

# FCC REPORT

**Applicant:** OPUS ONE Inc.  
**Address of Applicant:** 3rd FL, 4-7 of 243beon-gil, Unjung-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Rep of KOREA. (ZIP. 13477)

## Equipment Under Test (EUT)

**Product Name:** F1 Fast Wireless Auto Slide Car Charger  
**Model No.:** OP-AWCF1GL-BK, OP-AWCF1GL-WH, OP-AWCF1GL-BL, OP-AWCF1GL-PK, OP-AWCF1GL-LT  
**Trade mark:** OPUS ONE

**FCC ID:** 2AO5QOP-AWCF1GL-BK

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

**Date of sample receipt:** 28 Oct., 2019

**Date of Test:** 29 Oct., to 30 Oct., 2019

**Date of report issue:** 10 Dec., 2019

**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	30 Oct., 2019	Original
01	03 Dec., 2019	Update page 3, 5, 11
02	10 Dec., 2019	Update page 11~15

**Tested By:** Carrey Chen **Date:** 10 Dec., 2019  
**Test Engineer**

**Reviewed By:** Winner Zhang **Date:** 10 Dec., 2019  
**Project Engineer**

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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	N/A
<i>Remark:</i> <i>Pass: The EUT complies with the essential requirements in the standard.</i>		

## 5 General Information

### 5.1 Client Information

Applicant:	OPUS ONE Inc.
Address:	3rd FL, 4-7 of 243beon-gil, Unjung-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Rep of KOREA. (ZIP. 13477)
Manufacturer:	Shenzhen Mgctech Co.,Ltd.
Address:	4F, Bldg B, No.48-12, Fuchengao Industrial Rd., Pinghu Street, Longgang District, Shenzhen, China.

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

Product Name:	F1 Fast Wireless Auto Slide Car Charger
Model No.:	OP-AWCF1GL-BK, OP-AWCF1GL-WH, OP-AWCF1GL-BL, OP-AWCF1GL-PK, OP-AWCF1GL-LT
Operation Frequency:	112.30kHz~203.00kHz
Modulation type:	ASK
Antenna Type:	Coil Antenna
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
Power supply:	Input: 5V, 2A / 9V, 1.67A Output: 10W / 7.5W / 5W
Remark:	Model No.: OP-AWCF1GL-BK, OP-AWCF1GL-WH, OP-AWCF1GL-BL, OP-AWCF1GL-PK, OP-AWCF1GL-LT are identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name .

### 5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation
<i>Remark:</i> <i>Pre-scan input: 5V, output: 10W /7.5W / 5W; input: 9V, output: 10W /7.5W / 5W of the Power supply, Input: 5V, output: 10W was worse case mode. So the report only reflects the worse mode.</i>	

### 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
DEE VAN ENTERPRISECO., LTD	Car Adapter	DSA-18QFBFUSA	N/A	N/A
GS Japan	Lead-acid battery	55D26R-MFZ	8362810610	N/A

## 5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.38 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	±3.36 dB (k=2)

## 5.6 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.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **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>

## 5.7 Laboratory Location

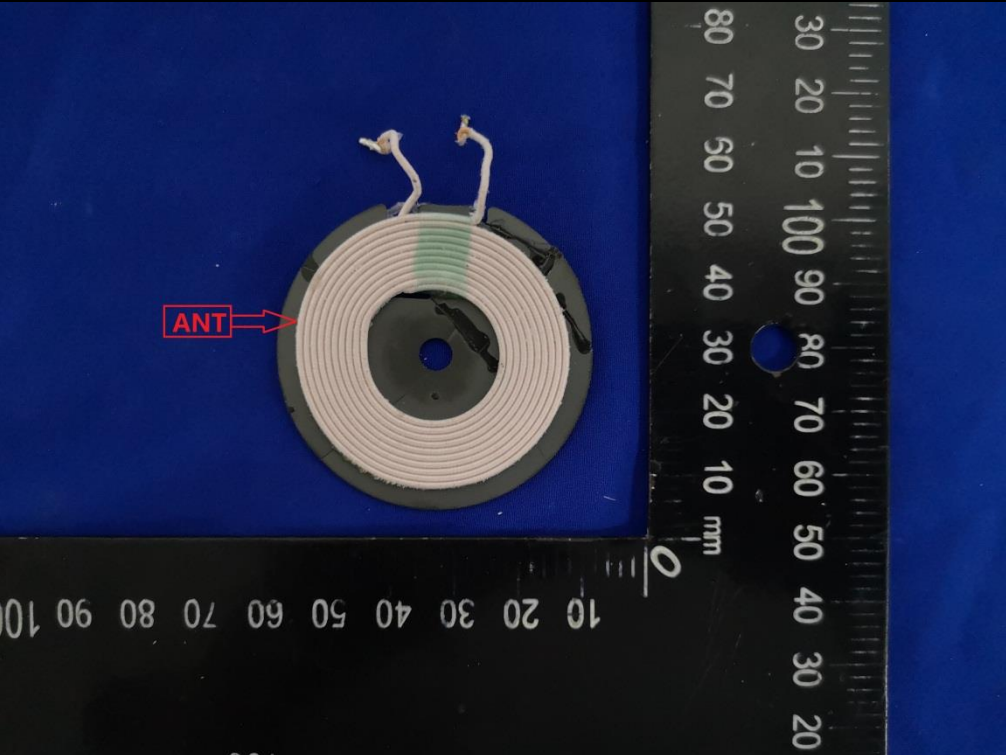
Shenzhen Zhongjian Nanfang Testing Co., Ltd.  
 Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
 Bao'an District, Shenzhen, Guangdong, China  
 Tel: +86-755-23118282, Fax: +86-755-23116366  
 Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

## 5.8 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	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-18-2019	03-17-2020
Loop Antenna	SCHWARZBECK	FMZB 1519 B	00044	03-18-2019	03-17-2020
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	03-18-2019	03-17-2020
Pre-amplifier	CD	PAP-1G18	11804	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-18-2019	03-17-2020
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-18-2019	03-17-2020
Simulated Station	Anritsu	MT8820C	6201026545	03-18-2019	03-17-2020
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-18-2019	03-17-2020
Cable	MICRO-COAX	MFR64639	K10742-5	03-18-2019	03-17-2020
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-18-2019	03-17-2020

## 6 Test results and Measurement Data

### 6.1 Antenna requirement

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



## 6.2 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
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	
	Above 1GHz	500		3	
Test Procedure:	<p>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.</p> <p>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.</p> <p>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.</p> <p>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 rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>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.</p>				
Test setup:	<p>9kHz-30MHz</p> <p>30MHz-1GHz</p>				

	<p>The diagram illustrates the test setup. An EUT (Equipment Under Test) is placed on a Turn Table at a height of 0.8m from the Ground Plane. The Turn Table is positioned 3m horizontally from the center of the Antenna Tower. The Antenna Tower has a Search Antenna at a height of 4m from the Ground Plane. An RF Test Receiver is connected to the Search Antenna. The distance from the center of the Antenna Tower to the Search Antenna is 1m.</p>
<p>Test Instruments:</p>	<p>Refer to section 5.9 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.3 for details</p>
<p>Test results:</p>	<p>Pass</p>
<p>Remark:</p>	<p>The emission levels of above 1 GHz are very lower than the limit and not show in test report.</p>

**Measurement Data:**

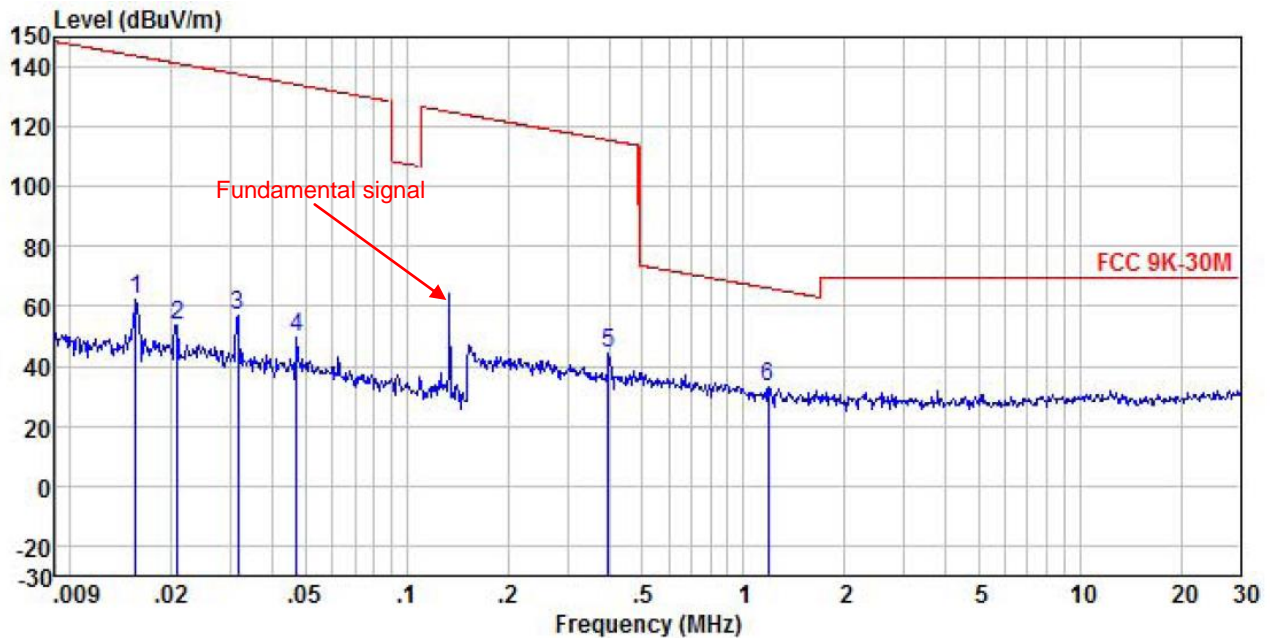
**a) Fundamental field strength**

Peak value				
Test Polarization	Frequency (kHz)	H-field@3m (dBμV)	Limit@3m (dBμV)	Result
Horizontal	134.00	64.08	125.06	Pass
Vertical	134.00	67.57	125.06	Pass
Average value				
Test Polarization	Frequency (kHz)	H-field@3m (dBμV)	Limit@3m (dBμV)	Result
Horizontal	134.00	54.29	105.06	Pass
Vertical	134.00	57.36	105.06	Pass

**b) Radiated spurious:**

**Below 1GHz:**

<b>Product Name:</b>	F1 Fast Wireless Auto Slide Car Charger	<b>Product Model:</b>	OP-AWCF1GL-BK
<b>Test By:</b>	Carey	<b>Test mode:</b>	Charing mode
<b>Test Frequency:</b>	9kHz~30MHz	<b>Polarization:</b>	Vertical
<b>Test Voltage:</b>	DC 12V	<b>Environment:</b>	Temp: 24°C Huni: 57%

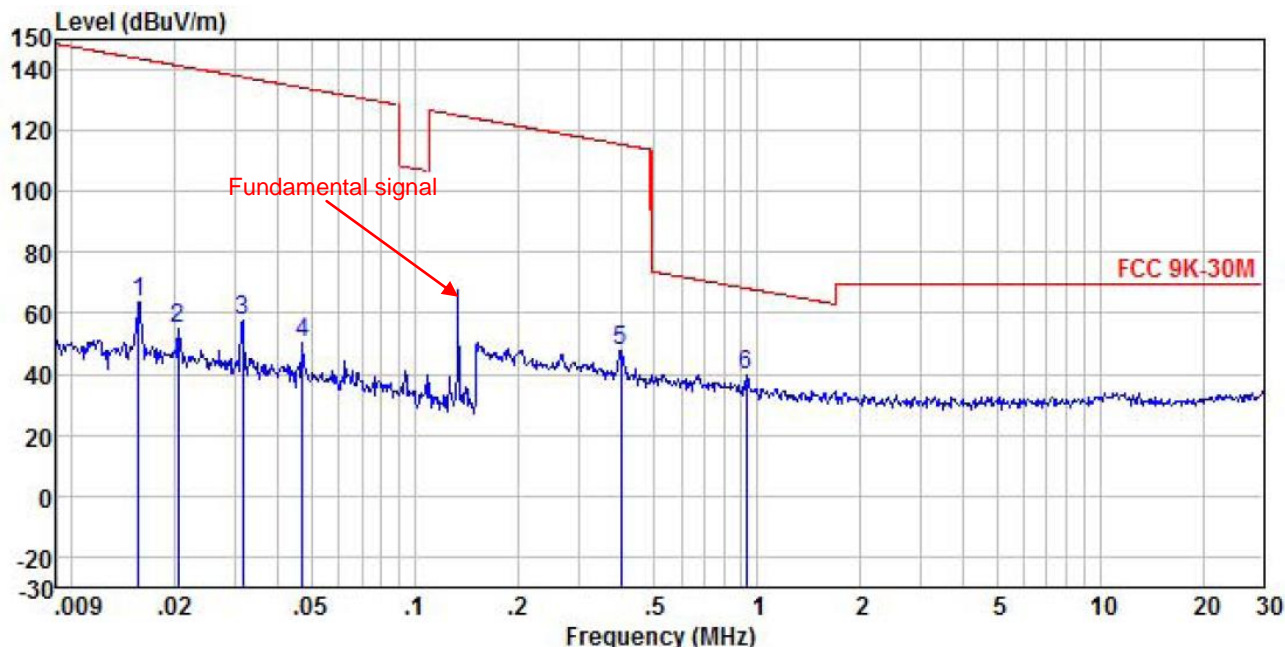


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	0.016	36.53	-25.86	0.05	0.00	62.22	143.71	-81.49	Peak
2	0.021	28.18	-25.90	0.07	0.00	53.85	141.24	-87.39	Peak
3	0.031	31.27	-25.95	0.12	0.00	56.94	137.65	-80.71	Peak
4	0.047	24.18	-25.99	0.17	0.00	49.86	134.13	-84.27	Peak
5	0.398	18.55	-26.28	0.37	0.00	44.14	115.62	-71.48	Peak
6	1.189	7.46	-26.35	0.62	0.00	33.23	66.13	-32.90	QP

**Remark:**

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

<b>Product Name:</b>	F1 Fast Wireless Auto Slide Car Charger	<b>Product Model:</b>	OP-AWCF1GL-BK
<b>Test By:</b>	Carey	<b>Test mode:</b>	Charing mode
<b>Test Frequency:</b>	9kHz~30MHz	<b>Polarization:</b>	Horizontal
<b>Test Voltage:</b>	DC 12V	<b>Environment:</b>	Temp: 24°C Huni: 57%

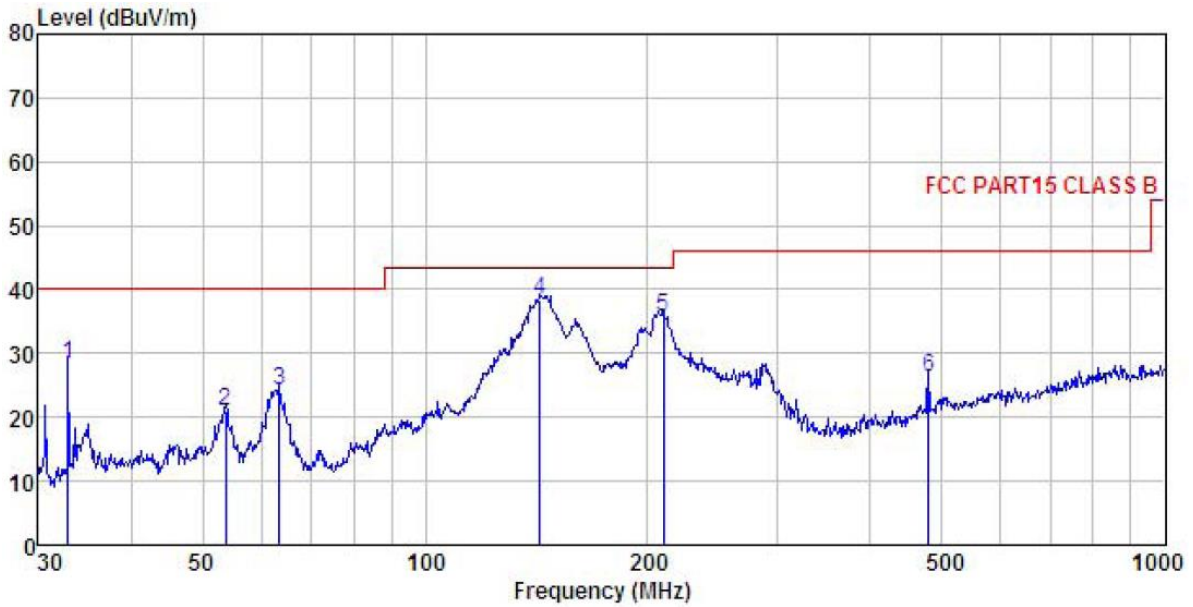


	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Line	Limit	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	0.016	38.06	-25.86	0.05	0.00	63.75	143.71	-79.96 Peak
2	0.020	29.61	-25.90	0.06	0.00	55.27	141.38	-86.11 Peak
3	0.031	31.90	-25.95	0.12	0.00	57.57	137.65	-80.08 Peak
4	0.047	24.50	-25.99	0.17	0.00	50.18	134.13	-83.95 Peak
5	0.401	22.40	-26.28	0.37	0.00	47.99	115.55	-67.56 Peak
6	0.932	14.25	-26.30	0.60	0.00	40.05	68.23	-28.18 QP

**Remark:**

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

<b>Product Name:</b>	F1 Fast Wireless Auto Slide Car Charger	<b>Product Model:</b>	OP-AWCF1GL-BK
<b>Test By:</b>	Carey	<b>Test mode:</b>	Charing mode
<b>Test Frequency:</b>	30 MHz ~ 1 GHz	<b>Polarization:</b>	Vertical
<b>Test Voltage:</b>	DC 12V	<b>Environment:</b>	Temp: 24°C      Huni: 57%

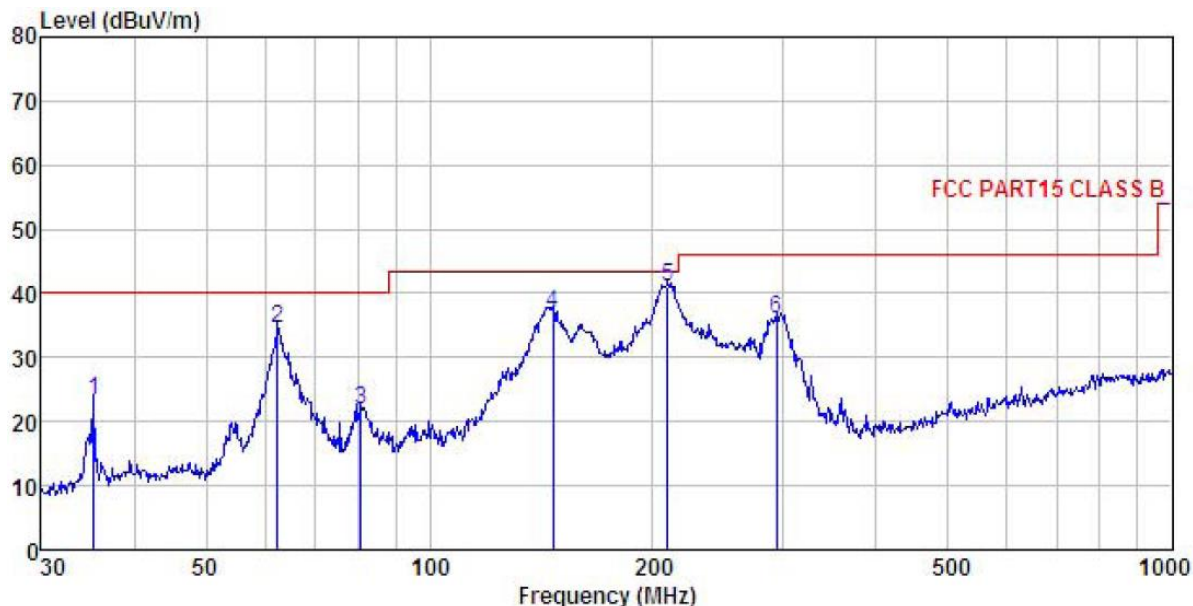


	Read Freq	Antenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	32.864	46.57	10.96	0.91	29.96	28.48	40.00	-11.52	QP
2	53.693	37.85	11.71	1.32	29.81	21.07	40.00	-18.93	QP
3	63.536	42.42	10.07	1.38	29.76	24.11	40.00	-15.89	QP
4	142.824	55.88	9.31	2.43	29.26	38.36	43.50	-5.14	QP
5	210.048	50.69	11.04	2.86	28.77	35.82	43.50	-7.68	QP
6	478.846	34.17	17.52	3.44	28.92	26.21	46.00	-19.79	QP

**Remark:**

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

<b>Product Name:</b>	F1 Fast Wireless Auto Slide Car Charger	<b>Product Model:</b>	OP-AWCF1GL-BK
<b>Test By:</b>	Carey	<b>Test mode:</b>	Charing mode
<b>Test Frequency:</b>	30 MHz ~ 1 GHz	<b>Polarization:</b>	Horizontal
<b>Test Voltage:</b>	DC 12V	<b>Environment:</b>	Temp: 24°C      Huni: 57%



	Read Freq	Antenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	35.251	40.82	11.24	1.07	29.95	23.18	40.00	-16.82	QP
2	62.431	52.43	10.45	1.38	29.76	34.50	40.00	-5.50	QP
3	80.927	42.07	7.76	1.69	29.63	21.89	40.00	-18.11	QP
4	146.888	54.67	9.09	2.47	29.24	36.99	43.50	-6.51	QP
5	209.313	55.86	11.04	2.86	28.77	40.99	43.50	-2.51	QP
6	293.084	47.97	13.50	2.92	28.46	35.93	46.00	-10.07	QP

**Remark:**

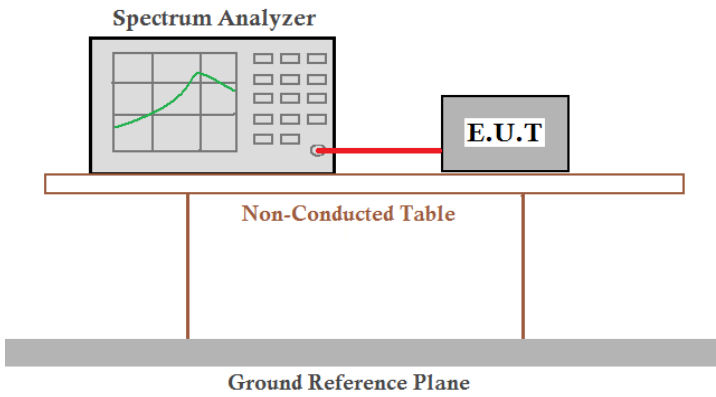
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

## 6.3 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.207		
Test Method:	ANSI C63.10:2013		
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
	0.5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:	<p><i>Remark</i>  <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.). The 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:	The power supply of the EUT is by the car charger, so not need to be tested.		



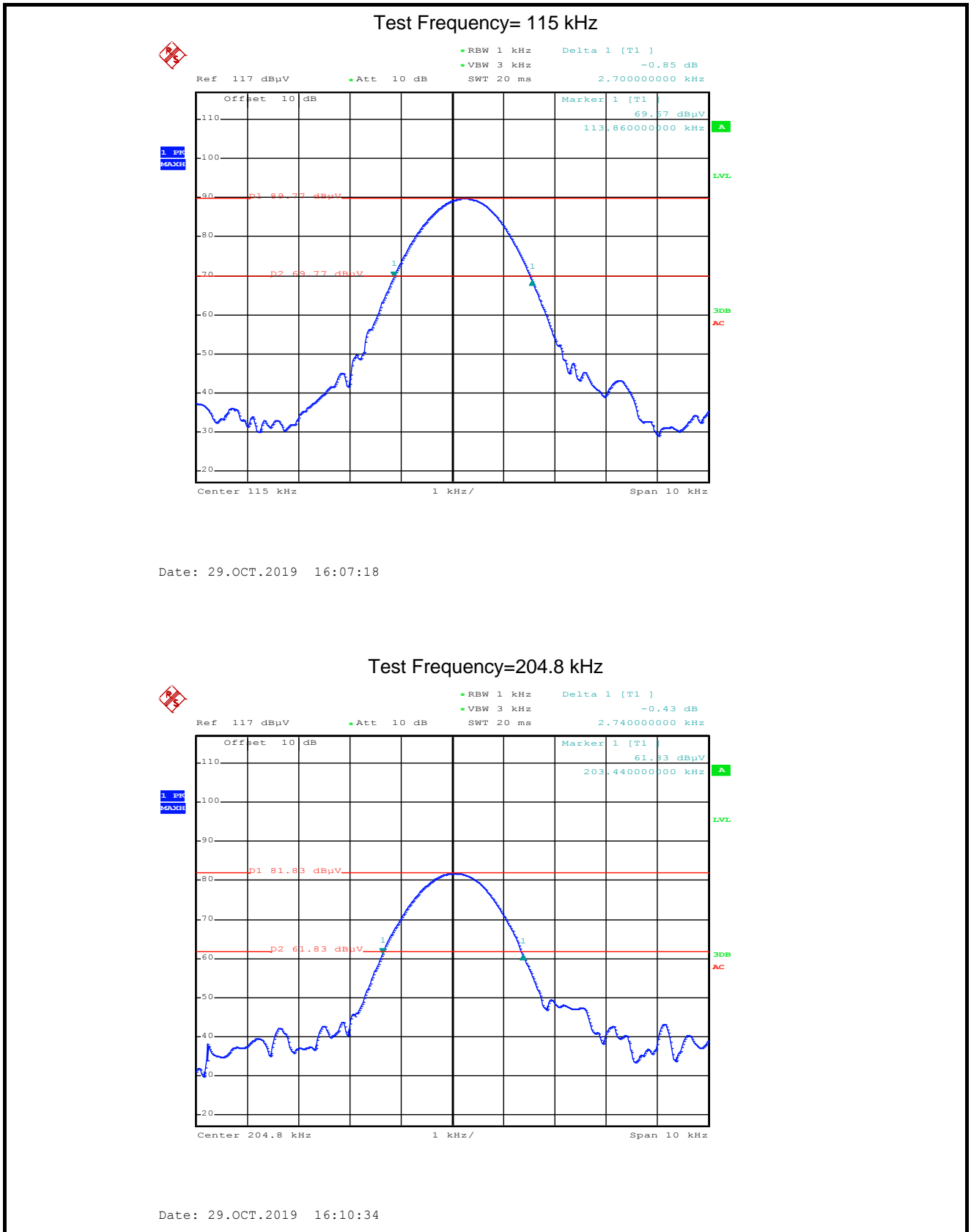
## 6.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 (c)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1 kHz, VBW=3 kHz, detector: Peak
Limit:	The fundamentalemission be kept within atleast the central 80% of the permittedband
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:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two legs. Below the table is a Ground Reference Plane.</p>
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)	Limits
2.70	N/A
2.74	
<i>Remark: For report purpose only.</i>	

Test plot as follows:

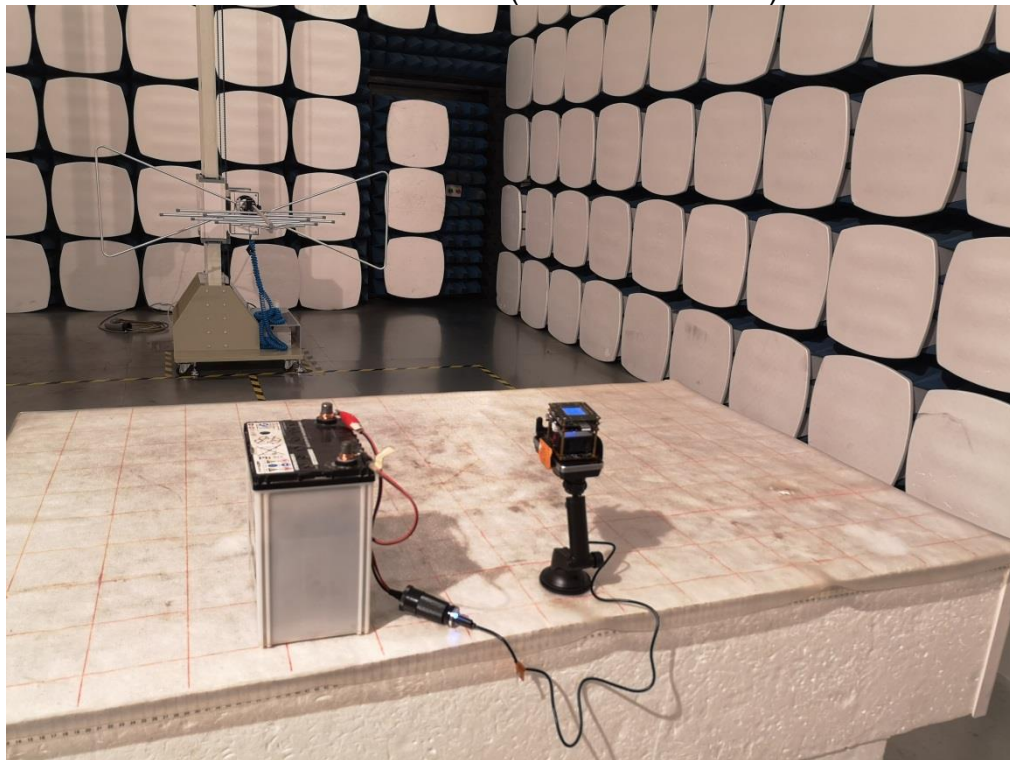


## 7 Test Setup Photos

Radiated Emission(9kHz-30MHz)



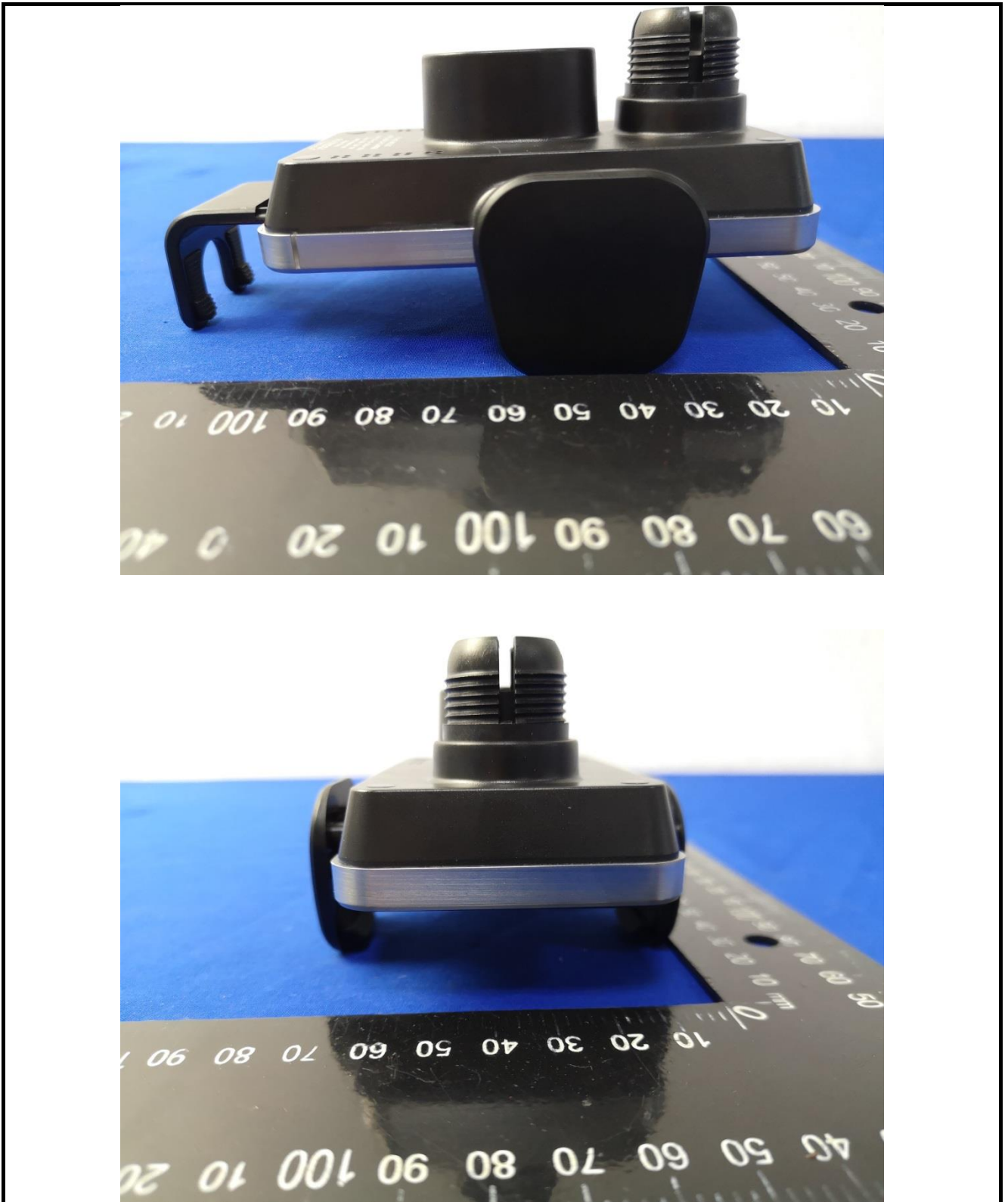
Radiated Emission(30MHz-1000MHz)

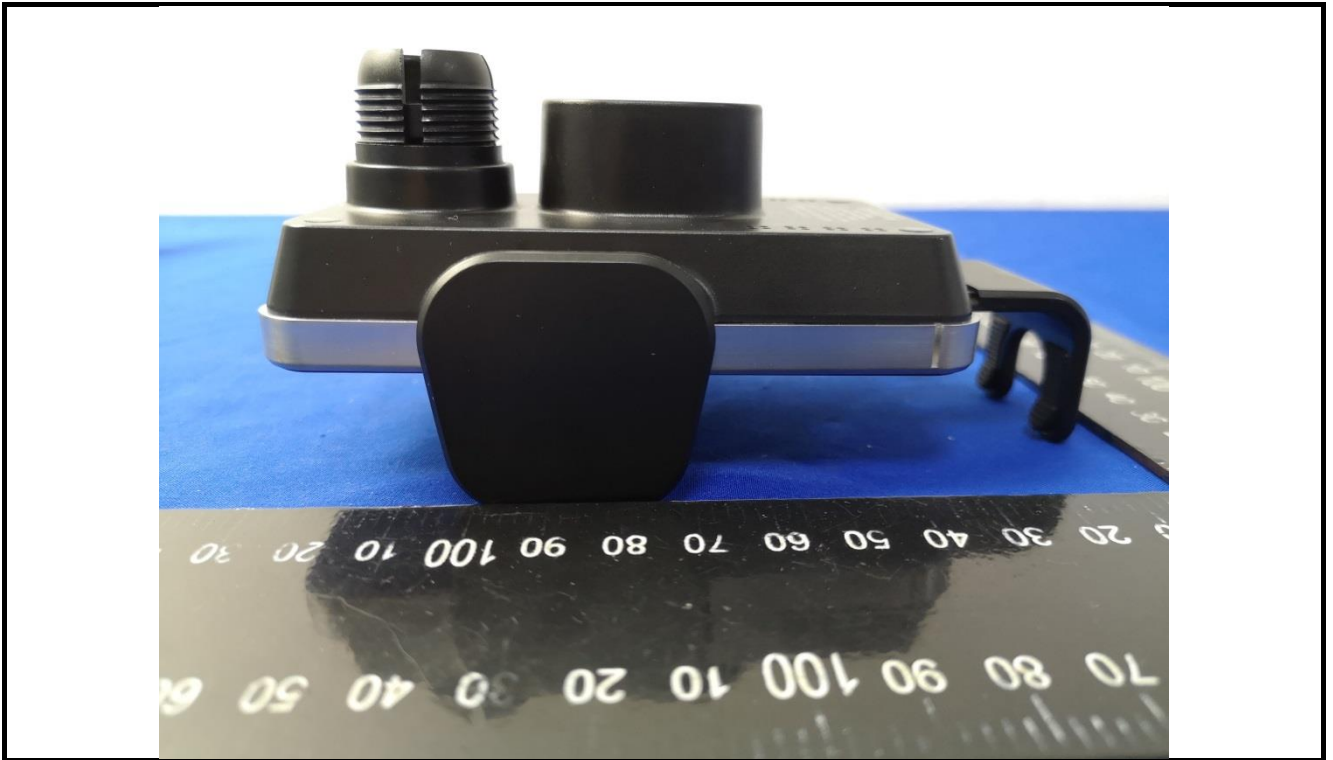


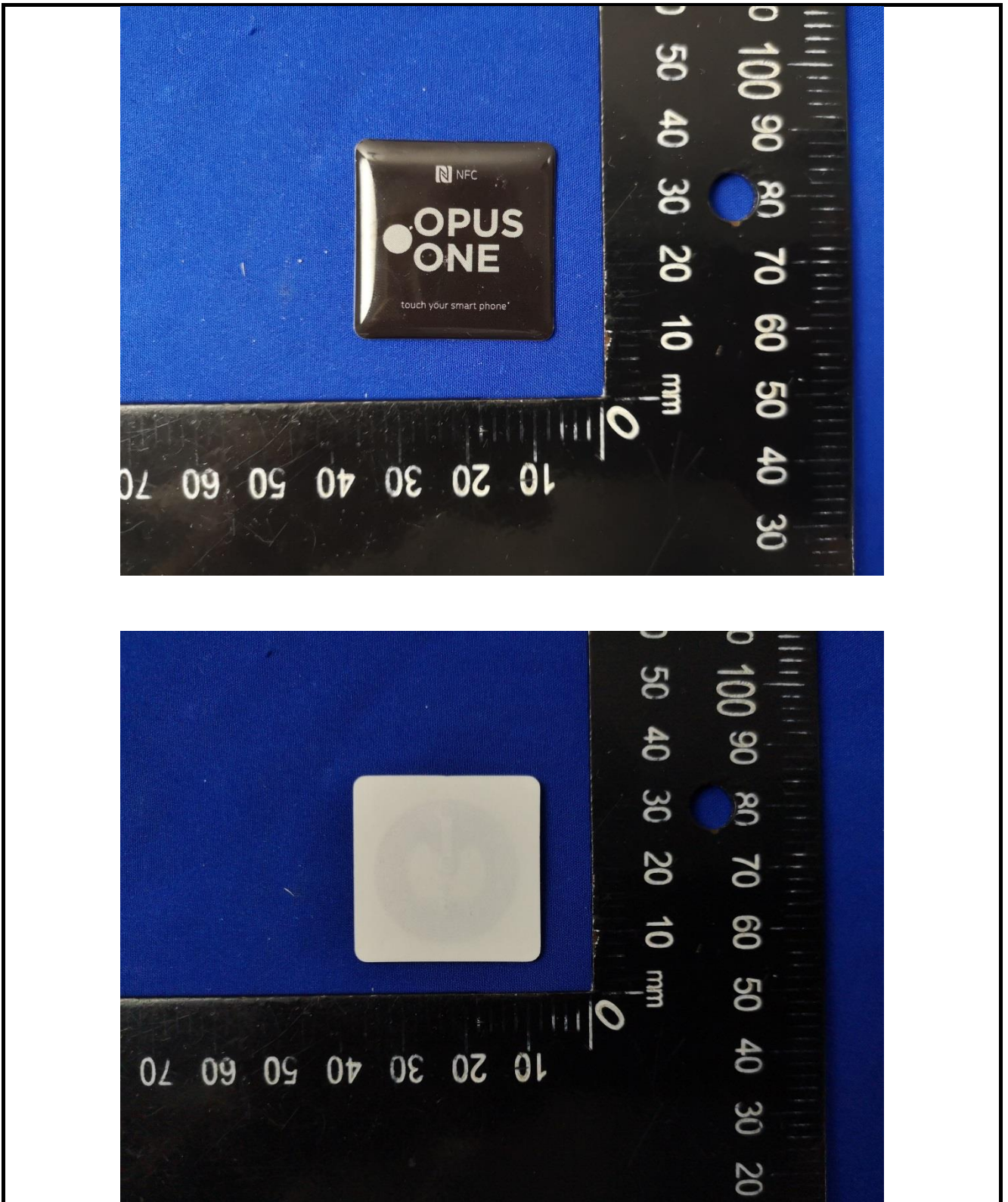
## 8 EUT Constructional Photos



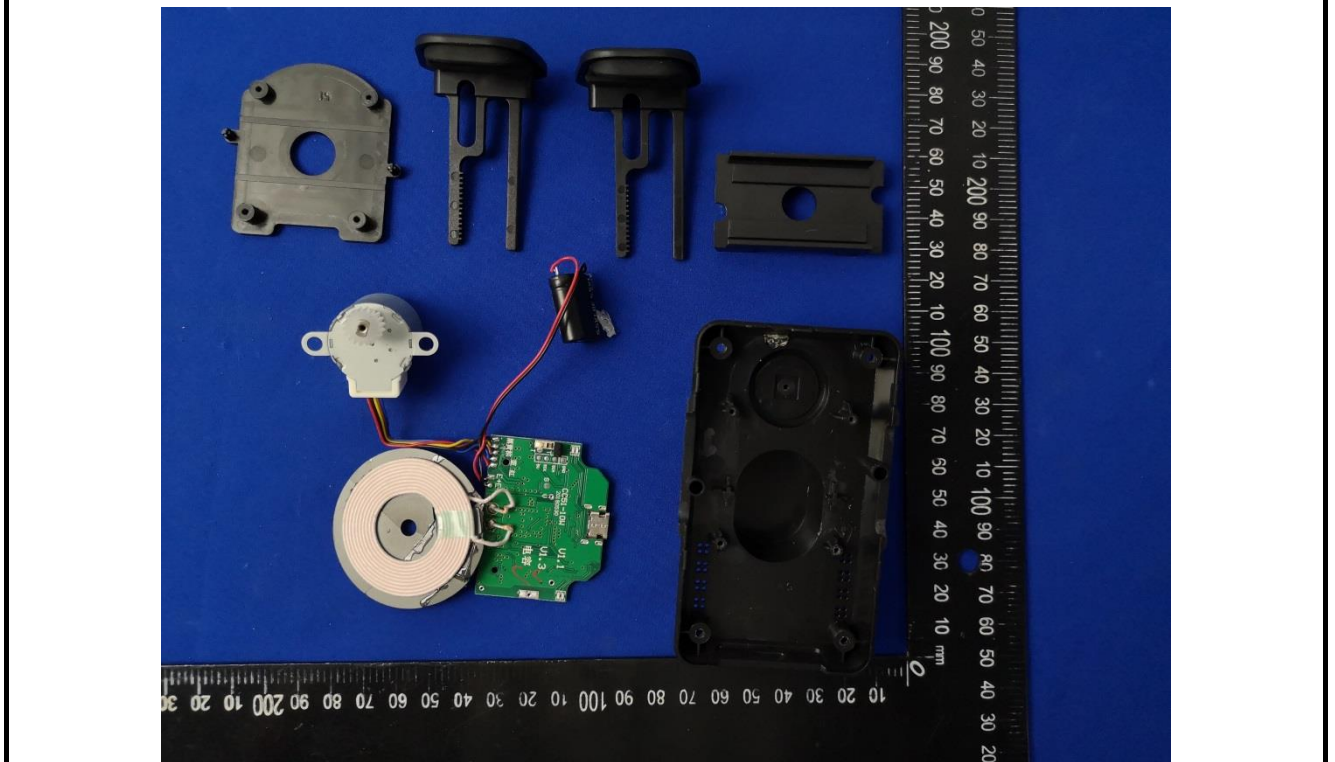
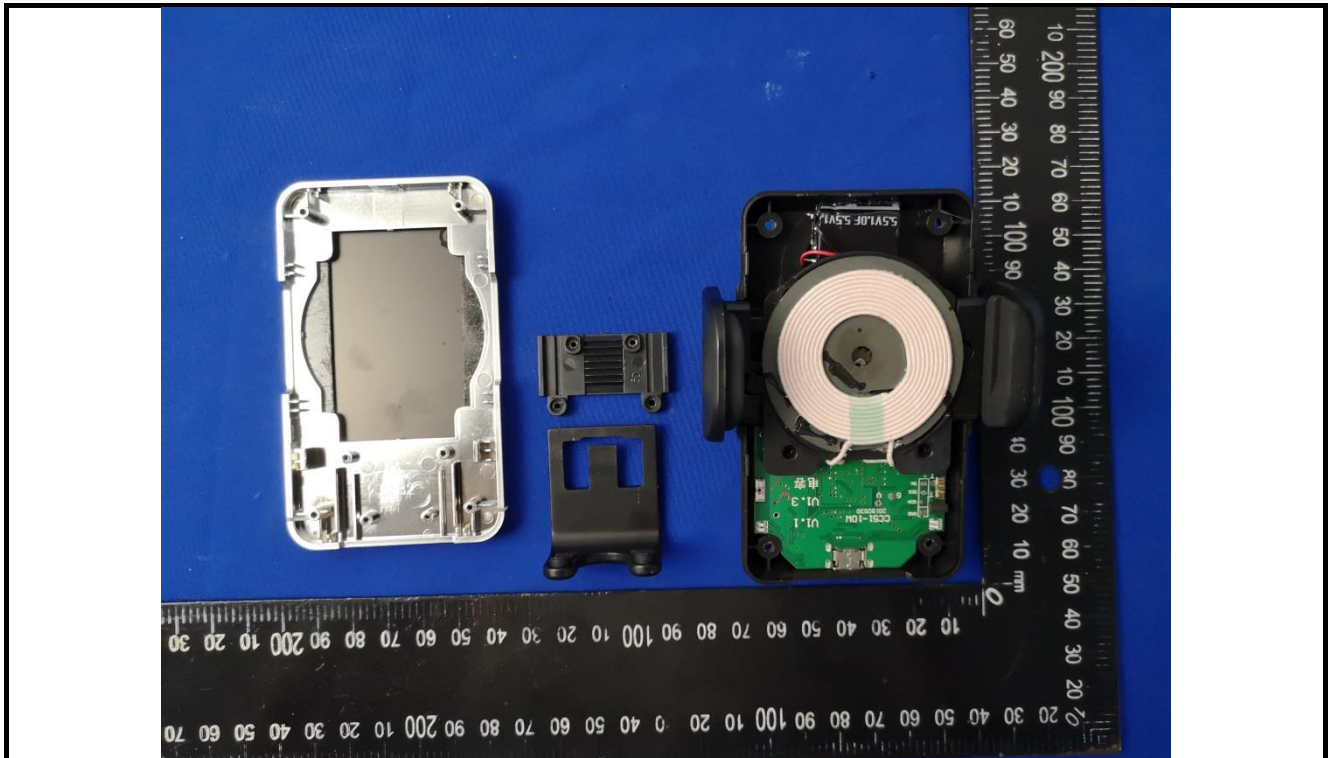


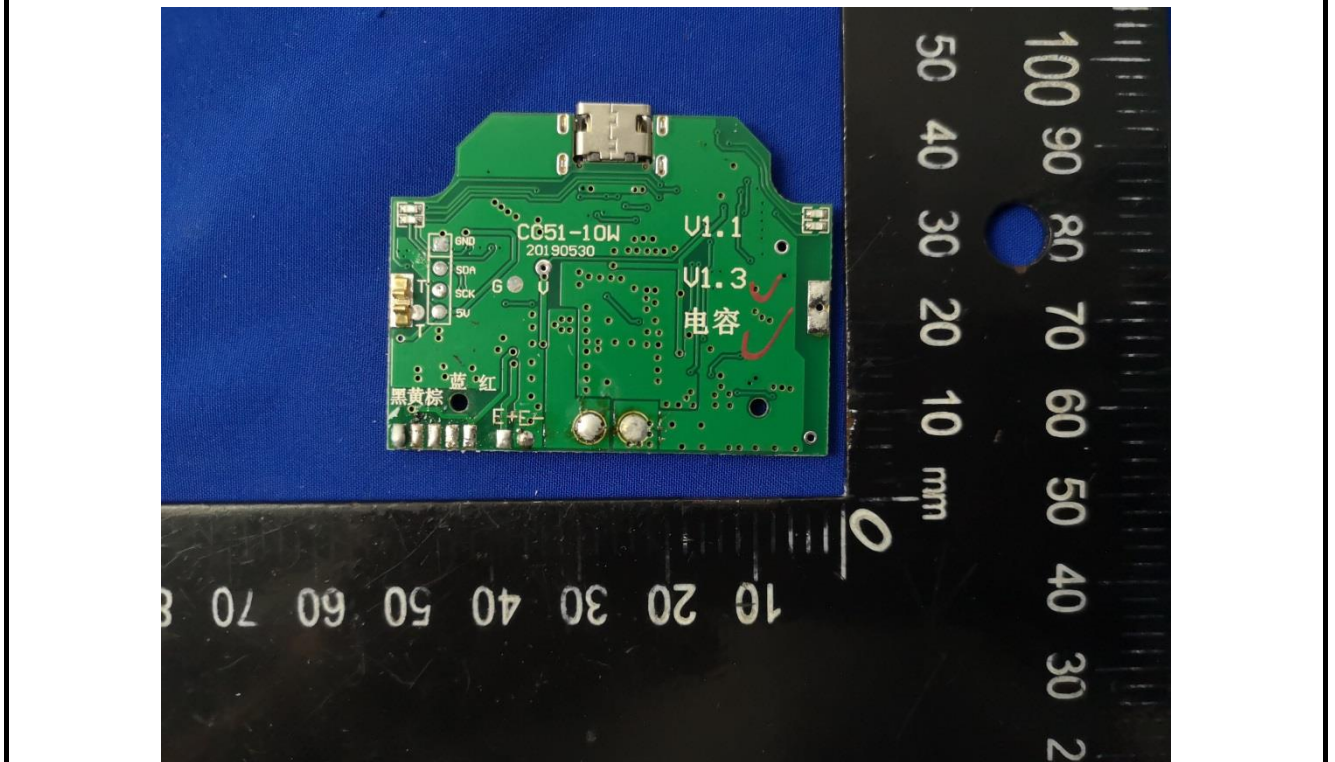
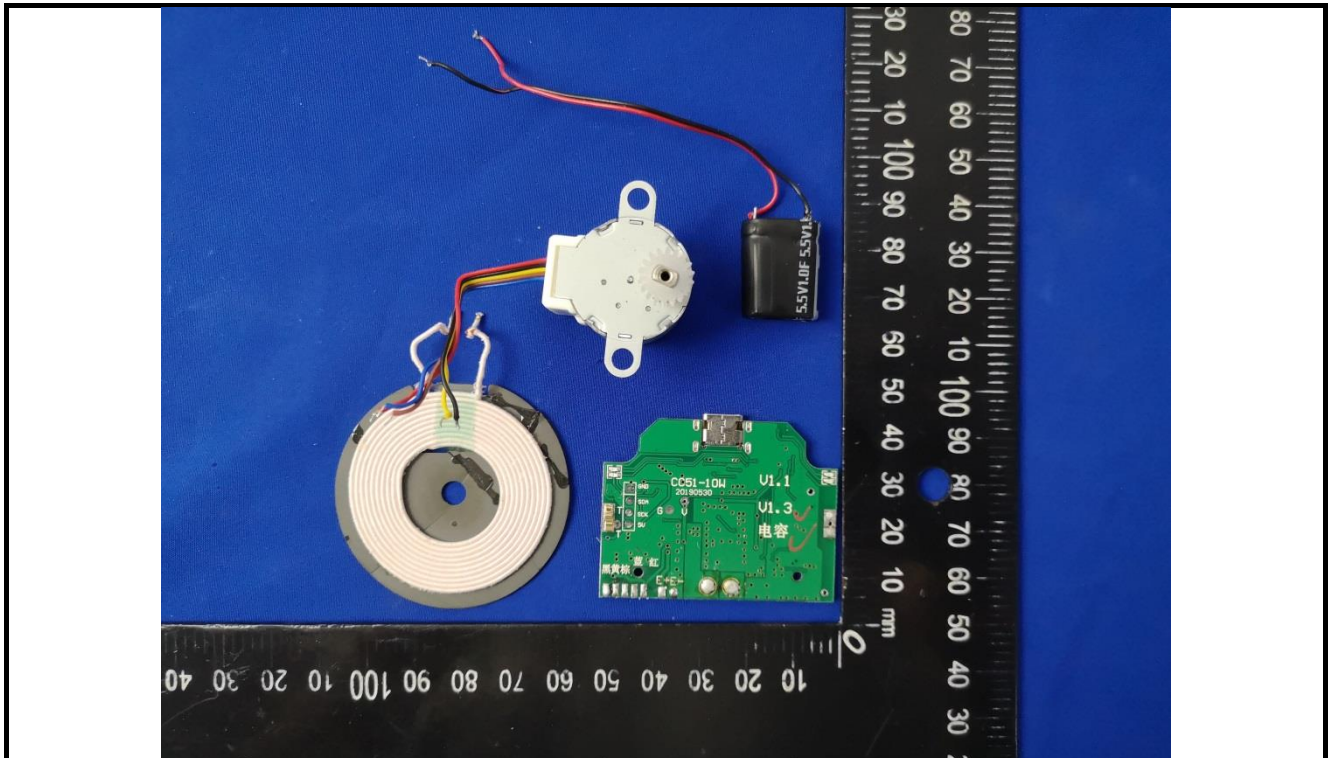


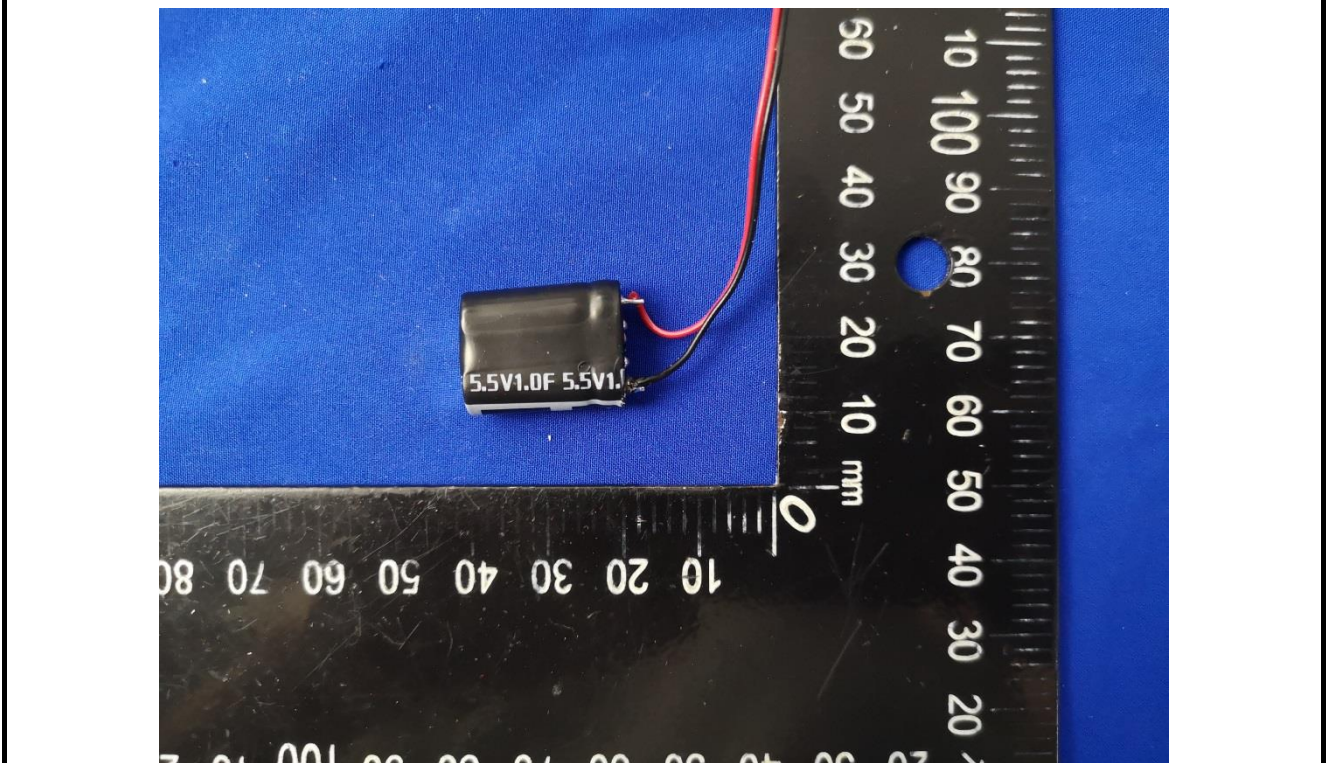
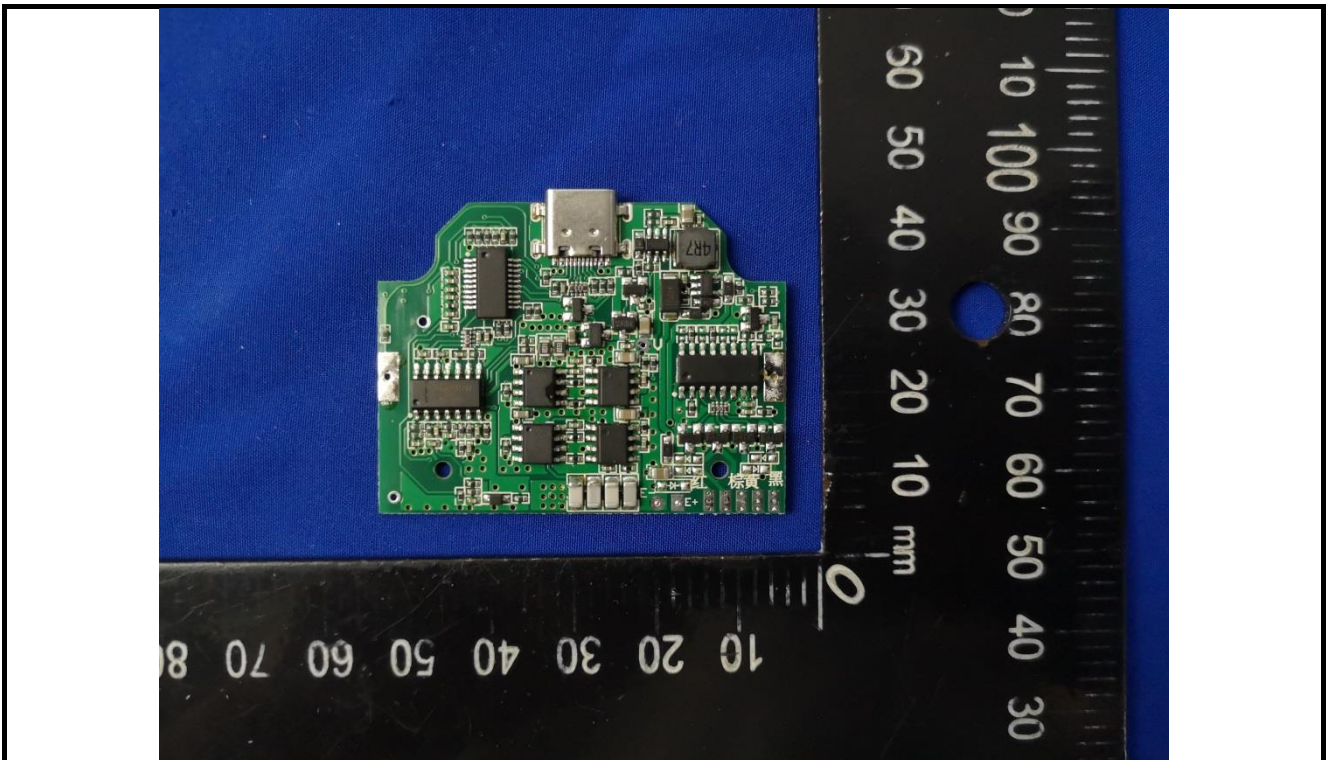


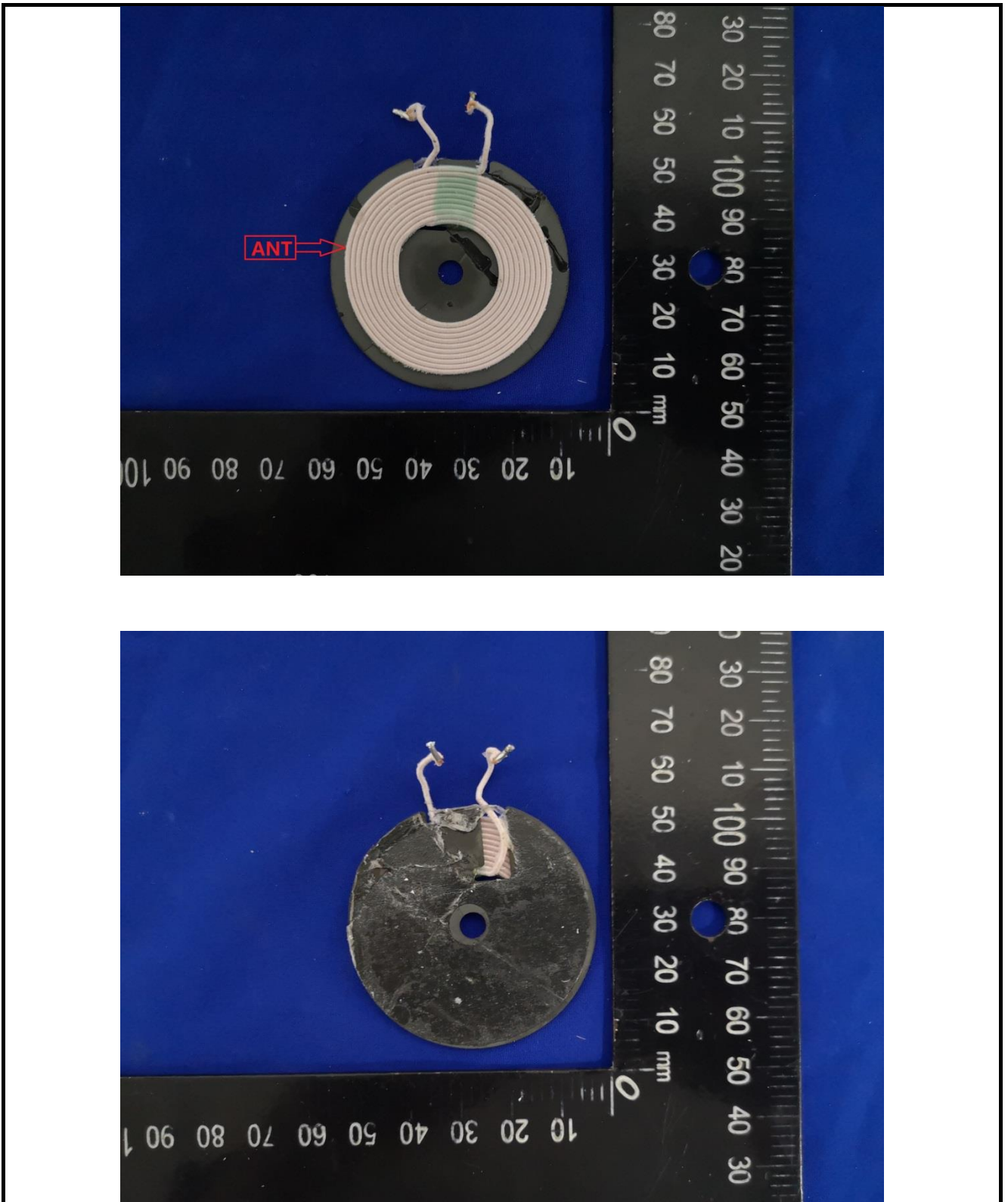












-----End of report-----