



**FCC CFR47 PART 15 SUBPART C**

**ANT+  
CERTIFICATION TEST REPORT  
FOR**

**Tablet with Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ and NFC**

**FCC ID: PY7TS-0040**

**REPORT NUMBER: 14U17934-E5 REVISION B**

**ISSUE DATE: SEPTEMBER 18, 2014**

**Prepared for  
SONY MOBILE COMMUNICATIONS, INC.  
NYA VATTENTORNET MOBILVAGEN 10  
LUND 22188  
SWEDEN**

**Prepared by  
UL VERIFICATION SERVICES INC.  
47173 BENICIA STREET  
FREMONT, CA 94538, U.S.A.  
TEL: (510) 771-1000  
FAX: (510) 661-0888**



**NVLAP LAB CODE 200065-0**

Revision History

| Rev. | Issue Date | Revisions                                  | Revised By |
|------|------------|--------------------------------------------|------------|
| --   | 09/05/14   | Initial issue                              | D. Coronia |
| A    | 09/17/14   | EUT description updated                    | D. Coronia |
| B    | 09/18/14   | EUT description updated; cover page, 4 & 7 | D. Coronia |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SONY MOBILE COMMUNICATIONS, INC.

**EUT DESCRIPTION:** Tablet with Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ and NFC

**SERIAL NUMBER:** CB5A20E0RY

**DATE TESTED:** AUGUST 18, 2014

| APPLICABLE STANDARDS     |              |
|--------------------------|--------------|
| STANDARD                 | TEST RESULTS |
| CFR 47 Part 15 Subpart C | Pass         |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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 any government.

Approved & Released For  
UL Verification Services Inc. By:

Tested By:



DAN CORONIA  
CONSUMER TECHNOLOGY DIVISION  
PROJECT LEAD  
UL Verification Services Inc.



DANIEL SOPER  
CONSUMER TECHNOLOGY DIVISION  
LAB ENGINEER  
UL Verification Services Inc.

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, 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               |
|-----------------------------------------------|------------------------------------|
| <input type="checkbox"/> Chamber A            | <input type="checkbox"/> Chamber D |
| <input checked="" type="checkbox"/> Chamber B | <input type="checkbox"/> Chamber E |
| <input type="checkbox"/> Chamber C            | <input type="checkbox"/> Chamber F |

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

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

| PARAMETER                             | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB     |
| Radiated Disturbance, 30 to 18000 MHz | 4.94 dB     |

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a Tablet with Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ and NFC.

The FCC ID: PY7TS-0040 shares the same enclosure and circuit board as FCC ID: PY7TM-0050. The WLAN/Bluetooth/ANT+ and NFC circuitry and layout, including antennas, are almost identical between the two units. The WLAN/Bluetooth/ANT+ and NFC antennas and surrounding circuitry are the same between these two units. The main difference between the two models is that WWAN circuitry in FCC ID: PY7TM-0050 is removed for FCC ID: PY7TS-0040.

After confirming through preliminary radiated emissions that the performance of the FCC ID: PY7TS-0040 remains representative of FCC ID: PY7TM-0050, test data for FCC ID: PY7TM-0050 is being submitted for this application to cover WLAN/Bluetooth/ANT+ and NFC features.

Radiated emissions were fully re-evaluated against FCC Part 15B requirements for digital devices and results indicated no significant differences between the two versions due to the depopulation of the WWAN circuitry.

### 5.2. MAXIMUM OUTPUT FUNDAMENTAL FIELD STRENGTH

The ANT+ mode has maximum output fundamental field strength as follows:

| Frequency Range<br>(MHz) | Mode  | Peak E-field Strength<br>(dBuV/m) | Avg E-field Strength<br>(dBuV/m) | Distance<br>(m) |
|--------------------------|-------|-----------------------------------|----------------------------------|-----------------|
| 2403 - 2480              | ANT + | 72.47                             | 72.09                            | 3.00            |

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of 0.4 dBi.

### 5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |              |        |                        |        |
|------------------------|--------------|--------|------------------------|--------|
| Description            | Manufacturer | Model  | Serial Number          | FCC ID |
| AC Adapter             | Sony         | EP880  | 3514W01 S08489 SEM 060 | DoC    |
| Earphone               | Sony         | MH410c | 14071EB60060A84        | DoC    |
| MHL cable              | Sony         | N/A    | N/A                    | N/A    |

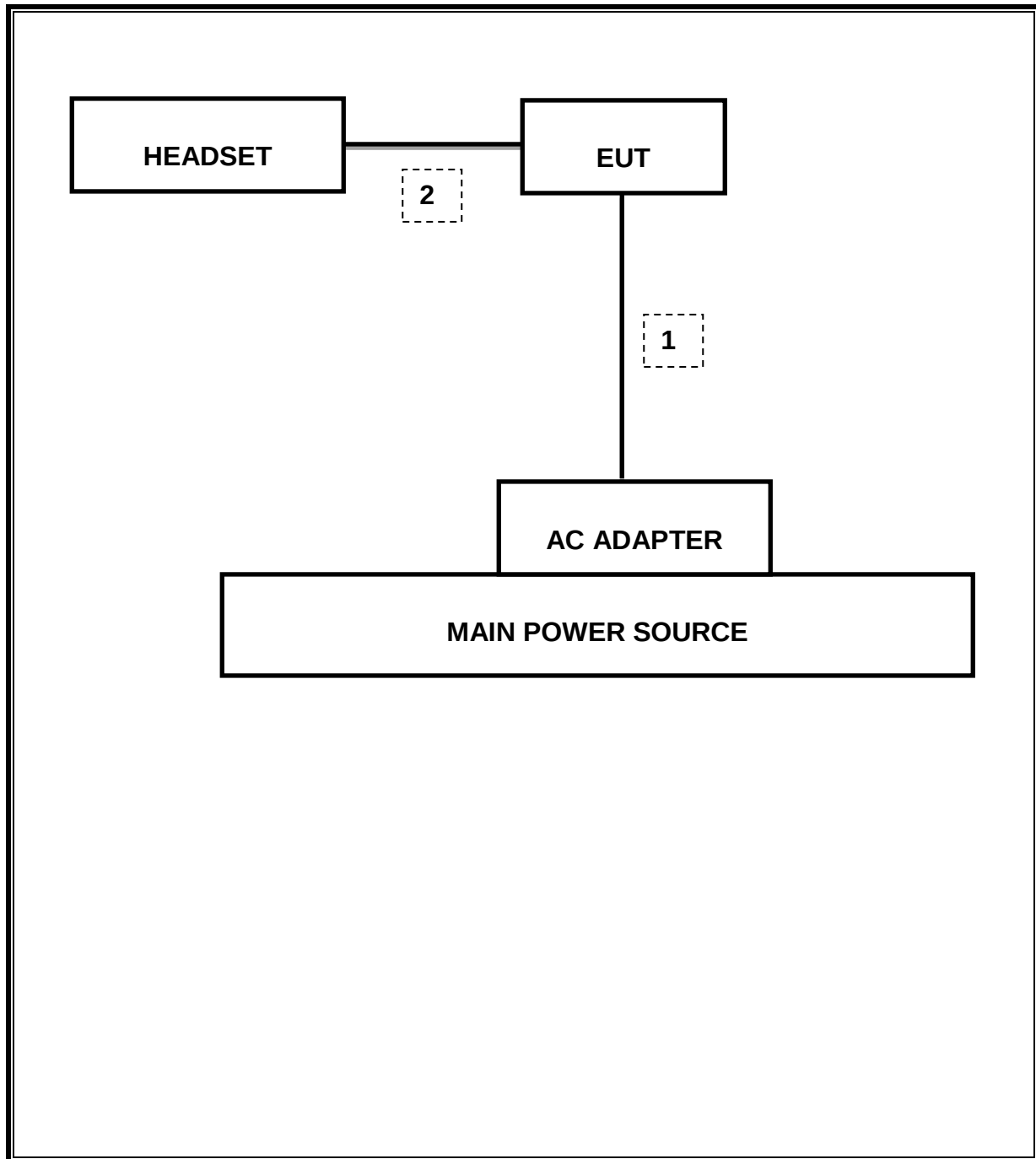
### I/O CABLES

| I/O Cable List |          |                      |                |            |                  |         |
|----------------|----------|----------------------|----------------|------------|------------------|---------|
| Cable No       | Port     | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1              | DC Power | 1                    | Mini-USB       | Shielded   | 1.2m             | N/A     |
| 2              | Audio    | 1                    | Mini-Jack      | Unshielded | 1m               | N/A     |

### TEST SETUP

The EUT is set to continuously transmit in ANT + test mode

**SETUP DIAGRAM FOR TESTS**



## 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       | Asset  | Cal Due  |
| Antenna, Biconolog, 30MHz-1 G | Sunol Sciences | JB1         | C01171 | 02/13/15 |
| Antenna, Horn, 18GHz          | EMCO           | 3115        | C00783 | 10/25/14 |
| Antenna, Horn, 26.5 GHz       | ARA            | MWH-1826/B  | C00980 | 11/14/14 |
| Preamplifier, 1300 MHz        | Agilent / HP   | 8447D       | C00580 | 01/28/15 |
| Preamplifier, 26.5 GHz        | Agilent / HP   | 8449B       | C01052 | 10/22/14 |
| Spectrum Analyzer, 44 GHz     | Agilent / HP   | E4446A      | C01069 | 12/20/14 |
| CBT Bluetooth Tester          | R & S          | CBT         | None   | 07/12/15 |
| Peak Power Meter              | Agilent / HP   | E4416A      | C00963 | 12/13/14 |
| Peak / Average Power Sensor   | Agilent / HP   | E9327A      | C00964 | 12/13/14 |
| LISN, 30 MHz                  | FCC            | 50/250-25-2 | C00626 | 01/14/15 |
| Reject Filter, 2.4GHz         | Micro-Tronics  | BRM50702    | N02684 | CNR      |

## 7. LIMITS AND RESULTS

### 7.1. 99% BANDWIDTH

#### LIMIT

None; for reporting purposes only.

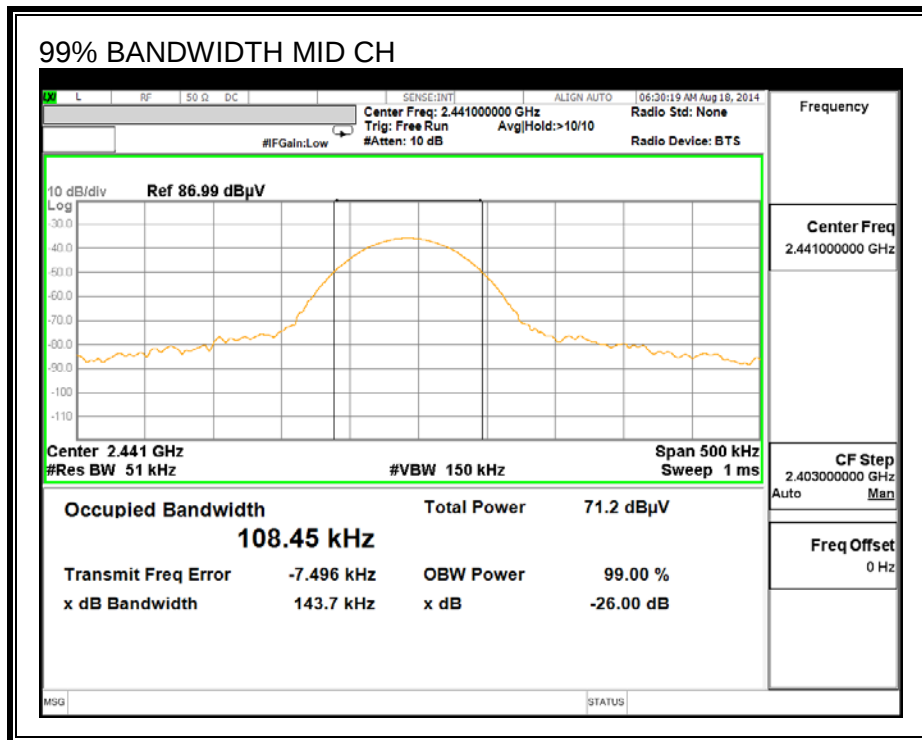
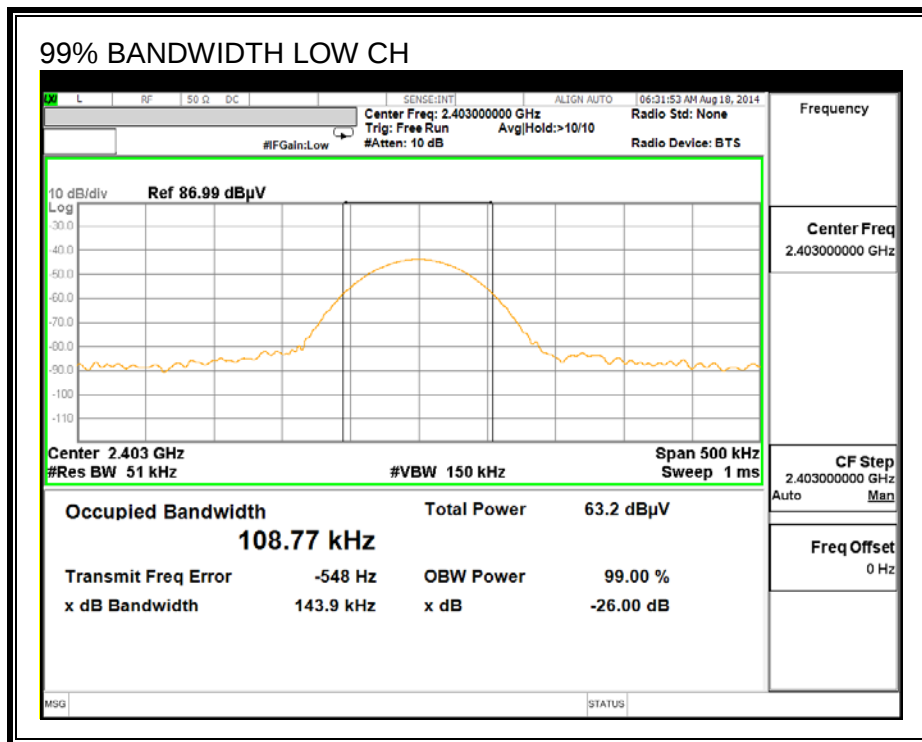
#### TEST PROCEDURE

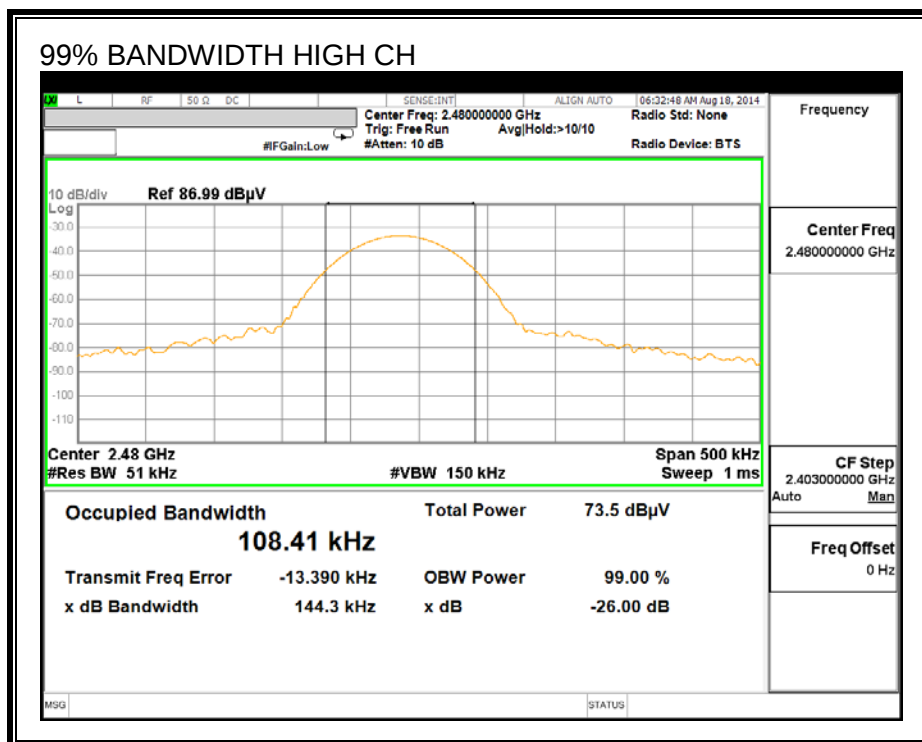
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

#### RESULTS

| Channel | Frequency<br>(MHz) | 99% Bandwidth<br>(MHz) |
|---------|--------------------|------------------------|
| Low     | 2403               | 0.108                  |
| Middle  | 2442               | 0.108                  |
| High    | 2480               | 0.108                  |

**99% BANDWIDTH**





## 7.2. TRANSMITTER RADIATED EMISSIONS

### TEST PROCEDURE

ANSI C63.4

### LIMIT

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz.

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------|--------------------------------------------------|------------------------------------------------|
| 902–928 MHz .....     | 50                                               | 500                                            |
| 2400–2483.5 MHz ..... | 50                                               | 500                                            |
| 5725–5875 MHz .....   | 50                                               | 500                                            |
| 24.0–24.25 GHz .....  | 250                                              | 2500                                           |

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

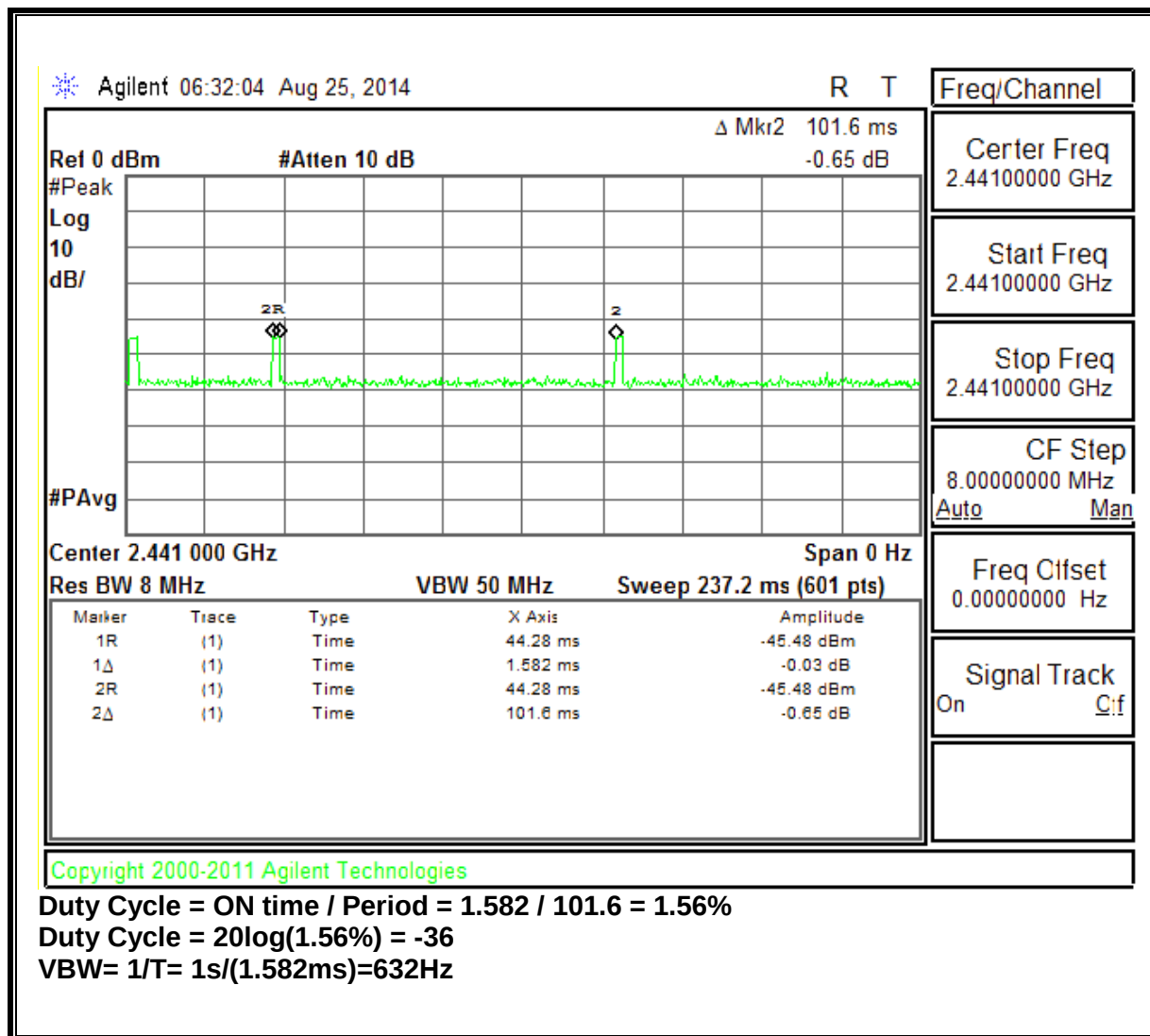
(e) As shown in Sec. 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

| Frequency (MHz)   | Field strength (microvolts/meter) | Measurement distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 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.

## RESULTS

### 7.2.1. DUTY CYCLE



## 7.2.2. FUNDAMENTAL FREQUENCY RADIATED EMISSION

|                                                                                   |                                                                                                                                                                                                          |                                                                                                                                                 |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|  | FCC, VCCI, CISPR, CE, AUSTEL, NZ<br>UL, CSA, TUV, BSMI, DHHS, NVLAP<br>47173 BENICIA STREET, FREMONT, CA 94538, USA                                                                                      | <b>Project #:</b> 14U17934<br><b>Report #:</b> _____<br><b>Date &amp; Time:</b> 08/21/14<br><b>Test Engr:</b> G. Chan, E. Lee, M. Zarin, L. Lee |
|                                                                                   | <b>Company:</b> Sony<br><b>EUT Description:</b> X-Pos EUT w/ AC charger<br><b>Test Configuration:</b> ANT+ Fundamental<br><b>Type of Test:</b> FCC<br><b>Mode of Operation:</b> Transmitting : ANT+ mode |                                                                                                                                                 |

$M\% = ((t1+t2+t3+...)/T) * 66.83\% = 1.56\%$

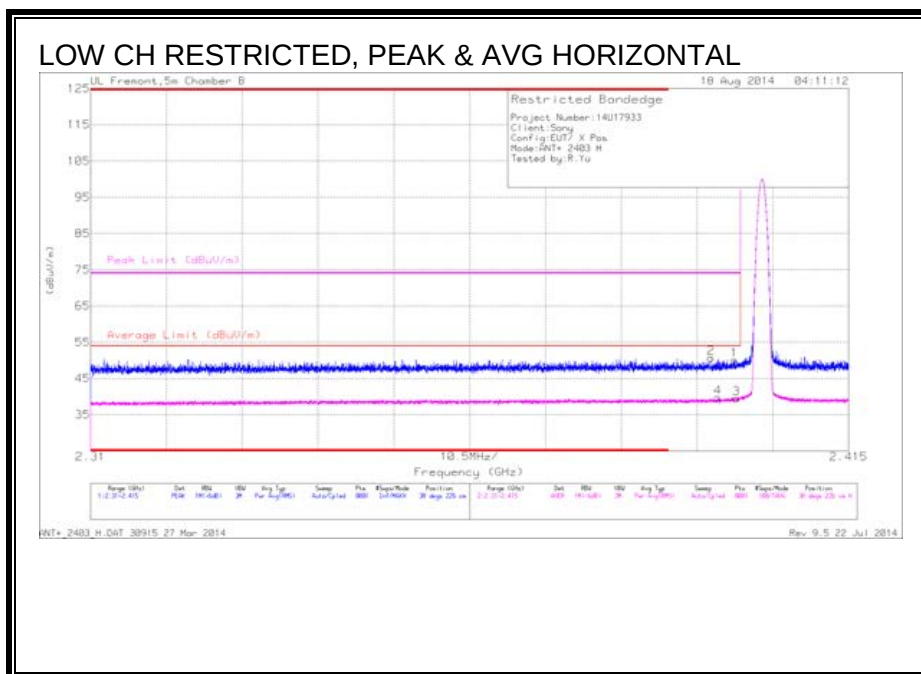
$Av\ Reading = Pk\ Reading + 20 * \log(M\%)$   
 $20 * \log(M\%) = -36.14$

| Freq.<br>(MHz) | Pk Rdg<br>(dBuV) | Av Rdg<br>(dBuV) | AF<br>(dB) | Closs<br>(dB) | Pre-amp<br>(dB) | Pk Level<br>(dBuV/m) | Av Level<br>(dBuV/m) | Pk Limit<br>FCC_B | Av Limit<br>FCC_B | Pk Margin<br>(dB) | Avg Margin<br>(dB) | Pol<br>(H/V) | Az<br>(Deg) | Height<br>(cm) |
|----------------|------------------|------------------|------------|---------------|-----------------|----------------------|----------------------|-------------------|-------------------|-------------------|--------------------|--------------|-------------|----------------|
| Low channel    |                  |                  |            |               |                 |                      |                      |                   |                   |                   |                    |              |             |                |
| 2403.00        | 54.62            | 53.90            | 32.10      | -20.00        | 0.00            | 66.72                | 66.00                | 114.00            | 94.00             | -47.28            | -28.00             | 3mV          | 36.00       | 346.00         |
| 2403.00        | 55.89            | 55.40            | 32.10      | -20.00        | 0.00            | 67.99                | 67.50                | 114.00            | 94.00             | -46.01            | -26.50             | 3mH          | 304.00      | 350.00         |
| Mid channel    |                  |                  |            |               |                 |                      |                      |                   |                   |                   |                    |              |             |                |
| 2441.00        | 57.46            | 56.92            | 32.10      | -20.00        | 0.00            | 69.56                | 69.02                | 114.00            | 94.00             | -44.44            | -24.98             | 3mV          | 3.00        | 339.00         |
| 2441.00        | 60.37            | 59.99            | 32.10      | -20.00        | 0.00            | 72.47                | 72.09                | 114.00            | 94.00             | -41.53            | -21.91             | 3mH          | 320.00      | 336.00         |
| High channel   |                  |                  |            |               |                 |                      |                      |                   |                   |                   |                    |              |             |                |
| 2480.00        | 53.38            | 52.45            | 32.10      | -20.00        | 0.00            | 65.48                | 64.55                | 114.00            | 94.00             | -48.52            | -29.45             | 3mV          | 354.00      | 330.00         |
| 2480.00        | 56.80            | 56.16            | 32.10      | -20.00        | 0.00            | 68.90                | 68.26                | 114.00            | 94.00             | -45.10            | -25.74             | 3mH          | 305.00      | 274.00         |

AVG VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

## 7.2.3. TRANSMITTER RESTRICTED BAND EDGES

### RESTRICTED BANEDGE (LOW CHANNEL)



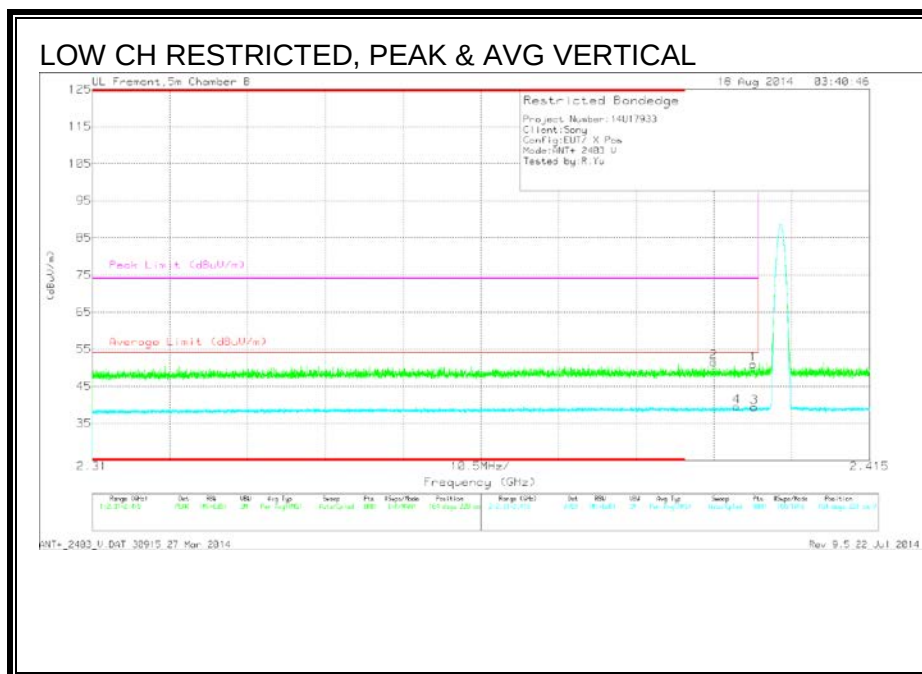
### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cb/ Ftr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 2      | 2.396           | 41.01                | PK  | 32.1           | -22.4                | 50.71                      | -                      | -           | 74                  | -23.29         | 38             | 226         | H        |
| 4      | 2.397           | 30.04                | RMS | 32.1           | -22.4                | 39.74                      | 54                     | -14.26      | -                   | -              | 38             | 226         | H        |
| 1      | 2.399           | 40.39                | PK  | 32.1           | -22.4                | 50.09                      | -                      | -           | 74                  | -23.91         | 38             | 226         | H        |
| 3      | 2.399           | 29.84                | RMS | 32.1           | -22.4                | 39.54                      | 54                     | -14.46      | -                   | -              | 38             | 226         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection



## Trace Markers

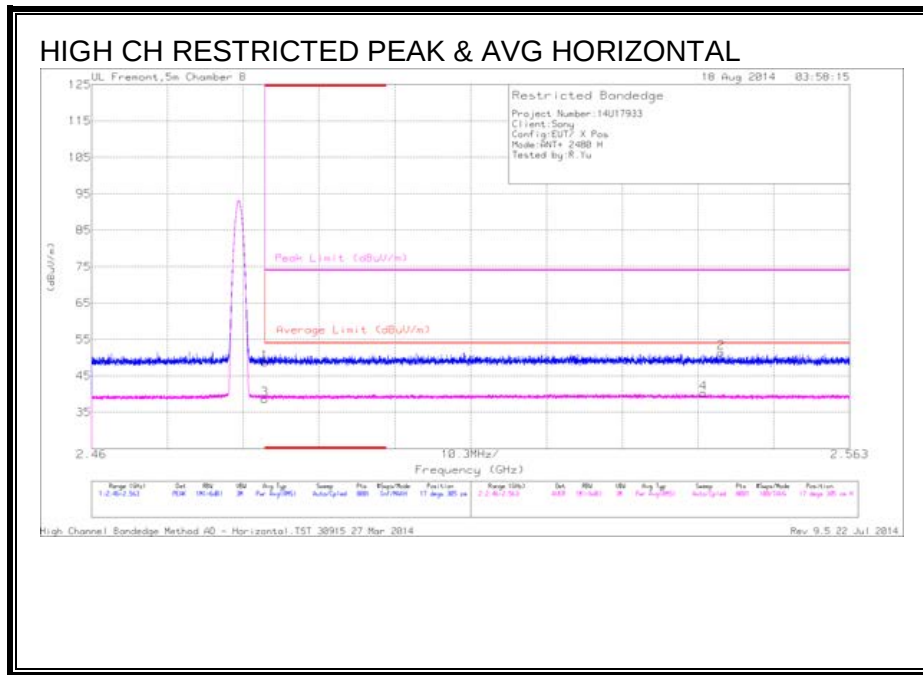
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 2      | 2.394           | 41.85                | PK  | 32.1           | -22.4                 | 51.55                      | -                      | -           | 74                  | -22.45         | 164            | 228         | V        |
| 4      | 2.397           | 29.81                | RMS | 32.1           | -22.4                 | 39.51                      | 54                     | -14.49      | -                   | -              | 164            | 228         | V        |
| 1      | 2.399           | 41.18                | PK  | 32.1           | -22.4                 | 50.88                      | -                      | -           | 74                  | -23.12         | 164            | 228         | V        |
| 3      | 2.399           | 29.7                 | RMS | 32.1           | -22.4                 | 39.4                       | 54                     | -14.6       | -                   | -              | 164            | 228         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

# **RESTRICTED BANDEDGE (HIGH CHANNEL)**



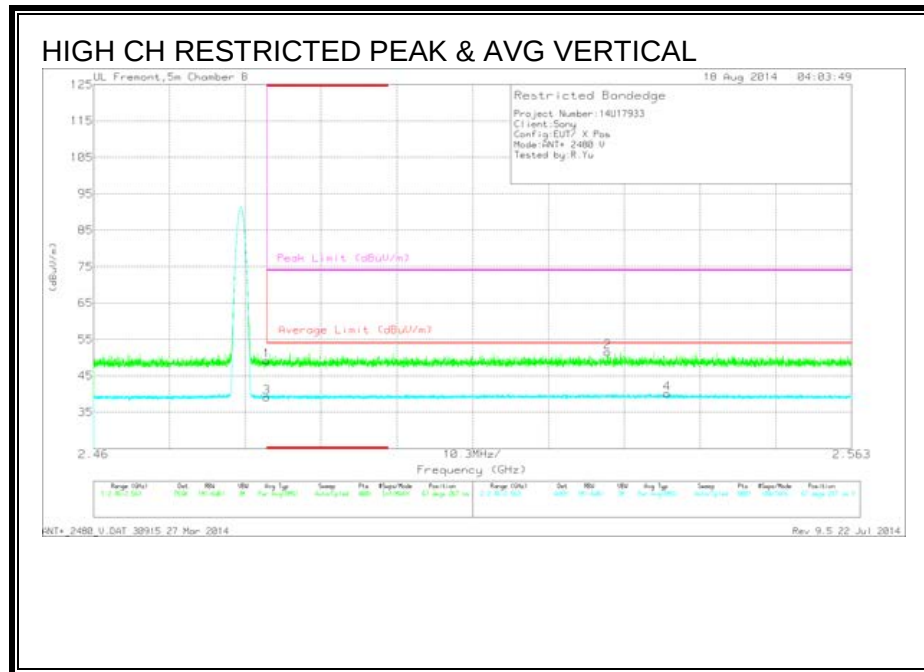
## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/Filt/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 38.73                | PK  | 32.4           | -22.4                 | 48.73                      | -                      | -           | 74                  | -25.27         | 17             | 305         | H        |
| 3      | * 2.484         | 28.64                | RMS | 32.4           | -22.4                 | 38.64                      | 54                     | -15.36      | -                   | -              | 17             | 305         | H        |
| 4      | 2.543           | 29.95                | RMS | 32.5           | -22.2                 | 40.25                      | 54                     | -13.75      | -                   | -              | 17             | 305         | H        |
| 2      | 2.546           | 40.99                | PK  | 32.5           | -22.1                 | 51.39                      | -                      | -           | 74                  | -22.61         | 17             | 305         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection



| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 39.14                | PK  | 32.4           | -22.4                 | 49.14                      | -                      | -           | 74                  | -24.86         | 67             | 267         | V        |
| 3      | * 2.484         | 29.16                | RMS | 32.4           | -22.4                 | 39.16                      | 54                     | -14.84      | -                   | -              | 67             | 267         | V        |
| 2      | 2.53            | 41.29                | PK  | 32.5           | -22.2                 | 51.59                      | -                      | -           | 74                  | -22.41         | 67             | 267         | V        |
| 4      | 2.538           | 29.75                | RMS | 32.5           | -22.1                 | 40.15                      | 54                     | -13.85      | -                   | -              | 67             | 267         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band  
PK - Peak detector  
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

### HARMONICS



FCC, VCCI, CISPR, CE, AUSTEL, NZ  
UL, CSA, TUV, BSMI, DHHS, NVLAP

47173 BENICIA STREET, FREMONT, CA 94538, USA

*Project #:* 14U17933

*Report #:* 14U17933

*Date & Time:* 08/18/14

*Test Engr:* Ryan Yu

*Company:* Sony

*EUT Description:* GSM/WCDMA/LTE + BLUETOOTH & WLAN (2.4 & 5GHz) Tablet

*Test Configuration:* X POSITION

*Type of Test:* FCC

*Mode of Operation:* Transmitting : ANT+ mode

M% = ((t1+t2+t3+...)/T) \* 66.83% = 1.56%

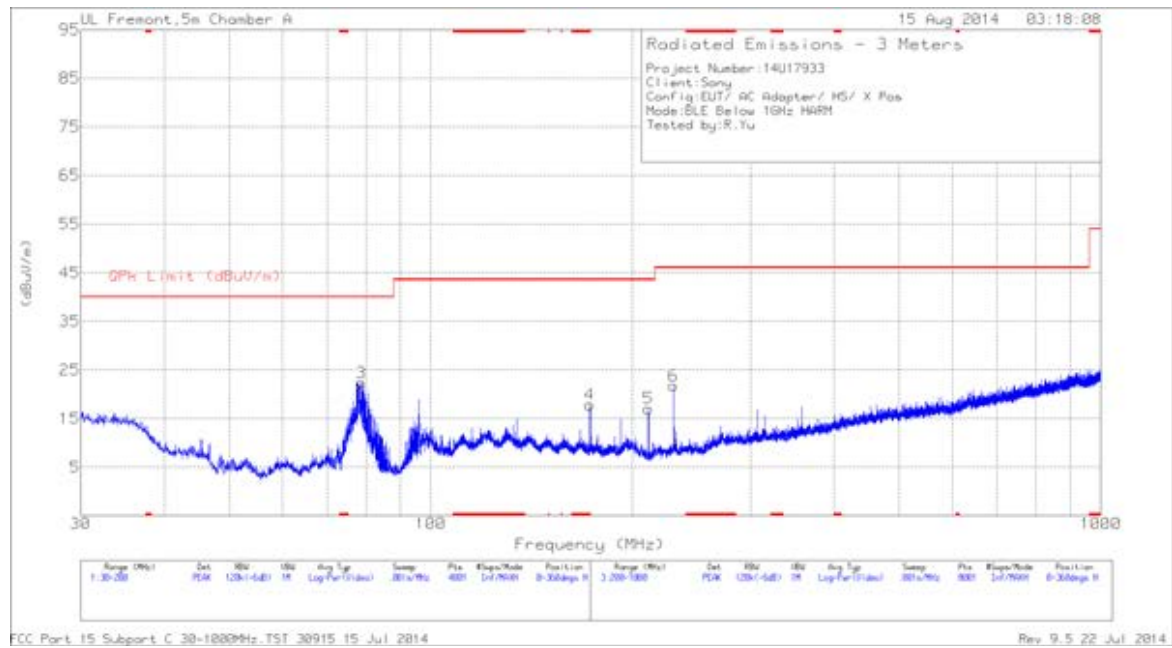
|                                      |
|--------------------------------------|
| Av Reading = Pk Reading + 20*log(M%) |
| 20 * log (M%) = -36.14               |

| Freq.<br>(MHz) | Pk Rdg<br>(dBuV) | Av Rdg<br>(dBuV) | AF<br>(dB) | Closs<br>(dB) | Pre-amp<br>(dB) | Pk Level<br>(dBuV/m) | Av Level<br>(dBuV/m) | Pk Limit<br>FCC B | Av Limit<br>FCC B | Pk Margin<br>(dB) | Avg Margin<br>(dB) | Pol<br>(H/V) | Az<br>(Deg) | Height<br>(Meter) |
|----------------|------------------|------------------|------------|---------------|-----------------|----------------------|----------------------|-------------------|-------------------|-------------------|--------------------|--------------|-------------|-------------------|
| Low channel    |                  |                  |            |               |                 |                      |                      |                   |                   |                   |                    |              |             |                   |
| 4806.00        | 42.64            | 31.80            | 32.10      | -20.00        | 0.00            | 54.74                | 43.90                | 74.00             | 54.00             | -19.26            | -10.10             | 3mV          | 297.00      | 3.44              |
| 4806.00        | 43.17            | 31.91            | 32.10      | -20.00        | 0.00            | 55.27                | 44.01                | 74.00             | 54.00             | -18.73            | -9.99              | 3mH          | 90.00       | 2.79              |
| Mid channel    |                  |                  |            |               |                 |                      |                      |                   |                   |                   |                    |              |             |                   |
| 4882.00        | 43.18            | 32.03            | 32.10      | -20.00        | 0.00            | 55.28                | 44.13                | 74.00             | 54.00             | -18.72            | -9.87              | 3mV          | 316.00      | 3.67              |
| 4882.00        | 43.77            | 32.58            | 32.10      | -20.00        | 0.00            | 55.87                | 44.68                | 74.00             | 54.00             | -18.13            | -9.32              | 3mH          | 110.00      | 2.24              |
| High channel   |                  |                  |            |               |                 |                      |                      |                   |                   |                   |                    |              |             |                   |
| 4960.00        | 43.27            | 32.45            | 32.10      | -20.00        | 0.00            | 55.37                | 44.55                | 74.00             | 54.00             | -18.63            | -9.45              | 3mV          | 280.00      | 3.49              |
| 4960.00        | 37.46            | 32.20            | 32.10      | -20.00        | 0.00            | 49.56                | 44.30                | 74.00             | 54.00             | -24.44            | -9.70              | 3mH          | 38.00       | 2.25              |

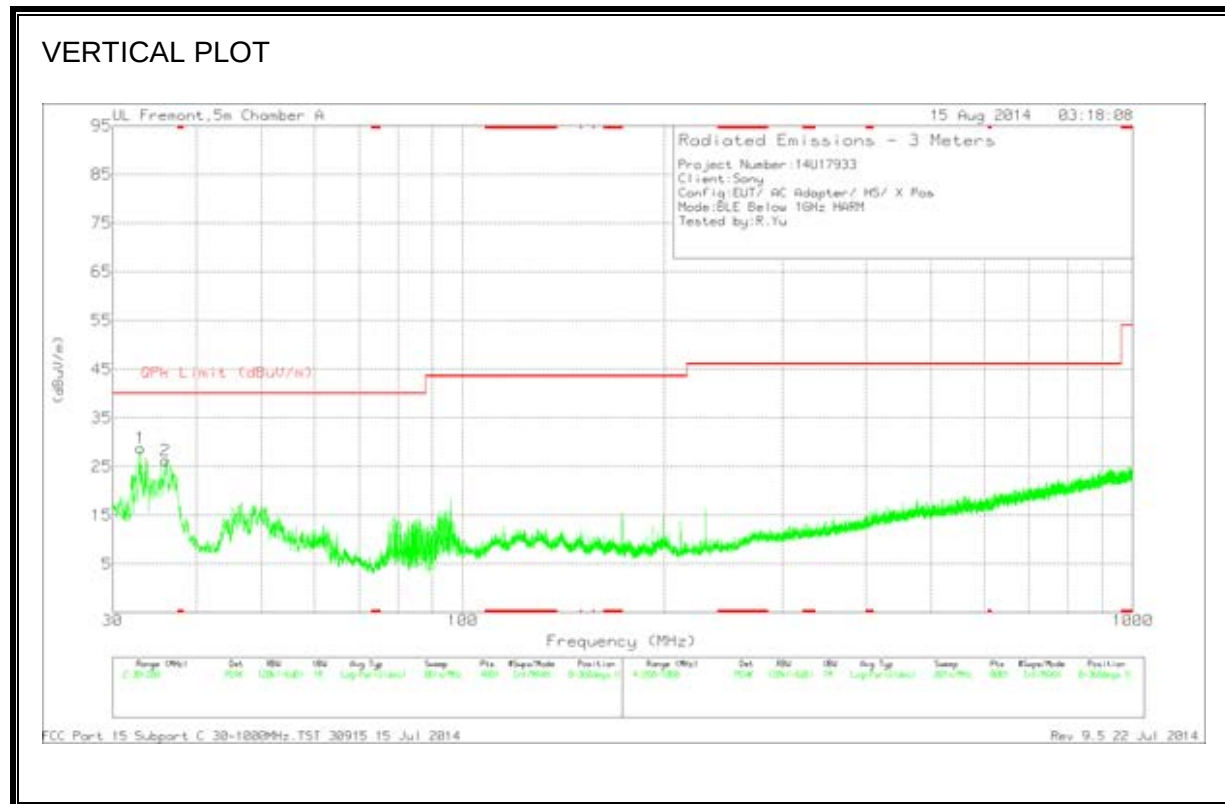
## 7.2.4. SPURIOUS BELOW 1 GHz

### SPURIOUS EMISSIONS 30 TO 1000 MHz (HORIZONTAL)

HORIZONTAL PLOT



**SPURIOUS EMISSIONS 30 TO 1000 MHz (VERTICAL)**



## Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T130 (dB/m) | Amp/Cbl (dB/m) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|----------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 4      | * 172.8         | 36.17                | PK  | 11.7           | -30            | 17.87                      | 43.52              | -25.65      | 0-360          | 200         | H        |
| 1      | 33.0175         | 40.39                | PK  | 19.5           | -31.1          | 28.79                      | 40                 | -11.21      | 0-360          | 101         | V        |
| 2      | 35.9925         | 40.07                | PK  | 17.3           | -31.1          | 26.27                      | 40                 | -13.73      | 0-360          | 101         | V        |
| 3      | 78.705          | 45.61                | PK  | 7.7            | -30.9          | 22.41                      | 40                 | -17.59      | 0-360          | 300         | H        |
| 5      | 211.2           | 36.4                 | PK  | 10.5           | -29.8          | 17.1                       | 43.52              | -26.42      | 0-360          | 101         | H        |
| 6      | 230.4           | 40.29                | PK  | 11.1           | -29.6          | 21.79                      | 46.02              | -24.23      | 0-360          | 101         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band  
PK - Peak detector

## 8. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

| Frequency of Emission (MHz) | Conducted Limit (dBuV) |          |
|-----------------------------|------------------------|----------|
|                             | Quasi-peak             | Average  |
| 0.15-0.5                    | 66 to 56               | 56 to 46 |
| 0.5-5                       | 56                     | 46       |
| 5-30                        | 60                     | 50       |

\* Decreases with the logarithm of the frequency.

### TEST PROCEDURE

ANSI C63.4 - 2009

### RESULTS

## 6 WORST EMISSIONS

### Line-L1 .15 - 30MHz

#### Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L1 (dB) | LC Cables 1&3 (dB) | Corrected Reading dBuV | CISPR 22 Class B QP | Margin to Limit (dB) | CISPR 22 Class B Avg | Margin to Limit (dB) |
|--------|-----------------|----------------------|-----|----------------|--------------------|------------------------|---------------------|----------------------|----------------------|----------------------|
| 1      | .2715           | 29.87                | PK  | .6             | 0                  | 30.47                  | 61.1                | -30.63               | -                    | -                    |
| 2      | .2715           | 2.69                 | Av  | .6             | 0                  | 3.29                   | -                   | -                    | 51.1                 | -47.81               |
| 3      | .6135           | 20.17                | PK  | .3             | 0                  | 20.47                  | 56                  | -35.53               | -                    | -                    |
| 4      | .6135           | 8.94                 | Av  | .3             | 0                  | 9.24                   | -                   | -                    | 46                   | -36.76               |
| 5      | 1.6305          | 13.11                | PK  | .2             | .1                 | 13.41                  | 56                  | -42.59               | -                    | -                    |
| 6      | 1.6305          | -3.54                | Av  | .2             | .1                 | -3.24                  | -                   | -                    | 46                   | -49.24               |
| 7      | 2.598           | 20.76                | PK  | .2             | .1                 | 21.06                  | 56                  | -34.94               | -                    | -                    |
| 8      | 2.598           | -1.17                | Av  | .2             | .1                 | -.87                   | -                   | -                    | 46                   | -46.87               |
| 9      | 3.2685          | 14.64                | PK  | .2             | .1                 | 14.94                  | 56                  | -41.06               | -                    | -                    |
| 10     | 3.2685          | -3.45                | Av  | .2             | .1                 | -3.15                  | -                   | -                    | 46                   | -49.15               |
| 11     | 5.7165          | 17.78                | PK  | .2             | .1                 | 18.08                  | 60                  | -41.92               | -                    | -                    |
| 12     | 5.7165          | -1.97                | Av  | .2             | .1                 | -1.67                  | -                   | -                    | 50                   | -51.67               |

### Line-L2 .15 - 30MHz

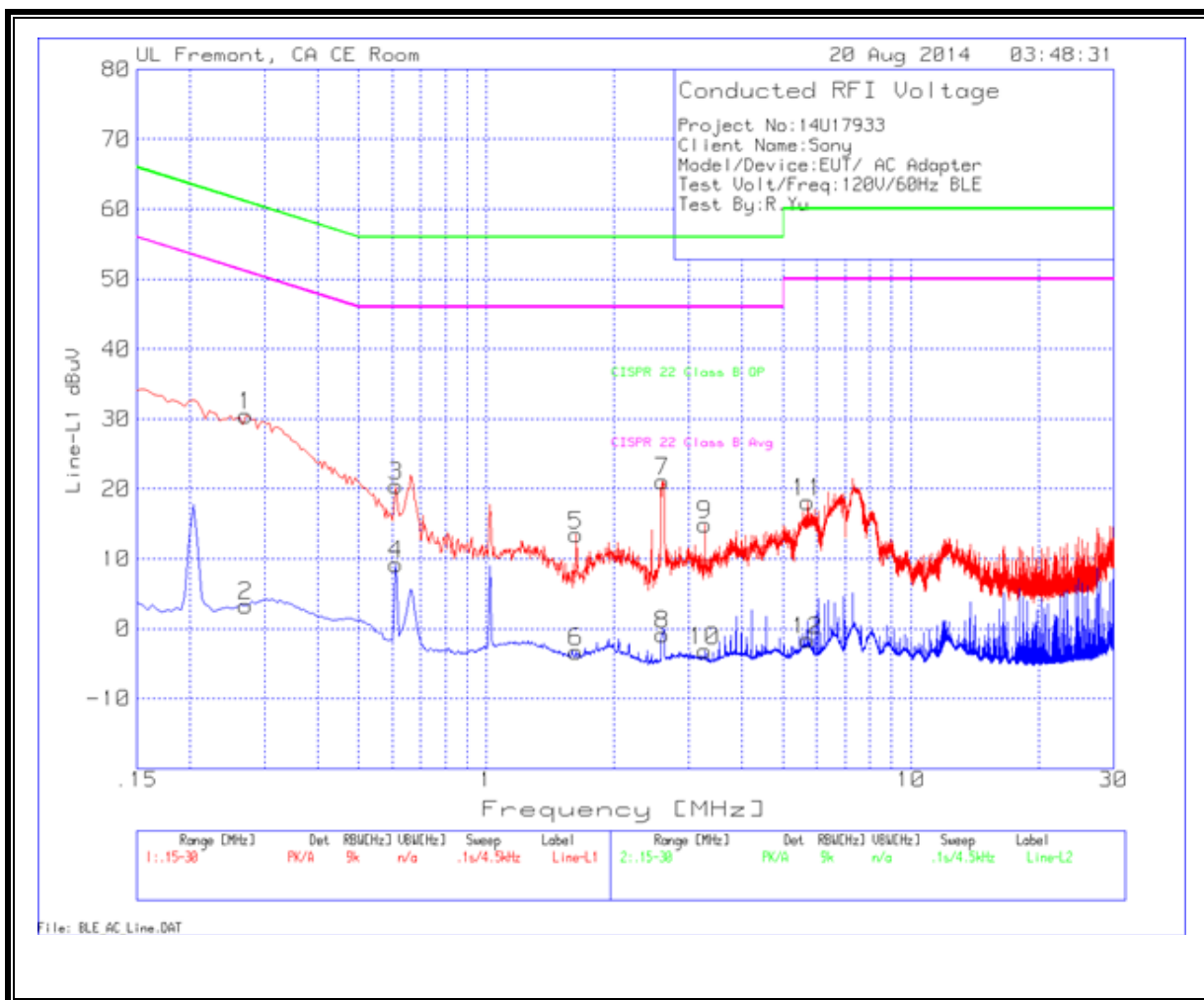
#### Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | T24 IL L2 (dB) | LC Cables 2&3 (dB) | Corrected Reading dBuV | CISPR 22 Class B QP | Margin to Limit (dB) | CISPR 22 Class B Avg | Margin to Limit (dB) |
|--------|-----------------|----------------------|-----|----------------|--------------------|------------------------|---------------------|----------------------|----------------------|----------------------|
| 13     | .6675           | 24.35                | PK  | .3             | 0                  | 24.65                  | 56                  | -31.35               | -                    | -                    |
| 14     | .6675           | 3.7                  | Av  | .3             | 0                  | 4                      | -                   | -                    | 46                   | -42                  |
| 15     | 1.0185          | 17.86                | PK  | .3             | 0                  | 18.16                  | 56                  | -37.84               | -                    | -                    |
| 16     | 1.0185          | 10.11                | Av  | .3             | 0                  | 10.41                  | -                   | -                    | 46                   | -35.59               |
| 17     | 1.428           | 15.02                | PK  | .2             | .1                 | 15.32                  | 56                  | -40.68               | -                    | -                    |
| 18     | 1.428           | 7.6                  | Av  | .2             | .1                 | 7.9                    | -                   | -                    | 46                   | -38.1                |
| 19     | 4.839           | 12.94                | PK  | .2             | .1                 | 13.24                  | 56                  | -42.76               | -                    | -                    |
| 20     | 4.839           | -4.76                | Av  | .2             | .1                 | -4.46                  | -                   | -                    | 46                   | -50.46               |
| 21     | 7.5345          | 22.11                | PK  | .2             | .1                 | 22.41                  | 60                  | -37.59               | -                    | -                    |
| 22     | 7.5345          | 4.54                 | Av  | .2             | .1                 | 4.84                   | -                   | -                    | 50                   | -45.16               |
| 23     | 27.537          | 16.27                | PK  | .3             | .3                 | 16.87                  | 60                  | -43.13               | -                    | -                    |
| 24     | 27.537          | 11.93                | Av  | .3             | .3                 | 12.53                  | -                   | -                    | 50                   | -37.47               |

PK - Peak detector

Av - average detection

**LINE 1 RESULTS**



**LINE 2 RESULTS**

