



TEST REPORT

Report Number. : 13911916-E12V2

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

Model : A2595 (Parent Model, Full Test)
A2782, A2783, A2784, A2785 (Variant Models)

FCC ID : BCG-E4082A (Parent Model)
BCG-E8064A, BCG-E4083A, BCG-8076A (Variant Models)

IC : 579C-E4082A (Parent Model)
579C-E8064A, 579C-E4083A, 579C-8076A (Variant Models)

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-210 ISSUE 10
ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:

February 07, 2022

Prepared by:

UL VERIFICATION SERVICES
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888



Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	1/21/2022	Initial Issue	Chin Pang
V2	2/7/2022	Address TCB's questions on cover page, page 5, page 9, 10 and section 8.2	Chin Pang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	7
3. FACILITIES AND ACCREDITATION	7
4. DECISION RULES AND MEASUREMENT UNCERTAINTY	7
4.1. METROLOGICAL TRACEABILITY	7
4.2. DECISION RULES.....	7
4.3. MEASUREMENT UNCERTAINTY.....	8
4.4. SAMPLE CALCULATION	8
5. EQUIPMENT UNDER TEST	9
5.1. DESCRIPTION OF EUT	9
5.2. MAXIMUM FIELD STRENGTH.....	9
5.3. WORST-CASE CONFIGURATION AND MODE.....	10
5.4. DESCRIPTION OF TEST SETUP.....	11
6. TEST AND MEASUREMENT EQUIPMENT	14
7. OCCUPIED BANDWIDTH	15
7.1. Reader Mode, Type A 848Kbps.....	16
7.2. CE Mode, Type A 848Kbps.....	16
7.3. TAG Mode	17
8. RADIATED EMISSION TEST RESULTS.....	18
8.1. LIMITS AND PROCEDURE.....	18
8.2. FUNDAMENTAL AND SPURIOUS EMISSIONS (0.15 - 30 MHz), EUT WITH AC/DC ADAPTER	20
8.2.1. READER MODE, TYPE A 848Kbps.....	20
8.2.2. CE MODE, TYPE A 848Kbps	24
8.2.3. TAG MODE, TYPE A 848Kbps	28
8.2.4. TX SPURIOUS EMISSION 30 TO 1000 MHz, EUT WITH AC/DC ADAPTER.....	32
9. FREQUENCY STABILITY	38
9.1.1. READER MODE, TYPE A 848Kbps.....	39
9.1.2. CE MODE, TYPE A 848Kbps	39
9.1.3. TAG Mode	39
10. AC MAINS LINE CONDUCTED EMISSIONS	40
10.1. NORMAL OPERATION.....	41
10.1.1. Reader Mode	41
10.1.2. CE MODE	43
10.1.3. TAG MODE	45

10.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED.....47

10.2.1. Reader Mode47

10.2.2. CE Mode49

10.2.3. TAG Mode.....51

11. SETUP PHOTOS53

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: SMARTPHONE

MODEL: A2595 (Parent Model)
 A2782, A2783, A2784, A2785 (Variant Models)

BRAND: APPLE

FCC ID: BCG-E4082A (Parent Model)
 BCG-E8064A, BCG-E4083A, BCG-E8076A (Variant Models)

IC : 579C-E4082A (Parent Model)
 579C-E8064A, 579C-E4083A, 579C-E8076A (Variant Models)

SERIAL NUMBER: DT23CMFDH2

SAMPLE RECEIPT DATE: OCTOBER 04, 2021

DATE TESTED: OCTOBER 04, 2021 – JANUARY 05, 2022

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies
ISED RSS-210 Issue 10, Annex B	Complies
ISED RSS-GEN Issue 5 + A1 + A2	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 A2LA, 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 Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Alejandro Martinez
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, F KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 5 + A1 + A2, and RSS-210 Issue 10.

3. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

Location	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
<input type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	550739

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	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance Loop, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB
Worst Case Occupied Bandwidth	1.22%

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

4.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Final Voltage (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \\ &\text{LISN Insertion Loss.} \\ 36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} &= 46.6 \text{ dBuV} \end{aligned}$$

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G FR1, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, GPS and NFC. All models support at least one UICC based SIM. The second SIM is an UICC based e-SIM (electronic SIM) in some models. China model has 1 p-SIM only. The device supports a built-in inductive charging receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

The Model and FCC IDs / ISED covered by this report includes:

Parent Model: A2595, FCC ID: BCG-E4082A, IC: 579C-E4082A

Variant Models: A2783; FCC ID: BCG-E4083A, IC: 579C-E4083A
 A2782, FCC ID: BCG-E8064A, IC: 579C-E8064A
 A2784 & A2785, FCC ID: BCG-E8076A, IC: 579C-8076A

5.2. MAXIMUM 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	Type A	Reader	848	27.67
		Tag	848	28.39
		CE	848	28.08

5.3. WORST-CASE CONFIGURATION AND MODE

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

The worst case position of the EUT was investigated under two configurations: EUT with power supply, EUT with headset. The EUT with power supply configuration was determined to be worst-case configurations; therefore, all final tests were performed on the EUT with power supply.

In addition, Tag, Reader and CE mode mode were investigated with Type A, B, F and ISO 15693 with data rates, such as 106Kbp/s, 212Kbp/s, 424Kbp/s and 848Kbp/s configuration to determine the worst case based on the highest power and spurious emissions. Type A 848Kbp/s was determined to be the worst case and therefore Type A was selected for all final tests

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 30 meter 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.

5.4. DESCRIPTION OF TEST SETUP

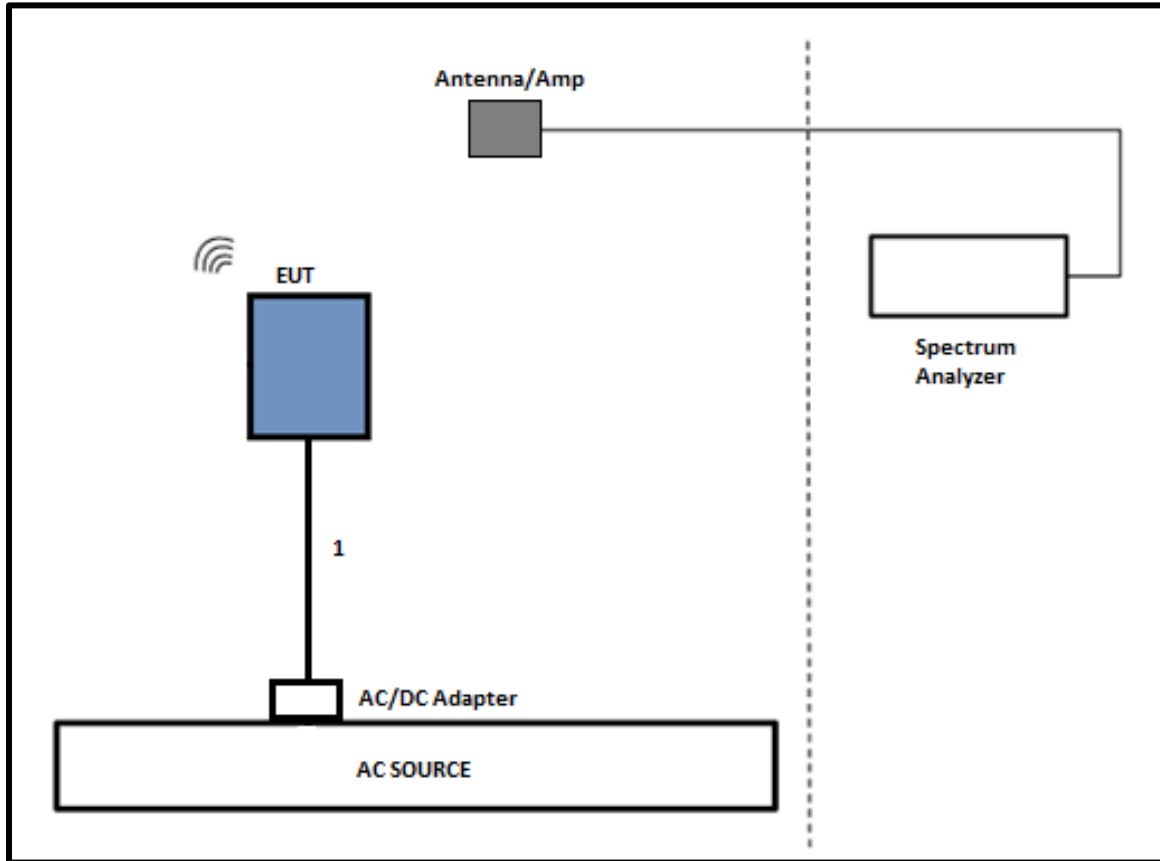
SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
laptop	Apple	Macbook Pro	C02SM041GTFL	BCG-A1707
Laptop AC/DC adapter	Liteon Technology	A1424	NSW25679	DoC
EUT AC Adapter	Apple	A1720	C3D8417A7R93KVPA8	DoC

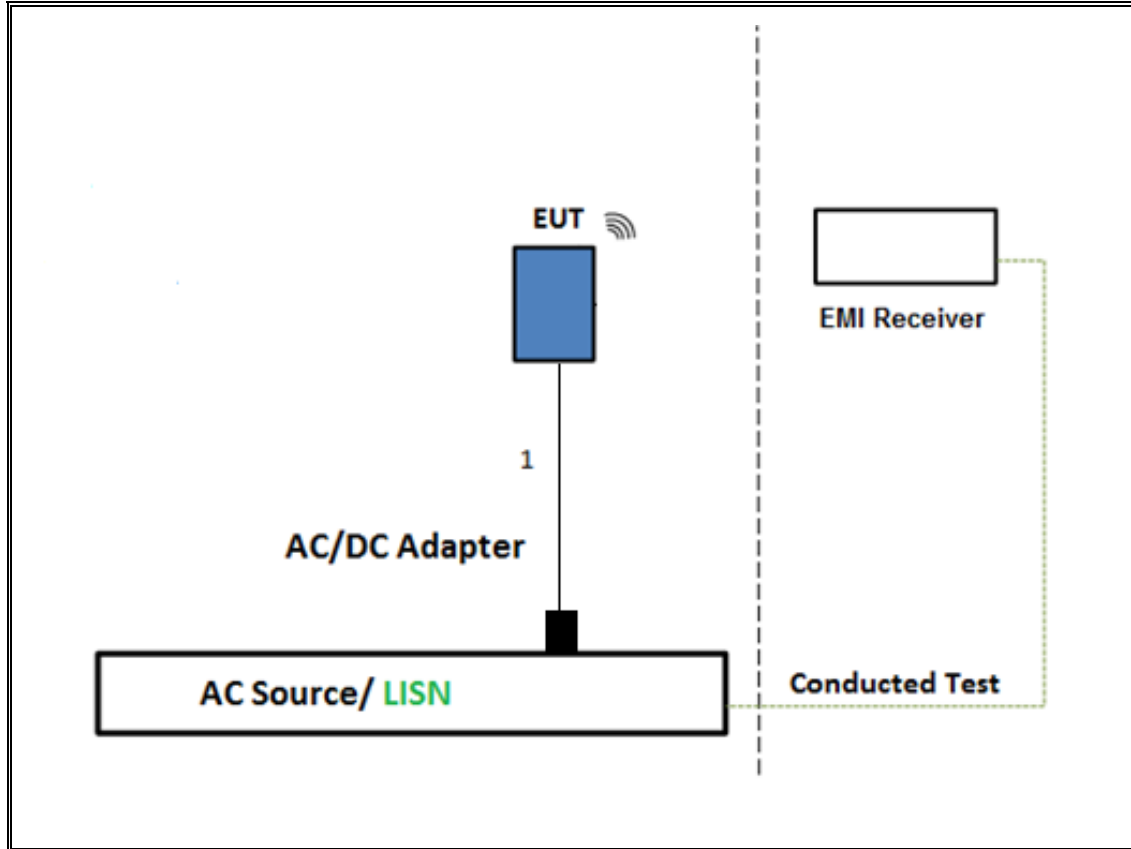
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-Shielded	1	N/A

SETUP DIAGRAM FOR RADIATED TESTS



TEST SETUP- AC LINE CONDUCTED:



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	Last Cal
*Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1466	01/25/2022	01/25/2021
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	79584	07/21/2022	07/21/2021
Amplifier 10KHz to 1GHz 32dB	Sonoma	310N	89831	07/21/2022	07/21/2021
*Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T342	01/25/2022	01/25/2021
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	204045	03/03/2022	03/03/2021
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T900	02/24/2022	02/24/2021
Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T1683	05/24/2022	05/24/2021
*Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T35	11/23/2021	11/23/2020
*Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	T1154	12/18/2021	12/18/2020

AC Line Conducted					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	T1436	02/19/2022	02/19/2021
*LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01	PRE0186446	01/20/2022	01/20/2021
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, Mar 6, 2020		
Conducted Software	UL	UL EMC	2020.2.26		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, February 21, 2020		

Note: *Testing is completed before equipment expiration date.

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 since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

RESULTS

99% and 20dB BW

Type A (Reader Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	21.412	25.05

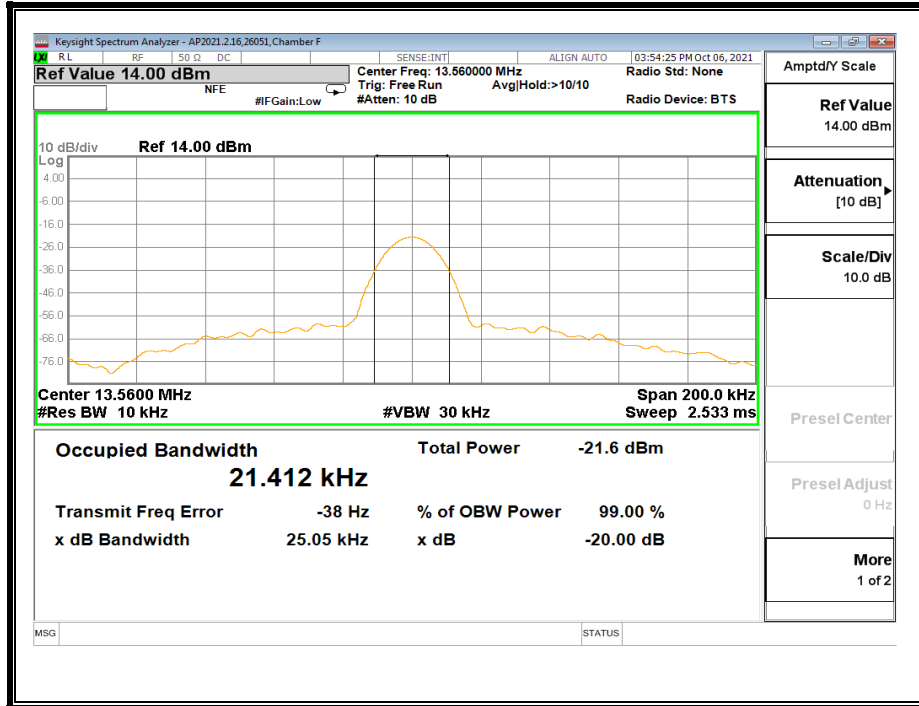
Type A (CE Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	21.832	25.41

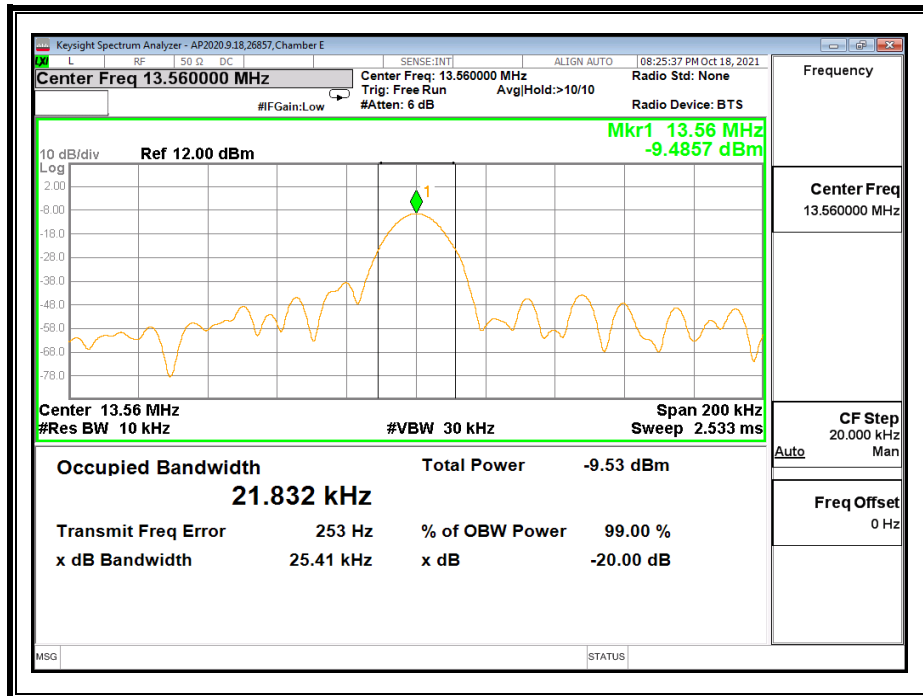
Tag Mode

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	22.353	25.24

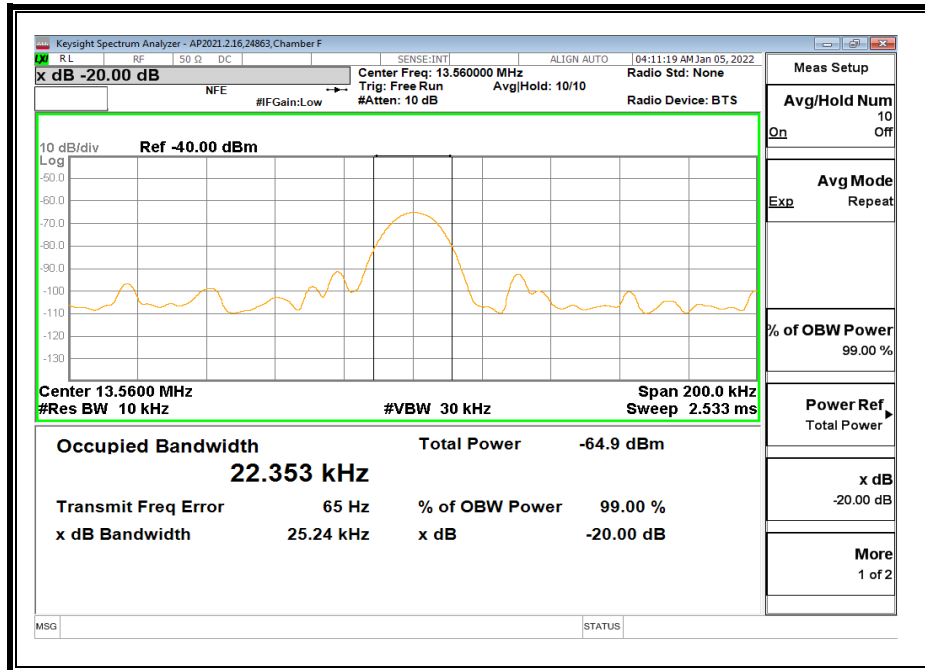
7.1. Reader Mode, Type A 848Kbps



7.2. CE Mode, Type A 848Kbps



7.3. TAG Mode



8. RADIATED EMISSION TEST RESULTS

8.1. 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

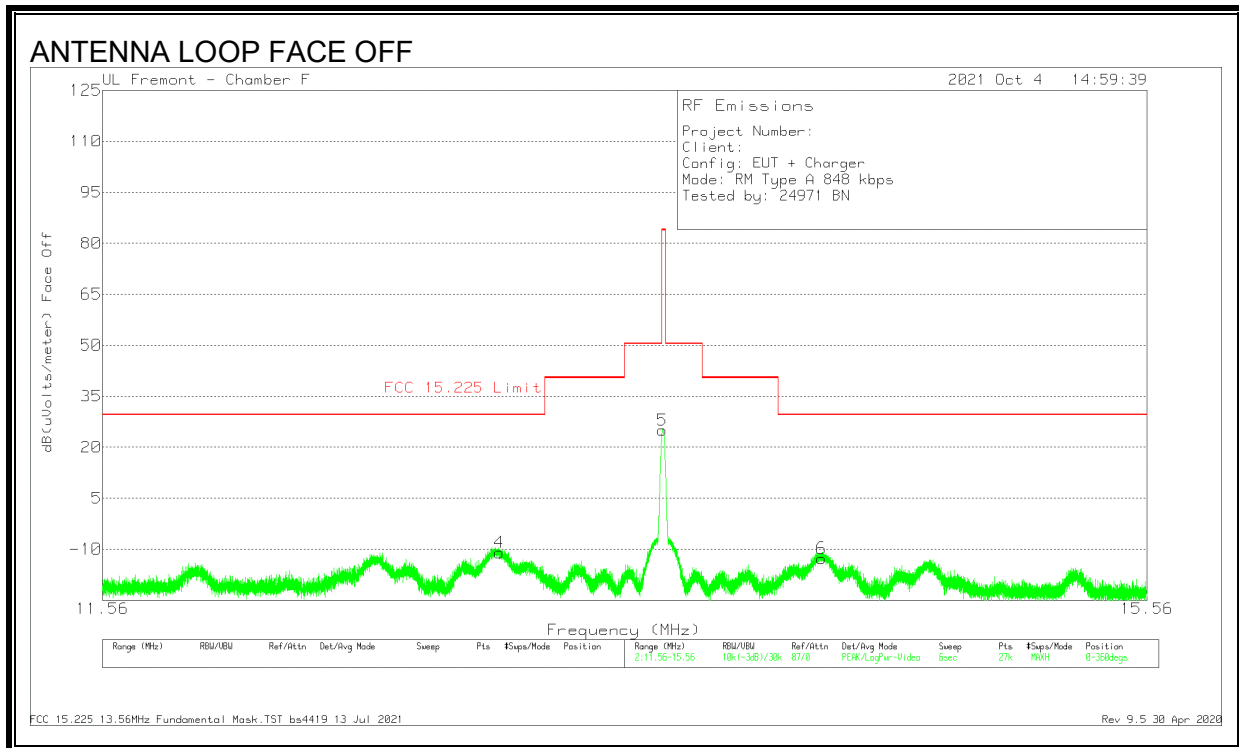
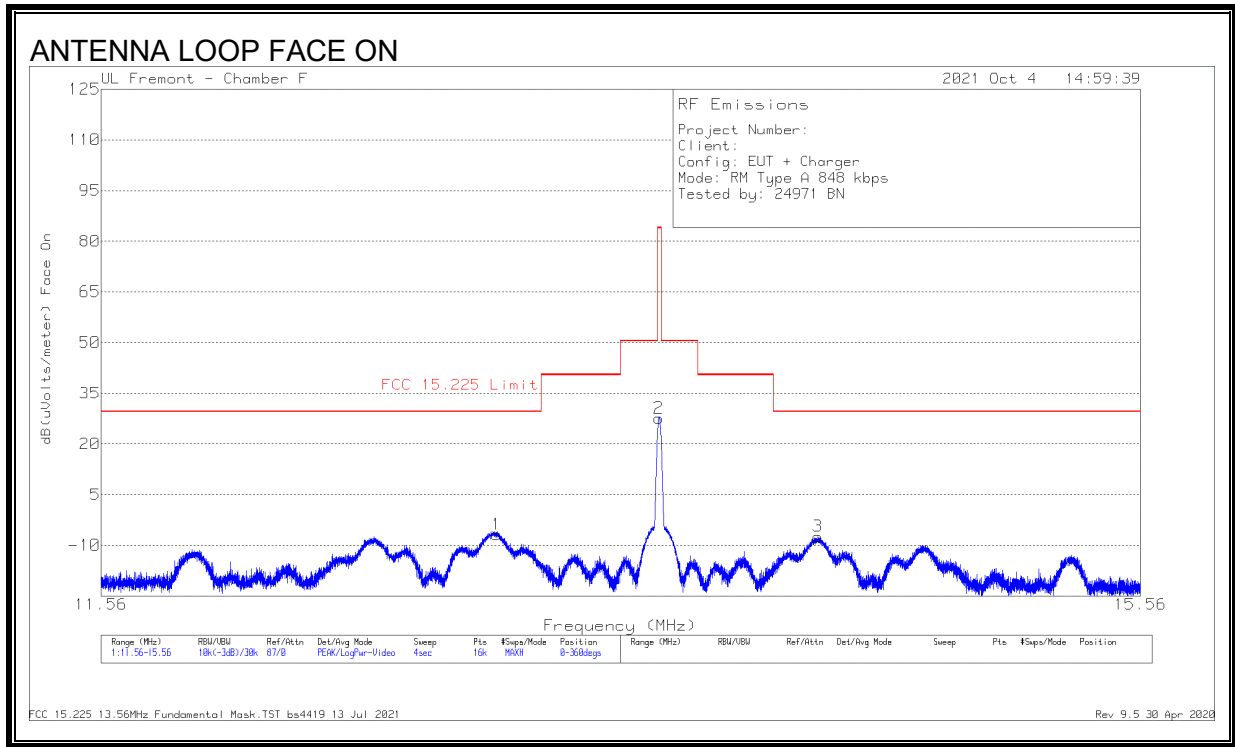
ANSI C63.10, 2013

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

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

8.2.1. READER MODE, TYPE A 848Kbps

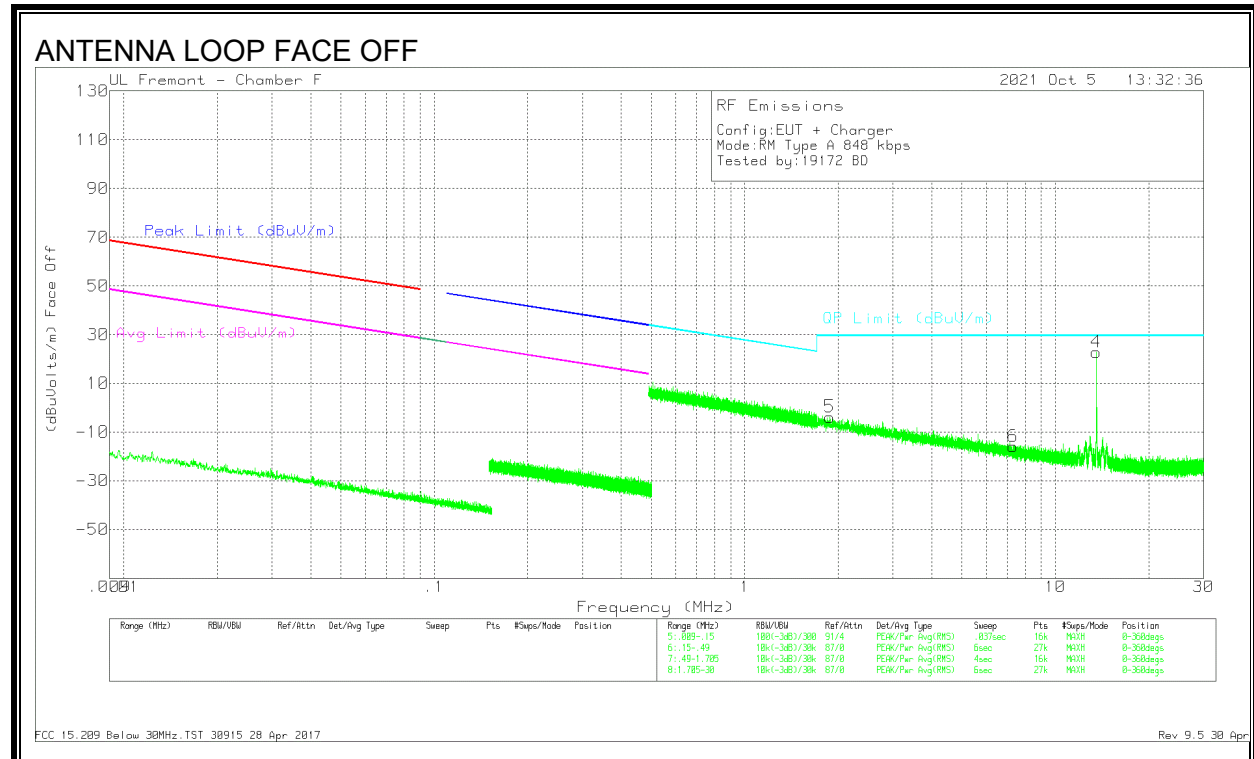
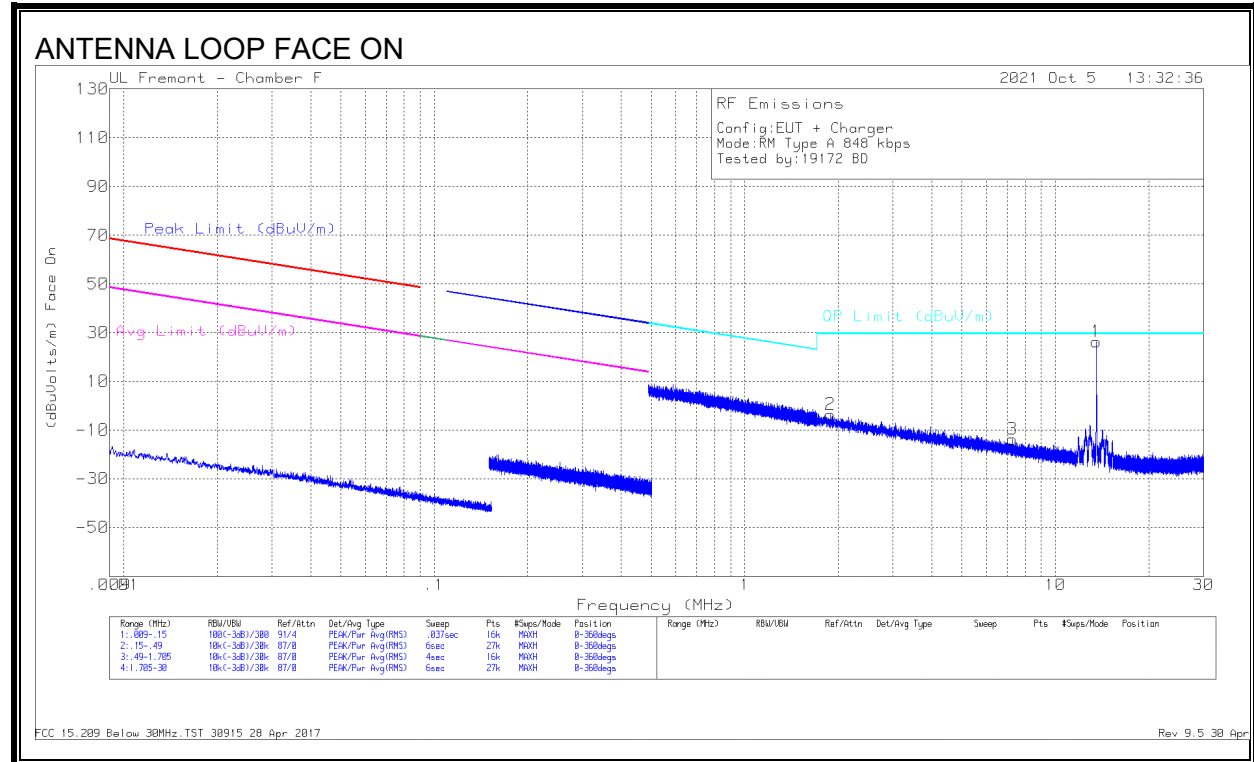


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	12.94375	22.03	Pk	10.8	.4	-40	-6.77	29.54	-36.31	0-360	Face-On
2	13.558	56.57	Pk	10.7	.4	-40	27.67	84	-56.33	0-360	Face-On
3	14.189	21.56	Pk	10.7	.4	-40	-7.34	29.54	-36.88	0-360	Face-On
4	12.94143	17.82	Pk	10.8	.4	-40	-10.98	29.54	-40.52	0-360	Face-Off
5	13.55578	53.89	Pk	10.7	.4	-40	24.99	84	-59.01	0-360	Face-Off
6	14.18404	16.17	Pk	10.7	.4	-40	-12.73	29.54	-42.27	0-360	Face-Off

Pk - Peak detector

SPURIOUS EMISSION 848Kbps



DATA

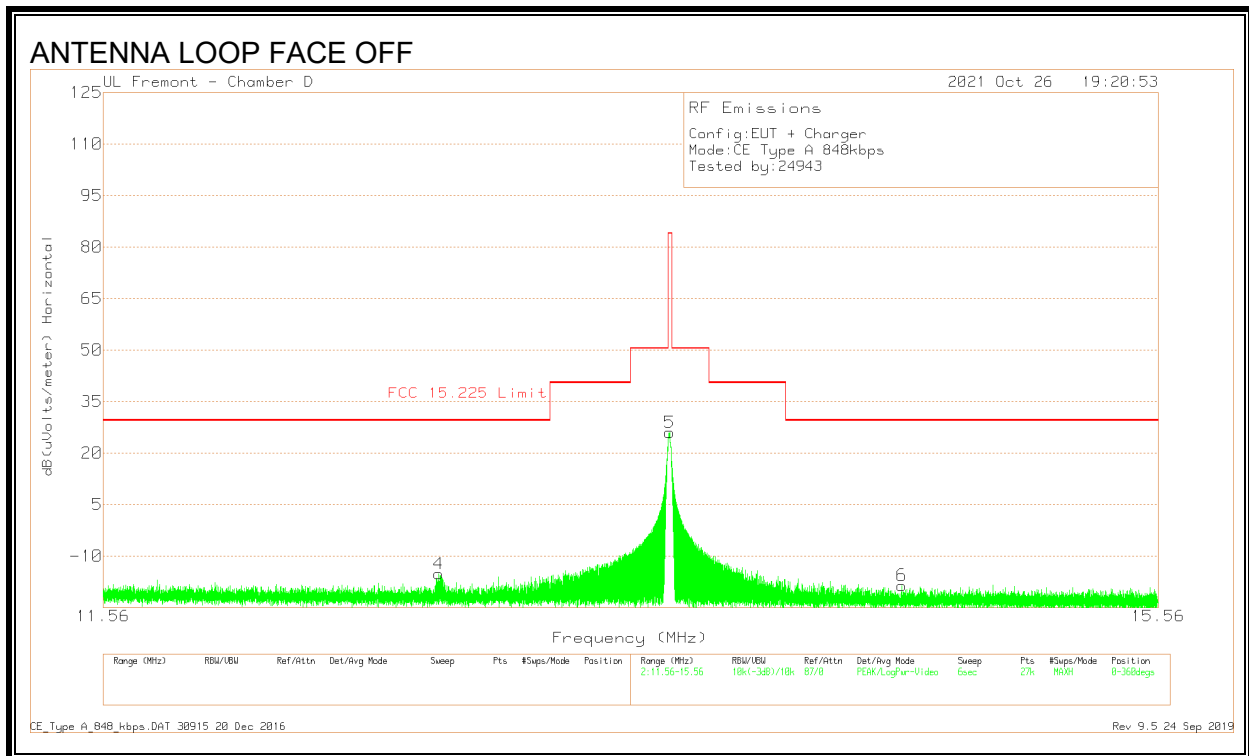
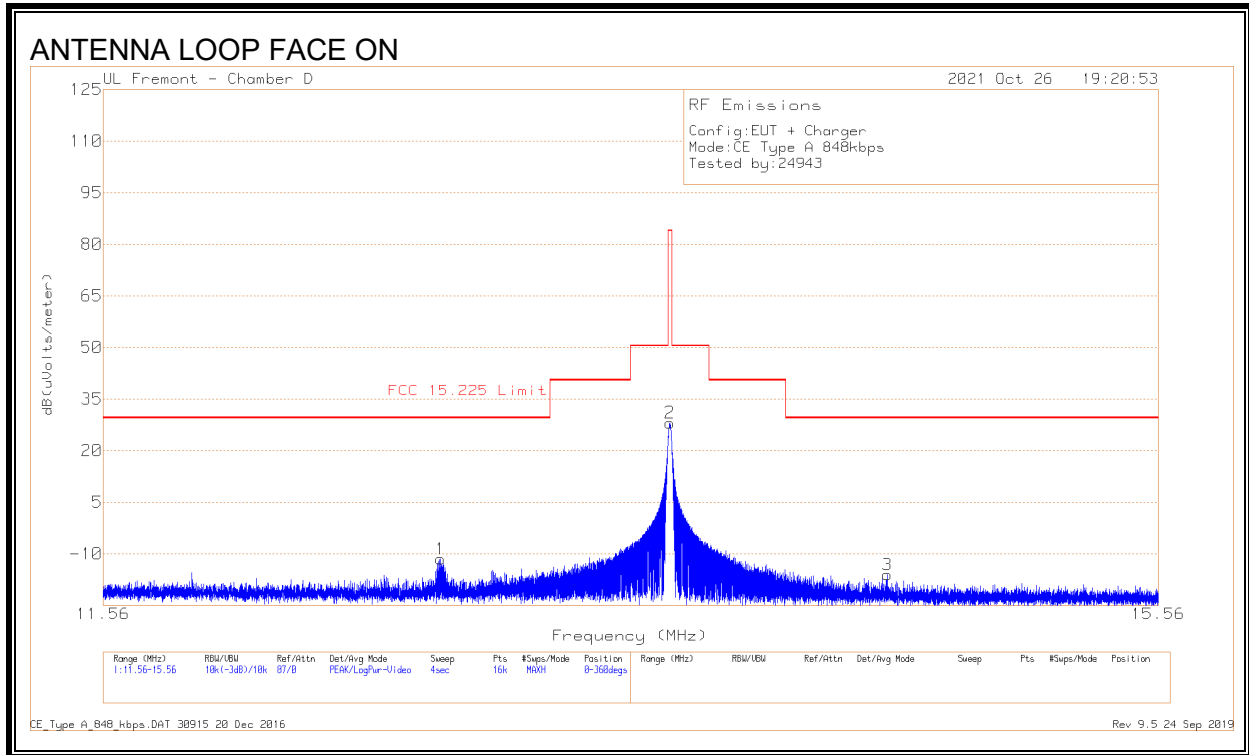
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	13.5626	55.61	Qp	10.4	.4	-40	26.41	29.5	-3.09	124	Face-On
2	1.8066	30.04	Qp	11.7	.1	-40	1.84	29.5	-27.66	269	Face-On
3	7.27538	17.97	Qp	11.2	.3	-40	-10.53	29.5	-40.03	350	Face-On
4	13.56	52.22	Qp	10.4	.4	-40	23.02	29.5	-6.48	36	Face-Off
5	1.74494	30.35	Qp	11.7	.1	-40	2.15	29.5	-27.35	165	Face-Off
6	7.22616	18.11	Qp	11.2	.3	-40	-10.39	29.5	-39.89	341	Face-Off

QP=Quasi Peak

Note: Marker 1 and 4 are fundamental signals.

8.2.2. CE MODE, TYPE A 848Kbps

FUNDAMENTAL

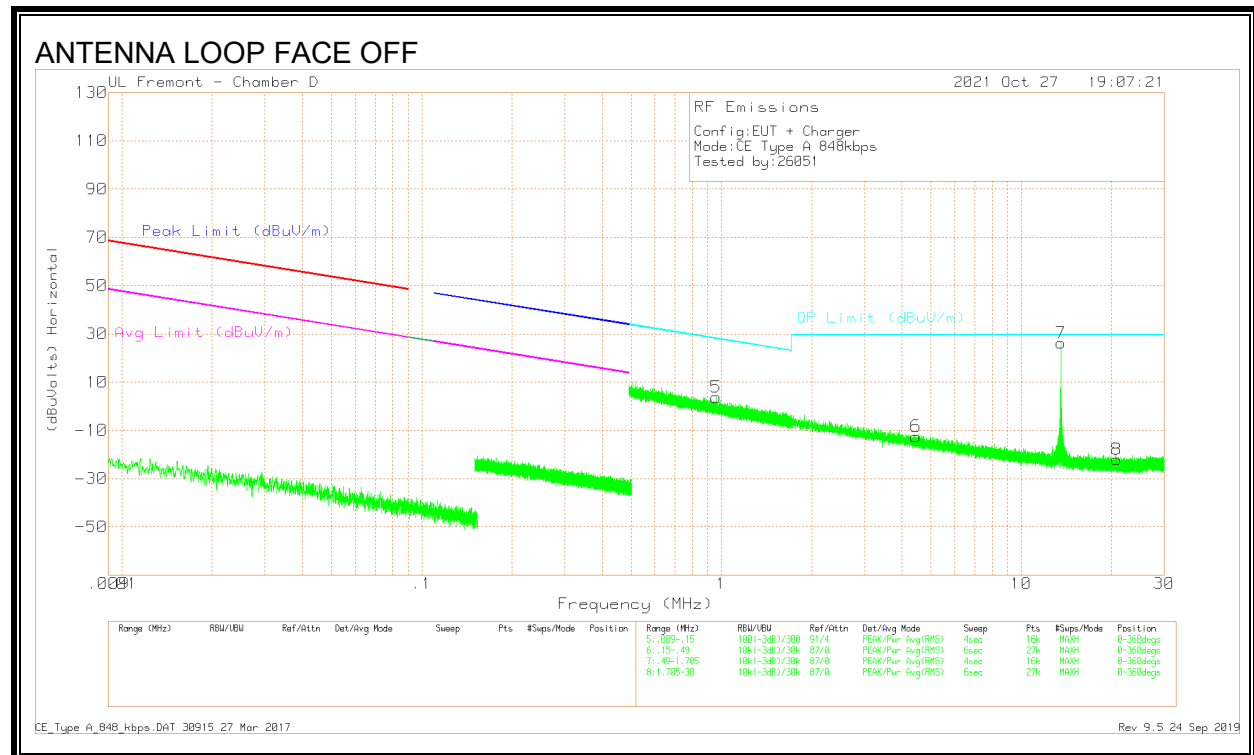
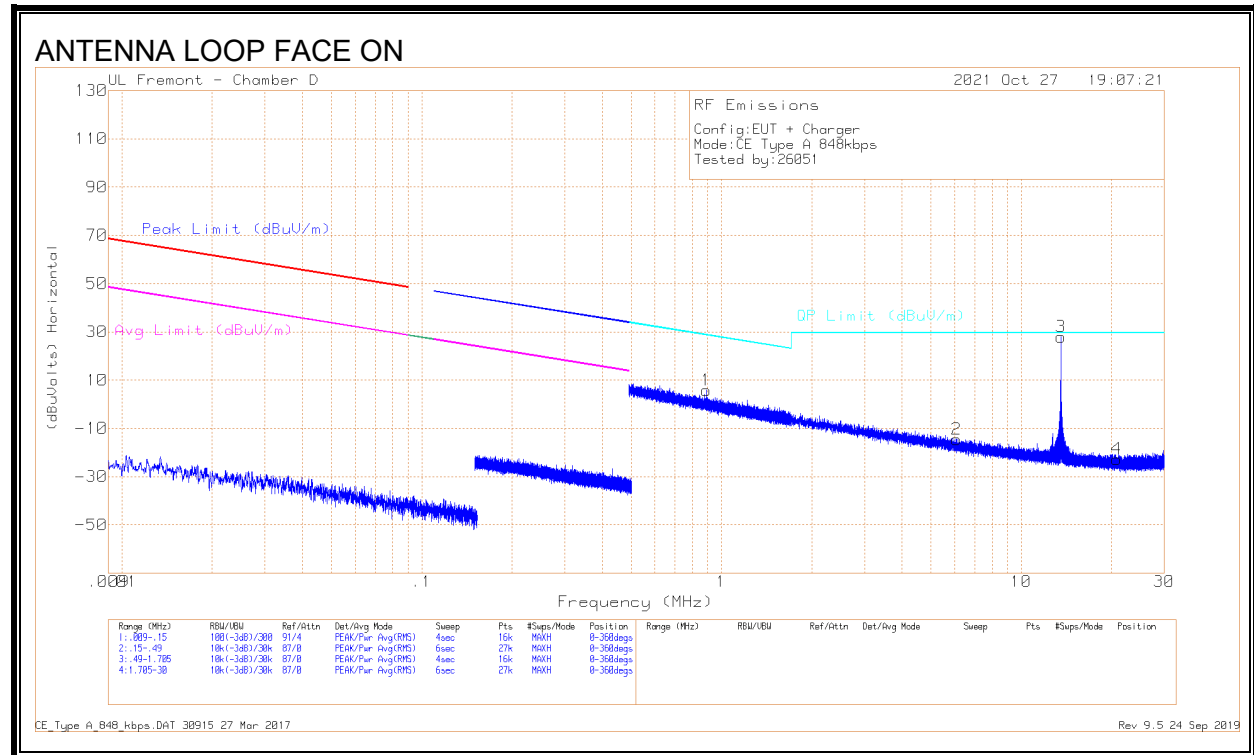


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr 30m	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Antenna Orientation
4	12.70493	13.78	Pk	10.5	.6	-40	-15.12	29.54	-44.66	0-360	Face-Off
1	12.712	17.43	Pk	10.5	.6	-40	-11.47	29.54	-41.01	0-360	Face-On
5	13.55933	55	Pk	10.4	.6	-40	26	84	-58	0-360	Face-Off
2	13.55975	57.08	Pk	10.4	.6	-40	28.08	84	-55.92	0-360	Face-On
3	14.417	12.95	Pk	10.4	.6	-40	-16.05	29.54	-45.59	0-360	Face-On
6	14.47649	10.47	Pk	10.4	.6	-40	-18.53	29.54	-48.07	0-360	Face-Off

Pk - Peak detector

SPURIOUS EMISSION 848Kbps



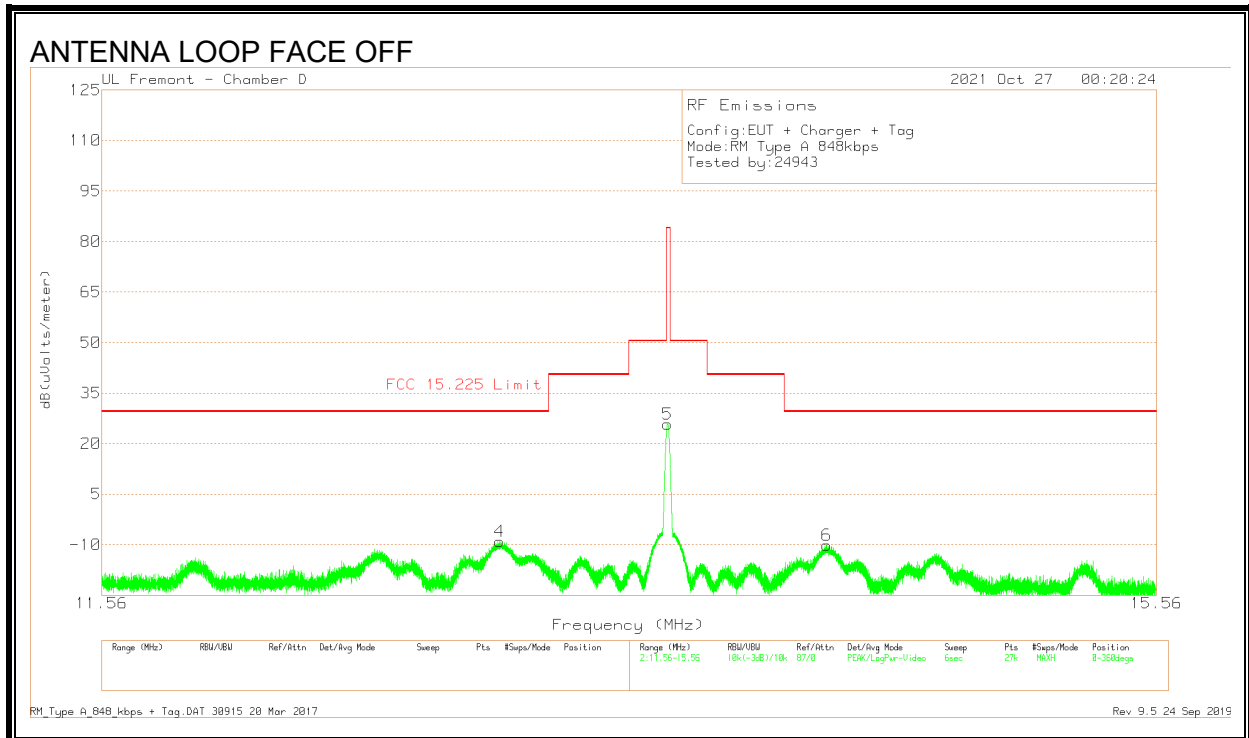
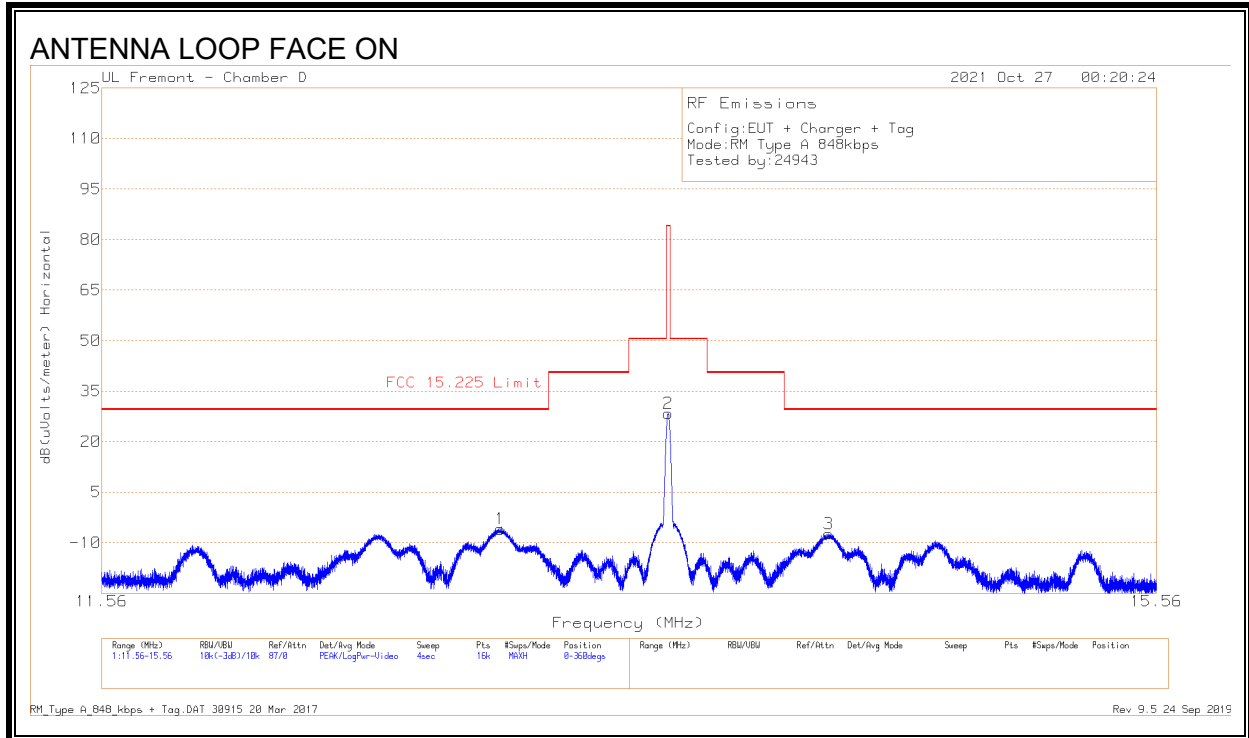
DATA

Marker	Frequency (MHz)	Meter Reading (dBUV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 30m	Corrected Reading (dBUV/m)	QP Limit (dBUV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	.8887	34.86	Pk	10.8	.1	-40	5.76	28.64	-22.88	0-360	Face-On
5	.9593	32.7	Pk	10.8	.2	-40	3.7	27.98	-24.28	0-360	Face-Off
6	4.45705	16.26	Pk	10.9	.3	-40	-12.54	29.5	-42.04	0-360	Face-Off
2	6.09822	14.24	Pk	10.8	.4	-40	-14.56	29.5	-44.06	0-360	Face-On
3	13.55998	57.02	Pk	10.3	.6	-40	27.92	29.5	-1.58	0-360	Face-On
7	13.55998	55.29	Pk	10.3	.6	-40	26.19	29.5	-3.31	0-360	Face-Off
4	20.82366	7.12	Pk	9.5	.7	-40	-22.68	29.5	-52.18	0-360	Face-On
8	20.82366	7.72	Pk	9.5	.7	-40	-22.08	29.5	-51.58	0-360	Face-Off

Pk – Peak Detector

Note: Marker 3 and 7 are fundamental signals.

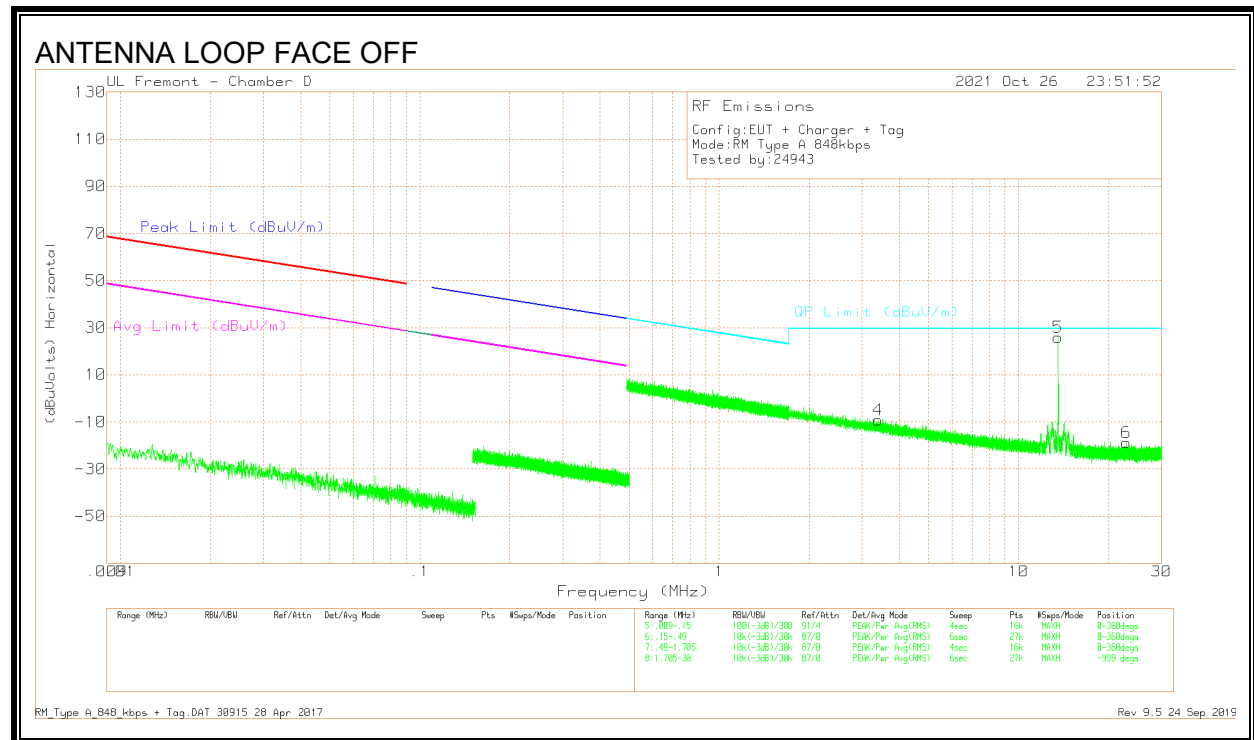
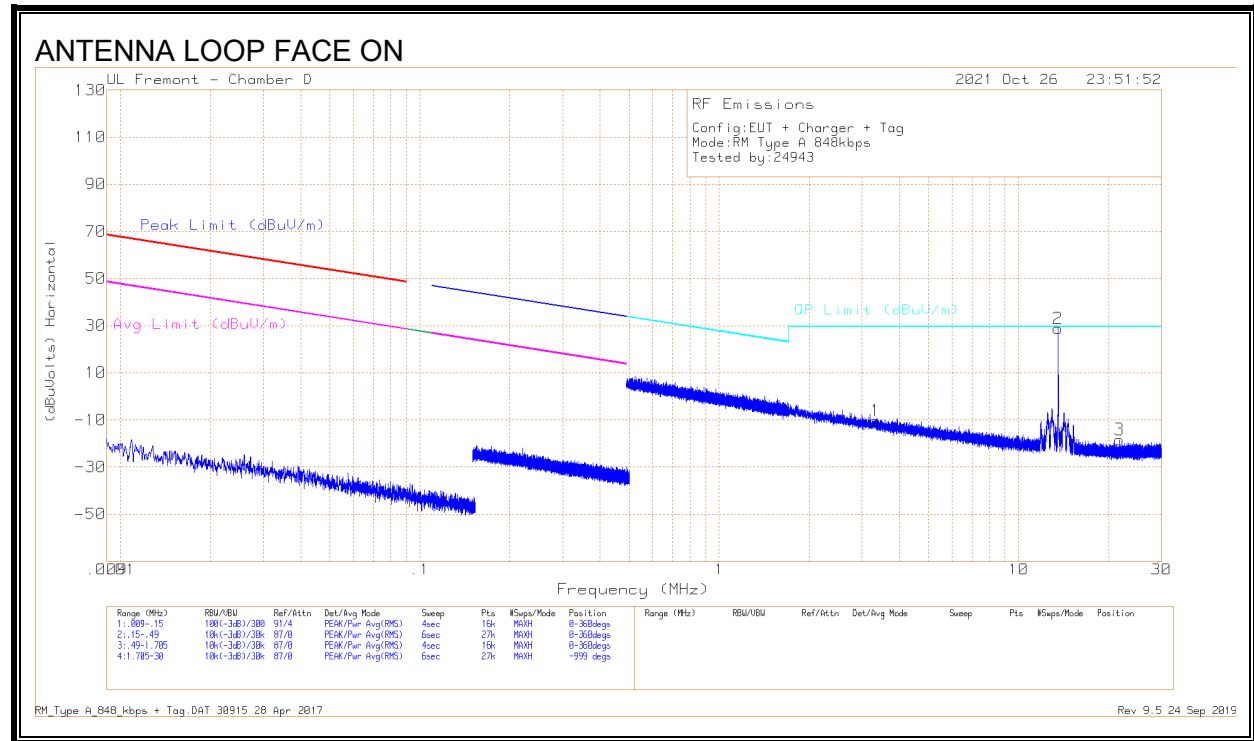
8.2.3. TAG MODE, TYPE A 848Kbps



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 30m	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Antenna Orientation
4	12.93063	19.5	Pk	10.8	.6	-40	-9.1	29.54	-38.64	0-360	Face-Off
1	12.93425	22.64	Pk	10.8	.6	-40	-5.96	29.54	-35.5	0-360	Face-on
5	13.55815	54.48	Pk	10.7	.6	-40	25.78	84	-58.22	0-360	Face-Off
2	13.56	57.09	Pk	10.7	.6	-40	28.39	84	-55.61	0-360	Face-On
6	14.18019	18.55	Pk	10.7	.6	-40	-10.15	29.54	-39.69	0-360	Face-Off
3	14.18725	21.31	Pk	10.7	.6	-40	-7.39	29.54	-36.93	0-360	Face-On

SPURIOUS EMISSION 848Kbps



DATA

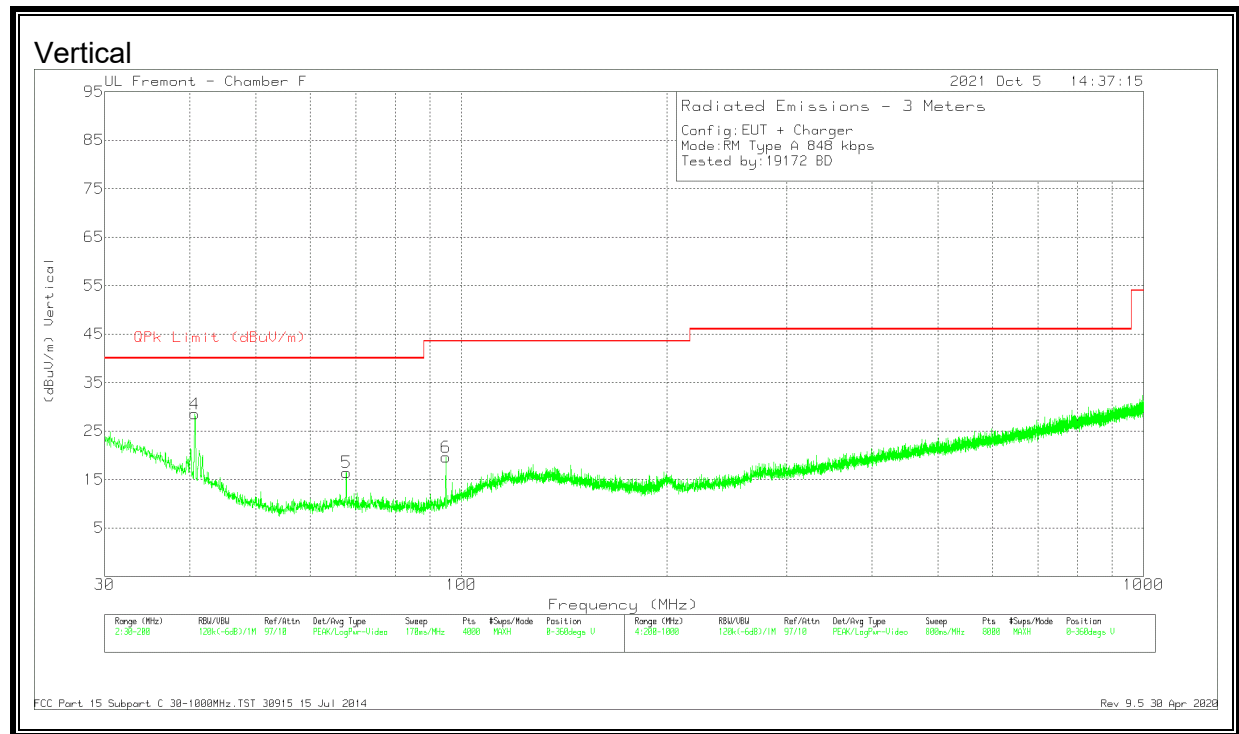
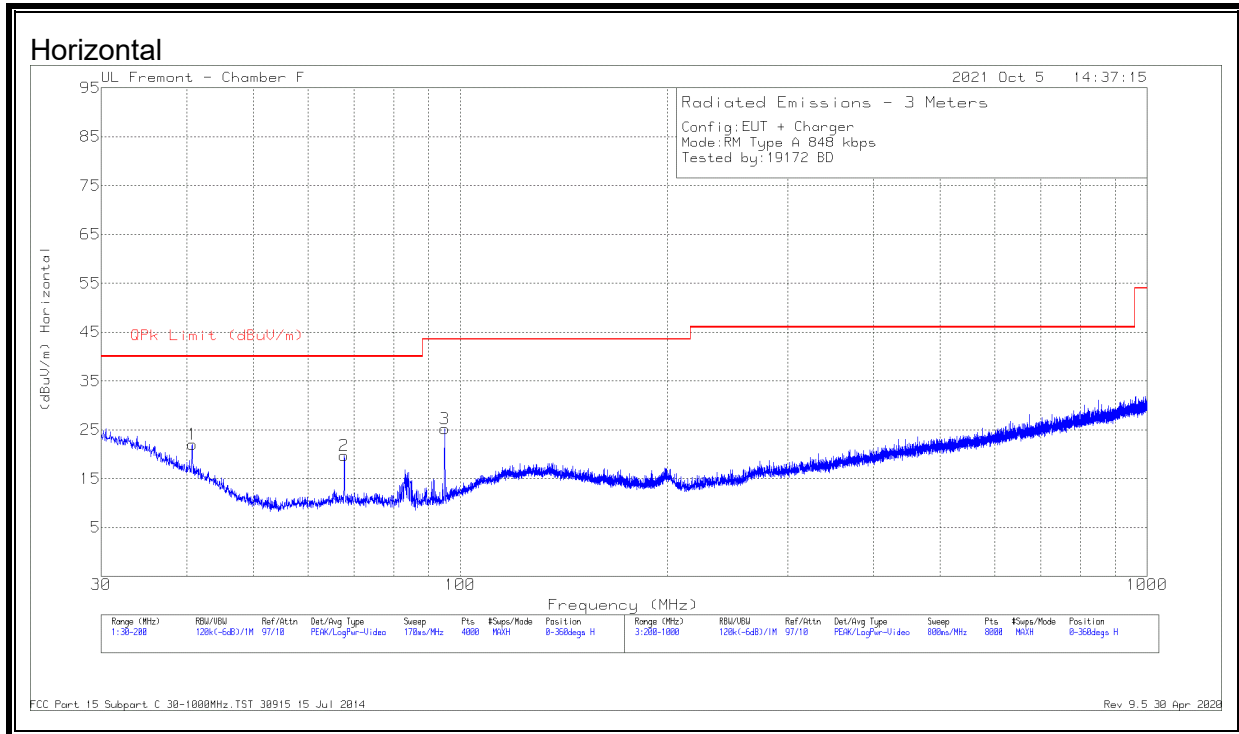
Marker	Frequency (MHz)	Meter Reading (dBUV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 30m	Corrected Reading (dBUV/m)	QP Limit (dBUV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	3.3315	18.16	Pk	11.4	.3	-40	-10.14	29.5	-39.64	0-360	Face On
4	3.40066	19.02	Pk	11.4	.3	-40	-9.28	29.5	-38.78	0-360	Face Off
2	13.55998	57.53	Pk	10.7	.6	-40	28.83	29.5	-.67	0-360	Face On
5	13.55998	54.58	Pk	10.7	.6	-40	25.88	29.5	-3.62	0-360	Face Off
3	21.73857	10.94	Pk	9.9	.8	-40	-18.36	29.5	-47.86	0-360	Face On
6	22.85783	10.76	Pk	9.7	.8	-40	-18.74	29.5	-48.24	0-360	Face Off

Pk - Peak detector

Note: Marker 2 and 5 are fundamental signals.

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

READER MODE, TYPE A, SPURIOUS EMISSION 848Kbps



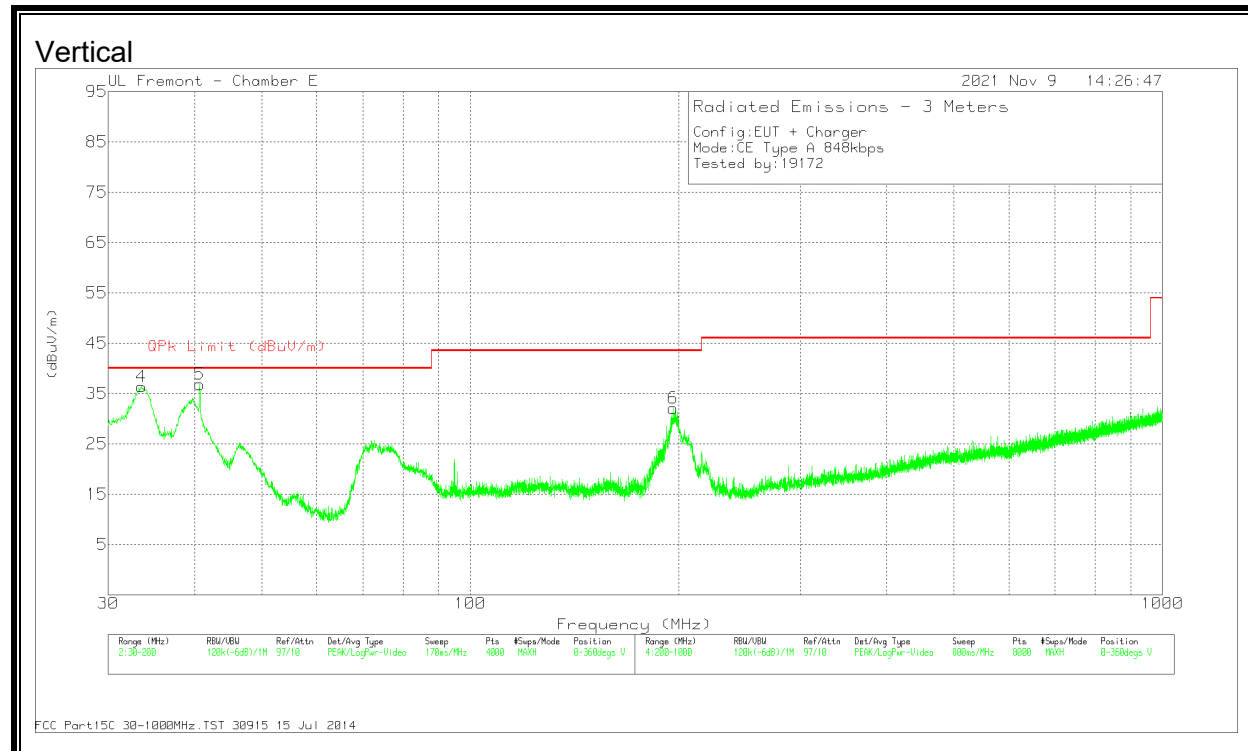
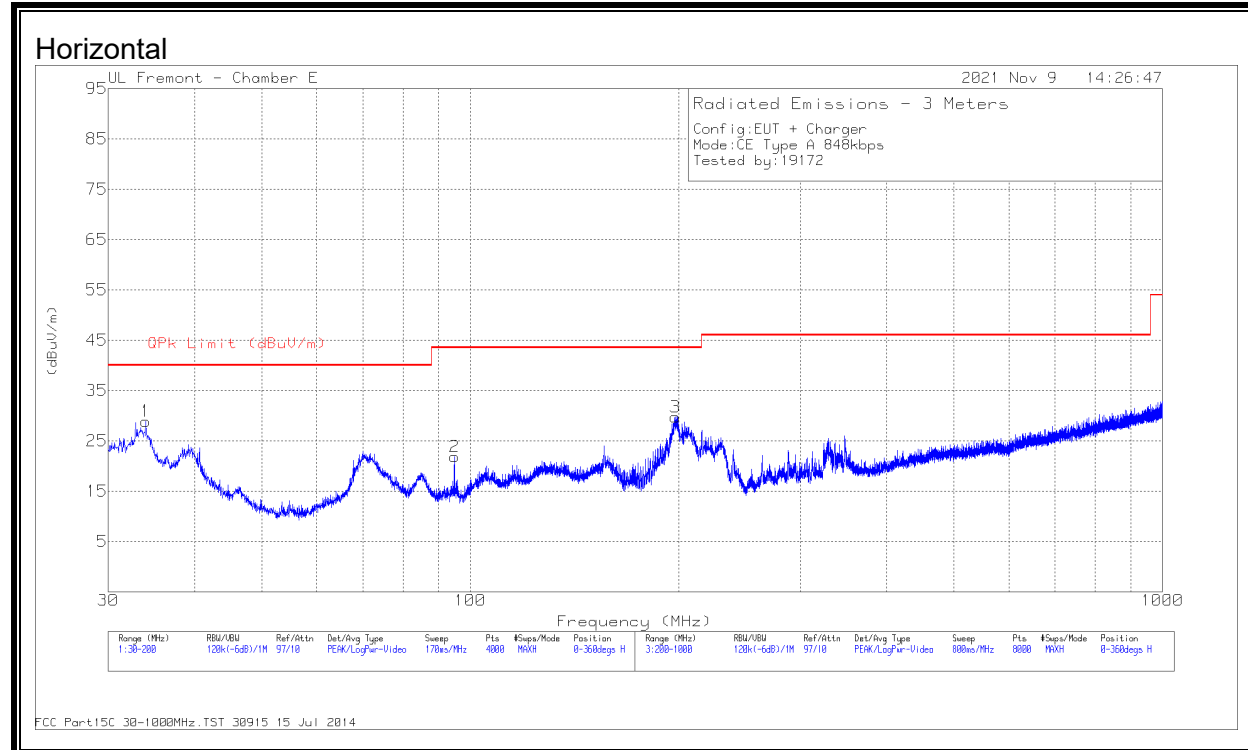
DATA

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
1	40.6821	31.38	Qp	20.4	-31.8	19.98	40	-20.02	348	317	H
2	67.8019	36.32	Qp	14.2	-31.5	19.02	40	-20.98	265	219	H
3	94.91	41.22	Qp	14.3	-31.2	24.32	43.52	-19.2	115	321	H
4	40.6775	38.94	Qp	20.4	-31.8	27.54	40	-12.46	29	110	V
5	67.7882	32.01	Qp	14.2	-31.5	14.71	40	-25.29	78	110	V
6	94.9189	36.59	Qp	14.3	-31.2	19.69	43.52	-23.83	220	149	V

Qp - Quasi-Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014
Rev 9.5 30 Apr 2020

CE Mode, Type A SPURIOUS EMISSION 848Kbps

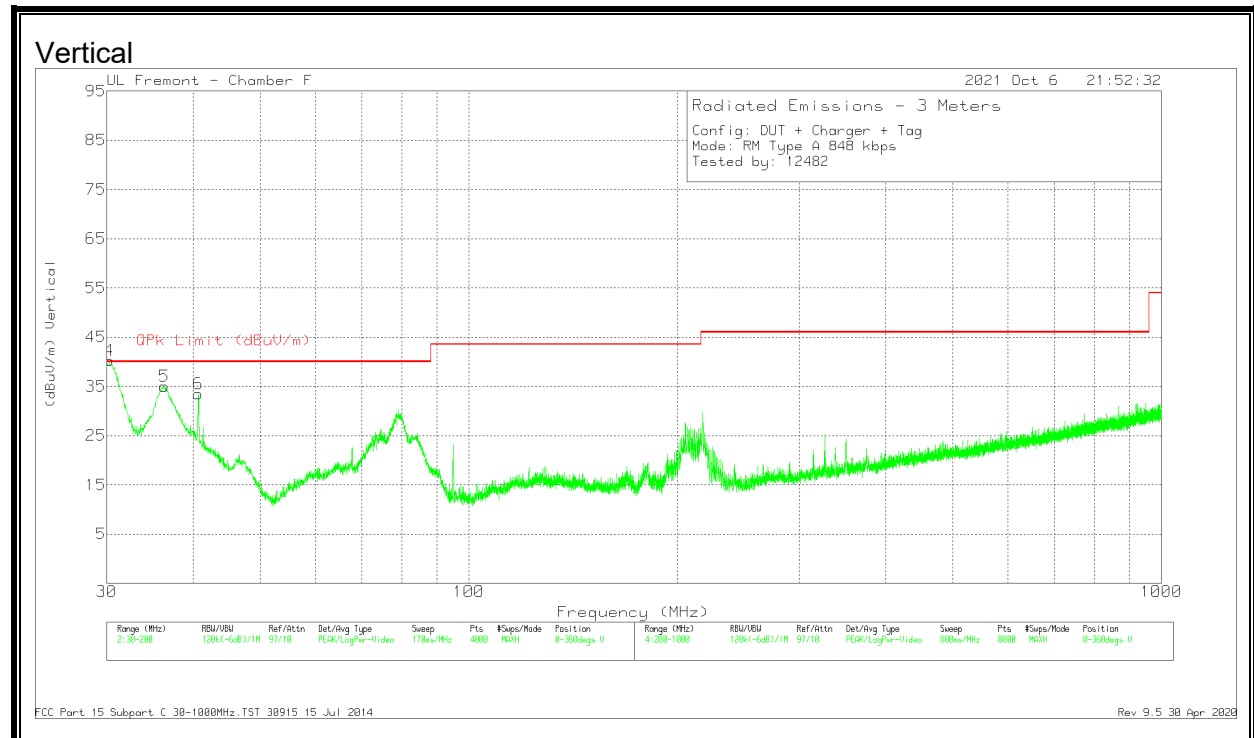
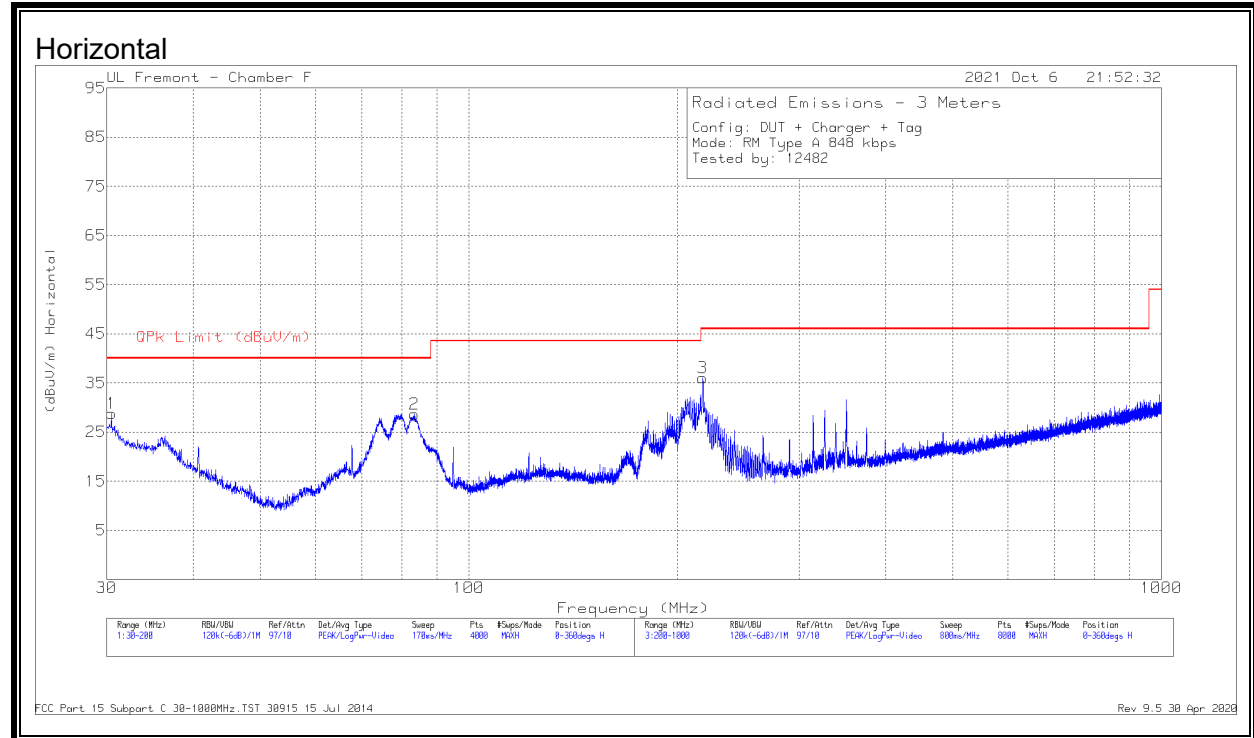


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204045 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.3278	28.78	Qp	24.7	-31	22.48	40	-17.52	281	356	H
4	33.8739	38.9	Qp	24.2	-30.9	32.2	40	-7.8	227	102	V
5	40.6974	44.97	Qp	19.1	-30.8	33.27	40	-6.73	284	108	V
2	94.9261	35.38	Qp	15.1	-30.3	20.18	43.52	-23.34	166	283	H
6	193.0312	37.93	Qp	17.4	-29.4	25.93	43.52	-17.59	272	102	V
3	198.794	34.4	Qp	18.3	-29.3	23.4	43.52	-20.12	108	133	H

Qp - Quasi-Peak detector

TAG MODE, SPURIOUS EMISSION 848Kbps



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
1	30.1906	26.43	Qp	28	-31.9	22.53	40	-17.47	212	384	H
2	83.8038	42.52	Qp	13.4	-31.3	24.62	40	-15.38	294	257	H
4	30.0559	40.01	Qp	28.1	-31.9	36.21	40	-3.79	256	111	V
5	36.2041	39.75	Qp	23.7	-31.8	31.65	40	-8.35	226	100	V
6	40.6853	43.62	Qp	20.4	-31.8	32.22	40	-7.78	201	101	V
3	217.4273	49.21	Qp	16.8	-30.3	35.71	46.02	-10.31	91	153	H

Qp - Quasi-Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014
Rev 9.5 30 Apr 2020

9. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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 $\pm 0.01\%$ (± 100 ppm).

TEST PROCEDURE

ANSI C63.10-2013 Clause 6.8

RESULTS

No non-compliance noted.

ID:	12482	Date:	10/20/2021
------------	-------	--------------	------------

9.1.1. READER MODE, TYPE A 848Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20°C										
Limit: ± 100 ppm = 1.35600 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(°C)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.55985456	1.707	13.55985633	1.576	13.55985887	1.388	13.55986015	1.294	± 100
	40	13.55985213	1.886	13.55985196	1.898	13.55985184	1.907	13.55985176	1.913	± 100
	30	13.55985697	1.529	13.55985775	1.471	13.55985852	1.414	13.55985953	1.340	± 100
	20	13.5598777	0.000	13.55987885	-0.085	13.55988035	-0.196	13.55988144	-0.276	± 100
	10	13.55990642	-2.118	13.55990935	-2.334	13.55991105	-2.459	13.55991321	-2.618	± 100
	0	13.55995028	-5.353	13.55995322	-5.569	13.5599558	-5.759	13.55995741	-5.878	± 100
	-10	13.55996979	-6.791	13.55997351	-7.066	13.5599764	-7.279	13.55998015	-7.556	± 100
	-20	13.56000149	-9.129	13.56000302	-9.242	13.56000342	-9.271	13.5600039	-9.048	± 100
3.23	20	13.55984504	2.409	13.55983106	3.440	13.55982434	3.935	13.55982214	4.097	± 100
4.37	20	13.55983243	3.339	13.55983199	3.371	13.55983175	3.388	13.55983159	3.401	± 100

9.1.2. CE MODE, TYPE A 848Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20°C										
Limit: ± 100 ppm = 1.35600 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(°C)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.56125493	9.345	13.56114777	17.248	13.56118194	14.727	13.56106208	23.567	± 100
	40	13.56081999	41.420	13.5618606	-35.321	13.56144964	-5.015	13.56156428	-13.468	± 100
	30	13.56112276	19.092	13.56126231	8.800	13.56071331	49.287	13.56160293	-16.319	± 100
	20	13.56138165	0.000	13.56146915	-6.453	13.56170571	-23.899	13.56171205	-24.366	± 100
	10	13.561413	-2.312	13.56118692	14.361	13.56156649	-13.631	13.56110125	20.678	± 100
	0	13.56074987	46.591	13.56152358	-10.467	13.56130973	5.304	13.56091077	34.725	± 100
	-10	13.56137057	0.817	13.56105284	24.248	13.56128797	6.908	13.56169101	-22.815	± 100
	-20	13.56097184	30.222	13.56129228	6.591	13.56105383	24.175	13.56154423	-11.990	± 100
3.23	20	13.56132205	4.395	13.56187141	-36.118	13.5612538	9.428	13.56142832	-3.442	± 100
4.37	20	13.5610623	23.551	13.56084123	39.854	13.56102647	26.193	13.5610814	22.142	± 100

9.1.3. TAG Mode

Reference Frequency: EUT Channel 13.56 MHz @ 20°C										
Limit: ± 100 ppm = 1.35600 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(°C)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.55985155	2.880	13.55985208	2.840	13.55985363	2.726	13.55985606	2.547	± 100
	40	13.55985146	2.886	13.55985135	2.894	13.55985126	2.901	13.55985129	2.898	± 100
	30	13.55985547	2.590	13.55985794	2.408	13.55985835	2.378	13.55985912	2.321	± 100
	20	13.5598906	0.000	13.5598901	0.036	13.55988952	0.079	13.55988901	0.117	± 100
	10	13.55992862	-2.804	13.55992764	-2.732	13.55992622	-2.627	13.55992497	-2.535	± 100
	0	13.55993786	-3.486	13.55994153	-3.756	13.55994546	-4.046	13.5599478	-4.218	± 100
	-10	13.55997683	-6.360	13.55998116	-6.679	13.55998137	-6.695	13.55998246	-6.774	± 100
	-20	13.55999879	-7.979	13.55999991	-8.062	13.56000103	-8.144	13.56000182	-8.203	± 100
3.23	20	13.55982186	5.069	13.55982254	5.019	13.55982284	4.997	13.55982292	4.991	± 100
4.37	20	13.55985577	2.569	13.55985234	2.821	13.55985775	2.422	13.55985845	2.370	± 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 50 μ H/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 (dB μ V)	
	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

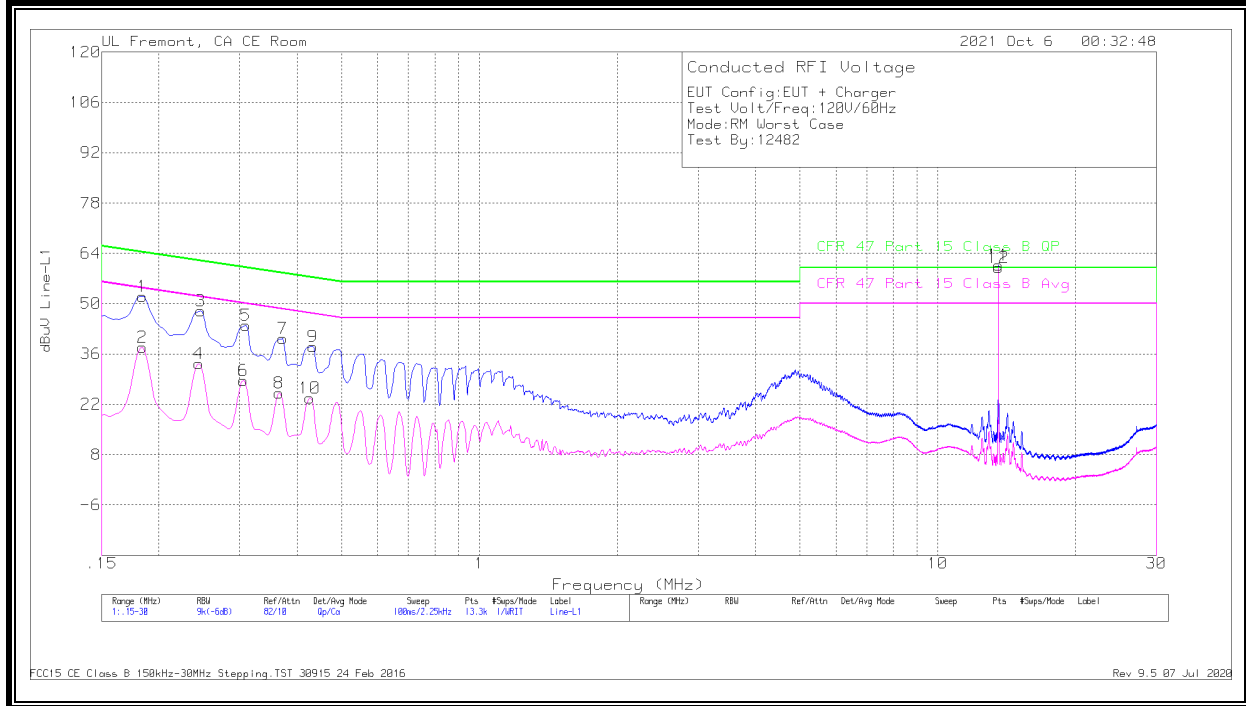
RESULTS

No non-compliance noted:

10.1. NORMAL OPERATION

10.1.1. Reader Mode

LINE 1 RESULTS



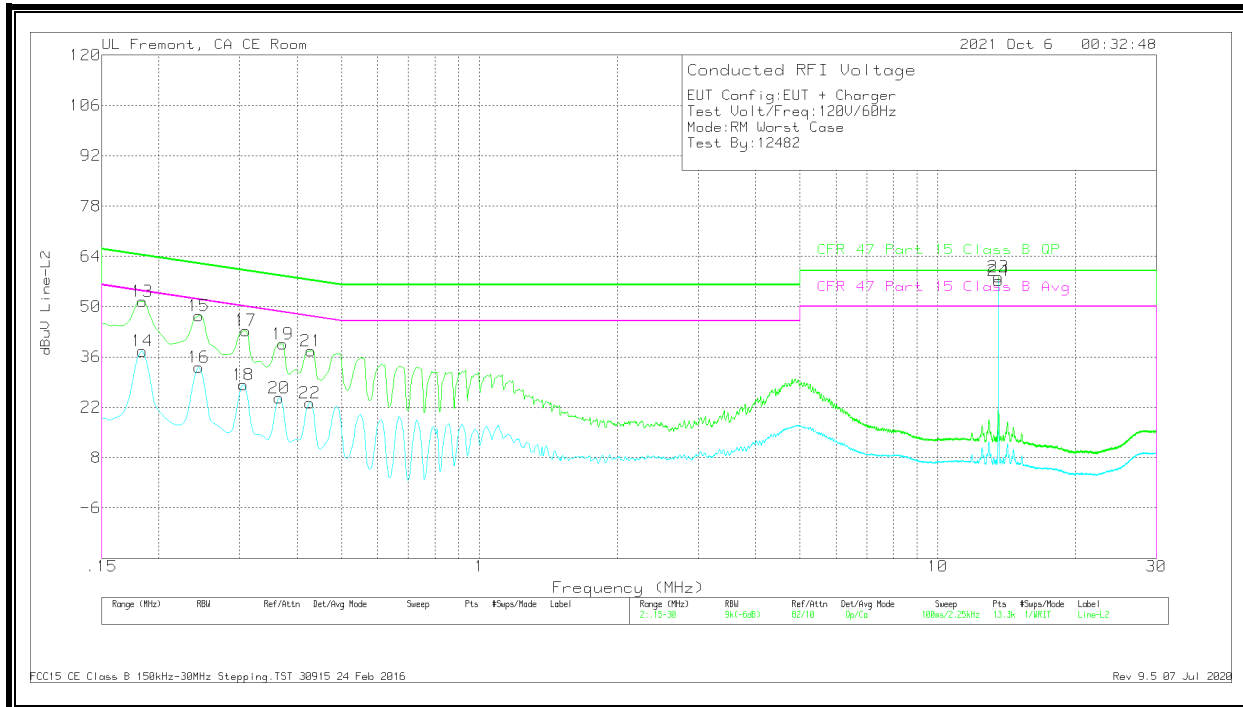
Worst Emission

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	LC Cables C1&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
2	.18375	28.54	Ca	0	0	9.4	37.94	-	-	54.31	-16.37
4	.2445	24.1	Ca	0	0	9.3	33.4	-	-	51.94	-18.54
6	.30525	19.36	Ca	0	0	9.3	28.66	-	-	50.1	-21.44
8	.366	15.87	Ca	0	0	9.3	25.17	-	-	48.59	-23.42
10	.42675	14.41	Ca	0	0	9.3	23.71	-	-	47.32	-23.61
12	13.56	50.39	Ca	.1	.2	9.3	59.99	-	-	50	9.99
1	.18375	42.6	Qp	0	0	9.4	52	64.31	-12.31	-	-
3	.24675	38.65	Qp	0	0	9.3	47.95	61.87	-13.92	-	-
5	.30975	34.6	Qp	0	0	9.3	43.9	59.98	-16.08	-	-
7	.37275	30.97	Qp	0	0	9.3	40.27	58.44	-18.17	-	-
9	.4335	28.76	Qp	0	0	9.3	38.06	57.19	-19.13	-	-
11	13.56	51.14	Qp	.1	.2	9.3	60.74	60	.74	-	-

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

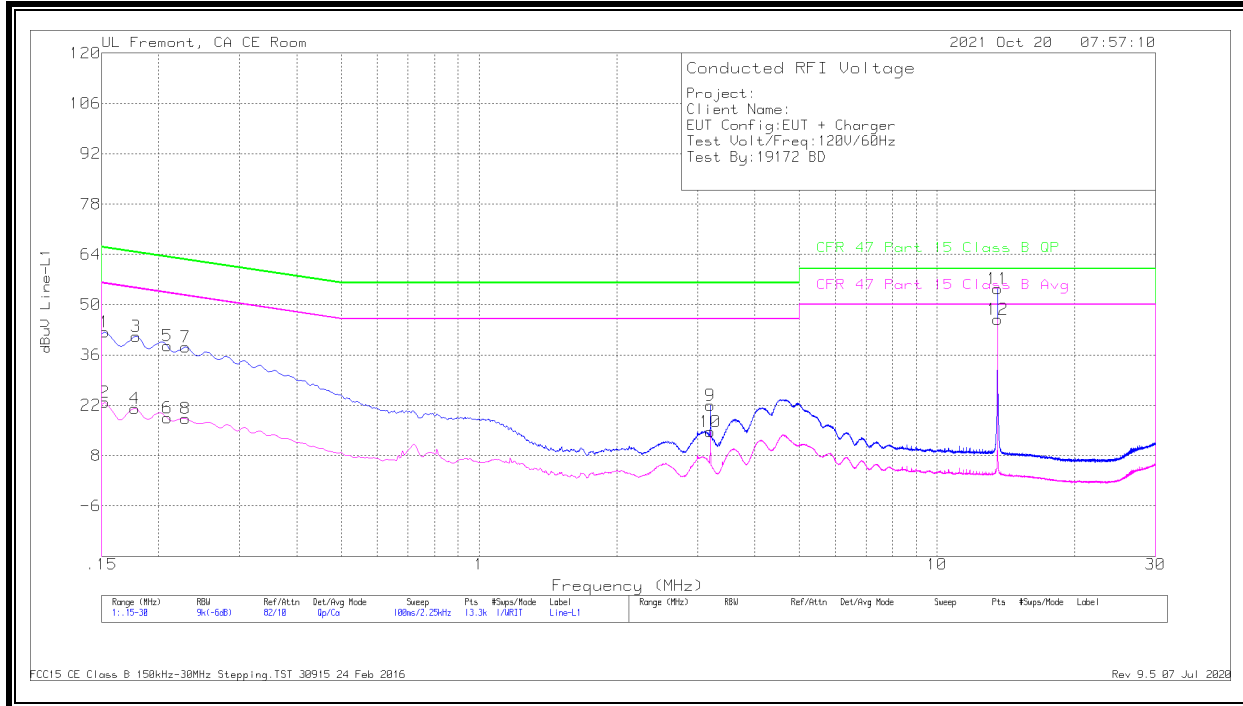
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
14	.18375	28.21	Ca	0	0	9.4	37.61	-	-	54.31	-16.7
16	.2445	23.83	Ca	0	0	9.3	33.13	-	-	51.94	-18.81
18	.30525	19.03	Ca	0	0	9.3	28.33	-	-	50.1	-21.77
20	.366	15.26	Ca	0	0	9.3	24.56	-	-	48.59	-24.03
22	.42675	13.84	Ca	0	0	9.3	23.14	-	-	47.32	-24.18
24	13.56	47.68	Ca	.1	.2	9.3	57.28	-	-	50	7.28
13	.18375	42.12	Qp	0	0	9.4	51.52	64.31	-12.79	-	-
15	.2445	38.16	Qp	0	0	9.3	47.46	61.94	-14.48	-	-
17	.30975	34.06	Qp	0	0	9.3	43.36	59.98	-16.62	-	-
19	.37275	30.38	Qp	0	0	9.3	39.68	58.44	-18.76	-	-
21	.429	28.36	Qp	0	0	9.3	37.66	57.27	-19.61	-	-
23	13.56	48.74	Qp	.1	.2	9.3	58.34	60	-1.66	-	-

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.

10.1.2. CE MODE

LINE 1 RESULTS

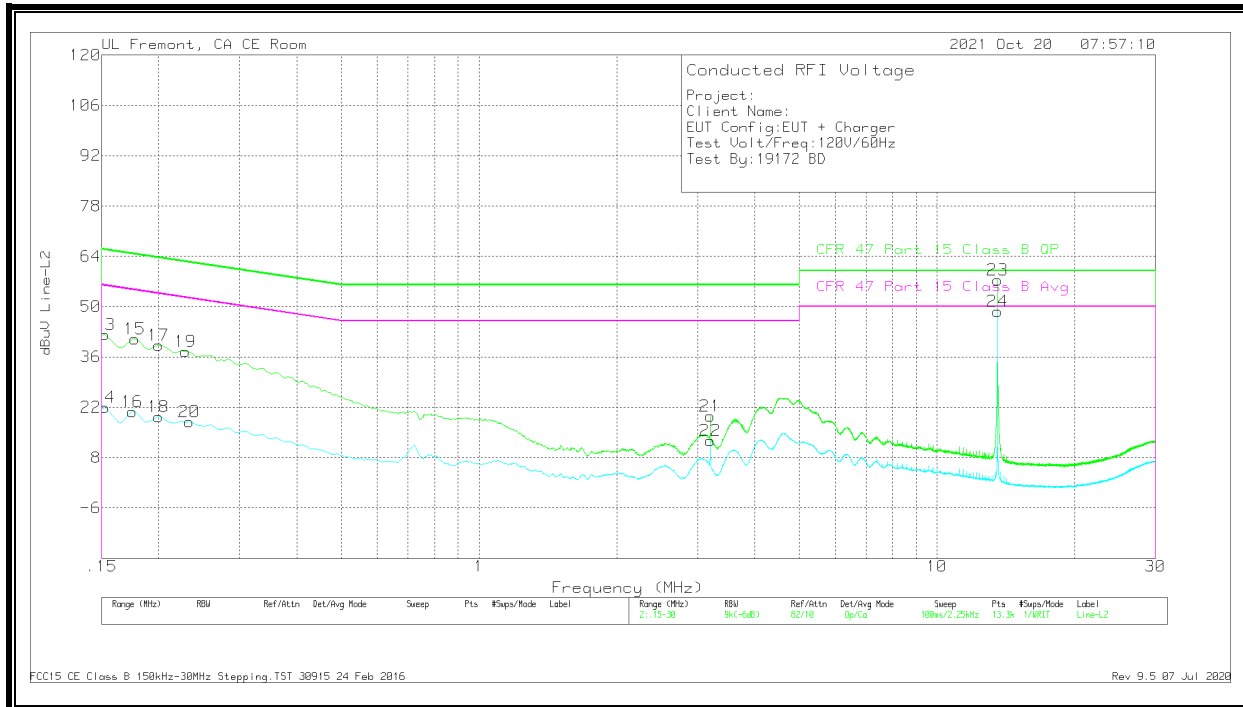


Worst Emission

Range 1: Line-L1 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	LC Cables C1&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)	
2	.15225	13.39	Ca	.1	0	9.4	22.89	-	-	55.88	-32.99	
4	.177	11.79	Ca	0	0	9.4	21.19	-	-	54.63	-33.44	
6	.2085	9.15	Ca	0	0	9.3	18.45	-	-	53.26	-34.81	
8	.22875	8.99	Ca	0	0	9.3	18.29	-	-	52.49	-34.2	
10	3.19875	5.32	Ca	0	.1	9.3	14.72	-	-	46	-31.28	
12	13.56	36.36	Ca	.1	.2	9.3	45.96	-	-	50	-4.04	
1	.15225	32.98	Qp	.1	0	9.4	42.48	65.88	-23.4	-	-	
3	.17813	31.75	Qp	0	0	9.4	41.15	64.57	-23.42	-	-	
5	.2085	29.33	Qp	0	0	9.3	38.63	63.26	-24.63	-	-	
7	.22875	28.88	Qp	0	0	9.3	38.18	62.49	-24.31	-	-	
9	3.19875	12.51	Qp	0	.1	9.3	21.91	56	-34.09	-	-	
11	13.56	44.89	Qp	.1	.2	9.3	54.49	60	-5.51	-	-	

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

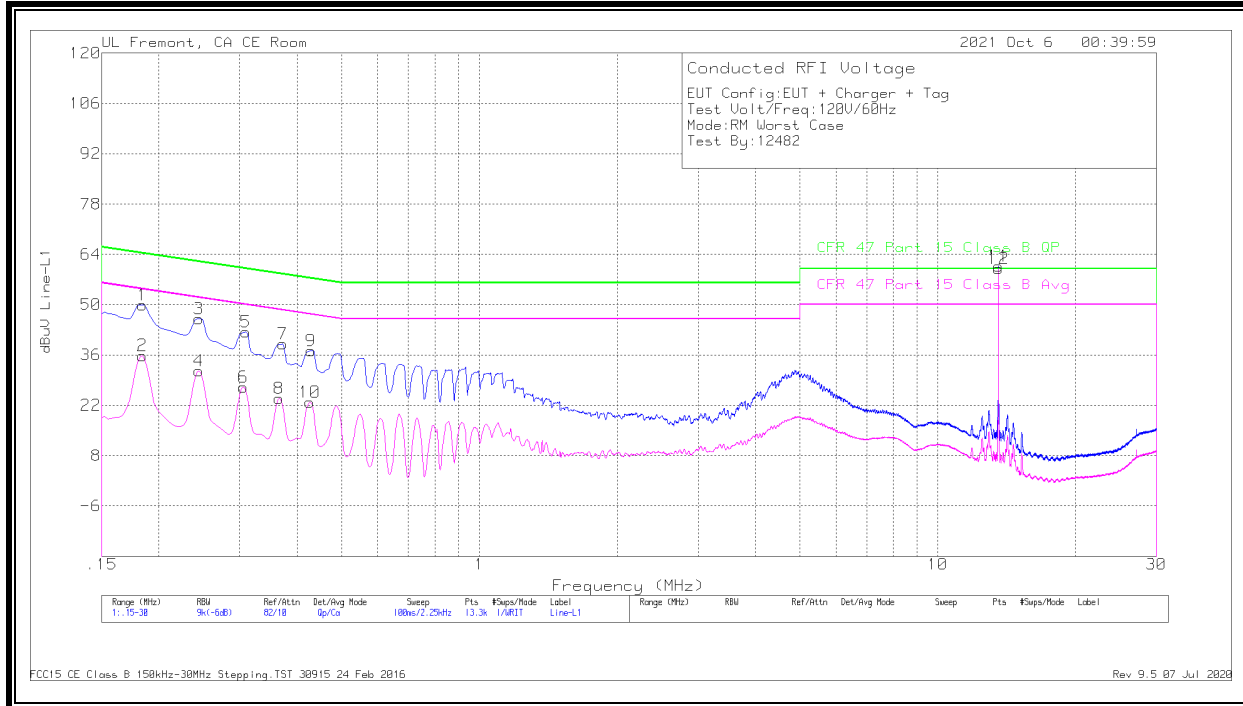
Range 2: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)	
14	.15225	12.65	Ca	0	0	9.4	22.05	-	-	55.88	-33.83	
16	.17475	11.37	Ca	0	0	9.4	20.77	-	-	54.73	-33.96	
18	.1995	10.02	Ca	0	0	9.3	19.32	-	-	53.63	-34.31	
20	.23325	8.62	Ca	0	0	9.3	17.92	-	-	52.33	-34.41	
22	3.19875	3.27	Ca	0	.1	9.3	12.67	-	-	46	-33.33	
24	13.56	39.16	Ca	.1	.2	9.3	48.76	-	-	50	-1.24	
13	.15225	32.89	Qp	0	0	9.4	42.29	65.88	-23.59	-	-	
15	.177	31.54	Qp	0	0	9.4	40.94	64.63	-23.69	-	-	
17	.1995	29.98	Qp	0	0	9.3	39.28	63.63	-24.35	-	-	
19	.22875	28.28	Qp	0	0	9.3	37.58	62.49	-24.91	-	-	
21	3.19875	10.2	Qp	0	.1	9.3	19.6	56	-36.4	-	-	
23	13.56	47.78	Qp	.1	.2	9.3	57.38	60	-2.62	-	-	

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.

10.1.3. TAG MODE

LINE 1 RESULTS



Worst Emission

Range 1: Line-L1 .15 - 30MHz

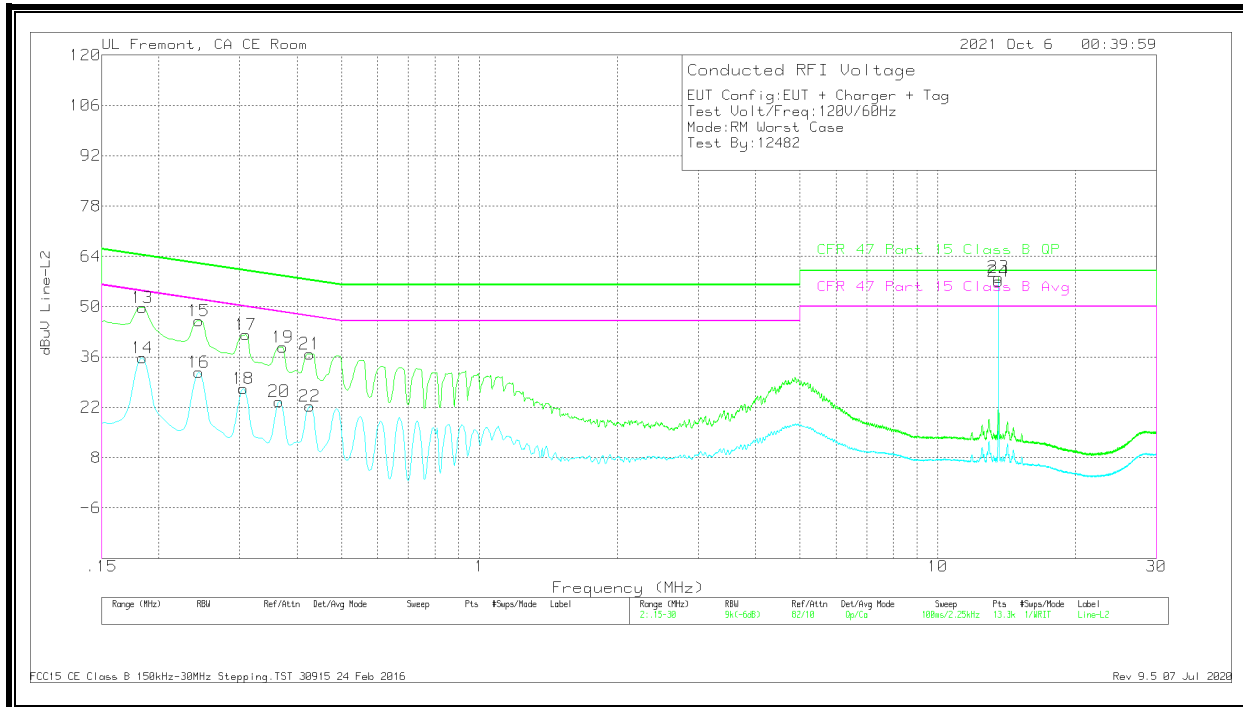
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	LC Cables C1&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
2	.18375	26.46	Ca	0	0	9.4	35.86	-	-	54.31	-18.45
4	.2445	22.31	Ca	0	0	9.3	31.61	-	-	51.94	-20.33
6	.30525	17.76	Ca	0	0	9.3	27.06	-	-	50.1	-23.04
8	.366	14.6	Ca	0	0	9.3	23.9	-	-	48.59	-24.69
10	.42675	13.54	Ca	0	0	9.3	22.84	-	-	47.32	-24.48
12	13.56	50.41	Ca	.1	.2	9.3	60.01	-	-	50	10.01
1	.18375	40.55	Qp	0	0	9.4	49.95	64.31	-14.36	-	-
3	.2445	36.78	Qp	0	0	9.3	46.08	61.94	-15.86	-	-
5	.30975	33.05	Qp	0	0	9.3	42.35	59.98	-17.63	-	-
7	.37275	29.77	Qp	0	0	9.3	39.07	58.44	-19.37	-	-
9	.429	27.9	Qp	0	0	9.3	37.2	57.27	-20.07	-	-
11	13.56	51.16	Qp	.1	.2	9.3	60.76	60	.76	-	-

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	PRE018644 6 L2	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
14	.18375	26.43	Ca	0	0	9.4	35.83	-	-	54.31	-18.48
16	.2445	22.4	Ca	0	0	9.3	31.7	-	-	51.94	-20.24
18	.30525	17.86	Ca	0	0	9.3	27.16	-	-	50.1	-22.94
20	.366	14.34	Ca	0	0	9.3	23.64	-	-	48.59	-24.95
22	.42675	13.11	Ca	0	0	9.3	22.41	-	-	47.32	-24.91
24	13.56	47.51	Ca	.1	.2	9.3	57.11	-	-	50	7.11
13	.18375	40.34	Qp	0	0	9.4	49.74	64.31	-14.57	-	-
15	.2445	36.82	Qp	0	0	9.3	46.12	61.94	-15.82	-	-
17	.30975	32.87	Qp	0	0	9.3	42.17	59.98	-17.81	-	-
19	.37275	29.51	Qp	0	0	9.3	38.81	58.44	-19.63	-	-
21	.42675	27.6	Qp	0	0	9.3	36.9	57.32	-20.42	-	-
23	13.56	48.59	Qp	.1	.2	9.3	58.19	60	-1.81	-	-

Qp - Quasi-Peak detector

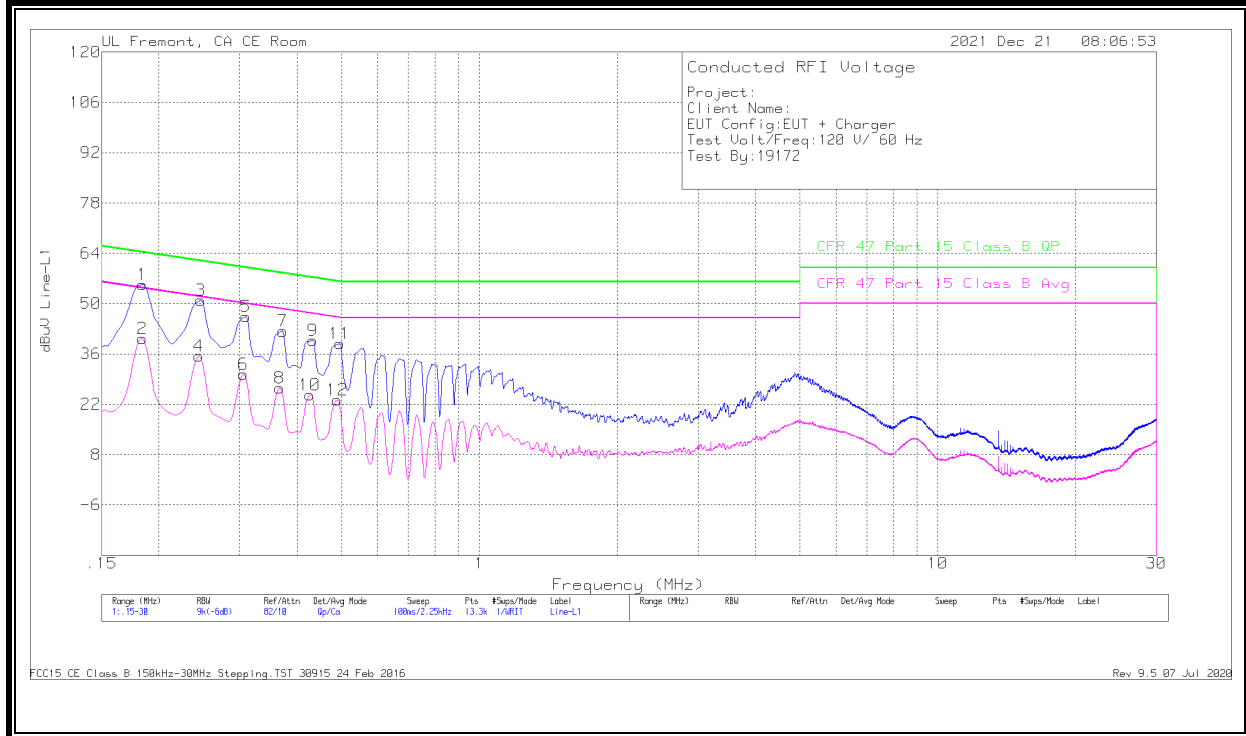
Ca - CISPR average detection

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.

10.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED

10.2.1. Reader Mode

LINE 1 RESULTS



Worst Emission

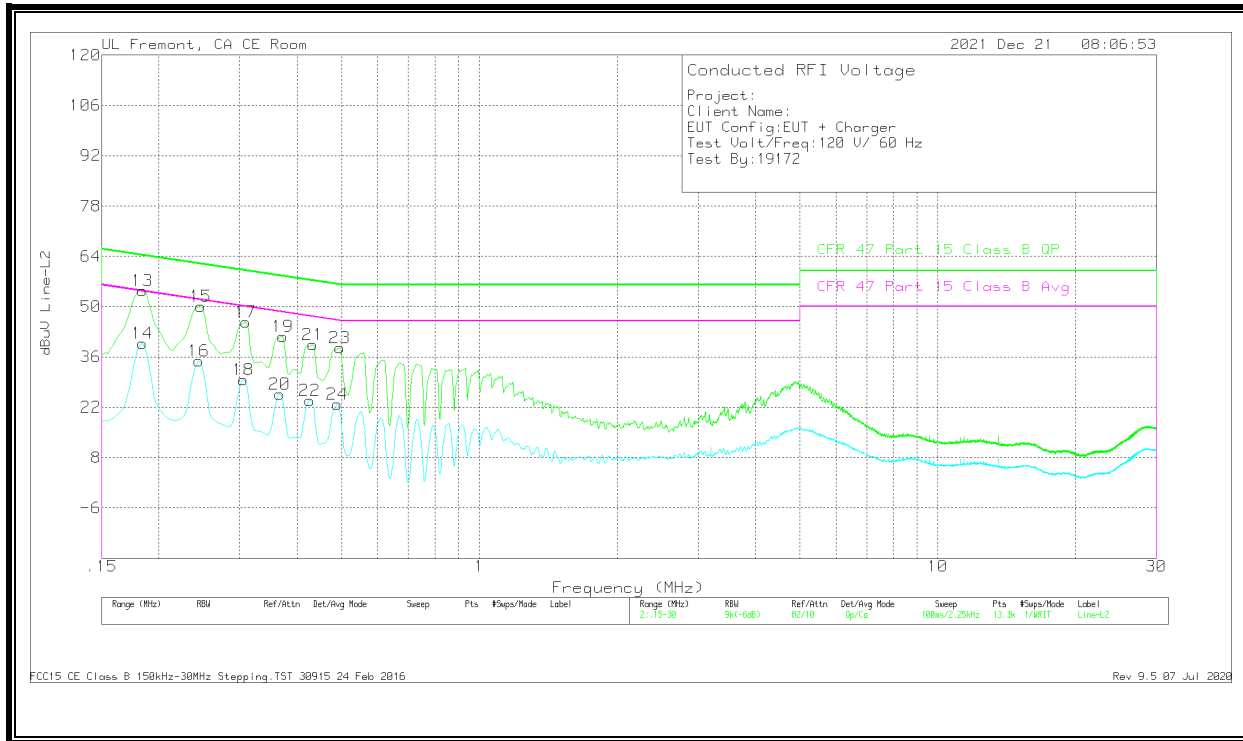
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	C1&C3 cable calibration factor	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
2	.18375	30.87	Ca	0	0	9.4	40.27	-	-	54.31	-14.04
4	.2445	26.07	Ca	0	0	9.3	35.37	-	-	51.94	-16.57
6	.30525	21	Ca	0	0	9.3	30.3	-	-	50.1	-19.8
8	.36713	17.16	Ca	0	0	9.3	26.46	-	-	48.57	-22.11
10	.42675	15.29	Ca	0	0	9.3	24.59	-	-	47.32	-22.73
12	.48975	13.9	Ca	0	0	9.3	23.2	-	-	46.17	-22.97
1	.18375	45.88	Qp	0	0	9.4	55.28	64.31	-9.03	-	-
3	.24675	41.58	Qp	0	0	9.3	50.88	61.87	-10.99	-	-
5	.30975	37.14	Qp	0	0	9.3	46.44	59.98	-13.54	-	-
7	.37275	33.02	Qp	0	0	9.3	42.32	58.44	-16.12	-	-
9	.4335	30.55	Qp	0	0	9.3	39.85	57.19	-17.34	-	-
11	.4965	29.65	Qp	0	0	9.3	38.95	56.06	-17.11	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Worst Emission

Range 2: Line-L2 .15 - 30MHz

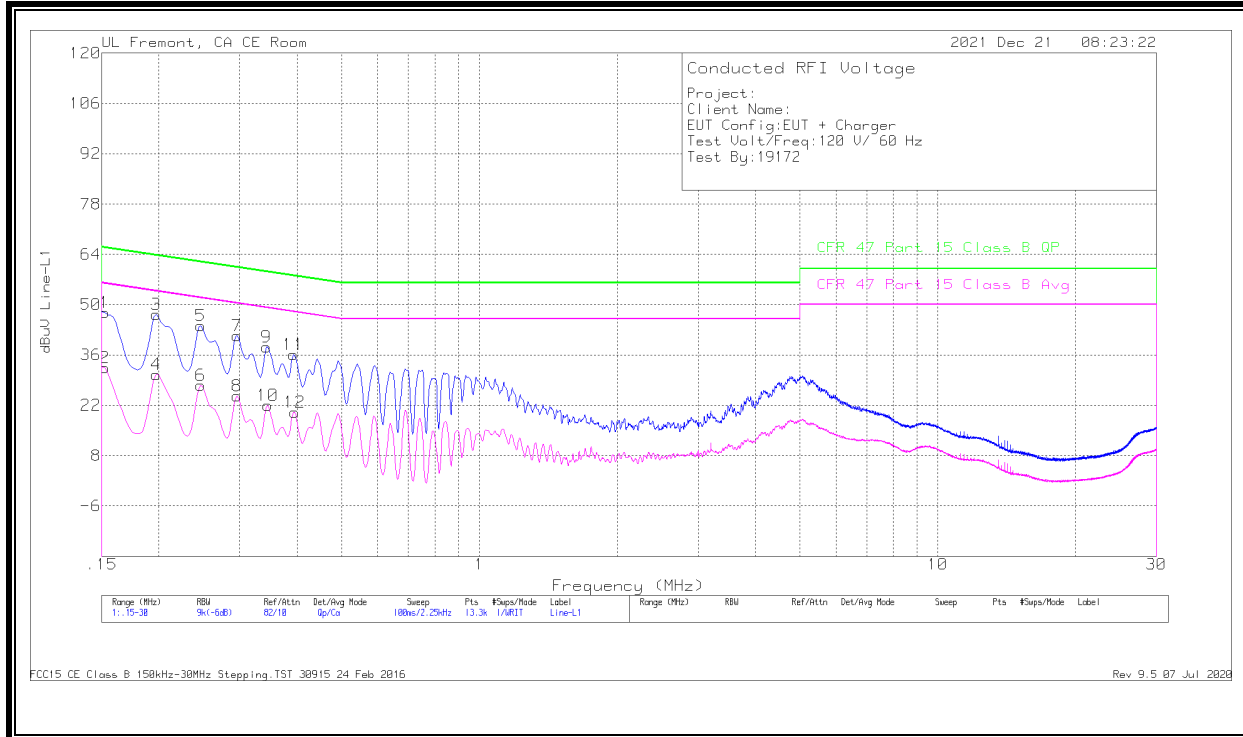
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	C2&C3 cable	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
14	.18375	30.31	Ca	0	0	9.4	39.71	-	-	54.31	-14.6
16	.2445	25.55	Ca	0	0	9.3	34.85	-	-	51.94	-17.09
18	.30525	20.42	Ca	0	0	9.3	29.72	-	-	50.1	-20.38
20	.36713	16.43	Ca	0	0	9.3	25.73	-	-	48.57	-22.84
22	.42675	14.67	Ca	0	0	9.3	23.97	-	-	47.32	-23.35
24	.48975	13.53	Ca	0	0	9.3	22.83	-	-	46.17	-23.34
13	.18375	45.1	Qp	0	0	9.4	54.5	64.31	-9.81	-	-
15	.24675	40.86	Qp	0	0	9.3	50.16	61.87	-11.71	-	-
17	.30975	36.49	Qp	0	0	9.3	45.79	59.98	-14.19	-	-
19	.37275	32.48	Qp	0	0	9.3	41.78	58.44	-16.66	-	-
21	.4335	30.08	Qp	0	0	9.3	39.38	57.19	-17.81	-	-
23	.4965	29.28	Qp	0	0	9.3	38.58	56.06	-17.48	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

10.2.2. CE Mode

LINE 1 RESULTS



Worst Emission

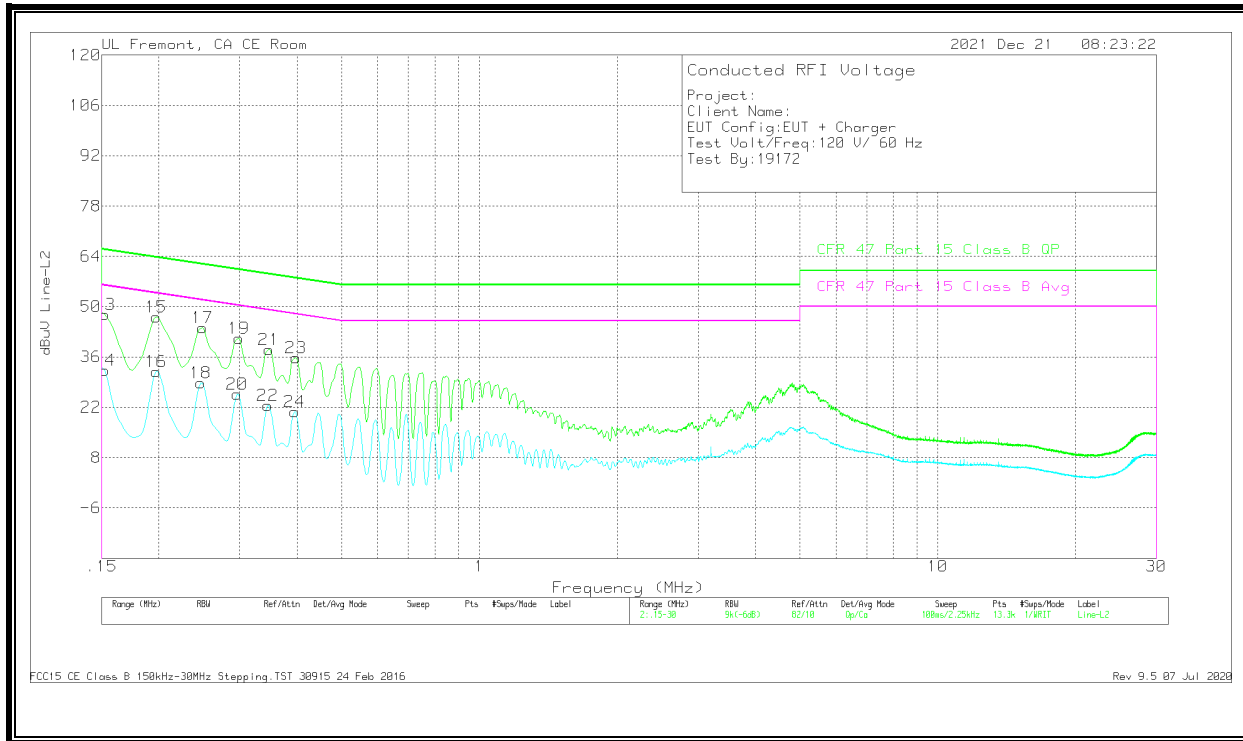
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L1	C1&C3 cable calibration factor	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
2	.15225	23.03	Ca	.1	0	9.4	32.53	-	-	55.88	-23.35
4	.19725	21.32	Ca	0	0	9.3	30.62	-	-	53.73	-23.11
6	.24675	18.31	Ca	0	0	9.3	27.61	-	-	51.87	-24.26
8	.29625	15.3	Ca	0	0	9.3	24.6	-	-	50.35	-25.75
10	.34575	12.73	Ca	0	0	9.3	22.03	-	-	49.06	-27.03
12	.39525	10.84	Ca	0	0	9.3	20.14	-	-	47.95	-27.81
1	.15225	38.37	Qp	.1	0	9.4	47.87	65.88	-18.01	-	-
3	.19725	37.96	Qp	0	0	9.3	47.26	63.73	-16.47	-	-
5	.24675	34.92	Qp	0	0	9.3	44.22	61.87	-17.65	-	-
7	.29625	32	Qp	0	0	9.3	41.3	60.35	-19.05	-	-
9	.3435	28.95	Qp	0	0	9.3	38.25	59.12	-20.87	-	-
11	.393	26.79	Qp	0	0	9.3	36.09	58	-21.91	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Worst Emission

Range 2: Line-L2 .15 - 30MHz

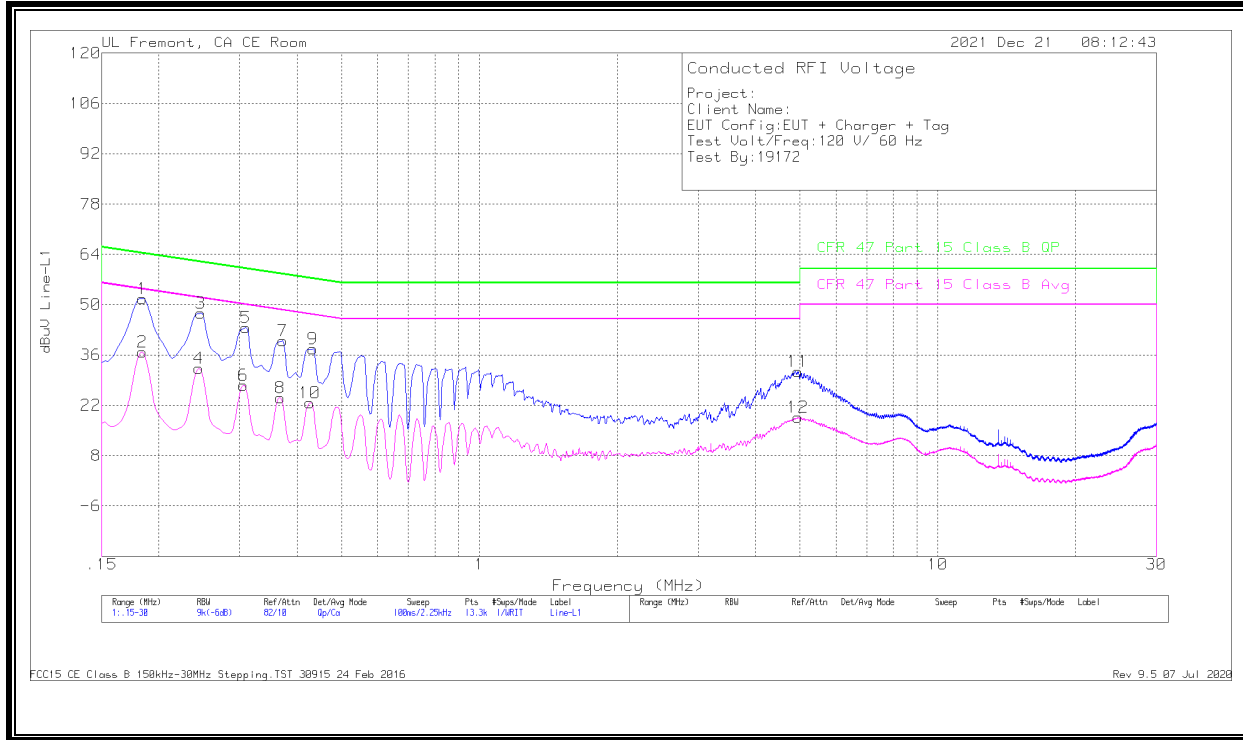
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	C2&C3 cable	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
14	.15225	22.93	Ca	0	0	9.4	32.33	-	-	55.88	-23.55
16	.19725	22.6	Ca	0	0	9.3	31.9	-	-	53.73	-21.83
18	.24675	19.5	Ca	0	0	9.3	28.8	-	-	51.87	-23.07
20	.29625	16.28	Ca	0	0	9.3	25.58	-	-	50.35	-24.77
22	.34575	13.29	Ca	0	0	9.3	22.59	-	-	49.06	-26.47
24	.39525	11.52	Ca	0	0	9.3	20.82	-	-	47.95	-27.13
13	.15225	38.47	Qp	0	0	9.4	47.87	65.88	-18.01	-	-
15	.19725	37.79	Qp	0	0	9.3	47.09	63.73	-16.64	-	-
17	.249	34.82	Qp	0	0	9.3	44.12	61.79	-17.67	-	-
19	.2985	31.87	Qp	0	0	9.3	41.17	60.28	-19.11	-	-
21	.348	28.78	Qp	0	0	9.3	38.08	59.01	-20.93	-	-
23	.3975	26.51	Qp	0	0	9.3	35.81	57.91	-22.1	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

10.2.3. TAG Mode

LINE 1 RESULTS



Worst Emission

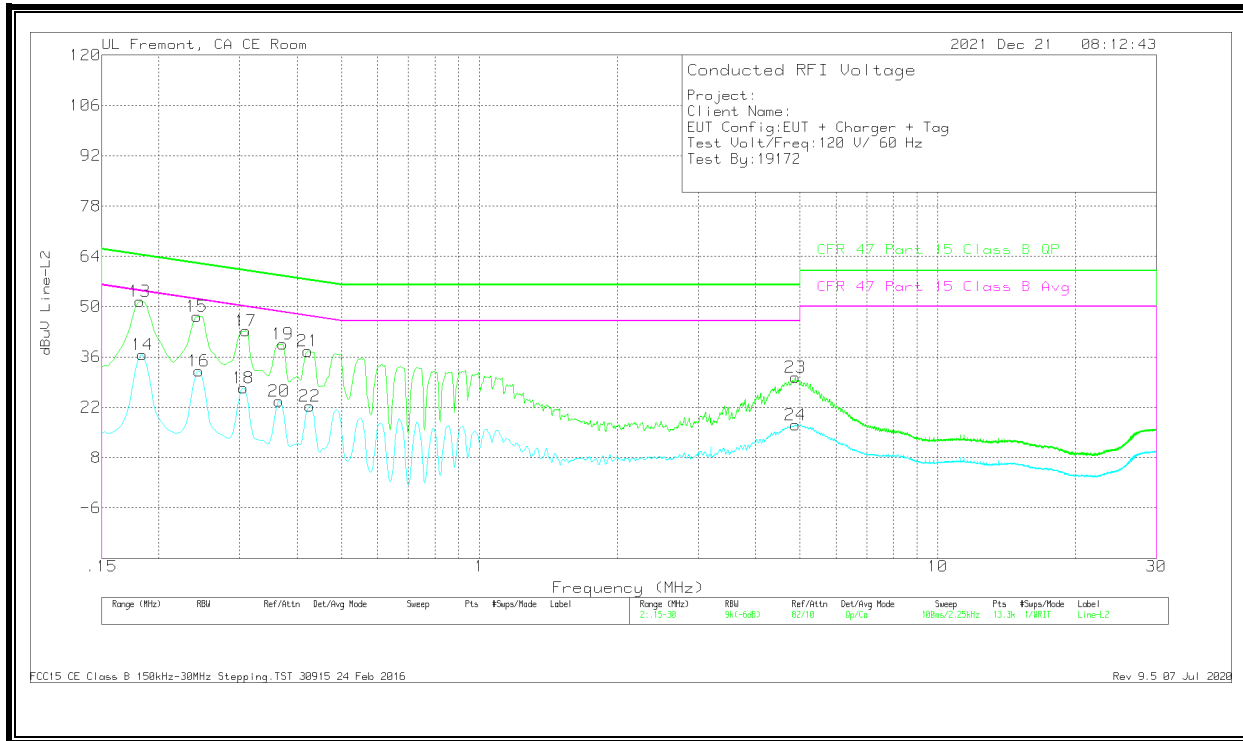
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBUV)	Det	PRE018644 6 L1	C1&C3 cable calibration factor	TekBox Limiter TBFL1 Model 207	Corrected Reading dBUV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
2	.18375	27.49	Ca	0	0	9.4	36.89	-	-	54.31	-17.42
4	.2445	23.06	Ca	0	0	9.3	32.36	-	-	51.94	-19.58
6	.30525	18.32	Ca	0	0	9.3	27.62	-	-	50.1	-22.48
8	.36825	14.82	Ca	0	0	9.3	24.12	-	-	48.54	-24.42
10	.42675	13.42	Ca	0	0	9.3	22.72	-	-	47.32	-24.6
12	4.95938	9.2	Ca	0	.1	9.3	18.6	-	-	46	-27.4
1	.18375	42.27	Qp	0	0	9.4	51.67	64.31	-12.64	-	-
3	.24675	38.33	Qp	0	0	9.3	47.63	61.87	-14.24	-	-
5	.30975	34.33	Qp	0	0	9.3	43.63	59.98	-16.35	-	-
7	.37275	30.71	Qp	0	0	9.3	40.01	58.44	-18.43	-	-
9	.4335	28.38	Qp	0	0	9.3	37.68	57.19	-19.51	-	-
11	4.956	22.06	Qp	0	.1	9.3	31.46	56	-24.54	-	-

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	PRE018644 6 L2	C2&C3 cable	TekBox Limiter TBFL1 Model 207	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)M argin (dB)
14	.18375	27.22	Ca	0	0	9.4	36.62	-	-	54.31	-17.69
16	.2445	22.84	Ca	0	0	9.3	32.14	-	-	51.94	-19.8
18	.30525	18.09	Ca	0	0	9.3	27.39	-	-	50.1	-22.71
20	.366	14.36	Ca	0	0	9.3	23.66	-	-	48.59	-24.93
22	.42675	12.96	Ca	0	0	9.3	22.26	-	-	47.32	-25.06
24	4.8885	7.76	Ca	0	.1	9.3	17.16	-	-	46	-28.84
13	.1815	42.04	Qp	0	0	9.4	51.44	64.42	-12.98	-	-
15	.24225	38.05	Qp	0	0	9.3	47.35	62.02	-14.67	-	-
17	.30975	33.94	Qp	0	0	9.3	43.24	59.98	-16.74	-	-
19	.37275	30.32	Qp	0	0	9.3	39.62	58.44	-18.82	-	-
21	.42225	28.31	Qp	0	0	9.3	37.61	57.4	-19.79	-	-
23	4.8885	20.89	Qp	0	.1	9.3	30.29	56	-25.71	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

11. SETUP PHOTOS

Please refer to 13911916-EP1V1 for setup photos

END OF TEST REPORT