

FCC PART 15C TEST REPORT FOR CERTIFICATION  
On Behalf of

mophie LLC

mophie 3-in-1 wireless charging pad

Model Number: WRLS-MULTI-WATCH

FCC ID: 2ACWB-MULTIA

Prepared for:	mophie LLC
	6244 Technology Ave. Kalamazoo, Michigan 49009 United States
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
	Tel: 86-769-83081888-808

Report Number:	ESTE-R1909119
Date of Test:	Jul. 09~Sep. 20, 2019
Date of Report:	Sep. 24, 2019

## TABLE OF CONTENTS

Description	Page
TEST REPORT VERIFICATION.....	3
1. GENERAL INFORMATION.....	4
1.1. Description of Device (EUT) .....	4
2. SUMMARY OF TEST .....	5
2.1. Summary of test result.....	5
2.2. Test Facilities .....	6
2.3. Measurement uncertainty .....	7
2.4. Assistant equipment used for test.....	7
2.5. Block Diagram .....	7
2.6. Test mode .....	8
2.7. Test Equipment.....	9
3 POWER LINE CONDUCTED EMISSION TEST .....	11
3.1 Limit .....	11
3.2 Test Procedure .....	11
3.3. Test Result.....	11
3.4. Test data .....	12
4 RADIATED EMISSION TEST .....	16
4.1 Limit.....	16
4.2. Block Diagram of Test setup.....	17
4.3. Test Procedure .....	18
4.4. Test Result.....	18
4.5. Test Data .....	19
5 TEST SETUP PHOTO .....	25
6 PHOTO EUT.....	27

**EST Technology Co., Ltd.**

<b>Applicant:</b>	mophie LLC		
<b>Address:</b>	6244 Technology Ave. Kalamazoo, Michigan 49009 United States		
<b>Manufacturer:</b>	mophie LLC		
<b>Address:</b>	6244 Technology Ave. Kalamazoo, Michigan 49009 United States		
<b>E.U.T:</b>	mophie 3-in-1 wireless charging pad		
<b>Model Number:</b>	WRLS-MULTI-WATCH		
<b>Power Supply:</b>	DC 5V From Adapter Input AC 100-240V, 50/60Hz		
<b>Test Voltage:</b>	DC 5V From Adapter Input AC 120V/60Hz DC 5V From Adapter Input AC 240V/60Hz		
<b>Trade Name:</b>	 mophie	<b>Serial No.:</b>	-----
<b>Date of Receipt:</b>	Jul. 09, 2019	<b>Date of Test:</b>	Jul. 09~Sep. 20, 2019
<b>Test Specification:</b>	FCC Rules and Regulations Part 15 Subpart C:2018 ANSI C63.10:2013		
<b>Test Result:</b>	<p>The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements.</p> <p>This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.</p>		
<b>Prepared by:</b>	<b>Reviewed by:</b>	<b>Approved by:</b>	
 <hr/> Ring / Assistant	 <hr/> Tony / Engineer	 <hr/> Iceman Hu / Manager	
<b>Other Aspects:</b> None.			
Abbreviations: OK/P=passed    fail/F=failed    n.a/N=not applicable    E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.			

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

Product Name	:	mophie 3-in-1 wireless charging pad
FCC ID	:	2ACWB-MULTIA
Model Number	:	WRLS-MULTI-WATCH
Operation frequency	:	110.5-326.5kHz
Antenna	:	Coil, 0 dBi.
Modulation	:	MSK
Max output power	:	18W
Sample Type	:	Prototype production

## 2. SUMMARY OF TEST

### 2.1. Summary of test result

Description of Test Item	Standard	Results
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10:2013	PASS
Radiated Emission	FCC Part 15: 15.209 ANSI C63.10:2013	PASS



## 2.2. Test Facilities

EMC Lab	:	<p>Certificated by CNAS, CHINA Registration No.: L5288 Date of registration: November 13, 2017</p> <p>Certificated by A2LA, USA Registration No.: 4366.01 Date of registration: November 07, 2017</p> <p>Certificated by FCC, USA Designation Number: CN1215 Registration No.: 722932 Date of registration: November 21, 2017</p> <p>Certificated by Industry Canada Registration No.: 9405A Date of registration: December 03, 2015</p> <p>Certificated by VCCI, Japan Registration No.: R-13663; C-14103 Date of registration: July 25, 2017 This Certificate is valid until: July 24, 2020</p> <p>Certificated by TUV Rheinland, Germany Registration No.: UA 50195514 0001 Date of registration: February 07, 2015</p> <p>Certificated by TUV/PS, Shenzhen Registration No.: SCN1017 Date of registration: January 27, 2011</p> <p>Certificated by Intertek ETL SEMKO Registration No.: 2011-RTL-L2-64 Date of registration: April 28, 2011</p> <p>Certificated by Nemko, Hong Kong Registration No.: 175193 Date of registration: May 4, 2011</p>
Name of Firm	:	EST Technology Co., Ltd.
Site Location	:	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

## 2.3. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	$\pm 3.48\text{dB}$
Uncertainty for spurious emissions test (30MHz-1GHz)	$\pm 4.60\text{ dB(Polarize: H)}$
	$\pm 4.68\text{ dB(Polarize: V)}$
Uncertainty for spurious emissions test (1GHz to 18GHz)	$\pm 4.96\text{dB}$
Uncertainty for radio frequency	$7 \times 10^{-8}$
Uncertainty for conducted RF Power	$0.20\text{dB}$
Uncertainty for Power density test	$0.26\text{dB}$

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

## 2.4. Assistant equipment used for test

### 2.4.1. Adapter

M/N	:	ADS-25FSG-19 19025EPCU
Input	:	AC 100-240V~50/60Hz, 0.7A Max
Output	:	DC 19V, 1.3A
Manufacturer	:	SHENZHEN HONOR ELECTRONIC CO.,LTD

### 2.4.2. Load 1

M/N	:	ESTRFWXCZFZ101
Input	:	5W
Output	:	5W

### 2.4.3. Load 2 (mobile phone)

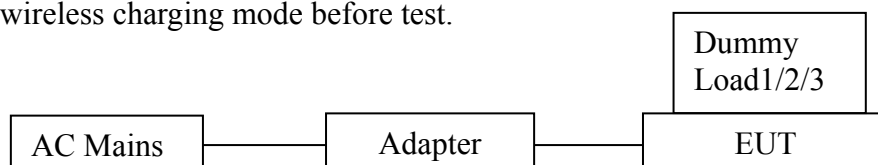
M/N	:	SM-G9300
Manufacturer	:	SAMSUNG

### 2.4.4. Load 3 (Watch)

M/N	:	Series3
Manufacturer	:	Apple

## 2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 meter high above ground. EUT was beset into wireless charging mode before test.



(EUT: mophie 3-in-1 wireless charging pad)

## 2.6. Test mode

Mode	
TX + Wireless Charging	Full Load
	Half Load
	Empty Load
Remark: The “Full Load” is worst case, will be recorded in the report.	



## 2.7. Test Equipment

### 2.7.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	CEPREI	June 14,19	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	101260	CEPREI	June 14,19	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	CEPREI	June 14,19	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

### 2.7.2. For radiated emission test(9 kHz-30MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	101780	CEPREI	June 14,19	1 Year
Active Loop Antenna	SCHWARZB ECK	FMZB 1519B	1519B-088	CEPREI	June 14,19	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

### 2.7.3. For radiated emissions test (30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	101780	CEPREI	June 14,19	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	CEPREI	June 14,19	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

### 2.7.4. For radiated emission test(above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Horn Antenna	SCHWARZB ECK	BBHA 9120 D	BBHA912 0D1002	CEPREI	June 14,19	1 Year
Horn Antenna	SCHWARZB ECK	BBHA9170	BBHA917 0242	CEPREI	June 14,19	1 Year
Signal Amplifier	SCHWARZB ECK	BBV9718	9718-212	CEPREI	June 14,19	1 Year
Spectrum Analyzer	Rohde &Schwarz	FSV	103173	CEPREI	June 14,19	1 Year
PSA Series Spectrum Analyzer	Agilent	E4447A	MY50180 031	CEPREI	June 14,19	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

## 2.7.5. For connect EUT antenna terminal test

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Spectrum Analyzer	Rohde & Schwarz	FSV	103173	CEPREI	June 14,19	1 Year
Spectrum Analyzer	Agilent	E4408B	MY44211 139	CEPREI	June 14,19	1 Year

### 3 POWER LINE CONDUCTED EMISSION TEST

#### 3.1 Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB( $\mu$ V)	Average Level dB( $\mu$ V)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

#### 3.2 Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

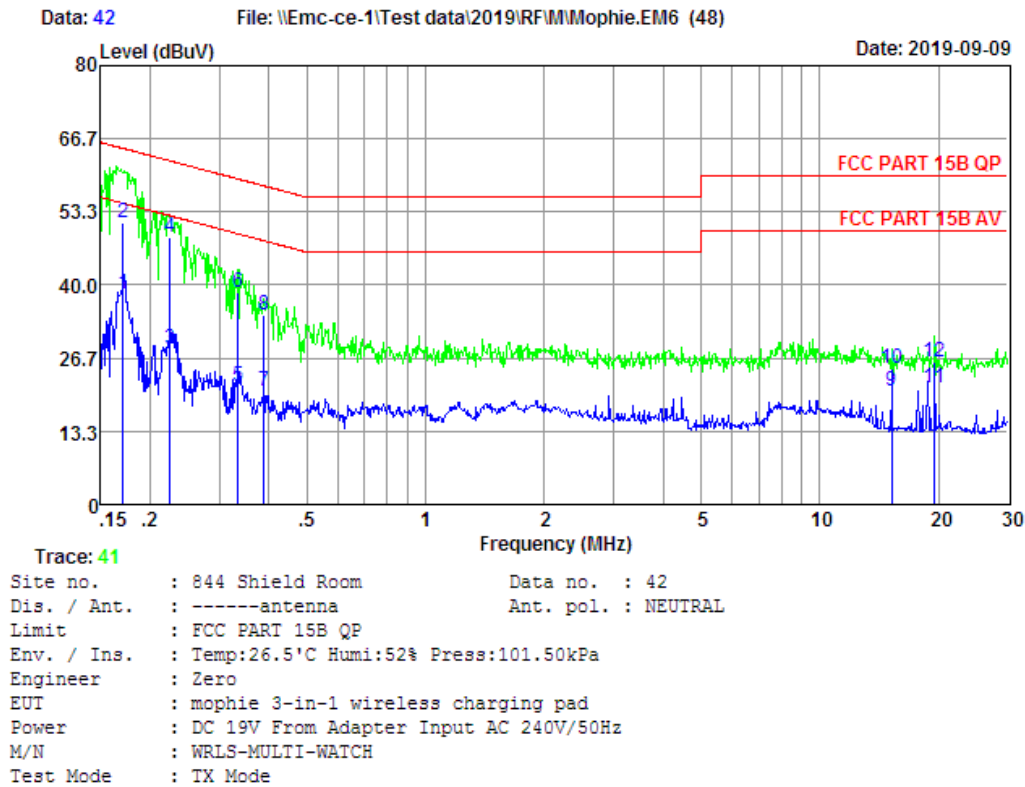
#### 3.3. Test Result

**PASS.** (All emissions not reported below are too low against the prescribed limits.)

## 3.4. Test data

EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878



	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17	9.62	9.69	19.14	38.45	54.94	16.49	Average
2	0.17	9.62	9.69	32.19	51.50	64.94	13.44	QP
3	0.22	9.70	9.84	8.88	28.42	52.66	24.24	Average
4	0.22	9.70	9.84	29.28	48.82	62.66	13.84	QP
5	0.33	9.74	9.92	1.75	21.41	49.35	27.94	Average
6	0.33	9.74	9.92	19.01	38.67	59.35	20.68	QP
7	0.39	9.76	9.92	0.96	20.64	48.08	27.44	Average
8	0.39	9.76	9.92	14.92	34.60	58.08	23.48	QP
9	15.23	9.85	10.12	0.71	20.68	50.00	29.32	Average
10	15.23	9.85	10.12	4.71	24.68	60.00	35.32	QP
11	19.53	9.62	10.15	1.46	21.23	50.00	28.77	Average
12	19.53	9.62	10.15	6.22	25.99	60.00	34.01	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.  
2. Margin= Limit - Emission Level.  
3. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.

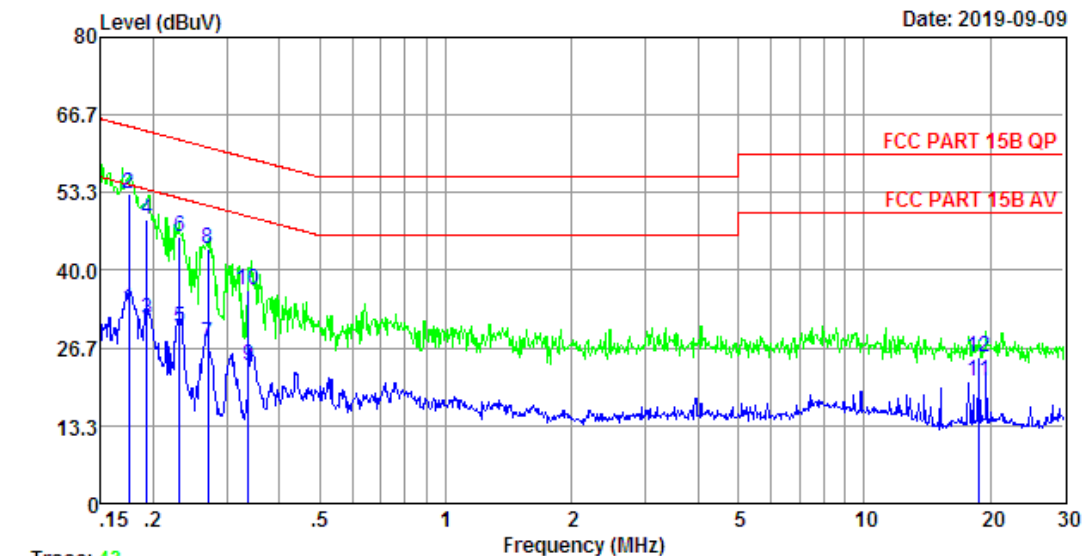
## EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878

Data: 44

File: \\Emc-ce-1\Test data\2019\RF\MM\ophie.EM6 (48)

Date: 2019-09-09



Trace: 43  
 Site no. : 844 Shield Room Data no. : 44  
 Dis. / Ant. : -----antenna Ant. pol. : LINE  
 Limit : FCC PART 15B QP  
 Env. / Ins. : Temp:26.5'C Humi:52% Press:101.50kPa  
 Engineer : Zero  
 EUT : mophie 3-in-1 wireless charging pad  
 Power : DC 19V From Adapter Input AC 240V/50Hz  
 M/N : WRLS-MULTI-WATCH  
 Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17	9.80	9.77	13.90	33.47	54.72	21.25	Average
2	0.17	9.80	9.77	33.56	53.13	64.72	11.59	QP
3	0.19	9.80	9.77	12.02	31.59	53.89	22.30	Average
4	0.19	9.80	9.77	29.21	48.78	63.89	15.11	QP
5	0.23	9.75	9.84	10.42	30.01	52.39	22.38	Average
6	0.23	9.75	9.84	26.24	45.83	62.39	16.56	QP
7	0.27	9.65	9.92	7.93	27.50	51.12	23.62	Average
8	0.27	9.65	9.92	24.02	43.59	61.12	17.53	QP
9	0.34	9.68	9.92	3.91	23.51	49.27	25.76	Average
10	0.34	9.68	9.92	16.92	36.52	59.27	22.75	QP
11	18.72	9.87	10.15	0.87	20.89	50.00	29.11	Average
12	18.72	9.87	10.15	5.04	25.06	60.00	34.94	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. If the average limit is met when using a quasi-peak detector,  
 the EUT shall be deemed to meet both limits and measurement  
 with average detector is unnecessary.

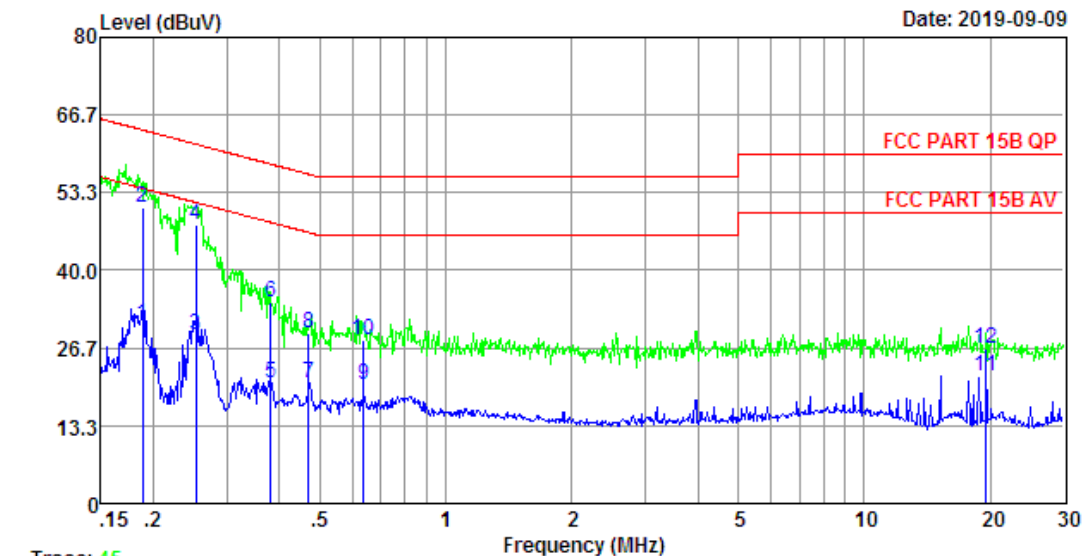
## EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878

Data: 46

File: \\Emc-ce-1\Test data\2019\RF\MM\ophie.EM6 (48)

Date: 2019-09-09



Trace: 45

Site no. : 844 Shield Room Data no. : 46  
Dis. / Ant. : -----antenna Ant. pol. : LINE  
Limit : FCC PART 15B QP  
Env. / Ins. : Temp:26.5'C Humi:52% Press:101.50kPa  
Engineer : Zero  
EUT : mophie 3-in-1 wireless charging pad  
Power : DC 19V From Adapter Input AC 120V/60Hz  
M/N : WRLS-MULTI-WATCH  
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	9.80	9.77	11.21	30.78	54.11	23.33	Average
2	0.19	9.80	9.77	31.23	50.80	64.11	13.31	QP
3	0.25	9.70	9.92	9.37	28.99	51.64	22.65	Average
4	0.25	9.70	9.92	28.31	47.93	61.64	13.71	QP
5	0.38	9.76	9.92	0.99	20.67	48.25	27.58	Average
6	0.38	9.76	9.92	14.95	34.63	58.25	23.62	QP
7	0.47	9.91	9.92	0.77	20.60	46.49	25.89	Average
8	0.47	9.91	9.92	9.41	29.24	56.49	27.25	QP
9	0.64	9.84	9.92	0.55	20.31	46.00	25.69	Average
10	0.64	9.84	9.92	8.35	28.11	56.00	27.89	QP
11	19.53	9.87	10.15	1.88	21.90	50.00	28.10	Average
12	19.53	9.87	10.15	6.46	26.48	60.00	33.52	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.  
2. Margin= Limit - Emission Level.  
3. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.



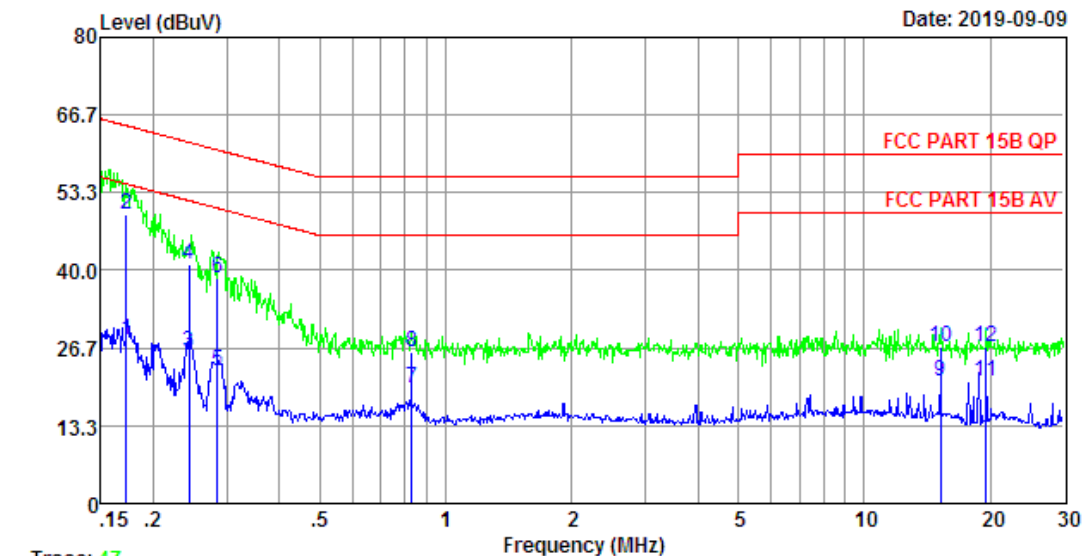
## EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878

Data: 48

File: \\Emc-ce-1\Test data\2019\RF\MM\ophie.EM6 (48)

Date: 2019-09-09



Trace: 47

Site no. : 844 Shield Room Data no. : 48  
Dis. / Ant. : -----antenna Ant. pol. : NEUTRAL  
Limit : FCC PART 15B QP  
Env. / Ins. : Temp:26.5'C Humi:52% Press:101.50kPa  
Engineer : Zero  
EUT : mophie 3-in-1 wireless charging pad  
Power : DC 19V From Adapter Input AC 120V/60Hz  
M/N : WRLS-MULTI-WATCH  
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17	9.62	9.69	8.61	27.92	54.86	26.94	Average
2	0.17	9.62	9.69	30.23	49.54	64.86	15.32	QP
3	0.24	9.71	9.92	6.32	25.95	52.00	26.05	Average
4	0.24	9.71	9.92	21.31	40.94	62.00	21.06	QP
5	0.28	9.72	9.92	3.00	22.64	50.68	28.04	Average
6	0.28	9.72	9.92	19.04	38.68	60.68	22.00	QP
7	0.83	9.72	9.93	0.12	19.77	46.00	26.23	Average
8	0.83	9.72	9.93	6.32	25.97	56.00	30.03	QP
9	15.23	9.85	10.12	0.85	20.82	50.00	29.18	Average
10	15.23	9.85	10.12	6.84	26.81	60.00	33.19	QP
11	19.53	9.62	10.15	1.10	20.87	50.00	29.13	Average
12	19.53	9.62	10.15	7.22	26.99	60.00	33.01	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.  
2. Margin= Limit - Emission Level.  
3. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.

## 4 RADIATED EMISSION TEST

### 4.1 Limit

#### 4.1.1 15.209 limits

Frequency (MHz)	Field Strength( $\mu\text{V/m}$ )	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 960	500	3

Remark : (1) Emission level  $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$   
 (2) The smaller limit shall apply at the cross point between two frequency bands.  
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

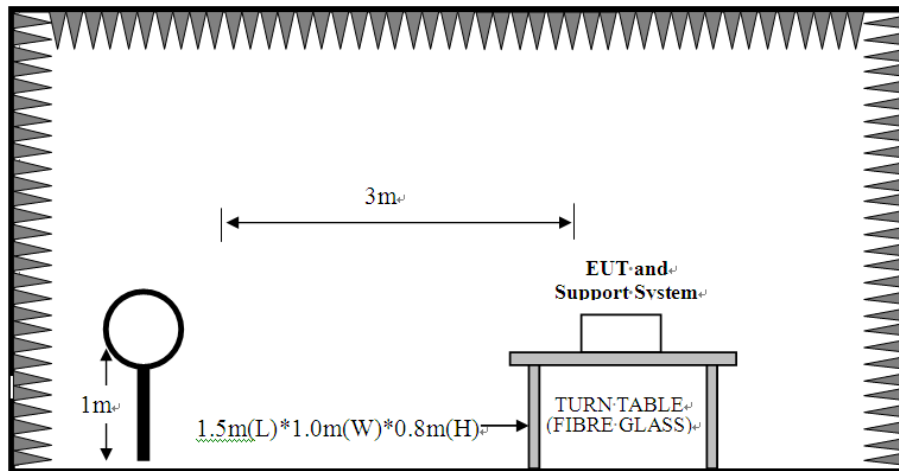
#### 4.1.2 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )

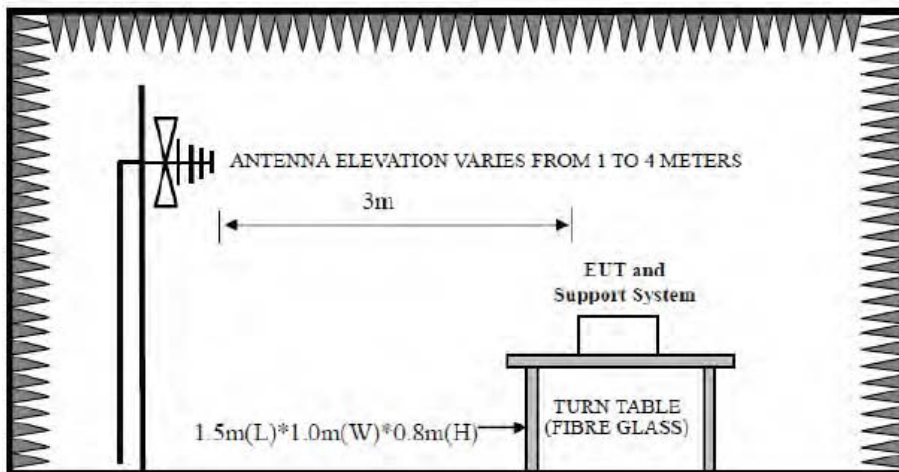
All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

## 4.2. Block Diagram of Test setup

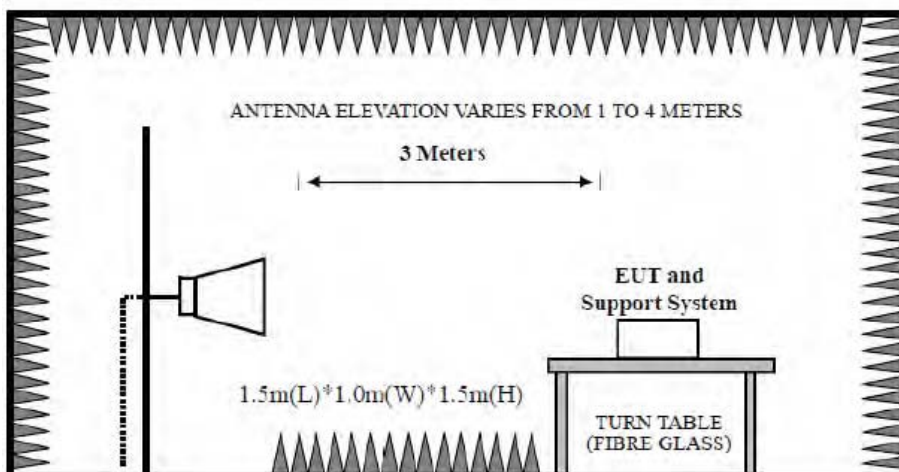
9kHz~30MHz



30~1000MHz



Above 1GHz



#### 4.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter high above ground for 9kHz~1000MHz test, and which is 1.5 meter high above ground for above 1GHz test. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

The test frequency analyzer system was set to Peak Detect (200Hz RBW in 9kHz to 150kHz and 10kHz RBW in 150kHz to 30MHz) Function and Specified Bandwidth with Maximum Hold Mode.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

PEAK detector, 1MHz/1MHz for PAEK measurement,

PEAK detector, 1MHz/10Hz for Average measurement

#### 4.4. Test Result

**PASS.**

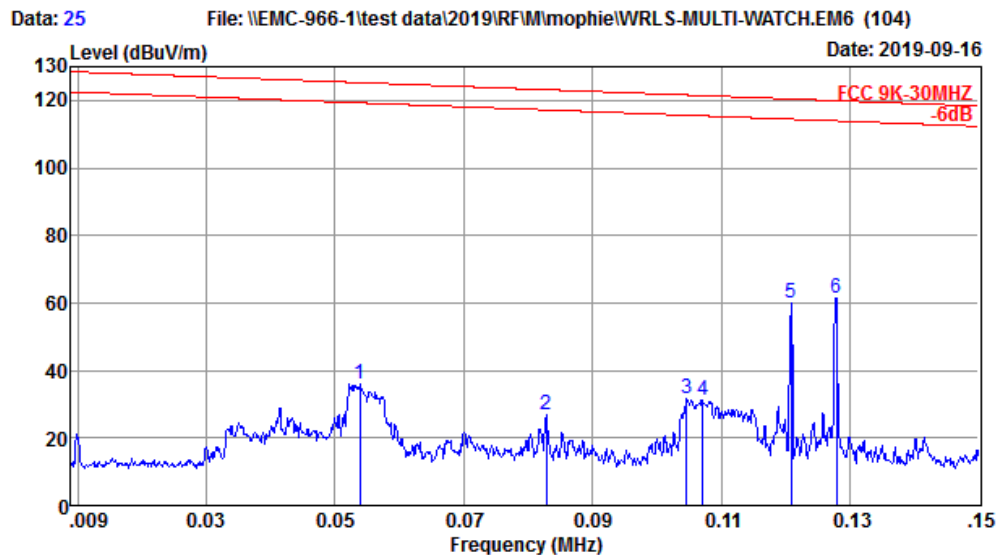
All the emissions from 9kHz to 1000 MHz were comply with 15.209 limits.

## 4.5. Test Data

9 kHz – 30 MHz

EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878



Site no. : 1# 966 Chamber Data no. : 25  
 Dis. / Ant. : 3m FMZB 1519B Ant. pol. : HORIZONTAL  
 Limit : FCC 9K-30MHz  
 Env. / Ins. : Temp:20.5';Humi:59%;Press:101.52kPa  
 Engineer : ZERO  
 EUT : mophie 3-in-1 wireless charging pad  
 Power : DC 19V From Adapter Input AC 120V/60Hz  
 M/N : WRLS-MULTI-WATCH  
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.05	20.42	0.10	15.28	35.80	125.28	89.48	Peak
2	0.08	20.29	0.10	6.41	26.80	123.19	96.39	Peak
3	0.10	20.24	0.10	11.48	31.82	121.62	89.80	Peak
4	0.11	20.24	0.10	11.01	31.35	121.44	90.09	Peak
5	0.12	20.25	0.10	39.54	59.89	120.45	60.56	Peak
6	0.13	20.25	0.10	41.06	61.41	119.94	58.53	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. The emission levels that are 20dB below the official limit are not reported.

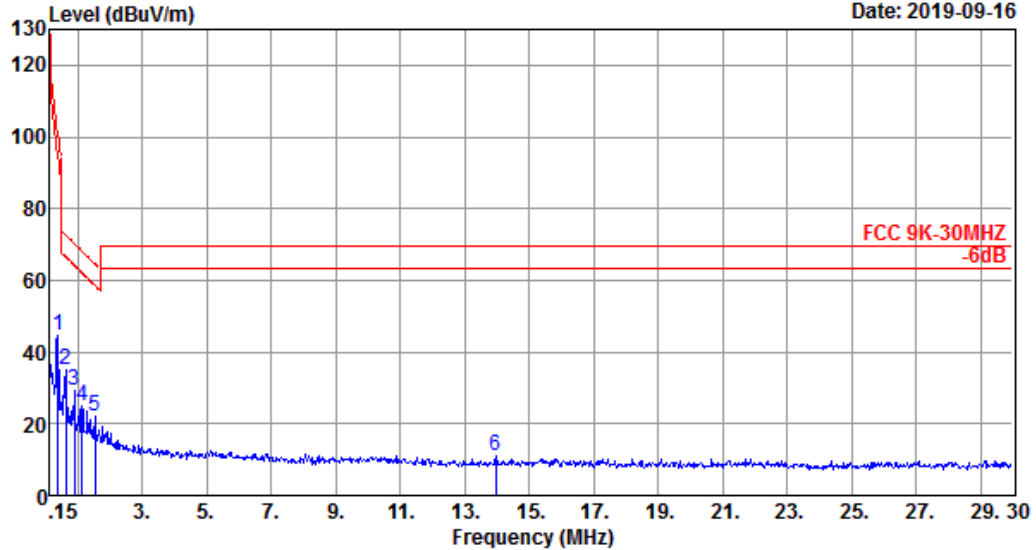
## EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878

Data: 26

File: \\EMC-966-1\\test data\\2019\\RF\\M\\mophie\\WRLS-MULTI-WATCH.EM6 (104)

Date: 2019-09-16



Site no. : 1# 966 Chamber Data no. : 26  
 Dis. / Ant. : 3m FMZB 1519B Ant. pol. : HORIZONTAL  
 Limit : FCC 9K-30MHz  
 Env. / Ins. : Temp:20.5';Humi:59%;Press:101.52kPa  
 Engineer : ZERO  
 EUT : mophie 3-in-1 wireless charging pad  
 Power : DC 19V From Adapter Input AC 120V/60Hz  
 M/N : WRLS-MULTI-WATCH  
 Test Mode : TX Mode

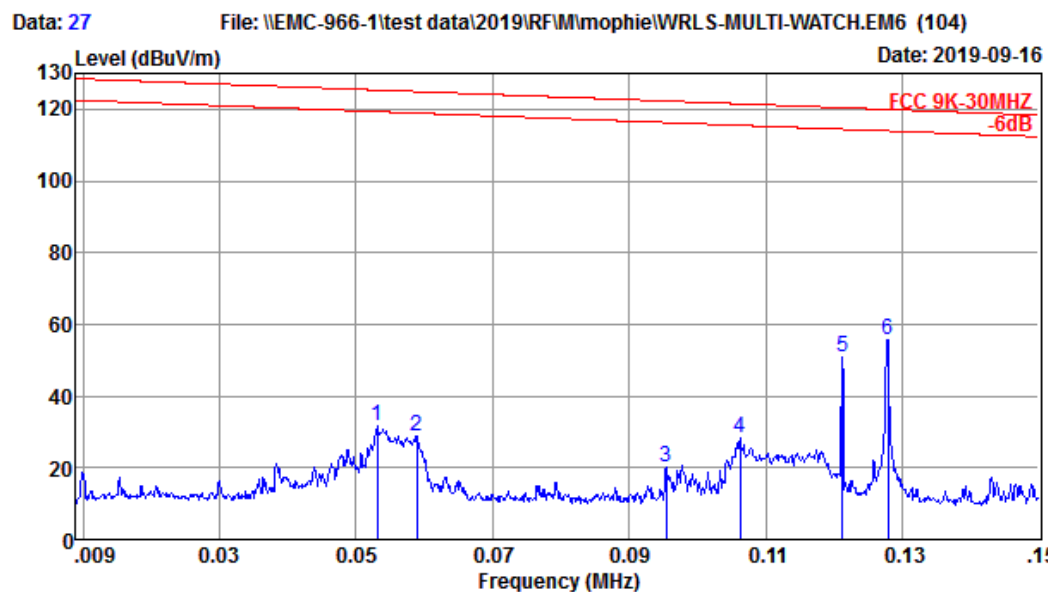
	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.39	20.08	0.10	24.22	44.40	101.10	56.70	Peak
2	0.63	20.06	0.10	15.06	35.22	72.57	37.35	Peak
3	0.90	20.01	0.10	9.29	29.40	70.18	40.78	Peak
4	1.14	20.01	0.10	4.90	25.01	68.05	43.04	Peak
5	1.55	19.99	0.11	2.13	22.23	64.33	42.10	Peak
6	13.97	19.98	0.15	-9.14	10.99	69.54	58.55	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. The emission levels that are 20dB below the official limit are not reported.



## EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878



Site no. : 1# 966 Chamber Data no. : 27  
 Dis. / Ant. : 3m FMZB 1519B Ant. pol. : VERTICAL  
 Limit : FCC 9K-30MHz  
 Env. / Ins. : Temp:20.5';Humi:59%;Press:101.52kPa  
 Engineer : ZERO  
 EUT : mophie 3-in-1 wireless charging pad  
 Power : DC 19V From Adapter Input AC 120V/60Hz  
 M/N : WRLS-MULTI-WATCH  
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.05	20.42	0.10	10.96	31.48	125.33	93.85	Peak
2	0.06	20.29	0.10	8.40	28.79	124.92	96.13	Peak
3	0.10	20.24	0.10	-0.21	20.13	122.28	102.15	Peak
4	0.11	20.24	0.10	7.83	28.17	121.50	93.33	Peak
5	0.12	20.25	0.10	30.40	50.75	120.42	69.67	Peak
6	0.13	20.25	0.10	35.38	55.73	119.94	64.21	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. The emission levels that are 20dB below the official limit are not reported.

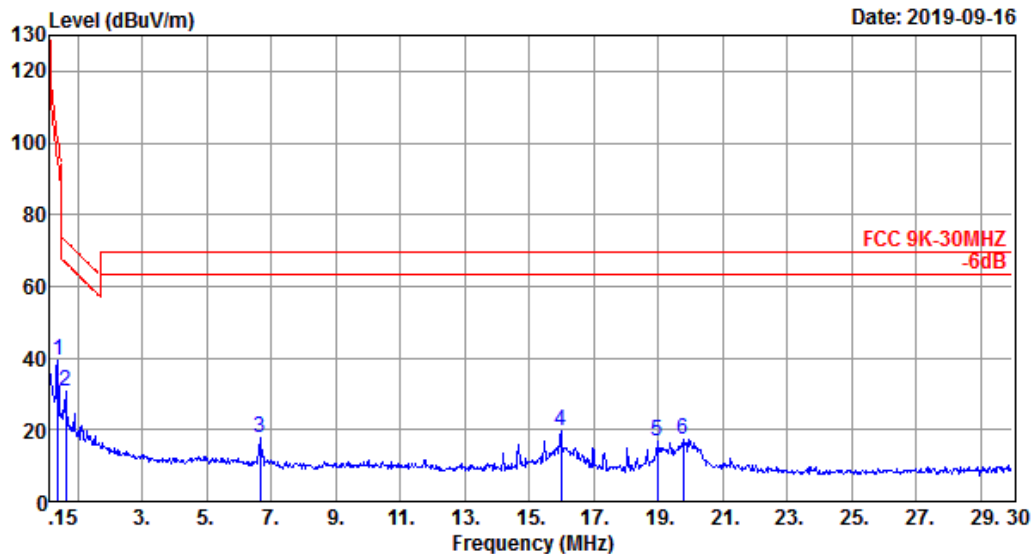
## EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878

Data: 28

File: \\EMC-966-1\\test data\\2019\\RF\\M\\mophie\\WRLS-MULTI-WATCH.EM6 (104)

Date: 2019-09-16



Site no. : 1# 966 Chamber Data no. : 28  
 Dis. / Ant. : 3m FMZB 1519B Ant. pol. : VERTICAL  
 Limit : FCC 9K-30MHZ  
 Env. / Ins. : Temp:20.5';Humi:59%;Press:101.52kPa  
 Engineer : ZERO  
 EUT : mophie 3-in-1 wireless charging pad  
 Power : DC 19V From Adapter Input AC 120V/60Hz  
 M/N : WRLS-MULTI-WATCH  
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.39	20.08	0.10	19.36	39.54	101.10	61.56	Peak
2	0.63	20.06	0.10	10.67	30.83	72.57	41.74	Peak
3	6.66	20.00	0.12	-2.39	17.73	69.54	51.81	Peak
4	16.00	20.00	0.15	-0.59	19.56	69.54	49.98	Peak
5	18.99	20.05	0.16	-3.46	16.75	69.54	52.79	Peak
6	19.79	20.07	0.17	-3.01	17.23	69.54	52.31	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. The emission levels that are 20dB below the official limit are not reported.

30-1000 MHz

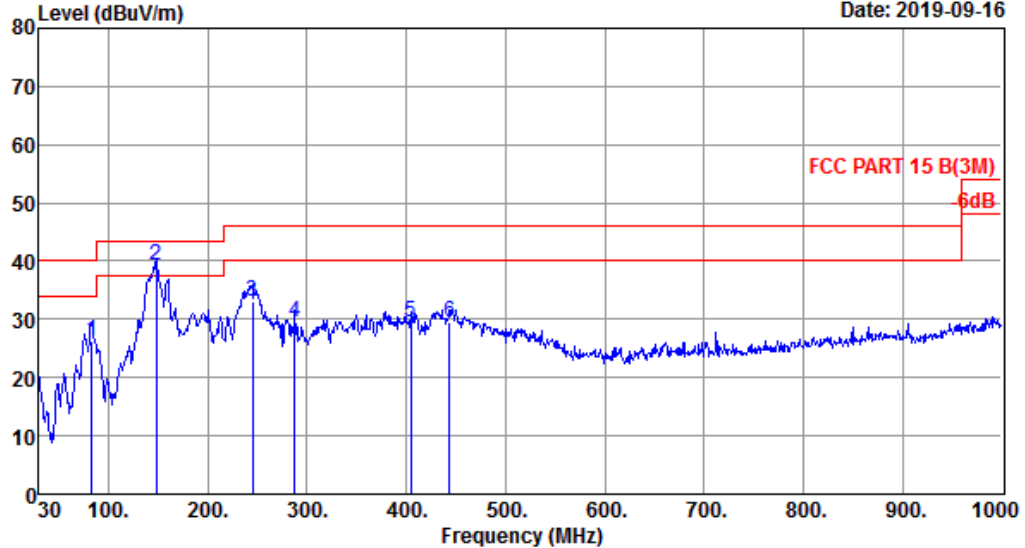
EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878

Data: 29

File: \\EMC-966-1\\test data\\2019\\RF\\M\\mophie\\WRLS-MULTI-WATCH.EM6 (104)

Date: 2019-09-16



Site no. : 1# 966 Chamber Data no. : 29  
 Dis. / Ant. : 3m 37062 Ant. pol. : HORIZONTAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:21.6';Humi:51.5%;Press:101.52kPa  
 Engineer : Frank  
 EUT : mophie 3-in-1 wireless charging pad  
 Power : DC 19V From Adapter Input AC 120V/60Hz  
 M/N : WRLS-MULTI-WATCH  
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	83.35	8.02	0.72	17.64	26.38	40.00	13.62	QP
2	148.34	11.64	1.08	26.57	39.29	43.50	4.21	QP
3	245.34	11.60	1.61	19.88	33.09	46.00	12.91	QP
4	288.02	13.20	1.82	14.43	29.45	46.00	16.55	QP
5	404.42	16.29	2.12	11.03	29.44	46.00	16.56	QP
6	443.22	17.02	2.49	10.11	29.62	46.00	16.38	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. The emission levels that are 20dB below the official limit are not reported.

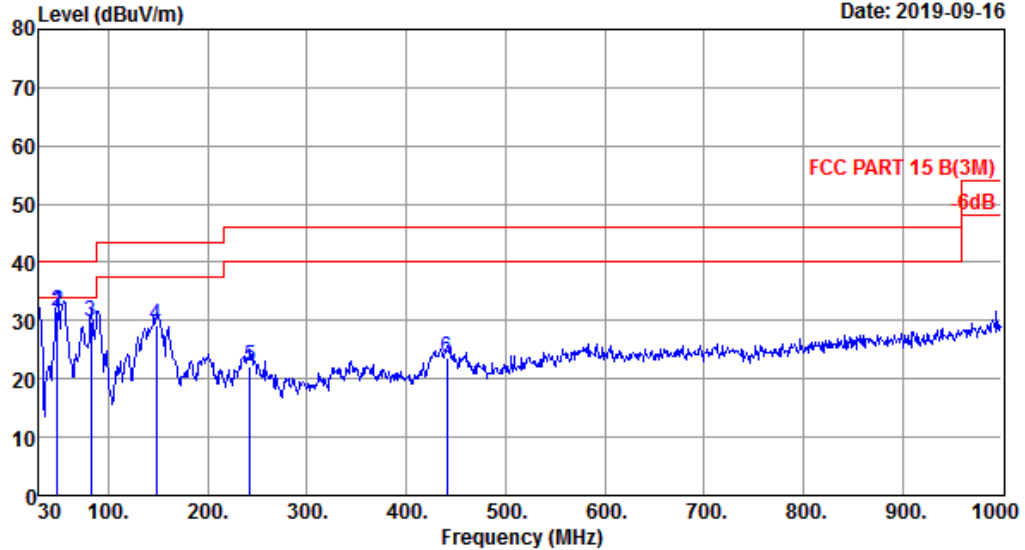
## EST Technology

Chilingxiang, Qishantou, Santun,  
Houjie, Dongguan, Guangdong, China  
Tel: +86-769-83081888  
Fax: +86-769-83081878

Data: 30

File: \\EMC-966-1\\test data\\2019\\RF\\M\\mophie\\WRLS-MULTI-WATCH.EM6 (104)

Date: 2019-09-16



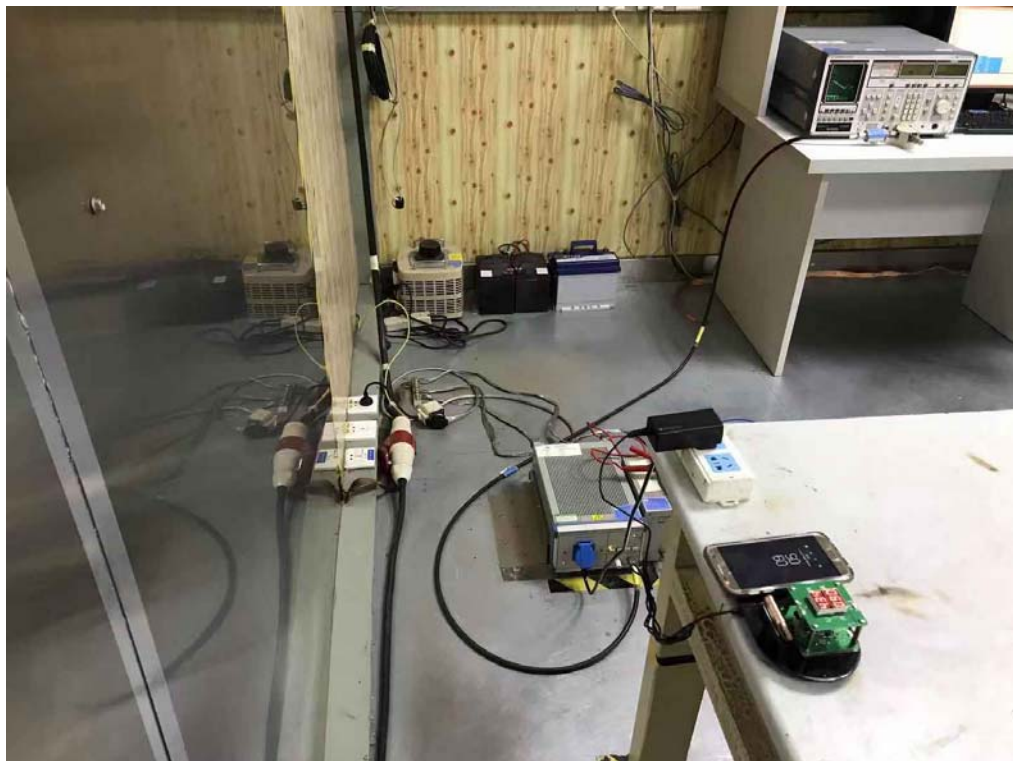
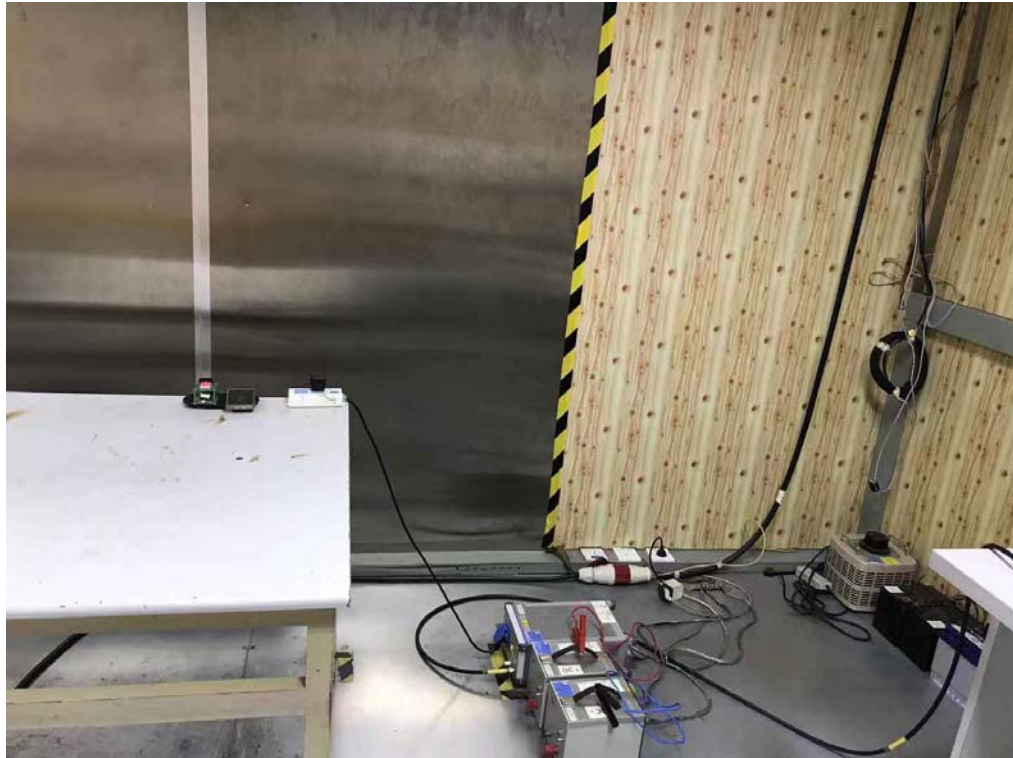
Site no. : 1# 966 Chamber Data no. : 30  
 Dis. / Ant. : 3m 37062 Ant. pol. : VERTICAL  
 Limit : FCC PART 15 B(3M)  
 Env. / Ins. : Temp:21.6';Humi:51.5%;Press:101.52kPa  
 Engineer : Frank  
 EUT : mophie 3-in-1 wireless charging pad  
 Power : DC 19V From Adapter Input AC 120V/60Hz  
 M/N : WRLS-MULTI-WATCH  
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	48.43	9.50	0.28	21.80	31.58	40.00	8.42	QP
2	48.43	9.50	0.28	21.80	31.58	40.00	8.42	QP
3	82.38	7.88	0.71	21.16	29.75	40.00	10.25	QP
4	148.34	11.64	1.08	16.48	29.20	43.50	14.30	QP
5	242.43	11.45	1.59	9.08	22.12	46.00	23.88	QP
6	441.28	16.94	2.47	4.19	23.60	46.00	22.40	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. Margin= Limit - Emission Level.  
 3. The emission levels that are 20dB below the official limit are not reported.

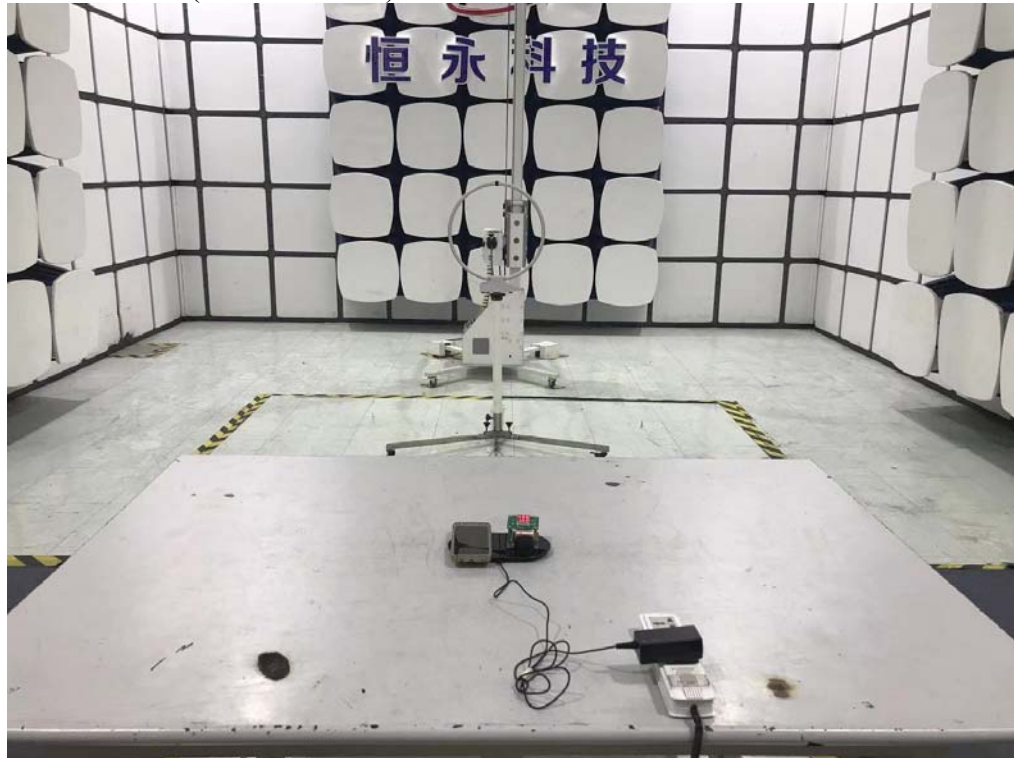
## 5 TEST SETUP PHOTO

Conducted Test

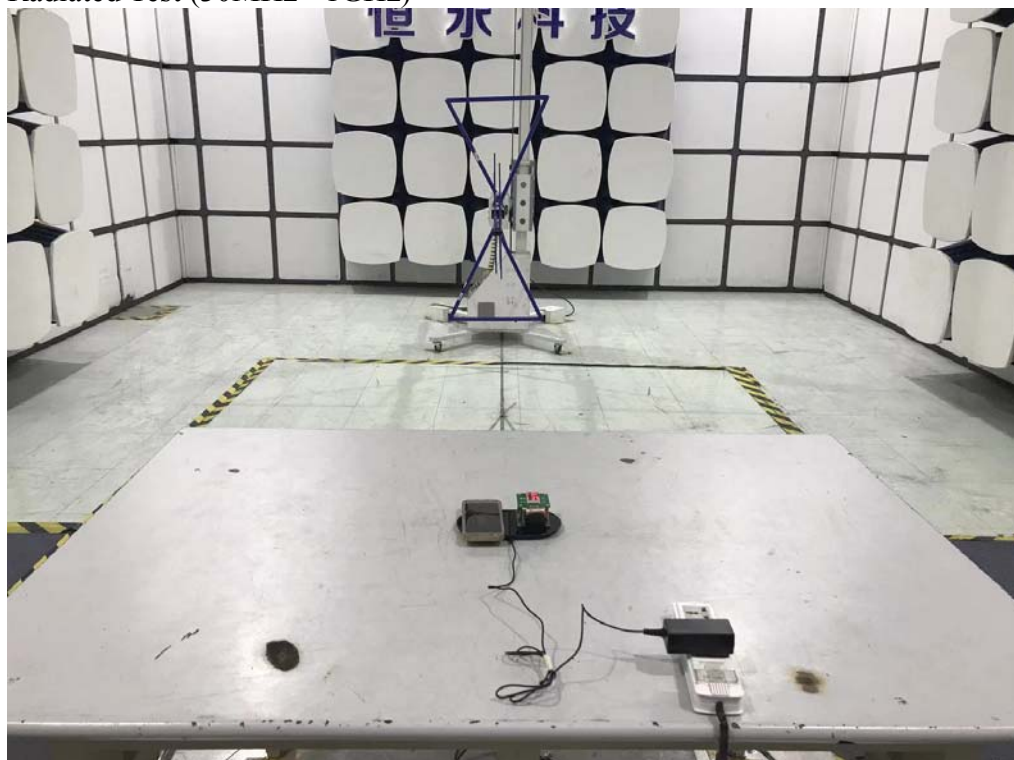




Radiated Test (9kHz-30 MHz)



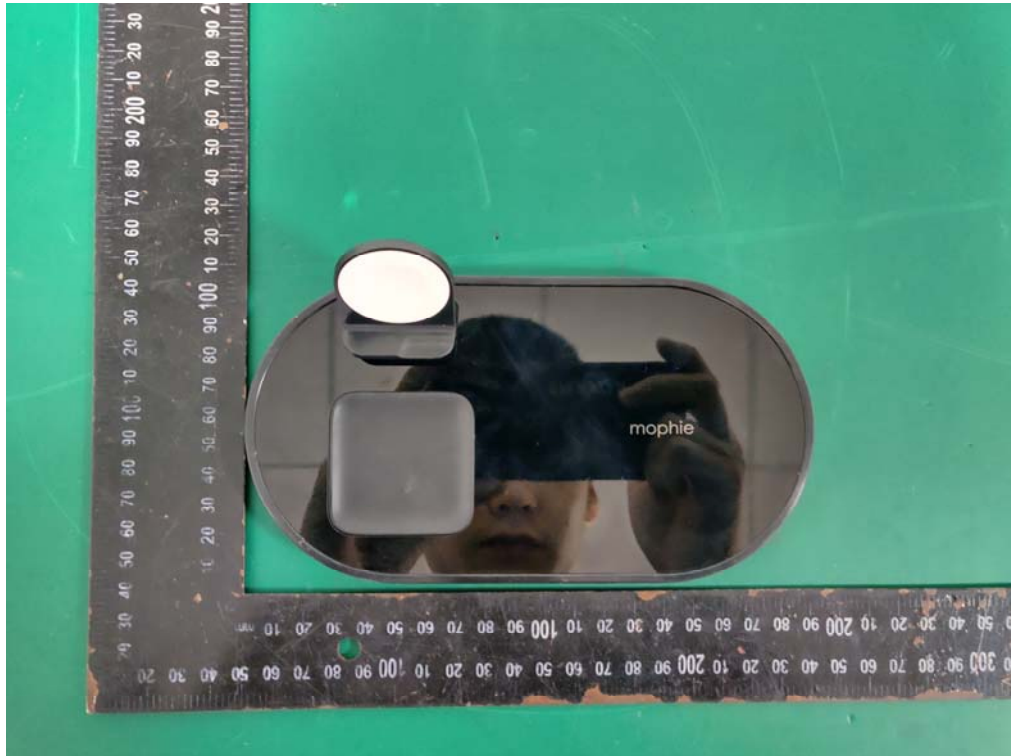
Radiated Test (30MHz - 1GHz)





## 6 PHOTO EUT

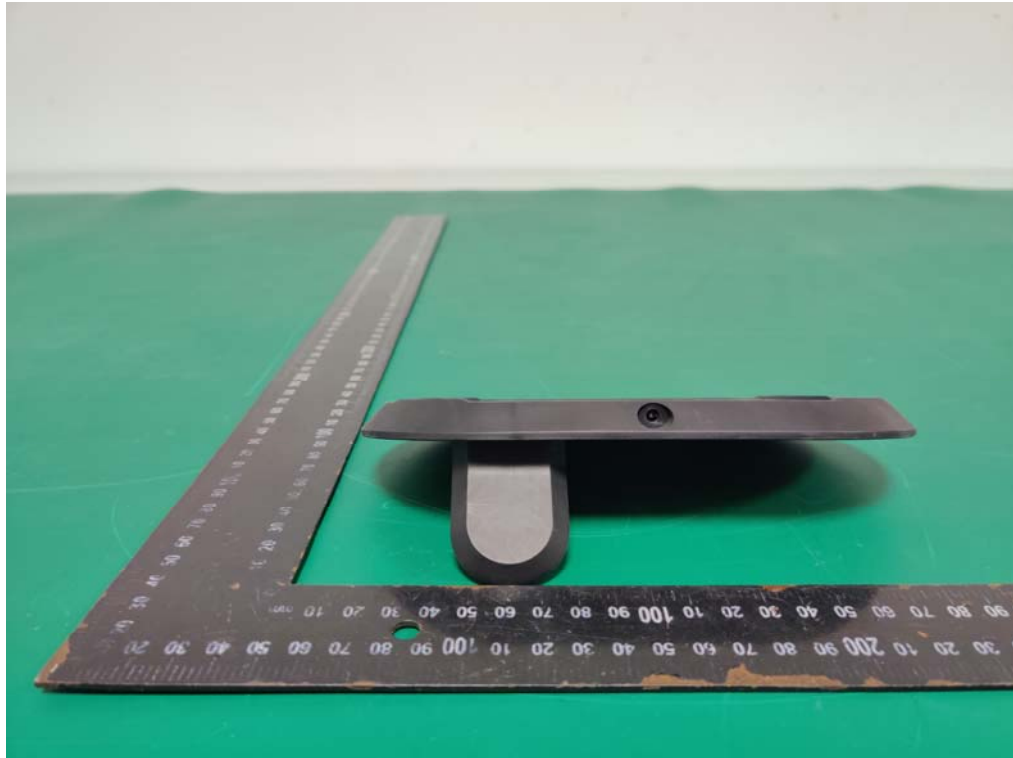
### External Photos M/N: WRLS-MULTI-WATCH



**External Photos**  
M/N: WRLS-MULTI-WATCH



**External Photos**  
M/N: WRLS-MULTI-WATCH

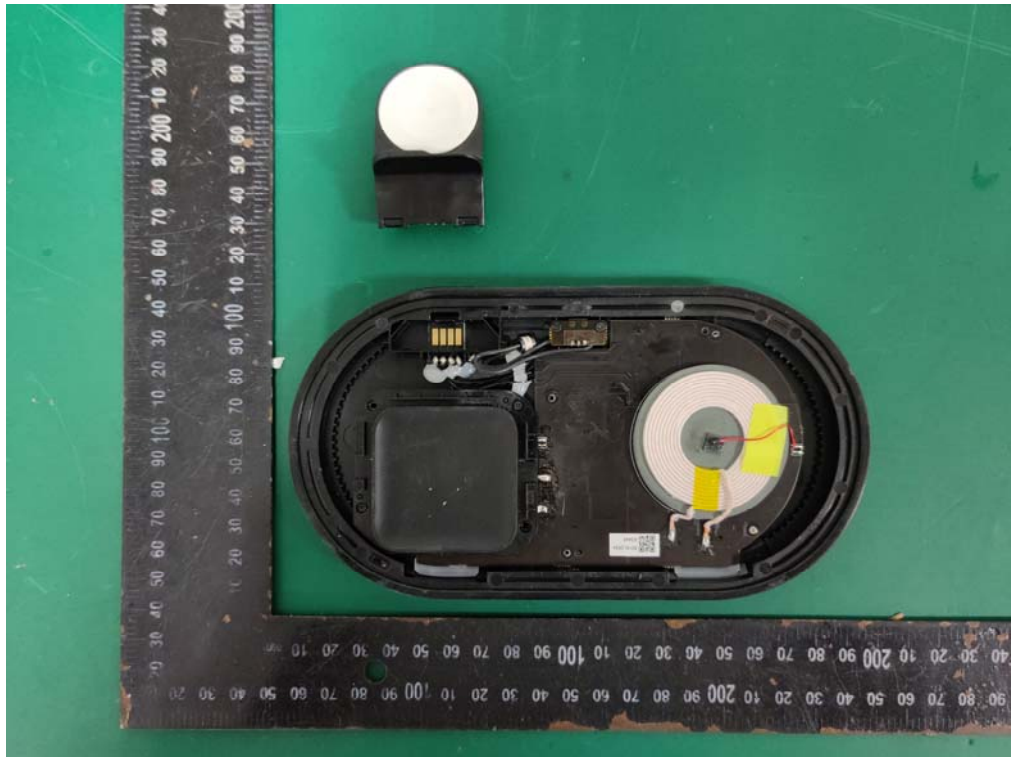


**External Photos**  
M/N: WRLS-MULTI-WATCH

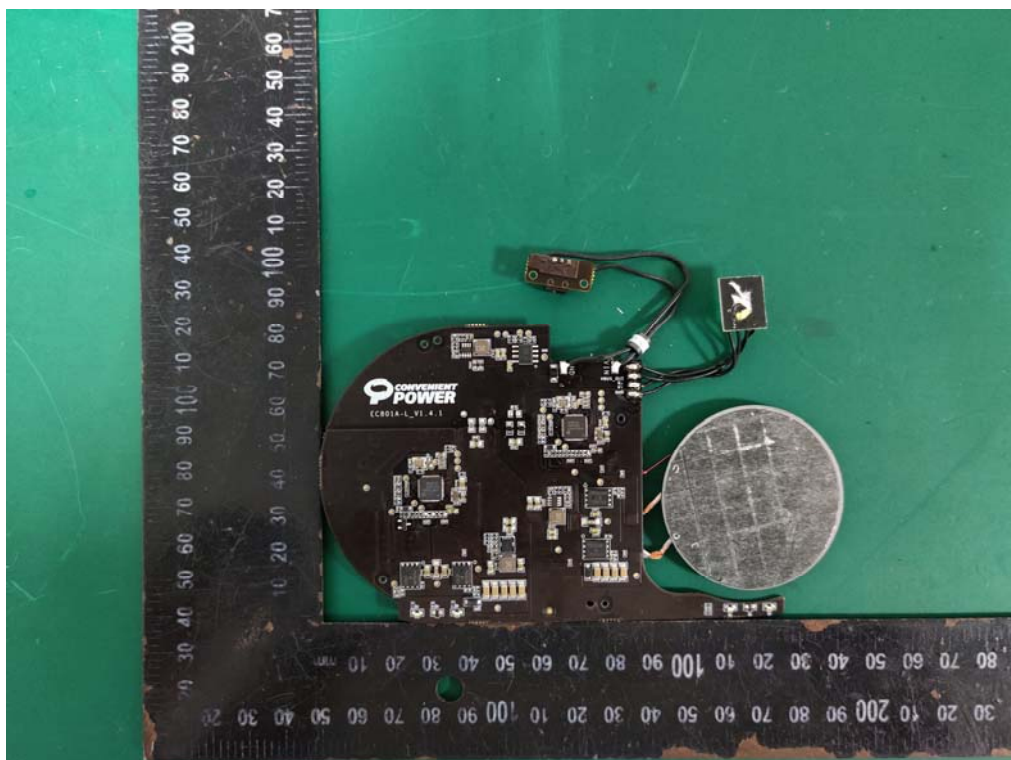
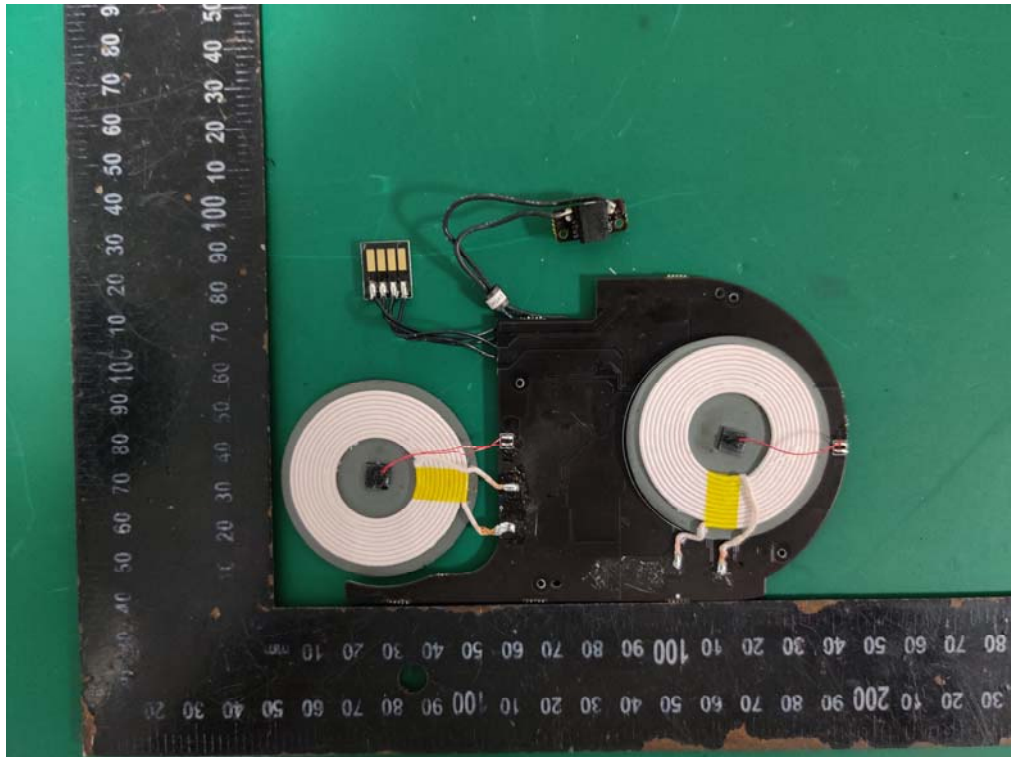




**Internal Photos**  
M/N: WRLS-MULTI-WATCH



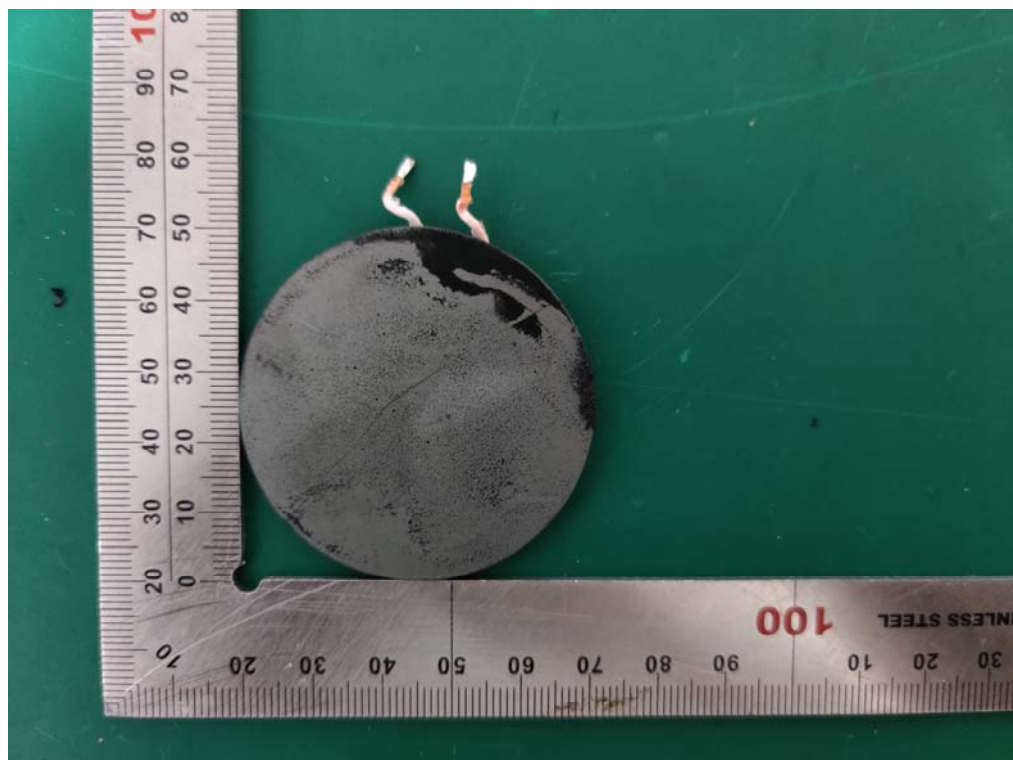
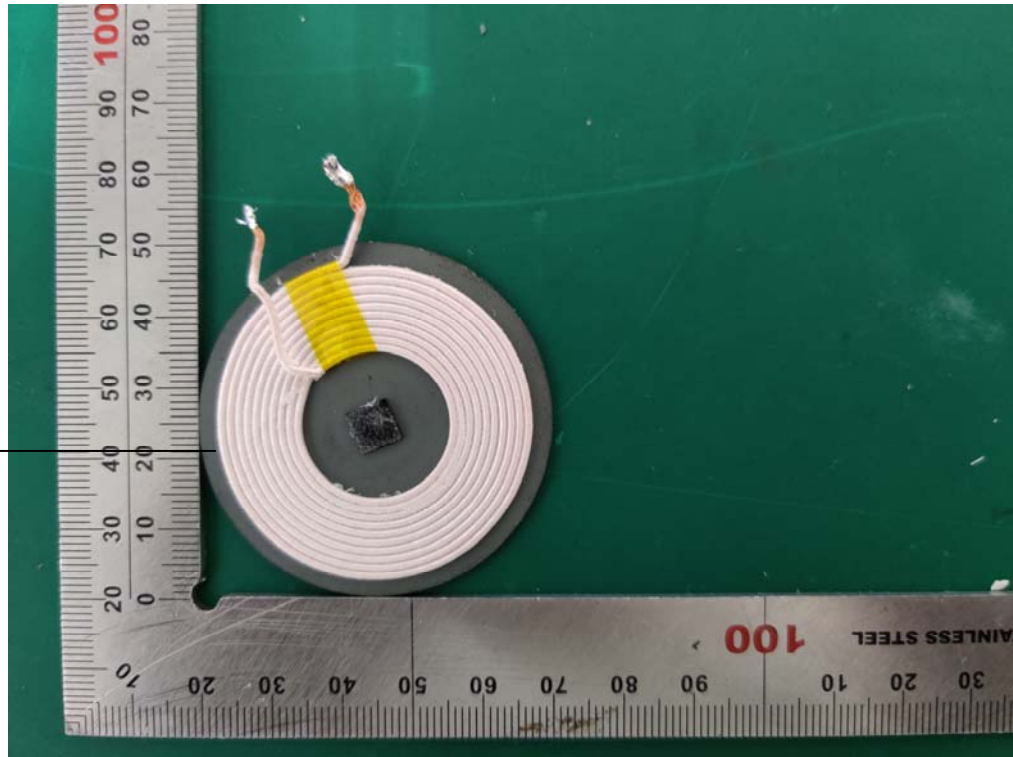
**Internal Photos**  
M/N: WRLS-MULTI-WATCH





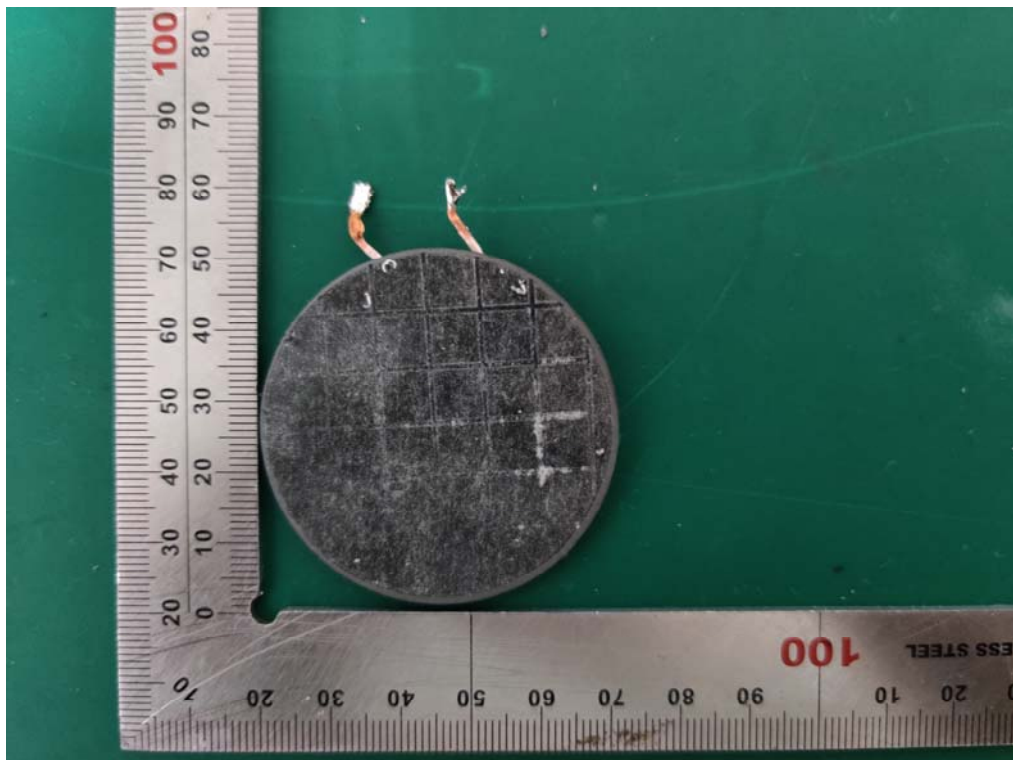
**Internal Photos**  
M/N: WRLS-MULTI-WATCH

Coil  
Antenna

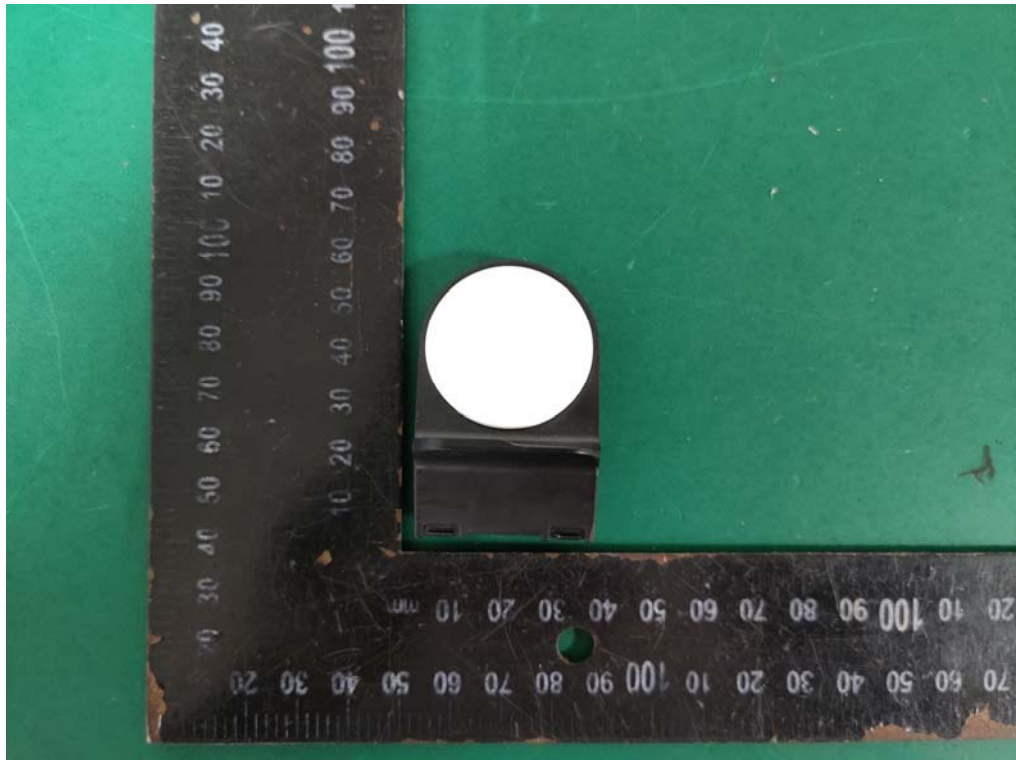


**Internal Photos**  
M/N: WRLS-MULTI-WATCH

Coil  
Antenna

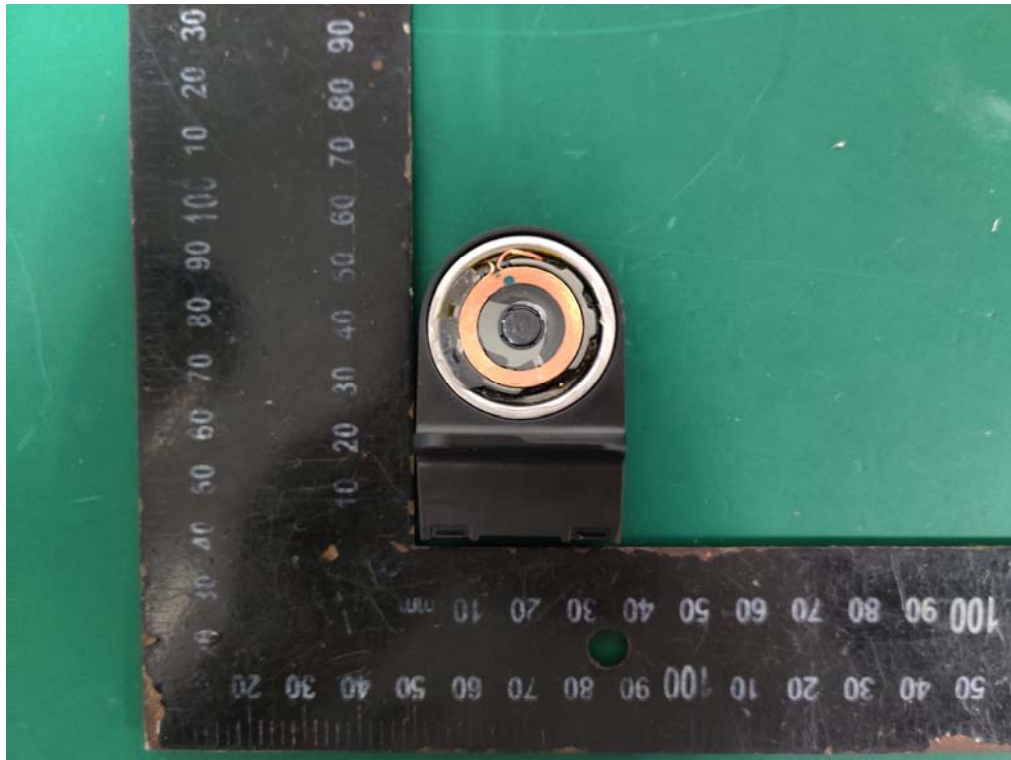


**Internal Photos**  
M/N: WRLS-MULTI-WATCH

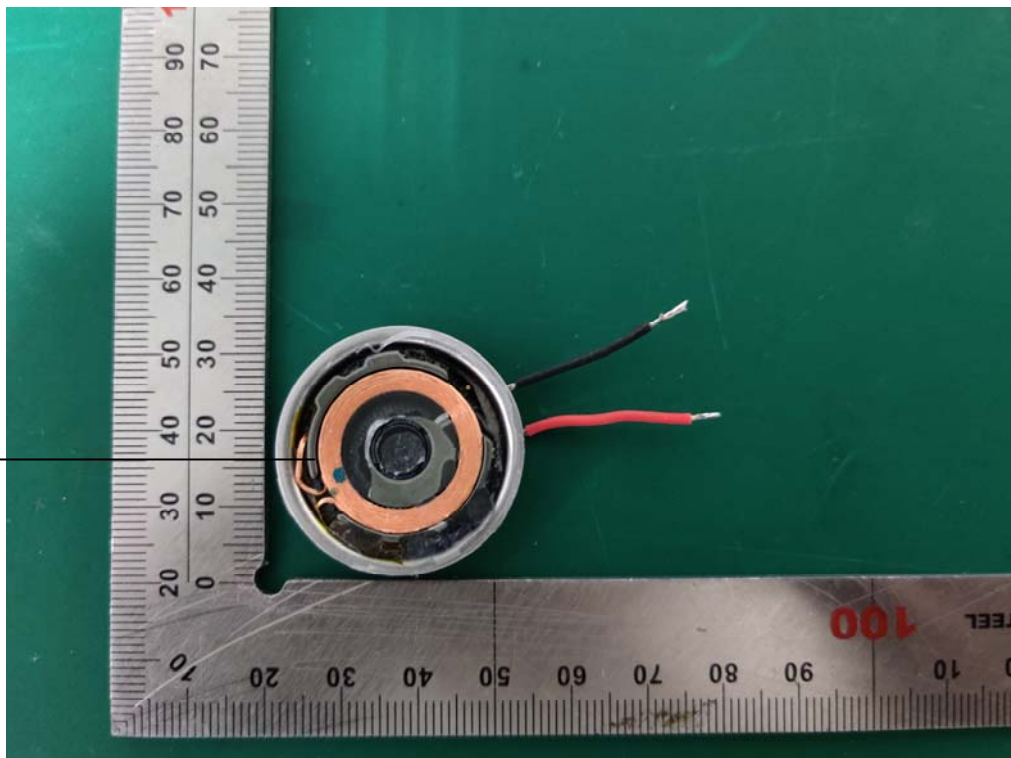




**Internal Photos**  
M/N: WRLS-MULTI-WATCH



Coil  
Antenna



**Internal Photos**  
M/N: WRLS-MULTI-WATCH

