

TEST REPORT

Report Number : 14523744-E12V2

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

Model : A3101 (Parent Model, Full Test)
A3102, A3104 (Variant Models)

FCC ID : BCG-E8436A (Parent Model)
BCG-E8437A, BCG-E8438A (Variant Models)

IC : 579C-E8436A (Parent Model)
579C-E8437A, 579C-E8438A (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 20, 2023

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888



Revision History

Rev.	Issue Date	Revisions	Revised By
V1	7/1/2023	Initial Issue	Chin Pang
V2	7/20/2023	Address TCB's questions section 4, 5, 8.2, 10	Chin Pang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	7
3. FACILITIES AND ACCREDITATION	7
4. DECISION RULES AND MEASUREMENT UNCERTAINTY	7
4.1. METROLOGICAL TRACEABILITY	7
4.2. DECISION RULES.....	7
4.3. MEASUREMENT UNCERTAINTY.....	8
4.4. SAMPLE CALCULATION	8
5. EQUIPMENT UNDER TEST	9
5.1. DESCRIPTION OF EUT	9
5.2. MAXIMUM E-FIELD STRENGTH	9
5.3. WORST-CASE CONFIGURATION AND MODE.....	10
5.4. SUPPORT EQUIPMENT	11
6. TEST AND MEASUREMENT EQUIPMENT	14
7. OCCUPIED BANDWIDTH	15
7.1. PRIMARY ANTENNA	16
7.1.1. READER MODE	16
7.1.2. TAG MODE	16
7.1.3. CE MODE.....	17
7.2. SECONDARY ANTENNA	18
7.2.1. READER MODE	18
7.2.2. TAG MODE	18
8. RADIATED EMISSION TEST RESULTS.....	19
8.1. LIMITS AND PROCEDURE	19
8.2. PRIMARY ANTENNA FUNDAMENTAL & SPURIOUS EMISSION 0.15-30 MHz.....	21
8.2.1. READER MODE	21
8.2.2. TAG MODE	23
8.2.3. CE MODE.....	25
8.3. PRIMARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz	27
8.3.1. READER MODE	27
8.3.2. TAG MODE	29
8.3.3. CE MODE.....	31
8.4. SECONDARY ANTENNA FUNDAMENTAL & SPURIOUS EMISSION 0.15-30 MHz..	33
8.4.1. READER MODE	33
8.4.2. TAG MODE	37
8.5. SECONDARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz.....	41
8.5.1. READER MODE	41
8.5.2. TAG MODE	43

9. FREQUENCY STABILITY	45
9.1. PRIMARY ANTENNA	46
9.1.1. READER MODE	46
9.1.2. TAG MODE	46
9.1.3. CE MODE	47
9.2. SECONDARY ANTENNA	48
9.2.1. READER MODE	48
9.2.2. TAG MODE, Type B 106 Kbps	48
10. AC MAINS LINE CONDUCTED EMISSIONS	49
10.1. PRIMARY ANTENNA	50
10.1.1. READER MODE WITH ANTENNA	50
10.1.2. READER MODE ANTENNA PORT TERMINATED	52
10.1.3. TAG MODE WITH ANTENNA	54
10.1.4. TAG MODE ANTENNA PORT TERMINATED	56
10.1.5. CE MODE WITH ANTENNA	58
10.1.6. CE MODE ANTENNA PORT TERMINATED	60
10.2. SECONDARY ANTENNA	62
10.2.1. READER MODE WITH ANTENNA	62
10.2.2. READER MODE ANTENNA PORT TERMINATED	64
10.2.3. TAG MODE WITH ANTENNA	66
10.2.4. TAG MODE ANTENNA PORT TERMINATED	68
11. SETUP PHOTOS	70

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: SMARTPHONE

MODEL: A3101 (Parent Model)
A3102, A3104 (Variant Models)

BRAND: APPLE

FCC ID: BCG-E8436A (PARENT MODEL)
BCG-E8437A, BCG-E8438A (VARIANT MODELS)

IC: 579C-E8436A (PARENT MODEL)
579C-E8437A, 579C-E8438A (VARIANT MODELS)

SERIAL NUMBER: R6P4R9CN66, M6P92MPKQQ, N3WK75H3FX

SAMPLE RECEIPT DATE: APRIL 04, JUNE 07, JUNE 20, 2023

DATE TESTED: APRIL 06, 2023 – JUNE 30, 2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies
ISED RSS-210 Issue 10, Annex B	Complies
ISED RSS-GEN Issue 5 + A1 + A2	Complies

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

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



Chin Pang
Senior Lab Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Francisco Guarnero
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

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 A2LA, certification #0751.05, 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, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☐	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
☐	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

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}
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.2%
Temperature	±0.57 %
Relative Humidity	3.39 %
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, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC, NB UNII, 802.15.4, 802.15.4ab-NB and MSS technologies. 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 ID covered by this report includes:

Parent Model: A3101, FCC ID: BCG-E8436A, IC ID: 579C-E8436A

Variant Models: A3102; FCC ID: BCG-E8437A, IC ID: 579C-E8437A

A3104; FCC ID: BCG-E8438A, IC ID: 579C-E8438A

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	106	27.61
			Tag	106	27.77
			CE	106	25.12
Secondary	13.56	Type B	Reader	106	4.97
			Tag	106	8.16

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 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 106 Kbps was determined to be the worst case and therefore Type B 106Kbps 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.

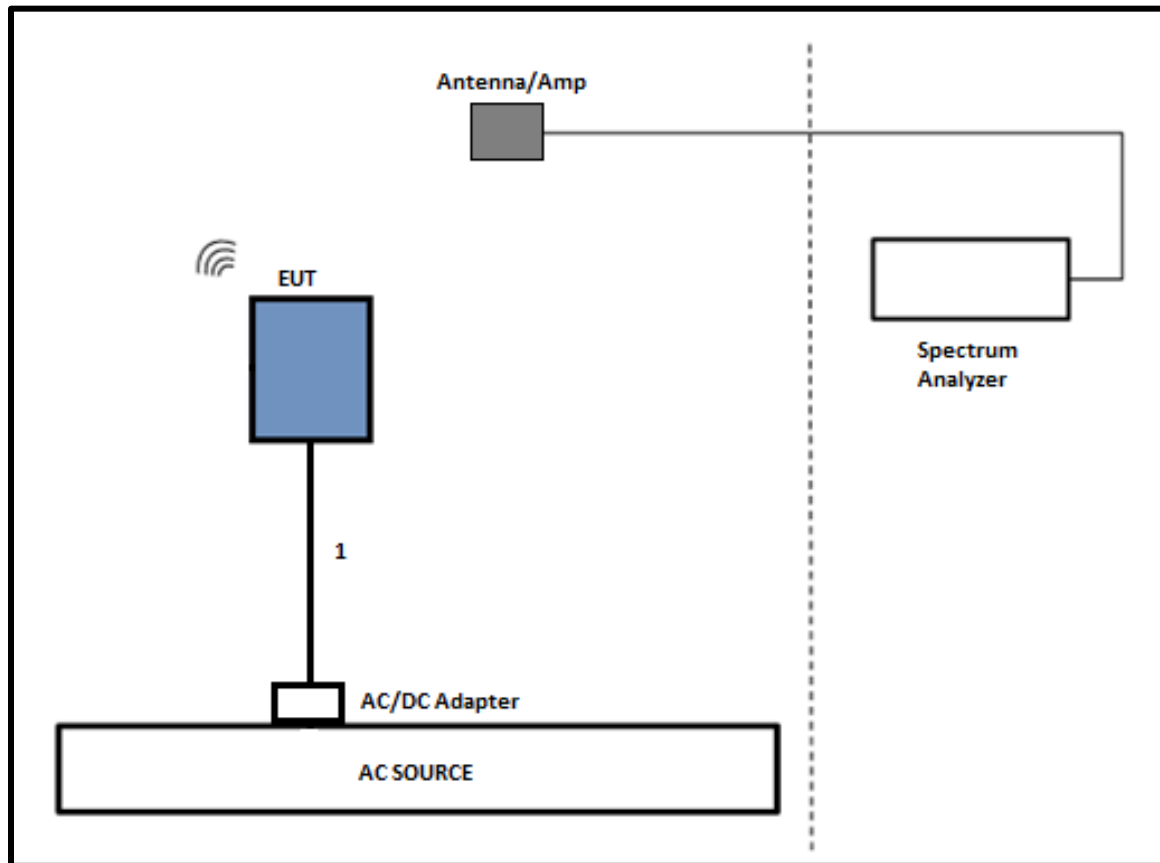
Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

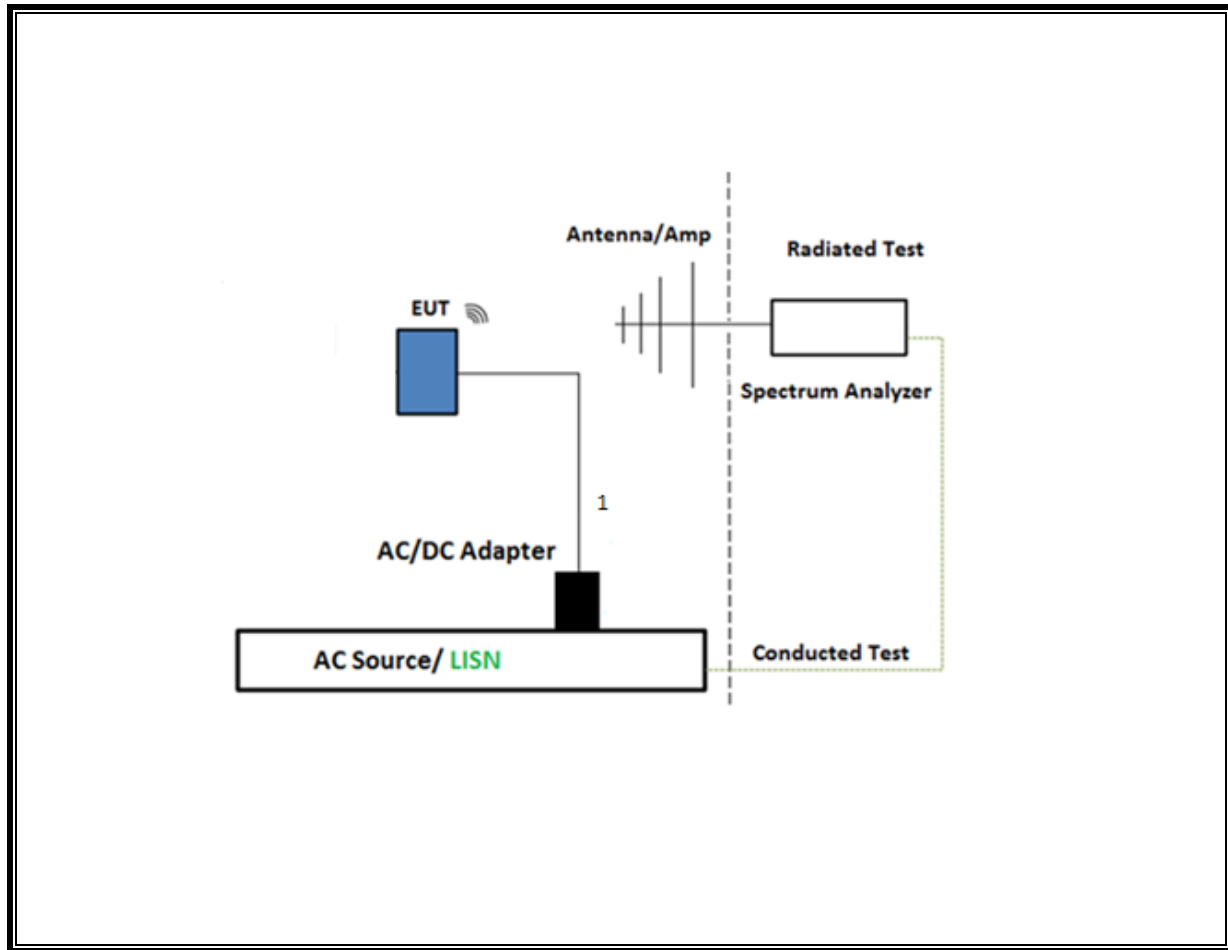
5.4. SUPPORT EQUIPMENT

SUPPORT TEST EQUIPMENT						
Description		Manufacturer	Model	Serial Number		FCC ID/ DoC
Laptop		Apple	Macbook Pro	C02VD7SAHV22		BCGA1708
Laptop AC/DC adapter		Liteon Technology	A1424	NSW25679		DoC
EUT AC/DC adapter		Apple	A1720	C3D8417A7R93KVPA8		DoC
I/O CABLES (RF RADIATED AND AC LINE CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	2	N/A

TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

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, Passive Loop 30Hz to 1MHz	Electro-Metrics	EM-6871	170014	07/19/2023	07/19/2022
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	07/28/2023	07/28/2022
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	85151	04/30/2024	04/30/2023
Amplifier, 9KHz to 1GHz, 32dB	Sonoma Instrument Co.	310N	89831	08/10/2023	08/10/2022
EMI TEST RECEIVER, with B8 option	Rohde & Schwarz	ESW44	169937	02/29/2024	02/29/2023
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	224378	10/27/2023	10/27/2022
Amplifier 9 KHz - 1 GHz	310N	SONOMA INSTRUMENT	224490	12/02/2023	12/02/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201502	02/29/2024	02/29/2023
Environmental Chamber	Cincinnati Sub Zero - division of Weiss Technik	ZPHS-8-3.5- SCT/WC	89097	12/31/2023	12/31/2022

AC Line Conducted					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	02/29/2024	02/29/2023
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN- 50/250-25-2-01- 480V	175764	01/31/2024	01/31/2023
Transient Limiter	TE	TBFL1	207996	07/15/2023	07/15/2022
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, May 1 , 2023		
Conducted Software	UL	UL EMC	2020.8.16		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023		

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)
106	13.56	21.770	24.94

TAG Mode

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
106	13.56	21.843	25.12

Type B (CE Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
106	13.56	21.908	25.51

Secondary Antenna

Type B (Reader Mode)

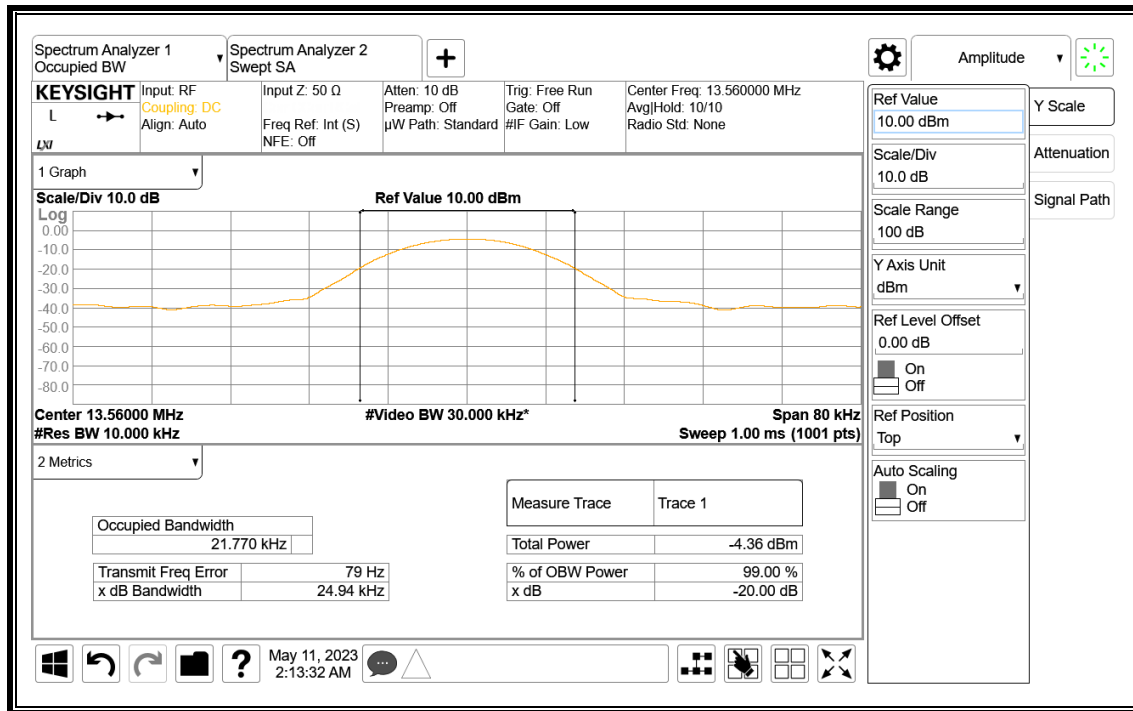
Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
106	13.56	21.723	25.06

TAG Mode

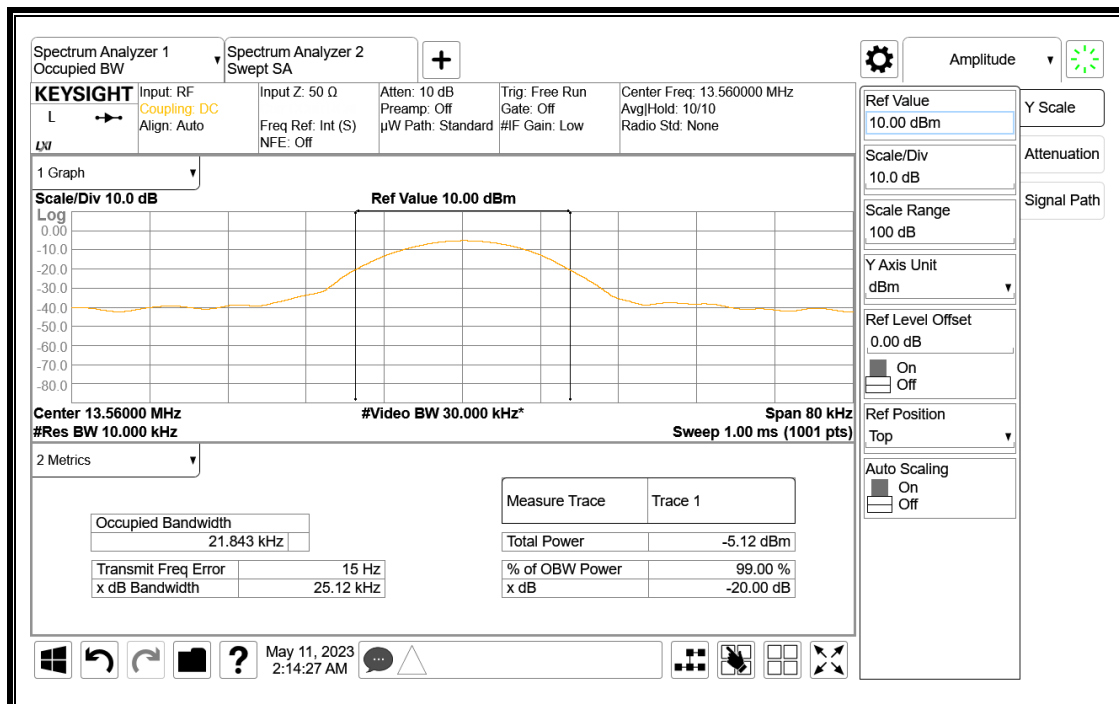
Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
106	13.56	21.957	25.13

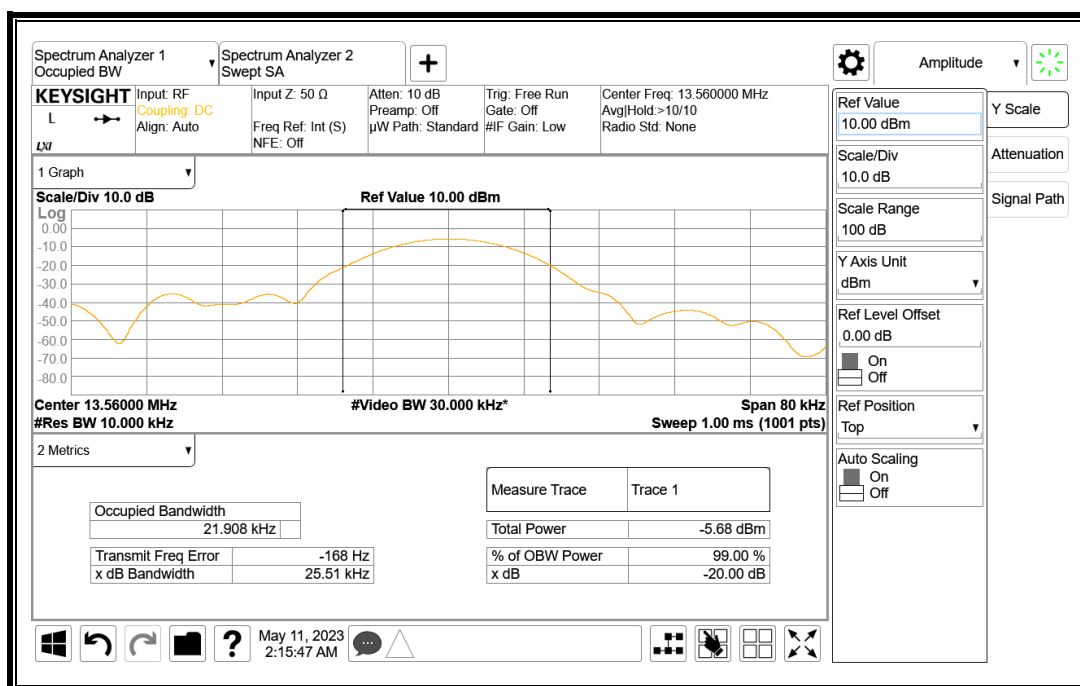
7.1. PRIMARY ANTENNA

7.1.1. READER MODE



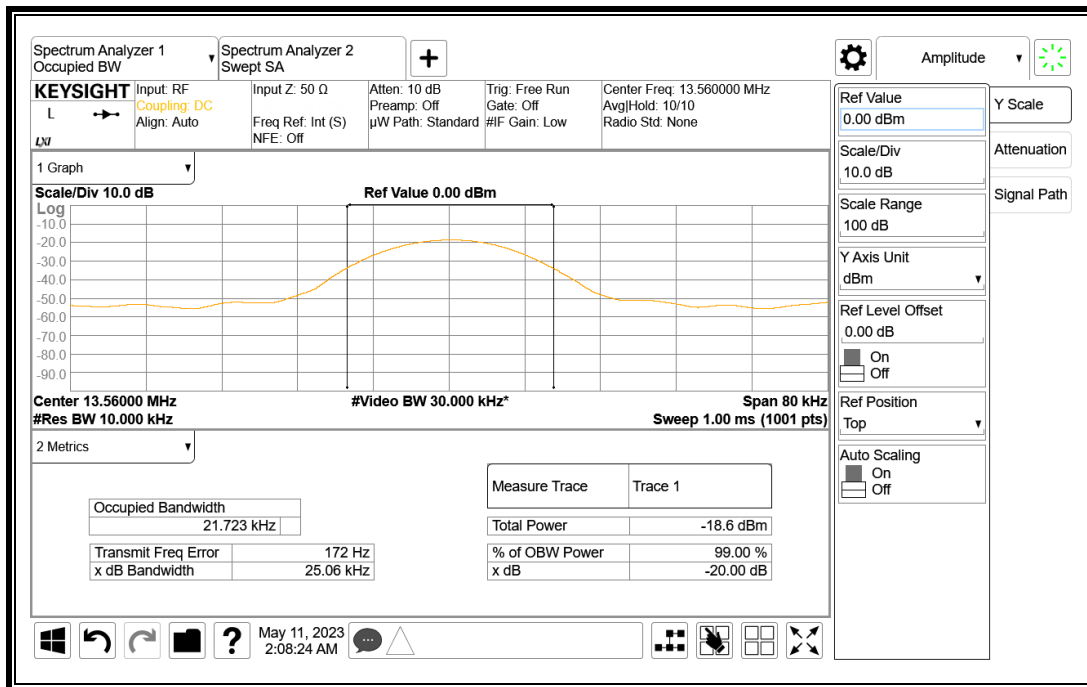
7.1.2. TAG MODE



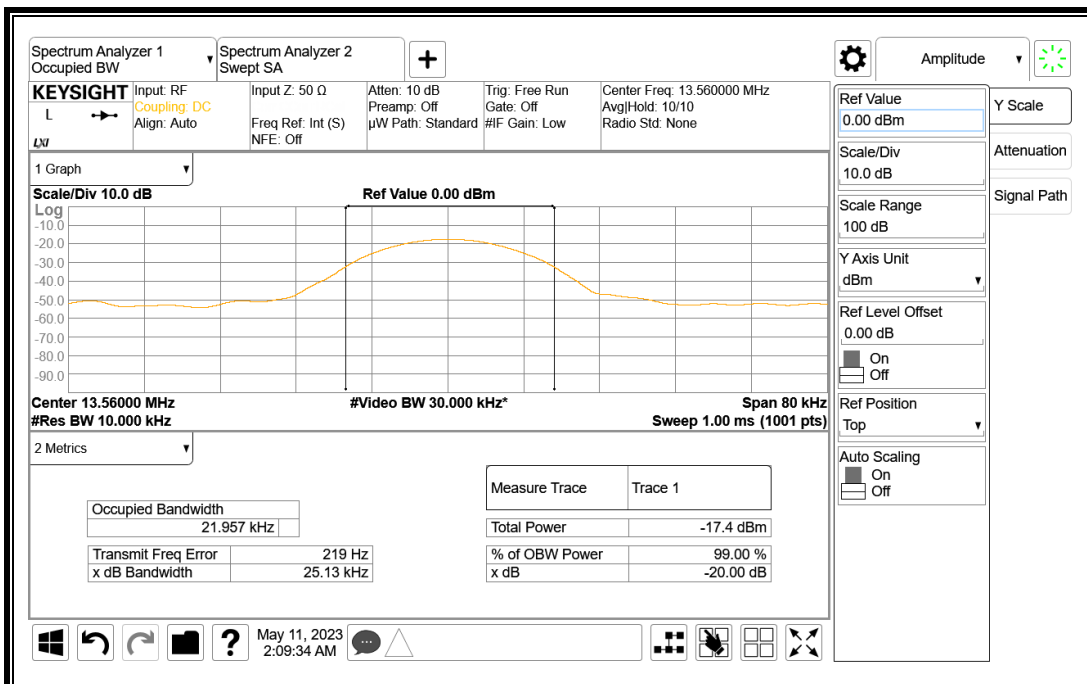
7.1.3. CE MODE

7.2. SECONDARY ANTENNA

7.2.1. READER MODE



7.2.2. TAG MODE



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

§15.225

IC RSS-210, Annex B.6

IC RSS-GEN, Section 8.9 (Transmitter)

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

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

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

(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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

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

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

Formula for converting the field 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.

§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

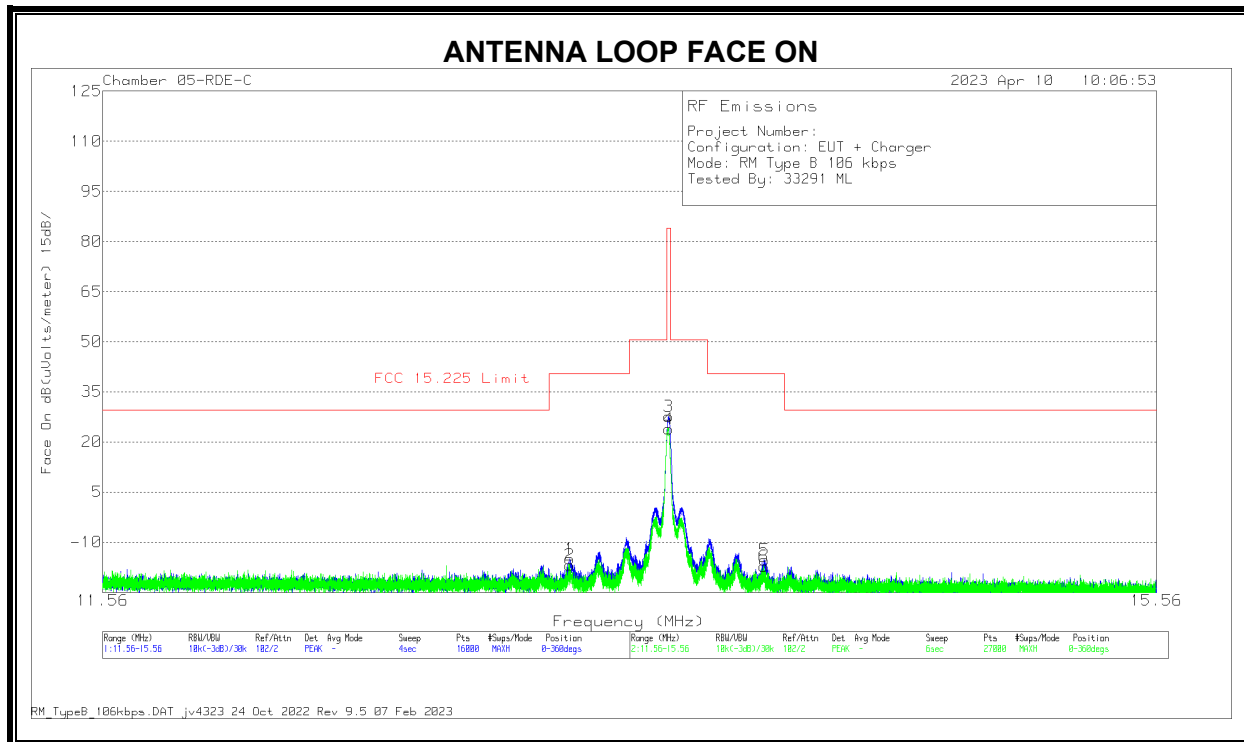
The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 0.15 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater.

RESULTS

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

8.2.1. READER MODE

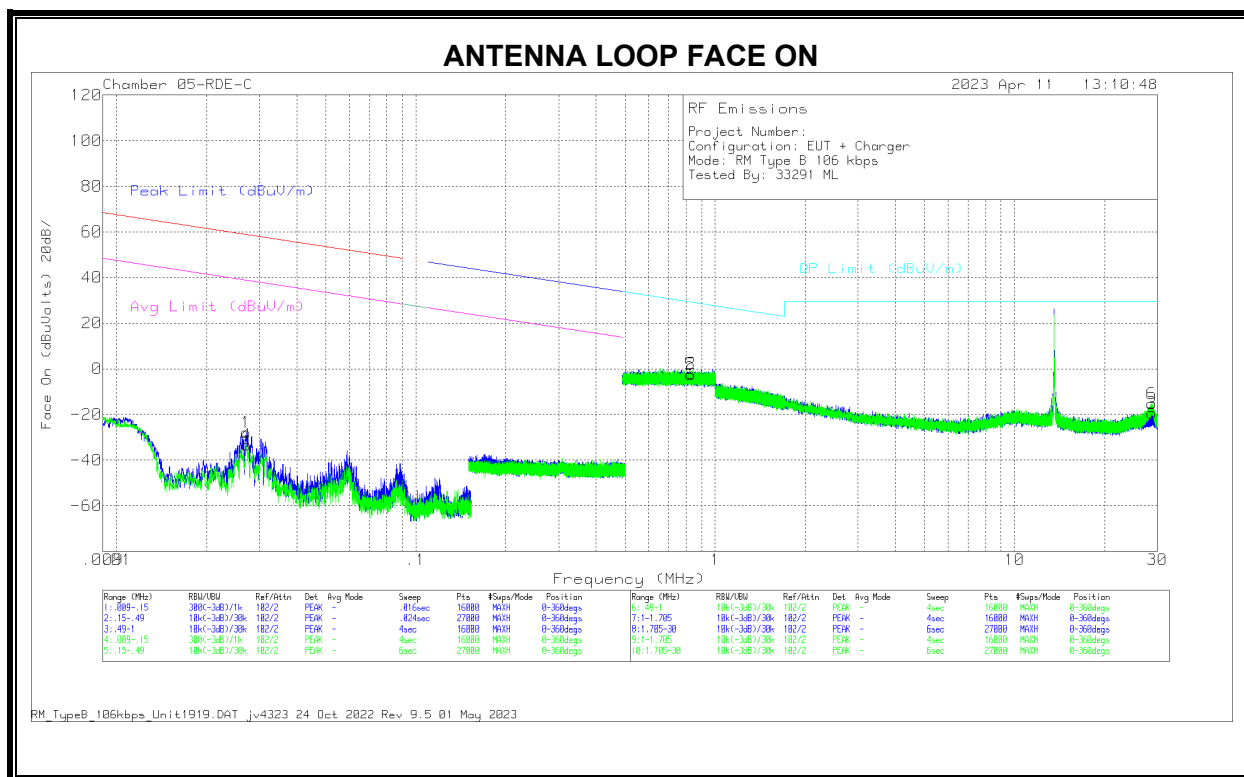
FUNDAMENTAL



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.1868	22.46	Pk	34.3	-31.7	-40	-14.94	40.51	-55.45	0-360	Face-On
2	13.1867	20.57	Pk	34.3	-31.7	-40	-16.83	40.51	-57.34	0-360	Face-On
3	13.5598	65.01	Pk	34.3	-31.7	-40	27.61	84	-56.39	0-360	Face-On
4	13.5596	61.34	Pk	34.3	-31.7	-40	23.94	84	-60.06	0-360	Face-Off
5	13.9305	22.22	Pk	34.2	-31.7	-40	-15.28	40.51	-55.79	0-360	Face-Off
6	13.9295	20.36	Pk	34.2	-31.7	-40	-17.14	40.51	-57.65	0-360	Face-Off

Pk - Peak detector

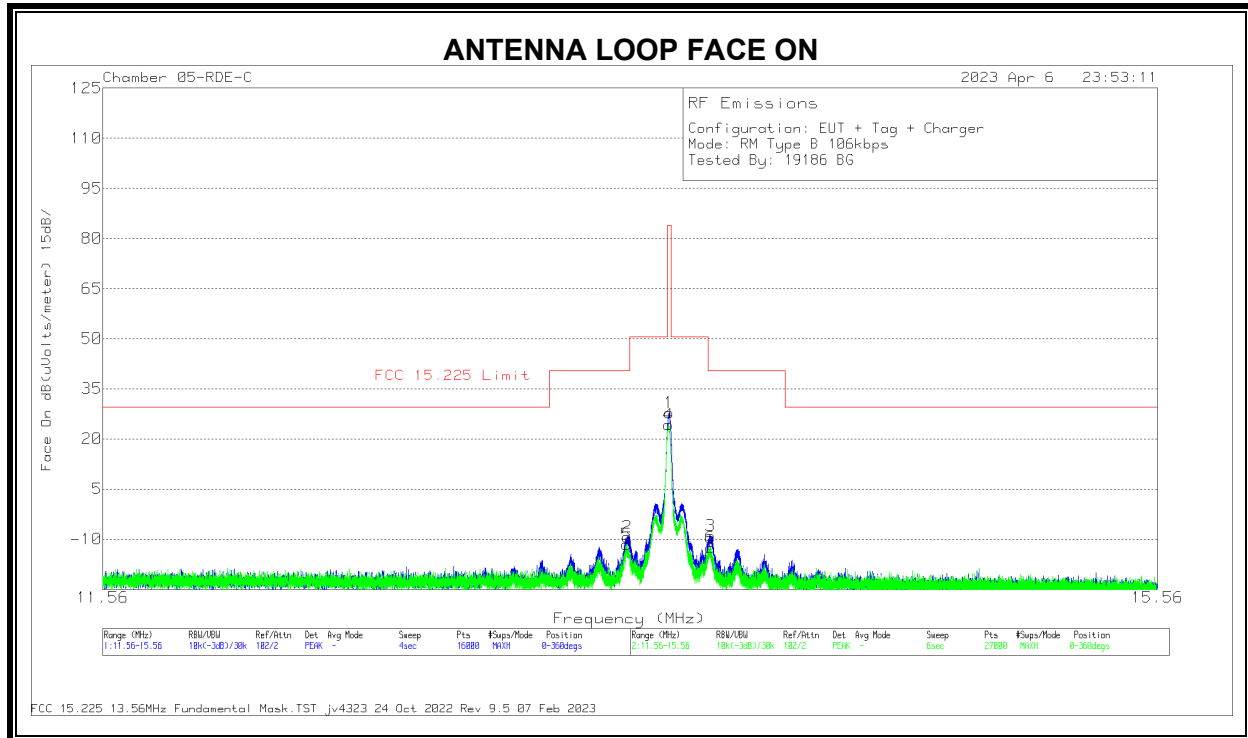


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (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	.0272	25.57	Pk	58.3	-31.8	-80	-27.93	58.91	-86.84	38.91	-66.84	0-360	Face-On
4	.0271	20.06	Pk	58.3	-31.8	-80	-33.44	58.93	-92.37	38.93	-72.37	0-360	Face-Off

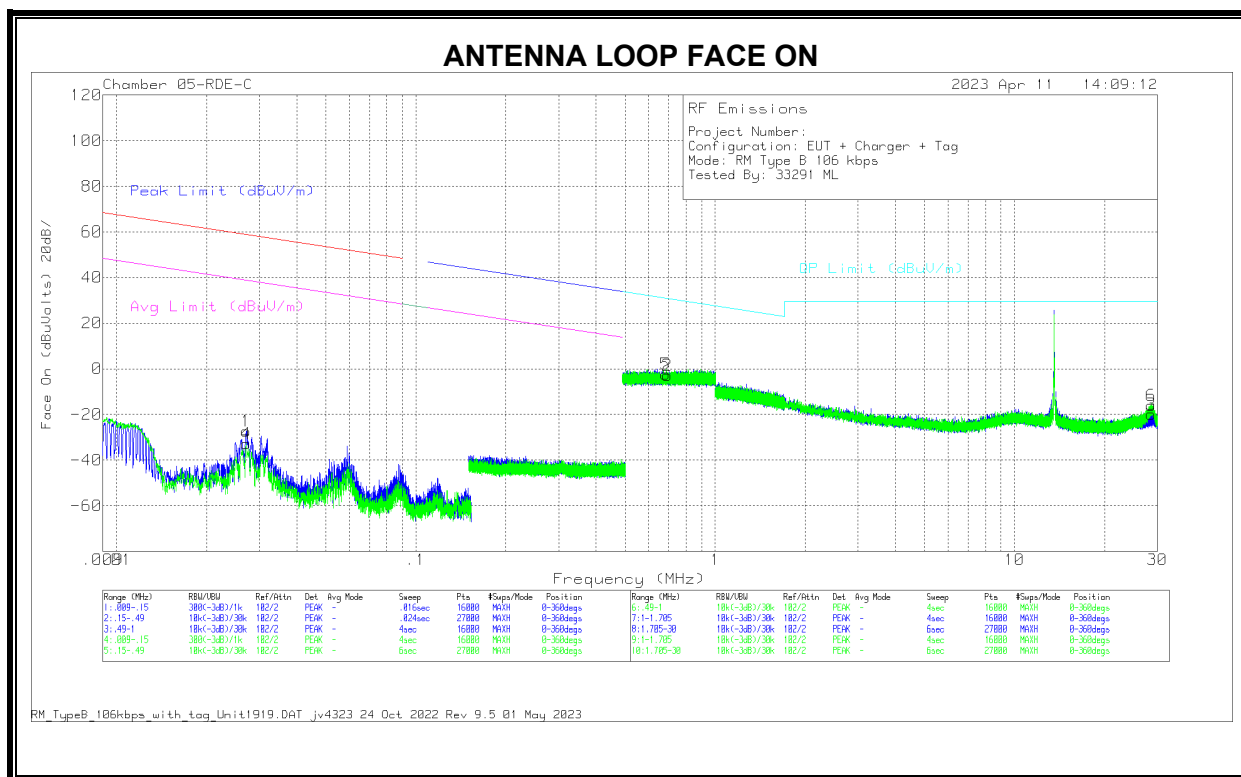
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.8315	13.43	Pk	56.4	-31.9	-40	-2.07	29.22	-31.29	0-360	Face-On
3	28.756	18.52	Pk	33.6	-31.4	-40	-19.28	29.5	-48.78	0-360	Face-On
5	.8276	13.04	Pk	56.4	-31.9	-40	-2.46	29.26	-31.72	0-360	Face-Off
6	28.7874	22.56	Pk	33.6	-31.5	-40	-15.34	29.5	-44.84	0-360	Face-Off

Pk - Peak detector

8.2.2. TAG MODE**FUNDAMENTAL****DATA**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading dB(uVolts/m eter)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.5594	65.17	Pk	34.3	-31.7	-40	27.77	84	-56.23	0-360	Face-On
2	13.4	28.23	Pk	34.3	-31.8	-40	-9.27	40.51	-49.78	0-360	Face-On
3	13.7193	28.44	Pk	34.2	-31.6	-40	-8.96	40.51	-49.47	0-360	Face-On
4	13.558	61.62	Pk	34.3	-31.7	-40	24.22	84	-59.78	0-360	Face-Off
5	13.3979	25.94	Pk	34.3	-31.8	-40	-11.56	40.51	-52.07	0-360	Face-Off
6	13.7195	24.93	Pk	34.2	-31.6	-40	-12.47	40.51	-52.98	0-360	Face-Off

Pk - Peak detector

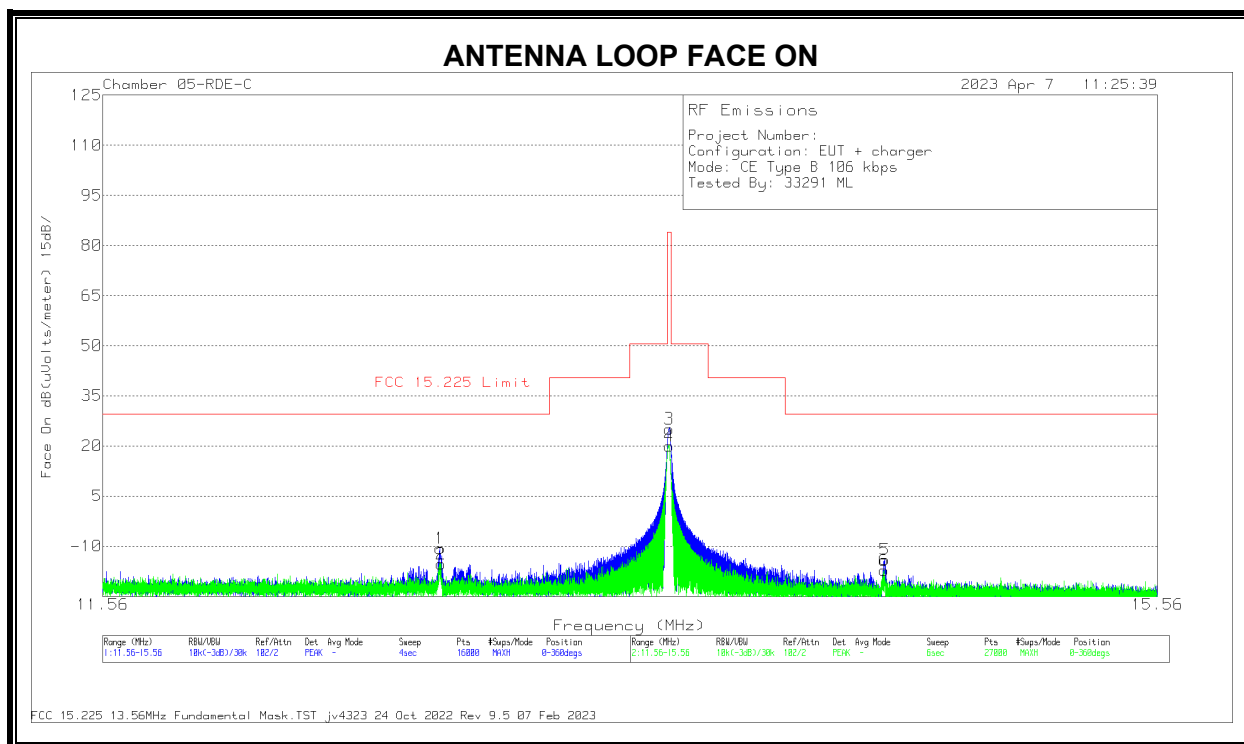


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (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	.0272	26.26	Pk	58.3	-31.8	-80	-27.24	58.91	-86.15	38.91	-66.15	0-360	Face-On
4	.0271	20.64	Pk	58.3	-31.8	-80	-32.86	58.92	-91.78	38.92	-71.78	0-360	Face-Off

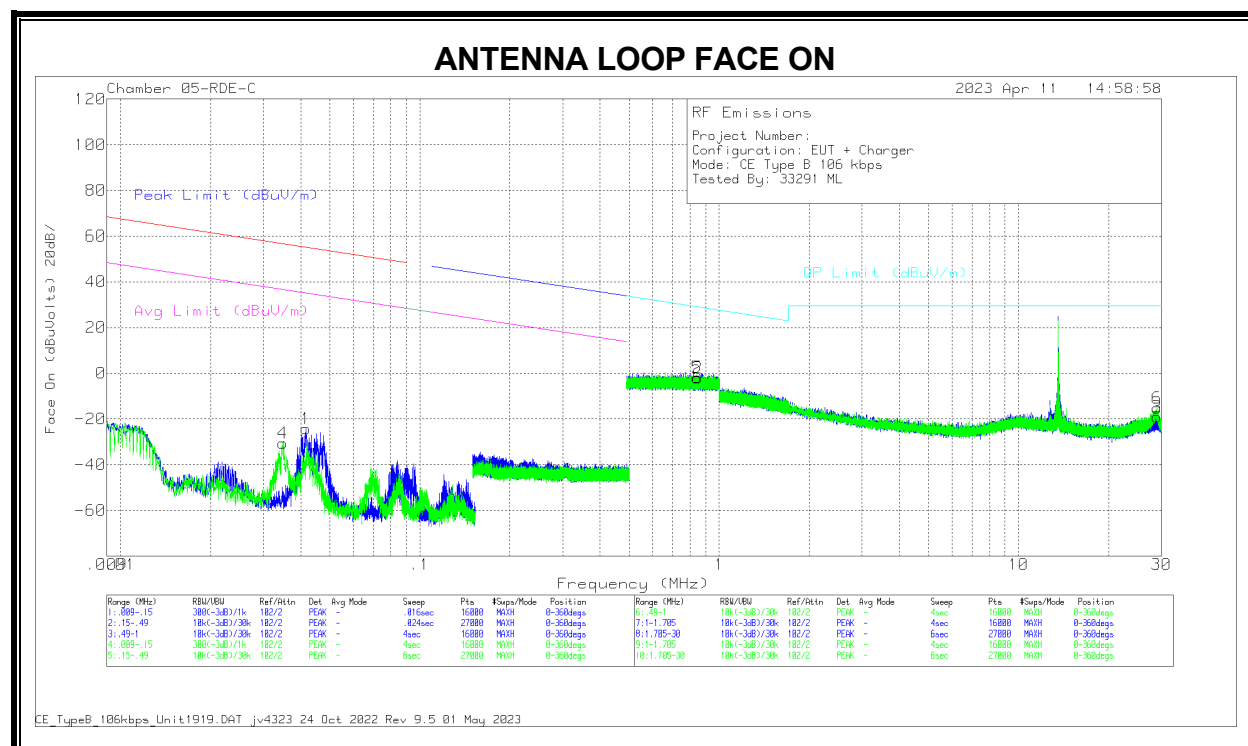
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.6918	12.95	Pk	56.3	-32	-40	-2.75	30.81	-33.56	0-360	Face-On
3	28.5757	17.93	Pk	33.6	-31.5	-40	-19.97	29.5	-49.47	0-360	Face-On
5	.6836	13.28	Pk	56.3	-32	-40	-2.42	30.92	-33.34	0-360	Face-Off
6	28.5663	21.96	Pk	33.6	-31.5	-40	-15.94	29.5	-45.44	0-360	Face-Off

Pk - Peak detector

8.2.3. CE MODE**FUNDAMENTAL****DATA**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit dBuV/m	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.7115	26.75	Pk	34.4	-31.8	-40	-10.65	29.54	-40.19	0-360	Face-On
2	12.7165	22.01	Pk	34.4	-31.8	-40	-15.39	29.54	-44.93	0-360	Face-On
3	13.5598	62.52	Pk	34.3	-31.7	-40	25.12	84	-58.88	0-360	Face-On
4	13.5598	57.44	Pk	34.3	-31.7	-40	20.04	84	-63.96	0-360	Face-Off
6	14.406	20.32	Pk	34.1	-31.7	-40	-17.28	29.54	-46.82	0-360	Face-Off
5	14.4088	23.63	Pk	34.1	-31.7	-40	-13.97	29.54	-43.51	0-360	Face-Off

Pk - Peak detector

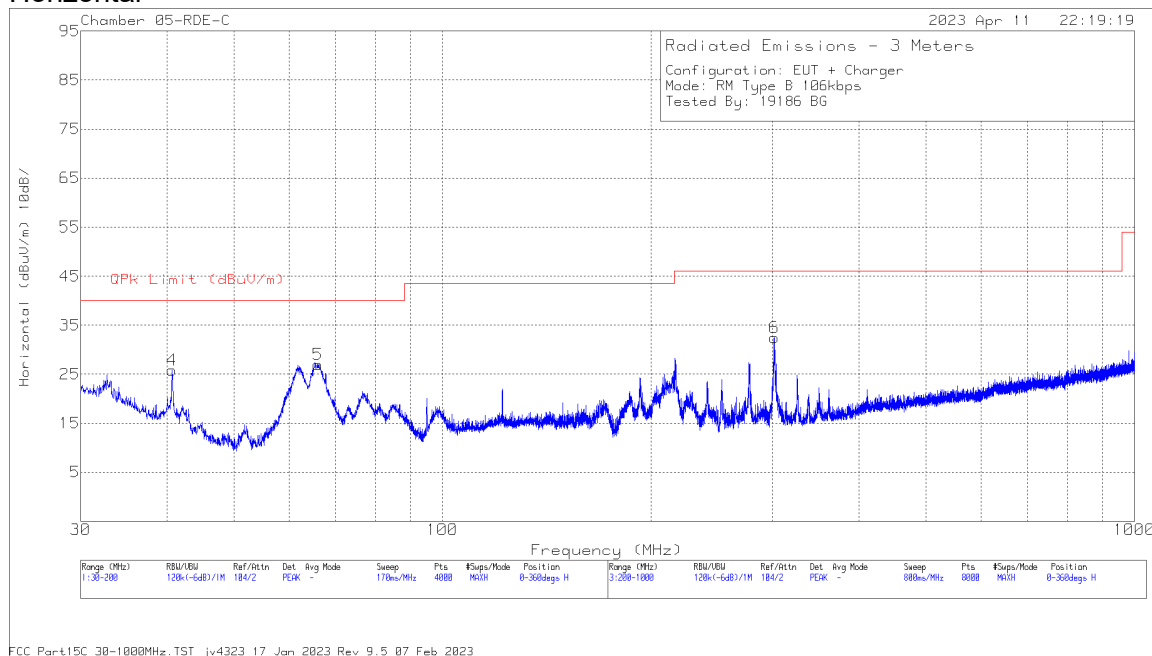
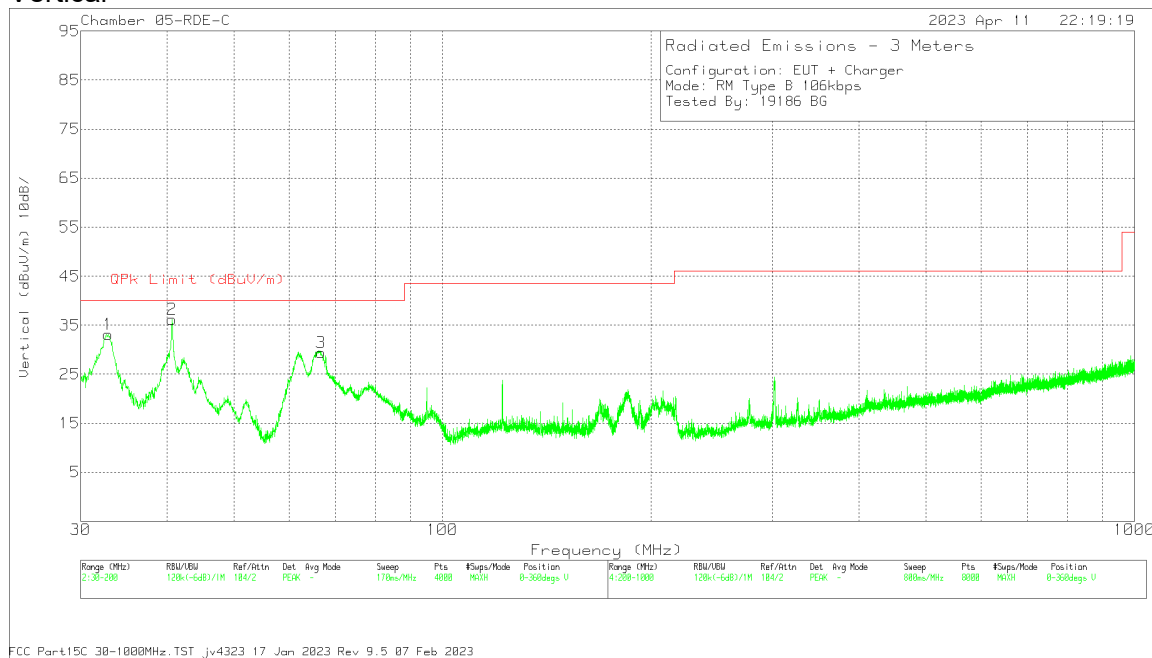


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (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	.0416	30.26	Pk	57.3	-31.9	-80	-24.34	55.2	-79.54	35.2	-59.54	0-360	Face-On
4	.0348	23.54	Pk	57.7	-31.9	-80	-30.66	56.75	-87.41	36.75	-67.41	0-360	Face-Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.8474	13.52	Pk	56.4	-31.9	-40	-1.98	29.06	-31.04	0-360	Face-On
3	29.0505	18.66	Pk	33.6	-31.4	-40	-19.14	29.5	-48.64	0-360	Face-On
5	.8431	13.75	Pk	56.4	-31.9	-40	-1.75	29.1	-30.85	0-360	Face-Off
6	28.9404	22.53	Pk	33.6	-31.4	-40	-15.27	29.5	-44.77	0-360	Face-Off

Pk - Peak detector

8.3. PRIMARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz**8.3.1. READER MODE****SPURIOUS EMISSION****Horizontal****Vertical**

DATA

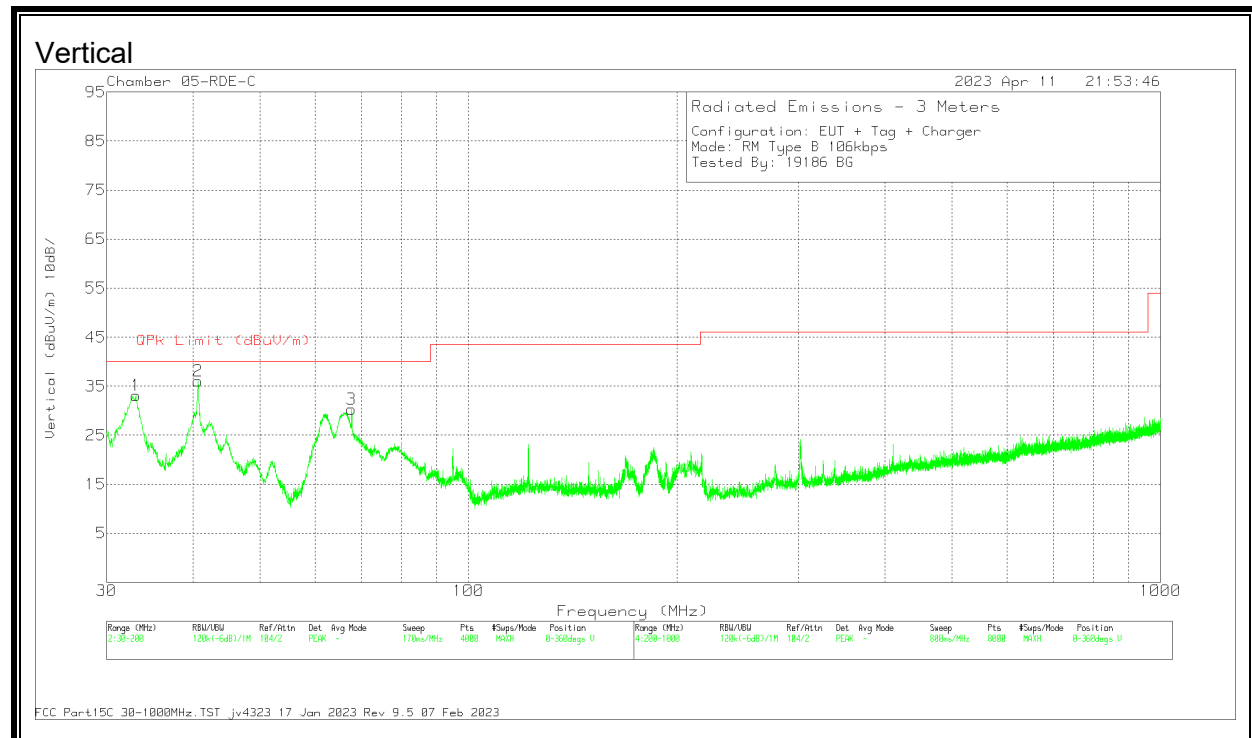
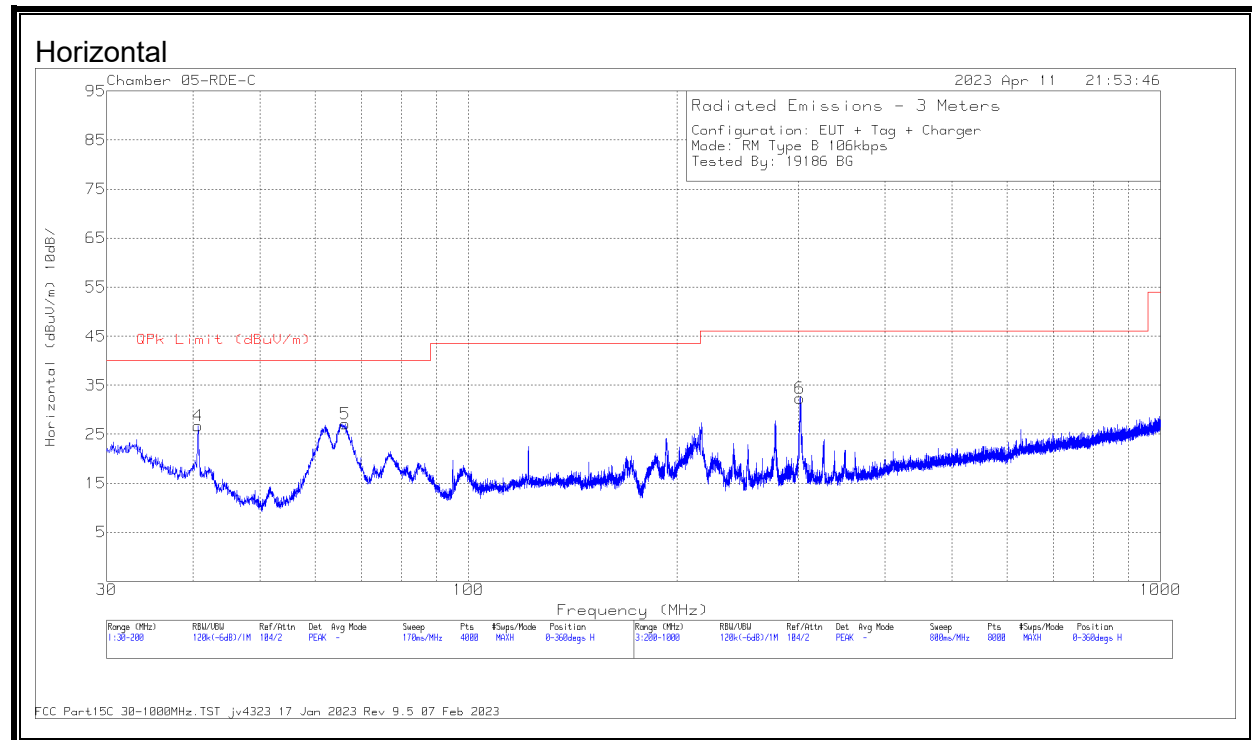
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE01849 71 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	32.8482	39.73	Pk	24.8	-31.4	33.13	40	-6.87	0-360	102	V
	32.7561	36.68	Qp	24.9	-31.4	30.18	40	-9.82	339	101	V
2	40.6703	48.44	Pk	19.3	-31.5	36.24	40	-3.76	0-360	102	V
	40.6761	47.08	Qp	19.3	-31.5	34.88	40	-5.12	338	105	V
3	66.8145	46.67	Pk	13.8	-31.1	29.37	40	-10.63	0-360	102	V
4	40.6703	38.05	Pk	19.3	-31.5	25.85	40	-14.15	0-360	398	H
5	66.0068	44.56	Pk	13.7	-31.3	26.96	40	-13.04	0-360	299	H
6	301.513	43.83	Pk	19.1	-30.4	32.53	46.02	-13.49	0-360	102	H

Pk - Peak detector

Qp - Quasi-Peak detector

8.3.2. TAG MODE

SPURIOUS EMISSION

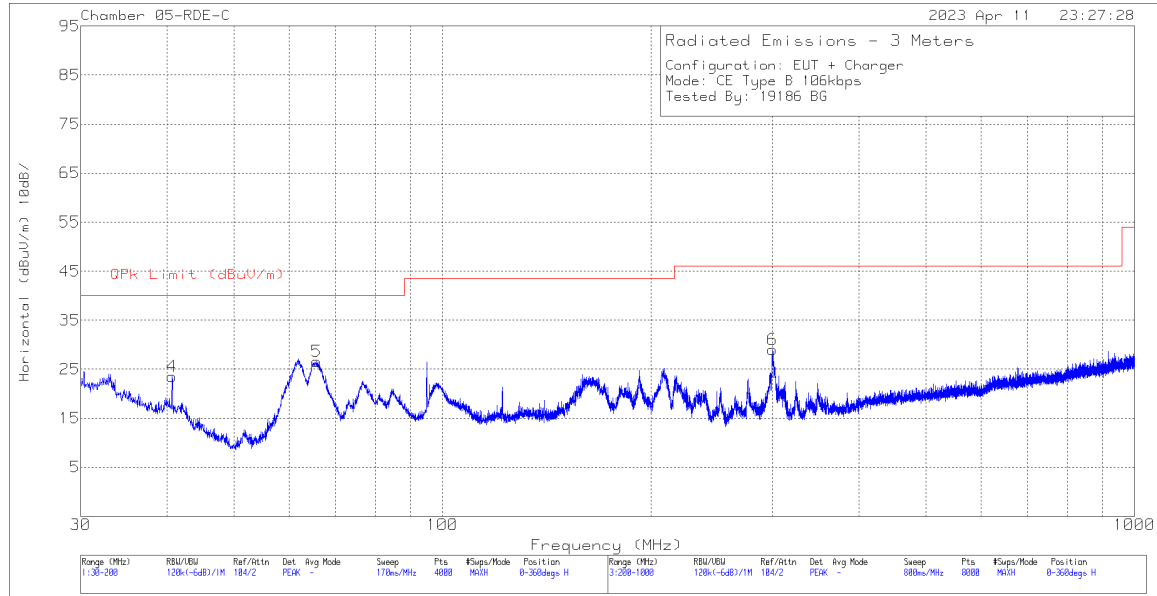
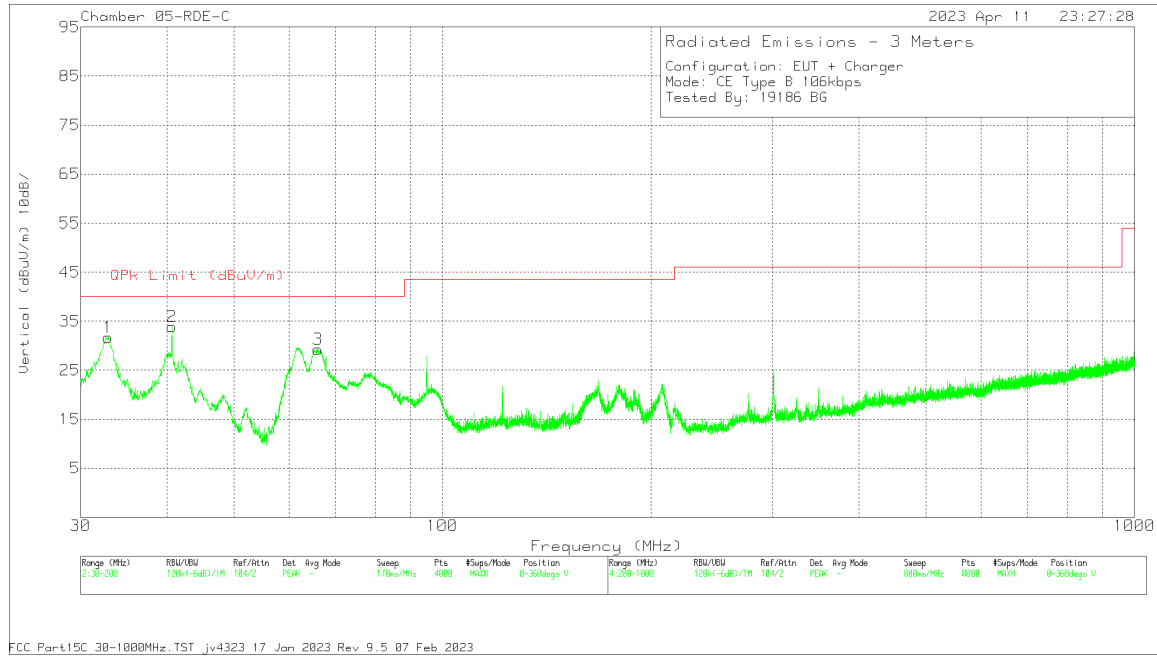


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE01849 71 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.0608	39.86	Pk	24.7	-31.4	33.16	40	-6.84	0-360	101	V
	32.8788	35.94	Pk	24.8	-31.4	29.34	40	-10.66	298	116	V
2	40.6703	48.24	Pk	19.3	-31.5	36.04	40	-3.96	0-360	101	V
	40.6653	47.01	QP	19.3	-31.5	34.81	40	-5.19	335	102	V
3	67.7923	47.66	Pk	13.8	-31.2	30.26	40	-9.74	0-360	101	V
4	40.6278	38.93	Pk	19.3	-31.5	26.73	40	-13.27	0-360	398	H
5	66.3044	44.63	Pk	13.7	-31.2	27.13	40	-12.87	0-360	198	H
6	301.413	43.65	Pk	19.1	-30.4	32.35	46.02	-13.67	0-360	101	H

Pk - Peak detector

Qp - Quasi-Peak detector

8.3.3. CE MODE**Horizontal****Vertical**

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE01849 71 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	32.8908	38.29	Pk	24.8	-31.4	31.69	40	-8.31	0-360	101	V
2	40.6278	46.12	Pk	19.3	-31.5	33.92	40	-6.08	0-360	101	V
	40.6699	41.22	Qp	19.3	-31.5	29.02	40	-10.98	337	143	V
3	66.0068	46.93	Pk	13.7	-31.3	29.33	40	-10.67	0-360	101	V
4	40.6703	35.77	Pk	19.3	-31.5	23.57	40	-16.43	0-360	298	H
5	65.7518	44.16	Pk	13.7	-31.3	26.56	40	-13.44	0-360	198	H
6	299.913	40.3	Pk	19	-30.3	29	46.02	-17.02	0-360	101	H

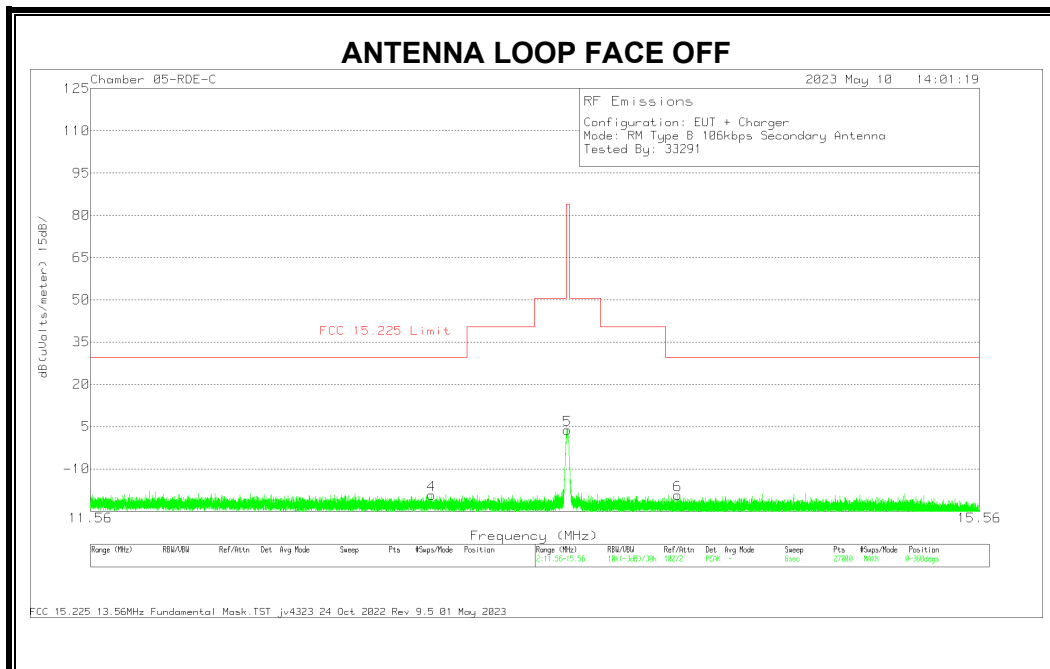
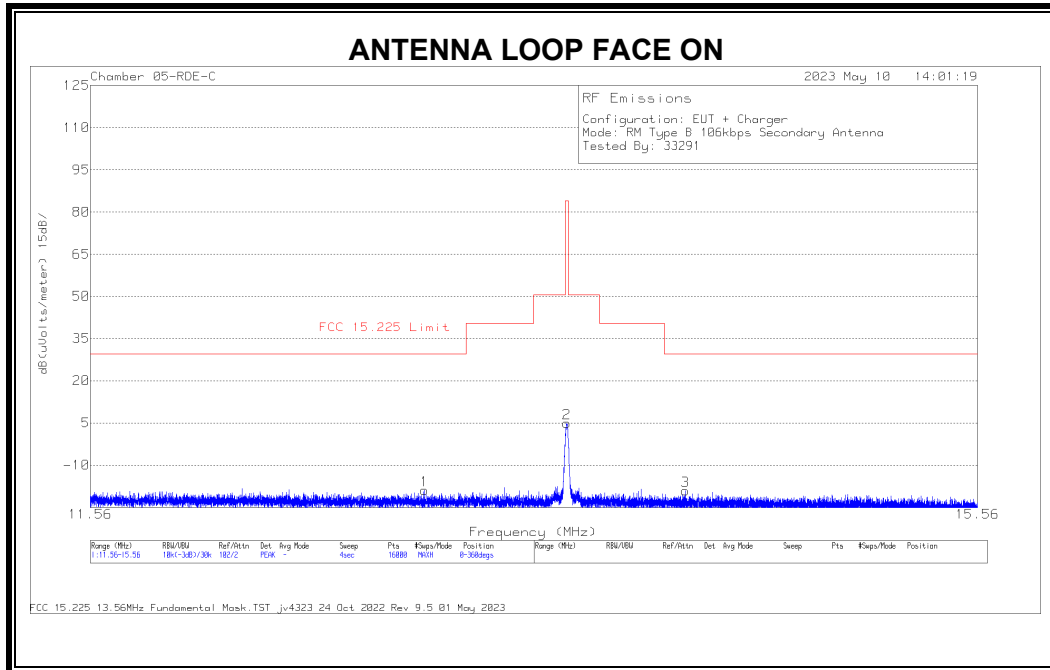
Pk - Peak detector

Qp - Peak detector

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

8.4.1. READER MODE

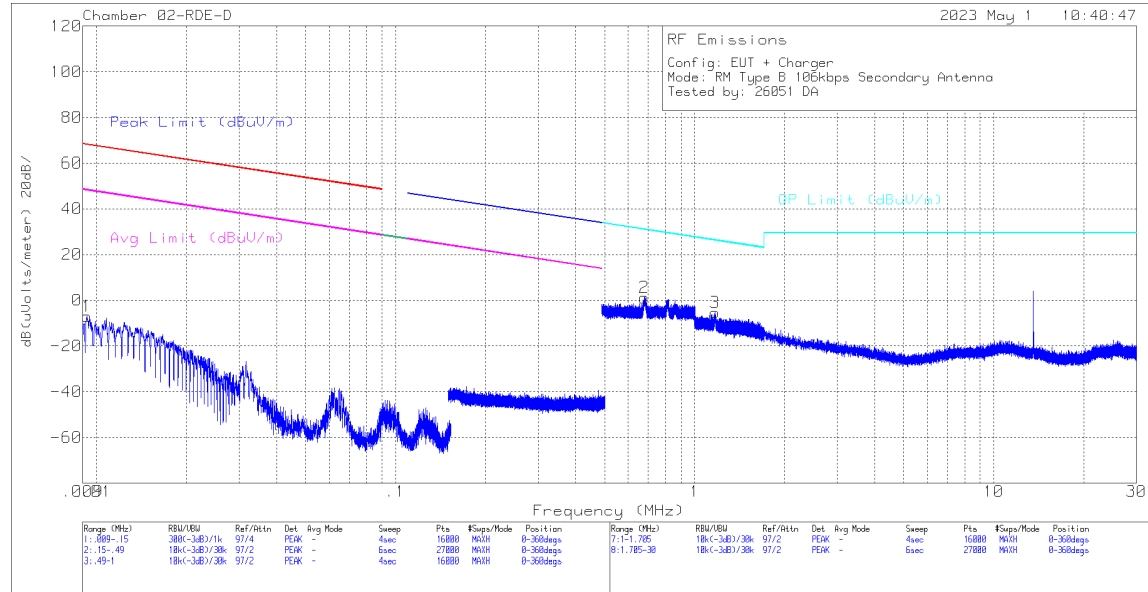
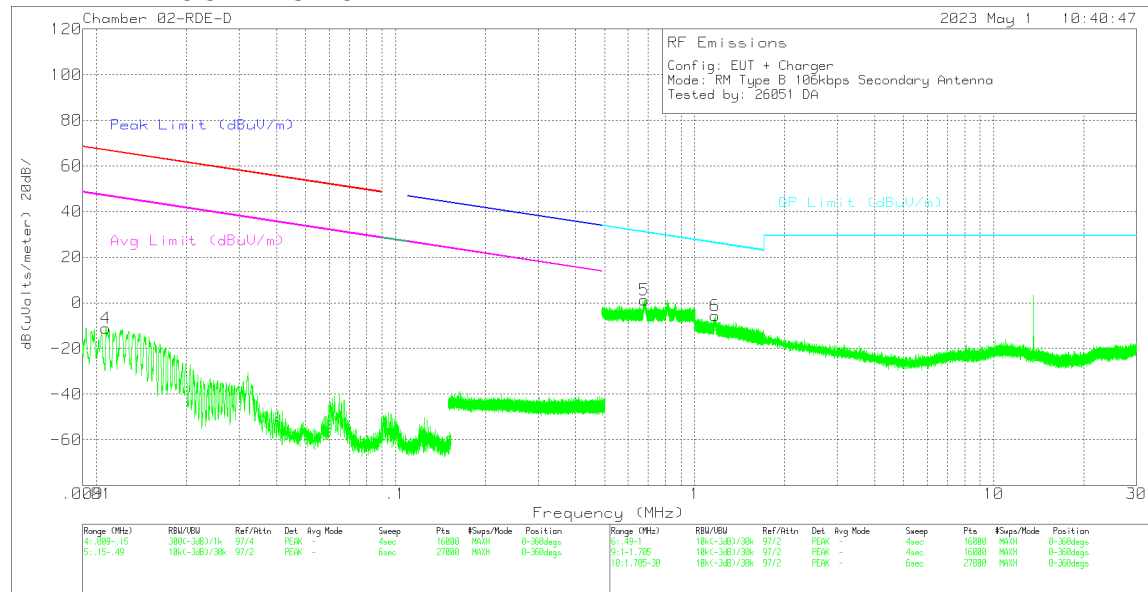
FUNDAMENTAL



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading dB(uVolts/m eter)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.9298	18.34	Pk	34.4	-31.7	-40	-18.96	29.54	-48.5	0-360	Face-On
2	13.56	42.37	Pk	34.3	-31.7	-40	4.97	84	-79.03	0-360	Face-On
3	14.1105	18.37	Pk	34.2	-31.7	-40	-19.13	29.54	-48.67	0-360	Face-On
4	12.9555	18.08	Pk	34.4	-31.7	-40	-19.22	29.54	-48.76	0-360	Face-Off
5	13.5584	41.26	Pk	34.3	-31.7	-40	3.86	84	-80.14	0-360	Face-Off
6	14.0674	18.19	Pk	34.2	-31.7	-40	-19.31	29.54	-48.85	0-360	Face-Off

Pk - Peak detector

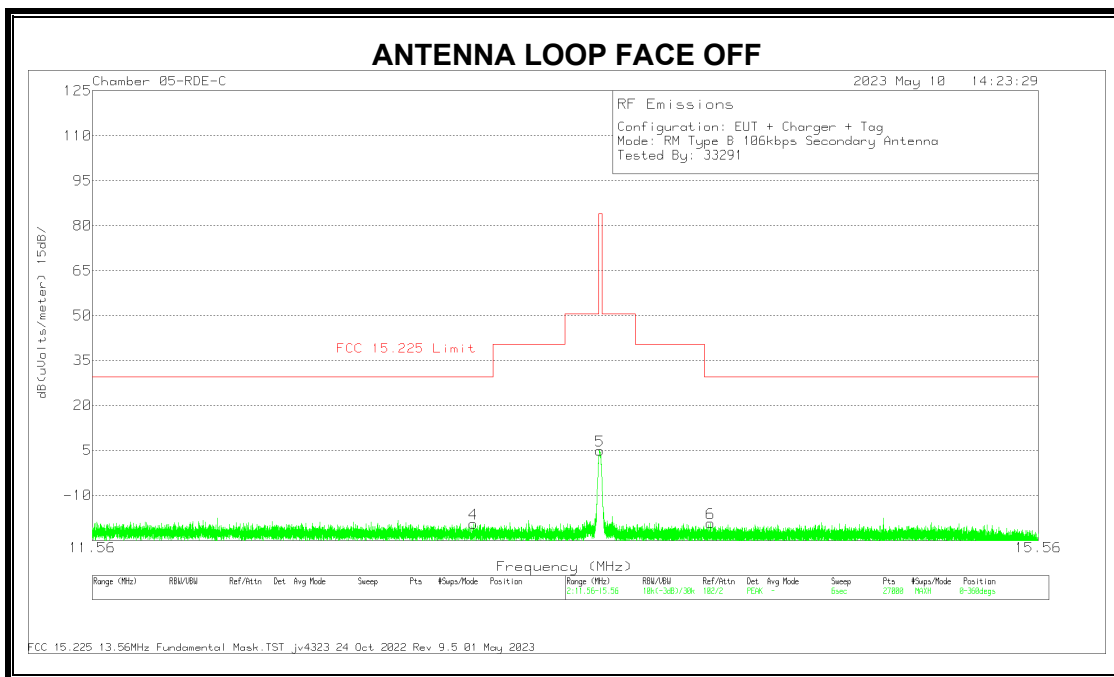
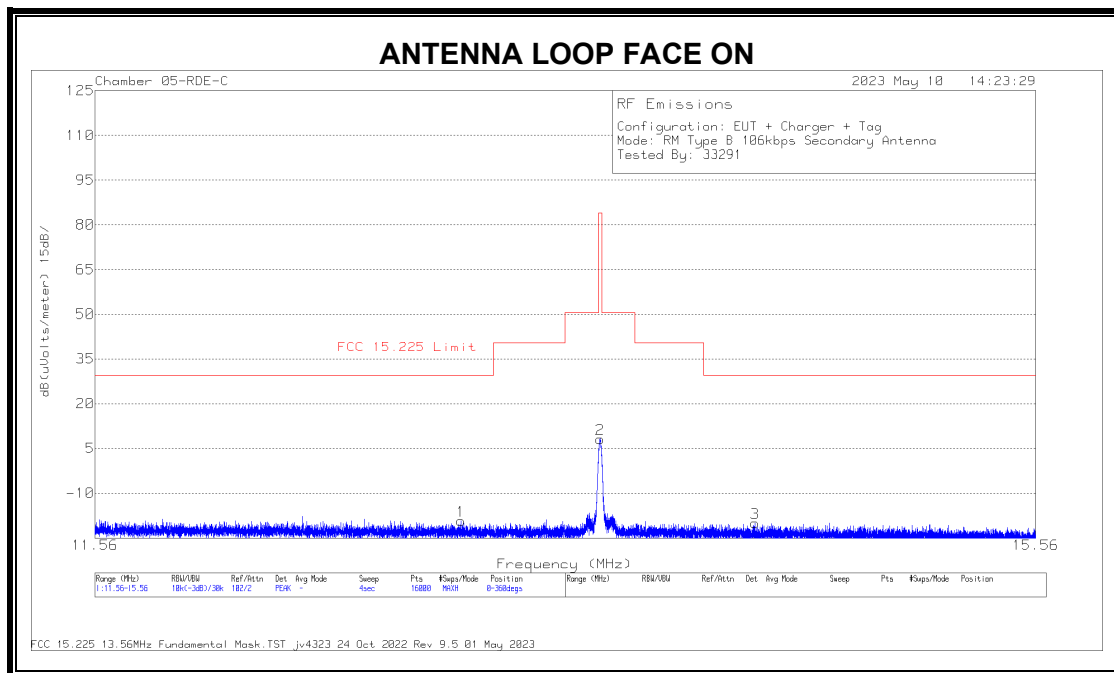
SPURIOUS EMISSION**ANTENNA LOOP FACE ON****ANTENNA LOOP FACE OFF**

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Cbl/Amp (dB)	Dist Corr 300m (dB)	Corrected Reading dB(uVolts/meter)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0093	42	Pk	61.1	-30	-80	-6.9	68.21	-75.11	48.21	-55.11	0-360	Face-On
4	.0108	39.18	Pk	60.3	-30.6	-80	-11.12	66.94	-78.06	46.94	-58.06	0-360	Face-Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Cbl/Amp (dB)	Dist Corr 30m (dB)	Corrected Reading dB(uVolts/meter)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.68	17.12	Pk	56.4	-32.4	-40	1.12	30.96	-29.84	0-360	Face-Off
3	1.1695	21.18	Pk	45.8	-32.4	-40	-5.42	26.27	-31.69	0-360	Face-On
5	.6788	17.29	Pk	56.4	-32.4	-40	1.29	30.98	-29.69	0-360	Face-On
6	1.1678	21.05	Pk	45.8	-32.4	-40	-5.55	26.28	-31.83	0-360	Face-Off

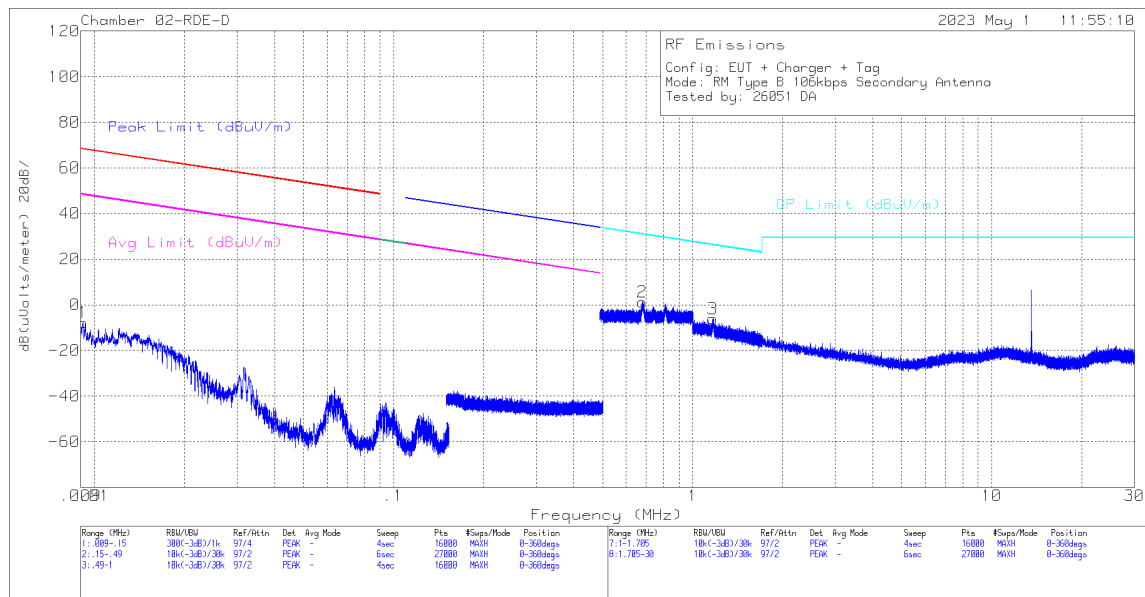
Pk - Peak detector

8.4.2. TAG MODE**FUNDAMENTAL**

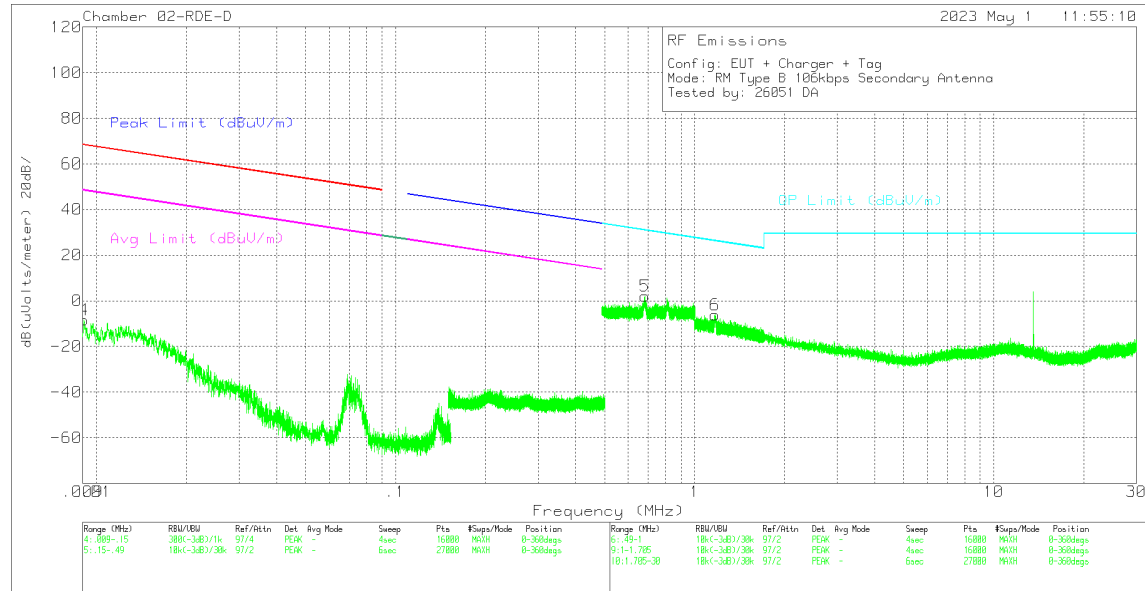
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading dB(uVolts/ meter)	FCC 15.225 Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.9775	18.12	Pk	34.3	-31.7	-40	-19.28	29.54	-48.82	0-360	Face-On
2	13.56	45.56	Pk	34.3	-31.7	-40	8.16	84	-75.84	0-360	Face-On
3	14.2403	17.57	Pk	34.2	-31.7	-40	-19.93	29.54	-49.47	0-360	Face-On
4	13.0307	18.02	Pk	34.3	-31.8	-40	-19.48	29.54	-49.02	0-360	Face-Off
5	13.5579	42.27	Pk	34.3	-31.7	-40	4.87	84	-79.13	0-360	Face-Off
6	14.0371	18.22	Pk	34.2	-31.7	-40	-19.28	29.54	-48.82	0-360	Face-Off

Pk - Peak detector

SPURIOUS EMISSION**ANTENNA LOOP FACE ON**

FCC 15.209 Below 30MHz.TST jv4323 25 Oct 2022 Rev 9.5 18 Jan 2023

ANTENNA LOOP FACE OFF

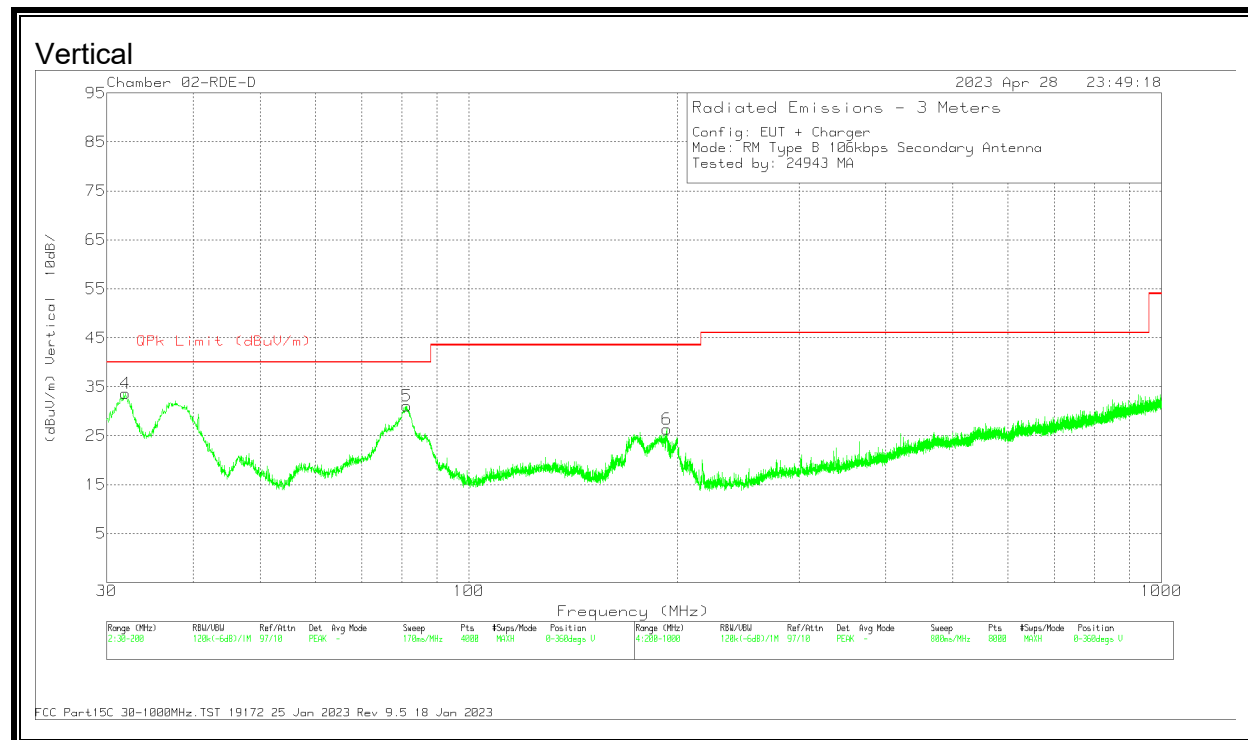
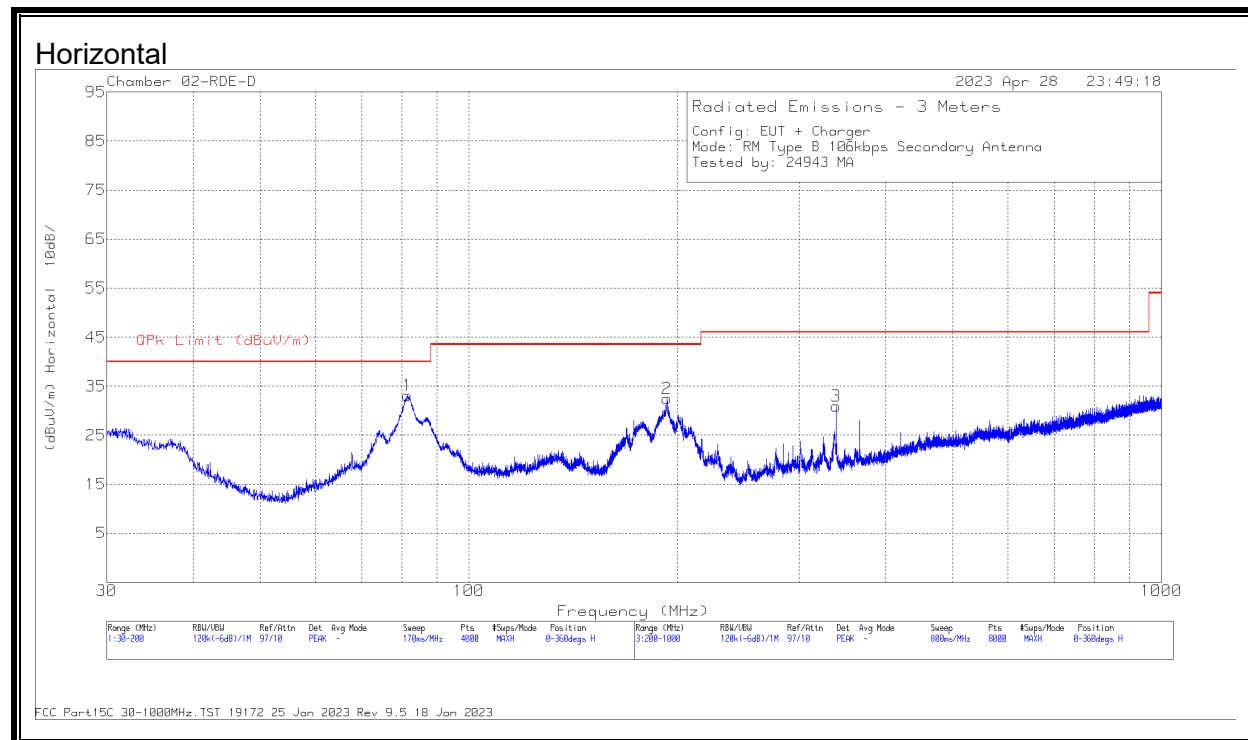
FCC 15.209 Below 30MHz.TST jv4323 25 Oct 2022 Rev 9.5 18 Jan 2023

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Cbl/Amp (dB)	Dist Corr 300m	Corrected Reading dB(uVolts/meter)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0092	40.91	Pk	61.2	-30	-80	-7.89	68.35	-76.24	48.35	-56.24	0-360	Face-On
4	.0091	40.22	Pk	61.3	-30	-80	-8.48	68.41	-76.89	48.41	-56.89	0-360	Face-Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Cbl/Amp (dB)	Dist Corr 30m	Corrected Reading dB(uVolts/meter)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.6787	17.16	Pk	56.4	-32.4	-40	1.16	30.98	-29.82	0-360	Face-On
3	1.1673	20.55	Pk	45.8	-32.4	-40	-6.05	26.28	-32.33	0-360	Face-On
5	.681	18.13	Pk	56.4	-32.4	-40	2.13	30.95	-28.82	0-360	Face-Off
6	1.1682	20.56	Pk	45.8	-32.4	-40	-6.04	26.28	-32.32	0-360	Face-Off

Pk - Peak detector

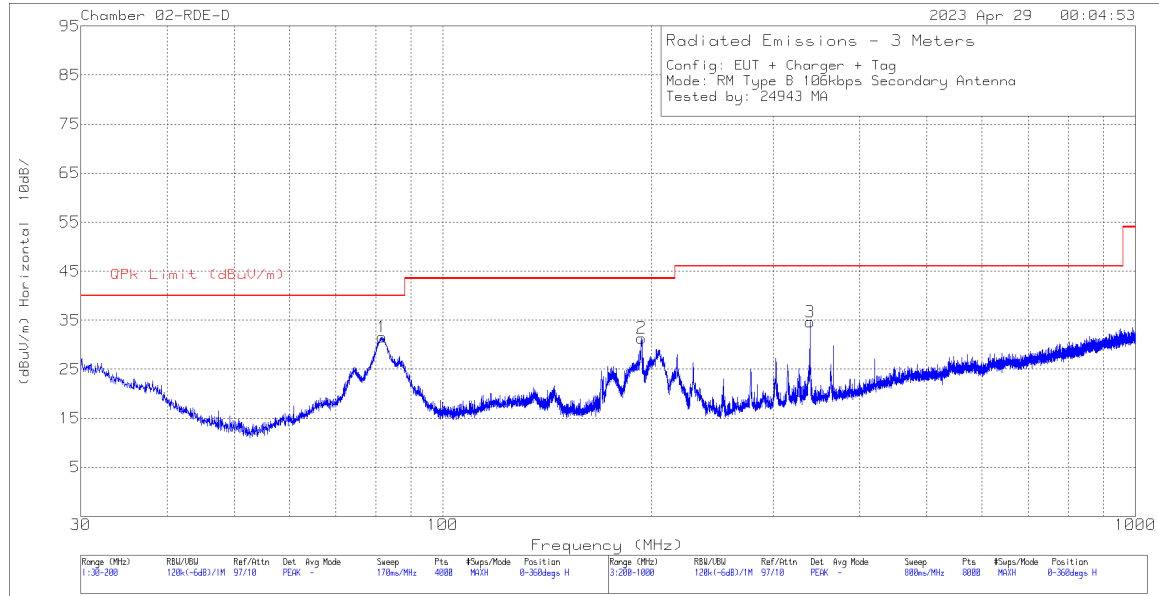
8.5. SECONDARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz**8.5.1. READER MODE**

DATA

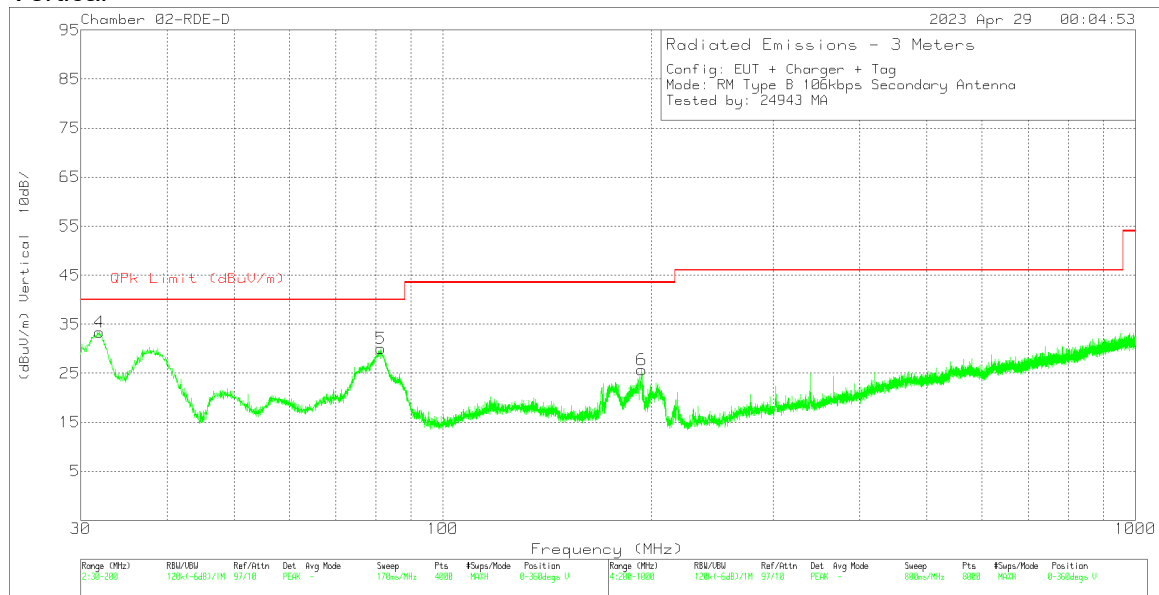
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB)	Cbl/Amp (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	81.5658	49.87	Pk	13.4	-30.2	33.07	40	-6.93	0-360	299	H
2	193.2	44.32	Pk	17.9	-29.8	32.42	43.52	-11.1	0-360	199	H
3	338.918	40.07	Pk	20	-29.1	30.97	46.02	-15.05	0-360	101	H
4	31.913	38.45	Pk	25.6	-30.4	33.65	40	-6.35	0-360	98	V
	31.920	35.16	QP	25.6	-30.4	30.36	40	-9.64	305	150	V
5	81.3108	47.9	Pk	13.4	-30.2	31.1	40	-8.9	0-360	98	V
6	193.2	38.19	Pk	17.9	-29.8	26.29	43.52	-17.23	0-360	98	V

Pk - Peak detector

QP-Quasi Peak

8.5.2. TAG MODE**Horizontal**

FCC Part15C 30-1000MHz.TST 19172 25 Jan 2023 Rev 9.5 18 Jan 2023

Vertical

FCC Part15C 30-1000MHz.TST 19172 25 Jan 2023 Rev 9.5 18 Jan 2023

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80508 ACF (dB)	Cbl/Amp (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	81.7359	48.38	Pk	13.4	-30.2	31.58	40	-8.42	0-360	299	H
2	193.412	43.19	Pk	18	-29.8	31.39	43.52	-12.13	0-360	199	H
3	339.018	43.79	Pk	20	-29.1	34.69	46.02	-11.33	0-360	101	H
4	31.9555	38.28	Pk	25.5	-30.4	33.38	40	-6.62	0-360	99	V
	31.9560	35.04	QP	25.5	-30.4	30.14	40	-9.86	320	145	V
5	81.3108	46.9	Pk	13.4	-30.2	30.1	40	-9.9	0-360	99	V
6	193.795	37.54	Pk	18	-29.8	25.74	43.52	-17.78	0-360	99	V

Pk - Peak detector

QP-Quasi Peak

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:	30606	Date:	06/17/2023
------------	-------	--------------	------------

9.1. PRIMARY ANTENNA**9.1.1. READER MODE**

Reference Frequency: EUT Channel 13.56 MHz @ 20°C										
Limit: ± 100 ppm = 1.35600 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(°C)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.560092	0.000	13.560093	-0.074	13.560099	-0.516	13.560097	-0.369	± 100
	40	13.560079	0.959	13.560084	0.590	13.560088	0.295	13.560087	0.369	± 100
	30	13.560083	0.664	13.560088	0.295	13.560087	0.369	13.560098	-0.442	± 100
	20	13.560092	0.000	13.560093	-0.074	13.560089	0.221	13.560096	-0.295	± 100
	10	13.560093	-0.074	13.560092	0.000	13.560091	0.074	13.560093	-0.074	± 100
	0	13.560089	0.221	13.560088	0.295	13.560085	0.516	13.560087	0.369	± 100
	-10	13.560083	0.664	13.560084	0.590	13.560092	0.000	13.560093	-0.074	± 100
	-20	13.560087	0.369	13.560089	0.221	13.560091	0.074	13.560093	-0.074	± 100
3.23	20	13.560088	0.295	13.560082	0.737	13.560086	0.442	13.560091	0.074	± 100
4.37	20	13.560092	0.000	13.560099	-0.516	13.560091	0.074	13.560093	-0.074	± 100

9.1.2. TAG MODE

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	13.55994	-1.032	13.559938	-0.885	13.559921	0.369	13.559916	0.737	± 100
	40	13.559931	-0.369	13.559927	-0.074	13.559916	0.737	13.559941	-1.106	± 100
	30	13.55991	1.180	13.559921	0.369	13.559928	-0.147	13.559931	-0.369	± 100
	20	13.559926	0.000	13.55993	-0.295	13.559941	-1.106	13.559935	-0.664	± 100
	10	13.55993	-0.295	13.559934	-0.590	13.559941	-1.106	13.559936	-0.737	± 100
	0	13.55993	-0.295	13.559941	-1.106	13.559931	-0.369	13.559916	0.737	± 100
	-10	13.559935	-0.664	13.559921	0.369	13.559913	0.959	13.559941	-1.106	± 100
	-20	13.559917	0.664	13.559921	0.369	13.559918	0.590	13.559921	0.369	± 100
3.23	20	13.5599361	-0.745	13.559934	-0.590	13.559932	-0.442	13.559935	-0.664	± 100
4.37	20	13.559921	0.369	13.559934	-0.590	13.559941	-1.106	13.559961	-2.581	± 100

9.1.3. CE MODE

Reference Frequency: EUT Channel 13.56 MHz @ 20°C										
Limit: ± 100 ppm = 1.35600 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(°C)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.560577	-0.442	13.560573	-0.147	13.560577	-0.442	13.560575	-0.295	± 100
	40	13.560573	-0.147	13.560575	-0.295	13.560577	-0.442	13.560578	-0.516	± 100
	30	13.560571	0.000	13.560577	-0.442	13.560577	-0.442	13.560576	-0.369	± 100
	20	13.560571	0.000	13.560572	-0.074	13.560574	-0.221	13.560574	-0.221	± 100
	10	13.560579	-0.590	13.560577	-0.442	13.560579	-0.590	13.560574	-0.221	± 100
	0	13.560581	-0.737	13.560788	-16.003	13.560789	-16.077	13.560785	-15.782	± 100
	-10	13.560791	-16.224	13.560789	-16.077	13.560787	-15.929	13.560788	-16.003	± 100
	-20	13.560787	-15.929	13.560788	-16.003	13.560791	-16.224	13.560787	-15.929	± 100
3.23	20	13.560787	-15.929	13.560786	-15.855	13.560788	-16.003	13.560787	-15.929	± 100
4.37	20	13.56072	-10.988	13.56077	-14.676	13.56076	-13.938	13.56078	-15.413	± 100

9.2. SECONDARY ANTENNA**9.2.1. READER MODE**

Reference Frequency: EUT Channel 13.56 MHz @ 20°C										
Limit: ± 100 ppm = 1.35600 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(°C)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.560031	-0.516	13.560028	-0.295	13.560031	-0.516	13.560032	-0.590	± 100
	40	13.560028	-0.295	13.560031	-0.516	13.560029	-0.369	13.560027	-0.221	± 100
	30	13.560019	0.369	13.560031	-0.516	13.560029	-0.369	13.560032	-0.590	± 100
	20	13.560024	0.000	13.560031	-0.516	13.560025	-0.074	13.560031	-0.516	± 100
	10	13.560013	0.811	13.560032	-0.590	13.560021	0.221	13.560011	0.959	± 100
	0	13.560061	-2.729	13.560062	-2.802	13.560054	-2.212	13.560055	-2.286	± 100
	-10	13.560016	0.590	13.560025	-0.074	13.560034	-0.737	13.560035	-0.811	± 100
	-20	13.560035	-0.811	13.560041	-1.254	13.560023	0.074	13.560024	0.000	± 100
3.23	20	13.560035	-0.811	13.560031	-0.516	13.560029	-0.369	13.560034	-0.737	± 100
4.37	20	13.560041	-1.254	13.560042	-1.327	13.560031	-0.516	13.560025	-0.074	± 100

9.2.2. TAG MODE, Type B 106 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	13.559934	-1.475	13.559931	-1.254	13.559929	-1.106	13.559916	-0.147	± 100
	40	13.559919	-0.369	13.559934	-1.475	13.559926	-0.885	13.559917	-0.221	± 100
	30	13.559933	-1.401	13.559928	-1.032	13.559916	-0.147	13.559932	-1.327	± 100
	20	13.559914	0.000	13.559912	0.147	13.559907	0.516	13.559941	-1.991	± 100
	10	13.559963	-3.614	13.559976	-4.572	13.559971	-4.204	13.559965	-3.761	± 100
	0	13.559921	-0.516	13.559931	-1.254	13.559918	-0.295	13.559922	-0.590	± 100
	-10	13.559921	-0.516	13.559934	-1.475	13.559916	-0.147	13.559941	-1.991	± 100
	-20	13.559917	-0.221	13.559918	-0.295	13.559921	-0.516	13.559937	-1.696	± 100
3.23	20	13.559914	0.000	13.559932	-1.327	13.559943	-2.139	13.559916	-0.147	± 100
4.37	20	13.559944	-2.212	13.559941	-1.991	13.559947	-2.434	13.559943	-2.139	± 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

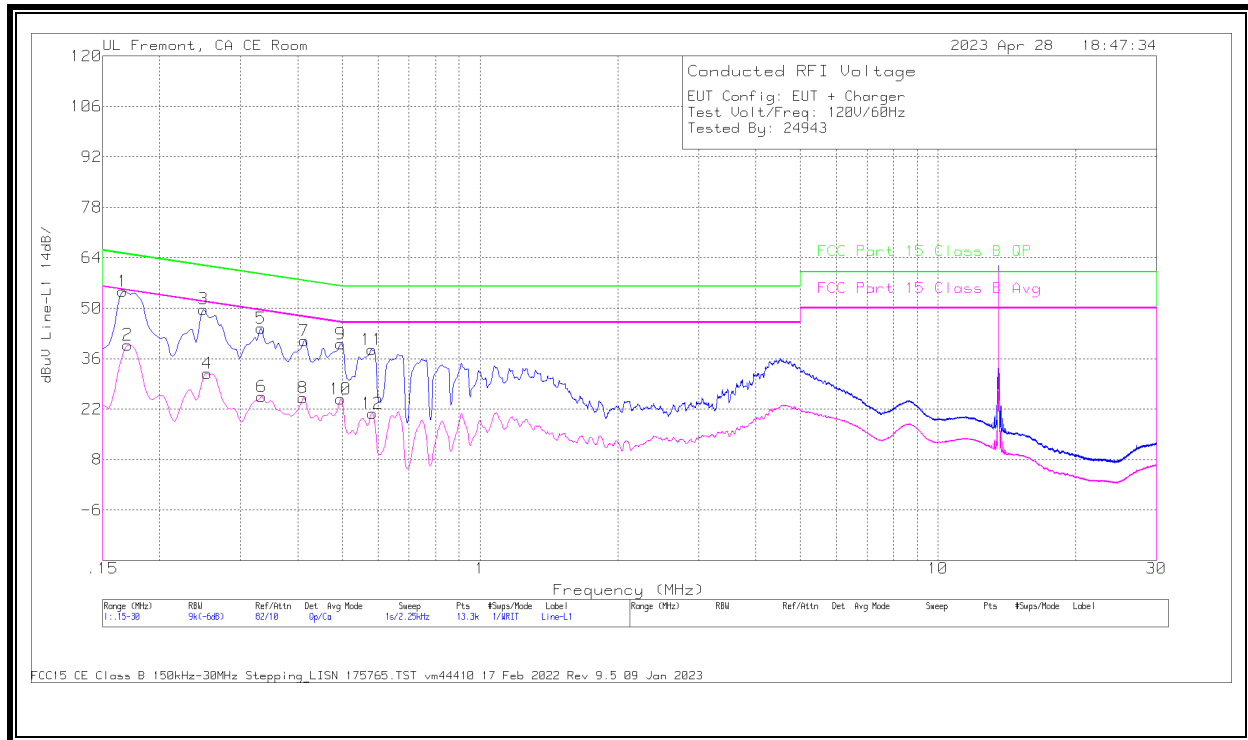
Notes:
1. The lower limit shall apply at the transition frequencies
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

TEST PROCEDURE

ANSI C63.10:2013

RESULTS

No non-compliance noted:

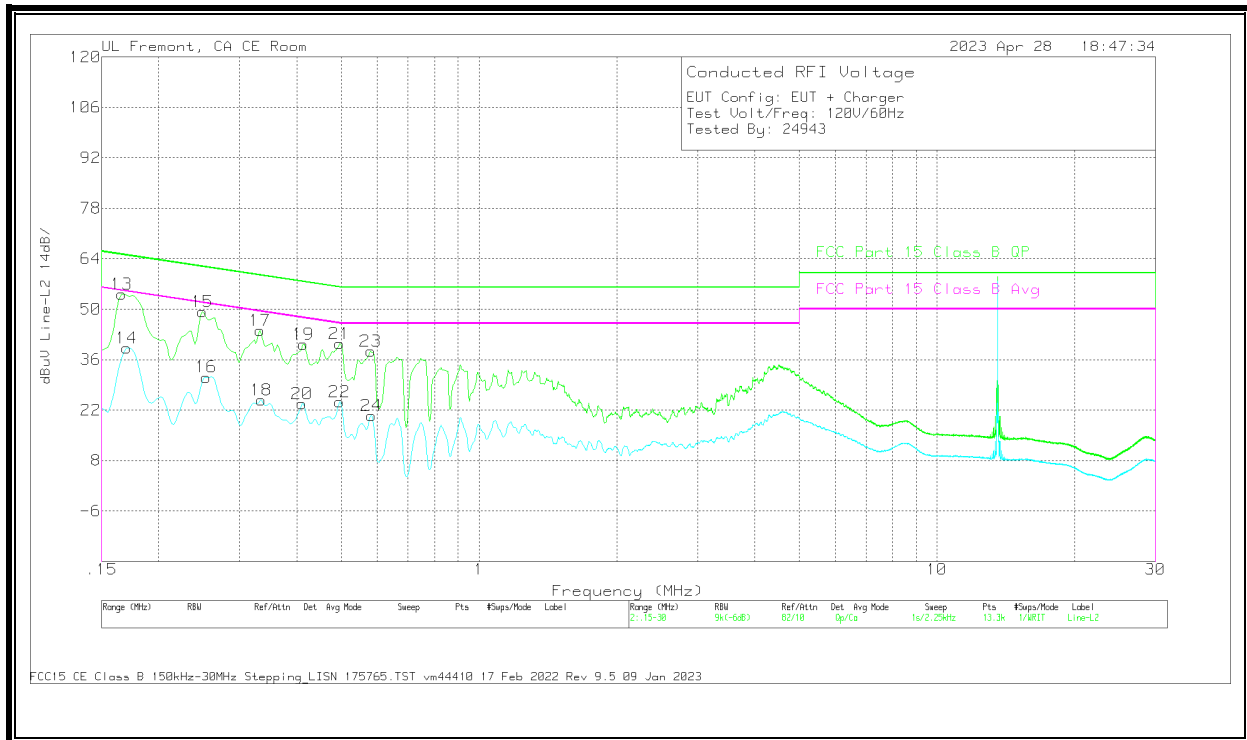
10.1. PRIMARY ANTENNA**10.1.1. READER MODE WITH ANTENNA****LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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)
1	.1658	45.34	Qp	0	0	9.4	54.74	65.17	-10.43	-	-
2	.1703	30.43	Ca	0	0	9.4	39.83	-	-	54.95	-15.12
3	.249	40.44	Qp	0	0	9.3	49.74	61.79	-12.05	-	-
4	.2535	22.57	Ca	0	0	9.3	31.87	-	-	51.64	-19.77
5	.3323	35.15	Qp	0	0	9.3	44.45	59.39	-14.94	-	-
6	.3334	16.11	Ca	0	0	9.3	25.41	-	-	49.37	-23.96
7	.4133	31.57	Qp	0	.1	9.3	40.97	57.58	-16.61	-	-
8	.411	15.72	Ca	0	.1	9.3	25.12	-	-	47.63	-22.51
9	.4965	30.75	Qp	0	.1	9.3	40.15	56.06	-15.91	-	-
10	.4965	15.41	Ca	0	.1	9.3	24.81	-	-	46.06	-21.25
11	.5798	29.08	Qp	0	.1	9.3	38.48	56	-17.52	-	-
12	.582	11.47	Ca	0	.1	9.3	20.87	-	-	46	-25.13

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	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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)
13	.1658	44.83	Qp	0	0	9.4	54.23	65.17	-10.94	-	-
14	.1703	29.84	Ca	0	0	9.4	39.24	-	-	54.95	-15.71
15	.249	40.05	Qp	0	0	9.3	49.35	61.79	-12.44	-	-
16	.2535	21.84	Ca	0	0	9.3	31.14	-	-	51.64	-20.5
17	.3323	34.74	Qp	0	0	9.3	44.04	59.39	-15.35	-	-
18	.3345	15.46	Ca	0	0	9.3	24.76	-	-	49.34	-24.58
19	.4133	30.88	Qp	0	.1	9.3	40.28	57.58	-17.3	-	-
20	.411	14.32	Ca	0	.1	9.3	23.72	-	-	47.63	-23.91
21	.4965	30.96	Qp	0	.1	9.3	40.36	56.06	-15.7	-	-
22	.4965	14.92	Ca	0	.1	9.3	24.32	-	-	46.06	-21.74
23	.5798	28.91	Qp	0	.1	9.3	38.31	56	-17.69	-	-
24	.582	11.11	Ca	0	.1	9.3	20.51	-	-	46	-25.49

Qp - Quasi-Peak detector

Ca - CISPR average detection

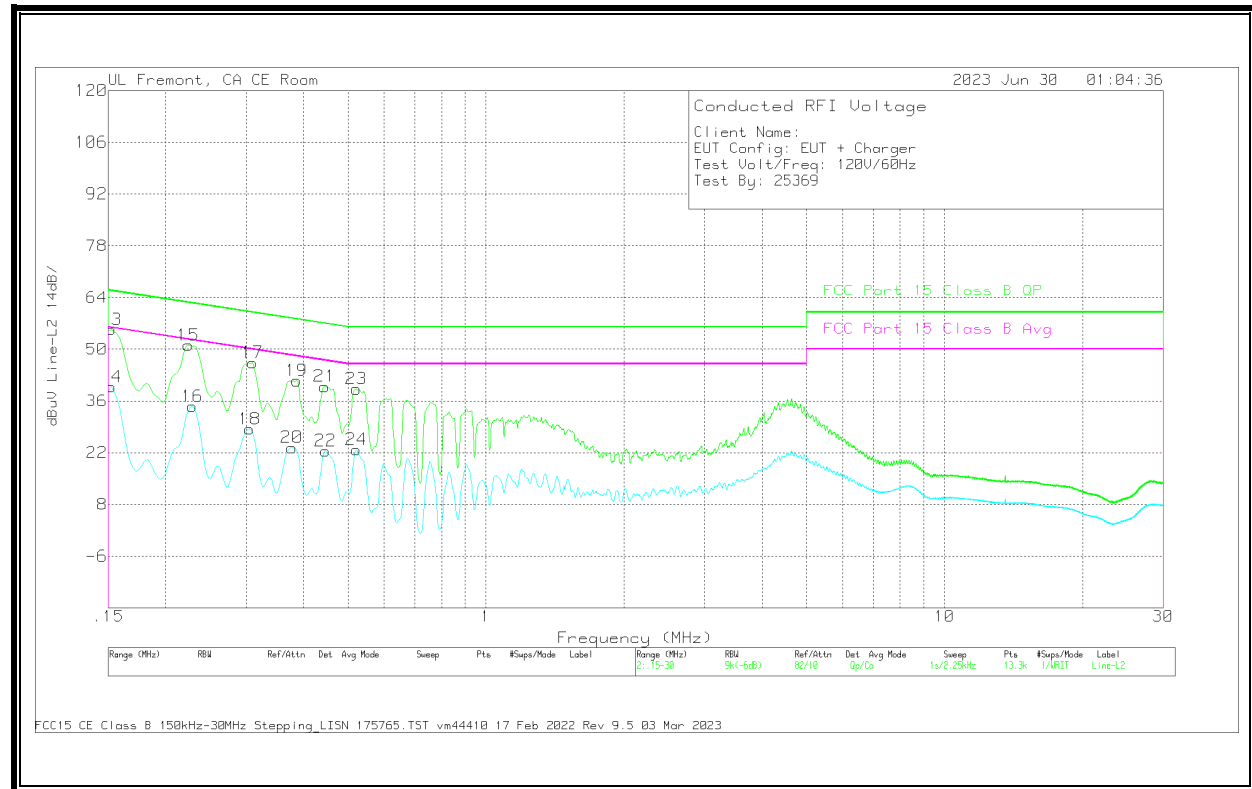
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

10.1.2. READER MODE ANTENNA PORT TERMINATED**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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	.1568	30.34	Ca	0	0	9.4	39.74	-	-	55.63	-15.89
4	.231	24.45	Ca	0	0	9.3	33.75	-	-	52.41	-18.66
6	.3053	17.75	Ca	0	0	9.3	27.05	-	-	50.1	-23.05
8	.3795	14.25	Ca	0	.1	9.3	23.65	-	-	48.29	-24.64
10	.4538	13.39	Ca	0	.1	9.3	22.79	-	-	46.81	-24.02
12	.5303	13.71	Ca	0	.1	9.3	23.11	-	-	46	-22.89
1	.1523	47.45	Qp	0	0	9.4	56.85	65.88	-9.03	-	-
3	.2288	42.42	Qp	0	0	9.3	51.72	62.49	-10.77	-	-
5	.303	37.65	Qp	0	0	9.3	46.95	60.16	-13.21	-	-
7	.3795	32.56	Qp	0	.1	9.3	41.96	58.29	-16.33	-	-
9	.4538	30.51	Qp	0	.1	9.3	39.91	56.81	-16.9	-	-
11	.5303	29.74	Qp	0	.1	9.3	39.14	56	-16.86	-	-

Qp - Quasi-Peak detector

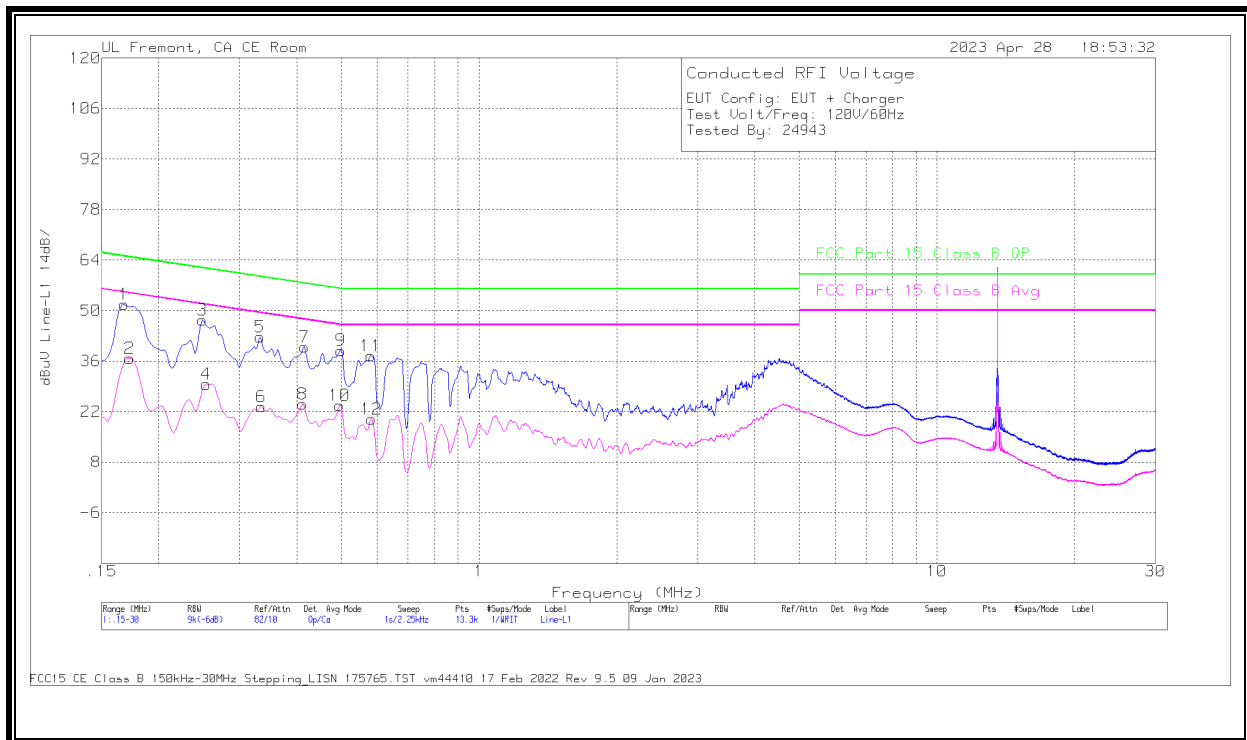
Ca - CISPR average detection

LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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	.1523	30.4	Ca	0	0	9.4	39.8	-	-	55.88	-16.08	
16	.2288	25.25	Ca	0	0	9.3	34.55	-	-	52.49	-17.94	
18	.3053	19.07	Ca	0	0	9.3	28.37	-	-	50.1	-21.73	
20	.3773	13.97	Ca	0	.1	9.3	23.37	-	-	48.34	-24.97	
22	.447	13.09	Ca	0	.1	9.3	22.49	-	-	46.93	-24.44	
24	.5213	13.4	Ca	0	.1	9.3	22.8	-	-	46	-23.2	
13	.1523	45.92	Qp	0	0	9.4	55.32	65.88	-10.56	-	-	
15	.2243	41.76	Qp	0	0	9.3	51.06	62.66	-11.6	-	-	
17	.3098	37.07	Qp	0	0	9.3	46.37	59.98	-13.61	-	-	
19	.3863	32.09	Qp	0	.1	9.3	41.49	58.14	-16.65	-	-	
21	.4448	30.52	Qp	0	.1	9.3	39.92	56.97	-17.05	-	-	
23	.5213	29.86	Qp	0	.1	9.3	39.26	56	-16.74	-	-	

Qp - Quasi-Peak detector

Ca - CISPR average detection

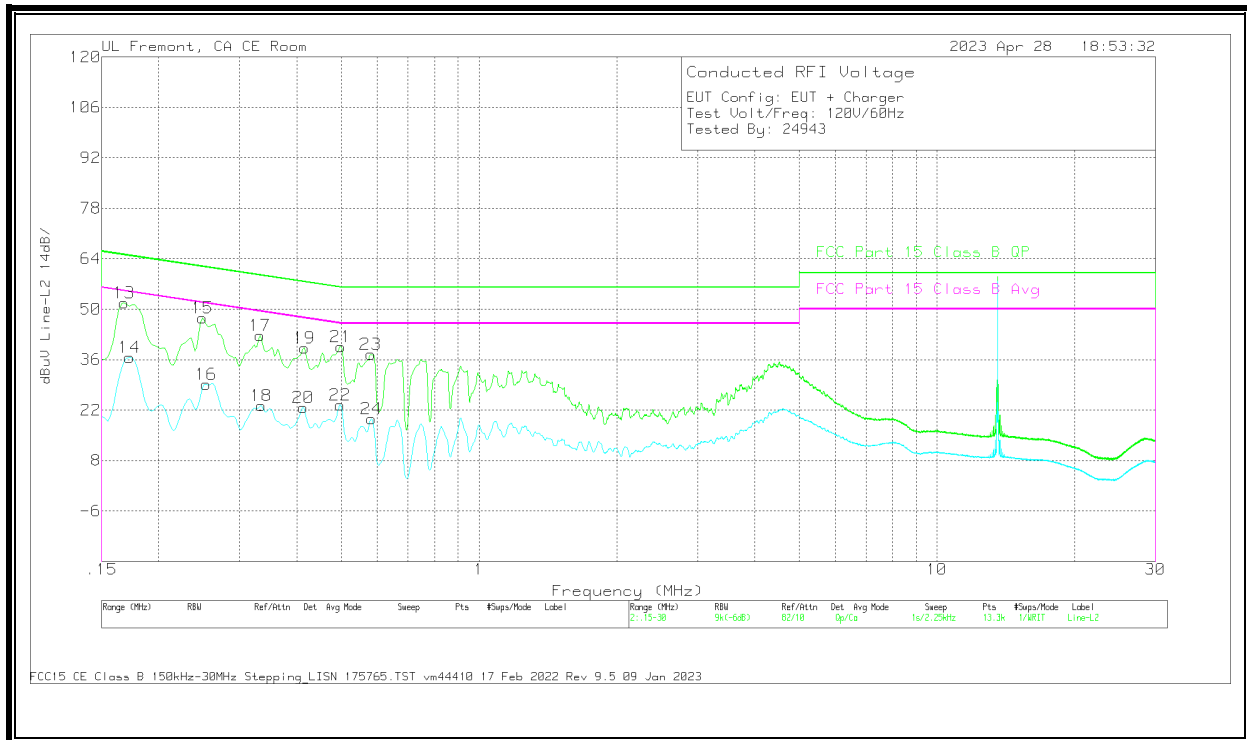
10.1.3. TAG MODE WITH ANTENNA**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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)
1	.168	42.3	Qp	0	0	9.4	51.7	65.06	-13.36	-	-
2	.1725	27.4	Ca	0	0	9.4	36.8	-	-	54.84	-18.04
3	.249	38.05	Qp	0	0	9.3	47.35	61.79	-14.44	-	-
4	.2535	20.28	Ca	0	0	9.3	29.58	-	-	51.64	-22.06
5	.3323	33.41	Qp	0	0	9.3	42.71	59.39	-16.68	-	-
6	.3345	14.04	Ca	0	0	9.3	23.34	-	-	49.34	-26
7	.4155	30.49	Qp	0	.1	9.3	39.89	57.54	-17.65	-	-
8	.4121	14.66	Ca	0	.1	9.3	24.06	-	-	47.61	-23.55
9	.4988	29.56	Qp	0	.1	9.3	38.96	56.02	-17.06	-	-
10	.4965	14.4	Ca	0	.1	9.3	23.8	-	-	46.06	-22.26
11	.5798	28.08	Qp	0	.1	9.3	37.48	56	-18.52	-	-
12	.582	10.53	Ca	0	.1	9.3	19.93	-	-	46	-26.07

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.

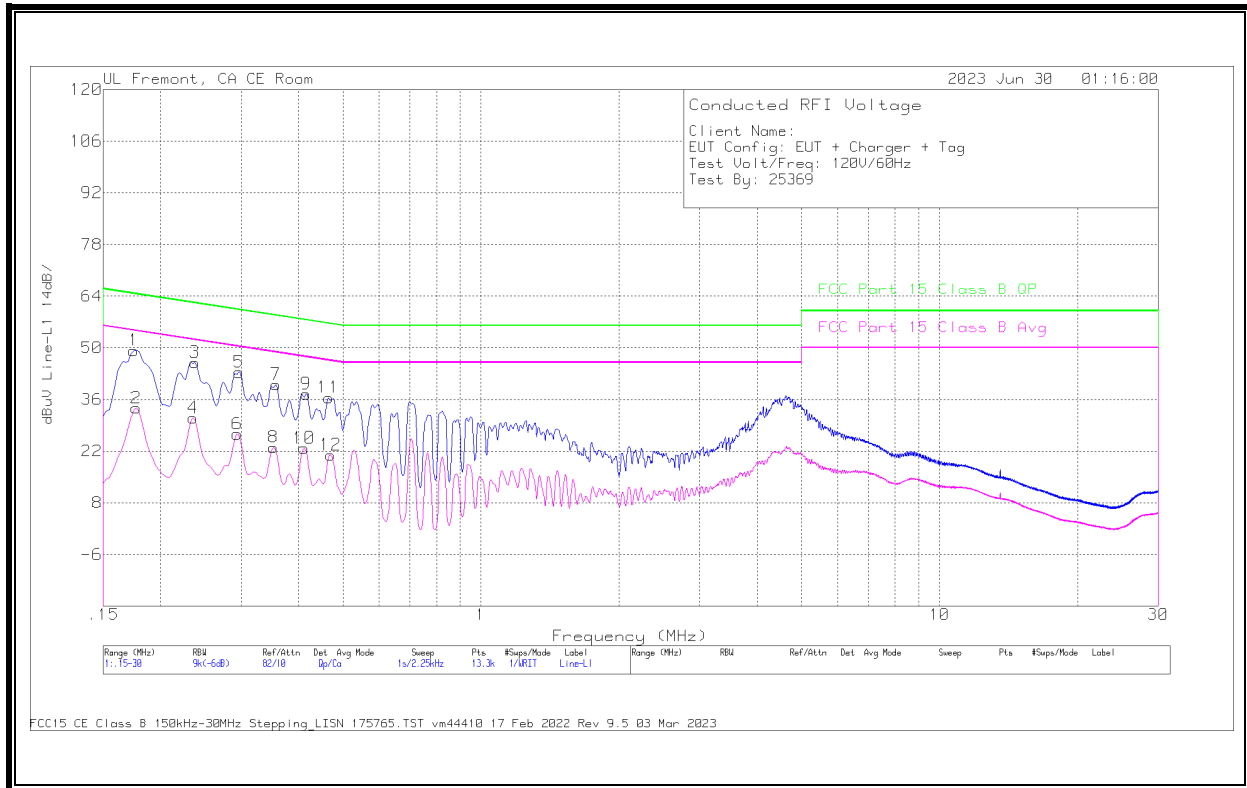
LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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)
13	.168	42.29	Qp	0	0	9.4	51.69	65.06	-13.37	-	-
14	.1725	27.15	Ca	0	0	9.4	36.55	-	-	54.84	-18.29
15	.249	38.24	Qp	0	0	9.3	47.54	61.79	-14.25	-	-
16	.2535	19.89	Ca	0	0	9.3	29.19	-	-	51.64	-22.45
17	.3323	33.38	Qp	0	0	9.3	42.68	59.39	-16.71	-	-
18	.3345	13.92	Ca	0	0	9.3	23.22	-	-	49.34	-26.12
19	.4155	29.9	Qp	0	.1	9.3	39.3	57.54	-18.24	-	-
20	.4133	13.24	Ca	0	.1	9.3	22.64	-	-	47.58	-24.94
21	.4988	30.11	Qp	0	.1	9.3	39.51	56.02	-16.51	-	-
22	.4976	13.97	Ca	0	.1	9.3	23.37	-	-	46.04	-22.67
23	.5798	28.15	Qp	0	.1	9.3	37.55	56	-18.45	-	-
24	.582	10.23	Ca	0	.1	9.3	19.63	-	-	46	-26.37

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.

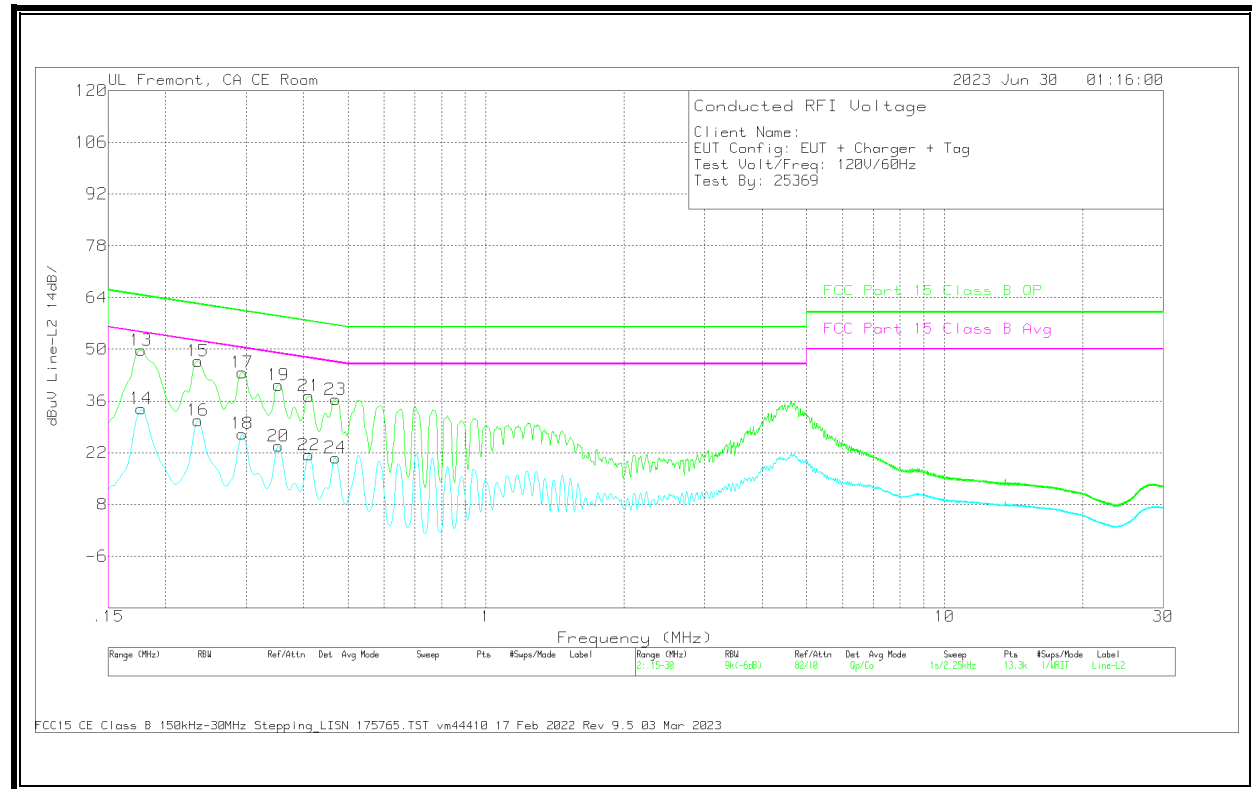
10.1.4. TAG MODE ANTENNA PORT TERMINATED**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dBuV	C1&C3 cable path loss dB	207996 Limiter with short cabl 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	.177	24.27	Ca	0	0	9.4	33.67	-	-	54.63	-20.96
4	.2355	21.7	Ca	0	0	9.3	31	-	-	52.25	-21.25
6	.294	17.34	Ca	0	0	9.3	26.64	-	-	50.41	-23.77
8	.3525	13.73	Ca	0	0	9.3	23.03	-	-	48.9	-25.87
10	.411	13.39	Ca	0	.1	9.3	22.79	-	-	47.63	-24.84
12	.4695	11.54	Ca	0	.1	9.3	20.94	-	-	46.52	-25.58
1	.1748	39.89	Qp	0	0	9.4	49.29	64.73	-15.44	-	-
3	.2378	36.74	Qp	0	0	9.3	46.04	62.17	-16.13	-	-
5	.2963	34.05	Qp	0	0	9.3	43.35	60.35	-17	-	-
7	.357	30.77	Qp	0	0	9.3	40.07	58.8	-18.73	-	-
9	.4155	28.1	Qp	0	.1	9.3	37.5	57.54	-20.04	-	-
11	.465	27.1	Qp	0	.1	9.3	36.5	56.6	-20.1	-	-

Qp - Quasi-Peak detector

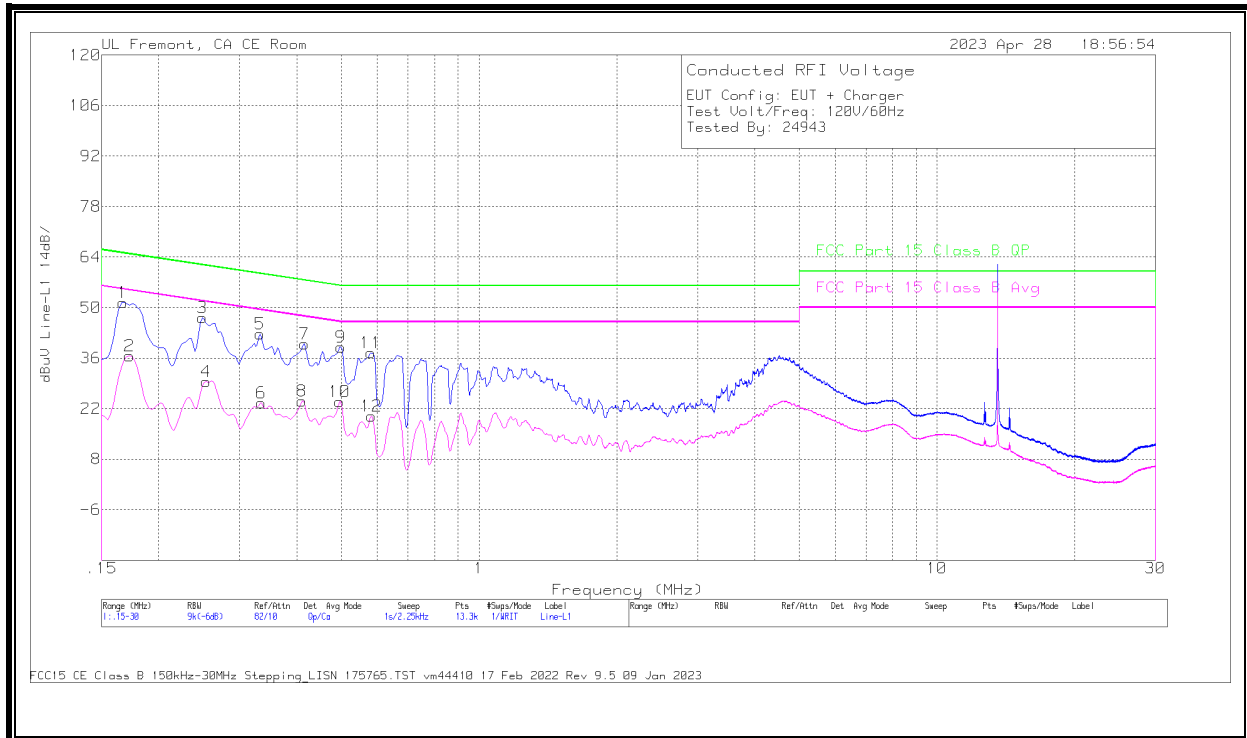
Ca - CISPR average detection

LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dBuV	C2&C3 cable path loss	207996 Limiter with short cabl 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	.177	24.52	Ca	0	0	9.4	33.92	-	-	54.63	-20.71
16	.2355	21.42	Ca	0	0	9.3	30.72	-	-	52.25	-21.53
18	.294	17.83	Ca	0	0	9.3	27.13	-	-	50.41	-23.28
20	.3525	14.49	Ca	0	0	9.3	23.79	-	-	48.9	-25.11
22	.411	12	Ca	0	.1	9.3	21.4	-	-	47.63	-26.23
24	.4695	11.23	Ca	0	.1	9.3	20.63	-	-	46.52	-25.89
13	.177	40.28	Qp	0	0	9.4	49.68	64.63	-14.95	-	-
15	.2355	37.46	Qp	0	0	9.3	46.76	62.25	-15.49	-	-
17	.294	34.4	Qp	0	0	9.3	43.7	60.41	-16.71	-	-
19	.3525	30.99	Qp	0	0	9.3	40.29	58.9	-18.61	-	-
21	.411	27.97	Qp	0	.1	9.3	37.37	57.63	-20.26	-	-
23	.4695	27.01	Qp	0	.1	9.3	36.41	56.52	-20.11	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

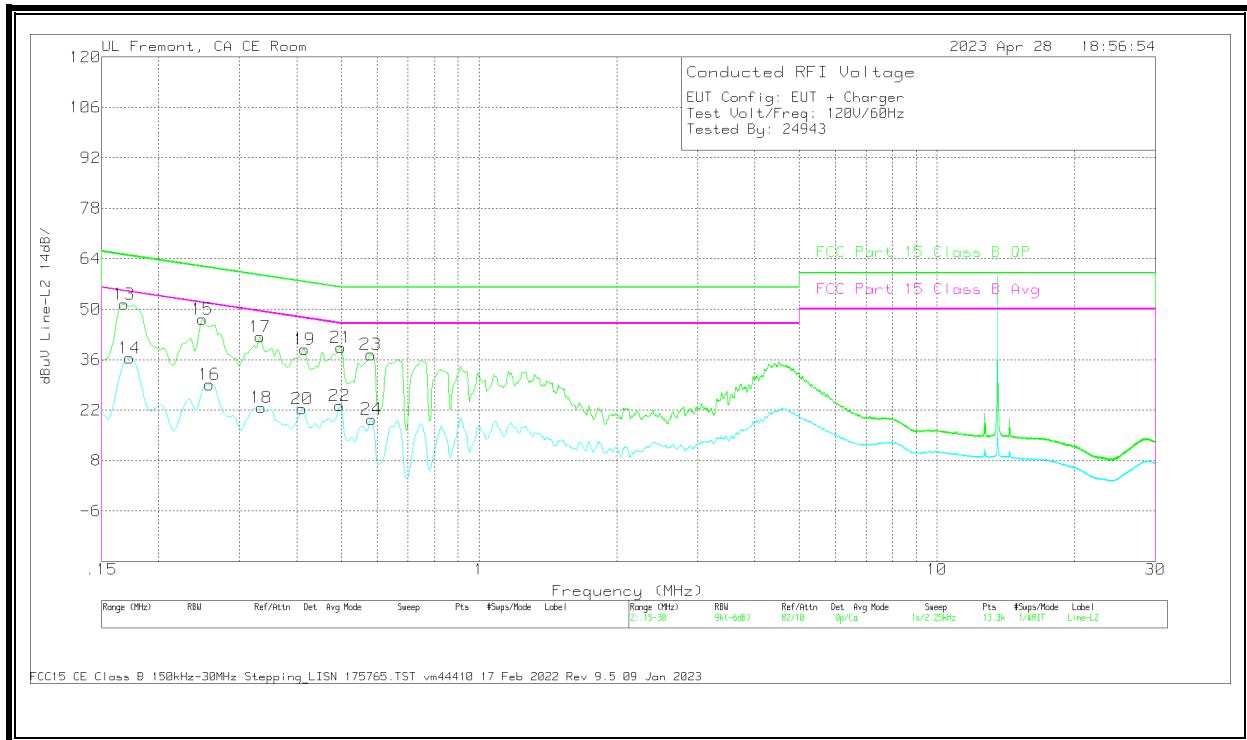
10.1.5. CE MODE WITH ANTENNA**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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)
1	.1669	42.03	Qp	0	0	9.4	51.43	65.11	-13.68	-	-
2	.1725	27.14	Ca	0	0	9.4	36.54	-	-	54.84	-18.3
3	.249	37.98	Qp	0	0	9.3	47.28	61.79	-14.51	-	-
4	.2535	20.12	Ca	0	0	9.3	29.42	-	-	51.64	-22.22
5	.3323	33.35	Qp	0	0	9.3	42.65	59.39	-16.74	-	-
6	.3345	14.2	Ca	0	0	9.3	23.5	-	-	49.34	-25.84
7	.4155	30.46	Qp	0	.1	9.3	39.86	57.54	-17.68	-	-
8	.411	14.73	Ca	0	.1	9.3	24.13	-	-	47.63	-23.5
9	.4988	29.6	Qp	0	.1	9.3	39	56.02	-17.02	-	-
10	.4965	14.56	Ca	0	.1	9.3	23.96	-	-	46.06	-22.1
11	.5798	28.08	Qp	0	.1	9.3	37.48	56	-18.52	-	-
12	.582	10.53	Ca	0	.1	9.3	19.93	-	-	46	-26.07

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.

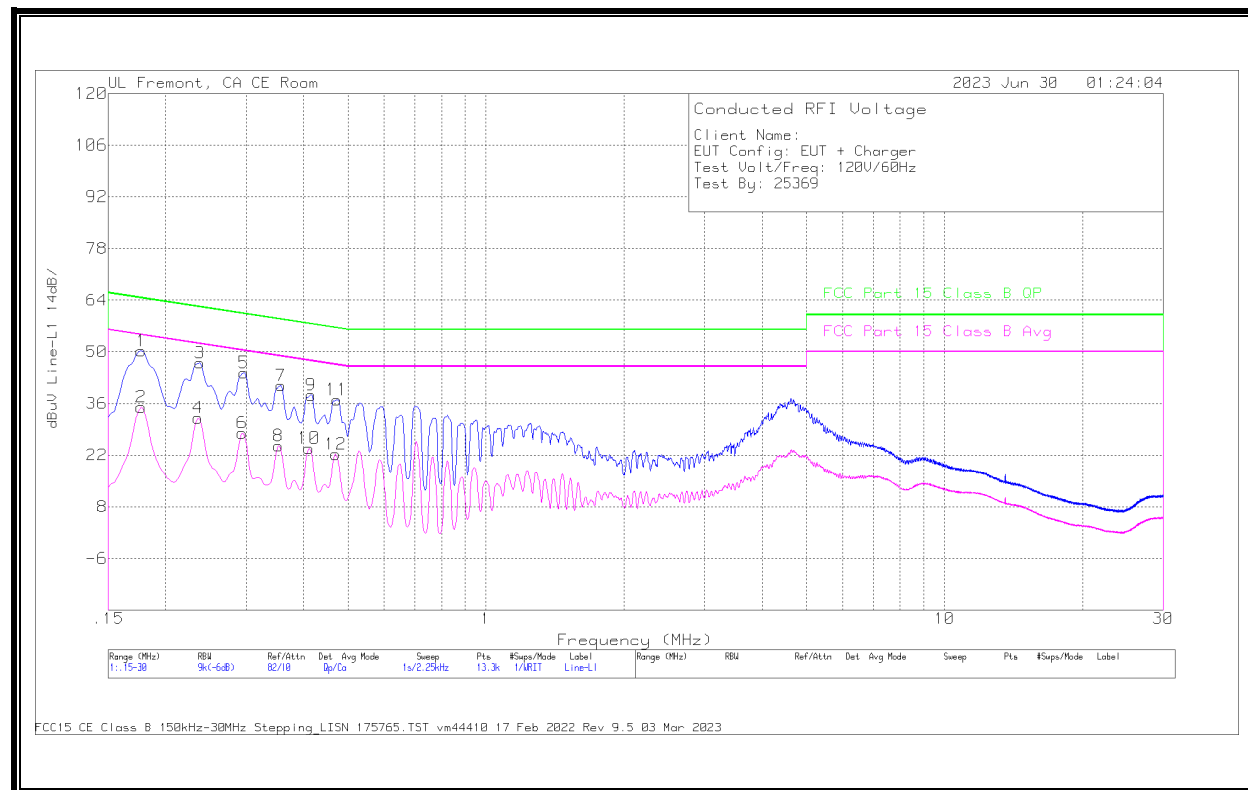
LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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)
13	.168	41.97	Qp	0	0	9.4	51.37	65.06	-13.69	-	-
14	.1725	27	Ca	0	0	9.4	36.4	-	-	54.84	-18.44
15	.249	37.9	Qp	0	0	9.3	47.2	61.79	-14.59	-	-
16	.258	19.76	Ca	0	0	9.3	29.06	-	-	51.5	-22.44
17	.3323	33.02	Qp	0	0	9.3	42.32	59.39	-17.07	-	-
18	.3345	13.45	Ca	0	0	9.3	22.75	-	-	49.34	-26.59
19	.4155	29.54	Qp	0	.1	9.3	38.94	57.54	-18.6	-	-
20	.411	12.95	Ca	0	.1	9.3	22.35	-	-	47.63	-25.28
21	.4988	29.98	Qp	0	.1	9.3	39.38	56.02	-16.64	-	-
22	.4965	13.84	Ca	0	.1	9.3	23.24	-	-	46.06	-22.82
23	.5798	28	Qp	0	.1	9.3	37.4	56	-18.6	-	-
24	.582	10.09	Ca	0	.1	9.3	19.49	-	-	46	-26.51

Qp - Quasi-Peak detector

Ca - CISPR average detection

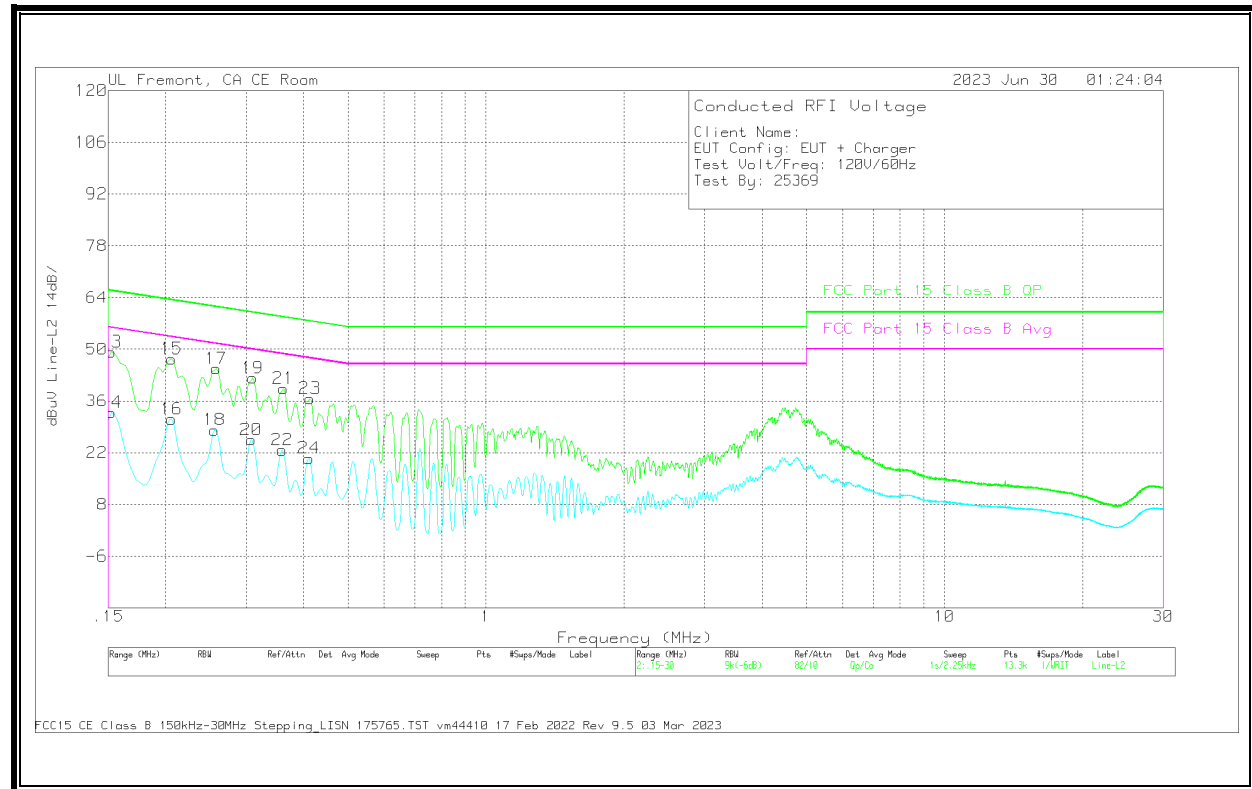
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

10.1.6. CE MODE ANTENNA PORT TERMINATED**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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	.177	25.59	Ca	0	0	9.4	34.99	-	-	54.63	-19.64
4	.2355	22.78	Ca	0	0	9.3	32.08	-	-	52.25	-20.17
6	.294	18.69	Ca	0	0	9.3	27.99	-	-	50.41	-22.42
8	.3525	15.19	Ca	0	0	9.3	24.49	-	-	48.9	-24.41
10	.411	14.46	Ca	0	.1	9.3	23.86	-	-	47.63	-23.77
12	.4695	12.82	Ca	0	.1	9.3	22.22	-	-	46.52	-24.3
1	.177	40.84	Qp	0	0	9.4	50.24	64.63	-14.39	-	-
3	.2378	37.66	Qp	0	0	9.3	46.96	62.17	-15.21	-	-
5	.2963	34.99	Qp	0	0	9.3	44.29	60.35	-16.06	-	-
7	.357	31.52	Qp	0	0	9.3	40.82	58.8	-17.98	-	-
9	.4155	28.83	Qp	0	.1	9.3	38.23	57.54	-19.31	-	-
11	.4729	27.56	Qp	0	.1	9.3	36.96	56.46	-19.5	-	-

Qp - Quasi-Peak detector

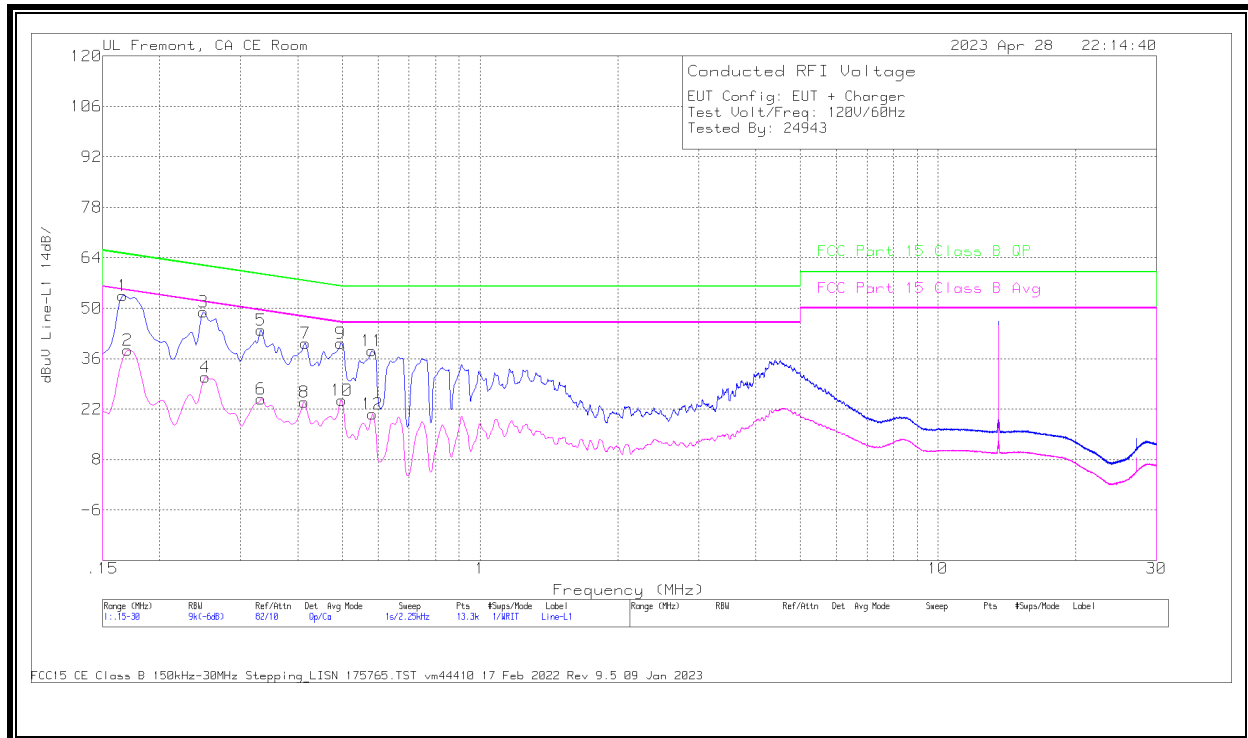
Ca - CISPR average detection

LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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	.1523	23.45	Ca	0	0	9.4	32.85	-	-	55.88	-23.03	
16	.2063	21.68	Ca	0	0	9.4	31.08	-	-	53.35	-22.27	
18	.2558	18.85	Ca	0	0	9.3	28.15	-	-	51.57	-23.42	
20	.3075	16.19	Ca	0	0	9.3	25.49	-	-	50.04	-24.55	
22	.3593	13.31	Ca	0	.1	9.3	22.71	-	-	48.75	-26.04	
24	.411	11.08	Ca	0	.1	9.3	20.48	-	-	47.63	-27.15	
13	.1523	39.85	Qp	0	0	9.4	49.25	65.88	-16.63	-	-	
15	.2063	38	Qp	0	0	9.4	47.4	63.35	-15.95	-	-	
17	.258	35.46	Qp	0	0	9.3	44.76	61.5	-16.74	-	-	
19	.3098	32.91	Qp	0	0	9.3	42.21	59.98	-17.77	-	-	
21	.3615	30.06	Qp	0	0	9.3	39.36	58.69	-19.33	-	-	
23	.4133	27.25	Qp	0	.1	9.3	36.65	57.58	-20.93	-	-	

Qp - Quasi-Peak detector

Ca - CISPR average detection

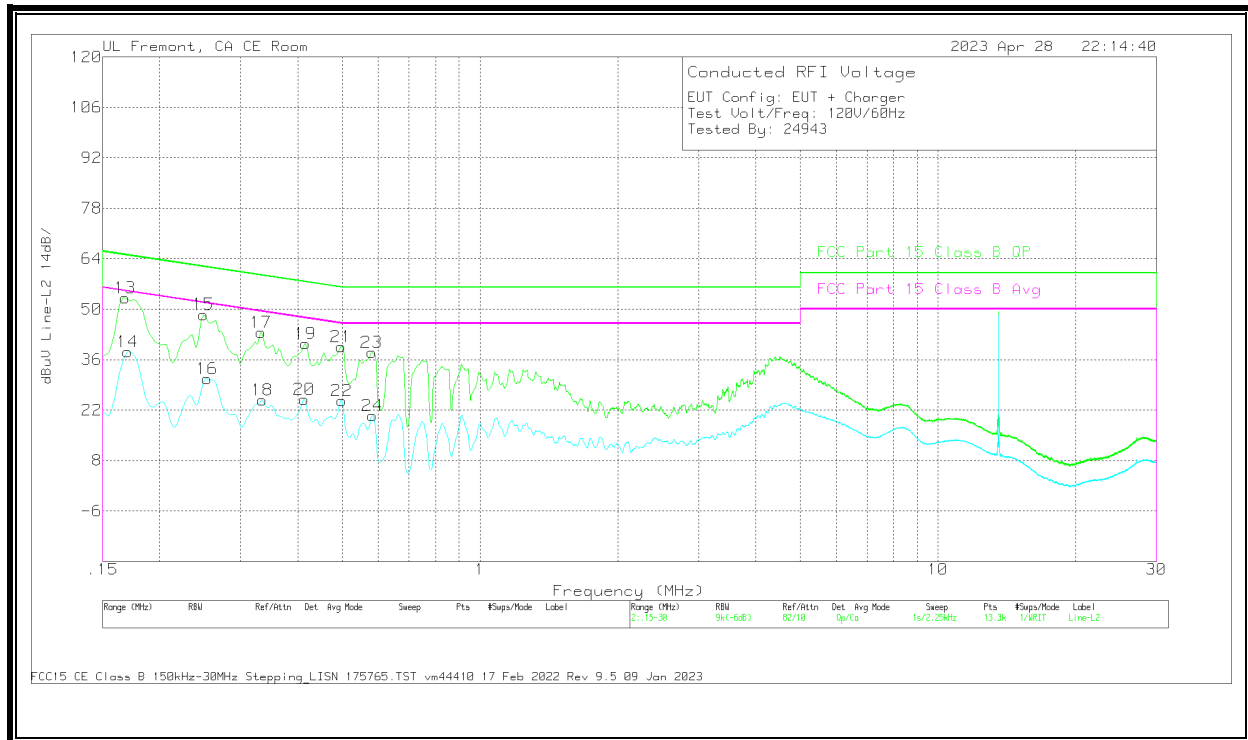
10.2. SECONDARY ANTENNA**10.2.1. READER MODE WITH ANTENNA****LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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)
1	.1658	44.15	Qp	0	0	9.4	53.55	65.17	-11.62	-	-
2	.1703	29	Ca	0	0	9.4	38.4	-	-	54.95	-16.55
3	.249	39.72	Qp	0	0	9.3	49.02	61.79	-12.77	-	-
4	.2513	21.58	Ca	0	0	9.3	30.88	-	-	51.72	-20.84
5	.3323	34.59	Qp	0	0	9.3	43.89	59.39	-15.5	-	-
6	.3323	15.55	Ca	0	0	9.3	24.85	-	-	49.39	-24.54
7	.4155	30.87	Qp	0	.1	9.3	40.27	57.54	-17.27	-	-
8	.4133	14.56	Ca	0	.1	9.3	23.96	-	-	47.58	-23.62
9	.4965	30.82	Qp	0	.1	9.3	40.22	56.06	-15.84	-	-
10	.4988	15.08	Ca	0	.1	9.3	24.48	-	-	46.02	-21.54
11	.5798	28.74	Qp	0	.1	9.3	38.14	56	-17.86	-	-
12	.582	11.16	Ca	0	.1	9.3	20.56	-	-	46	-25.44

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.

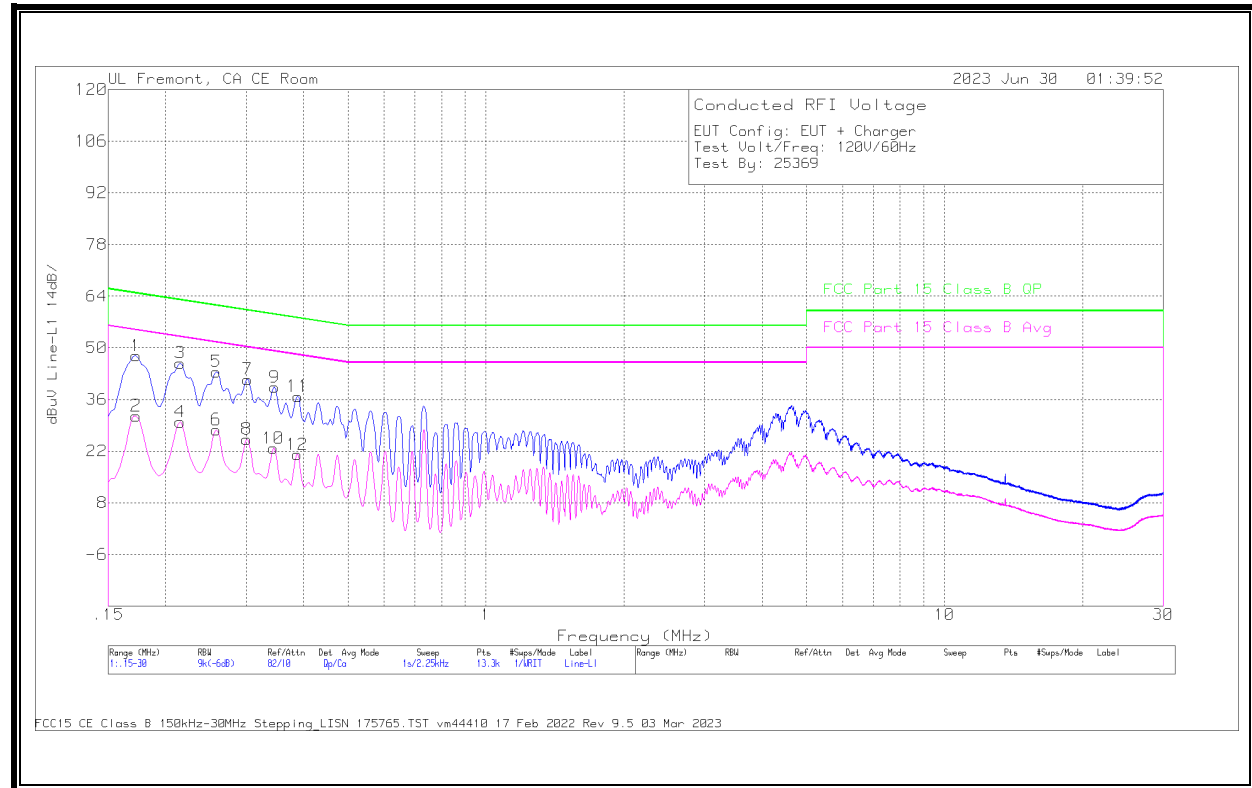
LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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)
13	.168	43.68	Qp	0	0	9.4	53.08	65.06	-11.98	-	-
14	.1703	28.73	Ca	0	0	9.4	38.13	-	-	54.95	-16.82
15	.249	39.22	Qp	0	0	9.3	48.52	61.79	-13.27	-	-
16	.2535	21.46	Ca	0	0	9.3	30.76	-	-	51.64	-20.88
17	.3323	34.32	Qp	0	0	9.3	43.62	59.39	-15.77	-	-
18	.3345	15.47	Ca	0	0	9.3	24.77	-	-	49.34	-24.57
19	.4155	31.09	Qp	0	.1	9.3	40.49	57.54	-17.05	-	-
20	.4133	15.49	Ca	0	.1	9.3	24.89	-	-	47.58	-22.69
21	.4976	30.23	Qp	0	.1	9.3	39.63	56.04	-16.41	-	-
22	.4988	15.17	Ca	0	.1	9.3	24.57	-	-	46.02	-21.45
23	.5798	28.57	Qp	0	.1	9.3	37.97	56	-18.03	-	-
24	.582	11.11	Ca	0	.1	9.3	20.51	-	-	46	-25.49

Qp - Quasi-Peak detector

Ca - CISPR average detection

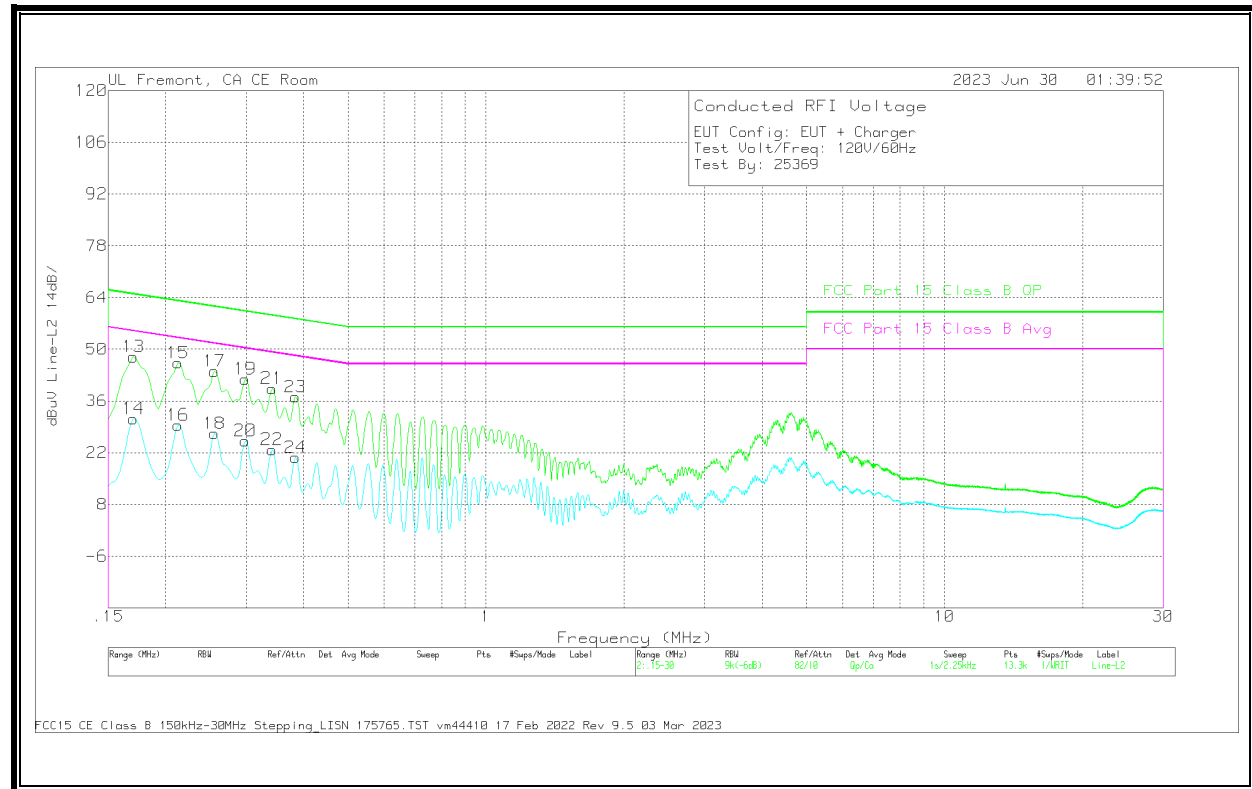
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

10.2.2. READER MODE ANTENNA PORT TERMINATED**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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	.1725	22.12	Ca	0	0	9.4	31.52	-	-	54.84	-23.32
4	.2153	20.59	Ca	0	0	9.3	29.89	-	-	53	-23.11
6	.258	18.48	Ca	0	0	9.3	27.78	-	-	51.5	-23.72
8	.3008	15.93	Ca	0	0	9.3	25.23	-	-	50.22	-24.99
10	.3435	13.36	Ca	0	.1	9.3	22.76	-	-	49.12	-26.36
12	.3874	11.63	Ca	0	.1	9.3	21.03	-	-	48.12	-27.09
1	.1725	38.43	Qp	0	0	9.4	47.83	64.84	-17.01	-	-
3	.2153	36.59	Qp	0	0	9.3	45.89	63	-17.11	-	-
5	.258	34.2	Qp	0	0	9.3	43.5	61.5	-18	-	-
7	.3019	32.15	Qp	0	0	9.3	41.45	60.19	-18.74	-	-
9	.3458	29.89	Qp	0	.1	9.3	39.29	59.06	-19.77	-	-
11	.3885	27.41	Qp	0	.1	9.3	36.81	58.1	-21.29	-	-

Qp - Quasi-Peak detector

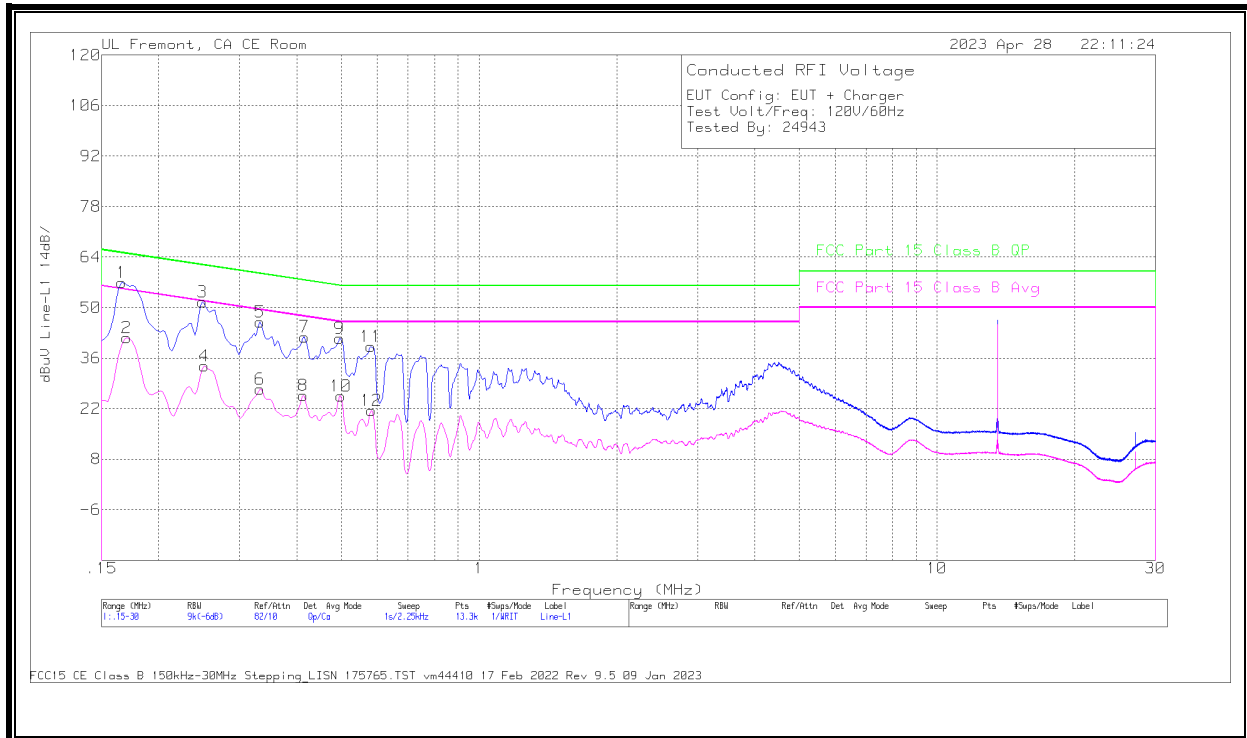
Ca - CISPR average detection

LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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	.1703	21.79	Ca	0	0	9.4	31.19	-	-	54.95	-23.76	
16	.213	20.04	Ca	0	0	9.4	29.44	-	-	53.09	-23.65	
18	.2558	17.88	Ca	0	0	9.3	27.18	-	-	51.57	-24.39	
20	.2985	15.9	Ca	0	0	9.3	25.2	-	-	50.28	-25.08	
22	.3413	13.51	Ca	0	0	9.3	22.81	-	-	49.17	-26.36	
24	.384	11.31	Ca	0	.1	9.3	20.71	-	-	48.19	-27.48	
13	.1703	38.56	Qp	0	0	9.4	47.96	64.95	-16.99	-	-	
15	.213	36.88	Qp	0	0	9.4	46.28	63.09	-16.81	-	-	
17	.2558	34.72	Qp	0	0	9.3	44.02	61.57	-17.55	-	-	
19	.2985	32.61	Qp	0	0	9.3	41.91	60.28	-18.37	-	-	
21	.3413	30.07	Qp	0	0	9.3	39.37	59.17	-19.8	-	-	
23	.384	27.67	Qp	0	.1	9.3	37.07	58.19	-21.12	-	-	

Qp - Quasi-Peak detector

Ca - CISPR average detection

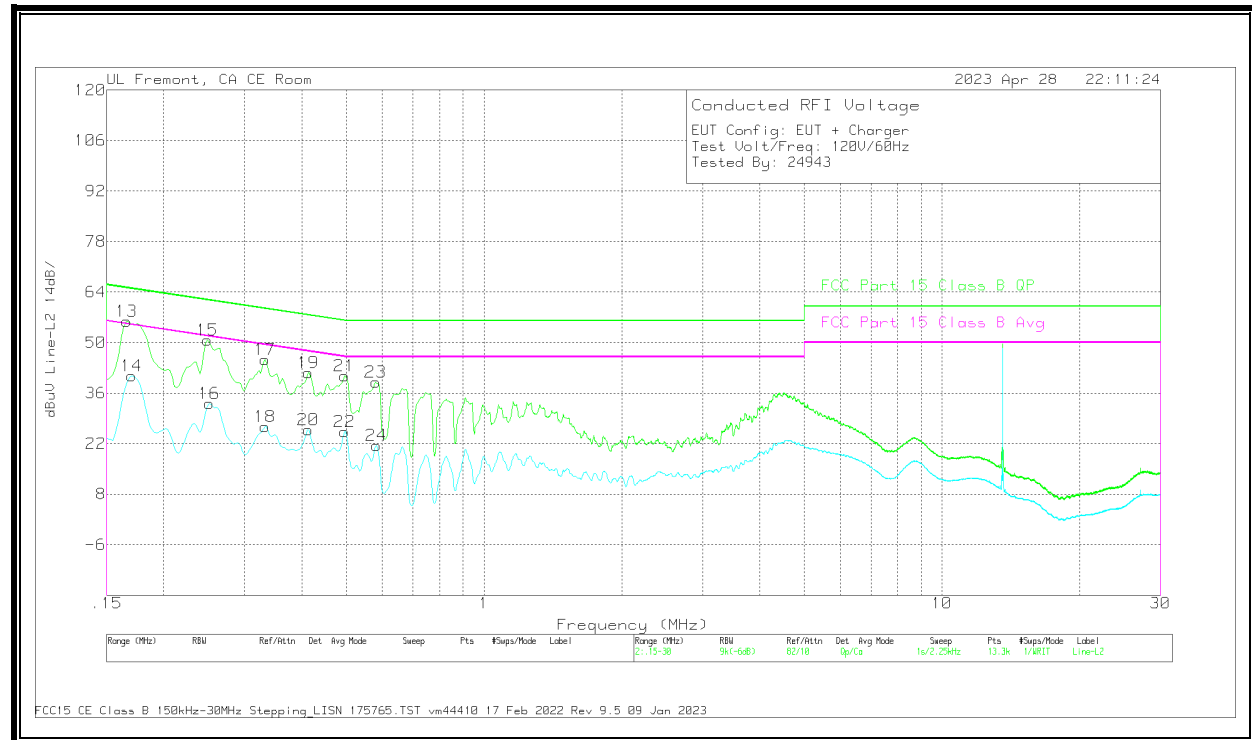
10.2.3. TAG MODE WITH ANTENNA**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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)
1	.1658	47.55	Qp	0	0	9.4	56.95	65.17	-8.22	-	-
2	.1703	32.32	Ca	0	0	9.4	41.72	-	-	54.95	-13.23
3	.249	42.3	Qp	0	0	9.3	51.6	61.79	-10.19	-	-
4	.2513	24.56	Ca	0	0	9.3	33.86	-	-	51.72	-17.86
5	.3323	36.64	Qp	0	0	9.3	45.94	59.39	-13.45	-	-
6	.3323	18.09	Ca	0	0	9.3	27.39	-	-	49.39	-22
7	.4155	32.51	Qp	0	.1	9.3	41.91	57.54	-15.63	-	-
8	.4133	16.28	Ca	0	.1	9.3	25.68	-	-	47.58	-21.9
9	.4965	32.11	Qp	0	.1	9.3	41.51	56.06	-14.55	-	-
10	.4988	16.15	Ca	0	.1	9.3	25.55	-	-	46.02	-20.47
11	.5798	29.76	Qp	0	.1	9.3	39.16	56	-16.84	-	-
12	.582	12.09	Ca	0	.1	9.3	21.49	-	-	46	-24.51

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.

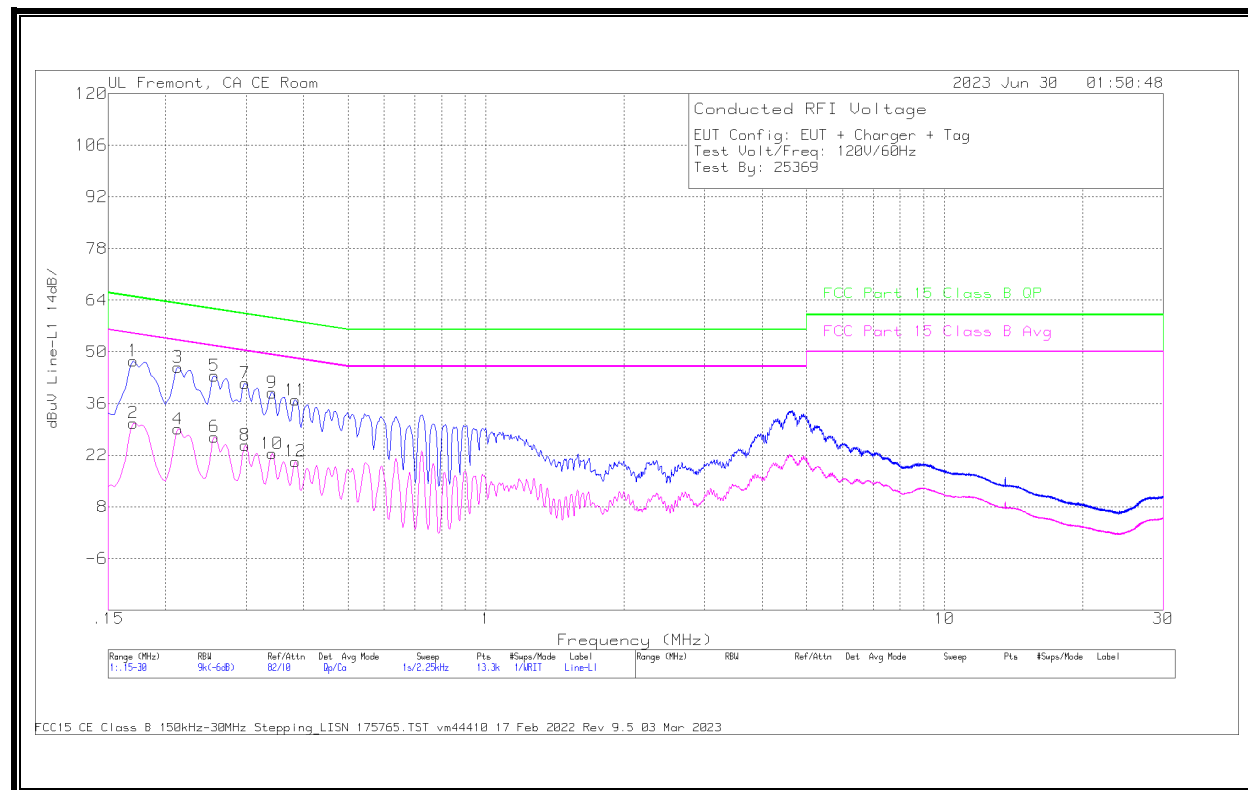
LINE 2 RESULTS**Worst Emission**

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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)
13	.1658	46.49	Qp	0	0	9.4	55.89	65.17	-9.28	-	-
14	.1703	31.32	Ca	0	0	9.4	40.72	-	-	54.95	-14.23
15	.249	41.38	Qp	0	0	9.3	50.68	61.79	-11.11	-	-
16	.2513	23.82	Ca	0	0	9.3	33.12	-	-	51.72	-18.6
17	.3323	35.96	Qp	0	0	9.3	45.26	59.39	-14.13	-	-
18	.3323	17.44	Ca	0	0	9.3	26.74	-	-	49.39	-22.65
19	.4133	32.2	Qp	0	.1	9.3	41.6	57.58	-15.98	-	-
20	.4133	16.48	Ca	0	.1	9.3	25.88	-	-	47.58	-21.7
21	.4965	31.35	Qp	0	.1	9.3	40.75	56.06	-15.31	-	-
22	.4965	15.99	Ca	0	.1	9.3	25.39	-	-	46.06	-20.67
23	.5798	29.59	Qp	0	.1	9.3	38.99	56	-17.01	-	-
24	.582	12.08	Ca	0	.1	9.3	21.48	-	-	46	-24.52

Qp - Quasi-Peak detector

Ca - CISPR average detection

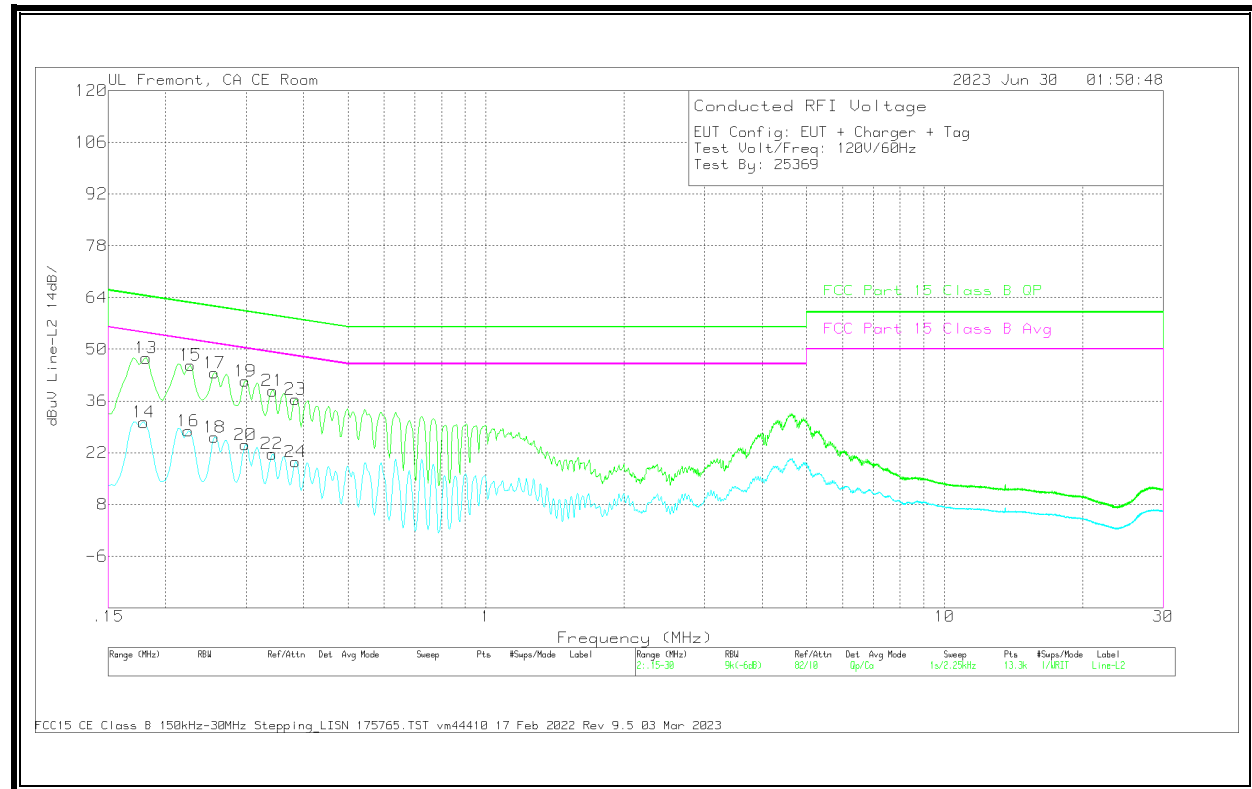
Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicates that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

10.2.4. TAG MODE ANTENNA PORT TERMINATED**LINE 1 RESULTS****Worst Emission**

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv dB	C1&C3 cable path loss dB	207996 Limiter with short cabl 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	.1703	21.31	Ca	0	0	9.4	30.71	-	-	54.95	-24.24
4	.213	19.65	Ca	0	0	9.4	29.05	-	-	53.09	-24.04
6	.2558	17.65	Ca	0	0	9.3	26.95	-	-	51.57	-24.62
8	.2985	15.39	Ca	0	0	9.3	24.69	-	-	50.28	-25.59
10	.3413	13.04	Ca	0	.1	9.3	22.44	-	-	49.17	-26.73
12	.384	10.91	Ca	0	.1	9.3	20.31	-	-	48.19	-27.88
1	.1703	38.15	Qp	0	0	9.4	47.55	64.95	-17.4	-	-
3	.213	36.42	Qp	0	0	9.4	45.82	63.09	-17.27	-	-
5	.2558	34.21	Qp	0	0	9.3	43.51	61.57	-18.06	-	-
7	.2985	32.16	Qp	0	0	9.3	41.46	60.28	-18.82	-	-
9	.3413	29.52	Qp	0	.1	9.3	38.92	59.17	-20.25	-	-
11	.384	27.51	Qp	0	.1	9.3	36.91	58.19	-21.28	-	-

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	L2_LISN dB	C2&C3 cable path loss dB	207996 Limiter with short cabl 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	.1793	20.81	Ca	0	0	9.4	30.21	-	-	54.52	-24.31
16	.2243	18.57	Ca	0	0	9.3	27.87	-	-	52.66	-24.79
18	.2558	16.87	Ca	0	0	9.3	26.17	-	-	51.57	-25.4
20	.2985	14.84	Ca	0	0	9.3	24.14	-	-	50.28	-26.14
22	.3413	12.38	Ca	0	0	9.3	21.68	-	-	49.17	-27.49
24	.384	10.11	Ca	0	.1	9.3	19.51	-	-	48.19	-28.68
13	.1815	38.21	Qp	0	0	9.4	47.61	64.42	-16.81	-	-
15	.2265	36.38	Qp	0	0	9.3	45.68	62.58	-16.9	-	-
17	.2558	34.26	Qp	0	0	9.3	43.56	61.57	-18.01	-	-
19	.2985	32.05	Qp	0	0	9.3	41.35	60.28	-18.93	-	-
21	.3424	29.45	Qp	0	0	9.3	38.75	59.15	-20.4	-	-
23	.384	27.03	Qp	0	.1	9.3	36.43	58.19	-21.76	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

11. SETUP PHOTOS

Please refer to 14523744-EP1V1 for setup photos.

END OF TEST REPORT