

FCC PART 15B

TEST REPORT

For

BAREBONES SYSTEMS,LLC.

1215 East Wilmington Avenue-Ste. 140 Salt Lake City, UT 84106

Model: LIV-257

Report Type: Original Report	Product Type: Vintage Flashlight
Report Number:	RDG200210030-00
Report Date:	2020-03-04
Reviewed By:	Jack Pan EMC Engineer
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	Vintage Flashlight
EUT Model:	LIV-257
Rated Input Voltage:	DC 5V
The Highest Operating Frequency:	<108MHz
Serial Number:	200210030
EUT Received Date:	2020-02-10
EUT Received Status:	Good

Objective

This report is prepared on behalf of *BAREBONES SYSTEMS,LLC.* in accordance with 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 Class B.

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: 4.55 dB, 200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Temperature	±1℃
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 “★”.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was test in On mode.

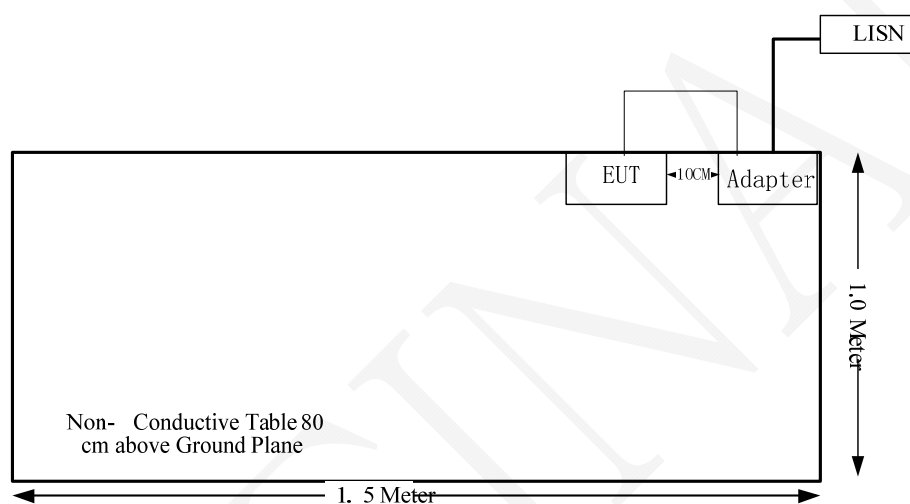
Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

No EUT software was used for testing.

Block Diagram of Test Setup



Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Dongang	Adapter	DA-00051000BU001	N/A

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
USB Cable	No	No	1.2	Adapter	EUT

Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission					
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	2019-05-09	2020-05-09
Radiated emissions below 1GHz					
R&S	EMI Test Receiver	ESCI	100224	2019-09-12	2020-09-12
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-2	2017-08-25	2020-08-25
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2019-09-24	2020-09-24
Sonoma	Amplifier	310N	185914	2019-10-13	2020-10-13

* 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

Temperature:	19.3~20.5 °C
Relative Humidity:	45~70%
ATM Pressure:	101.9~102.2kPa
Tester:	Sem Xiang, Vern Shen
Test Date:	2020.02.11~2020.02.21

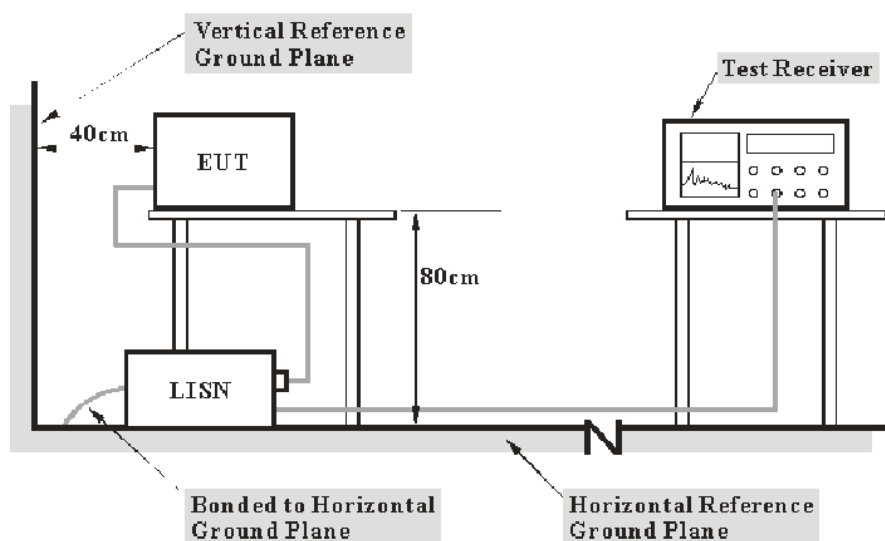
SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	FCC §15.107	Conducted emissions	Compliance
2	FCC §15.109	Radiated emissions	Compliance

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1 - 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.

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 was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

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 maximum limit. The equation for margin calculation is as follows:

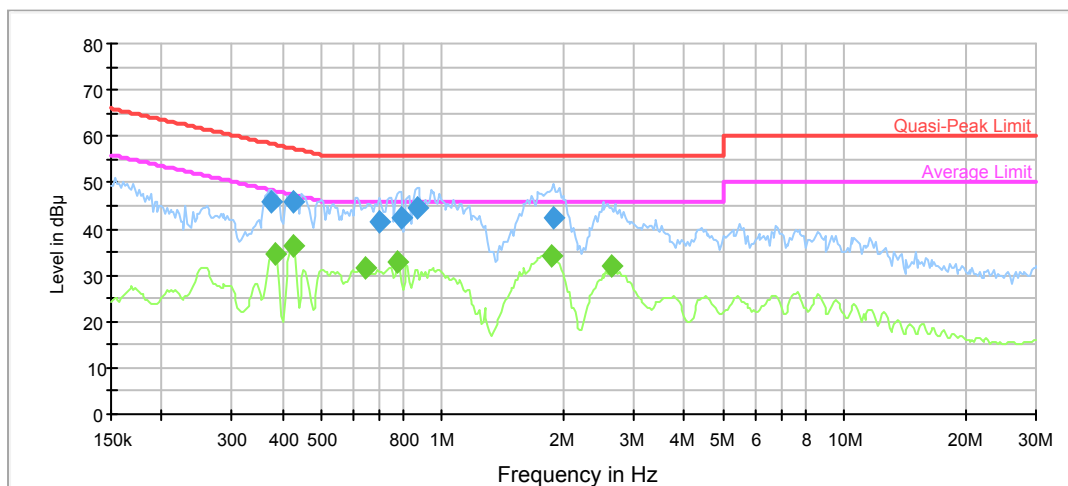
$$\text{Margin} = \text{Limit} - \text{Result}$$

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Test Data

Please refer to following table and plots:

Model Number: LIV-257
 Port: L
 Test Mode: On
 Power Source: AC 120V/60Hz
 Note:



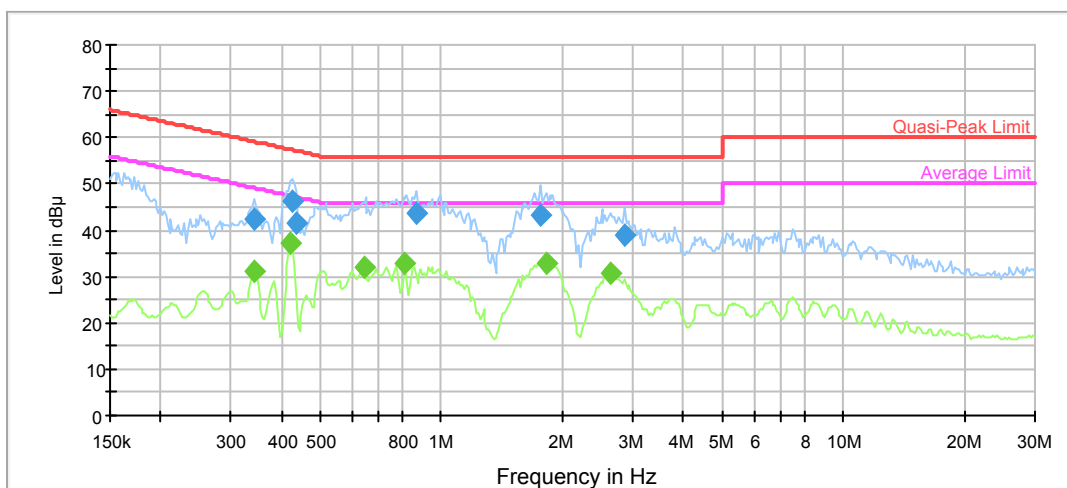
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.374678	45.7	9.000	L1	9.7	12.7	58.4
0.426418	45.9	9.000	L1	9.7	11.4	57.3
0.701301	41.4	9.000	L1	9.7	14.6	56.0
0.790244	42.3	9.000	L1	9.7	13.7	56.0
0.864278	44.4	9.000	L1	9.7	11.6	56.0
1.896889	42.2	9.000	L1	9.8	13.8	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.386031	34.5	9.000	L1	9.7	13.6	48.1
0.426418	36.3	9.000	L1	9.7	11.0	47.3
0.641227	31.7	9.000	L1	9.7	14.3	46.0
0.774673	32.7	9.000	L1	9.7	13.3	46.0
1.859513	34.1	9.000	L1	9.8	11.9	46.0
2.634191	31.8	9.000	L1	9.8	14.2	46.0

Model Number: LIV-257
Port: N
Test Mode: On
Power Source: AC 120V/60Hz
Note:



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.342583	42.5	9.000	N	9.6	16.6	59.1
0.426418	46.3	9.000	N	9.6	11.0	57.3
0.434989	41.7	9.000	N	9.6	15.5	57.2
0.864278	43.8	9.000	N	9.6	12.2	56.0
1.769262	43.1	9.000	N	9.6	12.9	56.0
2.852451	38.8	9.000	N	9.6	17.2	56.0

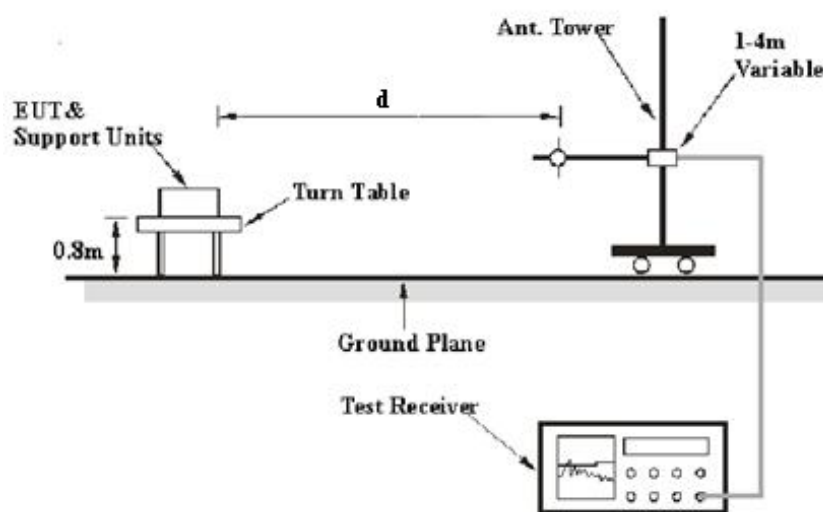
Final Result 2

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.342583	31.0	9.000	N	9.6	18.1	49.1
0.422196	37.0	9.000	N	9.6	10.4	47.4
0.641227	31.8	9.000	N	9.6	14.2	46.0
0.814189	32.8	9.000	N	9.6	13.2	46.0
1.822873	33.1	9.000	N	9.6	12.9	46.0
2.634191	30.5	9.000	N	9.6	15.5	46.0

2 - RADIATED EMISSIONS

EUT Setup

Below 1GHz:



The radiated emission tests were performed at the 3 meters distance, 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 1GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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

If the maximized peak measured value complies with under the QP limit more than 6dB, then it is unnecessary to perform QP measurement.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$\text{Result} = \text{Meter Reading} + \text{Corrected}$$

Note:

$$\text{Corrected} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

or

$$\text{Corrected} = \text{Antenna Factor} + \text{Cable Loss} + \text{Insertion loss of attenuator} - \text{Amplifier Gain}$$

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:

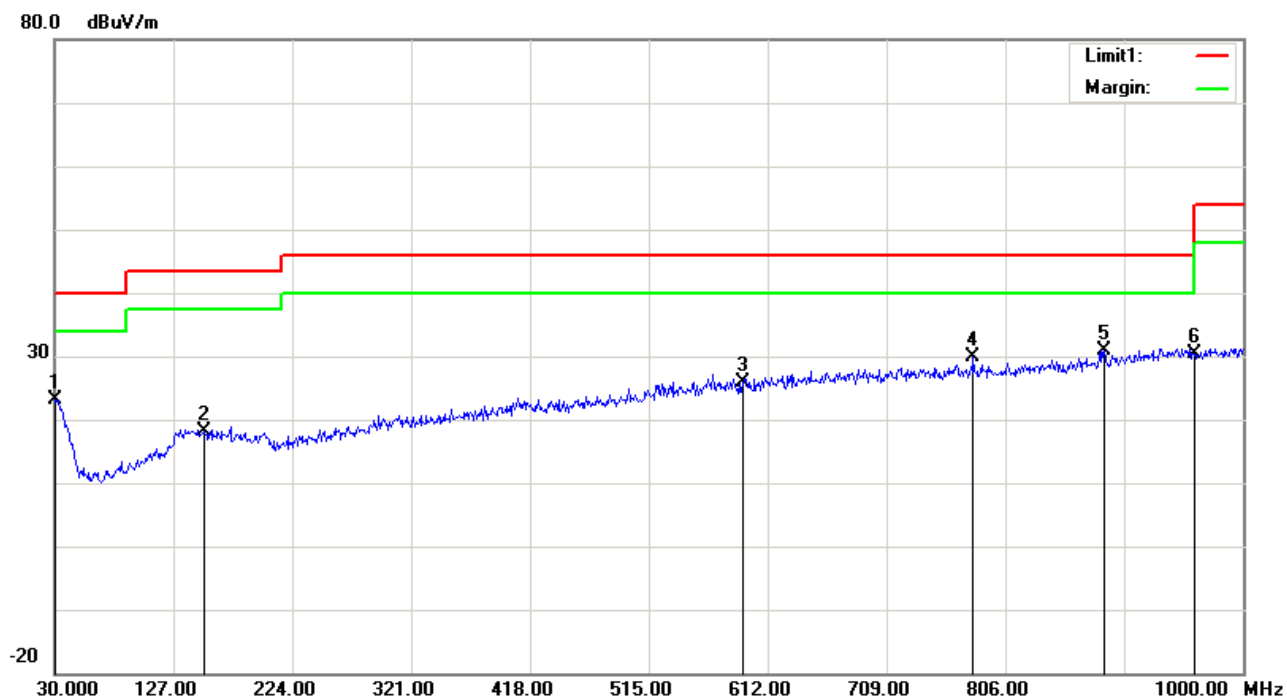
$$\text{Margin} = \text{Limit} - \text{Result}$$

Test Data

Please refer to following table and plots:

Condition: FCC Part 15B Class B
EUT: Vintage Flashlight
Model: LIV-257
Test Mode: On
Note:

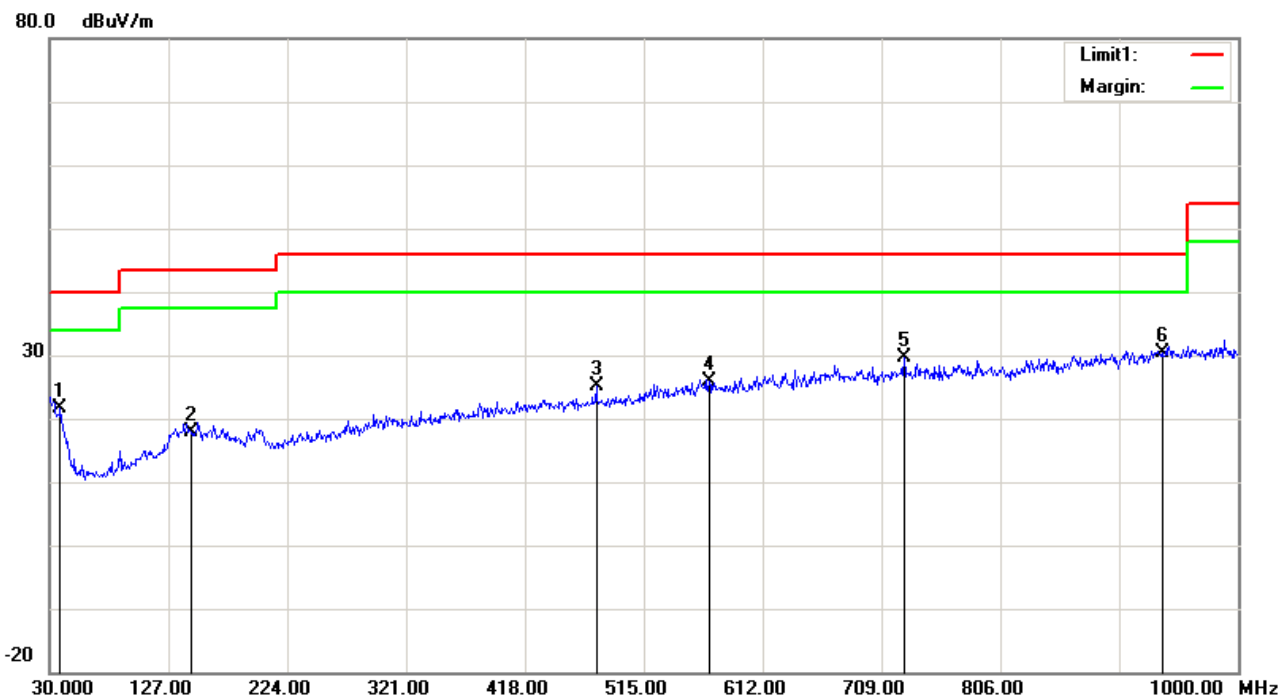
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	30.0000	27.54	peak	-4.33	23.21	40.00	16.79
2	152.2200	27.55	peak	-9.41	18.14	43.50	25.36
3	591.6300	27.36	peak	-1.50	25.86	46.00	20.14
4	779.8100	28.88	peak	1.02	29.90	46.00	16.10
5	886.5100	27.66	peak	3.33	30.99	46.00	15.01
6	960.2300	25.71	peak	4.75	30.46	54.00	23.54

Condition: FCC Part 15B Class B
EUT: Vintage Flashlight
Model: LIV-257
Test Mode: On
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	38.7300	30.30	peak	-8.78	21.52	40.00	18.48
2	145.4300	27.25	peak	-9.28	17.97	43.50	25.53
3	476.2000	28.91	peak	-3.82	25.09	46.00	20.91
4	568.3500	27.45	peak	-1.48	25.97	46.00	20.03
5	727.4300	28.90	peak	0.72	29.62	46.00	16.38
6	937.9200	25.90	peak	4.44	30.34	46.00	15.66

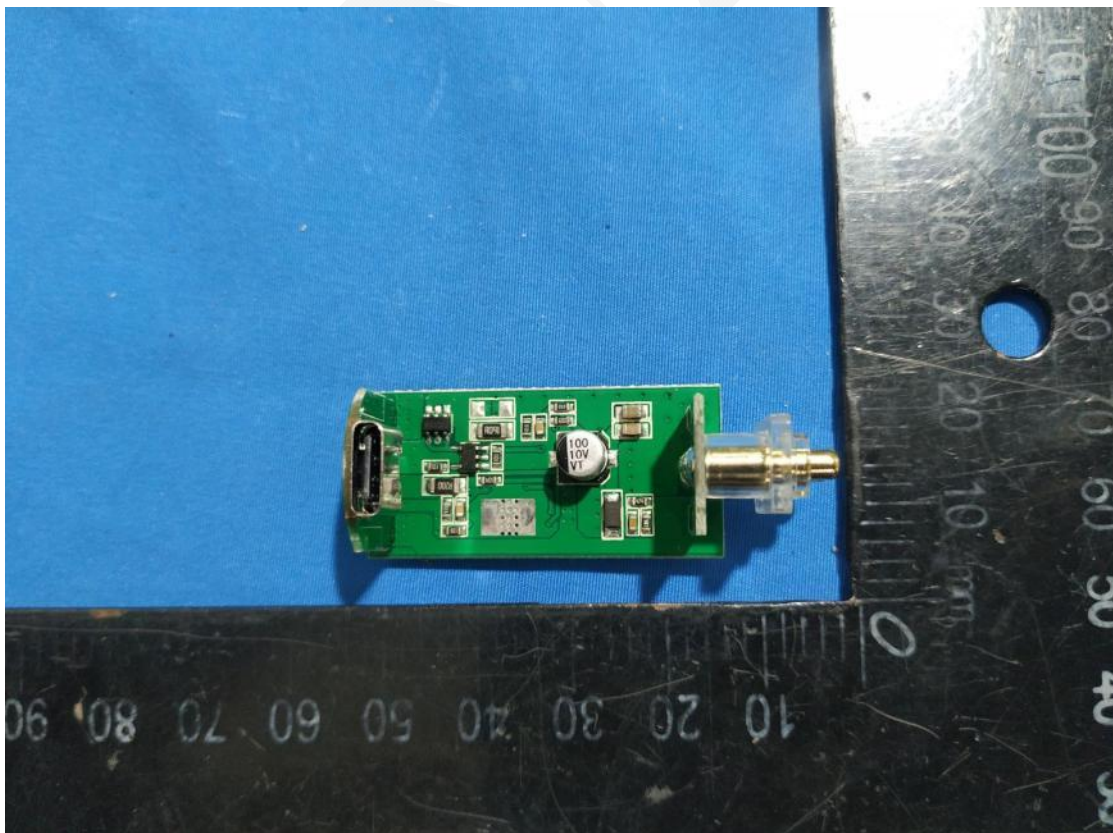
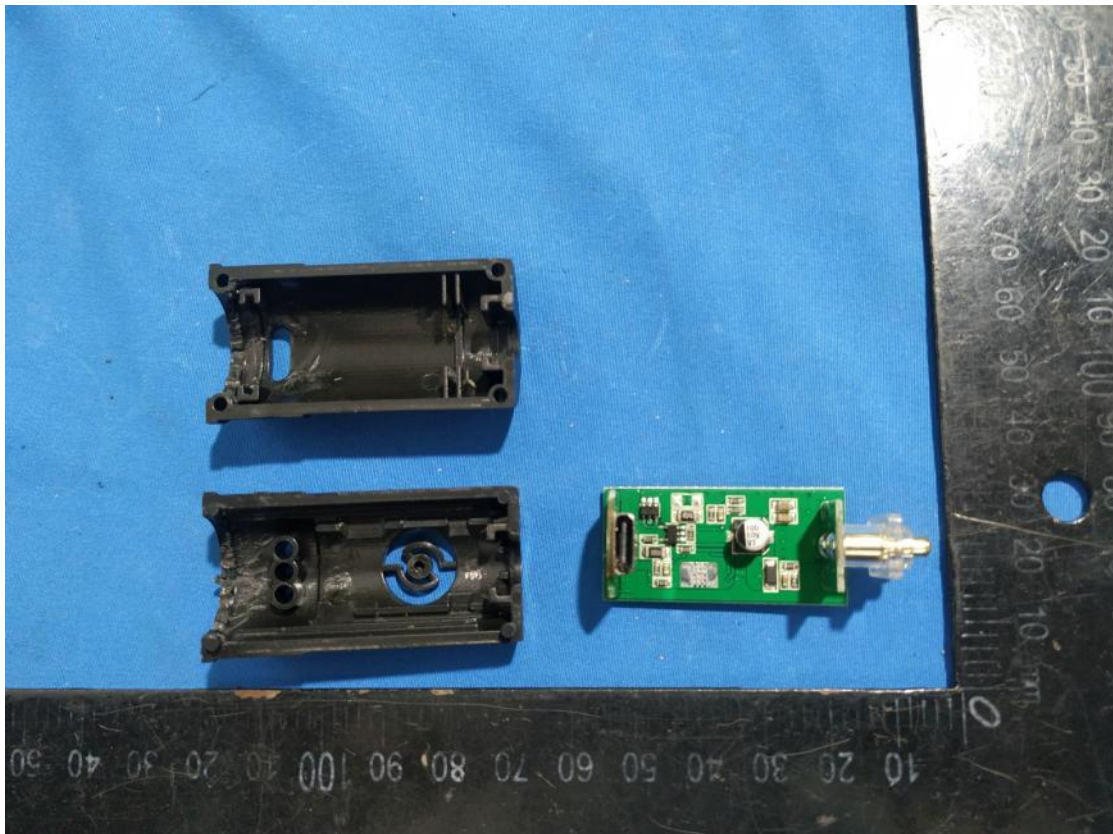
EXHIBIT A – EUT PHOTOGRAPHS

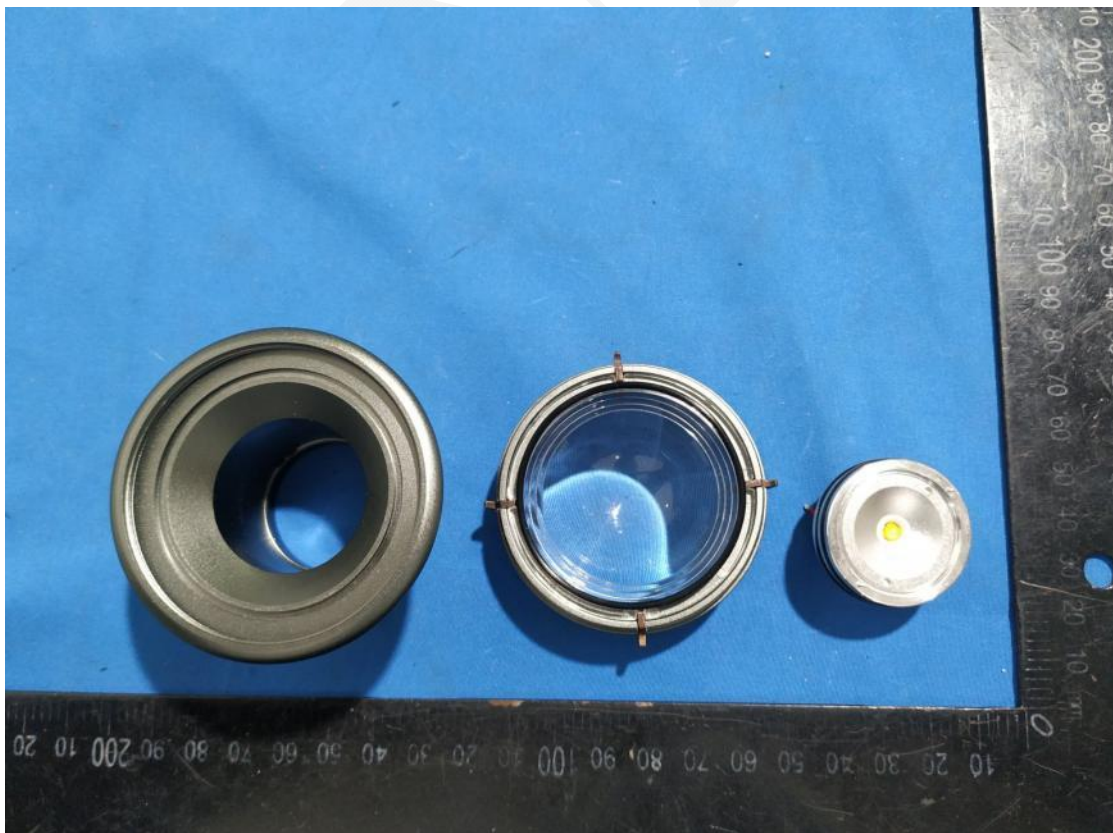
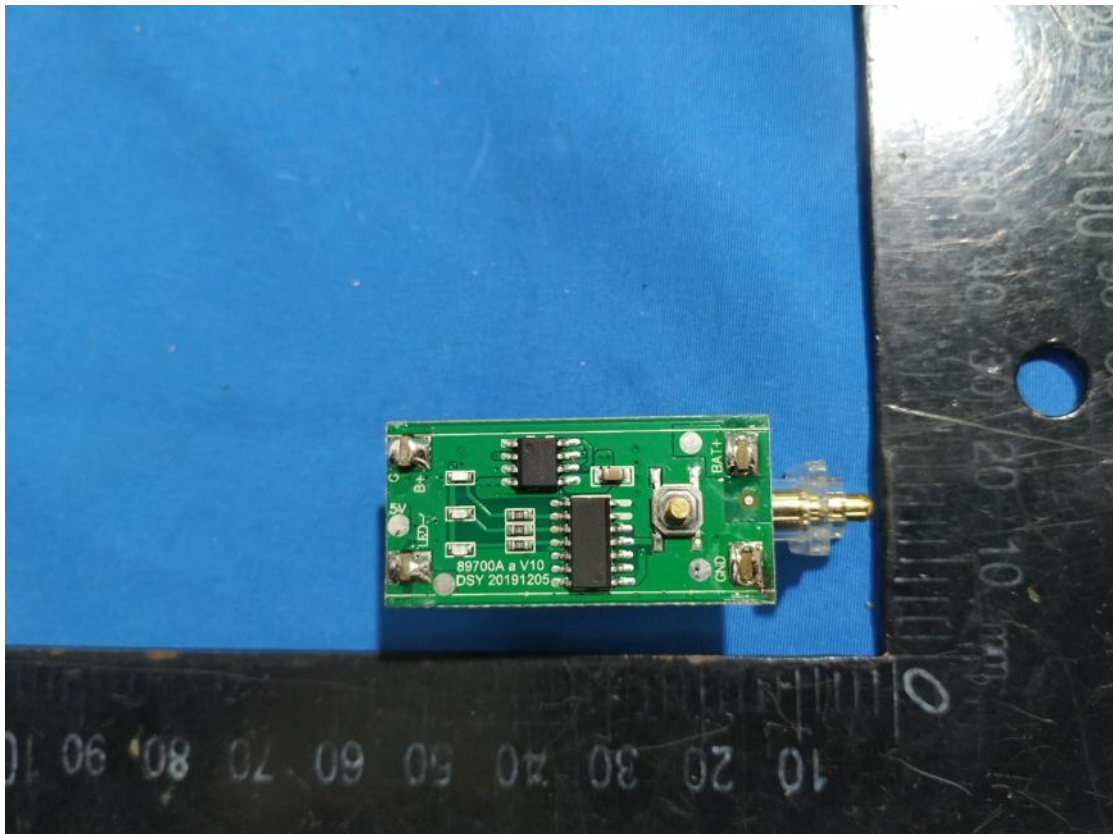


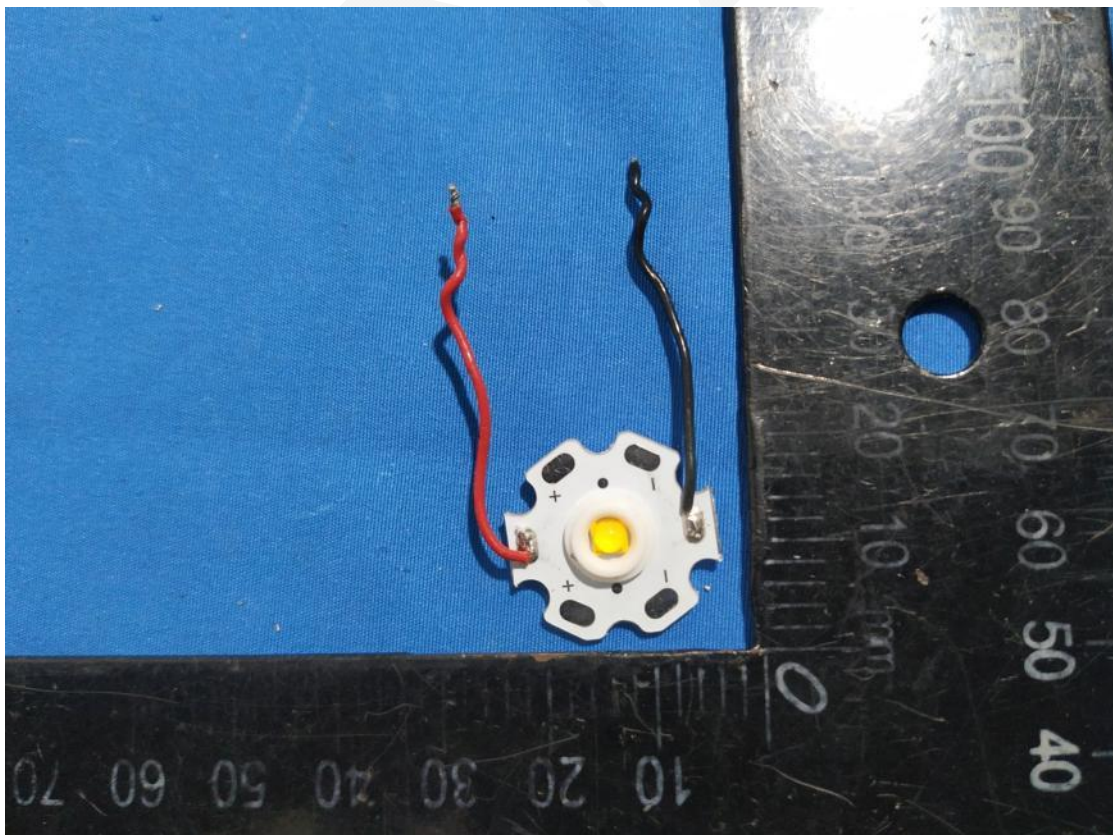
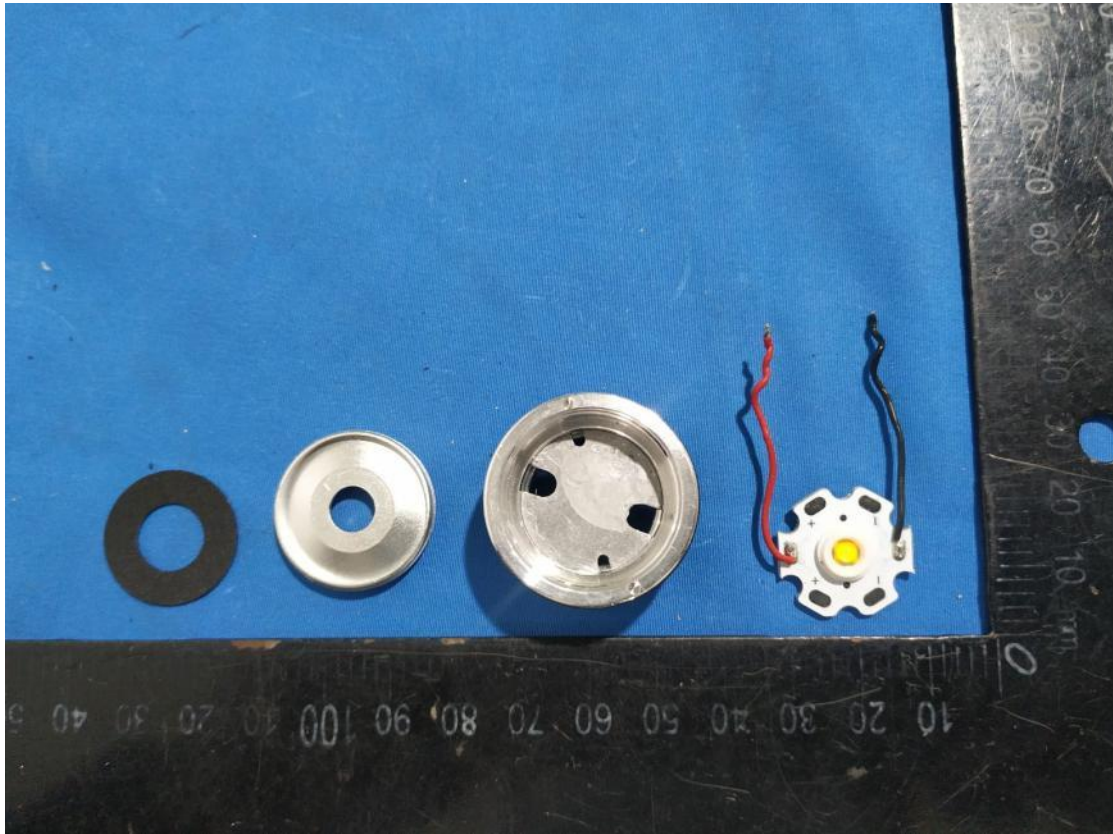












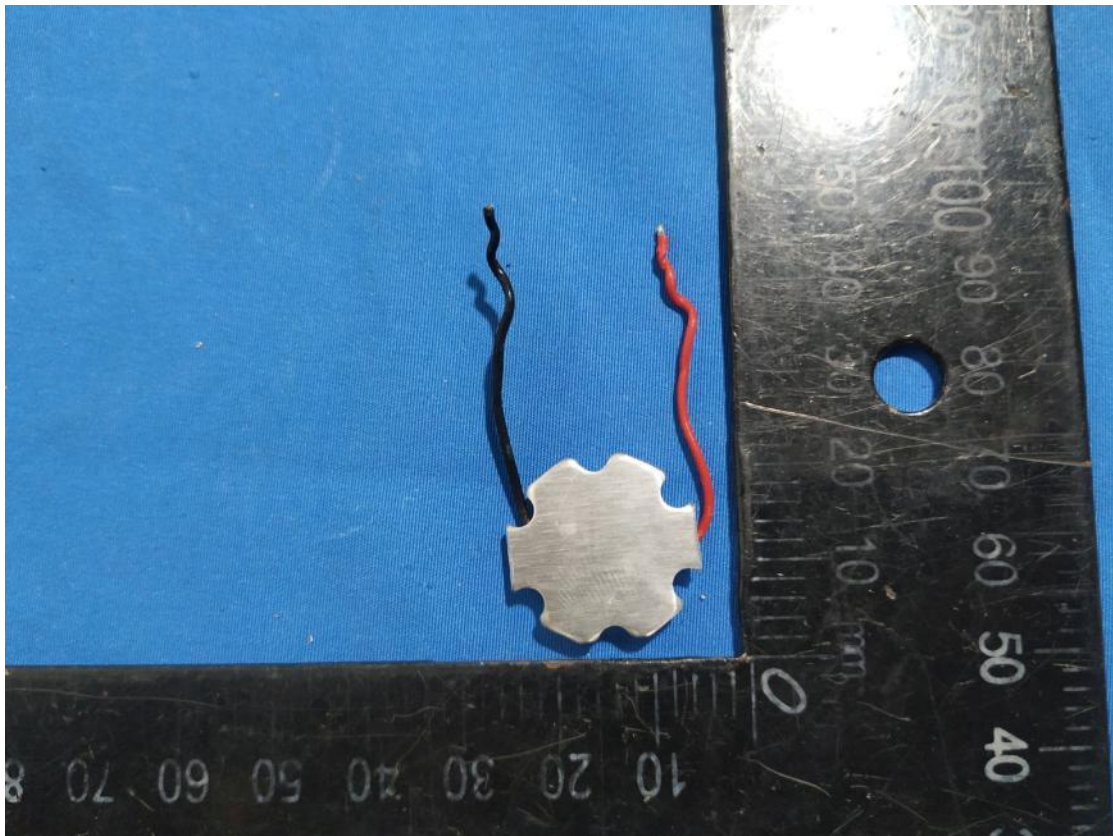


EXHIBIT B – TEST SETUP PHOTOGRAPHS

CE front View



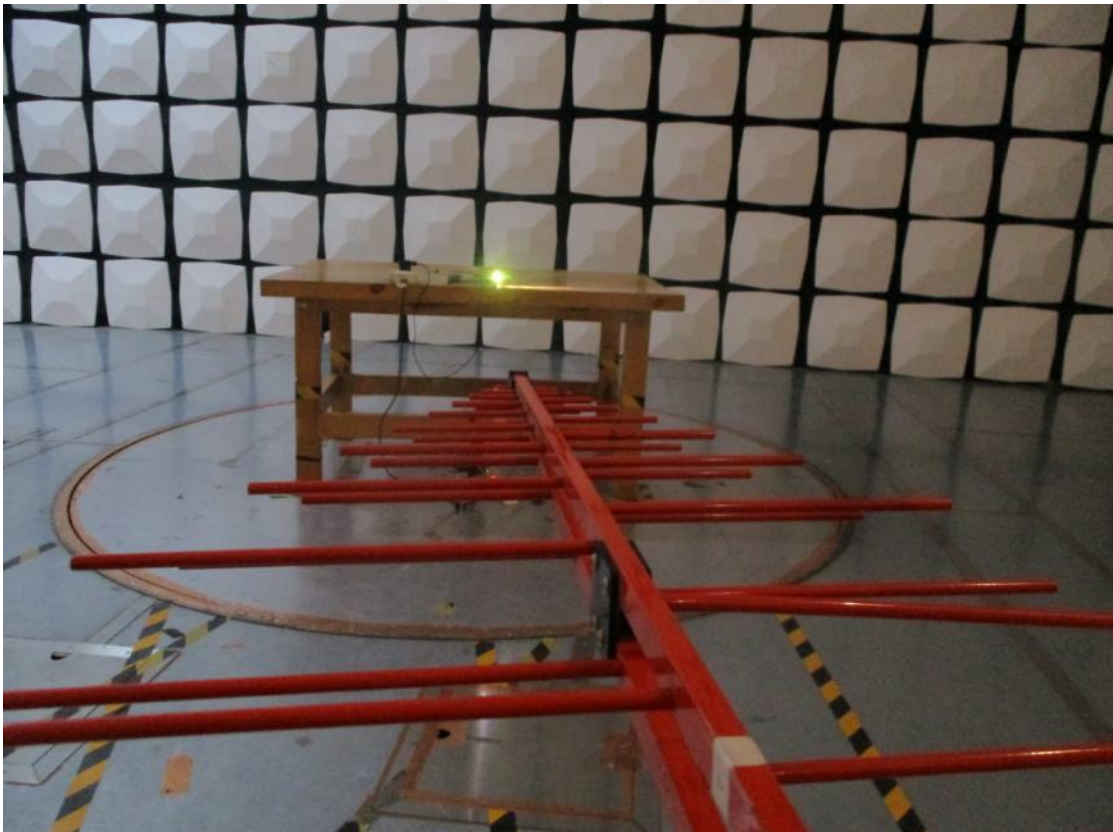
CE side View



RE Below 1G front View



RE Below 1G rear View



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