



# **FCC TEST REPORT**

## **FCC ID: 2AP2N-QICABLE**

On Behalf of

**Shenzhen Esorun Technology Co.,LTD**

**Wireless Charger**

**Model No.: Qicable**

Prepared for : Shenzhen Esorun Technology Co.,LTD  
10F, Mingzhuo Building, Mingzhuoxing Industrial  
Address : Park,Guangming Street, Guangming District, Shenzhen,  
China

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.  
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,  
518103, Shenzhen, Guangdong, China

Report Number : T1880946 05  
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Date of Report : July 09, 2018  
Version Number : REV0

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## TEST REPORT DECLARATION

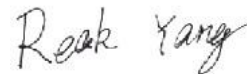
Applicant : Shenzhen Esorun Technology Co.,LTD  
Address : 10F, Mingzhuo Building, Mingzhuoxing Industrial Park,Guangming  
Street, Guangming District, Shenzhen, China  
Manufacturer : Shenzhen Esorun Technology Co.,LTD  
Address : 10F, Mingzhuo Building, Mingzhuoxing Industrial Park,Guangming  
Street, Guangming District, Shenzhen, China  
EUT Description : Wireless Charger  
(A) Model No. : Qicable  
(B) Trademark : ESORUN

Measurement Standard Used:

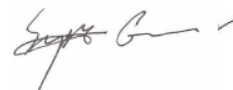
### FCC CFR Title 47 Part 15 Subpart C Section 15.209

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC CFR Title 47 Part 15 Subpart C Section 15.209 requirements.

Tested by (name + signature).....: Reak Yang  
Project Engineer



Approved by (name + signature).....: Simple Guan  
Project Manager



Date of issue.....: July 09, 2018

**Revision History**

Revision	Issue Date	Revisions	Revised By
00	July 09, 2018	Initial released Issue	Simple Guan

## 1. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS
Occupied Bandwidth	§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.

## 2. General Information

### 2.1. Description of Device (EUT)

EUT Name	:	Wireless Charger
Model No.	:	Qicable
DIFF.	:	N/A
Trademark	:	ESORUN
Power supply	:	Input: DC 5V/3A; DC 9V/2A Connector output: DC 5V/1A Wireless Output: DC 5V/1A; DC 9V/1.1A
Operation frequency	:	125-205KHz
Modulation	:	MSK
Antenna Type	:	Coil Antenna, Maximum Gain is 28dBi
Software version	:	V3.4
Hardware version	:	V1.0

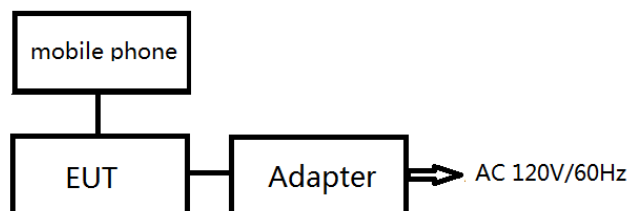
## 2.2. Accessories of Device (EUT)

Accessories1 : /  
 Manufacturer : /  
 Model : /  
 Ratings : /

## 2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or DOC
1	Mobile phone	APPLE	IPHONE 8	--	--
2	Adapter	--	S005AYU090 0112	--	--

## 2.4. Block Diagram of connection between EUT and simulators



## 2.5. Description of Test Modes

Channel	Frequency (KHz)	Channel	Frequency (KHz)	Channel	Frequency (KHz)	Channel	Frequency (KHz)
1	125	6	150	11	175	16	200
2	130	7	155	12	180	17	205
3	135	8	160	13	185	18	
4	140	9	165	14	190	19	
5	145	10	170	15	195	20	

*Note: Pre-San all output power mode, and only worst data listed in report (DC 9V/1.1A).*

## 2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35°C	27°C
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	980kPa

## 2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission

Registration Number: 293961

July 25, 2017 Certificated by IC

Registration Number: 12135A

## 2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	2.42dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.13 dB(Polarize: V)
	2.57dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB(Polarize: V)
	4.1dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB(Polarize: H)
	2.56dB(Polarize: V)
Uncertainty for radio frequency	1×10 <sup>-9</sup>
Uncertainty for conducted RF Power	0.65dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

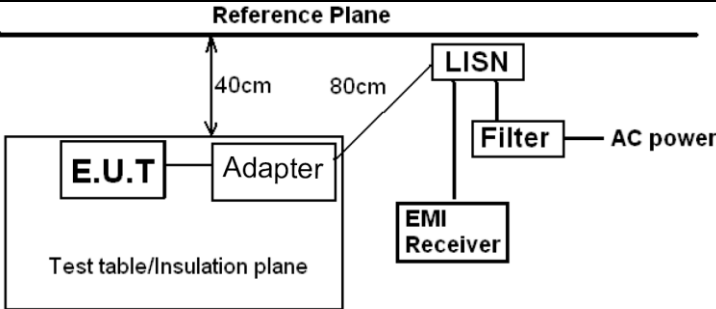
## 2.9. Test Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	2017.09.22	1Year
Spectrum analyzer	Agilent	E4407B	MY46185649	2017.09.22	1Year
Receiver	R&S	ESCI	1166.5950K03-1011	2017.09.22	1Year
Receiver	R&S	ESCI	101202	2017.09.22	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2016.09.30	2Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	2016.09.30	2Year
Cable	Resenberger	N/A	No.1	2017.09.22	1Year
Cable	SCHWARZBECK	N/A	No.2	2017.09.22	1Year
Cable	SCHWARZBECK	N/A	No.3	2017.09.22	1Year
Pre-amplifier	Schwarzbeck	BBV9743	9743-019	2017.09.22	1Year
Pre-amplifier	R&S	AFS33-18002650-30-8P-44	SEL0080	2017.09.22	1Year
Temperature controller	Terchy	MHQ	120	2017.09.22	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126466	2017.09.22	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	101043	2017.09.22	1 Year
20db Attenuator	ICPROBING	IATS1	82347	2017.09.22	1 Year

### 3. Test Results and Measurement Data

#### 3.1. Conducted Emission

##### 3.1.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><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></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													
Test Setup:	<div><p>Reference Plane</p><p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p></div>														
Test Mode:	Charging + Transmitting Mode														
Test Procedure:	<div><div>1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</div><div>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).</div><div>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.</div></div>														
Test Result:	PASS														

### 3.1.2. Test data

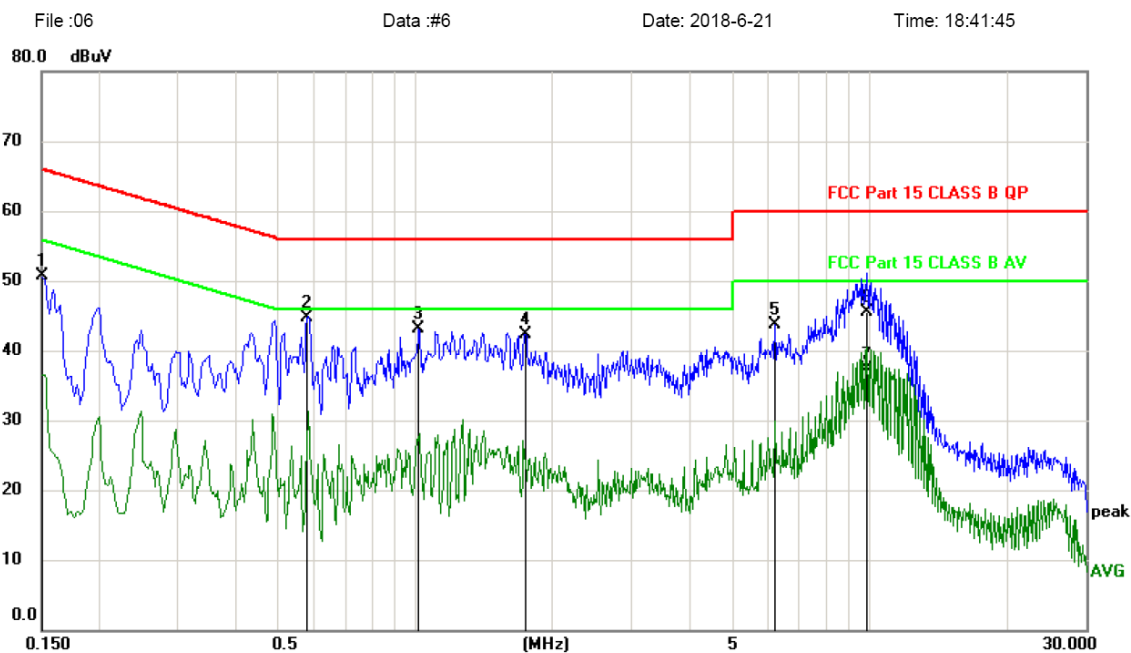
**Please refer to following diagram for individual**

Test Mode	: Full Load
Test Results	: <b>PASS</b>
Note:	<p>The test results are listed in next pages.</p> <p>This mode is worst case mode, so this report only reflected the worst mode.</p> <p>If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.</p> <p>If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.</p>

Test result for Channel 125KHz, AC 120V/ 60Hz

Line:

### Conducted Emission Measurement



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1500	41.01	9.66	50.67	66.00	-15.33	peak	
2 *	0.5790	35.01	9.72	44.73	56.00	-11.27	peak	
3	1.0200	33.28	9.77	43.05	56.00	-12.95	peak	
4	1.7460	32.55	9.85	42.40	56.00	-13.60	peak	
5	6.2040	33.40	10.23	43.63	60.00	-16.37	peak	
6	9.8820	35.11	10.32	45.43	60.00	-14.57	QP	
7	9.8820	27.03	10.32	37.35	50.00	-12.65	AVG	

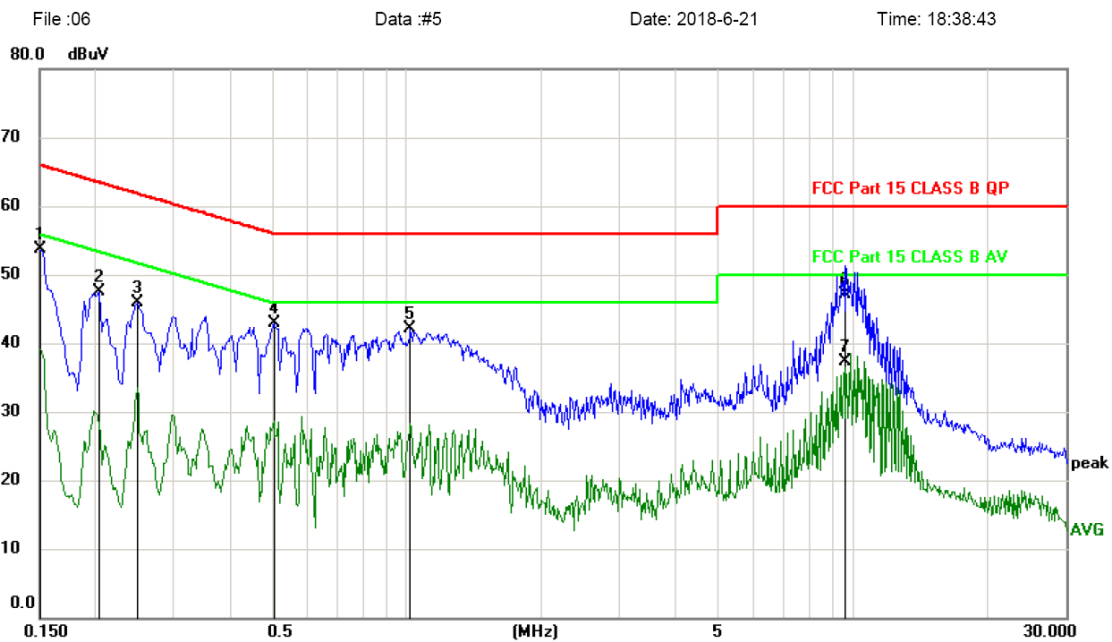
\*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

## Test result for Channel 125KHz, AC 120V/ 60Hz

Neutral:

## Conducted Emission Measurement



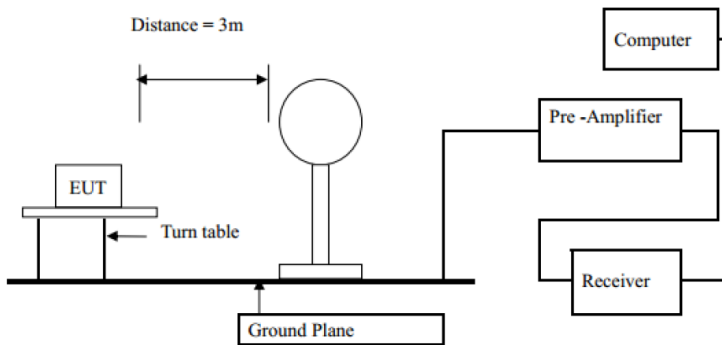
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1500	44.03	9.66	53.69	66.00	-12.31	peak	
2		0.2040	37.88	9.67	47.55	63.45	-15.90	peak	
3		0.2490	36.21	9.69	45.90	61.79	-15.89	peak	
4		0.5039	33.11	9.71	42.82	56.00	-13.18	peak	
5		1.0170	32.42	9.77	42.19	56.00	-13.81	peak	
6		9.6510	36.78	10.31	47.09	60.00	-12.91	QP	
7		9.6510	26.95	10.31	37.26	50.00	-12.74	AVG	

\*:Maximum data    x:Over limit    !:over margin

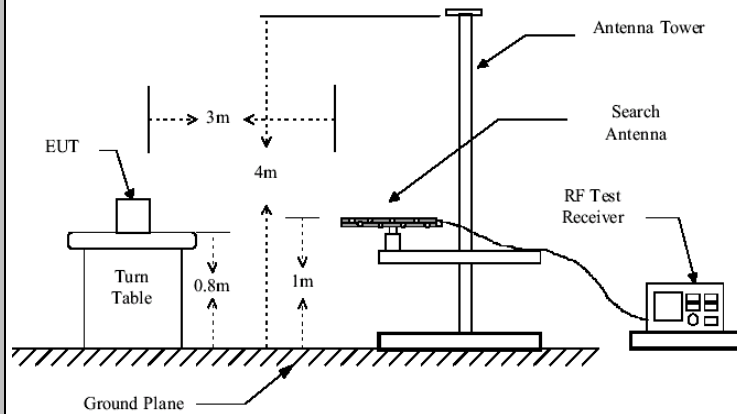
Note: Measurement=Reading Level+Correc Factor.    Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

## 3.2. Radiated Spurious Emission Measurement

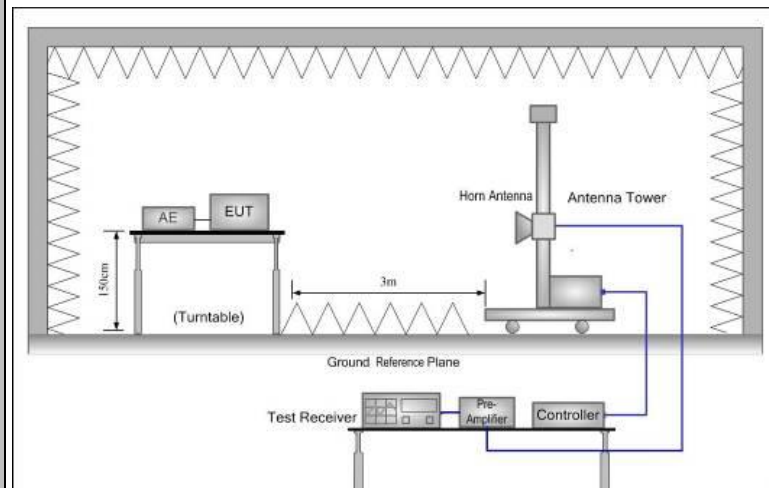
### 3.2.1. Test Specification

<b>Test Requirement:</b>	FCC Part15 C Section 15.209			
<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>Operation mode:</b>	Refer to item 4.1			
<b>Receiver Setup:</b>	Frequency	Detector	RBW	VBW
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz
	30MHz-1GHz	Quasi-peak	100KHz	300KHz
	Above 1GHz	Peak	1MHz	3MHz
<b>Limit:</b>	Remark			
	Quasi-peak Value			
	Quasi-peak Value			
	Quasi-peak Value			
	Peak Value			
	Average Value			
	Frequency	Field Strength (microvolts/meter)	Measurement Distance (meters)	
	0.009-0.490	2400/F(KHz)	300	
	0.490-1.705	24000/F(KHz)	30	
	1.705-30	30	30	
<b>Test setup:</b>	Frequency	Field Strength (microvolts/meter)	Measurement Distance (meters)	Detector
	Above 1GHz	500	3	Average
		5000	3	Peak
	For radiated emissions below 30MHz			
	 <p>Distance = 3m</p> <p>EUT</p> <p>Turn table</p> <p>Ground Plane</p> <p>Computer</p> <p>Pre -Amplifier</p> <p>Receiver</p>			

30MHz to 1GHz



Above 1GHz

**Test Procedure:**

1. For the radiated emission test below 1GHz:  
The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level.  
For the radiated emission test above 1GHz:  
Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which

	<p>maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.</p> <p>2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level</p> <p>3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.</p> <p>4. Use the following spectrum analyzer settings:</p> <p>(1) Span shall wide enough to fully capture the emission being measured;</p> <p>(2) Set RBW=100 kHz for <math>f &lt; 1</math> GHz; VBW <math>\geq</math> RBW; Sweep = auto; Detector function = peak; Trace = max hold;</p> <p>(3) Set RBW = 1 MHz, VBW= 3MHz for <math>f \geq 1</math> GHz for peak measurement.</p> <p>For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW <math>\geq 1/T</math>, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.</p>
<b>Test mode:</b>	Refer to section 4.1 for details
<b>Test results:</b>	PASS

### 3.2.2. Test Data

Please refer to following diagram for individual

Frequency Range	: 9KHz~30MHz
Test Mode	: TX: channel low, channel mid, channel high
Test Results	: <b>PASS</b>
Note: 1. The test results are listed in next pages. 2. This mode is worst case mode, so this report only reflected the worst mode. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.	

Freq.	Reading	Antenna Factor	Cable loss	Amp Factor	Result	Limit	Margin	Detect or	State
(MHz)	(dBuV/m)	dB/m	dB	dB	(dBuV/m)	(dBuV/m) at 3 m	(dB)		P/F
0.125	47.87	48.34	0.16	29.87	66.50	126.77	-60.27	PK	PASS
0.125	46.38	48.34	0.16	29.87	65.01	106.77	-41.76	AV	PASS
0.175	92.56	48.34	0.16	29.87	111.19	122.95	-11.76	PK	PASS
0.175	68.60	48.34	0.16	29.87	87.23	102.95	-15.72	AV	PASS
0.205	48.02	48.38	0.17	29.89	66.68	120.76	-54.08	PK	PASS
0.205	43.75	48.38	0.17	29.89	62.41	100.76	-38.35	AV	PASS
0.35	50.06	48.44	0.19	29.89	68.80	117.78	-48.98	PK	PASS
0.35	45.90	48.44	0.19	29.89	64.64	97.78	-33.14	AV	PASS
0.45	48.63	48.47	0.19	29.89	67.40	115.35	-47.95	PK	PASS
0.45	44.72	48.47	0.19	29.89	63.49	95.35	-31.86	AV	PASS
1.928	16.20	49.12	0.2	29.94	35.58	60	-24.42	QP	PASS
1.920	21.46	49.12	0.2	29.94	40.84	60	-19.16	QP	PASS

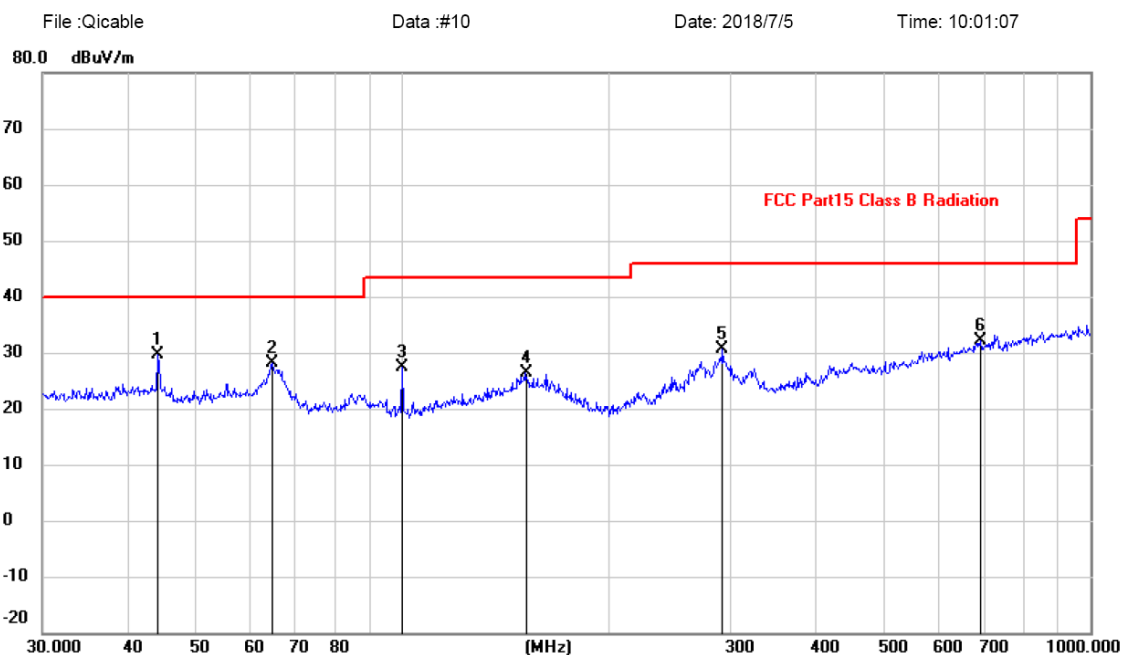
Frequency Range	: 30MHz~1000MHz
Test Mode	: Full Load
Test Results	: <b>PASS</b>
Note: 1. The test results are listed in next pages. 2. This mode is worst case mode, so this report only reflected the worst mode. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out.	

Frequency Range	: Above 1GHz	
EUT	: /	Test Date : /
M/N	: /	Temperature : /
Test Engineer	: /	Humidity : /
Test Mode	: /	
Test Results	: N/A	
Note: 1. The highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. So the frequency rang above 1GHz radiation test not applicable.		

Test result for Channel 125KHz, AC 120V/ 60Hz

**30MHz-1GHz**

Horizontal:

**Radiated Emission Measurement**

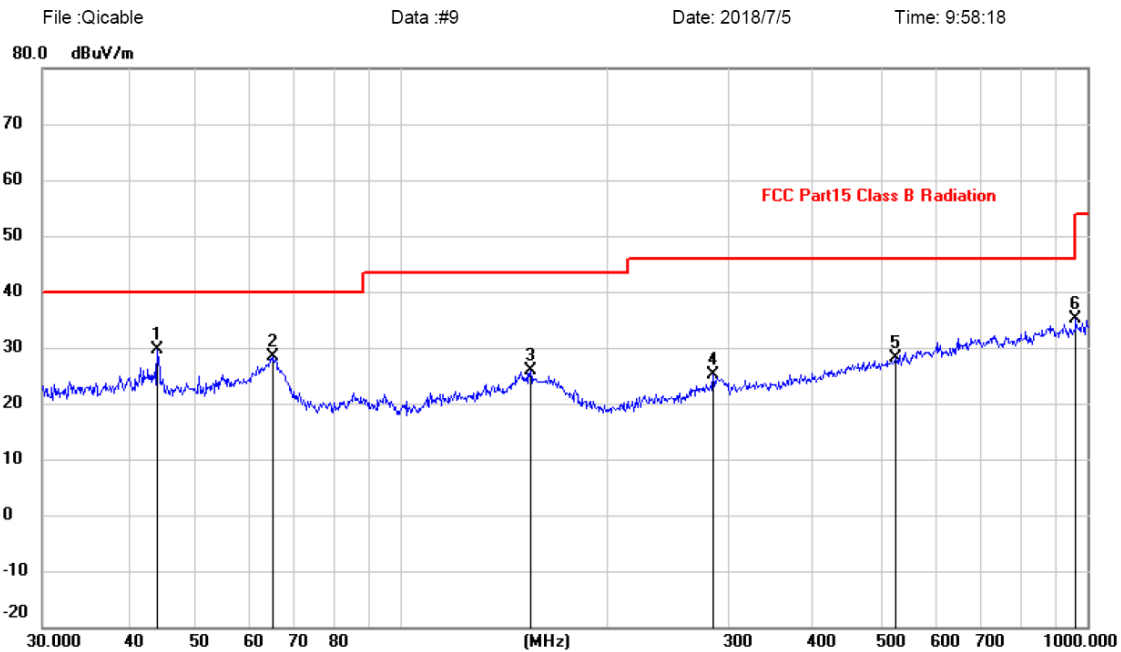
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	44.1202	15.74	13.85	29.59	40.00	-10.41	peak		
2		64.6594	16.10	11.97	28.07	40.00	-11.93	peak		
3		99.8777	16.79	10.60	27.39	43.50	-16.11	peak		
4		151.0666	11.89	14.56	26.45	43.50	-17.05	peak		
5		292.0583	17.34	13.20	30.54	46.00	-15.46	peak		
6		691.9867	11.46	20.77	32.23	46.00	-13.77	peak		

Note:1. \*:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Test result for Channel 125KHz, AC 120V/ 60Hz  
Vertical:

### Radiated Emission Measurement



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	44.1202	15.68	13.85	29.53	40.00	-10.47	peak		
2		64.8865	16.54	11.88	28.42	40.00	-11.58	peak		
3		154.2786	11.22	14.56	25.78	43.50	-17.72	peak		
4		284.9767	12.14	13.04	25.18	46.00	-20.82	peak		
5		526.3967	9.96	18.06	28.02	46.00	-17.98	peak		
6		965.5421	11.18	23.88	35.06	54.00	-18.94	peak		

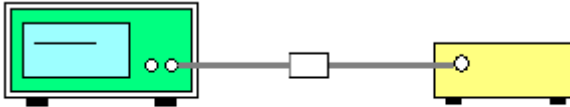
Note:1. \*:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

### Note:

Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

### 3.3. Test Specification

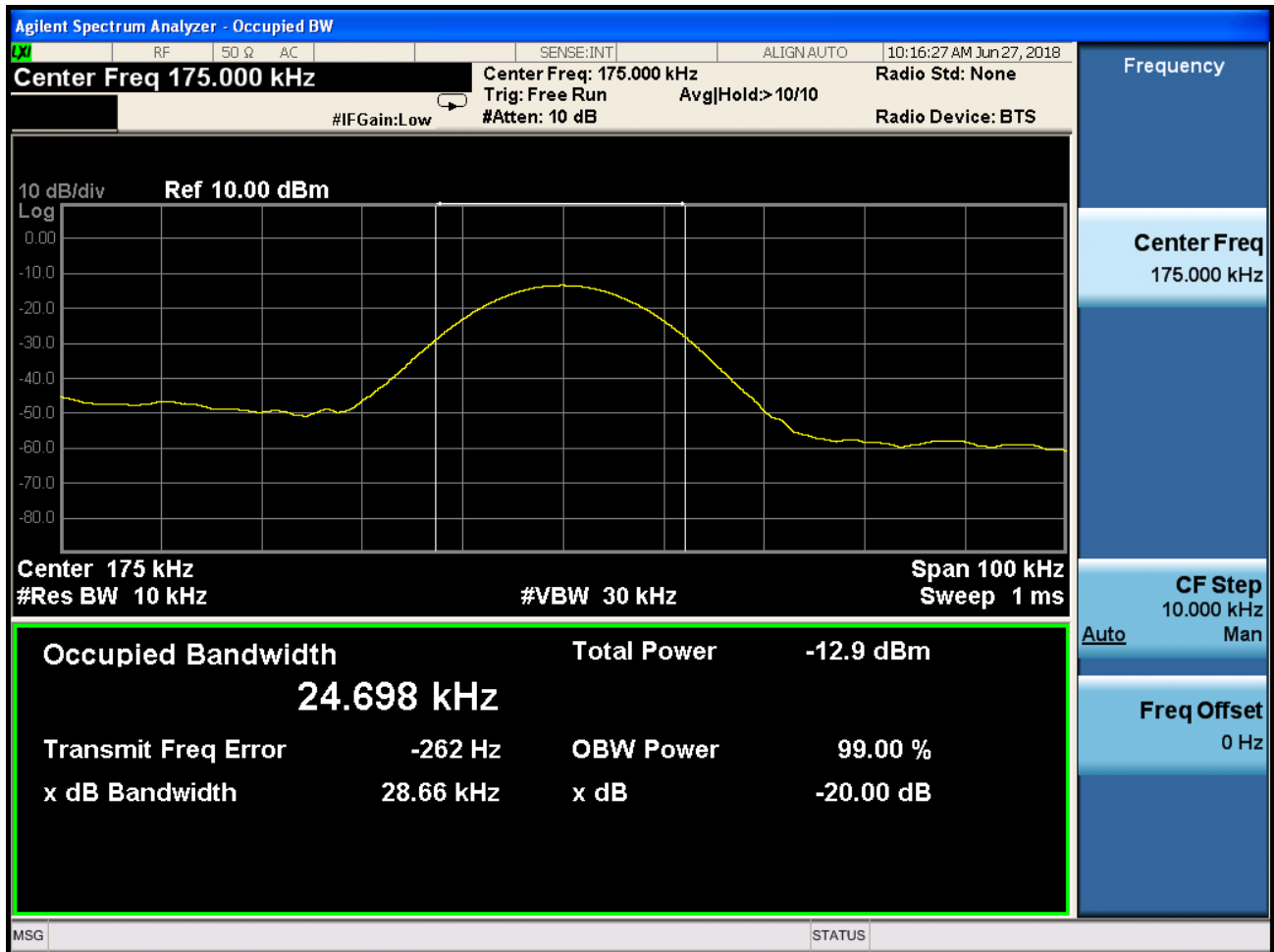
<b>Test Requirement:</b>	FCC Part15 C Section 15.215(c)
<b>Test Method:</b>	ANSI C63.10: 2013
<b>Limit:</b>	N/A
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>2. Set to 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; <math>RBW \geq 1\%</math> of the 20 dB bandwidth; <math>VBW \geq RBW</math>; 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. On the left is a green Spectrum Analyzer. A cable connects it to a small white rectangular connector box. This box is then connected to a yellow rectangular Equipment Under Test (EUT) on the right.</p>
<b>Test Mode:</b>	Refer to section 4.1 for details
<b>Test results:</b>	PASS

### 3.3.1. Test data

Frequency(KHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
175.0	28.66	---	PASS

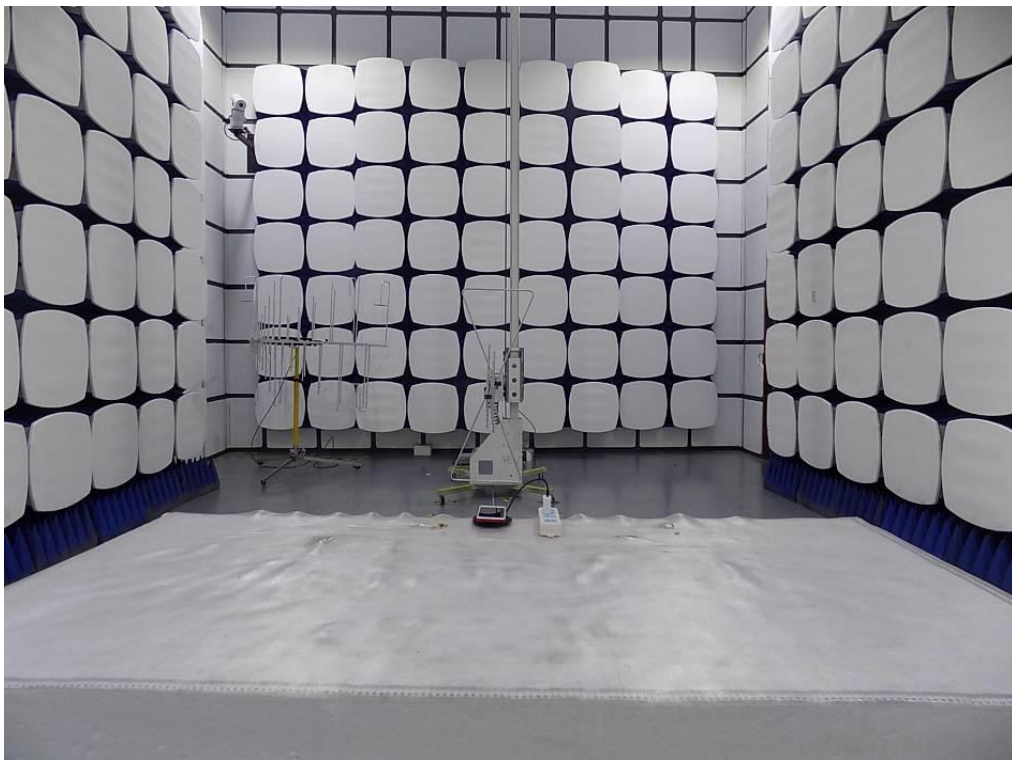
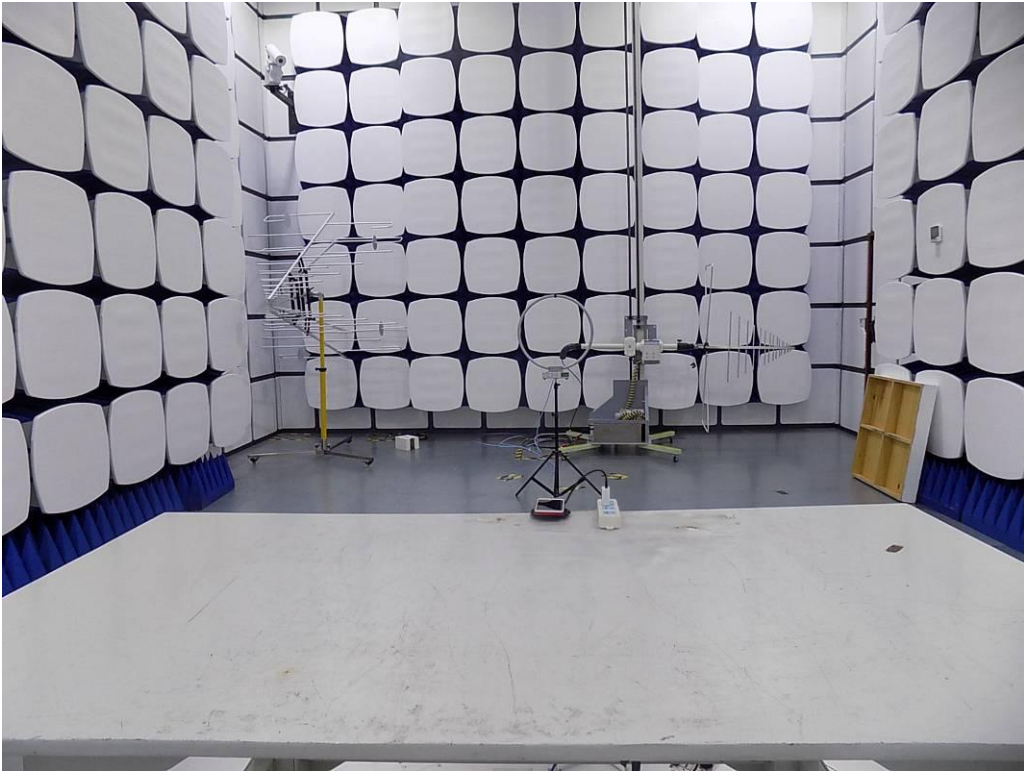
Test plots as follows:

Lowest channel

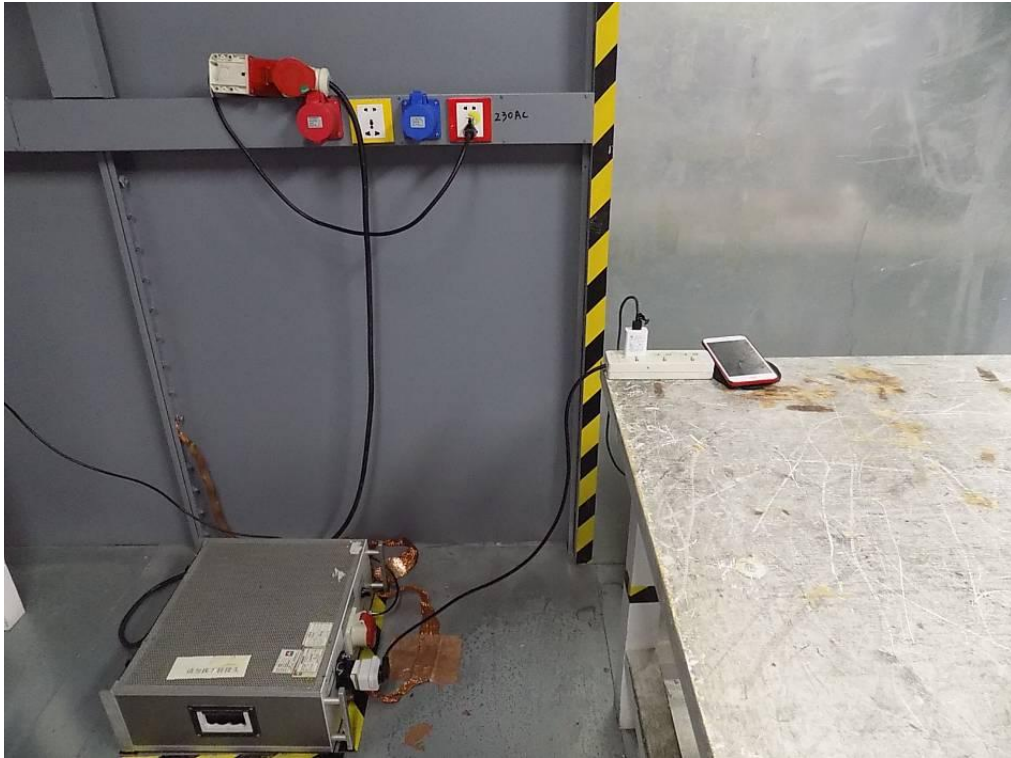


## 4. Photos of test setup

### Radiated Emission

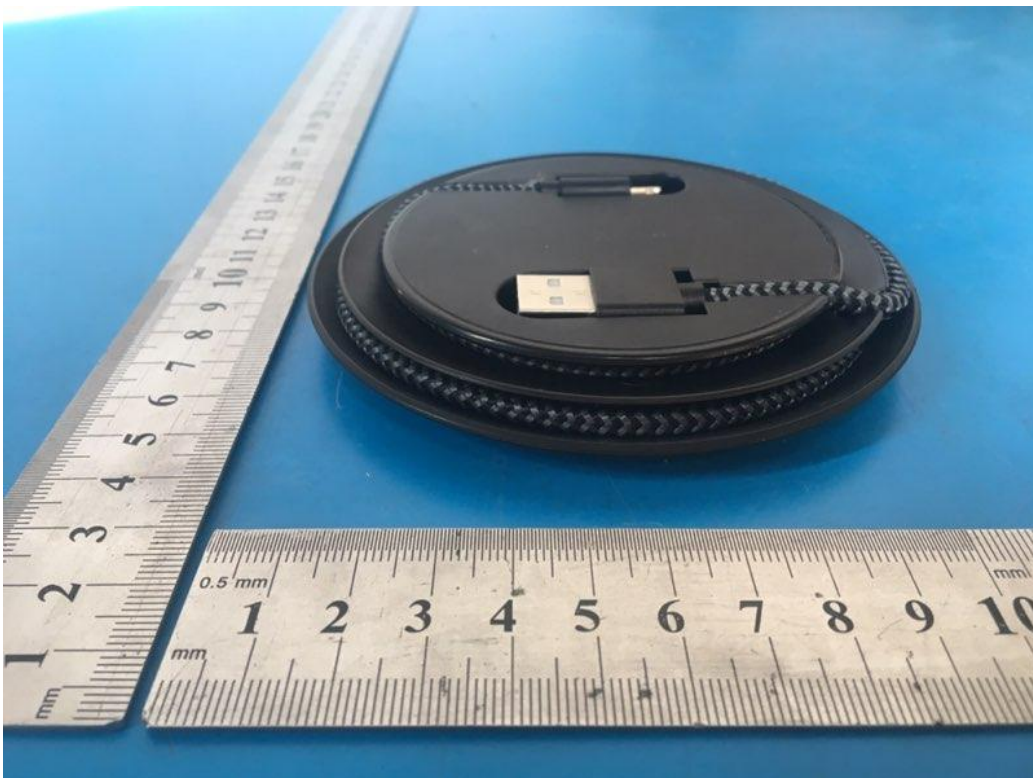


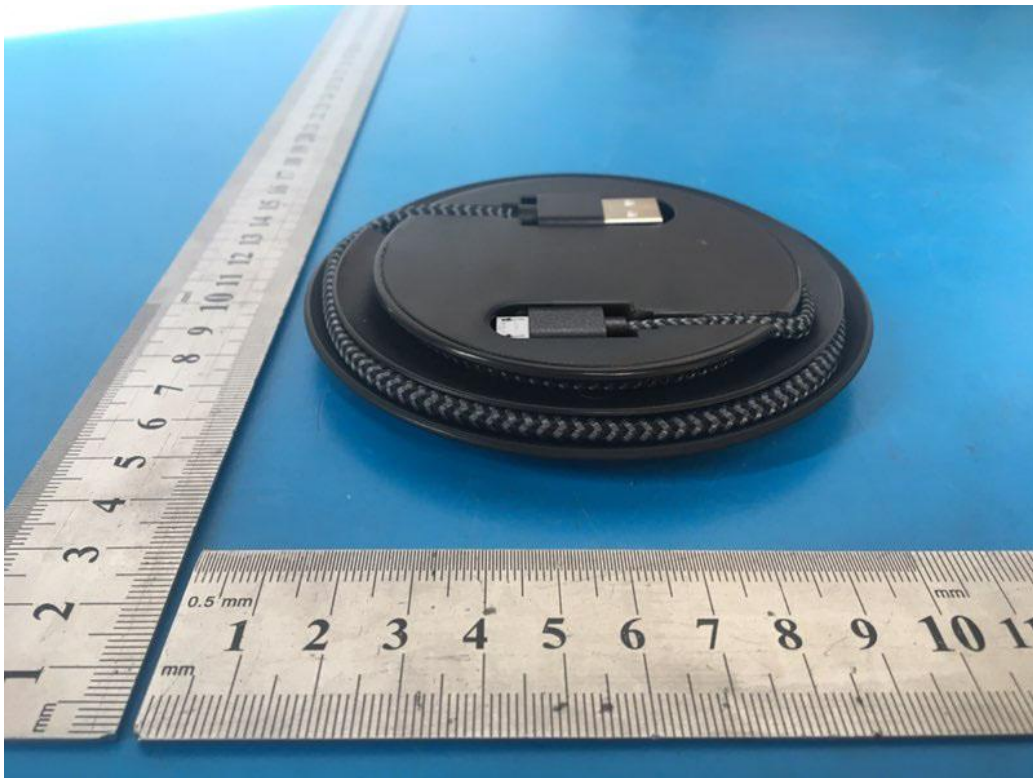
## Conducted Emission

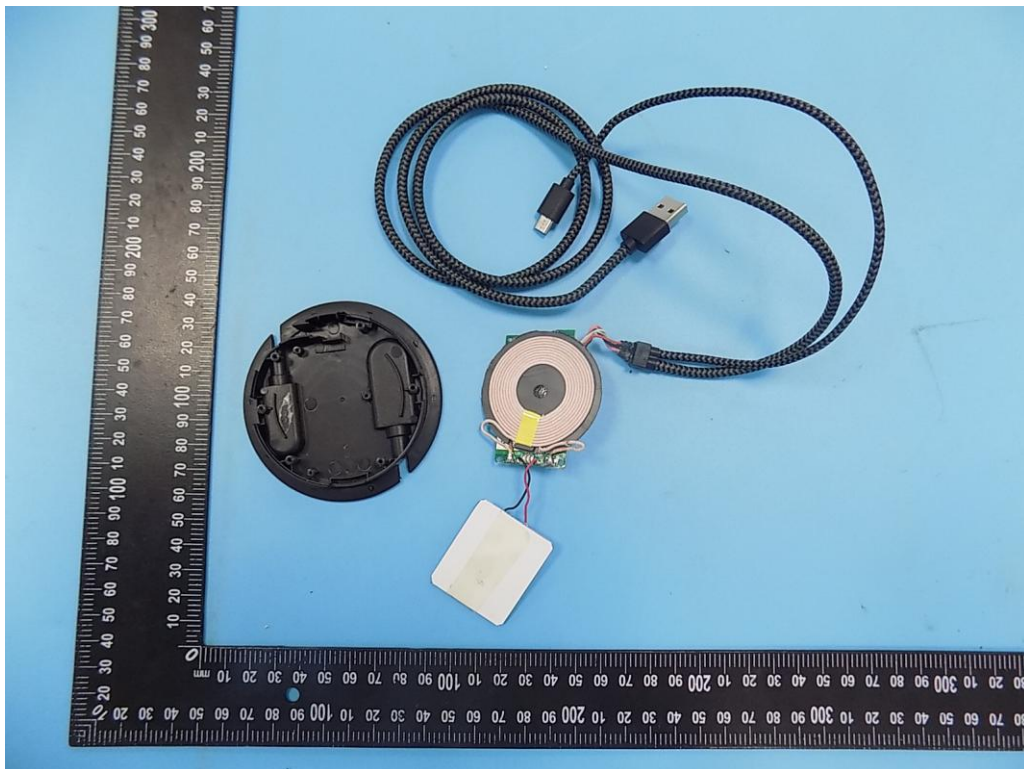


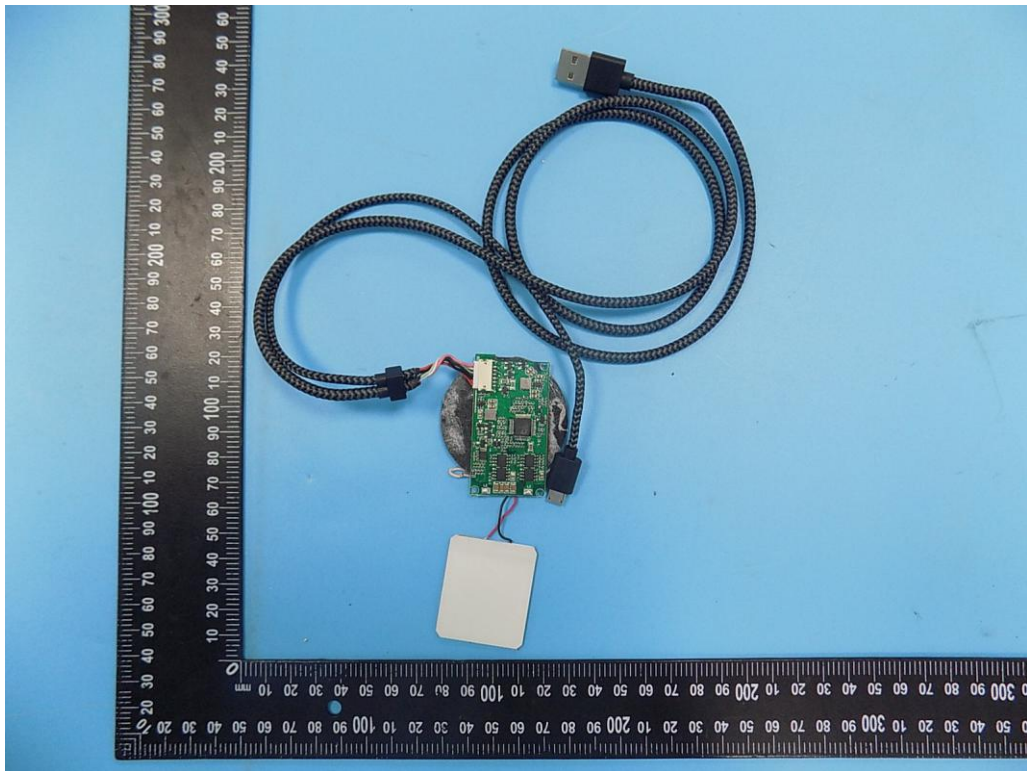
## 5. Photographs of EUT

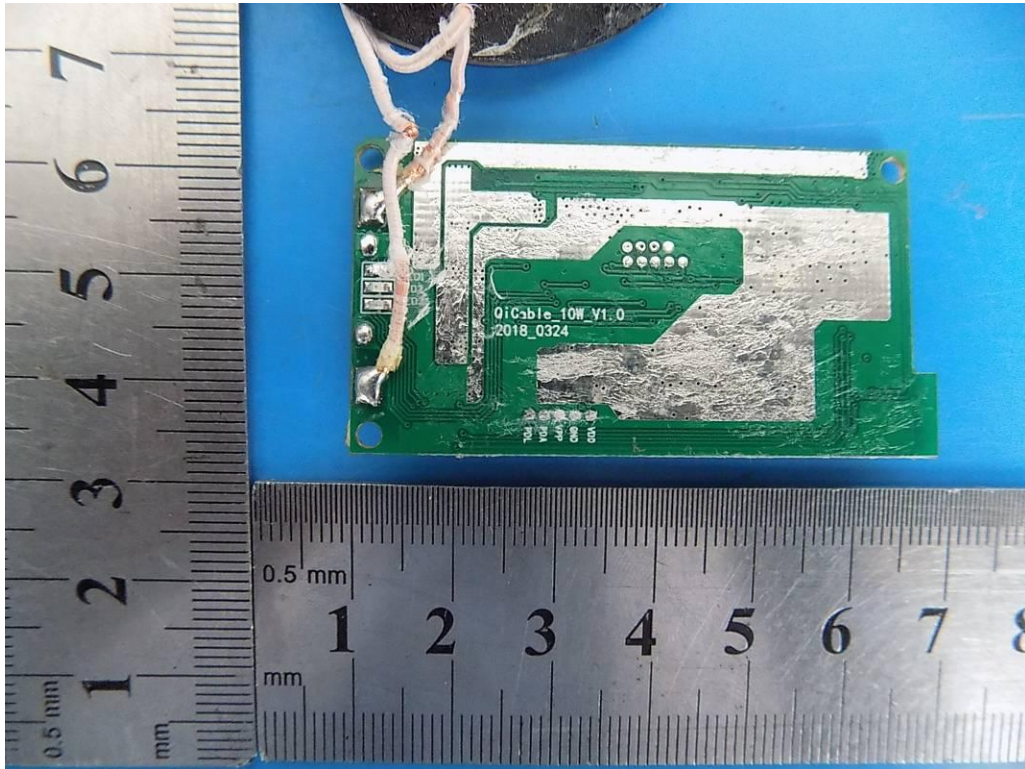












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