

FCC PART 15B

TEST REPORT

For

MPOW TECHNOLOGY CO., LIMITED

FLAT/RM 605 6/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET
MONGKOK KL HONG KONG

Tested Model: BH452A

Report Type: Original Report	Product Type: TRUE WIRELESS EARBUDS
Report Number:	RDG200525002-00A
Report Date:	2020-06-09
Reviewed By:	Ivan Cao Assistant Manager 
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

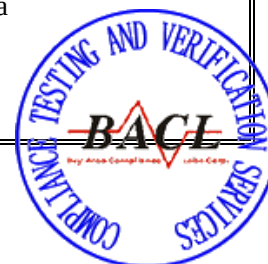


TABLE OF CONTENTS

General Information.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
TEST METHODOLOGY	3
MEASUREMENT UNCERTAINTY	3
TEST FACILITY	4
DECLARATIONS	4
System Test Configuration.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
SUPPORT EQUIPMENT LIST AND DETAILS	5
SUPPORT CABLE LIST AND DETAILS	5
BLOCK DIAGRAM OF TEST SETUP	5
TEST EQUIPMENT LIST	6
ENVIRONMENTAL CONDITIONS	6
Summary of Test Results.....	7
FCC Part 15B §15.107 – Conducted emissions	8
EUT SETUP	8
EMI TEST RECEIVER SETUP	8
TEST PROCEDURE	8
CORRECTED AMPLITUDE & MARGIN CALCULATION	9
TEST DATA	9
FCC Part 15B §15.109 – Radiated emissions	11
EUT SETUP	11
EMI TEST RECEIVER SETUP	12
TEST PROCEDURE	12
CORRECTED AMPLITUDE & MARGIN CALCULATION	12
TEST DATA	13
Exhibit A – Eut Photographs.....	17
Exhibit B – Test Setup Photographs	34

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	TRUE WIRELESS EARBUDS
EUT Model:	BH452A
The Highest Operating Frequency:	2480 MHz
Rated Input Voltage:	DC 3.8V from battery or charged by Charger Box
Serial Number:	RDG200525002-RF -S1
EUT Received Date:	2020.5.25
EUT Received Status:	Good

Objective

This report is prepared on behalf of **MPOW TECHNOLOGY CO.,LIMITED** in accordance with FCC Part 15B Part 2, Part J, and Part 15, Subpart A and B of the Federal Communications Commission's rules.

The objective is to determine the compliance of EUT with: FCC Part 15B.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~13GHz: 5.23 dB
Temperature	±1°C
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “△”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk “★”.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in Charging mode.

EUT Exercise Software

The EUT was tested by using no software.

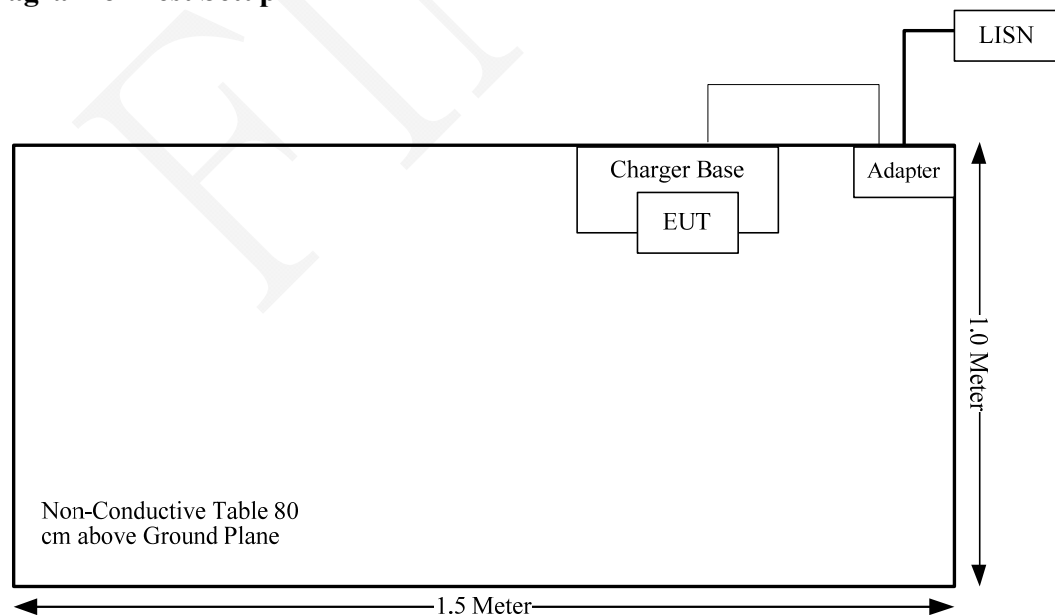
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Huawei	Adapter	HW-050200C3W	H333L5F4M06947

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
Power Cable	No	No	1.8	Charger Base	Adapter

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted Emissions					
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2019-09-05	2020-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2019-09-12	2020-09-12
R&S	EMI Test Receiver	ESCI	101121	2020-05-09	2021-05-09
Spurious Emissions					
R&S	EMI Test Receiver	ESR3	102453	2019-09-12	2020-09-12
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
HP	Amplifier	8447D	2727A05902	2019-09-05	2020-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-05-09	2021-05-09
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2019-09-05	2020-09-05

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

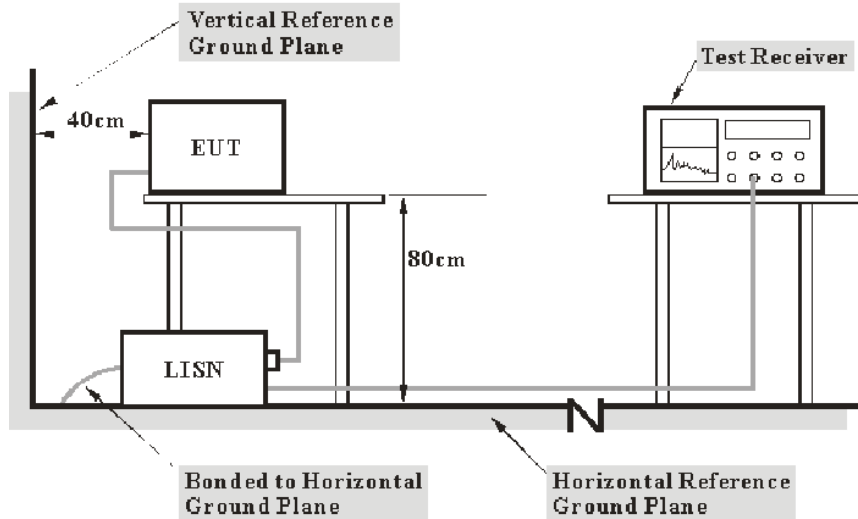
Test Item:	Conducted emissions	Radiated emissions (Below 1GHz)	Radiated emissions (Above 1GHz)
Temperature:	27.1°C	25.1°C	25.1°C
Relative Humidity:	63%	53%	53%
ATM Pressure:	101.0kPa	100.6kPa	100.6kPa
Tester:	Rita Huang	Joker Chen	Jalon Liu
Test Date:	2020-06-02	2020-05-28	2020-05-28

SUMMARY OF TEST RESULTS**FCC Part 15B**

Clause	Description of Test	Test Result
§15.107	Conducted emissions	Compliance
§15.109	Radiated emissions	Compliance

FCC PART 15B §15.107 – CONDUCTED EMISSIONS

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter was connected to the main LISN with a 120 V/60 Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter or EUT was connected to the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT. The report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:

Corr. = Cable loss + Factor of coupling device

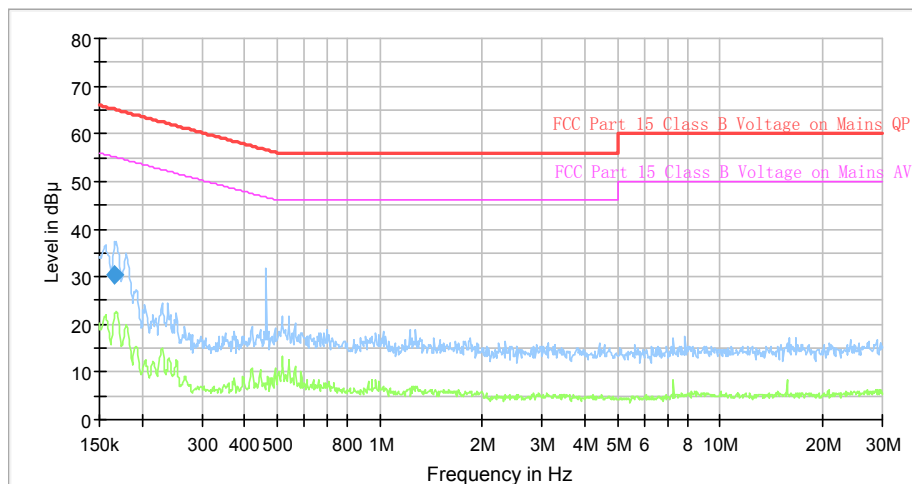
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Result

Test Data

Please refer to following table and plots:

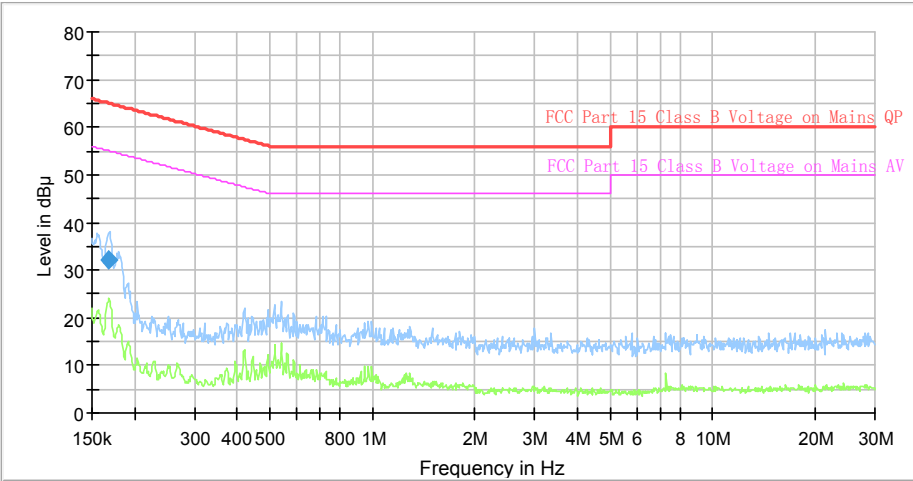
Port: L
Test Mode: Charging
Power Source: AC 120V/60Hz
Note:



Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Filter
0.166563	30.34	---	65.13	34.79	9.000	L1	ON

Port:
Test Mode:
Power Source:
Note:

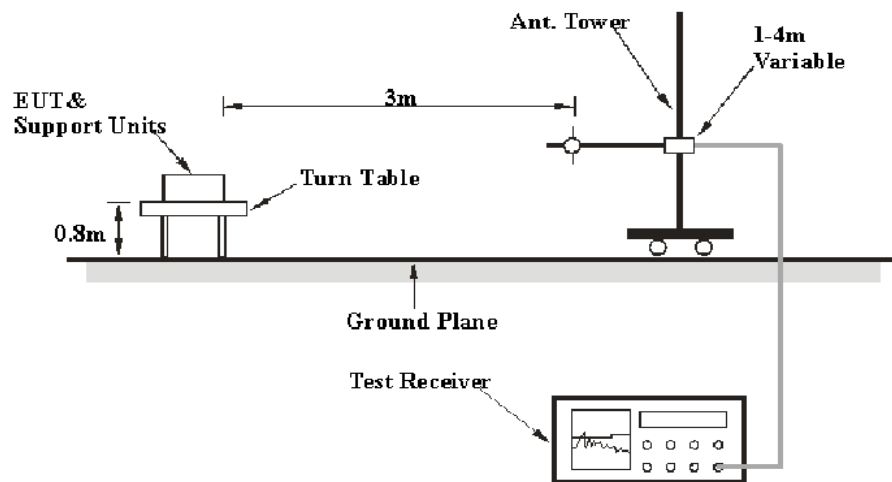
N
Charging
AC 120V/60Hz



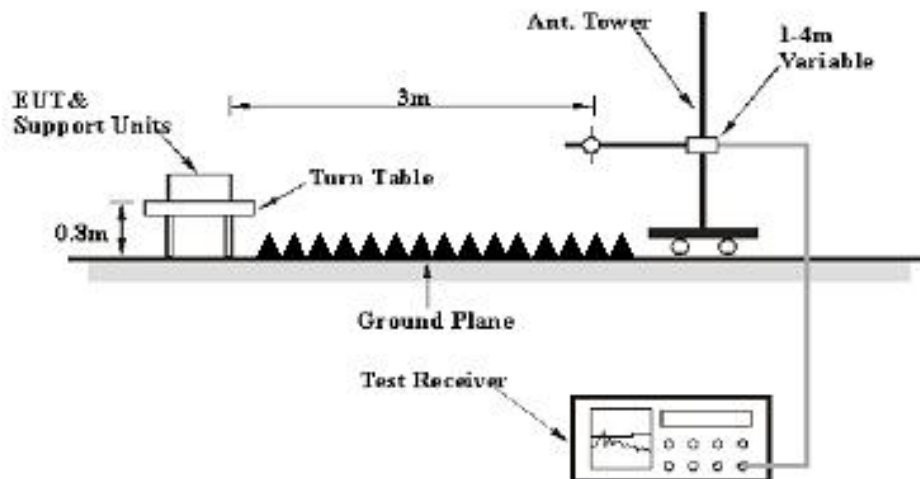
Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter
0.168233	32.29	---	65.05	32.76	9.000	N	ON

FCC PART 15B §15.109 – RADIATED EMISSIONS**EUT Setup**

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed at the 3 meters distance, above 1GHz were performed at the 3 meters, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 13 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	Reduced video bandwidth	/	AVG

Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Meter Reading+ Corrected

Note:

Corrected = Antenna Factor + Cable Loss - Amplifier Gain

or

Corrected = Antenna Factor + Cable Loss + Insertion loss of attenuator - Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

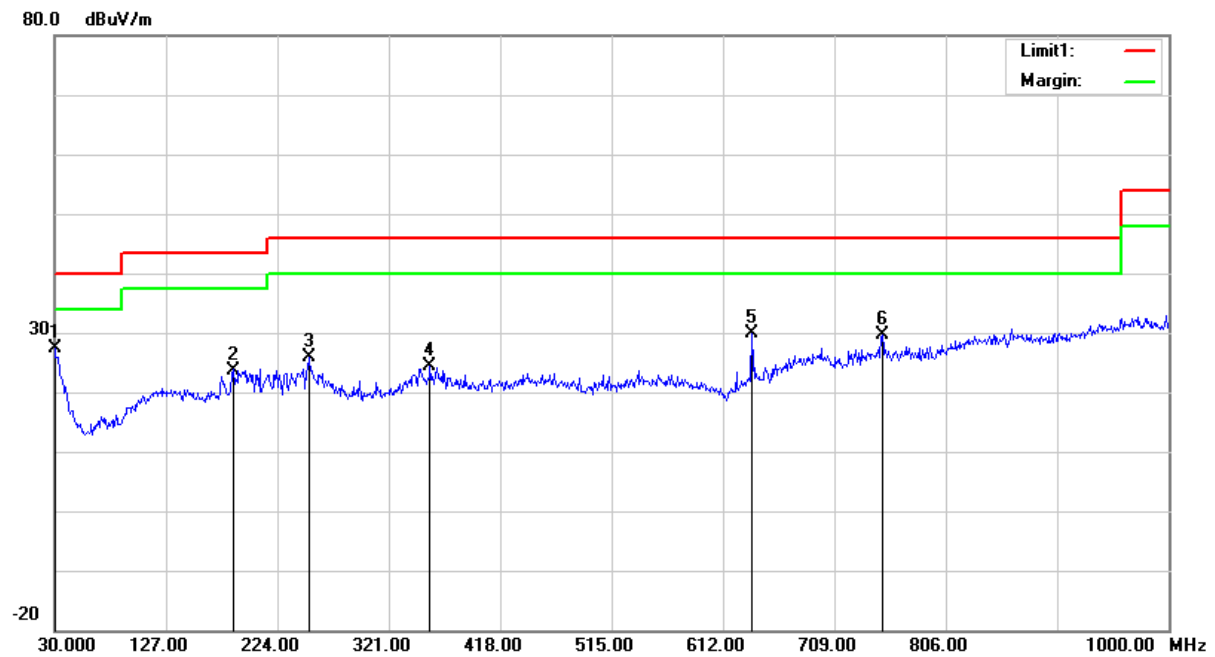
$$\text{Margin} = \text{Limit} - \text{Result}$$

Test Data

Please refer to following table and plots:

Condition: FCC Part 15B Class B
EUT: TRUE WIRELESS EARBUDS
Model: BH452A
Test Mode: Charging
Note:

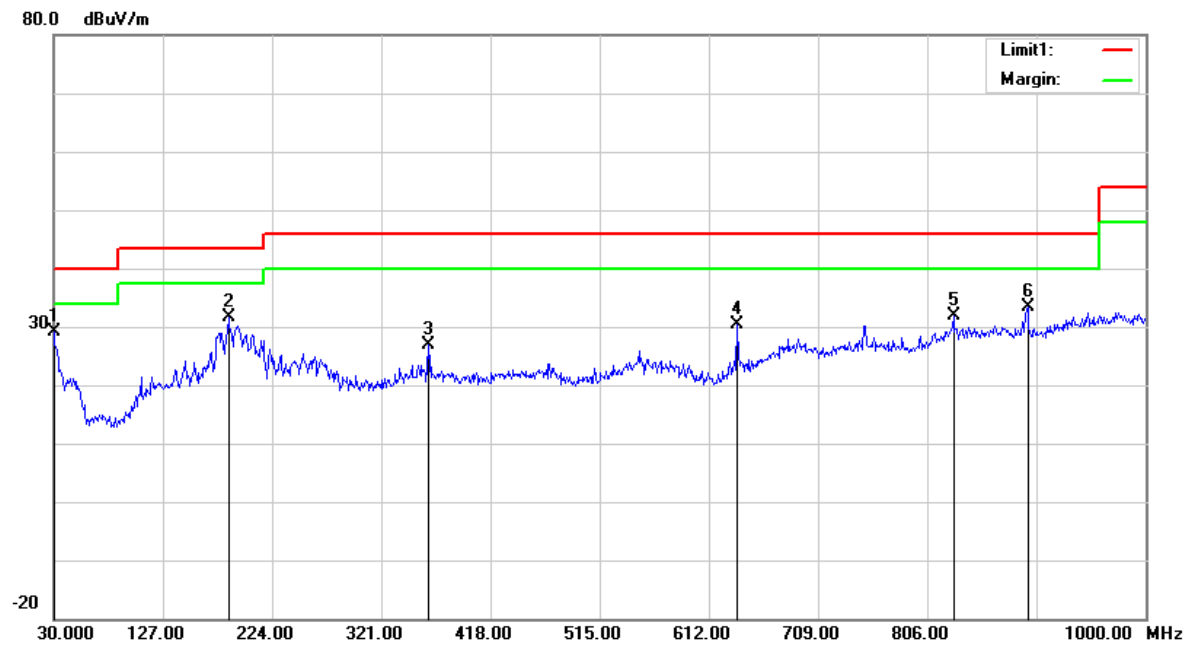
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.0000	25.70	peak	1.72	27.42	40.00	12.58
2	186.1700	31.13	peak	-7.38	23.75	43.50	19.75
3	251.1600	31.82	peak	-6.02	25.80	46.00	20.20
4	356.8900	27.27	peak	-2.85	24.42	46.00	21.58
5	637.2200	27.72	peak	2.20	29.92	46.00	16.08
6	750.7100	25.91	peak	3.66	29.57	46.00	16.43

Condition: FCC Part 15B Class B
EUT: TRUE WIRELESS EARBUDS
Model: BH452A
Test Mode: Charging
Note:

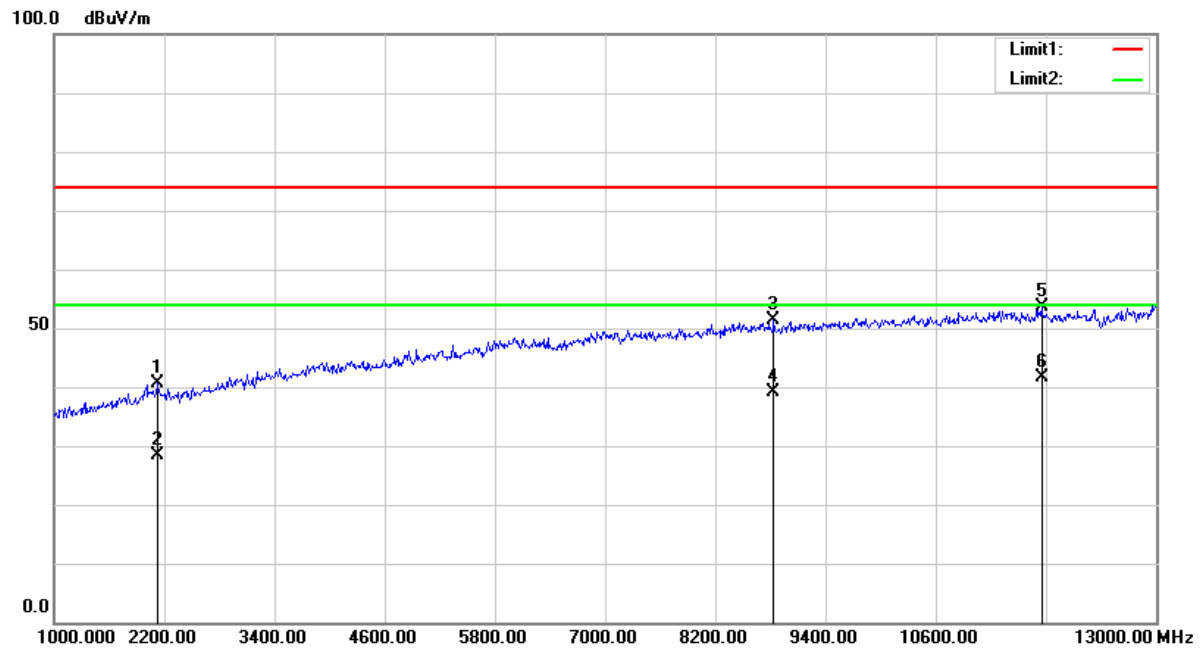
Polarization: Vertical
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	30.0000	27.48	peak	1.72	29.20	40.00	10.80
2	185.2000	38.96	peak	-7.40	31.56	43.50	11.94
3	362.7100	29.81	peak	-2.81	27.00	46.00	19.00
4	637.2200	28.16	peak	2.20	30.36	46.00	15.64
5	829.2800	26.94	peak	5.05	31.99	46.00	14.01
6	895.2400	33.46	peak	-0.01	33.45	46.00	12.55

Condition: FCC Part 15B Class B
EUT: TRUE WIRELESS EARBUDS
Model: BH452A
Test Mode: Charging
Note:

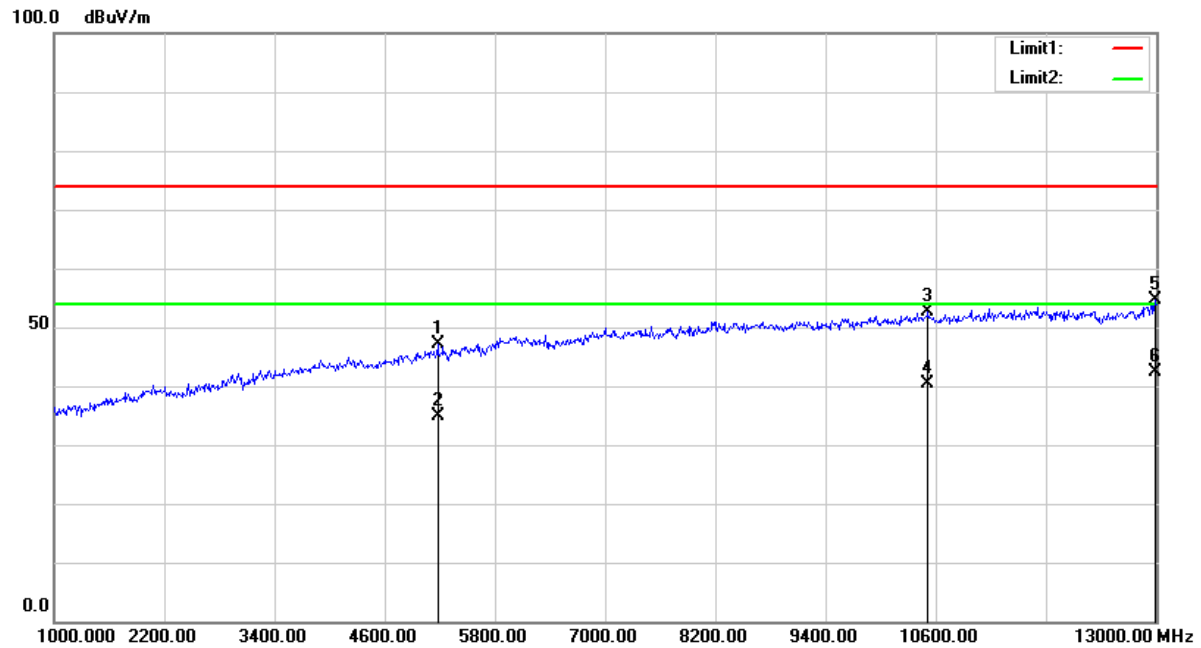
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	2134.000	36.77	peak	3.83	40.60	74.00	33.40
2	2134.000	24.59	AVG	3.83	28.42	54.00	25.58
3	8842.000	34.18	peak	17.10	51.28	74.00	22.72
4	8842.000	22.08	AVG	17.10	39.18	54.00	14.82
5	11752.000	33.25	peak	20.33	53.58	74.00	20.42
6	11752.000	21.20	AVG	20.33	41.53	54.00	12.47

Condition: FCC Part 15B Class B
EUT: TRUE WIRELESS EARBUDS
Model: BH452A
Test Mode: Charging
Note:

Polarization: Vertical
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	5182.000	35.59	peak	11.51	47.10	74.00	26.90
2	5182.000	23.41	AVG	11.51	34.92	54.00	19.08
3	10522.000	33.40	peak	19.13	52.53	74.00	21.47
4	10522.000	21.32	AVG	19.13	40.45	54.00	13.55
5	12988.000	32.73	peak	21.81	54.54	74.00	19.46
6	12988.000	20.66	AVG	21.81	42.47	54.00	11.53

EXHIBIT A – EUT PHOTOGRAPHS

EUT1



EUT2 L



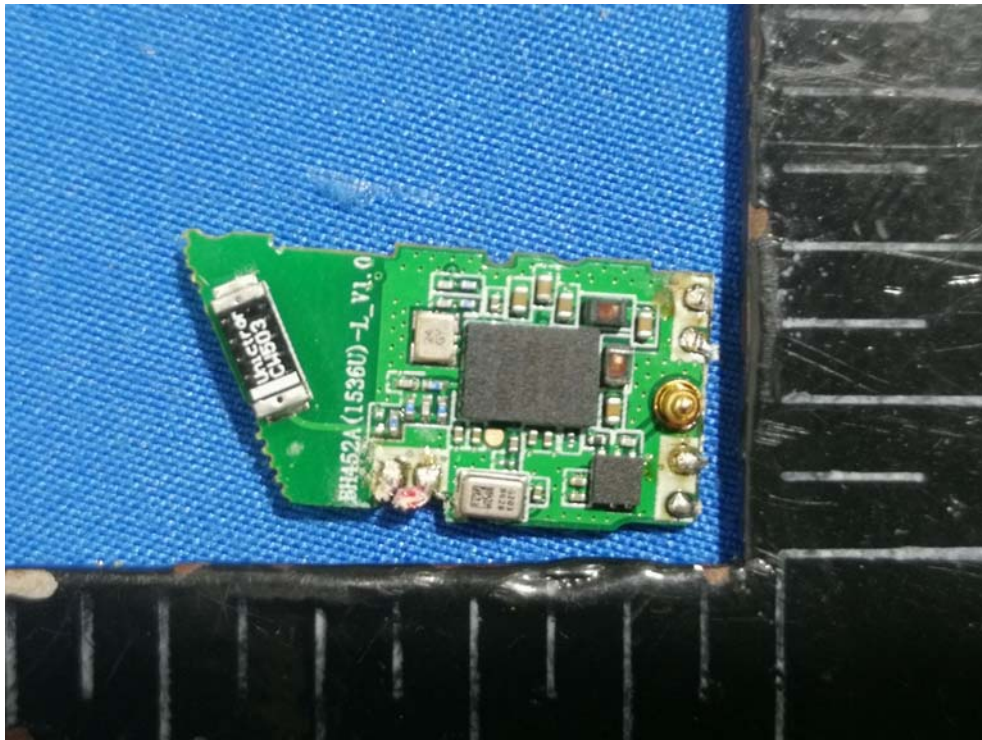






Uncover



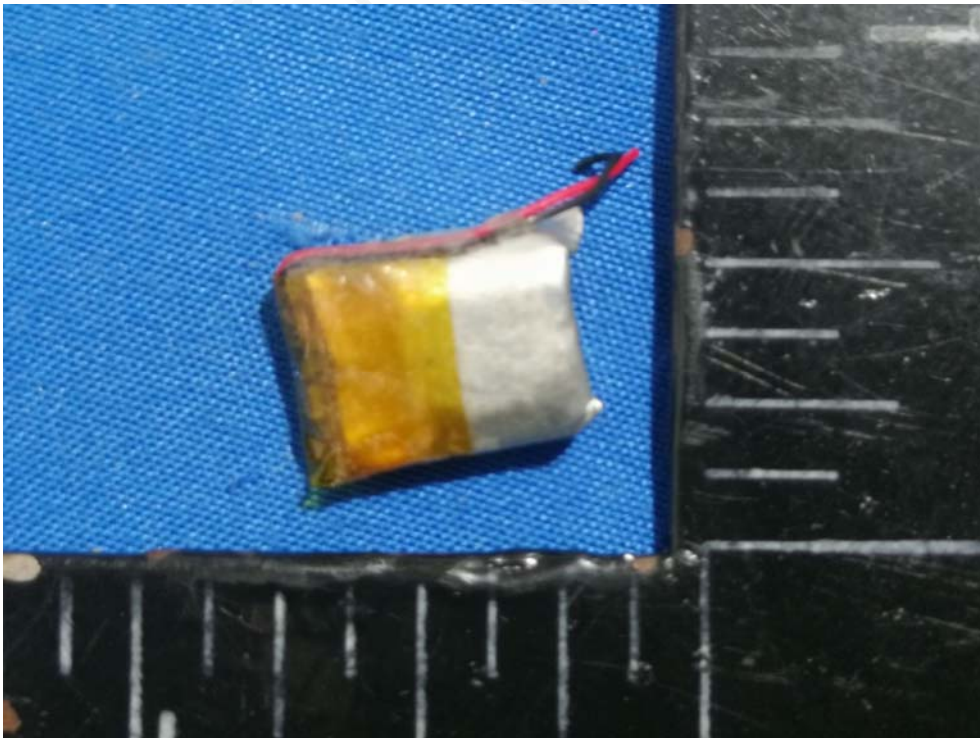
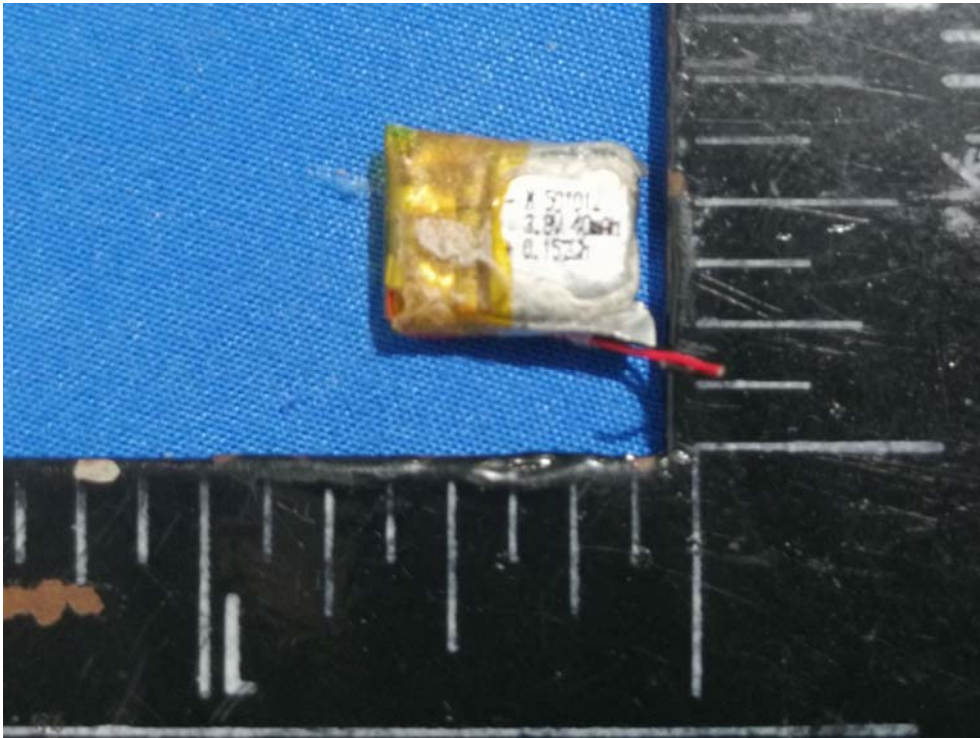


Chip



ant

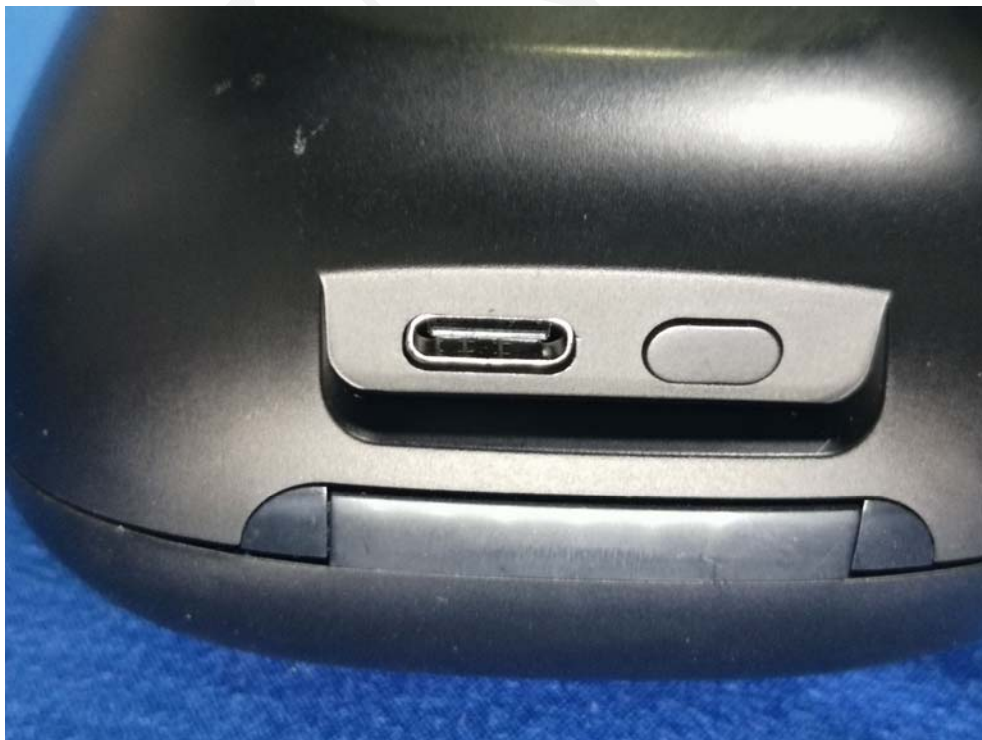




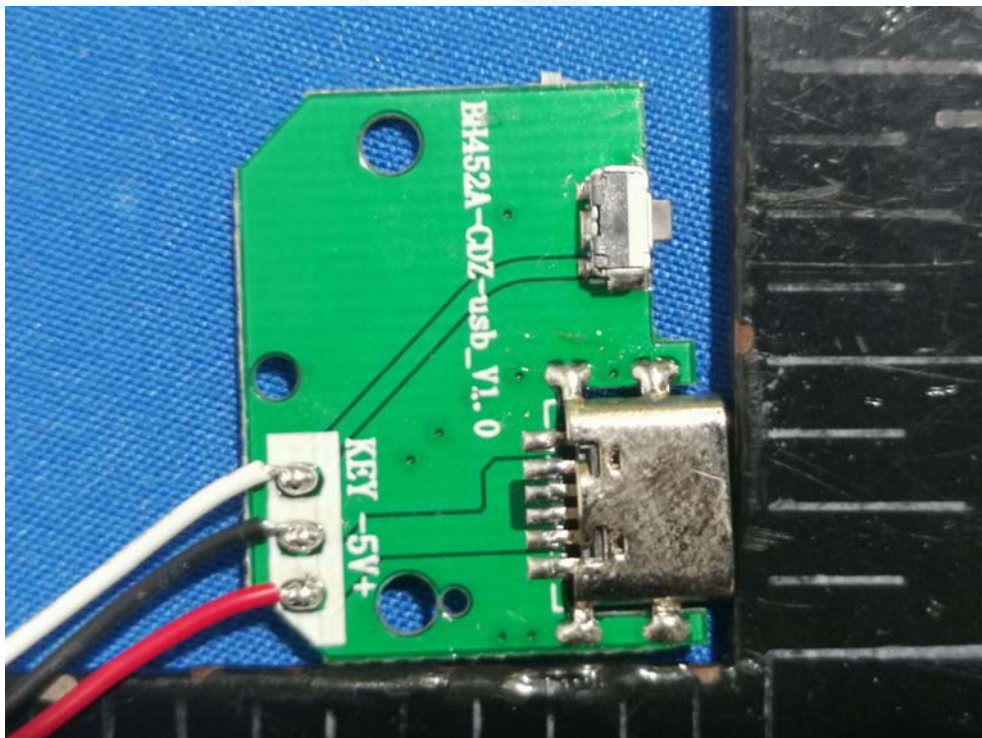


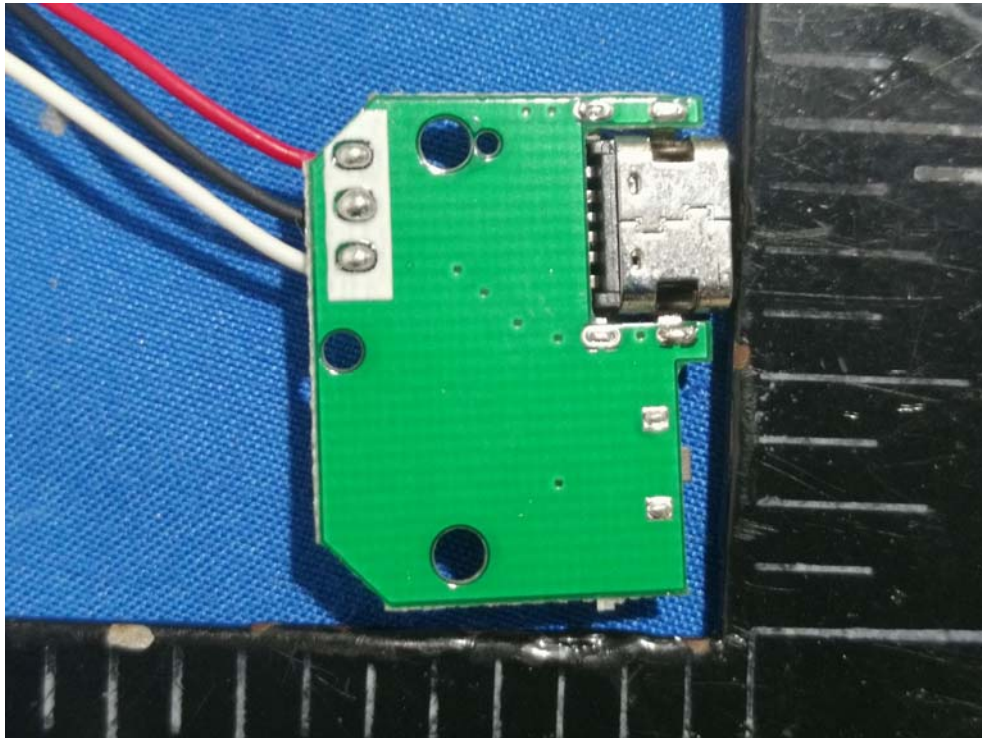


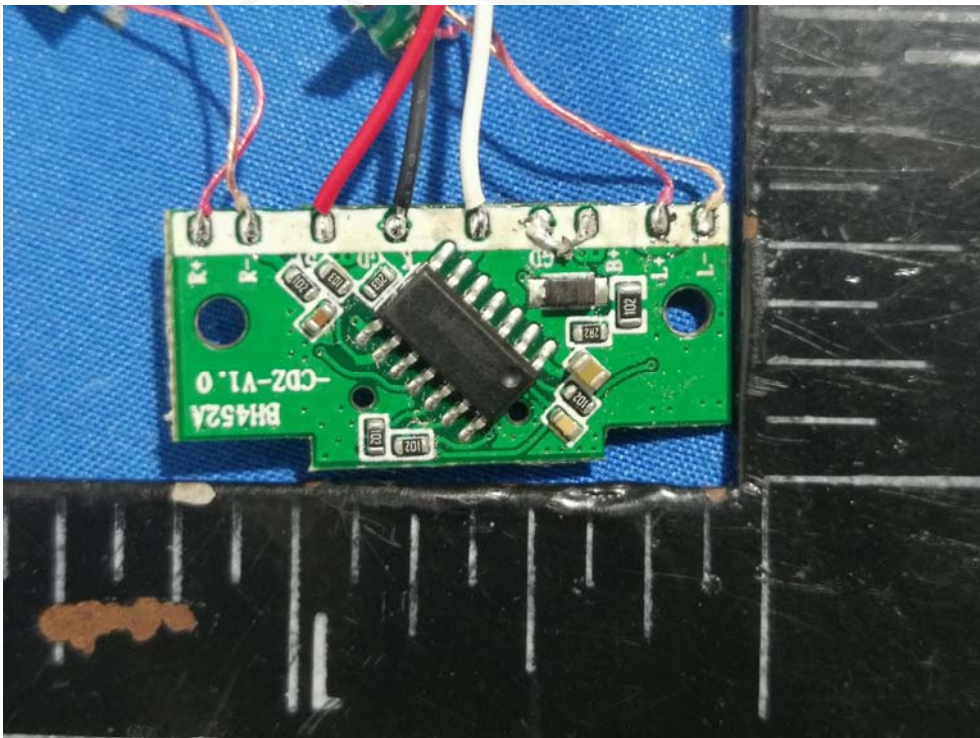
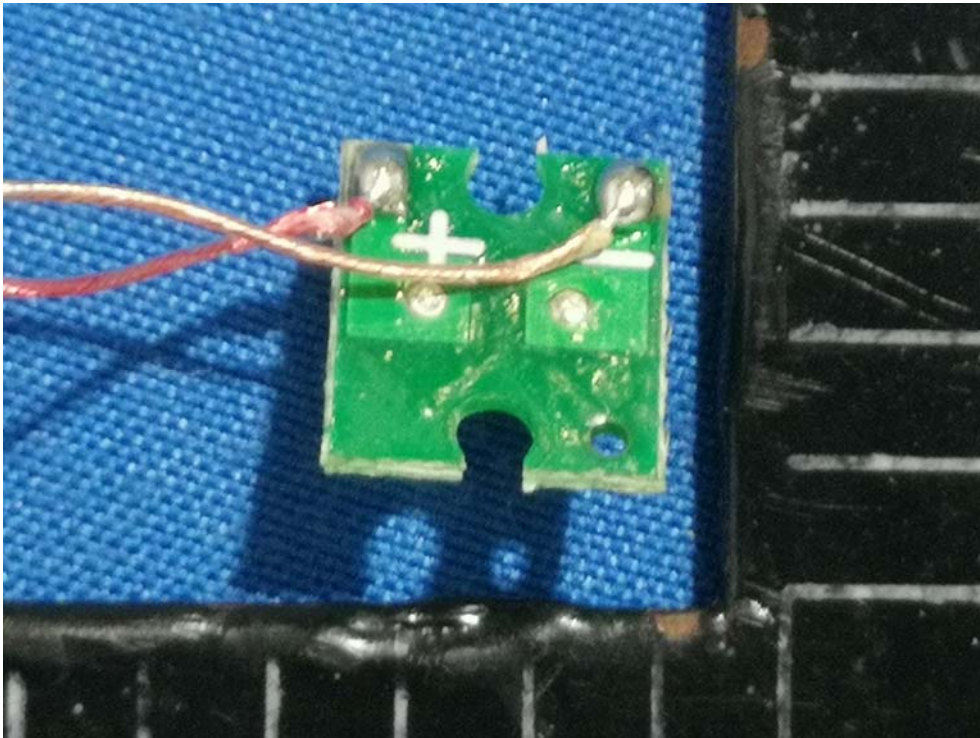


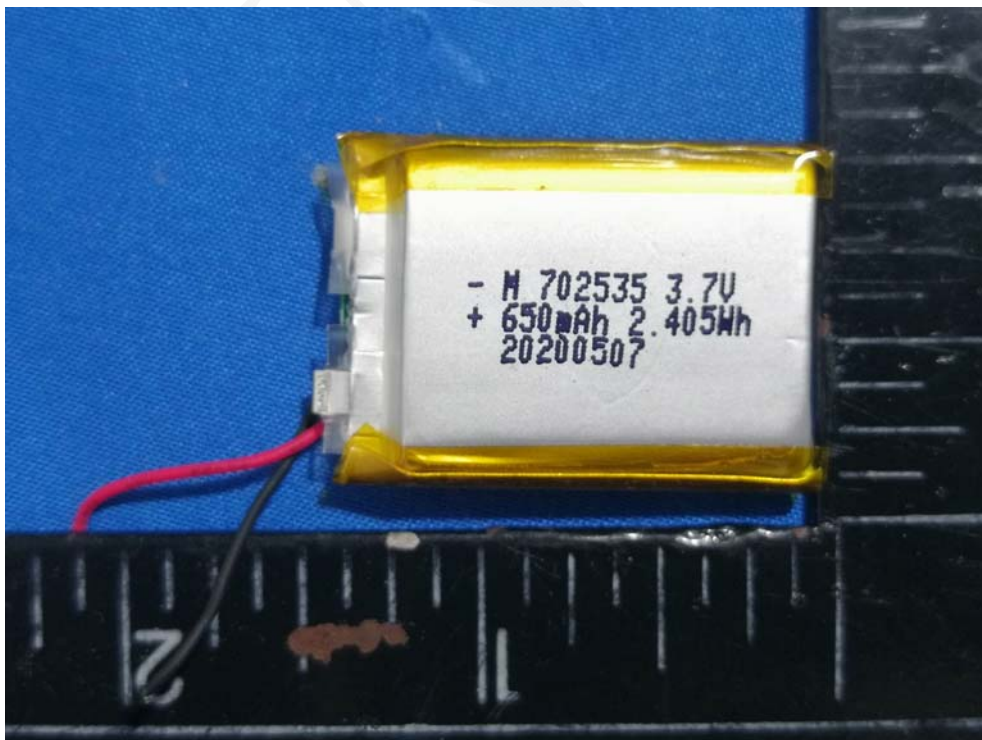
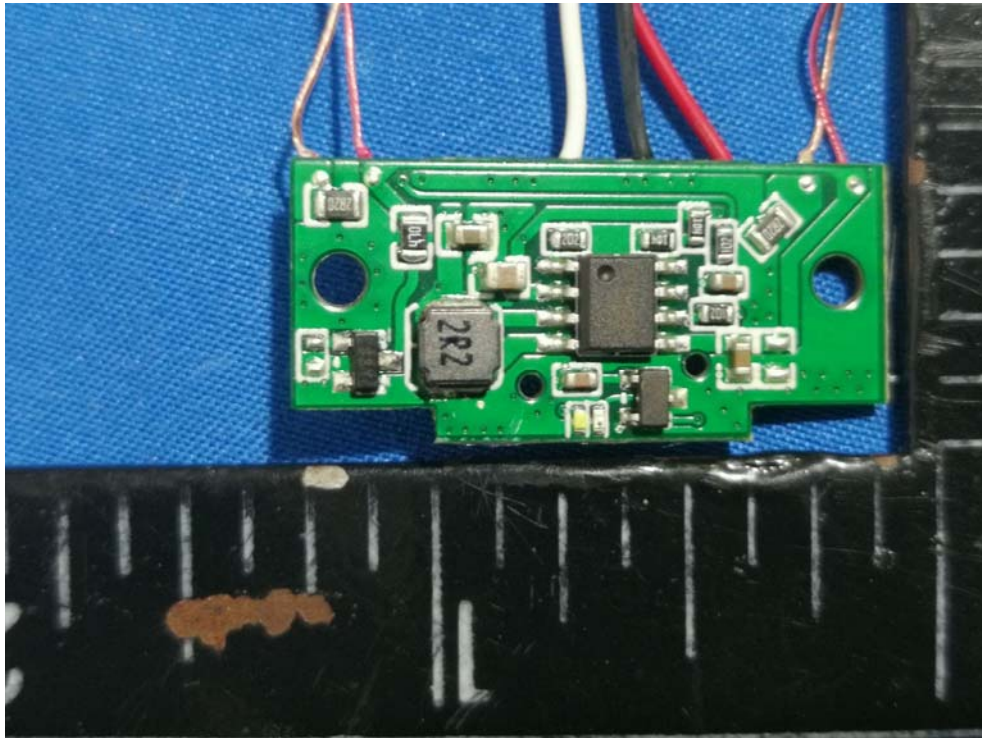












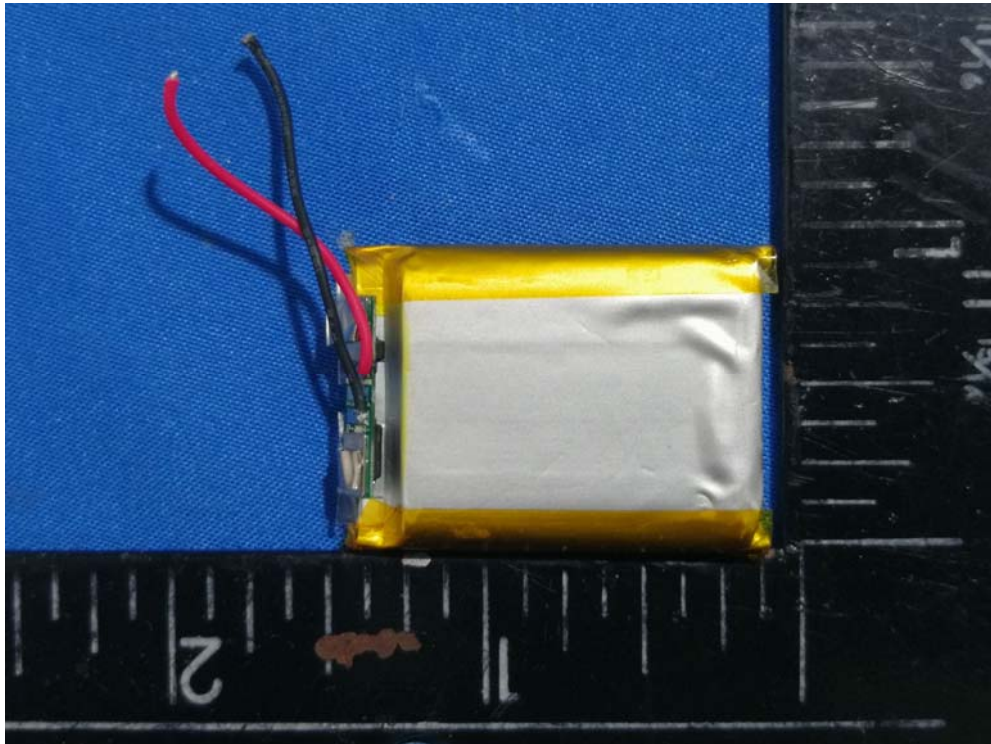


EXHIBIT B – TEST SETUP PHOTOGRAPHS

Conducted Emission -front View



Conducted Emission -Side View



Radiated Emission Below 1G -front View



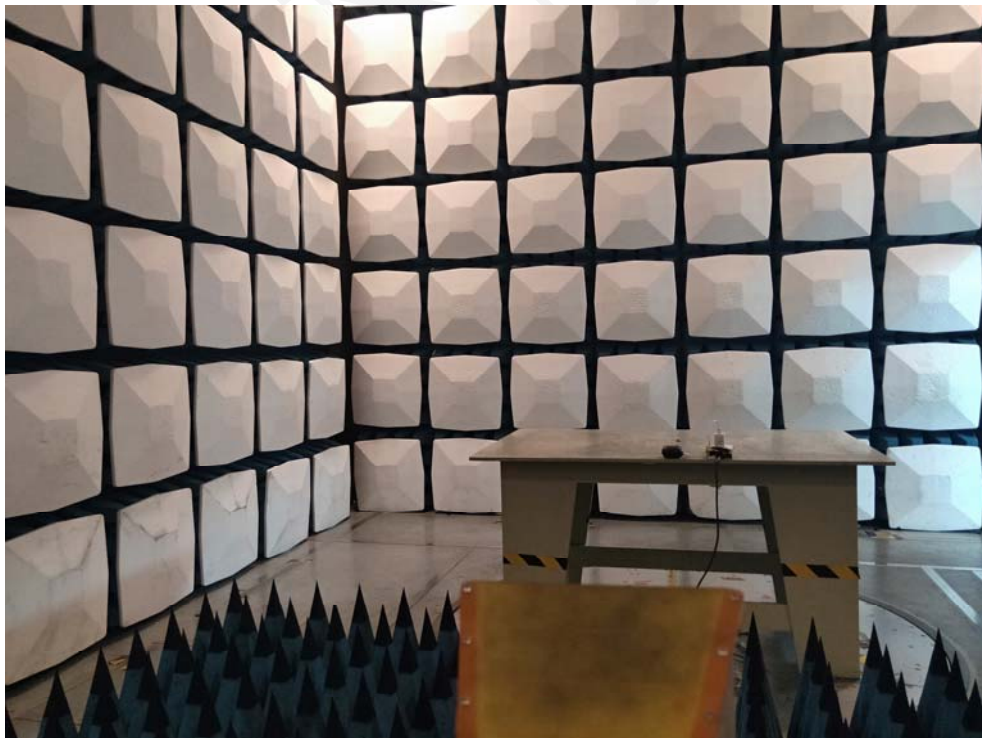
Radiated Emission Below 1G -rear View



Radiated Emission Above 1G -front View



Radiated Emission Above 1G -rear View



*****END OF REPORT*****