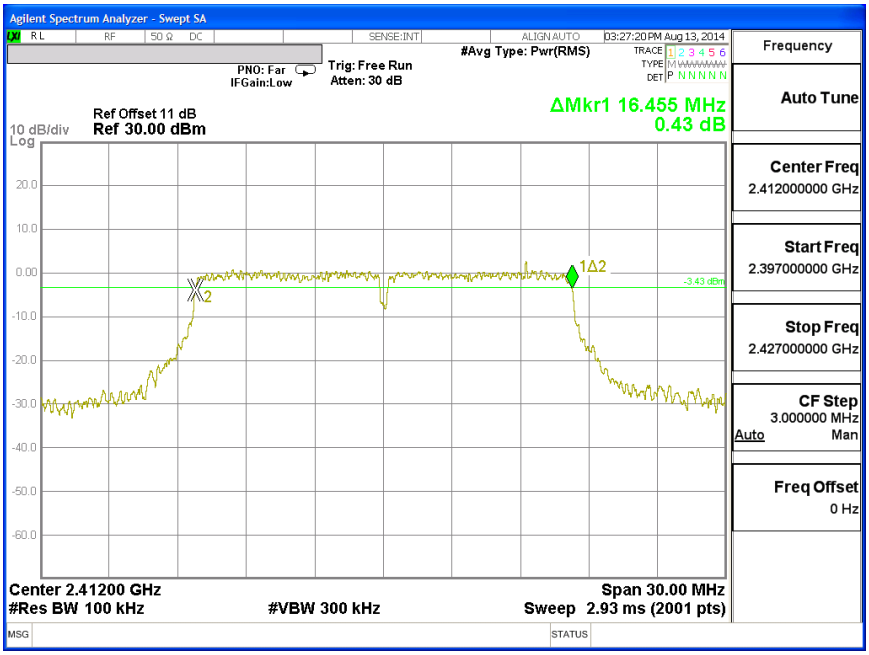
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

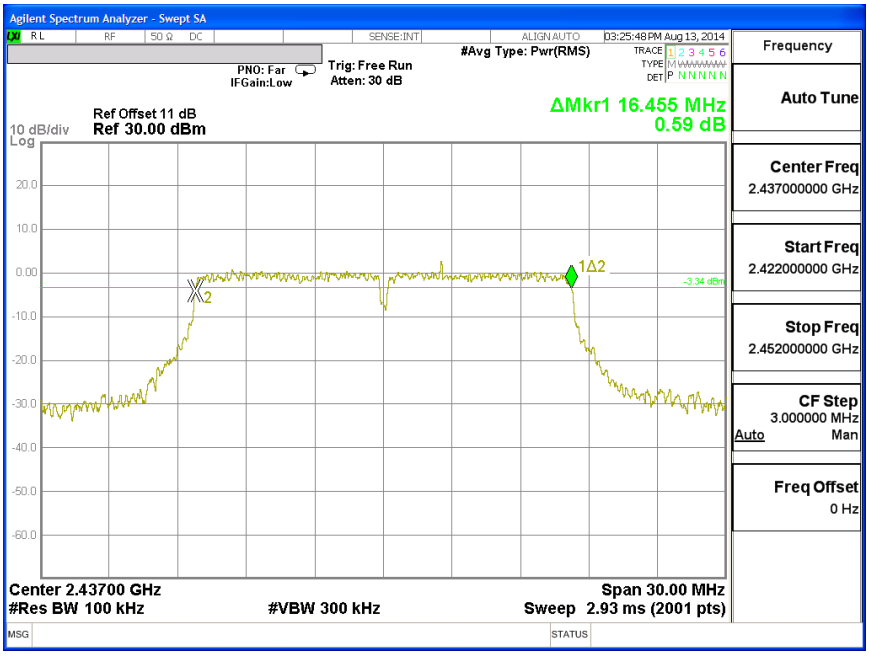
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.455	0.5
Mid	2437	16.455	0.5
High	2462	16.470	0.5

6 dB BANDWIDTH

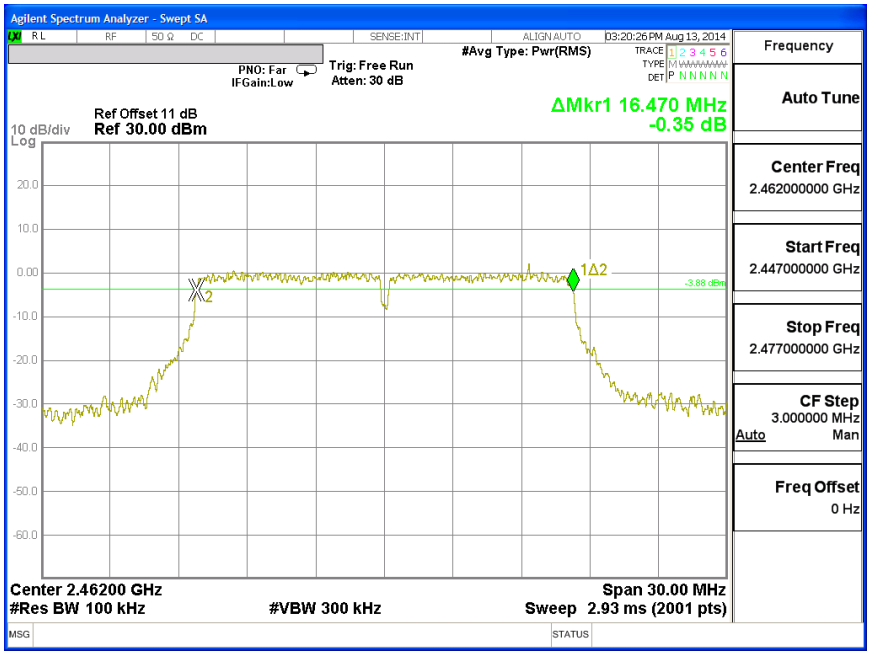
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



7.4.2. 99% BANDWIDTH

LIMITS

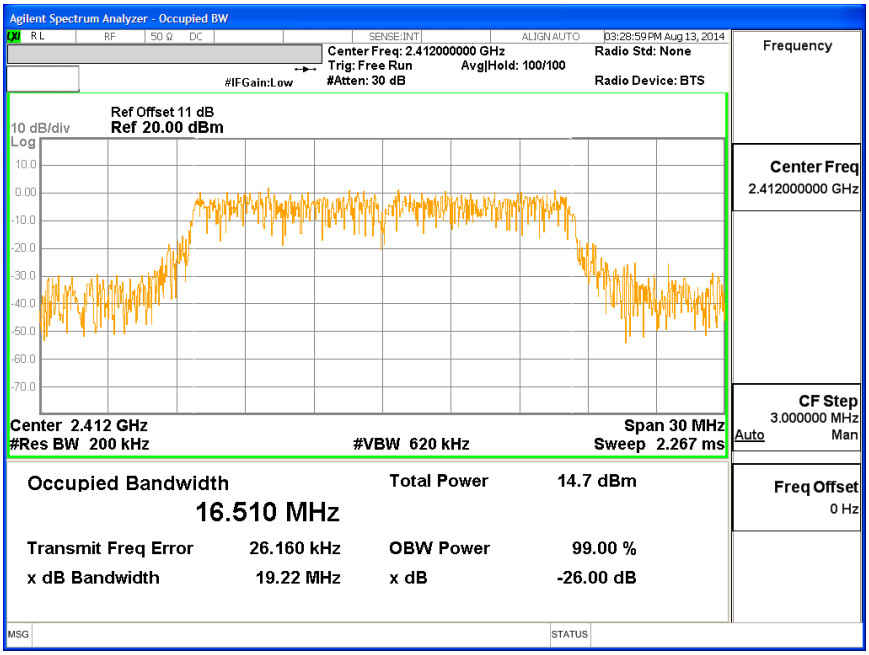
None; for reporting purposes only.

RESULTS

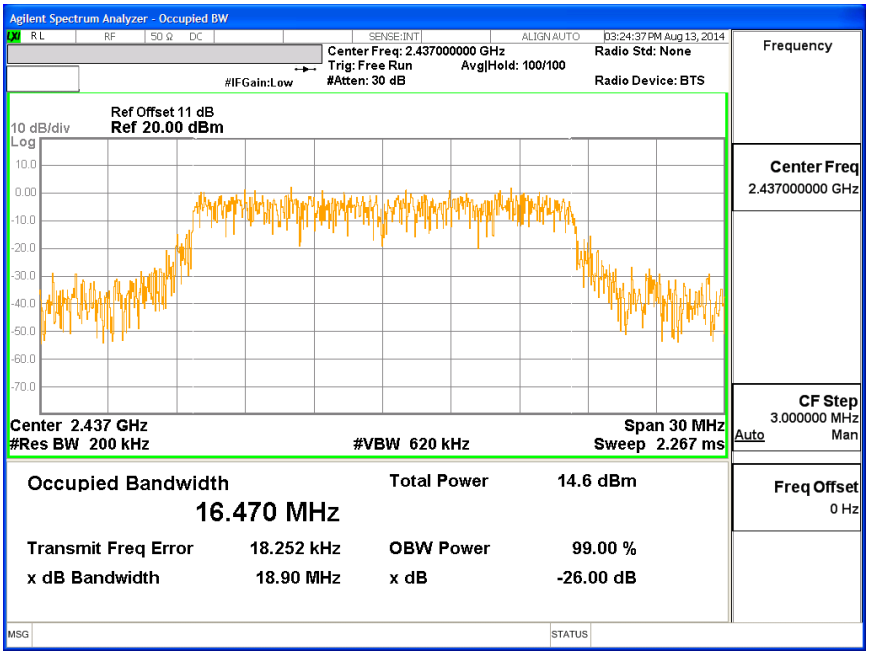
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.5100
Mid	2437	16.4700
High	2462	16.4840

99% BANDWIDTH

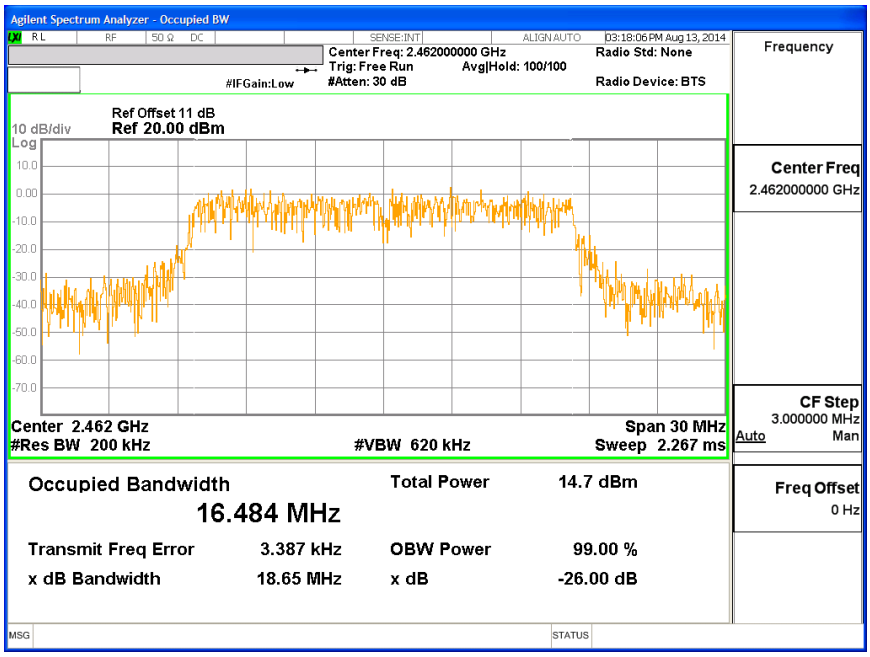
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



7.4.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	12.09
Mid	2437	15.43
High	2462	9.62

7.4.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

NCC LP0002 §3.10.1

For systems using digital modulation in the 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	1.90	30.00	30	36	30.00
Mid	2437	1.90	30.00	30	36	30.00
High	2462	1.90	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	20.79	20.79	30.00	-9.21
Mid	2437	23.30	23.30	30.00	-6.70
High	2462	17.02	17.02	30.00	-12.98

7.4.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

NCC LP0002 §3.10.1 (6.2.2)

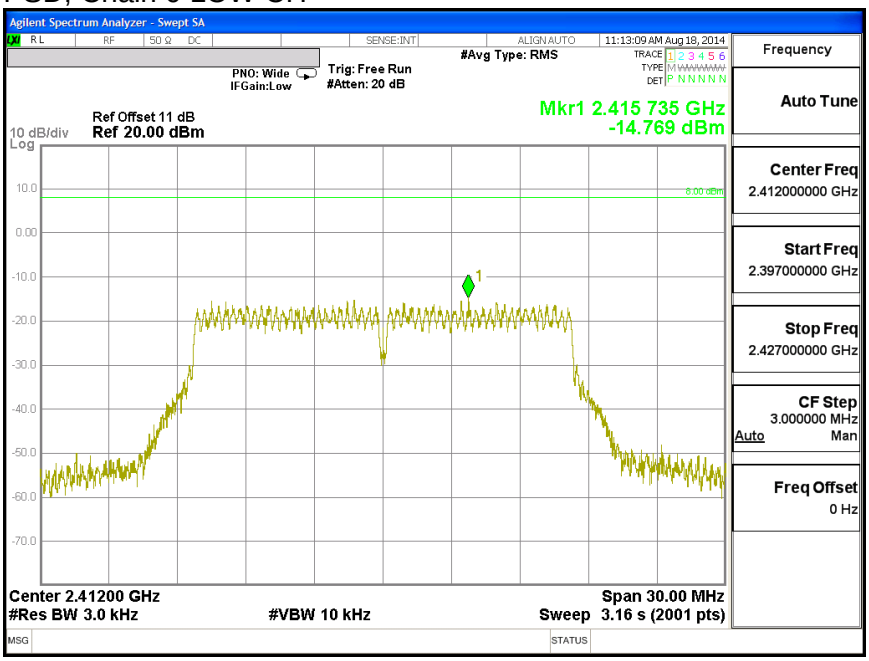
RESULTS

PSD Results

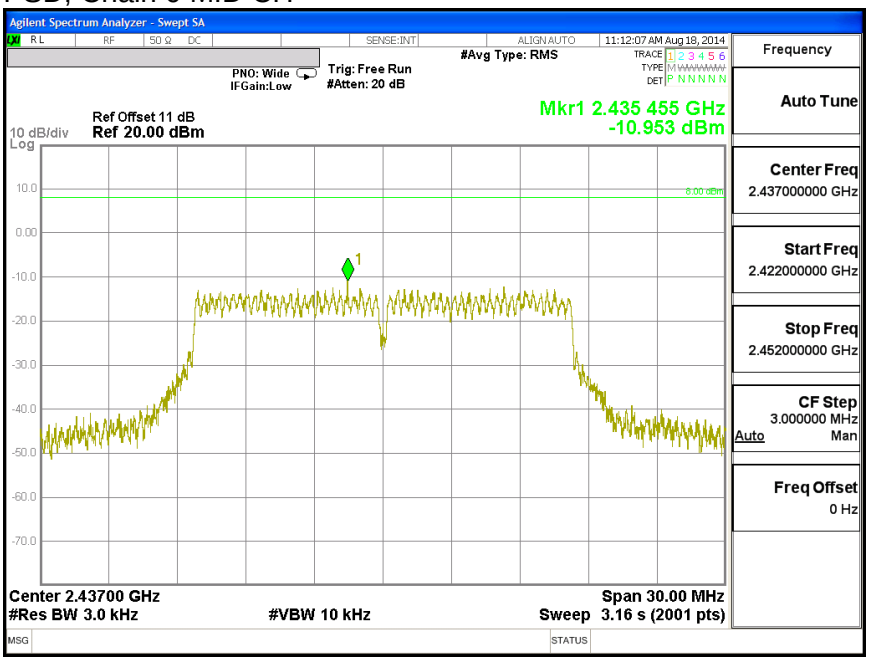
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-14.77	8.0	-22.8
Mid	2437	-10.95	8.0	-19.0
High	2462	-17.57	8.0	-25.6

PSD, Chain 0

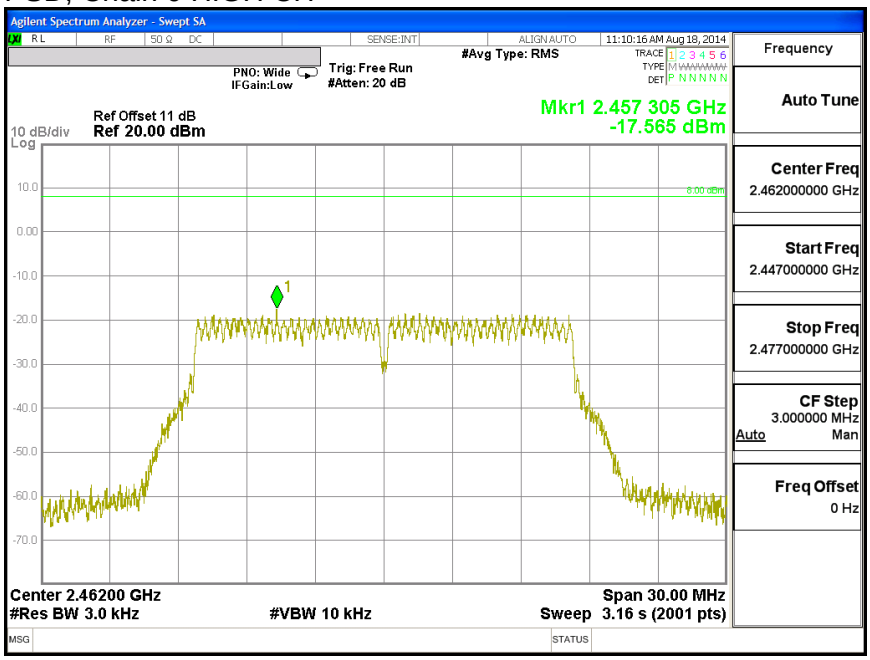
PSD, Chain 0 LOW CH



PSD, Chain 0 MID CH



PSD, Chain 0 HIGH CH



7.4.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

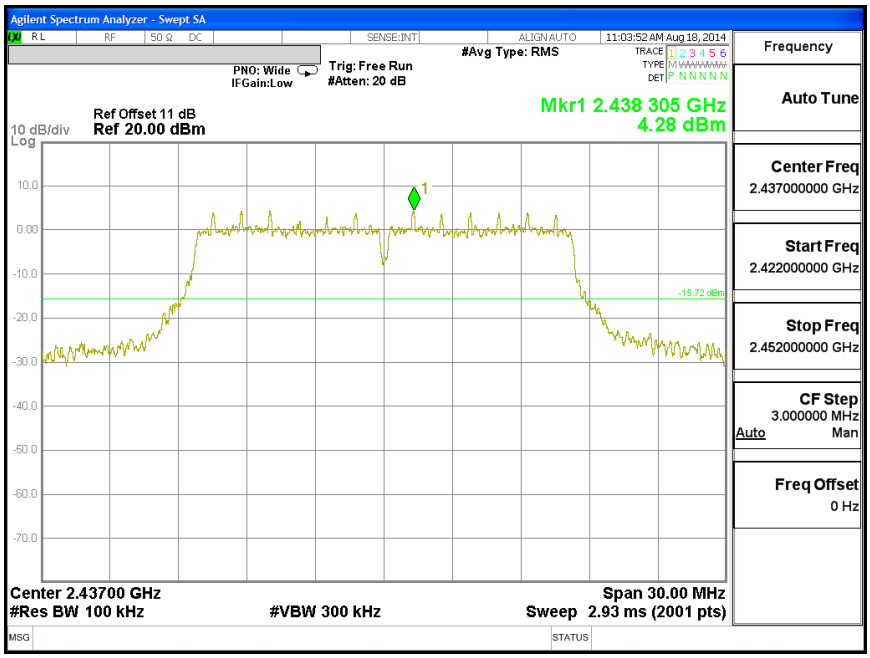
NCC LP0002 §3.10.1 (5.1)

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

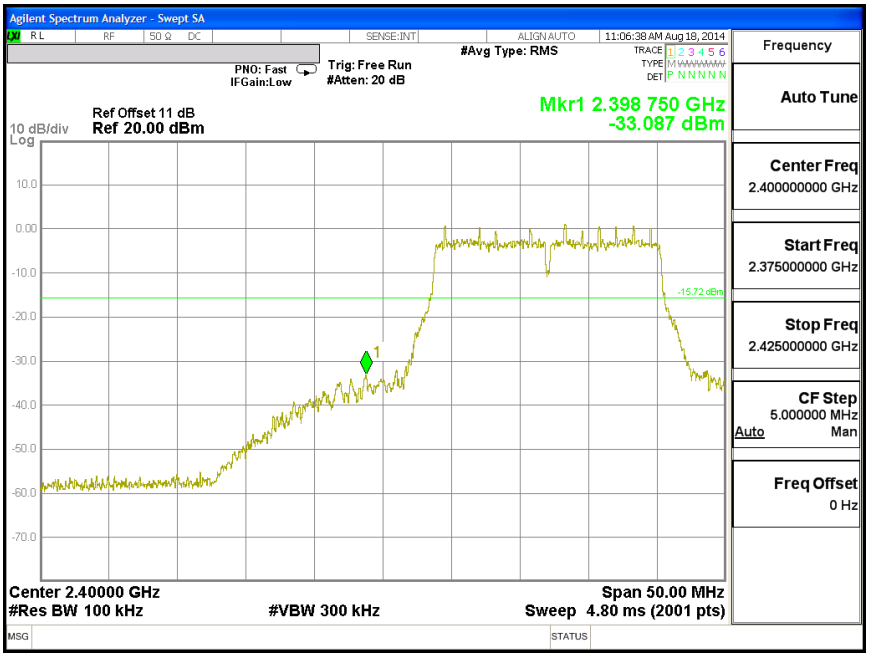
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



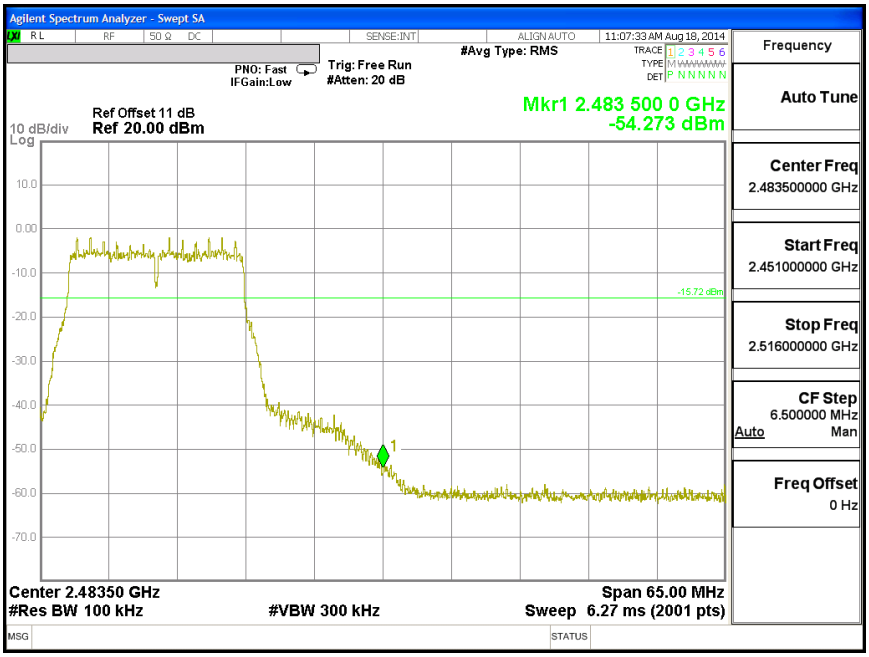
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



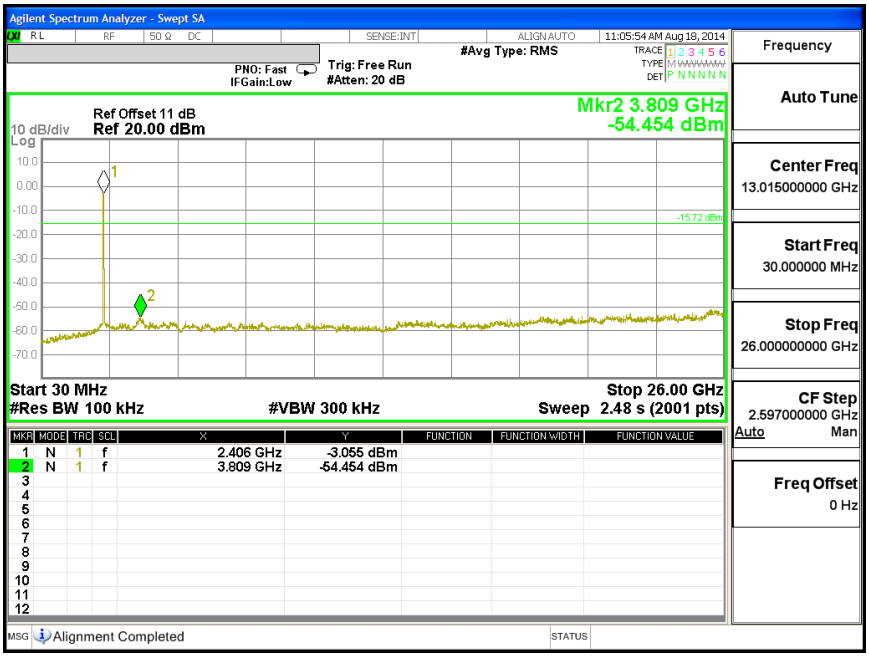
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

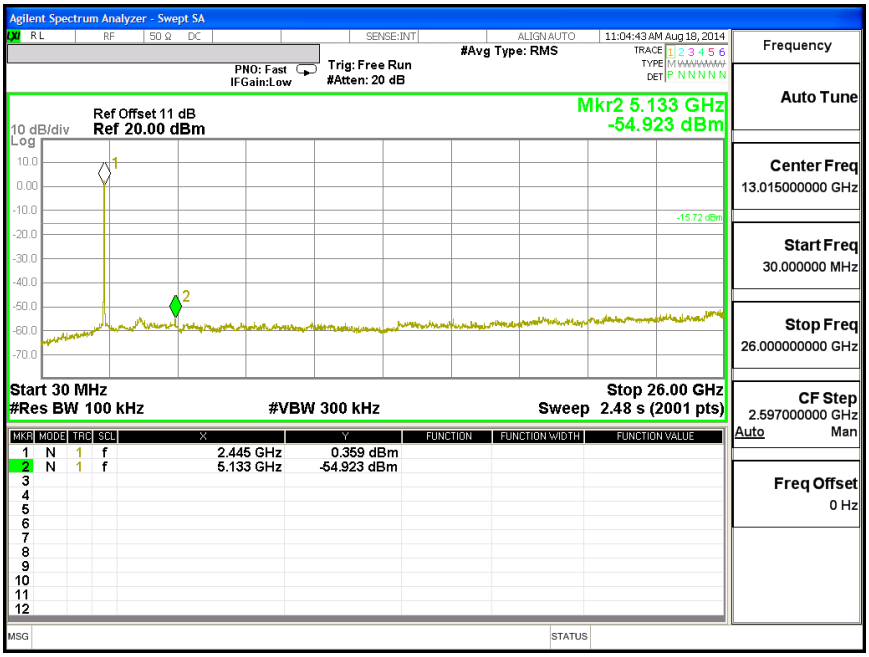


OUT-OF-BAND EMISSIONS

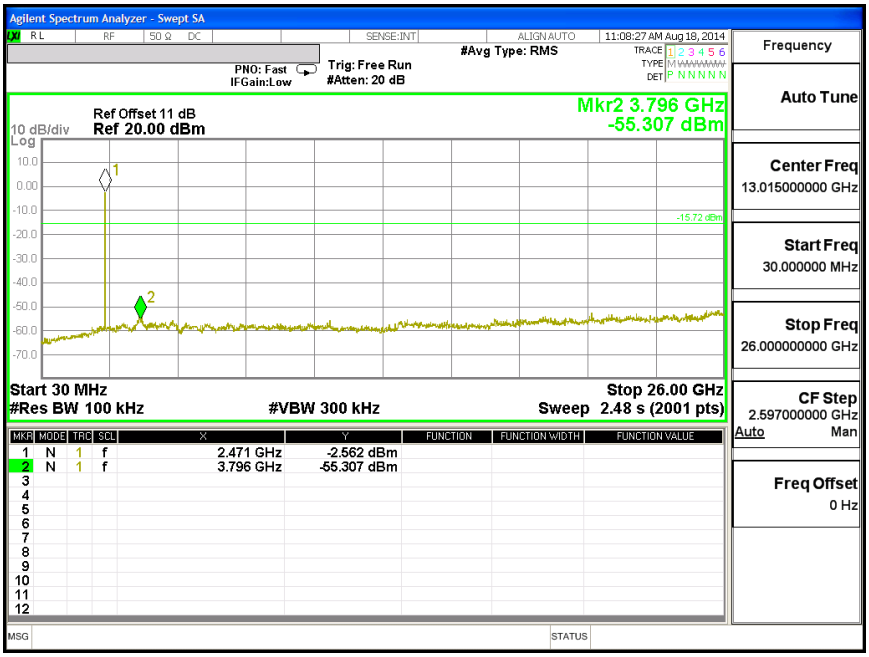
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH



7.5. 802.11n HT20 MODE IN THE 2.4 GHz BAND

7.5.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

NCC LP0002 §3.10.1 (6.2.1)

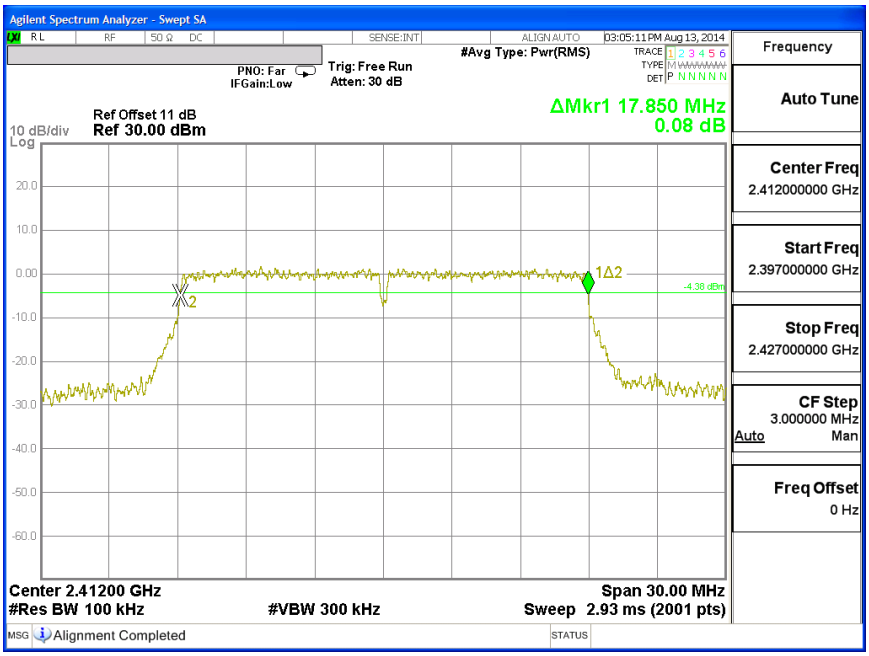
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

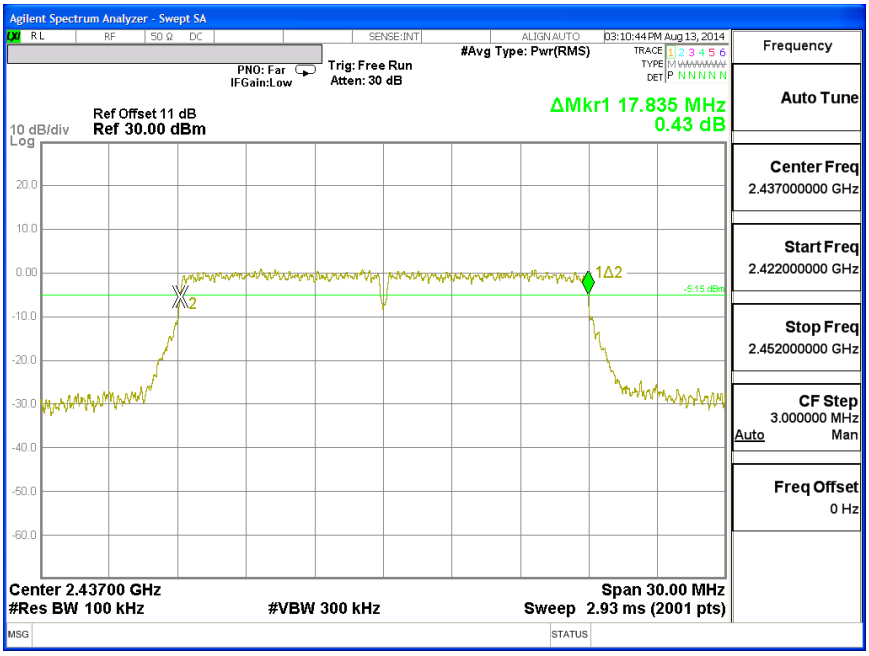
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.850	0.5
Mid	2437	17.835	0.5
High	2462	17.835	0.5

6 dB BANDWIDTH

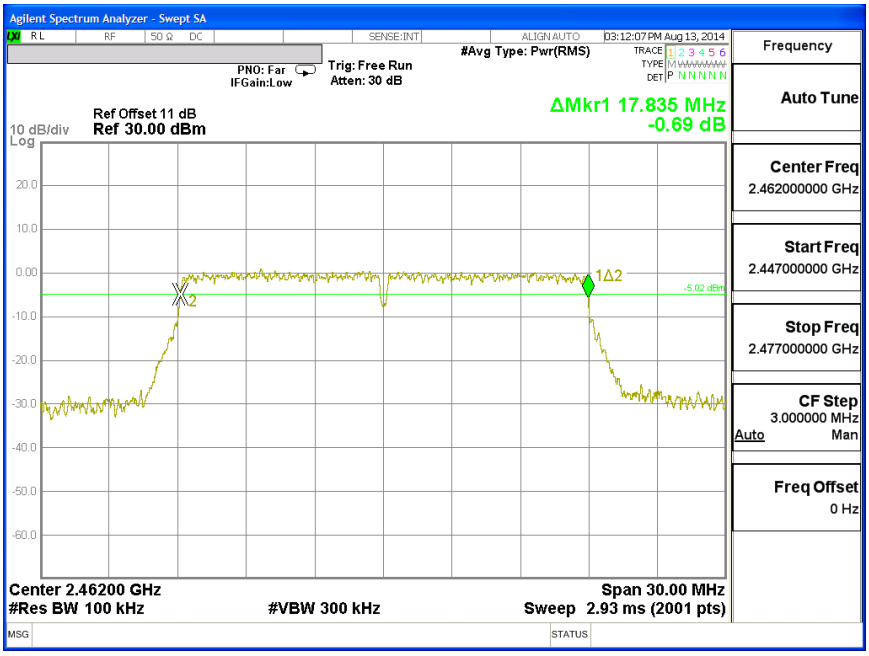
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



7.5.2. 99% BANDWIDTH

LIMITS

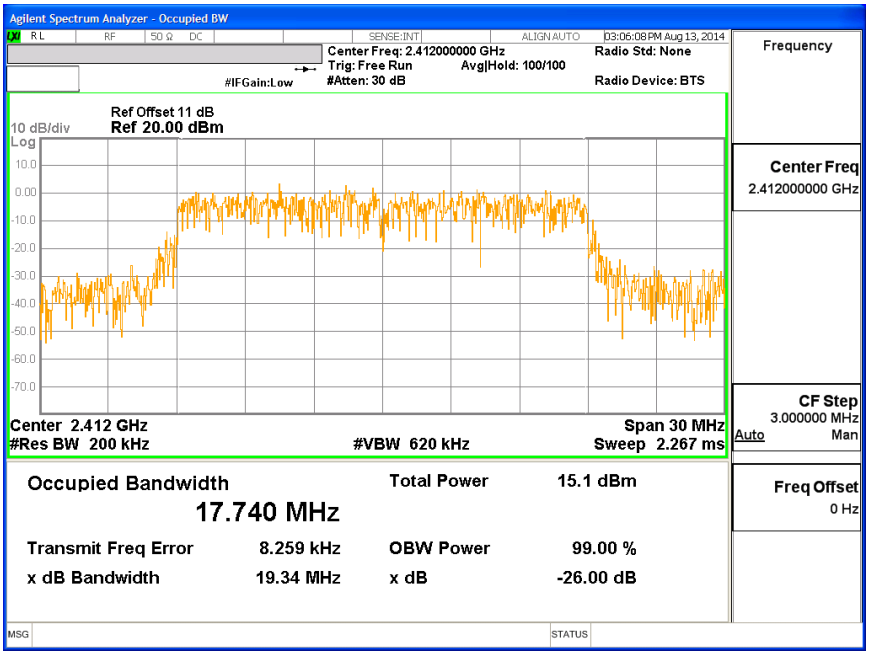
None; for reporting purposes only.

RESULTS

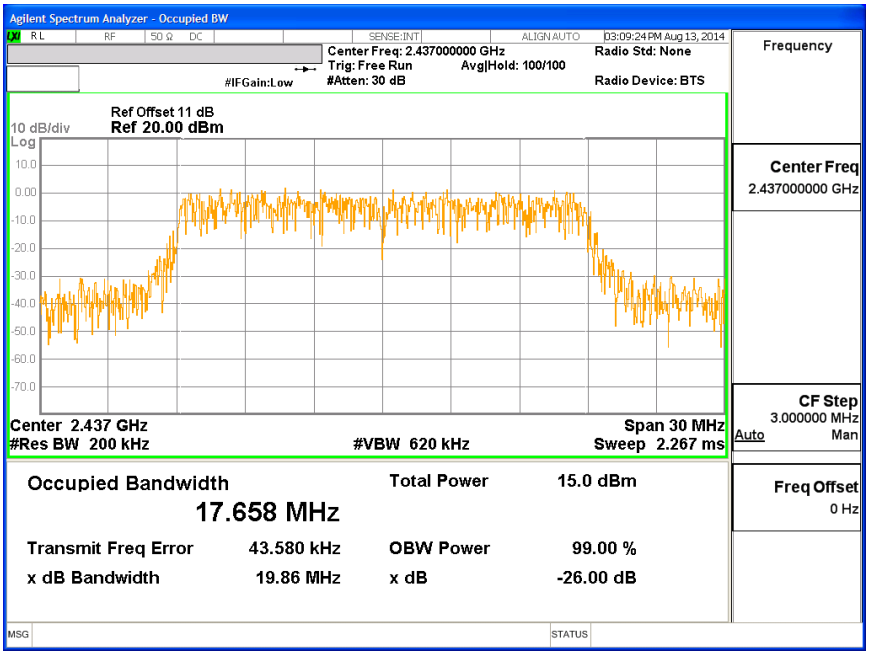
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.7400
Mid	2437	17.6580
High	2462	17.7710

99% BANDWIDTH

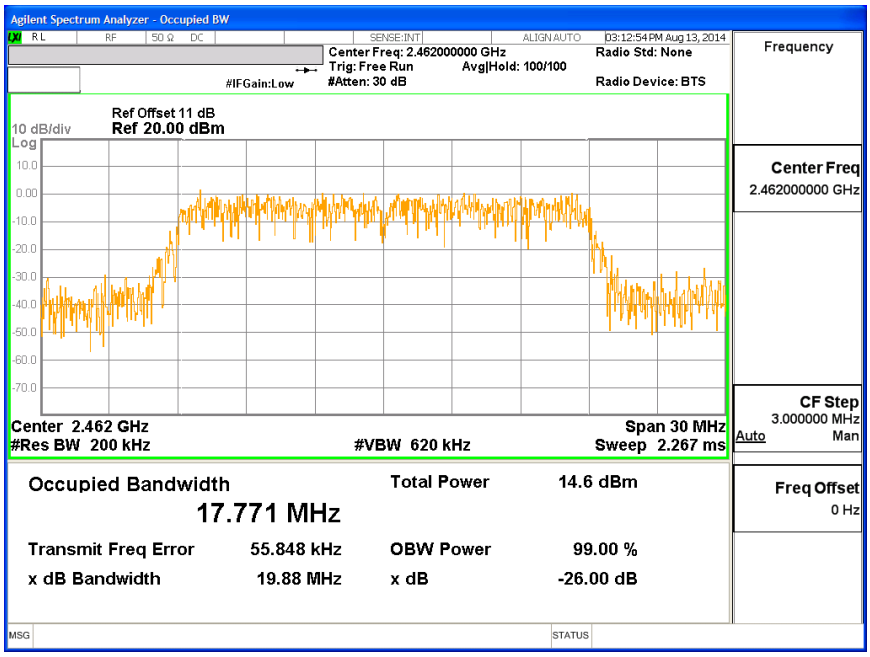
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



7.5.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	10.50
Mid	2437	13.82
High	2462	8.50

7.5.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

NCC LP0002 §3.10.1

For systems using digital modulation in the 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	1.90	30.00	30	36	30.00
Mid	2437	1.90	30.00	30	36	30.00
High	2462	1.90	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	19.59	19.59	30.00	-10.41
Mid	2437	22.99	22.99	30.00	-7.01
High	2462	17.91	17.91	30.00	-12.09

7.5.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

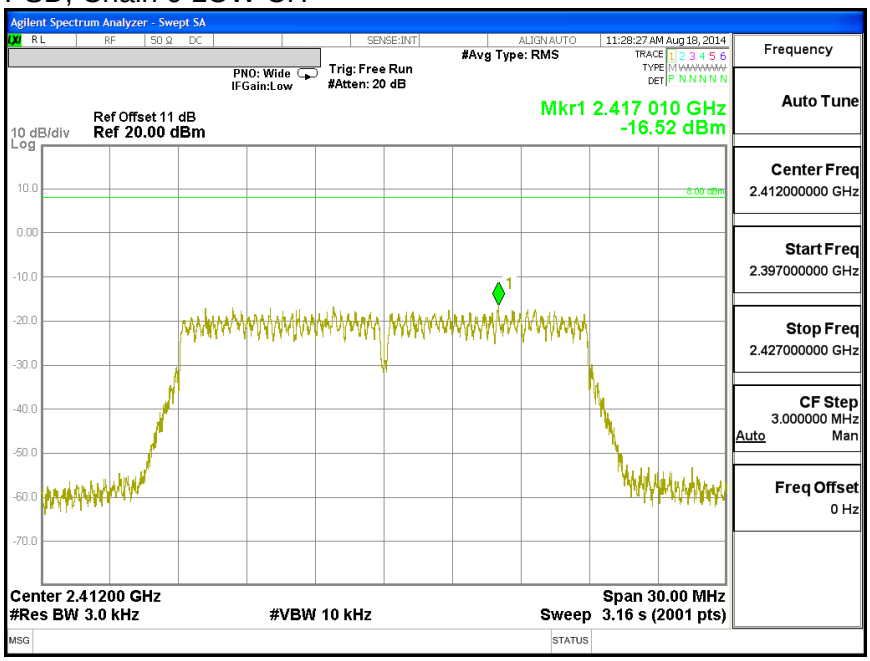
NCC LP0002 §3.10.1 (6.2.2)

RESULTS

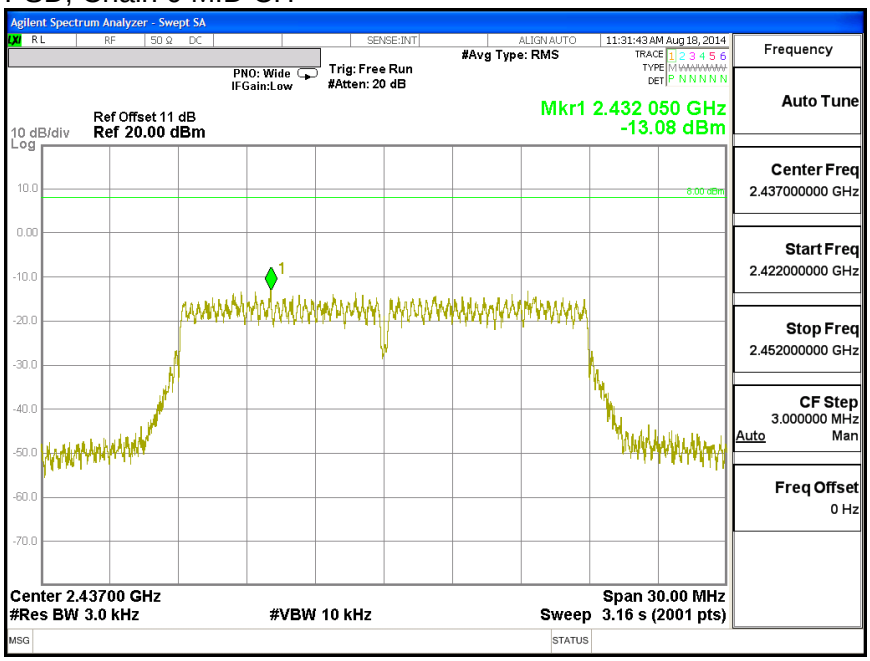
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-16.52	8.0	-24.5
Mid	2437	-13.08	8.0	-21.1
High	2462	-17.78	8.0	-25.8

PSD, Chain 0

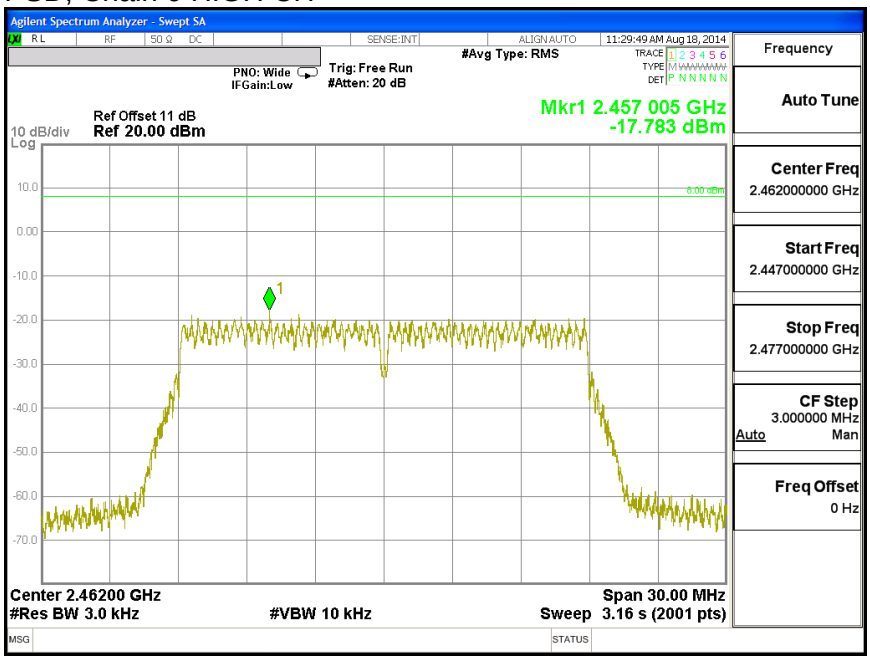
PSD, Chain 0 LOW CH



PSD, Chain 0 MID CH



PSD, Chain 0 HIGH CH



7.5.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

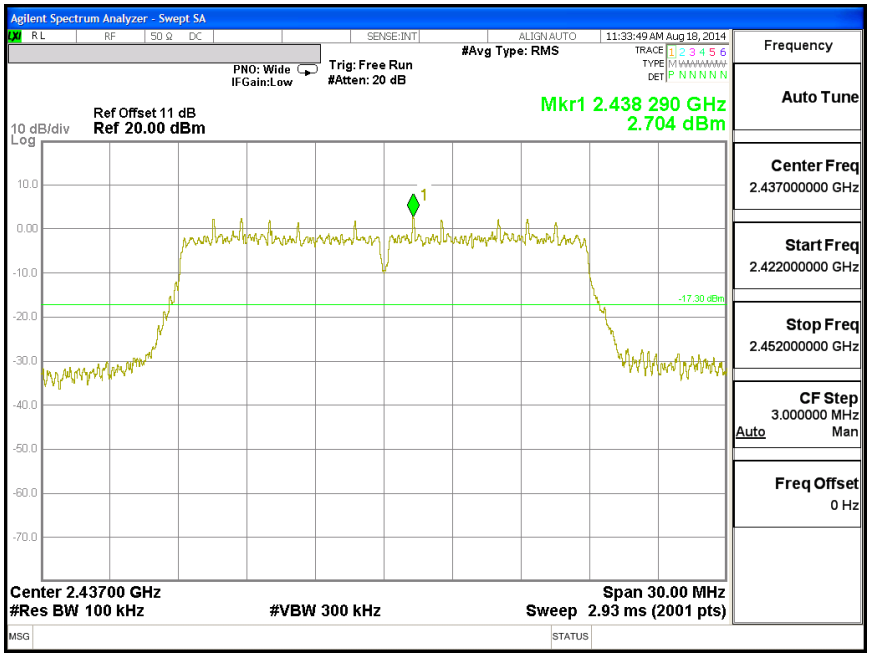
NCC LP0002 §3.10.1 (5.1)

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

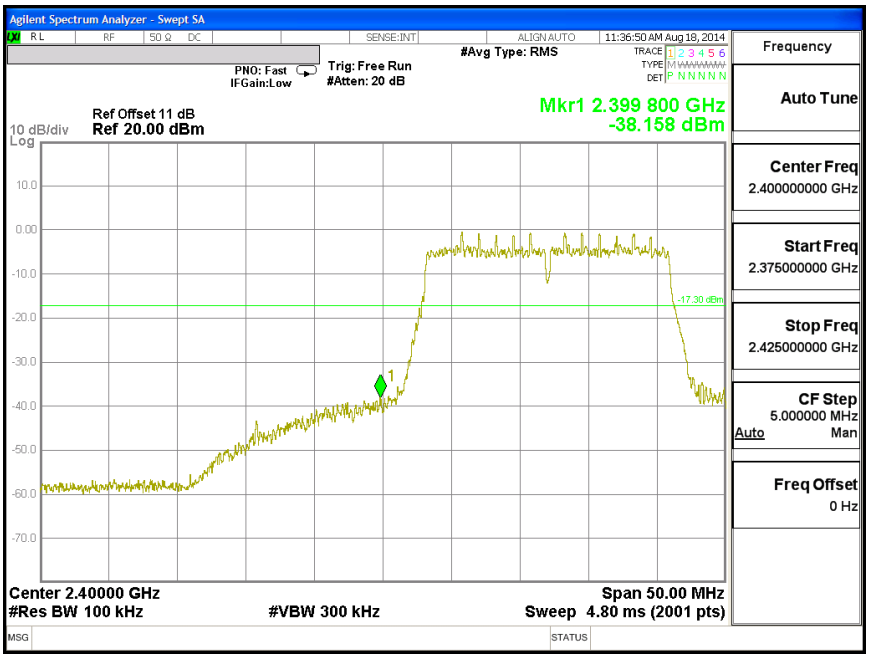
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



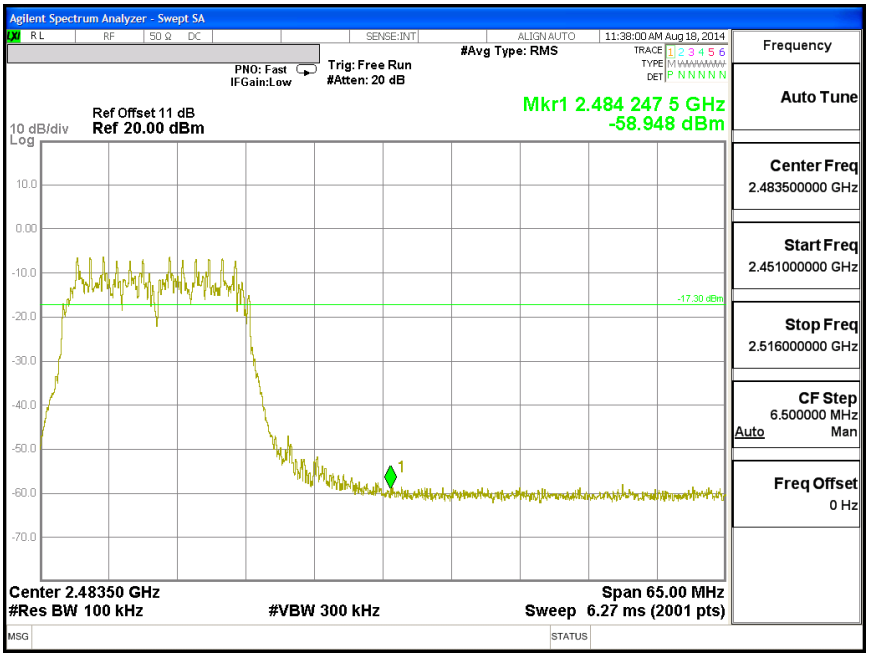
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



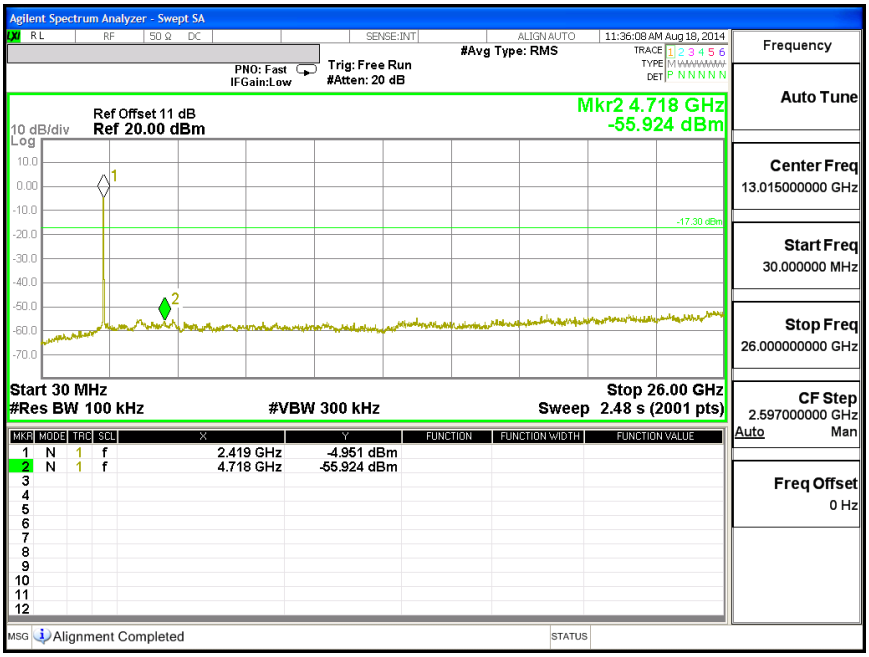
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

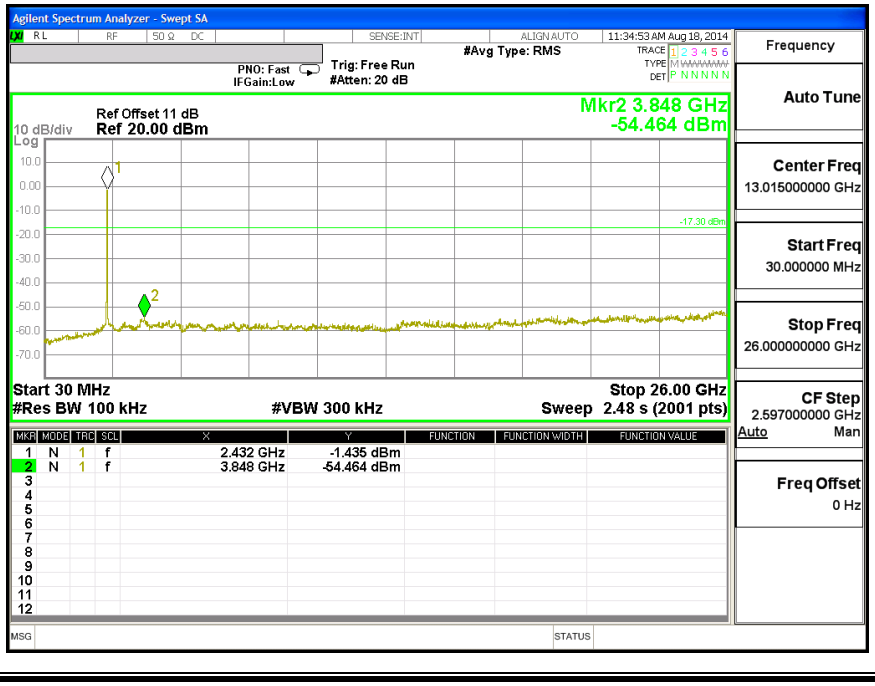


OUT-OF-BAND EMISSIONS

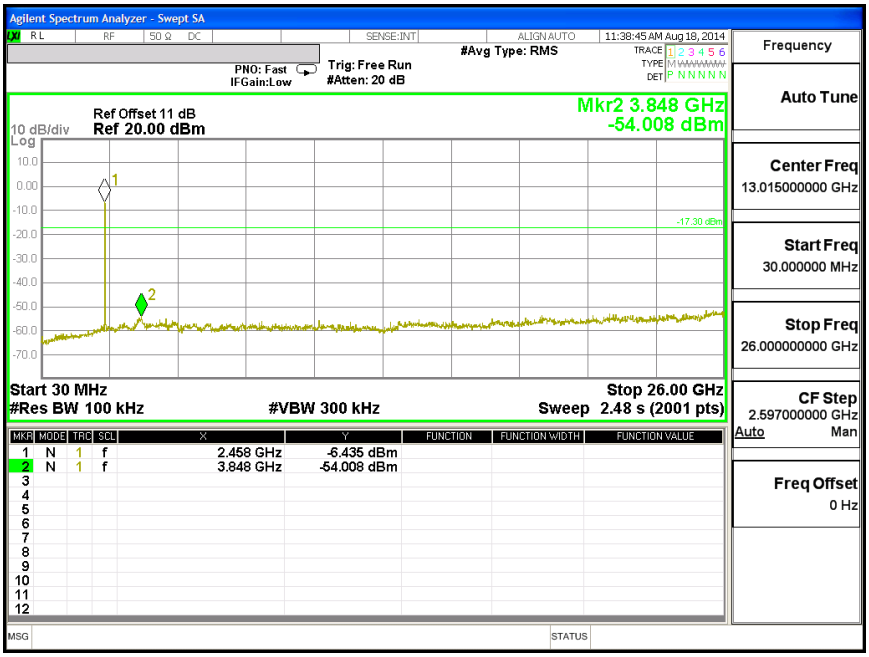
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH



8. 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.

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; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.

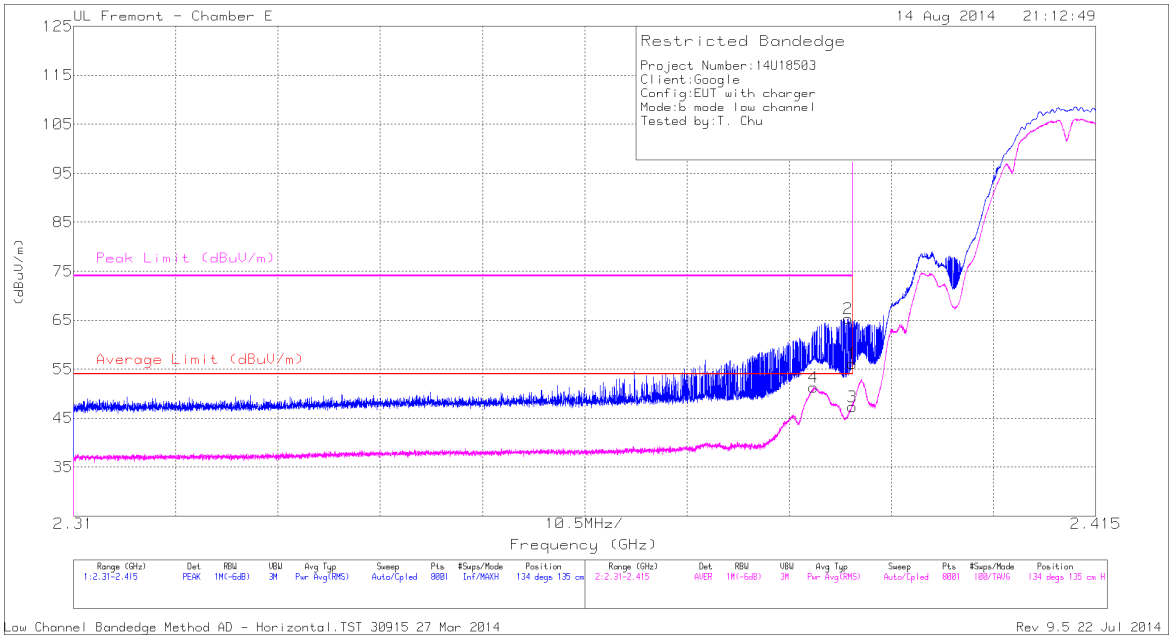
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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

8.2. TX ABOVE 1 GHz 802.11b 1Tx SISO MODE IN THE 2.4 GHz BAND

8.2.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL PLOT



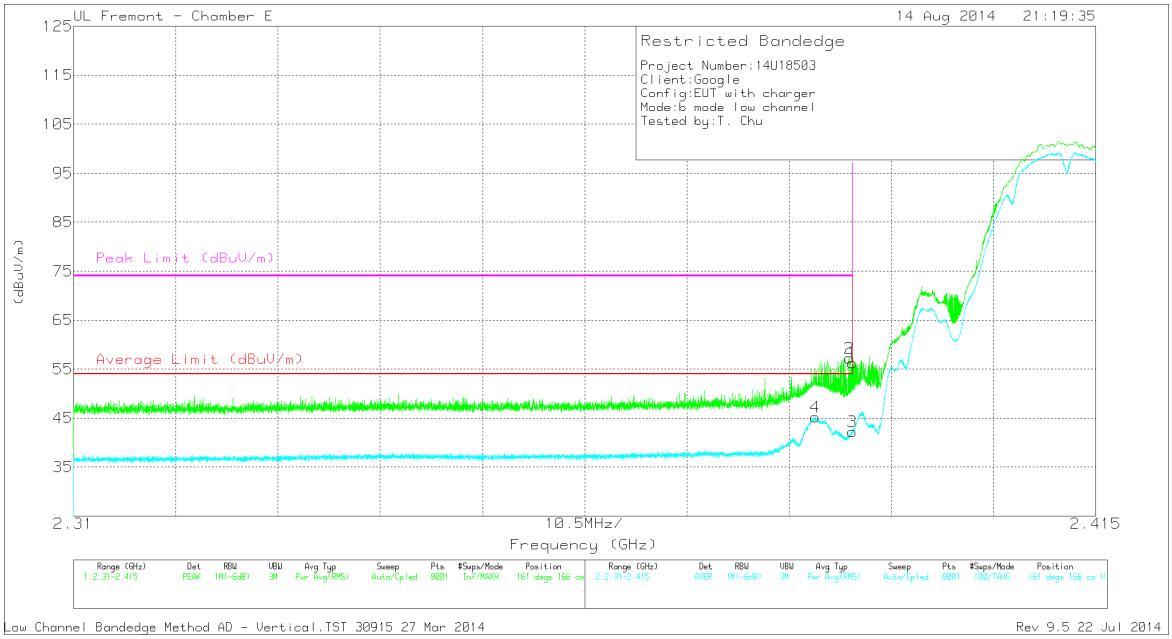
DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	48.77	PK	32	-24.7	56.07	-	-	74	-17.93	134	135	H
2	* 2.39	58.01	PK	32	-24.7	65.31	-	-	74	-8.69	134	135	H
3	* 2.39	39.97	RMS	32	-24.7	47.27	54	-6.73	-	-	134	135	H
4	* 2.386	44	RMS	32	-24.7	51.3	54	-2.7	-	-	134	135	H

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

PK - Peak detector
RMS - RMS detection

LOW CHANNEL VERTICAL PLOT



DATA

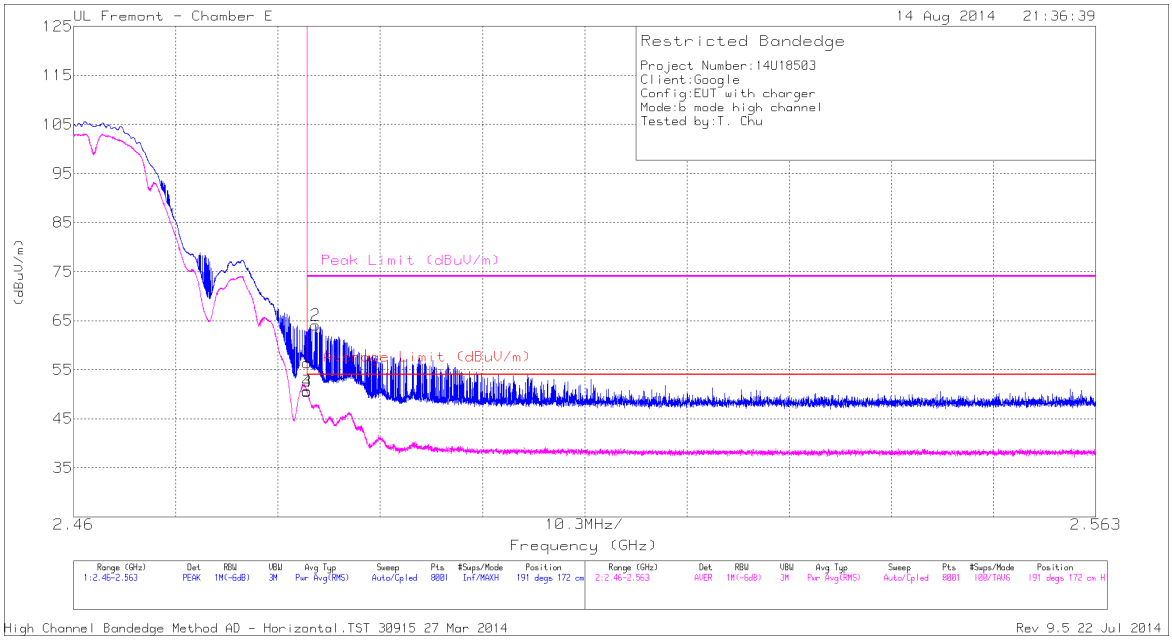
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	49.01	PK	32	-24.7	56.31	-	-	74	-17.69	161	166	V
2	* 2.39	49.9	PK	32	-24.7	57.2	-	-	74	-16.8	161	166	V
3	* 2.39	34.88	RMS	32	-24.7	42.18	54	-11.82	-	-	161	166	V
4	* 2.386	37.86	RMS	32	-24.7	45.16	54	-8.84	-	-	161	166	V

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

PK - Peak detector
RMS - RMS detection

8.2.2. RESTRICTED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL PLOT



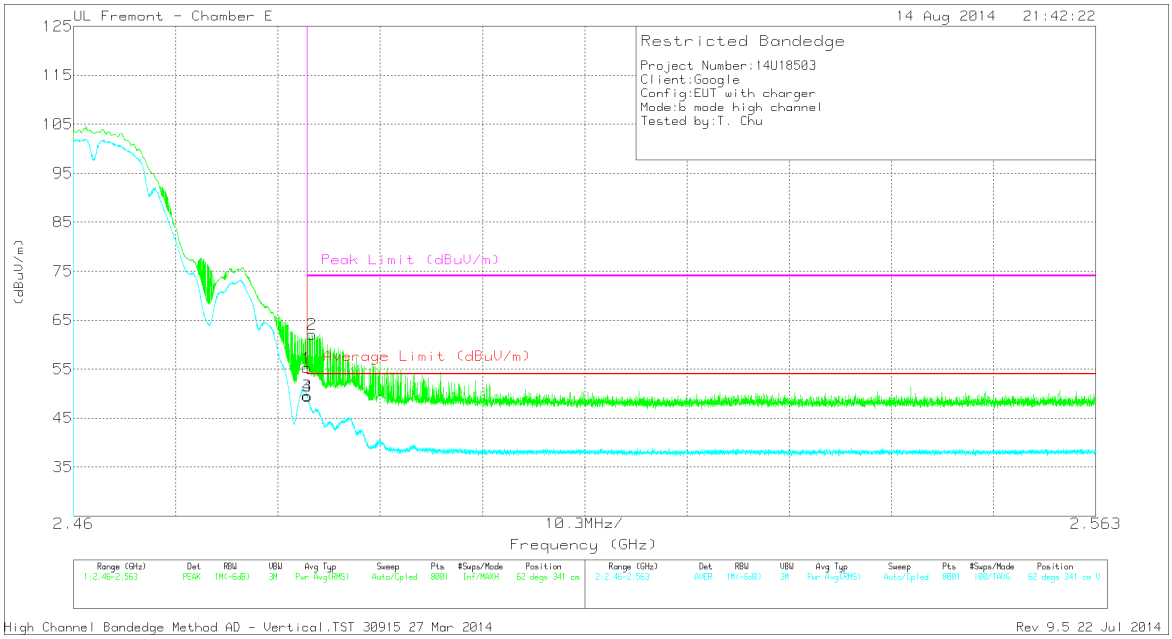
DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	48.39	PK	32.3	-24.3	56.39	-	-	74	-17.61	191	172	H
2	* 2.484	56.13	PK	32.3	-24.3	64.13	-	-	74	-9.87	191	172	H
3	* 2.484	42.65	RMS	32.3	-24.3	50.65	54	-3.35	-	-	191	172	H
4	* 2.484	42.58	RMS	32.3	-24.3	50.58	54	-3.42	-	-	191	172	H

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

PK - Peak detector
RMS - RMS detection

HIGH CHANNEL VERTICAL PLOT



DATA

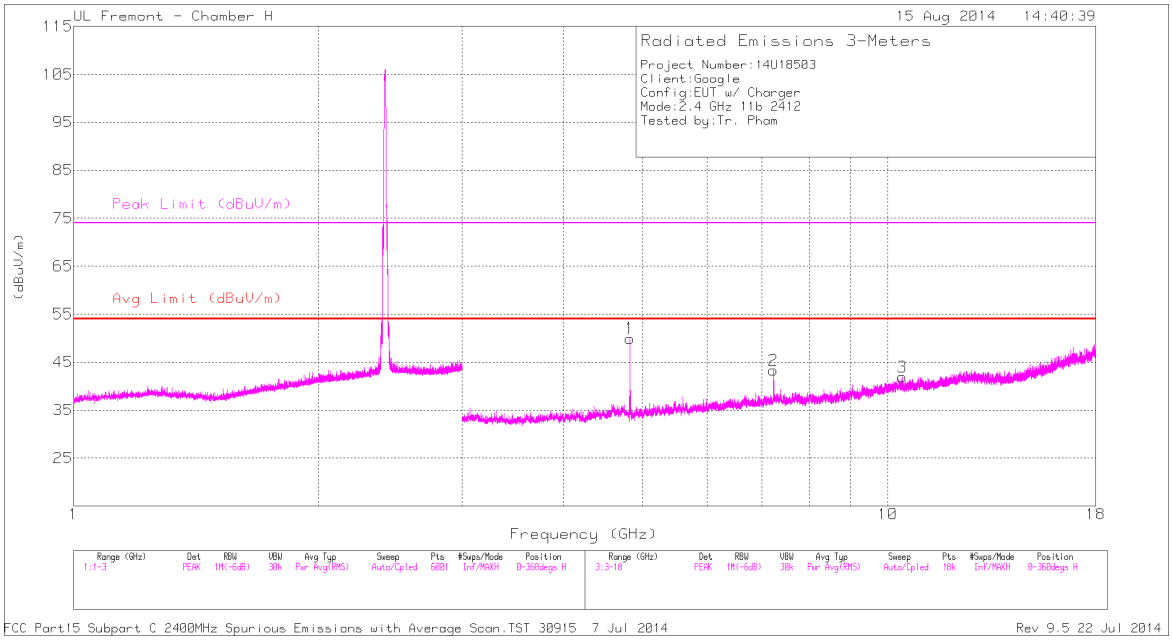
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.3	PK	32.3	-24.3	55.3	-	-	74	-18.7	62	341	V
2	* 2.484	54.11	PK	32.3	-24.3	62.11	-	-	74	-11.89	62	341	V
3	* 2.484	41.49	RMS	32.3	-24.3	49.49	54	-4.51	-	-	62	341	V
4	* 2.484	41.42	RMS	32.3	-24.3	49.42	54	-4.58	-	-	62	341	V

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

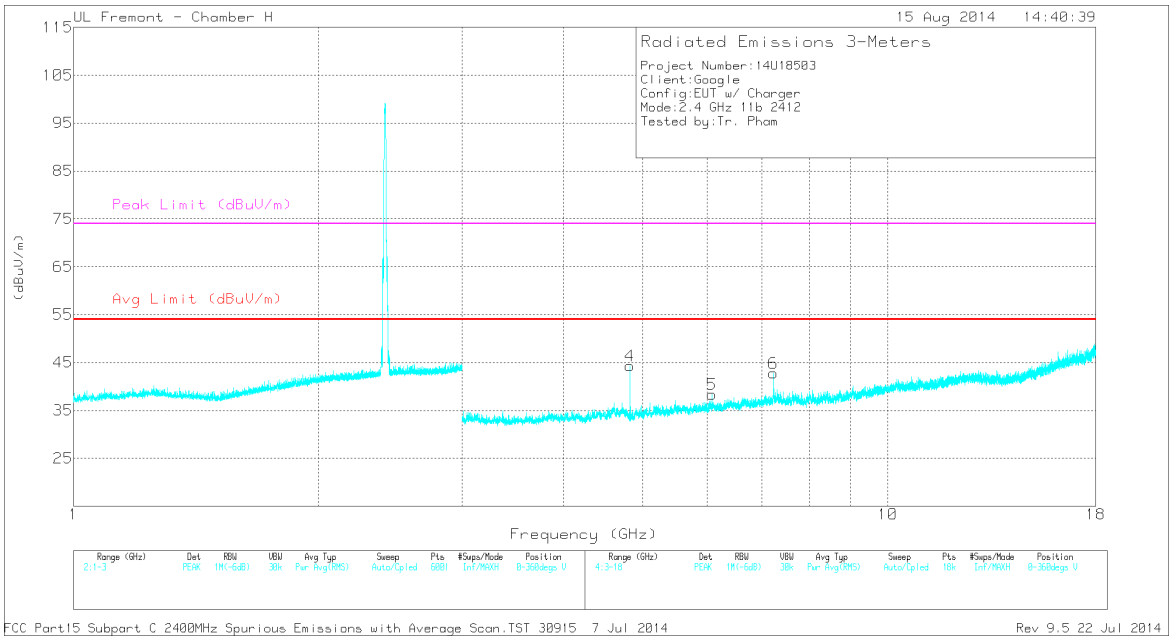
PK - Peak detector
RMS - RMS detection

8.2.3. LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

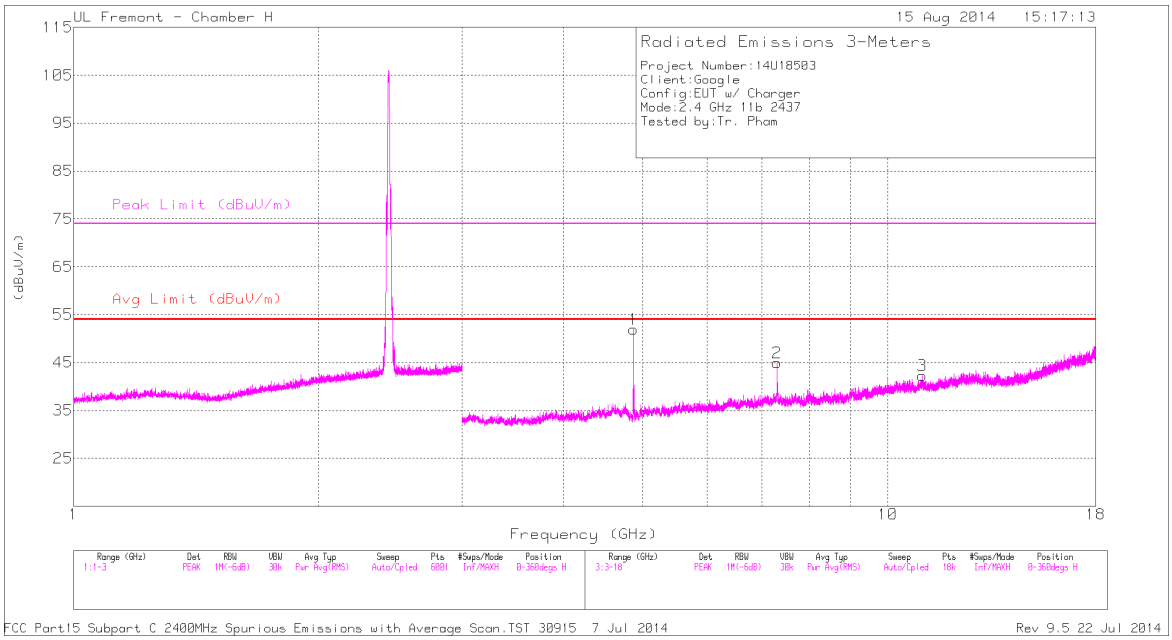
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.824	52.05	PK2	34.3	-32.3	54.05	-	-	74	-19.95	53	309	H
	* 4.824	49.46	MAv1	34.3	-32.3	51.46	54	-2.54	-	-	53	309	H
4	* 4.824	48.11	PK2	34.3	-32.3	50.11	-	-	74	-23.89	126	280	V
	* 4.824	43.6	MAv1	34.3	-32.3	45.6	54	-8.4	-	-	126	280	V
5	6.078	39.87	PK2	35.3	-30.4	44.77	-	-	-	-	156	266	V
	6.078	28.34	MAv1	35.3	-30.4	33.24	-	-	-	-	156	266	V
2	7.236	46.89	PK2	36.2	-30.3	52.79	-	-	-	-	166	165	H
	7.237	39.16	MAv1	36.2	-30.3	45.06	-	-	-	-	166	165	H
6	7.236	46.15	PK2	36.2	-30.3	52.05	-	-	-	-	181	184	V
	7.237	37.5	MAv1	36.2	-30.3	43.4	-	-	-	-	181	184	V
3	10.412	36.63	PK2	37.5	-25.7	48.43	-	-	-	-	128	180	H
	10.412	25.52	MAv1	37.5	-25.7	37.32	-	-	-	-	128	180	H

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

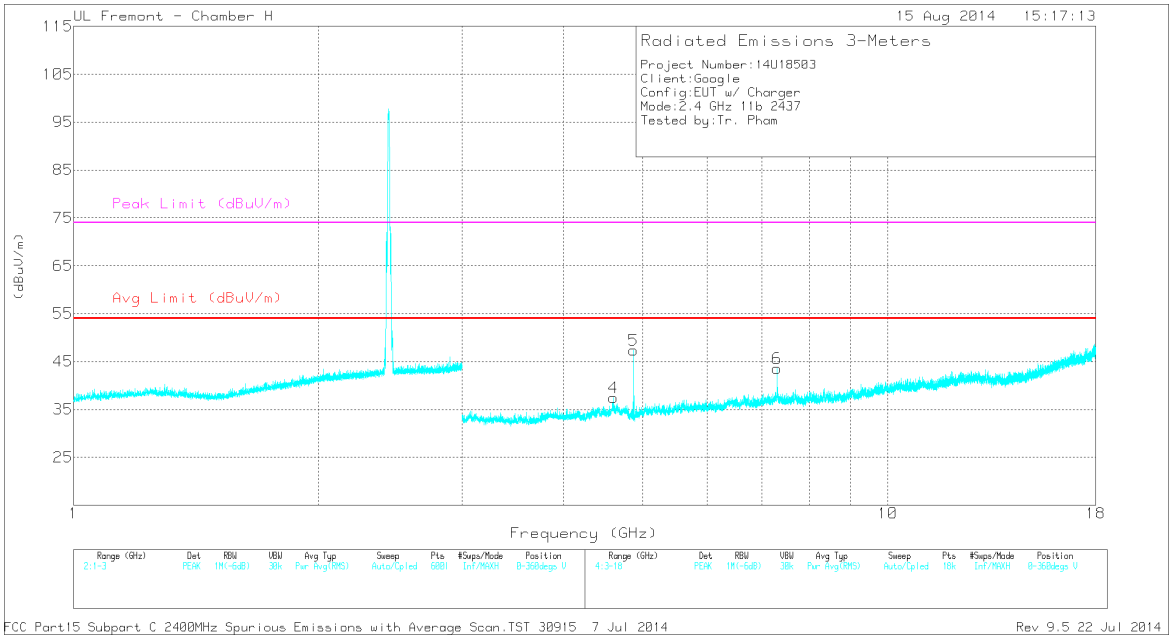
RMS - RMS detection
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

8.2.4. MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

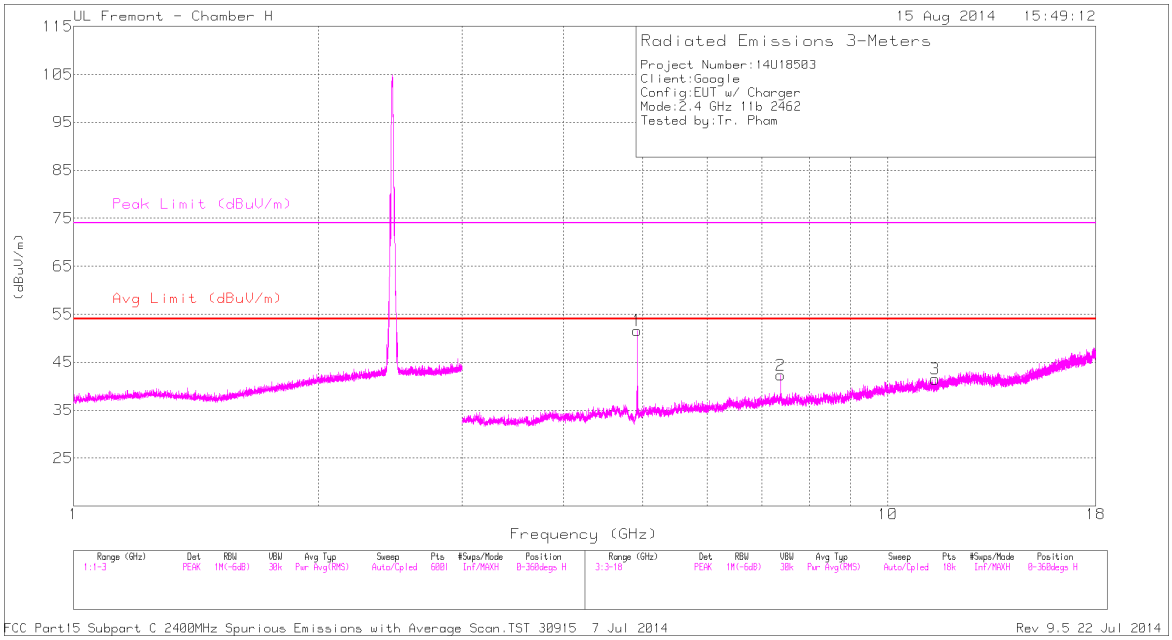
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.874	54.12	PK2	34.3	-32.2	56.22	-	-	74	-17.78	43	247	H
	* 4.874	51.45	MAv1	34.3	-32.2	53.55	54	-.45	-	-	43	247	H
2	* 7.31	44.94	PK2	36.2	-29.1	52.04	-	-	74	-21.96	160	173	H
	* 7.312	37.51	MAv1	36.2	-29.1	44.61	54	-9.39	-	-	160	173	H
3	* 11.026	37.11	PK2	37.8	-25	49.91	-	-	74	-24.09	200	153	H
	* 11.027	25.4	MAv1	37.8	-25	38.2	54	-15.8	-	-	200	153	H
4	* 4.6	42.72	PK2	34.1	-32.4	44.42	-	-	74	-29.58	186	180	V
	* 4.6	31.48	MAv1	34.1	-32.4	33.18	54	-20.82	-	-	186	180	V
5	* 4.874	49.21	PK2	34.3	-32.2	51.31	-	-	74	-22.69	83	279	V
	* 4.874	46.16	MAv1	34.3	-32.2	48.26	54	-5.74	-	-	83	279	V
6	* 7.311	44.03	PK2	36.2	-29.1	51.13	-	-	74	-22.87	94	262	V
	* 7.312	36.21	MAv1	36.2	-29.1	43.31	54	-10.69	-	-	94	262	V

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

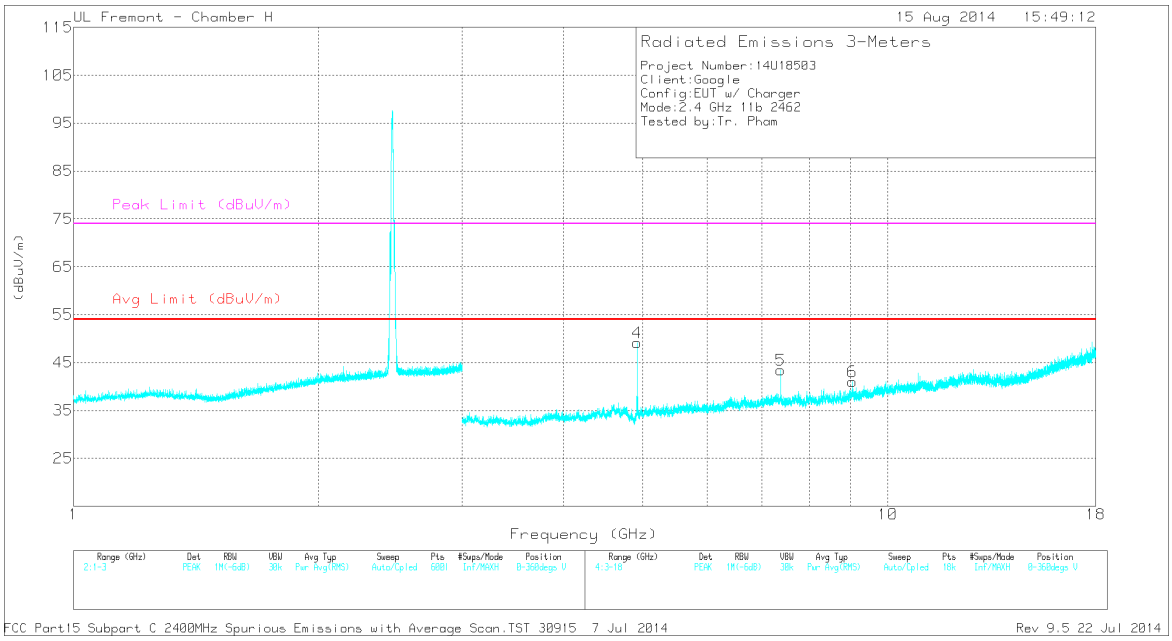
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

8.2.5. HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.924	52.44	PK2	34.3	-32.1	54.64	-	-	74	-19.36	144	210	H
	* 4.924	49.55	MAv1	34.3	-32.1	51.75	54	-2.25	-	-	144	210	H
2	* 7.386	44.28	PK2	36.1	-29	51.38	-	-	74	-22.62	159	188	H
	* 7.387	36.91	MAv1	36.1	-29	44.01	54	-9.99	-	-	159	188	H
3	* 11.427	36.84	PK2	38	-25.6	49.24	-	-	74	-24.76	200	169	H
	* 11.427	25.19	MAv1	38	-25.6	37.59	54	-16.41	-	-	200	169	H
4	* 4.924	47.86	PK2	34.3	-32.1	50.06	-	-	74	-23.94	117	179	V
	* 4.924	43.99	MAv1	34.3	-32.1	46.19	54	-7.81	-	-	117	179	V
5	* 7.386	43.75	PK2	36.1	-29	50.85	-	-	74	-23.15	126	168	V
	* 7.387	36.22	MAv1	36.1	-29	43.32	54	-10.68	-	-	126	168	V
6	* 9.041	37.62	PK2	36.4	-26.7	47.32	-	-	74	-26.68	162	183	V
	* 9.041	26.36	MAv1	36.4	-26.7	36.06	54	-17.94	-	-	162	183	V

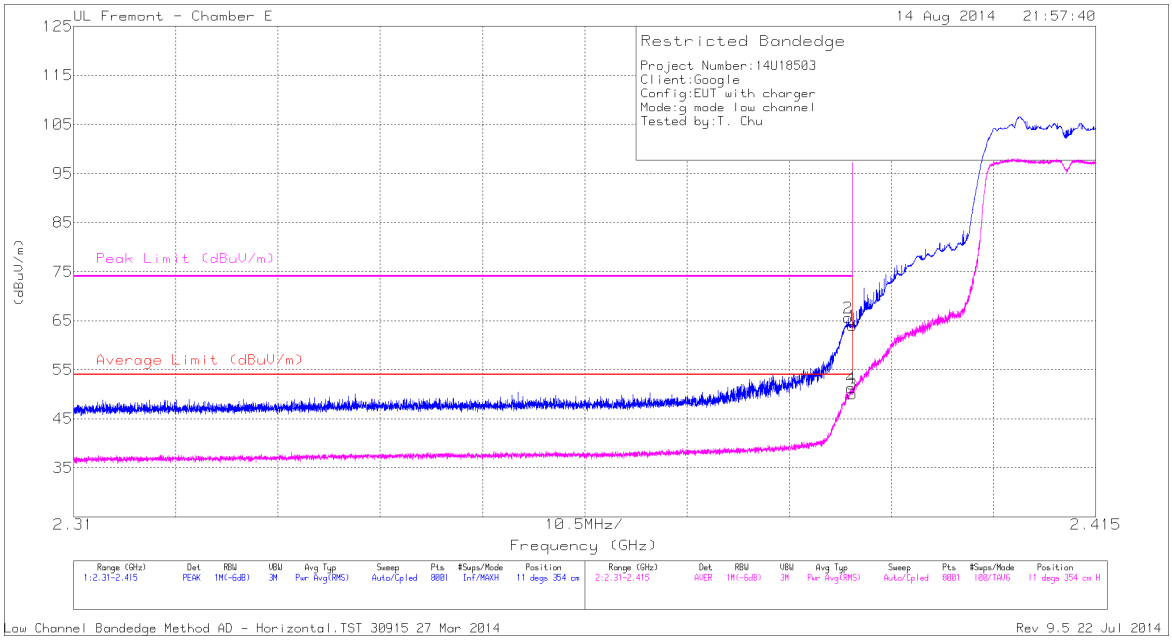
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

8.3. TX ABOVE 1 GHz 802.11g 1Tx SISO MODE IN THE 2.4 GHz BAND

8.3.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL PLOT



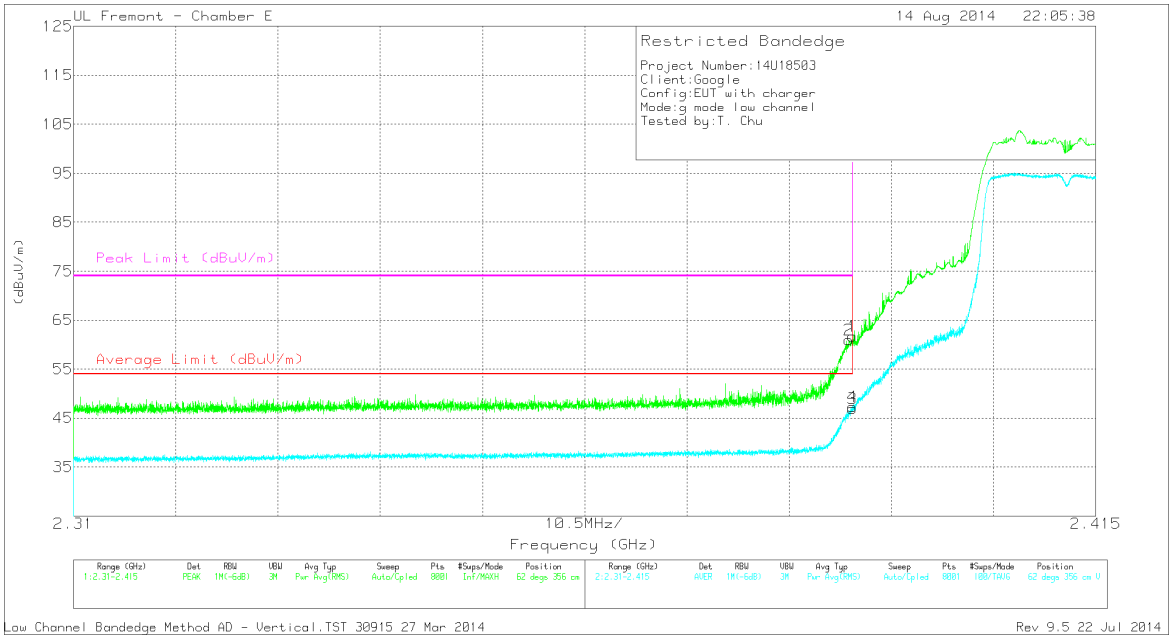
DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	56.69	PK	32	-24.7	63.99	-	-	74	-10.01	11	354	H
2	* 2.39	58.24	PK	32	-24.7	65.54	-	-	74	-8.46	11	354	H
3	* 2.39	42.78	RMS	32	-24.7	50.08	54	-3.92	-	-	11	354	H
4	* 2.39	43.97	RMS	32	-24.7	51.27	54	-2.73	-	-	11	354	H

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

PK - Peak detector
RMS - RMS detection

LOW CHANNEL VERTICAL PLOT



DATA

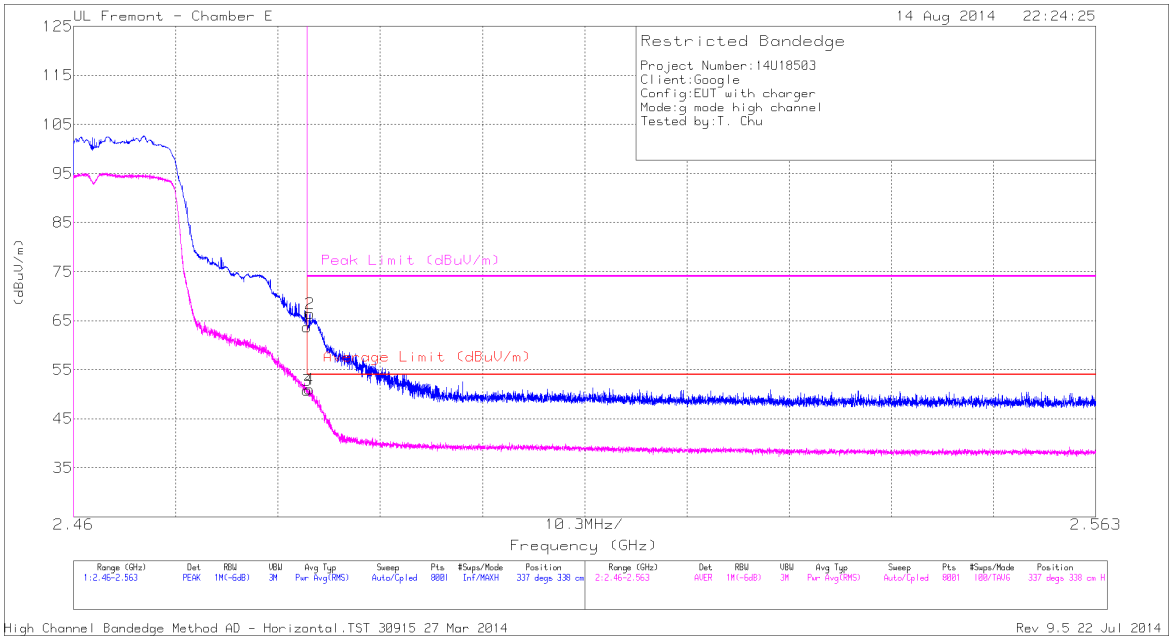
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	54.47	PK	32	-24.7	61.77	-	-	74	-12.23	62	356	V
2	* 2.39	53.66	PK	32	-24.7	60.96	-	-	74	-13.04	62	356	V
3	* 2.39	39.67	RMS	32	-24.7	46.97	54	-7.03	-	-	62	356	V
4	* 2.39	40	RMS	32	-24.7	47.3	54	-6.7	-	-	62	356	V

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

PK - Peak detector
RMS - RMS detection

8.3.2. RESTRICTED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL PLOT



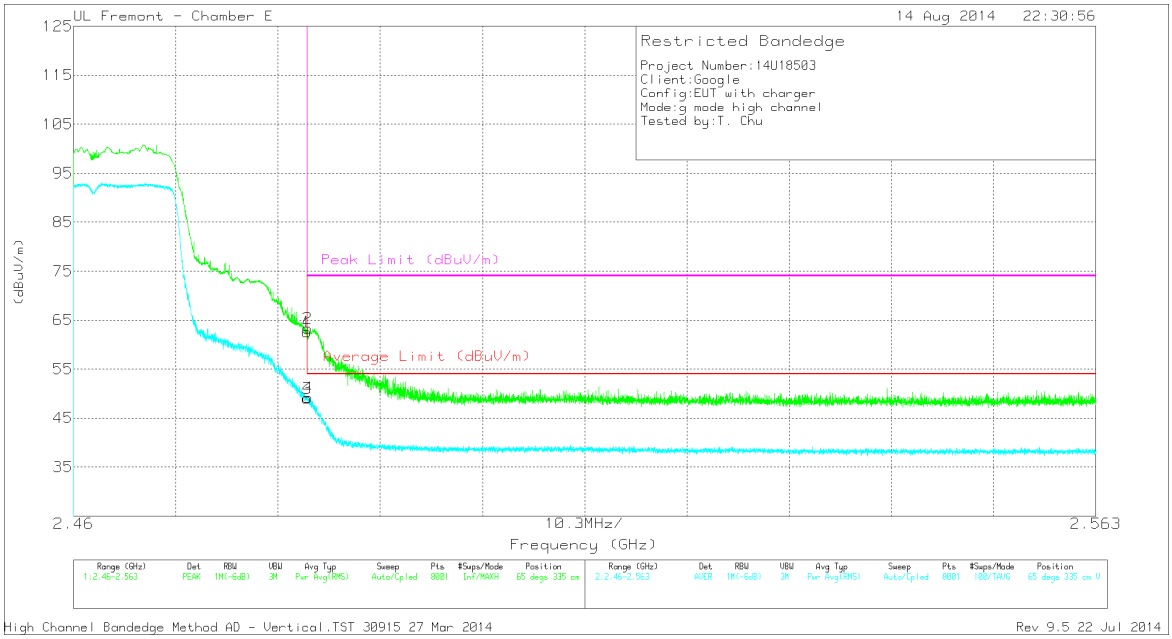
DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	55.7	PK	32.3	-24.3	63.7	-	-	74	-10.3	337	338	H
2	* 2.484	58.43	PK	32.3	-24.3	66.43	-	-	74	-7.57	337	338	H
3	* 2.484	42.77	RMS	32.3	-24.3	50.77	54	-3.23	-	-	337	338	H
4	* 2.484	43.01	RMS	32.3	-24.3	51.01	54	-2.99	-	-	337	338	H

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

PK - Peak detector
RMS - RMS detection

HIGH CHANNEL VERTICAL PLOT



DATA

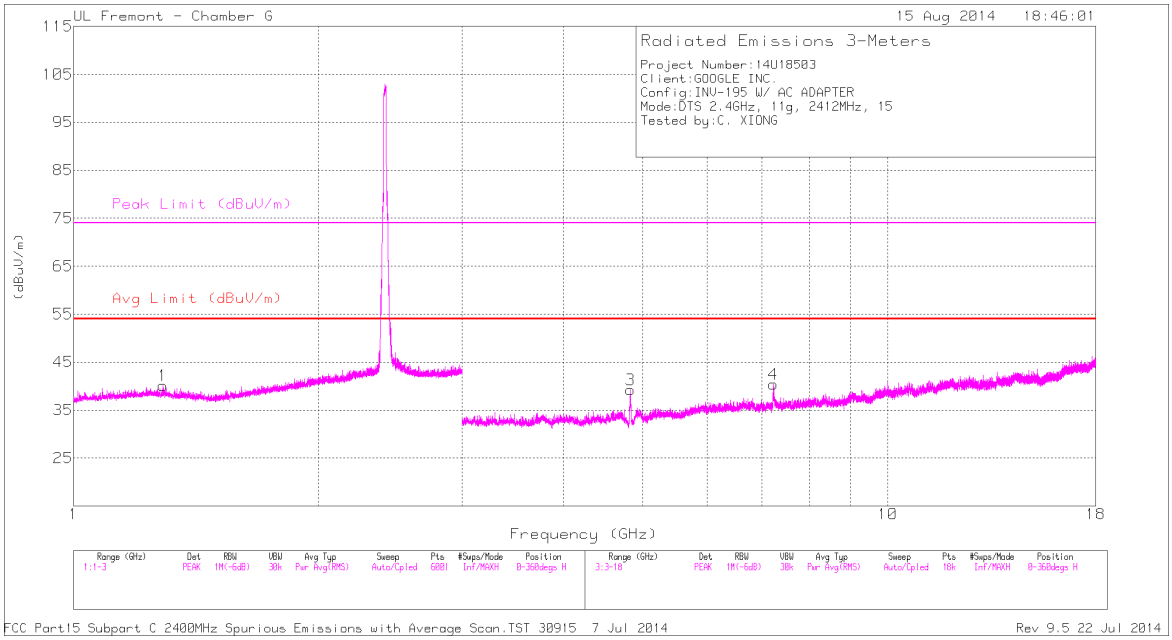
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	54.6	PK	32.3	-24.3	62.6	-	-	74	-11.4	65	335	V
2	* 2.484	55.29	PK	32.3	-24.3	63.29	-	-	74	-10.71	65	335	V
3	* 2.484	41.06	RMS	32.3	-24.3	49.06	54	-4.94	-	-	65	335	V
4	* 2.484	41.16	RMS	32.3	-24.3	49.16	54	-4.84	-	-	65	335	V

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

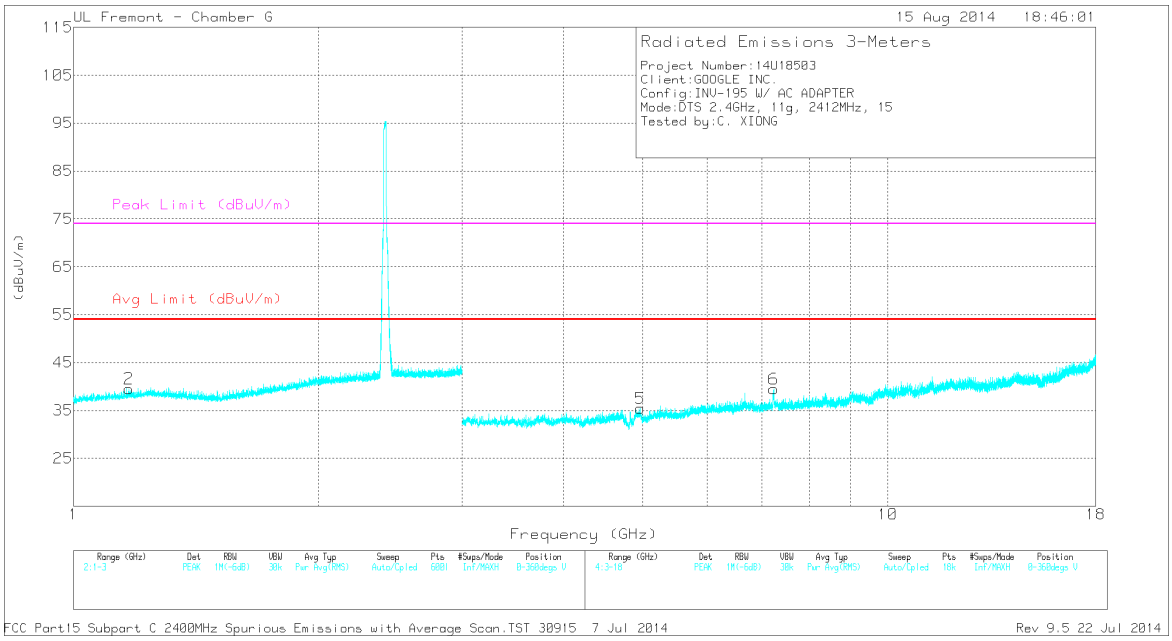
PK - Peak detector
RMS - RMS detection

8.3.3. LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

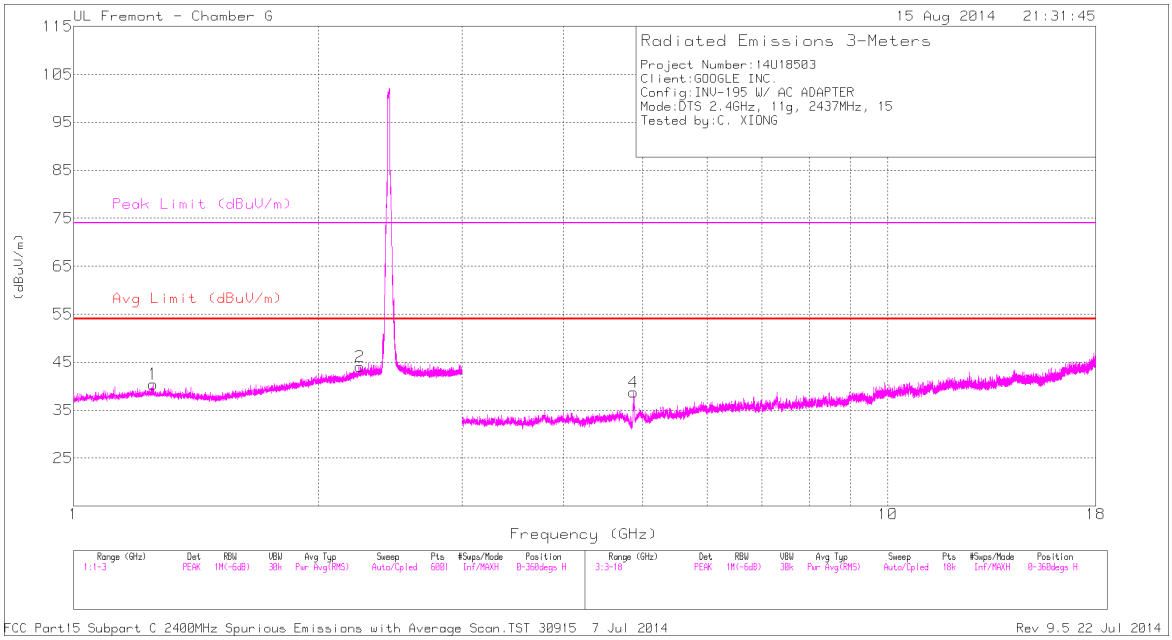
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.286	43.57	PK2	29	-26	46.57	-	-	74	-27.43	144	153	H
	* 1.289	32.53	MAv1	29	-26	35.53	54	-18.47	-	-	144	153	H
2	* 1.169	44.39	PK2	28.8	-26	47.19	-	-	74	-26.81	158	173	V
	* 1.169	32.76	MAv1	28.8	-26	35.56	54	-18.44	-	-	158	173	V
3	* 4.829	49.88	PK2	34.1	-33.1	50.88	-	-	74	-23.12	78	221	H
	* 4.829	35.49	MAv1	34.1	-33.1	36.49	54	-17.51	-	-	78	221	H
5	* 4.966	41.38	PK2	34.1	-33	42.48	-	-	74	-31.52	171	150	V
	* 4.966	30.21	MAv1	34.1	-33	31.31	54	-22.69	-	-	171	150	V
4	7.231	35.75	PK	35.6	-30.9	40.45	-	-	-	-	0-360	201	H
6	7.241	34.88	PK	35.6	-31	39.48	-	-	-	-	0-360	201	V

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

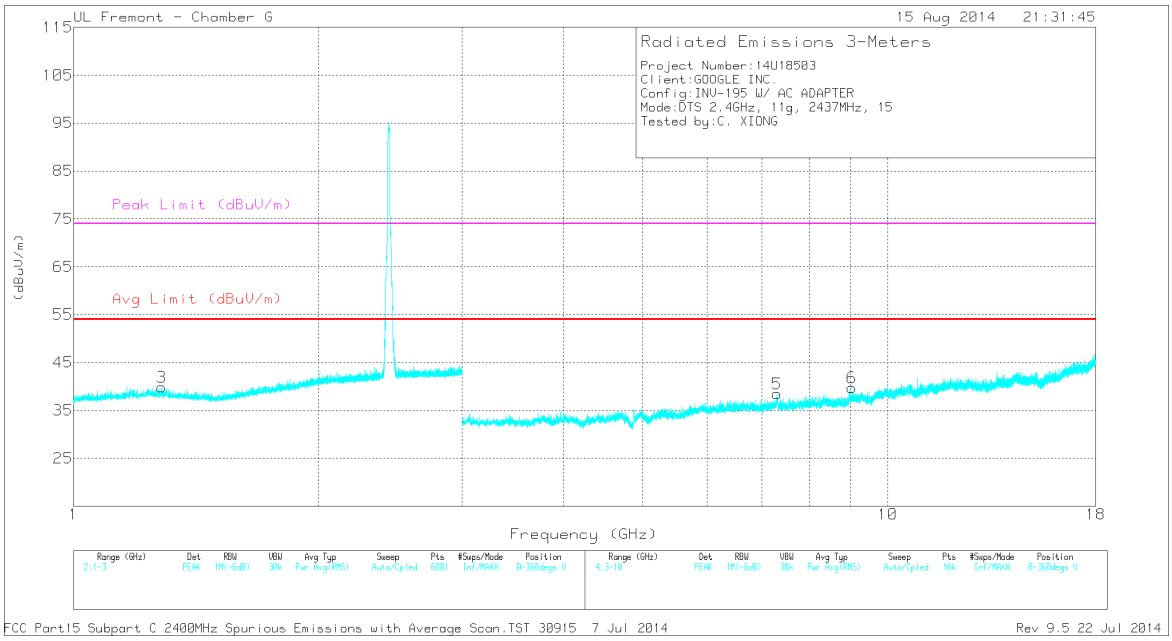
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

8.3.4. MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

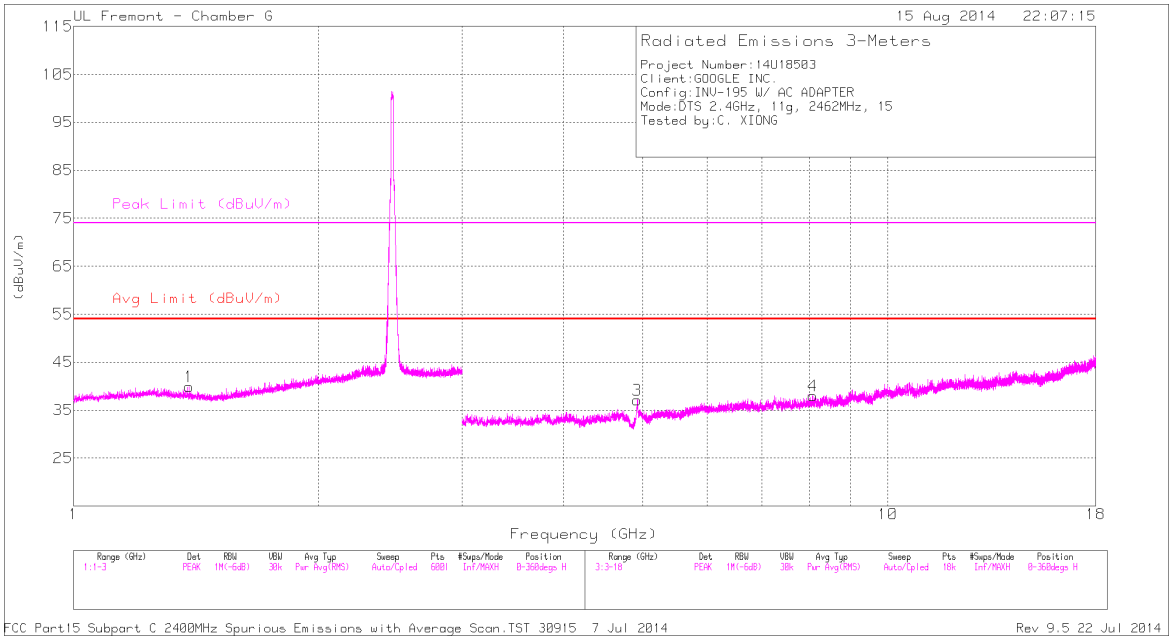
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.251	43.87	PK2	29.2	-26.1	46.97	-	-	74	-27.03	118	140	H
	* 1.254	32.53	MAv1	29.2	-26.1	35.63	54	-18.37	-	-	118	140	H
2	* 2.247	44.7	PK2	31.5	-25.1	51.1	-	-	74	-22.9	93	160	H
	* 2.247	33.53	MAv1	31.5	-25.1	39.93	54	-14.07	-	-	93	160	H
3	* 1.285	44.02	PK2	29	-26	47.02	-	-	74	-26.98	140	114	V
	* 1.284	32.7	MAv1	29	-26	35.7	54	-18.3	-	-	140	114	V
4	* 4.875	48.27	PK2	34.1	-33.1	49.27	-	-	74	-24.73	175	119	H
	* 4.873	34.9	MAv1	34.1	-33.1	35.9	54	-18.1	-	-	175	119	H
5	* 7.31	43.13	PK2	35.6	-31	47.73	-	-	74	-26.27	164	172	V
	* 7.31	30.39	MAv1	35.6	-31	34.99	54	-19.01	-	-	164	172	V
6	* 9.029	38.5	PK2	36.4	-28.4	46.5	-	-	74	-27.5	152	116	V
	* 9.031	27.35	MAv1	36.4	-28.3	35.45	54	-18.55	-	-	152	116	V

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

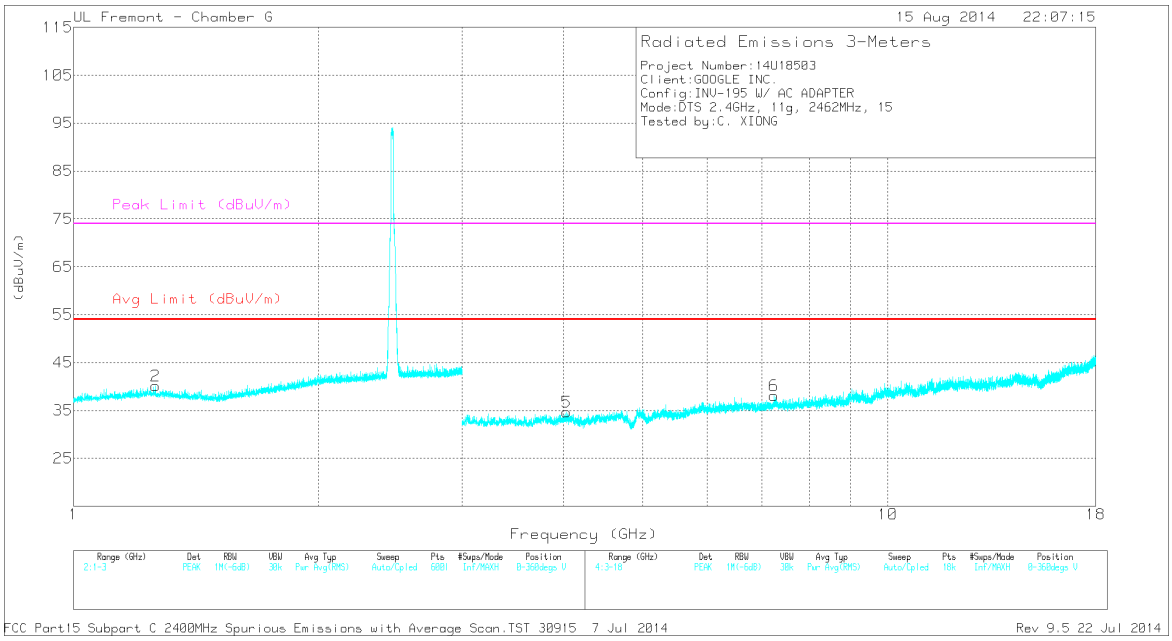
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

8.3.5. HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.384	44.05	PK2	28.5	-25.8	46.75	-	-	74	-27.25	24	128	H
	* 1.386	32.43	MAv1	28.5	-25.8	35.13	54	-18.87	-	-	24	128	H
2	* 1.261	44.05	PK2	29.1	-26	47.15	-	-	74	-26.85	84	161	V
	* 1.259	32.6	MAv1	29.2	-26	35.8	54	-18.2	-	-	84	161	V
3	* 4.924	46	PK2	34.1	-33.1	47	-	-	74	-27	179	124	H
	* 4.923	34.68	MAv1	34.1	-33.1	35.68	54	-18.32	-	-	179	124	H
4	* 8.086	39.42	PK2	35.8	-30.4	44.82	-	-	74	-29.18	169	134	H
	* 8.085	28.74	MAv1	35.8	-30.4	34.14	54	-19.86	-	-	169	134	H
5	* 4.036	41.28	PK2	33.4	-32.9	41.78	-	-	74	-32.22	92	222	V
	* 4.033	30.53	MAv1	33.4	-32.9	31.03	54	-22.97	-	-	92	222	V
6	7.248	33.39	PK	35.6	-30.9	38.09	-	-	-	-	0-360	101	V

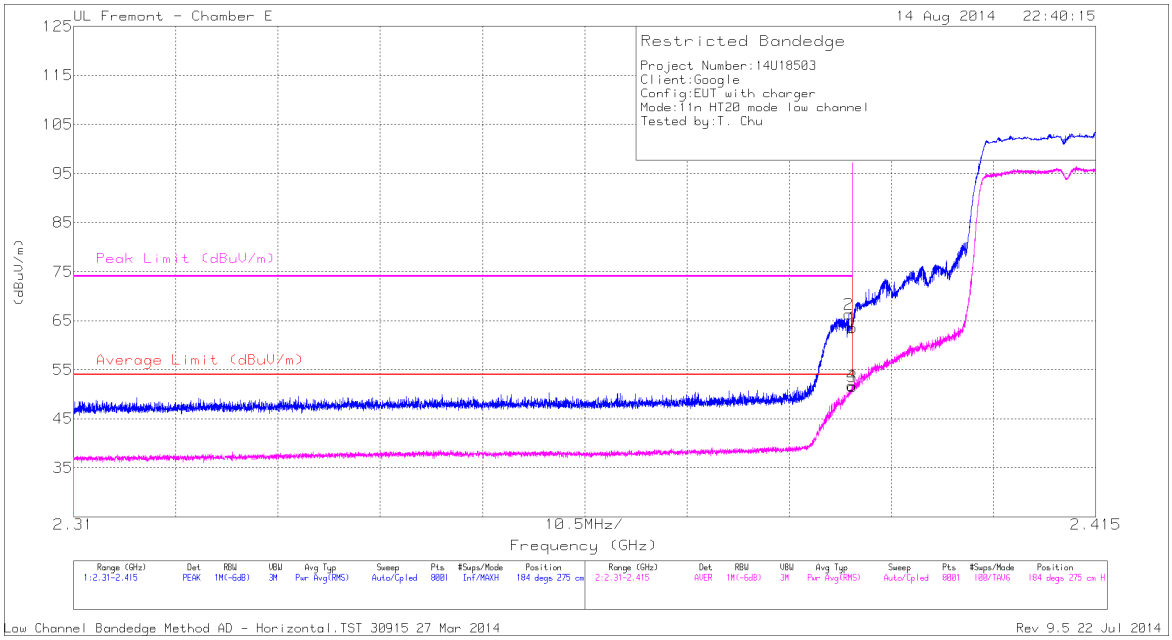
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

8.4. TX ABOVE 1 GHz 802.11n HT20 1Tx SISO MODE IN THE 2.4 GHz BAND

8.4.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL PLOT



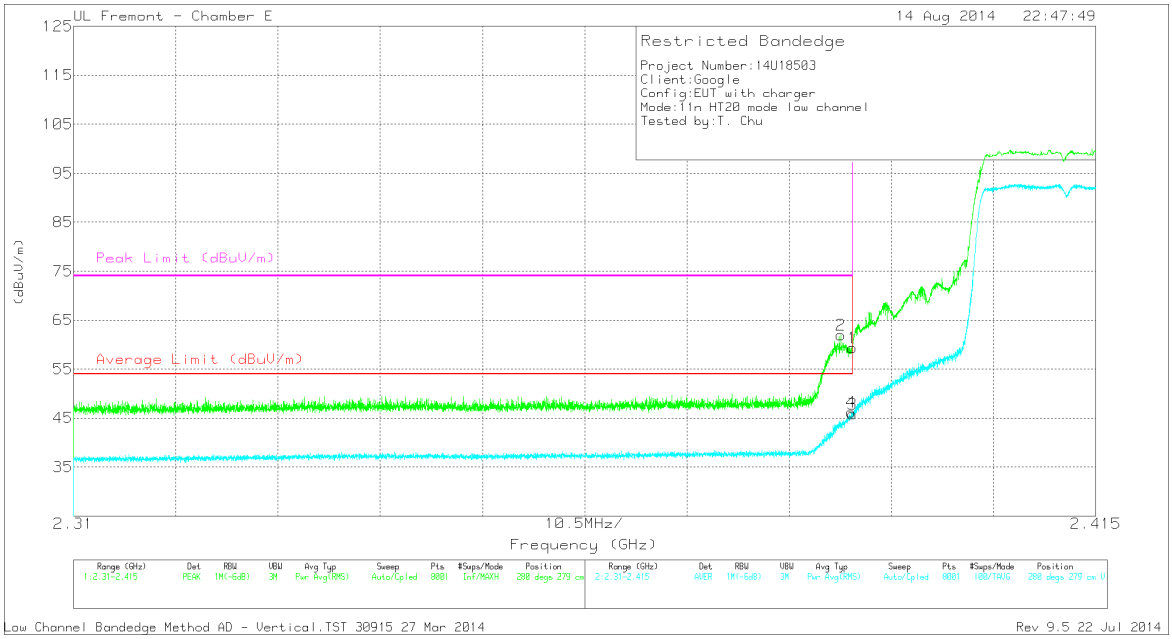
DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	56.26	PK	32	-24.7	63.56	-	-	74	-10.44	184	275	H
2	* 2.39	59.01	PK	32	-24.7	66.31	-	-	74	-7.69	184	275	H
3	* 2.39	44.19	RMS	32	-24.7	51.49	54	-2.51	-	-	184	275	H
4	* 2.39	44.49	RMS	32	-24.7	51.79	54	-2.21	-	-	184	275	H

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

PK - Peak detector
RMS - RMS detection

LOW CHANNEL VERTICAL PLOT



DATA

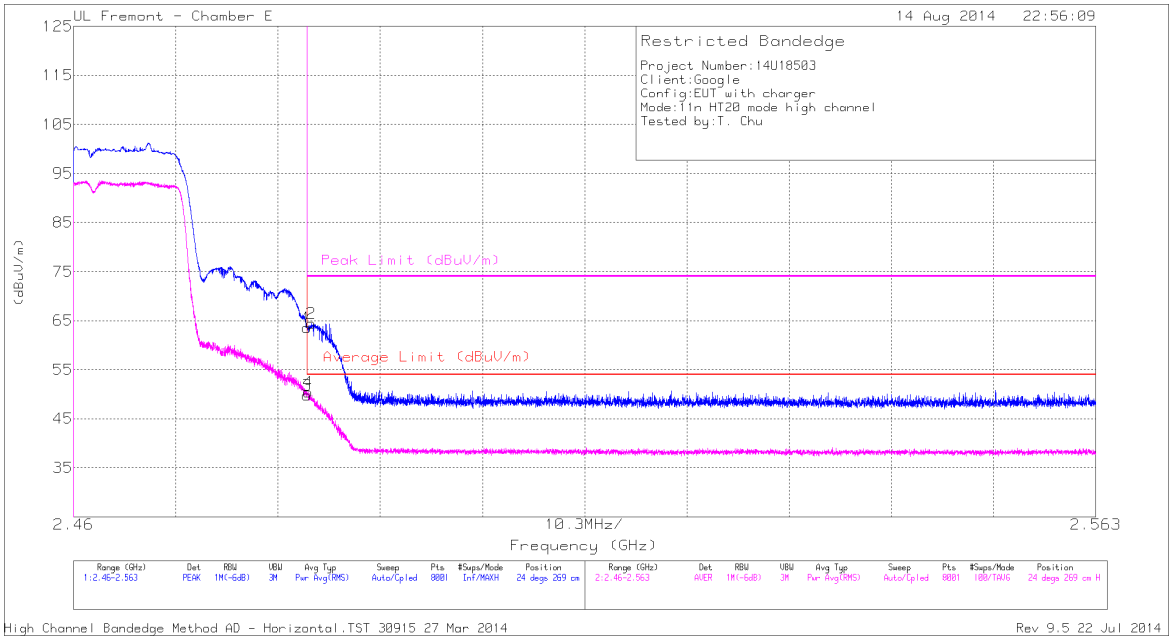
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	52.04	PK	32	-24.7	59.34	-	-	74	-14.66	280	279	V
2	* 2.389	54.64	PK	32	-24.7	61.94	-	-	74	-12.06	280	279	V
3	* 2.39	38.53	RMS	32	-24.7	45.83	54	-8.17	-	-	280	279	V
4	* 2.39	38.84	RMS	32	-24.7	46.14	54	-7.86	-	-	280	279	V

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

PK - Peak detector
RMS - RMS detection

8.4.2. RESTRICTED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL PLOT



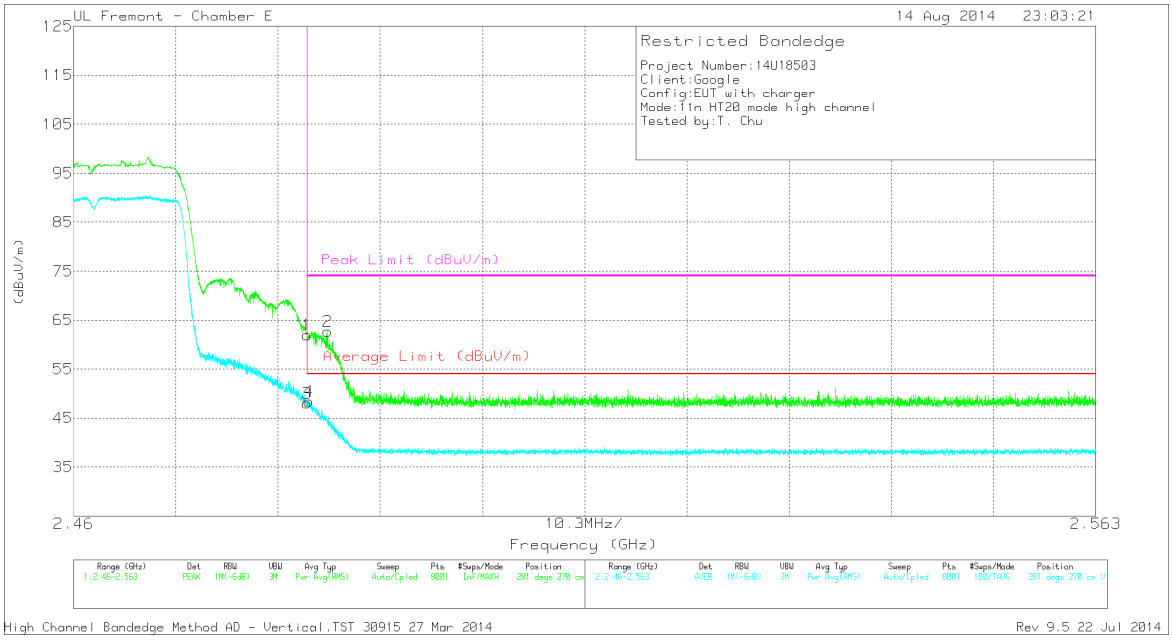
DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	55.52	PK	32.3	-24.3	63.52	-	-	74	-10.48	24	269	H
2	* 2.484	56.39	PK	32.3	-24.3	64.39	-	-	74	-9.61	24	269	H
3	* 2.484	41.77	RMS	32.3	-24.3	49.77	54	-4.23	-	-	24	269	H
4	* 2.484	42.47	RMS	32.3	-24.3	50.47	54	-3.53	-	-	24	269	H

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

PK - Peak detector
RMS - RMS detection

HIGH CHANNEL VERTICAL PLOT



DATA

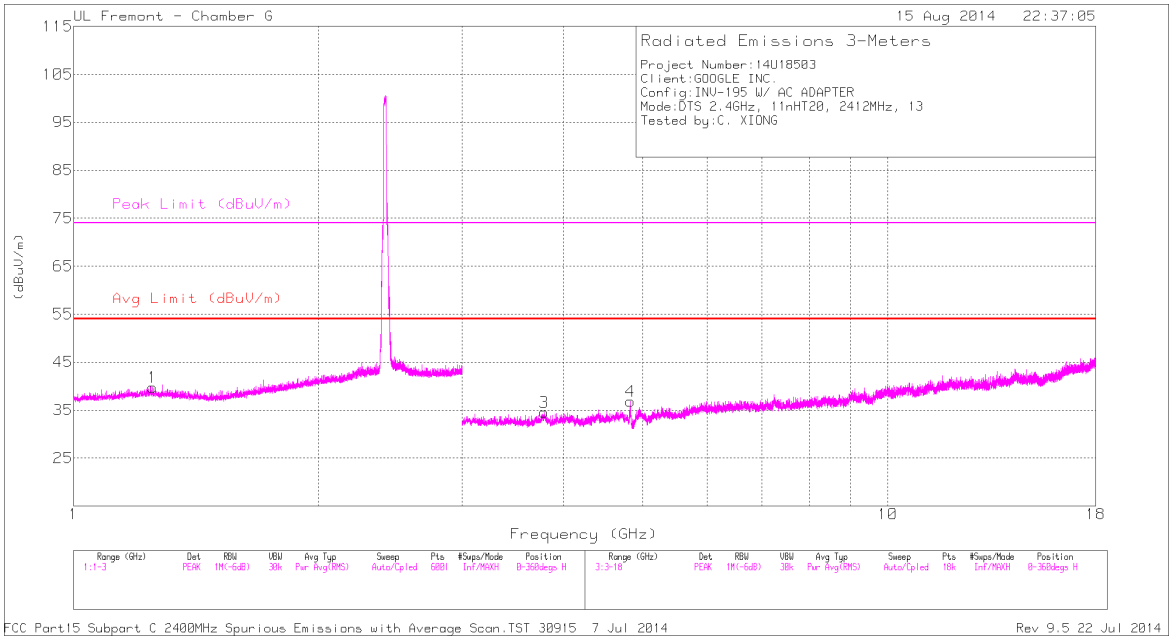
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T346 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	54.01	PK	32.3	-24.3	62.01	-	-	74	-11.99	281	270	V
2	* 2.486	54.72	PK	32.3	-24.3	62.72	-	-	74	-11.28	281	270	V
3	* 2.484	40.04	RMS	32.3	-24.3	48.04	54	-5.96	-	-	281	270	V
4	* 2.484	40.42	RMS	32.3	-24.3	48.42	54	-5.58	-	-	281	270	V

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

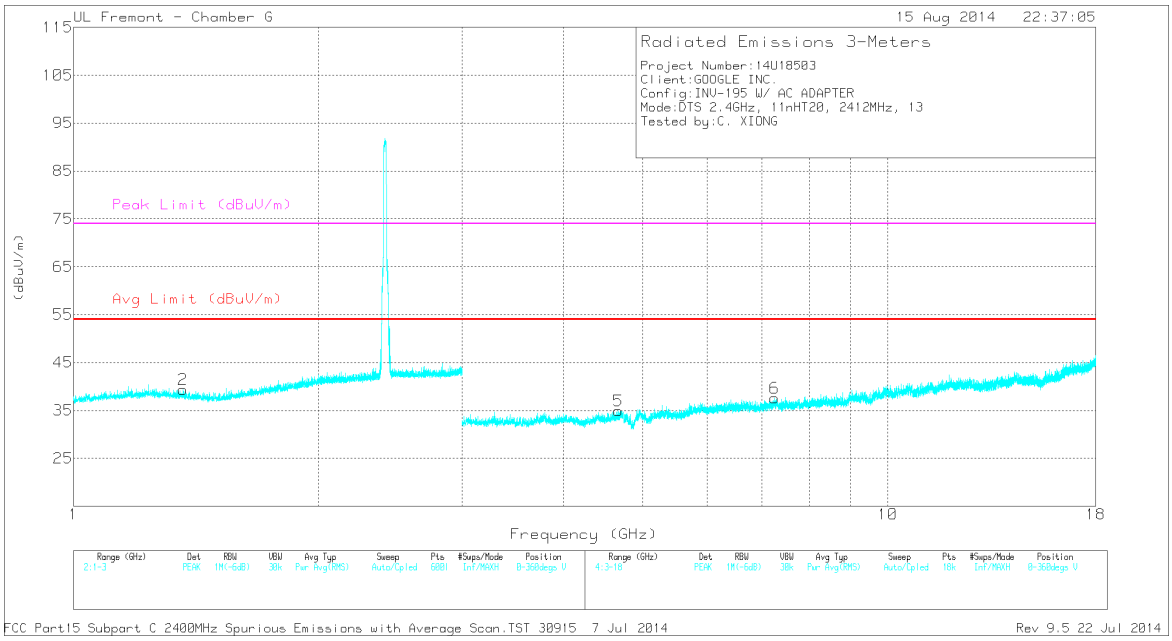
PK - Peak detector
RMS - RMS detection

8.4.3. LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

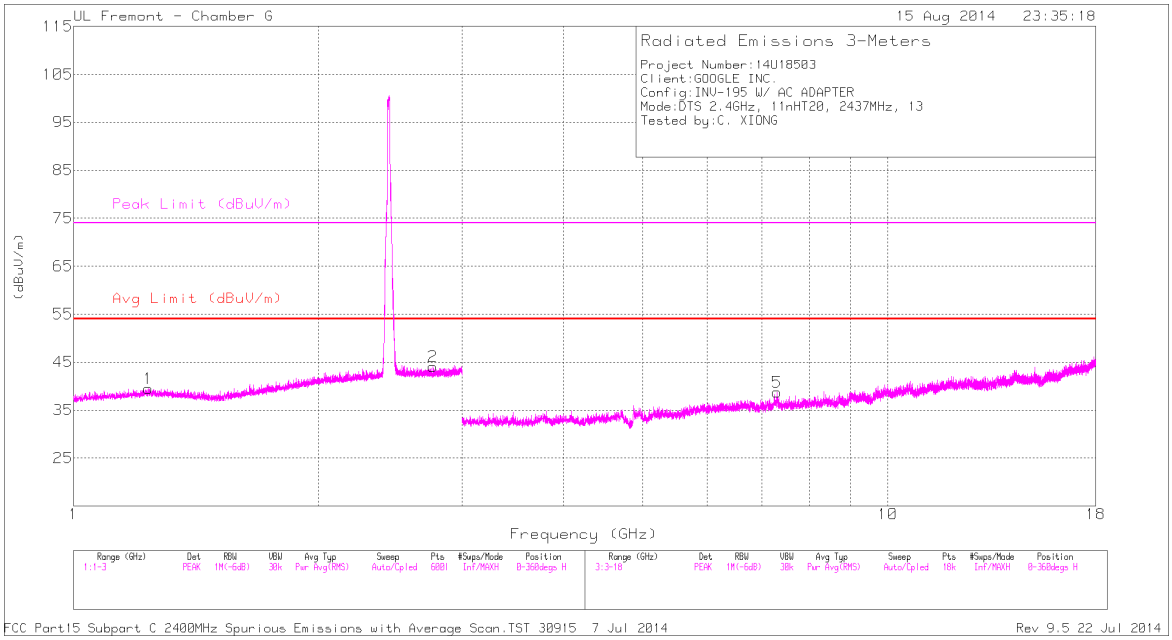
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.251	44.38	PK2	29.2	-26.1	47.48	-	-	74	-26.52	129	141	H
	* 1.249	32.75	MAv1	29.2	-26.1	35.85	54	-18.15	-	-	129	141	H
2	* 1.362	44.58	PK2	28.6	-25.9	47.28	-	-	74	-26.72	170	149	V
	* 1.363	32.54	MAv1	28.6	-25.9	35.24	54	-18.76	-	-	170	149	V
3	* 3.784	41.39	PK2	33	-32.8	41.59	-	-	74	-32.41	51	163	H
	* 3.784	30.99	MAv1	33	-32.8	31.19	54	-22.81	-	-	51	163	H
4	* 4.825	46.68	PK2	34.1	-33	47.78	-	-	74	-26.22	78	273	H
	* 4.826	32.75	MAv1	34.1	-33.1	33.75	54	-20.25	-	-	78	273	H
5	* 4.67	41.38	PK2	34	-33.1	42.28	-	-	74	-31.72	88	237	V
	* 4.669	30.38	MAv1	34	-33.1	31.28	54	-22.72	-	-	88	237	V
6	* 7.258	40.24	PK2	35.6	-30.9	44.94	-	-	74	-29.06	104	200	V
	* 7.257	29.23	MAv1	35.6	-30.9	33.93	54	-20.07	-	-	104	200	V

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

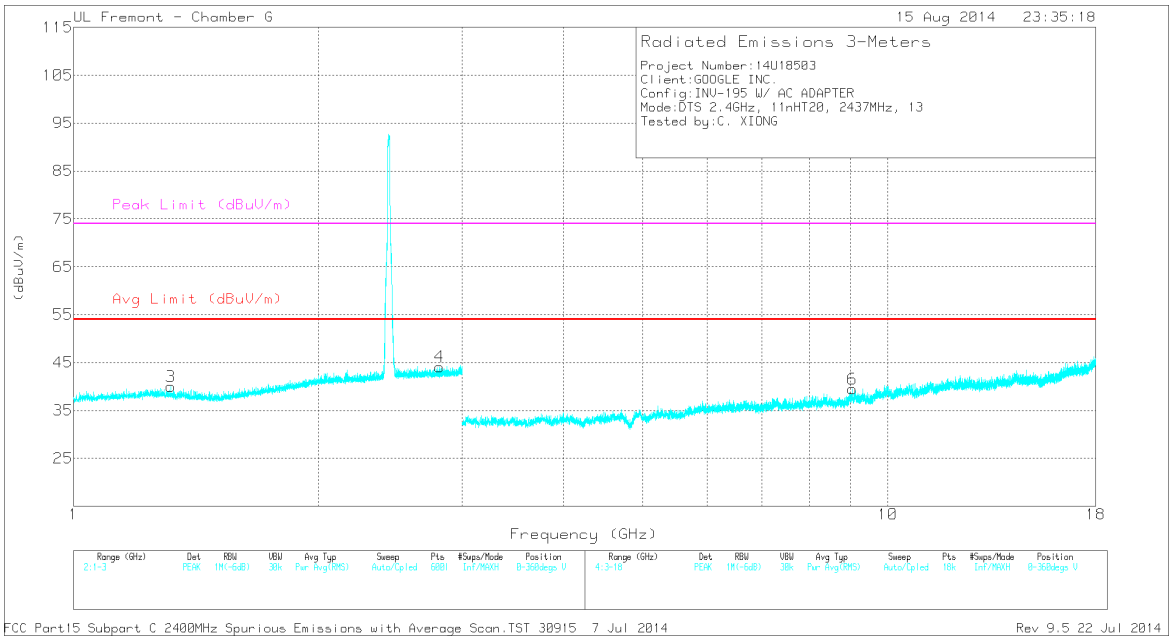
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

8.4.4. MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

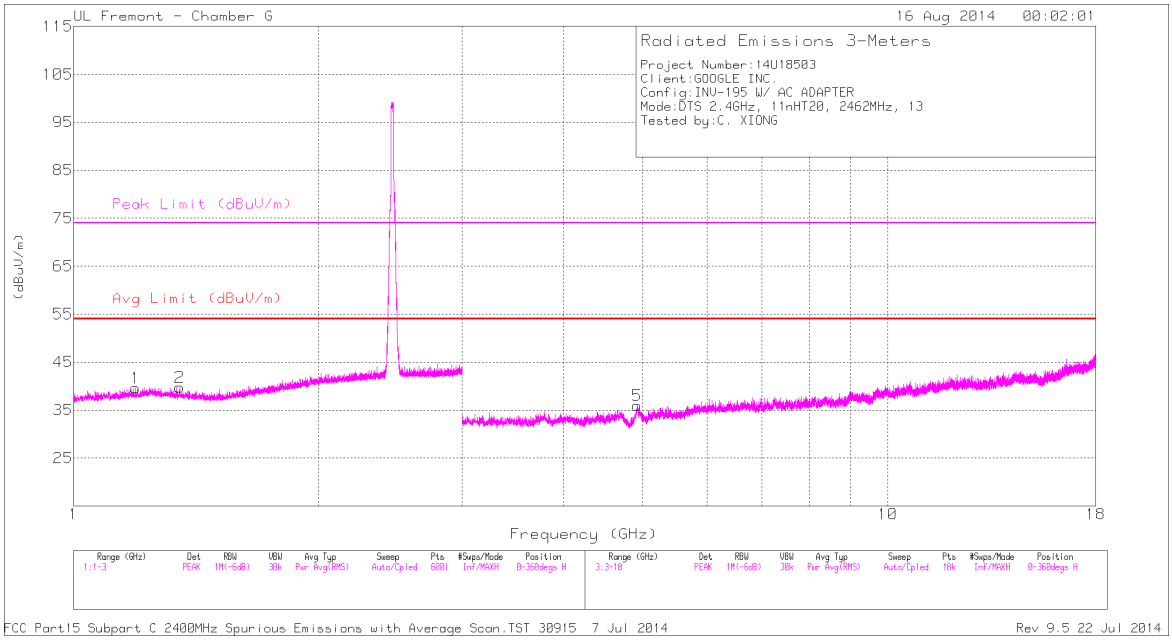
Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T862 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.236	44.16	PK2	29.1	-26.1	47.16	-	-	74	-26.84	80	171	H
	* 1.235	32.6	MAv1	29.1	-26	35.7	54	-18.3	-	-	80	171	H
2	* 2.761	43.33	PK2	32.2	-24.8	50.73	-	-	74	-23.27	99	162	H
	* 2.759	32.06	MAv1	32.2	-24.8	39.46	54	-14.54	-	-	99	162	H
3	* 1.315	43.64	PK2	28.9	-26	46.54	-	-	74	-27.46	35	190	V
	* 1.314	32.44	MAv1	28.9	-26	35.34	54	-18.66	-	-	35	190	V
4	* 2.814	44	PK2	32.3	-24.8	51.5	-	-	74	-22.5	179	215	V
	* 2.815	32.17	MAv1	32.3	-24.8	39.67	54	-14.33	-	-	179	215	V
5	* 7.308	39.82	PK2	35.6	-31	44.42	-	-	74	-29.58	164	156	H
	* 7.31	29.11	MAv1	35.6	-31	33.71	54	-20.29	-	-	164	156	H
6	* 9.043	38.53	PK2	36.4	-28.3	46.63	-	-	74	-27.37	47	206	V
	* 9.042	27.27	MAv1	36.4	-28.3	35.37	54	-18.63	-	-	47	206	V

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

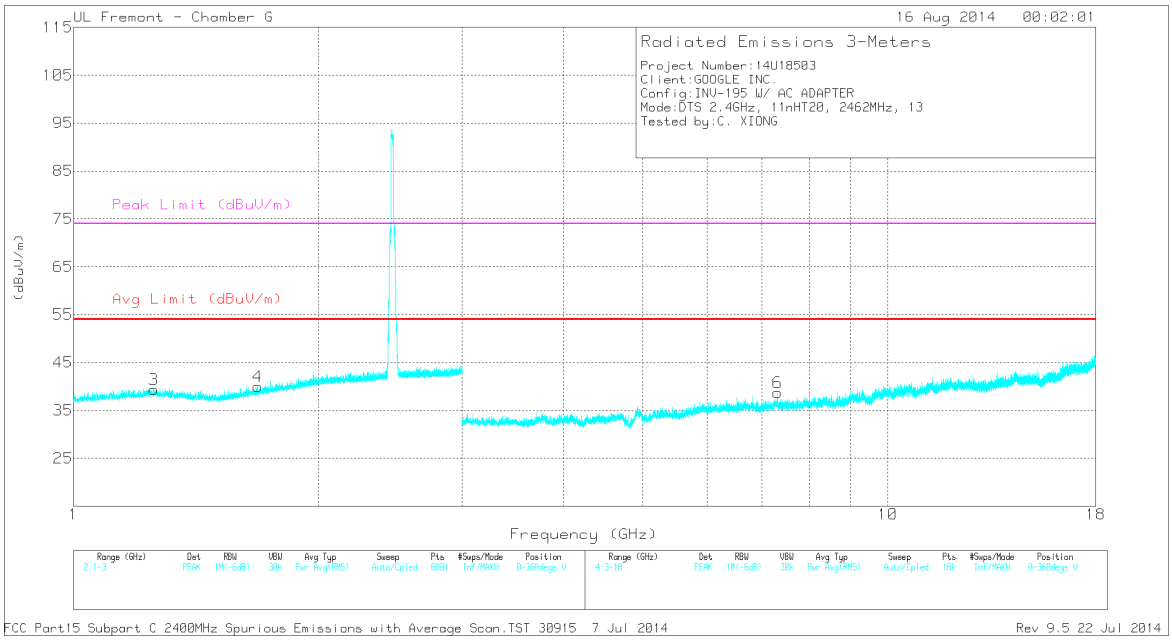
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

8.4.5. HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T862 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.191	43.87	PK2	28.9	-26	46.77	-	-	74	-27.23	127	139	H
	* 1.193	32.55	MAv1	28.9	-26	35.45	54	-18.55	-	-	127	139	H
2	* 1.351	44.26	PK2	28.7	-25.9	47.06	-	-	74	-26.94	140	121	H
	* 1.351	32.52	MAv1	28.7	-25.9	35.32	54	-18.68	-	-	140	121	H
3	* 1.257	44.31	PK2	29.2	-26	47.51	-	-	74	-26.49	223	173	V
	* 1.254	32.63	MAv1	29.2	-26.1	35.73	54	-18.27	-	-	223	173	V
4	* 1.685	43.93	PK2	29.2	-25.4	47.73	-	-	74	-26.27	201	181	V
	* 1.684	32.28	MAv1	29.1	-25.4	35.98	54	-18.02	-	-	201	181	V
5	* 4.921	44.83	PK2	34.1	-33.1	45.83	-	-	74	-28.17	184	168	H
	* 4.922	33.04	MAv1	34.1	-33.1	34.04	54	-19.96	-	-	184	168	H
6	* 7.323	40.62	PK2	35.6	-31.1	45.12	-	-	74	-28.88	113	132	V
	* 7.323	29.61	MAv1	35.6	-31.1	34.11	54	-19.89	-	-	113	132	V

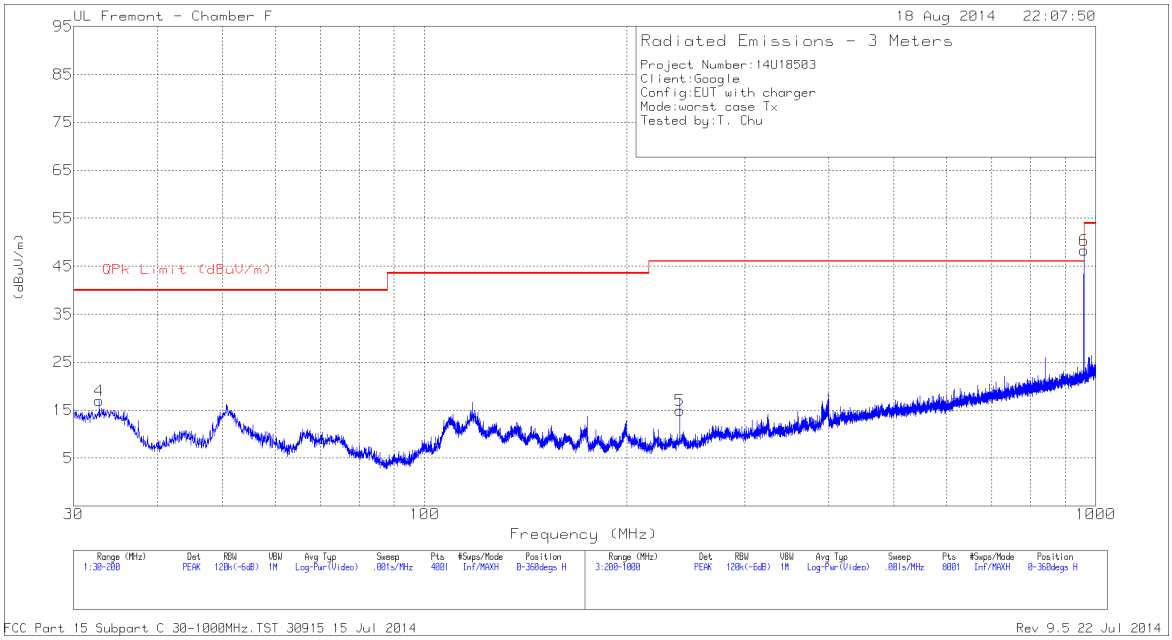
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

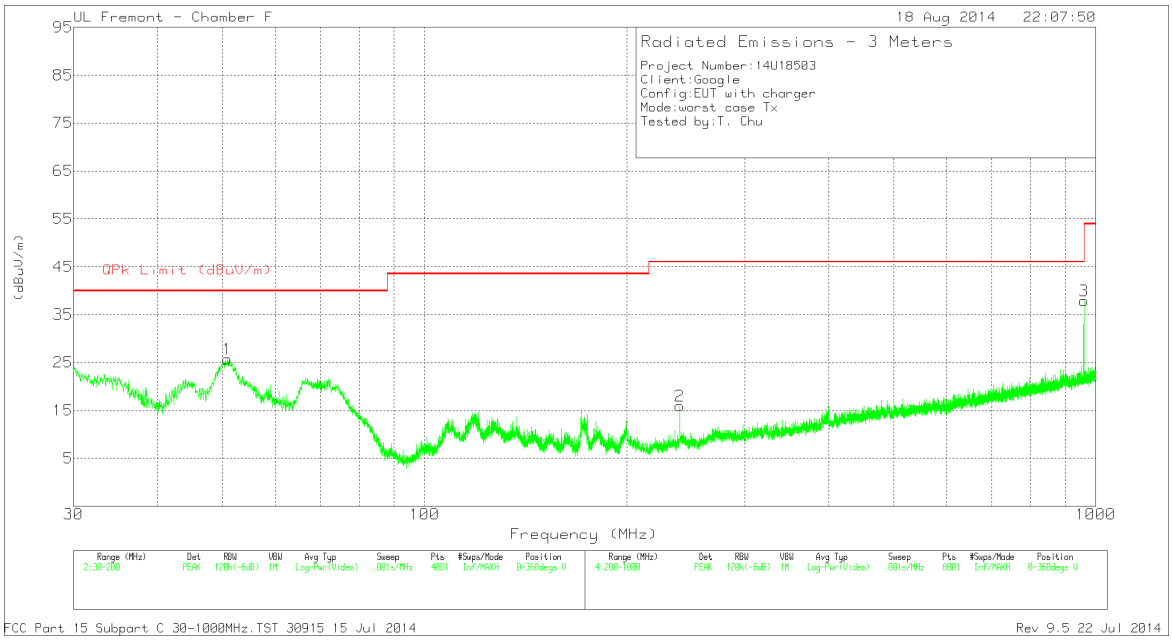
8.5. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



DATA

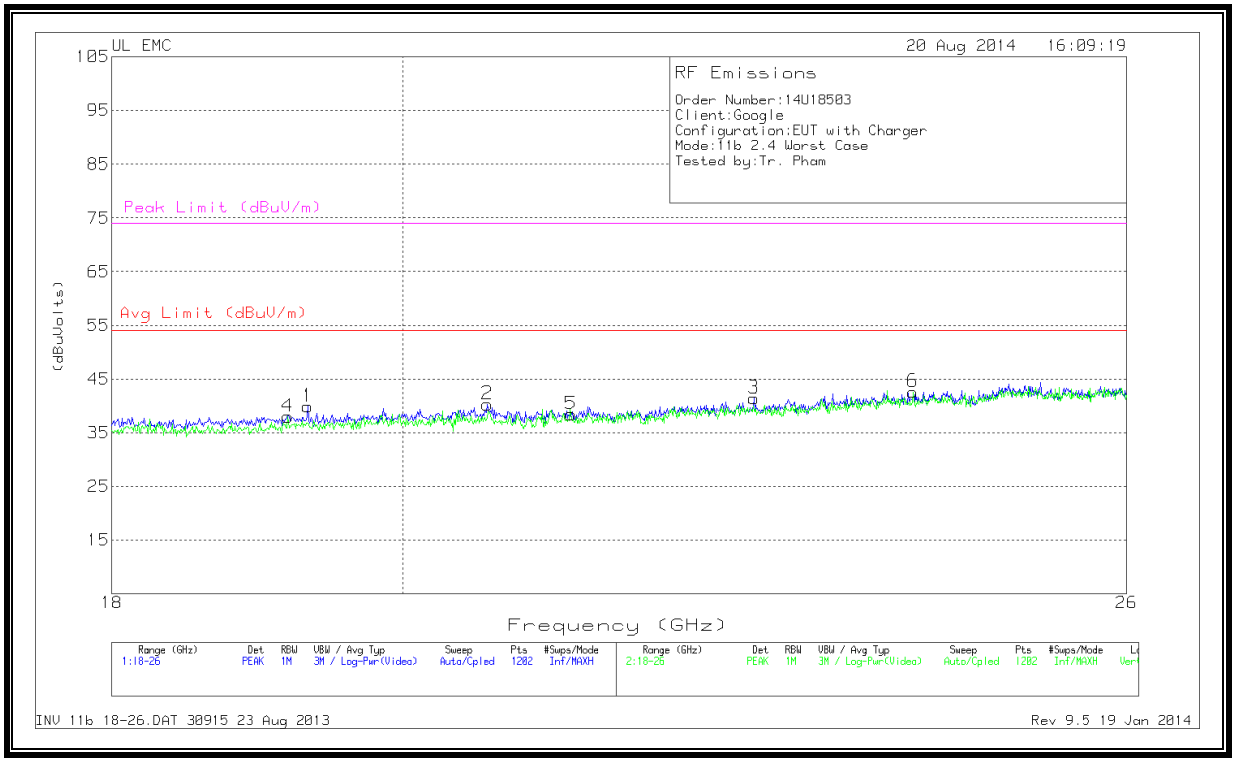
Marker	Frequency (MHz)	Meter Reading (dBµV)	Det	AF T122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBµV/m)	QPk Limit (dBµV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	50.8675	49.74	PK	7.8	-31.8	25.74	40	-14.26	0-360	100	V
2	* 240	35.18	PK	11.7	-30.9	15.98	46.02	-30.04	0-360	201	V
3	* 960	42.87	PK	23	-28	37.87	46.02	-8.15	0-360	100	V
4	32.7625	29.42	PK	19.4	-31.9	16.92	40	-23.08	0-360	301	H
5	239.9	34.19	PK	11.7	-30.9	14.99	46.02	-31.03	0-360	98	H
6	* 960.0017	55.09	QP	23	-28	50.09	53.97	-3.88	211	153	H

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

PK - Peak detector
QP - Quasi-Peak detector

8.6. WORST-CASE ABOVE 18 TO 26GHz

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



DATA

Horizontal 18000 - 26000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T89 (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	19.326	40.6	PK	32.5	-23.7	-9.5	39.9	54	-14.1	74	-34.1
2	20.624	40.42	PK	32.9	-23.5	-9.5	40.32	54	-13.68	74	-33.68
3	22.716	40.82	PK	33.4	-23.3	-9.5	41.42	54	-12.58	74	-32.58

Vertical 18000 - 26000MHz

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T89 (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
4	19.186	38.53	PK	32.5	-23.5	-9.5	38.03	54	-15.97	74	-35.97
5	21.257	38.73	PK	33	-23.8	-9.5	38.43	54	-15.57	74	-35.57
6	24.062	41.1	PK	33.6	-22.6	-9.5	42.6	54	-11.4	74	-31.4

PK - Peak detector

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

NCC LP0002 §2.3

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.

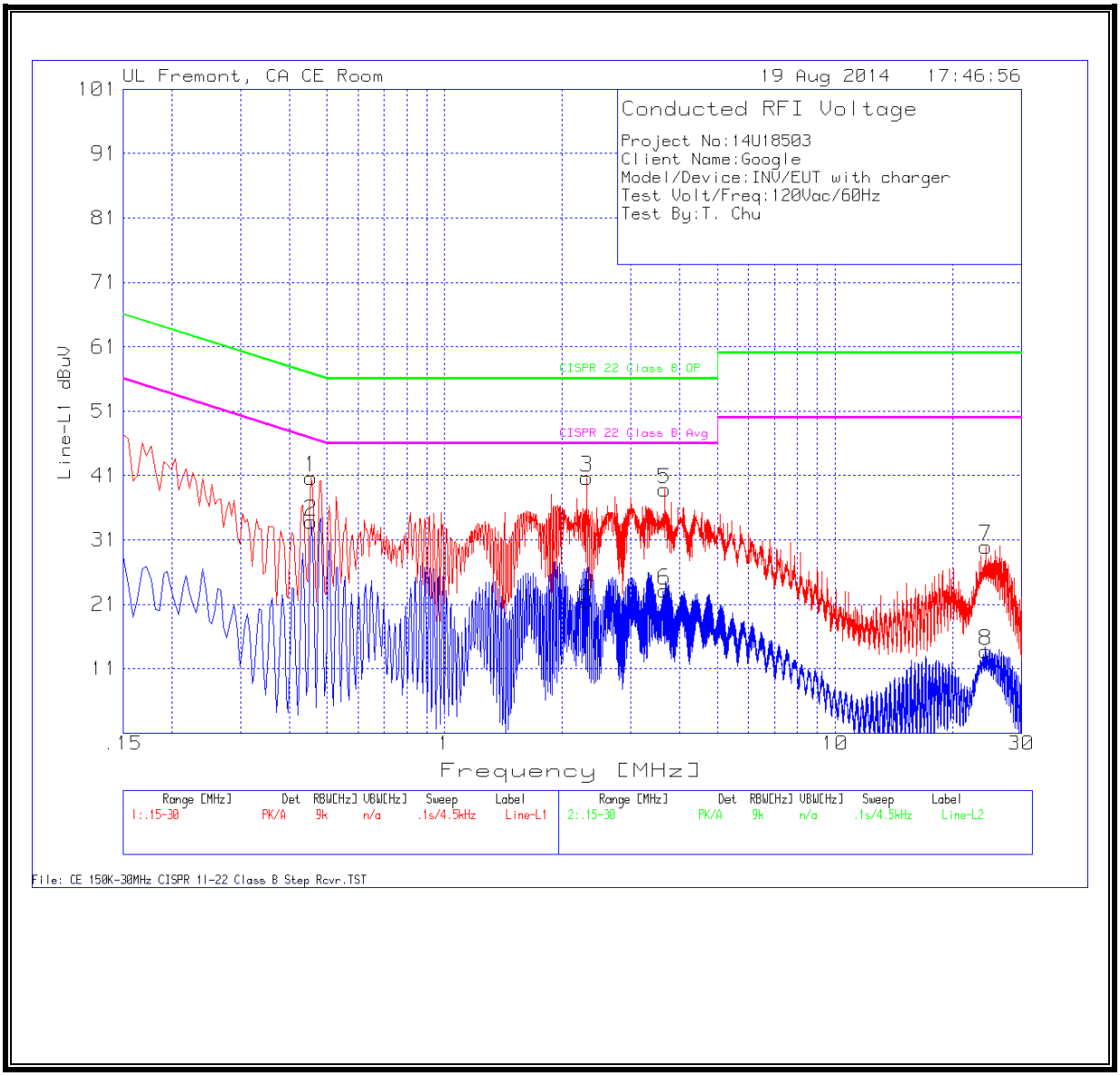
RESULTS

WORST EMISSIONS

LINE 1 RESULTS

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBµV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBµV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.456	40.31	PK	.4	0	40.71	56.8	-16.09	-	-
2	.456	33.42	Av	.4	0	33.82	-	-	46.8	-12.98
3	2.3145	40.33	PK	.2	.1	40.63	56	-15.37	-	-
4	2.3145	21.15	Av	.2	.1	21.45	-	-	46	-24.55
5	3.6555	38.5	PK	.2	.1	38.8	56	-17.2	-	-
6	3.6555	22.81	Av	.2	.1	23.11	-	-	46	-22.89
7	24.2745	29.38	PK	.3	.3	29.98	60	-30.02	-	-
8	24.2745	13.08	Av	.3	.3	13.68	-	-	50	-36.32



LINE 2 RESULTS

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBµV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBµV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
9	.177	43.58	PK	1.2	0	44.78	64.6	-19.82	-	-
10	.177	22.15	Av	1.2	0	23.35	-	-	54.6	-31.25
11	.483	36.57	PK	.4	0	36.97	56.3	-19.33	-	-
12	.483	29.81	Av	.4	0	30.21	-	-	46.3	-16.09
13	2.3865	35.05	PK	.2	.1	35.35	56	-20.65	-	-
14	2.3865	14.81	Av	.2	.1	15.11	-	-	46	-30.89
15	4.9695	34.06	PK	.2	.1	34.36	56	-21.64	-	-
16	4.9695	13.66	Av	.2	.1	13.96	-	-	46	-32.04
17	24.837	26.07	PK	.3	.2	26.57	60	-33.43	-	-
18	24.837	7.05	Av	.3	.2	7.55	-	-	50	-42.45