FCC TEST REPORT

FCC ID: 2AX73-102

Product	:	Miiibo Drink Mini
Model Name	:	102MB
Brand	:	N/A
Report No.	:	PTC20110505301E-FC01

Prepared for

Shenzhen Miiibo Innovation Technology Co.,Ltd

Qianhai Complex A201, Qianwan Road 1, Qianhai Shenzhen-Hong Kong Cooperation Zone, Shenzhen,P.R.China

Prepared by

Precise Testing & Certification Co., Ltd.

Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

1 TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Miiibo Innovation Technology Co.,Ltd
Address	:	Qianhai Complex A201, Qianwan Road 1, Qianhai Shenzhen-Hong Kong Cooperation Zone, Shenzhen,P.R.China
Manufacture's name	:	Shenzhen Miiibo Innovation Technology Co.,Ltd
Address	:	Qianhai Complex A201, Qianwan Road 1, Qianhai Shenzhen-Hong Kong Cooperation Zone, Shenzhen,P.R.China
Product name	:	Miiibo Drink Mini
Model name	:	102MB
Standards	:	FCC Part15 Subpart C
Test procedure	:	ANSI C63.10:2013
Test Date	:	Nov 12, 2020 to Nov 27, 2020
Date of Issue	:	Nov 27, 2020
Test Result	:	Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:

Leo Yang

Leo Yang / Engineer

Technical Manager:

Chris Du / Manager

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2 Test Summary

Standard Section	Test Item	Result
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS
Part 15.203	Antenna Requirement	PASS

3 General Information

3.1 General Description of E.U.T.

Product Name	:	Miiibo Drink Mini
Model Name	:	102MB
Operation Frequency	:	110-205KHz
Type of Modulation	:	ASK
Antenna installation	:	Inductive loop coil Antenna
Antenna Gain	:	0 dBi
Power supply	:	Input: 100-240V~ 50/60Hz, Output: 2W
Hardware Version	:	N/A
Software Version	:	N/A

3.2 Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Full load, Wireless charger module

For Conducted Emission	
Final Test Mode	Description
Mode 1	Full load, Wireless charger module

For Radiated Emission	
Final Test Mode	Description
Mode 1	Full load, Wireless charger module

Note: (1)Test channel is 0.1250MHz.

(2)All the situation(full load, half load and empty load) has been tested,only the worst situation (full load) was recorded in the report.

(3)2W All modes have been tested. This report only show the test result of the worst case(Full load 2W).

3.3 Test Site

Precise Testing & Certification Co., Ltd.

Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A-1

4 Equipment During Test

4.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
MXG Signal Analyzer	Agilent	N9020A	MY56070279	10Hz-30GHz	Aug. 21, 2021
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Aug. 21, 2021

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug 19, 2021
Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	Aug. 21, 2021
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug. 21, 2021
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Aug 19, 2021
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Aug. 19, 2021
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Aug. 19, 2021
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Aug. 21, 2021
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	Aug. 21, 2021
Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	Aug. 21, 2021

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 19, 2021
Artificial Mains Network	Rohde&Schwarz	ENV216	102453	9KHz-300MHz	Aug. 19, 2021
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Aug. 19, 2021

4.2 Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
		Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB

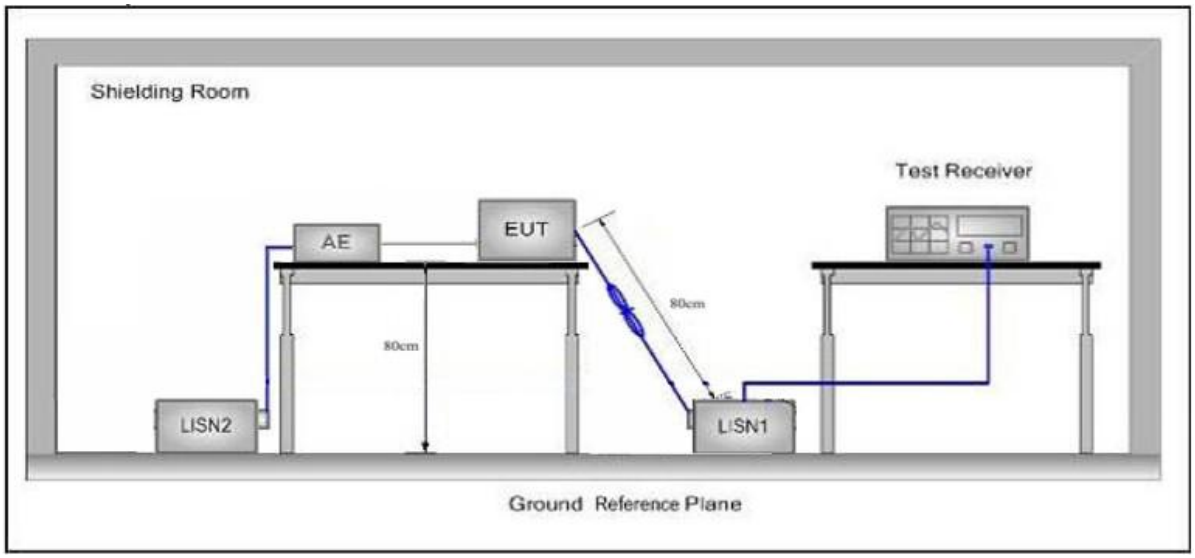
4.3 Description of Support Units

Equipment	Model No.	Series No.
Motor	Input:2W	N/A

5 Test Standard and Limit

Test Standard	FCC Part15 Section 15.207		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50
Remark: (1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequency.			

5.1 Test Setup



5.2 Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of 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 FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

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

5.3. Test Data

Please to see the following pages

Note:During the test, pre-scan 120Vac/60Hz and 240Vac/60Hz of the Power supply, found 120Vac/60Hz was worse case,mode, the report only reflects the worst mode.

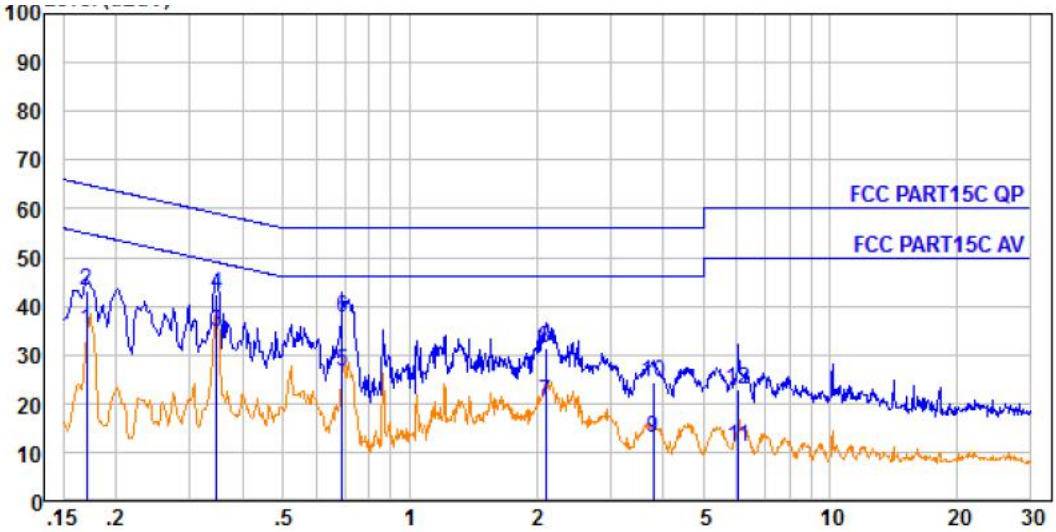
Conducted Emission Test Data

Operating Condition: Mode 1

Test Specification: AC 120V, 60Hz for adapter

Comment: Live Line

Tem.: 22℃ Hum.: 51%



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBµV	Emission Level dBµV	Limit dBµV	Over Limit dB	Remark
1.	0.170	0.24	9.59	25.23	35.06	54.94	-19.88	Average
2.	0.170	0.24	9.59	33.22	43.05	64.94	-21.89	QP
3.	0.346	0.39	9.60	24.53	34.52	49.05	-14.53	Average
4.	0.346	0.39	9.60	32.48	42.47	59.05	-16.58	QP
5.	0.690	0.44	9.61	16.64	26.69	46.00	-19.31	Average
6.	0.690	0.44	9.61	27.71	37.76	56.00	-18.24	QP
7.	2.110	0.47	9.61	10.33	20.41	46.00	-25.59	Average
8.	2.110	0.47	9.61	21.42	31.50	56.00	-24.50	QP
9.	3.799	0.47	9.65	2.81	12.93	46.00	-33.07	Average
10.	3.799	0.47	9.65	14.08	24.20	56.00	-31.80	QP
11.	6.056	0.53	9.70	0.94	11.17	50.00	-38.83	Average
12.	6.056	0.53	9.70	12.80	23.03	60.00	-36.97	QP

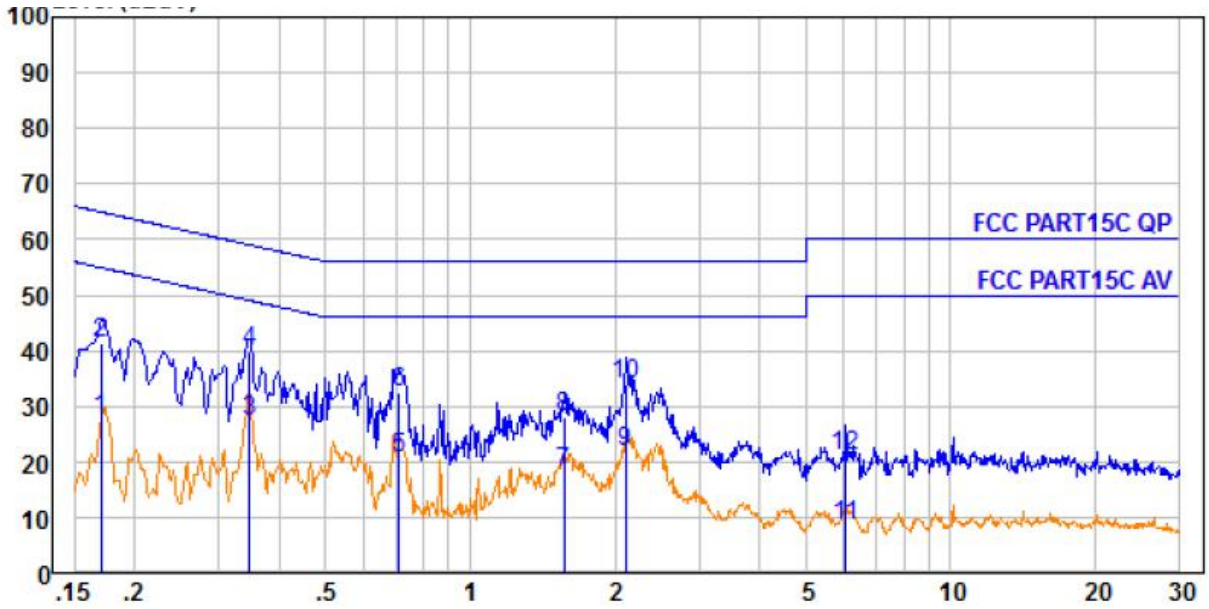
Conducted Emission Test Data

Operating Condition: Mode 1

Test Specification: AC 120V, 60Hz for adapter

Comment: Neutral Line

Tem.: 22℃ Hum.: 51%



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBμV	Emission Level dBμV	Limit dBμV	Over Limit dB	Remark
1.	0.170	0.24	9.60	17.79	27.63	54.94	-27.31	Average
2.	0.170	0.24	9.60	31.62	41.46	64.94	-23.48	QP
3.	0.346	0.39	9.62	17.17	27.18	49.05	-21.87	Average
4.	0.346	0.39	9.62	29.90	39.91	59.05	-19.14	QP
5.	0.712	0.44	9.64	10.73	20.81	46.00	-25.19	Average
6.	0.712	0.44	9.64	22.49	32.57	56.00	-23.43	QP
7.	1.568	0.47	9.64	7.84	17.95	46.00	-28.05	Average
8.	1.568	0.47	9.64	17.87	27.98	56.00	-28.02	QP
9.	2.110	0.47	9.64	11.61	21.72	46.00	-24.28	Average
10.	2.110	0.47	9.64	23.72	33.83	56.00	-22.17	QP
11.	6.056	0.53	9.73	-1.66	8.60	50.00	-41.40	Average
12.	6.056	0.53	9.73	10.69	20.95	60.00	-39.05	QP

6 Radiation Spurious Emission and Band Edge

6.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3

Remark:

(1)The lower limit shall apply at the transition frequency.

(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

6.2 Test Setup

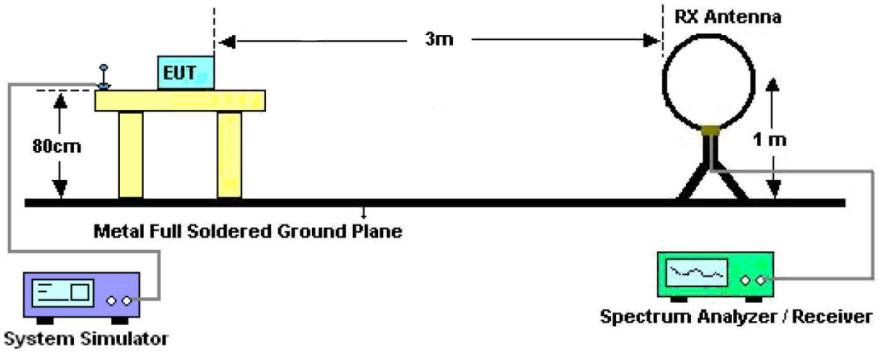


Figure 1. Below 30MHz

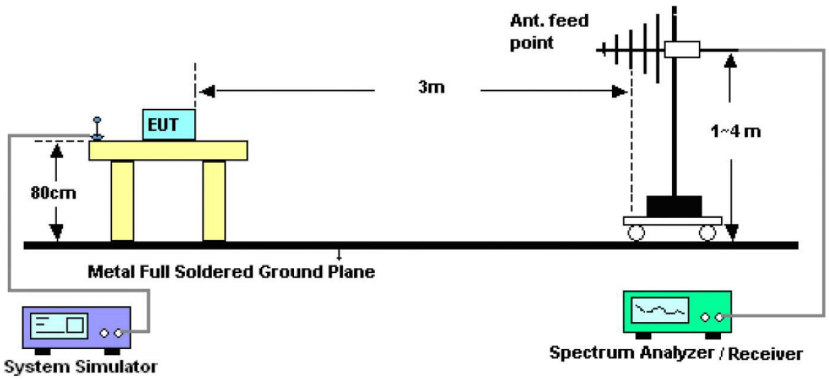


Figure 2. 30MHz to 1GHz

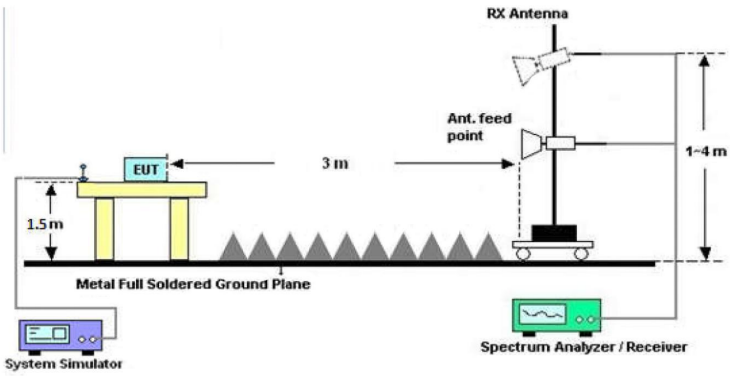


Figure 3. Above 1 GHz

6.3 Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The 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 from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

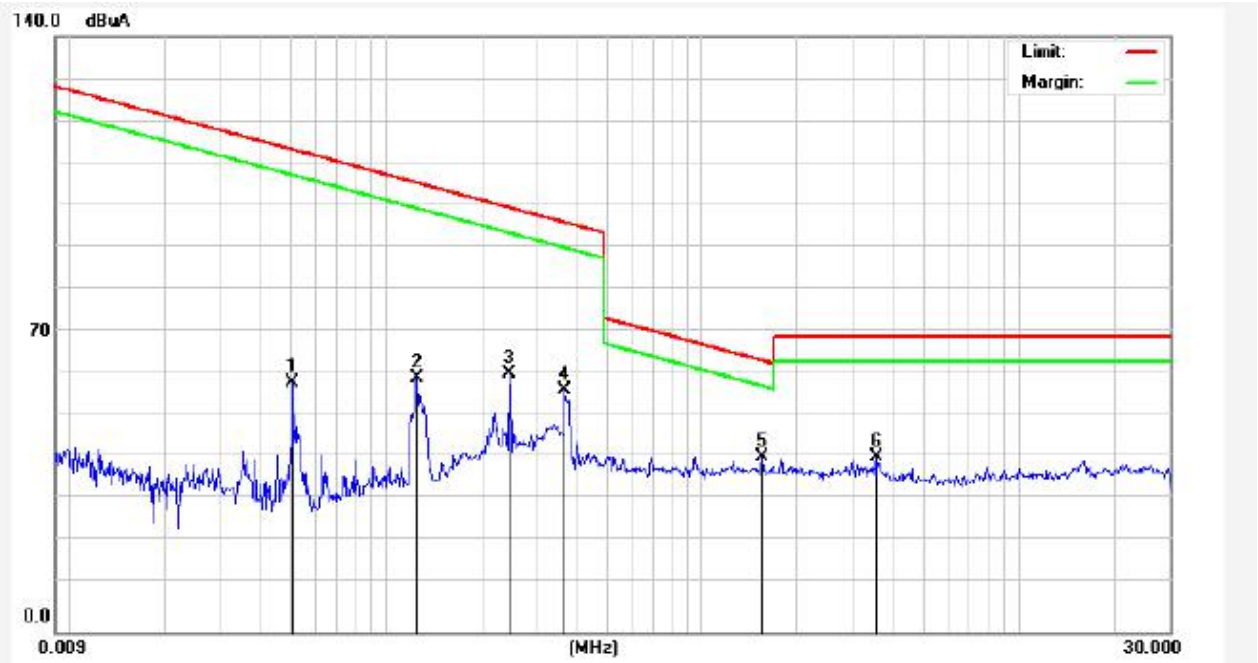
6.4 Test Data

PASS

Note: The data is in TX mode, and this is the worst mode.

Test Results (9K~30MHz)

Test Mode:	Mode 1
Power Source:	AC 120V, 60Hz for adapter
Temp.(℃)/Hum.(%RH):	24.7℃/51%RH
Distance:	3m

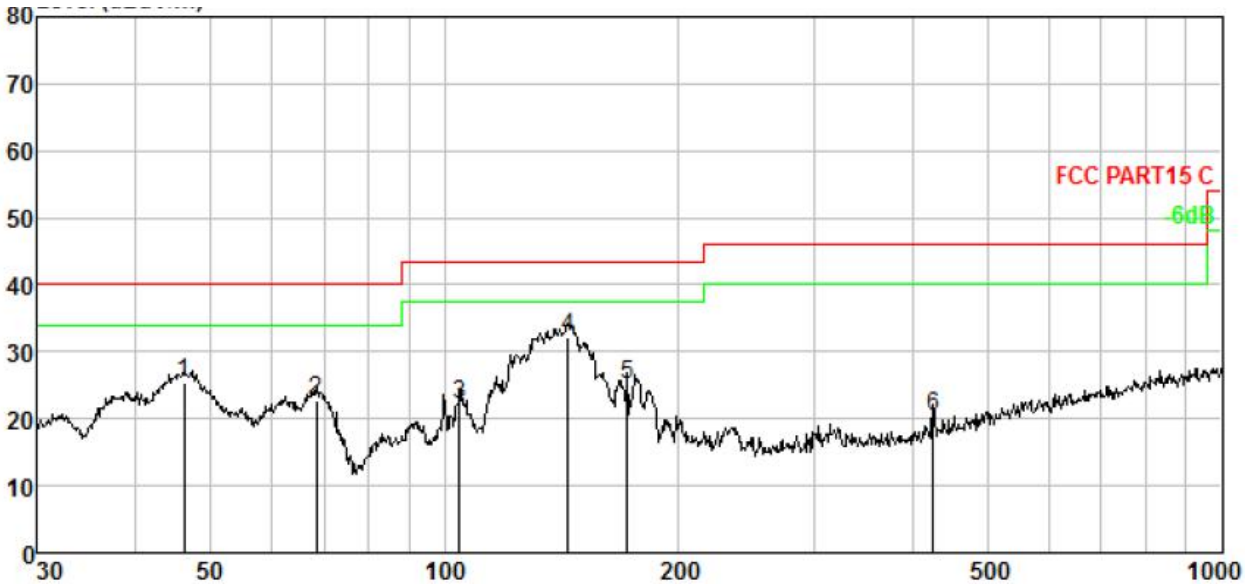


No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit dBuA	Over Limit (dB)	Detector
1	0.0509	19.80	38.92	58.72	113.36	-54.64	QP
2	0.1250	26.56	33.01	59.57	105.60	-46.03	QP
3	0.2459	21.01	39.55	60.56	99.75	-39.19	QP
4	0.3664	19.89	37.02	56.91	96.31	-39.40	QP
5	1.5420	11.61	29.47	41.08	63.84	-22.76	QP
6	3.5659	11.45	29.74	41.19	69.54	-28.35	QP

Remark： According to FCC PART 15.209 (d), the emission limits 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 Results (30~1000MHz)

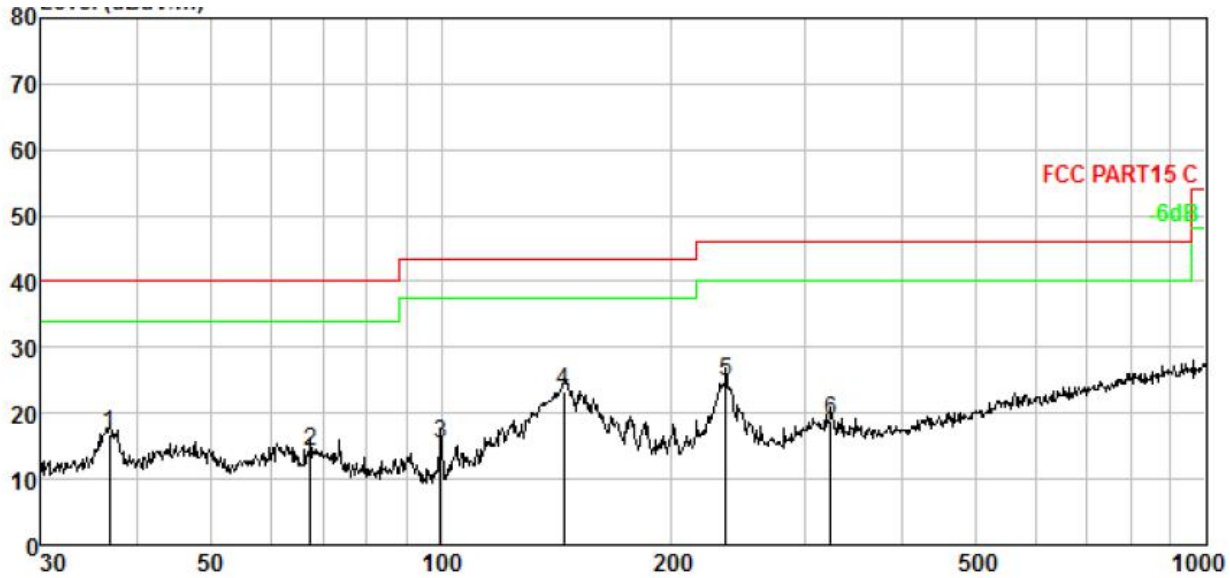
Test Mode:	Mode 1
Power Source:	AC 120V, 60Hz for adapter
Polarization:	Vertical
Temp.(℃)/Hum.(%RH):	24.3℃/54%RH
Distance:	3m



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	46.340	1.95	12.24	41.02	29.92	25.29	40.00	-14.71	QP
2.	68.391	2.62	10.38	39.61	29.95	22.66	40.00	-17.34	QP
3.	104.536	3.35	10.16	38.67	29.99	22.19	43.50	-21.31	QP
4.	144.335	3.90	13.48	44.84	30.02	32.20	43.50	-11.30	QP
5.	171.995	4.20	13.12	37.72	30.03	25.01	43.50	-18.49	QP
6.	425.028	5.76	15.37	29.84	30.75	20.22	46.00	-25.78	QP

Test Results (30~1000MHz)

Test Mode:	Mode 1
Power Source:	AC 120V, 60Hz for adapter
Polarization:	Horizontal
Temp.(℃)/Hum.(%RH):	24.3℃/54%RH
Distance:	3m



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	36.895	1.56	12.16	32.87	29.90	16.69	40.00	-23.31	QP
2.	67.438	2.59	10.55	31.06	29.95	14.25	40.00	-25.75	QP
3.	99.878	3.27	9.59	32.47	29.99	15.34	43.50	-28.16	QP
4.	144.842	3.91	13.50	35.92	30.02	23.31	43.50	-20.19	QP
5.	235.816	4.74	12.11	38.21	30.15	24.91	46.00	-21.09	QP
6.	323.320	5.29	13.78	30.17	30.42	18.82	46.00	-27.18	QP

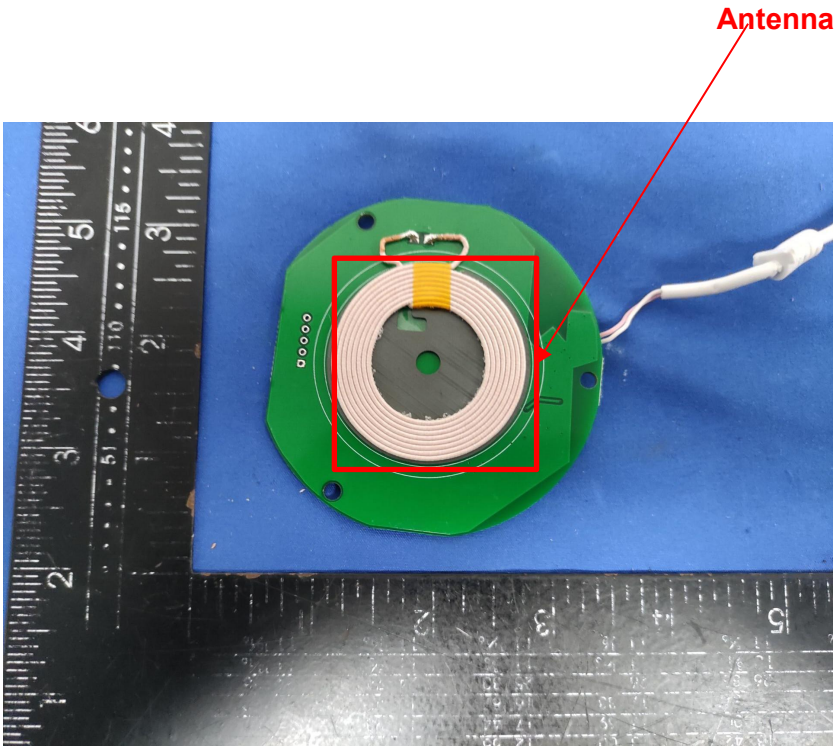
7 Antenna Requirement

7.1 Test Standard and Requirement

Test Standard	FCC Part15 Section 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.

7.2 Antenna Connected Construction

The antenna is a Inductive loop coil Antenna which permanently attached, and the best case gain of the antenna is 0 dBi. It complies with the standard requirement.



APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Conducted Emission Measurement

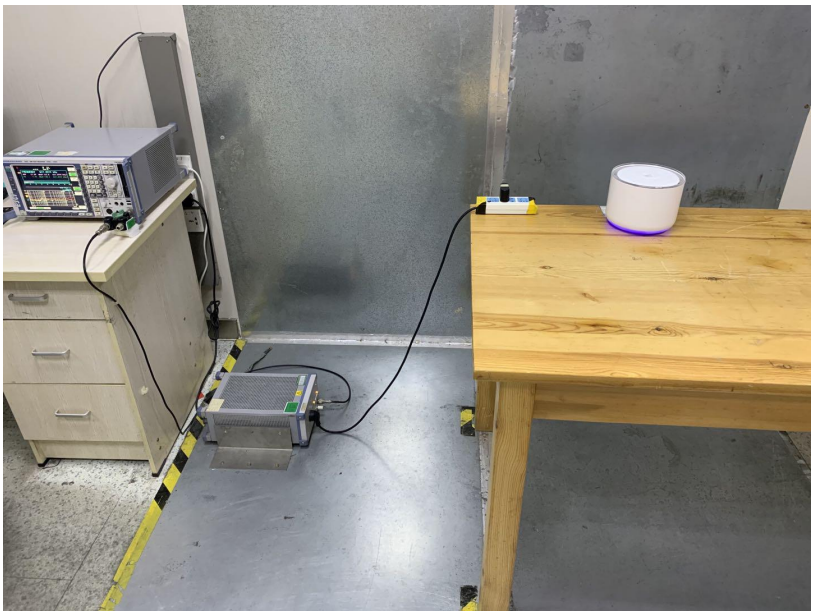
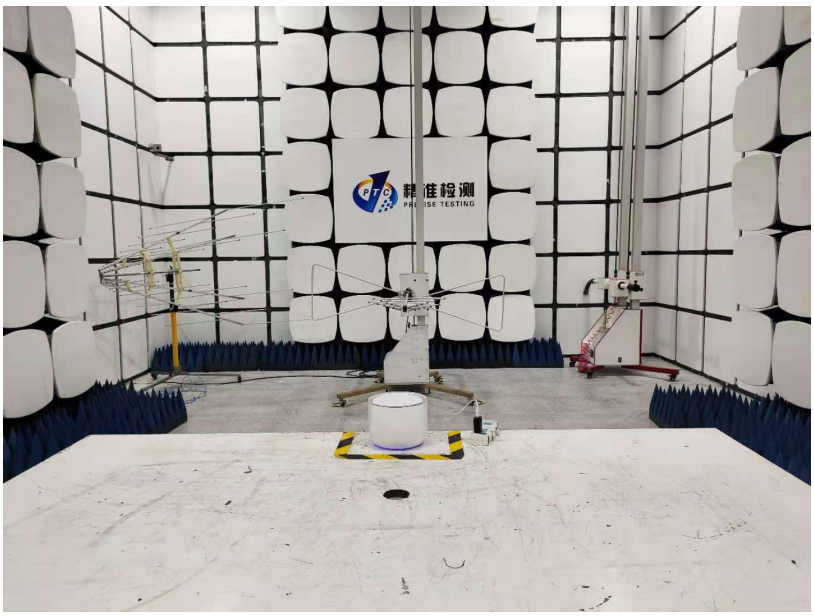
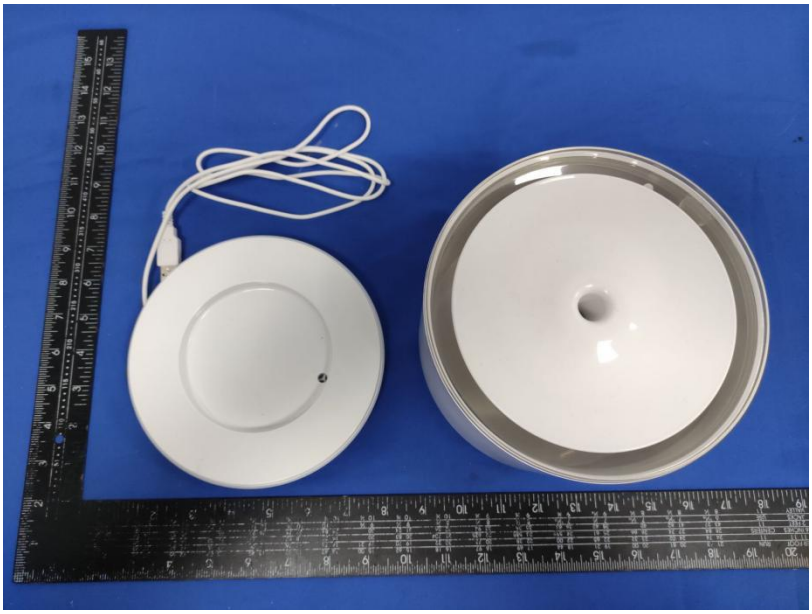
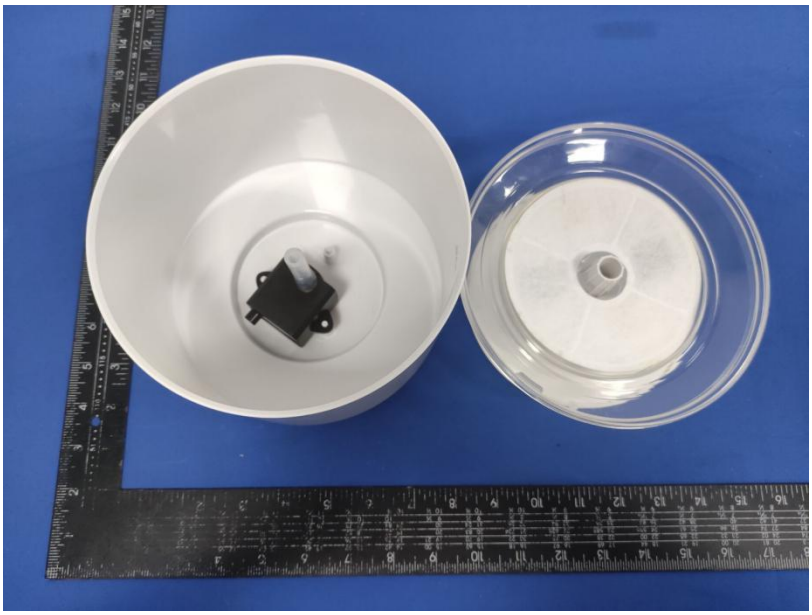


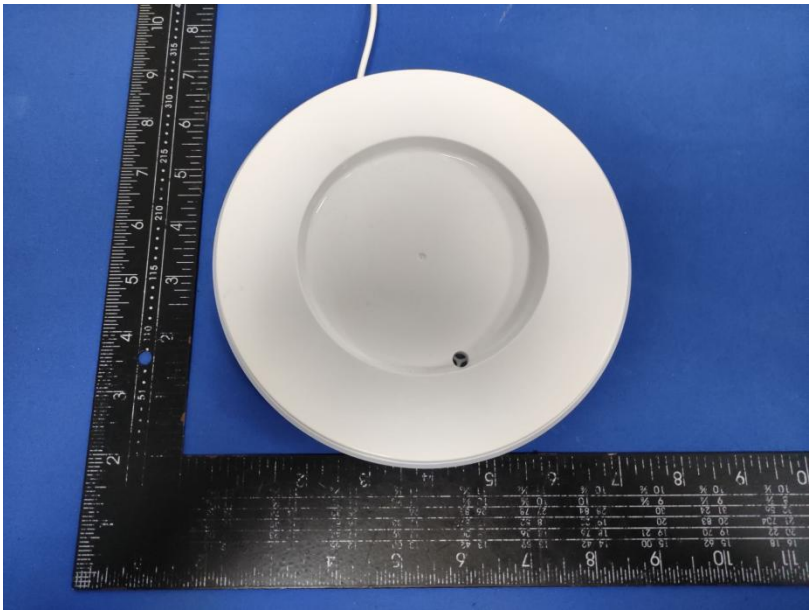
Photo of Radiation Emission Test



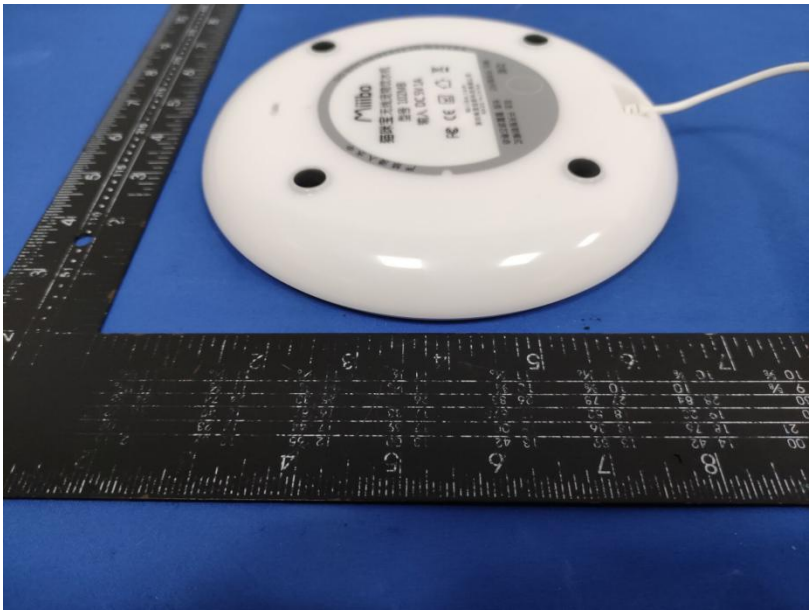
APPENDIX II -- EXTERNAL PHOTOGRAPH

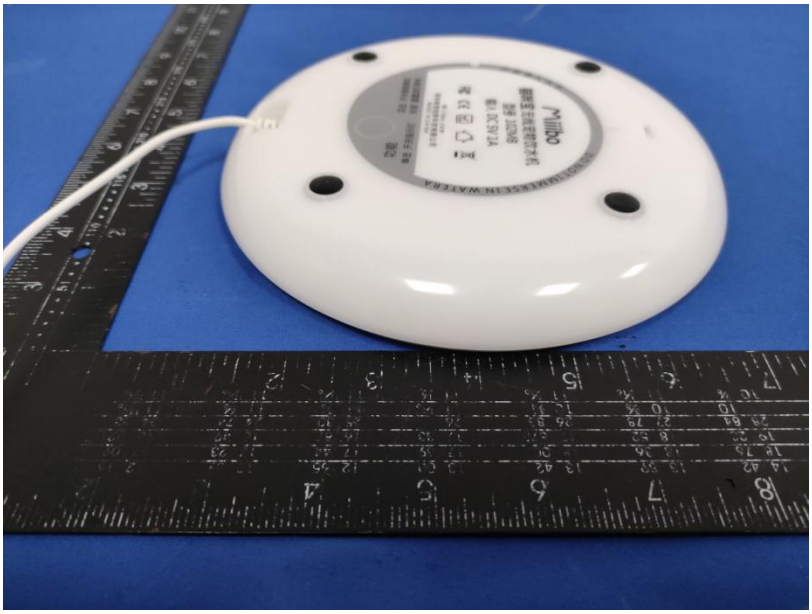






Miiibo
猫咪宝无线宠物饮水机
型号 102MB
输入 DC 5V 1A
DO NOT IMMERSE IN WATER


Milibo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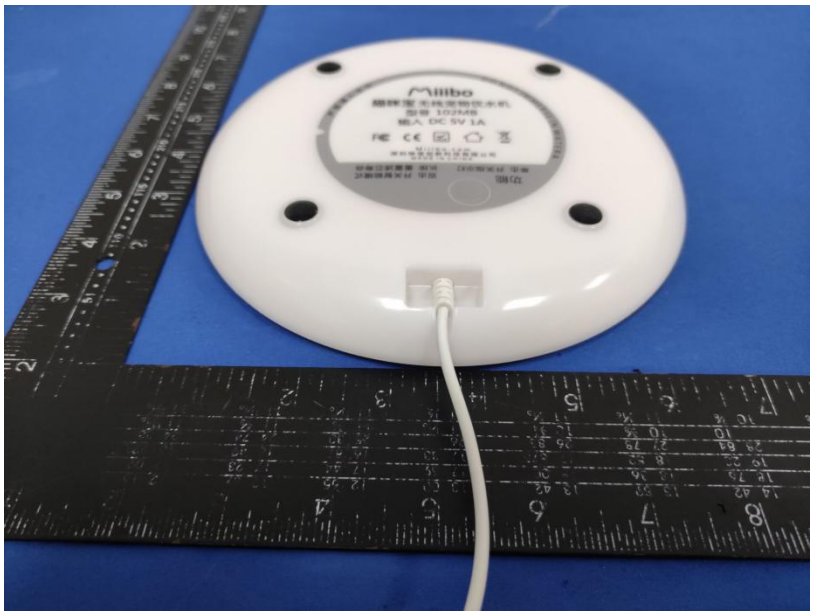

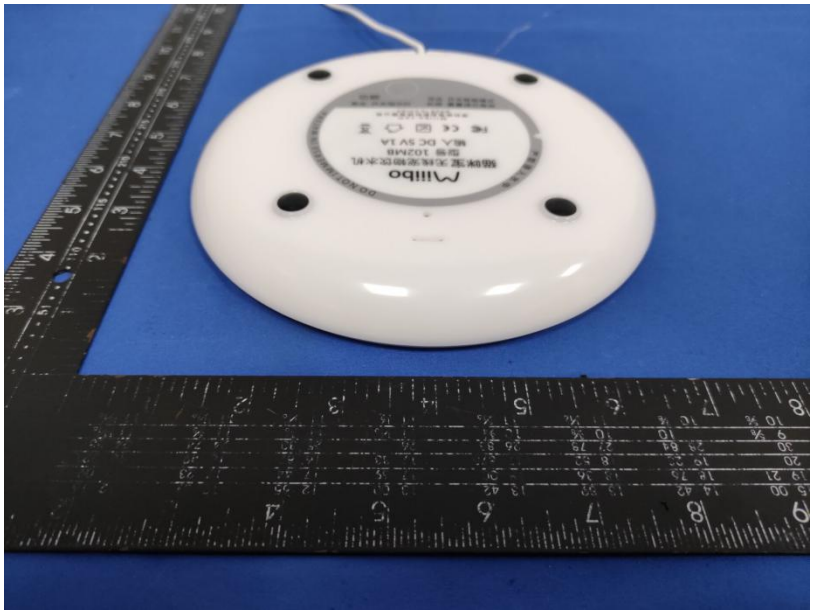

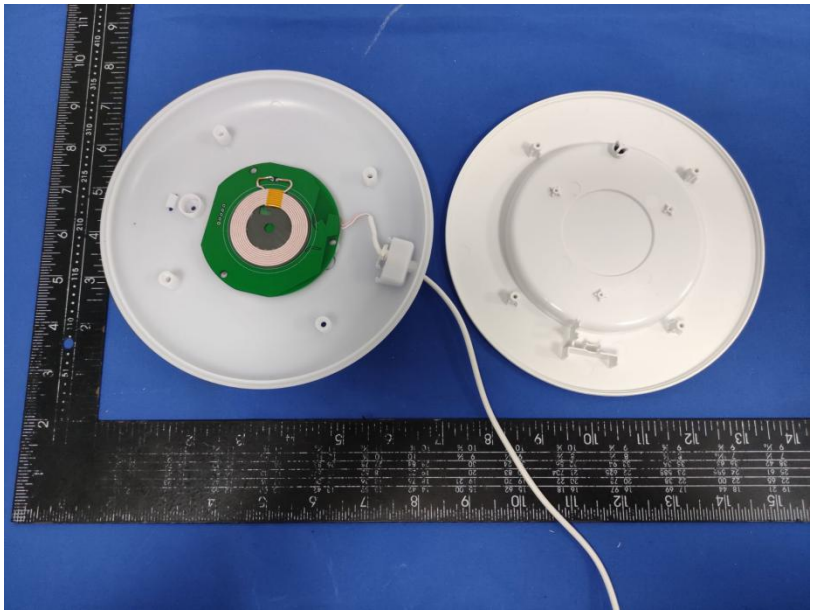

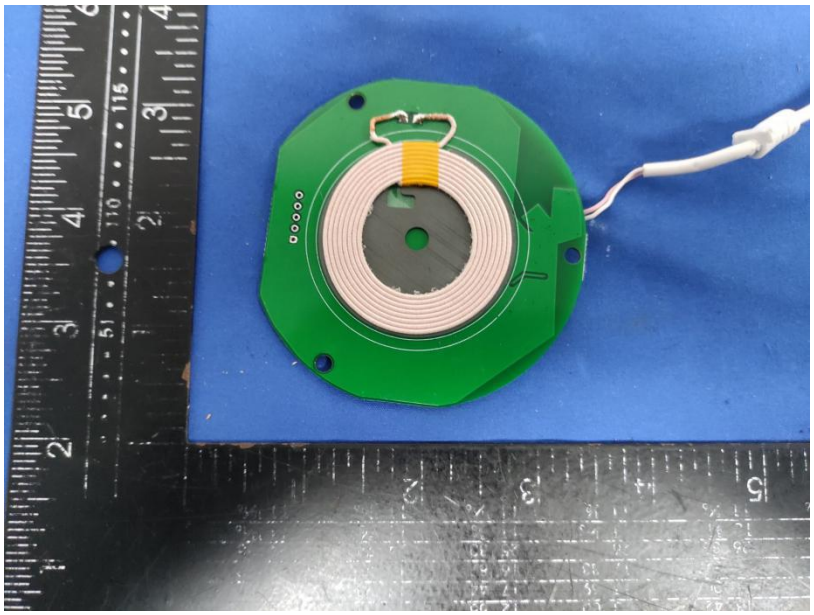

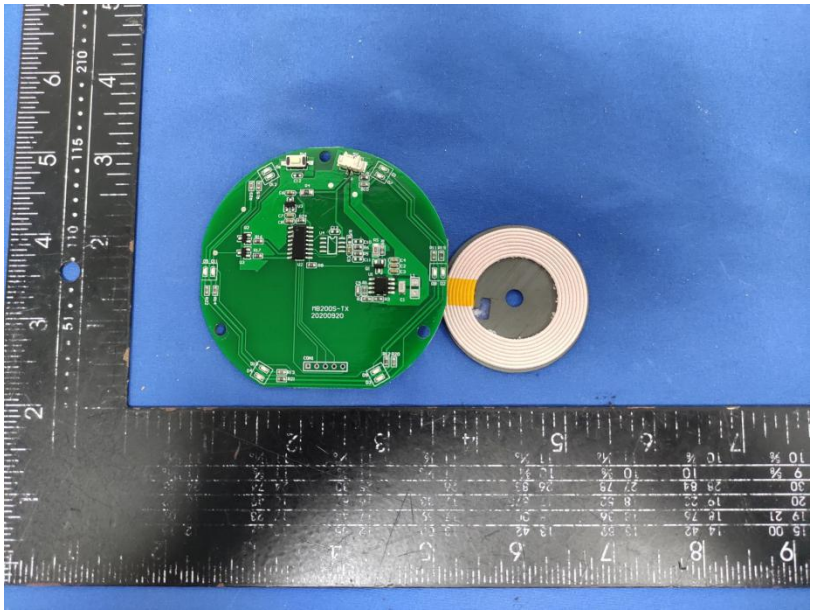

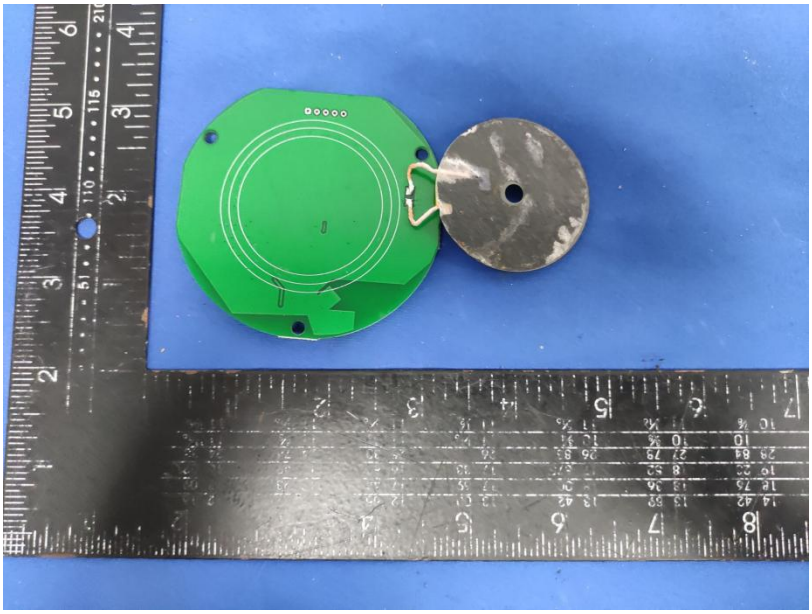

********THE END REPORT********