

FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

TCL Technoly Electronics (Huizhou) Co.,Ltd

Levitation Bluetooth Speaker
(Mars Base)

Model Number: L141

FCC ID: ZVAPS000020

Prepared for : TCL Technoly Electronics (Huizhou) Co.,Ltd
Section 37, Zhongkai High-tech Development Zone,
Huizhou City, Guang Dong Province, China, 516006

Prepared By : EST Technology Co., Ltd.
Santun(guantai Road), Houjie Town, DongGuan City,
GuangDong, China.

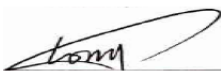
Tel: 86-769-83081888-808

Report Number: ESTE-R1509029
Date of Test : August 15~September 09,2015
Date of Report: September 11,2015

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Test Report Verification

Applicant:	TCL Technoly Electronics (Huizhou) Co.,Ltd		
Address:	Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guang Dong Province, China, 516006		
Manufacturer	Crazybaby Inc.		
Address:	175 South Main Suite,500 Salt Lake City,UT 84111,United States.		
E.U.T:	Levitation Bluetooth Speaker		
Model Number:	L141		
Power Supply:	DC 7.4V From Internal Battery DC 12V From Adapter Input AC 100-240V~50/60Hz		
Test Voltage:	AC 120V/240V		
Trade Name:	Mars by crazybaby	Serial No.:	-----
Date of Receipt:	August 11, 2015	Date of Test:	August 15~September 09,2015
Test Specification:	FCC Rules and Regulations Part 15 Subpart C:2014 ANSI C63.10:2013		
Test Result:	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. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. Date: September 11, 2015		
Prepared by:	Tested by:	Approved by:	
 	 	 	
Ada / Assistant	Tony.Tang/ Engineer	IcemanHu / Manager	
Other Aspects:	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 : Levitation Bluetooth Speaker

Model Number : L141

FCC ID : ZVAPS000020

Operation frequency : 112-205 kHz

Modulation : ASK

Antenna Type : Coil Antenna

2. SUMMARY OF TEST

2.1. Summary of test result

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

2.2. Test Facilities

EMC Lab : Certificated by CNAL, CHINA
 Registration No.: L5288
 Date of registration: Nov 23, 2014

 Certificated by FCC, USA
 Registration No.: 989591
 Date of registration: November 20, 2013

 Certificated by Industry Canada
 Registration No.: 9405A-1
 Date of registration: January 03, 2013

 Certificated by VCCI, Japan
 Registration No.: R-3663 & C-4103
 Date of registration: July 25, 2011

 Certificated by TUV Rheinland, Germany
 Registration No.: UA 50195514 0001
 Date of registration: January 07, 2011

 Certificated by TUV/PS, Shenzhen
 Registration No.: SCN1017
 Date of registration: January 27, 2011

 Certificated by Intertek ETL SEMKO
 Registration No.: 2011-RTL-L1-18
 Date of registration: April 28, 2011

 Certificated by Siemic, Inc.
 Registration No.: SLCN021
 Date of registration: November 8, 2011

 Certificated by Nemko, Hong Kong
 Registration No.: 175193
 Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

Site Location : San Tun Management Zone, Houjie District, Dongguan,
 Guangdong, China

2.3. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.54dB
Uncertainty for Radiation Emission test (30MHz-1GHz)	3.62
Uncertainty for Radiation Emission test (1GHz to 18GHz)	4.86
Uncertainty for radio frequency	7×10^{-8}
Uncertainty for conducted RF Power	0.20dB
Uncertainty for Power density test	0.26dB

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

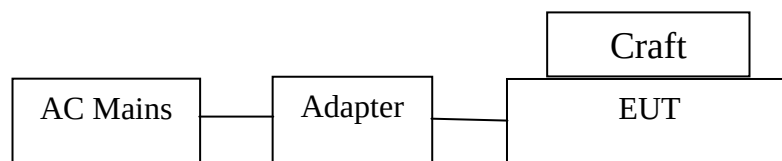
2.4. Assistant equipment used for test

2.4.1. Adapter

M / N : TMUA120200A
 Manufacturer : TCL Technoly Electronics (Huizhou) Co.,Ltd
 INPUT : AC 100~240V-50/60Hz, 1.0A Max.
 OUTPUT : DC 12.0V, 2.0A

2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground. EUT was be set into BT test mode by software before test.



(EUT: Levitation Bluetooth Speaker)

2.6. Test mode

Charging

2.7. Test Equipment

2.7.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	June,28,15	1 Year
Artificial Mains Networ	Rohde & Schwarz	ENV216	101260	June,28,15	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	June,28,15	1 Year

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

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESCI	100435	June,29,15	1 Year
Loop Antenna	ETS-LINDGREN	6502	00071730	June,29,15	1 Year

2.7.3. For radiated emission test(30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESVS10	100004	June,28,15	1 Year
Spectrum Analyzer	Agilent	E4411B	MY50140697	June,28,15	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	June,28,15	1 Year
Signal Amplifier	Agilent	310N	187037	June,28,15	1 Year

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μ V)	Average Level dB(μ 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.

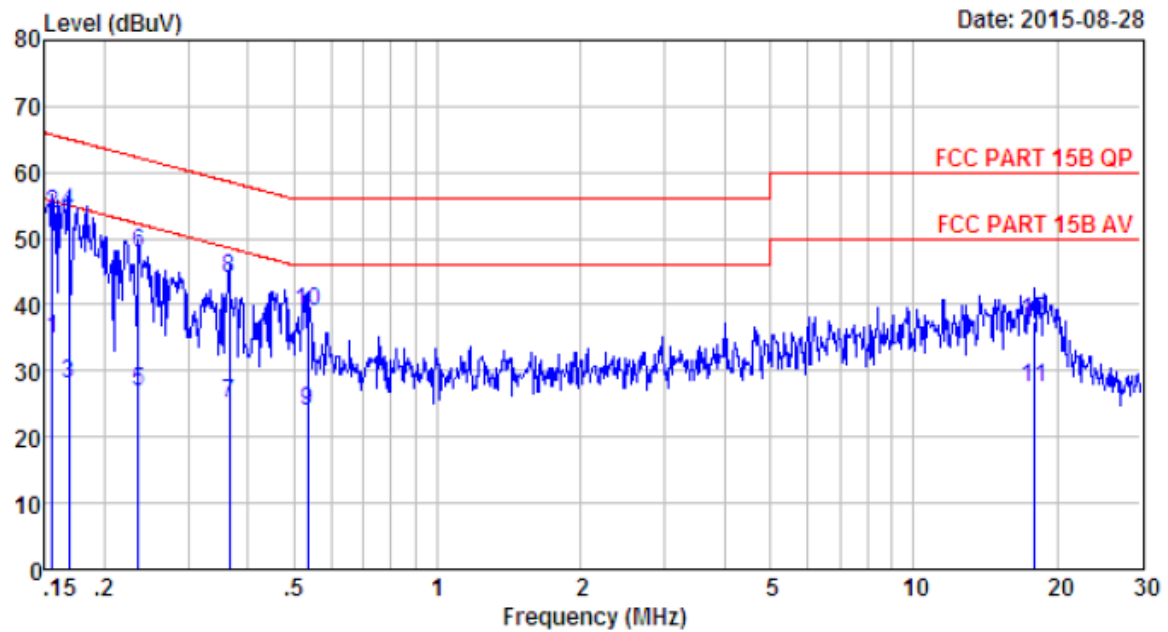
The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

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

3.3. Test Result

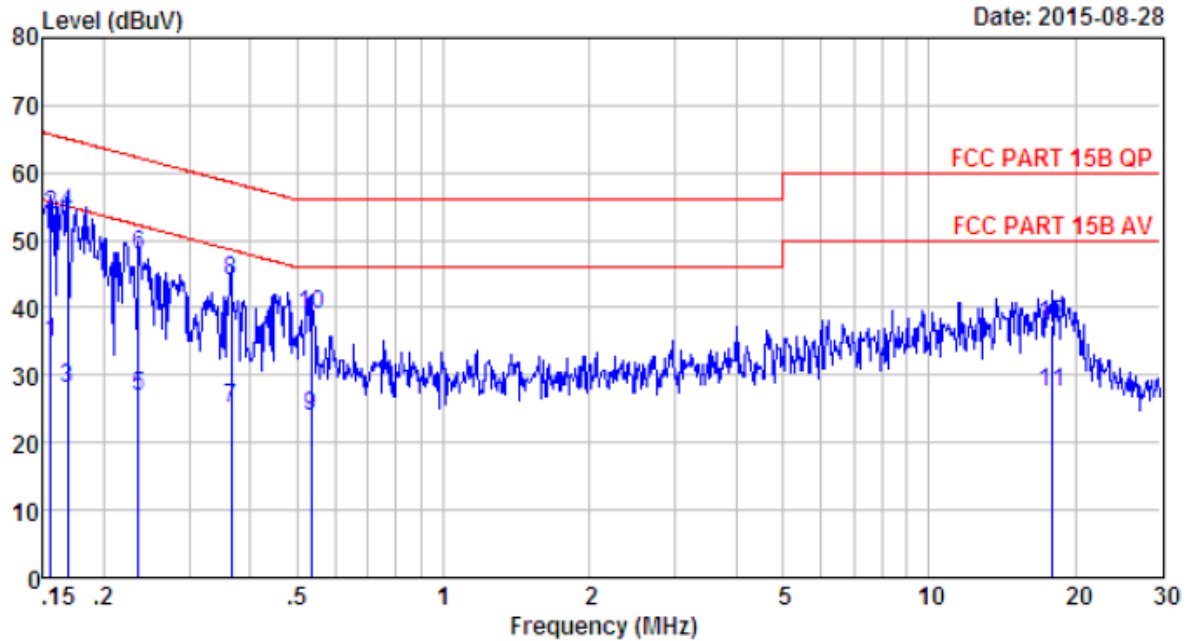
PASS. (The testing data was attached in the next pages.)

3.4. Test Data



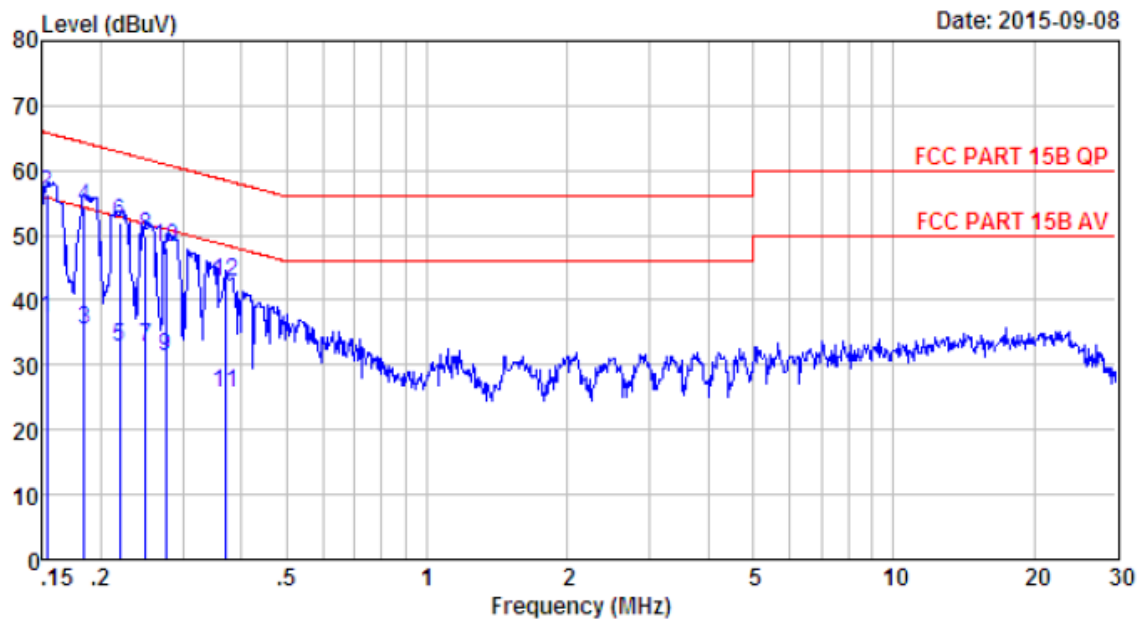
Site no : 844 Shield Room
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa NEUTRAL
 Limit : FCC PART 15B QP
 Engineer : Tony
 EUT : Levitation Bluetooth Speaker
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : L141
 Test Mode : Wireless Charging

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.16	9.48	9.81	15.50	34.79	55.69	20.90	Average
2	0.16	9.48	9.81	34.50	53.79	65.69	11.90	QP
3	0.17	9.52	9.81	8.60	27.93	55.03	27.10	Average
4	0.17	9.52	9.81	34.60	53.93	65.03	11.10	QP
5	0.24	9.60	9.82	7.36	26.78	52.26	25.48	Average
6	0.24	9.60	9.82	28.36	47.78	62.26	14.48	QP
7	0.37	9.59	9.82	5.66	25.07	48.61	23.54	Average
8	0.37	9.59	9.82	24.66	44.07	58.61	14.54	QP
9	0.53	9.60	9.82	4.63	24.05	46.00	21.95	Average
10	0.53	9.60	9.82	19.63	39.05	56.00	16.95	QP
11	17.94	9.80	9.94	7.85	27.59	50.00	22.41	Average
12	17.94	9.80	9.94	17.85	37.59	60.00	22.41	QP



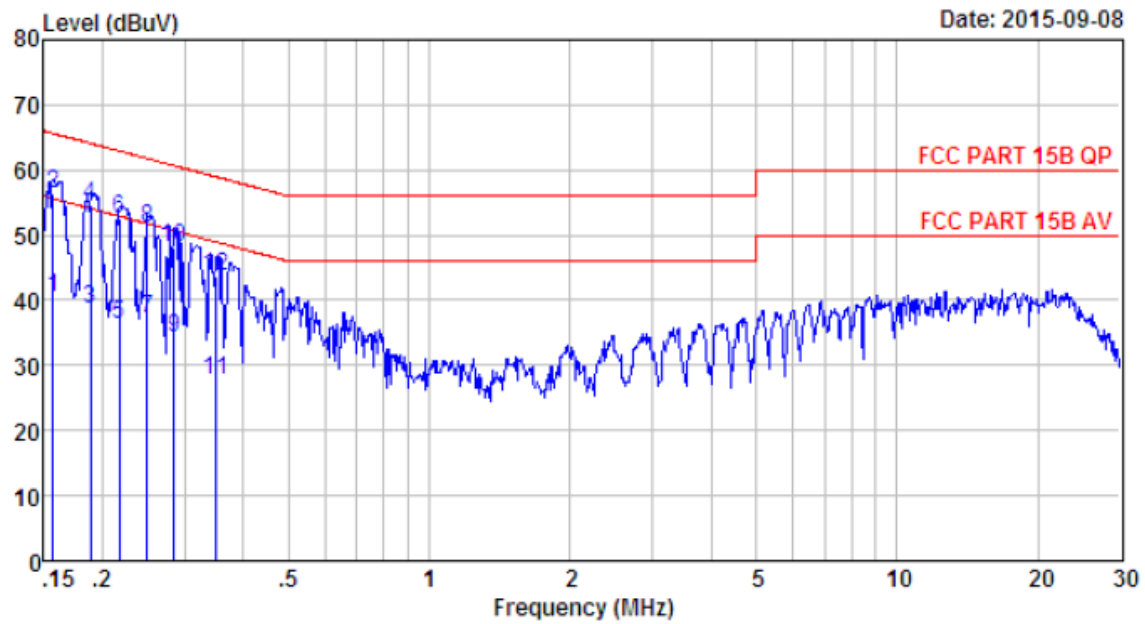
Site no : 844 Shield Room
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa NEUTRAL
 Limit : FCC PART 15B QP
 Engineer : Tony
 EUT : Levitation Bluetooth Speaker
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : L141
 Test Mode : Wireless Charging

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.16	9.48	9.81	15.50	34.79	55.69	20.90	Average
2	0.16	9.48	9.81	34.50	53.79	65.69	11.90	QP
3	0.17	9.52	9.81	8.60	27.93	55.03	27.10	Average
4	0.17	9.52	9.81	34.60	53.93	65.03	11.10	QP
5	0.24	9.60	9.82	7.36	26.78	52.26	25.48	Average
6	0.24	9.60	9.82	28.36	47.78	62.26	14.48	QP
7	0.37	9.59	9.82	5.66	25.07	48.61	23.54	Average
8	0.37	9.59	9.82	24.66	44.07	58.61	14.54	QP
9	0.53	9.60	9.82	4.63	24.05	46.00	21.95	Average
10	0.53	9.60	9.82	19.63	39.05	56.00	16.95	QP
11	17.94	9.80	9.94	7.85	27.59	50.00	22.41	Average
12	17.94	9.80	9.94	17.85	37.59	60.00	22.41	QP



Site no : 844 Shield Room Data no. : 25
 Env. / Ins. : Temp:24.3'C Humi:58% Press:101.50kPa LINE Phase : NEUTRAL
 Limit : FCC PART 15B QP
 Engineer : Tony
 EUT : Wireless Speaker
 Power : DC 12V From Adapter Input AC 240V/60Hz
 M/N : Mars
 Test Mode : Wireless Charging

	Freq. (MHz)	ISN Factor (db)	Cable Loss (db)	Reading dBuV	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.153	9.47	9.81	17.96	37.24	55.82	18.58	Average
2	0.153	9.47	9.81	36.96	56.24	65.82	9.58	QP
3	0.184	9.56	9.80	15.92	35.28	54.28	19.00	Average
4	0.184	9.56	9.80	34.92	54.28	64.28	10.00	QP
5	0.220	9.60	9.80	13.43	32.83	52.83	20.00	Average
6	0.220	9.60	9.80	32.43	51.83	62.83	11.00	QP
7	0.249	9.60	9.82	13.47	32.89	51.78	18.89	Average
8	0.249	9.60	9.82	30.47	49.89	61.78	11.89	QP
9	0.276	9.60	9.83	11.83	31.26	50.94	19.68	Average
10	0.276	9.60	9.83	28.83	48.26	60.94	12.68	QP
11	0.369	9.59	9.82	6.26	25.67	48.52	22.85	Average
12	0.369	9.59	9.82	23.26	42.67	58.52	15.85	QP



Site no : 844 Shield Room Data no. : 27
 Env. / Ins. : Temp:24.3'C Humi:58% Press:101.50kPa LINE Phase : LINE
 Limit : FCC PART 15B QP
 Engineer : Tony
 EUT : Wireless Speaker
 Power : DC 12V From Adapter Input AC 240V/60Hz
 M/N : Mars
 Test Mode : Wireless Charging

	Freq. (MHz)	ISN Factor (db)	Cable Loss (db)	Reading dBuV	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.156	9.61	9.81	21.07	40.49	55.65	15.16	Average
2	0.156	9.61	9.81	37.07	56.49	65.65	9.16	QP
3	0.188	9.61	9.80	19.15	38.56	54.11	15.55	Average
4	0.188	9.61	9.80	35.15	54.56	64.11	9.55	QP
5	0.217	9.61	9.80	17.02	36.43	52.92	16.49	Average
6	0.217	9.61	9.80	33.02	52.43	62.92	10.49	QP
7	0.249	9.61	9.82	17.70	37.13	51.78	14.65	Average
8	0.249	9.61	9.82	31.70	51.13	61.78	10.65	QP
9	0.285	9.61	9.83	14.68	34.12	50.68	16.56	Average
10	0.285	9.61	9.83	28.68	48.12	60.68	12.56	QP
11	0.348	9.61	9.83	8.34	27.78	49.00	21.22	Average
12	0.348	9.61	9.83	24.34	43.78	59.00	15.22	QP

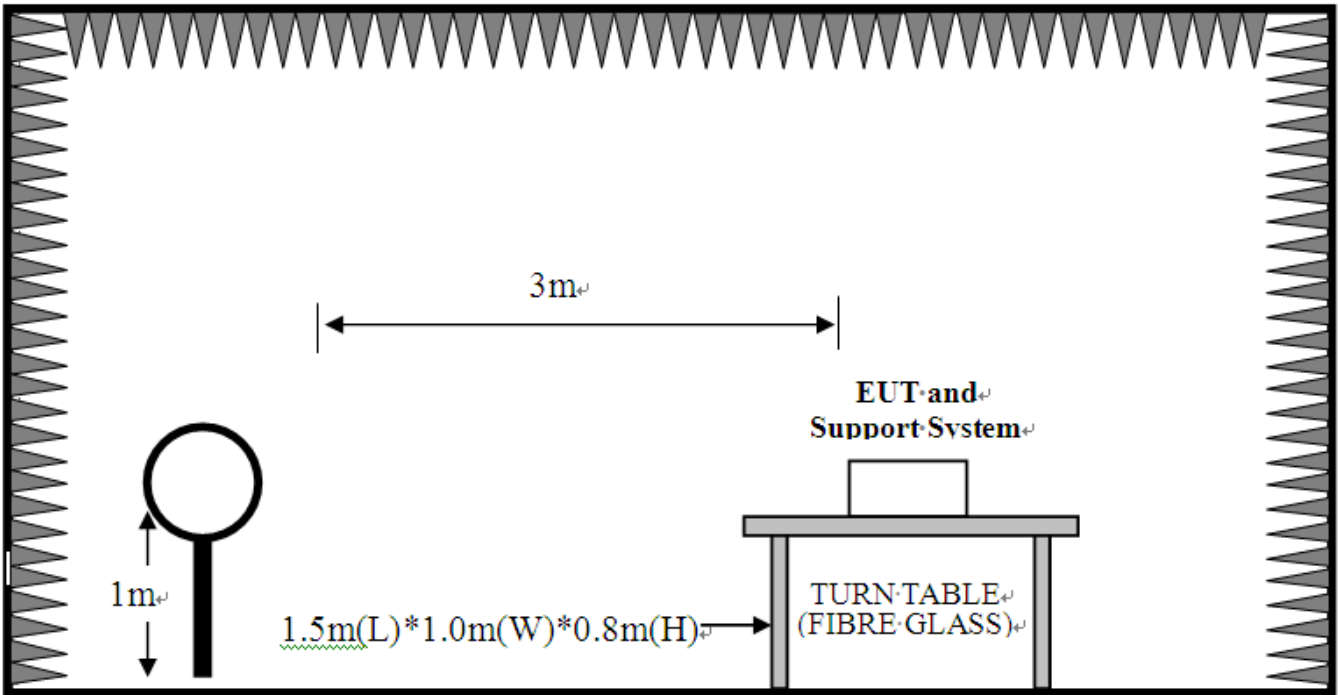
4. RADIATED EMISSIONS

4.1. Limit

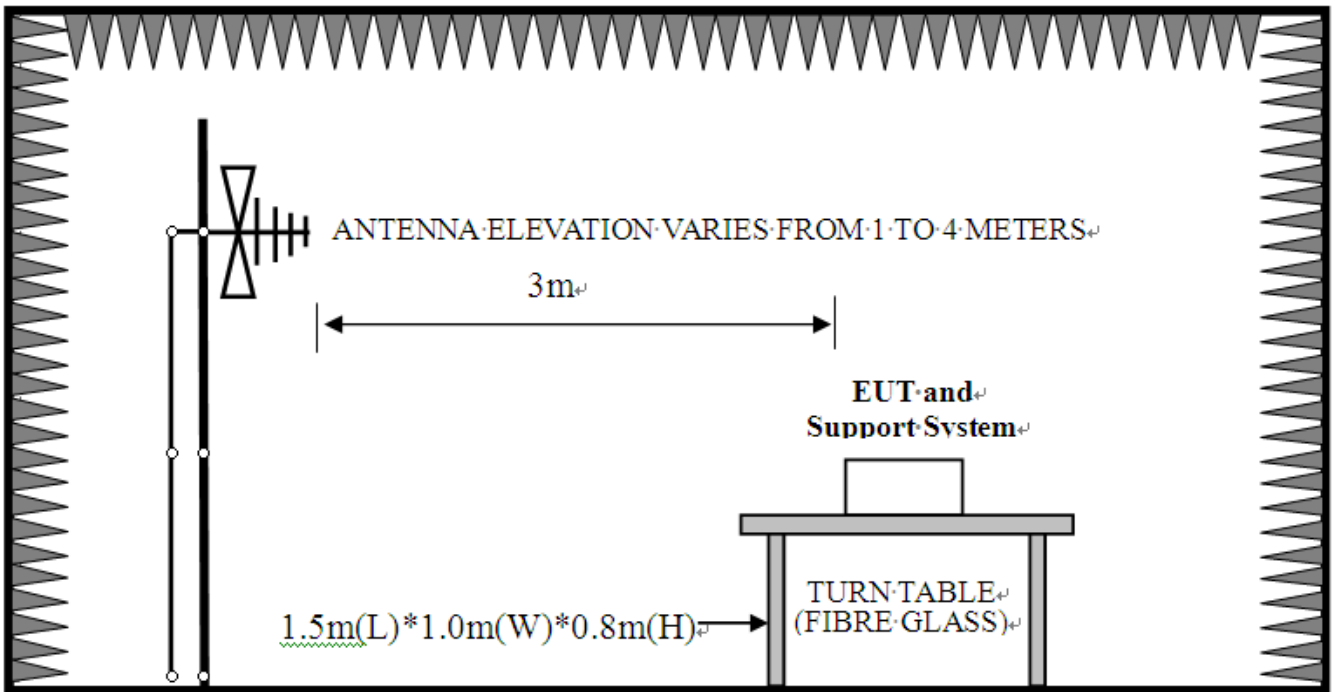
Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Distance (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

4.2. Block Diagram of Test setup

9kHz~30MHz



30~1000MHz



4.3. Test Procedure

Below 30MHz

1. The Product is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The maximum values of the field strength are recorded by adjusting the polarizations of the test antenna and rotating the turntable.
2. For each suspected emission, the Product was arranged to its worst case and then turn table was turned from 0 degrees to 360 degrees to find the maximum reading. c. The test frequency analyzer system was set to Peak Detect (300Hz RBW in 9kHz to 150kHz and 10kHz RBW in 150kHz to 30MHz) Function and Specified Bandwidth with Maximum Hold Mode.

30MHz ~ 1GHz:

1. The Product was placed on the non-conductive turntable 0.8m above the ground at a chamber.
2. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees. c. For each frequency whose maximum record was higher or close to limit, measure its QP value (120 kHz RBW): vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

4.4. Test Result

PASS.

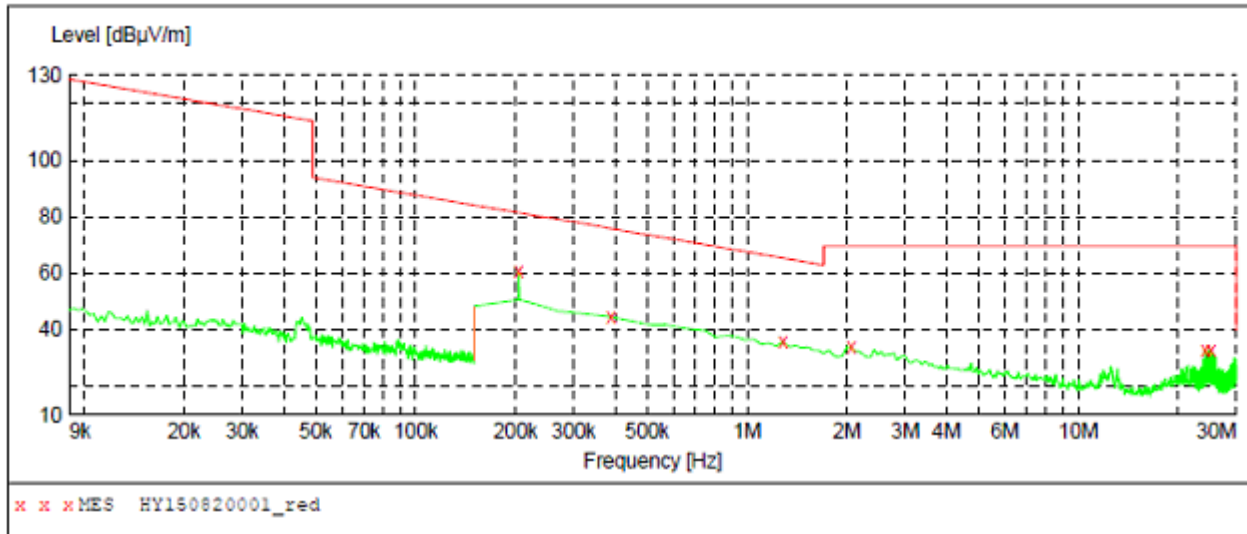
- Note: 1、 Below 30MHz: The radiation measurements are performed in X, Y, Z axis positioning. And worst case mode is recorded in the report.
- 2、 The frequency 5730MHz 、 5776MHz and 5824MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

4.5. Test Data

9 kHz – 30 MHz

EUT: Levitation Bluetooth Speaker		
M/N: L141		
Test date: 2015-08-20	Tested by: Tony.Tang	Test site: RF Site
Mode: Wireless Charging		
Power: DC 12V From Adapter Input AC 120V/60Hz		
Temperature : 24°C		
Humidity : 53%		

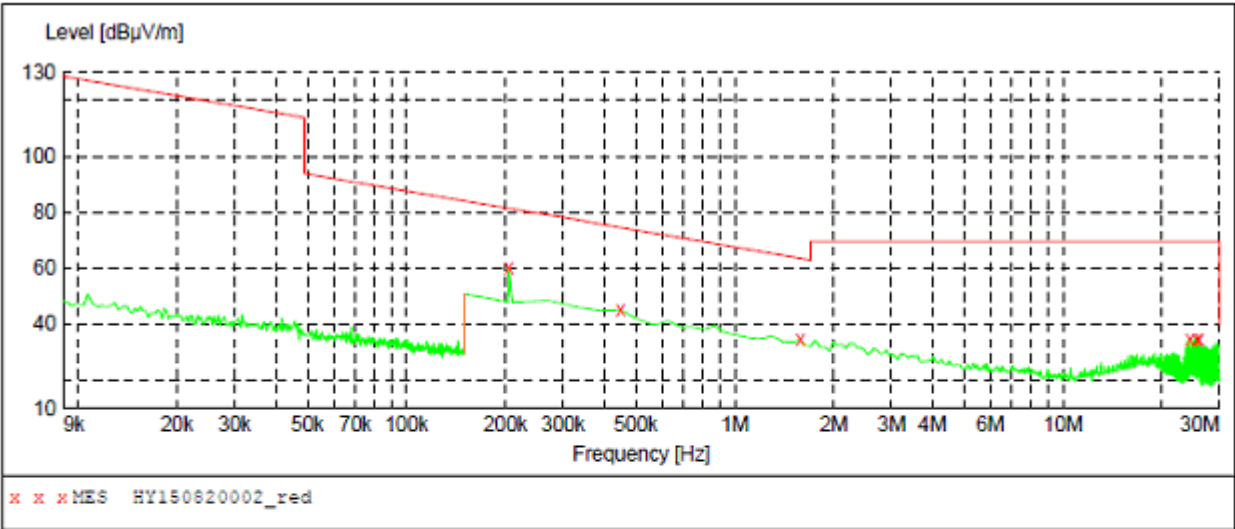
X

**MEASUREMENT RESULT: "HY150820001_red"**

20/08/2015 14:06

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.205000	60.67	-19.9	75.8	15.1	---	400.0	360.00	HORIZONTAL
0.388800	44.60	-19.9	75.8	31.2	---	400.0	360.00	HORIZONTAL
1.284300	35.80	-19.8	65.4	29.6	---	400.0	360.00	HORIZONTAL
2.060400	34.00	-19.5	69.5	35.5	---	400.0	360.00	HORIZONTAL
24.149400	32.70	-21.3	69.5	36.8	---	400.0	360.00	HORIZONTAL
25.224000	32.70	-21.5	69.5	36.8	---	400.0	360.00	HORIZONTAL

Y

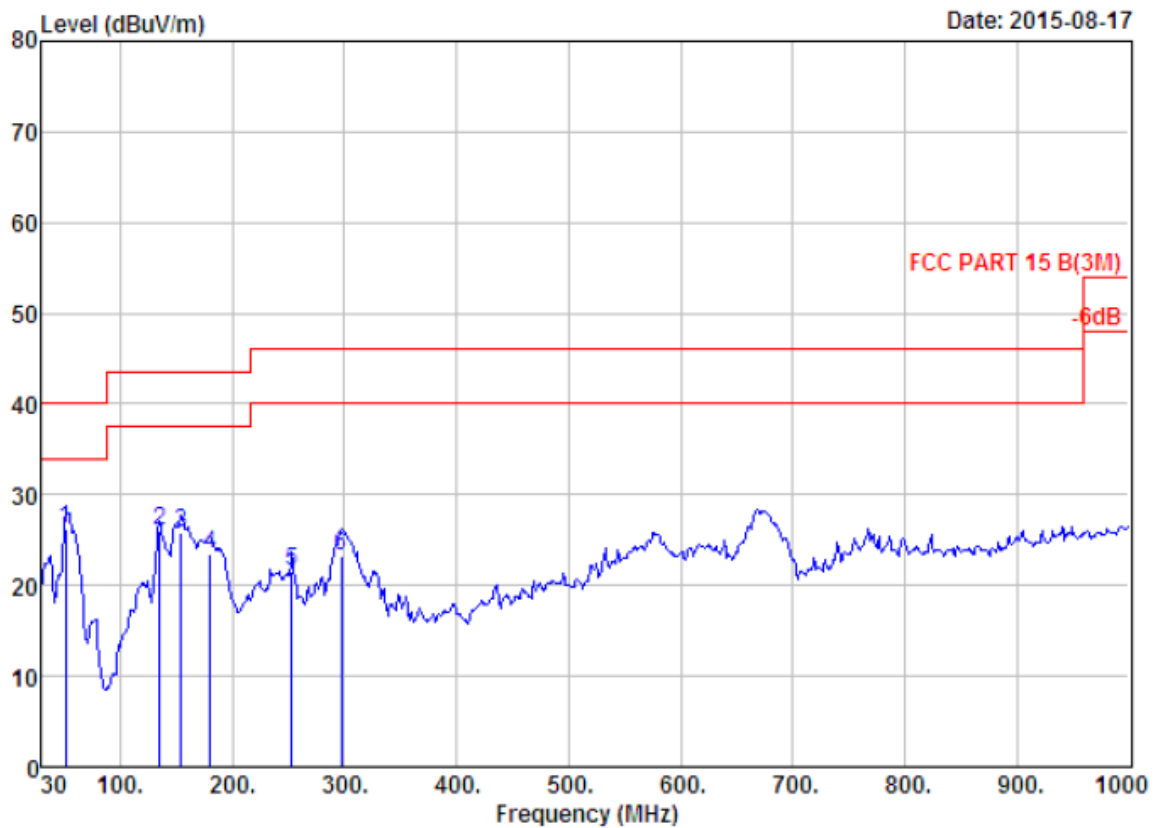


MEASUREMENT RESULT: "HY150820002_red"

20/08/2015 14:01

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.205000	60.10	-19.9	74.6	20.9	---	400.0	360.00	VERTICAL
0.448500	45.20	-19.9	74.6	29.4	---	400.0	360.00	VERTICAL
1.582800	34.50	-19.7	63.6	29.1	---	400.0	360.00	VERTICAL
24.388200	34.70	-21.4	69.5	34.8	---	400.0	360.00	VERTICAL
25.582200	34.90	-21.4	69.5	34.6	---	400.0	360.00	VERTICAL
25.940400	34.60	-21.4	69.5	34.9	---	400.0	360.00	VERTICAL

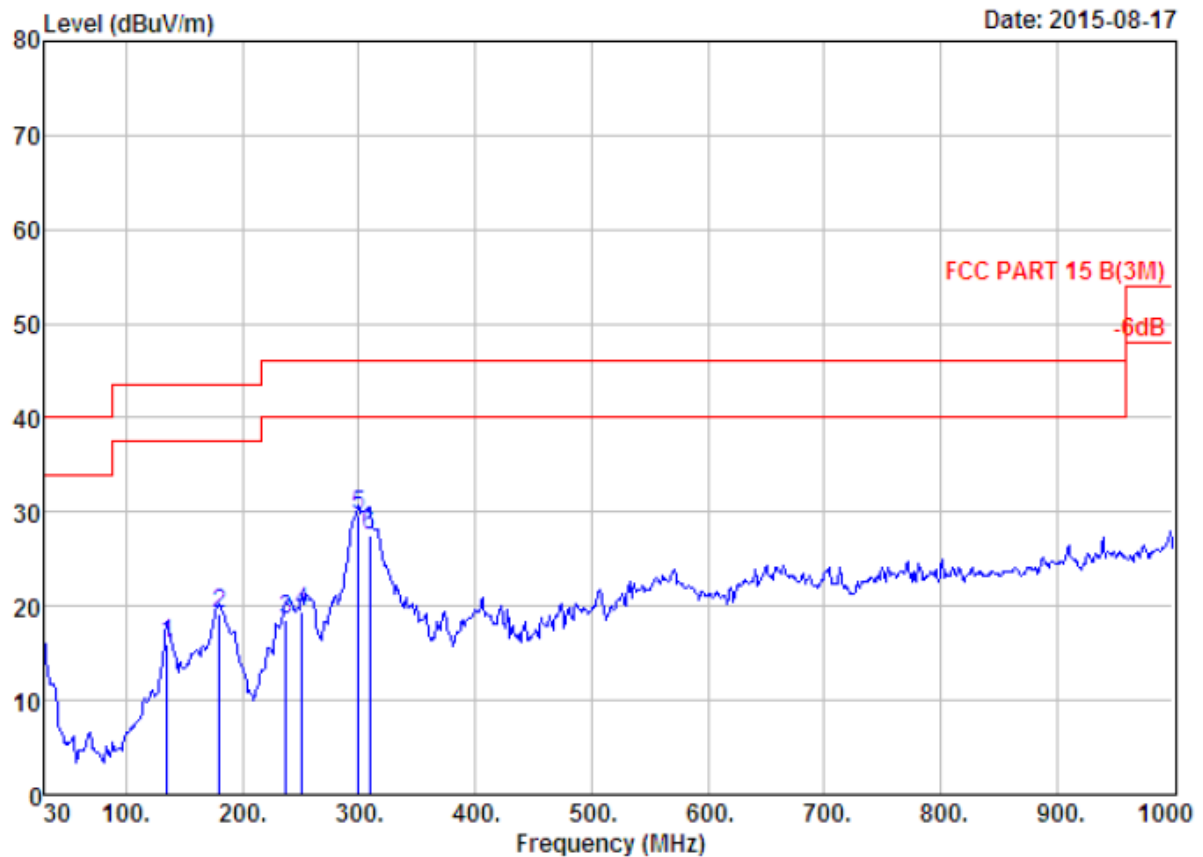
30-1000MHz



Site no. : 966 1# chamber
 Dis. / Ant. : 3m 27137
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Levitation Bluetooth Speaker
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : L141
 Test Mode : Wireless Charging

Data no. : 33
Ant. pol. : VERTICAL

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	51.34	6.92	0.89	18.50	26.31	40.00	13.69	QP
2	134.76	11.37	1.57	13.16	26.10	43.50	17.40	QP
3	154.16	10.71	1.66	13.35	25.72	43.50	17.78	QP
4	180.35	8.95	1.70	12.73	23.38	43.50	20.12	QP
5	253.10	12.17	2.17	7.25	21.59	46.00	24.41	QP
6	296.75	12.99	2.32	7.98	23.29	46.00	22.71	QP

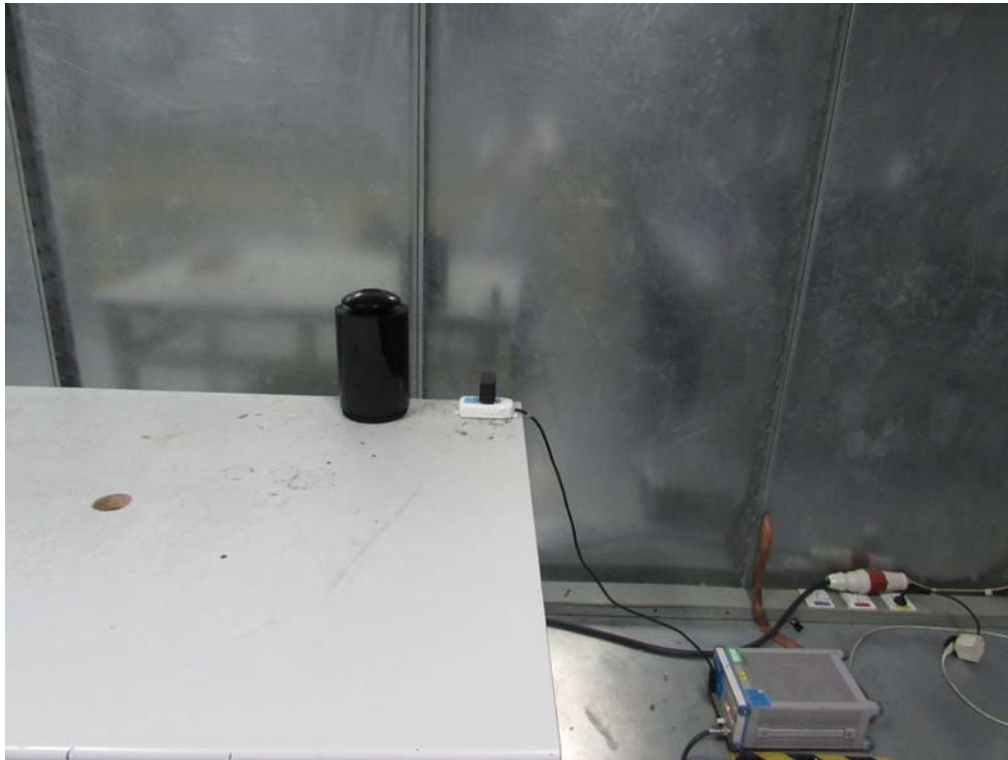


Site no. : 966 1# chamber Data no. : 34
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Tony
 EUT : Levitation Bluetooth Speaker
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : L141
 Test Mode : Wireless Charging

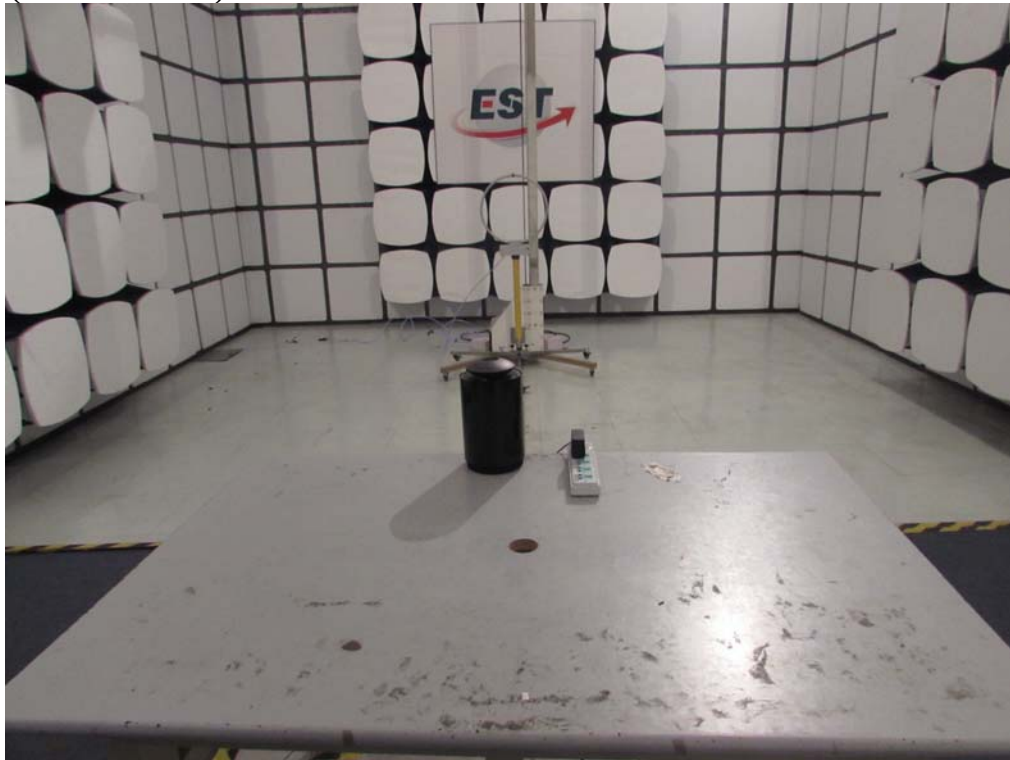
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	134.76	11.37	1.57	3.17	16.11	43.50	27.39	QP
2	180.35	8.95	1.70	8.57	19.22	43.50	24.28	QP
3	237.58	10.01	2.09	6.37	18.47	46.00	27.53	QP
4	251.16	11.94	2.15	5.28	19.37	46.00	26.63	QP
5	299.66	13.01	2.38	14.28	29.67	46.00	16.33	QP
6	309.36	13.18	2.36	12.06	27.60	46.00	18.40	QP

5. TEST SETUP PHOTO

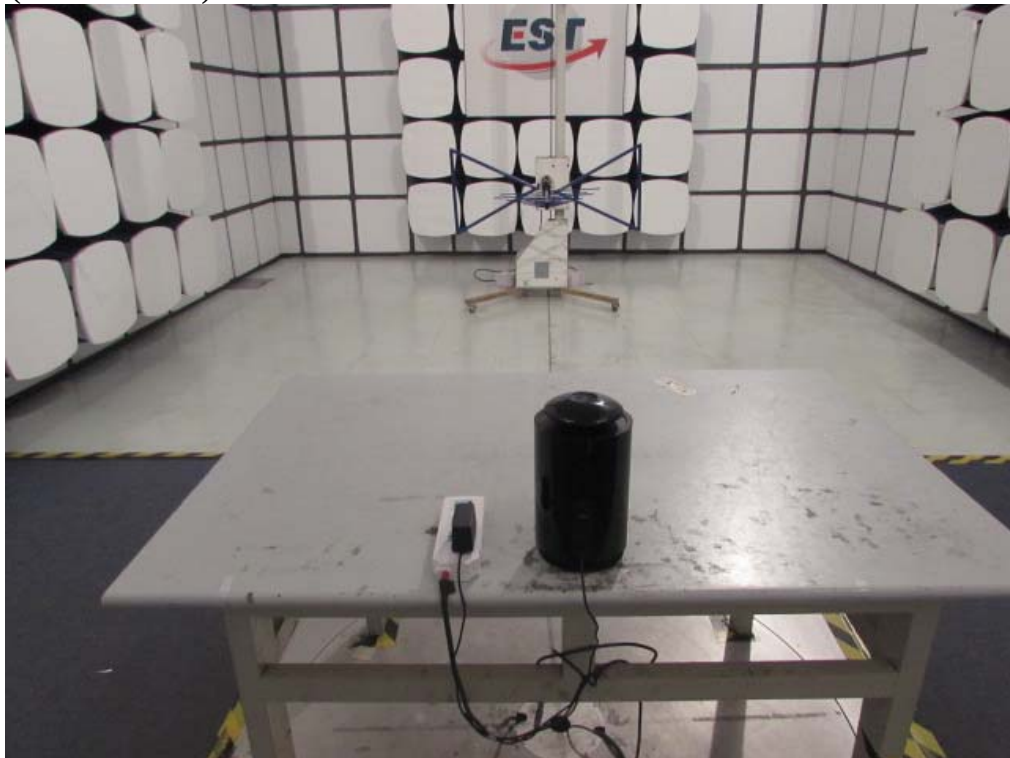
Conducted Test



Radiated Test (9 kHz-30 MHz)



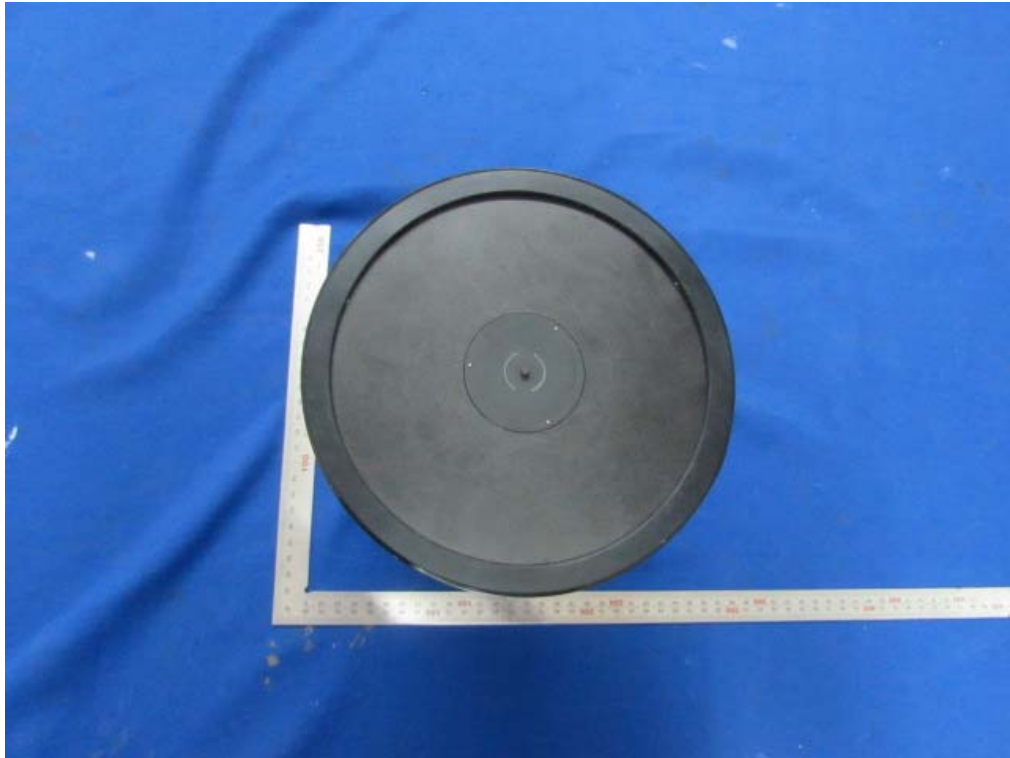
Radiated Test (30-1000 MHz)



6. PHOTOS OF EUT

External Photos

M/N: L141



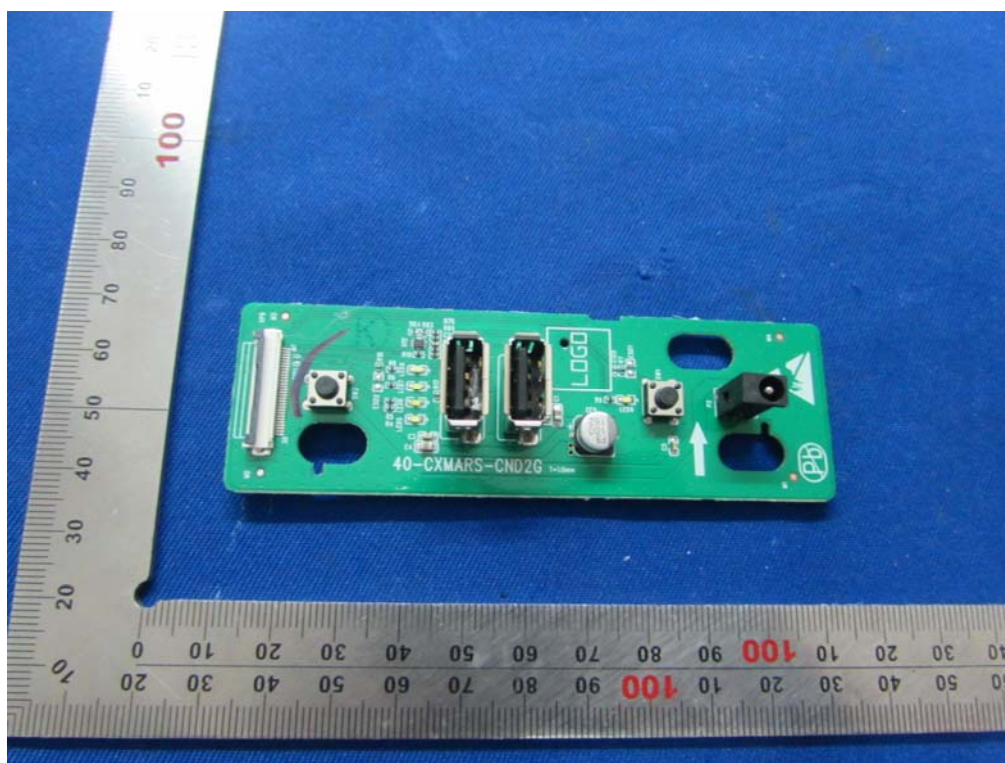
External Photos

M/N: L141



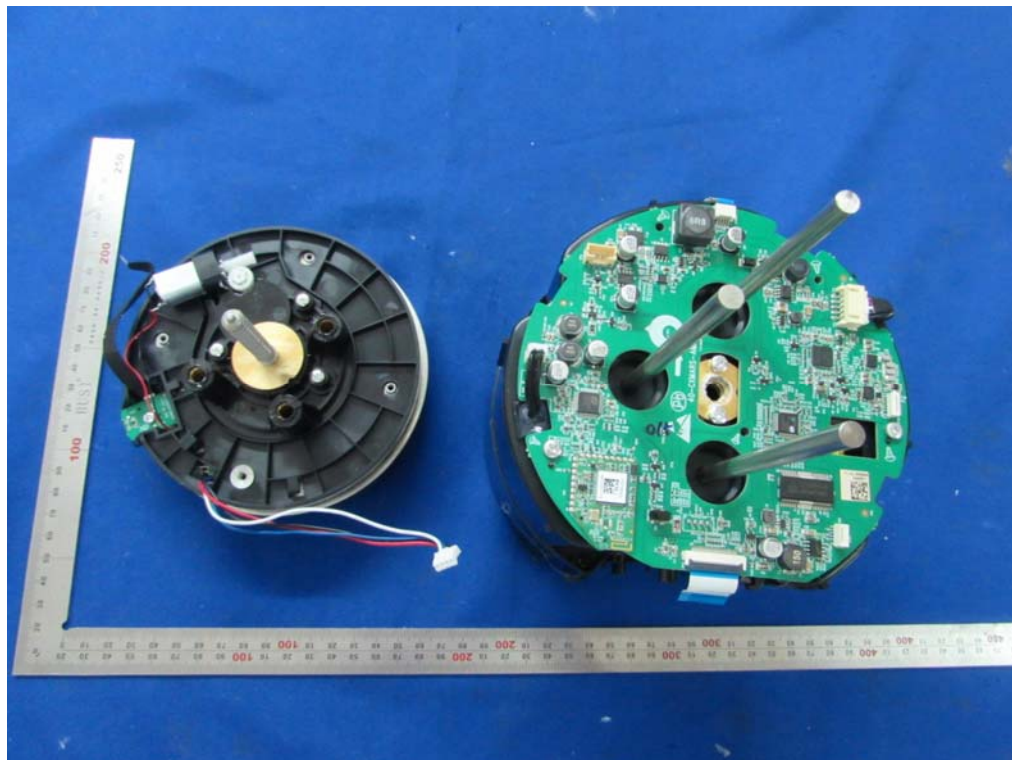
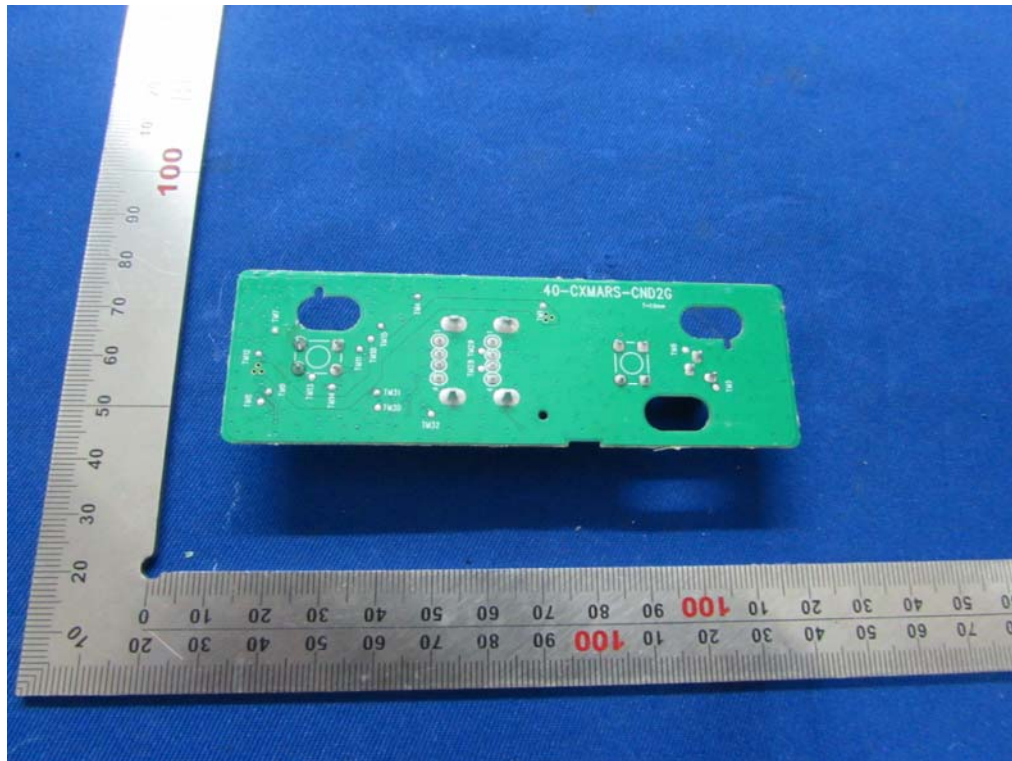
Internal Photos

M/N: L141

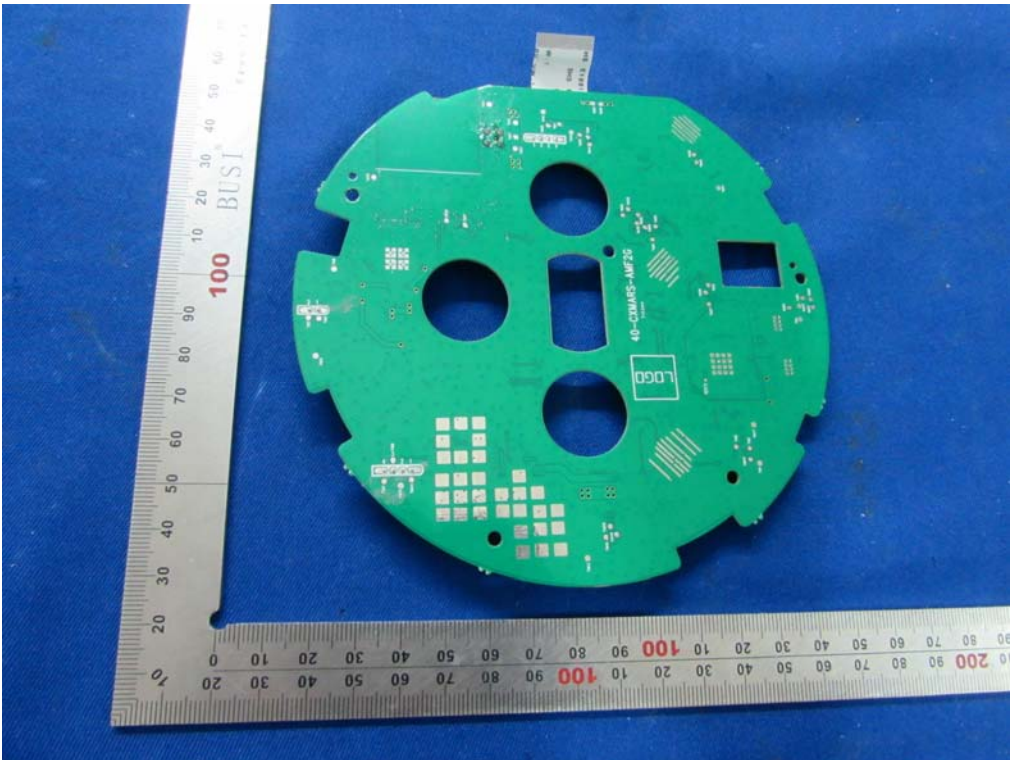
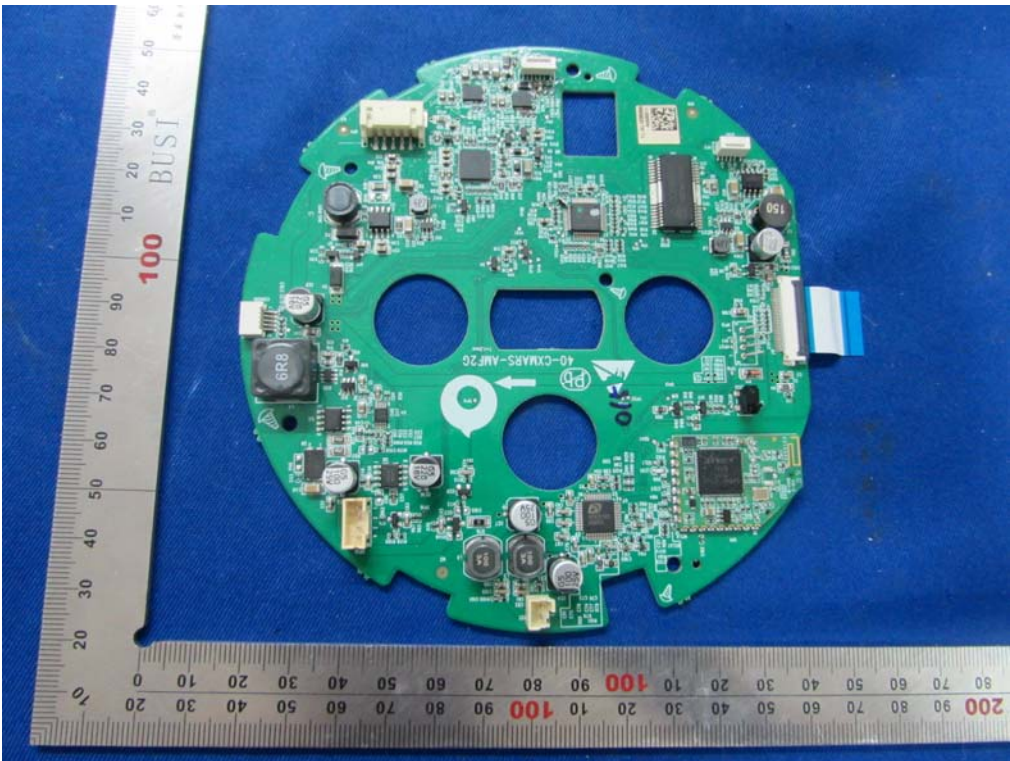


Internal Photos

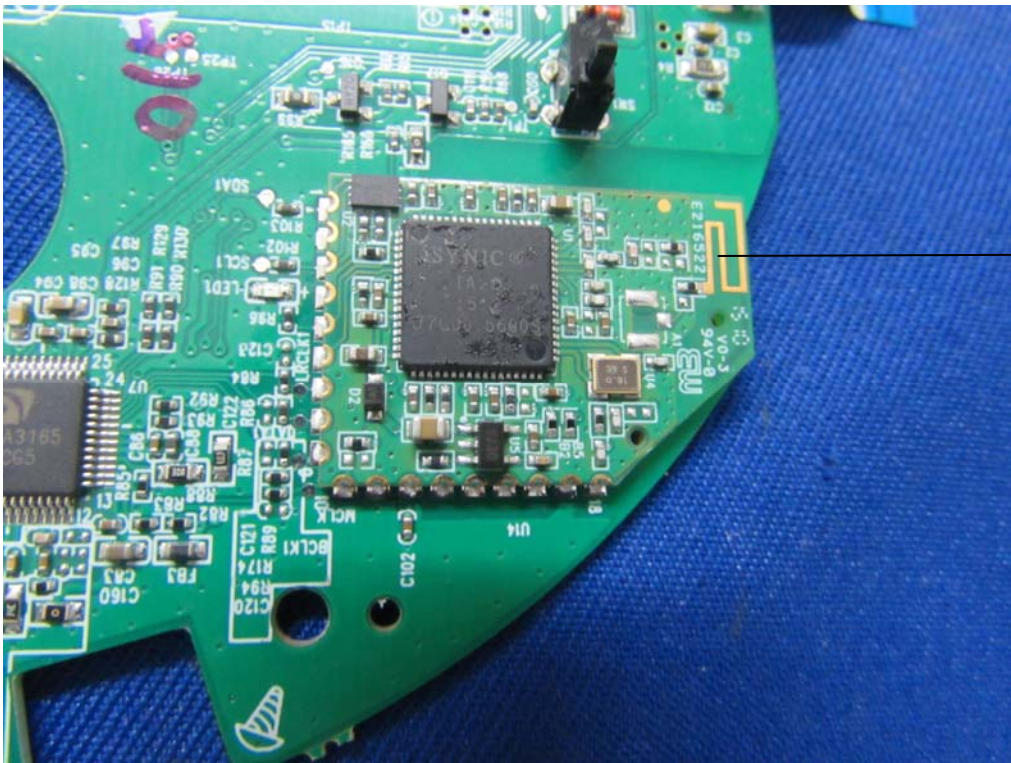
M/N: L141



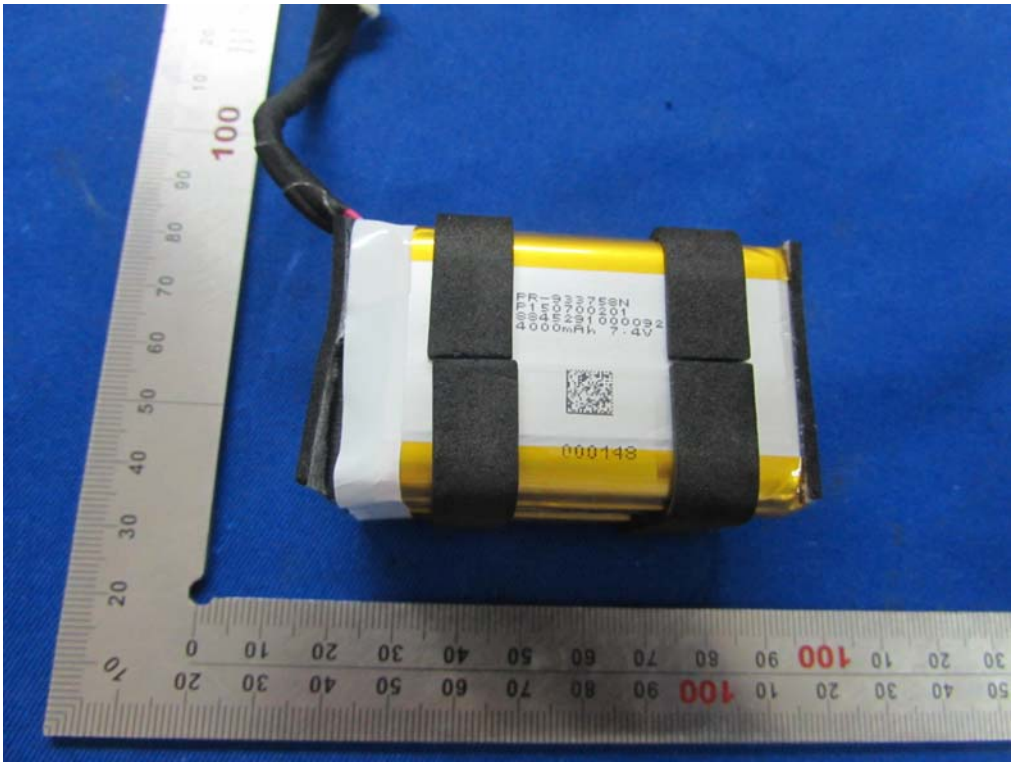
Internal Photos
M/N: L141



Internal Photos
M/N: L141

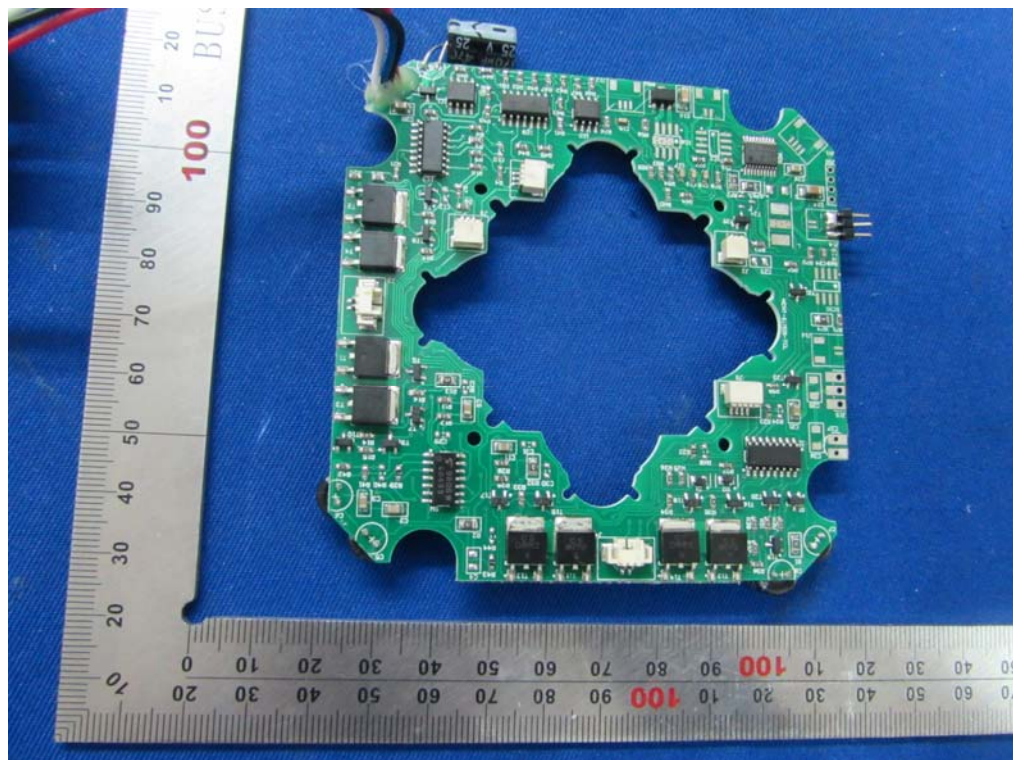
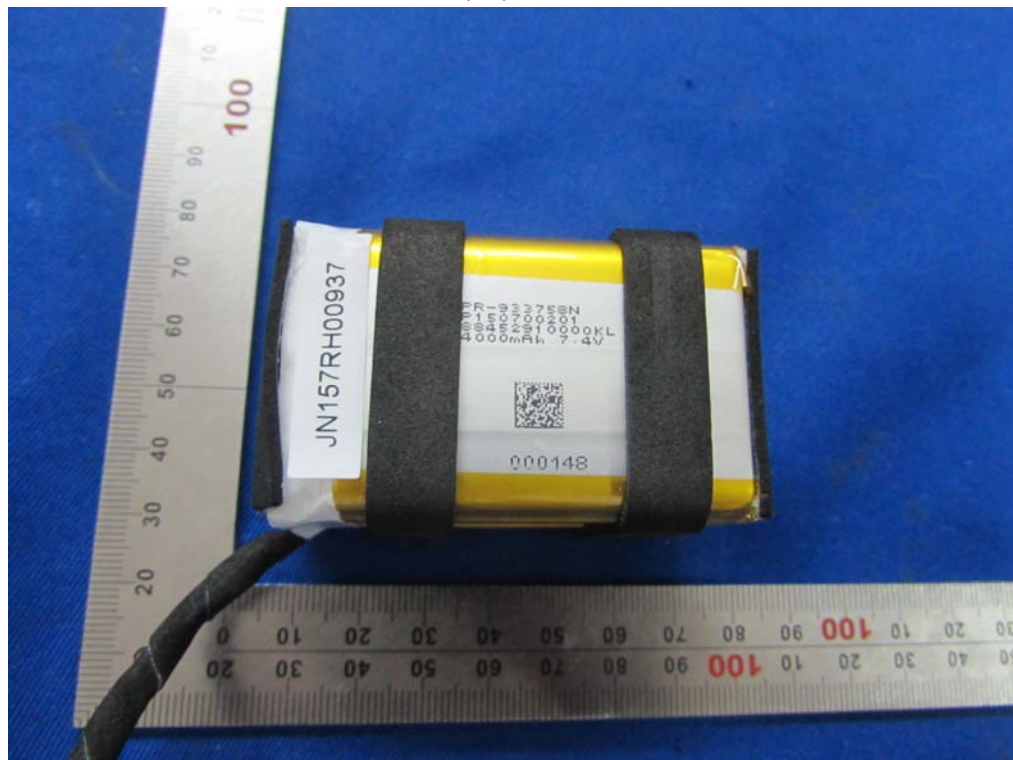


5.8G
Antenna



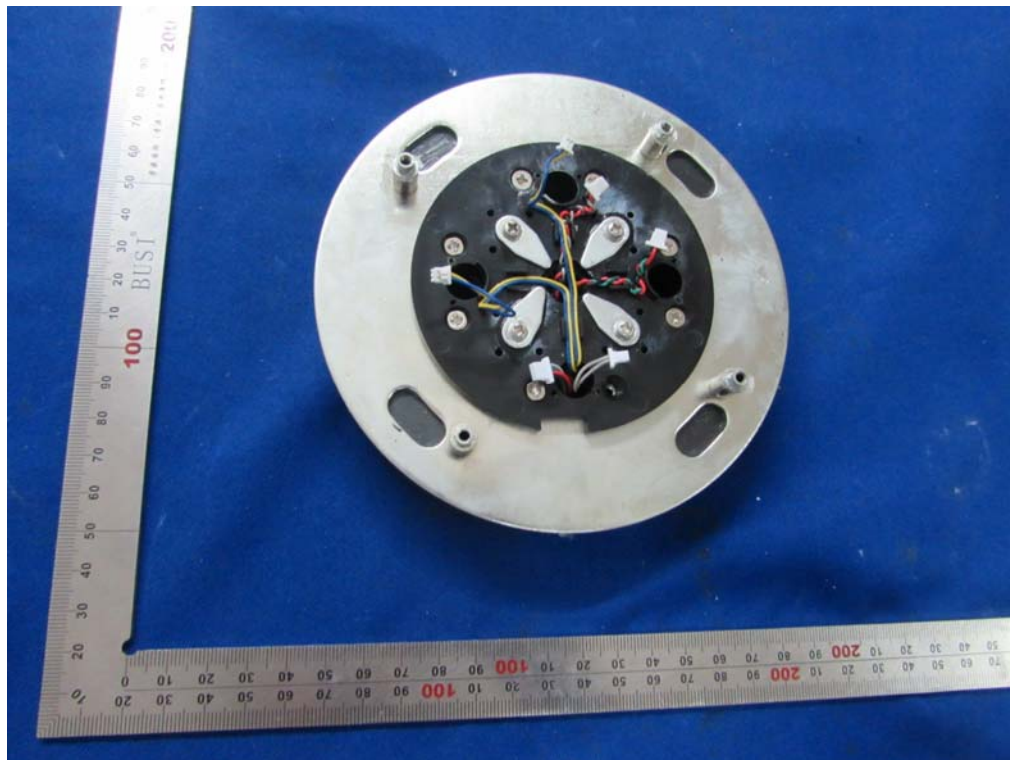
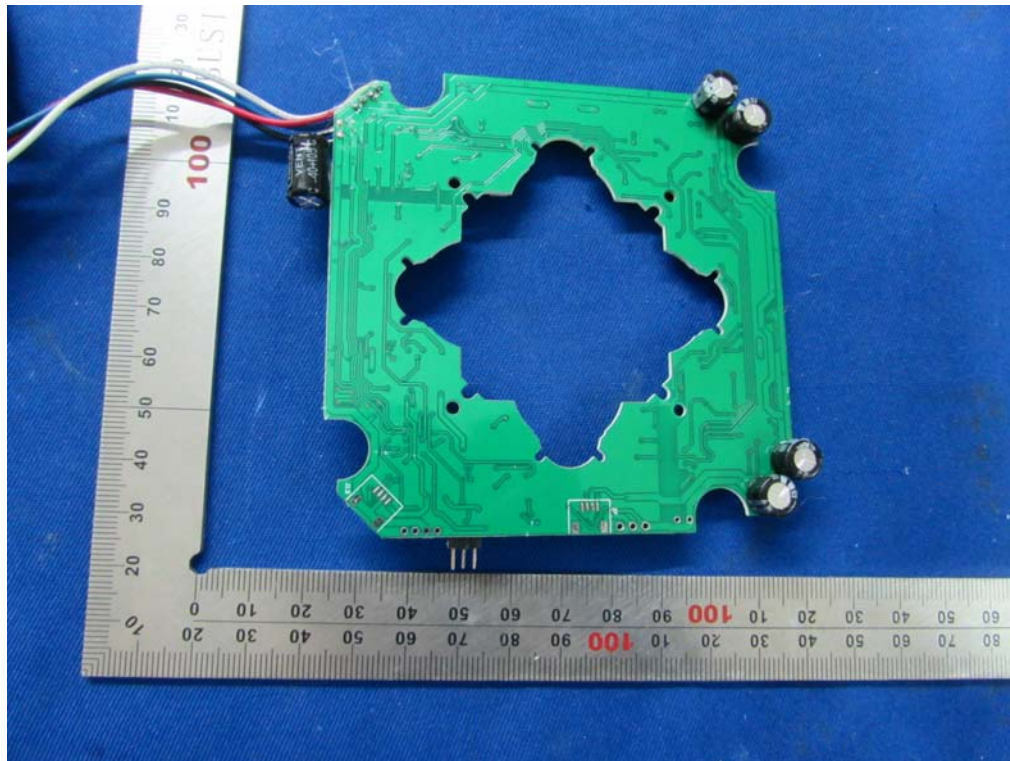
Internal Photos

M/N: L141



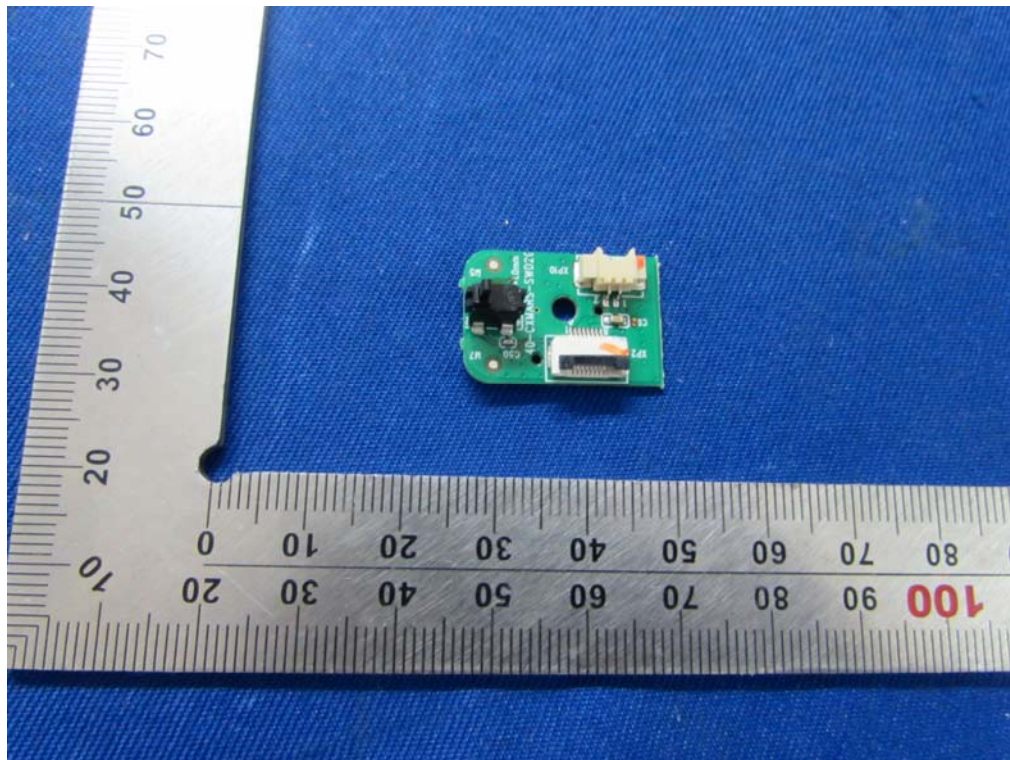
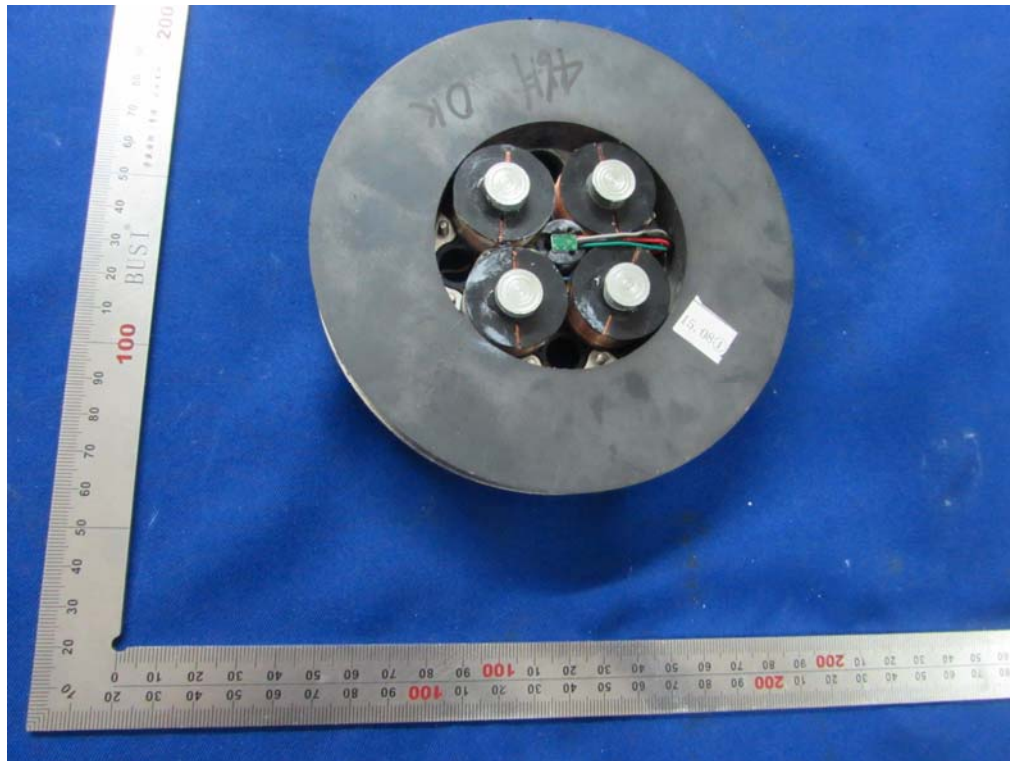
Internal Photos

M/N: L141



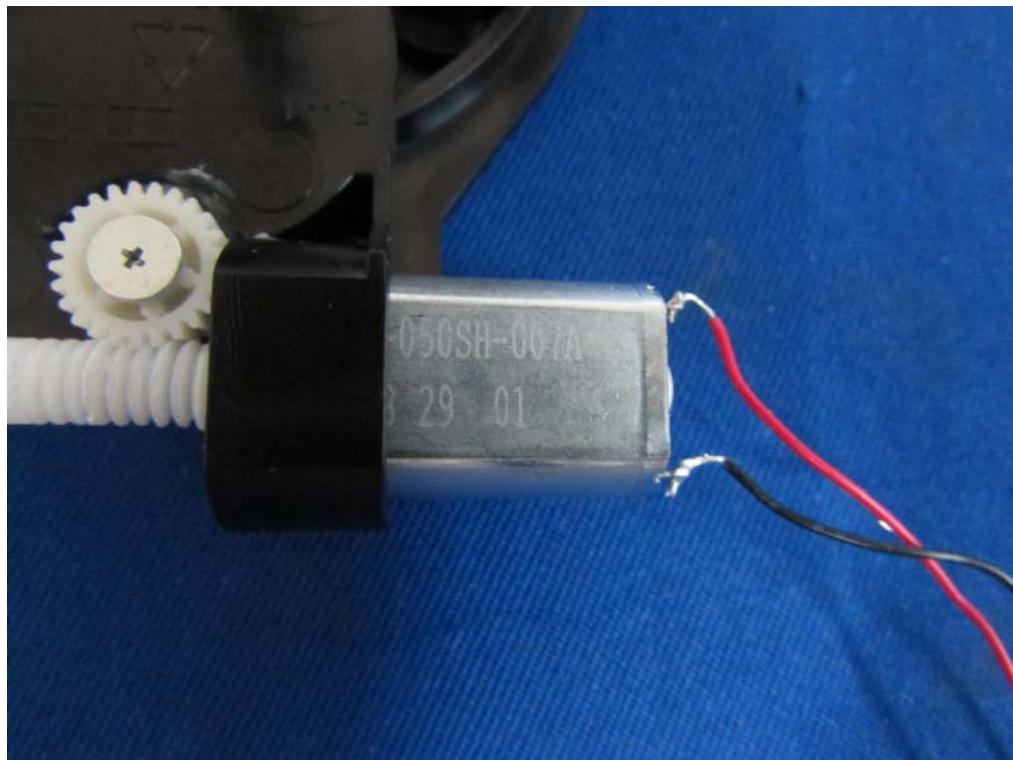
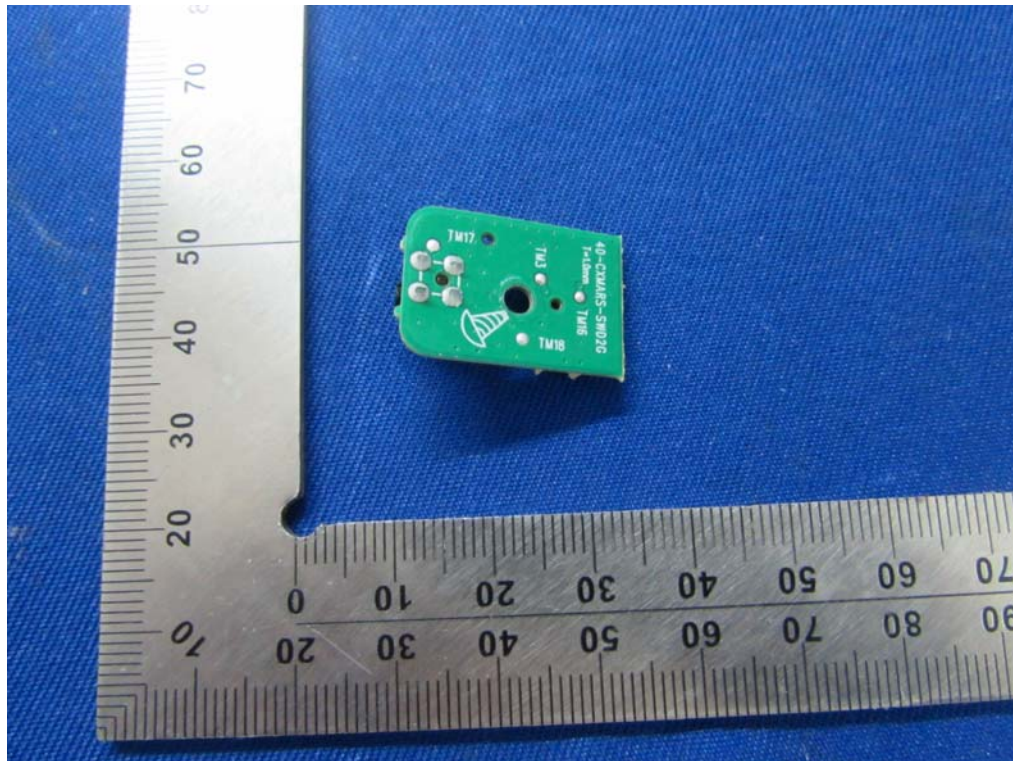
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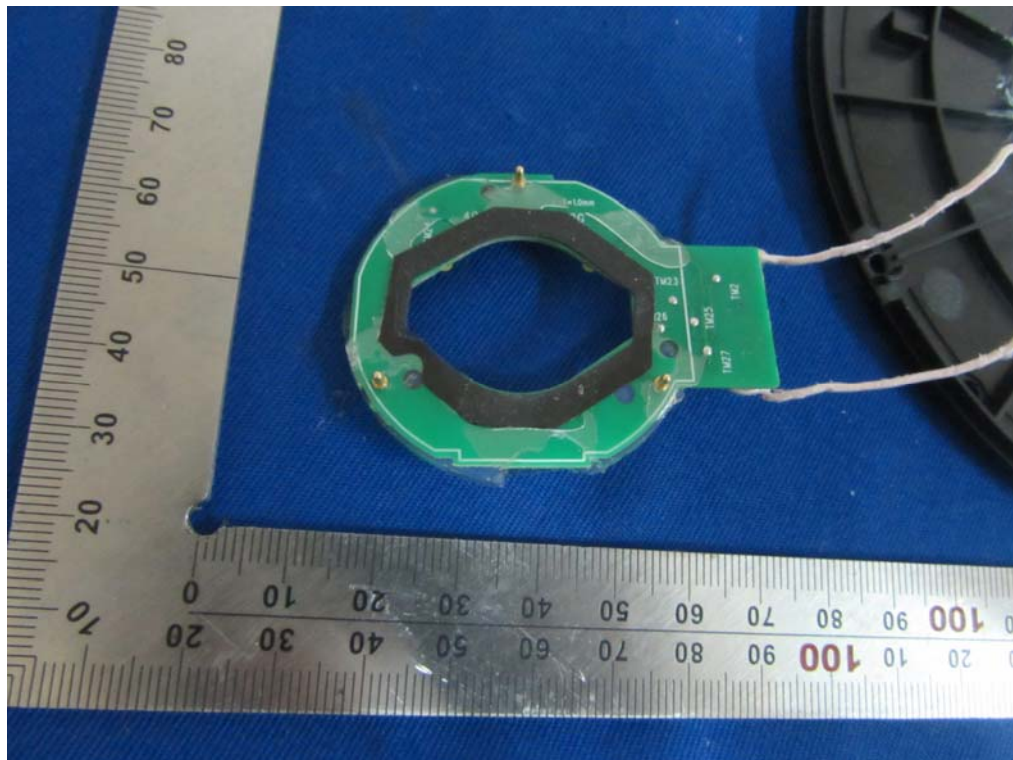
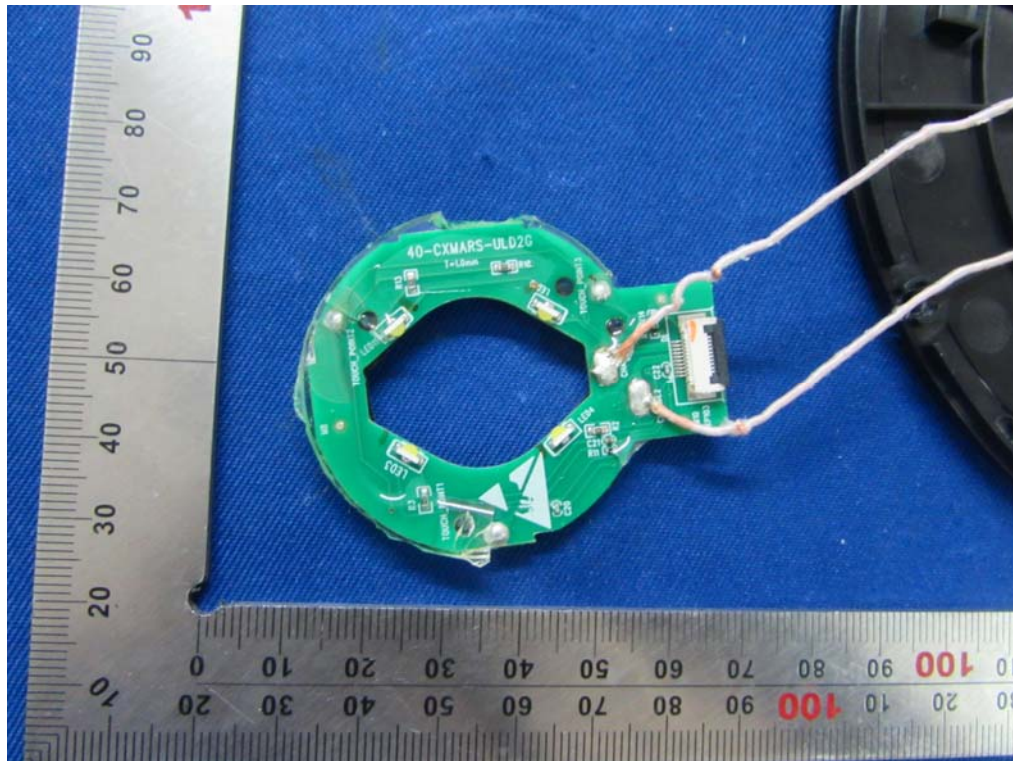
Internal Photos

M/N: L141



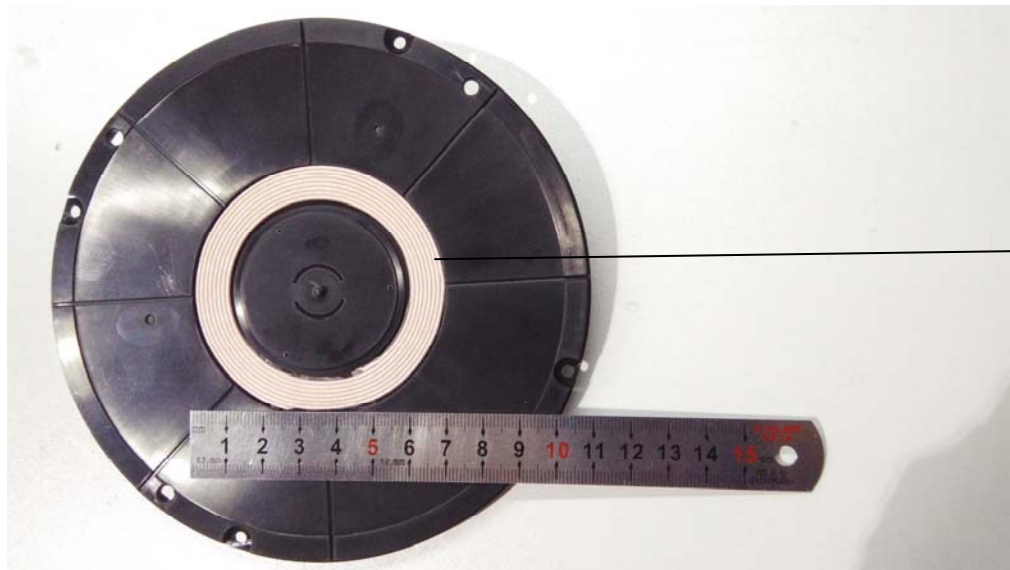
Internal Photos

M/N: L141



Internal Photos

M/N: L141



Wireless
Charging
Coil

Adapter Photos

