TEST REPORT

Applicant:	NINGBO UNIVERSAL DRAGON I/E CORP.
Address of Applicant:	9/f Kirin Mansion,Tiantong North Road 1539#, Ningbo, China
Manufacturer:	NINGBO UNIVERSAL DRAGON I/E CORP.
Address of Manufacturer:	9/f Kirin Mansion,Tiantong North Road 1539#, Ningbo, China

Equipment Under Test (EUT)

Product Name:	wireless charger notebook
Model No.:	KP2236S
FCC ID:	2AUVH-KP2236S
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C
Date of sample receipt:	November 29, 2019
Date of Test:	November 29, 2019-December 06, 2019
Date of report issued:	December 06, 2019
Test Result :	PASS *

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

Authorized Signature:

Robinson Lo
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	*December 06, 2019*	*Original*

Prepared By:		***Date:***	*December 06, 2019*
	Project Engineer		
Check By:		***Date:***	*December 06, 2019*
	Reviewer		

3 Contents

Page

1 COVER PAGE 1

2 VERSION 2

3 CONTENTS 3

4 TEST SUMMARY 4

4.1 MEASUREMENT UNCERTAINTY 4

5 GENERAL INFORMATION 5

5.1 GENERAL DESCRIPTION OF EUT 5
5.2 TEST MODE 6
5.3 DESCRIPTION OF SUPPORT UNITS 6
5.4 DEVIATION FROM STANDARDS 6
5.5 ABNORMALITIES FROM STANDARD CONDITIONS 6
5.6 TEST FACILITY 6
5.7 TEST LOCATION 6
5.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER 6

6 TEST INSTRUMENTS LIST 7

7 TEST RESULTS AND MEASUREMENT DATA 9

7.1 ANTENNA REQUIREMENT: 9
7.2 CONDUCTED EMISSIONS 10
7.3 RADIATED EMISSION METHOD 13
7.4 20DB OCCUPY BANDWIDTH 18

8 TEST SETUP PHOTO 19

9 EUT CONSTRUCTIONAL DETAILS 21

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Radiated Emission	15.209	Pass
20dB Bandwidth	15.215	Pass

Pass: The EUT complies with the essential requirements in the standard.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	wireless charger notebook
Model No.:	KP2236S
Serial No.:	K9TP-KP2236S
Test sample(s) ID:	GTS201911000204-1
Sample(s) Status	Engineer sample
Operation Frequency:	111.5kHz ~ 205KHz
Modulation type:	Backscatter modulation
Antenna Type:	Inductive loop coil Antenna
Antenna gain:	0dBi (Max)
Power supply:	Input: DC 5V/2A Output: 5W (5V/1A)

Operation Frequency each of channel

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	0.1115	06	0.140	11	0.165	16	0.190
02	0.120	07	0.145	12	0.170	17	0.195
03	0.125	08	0.150	13	0.175	18	0.200
04	0.130	09	0.155	14	0.180	19	0.205
05	0.135	10	0.160	15	0.185		

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting.

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC Approval
SAMSUNG	Mobile Phone	S7EDGE	R28H835BJ2B	DOC
APPLE	USB Charger	A1399	N/A	N/A

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

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

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

● **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

5.8 Other Information Requested by the Customer

None.

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 26 2019	June. 25 2020
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 26 2019	June. 25 2020
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 26 2019	June. 25 2020
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 26 2019	June. 25 2020
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 26 2019	June. 25 2020
9	Coaxial Cable	GTS	N/A	GTS211	June. 26 2019	June. 25 2020
10	Coaxial cable	GTS	N/A	GTS210	June. 26 2019	June. 25 2020
11	Coaxial Cable	GTS	N/A	GTS212	June. 26 2019	June. 25 2020
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 26 2019	June. 25 2020
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 26 2019	June. 25 2020
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 26 2019	June. 25 2020
15	Band filter	Amindeon	82346	GTS219	June. 26 2019	June. 25 2020
16	Power Meter	Anritsu	ML2495A	GTS540	June. 26 2019	June. 25 2020
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 26 2019	June. 25 2020
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 26 2019	June. 25 2020
19	Splitter	Agilent	11636B	GTS237	June. 26 2019	June. 25 2020
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 26 2019	June. 25 2020
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 19 2019	Oct. 18 2020
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 19 2019	Oct. 18 2020
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 19 2019	Oct. 18 2020
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 26 2019	June. 25 2020

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 26 2019	June. 25 2020
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 26 2019	June. 25 2020
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 26 2019	June. 25 2020
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 26 2019	June. 25 2020
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 26 2019	June. 25 2020

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
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.	
EUT Antenna:	
The Ant is Inductive loop coil antenna, the best case gain of the antenna is 0dBi.	

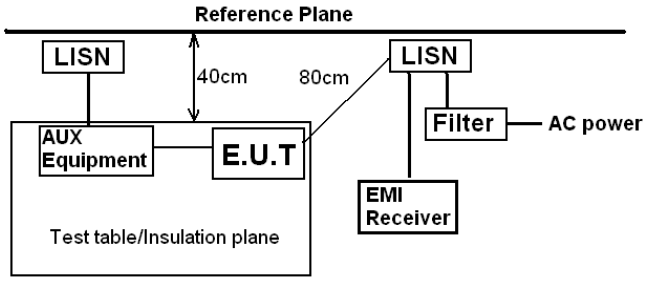
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C 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, Sweep time=auto
Limit:	

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

* Decreases with the logarithm of the frequency.

Test setup:



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

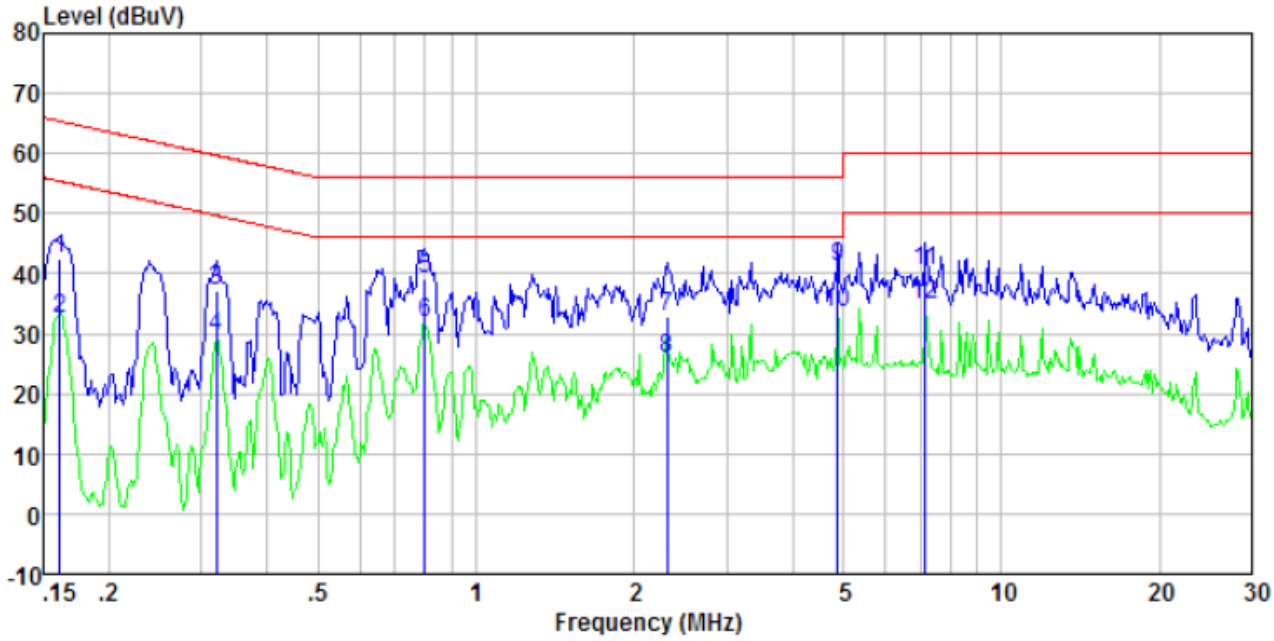
Test procedure:

1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
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).
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 on conducted measurement.

Test Instruments:	Refer to section 6.0 for details
Test mode:	AC 120V 60Hz
Test results:	Pass

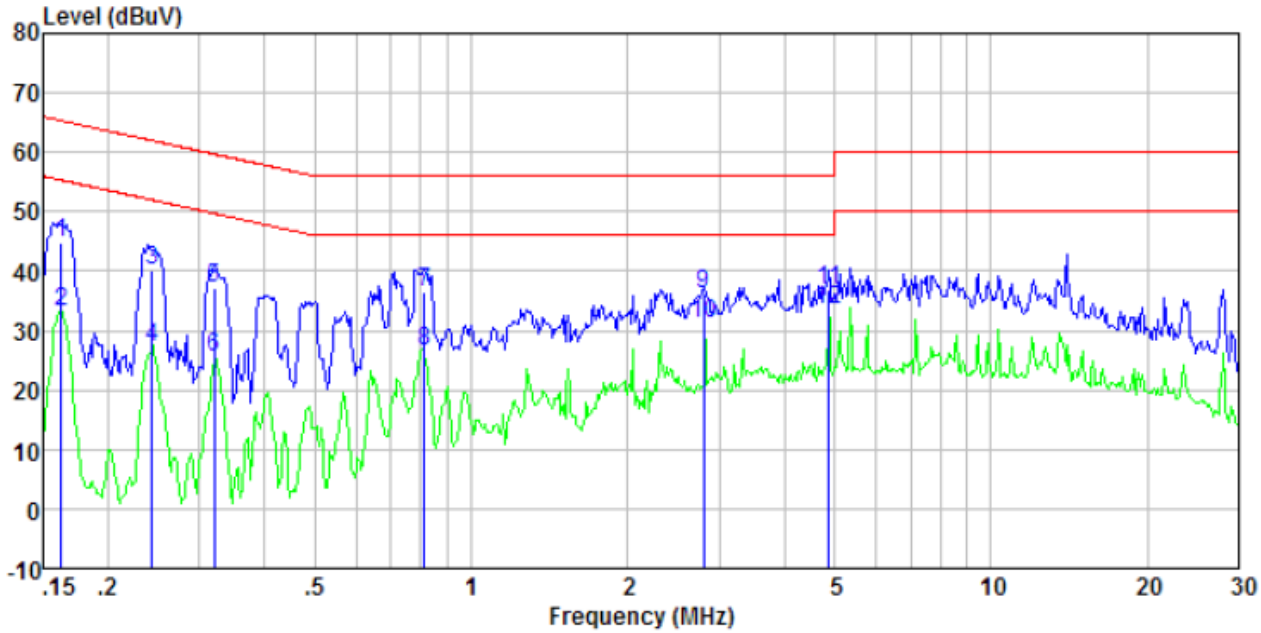
Measurement data:

Line:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.16	42.02	0.40	0.08	42.50	65.38	-22.88	QP
0.16	32.11	0.40	0.08	32.59	55.38	-22.79	Average
0.32	36.52	0.39	0.10	37.01	59.71	-22.70	QP
0.32	28.93	0.39	0.10	29.42	49.71	-20.29	Average
0.80	38.75	0.24	0.14	39.13	56.00	-16.87	QP
0.80	31.31	0.24	0.14	31.69	46.00	-14.31	Average
2.31	32.48	0.20	0.18	32.86	56.00	-23.14	QP
2.31	25.63	0.20	0.18	26.01	46.00	-19.99	Average
4.87	40.76	0.20	0.17	41.13	56.00	-14.87	QP
4.87	33.00	0.20	0.17	33.37	46.00	-12.63	Average
7.18	40.21	0.20	0.19	40.60	60.00	-19.40	QP
7.18	34.29	0.20	0.19	34.68	50.00	-15.32	Average

Neutral:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.16	44.25	0.40	0.08	44.73	65.34	-20.61	QP
0.16	32.64	0.40	0.08	33.12	55.34	-22.22	Average
0.24	39.72	0.40	0.11	40.23	62.00	-21.77	QP
0.24	26.61	0.40	0.11	27.12	52.00	-24.88	Average
0.32	36.52	0.39	0.10	37.01	59.71	-22.70	QP
0.32	25.08	0.39	0.10	25.57	49.71	-24.14	Average
0.81	35.97	0.23	0.14	36.34	56.00	-19.66	QP
0.81	26.07	0.23	0.14	26.44	46.00	-19.56	Average
2.79	35.90	0.20	0.19	36.29	56.00	-19.71	QP
2.79	30.82	0.20	0.19	31.21	46.00	-14.79	Average
4.87	36.36	0.20	0.17	36.73	56.00	-19.27	QP
4.87	33.11	0.20	0.17	33.48	46.00	-12.52	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 1GHz
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Remark
9kHz - 30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

Remark: For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission test in these three bands are based on measurements employing an average detector.

Limit:
(Spurious Emissions)

Limits for frequency below 30MHz

Frequency	Limit (uV/m)	Measurement Distance(m)	Remark
0.009-0.490	2400/F(kHz)	300	Quasi-peak Value
0.490-1.705	24000/F(kHz)	30	Quasi-peak Value
1.705-30	30	30	Quasi-peak Value

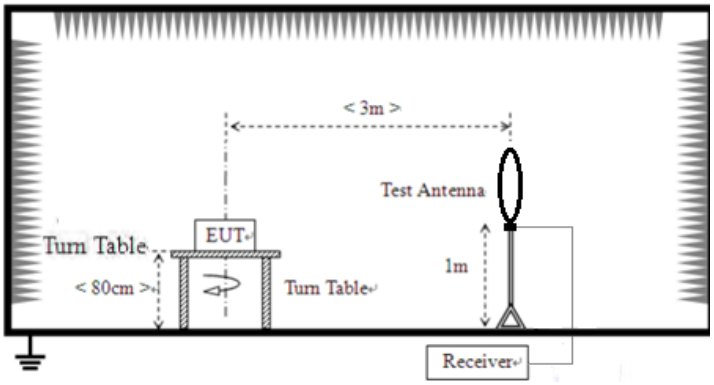
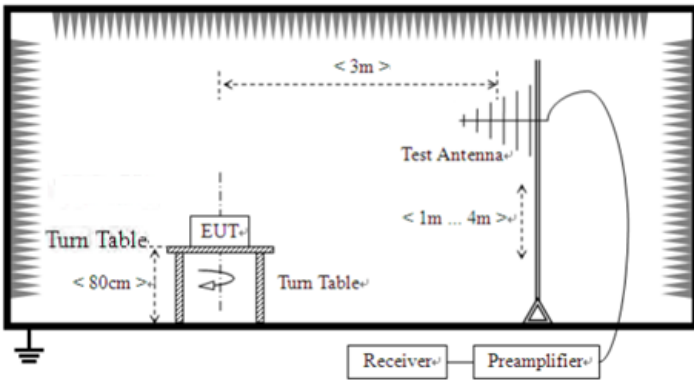
Limits for frequency Above 30MHz

Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.00	Quasi-peak Value
88MHz-216MHz	43.50	Quasi-peak Value
216MHz-960MHz	46.00	Quasi-peak Value
960MHz-1GHz	54.00	Quasi-peak Value
Above 1GHz	54.00	Average Value
	74.00	Peak Value

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. 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.
4. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the

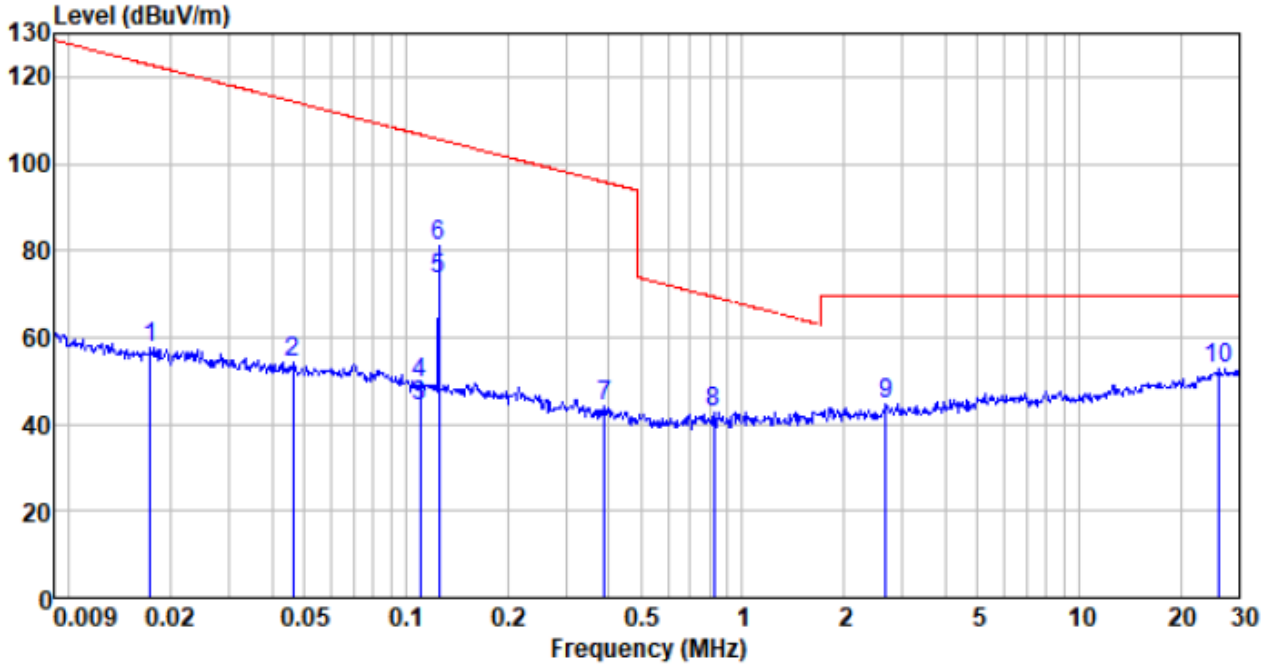
	limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test setup:	Below 30MHz  30MHz ~ 1000MHz 
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

Limit dBuV/m @3m = Limit dBuV/m @30m + 40

Below 30MHz

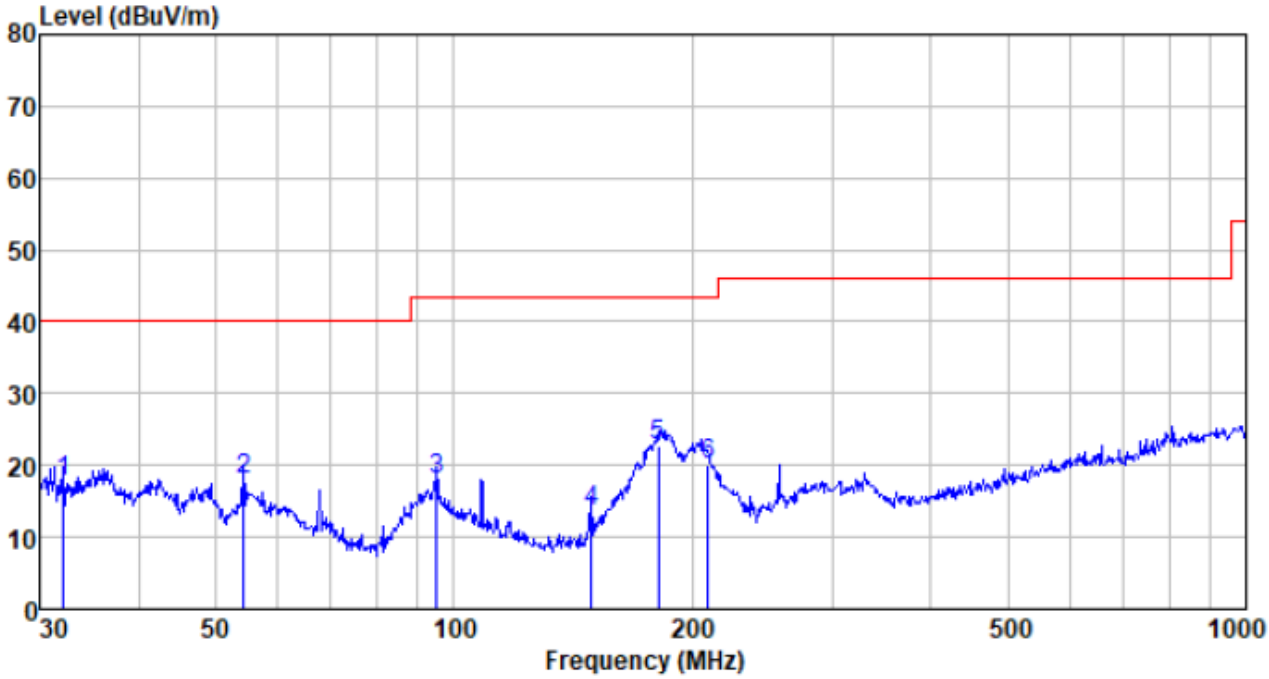


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
0.017	47.94	19.52	0.05	9.78	57.73	122.81	-65.08	Peak
0.046	42.64	21.38	0.11	9.90	54.23	114.28	-60.05	Peak
0.110	31.67	22.86	0.17	10.42	44.28	106.78	-62.50	Average
0.110	36.94	22.86	0.17	10.42	49.55	106.78	-57.23	Peak
* 0.125	60.96	22.75	0.18	10.41	73.48	105.66	-32.18	Average
* 0.125	68.71	22.75	0.18	10.41	81.23	105.66	-24.43	Peak
0.388	32.26	21.74	0.26	10.34	43.92	95.83	-51.91	Peak
0.825	31.54	21.07	0.31	10.30	42.62	69.28	-26.66	Peak
2.675	33.20	21.26	0.39	10.33	44.52	69.54	-25.02	Peak
26.136	35.65	27.09	0.55	10.55	52.74	69.54	-16.80	Peak

*:fundamental frequency

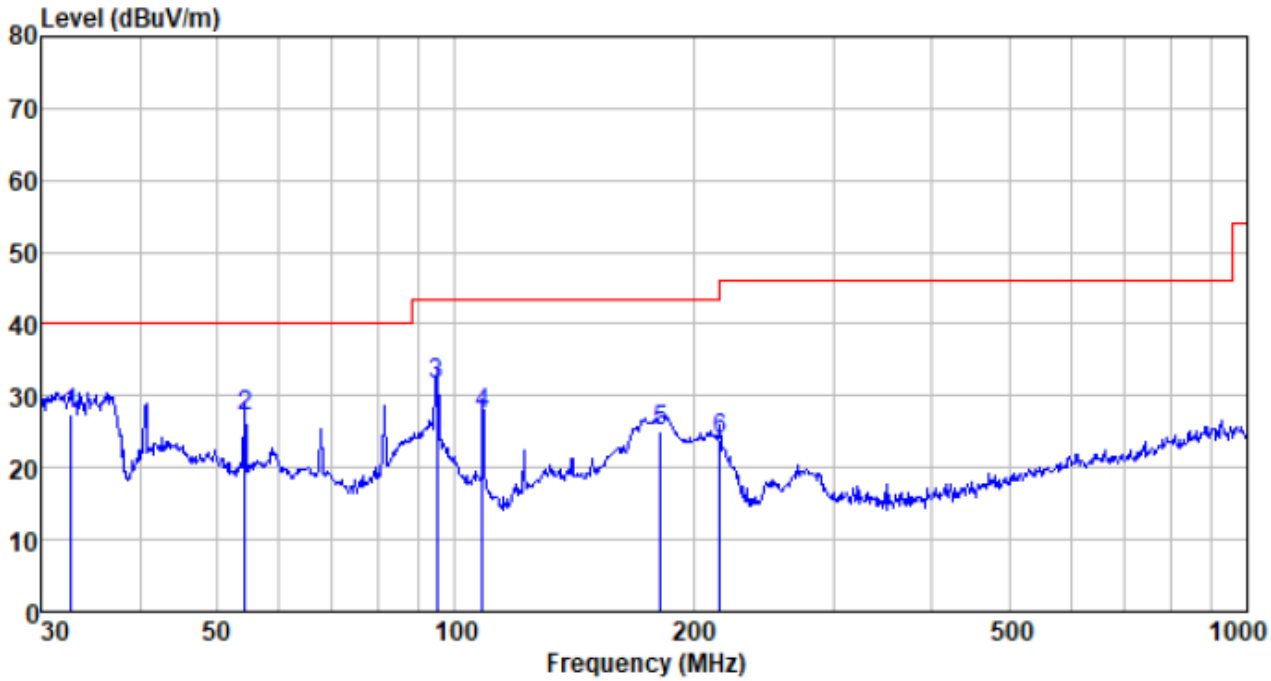
30MHz ~ 1GHz

Horizontal



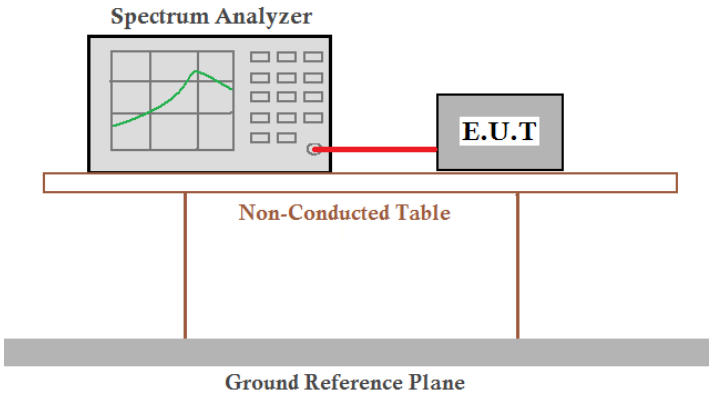
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
32.179	41.11	11.25	0.58	35.16	17.78	40.00	-22.22	QP
54.261	41.55	11.85	0.81	36.24	17.97	40.00	-22.03	QP
95.093	41.87	11.52	1.15	36.68	17.86	43.50	-25.64	QP
148.963	41.43	7.59	1.56	37.07	13.51	43.50	-29.99	QP
181.283	49.20	9.07	1.75	37.24	22.78	43.50	-20.72	QP
209.313	44.75	10.76	1.89	37.34	20.06	43.50	-23.44	QP

Vertical



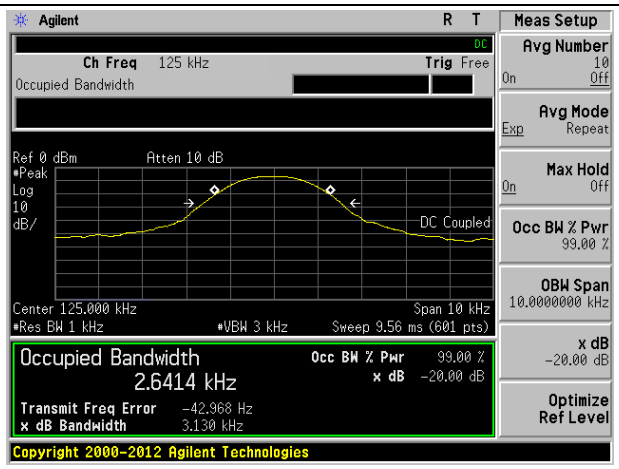
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
32.749	50.83	11.26	0.58	35.20	27.47	40.00	-12.53	QP
54.261	50.64	11.85	0.81	36.24	27.06	40.00	-12.94	QP
94.760	55.61	11.45	1.15	36.68	31.53	43.50	-11.97	QP
108.267	51.69	11.26	1.26	36.79	27.42	43.50	-16.08	QP
181.920	51.63	9.07	1.75	37.25	25.20	43.50	-18.30	QP
216.024	48.30	11.02	1.93	37.35	23.90	46.00	-22.10	QP

7.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.215
Test Method:	ANSI C63.10:2013
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

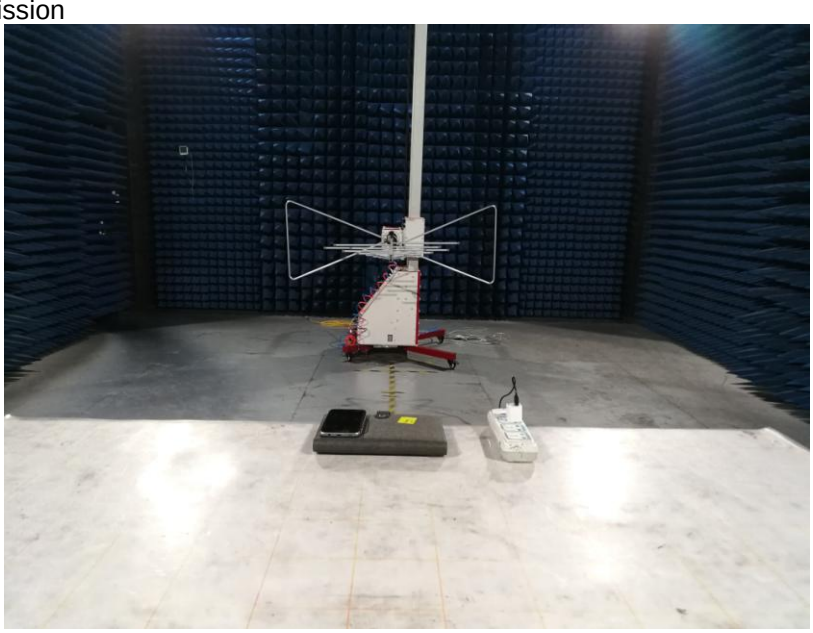
Measurement Data

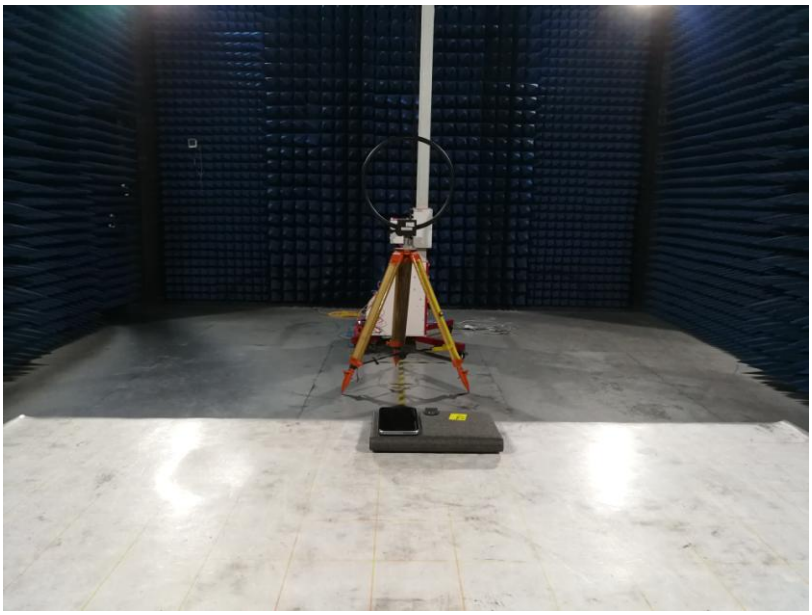
Test frequency (KHz)	20dB bandwidth (KHz)	Result
125.00	3.130	Pass



8 Test Setup Photo

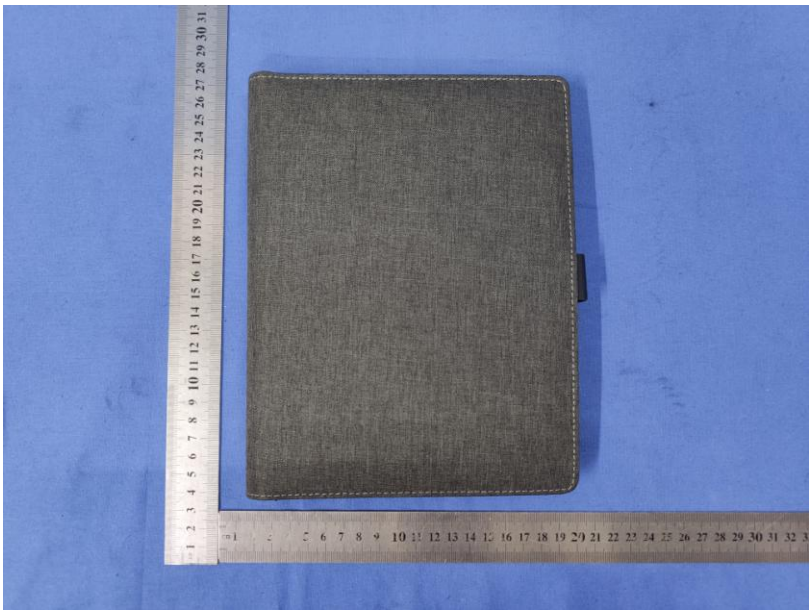
Radiated Emission

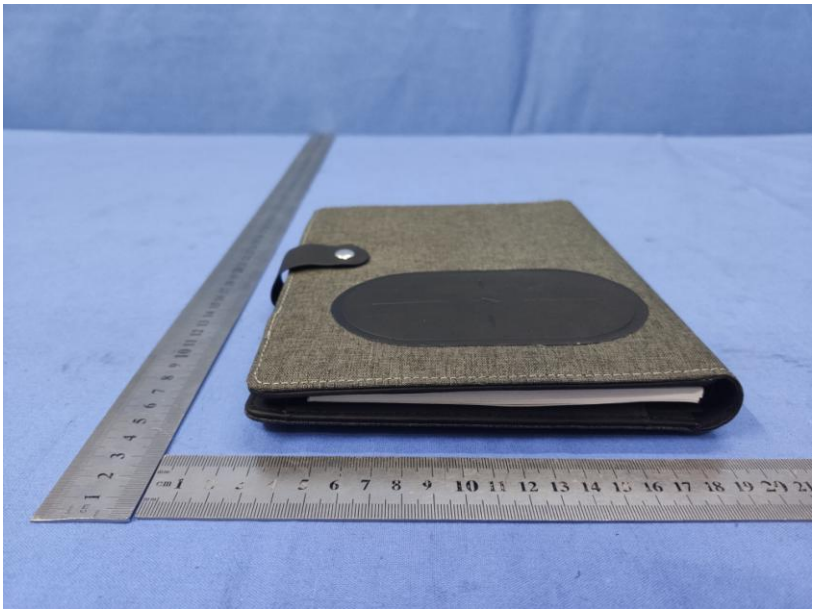


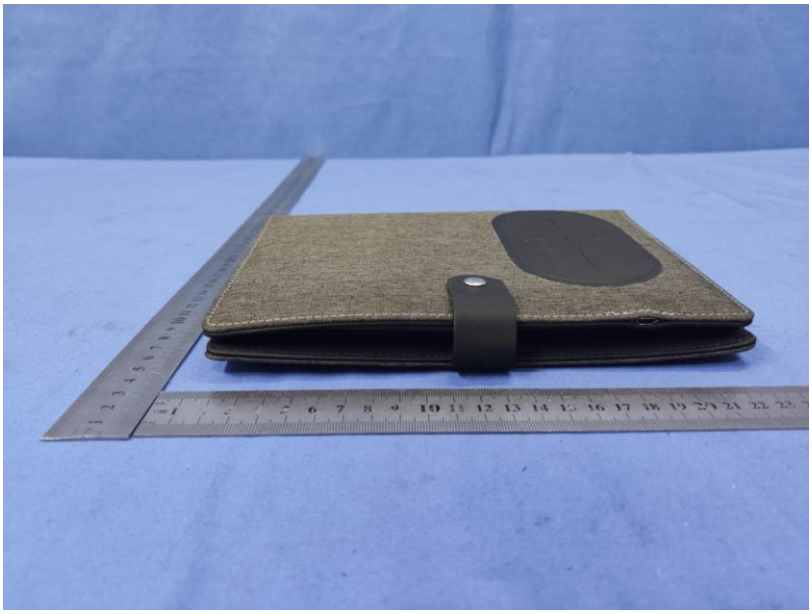


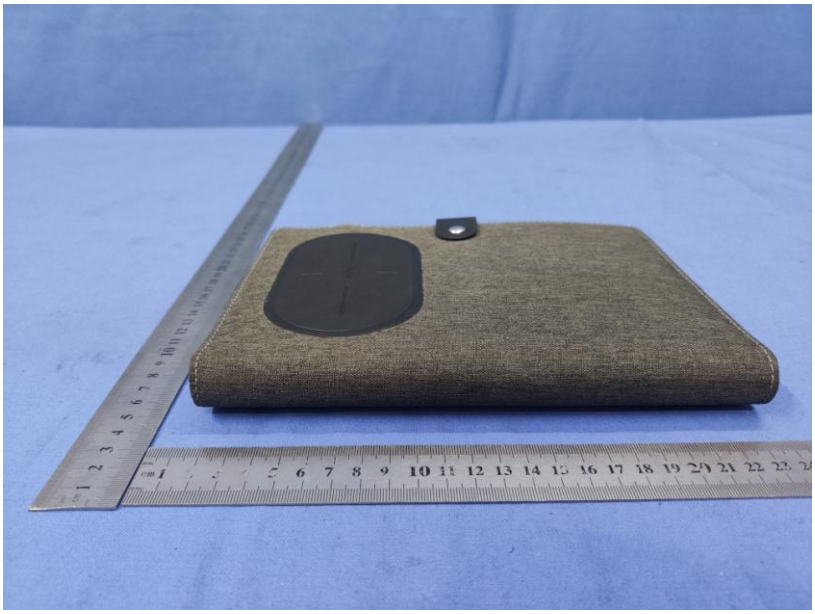
Conducted Emission

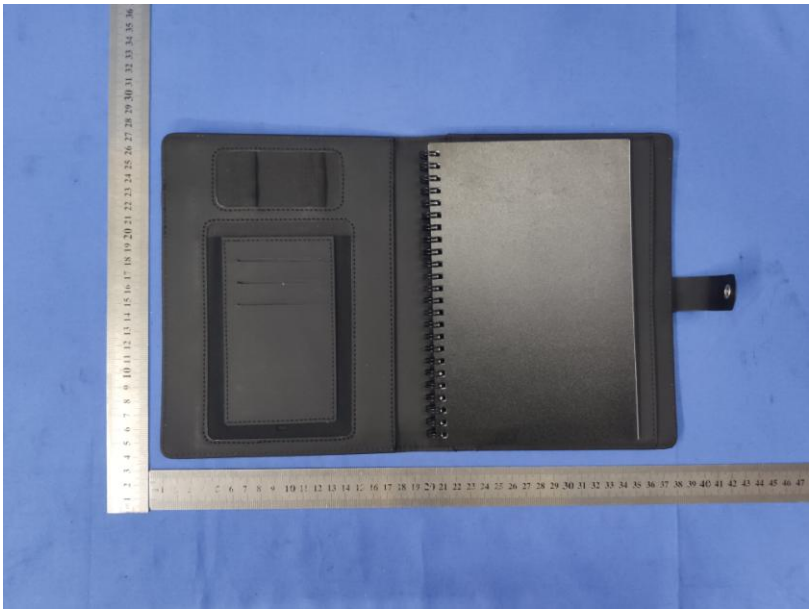
9 EUT Constructional Details

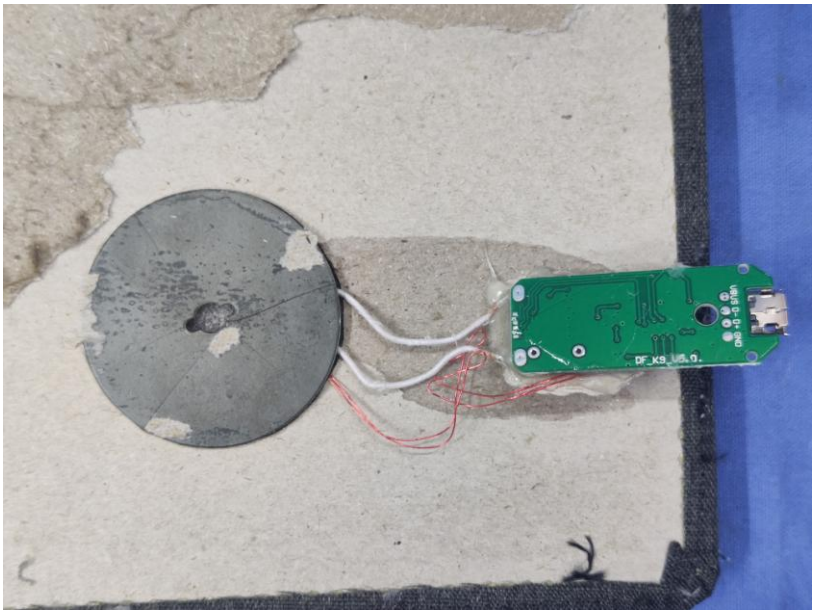


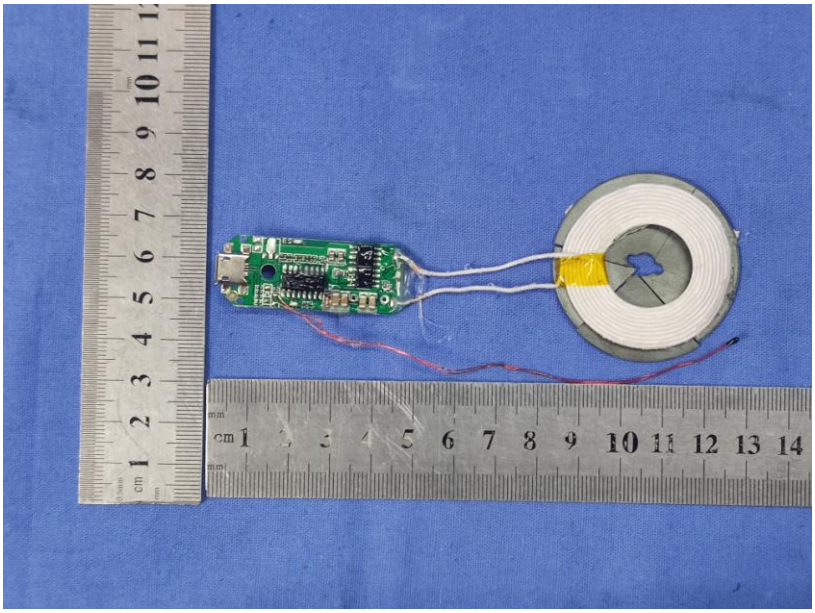


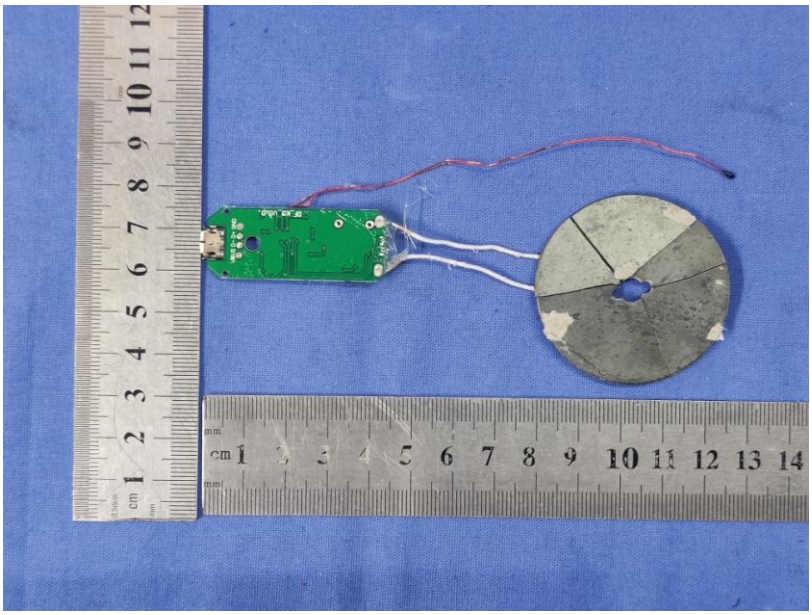


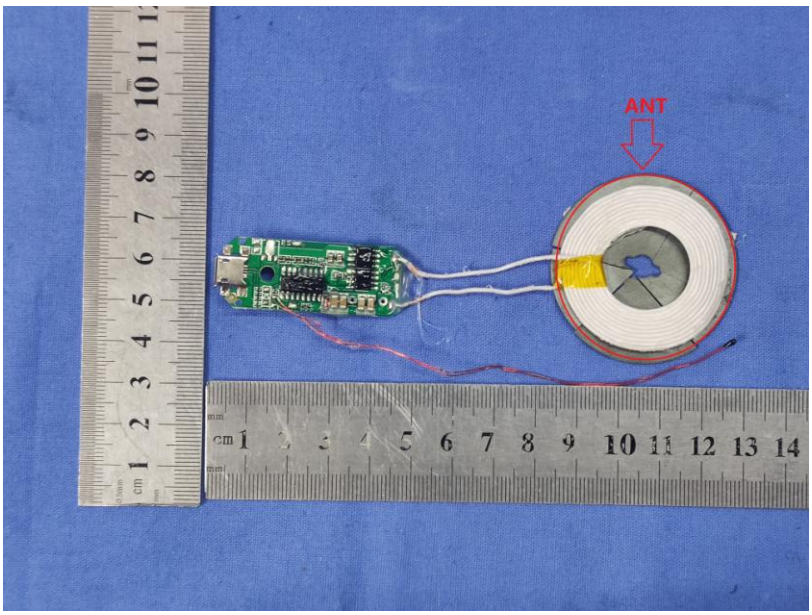












------End------