



TEST REPORT

Report Number. : 13573777-E12V1

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

Model : A2481 (Parent Model, Full Test)
A2626, A2628, A2629, A2630 (Variant Models)

FCC ID : BCG-E3994A (Parent Model, Full Test)
BCG-E3996A, BCG-E4029A, BCG-E4030A (Variant Models)

IC : 579C-E3994A (Parent Model, Full Test)
579C-E3996A, 579C-E4029A, 579C-E4030A (Variant Models)

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 10

Date of Issue:

July 30, 2021

Prepared by:

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	7/30/2021	Initial Issue	Frank Ibrahim

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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: A2481 (Parent Model, Full Test)
A2630, A2626, A2628, A2629 (Variant Models)

BRAND: APPLE

FCC ID: BCG-E3994A (Parent Model, Full Test)
BCG-E3996A, BCG-E4029A, BCG-E4030A, (Variant Models)

IC ID: 579C-E3994A (Parent Model, Full Test)
579C-E3996A, 579C-E4029A, 579C-E4030A (Variant Models)

SERIAL NUMBER: G0HFYT6X7Q

SAMPLE RECEIPT DATE: MAY 25, 2021

DATE TESTED: JUNE 06, 2021 – JULY 29, 2021

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

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

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

Prepared By:



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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- ANSI C63.10-2013
- KDB 414788 D01 Radiated Test Site v01r01
- RSS-GEN Issue 5 + A1 + A2
- RSS-210 Issue 10

3. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538	US0104	2324A	208313
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538	US0104	22541	208313
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538	US0104	2324B	208313

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, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB

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)

$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

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.

$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

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, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS and NFC. All models 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 Models and FCC and IC ID covered by this report include:

Parent Model: A2481; FCC ID: BCG-E3994A; IC ID: 579C-E3994A

Variant Models: A2626; FCC ID: BCG-E3996A; IC ID: 579C-E3996A
 A2628; FCC ID: BCG-E4029A; IC ID: 579C-E4029A
 A2629; FCC ID: BCG-E4030A; IC ID: 579C-E4030A
 A2630; FCC ID: BCG-E4030A; IC ID: 579C-E4030A

5.2. MAXIMUM E-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 B	Reader	848	23.80
			Tag	848	24.55
			CE	848	23.44
Secondary	13.56	Type B	Reader	848	3.74
			Tag	848	5.39

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. The EUT has primary and secondary antennas and worst case was investigated on the primary antenna since it has the highest power.

The worst case position of the EUT was investigated under two configurations: EUT with power supply, EUT with earphones. 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 were investigated with Type A, B and F with data rates, such as 106Kbp/s, 212Kbp/s, 424Kbp/s and 848Kbp/s and ISO 15693 configuration to determine the worst case based on the highest power and spurious emissions. Type B 848Kbp/s was determined to be the worst case and therefore Type B 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.

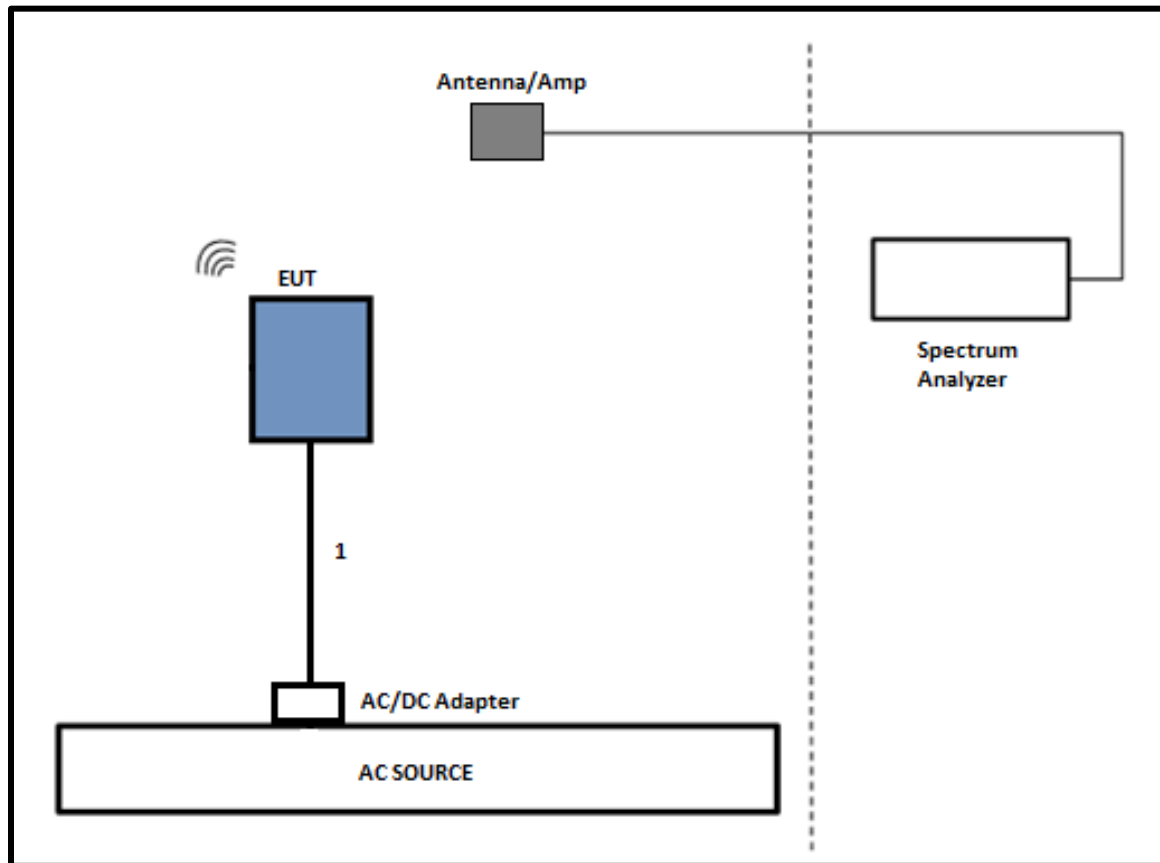
Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

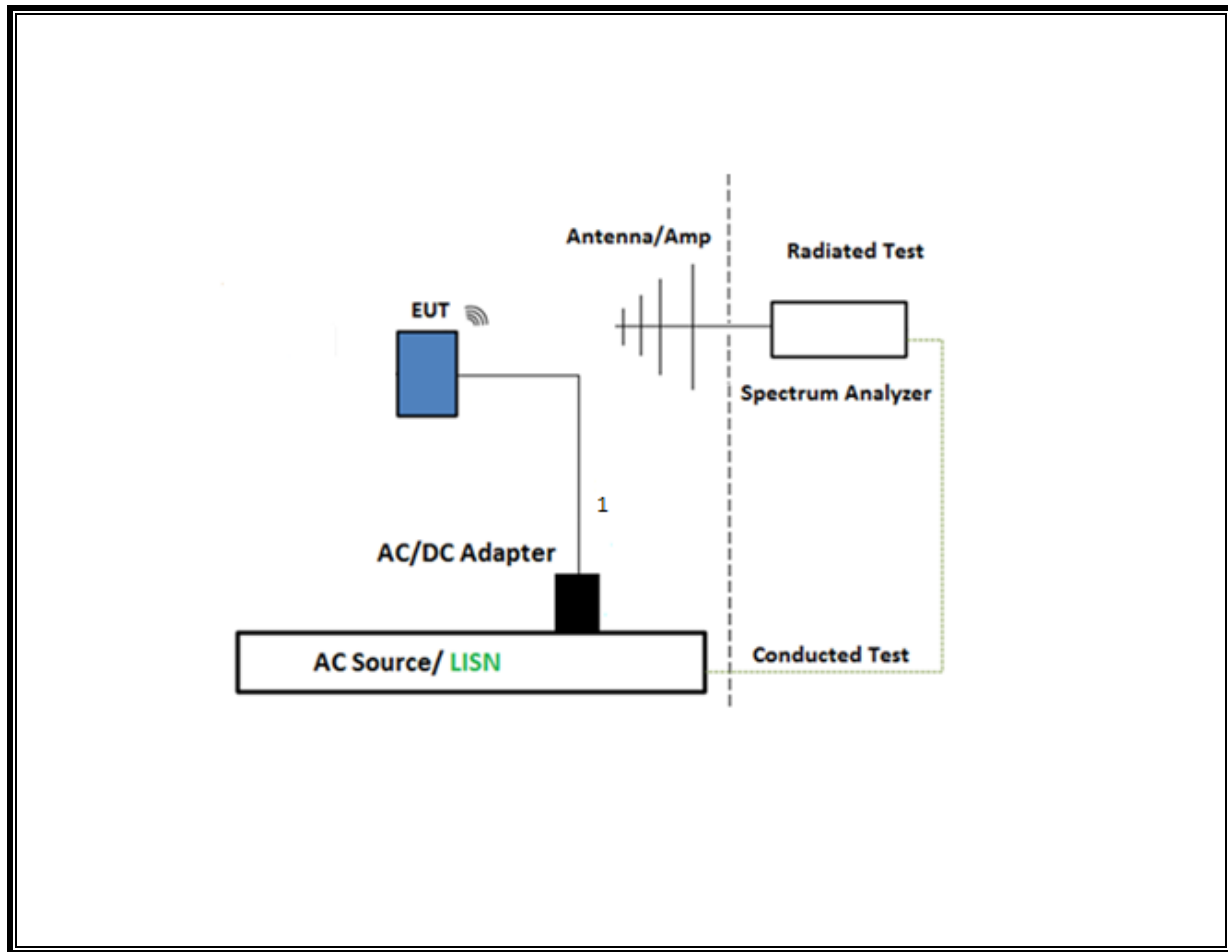
5.4. SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Apple	Macbook Pro	C02SM041GTFL	BCGA1707
Laptop AC/DC adapter	Apple	A1424	NSW25679	DoC
EUT AC/DC 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

SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST

6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T900	02/24/2022	02/24/2021
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T173	07/22/2021	07/22/2020
Antenna, Active Loop 9KHz to 30MHz	EMCO	6502	T35	11/23/2021	11/23/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T342	01/25/2022	01/25/2021
EMI Test Receiver	Rohde & Schwarz	ESW44	Pre0179372	02/22/2022	02/22/2021
*Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	T754	06/21/2021	06/21/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T459	09/21/2021	09/21/2020

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
Power Cable, Line Conducted Emissions	UL	PR1	T861	10/27/2021	10/27/2020
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		

*Testing was completed before equipment calibration due 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

Primary Antenna

Type B (Reader Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	23.245	26.93

Type B (CE Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	21.479	25.01

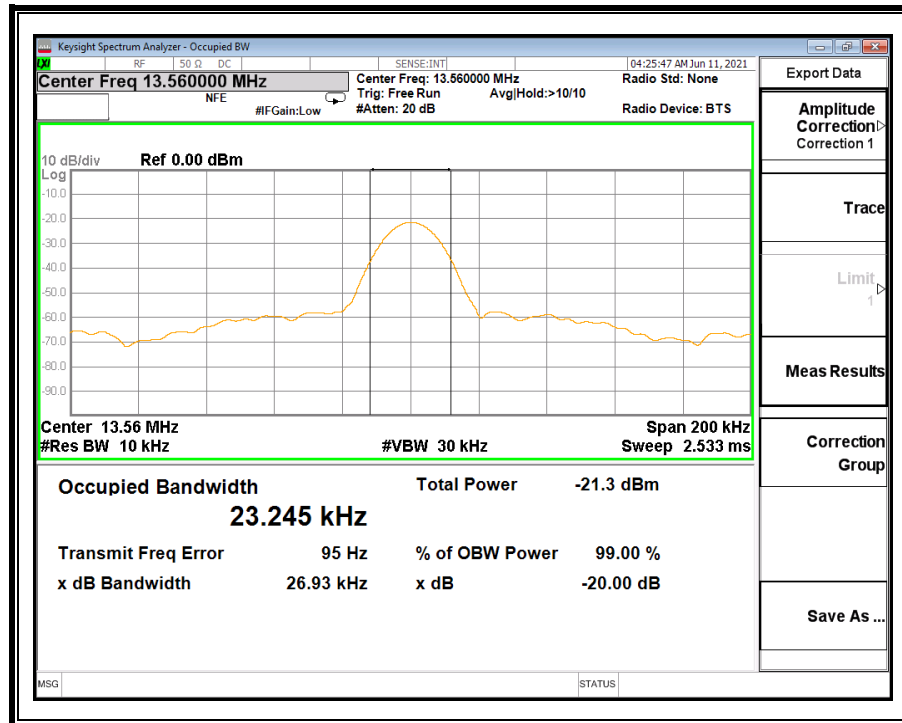
Secondary Antenna

Type B (Reader Mode)

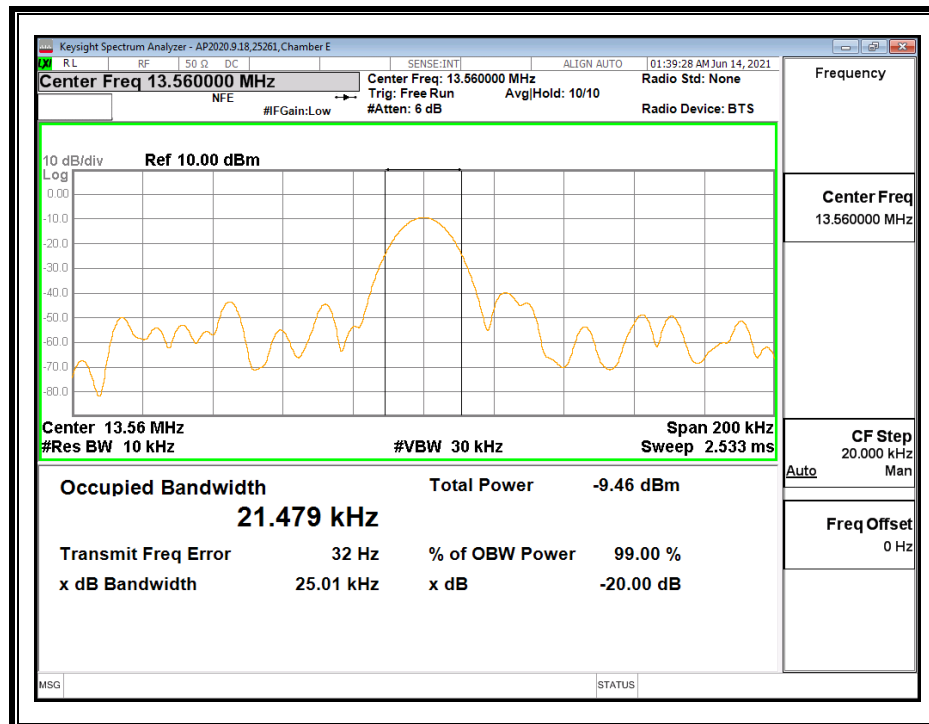
Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
848	13.56	23.828	27.13

7.1. PRIMARY ANTENNA

7.1.1. READER MODE, Type B 848 Kbps

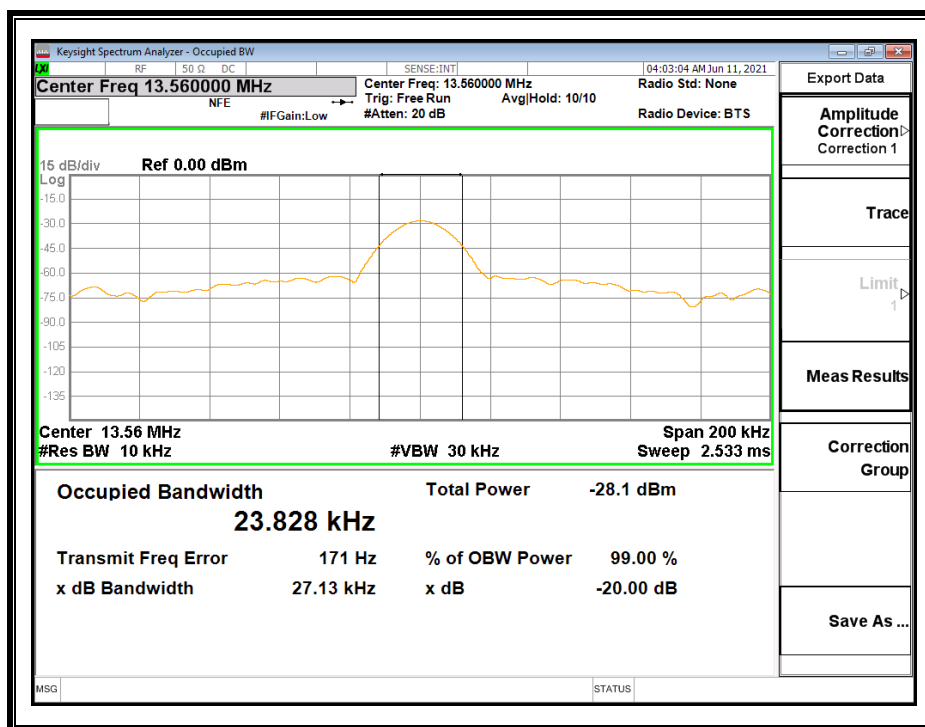


7.1.2. CE MODE, Type B 848 Kbps



7.2. SECONDARY ANTENNA

7.2.1. READER MODE, Type B 848 Kbps



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 field 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

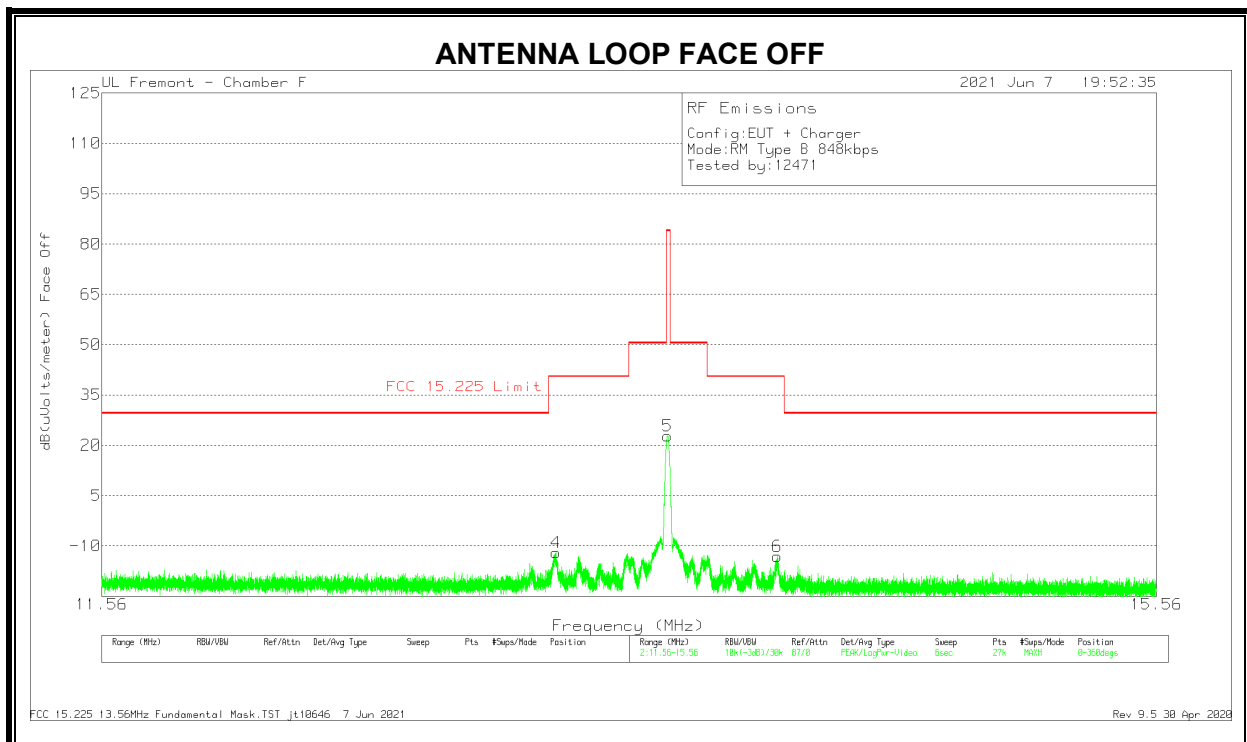
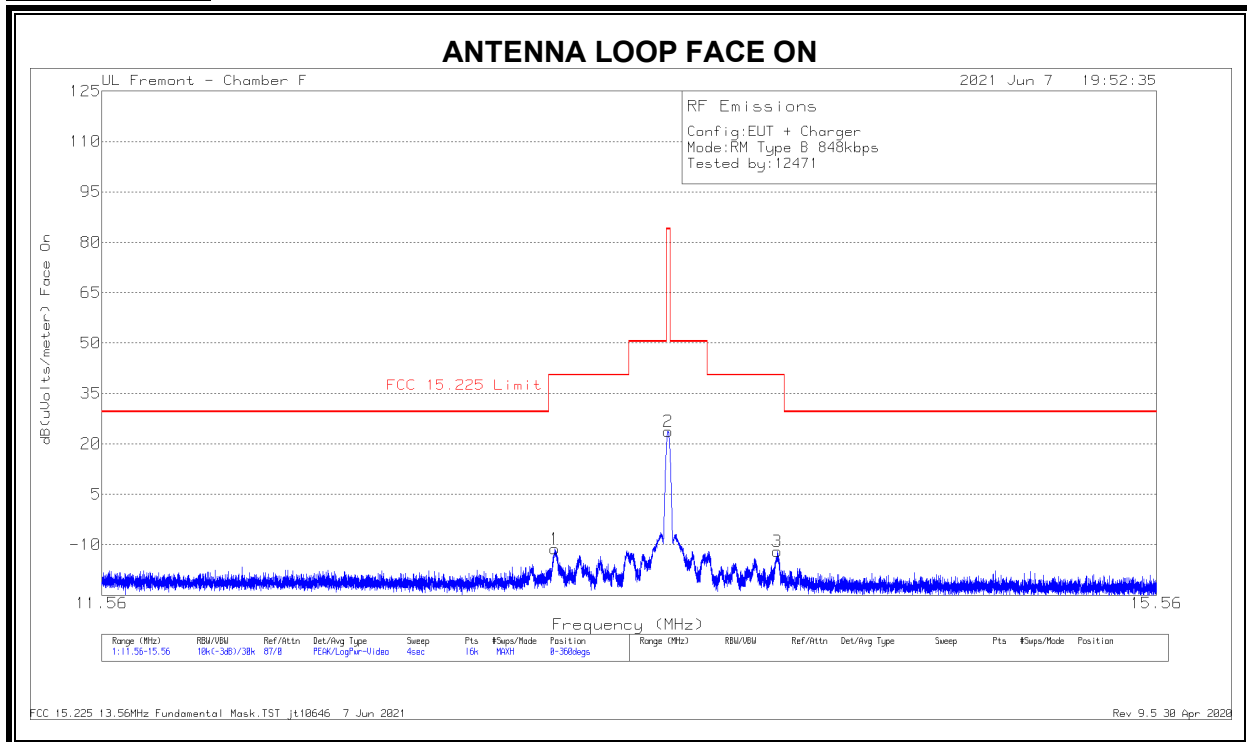
The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 0.15 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater.

RESULTS

8.2. PRIMARY ANTENNA FUNDAMENTAL & SPURIOUS EMISSIONS 0.15 - 30 MHz

8.2.1. READER MODE, TYPE B 848 Kbps

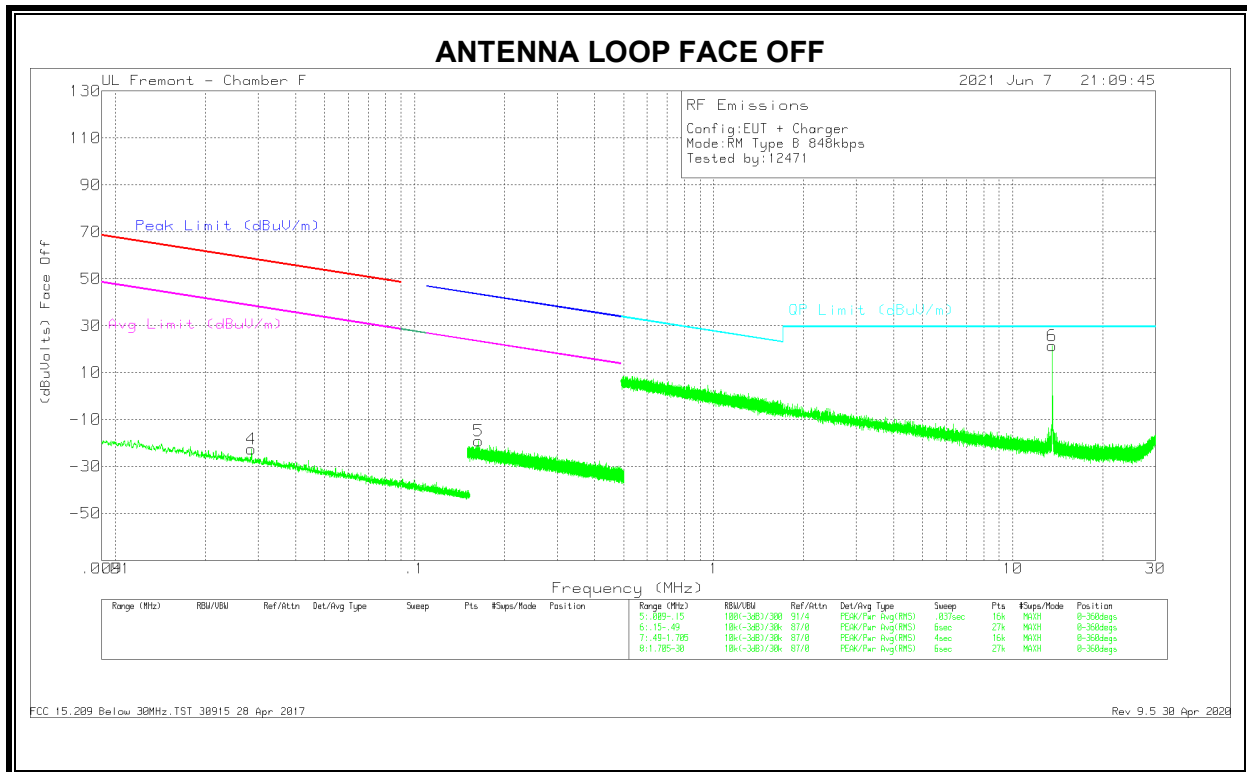
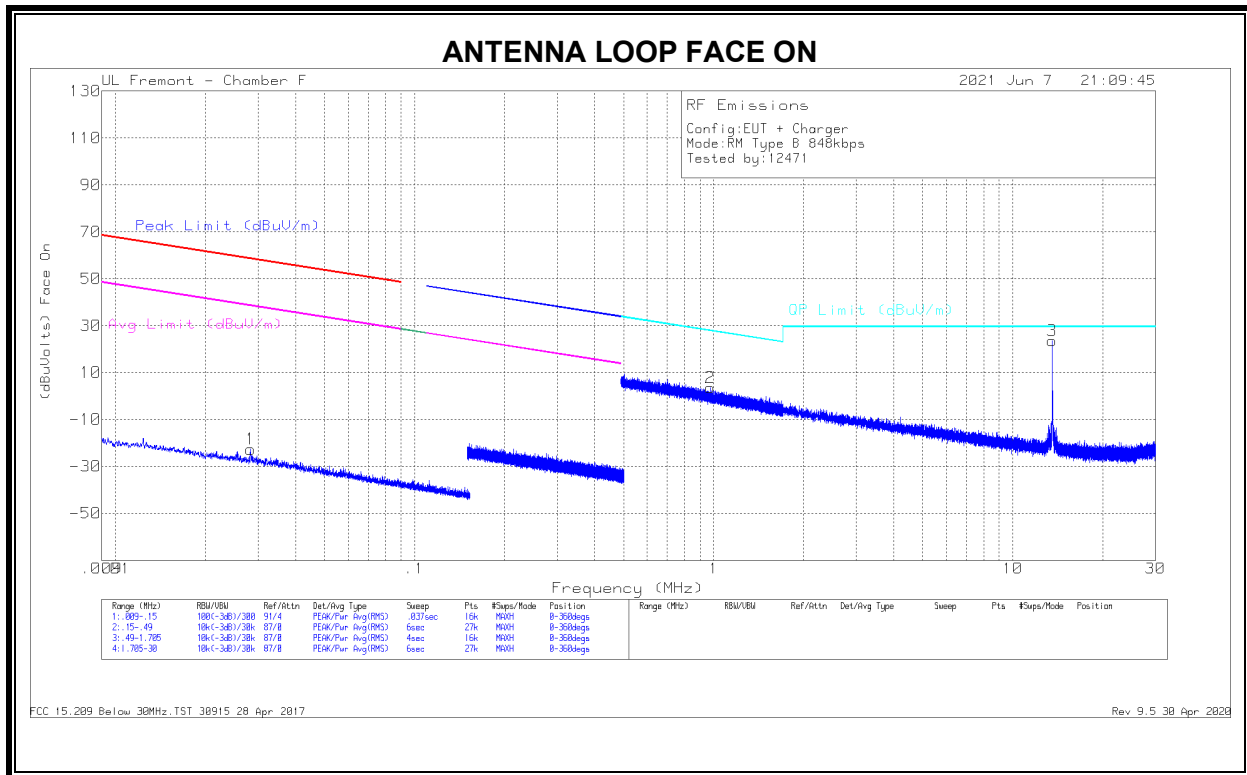
FUNDAMENTAL



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.13475	17.93	Pk	10.5	.4	-40	-11.17	40.51	-51.68	0-360	Face On
2	13.55963	53	Pk	10.4	.4	-40	23.8	84	-60.2	0-360	Face On
3	13.983	17.22	Pk	10.4	.4	-40	-11.98	40.51	-52.49	0-360	Face On
4	13.13931	17.16	Pk	10.5	.4	-40	-11.94	40.51	-52.45	0-360	Face Off
5	13.5583	52.03	Pk	10.4	.4	-40	22.83	84	-61.17	0-360	Face Off
6	13.98454	16.03	Pk	10.4	.4	-40	-13.17	40.51	-53.68	0-360	Face Off

Pk - Peak detector



DATA

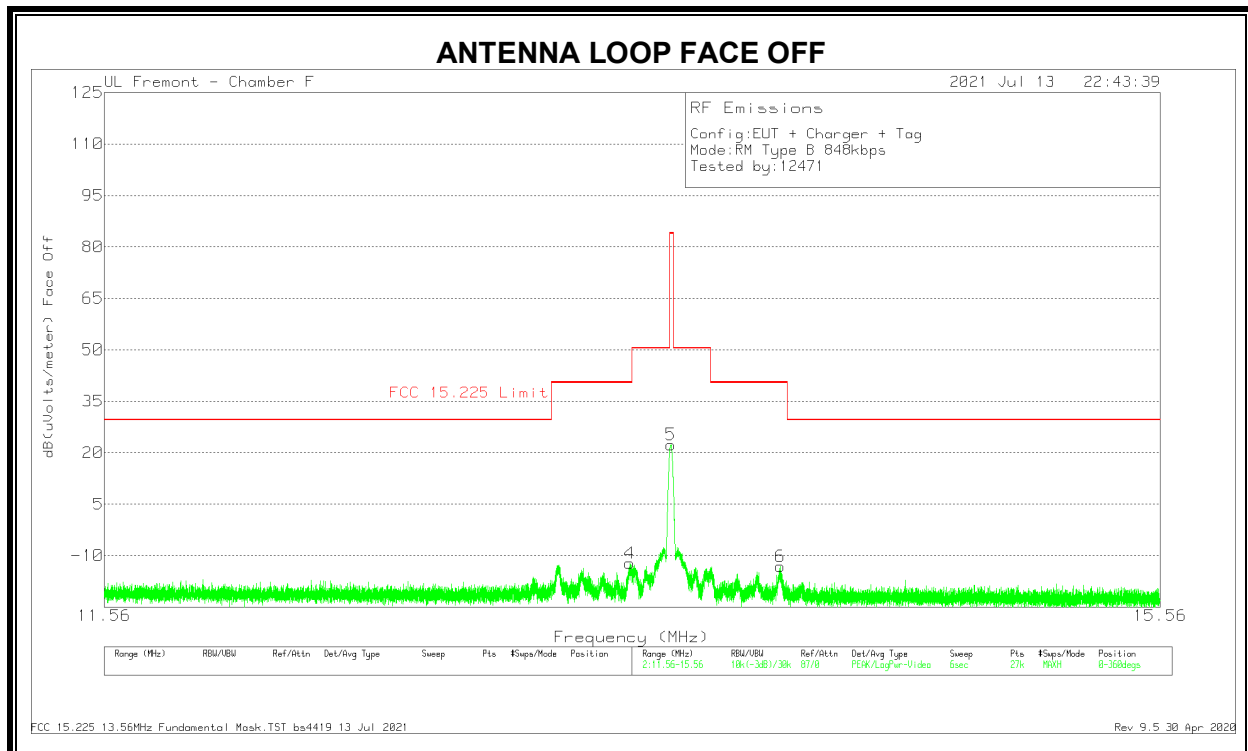
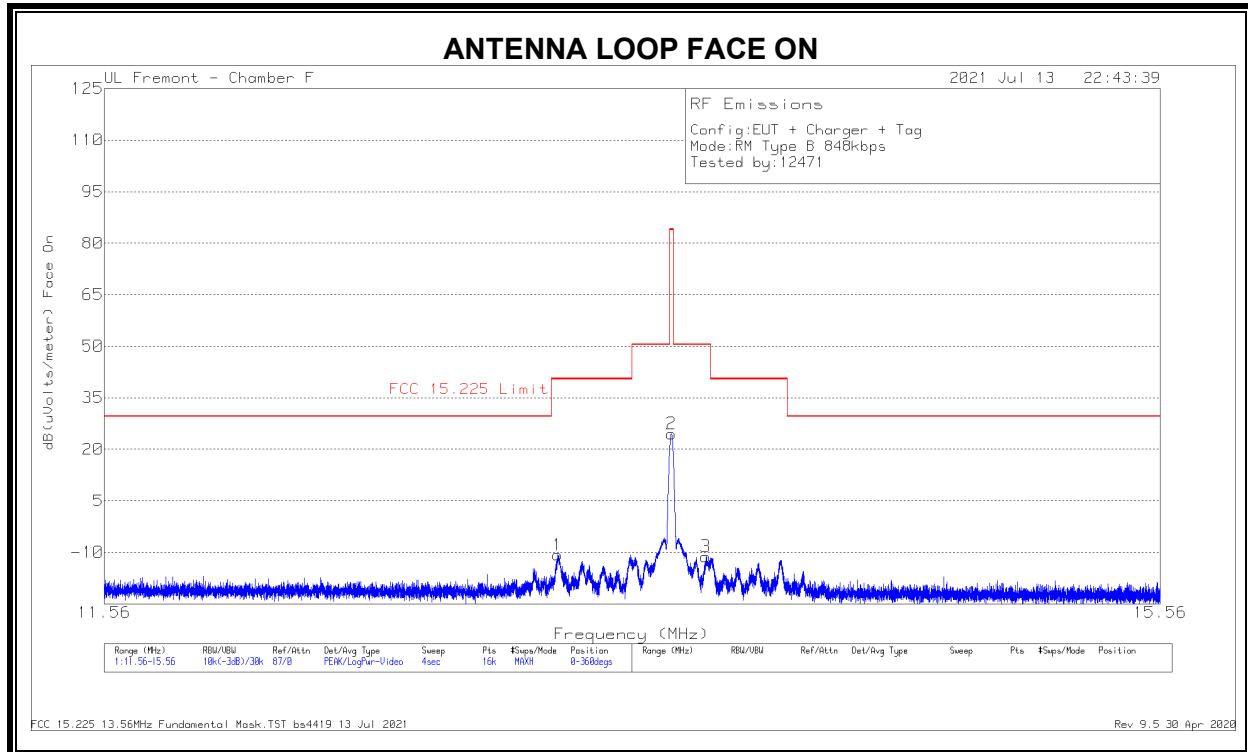
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.02831	42.21	Pk	15.1	0	-80	-22.69	58.54	-81.23	38.54	-61.23	0-360	Face On
4	.02849	42.54	Pk	15	0	-80	-22.46	58.49	-80.95	38.49	-60.95	0-360	Face Off
5	.16357	48.62	Pk	12.2	.1	-80	-19.08	43.35	-62.43	23.35	-42.43	0-360	Face Off

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.97503	31.82	Pk	11.6	.1	-40	3.52	27.84	-24.32	0-360	Face On
3	13.55893	52.86	Pk	10.4	.4	-40	23.66	29.5	-5.84	0-360	Face On
6	13.55998	50.76	Pk	10.4	.4	-40	21.56	29.5	-7.94	0-360	Face Off

Pk - Peak detector

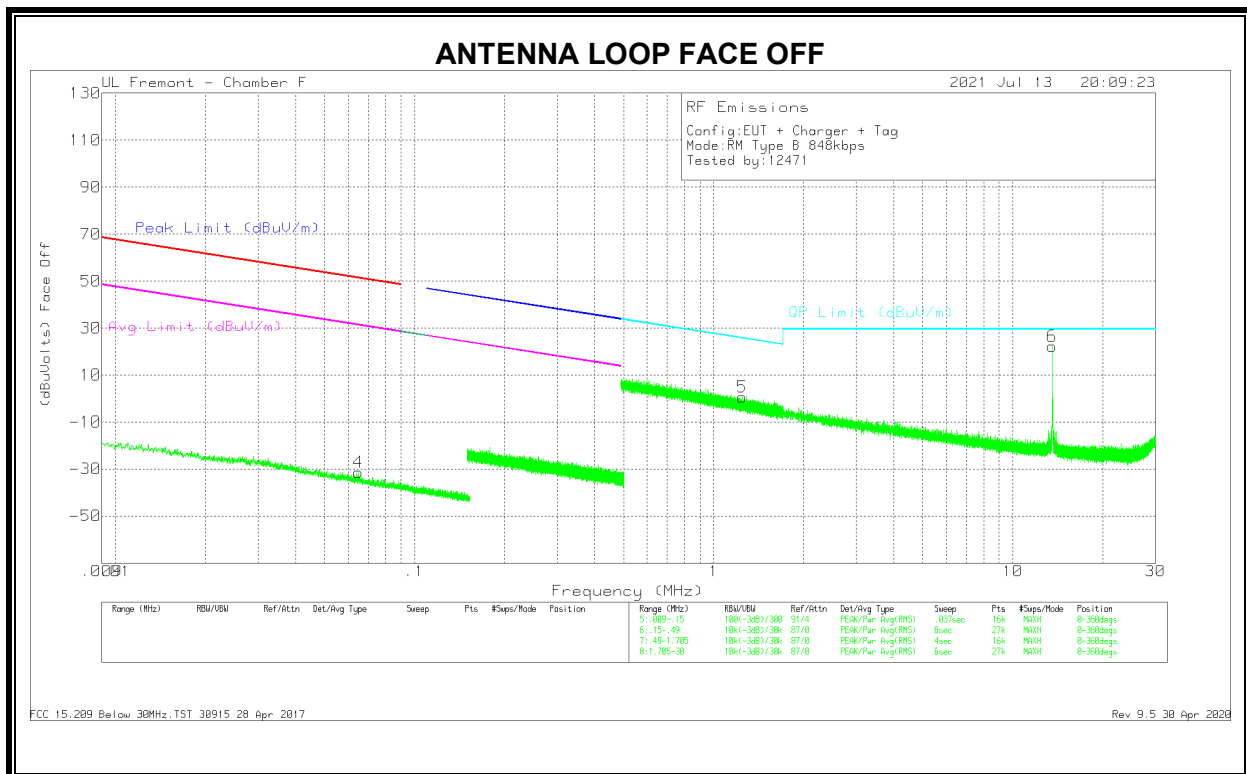
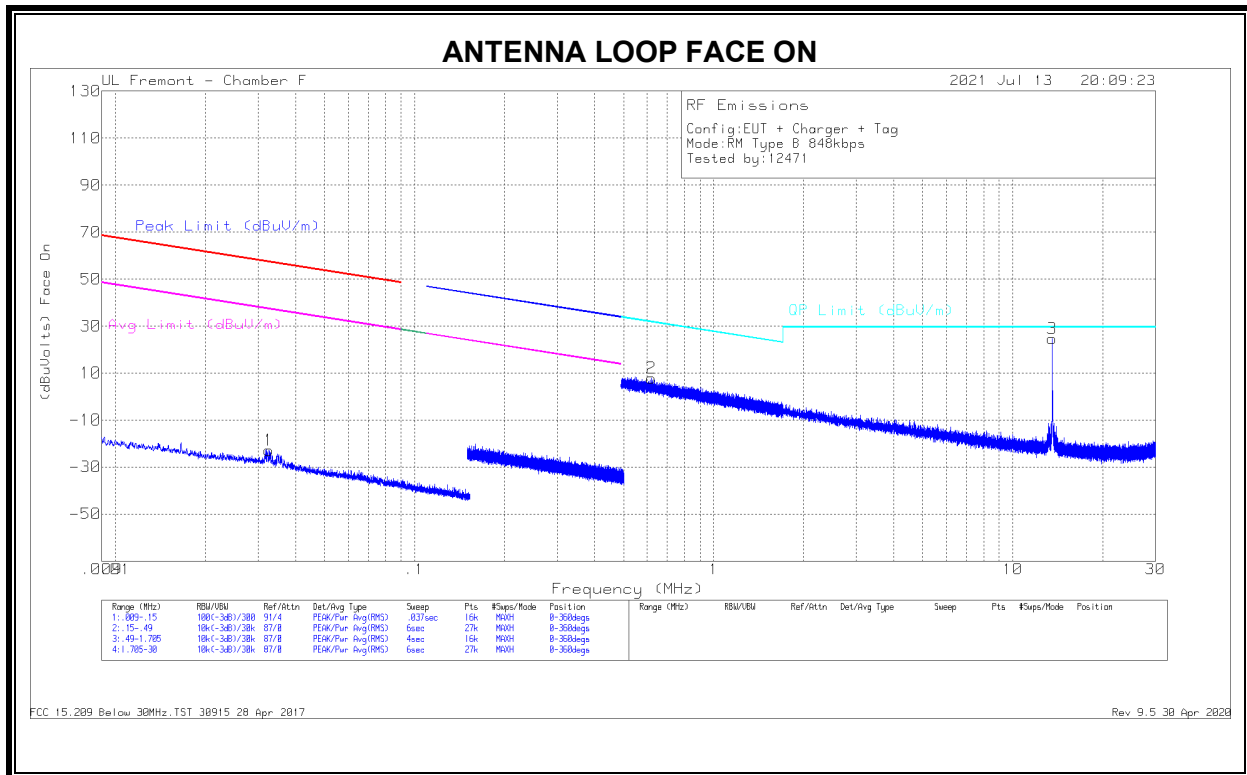
Note: Marker 3 and 6 are Fundamental signals.

8.2.2. TAG MODE, TYPE B 848 Kbps**FUNDAMENTAL**

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)	Polarity
1	13.13275	18.06	Pk	10.8	.4	-40	-10.74	40.51	-51.25	0-360	Face On
2	13.56013	53.45	Pk	10.7	.4	-40	24.55	84	-59.45	0-360	Face On
3	13.692	17.65	Pk	10.7	.4	-40	-11.25	50.5	-61.75	0-360	Face On
4	13.40201	16.58	Pk	10.8	.4	-40	-12.22	40.51	-52.73	0-360	Face Off
5	13.55896	51.22	Pk	10.7	.4	-40	22.32	84	-61.68	0-360	Face Off
6	13.98232	15.76	Pk	10.7	.4	-40	-13.14	40.51	-53.65	0-360	Face Off

Pk - Peak detector



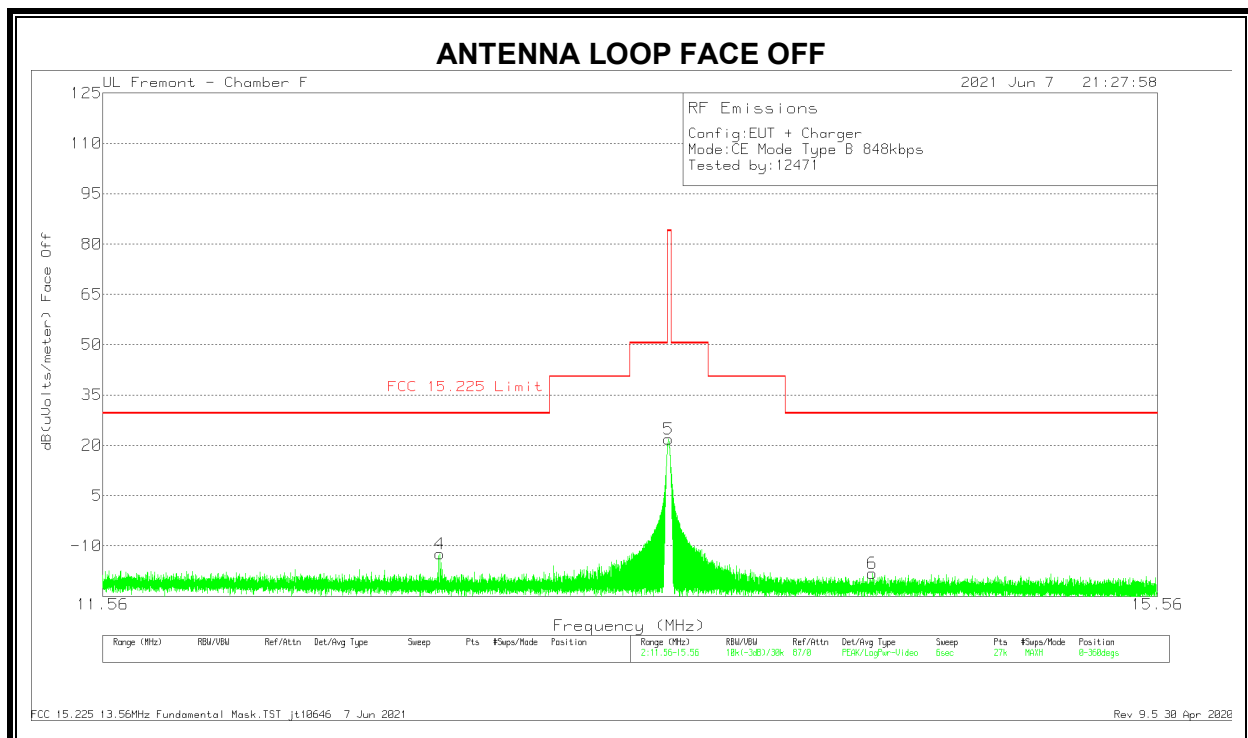
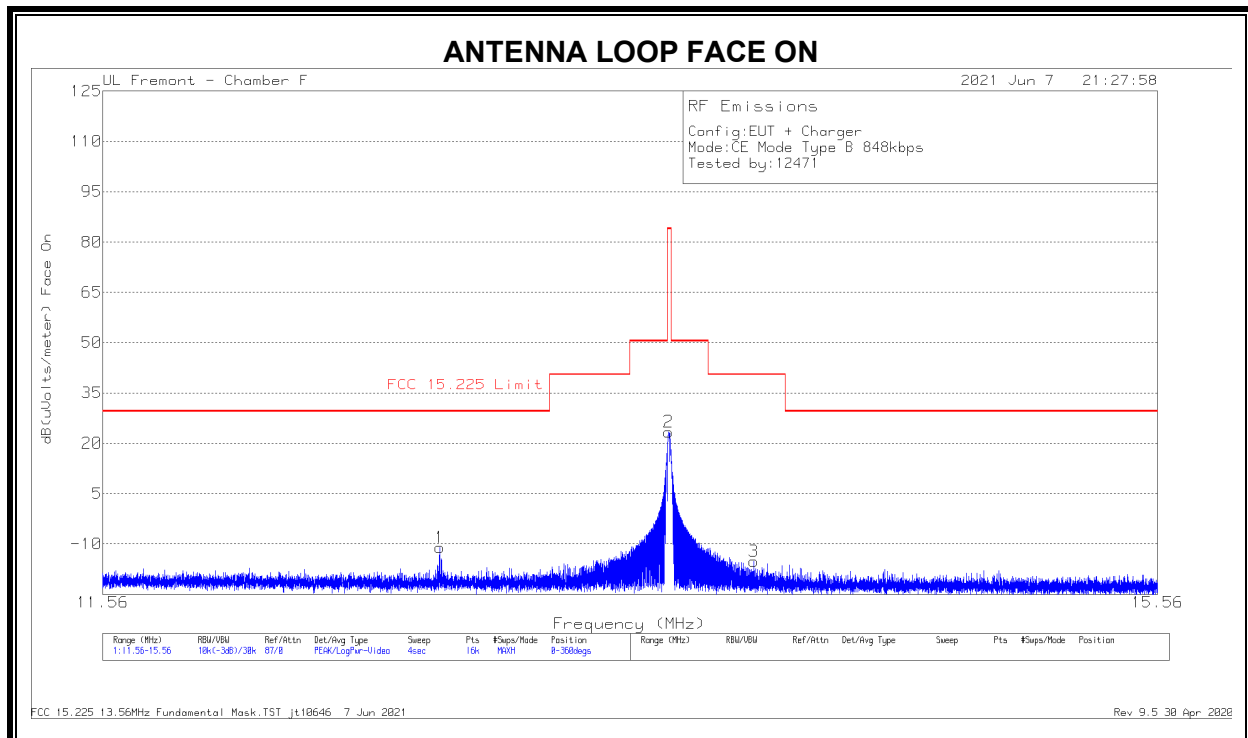
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.03263	42.76	Pk	14.4	0	-80	-22.84	57.31	-80.15	37.31	-60.15	0-360	Face On
4	.0649	36.09	Pk	12.5	0	-80	-31.41	51.34	-82.75	31.34	-62.75	0-360	Face Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.61874	36.53	Pk	11.3	.1	-40	7.93	31.78	-23.85	0-360	Face On
3	13.55893	53.45	Pk	10.7	.4	-40	24.55	29.5	-4.95	0-360	Face On
5	1.24787	29.16	Pk	11.5	.1	-40	.76	25.7	-24.94	0-360	Face Off
6	13.55788	51.24	Pk	10.7	.4	-40	22.34	29.5	-7.16	0-360	Face Off

Pk - Peak detector

Note: Marker 3 and 6 are Fundamental signals.

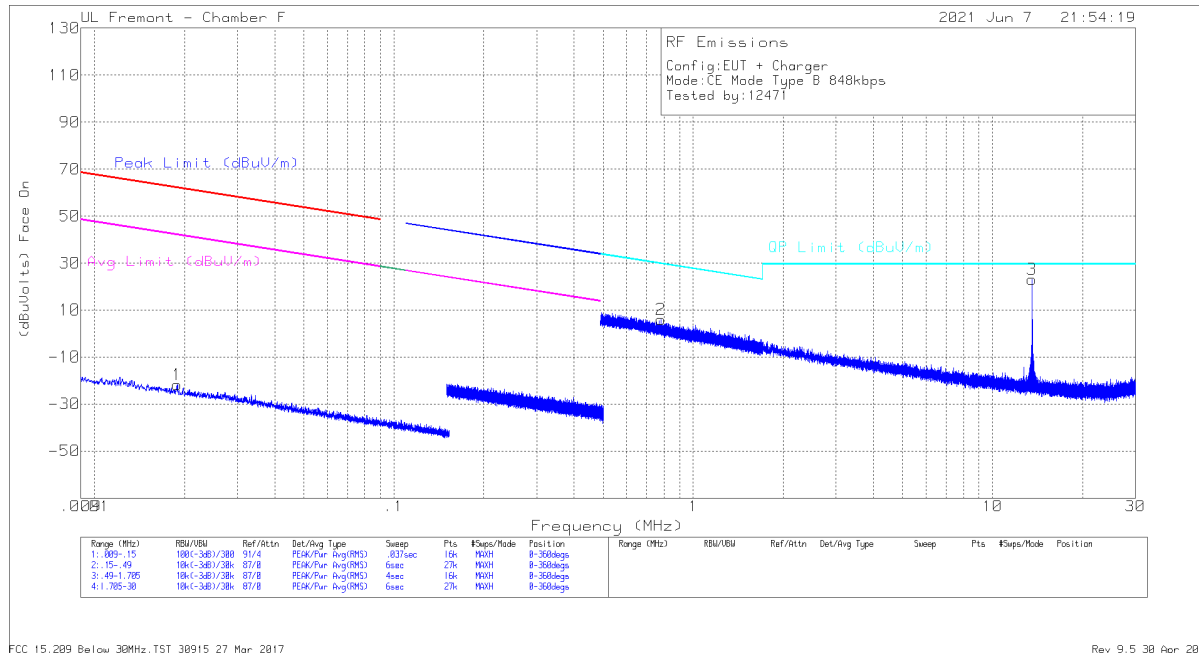
8.2.3. CE MODE, TYPE B 848 Kbps**FUNDAMENTAL**

DATA

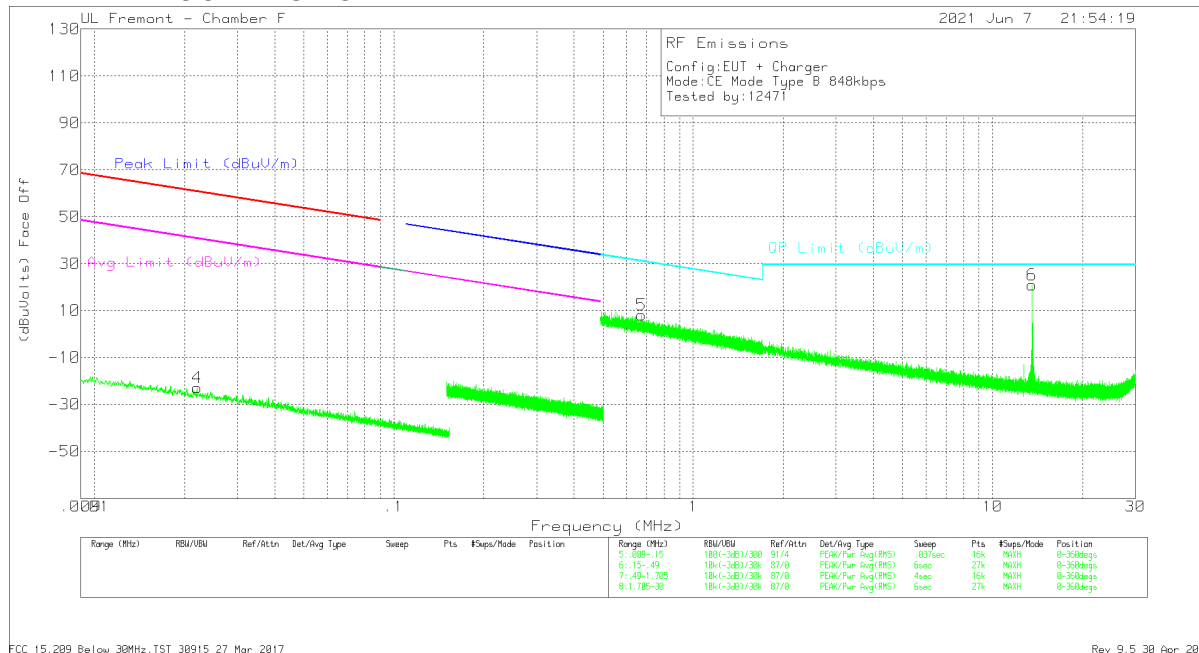
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.711	18.11	Pk	10.5	.4	-40	-10.99	29.54	-40.53	0-360	Face On
2	13.5585	52.64	Pk	10.4	.4	-40	23.44	84	-60.56	0-360	Face On
3	13.88725	13.98	Pk	10.4	.4	-40	-15.22	40.51	-55.73	0-360	Face On
4	12.71203	16.71	Pk	10.5	.4	-40	-12.39	29.54	-41.93	0-360	Face Off
5	13.55785	51.01	Pk	10.4	.4	-40	21.81	84	-62.19	0-360	Face Off
6	14.35927	11.1	Pk	10.4	.4	-40	-18.1	29.54	-47.64	0-360	Face Off

Pk - Peak detector

ANTENNA LOOP FACE ON



ANTENNA LOOP FACE OFF



DATA

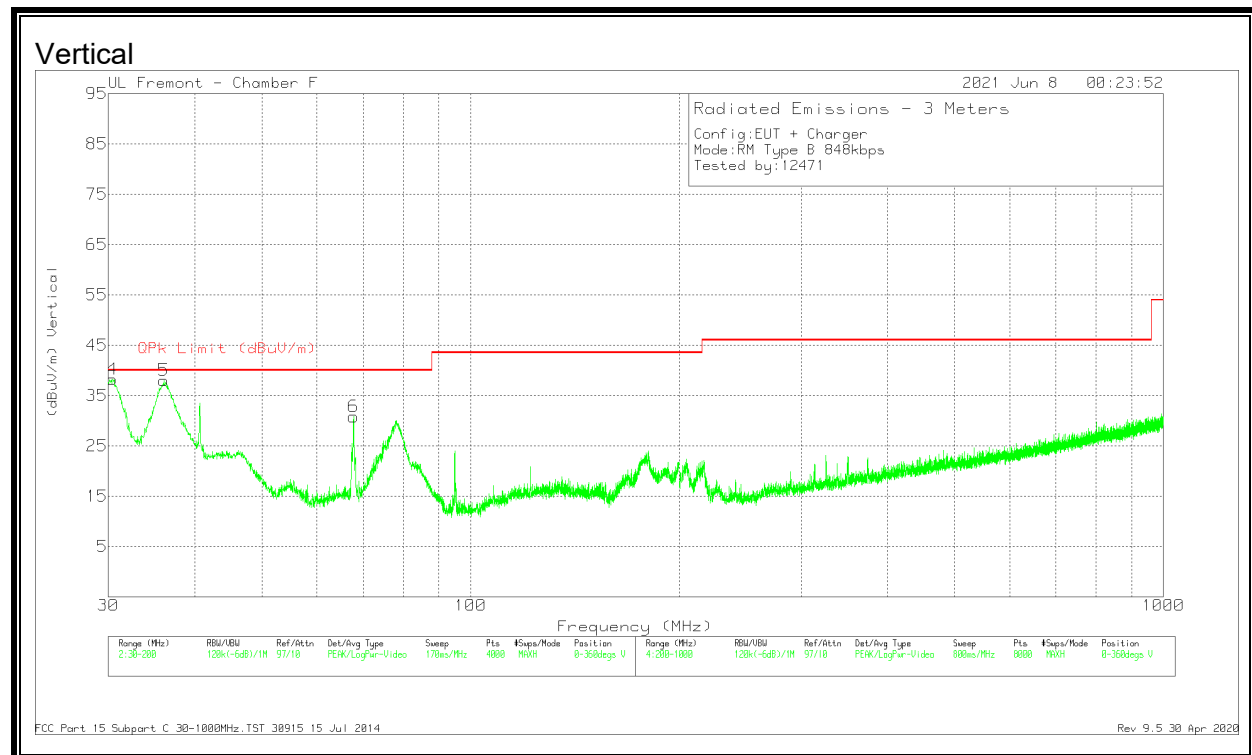
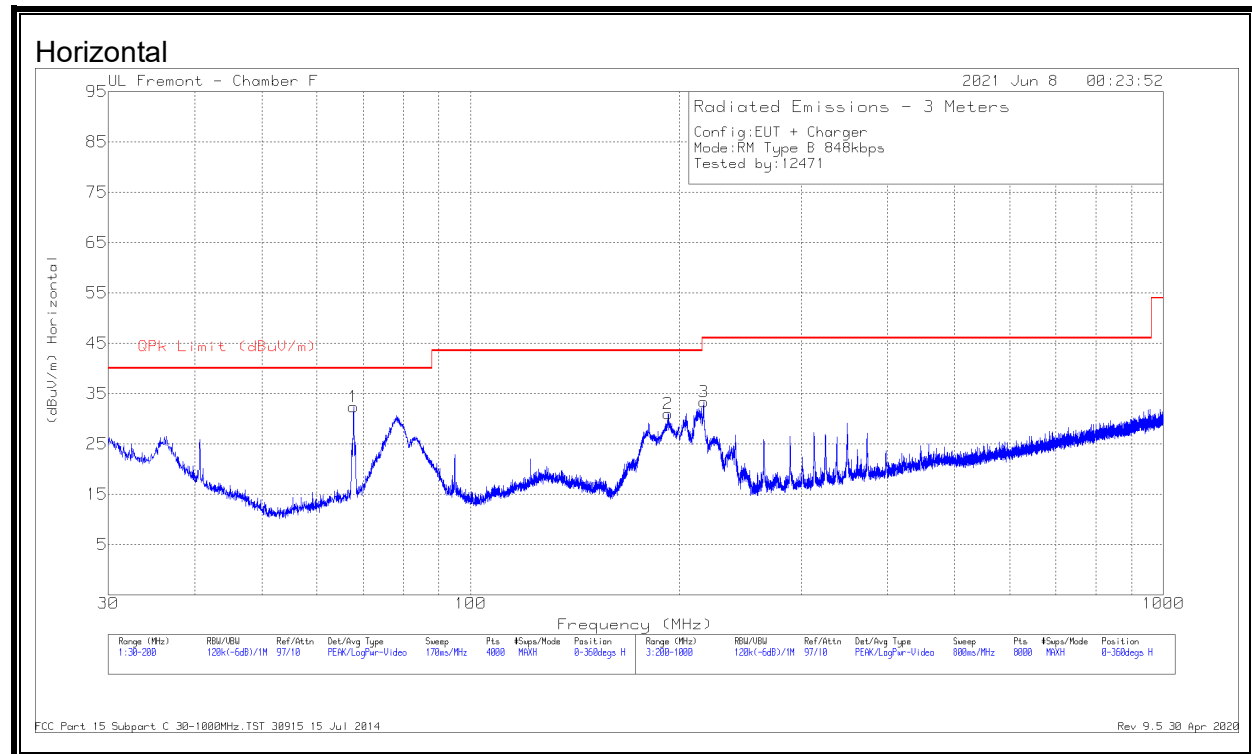
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.01894	42.85	Pk	15.4	0	-80	-21.75	62.04	-83.79	42.04	-63.79	0-360	Face On
4	.02202	42.31	Pk	14.8	0	-80	-22.89	60.73	-83.62	40.73	-63.62	0-360	Face Off

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.78199	35.04	Pk	10.8	.1	-40	5.94	29.75	-23.81	0-360	Face On
3	13.55893	52.42	Pk	10.3	.4	-40	23.12	29.5	-6.38	0-360	Face On
5	.67293	37.29	Pk	10.8	.1	-40	8.19	31.05	-22.86	0-360	Face Off
6	13.55788	50.11	Pk	10.3	.4	-40	20.81	29.5	-8.69	0-360	Face Off

Pk - Peak detector

Note: Marker 3 and 6 are Fundamental signals.

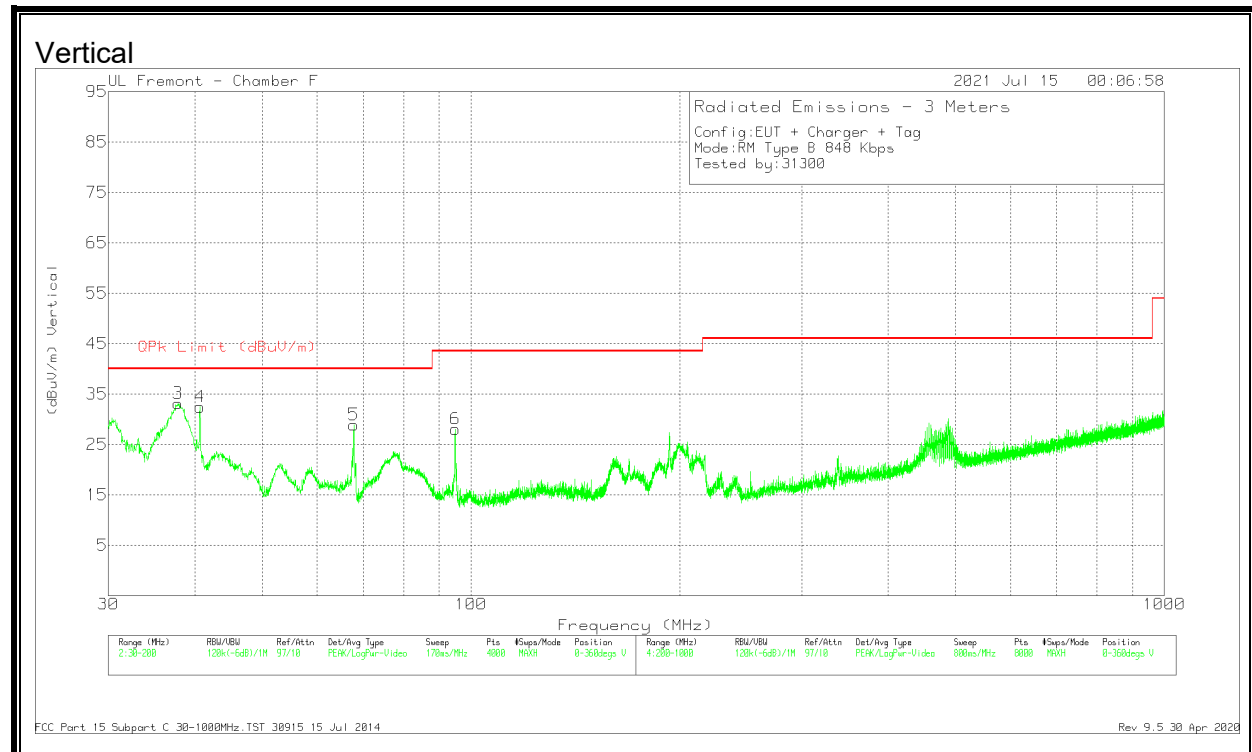
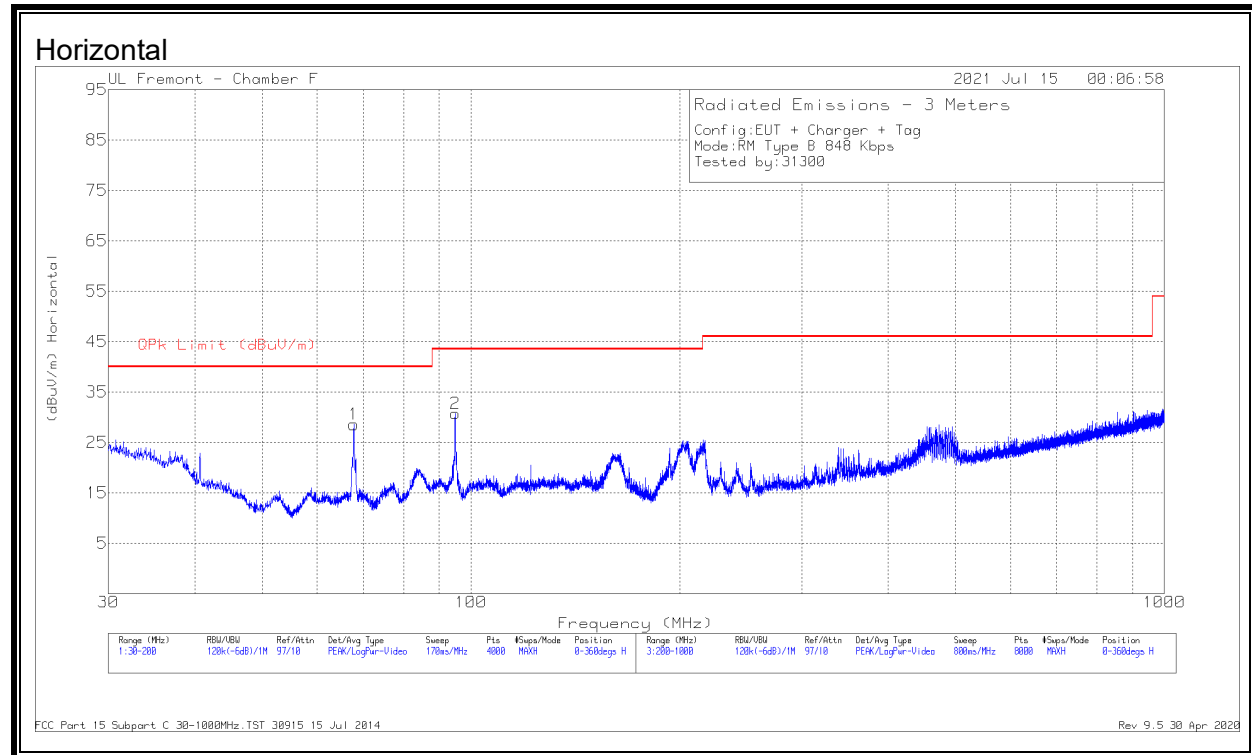
8.3. PRIMARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz**8.3.1. READER MODE, Type B 848 Kbps****SPURIOUS EMISSION**

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	67.7923	49.63	Pk	14.2	-31.5	32.33	40	-7.67	0-360	300	H
2	192.8596	44.07	Pk	17.3	-30.4	30.97	43.52	-12.55	0-360	201	H
3	217.2022	46.84	Pk	16.8	-30.3	33.34	46.02	-12.68	0-360	201	H
4	30.528	38.57	Qp	27.7	-31.9	34.37	40	-5.63	244	108	V
5	40.6751	42.41	Qp	20.4	-31.8	31.01	40	-8.99	271	120	V
6	67.7923	48.11	Pk	14.2	-31.5	30.81	40	-9.19	0-360	100	V

Pk - Peak detector

Qp - Quasi-Peak detector

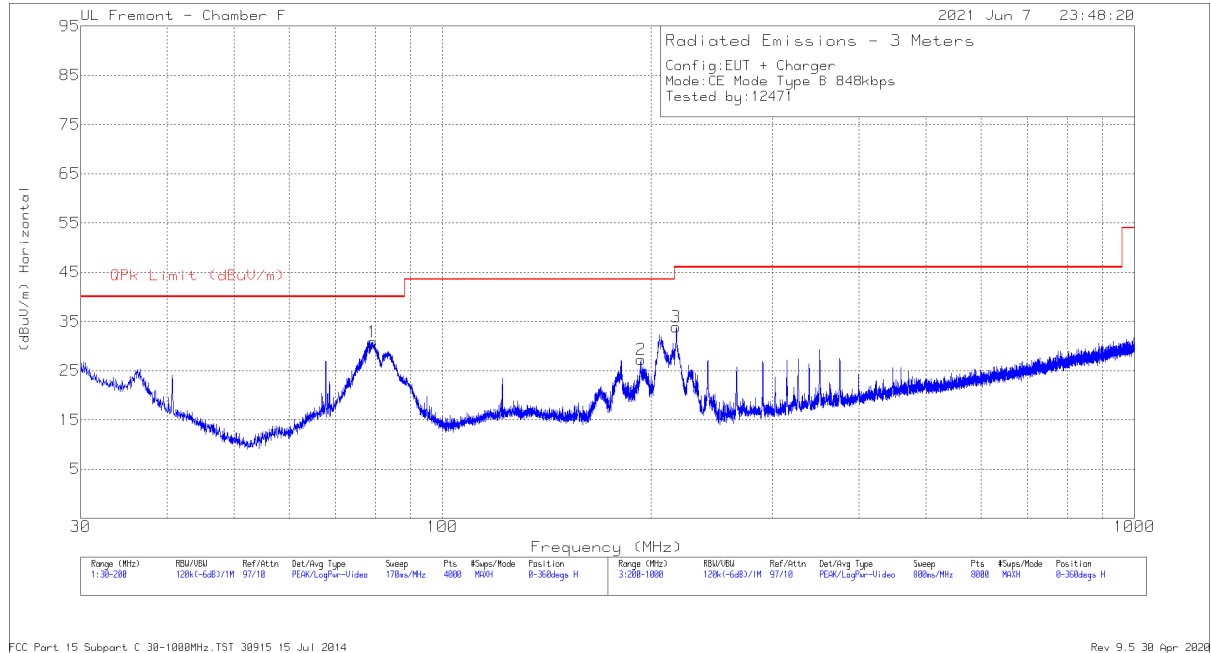
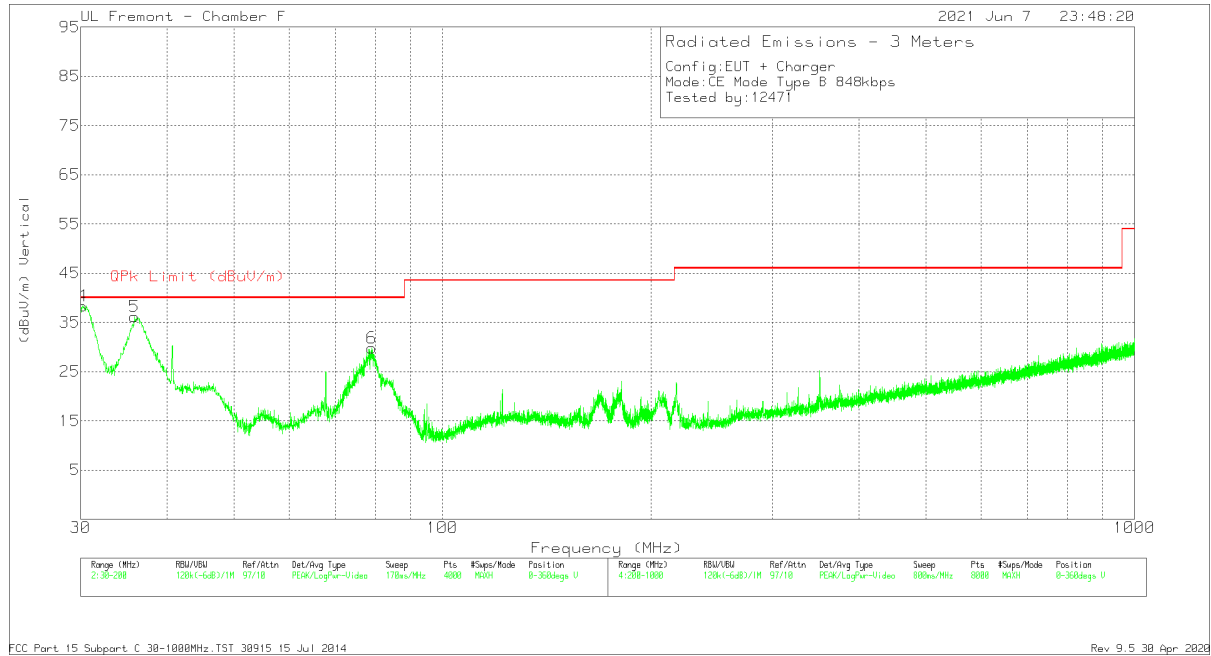
8.3.2. TAG MODE, Type B 848 Kbps**SPURIOUS EMISSION**

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	67.7923	45.87	Pk	14.2	-31.5	28.57	40	-11.43	0-360	200	H
2	94.9143	47.62	Pk	14.3	-31.2	30.72	43.52	-12.8	0-360	200	H
3	* 37.822	42.44	Pk	22.5	-31.8	33.14	40	-6.86	0-360	100	V
4	40.6703	43.84	Pk	20.4	-31.8	32.44	40	-7.56	0-360	100	V
5	67.7923	46.19	Pk	14.2	-31.5	28.89	40	-11.11	0-360	100	V
6	94.9143	44.95	Pk	14.3	-31.2	28.05	43.52	-15.47	0-360	100	V

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

Pk - Peak detector

8.3.3. CE MODE, Type B 848 Kbps**Horizontal****Vertical**

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	79.1427	48.51	Pk	13.7	-31.4	30.81	40	-9.19	0-360	201	H
2	193.6674	40.24	Pk	17.4	-30.4	27.24	43.52	-16.28	0-360	100	H
3	217.6023	47.28	Pk	16.9	-30.3	33.88	46.02	-12.14	0-360	99	H
4	30.513	38.83	Qp	27.7	-31.9	34.63	40	-5.37	310	105	V
5	36.399	42.37	Qp	23.6	-31.8	34.17	40	-5.83	249	105	V
6	78.9727	47.52	Pk	13.7	-31.4	29.82	40	-10.18	0-360	100	V

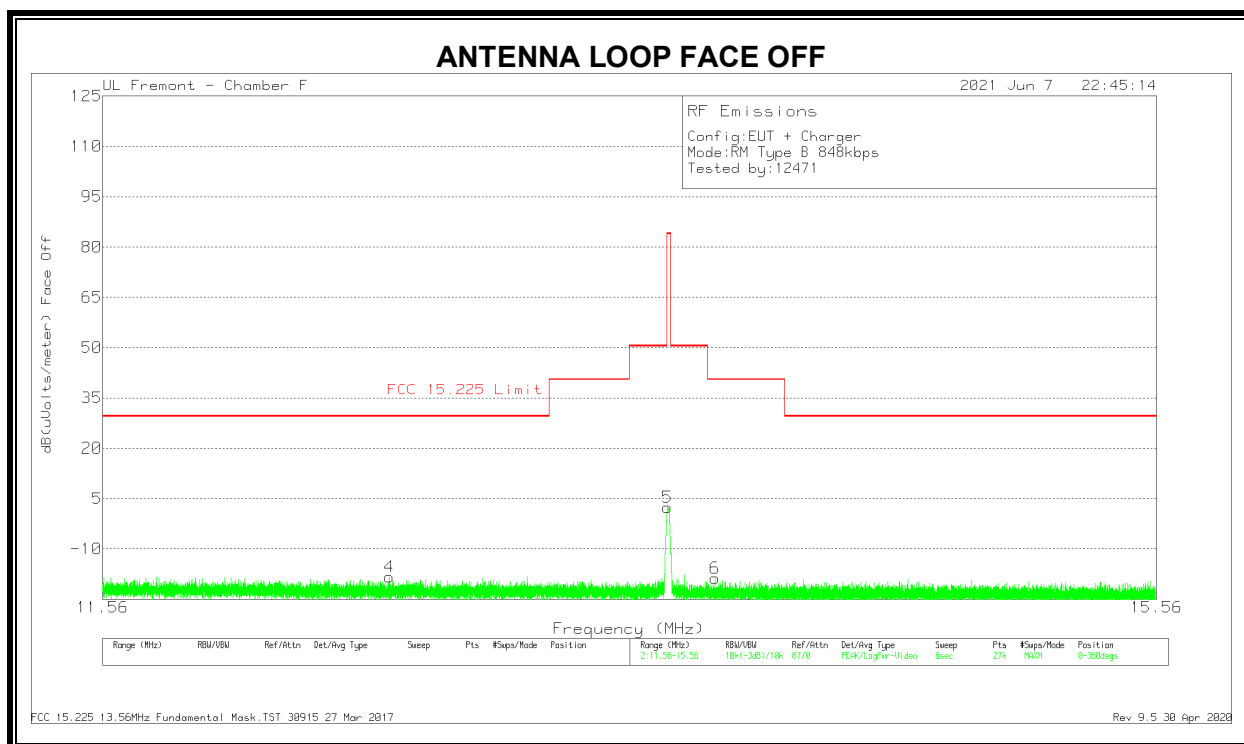
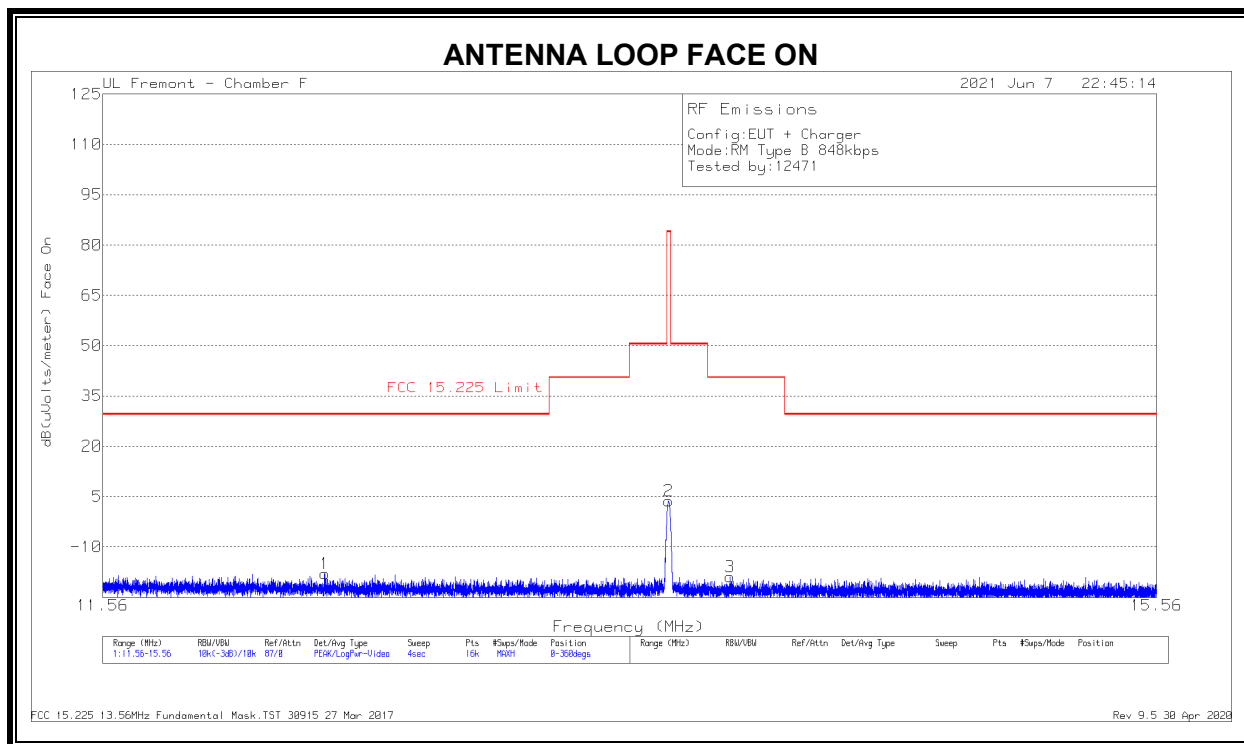
Pk - Peak detector

Qp - Quasi-Peak detector

8.4. SECONDARY ANTENNA FUNDAMENTAL & SPURIOUS EMISSION 0.15-30 MHz

8.4.1. READER MODE, TYPE B 848 Kbps

FUNDAMENTAL

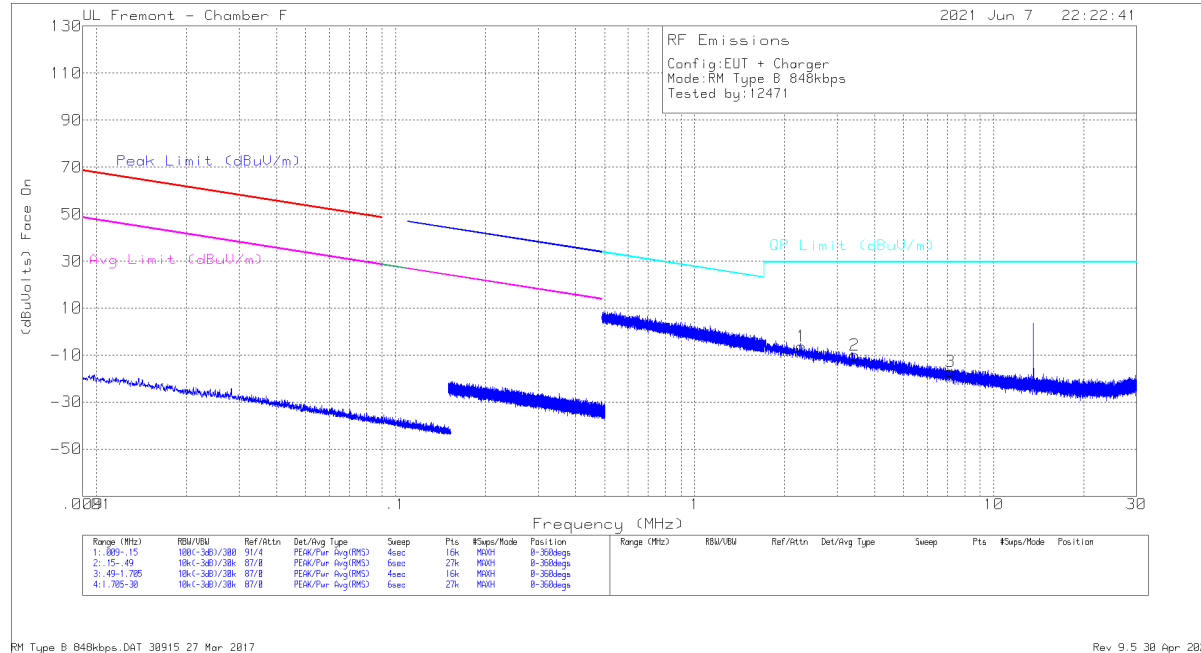


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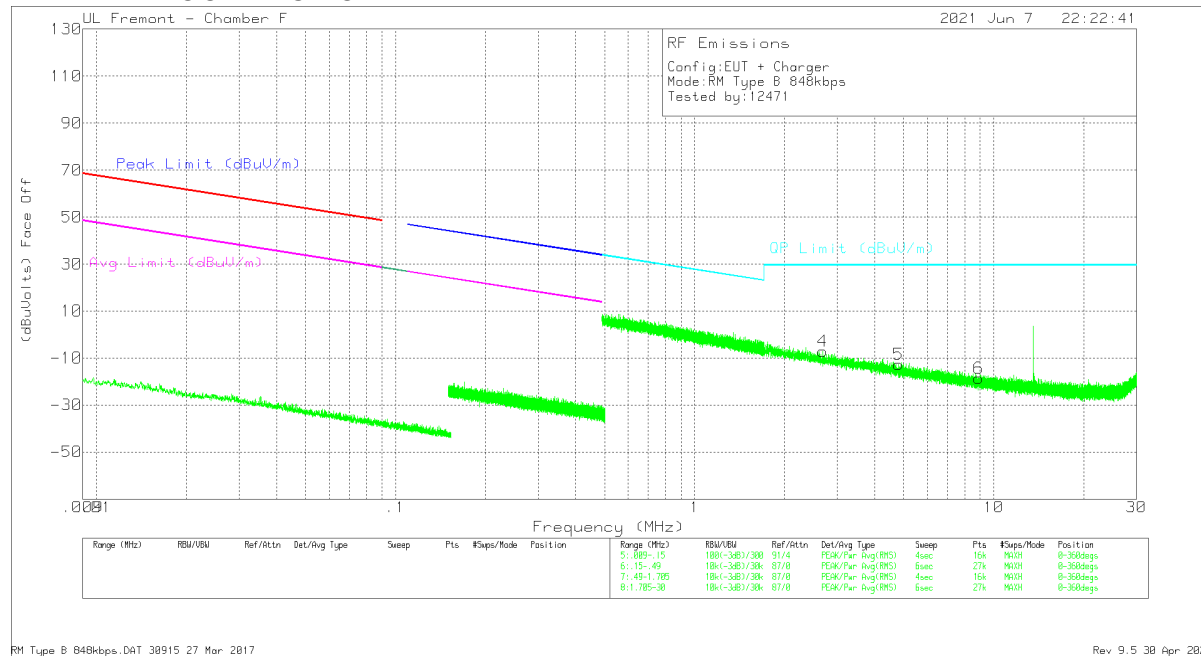
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.3065	11.23	Pk	10.4	.4	-40	-17.97	29.54	-47.51	0-360	Face On
2	13.56	33.04	Pk	10.3	.4	-40	3.74	84	-80.26	0-360	Face On
3	13.798	10.42	Pk	10.3	.4	-40	-18.88	40.51	-59.39	0-360	Face On
4	12.53443	10.8	Pk	10.4	.4	-40	-18.4	29.54	-47.94	0-360	Face Off
5	13.55652	31.66	Pk	10.3	.4	-40	2.36	84	-81.64	0-360	Face Off
6	13.73767	10.62	Pk	10.3	.4	-40	-18.68	40.51	-59.19	0-360	Face Off

Pk - Peak detector

ANTENNA LOOP FACE ON



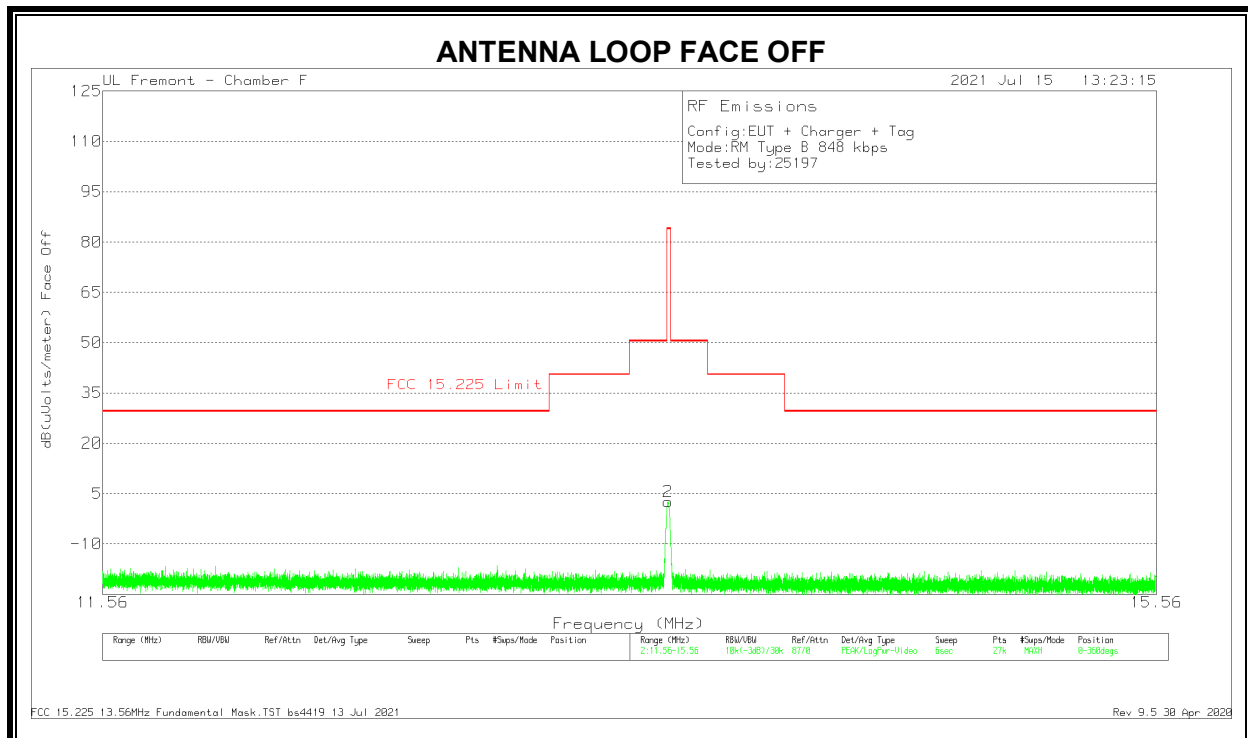
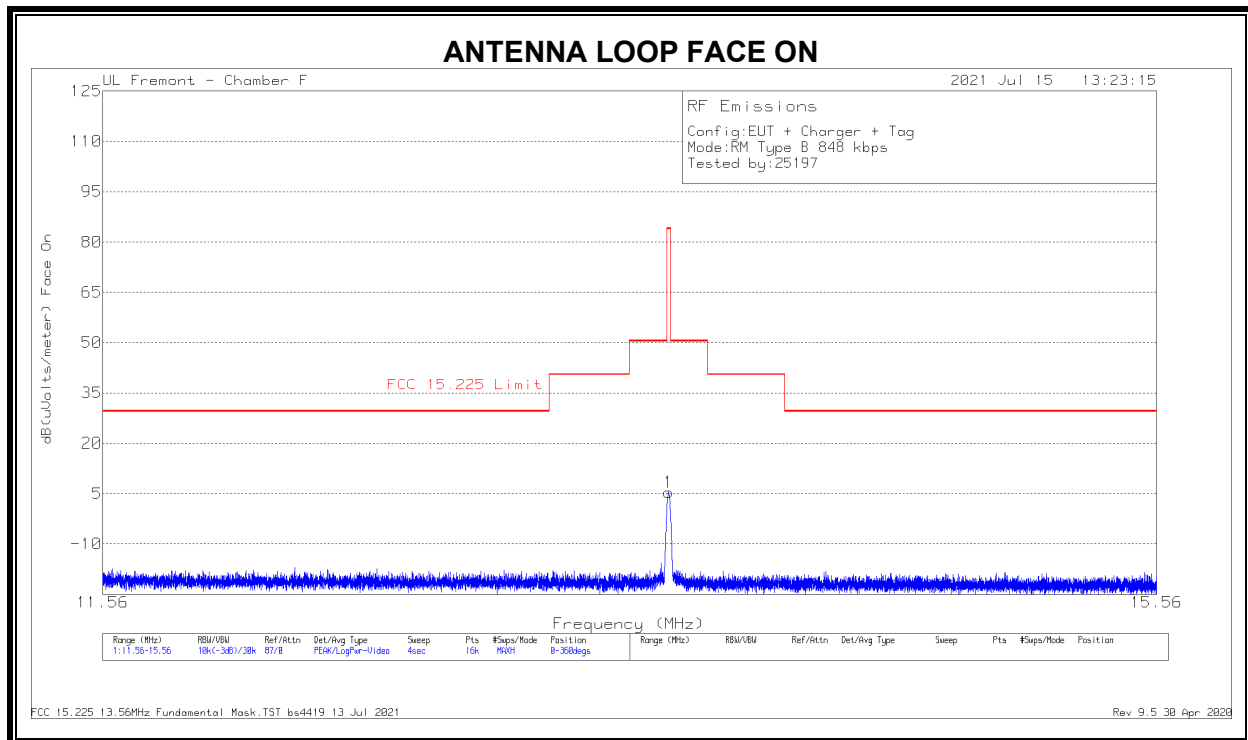
ANTENNA LOOP FACE OFF



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	2.27406	22.8	Pk	10.8	.2	-40	-6.2	29.5	-35.7	0-360	Face-On
2	3.42896	18.99	Pk	10.8	.2	-40	-10.01	29.5	-39.51	0-360	Face-On
3	7.1525	12.04	Pk	10.8	.3	-40	-16.86	29.5	-46.36	0-360	Face-On
4	2.67964	21.93	Pk	10.8	.2	-40	-7.07	29.5	-36.57	0-360	Face-Off
5	4.80708	16.19	Pk	10.9	.2	-40	-12.71	29.5	-42.21	0-360	Face-Off
6	8.89847	10.55	Pk	10.7	.3	-40	-18.45	29.5	-47.95	0-360	Face-Off

Pk - Peak detector

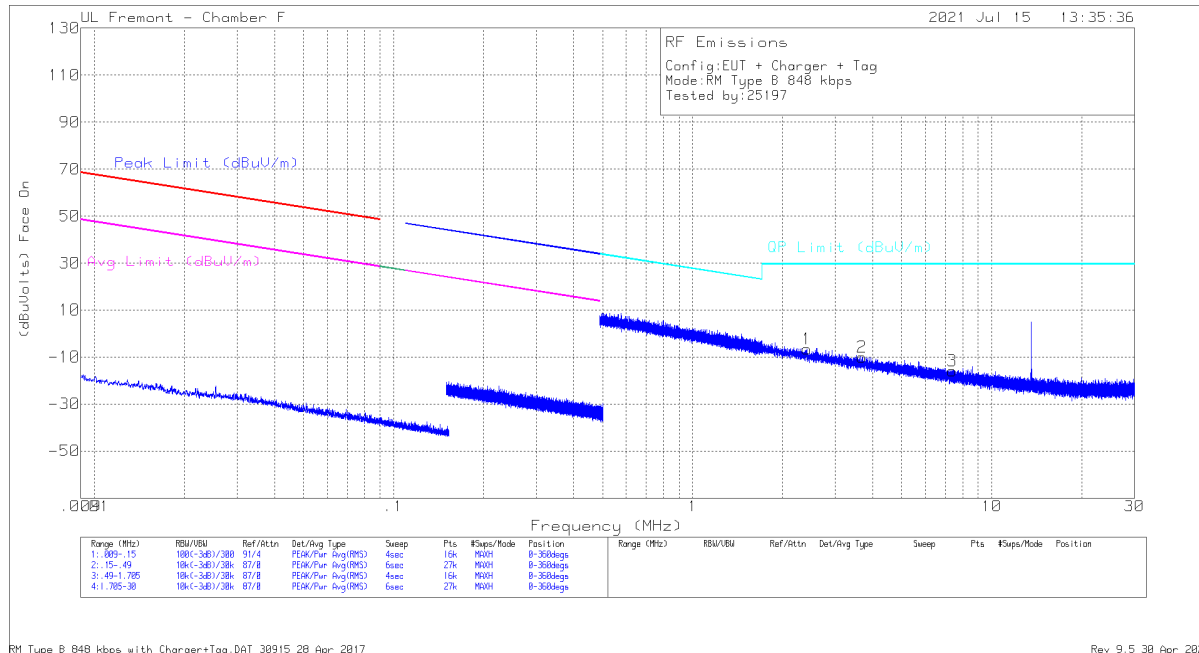
8.4.2. TAG MODE, TYPE B 848 Kbps**FUNDAMENTAL**

DATA

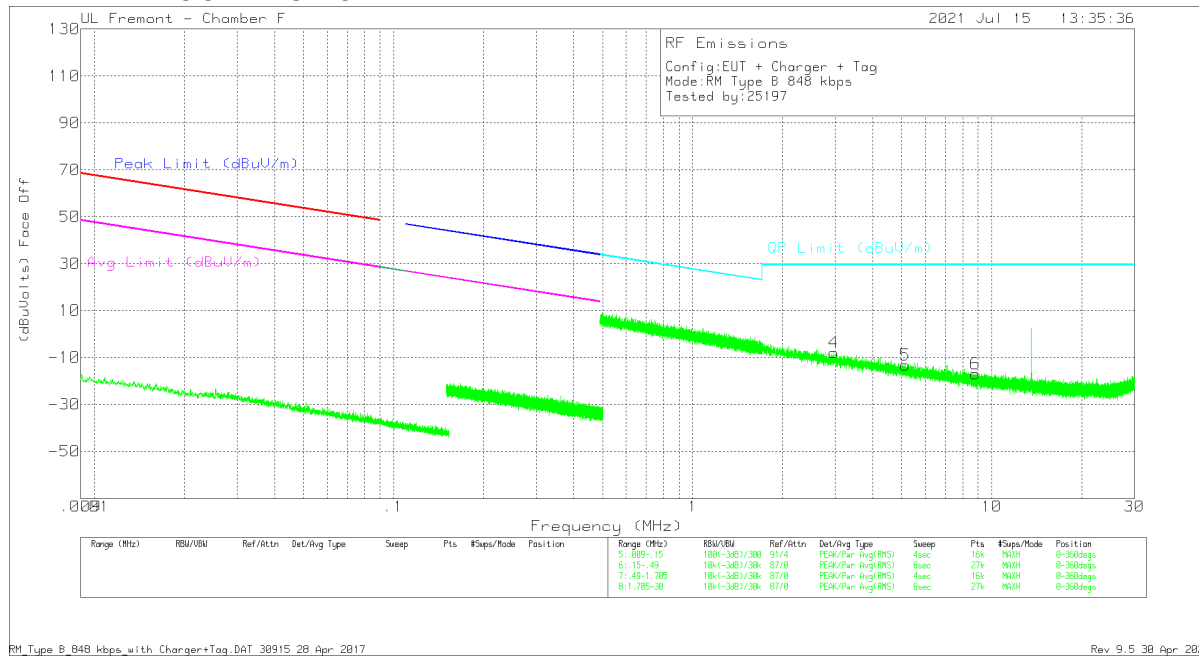
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.5595	34.29	Pk	10.7	.4	-40	5.39	84	-78.61	0-360	Face On
2	13.5583	31.47	Pk	10.7	.4	-40	2.57	84	-81.43	0-360	Face Off

Pk - Peak detector

ANTENNA LOOP FACE ON



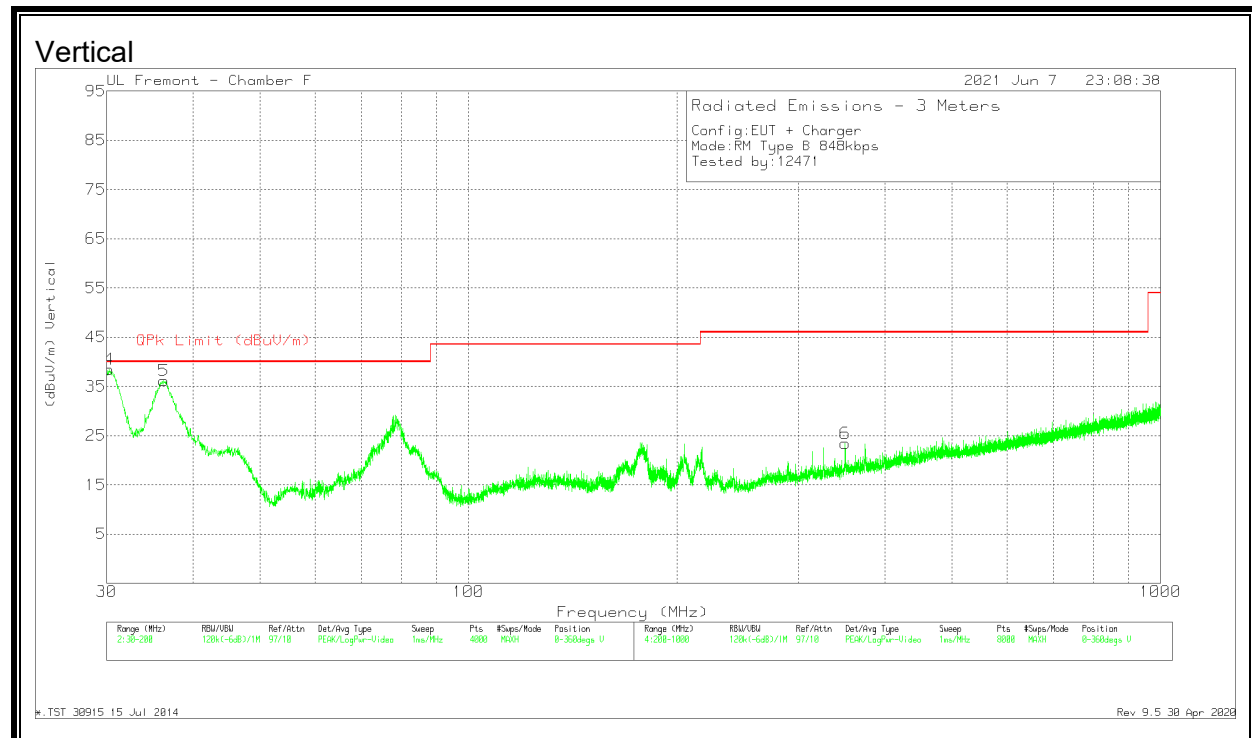
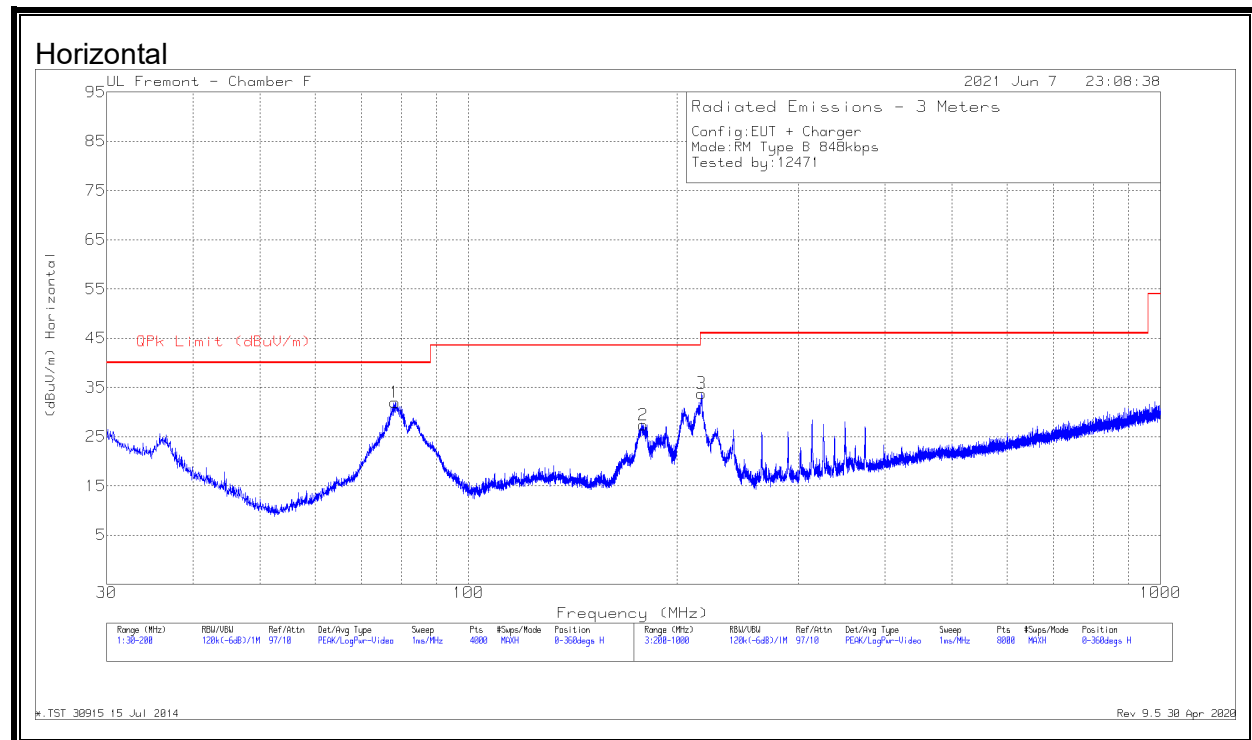
ANTENNA LOOP FACE OFF



DATA

Marker	Frequen cy (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Correcte d Reading (dBuVol ts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	2.40926	21.81	Pk	11.4	.2	-40	-6.59	29.5	-36.09	0-360	Face-On
2	3.67734	18.28	Pk	11.5	.2	-40	-10.02	29.5	-39.52	0-360	Face-On
3	7.37468	12.63	Pk	11.1	.3	-40	-15.97	29.5	-45.47	0-360	Face-On
4	2.96365	20.51	Pk	11.4	.2	-40	-7.89	29.5	-37.39	0-360	Face-Off
5	5.14349	15.25	Pk	11.3	.2	-40	-13.25	29.5	-42.75	0-360	Face-Off
6	8.81044	12.02	Pk	10.8	.3	-40	-16.88	29.5	-46.38	0-360	Face-Off

Pk - Peak detector

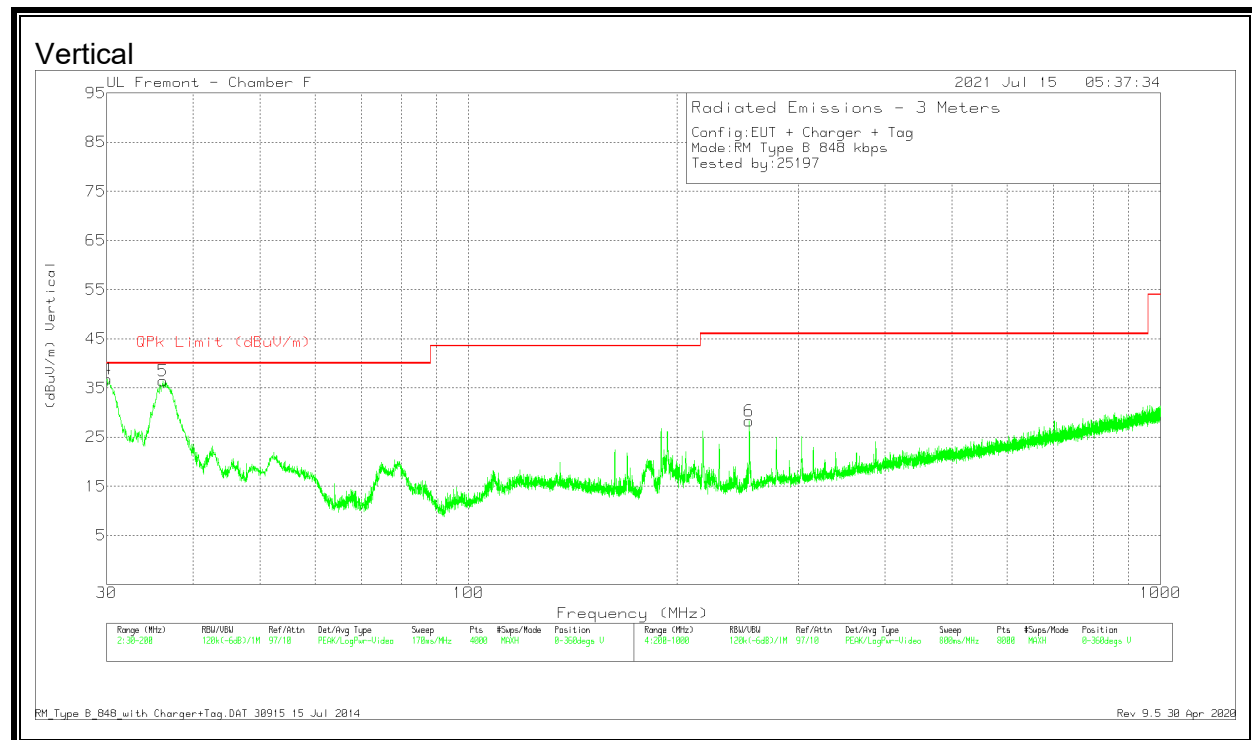
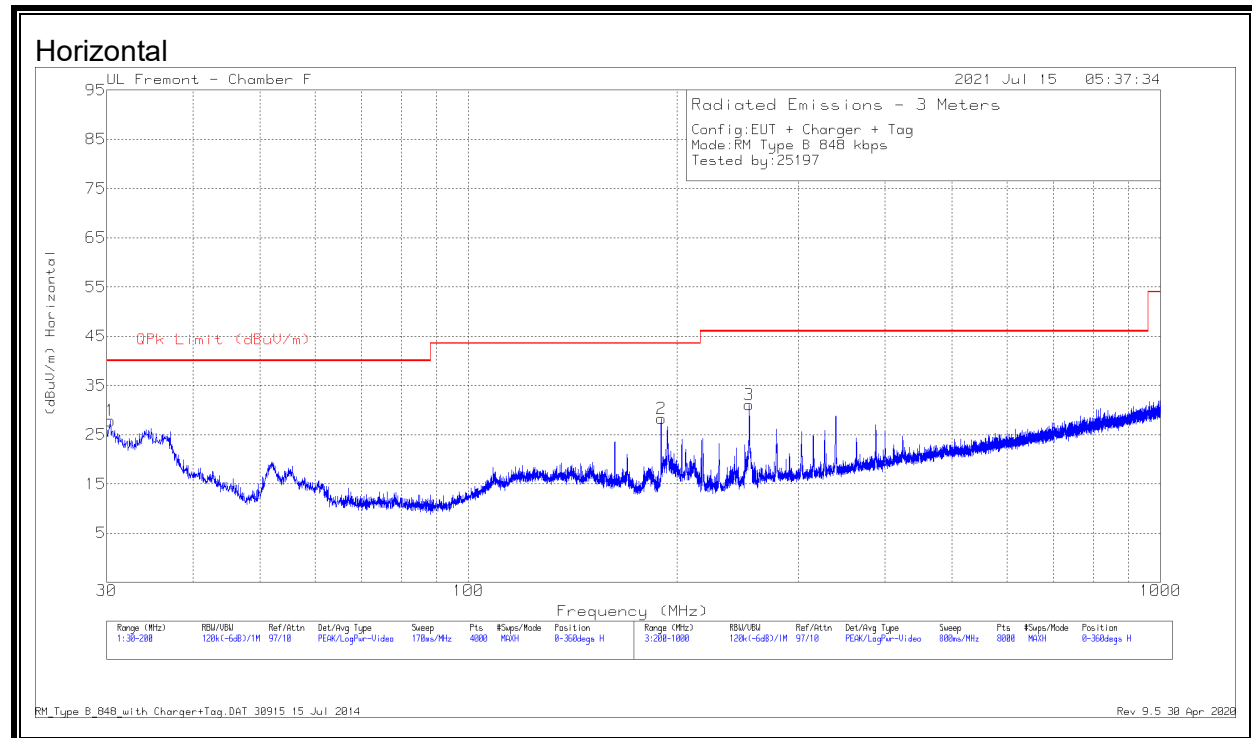
8.5. SECONDARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz**8.5.1. READER MODE, Type B 848 Kbps**

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	78.2925	49.52	Pk	13.8	-31.4	31.92	40	-8.08	0-360	201	H
2	178.7885	40.9	Pk	17	-30.5	27.4	43.52	-16.12	0-360	201	H
3	217.3022	47.3	Pk	16.8	-30.3	33.8	46.02	-12.22	0-360	100	H
4	30.435	38.57	Qp	27.8	-31.9	34.47	40	-5.53	278	105	V
5	36.3996	40.94	Qp	23.6	-31.8	32.74	40	-7.26	276	105	V
6	350.2195	32.56	Pk	20.6	-29.7	23.46	46.02	-22.56	0-360	99	V

Pk - Peak detector

Qp - Quasi-Peak detector

8.5.2. TAG Mode, Type B 848 Kbps

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	30.3401	31.82	Pk	27.9	-31.9	27.82	40	-12.18	0-360	201	H
2	189.8414	41.76	Pk	17.1	-30.6	28.26	43.52	-15.26	0-360	99	H
3	* 254.3071	43.48	Pk	17.7	-30.1	31.08	46.02	-14.94	0-360	100	H
4	30	35.74	Qp	28.1	-31.9	31.94	40	-8.06	247	105	V
5	36.0861	39.33	Qp	23.8	-31.8	31.33	40	-8.67	292	100	V
6	* 254.6071	40.65	Pk	17.7	-30.1	28.25	46.02	-17.77	0-360	99	V

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

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 $\pm 0.01\%$ 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:	12471	Date:	6/11/2021
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9.1. PRIMARY ANTENNA

9.1.1. READER MODE, Type B 848 Kbps

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	13.55972379	7.190	13.55972812	6.871	13.55973235	6.560	13.55973933	6.045	± 100
	40	13.55982751	-0.458	13.55982549	-0.309	13.55982412	-0.208	13.55982292	-0.120	± 100
	30	13.55981554	0.425	13.55981516	0.453	13.55981506	0.460	13.55981527	0.445	± 100
	20	13.5598213	0.000	13.5598233	-0.148	13.5598252	-0.288	13.55982723	-0.438	± 100
	10	13.55984491	-1.741	13.55984799	-1.969	13.55985074	-2.171	13.55985331	-2.361	± 100
	0	13.5598749	-3.953	13.55987818	-4.195	13.55988111	-4.411	13.55988377	-4.607	± 100
	-10	13.55990526	-6.192	13.55990849	-6.430	13.55991066	-6.590	13.55991249	-6.725	± 100
	-20	13.55992677	-7.778	13.55992825	-7.887	13.55992895	-7.939	13.55992956	-7.984	± 100
3.23	20	13.55982933	-0.593	13.55982795	-0.491	13.55982732	-0.444	13.55982684	-0.409	± 100
4.37	20	13.55983389	-0.929	13.55983296	-0.860	13.55983218	-0.802	13.55983153	-0.755	± 100

9.1.2. CE MODE, Type B 848 Kbps

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	13.56018442	-17.752	13.55978518	11.691	13.55958317	26.589	13.55970123	17.882	± 100
	40	13.5600643	-8.893	13.5597025	17.789	13.55962731	23.333	13.56008343	-10.303	± 100
	30	13.55985787	6.330	13.56011023	-12.280	13.55982311	8.894	13.55975949	13.585	± 100
	20	13.5599437	0.000	13.55957558	27.148	13.55995956	-1.169	13.56001906	-5.556	± 100
	10	13.560191	-18.236	13.55978364	11.804	13.56006169	-8.700	13.56030068	-26.325	± 100
	0	13.55972603	16.053	13.5600257	-6.046	13.56013545	-14.140	13.55994922	-0.406	± 100
	-10	13.55996955	-1.906	13.56038785	-32.753	13.56003259	-6.555	13.56027066	-24.111	± 100
	-20	13.55980254	10.411	13.56003503	-6.735	13.56015154	-15.326	13.5598578	6.335	± 100
3.23	20	13.56012306	-13.226	13.56007858	-9.946	13.55989812	3.362	13.56023715	-21.640	± 100
4.37	20	13.56001457	-5.226	13.56016388	-16.237	13.56026317	-23.559	13.55990721	2.692	± 100

9.2. SECONDARY ANTENNA

9.2.1. READER MODE, Type B 848 Kbps

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	13.55994926	-1.683	13.55996888	-3.130	13.55998204	-4.101	13.55998105	-4.028	± 100
	40	13.56000687	-5.932	13.56001628	-6.626	13.56002649	-7.379	13.55995617	-2.193	± 100
	30	13.55995465	-2.081	13.5599573	-2.276	13.55996162	-2.595	13.55996746	-3.026	± 100
	20	13.55992643	0.000	13.55992371	0.201	13.55992291	0.260	13.5599237	0.201	± 100
	10	13.55992154	0.361	13.55992164	0.353	13.55992191	0.333	13.5599223	0.305	± 100
	0	13.55999673	-5.185	13.55999303	-4.911	13.55999025	-4.707	13.55998748	-4.502	± 100
	-10	13.56003834	-8.253	13.56003163	-7.758	13.5600265	-7.380	13.56002213	-7.057	± 100
	-20	13.56010143	-12.906	13.56009038	-12.091	13.56008847	-11.950	13.56008552	-11.733	± 100
3.23	20	13.55992283	0.266	13.55992282	0.267	13.55992279	0.269	13.55992278	0.269	± 100
4.37	20	13.55992315	0.242	13.55992293	0.258	13.55992282	0.266	13.55992276	0.271	± 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

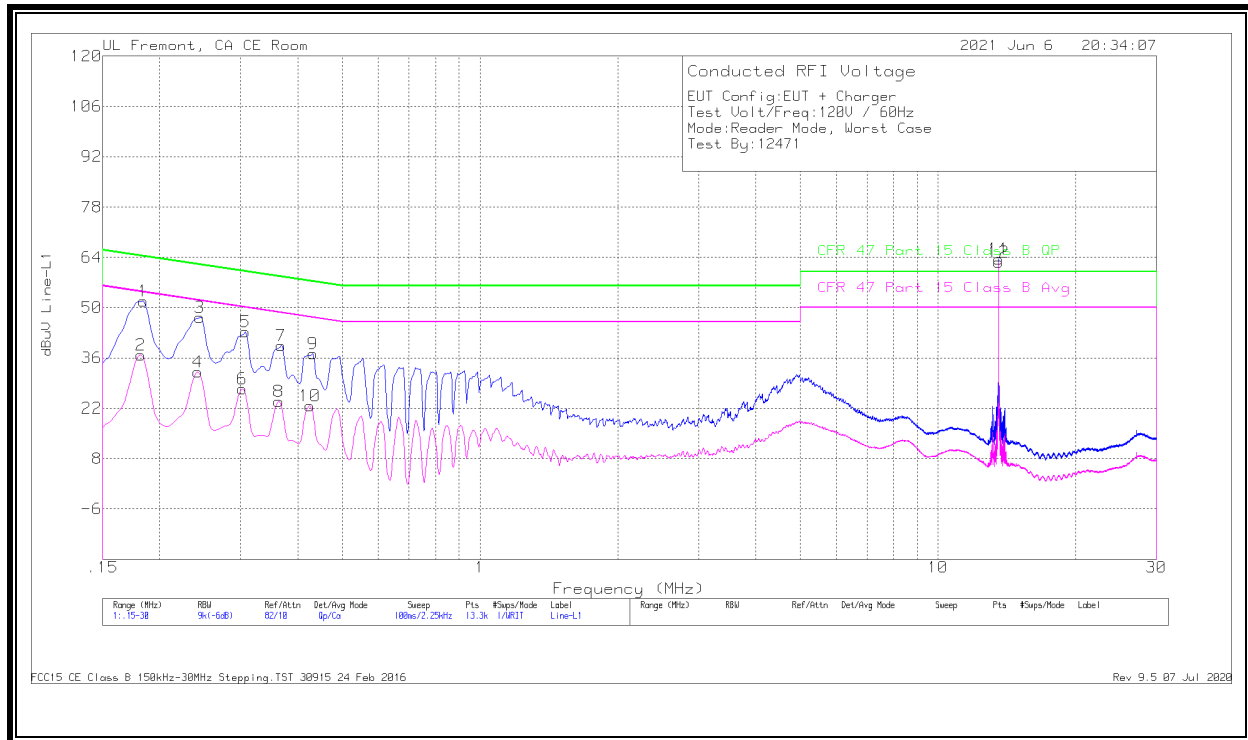
Notes:
 1. The lower limit shall apply at the transition frequencies
 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

TEST PROCEDURE

ANSI C63.10:2013

RESULTS

No non-compliance noted:

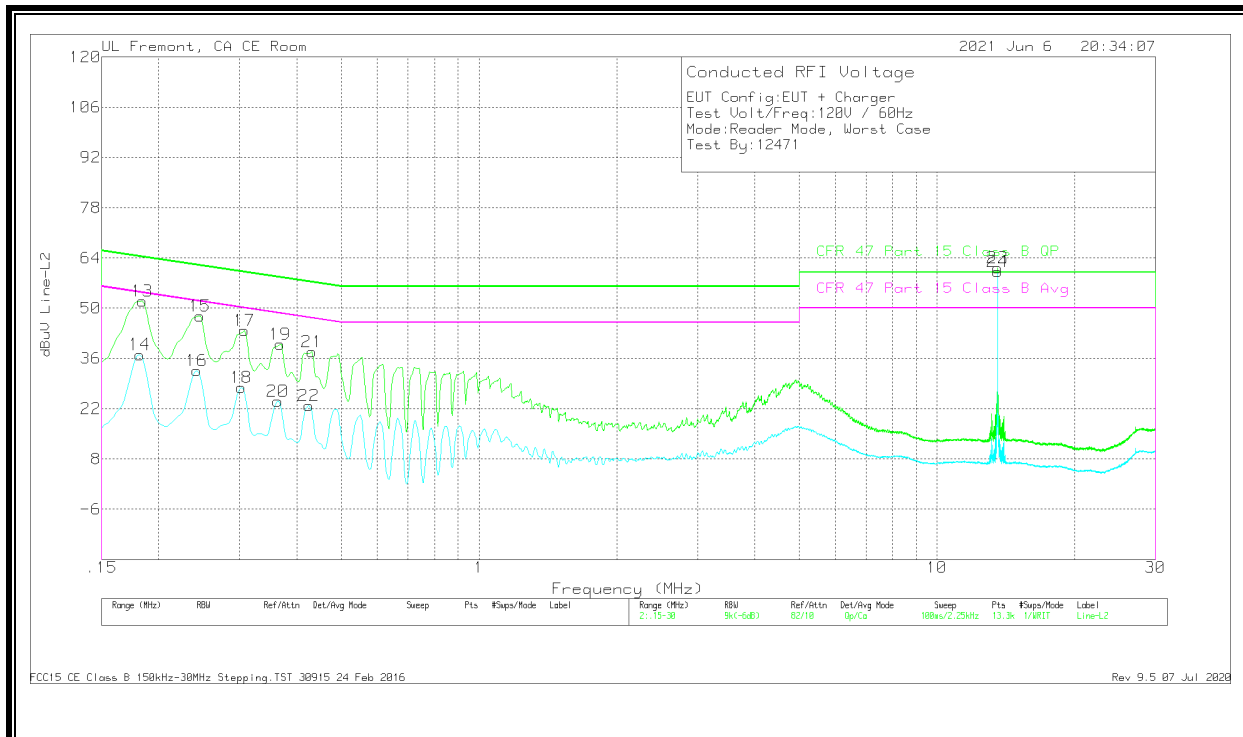
10.1. PRIMARY ANTENNA**10.1.1. READER MODE, Type B 848 Kbps, with Antenna****LINE 1 RESULTS****Worst Emission**

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)
1	.18375	42.38	Qp	0	0	9.4	51.78	64.31	-12.53	-	-
2	.1815	27.43	Ca	0	0	9.4	36.83	-	-	54.42	-17.59
3	.2445	37.99	Qp	0	0	9.3	47.29	61.94	-14.65	-	-
4	.24225	22.82	Ca	0	0	9.3	32.12	-	-	52.02	-19.9
5	.3075	33.92	Qp	0	0	9.3	43.22	60.04	-16.82	-	-
6	.303	18.02	Ca	0	0	9.3	27.32	-	-	50.16	-22.84
7	.36825	30.12	Qp	0	0	9.3	39.42	58.54	-19.12	-	-
8	.36375	14.58	Ca	0	0	9.3	23.88	-	-	48.64	-24.76
9	.43125	27.94	Qp	0	0	9.3	37.24	57.23	-19.99	-	-
10	.4245	13.37	Ca	0	0	9.3	22.67	-	-	47.36	-24.69
11	13.56	53.96	Qp	.1	.2	9.3	63.56	60	3.56	-	-
12	13.56	53.09	Ca	.1	.2	9.3	62.69	-	-	50	12.69

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.

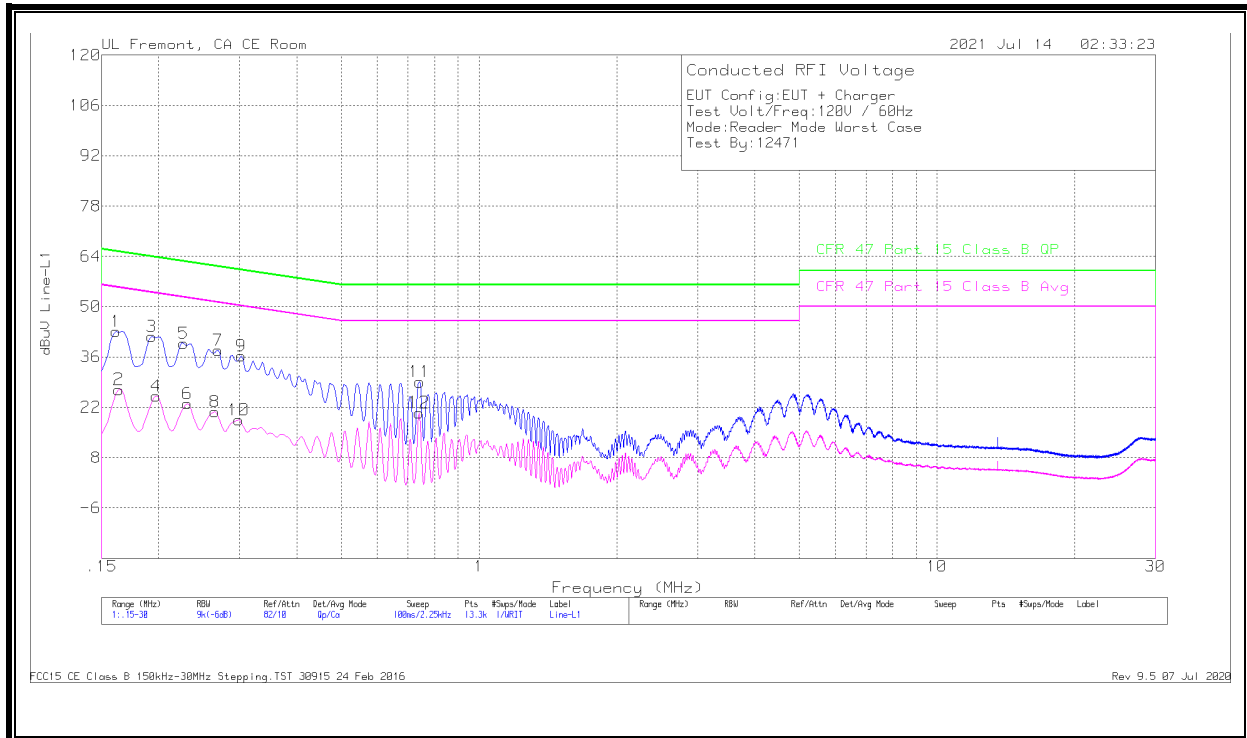
LINE 2 RESULTS**Worst Emission**

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)
13	.18375	42.58	Qp	0	0	9.4	51.98	64.31	-12.33	-	-
14	.1815	27.68	Ca	0	0	9.4	37.08	-	-	54.42	-17.34
15	.24563	38.49	Qp	0	0	9.3	47.79	61.9	-14.11	-	-
16	.24225	23.26	Ca	0	0	9.3	32.56	-	-	52.02	-19.46
17	.3075	34.55	Qp	0	0	9.3	43.85	60.04	-16.19	-	-
18	.303	18.56	Ca	0	0	9.3	27.86	-	-	50.16	-22.3
19	.36825	30.71	Qp	0	0	9.3	40.01	58.54	-18.53	-	-
20	.36375	14.85	Ca	0	0	9.3	24.15	-	-	48.64	-24.49
21	.43125	28.63	Qp	0	0	9.3	37.93	57.23	-19.3	-	-
22	.4245	13.53	Ca	0	0	9.3	22.83	-	-	47.36	-24.53
23	13.56	51.66	Qp	.1	.2	9.3	61.26	60	1.26	-	-
24	13.56	50.53	Ca	.1	.2	9.3	60.13	-	-	50	10.13

Qp - Quasi-Peak detector

Ca - CISPR average detection

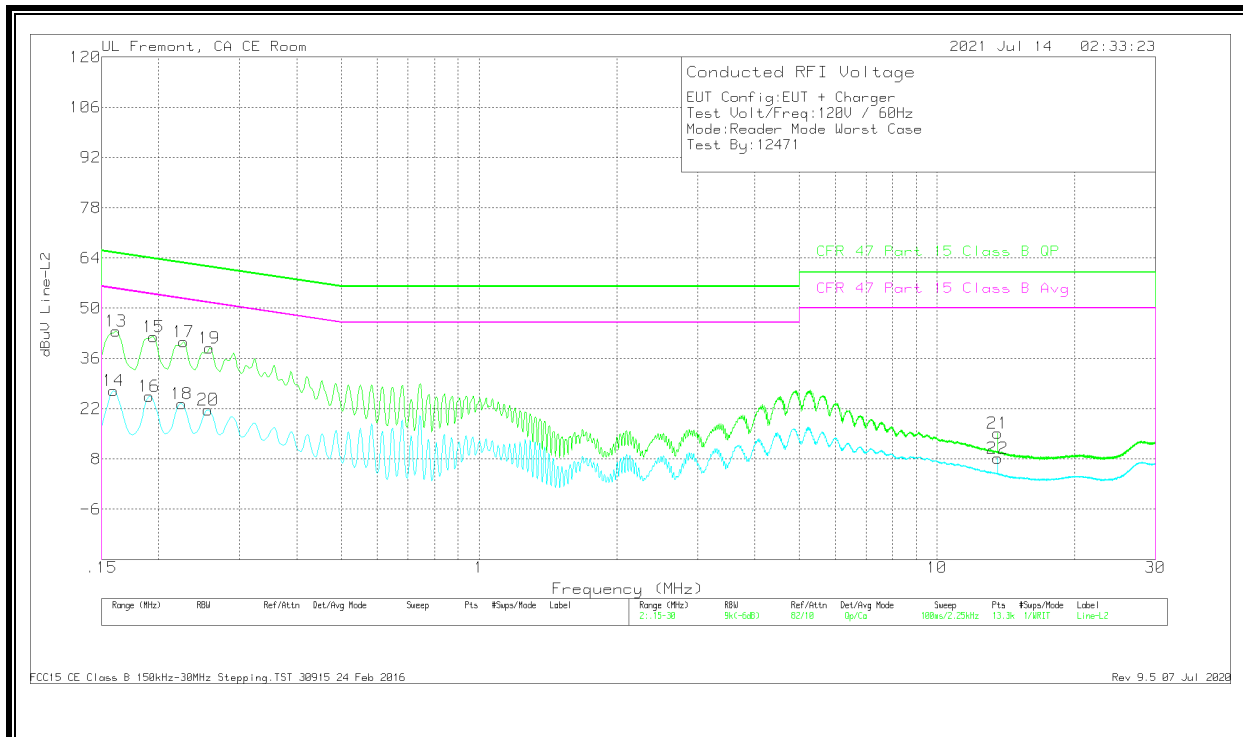
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

10.1.2. READER MODE, Type B 848 Kbps, Antenna Port Terminated**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)
1	.16125	33.7	Qp	0	0	9.4	43.1	65.4	-22.3	-	-
2	.1635	17.56	Ca	0	0	9.4	26.96	-	-	55.28	-28.32
3	.19275	32.37	Qp	0	0	9.3	41.67	63.92	-22.25	-	-
4	.19725	15.84	Ca	0	0	9.3	25.14	-	-	53.73	-28.59
5	.2265	30.42	Qp	0	0	9.3	39.72	62.58	-22.86	-	-
6	.231	13.76	Ca	0	0	9.3	23.06	-	-	52.41	-29.35
7	.26925	28.63	Qp	0	0	9.3	37.93	61.14	-23.21	-	-
8	.26475	11.52	Ca	0	0	9.3	20.82	-	-	51.28	-30.46
9	.303	26.96	Qp	0	0	9.3	36.26	60.16	-23.9	-	-
10	.2985	9.17	Ca	0	0	9.3	18.47	-	-	50.28	-31.81
11	.74175	19.76	Qp	0	0	9.3	29.06	56	-26.94	-	-
12	.7395	11.2	Ca	0	0	9.3	20.5	-	-	46	-25.5

Qp - Quasi-Peak detector

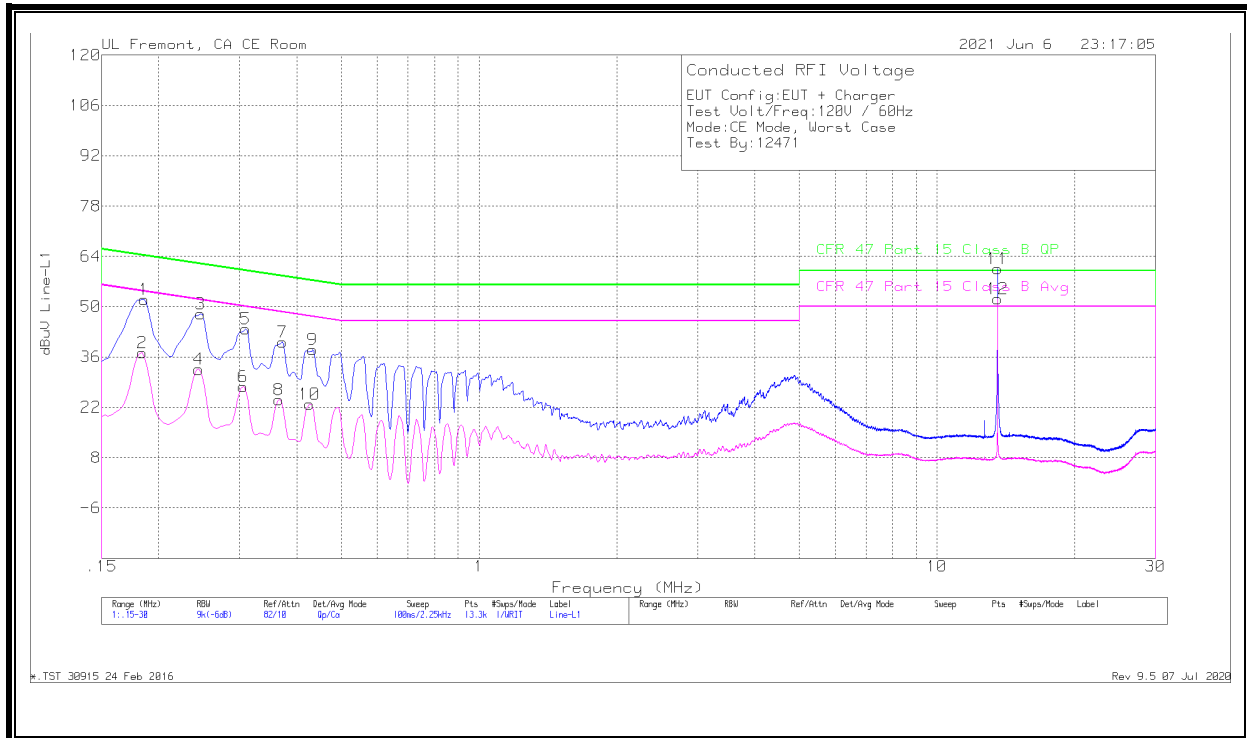
Ca - CISPR average detection

LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	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)M argin (dB)
13	.16125	34.25	Qp	0	0	9.4	43.65	65.4	-21.75	-	-
14	.159	17.64	Ca	0	0	9.4	27.04	-	-	55.52	-28.48
15	.195	32.78	Qp	0	0	9.3	42.08	63.82	-21.74	-	-
16	.1905	16.12	Ca	0	0	9.3	25.42	-	-	54.01	-28.59
17	.2265	31.41	Qp	0	0	9.3	40.71	62.58	-21.87	-	-
18	.22425	14.16	Ca	0	0	9.3	23.46	-	-	52.66	-29.2
19	.258	29.62	Qp	0	0	9.3	38.92	61.5	-22.58	-	-
20	.25575	12.42	Ca	0	0	9.3	21.72	-	-	51.57	-29.85
21	13.56	5.6	Qp	.1	.2	9.3	15.2	60	-44.8	-	-
22	13.56	-1.38	Ca	.1	.2	9.3	8.22	-	-	50	-41.78

Qp - Quasi-Peak detector

Ca - CISPR average detection

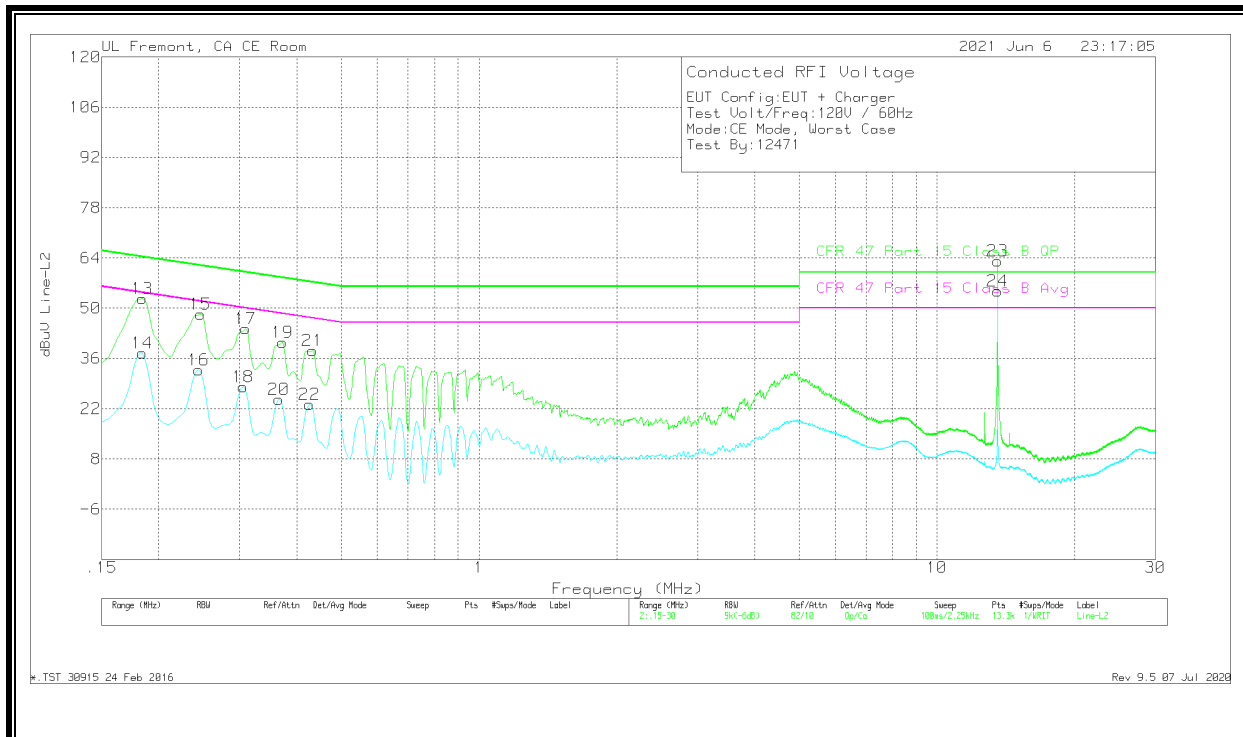
10.1.3. CE MODE, Type B 848 Kbps, with Antenna**LINE 1 RESULTS****Worst Emission**

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)
1	.186	42.67	Qp	0	0	9.4	52.07	64.21	-12.14	-	-
2	.18375	27.69	Ca	0	0	9.4	37.09	-	-	54.31	-17.22
3	.24675	38.62	Qp	0	0	9.3	47.92	61.87	-13.95	-	-
4	.2445	23.25	Ca	0	0	9.3	32.55	-	-	51.94	-19.39
5	.30975	34.57	Qp	0	0	9.3	43.87	59.98	-16.11	-	-
6	.30525	18.48	Ca	0	0	9.3	27.78	-	-	50.1	-22.32
7	.37275	30.85	Qp	0	0	9.3	40.15	58.44	-18.29	-	-
8	.366	14.83	Ca	0	0	9.3	24.13	-	-	48.59	-24.46
9	.4335	28.67	Qp	0	0	9.3	37.97	57.19	-19.22	-	-
10	.42675	13.62	Ca	0	0	9.3	22.92	-	-	47.32	-24.4
11	13.56	51.02	Qp	.1	.2	9.3	60.62	60	.62	-	-
12	13.56	42.6	Ca	.1	.2	9.3	52.2	-	-	50	2.2

Qp - Quasi-Peak detector

Ca - CISPR average detection

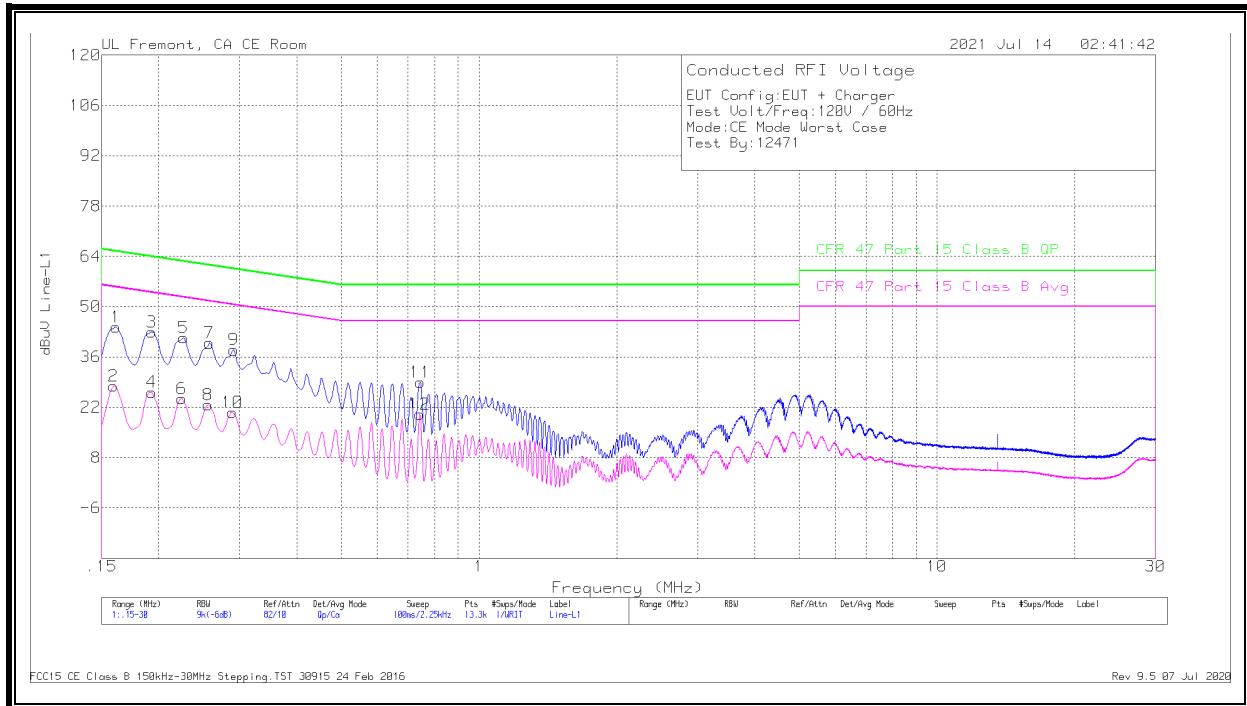
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

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)
13	.18375	43.22	Qp	0	0	9.4	52.62	64.31	-11.69	-	-
14	.18375	28.1	Ca	0	0	9.4	37.5	-	-	54.31	-16.81
15	.24675	39.1	Qp	0	0	9.3	48.4	61.87	-13.47	-	-
16	.2445	23.58	Ca	0	0	9.3	32.88	-	-	51.94	-19.06
17	.30975	34.96	Qp	0	0	9.3	44.26	59.98	-15.72	-	-
18	.30525	18.79	Ca	0	0	9.3	28.09	-	-	50.1	-22.01
19	.37275	31.16	Qp	0	0	9.3	40.46	58.44	-17.98	-	-
20	.366	15.24	Ca	0	0	9.3	24.54	-	-	48.59	-24.05
21	.4335	28.91	Qp	0	0	9.3	38.21	57.19	-18.98	-	-
22	.42675	13.85	Ca	0	0	9.3	23.15	-	-	47.32	-24.17
23	13.56	53.58	Qp	.1	.2	9.3	63.18	60	3.18	-	-
24	13.56	45.27	Ca	.1	.2	9.3	54.87	-	-	50	4.87

Qp - Quasi-Peak detector
Ca - CISPR average detection

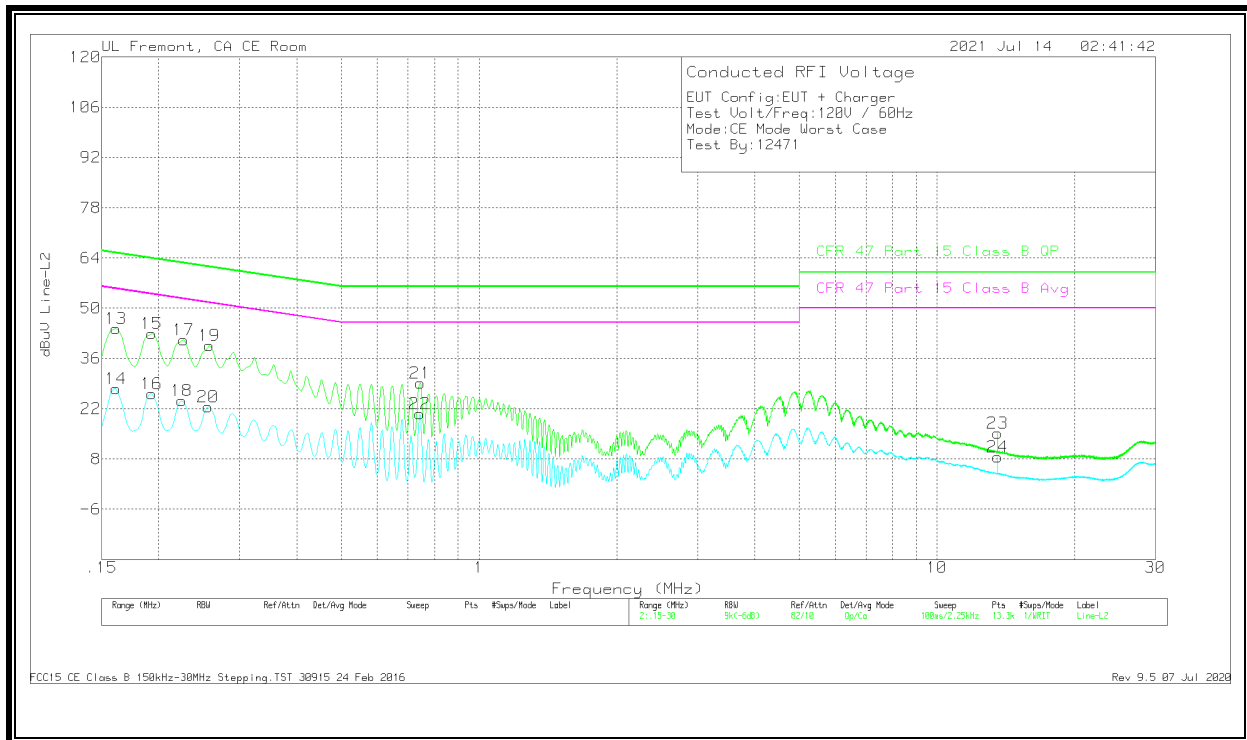
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

10.1.4. CE MODE, Type B 848 Kbps, Antenna Port Terminated**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)
1	.16125	34.97	Qp	0	0	9.4	44.37	65.4	-21.03	-	-
2	.159	18.42	Ca	.1	0	9.4	27.92	-	-	55.52	-27.6
3	.19275	33.67	Qp	0	0	9.3	42.97	63.92	-20.95	-	-
4	.19275	16.96	Ca	0	0	9.3	26.26	-	-	53.92	-27.66
5	.2265	32.07	Qp	0	0	9.3	41.37	62.58	-21.21	-	-
6	.22425	15.09	Ca	0	0	9.3	24.39	-	-	52.66	-28.27
7	.258	30.58	Qp	0	0	9.3	39.88	61.5	-21.62	-	-
8	.25575	13.44	Ca	0	0	9.3	22.74	-	-	51.57	-28.83
9	.29175	28.66	Qp	0	0	9.3	37.96	60.47	-22.51	-	-
10	.2895	11.3	Ca	0	0	9.3	20.6	-	-	50.54	-29.94
11	.744	19.7	Qp	0	0	9.3	29	56	-27	-	-
12	.74175	10.7	Ca	0	0	9.3	20	-	-	46	-26

Qp - Quasi-Peak detector

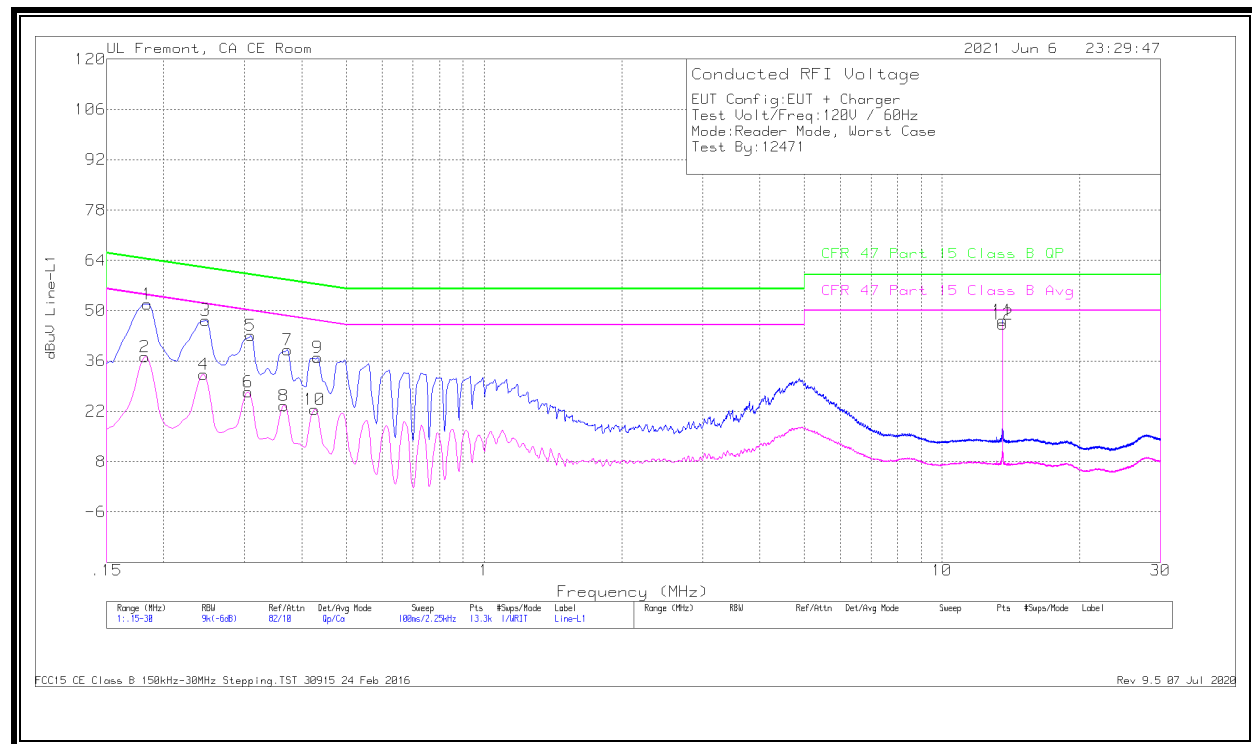
Ca - CISPR average detection

LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 L2	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)M argin (dB)
13	.16125	34.94	Qp	0	0	9.4	44.34	65.4	-21.06	-	-
14	.16125	18.23	Ca	0	0	9.4	27.63	-	-	55.4	-27.77
15	.19275	33.56	Qp	0	0	9.3	42.86	63.92	-21.06	-	-
16	.19275	16.83	Ca	0	0	9.3	26.13	-	-	53.92	-27.79
17	.2265	31.9	Qp	0	0	9.3	41.2	62.58	-21.38	-	-
18	.22425	14.91	Ca	0	0	9.3	24.21	-	-	52.66	-28.45
19	.258	30.31	Qp	0	0	9.3	39.61	61.5	-21.89	-	-
20	.25575	13.27	Ca	0	0	9.3	22.57	-	-	51.57	-29
21	.744	19.82	Qp	0	0	9.3	29.12	56	-26.88	-	-
22	.74175	11.28	Ca	0	0	9.3	20.58	-	-	46	-25.42
23	13.56	5.55	Qp	.1	.2	9.3	15.15	60	-44.85	-	-
24	13.56	-1.05	Ca	.1	.2	9.3	8.55	-	-	50	-41.45

Qp - Quasi-Peak detector

Ca - CISPR average detection

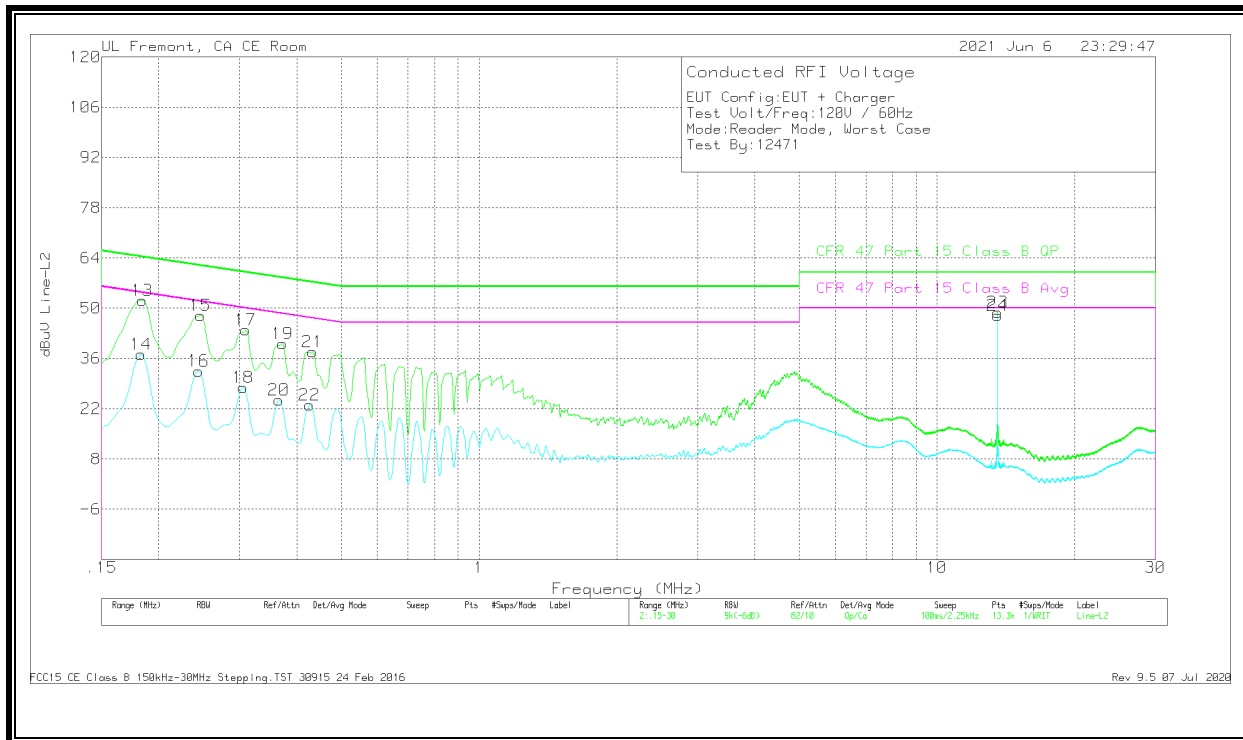
10.2. SECONDARY ANTENNA**10.2.1. READER MODE, Type B 848 Kbps, with Antenna****LINE 1 RESULTS****Worst Emission**

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)
1	.18375	42.46	Qp	0	0	9.4	51.86	64.31	-12.45	-	-
2	.1815	27.76	Ca	0	0	9.4	37.16	-	-	54.42	-17.26
3	.24675	38.07	Qp	0	0	9.3	47.37	61.87	-14.5	-	-
4	.2445	22.98	Ca	0	0	9.3	32.28	-	-	51.94	-19.66
5	.30975	33.74	Qp	0	0	9.3	43.04	59.98	-16.94	-	-
6	.30525	18.04	Ca	0	0	9.3	27.34	-	-	50.1	-22.76
7	.37275	29.84	Qp	0	0	9.3	39.14	58.44	-19.3	-	-
8	.366	14.33	Ca	0	0	9.3	23.63	-	-	48.59	-24.96
9	.4335	27.65	Qp	0	0	9.3	36.95	57.19	-20.24	-	-
10	.42675	13.27	Ca	0	0	9.3	22.57	-	-	47.32	-24.75
11	13.56	37.75	Qp	.1	.2	9.3	47.35	60	-12.65	-	-
12	13.56	36.63	Ca	.1	.2	9.3	46.23	-	-	50	-3.77

Qp - Quasi-Peak detector

Ca - CISPR average detection

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

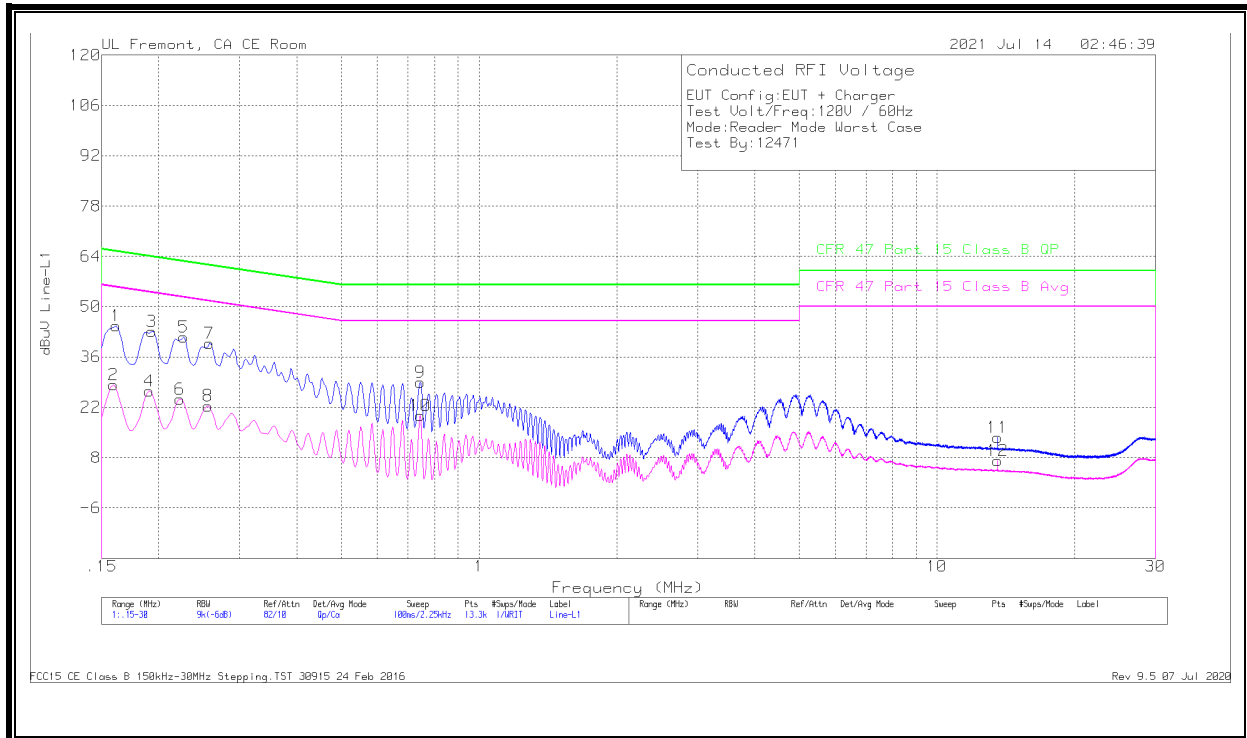
LINE 2 RESULTS**Worst Emission**

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)
13	.18375	42.78	Qp	0	0	9.4	52.18	64.31	-12.13	-	-
14	.18263	27.7	Ca	0	0	9.4	37.1	-	-	54.37	-17.27
15	.24675	38.68	Qp	0	0	9.3	47.98	61.87	-13.89	-	-
16	.2445	23.24	Ca	0	0	9.3	32.54	-	-	51.94	-19.4
17	.30975	34.6	Qp	0	0	9.3	43.9	59.98	-16.08	-	-
18	.30525	18.56	Ca	0	0	9.3	27.86	-	-	50.1	-22.24
19	.37275	30.84	Qp	0	0	9.3	40.14	58.44	-18.3	-	-
20	.366	15.1	Ca	0	0	9.3	24.4	-	-	48.59	-24.19
21	.4335	28.58	Qp	0	0	9.3	37.88	57.19	-19.31	-	-
22	.42675	13.75	Ca	0	0	9.3	23.05	-	-	47.32	-24.27
23	13.56	39.31	Qp	.1	.2	9.3	48.91	60	-11.09	-	-
24	13.56	38.41	Ca	.1	.2	9.3	48.01	-	-	50	-1.99

Qp - Quasi-Peak detector

Ca - CISPR average detection

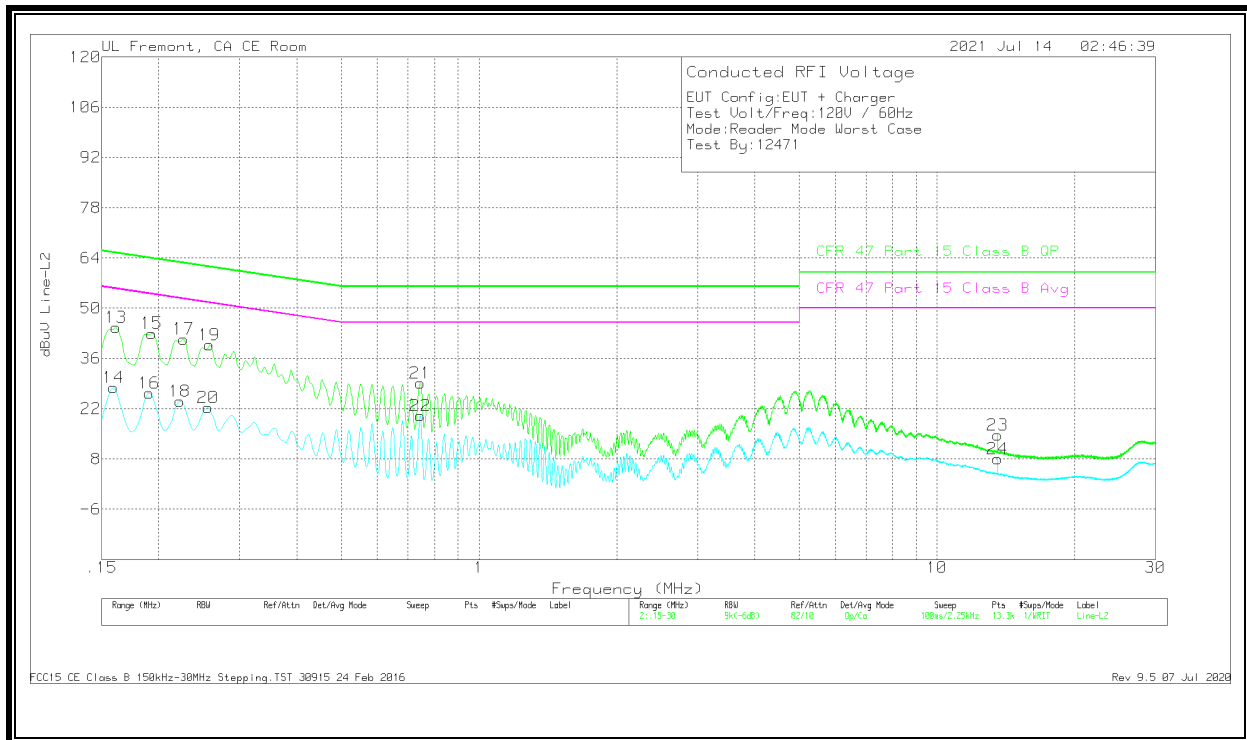
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

10.2.2. READER MODE, Type B 848 Kbps, Antenna Port Terminated**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)
1	.16125	35.2	Qp	0	0	9.4	44.6	65.4	-20.8	-	-
2	.159	18.74	Ca	.1	0	9.4	28.24	-	-	55.52	-27.28
3	.19275	33.81	Qp	0	0	9.3	43.11	63.92	-20.81	-	-
4	.1905	17.2	Ca	0	0	9.3	26.5	-	-	54.01	-27.51
5	.2265	32.25	Qp	0	0	9.3	41.55	62.58	-21.03	-	-
6	.222	15.02	Ca	0	0	9.3	24.32	-	-	52.74	-28.42
7	.258	30.51	Qp	0	0	9.3	39.81	61.5	-21.69	-	-
8	.25575	13.12	Ca	0	0	9.3	22.42	-	-	51.57	-29.15
9	.744	19.65	Qp	0	0	9.3	28.95	56	-27.05	-	-
10	.744	10.38	Ca	0	0	9.3	19.68	-	-	46	-26.32
11	13.56	3.95	Qp	.1	.2	9.3	13.55	60	-46.45	-	-
12	13.56	-2.5	Ca	.1	.2	9.3	7.1	-	-	50	-42.9

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	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)M argin (dB)
13	.16125	35.24	Qp	0	0	9.4	44.64	65.4	-20.76	-	-
14	.159	18.58	Ca	0	0	9.4	27.98	-	-	55.52	-27.54
15	.19275	33.71	Qp	0	0	9.3	43.01	63.92	-20.91	-	-
16	.1905	17.03	Ca	0	0	9.3	26.33	-	-	54.01	-27.68
17	.2265	32.14	Qp	0	0	9.3	41.44	62.58	-21.14	-	-
18	.222	14.86	Ca	0	0	9.3	24.16	-	-	52.74	-28.58
19	.258	30.44	Qp	0	0	9.3	39.74	61.5	-21.76	-	-
20	.25575	12.99	Ca	0	0	9.3	22.29	-	-	51.57	-29.28
21	.744	19.77	Qp	0	0	9.3	29.07	56	-26.93	-	-
22	.744	10.83	Ca	0	0	9.3	20.13	-	-	46	-25.87
23	13.56	5	Qp	.1	.2	9.3	14.6	60	-45.4	-	-
24	13.56	-1.55	Ca	.1	.2	9.3	8.05	-	-	50	-41.95

Qp - Quasi-Peak detector

Ca - CISPR average detection

END OF TEST REPORT

11. SETUP PHOTOS

Please refer to 13571607-EP1V1 for setup photos.