FCC Test Report

Client Name	:	BICOM INC.
Address	:	#2F, 7, Yanghyeon-ro 405beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, South Korea
Product Name	:	Wireless Speaker
Date	:	Apr. 19, 2019

Shenzhen Anbotek Compliance Laboratory Limited

Contents

TEST REPORT

Applicant	:	BICOM INC.
Manufacturer	:	BICOM INC.
Product Name	:	Wireless Speaker
Model No.	:	EZ-M3R
Trade Mark	:	N.A.
Rating(s)	:	Input: DC 5V , 2A(with 3.635V, 3.4A Battery inside)

Test Standard(s)	**:**	**FCC Rules and Regulations Part 15 Subpart B: 2018**
Test Method(s)	**:**	**ANSI C63.4-2014**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited Is assumed full responsibility for the accuracy and completeness of these measurements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited

Date of Receipt Apr. 09, 2019

Date of Test Apr. 09~19, 2019

Prepared By

(Engineer / Oliay Yang)

Reviewer

(Supervisor / Snowy Meng)

Approved & Authorized Signer

(Manager / Sally Zhang)

1. General Information

1.1. Client Information

Applicant	:	BICOM INC.
Address	:	#2F, 7, Yanghyeon-ro 405beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, South Korea
Manufacturer	:	BICOM INC.
Address	:	#2F, 7, Yanghyeon-ro 405beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, South Korea
Factory	:	BICOM INC.
Address	:	#2F, 7, Yanghyeon-ro 405beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, South Korea

1.2. Description of Device (EUT)

Product Name	:	Wireless Speaker
Model No.	:	EZ-M3R
Trade Mark	:	N.A.
Test Power Supply	:	AC 120V, 60Hz for adapter / DC 3.635V Battery inside
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Product Description	:	N/A
Remark: (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

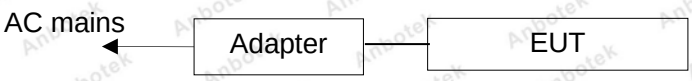
1.3. Auxiliary Equipment Used During Test

Adapter	:	Model: A2013 Input: 100-240V 50-60Hz 0.7A Output: 3.6-6.5V⎓ 3A/ 6.5-9V⎓ 2A/ 9-12V⎓ 1.5A

1.4. Description of Test Mode

Pretest Mode	Description
Mode 1	Charge Mode
Mode 2	BT mode
Mode 3	AUX mode
Mode 4	RX mode

For Mode 1 Block Diagram of Test Setup



For Mode 2~Mode 4 Block Diagram of Test Setup

1.5. Test Summary

Test Items	Test Mode	Status
Power Line Conducted Emission Test (150KHz To 30MHz)	Mode 1	P
Radiated Emission Test (30MHz To 6GHz)	All Mode	P
P) Indicates “PASS”. N) Indicates “Not applicable”.		

1.6. Test Equipment List

Conducted Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Nov. 26, 2018	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Nov. 05, 2018	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Nov. 05, 2018	1 Year
4.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A

Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Nov. 05, 2018	1 Year
2.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 19, 2018	1 Year
3.	Pre-amplifier	SONOMA	310N	186860	Nov. 05, 2018	1 Year
4.	Software Name EZ-EMC	Ferrari Technology	ANB-03A	N/A	N/A	N/A
5.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 05, 2018	1 Year
6.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 05, 2018	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 19, 2018	1 Year

1.7. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been Registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, July 31, 2017.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Power Line Conducted Emission Test

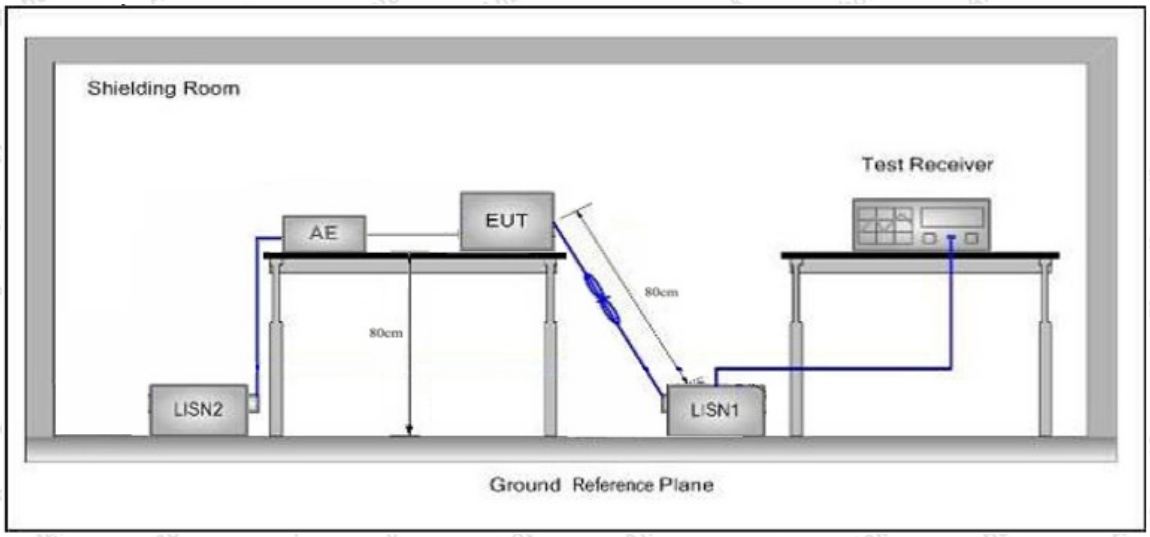
2.1. Test Standard and Limit

Test Standard	FCC Part 15 Subpart B

Power Line Conducted Emission Measurement Limits (FCC Part 15 Class B)

Test Limit	Frequency (MHz)	At mains terminals (dBμV)	
		Quasi-peak Level	Average Level
	0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
	0.50 ~ 5.00	56	46
	5.00 ~ 30.00	60	50
Remark: (1) The lower limit shall apply at the transition frequencies. (2) * Decreasing linearly with logarithm of frequency.			

2.2. Test Setup



2.3. EUT Configuration on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

2.4. Operating Condition of EUT

2.4.1. Setup the EUT as shown in Section 2.2.

2.4.2. Turn on the power of all equipments.

2.4.3. Let the EUT work in test mode and measure it.

2.5. 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 C63.4-2014 on Conducted Emission Measurement.

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

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

All the test results are listed in Section 2.6.

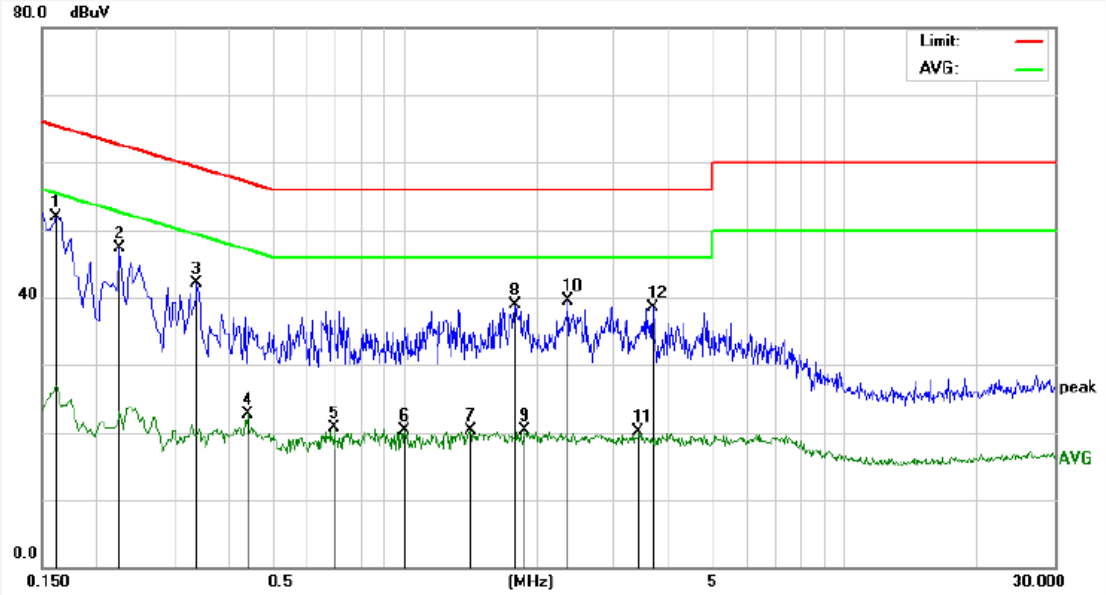
2.6. Test Results

PASS

The test curves are shown in the following pages.

Conducted Emission Test Data

Test Site:	1# Shielded Room
Test Specification:	AC 120V, 60Hz for adapter
Comment:	Live Line
	Tem.: 21.2℃ Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1620	32.05	19.90	51.95	65.36	-13.41	QP	
2	0.2260	27.45	19.89	47.34	62.59	-15.25	QP	
3	0.3379	22.21	19.91	42.12	59.25	-17.13	QP	
4	0.4420	2.74	19.95	22.69	47.02	-24.33	AVG	
5	0.6940	0.66	20.04	20.70	46.00	-25.30	AVG	
6	1.0020	0.14	20.12	20.26	46.00	-25.74	AVG	
7	1.4140	0.22	20.13	20.35	46.00	-25.65	AVG	
8	1.7820	18.74	20.14	38.88	56.00	-17.12	QP	
9	1.8780	0.15	20.14	20.29	46.00	-25.71	AVG	
10	2.3500	19.39	20.15	39.54	56.00	-16.46	QP	
11	3.4100	-0.12	20.17	20.05	46.00	-25.95	AVG	
12	3.6660	18.41	20.17	38.58	56.00	-17.42	QP	

Note: Result=Reading+Factor Over Limit=Result-Limit

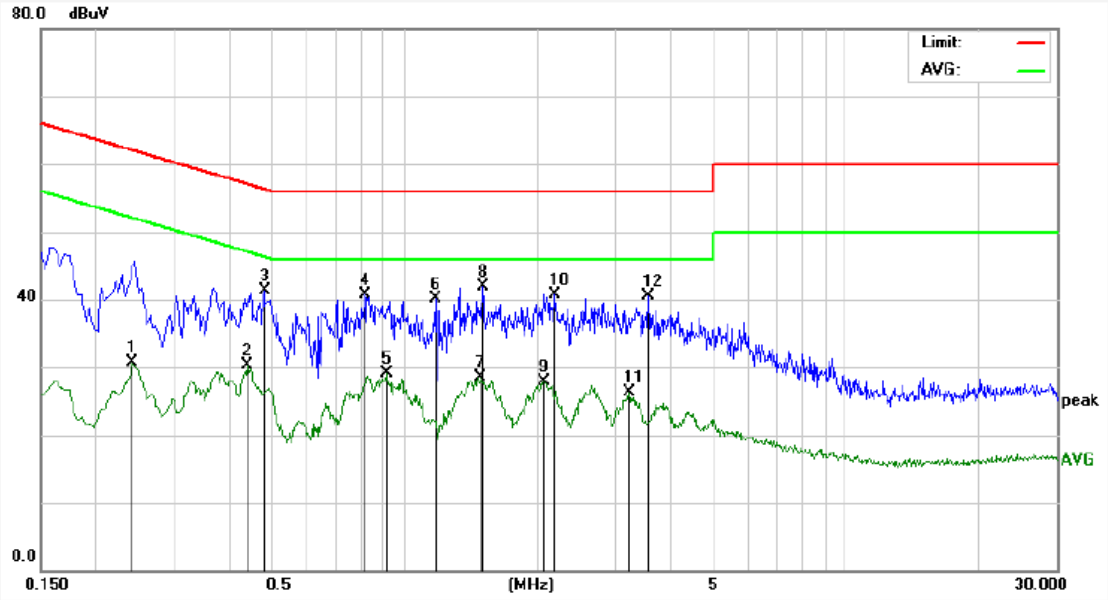
Conducted Emission Test Data

Test Site: 1# Shielded Room

Test Specification: AC 120V, 60Hz for adapter

Comment: Neutral Line

Tem.: 21.2℃ Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2420	10.76	19.89	30.65	52.02	-21.37	AVG	
2	0.4420	10.33	19.95	30.28	47.02	-16.74	AVG	
3	0.4820	21.36	19.97	41.33	56.30	-14.97	QP	
4	0.8139	20.65	20.07	40.72	56.00	-15.28	QP	
5	0.9100	8.95	20.10	29.05	46.00	-16.95	AVG	
6	1.1740	19.94	20.12	40.06	56.00	-15.94	QP	
7	1.4900	8.42	20.13	28.55	46.00	-17.45	AVG	
8	1.5060	21.85	20.13	41.98	56.00	-14.02	QP	
9	2.0740	7.86	20.14	28.00	46.00	-18.00	AVG	
10	2.1980	20.66	20.14	40.80	56.00	-15.20	QP	
11	3.2300	6.13	20.16	26.29	46.00	-19.71	AVG	
12	3.5740	20.28	20.17	40.45	56.00	-15.55	QP	

Note: Result=Reading+Factor Over Limit=Result-Limit

3. Radiated Emission Test

3.1. Test Standard and Limit

Test Standard	FCC Part 15 Subpart B

Radiated Emission Test Limit (Subpart B Class B)

	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
Test Limit	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.

3.2. Test Setup

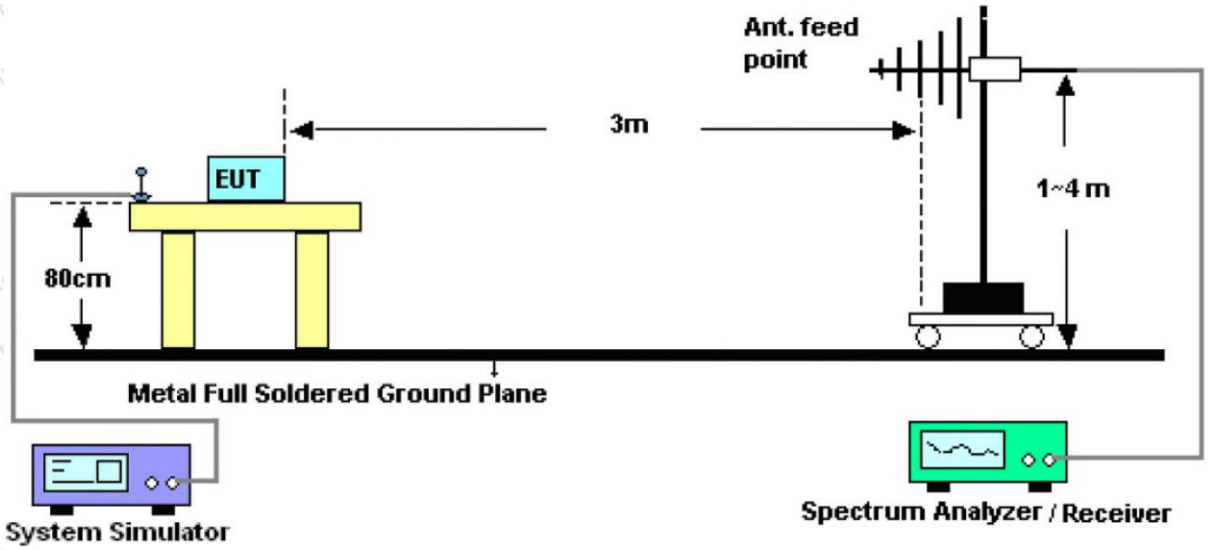


Figure 1. 30MHz to 1GHz

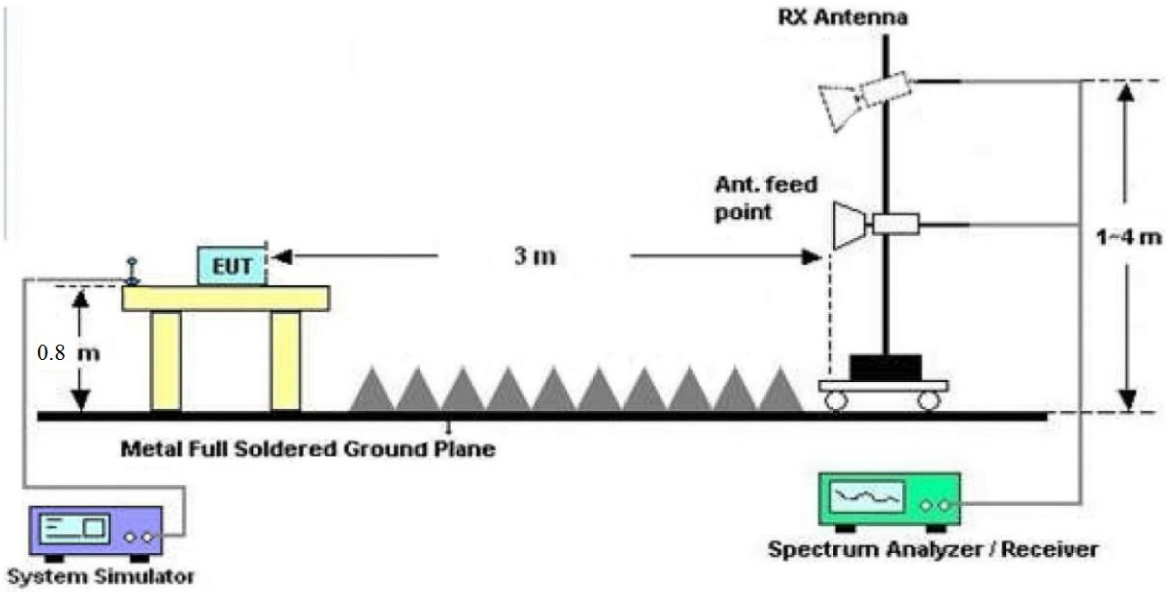


Figure 2. Above 1 GHz

3.3. EUT Configuration on Measurement

The following equipments are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT as shown in Section 3.2.

3.4.2. Turn on the power of all equipments.

3.4.3. Let the EUT work in test mode and measure it.

3.5. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (Trilog Broadband Antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.

The bandwidth of the EMI test receiver (ESCI) is set at 120kHz.

The frequency range from 30MHz to 6GHz is checked.

The test results are listed in Section 3.6.

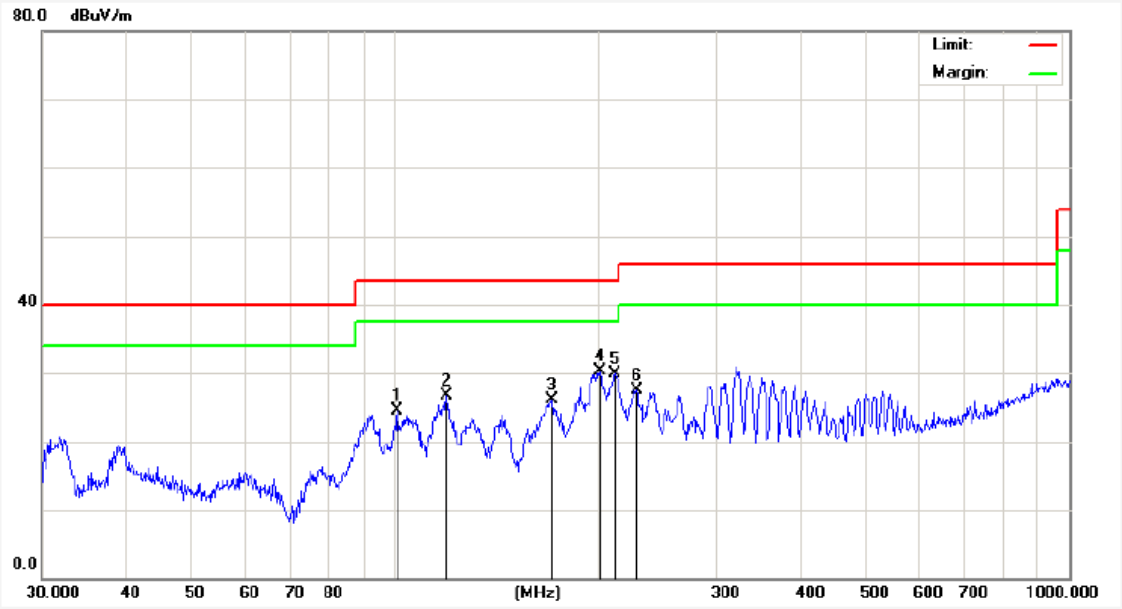
3.6. Test Results

PASS

The test curves are shown in the following pages.

The EUT was tested on (Mode 1, Mode 2, Mode 3, Mode 4) modes, only the worst data of (Mode 1) are attached in the following pages.

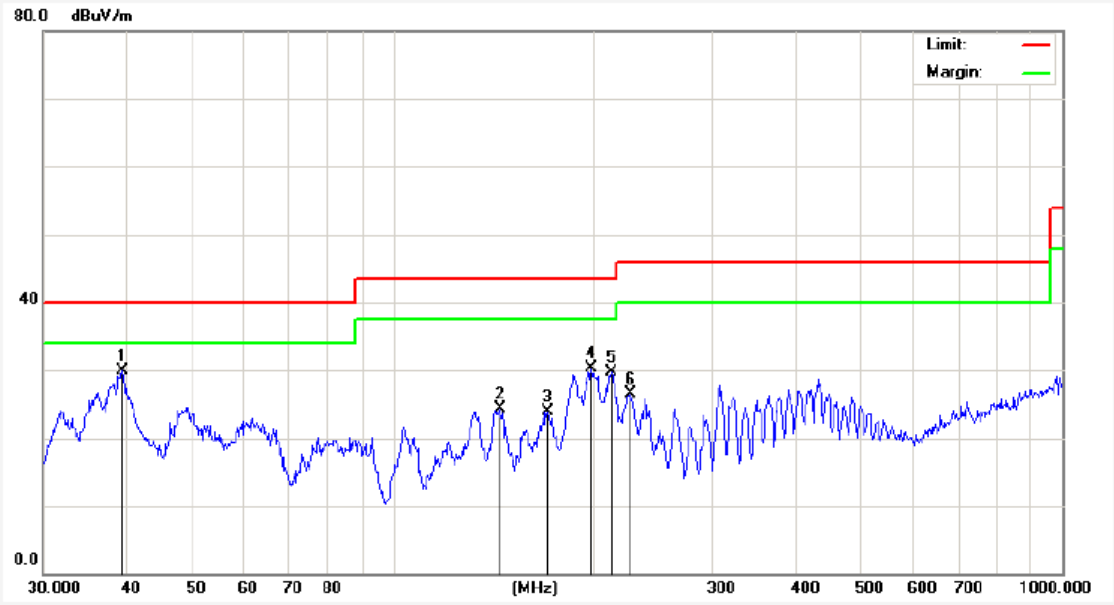
Test item:	**Radiation Test**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC Part 15 Subpart B**	**Power Source:**	**AC 120V, 60Hz for adapter**
Distance:	**3m**	**Temp.(℃)/Hum.(%RH):**	**24(℃)/52%RH**



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	100.9339	46.27	-21.75	24.52	43.50	-18.98	QP	300	0	
2	119.4361	48.90	-22.29	26.61	43.50	-16.89	QP	300	99	
3	171.3926	46.69	-20.60	26.09	43.50	-17.41	QP	300	163	
4	201.3930	50.14	-19.90	30.24	43.50	-13.26	QP	300	199	
5	212.2695	49.95	-20.14	29.81	43.50	-13.69	QP	300	264	
6	228.4904	47.06	-19.54	27.52	46.00	-18.48	QP	300	360	

Note: **Result=Reading+Factor Over Limit=Result-Limit**

Test item:	**Radiation Test**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC Part 15 Subpart B**	**Power Source:**	**AC 120V, 60Hz for adapter**
Distance:	**3m**	**Temp.(℃)/Hum.(%RH):**	**24(℃)/52%RH**



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.4371	43.50	-13.67	29.83	40.00	-10.17	QP	300	0	
2	144.3348	42.75	-18.43	24.32	43.50	-19.18	QP	300	77	
3	170.1948	41.49	-17.55	23.94	43.50	-19.56	QP	300	105	
4	197.8928	46.27	-15.88	30.39	43.50	-13.11	QP	300	193	
5	212.2695	45.20	-15.52	29.68	43.50	-13.82	QP	300	206	
6	226.0994	41.53	-15.06	26.47	46.00	-19.53	QP	300	360	

Note: **Result=Reading+Factor Over Limit=Result-Limit**

Test Results (1GHz~6GHz)

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
1338.96	46.76	-2.60	44.16	74.00	-29.84	H	PEAK
2184.50	55.49	-2.66	52.83	74.00	-21.17	H	PEAK
2024.51	51.81	-4.42	47.40	74.00	-26.60	H	PEAK
4089.04	46.28	-4.66	41.62	74.00	-32.38	H	PEAK
4334.66	48.14	-4.62	43.53	74.00	-30.47	H	PEAK
5021.32	51.51	-5.52	46.00	74.00	-28.00	H	PEAK
1338.96	38.28	-2.60	35.68	54.00	-18.32	H	AVG
2184.50	39.44	-2.66	36.78	54.00	-17.22	H	AVG
2024.51	42.15	-4.42	37.74	54.00	-16.26	H	AVG
4089.04	41.93	-4.66	37.27	54.00	-16.73	H	AVG
4334.66	43.26	-4.62	38.64	54.00	-15.36	H	AVG
5021.32	38.25	-5.52	32.73	54.00	-21.27	H	AVG
1699.80	50.76	-2.24	48.53	74.00	-25.47	V	PEAK
2175.84	50.11	-2.86	47.25	74.00	-26.75	V	PEAK
1941.95	48.70	-4.54	44.16	74.00	-29.84	V	PEAK
4146.82	48.09	-4.99	43.09	74.00	-30.91	V	PEAK
4363.14	55.11	-5.39	49.71	74.00	-24.29	V	PEAK
4841.14	48.09	-5.26	42.83	74.00	-31.17	V	PEAK
1699.80	39.91	-2.24	37.67	54.00	-16.33	V	AVG
2175.84	43.59	-2.86	40.73	54.00	-13.27	V	AVG
1941.95	41.46	-4.54	36.92	54.00	-17.08	V	AVG
4146.82	38.56	-4.99	33.56	54.00	-20.44	V	AVG
4363.14	43.19	-5.39	37.80	54.00	-16.20	V	AVG
4841.14	39.51	-5.26	34.25	54.00	-19.75	V	AVG

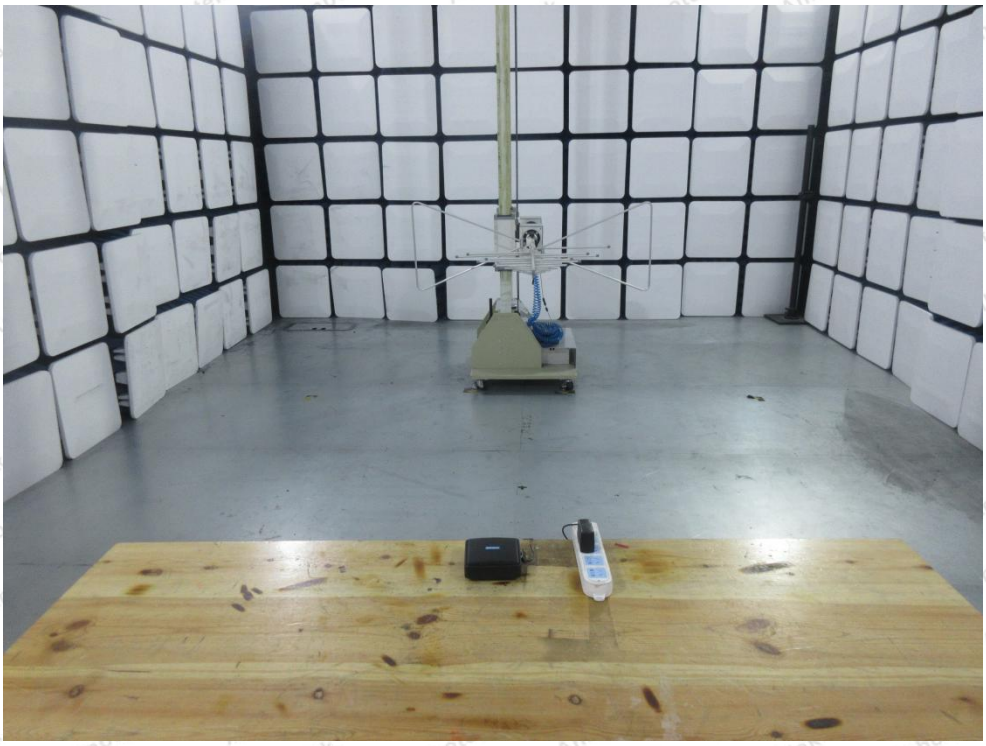
Remark:

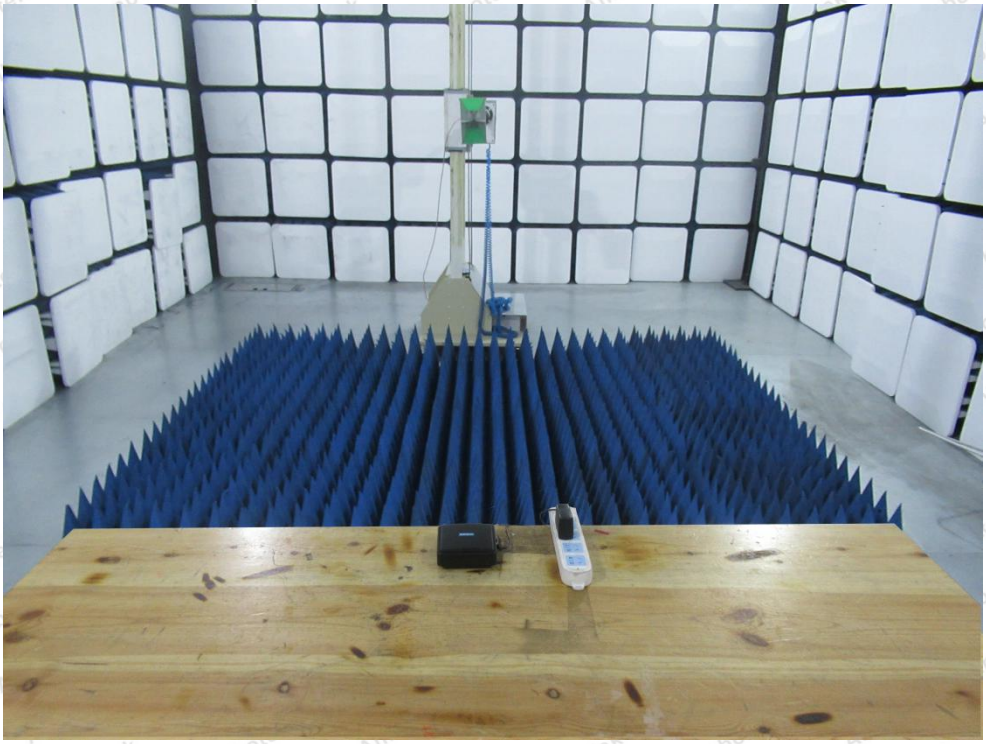
1. Level =Receiver Read level + Antenna Factor

APPENDIX I -- TEST SETUP PHOTOGRAPH

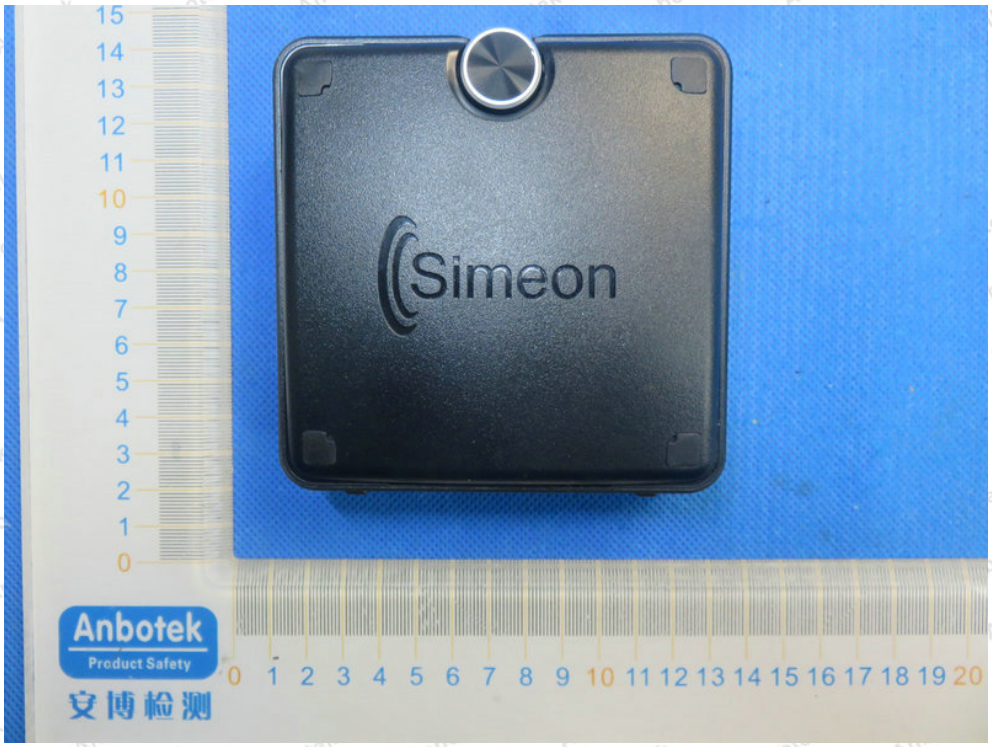
Photo of Power Line Conducted Emission Test

Photo of Radiated Emission Test





APPENDIX II -- EXTERNAL PHOTOGRAPH

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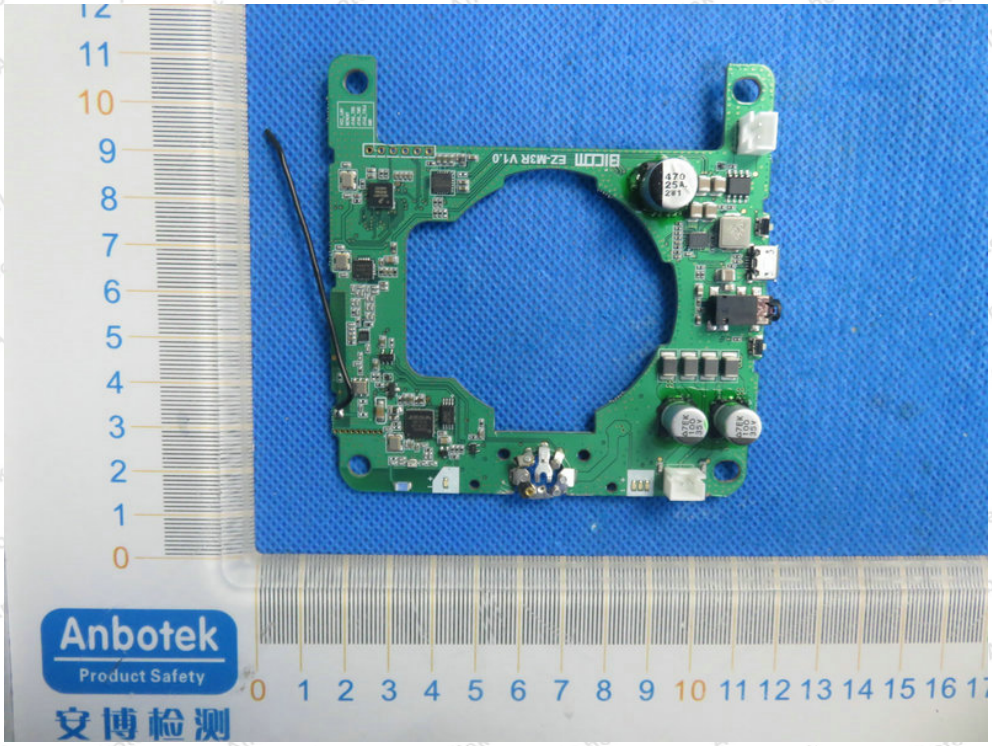
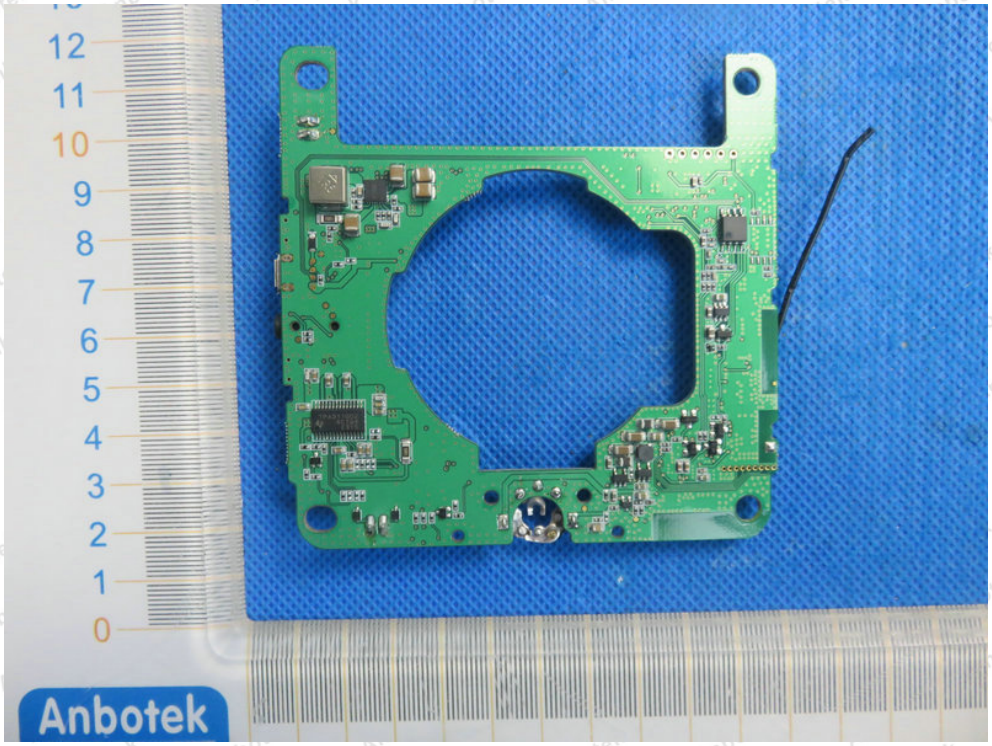
APPENDIX III -- INTERNAL PHOTOGRAPH

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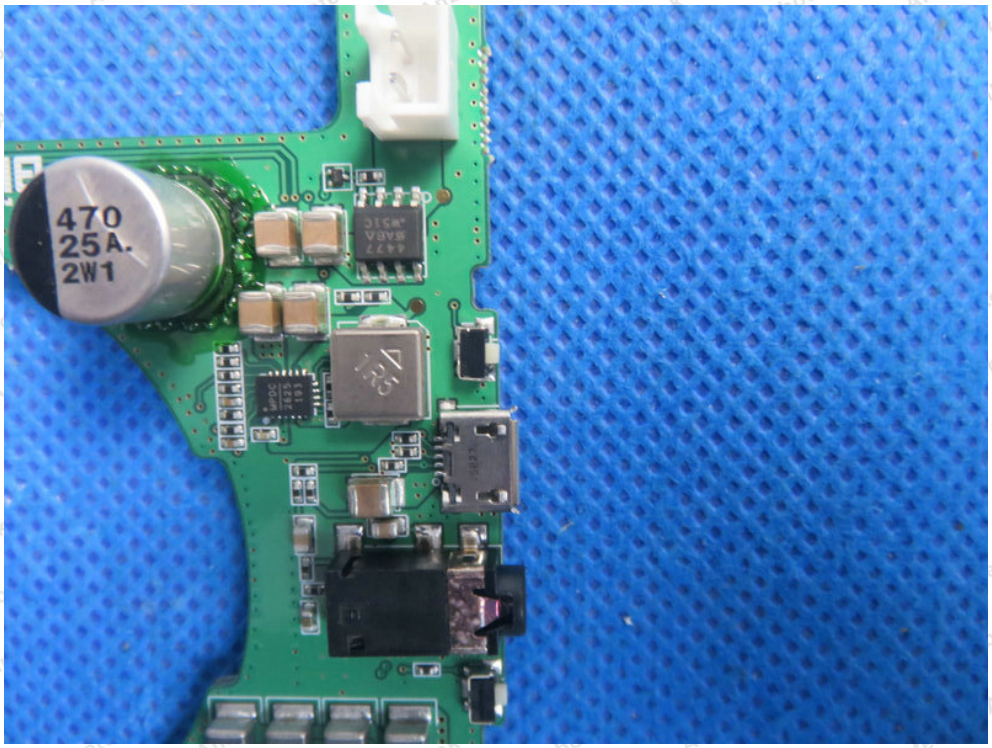
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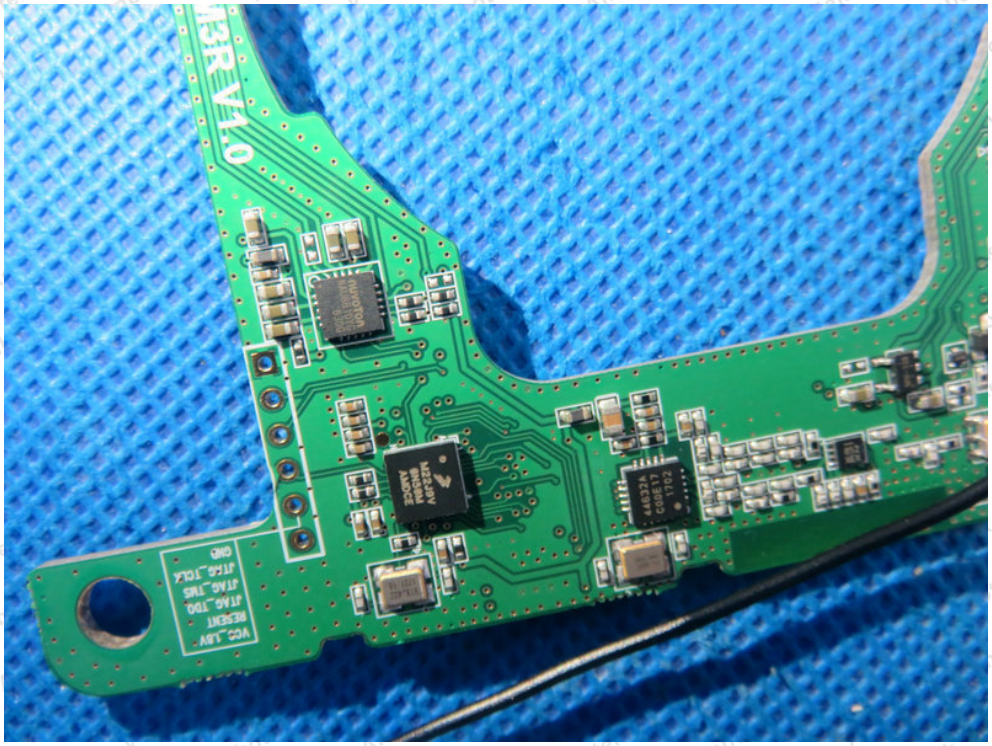
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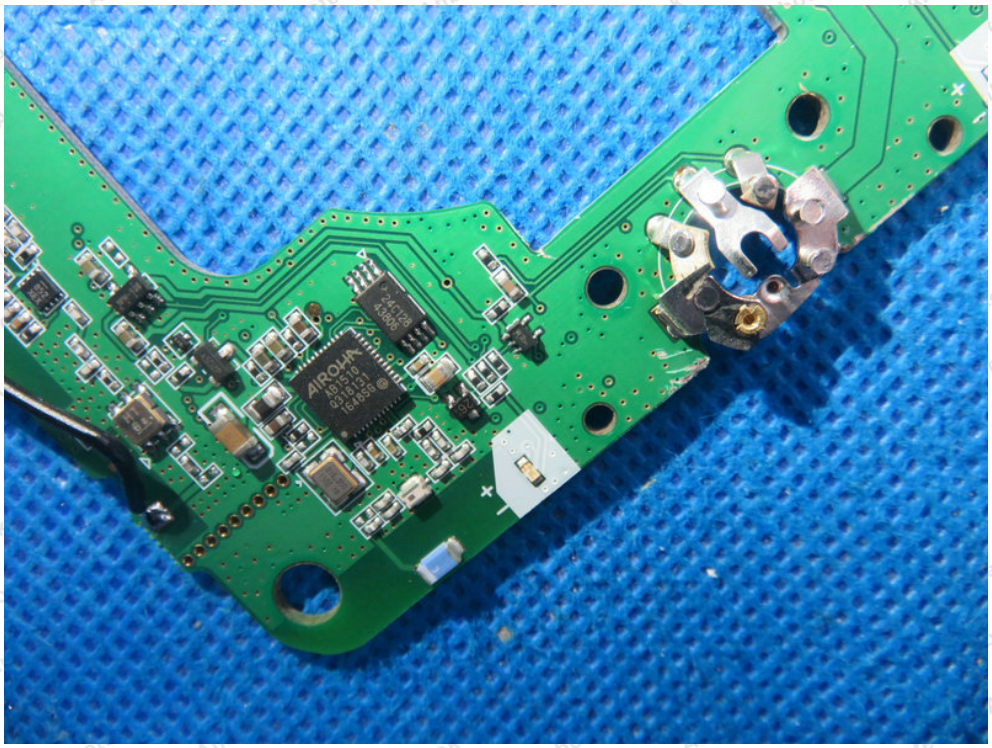

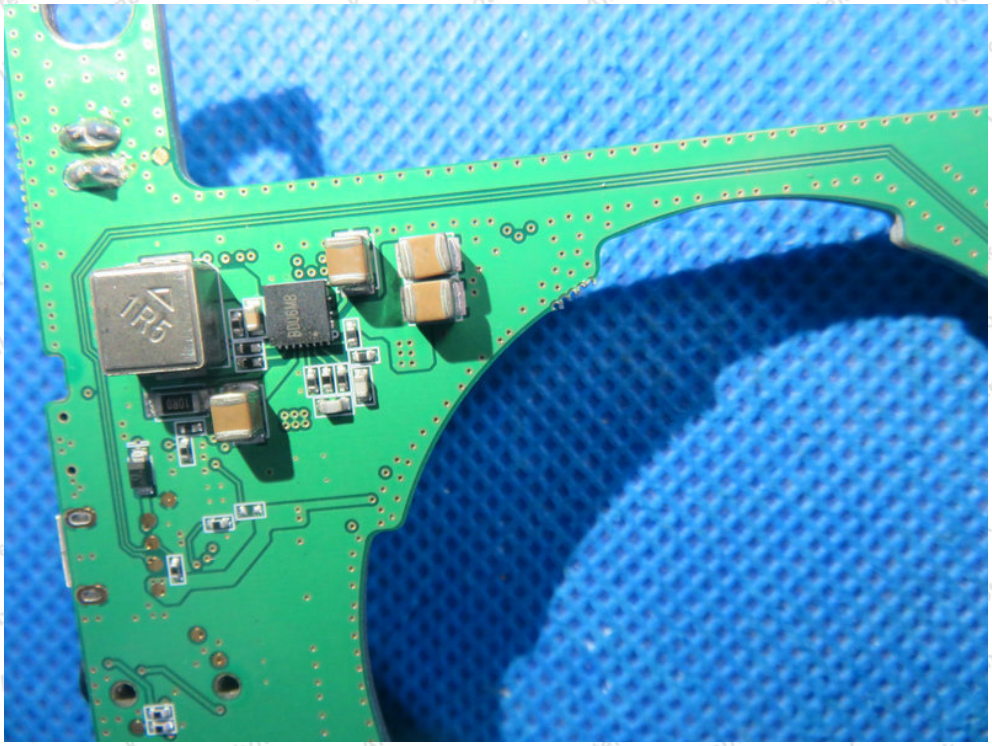

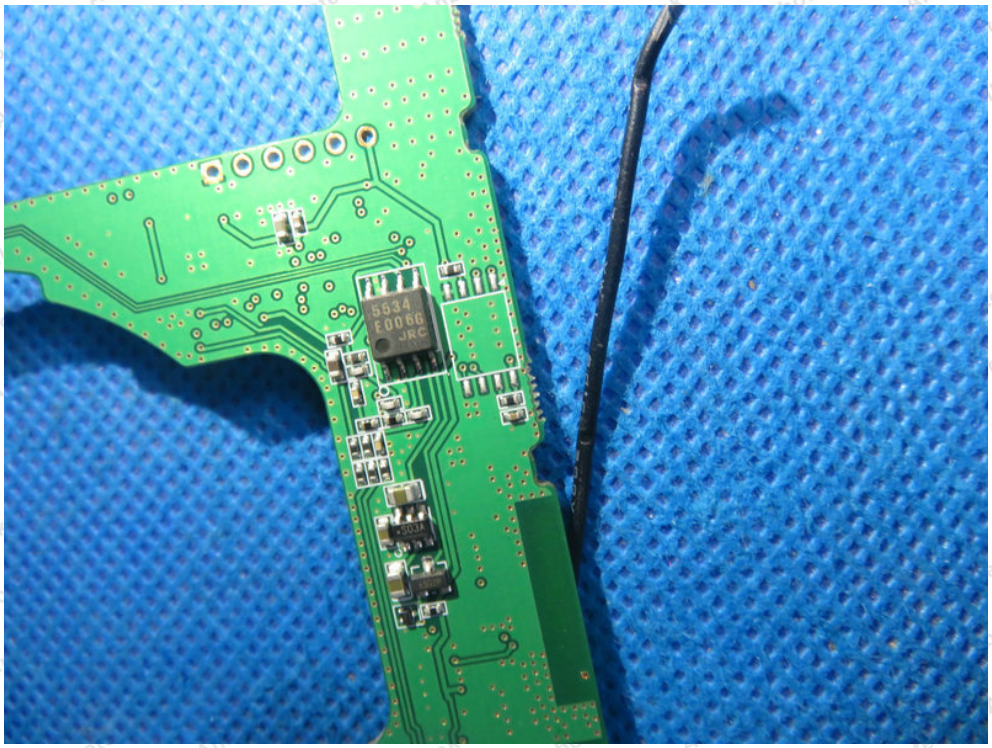

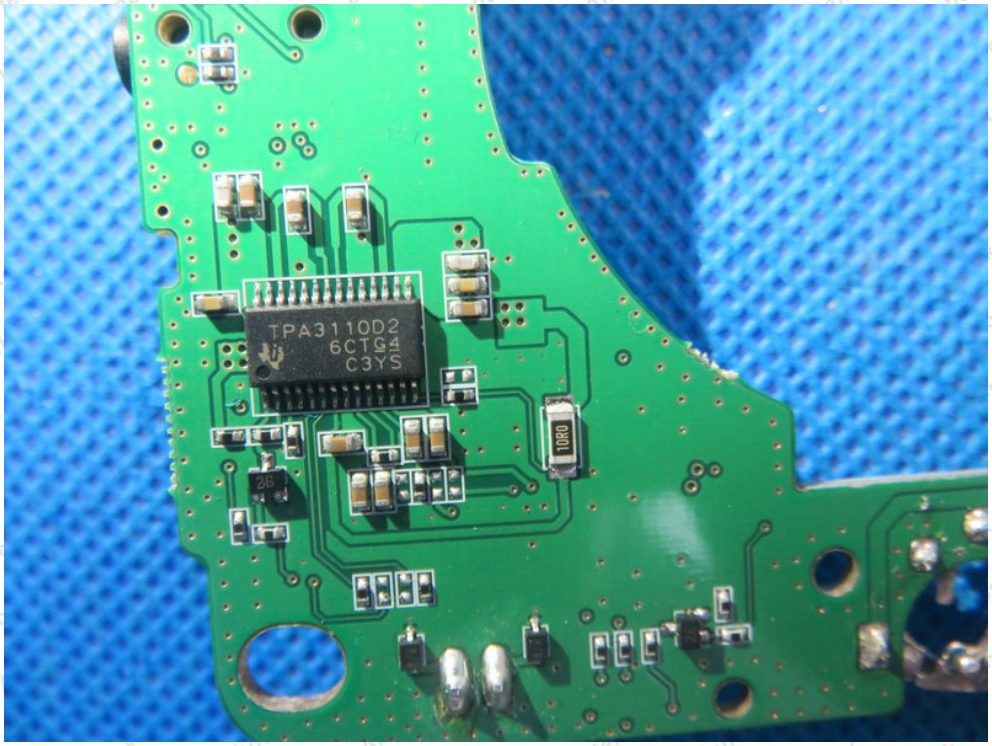
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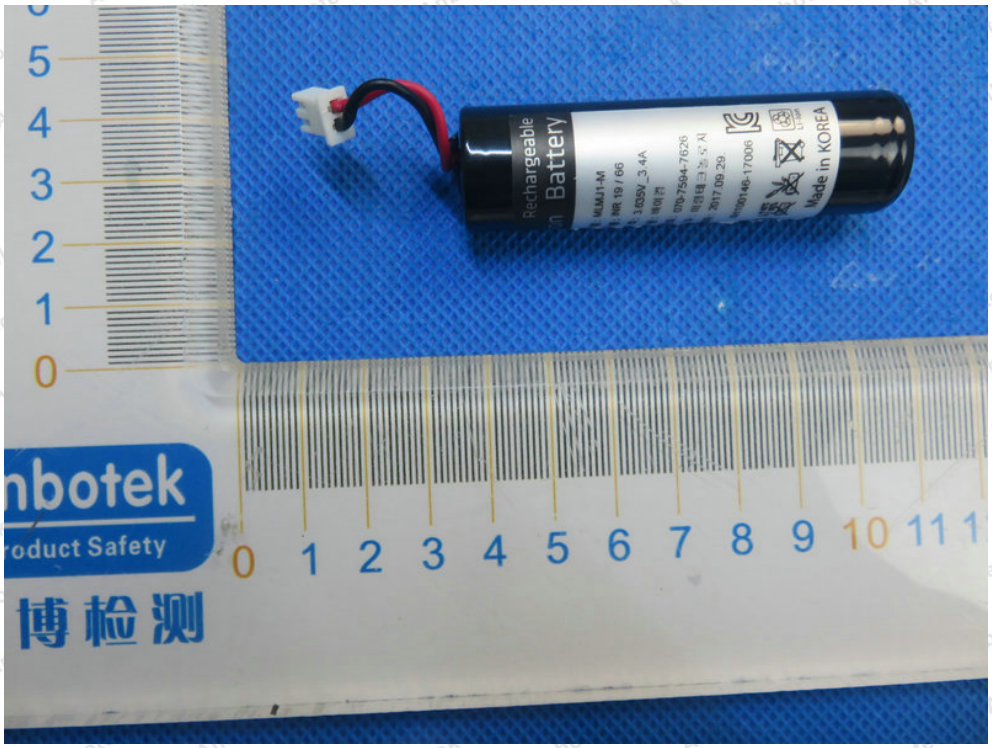
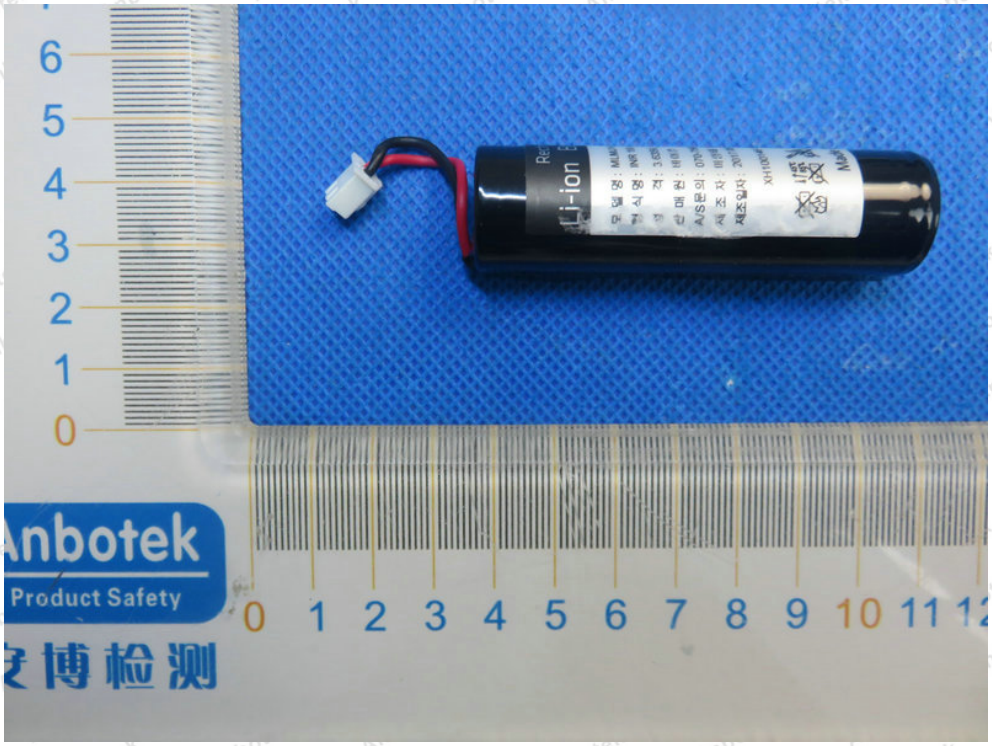
C3YS


Rechargeable
Battery
Made in KOREA



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