FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

CELLULAR PHONE WITH BLUETOOTH AND WLAN RADIOS

MODEL NUMBER: A1662

FCC ID: BCG-E2945A
IC: 579C-E2945A

REPORT NUMBER: 15U21634-E1V3

ISSUE DATE: FEBRUARY 04, 2016

Prepared for
APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	01/27/2016	Initial Issue	M. Mekuria
V2	01/28/2016	Addresses TCB Reviewer Request	M. Mekuria
V3	02/04/2016	Revised Section 5.4 report to address TCB's question	T. Chu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

EUT DESCRIPTION: CELLULAR PHONE WITH BLUETOOTH AND WLAN RADIOS

MODEL: A1662

SERIAL NUMBER: C39Q3008GR1X

DATE TESTED: AUGUST 17, 2015 TO SEPTEMBER 15, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	Pass
INDUSTRY CANADA RSS-210 Issue 8, Annex 2	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:

CHIN PANG
SENIOR ENGINEER
UL VERIFICATION SERVICES INC.

Tested By:

TONY WANG
EMC ENGINEER
UL VERIFICATION SERVICES INC.

2. 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-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

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

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT, Model A1662 is a mobile phone with multimedia functions (music, application support, and video), cellular GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-HSDPA/LTE radio, IEEE 802.11a/b/g/n/ac,NFC and Bluetooth radio. The rechargeable battery is not user accessible.

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	E Field at 30m distance (dBuV/m)
13.56	Type A	22.10
	Type B	22.12

5.3. SOFTWARE AND FIRMWARE

The test utility software used during testing was ES1.1 NCI.

5.4. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated under three orthogonal orientations X (Flatbed), Y (Landscape), and Z (Portrait). The Y (Landscape) orientation was determined to be the worst-case orientation.

The worst case position of the EUT was investigated under three setup configurations: EUT with power supply, EUT with earphones and EUT with power supply and earphones. The EUT with power supply and earphones configuration was determined to be worst-case configuration; therefore, all final fundamental, radiated testing and Line Conducted were performed with the EUT with power supply and earphones.

There is no significant difference between OAT and chamber readings by comparison; therefore All radiated test was performed in the chamber.

5.5. DESCRIPTION OF TEST SETUP

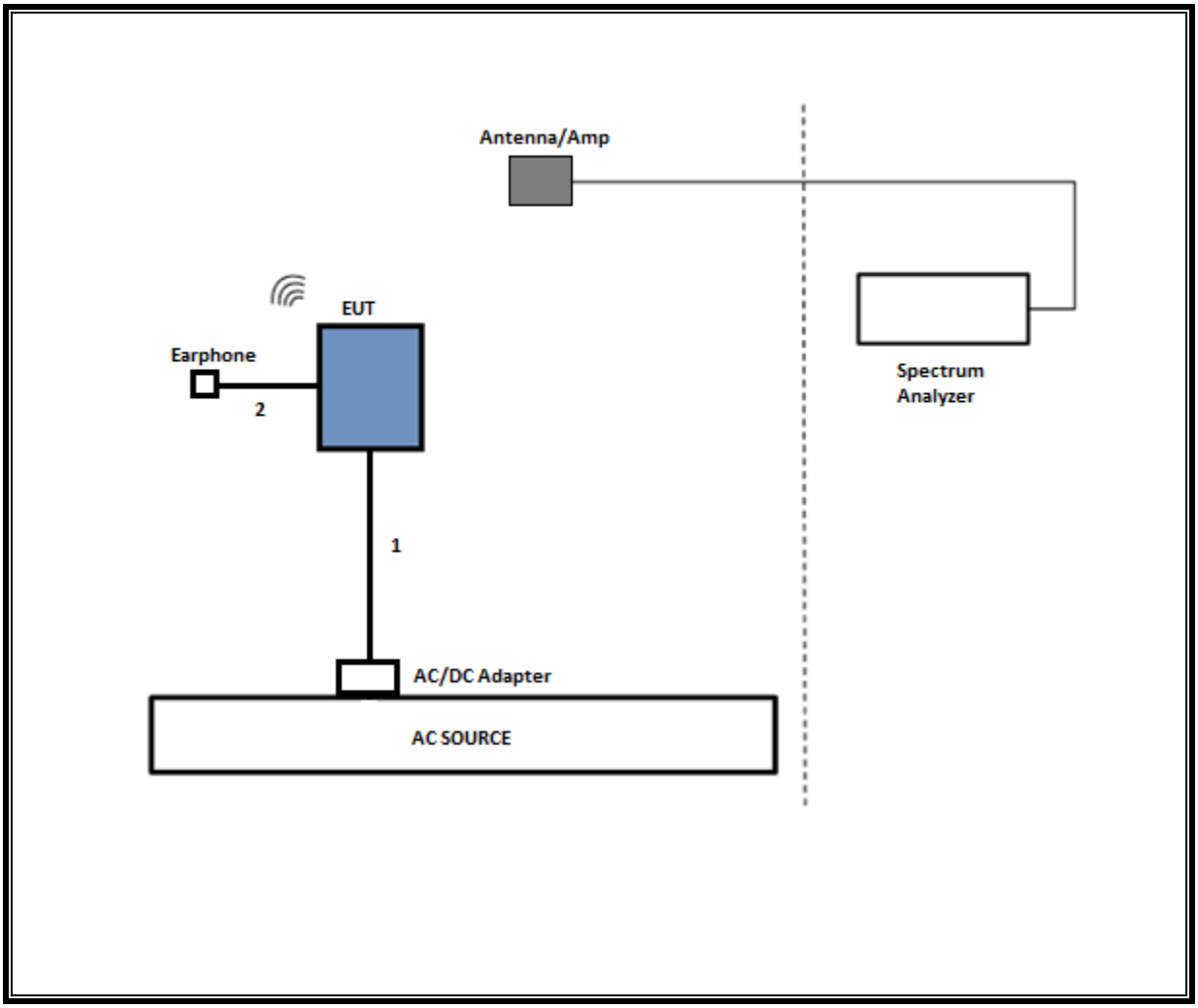
SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Apple	Mac Book Pro	W801200UD94	n/a
Laptop AC/DC Adapter	Apple	85W MagSAfe Power adapter	A122	n/a
EUT AC/DC Adapter	Apple	A1385	D292365B2FQDHLHC7	n/a
Earphones	Apple	n/a	n/a	n/a

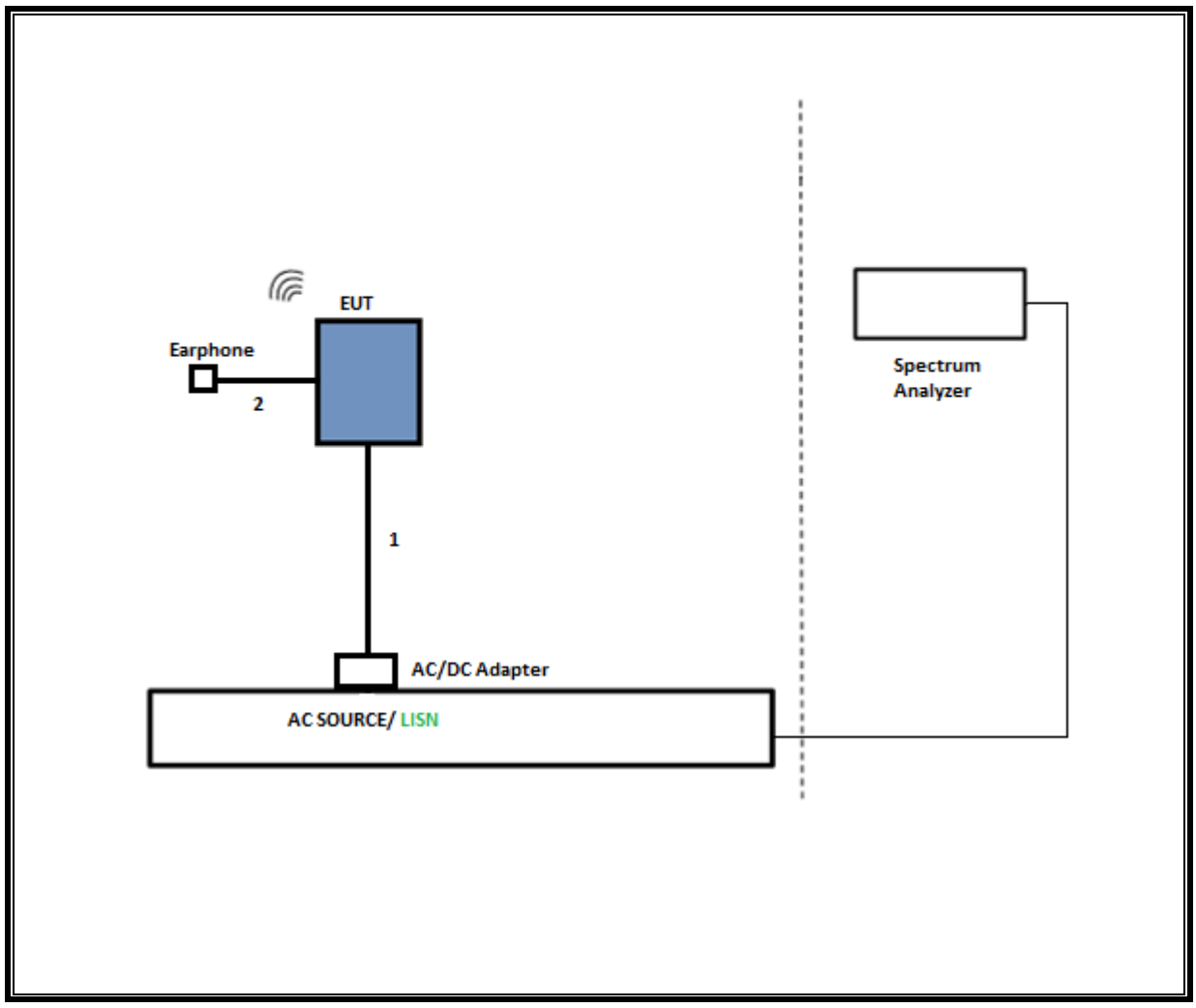
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	lightning	Un-shielded	1	n/a
2	Audio	1	Jack	Un-shielded	0.5	n/a
3	DC	2	Alligator	18 AWG strand	1	Insulated cable

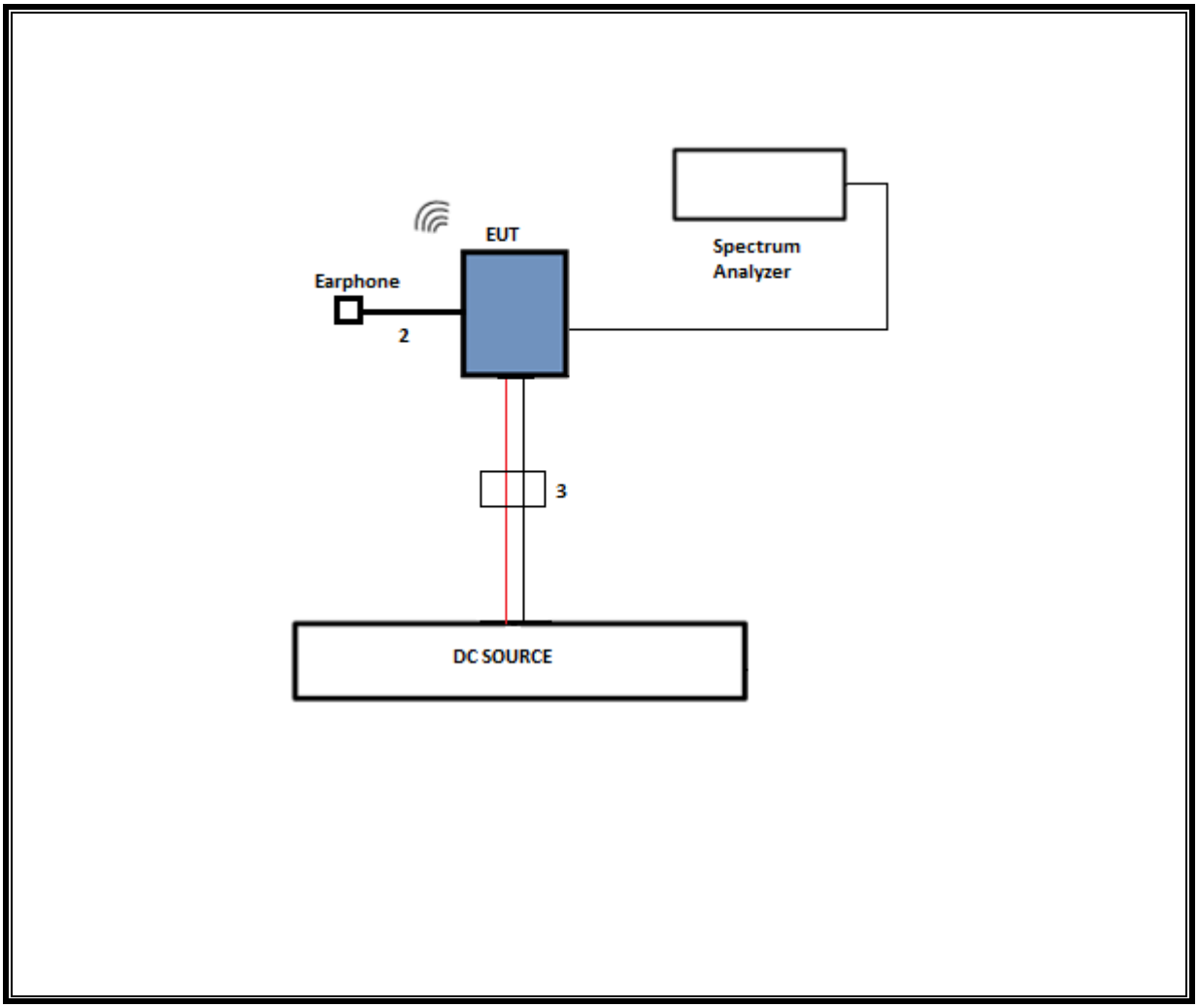
SETUP DIAGRAM RADIATED



SETUP DIAGRAM LINE CONDUCTED



SETUP DIAGRAM FREQUENCY STABILITY



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 Due**
Spectrum Analyzer	Agilent	N9030A	906	06/11/16
Antenna, Broadband Hybrid	Sunol Sciences	JB3	900	04/10/16
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	835	06/09/16
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	834	02/16/16
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	906	06/11/16
Antenna, Loop, 30 MHz	ETS Lindgren	6502	757	05/21/16
Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	754	03/21/16
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	1222	03/27/16
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	212	08/07/16
LISN for Conducted Emissions CISPR-16	FCC	LISN-50/250-25-2	24	01/16/16
Line conducted Power cable ANSI 63.4	UL	PG1	861	07/28/16
UL SOFTWARE				
*Radiated Software	UL	UL EMC	Fundamental mask, 5/7/15	
*Conducted Software	UL	UL EMC	Ver 2.2, March 31, 2015	
*Radiated Software	UL	UL EMC	Below 30Mhz, 6/24/15	
*Radiated Software	UL	UL EMC	Below 1Ghz, 7/15/14	
*AC Line Conducted Software	UL	UL EMC	Ver 9.5, April 3, 2015	

Note: * indicates automation software version used in the compliance certification testing

7. OCCUPIED BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 10kHz. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

99% and 20dB BW

Type A

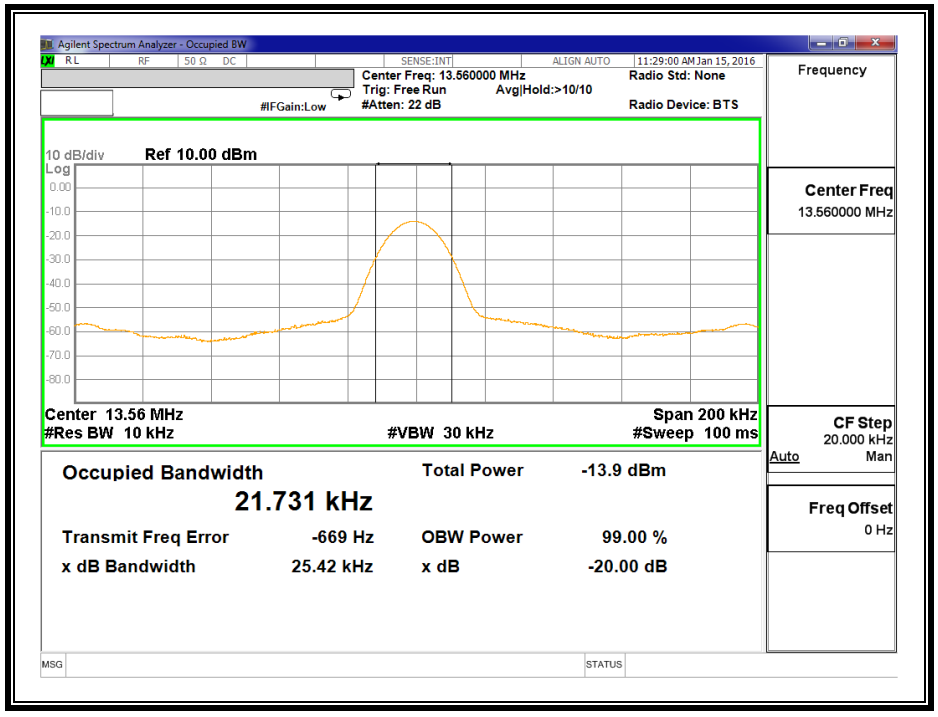
Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
424	13.56	21.731	25.42
212	13.56	21.735	25.43
106	13.56	21.987	24.93

Type B

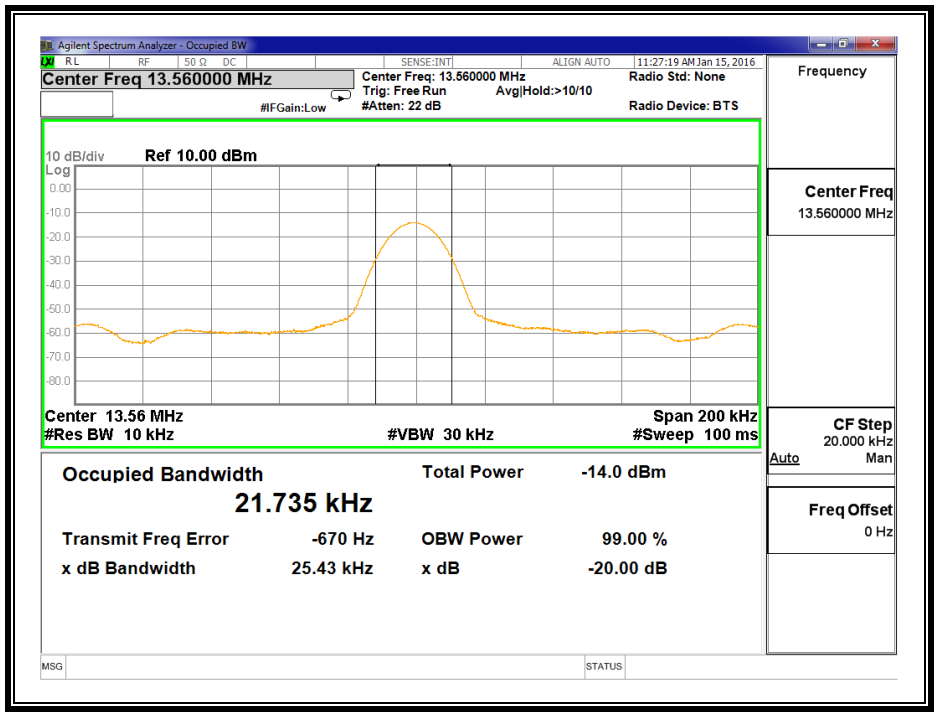
Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
424	13.56	21.757	25.44
212	13.56	21.758	25.44
106	13.56	21.756	25.42

7.1. TYPE A

424Kbps



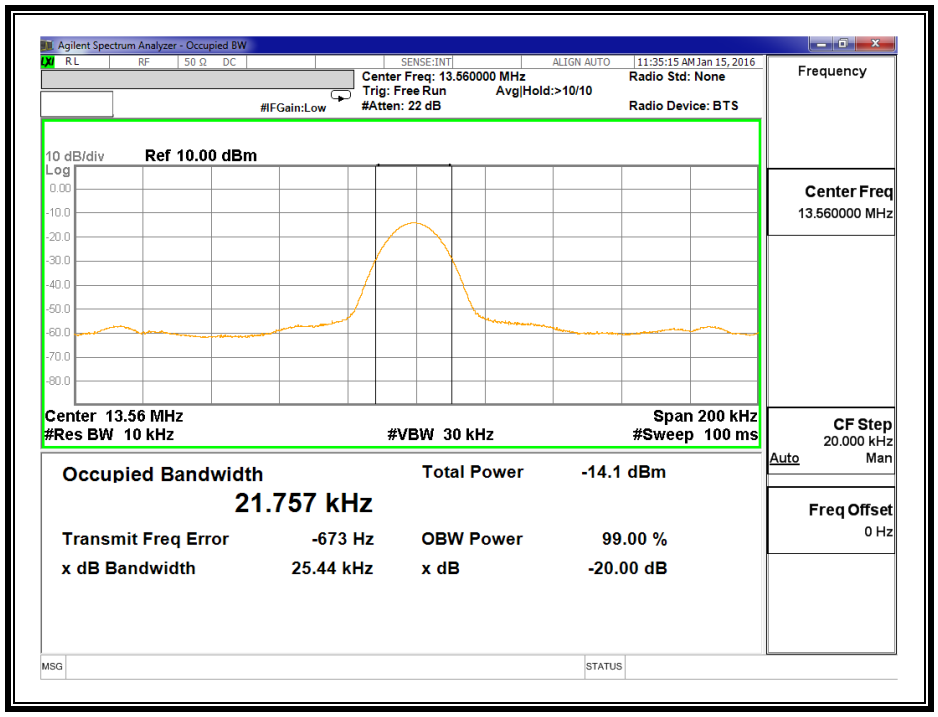
212Kbps



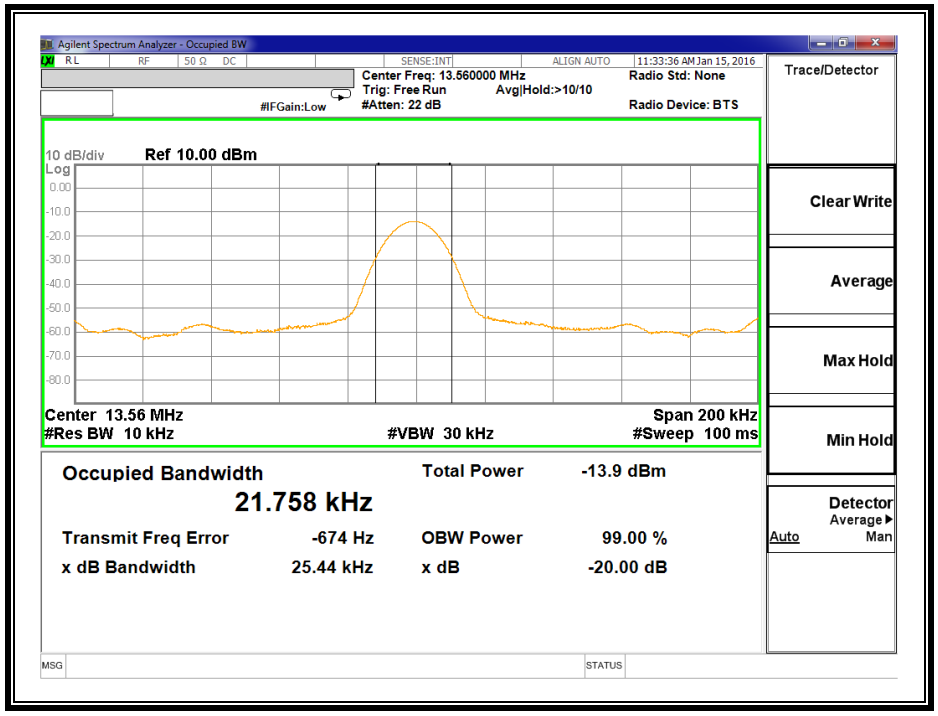
106Kbps

7.2. TYPE B

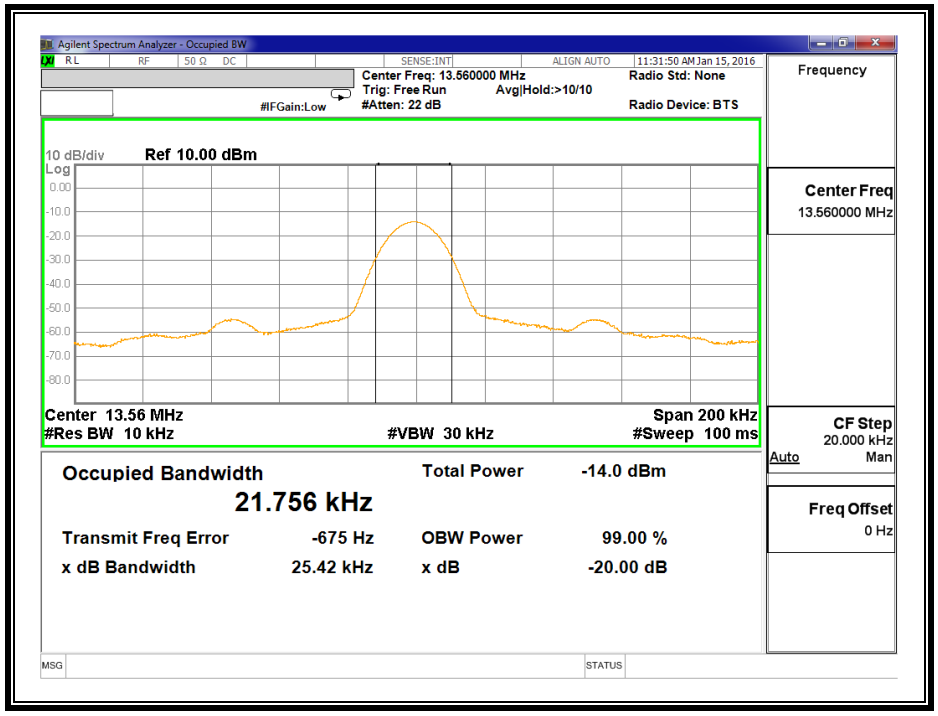
424Kbps



212Kbps



106Kbps



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

§15.225
IC RSS-210, A2.6
IC RSS-GEN, Section 8.9 (Transmitter)
IC RSS-GEN, Section 7.1.2 (Receiver)

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:
§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.
§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

Formula for converting the filed strength from uV/m to dBuV/m is:
Limit (dBuV/m) = 20 log limit (uV/m)

In addition:

§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (d) The provisions in §§ 15.225, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

TEST PROCEDURE

ANSI C63.10, 2013

The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 0.15 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater.

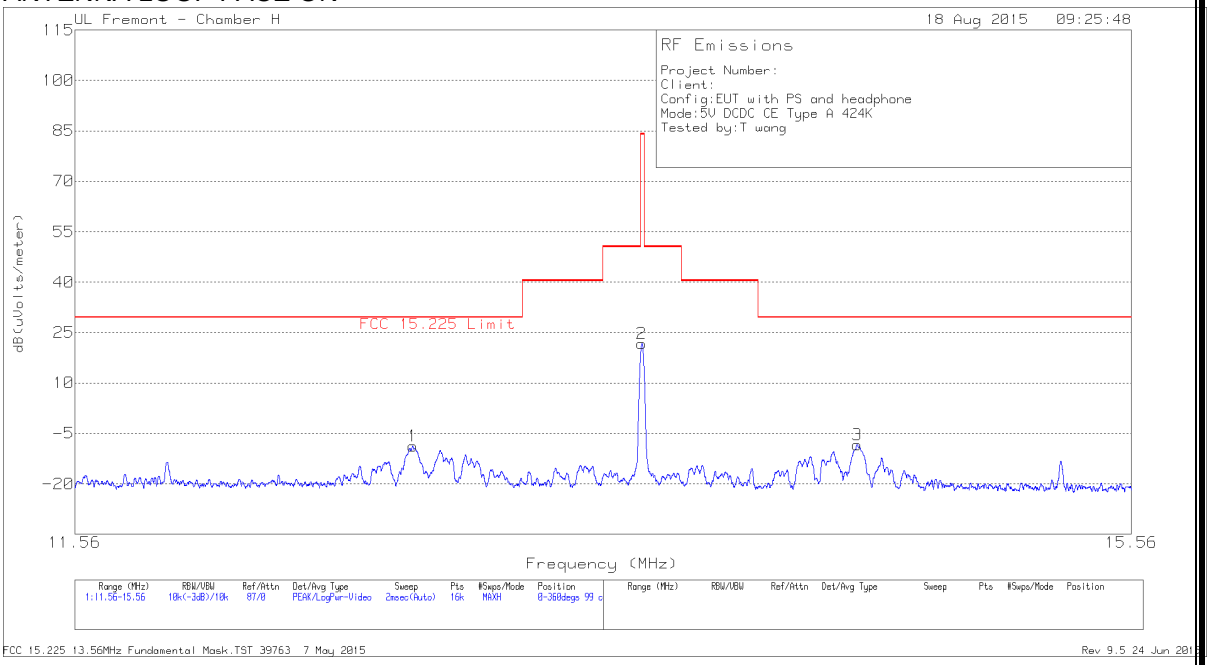
RESULTS

8.2. FUNDAMENTAL AND SPURIOUS EMISSIONS (0.15 – 30 MHz)

8.2.1. TYPE A

FUNDAMENTAL 424Kbps

ANTENNA LOOP FACE ON



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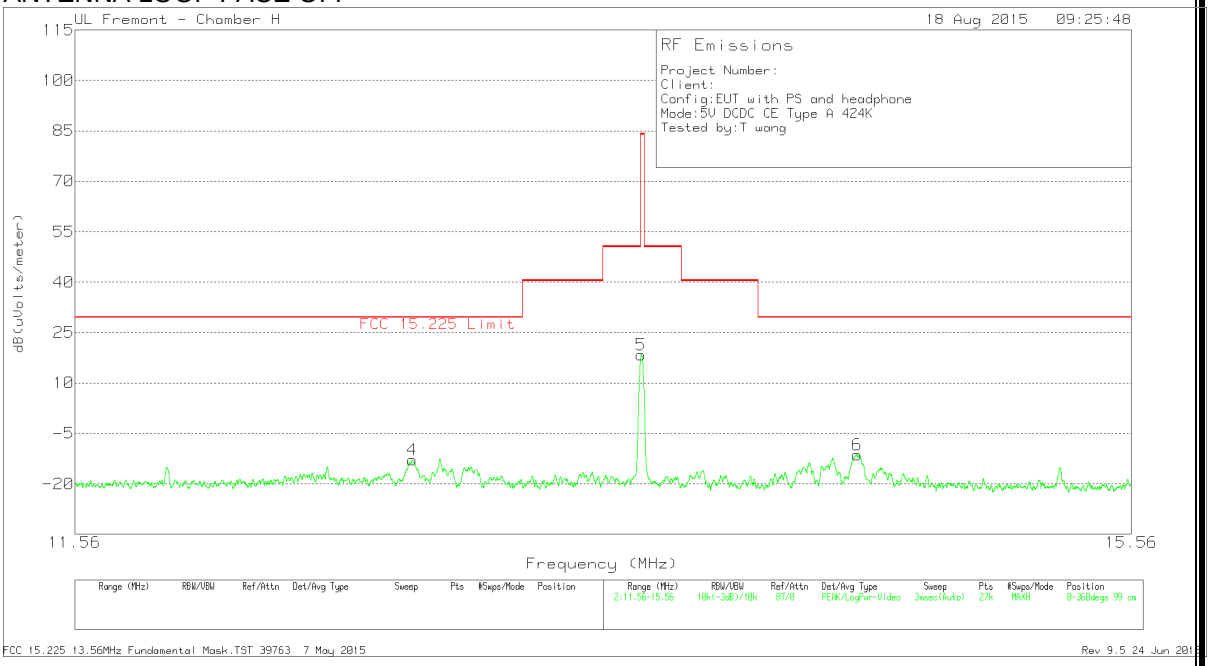

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts /meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
4	12.71114	16.08	Pk	10.4	.6	-40	-12.92	29.54	-42.46	0-360
1	12.71288	20.23	Pk	10.4	.6	-40	-8.77	29.54	-38.31	0-360
5	13.55682	47.43	Pk	10.4	.6	-40	18.43	84	-65.57	0-360
2	13.55938	50.66	Pk	10.4	.6	-40	21.66	84	-62.34	0-360
6	14.405	17.79	Pk	10.3	.5	-40	-11.41	29.54	-40.95	0-360
3	14.40625	20.8	Pk	10.3	.5	-40	-8.4	29.54	-37.94	0-360

Pk - Peak detector

FCC 15.225 13.56MHz Fundamental Mask.TST 39763 7 May 2015

Rev 9.5 24 Jun 2015

SPURIOUS EMISSIONS 424kbps

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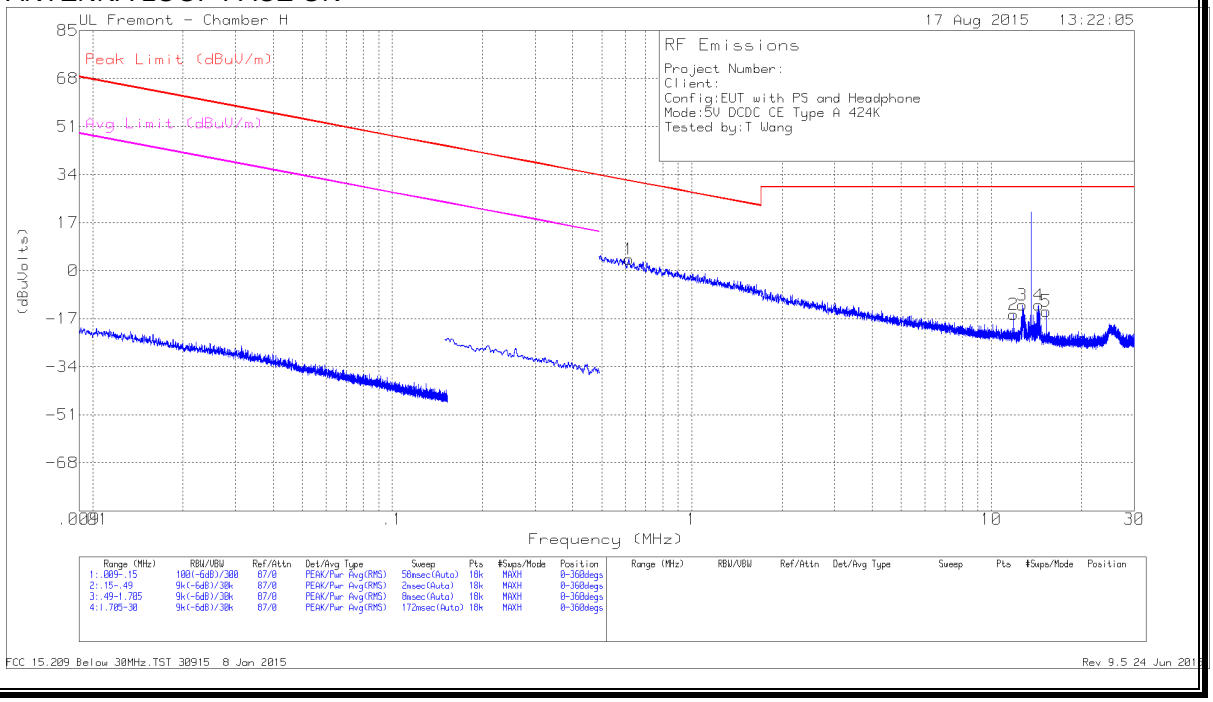

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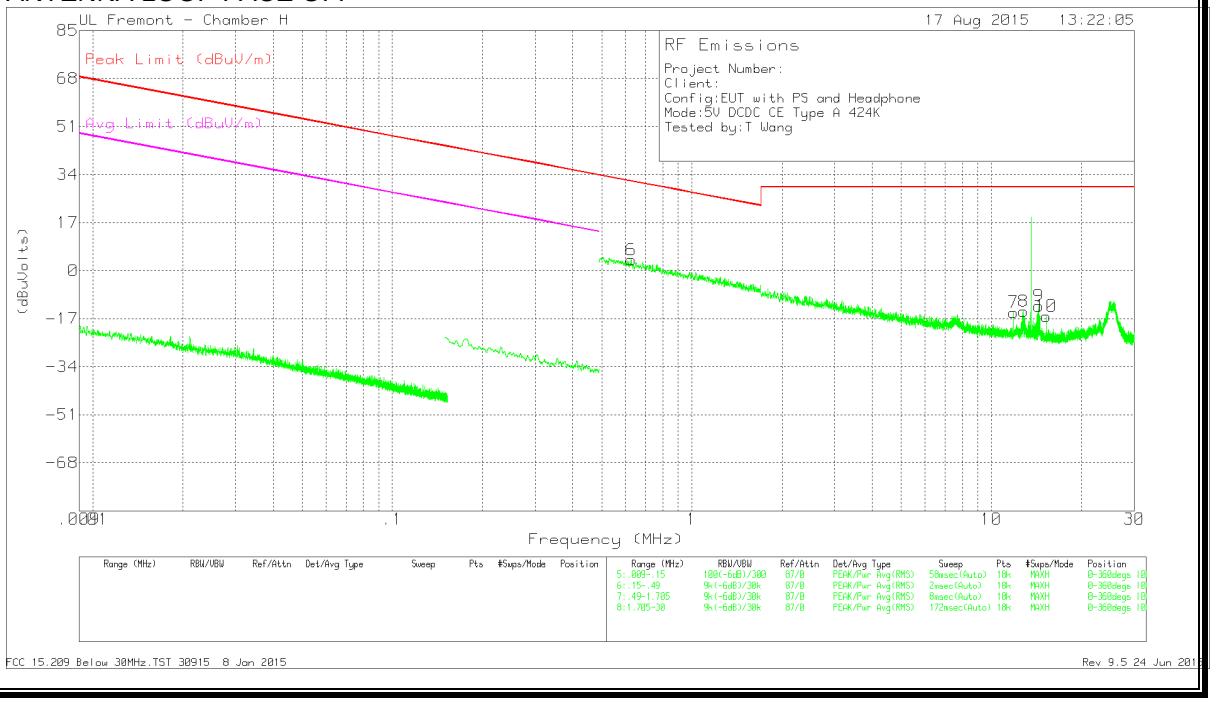

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.61606	33.7	Pk	10.2	.1	-40	4	31.81	-27.81	-	-	0-360
6	.62725	33.52	Pk	10.2	.1	-40	3.82	31.66	-27.84	-	-	0-360
2	11.86484	13.6	Pk	10.4	.5	-40	-15.5	29.54	-45.04	-	-	0-360
7	11.86484	14.28	Pk	10.4	.5	-40	-14.82	29.54	-44.36	-	-	0-360
3	12.71057	16.76	Pk	10.4	.6	-40	-12.24	29.54	-41.78	-	-	0-360
8	12.80804	14.58	Pk	10.4	.6	-40	-14.42	29.54	-43.96	-	-	0-360
4	14.40597	17.04	Pk	10.3	.5	-40	-12.16	29.54	-41.7	-	-	0-360
9	14.40597	16.72	Pk	10.3	.5	-40	-12.48	29.54	-42.02	-	-	0-360
5	15.25407	14.74	Pk	10.3	.6	-40	-14.36	29.54	-43.9	-	-	0-360
10	15.25407	13	Pk	10.3	.6	-40	-16.1	29.54	-45.64	-	-	0-360

Pk - Peak detector

FCC 15.209 Below 30MHz.TST 30915 8 Jan 2015

Rev 9.5 24 Jun 2015

FUNDAMENTAL 212Kbps

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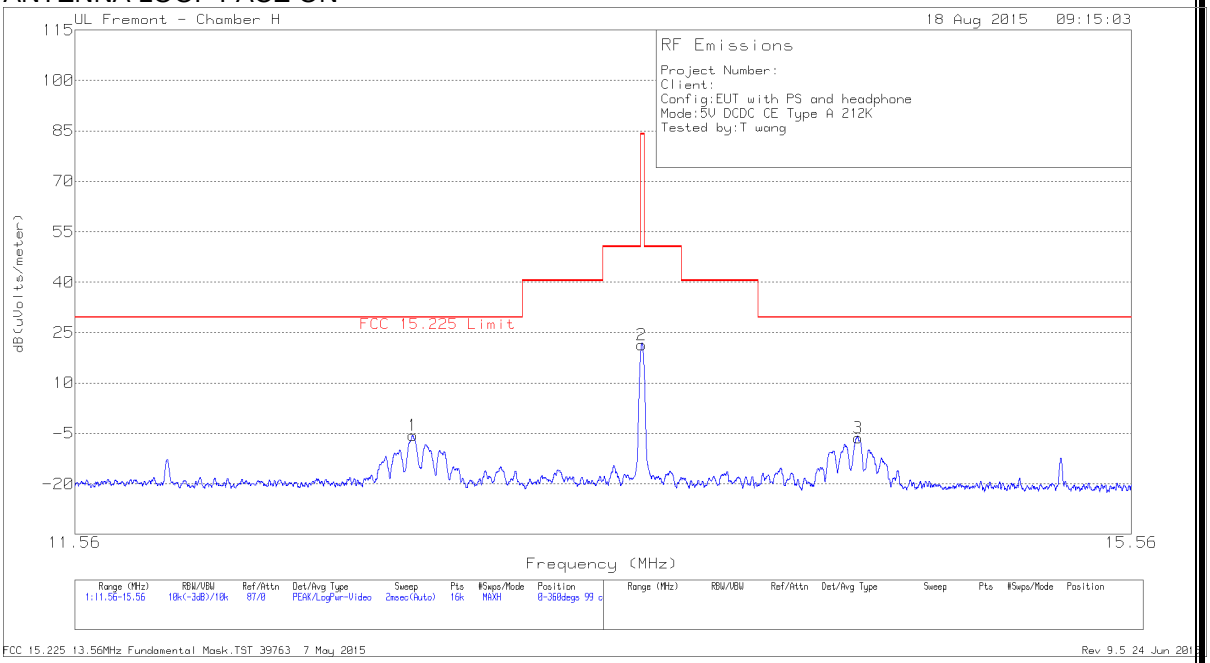

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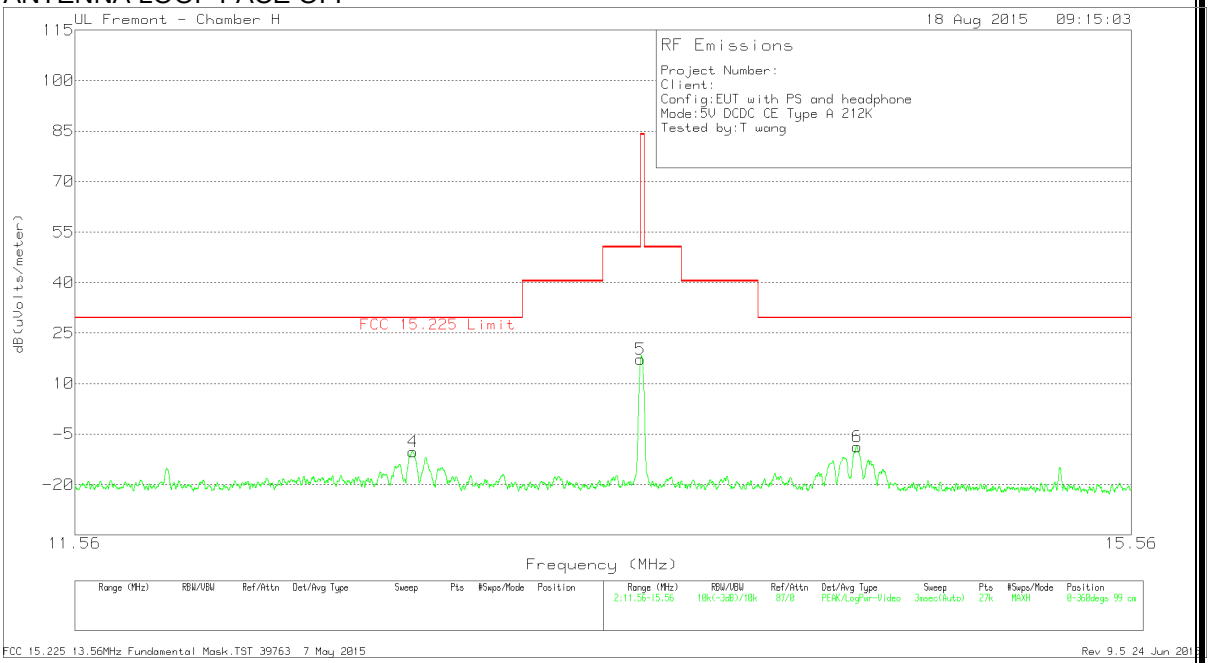

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts /meter)	FCC 15.225 Limit	Margin (dB)	Azimuth (Degs)
1	12.71263	23.36	Pk	10.4	.6	-40	-5.64	29.54	-35.18	0-360
4	12.71314	18.8	Pk	10.4	.6	-40	-10.2	29.54	-39.74	0-360
5	13.55445	46.29	Pk	10.4	.6	-40	17.29	84	-66.71	0-360
2	13.55725	50.39	Pk	10.4	.6	-40	21.39	84	-62.61	0-360
6	14.405	20.5	Pk	10.3	.5	-40	-8.7	29.54	-38.24	0-360
3	14.4095	22.91	Pk	10.3	.5	-40	-6.29	29.54	-35.83	0-360

Pk - Peak detector

FCC 15.225 13.56MHz Fundamental Mask.TST 39763 7 May 2015

Rev 9.5 24 Jun 2015

SPURIOUS EMISSIONS 212kbps

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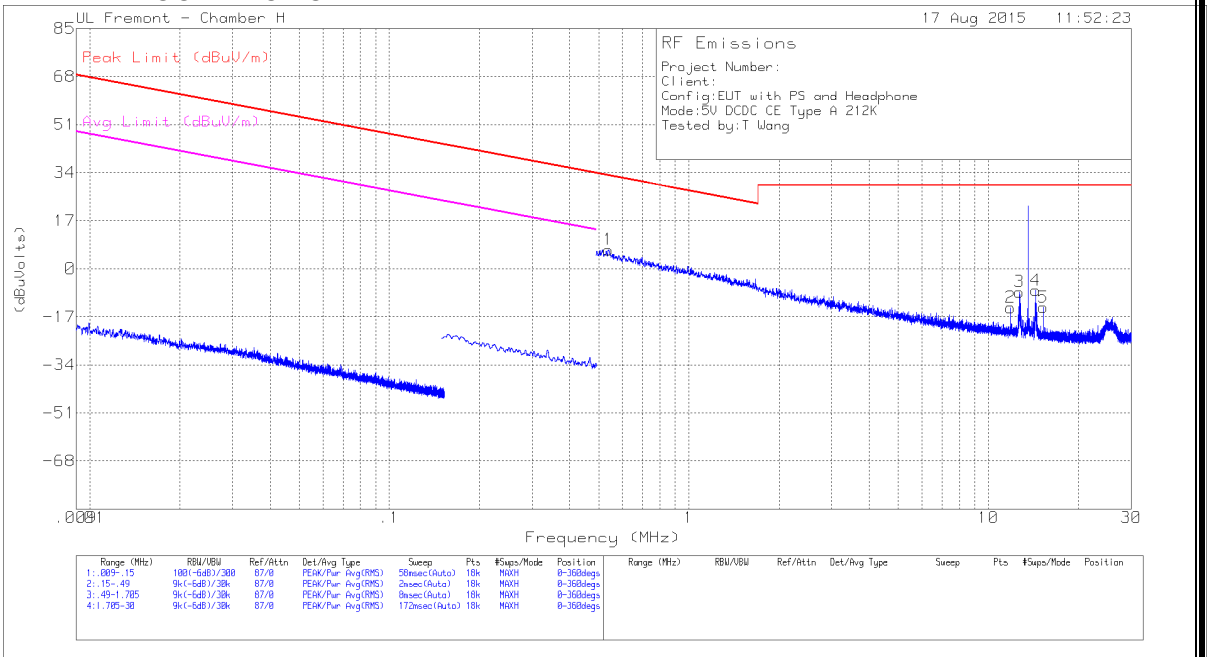

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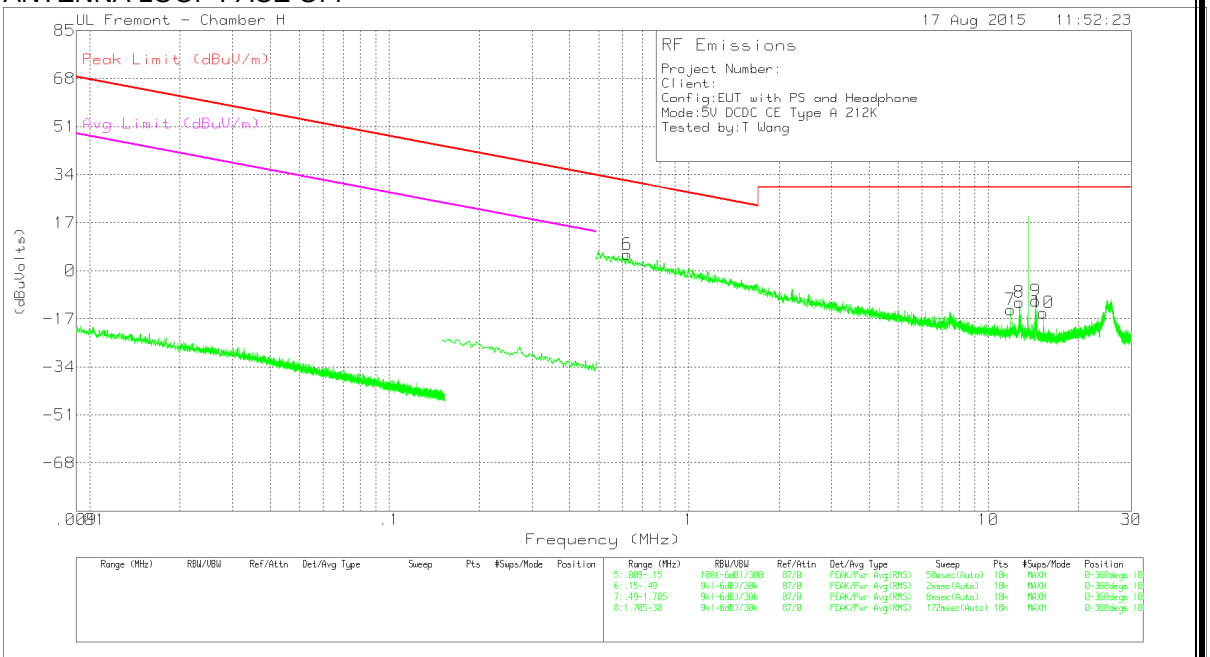

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.53914	36.34	Pk	10.3	.1	-40	6.74	32.97	-26.23	-	-	0-360
6	.6233	35.53	Pk	10.2	.1	-40	5.83	31.71	-25.88	-	-	0-360
2	11.86484	15.38	Pk	10.4	.5	-40	-13.72	29.54	-43.26	-	-	0-360
7	11.86484	15.28	Pk	10.4	.5	-40	-13.82	29.54	-43.36	-	-	0-360
3	12.71214	20.82	Pk	10.4	.6	-40	-8.18	29.54	-37.72	-	-	0-360
8	12.71372	17.87	Pk	10.4	.6	-40	-11.13	29.54	-40.67	-	-	0-360
9	14.40676	18.59	Pk	10.3	.5	-40	-10.61	29.54	-40.15	-	-	0-360
4	14.40755	21.57	Pk	10.3	.5	-40	-7.63	29.54	-37.17	-	-	0-360
5	15.25407	15.44	Pk	10.3	.6	-40	-13.66	29.54	-43.2	-	-	0-360
10	15.25485	14.24	Pk	10.3	.6	-40	-14.86	29.54	-44.4	-	-	0-360

Pk - Peak detector

FCC 15.209 Below 30MHz.TST 30915 8 Jan 2015

Rev 9.5 24 Jun 2015

FUNDAMENTAL 106Kbps

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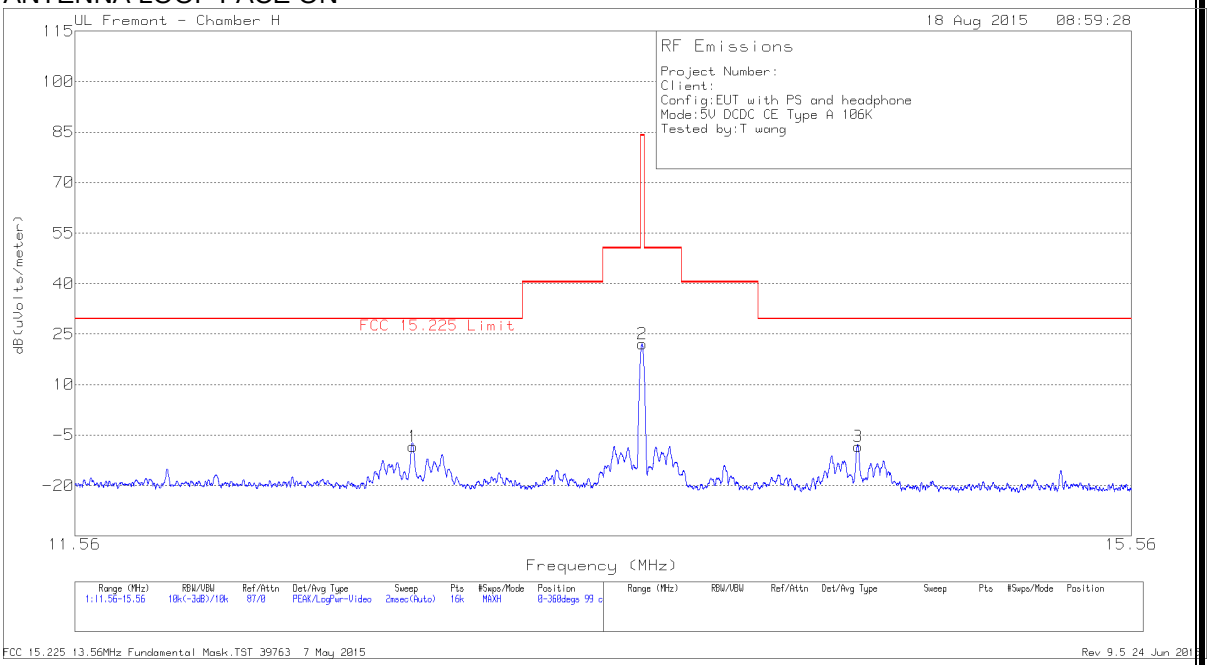

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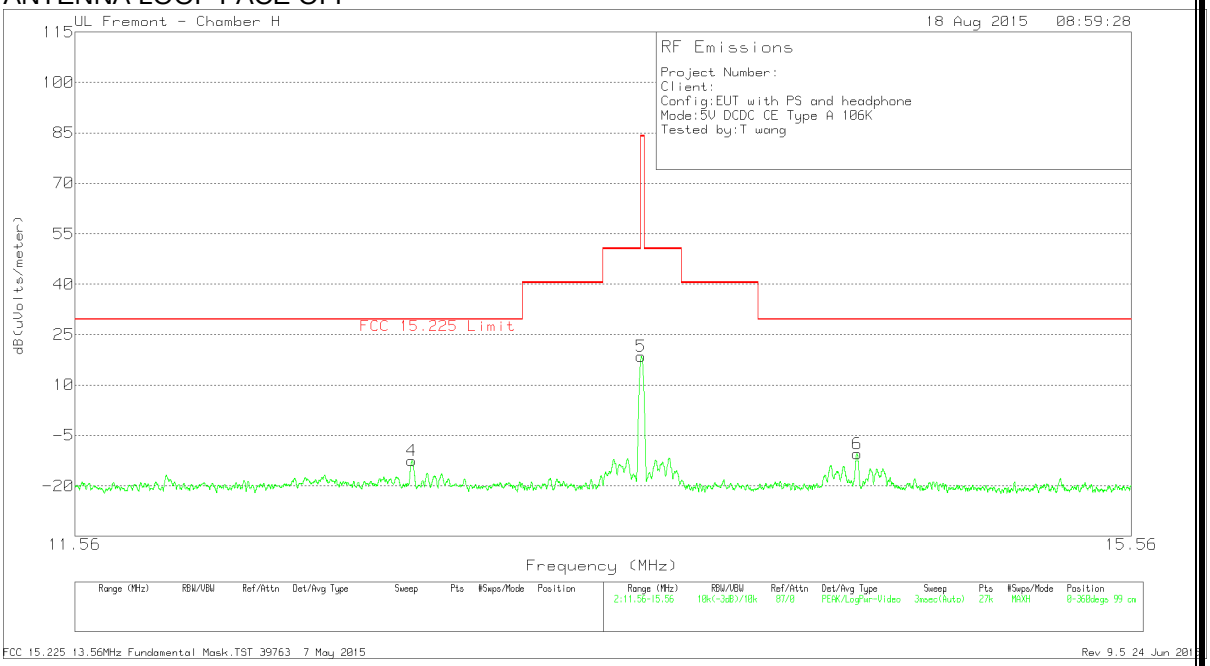


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts /meter)	FCC 15.225 Limit	Margin (dB)	Azimuth (Degs)
4	12.71011	16.5	Pk	10.4	.6	-40	-12.5	29.54	-42.04	0-360
1	12.71475	20.66	Pk	10.4	.6	-40	-8.34	29.54	-37.88	0-360
5	13.55682	47.49	Pk	10.4	.6	-40	18.49	84	-65.51	0-360
2	13.55975	51.1	Pk	10.4	.6	-40	22.1	84	-61.9	0-360
6	14.405	18.7	Pk	10.3	.5	-40	-10.5	29.54	-40.04	0-360
3	14.4095	20.9	Pk	10.3	.5	-40	-8.3	29.54	-37.84	0-360

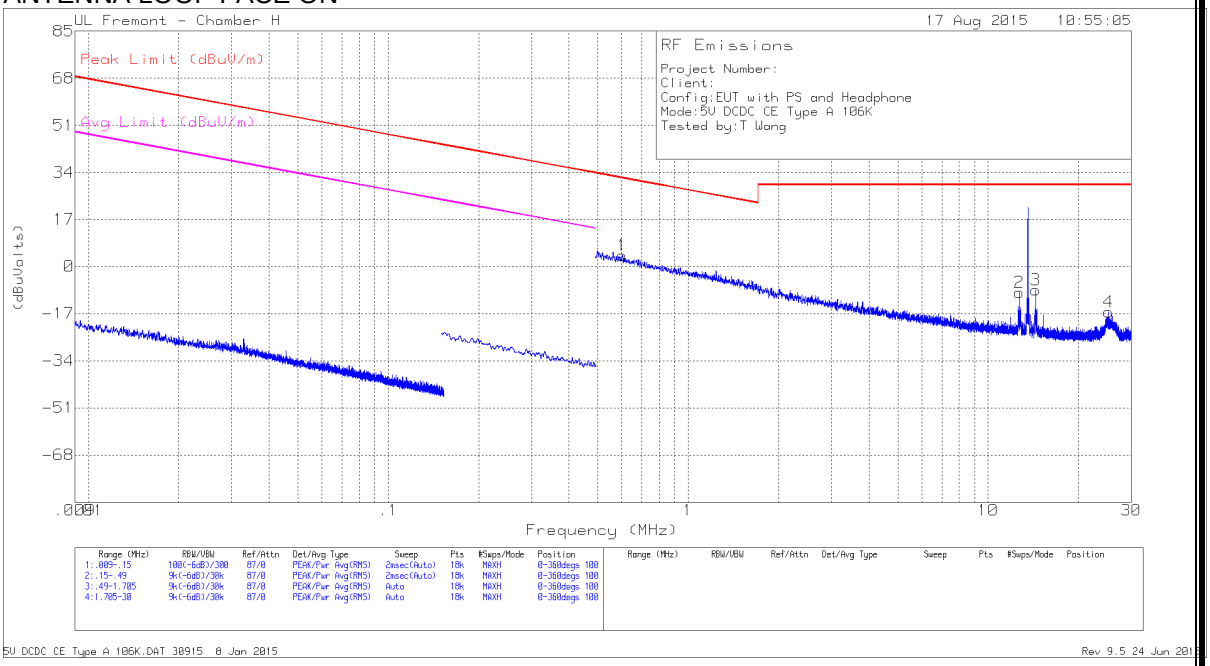
Pk - Peak detector

FCC 15.225 13.56MHz Fundamental Mask.TST 39763 7 May 2015

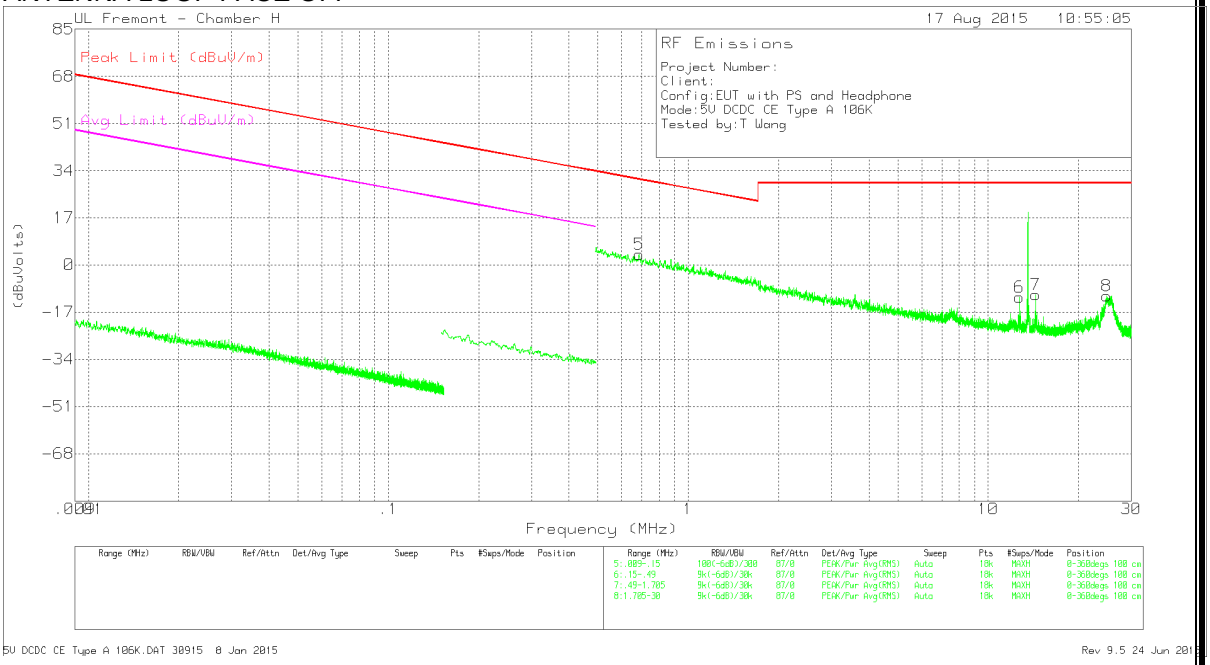
Rev 9.5 24 Jun 2015

SPURIOUS EMISSIONS 106Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.60279	33.86	Pk	10.2	.1	-40	4.16	32	-27.84	-	-	0-360
5	.68554	33.6	Pk	10.2	.1	-40	3.9	30.88	-26.98	-	-	0-360
6	12.71214	17.33	Pk	10.4	.6	-40	-11.67	29.54	-41.21	-	-	0-360
2	12.71293	19.74	Pk	10.4	.6	-40	-9.26	29.54	-38.8	-	-	0-360
3	14.40676	20.7	Pk	10.3	.5	-40	-8.5	29.54	-38.04	-	-	0-360
7	14.40676	18.5	Pk	10.3	.5	-40	-10.7	29.54	-40.24	-	-	0-360
8	24.83384	19.27	Pk	8.9	.7	-40	-11.13	29.54	-40.67	-	-	0-360
4	25.25356	14.1	Pk	8.8	.7	-40	-16.4	29.54	-45.94	-	-	0-360

Pk - Peak detector

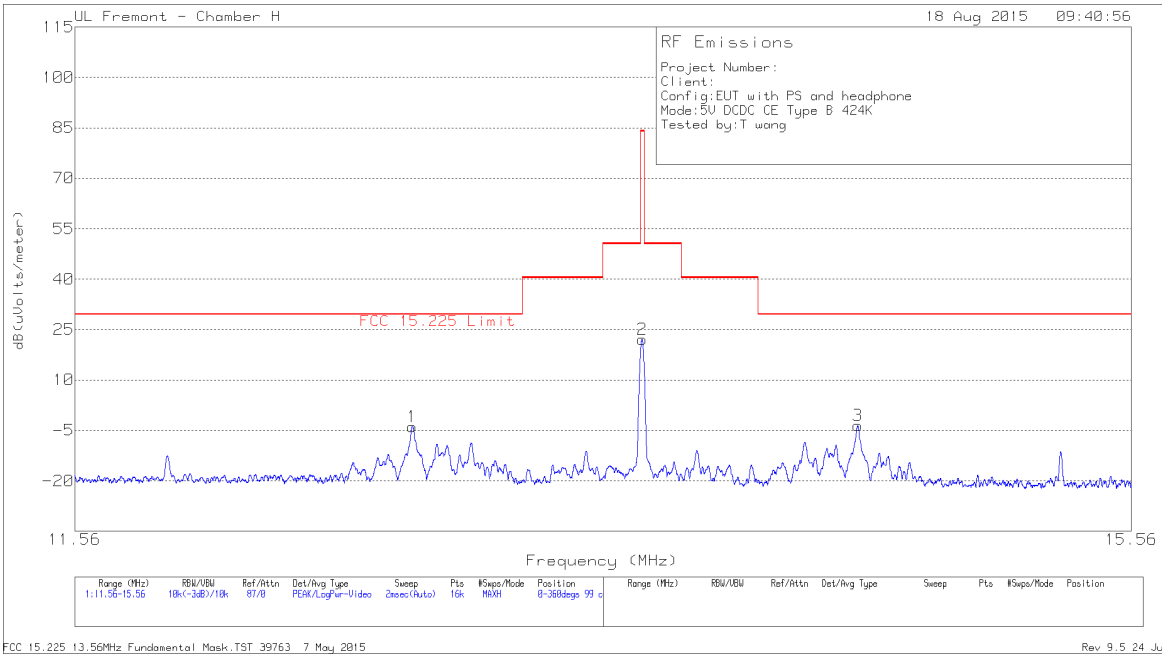
5V DCDC CE Type A 106K.DAT 30915 8 Jan 2015

Rev 9.5 24 Jun 2015

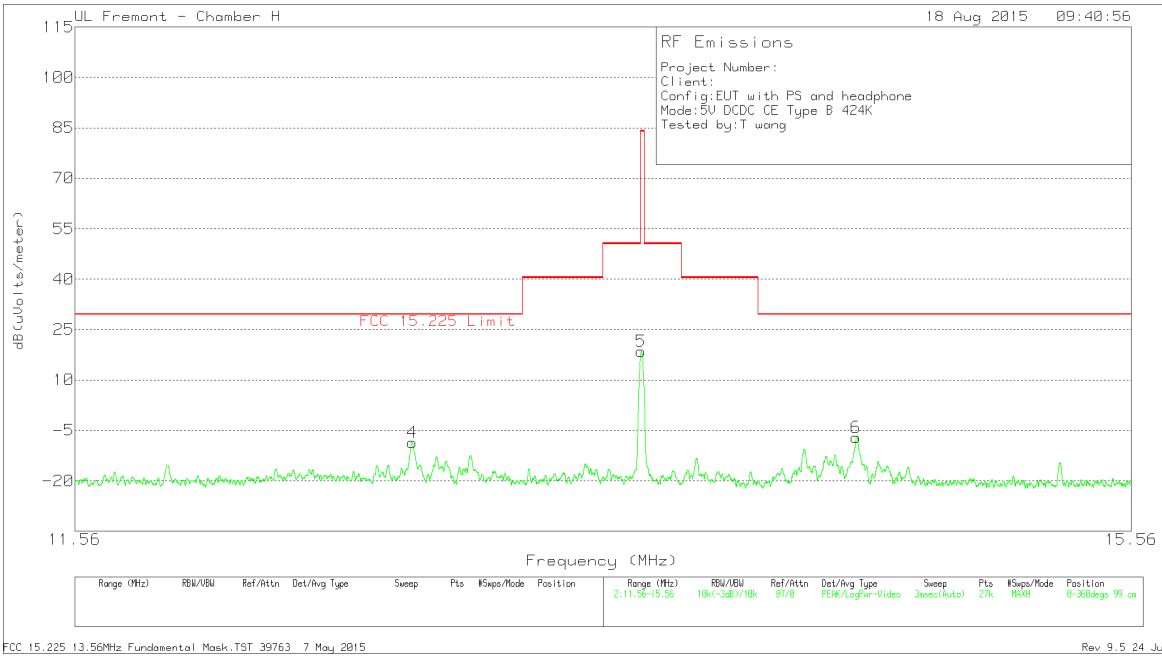
8.2.2. TYPE B

FUNDAMENTAL 424Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts /meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
4	12.71085	20.46	Pk	10.4	.6	-40	-8.54	29.54	-38.08	0-360
1	12.71213	25.17	Pk	10.4	.6	-40	-3.83	29.54	-33.37	0-360
5	13.55682	47.53	Pk	10.4	.6	-40	18.53	84	-65.47	0-360
2	13.55975	51.12	Pk	10.4	.6	-40	22.12	84	-61.88	0-360
6	14.4013	22.07	Pk	10.3	.5	-40	-7.13	29.54	-36.67	0-360
3	14.40763	25.6	Pk	10.3	.5	-40	-3.6	29.54	-33.14	0-360

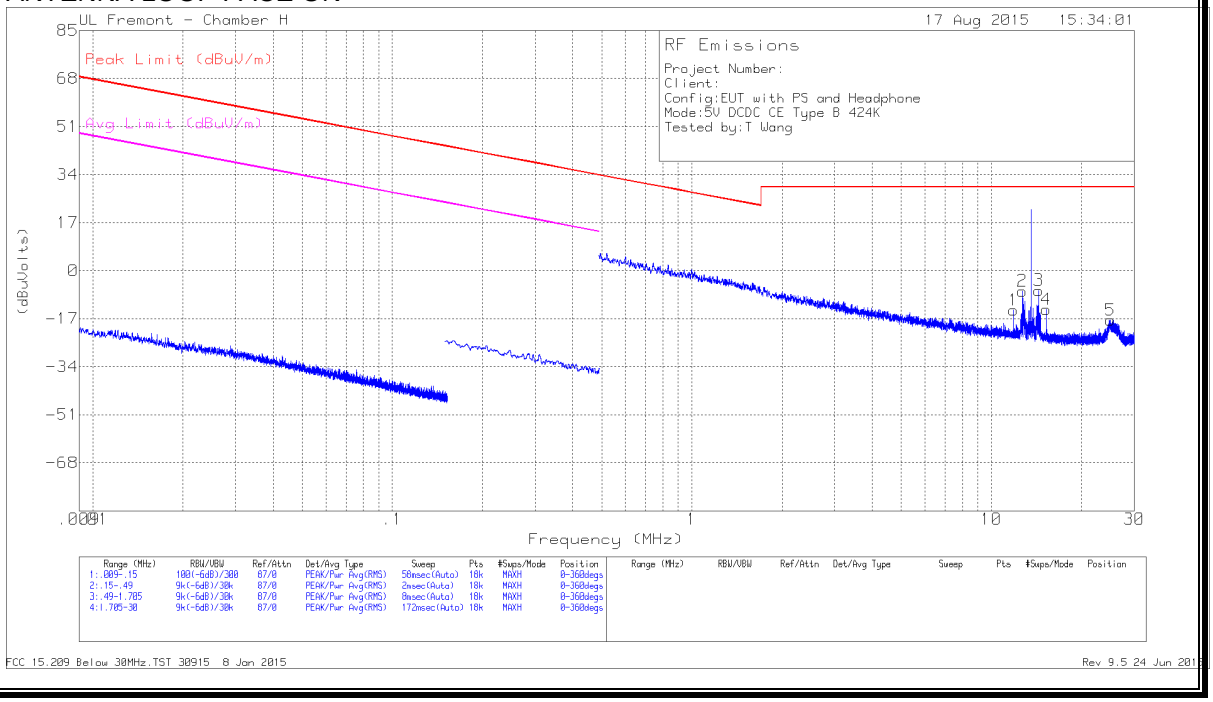
Pk - Peak detector

FCC 15.225 13.56MHz Fundamental Mask.TST 39763 7 May 2015

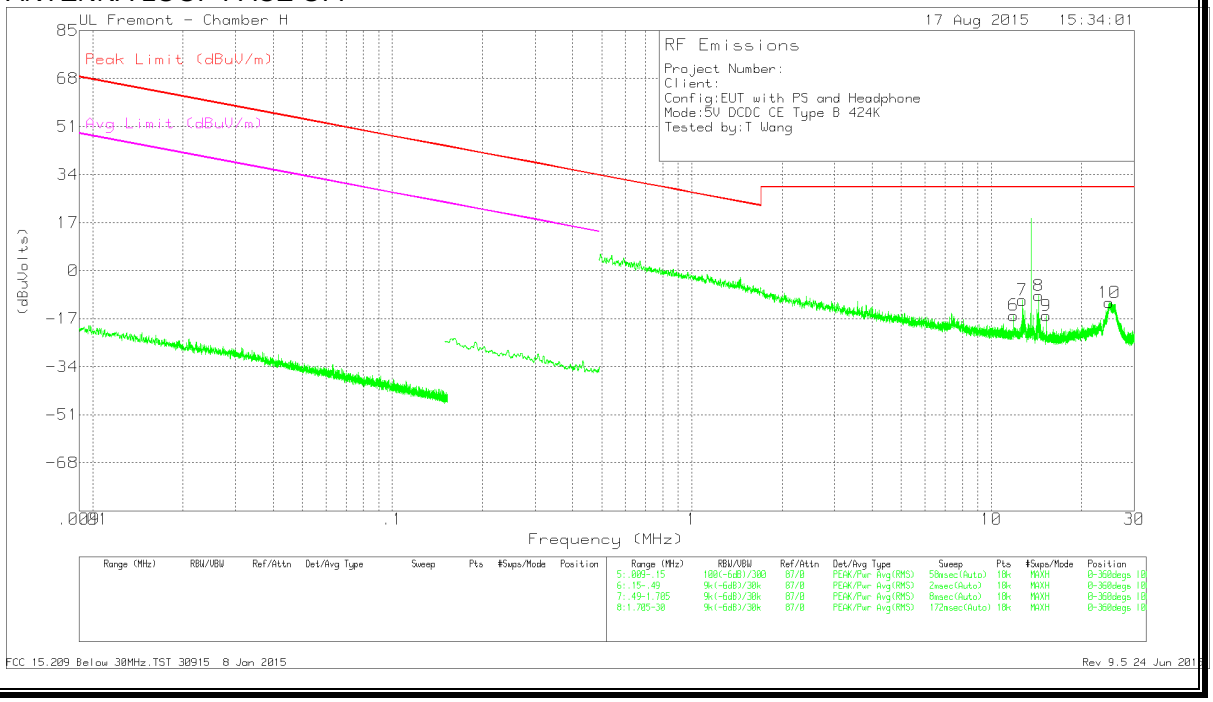
Rev 9.5 24 Jun 2015

SPURIOUS EMISSIONS 424Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
6	11.86405	13.24	Pk	10.4	.5	-40	-15.86	29.54	-45.4	-	-	0-360
1	11.86484	15.12	Pk	10.4	.5	-40	-13.98	29.54	-43.52	-	-	0-360
2	12.71214	21.8	Pk	10.4	.6	-40	-7.2	29.54	-36.74	-	-	0-360
7	12.71214	18.52	Pk	10.4	.6	-40	-10.48	29.54	-40.02	-	-	0-360
8	14.40755	20.33	Pk	10.3	.5	-40	-8.87	29.54	-38.41	-	-	0-360
3	14.40833	22.2	Pk	10.3	.5	-40	-7	29.54	-36.54	-	-	0-360
9	15.25407	13.08	Pk	10.3	.6	-40	-16.02	29.54	-45.56	-	-	0-360
4	15.25564	15.37	Pk	10.3	.6	-40	-13.73	29.54	-43.27	-	-	0-360
10	24.74345	19.11	Pk	8.9	.7	-40	-11.29	29.54	-40.83	-	-	0-360
5	24.96431	12.87	Pk	8.9	.7	-40	-17.53	29.54	-47.07	-	-	0-360

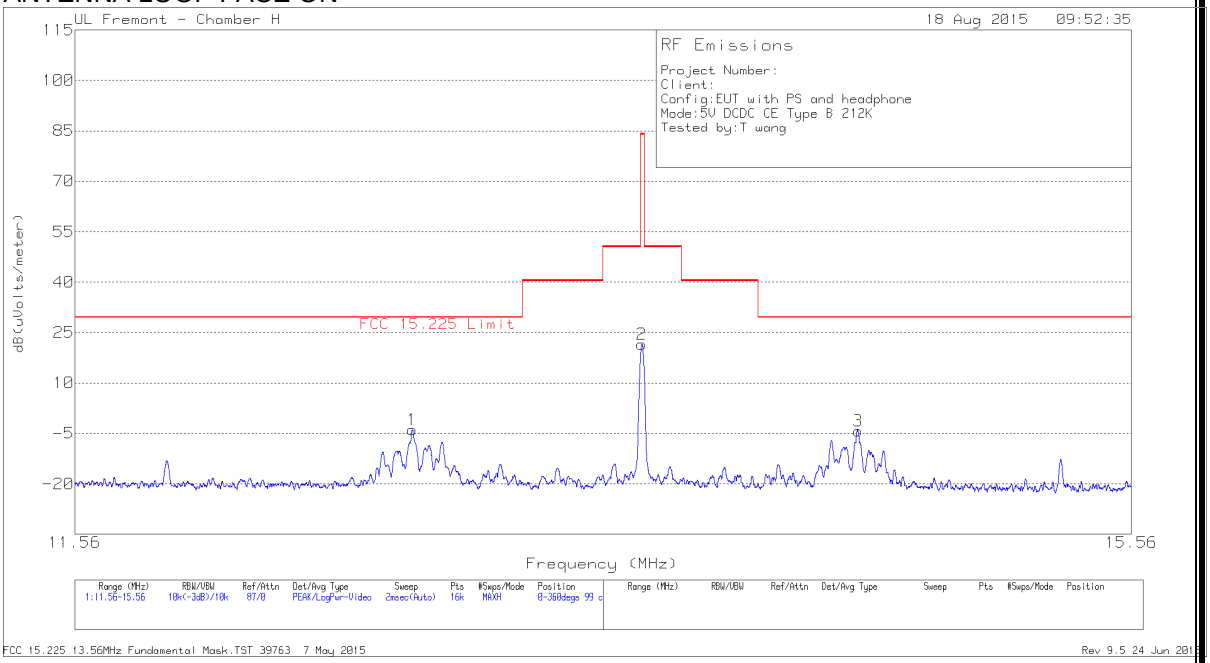
Pk - Peak detector

FCC 15.209 Below 30MHz.TST 30915 8 Jan 2015

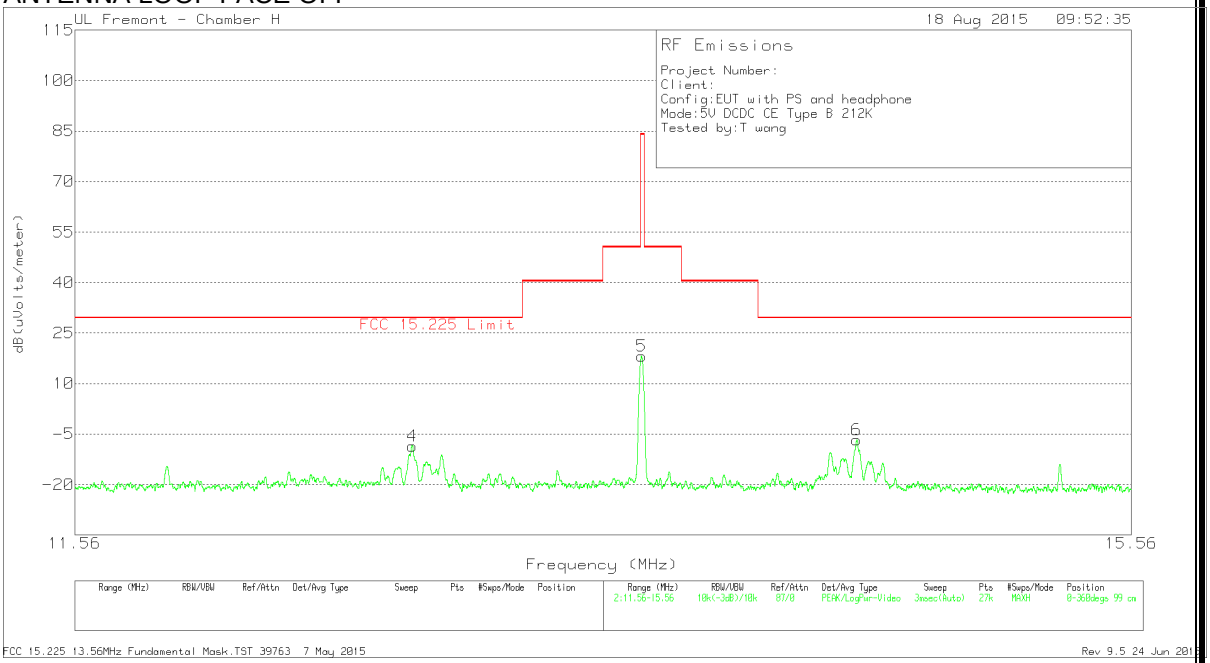
Rev 9.5 24 Jun 2015

FUNDAMENTAL 212Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts /meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
4	12.71092	-8.29	Pk	10.4	.6	-40	-37.29	29.54	-66.83	0-360
1	12.71163	25.02	Pk	10.4	.6	-40	-3.98	29.54	-33.52	0-360
5	13.55763	47.1	Pk	10.4	.6	-40	18.1	84	-65.9	0-360
2	13.55938	50.46	Pk	10.4	.6	-40	21.46	84	-62.54	0-360
6	14.40389	22.44	Pk	10.3	.5	-40	-6.76	29.54	-36.3	0-360
3	14.4095	24.86	Pk	10.3	.5	-40	-4.34	29.54	-33.88	0-360

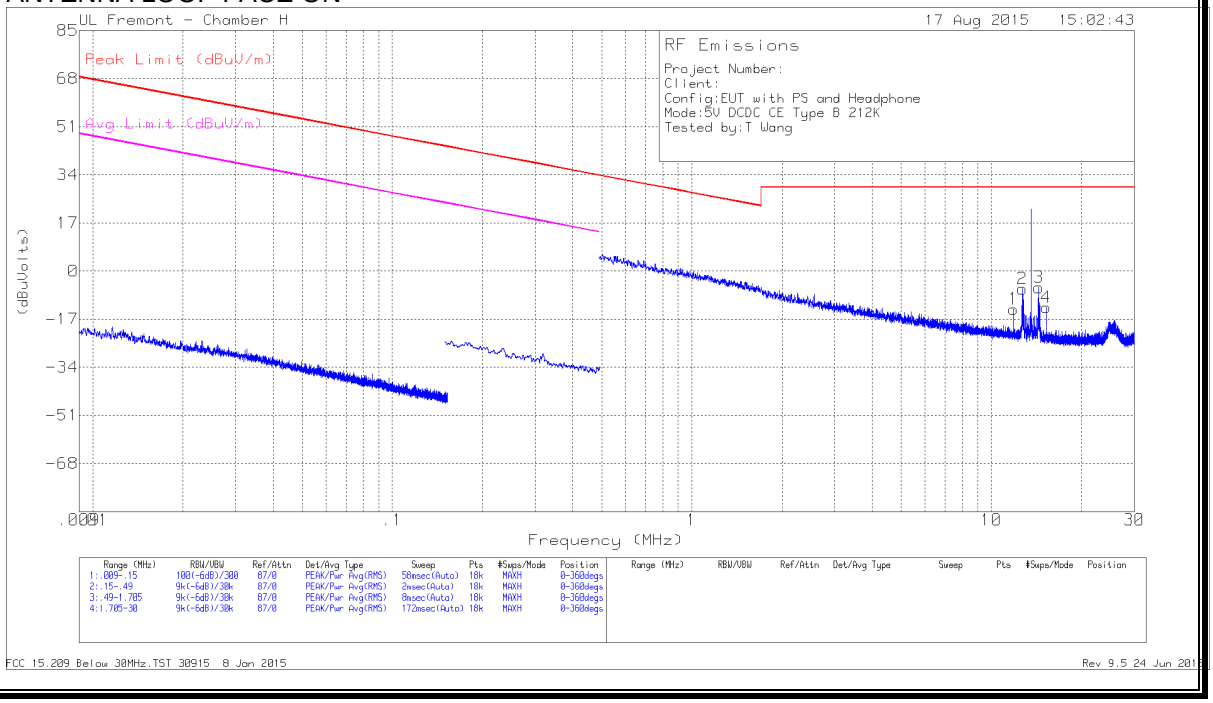
Pk - Peak detector

FCC 15.225 13.56MHz Fundamental Mask.TST 39763 7 May 2015

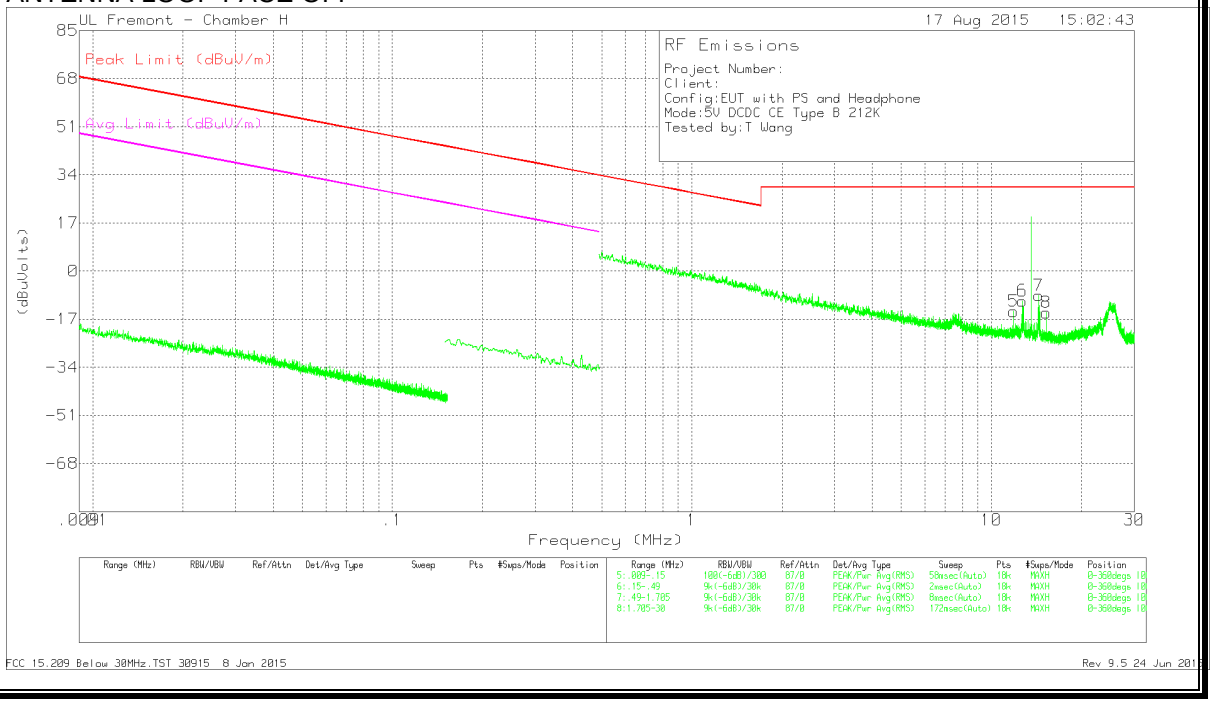
Rev 9.5 24 Jun 2015

SPURIOUS EMISSIONS 212Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	11.86484	15.67	Pk	10.4	.5	-40	-13.43	29.54	-42.97	-	-	0-360
5	11.86484	14.84	Pk	10.4	.5	-40	-14.26	29.54	-43.8	-	-	0-360
6	12.70821	18.46	Pk	10.4	.6	-40	-10.54	29.54	-40.08	-	-	0-360
2	12.71136	22.73	Pk	10.4	.6	-40	-6.27	29.54	-35.81	-	-	0-360
3	14.40755	23.39	Pk	10.3	.5	-40	-5.81	29.54	-35.35	-	-	0-360
7	14.40833	20.56	Pk	10.3	.5	-40	-8.64	29.54	-38.18	-	-	0-360
4	15.25407	16.22	Pk	10.3	.6	-40	-12.88	29.54	-42.42	-	-	0-360
8	15.25485	14.38	Pk	10.3	.6	-40	-14.72	29.54	-44.26	-	-	0-360

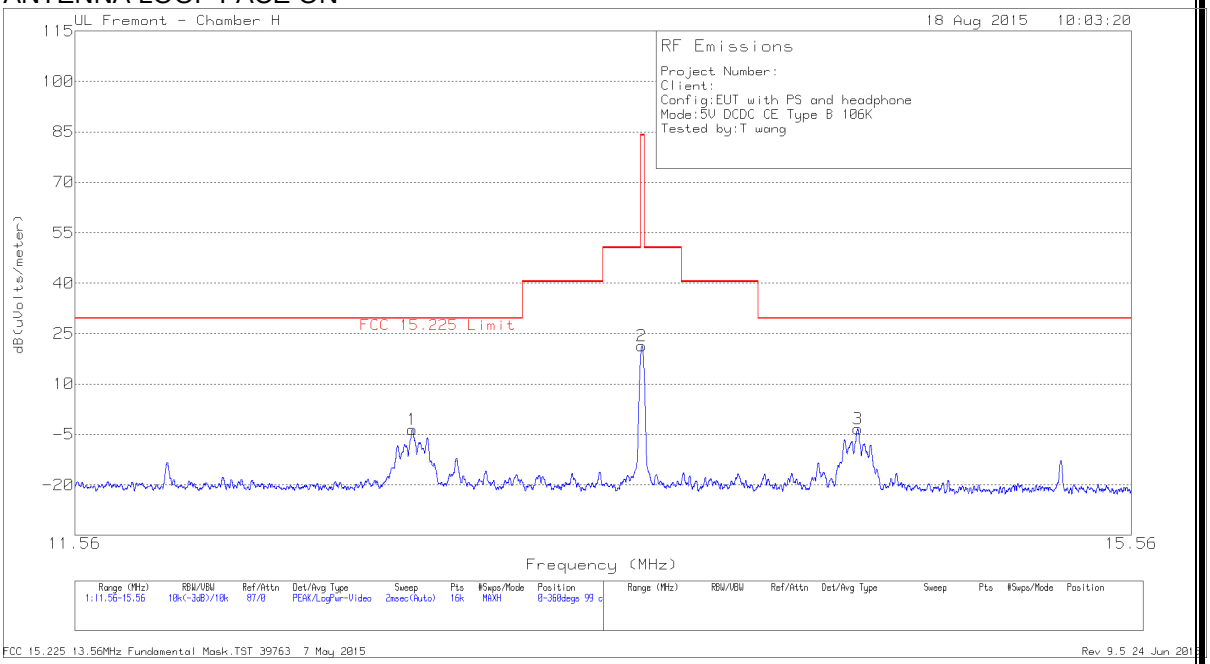
Pk - Peak detector

FCC 15.209 below 30MHz.TST 30915 8 Jan 2015

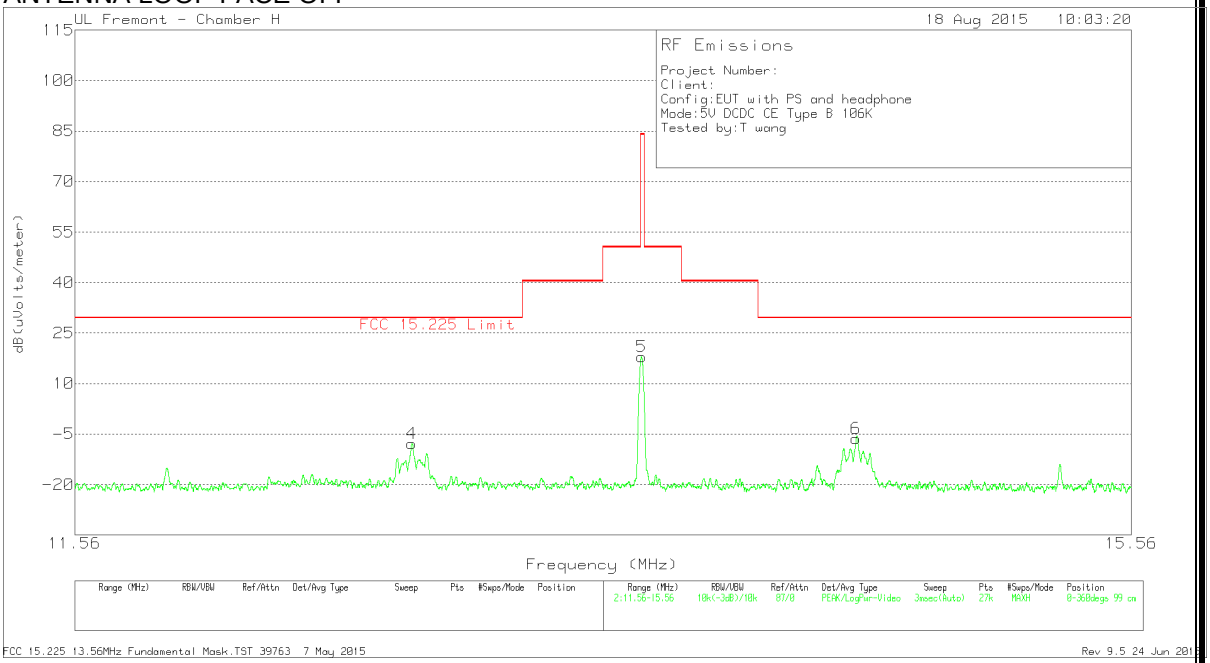
Rev 9.5 24 Jun 2015

FUNDAMENTAL 106Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts /meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
4	12.71011	21.24	Pk	10.4	.6	-40	-7.76	29.54	-37.3	0-360
1	12.71188	25.55	Pk	10.4	.6	-40	-3.45	29.54	-32.99	0-360
5	13.55763	47	Pk	10.4	.6	-40	18	84	-66	0-360
2	13.5595	50.39	Pk	10.4	.6	-40	21.39	84	-62.61	0-360
6	14.4013	22.79	Pk	10.3	.5	-40	-6.41	29.54	-35.95	0-360
3	14.40738	25.85	Pk	10.3	.5	-40	-3.35	29.54	-32.89	0-360

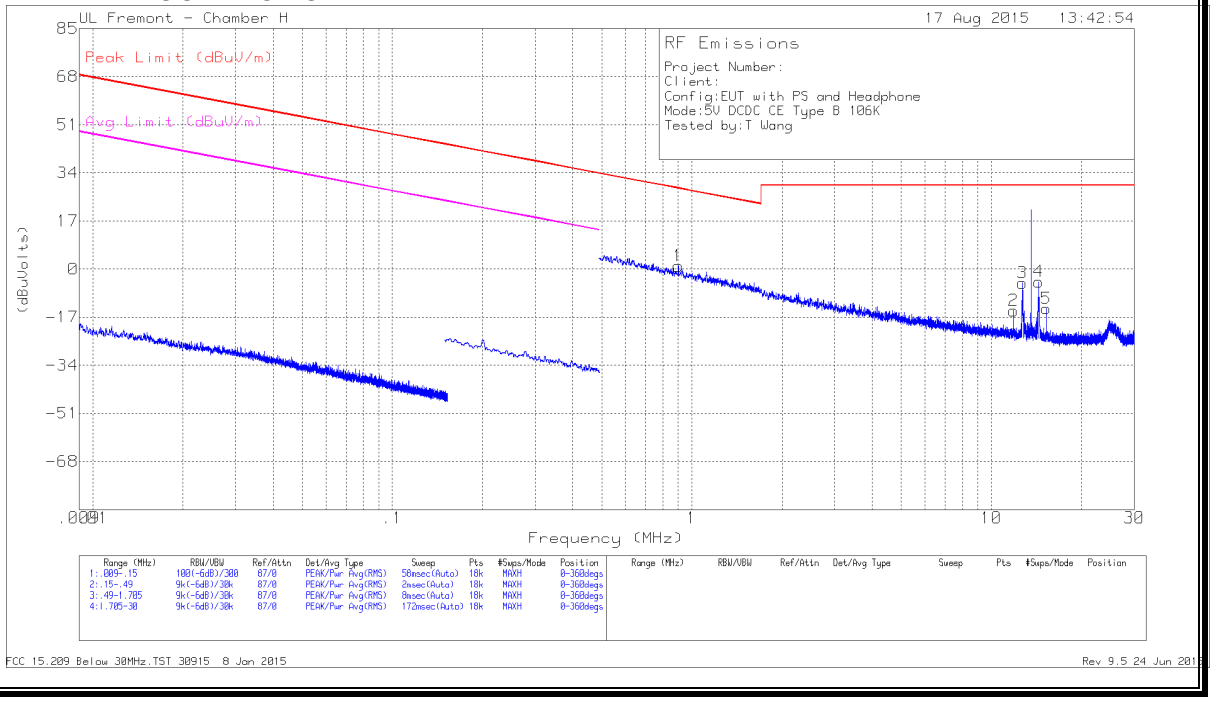
Pk - Peak detector

FCC 15.225 13.56MHz Fundamental Mask.TST 39763 7 May 2015

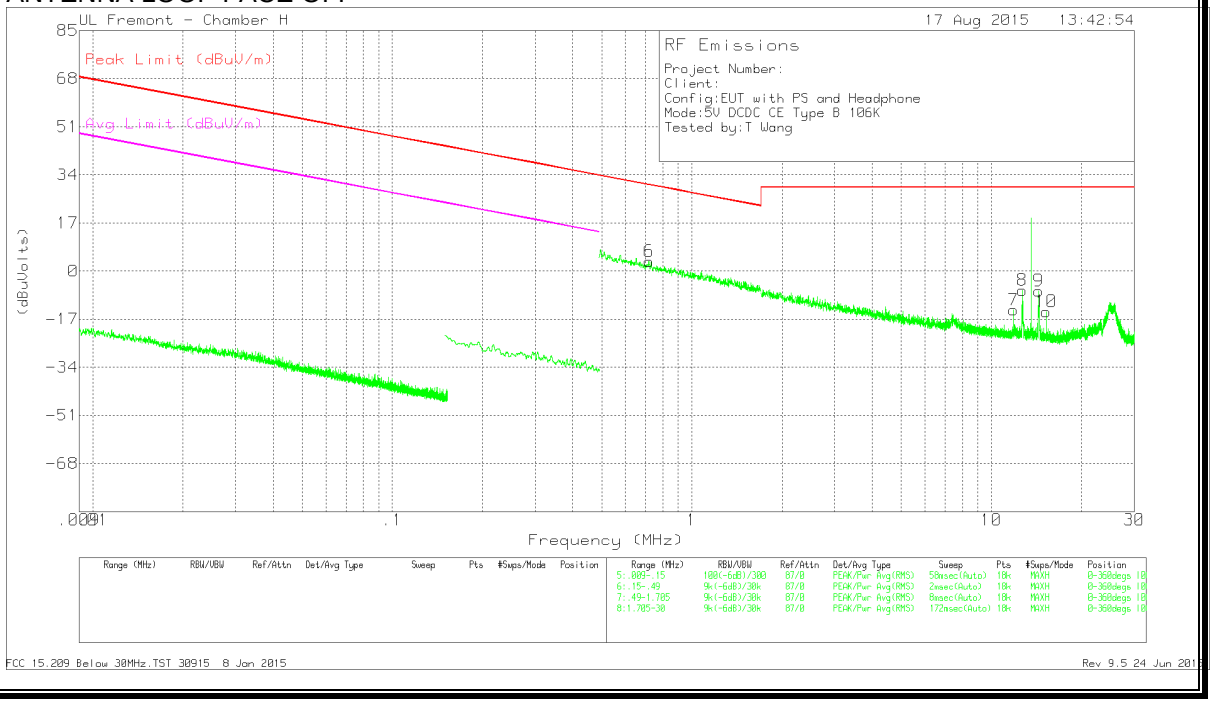
Rev 9.5 24 Jun 2015

SPURIOUS EMISSIONS 106Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
6	.7187	33.16	Pk	10.2	.1	-40	3.46	30.47	-27.01	-	-	0-360
1	.90108	30.69	Pk	10.2	.2	-40	1.09	28.51	-27.42	-	-	0-360
2	11.86405	14.38	Pk	10.4	.5	-40	-14.72	29.54	-44.26	-	-	0-360
7	11.86405	15.34	Pk	10.4	.5	-40	-13.76	29.54	-43.3	-	-	0-360
3	12.71214	24.08	Pk	10.4	.6	-40	-4.92	29.54	-34.46	-	-	0-360
8	12.71214	22.2	Pk	10.4	.6	-40	-6.8	29.54	-36.34	-	-	0-360
4	14.40676	24.7	Pk	10.3	.5	-40	-4.5	29.54	-34.04	-	-	0-360
9	14.40676	22.17	Pk	10.3	.5	-40	-7.03	29.54	-36.57	-	-	0-360
5	15.25407	15.16	Pk	10.3	.6	-40	-13.94	29.54	-43.48	-	-	0-360
10	15.25407	14.74	Pk	10.3	.6	-40	-14.36	29.54	-43.9	-	-	0-360

Pk - Peak detector

FCC 15.209 below 30MHz.TST 30915 8 Jan 2015

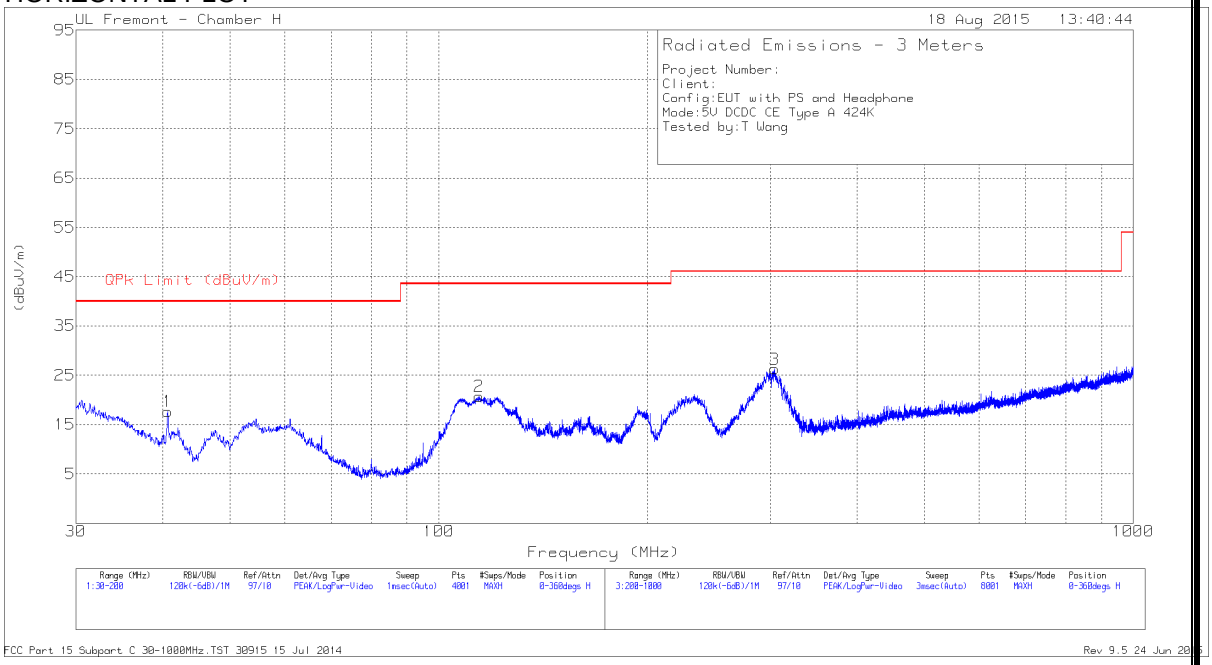
Rev 9.5 24 Jun 2015

8.3. TX SPURIOUS EMISSION 30 TO 1000 MHz

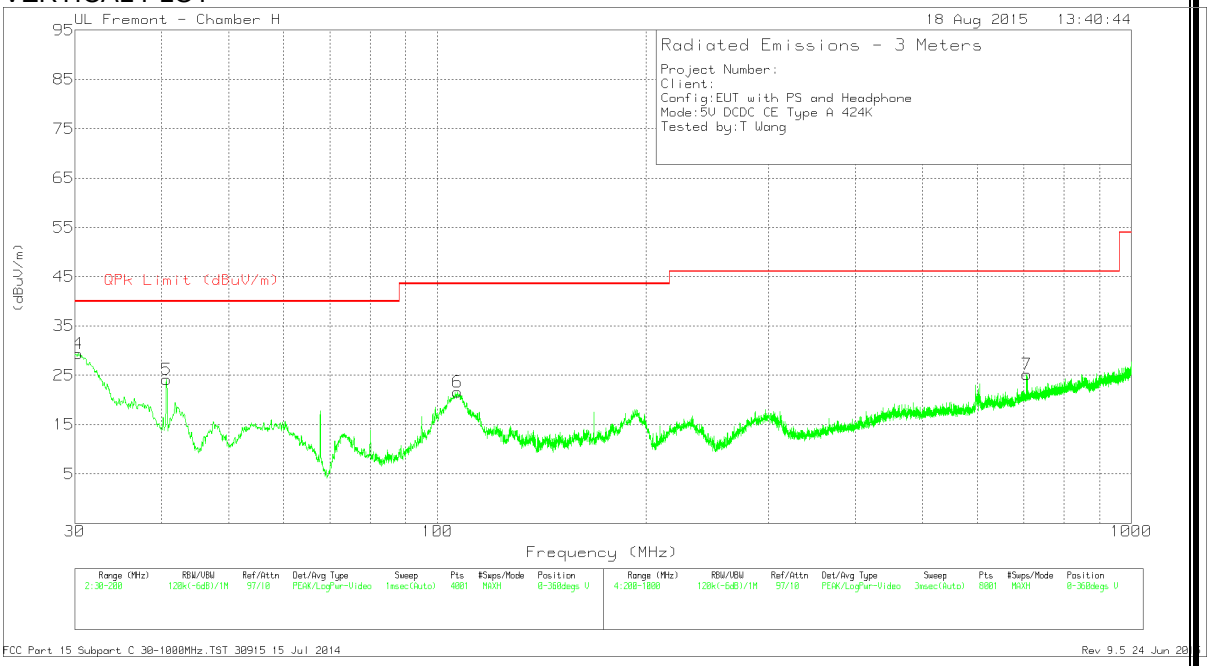
8.3.1. TYPE A

424Kbps

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 114.2775	38.05	Pk	13.1	-30.4	20.75	43.52	-22.77	0-360	201	H
4	30.34	39.24	Pk	21.5	-31.3	29.44	40	-10.56	0-360	100	V
5	40.6675	41.23	Pk	14.1	-31.2	24.13	40	-15.87	0-360	100	V
1	40.71	34.78	Pk	14.1	-31.2	17.68	40	-22.32	0-360	401	H
6	106.8825	40.27	Pk	11.8	-30.5	21.57	43.52	-21.95	0-360	100	V
3	304.7	41.86	Pk	13.4	-29	26.26	46.02	-19.76	0-360	100	H
7	706.5	32.65	Pk	20.2	-27.7	25.15	46.02	-20.87	0-360	301	V

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

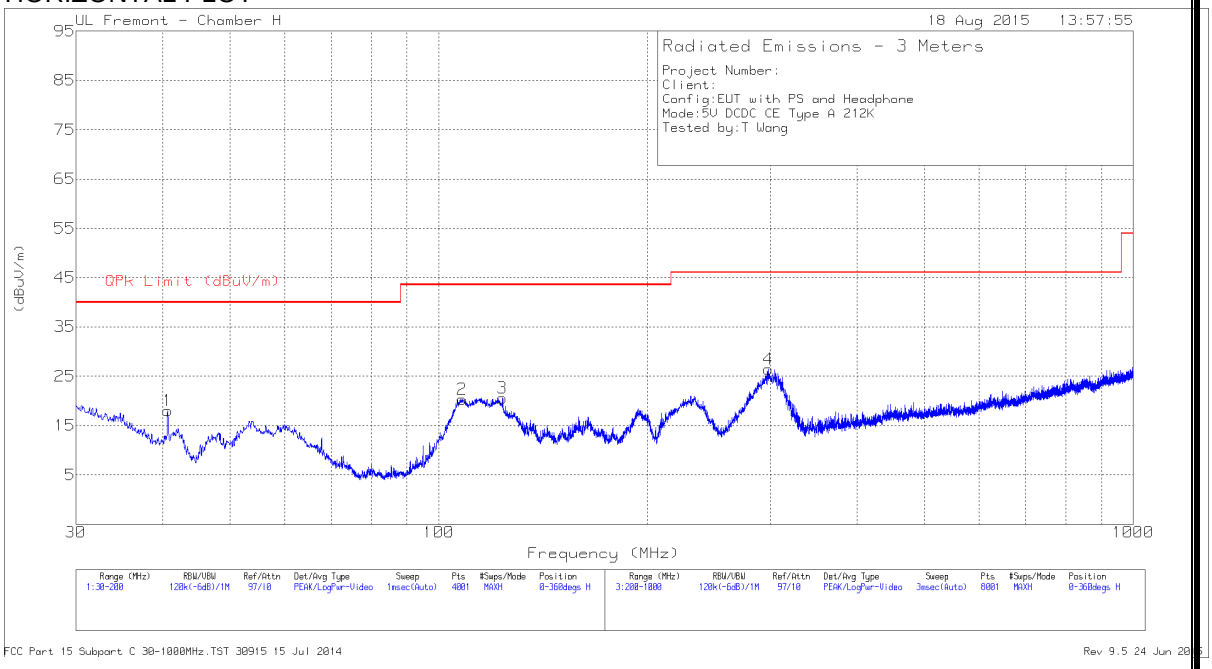
Pk - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

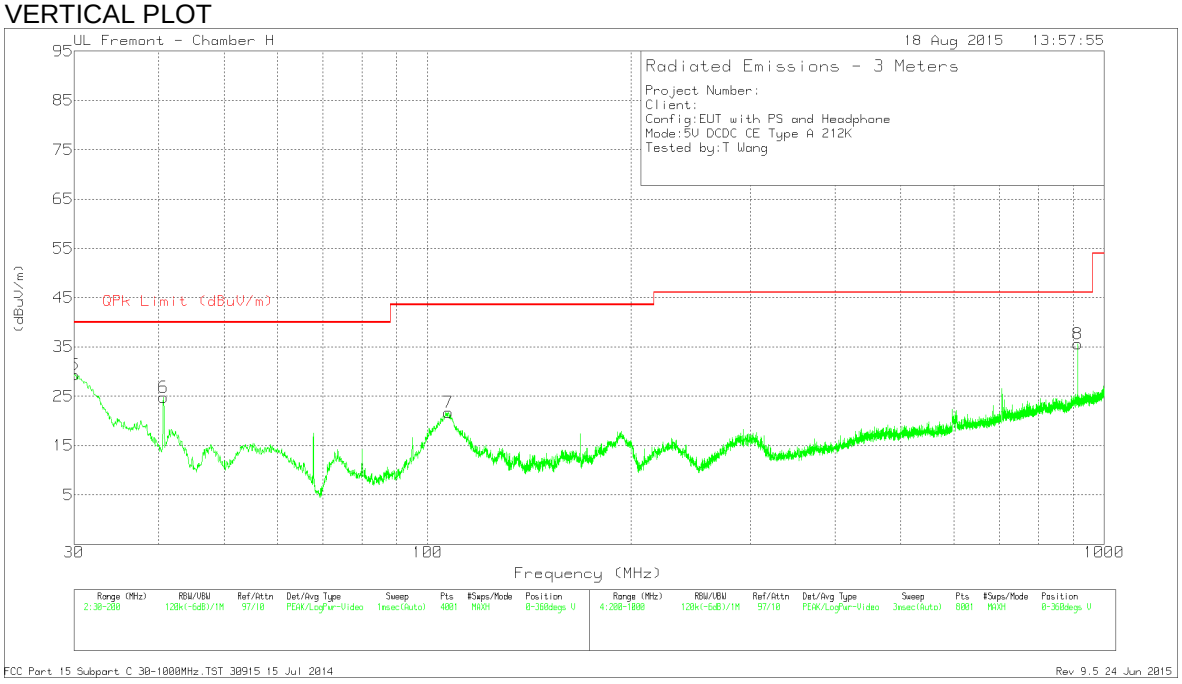
Rev 9.5 24 Jun 2015

212Kbps

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 108.0725	38.64	Pk	12.1	-30.4	20.34	43.52	-23.18	0-360	301	H
3	* 123.5425	37.04	Pk	13.8	-30.3	20.54	43.52	-22.98	0-360	201	H
5	30.085	39.04	Pk	21.6	-31.3	29.34	40	-10.66	0-360	100	V
1	40.6675	35.15	Pk	14.1	-31.2	18.05	40	-21.95	0-360	301	H
6	40.6675	41.85	Pk	14.1	-31.2	24.75	40	-15.25	0-360	100	V
7	107.3925	40.28	Pk	11.9	-30.4	21.78	43.52	-21.74	0-360	100	V
4	298.1	42.34	Pk	13.2	-29.1	26.44	46.02	-19.58	0-360	100	H
8	914	39.53	Pk	22.5	-26.4	35.63	46.02	-10.39	0-360	201	V

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

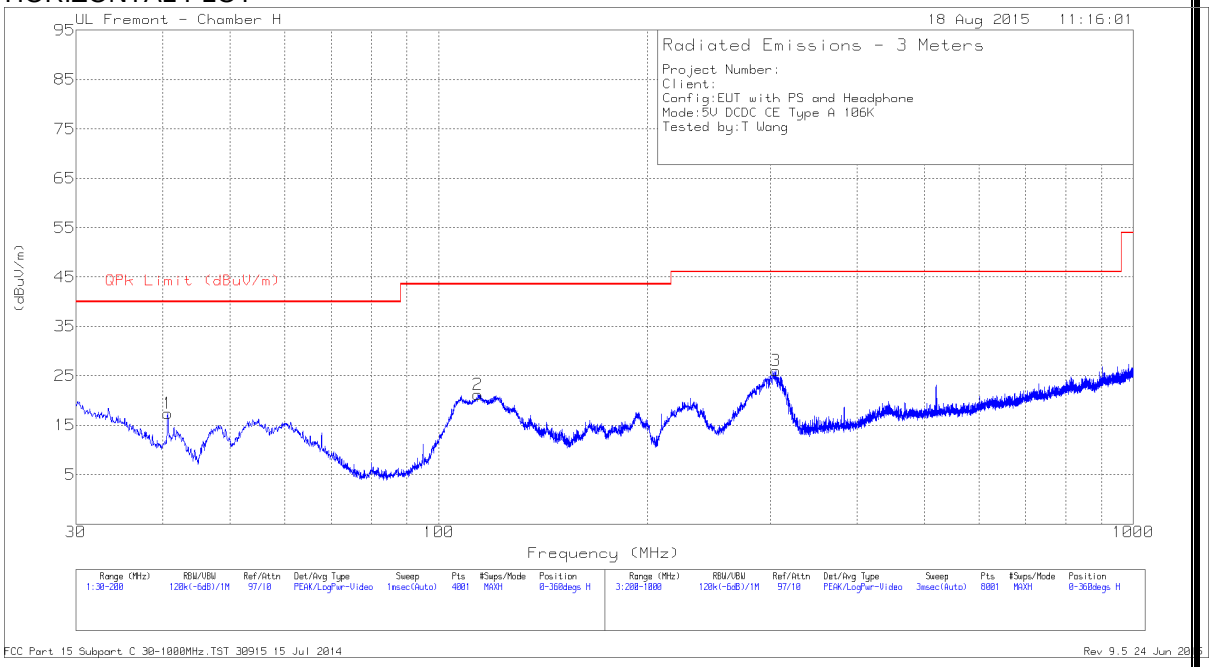
Pk - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

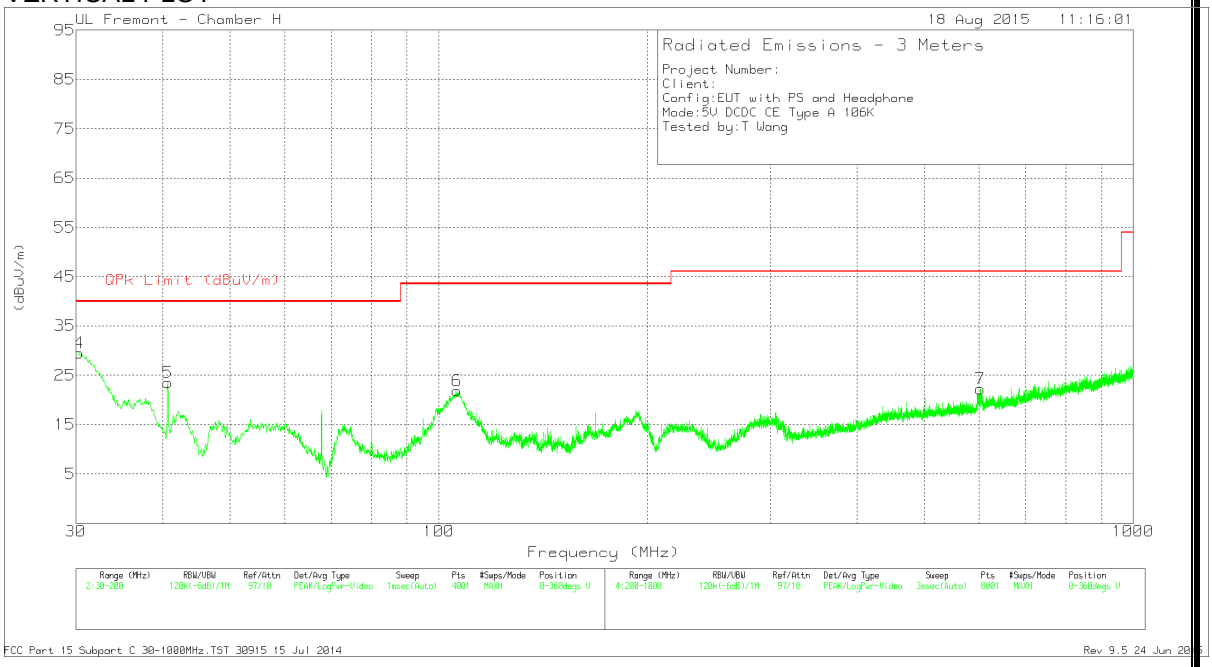
Rev 9.5 24 Jun 2015

106Kbps

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 113.895	38.49	Pk	13.1	-30.4	21.19	43.52	-22.33	0-360	301	H
4	30.34	39.37	Pk	21.5	-31.3	29.57	40	-10.43	0-360	100	V
1	40.6675	34.47	Pk	14.1	-31.2	17.37	40	-22.63	0-360	301	H
5	40.6675	40.67	Pk	14.1	-31.2	23.57	40	-16.43	0-360	100	V
6	106.245	40.74	Pk	11.6	-30.5	21.84	43.52	-21.68	0-360	100	V
3	305.7	41.64	Pk	13.4	-29	26.04	46.02	-19.98	0-360	100	H
7	602.3	31.29	Pk	18.8	-27.9	22.19	46.02	-23.83	0-360	99	V

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

Pk - Peak detector

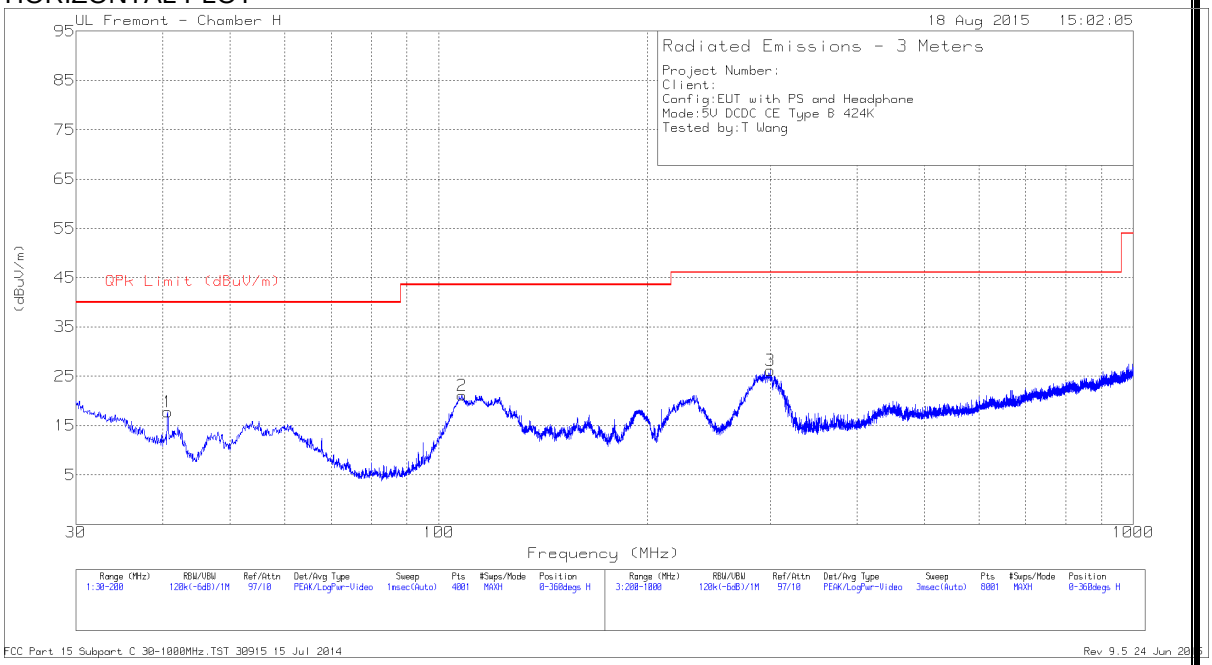
FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

Rev 9.5 24 Jun 2015

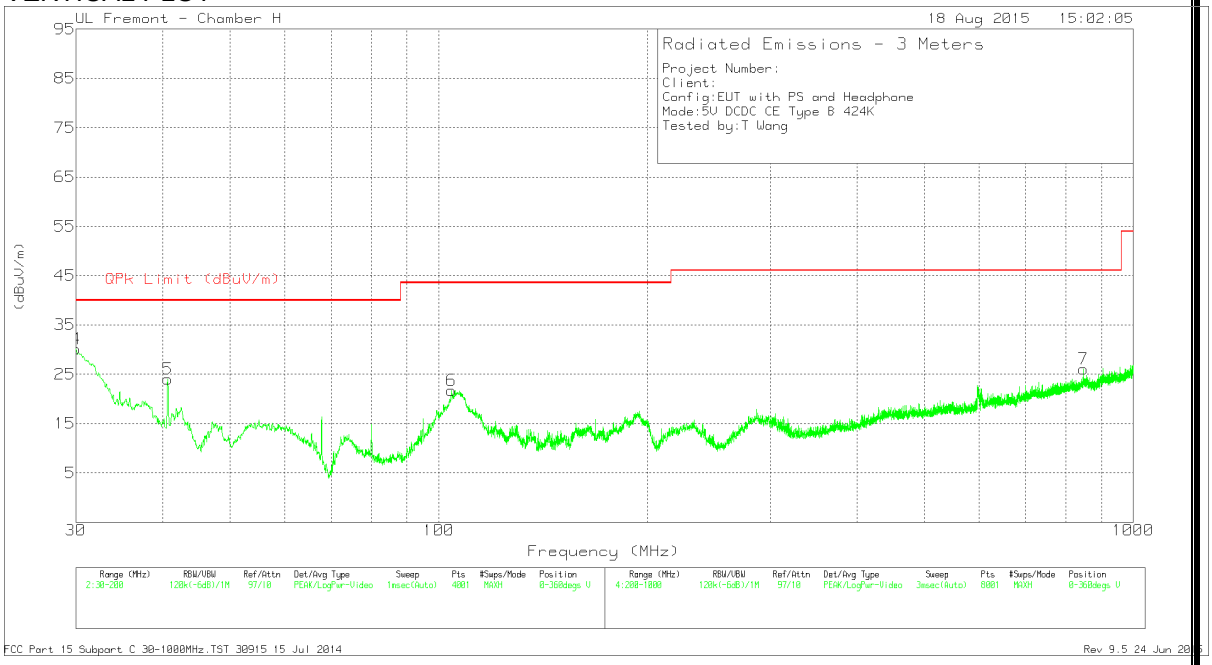
8.3.2. TYPE B

424Kbps

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	30.0425	39.72	Pk	21.7	-31.3	30.12	40	-9.88	0-360	100	V
1	40.6675	34.91	Pk	14.1	-31.2	17.81	40	-22.19	0-360	401	H
5	40.6675	41.13	Pk	14.1	-31.2	24.03	40	-15.97	0-360	100	V
6	104.2688	41.14	Pk	11.1	-30.5	21.74	43.52	-21.78	0-360	100	V
2	107.945	39.46	Pk	12.1	-30.4	21.16	43.52	-22.36	0-360	301	H
3	300	42.09	Pk	13.2	-29.1	26.19	46.02	-19.83	0-360	100	H
7	848	30.91	Pk	22	-26.9	26.01	46.02	-20.01	0-360	301	V

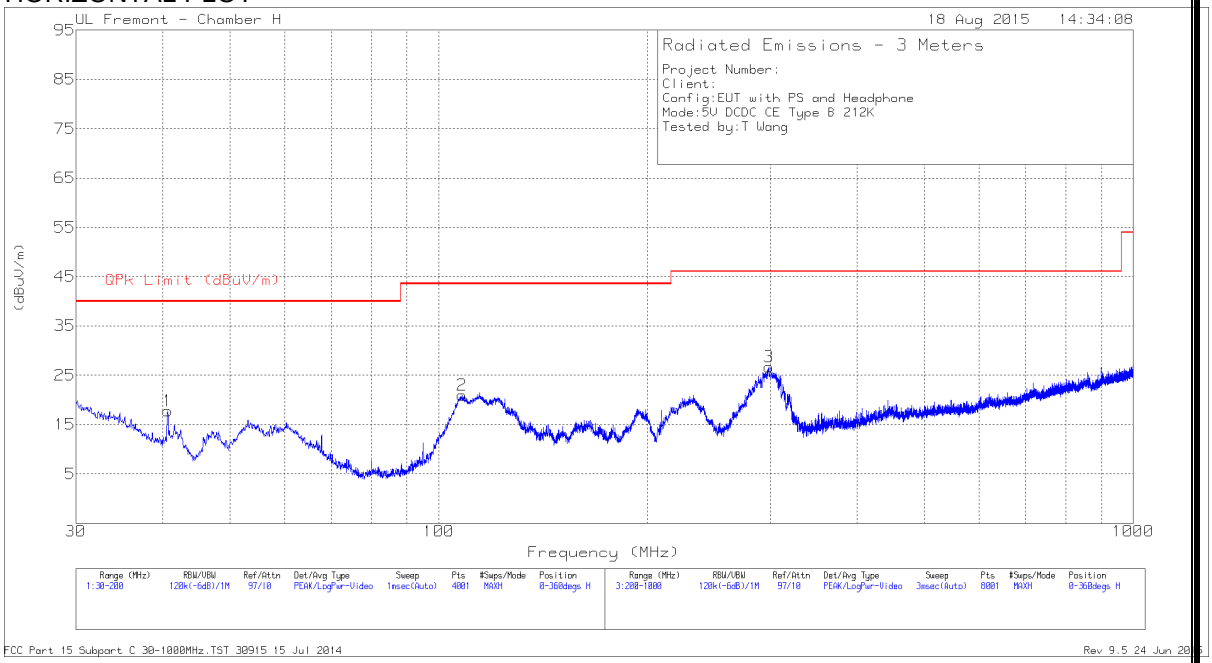
Pk - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

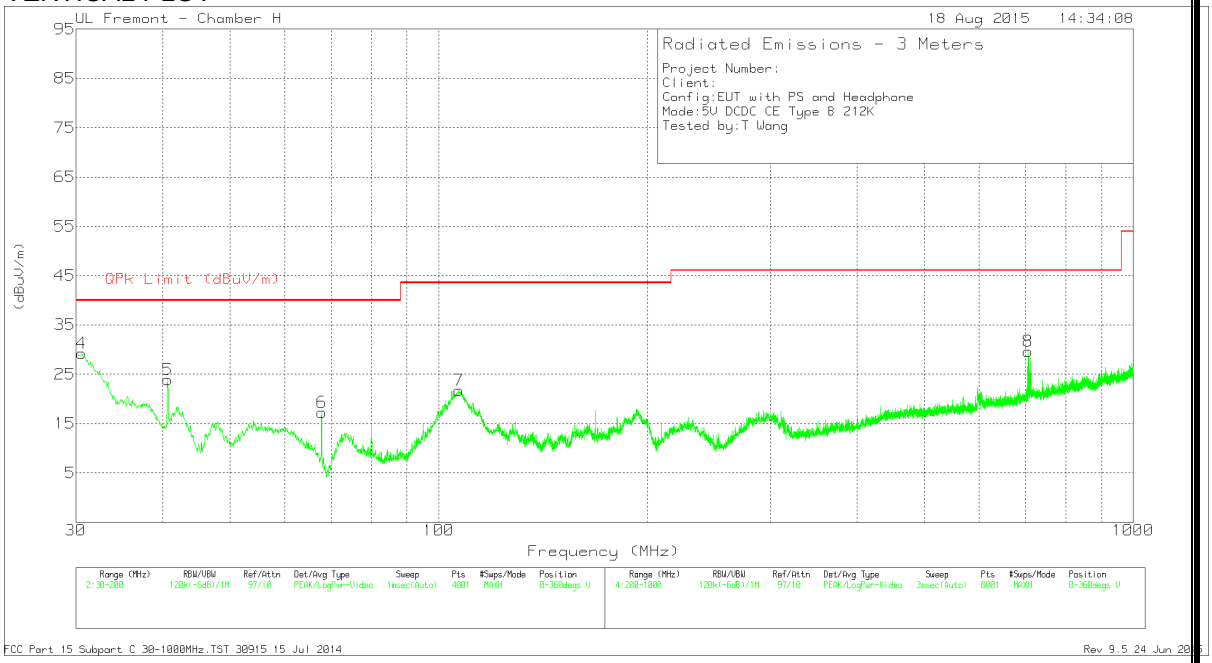
Rev 9.5 24 Jun 2015

212Kbps

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 108.03	39.33	Pk	12.1	-30.4	21.03	43.52	-22.49	0-360	301	H
4	30.595	39.22	Pk	21.3	-31.3	29.22	40	-10.78	0-360	100	V
5	40.6675	41.05	Pk	14.1	-31.2	23.95	40	-16.05	0-360	100	V
1	40.71	34.91	Pk	14.1	-31.2	17.81	40	-22.19	0-360	401	H
6	67.7825	39.61	Pk	8.5	-30.8	17.31	40	-22.69	0-360	100	V
7	106.84	40.48	Pk	11.8	-30.5	21.78	43.52	-21.74	0-360	100	V
3	298.8	42.55	Pk	13.2	-29.1	26.65	46.02	-19.37	0-360	100	H
8	705.45	37.28	Pk	20.1	-27.7	29.68	46.02	-16.34	0-360	100	V

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

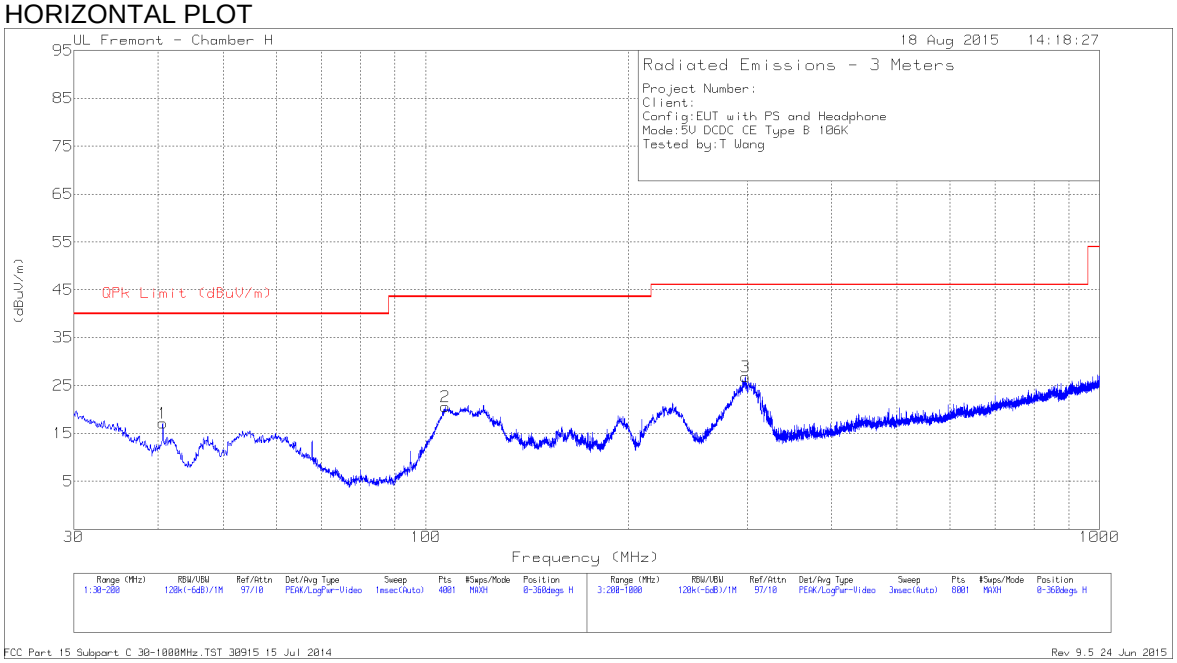
Pk - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

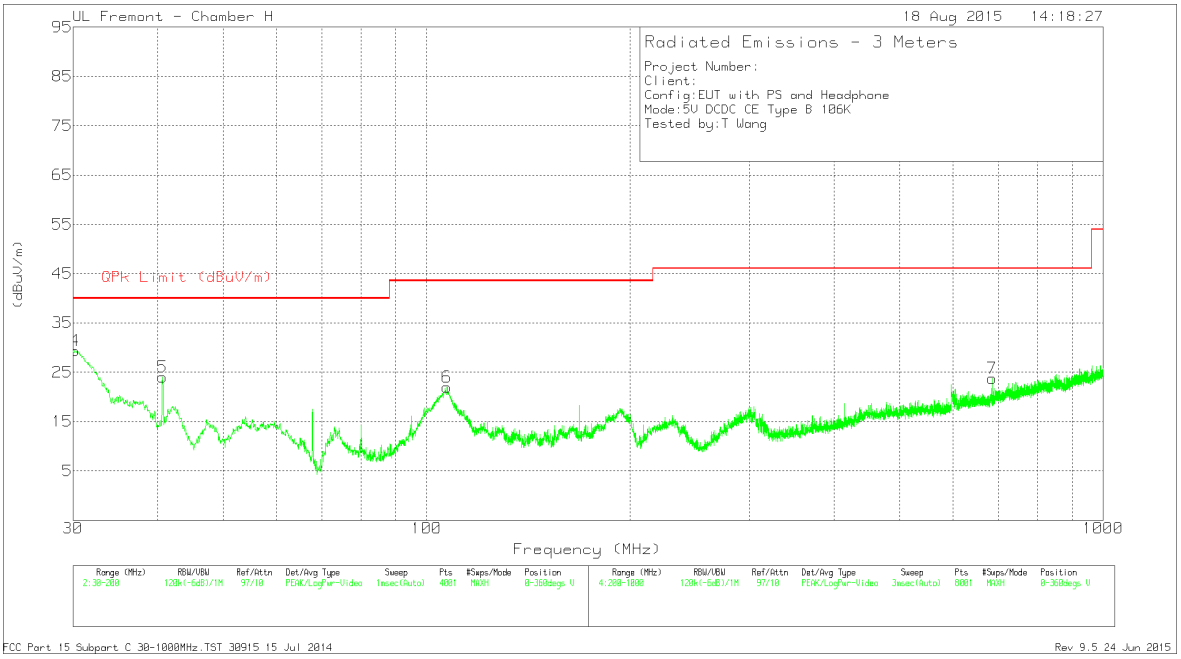
Rev 9.5 24 Jun 2015

106Kbps

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	30.1913	39.12	Pk	21.6	-31.3	29.42	40	-10.58	0-360	100	V
1	40.6675	34.28	Pk	14.1	-31.2	17.18	40	-22.82	0-360	401	H
5	40.6675	41.14	Pk	14.1	-31.2	24.04	40	-15.96	0-360	100	V
2	106.84	39.34	Pk	11.8	-30.5	20.64	43.52	-22.88	0-360	301	H
6	107.2225	40.55	Pk	11.9	-30.4	22.05	43.52	-21.47	0-360	100	V
3	298.1	42.74	Pk	13.2	-29.1	26.84	46.02	-19.18	0-360	100	H
7	685.4	32.05	Pk	19.4	-27.7	23.75	46.02	-22.27	0-360	99	V

Pk - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

Rev 9.5 24 Jun 2015

9. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency, over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

TEST PROCEDURE

ANSI C63.10 Clause 6.8

RESULTS

9.1. TYPE A

424Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.5592816	3.083	13.5592762	3.481	13.5592717	3.813	13.5592691	4.004	± 100
3.80	40	13.5593251	-0.125	13.5593172	0.457	13.5593084	1.106	13.5592982	1.858	± 100
3.80	30	13.5593701	-3.444	13.5593560	-2.404	13.5593497	-1.940	13.5593372	-1.018	± 100
3.80	***20***	***13.5593234***	***0.000***	***13.5593237***	***-0.022***	***13.5593307***	***-0.538***	***13.5593374***	***-1.032***	***± 100***
3.80	10	13.5593380	-1.077	13.5593413	-1.320	13.5593465	-1.704	13.5593475	-1.777	± 100
3.80	0	13.5593545	-2.294	13.5593601	-2.706	13.5593651	-3.075	13.5593698	-3.422	± 100
3.80	-10	13.5593722	-3.599	13.5593737	-3.709	13.5593736	-3.702	13.5593731	-3.665	± 100
3.80	-20	13.5593721	-3.591	13.5593690	-3.363	13.5593658	-3.127	13.5593659	-3.134	± 100
3.23	20	13.5593250	-0.118	13.5593242	-0.059	13.5593315	-0.597	13.5593365	-0.966	± 100
4.37	20	13.5593275	-0.302	13.5593252	-0.133	13.5593325	-0.671	13.5593376	-1.047	± 100

212Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.5592870	2.441	13.5592876	2.397	13.5592844	2.633	13.5592794	3.001	± 100
3.80	40	13.5593081	0.885	13.5593027	1.280	13.5592891	2.286	13.5592847	2.611	± 100
3.80	30	13.5593286	-0.627	13.5593276	-0.553	13.5593158	0.317	13.5593142	0.435	± 100
3.80	***20***	***13.5593201***	***0.000***	***13.5593264***	***-0.465***	***13.5593323***	***-0.900***	***13.5593367***	***-1.224***	***± 100***
3.80	10	13.5593440	-1.763	13.5593515	-2.316	13.5593572	-2.736	13.5593631	-3.171	± 100
3.80	0	13.5593687	-3.584	13.5593692	-3.621	13.5593737	-3.953	13.5593751	-4.056	± 100
3.80	-10	13.5593761	-4.130	13.5593751	-4.056	13.5593726	-3.872	13.5593713	-3.776	± 100
3.80	-20	13.5593579	-2.788	13.5593544	-2.529	13.5593536	-2.471	13.5593480	-2.058	± 100
3.23	20	*13.5593207*	-0.044	*13.5593261*	-0.442	*13.5593318*	-0.863	*13.5593362*	-1.187	± 100
4.37	20	*13.5593223*	-0.162	*13.5593269*	-0.501	*13.5593328*	-0.937	*13.5593371*	-1.254	± 100

106Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.5592864	3.643	13.5592845	3.783	13.5592794	4.159	13.5592643	5.273	± 100
3.80	40	13.5593030	2.419	13.5593026	2.448	13.5592934	3.127	13.5592879	3.532	± 100
3.80	30	13.5593520	-1.195	13.5593514	-1.150	13.5593291	0.494	13.5593192	1.224	± 100
3.80	***20***	***13.5593358***	***0.000***	***13.5593362***	***-0.029***	***13.5593432***	***-0.546***	***13.5593476***	***-0.870***	***± 100***
3.80	10	13.5593389	-0.229	13.5593463	-0.774	13.5593479	-0.892	13.5593493	-0.996	± 100
3.80	0	13.5593669	-2.291	13.5593667	-2.280	13.5593667	-2.276	13.5593666	-2.273	± 100
3.80	-10	13.5593572	-1.578	13.5593624	-1.962	13.5593684	-2.404	13.5593676	-2.345	± 100
3.80	-20	13.5593487	-0.951	13.5593435	-0.568	13.5593408	-0.369	13.5593418	-0.445	± 100
3.23	20	*13.5593351*	0.052	*13.5593360*	-0.015	*13.5593430*	-0.531	*13.5593472*	-0.841	± 100
4.37	20	*13.5593363*	-0.037	*13.5593367*	-0.066	*13.5593436*	-0.575	*13.5593479*	-0.892	± 100

9.2. TYPE B

424Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.5592710	0.708	13.5592699	0.789	13.5592669	1.010	13.5592655	1.114	± 100
3.80	40	13.5592959	-1.128	13.5592919	-0.833	13.5592826	-0.147	13.5592821	-0.111	± 100
3.80	30	13.5593741	-6.895	13.5593667	-6.350	13.5593460	-4.823	13.5593299	-3.636	± 100
3.80	***20***	***13.5592806***	***0.000***	***13.5592812***	***-0.044***	***13.5592819***	***-0.096***	***13.5592824***	***-0.133***	***± 100***
3.80	10	13.5593291	-3.577	13.5593335	-3.901	13.5593392	-4.322	13.5593430	-4.602	± 100
3.80	0	13.5593548	-5.472	13.5593628	-6.062	13.5593656	-6.268	13.5593671	-6.379	± 100
3.80	-10	13.5593723	-6.763	13.5593732	-6.829	13.5593740	-6.888	13.5593744	-6.917	± 100
3.80	-20	13.5593735	-6.851	13.5593716	-6.711	13.5593692	-6.534	13.5593640	-6.150	± 100
3.23	20	*13.5592804*	0.015	*13.5592810*	-0.029	*13.5592815*	-0.066	*13.5592822*	-0.118	± 100
4.37	20	*13.5592808*	-0.015	*13.5592817*	-0.081	*13.5592823*	-0.125	*13.5592826*	-0.147	± 100

212Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.5592660	3.598	13.5592651	3.665	13.5592651	3.660	13.5592650	3.671	± 100
3.80	40	13.5593039	0.802	13.5592920	1.676	13.5592883	1.949	13.5592855	2.156	± 100
3.80	30	13.5593164	-0.121	13.5593129	0.139	13.5593094	0.399	13.5593074	0.543	± 100
3.80	***20***	***13.5593148***	***0.000***	***13.5593150***	***-0.016***	***13.5593189***	***-0.307***	***13.5593251***	***-0.761***	***± 100***
3.80	10	13.5593273	-0.924	13.5593278	-0.957	13.5593276	-0.943	13.5593380	-1.712	± 100
3.80	0	13.5593658	-3.760	13.5593683	-3.950	13.5593684	-3.958	13.5593707	-4.124	± 100
3.80	-10	13.5593746	-4.415	13.5593758	-4.502	13.5593757	-4.494	13.5593755	-4.477	± 100
3.80	-20	13.5593625	-3.521	13.5593591	-3.270	13.5593545	-2.931	13.5593544	-2.924	± 100
3.23	20	*13.5593147*	0.003	*13.5593148*	-0.002	*13.5593185*	-0.275	*13.5593250*	-0.754	± 100
4.37	20	*13.5593148*	0.000	*13.5593156*	-0.061	*13.5593192*	-0.326	*13.5593253*	-0.776	± 100

106Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.5592183	6.667	13.5592184	6.656	13.5592182	6.670	13.5592183	6.663	± 100
3.80	40	13.5592339	5.516	13.5592329	5.588	13.5592329	5.585	13.5592330	5.581	± 100
3.80	30	13.5592751	2.479	13.5592745	2.521	13.5592732	2.620	13.5592698	2.863	± 100
3.80	***20***	***13.5593087***	***0.000***	***13.5593085***	***0.013***	***13.5593088***	***-0.009***	***13.5593085***	***0.015***	***± 100***
3.80	10	13.5593424	-2.488	13.5593421	-2.463	13.5593420	-2.457	13.5593420	-2.456	± 100
3.80	0	13.5593651	-4.161	13.5593650	-4.155	13.5593650	-4.151	13.5593650	-4.152	± 100
3.80	-10	13.5593668	-4.288	13.5593669	-4.291	13.5593669	-4.291	13.5593669	-4.291	± 100
3.80	-20	13.5593535	-3.306	13.5593533	-3.292	13.5593529	-3.263	13.5593528	-3.251	± 100
3.23	20	*13.5593086*	0.005	*13.5593083*	0.028	*13.5593085*	0.013	*13.5593083*	0.028	± 100
4.37	20	*13.5593090*	-0.024	*13.5593085*	0.013	*13.5593090*	-0.024	*13.5593087*	-0.002	± 100

10. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207
IC RSS-GEN, Section 8.8

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

TEST PROCEDURE

ANSI C63.10:2013

RESULTS

No non-compliance noted:

10.1. TYPE A

10.1.1. NORMAL OPERATION, 424 KBPS

Trace Markers

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.1635	44.54	Pk	1.2	0	45.74	65.28	-19.54	-	-
2	.168	23.86	Av	1.2	0	25.06	-	-	55.06	-30
3	.8115	44.46	Pk	.3	0	44.76	56	-11.24	-	-
4	.816	27.44	Av	.3	0	27.74	-	-	46	-18.26
5	2.2515	28.63	Pk	.2	.1	28.93	56	-27.07	-	-
6	2.274	18.43	Av	.2	.1	18.73	-	-	46	-27.27
7	4.218	29.03	Pk	.2	.1	29.33	56	-26.67	-	-
8	4.209	19.47	Av	.2	.1	19.77	-	-	46	-26.23
9	13.56	61.42	Pk	.2	.2	61.82	60	1.82	-	-
10	13.56	57.61	Av	.2	.2	58.01	-	-	50	8.01
11	26.6235	25	Pk	.3	.3	25.6	60	-34.4	-	-
12	26.6235	14.3	Av	.3	.3	14.9	-	-	50	-35.1

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
13	.16575	44.58	Pk	1.3	0	45.88	65.17	-19.29	-	-
14	.168	24.76	Av	1.3	0	26.06	-	-	55.06	-29
15	.5865	32.97	Pk	.3	0	33.27	56	-22.73	-	-
16	.5865	20.95	Av	.3	0	21.25	-	-	46	-24.75
17	.8115	43.84	Pk	.3	0	44.14	56	-11.86	-	-
18	.816	30.14	Av	.3	0	30.44	-	-	46	-15.56
19	1.491	29.16	Pk	.2	.1	29.46	56	-26.54	-	-
20	1.491	18.63	Av	.2	.1	18.93	-	-	46	-27.07
21	13.56	57.3	Pk	.2	.2	57.7	60	-2.3	-	-
22	13.56	55.19	Av	.2	.2	55.59	-	-	50	5.59
23	23.1315	24.11	Pk	.3	.2	24.61	60	-35.39	-	-
24	23.1315	17.24	Av	.3	.2	17.74	-	-	50	-32.26

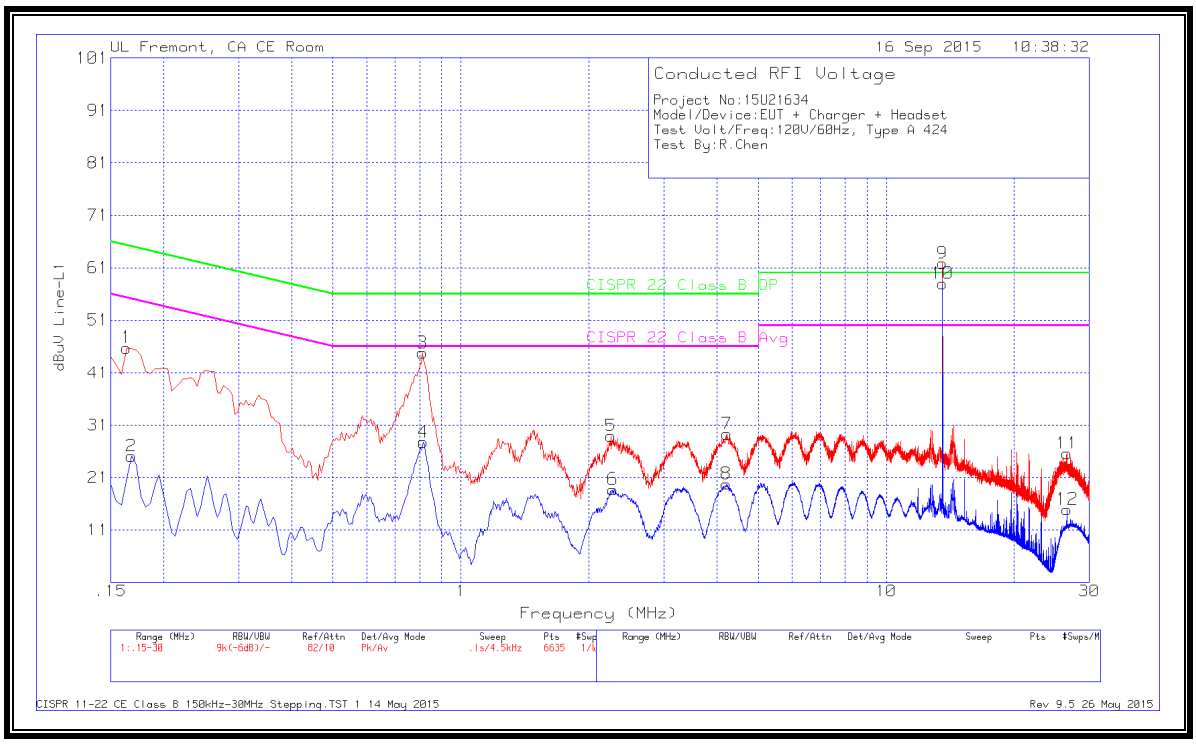
Pk - Peak detector

Av - Average detection

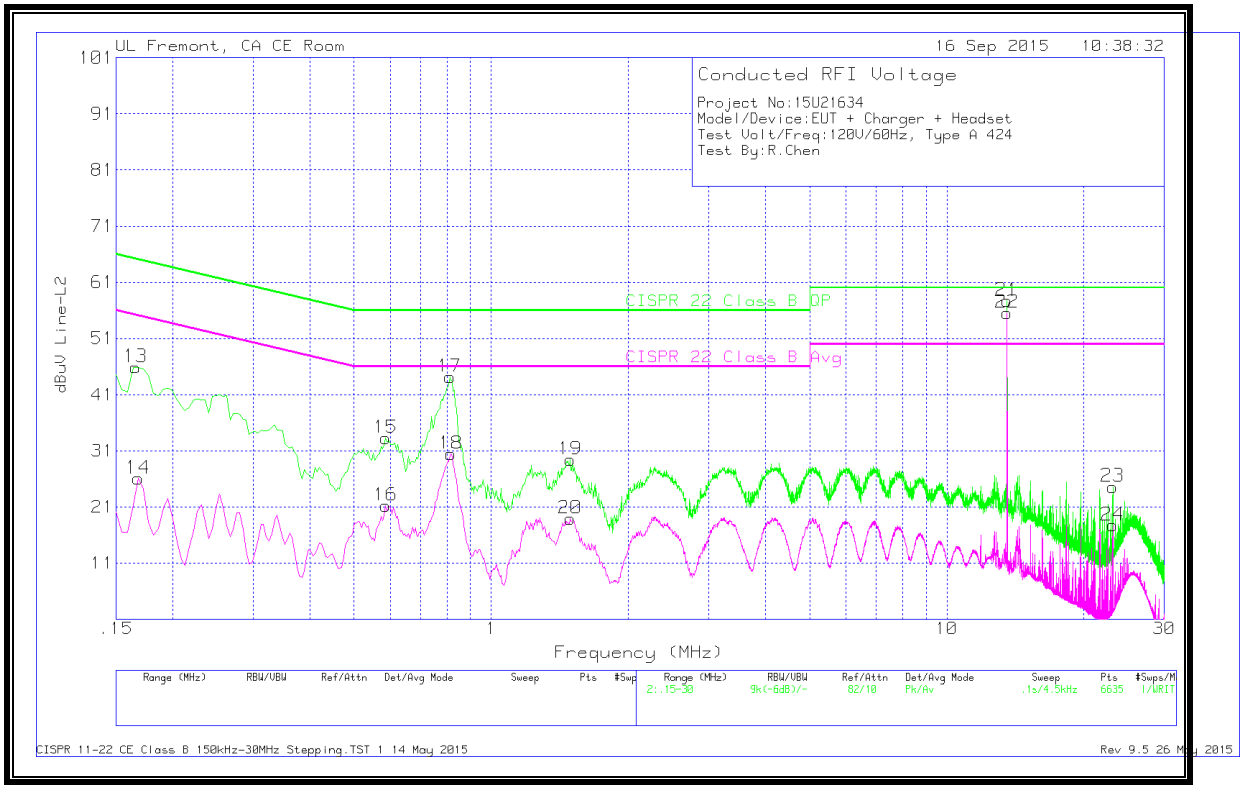
CISPR 11-22 CE Class B 150kHz-30MHz Stepping.TST 1 14 May 2015

Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicate that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

LINE 1 RESULTS



LINE 2 RESULTS



10.1.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 424 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.168	45.44	Pk	1.2	0	46.64	65.06	-18.42	-	-
2	.168	23.97	Av	1.2	0	25.17	-	-	55.06	-29.89
3	.816	44.21	Pk	.3	0	44.51	56	-11.49	-	-
4	.807	27.05	Av	.3	0	27.35	-	-	46	-18.65
5	4.1865	27.94	Pk	.2	.1	28.24	56	-27.76	-	-
6	4.2045	18.86	Av	.2	.1	19.16	-	-	46	-26.84

Pk - Peak detector

Av - Average detection

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
7	.1635	44.95	Pk	1.3	0	46.25	65.28	-19.03	-	-
8	.168	24.4	Av	1.3	0	25.7	-	-	55.06	-29.36
9	.8115	43.89	Pk	.3	0	44.19	56	-11.81	-	-
10	.816	29.8	Av	.3	0	30.1	-	-	46	-15.9
11	1.509	28.77	Pk	.2	.1	29.07	56	-26.93	-	-
12	1.4955	18.11	Av	.2	.1	18.41	-	-	46	-27.59

Pk - Peak detector

Av - Average detection

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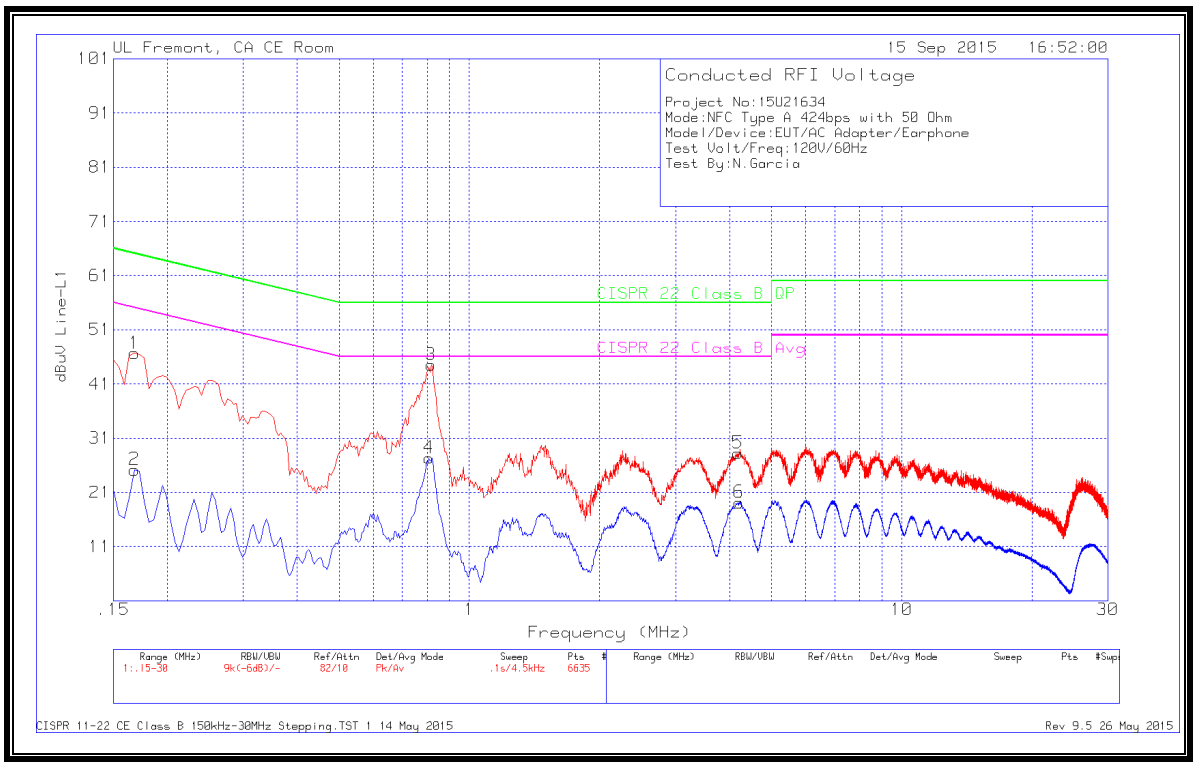
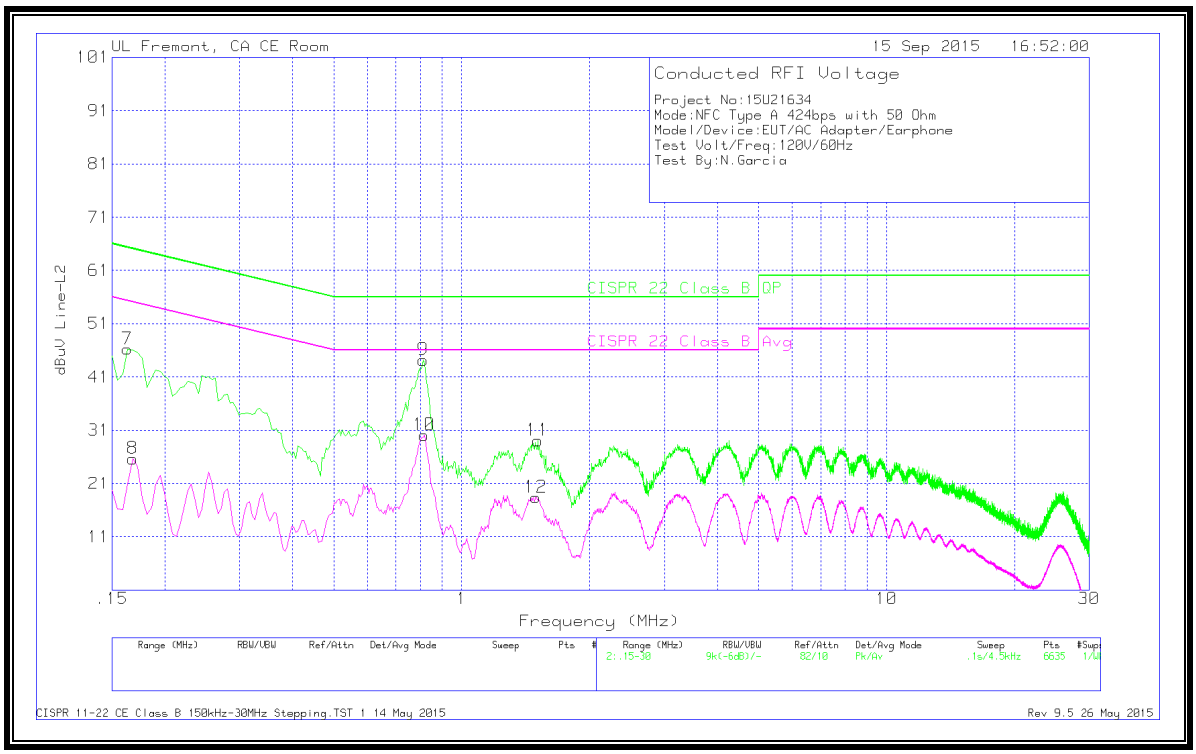
LINE 1 RESULTS



LINE 2 RESULTS



10.1.3. NORMAL OPERATION, 212 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.276	44.66	Pk	.6	0	45.26	60.94	-15.68		
2	.276	38.17	Av	.6	0	38.77	-	-	50.94	-12.17
3	.555	45.33	Pk	.3	0	45.63	56	-10.37		
4	.555	37.81	Av	.3	0	38.11	-	-	46	-7.89
5	.834	41.27	Pk	.3	0	41.57	56	-14.43		
6	.834	34.49	Av	.3	0	34.79	-	-	46	-11.21
7	13.56	56.6	Pk	.2	.2	57	60	-3		
8	13.56	49.63	Av	.2	.2	50.03	-	-	**50**	**.03**

Pk - Peak detector

Av - Average detection

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
9	.276	43.22	Pk	.7	0	43.92	60.94	-17.02		
10	.276	29.54	Av	.7	0	30.24	-	-	50.94	-20.7
11	.555	37.43	Pk	.3	0	37.73	56	-18.27		
12	.555	27.19	Av	.3	0	27.49	-	-	46	-18.51
13	.834	37.57	Pk	.3	0	37.87	56	-18.13		
14	.834	25.48	Av	.3	0	25.78	-	-	46	-20.22
15	13.56	51.68	Pk	.2	.2	52.08	60	-7.92		
16	13.56	46.99	Av	.2	.2	47.39	-	-	50	-2.61

Pk - Peak detector

Av - Average detection

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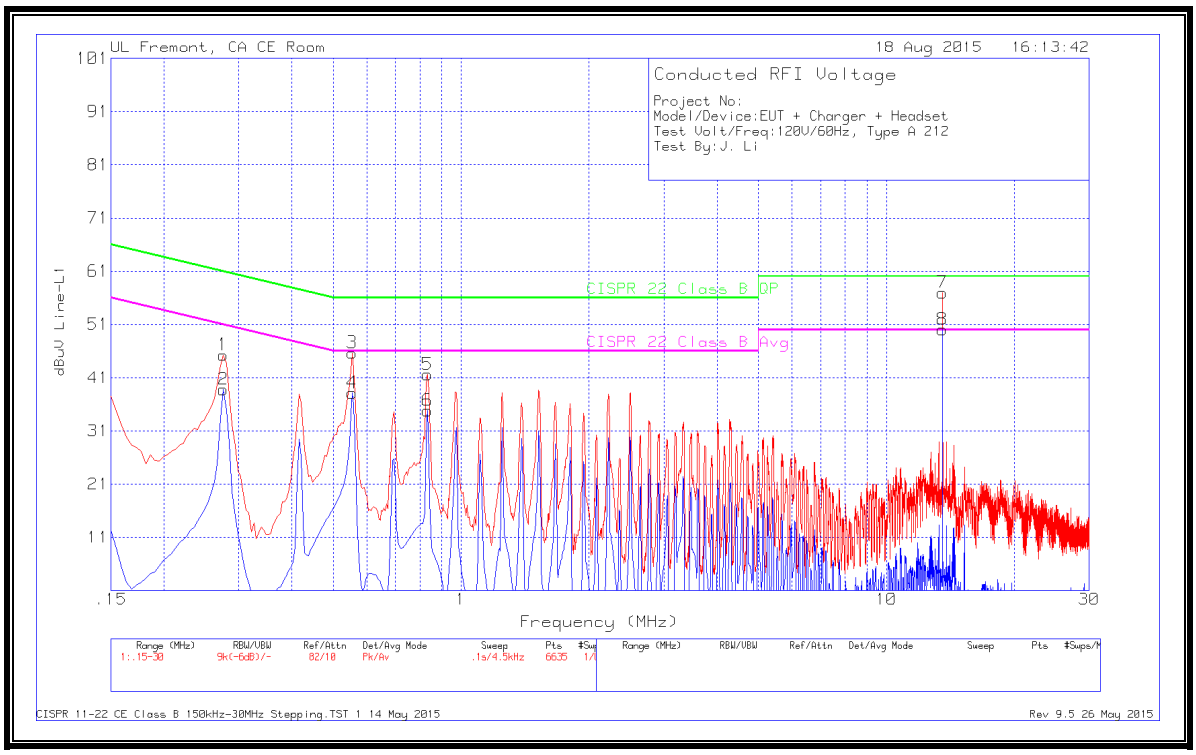
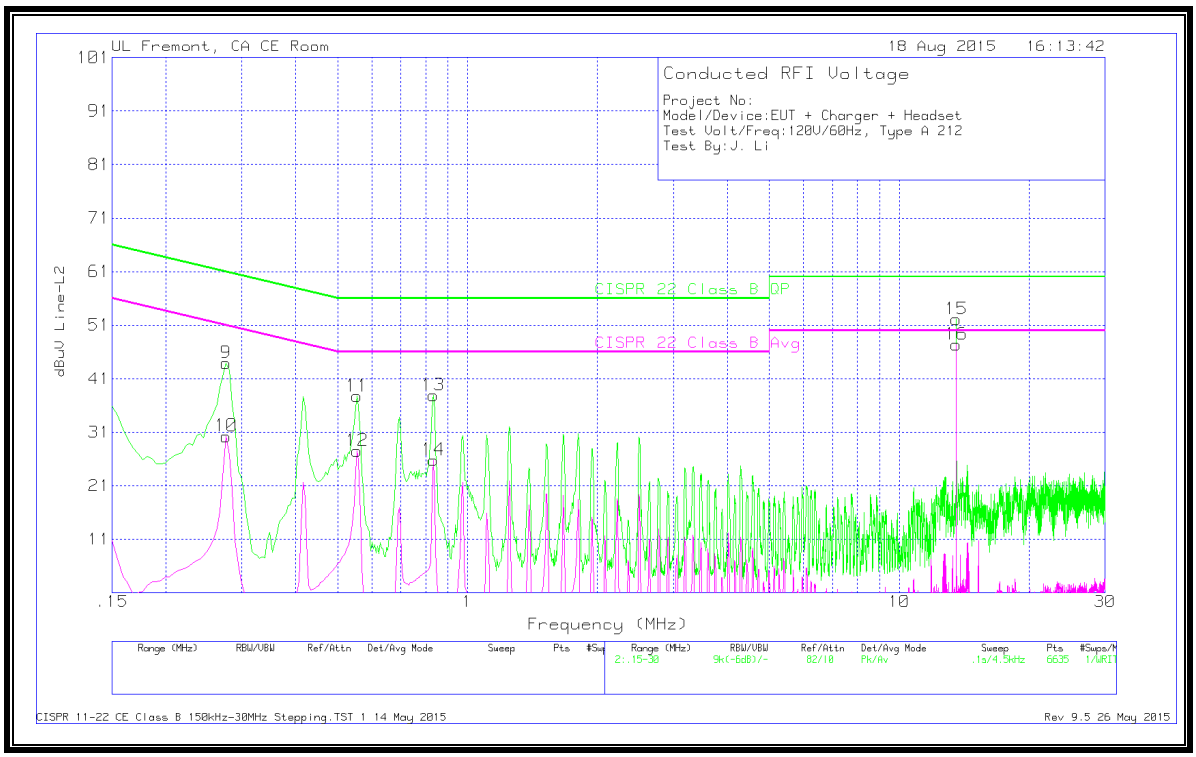
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicate that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

LINE 1 RESULTS



LINE 2 RESULTS



10.1.4. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 212 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.168	45.71	Pk	1.2	0	46.91	65.06	-18.15		
2	.168	25.74	Av	1.2	0	26.94	-	-	55.06	-28.12
3	.816	43.88	Pk	.3	0	44.18	56	-11.82		
4	.807	31.98	Av	.3	0	32.28	-	-	46	-13.72
5	4.128	32.22	Pk	.2	.1	32.52	56	-23.48		
6	4.1415	20.55	Av	.2	.1	20.85	-	-	46	-25.15
7	26.3085	21.09	Pk	.3	.3	21.69	60	-38.31		
8	26.3085	8.91	Av	.3	.3	9.51	-	-	50	-40.49

Pk - Peak detector

Av - Average detection

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
9	.168	44.25	Pk	1.3	0	45.55	65.06	-19.51		
10	.168	23.58	Av	1.3	0	24.88	-	-	55.06	-30.18
11	.8115	44.5	Pk	.3	0	44.8	56	-11.2		
12	.816	26.34	Av	.3	0	26.64	-	-	46	-19.36
13	3.1965	29.7	Pk	.2	.1	30	56	-26		
14	3.228	19.49	Av	.2	.1	19.79	-	-	46	-26.21
15	26.313	22.32	Pk	.3	.3	22.92	60	-37.08		
16	26.331	9.68	Av	.3	.3	10.28	-	-	50	-39.72

Pk - Peak detector

Av - Average detection

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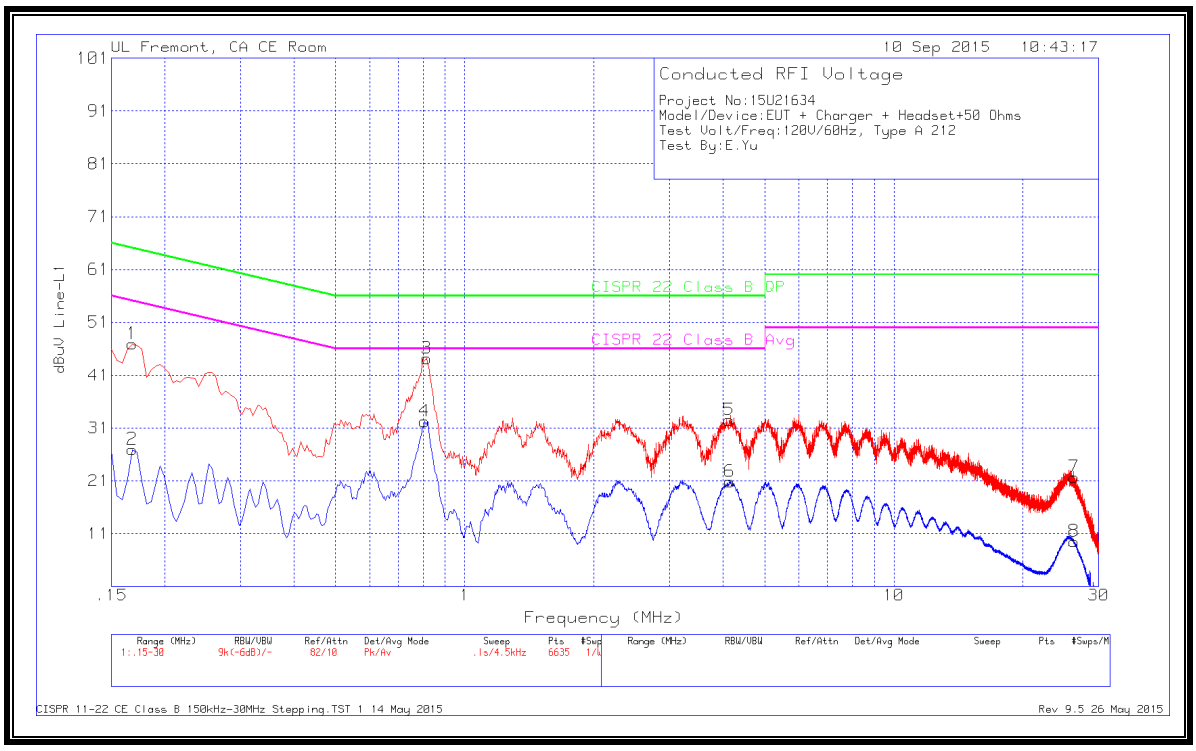
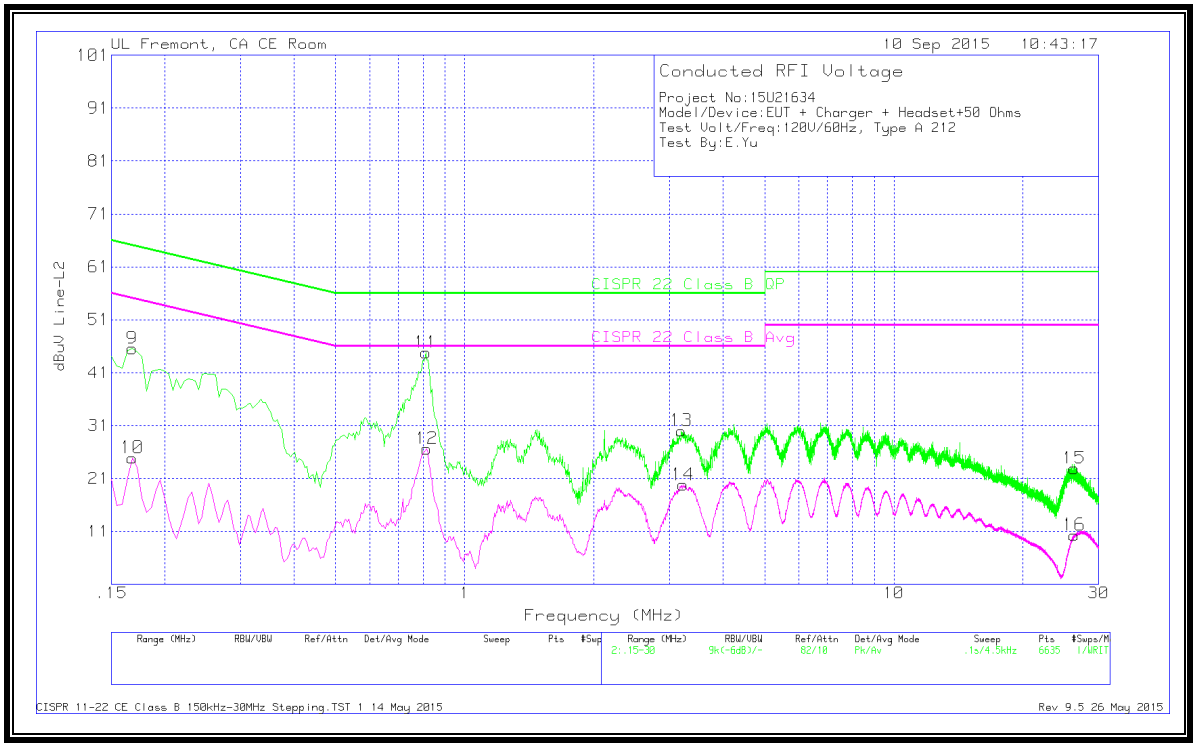
LINE 1 RESULTS



LINE 2 RESULTS



10.1.5. NORMAL OPERATION, 106 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.276	46.54	Pk	.6	0	47.14	60.94	-13.8		
2	.276	38.11	Av	.6	0	38.71	-	-	50.94	-12.23
3	.555	44.72	Pk	.3	0	45.02	56	-10.98		
4	.5595	37.77	Av	.3	0	38.07	-	-	46	-7.93
5	.834	41.36	Pk	.3	0	41.66	56	-14.34		
6	.834	34.21	Av	.3	0	34.51	-	-	46	-11.49
7	13.56	57.21	Pk	.2	.2	57.61	60	-2.39		
8	13.56	50.74	Av	.2	.2	51.14	-	-	**50**	**1.14**

Pk - Peak detector

Av - Average detection

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
9	.276	43.82	Pk	.7	0	44.52	60.94	-16.42		
10	.276	30.42	Av	.7	0	31.12	-	-	50.94	-19.82
11	.555	37.95	Pk	.3	0	38.25	56	-17.75		
12	.555	28.23	Av	.3	0	28.53	-	-	46	-17.47
13	.834	37.91	Pk	.3	0	38.21	56	-17.79		
14	.834	25.81	Av	.3	0	26.11	-	-	46	-19.89
15	13.56	52.66	Pk	.2	.2	53.06	60	-6.94		
16	13.56	48.37	Av	.2	.2	48.77	-	-	50	-1.23

Pk - Peak detector

Av - Average detection

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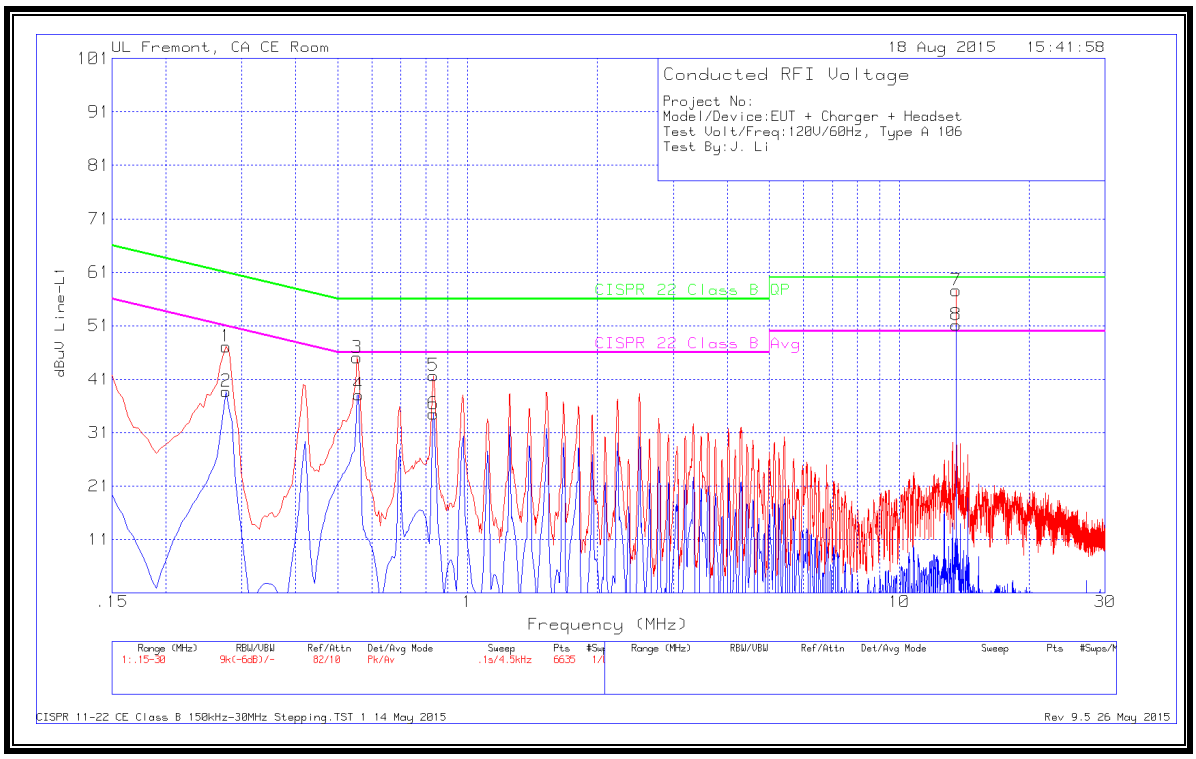
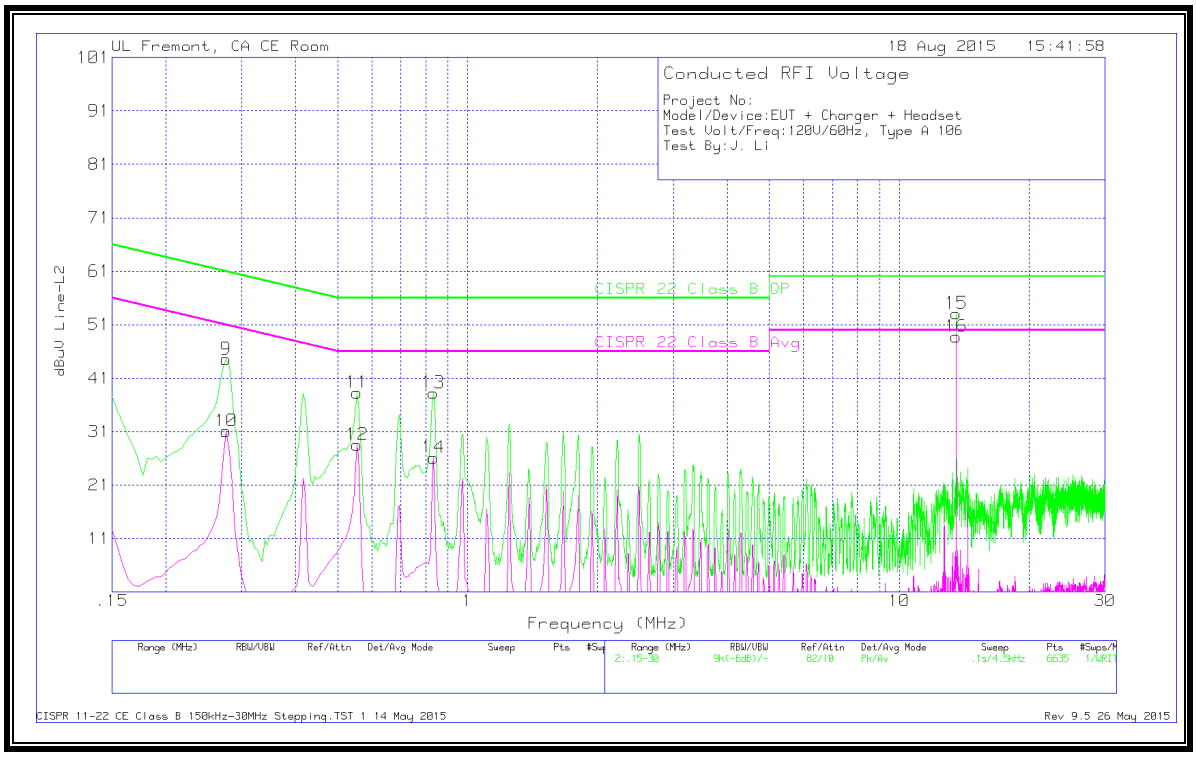
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicate that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

LINE 1 RESULTS



LINE 2 RESULTS



10.1.6. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 106 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.168	45.78	Pk	1.2	0	46.98	65.06	-18.08		
2	.168	26.03	Av	1.2	0	27.23	-	-	55.06	-27.83
3	.816	44.55	Pk	.3	0	44.85	56	-11.15		
4	.816	31.94	Av	.3	0	32.24	-	-	46	-13.76
5	4.2	32.82	Pk	.2	.1	33.12	56	-22.88		
6	4.2225	20.5	Av	.2	.1	20.8	-	-	46	-25.2
7	25.3545	22.25	Pk	.3	.3	22.85	60	-37.15		
8	25.3545	10.17	Av	.3	.3	10.77	-	-	50	-39.23

Pk - Peak detector

Av - Average detection

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
9	.168	44.37	Pk	1.3	0	45.67	65.06	-19.39		
10	.168	23.8	Av	1.3	0	25.1	-	-	55.06	-29.96
11	.816	43.94	Pk	.3	0	44.24	56	-11.76		
12	.816	26.46	Av	.3	0	26.76	-	-	46	-19.24
13	4.11	30.17	Pk	.2	.1	30.47	56	-25.53		
14	4.1235	19.92	Av	.2	.1	20.22	-	-	46	-25.78
15	26.2905	21.98	Pk	.3	.3	22.58	60	-37.42		
16	26.3265	9.54	Av	.3	.3	10.14	-	-	50	-39.86

Pk - Peak detector

Av - Average detection

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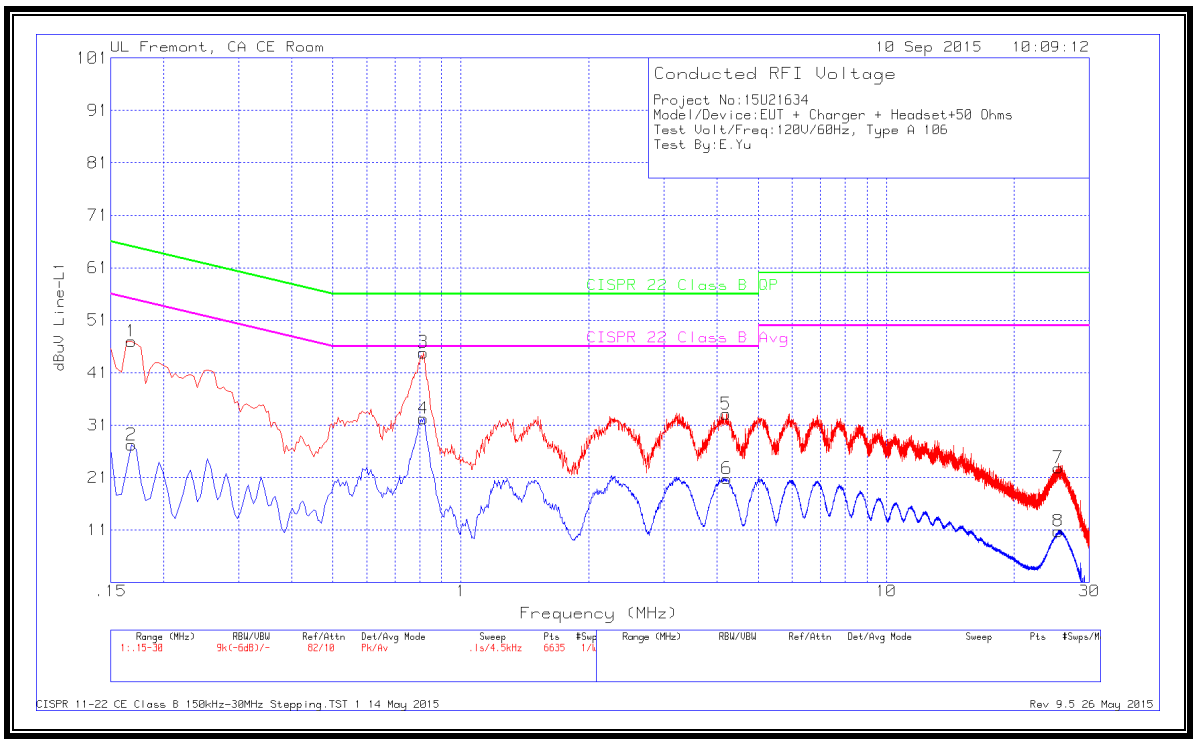
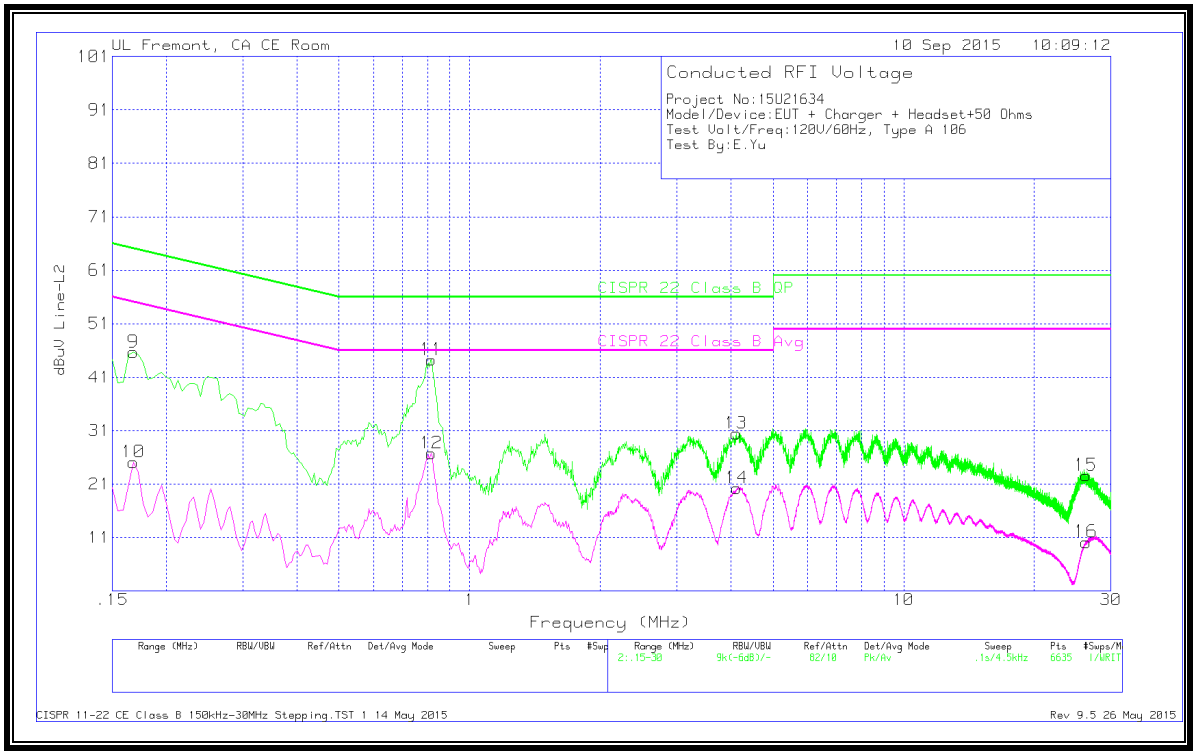
LINE 1 RESULTS



LINE 2 RESULTS



10.1.7. NORMAL OPERATION WITH LAPTOP, WORST CASE

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.195	59.67	Pk	1	0	60.67	63.82	-3.15	-	-
2	.1995	43.52	Av	.9	0	44.42	-	-	53.63	-9.21
3	8.5965	36.43	Pk	.2	.1	36.73	60	-23.27	-	-
4	8.5965	29.2	Av	.2	.1	29.5	-	-	50	-20.5
5	13.56	51.09	Pk	.2	.2	51.49	60	-8.51	-	-
6	13.56	46.96	Av	.2	.2	47.36	-	-	50	-2.64

Pk - Peak detector

Av - Average detection

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
7	.159	57.69	Pk	1.4	0	59.09	65.52	-6.43	-	-
8	.1815	40.46	Av	1.2	0	41.66	-	-	54.42	-12.76
9	13.56	50.63	Pk	.2	.2	51.03	60	-8.97	-	-
10	13.56	47.12	Av	.2	.2	47.52	-	-	50	-2.48
11	18.06	42.73	Pk	.3	.2	43.23	60	-16.77	-	-
12	18.078	28.96	Av	.3	.2	29.46	-	-	50	-20.54

Pk - Peak detector

Av - Average detection

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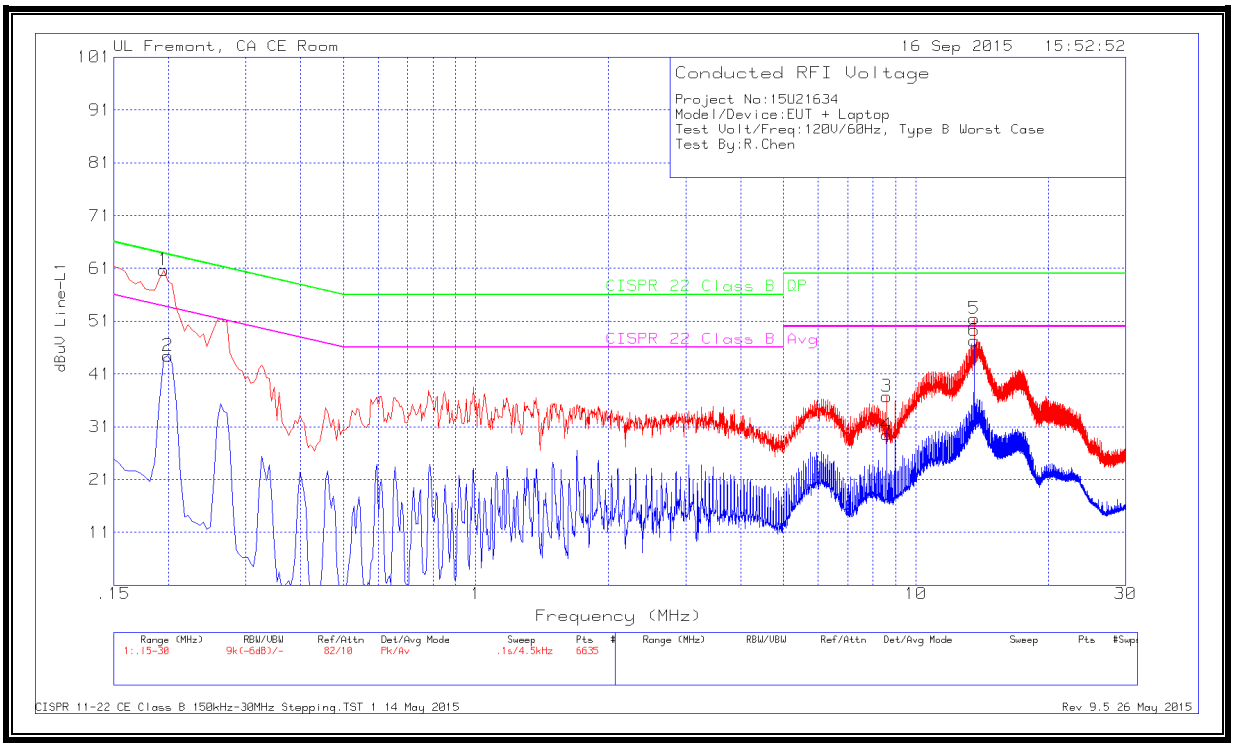
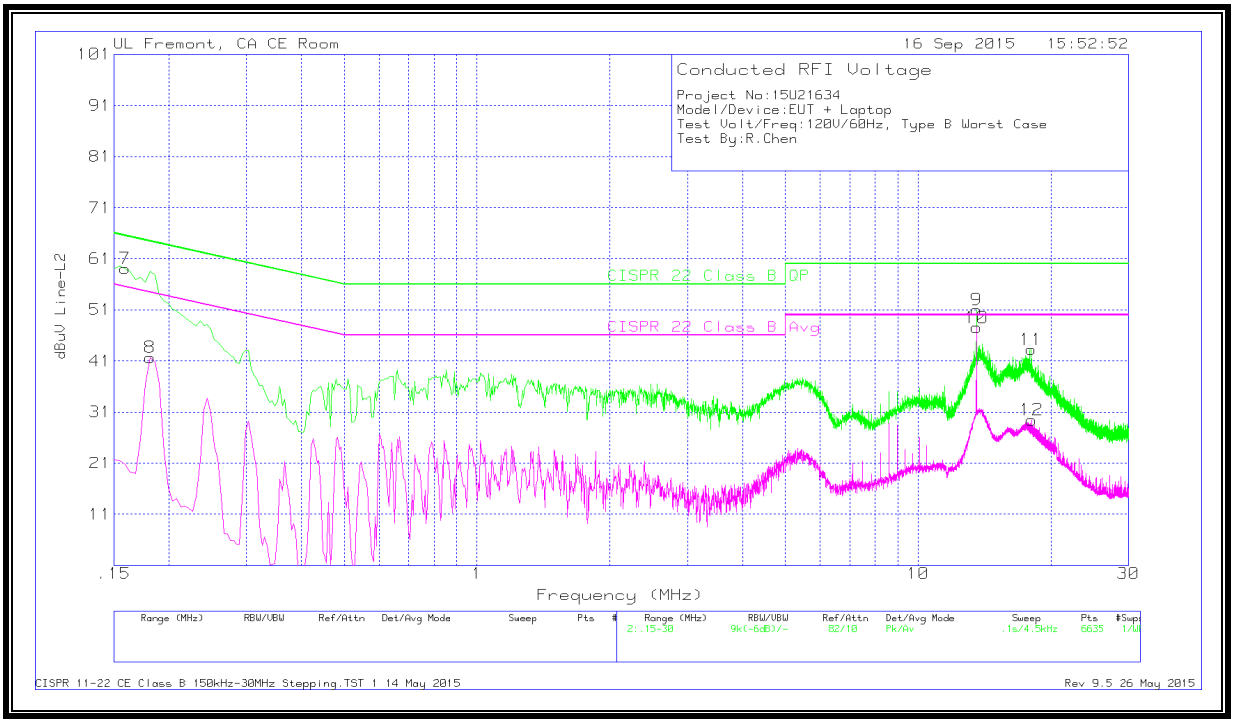
LINE 1 RESULTS



LINE 2 RESULTS



10.2. TYPE B

10.2.1. NORMAL OPERATION, 424 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.159	37.93	Pk	1.3	0	39.23	65.52	-26.29	-	-
2	.1635	19.71	Av	1.2	0	20.91	-	-	55.28	-34.37
3	.807	40.53	Pk	.3	0	40.83	56	-15.17	-	-
4	.807	28.01	Av	.3	0	28.31	-	-	46	-17.69
5	3.651	28.53	Pk	.2	.1	28.83	56	-27.17	-	-
6	3.633	10.92	Av	.2	.1	11.22	-	-	46	-34.78
7	13.56	66.19	Pk	.2	.2	66.59	60	6.59	-	-
8	13.56	62.35	Av	.2	.2	62.75	-	-	50	12.75
9	24.5355	30.41	Pk	.3	.2	30.91	60	-29.09	-	-
10	24.5355	24.65	Av	.3	.2	25.15	-	-	50	-24.85

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
11	.1635	42.32	Pk	1.3	0	43.62	65.28	-21.66	-	-
12	.168	22.95	Av	1.3	0	24.25	-	-	55.06	-30.81
13	.2445	39.13	Pk	.8	0	39.93	61.94	-22.01	-	-
14	.2535	21.01	Av	.7	0	21.71	-	-	51.64	-29.93
15	.807	42.5	Pk	.3	0	42.8	56	-13.2	-	-
16	.8115	29.55	Av	.3	0	29.85	-	-	46	-16.15
17	13.56	61.91	Pk	.2	.2	62.31	60	2.31	-	-
18	13.56	59.63	Av	.2	.2	60.03	-	-	50	10.03
19	14.406	33.9	Pk	.2	.2	34.3	60	-25.7	-	-
20	14.4015	23.58	Av	.2	.2	23.98	-	-	50	-26.02

Pk - Peak detector

Av - Average detection

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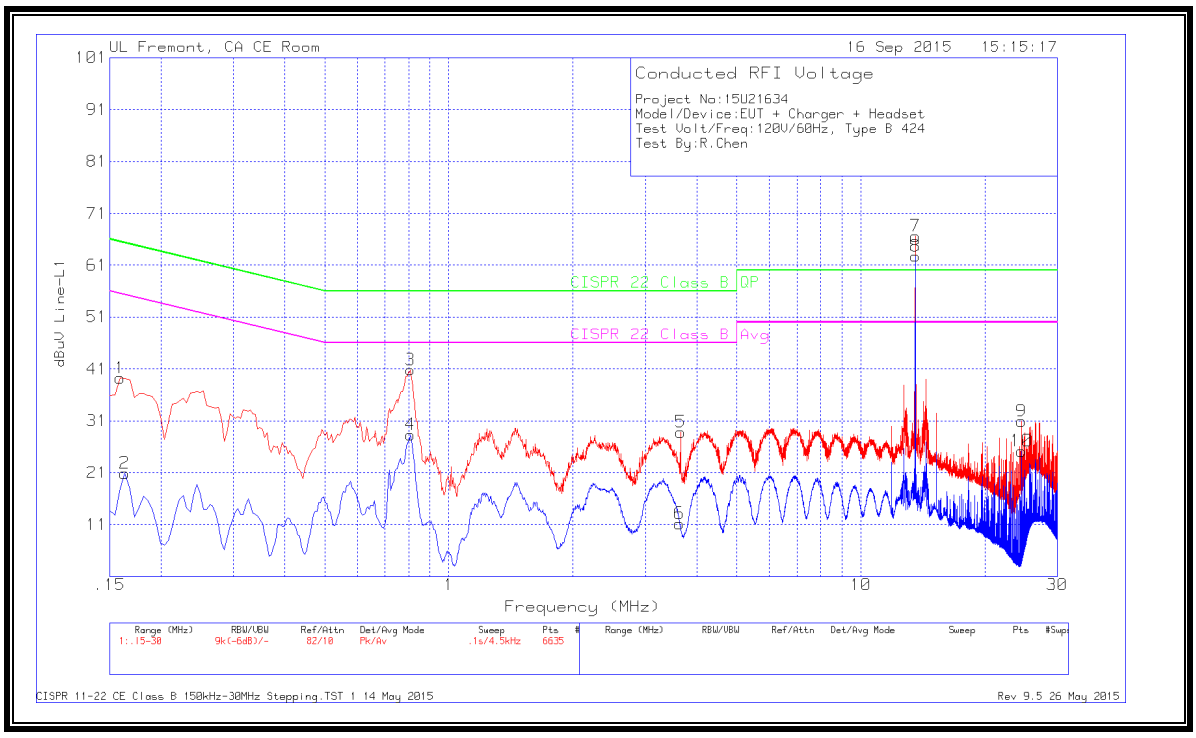
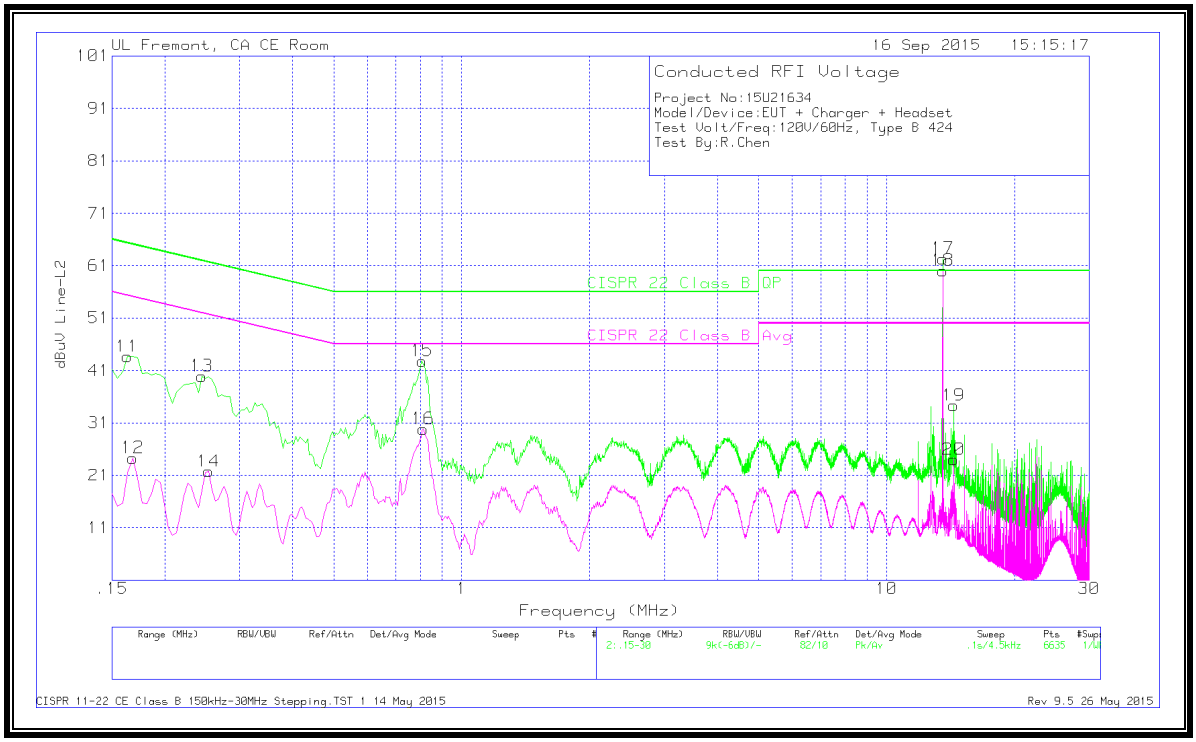
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicate that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

LINE 1 RESULTS



LINE 2 RESULTS



10.2.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 424 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.1635	44.59	Pk	1.2	0	45.79	65.28	-19.49		
2	.168	25.22	Av	1.2	0	26.42	-	-	55.06	-28.64
3	.2535	40.73	Pk	.7	0	41.43	61.64	-20.21		
4	.2535	22.23	Av	.7	0	22.93	-	-	51.64	-28.71
5	.3345	36.4	Pk	.5	0	36.9	59.34	-22.44		
6	.339	18.34	Av	.5	0	18.84	-	-	49.23	-30.39
7	.6	33.25	Pk	.3	0	33.55	56	-22.45		
8	.5865	19.85	Av	.3	0	20.15	-	-	46	-25.85
9	.8115	44.6	Pk	.3	0	44.9	56	-11.1		
10	.816	28.95	Av	.3	0	29.25	-	-	46	-16.75
11	1.473	30.67	Pk	.2	.1	30.97	56	-25.03		
12	1.491	18.73	Av	.2	.1	19.03	-	-	46	-26.97

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
13	.1635	44.58	Pk	1.3	0	45.88	65.28	-19.4		
14	.168	25.76	Av	1.3	0	27.06	-	-	55.06	-28
15	.249	40.55	Pk	.7	0	41.25	61.79	-20.54		
16	.2535	23.39	Av	.7	0	24.09	-	-	51.64	-27.55
17	.3345	35.17	Pk	.5	0	35.67	59.34	-23.67		
18	.339	19.98	Av	.5	0	20.48	-	-	49.23	-28.75
19	.5865	33.99	Pk	.3	0	34.29	56	-21.71		
20	.5865	21.98	Av	.3	0	22.28	-	-	46	-23.72
21	.807	44.51	Pk	.3	0	44.81	56	-11.19		
22	.816	30.87	Av	.3	0	31.17	-	-	46	-14.83
23	2.256	29	Pk	.2	.1	29.3	56	-26.7		
24	2.2515	19.25	Av	.2	.1	19.55	-	-	46	-26.45

Pk - Peak detector

Av - Average detection

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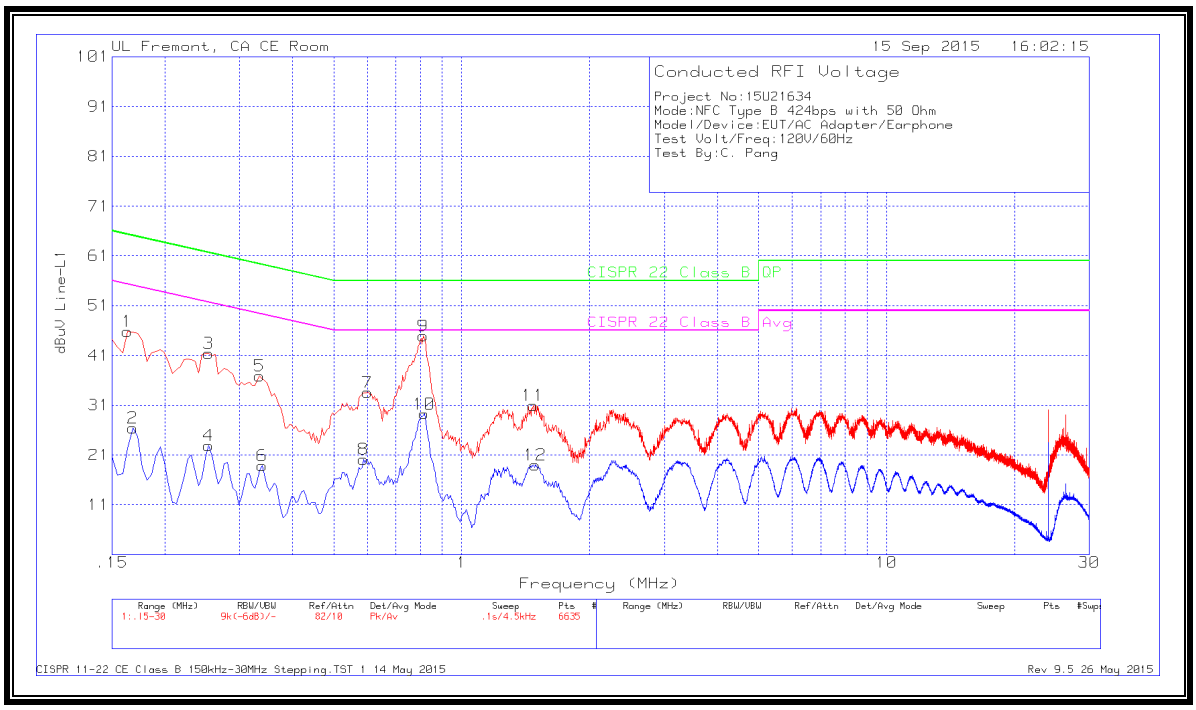
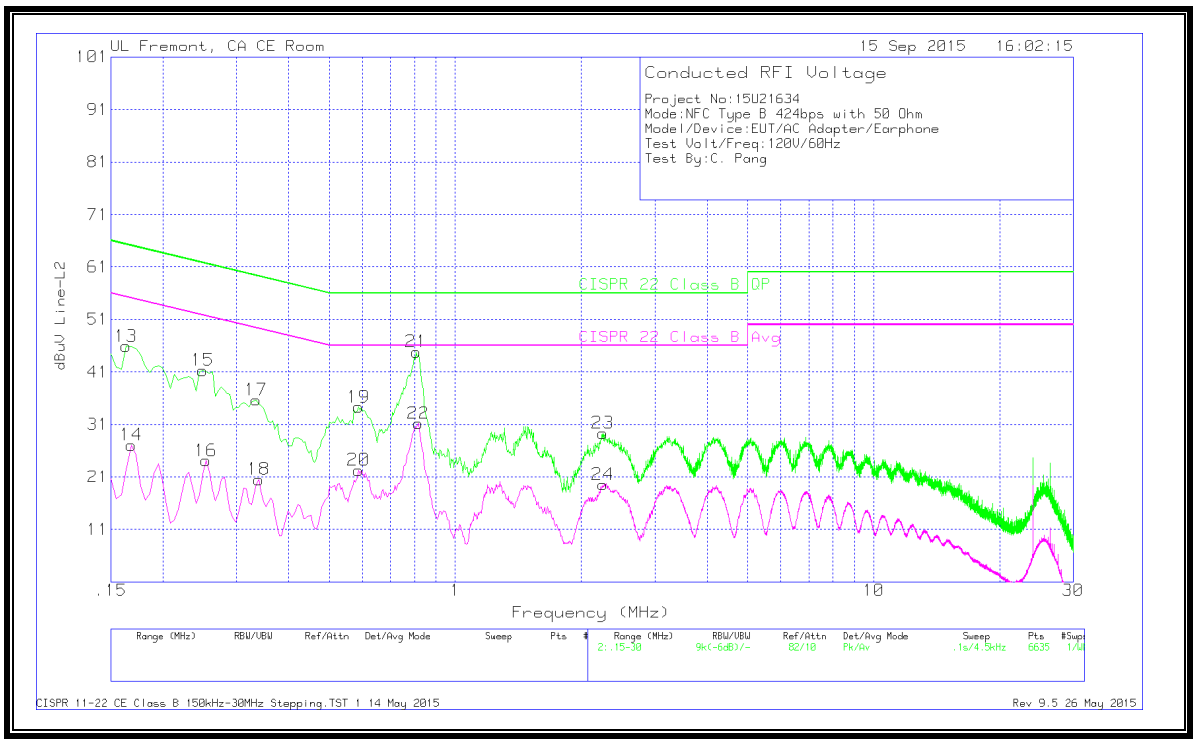
LINE 1 RESULTS



LINE 2 RESULTS



10.2.3. NORMAL OPERATION, 212 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.168	44.75	Pk	1.2	0	45.95	65.06	-19.11	-	-
2	.168	24.32	Av	1.2	0	25.52	-	-	55.06	-29.54
3	.816	44.48	Pk	.3	0	44.78	56	-11.22	-	-
4	.816	27.59	Av	.3	0	27.89	-	-	46	-18.11
5	4.209	29.4	Pk	.2	.1	29.7	56	-26.3	-	-
6	4.21575	19.43	Av	.2	.1	19.73	-	-	46	-26.27
7	7.863	29.15	Pk	.2	.1	29.45	60	-30.55	-	-
8	7.845	19.06	Av	.2	.1	19.36	-	-	50	-30.64
9	13.56	63.97	Pk	.2	.2	64.37	60	4.37	-	-
10	13.56	59.93	Av	.2	.2	60.33	-	-	50	10.33
11	27.1185	27.03	Pk	.3	.3	27.63	60	-32.37	-	-
12	27.1185	13.94	Av	.3	.3	14.54	-	-	50	-35.46

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
13	.1635	44.72	Pk	1.3	0	46.02	65.28	-19.26	-	-
14	.168	24.51	Av	1.3	0	25.81	-	-	55.06	-29.25
15	.249	40.39	Pk	.7	0	41.09	61.79	-20.7	-	-
16	.2535	22.07	Av	.7	0	22.77	-	-	51.64	-28.87
17	.816	43.36	Pk	.3	0	43.66	56	-12.34	-	-
18	.816	30.04	Av	.3	0	30.34	-	-	46	-15.66
19	3.2415	28.26	Pk	.2	.1	28.56	56	-27.44	-	-
20	3.228	18.77	Av	.2	.1	19.07	-	-	46	-26.93
21	13.56	59.34	Pk	.2	.2	59.74	60	-.26	-	-
22	13.56	57.47	Av	.2	.2	57.87	-	-	50	7.87
23	27.1635	22.61	Pk	.3	.3	23.21	60	-36.79	-	-
24	27.1635	14.45	Av	.3	.3	15.05	-	-	50	-34.95

Pk - Peak detector

Av - Average detection

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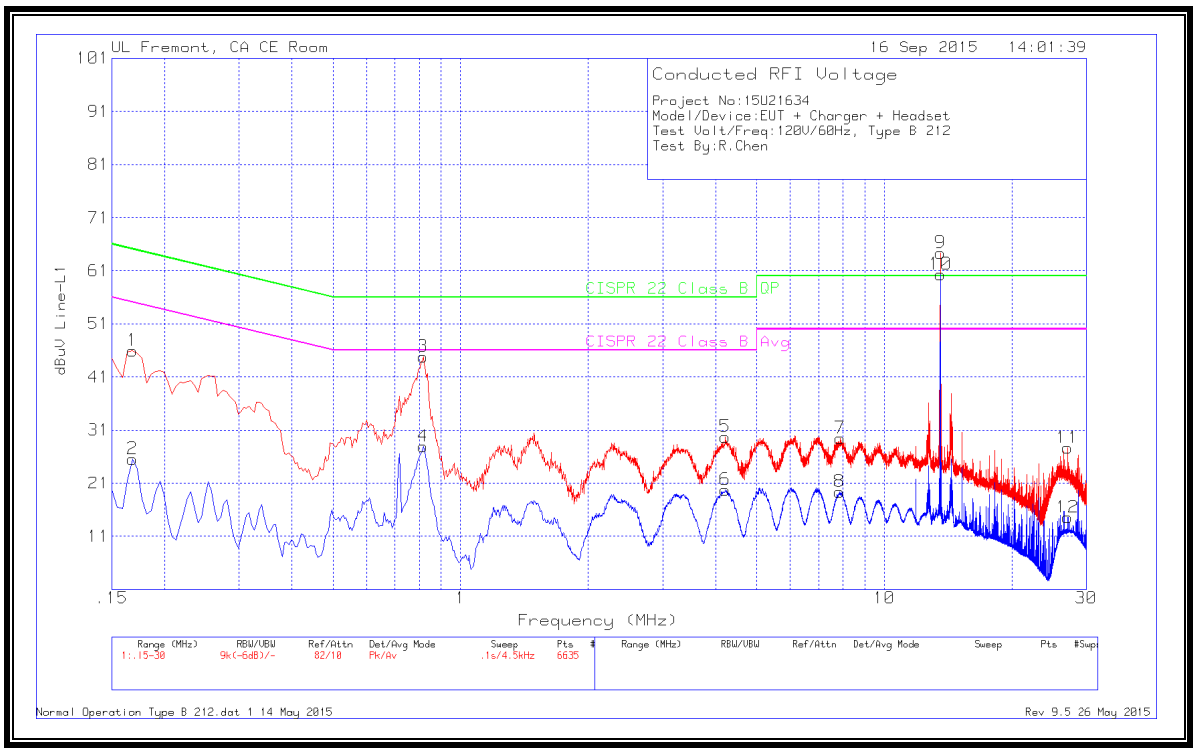
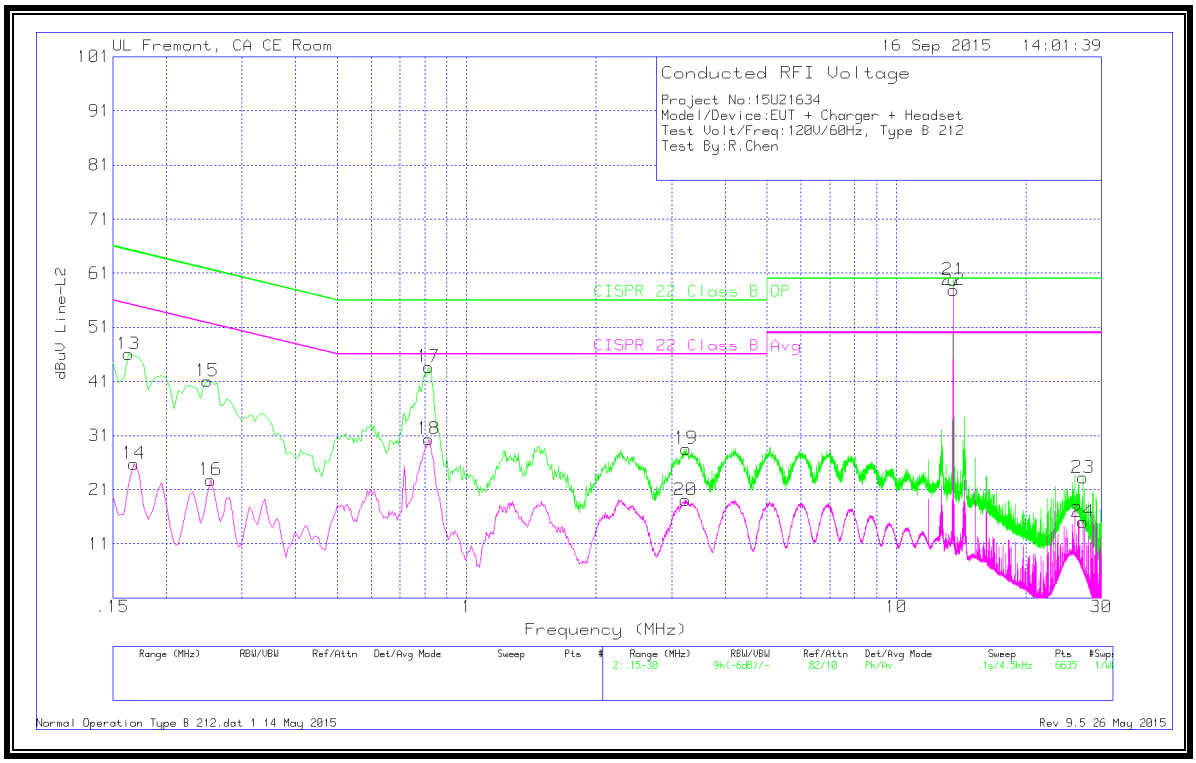
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicate that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

LINE 1 RESULTS



LINE 2 RESULTS



10.2.4. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 212 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.168	44.65	Pk	1.2	0	45.85	65.06	-19.21		
2	.168	25.02	Av	1.2	0	26.22	-	-	55.06	-28.84
3	.2535	40.87	Pk	.7	0	41.57	61.64	-20.07		
4	.2535	22.15	Av	.7	0	22.85	-	-	51.64	-28.79
5	.3345	36.04	Pk	.5	0	36.54	59.34	-22.8		
6	.339	18.41	Av	.5	0	18.91	-	-	49.23	-30.32
7	.816	44.68	Pk	.3	0	44.98	56	-11.02		
8	.816	28.86	Av	.3	0	29.16	-	-	46	-16.84
9	1.491	30.97	Pk	.2	.1	31.27	56	-24.73		
10	1.4955	18.82	Av	.2	.1	19.12	-	-	46	-26.88
11	5.073	29.33	Pk	.2	.1	29.63	60	-30.37		
12	5.073	20.2	Av	.2	.1	20.5	-	-	50	-29.5

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
13	.168	44.56	Pk	1.3	0	45.86	65.06	-19.2		
14	.168	25.53	Av	1.3	0	26.83	-	-	55.06	-28.23
15	.2445	40.39	Pk	.8	0	41.19	61.94	-20.75		
16	.2535	23.18	Av	.7	0	23.88	-	-	51.64	-27.76
17	.3345	35	Pk	.5	0	35.5	59.34	-23.84		
18	.339	19.86	Av	.5	0	20.36	-	-	49.23	-28.87
19	.816	44.3	Pk	.3	0	44.6	56	-11.4		
20	.816	30.66	Av	.3	0	30.96	-	-	46	-15.04
21	1.482	29.9	Pk	.2	.1	30.2	56	-25.8		
22	1.4865	19.12	Av	.2	.1	19.42	-	-	46	-26.58
23	2.274	28.54	Pk	.2	.1	28.84	56	-27.16		
24	2.292	19.76	Av	.2	.1	20.06	-	-	46	-25.94

Pk - Peak detector

Av - Average detection

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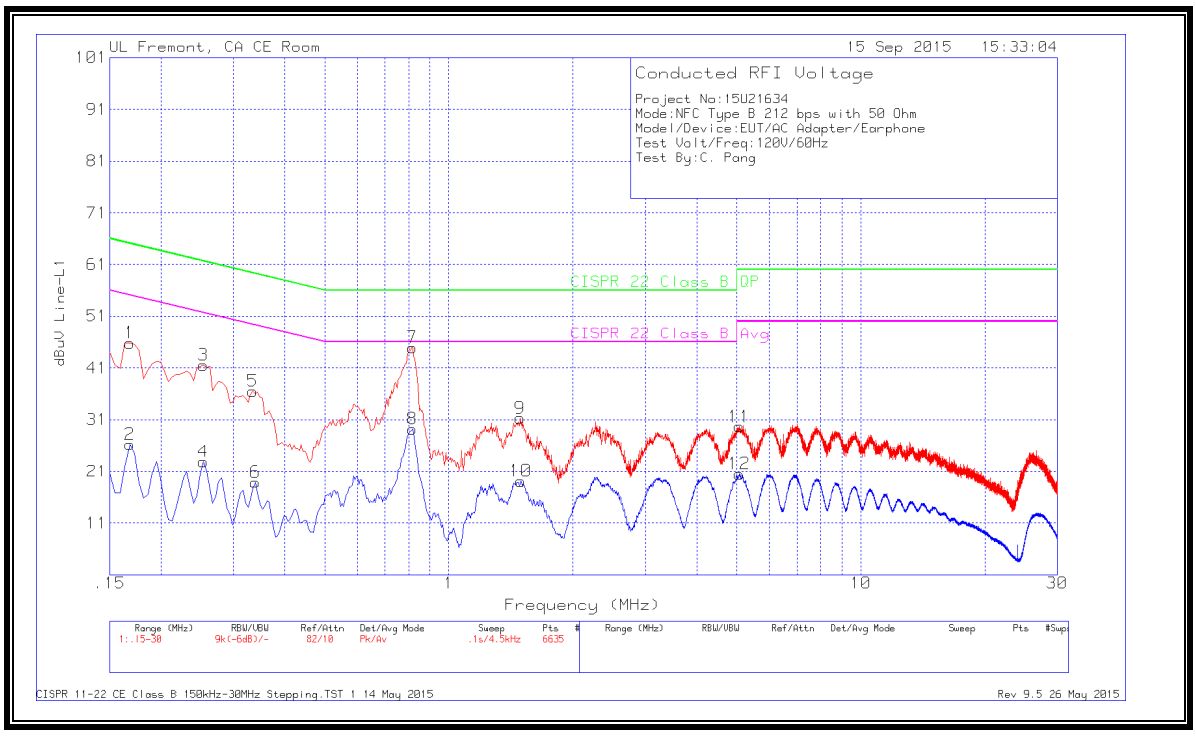
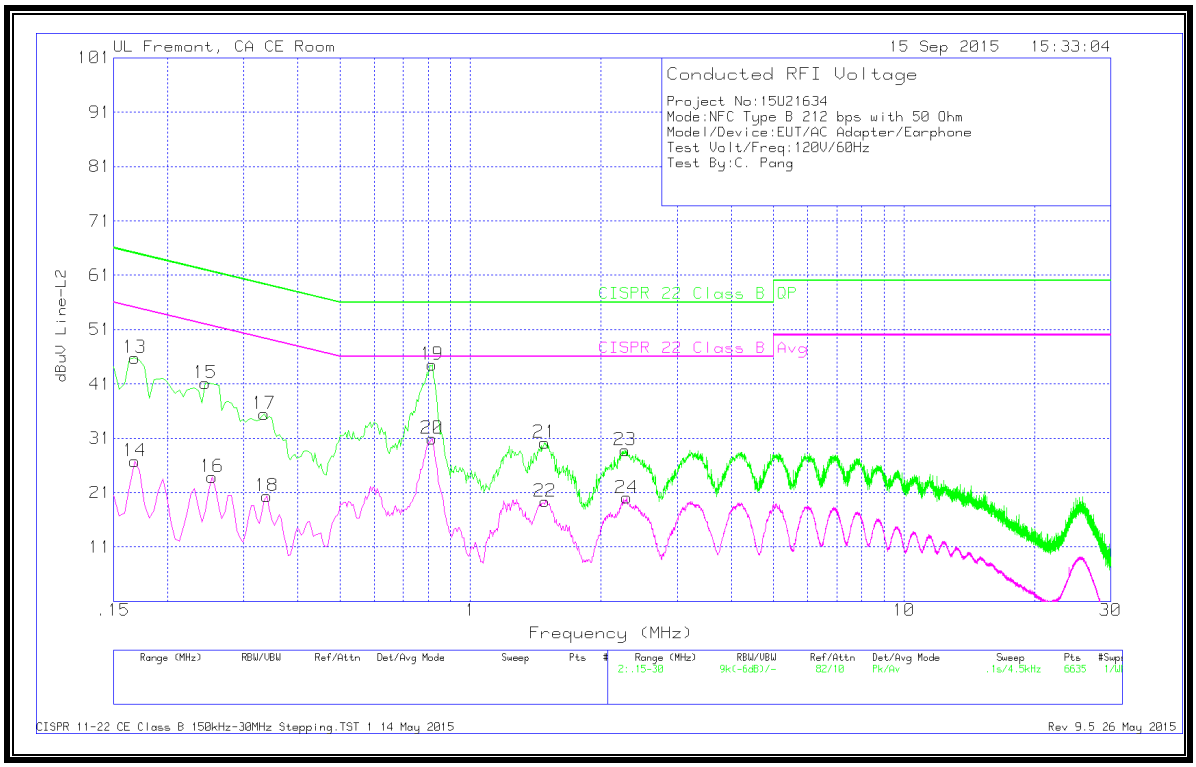
LINE 1 RESULTS



LINE 2 RESULTS



10.2.5. NORMAL OPERATION, 106 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.1635	44.64	Pk	1.2	0	45.84	65.28	-19.44	-	-
2	.168	24.59	Av	1.2	0	25.79	-	-	55.06	-29.27
3	.8115	45.22	Pk	.3	0	45.52	56	-10.48	-	-
4	.816	28.2	Av	.3	0	28.5	-	-	46	-17.5
5	6.9405	30.17	Pk	.2	.1	30.47	60	-29.53	-	-
6	6.9405	19.87	Av	.2	.1	20.17	-	-	50	-29.83
7	13.56	62.49	Pk	.2	.2	62.89	60	2.89	-	-
8	13.56	58.54	Av	.2	.2	58.94	-	-	50	8.94
9	18.2445	29.4	Pk	.3	.2	29.9	60	-30.1	-	-
10	18.2445	19.38	Av	.3	.2	19.88	-	-	50	-30.12
11	1.4595	30.56	Pk	.2	.1	30.86	56	-25.14	-	-
12	1.464	17.71	Av	.2	.1	18.01	-	-	46	-27.99

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
13	.168	44.67	Pk	1.3	0	45.97	65.06	-19.09	-	-
14	.168	24.8	Av	1.3	0	26.1	-	-	55.06	-28.96
15	.8115	44.18	Pk	.3	0	44.48	56	-11.52	-	-
16	.816	30.59	Av	.3	0	30.89	-	-	46	-15.11
17	3.1785	28.73	Pk	.2	.1	29.03	56	-26.97	-	-
18	3.192	18.8	Av	.2	.1	19.1	-	-	46	-26.9
19	6.459	28.81	Pk	.2	.1	29.11	60	-30.89	-	-
20	6.4365	11.72	Av	.2	.1	12.02	-	-	50	-37.98
21	13.56	57.92	Pk	.2	.2	58.32	60	-1.68	-	-
22	13.56	55.95	Av	.2	.2	56.35	-	-	50	6.35
23	15.2565	25.94	Pk	.3	.2	26.44	60	-33.56	-	-
24	15.2565	19.64	Av	.3	.2	20.14	-	-	50	-29.86

Pk - Peak detector

Av - Average detection

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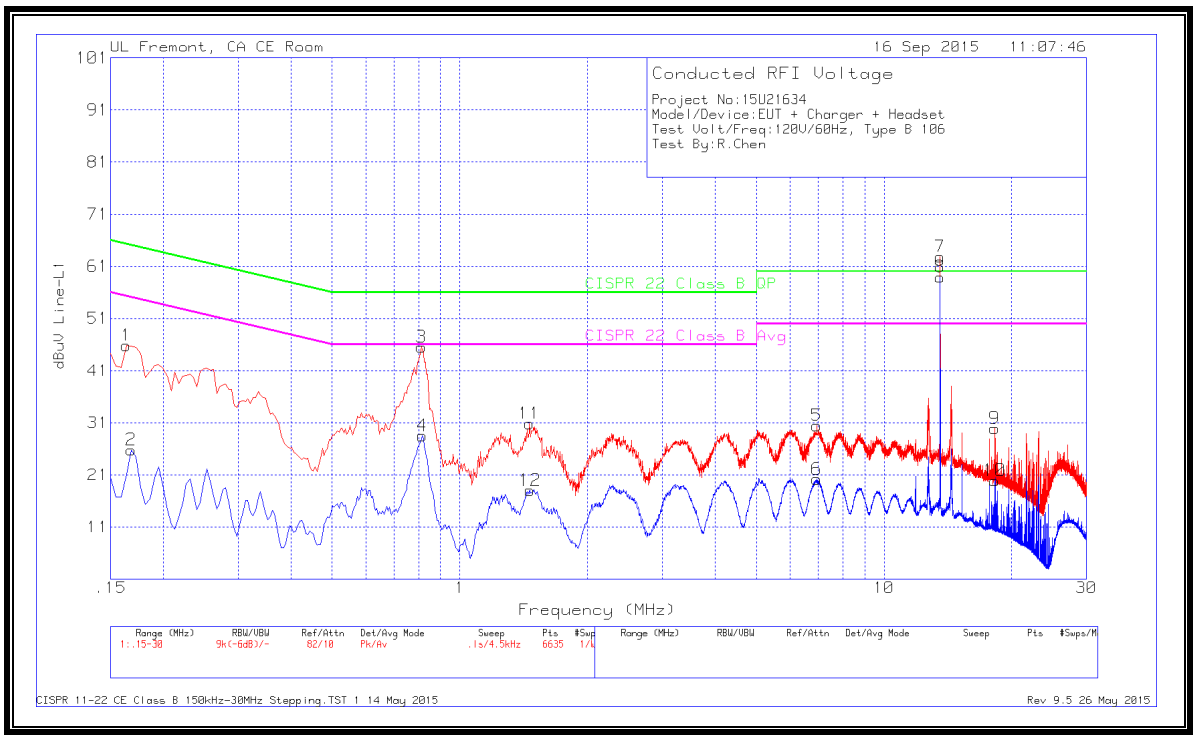
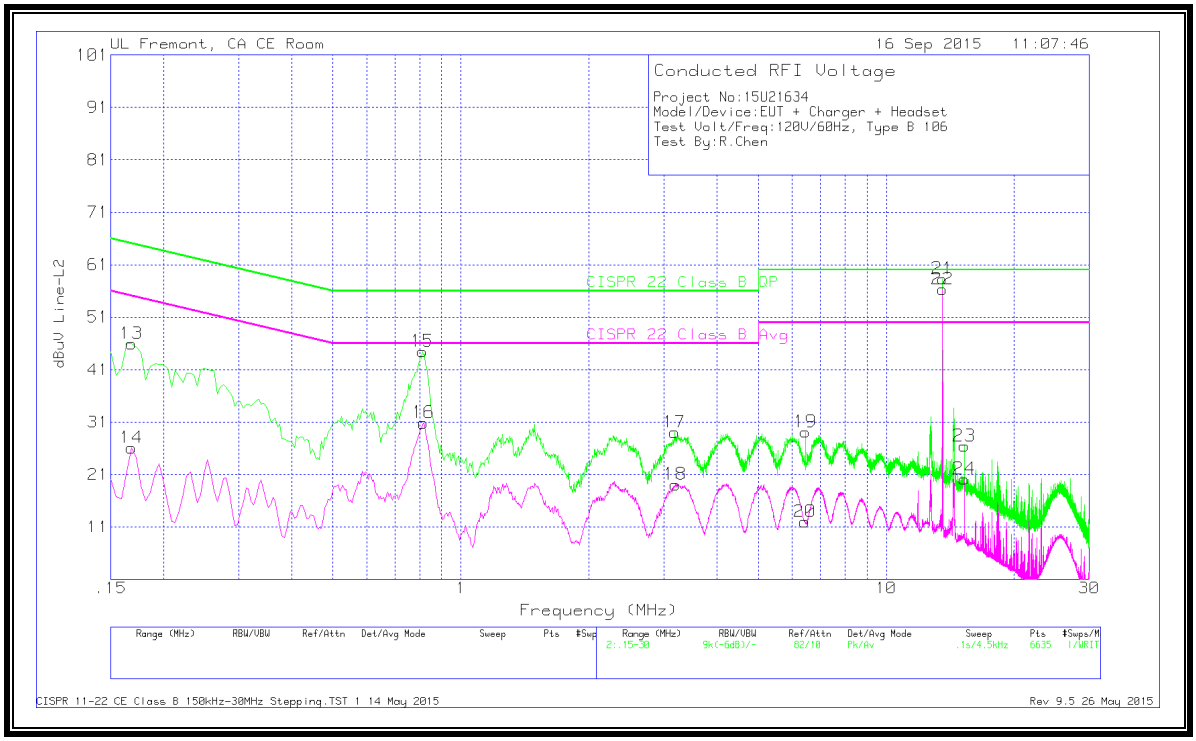
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicate that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

LINE 1 RESULTS



LINE 2 RESULTS



10.2.6. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 106 KBPS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.816	45.37	Pk	.3	0	45.67	56	-10.33		
2	.807	28.72	Av	.3	0	29.02	-	-	46	-16.98
3	.168	45.65	Pk	1.2	0	46.85	65.06	-18.21		
4	.168	26.23	Av	1.2	0	27.43	-	-	55.06	-27.63
5	.258	41.21	Pk	.7	0	41.91	61.5	-19.59		
6	.2535	22.43	Av	.7	0	23.13	-	-	51.64	-28.51
7	.6	33.67	Pk	.3	0	33.97	56	-22.03		
8	.6	19.38	Av	.3	0	19.68	-	-	46	-26.32
9	1.473	31.1	Pk	.2	.1	31.4	56	-24.6		
10	1.4685	18.23	Av	.2	.1	18.53	-	-	46	-27.47
11	2.2875	30.19	Pk	.2	.1	30.49	56	-25.51		
12	2.2605	19.18	Av	.2	.1	19.48	-	-	46	-26.52

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
13	.1635	44.76	Pk	1.3	0	46.06	65.28	-19.22		
14	.168	25.35	Av	1.3	0	26.65	-	-	55.06	-28.41
15	.249	40.64	Pk	.7	0	41.34	61.79	-20.45		
16	.2535	22.93	Av	.7	0	23.63	-	-	51.64	-28.01
17	.8025	43.94	Pk	.3	0	44.24	56	-11.76		
18	.816	30.58	Av	.3	0	30.88	-	-	46	-15.12
19	1.4955	29.85	Pk	.2	.1	30.15	56	-25.85		
20	1.4955	19.13	Av	.2	.1	19.43	-	-	46	-26.57
21	2.3055	28.7	Pk	.2	.1	29	56	-27		
22	2.2965	19.44	Av	.2	.1	19.74	-	-	46	-26.26
23	.3345	35	Pk	.5	0	35.5	59.34	-23.84		
24	.339	19.82	Av	.5	0	20.32	-	-	49.23	-28.91

Pk - Peak detector

Av - Average detection

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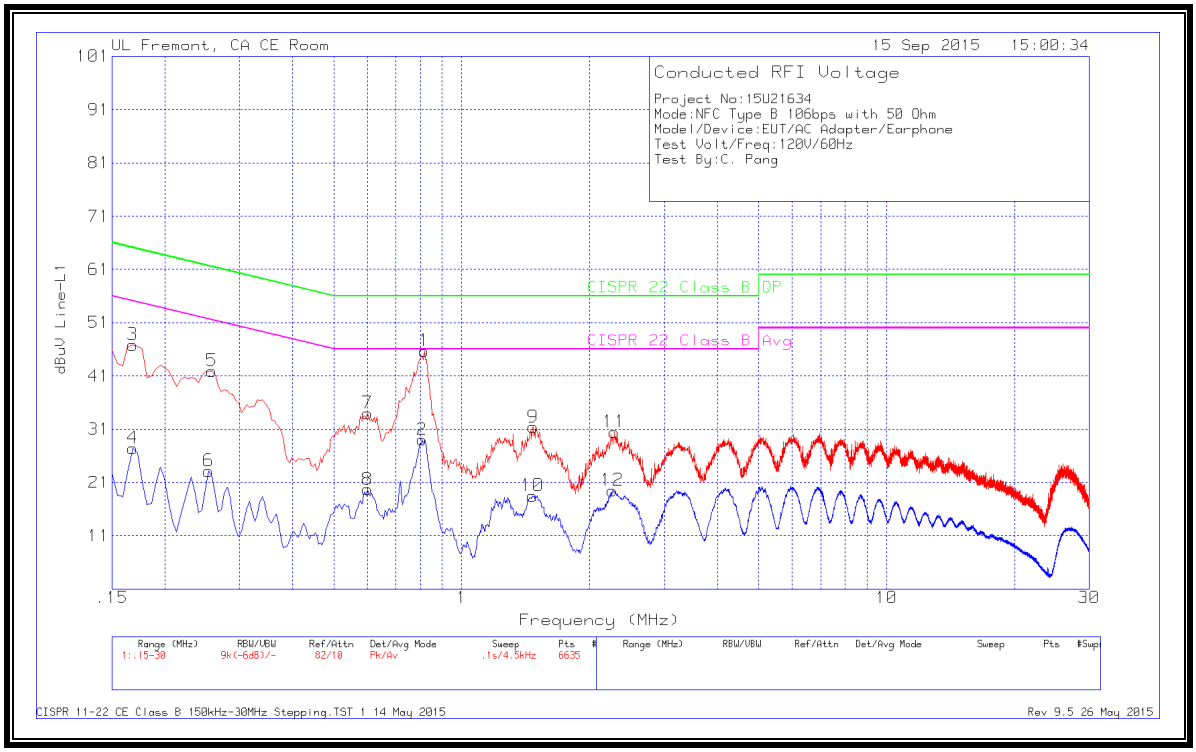
LINE 1 RESULTS



LINE 2 RESULTS