



FCC TEST REPORT

FCC ID: 2ACA8-TRIO

Product	:	Trio Wireless Charger
Model Name	:	51193,51219,51XXX(The variable "X" can be 0 to 9, A to Z for marketing purpose only, no safety affect)
Brand	:	RAPTIC, X-Doria
Report No.	:	PTC20111303301E-FC01
Prepared for		
Doria International, Inc.		
12424 Wilshire Blvd. Suite 1120 Los Angeles, CA 90025		
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 : Doria International, Inc.

Address : 12424 Wilshire Blvd. Suite 1120 Los Angeles, CA 90025

Manufacture's name : Power System Electronic Technology Co., Ltd.

Address : No.1 Shangbian Road, Puxin Industrial District, Shipai Town, Dongguan City, Guangdong, China

Product name : Trio Wireless Charger

Model name : 51193,51219,51XXX(The variable "X" can be 0 to 9, A to Z for marketing purpose only, no safety affect)

Standards : FCC Part15 Subpart C

Test procedure : ANSI C63.10:2013

Test Date : November 17,2020 to November 26,2020

Date of Issue : November 26,2020

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.

This report shall not be reproduced except in full, without the written approval of PTC, this document may be altered or revised by PTC, personal only, and shall be noted in the revision of the document.

Test Engineer:

A handwritten signature in black ink that reads "Leo Yang" with a long horizontal stroke extending to the right.

Leo Yang / Engineer

Technical Manager:

A handwritten signature in black ink that appears to read "Chris Du" in a stylized, cursive font.

Chris Du / Manager



Contents

	Page
1 TEST RESULT CERTIFICATION.....	2
2 TEST SUMMARY.....	4
3 GENERAL INFORMATION.....	5
3.1 GENERAL DESCRIPTION OF E.U.T.....	5
3.2 DESCRIPTION OF TEST MODES.....	6
3.3 TEST SITE.....	7
4 EQUIPMENT DURING TEST.....	8
4.1 EQUIPMENTS LIST.....	8
4.2 MEASUREMENT UNCERTAINTY.....	9
5 TEST STANDARD AND LIMIT.....	10
5.1 TEST SETUP.....	10
5.2 TEST PROCEDURE.....	10
5.3. TEST DATA.....	11
6 RADIATION SPURIOUS EMISSION AND BAND EDGE.....	13
6.1 TEST STANDARD AND LIMIT.....	13
6.2 TEST SETUP.....	14
6.3 TEST PROCEDURE.....	15
6.4 TEST DATA.....	15
7 ANTENNA REQUIREMENT.....	19
7.1 TEST STANDARD AND REQUIREMENT.....	19
7.2 ANTENNA CONNECTED CONSTRUCTION.....	19
APPENDIX I -- TEST SETUP PHOTOGRAPH.....	20
APPENDIX II -- EXTERNAL PHOTOGRAPH.....	22



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	:	Trio Wireless Charger
Model Name	:	51193,51219,51XXX Note:(The variable "X" can be 0 to 9, A to Z for marketing purpose only, no safety affect. All samples are the same except appearance color and model number.)
Operation Frequency	:	110.1-205KHz
Type of Modulation	:	ASK
Antenna installation	:	Inductive loop coil Antenna
Antenna Gain	:	0 dBi
Power supply	:	Input: 100-240V~ 50/60Hz, 0.8A Output: DC 5V, 3A/DC 9V, 2.66A/DC12V, 2A
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)5W/7.5W/10W All modes have been tested. This report only show the test result of the worst case(Full load 10W).



Report No.: PTC20111303301E-FC01

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	SER MY5111038	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. 21, 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. 21, 2021
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Aug. 21, 2021
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Aug. 21, 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

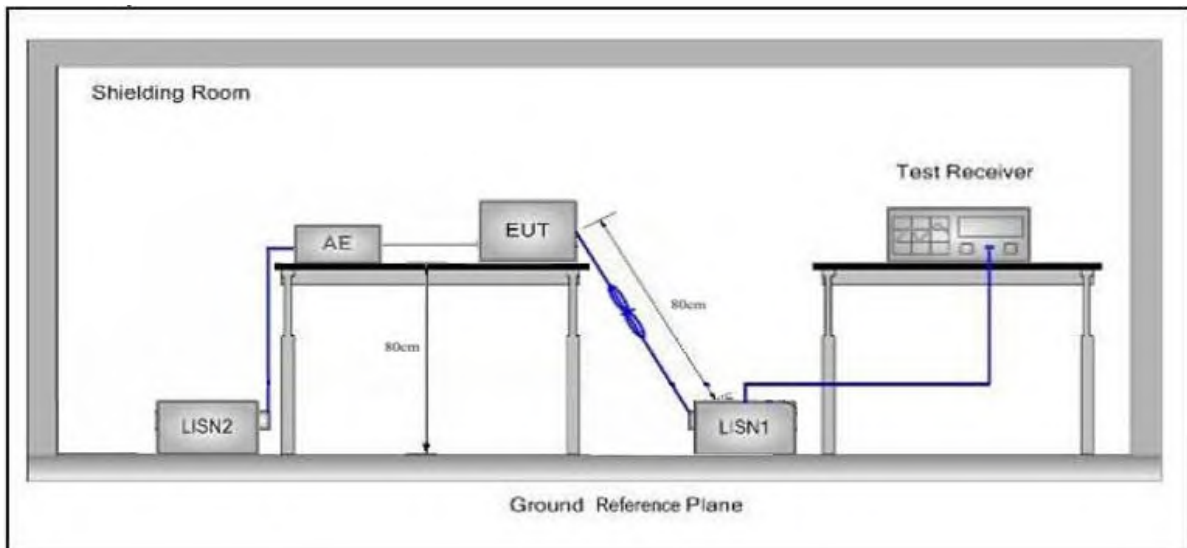
4.3 Description of Support Units

Equipment	Model No.	Series No.
iPhone 11	Input:5W/7.5W/10W	N/A
Watch	Input:5W/7.5W/10W	
ipod	Input:5W/7.5W/10W	

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.

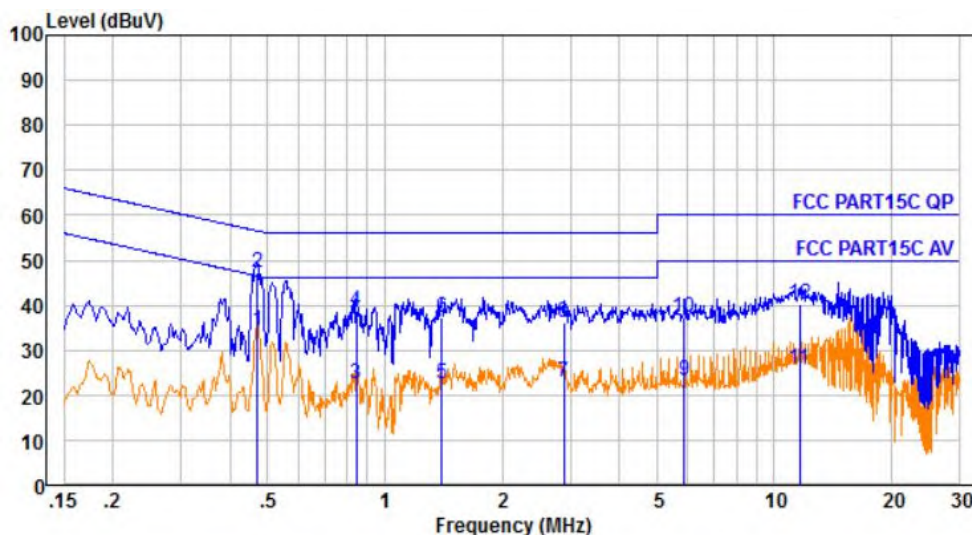
Conducted Emission Test Data

Operating Condition: Mode 1

Test Specification: AC 120V, 60Hz for adapter

Comment: Live Line

Tem.: 22°C Hum.: 51%

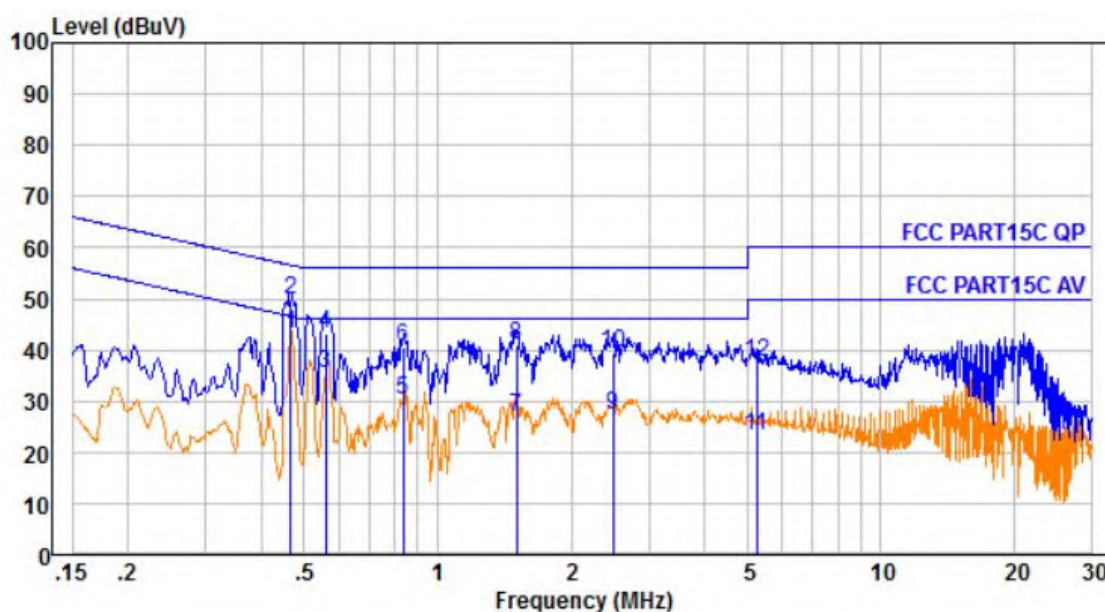


No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.471	0.42	9.61	24.35	34.38	46.49	-12.11	Average
2.	0.471	0.42	9.61	37.13	47.16	56.49	-9.33	QP
3.	0.844	0.45	9.61	12.36	22.42	46.00	-23.58	Average
4.	0.844	0.45	9.61	28.54	38.60	56.00	-17.40	QP
5.	1.403	0.46	9.61	12.26	22.33	46.00	-23.67	Average
6.	1.403	0.46	9.61	27.28	37.35	56.00	-18.65	QP
7.	2.884	0.47	9.63	12.83	22.93	46.00	-23.07	Average
8.	2.884	0.47	9.63	26.16	36.26	56.00	-19.74	QP
9.	5.867	0.52	9.70	13.06	23.28	50.00	-26.72	Average
10.	5.867	0.52	9.70	27.11	37.33	60.00	-22.67	QP
11.	11.621	0.56	9.78	15.63	25.97	50.00	-24.03	Average
12.	11.621	0.56	9.78	29.97	40.31	60.00	-19.69	QP



Conducted Emission Test Data

Operating Condition: Mode 1
 Test Specification: AC 120V, 60Hz for adapter
 Comment: Neutral Line
 Tem.: 22°C Hum.: 51%



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBμV	Emission Level dBμV	Limit dBμV	Over Limit dB	Remark
1.	0.466	0.42	9.63	33.25	43.30	46.58	-3.28	Average
2.	0.466	0.42	9.63	39.60	49.65	56.58	-6.93	QP
3.	0.558	0.43	9.63	25.40	35.46	46.00	-10.54	Average
4.	0.558	0.43	9.63	33.22	43.28	56.00	-12.72	QP
5.	0.835	0.45	9.64	20.12	30.21	46.00	-15.79	Average
6.	0.835	0.45	9.64	30.42	40.51	56.00	-15.49	QP
7.	1.511	0.47	9.64	16.71	26.82	46.00	-19.18	Average
8.	1.511	0.47	9.64	30.74	40.85	56.00	-15.15	QP
9.	2.487	0.47	9.65	17.21	27.33	46.00	-18.67	Average
10.	2.487	0.47	9.65	29.27	39.39	56.00	-16.61	QP
11.	5.249	0.51	9.71	13.12	23.34	50.00	-26.66	Average
12.	5.249	0.51	9.71	27.54	37.76	60.00	-22.24	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

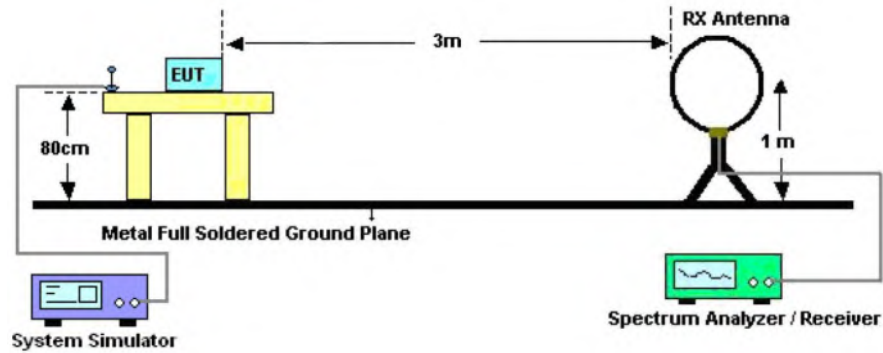


Figure 1. Below 30MHz

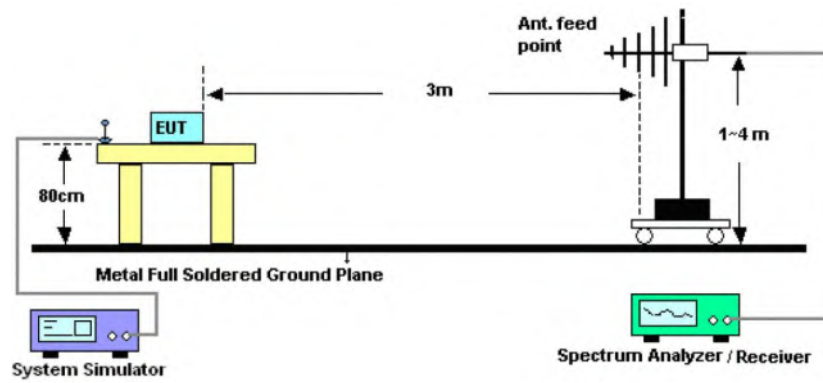


Figure 2. 30MHz to 1GHz

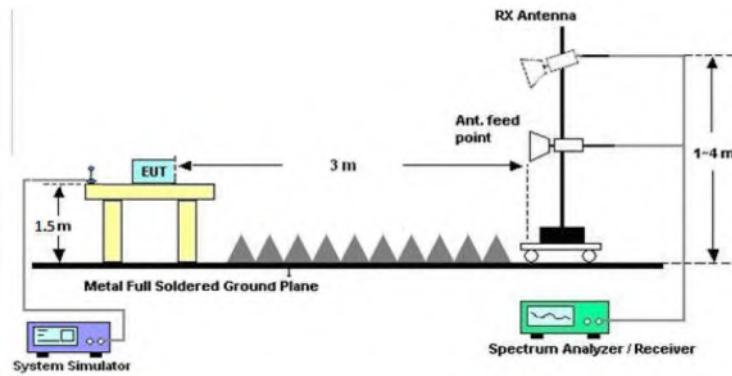


Figure 3. Above 1 GHz



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.



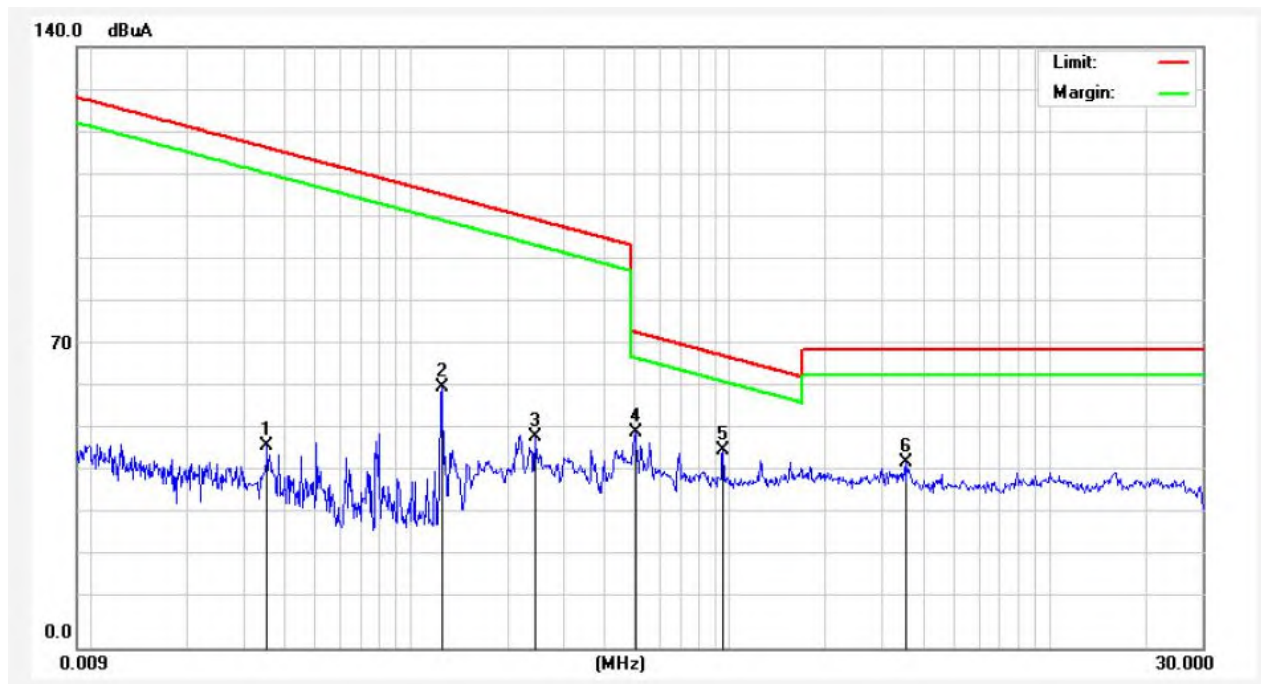
Test Results (9K~30MHz)

Test Mode: Mode 1

Power Source: AC 120V, 60Hz for adapter

Temp.(°C)/Hum.(%RH): 24.7°C/51%RH

Distance: 3m



Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	degree (dgc)
0.0354	34.67	19.28	2.53	0	56.48	136.50	-80.02	Peak	351
0.0354	25.22	19.28	2.53	0	47.03	116.50	-69.47	AV	351
0.1250	48.00	19.30	2.54	0	69.84	125.60	-55.76	Peak	217
0.1250	38.73	19.30	2.54	0	60.57	105.60	-45.03	AV	217
0.2459	36.65	19.30	2.54	0	58.49	119.75	-61.26	Peak	281
0.2459	27.22	19.30	2.54	0	49.06	99.75	-50.69	AV	281
0.5060	28.04	19.53	2.59	0	50.16	73.52	-23.36	QP	317
0.9495	23.93	19.53	2.59	0	46.05	68.05	-22.00	QP	29
3.5659	21.07	19.53	2.59	0	43.19	69.54	-26.35	QP	173

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)

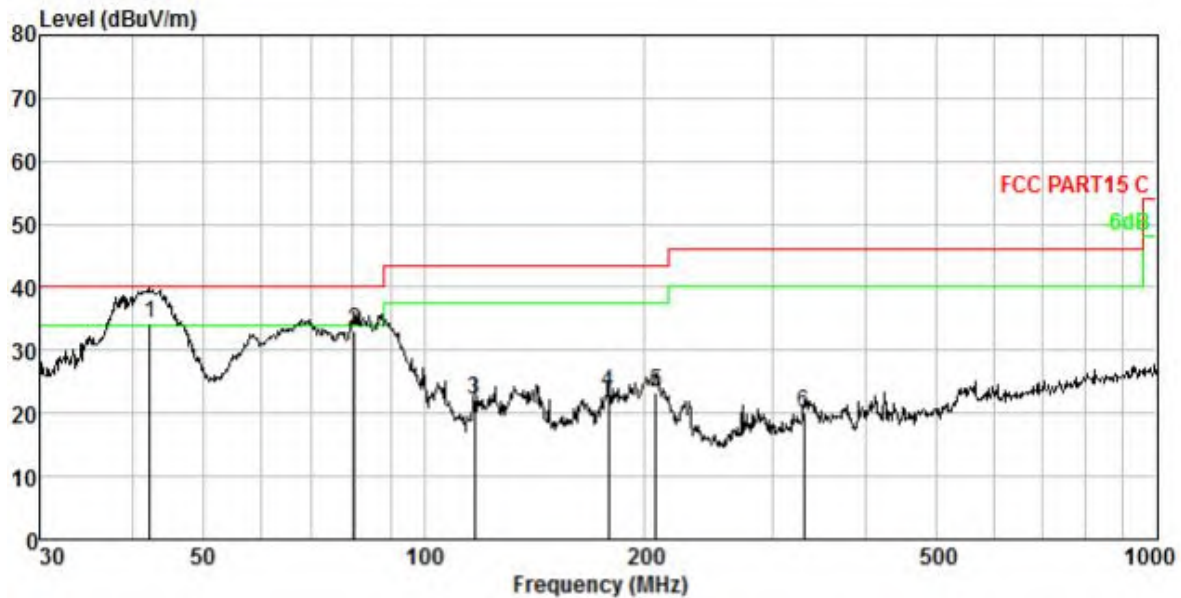
Test Mode: Mode 1

Power Source: AC 120V, 60Hz for adapter

Polarization: Vertical

Temp.(°C)/Hum.(%RH): 24.3°C/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.	42.302	1.80	12.20	50.29	29.91	34.38	40.00	-5.62	QP
2.	80.362	2.90	8.98	51.15	29.97	33.06	40.00	-6.94	QP
3.	117.360	3.55	11.69	37.02	30.00	22.26	43.50	-21.24	QP
4.	178.758	4.27	12.59	36.58	30.03	23.41	43.50	-20.09	QP
5.	207.123	4.52	11.24	37.68	30.06	23.38	43.50	-20.12	QP
6.	330.195	5.33	13.95	31.39	30.45	20.22	46.00	-25.78	QP



Test Results (30~1000MHz)

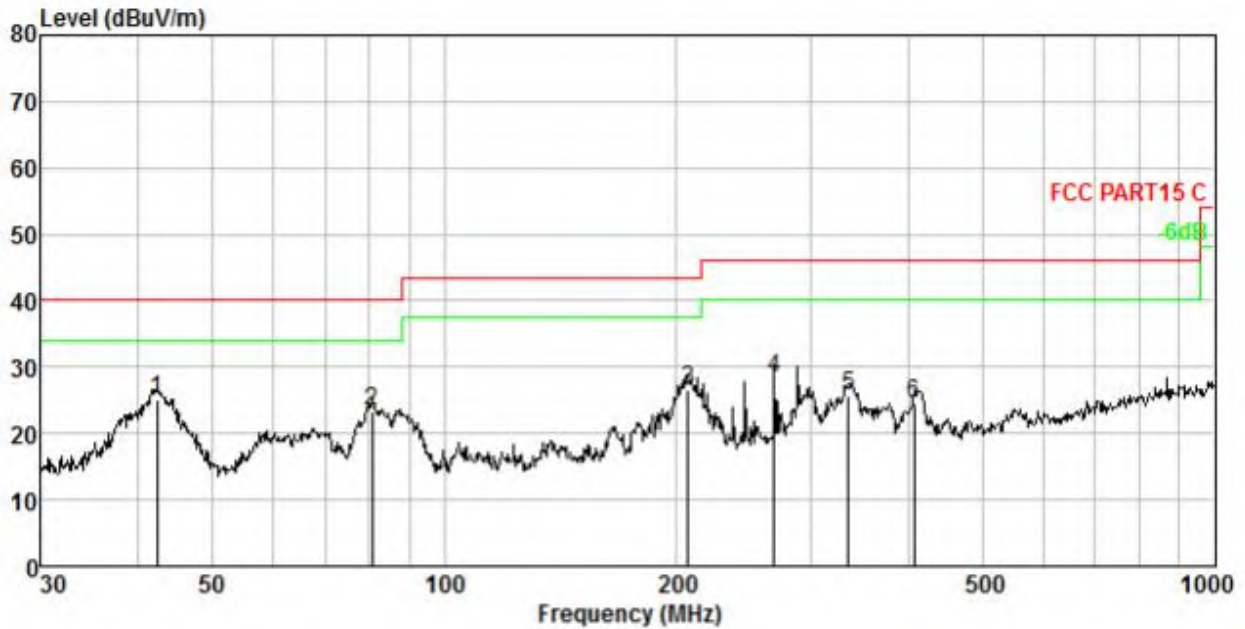
Test Mode: Mode 1

Power Source: AC 120V, 60Hz for adapter

Polarization: Horizontal

Temp.(°C)/Hum.(%RH): 24.3°C/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.	42.451	1.80	12.20	40.90	29.91	24.99	40.00	-15.01	QP
2.	80.644	2.90	8.96	41.50	29.97	23.39	40.00	-16.61	QP
3.	207.123	4.52	11.24	40.96	30.06	26.66	43.50	-16.84	QP
4.	268.485	4.97	12.77	40.83	30.24	28.33	46.00	-17.67	QP
5.	334.859	5.35	14.06	36.60	30.47	25.54	46.00	-20.46	QP
6.	407.515	5.69	14.97	34.52	30.72	24.46	46.00	-21.54	QP

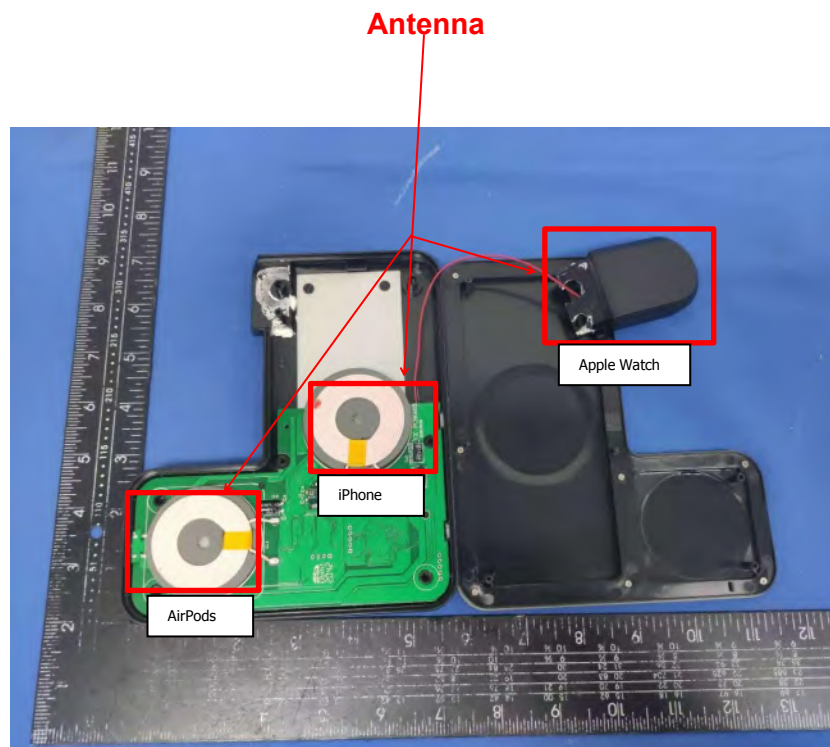
7 Antenna Requirement

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





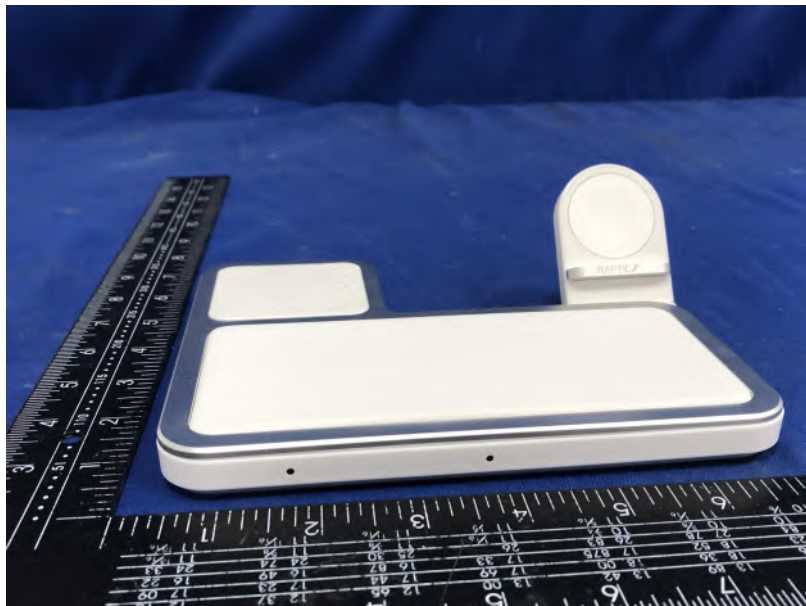
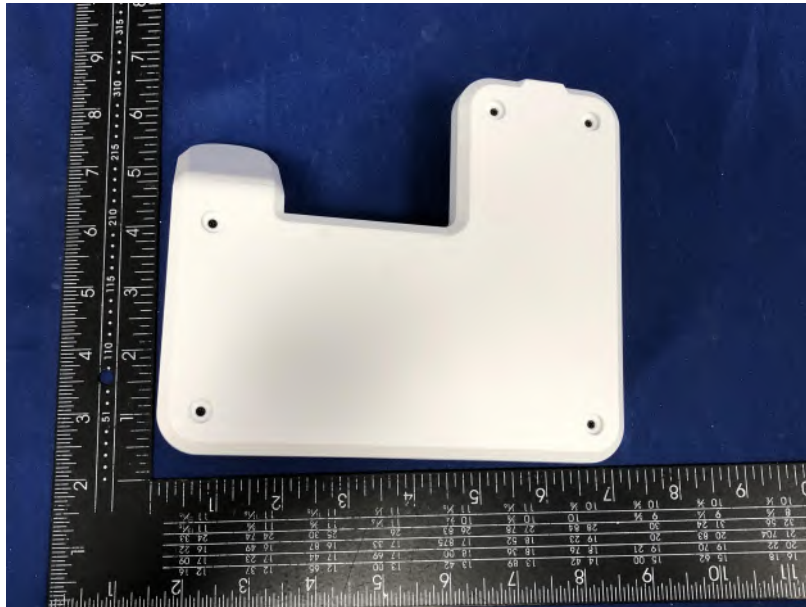
APPENDIX II -- EXTERNAL PHOTOGRAPH

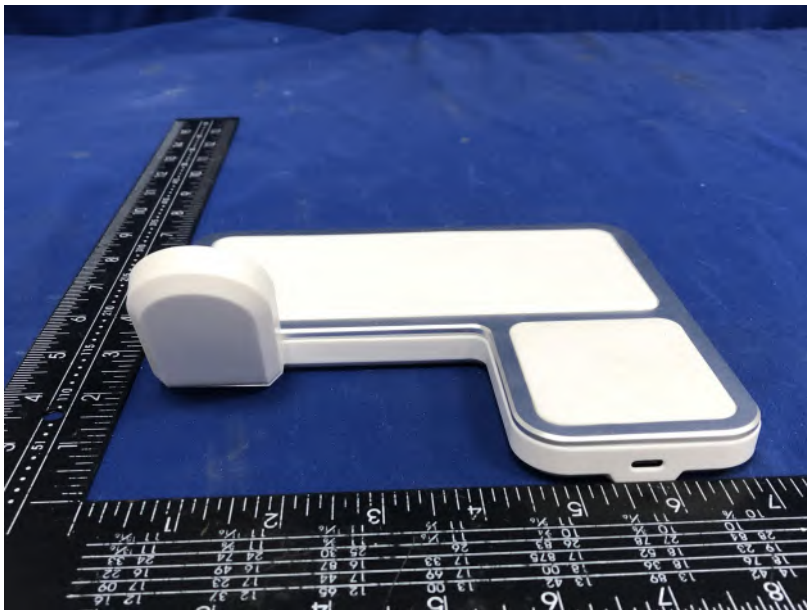
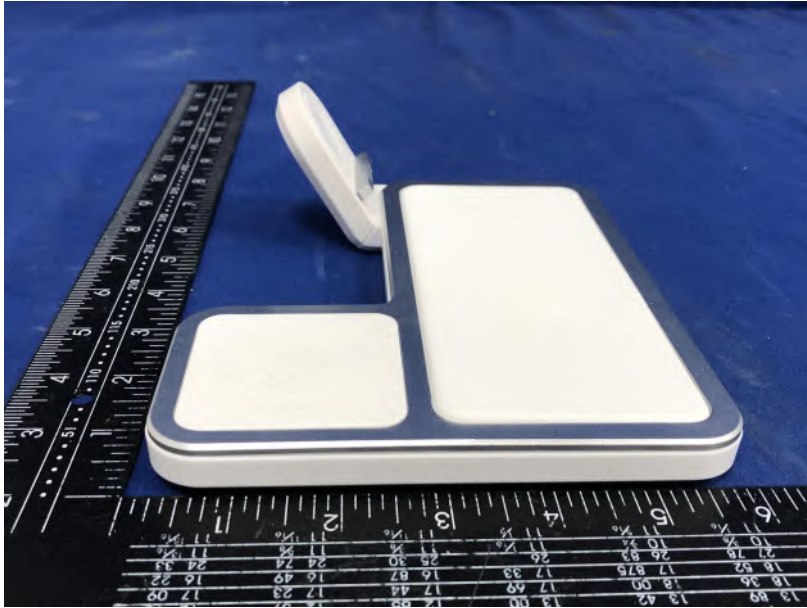


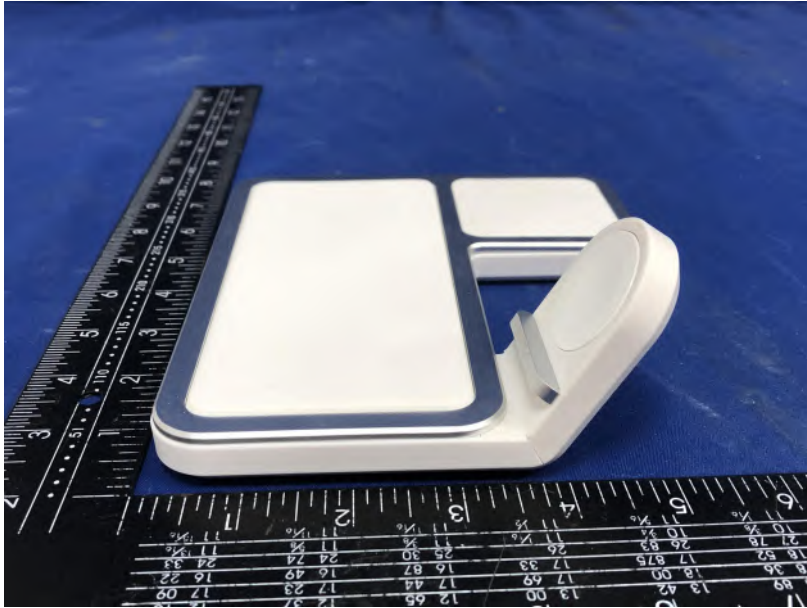
(51219:Black,51193:White)

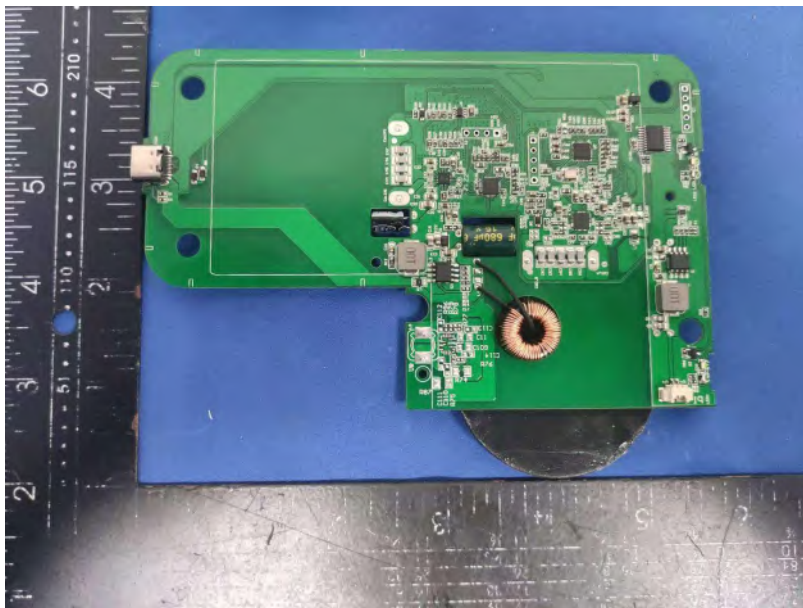
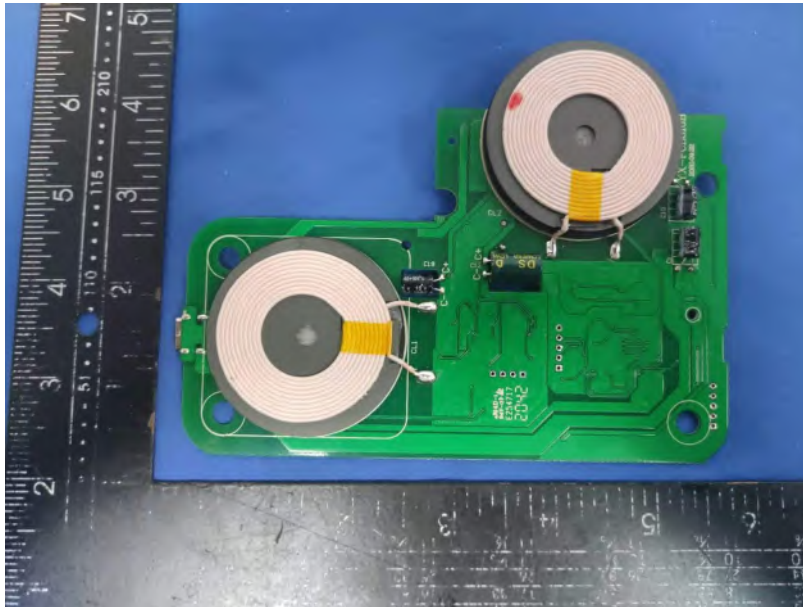


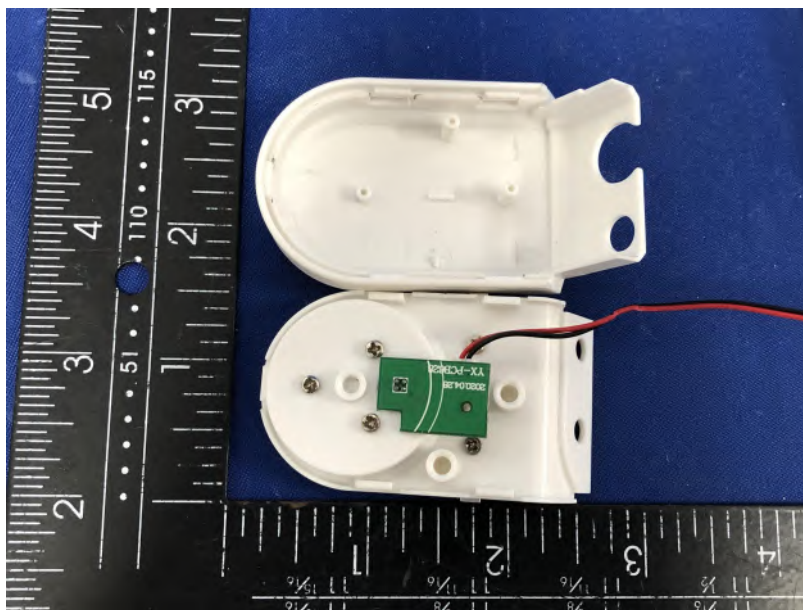
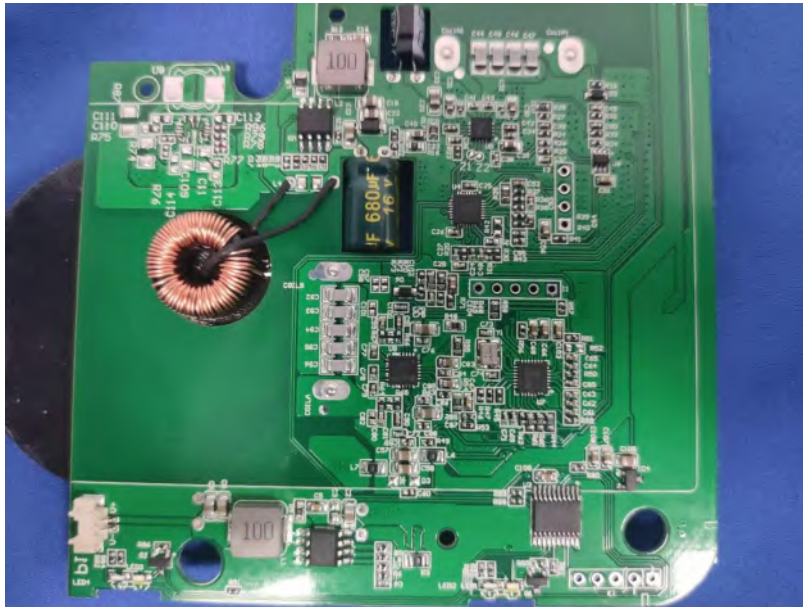


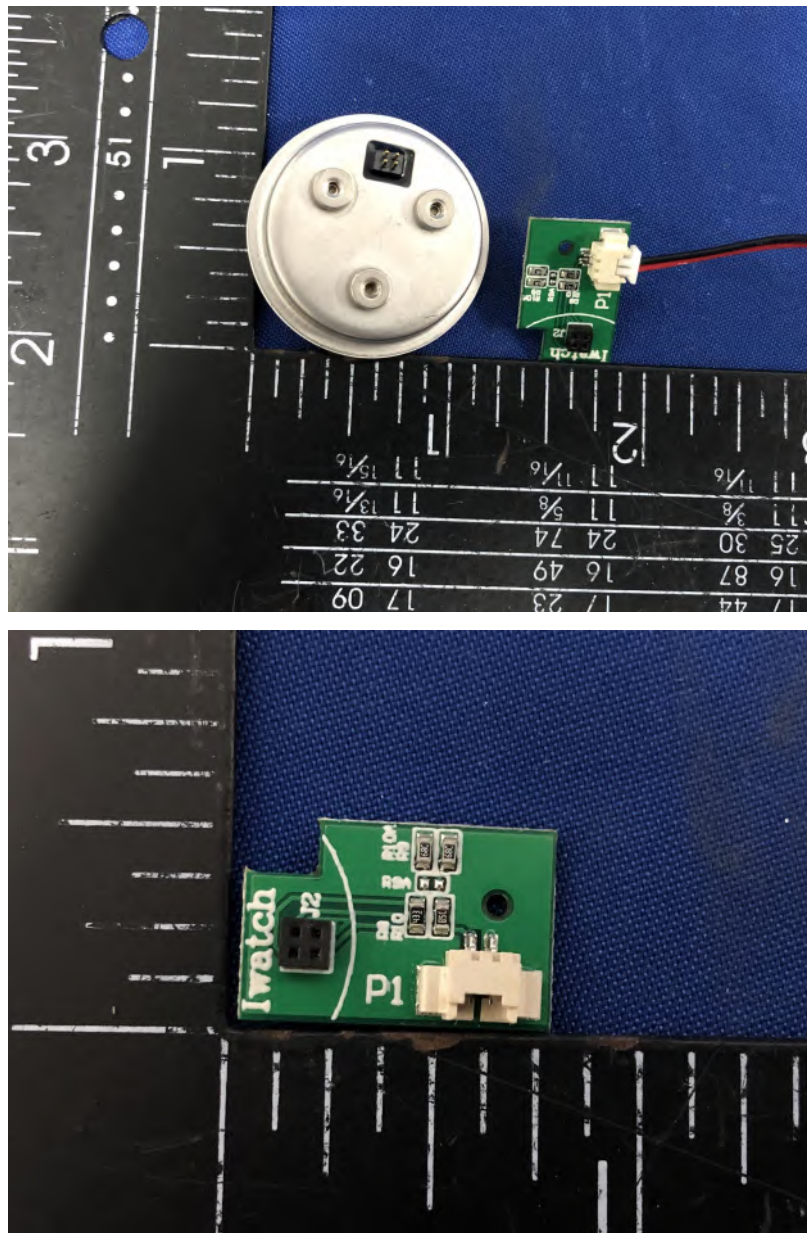


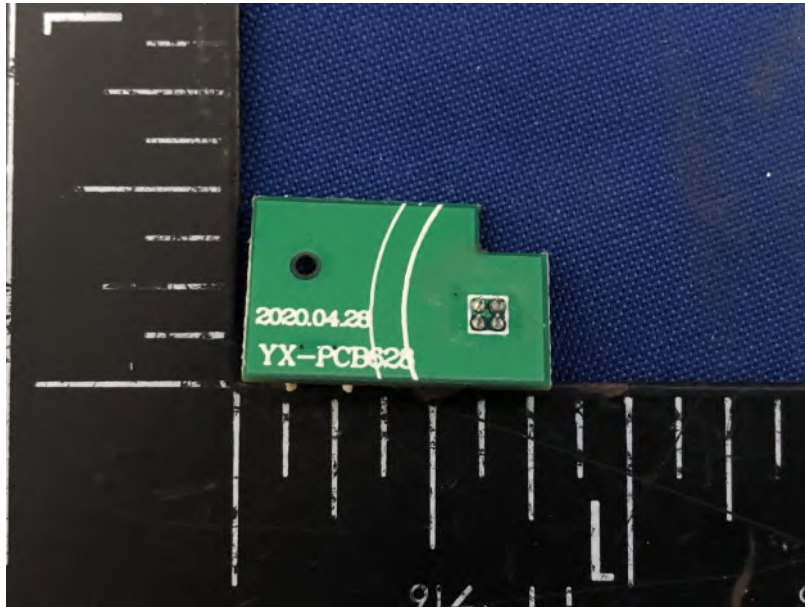












*****THE END REPORT*****