



# **CERTIFICATION TEST REPORT**

**Report Number. :** 12085703-E12V1

**Applicant :** SONY MOBILE COMMUNICATIONS, INC.  
4-12-3 HIGASHI-SHINAGAWA,  
SHINAGAWA -KU, TOKYO, 140-0002, JAPAN

**FCC ID :** PY7-00718V

**EUT Description :** GSM/WCDMA/LTE PHONE with BT, DTS/UNII a/b/g/n/ac & NFC

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C

**Date Of Issue:**

February 13, 2018

**Prepared by:**

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Revision History

| <u>Rev.</u> | <u>Issue<br/>Date</u> | <u>Revisions</u> | <u>Revised By</u> |
|-------------|-----------------------|------------------|-------------------|
| V1          | 02/13/18              | Initial Review   | D. Corona         |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SONY MOBILE COMMUNICATIONS, INC.  
4-12-3 HIGASHI-SHINAGAWA,  
SHINAGAWA -KU, TOKYO, 140-0002, JAPAN

**EUT DESCRIPTION:** GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC

**SERIAL NUMBER:** RADIATED: QV70000R16, QV7000LZ16

**DATE TESTED:** JANUARY 31, 2018

| 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

Prepared By:



Dan Corona  
Operations Leader  
UL Verification Services Inc.



Kiya Kedida  
Project Engineer  
UL Verification Services Inc.

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013 and KDB 484596 D01 v01 Referencing Test Data DR01-42712.

## 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 checked="" type="checkbox"/> Chamber A(IC: 2324B-1) | <input type="checkbox"/> Chamber D(IC: 22541-1)            |
| <input type="checkbox"/> Chamber B(IC: 2324B-2)            | <input checked="" type="checkbox"/> Chamber E(IC: 22541-2) |
| <input type="checkbox"/> Chamber C(IC: 2324B-3)            | <input type="checkbox"/> Chamber F(IC: 22541-3)            |
|                                                            | <input type="checkbox"/> Chamber G(IC: 22541-4)            |
|                                                            | <input type="checkbox"/> Chamber H(IC: 22541-5)            |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

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

Chambers A through C are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

## 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 |
|-----------------------------------------------------|-------------|
| Worst Case Conducted Disturbance, 9KHz to 0.15 MHz  | 3.84 dB     |
| Worst Case Conducted Disturbance, 0.15 to 30 MHz    | 3.65 dB     |
| Worst Case Radiated Disturbance, 9KHz to 30 MHz     | 3.15 dB     |
| Worst Case Radiated Disturbance, 30 to 1000 MHz     | 5.36 dB     |
| Worst Case Radiated Disturbance, 1000 to 18000 MHz  | 4.32 dB     |
| Worst Case Radiated Disturbance, 18000 to 26000 MHz | 4.45 dB     |
| Worst Case Radiated Disturbance, 26000 to 40000 MHz | 5.24 dB     |

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC.

## 6. REUSE OF TEST DATA

### 6.1. INTRODUCTION

According to the manufacturer, FCC ID: PY7-21831A and FCC ID: PY7-00718V licensed and unlicensed radios (WWAN/WLAN/BT/BLE/NFC) are electrically identical. The FCC ID: PY7-21831A test data shall remain representative of FCC ID: PY7-00718V so, FCC ID: PY7-00718V leverages test data from FCC ID: PY7-21831A.

The applicant takes full responsibility that the test data as referenced in this section represents compliance for this FCC ID.

### 6.2. DEVICES DIFFERENCES

Difference between PY7-21831A and PY7-00718V:

- Conducted power all same (i.e. Cellular band and WLAN)
- For cellular band, all cellular bands will change the antenna perspective which is listed as below (i.e. antenna gain, pattern, and matching circuit), Hence RSE and SAR has been tested for all bands.
  - LTE: B2/B4/B5/B7/B12/B13/B17/B26/B41/B66 (\*B29 Rx only no impact)
  - UMTS: B2/B4/B5
  - GSM: 850/1900
- For WLAN only 2.4GHz/5GHz chain 1 will change from antenna gain perspective. (i.e. WLAN 2.4GHz and 5GHz WLAN chain 0, PY7-00718V is same as PY7-21831A).

Please refer to operational description for details.

### 6.3. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device PY7-00718V for radiated harmonic spurious. The data from the application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the summary and appendix A.

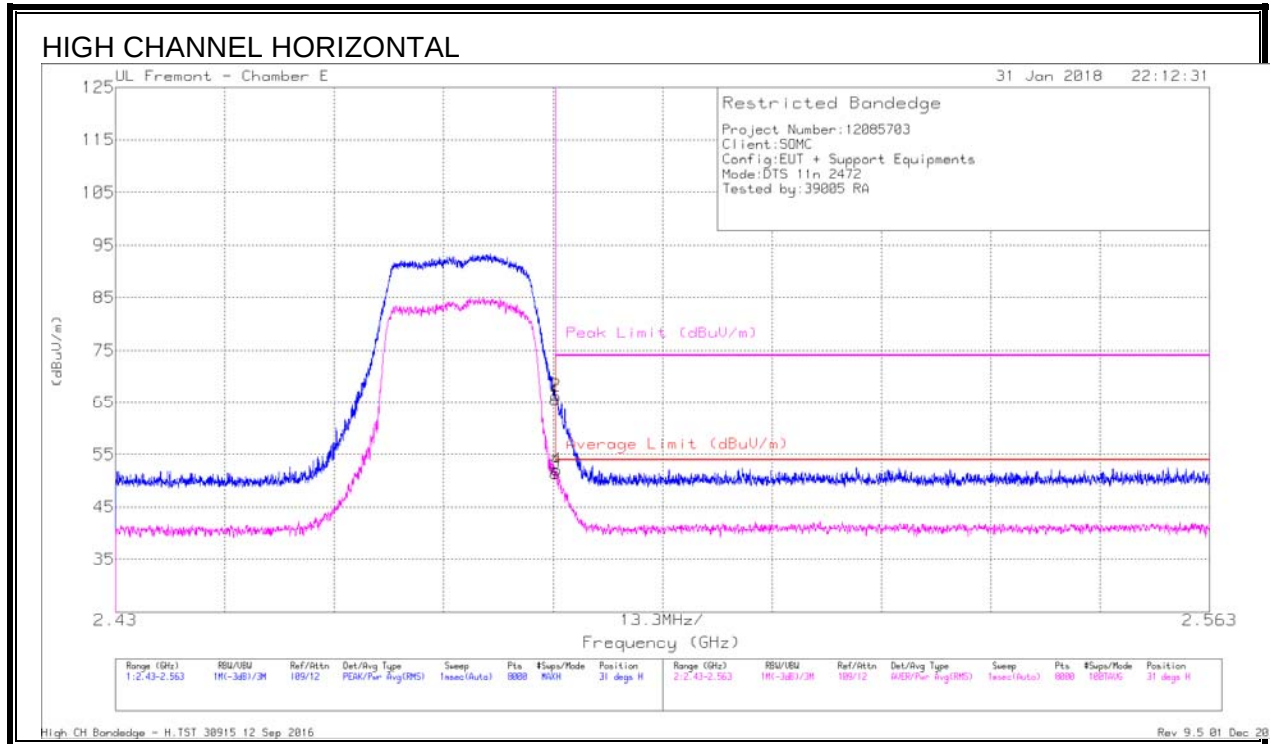
### 6.4. REFERENCE DETAIL

| Equipment Class | Reference FCC ID | Report Title/Section         |
|-----------------|------------------|------------------------------|
| DTS (WLAN)      | PY7-21831A       | 12073310-E4V2 FCC Report DTS |

## 7. SPOT CHECK DATA

### 7.1. 11n-HT20 MIMO MODE IN THE 2.4GHZ BAND

#### 7.1.1. BANDEDGE (HIGH CHANNEL)



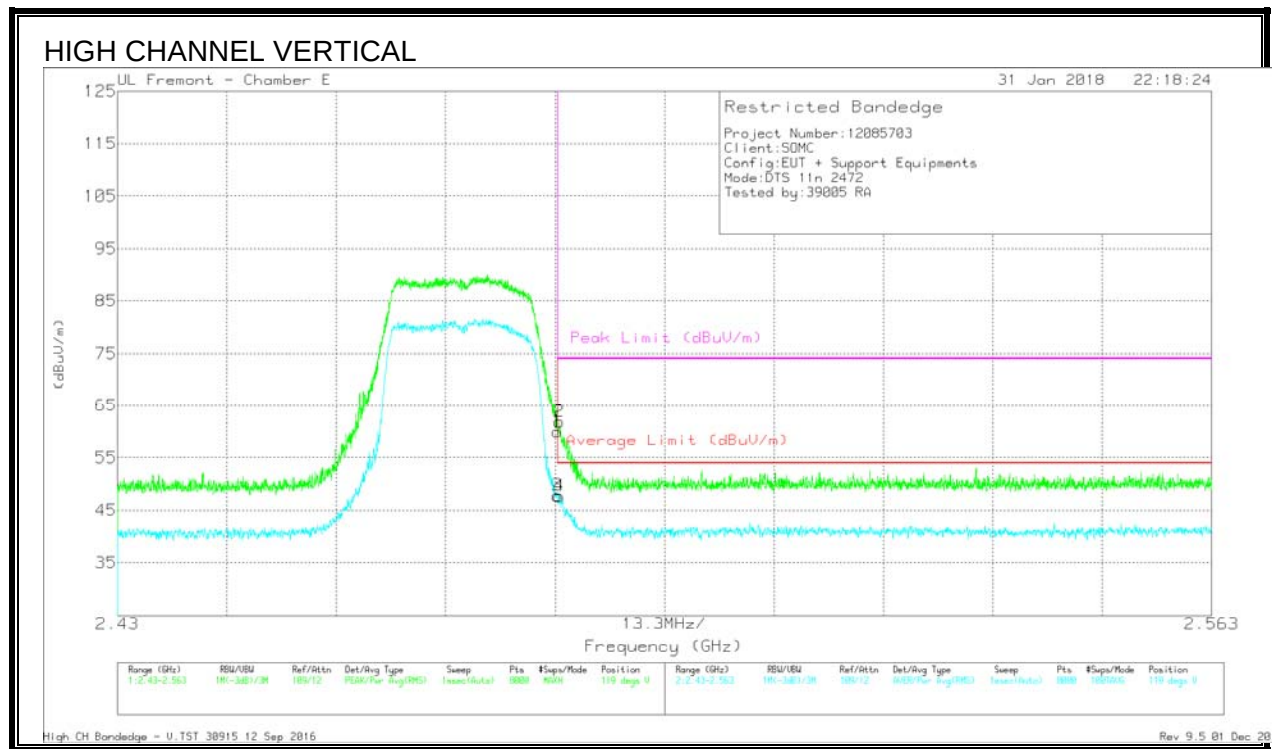
#### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF-TS46 (dBm) | Amp/CM/Fit/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Altitude (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|---------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|-----------------|-------------|----------|
| 1      | * 2.484         | 52.94                | Pk  | 32.1          | -19.6               | 0            | 65.44                      | -                      | -           | 74                  | -8.56          | 31              | 213         | H        |
| 2      | * 2.484         | 53.75                | Pk  | 32.1          | -19.5               | 0            | 66.35                      | -                      | -           | 74                  | -7.65          | 31              | 213         | H        |
| 3      | * 2.484         | 38.78                | RMS | 32.1          | -19.6               | .11          | 51.39                      | 54                     | -2.61       | -                   | -              | 31              | 213         | H        |
| 4      | * 2.484         | 39.29                | RMS | 32.1          | -19.5               | .11          | 52                         | 54                     | -2          | -                   | -              | 31              | 213         | H        |

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

Pk - Peak detector

RMS - RMS detection



## Trace Markers

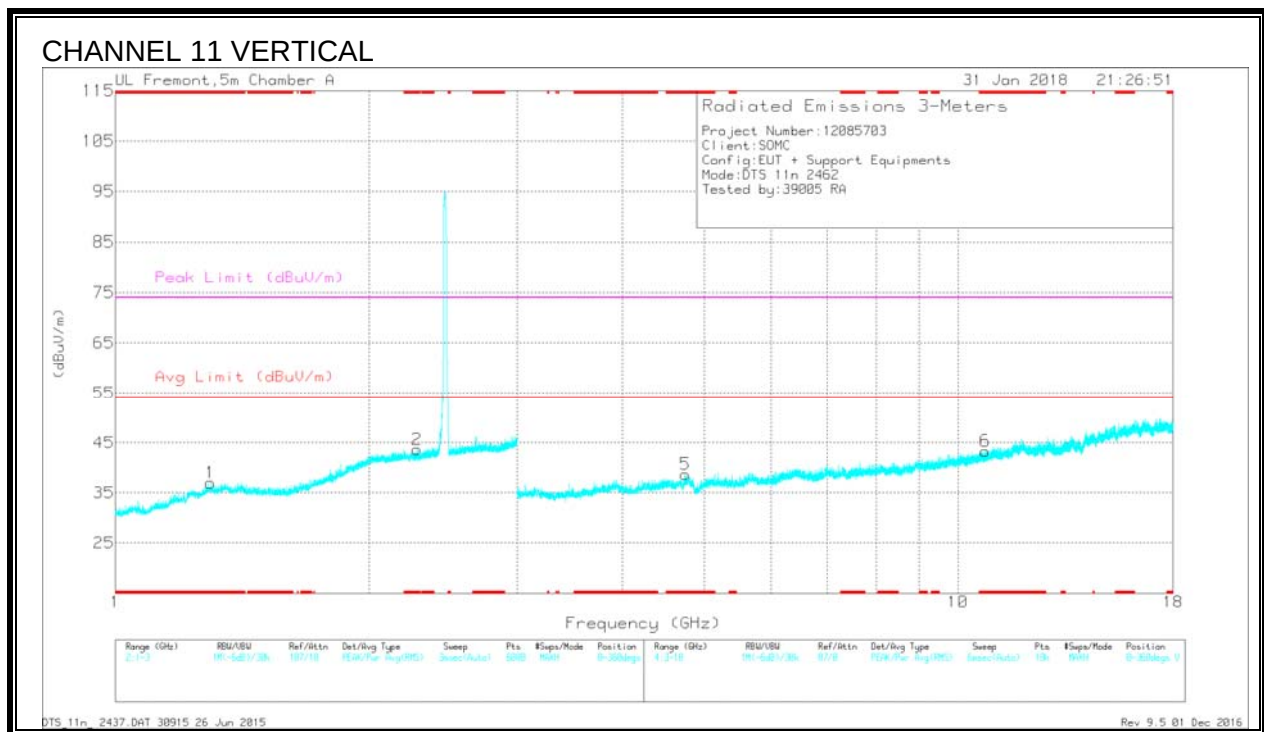
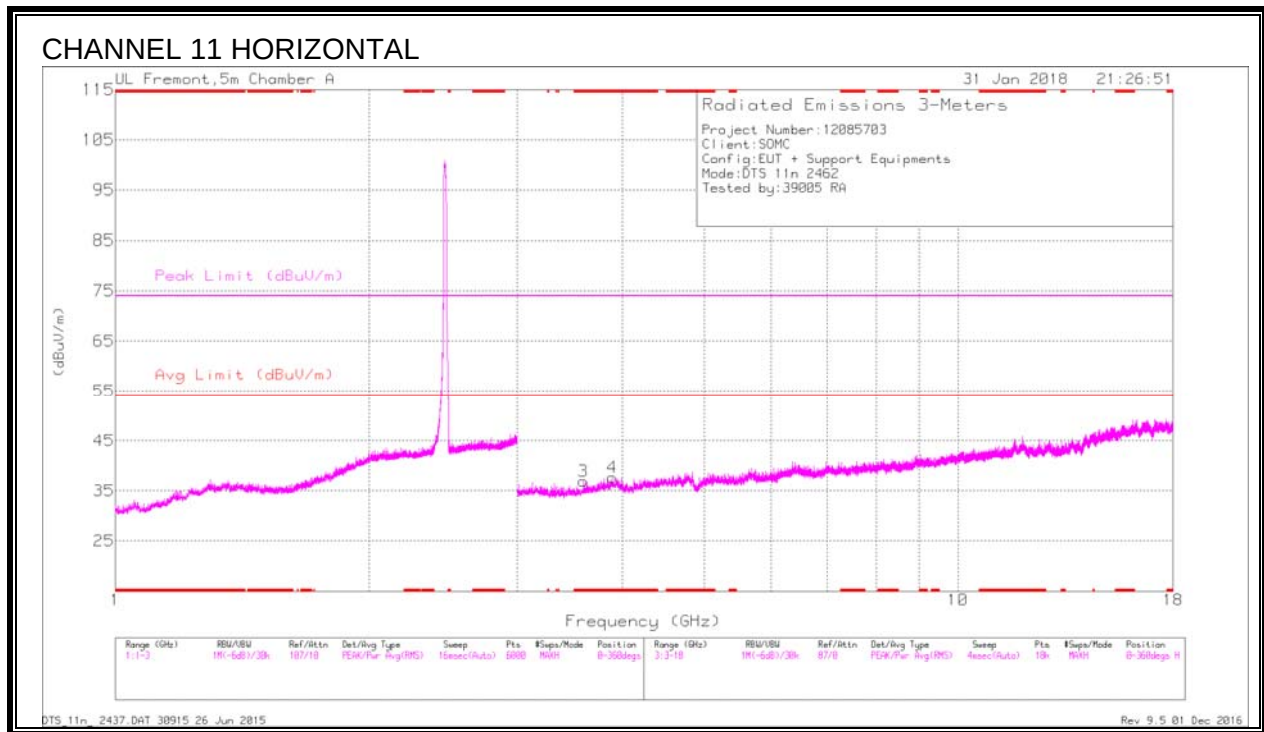
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T348 (dBm) | Amp/Col/Filt/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|-----------------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.484         | 47.45                | Pk  | 32.1          | -19.6                 | 0            | 59.95                      | -                      | -           | 74                  | -14.02         | 119            | 289         | V        |
| 2      | * 2.484         | 49.24                | Pk  | 32.1          | -19.5                 | 0            | 61.84                      | -                      | -           | 74                  | -12.16         | 119            | 289         | V        |
| 3      | * 2.484         | 35.34                | RMS | 32.1          | -19.6                 | .11          | 47.95                      | 54                     | -6.05       | -                   | -              | 119            | 289         | V        |
| 4      | * 2.484         | 35.04                | RMS | 32.1          | -19.5                 | .11          | 47.75                      | 54                     | -6.25       | -                   | -              | 119            | 289         | V        |

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

Pk - Peak detector

RMS - RMS detection

## 7.1.2. HARMONICS AND SPURIOUS EMISSIONS



## Radiated Emissions

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Ftr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------|----------------------|--------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 1.297         | 29.59                | Pk  | 28.9           | -21.5                | 0            | 36.99                      | -                  | -           | 74                  | -37.01         | 0-360          | 100         | V        |
| 2      | * 2.282         | 31.25                | Pk  | 31.8           | -19.4                | 0            | 43.65                      | -                  | -           | 74                  | -30.35         | 0-360          | 100         | V        |
| 3      | * 3.592         | 33.99                | Pk  | 33.3           | -30.4                | 0            | 36.89                      | -                  | -           | 74                  | -37.11         | 0-360          | 101         | H        |
| 4      | * 3.888         | 33.63                | Pk  | 33.7           | -29.7                | 0            | 37.63                      | -                  | -           | 74                  | -36.37         | 0-360          | 200         | H        |
| 5      | * 4.75          | 32.79                | Pk  | 34.4           | -28.5                | 0            | 38.69                      | -                  | -           | 74                  | -35.31         | 0-360          | 200         | V        |
| 6      | * 10.769        | 28.41                | Pk  | 38.1           | -23.2                | 0            | 43.31                      | -                  | -           | 74                  | -30.69         | 0-360          | 100         | V        |

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

Pk - Peak detector

### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T346 (dB/m) | Amp/Cbl/Ftr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|----------------|----------------------|--------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| * 1.299         | 36.14                | PK2  | 28.9           | -21.5                | 0            | 43.54                      | -                  | -           | 74                  | -30.46         | 360            | 207         | V        |
| * 1.296         | 23.77                | MAv1 | 28.9           | -21.6                | 0            | 31.07                      | 54                 | -22.93      | -                   | -              | 360            | 207         | V        |
| * 2.283         | 36.45                | PK2  | 31.8           | -19.4                | 0            | 48.85                      | -                  | -           | 74                  | -25.15         | 324            | 195         | V        |
| * 2.281         | 24.79                | MAv1 | 31.8           | -19.4                | 0            | 37.19                      | 54                 | -16.81      | -                   | -              | 324            | 195         | V        |
| * 3.591         | 39.82                | PK2  | 33.3           | -30.4                | 0            | 42.72                      | -                  | -           | 74                  | -31.28         | 330            | 186         | H        |
| * 3.592         | 28.5                 | MAv1 | 33.3           | -30.4                | 0            | 31.4                       | 54                 | -22.6       | -                   | -              | 330            | 186         | H        |
| * 3.89          | 39.86                | PK2  | 33.7           | -29.6                | 0            | 43.96                      | -                  | -           | 74                  | -30.04         | 254            | 230         | H        |
| * 3.888         | 28.49                | MAv1 | 33.7           | -29.7                | 0            | 32.49                      | 54                 | -21.51      | -                   | -              | 254            | 230         | H        |
| * 4.748         | 38.17                | PK2  | 34.4           | -28.6                | 0            | 43.97                      | -                  | -           | 74                  | -30.03         | 242            | 213         | V        |
| * 4.75          | 27.32                | MAv1 | 34.4           | -28.5                | 0            | 33.22                      | 54                 | -20.78      | -                   | -              | 242            | 213         | V        |
| * 7.656         | 37.02                | PK2  | 36.4           | -26.3                | 0            | 47.12                      | -                  | -           | 74                  | -26.88         | 191            | 197         | V        |
| * 7.655         | 25.55                | MAv1 | 36.4           | -26.2                | 0            | 35.75                      | 54                 | -18.25      | -                   | -              | 191            | 197         | V        |
| * 10.769        | 33.8                 | PK2  | 38.1           | -23.2                | 0            | 48.7                       | -                  | -           | 74                  | -25.3          | 1              | 101         | V        |
| * 10.768        | 23.24                | MAv1 | 38.1           | -23.2                | 0            | 38.14                      | 54                 | -15.86      | -                   | -              | 1              | 101         | V        |

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

## APPENDIX A

| PY7-00718V SPOT CHECK RESULTS        |             |         |                    |            |       |            |       |            |       |
|--------------------------------------|-------------|---------|--------------------|------------|-------|------------|-------|------------|-------|
| Technology                           | Test Item   | Channel | Measured Frequency | PY7-21831A |       | PY7-00718V |       | Delta (dB) |       |
|                                      |             |         |                    | Peak       | Ave   | Peak       | Ave   | Peak       | Ave   |
| BT                                   | RBE         | 1       | 2439MHz            | 44.81      | 34.38 | 47.08      | 35.44 | -2.27      | -1.06 |
|                                      | RSE         | 39      | 2759MHz            | 51.47      | 38.14 | 49.51      | 36.11 | 1.96       | 2.03  |
| Note: GFSK is the worst mode         |             |         |                    |            |       |            |       |            |       |
|                                      |             |         |                    |            |       |            |       |            |       |
| BLE                                  | RBE         | 19      | 2484MHz            | 52.26      | 39.02 | 51.2       | 40.04 | 1.06       | -1.02 |
|                                      | RSE         | 19      | 8141MHz            | 47.64      | 38.28 | 48.06      | 39.42 | -0.42      | -1.14 |
| Note:                                |             |         |                    |            |       |            |       |            |       |
| DTS                                  | RBE         | 13      | 2390MHz            | 63.44      | 48.83 | 66.35      | 51.39 | -2.91      | -2.56 |
|                                      | RSE         | 11      | 1076.5MHz          | 51.62      | 40.66 | 48.7       | 38.14 | 2.92       | 2.52  |
| Note: 802.11n HT20 is the worst mode |             |         |                    |            |       |            |       |            |       |
|                                      |             |         |                    |            |       |            |       |            |       |
| UNII                                 | RBE         | 36      | 5150MHz            | 57.36      | 45.37 | 53.13      | 46.85 | -4.23      | 1.48  |
|                                      | RSE         | 36      | 11679MHz           | 48.26      | 36.07 | 48.48      | 36.27 | 0.22       | 0.2   |
| Note: 802.11a HT20 is the worst mode |             |         |                    |            |       |            |       |            |       |
|                                      |             |         |                    |            |       |            |       |            |       |
| NFC                                  | Fundamental | N/A     | 13.56 MHz          | 19.49      |       | 13.14      |       | -6.35      |       |
| Note: Fundamental is the worst case  |             |         |                    |            |       |            |       |            |       |
|                                      |             |         |                    |            |       |            |       |            |       |
| Part15B                              | RSE         | N/A     | 398.62MHz          | 42.09      |       | 30.7       |       | -11.39     |       |
| Note: Below 1GHz is the worst case   |             |         |                    |            |       |            |       |            |       |

## END OF REPORT