



# **TEST REPORT**

**Report Number. :** 13335182-E12V3

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

**Model :** A2342

**FCC ID :** BCG-E3548A

**IC :** 579C-E3548A

**EUT Description :** SMARTPHONE

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

**Date of Issue:**  
September 30, 2020

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Revision History

| Rev. | Issue Date | Revisions               | Revised By |
|------|------------|-------------------------|------------|
| V1   | 9/21/2020  | Initial Issue           | Chin Pang  |
| V2   | 9/25/2020  | Address TCB's Questions | Chin Pang  |
| V3   | 9/30/2020  | Address TCB's Questions | Vien Tran  |

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## 1. ATTESTATION OF TEST RESULTS

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

**EUT DESCRIPTION:** SMARTPHONE

**MODEL:** A2342

**Serial Number:** G6TCQ01TQ897

**DATE TESTED:** MAY 15, 2020 – AUGUST 09, 2020

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

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

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

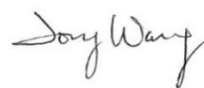
This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This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

Approved & Released For  
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Prepared By:



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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 5, and RSS-210 Issue 10, Annex B.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street                            | 47266 Benicia Street                                       | 47658 Kato Rd.                                   |
|-------------------------------------------------|------------------------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Chamber A (IC:2324B-1) | <input type="checkbox"/> Chamber D (IC:22541-1)            | <input type="checkbox"/> Chamber I (IC: 2324A-5) |
| <input type="checkbox"/> Chamber B (IC:2324B-2) | <input type="checkbox"/> Chamber E (IC:22541-2)            | <input type="checkbox"/> Chamber J (IC: 2324A-6) |
| <input type="checkbox"/> Chamber C (IC:2324B-3) | <input type="checkbox"/> Chamber F (IC:22541-3)            | <input type="checkbox"/> Chamber K (IC: 2324A-1) |
|                                                 | <input type="checkbox"/> Chamber G (IC:22541-4)            | <input type="checkbox"/> Chamber L (IC: 2324A-3) |
|                                                 | <input checked="" type="checkbox"/> Chamber H (IC:22541-5) | <input type="checkbox"/> Chamber M (IC: 2324A-2) |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

## 4. DECISION RULES AND MEASUREMENT UNCERTAINTY

### 4.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

### 4.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                                           | $U_{Lab}$ |
|-----------------------------------------------------|-----------|
| Worst Case Conducted Disturbance, 9KHz to 0.15 MHz  | 3.39 dB   |
| Worst Case Conducted Disturbance, 0.15 to 30 MHz    | 3.07 dB   |
| Worst Case Radiated Disturbance, 9KHz to 30 MHz     | 2.52 dB   |
| Worst Case Radiated Disturbance, 30 to 1000 MHz     | 4.88 dB   |
| Worst Case Radiated Disturbance, 1000 to 18000 MHz  | 4.24 dB   |
| Worst Case Radiated Disturbance, 18000 to 26000 MHz | 4.37 dB   |
| Worst Case Radiated Disturbance, 26000 to 40000 MHz | 5.17 dB   |

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

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

### 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 A | Reader | 848  | 27.71                            |
|           |                       |        | CE     | 848  | 26.58                            |
| Secondary | 13.56                 | Type A | Reader | 848  | -9.46                            |

### 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 and Reader, Tag 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 A 848Kbp/s Reader mode was determined to be the worst case and therefore Type A was selected for all final tests

For below 30MHz testing, investigation was done on three antenna orientations: RX antenna Face-on, Face-off and horizontal (parallel to ground). The worst-case configurations were determined on RX antenna Face-on and Face-off; therefore, all final tests were performed using these two orientations.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 meter open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



## 5.4. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |                   |             |                  |         |
|------------------------|-------------------|-------------|------------------|---------|
| Description            | Manufacturer      | Model       | Serial Number    | FCC ID  |
| laptop                 | Apple             | Macbook Pro | C02P41RZG086     | FCC DoC |
| Laptop AC/DC adapter   | Liteon Technology | PA-1450-BA1 | B123             | NA      |
| EUT AC Adapter         | Apple             | A1385       | D292365CDYADHLC3 | NA      |

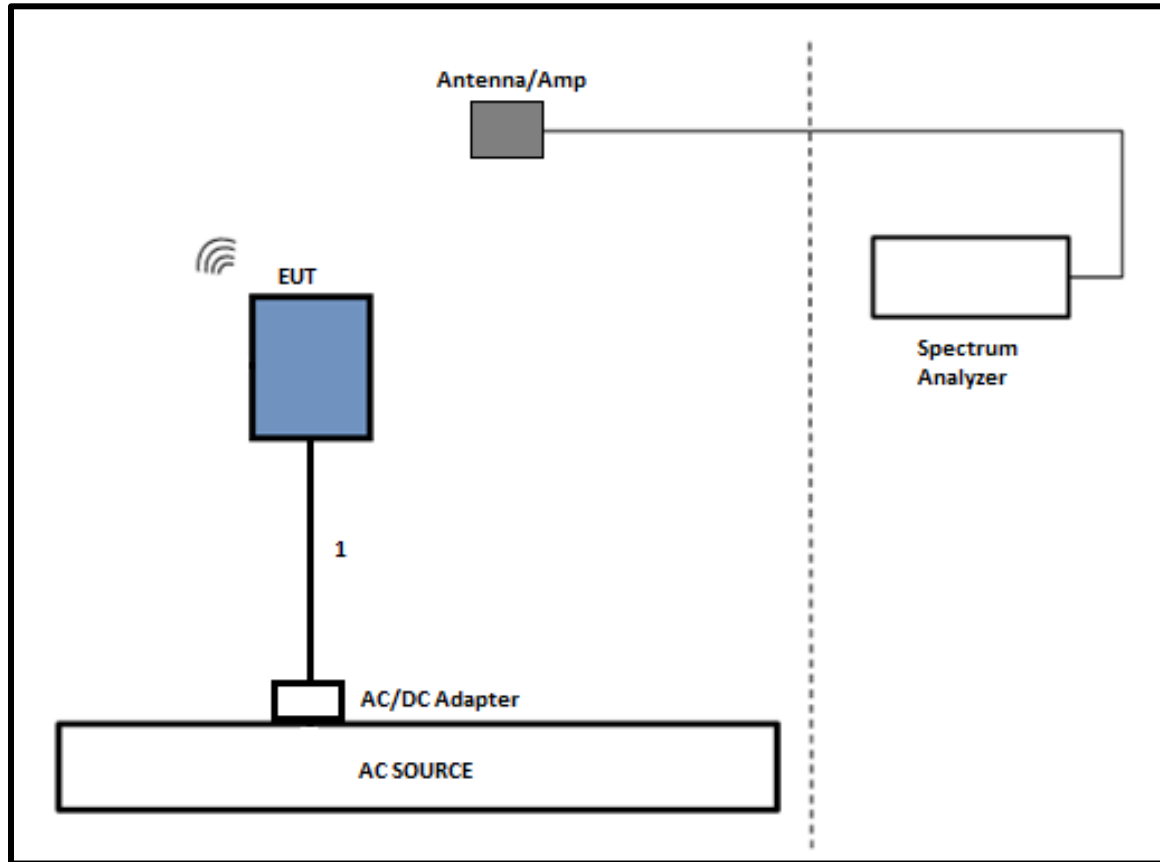
### I/O CABLES

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

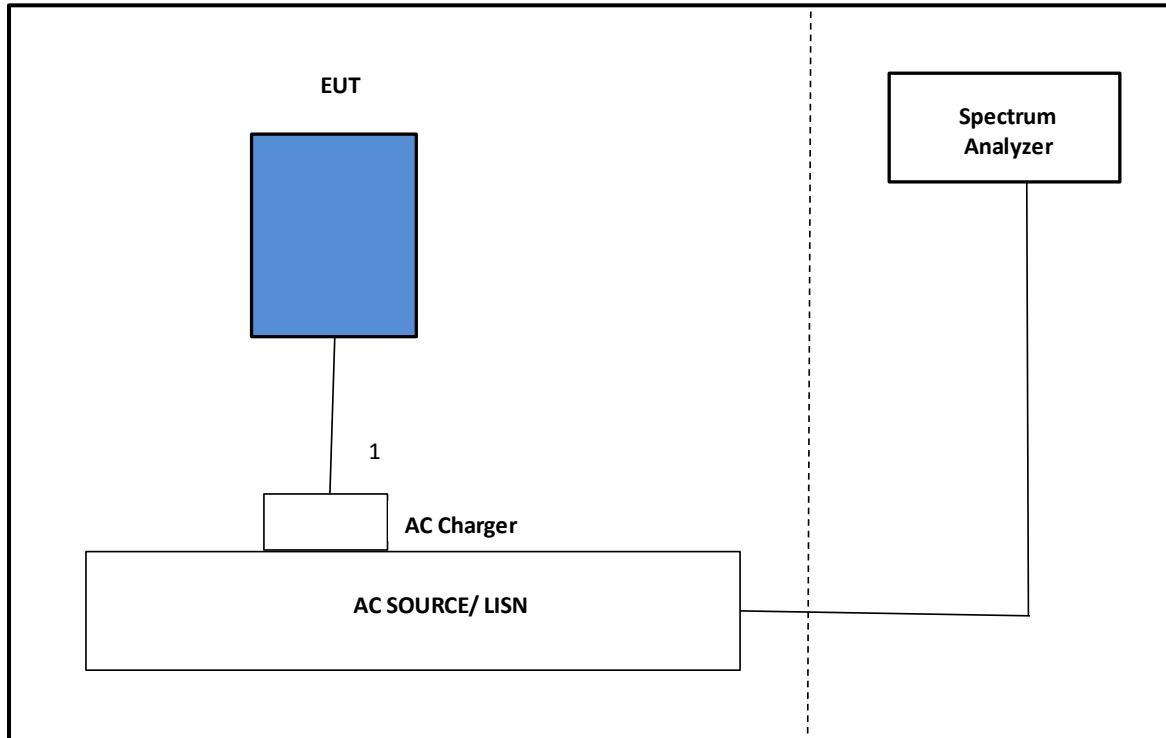
### TEST SETUP

The EUT is installed in a host laptop computer during the tests. Test software exercised the radio card.

**SETUP DIAGRAM FOR RADIATED TESTS**



**SETUP DIAGRAM FOR LINE CONDUCTED TESTS**



The EUT is installed in a host laptop computer during the tests. Test software exercised the radio card.

## 6. TEST AND MEASUREMENT EQUIPMENT

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

| TEST EQUIPMENT LIST                          |                                 |                   |        |            |            |
|----------------------------------------------|---------------------------------|-------------------|--------|------------|------------|
| Description                                  | Manufacturer                    | Model             | ID Num | Cal Due    | Last Cal   |
| *Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences Corp.            | JB3               | T900   | 08/09/2020 | 08/09/2019 |
| Amplifier, 10KHz to 1GHz, 32dB               | Sonoma                          | 310N              | T835   | 01/23/2021 | 01/23/2020 |
| *Antenna, Active Loop 9KHz to 30MHz          | EMCO                            | 6502              | T35    | 06/06/2020 | 06/06/2019 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz         | Agilent (Keysight) Technologies | N9030A            | T340   | 01/22/2021 | 01/22/2020 |
| Chamber, Environmental                       | Cincinnati Sub Zero             | ZPHS-8-3.5-SCT/WC | T754   | 12/22/2020 | 12/22/2019 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz         | Keysight Technologies Inc       | N9030A-544        | T1210  | 01/22/2021 | 01/22/2020 |

| AC Line Conducted                     |                               |                         |                            |            |            |
|---------------------------------------|-------------------------------|-------------------------|----------------------------|------------|------------|
| Description                           | Manufacturer                  | Model                   | ID Num                     | Cal Due    | Last Cal   |
| *EMI Test Receiver 9kHz-7GHz          | Rohde & Schwarz               | ESR                     | T1436                      | 02/20/2021 | 02/20/2020 |
| Power Cable, Line Conducted Emissions | UL                            | PR1                     | T861                       | 10/27/2020 | 10/27/2019 |
| LISN for Conducted Emissions CISPR-16 | FISCHER CUSTOM COMMUNICATIONS | FCC-LISN-50/250-25-2-01 | PRE0186446                 | 01/23/2021 | 01/23/2020 |
| UL AUTOMATION SOFTWARE                |                               |                         |                            |            |            |
| Radiated Software                     | UL                            | UL EMC                  | Ver 9.5, Mar 6, 2020       |            |            |
| Conducted Software                    | UL                            | UL EMC                  | 2020.2.26                  |            |            |
| AC Line Conducted Software            | UL                            | UL EMC                  | Ver 9.5, February 21, 2020 |            |            |

\*Testing is completed before equipment expiration date.

## 7. OCCUPIED BANDWIDTH

### LIMITS

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 10kHz. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

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

### RESULTS

#### 99% and 20dB BW

##### Primary Antenna

##### Type A (Reader Mode)

| Mode Kbps | Frequency (MHz) | 99% Bandwidth (KHz) | 20dB Bandwidth (KHz) |
|-----------|-----------------|---------------------|----------------------|
| 848       | 13.56           | 24.6153             | 28.629               |

##### Type A (CE Mode)

| Mode Kbps | Frequency (MHz) | 99% Bandwidth (KHz) | 20dB Bandwidth (KHz) |
|-----------|-----------------|---------------------|----------------------|
| 848       | 13.56           | 24.2095             | 28.611               |

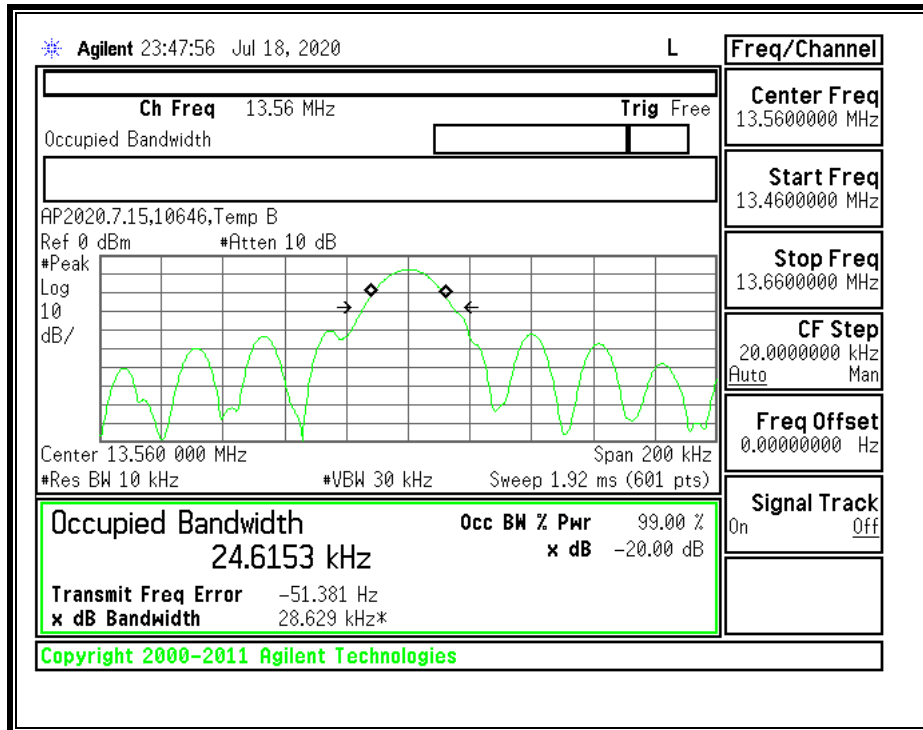
##### Secondary Antenna

##### Type A (Reader Mode)

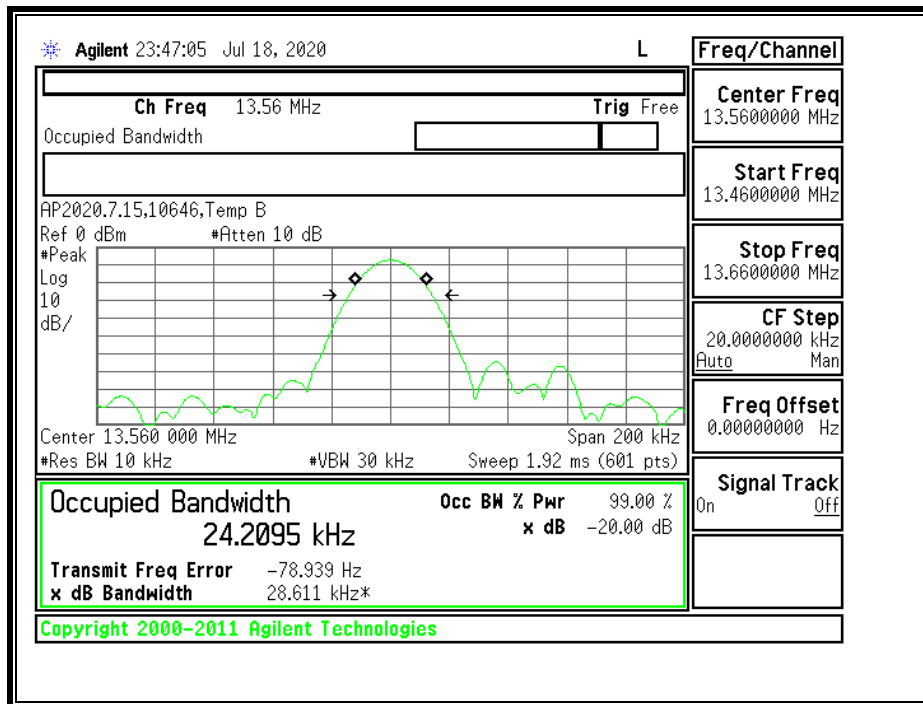
| Mode Kbps | Frequency (MHz) | 99% Bandwidth (KHz) | 20dB Bandwidth (KHz) |
|-----------|-----------------|---------------------|----------------------|
| 848       | 13.56           | 25.8563             | 32.864               |

## 7.1. PRIMARY ANTENNA

### Type A (Reader Mode), 848Kbps

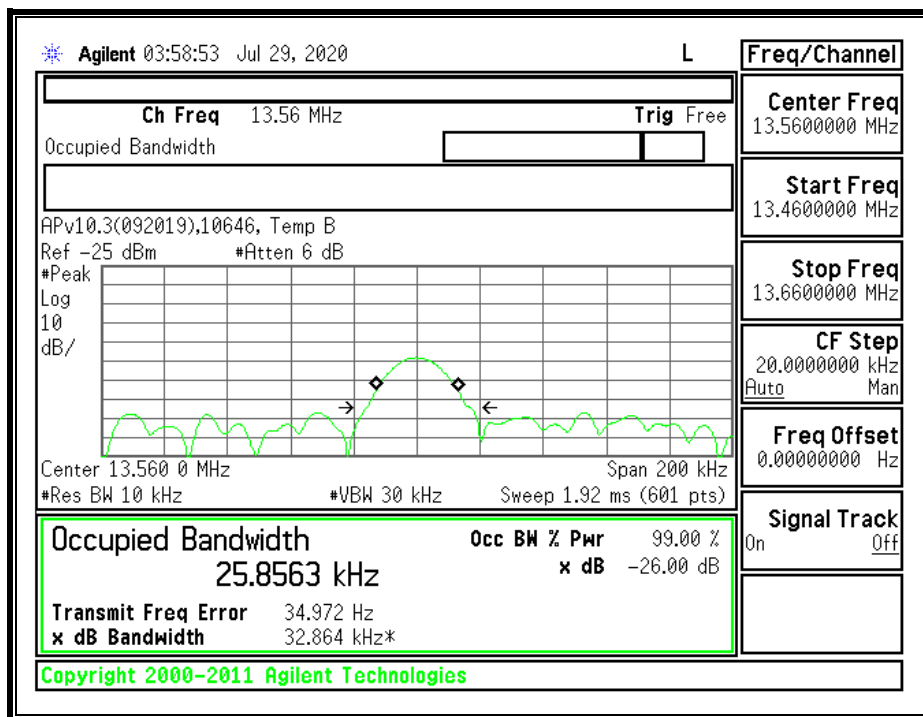


### Type A (CE Mode), 848Kbps



## 7.2. Secondary Antenna

### Type A (Reader Mode),848Kbps



## 8. RADIATED EMISSION TEST RESULTS

### 8.1. LIMITS AND PROCEDURE

#### LIMIT

§15.225

IC RSS-210, Annex B.6

IC RSS-GEN, Section 8.9 (Transmitter)

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

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

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

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

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

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

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

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

Formula for converting the field strength from uV/m to dBuV/m is:

Limit (dBuV/m) = 20 log limit (uV/m)



In addition:

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

§15.209 (d) The provisions in §§ 15.225, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

### **TEST PROCEDURE**

ANSI C63.10, 2013

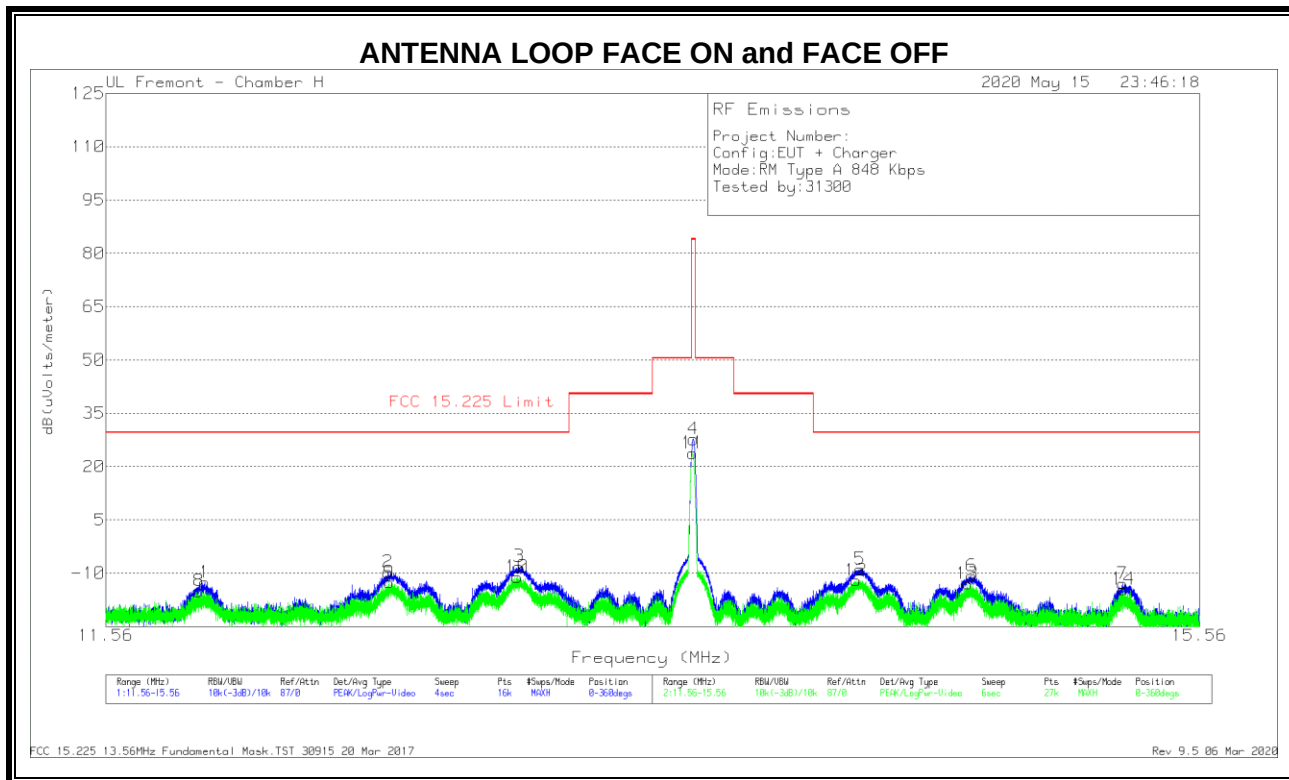
The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 0.15 MHz to the 10<sup>th</sup> harmonic of the highest fundamental frequency, or 1000 MHz, whichever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

### **RESULTS**

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

### 8.2.1. READER MODE, TYPE A 848Kbps

#### FUNDAMENTAL

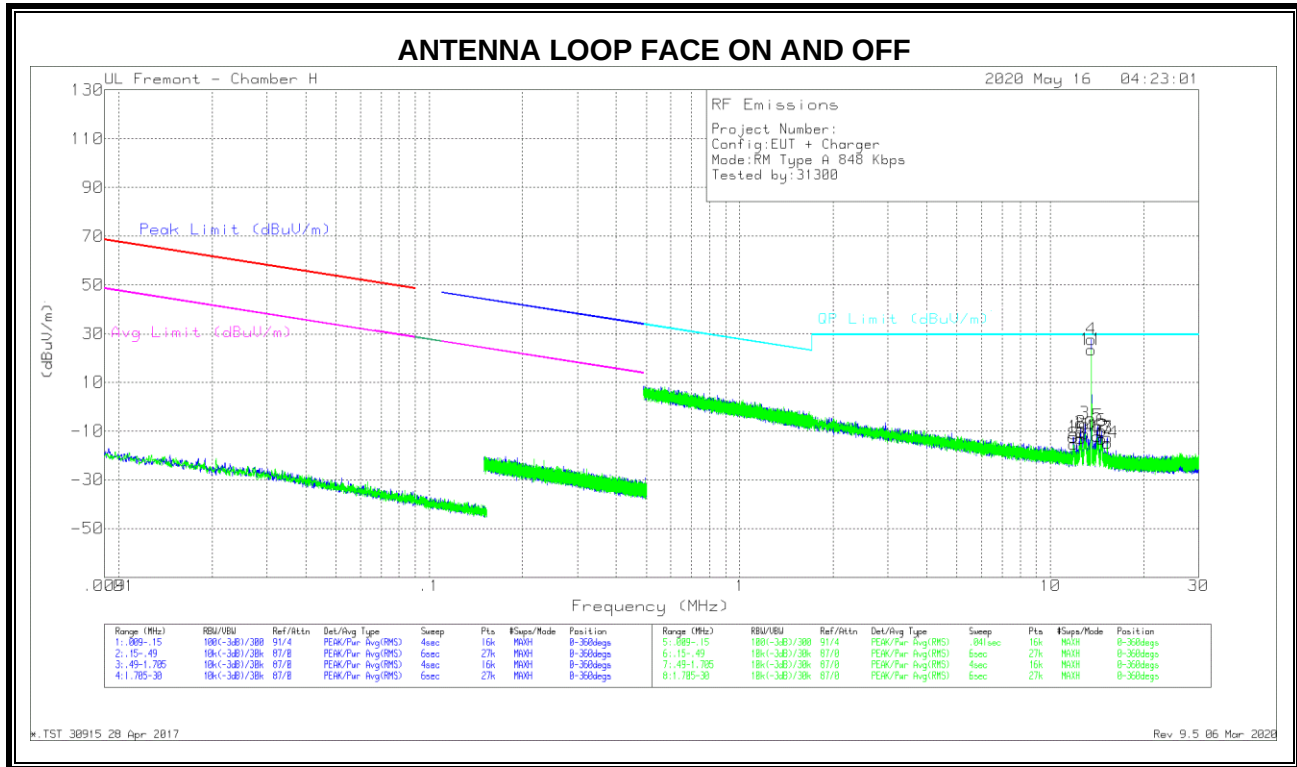


#### DATA

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dBm) | Cables (dB) | Dist Corr (dB) 40Log | Corrected Reading dB(uVolts/meter) | FCC 15.225 Limit | PK Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|--------------------|-------------|----------------------|------------------------------------|------------------|----------------|----------------|
| 8      | 11.85526        | 13.88                | Pk  | 10.7               | .4          | -40                  | -15.02                             | 29.54            | -44.56         | 0-360          |
| 1      | 11.87525        | 16.29                | Pk  | 10.7               | .4          | -40                  | -12.61                             | 29.54            | -42.15         | 0-360          |
| 2      | 12.48           | 19.2                 | Pk  | 10.7               | .4          | -40                  | -9.7                               | 29.54            | -39.24         | 0-360          |
| 9      | 12.48485        | 16.33                | Pk  | 10.7               | .4          | -40                  | -12.57                             | 29.54            | -42.11         | 0-360          |
| 10     | 12.92678        | 17.92                | Pk  | 10.6               | .4          | -40                  | -11.08                             | 29.54            | -40.62         | 0-360          |
| 3      | 12.93325        | 20.9                 | Pk  | 10.6               | .4          | -40                  | -8.1                               | 29.54            | -37.64         | 0-360          |
| 11     | 13.55785        | 52.76                | Pk  | 10.6               | .4          | -40                  | 23.76                              | 84               | -60.24         | 0-360          |
| 4      | 13.56           | 56.71                | Pk  | 10.6               | .4          | -40                  | 27.71                              | 84               | -56.29         | 0-360          |
| 12     | 14.17353        | 16.96                | Pk  | 10.6               | .4          | -40                  | -12.04                             | 29.54            | -41.58         | 0-360          |
| 5      | 14.1895         | 20.12                | Pk  | 10.6               | .4          | -40                  | -8.88                              | 29.54            | -38.42         | 0-360          |
| 13     | 14.6091         | 16.02                | Pk  | 10.6               | .4          | -40                  | -12.98                             | 29.54            | -42.52         | 0-360          |
| 6      | 14.62625        | 18.24                | Pk  | 10.6               | .4          | -40                  | -10.76                             | 29.54            | -40.3          | 0-360          |
| 7      | 15.23725        | 16.03                | Pk  | 10.6               | .4          | -40                  | -12.97                             | 29.54            | -42.51         | 0-360          |
| 14     | 15.24165        | 14.48                | Pk  | 10.6               | .4          | -40                  | -14.52                             | 29.54            | -44.06         | 0-360          |

Pk - Peak detector

**SPURIOUS EMISSION**



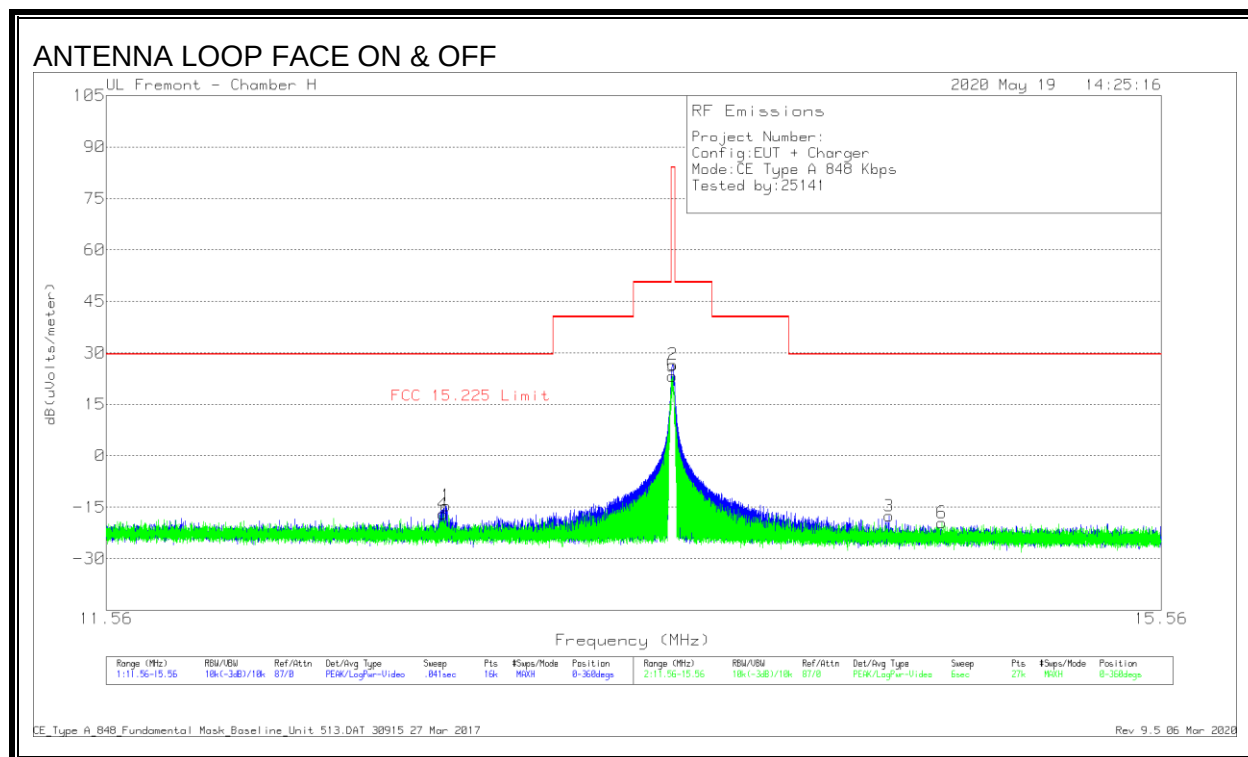
**DATA**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dBm) | Cables (dB) | Dist Corr (dB) 40Log | Corrected Reading (dBuV/m) | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|--------------------|-------------|----------------------|----------------------------|-------------------|-------------|----------------|
| 1      | 11.85907        | 16.53                | Pk  | 10.7               | .4          | -40                  | -12.37                     | 29.5              | -41.87      | 0-360          |
| 8      | 11.86955        | 13.48                | Pk  | 10.7               | .4          | -40                  | -15.42                     | 29.5              | -44.92      | 0-360          |
| 9      | 12.50988        | 16.01                | Pk  | 10.6               | .4          | -40                  | -12.99                     | 29.5              | -42.49      | 0-360          |
| 2      | 12.5277         | 18.34                | Pk  | 10.6               | .4          | -40                  | -10.66                     | 29.5              | -40.16      | 0-360          |
| 10     | 12.93118        | 17.93                | Pk  | 10.6               | .4          | -40                  | -11.07                     | 29.5              | -40.57      | 0-360          |
| 3      | 12.93222        | 22.04                | Pk  | 10.6               | .4          | -40                  | -6.96                      | 29.5              | -36.46      | 0-360          |
| 4      | 13.55893        | 56.51                | Pk  | 10.6               | .4          | -40                  | 27.51                      | 29.5              | -1.99       | 0-360          |
| 11     | 13.55998        | 52.35                | Pk  | 10.6               | .4          | -40                  | 23.35                      | 29.5              | -6.15       | 0-360          |
| 12     | 14.1762         | 16.95                | Pk  | 10.6               | .4          | -40                  | -12.05                     | 29.5              | -41.55      | 0-360          |
| 5      | 14.18354        | 21.15                | Pk  | 10.6               | .4          | -40                  | -7.85                      | 29.5              | -37.35      | 0-360          |
| 6      | 14.63208        | 19.26                | Pk  | 10.6               | .4          | -40                  | -9.74                      | 29.5              | -39.24      | 0-360          |
| 13     | 14.63418        | 15.91                | Pk  | 10.6               | .4          | -40                  | -13.09                     | 29.5              | -42.59      | 0-360          |
| 14     | 15.23992        | 14.06                | Pk  | 10.6               | .4          | -40                  | -14.94                     | 29.5              | -44.44      | 0-360          |
| 7      | 15.25354        | 16.39                | Pk  | 10.6               | .4          | -40                  | -12.61                     | 29.5              | -42.11      | 0-360          |

Pk - Peak detector

## 8.2.2. CE MODE, TYPE A 848Kbps

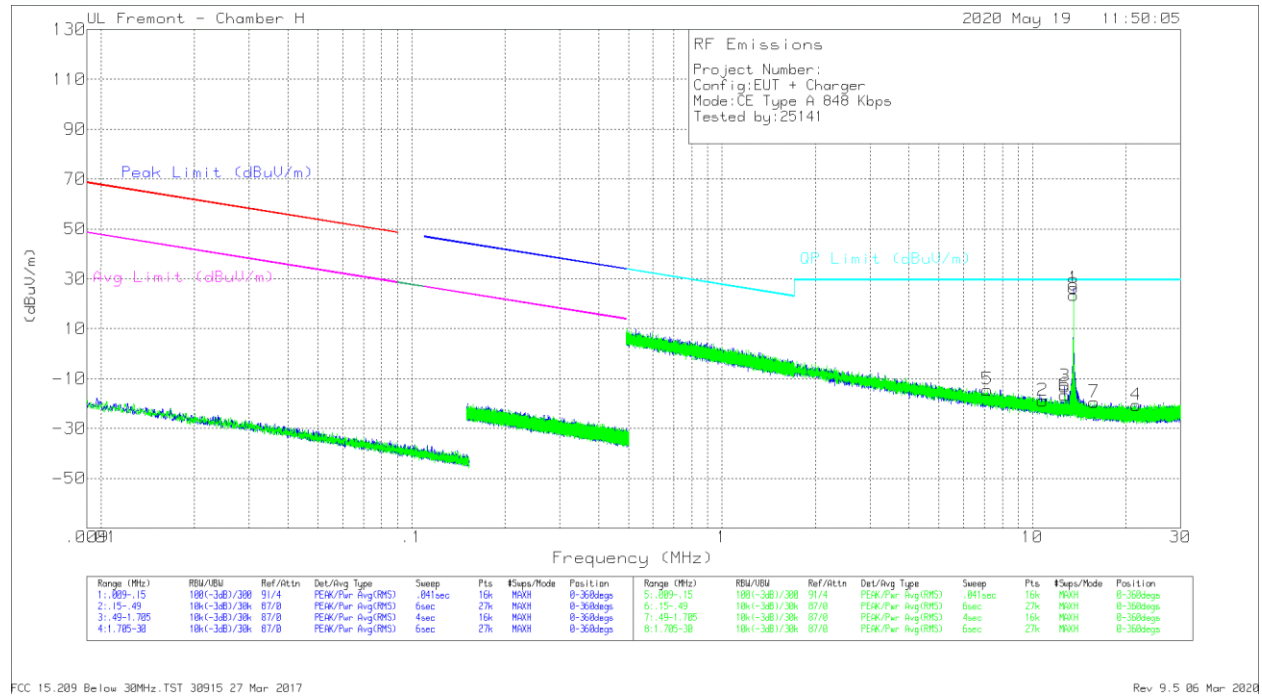
### FUNDAMENTAL 848Kbps



### DATA

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dB/m) | Cables (dB) | Dist Corr (dB) 40Log | Corrected Reading dB(uVolts/meter) | FCC 15.225 Limit | PK Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|---------------------|-------------|----------------------|------------------------------------|------------------|----------------|----------------|
| 4      | 12.71055        | 12.32                | Pk  | 10.3                | .4          | -40                  | -16.98                             | 29.54            | -46.52         | 0-360          |
| 1      | 12.722          | 14.78                | Pk  | 10.3                | .4          | -40                  | -14.52                             | 29.54            | -44.06         | 0-360          |
| 5      | 13.5583         | 52.61                | Pk  | 10.2                | .4          | -40                  | 23.21                              | 84               | -60.79         | 0-360          |
| 2      | 13.56           | 55.98                | Pk  | 10.2                | .4          | -40                  | 26.58                              | 84               | -57.42         | 0-360          |
| 3      | 14.4115         | 11.83                | Pk  | 10.2                | .4          | -40                  | -17.57                             | 29.54            | -47.11         | 0-360          |
| 6      | 14.62745        | 9.99                 | Pk  | 10.1                | .4          | -40                  | -19.51                             | 29.54            | -49.05         | 0-360          |

Pk - Peak detector

**SPURIOUS EMISSION 848Kbps****ANTENNA LOOP FACE ON AND OFF****DATA**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dB/m) | Cables (dB) | Dist Corr (dB) 40Log | Corrected Reading (dBuV/m) | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|---------------------|-------------|----------------------|----------------------------|-------------------|-------------|----------------|
| 5      | 7.15833         | 7.17                 | Qp  | 10.7                | .3          | -40                  | -21.83                     | 29.5              | -51.33      | 272            |
| 2      | 10.7846         | 4.69                 | Qp  | 10.5                | .4          | -40                  | -24.41                     | 29.5              | -53.91      | 59             |
| 3      | 12.7058         | 7.7                  | Qp  | 10.3                | .4          | -40                  | -21.6                      | 29.5              | -51.1       | 23             |
| 6      | 12.7217         | 5.82                 | Qp  | 10.3                | .4          | -40                  | -23.48                     | 29.5              | -52.98      | 113            |
| 7      | 15.8077         | 2.77                 | Qp  | 10                  | .4          | -40                  | -26.83                     | 29.5              | -56.33      | 143            |
| 4      | 21.586          | 2.25                 | Qp  | 9.3                 | .5          | -40                  | -27.95                     | 29.5              | -57.45      | 190            |
| 1      | 13.55945        | 55.71                | PK  | 10.2                | .4          | -40                  | 26.31                      | 29.5              | -3.19       | 0-360          |
| 8      | 13.55945        | 52.93                | PK  | 10.2                | .4          | -40                  | 23.53                      | 29.5              | -5.97       | 0-360          |

PK - Peak detector

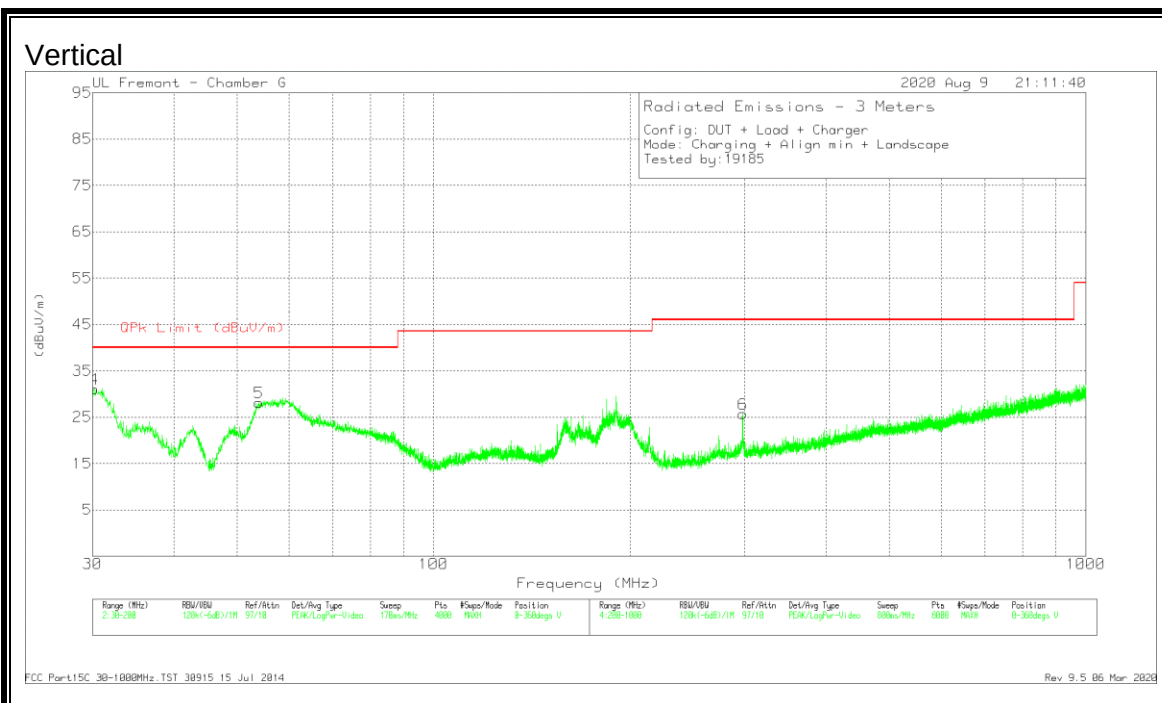
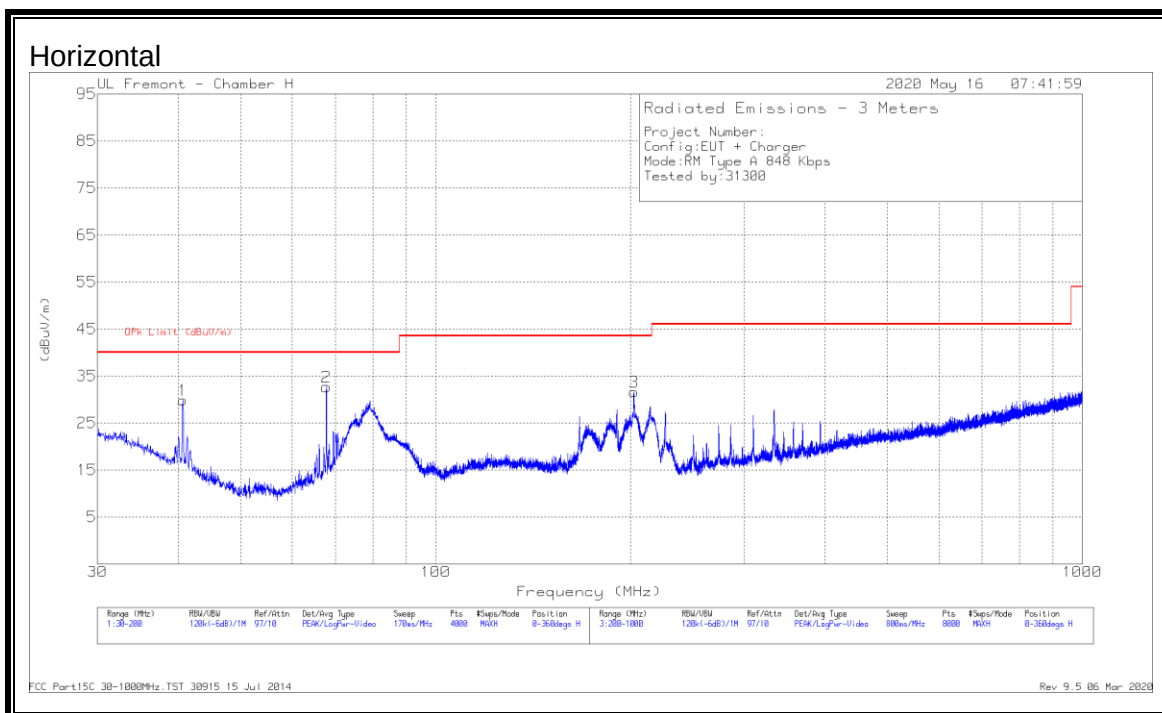
Qp - Quasi-Peak detector

Note: Marker 1 and 8 are the fundamental signal

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

### 8.3.1. Type A (Reader Mode)

#### SPURIOUS EMISSION 848Kbps



**DATA**

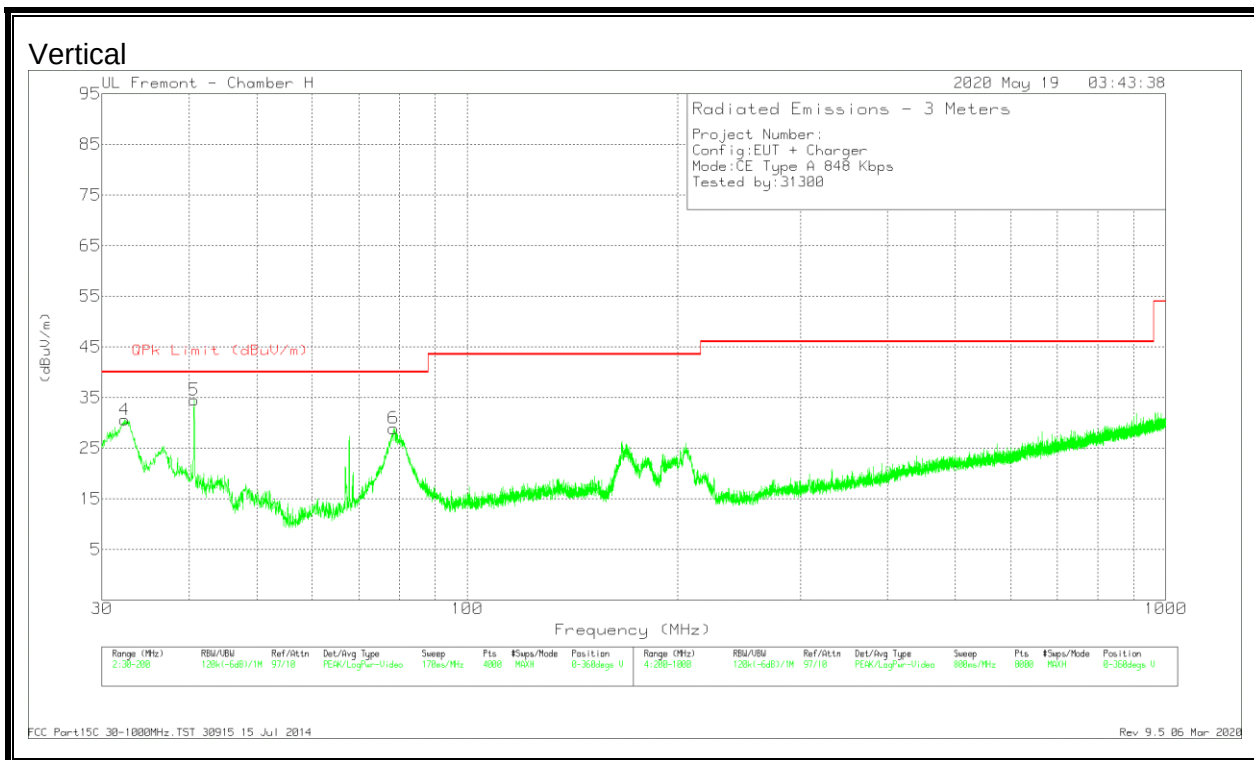
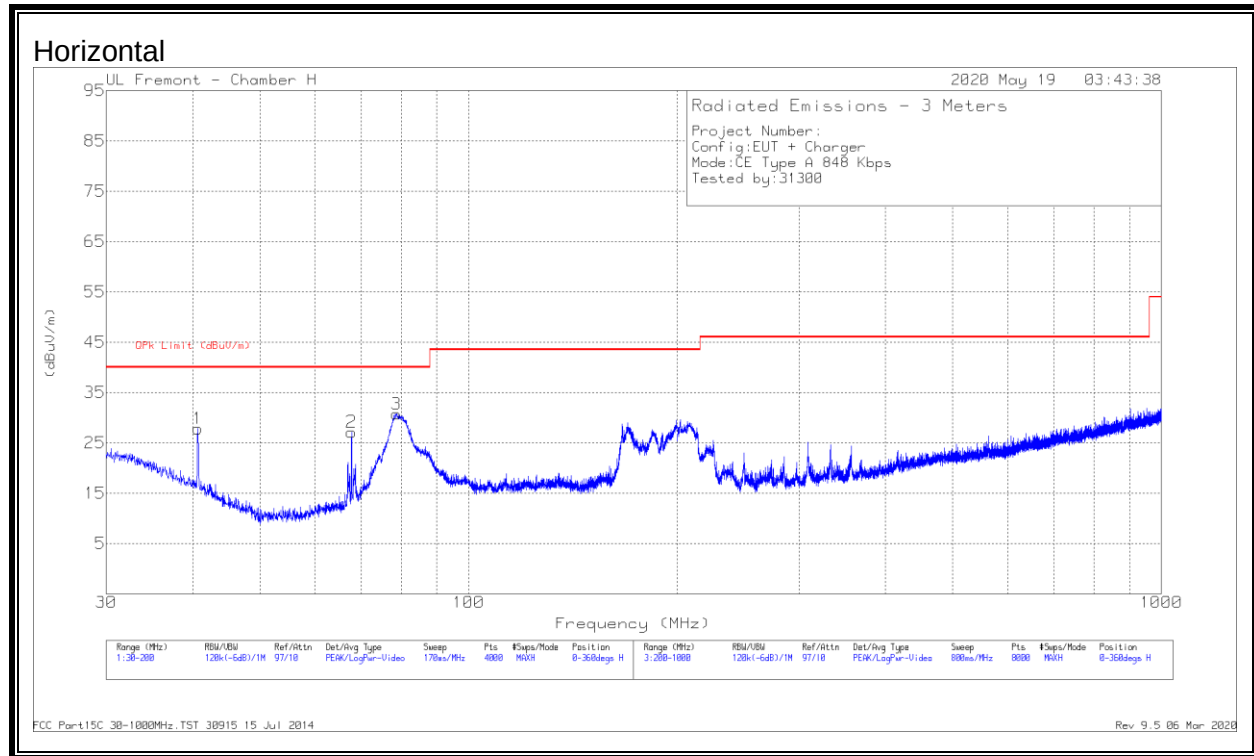
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T900 (dB/m) | AmplCbl (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 4      | 32.3806         | 39.38                | Pk  | 25.4           | -31.2        | 33.58                      | 40                 | -6.42       | 0-360          | 100         | V        |
| 1      | 40.6703         | 41.17                | Pk  | 19.8           | -31.1        | 29.87                      | 40                 | -10.13      | 0-360          | 400         | H        |
| 5      | 40.6703         | 46                   | Pk  | 19.8           | -31.1        | 34.7                       | 40                 | -5.3        | 0-360          | 100         | V        |
|        | 40.6852         | 46.47                | Qp  | 19.8           | -31.1        | 35.17                      | 40                 | -4.83       | 294            | 100         | V        |
| 2      | 67.7923         | 49.48                | Pk  | 14             | -30.8        | 32.68                      | 40                 | -7.32       | 0-360          | 300         | H        |
| 6      | 67.7923         | 49.24                | Pk  | 14             | -30.8        | 32.44                      | 40                 | -7.56       | 0-360          | 100         | V        |
| 3      | 202.7004        | 43.32                | Pk  | 17.9           | -29.6        | 31.62                      | 43.52              | -11.9       | 0-360          | 200         | H        |

Pk - Peak detector

Qp - Quasi-Peak detector

### 8.3.2. Type A (CE Mode)

#### SPURIOUS EMISSION 848Kbps





**DATA**

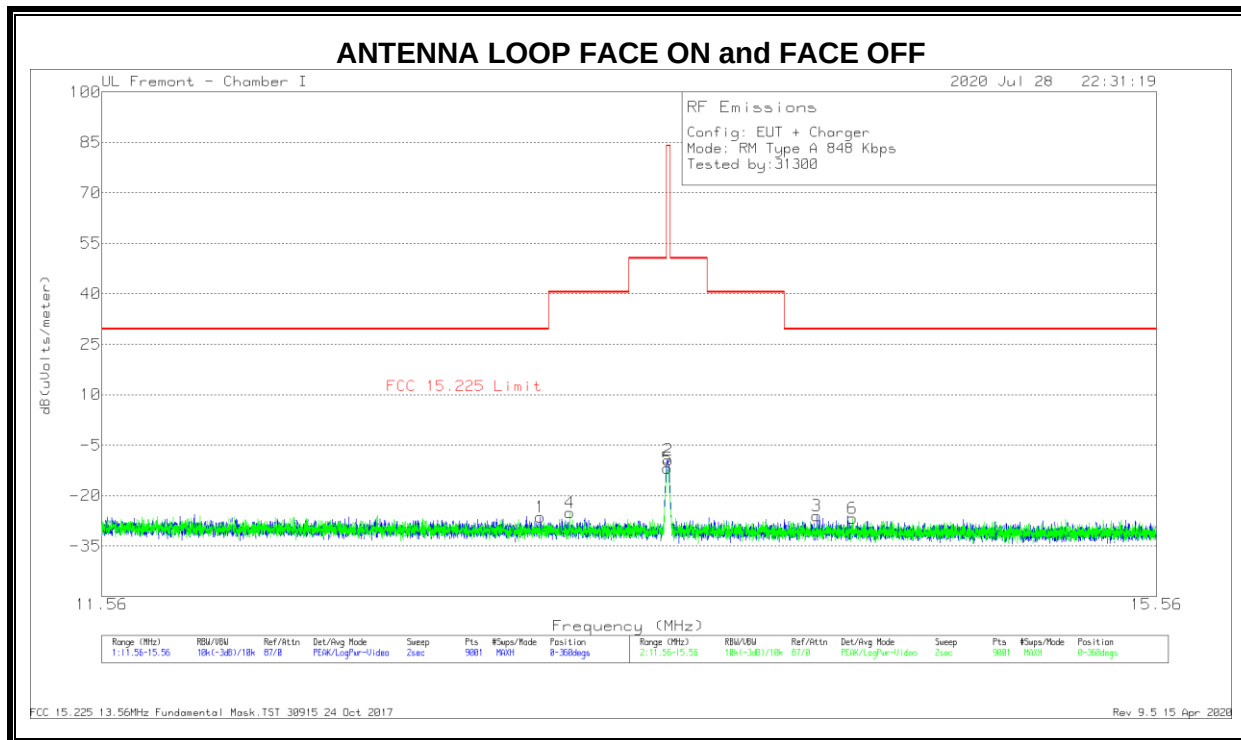
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T900 (dB/m) | Amp/Cbl (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 4      | 32.3381         | 36.28                | Pk  | 25.5           | -31.2        | 30.58                      | 40                 | -9.42       | 0-360          | 100         | V        |
| 1      | 40.6703         | 39.12                | Pk  | 19.8           | -31.1        | 27.82                      | 40                 | -12.18      | 0-360          | 300         | H        |
| 5      | 40.6703         | 45.79                | Pk  | 19.8           | -31.1        | 34.49                      | 40                 | -5.51       | 0-360          | 100         | V        |
|        | 40.6693         | 44.35                | Qp  | 19.8           | -31.1        | 33.05                      | 40                 | -6.95       | 319            | 106         | V        |
| 2      | 67.7923         | 43.92                | Pk  | 14             | -30.8        | 27.12                      | 40                 | -12.88      | 0-360          | 200         | H        |
| 6      | 78.4625         | 46.11                | Pk  | 13.5           | -30.7        | 28.91                      | 40                 | -11.09      | 0-360          | 100         | V        |
| 3      | 78.6751         | 48.01                | Pk  | 13.4           | -30.7        | 30.71                      | 40                 | -9.29       | 0-360          | 300         | H        |

Pk - Peak detector  
Qp - Quasi-Peak detector

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

### 8.4.1. READER MODE, TYPE A 848Kbps

#### FUNDAMENTAL

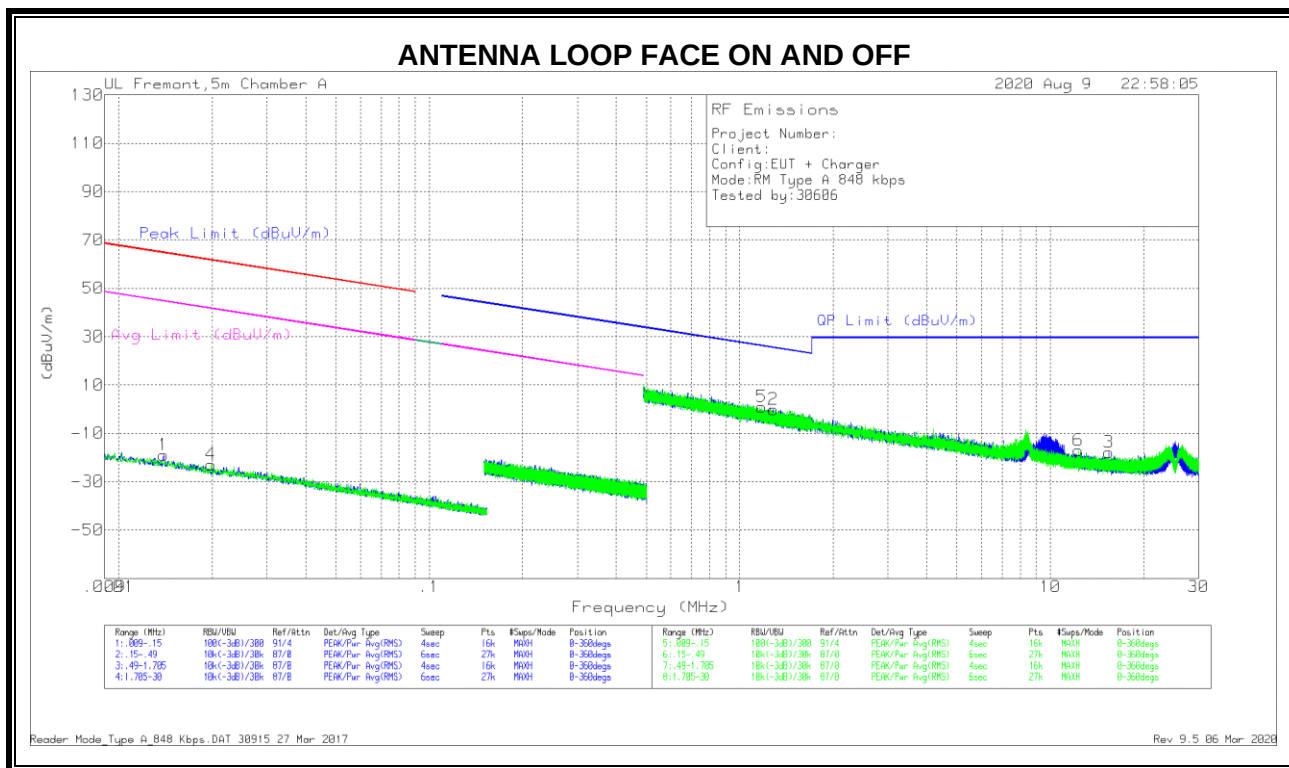


#### DATA

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (ACF) | Cables w/ PRE0180175 (dB) | Dist Corr 30m (dB) 40Log | Corrected Reading dB(uVolts/meter) | FCC 15.225 Limit | PK Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|--------------------|---------------------------|--------------------------|------------------------------------|------------------|----------------|----------------|
| 1      | 13.08114        | 10.92                | Pk  | 34.2               | -31.5                     | -40                      | -26.38                             | 29.54            | -55.92         | 0-360          |
| 2      | 13.55933        | 27.94                | Pk  | 34.1               | -31.5                     | -40                      | -9.46                              | 84               | -93.46         | 0-360          |
| 3      | 14.13964        | 11.27                | Pk  | 34.1               | -31.4                     | -40                      | -26.03                             | 29.54            | -55.57         | 0-360          |
| 4      | 13.18904        | 12.16                | Pk  | 34.2               | -31.5                     | -40                      | -25.14                             | 40.51            | -65.65         | 0-360          |
| 5      | 13.55756        | 25.54                | Pk  | 34.1               | -31.5                     | -40                      | -11.86                             | 84               | -95.86         | 0-360          |
| 6      | 14.28394        | 10.53                | Pk  | 34.1               | -31.4                     | -40                      | -26.77                             | 29.54            | -56.31         | 0-360          |

Pk - Peak detector

**SPURIOUS EMISSION**



**DATA**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dB/m) | Cables (dB) | Dist Corr 300m | Corrected Reading (dBuV/m) | Peak Limit (dBuV/m) | Margin (dB) | Avg Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|---------------------|-------------|----------------|----------------------------|---------------------|-------------|--------------------|-------------|----------------|
| 1      | .01395          | 43.45                | Pk  | 17.5                | 0           | -80            | -19.05                     | 64.69               | -83.74      | 44.69              | -63.74      | 0-360          |
| 4      | .01985          | 41.91                | Pk  | 15.2                | 0           | -80            | -22.89                     | 61.63               | -84.52      | 41.63              | -64.52      | 0-360          |

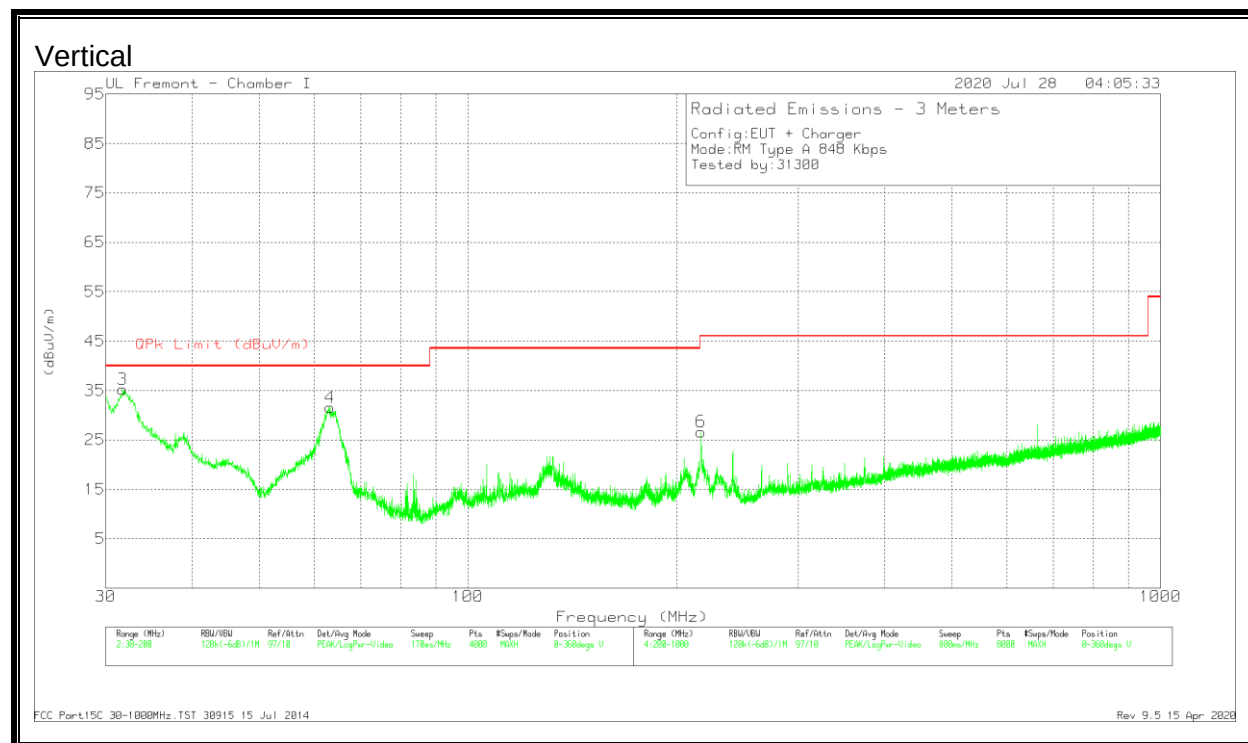
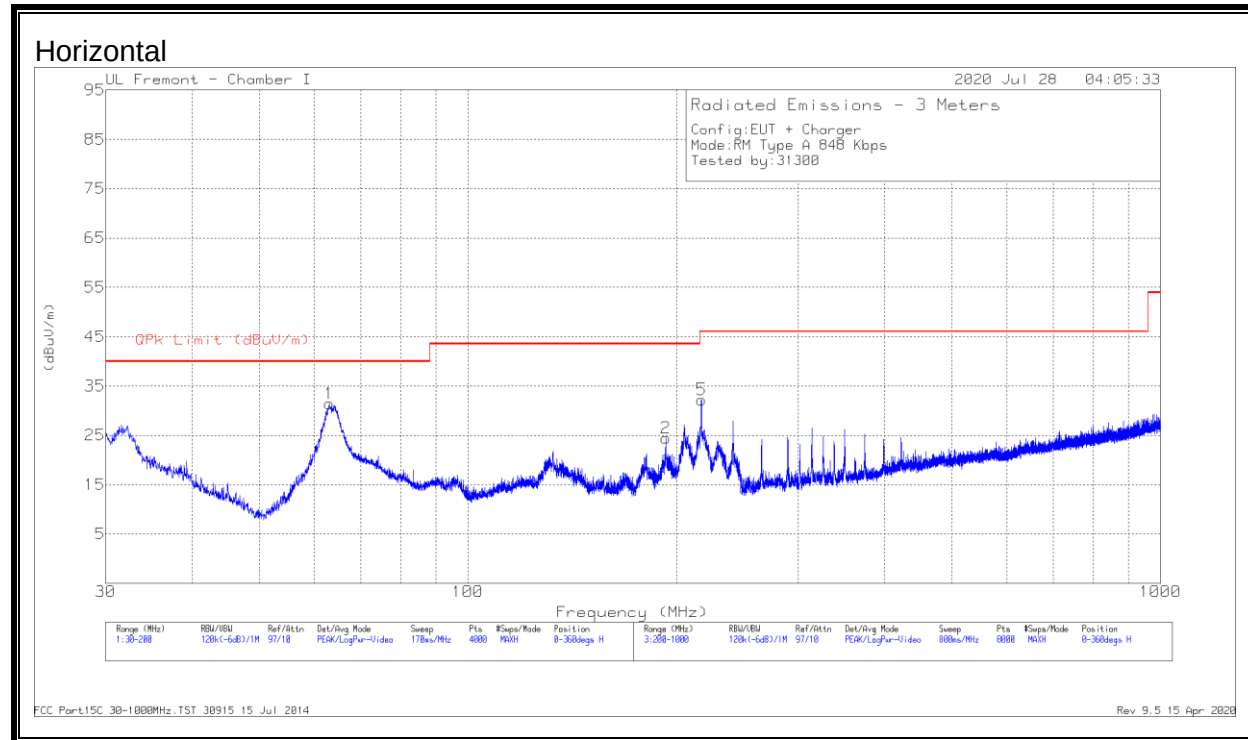
Pk - Peak detector

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (dB/m) | Cables (dB) | Dist Corr 30m | Corrected Reading (dBuV/m) | QP Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|---------------------|-------------|---------------|----------------------------|-------------------|-------------|----------------|
| 5      | 1.17461         | 30.02                | Pk  | 10.8                | .2          | -40           | 1.02                       | 26.23             | -25.21      | 0-360          |
| 2      | 1.28192         | 28.78                | Pk  | 10.8                | .2          | -40           | -.22                       | 25.47             | -25.69      | 0-360          |
| 6      | 12.31076        | 12.07                | Pk  | 10.4                | .5          | -40           | -17.03                     | 29.5              | -46.53      | 0-360          |
| 3      | 15.39293        | 11.56                | Pk  | 10.1                | .5          | -40           | -17.84                     | 29.5              | -47.34      | 0-360          |

Pk - Peak detector

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

### Type A (Reader Mode),SPURIOUS EMISSION 848Kbps



## DATA

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF PRE0184052 (dB/m) | Amp Cbl (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 1      | 63.0736         | 48.89                | Pk  | 13.5                 | -31          | 31.39                      | 40                 | -8.61       | 0-360          | 399         | H        |
| 2      | 193.0722        | 37.8                 | Pk  | 17                   | -30.3        | 24.5                       | 43.52              | -19.02      | 0-360          | 99          | H        |
| 3      | 31.743          | 41.03                | Pk  | 25.7                 | -31.5        | 35.23                      | 40                 | -4.77       | 0-360          | 100         | V        |
|        | 31.9578         | 38.05                | Qp  | 25.5                 | -31.5        | 32.05                      | 40                 | -7.95       | 258            | 105         | V        |
| 4      | 63.2436         | 49.04                | Pk  | 13.5                 | -31          | 31.54                      | 40                 | -8.46       | 0-360          | 100         | V        |
| 5      | 217.4023        | 46.16                | Pk  | 16.4                 | -30.3        | 32.26                      | 46.02              | -13.76      | 0-360          | 99          | H        |
| 6      | 217.2022        | 40.58                | Pk  | 16.4                 | -30.3        | 26.68                      | 46.02              | -19.34      | 0-360          | 199         | V        |

Pk - Peak detector

Qp - Quasi-Peak detector

## 9. FREQUENCY STABILITY

### LIMIT

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

### TEST PROCEDURE

ANSI C63.10-2013 Clause 6.8

### RESULTS

No non-compliance noted.

|            |       |              |                           |
|------------|-------|--------------|---------------------------|
| <b>ID:</b> | 38602 | <b>Date:</b> | 7/02/2020 &<br>08/01/2020 |
|------------|-------|--------------|---------------------------|

## 9.1. PRIMARY ANTENNA

### READER MODE, TYPE A 848Kbps

| Reference Frequency: EUT Channel 13.56 MHz @ 20°C |             |                                               |             |                |             |                |             |                 |             |             |
|---------------------------------------------------|-------------|-----------------------------------------------|-------------|----------------|-------------|----------------|-------------|-----------------|-------------|-------------|
| Limit: $\pm 100$ 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          | 13.5597621                                    | 5.115       | 13.5597649     | 4.907       | 13.5597687     | 4.629       | 13.5597732      | 4.294       | $\pm 100$   |
|                                                   | 40          | 13.5597588                                    | 5.357       | 13.5597575     | 5.452       | 13.5597565     | 5.525       | 13.5597560      | 5.563       | $\pm 100$   |
|                                                   | 30          | 13.5597829                                    | 3.576       | 13.5597791     | 3.857       | 13.5597753     | 4.138       | 13.5597719      | 4.392       | $\pm 100$   |
|                                                   | 20          | 13.5598314                                    | 0.000       | 13.5598243     | 0.527       | 13.5598170     | 1.067       | 13.5598102      | 1.562       | $\pm 100$   |
|                                                   | 10          | 13.5597890                                    | 3.128       | 13.5598006     | 2.274       | 13.5598142     | 1.269       | 13.5598281      | 0.248       | $\pm 100$   |
|                                                   | 0           | 13.5606029                                    | -56.889     | 13.5606279     | -58.735     | 13.5605784     | -55.089     | 13.5606177      | -57.983     | $\pm 100$   |
|                                                   | -10         | 13.5605856                                    | -55.619     | 13.5607039     | -64.339     | 13.5606787     | -62.485     | 13.5606978      | -63.891     | $\pm 100$   |
|                                                   | -20         | 13.5610769                                    | -91.849     | 13.5609121     | -79.697     | 13.5608861     | -77.776     | 13.5609388      | -81.668     | $\pm 100$   |
| 3.23                                              | 20          | 13.5598329                                    | -0.108      | 13.5598555     | -1.774      | 13.5598804     | -3.613      | 13.5599136      | -6.062      | $\pm 100$   |
| 4.37                                              | 20          | 13.5597635                                    | 5.008       | 13.5597744     | 4.204       | 13.5597785     | 3.900       | 13.5597755      | 4.122       | $\pm 100$   |

### CE MODE, TYPE A 848Kbps

| Reference Frequency: EUT Channel 13.56 MHz @ 20°C |             |                                               |             |                |             |                |             |                 |             |             |
|---------------------------------------------------|-------------|-----------------------------------------------|-------------|----------------|-------------|----------------|-------------|-----------------|-------------|-------------|
| Limit: $\pm 100$ 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          | 13.5600078                                    | 24.671      | 13.5599919     | 25.843      | 13.5599284     | 30.528      | 13.5600606      | 20.778      | $\pm 100$   |
|                                                   | 40          | 13.5599474                                    | 29.130      | 13.5598462     | 36.590      | 13.5599171     | 31.364      | 13.5598622      | 35.409      | $\pm 100$   |
|                                                   | 30          | 13.5598396                                    | 37.077      | 13.5602634     | 5.824       | 13.5601366     | 15.177      | 13.5601703      | 12.686      | $\pm 100$   |
|                                                   | 20          | 13.5603424                                    | 0.000       | 13.5605757     | -17.207     | 13.5604017     | -4.376      | 13.5604457      | -7.622      | $\pm 100$   |
|                                                   | 10          | 13.5603623                                    | -1.471      | 13.5603242     | 1.342       | 13.5603586     | -1.196      | 13.5603382      | 0.309       | $\pm 100$   |
|                                                   | 0           | 13.5602844                                    | 4.273       | 13.5601716     | 12.595      | 13.5602561     | 6.361       | 13.5601148      | 16.784      | $\pm 100$   |
|                                                   | -10         | 13.5601556                                    | 13.775      | 13.5601303     | 15.640      | 13.5601440     | 14.630      | 13.5601176      | 16.578      | $\pm 100$   |
|                                                   | -20         | 13.5602584                                    | 6.189       | 13.5604886     | -10.786     | 13.5605942     | -18.570     | 13.5605003      | -11.645     | $\pm 100$   |
| 3.23                                              | 20          | 13.5602352                                    | 7.906       | 13.5603147     | 2.039       | 13.5602763     | 4.875       | 13.5602574      | 6.267       | $\pm 100$   |
| 4.37                                              | 20          | 13.5599534                                    | 28.685      | 13.5599445     | 29.341      | 13.5599244     | 30.823      | 13.5599012      | 32.534      | $\pm 100$   |

## 9.2. SECONDARY ANTENNA

### READER MODE, TYPE A 848Kbps

| Reference Frequency: EUT Channel 13.56 MHz @ 20°C |             |                                               |              |                   |               |                   |               |                   |               |                             |
|---------------------------------------------------|-------------|-----------------------------------------------|--------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-----------------------------|
| Limit: $\pm 100$ 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)                 |
| <b>3.80</b>                                       | 50          | 13.5599215                                    | 3.495        | 13.5599220        | 3.453         | 13.5599230        | 3.384         | 13.5599242        | 3.296         | $\pm 100$                   |
|                                                   | 40          | 13.5599201                                    | 3.594        | 13.5599203        | 3.581         | 13.5599209        | 3.539         | 13.5599215        | 3.490         | $\pm 100$                   |
|                                                   | 30          | 13.5599307                                    | 2.814        | 13.5599335        | 2.609         | 13.5599365        | 2.383         | 13.5599393        | 2.181         | $\pm 100$                   |
|                                                   | <b>20</b>   | <b>13.5599688</b>                             | <b>0.000</b> | <b>13.5599703</b> | <b>-0.109</b> | <b>13.5599721</b> | <b>-0.240</b> | <b>13.5599740</b> | <b>-0.379</b> | <b><math>\pm 100</math></b> |
|                                                   | 10          | 13.5599957                                    | -1.981       | 13.5600009        | -2.361        | 13.5600060        | -2.739        | 13.5600099        | -3.030        | $\pm 100$                   |
|                                                   | 0           | 13.5600360                                    | -4.949       | 13.5600397        | -5.225        | 13.5600430        | -5.469        | 13.5600456        | -5.658        | $\pm 100$                   |
|                                                   | -10         | 13.5600664                                    | -7.191       | 13.5600686        | -7.355        | 13.5600704        | -7.488        | 13.5600715        | -7.569        | $\pm 100$                   |
|                                                   | -20         | 13.5600820                                    | -8.348       | 13.5600829        | -8.409        | 13.5600834        | -8.451        | 13.5600839        | -8.482        | $\pm 100$                   |
| 3.23                                              | 20          | 13.5599685                                    | 0.023        | 13.5599702        | -0.103        | 13.5599720        | -0.235        | 13.5599739        | -0.371        | $\pm 100$                   |
| 4.37                                              | 20          | 13.5599689                                    | 0.000        | 13.5599704        | -0.111        | 13.5599721        | -0.242        | 13.5599740        | -0.380        | $\pm 100$                   |



## 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 $\mu$ 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<br>(MHz)                                                                                                                                                         | Limits (dB $\mu$ 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:<br>1. The lower limit shall apply at the transition frequencies<br>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

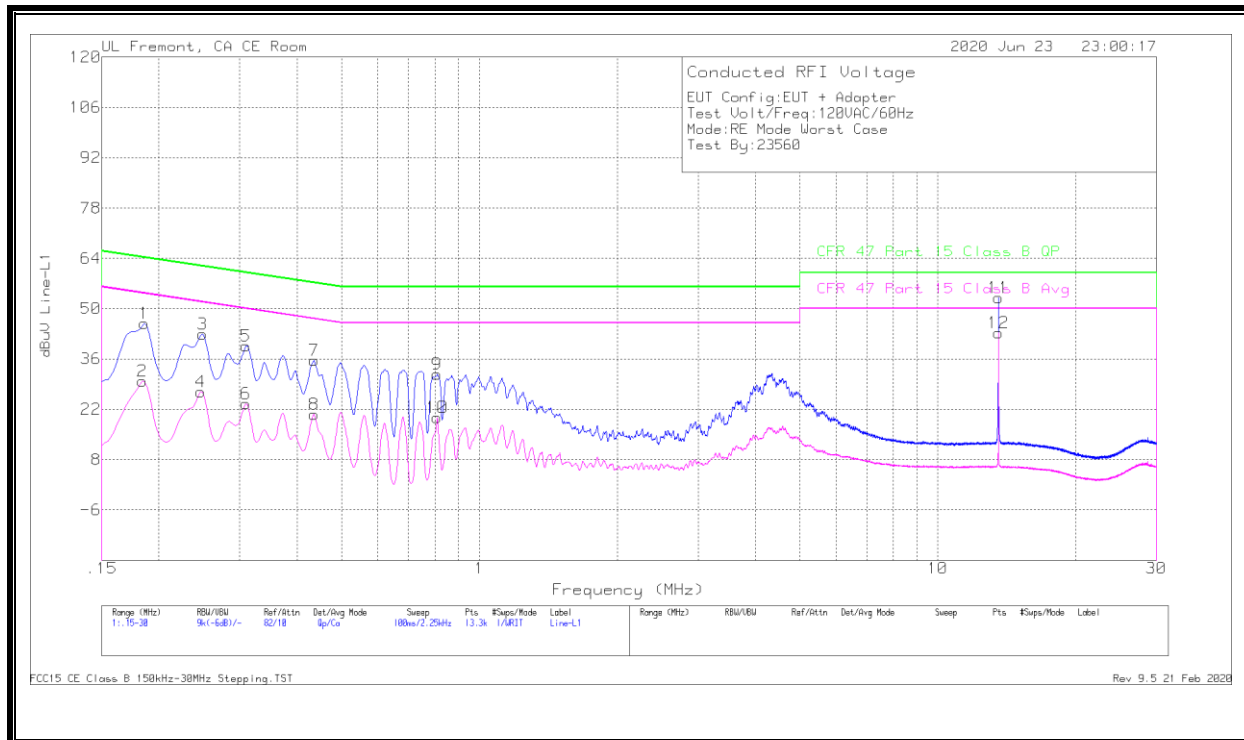
### RESULTS

No non-compliance noted:

## 10.1. READER MODE, TYPE A 848Kbps

### 10.1.1. NORMAL OPERATION

#### LINE 1 RESULTS



#### Worst Emission

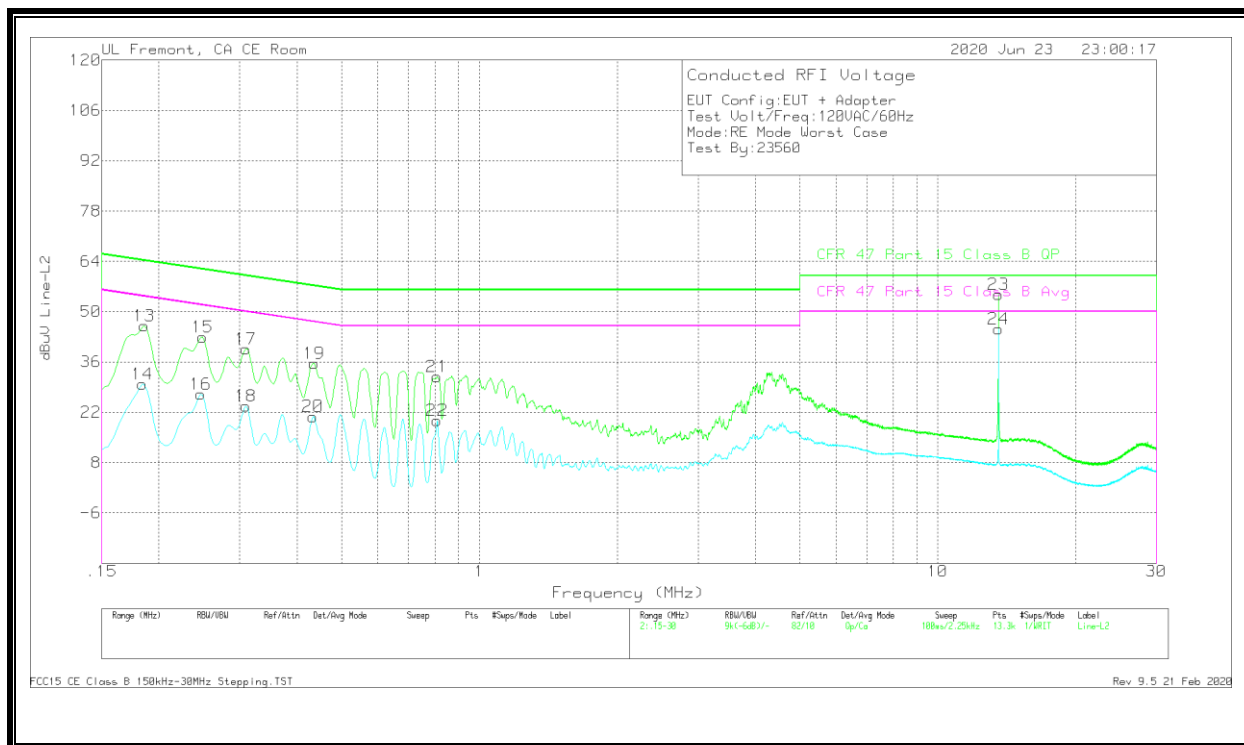
| Range 1: Line-L1 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
| 1                            | .186            | 35.95                | Qp  | 0                   | 0               | 10           | 45.95                  | 64.21                     | -18.26         | -                          | -                     |
| 2                            | .18375          | 19.78                | Ca  | 0                   | 0               | 10           | 29.78                  | -                         | -              | 54.31                      | -24.53                |
| 3                            | .249            | 32.97                | Qp  | 0                   | 0               | 10           | 42.97                  | 61.79                     | -18.82         | -                          | -                     |
| 4                            | .24675          | 16.93                | Ca  | 0                   | 0               | 10           | 26.93                  | -                         | -              | 51.87                      | -24.94                |
| 5                            | .30975          | 29.57                | Qp  | 0                   | 0               | 10           | 39.57                  | 59.98                     | -20.41         | -                          | -                     |
| 6                            | .30975          | 13.59                | Ca  | 0                   | 0               | 10           | 23.59                  | -                         | -              | 49.98                      | -26.39                |
| 7                            | .43575          | 25.55                | Qp  | 0                   | 0               | 10           | 35.55                  | 57.14                     | -21.59         | -                          | -                     |
| 8                            | .43575          | 10.57                | Ca  | 0                   | 0               | 10           | 20.57                  | -                         | -              | 47.14                      | -26.57                |
| 9                            | .80925          | 21.78                | Qp  | 0                   | 0               | 10           | 31.78                  | 56                        | -24.22         | -                          | -                     |
| 10                           | .80925          | 9.65                 | Ca  | 0                   | 0               | 10           | 19.65                  | -                         | -              | 46                         | -26.35                |
| 11                           | 13.56           | 42.66                | Qp  | .1                  | .2              | 10.1         | 53.06                  | 60                        | -6.94          | -                          | -                     |
| 12                           | 13.56           | 32.85                | Ca  | .1                  | .2              | 10.1         | 43.25                  | -                         | -              | 50                         | -6.75                 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

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

## LINE 2 RESULTS



## Worst Emission

| Range 2: Line-L2 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                      |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)Margin (dB) |
| 13                           | .186            | 36.07                | Qp  | 0                   | 0               | 10           | 46.07                  | 64.21                     | -18.14         | -                          | -                    |
| 14                           | .18375          | 19.88                | Ca  | 0                   | 0               | 10           | 29.88                  | -                         | -              | 54.31                      | -24.43               |
| 15                           | .249            | 32.85                | Qp  | 0                   | 0               | 10           | 42.85                  | 61.79                     | -18.94         | -                          | -                    |
| 16                           | .24675          | 17.01                | Ca  | 0                   | 0               | 10           | 27.01                  | -                         | -              | 51.87                      | -24.86               |
| 17                           | .30975          | 29.59                | Qp  | 0                   | 0               | 10           | 39.59                  | 59.98                     | -20.39         | -                          | -                    |
| 18                           | .30975          | 13.8                 | Ca  | 0                   | 0               | 10           | 23.8                   | -                         | -              | 49.98                      | -26.18               |
| 19                           | .43575          | 25.67                | Qp  | 0                   | 0               | 10           | 35.67                  | 57.14                     | -21.47         | -                          | -                    |
| 20                           | .4335           | 10.85                | Ca  | 0                   | 0               | 10           | 20.85                  | -                         | -              | 47.19                      | -26.34               |
| 21                           | .80925          | 21.99                | Qp  | 0                   | 0               | 10           | 31.99                  | 56                        | -24.01         | -                          | -                    |
| 22                           | .80925          | 9.74                 | Ca  | 0                   | 0               | 10           | 19.74                  | -                         | -              | 46                         | -26.26               |
| 23                           | 13.56           | 44.41                | Qp  | .1                  | .2              | 10.1         | 54.81                  | 60                        | -5.19          | -                          | -                    |
| 24                           | 13.56           | 34.78                | Ca  | .1                  | .2              | 10.1         | 45.18                  | -                         | -              | 50                         | -4.82                |

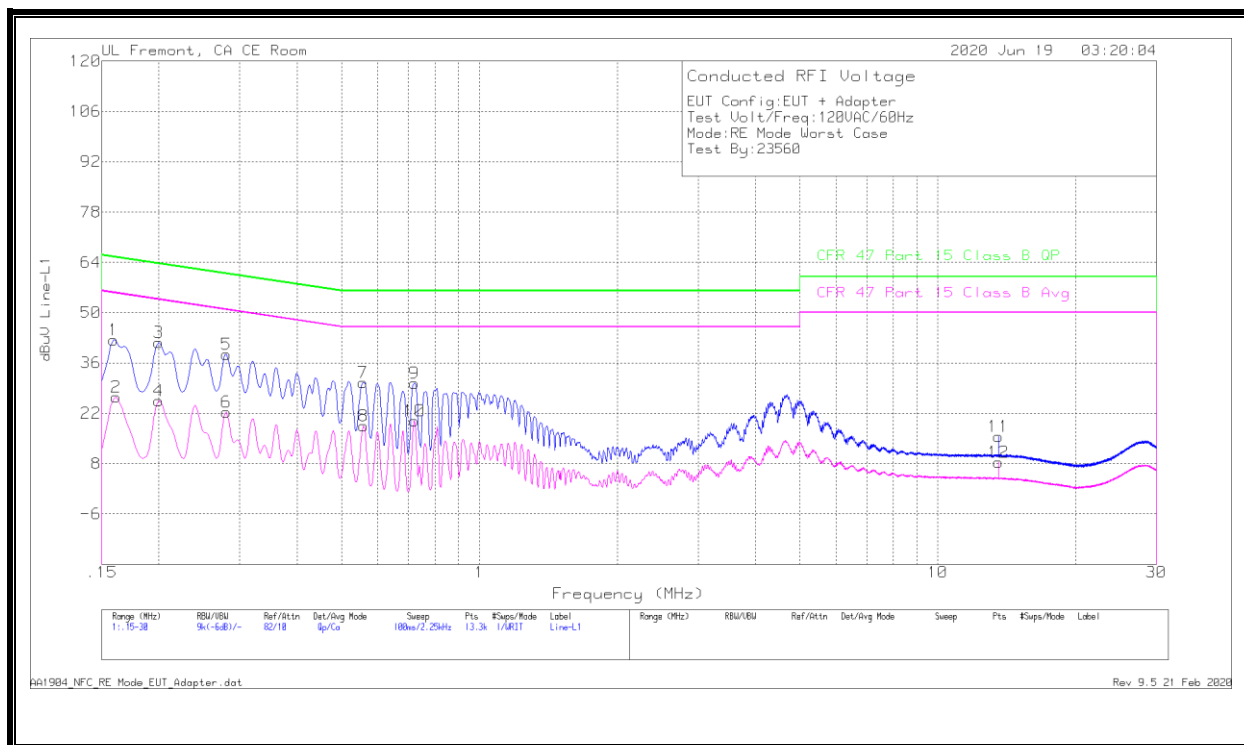
Qp - Quasi-Peak detector  
Ca - CISPR average detection

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

## 10.1.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 848Kbps

### LINE 1 RESULTS

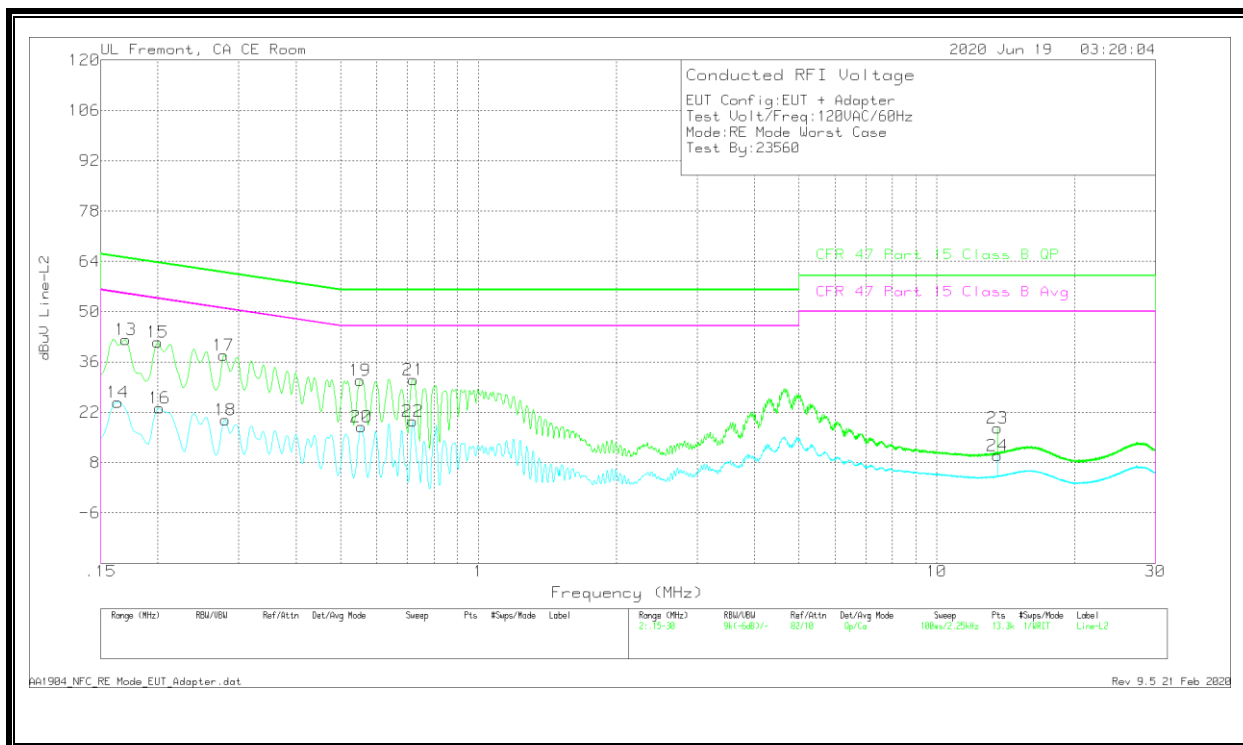


### Worst Emission

| Range 1: Line-L1 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                      |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)Margin (dB) |
| 1                            | .159            | 32.27                | Qp  | .1                  | 0               | 10           | 42.37                  | 65.52                     | -23.15         | -                          | -                    |
| 2                            | .16125          | 16.52                | Ca  | 0                   | 0               | 10           | 26.52                  | -                         | -              | 55.4                       | -28.88               |
| 3                            | .1995           | 31.74                | Qp  | 0                   | 0               | 10           | 41.74                  | 63.63                     | -21.89         | -                          | -                    |
| 4                            | .1995           | 15.52                | Ca  | 0                   | 0               | 10           | 25.52                  | -                         | -              | 53.63                      | -28.11               |
| 5                            | .2805           | 28.32                | Qp  | 0                   | 0               | 10           | 38.32                  | 60.8                      | -22.48         | -                          | -                    |
| 6                            | .2805           | 12.28                | Ca  | 0                   | 0               | 10           | 22.28                  | -                         | -              | 50.8                       | -28.52               |
| 7                            | .55725          | 20.61                | Qp  | 0                   | 0               | 10           | 30.61                  | 56                        | -25.39         | -                          | -                    |
| 8                            | .5595           | 8.55                 | Ca  | 0                   | 0               | 10           | 18.55                  | -                         | -              | 46                         | -27.45               |
| 9                            | .7215           | 20.42                | Qp  | 0                   | 0               | 10           | 30.42                  | 56                        | -25.58         | -                          | -                    |
| 10                           | .7215           | 9.86                 | Ca  | 0                   | 0               | 10           | 19.86                  | -                         | -              | 46                         | -26.14               |
| *11                          | 13.56           | 5.2                  | Qp  | .1                  | .2              | 10.1         | 15.6                   | 60                        | -44.4          | -                          | -                    |
| *12                          | 13.56           | -2.09                | Ca  | .1                  | .2              | 10.1         | 8.31                   | -                         | -              | 50                         | -41.69               |

Qp - Quasi-Peak detector  
Ca - CISPR average detection

## LINE 2 RESULTS



## Worst Emission

| Range 2: Line-L2 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
| 13                           | .17025          | 32.15                | Qp  | 0                   | 0               | 10           | 42.15                  | 64.95                     | -22.8          | -                          | -                     |
| 14                           | .1635           | 14.81                | Ca  | 0                   | 0               | 10           | 24.81                  | -                         | -              | 55.28                      | -30.47                |
| 15                           | .1995           | 31.48                | Qp  | 0                   | 0               | 10           | 41.48                  | 63.63                     | -22.15         | -                          | -                     |
| 16                           | .20175          | 13.17                | Ca  | 0                   | 0               | 10           | 23.17                  | -                         | -              | 53.54                      | -30.37                |
| 17                           | .27825          | 27.94                | Qp  | 0                   | 0               | 10           | 37.94                  | 60.87                     | -22.93         | -                          | -                     |
| 18                           | .2805           | 9.83                 | Ca  | 0                   | 0               | 10           | 19.83                  | -                         | -              | 50.8                       | -30.97                |
| 19                           | .55275          | 20.89                | Qp  | 0                   | 0               | 10           | 30.89                  | 56                        | -25.11         | -                          | -                     |
| 20                           | .555            | 8                    | Ca  | 0                   | 0               | 10           | 18                     | -                         | -              | 46                         | -28                   |
| 21                           | .7215           | 21.03                | Qp  | 0                   | 0               | 10           | 31.03                  | 56                        | -24.97         | -                          | -                     |
| 22                           | .71925          | 9.47                 | Ca  | 0                   | 0               | 10           | 19.47                  | -                         | -              | 46                         | -26.53                |
| *23                          | 13.56           | 7.25                 | Qp  | .1                  | .2              | 10.1         | 17.65                  | 60                        | -42.35         | -                          | -                     |
| *24                          | 13.56           | -46                  | Ca  | .1                  | .2              | 10.1         | 9.94                   | -                         | -              | 50                         | -40.06                |

Qp - Quasi-Peak detector

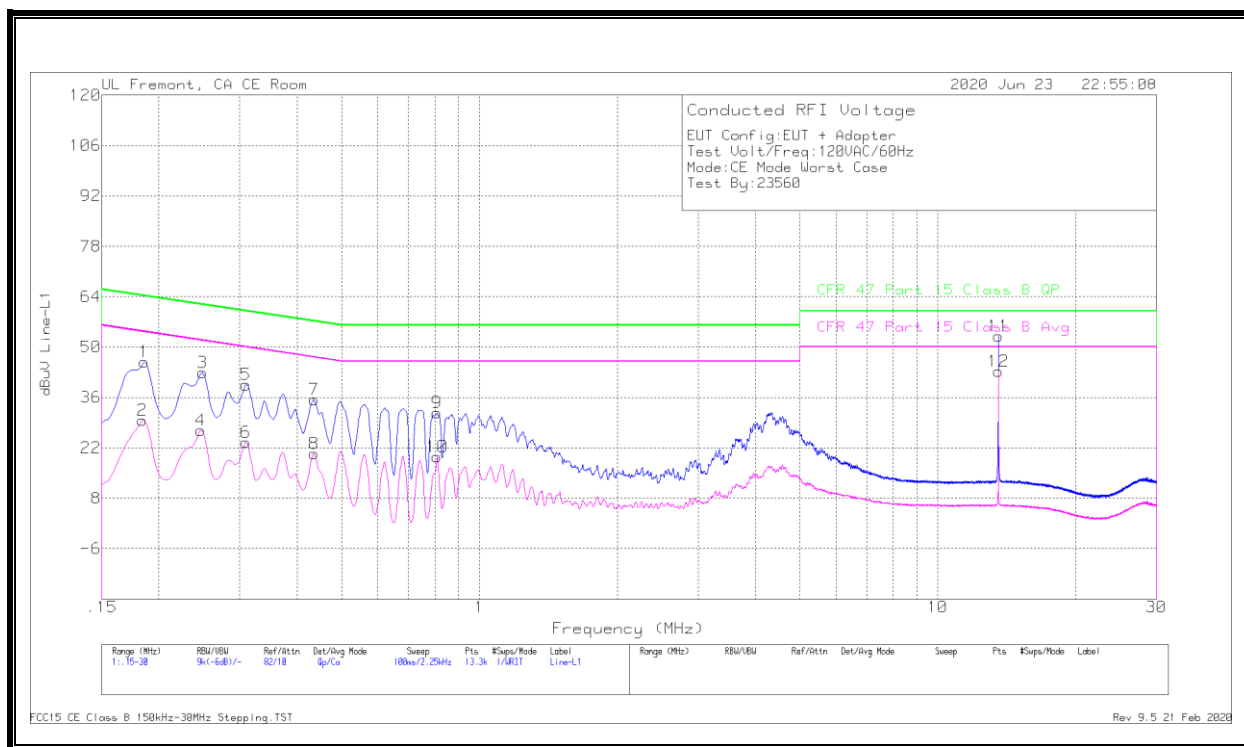
Ca - CISPR average detection

AA1904\_NFC\_RE\_Mode\_EUT\_Adapter.dat  
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## 10.2. CE MODE, TYPE A 848Kbps

### 10.2.1. NORMAL OPERATION

#### LINE 1 RESULTS



#### Worst Emission

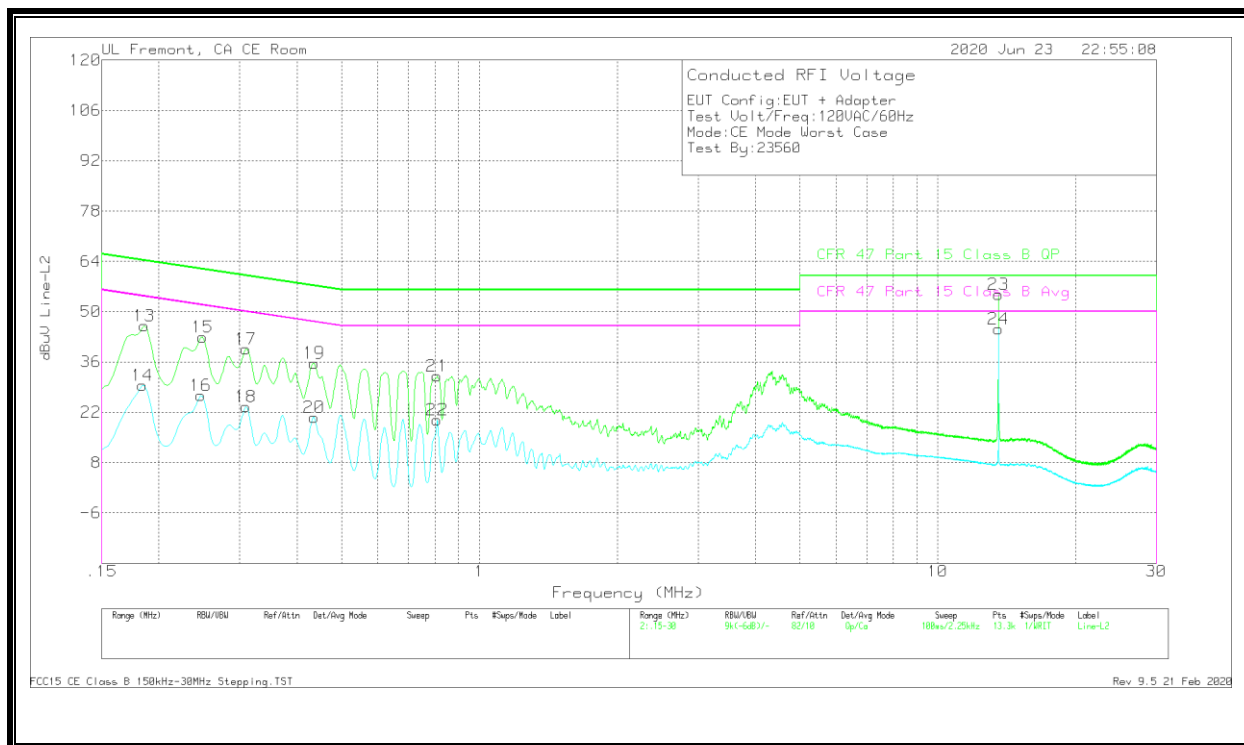
| Range 1: Line-L1 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
| 1                            | .186            | 35.91                | Qp  | 0                   | 0               | 10           | 45.91                  | 64.21                     | -18.3          | -                          | -                     |
| 2                            | .18375          | 19.69                | Ca  | 0                   | 0               | 10           | 29.69                  | -                         | -              | 54.31                      | -24.62                |
| 3                            | .249            | 32.89                | Qp  | 0                   | 0               | 10           | 42.89                  | 61.79                     | -18.9          | -                          | -                     |
| 4                            | .24675          | 16.9                 | Ca  | 0                   | 0               | 10           | 26.9                   | -                         | -              | 51.87                      | -24.97                |
| 5                            | .30975          | 29.53                | Qp  | 0                   | 0               | 10           | 39.53                  | 59.98                     | -20.45         | -                          | -                     |
| 6                            | .30975          | 13.62                | Ca  | 0                   | 0               | 10           | 23.62                  | -                         | -              | 49.98                      | -26.36                |
| 7                            | .43575          | 25.44                | Qp  | 0                   | 0               | 10           | 35.44                  | 57.14                     | -21.7          | -                          | -                     |
| 8                            | .43575          | 10.42                | Ca  | 0                   | 0               | 10           | 20.42                  | -                         | -              | 47.14                      | -26.72                |
| 9                            | .80925          | 21.74                | Qp  | 0                   | 0               | 10           | 31.74                  | 56                        | -24.26         | -                          | -                     |
| 10                           | .80925          | 9.61                 | Ca  | 0                   | 0               | 10           | 19.61                  | -                         | -              | 46                         | -26.39                |
| 11                           | 13.56           | 42.65                | Qp  | .1                  | .2              | 10.1         | 53.05                  | 60                        | -6.95          | -                          | -                     |
| 12                           | 13.56           | 32.83                | Ca  | .1                  | .2              | 10.1         | 43.23                  | -                         | -              | 50                         | -6.77                 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

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

## LINE 2 RESULTS



## Worst Emission

| Range 2: Line-L2 .15 - 30MHz |                 |                      |     |                     |                 |              |                          |                           |                |                            |                      |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|--------------------------|---------------------------|----------------|----------------------------|----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading (dBuV) | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)Margin (dB) |
| 13                           | .186            | 36.11                | Qp  | 0                   | 0               | 10           | 46.11                    | 64.21                     | -18.1          | -                          | -                    |
| 14                           | .18375          | 19.48                | Ca  | 0                   | 0               | 10           | 29.48                    | -                         | -              | 54.31                      | -24.83               |
| 15                           | .249            | 32.9                 | Qp  | 0                   | 0               | 10           | 42.9                     | 61.79                     | -18.89         | -                          | -                    |
| 16                           | .24675          | 16.68                | Ca  | 0                   | 0               | 10           | 26.68                    | -                         | -              | 51.87                      | -25.19               |
| 17                           | .30975          | 29.65                | Qp  | 0                   | 0               | 10           | 39.65                    | 59.98                     | -20.33         | -                          | -                    |
| 18                           | .30975          | 13.55                | Ca  | 0                   | 0               | 10           | 23.55                    | -                         | -              | 49.98                      | -26.43               |
| 19                           | .43575          | 25.68                | Qp  | 0                   | 0               | 10           | 35.68                    | 57.14                     | -21.46         | -                          | -                    |
| 20                           | .43575          | 10.67                | Ca  | 0                   | 0               | 10           | 20.67                    | -                         | -              | 47.14                      | -26.47               |
| 21                           | .80925          | 22.06                | Qp  | 0                   | 0               | 10           | 32.06                    | 56                        | -23.94         | -                          | -                    |
| 22                           | .80925          | 9.9                  | Ca  | 0                   | 0               | 10           | 19.9                     | -                         | -              | 46                         | -26.1                |
| 23                           | 13.56           | 44.39                | Qp  | .1                  | .2              | 10.1         | 54.79                    | 60                        | -5.21          | -                          | -                    |
| 24                           | 13.56           | 34.74                | Ca  | .1                  | .2              | 10.1         | 45.14                    | -                         | -              | 50                         | -4.86                |

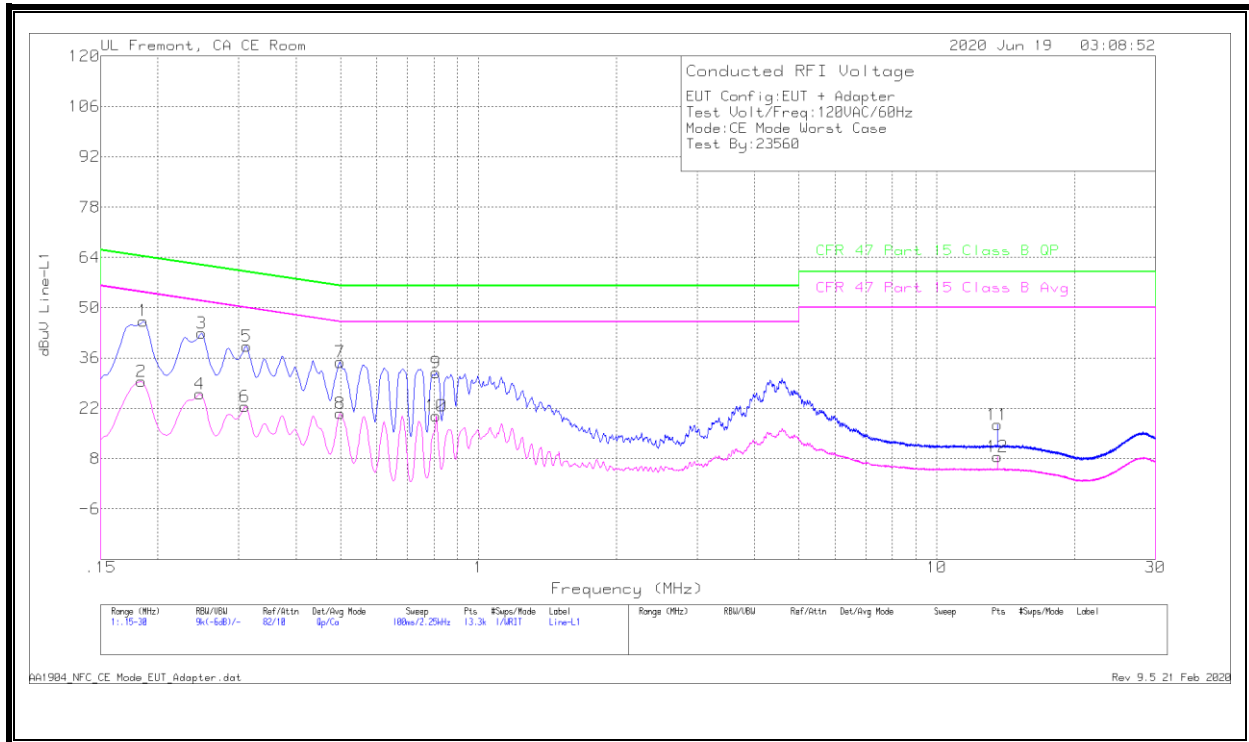
Qp - Quasi-Peak detector  
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST  
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Note: 13.56MHz is a fundamental frequency of the EUT. Data under the following section indicate that when the antenna terminal is terminated the fundamental amplitude is lowering below the limit line.

## 10.2.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 848Kbps

### LINE 1 RESULTS



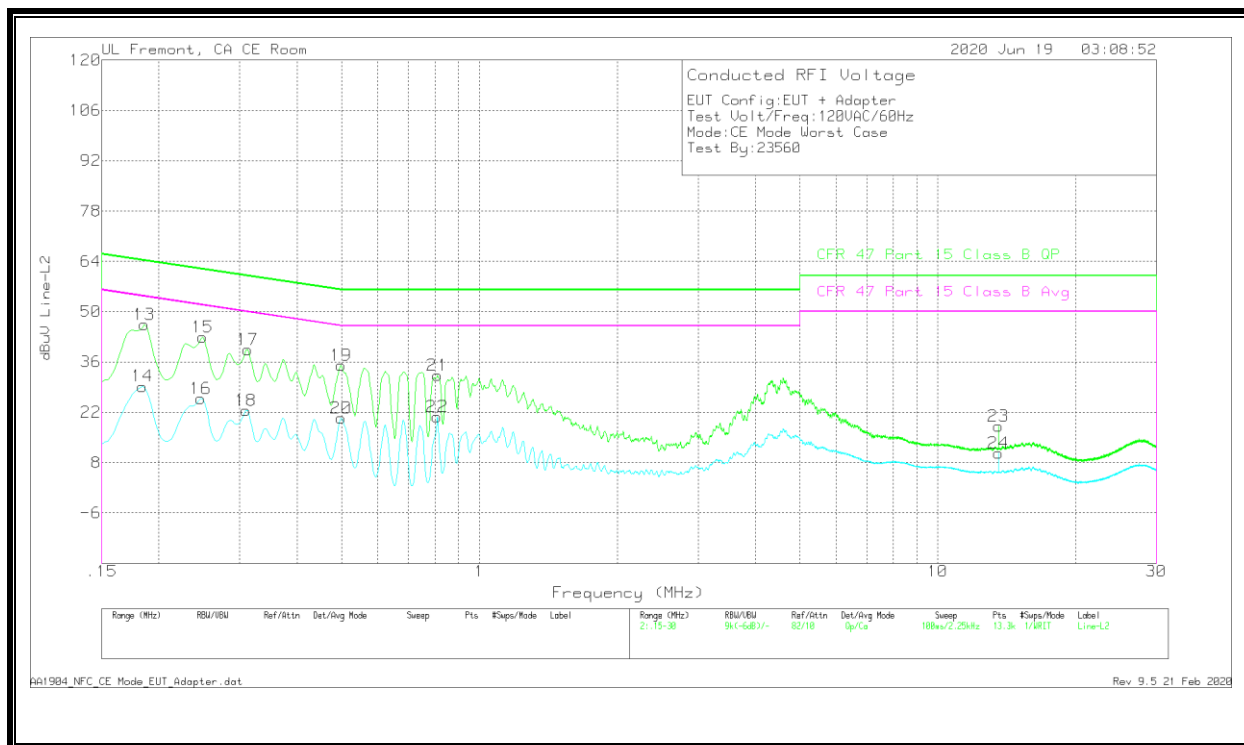
### Worst Emission

| Range 1: Line-L1 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
| 1                            | .186            | 36.33                | Qp  | 0                   | 0               | 10           | 46.33                  | 64.21                     | -17.88         | -                          | -                     |
| 2                            | .18375          | 19.55                | Ca  | 0                   | 0               | 10           | 29.55                  | -                         | -              | 54.31                      | -24.76                |
| 3                            | .249            | 32.98                | Qp  | 0                   | 0               | 10           | 42.98                  | 61.79                     | -18.81         | -                          | -                     |
| 4                            | .24675          | 15.99                | Ca  | 0                   | 0               | 10           | 25.99                  | -                         | -              | 51.87                      | -25.88                |
| 5                            | .312            | 29.34                | Qp  | 0                   | 0               | 10           | 39.34                  | 59.92                     | -20.58         | -                          | -                     |
| 6                            | .30975          | 12.47                | Ca  | 0                   | 0               | 10           | 22.47                  | -                         | -              | 49.98                      | -27.51                |
| 7                            | .49875          | 24.82                | Qp  | 0                   | 0               | 10           | 34.82                  | 56.02                     | -21.2          | -                          | -                     |
| 8                            | .49875          | 10.58                | Ca  | 0                   | 0               | 10           | 20.58                  | -                         | -              | 46.02                      | -25.44                |
| 9                            | .80925          | 21.88                | Qp  | 0                   | 0               | 10           | 31.88                  | 56                        | -24.12         | -                          | -                     |
| 10                           | .80925          | 9.93                 | Ca  | 0                   | 0               | 10           | 19.93                  | -                         | -              | 46                         | -26.07                |
| *11                          | 13.56           | 6.99                 | Qp  | .1                  | .2              | 10.1         | 17.39                  | 60                        | -42.61         | -                          | -                     |
| *12                          | 13.56           | -1.92                | Ca  | .1                  | .2              | 10.1         | 8.48                   | -                         | -              | 50                         | -41.52                |

Qp - Quasi-Peak detector  
Ca - CISPR average detection



## LINE 2 RESULTS



## Worst Emission

| Range 2: Line-L2 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
| 13                           | .186            | 36.34                | Qp  | 0                   | 0               | 10           | 46.34                  | 64.21                     | -17.87         | -                          | -                     |
| 14                           | .18375          | 19.23                | Ca  | 0                   | 0               | 10           | 29.23                  | -                         | -              | 54.31                      | -25.08                |
| 15                           | .249            | 32.99                | Qp  | 0                   | 0               | 10           | 42.99                  | 61.79                     | -18.8          | -                          | -                     |
| 16                           | .24675          | 15.85                | Ca  | 0                   | 0               | 10           | 25.85                  | -                         | -              | 51.87                      | -26.02                |
| 17                           | .312            | 29.5                 | Qp  | 0                   | 0               | 10           | 39.5                   | 59.92                     | -20.42         | -                          | -                     |
| 18                           | .30975          | 12.59                | Ca  | 0                   | 0               | 10           | 22.59                  | -                         | -              | 49.98                      | -27.39                |
| 19                           | .49875          | 25.07                | Qp  | 0                   | 0               | 10           | 35.07                  | 56.02                     | -20.95         | -                          | -                     |
| 20                           | .49875          | 10.42                | Ca  | 0                   | 0               | 10           | 20.42                  | -                         | -              | 46.02                      | -25.6                 |
| 21                           | .8115           | 22.24                | Qp  | 0                   | 0               | 10           | 32.24                  | 56                        | -23.76         | -                          | -                     |
| 22                           | .80925          | 10.72                | Ca  | 0                   | 0               | 10           | 20.72                  | -                         | -              | 46                         | -25.28                |
| *23                          | 13.56           | 7.68                 | Qp  | .1                  | .2              | 10.1         | 18.08                  | 60                        | -41.92         | -                          | -                     |
| *24                          | 13.56           | .3                   | Ca  | .1                  | .2              | 10.1         | 10.7                   | -                         | -              | 50                         | -39.3                 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

\*Indicates UL RFID signal. Not from device.

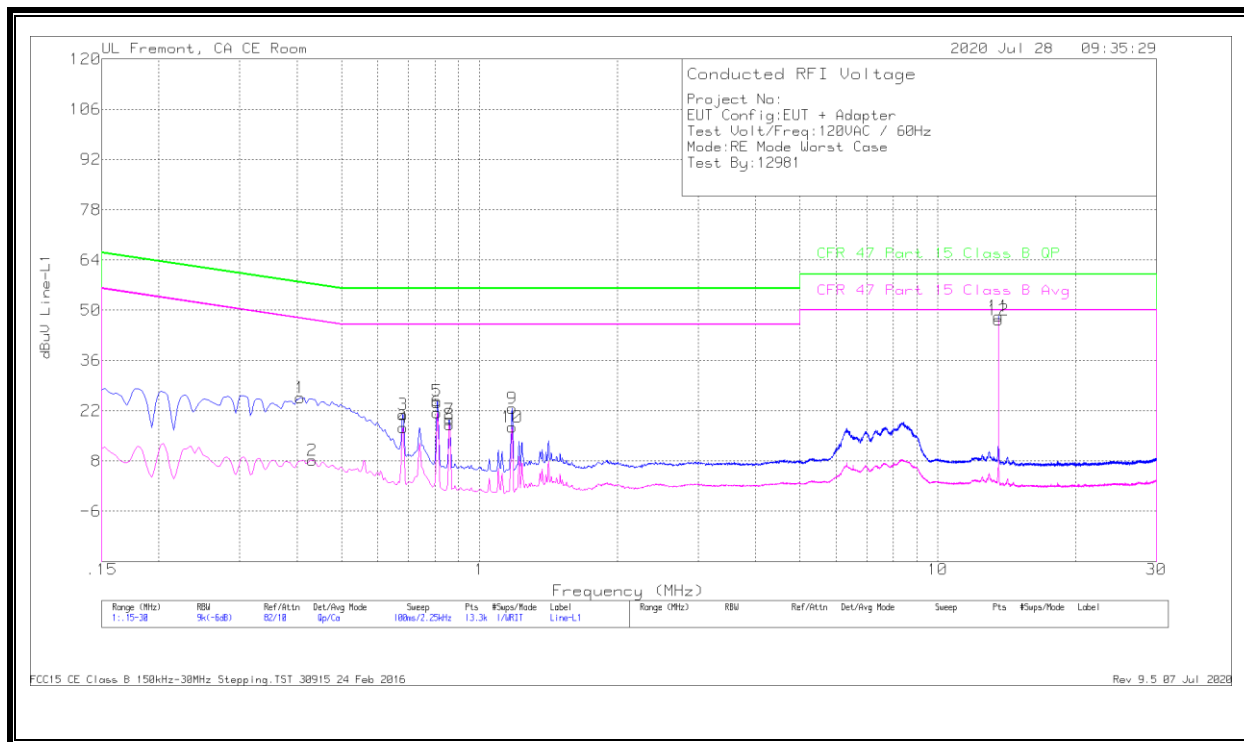
AA1904\_NFC\_CE Mode\_EUT\_Adapter.dat

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## 10.3. SECONDARY ANTENNA

### 10.3.1. READER MODE, NORMAL OPERATION

#### LINE 1 RESULTS



#### Worst Emission

##### Range 1: Line-L1 .15 - 30MHz

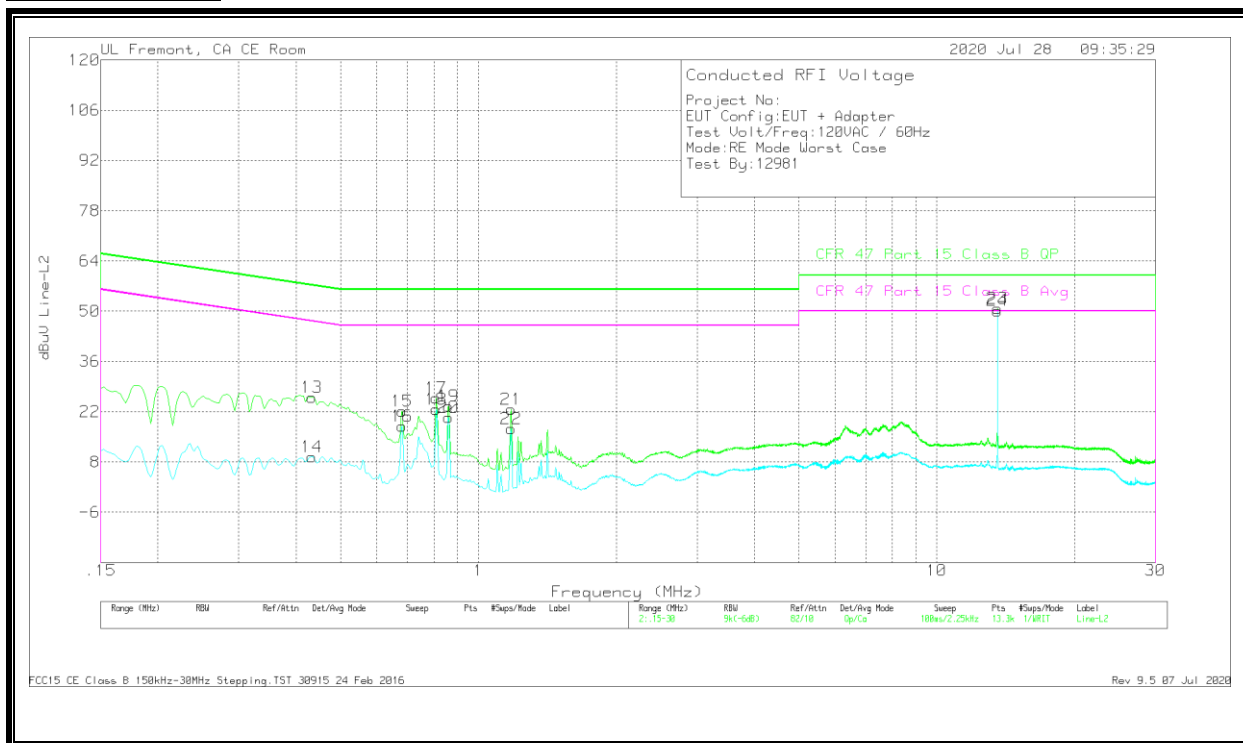
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
|--------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| 1      | .4065           | 15.6                 | Qp  | 0                   | 0               | 10           | 25.6                   | 57.72                     | -32.12         | -                          | -                     |
| 2      | .43125          | -1.74                | Ca  | 0                   | 0               | 10           | 8.26                   | -                         | -              | 47.23                      | -38.97                |
| 3      | .681            | 11.02                | Qp  | 0                   | 0               | 10           | 21.02                  | 56                        | -34.98         | -                          | -                     |
| 4      | .681            | 7.35                 | Ca  | 0                   | 0               | 10           | 17.35                  | -                         | -              | 46                         | -28.65                |
| 5      | .80925          | 14.8                 | Qp  | 0                   | 0               | 10           | 24.8                   | 56                        | -31.2          | -                          | -                     |
| 6      | .80925          | 11.55                | Ca  | 0                   | 0               | 10           | 21.55                  | -                         | -              | 46                         | -24.45                |
| 7      | .861            | 9.53                 | Qp  | 0                   | 0               | 10           | 19.53                  | 56                        | -36.47         | -                          | -                     |
| 8      | .861            | 8.16                 | Ca  | 0                   | 0               | 10           | 18.16                  | -                         | -              | 46                         | -27.84                |
| 9      | 1.17825         | 12.58                | Qp  | 0                   | .1              | 10           | 22.68                  | 56                        | -33.32         | -                          | -                     |
| 10     | 1.17825         | 7.34                 | Ca  | 0                   | .1              | 10           | 17.44                  | -                         | -              | 46                         | -28.56                |
| 11     | 13.56           | 37.92                | Qp  | .1                  | .2              | 10.1         | 48.32                  | 60                        | -11.68         | -                          | -                     |
| 12     | 13.56           | 36.94                | Ca  | .1                  | .2              | 10.1         | 47.34                  | -                         | -              | 50                         | -2.66                 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

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## LINE 2 RESULTS



## Worst Emission

### Range 2: Line-L2 .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR) Margin (dB) |
|--------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| 13     | .4335           | 16.05                | Qp  | 0                   | 0               | 10           | 26.05                  | 57.19                     | -31.14         | -                          | -                     |
| 14     | .4335           | -54                  | Ca  | 0                   | 0               | 10           | 9.46                   | -                         | -              | 47.19                      | -37.73                |
| 15     | .681            | 12.19                | Qp  | 0                   | 0               | 10           | 22.19                  | 56                        | -33.81         | -                          | -                     |
| 16     | .681            | 8.05                 | Ca  | 0                   | 0               | 10           | 18.05                  | -                         | -              | 46                         | -27.95                |
| 17     | .80925          | 15.79                | Qp  | 0                   | 0               | 10           | 25.79                  | 56                        | -30.21         | -                          | -                     |
| 18     | .80925          | 12.65                | Ca  | 0                   | 0               | 10           | 22.65                  | -                         | -              | 46                         | -23.35                |
| 19     | .861            | 13.52                | Qp  | 0                   | 0               | 10           | 23.52                  | 56                        | -32.48         | -                          | -                     |
| 20     | .861            | 10.48                | Ca  | 0                   | 0               | 10           | 20.48                  | -                         | -              | 46                         | -25.52                |
| 21     | 1.17825         | 12.54                | Qp  | 0                   | .1              | 10           | 22.64                  | 56                        | -33.36         | -                          | -                     |
| 22     | 1.17825         | 7.23                 | Ca  | 0                   | .1              | 10           | 17.33                  | -                         | -              | 46                         | -28.67                |
| 23     | 13.56           | 40.44                | Qp  | .1                  | .2              | 10.1         | 50.84                  | 60                        | -9.16          | -                          | -                     |
| 24     | 13.56           | 39.77                | Ca  | .1                  | .2              | 10.1         | 50.17                  | -                         | -              | 50                         | .17                   |

Qp - Quasi-Peak detector

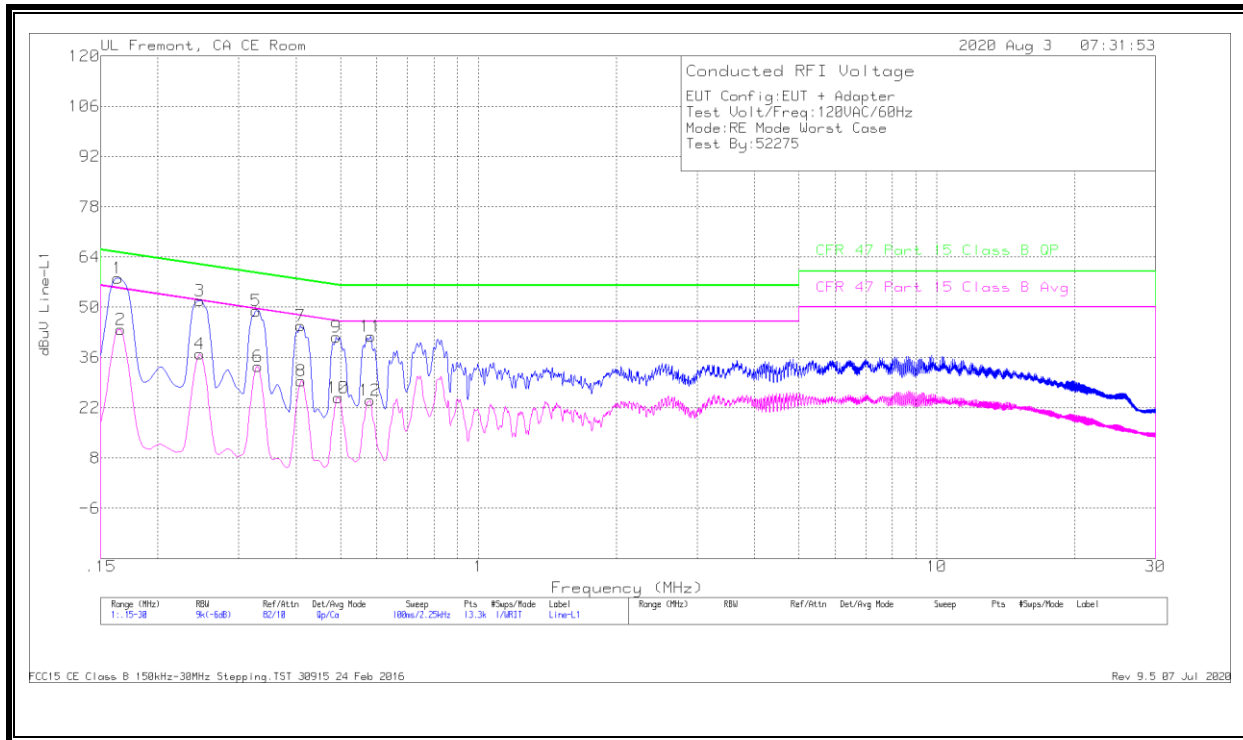
Ca - CISPR average detection

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## 10.3.2. NORMAL OPERATION WITH ANTENNA PORT TERMINATED, 848Kbps

### LINE 1 RESULTS



### Worst Emission

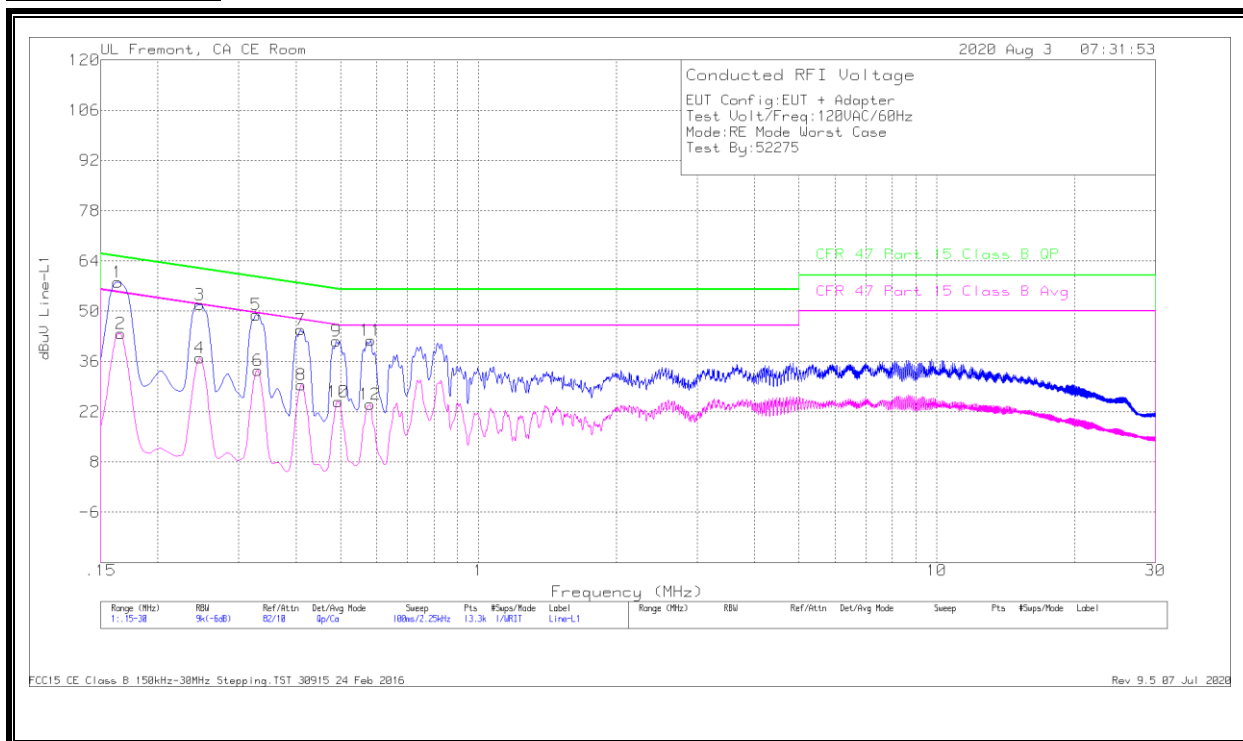
| Range 1: Line-L1 .15 - 30MHz |                 |                      |     |                     |                 |              |                        |                           |                |                            |                       |
|------------------------------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | PRE018644 6 LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
| 1                            | .1635           | 48.07                | Qp  | 0                   | 0               | 10           | 58.07                  | 65.28                     | -7.21          | -                          | -                     |
| 2                            | .16575          | 33.82                | Ca  | 0                   | 0               | 10           | 43.82                  | -                         | -              | 55.17                      | -11.35                |
| 3                            | .24675          | 41.9                 | Qp  | 0                   | 0               | 10           | 51.9                   | 61.87                     | -9.97          | -                          | -                     |
| 4                            | .24675          | 27.07                | Ca  | 0                   | 0               | 10           | 37.07                  | -                         | -              | 51.87                      | -14.8                 |
| 5                            | .32775          | 38.95                | Qp  | 0                   | 0               | 10           | 48.95                  | 59.51                     | -10.56         | -                          | -                     |
| 6                            | .33             | 23.58                | Ca  | 0                   | 0               | 10           | 33.58                  | -                         | -              | 49.45                      | -15.87                |
| 7                            | .40875          | 34.78                | Qp  | 0                   | 0               | 10           | 44.78                  | 57.67                     | -12.89         | -                          | -                     |
| 8                            | .411            | 19.57                | Ca  | 0                   | 0               | 10           | 29.57                  | -                         | -              | 47.63                      | -18.06                |
| 9                            | .48975          | 31.69                | Qp  | 0                   | 0               | 10           | 41.69                  | 56.17                     | -14.48         | -                          | -                     |
| 10                           | .49425          | 14.86                | Ca  | 0                   | 0               | 10           | 24.86                  | -                         | -              | 46.1                       | -21.24                |
| 11                           | .582            | 31.85                | Qp  | 0                   | 0               | 10           | 41.85                  | 56                        | -14.15         | -                          | -                     |
| 12                           | .57975          | 14.06                | Ca  | 0                   | 0               | 10           | 24.06                  | -                         | -              | 46                         | -21.94                |

Qp - Quasi-Peak detector

Ca - CISPR average detection

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## LINE 2 RESULTS



## Worst Emission

### Range 2: Line-L2 .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBUV) | Det | PRE018644 6 LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBUV | CFR 47 Part 15 Class B QP | QP Margin (dB) | CFR 47 Part 15 Class B Avg | Av(CISPR)M argin (dB) |
|--------|-----------------|----------------------|-----|---------------------|-----------------|--------------|------------------------|---------------------------|----------------|----------------------------|-----------------------|
| 13     | .1635           | 46.44                | Qp  | 0                   | 0               | 10           | 56.44                  | 65.28                     | -8.84          | -                          | -                     |
| 14     | .1635           | 32.03                | Ca  | 0                   | 0               | 10           | 42.03                  | -                         | -              | 55.28                      | -13.25                |
| 15     | .24675          | 40.35                | Qp  | 0                   | 0               | 10           | 50.35                  | 61.87                     | -11.52         | -                          | -                     |
| 16     | .24675          | 24.97                | Ca  | 0                   | 0               | 10           | 34.97                  | -                         | -              | 51.87                      | -16.9                 |
| 17     | .3255           | 36.98                | Qp  | 0                   | 0               | 10           | 46.98                  | 59.57                     | -12.59         | -                          | -                     |
| 18     | .32775          | 21.43                | Ca  | 0                   | 0               | 10           | 31.43                  | -                         | -              | 49.51                      | -18.08                |
| 19     | .4065           | 32.47                | Qp  | 0                   | 0               | 10           | 42.47                  | 57.72                     | -15.25         | -                          | -                     |
| 20     | .411            | 17.24                | Ca  | 0                   | 0               | 10           | 27.24                  | -                         | -              | 47.63                      | -20.39                |
| 21     | .4965           | 30.74                | Qp  | 0                   | 0               | 10           | 40.74                  | 56.06                     | -15.32         | -                          | -                     |
| 22     | .49425          | 12.32                | Ca  | 0                   | 0               | 10           | 22.32                  | -                         | -              | 46.1                       | -23.78                |
| 23     | .57075          | 30.13                | Qp  | 0                   | 0               | 10           | 40.13                  | 56                        | -15.87         | -                          | -                     |
| 24     | .57075          | 12.5                 | Ca  | 0                   | 0               | 10           | 22.5                   | -                         | -              | 46                         | -23.5                 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

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## **11. SETUP PHOTOS**

Please refer to 13335182-EP1 for setup photos.

**END OF TEST REPORT**