CERTIFICATION TEST REPORT

REPORT NUMBER : 11626381T-E7V2

APPLICANT	:	SONY MOBILE COMMUNICATIONS INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU,TOKYO, 140-0002, JAPAN
FCC ID	:	PY7-08618T
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 C

Date Of Issue:

May 02, 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: 200246-0

Revision History

Ver.	Issue Date	Revisions	Revised By
V1	04/10/17	Initial Issue	C. Vergonio
V2	05/02/17	Added Note in Section 7. Updated KDB reference in Page 19.	C. Vergonio

TABLE OF CONTENTS

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:	CB512DRHCH, CB512DRH3A
DATE TESTED:	MARCH 22, 2017 – APRIL 7, 2017

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC 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:

CHARLES VERGONIO
CONSUMER TECHNOLOGY DIVISION
WiSE PROJECT LEAD
UL VERIFICATION SERVICES INC

Prepared By:

Angel Escamilla

ANGEL ESCAMILLA
CONSUMER TECHNOLOGY DIVISION
WiSE LAB ENGINEER
UL VERIFICATION SERVICES INC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, and 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
☒ 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 and 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

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

5.2. MAXIMUM FIELD STRENGTH

The testing was performed at 3 meter. The transmitter maximum E-field at 30 meter distance is 18.04 dBuV/m which is converted from the 3 meter data.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes loop antenna.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was s_atp_1_00067_A_9_4.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission was 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, Z, it was determined that Y-Axis orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y-Axis orientation.

5.6. MODIFICATIONS

No modifications were made during testing.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SONY	1300-7137.1	4016W40310044	NA
Headphones	SONY	N/A	N/A	N/A

I/O CABLES

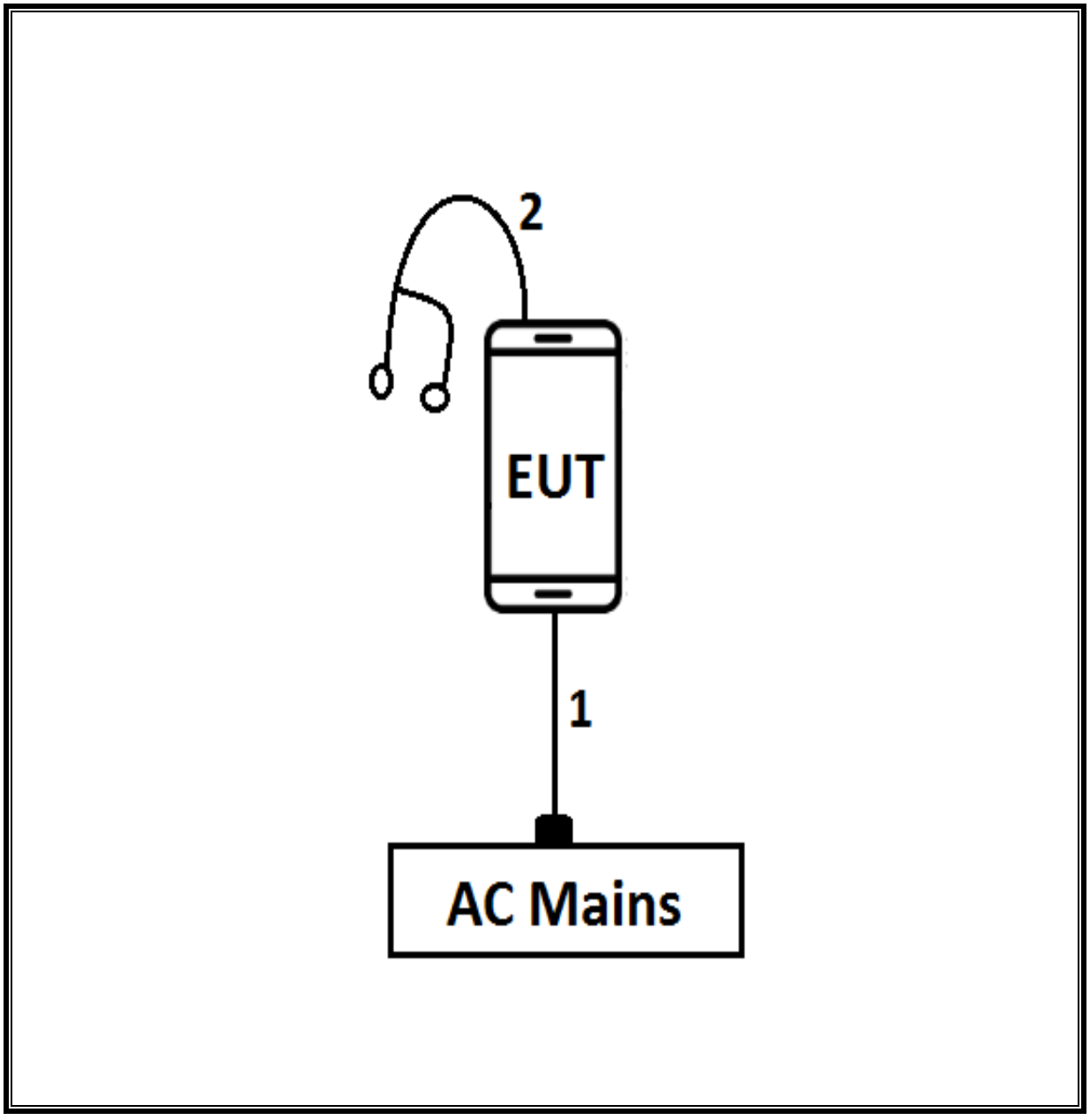
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB	Shielded	3	N/A
2	Audio	1	3.5mm	Shielded	1	N/A

TEST SETUP

The EUT is setup as a standalone device. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS

RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



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, Broadband Hybrid, 30MHz to 2000MHz w/4dB Pad	Sunol Sciences Corp.	JB3	T477	06/22/2017
Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T1683	02/17/2018
Amplifier, 10kHz-1GHz	Agilent (Keysight) Technologies	8447D	T15	08/26/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T907	01/23/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1450	01/10/2018
Temperature Chamber	Thermotron Industires	SE-600-10-10	T80	08/21/2017
EMI Test Receiver	Rohde & Schwarz	ESR	T1436	01/18/2018
LISN	Fischer Custom Communications	FCC-LISN-50/250-25-2-01	T1310	06/08/2017
Transient Limiter	COM-POWER	LIT-930	T1457	02/24/18

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Conducted Emissions Software	UL	UL EMC	Ver 9.5, May 26, 2015
Radiated Emissions Software	UL	UL EMC	Ver 9.5, April 26, 2016

7. OCCUPIED BANDWIDTH

LIMITS

For reporting purposes only. Tested per ANSI C63.10 (6.9.3)

RESULTS

ID:	45250	Date:	3/24/17

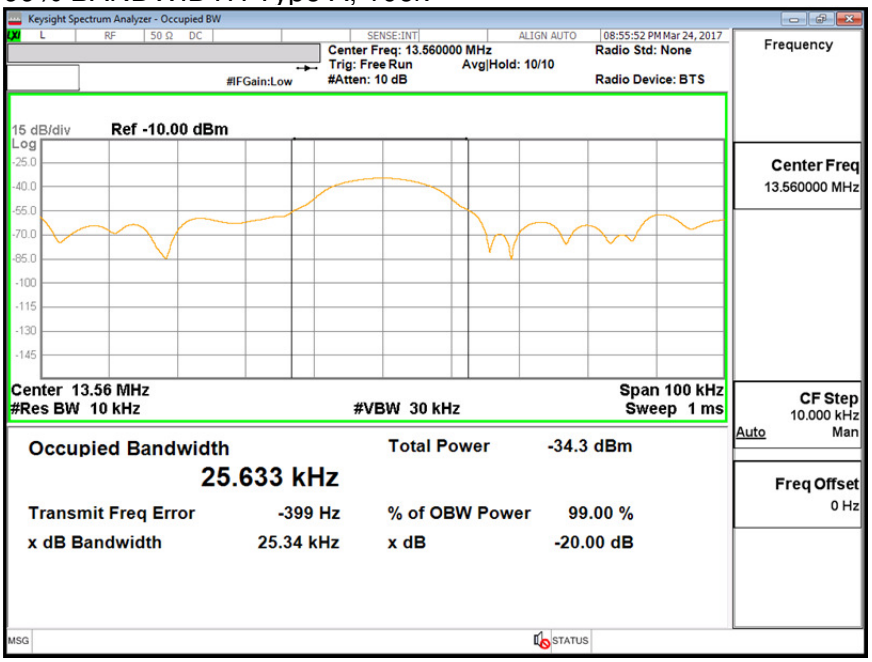
Frequency (MHz)	Modulation	Data Rate (kbps)	99% Bandwidth (kHz)	20dB Bandwidth (kHz)
13.56	Type A	106	25.633	25.340
		212	22.948	25.600
		424	21.431	24.750
		848	21.343	25.090
	Type B	106	22.343	25.140
		212	22.240	25.590
		424	21.751	25.730
		848	21.664	25.450
	Type F	212	21.313	25.090
		424	21.258	25.070

Note(s):

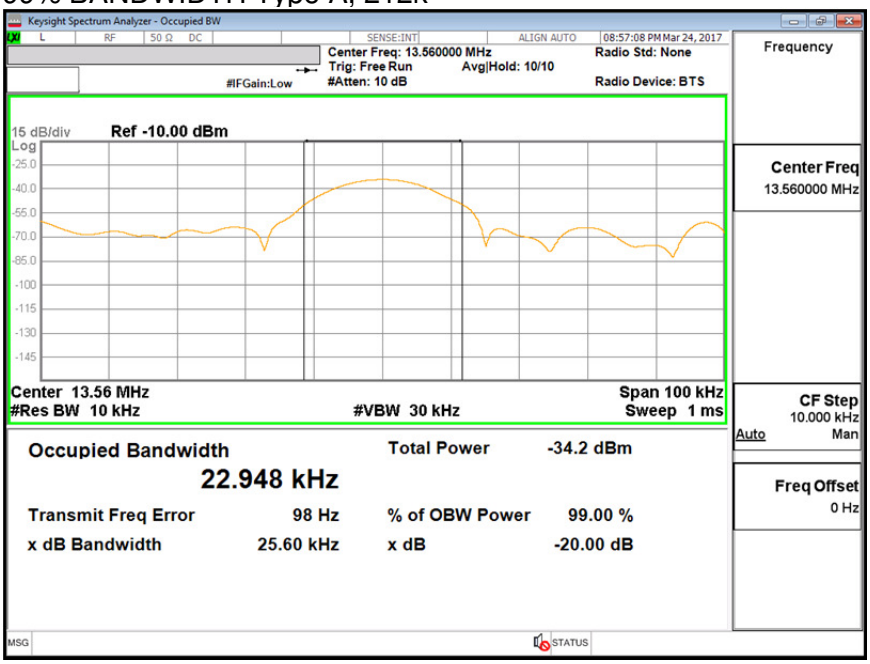
- Because the measured signal is CW adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

99% Bandwidth

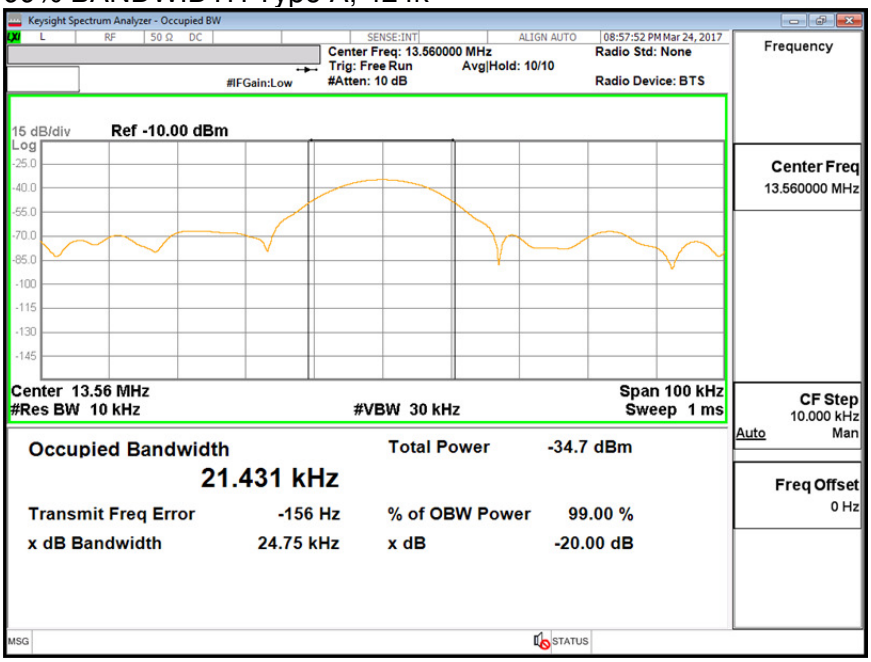
99% BANDWIDTH Type A, 106k



99% BANDWIDTH Type A, 212k

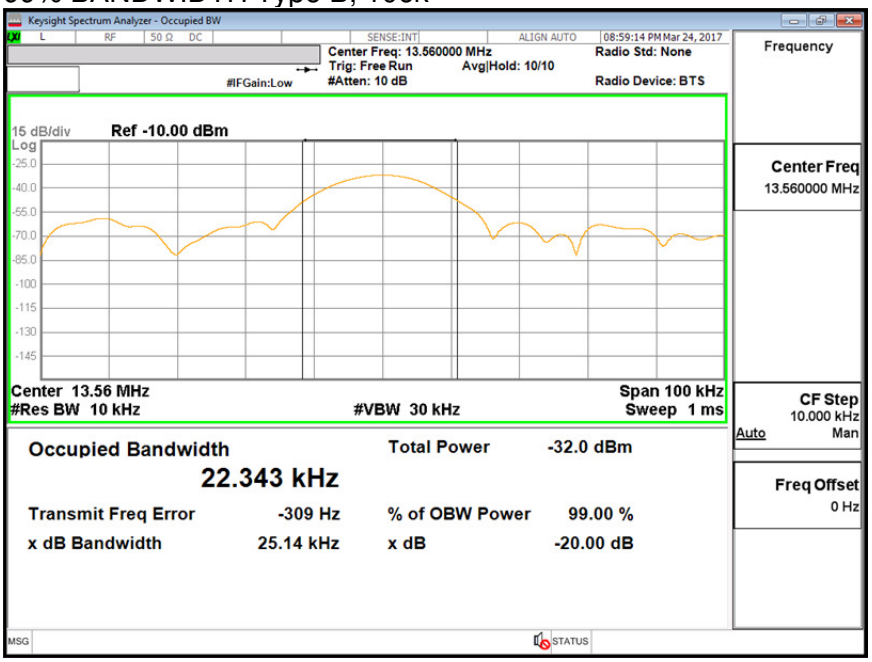


99% BANDWIDTH Type A, 424k

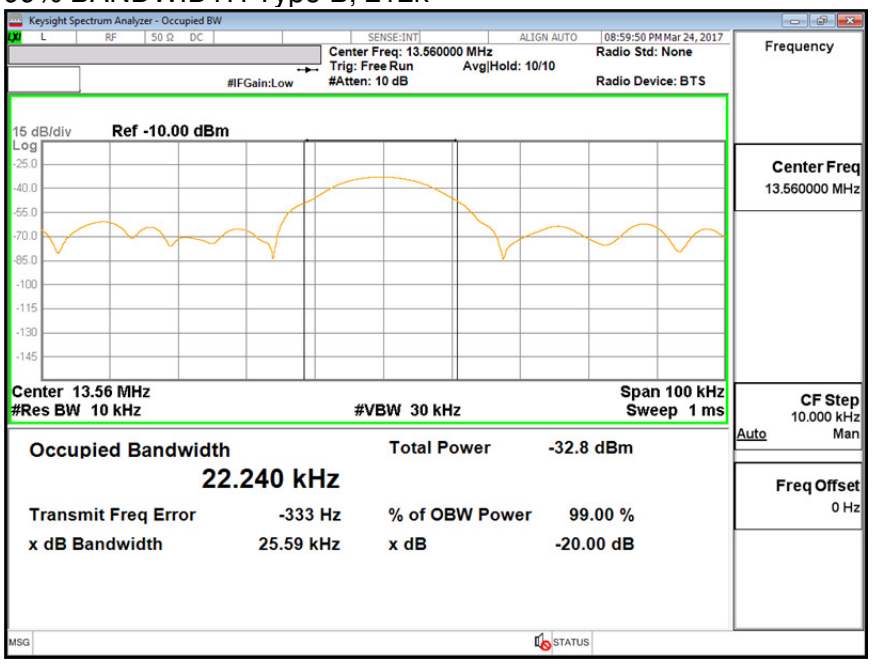


99% BANDWIDTH Type A, 848k

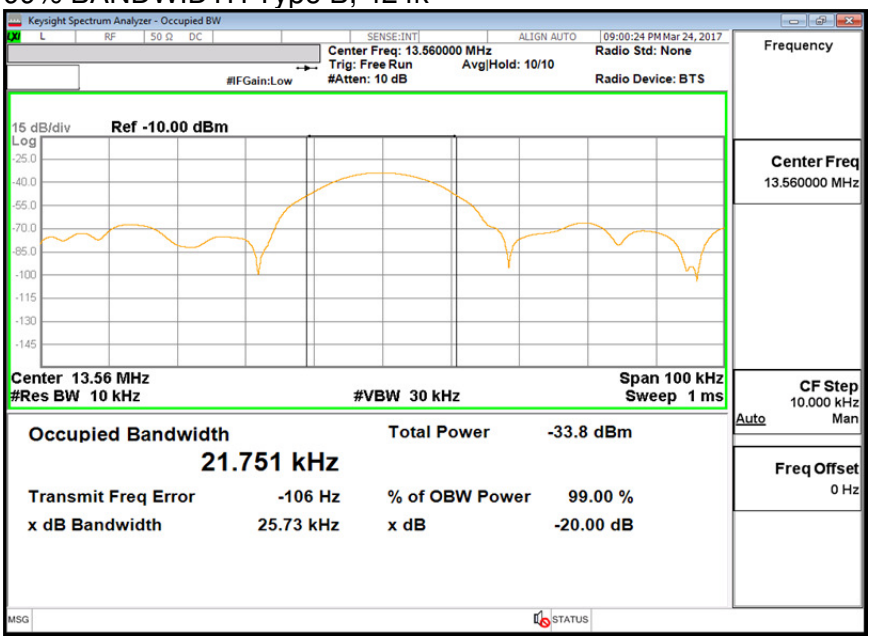
99% BANDWIDTH Type B, 106k



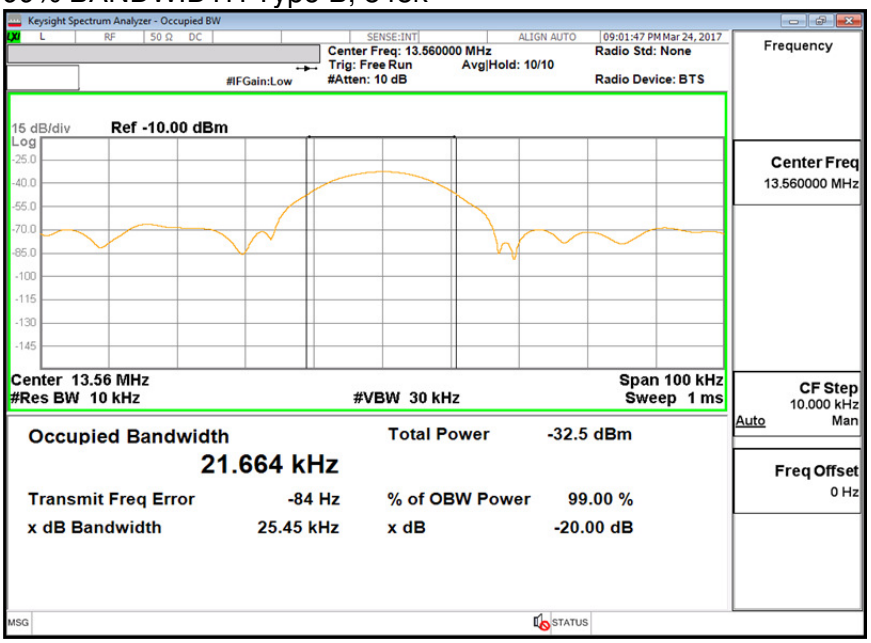
99% BANDWIDTH Type B, 212k



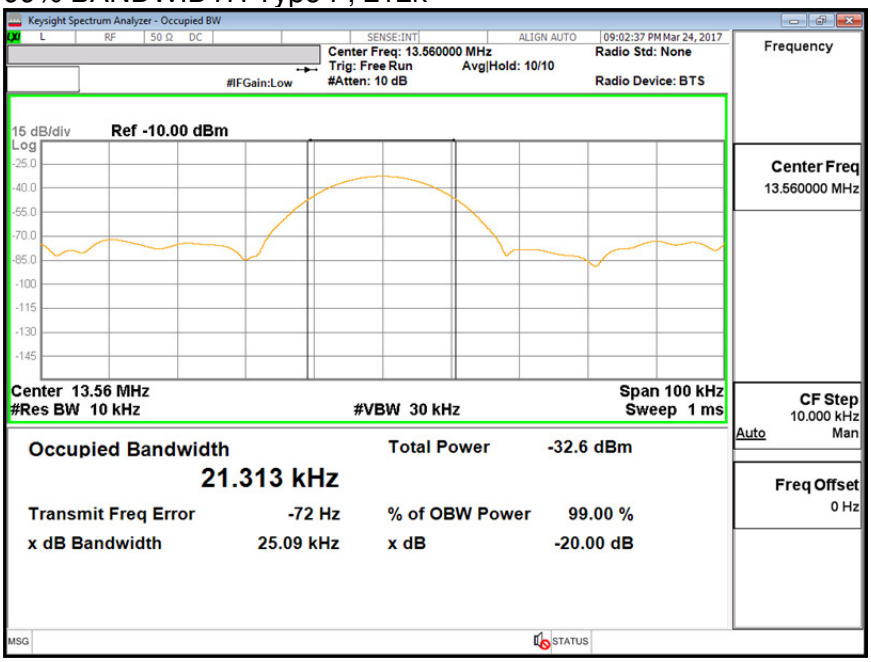
99% BANDWIDTH Type B, 424k



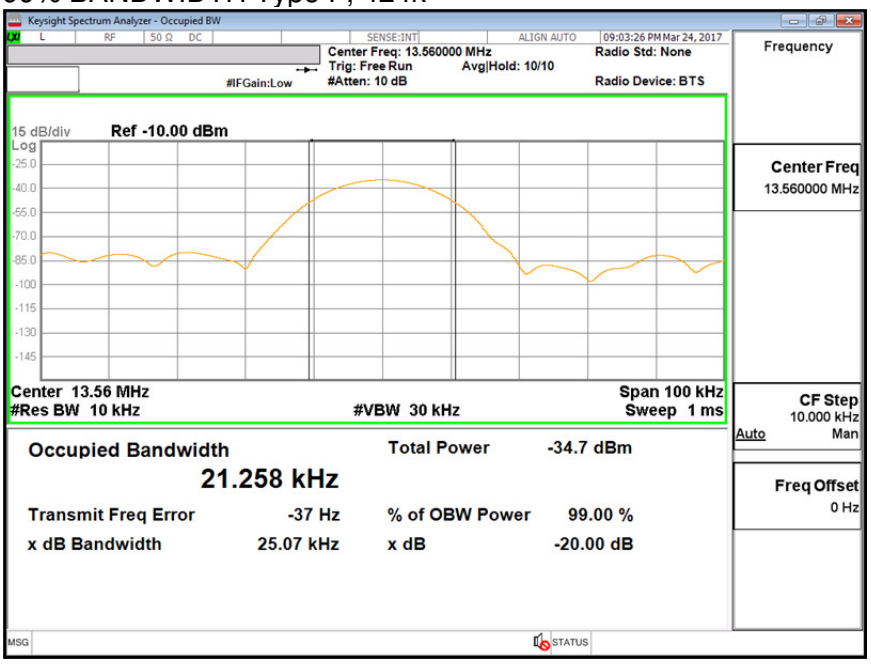
99% BANDWIDTH Type B, 848k



99% BANDWIDTH Type F, 212k



99% BANDWIDTH Type F, 424k



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

§15.225, 15.209
IC RSS-210, Annex B.6 (Transmitter)
IC RSS-GEN, Section 7.1.2 (Receiver)

(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 filed 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 at 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. The frequency range was investigated from 0.15 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater (1000MHz)

RESULTS

No non-compliance noted:

KDB 414788 OATS and Chamber Correlation Justification

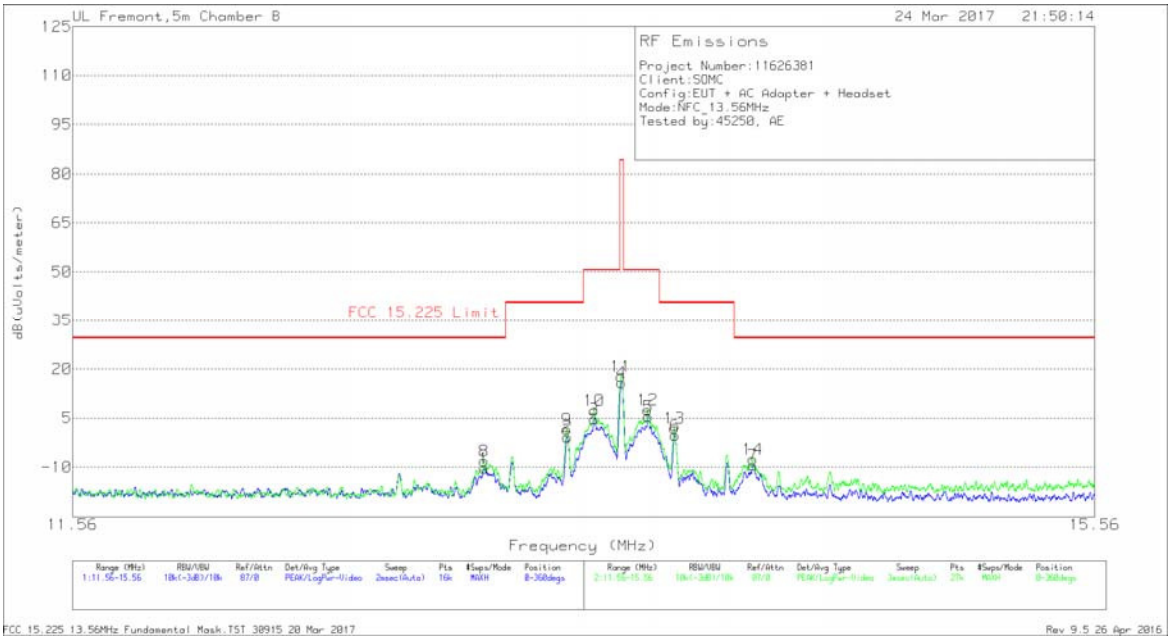
Device is a Smart Phone.

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

8.1.1. FUNDAMENTAL EMISSION MASK (11.56 – 15.56MHz)

FUNDAMENTAL Type A, 106k



Note: All data rate Field Strength was investigated and Type A, 106k found to have the highest Field Strength results and represents as the worst case data rate.

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)
8	13.02912	19.93	Pk	10.4	1.6	-40	-8.07	29.54	-37.61	0-360
1	13.02988	17.58	Pk	10.4	1.6	-40	-10.42	29.54	-39.96	0-360
9	13.34658	29.63	Pk	10.4	1.6	-40	1.63	40.51	-38.88	0-360
2	13.348	27.25	Pk	10.4	1.6	-40	-.75	40.51	-41.26	0-360
10	13.45255	35.38	Pk	10.4	1.6	-40	7.38	50.5	-43.12	0-360
3	13.454	32.79	Pk	10.4	1.6	-40	4.79	50.5	-45.71	0-360
11	13.55807	45.8	Pk	10.4	1.6	-40	17.8	84	-66.2	0-360
4	13.55988	43.96	Pk	10.4	1.6	-40	15.96	84	-68.04	0-360
12	13.6636	35.56	Pk	10.4	1.6	-40	7.56	50.5	-42.94	0-360
5	13.666	33.41	Pk	10.4	1.6	-40	5.41	50.5	-45.09	0-360
13	13.76957	30.08	Pk	10.3	1.6	-40	1.98	40.51	-38.53	0-360
6	13.77188	27.78	Pk	10.3	1.6	-40	-.32	40.51	-40.83	0-360
14	14.08777	20.62	Pk	10.3	1.6	-40	-7.48	29.54	-37.02	0-360
7	14.08863	18.69	Pk	10.3	1.6	-40	-9.41	29.54	-38.95	0-360

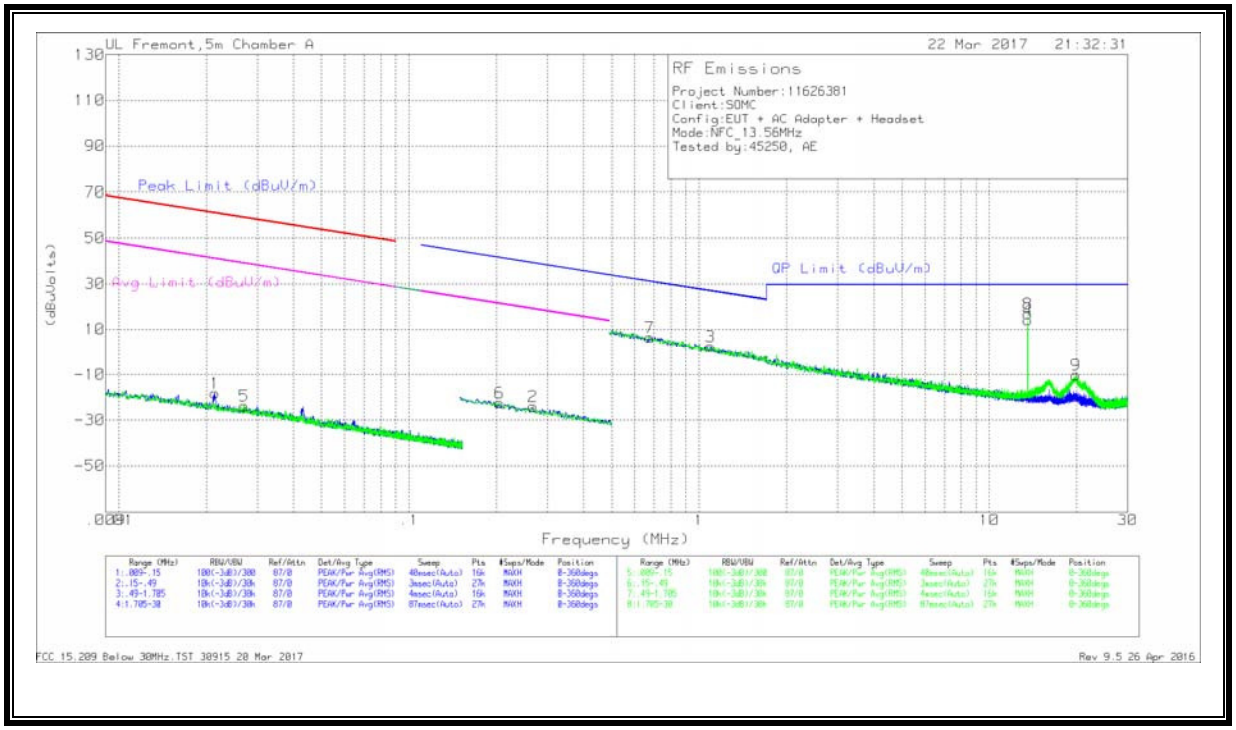
Pk - Peak detector

Fundamental Frequency

Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading dB(uVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Antenna Position
13.559	46.04	Pk	10.4	1.6	-40	18.04	84	-65.96	125	Face Off
13.5605	44.32	Pk	10.4	1.6	-40	16.32	84	-67.68	88	Face On

Pk - Peak detector

8.1.2. SPURIOUS EMISSIONS (0.09 – 30MHz)



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.02141	46.51	Pk	15.2	.1	-80	-18.19	60.97	-79.16	40.97	-59.16	-	-	-	-	0-360
5	.02708	41.56	Pk	14.6	.1	-80	-23.74	58.93	-82.67	38.93	-62.67	-	-	-	-	0-360
6	.20507	45.98	Pk	11.5	.1	-80	-22.42	-	-	-	-	41.38	-63.8	21.38	-43.8	0-360
2	.26701	44.37	Pk	11.5	.1	-80	-24.03	-	-	-	-	39.08	-63.11	19.08	-43.11	0-360

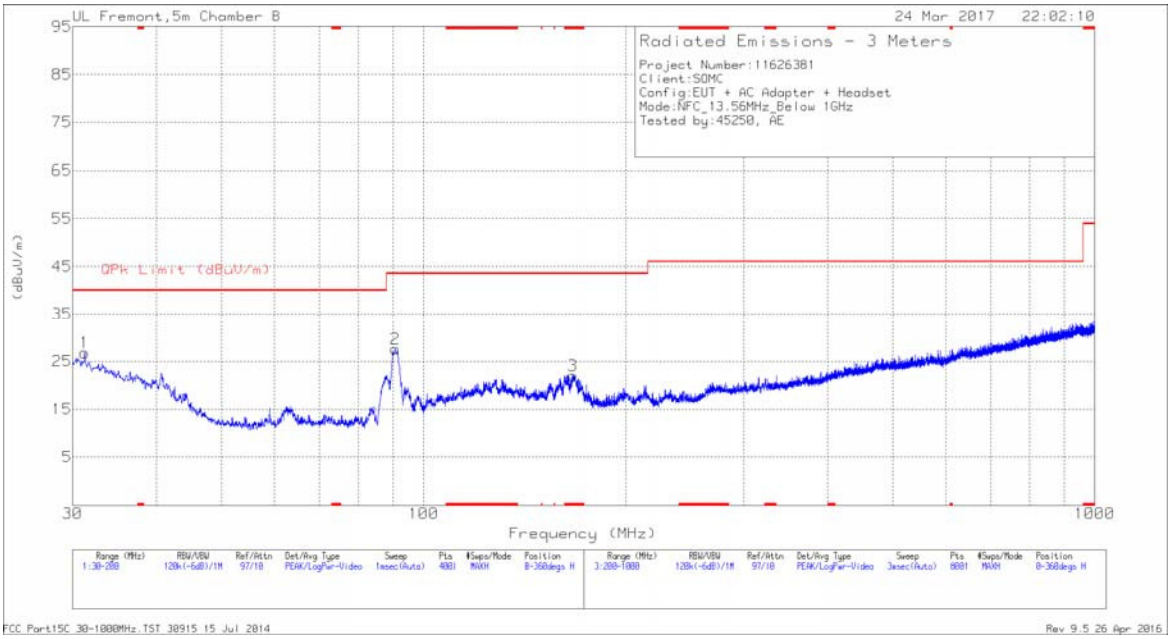
Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
7	.67514	34.8	Pk	11.5	.1	-40	6.4	-	-	-	-	31.02	-24.62	0-360
3	1.09553	30.9	Pk	11.5	.2	-40	2.6	-	-	-	-	26.83	-24.23	0-360
4	13.5605	43.32	Pk	10.4	.6	-40	14.32	-	-	-	-	29.5	-15.18	0-360
8	13.5605	45.83	Pk	10.4	.6	-40	16.83	-	-	-	-	29.5	-12.67	0-360
9	19.88046	19.35	Pk	9.7	.7	-40	-10.25	-	-	-	-	29.5	-39.75	0-360

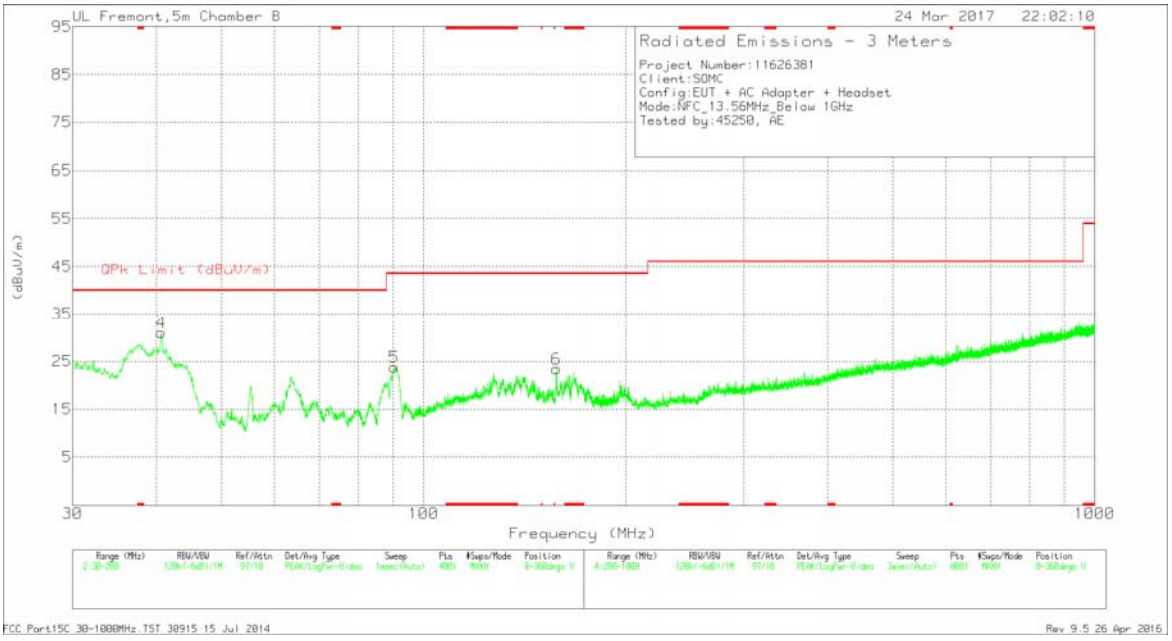
Pk - Peak detector

8.1.3. TX SPURIOUS EMISSIONS (30 – 1000MHz)

HORIZONTAL PLOT



VERTICAL PLOT



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 167.105	33.36	Pk	15.9	-27.2	22.06	43.52	-21.46	0-360	200	H
1	31.275	31.01	Pk	24.6	-28.8	26.81	40	-13.19	0-360	400	H
4	40.6675	42.22	Pk	17.5	-28.7	31.02	40	-8.98	0-360	100	V
5	90.4775	40.2	Pk	11.6	-28	23.8	43.52	-19.72	0-360	100	V
2	90.7325	44	Pk	11.6	-28	27.6	43.52	-15.92	0-360	200	H
6	157.755	34.46	Pk	16.3	-27.3	23.46	43.52	-20.06	0-360	100	V

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

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207
IC RSS-GEN, Section 7.2.2

(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 50µH/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 (MHz)	Limits (dBµV)	
	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: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

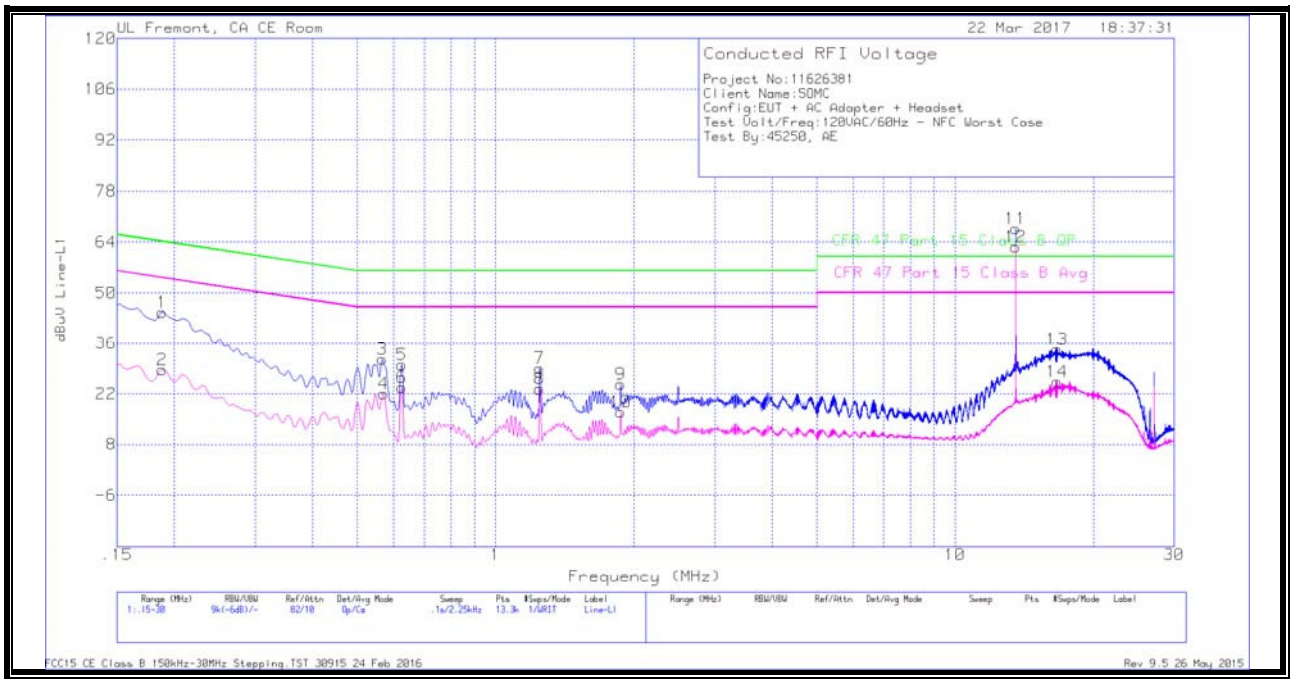
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both Line 1 (HOT) and Line 2 (NEUTRAL).

RESULTS

No non-compliance noted.

EUT WITH ANTENNA - LINE 1 RESULTS



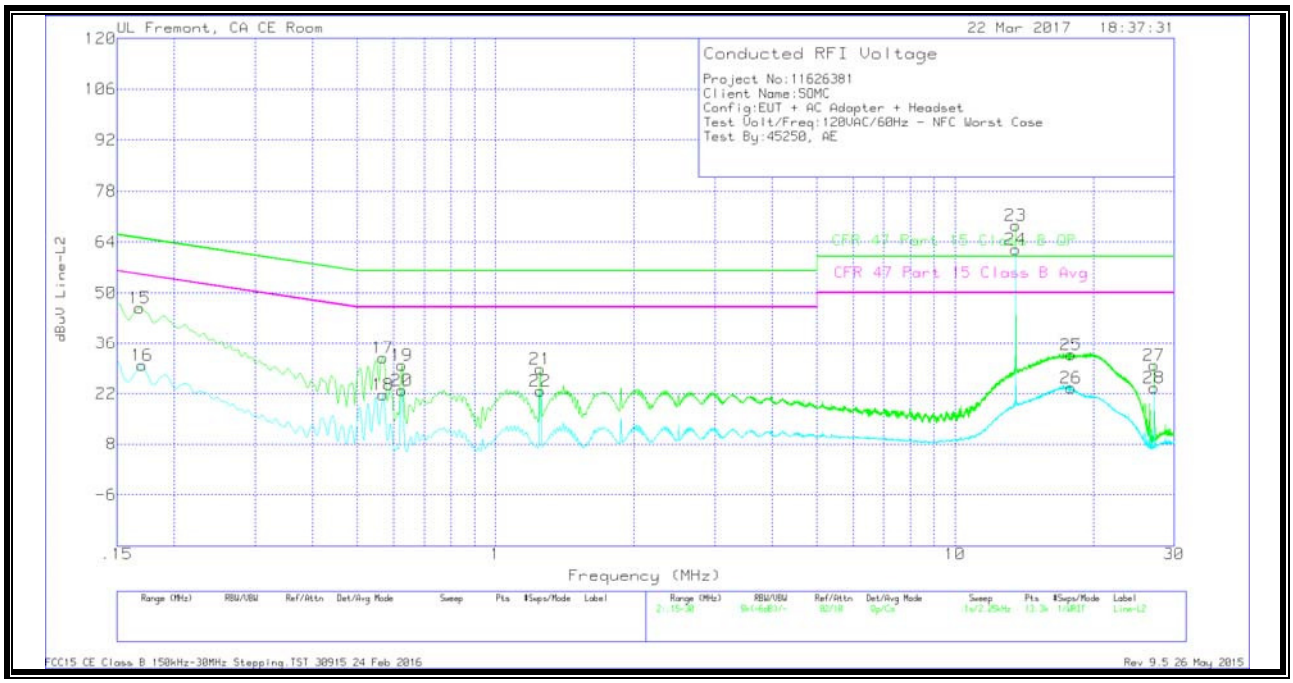
WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	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	.18825	34.45	Qp	0	.1	10.1	44.65	64.11	-19.46	-	-
2	.18825	18.34	Ca	0	.1	10.1	28.54	-	-	54.11	-25.57
3	.56625	21.3	Qp	0	.1	10.1	31.5	56	-24.5	-	-
4	.57075	11.78	Ca	0	.1	10.1	21.98	-	-	46	-24.02
5	.62475	19.81	Qp	0	.1	10.1	30.01	56	-25.99	-	-
6	.62475	13.6	Ca	0	.1	10.1	23.8	-	-	46	-22.2
7	1.248	18.85	Qp	0	.1	10.1	29.05	56	-26.95	-	-
8	1.248	13.12	Ca	0	.1	10.1	23.32	-	-	46	-22.68
9	1.8735	14.37	Qp	0	.1	10.1	24.57	56	-31.43	-	-
10	1.8735	6.7	Ca	0	.1	10.1	16.9	-	-	46	-29.1
11	13.56	57.2	Qp	.1	.2	10.2	67.7	60	7.7	-	-
12	13.56	52.11	Ca	.1	.2	10.2	62.61	-	-	50	12.61
13	16.6875	23.83	Qp	0	.2	10.3	34.33	60	-25.67	-	-
14	16.68525	14.8	Ca	0	.2	10.3	25.3	-	-	50	-24.7

Qp - Quasi-Peak detector
Ca - CISPR average detection
Note: Markers 11 and 12 are the 13.56MHz NFC Fundamental

EUT WITH ANTENNA-LINE 2 RESULTS



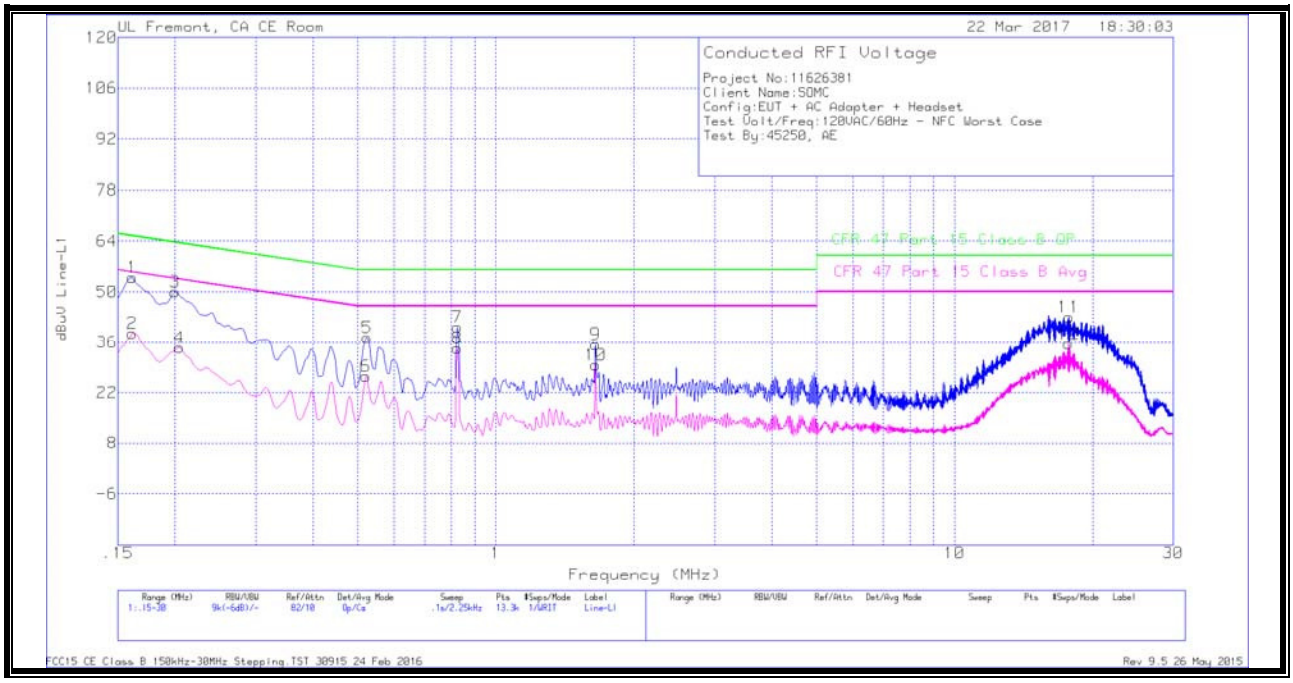
WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	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)
15	.168	35.73	Qp	0	0	10.1	45.83	65.06	-19.23	-	-
16	.17025	19.65	Ca	0	.1	10.1	29.85	-	-	54.95	-25.1
17	.5685	21.7	Qp	0	.1	10.1	31.9	56	-24.1	-	-
18	.5685	11.53	Ca	0	.1	10.1	21.73	-	-	46	-24.27
19	.62475	19.68	Qp	0	.1	10.1	29.88	56	-26.12	-	-
20	.62475	12.69	Ca	0	.1	10.1	22.89	-	-	46	-23.11
21	1.25025	18.63	Qp	0	.1	10.1	28.83	56	-27.17	-	-
22	1.25025	12.56	Ca	0	.1	10.1	22.76	-	-	46	-23.24
23	13.56	58.02	Qp	.1	.2	10.2	68.52	**60**	**8.52**	-	-
24	13.56	51.46	Ca	.1	.2	10.2	61.96	-	-	**50**	**11.96**
25	17.889	22.24	Qp	0	.3	10.3	32.84	60	-27.16	-	-
26	17.889	13.01	Ca	0	.3	10.3	23.61	-	-	50	-26.39
27	27.1185	18.99	Qp	.1	.3	10.5	29.89	60	-30.11	-	-
28	27.1185	12.6	Ca	.1	.3	10.5	23.5	-	-	50	-26.5

Qp - Quasi-Peak detector
Ca - CISPR average detection
Note: Markers 23 and 24 are the 13.56MHz NFC Fundamental

EUT WITH ANTENNA PORT TERMINATED -LINE 1 RESULTS

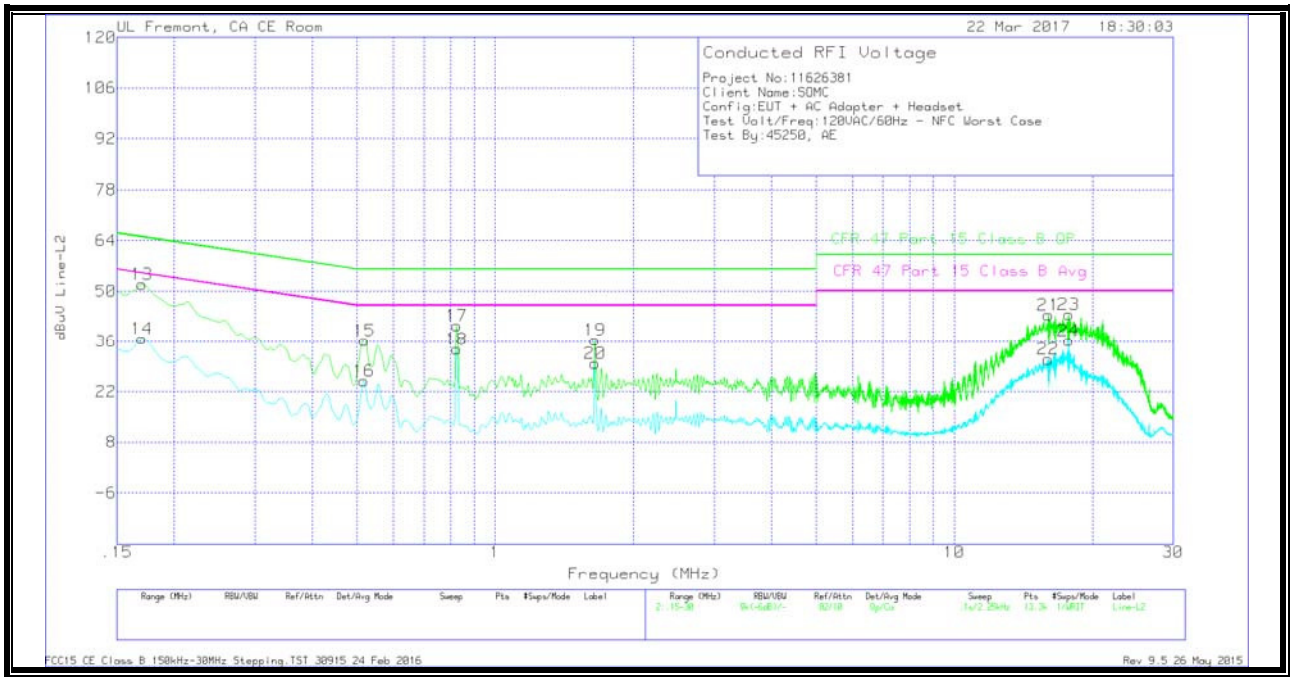


WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	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	.16125	43.81	Qp	0	.1	10.1	54.01	65.4	-11.39	-	-
2	.16125	28.31	Ca	0	.1	10.1	38.51	-	-	55.4	-16.89
3	.1995	39.77	Qp	0	.1	10.1	49.97	63.63	-13.66	-	-
4	.204	24.31	Ca	0	.1	10.1	34.51	-	-	53.45	-18.94
5	.5235	27.03	Qp	0	.1	10.1	37.23	56	-18.77	-	-
6	.52125	16.39	Ca	0	.1	10.1	26.59	-	-	46	-19.41
7	.825	30.14	Qp	0	.1	10.1	40.34	56	-15.66	-	-
8	.825	24.09	Ca	0	.1	10.1	34.29	-	-	46	-11.71
9	1.6485	25.28	Qp	0	.1	10.1	35.48	56	-20.52	-	-
10	1.6485	19.46	Ca	0	.1	10.1	29.66	-	-	46	-16.34
11	17.74275	32.62	Qp	0	.2	10.3	43.12	60	-16.88	-	-
12	17.7405	25.15	Ca	0	.2	10.3	35.65	-	-	50	-14.35

Qp - Quasi-Peak detector
Ca - CISPR average detection

EUT WITH ANTENNA PORT TERMINATED -LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	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	.17025	41.66	Qp	0	.1	10.1	51.86	64.95	-13.09	-	-
14	.17025	26.58	Ca	0	.1	10.1	36.78	-	-	54.95	-18.17
15	.519	26.1	Qp	0	.1	10.1	36.3	56	-19.7	-	-
16	.51675	14.69	Ca	0	.1	10.1	24.89	-	-	46	-21.11
17	.825	30.16	Qp	0	.1	10.1	40.36	56	-15.64	-	-
18	.825	23.61	Ca	0	.1	10.1	33.81	-	-	46	-12.19
19	1.6485	26.28	Qp	0	.1	10.1	36.48	56	-19.52	-	-
20	1.6485	19.69	Ca	0	.1	10.1	29.89	-	-	46	-16.11
21	16.0395	32.84	Qp	0	.3	10.3	43.44	60	-16.56	-	-
22	16.0035	20.37	Ca	0	.3	10.3	30.97	-	-	50	-19.03
23	17.74275	32.98	Qp	0	.3	10.3	43.58	60	-16.42	-	-
24	17.74275	25.65	Ca	0	.3	10.3	36.25	-	-	50	-13.75

Qp - Quasi-Peak detector
Ca - CISPR average detection

10. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency, over a temperature variation of -10 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.

TEST PROCEDURE

ANSI C63.10

RESULTS

ID:	45250	Date:	4/7/2017

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse								
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.8	55	13.5596768	3.926	13.5596748	4.070	13.5596741	4.126	13.5596737	4.155	± 100
3.8	40	13.5596999	2.224	13.5596954	2.553	13.5596944	2.629	13.5596925	2.767	± 100
3.8	30	13.5597575	-2.030	13.5597438	-1.015	13.5597336	-0.262	13.5597251	0.365	± 100
3.8	***20***	***13.5597300***	***0.000***	***13.5597296***	***0.031***	***13.5597287***	***0.099***	***13.5597287***	***0.096***	***± 100***
3.8	10	13.5597934	-4.677	13.5598034	-5.411	13.5598059	-5.595	13.5598079	-5.747	± 100
3.8	0	13.5598078	-5.739	13.5598071	-5.685	13.5598060	-5.602	13.5598052	-5.541	± 100
3.8	-10	13.5598079	-5.744	13.5598072	-5.692	13.5598063	-5.622	13.5598058	-5.586	± 100
3.6	20	13.5597292	0.057	13.5597285	0.116	13.5597283	0.124	13.5597292	0.060	± 100
4.2	20	13.5597294	0.046	13.5597296	0.027	13.5597290	0.075	13.5597291	0.070	± 100