TEST REPORT

Report Number : 14982484-E12V3

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

Model : A3081 (Parent)
A3286, A3287, A3288 (Variant Models)

FCC ID : BCG-E8688A (Parent Model)
BCG-E8689A, BCG-E8690A, BCG-E8691A (Variant Models)

IC : 579C-E8688A (Parent Model)
579C-E8689A, 579C-E8690A, 579C-E8691A (Variant Models)

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-210 ISSUE 11
ISED RSS-GEN ISSUE 5 + A1 + A

Date Of Issue:
July 16, 2024

Prepared by:
UL VERIFICATION INC.
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ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.		Issue Date		Revisions		Revised By
V1		2024/07/08		Initial Issue		Chin Pang
V2		2024/07/14		Address TCB's question on page 7		Chin Pang
V3		2024/07/16		Address TCB questions on section 10.2		Chin Pang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	APPLE INC. 11 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
EUT DESCRIPTION:	SMARTPHONE
MODEL:	A3081 (Parent Model) A3286, A3287, A3288 (Variant Models)
BRAND:	APPLE
SERIAL NUMBER:	C7YJLH71JP, H9FX6FG9MJ
SAMPLE RECEIPT DATE:	2024/06/03
DATE TESTED:	2024/06/04 – 2024/07/16

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	Complies
ISED RSS-210 Issue 11, 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:

Chris Xiong
Senior 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 11

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	1.20 %
Temperature	±0.57 %
Relative Huminity	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 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5GNR1, 5GNR2, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

5.2. MAXIMUM E-FIELD STRENGTH

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

Antenna	Frequency Range (MHz)	Type	Mode	Rate (Kbps)	E Field at 30m distance (dBuV/m)
Primary	13.56	B	CE	106	26.79
			Reader	106	27.85
			Reader + TAG	106	26.88
Secondary	13.56	B	Reader	106	3.92
			Reader + TAG	106	3.31

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 three configurations: EUT only, 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, Reader + 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 106Kbps 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.

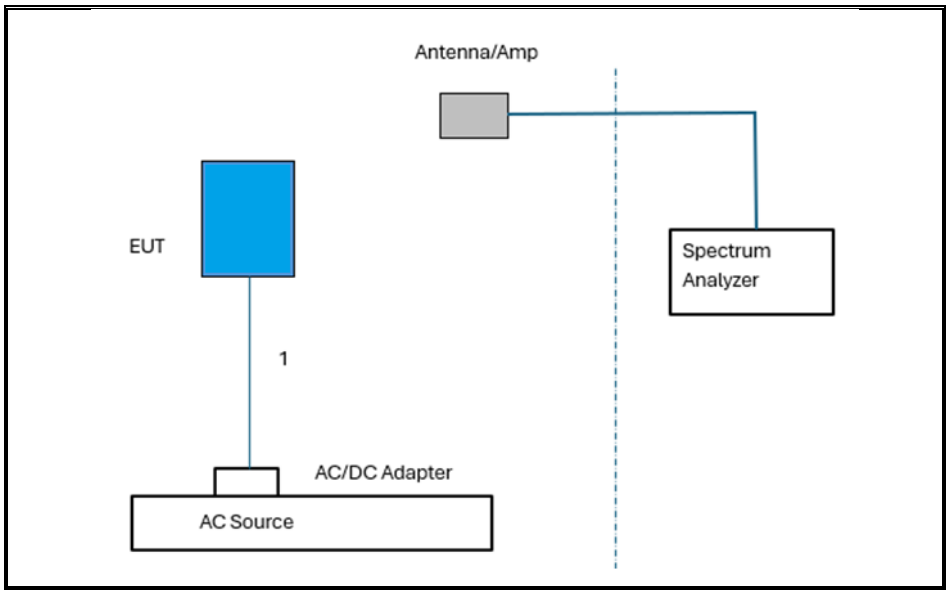
5.4. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID/ DoC**
EUT AC/DC Adapter	Apple	A2305	HHY23570SL11PW9A1	DoC
Tag	Infineon	NA	A803493D139C	NA

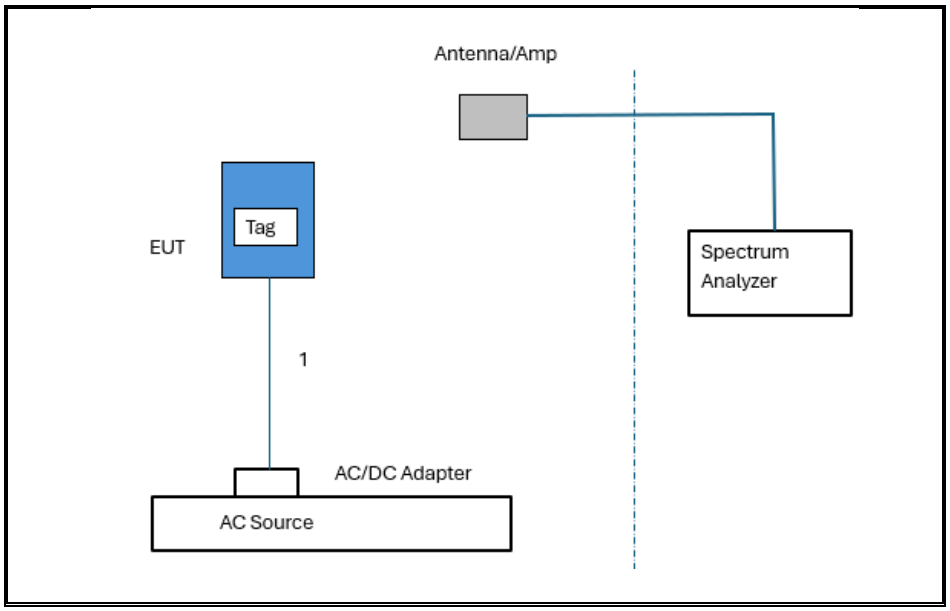
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	Type-C	Un-Shielded	1	N/A

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	Type-C	Un-Shielded	1	N/A

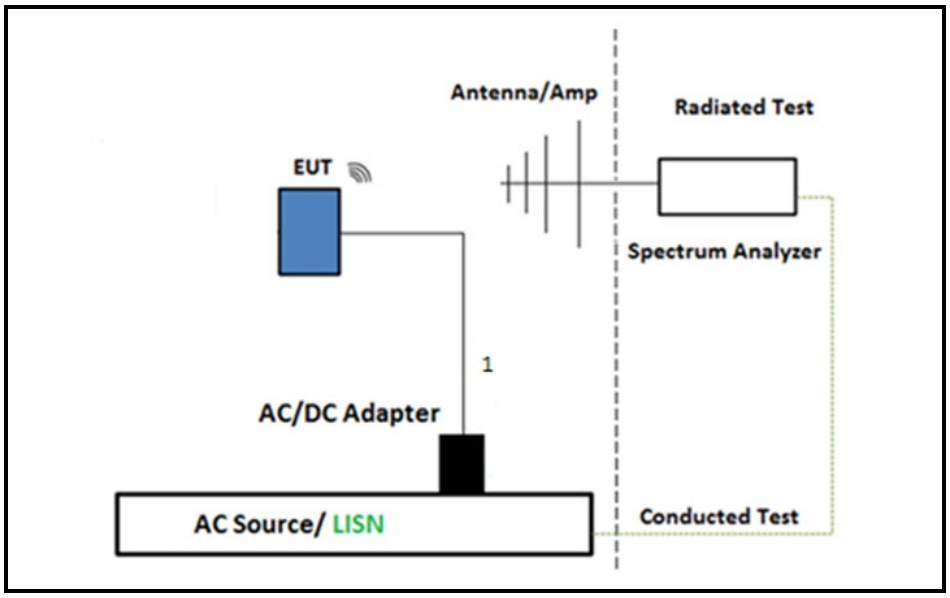
SETUP DIAGRAM FOR RADIATED TESTS (CE and READER MODE)



SETUP DIAGRAM FOR RADIATED TESTS (READER + TAG MODE)



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**
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	170014	2024/08/31
Antenna, Passive Loop 100kHz to 30MHz	ELECTRO-METRICS	EM-6872	170016	2024/08/31
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	80397	2025/01/25
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	232075	2025/03/31
Link File, @3m, 9kHz-1000MHz Hybrid Path Loss	UL-FR1	Port 0 Factors	211062	2025/03/31
EMI Test Receiver	Rohde & Schwarz	ESW44	235670	2025/02/28
* Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	82472	2024/06/30
Sniffer Probes	Electro Metrics	EM-6992	N/A	N/A

AC LINE CONDUCTED				
Description	**Manufacturer**	**Model**	**ID Number**	**Cal Due**
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	2025/02/28
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175765	2025/01/31
Transient Limiter	TE	TBFL1	207996	2024/08/31

UL AUTOMATION SOFTWARE			
Radiated Software	UL	UL EMC	Ver 9.5, May 1, 2023
Conducted Software	UL	UL EMC	2024.2.23
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023

* Testing was completed before equipment calibration date

7. 99% OCCUPIED BANDWIDTH AND 20dB 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.

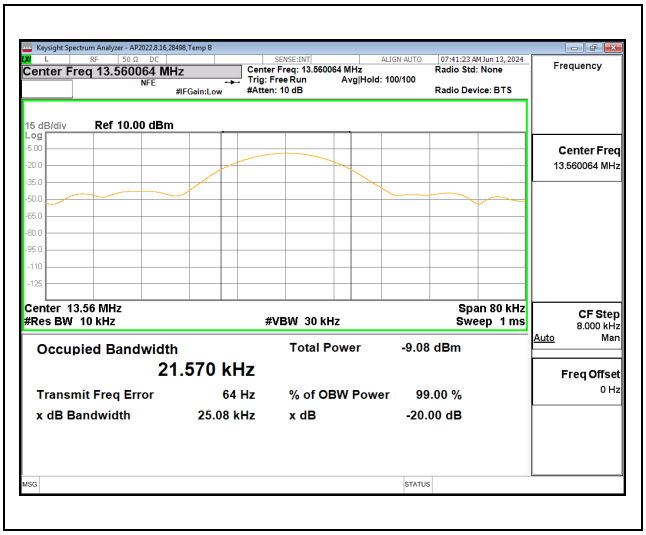
Note: Because the measured signal is CW or CW-like, adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

RESULTS

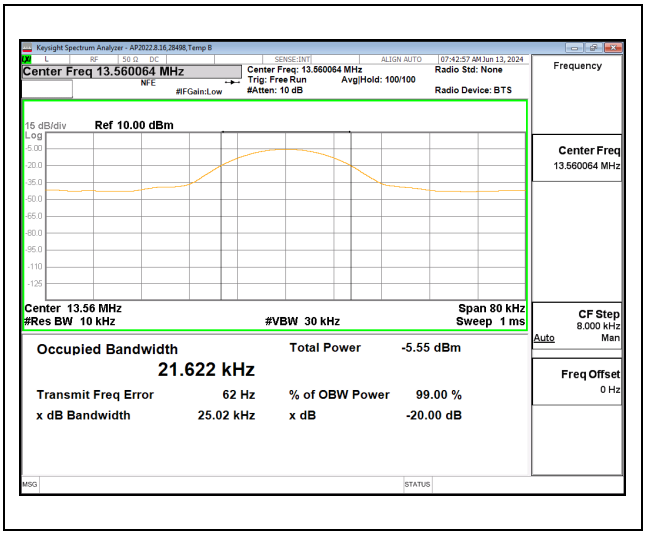
Antenna	Type (Mode)	Rate (Kbps)	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
Primary	Type B (CE)	106	13.56	21.570	25.08
	Type B (Reader)	106	13.56	21.622	25.02
	Type B (Reader + TAG)	106	13.56	21.725	25.18
Secondary	Type B (Reader)	106	13.56	21.762	25.07
	Type B (Reader + TAG)	106	13.56	21.799	25.10

7.1. PRIMARY ANTENNA

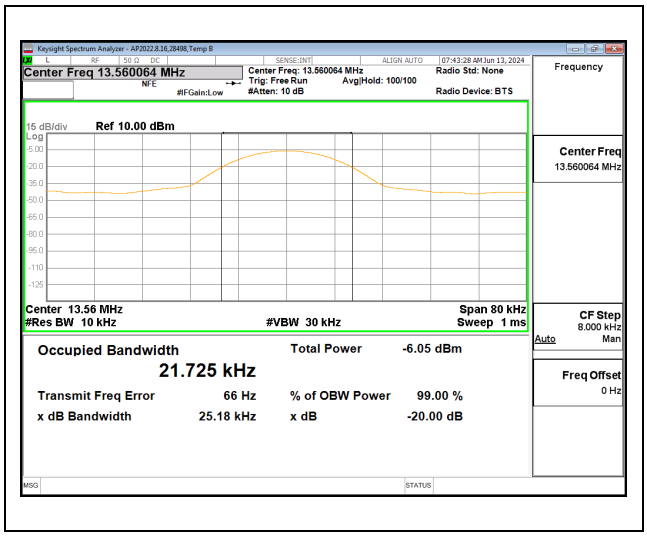
7.1.1. CE MODE: TYPE B, 106 Kbps



7.1.2. READER MODE: TYPE B, 106 Kbps

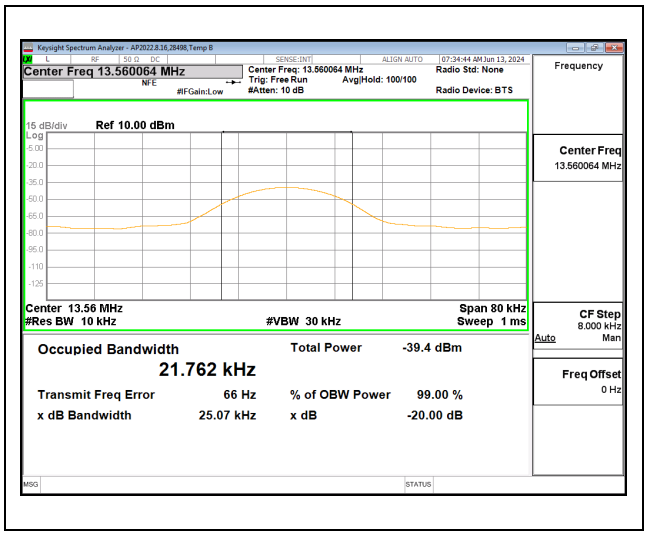


7.1.3. READER + TAG MODE: TYPE B, 106 Kbps

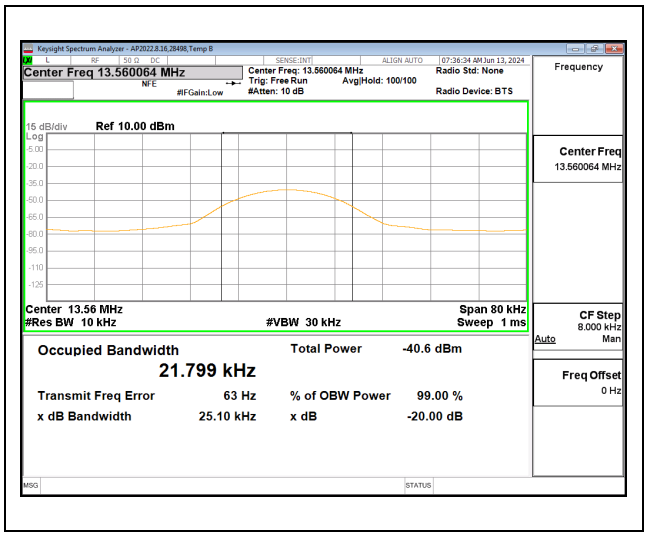


7.2. SECONDARY ANTENNA

7.2.1. READER MODE: TYPE B, 106 Kbps



7.2.2. READER + TAG MODE: TYPE B, 106 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 filed strength from uV/m to dBuV/m is:
Limit (dBuV/m) = 20 log limit (uV/m)

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

In addition:

§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (e), The provisions in §§ 15.31, §§ 15.33 and §§ 15.35 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

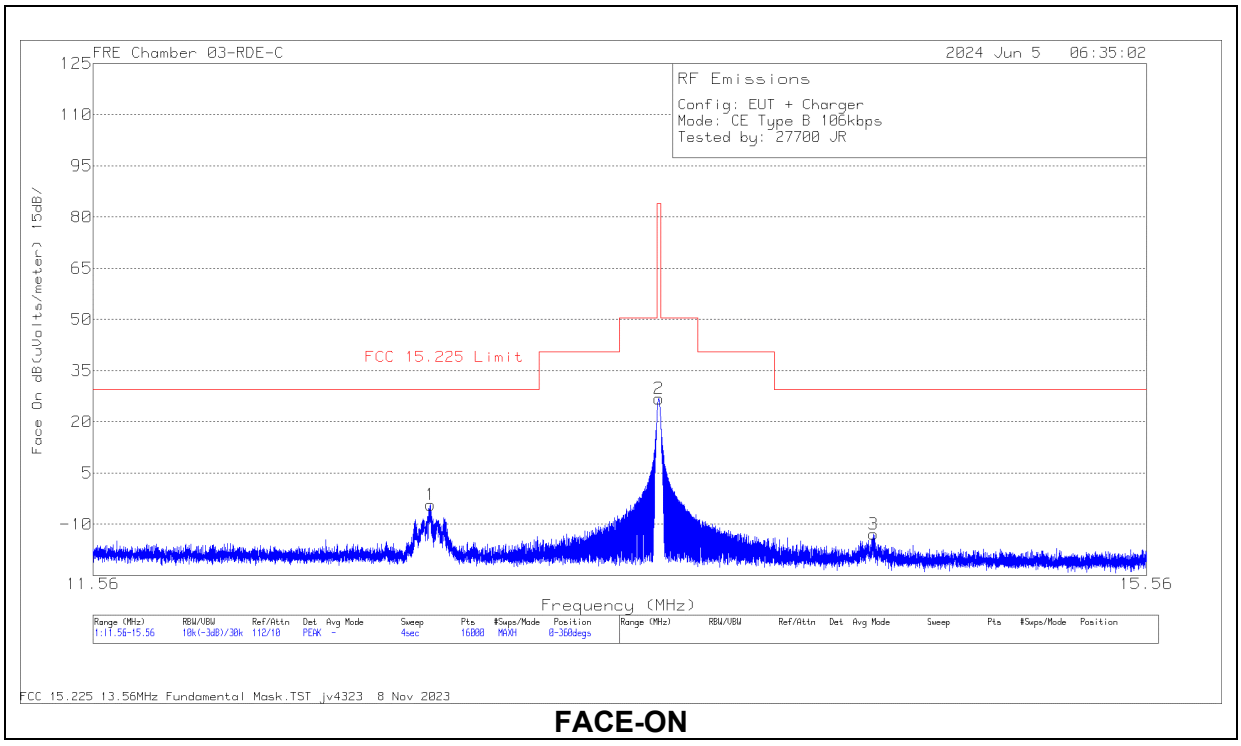
ANSI C63.10, 2013

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.

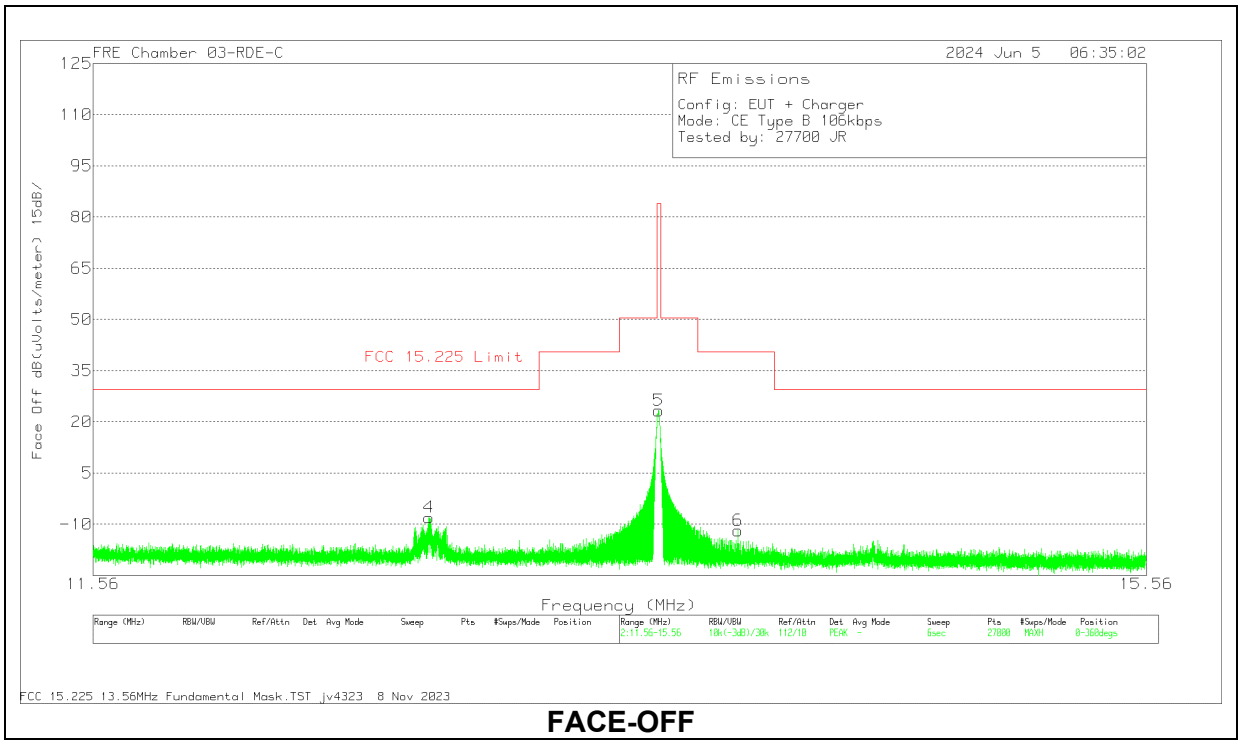
RESULTS

8.2. PRIMARY ANTENNA FUNDAMENTAL

8.2.1. CE MODE: TYPE B, 106 Kbps



FACE-ON



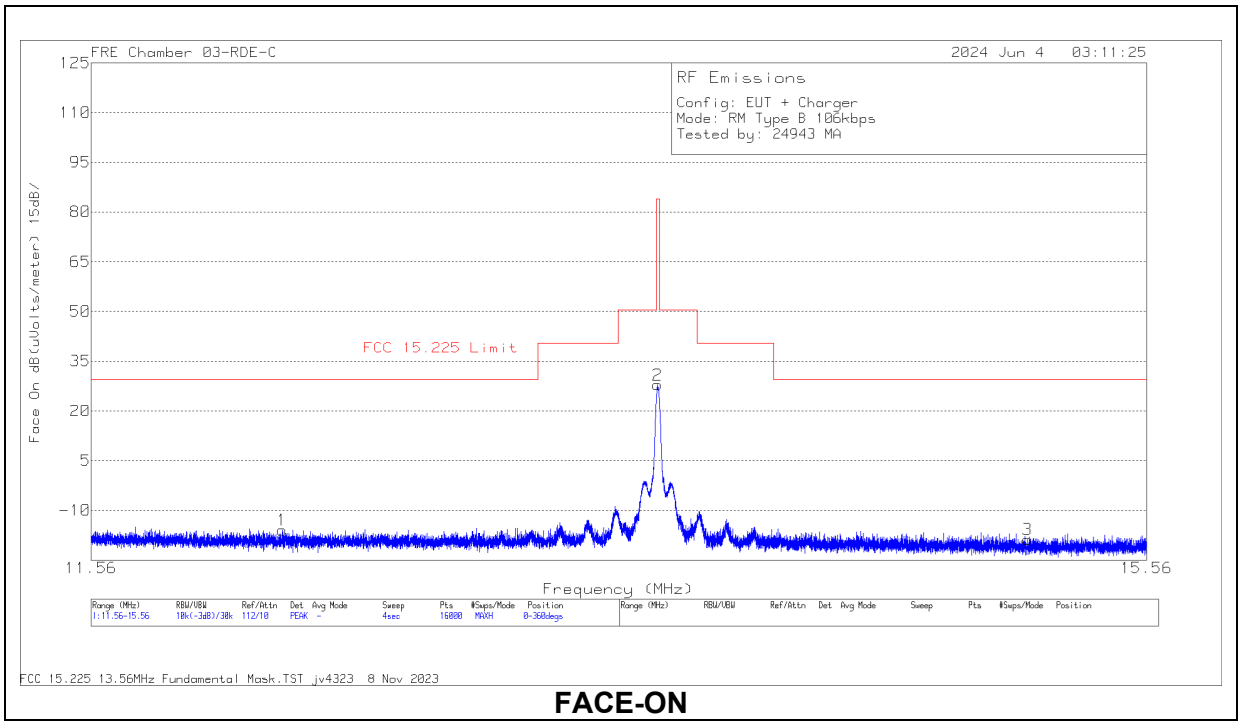
FACE-OFF

DATA

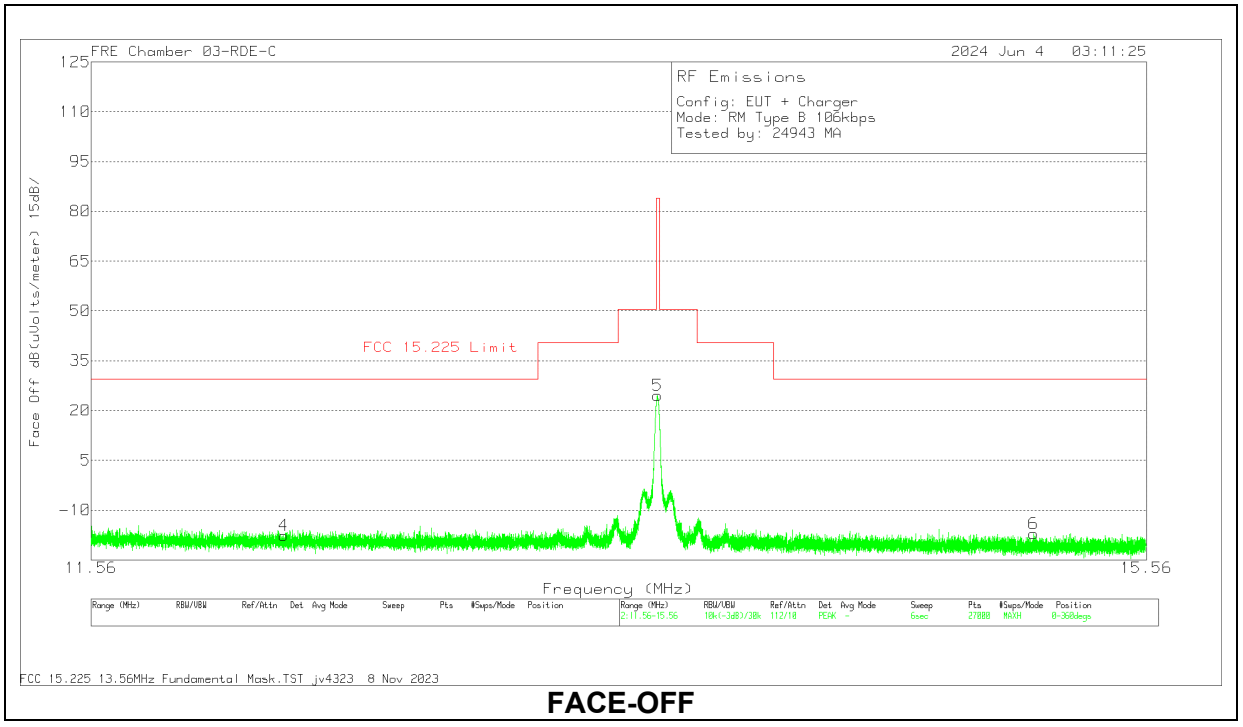
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/meter)	FCC 15.225 Limit (dBuV/meter)	PK Margin (dB)	Azimuth (Degs)	Polarity
4	12.7089	29.58	Pk	34.5	-32.1	-40	-8.02	29.54	-37.56	0-360	Face-Off
1	12.7145	33.4	Pk	34.5	-32.2	-40	-4.3	29.54	-33.84	0-360	Face-On
5	13.5592	61.2	Pk	34.3	-32.2	-40	23.3	84	-60.7	0-360	Face-Off
2	13.5598	64.69	Pk	34.3	-32.2	-40	26.79	84	-57.21	0-360	Face-On
6	13.8661	25.64	Pk	34.3	-31.8	-40	-11.86	40.51	-52.37	0-360	Face-Off
3	14.4063	24.79	Pk	34.2	-31.9	-40	-12.91	29.54	-42.45	0-360	Face-On

Pk - Peak detector

8.2.2. READER MODE: TYPE B, 106 Kbps



FACE-ON



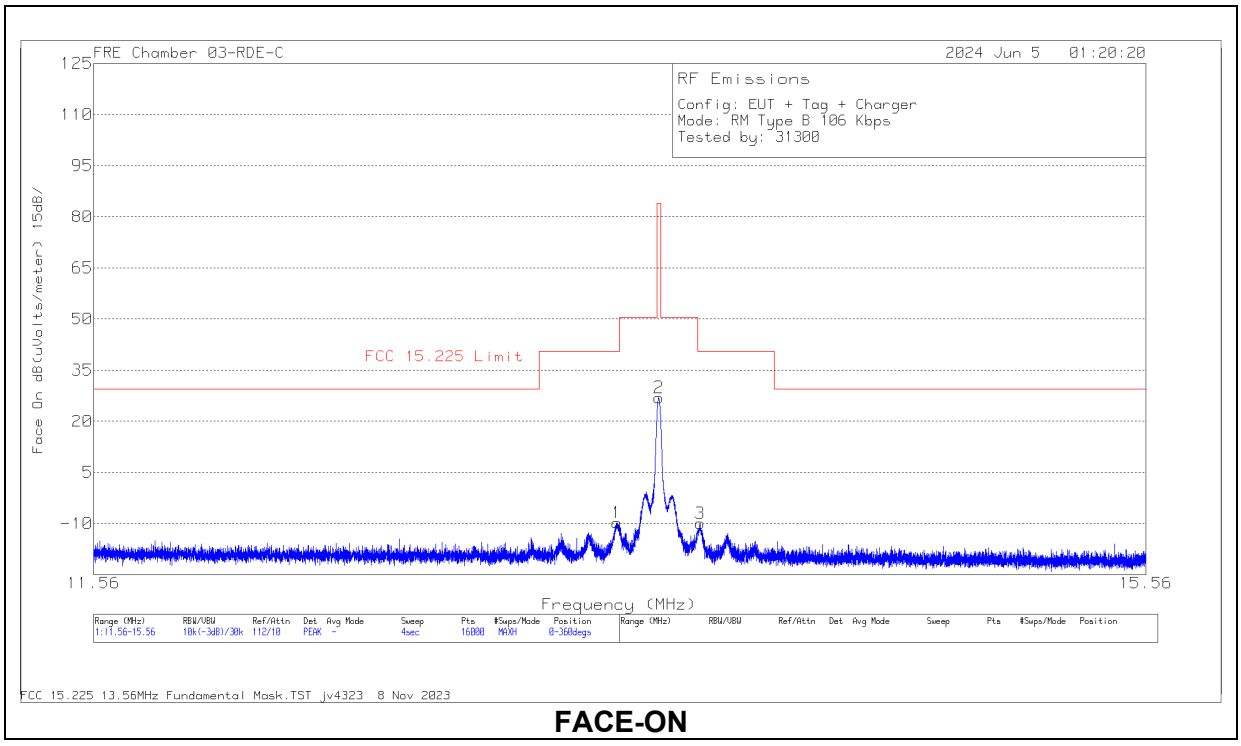
FACE-OFF

DATA

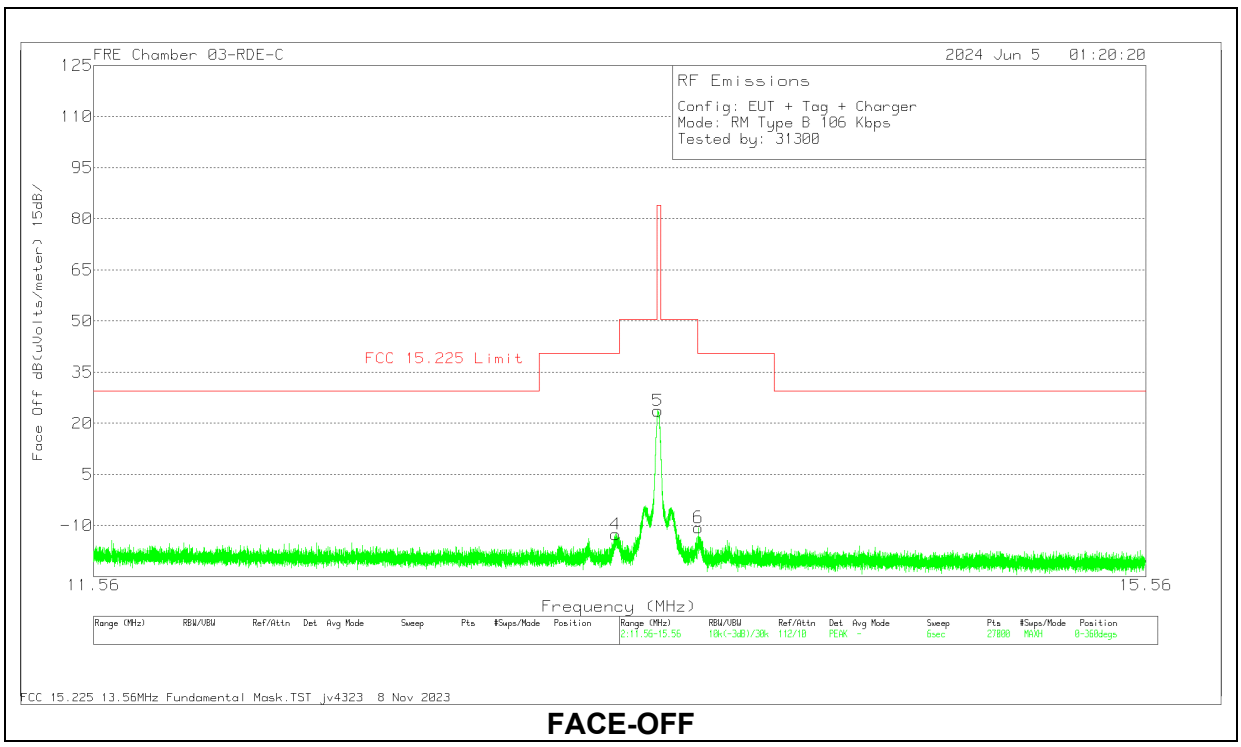
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/meter)	FCC 15.225 Limit (dBuV/meter)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.1995	21.49	Pk	34.6	-32.1	-40	-16.01	29.54	-45.55	0-360	Face-On
4	12.2041	19.83	Pk	34.6	-32.1	-40	-17.67	29.54	-47.21	0-360	Face-Off
5	13.5585	62.48	Pk	34.3	-32.2	-40	24.58	84	-59.42	0-360	Face-Off
2	13.5595	65.75	Pk	34.3	-32.2	-40	27.85	84	-56.15	0-360	Face-On
3	15.0478	19.18	Pk	34.1	-32.1	-40	-18.82	29.54	-48.36	0-360	Face-On
6	15.0729	20.93	Pk	34.1	-32.1	-40	-17.07	29.54	-46.61	0-360	Face-Off

Pk - Peak detector

8.2.3. READER + TAG MODE: TYPE B, 106 Kbps



FACE-ON



FACE-OFF

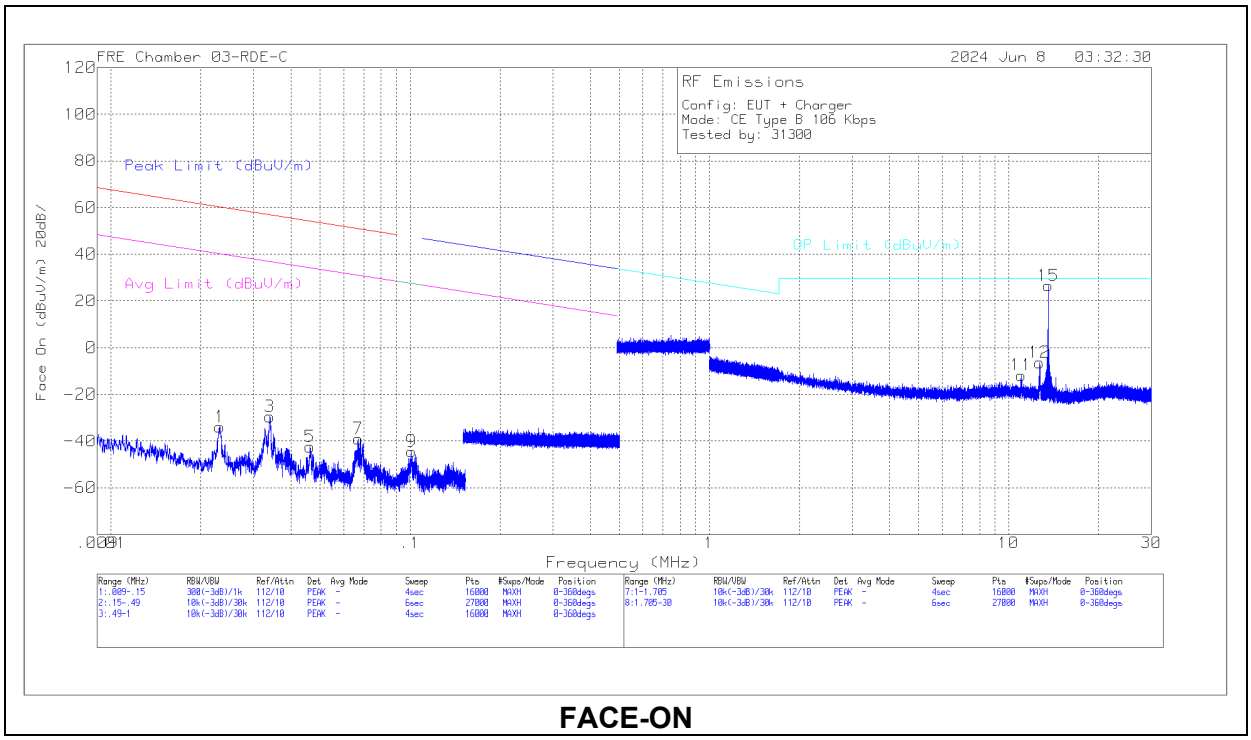
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/meter)	FCC 15.225 Limit (dBuV/meter)	PK Margin (dB)	Azimuth (Degs)	Polarity
4	13.3962	25	Pk	34.3	-31.9	-40	-12.6	40.51	-53.11	0-360	Face-Off
1	13.4	27.8	Pk	34.3	-31.9	-40	-9.8	40.51	-50.31	0-360	Face-On
5	13.5567	61.58	Pk	34.3	-32.2	-40	23.68	84	-60.32	0-360	Face-Off
2	13.5598	64.78	Pk	34.3	-32.2	-40	26.88	84	-57.12	0-360	Face-On
6	13.7134	27.36	Pk	34.3	-32.3	-40	-10.64	40.51	-51.15	0-360	Face-Off
3	13.7203	28.03	Pk	34.3	-32.3	-40	-9.97	40.51	-50.48	0-360	Face-On

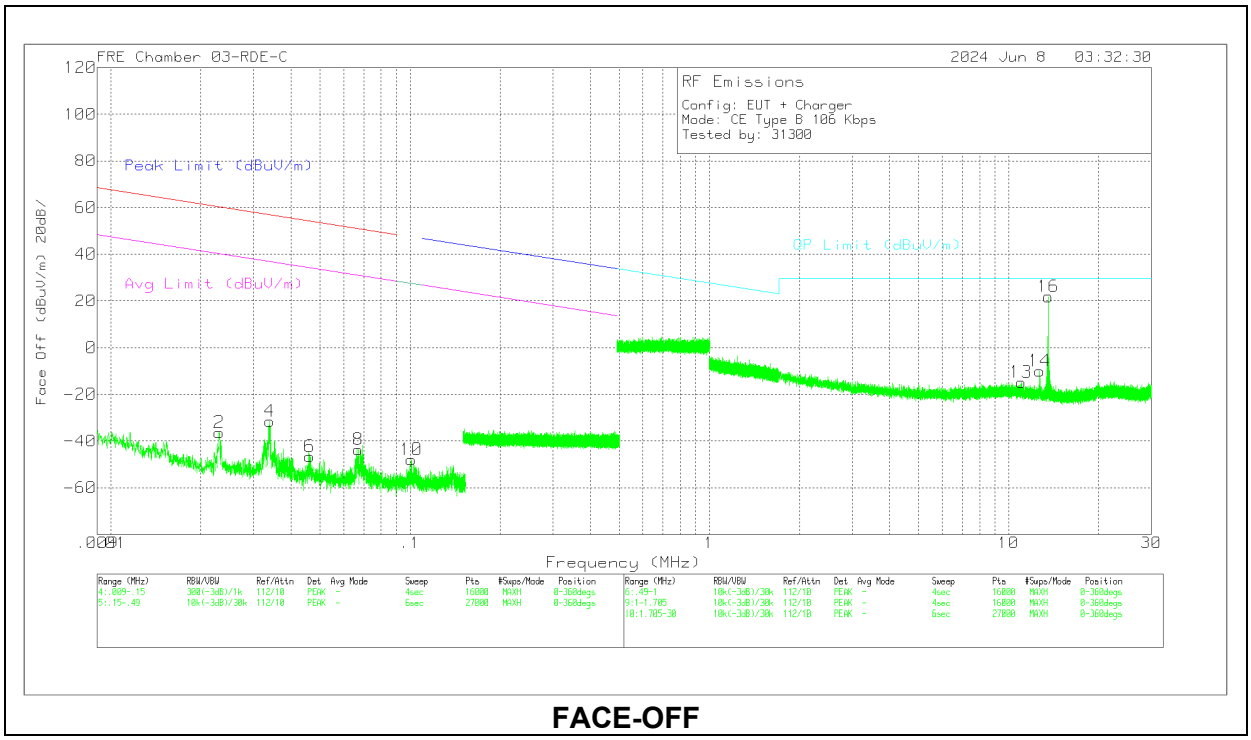
Pk - Peak detector

8.1. PRIMARY ANTENNA SPURIOUS EMISSION 0.009-30 MHz

8.1.1. CE MODE: TYPE B, 106 Kbps



FACE-ON



FACE-OFF

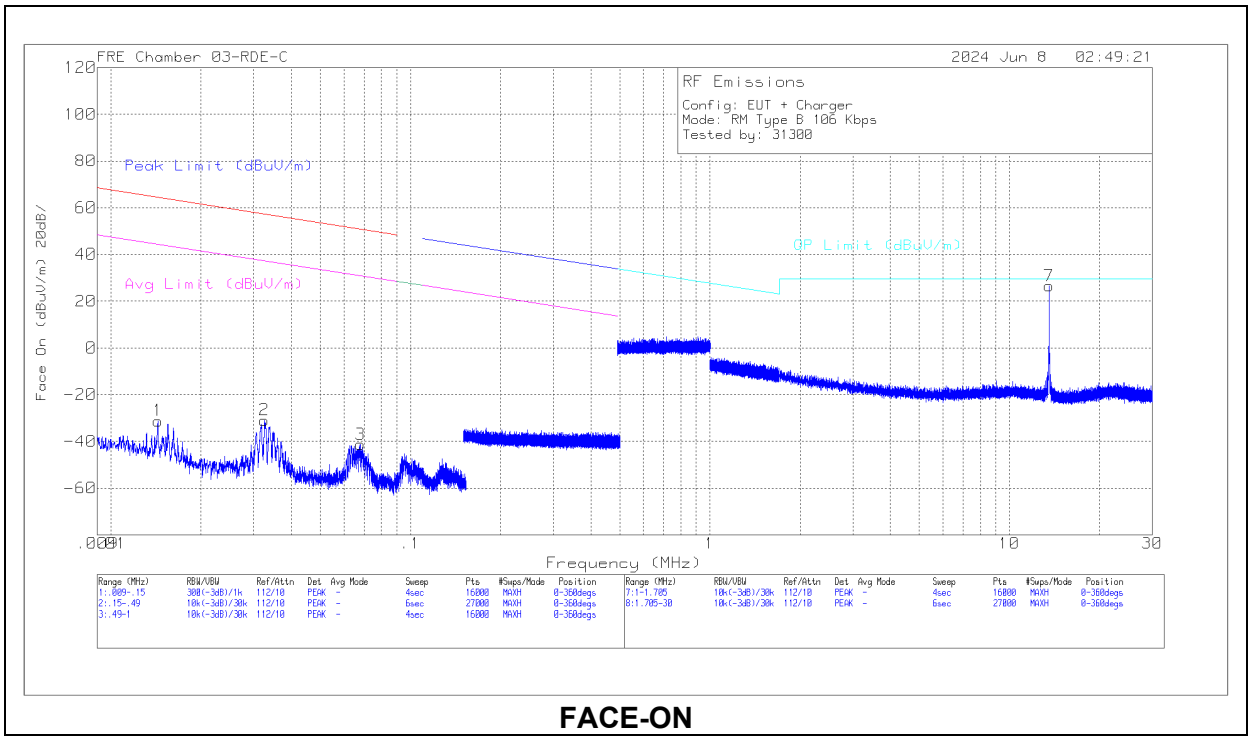
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
2	.023	17.12	Pk	58.8	-32.3	-80	-36.38	60.35	-96.73	40.35	-76.73	-	-	0-360	Face-Off
1	.0231	19.63	Pk	58.7	-32.3	-80	-33.97	60.3	-94.27	40.3	-74.27	-	-	0-360	Face-On
3	.034	25.38	Pk	57.7	-32.6	-80	-29.52	56.96	-86.48	36.96	-66.48	-	-	0-360	Face-On
4	.034	23.44	Pk	57.7	-32.6	-80	-31.46	56.96	-88.42	36.96	-68.42	-	-	0-360	Face-Off
6	.0462	9.12	Pk	57.2	-32.9	-80	-46.58	54.3	-100.88	34.3	-80.88	-	-	0-360	Face-Off
5	.0463	13.25	Pk	57.2	-32.9	-80	-42.45	54.27	-96.72	34.27	-76.72	-	-	0-360	Face-On
7	.0671	17.5	Pk	56	-32.5	-80	-39	51.05	-90.05	31.05	-70.05	-	-	0-360	Face-On
8	.0672	12.84	Pk	56	-32.5	-80	-43.66	51.04	-94.7	31.04	-74.7	-	-	0-360	Face-Off
10	.101	9.33	Pk	55.6	-32.9	-80	-47.97	-	-	-	-	27.53	-75.5	0-360	Face-Off

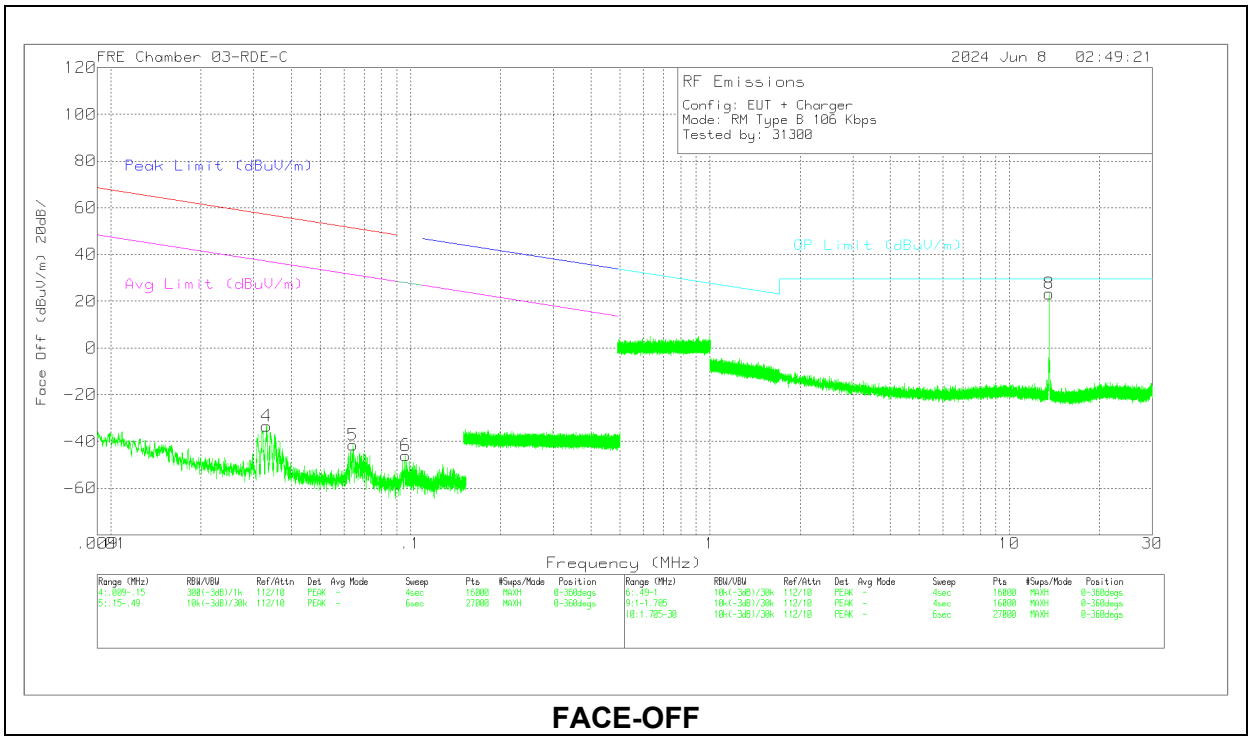
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
13	11.0123	22.71	Pk	34.8	-32.3	-40	-14.79	29.5	-44.29	0-360	Face-Off
11	11.0144	25.69	Pk	34.8	-32.3	-40	-11.81	29.5	-41.31	0-360	Face-On
12	12.708	31.21	Pk	34.5	-32.1	-40	-6.39	29.5	-35.89	0-360	Face-On
14	12.7142	27.72	Pk	34.5	-32.2	-40	-9.98	29.5	-39.48	0-360	Face-Off
15	* 13.56	64.45	Pk	34.3	-32.2	-40	26.55	29.5	-2.95	0-360	Face-On
16	* 13.56	59.77	Pk	34.3	-32.2	-40	21.87	29.5	-7.63	0-360	Face-Off

Pk - Peak detector
* = Fundamental frequency
Note: Marker 15 and 16 are fundamental signals.

8.1.2. READER MODE: TYPE B, 106 Kbps



FACE-ON



FACE-OFF

DATA

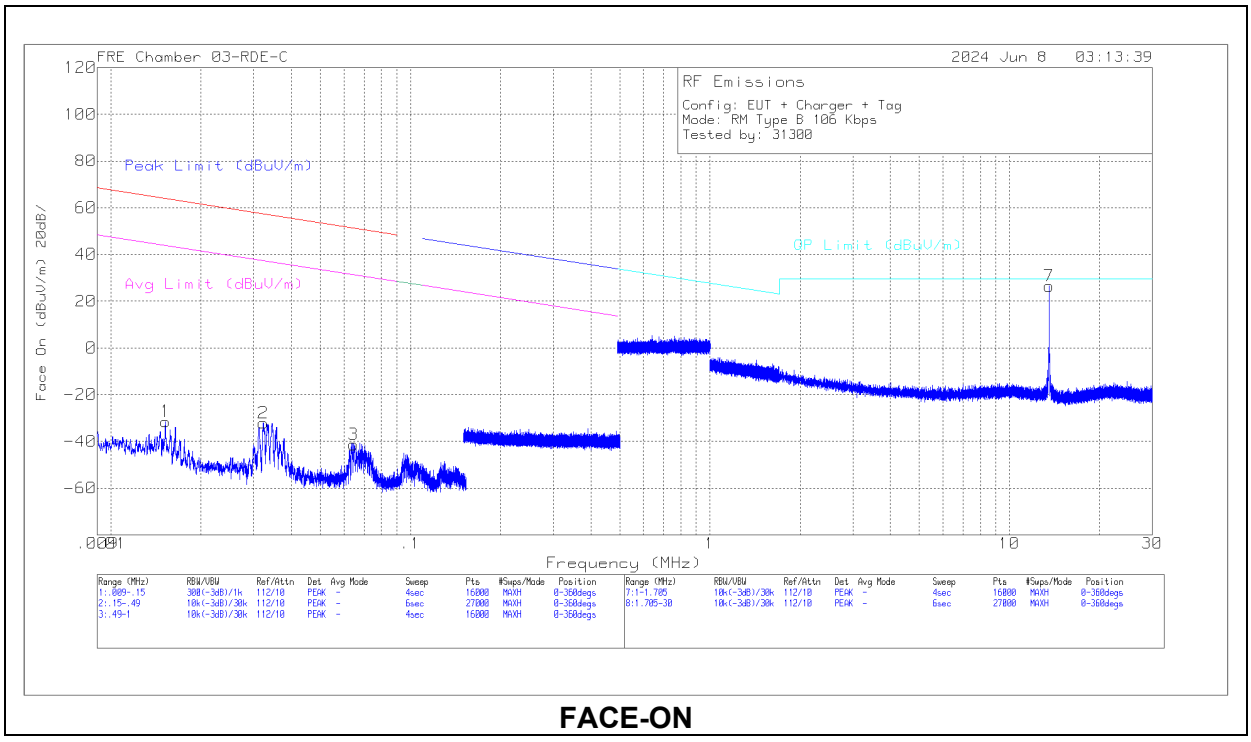
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0144	20.14	Pk	59.8	-31.1	-80	-31.16	64.44	-95.6	44.44	-75.6	-	-	0-360	Face-On
2	.0325	23.98	Pk	57.8	-32.7	-80	-30.92	57.35	-88.27	37.35	-68.27	-	-	0-360	Face-On
4	.0331	21.36	Pk	57.8	-32.6	-80	-33.44	57.2	-90.64	37.2	-70.64	-	-	0-360	Face-Off
5	.0642	14.92	Pk	56.1	-32.6	-80	-41.58	51.44	-93.02	31.44	-73.02	-	-	0-360	Face-Off
3	.068	15.19	Pk	56	-32.5	-80	-41.31	50.94	-92.25	30.94	-72.25	-	-	0-360	Face-On
6	.0964	11.12	Pk	55.7	-32.9	-80	-46.08	-	-	-	-	27.91	-73.99	0-360	Face-Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
8	* 13.5589	61.13	Pk	34.3	-32.2	-40	23.23	29.5	-6.27	0-360	Face-Off
7	* 13.5605	64.47	Pk	34.3	-32.2	-40	26.57	29.5	-2.93	0-360	Face-On

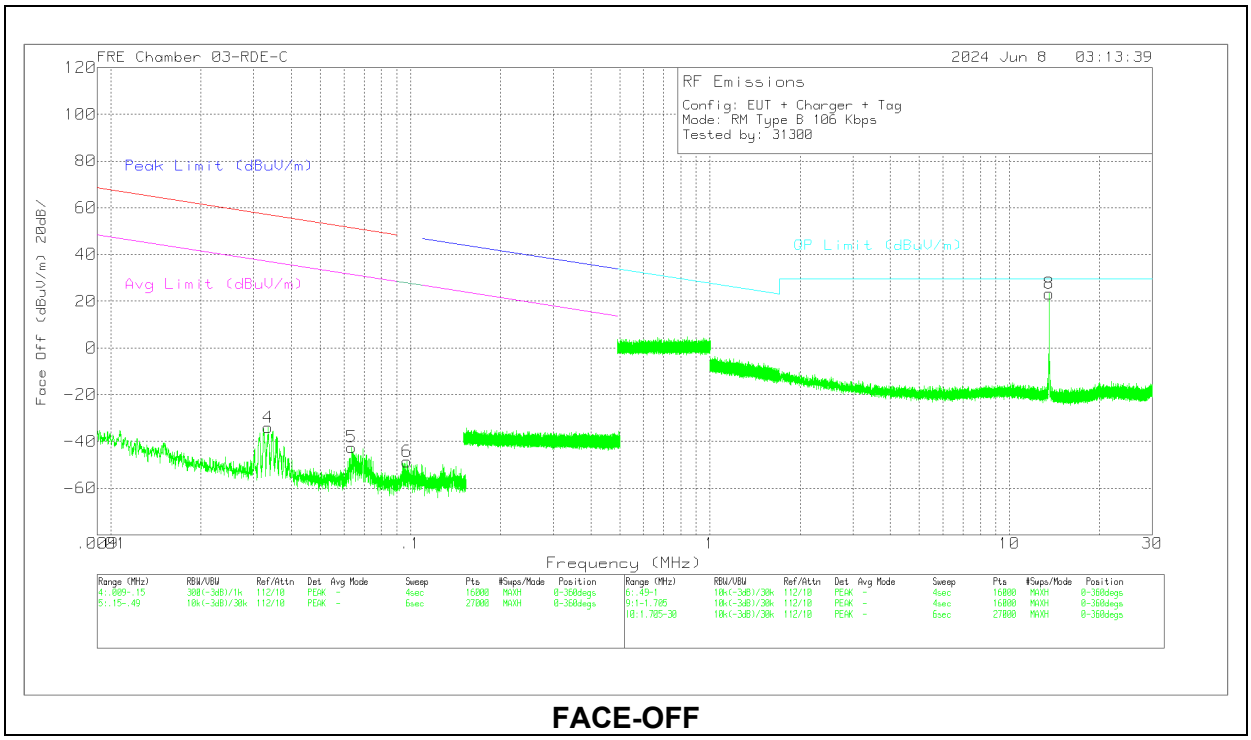
Pk - Peak detector
* = Fundamental frequency

Note: Marker 7 and 8 are fundamental signals.

8.1.3. READER + TAG MODE: TYPE B, 106 Kbps



FACE-ON



FACE-OFF

DATA

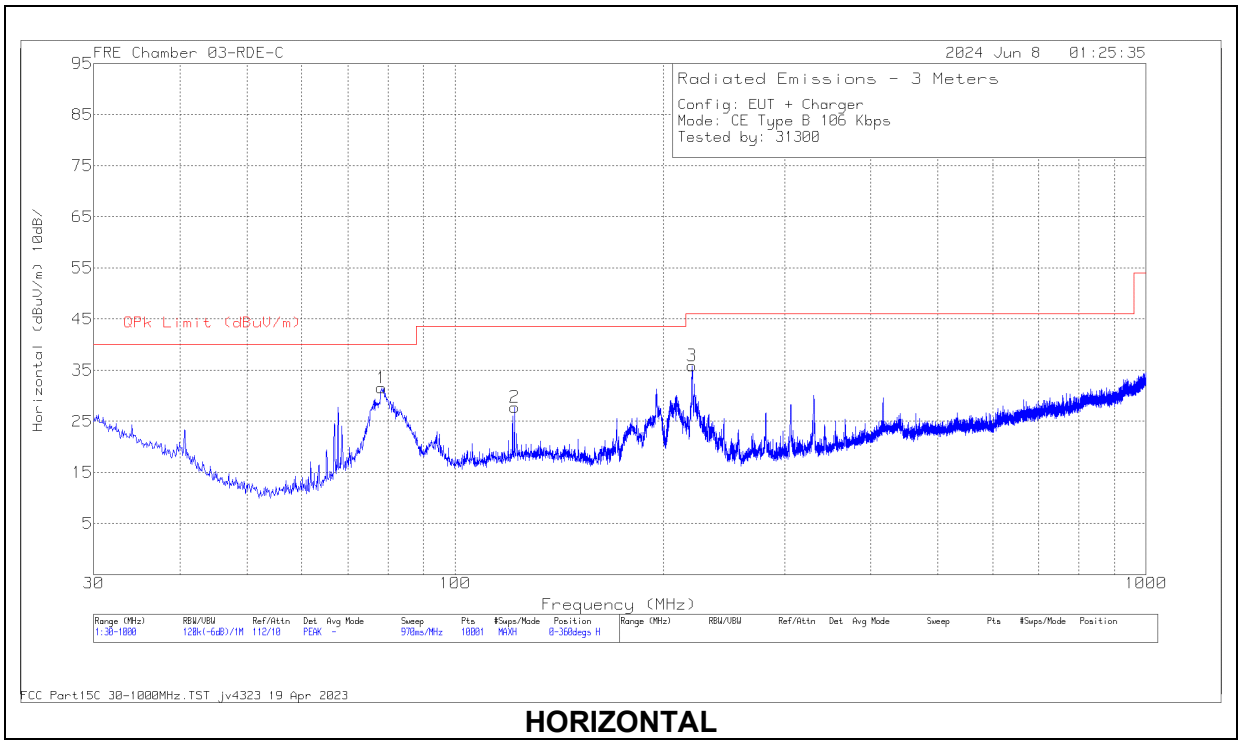
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0152	20.12	Pk	59.7	-31.3	-80	-31.48	63.94	-95.42	43.94	-75.42	-	-	0-360	Face-On
2	.0323	22.76	Pk	57.8	-32.7	-80	-32.14	57.41	-89.55	37.41	-69.55	-	-	0-360	Face-On
4	.0335	20.88	Pk	57.7	-32.6	-80	-34.02	57.1	-91.12	37.1	-71.12	-	-	0-360	Face-Off
5	.0637	14.11	Pk	56.1	-32.7	-80	-42.49	51.51	-94	31.51	-74	-	-	0-360	Face-Off
3	.0646	15.17	Pk	56.1	-32.6	-80	-41.33	51.38	-92.71	31.38	-72.71	-	-	0-360	Face-On
6	.0975	8.6	Pk	55.7	-32.9	-80	-48.6	-	-	-	-	27.82	-76.42	0-360	Face-Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
7	* 13.5589	64.4	Pk	34.3	-32.2	-40	26.5	29.5	-3	0-360	Face-On
8	* 13.5589	61.13	Pk	34.3	-32.2	-40	23.23	29.5	-6.27	0-360	Face-Off

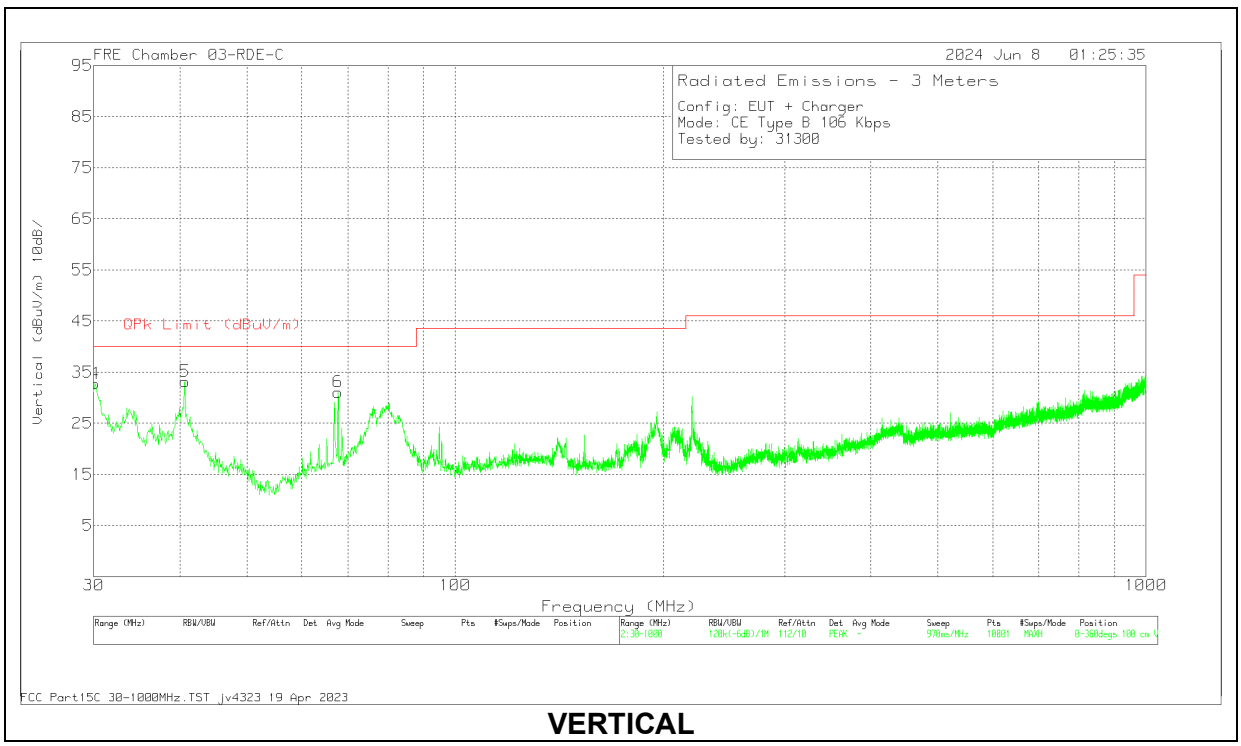
Pk - Peak detector
* = Fundamental frequency
Note: Marker 7 and 8 are fundamental signals.

8.2. PRIMARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz

8.2.1. CE MODE: TYPE B, 106 Kbps



HORIZONTAL



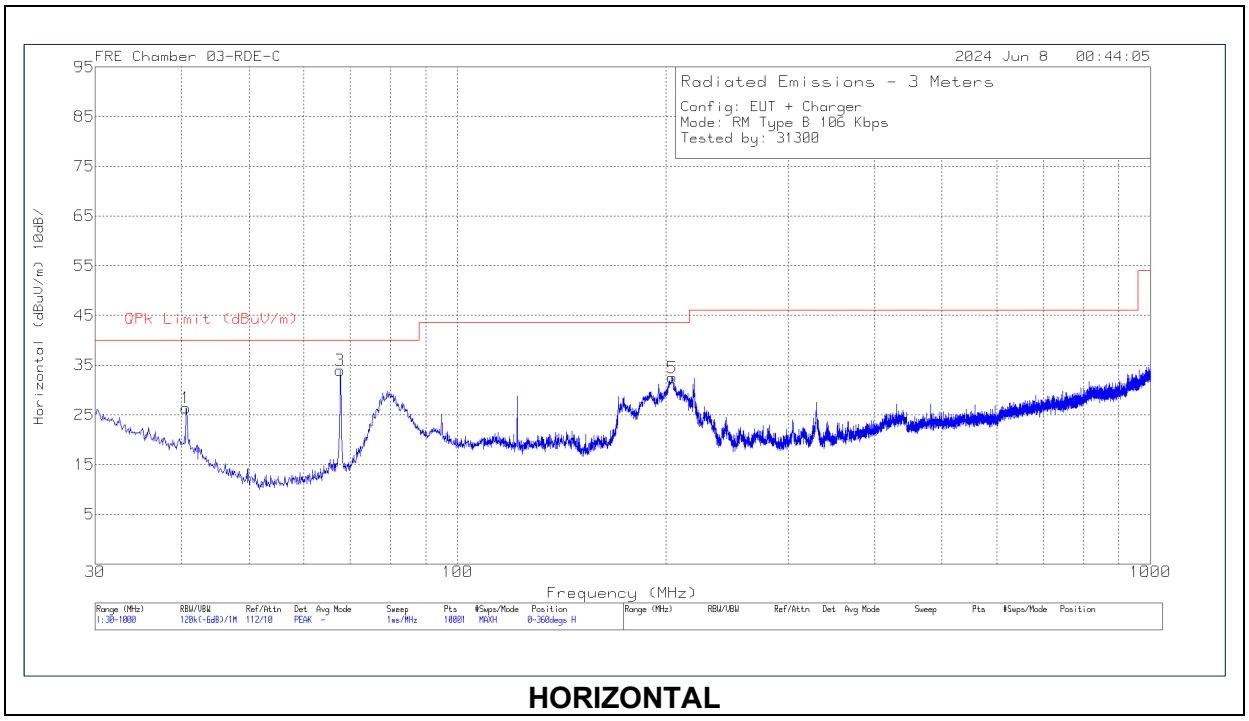
VERTICAL

DATA

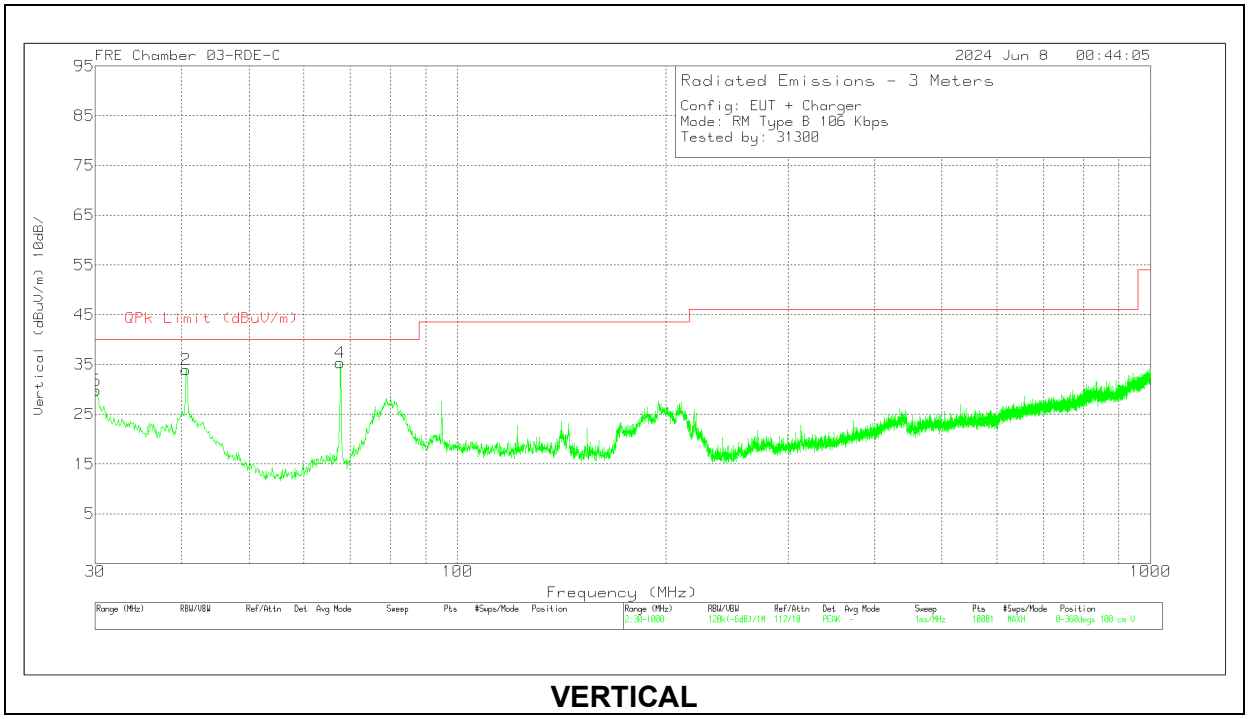
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	232075 ACF (dB/m)	CBL AMP (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 121.956	38.48	Pk	19.9	-30.6	27.78	43.52	-15.74	0-360	198	H
4	30.097	37.45	Pk	26.9	-31.6	32.75	40	-7.25	0-360	100	V
5	40.67	45.05	Pk	19.4	-31.3	33.15	40	-6.85	0-360	100	V
6	67.733	48.01	Pk	14.1	-31	31.11	40	-8.89	0-360	100	V
1	78.306	48.83	Pk	13.6	-30.9	31.53	40	-8.47	0-360	298	H
3	220.508	49.26	Pk	16.6	-30	35.86	46.02	-10.16	0-360	99	H

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

8.2.2. READER MODE: TYPE B, 106 Kbps



HORIZONTAL



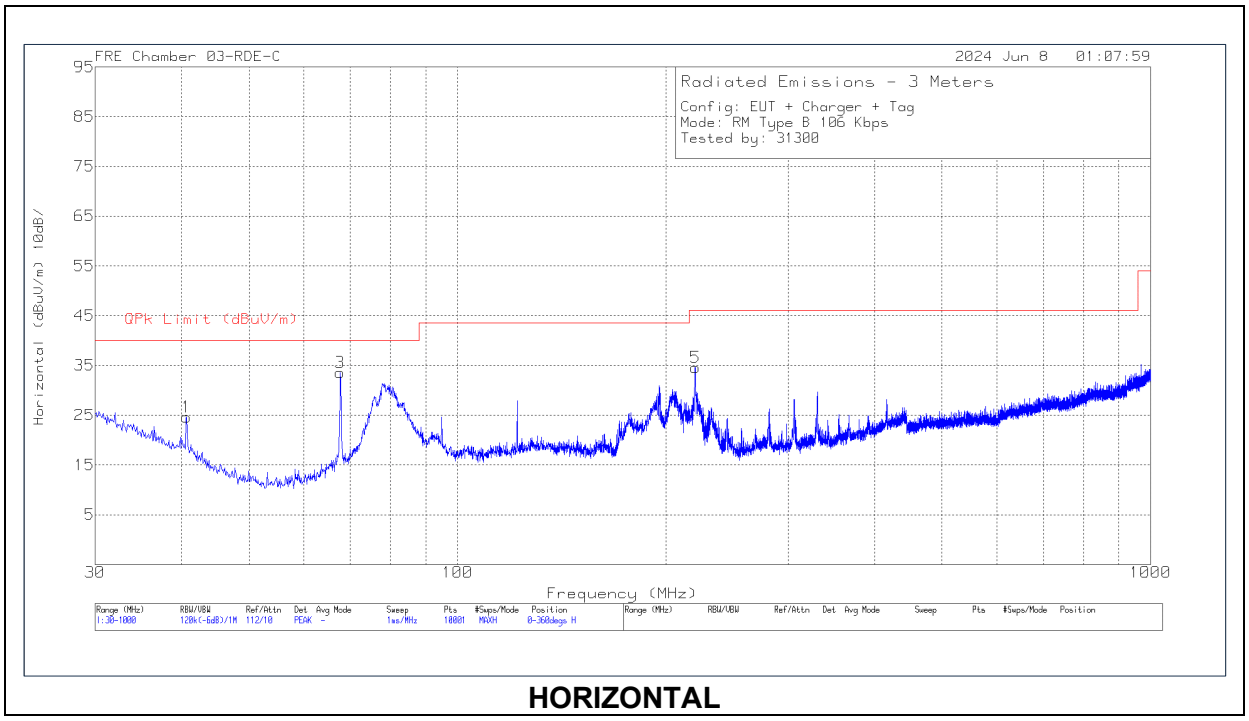
VERTICAL

DATA

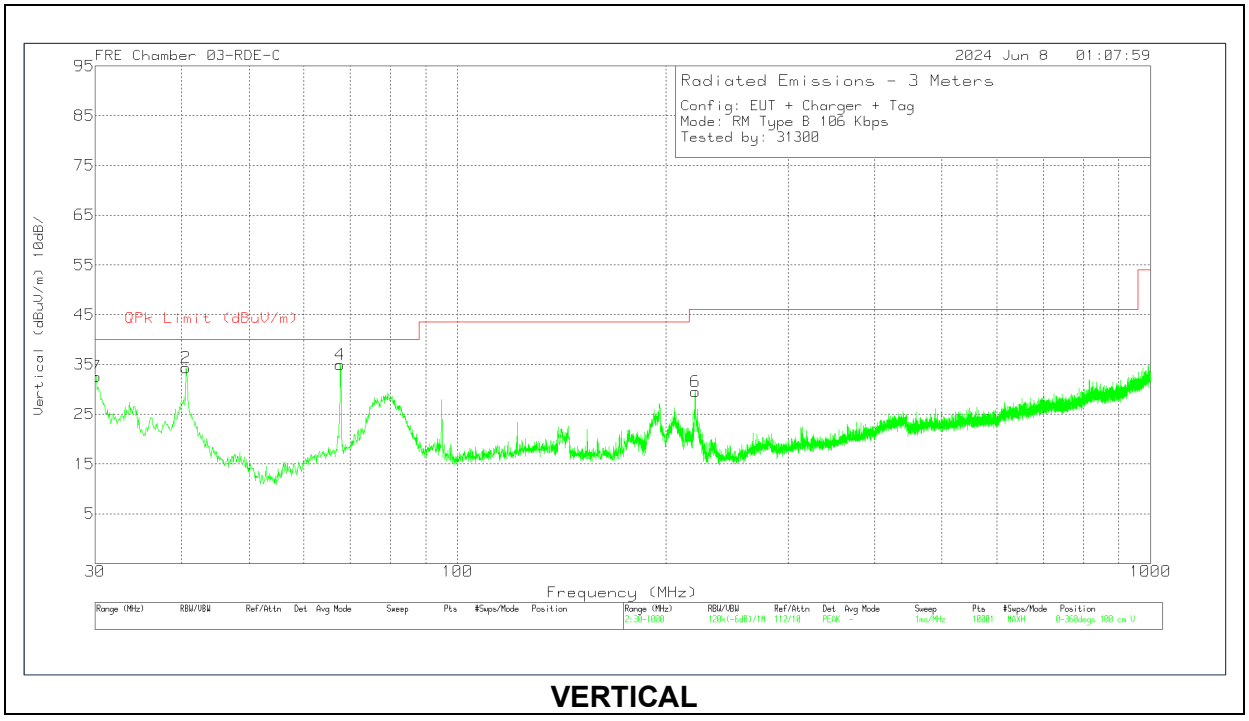
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	232075 ACF (dB/m)	CBL AMP (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	30.097	34.45	Pk	26.9	-31.6	29.75	40	-10.25	0-360	100	V
1	40.573	38.16	Pk	19.5	-31.3	26.36	40	-13.64	0-360	199	H
2	40.573	45.77	Pk	19.5	-31.3	33.97	40	-6.03	0-360	100	V
	40.6846	45.28	Qp	19.4	-31.3	33.38	40	-6.62	295	103	V
3	67.733	50.85	Pk	14.1	-31	33.95	40	-6.05	0-360	399	H
4	67.733	52.26	Pk	14.1	-31	35.36	40	-4.64	0-360	100	V
	67.7943	51.88	Qp	14.1	-31	34.98	40	-5.02	255	101	V
5	204.018	45.3	Pk	17.2	-30	32.5	43.52	-11.02	0-360	100	H

Pk - Peak detector
Qp - Quasi-Peak detector

8.2.3. READER + TAG MODE: TYPE B, 106 Kbps



HORIZONTAL



VERTICAL

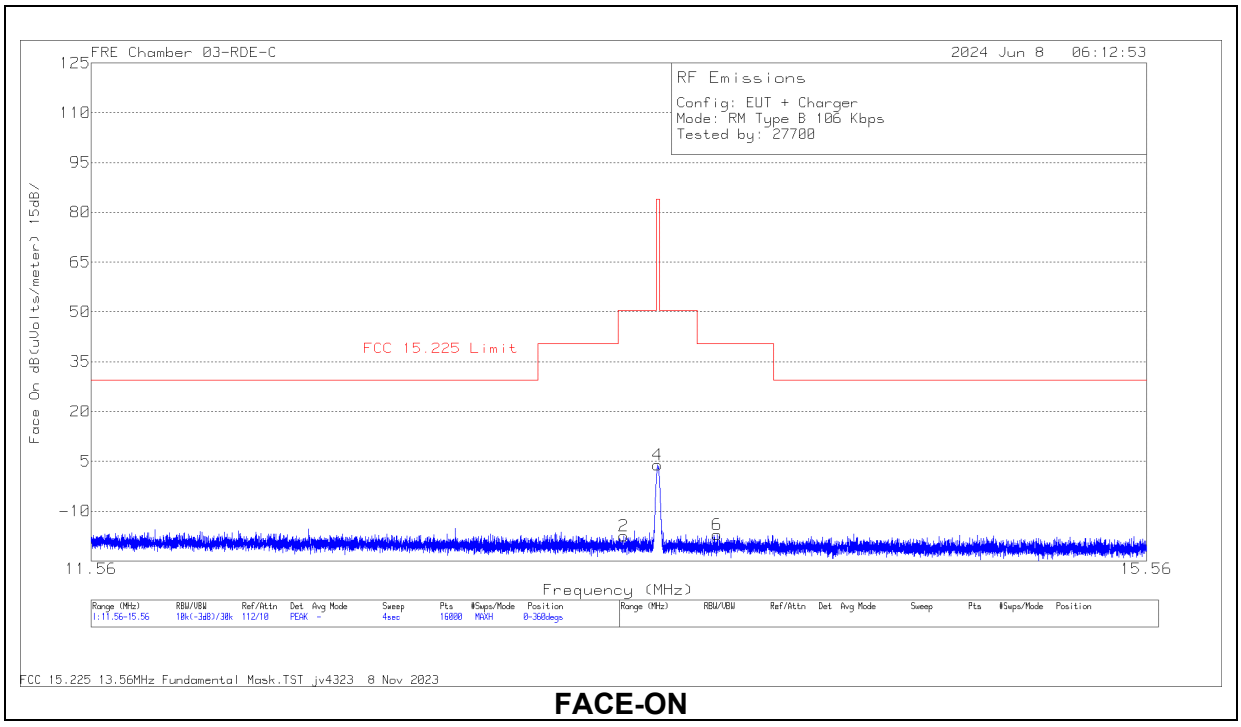
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	232075 ACF (dB/m)	CBL AMP (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	30.097	37.23	Pk	26.9	-31.6	32.53	40	-7.47	0-360	100	V
2	40.573	46.12	Pk	19.5	-31.3	34.32	40	-5.68	0-360	100	V
	40.6767	45.04	Qp	19.4	-31.3	33.14	40	-6.86	293	113	V
1	40.67	36.49	Pk	19.4	-31.3	24.59	40	-15.41	0-360	199	H
3	67.733	50.52	Pk	14.1	-31	33.62	40	-6.38	0-360	398	H
4	67.733	51.88	Pk	14.1	-31	34.98	40	-5.02	0-360	100	V
	67.795	51.8	Qp	14.1	-31	34.9	40	-5.1	266	105	V
6	220.411	43.15	Pk	16.5	-30.1	29.55	46.02	-16.47	0-360	100	V
5	220.508	47.99	Pk	16.6	-30	34.59	46.02	-11.43	0-360	101	H

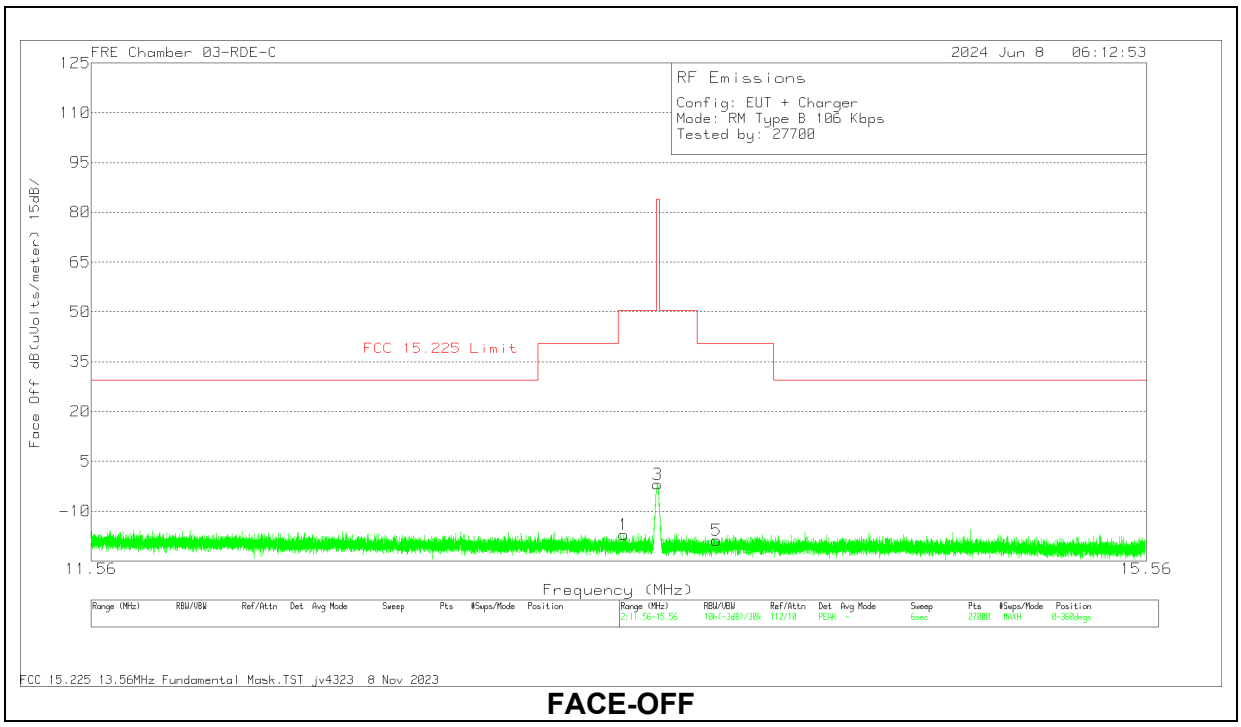
Pk - Peak detector
Qp - Quasi-Peak detector

8.3. SECONDARY ANTENNA FUNDAMENTAL

8.3.1. READER MODE: TYPE B, 106 Kbps



FACE-ON



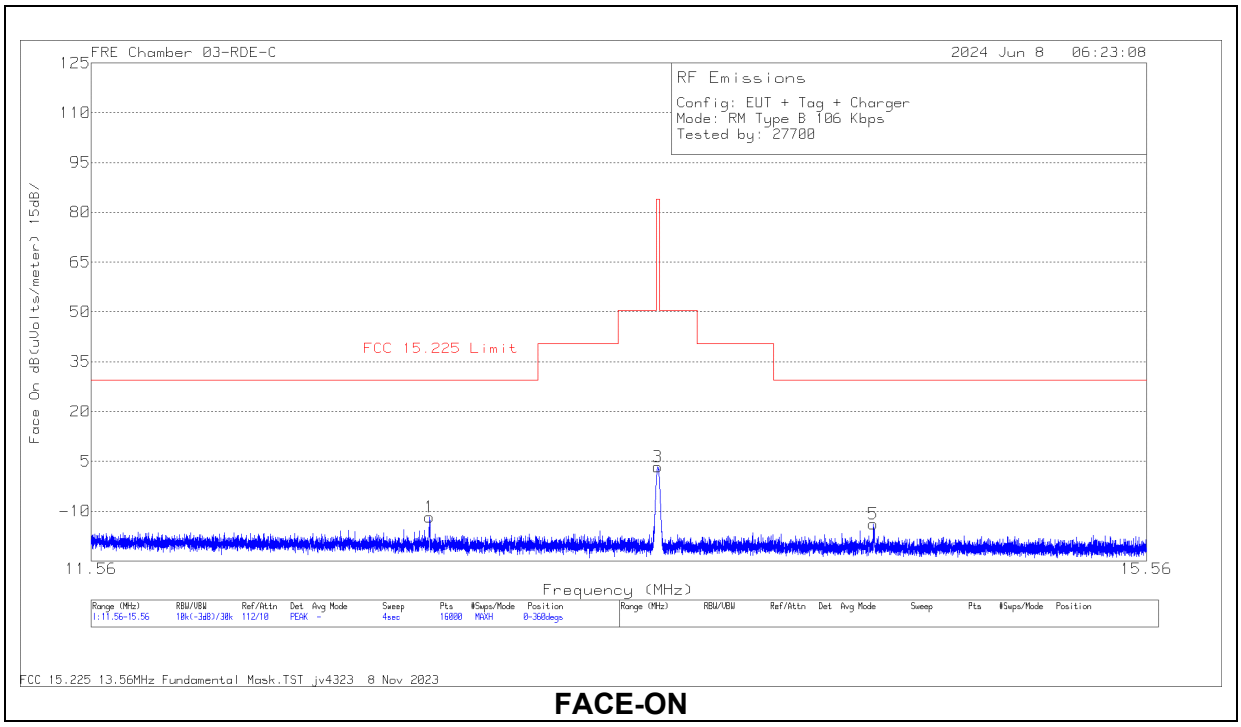
FACE-OFF

DATA

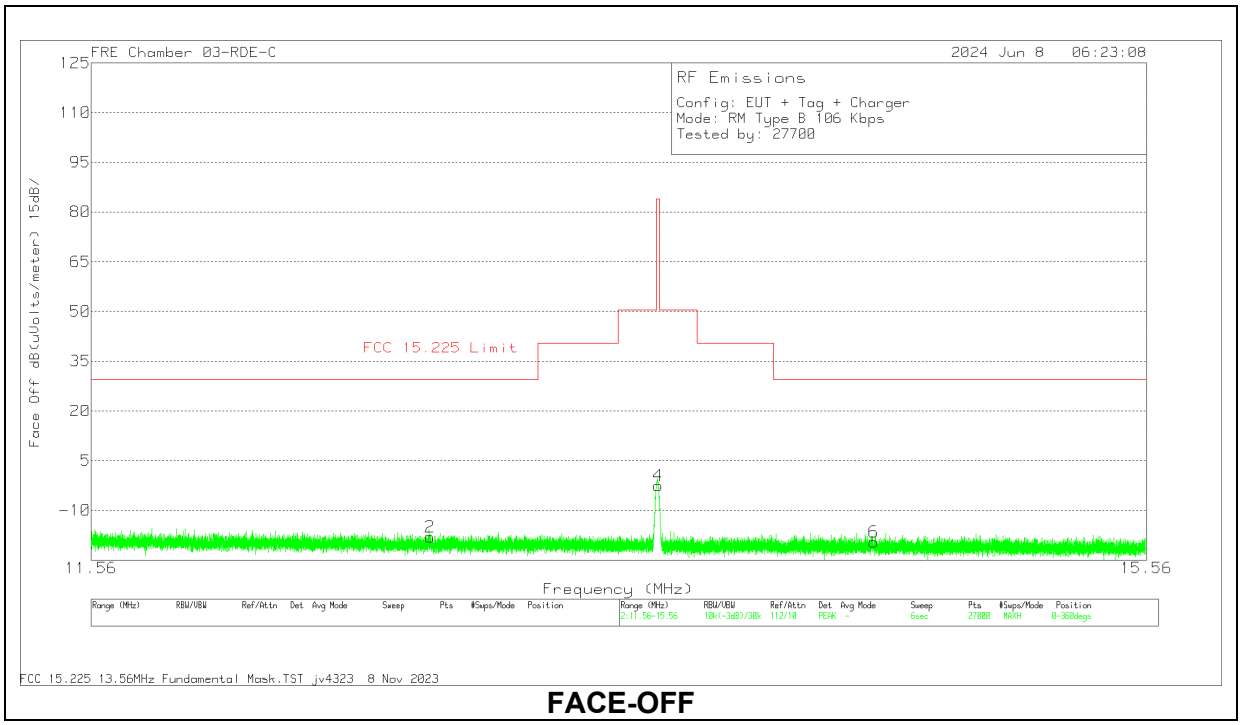
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/meter)	FCC 15.225 Limit (dBuV/meter)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	13.4298	20.64	Pk	34.3	-32	-40	-17.06	50.5	-67.56	0-360	Face-Off
2	13.431	20.2	Pk	34.3	-32	-40	-17.5	50.5	-68	0-360	Face-On
4	13.5585	41.82	Pk	34.3	-32.2	-40	3.92	84	-80.08	0-360	Face-On
3	13.5593	36.03	Pk	34.3	-32.2	-40	-1.87	84	-85.87	0-360	Face-Off
5	13.7864	19.06	Pk	34.3	-32.1	-40	-18.74	40.51	-59.25	0-360	Face-Off
6	13.7888	20.7	Pk	34.3	-32.1	-40	-17.1	40.51	-57.61	0-360	Face-On

Pk - Peak detector

8.3.2. READER + TAG MODE: TYPE B, 106 Kbps



FACE-ON



FACE-OFF

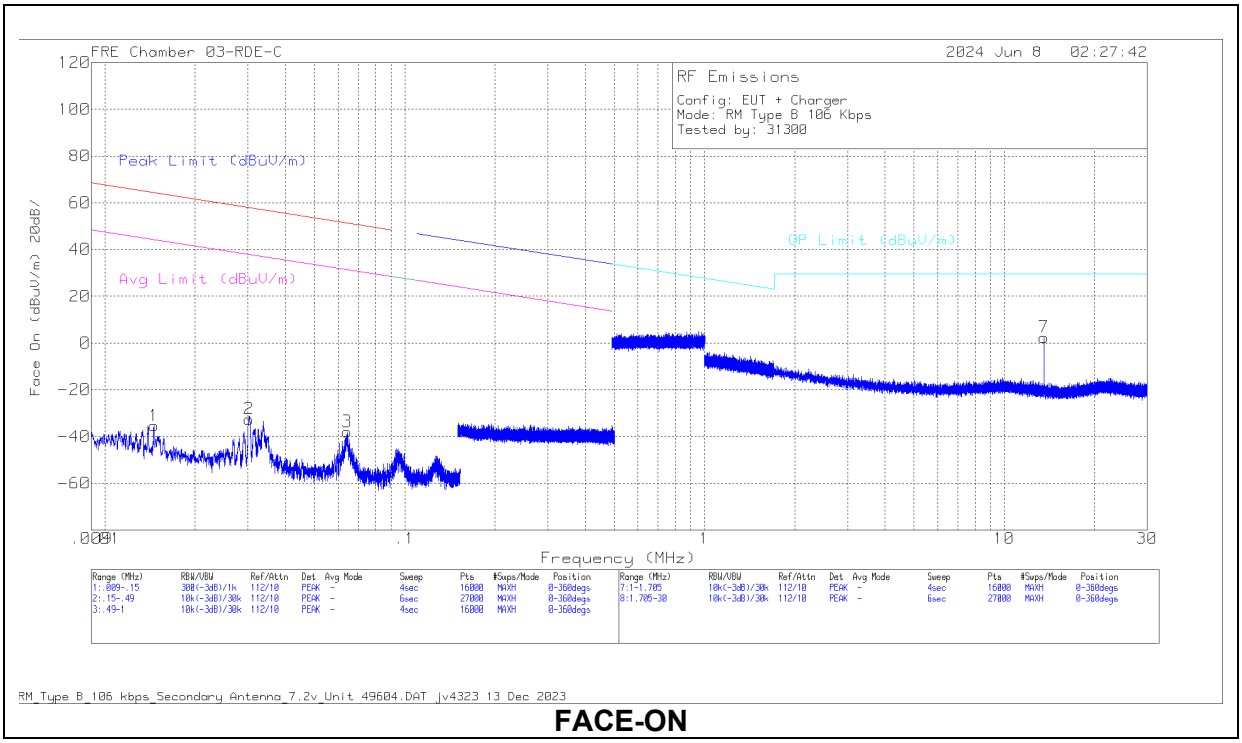
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/meter)	FCC 15.225 Limit (dBuV/meter)	PK Margin (dB)	Azimuth (Degs)	Polarity
1	12.7158	25.92	Pk	34.5	-32.2	-40	-11.78	29.54	-41.32	0-360	Face-On
2	12.7171	19.6	Pk	34.5	-32.2	-40	-18.1	29.54	-47.64	0-360	Face-Off
3	13.56	41.21	Pk	34.3	-32.2	-40	3.31	84	-80.69	0-360	Face-On
4	13.5616	35.36	Pk	34.3	-32.2	-40	-2.54	84	-86.54	0-360	Face-Off
5	14.4083	23.89	Pk	34.2	-31.9	-40	-13.81	29.54	-43.35	0-360	Face-On
6	14.4089	18.13	Pk	34.2	-31.9	-40	-19.57	29.54	-49.11	0-360	Face-Off

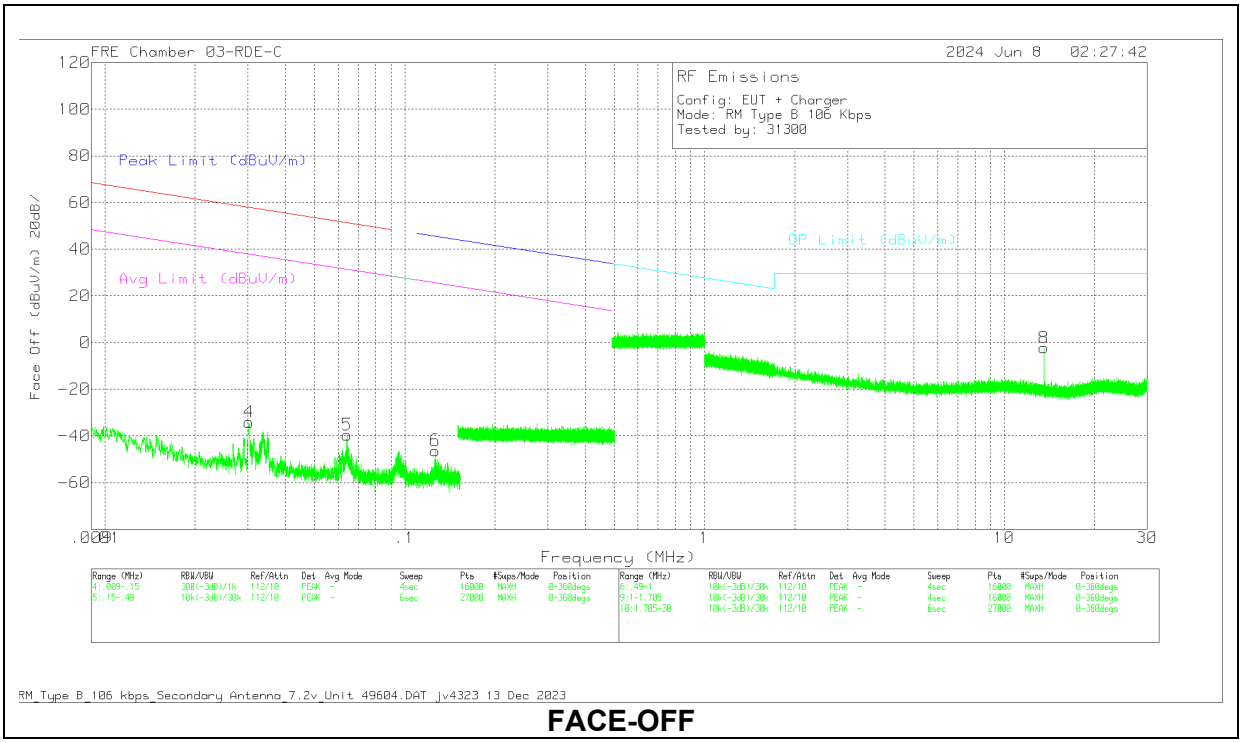
Pk - Peak detector

8.4. SECONDARY ANTENNA SPURIOUS EMISSION 0.009-30 MHz

8.4.1. READER MODE: TYPE B, 106 Kbps



FACE-ON



FACE-OFF

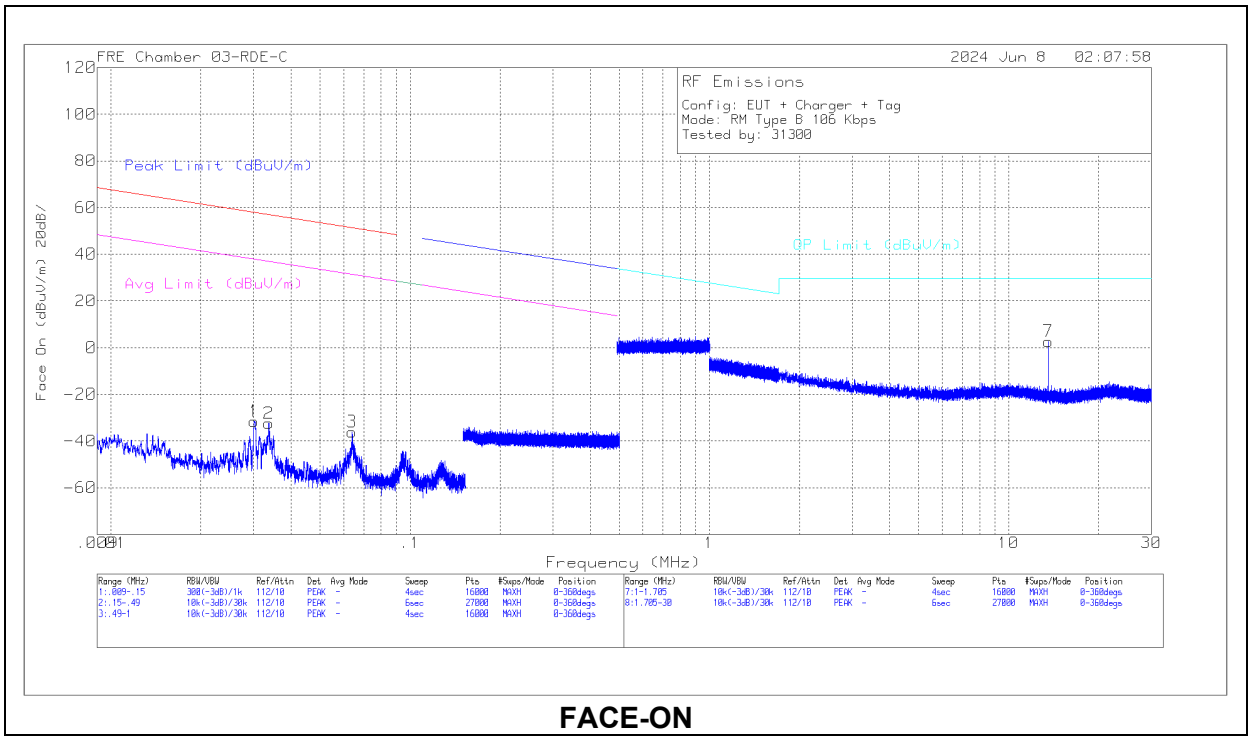
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H (ACF) (dB/m)	CBL AMP (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	.0146	16.06	Pk	59.8	-31.2	-80	-35.34	64.33	-99.67	44.33	-79.67	0-360	Face-On
2	.0303	22.17	Pk	58	-32.7	-80	-32.53	57.97	-90.5	37.97	-70.5	0-360	Face-On
4	.0303	20.59	Pk	58	-32.7	-80	-34.11	57.96	-92.07	37.96	-72.07	0-360	Face-Off
3	.0641	18.56	Pk	56.1	-32.6	-80	-37.94	51.44	-89.38	31.44	-69.38	0-360	Face-On
5	.0642	16.92	Pk	56.1	-32.6	-80	-39.58	51.44	-91.02	31.44	-71.02	0-360	Face-Off
6	.1263	10.91	Pk	55.8	-33	-80	-46.29	45.6	-91.89	25.6	-71.89	0-360	Face-Off

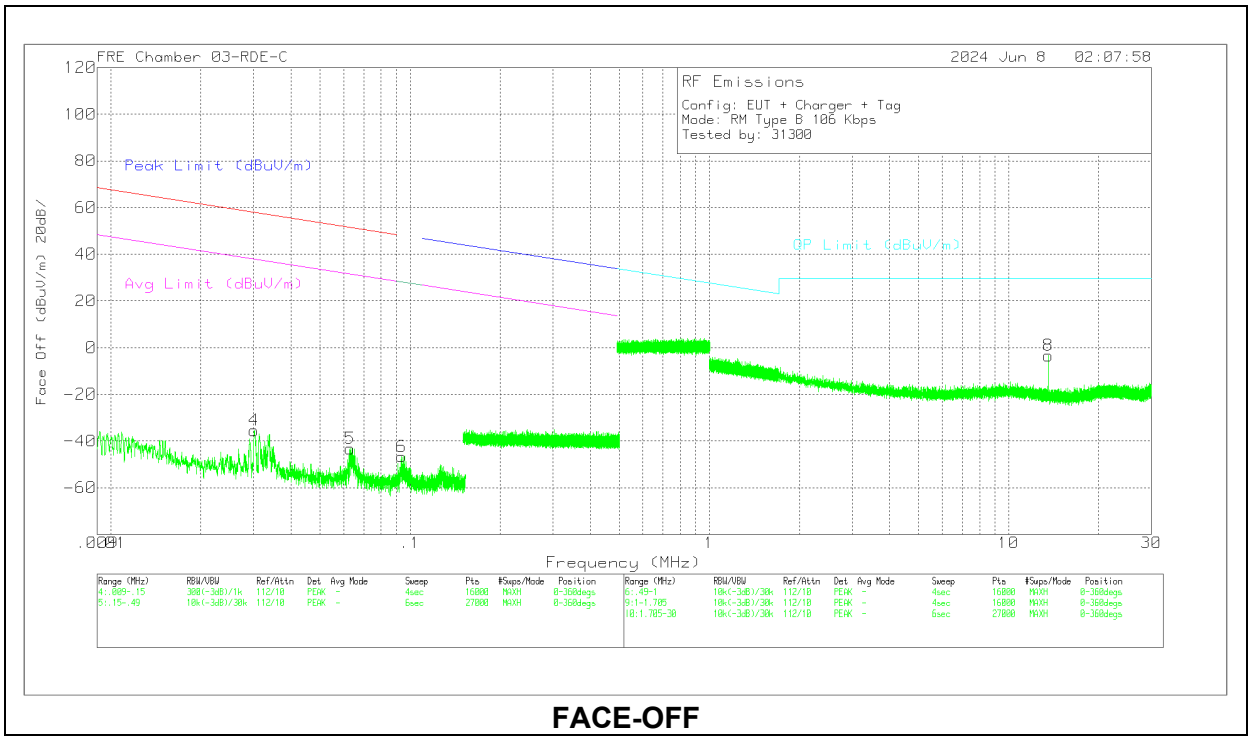
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
7	* 13.557	40.36	Pk	34.3	-32.2	-40	2.46	29.5	-27.04	0-360	Face-On
8	* 13.56	35.61	Pk	34.3	-32.2	-40	-2.29	29.5	-31.79	0-360	Face-Off

Pk - Peak detector
* = Fundamental frequency
Note: Marker 7 and 8 are fundamental signals

8.4.2. READER + TAG MODE: TYPE B, 106 Kbps



FACE-ON



FACE-OFF

DATA

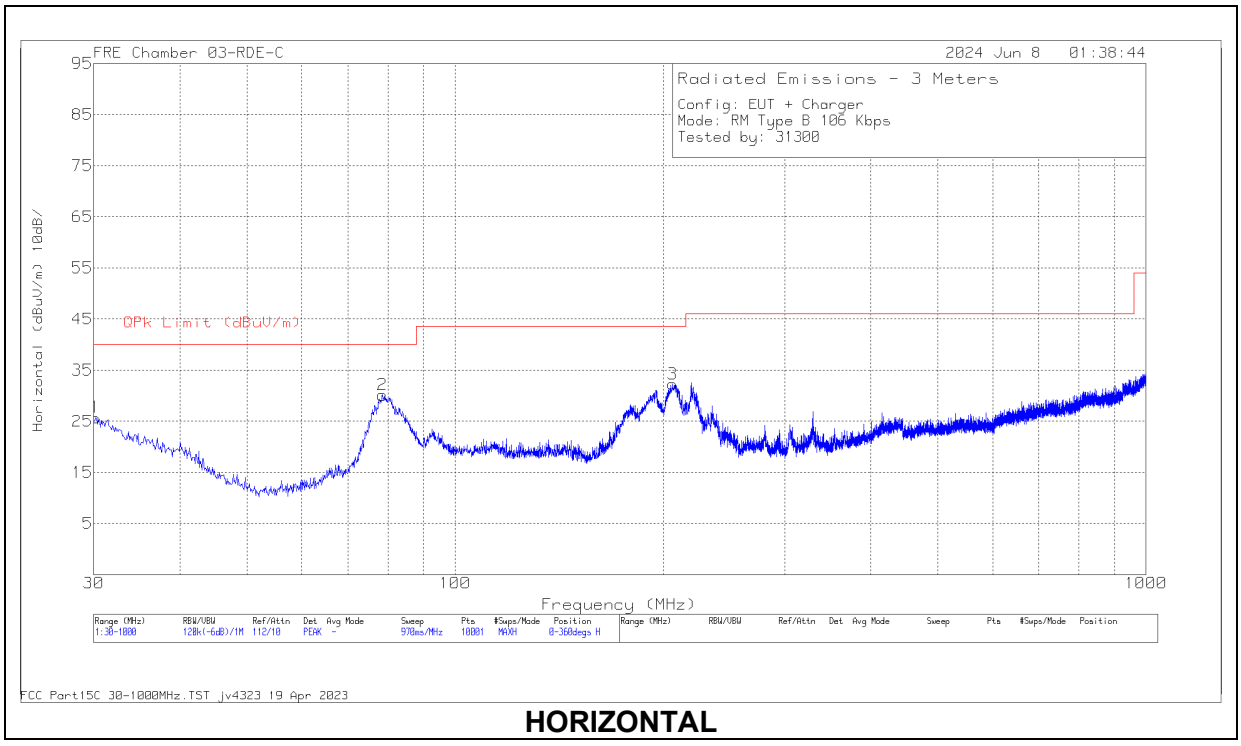
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.0301	23.16	Pk	58	-32.7	-80	-31.54	58	-89.54	38	-69.54	-	-	0-360	Face-On
4	.0301	19.24	Pk	58	-32.7	-80	-35.46	58.01	-93.47	38.01	-73.47	-	-	0-360	Face-On
2	.0337	22.46	Pk	57.7	-32.6	-80	-32.44	57.03	-89.47	37.03	-69.47	-	-	0-360	Face-Off
5	.0631	13.36	Pk	56.1	-32.7	-80	-43.24	51.58	-94.82	31.58	-74.82	-	-	0-360	Face-On
3	.0641	20.42	Pk	56.1	-32.6	-80	-36.08	51.45	-87.53	31.45	-67.53	-	-	0-360	Face-Off
6	.0936	10.65	Pk	55.7	-33	-80	-46.65	-	-	-	-	28.16	-74.81	0-360	Face-Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	CBL AMP (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
7	* 13.5579	40.61	Pk	34.3	-32.2	-40	2.71	29.5	-26.79	0-360	Face-On
8	* 13.561	34.51	Pk	34.3	-32.2	-40	-3.39	29.5	-32.89	0-360	Face-Off

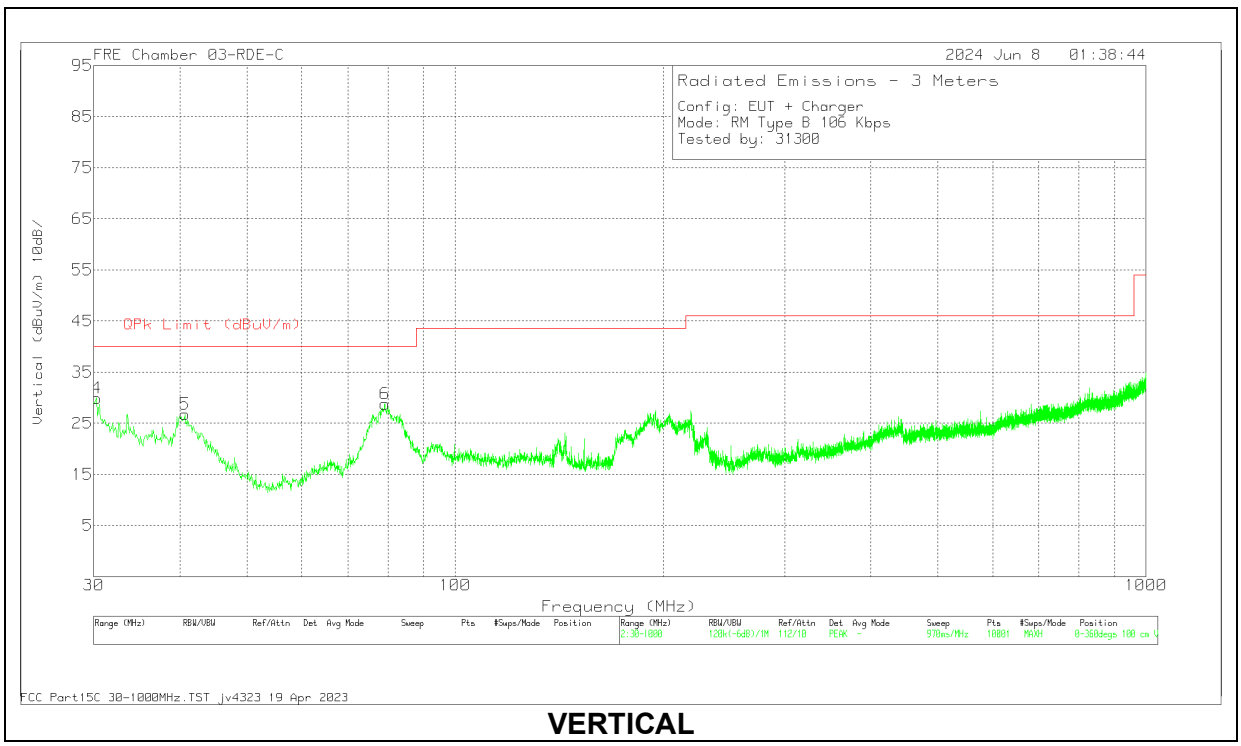
Pk - Peak detector
* = Fundamental frequency

8.5. SECONDARY ANTENNA TX SPURIOUS EMISSION 30-1000 MHz

8.5.1. READER MODE: TYPE B, 106 Kbps



HORIZONTAL



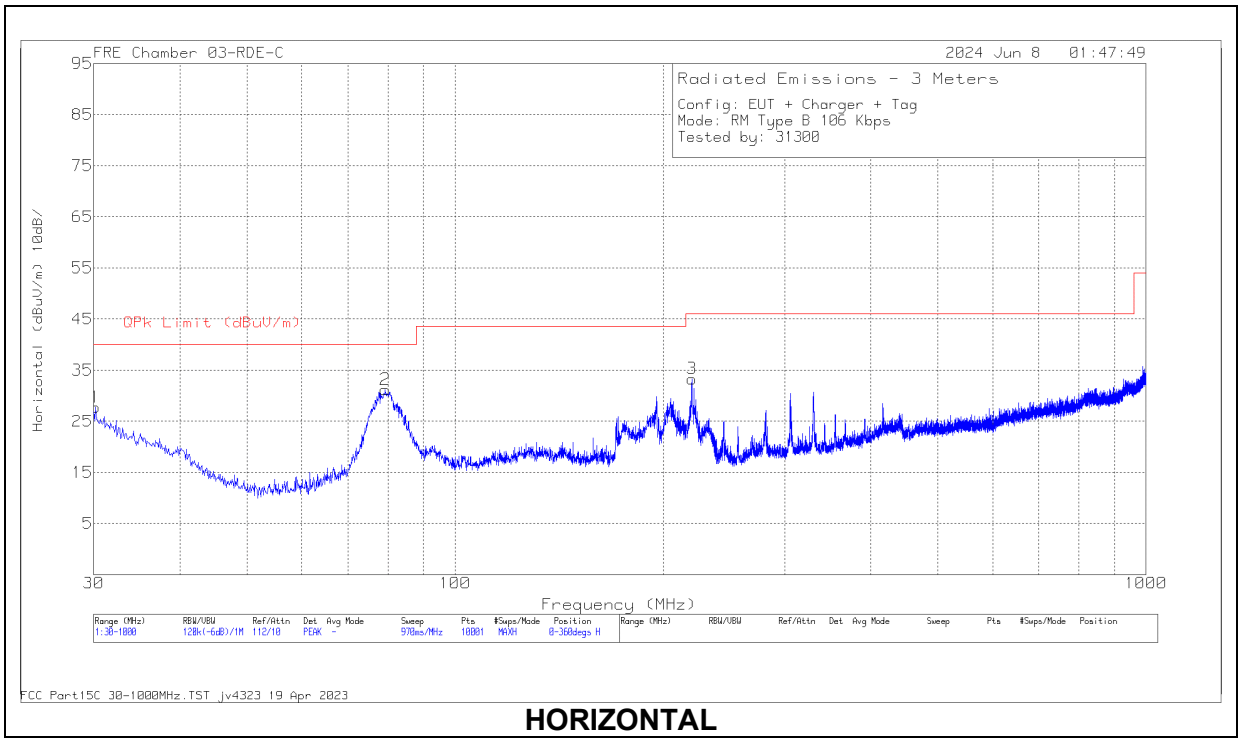
VERTICAL

DATA

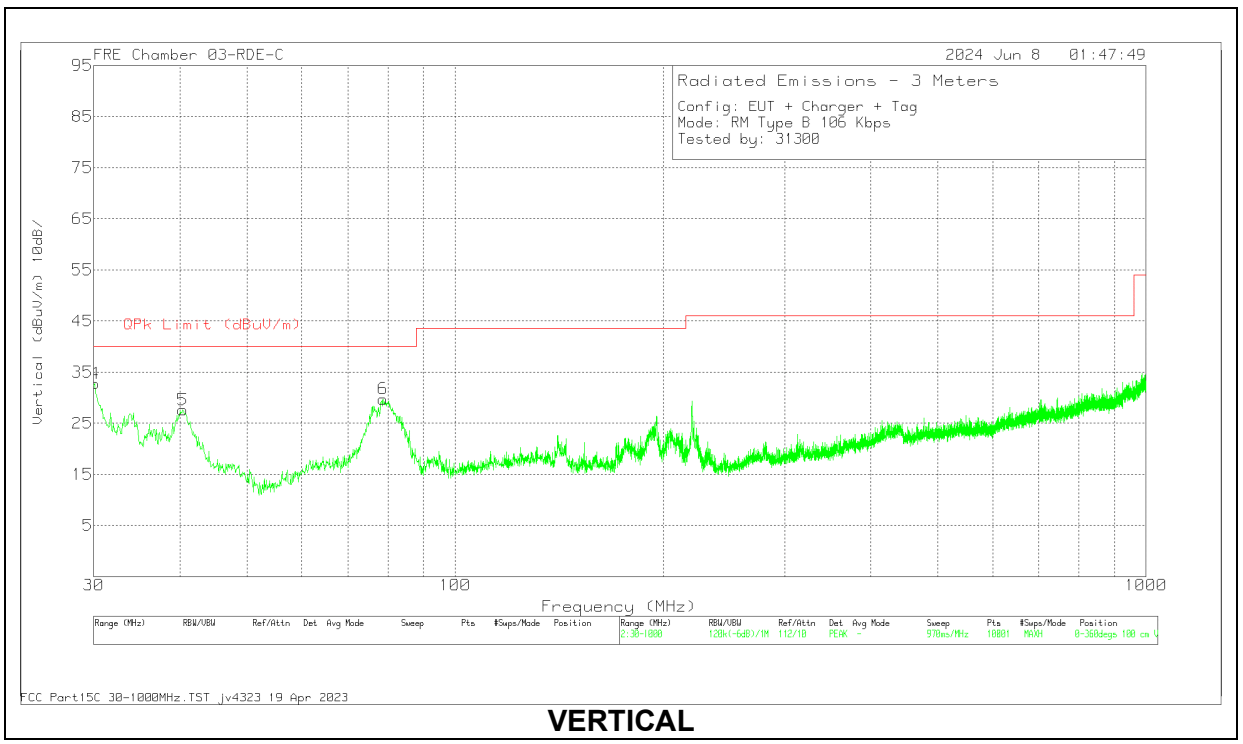
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	232075 ACF (dB/m)	CBL AMP (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.194	30.4	Pk	26.9	-31.6	25.7	40	-14.3	0-360	99	H
4	30.291	34.8	Pk	26.8	-31.7	29.9	40	-10.1	0-360	100	V
5	40.67	38.67	Pk	19.4	-31.3	26.77	40	-13.23	0-360	100	V
2	78.597	47.65	Pk	13.5	-31	30.15	40	-9.85	0-360	298	H
6	79.179	46.29	Pk	13.5	-31	28.79	40	-11.21	0-360	100	V
3	206.637	45.55	Pk	16.6	-29.9	32.25	43.52	-11.27	0-360	99	H

Pk - Peak detector

8.5.2. READER + TAG MODE: TYPE B, 106 Kbps



HORIZONTAL



VERTICAL

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	232075 ACF (dB/m)	CBL AMP (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	30.097	37.46	Pk	26.9	-31.6	32.76	40	-7.24	0-360	100	V
1	30.194	32.41	Pk	26.9	-31.6	27.71	40	-12.29	0-360	298	H
5	40.379	39.3	Pk	19.6	-31.3	27.6	40	-12.4	0-360	100	V
6	78.694	47.25	Pk	13.5	-31	29.75	40	-10.25	0-360	100	V
2	79.276	48.68	Pk	13.5	-31	31.18	40	-8.82	0-360	298	H
3	220.411	46.91	Pk	16.5	-30.1	33.31	46.02	-12.71	0-360	99	H

Pk - Peak detector

9. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency, over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

IC RSS-210, Annex B.6

Carrier frequency stability shall be maintained to ±0.01% (±100 ppm).

TEST PROCEDURE

ANSI C63.10-2013 Clause 6.8

RESULTS

No non-compliance noted.

ID:	31300	Date:	2024/06/27

9.1. PRIMARY ANTENNA

9.1.1. CE MODE: TYPE B, 106 Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC										
Limit: ± 100 ppm = 1.356 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(VAC)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
	50	13.559936	3.835	13.559937	3.761	13.559938	3.687	13.55994	3.540	± 100
	40	13.559936	3.835	13.559935	3.909	13.559935	3.909	13.559934	3.982	± 100
	30	13.559976	0.885	13.559974	1.032	13.559972	1.180	13.559969	1.401	± 100
3.80	***20***	***13.559988***	***0.000***	***13.559998***	***-0.737***	***13.559997***	***-0.664***	***13.559996***	***-0.590***	***± 100***
	10	13.560036	-3.540	13.560038	-3.687	13.560039	-3.761	13.560041	-3.909	± 100
	0	13.560072	-6.195	13.560074	-6.342	13.560083	-7.006	13.560086	-7.227	± 100
	-10	13.560116	-9.440	13.560121	-9.808	13.560127	-10.251	13.560133	-10.693	± 100
	-20	13.560182	-14.307	13.560181	-14.233	13.560175	-13.791	13.560183	-14.381	± 100
3.23	20	13.560162	-12.832	13.560101	-8.333	13.560129	-10.398	13.560134	-10.767	± 100
4.37	20	13.559967	1.549	13.559970	1.327	13.559974	1.032	13.559979	0.664	± 100

9.1.2. READER MODE: TYPE B, 106 Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC										
Limit: ± 100 ppm = 1.35600 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(VAC)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
	50	13.559747	2.581	13.559749	2.434	13.559755	1.991	13.559752	2.212	± 100
	40	13.559734	3.540	13.559734	3.540	13.559733	3.614	13.559733	3.614	± 100
	30	13.559809	-1.991	13.559796	-1.032	13.559786	-0.295	13.559777	0.369	± 100
3.80	***20***	***13.559782***	***0.000***	***13.559825***	***-3.171***	***13.559862***	***-5.900***	***13.559756***	***1.917***	***± 100***
	10	13.559824	-3.097	13.559826	-3.245	13.559827	-3.319	13.559829	-3.466	± 100
	0	13.559861	-5.826	13.559866	-6.195	13.559869	-6.416	13.559874	-6.785	± 100
	-10	13.559914	-9.735	13.559918	-10.029	13.559922	-10.324	13.559928	-10.767	± 100
	-20	13.559957	-12.906	13.559962	-13.274	13.559967	-13.643	13.559972	-14.012	± 100
3.23	20	13.559946	-12.094	13.559946	-12.094	13.559947	-12.168	13.559947	-12.168	± 100
4.37	20	13.559779	0.221	13.55978	0.147	13.559784	-0.147	13.559786	-0.295	± 100

9.1.3. TAG MODE: TYPE B, 106 Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC										
Limit: ± 100 ppm = 1.356 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
	50	13.559735	3.540	13.559736	3.466	13.559739	3.245	13.559743	2.950	± 100
	40	13.559743	2.950	13.559742	3.024	13.559737	3.392	13.559735	3.540	± 100
	30	13.559796	-0.959	13.559787	-0.295	13.559779	0.295	13.559771	0.885	± 100
3.80	***20***	***13.559783***	***0.000***	***13.559773***	***0.737***	***13.559768***	***1.106***	***13.559765***	***1.327***	***± 100***
	10	13.559825	-3.097	13.559821	-2.802	13.559822	-2.876	13.559824	-3.024	± 100
	0	13.559852	-5.088	13.559857	-5.457	13.559866	-6.121	13.559874	-6.711	± 100
	-10	13.559915	-9.735	13.559919	-10.029	13.559924	-10.398	13.559931	-10.914	± 100
	-20	13.559965	-13.422	13.559968	-13.643	13.559973	-14.012	13.559978	-14.381	± 100
3.23	20	13.559954	-12.611	13.559947	-12.094	13.559946	-12.021	13.559944	-11.873	± 100
4.37	20	13.559798	-1.106	13.559793	-0.737	13.559789	-0.442	13.559786	-0.221	± 100

9.2. SECONDARY ANTENNA

9.2.1. READER MODE: TYPE B, 106 Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC										
Limit: ± 100 ppm = 1.356 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(VAC)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
	50	13.559961	1.770	13.559962	1.696	13.559962	1.696	13.559964	1.549	± 100
	40	13.559955	2.212	13.559955	2.212	13.559954	2.286	13.559952	2.434	± 100
	30	13.559999	-1.032	13.559991	-0.442	13.559985	0.000	13.559981	0.295	± 100
3.80	***20***	***13.559985***	***0.000***	***13.559982***	***0.221***	***13.559978***	***0.516***	***13.559966***	***1.401***	***± 100***
	10	13.560009	-1.770	13.560021	-2.655	13.560025	-2.950	13.560033	-3.540	± 100
	0	13.560037	-3.835	13.560039	-3.982	13.560042	-4.204	13.560045	-4.425	± 100
	-10	13.560074	-6.563	13.560075	-6.637	13.560076	-6.711	13.560078	-6.858	± 100
	-20	13.560094	-8.038	13.560094	-8.038	13.560095	-8.112	13.560096	-8.186	± 100
3.23	20	13.559951	2.507	13.559955	2.212	13.559945	2.950	13.559951	2.507	± 100
4.37	20	13.559978	0.516	13.559979	0.442	13.559975	0.737	13.559972	0.959	± 100

9.2.2. TAG MODE: TYPE B, 106 Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC										
Limit: ± 100 ppm = 1.356 KHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(VAC)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
	50	13.559966	0.442	13.559967	0.369	13.559968	0.295	13.55997	0.147	± 100
	40	13.559951	1.549	13.559951	1.549	13.559951	1.549	13.559951	1.549	± 100
	30	13.559959	0.959	13.559958	1.032	13.559958	1.032	13.559958	1.032	± 100
3.80	***20***	***13.559972***	***0.000***	***13.559973***	***-0.074***	***13.559974***	***-0.147***	***13.559976***	***-0.295***	***± 100***
	10	13.560027	-4.056	13.560035	-4.646	13.560043	-5.236	13.560054	-6.047	± 100
	0	13.560049	-5.678	13.560049	-5.678	13.560049	-5.678	13.560049	-5.678	± 100
	-10	13.560063	-6.711	13.560066	-6.932	13.560068	-7.080	13.560071	-7.301	± 100
	-20	13.560087	-8.481	13.560088	-8.555	13.56009	-8.702	13.560092	-8.850	± 100
3.23	20	13.559947	1.844	13.559946	1.917	13.559946	1.917	13.559948	1.770	± 100
4.37	20	13.559957	1.106	13.559961	0.811	13.559972	0.000	13.559974	-0.147	± 100

10. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207
IC RSS-GEN, Section 8.8

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

TEST PROCEDURE

ANSI C63.10:2020

RESULTS

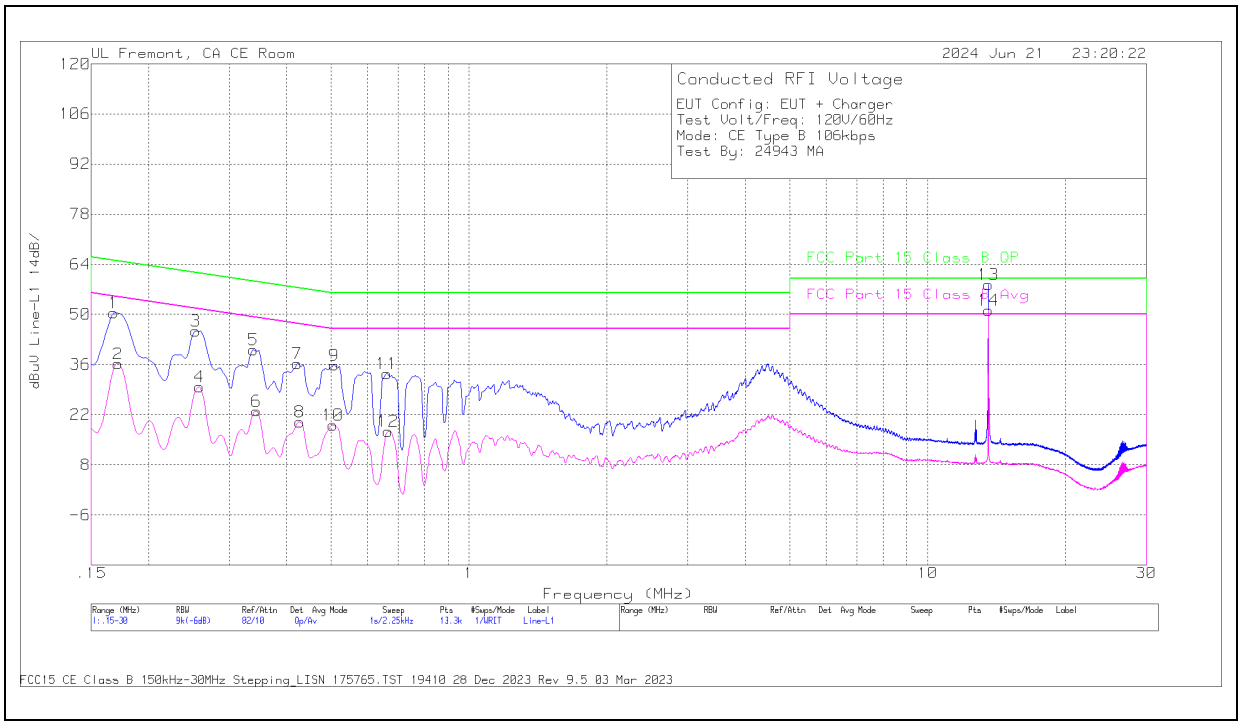
No non-compliance noted.

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

10.1. PRIMARY ANTENNA

10.1.1. CE MODE: TYPE B, 106 Kbps

LINE 1 RESULTS



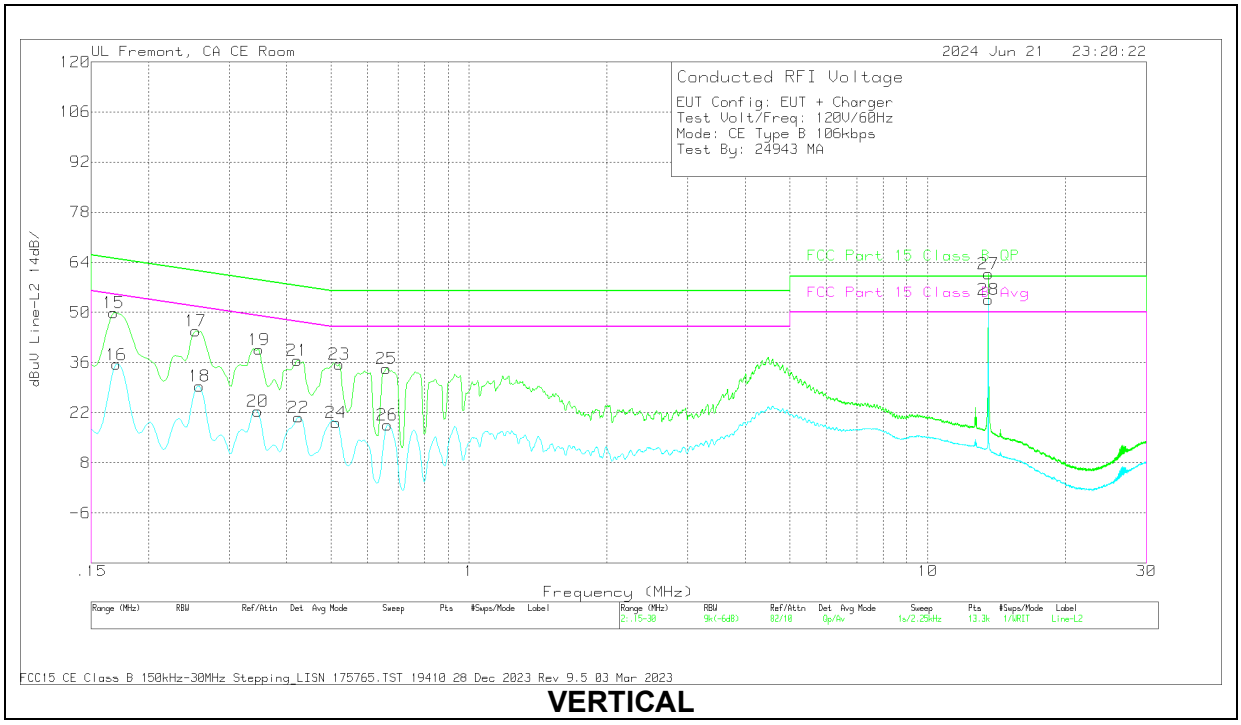
DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.1714	26.56	Av	.1	0	9.5	36.16	-	-	54.89	-18.73
4	.258	20.35	Av	0	0	9.4	29.75	-	-	51.5	-21.75
6	.3435	13.6	Av	0	0	9.4	23	-	-	49.12	-26.12
8	.4268	10.6	Av	0	.1	9.3	20	-	-	47.32	-27.32
10	.5055	9.83	Av	0	0	9.3	19.13	-	-	46	-26.87
12	.6653	7.78	Av	0	.1	9.4	17.28	-	-	46	-28.72
14	13.56	41.2	Av	.1	.3	9.5	51.1	-	-	**50**	**1.1**
1	.168	40.89	Qp	.1	0	9.5	50.49	65.06	-14.57	-	-
3	.2535	35.99	Qp	0	0	9.4	45.39	61.64	-16.25	-	-
5	.339	30.68	Qp	0	0	9.4	40.08	59.23	-19.15	-	-
7	.4223	26.85	Qp	0	0	9.4	36.25	57.4	-21.15	-	-
9	.5078	26.5	Qp	0	0	9.3	35.8	56	-20.2	-	-
11	.6619	23.89	Qp	0	.1	9.4	33.39	56	-22.61	-	-
13	13.56	48.48	Qp	.1	.3	9.5	58.38	60	-1.62	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

LINE 2 RESULTS



VERTICAL

DATA

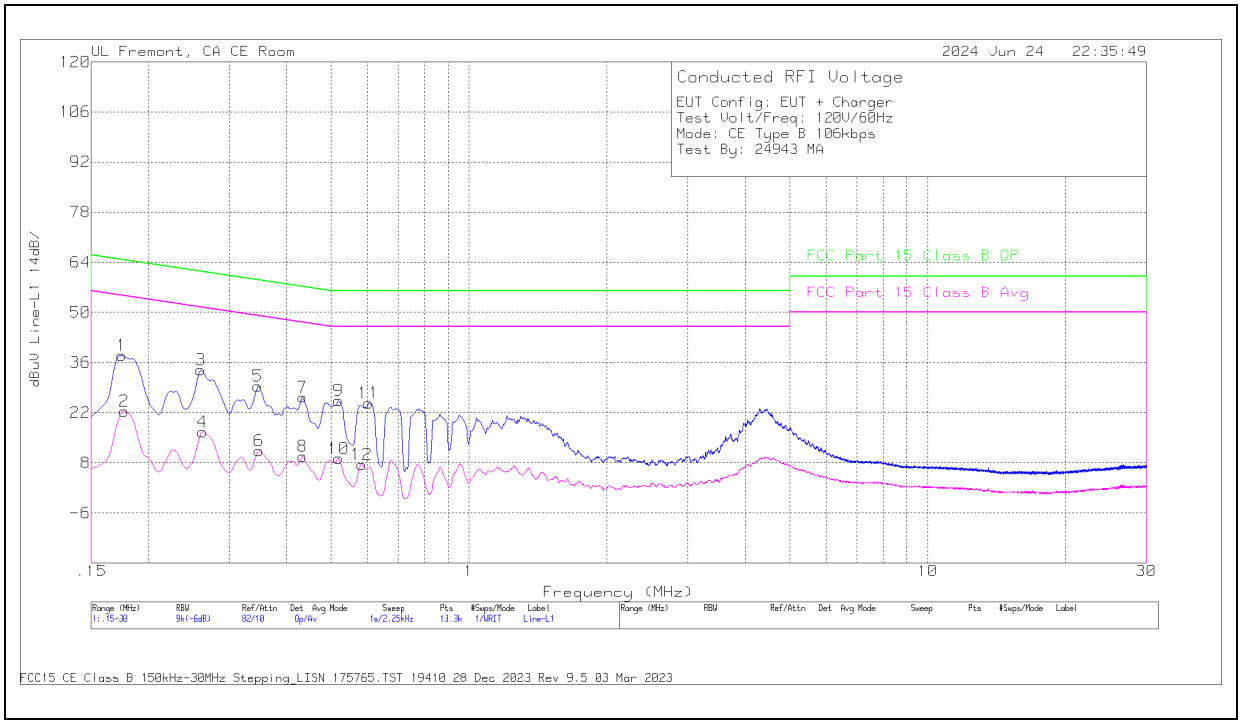
Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
16	.1703	25.95	Av	0	0	9.5	35.45	-	-	54.95	-19.5
18	.258	20.05	Av	0	0	9.4	29.45	-	-	51.5	-22.05
20	.3458	12.87	Av	0	.1	9.4	22.37	-	-	49.06	-26.69
22	.4245	11.22	Av	0	.1	9.4	20.72	-	-	47.36	-26.64
24	.5123	9.92	Av	0	0	9.3	19.22	-	-	46	-26.78
26	.663	8.99	Av	0	.1	9.4	18.49	-	-	46	-27.51
28	13.56	43.78	Av	.1	.2	9.5	53.58	-	-	**50**	**3.58**
15	.168	40.35	Qp	.1	0	9.5	49.95	65.06	-15.11	-	-
17	.2535	35.43	Qp	0	0	9.4	44.83	61.64	-16.81	-	-
19	.348	30.15	Qp	0	.1	9.4	39.65	59.01	-19.36	-	-
21	.4223	27.14	Qp	0	.1	9.4	36.64	57.4	-20.76	-	-
23	.5213	26.28	Qp	0	0	9.3	35.58	56	-20.42	-	-
25	.6608	24.79	Qp	0	.1	9.4	34.29	56	-21.71	-	-
27	13.56	51.04	Qp	.1	.2	9.5	60.84	**60**	**.84**	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

10.1.2. CE MODE: TYPE B, 106 Kbps (ANTENNA PORT TERMINATED)

LINE 1 RESULTS

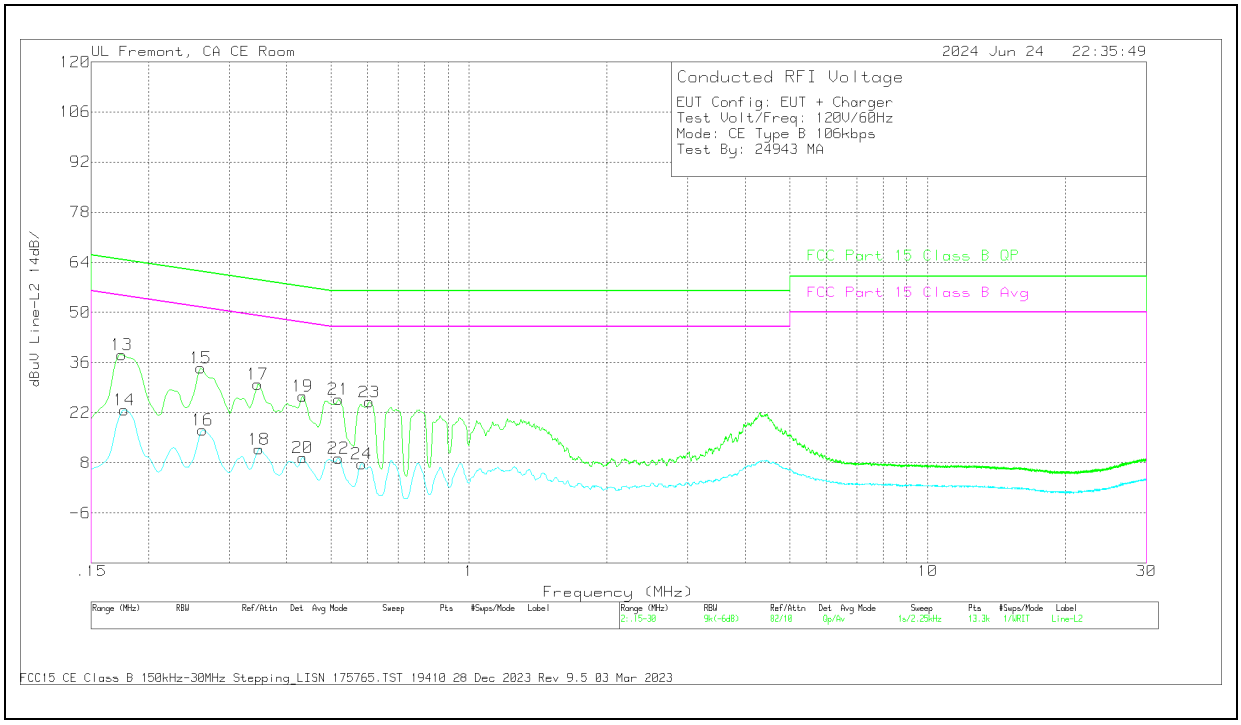


DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.177	12.85	Av	.1	.1	9.4	22.45	-	-	54.63	-32.18
4	.2625	7.26	Av	0	0	9.4	16.66	-	-	51.35	-34.69
6	.348	1.98	Av	0	0	9.4	11.38	-	-	49.01	-37.63
8	.4335	.32	Av	0	.1	9.3	9.72	-	-	47.19	-37.47
10	.519	-.12	Av	0	0	9.3	9.18	-	-	46	-36.82
12	.5843	-1.86	Av	0	0	9.4	7.54	-	-	46	-38.46
1	.1748	28.44	Qp	.1	0	9.5	38.04	64.73	-26.69	-	-
3	.2603	24.57	Qp	0	0	9.4	33.97	61.42	-27.45	-	-
5	.3458	20.02	Qp	0	0	9.4	29.42	59.06	-29.64	-	-
7	.4335	16.93	Qp	0	.1	9.3	26.33	57.19	-30.86	-	-
9	.519	16.04	Qp	0	0	9.3	25.34	56	-30.66	-	-
11	.6045	15.31	Qp	0	0	9.4	24.71	56	-31.29	-	-

Qp - Quasi-Peak detector
Av - Average detection

LINE 2 RESULTS



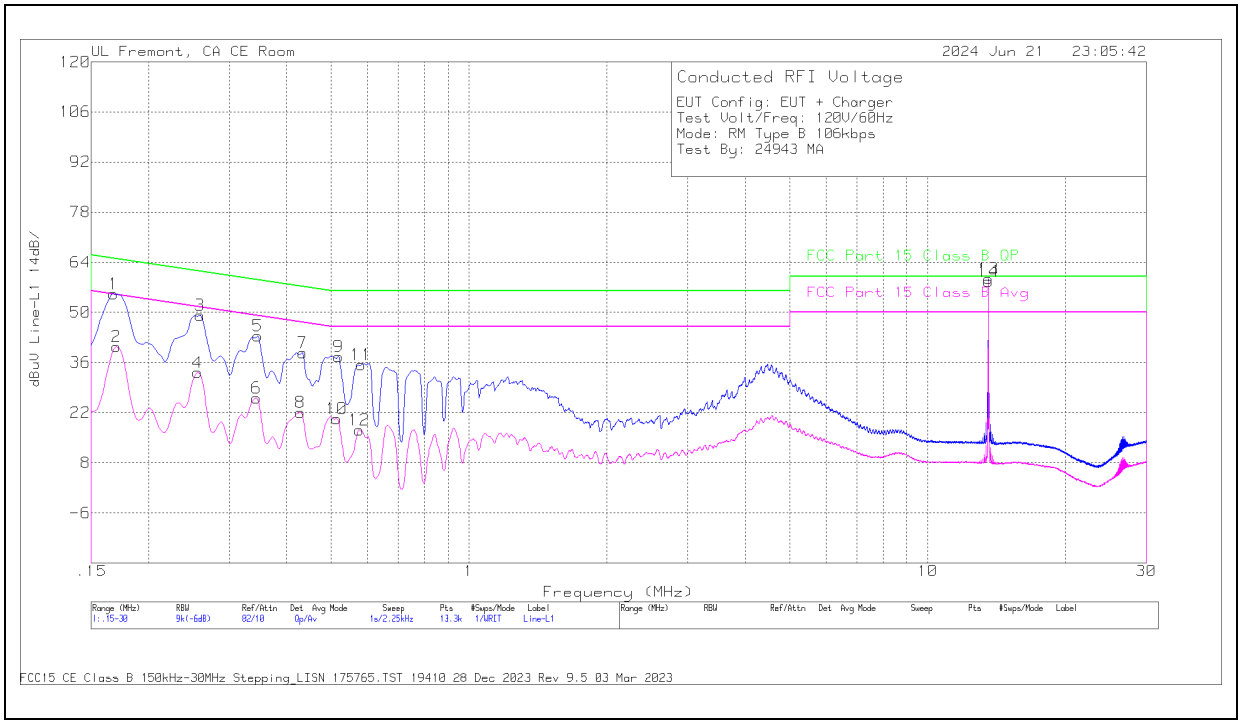
DATA

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
14	.177	13.3	Av	0	.1	9.4	22.8	-	-	54.63	-31.83
16	.2625	7.69	Av	0	0	9.4	17.09	-	-	51.35	-34.26
18	.348	2.29	Av	0	.1	9.4	11.79	-	-	49.01	-37.22
20	.4335	.19	Av	0	0	9.3	9.49	-	-	47.19	-37.7
22	.519	-.06	Av	0	0	9.3	9.24	-	-	46	-36.76
24	.5843	-1.8	Av	0	.1	9.4	7.7	-	-	46	-38.3
13	.1748	28.72	Qp	0	0	9.5	38.22	64.73	-26.51	-	-
15	.2603	25.14	Qp	0	0	9.4	34.54	61.42	-26.88	-	-
17	.3458	20.41	Qp	0	.1	9.4	29.91	59.06	-29.15	-	-
19	.4335	17.28	Qp	0	0	9.3	26.58	57.19	-30.61	-	-
21	.519	16.46	Qp	0	0	9.3	25.76	56	-30.24	-	-
23	.6068	15.45	Qp	0	.1	9.4	24.95	56	-31.05	-	-

Qp - Quasi-Peak detector
Av - Average detection

10.1.3. READER MODE: TYPE B, 106 Kbps

LINE 1 RESULTS



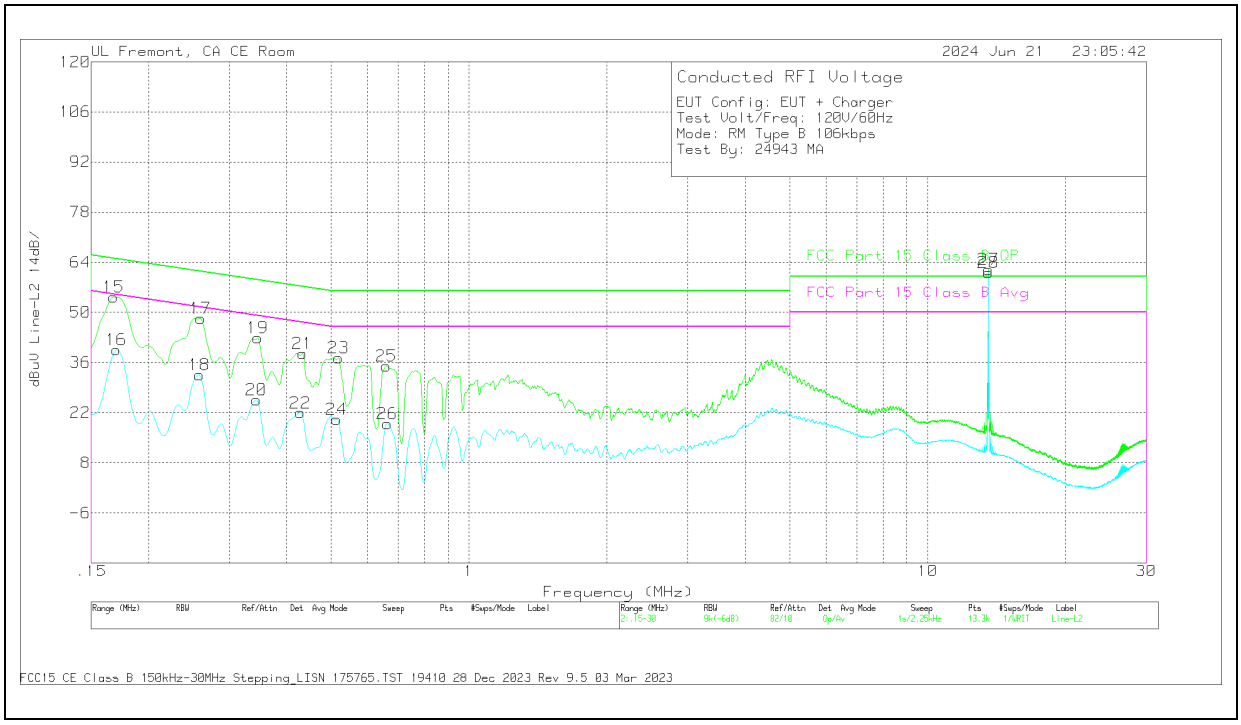
DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
2	.1703	30.92	Av	.1	0	9.5	40.52	-	-	54.95	-14.43
4	.2558	23.78	Av	0	0	9.4	33.18	-	-	51.57	-18.39
6	.3435	16.64	Av	0	0	9.4	26.04	-	-	49.12	-23.08
8	.429	12.67	Av	0	.1	9.3	22.07	-	-	47.27	-25.2
10	.5145	11.02	Av	0	0	9.3	20.32	-	-	46	-25.68
12	.5764	7.76	Av	0	0	9.4	17.16	-	-	46	-28.84
14	13.56	48.76	Av	.1	.3	9.5	58.66	-	-	**50**	**8.66**
1	.168	45.57	Qp	.1	0	9.5	55.17	65.06	-9.89	-	-
3	.2591	39.75	Qp	0	0	9.4	49.15	61.46	-12.31	-	-
5	.3458	34.05	Qp	0	0	9.4	43.45	59.06	-15.61	-	-
7	.4335	29.34	Qp	0	.1	9.3	38.74	57.19	-18.45	-	-
9	.519	28.35	Qp	0	0	9.3	37.65	56	-18.35	-	-
11	.582	25.97	Qp	0	0	9.4	35.37	56	-20.63	-	-
13	13.56	49.55	Qp	.1	.3	9.5	59.45	60	-.55	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

LINE 2 RESULTS



DATA

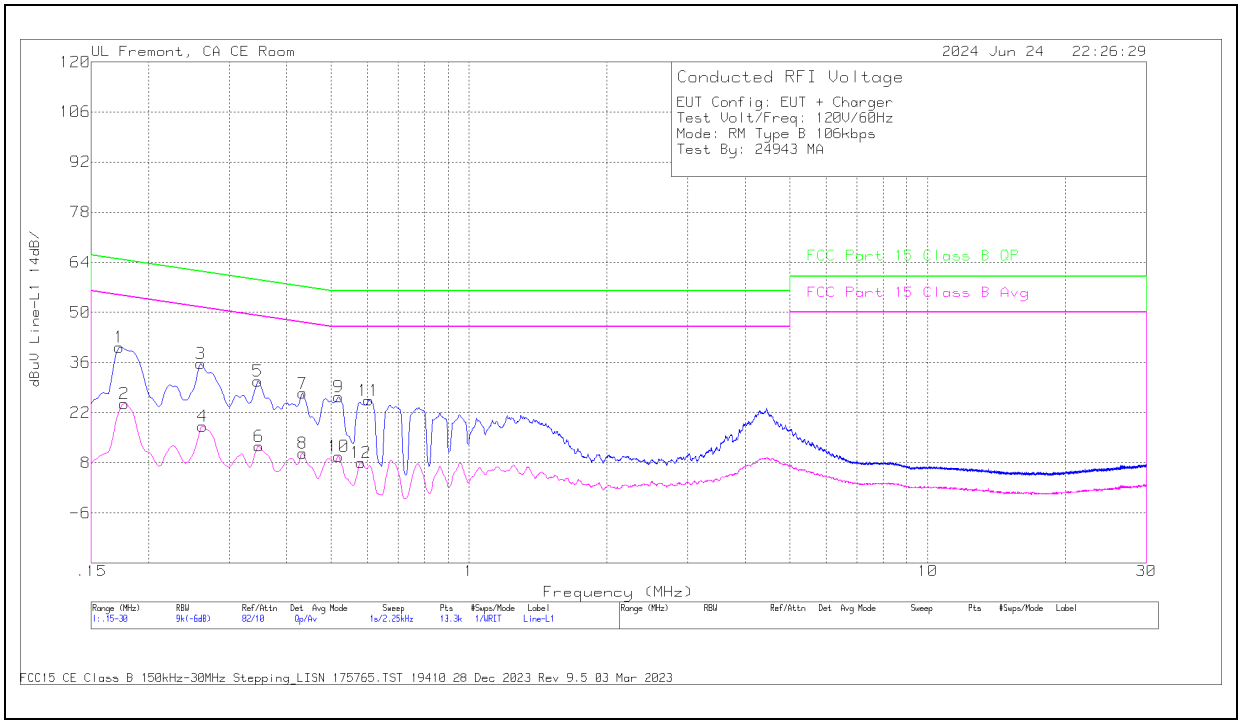
Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
16	.1703	30.1	Av	0	0	9.5	39.6	-	-	54.95	-15.35
18	.258	23.18	Av	0	0	9.4	32.58	-	-	51.5	-18.92
20	.3435	16	Av	0	.1	9.4	25.5	-	-	49.12	-23.62
22	.429	12.66	Av	0	0	9.3	21.96	-	-	47.27	-25.31
24	.5145	10.81	Av	0	0	9.3	20.11	-	-	46	-25.89
26	.663	9.41	Av	0	.1	9.4	18.91	-	-	**46**	**-27.09**
28	13.56	51.35	Av	.1	.2	9.5	61.15	-	-	**50**	**11.15**
15	.168	44.69	Qp	.1	0	9.5	54.29	65.06	-10.77	-	-
17	.2603	38.96	Qp	0	0	9.4	48.36	61.42	-13.06	-	-
19	.3458	33.35	Qp	0	.1	9.4	42.85	59.06	-16.21	-	-
21	.4335	29.26	Qp	0	0	9.3	38.56	57.19	-18.63	-	-
23	.519	28.02	Qp	0	0	9.3	37.32	56	-18.68	-	-
25	.6608	25.46	Qp	0	.1	9.4	34.96	56	-21.04	-	-
27	13.56	52.14	Qp	.1	.2	9.5	61.94	60	1.94	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

10.1.4. READER MODE: TYPE B, 106 Kbps (ANTENNA PORT TERMINATED)

LINE 1 RESULTS

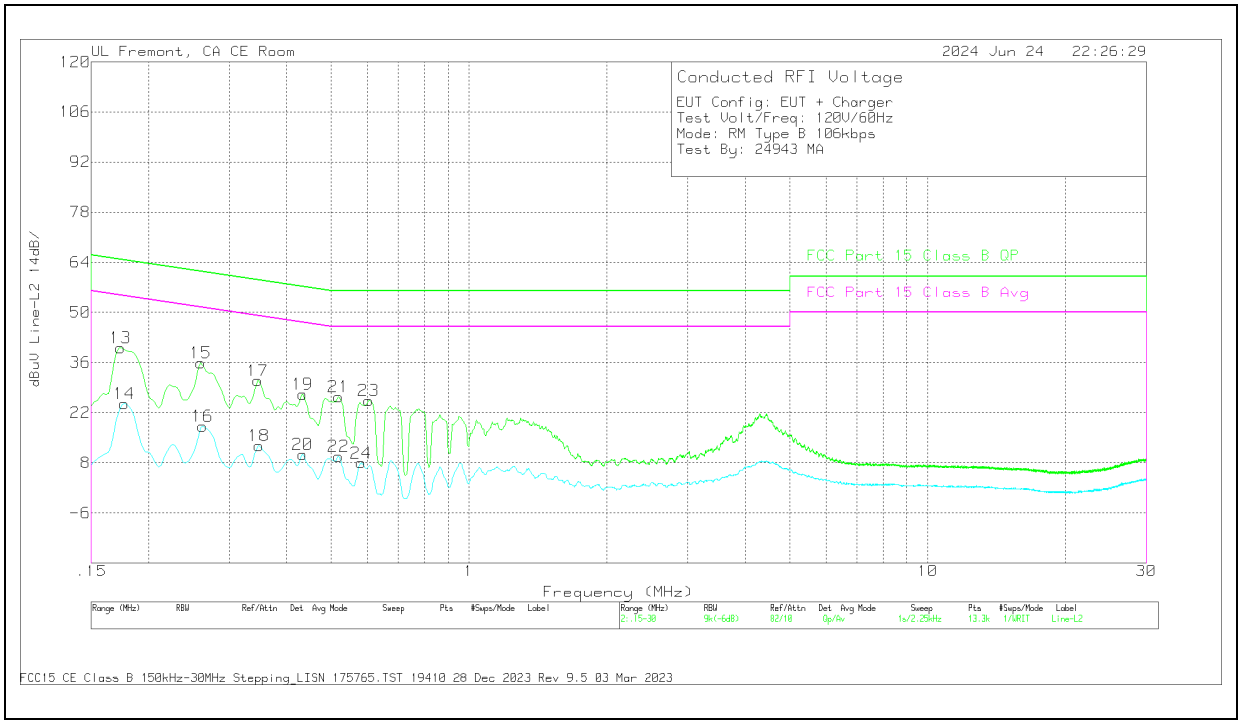


DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.177	14.94	Av	.1	.1	9.4	24.54	-	-	54.63	-30.09
4	.2625	8.76	Av	0	0	9.4	18.16	-	-	51.35	-33.19
6	.348	3.26	Av	0	0	9.4	12.66	-	-	49.01	-36.35
8	.4335	1.25	Av	0	.1	9.3	10.65	-	-	47.19	-36.54
10	.519	.48	Av	0	0	9.3	9.78	-	-	46	-36.22
12	.5809	-1.37	Av	0	0	9.4	8.03	-	-	46	-37.97
1	.1725	30.69	Qp	.1	0	9.5	40.29	64.84	-24.55	-	-
3	.2603	26.31	Qp	0	0	9.4	35.71	61.42	-25.71	-	-
5	.3458	21.42	Qp	0	0	9.4	30.82	59.06	-28.24	-	-
7	.4335	17.99	Qp	0	.1	9.3	27.39	57.19	-29.8	-	-
9	.519	17.19	Qp	0	0	9.3	26.49	56	-29.51	-	-
11	.6045	16.06	Qp	0	0	9.4	25.46	56	-30.54	-	-

Qp - Quasi-Peak detector
Av - Average detection

LINE 2 RESULTS



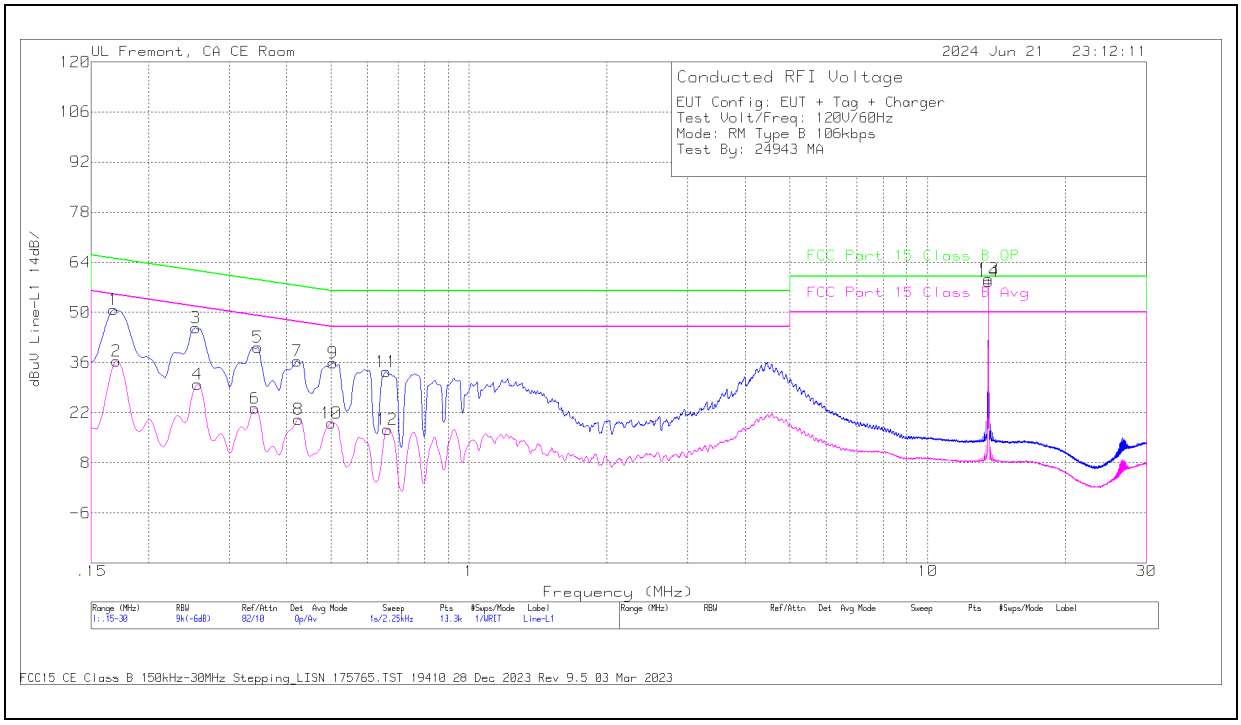
DATA

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
14	.177	15.05	Av	0	.1	9.4	24.55	-	-	54.63	-30.08
16	.2625	8.79	Av	0	0	9.4	18.19	-	-	51.35	-33.16
18	.348	3.25	Av	0	.1	9.4	12.75	-	-	49.01	-36.26
20	.4335	.96	Av	0	0	9.3	10.26	-	-	47.19	-36.93
22	.519	.44	Av	0	0	9.3	9.74	-	-	46	-36.26
24	.582	-1.56	Av	0	.1	9.4	7.94	-	-	46	-38.06
13	.1736	30.6	Qp	0	0	9.5	40.1	64.78	-24.68	-	-
15	.2603	26.45	Qp	0	0	9.4	35.85	61.42	-25.57	-	-
17	.3458	21.4	Qp	0	.1	9.4	30.9	59.06	-28.16	-	-
19	.4335	17.9	Qp	0	0	9.3	27.2	57.19	-29.99	-	-
21	.519	17.18	Qp	0	0	9.3	26.48	56	-29.52	-	-
23	.6045	15.95	Qp	0	.1	9.4	25.45	56	-30.55	-	-

Qp - Quasi-Peak detector
Av - Average detection

10.1.5. READER + TAG MODE: TYPE B, 106 Kbps

LINE 1 RESULTS



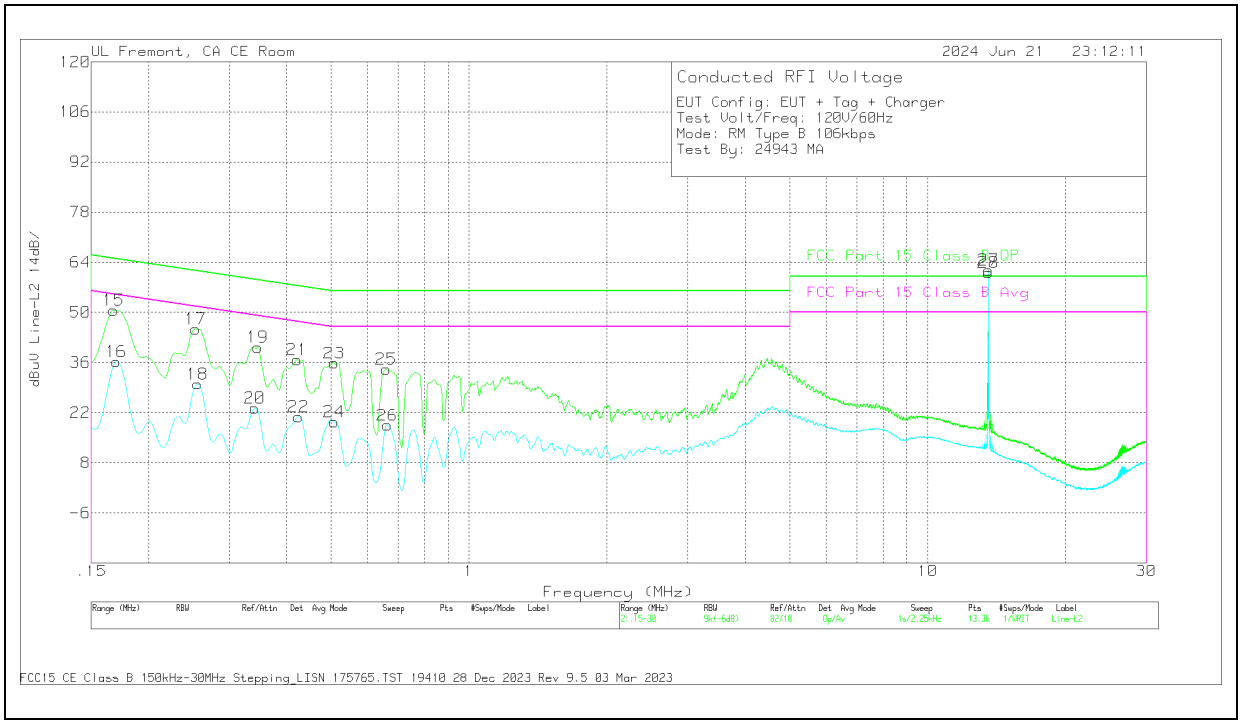
DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.1703	26.86	Av	.1	0	9.5	36.46	-	-	54.95	-18.49
4	.2558	20.52	Av	0	0	9.4	29.92	-	-	51.57	-21.65
6	.3413	13.8	Av	0	0	9.4	23.2	-	-	49.17	-25.97
8	.4245	10.69	Av	0	0	9.4	20.09	-	-	47.36	-27.27
10	.501	9.82	Av	0	0	9.3	19.12	-	-	46	-26.88
12	.663	7.82	Av	0	.1	9.4	17.32	-	-	46	-28.68
14	13.56	48.71	Av	.1	.3	9.5	58.61	-	-	50	8.61
1	.168	41.2	Qp	.1	0	9.5	50.8	65.06	-14.26	-	-
3	.2535	36.28	Qp	0	0	9.4	45.68	61.64	-15.96	-	-
5	.3458	30.94	Qp	0	0	9.4	40.34	59.06	-18.72	-	-
7	.4223	27.03	Qp	0	0	9.4	36.43	57.4	-20.97	-	-
9	.5055	26.55	Qp	0	0	9.3	35.85	56	-20.15	-	-
11	.6596	23.94	Qp	0	.1	9.4	33.44	56	-22.56	-	-
13	13.56	49.5	Qp	.1	.3	9.5	59.4	60	-.6	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

LINE 2 RESULTS



DATA

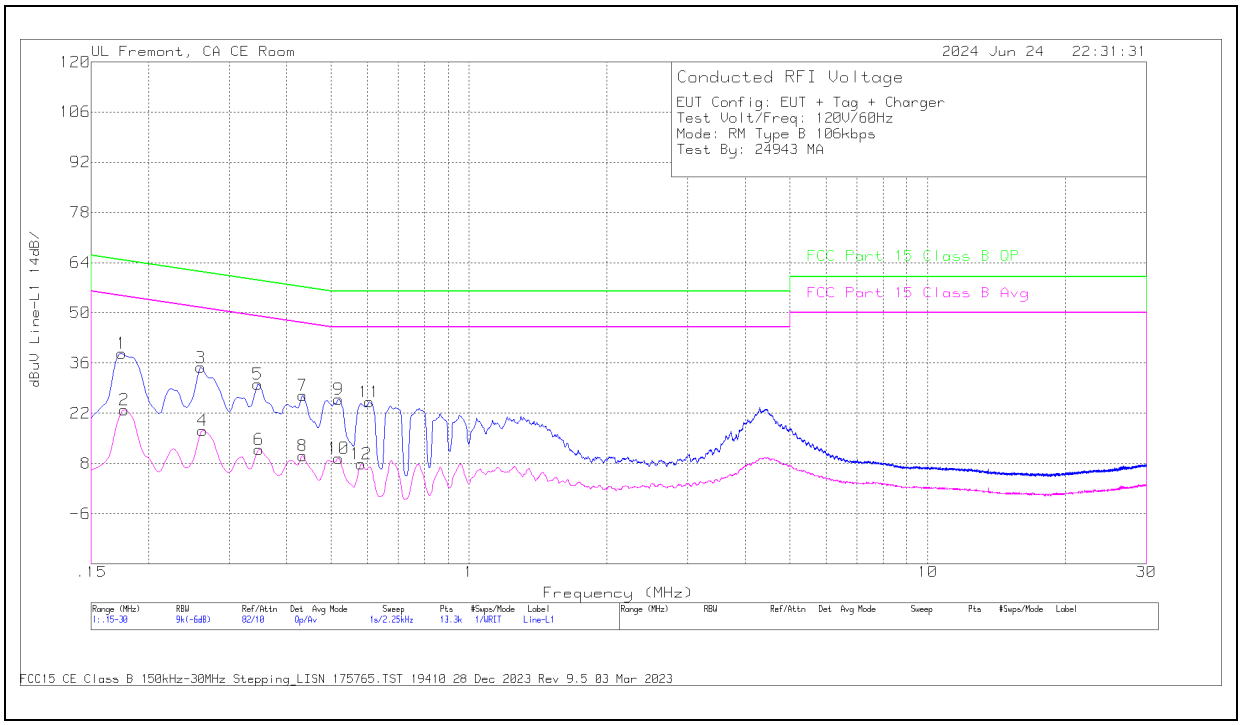
Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
16	.1703	26.77	Av	0	0	9.5	36.27	-	-	54.95	-18.68
18	.2558	20.61	Av	0	0	9.4	30.01	-	-	51.57	-21.56
20	.3413	13.71	Av	0	.1	9.4	23.21	-	-	49.17	-25.96
22	.4245	11.3	Av	0	.1	9.4	20.8	-	-	47.36	-26.56
24	.5078	10.11	Av	0	0	9.3	19.41	-	-	46	-26.59
26	.663	8.96	Av	0	.1	9.4	18.46	-	-	46	-27.54
28	13.56	51.3	Av	.1	.2	9.5	61.1	-	-	50	11.1
15	.168	41.08	Qp	.1	0	9.5	50.68	65.06	-14.38	-	-
17	.2535	35.98	Qp	0	0	9.4	45.38	61.64	-16.26	-	-
19	.3458	30.81	Qp	0	.1	9.4	40.31	59.06	-18.75	-	-
21	.4223	27.32	Qp	0	.1	9.4	36.82	57.4	-20.58	-	-
23	.5078	26.52	Qp	0	0	9.3	35.82	56	-20.18	-	-
25	.6596	24.68	Qp	0	.1	9.4	34.18	56	-21.82	-	-
27	13.56	52.09	Qp	.1	.2	9.5	61.89	**60**	**1.89**	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

10.1.6. READER + TAG MODE: TYPE B, 106 Kbps (ANTENNA PORT TERMINATED)

LINE 1 RESULTS

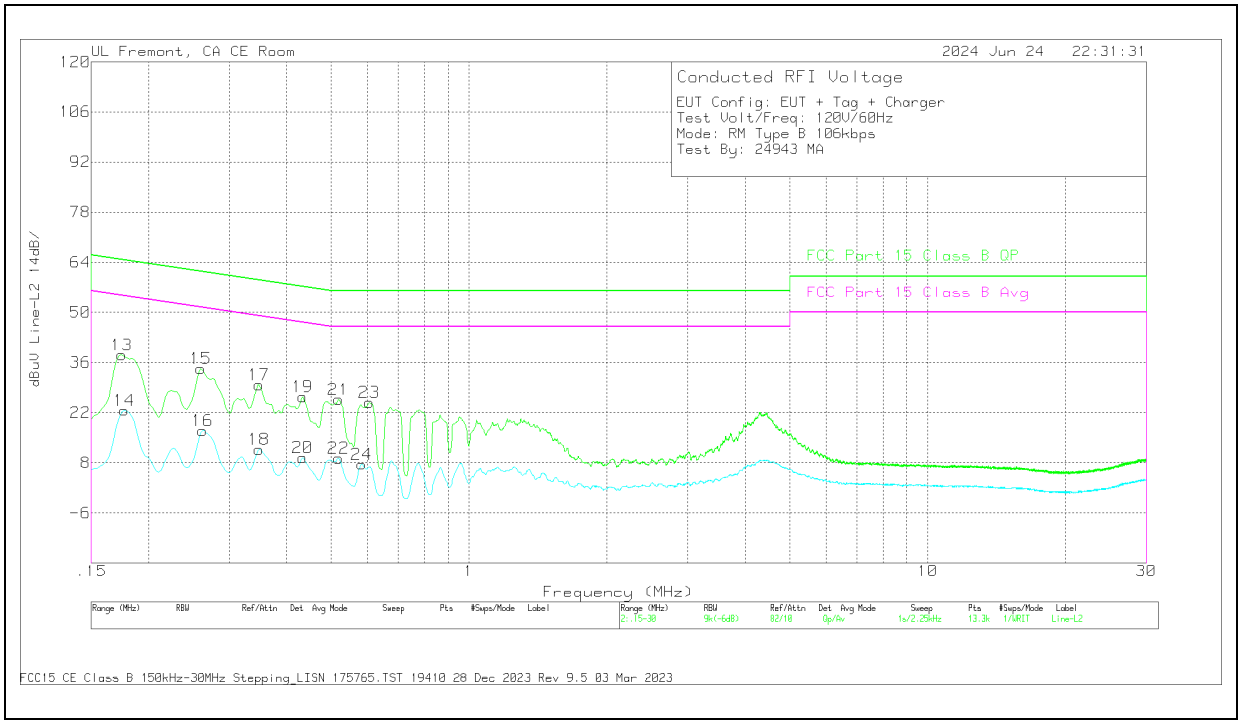


DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.177	13.34	Av	.1	.1	9.4	22.94	-	-	54.63	-31.69
4	.2625	7.81	Av	0	0	9.4	17.21	-	-	51.35	-34.14
6	.348	2.53	Av	0	0	9.4	11.93	-	-	49.01	-37.08
8	.4335	.7	Av	0	.1	9.3	10.1	-	-	47.19	-37.09
10	.519	.18	Av	0	0	9.3	9.48	-	-	46	-36.52
12	.582	-1.49	Av	0	0	9.4	7.91	-	-	46	-38.09
1	.1748	29.04	Qp	.1	0	9.5	38.64	64.73	-26.09	-	-
3	.2603	25.35	Qp	0	0	9.4	34.75	61.42	-26.67	-	-
5	.3458	20.74	Qp	0	0	9.4	30.14	59.06	-28.92	-	-
7	.4335	17.61	Qp	0	.1	9.3	27.01	57.19	-30.18	-	-
9	.519	16.66	Qp	0	0	9.3	25.96	56	-30.04	-	-
11	.6068	15.73	Qp	0	0	9.4	25.13	56	-30.87	-	-

Qp - Quasi-Peak detector
Av - Average detection

LINE 2 RESULTS



DATA

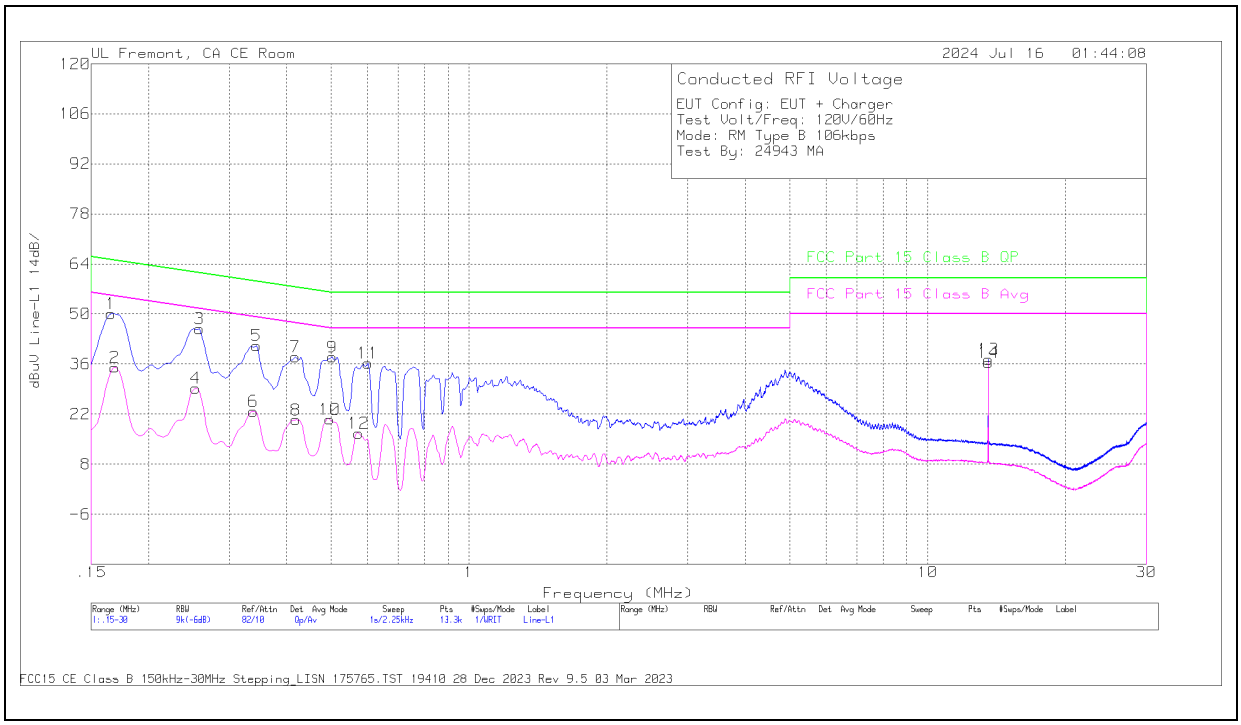
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
14	.177	13.15	Av	0	.1	9.4	22.65	-	-	54.63	-31.98
16	.2625	7.56	Av	0	0	9.4	16.96	-	-	51.35	-34.39
18	.348	2.21	Av	0	.1	9.4	11.71	-	-	49.01	-37.3
20	.4335	.09	Av	0	0	9.3	9.39	-	-	47.19	-37.8
22	.519	-.06	Av	0	0	9.3	9.24	-	-	46	-36.76
24	.5843	-1.92	Av	0	.1	9.4	7.58	-	-	46	-38.42
13	.1748	28.59	Qp	0	0	9.5	38.09	64.73	-26.64	-	-
15	.2603	24.96	Qp	0	0	9.4	34.36	61.42	-27.06	-	-
17	.348	20.22	Qp	0	.1	9.4	29.72	59.01	-29.29	-	-
19	.4335	17.13	Qp	0	0	9.3	26.43	57.19	-30.76	-	-
21	.519	16.35	Qp	0	0	9.3	25.65	56	-30.35	-	-
23	.6068	15.34	Qp	0	.1	9.4	24.84	56	-31.16	-	-

Qp - Quasi-Peak detector
Av - Average detection

10.2. SECONDARY ANTENNA

10.2.1. READER MODE: TYPE B, 106 Kbps

LINE 1 RESULTS



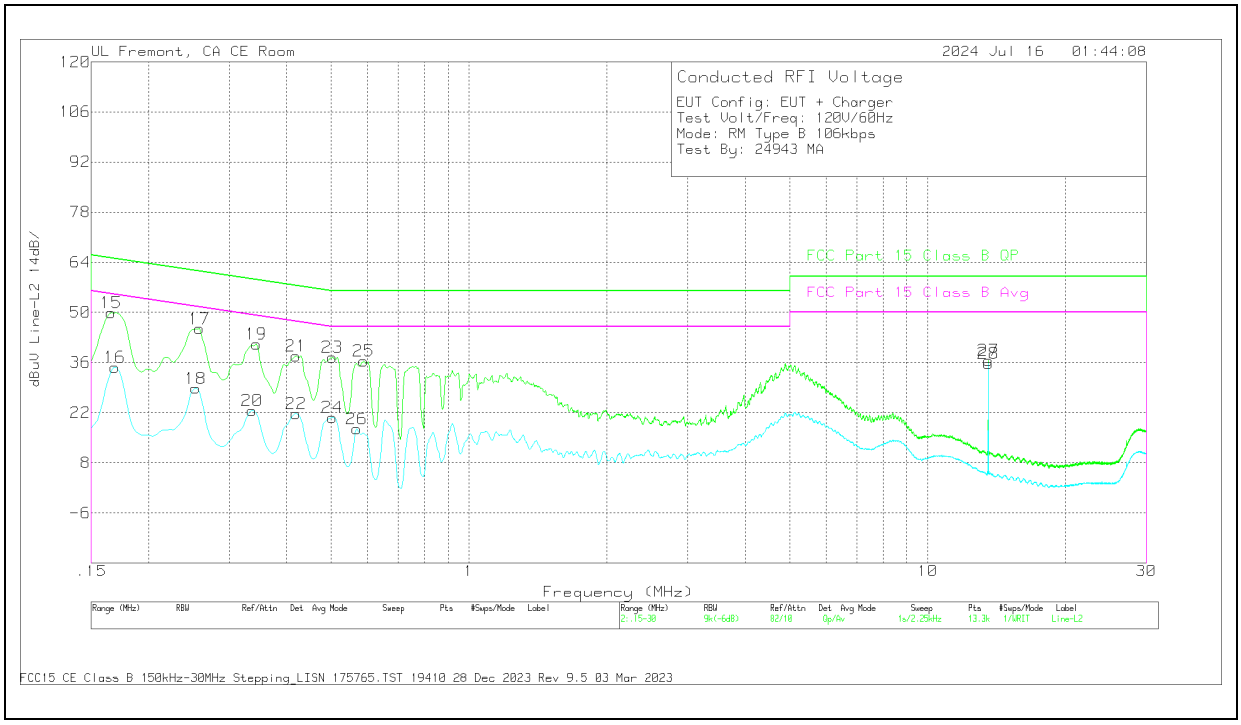
DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.1691	25.49	Av	.1	0	9.5	35.09	-	-	55	-19.91
4	.2535	19.79	Av	0	0	9.4	29.19	-	-	51.64	-22.45
6	.339	13.37	Av	0	0	9.4	22.77	-	-	49.23	-26.46
8	.42	10.98	Av	0	0	9.4	20.38	-	-	47.45	-27.07
10	.4965	11.25	Av	0	0	9.3	20.55	-	-	46.06	-25.51
12	.5753	7.21	Av	0	0	9.4	16.61	-	-	46	-29.39
14	13.56	26.45	Av	.1	.3	9.5	36.35	-	-	50	-13.65
1	.1658	40.47	Qp	.1	0	9.5	50.07	65.17	-15.1	-	-
3	.258	36.49	Qp	0	0	9.4	45.89	61.5	-15.61	-	-
5	.3435	31.76	Qp	0	0	9.4	41.16	59.12	-17.96	-	-
7	.4178	28.57	Qp	0	0	9.4	37.97	57.49	-19.52	-	-
9	.5033	28.61	Qp	0	0	9.3	37.91	56	-18.09	-	-
11	.6023	26.81	Qp	0	0	9.4	36.21	56	-19.79	-	-
13	13.56	27.44	Qp	.1	.3	9.5	37.34	60	-22.66	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

LINE 2 RESULTS



DATA

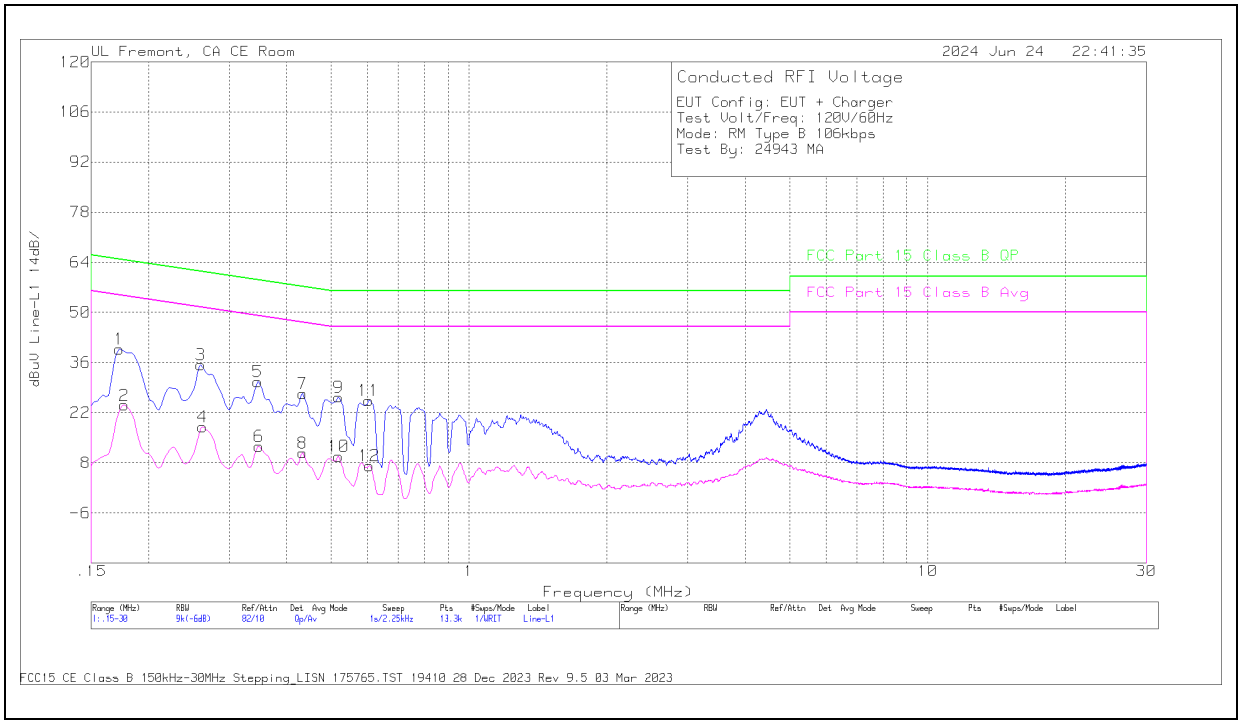
Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
16	.1691	25	Av	.1	0	9.5	34.6	-	-	55	-20.4
18	.2535	19.39	Av	0	0	9.4	28.79	-	-	51.64	-22.85
20	.3368	13.05	Av	0	.1	9.4	22.55	-	-	49.28	-26.73
22	.42	12.13	Av	0	.1	9.4	21.63	-	-	47.45	-25.82
24	.5033	11.33	Av	0	0	9.3	20.63	-	-	46	-25.37
26	.5685	8.12	Av	0	0	9.3	17.42	-	-	46	-28.58
28	13.56	25.89	Av	.1	.2	9.5	35.69	-	-	50	-14.31
15	.1658	40.27	Qp	.1	0	9.5	49.87	65.17	-15.3	-	-
17	.258	36.04	Qp	0	0	9.4	45.44	61.5	-16.06	-	-
19	.3435	31.59	Qp	0	.1	9.4	41.09	59.12	-18.03	-	-
21	.42	28.36	Qp	0	.1	9.4	37.86	57.45	-19.59	-	-
23	.5033	28.18	Qp	0	0	9.3	37.48	56	-18.52	-	-
25	.5888	26.86	Qp	0	.1	9.4	36.36	56	-19.64	-	-
27	13.56	26.74	Qp	.1	.2	9.5	36.54	60	-23.46	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

10.2.2. READER MODE: TYPE B, 106 Kbps (ANTENNA PORT TERMINATED)

LINE 1 RESULTS

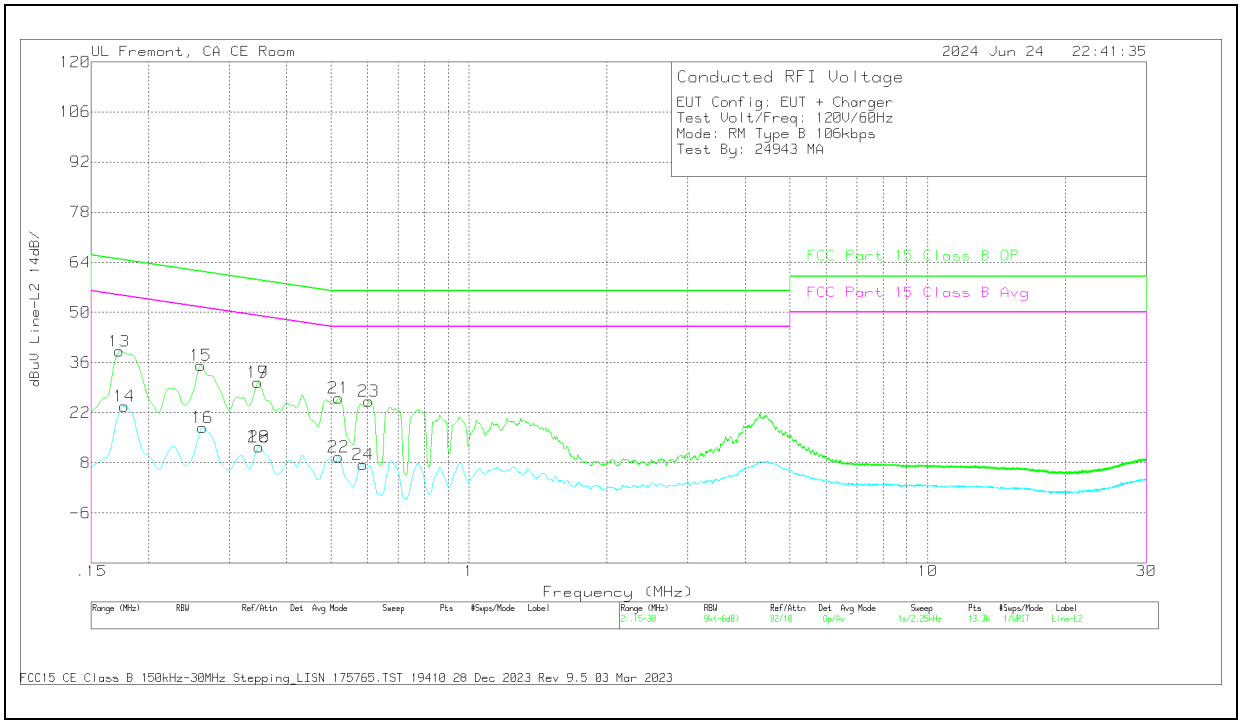


DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.177	14.46	Av	.1	.1	9.4	24.06	-	-	54.63	-30.57
4	.2625	8.64	Av	0	0	9.4	18.04	-	-	51.35	-33.31
6	.348	3.19	Av	0	0	9.4	12.59	-	-	49.01	-36.42
8	.4335	1.34	Av	0	.1	9.3	10.74	-	-	47.19	-36.45
10	.519	.48	Av	0	0	9.3	9.78	-	-	46	-36.22
12	.6068	-2.24	Av	0	0	9.4	7.16	-	-	46	-38.84
1	.1725	30.08	Qp	.1	0	9.5	39.68	64.84	-25.16	-	-
3	.2603	25.96	Qp	0	0	9.4	35.36	61.42	-26.06	-	-
5	.3458	21.26	Qp	0	0	9.4	30.66	59.06	-28.4	-	-
7	.4335	17.85	Qp	0	.1	9.3	27.25	57.19	-29.94	-	-
9	.519	17.03	Qp	0	0	9.3	26.33	56	-29.67	-	-
11	.6045	16	Qp	0	0	9.4	25.4	56	-30.6	-	-

Qp - Quasi-Peak detector
Av - Average detection

LINE 2 RESULTS



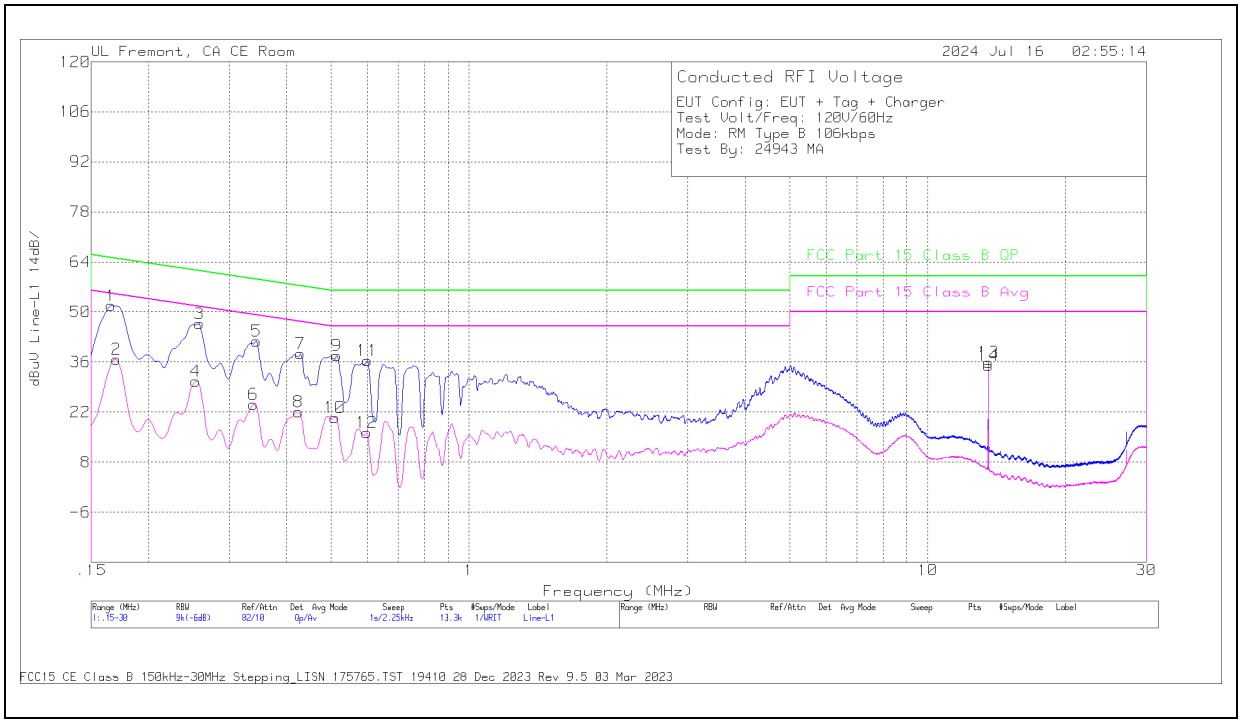
DATA

Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
14	.177	14.28	Av	0	.1	9.4	23.78	-	-	54.63	-30.85
16	.2625	8.38	Av	0	0	9.4	17.78	-	-	51.35	-33.57
18	.348	2.89	Av	0	.1	9.4	12.39	-	-	49.01	-36.62
20	.348	2.89	Av	0	.1	9.4	12.39	-	-	49.01	-36.62
22	.519	.34	Av	0	0	9.3	9.64	-	-	46	-36.36
24	.5865	-2.04	Av	0	.1	9.4	7.46	-	-	46	-38.54
13	.1725	29.64	Qp	0	0	9.5	39.14	64.84	-25.7	-	-
15	.2603	25.81	Qp	0	0	9.4	35.21	61.42	-26.21	-	-
17	.3458	20.98	Qp	0	.1	9.4	30.48	59.06	-28.58	-	-
19	.3458	20.98	Qp	0	.1	9.4	30.48	59.06	-28.58	-	-
21	.519	16.8	Qp	0	0	9.3	26.1	56	-29.9	-	-
23	.6045	15.67	Qp	0	.1	9.4	25.17	56	-30.83	-	-

Qp - Quasi-Peak detector
Av - Average detection

10.2.3. READER + TAG MODE: TYPE B, 106 Kbps

LINE 1 RESULTS



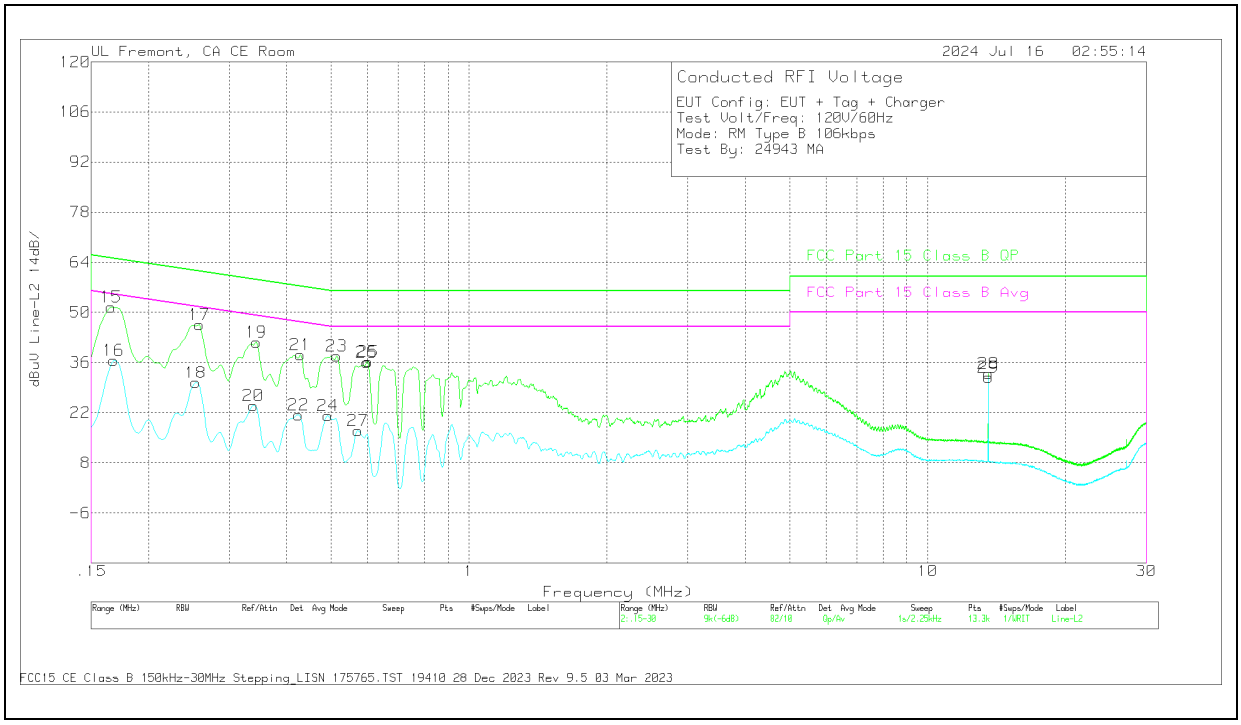
DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.1703	27.13	Av	.1	0	9.5	36.73	-	-	54.95	-18.22
4	.2535	21.18	Av	0	0	9.4	30.58	-	-	51.64	-21.06
6	.339	14.82	Av	0	0	9.4	24.22	-	-	49.23	-25.01
8	.4245	12.62	Av	0	0	9.4	22.02	-	-	47.36	-25.34
10	.51	11.21	Av	0	0	9.3	20.51	-	-	46	-25.49
12	.5978	6.89	Av	0	0	9.4	16.29	-	-	46	-29.71
14	13.56	25.05	Av	.1	.3	9.5	34.95	-	-	50	-15.05
1	.1658	42.16	Qp	.1	0	9.5	51.76	65.17	-13.41	-	-
3	.258	37.28	Qp	0	0	9.4	46.68	61.5	-14.82	-	-
5	.3435	32.42	Qp	0	0	9.4	41.82	59.12	-17.3	-	-
7	.429	28.92	Qp	0	.1	9.3	38.32	57.27	-18.95	-	-
9	.5145	28.54	Qp	0	0	9.3	37.84	56	-18.16	-	-
11	.6	27	Qp	0	0	9.4	36.4	56	-19.6	-	-
13	13.56	25.97	Qp	.1	.3	9.5	35.87	60	-24.13	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

LINE 2 RESULTS



DATA

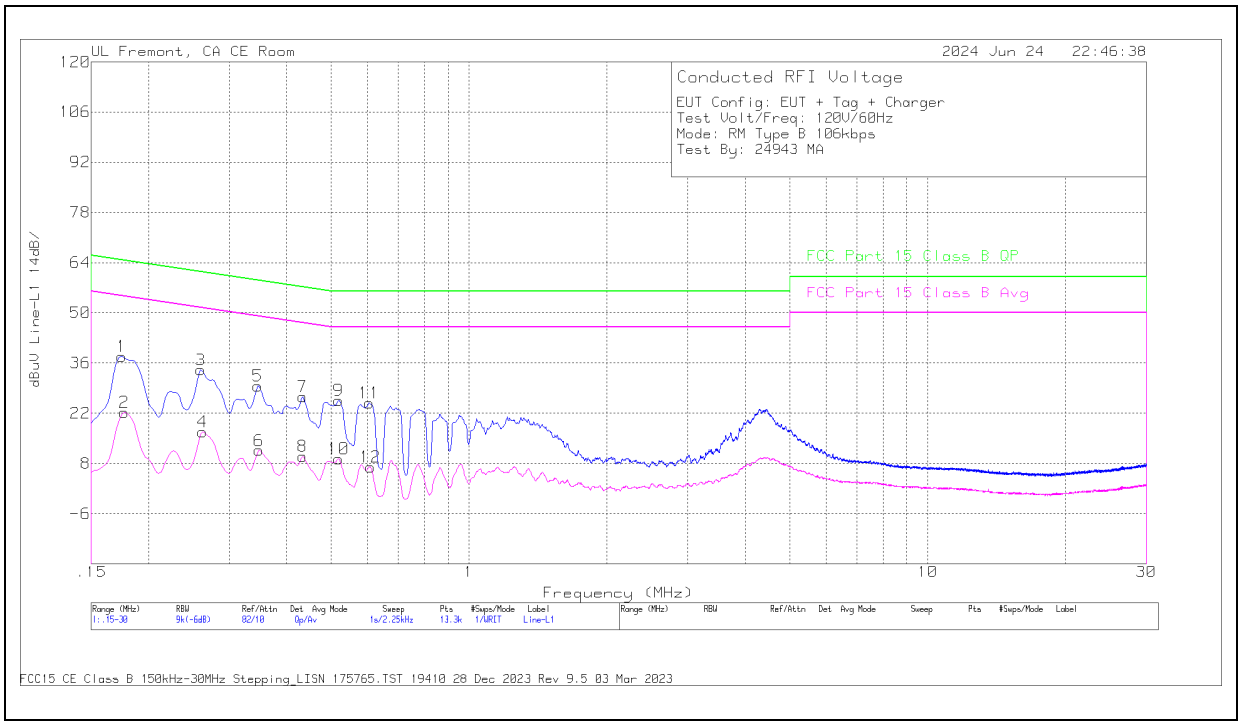
Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
16	.168	26.97	Av	.1	0	9.5	36.57	-	-	55.06	-18.49
18	.2535	20.98	Av	0	0	9.4	30.38	-	-	51.64	-21.26
20	.339	14.51	Av	0	.1	9.4	24.01	-	-	49.23	-25.22
22	.4245	11.81	Av	0	.1	9.4	21.31	-	-	47.36	-26.05
24	.492	11.81	Av	0	0	9.3	21.11	-	-	46.13	-25.02
27	.573	7.69	Av	0	0	9.3	16.99	-	-	46	-29.01
29	13.56	22.06	Av	.1	.2	9.5	31.86	-	-	50	-18.14
15	.1658	41.84	Qp	.1	0	9.5	51.44	65.17	-13.73	-	-
17	.258	37.19	Qp	0	0	9.4	46.59	61.5	-14.91	-	-
19	.3435	32.2	Qp	0	.1	9.4	41.7	59.12	-17.42	-	-
21	.429	28.83	Qp	0	0	9.3	38.13	57.27	-19.14	-	-
23	.5145	28.49	Qp	0	0	9.3	37.79	56	-18.21	-	-
25	.6023	26.79	Qp	0	.1	9.4	36.29	56	-19.71	-	-
26	.5978	26.5	Qp	0	.1	9.4	36	56	-20	-	-
28	13.56	23.1	Qp	.1	.2	9.5	32.9	60	-27.1	-	-

Qp - Quasi-Peak detector
Av - Average detection

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

10.2.4. READER + TAG MODE: TYPE B, 106 Kbps (ANTENNA PORT TERMINATED)

LINE 1 RESULTS

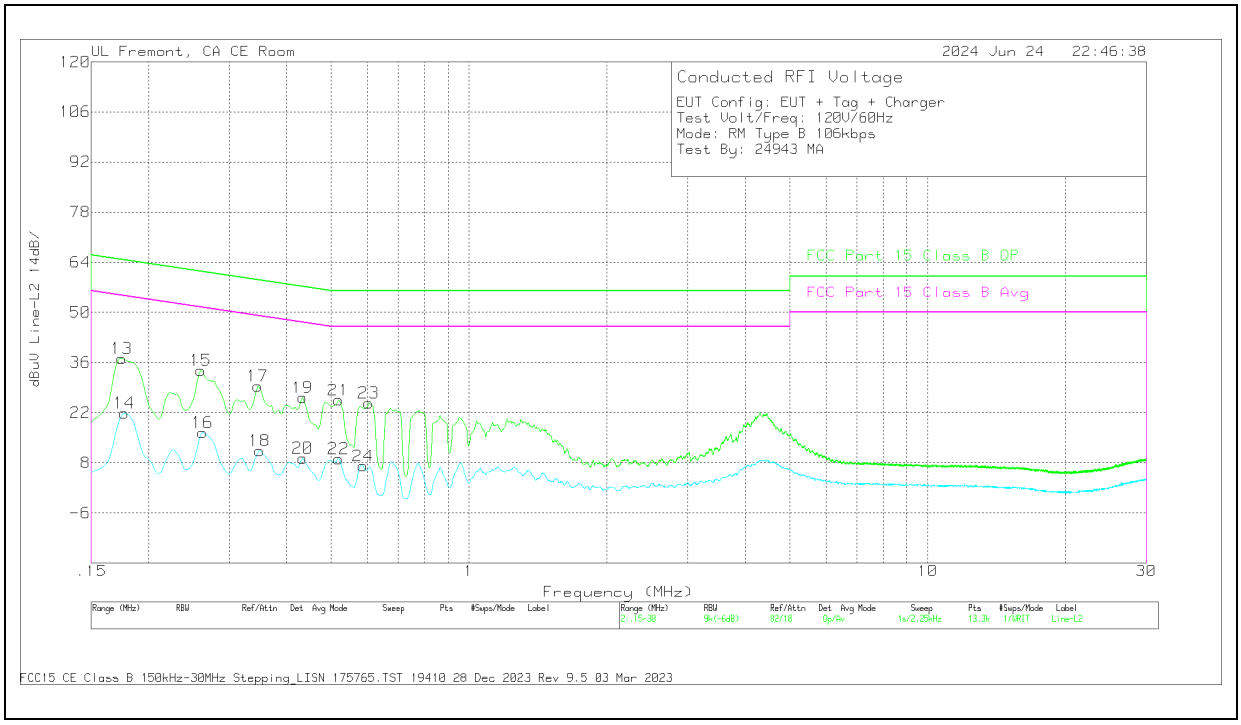


DATA

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B QP (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg (dBuV)	Av Margin (dB)
2	.177	12.57	Av	.1	.1	9.4	22.17	-	-	54.63	-32.46
4	.2625	7.34	Av	0	0	9.4	16.74	-	-	51.35	-34.61
6	.348	2.22	Av	0	0	9.4	11.62	-	-	49.01	-37.39
8	.4335	.51	Av	0	.1	9.3	9.91	-	-	47.19	-37.28
10	.519	-.02	Av	0	0	9.3	9.28	-	-	46	-36.72
12	.609	-2.49	Av	0	0	9.4	6.91	-	-	46	-39.09
1	.1748	28.2	Qp	.1	0	9.5	37.8	64.73	-26.93	-	-
3	.2603	24.66	Qp	0	0	9.4	34.06	61.42	-27.36	-	-
5	.3458	20.18	Qp	0	0	9.4	29.58	59.06	-29.48	-	-
7	.4335	17.21	Qp	0	.1	9.3	26.61	57.19	-30.58	-	-
9	.519	16.24	Qp	0	0	9.3	25.54	56	-30.46	-	-
11	.6068	15.47	Qp	0	0	9.4	24.87	56	-31.13	-	-

Qp - Quasi-Peak detector
Av - Average detection

LINE 2 RESULTS



DATA

Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN (dB)**	**Cbl (dB)**	**Trns Limiter (dB)**	**Corrected Reading (dBuV)**	**FCC Part 15 Class B QP (dBuV)**	**QP Margin (dB)**	**FCC Part 15 Class B Avg (dBuV)**	**Av Margin (dB)**
14	.177	12.4	Av	0	.1	9.4	21.9	-	-	54.63	-32.73
16	.2625	6.99	Av	0	0	9.4	16.39	-	-	51.35	-34.96
18	.3491	1.81	Av	0	.1	9.4	11.31	-	-	48.98	-37.67
20	.4335	-.11	Av	0	0	9.3	9.19	-	-	47.19	-38
22	.519	-.16	Av	0	0	9.3	9.14	-	-	46	-36.86
24	.5865	-2.43	Av	0	.1	9.4	7.07	-	-	46	-38.93
13	.1748	27.66	Qp	0	0	9.5	37.16	64.73	-27.57	-	-
15	.2603	24.35	Qp	0	0	9.4	33.75	61.42	-27.67	-	-
17	.3458	19.86	Qp	0	.1	9.4	29.36	59.06	-29.7	-	-
19	.4335	16.88	Qp	0	0	9.3	26.18	57.19	-31.01	-	-
21	.519	16.18	Qp	0	0	9.3	25.48	56	-30.52	-	-
23	.6045	15.12	Qp	0	.1	9.4	24.62	56	-31.38	-	-

Qp - Quasi-Peak detector
Av - Average detection

11. SETUP PHOTOS

Please refer to 14982484-EP1V1 for setup photos.

END OF TEST REPORT