

## FCC Test Report (DoC)

**Application No.:** HKEM1703000607IT  
**Applicant:** EMBEST TECHNOLOGY CO.,LTD.  
**Manufacturer:** EMBEST TECHNOLOGY CO.,LTD.  
**Factory:** EMBEST TECHNOLOGY CO.,LTD.  
**Product Information:**  
**Product Name:** Flick Zero  
**Model No.:** V1.1  
**Requirement:** 47 CFR PART 15,SUBPART B:2016  
**Date of Receipt:** March 16, 2017  
**Date of Test:** March 17, 2017 to March 31, 2017  
**Date of Issue:** March 31, 2017

|                      |       |
|----------------------|-------|
| <b>Test Result :</b> | PASS* |
|----------------------|-------|

\* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature:

CHEN Jian-feng, Jeffrey



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## 2 Test Summary

| Test  | Test Requirement                | Test Method     | Class / Severity | Result            |
|---|---------------------------------|-----------------|------------------|-------------------|
| Conducted Emission  | FCC PART 15,<br>SUBPART B: 2016 | ANSI C63.4:2009 | Class B          | PASS              |
| Radiated Emission<br>(30MHz to 1GHz)                          | FCC PART 15,<br>SUBPART B: 2016 | ANSI C63.4:2014 | Class B          | PASS              |
| Radiated Emission<br>above 1 GHz                              | FCC PART 15,<br>SUBPART B: 2016 | ANSI C63.4:2014 | Class B          | N/A <sup>1)</sup> |
| <b>Remark :</b>   |                                 |                 |                  |                   |
| 1) Please refer to section 6.3 of this report for explanation |                                 |                 |                  |                   |

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## 4 General Information

### 4.1 Client Information

Applicant/Manufacturer: EMBEST TECHNOLOGY CO.,LTD.  
 Address of Applicant /Manufacturer: Tower B 4/F, Shanshui Building, Nanshan Yungu Innovation Industry Park, Liuxian Ave. No.1183, Nanshan District, Shenzhen, Guangdong, China  
 Factory: EMBEST TECHNOLOGY CO.,LTD.  
 Address of Factory: Tower B 4/F, Shanshui Building, Nanshan Yungu Innovation Industry Park, Liuxian Ave. No.1183, Nanshan District, Shenzhen, Guangdong, China

### 4.2 General Description of EUT

EUT Name: Flick Zero  
 Model No.: V1.1  
 EUT Description: Flick Zero

### 4.3 Details of EUT

Power Supply: Supplied by Associated Module  
 Operating frequency: Less than 108MHz

### 4.4 Description of Support Units

**Supporting equipment :**

| Description       | Manufacturer       | Model No.   | Serial No.          | Data Cable | Power Cable |
|-------------------|--------------------|-------------|---------------------|------------|-------------|
| Notebook computer | ASUS               | A556U       | FBN0CV9213834<br>8E | N/A        | 2.2m(DC)    |
| Mouse             | Lenovo             | MO28UOL     | 4401282 081         | USB        | N/A         |
| Ethernet router   | TP-LINK            | TL-WR1043ND | 10275200539         | LAN        | 1.8m (DC)   |
| Associated Module | Supplied by client | N/A         | N/A                 | N/A        | N/A         |

Note: For the cable detail please refer to below table.

**Cables:**

| # | Type               | Length, m | Shield | Metallic hood | Ferrite |
|---|--------------------|-----------|--------|---------------|---------|
| 1 | Associated Cable 1 | 0.20      | No     | No            | No      |
| 2 | Associated Cable 2 | 0.80      | No     | No            | No      |

**Software:**

| Description       | Manufacturer       | Software name          | Version no. |
|-------------------|--------------------|------------------------|-------------|
| EMC test software | Provided by Client | Aurea_Software_Package | V2.0.0      |

#### 4.5 Standards Applicable for Testing

CFR 47, FCC Part 15, 2016

ANSI C63.4:2014

#### 4.6 Test Location

All tests were performed at: -

SGS IECC Limited (Member of the SGS Group (SGS SA))

Units 303-305, 3/F., 31 Lok Yip Road, On Lok Tsuen, Fanling, N.T., Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480.

No tests were sub-contracted.

#### 4.7 Test Facility

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

- **FCC – CAB Registration No.: 446297**

Measurement facility located at Fanling (Hong Kong), accredited as a Conformity Assessment Body (CAB) and was designated by FCC to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Part 15 and 18 of the Commission's Rules.

#### 4.8 Deviation from Standards

None.

#### 4.9 Abnormalities from Standard Conditions

None.

#### 4.10 Declaration of Family Grouping

None.

#### 4.11 Abbreviations

N/A: Not Applicable  
EUT: Equipment Under Test

#### 4.12 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item                              | Measurement Uncertainty |
|-----|-----------------------------------|-------------------------|
| 1   | Radiated disturbance 30MHz – 1GHz | 5.5                     |
| 2   | Conducted Emissions               | 3.1                     |

## 5 Equipments Used during Test

| Radiated Emission                    |                 |                      |            |               |
|--------------------------------------|-----------------|----------------------|------------|---------------|
| Equipment                            | Manufacturer    | Model / Serial No.   | Cal. Date  | Cal. Due Date |
| 3m Semi-Anechoic Chamber (pre-test)  | --              | --                   | --         | --            |
| 3m / 10m Open Aera Test Site         | --              | --                   | 2015/03/11 | 2018/03/10    |
| Test Receiver 9KHz-2750MHz           | Rohde & Schwarz | ESCS 30 /100388      | 2016/09/28 | 2017/09/27    |
| Spectrum Analyzer 9kHz - 30GHz       | Rohde & Schwarz | FSP30/101474         | 2016/05/31 | 2017/05/30    |
| Loop Antenna 9KHz-30MHz              | Rohde & Schwarz | HFH2-Z2              | 2016/01/23 | 2019/01/22    |
| Antenna (30-300 MHz)                 | Schwarzbeck     | BBA9106, VHA9103     | 2014/11/15 | 2017/11/14    |
| Log-periodic Antennas 300MHz-1000MHz | Schwarzbeck     | UHALP9107            | 2014/11/15 | 2017/11/14    |
| Antenna, 30MHz – 1000MHz             | Schaffner       | CBL6111C / 2791      | 2016/10/27 | 2018/10/26    |
| Horn Antenna 1 - 18GHz               | Schwarzbeck     | BBHA9120D/9120D-1070 | 2016/01/23 | 2018/01/22    |
| Preamplifier 1 - 18GHz               | Schwarzbeck     | BBV9718/9718-223     | 2017/01/23 | 2018/01/22    |
| Coaxial Cable                        | --              | E167                 | 2016/11/17 | 2017/11/16    |
| Antenna Mast System                  | Schwarzbeck     | AM9104 / -           | --         | --            |
| Turntable with Controller            | Drehtisch       | DT312 / -            | --         | --            |

| Conducted Emission              |                 |                      |            |               |
|---------------------------------|-----------------|----------------------|------------|---------------|
| Equipment                       | Manufacturer    | Model / Serial No.   | Cal. Date  | Cal. Due Date |
| Test Receiver                   | Rohde & Schwarz | ESCS 30 /100388      | 2016/09/28 | 2017/09/27    |
| Impulse Limiter                 | Rohde & Schwarz | ESH-3-Z2 / 375881052 | 2017/01/23 | 2018/01/22    |
| Artificial Mains Network (LISN) | Schwarzbeck     | NSLK 8127 / 8127312  | 2016/04/20 | 2017/04/19    |

## 6 Test Results

### 6.1 Conducted Emissions Mains Terminals, 150kHz to 30MHz

Test Requirement: FCC Part15 B  
 Test Method: ANSI C63.4  
 Test Voltage & frequency: Supplied by Associated Module  
 Frequency Range: 150KHz to 30MHz  
 Class / Severity: Class B  
 Detector: Peak for pre-scan (9kHz Resolution Bandwidth)  
 Quasi-Peak and Average if maximised peak within 20dB of Quasi-Peak limit  
 Limit:

| Frequency range<br>MHz | Class B Limits |          |
|------------------------|----------------|----------|
|                        | Quasi-peak     | Average  |
| 0.15 to 0.50           | 66 to 56       | 56 to 46 |
| 0.50 to 5              | 56             | 46       |
| 5 to 30                | 60             | 50       |

**Note:**

- 1) The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.
- 2) The lower limit is applicable at the transition frequency.

#### 6.1.1 EUT Operation

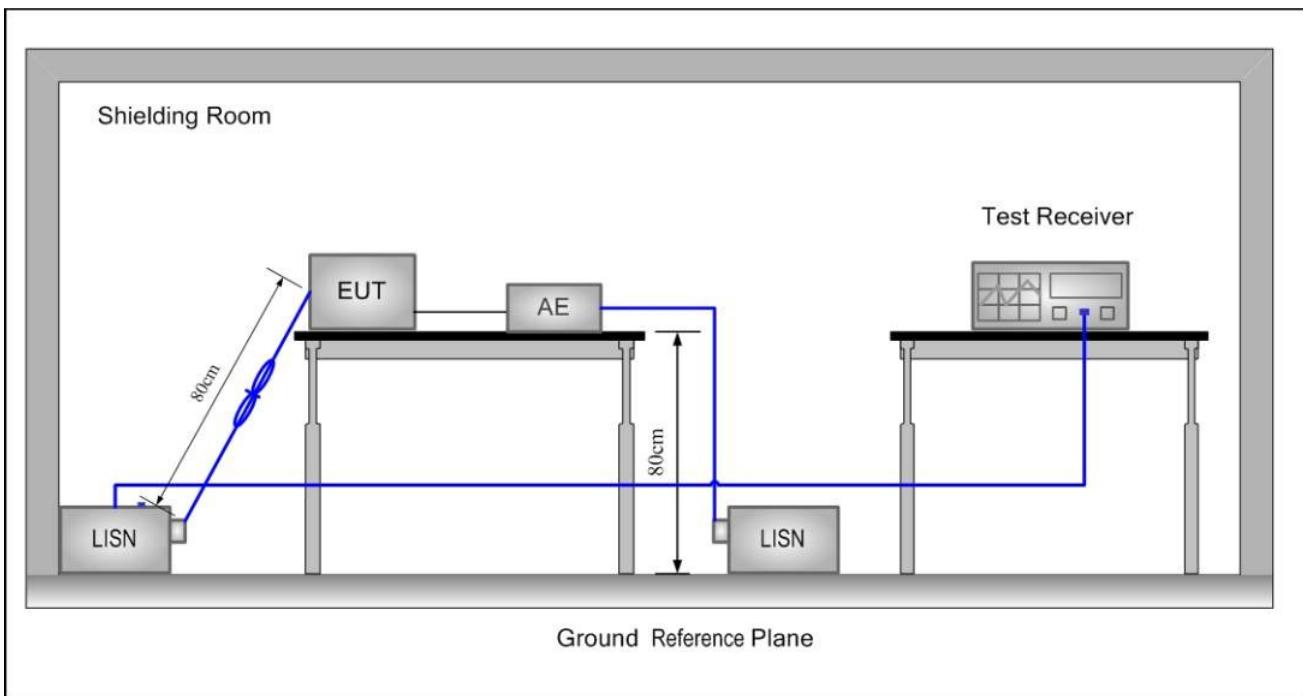
Operating Environment:

Temperature: 25°C      Humidity: 47%      Atmospheric Pressure: 1020mbar

EUT Operation: Pre-test with Peak detector with the following mode(s):  
 1: PC connection mode.

Final test with Quasi-Peak detector with the following mode(s):  
 1: PC connection mode.

### 6.1.2 Test Setup and Procedure



1. The mains terminal conducted emission test was conducted in a shielded room.
2. The EUT was connected via the host computer to AC power source through a LISN (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. For Load terminal voltage measurement, a voltage probe was used on the load terminals. Measurement at control terminals were carried out by means of an impedance stabilization network (ISN). The ISN was bounded to ground.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The EUT kept a distance of at least 0.8m from any other earthed conducting surface. The Artificial Mains Network was situated at a distance of 0.8m from the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

### 6.1.3 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

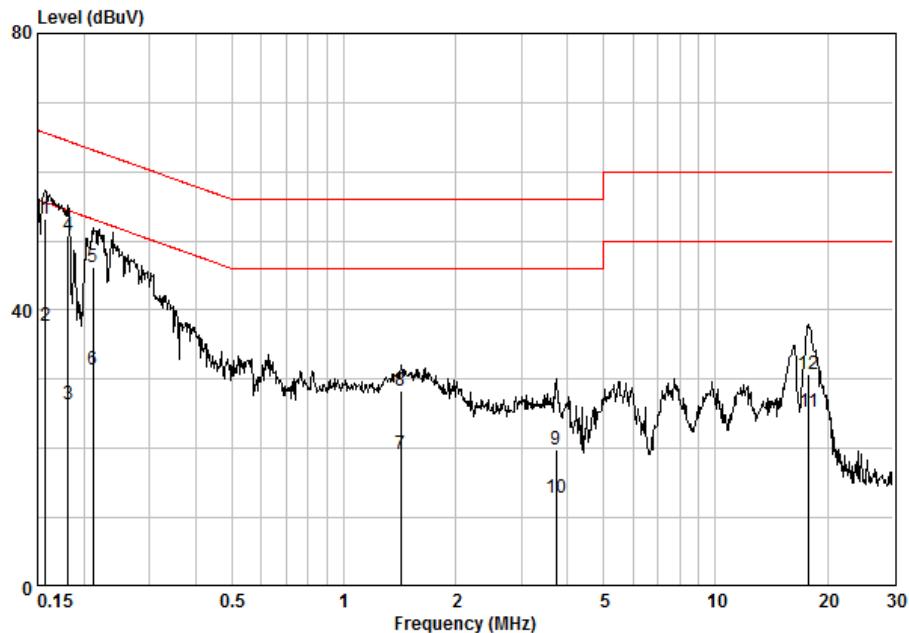
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

The following Quasi-Peak and Average measurements were performed on PC connection mode.

:

### Live line:

Peak Scan:



Quasi-peak and Average measurement:

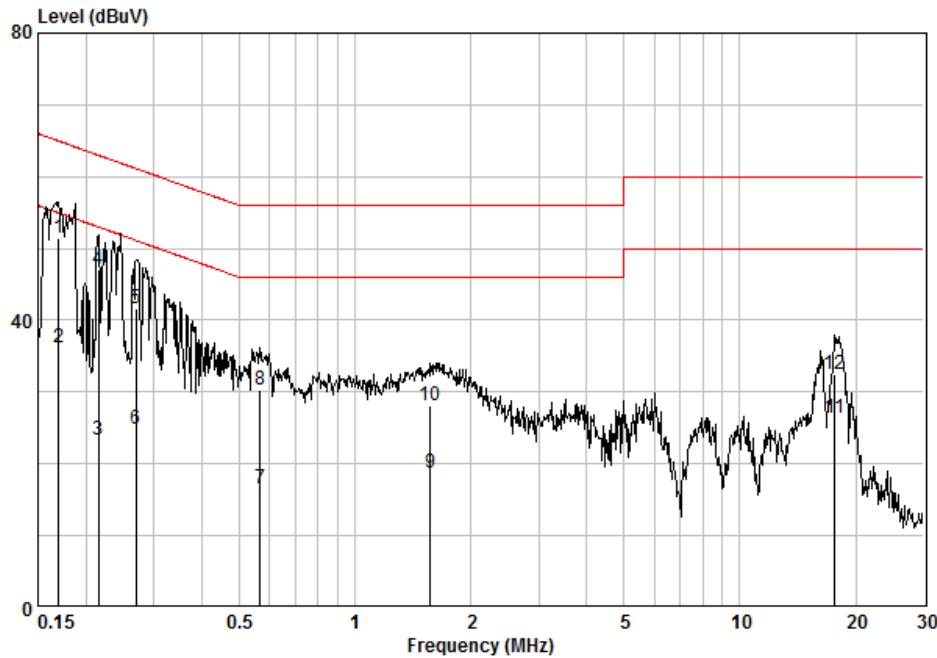
| Freq    | Cable | LISN   | Read  | Limit Line | Over Limit | Remark         |
|---------|-------|--------|-------|------------|------------|----------------|
|         | Loss  | Factor | Level |            |            |                |
| MHz     | dB    | dB     | dBuV  | dBuV       | dBuV       | dB             |
| 0.15733 | 0.10  | 0.12   | 52.90 | 53.12      | 65.60      | -12.49 QP      |
| 0.15733 | 0.10  | 0.12   | 37.50 | 37.72      | 55.60      | -17.88 AVERAGE |
| 0.18152 | 0.10  | 0.12   | 26.19 | 26.41      | 54.42      | -28.01 AVERAGE |
| 0.18152 | 0.10  | 0.12   | 50.64 | 50.86      | 64.42      | -13.56 QP      |
| 0.21167 | 0.10  | 0.12   | 45.98 | 46.19      | 63.14      | -16.95 QP      |
| 0.21167 | 0.10  | 0.12   | 31.17 | 31.39      | 53.14      | -21.75 AVERAGE |
| 1.426   | 0.10  | 0.25   | 18.86 | 19.20      | 46.00      | -26.80 AVERAGE |
| 1.426   | 0.10  | 0.25   | 28.07 | 28.42      | 56.00      | -27.58 QP      |
| 3.720   | 0.10  | 0.39   | 19.45 | 19.94      | 56.00      | -36.06 QP      |
| 3.720   | 0.10  | 0.39   | 12.31 | 12.80      | 46.00      | -33.20 AVERAGE |
| 17.849  | 0.20  | 0.65   | 24.43 | 25.28      | 50.00      | -24.72 AVERAGE |
| 17.849  | 0.20  | 0.65   | 29.79 | 30.64      | 60.00      | -29.36 QP      |

Level = Read Level + LISN Factor + Cable Loss.

**Level = Read Level + LISN Factor + Cable Loss.**

**Neutral line:**

Peak Scan:



Quasi-peak and Average measurement:

| Freq    | Cable | LISN   | Read  | Limit | Over  | Line   | Limit   | Remark |
|---------|-------|--------|-------|-------|-------|--------|---------|--------|
|         | Loss  | Factor | Level |       |       |        |         |        |
| MHz     | dB    | dB     | dBuV  | dBuV  | dBuV  | dB     |         |        |
| 0.16944 | 0.10  | 0.13   | 51.27 | 51.50 | 64.99 | -13.49 | QP      |        |
| 0.16944 | 0.10  | 0.13   | 36.06 | 36.29 | 54.99 | -18.70 | AVERAGE |        |
| 0.21506 | 0.10  | 0.15   | 23.17 | 23.42 | 53.01 | -29.59 | AVERAGE |        |
| 0.21506 | 0.10  | 0.15   | 46.85 | 47.10 | 63.01 | -15.91 | QP      |        |
| 0.27009 | 0.10  | 0.17   | 41.46 | 41.73 | 61.12 | -19.39 | QP      |        |
| 0.27009 | 0.10  | 0.17   | 24.51 | 24.78 | 51.12 | -26.34 | AVERAGE |        |
| 0.56709 | 0.10  | 0.22   | 16.33 | 16.66 | 46.00 | -29.34 | AVERAGE |        |
| 0.56709 | 0.10  | 0.22   | 29.87 | 30.19 | 56.00 | -25.81 | QP      |        |
| 1.568   | 0.10  | 0.28   | 18.45 | 18.83 | 46.00 | -27.17 | AVERAGE |        |
| 1.568   | 0.10  | 0.28   | 27.66 | 28.04 | 56.00 | -27.96 | QP      |        |
| 17.661  | 0.20  | 0.79   | 25.37 | 26.36 | 50.00 | -23.64 | AVERAGE |        |
| 17.661  | 0.20  | 0.79   | 31.59 | 32.58 | 60.00 | -27.42 | QP      |        |

**Level = Read Level + LISN Factor + Cable Loss.**

## 6.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: FCC Part15 B  
 Test Method: ANSI C63.4:2014  
 Test Voltage & frequency: Supplied by Associated Module  
 Frequency Range: 30MHz to 1GHz  
 Measurement Distance: 3m  
 Detector: Peak for pre-scan (120kHz resolution bandwidth)  
                   Quasi-Peak if maximised peak within 20dB of limit  
 Class: Class B

| Frequency range<br>MHz | Quasi-peak limits<br>dB ( $\mu$ V/m) |
|------------------------|--------------------------------------|
| 30 to 88               | 40                                   |
| 88 to 216              | 43.5                                 |
| 216 to 960             | 46                                   |
| Above 960              | 54                                   |

Note: At transitional frequencies the lower limit applies.

### 6.2.1 EUT Operation

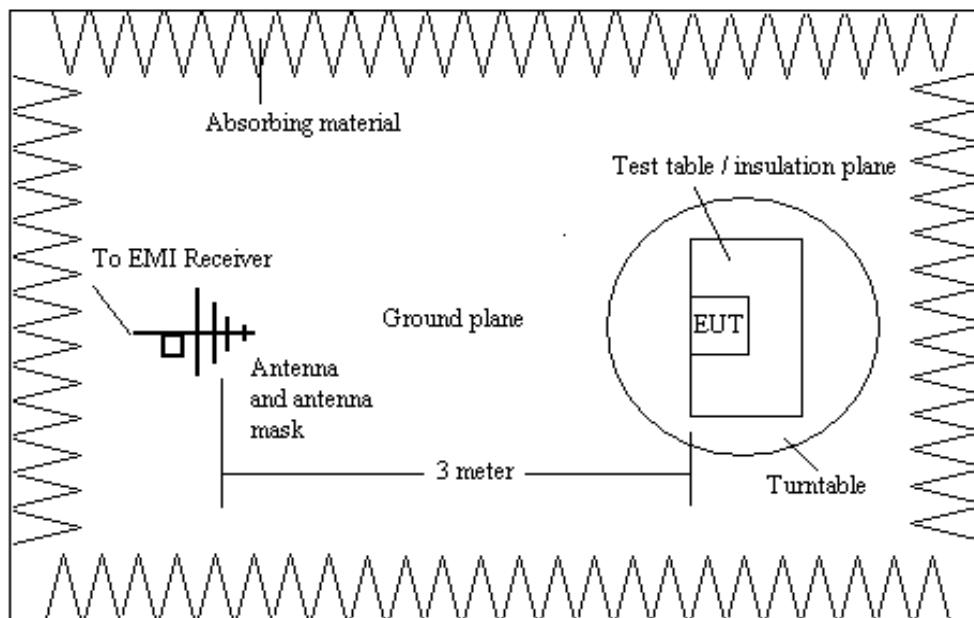
Operating Environment:

Temperature: 25°C      Humidity: 47%      Atmospheric Pressure: 1020mbar

EUT Operation: Pre-test with Peak detector with the following mode(s):  
 1: PC connection mode.

Final test with Quasi-Peak detector with the following mode(s):  
 1: PC connection mode.

### 6.2.2 Test Setup and Procedure



1. The pre-test of the radiated emissions test was conducted in a semi-anechoic chamber and the final measurement was conducted in the open area test site.
2. Bilog antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to the host PC which was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT with located frequencies.
5. The actual frequencies of maximum emission were confirmed in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

### 6.2.3 Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Bilog antenna with 2 orthogonal polarities and frequencies of peak emissions from the EUT were detected within 20dB of the class B limit line. Final measurement was conducted in the open area test site with data as follows:

**Test results on mode:**

| Frequency (MHz) | Antenna Polarization | Trans. (dB/m) | Receiver QP Reading (dB $\mu$ V) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) |
|-----------------|----------------------|---------------|----------------------------------|-------------------------------|----------------------|-----------------|
| 32.979          | V                    | 17.81         | 2.89                             | 20.70                         | 29.50                | -8.80           |
| 42.154          | H                    | 14.22         | 1.84                             | 16.06                         | 29.50                | -13.44          |
| 60.280          | V                    | 9.99          | 15.02                            | 25.01                         | 29.50                | -4.49           |
| 120.699         | V                    | 11.43         | 10.42                            | 21.85                         | 33.00                | -11.15          |
| 148.963         | V                    | 11.39         | 7.62                             | 19.01                         | 33.00                | -13.99          |
| 153.200         | H                    | 11.15         | 5.44                             | 16.59                         | 33.00                | -16.41          |
| 364.260         | V                    | 14.43         | 9.74                             | 24.17                         | 35.60                | -11.43          |
| 368.112         | H                    | 14.72         | 5.98                             | 20.70                         | 35.60                | -14.90          |
| 451.135         | H                    | 18.11         | 7.02                             | 25.13                         | 35.60                | -10.47          |
| 668.142         | H                    | 20.65         | 4.69                             | 25.34                         | 35.60                | -10.26          |
| 699.305         | V                    | 21.04         | 8.52                             | 29.56                         | 35.60                | -6.04           |
| 909.667         | H                    | 22.92         | 5.49                             | 28.41                         | 35.60                | -7.19           |

**Note:**

- 1) All readings are Quasi-Peak values.
- 2) Transducer = Antenna Factor + Cable Loss.

### 6.3 Radiated Emissions above 1 GHz

Test Requirement: FCC Part15 B

Test Method: ANSI C63.4:2014

Test Date: Not Applicable

**Remark:**

**There is no need for Radiated Emissions (above 1G) test to be performed on this product in accordance with FCC Part 15 because the highest internal source is less than 108 MHz.**

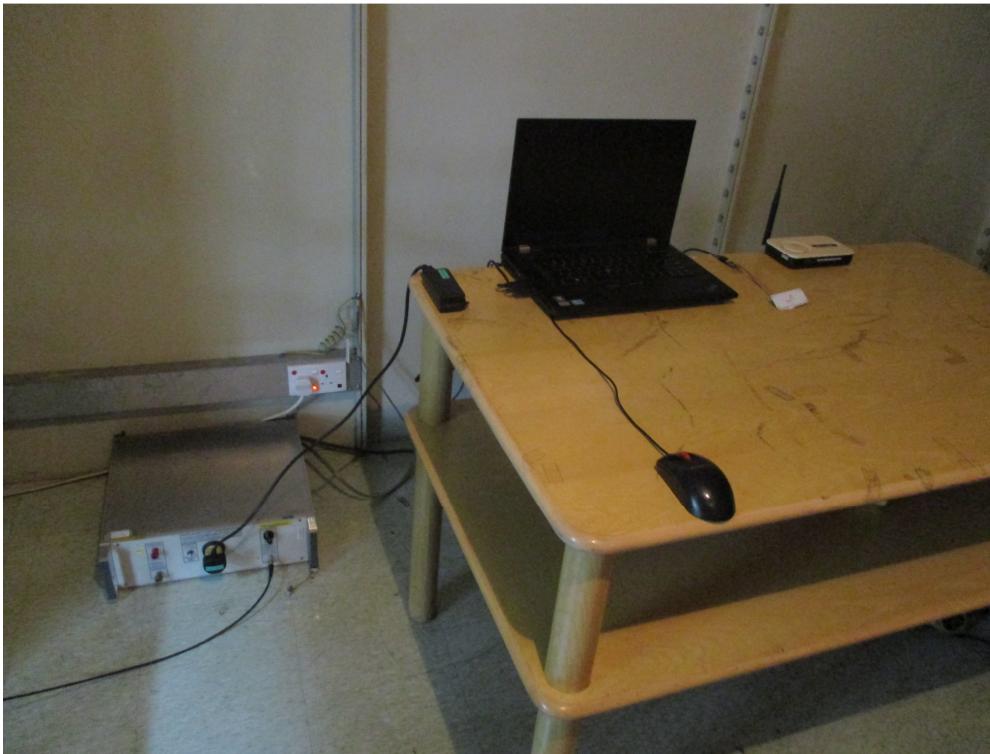
For further details, please refer to Subject B section 15.33 (b) (1)of FCC Part 15 which states:

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

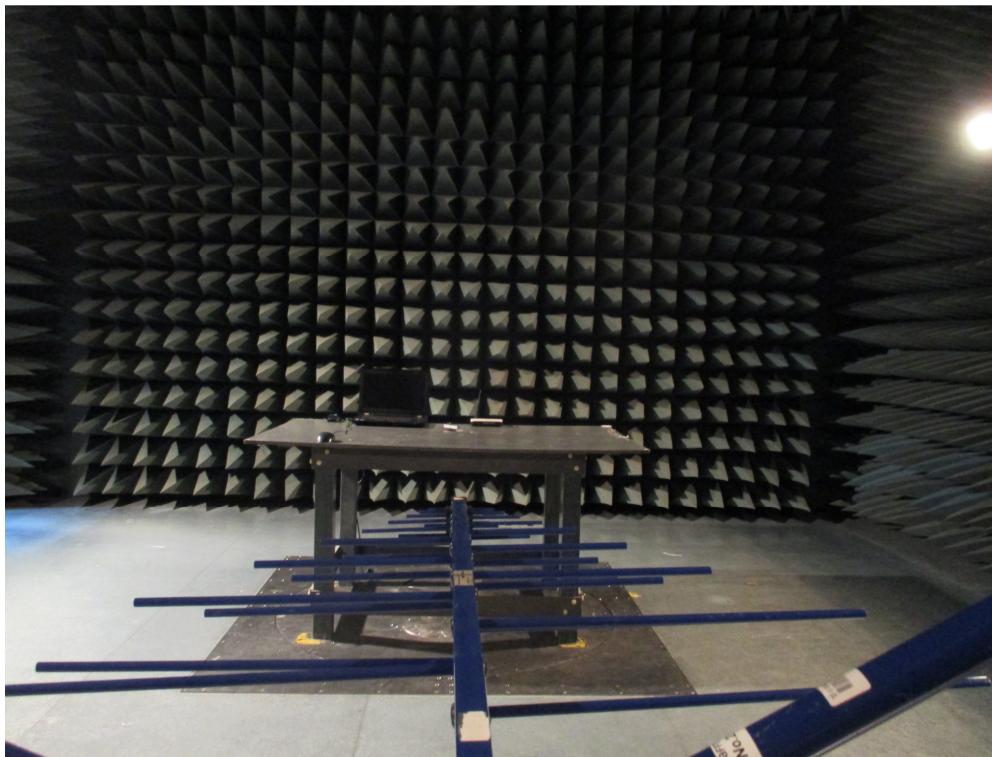
| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement Range (MHz)                          |
|--|---|
| Below 1.705  | 30  |
| 1.705 to 108   | 1000  |
| 108 to 500   | 2000  |
| 500 to 1000  | 5000  |
| Above 1000   | 5th harmonic of the highest frequency or 40 GHz, whichever is lower |

## 7 Photographs

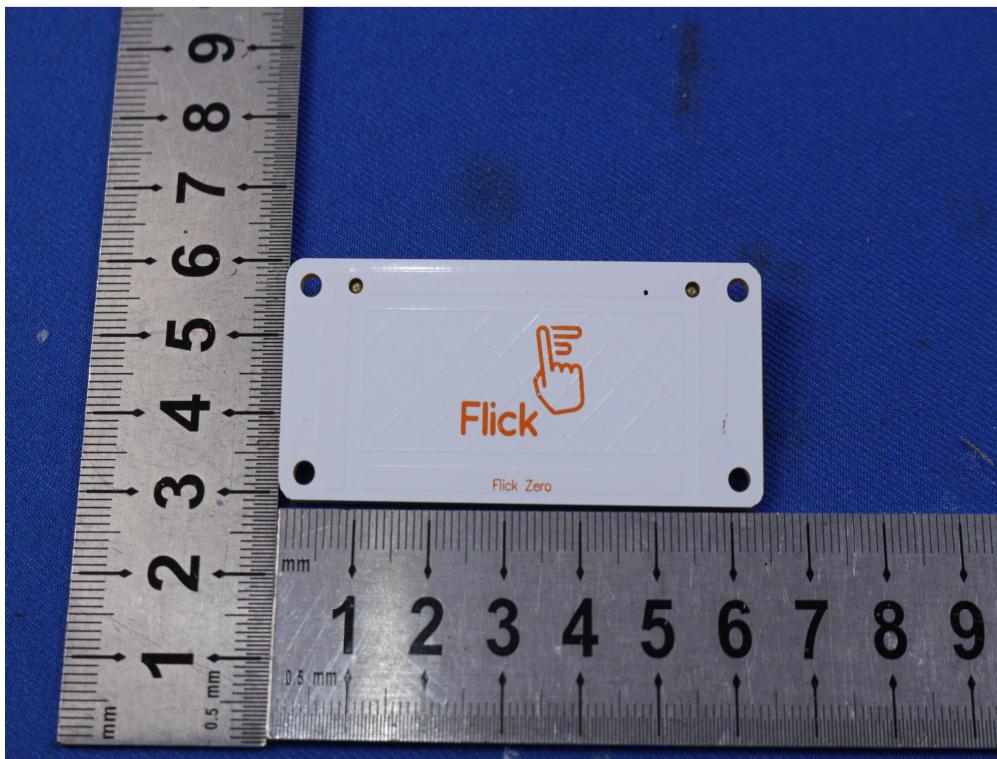
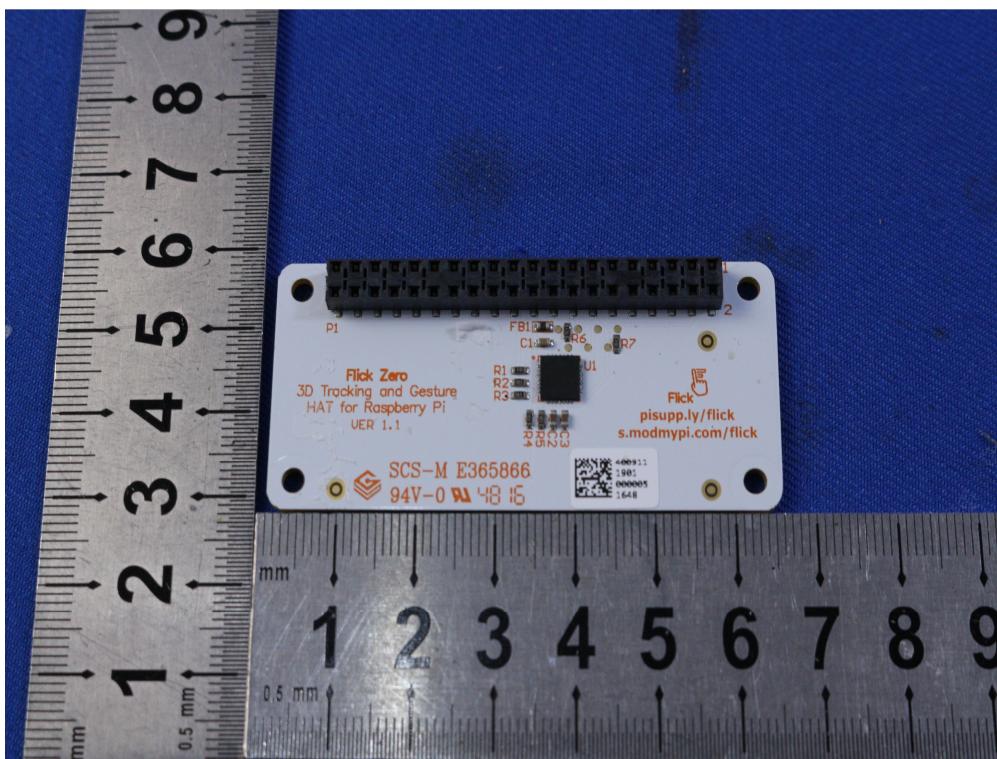
### 7.1 Conducted Emission Test Setup



## 7.2 Radiated Emission Test Setup



### 7.3 EUT Constructional Details



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