



PRECISE TESTING

FCC TEST REPORT

FCC ID: 2AQTN-YM-612

Product Name	:	Clock Radio Bluetooth
Model Name	:	YM-612, NEO AIR6, BLP2612-001, W7
Brand Name	:	N/A
Report No.	:	PTC18072617101E-FC02
Prepared for		
DONG GUAN YUNMEI ELECTRONICS CO., LTD F3-4, Dingfeng Commercial Centre, Hengkeng Industrial Zone, Liaobu Town, Dongguan, Guangdong, China		
Prepared by		
Dongguan Precise Testing & Certification Corp., Ltd. Building D, Baoding Technology Park, Guangming Road 2, Guangming Community, Dongcheng District, Dongguan, Guangdong, China		



PRECISE TESTING

Report No.: PTC18072617101E-FC02

1 TEST RESULT CERTIFICATION

Applicant's name : DONG GUAN YUNMEI ELECTRONICS CO., LTD
Address : F3-4, Dingfeng Commercial Centre, Hengkeng Industrial Zone, Liaobu Town, Dongguan, Guangdong, China
Manufacturer's name : DONG GUAN YUNMEI ELECTRONICS CO., LTD
Address : F3-4, Dingfeng Commercial Centre, Hengkeng Industrial Zone, Liaobu Town, Dongguan, Guangdong, China
Product name : Clock Radio Bluetooth
Model name : YM-612, NEO AIR6, BLP2612-001, W7
Standards : FCC CFR47 Part 15C
Test procedure : ANSI C63.10:2013
Test Date : August 01, 2018 to August 18, 2018
Date of Issue : August 18, 2018
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 / Engineer

Technical Manager:

Chris Du / Manager



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2 Test Summary

Test Items	Test Requirement	Result
Radiated Spurious Emissions	15.209	PASS
Conduct Emission	15.207	PASS



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3 TEST FACILITY

Dongguan Precise Testing & Certification Corp., Ltd.

Address: Building D, Baoding Technology Park, Guangming Road2, Dongcheng District, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A-1

Test Lab: Shenzhen Tongce Testing Lab

Address: 18/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

FCC Registered No.: 645098

Test items: Radiated Spurious Emission(9KHz to 30MHz)



4 General Information

4.1 General Description of E.U.T.

Product Name	:	Clock Radio Bluetooth
Model Name	:	YM-612, NEO AIR6, BLP2612-001, W7 (Note: The samples are the same except appearance, model number.)
Operating frequency	:	110-205KHz
Numbers of Channel	:	20 Channels
Antenna Type	:	Inductive Loop Coil Antenna
Antenna Gain	:	0dBi
Type of Modulation	:	MSK
Power supply	:	For Adapter: Model: BX-0503000 Input: AC 100-240V, 50/60Hz Output: DC 5V, 3000mA
Hardware Version	:	1.0
Software Version	:	1.0



4.2 Test Mode

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 or test configuration mode mentioned above was evaluated respectively.

Pretest Mode		Description
Mode 1		CH01
Mode 2		CH10
Mode 3		CH20
Mode 4		Keeping TX+Charging mode

For Conducted Emission		
Final Test Mode		Description
Mode 4		Keeping TX+Charging mode

For Radiated Emission		
Final Test Mode		Description
Mode 1		CH01
Mode 2		CH10
Mode 3		CH20

Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	0.110	6	0.135	11	0.160	16	0.185
2	0.115	7	0.140	12	0.165	17	0.190
3	0.120	8	0.145	13	0.170	18	0.195
4	0.125	9	0.150	14	0.175	19	0.200
5	0.130	10	0.155	15	0.180	20	0.205



5 Equipment During Test

5.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
MXG Signal Analyzer	Agilent	N9020A	MY56070279	10Hz-30GHz	Apr 07, 2019
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Oct 09, 2018
Antenna Connector	Florida RF Labs	N/A	RF01#	N/A	Aug. 26, 2018

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.

Radiated Emissions(Test Frequency from 9KHz-18GHz)

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Sep. 03, 2018
Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	Aug 31, 2018
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug 31, 2018
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Sep. 03, 2018
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Sep. 03, 2018
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Oct. 13, 2018
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Aug. 31, 2018
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	Aug. 31, 2018
Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	Sep. 03, 2018



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Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Sep. 03, 2018
Artificial Mains Network	Rohde&Schwarz	L2-16B	000WX31025	9KHz-300MHz	Sep. 03, 2018
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Sep. 03, 2018



5.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~25GHz)	$\pm 4.74\text{dB}$
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	



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5.3 Description of Support Units

Equipment	Model No.	Series No.
Mobile Phone	Samsung S9	N/A



6 Conducted Emission

Test Requirement: : FCC CFR 47 Part 15 Section 15.207
Test Method: : ANSI C63.10:2013
Test Result: : PASS
Frequency Range: : 150kHz to 30MHz
Class/Severity: : Class B
Detector: : Peak for pre-scan (9kHz Resolution Bandwidth)

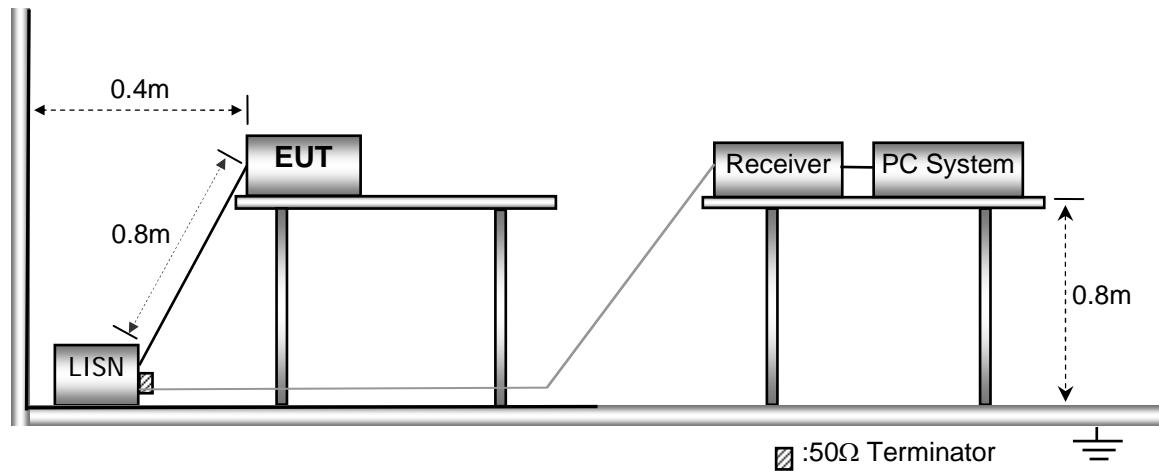
6.1 E.U.T. Operation

Operating Environment :

Temperature: : 25.5 °C
Humidity: : 51 % RH
Atmospheric Pressure: : 101.2kPa
Test Voltage : AC 120V/60Hz

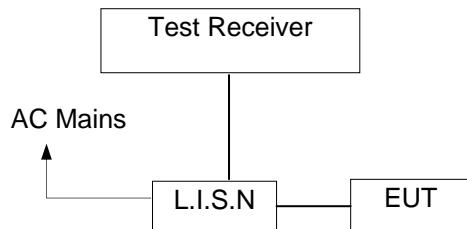
6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2013





6.3 Test SET-UP (Block Diagram of Configuration)



6.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

6.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

6.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.7 Conducted Emission Test Result

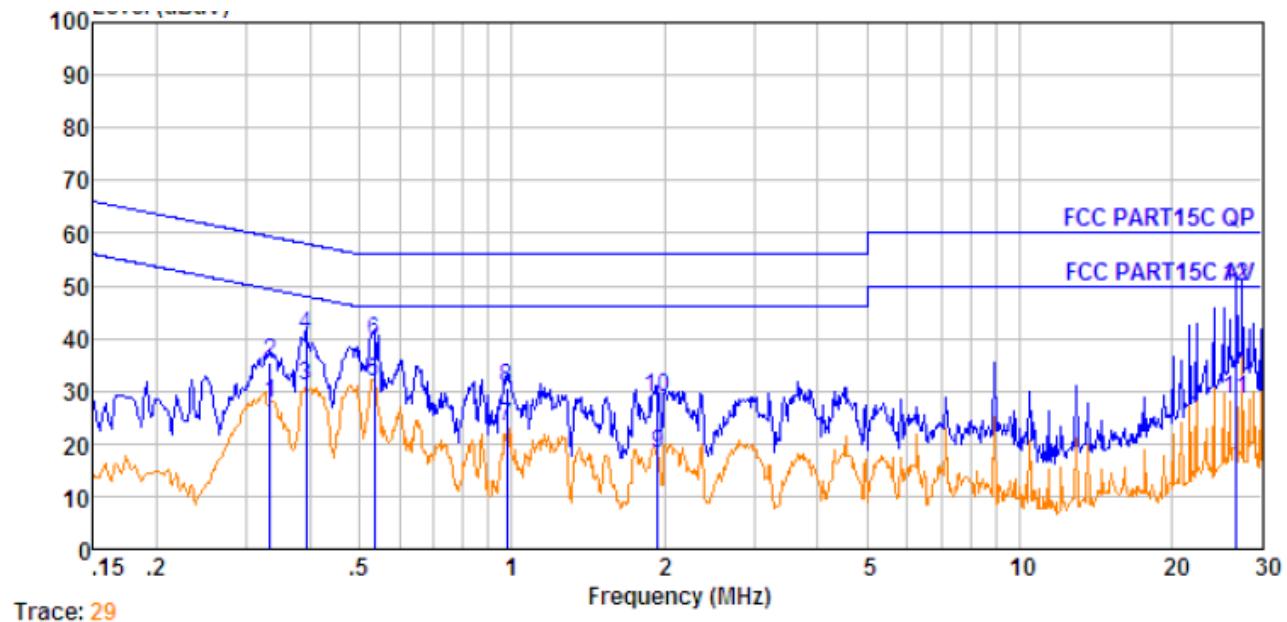
Pass.



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Line -120V/60Hz:



Trace: 29

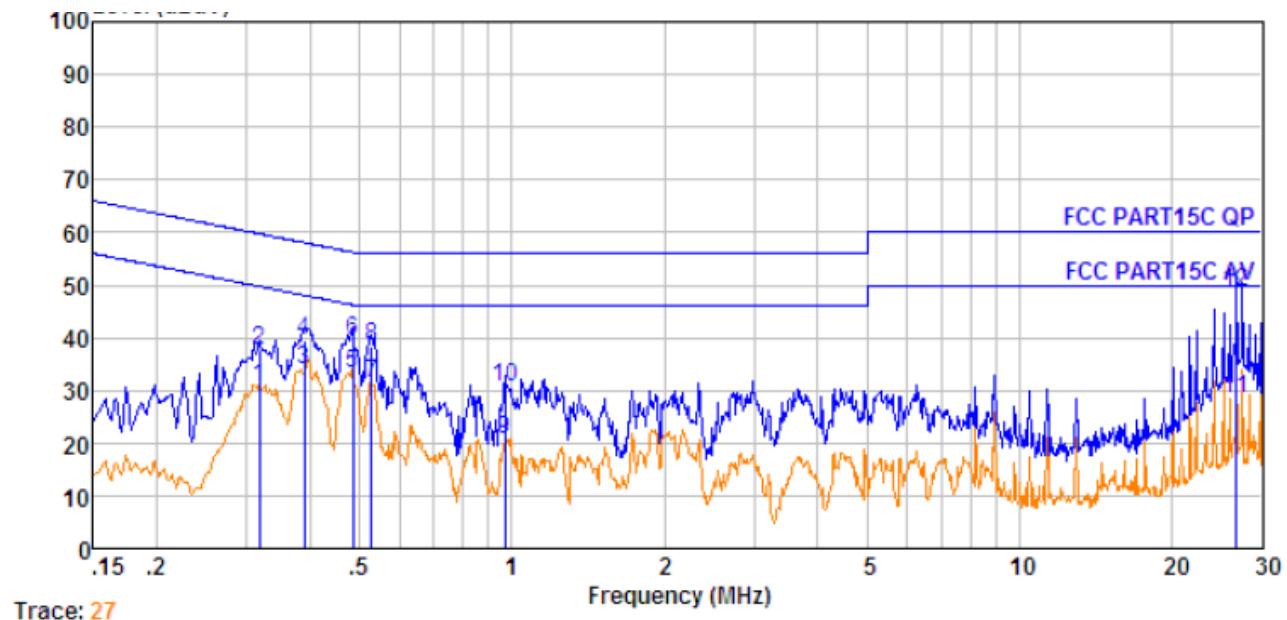
No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.334	0.38	9.70	17.51	27.59	49.35	-21.76	Average
2.	0.334	0.38	9.70	25.32	35.40	59.35	-23.95	QP
3.	0.393	0.40	9.73	21.03	31.16	47.99	-16.83	Average
4.	0.393	0.40	9.73	30.36	40.49	57.99	-17.50	QP
5.	0.535	0.43	9.78	21.40	31.61	46.00	-14.39	Average
6.	0.535	0.43	9.78	29.34	39.55	56.00	-16.45	QP
7.	0.979	0.46	9.82	12.95	23.23	46.00	-22.77	Average
8.	0.979	0.46	9.82	20.38	30.66	56.00	-25.34	QP
9.	1.939	0.47	9.85	7.82	18.14	46.00	-27.86	Average
10.	1.939	0.47	9.85	18.35	28.67	56.00	-27.33	QP
11.	26.699	0.51	9.91	18.00	28.42	50.00	-21.58	Average
12.	26.699	0.51	9.91	39.55	49.97	60.00	-10.03	QP



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Neutral -120V/60Hz:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.318	0.38	9.72	20.47	30.57	49.75	-19.18	Average
2.	0.318	0.38	9.72	27.53	37.63	59.75	-22.12	QP
3.	0.389	0.40	9.76	23.74	33.90	48.08	-14.18	Average
4.	0.389	0.40	9.76	29.35	39.51	58.08	-18.57	QP
5.	0.486	0.43	9.80	22.91	33.14	46.23	-13.09	Average
6.	0.486	0.43	9.80	29.35	39.58	56.23	-16.65	QP
7.	0.529	0.43	9.81	21.27	31.51	46.00	-14.49	Average
8.	0.529	0.43	9.81	28.16	38.40	56.00	-17.60	QP
9.	0.968	0.46	9.85	10.52	20.83	46.00	-25.17	Average
10.	0.968	0.46	9.85	20.21	30.52	56.00	-25.48	QP
11.	26.699	0.51	10.09	17.85	28.45	50.00	-21.55	Average
12.	26.699	0.51	10.09	38.22	48.82	60.00	-11.18	QP



7 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209

Test Method : ANSI C63.10:2013

Test Result : PASS

Measurement Distance : 3m

Limit : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation

Operating Environment :

Temperature : 23.5 °C

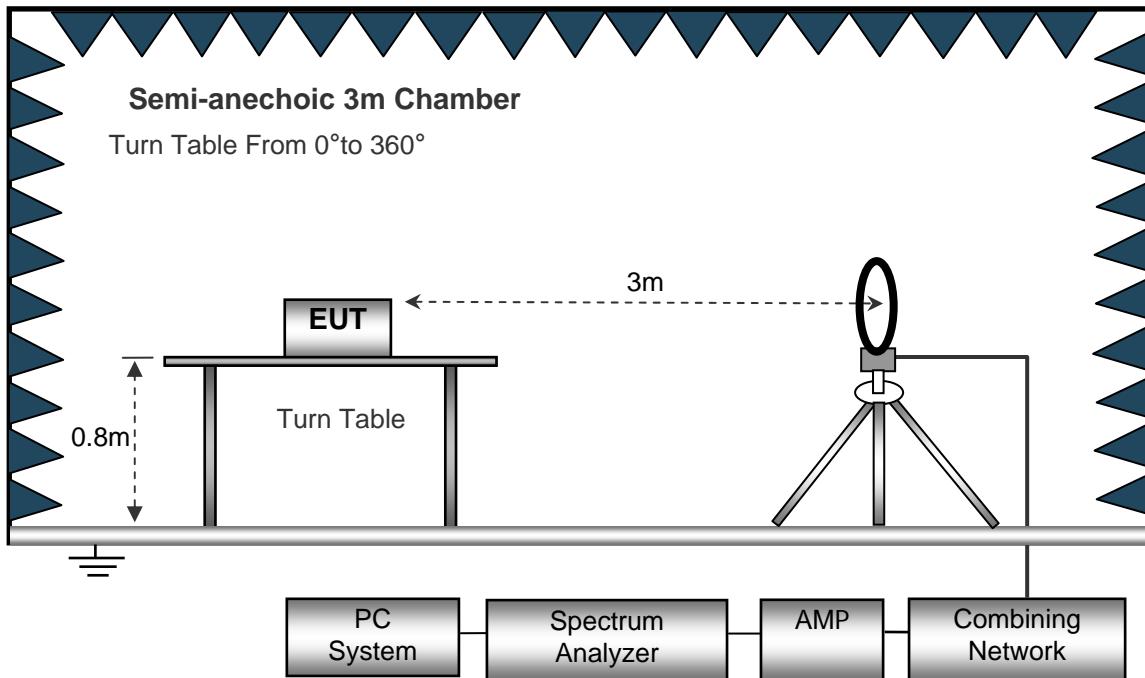
Humidity : 51.1 % RH

Atmospheric Pressure : 101.2kPa

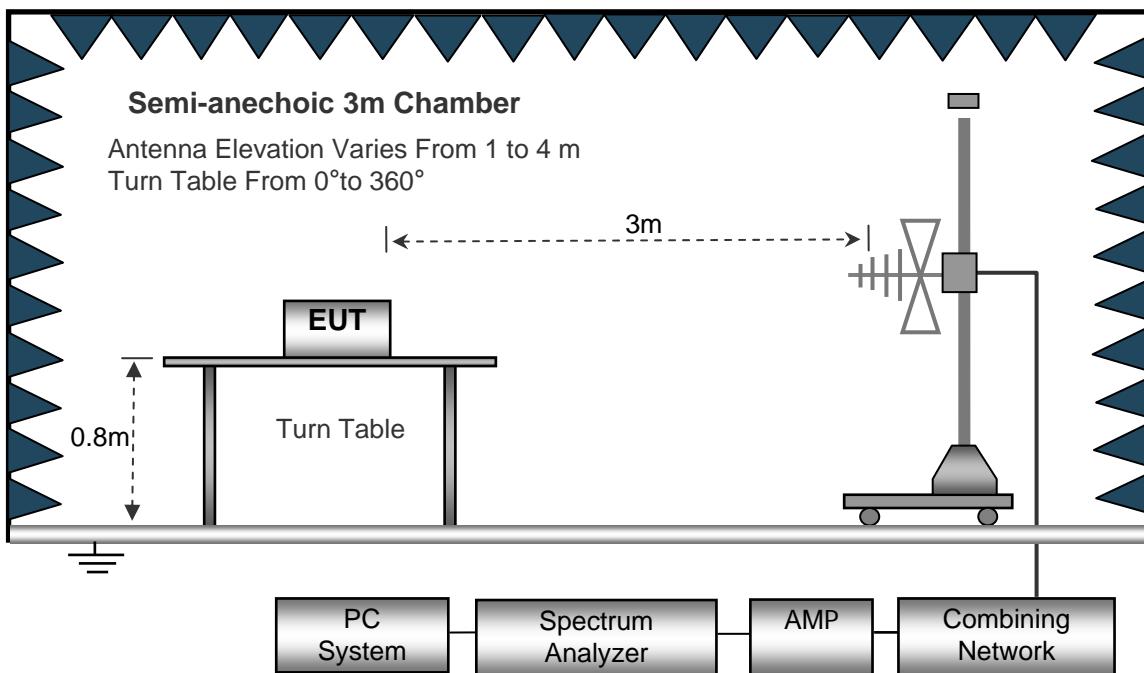
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

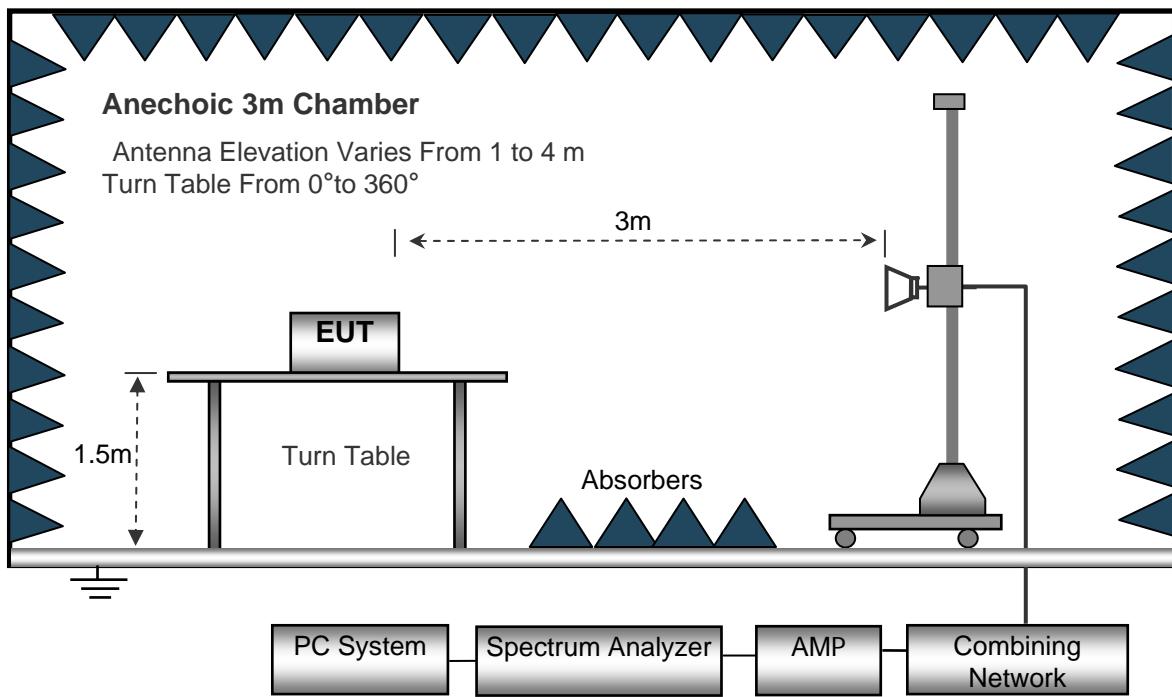
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



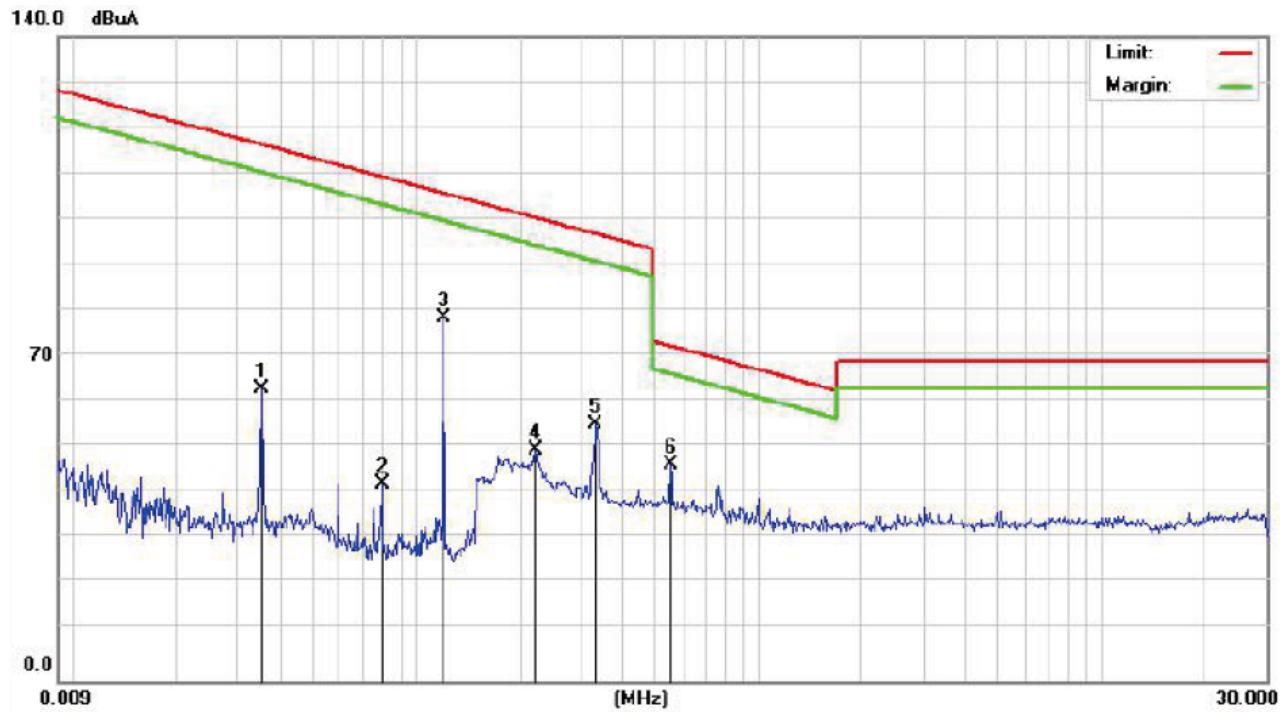
7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
 - 1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
 - 2) Change the antenna polarization and repeat 1) with vertical polarization.
 - 3) Make a hardcopy of the spectrum.
 - 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
 - 5) Change the analyser mode to Clear/ Write and found the cone of emission.
 - 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.
 - 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
 - 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.



7.5 Summary of Test Results

Test Frequency: 9KHz-30MHz



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
									(dge)
0.0352	48.84	19.28	2.53	0	70.65	136.55	-65.90	Peak	12
0.0352	41.75	19.28	2.53	0	63.56	116.55	-52.99	AV	12
0.0792	37.78	19.32	2.55	0	59.65	129.54	-69.89	Peak	45
0.0792	21.10	19.32	2.55	0	42.97	109.54	-66.57	AV	45
0.1199	66.67	19.36	2.62	0	88.65	125.96	-37.31	Peak	147
0.1199	56.93	19.36	2.62	0	78.91	105.96	-27.05	AV	147
0.2220	48.23	19.38	2.63	0	70.24	120.64	-50.40	Peak	120
0.2220	28.15	19.38	2.63	0	50.16	100.64	-50.48	AV	120
0.3339	47.78	19.38	2.63	0	69.79	117.11	-47.32	Peak	354
0.3339	33.65	19.38	2.63	0	55.66	97.11	-41.45	AV	354
0.5540	25.22	19.38	2.63	0	47.23	72.73	-25.50	QP	180

Remark: According to FCC Part 15.209(d), the emission limits for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

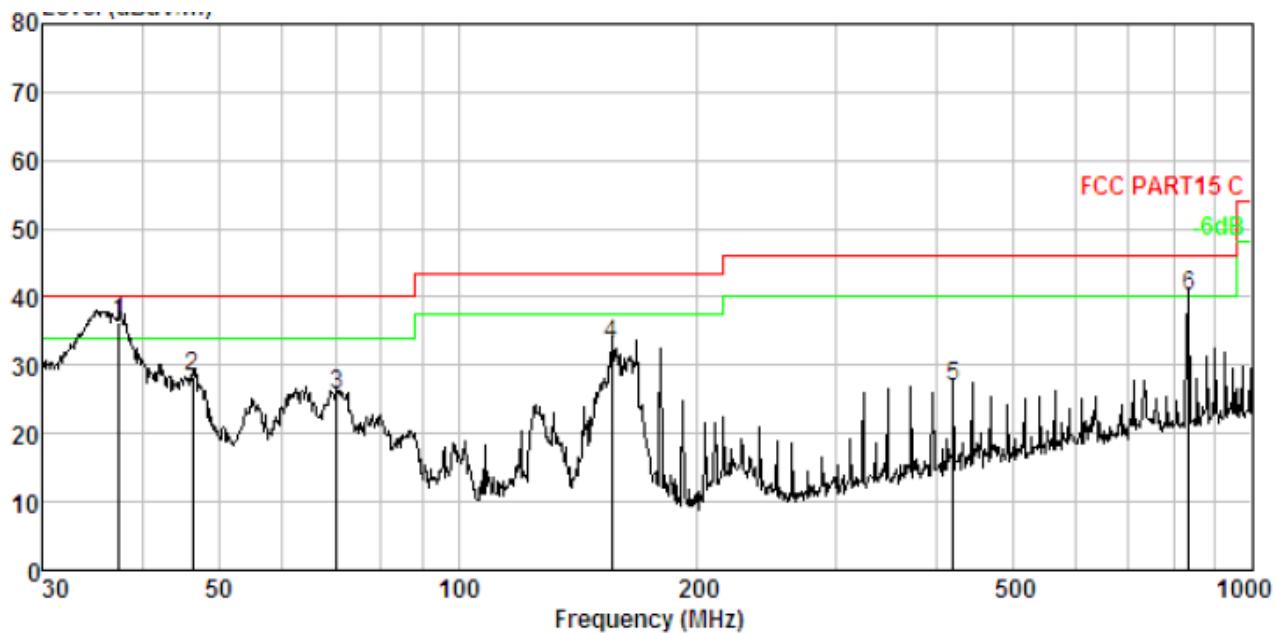


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Test Frequency: 30MHz ~ 1GHz

Horizontal:



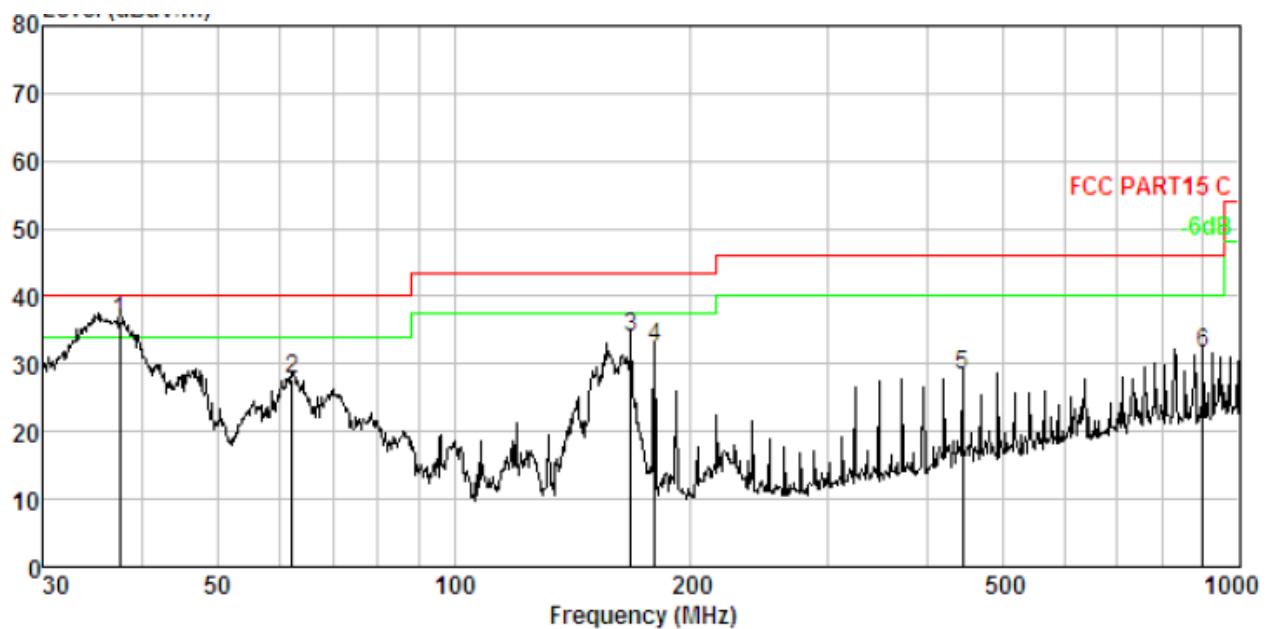
No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	37.416	1.26	13.51	51.67	30.05	36.39	40.00	-3.61	QP
2.	46.340	1.45	12.98	43.95	30.12	28.26	40.00	-11.74	QP
3.	70.337	1.83	9.98	44.28	30.27	25.82	40.00	-14.18	QP
4.	155.910	2.55	13.89	47.22	30.54	33.12	43.50	-10.38	QP
5.	420.580	3.45	15.72	38.61	30.89	26.89	46.00	-19.11	QP
6.	833.317	4.06	21.97	45.15	31.13	40.05	46.00	-5.95	QP



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Vertical:



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.	37.548	1.26	13.51	51.47	30.05	36.19	40.00	-3.81	QP
2.	62.213	1.72	12.02	44.16	30.22	27.68	40.00	-12.32	QP
3.	167.824	2.61	13.45	48.49	30.57	33.98	43.50	-9.52	QP
4.	180.017	2.68	12.44	47.89	30.59	32.42	43.50	-11.08	QP
5.	444.851	3.50	16.28	39.39	30.91	28.26	46.00	-17.74	QP
6.	900.147	4.13	22.58	35.93	31.15	31.49	46.00	-14.51	QP



8 Antenna Requirement

8.1 Antenna 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.

8.2 Result

The antenna is inductive loop coil antenna which permanently attached, and the best case gain of the antenna is 0dBi and meets the requirement.



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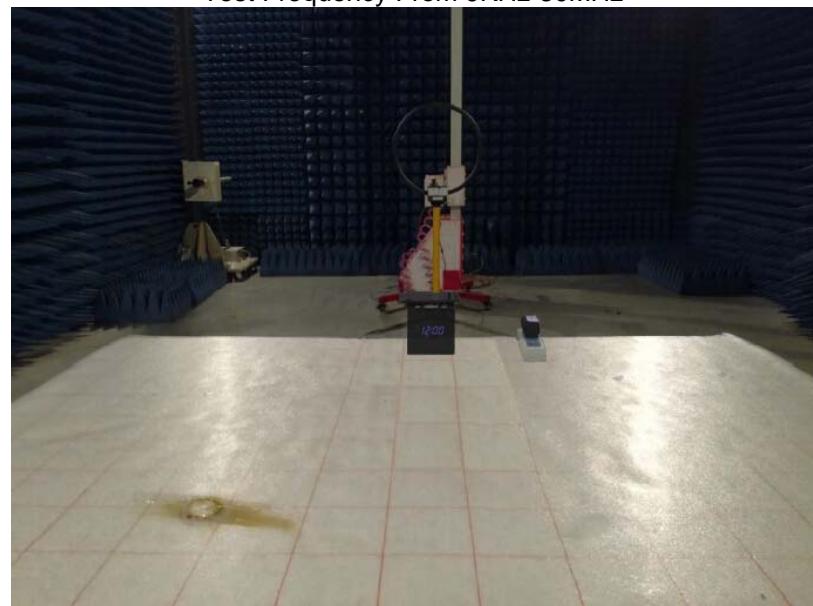
Report No.: PTC18072617101E-FC02

9 TEST PHOTOS

Conducted Emissions



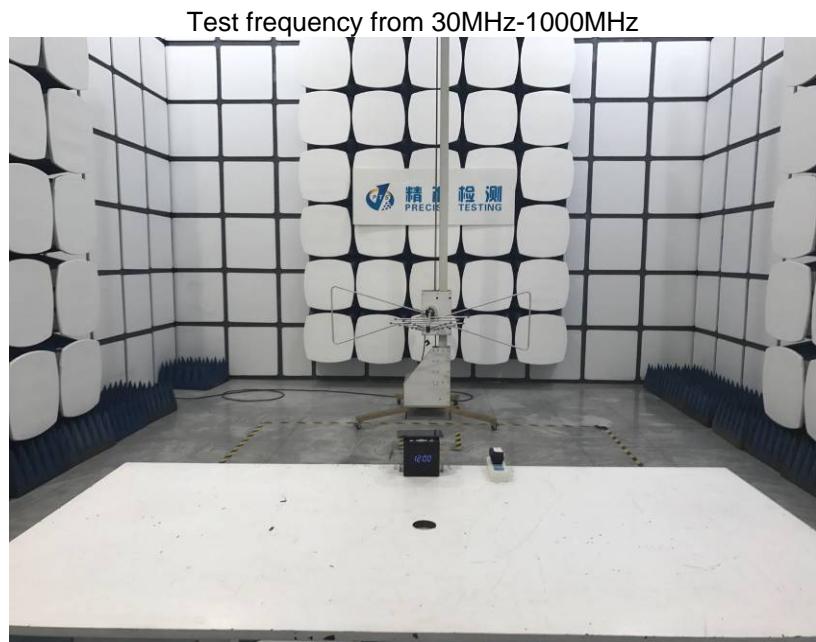
Radiated Spurious Emissions
Test Frequency From 9KHz-30MHz





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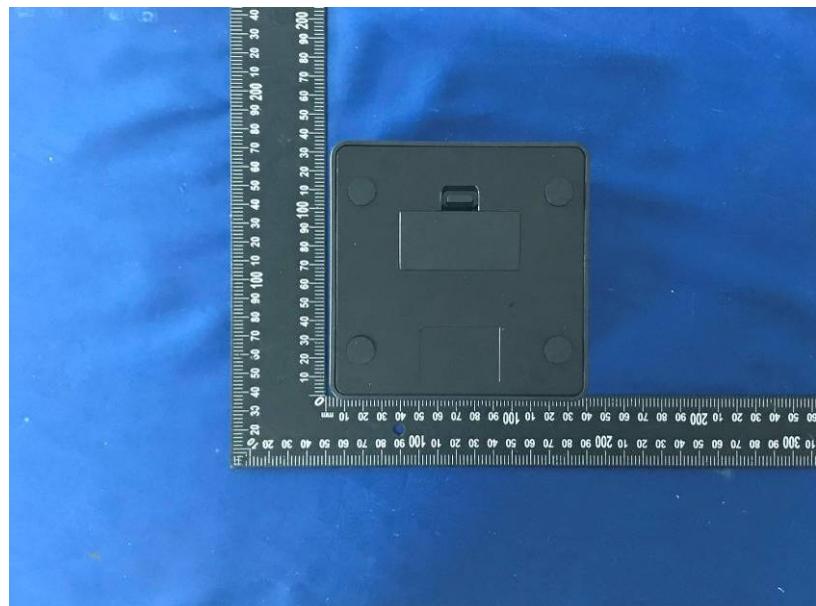
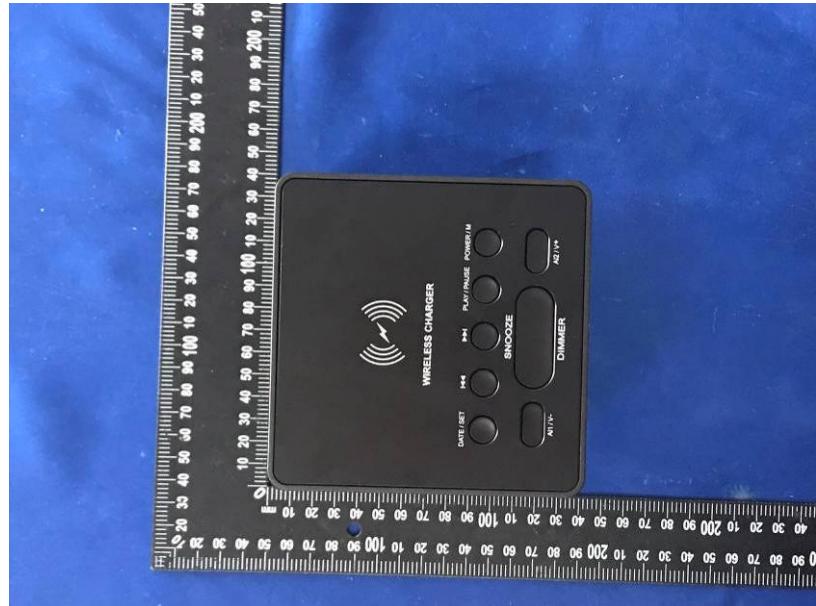




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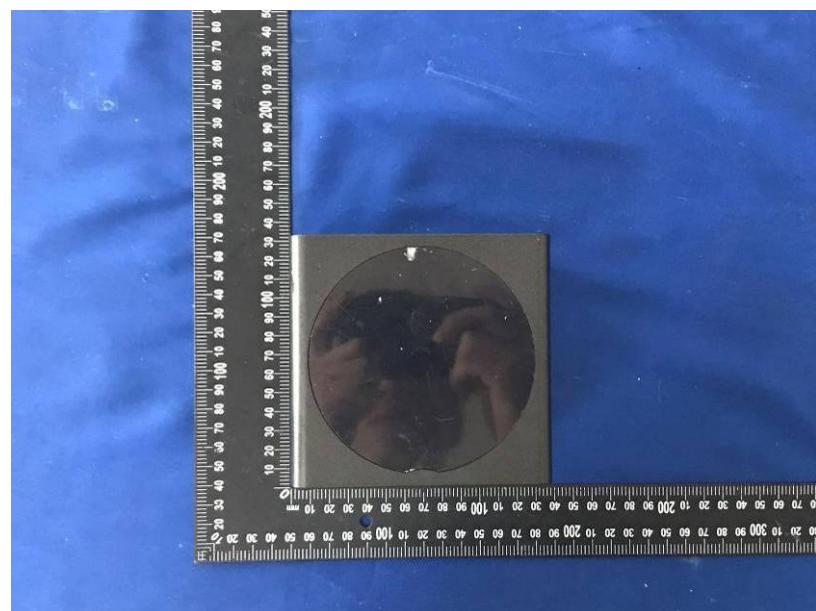
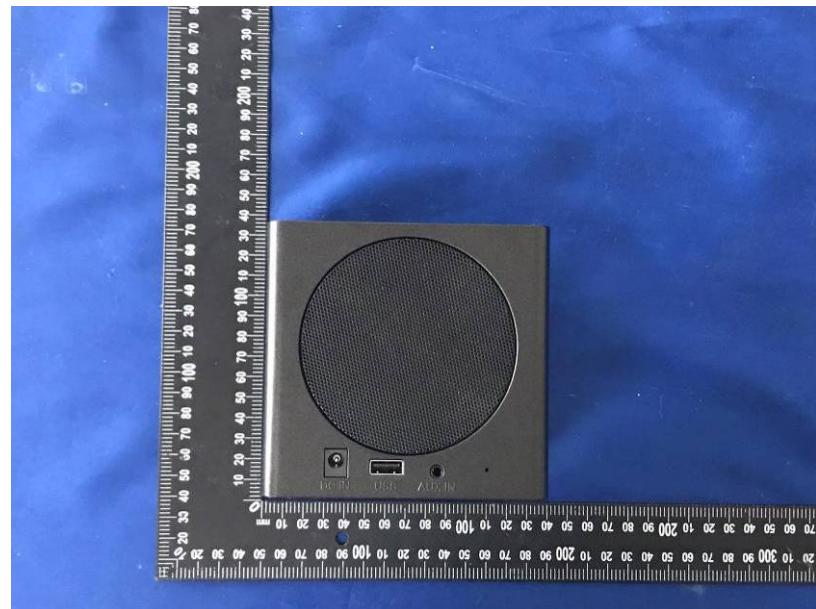
10 EUT PHOTOS





PRECISE TESTING

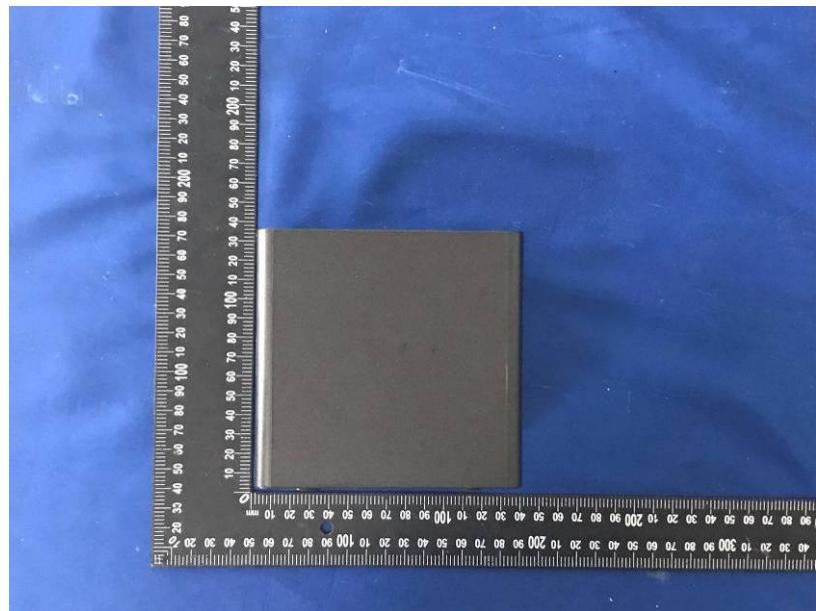
Report No.: PTC18072617101E-FC02





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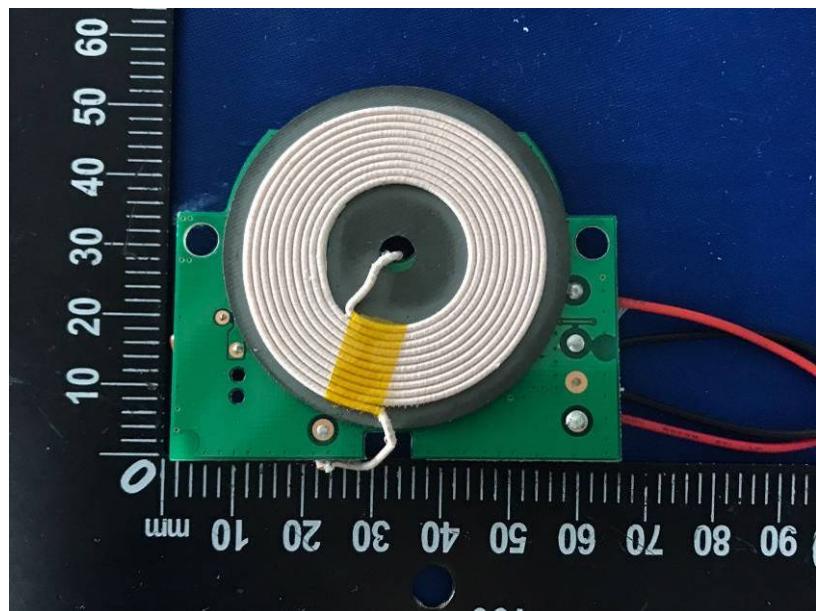
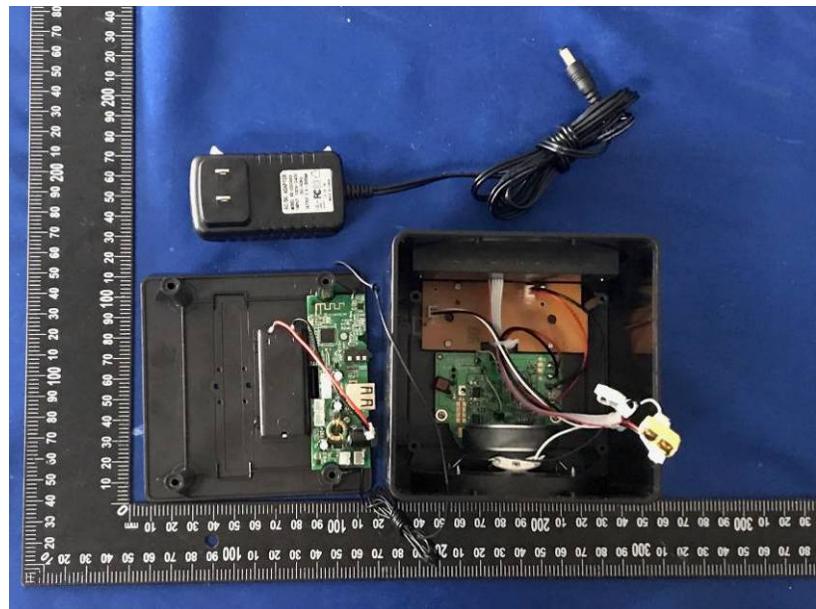
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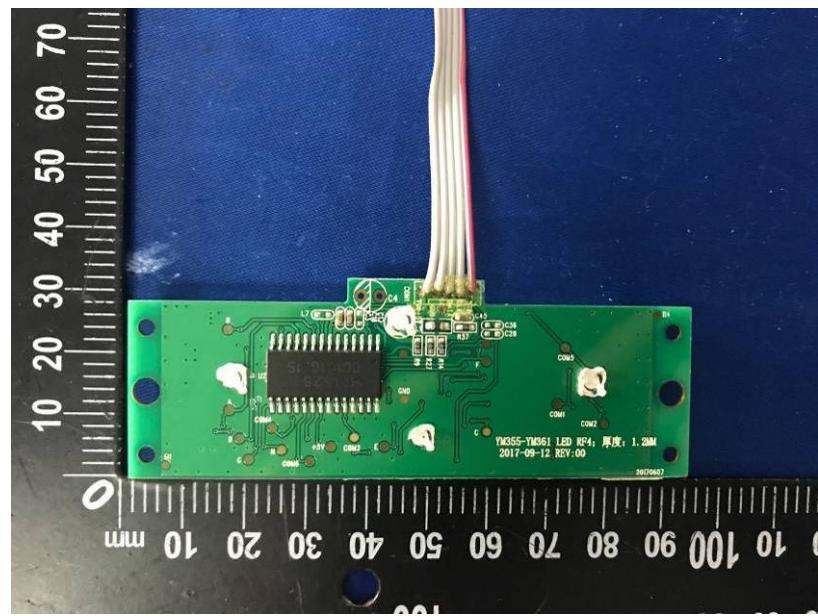
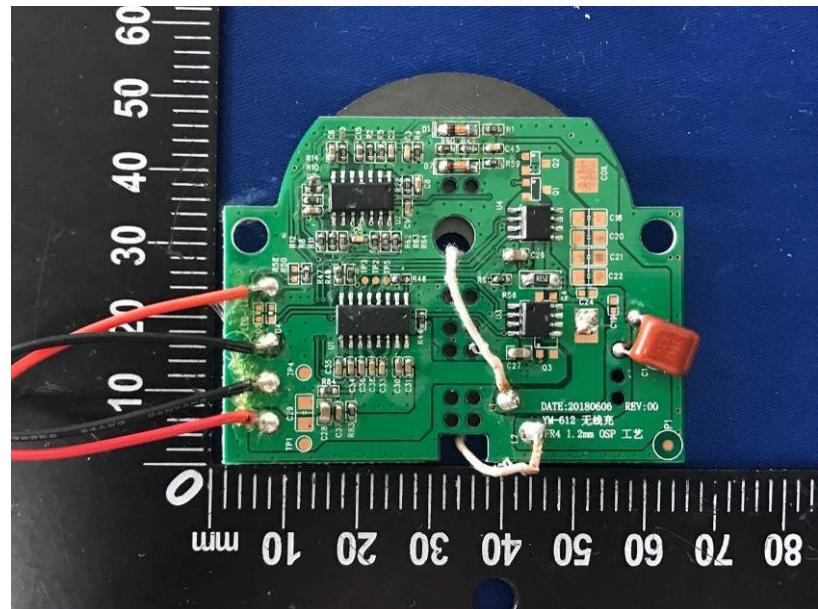
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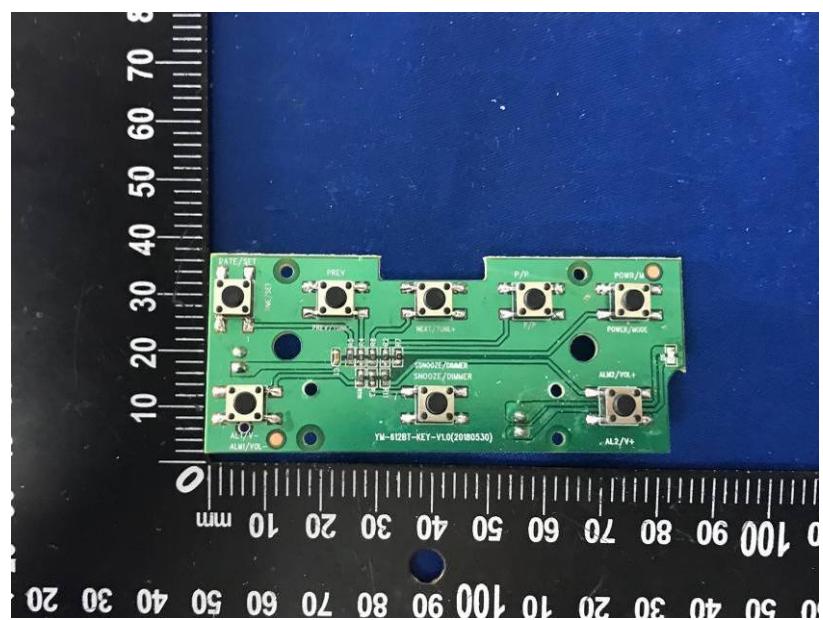
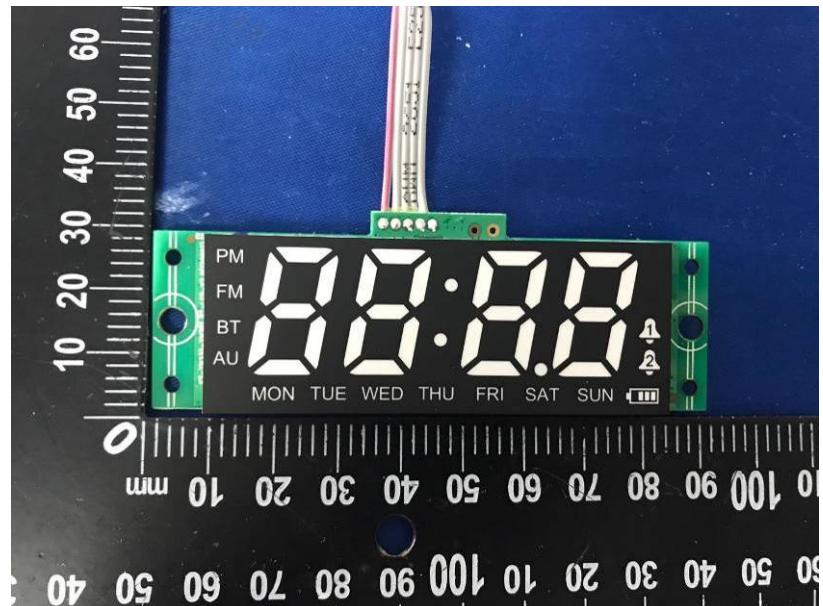
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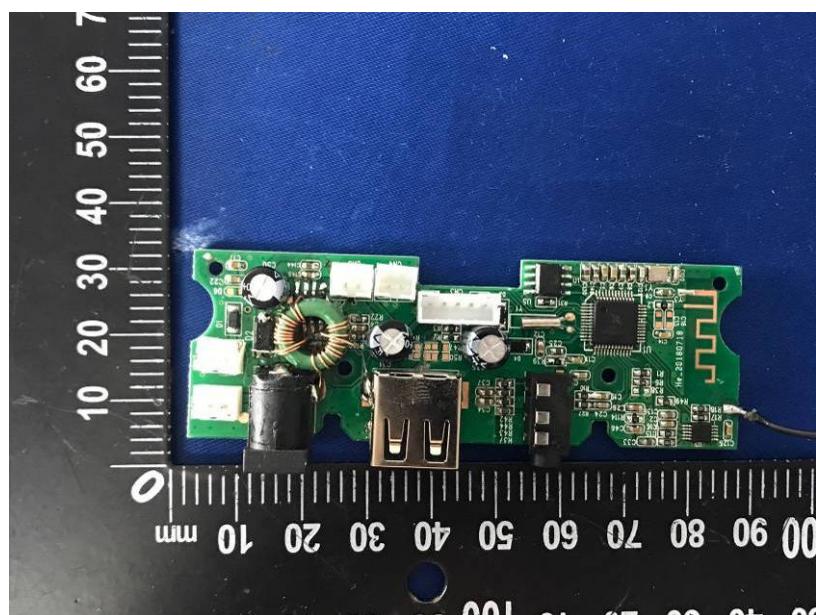
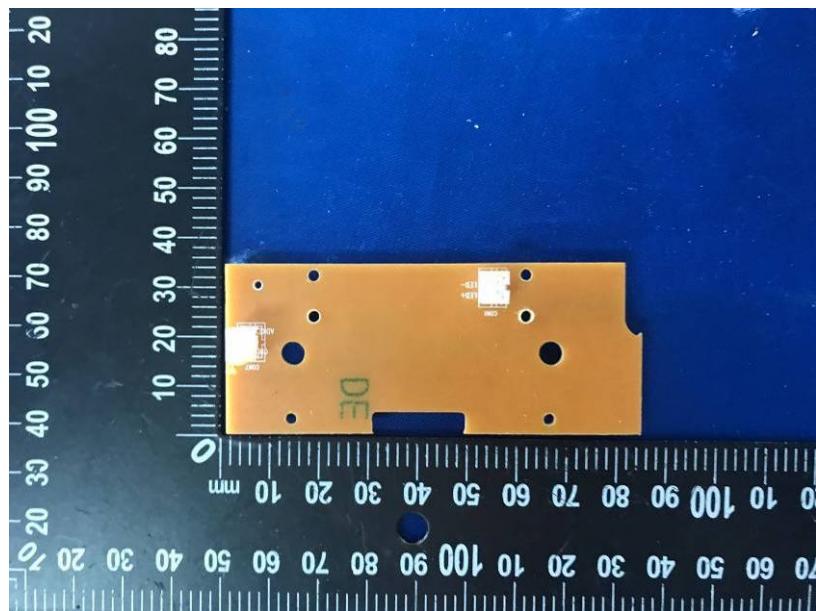
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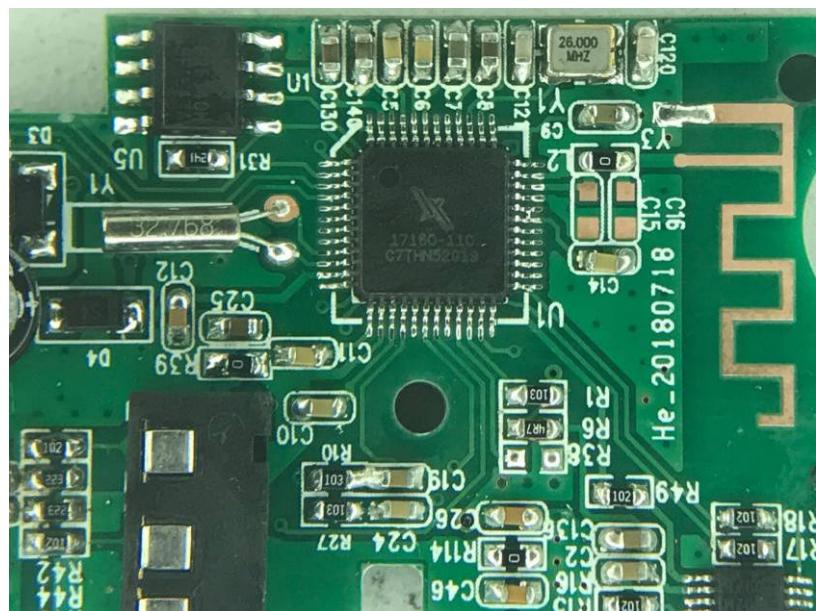
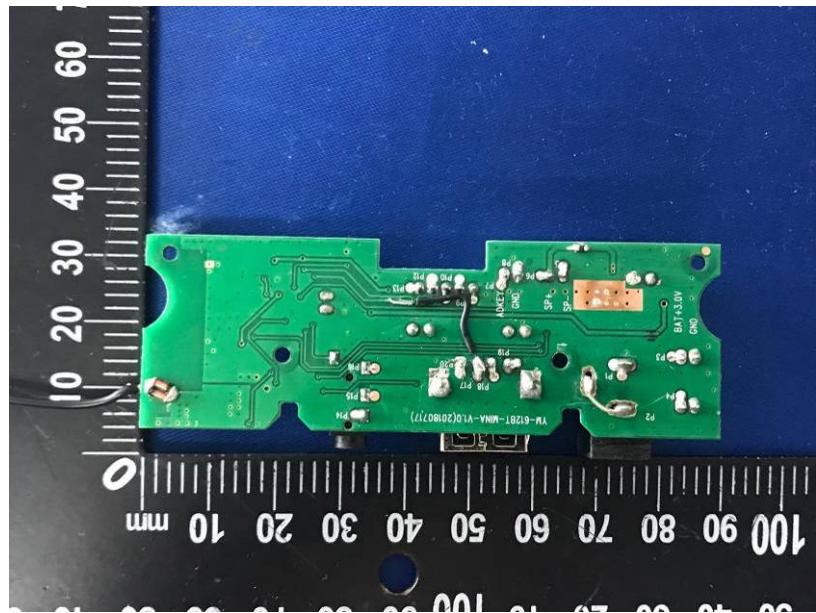
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*****THE END REPORT*****