



CERTIFICATION TEST REPORT

Report Number. : 11783785-E5V1

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

FCC ID : PY7-22031B

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

Test Standard(s) : FCC 47 CFR PART 15 SUBPART E (Excluding DFS)

Date Of Issue:

August 07, 2017

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

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	08/07/17	Initial Review	D. Corona

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION.....	5
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION.....	6
4.3. MEASUREMENT UNCERTAINTY	6
5. EQUIPMENT UNDER TEST	7
5.1. DESCRIPTION OF EUT.....	7
6. REUSE OF TEST DATA	8
6.1. INTRODUCTION	8
6.2. DEVICES DIFFERENCES	8
6.3. SPOT CHECK VERIFICATION RESULTS SUMMARY	8
6.4. REFERENCE DETAIL.....	8
7. SPOT CHECK DATA	9
7.1. 11n HT20 2TX CDD MIMO MODE IN THE 5.6GHz BAND.....	9
7.1.1. BANDEDGE (LOW CHANNEL)	9
7.1.2. HARMONICS AND SPURIOUS EMISSIONS	11
8. SETUP PHOTOS.....	13

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, GPS & NFC

SERIAL NUMBER: RADIATED: BH9000SE81 & BH9000L281
CONDUCTED: BH9000BU82 & BH9000AA82

DATE TESTED: JUNE 6 – AUGUST 7, 2017

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E (Excluding DFS)	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:



DAN CORONIA
WiSE PROJECT LEAD
UL VERIFICATION SERVICES INC.

Prepared By:



GLENN ESCANO
WiSE LAB 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, and ANSI C63.10-2013.

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(IC: 2324B-1)	☐ Chamber D(IC: 22541-1)
☒ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 22541-2)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 22541-3)
	☐ Chamber G(IC: 22541-4)
	☐ 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, GPS & NFC.

6. REUSE OF TEST DATA

6.1. INTRODUCTION

According to the manufacturer, FCC ID: PY7-65365K and FCC ID: PY7-22031B unlicensed radios (WLAN/BT/BLE/NFC) are electrically identical. They share the same chipset, same power and same antenna performance including antenna gain. The FCC ID: PY7-65365K test data shall remain representative of FCC ID: PY7-22031B so, FCC ID: PY7-22031B leverages test data from FCC ID: PY7-65365K.

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 PY7-65365K and PY7-22031B:

Various components were removed from PY7-65365K to establish PY7-22031B; such components are related only to the cellular part and there are no changes in non-cellular (WLAN/BT/BLE/NFC) parts, which are electronically identical.

6.3. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device PY7-22031B for radiated harmonic spurious and radiated band-edge. 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.

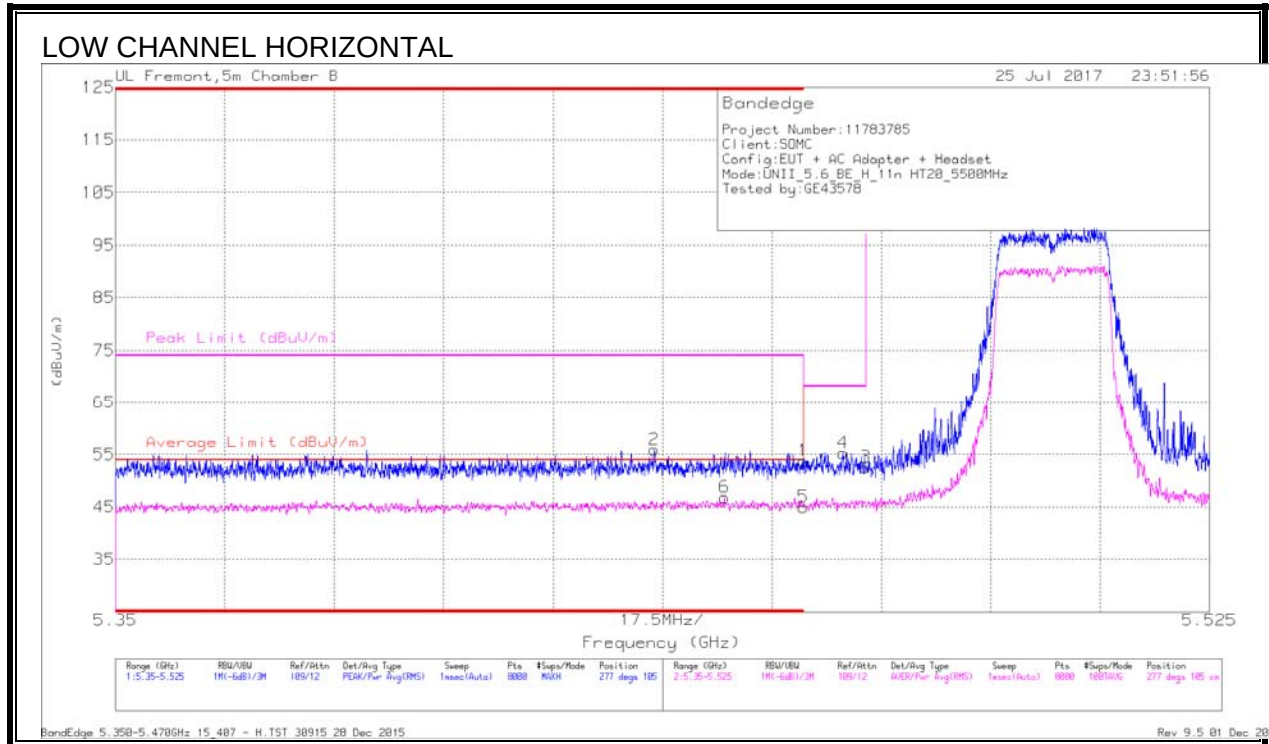
6.4. REFERENCE DETAIL

Equipment Class	Reference FCC ID	Report Title/Section
DSS (BT)	PY7-65365K	11785223-E2V1 FCC Report BT
DTS (BLE)	PY7-65365K	11785223-E3V2 FCC Report BLE
DTS (WLAN)	PY7-65365K	11785223-E4V3 FCC Report DTS
UNII (WLAN)	PY7-65365K	11785223-E5V3 FCC Report UNII
NFC	PY7-65365K	11785223-E7V2 FCC Report NFC
JBP	PY7-65365K	11785223-E8V2 FCC Report 15B

7. SPOT CHECK DATA

7.1. 11n HT20 2TX CDD MIMO MODE IN THE 5.6GHz BAND

7.1.1. BANDEDGE (LOW CHANNEL)



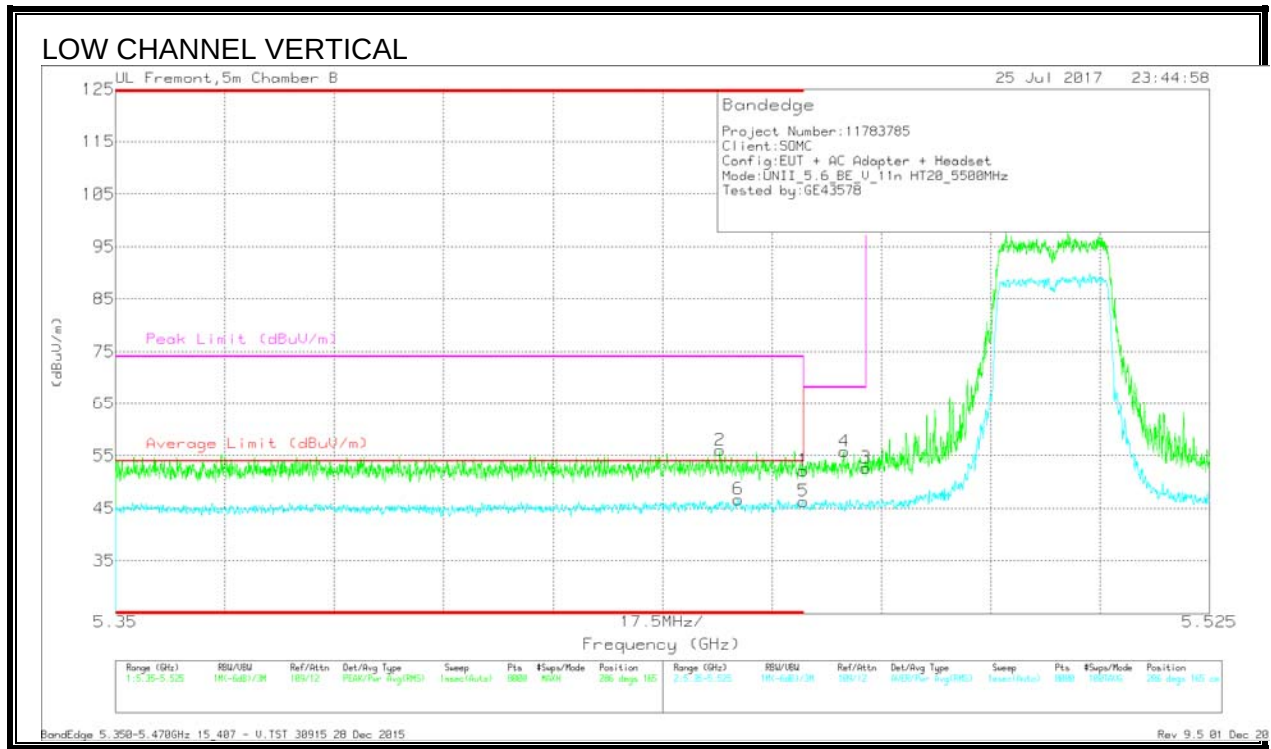
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF 1863 (dB/m)	Amp/Ch/Flt/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
2	* 5.436	39.26	Pk	35.1	-18.5	0	55.86	-	-	74	-18.14	277	105	H
6	* 5.447	30.14	RMS	35.1	-18.6	.18	46.82	54	-7.18	-	-	277	105	H
1	* 5.46	37.46	Pk	35.2	-18.9	0	53.76	-	-	74	-20.24	277	105	H
5	* 5.46	28.47	RMS	35.2	-18.9	.18	44.95	54	-9.05	-	-	277	105	H
4	5.466	39.11	Pk	35.2	-19	0	55.31	-	-	68.2	-12.89	277	105	H
3	5.47	36.19	Pk	35.2	-18.9	0	52.49	-	-	68.2	-15.71	277	105	H

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

Pk - Peak detector

RMS - RMS detection



Trace Markers

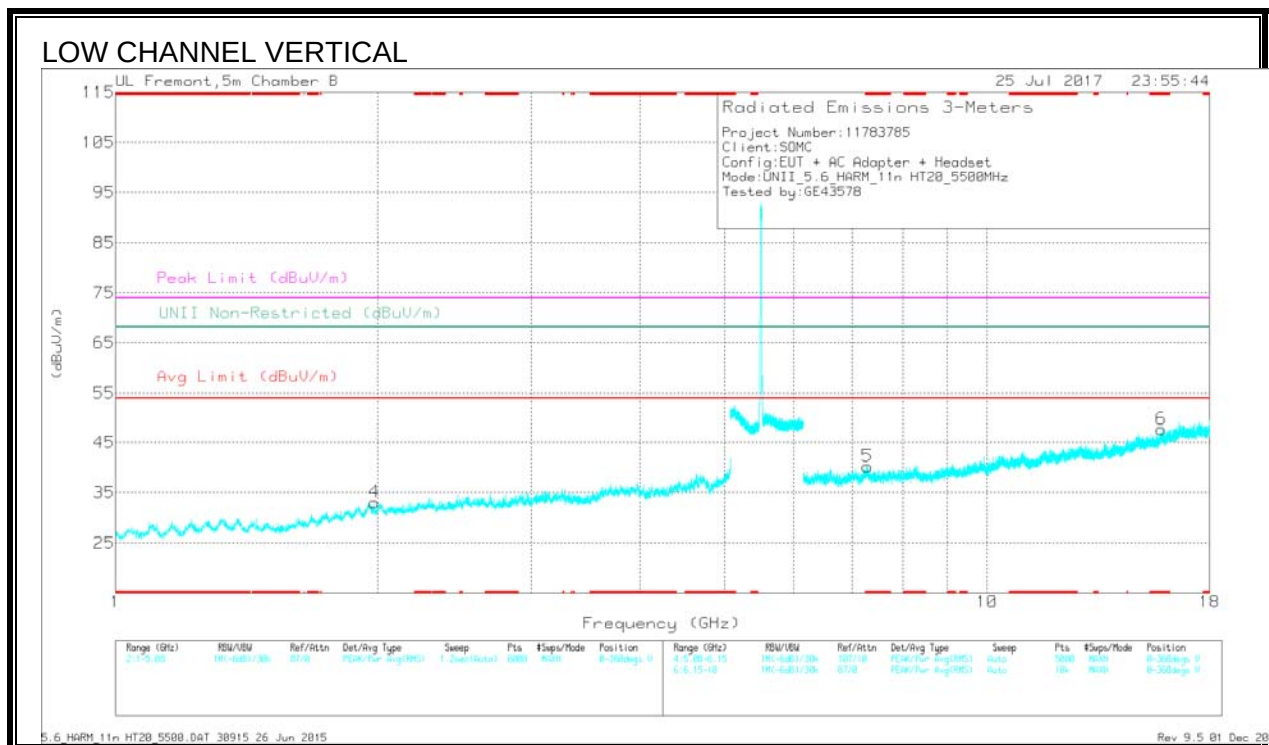
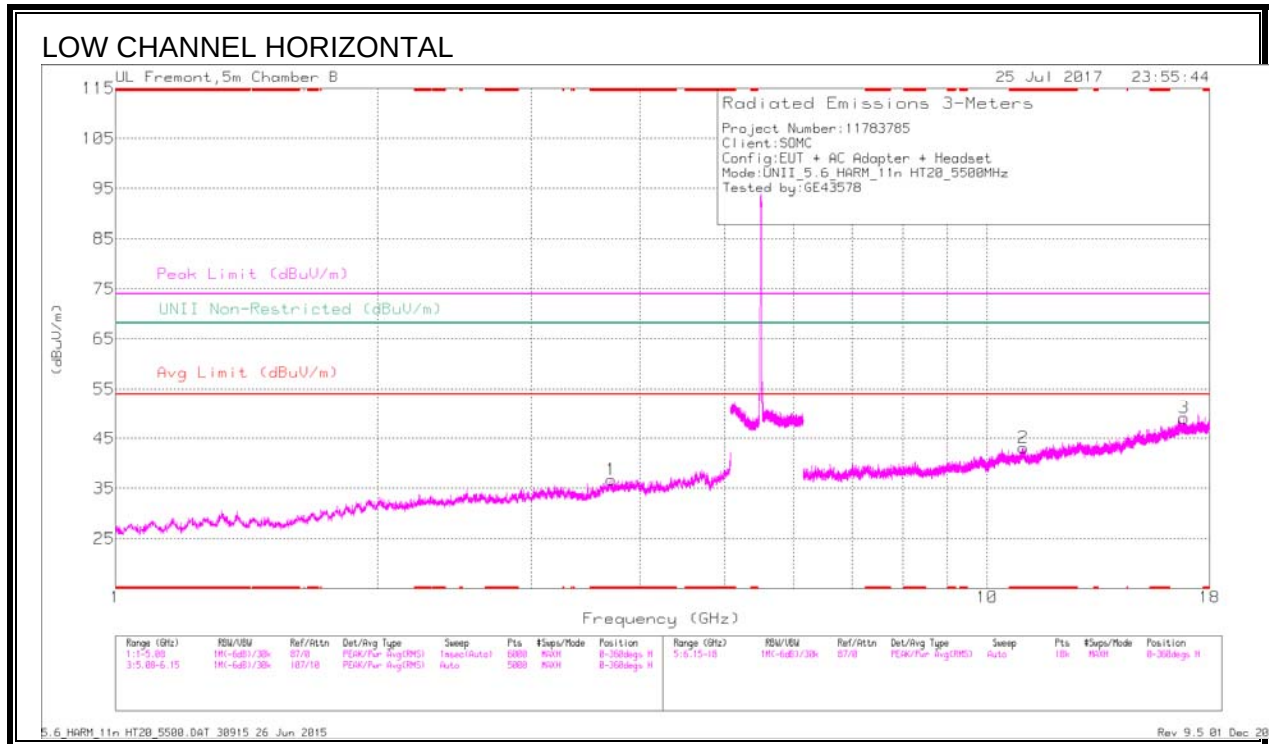
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cb/FHz/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
2	* 5.447	39.54	Pk	35.1	-18.6	0	56.04	-	-	74	-17.96	286	165	V
6	* 5.45	30.23	RMS	35.1	-18.8	-18	46.71	54	-7.29	-	-	286	165	V
1	* 5.46	35.9	Pk	35.2	-18.9	0	52.2	-	-	74	-21.8	286	165	V
5	* 5.46	29.84	RMS	35.2	-18.9	-18	46.32	54	-7.68	-	-	286	165	V
4	5.467	39.61	Pk	35.2	-19	0	55.81	-	-	68.2	-12.39	286	165	V
3	5.47	36.35	Pk	35.2	-18.9	0	52.65	-	-	68.2	-15.55	286	165	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

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filt/Fed (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	URRL Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.708	39.66	PK-U	33.3	-30.6	0	42.36	-	-	74	-31.64	-	-	51	104	H
	* 3.707	28.26	ADR	33.3	-30.6	.18	31.14	54	-22.86	-	-	-	-	51	104	H
2	* 10.998	34.46	PK-U	37.7	-21.5	0	50.66	-	-	74	-23.34	-	-	229	199	H
	* 11	21.92	ADR	37.7	-21.5	.18	38.3	54	-15.7	-	-	-	-	229	199	H
5	* 7.291	36.36	PK-U	35.8	-26	0	46.16	-	-	74	-27.84	-	-	301	199	V
	* 7.291	25.2	ADR	35.8	-26	.18	35.18	54	-18.82	-	-	-	-	301	199	V
6	* 15.851	31.76	PK-U	41	-18.9	0	53.86	-	-	74	-20.14	-	-	329	104	V
	* 15.851	20.4	ADR	41	-18.8	.18	42.78	54	-11.22	-	-	-	-	329	104	V
4	1.982	39.88	PK-U	31.2	-31.9	0	39.18	-	-	-	-	68.2	-29.02	16	200	V
3	16.823	30.72	PK-U	42.3	-18.5	0	54.52	-	-	-	-	68.2	-13.68	105	104	H

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

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

APPENDIX A

PY7-22031B SPOT CHECK RESULTS									
Technology	Test Item	Channel	Measured Frequency	PY7-65365K		PY7-22031B		Delta (dB)	
				Peak	Ave	Peak	Ave	Peak	Ave
BT	RBE	78	2480 MHz	54.86	37.78	51.27	38.87	-3.59	1.09
	RSE	39	14270 MHz	48.75	35.14	48.77	39.01	0.02	3.87
Note: GFSK is the worst mode									
BLE	RBE	0	2402 MHz	49.75	38.93	48.57	39.01	-1.18	0.08
	RSE	19	11740 MHz	48.94	38.07	49.66	38.98	0.72	0.91
Note:									
DTS	RBE	13	2472 MHz	66.03	50.67	65.84	50.99	-0.19	0.32
	RSE	6	15840 MHz	54.5	42.42	54.99	42.39	0.44	-0.03
NOTE: 802.11n HT20 is the worst mode									
NFC	Fundamental	-	13.56 MHz	26.96		20.78		-6.18	
UNII	RBE	100	5470 MHz	60.77	44.25	55.86	46.82	-4.91	2.57
(20MHz)	RSE	100	15.85 GHz	54.14	42.08	53.86	42.78	-0.28	0.70
NOTE: 802.11n HT20 mode is the worst									

END OF REPORT