CERTIFICATION TEST REPORT

Report Number. : 12132730-E5V4

Applicant	:	SONY MOBILE COMMUNICATIONS INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA-KU TOKYO, 140-0002, JAPAN
FCC ID	:	PY7-43153F
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 E (EXCEPT DFS)

Date Of Issue:
April 02, 2018

Prepared by:
UL Verification Services Inc.
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NVLAP TESTING
NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	03/22/18	Initial Issue	
V2	03/26/18	Added Section 6, Updated Section 7.1.1, 8 & Appendix A	Kiya Kedida
V3	03/29/18	Updated Section 8 & 8.1.1	Kiya Kedida
V4	04/02/18	Updated Section 8 & Appendix A	Kiya Kedida

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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:	BH9000HHBN, BH90004LBN, BH90004QBN, BH90006UBN
DATE TESTED:	MARCH 8 to 14, 2018

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E (EXCEPT DFS)	Complies

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:

Dan Coronia
Operations Leader
UL Verification Services Inc.

Reviewed By:

Kiya Kedida
Project Engineer
UL Verification Services Inc.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC KDB 662911 D01 v02r01, FCC KDB 789033 D02 v02r01, 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
☒ Chamber A(ISED: 2324B-1)	☐ Chamber D(ISED: 22541-1)
☒ Chamber B(ISED: 2324B-2)	☐ Chamber E(ISED: 22541-2)
☒ Chamber C(ISED: 2324B-3)	☒ Chamber F(ISED: 22541-3)
	☒ Chamber G(ISED: 22541-4)
	☐ Chamber H(ISED: 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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4.3. MEASUREMENT UNCERTAINTY

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

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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.

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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**
Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T493	06/23/2018	06/23/2017
Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T1165	11/25/2018	11/25/2017
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	06/09/2018	06/09/2017
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T119	03/28/2018	03/28/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018	12/21/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T917	06/29/2018	06/29/2017

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, Dec 1, 2016

NOTE: *testing is completed before equipment calibration expiration date.

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7. REUSE OF TEST DATA

7.1. INTRODUCTION

According to the manufacturer, FCC ID: PY7-11821Y and FCC ID: PY7-43153F unlicensed radios (WLAN/BT/BLE/NFC) are electrically identical. The FCC ID: PY7-11821Y test data shall remain representative of FCC ID: PY7-43153F so, FCC ID: PY7-43153F leverages test data from FCC ID: PY7-11821Y.

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

7.2. DEVICES DIFFERENCES

Difference between PY7-11821Y and PY7-43153F:

Sony Mobile Communications Inc. hereby declares that the difference between PY7-11821Y and PY7-43153F is related only to the cellular part and no change is non-cellular (WLAN/Bluetooth/NFC) parts. The non-cellular parts which are electrically identical, and therefore the following report/data of PY7-11821Y may represent for PY7-43153F.

7.3. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device PY7-43153F 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.

7.4. REFERENCE DETAIL

Equipment Class	Reference FCC ID	Report Title/Section
NII (UNII WLAN)	PY7-11821Y	12132671-E5V2 FCC Report UNII

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8. SPOT CHECK DATA

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to worst case mode 11ac HT80 for band edge and 11n HT40 for radiated spurious emission.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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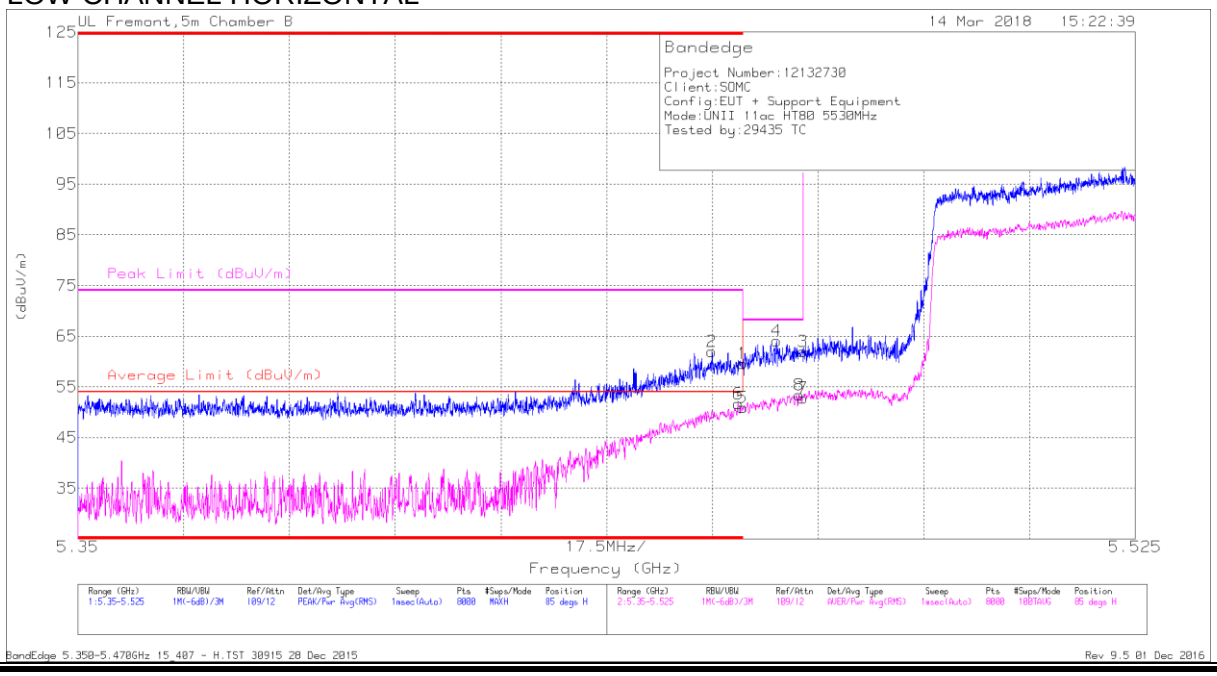
8.1. 11ac HT80 2TX CDD MIMO MODE IN THE 5.5GHz BAND

8.1.1. BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ 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	* 5.46	44.07	Pk	35.2	-19.7	0	59.57	-	-	74	-14.43	85	116	H
2	* 5.455	46.34	Pk	35.2	-19.6	0	61.94	-	-	74	-12.06	85	116	H
5	* 5.46	35.42	RMS	35.2	-19.7	.53	51.45	54	-3.08	-	-	85	116	H
6	* 5.459	36.21	RMS	35.2	-19.7	.53	52.24	54	-2.29	-	-	85	116	H
4	5.466	48.52	Pk	35.2	-19.7	0	64.02	-	-	68.2	-4.18	85	116	H
8	5.469	38.05	RMS	35.2	-19.8	.53	53.98	-	-	-	-	85	116	H
3	5.47	46.51	Pk	35.2	-19.7	0	62.01	-	-	68.2	-6.19	85	116	H
7	5.47	37.26	RMS	35.2	-19.7	.53	53.29	-	-	-	-	85	116	H

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

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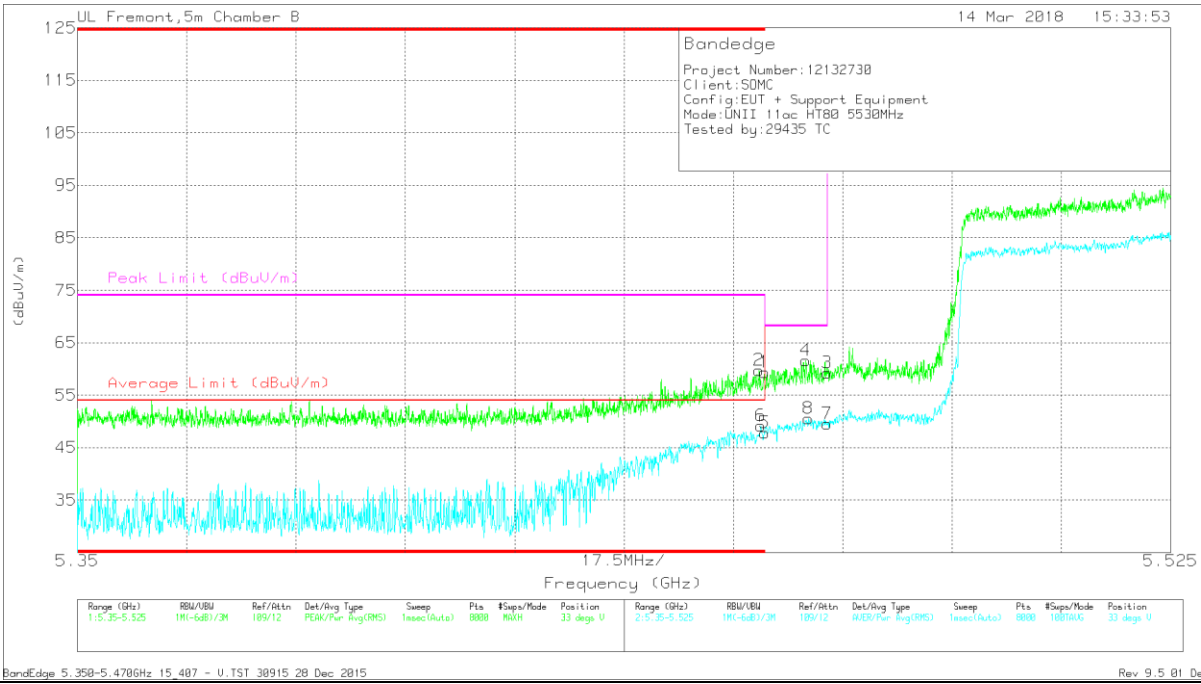
LOW CHANNEL VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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
2	* 5.459	44.25	Pk	35.2	-19.7	0	59.75	-	-	74	-14.25	33	228	V
6	* 5.459	33.65	RMS	35.2	-19.7	.53	49.68	54	-4.32	-	-	33	228	V
1	* 5.46	43.85	Pk	35.2	-19.7	0	59.35	-	-	74	-14.65	33	228	V
5	* 5.46	32.26	RMS	35.2	-19.7	.53	48.29	54	-6.24	-	-	33	228	V
4	5.467	45.99	Pk	35.2	-19.6	0	61.59	-	-	68.2	-6.61	33	228	V
8	5.467	34.89	RMS	35.2	-19.6	.53	51.02	-	-	-	-	33	228	V
3	5.47	43.73	Pk	35.2	-19.7	0	59.23	-	-	68.2	-8.97	33	228	V
7	5.47	34.1	RMS	35.2	-19.7	.53	50.13	-	-	-	-	33	228	V

* - indicates frequency in CFR47 Pt 15 Restricted Band
Pk - Peak detector
RMS - RMS detection

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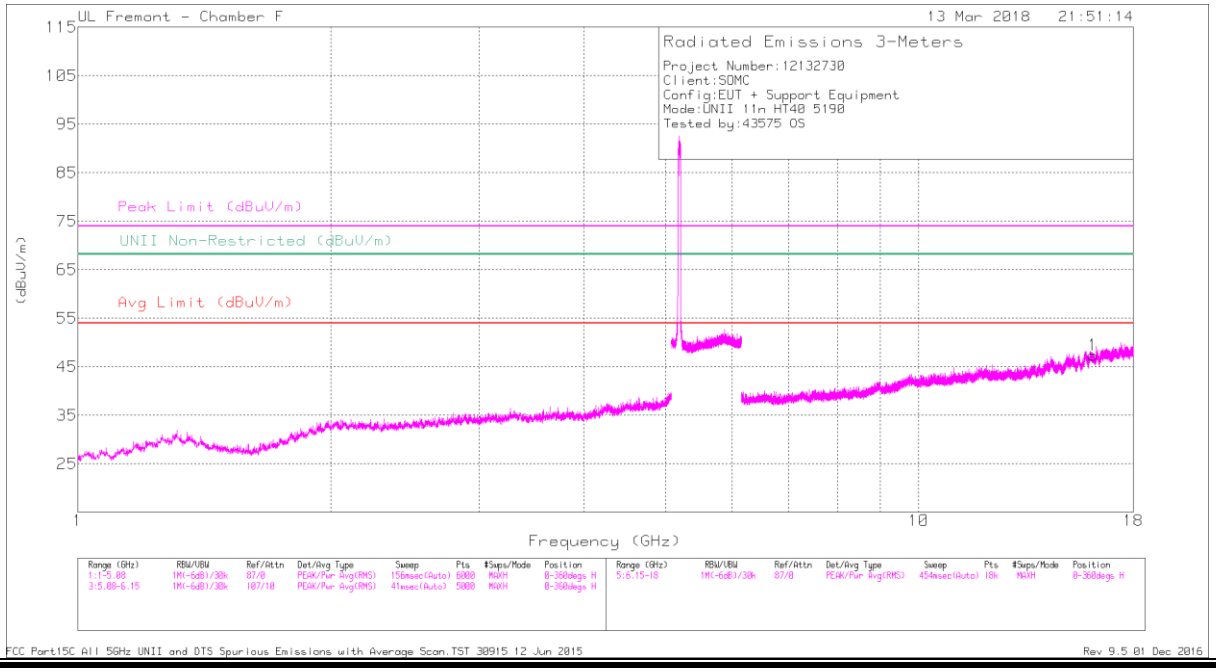
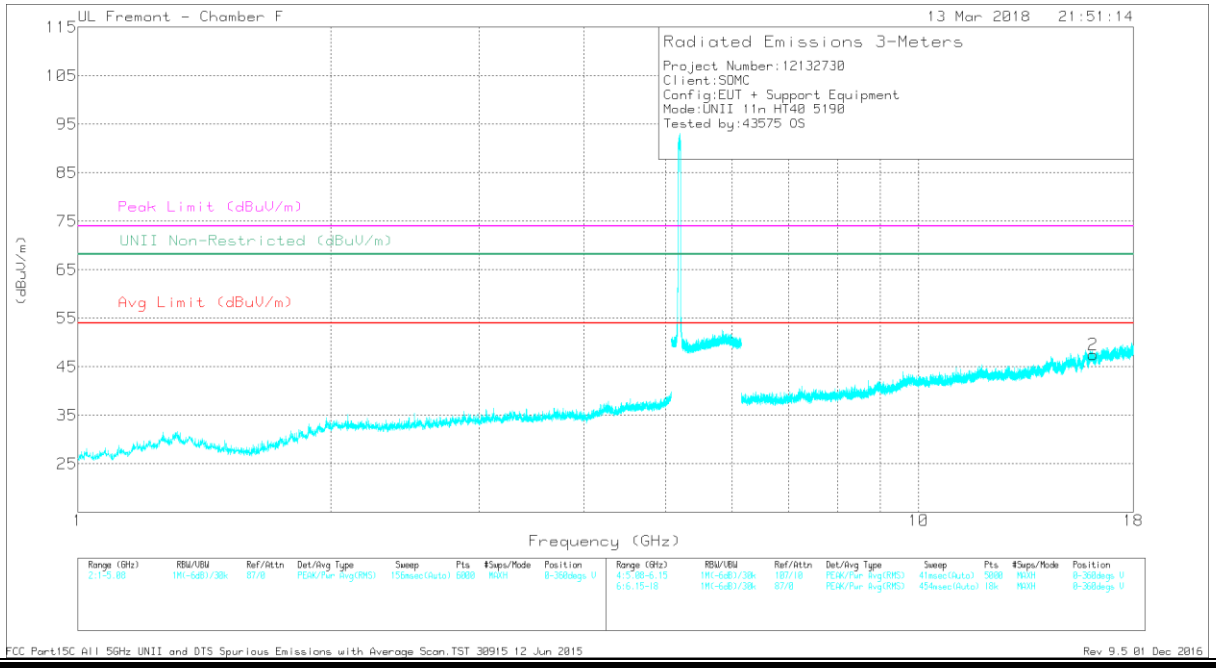
8.1.2. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 16.118	27.55	Pk	41.2	-21.4	0	47.35	-	-	74	-26.65	-	-	0-360	100	H
2	* 16.116	27.87	Pk	41.2	-21.5	0	47.57	-	-	74	-26.43	-	-	0-360	201	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 16.117	33.61	PK-U	41.2	-21.4	0	53.41	-	-	74	-20.59	-	-	293	383	H
* 16.119	22.42	ADR	41.2	-21.4	.29	42.51	54	-11.49	-	-	-	-	293	383	H
* 16.116	34.17	PK-U	41.2	-21.5	0	53.87	-	-	74	-20.13	-	-	97	358	V
* 16.117	22.39	ADR	41.2	-21.5	.29	42.38	54	-11.62	-	-	-	-	97	358	V

* - indicates frequency in CFR47 Pt 15 Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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APPENDIX A

PY- 43153F SPOT CHECK RESULTS									
Technology	Test Item	Channel	Measured Frequency	PY7-11821Y		PY-43153F		Delta (dB)	
				Peak	Ave	Peak	Ave	Peak	Ave
UNII	**RBE**	**106**	**5460MHz**	**59.59**	**48.95**	**61.94**	**52.24**	**2.35**	**3.59**
	RSE	**38**	**16120MHz**	**55.24**	**43.87**	**53.87**	**42.51**	**-1.37**	**-1.36**
Note: 802.11ac HT80 is the worst mode									

END OF REPORT

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