

# FCC REPORT

**Applicant:** Ubio Labs, Inc.

**Address of Applicant:** 2821 Northup Way, Suite 250 Bellevue, WA 98004 USA

## Equipment Under Test (EUT)

**Product Name:** Wireless Speaker & Charging Hub

**Model No.:** WSP1001

**Trade mark:** ubiolabs

**FCC ID:** 2ATGY-WSP1001

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.209

**Date of sample receipt:** 23 Jun., 2020

**Date of Test:** 23 Jun., to 16 Jul., 2020

**Date of report issue:** 17 Jul., 2020

**Test Result:** PASS\*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang  
Laboratory Manager

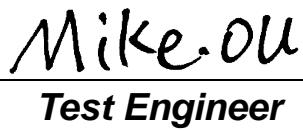
This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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**2 Version**

Version No.	Date	Description
00	17 Jul., 2020	<i>Original</i>

**Tested By:**  
**Test Engineer****Date:**

17 Jul., 2020

**Reviewed By:**  
**Project Engineer****Date:**

17 Jul., 2020

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## 4 Test Summary

Test Item	Section in CFR 47	Result
Spurious emissions	15.209	Pass
20dB Bandwidth	15.215(c)	Pass
Conducted Emission	15.207	Pass
<b>Remark:</b>		
1. Pass: The EUT complies with the essential requirements in the standard. 2. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).		
<b>Test Method:</b>	ANSI C63.4-2014 ANSI C63.10-2013	

## 5 General Information

### 5.1 Client Information

Applicant:	Ubio Labs, Inc.
Address:	2821 Northup Way, Suite 250 Bellevue, WA 98004 USA
Factory:	SHENZHEN JUNLAN ELECTRONIC LTD.
Address:	No.277 PingKui Road, Shijing Community, Pingshan Street, Pingshan New District, Shenzhen, China.

### 5.2 General Description of E.U.T.

Product Name:	Wireless Speaker & Charging Hub
Model No.:	WSP1001
Operation Frequency:	127kHz
Modulation type:	ASK
Antenna Type:	Coil Antenna
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
AC adapter:	Model: CHG1147SG Input: AC110-240V, 50-60Hz, 1.3A Output: DC 18.0V, 3500mA

### 5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation
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### 5.4 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
Skytek	Wireless charging match load	N/A	N/A	N/A
Apple	Mobile phone	iPhone 11 Pro	MWDE2CH/A	Doc

### 5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB
Radiated Emission (1GHz ~ 18GHz)	±5.16 dB
Radiated Emission (18GHz ~ 26.5GHz)	±3.20 dB

## 5.6 Additions to, deviations, or exclusions from the method

No

## 5.7 Laboratory Facility

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

● **FCC - Designation No.: CN1211**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

## 5.8 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

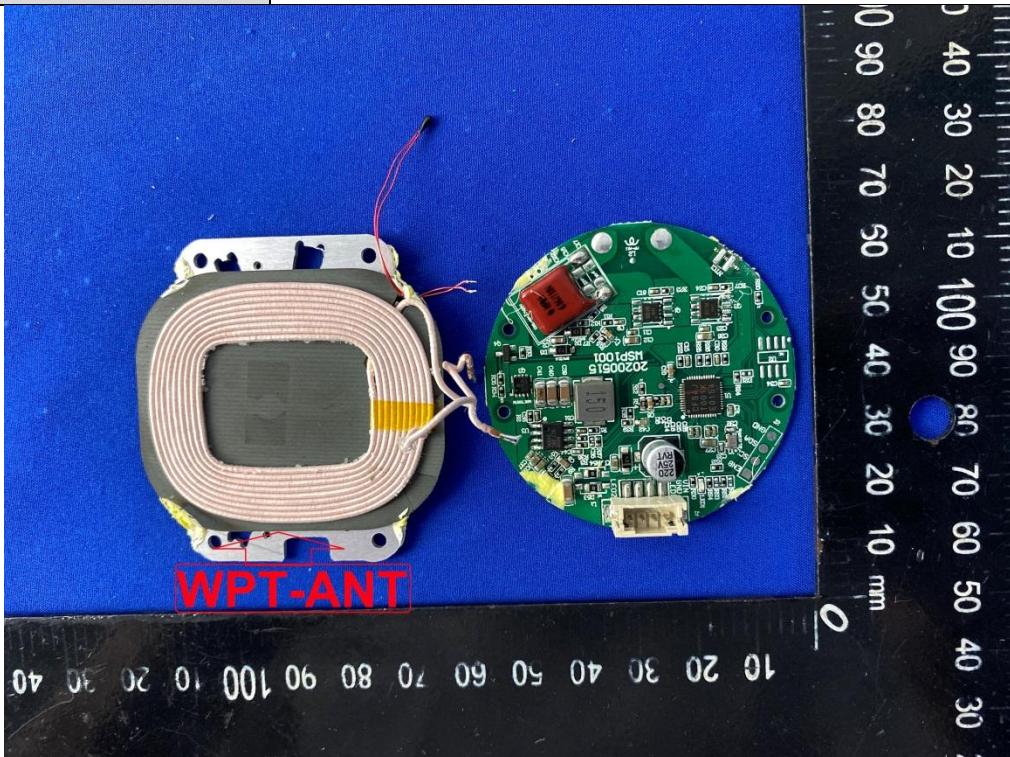
## 5.9 Test Instrumentslist

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-07-2020	03-06-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-07-2020	03-06-2021
Loop Antenna	SCHWARZBECK	FMZB 1519 B	00044	03-07-2020	03-06-2021
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	03-07-2020	03-06-2021
Pre-amplifier	CD	PAP-1G18	11804	03-07-2020	03-06-2021
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-05-2020	03-04-2021
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-05-2020	03-04-2021
Simulated Station	Anritsu	MT8820C	6201026545	03-07-2020	03-06-2021
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2020	03-06-2021
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2020	03-06-2021
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2020	03-06-2021

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-05-2020	03-04-2021
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-05-2020	03-04-2021
LISN	CHASE	MN2050D	1447	03-05-2020	03-04-2021
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2017	07-20-2020
Cable	HP	10503A	N/A	03-05-2020	03-04-2021
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A

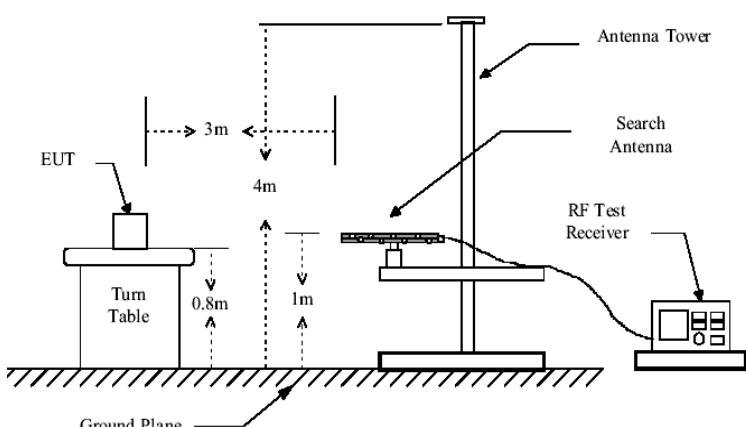
## 6 Test results and Measurement Data

### 6.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement:	<p>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.</p>
E.U.T Antenna:	

## 6.2 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209						
Test Frequency Range:	9kHz to 1000MHz						
Test site:	Measurement Distance: 3m(Semi-Anechoic Chamber)						
Receiver setup:	Frequency	Detector	RBW	VBW	Remark		
	9kHz-150kHz	Quasi-peak	200Hz	600Hz	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		
Limit:	Frequency (MHz)	Limit (uV/m @3m)		Distance (m)			
	0.009-0.490	2400/F(kHz)		300			
	0.490-1.705	24000/F(kHz)		30			
	1.705-30	30		30			
	30-88	100		3			
	88-216	150		3			
	216-960	200		3			
Test Procedure:	Above 1GHz	500		3			
	a.	The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.					
	b.	The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.					
	c.	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 the measurement.					
	d.	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.					
	e.	The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.					
	f.	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.					
Test setup:	<p>9kHz-30MHz</p> <p>30MHz-1GHz</p>						

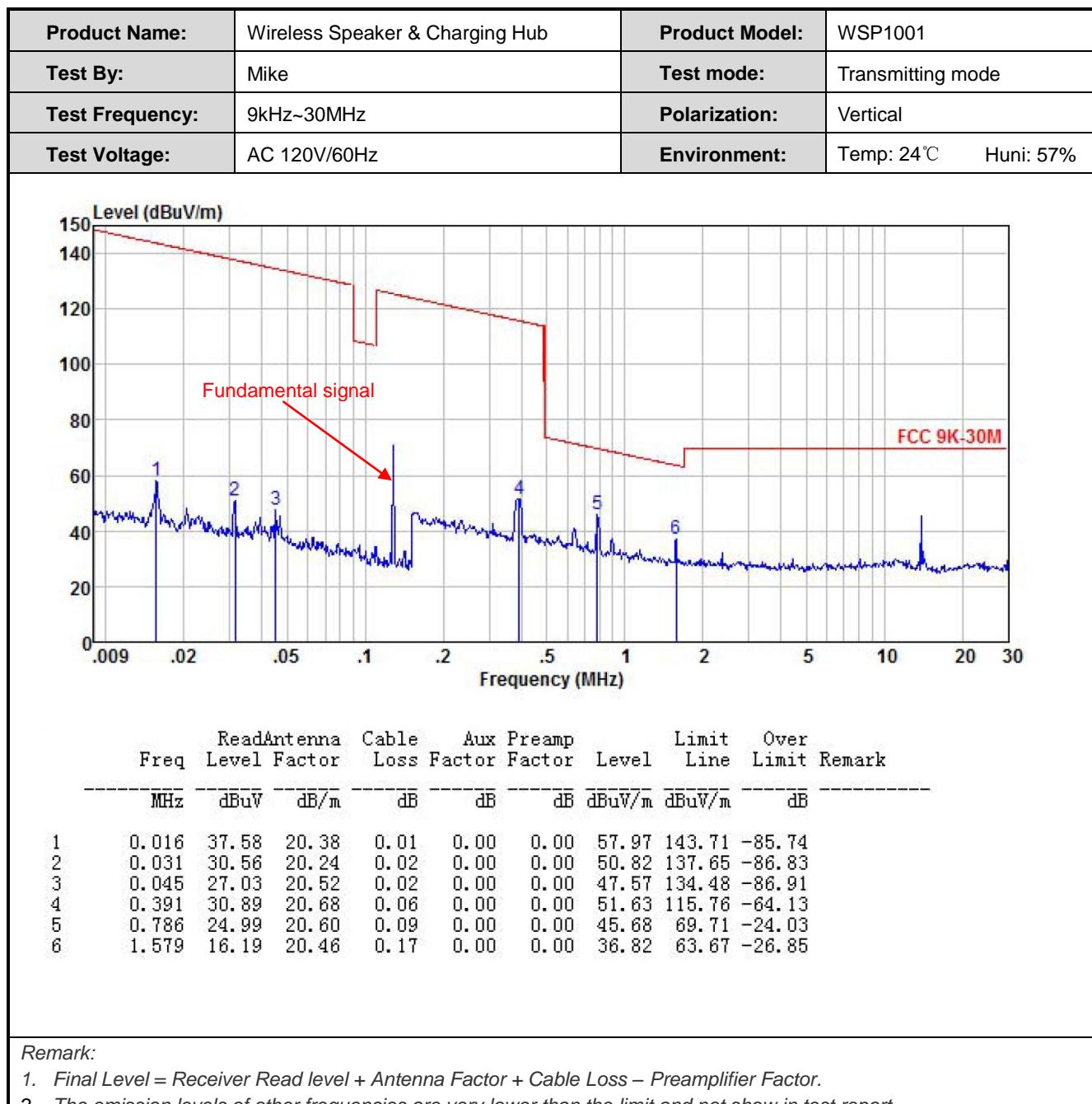
	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass
Remark:	The emission levels of above 1 GHz are very lower than the limit and not show in test report.

**Measurement Data:****a) Fundamental field strength**

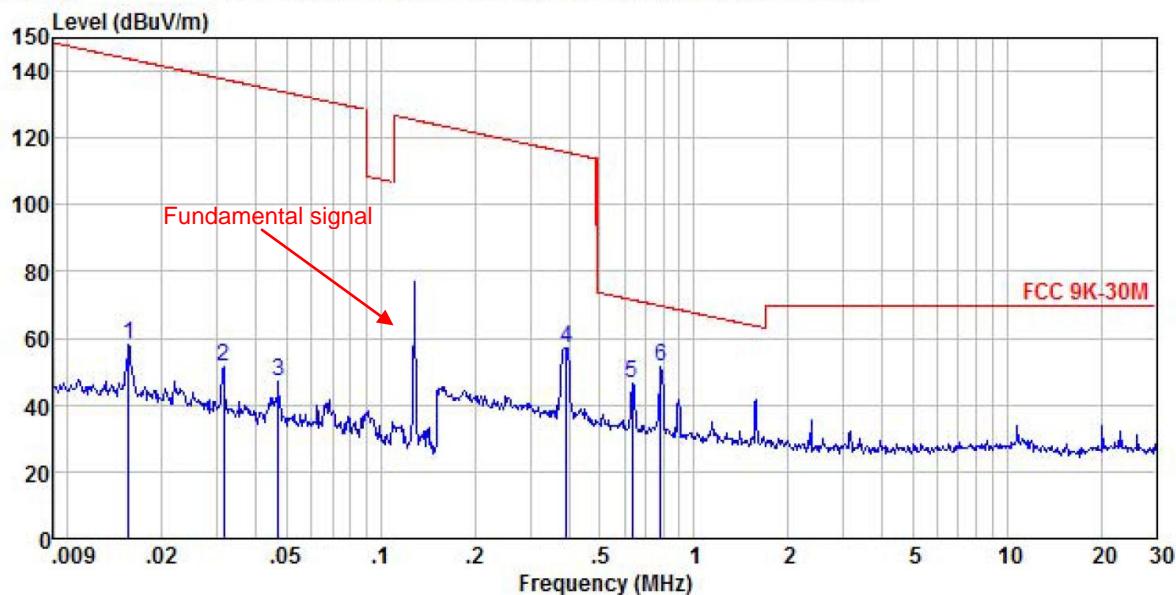
<b>Peak value</b>				
Test Polarization	Frequency (kHz)	H-field@3m (dB $\mu$ V)	Limit@3m (dB $\mu$ V)	Result
Horizontal	127.00	78.68	125.53	Pass
Vertical	127.00	73.61	125.53	Pass
<b>Average value</b>				
Test Polarization	Frequency (kHz)	H-field@3m (dB $\mu$ V)	Limit@3m (dB $\mu$ V)	Result
Horizontal	127.00	57.59	105.53	Pass
Vertical	127.00	52.36	105.53	Pass

## b) Radiated spurious:

Below 1GHz:



Product Name:	Wireless Speaker & Charging Hub	Product Model:	WSP1001
Test By:	Mike	Test mode:	Transmitting mode
Test Frequency:	9kHz~30MHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24°C Huni: 57%

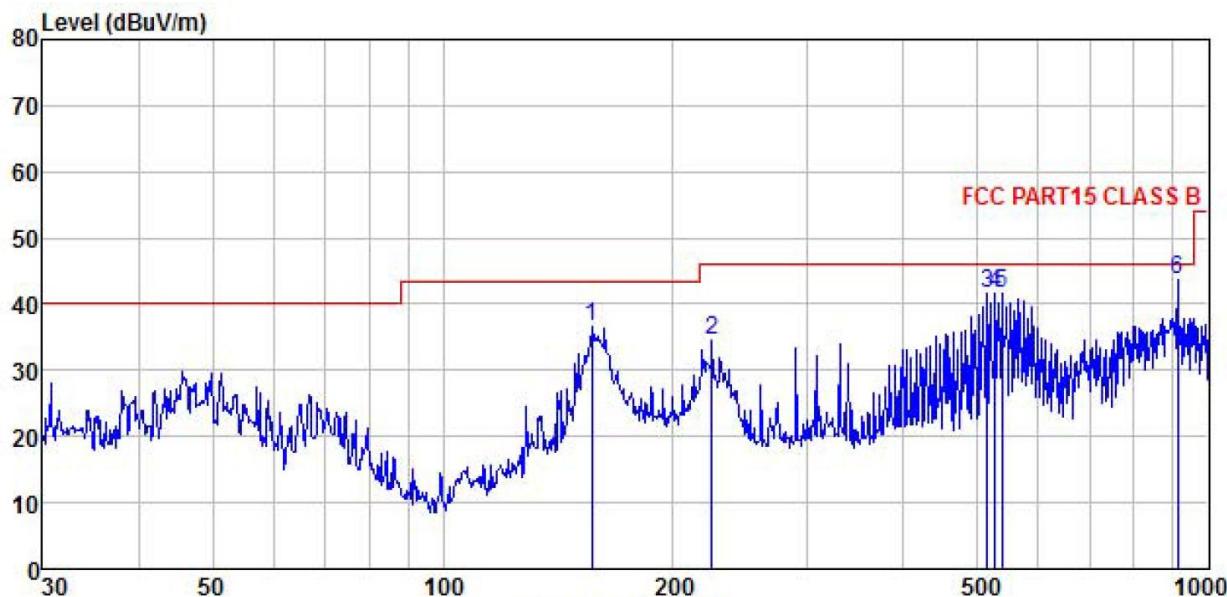


Freq MHz	Read Level dBuV	Antenna Factor dB/m	Cable Loss dB	Aux Factor dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	0.016	37.48	20.38	0.01	0.00	0.00	57.87	143.71	-85.84
2	0.031	31.42	20.24	0.02	0.00	0.00	51.68	137.65	-85.97
3	0.047	26.69	20.56	0.02	0.00	0.00	47.27	134.13	-86.86
4	0.391	36.49	20.68	0.06	0.00	0.00	57.23	115.76	-58.53
5	0.636	25.54	20.70	0.09	0.00	0.00	46.33	71.54	-25.21
6	0.786	30.72	20.60	0.09	0.00	0.00	51.41	69.71	-18.30

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	Wireless Speaker & Charging Hub	Product Model:	WSP1001
Test By:	Mike	Test mode:	Transmitting mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24°C Huni: 57%

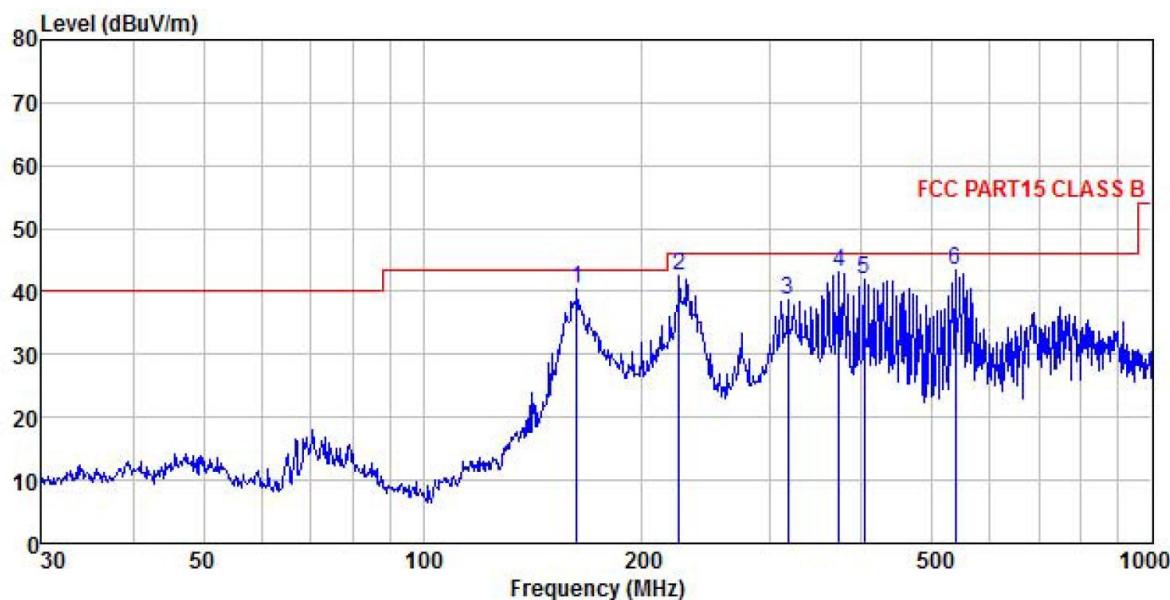


Freq MHz	ReadAntenna Level Factor		Cable Loss	Aux Preamp Factor Factor		Limit Level	Over Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dB	dBuV/m	dBuV/m	dB
1 156.458	50.31	14.77	0.63	0.00	29.16	36.55	43.50	-6.95	QP
2 224.519	44.14	18.40	0.74	0.00	28.68	34.60	46.00	-11.40	QP
3 513.633	50.06	19.46	1.12	0.00	28.99	41.65	46.00	-4.35	QP
4 526.397	50.11	19.51	1.13	0.00	29.03	41.72	46.00	-4.28	QP
5 537.589	49.98	19.55	1.14	0.00	29.06	41.61	46.00	-4.39	QP
6 912.862	47.37	22.65	1.50	0.00	27.84	43.68	46.00	-2.32	QP

## Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	Wireless Speaker & Charging Hub	Product Model:	WSP1001
Test By:	Mike	Test mode:	Transmitting mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24°C Huni: 57%

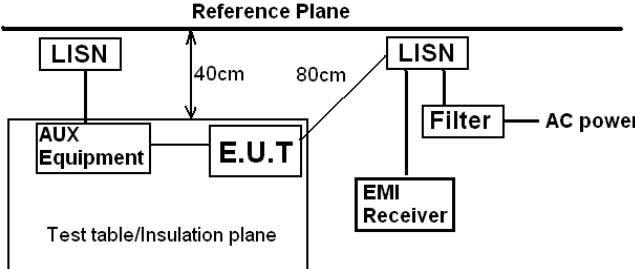


Freq MHz	Read	Antenna	Cable	Aux	Preamp	Limit Line dBuV/m	Over Line Limit dB	Over Limit Remark
	Level	Factor	Loss	Factor	Factor			
1 162.611	53.26	15.56	0.64	0.00	29.11	40.35	43.50	-3.15 QP
2 224.519	52.06	18.40	0.74	0.00	28.68	42.52	46.00	-3.48 QP
3 316.589	47.45	18.73	0.88	0.00	28.49	38.57	46.00	-7.43 QP
4 372.005	51.81	18.93	0.96	0.00	28.66	43.04	46.00	-2.96 QP
5 403.250	50.73	19.11	0.99	0.00	28.79	42.04	46.00	-3.96 QP
6 537.589	51.86	19.55	1.14	0.00	29.06	43.49	46.00	-2.51 QP

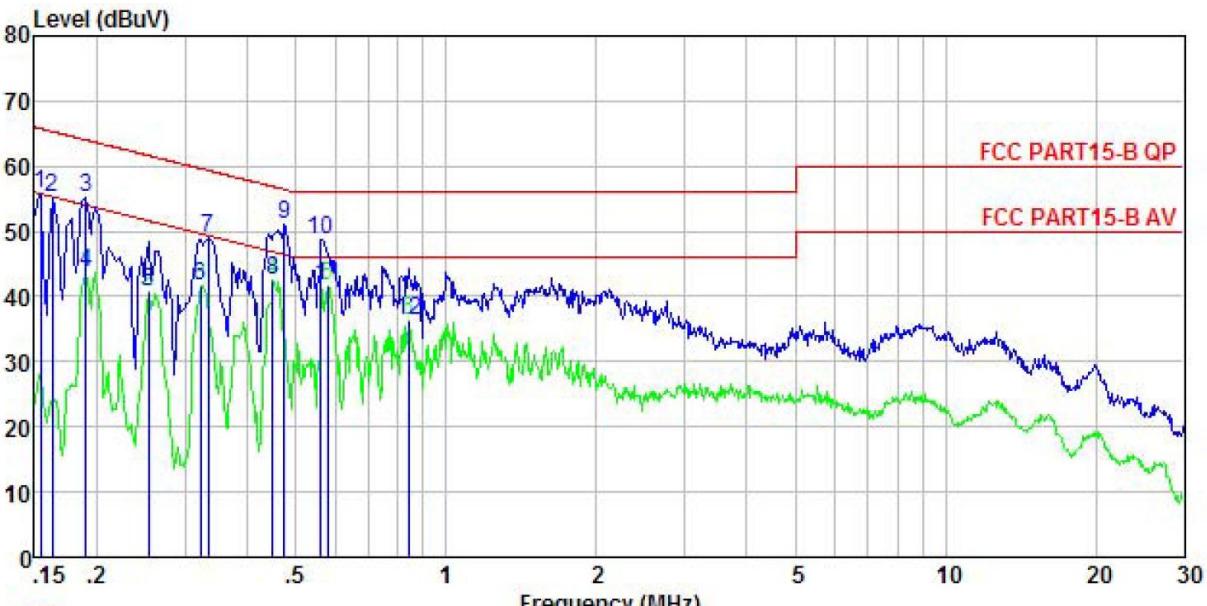
## Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

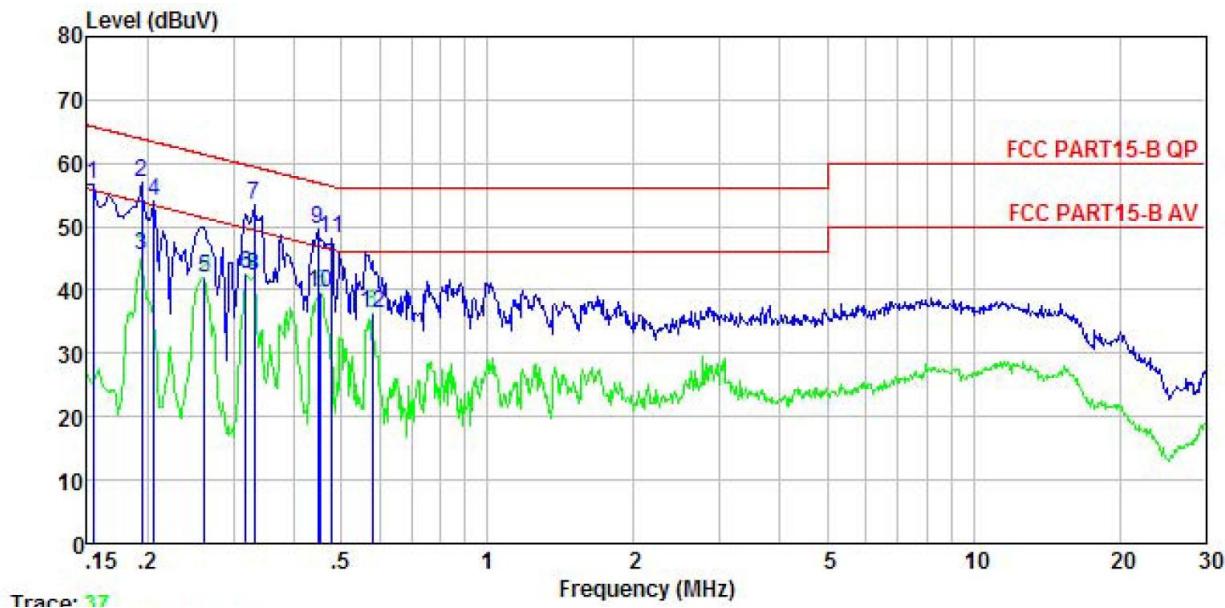
### 6.3 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.207					
Test Frequency Range:	150kHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9kHz, VBW=30kHz					
Limit:	Frequency range (MHz)		Limit (dB $\mu$ V)			
			Quasi-peak      Average			
	0.15-0.5	66 to 56*	56 to 46*			
	0.5-5	56	46			
Limit:	0.5-30	60	50			
	* Decreases with the logarithm of the frequency.					
Test setup:	 <p>Reference Plane</p> <p>LISN</p> <p>40cm</p> <p>80cm</p> <p>AUX Equipment</p> <p>E.U.T</p> <p>Test table/Insulation plane</p> <p>Filter</p> <p>AC power</p> <p>EMI Receiver</p>					
<p>Remark:  <i>E.U.T: Equipment Under Test</i>  <i>LISN: Line Impedance Stabilization Network</i>  <i>Test table height=0.8m</i></p>						
Test procedure	<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.). They provide 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 refers 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 C63.4: 2014 on conducted measurement.</li> </ol>					
Test environment:	Temp.:	23 °C	Humid.:	56%	Press.:	101kPa
Test Instruments:	Refer to section 5.9 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

## Measurement data:

Product name:	Wireless Speaker & Charging Hub			Product Model:	WSP1001																																																																																																																																
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<table border="1"> <thead> <tr> <th>Freq</th> <th>Read Level</th> <th>LISN Factor</th> <th>Cable Loss</th> <th>Aux Factor</th> <th>Level</th> <th>Limit Line</th> <th>Over Limit</th> <th>Remark</th> </tr> <tr> <th>MHz</th> <th>dBuV</th> <th>dB</th> <th>dB</th> <th>dB</th> <th>dBuV</th> <th>dBuV</th> <th>dB</th> <th></th> </tr> </thead> <tbody> <tr><td>1</td><td>0.154</td><td>45.62</td><td>-0.57</td><td>10.78</td><td>-0.06</td><td>55.77</td><td>65.78</td><td>-10.01 QP</td></tr> <tr><td>2</td><td>0.162</td><td>45.06</td><td>-0.58</td><td>10.77</td><td>-0.08</td><td>55.17</td><td>65.34</td><td>-10.17 QP</td></tr> <tr><td>3</td><td>0.190</td><td>45.24</td><td>-0.59</td><td>10.76</td><td>-0.14</td><td>55.27</td><td>64.02</td><td>-8.75 QP</td></tr> <tr><td>4</td><td>0.190</td><td>33.67</td><td>-0.59</td><td>10.76</td><td>-0.14</td><td>43.70</td><td>54.02</td><td>-10.32 Average</td></tr> <tr><td>5</td><td>0.253</td><td>30.76</td><td>-0.57</td><td>10.75</td><td>-0.22</td><td>40.72</td><td>51.64</td><td>-10.92 Average</td></tr> <tr><td>6</td><td>0.322</td><td>31.60</td><td>-0.53</td><td>10.74</td><td>-0.09</td><td>41.72</td><td>49.66</td><td>-7.94 Average</td></tr> <tr><td>7</td><td>0.334</td><td>38.83</td><td>-0.52</td><td>10.73</td><td>-0.01</td><td>49.03</td><td>59.35</td><td>-10.32 QP</td></tr> <tr><td>8</td><td>0.449</td><td>32.29</td><td>-0.45</td><td>10.74</td><td>0.02</td><td>42.60</td><td>46.89</td><td>-4.29 Average</td></tr> <tr><td>9</td><td>0.474</td><td>40.84</td><td>-0.44</td><td>10.75</td><td>-0.18</td><td>50.97</td><td>56.45</td><td>-5.48 QP</td></tr> <tr><td>10</td><td>0.561</td><td>38.87</td><td>-0.46</td><td>10.76</td><td>-0.37</td><td>48.80</td><td>56.00</td><td>-7.20 QP</td></tr> <tr><td>11</td><td>0.579</td><td>31.65</td><td>-0.47</td><td>10.76</td><td>-0.37</td><td>41.57</td><td>46.00</td><td>-4.43 Average</td></tr> <tr><td>12</td><td>0.839</td><td>26.11</td><td>-0.57</td><td>10.82</td><td>0.03</td><td>36.39</td><td>46.00</td><td>-9.61 Average</td></tr> </tbody> </table>								Freq	Read Level	LISN Factor	Cable Loss	Aux Factor	Level	Limit Line	Over Limit	Remark	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB		1	0.154	45.62	-0.57	10.78	-0.06	55.77	65.78	-10.01 QP	2	0.162	45.06	-0.58	10.77	-0.08	55.17	65.34	-10.17 QP	3	0.190	45.24	-0.59	10.76	-0.14	55.27	64.02	-8.75 QP	4	0.190	33.67	-0.59	10.76	-0.14	43.70	54.02	-10.32 Average	5	0.253	30.76	-0.57	10.75	-0.22	40.72	51.64	-10.92 Average	6	0.322	31.60	-0.53	10.74	-0.09	41.72	49.66	-7.94 Average	7	0.334	38.83	-0.52	10.73	-0.01	49.03	59.35	-10.32 QP	8	0.449	32.29	-0.45	10.74	0.02	42.60	46.89	-4.29 Average	9	0.474	40.84	-0.44	10.75	-0.18	50.97	56.45	-5.48 QP	10	0.561	38.87	-0.46	10.76	-0.37	48.80	56.00	-7.20 QP	11	0.579	31.65	-0.47	10.76	-0.37	41.57	46.00	-4.43 Average	12	0.839	26.11	-0.57	10.82	0.03	36.39	46.00	-9.61 Average
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<p>Notes:</p> <ol style="list-style-type: none"> <li>An initial pre-scan was performed on the line and neutral lines with peak detector.</li> <li>Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.</li> <li>Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.</li> </ol>																																																																																																																																					

<b>Product name:</b>	Wireless Speaker & Charging Hub	<b>Product Model:</b>	WSP1001
<b>Test by:</b>	Mike	<b>Test mode:</b>	Transmitting mode
<b>Test frequency:</b>	150 kHz ~ 30 MHz	<b>Phase:</b>	Neutral
<b>Test voltage:</b>	AC 120 V/60 Hz	<b>Environment:</b>	Temp: 22.5°C Huni: 55%



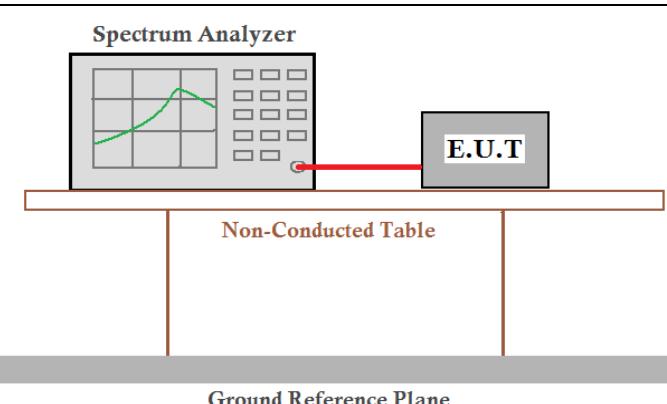
Trace: 37

Freq	Read	LISN	Cable	Aux	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	
1	0.154	46.60	-0.69	10.78	0.01	56.70	65.78 -9.08 QP
2	0.194	47.00	-0.67	10.76	0.00	57.09	63.84 -6.75 QP
3	0.194	35.50	-0.67	10.76	0.00	45.59	53.84 -8.25 Average
4	0.206	43.94	-0.67	10.76	0.00	54.03	63.36 -9.33 QP
5	0.262	31.91	-0.67	10.75	0.01	42.00	51.38 -9.38 Average
6	0.318	32.45	-0.66	10.74	-0.01	42.52	49.75 -7.23 Average
7	0.330	43.31	-0.66	10.73	-0.01	53.37	59.44 -6.07 QP
8	0.330	32.18	-0.66	10.73	-0.01	42.24	49.44 -7.20 Average
9	0.447	39.40	-0.64	10.74	-0.02	49.48	56.93 -7.45 QP
10	0.454	29.59	-0.64	10.74	-0.01	39.68	46.80 -7.12 Average
11	0.479	37.89	-0.65	10.75	0.01	48.00	56.36 -8.36 QP
12	0.579	26.06	-0.65	10.76	0.03	36.20	46.00 -9.80 Average

## Notes:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

## 6.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 (c)
Receiver setup:	RBW=3 kHz, VBW=10 kHz, detector: Peak
Limit:	N/A
Test Procedure:	<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 the EUT to proper test channel.</li> <li>3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.</li> <li>4. Read 20dB bandwidth.</li> </ol>
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

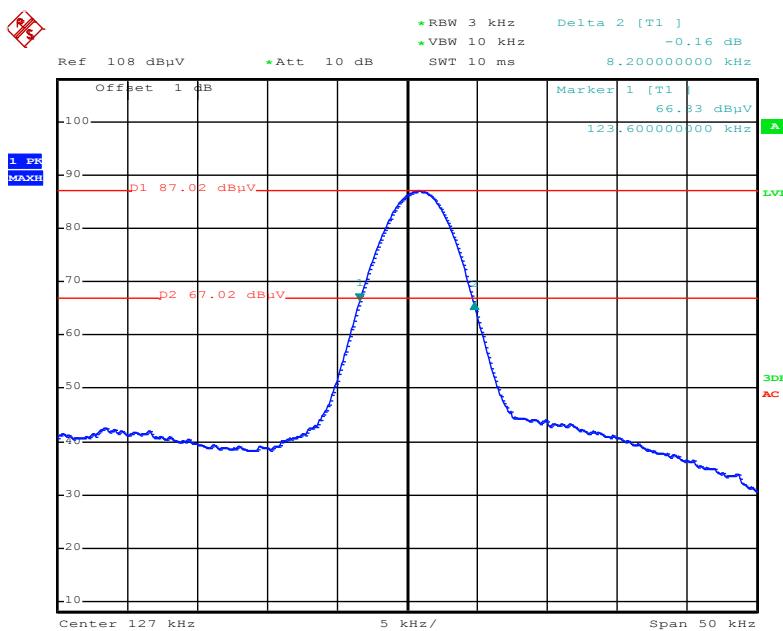
### Measurement Data

20dB bandwidth (kHz)	99% bandwidth (kHz)	Limits
8.20	6.80	N/A

Remark: For report purpose only.

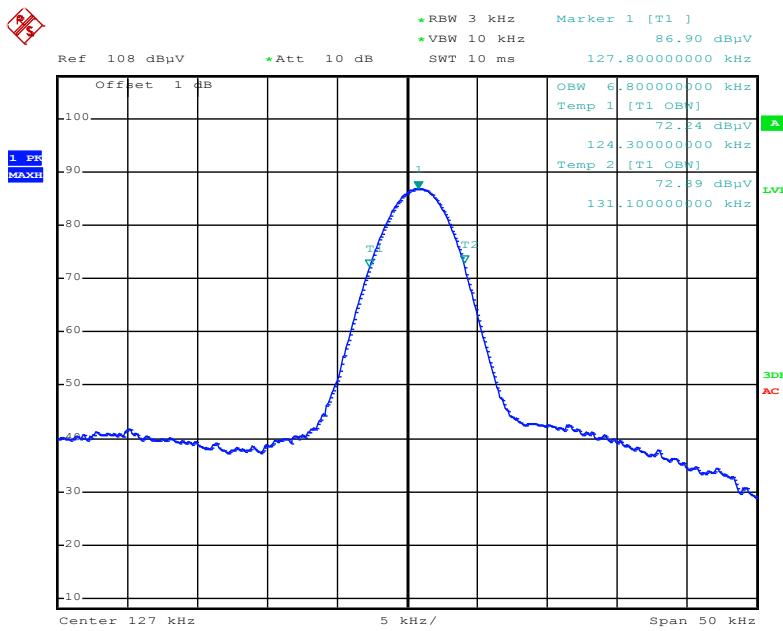
Test plot as follows:

20dB bandwidth



Date: 28.JUN.2020 15:24:48

99% bandwidth



Date: 28.JUN.2020 15:25:07

## **8 EUT Constructional Photos**

Reference to the test report No.: CCISE200609201

-----End of report-----