

# TEST REPORT

**FCC ID: 2AGLC-SW918**

**Product: Brooklyn Boombox**

**Model No.: SW-918**

**Additional Model No.: GPO Brooklyn**

**Trade Mark: N/A**

**Report No.: TCT171123E001**

**Issued Date: Nov. 24, 2017**

Issued for:

**Shenzhen Sunwin Technology Co., Ltd.**

**Floor 2 Building A2 Shengyang Industrial District, Guanguang Road,  
Jutang Community, Guanlan, Longhua New Area, Shenzhen,  
Guangdong, China**

Issued By:

**Shenzhen Tongce Testing Lab.**

**1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China**

**TEL: +86-755-27673339**

**FAX: +86-755-27673332**

**Note: This report shall not be reproduced except in full, without the written approval of Shenzhen Tongce Testing Lab.**

**This document may be altered or revised by Shenzhen Tongce Testing Lab. personnel only, and shall be noted in the revision section of the document. The test results in the report only apply to the tested sample.**

## TABLE OF CONTENTS

<b>1. Test Certification .....</b>	<b>3</b>
<b>2. Test Result Summary .....</b>	<b>4</b>
<b>3. EUT Description.....</b>	<b>5</b>
<b>4. Genera Information.....</b>	<b>6</b>
4.1. TEST ENVIRONMENT AND MODE.....	6
4.2. DESCRIPTION OF SUPPORT UNITS .....	6
<b>5. Facilities and Accreditations .....</b>	<b>7</b>
5.1. FACILITIES .....	7
5.2. LOCATION .....	7
5.3. MEASUREMENT UNCERTAINTY .....	7
<b>6. Test Results and Measurement Data .....</b>	<b>8</b>
6.1. ANTENNA REQUIREMENT .....	8
6.2. CONDUCTED EMISSION .....	9
6.3. RADIATED EMISSION MEASUREMENT.....	13
6.4. 20dB OCCUPIED BANDWIDTH .....	23

### **Appendix A: Photographs of Test Setup**

### **Appendix B: Photographs of EUT**

## 1. Test Certification

<b>Product:</b>	Brooklyn Boombox
<b>Model No.:</b>	SW-918
<b>Additional Model:</b>	GPO Brooklyn
<b>Trade Mark:</b>	N/A
<b>Applicant:</b>	Shenzhen Sunwin Technology Co., Ltd.
<b>Address:</b>	Floor 2 Building A2 Shengyang Industrial District, Guanguang Road, Jutang Community, Guanlan, Longhua New Area, Shenzhen, Guangdong, China
<b>Manufacturer:</b>	Shenzhen Sunwin Technology Co., Ltd.
<b>Address:</b>	Floor 2 Building A2 Shengyang Industrial District, Guanguang Road, Jutang Community, Guanlan, Longhua New Area, Shenzhen, Guangdong, China
<b>Date of Test:</b>	Nov. 08, 2017 - Nov. 16, 2017
<b>Applicable Standards:</b>	FCC CFR Title 47 Part 15 Subpart C Section 15.249

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

*Brews Xu*

Date: Nov. 16, 2017

*Brews Xu*

Reviewed By:



Date: Nov. 24, 2017

Approved By:

*Tomsin*

Date: Nov. 24, 2017

## 2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna Requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Field Strength of Fundamental	§15.249 (a)	PASS
Spurious Emissions	§2.1053 §15.249 (a) (d)/ §15.209	PASS
Band Edge	§2.1053 §15.249 (d)/ §15.205	PASS
20dB Occupied Bandwidth	§2.1049 §15.215 (c)	PASS

**Note:**

1. Pass: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

### 3. EUT Description

<b>Product Name:</b>	Brooklyn Boombox
<b>Model :</b>	SW-918
<b>Additional Model:</b>	GPO Brooklyn
<b>Trade Mark:</b>	N/A
<b>Operation Frequency:</b>	2402-2480MHz
<b>Number of Channel:</b>	79
<b>Modulation Technology:</b>	GFSK
<b>Antenna Type:</b>	PCB Antenna
<b>Antenna Gain:</b>	0dBi
<b>Power Source</b>	DC3*3.7V From Battery or DC15V 4A form Adapter with AC 120V/60Hz
<b>Remark:</b>	All models above are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.

#### Operation Frequency Each of Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
...	...	...	...	...	...	...	...
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
...	...	...	...	...	...	...	...
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		-

#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

## 4. General Information

### 4.1. Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel
<p>The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.</p>	

### 4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Dongle	BALANCE	/	2AG6OR427B	/

#### Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

## 5. Facilities and Accreditations

### 5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

### 5.2. Location

Shenzhen Tongce Testing Lab

Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

TEL: +86-755-27673339

### 5.3. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.12\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1GHz)	$\pm 3.92\text{dB}$
5	All emissions, radiated(>1GHz)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1\text{ }^\circ\text{C}$
7	Humidity	$\pm 1.0\%$

## 6. Test Results and Measurement Data

### 6.1. Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203
-----------------------	-----------------------------

#### 15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

E.U.T Antenna:	
----------------	--

The EUT antenna is PCB antenna which permanently attached, and the best case gain of the antenna is 0dBi.



## 6.2. Conducted Emission

### 6.2.1. Test Specification

<b>Test Requirement:</b>	FCC Part15 C Section 15.207																	
<b>Test Method:</b>	ANSI C63.10:2013																	
<b>Frequency Range:</b>	150 kHz to 30 MHz																	
<b>Receiver setup:</b>	RBW=9 kHz, VBW=30 kHz, Sweep time=auto																	
<b>Limits:</b>	<table border="1"> <thead> <tr> <th>Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th></th> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table>			Frequency range (MHz)	Limit (dBuV)			Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)																	
	Quasi-peak	Average																
0.15-0.5	66 to 56*	56 to 46*																
0.5-5	56	46																
5-30	60	50																
<b>Test Setup:</b>	<p>Reference Plane</p> <p>Test table/Insulation plane</p> <p>Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>																	
<b>Test Mode:</b>	Transmitting mode with modulation																	
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</li> </ol>																	
<b>Test Result:</b>	PASS																	

### 6.2.2. Test Instruments

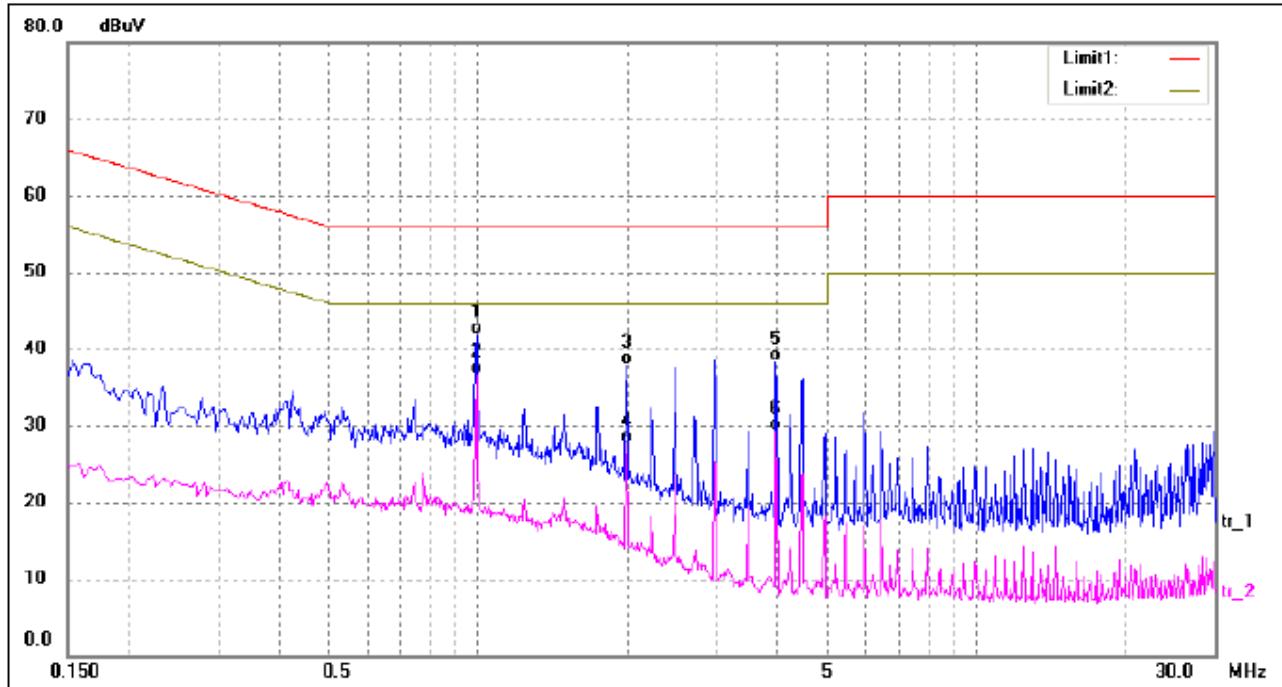
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	R&S	ESPI	101401	Jun. 12, 2018
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 27, 2018
Coax cable (9KHz-30MHz)	TCT	CE-05	N/A	Sep. 27, 2018
EMI Test Software	Shurples Technology	EZ-EMC	N/A	N/A

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

### 6.2.3. Test data

Please refer to following diagram for individual

#### Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Correct (dB/m)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Detector
1	0.9900	32.09	9.76	41.85	56.00	-14.15	QP
2*	0.9900	26.93	9.76	36.69	46.00	-9.31	AVG
3	1.9820	28.18	9.74	37.92	56.00	-18.08	QP
4	1.9820	17.96	9.74	27.70	46.00	-18.30	AVG
5	3.9620	28.61	9.69	38.30	56.00	-17.70	QP
6	3.9620	19.70	9.69	29.39	46.00	-16.61	AVG

**Note:**

Freq. = Emission frequency in MHz

Reading level (dB $\mu$ V) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dB $\mu$ V) = Reading level (dB $\mu$ V) + Corr. Factor (dB)

Limit (dB $\mu$ V) = Limit stated in standard

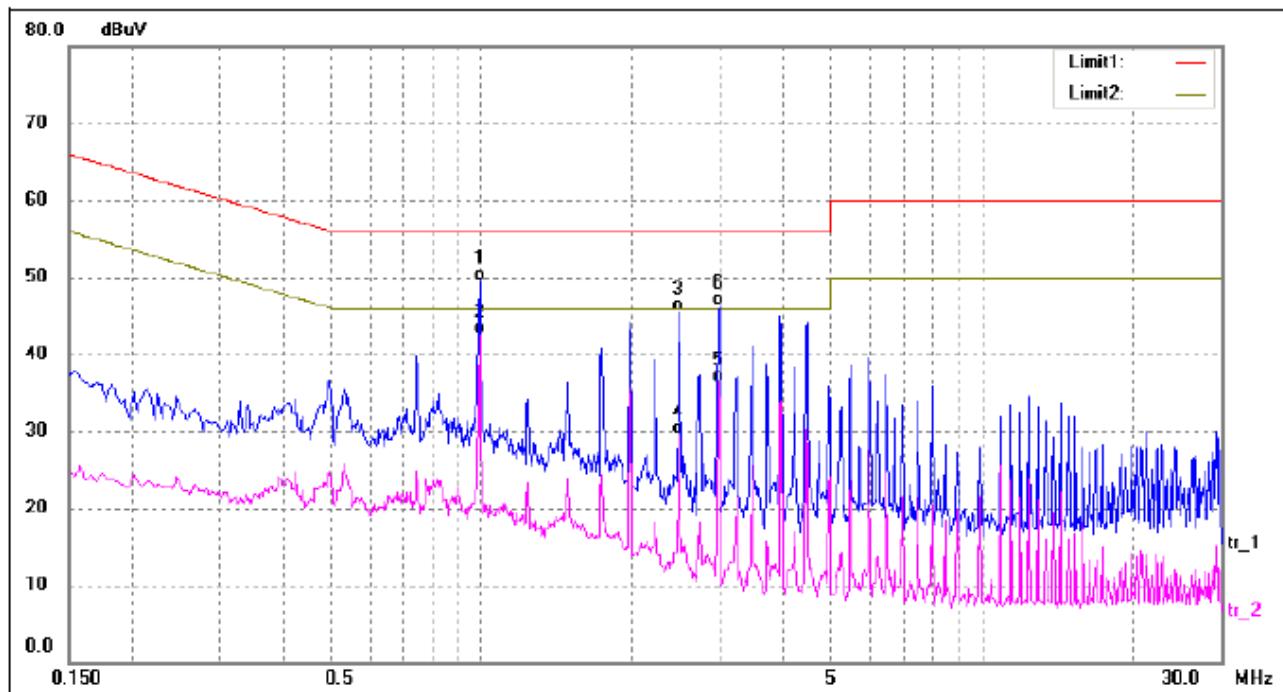
Margin (dB) = Measurement (dB $\mu$ V) – Limits (dB $\mu$ V)

Q.P. = Quasi-Peak

AVG = average

\* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

**Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)**



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Correct (dB/m)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Detector
1	0.9940	39.65	9.76	49.41	56.00	-6.59	QP
2*	0.9940	32.69	9.76	42.45	46.00	-3.55	AVG
3	2.4780	35.74	9.72	45.46	56.00	-10.54	QP
4	2.4780	19.75	9.72	29.47	46.00	-16.53	AVG
5	2.9740	26.52	9.71	36.23	46.00	-9.77	AVG
6	2.9780	36.62	9.71	46.33	56.00	-9.67	QP

**Note:**

Freq. = Emission frequency in MHz

Reading level (dB $\mu$ V) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dB $\mu$ V) = Reading level (dB $\mu$ V) + Corr. Factor (dB)

Limit (dB $\mu$ V) = Limit stated in standard

Margin (dB) = Measurement (dB $\mu$ V) – Limits (dB $\mu$ V)

Q.P. =Quasi-Peak

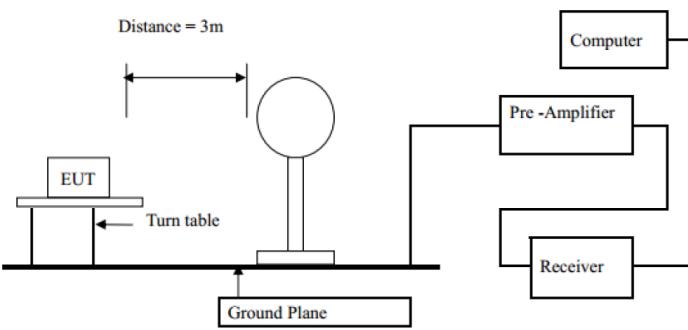
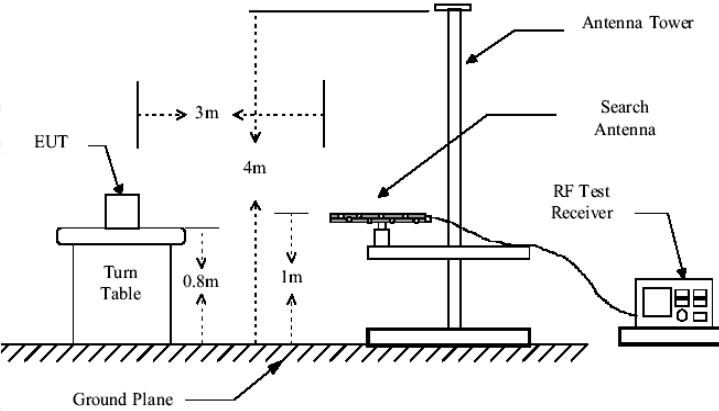
AVG =average

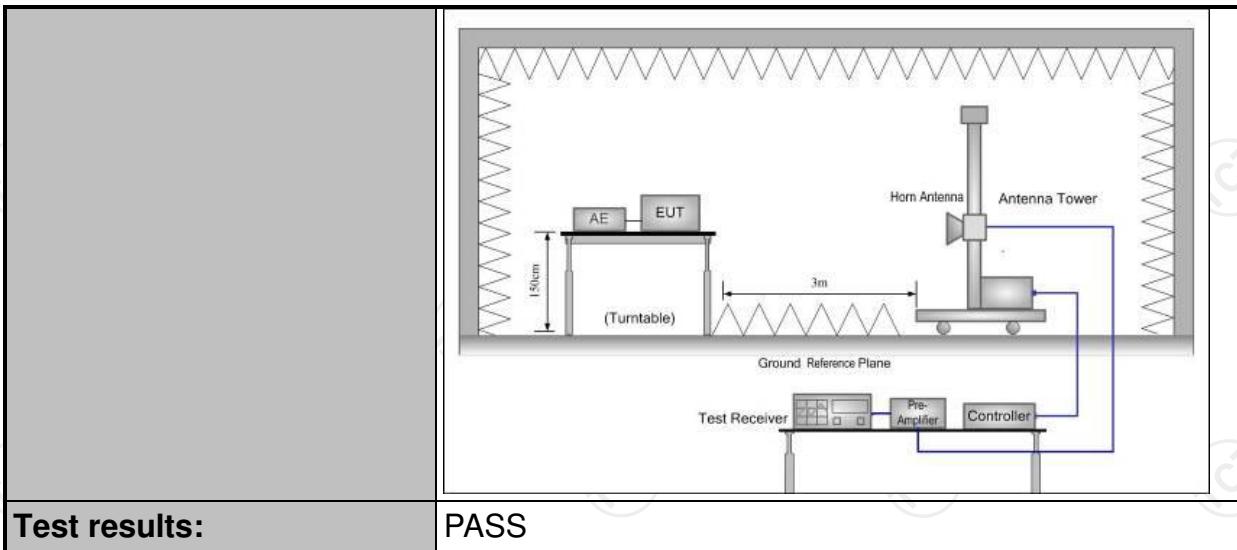
\* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

## 6.3. Radiated Emission Measurement

### 6.3.1. Test Specification

<b>Test Requirement:</b>	FCC Part15 C Section 15.209/ Part 2 J Section 2.1053								
<b>Test Method:</b>	ANSI C63.10:2013								
<b>Frequency Range:</b>	9 kHz to 25 GHz								
<b>Measurement Distance:</b>	3 m								
<b>Antenna Polarization:</b>	Horizontal & Vertical								
<b>Receiver Setup:</b>	Frequency	Detector	RBW	VBW	Remark				
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value				
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value				
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value				
	Above 1GHz	Peak	1MHz	3MHz	Peak Value				
		Peak	1MHz	10Hz	Average Value				
<b>Limit(Field strength of the fundamental signal):</b>	Frequency	Limit (dBuV/m @3m)		Remark					
	2400MHz-2483.5MHz	94.00		Average Value					
		114.00		Peak Value					
<b>Limit(Spurious Emissions):</b>	Frequency	Limit (dBuV/m @3m)		Remark					
	0.009-0.490	2400/F(KHz)		Quasi-peak Value					
	0.490-1.705	24000/F(KHz)		Quasi-peak Value					
	1.705-30	30		Quasi-peak Value					
	30MHz-88MHz	40.0		Quasi-peak Value					
	88MHz-216MHz	43.5		Quasi-peak Value					
	216MHz-960MHz	46.0		Quasi-peak Value					
	960MHz-1GHz	54.0		Quasi-peak Value					
	Above 1GHz	54.0		Average Value					
		74.0		Peak Value					
<b>Limit (band edge) :</b>	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 Section 15.209, whichever is the lesser attenuation.								
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber in below 1GHz, 1.5m above the ground in above 1GHz. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make</li> </ol>								

	<p>the measurement.</p> <ol style="list-style-type: none"> <li>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li> </ol>
<p><b>Test setup:</b></p>	<p>For radiated emissions below 30MHz</p>  <p>30MHz to 1GHz</p>  <p>Above 1GHz</p> <p>(The diagram below shows the test setup that is utilized to make the measurements for emission from 1GHz to the tenth harmonic of the highest fundamental frequency or to 40GHz emissions, whichever is lower.)</p>



**Test results:** PASS

### 6.3.2. Test Instruments

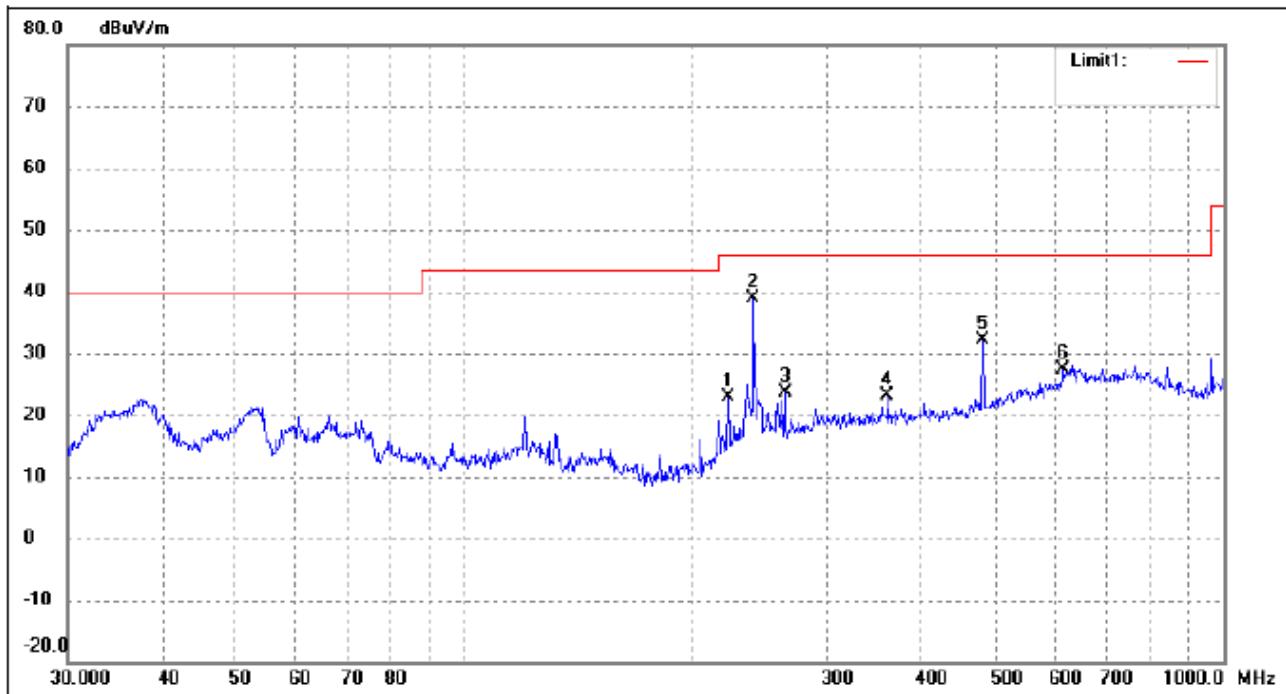
ESPI Test Receiver	ROHDE&SCHW ARZ	ESVD	100008	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHW ARZ	FSEM	848597/001	Sep. 27, 2018
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 27, 2018
Pre-amplifier	HP	8447D	2727A05017	Sep. 27, 2018
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9170	373	Sep. 27, 2018
Coax cable	TCT	RE-low-01	N/A	Sep. 27, 2018
Coax cable	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable	TCT	RE-high-04	N/A	Sep. 27, 2018
Antenna Mast	CCS	CC-A-4M	N/A	N/A
EMI Test Software	Shurples Technology	EZ-EMC	N/A	N/A

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

### 6.3.3. Test Data

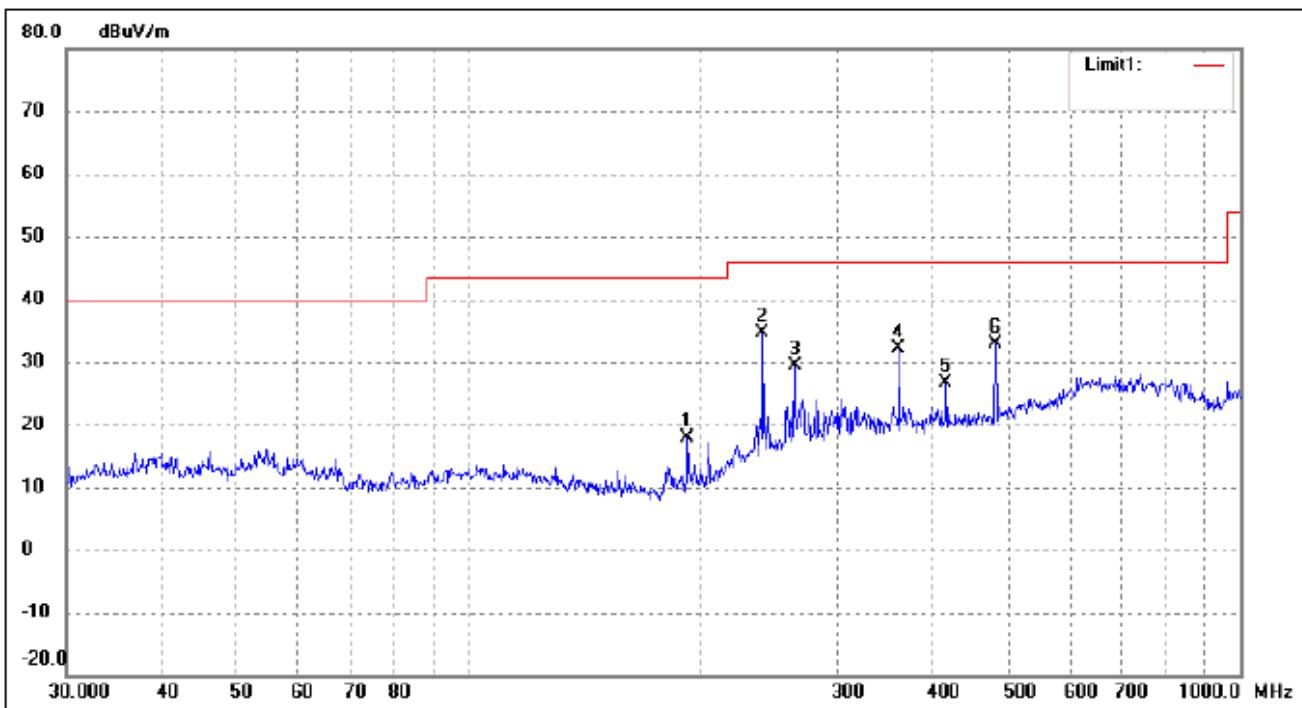
#### Below 1GHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree	Height (cm)	Remark
1	222.1698	36.70	-13.71	22.99	46.00	-23.01	246	100	peak
2	239.9874	51.31	-12.54	38.77	46.00	-7.23	95	100	peak
3	263.8190	35.18	-11.51	23.67	46.00	-22.33	154	100	peak
4	360.4476	31.94	-8.92	23.02	46.00	-22.98	106	100	peak
5	480.5276	39.00	-6.84	32.16	46.00	-13.84	99	100	peak
6	614.2142	28.74	-1.28	27.46	46.00	-18.54	208	100	peak

Vertical:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	191.7450	36.40	-18.58	17.82	43.50	-25.68	77	100	peak
2	239.9874	47.25	-12.54	34.71	46.00	-11.29	174	100	peak
3	263.8190	41.00	-11.51	29.49	46.00	-16.51	70	100	peak
4	360.4476	41.07	-8.92	32.15	46.00	-13.85	275	100	peak
5	414.7223	34.79	-8.19	26.60	46.00	-19.40	266	100	peak
6	480.5276	39.68	-6.84	32.84	46.00	-13.16	106	100	peak

Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.
- (2) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

**Above 1 GHz Test Results:**

CH Low (2402MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2402	113.09	-5.84	107.25	114	-6.75	peak
2402	86.27	-5.84	80.43	94	-13.57	AVG
4804	61.44	-3.64	57.8	74	-16.2	peak
4804	45.76	-3.64	42.12	54	-11.88	AVG
7206	55.39	-0.95	54.44	74	-19.56	peak
7206	40.12	-0.95	39.17	54	-14.83	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2402	112.16	-5.84	106.32	114	-7.68	peak
2402	85.31	-5.84	79.47	94	-14.53	AVG
4804	55.47	-3.64	51.83	74	-22.17	peak
4804	45.63	-3.64	41.99	54	-12.01	AVG
7206	55.29	-0.95	54.34	74	-19.66	peak
7206	40.52	-0.95	39.57	54	-14.43	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

CH Middle (2441MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2441	111.68	-5.71	105.97	114	-8.03	peak
2441	85.04	-5.71	79.33	94	-14.67	AVG
4882	55.43	-3.51	51.92	74	-22.08	peak
4882	45.76	-3.51	42.25	54	-11.75	AVG
7323	55.59	-0.82	54.77	74	-19.23	peak
7323	40.11	-0.82	39.29	54	-14.71	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2441	110.73	-5.71	105.02	114	-8.98	peak
2441	84.56	-5.71	78.85	94	-15.15	AVG
4882	54.35	-3.51	50.84	74	-23.16	peak
4882	45.09	-3.51	41.58	54	-12.42	AVG
7323	53.42	-0.82	52.6	74	-21.4	peak
7323	39.84	-0.82	39.02	54	-14.98	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

CH High (2480MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2480	110.24	-5.65	104.59	114	-9.41	peak
2480	85.01	-5.65	79.36	94	-14.64	AVG
4960	54.73	-3.43	51.3	74	-22.7	peak
4960	45.88	-3.43	42.45	54	-11.55	AVG
7440	53.61	-0.75	52.86	74	-21.14	peak
7440	38.54	-0.75	37.79	54	-16.21	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2480	109.32	-5.65	103.67	114	-10.33	peak
2480	84.46	-5.65	78.81	94	-15.19	AVG
4960	52.93	-3.43	49.5	74	-24.5	peak
4960	44.05	-3.43	40.62	54	-13.38	AVG
7440	51.62	-0.75	50.87	74	-23.13	peak
7440	38.17	-0.75	37.42	54	-16.58	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

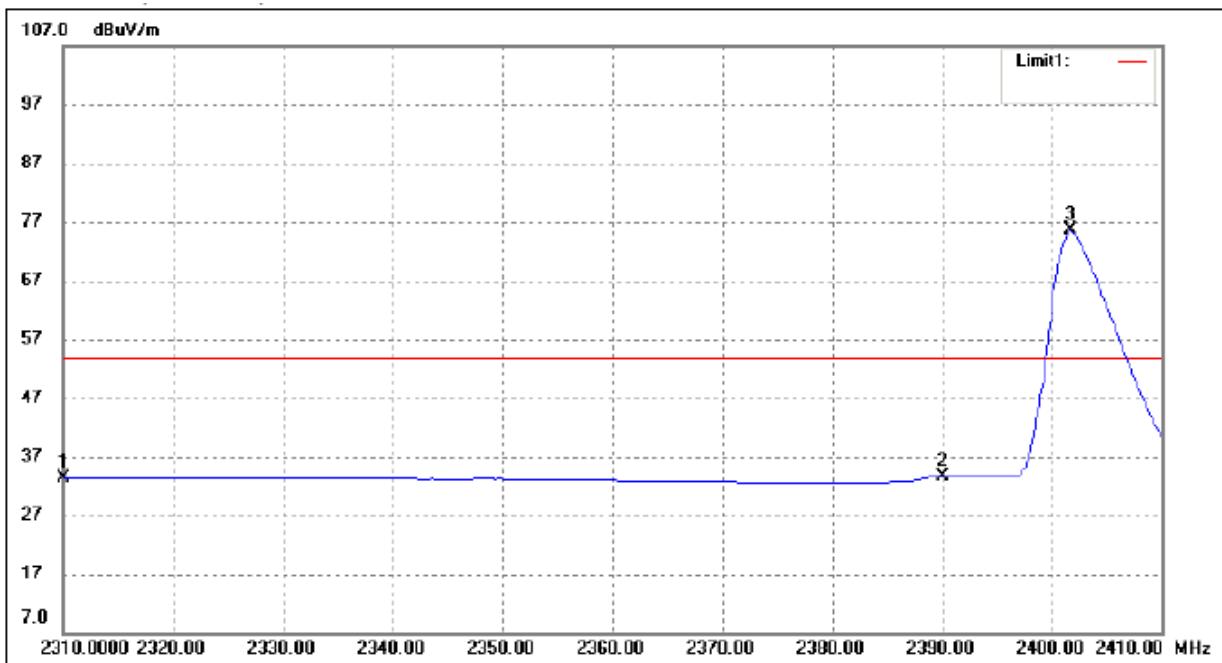
- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.

## BAND EDGE

Radiated Band Edge Test:

Operation Mode: TX CH Low (2402MHz)

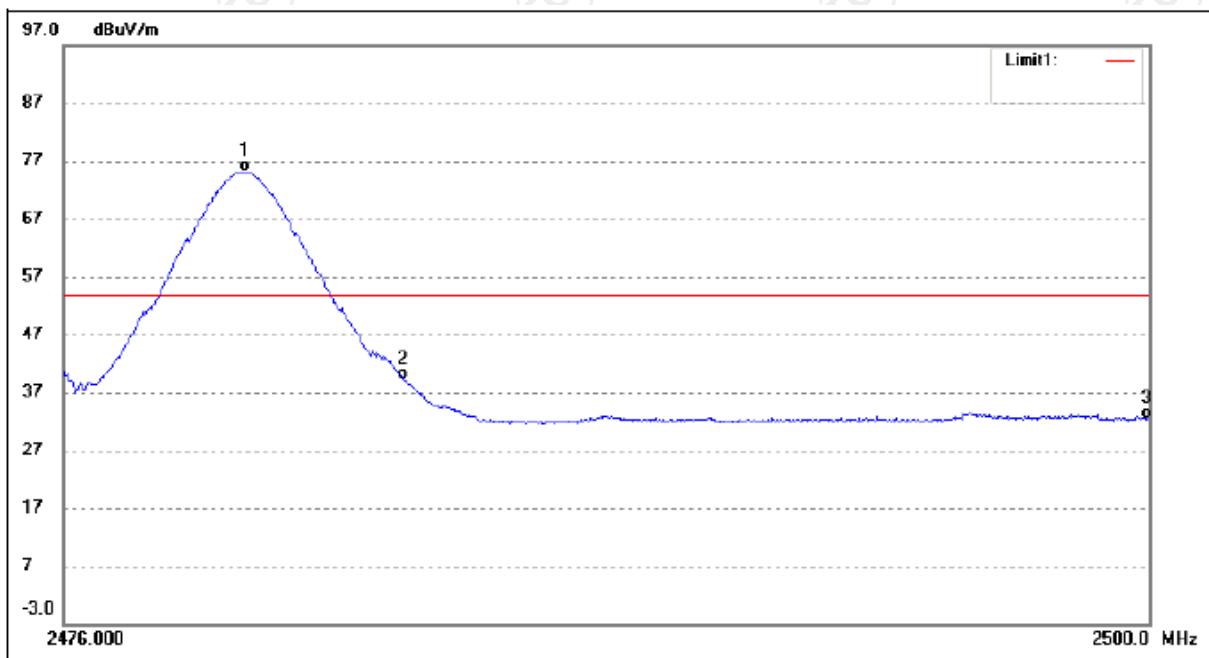
Horizontal (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	36.82	-3.35	33.47	54.00	-20.52	Average Detector
	2310.000	48.51	-3.35	45.16	74.00	-28.86	Peak Detector
2	2390.000	38.01	-4.29	33.72	54.00	-20.27	Average Detector
	2390.000	51.64	-4.29	47.35	74.00	-26.63	Peak Detector
3	2401.600	80.06	-4.42	75.60	/	/	Average Detector
	2402.200	95.71	-4.42	91.28	/	/	Peak Detector

Operation Mode: TX CH High (2480MHz)

Horizontal (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.992	76.55	-1.36	75.19	/	/	Average Detector
	2479.968	90.99	-1.36	89.63	/	/	Peak Detector
2	2483.500	40.50	-1.36	39.14	54.00	-14.86	Average Detector
	2483.500	52.81	-1.36	51.45	74.00	-22.55	Peak Detector
3	2500.000	33.75	-1.34	32.41	54.00	-21.59	Average Detector
	2500.000	46.75	-1.34	45.41	74.00	-28.59	Peak Detector

## 6.4.20dB Occupied Bandwidth

### 6.4.1. Test Specification

<b>Test Requirement:</b>	FCC Part15 C Section 15.215(c)/ Part 2 J Section 2.1049
<b>Test Method:</b>	ANSI C63.10: 2013
<b>Limit:</b>	N/A
	<ol style="list-style-type: none"> <li>1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>2. Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW<math>\geq</math>1% of the 20 dB bandwidth; VBW<math>\geq</math>RBW; Sweep = auto; Detector function = peak; Trace = max hold.</li> <li>4. Measure and record the results in the test report.</li> </ol>
<b>Test setup:</b>	 <p>The diagram illustrates the test setup. A green 'Spectrum Analyzer' is connected to a yellow 'EUT' (Equipment Under Test) via a grey cable. The analyzer has two circular ports on its front panel, and the EUT is a simple rectangular box with a single circular port.</p>
<b>Test Mode:</b>	Transmitting mode with modulation
<b>Test results:</b>	PASS

### 6.4.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018

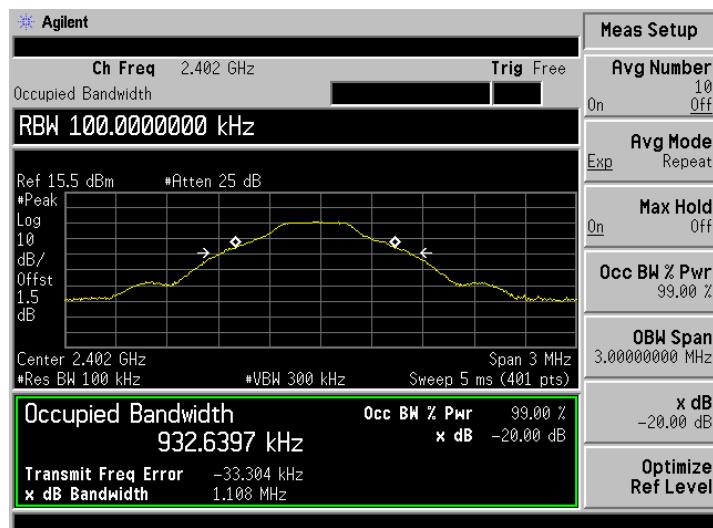
**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

**6.4.3. Test data**

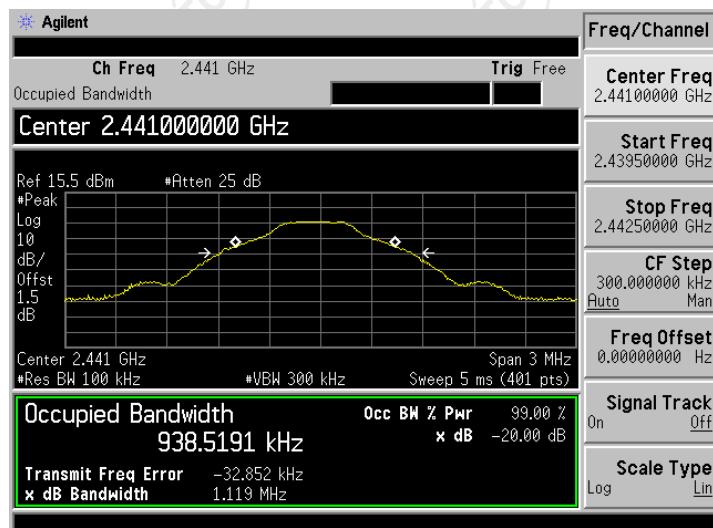
Test Channel	20dB Occupy Bandwidth (kHz)	Limit	Conclusion
Lowest	1108.00	---	PASS
Middle	1119.00	---	PASS
Highest	1103.00	---	PASS

**Test plots as follows:**

Lowest channel



Middle channel



Highest channel

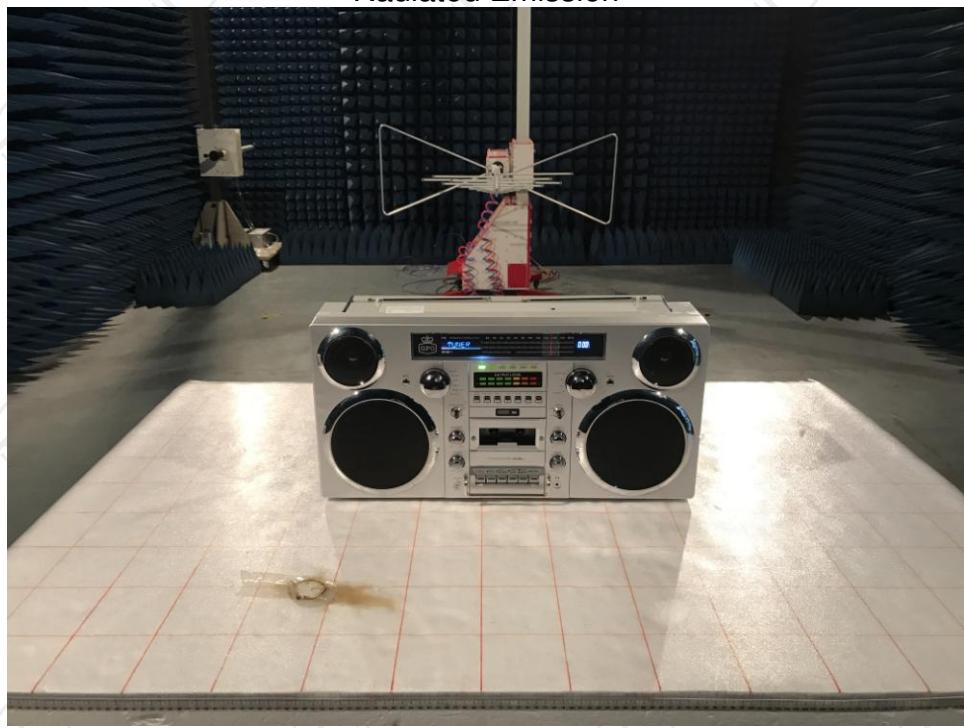


## Appendix A: Photographs of Test Setup

Product: Brooklyn Boombox

Model: SW-918

Radiated Emission



Conducted Emission

