TEST REPORT

Report Number. : 14040867-E12V1

Applicant	:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	:	A2649 (Parent Model, Full Test) A2881, A2882, A2883, A2884 (Variant Models)
FCC ID	:	BCG-E8138A (Parent Model) BCG-E8142A, BCG-E8143A, BCG-E8144A (Variant Models)
IC	:	579C-E8138A (Parent Model) 579C-E8142A, 579C-E8143A, 579C-E8144A (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:
July 11, 2022

Prepared by:
UL LLC
47173 Benicia Street
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CERT #0751.05

REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	7/11/2022	Initial Issue	Chin Pang

UL LLC. FORM NO: CCSUP4701I
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TABLE OF CONTENTS

UL LLC. FORM NO: CCSUP4701I
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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: SMARTPHONE

MODEL: A2649 (Parent Model)
A2881, A2882, A2883, A2884 (Variant Models)

BRAND: APPLE

FCC ID: BCG-E8138A (Parent Model)
BCG-E8142A, BCG-E8143A, BCG-E8144A (Variant Models)

IC: 579C-E8138A (Parent Model)
579C-E8142A, 579C-E8143A, 579C-E8144A (Variant Models)

SERIAL NUMBER: V2V9KHF5W9

SAMPLE RECEIPT DATE: MAY 31, 2022

DATE TESTED: JUNE 01-23, 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 LLC. 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 LLC. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC. 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 LLC. By:

Chin Pang
Senior Engineer
Consumer Technology Division
UL LLC.

Prepared By:

Alejandro Martinez
Test Engineer
Consumer Technology Division
UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, 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 LLC. 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
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
☐	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:
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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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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, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband GPS, NFC and MSS. All models except reference model support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and 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/IC IDs covered by this report includes:

Parent Model: A2649, FCC ID: BCG-E8138A, IC: 579C-E8138A

Variant Models: A2881, FCC ID: BCG-E8142A, IC: 579C-E8142A
A2882; FCC ID: BCG-E8143A, IC: 579C-E8143A
A2883 & A2884, FCC ID: BCG-E8144A, IC: 579C-E8144A

5.2. MAXIMUM FIELD STRENGTH

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

Antenna	Frequency Range (MHz)	Mode		Kbps	E Field at 30m distance (dBuV/m)
Primary	13.56	Type A	Reader	848	26.59
			Tag	848	26.61
			CE	848	23.20
Secondary	13.56	Type A	Reader	848	6.06
			Tag	848	6.61

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 Y(Landscape) orientation was determined to be the worst-case orientation for primary antenna and X (Flatbed) orientation for secondary antenna.

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.

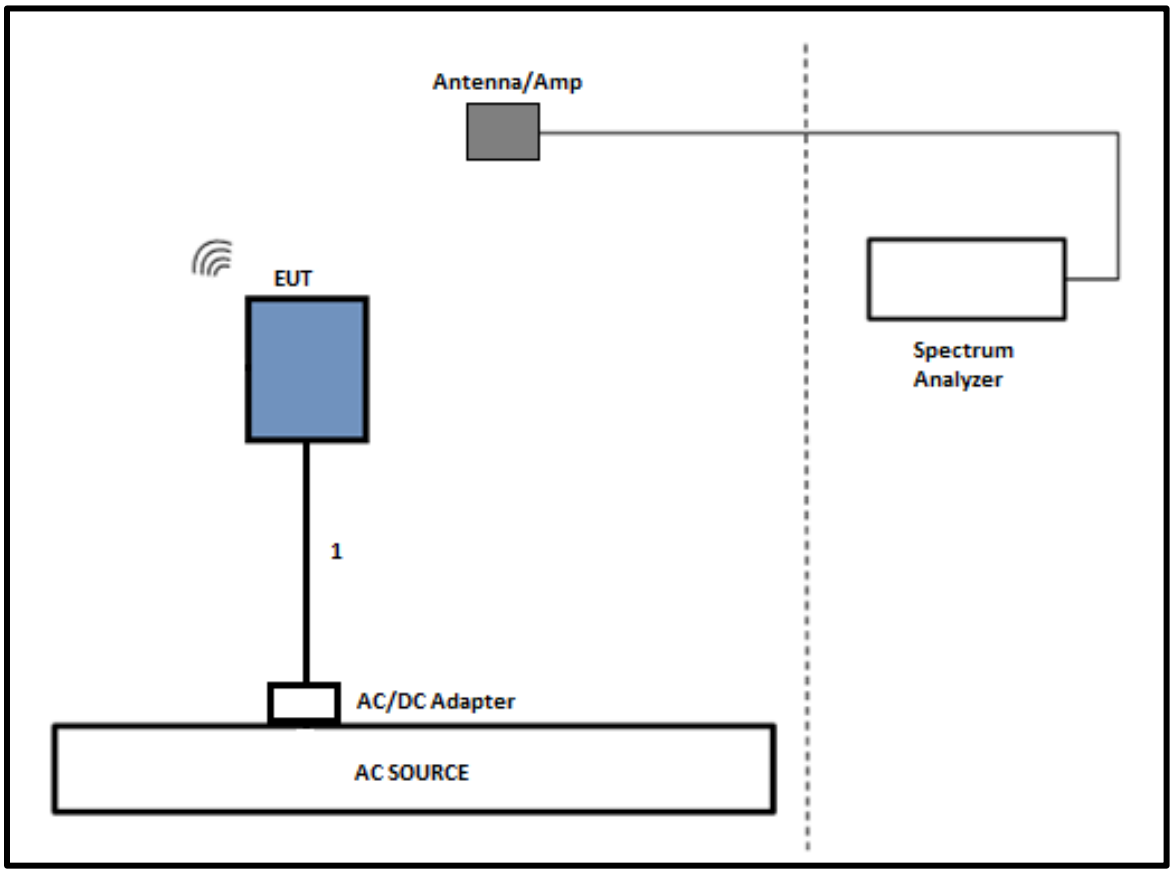
5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

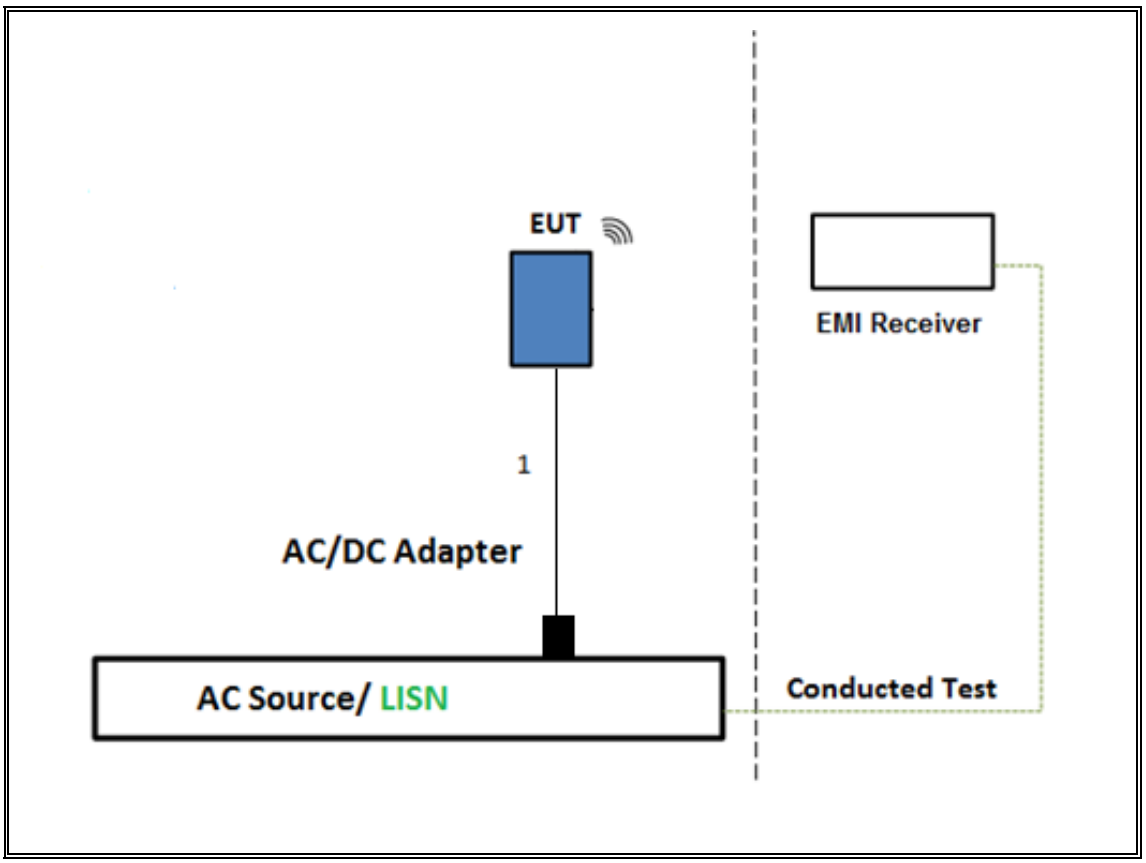
Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
laptop	Apple	Macbook Pro	C02SM041GTFL	BCG-A1707
Laptop AC/DC adapter	Liteon Technology	A1424	NSW25679	DoC
EUT AC Adapter	Apple	A1720	C3D8417A7R93KVPA8	DoC

I/O CABLES (RF RADIATED AND AC LINE AC TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	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	Agilent (Keysight) Technologies	N9030A	80396	02/01/2023	02/01/2022
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	204044	01/31/2023	01/31/2022
Amplifier10KHz to 1GHz 32dB	Sonoma	310N	89831	07/21/2022	07/21/2021
Antenna, Passive Loop 30Hz to 1MHz	Electro-Metrics	EM-6871	170013	07/29/2022	07/29/2021
Antenna, Passive Loop 100KHz to 30MHz	ETS-Lindgren	EM-6872	170015	07/29/2022	07/29/2021
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	79584	07/21/2022	07/21/2021
Spectrum Analyzer, PXA 3Hz to 44GHz(	Keysight	N9030A	206415	03/17/2023	03/17/2022
Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	T1154	05/12/2023	05/12/2022

AC Line Conducted					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	T1436	02/21/2023	02/21/2022
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175765	01/26/2023	01/26/2022
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		

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	21.359	24.97

Type A (CE Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	21.616	24.89

Tag Mode

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	21.419	25.10

Secondary Antenna

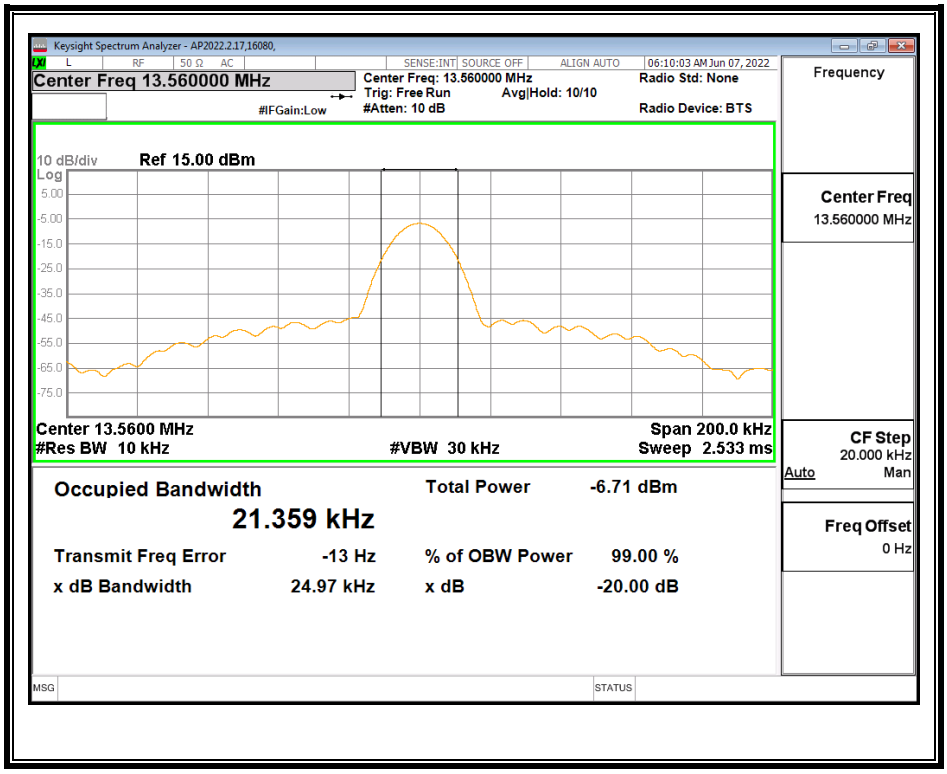
Type A (Reader Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	21.354	25.09

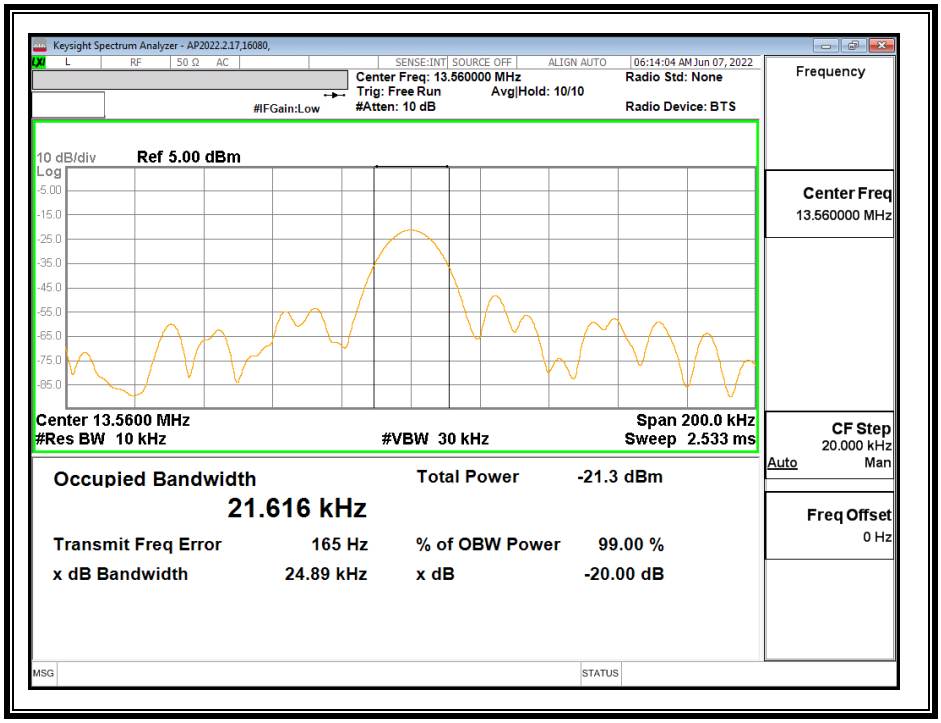
Type A (TAG Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	21.237	24.92

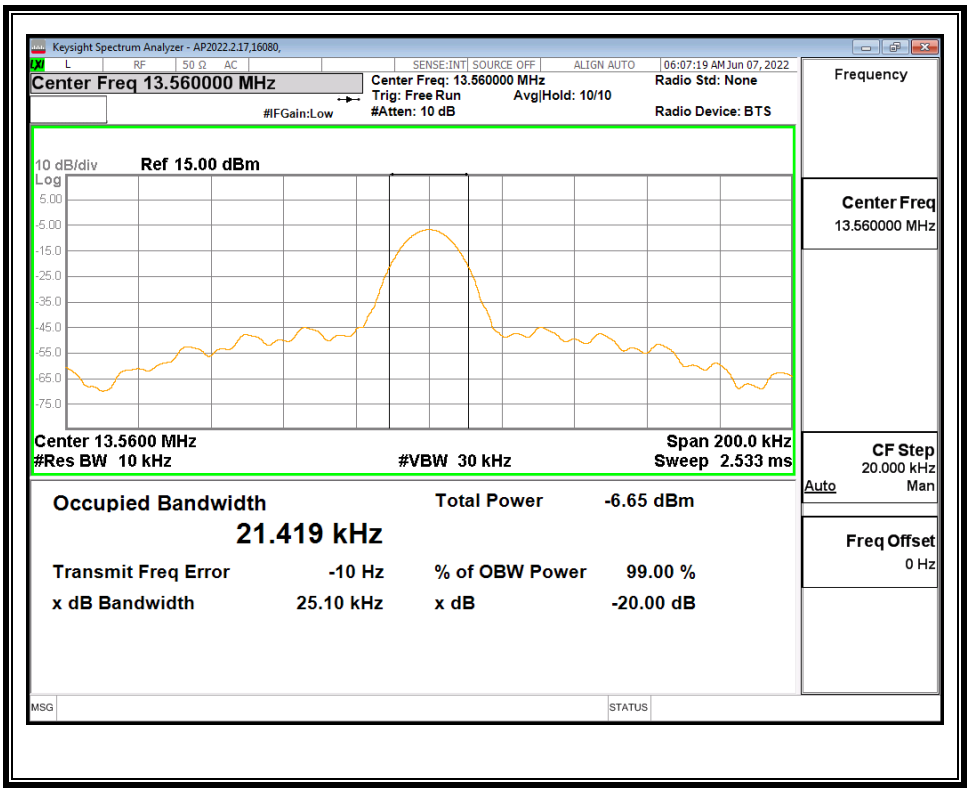
7.1. Reader Mode, Type A 848Kbps



7.2. CE Mode, Type A 848Kbps

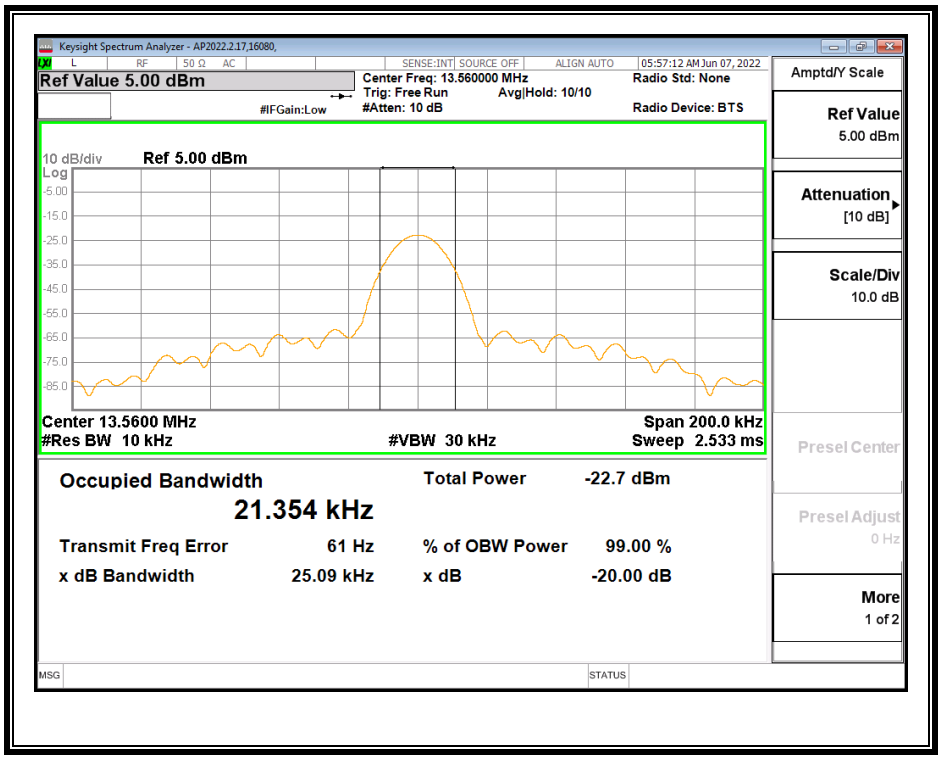


TAG Mode, Type A 848Kbps

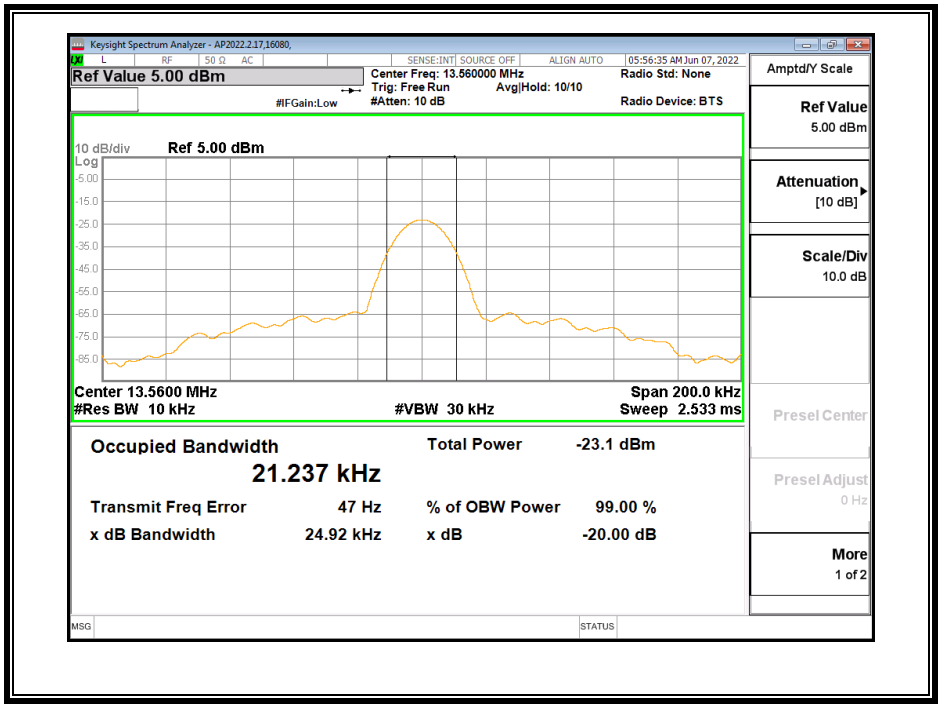


7.3. Secondary Antenna

Reader Mode, Type A 848Kbps



TAG Mode, Type A 848Kbps



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)

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.

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.

TEST PROCEDURE

ANSI C63.10, 2013

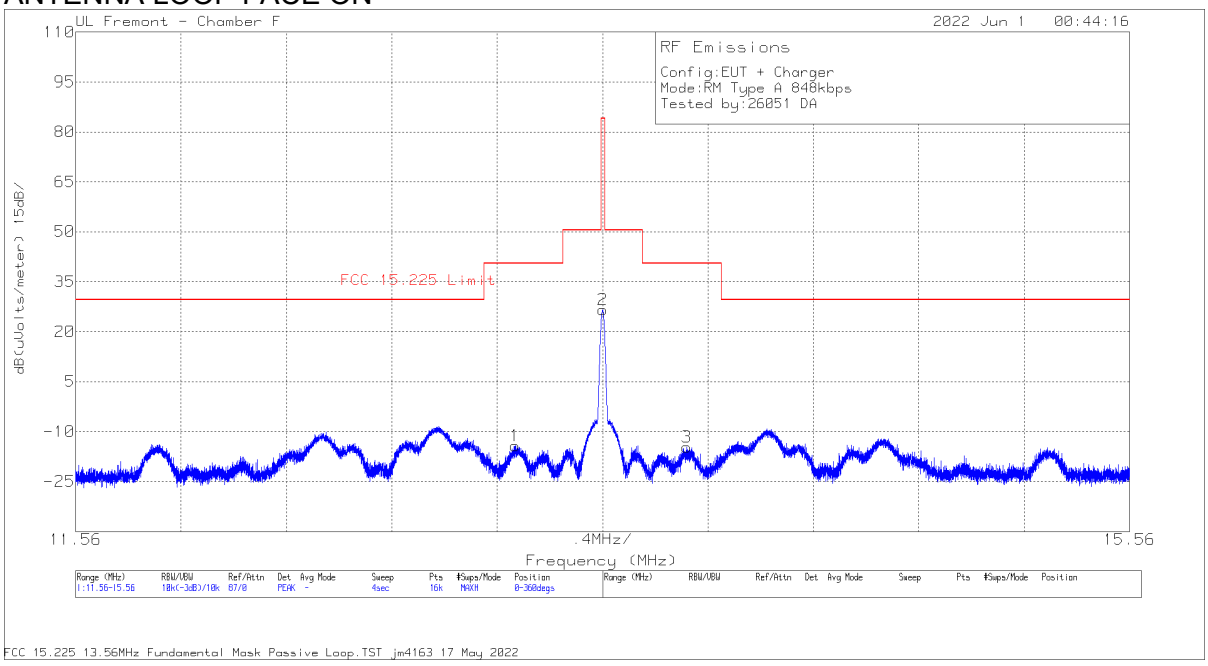
The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 0.15 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater.

RESULTS

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

8.2.1. READER MODE, TYPE A 848Kbps

ANTENNA LOOP FACE ON



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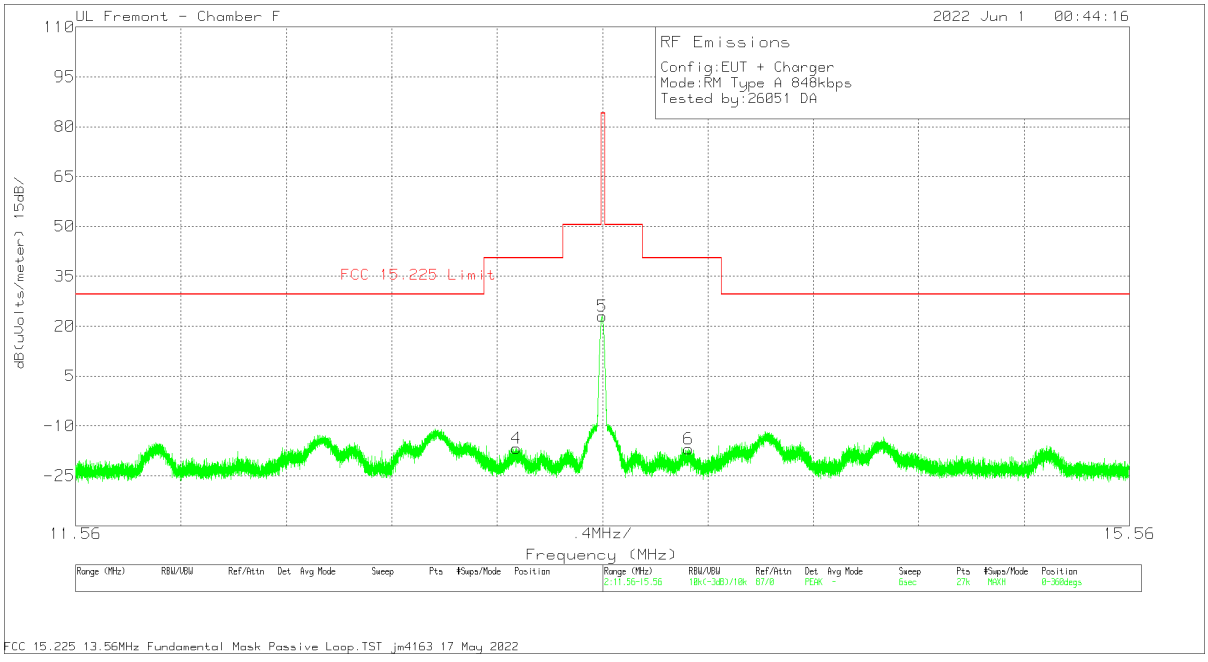

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading dBuV/m	FCC 15.225 Limit dBuV/m	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.2293	23.97	Pk	34.4	-32.6	-40	-14.23	40.51	-54.74	0-360	Face-On
2	13.5601	64.89	Pk	34.3	-32.6	-40	**26.59**	84	-57.41	0-360	Face-On
3	13.8805	23.75	Pk	34.2	-32.6	-40	-14.65	40.51	-55.16	0-360	Face-On
4	13.2327	21.5	Pk	34.4	-32.6	-40	-16.7	40.51	-57.21	0-360	Face-Off
5	13.5579	61.4	Pk	34.3	-32.6	-40	23.1	84	-60.9	0-360	Face-Off
6	13.887	21.49	Pk	34.2	-32.6	-40	-16.91	40.51	-57.42	0-360	Face-Off

Pk - Peak detector

SPURIOUS EMISSION 848Kbps

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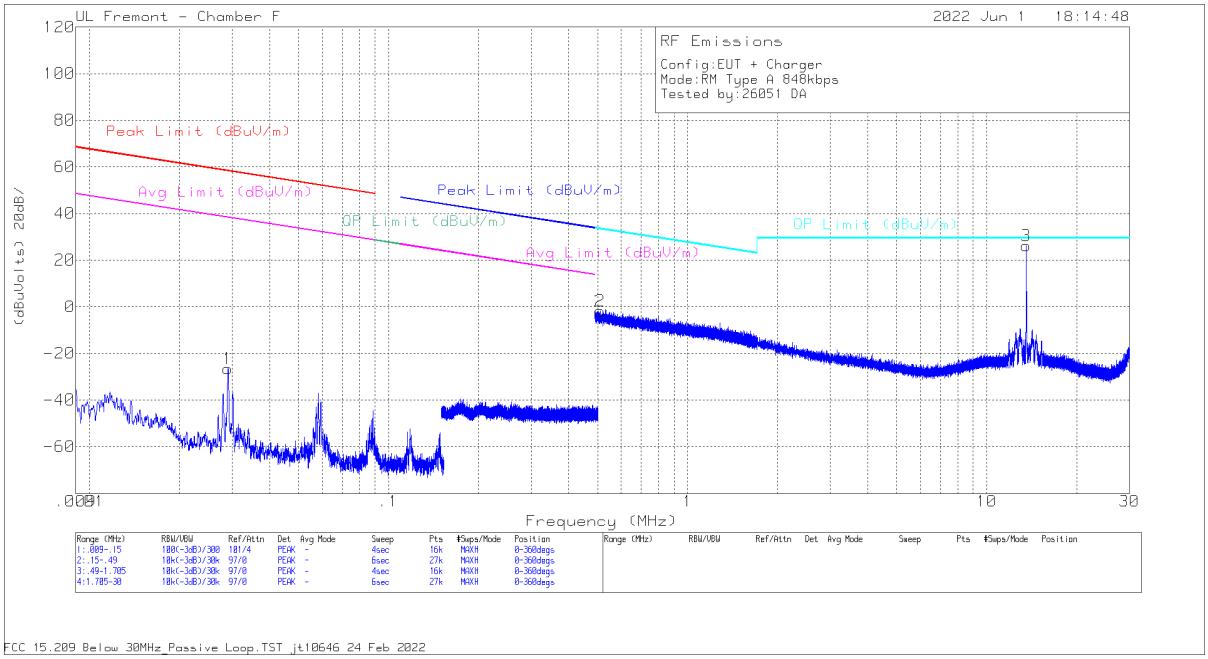

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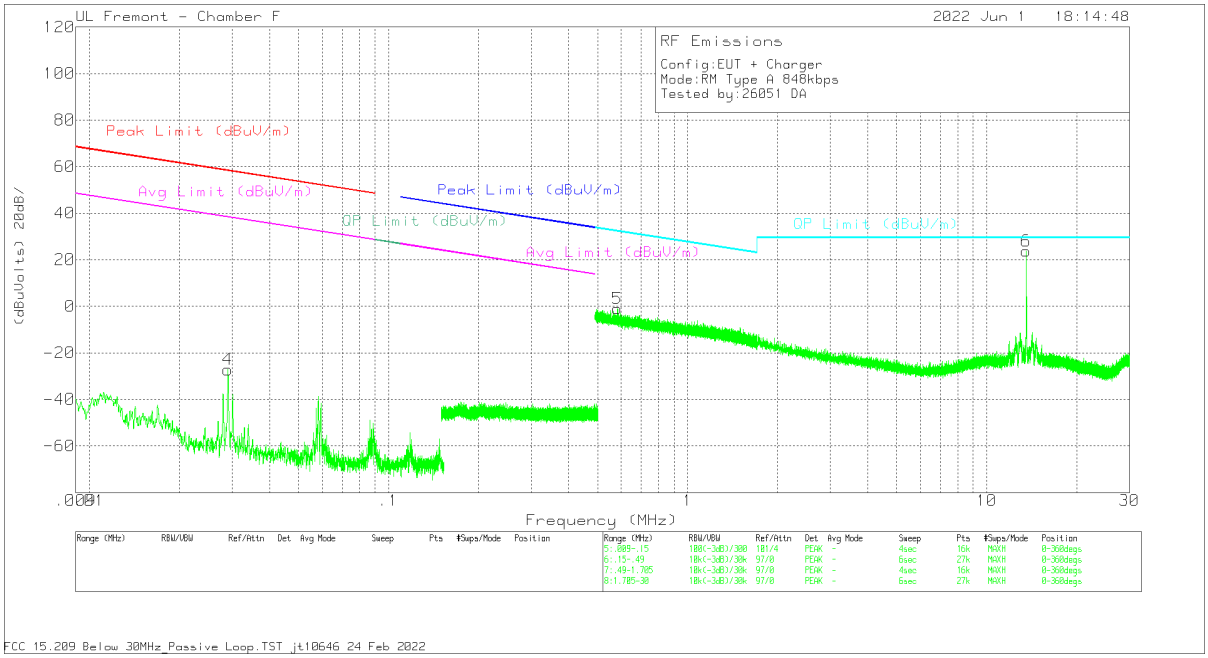


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.029	27.57	Pk	58.1	-32.2	-80	-26.53	58.33	-84.86	38.33	-64.86	0-360	Face-On
4	.029	26.88	Pk	58.1	-32.2	-80	-27.22	58.32	-85.54	38.32	-65.54	0-360	Face-Off

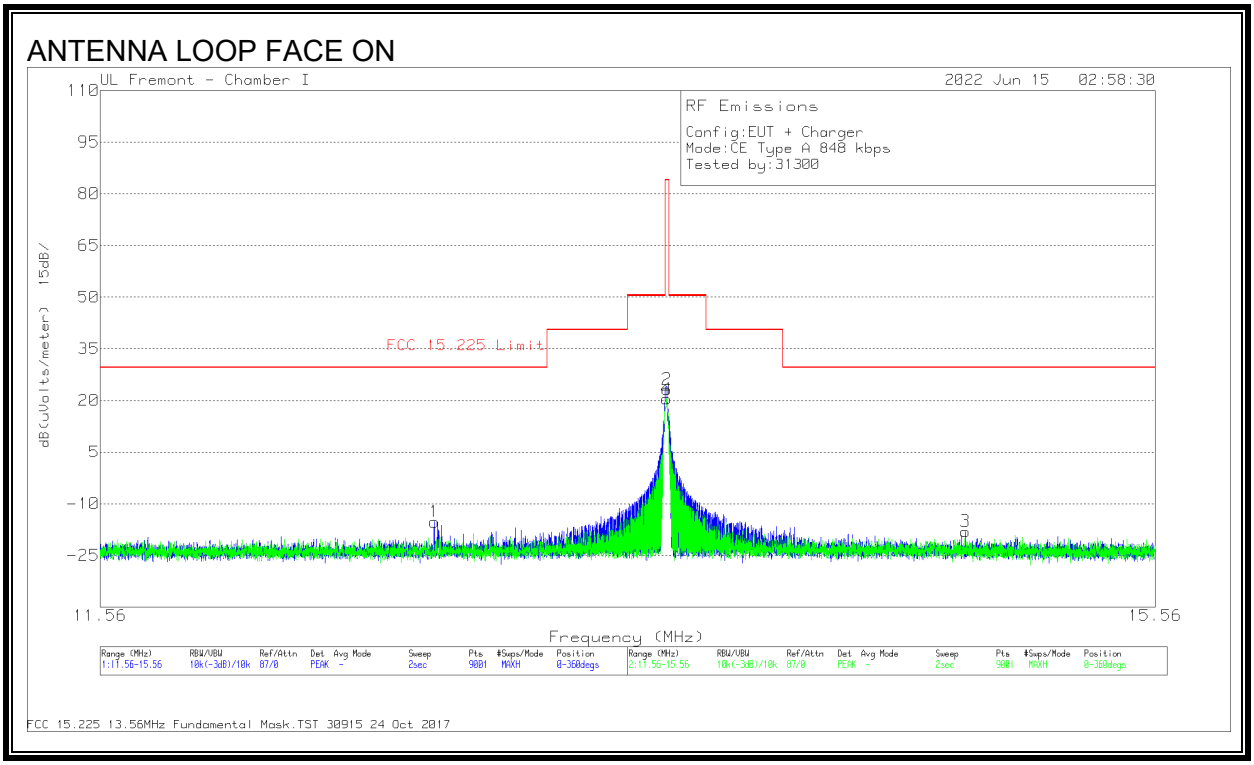
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.5095	18.58	Pk	52.2	-32.6	-40	-1.82	33.46	-35.28	0-360	Face-On
3	13.56	64.46	Pk	34.3	-32.6	-40	26.16	29.5	-3.34	0-360	Face-On
5	.5828	20.47	Pk	51.1	-32.6	-40	-1.03	32.3	-33.33	0-360	Face-Off
6	13.56	61.96	Pk	34.3	-32.6	-40	23.66	29.5	-5.84	0-360	Face-Off

Pk - Peak detector

Note: Marker 3 and 6 are fundamental signals.

8.2.2. CE MODE, TYPE A 848Kbps

FUNDAMENTAL



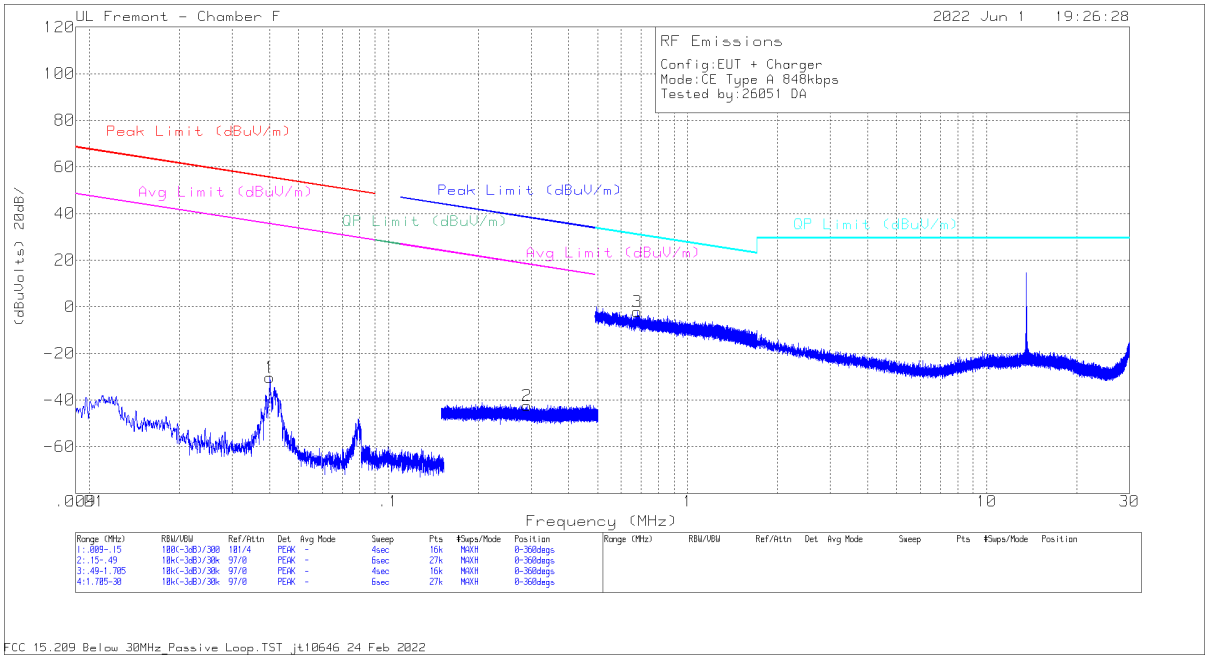
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.7015	21.86	Pk	34.5	-31.6	-40	-15.24	29.54	-44.78	0-360	Face-On
2	13.5607	60.5	Pk	34.3	-31.6	-40	23.2	84	-60.8	0-360	Face-On
3	14.7506	19.44	Pk	34.1	-31.6	-40	-18.06	29.54	-47.6	0-360	Face-Off
4	13.5593	57.71	Pk	34.3	-31.6	-40	20.41	84	-63.59	0-360	Face-Off

Pk - Peak detector

SPURIOUS EMISSION 848Kbps

ANTENNA LOOP FACE ON



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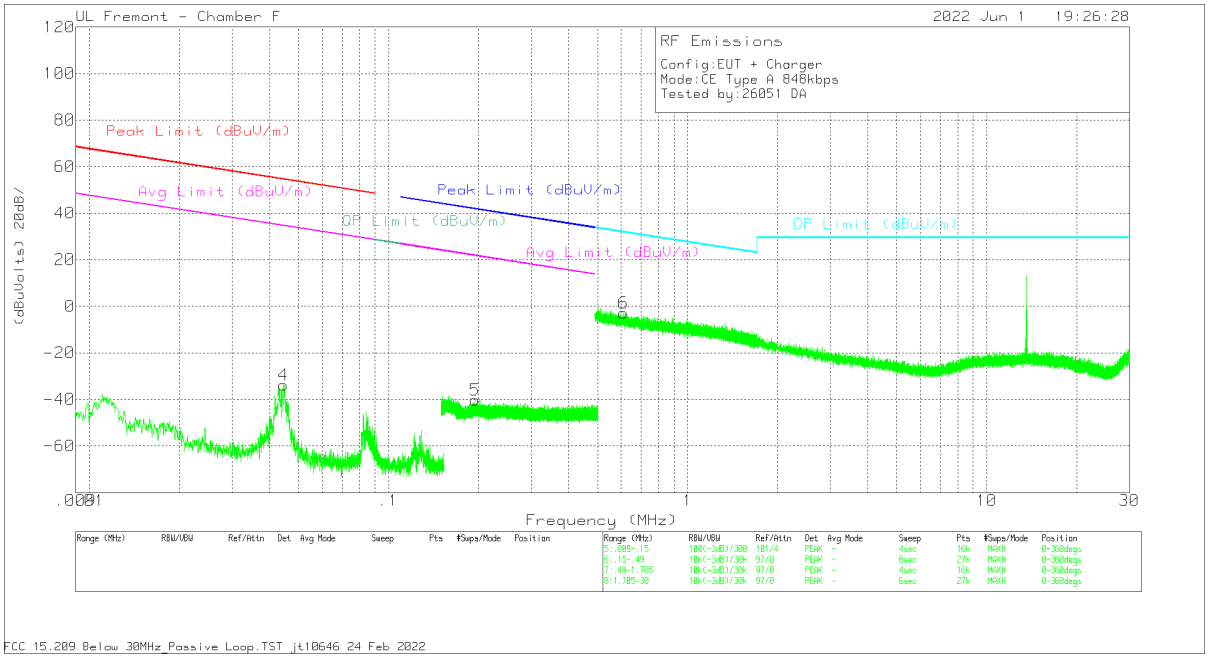


DATA

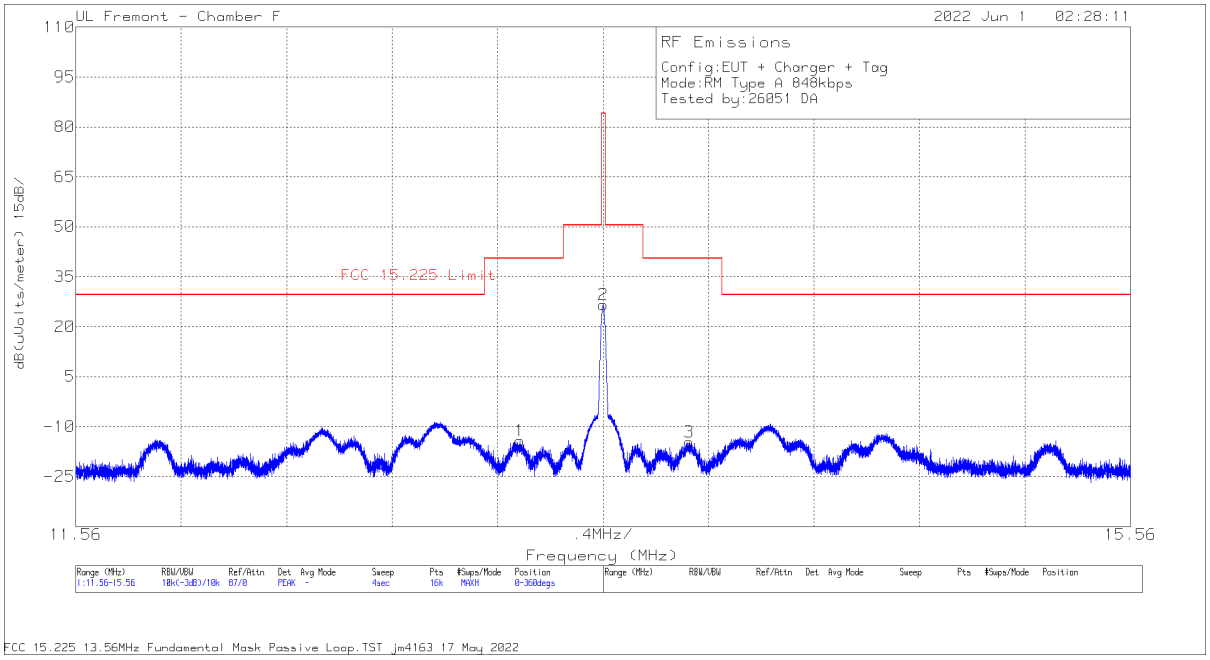
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0401	24.9	Pk	57.2	-32.4	-80	-30.3	55.52	-85.82	35.52	-65.82	0-360	Face-On
2	.2913	14.03	Pk	56.2	-32.6	-80	-42.37	38.33	-80.7	18.33	-60.7	0-360	Face-On
4	.0446	21.47	Pk	57.2	-32.4	-80	-33.73	54.61	-88.34	34.61	-68.34	0-360	Face-Off
5	.1944	16	Pk	56.3	-32.6	-80	-40.3	41.85	-82.15	21.85	-62.15	0-360	Face-Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
3	.6785	20.83	Pk	49.8	-32.6	-40	-1.97	30.98	-32.95	0-360	Face-On
6	.6107	19.04	Pk	50.7	-32.6	-40	-2.86	31.89	-34.75	0-360	Face-Off

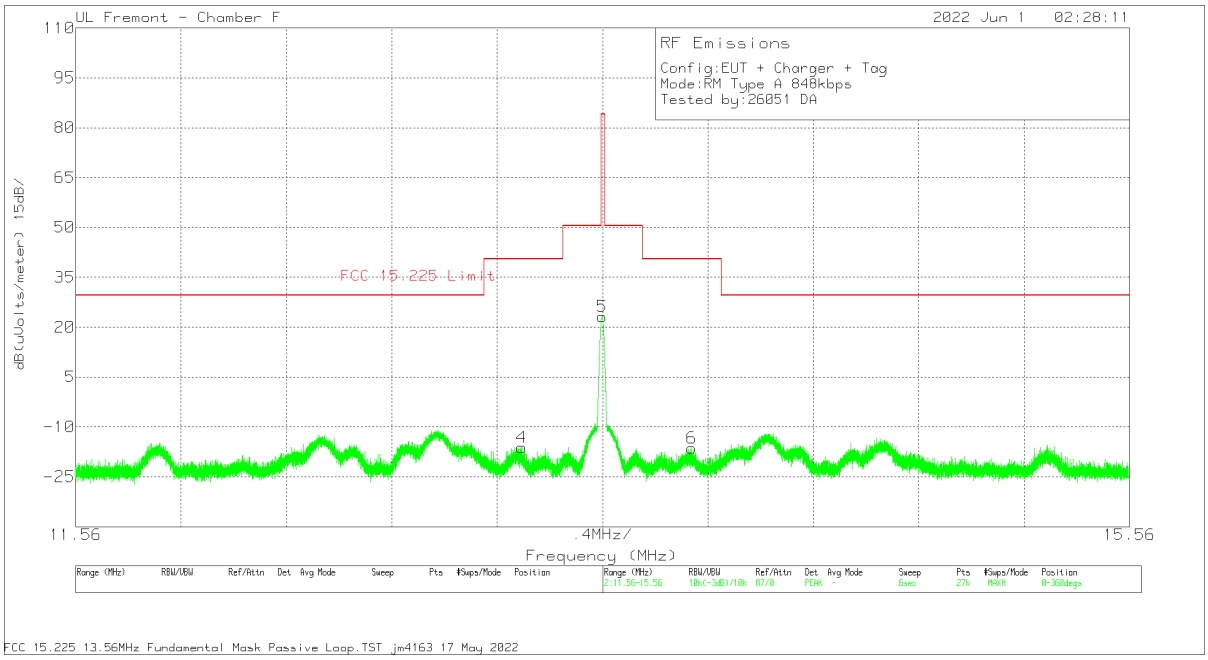
Pk - Peak detector

8.2.3. TAG MODE, TYPE A 848Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



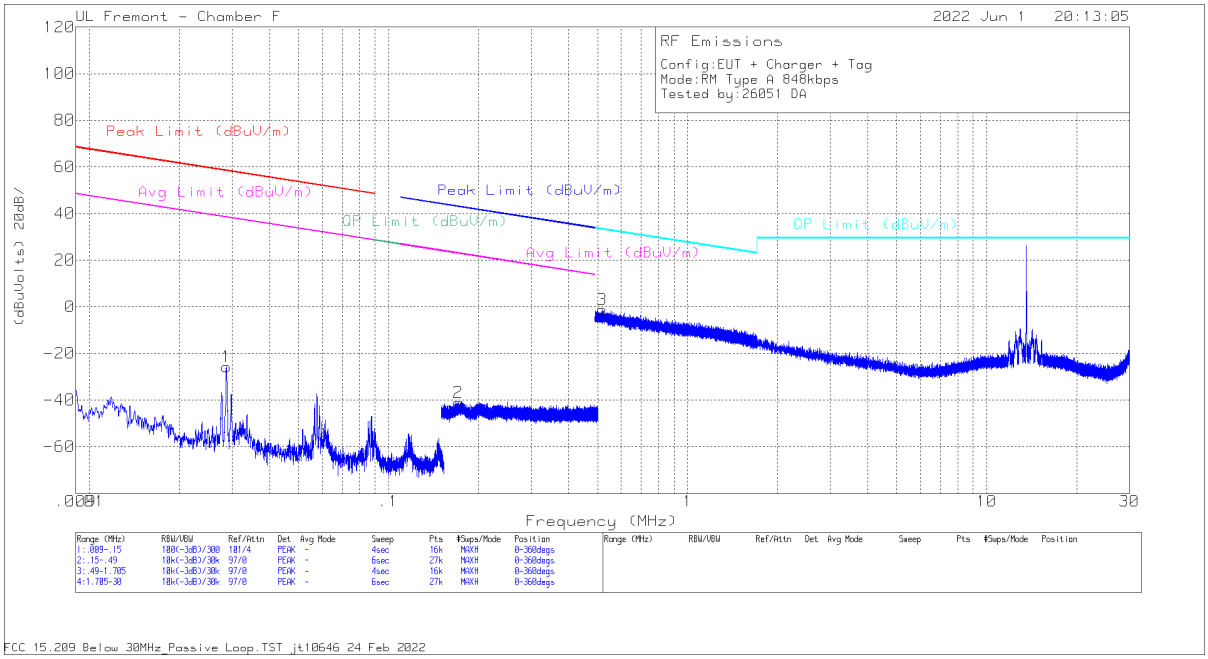
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.2438	23.89	Pk	34.4	-32.6	-40	-14.31	40.51	-54.82	0-360	Face-On
2	13.56	64.91	Pk	34.3	-32.6	-40	**26.61**	84	-57.39	0-360	Face-On
3	13.8878	23.76	Pk	34.2	-32.6	-40	-14.64	40.51	-55.15	0-360	Face-On
4	13.2532	22.21	Pk	34.3	-32.6	-40	-16.09	40.51	-56.6	0-360	Face-Off
5	13.5577	61.54	Pk	34.3	-32.6	-40	23.24	84	-60.76	0-360	Face-Off
6	13.8978	21.99	Pk	34.2	-32.6	-40	-16.41	40.51	-56.92	0-360	Face-Off

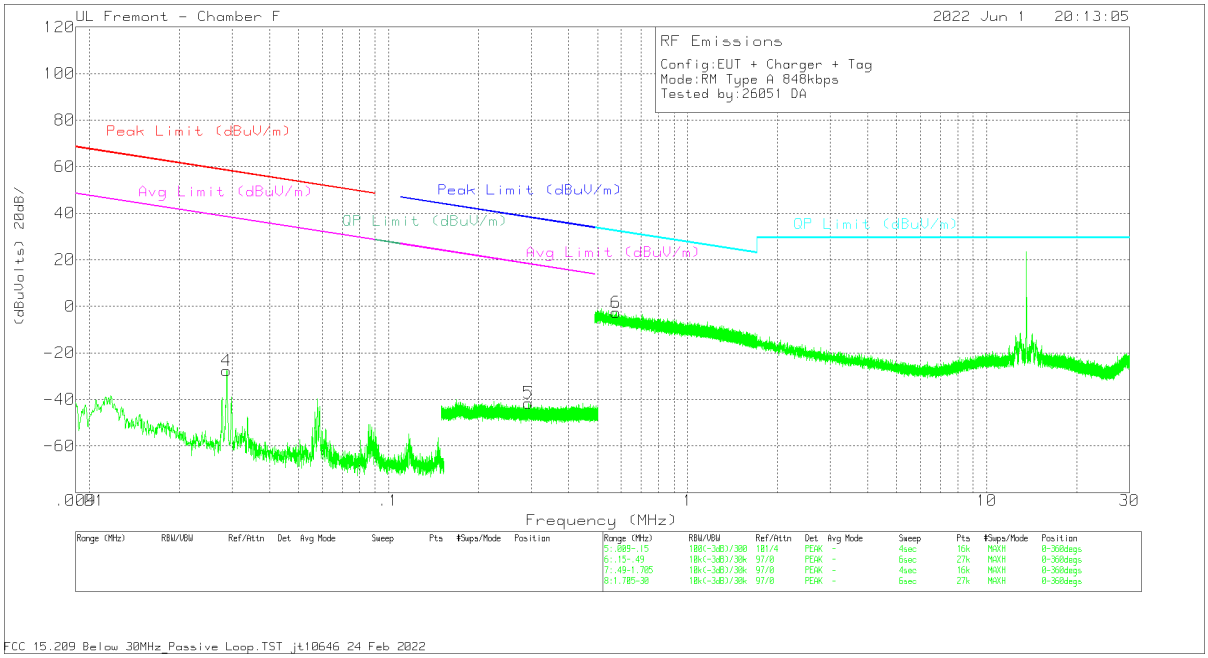
Pk - Peak detector

SPURIOUS EMISSION 848Kbps

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0287	28.3	Pk	58.1	-32.2	-80	-25.8	58.43	-84.23	38.43	-64.23	0-360	Face-On
2	.171	15.32	Pk	56.1	-32.6	-80	-41.18	42.96	-84.14	22.96	-64.14	0-360	Face-Off
4	.0288	26.54	Pk	58.1	-32.2	-80	-27.56	58.4	-85.96	38.4	-65.96	0-360	Face-On
5	.2929	14.91	Pk	56.2	-32.6	-80	-41.49	38.28	-79.77	18.28	-59.77	0-360	Face-Off

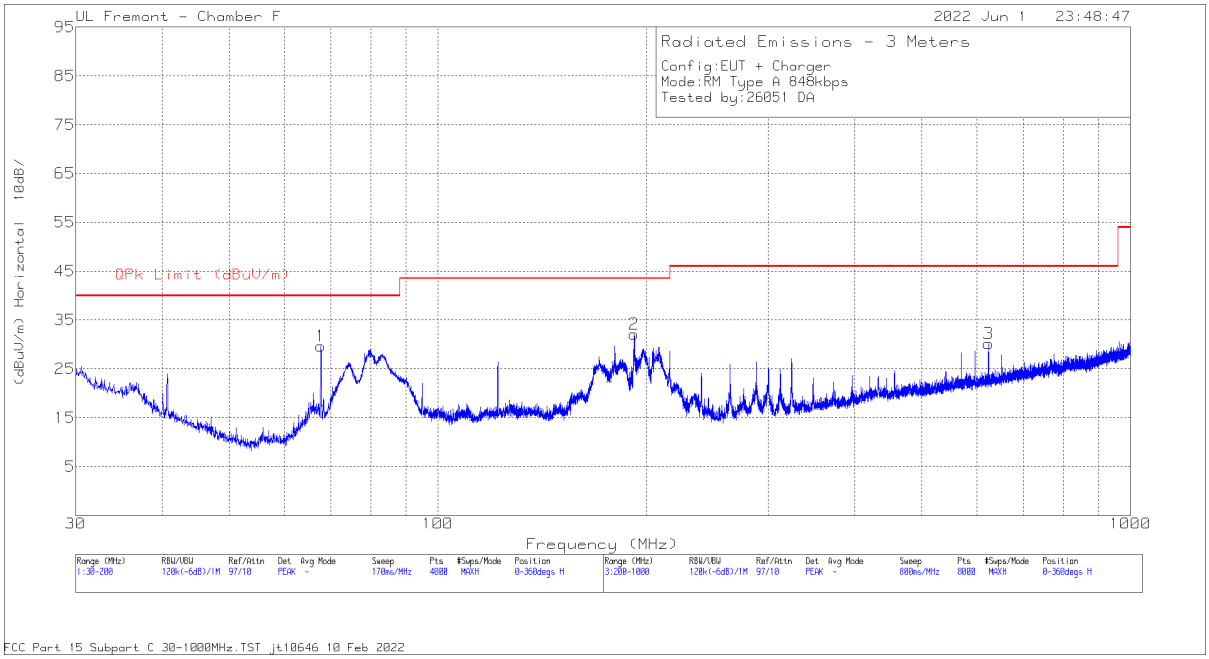
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
3	.5171	19.27	Pk	52.1	-32.6	-40	-1.23	33.33	-34.56	0-360	Face-On
6	.5772	18.79	Pk	51.2	-32.6	-40	-2.61	32.38	-34.99	0-360	Face-Off

Pk - Peak detector

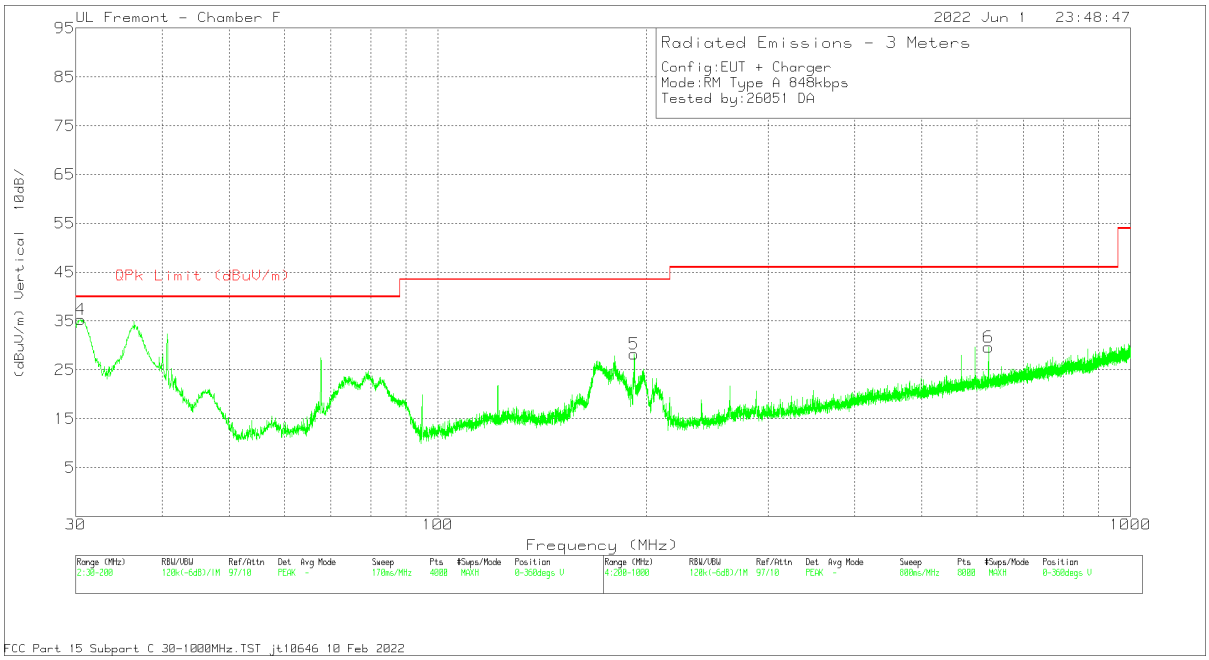
8.2.4. TX SPURIOUS EMISSION 30 TO 1000 MHz, EUT WITH AC/DC ADAPTER

READER MODE, TYPE A, SPURIOUS EMISSION 848Kbps

Horizontal



Vertical



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	67.7923	47.12	Pk	14.3	-31.7	29.72	40	-10.28	0-360	200	H
2	192.179	44.93	Pk	18.2	-31	32.13	43.52	-11.39	0-360	200	H
4	30.5101	39.86	Pk	27.4	-32	35.26	40	-4.74	0-360	100	V
5	192.179	41.04	Pk	18.2	-31	28.24	43.52	-15.28	0-360	100	V
3	623.755	33.49	Pk	26	-29.3	30.19	46.02	-15.83	0-360	300	H
6	623.755	32.98	Pk	26	-29.3	29.68	46.02	-16.34	0-360	99	V

Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
30.7883	37.15	Qp	27.2	-32	32.35	40	-7.65	194	102	V

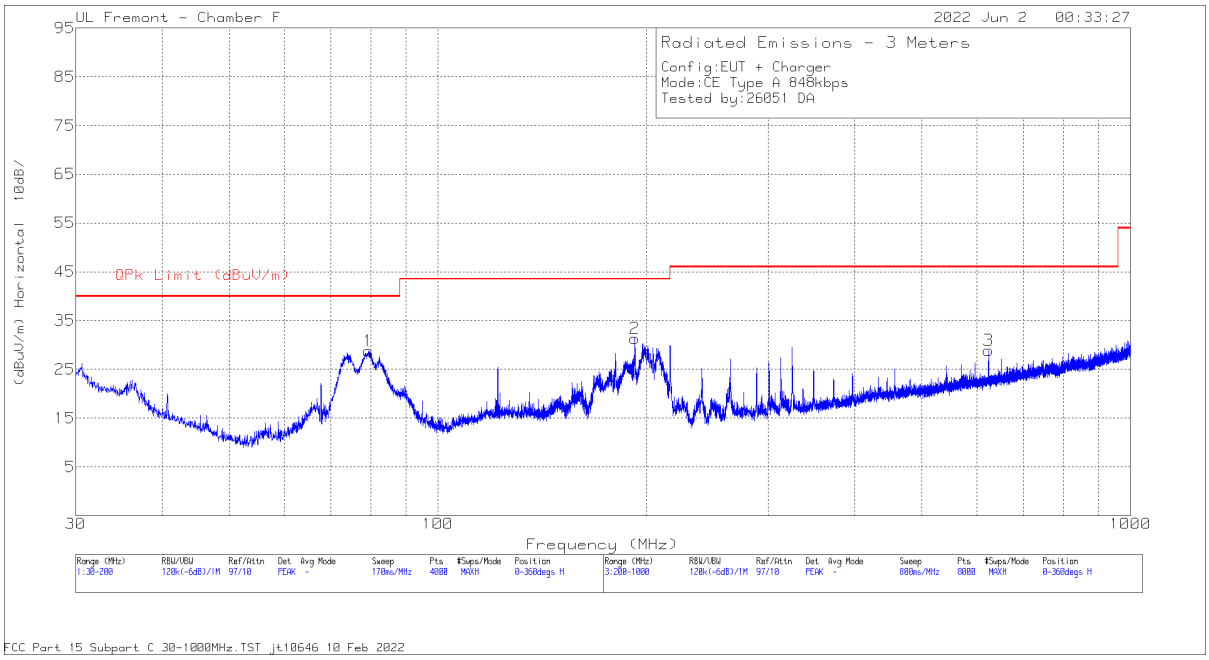
PK -Peak detector

Qp - Quasi-Peak detector

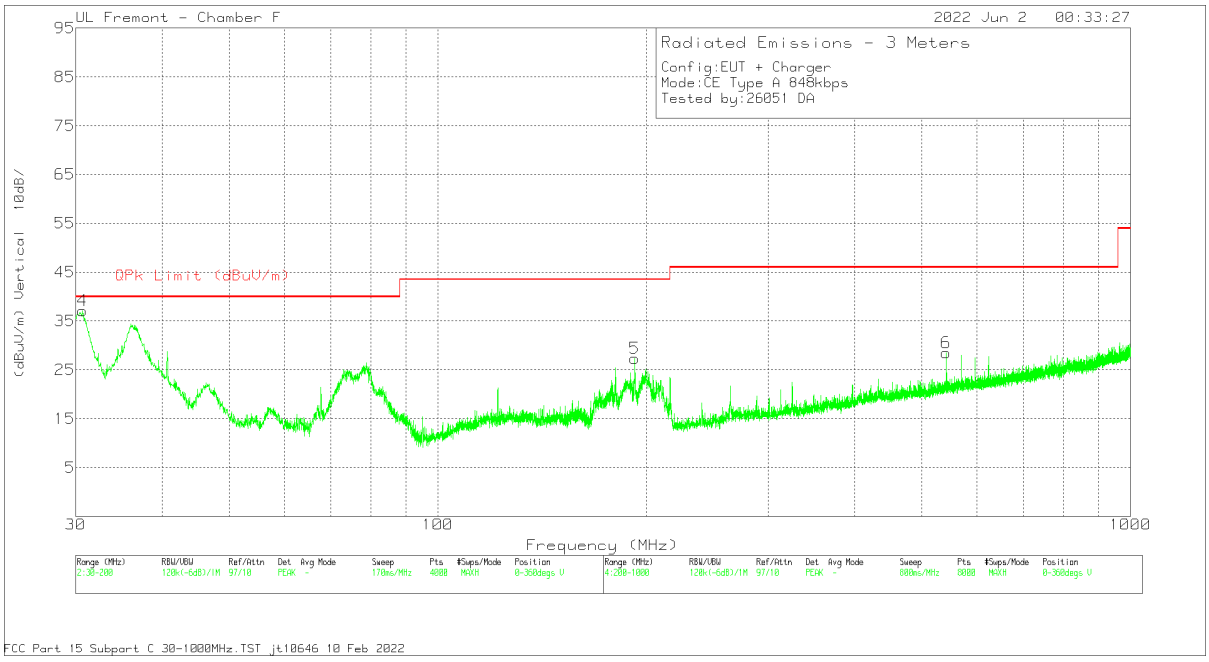
FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014
Rev 9.5 30 Apr 2020

CE Mode, Type A SPURIOUS EMISSION 848Kbps

Horizontal



Vertical



DATA

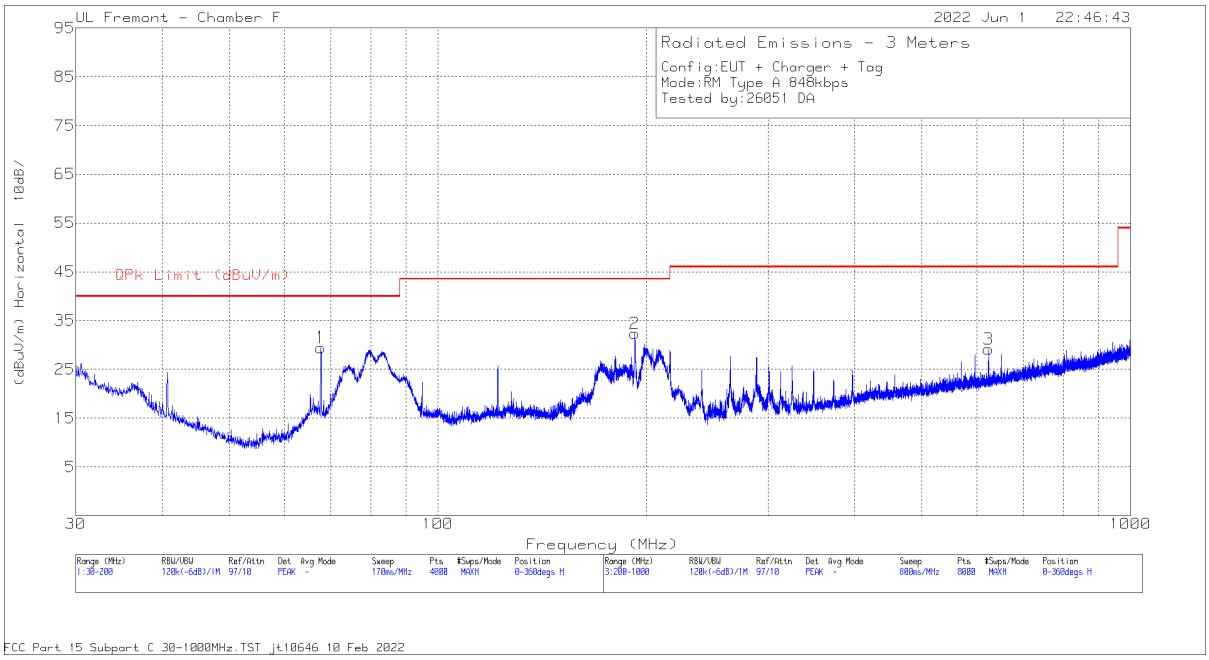
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	79.3978	46.24	Pk	14.1	-31.6	28.74	40	-11.26	0-360	199	H
2	192.477	44.16	Pk	18.2	-31	31.36	43.52	-12.16	0-360	102	H
4	30.6802	41.81	Pk	27.3	-32	37.11	40	-2.89	0-360	100	V
5	192.477	40.14	Pk	18.2	-31	27.34	43.52	-16.18	0-360	100	V
3	623.755	32.16	Pk	26	-29.3	28.86	46.02	-17.16	0-360	299	H
6	542.445	33.3	Pk	24.9	-29.7	28.5	46.02	-17.52	0-360	101	V

Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
30.5867	38.57	Qp	27.3	-32	33.87	40	-6.13	238	103	V

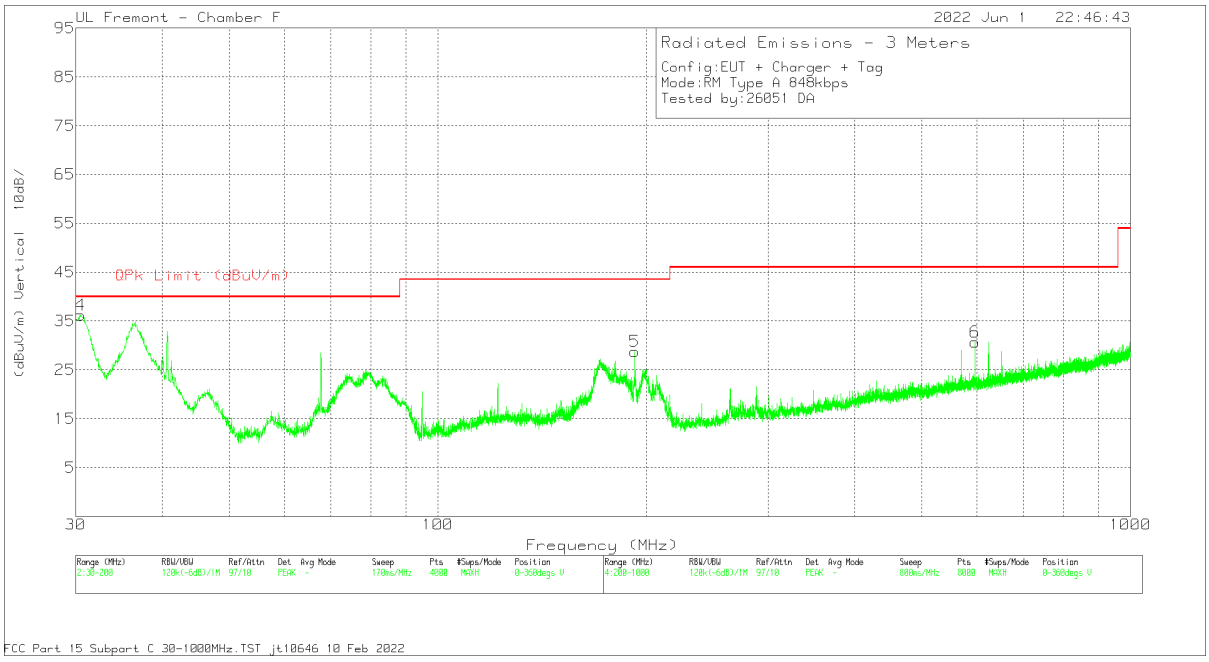
Pk - Peak detector
Qp - Quasi-Peak detector

TAG MODE, SPURIOUS EMISSION 848Kbps

Horizontal



Vertical



DATA

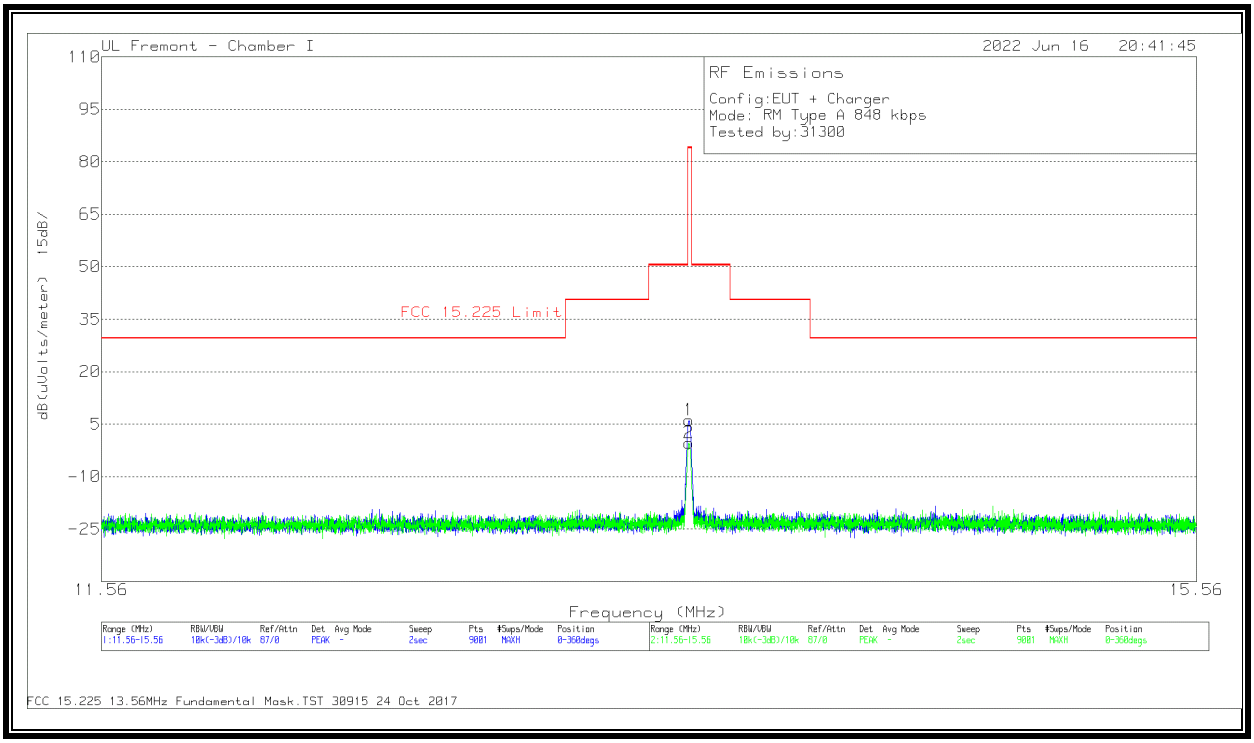
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	67.7923	46.87	Pk	14.3	-31.7	29.47	40	-10.53	0-360	200	H
2	192.477	45.2	Pk	18.2	-31	32.4	43.52	-11.12	0-360	200	H
4	30.4676	40.81	Pk	27.4	-32	36.21	40	-3.79	0-360	100	V
	30.484	37.65	Qp	27.4	-32	33.05	40	-6.95	284	101	V
5	192.392	41.58	Pk	18.2	-31	28.78	43.52	-14.74	0-360	100	V
3	623.755	32.43	Pk	26	-29.3	29.13	46.02	-16.89	0-360	300	H
6	596.652	34.83	Pk	25.5	-29.6	30.73	46.02	-15.29	0-360	99	V

PK – Peak detector
Qp - Quasi-Peak detector

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

8.3.1. READER MODE, TYPE A 848Kbps

FUNDAMENTAL



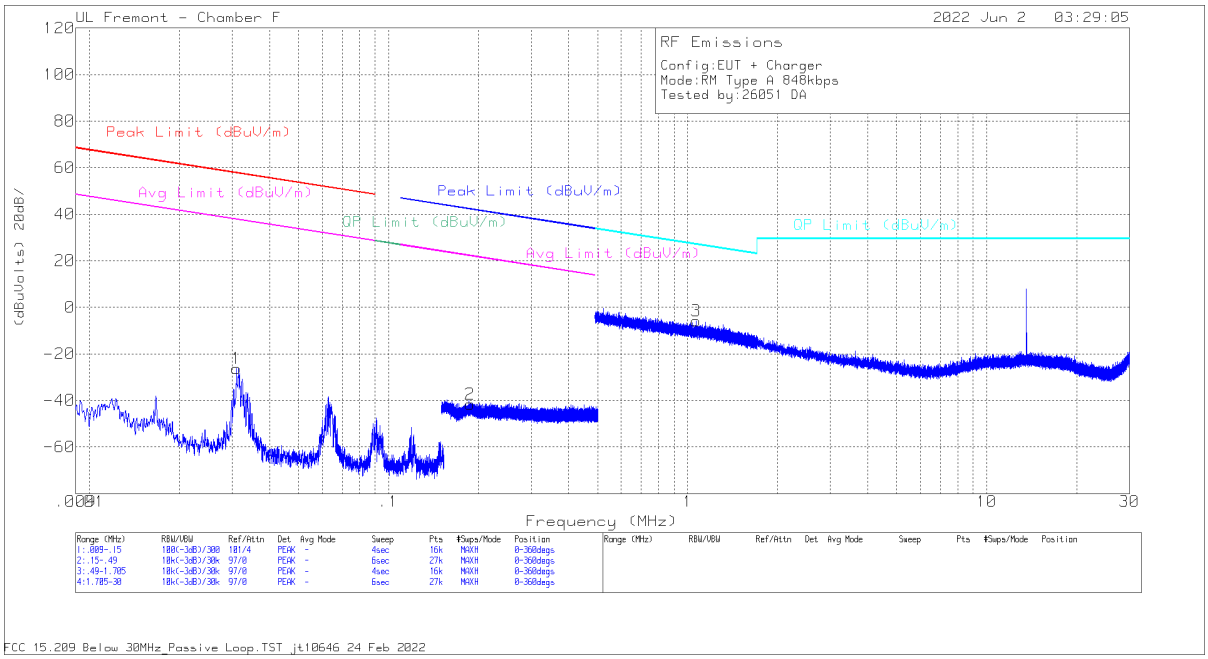
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.558	43.36	Pk	34.3	-31.6	-40	6.06	84	-77.94	0-360	Face-On
2	13.558	36.85	Pk	34.3	-31.6	-40	-.45	84	-84.45	0-360	Face-Off

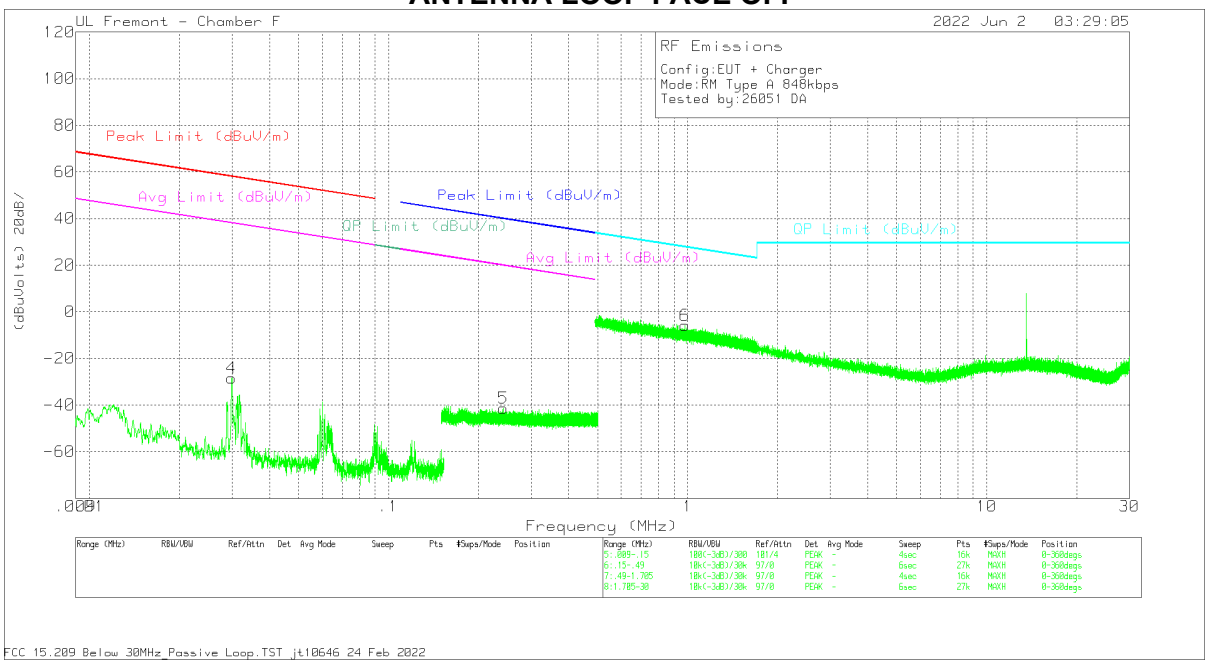
Pk - Peak detector

SPURIOUS EMISSION

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.031	27.9	Pk	57.9	-32.2	-80	-26.4	57.75	-84.15	37.75	-64.15	0-360	Face-On
2	.1874	14.77	Pk	56.2	-32.6	-80	-41.63	42.16	-83.79	22.16	-63.79	0-360	Face-On
4	.0299	25.73	Pk	58	-32.2	-80	-28.47	58.06	-86.53	38.06	-66.53	0-360	Face-Off
5	.2421	15.02	Pk	56.3	-32.6	-80	-41.28	39.93	-81.21	19.93	-61.21	0-360	Face-Off

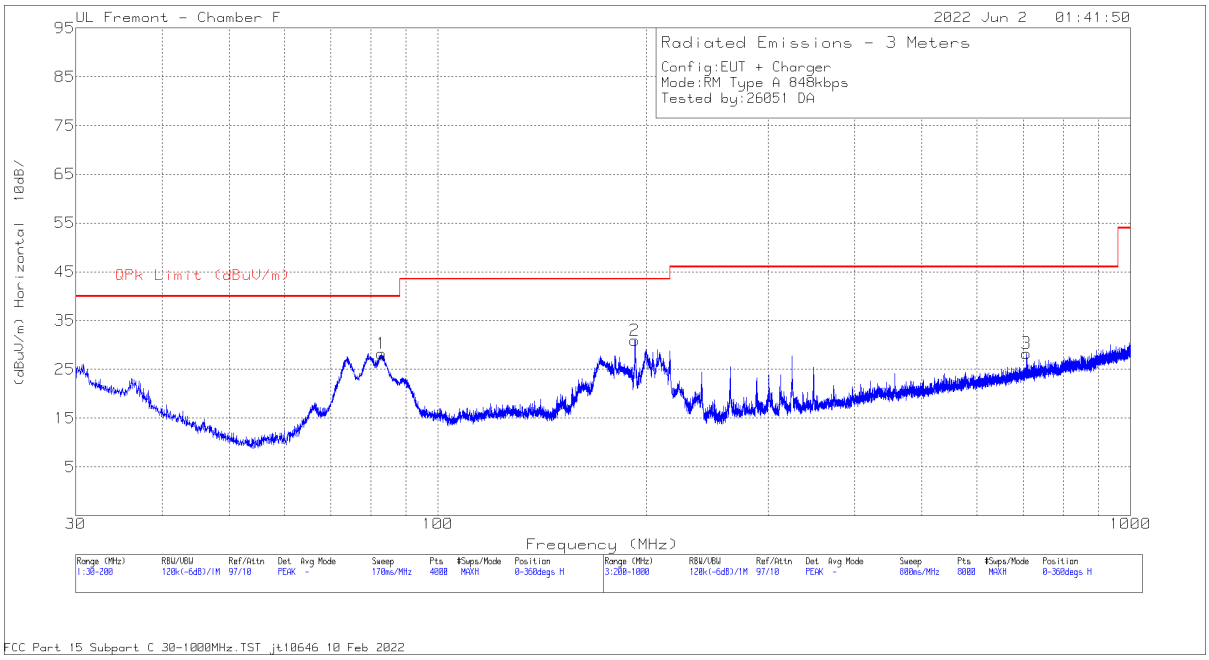
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
3	1.0687	20.26	Pk	46.5	-32.6	-40	-5.84	27.05	-32.89	0-360	Face-On
6	.9793	19.88	Pk	47	-32.6	-40	-5.72	27.8	-33.52	0-360	Face-Off

PK – Peak Detector
Qp - Quasi-Peak detector

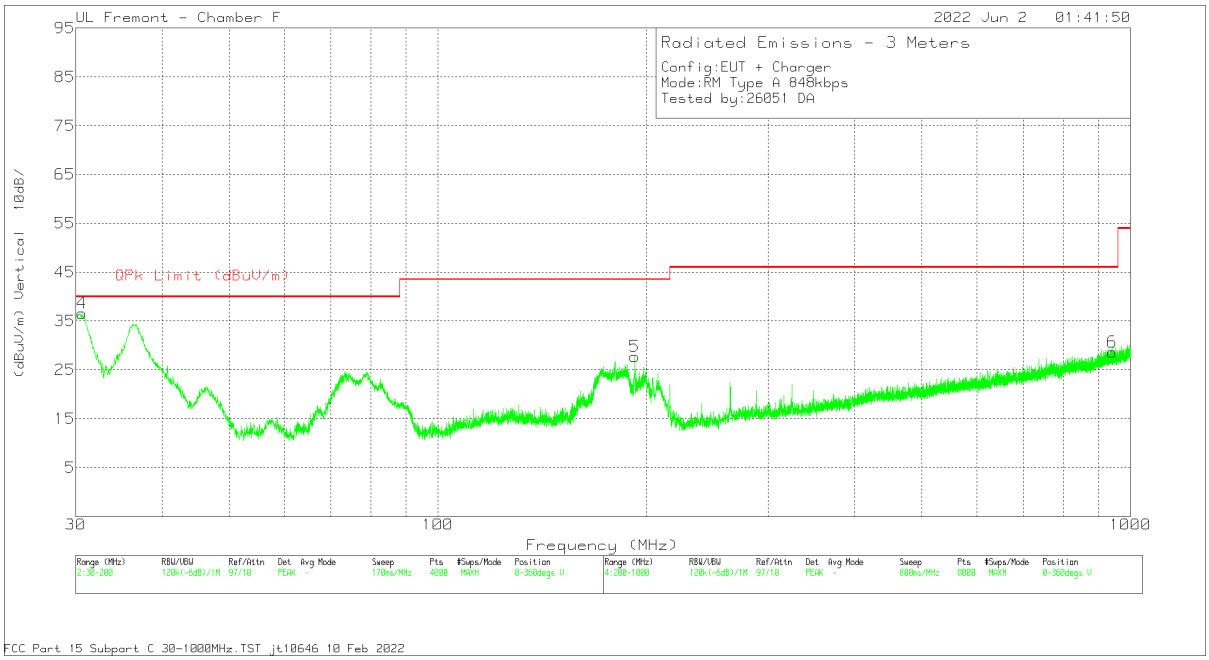
8.3.2. TX SPURIOUS EMISSION 30 TO 1000 MHz, EUT WITH AC/DC ADAPTER

Type A (Reader Mode),SPURIOUS EMISSION 848Kbps

Horizontal



Vertical



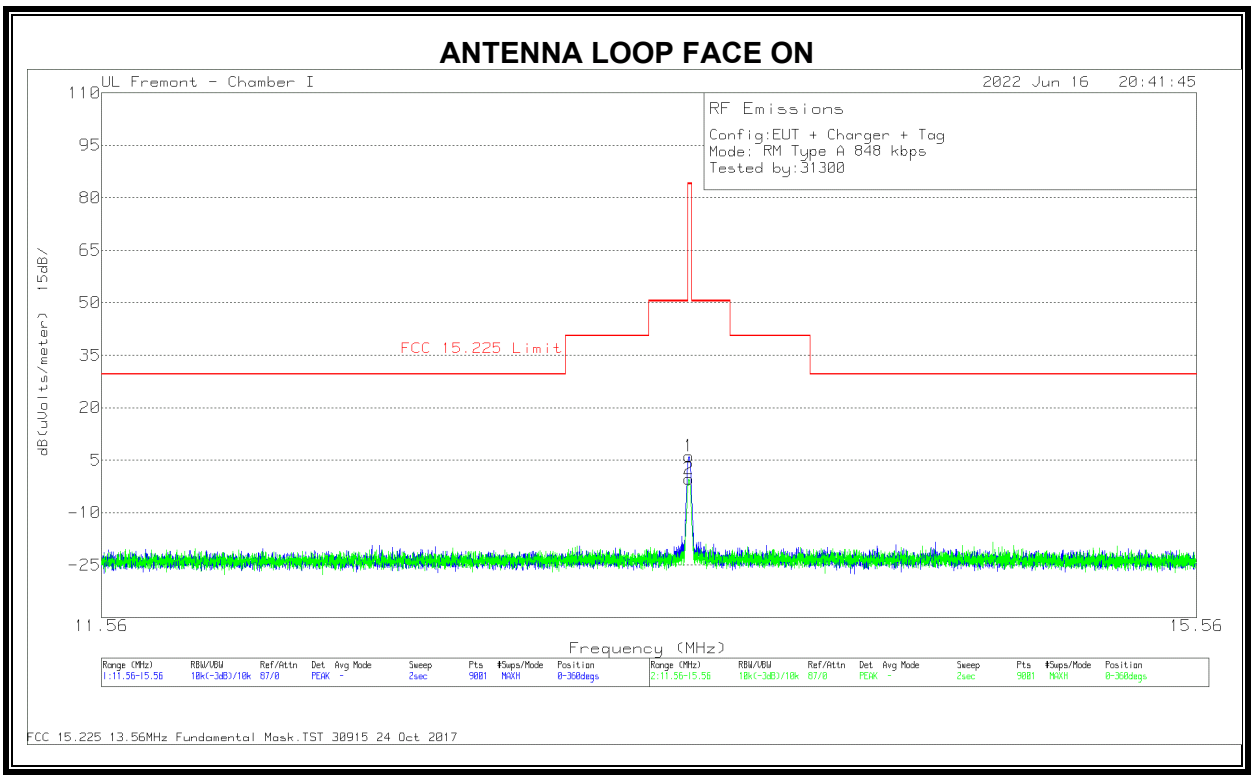
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	82.9262	45.9	Pk	14	-31.6	28.3	40	-11.7	0-360	299	H
2	192.562	43.76	Pk	18.2	-31	30.96	43.52	-12.56	0-360	99	H
4	30.5952	41.26	Pk	27.3	-32	36.56	40	-3.44	0-360	100	V
	30.6009	38.26	Qp	27.3	-32	33.56	40	-6.44	232	104	V
5	192.435	40.5	Pk	18.2	-31	27.7	43.52	-15.82	0-360	100	V
3	708.166	30.41	Pk	27.1	-29.2	28.31	46.02	-17.71	0-360	200	H
6	941.396	26.47	Pk	29.8	-27.6	28.67	46.02	-17.35	0-360	200	V

Pk - Peak detector
Qp - Quasi-Peak detector

8.3.3. TAG MODE, TYPE A 848Kbps

FUNDAMENTAL

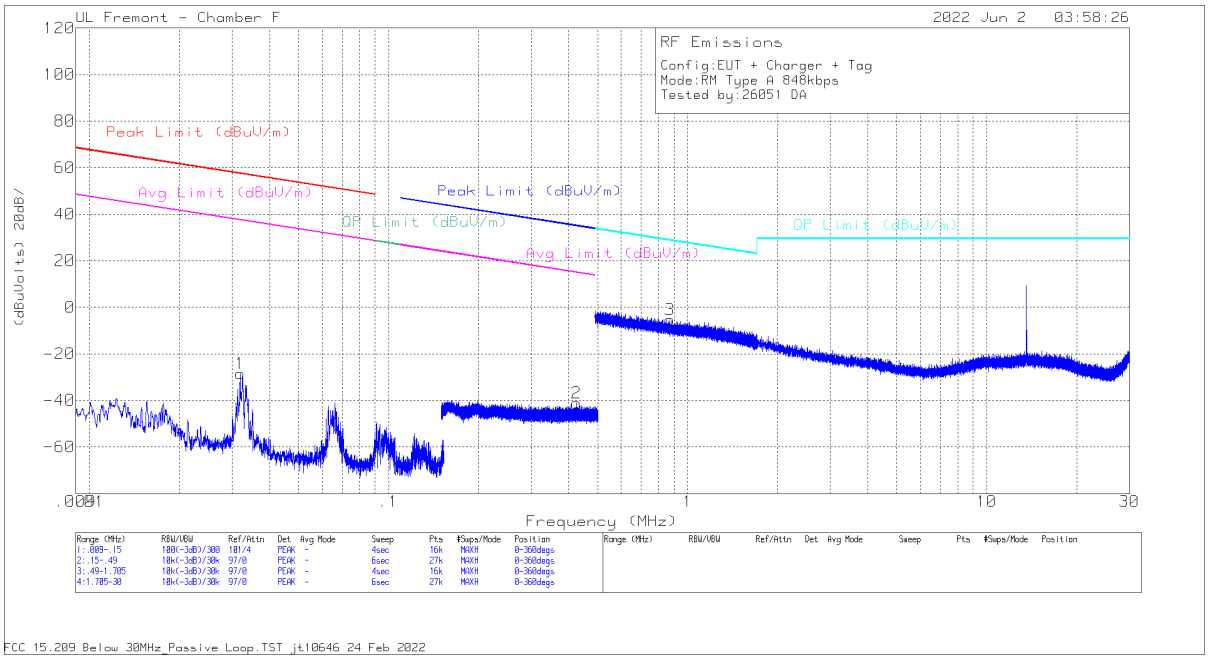


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.558	43.91	Pk	34.3	-31.6	-40	6.61	84	-77.39	0-360	Face-On
2	13.558	40.32	Pk	34.3	-31.6	-40	3.02	84	-80.98	0-360	Face-Off

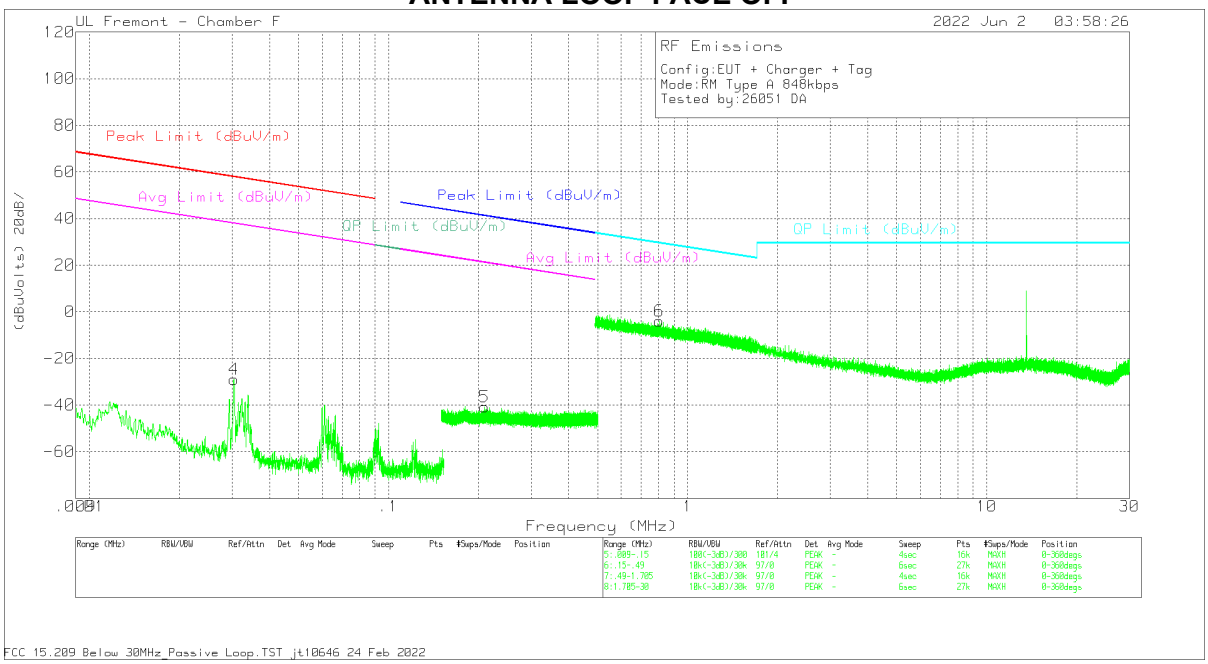
Pk - Peak detector

SPURIOUS EMISSION

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0319	26.13	Pk	57.8	-32.3	-80	-28.37	57.5	-85.87	37.5	-65.87	0-360	Face-On
2	.4251	15.19	Pk	56.2	-32.6	-80	-41.21	35.04	-76.25	15.04	-56.25	0-360	Face-On
4	.0304	25.31	Pk	58	-32.2	-80	-28.89	57.93	-86.82	37.93	-66.82	0-360	Face-Off
5	.2091	15.46	Pk	56.3	-32.6	-80	-40.84	41.21	-82.05	21.21	-62.05	0-360	Face-Off

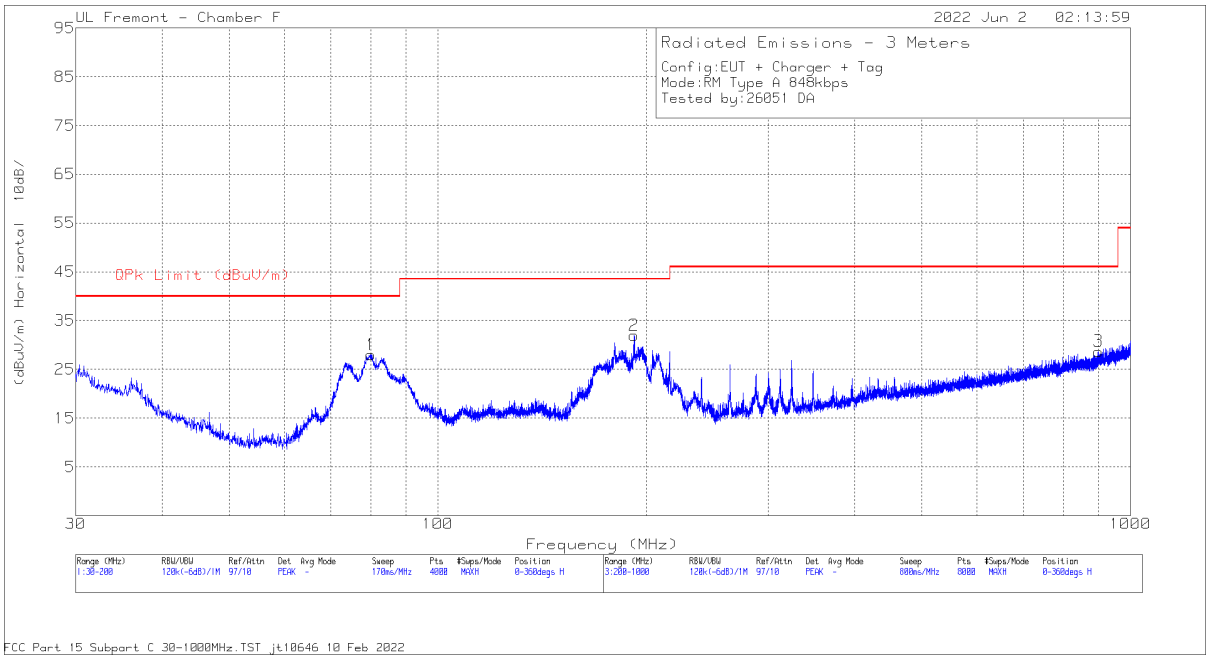
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Amp/Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuV/m))	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
3	.8737	19.56	Pk	47.7	-32.5	-40	-5.24	28.79	-34.03	0-360	Face-On
6	.8049	20.16	Pk	48.4	-32.6	-40	-4.04	29.5	-33.54	0-360	Face-Off

Pk - Peak detector

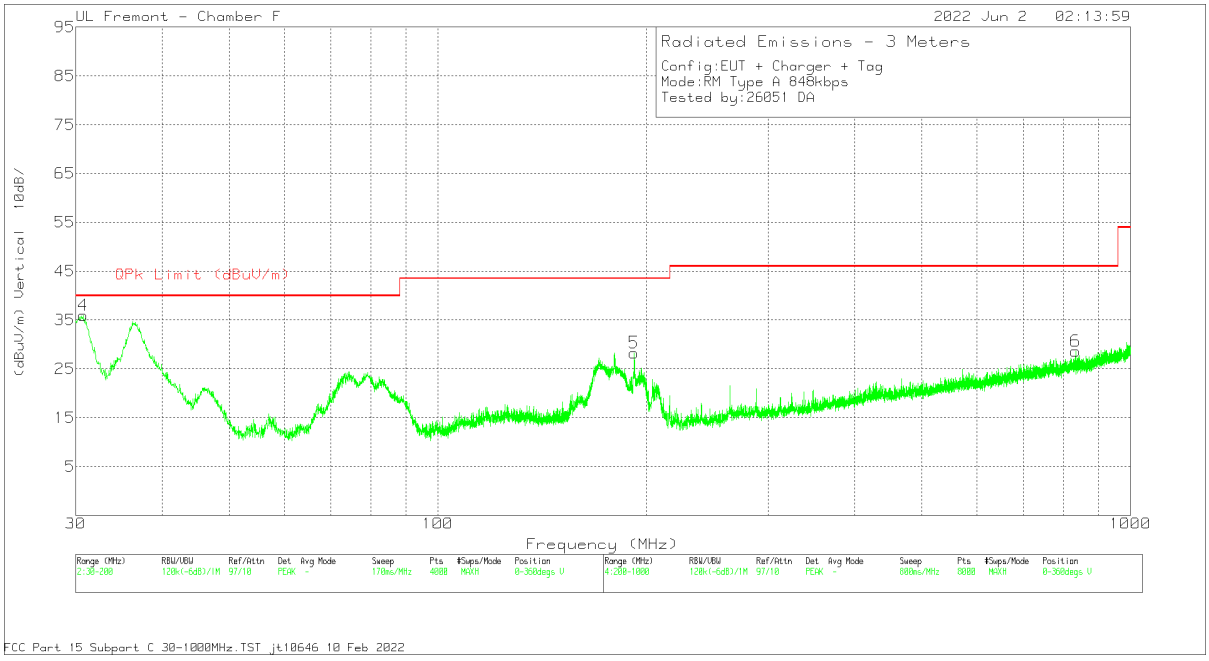
8.3.4. TX SPURIOUS EMISSION 30 TO 1000 MHz, EUT WITH AC/DC ADAPTER

Type A (Reader Mode),SPURIOUS EMISSION 848Kbps

Horizontal



Vertical



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF 204044 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	80.0355	45.55	Pk	14.1	-31.6	28.05	40	-11.95	0-360	200	H
2	192.179	44.73	Pk	18.2	-31	31.93	43.52	-11.59	0-360	200	H
4	30.7227	40.71	Pk	27.2	-32	35.91	40	-4.09	0-360	101	V
	30.7397	37.65	Qp	27.2	-32	32.85	40	-7.15	239	108	V
5	192.094	41.11	Pk	18.2	-31	28.31	43.52	-15.21	0-360	101	V
3	898.491	27.7	Pk	29.1	-28.1	28.7	46.02	-17.32	0-360	101	H
6	833.282	28.32	Pk	28.7	-28.4	28.62	46.02	-17.4	0-360	200	V

Pk - Peak detector
Qp - Quasi-Peak detector

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.

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:	31300	Date:	6/6/2022

9.1. PRIMARY ANTENNA

READER MODE, TYPE A 848Kbps

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	13.55983307	0.525	13.55984246	-0.167	13.55984715	-0.513	13.55985231	-0.894	± 100
	40	13.55983007	0.747	13.55982742	0.942	13.55982647	1.012	13.55982648	1.012	± 100
	30	13.5598767	-2.692	13.55986313	-1.692	13.55985056	-0.765	13.5598408	-0.045	± 100
3.80	***20***	***13.55984019***	***0.000***	***13.55983994***	***0.019***	***13.55983964***	***0.040***	***13.55983927***	***0.068***	***± 100***
	10	13.55985467	-1.068	13.5598579	-1.306	13.55985952	-1.425	13.5598613	-1.556	± 100
	0	13.55988058	-2.978	13.55988458	-3.274	13.55988848	-3.561	13.55989253	-3.860	± 100
	-10	13.55991171	-5.274	13.55991726	-5.683	13.55992276	-6.089	13.5599301	-6.630	± 100
	-20	13.55994937	-8.052	13.55995515	-8.478	13.55995803	-8.690	13.55996339	-9.085	± 100
3.23	20	13.5598352	0.368	13.55983488	0.392	13.55983479	0.399	13.55983466	0.408	± 100
4.37	20	13.55983913	0.078	13.55983976	0.032	13.55984013	0.005	13.55984055	-0.026	± 100

CE MODE, TYPE A 848Kbps

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	13.56049441	-13.298	13.56037017	-4.136	13.56023091	6.134	13.56012376	14.036	± 100
	40	13.56013193	13.433	13.56031709	-0.222	13.56022198	6.793	13.5603234	-0.687	± 100
	30	13.560219	7.012	13.56011907	14.382	13.56023989	5.472	13.56035776	-3.221	± 100
3.80	***20***	***13.56031409***	***0.000***	***13.56013411***	***13.273***	***13.56002651***	***21.207***	***13.56005179***	***19.343***	***± 100***
	10	13.56057409	-19.174	13.56004143	20.107	13.56027419	2.942	13.56039677	-6.098	± 100
	0	13.56009625	16.065	13.56021558	7.264	13.56065549	-25.177	13.56026183	3.854	± 100
	-10	13.56014373	12.563	13.5605227	-15.384	13.56022839	6.320	13.56025724	4.192	± 100
	-20	13.56038664	-5.351	13.56012288	14.100	13.56050279	-13.916	13.56041536	-7.469	± 100
3.23	20	13.56018195	9.744	13.55996379	25.833	13.56029783	1.199	13.56014304	12.614	± 100
4.37	20	13.56030083	0.978	13.56055022	-17.414	13.56027968	2.537	13.56013495	13.211	± 100

TAG 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	13.55983502	-0.353	13.55984137	-0.822	13.55984475	-1.071	13.55985318	-1.693	± 100
	40	13.55984256	-0.910	13.55984198	-0.867	13.55984163	-0.841	13.55984172	-0.848	± 100
	30	13.55982648	0.277	13.55982648	0.276	13.5598265	0.275	13.55982664	0.265	± 100
3.80	***20***	***13.55983023***	***0.000***	***13.55983193***	***-0.125***	***13.5598324***	***-0.160***	***13.55983302***	***-0.206***	***± 100***
	10	13.55984622	-1.179	13.5598485	-1.348	13.5598507	-1.510	13.55985336	-1.706	± 100
	0	13.55987166	-3.055	13.55987539	-3.331	13.55987958	-3.639	13.55988424	-3.983	± 100
	-10	13.55990168	-5.270	13.55990716	-5.673	13.5599128	-6.089	13.55991822	-6.489	± 100
	-20	13.55992672	-7.116	13.55993511	-7.734	13.55994192	-8.237	13.55995049	-8.869	± 100
3.23	20	13.55983122	-0.073	13.5598306	-0.028	13.55983058	-0.026	13.55983126	-0.076	± 100
4.37	20	13.5598336	-0.248	13.5598353	-0.374	13.55983587	-0.416	13.55983646	-0.460	± 100

9.2. SECONDARY ANTENNA

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 Measureed 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)
	50	13.55993	3.296	13.55993494	2.931	13.55993836	2.679	13.55994478	2.206	± 100
	40	13.55992566	3.616	13.55992341	3.782	13.55992249	3.849	13.55992256	3.844	± 100
	30	13.5599395	2.595	13.55993523	2.910	13.55993103	3.220	13.55992934	3.345	± 100
3.80	***20***	***13.55997469***	***0.000***	***13.55995906***	***1.153***	***13.5599588***	***1.172***	***13.55995494***	***1.457***	***± 100***
	10	13.5600071	-2.390	13.56000209	-2.021	13.55999698	-1.644	13.55999092	-1.197	± 100
	0	13.56003391	-4.367	13.5600304	-4.109	13.56002674	-3.839	13.56002326	-3.582	± 100
	-10	13.56004877	-5.463	13.56004732	-5.357	13.56004614	-5.269	13.56004544	-5.217	± 100
	-20	13.56002883	-3.993	13.56003858	-4.712	13.56004603	-5.261	13.56005388	-5.840	± 100
3.23	20	13.55995205	1.670	13.55994943	1.863	13.55994852	1.930	13.55994642	2.085	± 100
4.37	20	13.55994803	1.966	13.55994809	1.961	13.55994772	1.989	13.55994707	2.037	± 100

TAG 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 Measureed 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)
	50	13.55993871	-1.536	13.55994803	-2.223	13.55995434	-2.688	13.55996438	-3.429	± 100
	40	13.55995415	-2.674	13.55995023	-2.386	13.5599466	-2.118	13.55994336	-1.879	± 100
	30	13.55993562	-1.308	13.55993034	-0.918	13.55992478	-0.508	13.55992206	-0.308	± 100
3.80	***20***	***13.55991789***	***0.000***	***13.55991826***	***-0.028***	***13.55991941***	***-0.113***	***13.55992078***	***-0.214***	***± 100***
	10	13.55994462	-1.972	13.55994826	-2.240	13.55994922	-2.311	13.559951	-2.442	± 100
	0	13.5599673	-3.644	13.55997141	-3.947	13.55997547	-4.247	13.55998138	-4.683	± 100
	-10	13.55999122	-5.408	13.5600014	-6.159	13.56000587	-6.488	13.56001249	-6.977	± 100
	-20	13.56003476	-8.619	13.56003918	-8.945	13.56004297	-9.224	13.56004668	-9.498	± 100
3.23	20	13.55992122	-0.246	13.55992173	-0.283	13.55992216	-0.315	13.55992908	-0.826	± 100
4.37	20	13.55992514	-0.535	13.55992606	-0.603	13.55992703	-0.674	13.55992797	-0.744	± 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

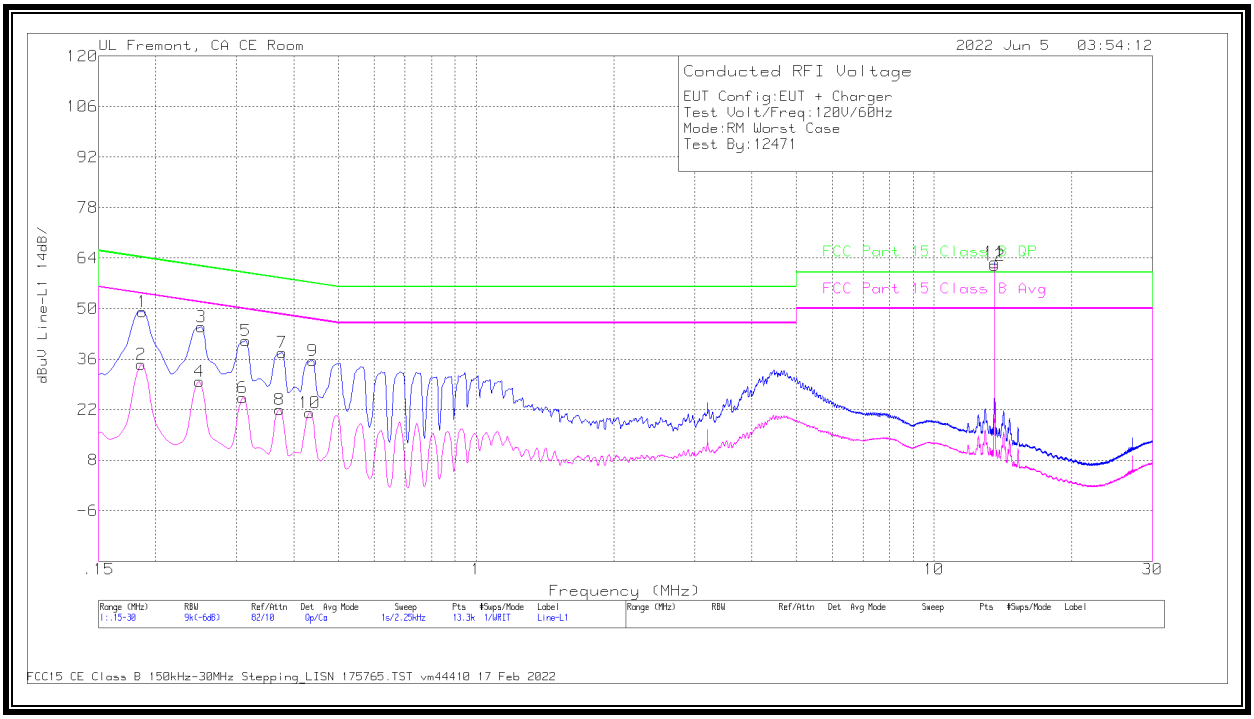
RESULTS

No non-compliance noted:

10.1. PRIMARY ANTENNA

10.1.1. Reader Mode, NORMAL OPERATION

LINE 1 RESULTS



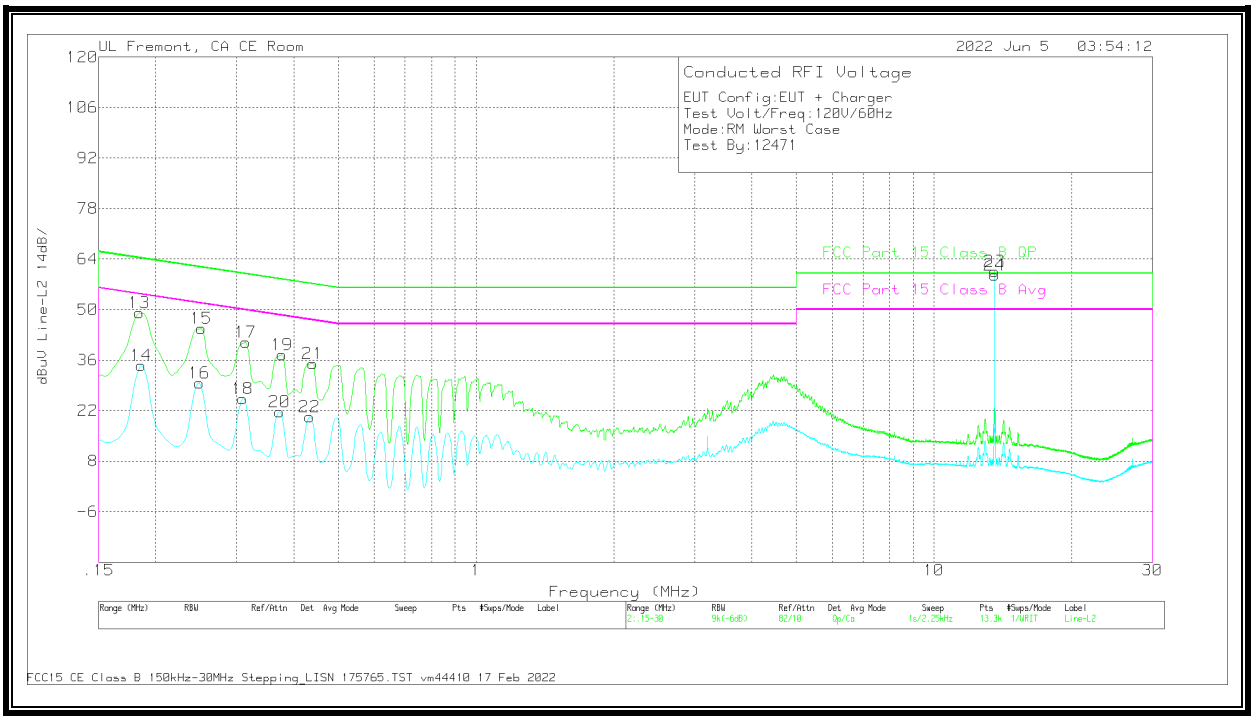
Worst Emission

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR) Margin (dB)
2	.186	24.34	Ca	.1	0	10.1	34.54	-	-	54.21	-19.67
4	.249	20.27	Ca	0	0	9.5	29.77	-	-	51.79	-22.02
6	.3098	15.82	Ca	0	0	9.5	25.32	-	-	49.98	-24.66
8	.3728	12.57	Ca	0	0	9.5	22.07	-	-	48.44	-26.37
10	.4335	11.65	Ca	0	0	9.5	21.15	-	-	47.19	-26.04
12	13.56	52.23	Ca	.1	.2	9.5	62.03	-	-	**50**	**12.03**
1	.1871	39	Qp	.1	0	10.1	49.2	64.16	-14.96	-	-
3	.2513	35.44	Qp	0	0	9.5	44.94	61.72	-16.78	-	-
5	.3143	31.68	Qp	0	0	9.5	41.18	59.86	-18.68	-	-
7	.3773	28.3	Qp	0	0	9.5	37.8	58.34	-20.54	-	-
9	.4403	26.14	Qp	0	0	9.5	35.64	57.06	-21.42	-	-
11	13.56	52.98	Qp	.1	.2	9.5	62.78	**60**	**2.78**	-	-

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

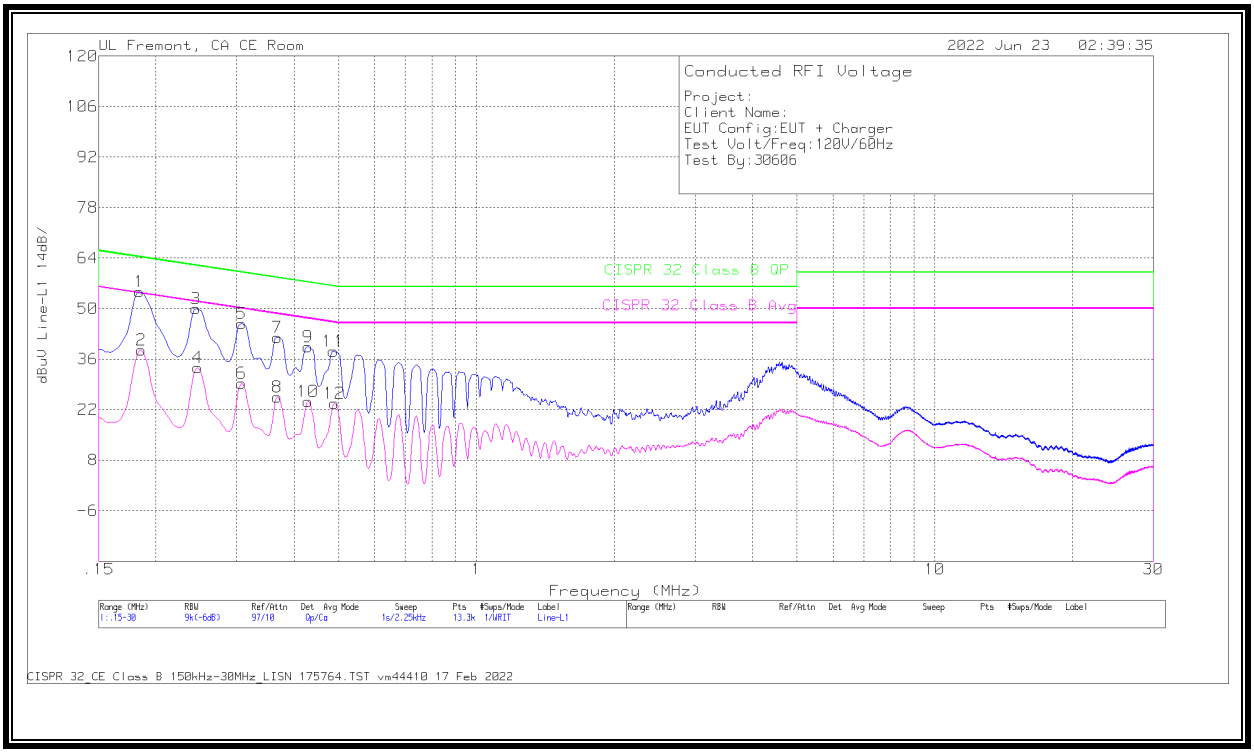
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR) Margin (dB)
14	.186	24.26	Ca	.1	0	10.1	34.46	-	-	54.21	-19.75
16	.249	20.09	Ca	0	0	9.5	29.59	-	-	51.79	-22.2
18	.3098	15.74	Ca	0	0	9.5	25.24	-	-	49.98	-24.74
20	.3728	12.09	Ca	0	0	9.5	21.59	-	-	48.44	-26.85
22	.4335	10.81	Ca	0	0	9.5	20.31	-	-	47.19	-26.88
24	13.56	49.81	Ca	.1	.2	9.5	59.61	-	-	**50**	**9.61**
13	.1838	38.75	Qp	.1	0	10.2	49.05	64.31	-15.26	-	-
15	.2513	35.29	Qp	0	0	9.5	44.79	61.72	-16.93	-	-
17	.3143	31.47	Qp	0	0	9.5	40.97	59.86	-18.89	-	-
19	.3773	27.93	Qp	0	0	9.5	37.43	58.34	-20.91	-	-
21	.4403	25.62	Qp	0	0	9.5	35.12	57.06	-21.94	-	-
23	13.56	50.75	Qp	.1	.2	9.5	60.55	**60**	**.55**	-	-

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. READER MODE ANTENNA PORT TERMINATED, 848Kbps

LINE 1 RESULTS



Worst Emission

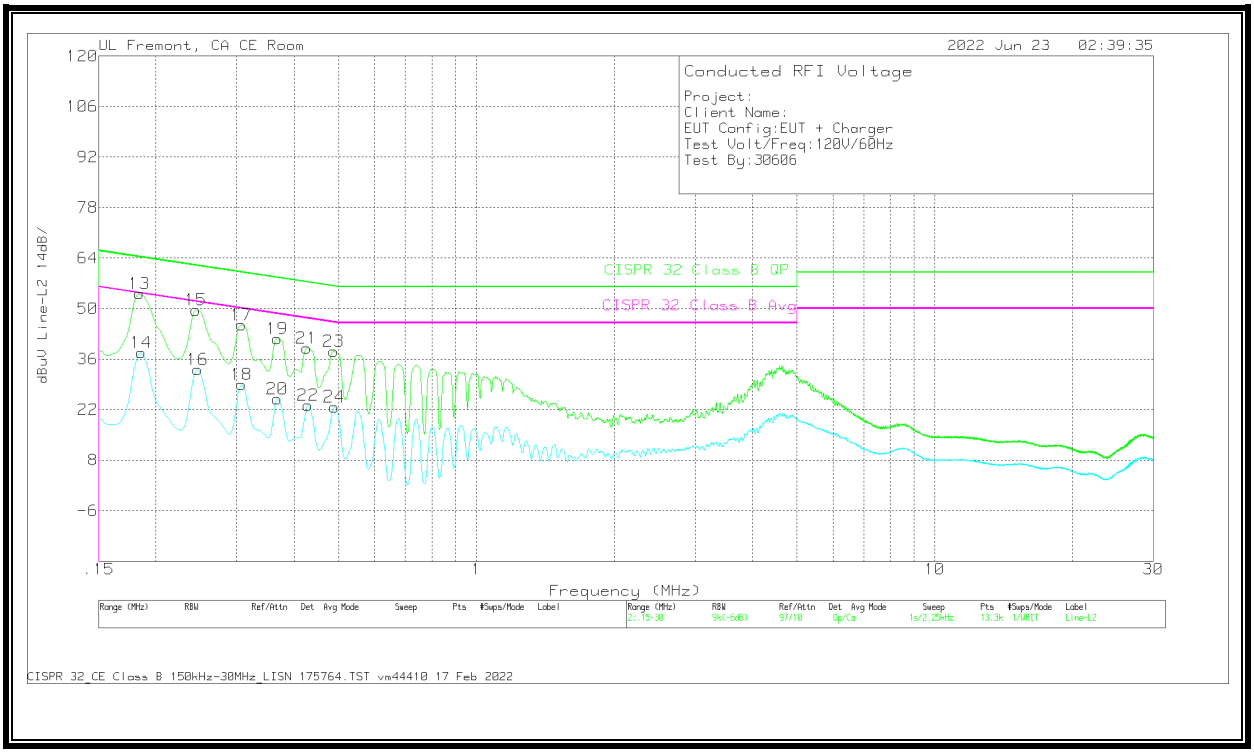
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
2	.186	28.29	Ca	.1	0	10.1	38.49	-	-	54.21	-15.72
4	.2468	24.12	Ca	.1	0	9.5	33.72	-	-	51.87	-18.15
6	.3075	19.67	Ca	.1	0	9.5	29.27	-	-	50.04	-20.77
8	.3683	16	Ca	0	0	9.5	25.5	-	-	48.54	-23.04
10	.429	14.8	Ca	0	0	9.5	24.3	-	-	47.27	-22.97
12	.4898	14.22	Ca	0	0	9.5	23.72	-	-	46.17	-22.45
1	.1838	44.34	Qp	.1	0	10.2	54.64	64.31	-9.67	-	-
3	.2445	40.35	Qp	.1	0	9.5	49.95	61.94	-11.99	-	-
5	.3075	36.18	Qp	.1	0	9.5	45.78	60.04	-14.26	-	-
7	.3683	32.55	Qp	0	0	9.5	42.05	58.54	-16.49	-	-
9	.429	29.91	Qp	0	0	9.5	39.41	57.27	-17.86	-	-
11	.4875	28.68	Qp	0	0	9.5	38.18	56.21	-18.03	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

LINE 2 RESULTS



Worst Emission

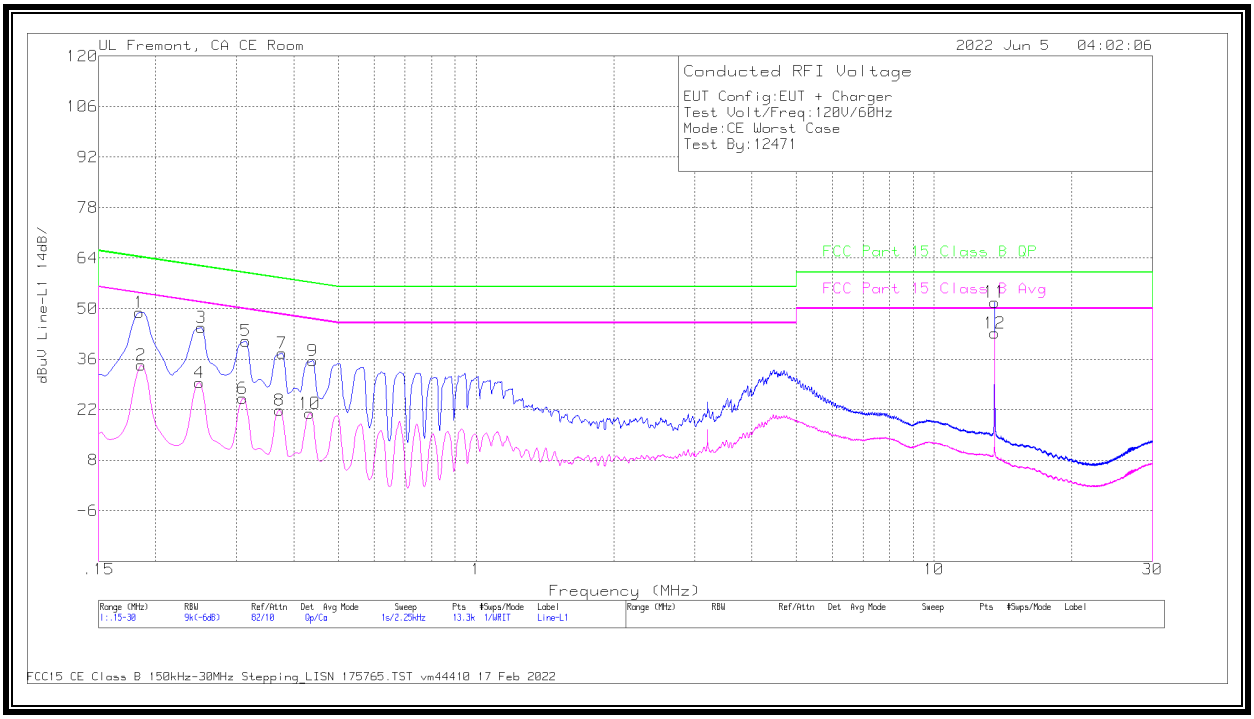
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22.(dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
14	.186	27.64	Ca	.1	0	10.1	37.84	-	-	54.21	-16.37
16	.2468	23.54	Ca	.1	0	9.5	33.14	-	-	51.87	-18.73
18	.3075	19.39	Ca	0	0	9.5	28.89	-	-	50.04	-21.15
20	.3683	15.48	Ca	0	0	9.5	24.98	-	-	48.54	-23.56
22	.429	13.66	Ca	0	0	9.5	23.16	-	-	47.27	-24.11
24	.4898	13.29	Ca	0	0	9.5	22.79	-	-	46.17	-23.38
13	.1838	43.93	Qp	.1	0	10.2	54.23	64.31	-10.08	-	-
15	.2445	39.97	Qp	.1	0	9.5	49.57	61.94	-12.37	-	-
17	.3075	35.93	Qp	0	0	9.5	45.43	60.04	-14.61	-	-
19	.3683	32.1	Qp	0	0	9.5	41.6	58.54	-16.94	-	-
21	.4268	29.5	Qp	0	0	9.5	39	57.32	-18.32	-	-
23	.4886	28.66	Qp	0	0	9.5	38.16	56.19	-18.03	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

10.1.3. CE MODE, Normal Operation

LINE 1 RESULTS

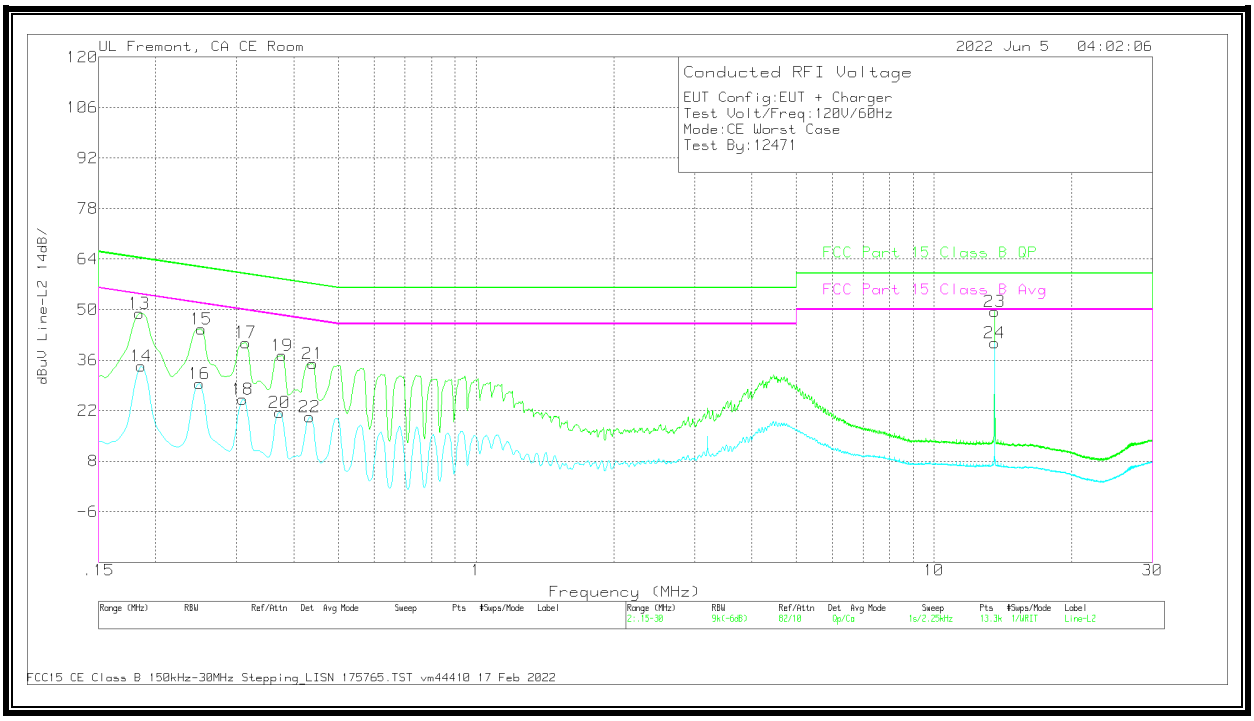


Worst Emission

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)Margin (dB)
2	.186	24.12	Ca	.1	0	10.1	34.32	-	-	54.21	-19.89
4	.249	20.02	Ca	0	0	9.5	29.52	-	-	51.79	-22.27
6	.3098	15.59	Ca	0	0	9.5	25.09	-	-	49.98	-24.89
8	.3728	12.39	Ca	0	0	9.5	21.89	-	-	48.44	-26.55
10	.4335	11.46	Ca	0	0	9.5	20.96	-	-	47.19	-26.23
12	13.56	33.48	Ca	.1	.2	9.5	43.28	-	-	50	-6.72
1	.1838	38.72	Qp	.1	0	10.2	49.02	64.31	-15.29	-	-
3	.2513	35.26	Qp	0	0	9.5	44.76	61.72	-16.96	-	-
5	.3143	31.55	Qp	0	0	9.5	41.05	59.86	-18.81	-	-
7	.3773	28.19	Qp	0	0	9.5	37.69	58.34	-20.65	-	-
9	.4403	26.01	Qp	0	0	9.5	35.51	57.06	-21.55	-	-
11	13.56	42.02	Qp	.1	.2	9.5	51.82	60	-8.18	-	-

Note: 13.56MHz is a fundamental frequency of the EUT.

LINE 2 RESULTS



Worst Emission

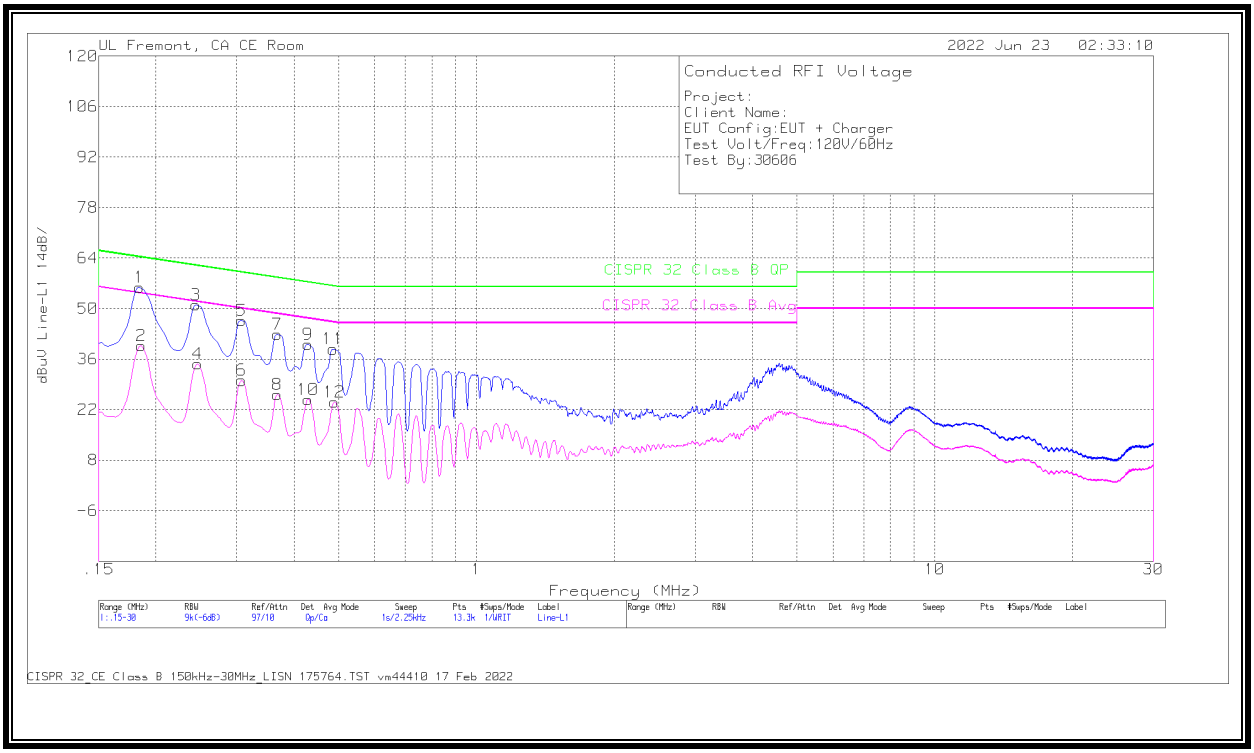
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)Margin (dB)
14	.186	24.14	Ca	.1	0	10.1	34.34	-	-	54.21	-19.87
16	.249	19.97	Ca	0	0	9.5	29.47	-	-	51.79	-22.32
18	.3098	15.64	Ca	0	0	9.5	25.14	-	-	49.98	-24.84
20	.3728	11.99	Ca	0	0	9.5	21.49	-	-	48.44	-26.95
22	.4335	10.71	Ca	0	0	9.5	20.21	-	-	47.19	-26.98
24	13.56	31.06	Ca	.1	.2	9.5	40.86	-	-	50	-9.14
13	.1838	38.61	Qp	.1	0	10.2	48.91	64.31	-15.4	-	-
15	.2513	35.16	Qp	0	0	9.5	44.66	61.72	-17.06	-	-
17	.3143	31.37	Qp	0	0	9.5	40.87	59.86	-18.99	-	-
19	.3773	27.87	Qp	0	0	9.5	37.37	58.34	-20.97	-	-
21	.4403	25.53	Qp	0	0	9.5	35.03	57.06	-22.03	-	-
23	13.56	39.6	Qp	.1	.2	9.5	49.4	60	-10.6	-	-

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

10.1.4. CE Mode WITH ANTENNA PORT TERMINATED, 848Kbps

LINE 1 RESULTS



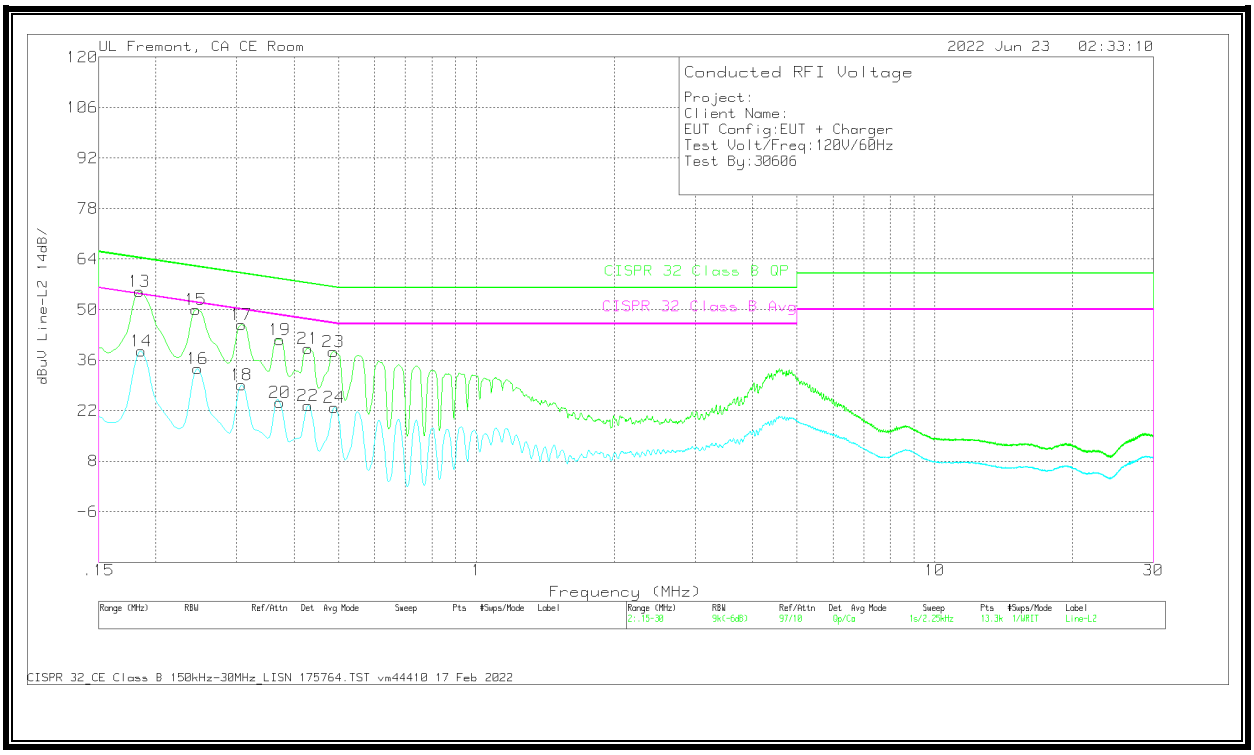
Worst Emission

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22.(dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
2	.186	29.49	Ca	.1	0	10.1	39.69	-	-	54.21	-14.52
4	.2468	25.13	Ca	.1	0	9.5	34.73	-	-	51.87	-17.14
6	.3075	20.5	Ca	.1	0	9.5	30.1	-	-	50.04	-19.94
8	.3683	16.76	Ca	0	0	9.5	26.26	-	-	48.54	-22.28
10	.429	15.35	Ca	0	0	9.5	24.85	-	-	47.27	-22.42
12	.4898	14.65	Ca	0	0	9.5	24.15	-	-	46.17	-22.02
1	.1838	45.67	Qp	.1	0	10.2	55.97	64.31	-8.34	-	-
3	.2445	41.48	Qp	.1	0	9.5	51.08	61.94	-10.86	-	-
5	.3075	37.09	Qp	.1	0	9.5	46.69	60.04	-13.35	-	-
7	.3683	33.3	Qp	0	0	9.5	42.8	58.54	-15.74	-	-
9	.429	30.52	Qp	0	0	9.5	40.02	57.27	-17.25	-	-
11	.4864	29.29	Qp	0	0	9.5	38.79	56.23	-17.44	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

LINE 2 RESULTS



Worst Emission

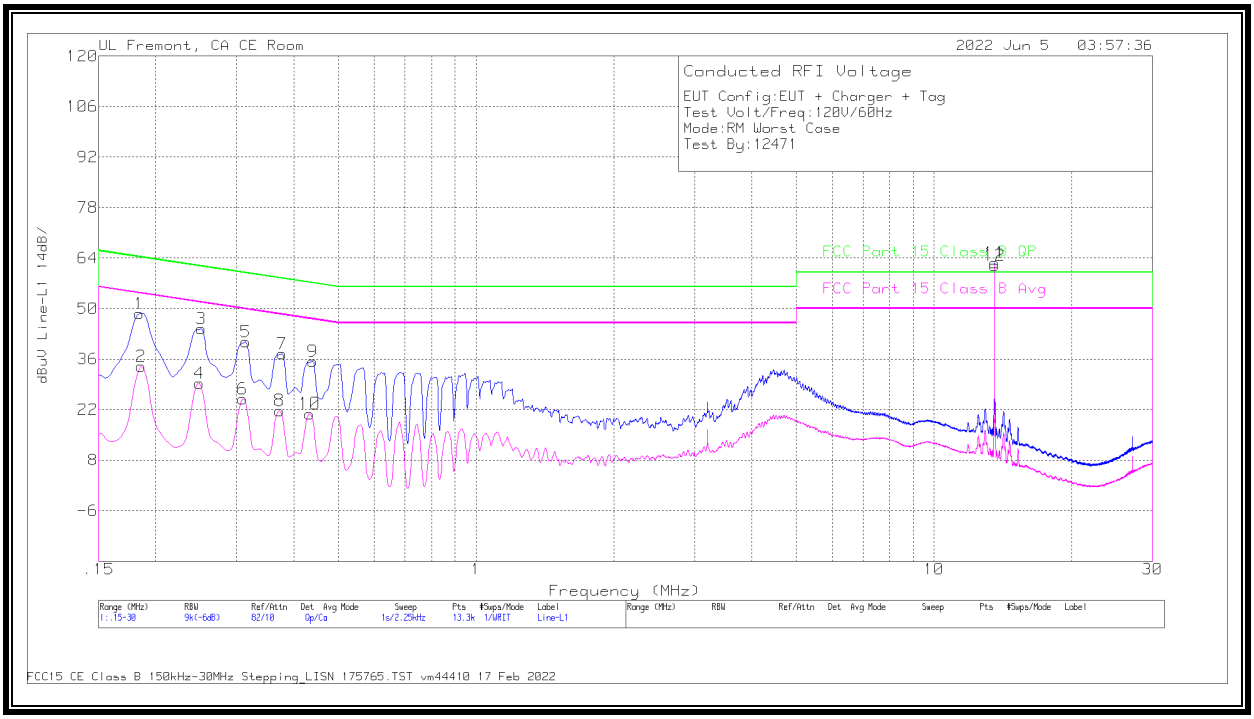
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
14	.186	28.32	Ca	.1	0	10.1	38.52	-	-	54.21	-15.69
16	.2468	23.99	Ca	.1	0	9.5	33.59	-	-	51.87	-18.28
18	.3075	19.64	Ca	0	0	9.5	29.14	-	-	50.04	-20.9
20	.3728	14.8	Ca	0	0	9.5	24.3	-	-	48.44	-24.14
22	.429	13.84	Ca	0	0	9.5	23.34	-	-	47.27	-23.93
24	.4898	13.43	Ca	0	0	9.5	22.93	-	-	46.17	-23.24
13	.1838	44.68	Qp	.1	0	10.2	54.98	64.31	-9.33	-	-
15	.2445	40.41	Qp	.1	0	9.5	50.01	61.94	-11.93	-	-
17	.3075	36.25	Qp	0	0	9.5	45.75	60.04	-14.29	-	-
19	.3728	32.11	Qp	0	0	9.5	41.61	58.44	-16.83	-	-
21	.429	29.66	Qp	0	0	9.5	39.16	57.27	-18.11	-	-
23	.4875	28.85	Qp	0	0	9.5	38.35	56.21	-17.86	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

10.1.5. TAG MODE , NORMAL OPERATION

LINE 1 RESULTS



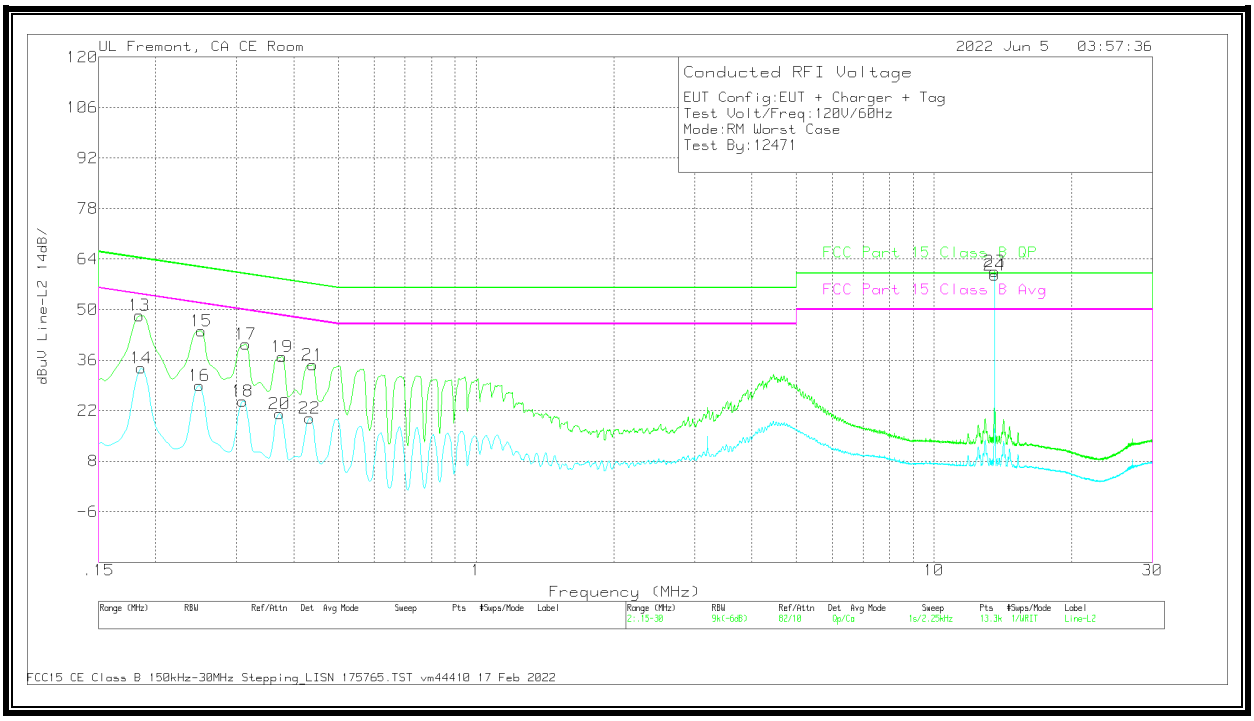
Worst Emission

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR) Margin (dB)
2	.186	23.79	Ca	.1	0	10.1	33.99	-	-	54.21	-20.22
4	.249	19.79	Ca	0	0	9.5	29.29	-	-	51.79	-22.5
6	.3098	15.45	Ca	0	0	9.5	24.95	-	-	49.98	-25.03
8	.3728	12.25	Ca	0	0	9.5	21.75	-	-	48.44	-26.69
10	.4335	11.38	Ca	0	0	9.5	20.88	-	-	47.19	-26.31
12	13.56	52.18	Ca	.1	.2	9.5	61.98	-	-	**50**	**11.98**
1	.1838	38.38	Qp	.1	0	10.2	48.68	64.31	-15.63	-	-
3	.2513	34.91	Qp	0	0	9.5	44.41	61.72	-17.31	-	-
5	.3143	31.25	Qp	0	0	9.5	40.75	59.86	-19.11	-	-
7	.3773	27.96	Qp	0	0	9.5	37.46	58.34	-20.88	-	-
9	.4403	25.84	Qp	0	0	9.5	35.34	57.06	-21.72	-	-
11	13.56	52.92	Qp	.1	.2	9.5	62.72	**60**	**2.72**	-	-

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

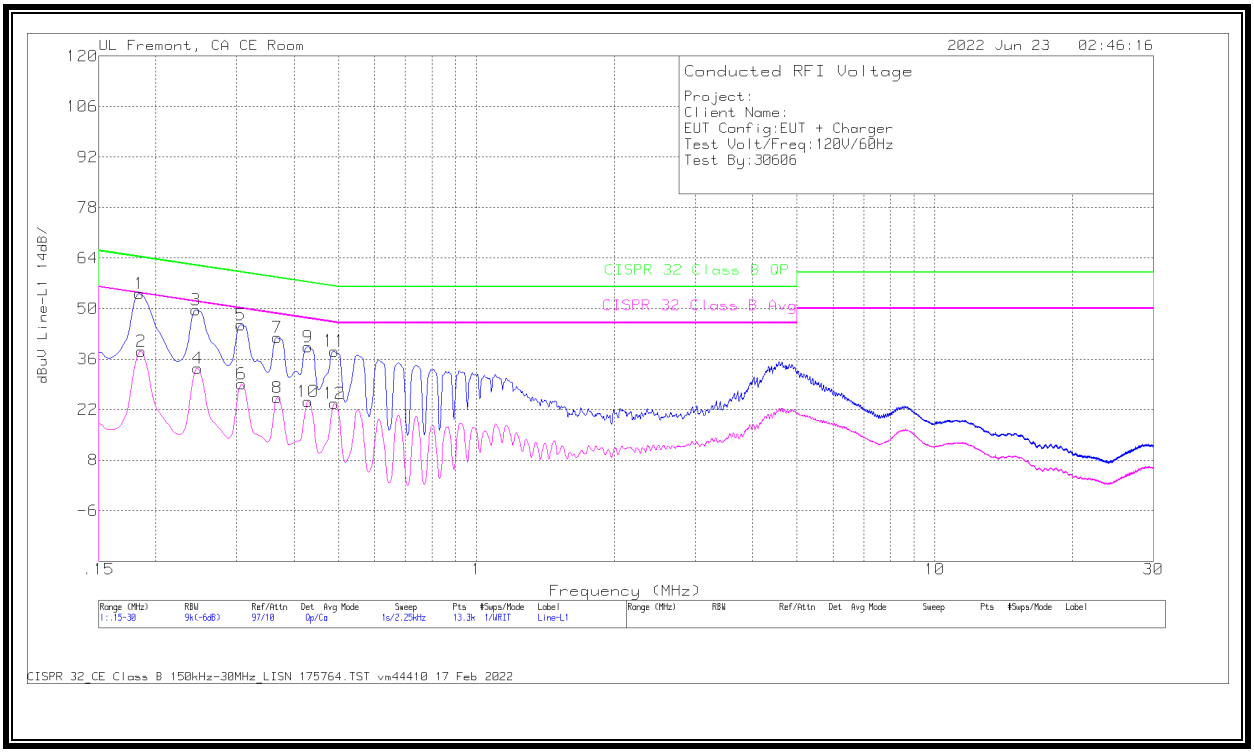
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)Margin (dB)
14	.186	23.59	Ca	.1	0	10.1	33.79	-	-	54.21	-20.42
16	.249	19.51	Ca	0	0	9.5	29.01	-	-	51.79	-22.78
18	.3098	15.17	Ca	0	0	9.5	24.67	-	-	49.98	-25.31
20	.3728	11.57	Ca	0	0	9.5	21.07	-	-	48.44	-27.37
22	.4335	10.46	Ca	0	0	9.5	19.96	-	-	47.19	-27.23
24	13.56	49.82	Ca	.1	.2	9.5	59.62	-	-	**50**	**9.62**
13	.1838	38.05	Qp	.1	0	10.2	48.35	64.31	-15.96	-	-
15	.2513	34.66	Qp	0	0	9.5	44.16	61.72	-17.56	-	-
17	.3143	30.94	Qp	0	0	9.5	40.44	59.86	-19.42	-	-
19	.3773	27.47	Qp	0	0	9.5	36.97	58.34	-21.37	-	-
21	.4403	25.24	Qp	0	0	9.5	34.74	57.06	-22.32	-	-
23	13.56	50.76	Qp	.1	.2	9.5	60.56	**60**	**.56**	-	-

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.

10.1.6. TAG Mode, ANTENNA PORT TERMINATED

LINE 1 RESULTS

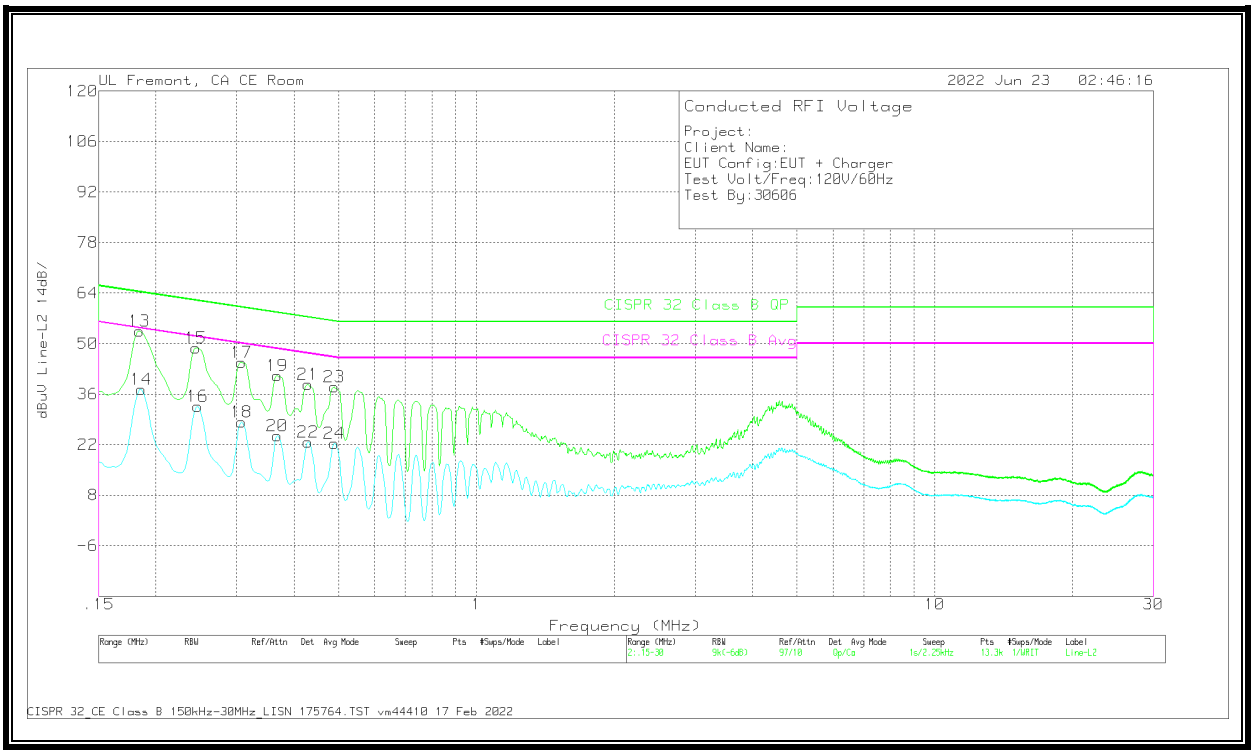


Worst Emission

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
2	.186	27.99	Ca	.1	0	10.1	38.19	-	-	54.21	-16.02
4	.2468	23.95	Ca	.1	0	9.5	33.55	-	-	51.87	-18.32
6	.3075	19.52	Ca	.1	0	9.5	29.12	-	-	50.04	-20.92
8	.3683	15.85	Ca	0	0	9.5	25.35	-	-	48.54	-23.19
10	.429	14.8	Ca	0	0	9.5	24.3	-	-	47.27	-22.97
12	.4898	14.26	Ca	0	0	9.5	23.76	-	-	46.17	-22.41
1	.1838	43.83	Qp	.1	0	10.2	54.13	64.31	-10.18	-	-
3	.2445	40.01	Qp	.1	0	9.5	49.61	61.94	-12.33	-	-
5	.3064	35.92	Qp	.1	0	9.5	45.52	60.07	-14.55	-	-
7	.3683	32.44	Qp	0	0	9.5	41.94	58.54	-16.6	-	-
9	.429	29.94	Qp	0	0	9.5	39.44	57.27	-17.83	-	-
11	.4898	28.76	Qp	0	0	9.5	38.26	56.17	-17.91	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



Worst Emission

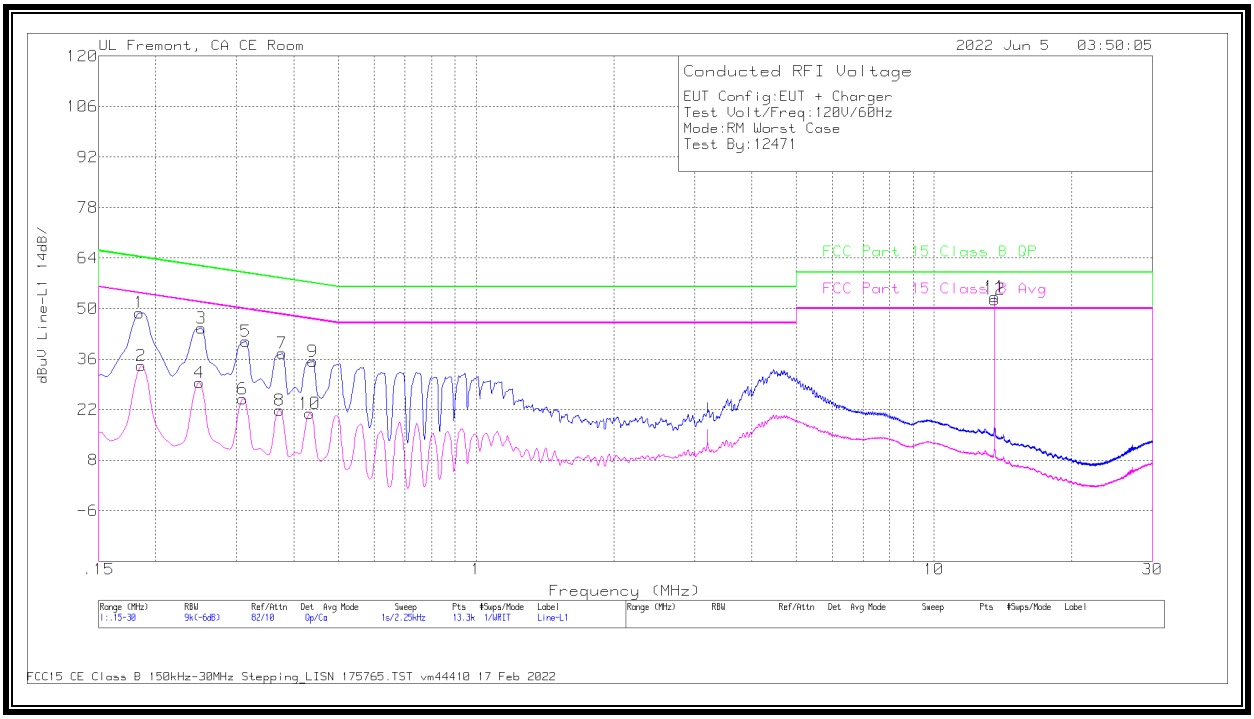
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
14	.186	27.09	Ca	.1	0	10.1	37.29	-	-	54.21	-16.92
16	.2468	23	Ca	.1	0	9.5	32.6	-	-	51.87	-19.27
18	.3075	18.85	Ca	0	0	9.5	28.35	-	-	50.04	-21.69
20	.3683	15.01	Ca	0	0	9.5	24.51	-	-	48.54	-24.03
22	.429	13.16	Ca	0	0	9.5	22.66	-	-	47.27	-24.61
24	.4898	12.94	Ca	0	0	9.5	22.44	-	-	46.17	-23.73
13	.1838	43.14	Qp	.1	0	10.2	53.44	64.31	-10.87	-	-
15	.2445	39.26	Qp	.1	0	9.5	48.86	61.94	-13.08	-	-
17	.3075	35.32	Qp	0	0	9.5	44.82	60.04	-15.22	-	-
19	.3683	31.63	Qp	0	0	9.5	41.13	58.54	-17.41	-	-
21	.429	29.13	Qp	0	0	9.5	38.63	57.27	-18.64	-	-
23	.4898	28.44	Qp	0	0	9.5	37.94	56.17	-18.23	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

10.2. SECONDARY ANTENNA

10.2.1. READER MODE, NORMAL OPERATION

LINE 1 RESULTS



Worst Emission

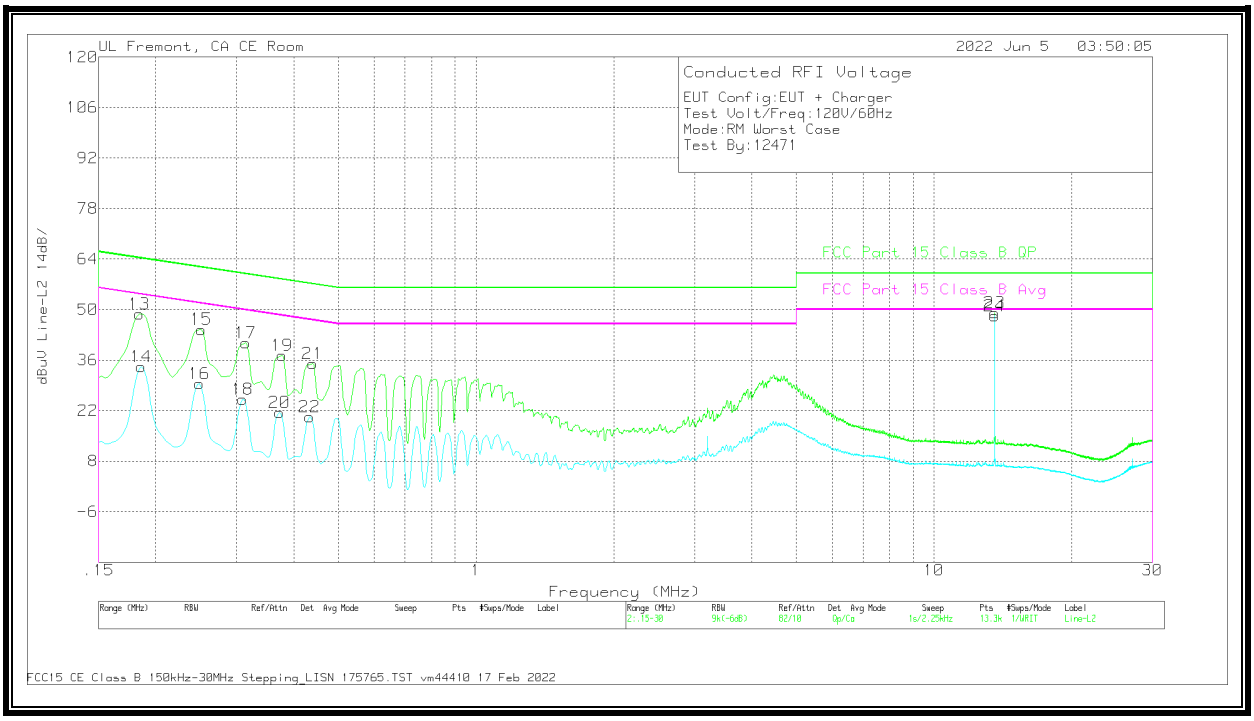
Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR) Margin (dB)
2	.186	23.96	Ca	.1	0	10.1	34.16	-	-	54.21	-20.05
4	.249	19.92	Ca	0	0	9.5	29.42	-	-	51.79	-22.37
6	.3098	15.54	Ca	0	0	9.5	25.04	-	-	49.98	-24.94
8	.3728	12.29	Ca	0	0	9.5	21.79	-	-	48.44	-26.65
10	.4335	11.43	Ca	0	0	9.5	20.93	-	-	47.19	-26.26
12	13.56	42.72	Ca	.1	.2	9.5	52.52	-	-	**50**	**2.52**
1	.1838	38.57	Qp	.1	0	10.2	48.87	64.31	-15.44	-	-
3	.2513	35.1	Qp	0	0	9.5	44.6	61.72	-17.12	-	-
5	.3143	31.41	Qp	0	0	9.5	40.91	59.86	-18.95	-	-
7	.3773	28.08	Qp	0	0	9.5	37.58	58.34	-20.76	-	-
9	.4403	25.95	Qp	0	0	9.5	35.45	57.06	-21.61	-	-
11	13.56	43.45	Qp	.1	.2	9.5	53.25	60	-6.75	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

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

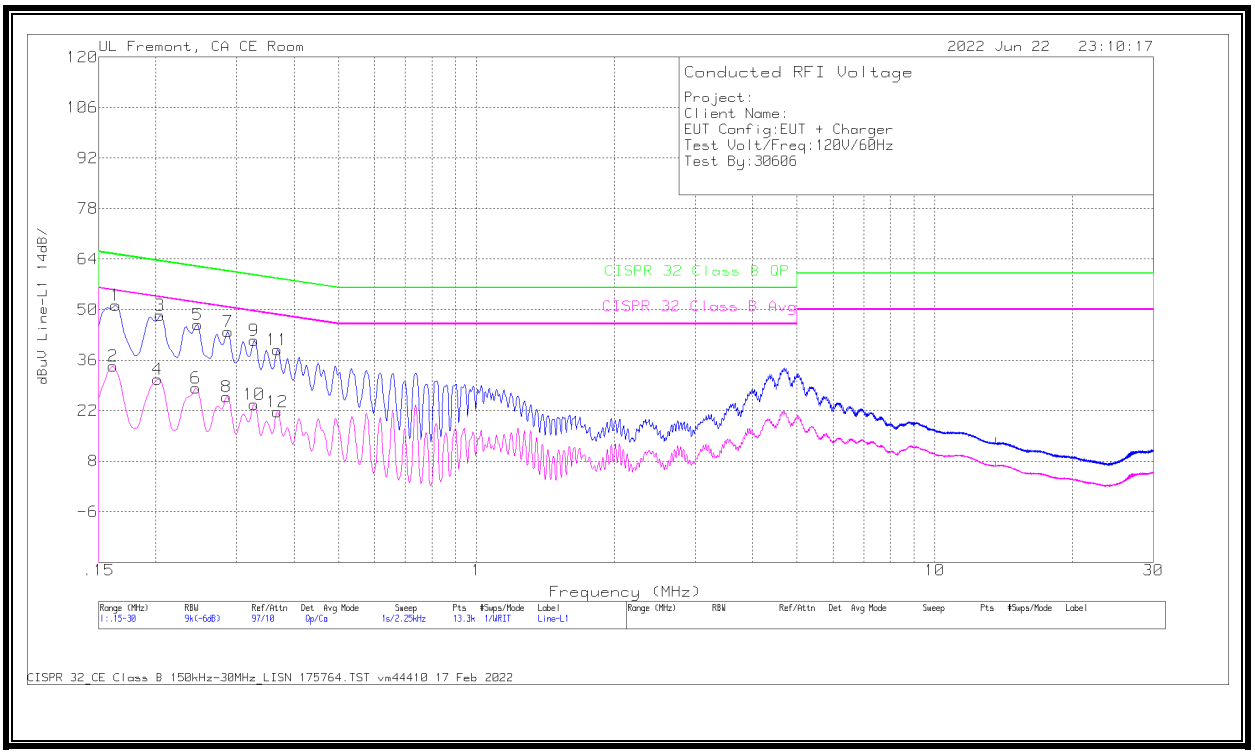
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR) Margin (dB)
14	.186	24.03	Ca	.1	0	10.1	34.23	-	-	54.21	-19.98
16	.249	19.93	Ca	0	0	9.5	29.43	-	-	51.79	-22.36
18	.3098	15.58	Ca	0	0	9.5	25.08	-	-	49.98	-24.9
20	.3728	11.92	Ca	0	0	9.5	21.42	-	-	48.44	-27.02
22	.4335	10.7	Ca	0	0	9.5	20.2	-	-	47.19	-26.99
24	13.56	38.41	Ca	.1	.2	9.5	48.21	-	-	50	-1.79
13	.1838	38.42	Qp	.1	0	10.2	48.72	64.31	-15.59	-	-
15	.2513	35.02	Qp	0	0	9.5	44.52	61.72	-17.2	-	-
17	.3143	31.26	Qp	0	0	9.5	40.76	59.86	-19.1	-	-
19	.3773	27.76	Qp	0	0	9.5	37.26	58.34	-21.08	-	-
21	.4403	25.49	Qp	0	0	9.5	34.99	57.06	-22.07	-	-
23	13.56	39.34	Qp	.1	.2	9.5	49.14	60	-10.86	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

10.2.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 848Kbps

LINE 1 RESULTS



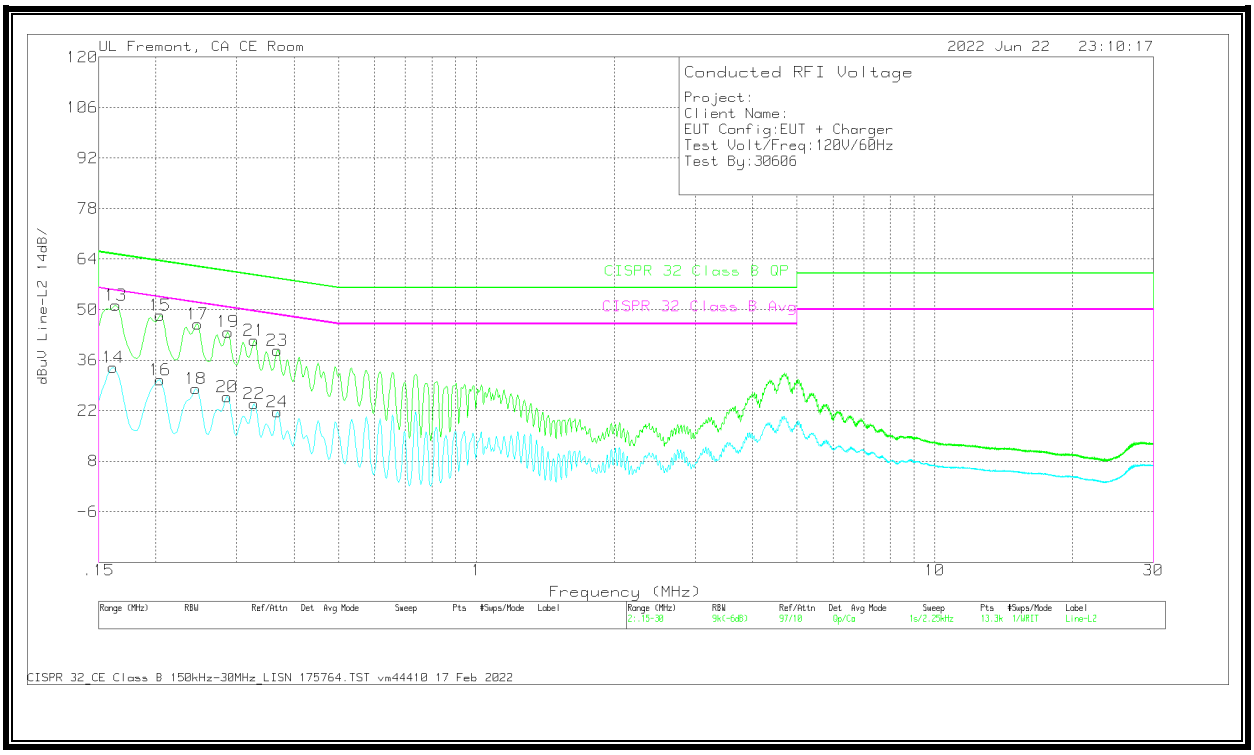
Worst Emission

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
2	.1613	23.39	Ca	.1	0	10.8	34.29	-	-	55.4	-21.11
4	.2018	20.84	Ca	.1	0	9.7	30.64	-	-	53.54	-22.9
6	.2445	18.68	Ca	.1	0	9.5	28.28	-	-	51.94	-23.66
8	.285	16.24	Ca	.1	0	9.5	25.84	-	-	50.67	-24.83
10	.3278	14.22	Ca	0	0	9.5	23.72	-	-	49.51	-25.79
12	.3683	12.18	Ca	0	0	9.5	21.68	-	-	48.54	-26.86
1	.1635	40.46	Qp	.1	0	10.7	51.26	65.28	-14.02	-	-
3	.204	38.74	Qp	.1	0	9.6	48.44	63.45	-15.01	-	-
5	.2468	36.29	Qp	.1	0	9.5	45.89	61.87	-15.98	-	-
7	.2873	34.28	Qp	.1	0	9.5	43.88	60.6	-16.72	-	-
9	.3278	31.99	Qp	0	0	9.5	41.49	59.51	-18.02	-	-
11	.3683	29.38	Qp	0	0	9.5	38.88	58.54	-19.66	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

LINE 2 RESULTS



Worst Emission

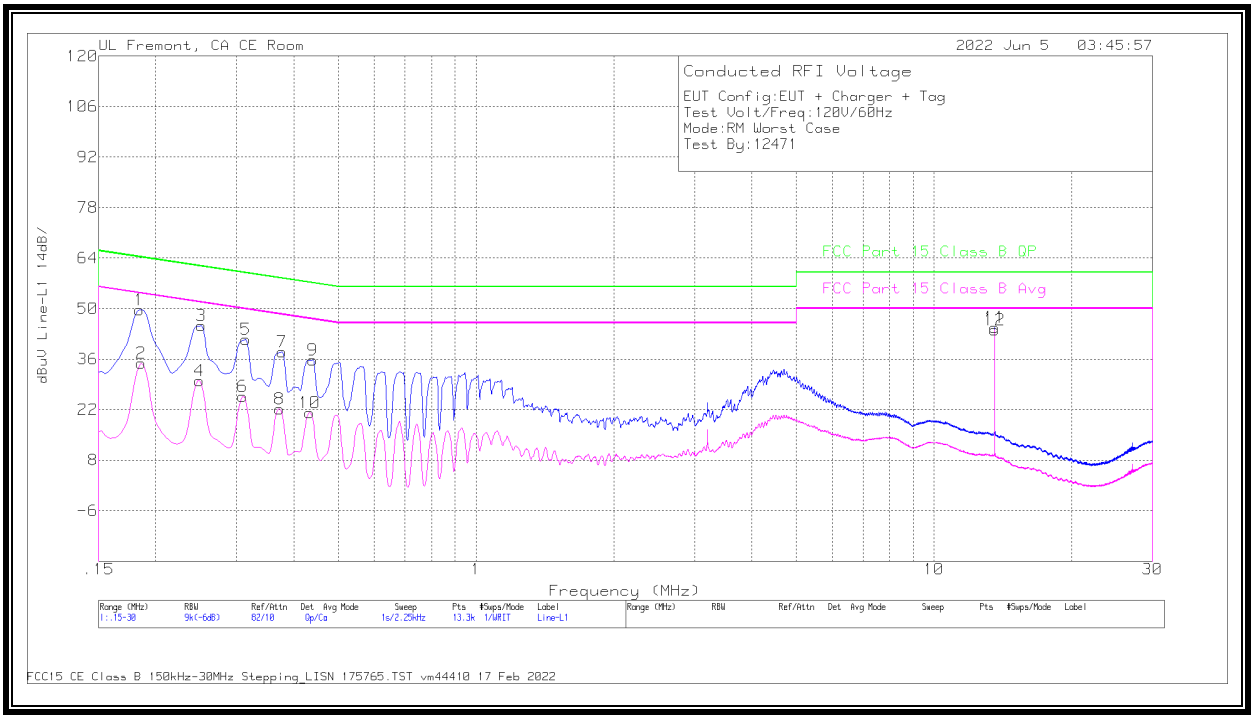
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
14	.1613	23.18	Ca	.1	0	10.8	34.08	-	-	55.4	-21.32
16	.204	20.79	Ca	.1	0	9.6	30.49	-	-	53.45	-22.96
18	.2445	18.51	Ca	.1	0	9.5	28.11	-	-	51.94	-23.83
20	.2861	16.21	Ca	.1	0	9.5	25.81	-	-	50.64	-24.83
22	.3278	14.37	Ca	0	0	9.5	23.87	-	-	49.51	-25.64
24	.3683	12.09	Ca	0	0	9.5	21.59	-	-	48.54	-26.95
13	.1635	40.48	Qp	.1	0	10.7	51.28	65.28	-14	-	-
15	.204	38.75	Qp	.1	0	9.6	48.45	63.45	-15	-	-
17	.2468	36.37	Qp	.1	0	9.5	45.97	61.87	-15.9	-	-
19	.2873	34.23	Qp	.1	0	9.5	43.83	60.6	-16.77	-	-
21	.3278	31.99	Qp	0	0	9.5	41.49	59.51	-18.02	-	-
23	.3683	29.26	Qp	0	0	9.5	38.76	58.54	-19.78	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016
Rev 9.5 07 Jul 2020

10.2.3. TAG MODE , NORMAL OPERATION

LINE 1 RESULTS



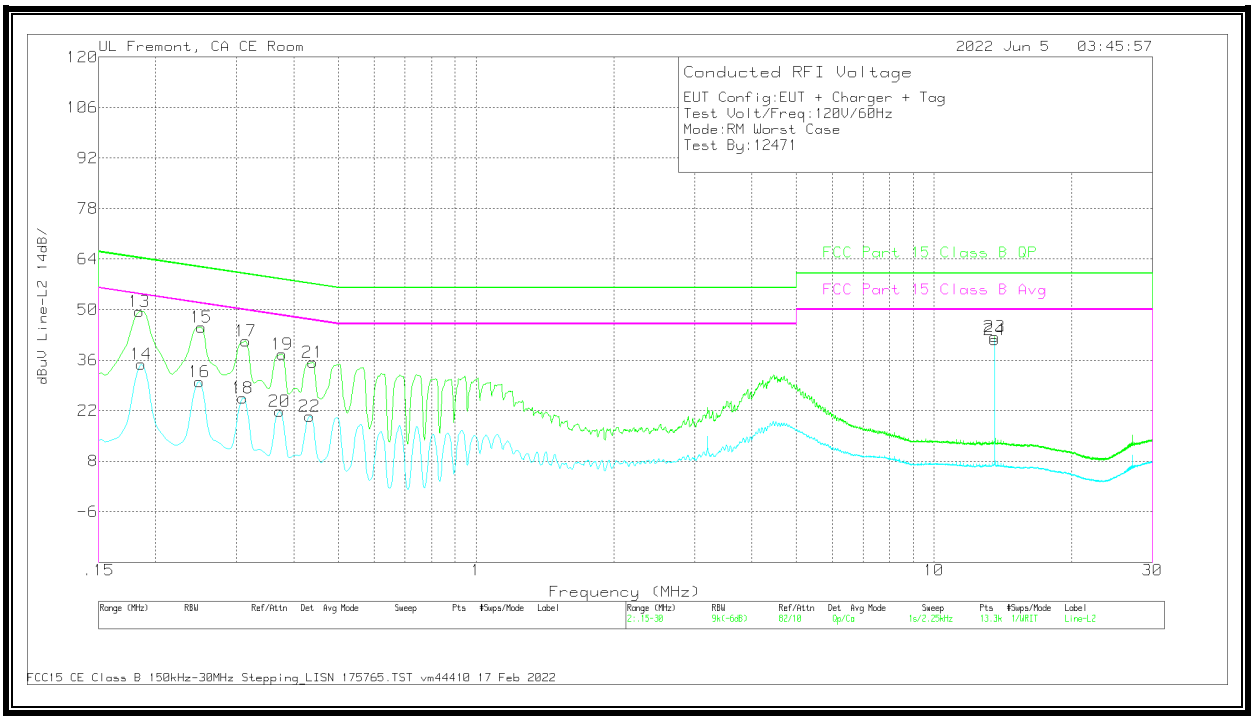
Worst Emission

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)Margin (dB)
2	.186	24.73	Ca	.1	0	10.1	34.93	-	-	54.21	-19.28
4	.249	20.55	Ca	0	0	9.5	30.05	-	-	51.79	-21.74
6	.3098	16.12	Ca	0	0	9.5	25.62	-	-	49.98	-24.36
8	.3728	12.71	Ca	0	0	9.5	22.21	-	-	48.44	-26.23
10	.4335	11.71	Ca	0	0	9.5	21.21	-	-	47.19	-25.98
12	13.56	34.24	Ca	.1	.2	9.5	44.04	-	-	50	-5.96
1	.1838	39.31	Qp	.1	0	10.2	49.61	64.31	-14.7	-	-
3	.2513	35.73	Qp	0	0	9.5	45.23	61.72	-16.49	-	-
5	.3143	31.92	Qp	0	0	9.5	41.42	59.86	-18.44	-	-
7	.3773	28.48	Qp	0	0	9.5	37.98	58.34	-20.36	-	-
9	.4403	26.31	Qp	0	0	9.5	35.81	57.06	-21.25	-	-
11	13.56	34.96	Qp	.1	.2	9.5	44.76	60	-15.24	-	-

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

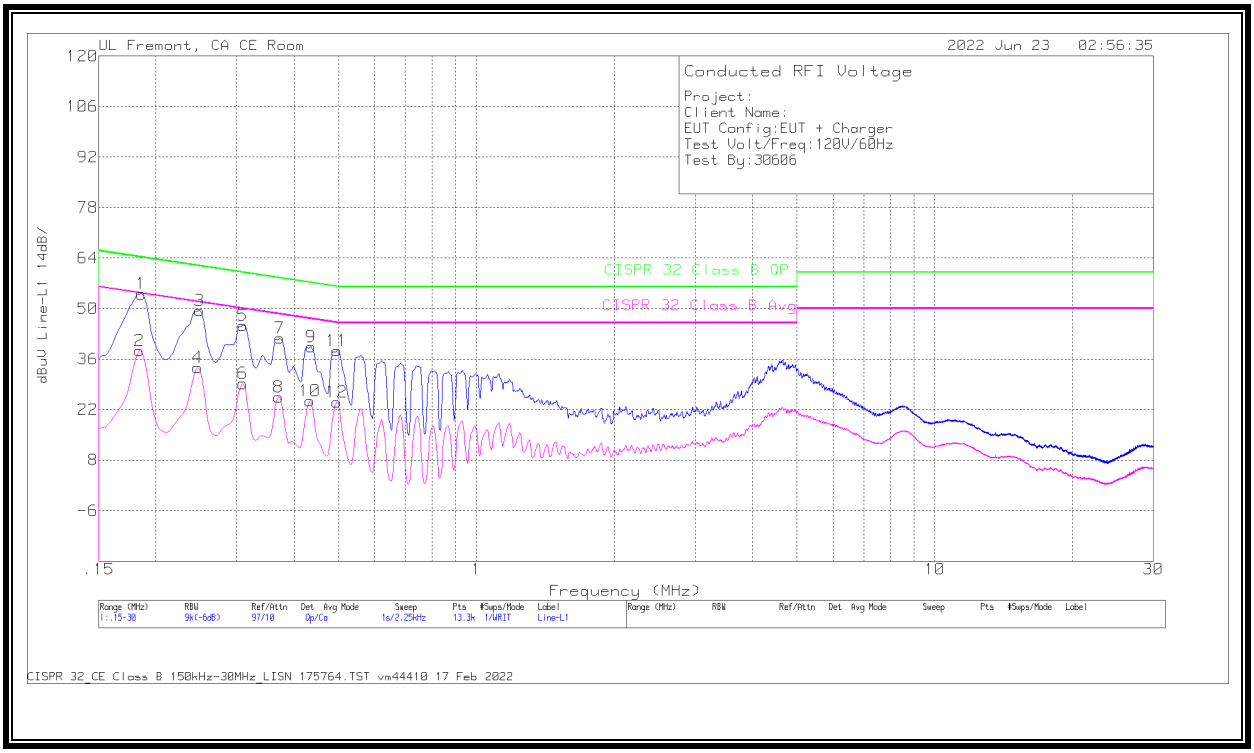
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175765 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP dBuV	QP Margin (dB)	FCC Part 15 Class B Avg dBuV	Av(CISPR)Margin (dB)
14	.186	24.71	Ca	.1	0	10.1	34.91	-	-	54.21	-19.3
16	.249	20.54	Ca	0	0	9.5	30.04	-	-	51.79	-21.75
18	.3098	16.03	Ca	0	0	9.5	25.53	-	-	49.98	-24.45
20	.3728	12.32	Ca	0	0	9.5	21.82	-	-	48.44	-26.62
22	.4335	11	Ca	0	0	9.5	20.5	-	-	47.19	-26.69
24	13.56	31.85	Ca	.1	.2	9.5	41.65	-	-	50	-8.35
13	.1838	39.17	Qp	.1	0	10.2	49.47	64.31	-14.84	-	-
15	.2513	35.67	Qp	0	0	9.5	45.17	61.72	-16.55	-	-
17	.3143	31.81	Qp	0	0	9.5	41.31	59.86	-18.55	-	-
19	.3773	28.22	Qp	0	0	9.5	37.72	58.34	-20.62	-	-
21	.4403	25.86	Qp	0	0	9.5	35.36	57.06	-21.7	-	-
23	13.56	32.8	Qp	.1	.2	9.5	42.6	60	-17.4	-	-

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.

10.2.4. TAG Mode, ANTENNA PORT TERMINATED

LINE 1 RESULTS

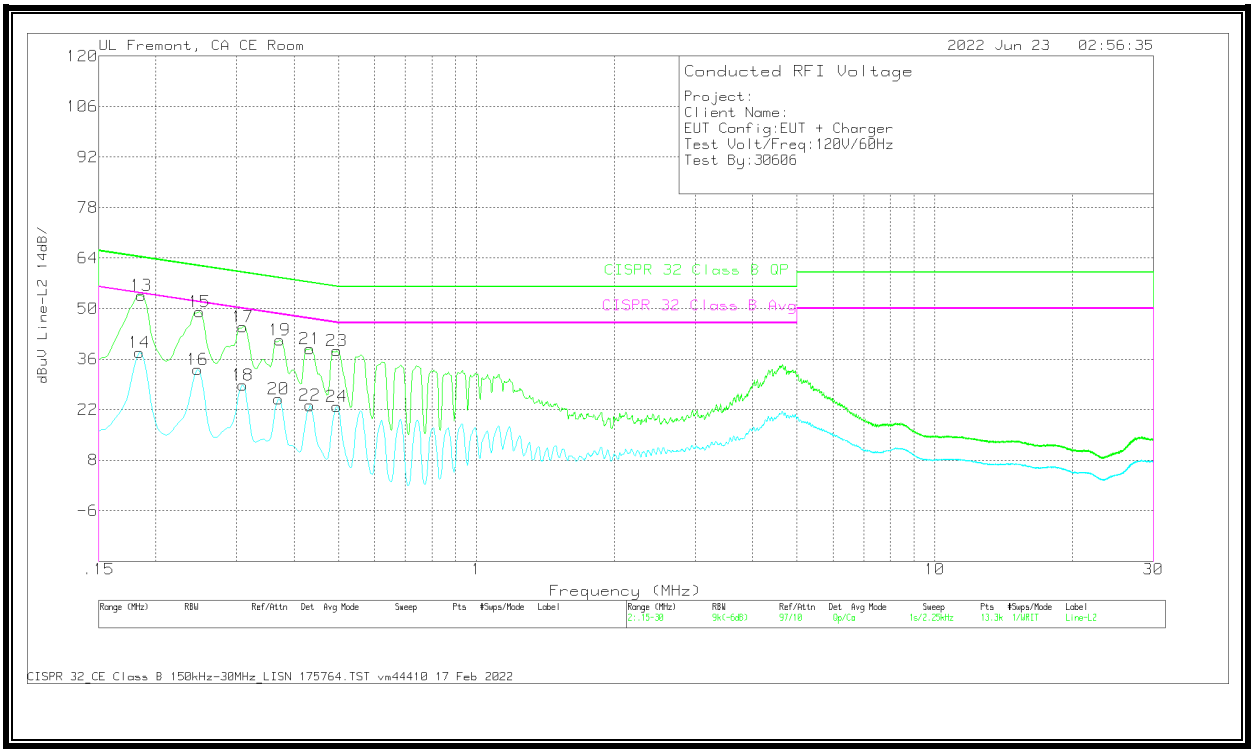


Worst Emission

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175764 LISN L1 (dB)	C1&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
2	.1838	28.11	Ca	.1	0	10.2	38.41	-	-	54.31	-15.9
4	.2468	24.1	Ca	.1	0	9.5	33.7	-	-	51.87	-18.17
6	.3098	19.63	Ca	.1	0	9.5	29.23	-	-	49.98	-20.75
8	.3705	16	Ca	0	0	9.5	25.5	-	-	48.49	-22.99
10	.4335	14.95	Ca	0	0	9.5	24.45	-	-	47.19	-22.74
12	.4965	14.63	Ca	0	0	9.5	24.13	-	-	46.06	-21.93
1	.186	43.89	Qp	.1	0	10.1	54.09	64.21	-10.12	-	-
3	.249	39.89	Qp	.1	0	9.5	49.49	61.79	-12.3	-	-
5	.3098	35.73	Qp	.1	0	9.5	45.33	59.98	-14.65	-	-
7	.3728	32.28	Qp	0	0	9.5	41.78	58.44	-16.66	-	-
9	.4358	29.87	Qp	0	0	9.5	39.37	57.14	-17.77	-	-
11	.4965	28.82	Qp	0	0	9.5	38.32	56.06	-17.74	-	-

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	175764 LISN L2 (dB)	C2&C3 cable (dB)	207996 Limiter 9k-600M_6-2-22. (dB)	Corrected Reading dBuV	CISPR 32 Class B QP dBuV	Margin (dB)	CISPR 32 Class B Avg dBuV	Margin (dB)
14	.1838	27.49	Ca	.1	0	10.2	37.79	-	-	54.31	-16.52
16	.2468	23.52	Ca	.1	0	9.5	33.12	-	-	51.87	-18.75
18	.3098	19.33	Ca	0	0	9.5	28.83	-	-	49.98	-21.15
20	.3705	15.44	Ca	0	0	9.5	24.94	-	-	48.49	-23.55
22	.4335	13.65	Ca	0	0	9.5	23.15	-	-	47.19	-24.04
24	.4965	13.42	Ca	0	0	9.5	22.92	-	-	46.06	-23.14
13	.186	43.47	Qp	.1	0	10.1	53.67	64.21	-10.54	-	-
15	.249	39.49	Qp	.1	0	9.5	49.09	61.79	-12.7	-	-
17	.3098	35.43	Qp	0	0	9.5	44.93	59.98	-15.05	-	-
19	.3728	31.74	Qp	0	0	9.5	41.24	58.44	-17.2	-	-
21	.4335	29.44	Qp	0	0	9.5	38.94	57.19	-18.25	-	-
23	.4965	28.86	Qp	0	0	9.5	38.36	56.06	-17.7	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

11. SETUP PHOTOS

Please refer to 14040867-EP1V1 for setup photos

END OF TEST REPORT