CERTIFICATION TEST REPORT

Report Number. : 13181006–E2V3

Applicant	:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	:	A2140
FCC ID	:	BCGA2140
IC	:	579C-A2140
EUT Description	:	WIRELESS CHARGER
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS-210 ISSUE 10

Date Of Issue:
October 02, 2020

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
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NVLAP TESTING
NVLAP Lab code: 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	9/23/2020	Initial Review	Chin Pang
V2	9/28/2020	Changed RSS-210 Isue 10 on Cover Page; Added the conversion factor from E-field to H-field statement for IC limits on page 15.	T. Chan
V3	10/02/2020	Update Spurious Y axis labeb to dBuV/m on plot and data table.	Francisco Guarnero

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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A

EUT DESCRIPTION: WIRELESS CHARGER

MODEL: A2140

SERIAL NUMBER: DLCD42U106M2

DATE TESTED: AUGUST 26, 2020 to SEPTEMBER 02, 2020

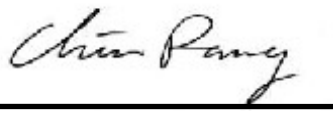
APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	Complies
ISED RSS-210 Issue 10, Annex B	Complies
ISED RSS-GEN Issue 5	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

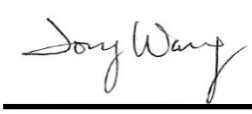
This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This 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 the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



Chin Pang
Senior Enginner
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Tony Wang
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 5, and RSS-210 Issue 10.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions were measured at 47658 Kato RD 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	47658 Kato Rd
☐ Chamber A	☐ Chamber D	☐ Chamber I
☐ Chamber B	☐ Chamber E	☐ Chamber J
☐ Chamber C	☒ Chamber F	☐ Chamber K
	☐ Chamber G	☐ Chamber L
	☐ Chamber H	☐ Chamber M

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code: 2324A.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

4.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U_{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance Loop, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB
Worst Case Occupied Bandwidth	0.09dB / 2.00%

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a magnetic charger which inductively charge other wireless charging devices.The charging function operates at 127.7kHz (Qi) and 360.0kHz. The charger supports charging at 5W, 7.5W and 15W power and NFC tag operation. The charger doesn't have any internal battery.

5.2. MAXIMUM E-FIELD STRENGTH

The transmitter has a maximum peak radiated E field strength as follows:

Frequency Range (MHz)	Mode	Kbps	E Field at 30m distance (dBuV/m)
13.56	Reader	26.48	14.33

5.3. SOFTWARE AND FIRMWARE

The test utility software used during testing was v141

5.4. WORST-CASE CONFIGURATION AND MODE

The EUT is a single frequency magnetic charger enclosed in a stainless steel case. For the entire radiated emissions test, the EUT was investigated on the following configuration during the test at its natural orientation.

AC power line conducted emissions were also investigated on the following configurations

Config	Mode	Descriptions
1	Operating	EUT powered by AC/DC adapter with phone by host PC via USB cable

For below 30MHz & 1GHz tests EUT was connected to AC power adapter as the worst case, the worst-case configuration reported was tested with EUT and phone. For AC line conducted emission, test was investigated with AC power adapter.

The EUT was tested as operation modes. During operational mode, EUT was tested with wireless phone.

For all radiated emissions tests, all final data for operational mode represents EUT with phone. During the Near Field Communication (NFC) process, the phone actively indicates the status of the NFC process from laptop that was connected to phone.

For below 30MHz testing, investigation was done on three antenna orientations: RX antenna Face-on, Face-off and horizontal (parallel to ground). The worst-case configurations were determined on RX antenna Face-on and Face-off; therefore, all final tests were performed using these two orientations.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 300 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC/DC adapter	Apple	A1882	C4H748200RXH80MAY	N/A
Phone	Apple	A2172	G6TD200304FR	N/A
Laptop	Apple	MacBook Air	C2QLN093FKYR	DoC
Laptop Adapter	Apple	A1436	C045196GMGTG6HHAD	DoC

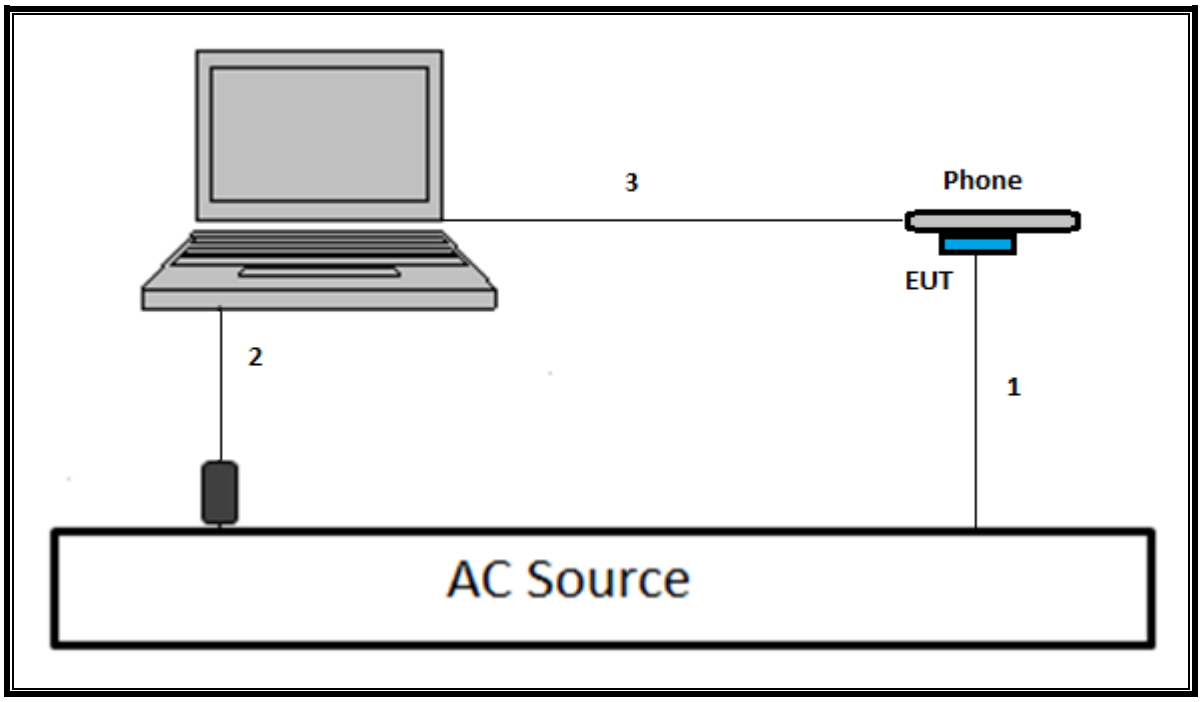
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC	1	USB-C	Un-shielded	1	30W Power Supply
2	DC	1	Magnetic 5 pin	Un-shielded	3	60W Power Supply
3	USB	1	Lightening	Un-shielded	1	Communication

TEST SETUP

The EUT is directly connected to an AC/DC adapter via USB-C cable and magnetic connect to host phone on top of EUT. Host laptop computer is connected to host phone via USB / lightening cable during the tests. Test software exercised the radio card.

CONFIGURATION 1: OPERATING MODE WITH PHONE



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**	**ID Num**	**Cal Due**
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T1616	10/28/2020
Antenna, Broadband Hybrid, 30MHz to 2000MHz w/4dB	Sunol Sciences Crop.	JB1	T243	04/15/2021
Amplifier, 10kHz to 1GHz, 32dB	Sonoma Instrument	310N	T173	07/22/2021
Sniffer Probes	Electro Metrics	EM-6992	N/A	N/A
Environmental Chamber	Cincinnati Sub-Zero	ZPHS-8-3.5-SCT/WC	T754	12/22/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A-544	T342	01/23/2021

AC Line Conducted				
EMI Test Receiver 9Khz-7GHz	Rohde & Schwarz	ESCI7	T1436	02/20/2021
Power Cable, Line Conducted Emissions	UL	PG1	T861	10/27/2020
LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2-01	PRE0186446	01/23/2021
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, April 30, 2020	
Conducted Software	UL	UL EMC	Ver 2020.8.6	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015	

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.

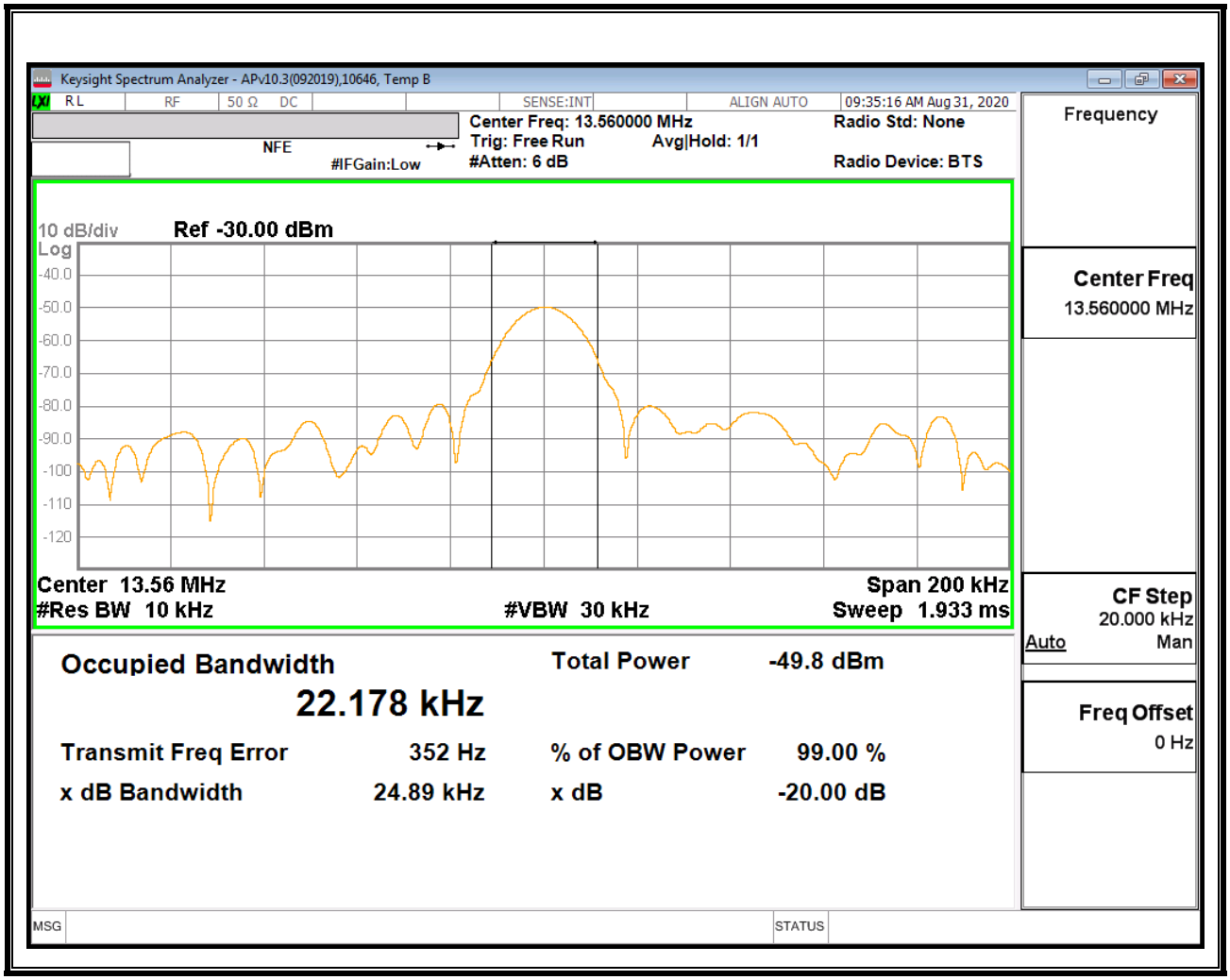
Note: Because the measured signal is CW or CW like, adjusting the RBW per C63.10 would not be practical. Measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

RESULTS

99% and 20dB BW

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
26.48	13.56	22.178	24.89

Reader Mode



8. 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.

IC RSS-210, Annex B.6
Carrier frequency stability shall be maintained to ±0.01% (±100 ppm).

TEST PROCEDURE

ANSI C63.10-2013 Clause 6.8

RESULTS

No non-compliance noted.

ID:	38602	Date:	09/01/2020

Reader Mode

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC										
Limit: ± 100 ppm = 1.35600 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(VAC)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
	50	13.5600731	22.629	13.5597275	48.119	13.5597010	50.074	13.5596880	51.034	± 100
	40	13.5601355	18.029	13.5600104	27.252	13.5600229	26.329	13.5600849	21.764	± 100
	30	13.5603200	4.424	13.5598675	37.792	13.5601151	19.532	13.5603200	4.426	± 100
3.80	***20***	***13.5603800***	***0.000***	***13.5607524***	***-27.465***	***13.5607098***	***-24.323***	***13.5606462***	***-19.632***	***± 100***
	10	13.5600218	26.414	13.5601392	17.754	13.5608315	-33.299	13.5602201	11.792	± 100
	0	13.5598105	41.998	13.5600592	23.659	13.5601478	17.123	13.5600446	24.736	± 100
	-10	13.5599552	31.327	13.5600080	27.431	13.5599409	32.380	13.5597007	50.093	± 100
	-20	13.5598839	36.585	13.5597884	43.628	13.5598621	38.190	13.5596396	54.597	± 100
3.23	20	13.5597891	43.575	13.5597421	47.041	13.5598120	41.886	13.5598045	42.439	± 100
4.37	20	13.5601154	19.511	13.5601344	18.110	13.5601975	13.457	13.5602108	12.476	± 100

9. RADIATED EMISSION TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMIT

§15.225
IC RSS-210, Annex B.6
IC RSS-GEN, Section 8.9 (Transmitter)

(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

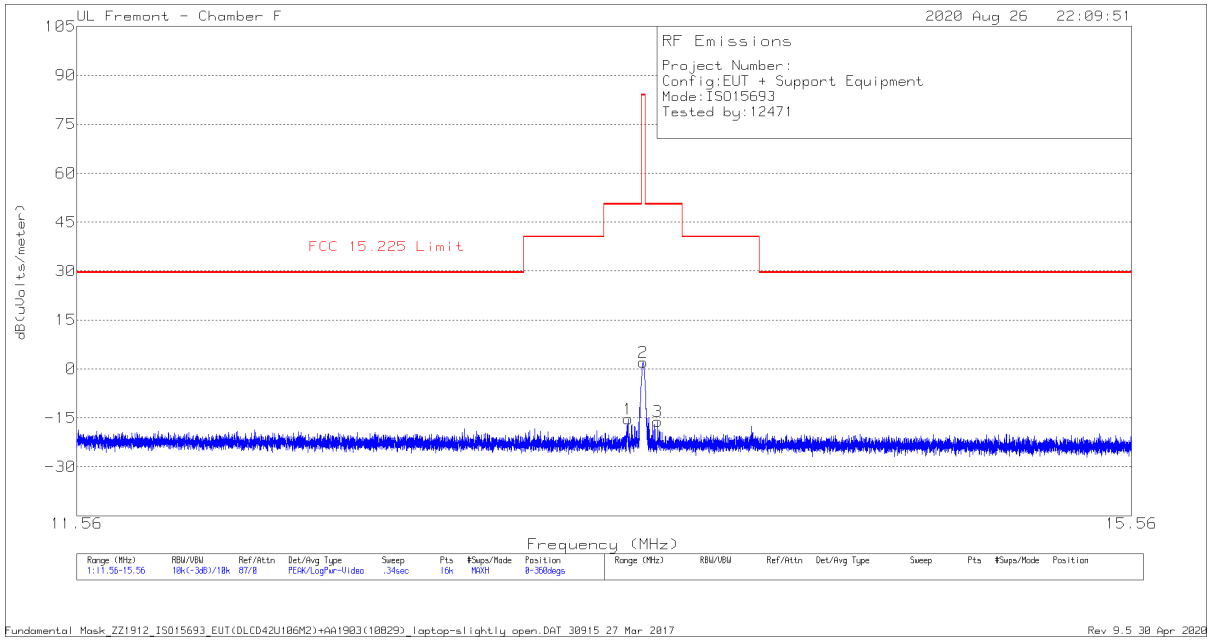
Note: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as report in the table) using free space impedance of 377 Ohms. For example, the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

9.2. FUNDAMENTAL AND SPURIOUS EMISSIONS (0.15 - 30 MHz), EUT WITH AC/DC ADAPTER

Reader Mode

FUNDAMENTAL

ANTENNA LOOP FACE ON



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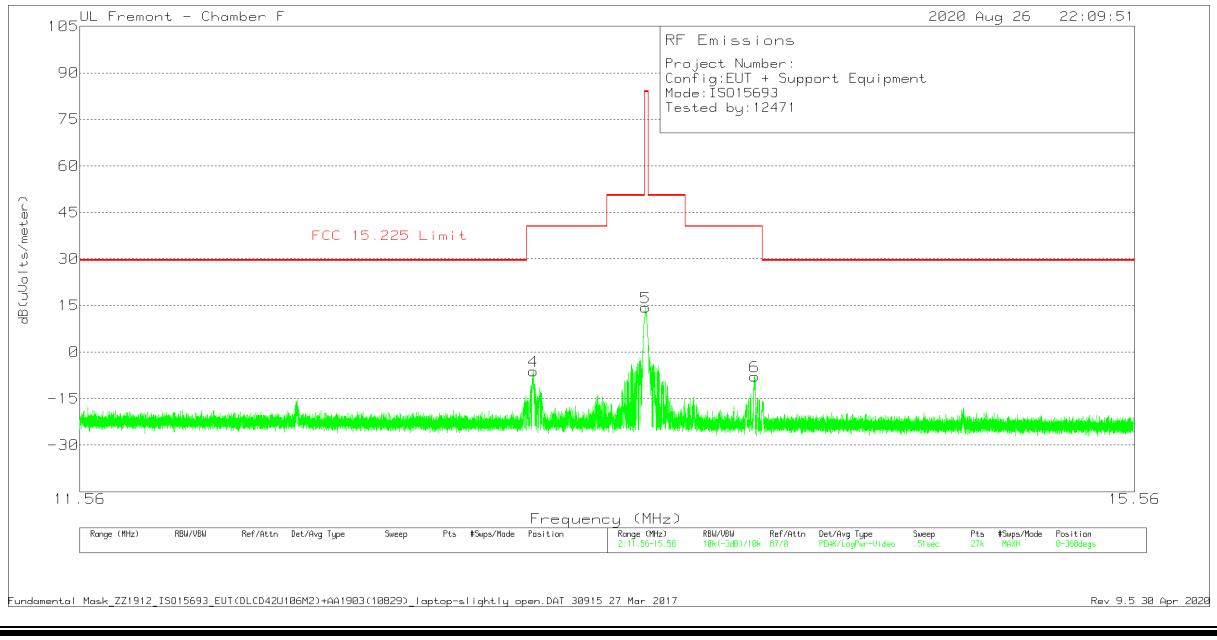


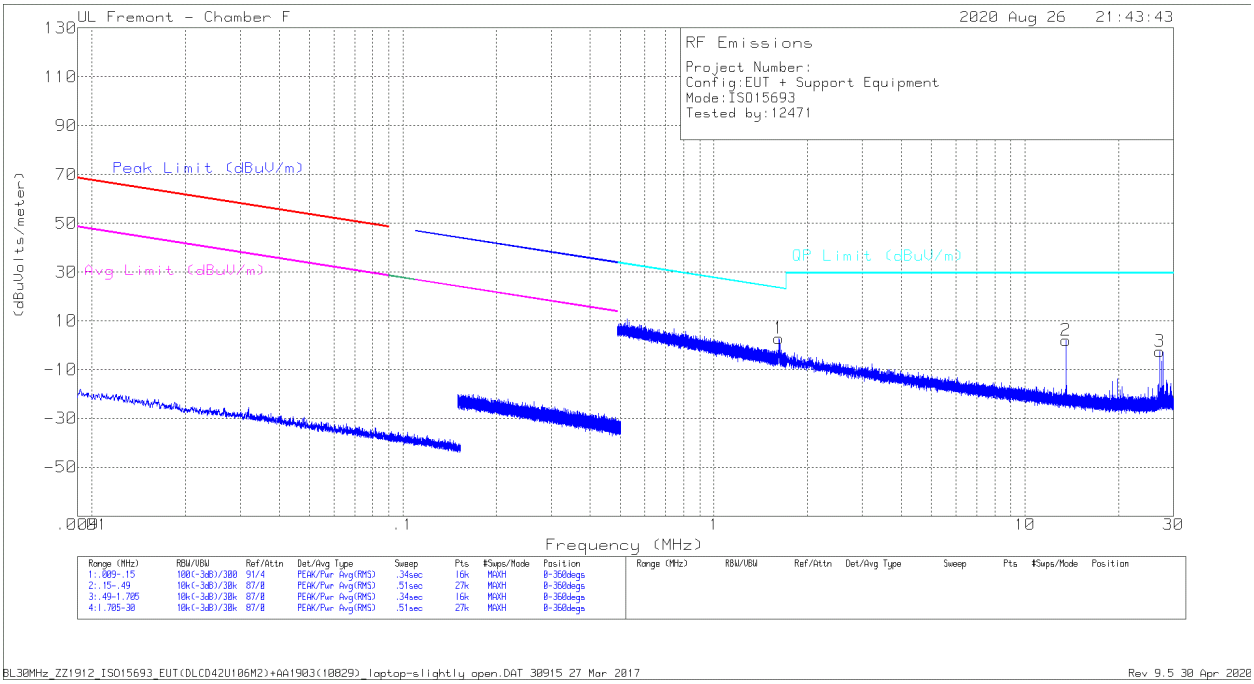
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uV/m)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
1	13.502	14.01	Pk	10.2	.4	-40	-15.39	50.5	-65.89	0-360
2	13.55963	31.46	Pk	10.2	.4	-40	2.06	84	-81.94	0-360
3	13.615	13.31	Pk	10.2	.4	-40	-16.09	50.5	-66.59	0-360
4	13.13561	23.09	Pk	10.3	.4	-40	-6.21	40.51	-46.72	0-360
5	13.55741	43.73	Pk	10.2	.4	-40	14.33	84	-69.67	0-360
6	13.98143	21.62	Pk	10.2	.4	-40	-7.78	40.51	-48.29	0-360

Pk - Peak detector

SPURIOUS EMISSION

ANTENNA LOOP FACE ON



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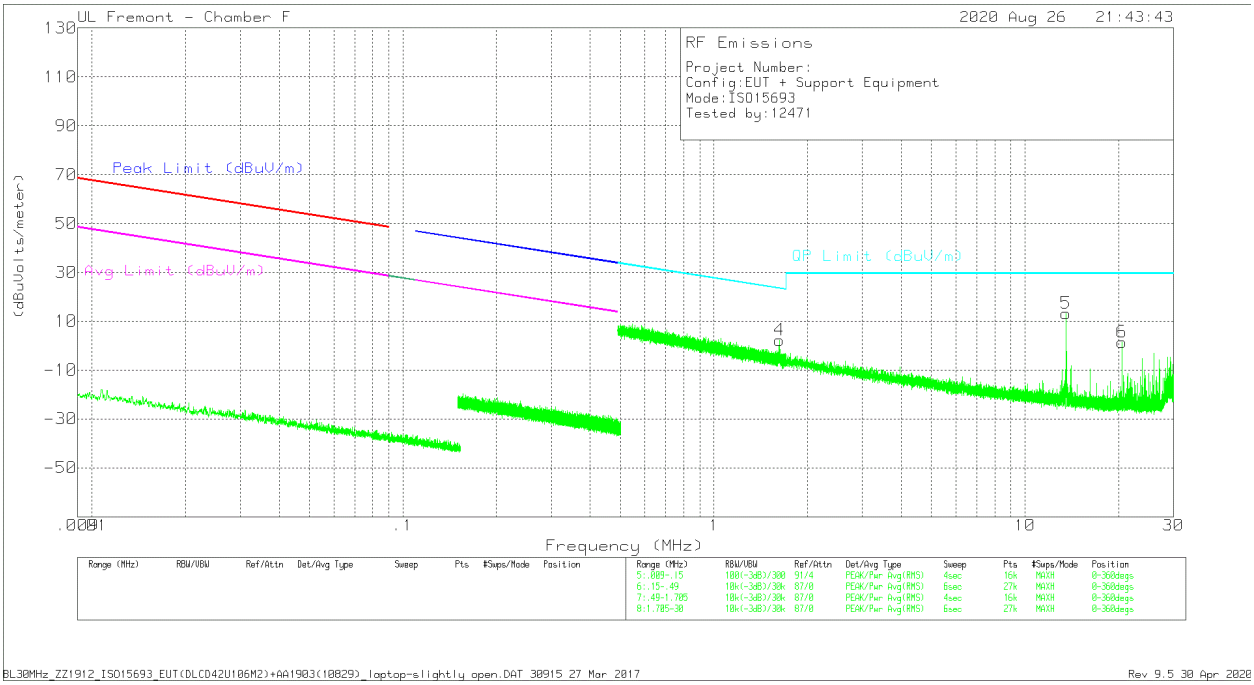


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	1.61951	31.89	Pk	10.8	.1	-40	2.79	23.45	-20.66	0-360
3	27.12005	28.57	Pk	8.4	.6	-40	-2.43	29.5	-31.93	0-360
4	1.62217	31.29	Pk	10.8	.1	-40	2.19	23.43	-21.24	0-360
6	20.52498	31.63	Pk	9.4	.5	-40	1.53	29.5	-27.97	0-360

Pk - Peak detector

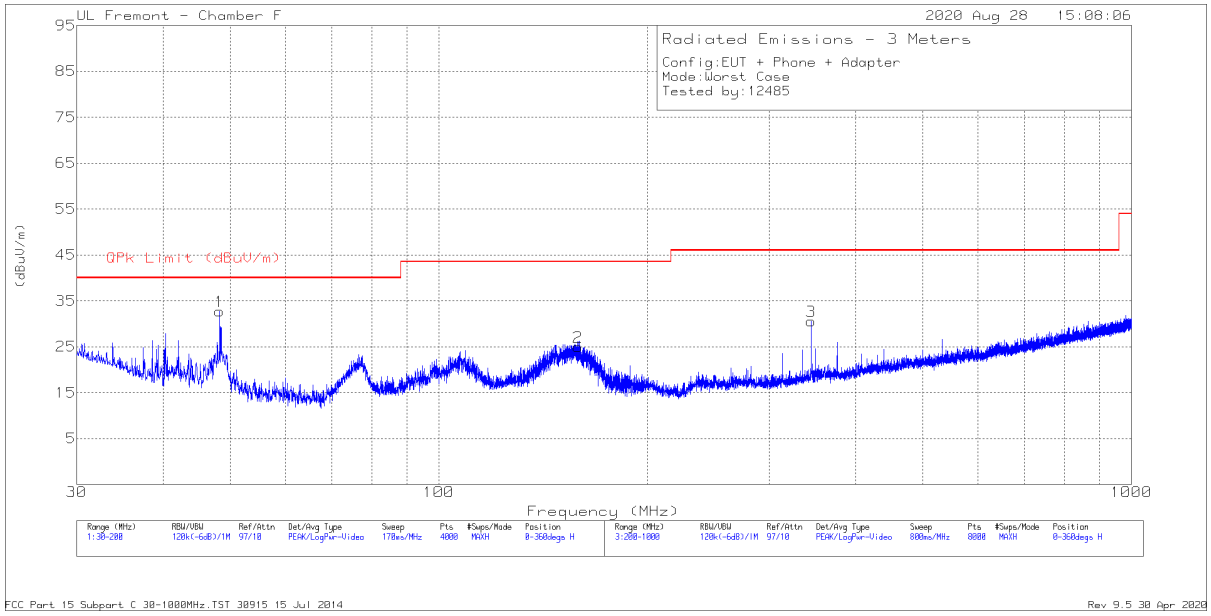
Note: Marker 2 and 5 are the fundamental signal.

9.3. TX SPURIOUS EMISSION 30 TO 1000 MHz, EUT WITH AC/DC ADAPTER

Reader Mode

SPURIOUS EMISSION 26.48Kbps

ANTENNA LOOP FACE ON



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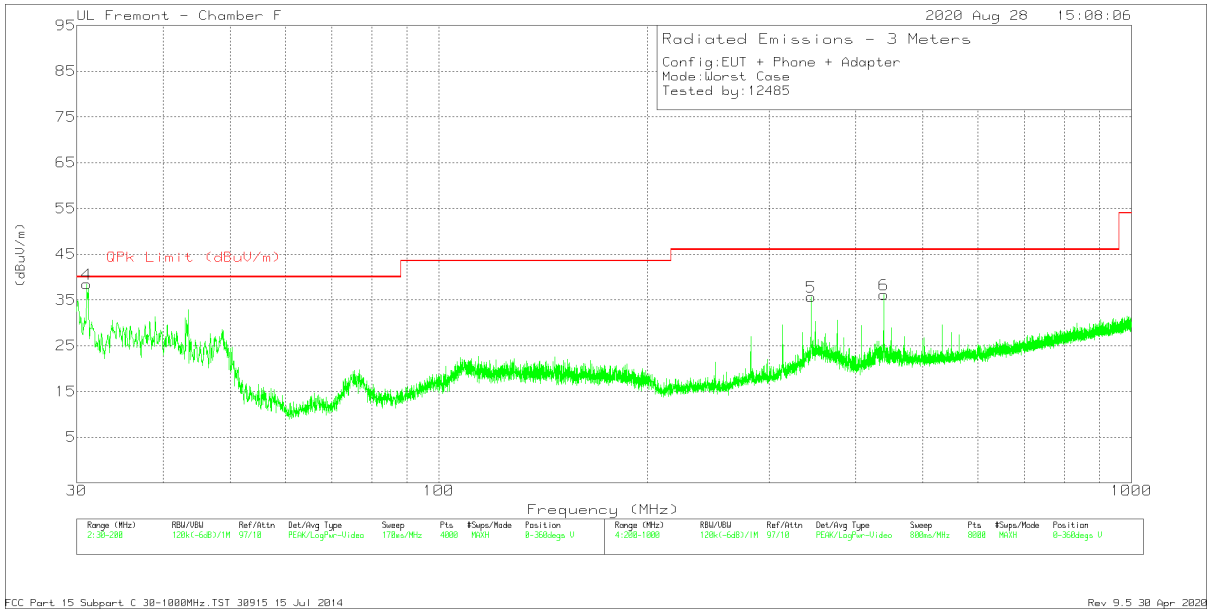


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	48.2797	49.37	Pk	15.1	-31.7	32.77	40	-7.23	0-360	400	H
2	158.6808	37.21	Pk	18.4	-30.7	24.91	43.52	-18.61	0-360	201	H
3	344.7188	39.35	Pk	20.8	-29.6	30.55	46.02	-15.47	0-360	101	H
4	30.9512	35.22	Qp	27.4	-31.9	30.72	40	-9.28	34	144	V
5	344.7188	44.44	Pk	20.8	-29.6	35.64	46.02	-10.38	0-360	100	V
6	438.731	42.71	Pk	22.8	-29.3	36.21	46.02	-9.81	0-360	100	V

Pk - Peak detector
Qp - Quasi-Peak detector

10. 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.

IC RSS-210, Annex B.6
Carrier frequency stability shall be maintained to ±0.01% (±100 ppm).

TEST PROCEDURE

ANSI C63.10-2013 Clause 6.8

RESULTS

No non-compliance noted.

ID:	38602	Date:	08/28/2020

READER MODE

26.48Kbps

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	13.5600731	22.629	13.5597275	48.119	13.5597010	50.074	13.5596880	51.034	± 100
3.80	40	13.5601355	18.029	13.5600104	27.252	13.5600229	26.329	13.5600849	21.764	± 100
3.80	30	13.5603200	4.424	13.5598675	37.792	13.5601151	19.532	13.5603200	4.426	± 100
3.80	***20***	***13.5603800***	***0.000***	***13.5607524***	***-27.465***	***13.5607098***	***-24.323***	***13.5606462***	***-19.632***	***± 100***
3.80	10	13.5600218	26.414	13.5601392	17.754	13.5608315	-33.299	13.5602201	11.792	± 100
3.80	0	13.5598105	41.998	13.5600592	23.659	13.5601478	17.123	13.5600446	24.736	± 100
3.80	-10	13.5599552	31.327	13.5600080	27.431	13.5599409	32.380	13.5597007	50.093	± 100
3.80	-20	13.5598839	36.585	13.5597884	43.628	13.5598621	38.190	13.5596396	54.597	± 100
3.23	20	13.5597891	43.575	13.5597421	47.041	13.5598120	41.886	13.5598045	42.439	± 100
4.37	20	13.5601154	19.511	13.5601344	18.110	13.5601975	13.457	13.5602108	12.476	± 100

11. 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

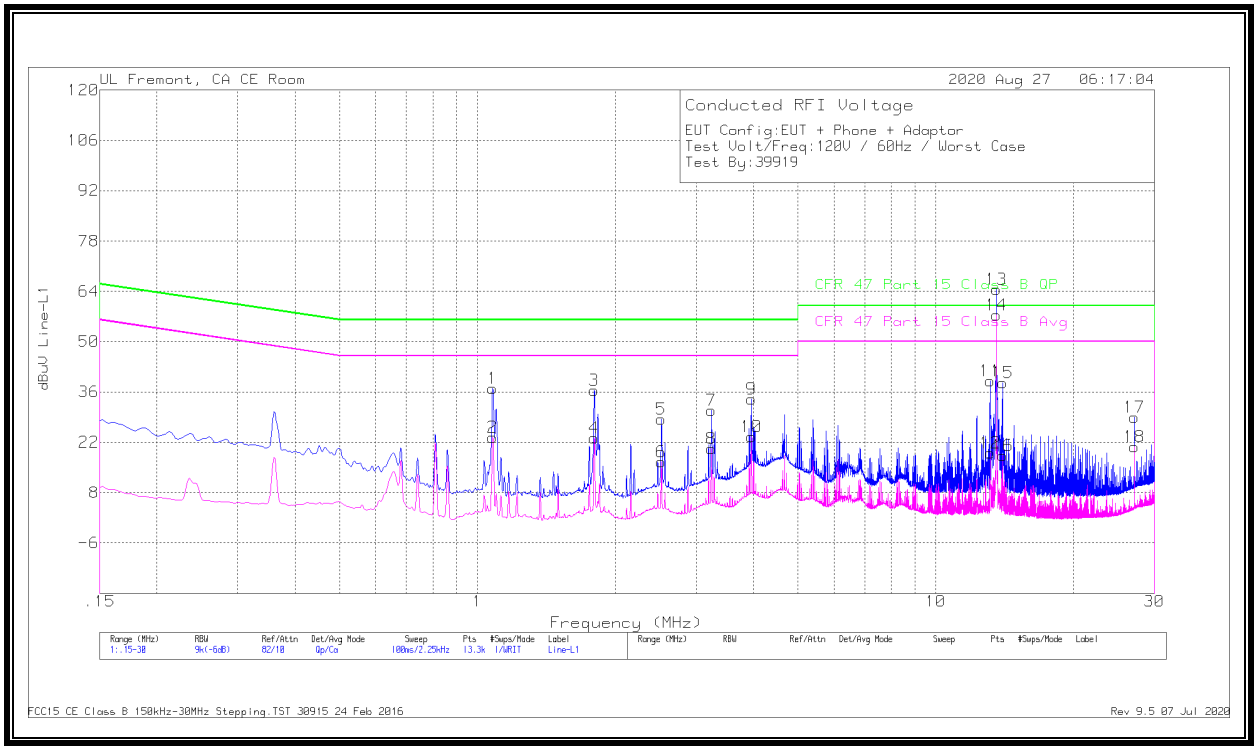
RESULTS

No non-compliance noted:

Reader Mode

11.1.1. NORMAL OPERATION, 26.48Kbps

LINE 1 RESULTS



Worst Emission

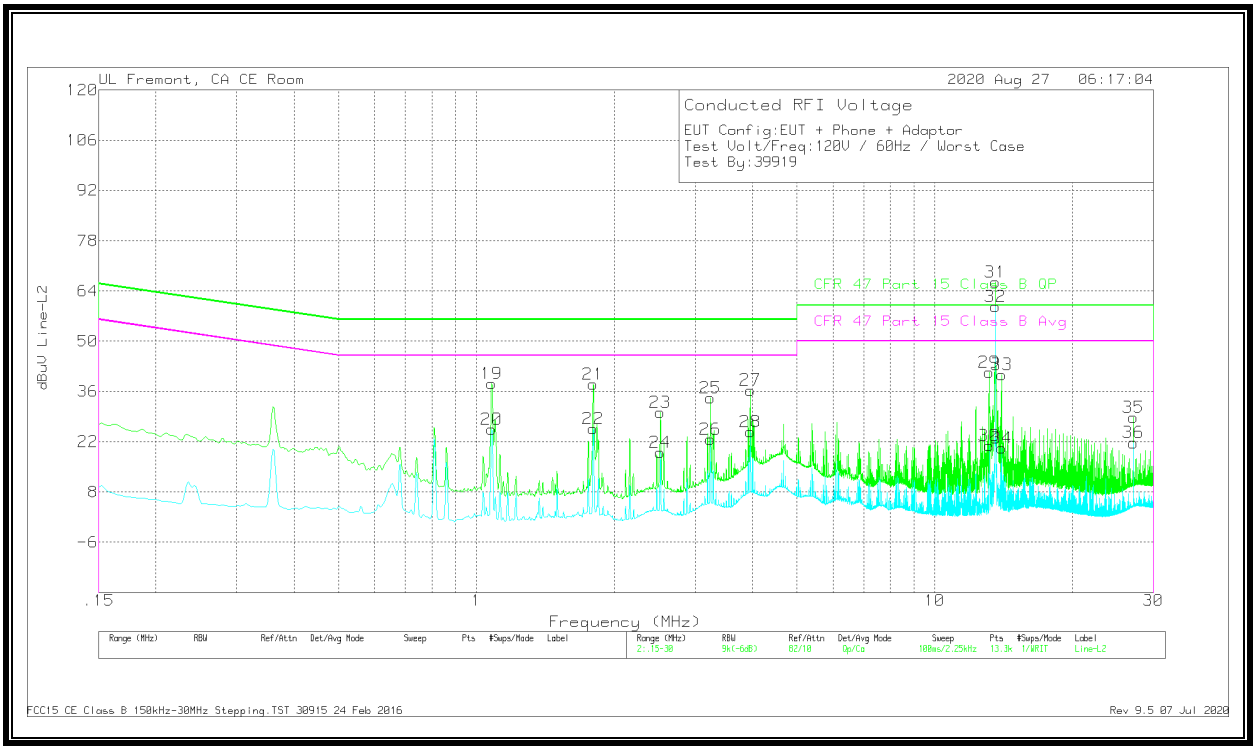
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE01864 46 LISN L1	LC Cables C1&C3	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	1.07925	26.9	Qp	0	.1	10	37	56	-19	-	-
2	1.07925	13.22	Ca	0	.1	10	23.32	-	-	46	-22.68
3	1.79925	26.4	Qp	0	.1	10	36.5	56	-19.5	-	-
4	1.79925	13.17	Ca	0	.1	10	23.27	-	-	46	-22.73
5	2.51925	18.32	Qp	0	.1	10	28.42	56	-27.58	-	-
6	2.51925	6.47	Ca	0	.1	10	16.57	-	-	46	-29.43
7	3.23925	20.77	Qp	0	.1	10	30.87	56	-25.13	-	-
8	3.23925	10.1	Ca	0	.1	10	20.2	-	-	46	-25.8
9	3.95925	24	Qp	0	.1	10	34.1	56	-21.9	-	-
10	3.95925	13.47	Ca	0	.1	10	23.57	-	-	46	-22.43
11	13.137	28.75	Qp	.1	.2	10.1	39.15	60	-20.85	-	-
12	13.137	8.65	Ca	.1	.2	10.1	19.05	-	-	50	-30.95
13	13.56	54.12	Qp	.1	.2	10.1	64.52	**60**	**4.52**	-	-
14	13.56	47.06	Ca	.1	.2	10.1	57.46	-	-	**50**	**7.46**
15	13.983	28.12	Qp	.1	.3	10.1	38.62	60	-21.38	-	-
16	13.983	7.8	Ca	.1	.3	10.1	18.3	-	-	50	-31.7
17	27.12075	18.26	Qp	0	.4	10.3	28.96	60	-31.04	-	-
18	27.12075	10.04	Ca	0	.4	10.3	20.74	-	-	50	-29.26

Qp - Quasi-Peak detector
Ca - CISPR average detection

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 2 RESULTS



Worst Emission

Range 2: Line-L2 .15 - 30MHz

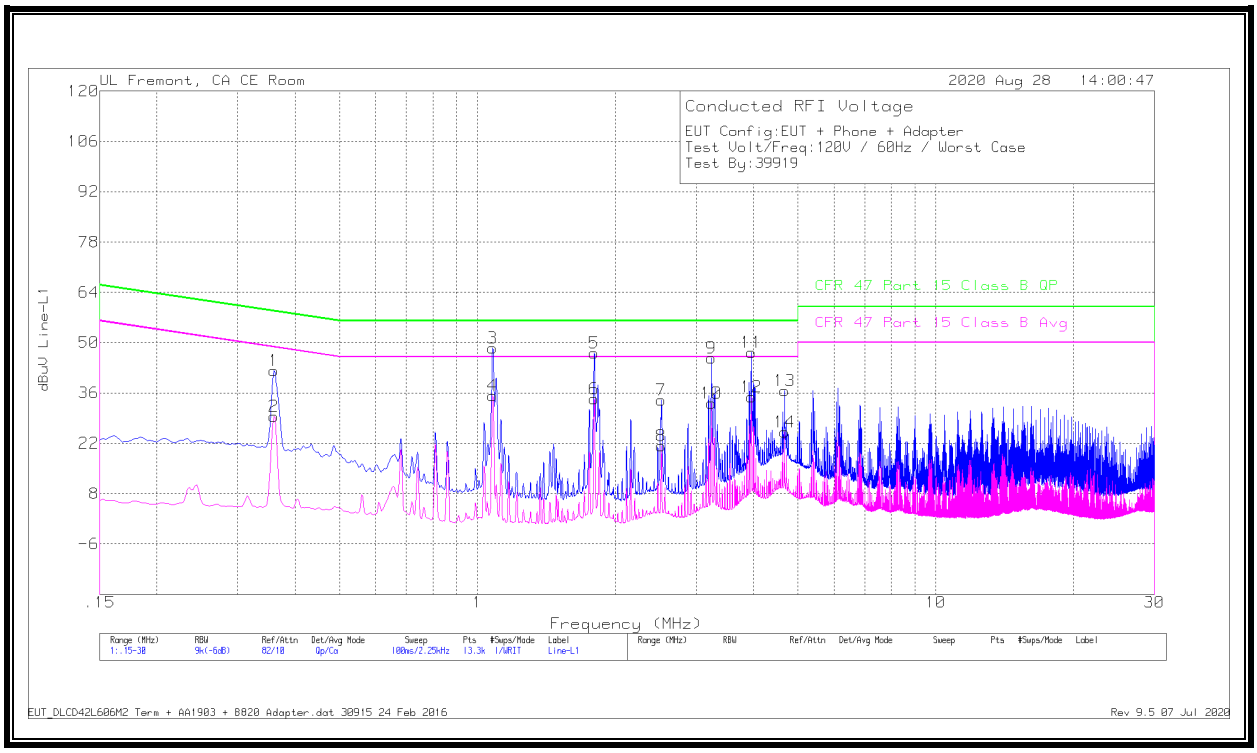
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE01864 46 LISN L2	LC Cables C2&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
19	1.07925	28.1	Qp	0	.1	10	38.2	56	-17.8	-	-
20	1.07925	15.32	Ca	0	.1	10	25.42	-	-	46	-20.58
21	1.79925	27.92	Qp	0	.1	10	38.02	56	-17.98	-	-
22	1.79925	15.51	Ca	0	.1	10	25.61	-	-	46	-20.39
23	2.51925	20.13	Qp	0	.1	10	30.23	56	-25.77	-	-
24	2.51925	8.94	Ca	0	.1	10	19.04	-	-	46	-26.96
25	3.23925	24.17	Qp	0	.1	10	34.27	56	-21.73	-	-
26	3.23925	12.66	Ca	0	.1	10	22.76	-	-	46	-23.24
27	3.95925	26.28	Qp	0	.1	10	36.38	56	-19.62	-	-
28	3.95925	14.73	Ca	0	.1	10	24.83	-	-	46	-21.17
29	13.137	30.98	Qp	.1	.2	10.1	41.38	60	-18.62	-	-
30	13.137	10.57	Ca	.1	.2	10.1	20.97	-	-	50	-29.03
31	13.56	56.05	Qp	.1	.2	10.1	66.45	**60**	**6.45**	-	-
32	13.56	49.24	Ca	.1	.2	10.1	59.64	-	-	**50**	**9.64**
33	13.983	30.24	Qp	.1	.3	10.1	40.74	60	-19.26	-	-
34	13.983	9.73	Ca	.1	.3	10.1	20.23	-	-	50	-29.77
35	27.12075	18.03	Qp	.1	.4	10.3	28.83	60	-31.17	-	-
36	27.12075	10.93	Ca	.1	.4	10.3	21.73	-	-	50	-28.27

Qp - Quasi-Peak detector
Ca - CISPR average detection

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.

11.1.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 26.48Kbps

LINE 1 RESULTS



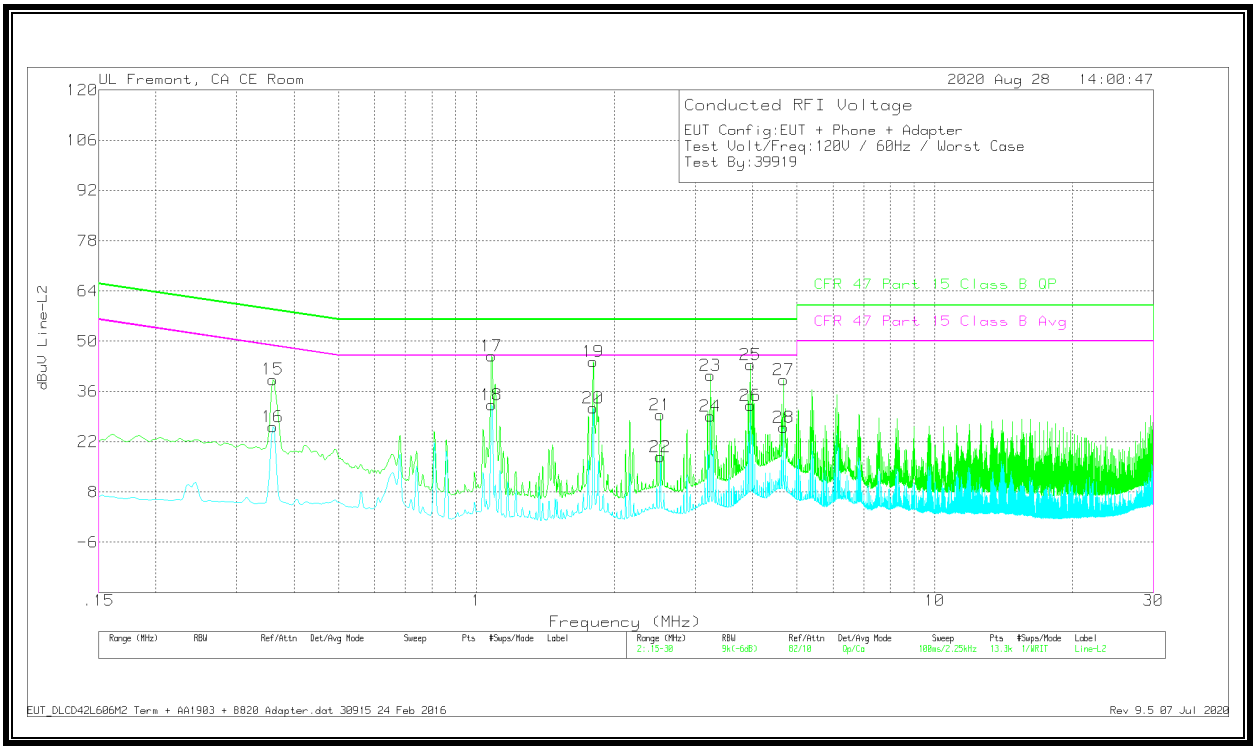
Worst Emission

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE01864 46 LISN L1	LC Cables C1&C3	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	.35925	32.18	Qp	0	0	10	42.18	58.75	-16.57	-	-
2	.35925	19.45	Ca	0	0	10	29.45	-	-	48.75	-19.3
3	1.07925	38.33	Qp	0	.1	10	48.43	56	-7.57	-	-
4	1.07925	25.08	Ca	0	.1	10	35.18	-	-	46	-10.82
5	1.79925	37.08	Qp	0	.1	10	47.18	56	-8.82	-	-
6	1.79925	24.32	Ca	0	.1	10	34.42	-	-	46	-11.58
7	2.51925	23.9	Qp	0	.1	10	34	56	-22	-	-
8	2.51925	11.14	Ca	0	.1	10	21.24	-	-	46	-24.76
9	3.23925	35.57	Qp	0	.1	10	45.67	56	-10.33	-	-
10	3.23925	23.09	Ca	0	.1	10	33.19	-	-	46	-12.81
11	3.95925	37.15	Qp	0	.1	10	47.25	56	-8.75	-	-
12	3.95925	24.8	Ca	0	.1	10	34.9	-	-	46	-11.1
13	4.67925	26.48	Qp	0	.1	10.1	36.68	56	-19.32	-	-
14	4.67925	14.92	Ca	0	.1	10.1	25.12	-	-	46	-20.88

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



Worst Emission

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE01864 46 LISN L2	LC Cables C2&C3	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)
15	.35925	29.35	Qp	0	0	10	39.35	58.75	-19.4	-	-
16	.35925	16.19	Ca	0	0	10	26.19	-	-	48.75	-22.56
17	1.07925	35.75	Qp	0	.1	10	45.85	56	-10.15	-	-
18	1.07925	22.21	Ca	0	.1	10	32.31	-	-	46	-13.69
19	1.79925	34.27	Qp	0	.1	10	44.37	56	-11.63	-	-
20	1.79925	21.29	Ca	0	.1	10	31.39	-	-	46	-14.61
21	2.51925	19.38	Qp	0	.1	10	29.48	56	-26.52	-	-
22	2.51925	7.77	Ca	0	.1	10	17.87	-	-	46	-28.13
23	3.23925	30.44	Qp	0	.1	10	40.54	56	-15.46	-	-
24	3.23925	19	Ca	0	.1	10	29.1	-	-	46	-16.9
25	3.95925	33.4	Qp	0	.1	10	43.5	56	-12.5	-	-
26	3.95925	21.97	Ca	0	.1	10	32.07	-	-	46	-13.93
27	4.67925	29.13	Qp	0	.1	10.1	39.33	56	-16.67	-	-
28	4.67925	15.81	Ca	0	.1	10.1	26.01	-	-	46	-19.99

Qp - Quasi-Peak detector
Ca - CISPR average detection

12. SETUP PHOTOS

Please refer to 13181006-EP1V1 for setup photos

END OF TEST REPORT