

FCC TEST REPORT

FOR

Kintec Digital Co.,Ltd

Wireless Charger

Test Model: KQI-T02S

Additional Model No.: KQI-T01SS, KQI-T01SM, KQI-T02SS, KQI-T02SM,
KQI-T01S

Prepared for : Kintec Digital Co.,Ltd
Address : 8F, Jinye Building, NO.306, ChangQing South Road,
Chang'An, Dong Guan City, GuangDong, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : September 08, 2018
Number of tested samples : 1
Serial number : Prototype
Date of Test : September 08, 2018~September 15, 2018
Date of Report : September 18, 2018

FCC TEST REPORT
FCC CFR 47 PART 15C: 2017

Report Reference No. : LCS180904010AEA

Date of Issue : September 18, 2018

Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure : Full application of Harmonised standards
Partial application of Harmonised standards
Other standard testing method

Applicant's Name : Kintec Digital Co.,Ltd

Address : 8F, Jinye Building, NO.306, ChangQing South Road, Chang'An, Dong Guan City, GuangDong, China

Test Specification

Standard : FCC CFR 47 PART 15C: 2017

Test Report Form No. : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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Test Item Description : Wireless Charger

Trade Mark : /

Test Model : KQI-T02S

Ratings : Input: DC5V/2A; DC9V/1.67A

Result : Positive

Compiled by:

Linda He

Linda He/ Administrators

Supervised by:

Calvin Weng

Calvin Weng / Technique principal

Approved by:

Gavin Liang

Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS180904010AEA	<u>September 18, 2018</u> Date of issue
--	--

Test Model.....	: KQI-T02S
EUT.....	: Wireless Charger
Applicant	: Kintec Digital Co.,Ltd
Address.....	: 8F, Jinye Building, NO.306, ChangQing South Road, Chang'An, Dong Guan City, GuangDong, China
Telephone.....	: /
Fax.....	: /
Manufacturer	: Kintec Digital Co.,Ltd
Address.....	: 8F, Jinye Building, NO.306, ChangQing South Road, Chang'An, Dong Guan City, GuangDong, China
Telephone.....	: /
Fax.....	: /
Factory	: Kintec Digital Co.,Ltd
Address.....	: 8F, Jinye Building, NO.306, ChangQing South Road, Chang'An, Dong Guan City, GuangDong, China
Telephone.....	: /
Fax.....	: /

Test Result	Positive
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The test report merely corresponds to the test sample.
 It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	September 18, 2018	Initial Issue	Gavin Liang

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	6
1.1 Description of Device (EUT)	6
1.2 Support equipment List.....	6
1.3 External I/O Cable	6
1.4 Description of Test Facility	6
1.5 Statement of the Measurement Uncertainty	7
1.6 Measurement Uncertainty	7
1.7 Description of Test Modes.....	7
2. TEST METHODOLOGY	8
2.1 EUT Configuration	8
2.2 EUT Exercise.....	8
2.3 General Test Procedures	8
2.3.1 Conducted Emissions	8
2.3.2 Radiated Emissions	8
3. SYSTEM TEST CONFIGURATION	9
3.1 Justification	9
3.2 EUT Exercise Software.....	9
3.3 Special Accessories	9
3.4 Block Diagram/Schematics	9
3.5 Equipment Modifications	9
3.6 Test Setup.....	9
4. SUMMARY OF TEST EQUIPMENT	10
5. SUMMARY OF TEST RESULT	11
3. POWER LINE CONDUCTED MEASUREMENT	12
4. RADIATED EMISSION MEASUREMENT	14
4.1. Block Diagram of Test Setup.....	14
4.2. Radiated Emission Limit.....	15
4.3. EUT Configuration on Measurement.....	15
4.4. Operating Condition of EUT.....	15
4.5. Measuring Setting.....	16
4.6. Test Procedure	17
4.7. Test Results.....	18
5. PHOTOGRAPHS OF TEST SETUP	21
6. EXTERNAL PHOTOGRAPHS OF THE EUT.....	23
7. INTERNAL PHOTOGRAPHS OF THE EUT	26

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

- EUT : Wireless Charger
- Test Model : KQI-T02S
- Additional Model No. : KQI-T01SS, KQI-T01SM, KQI-T02SS, KQI-T02SM, KQI-T01S
All the models are identical with each other except the model name is different, therefore, full test was applied on KQI-T02S, other models are deemed to fulfill the requirement without further test.
- Model Declaration : other models are deemed to fulfill the requirement without further test.
- Hardware Version : M05-T041-110
- Software Version : Ox5aa973
- Operating Frequency : 110KHz~205.0KHz
- Modulation Type : CW (Continuous Wave)
- Antenna Type : Coil Antenna
- Power supply : Input: DC5V/2A; DC9V/1.67A

1.2 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Apple Inc.	Load	iphone X	--	FCC ID

1.3 External I/O Cable

I/O Port Description	Quantity	Cable
---	---	---

1.4 Description of Test Facility

FCC Registration Number. is 254912.

Industry Canada Registration Number. is 9642A-1.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

NVLAP Registration Code is 600167-0

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.5 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Radiation Uncertainty	9KHz~30MHz	3.10dB	(1)
	30MHz~200MHz	2.96dB	(1)
	200MHz~1000MHz	3.10dB	(1)
	1GHz~26.5GHz	3.80dB	(1)
	26.5GHz~40GHz	3.90dB	(1)
Conduction Uncertainty	150kHz~30MHz	1.63dB	(1)
Power disturbance	30MHz~300MHz	1.60dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description of Test Modes

Equipment under test was operated during the measurement under the following conditions:

Charging and communication mode

Modulation Type: CW (Continuous Wave)

Test Modes:		
Mode 1	AC/DC Adapter + EUT + Mobile Phone (Battery Status: <1%)	Record
Mode 2	AC/DC Adapter + EUT + Mobile Phone (Battery Status: <50%)	Pre-tested
Mode 3	AC/DC Adapter + EUT + Mobile Phone (Battery Status: 100%)	Pre-tested
Mode 4	PC + EUT + Mobile Phone (Battery Status: <1%)	Pre-tested
Mode 5	PC + EUT + Mobile Phone (Battery Status: <50%)	Pre-tested
Mode 6	PC + EUT + Mobile Phone (Battery Status: <100%)	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		

For AC conducted emission, pre-test at both AC 120V/60Hz and AC 240V/50Hz, recorded worst case;

For AC conducted emission, pre-test at both AC charge from power adapter and PC modes, recorded worst case.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR PART 15C 15.207 and 15.209.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the charging and compunction mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207 and 15.209 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a normal condition.

3.2 EUT Exercise Software

N/A.

3.3 Special Accessories

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/ unshielded	Notes
1	PC	Lenovo	Ideapad	A131101550	/	/	DOC
2	Power adapter	Lenovo	CPA-A090	36200414	1.00m	unshielded	DOC
3	Power adapter	Mass Power	ED1-0501 00UA	/	1.00m	unshielded	DOC

3.4 Block Diagram/Schematics

Please refer to the related document.

3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6 Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	ESA-E SERIES SPECTRUM ANALYZER	Agilent	E4407B	MY41440754	2017-11-17	2018-11-16
2	MXA Signal Analyzer	Agilent	N9020A	MY49100040	2018-06-16	2019-06-15
3	SPECTRUM ANALYZER	R&S	FSP	100503	2018-06-16	2019-06-15
4	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2018-06-16	2019-06-15
5	Positioning Controller	MF	MF-7082	/	2018-06-16	2019-06-15
6	EMI Test Software	AUDIX	E3	ROMOSS	2018-06-16	2019-06-15
7	EMI Test Receiver	R&S	ESR 7	101181	2018-06-16	2019-06-15
8	AMPLIFIER	QuieTek	QTK-A2525G	CHM10809065	2017-11-17	2018-11-16
9	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2018-06-22	2019-06-21
10	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-05-02	2019-05-01
11	Horn Antenna	EMCO	3115	6741	2018-06-22	2019-06-21
12	RF Cable-R03m	Jye Bao	RG142	CB021	2018-06-16	2019-06-15
13	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2018-06-16	2019-06-15
14	TEST RECEIVER	R&S	ESCI	101142	2018-06-16	2019-06-15
15	RF Cable-CON	UTIFLEX	3102-26886-4	CB049	2018-06-16	2019-06-15
16	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-0032	2018-06-16	2019-06-15
17	Artificial Mains	R&S	ENV216	101288	2018-06-16	2019-06-15

Note: All equipment is calibrated through GUANGZHOU LISAI CALIBRATION AND TEST CO.,LTD.

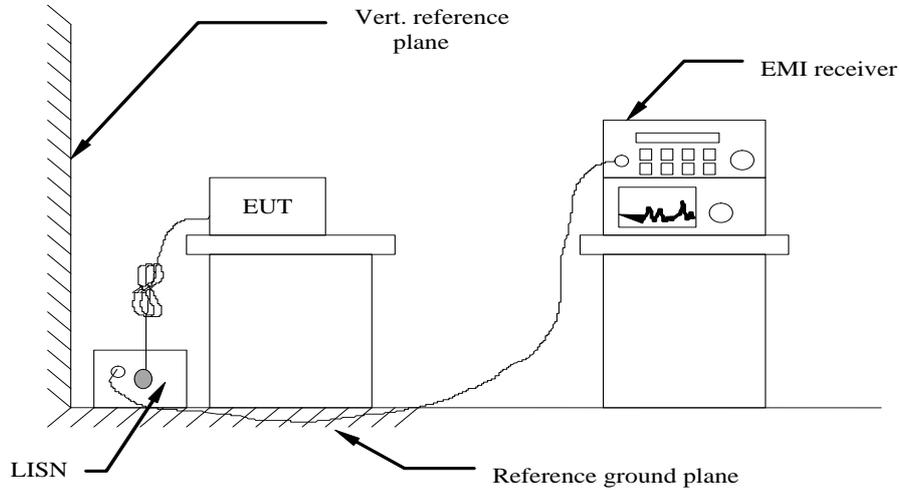
5. SUMMARY OF TEST RESULT

Test Item	FCC Rule No.	Temperature conditions	Power source conditions	C	NC	NA	NP	Remark
Radiated Emission	§15.209	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-/-
AC conducted emission	§15.207	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-/-

Remark: The measurement uncertainty is not included in the test result.

3. POWER LINE CONDUCTED MEASUREMENT

3.1. Block Diagram of Test Setup



3.2. Standard Applicable

According to §15.207: For all the consumer devices which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

* Decreasing linearly with the logarithm of the frequency

3.3 Test Results

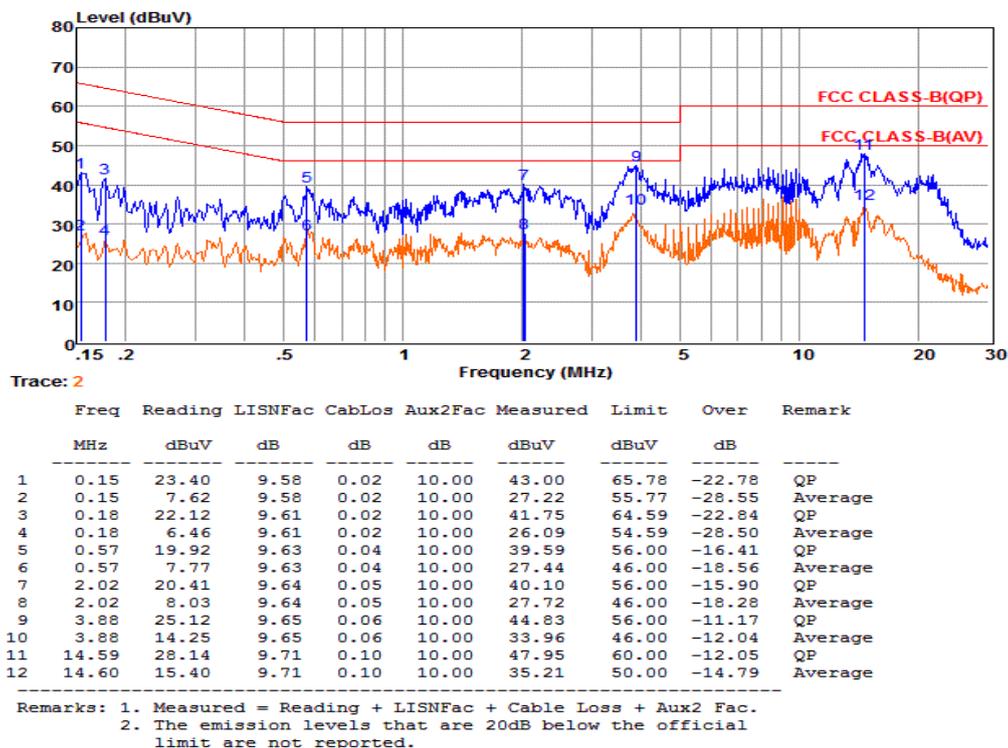
PASS.

The test data please refer to following page.

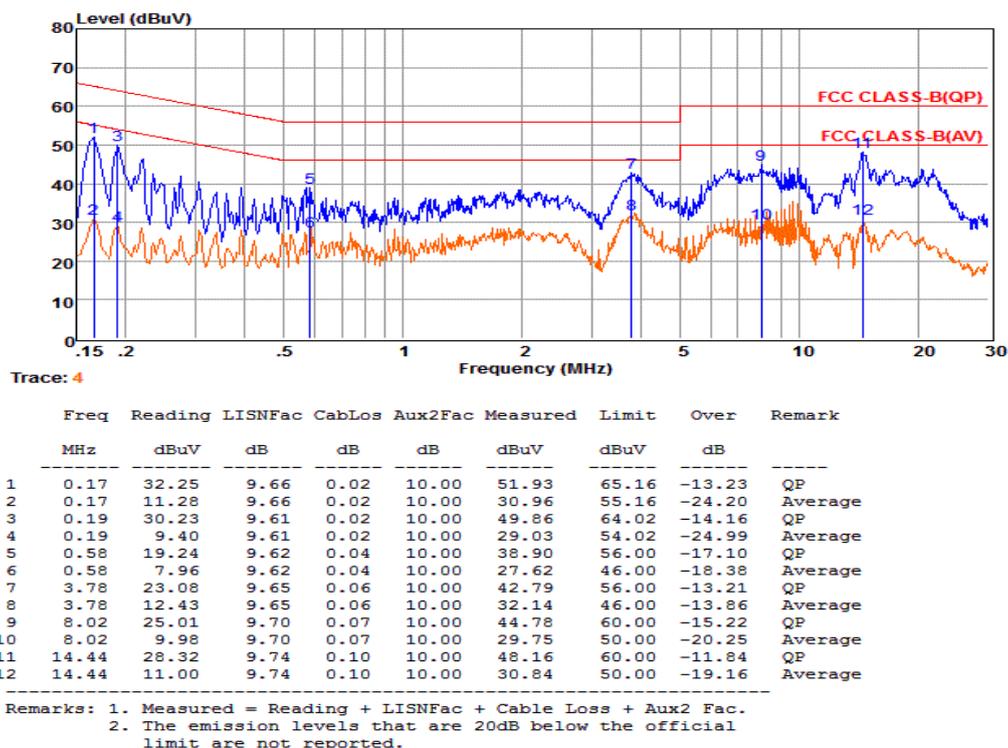
Temperature	24.3°C	Humidity	54.4%
Test Engineer	Diamond Lu		

AC Conducted Emission of charge from power adapter mode @ AC 240V/50Hz

Line



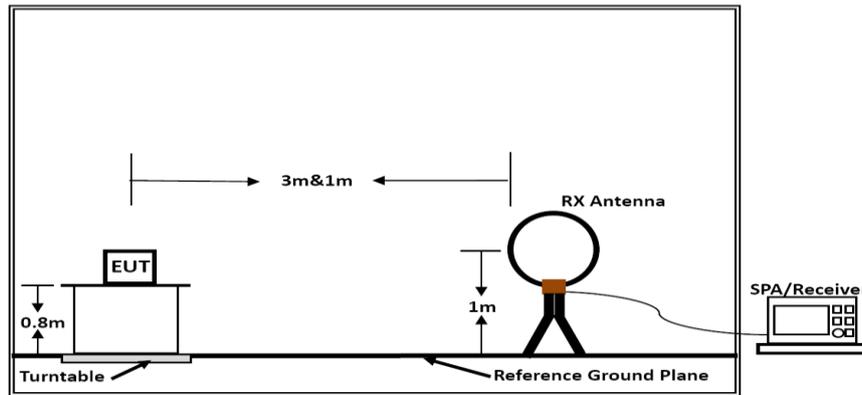
Neutral



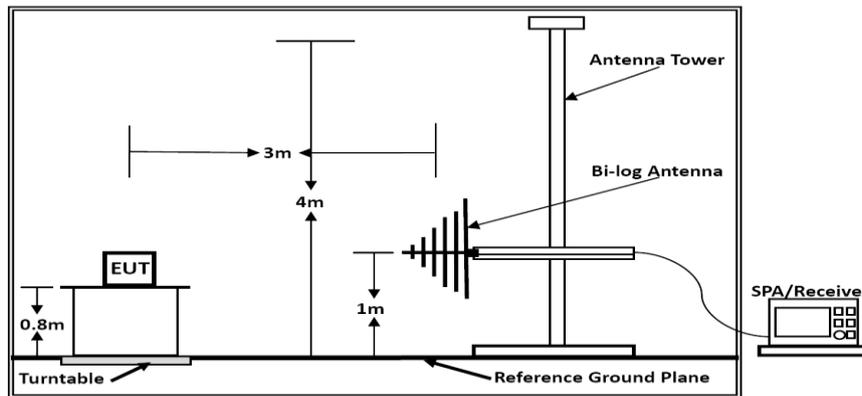
***Note: Pre-scan all modes and recorded the worst case results in this report.

4. RADIATED EMISSION MEASUREMENT

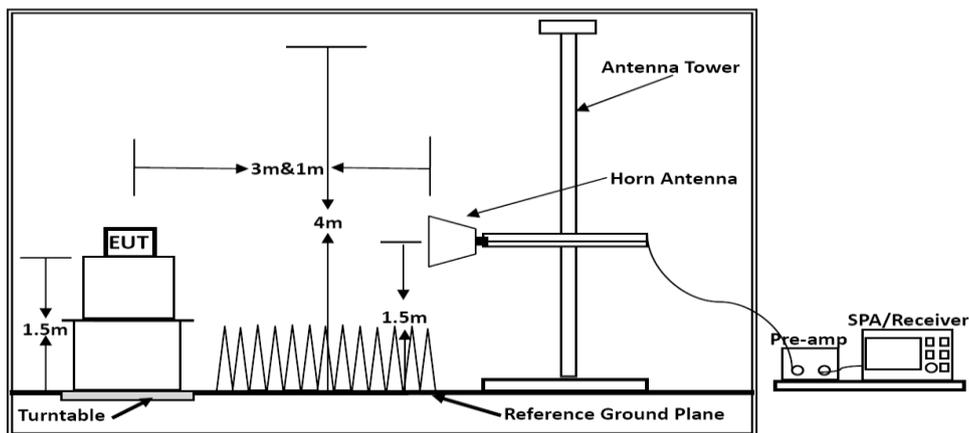
4.1. Block Diagram of Test Setup



Below 30MHz



Below 1GHz



Above 1GHz

4.2. Radiated Emission Limit

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 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	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	(\2)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.3. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4. Operating Condition of EUT

- (1) Setup the EUT as shown in Section 4.1.
- (2) Let the EUT work in worst test mode (Mode 1) and measure it.

4.5. Measuring Setting

The following table is the setting of spectrum analyzer and receiver.

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP/Average
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP/Average
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

4.6. Test Procedure

1) Sequence of testing 9 kHz to 30 MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 0.8 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

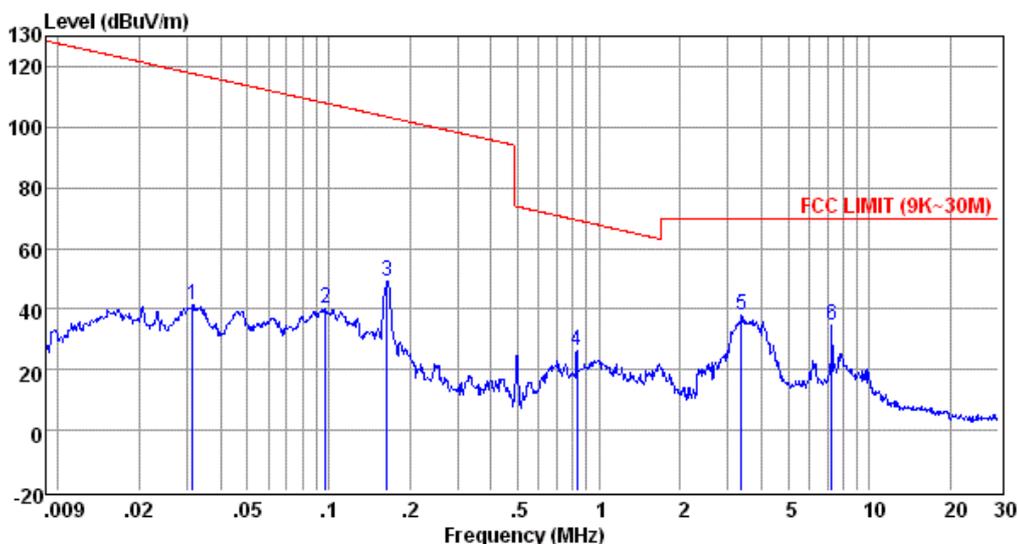
4.7. Test Results

PASS.

Only report the worst test data (Mode 1) in test report;
The test data please refer to following page:

Temperature	23.4°C	Humidity	53.2%
Test Engineer	Diamond Lu		

0.009~30MHz

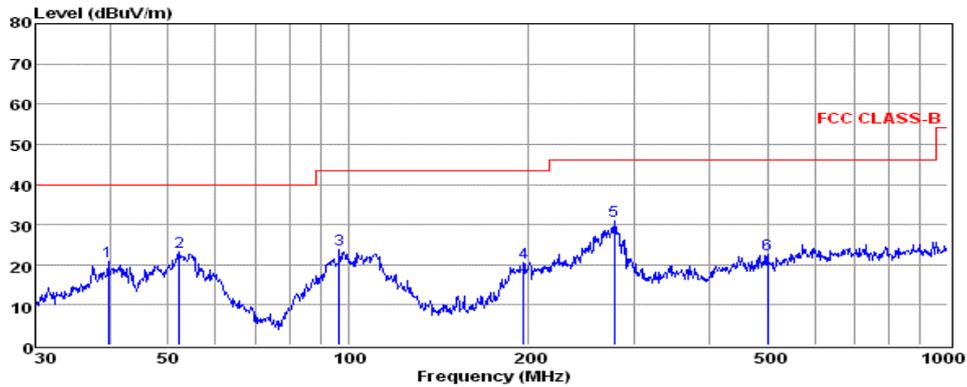


	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	0.03	541.07	0.30	-500.00	41.37	117.72	-76.35	QP
2	0.10	539.84	0.30	-500.00	40.14	107.92	-67.78	QP
3	0.16	25.51	0.30	23.17	48.98	103.44	-54.46	QP
4	0.83	5.19	0.30	21.01	26.50	69.33	-42.83	QP
5	3.36	16.23	0.30	21.48	38.01	69.50	-31.49	QP
6	7.25	11.69	0.30	22.65	34.64	69.50	-34.86	QP

- Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that ate 20db blow the official limit are not reported

30MHz~1000MHz

Horizontal

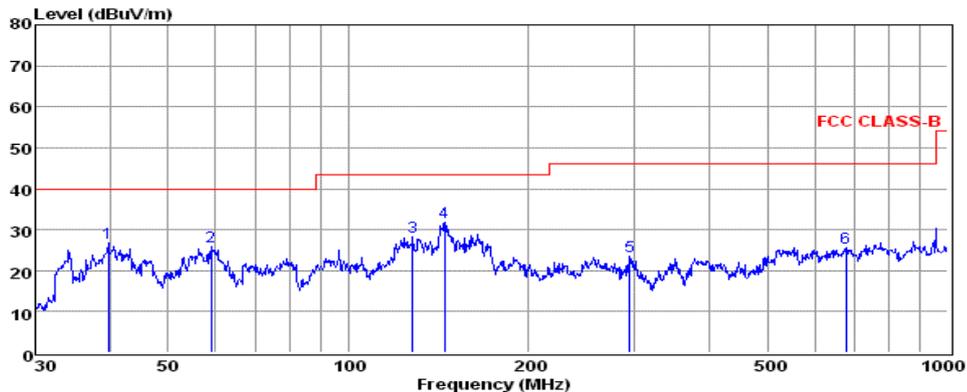


Env. / Ins: 23.4 °C / 53.2 %
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	39.71	7.01	0.38	13.51	20.90	40.00	-19.10	QP
2	52.21	9.60	0.54	13.15	23.29	40.00	-16.71	QP
3	96.44	10.37	0.58	12.93	23.88	43.50	-19.62	QP
4	195.82	8.87	0.96	10.57	20.40	43.50	-23.10	QP
5	278.07	17.22	1.01	12.61	30.84	46.00	-15.16	QP
6	501.18	4.40	1.54	16.60	22.54	46.00	-23.46	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that at 20db below the official limit are not reported

Vertical



Env. / Ins: 23.4 °C / 53.2 %
 pol: VERTICAL

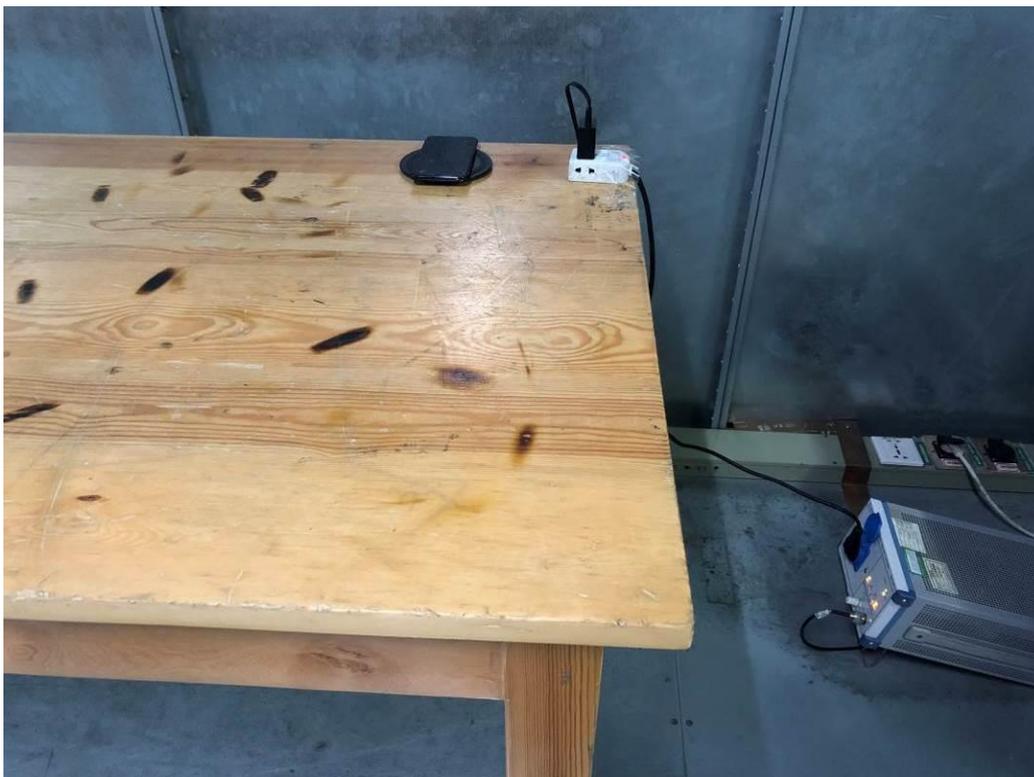
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	39.71	13.01	0.38	13.51	26.90	40.00	-13.10	QP
2	59.03	12.53	0.49	12.75	25.77	40.00	-14.23	QP
3	128.11	18.24	0.67	9.22	28.13	43.50	-15.37	QP
4	144.84	22.95	0.77	8.22	31.94	43.50	-11.56	QP
5	295.15	9.39	1.08	12.97	23.44	46.00	-22.56	QP
6	677.58	5.09	1.73	18.73	25.55	46.00	-20.45	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that at 20db below the official limit are not reported

Note:

- 1). Pre-scan all modes and recorded the worst case results in this report.
- 2). Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3). Corrected Reading: Antenna Factor + Cable Loss + Read Level = Level.

5. PHOTOGRAPHS OF TEST SETUP



Conducted Emission-AC adapter charge mode



Radiated Emission below 30MHz-AC adapter charge mode



Radiated Emission below 1GHz-AC adapter charge mode

6. EXTERNAL PHOTOGRAPHS OF THE EUT



Fig. 1



Fig. 2



Fig. 3



Fig. 4

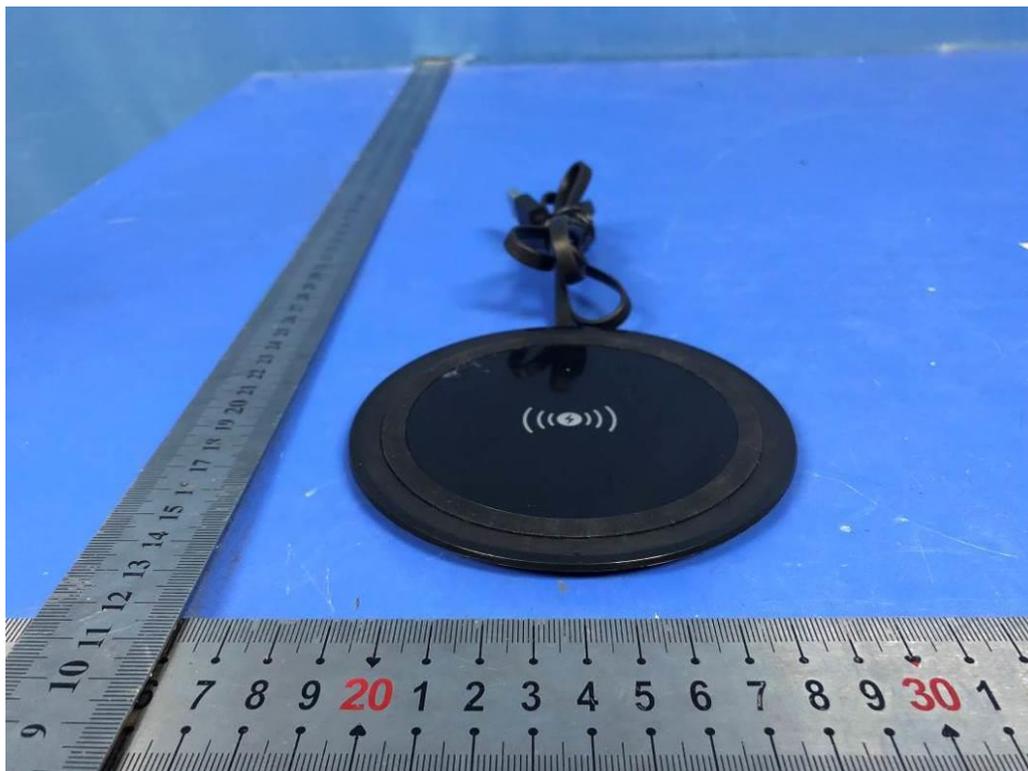


Fig. 5

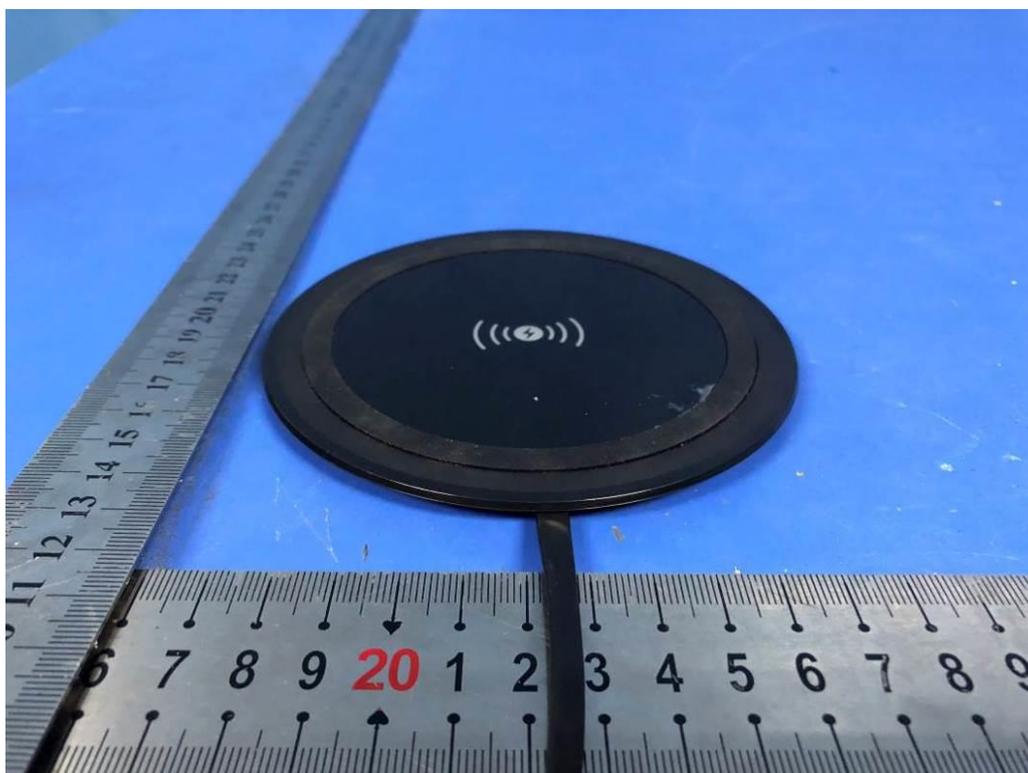


Fig. 6

7. INTERNAL PHOTOGRAPHS OF THE EUT

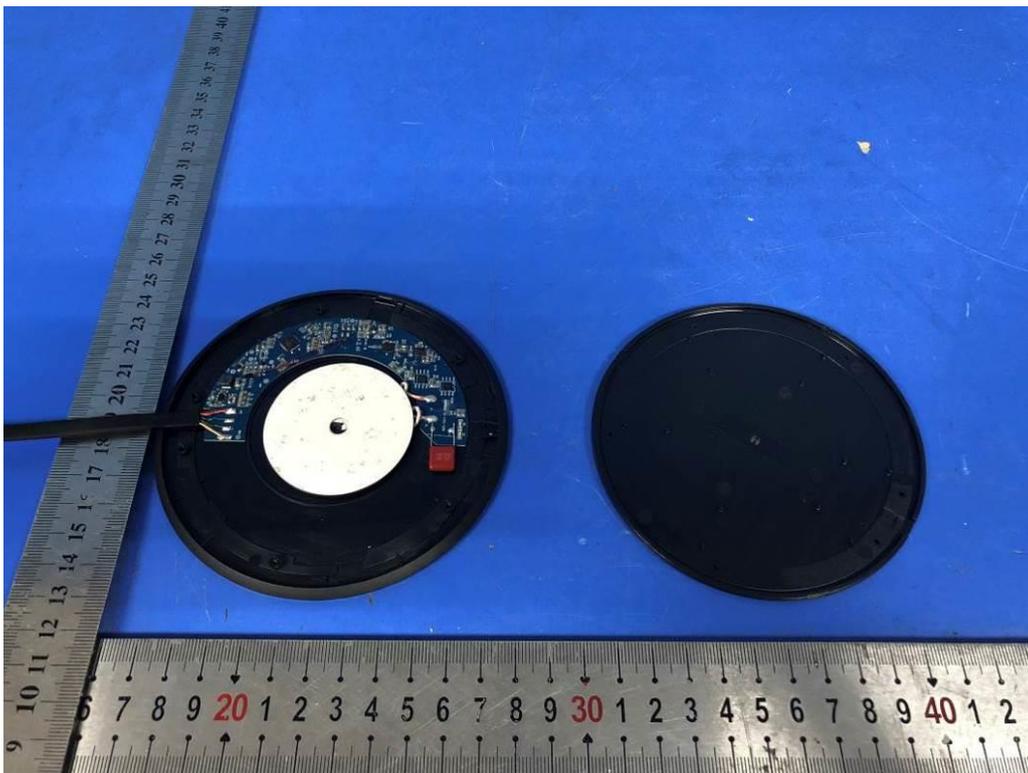


Fig. 1

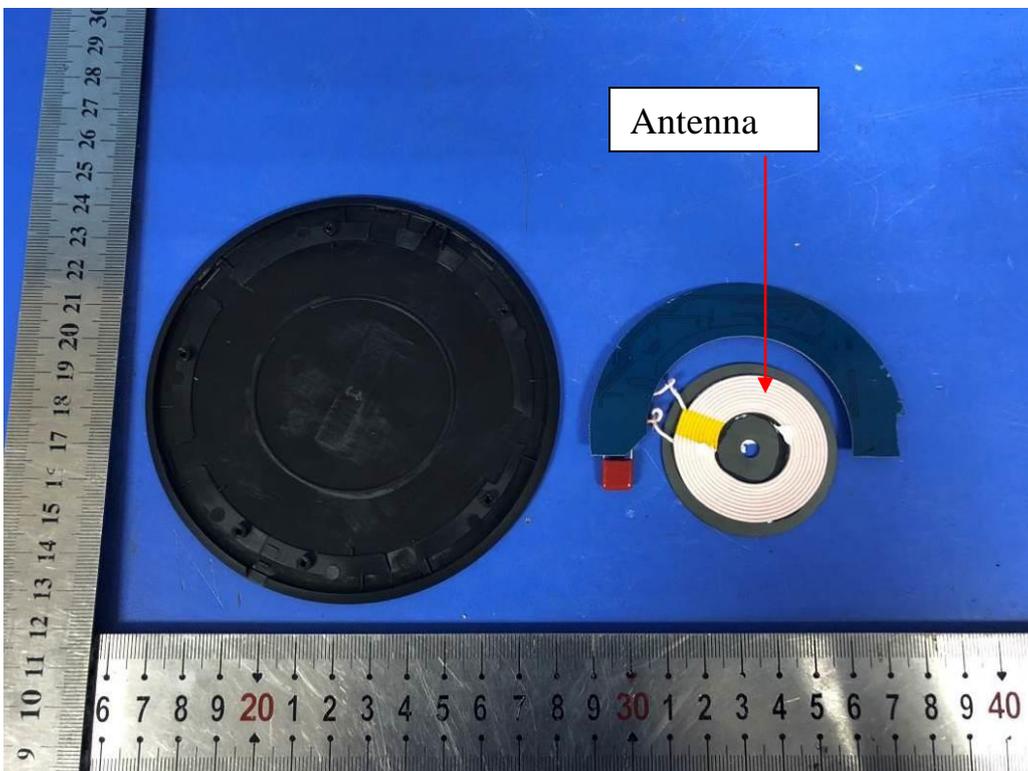


Fig. 2

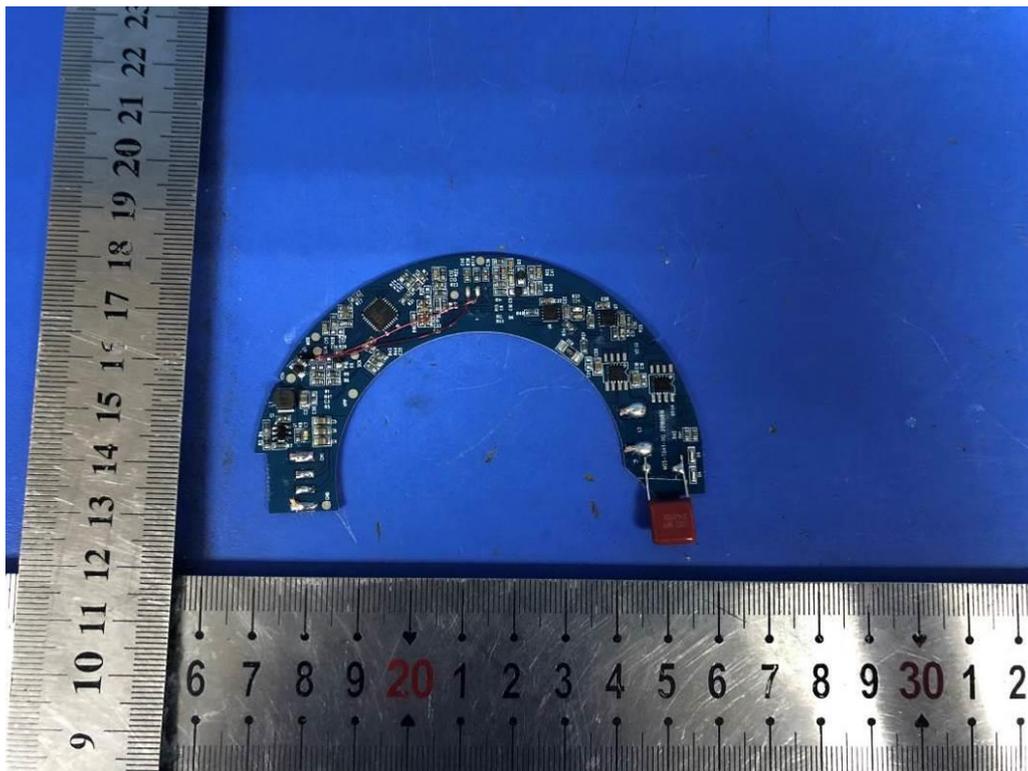


Fig. 3

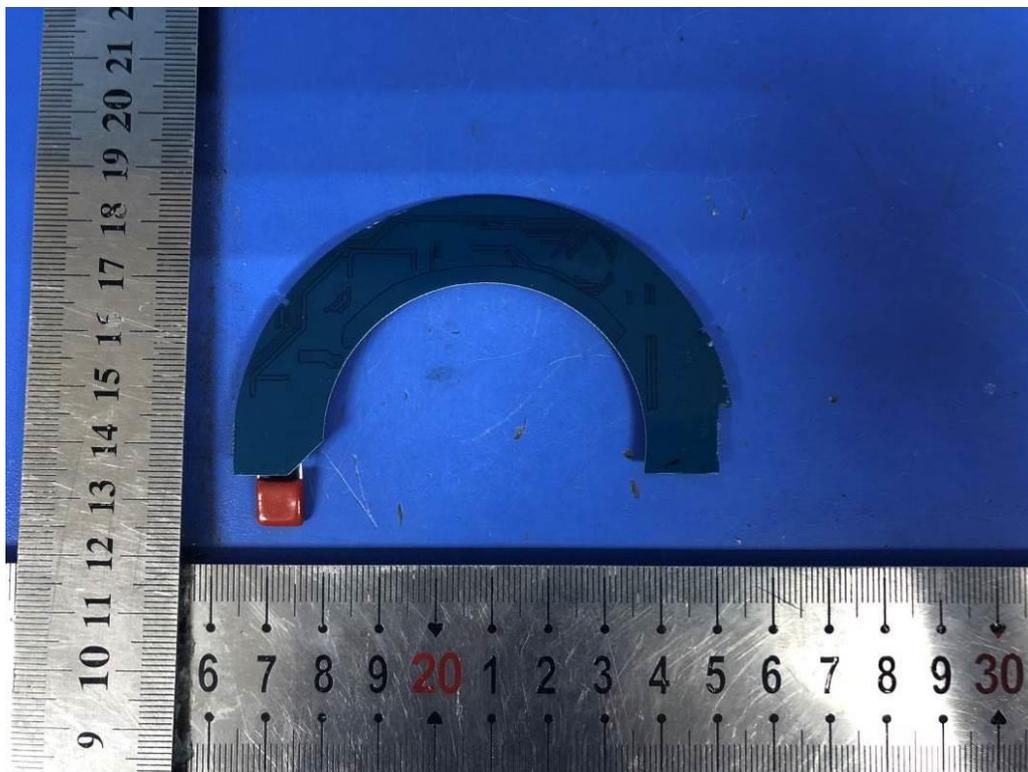


Fig. 4

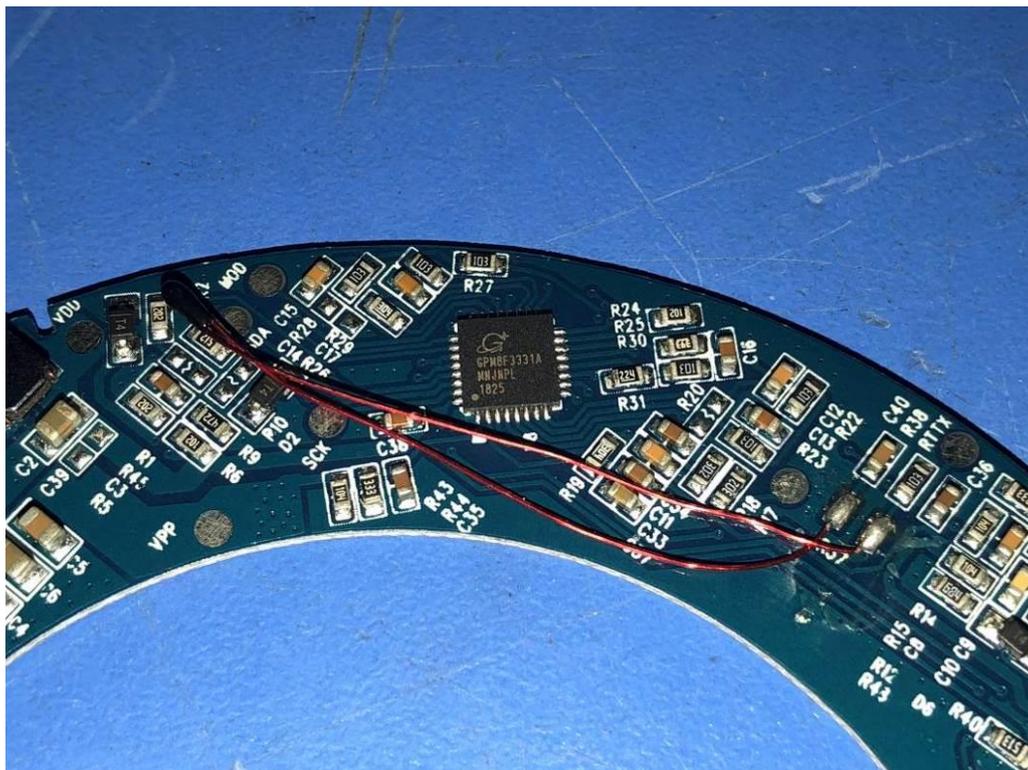


Fig. 5

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