CIIPC TEST REPORT

Report Number. : 11360406-E1V2

Applicant	:	SONOS INC. 614 CHAPALA STREET SANTA BARBARA, CA 93101, U.S.A.
Model	:	PLAY : 1 (Type 1)
FCC ID	:	SBVRM007
IC ID	:	5373A-RM007
EUT Description	:	802.11a/b/g/n 2x2 CLIENT DEVICE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS-247 ISSUE 1 INDUSTRY CANADA RSS-GEN Issue 4

Date of Issue:
10/7/2016

Prepared by:
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NVLAP LAB CODE 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	8/30/16	Initial Issue	D. CORONIA
V2	10/7/16	Updated Section 2.5, 2.6, 3.6 & 5.2.1	D. CORONIA

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONOS, INC.
614 CHAPALA STREET
SANTA BARBARA, CA 93101, U.S.A.

EUT DESCRIPTION: 802.11a/b/g/n 2x2 CLIENT DEVICE

MODEL: PLAY: 1 (TYPE 1)

SERIAL NUMBER: 94-9F-3E-00-03-74-B

DATE TESTED: AUGUST 8 – AUGUST 31, 2016

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 1	Pass
INDUSTRY CANADA RSS-GEN Issue 4	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:

Dan Coronia
Project Lead
UL Verification Services Inc.

Prepared By:

Jonathan Hsu
Lab Engineer
UL Verification Services Inc.

2. SUMMARY OF TESTING

2.1. 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(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☒ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☐ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

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.

2.2. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Refer to original
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Refer to original
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Refer to original
15.247	RSS-247 5.2.2	PSD	<8dBm		Refer to original
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10		Pass
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass

2.3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-247 Issue 1.

2.4. CALIBRATION AND UNCERTAINTY

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.

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

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%.

2.5. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 558074 D01 v03r05, Section 6.

Unwanted emissions in restricted bands: KDB 558074 D01 v03r05, Section 12.0, 12.2.

Unwanted emissions in non-restricted bands: KDB 558074 D01 v03r05, Section 11.1, 11.2, and 11.3

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

2.6. 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 Number**	**Cal Due**
Amplifier, 1 – 18GHz	Miteq	AFS42-00101800-25-S-42	493	03/09/17
Filter, HPF 6HPF	Mictro-tronics	HPS17542	483	03/09/17
Filter, HPF 3GHz	Mictro-tronics	HPM17543	485	03/09/17
Switch Driver	Keysight	11713A	457	NA
Filter, LPF 6GHz	Mictro-tronics	LPS7541	482	03/09/17
Antenna, Horn 1-18GHz	ETS Lindgren	3117	345	03/24/17
Antenna, Horn 18-26.5GHz	Seavey Division	MWH-1826/B	449	05/26/17
Antenna, Active Loop 9kHz to 30MHz	Emco	6502	35	03/24/17
Antenna, Horn 1-18GHz	Emco	3115	59	11/18/16
Controller	Sunol Sciences	SC110V	1290	NA
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB1	130	09/01/16
Amplifier, 10kHz to 1GHz, 32dB	Keysight	8447D	10	02/01/17
Amplifier, 1GHz to 8GHz, 35dB	Miteq	AMF-4D-01000800-30-29P	1156	03/09/17
Amplifier, 1GHz to 26.5GHz, 23.5dB	Agilent	8449B	404	07/05/17
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	907	01/06/17

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2016
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
Antenna Port Software	UL	UL RF	Ver 5.1.1, July 15, 2016

3. EQUIPMENT UNDER TEST

3.1. MAXIMUM OUTPUT POWER

Please refer to report, UL 13U14836-1B.
The output powers were verified and measured at same or lower power setting compared to the original certification testing level.

3.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes right and left dipole PCB antennas, with a maximum gain as below:

Frequency (MHz)	Max. Peak Gain with Cable Loss (dBi) (Main-Right Antenna)	Max. Peak Gain with Cable Loss (dBi) (Aux-Left Antenna)
2400-2483.5	2.85	3.09

3.3. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Atheros Radio Test 2 (ART2-GUI).

3.4. WORST-CASE CONFIGURATION AND MODE

Above 1GHz Low/Middle/High channel were tested for radiated emissions. Below 1GHz, above 18GHz and conducted power line emissions, the channel with the highest output power was tested.

The EUT is for desktop applications; all radiated testing was performed with EUT laid out in desktop configuration.

Power was measured at same or lower power setting compared to the original certification testing level; thus, the Conducted Bandedge, Conducted Spurious Emission, PSD measurement were not performed for these band. Please refer to UL reports: 13U14836-1B for detail.

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

802.11b mode: 11 Mbps
802.11g mode: 24 Mbps (16 QAM)
802.11n HT20mode: 26 Mbps (QPSK, MCS9)

The EUT was placed on normal orientation, standing position and all radiated emissions were performed with the EUT as shown on the setup photo.

3.5. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The purpose of this C2PC: Front end module changed (i.e. LAN, PA and Tx/Rx switch).

3.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	**Manufacturer**	**Model**	**Serial Number**
Laptop	Lenovo	X200	R9-0YM4F
AC/DC Adapter	Lenovo	ADLX90NCT2A	11S45N0311Z1ZLZ632KDK

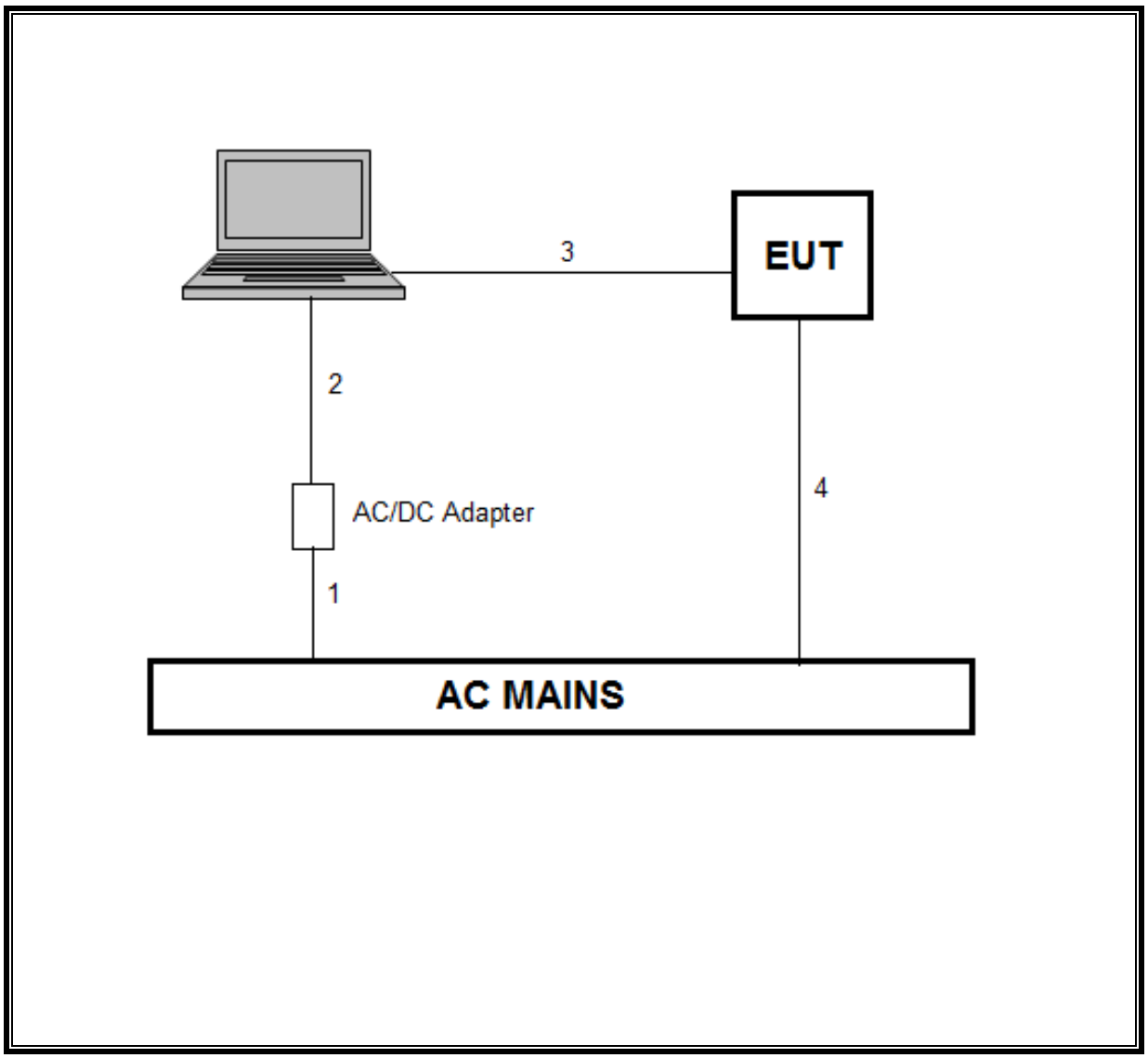
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC Power	1	AC	Unsheilded	1	AC Mains to AC/DC Adapter
2	DC Power	1	DC	Sheilded	1.2	AC/DC Adapter to Laptop
3	Ethernet	1	RJ45	Unsheilded	1.5	Laptop to EUT
4	AC Power	1	AC	Unsheilded	1.2	AC Mains to EUT

TEST SETUP

The EUT and the support laptop were connected during the tests. A command prompt was used to select channels and power settings from a list of commands to exercise the radio card.

SETUP DIAGRAM FOR TESTS



4. ANTENNA PORT TEST RESULTS

4.1. ON TIME, DUTY CYCLE

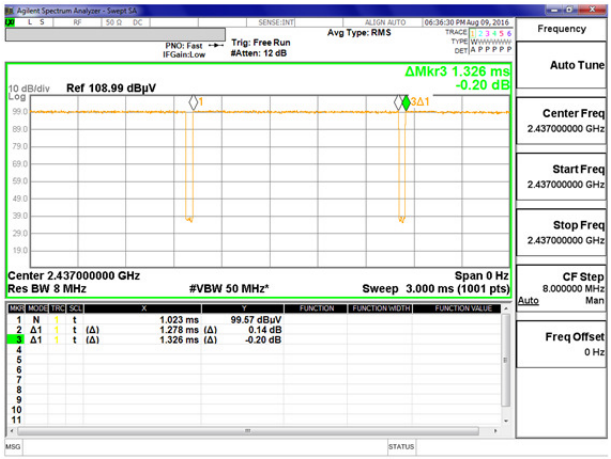
LIMITS

None; for reporting purposes only.

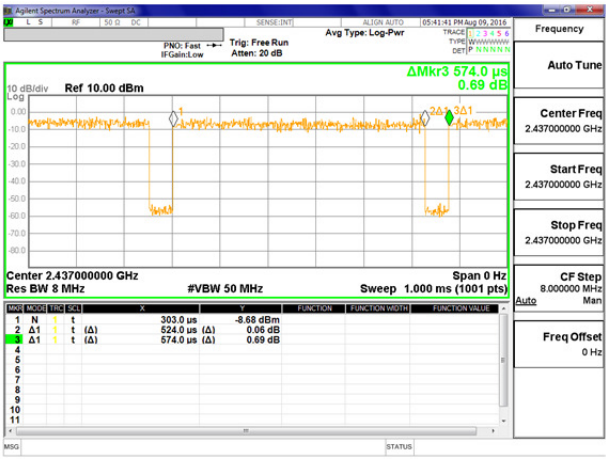
ON TIME AND DUTY CYCLE RESULTS

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	1.278	1.326	0.964	96.38%	0.16	0.782
802.11g 1TX	0.524	0.574	0.913	91.29%	0.40	1.908
802.11n HT20 1TX	0.504	0.555	0.908	90.77%	0.42	1.986

DUTY CYCLE PLOTS



11b Duty Cycle



11g Duty Cycle

11n HT20 Duty Cycle

ID:	44350	Date:	8/9/2016

4.2. OUTPUT POWER

LIMITS

FCC §15.247 (b)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. The total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi.

IC RSS-247 5.4.4

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. Except as provided in Section 5.4(5), the e.i.r.p. shall not exceed 4 W.

Results

Please refer to report, UL 13U14836-1B.

5. RADIATED TEST RESULTS

5.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300m	2400/F(kHz) @ 300m
0.490-1.705	24000/F(kHz) @ 30m	24000/F(kHz) @ 30m
1.705-30.0	30 @ 30m	30 @ 30m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE: KDB 937606 OATS and Chamber Correlation Justification

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. 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 add duty cycle factor for average measurements.
Note: The pre-scan measurements above 1GHz the VBW is set to 30 kHz.

The spectrum from 9 kHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

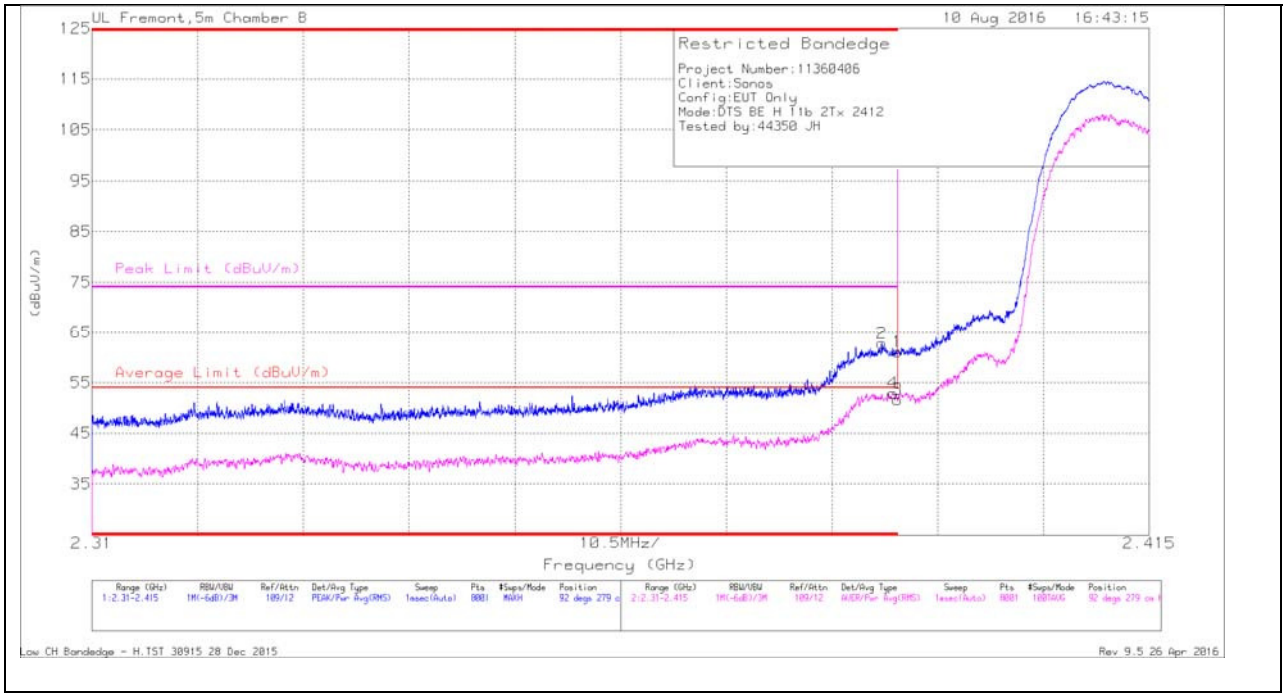
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

5.2. TRANSMITTER ABOVE 1 GHz

5.2.1. TX ABOVE 1 GHz 802.11b MODE

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULTS

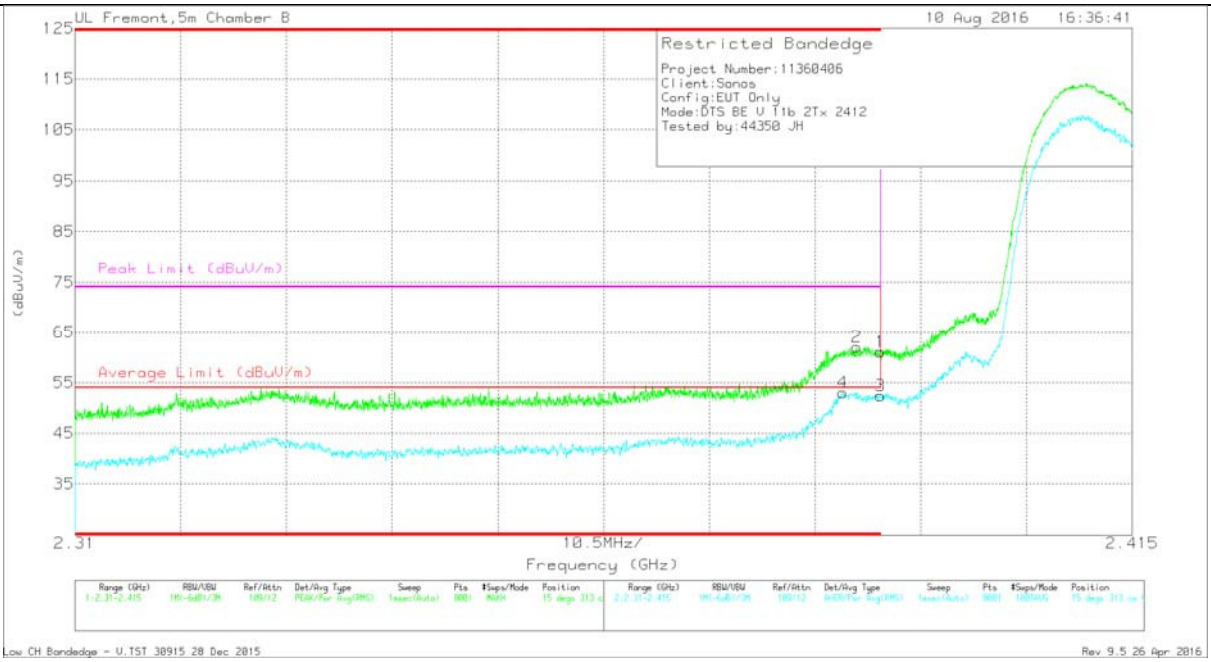


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	51.26	Pk	32.1	-22.3	0	61.06	-	-	74	-12.94	92	279	H
2	* 2.388	53.09	Pk	32.1	-22.4	0	62.79	-	-	74	-11.21	92	279	H
3	* 2.39	41.69	RMS	32.1	-22.3	.16	51.65	54	-2.35	-	-	92	279	H
4	* 2.39	42.95	RMS	32.1	-22.3	.16	52.91	54	-1.09	-	-	92	279	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULTS



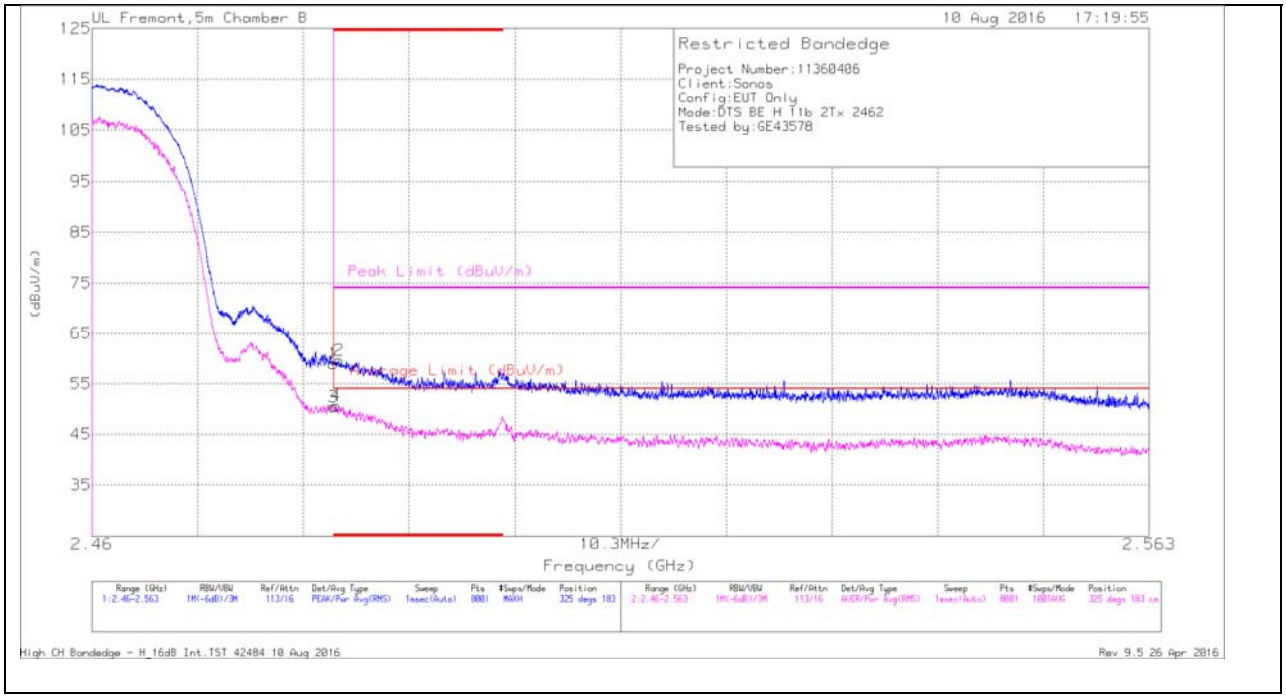
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	51.34	Pk	32.1	-22.3	0	61.14	-	-	74	-12.86	15	313	V
2	* 2.388	52.41	Pk	32.1	-22.4	0	62.11	-	-	74	-11.89	15	313	V
3	* 2.39	42.4	RMS	32.1	-22.3	.16	52.36	54	-1.64	-	-	15	313	V
4	* 2.386	43.17	RMS	32.1	-22.4	.16	53.03	54	-.97	-	-	15	313	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULTS

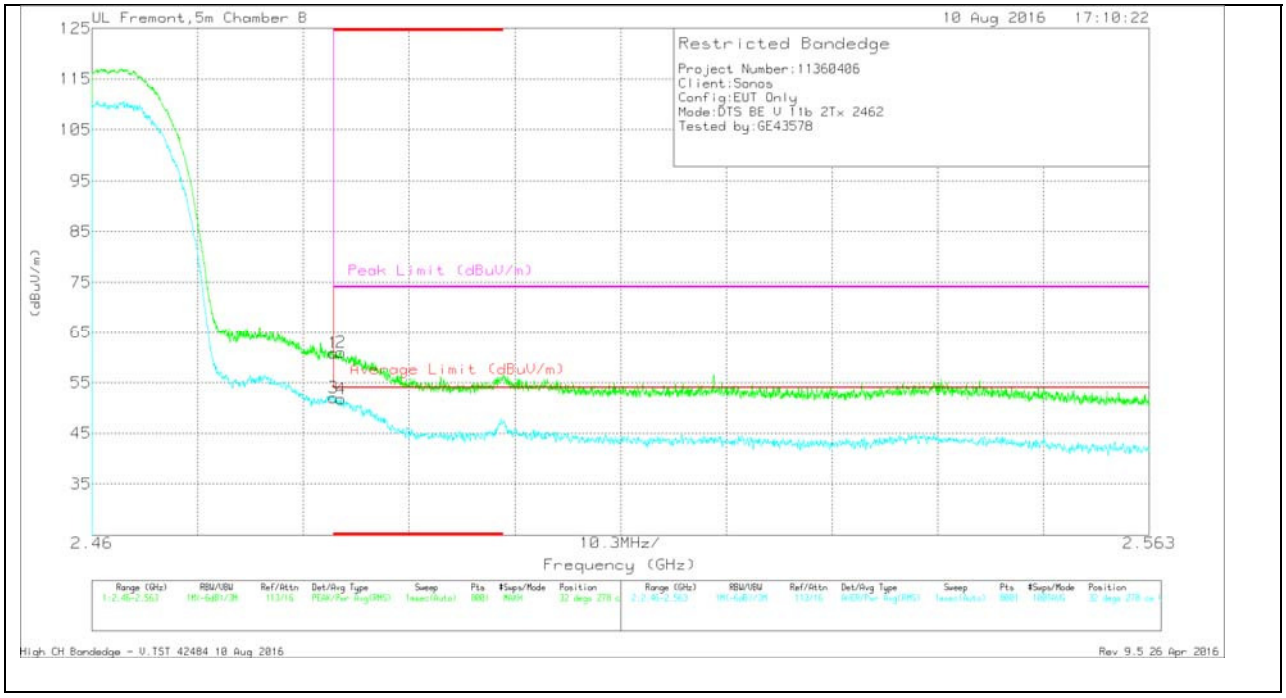


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	48.99	Pk	32.3	-22.3	0	58.99	-	-	74	-15.01	325	183	H
2	* 2.484	49.6	Pk	32.3	-22.3	0	59.6	-	-	74	-14.4	325	183	H
3	* 2.484	40.27	RMS	32.3	-22.3	.16	50.43	54	-3.57	-	-	325	183	H
4	* 2.484	40.52	RMS	32.3	-22.3	.16	50.68	54	-3.32	-	-	325	183	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULTS



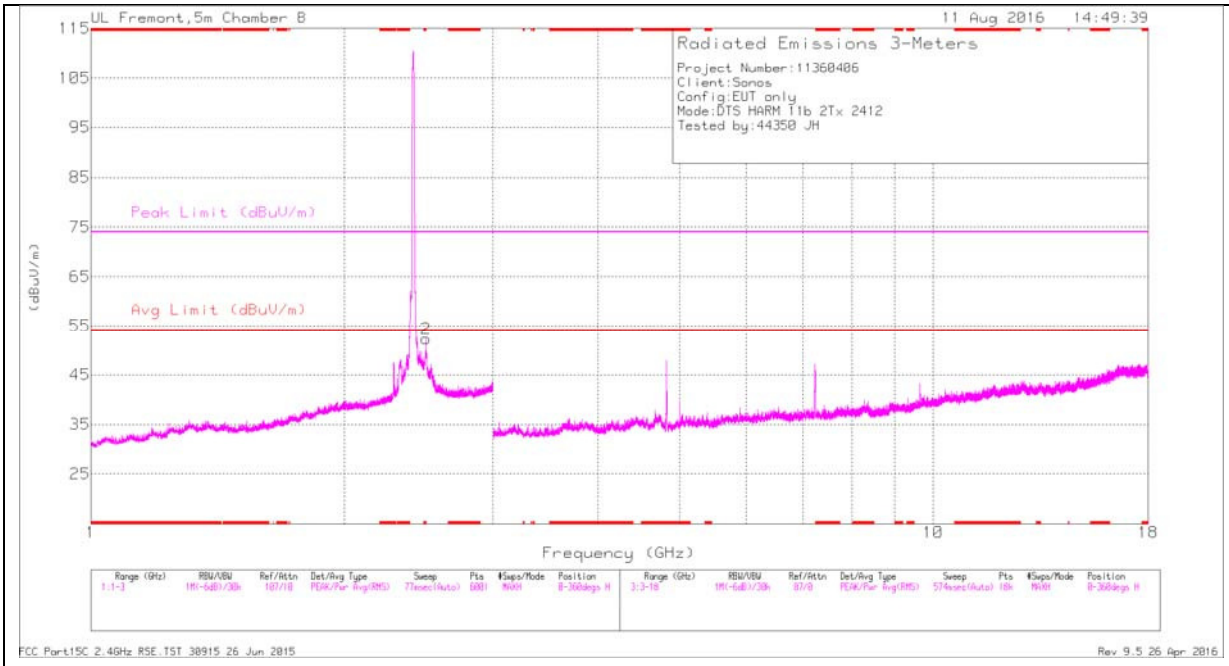
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	50.87	Pk	32.3	-22.3	0	60.87	-	-	74	-13.13	32	278	V
2	* 2.484	50.98	Pk	32.3	-22.3	0	60.98	-	-	74	-13.02	32	278	V
3	* 2.484	41.89	RMS	32.3	-22.3	.16	52.05	54	-1.95	-	-	32	278	V
4	* 2.484	41.61	RMS	32.3	-22.3	.16	51.77	54	-2.23	-	-	32	278	V

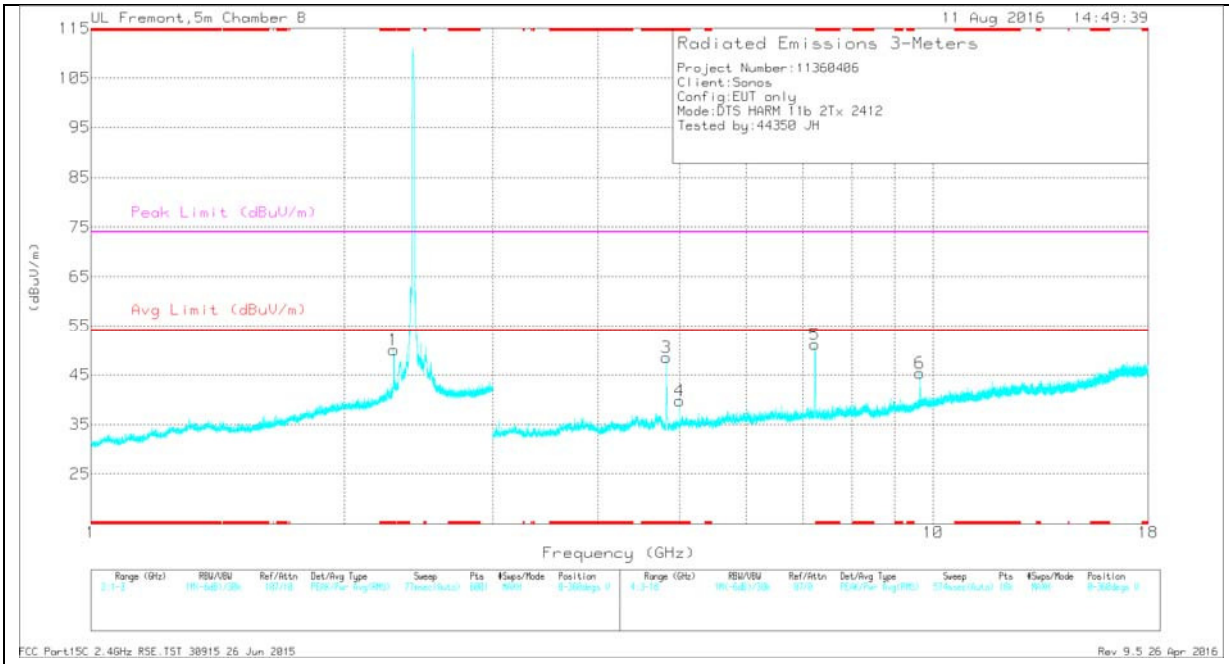
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2	* 2.5	42.38	Pk	32.3	-22.3	0	52.38	-	-	74	-21.62	0-360	199	H
1	* 2.288	40.74	Pk	31.5	-22.2	0	50.04	-	-	74	-23.96	0-360	199	V
3	* 4.824	46.51	Pk	33.8	-31.8	0	48.51	-	-	74	-25.49	0-360	199	V
4	* 5	37.12	Pk	34.1	-31.4	0	39.82	-	-	74	-34.18	0-360	101	V
5	7.236	45.7	Pk	35.6	-30.1	0	51.2	-	-	-	-	0-360	199	V
6	9.647	35.33	Pk	36.8	-26.8	0	45.33	-	-	-	-	0-360	101	V

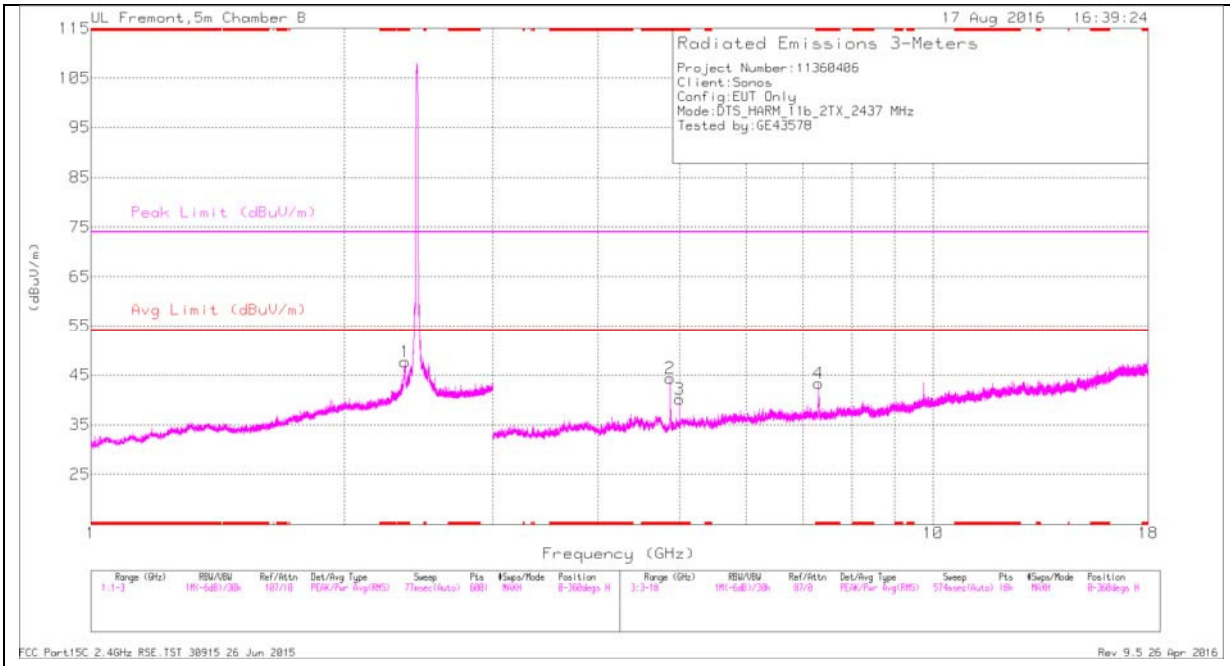
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

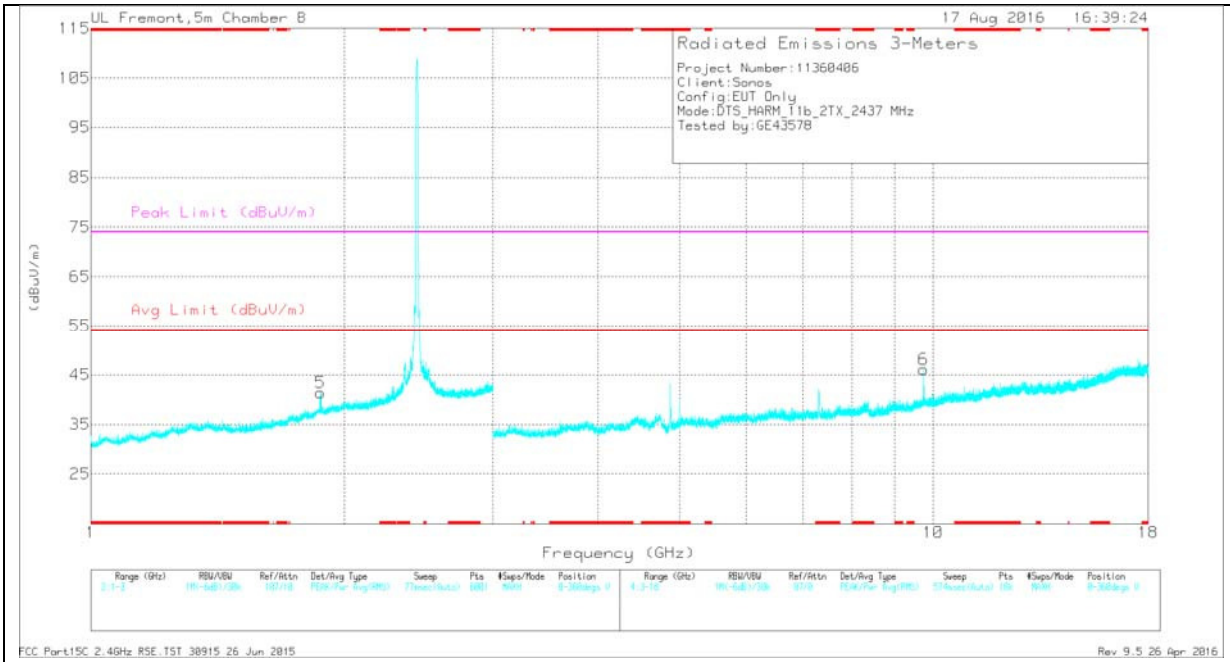
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.5	48.79	PK2	32.3	-22.2	0	58.89	-	-	74	-15.11	324	224	H
* 2.5	40.02	MAv1	32.3	-22.2	.16	50.28	54	-3.72	-	-	324	224	H
* 2.288	46.56	PK2	31.5	-22.2	0	55.86	-	-	74	-18.14	360	264	V
* 2.288	38.39	MAv1	31.5	-22.2	.16	47.85	54	-6.15	-	-	360	264	V
* 4.824	49.87	PK2	33.8	-31.8	0	51.87	-	-	74	-22.13	50	305	V
* 4.824	41.8	MAv1	33.8	-31.8	.16	43.96	54	-10.04	-	-	50	305	V
* 5	42.24	PK2	34.1	-31.4	0	44.94	-	-	74	-29.06	183	103	V
* 5	35.66	MAv1	34.1	-31.4	.16	38.52	54	-15.48	-	-	183	103	V
2.51	49.11	PK2	32.3	-22.2	0	59.21	-	-	-	-	324	224	H
2.51	40.36	MAv1	32.3	-22.2	.16	50.62	-	-	-	-	324	224	H
7.238	49.9	PK2	35.6	-30.1	0	55.4	-	-	-	-	31	197	V
7.239	40.78	MAv1	35.6	-30.1	.16	46.44	-	-	-	-	31	197	V
9.648	39.65	PK2	36.8	-26.8	0	49.65	-	-	-	-	43	101	V
9.648	34.12	MAv1	36.8	-26.8	.16	44.28	-	-	-	-	43	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.36	38.01	Pk	31.9	-22.3	0	47.61	-	-	74	-26.39	0-360	199	H
2	* 4.874	43.24	Pk	33.8	-32.7	0	44.34	-	-	74	-29.66	0-360	101	H
3	* 5	37.5	Pk	34.1	-31.4	0	40.2	-	-	74	-33.8	0-360	101	H
4	* 7.31	38.19	Pk	35.6	-30.5	0	43.29	-	-	74	-30.71	0-360	101	H
5	1.872	32.57	Pk	30.6	-21.8	0	41.37	-	-	-	-	0-360	101	V
6	9.748	35.67	Pk	36.9	-26.5	0	46.07	-	-	-	-	0-360	101	V

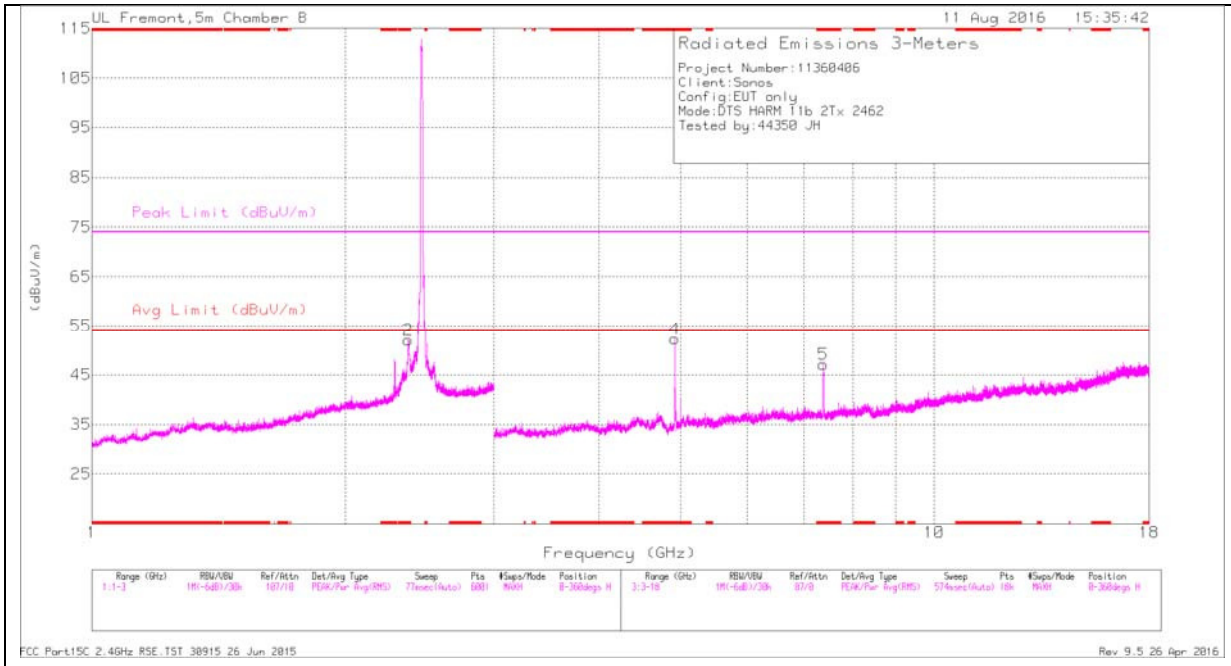
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

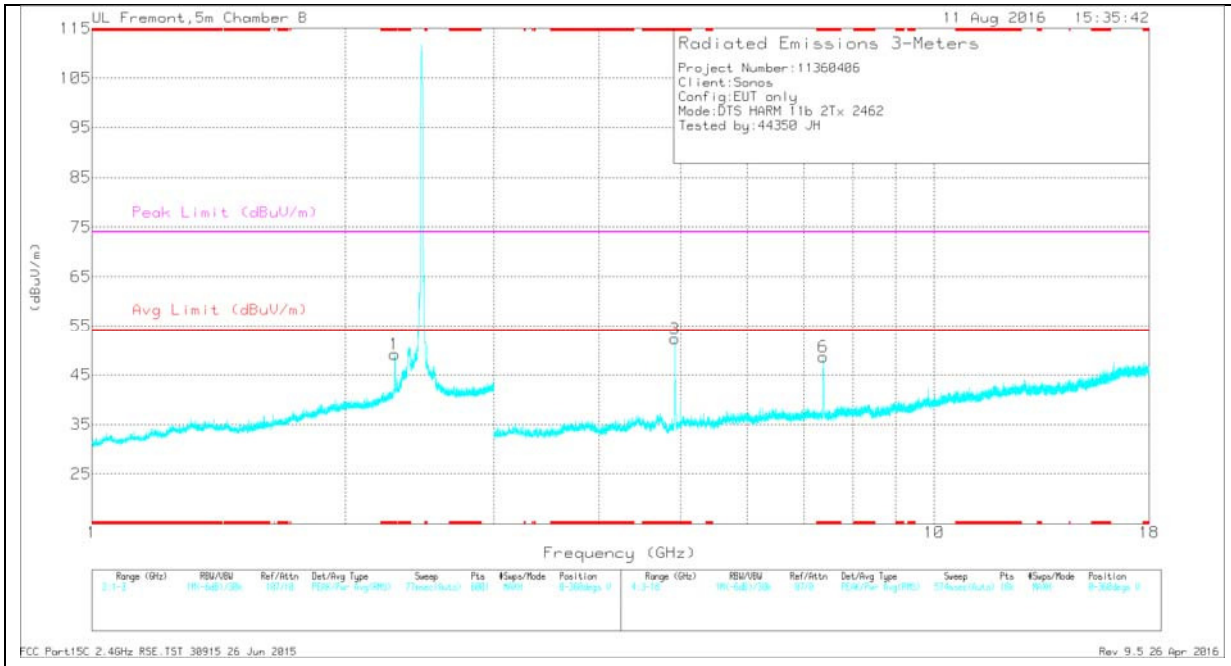
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.359	44.87	PK2	31.9	-22.4	0	54.37	-	-	74	-19.63	149	221	H
* 2.36	34.97	MAv1	31.9	-22.3	.16	44.73	54	-9.27	-	-	149	221	H
* 4.874	46.58	PK2	33.8	-32.7	0	47.68	-	-	74	-26.32	137	104	H
* 4.874	37.31	MAv1	33.8	-32.7	.16	38.57	54	-15.43	-	-	137	104	H
* 5	43.27	PK2	34.1	-31.5	0	45.87	-	-	74	-28.13	4	119	H
* 5	36.05	MAv1	34.1	-31.4	.16	38.91	54	-15.09	-	-	4	119	H
* 7.312	44.3	PK2	35.6	-30.5	0	49.4	-	-	74	-24.6	184	201	H
* 7.312	35.64	MAv1	35.6	-30.5	.16	40.9	54	-13.1	-	-	184	201	H
1.873	36.68	PK2	30.6	-21.8	0	45.48	-	-	-	-	199	252	V
9.748	40.33	PK2	36.9	-26.5	0	50.73	-	-	-	-	214	127	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2	* 2.375	42.39	Pk	32	-22.3	0	52.09	-	-	74	-21.91	0-360	199	H
1	* 2.288	39.81	Pk	31.5	-22.2	0	49.11	-	-	74	-24.89	0-360	199	V
4	* 4.924	51.34	Pk	33.9	-32.9	0	52.34	-	-	74	-21.66	0-360	101	H
5	* 7.388	41.02	Pk	35.6	-29.5	0	47.12	-	-	74	-26.88	0-360	101	H
3	* 4.924	51.28	Pk	33.9	-32.9	0	52.28	-	-	74	-21.72	0-360	199	V
6	* 7.38	42.76	Pk	35.6	-29.7	0	48.66	-	-	74	-25.34	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

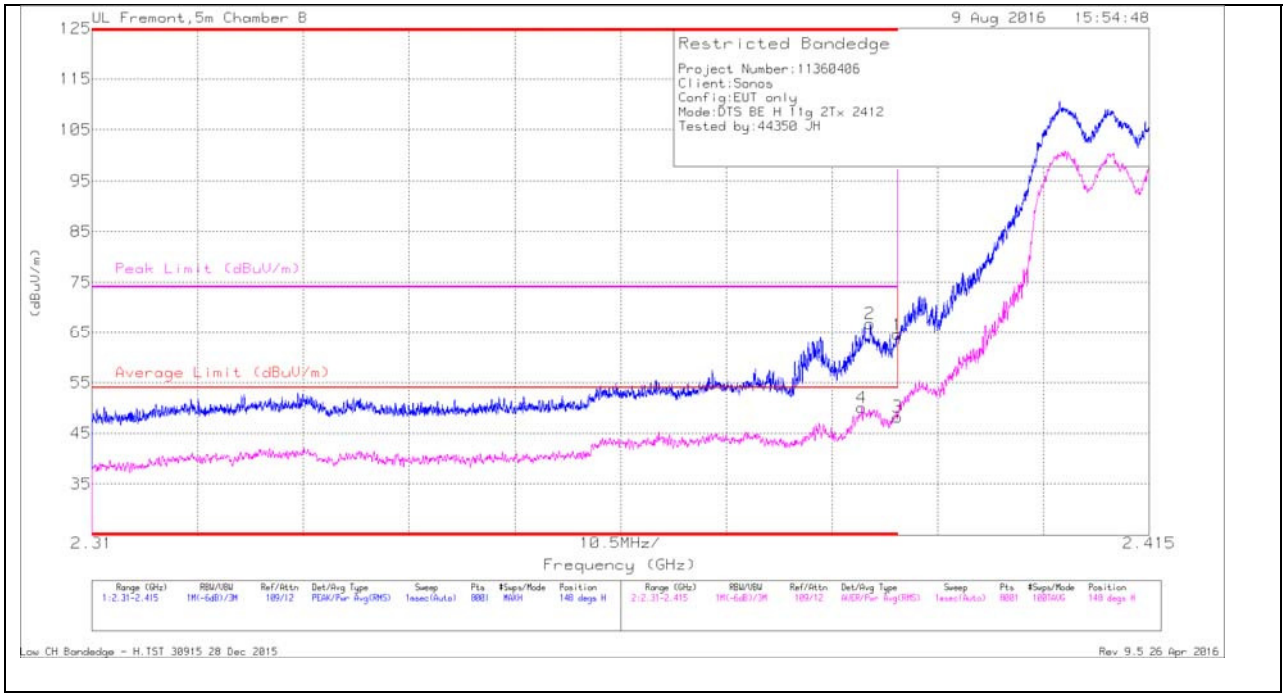
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.376	49.05	PK2	32	-22.4	0	58.65	-	-	74	-15.35	325	199	H
* 2.376	39.06	MAv1	32	-22.4	.16	48.82	54	-5.18	-	-	325	199	H
* 2.288	44.98	PK2	31.5	-22.2	0	54.28	-	-	74	-19.72	358	182	V
* 2.288	38.72	MAv1	31.5	-22.2	.16	48.18	54	-5.82	-	-	358	182	V
* 4.924	53.14	PK2	33.9	-32.9	0	54.14	-	-	74	-19.86	317	111	H
* 4.924	45.95	MAv1	33.9	-32.9	.16	47.11	54	-6.89	-	-	317	111	H
* 7.387	48.42	PK2	35.6	-29.5	0	54.52	-	-	74	-19.48	345	308	H
* 7.387	40.24	MAv1	35.6	-29.5	.16	46.5	54	-7.5	-	-	345	308	H
* 4.924	52.56	PK2	33.9	-32.9	0	53.56	-	-	74	-20.44	347	203	V
* 4.924	45.54	MAv1	33.9	-32.9	.16	46.7	54	-7.3	-	-	347	203	V
* 7.384	47.97	PK2	35.6	-29.6	0	53.97	-	-	74	-20.03	30	146	V
* 7.383	39.79	MAv1	35.6	-29.6	.16	45.95	54	-8.05	-	-	30	146	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

5.2.2. TX ABOVE 1 GHz 802.11g MODE

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULTS

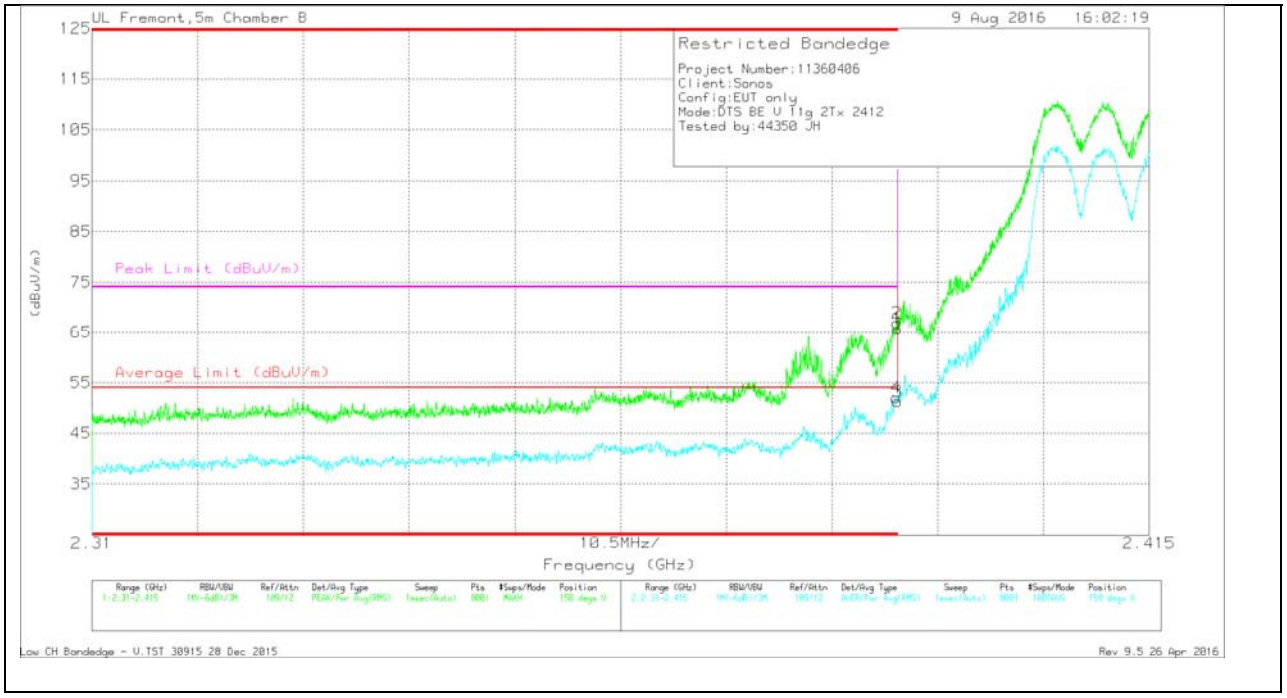


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	54.76	Pk	32.1	-22.3	0	64.56	-	-	74	-9.44	148	282	H
2	* 2.387	57.07	Pk	32.1	-22.4	0	66.77	-	-	74	-7.23	148	282	H
3	* 2.39	38.04	RMS	32.1	-22.3	.4	48.24	54	-5.76	-	-	148	282	H
4	* 2.386	39.98	RMS	32.1	-22.4	.4	50.08	54	-3.92	-	-	148	282	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULTS



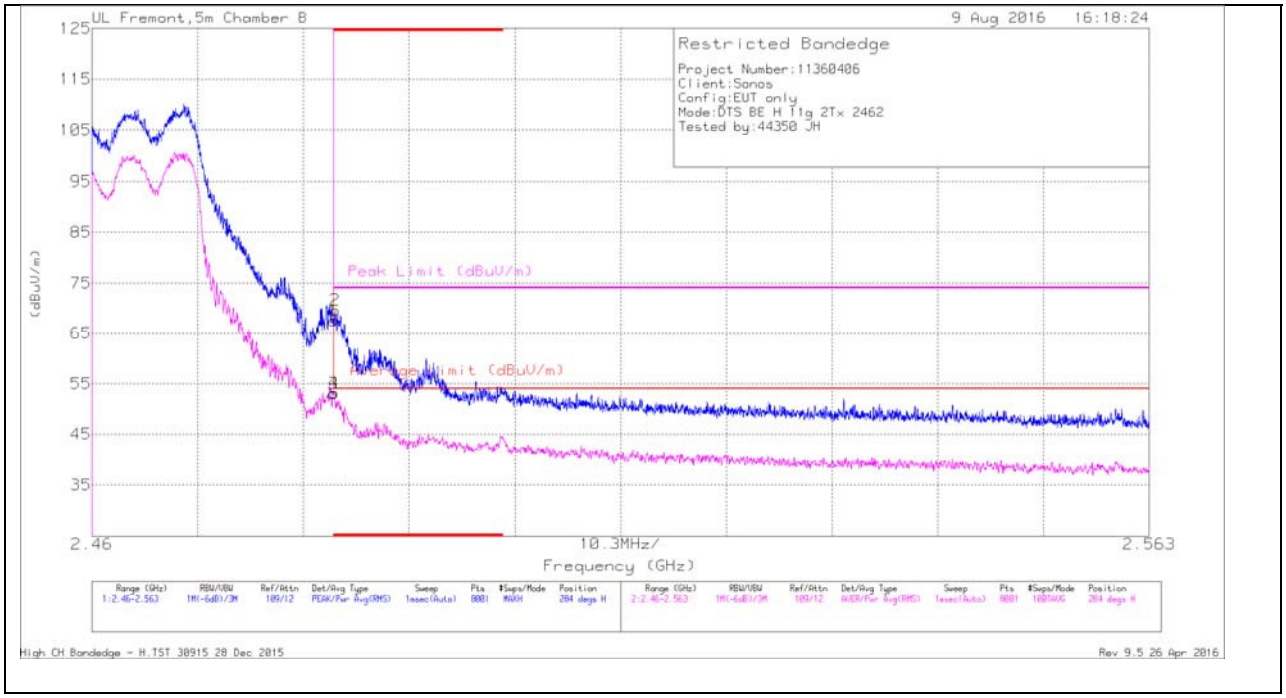
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	55.95	Pk	32.1	-22.3	0	65.75	-	-	74	-8.25	158	254	V
2	* 2.39	57.14	Pk	32.1	-22.3	0	66.94	-	-	74	-7.06	158	254	V
3	* 2.39	41.07	RMS	32.1	-22.3	.4	51.27	54	-2.73	-	-	158	254	V
4	* 2.39	41.8	RMS	32.1	-22.3	.4	52	54	-2	-	-	158	254	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULTS

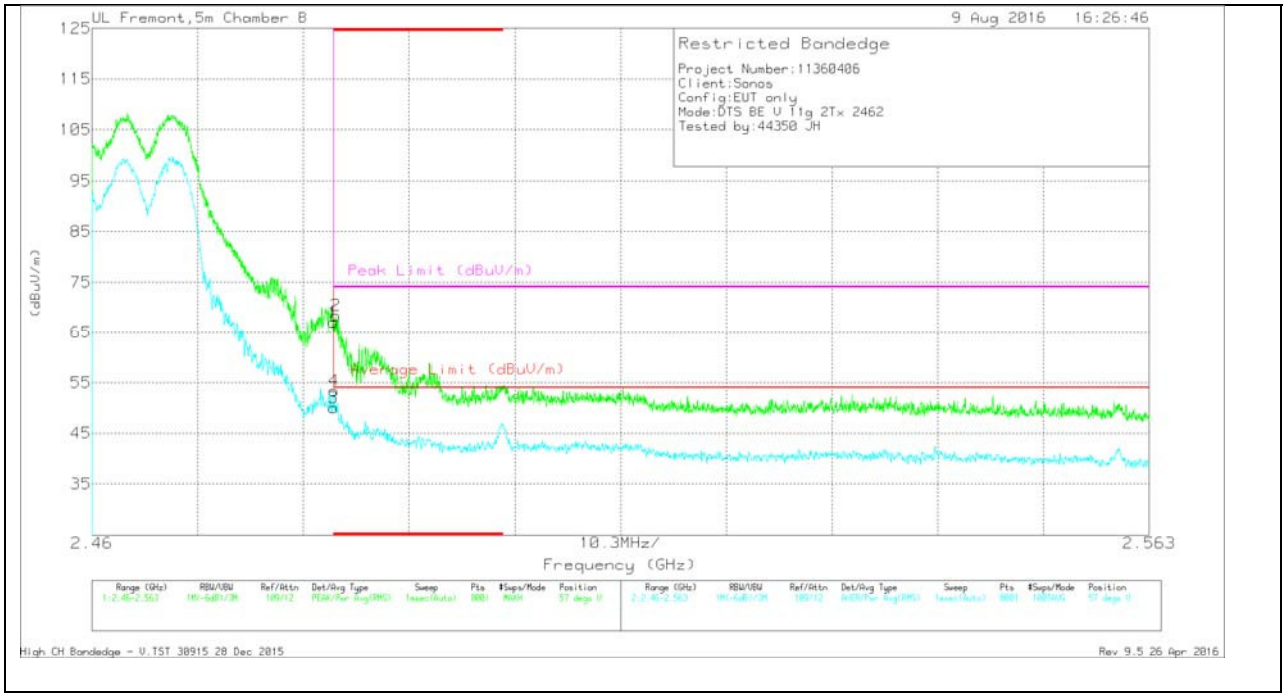


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	57.6	Pk	32.3	-22.3	0	67.6	-	-	74	-6.4	284	359	H
2	* 2.484	59.64	Pk	32.3	-22.3	0	69.64	-	-	74	-4.36	284	359	H
3	* 2.484	42.62	RMS	32.3	-22.3	.4	53.02	54	-.98	-	-	284	359	H
4	* 2.484	42.78	RMS	32.3	-22.3	.4	53.18	54	-.82	-	-	284	359	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULTS



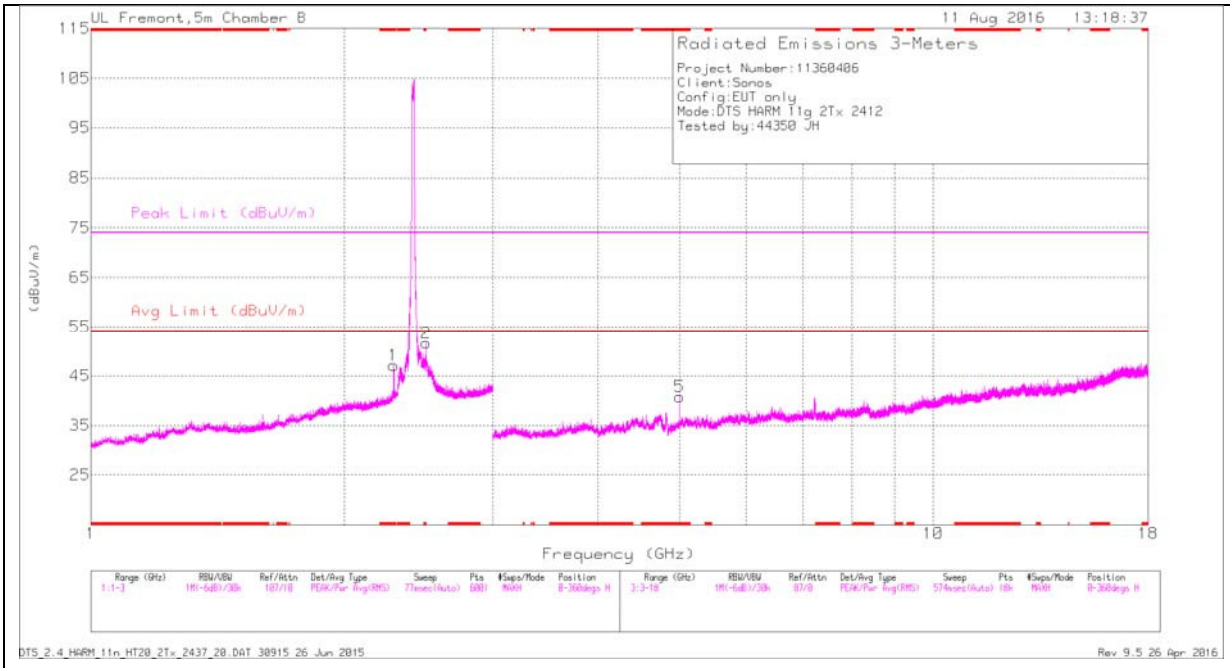
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	57.01	Pk	32.3	-22.3	0	67.01	-	-	74	-6.99	57	112	V
2	* 2.484	58.43	Pk	32.3	-22.3	0	68.43	-	-	74	-5.57	57	112	V
3	* 2.484	39.6	RMS	32.3	-22.3	.4	50	54	-4	-	-	57	112	V
4	* 2.484	42.98	RMS	32.3	-22.3	.4	53.38	54	-.62	-	-	57	112	V

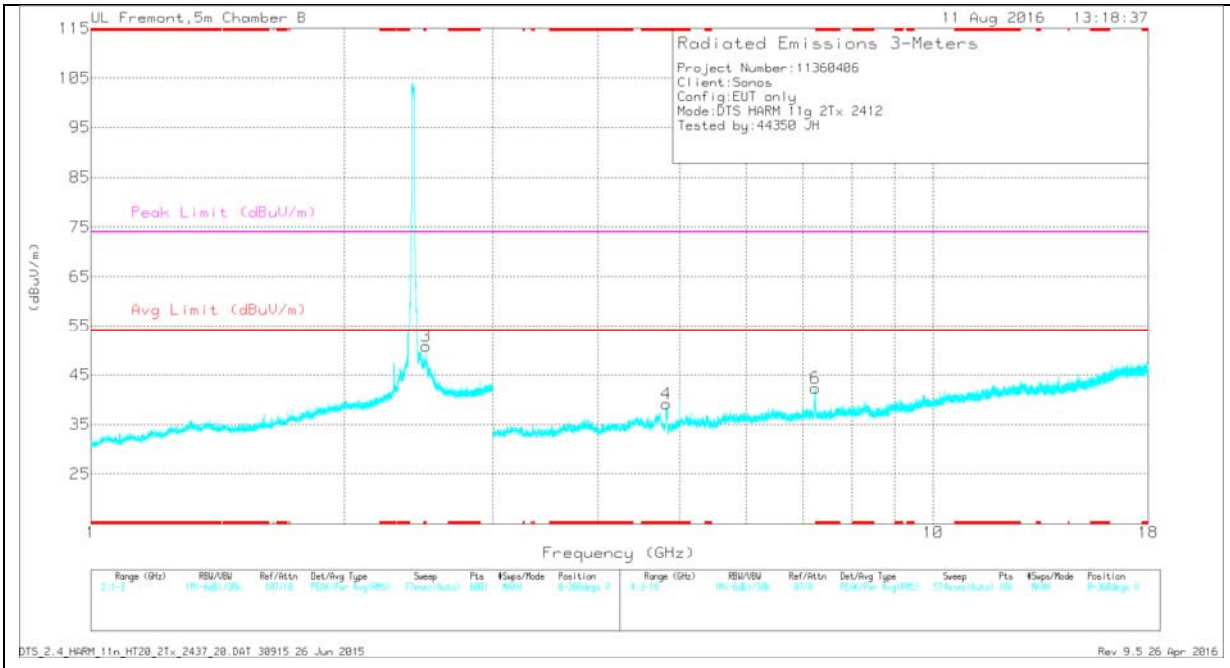
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.288	37.85	Pk	31.5	-22.2	0	47.15	-	-	74	-26.85	0-360	199	H
2	* 2.5	41.58	Pk	32.3	-22.2	0	51.68	-	-	74	-22.32	0-360	199	H
3	* 2.5	40.69	Pk	32.3	-22.2	0	50.79	-	-	74	-23.21	0-360	199	V
5	* 5	38.13	Pk	34.1	-31.4	0	40.83	-	-	74	-33.17	0-360	101	H
4	* 4.822	37.07	Pk	33.8	-31.7	0	39.17	-	-	74	-34.83	0-360	101	V
6	7.246	36.85	Pk	35.6	-30.2	0	42.25	-	-	-	-	0-360	101	V

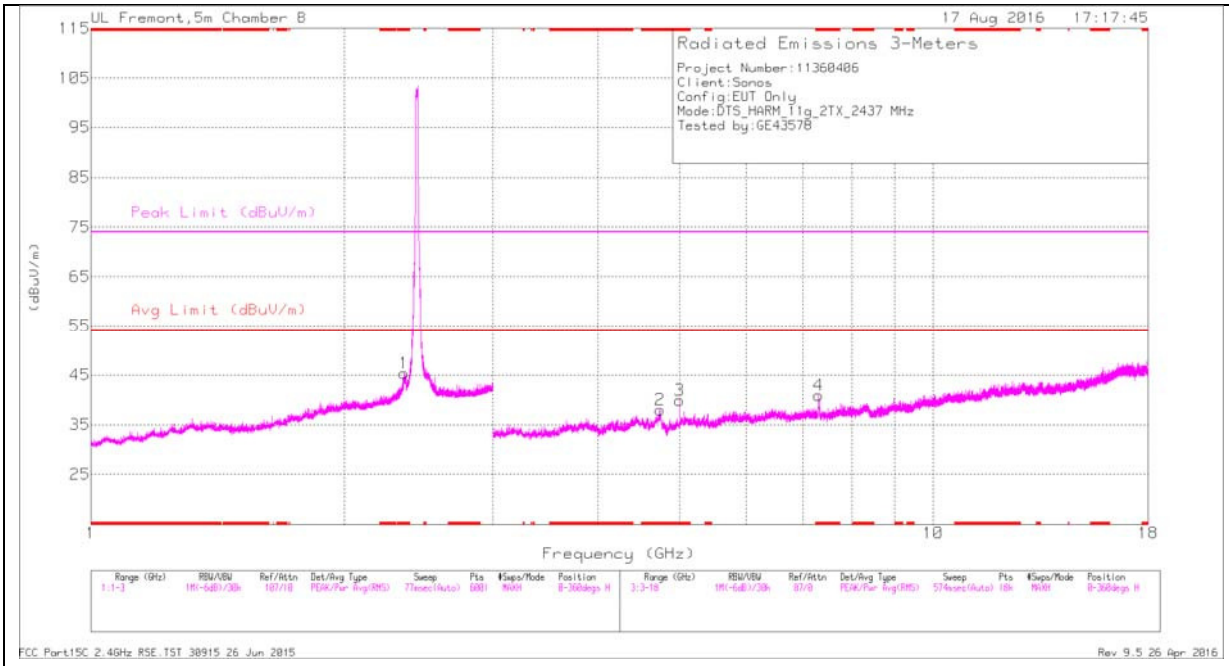
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

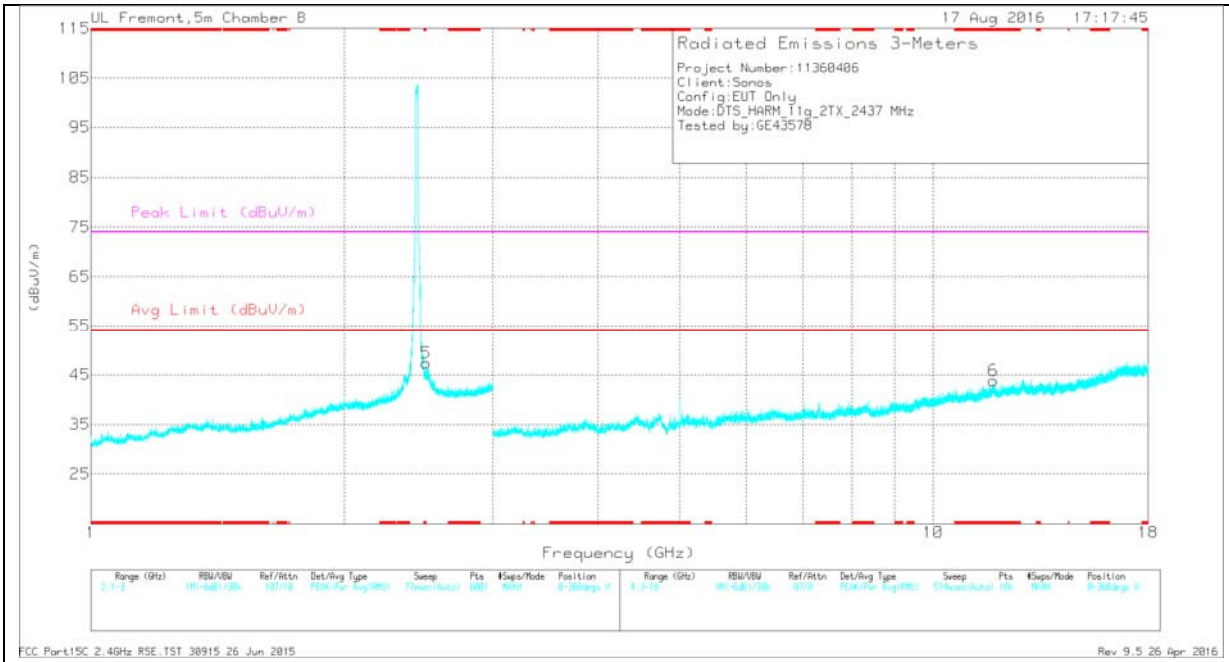
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.288	43.33	PK2	31.5	-22.2	0	52.63	-	-	74	-21.37	327	215	H
* 2.288	35.93	MAv1	31.5	-22.2	.4	45.63	54	-8.37	-	-	327	215	H
* 2.5	47.73	PK2	32.3	-22.3	0	57.73	-	-	74	-16.27	332	235	H
* 2.5	39.59	MAv1	32.3	-22.2	.4	50.09	54	-3.91	-	-	332	235	H
* 2.5	46.76	PK2	32.3	-22.3	0	56.76	-	-	74	-17.24	46	238	V
* 2.5	38.53	MAv1	32.3	-22.2	.4	49.03	54	-4.97	-	-	46	238	V
* 5	42.66	PK2	34.1	-31.5	0	45.26	-	-	74	-28.74	190	119	H
* 5	36.29	MAv1	34.1	-31.5	.4	39.29	54	-14.71	-	-	190	119	H
* 4.823	46.27	PK2	33.8	-31.8	0	48.27	-	-	74	-25.73	71	252	V
* 4.822	35.62	MAv1	33.8	-31.8	.4	38.02	54	-15.98	-	-	71	252	V
2.51	48.43	PK2	32.3	-22.2	0	58.53	-	-	74	-15.47	332	235	H
2.51	39.85	MAv1	32.3	-22.2	.4	50.35	-	-	-	-	332	235	H
2.51	46.9	PK2	32.3	-22.2	0	57	-	-	74	-17	46	238	V
2.51	38.78	MAv1	32.3	-22.2	.4	49.28	-	-	-	-	46	238	V
7.232	44.44	PK2	35.6	-29.9	0	50.14	-	-	74	-23.86	34	204	V
7.237	32.45	MAv1	35.6	-30.1	.4	38.35	-	-	-	-	34	204	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.354	35.79	Pk	31.9	-22.4	0	45.29	-	-	74	-28.71	0-360	199	H
5	* 2.5	37.3	Pk	32.3	-22.2	0	47.4	-	-	74	-26.6	0-360	101	V
2	* 4.739	34.85	Pk	34	-30.9	0	37.95	-	-	74	-36.05	0-360	199	H
3	* 5	37.17	Pk	34.1	-31.4	0	39.87	-	-	74	-34.13	0-360	101	H
4	* 7.311	35.76	Pk	35.6	-30.5	0	40.86	-	-	74	-33.14	0-360	199	H
6	* 11.785	29.59	Pk	38.7	-24.5	0	43.79	-	-	74	-30.21	0-360	101	V

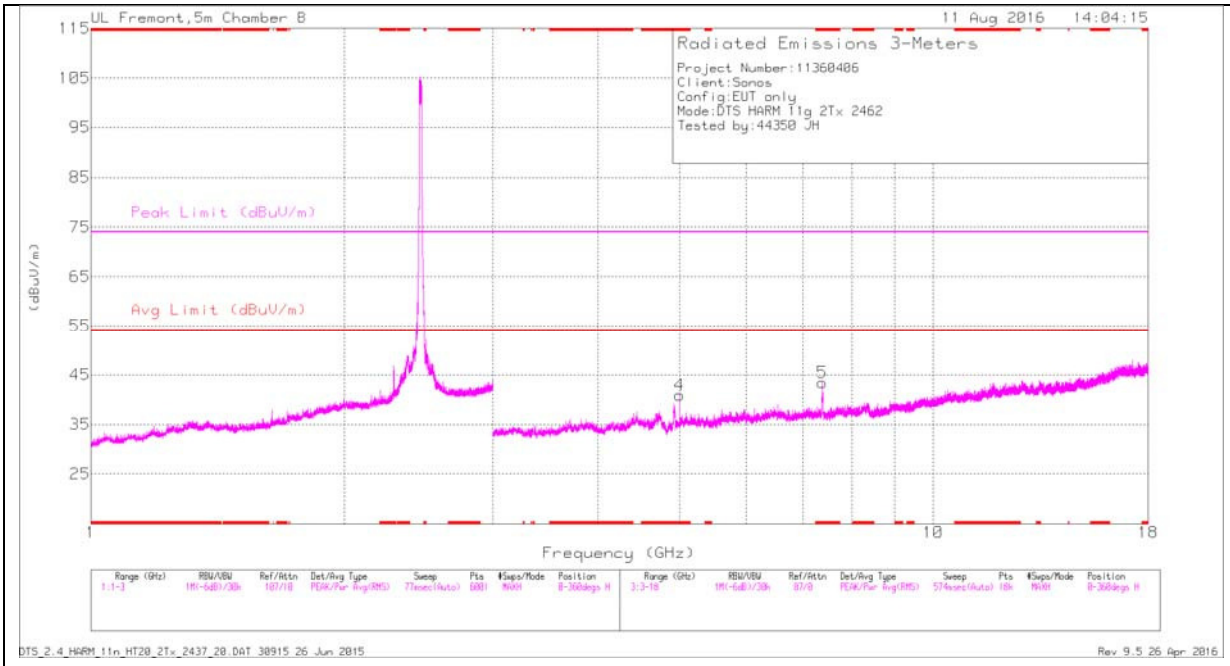
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

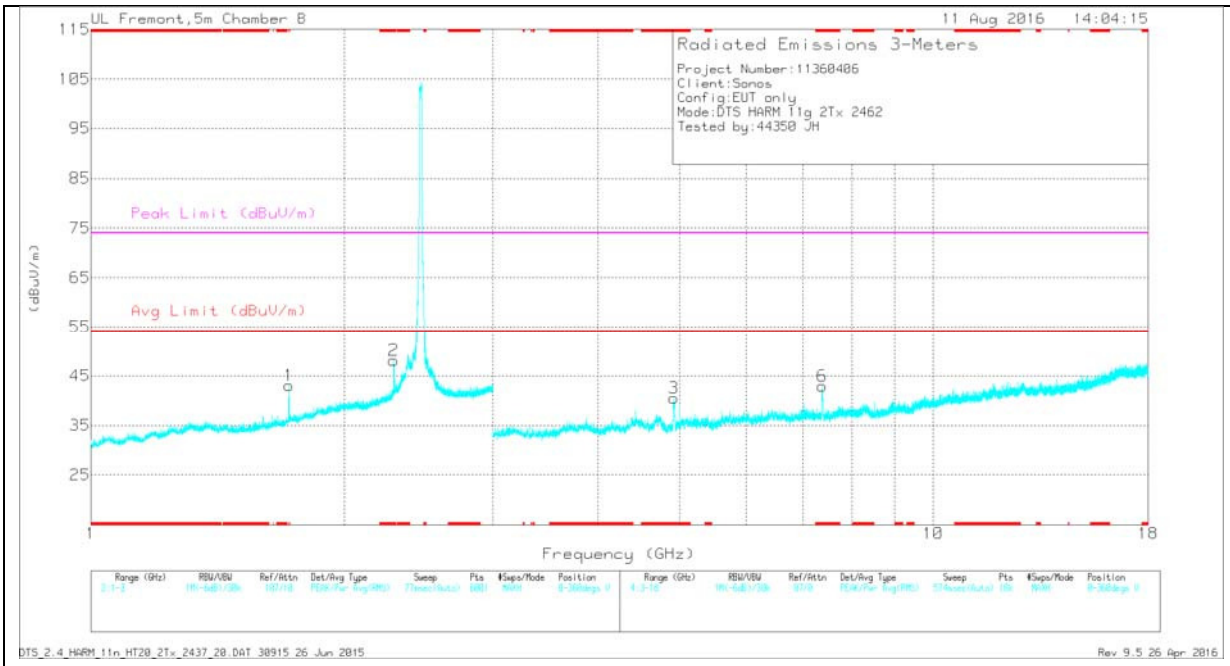
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.354	42.94	PK2	31.9	-22.4	0	52.44	-	-	74	-21.56	148	255	H
* 2.356	31.86	MAv1	31.9	-22.3	.4	41.86	54	-12.14	-	-	148	255	H
* 2.5	42.4	PK2	32.3	-22.2	0	52.5	-	-	74	-21.5	36	103	V
* 4.739	40.84	PK2	34	-31	0	43.84	-	-	74	-30.16	225	147	H
* 4.739	29.57	MAv1	34	-30.9	.4	33.07	54	-20.93	-	-	225	147	H
* 5	42.85	PK2	34.1	-31.5	0	45.45	-	-	74	-28.55	8	116	H
* 5	36.13	MAv1	34.1	-31.4	.4	39.23	54	-14.77	-	-	8	116	H
* 7.31	44.3	PK2	35.6	-30.5	0	49.4	-	-	74	-24.6	154	279	H
* 7.311	33.25	MAv1	35.6	-30.5	.4	38.75	54	-15.25	-	-	154	279	H
* 11.784	34.57	PK2	38.7	-24.6	0	48.67	-	-	74	-25.33	85	102	V
* 11.785	23.78	MAv1	38.7	-24.5	.4	38.38	54	-15.62	-	-	85	102	V
2.5	35.08	MAv1	32.3	-22.2	.4	45.58	-	-	-	-	36	103	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2	* 2.288	38.8	Pk	31.5	-22.2	0	48.1	-	-	74	-25.9	0-360	199	V
4	* 5	38.15	Pk	34.1	-31.4	0	40.85	-	-	74	-33.15	0-360	101	H
5	* 7.386	37.32	Pk	35.6	-29.5	0	43.42	-	-	74	-30.58	0-360	199	H
3	* 4.922	39.54	Pk	33.9	-32.9	0	40.54	-	-	74	-33.46	0-360	199	V
6	* 7.384	36.92	Pk	35.6	-29.6	0	42.92	-	-	74	-31.08	0-360	199	V
1	1.718	35.91	Pk	29.3	-22.2	0	43.01	-	-	-	-	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

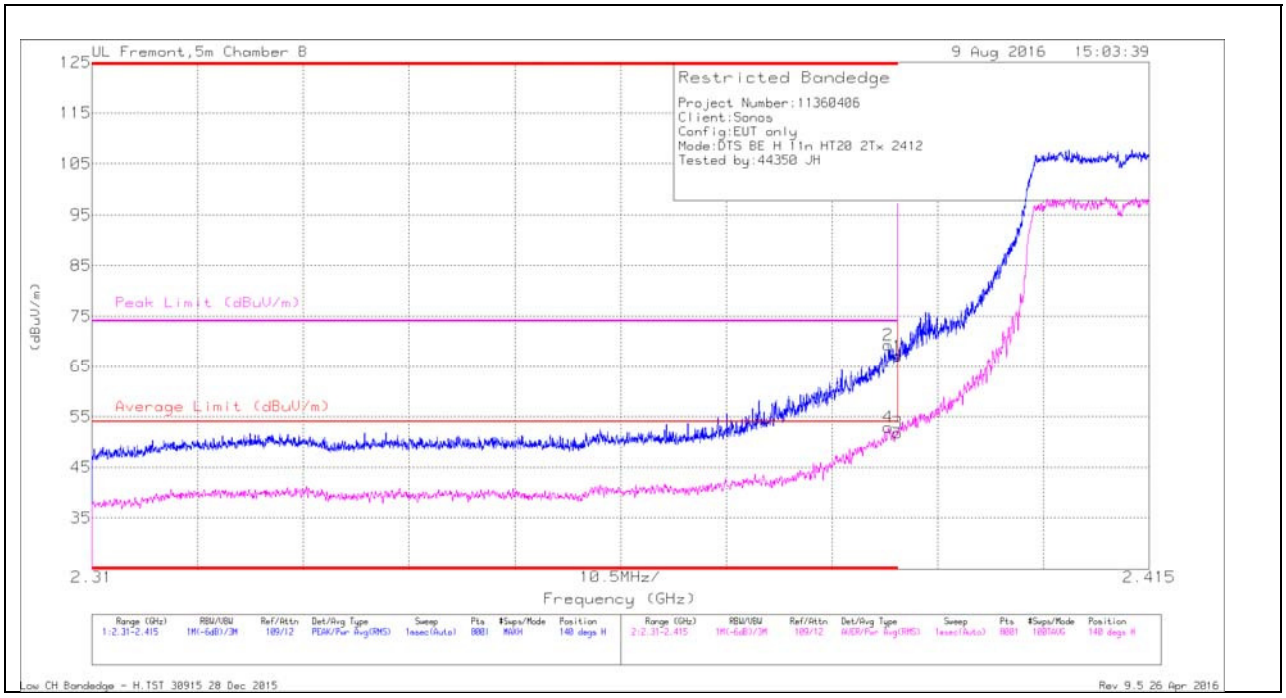
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.288	42.61	PK2	31.5	-22.2	0	51.91	-	-	74	-22.09	357	204	V
* 2.288	35.95	MAv1	31.5	-22.2	.4	45.65	54	-8.35	-	-	357	204	V
* 5	42.54	PK2	34.1	-31.5	0	45.14	-	-	74	-28.86	201	118	H
* 5	36.68	MAv1	34.1	-31.4	.4	39.78	54	-14.22	-	-	201	118	H
* 7.38	45.82	PK2	35.6	-29.7	0	51.72	-	-	74	-22.28	332	365	H
* 7.384	33.59	MAv1	35.6	-29.6	.4	39.99	54	-14.01	-	-	332	365	H
* 4.921	47.05	PK2	33.9	-32.9	0	48.05	-	-	74	-25.95	347	192	V
* 4.922	36.32	MAv1	33.9	-32.9	.4	37.72	54	-16.28	-	-	347	192	V
* 7.389	45.24	PK2	35.6	-29.5	0	51.34	-	-	74	-22.66	34	165	V
* 7.385	33.17	MAv1	35.6	-29.6	.4	39.57	54	-14.43	-	-	34	165	V
1.716	24.42	MAv1	29.3	-22.1	.4	32.02	-	-	-	-	8	184	V
1.723	36.02	PK2	29.4	-22.1	0	43.32	-	-	74	-30.68	8	184	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

5.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULTS

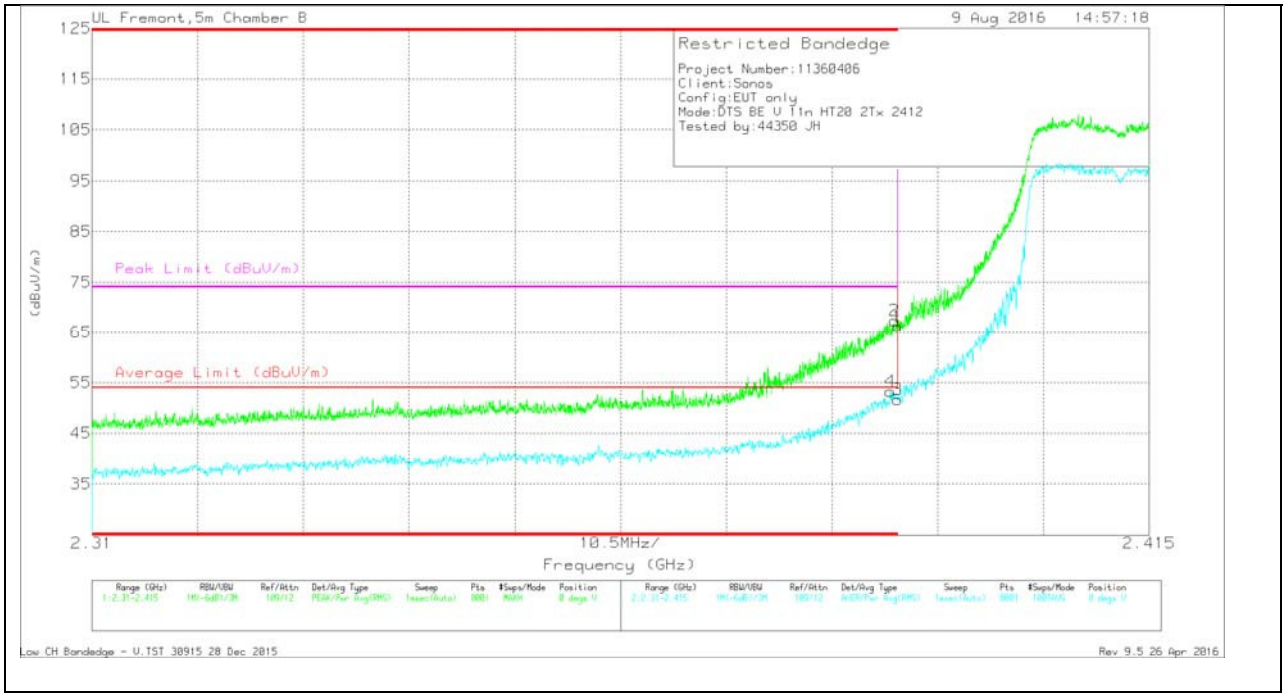


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	57.29	Pk	32.1	-22.3	0	67.09	-	-	74	-6.91	140	189	H
2	* 2.389	59.49	Pk	32.1	-22.3	0	69.29	-	-	74	-4.71	140	189	H
3	* 2.39	41.58	RMS	32.1	-22.3	.42	51.8	54	-2.2	-	-	140	189	H
4	* 2.389	42.63	RMS	32.1	-22.3	.42	52.85	54	-1.15	-	-	140	189	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULTS



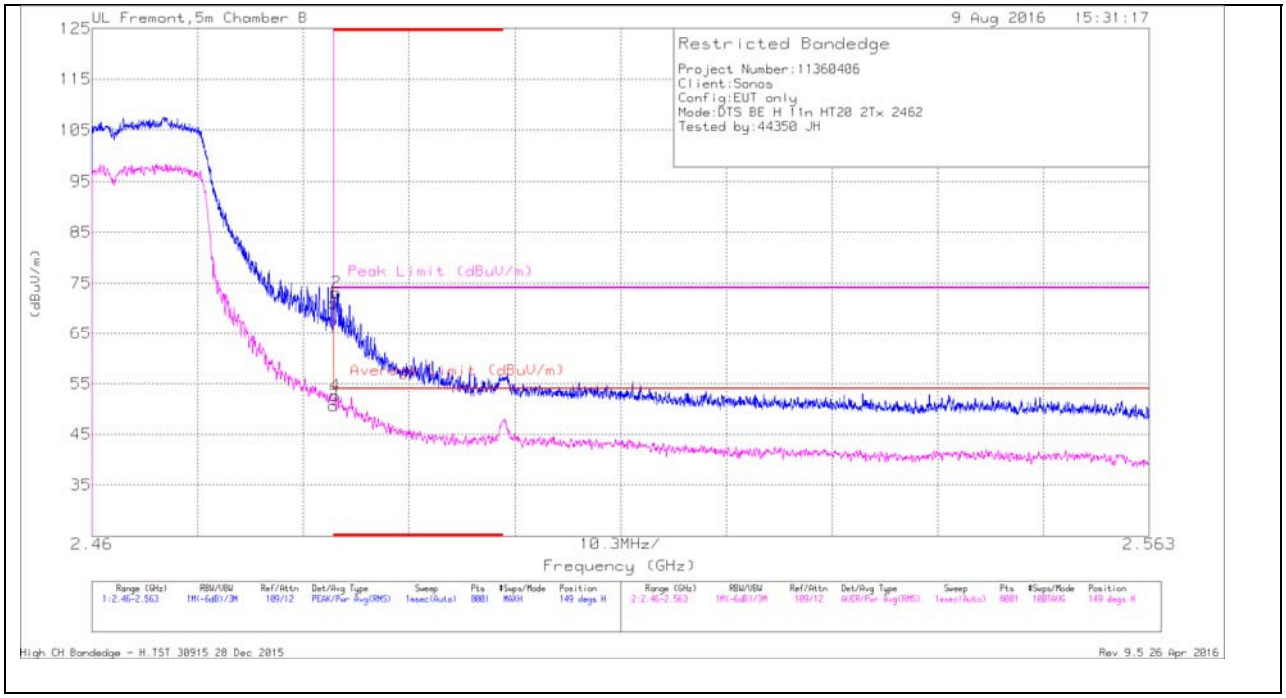
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	56.39	Pk	32.1	-22.3	0	66.19	-	-	74	-7.81	0	188	V
2	* 2.39	57.61	Pk	32.1	-22.3	0	67.41	-	-	74	-6.59	0	188	V
3	* 2.39	41.46	RMS	32.1	-22.3	.42	51.68	54	-2.32	-	-	0	188	V
4	* 2.389	43	RMS	32.1	-22.3	.42	53.22	54	-.78	-	-	0	188	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULTS

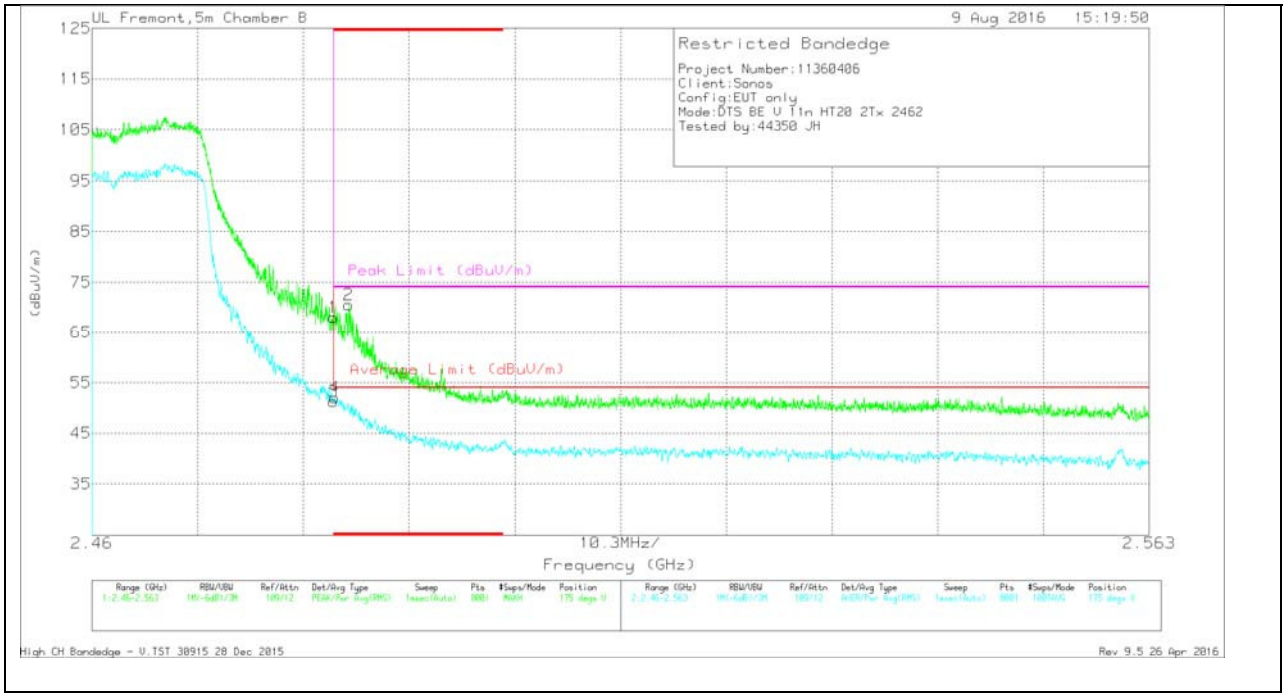


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	60.99	Pk	32.3	-22.3	0	70.99	-	-	74	-3.01	149	261	H
2	* 2.484	63.19	Pk	32.3	-22.3	0	73.19	-	-	74	-.81	149	261	H
3	* 2.484	40.25	RMS	32.3	-22.3	.42	50.67	54	-3.33	-	-	149	261	H
4	* 2.484	42.25	RMS	32.3	-22.3	.42	52.67	54	-1.33	-	-	149	261	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULTS



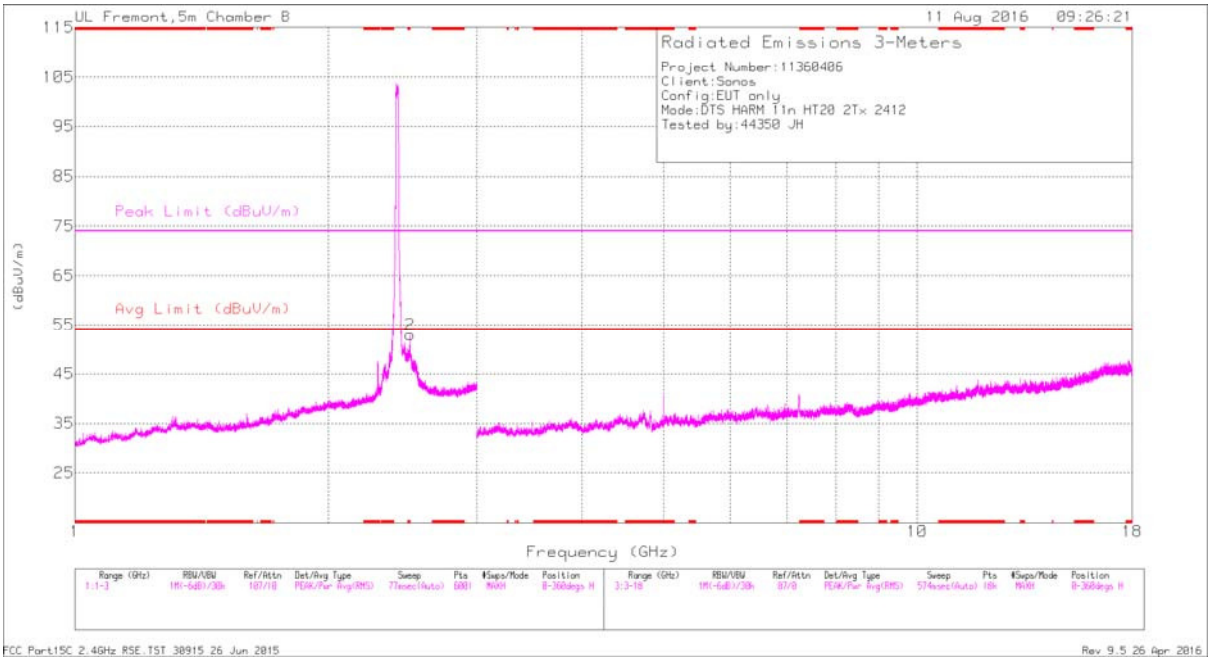
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	58.02	Pk	32.3	-22.3	0	68.02	-	-	74	-5.98	175	269	V
2	* 2.485	60.46	Pk	32.3	-22.2	0	70.56	-	-	74	-3.44	175	269	V
3	* 2.484	40.87	RMS	32.3	-22.3	.42	51.29	54	-2.71	-	-	175	269	V
4	* 2.484	41.58	RMS	32.3	-22.3	.42	52	54	-2	-	-	175	269	V

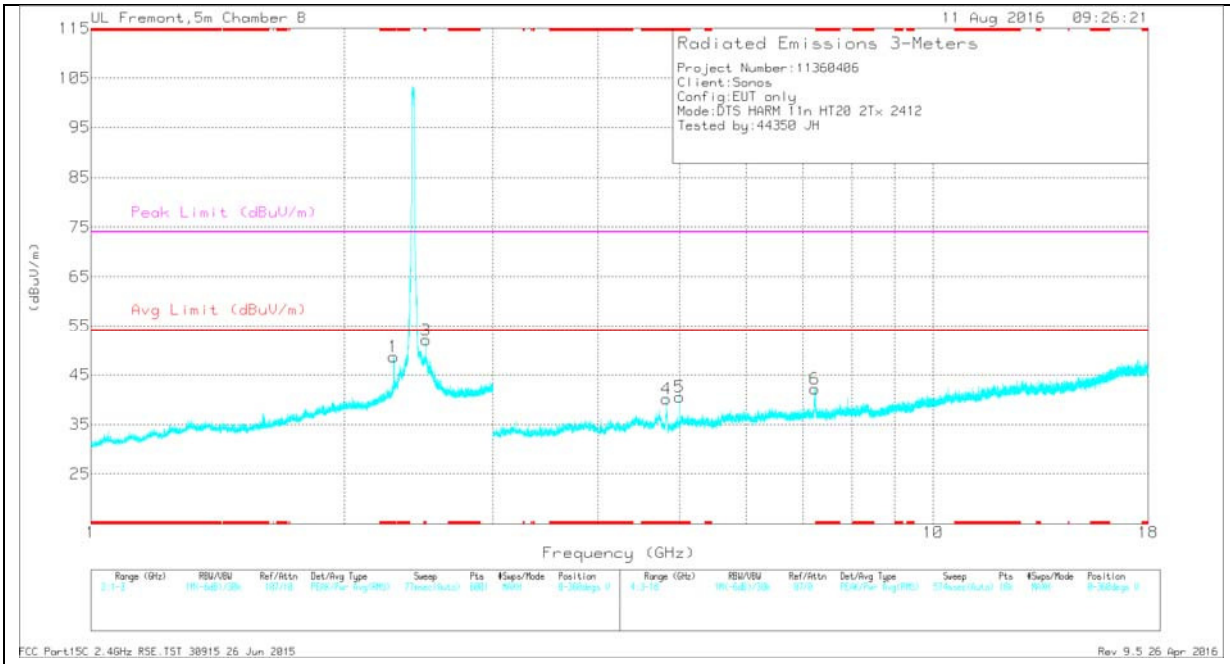
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2	* 2.5	42.82	Pk	32.3	-22.2	0	52.92	-	-	74	-21.08	0-360	199	H
1	* 2.288	39.39	Pk	31.5	-22.2	0	48.69	-	-	74	-25.31	0-360	199	V
3	* 2.5	41.97	Pk	32.3	-22.2	0	52.07	-	-	74	-21.93	0-360	101	V
4	* 4.822	38.19	Pk	33.8	-31.8	0	40.19	-	-	74	-33.81	0-360	199	V
5	* 5	37.83	Pk	34.1	-31.4	0	40.53	-	-	74	-33.47	0-360	101	V
6	7.233	36.57	Pk	35.6	-30	0	42.17	-	-	-	-	0-360	101	V

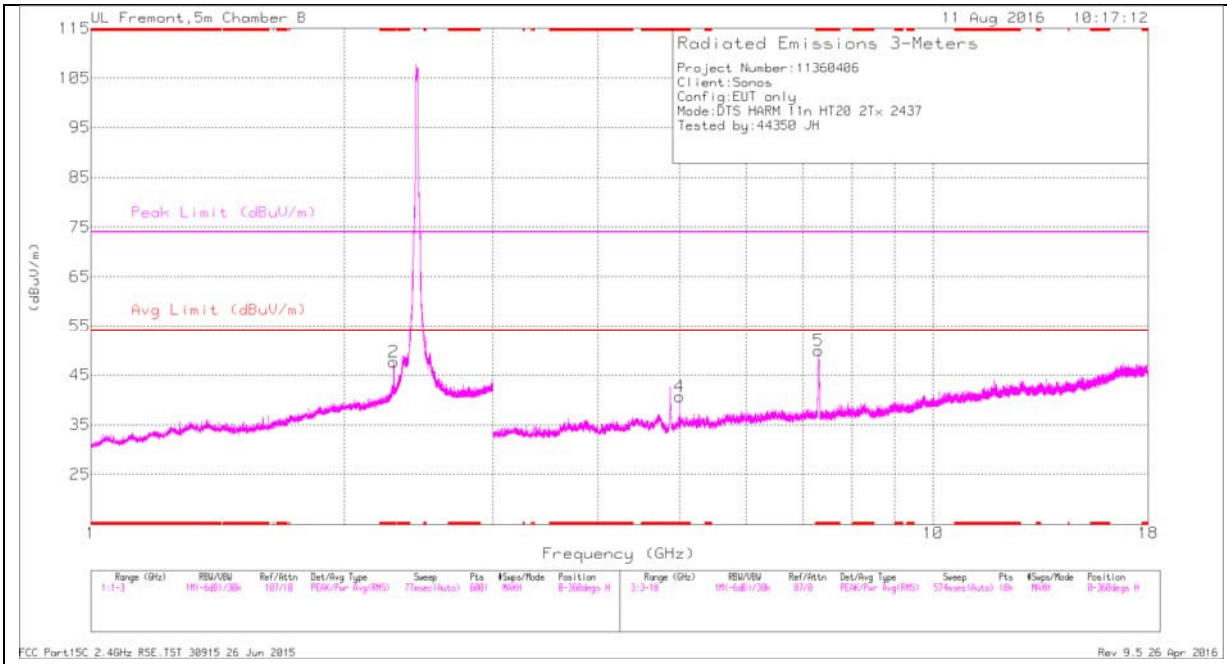
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

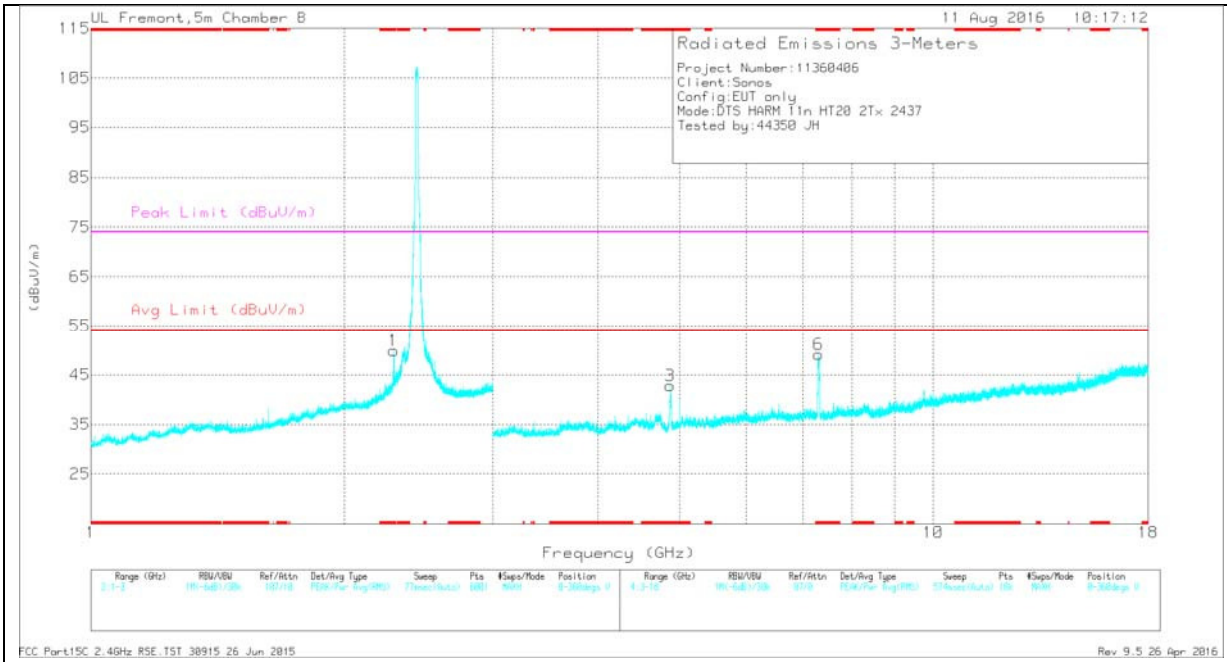
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.5	48.24	PK2	32.3	-22.2	0	58.34	-	-	74	-15.66	327	227	H
* 2.5	40.32	MAv1	32.3	-22.2	.42	50.84	54	-3.16	-	-	327	227	H
* 2.288	43.35	PK2	31.5	-22.2	0	52.65	-	-	74	-21.35	353	211	V
* 2.288	35.95	MAv1	31.5	-22.2	.42	45.67	54	-8.33	-	-	353	211	V
* 2.5	47.92	PK2	32.3	-22.2	0	58.02	-	-	74	-15.98	355	314	V
* 2.5	38.78	MAv1	32.3	-22.2	.42	49.3	54	-4.7	-	-	355	314	V
* 4.824	44.31	PK2	33.8	-31.8	0	46.31	-	-	74	-27.69	347	220	V
* 4.824	32.3	MAv1	33.8	-31.8	.42	34.72	54	-19.28	-	-	347	220	V
* 5	42.32	PK2	34.1	-31.4	0	45.02	-	-	74	-28.98	161	103	V
* 5	36.23	MAv1	34.1	-31.4	.42	39.35	54	-14.65	-	-	161	103	V
2.51	49.79	PK2	32.3	-22.2	0	59.89	-	-	74	-14.11	327	227	H
2.51	40.93	MAv1	32.3	-22.2	.42	51.45	-	-	-	-	327	227	H
2.51	47.53	PK2	32.3	-22.2	0	57.63	-	-	74	-16.37	355	314	V
2.51	39.34	MAv1	32.3	-22.2	.42	49.86	-	-	-	-	355	314	V
7.235	32.23	MAv1	35.6	-30.1	.42	38.15	-	-	-	-	35	105	V
7.238	44.49	PK2	35.6	-30.1	0	49.99	-	-	74	-24.01	35	105	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2	* 2.288	38.28	Pk	31.5	-22.2	0	47.58	-	-	74	-26.42	0-360	199	H
1	* 2.288	40.61	Pk	31.5	-22.2	0	49.91	-	-	74	-24.09	0-360	199	V
4	* 5	37.92	Pk	34.1	-31.4	0	40.62	-	-	74	-33.38	0-360	101	H
5	* 7.308	44.86	Pk	35.6	-30.5	0	49.96	-	-	74	-24.04	0-360	199	H
3	* 4.872	41.67	Pk	33.8	-32.7	0	42.77	-	-	74	-31.23	0-360	199	V
6	* 7.313	44.02	Pk	35.6	-30.5	0	49.12	-	-	74	-24.88	0-360	101	V

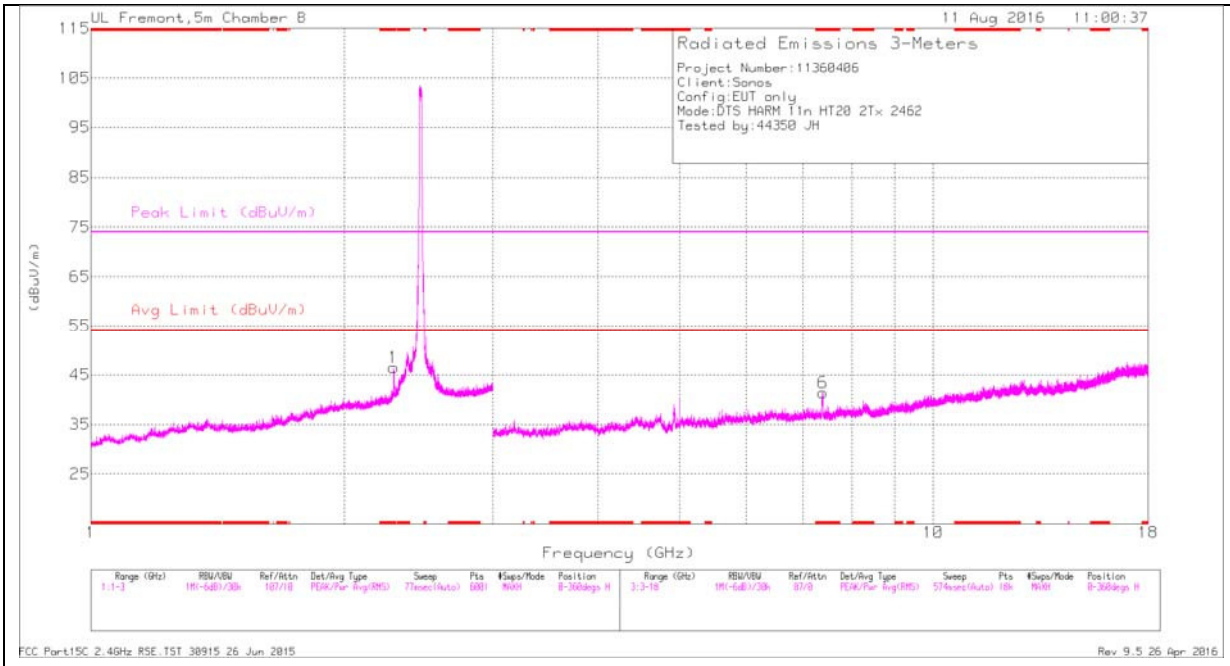
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Radiated Emissions

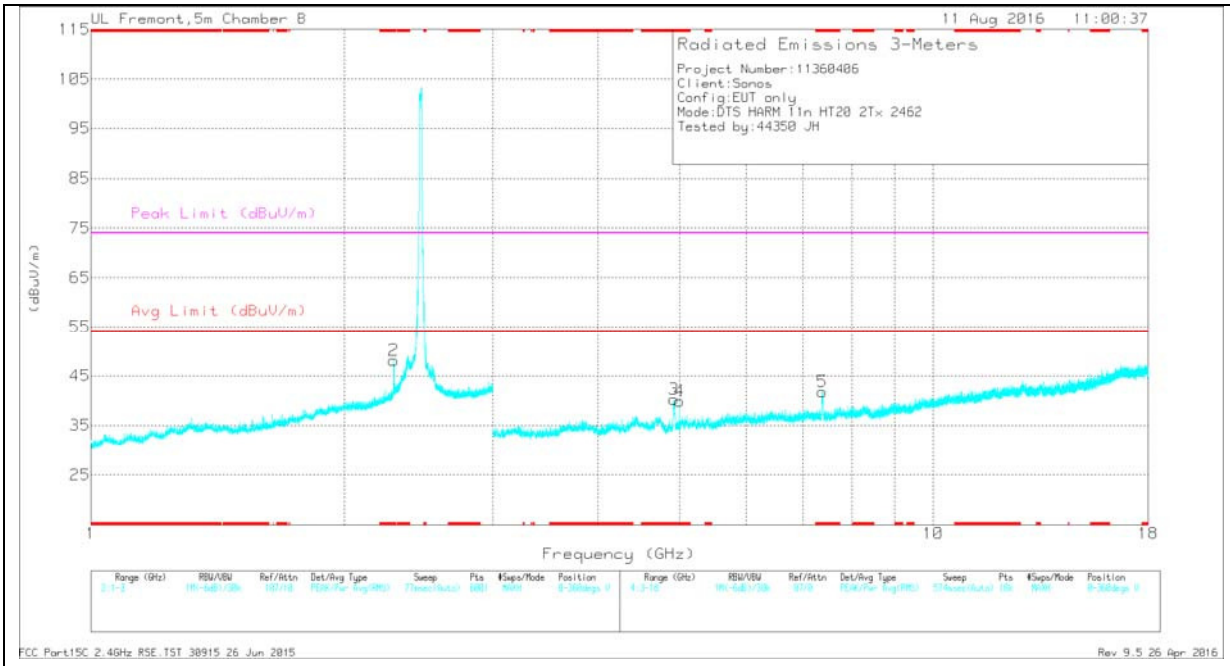
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.288	44.77	PK2	31.5	-22.2	0	54.07	-	-	74	-19.93	328	202	H
* 2.288	37.65	MAv1	31.5	-22.2	.42	47.37	54	-6.63	-	-	328	202	H
* 2.288	45.25	PK2	31.5	-22.2	0	54.55	-	-	74	-19.45	360	271	V
* 2.288	38.52	MAv1	31.5	-22.2	.42	48.24	54	-5.76	-	-	360	271	V
* 5	42.36	PK2	34.1	-31.4	0	45.06	-	-	74	-28.94	187	112	H
* 5	36.95	MAv1	34.1	-31.4	.42	40.07	54	-13.93	-	-	187	112	H
* 7.31	53.74	PK2	35.6	-30.5	0	58.84	-	-	74	-15.16	11	121	H
* 7.31	41.28	MAv1	35.6	-30.5	.42	46.8	54	-7.2	-	-	11	121	H
* 4.874	48.94	PK2	33.8	-32.7	0	50.04	-	-	74	-23.96	345	196	V
* 4.874	36.06	MAv1	33.8	-32.7	.42	37.58	54	-16.42	-	-	345	196	V
* 7.307	53.32	PK2	35.6	-30.5	0	58.42	-	-	74	-15.58	33	101	V
* 7.309	41.55	MAv1	35.6	-30.5	.42	47.07	54	-6.93	-	-	33	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.288	37.22	Pk	31.5	-22.2	0	46.52	-	-	74	-27.48	0-360	199	H
2	* 2.288	38.85	Pk	31.5	-22.2	0	48.15	-	-	74	-25.85	0-360	199	V
6	* 7.394	35.36	Pk	35.6	-29.5	0	41.46	-	-	74	-32.54	0-360	101	H
3	* 4.924	39.28	Pk	33.9	-32.9	0	40.28	-	-	74	-33.72	0-360	199	V
4	* 5	37.18	Pk	34.1	-31.4	0	39.88	-	-	74	-34.12	0-360	101	V
5	* 7.385	35.84	Pk	35.6	-29.6	0	41.84	-	-	74	-32.16	0-360	199	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

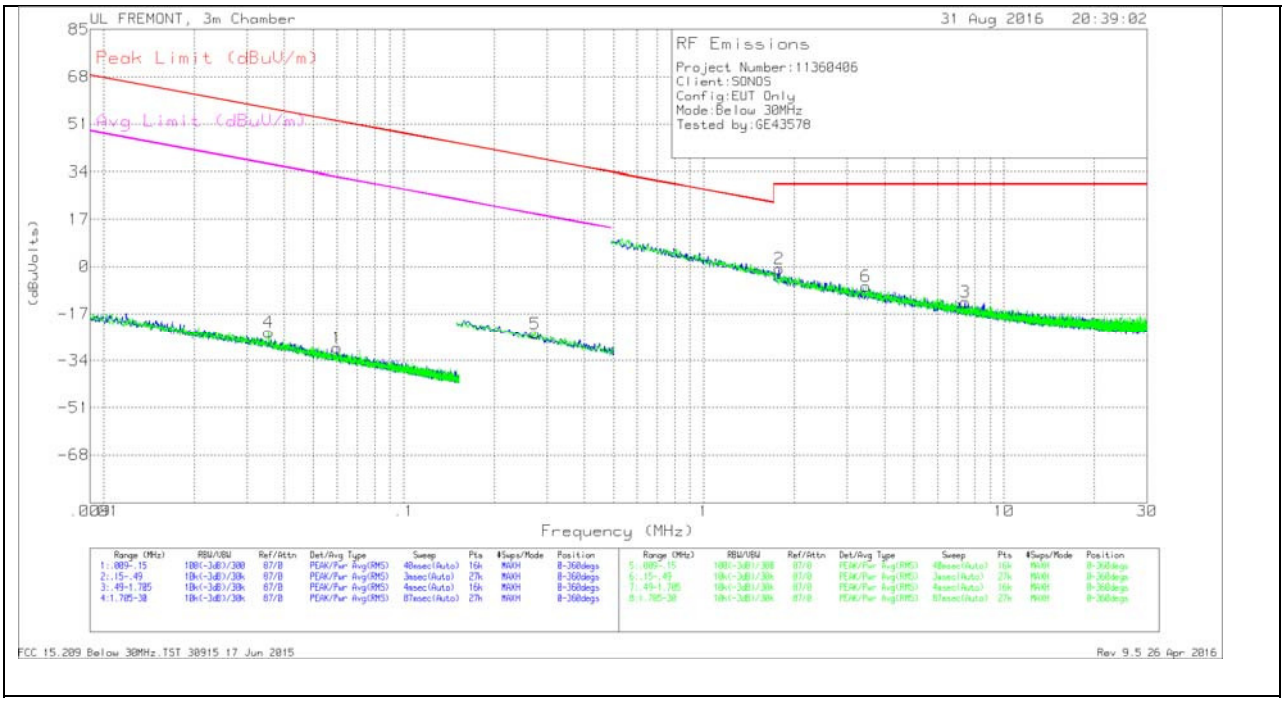
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
* 2.288	43.03	PK2	31.5	-22.2	0	52.33	-	-	74	-21.67	331	210	H
* 2.288	35.85	MAv1	31.5	-22.2	.42	45.57	54	-8.43	-	-	331	210	H
* 2.288	43.93	PK2	31.5	-22.2	0	53.23	-	-	74	-20.77	360	183	V
* 2.288	36.74	MAv1	31.5	-22.2	.42	46.46	54	-7.54	-	-	360	183	V
* 7.392	44	PK2	35.6	-29.5	0	50.1	-	-	74	-23.9	345	318	H
* 7.385	32.19	MAv1	35.6	-29.6	.42	38.61	54	-15.39	-	-	345	318	H
* 4.919	45.95	PK2	33.9	-32.9	0	46.95	-	-	74	-27.05	71	217	V
* 4.922	35.95	MAv1	33.9	-32.9	.42	37.37	54	-16.63	-	-	71	217	V
* 5	42.16	PK2	34.1	-31.5	0	44.76	-	-	74	-29.24	182	114	V
* 5	35.14	MAv1	34.1	-31.4	.42	38.26	54	-15.74	-	-	182	114	V
* 7.384	41.77	PK2	35.6	-29.6	0	47.77	-	-	74	-26.23	30	103	V
* 7.385	31.35	MAv1	35.6	-29.6	.42	37.77	54	-16.23	-	-	30	103	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

5.3. WORST-CASE BELOW 30 MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
4	.0355	42.39	Pk	12.5	1.4	-80	-23.71	56.6	-80.31	36.6	-60.31	0-360
1	.05986	38.1	Pk	11.1	1.4	-80	-29.4	52.06	-81.46	32.06	-61.46	0-360
5	.27391	43.5	Pk	10.8	1.5	-80	-24.2	38.85	-63.05	18.85	-43.05	0-360

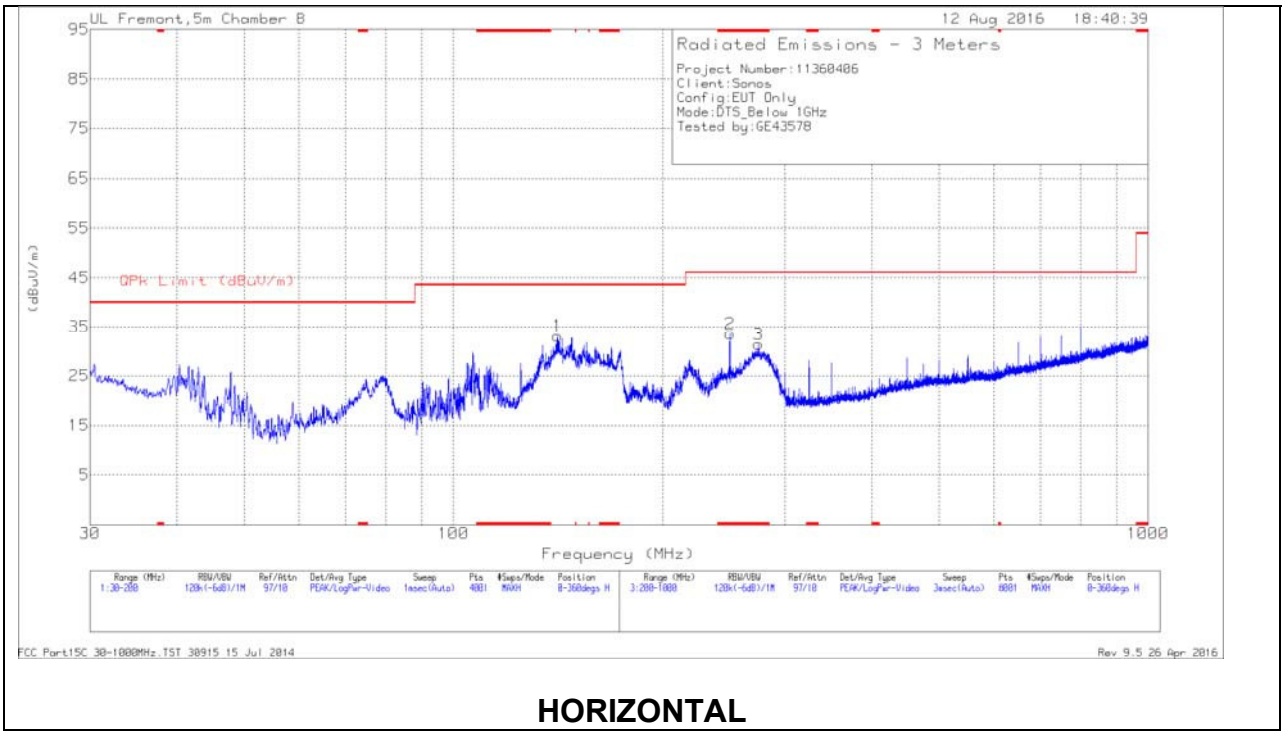
Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
2	1.78098	26.99	Pk	10.8	1.5	-40	-.71	29.54	-30.25	-	-	0-360
6	3.46721	20.54	Pk	10.8	1.5	-40	-7.16	29.54	-36.7	-	-	0-360
3	7.41712	14.83	Pk	10.9	1.5	-40	-12.77	29.54	-42.31	-	-	0-360

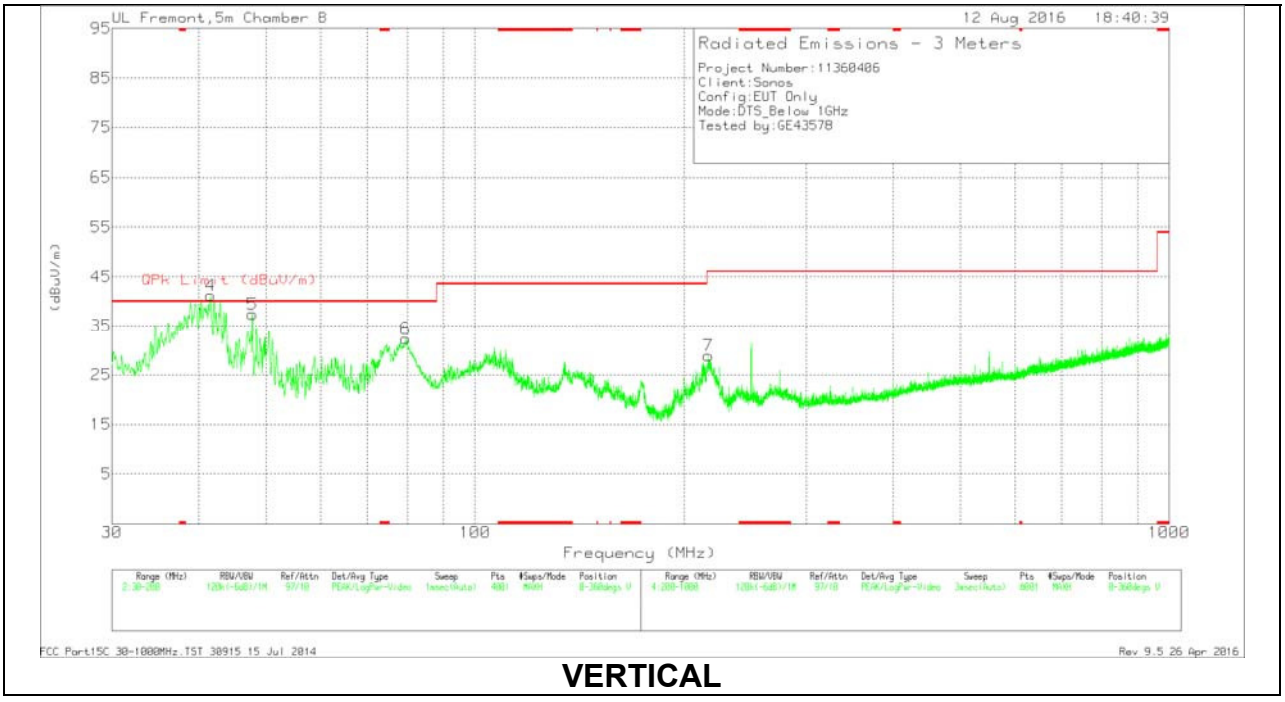
Pk - Peak detector

5.4. WORST-CASE BELOW 1 GHz

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



HORIZONTAL



VERTICAL

Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 250	44.82	Pk	15.4	-26.6	33.62	46.02	-12.4	0-360	100	H
3	* 275	40.4	Pk	17.3	-26.3	31.4	46.02	-14.62	0-360	100	H
4	41.6025	53.18	Pk	16.7	-28.7	41.18	40	1.18	0-360	100	V
5	47.8075	53.46	Pk	12.5	-28.5	37.46	40	-2.54	0-360	100	V
6	79.4275	49.19	Pk	11.5	-28.3	32.39	40	-7.61	0-360	100	V
1	141.2225	43.75	Pk	17.1	-27.7	33.15	43.52	-10.37	0-360	200	H
7	216.9	41.05	Pk	14.6	-26.8	28.85	46.02	-17.17	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

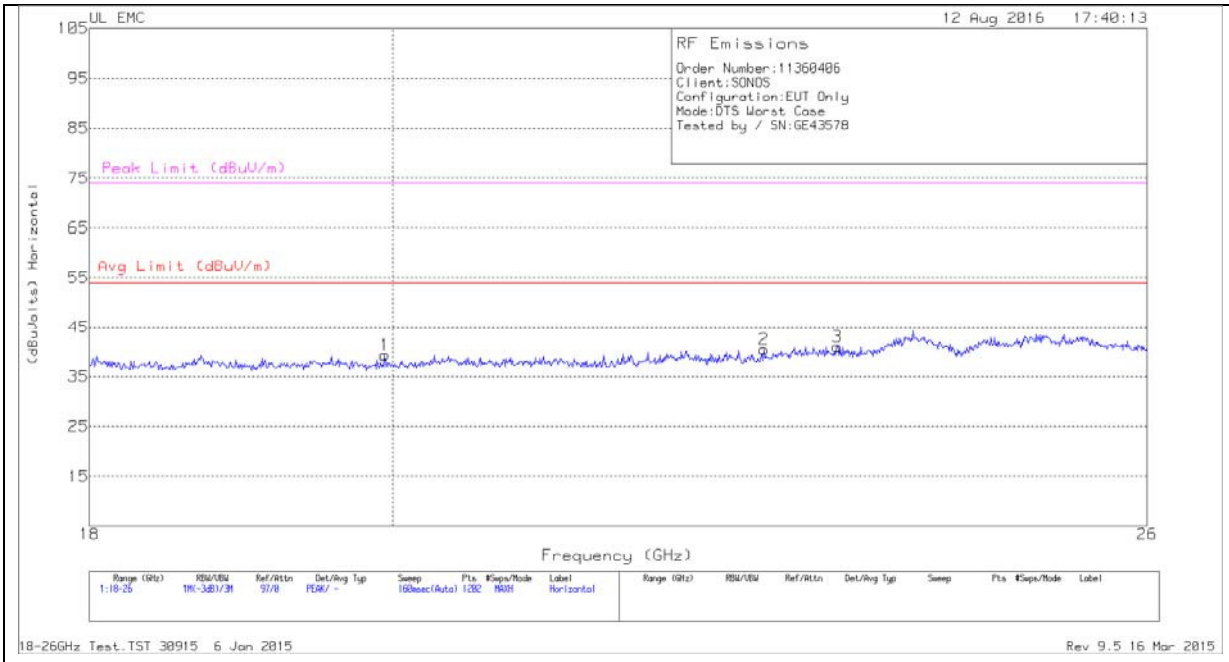
Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
41.5939	50.46	Qp	16.7	-28.7	38.46	40	-1.54	208	102	V
47.7974	52.13	Qp	12.5	-28.5	36.13	40	-3.87	326	101	V

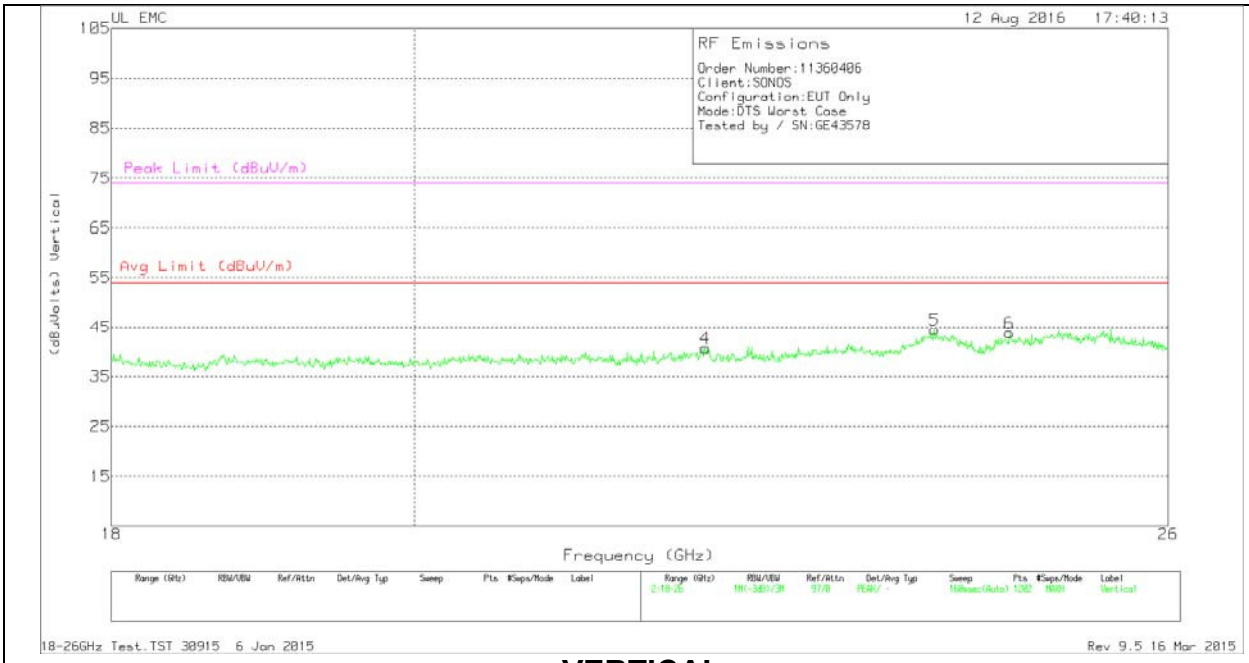
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

5.5. WORST-CASE 18 GHz – 26 GHz

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



HORIZONTAL



VERTICAL

Data

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T449 (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	19.945	41.33	Pk	32.6	-25.1	-9.5	39.33	54	-14.67	74	-34.67
2	22.756	41.5	Pk	33.4	-24.9	-9.5	40.5	54	-13.5	74	-33.5
3	23.346	41.8	Pk	33.6	-24.9	-9.5	41	54	-13	74	-33
4	22.13	41.67	Pk	33.5	-25	-9.5	40.67	54	-13.33	74	-33.33
5	23.968	44.2	Pk	34	-24.2	-9.5	44.5	54	-9.5	74	-29.5
6	24.601	43.43	Pk	34.1	-24.2	-9.5	43.83	54	-10.17	74	-30.17

6. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	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.

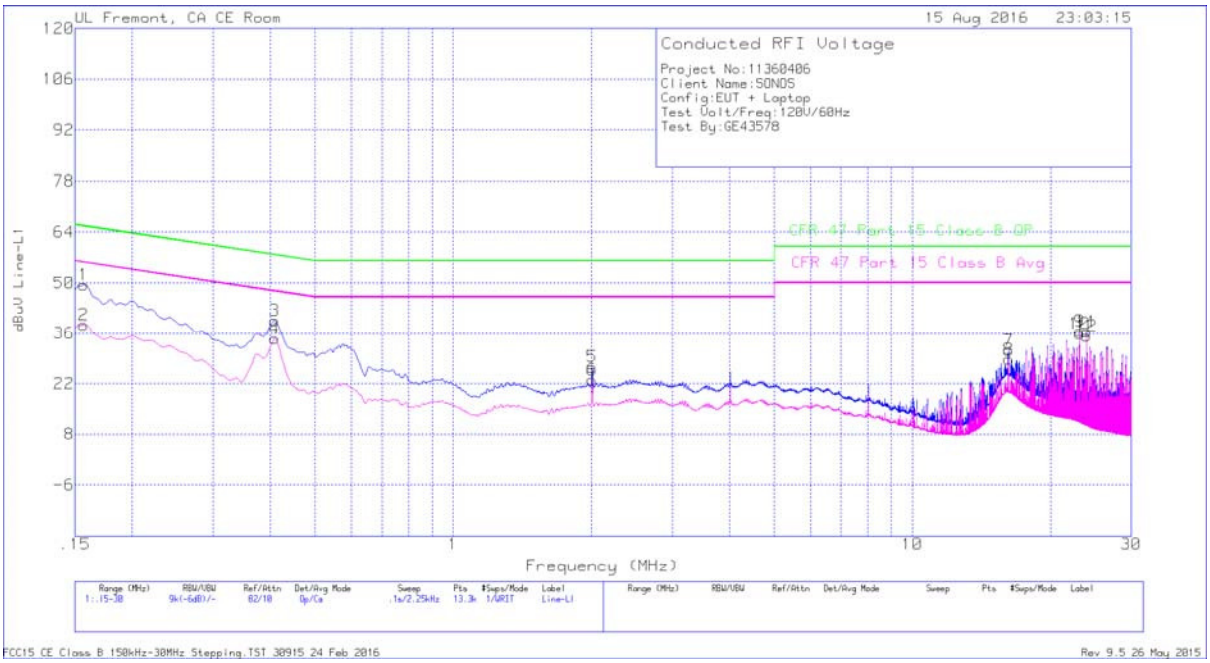
TEST PROCEDURE

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 C63.10.

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.

LINE 1 RESULTS



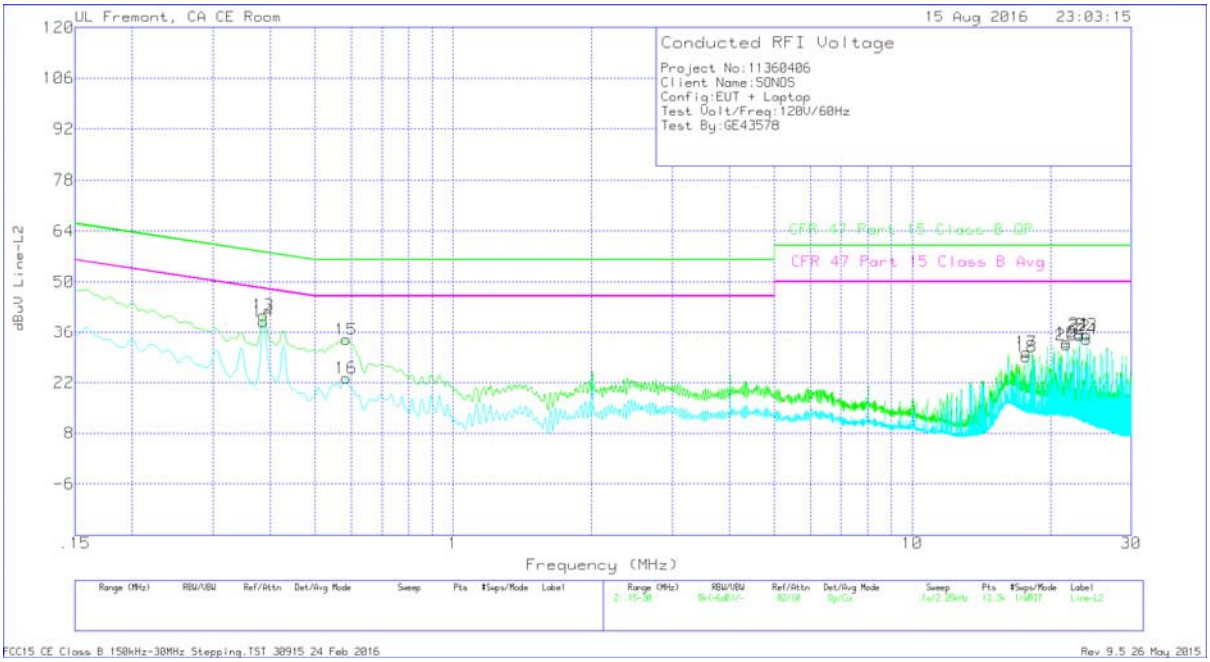
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables 1&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.15675	39.37	Qp	0	0	10.1	49.47	65.63	-16.16	-	-
2	.15675	28.3	Ca	0	0	10.1	38.4	-	-	55.63	-17.23
3	.40875	29.4	Qp	0	0	10.1	39.5	57.67	-18.17	-	-
4	.40875	24.36	Ca	0	0	10.1	34.46	-	-	47.67	-13.21
5	2.0085	16.42	Qp	0	.1	10.1	26.62	56	-29.38	-	-
6	2.0085	12.92	Ca	0	.1	10.1	23.12	-	-	46	-22.88
7	16.2285	20.78	Qp	0	.2	10.3	31.28	60	-28.72	-	-
8	16.2285	18.26	Ca	0	.2	10.3	28.76	-	-	50	-21.24
9	23.12925	25.86	Qp	.1	.2	10.4	36.56	60	-23.44	-	-
10	23.12925	25.23	Ca	.1	.2	10.4	35.93	-	-	50	-14.07
11	23.98425	25.69	Qp	.1	.2	10.4	36.39	60	-23.61	-	-
12	23.98425	24.51	Ca	.1	.2	10.4	35.21	-	-	50	-14.79

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	.38625	30.62	Qp	0	0	10.1	40.72	58.14	-17.42	-	-
14	.38625	29.01	Ca	0	0	10.1	39.11	-	-	48.14	-9.03
15	.58425	23.9	Qp	0	0	10.1	34	56	-22	-	-
16	.58425	13.06	Ca	0	0	10.1	23.16	-	-	46	-22.84
17	17.69325	19.89	Qp	0	.2	10.3	30.39	60	-29.61	-	-
18	17.69325	18.7	Ca	0	.2	10.3	29.2	-	-	50	-20.8
19	21.66225	22.51	Qp	0	.2	10.4	33.11	60	-26.89	-	-
20	21.66225	21.85	Ca	0	.2	10.4	32.45	-	-	50	-17.55
21	23.12925	24.93	Qp	.1	.2	10.4	35.63	60	-24.37	-	-
22	23.12925	24.27	Ca	.1	.2	10.4	34.97	-	-	50	-15.03
23	23.98425	24.61	Qp	.1	.2	10.4	35.31	60	-24.69	-	-
24	23.98425	23.38	Ca	.1	.2	10.4	34.08	-	-	50	-15.92

Qp - Quasi-Peak detector

Ca - CISPR average detection