



FCC 47 CFR PART 15 SUBPART C

**BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT**

FOR

SMART BLE DEVICE

MODEL NUMBER: CAP1

FCC ID: A4R-CAP1

REPORT NUMBER: 15U20041-1, Revision B

ISSUE DATE: April 20, 2015

Prepared for

GOOGLE

1600 AMPHITHEATRE PARKWAY

MOUNTAIN VIEW

CA, 94043, US

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	3/16/15	Initial Issue	F. de Anda
A	4/13/15	Correction to product description	G. Rincand
B	4/20/15	Update -Section 5.2 with PK power data	F. de Anda

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: GOOGLE
1600 AMPITHEATER PARKWAY
MOUNTAIN VIEW, CA 94043

EUT DESCRIPTION: SMART BLE DEVICE

MODEL: CAP1

SERIAL NUMBER: JHPP41504000111 (RADIATED), JHPP41504000301 (RADIATED),
PROTO 1 (CONDUCTED)

DATE TESTED: MARCH 11, 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:

Tested By:



FRANCISCO DE ANDA
PROJECT LEAD
UL Verification Services Inc.

Joey Gomez
EMC ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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:

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

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 a Smart BLE device.

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	2.864	1.93

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a monopole antenna, with a maximum gain of 0 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was ver 51.

The test utility software used during testing was ver 51.

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 portrait orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in portrait orientation.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
LAPTOP	IBM	T41p	99-RFTCK	N/A
AC ADAPTER	IBM	92P1020	11S92P1020Z1Z9RM	N/A

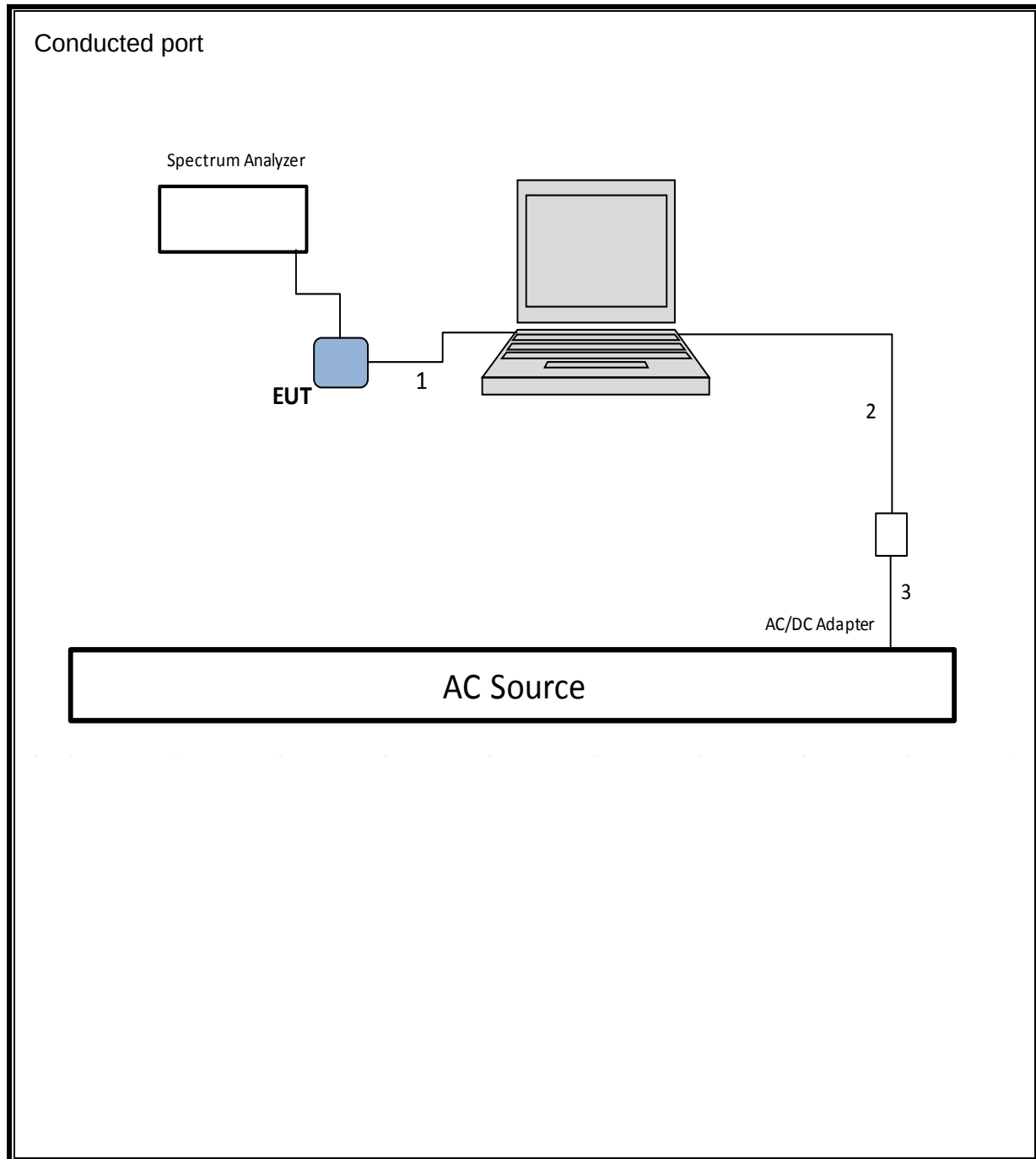
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	Micro-USB	Unshielded	0.25	
2	DC	1	DC	Unshielded	1	
3	AC	1	AC	Unshielded	0.5	

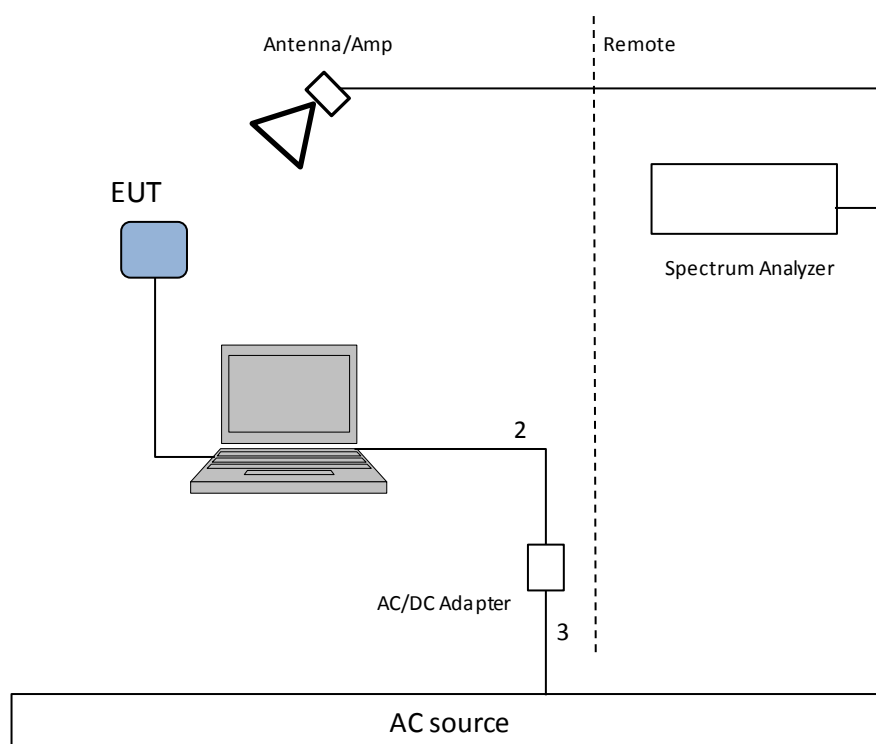
TEST SETUP

The EUT is connected to the test laptop via USB, test software exercises the EUT

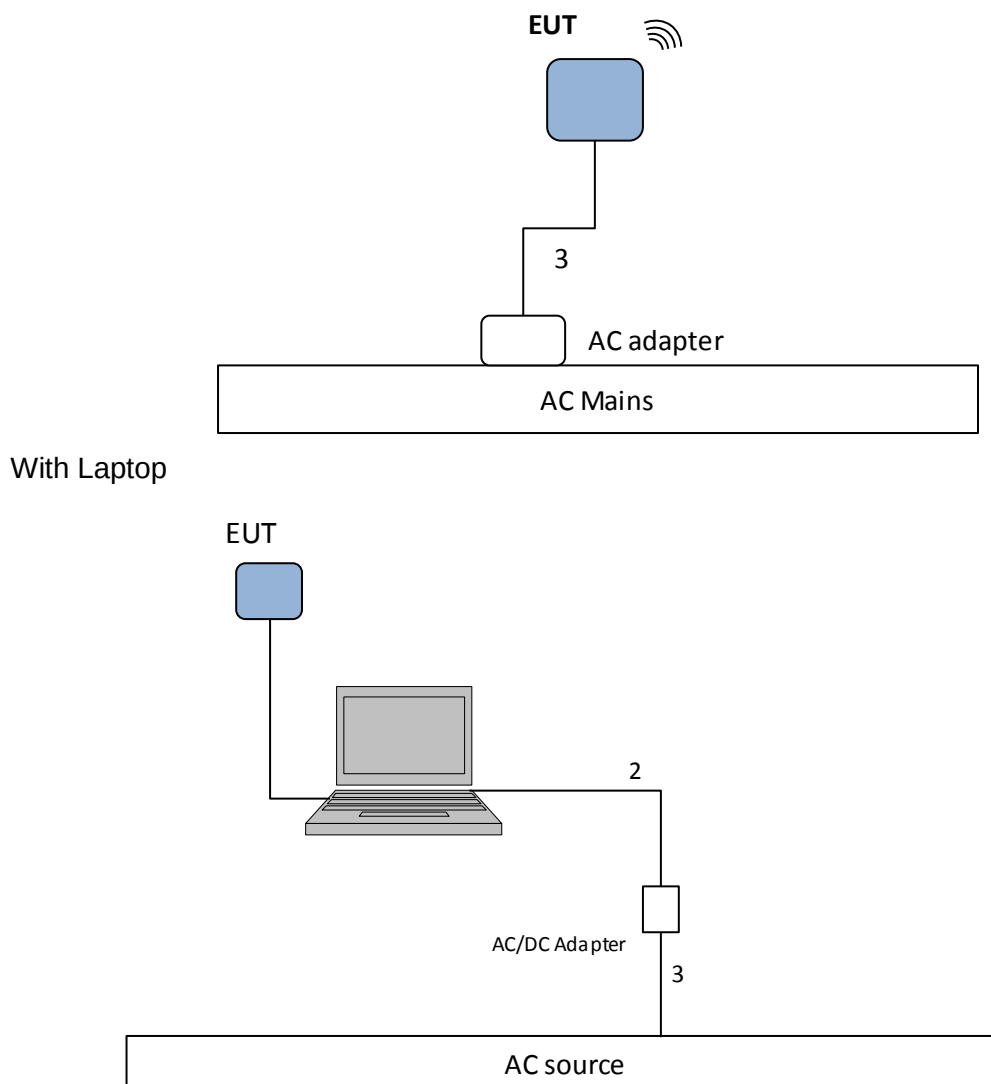
SETUP DIAGRAM FOR TESTS



Radiated Emissions



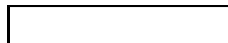
Line Conducted Emissions - Charging



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		
Horn Antenna 1-18 GHz	ETS Lindgren	3117	863	04/14/14	04/14/15
Hybrid Antenna 30 - 2000MHz	Sunol Sciences	JB3	900	05/14/14	03/28/15
3GHz HPF	Micro-Tronics	HPM17543	897	05/13/14	05/13/15
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 PXA 3Hz - 4	Agilent	N9030A	906	05/07/14	05/07/15
Horn Antenna 18-26GHz	ARA	MWH-1826	89	12/17/14	12/17/15
Amplifier 1-26.5GHz	Agilent	8449B	404	03/25/14	03/25/15
Spectrum Analyzer 40GHz	Agilent	8564E	106	08/06/14	08/06/15



7. MEASUREMENT METHODS

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

Output Power: KDB 558074 D01 v03r02, Section 9.1.1.

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.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r02, Section 12.2.

Band-edge: KDB 558074 D01 v03r02, Section 13.3.1.

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

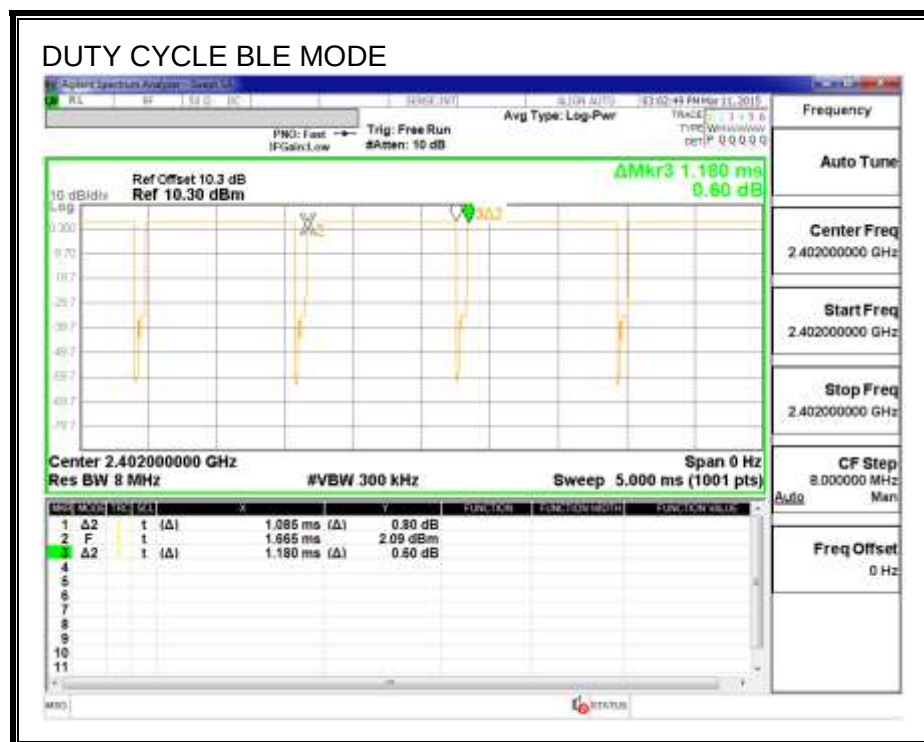
KDB 558074 Zero-Span Spectrum Analyzer Method.

8.1.1. 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)
BLE	1.085	1.180	0.919	91.95%	0.36	0.922

8.1.2. 91.95

8.1.3. 1111DUTY CYCLE PLOTS



8.1.4. 6 dB BANDWIDTH

LIMITS

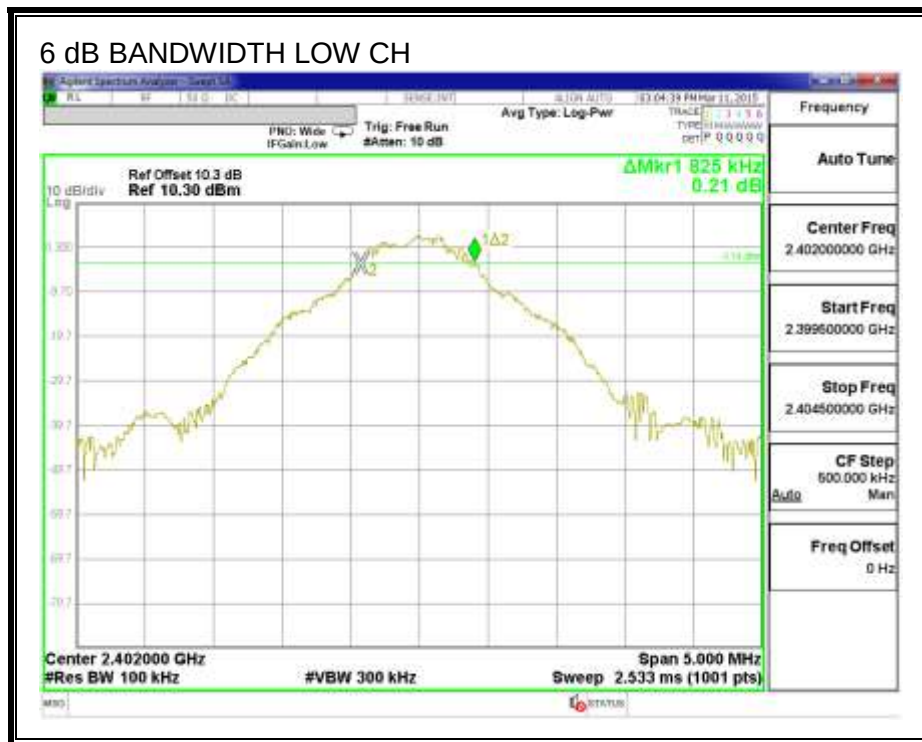
FCC §15.247 (a) (2)

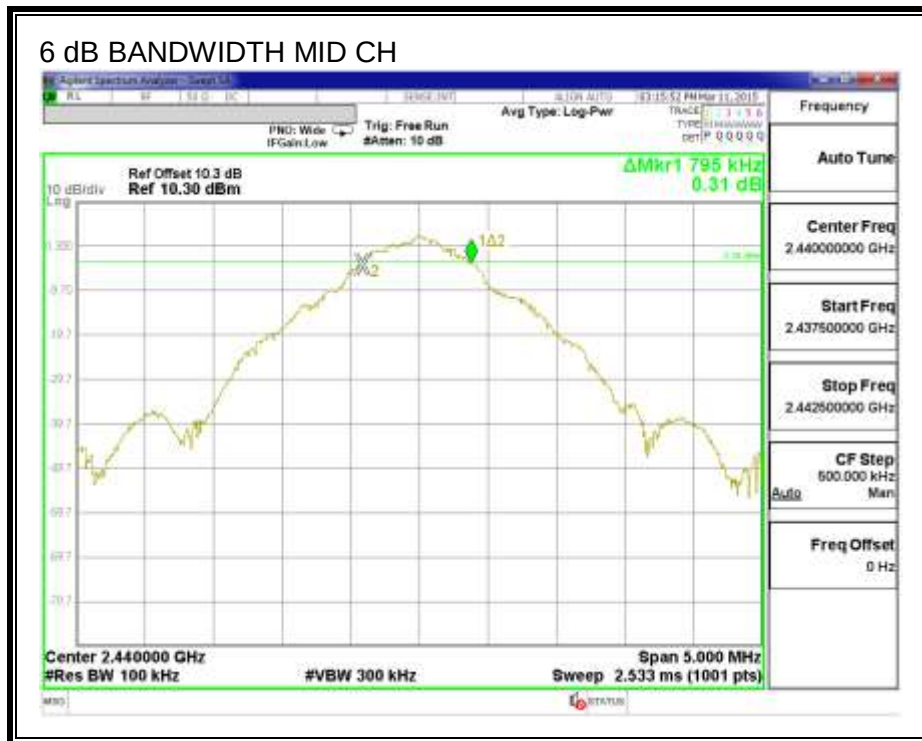
The minimum 6 dB bandwidth shall be at least 500 kHz.

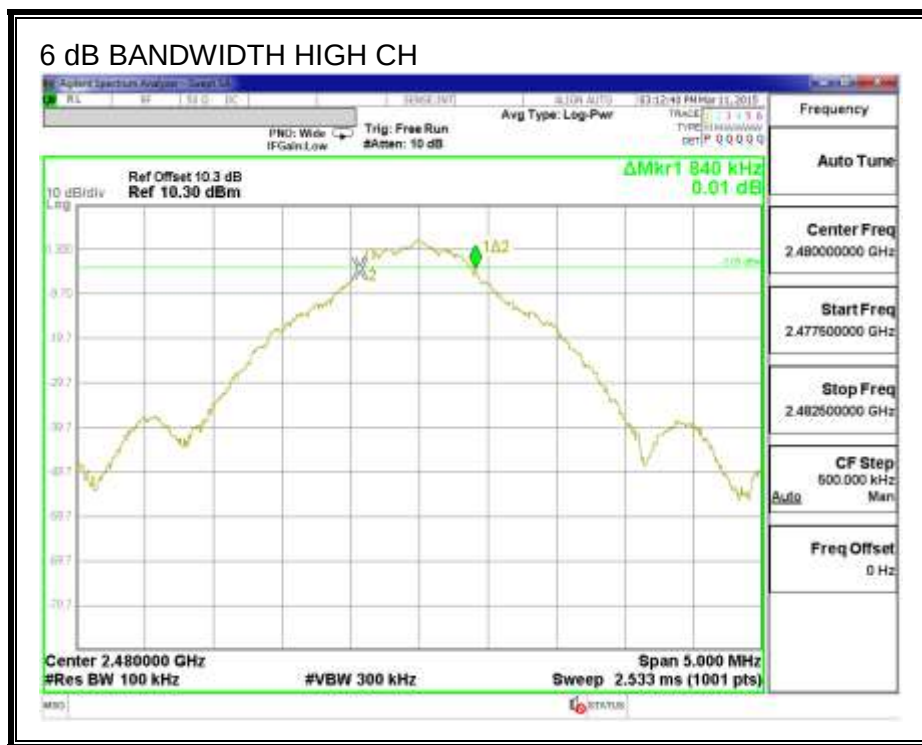
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.8250	0.5
Middle	2440	0.7950	0.5
High	2480	0.8400	0.5

6 dB BANDWIDTH







8.1.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

The cable assembly insertion loss of 10.3 dB (including 10 dB pad and 0.3 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	2.49
Middle	2440	2.23
High	2480	1.83

8.1.6. OUTPUT POWER

LIMITS

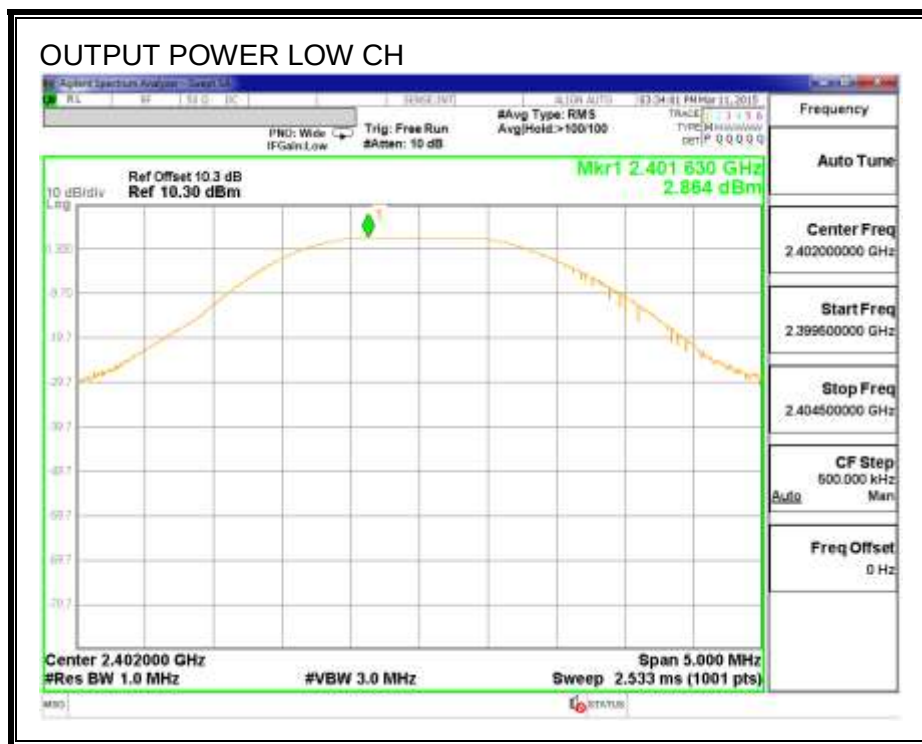
FCC §15.247 (b)

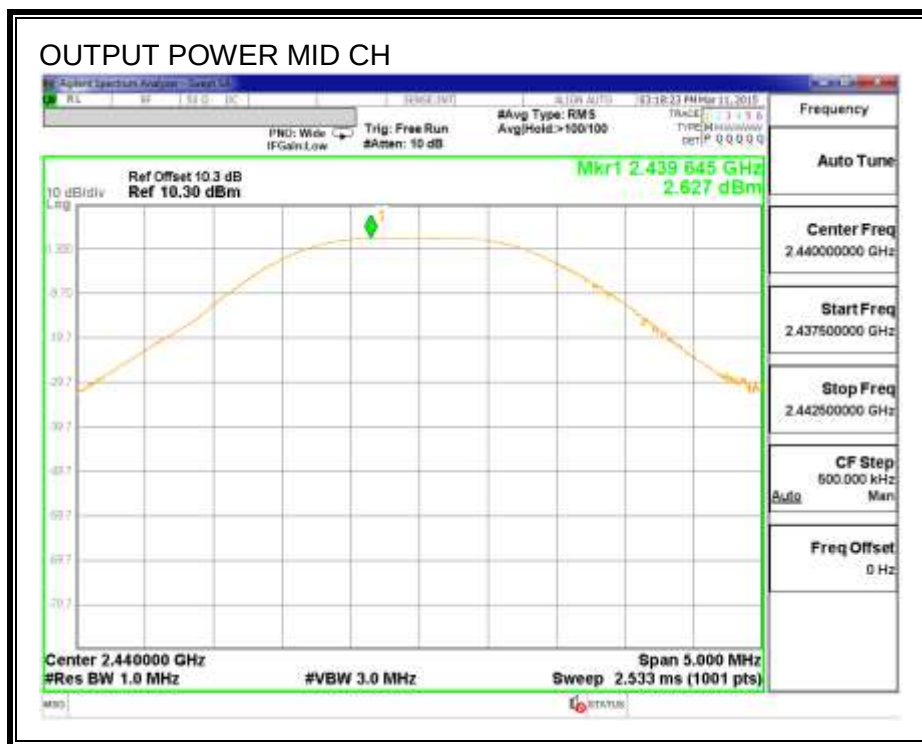
The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

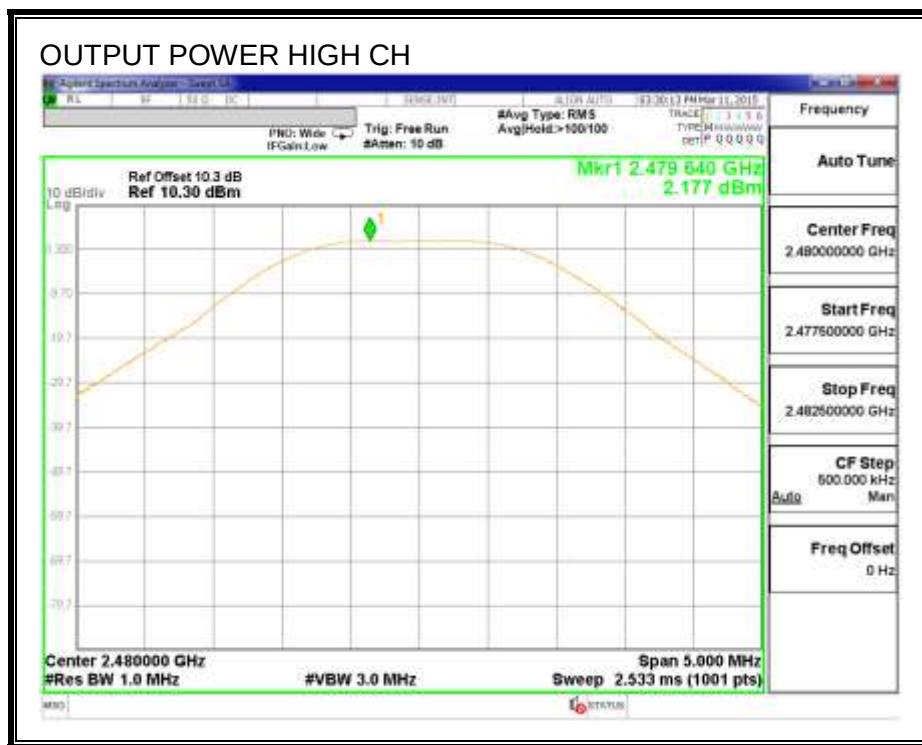
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	2.864	30	-27.136
Middle	2440	2.627	30	-27.373
High	2480	2.177	30	-27.823

OUTPUT POWER







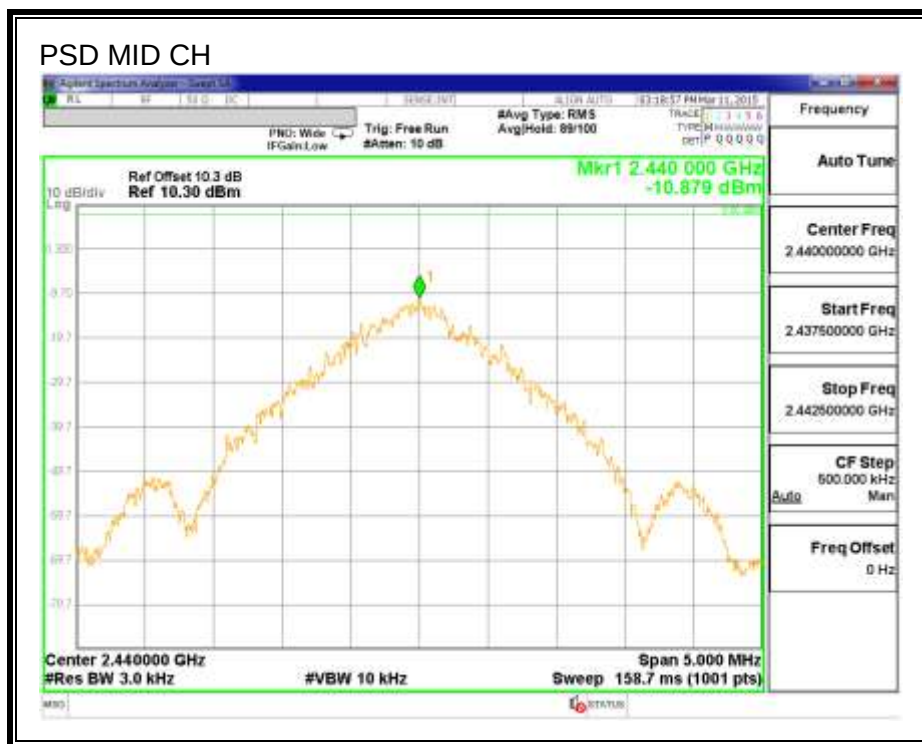
8.1.7. POWER SPECTRAL DENSITY LIMITS

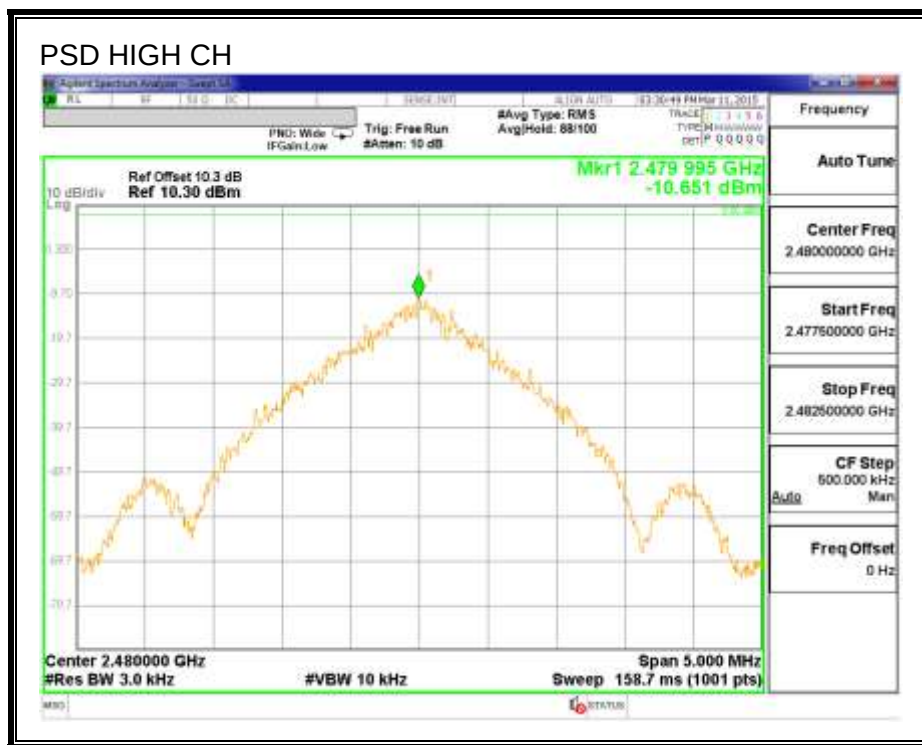
FCC §15.247 (e)

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

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-10.546	8	-18.55
Middle	2440	-10.879	8	-18.88
High	2480	-10.651	8	-18.65





8.1.8. CONDUCTED SPURIOUS EMISSIONS

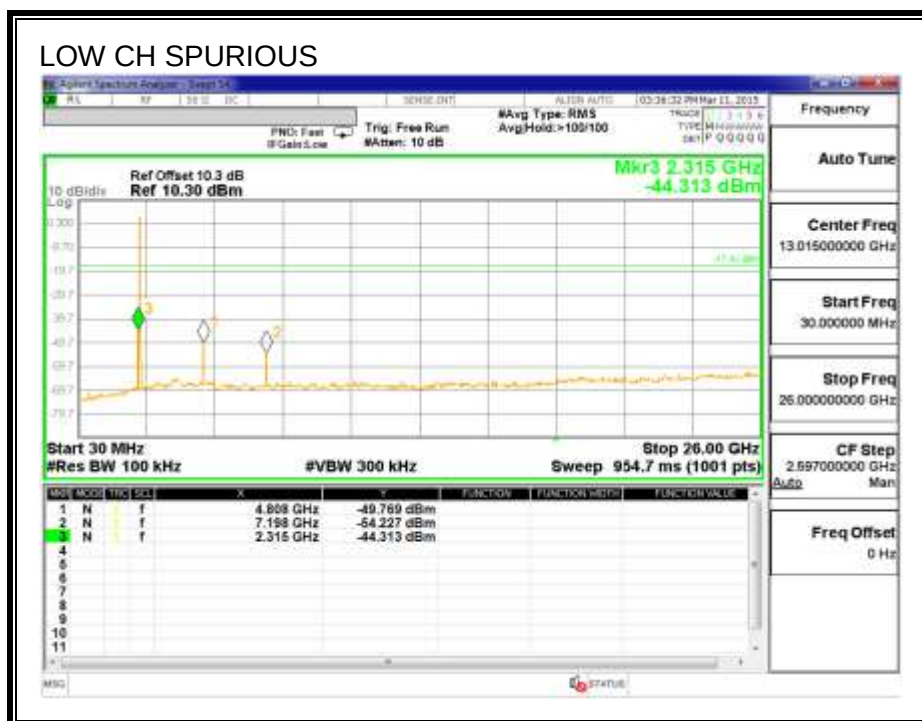
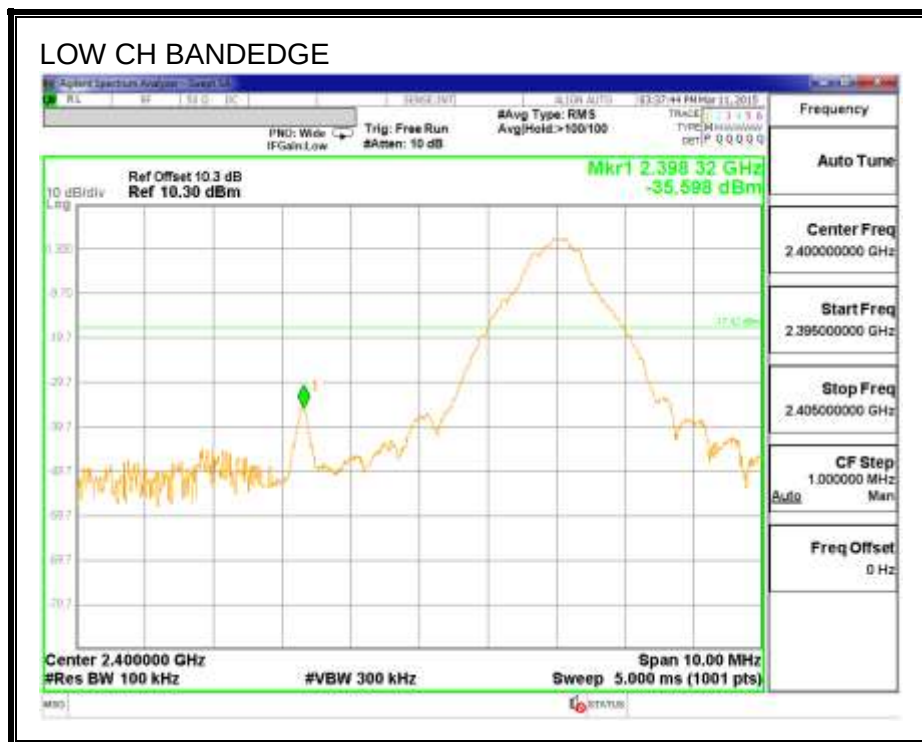
LIMITS

FCC §15.247 (d)

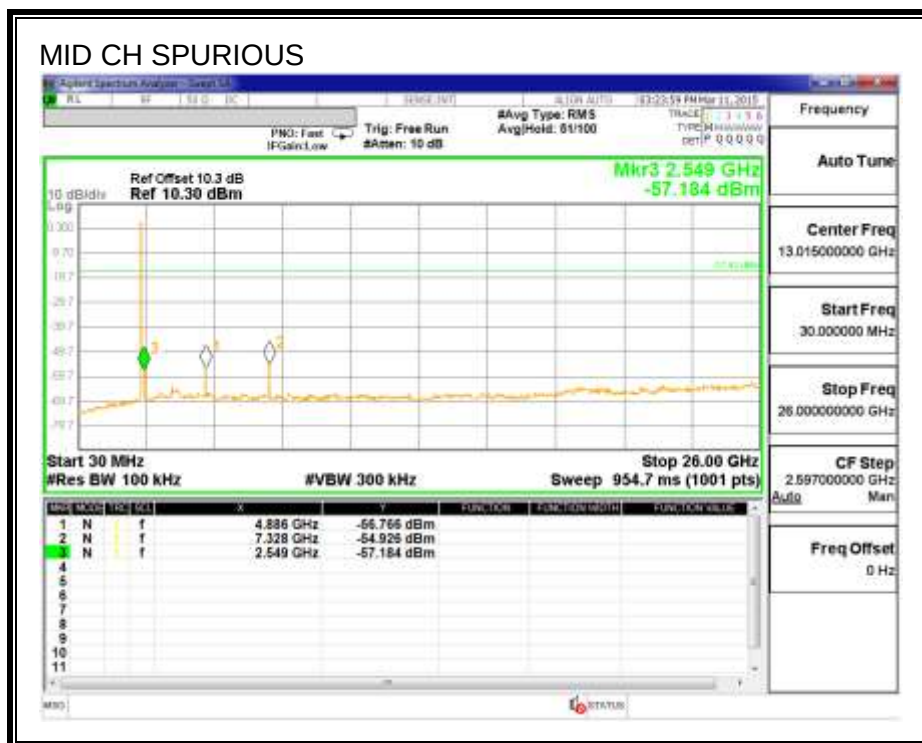
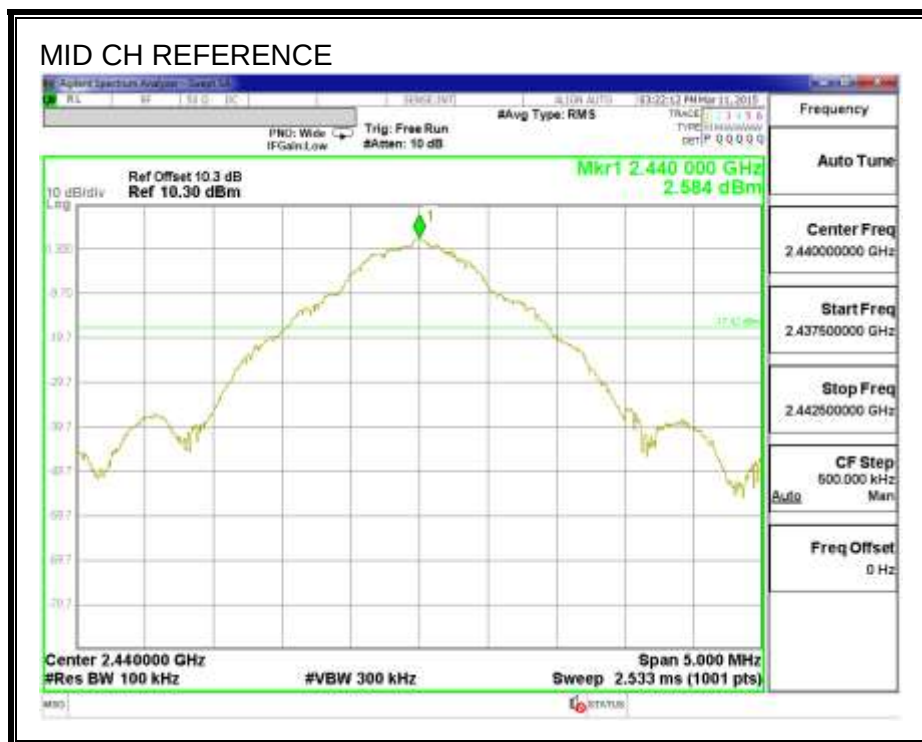
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

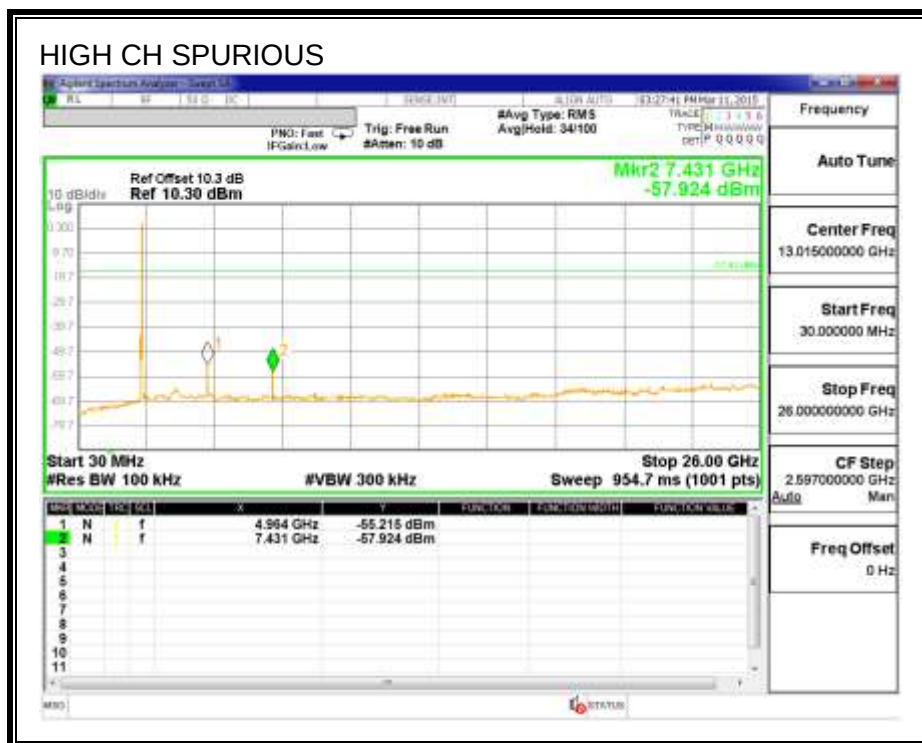
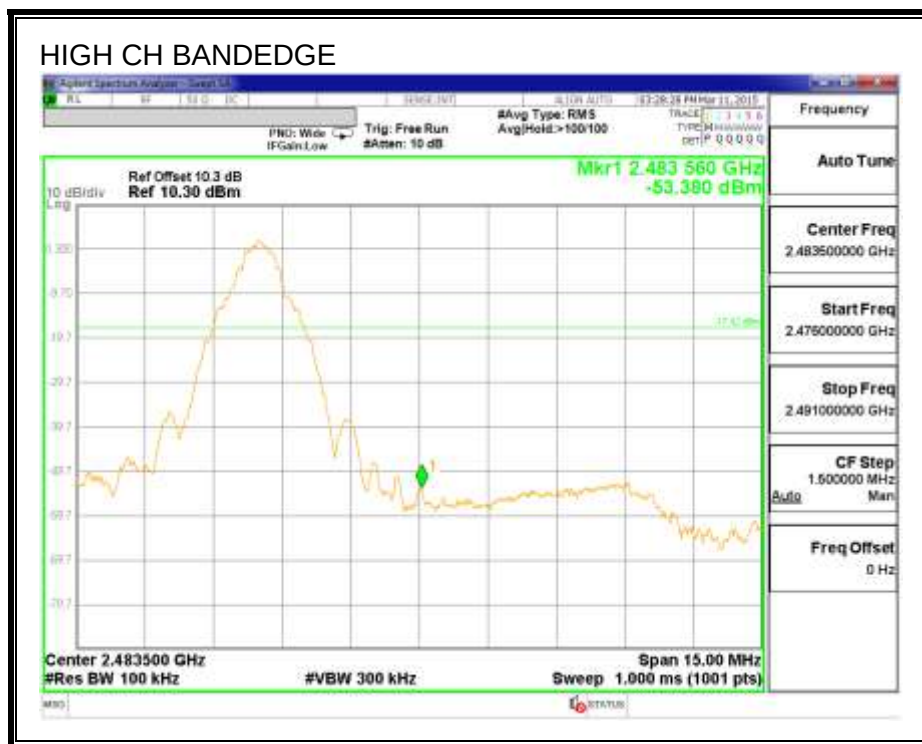
SPURIOUS EMISSIONS, LOW CHANNEL



SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

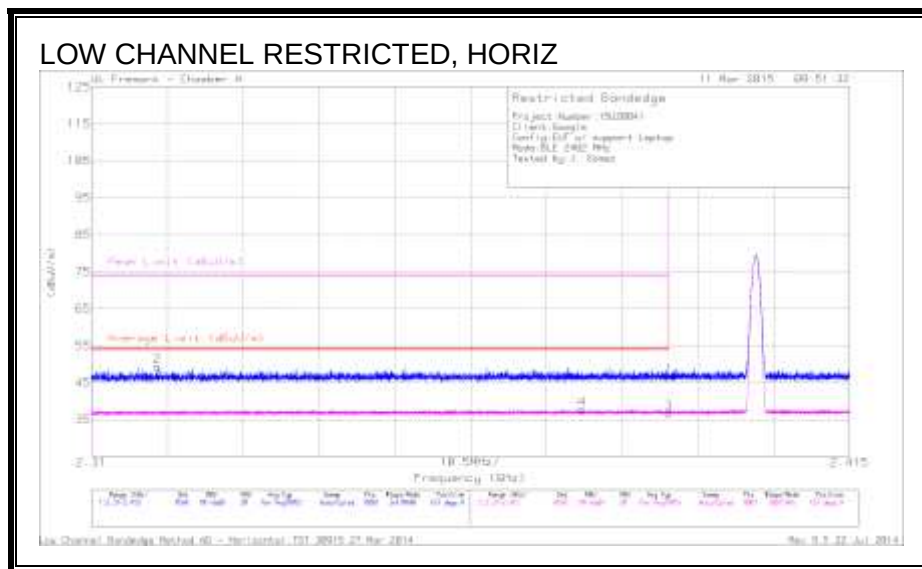
FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit ($\mu\text{V/m}$) at 3 m	Field Strength Limit (dB $\mu\text{V/m}$) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

9.2. TRANSMITTER ABOVE 1 GHz

9.3. TX ABOVE 1 GHz FOR BLUETOOTH LOW ENERGY MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

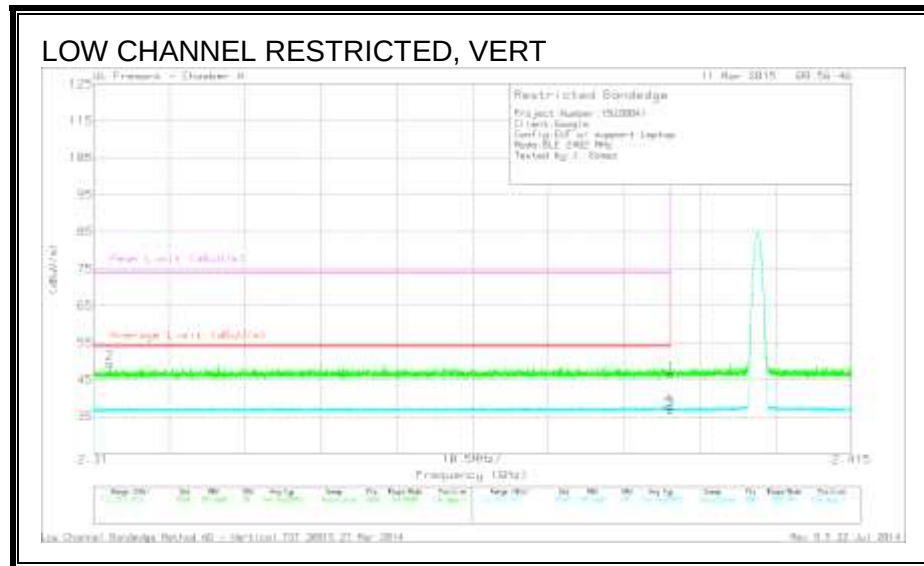


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/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	39.29	PK	32	-24.6	0	46.69	-	-	74	-27.31	167	233	H
2	* 2.319	42.15	PK	31.8	-24.6	0	49.35	-	-	74	-24.65	167	233	H
3	* 2.39	29.36	RMS	32	-24.6	.36	37.12	54	-16.88	-	-	167	233	H
4	* 2.378	30.38	RMS	32	-24.6	.36	38.14	54	-15.86	-	-	167	233	H

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

PK - Peak detector
RMS - RMS detection



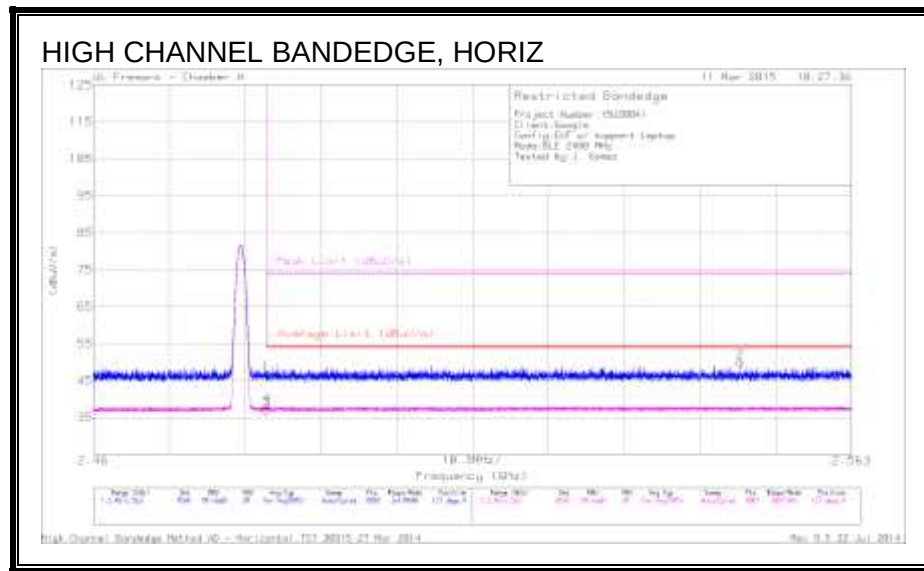
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Filt/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	* 2.312	42.18	PK	31.8	-24.6	0	49.38	-	-	74	-24.62	136	147	V
1	* 2.39	39.24	PK	32	-24.6	0	46.64	-	-	74	-27.36	136	147	V
3	* 2.39	29.43	RMS	32	-24.6	.36	37.19	54	-16.81	-	-	136	147	V
4	* 2.39	30.33	RMS	32	-24.6	.36	38.09	54	-15.91	-	-	136	147	V

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

PK - Peak detector
RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

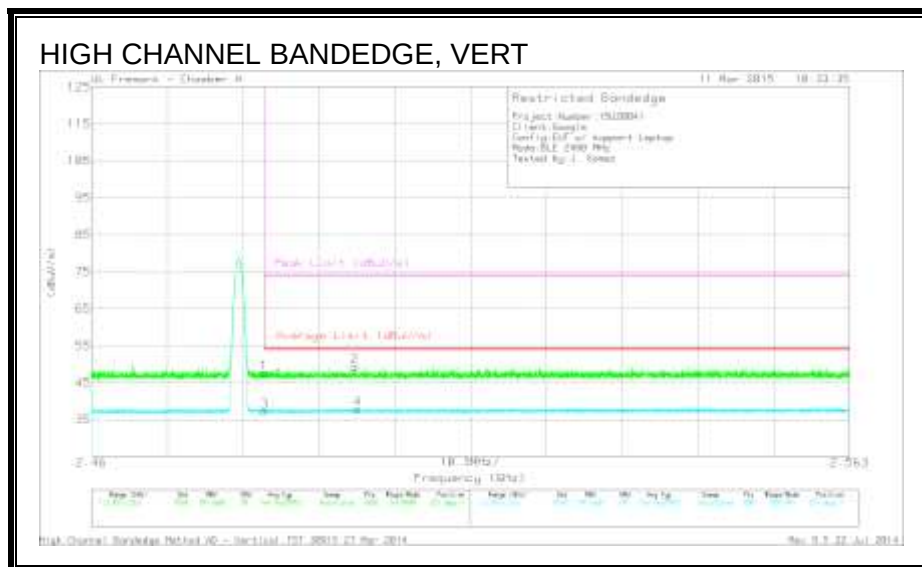


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/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	39.08	PK	32.2	-24.5	0	46.78	-	-	74	-27.22	127	292	H
3	* 2.484	29.38	RMS	32.2	-24.5	.36	37.44	54	-16.56	-	-	127	292	H
4	* 2.484	30.54	RMS	32.2	-24.5	.36	38.6	54	-15.4	-	-	127	292	H
2	2.548	42.13	PK	32.2	-24.3	0	50.03	-	-	74	-23.97	127	292	H

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

PK - Peak detector
RMS - RMS detection



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fitr/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	39.93	PK	32.2	-24.5	0	47.63	-	-	74	-26.37	251	234	V
2	* 2.496	41.66	PK	32.2	-24.5	0	49.36	-	-	74	-24.64	251	234	V
3	* 2.484	29.59	RMS	32.2	-24.5	.36	37.65	54	-16.35	-	-	251	234	V
4	* 2.496	30.28	RMS	32.2	-24.5	.36	38.34	54	-15.66	-	-	251	234	V

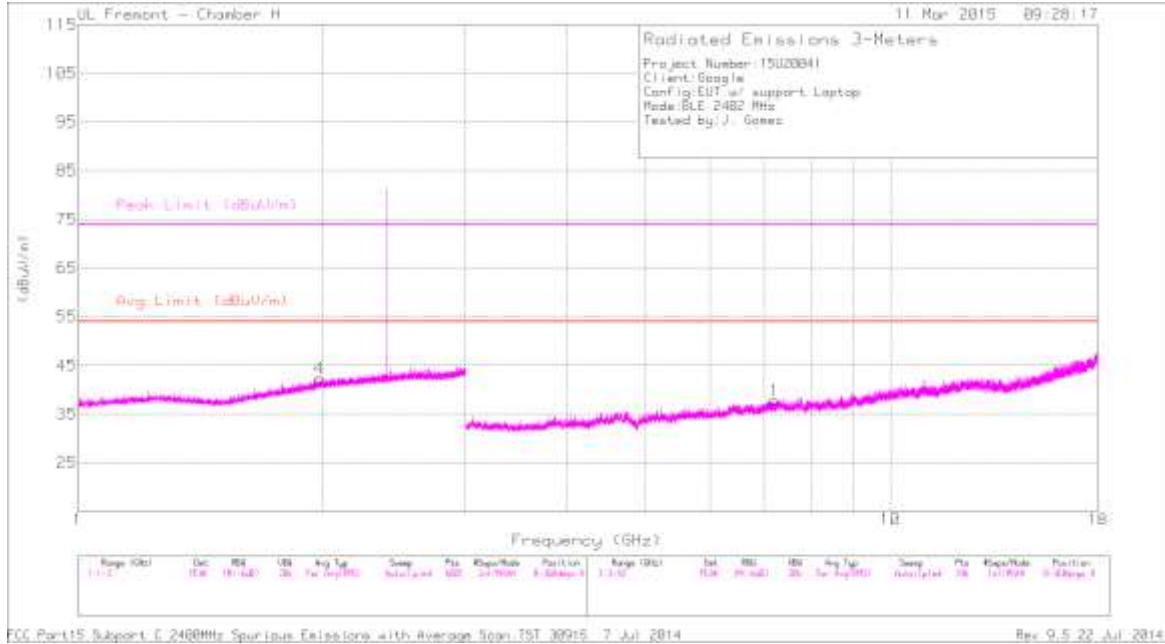
* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector
RMS - RMS detection

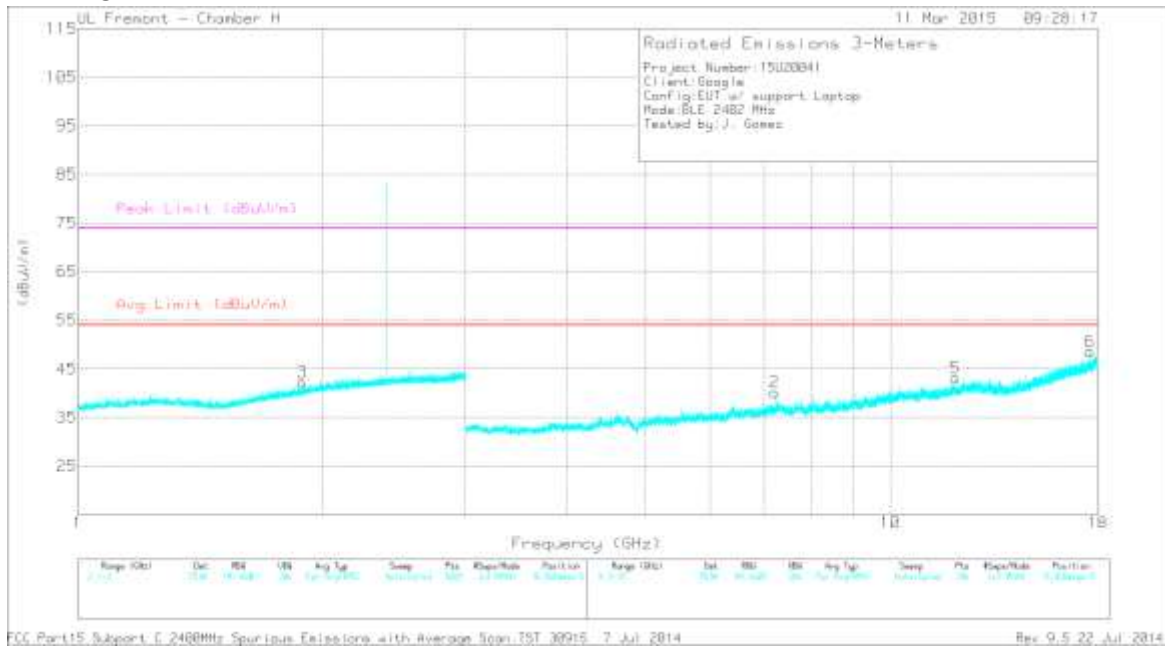
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL

HORIZONTAL



VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	DC Corr (dB)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 12.035	35.93	PK2	38.8	0	-25	49.73	-	-	74	-24.27	45	230	V
	* 12.034	24.05	MAv1	38.8	.36	-24.9	38.31	54	-15.69	-	-	45	230	V
3	1.891	36.93	PK	30.6	0	-25.2	42.33	-	-	-	-	0-360	100	V
4	1.983	36.13	PK	31.2	0	-25	42.33	-	-	-	-	0-360	100	H
1	7.206	32.27	PK	36.1	0	-30.6	37.77	-	-	-	-	0-360	201	H
2	7.206	34.71	PK	36.1	0	-30.6	40.21	-	-	-	-	0-360	201	V
6	17.613	28.28	PK	42.2	0	-21.9	48.58	-	-	-	-	0-360	201	V

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

-Compliance for emissions in non-restricted bands shown in conducted Out Of Band testing

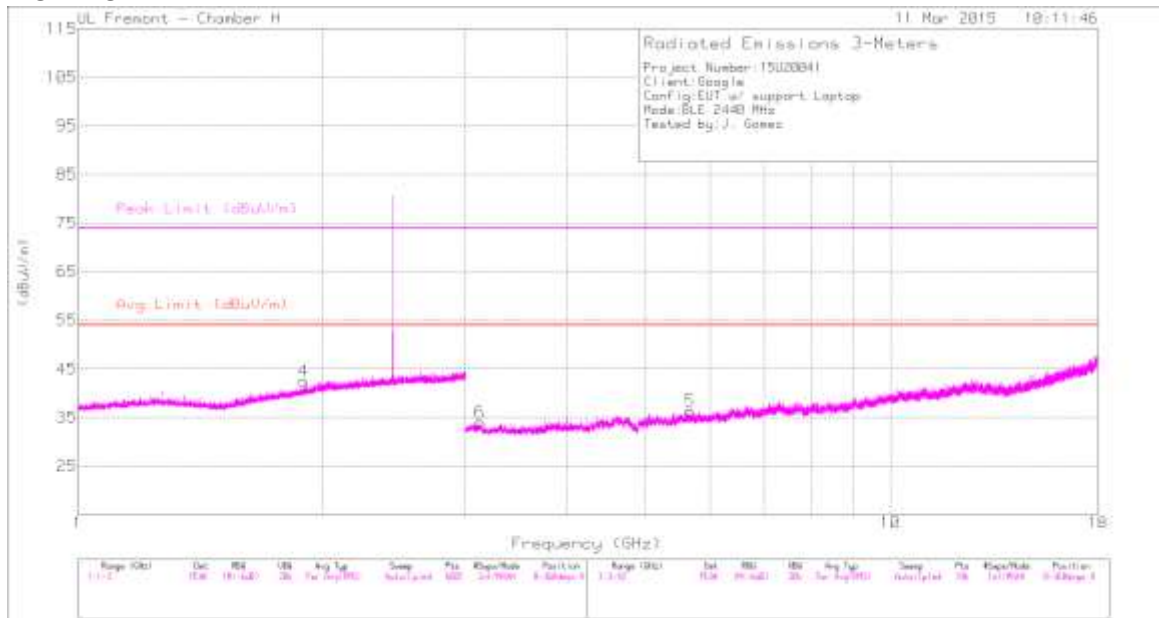
PK - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL

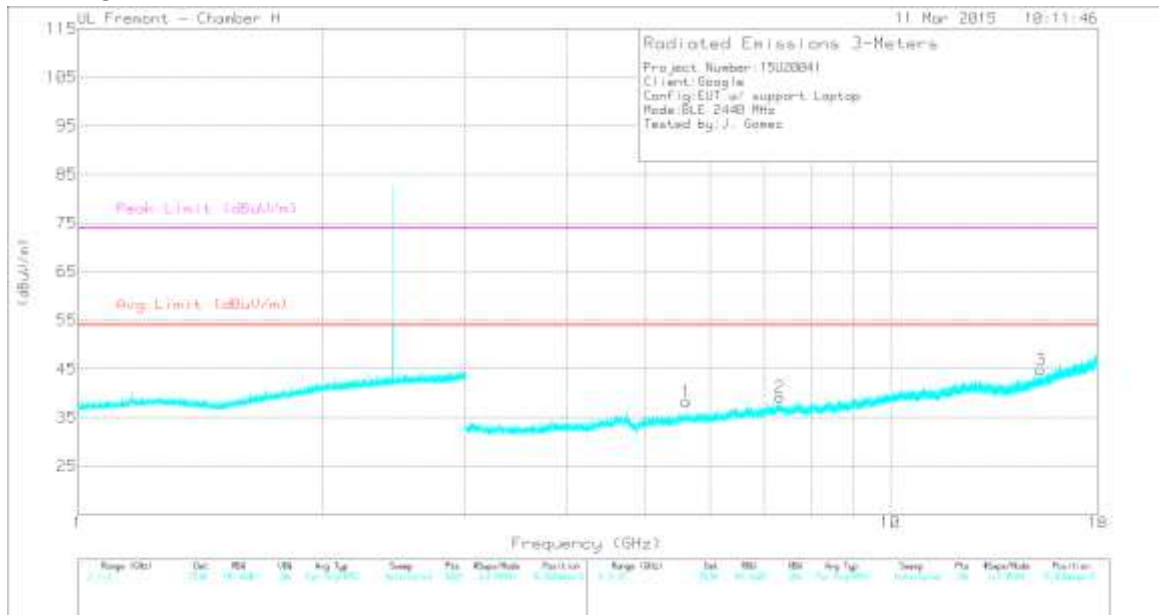
HORIZONTAL



FCC Part 15, Subpart C, 2400MHz Spurious Emissions with Average Span, TST 30915, 7 Jul 2014

Rev 9.5 22 Jul 2014

VERTICAL



FCC Part 15, Subpart C, 2400MHz Spurious Emissions with Average Span, TST 30915, 7 Jul 2014

Rev 9.5 22 Jul 2014

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	DC Corr (dB)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 7.32	40.19	PK2	36.2	0	-28.9	47.49	-	-	74	-26.51	95	118	V
	* 7.32	30.73	MAv1	36.2	.36	-28.9	38.39	54	-15.61	-	-	95	118	V
4	1.898	37.05	PK	30.6	0	-25.1	42.55	-	-	-	-	0-360	100	H
6	3.126	33.67	PK	32.9	0	-32.5	34.07	-	-	-	-	0-360	201	H
1	5.608	35.26	PK	35.1	0	-32.1	38.26	-	-	-	-	0-360	100	V
5	5.673	33.38	PK	35	0	-32	36.38	-	-	-	-	0-360	100	H
3	15.308	29.64	PK	40.9	0	-25.7	44.84	-	-	-	-	0-360	201	V

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

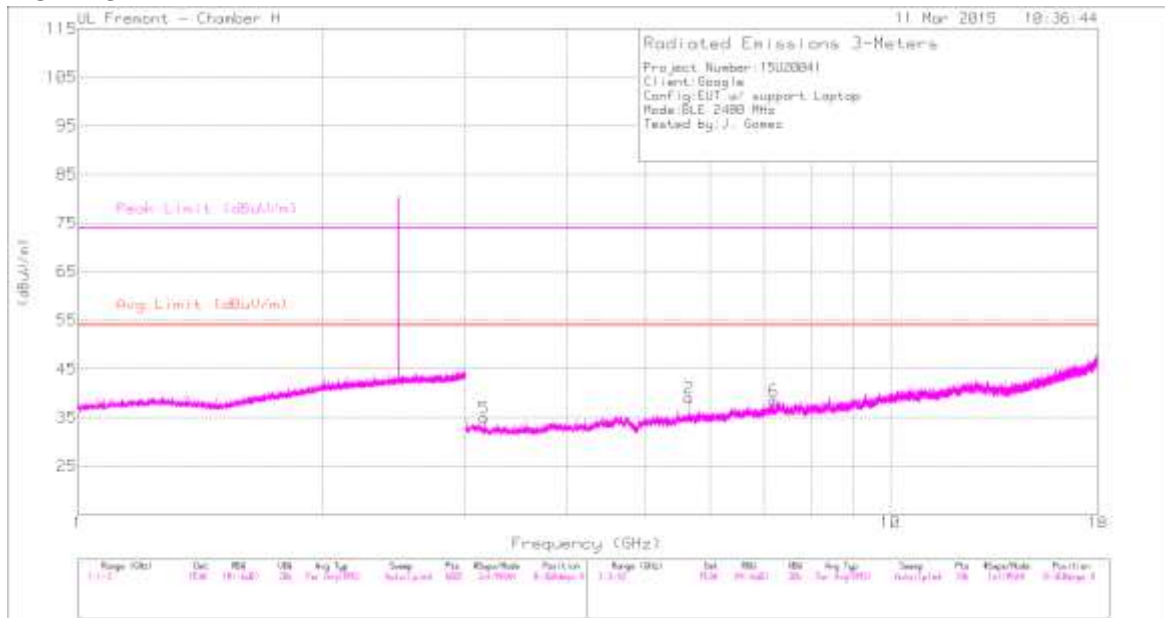
PK - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL

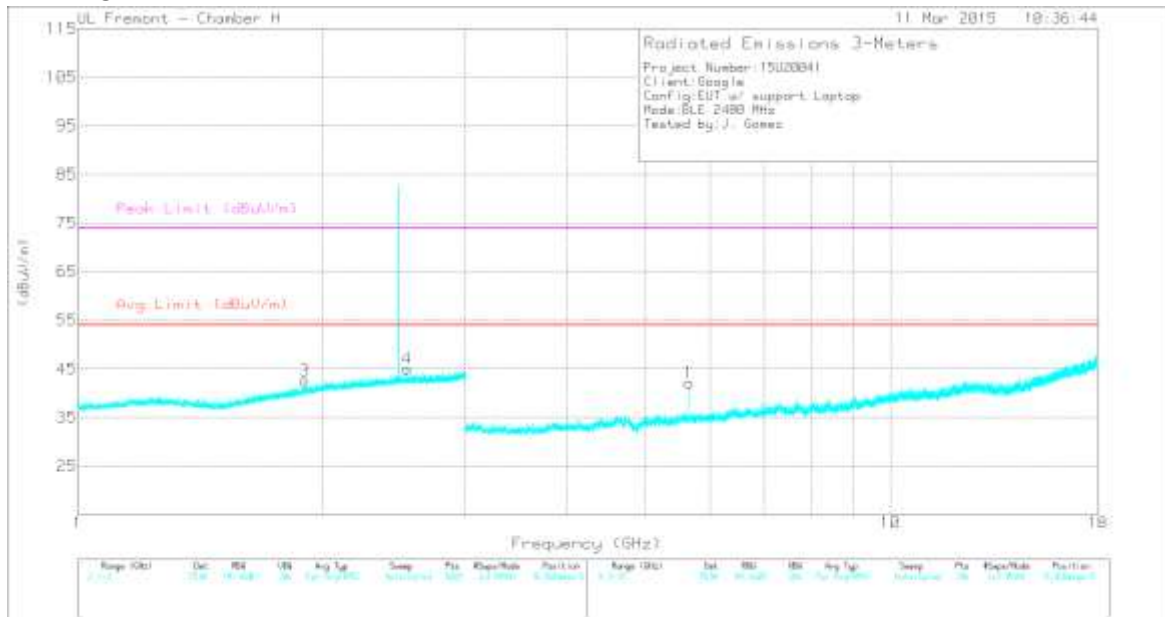
HORIZONTAL



FCC Part 15, Subpart C, 2400MHz Spurious Emissions with Average Span: TST 30915 7 Jul 2014

Rev: 9.5 22 Jul 2014

VERTICAL



FCC Part 15, Subpart C, 2400MHz Spurious Emissions with Average Span: TST 30915 7 Jul 2014

Rev: 9.5 22 Jul 2014

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	1.903	37.08	PK	30.7	-25.1	42.68	-	-	-	-	0-360	201	V
4	2.544	37.29	PK	32.2	-24.4	45.09	-	-	-	-	0-360	100	V
5	3.165	35.15	PK	32.9	-33.1	34.95	-	-	-	-	0-360	100	H
2	5.648	36.25	PK	35	-32.2	39.05	-	-	-	-	0-360	100	H
1	5.648	39.39	PK	35	-32.2	42.19	-	-	-	-	0-360	201	V
6	7.185	32.8	PK	36.1	-30.4	38.5	-	-	-	-	0-360	100	H

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

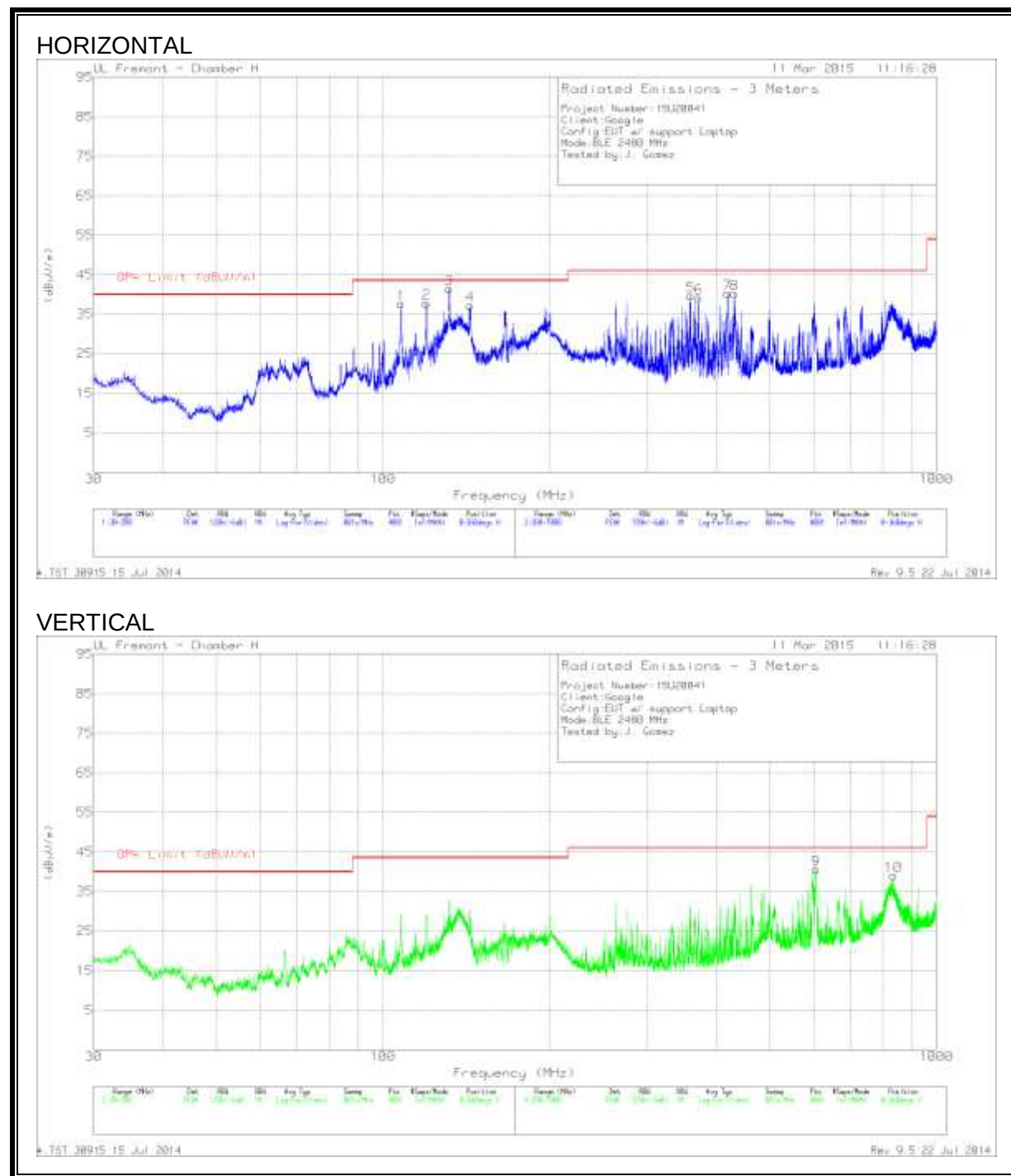
PK - Peak detector

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

9.4. WORST-CASE BELOW 1 GHz

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



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	SS JB3 SN A051314-1	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 119.8925	46.33	QP	16.6	-30.3	32.63	43.52	-10.89	43	193	H
3	* 131.8745	49.55	QP	16.9	-30.2	36.25	43.52	-7.27	38	243	H
1	107.8647	48.31	QP	14.9	-30.4	32.81	43.52	-10.71	40	312	H
4	143.73	51.22	PK	16.2	-30.1	37.32	43.52	-6.2	0-360	201	H
5	359.4	50.85	PK	17.6	-28.8	39.65	46.02	-6.37	0-360	100	H
6	371.7	50.06	PK	17.8	-28.7	39.16	46.02	-6.86	0-360	100	H
7	419.037	44.26	QP	19.2	-28.6	34.86	46.02	-11.16	71	217	H
8	431.1188	45.41	QP	19.4	-28.6	36.21	46.02	-9.81	74	196	H
9	605.4813	43.54	QP	21.6	-28	37.14	46.02	-8.88	337	232	V
10	835.5	41.56	PK	24.6	-27.1	39.06	46.02	-6.96	0-360	99	V

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

PK - Peak detector

QP - Quasi-Peak detector

9.5. WORST-CASE 18 to 26 GHz

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



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	18.087	42.63	PK	32.6	-24.9	-9.5	40.83	54	-13.17	74	-33.17
2	20.551	42.07	PK	33	-23.9	-9.5	41.66	54	-12.34	74	-32.34
3	23.975	43.57	PK	34.2	-22.6	-9.5	45.67	54	-8.33	74	-28.33
4	18.313	41.6	PK	32.5	-24.6	-9.5	40	54	-14	74	-34
5	21.777	41.27	PK	33.6	-23.2	-9.5	42.17	54	-11.83	74	-31.83
6	25.454	44.4	PK	34.6	-22.5	-9.5	47	54	-7	74	-27

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

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
1	.5955	30.43	PK	.3	0	30.73	56	-25.27	46	-15.27
2	.5955	18.25	Av	.3	0	18.55	56	-37.45	46	-27.45
3	6.783	34.8	PK	.2	.1	35.1	60	-24.9	50	-14.9
4	6.783	28.42	Av	.2	.1	28.72	60	-31.28	50	-21.28
5	20.337	20.57	PK	.3	.2	21.07	60	-38.93	50	-28.93
6	20.3415	8.86	Av	.3	.2	9.36	60	-50.64	50	-40.64
7	22.5825	18.26	PK	.3	.2	18.76	60	-41.24	50	-31.24
8	22.5825	1.04	Av	.3	.2	1.54	60	-58.46	50	-48.46

PK - Peak detector

Av - average detection

Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
9	.5955	29.32	PK	.3	0	29.62	56	-26.38	46	-16.38
10	.5955	17.37	Av	.3	0	17.67	56	-38.33	46	-28.33
12	5.271	9.91	Av	.2	.1	10.21	w60	-49.79	50	-39.79
11	5.2845	23.26	PK	.2	.1	23.56	60	-36.44	50	-26.44
13	6.7785	33.97	PK	.2	.1	34.27	60	-25.73	50	-15.73
14	6.7785	21.29	Av	.2	.1	21.59	60	-38.41	50	-28.41
15	13.5645	22.99	PK	.2	.2	23.39	60	-36.61	50	-26.61
16	13.5645	6.26	Av	.2	.2	6.66	60	-53.34	50	-43.34

PK - Peak detector

Av - average detection

LINE 2 RESULTS

