

# EMC TEST REPORT

Product Name LED Light

Trade mark /

Model No. B018FXNV00, LM-085B, LM-085E, B00M0K37RG, B00KAWA4TU

FCC ID: 2A42M-B018FXNV00

Report No. CTB220223009RFX

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Date of Receipt 2022-02-15

Date of Test(s) 2022-02-15~ 2022-02-22

Date of Issue 2022-02-23

Test Standard(s) CFR47, FCC Part 15 Subpart B, ANSI C63.4: 2014

Test Result: Pass

In the configuration tested, the EUT complied with the standards specified above.

Compiled by:



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Reviewed by:



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Approved by:



Note: The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report shall not be reproduced except in full, without prior written approval of CTB. This document may be altered or revised by CTB, personnel only, and shall be noted in the revision of the document.

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## 1. Description of version

| Report No.     | Issue Date | Description | Approved |
|----------------|------------|-------------|----------|
| CTB20223009RFX | 2022-02-23 | Original    | Valid    |
|                |            |             |          |

## 2. Test summary

Test procedures according to the technical standards:

| Standard | Test Item          | Test Result |
|----------|--------------------|-------------|
| §15.107  | Conducted Emission | PASS        |
| §15.109  | Radiated Emission  | PASS        |

### 3. Measurement uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard

| Test Item          | Frequency          | Expanded Uncertainty<br>( $U_{Lab}$ ) |
|--------------------|--------------------|---------------------------------------|
| Conducted Emission | 150 kHz to 30 MHz  | $\pm 3.2$ dB                          |
| Radiated Emission  | 30 MHz to 1000 MHz | $\pm 4.8$ dB                          |

uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %

## 4. General information

### 4.1. Description of EUT

|                         |                                                                                                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name            | LED Light                                                                                                                                                 |
| Trade mark              | /                                                                                                                                                         |
| Model No.               | B018FXNV00,                                                                                                                                               |
| Serial No.              | LM-085B, LM-085E, B00M0K37RG, B00KAWA4TU                                                                                                                  |
| Model Difference        | All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: B018FXNV00, |
| max Operating frequency | 24MHz                                                                                                                                                     |
| Normal Testing Voltage  | AC120V/60Hz                                                                                                                                               |
| Configuration           | <input checked="" type="checkbox"/> Table-top <input type="checkbox"/> Floor-standing                                                                     |
| Adapter Information:    | /                                                                                                                                                         |

**Note:** The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

### 4.2. Description of accessory device

| No. | Device Type | Brand | Model | Specification | Note |
|-----|-------------|-------|-------|---------------|------|
| /   | /           | /     | /     | /             | /    |

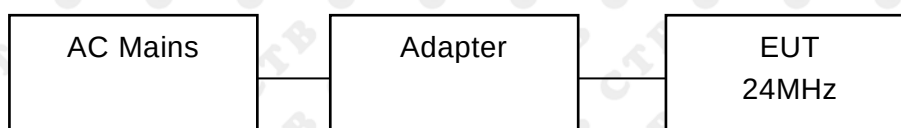
### 4.3. Test conditions

Temperature: 15-25°C

Relative Humidity: 30-60 %

Atmospheric pressure: 800hPa-1060hPa

### 4.4. Block diagram of EUT configuration



#### 4.5. Operating condition of EUT

|                                                                                                                                                                                                             |        |         |              |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------|--------------|---------------|
| Operating condition                                                                                                                                                                                         | Mode 1 | Working | Test Voltage | AC 120V/60Hz* |
| Note: This test covers all possible operating modes of the device, only the worst data are listed in report. The worst data are shown (*) is the nearest standard limit which were recorded in this report. |        |         |              |               |

## 5. List of Test and Measurement Instruments

| Conducted Emission Measurement |                   |               |              |            |                 |                  |
|--------------------------------|-------------------|---------------|--------------|------------|-----------------|------------------|
| No.                            | Equipment         | Manufacturer  | Model No.    | Serial No. | Calibrated date | Calibrated until |
| 1                              | AMN               | ROHDE&SCHWARZ | ESH3-Z5      | 831551852  | 2021.09.27      | 2022.08.05       |
| 2                              | Pulse limiter     | ROHDE&SCHWARZ | ESH3Z2       | 357881052  | 2021.09.27      | 2022.08.05       |
| 3                              | EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCS30       | 834115/006 | 2021.09.27      | 2022.08.05       |
| 4                              | Coaxial cable     | ZDECL         | Z302S        | 18091904   | 2021.09.27      | 2022.08.05       |
| 5                              | AAN               | Schwarzbeck   | NTFM8158     | 6114       | 2021.09.27      | 2022.08.05       |
| 6                              | EZ-EMC            | Frad          | EMC-con3A1.1 | /          | /               | /                |

| Radiated Emission Measurement |                                      |               |                            |            |                 |                  |
|-------------------------------|--------------------------------------|---------------|----------------------------|------------|-----------------|------------------|
| No.                           | Equipment                            | Manufacturer  | Model No.                  | Serial No. | Calibrated date | Calibrated until |
| 1                             | Double Ridged Broadband Horn Antenna | Schwarzbeck   | BBHA 9120D                 | 1911       | 2021.09.27      | 2022.08.07       |
| 2                             | TRILOG Broadband Antenna             | Schwarzbeck   | VULB 9168                  | 869        | 2021.09.27      | 2022.08.07       |
| 3                             | Amplifier                            | Agilent       | 8449B                      | 3008A01838 | 2021.09.27      | 2022.08.05       |
| 4                             | Amplifier                            | HP            | 8447E                      | 2945A02747 | 2021.09.27      | 2022.08.05       |
| 5                             | EMI TEST RECEIVER                    | ROHDE&SCHWARZ | ESPI7                      | 100362     | 2021.09.27      | 2022.08.05       |
| 6                             | Coaxial cable                        | ETS           | RFC-SNS-100<br>-NMS-80 NI  | /          | 2021.09.27      | 2022.08.05       |
| 7                             | Coaxial cable                        | ETS           | RFC-SNS-100<br>-NMS-20 NI  | /          | 2021.09.27      | 2022.08.05       |
| 8                             | Coaxial cable                        | ETS           | RFC-SNS-100<br>-SMS-20 NI  | /          | 2021.09.27      | 2022.08.05       |
| 9                             | Coaxial cable                        | ETS           | RFC-NNS-100<br>-NMS-300 NI | /          | 2021.09.27      | 2022.08.05       |
| 10                            | EZ-EMC                               | Frad          | EMC-con3A1.1<br>1          | /          | /               | /                |

## 6. Conducted Emission

### 6.1. Limit

☒ Except for Class A devices:

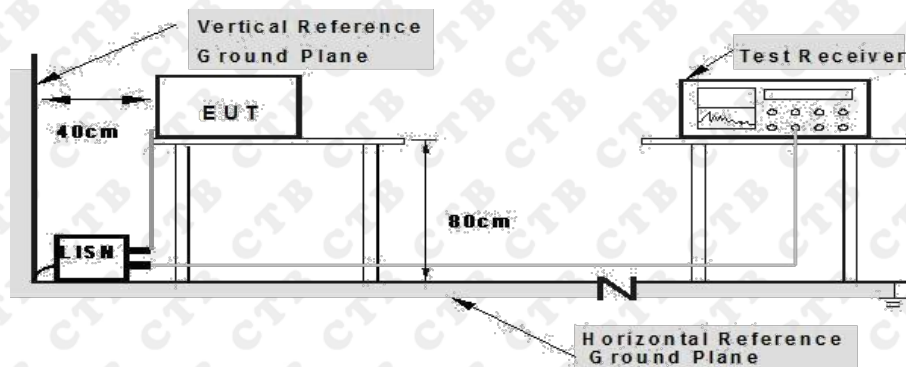
| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15-0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5-5                       | 56                           | 46        |
| 5-30                        | 60                           | 50        |

**Note:** Decreases with the logarithm of the frequency.

☐ For Class A devices:

| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |         |
|-----------------------------|------------------------------|---------|
|                             | Quasi-peak                   | Average |
| 0.15-0.5                    | 79                           | 66      |
| 0.5-30                      | 73                           | 60      |

### 6.2. Test setup



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

The setup of EUT is according with ANSI C63.4 measurement procedure. Specification used with FCC Part 15 limits.

### 6.3. EMI test receiver setup

|                      |                                            |
|----------------------|--------------------------------------------|
| Frequency Range      | 9kHz-30MHz                                 |
| Resolution Bandwidth | 200Hz (9kHz-150kHz)<br>9kHz (150kHz-30MHz) |

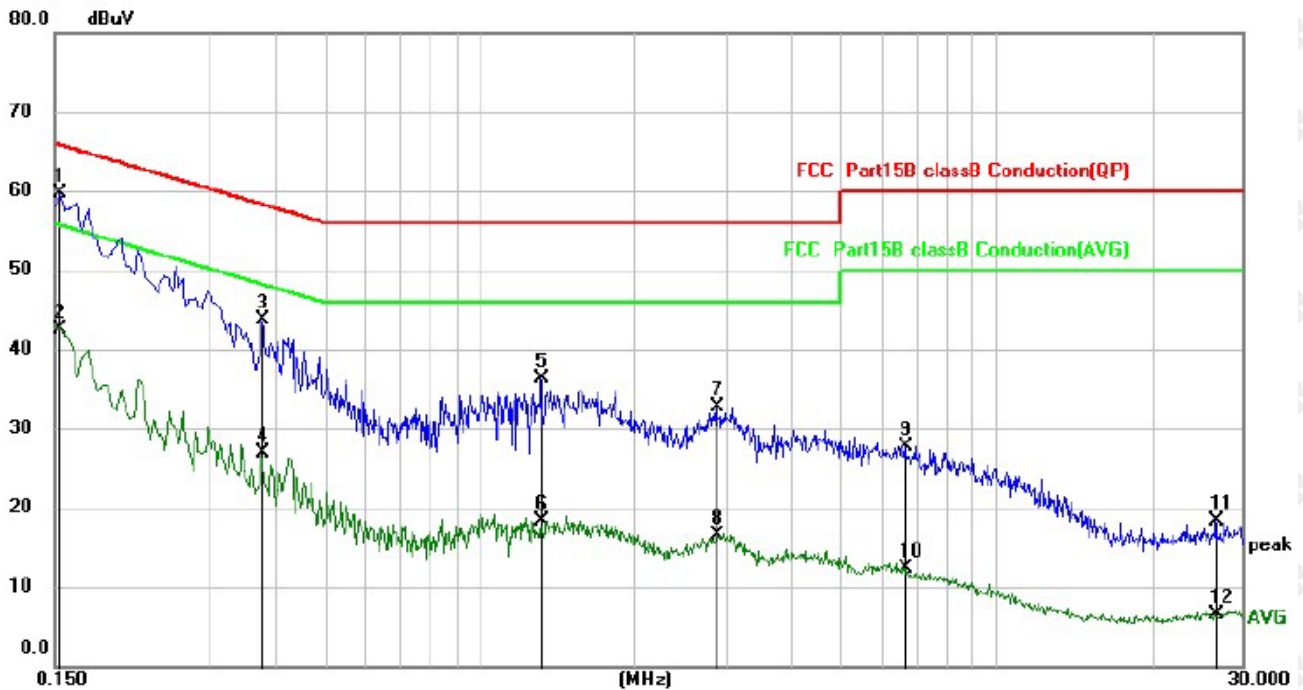
### 6.4. Test procedure

1. Measurement was performed in shielded room, and instruments used were followed clause 4 of ANSI C63.4.
2. Detailed test procedure was following clause 7 of ANSI C63.4.

3. Frequency range 150kHz – 30MHz was checked and EMI receiver measurement bandwidth was set to 9 kHz.

### 6.5. Test results

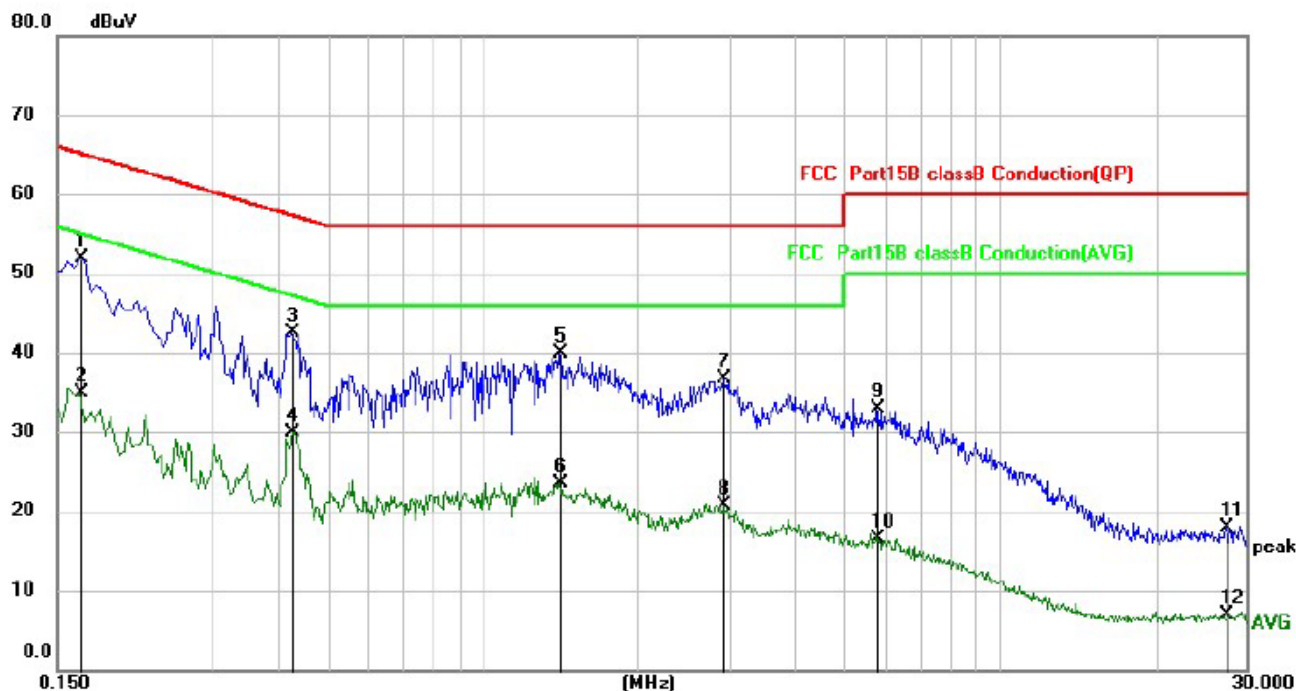
|                |              |                    |        |
|----------------|--------------|--------------------|--------|
| Temperature:   | 24°C         | Relative Humidity: | 54 %   |
| Pressure:      | 101kPa       | Phase :            | Line   |
| Test Voltage : | AC 120V/60Hz | Test Mode:         | Mode 1 |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|
| 1   | *   | 0.1539       | 48.89                    | 10.72                   | 59.61                    | 65.79         | -6.18        | QP       |
| 2   |     | 0.1539       | 31.70                    | 10.72                   | 42.42                    | 55.79         | -13.37       | AVG      |
| 3   |     | 0.3780       | 33.12                    | 10.59                   | 43.71                    | 58.32         | -14.61       | QP       |
| 4   |     | 0.3780       | 16.34                    | 10.59                   | 26.93                    | 48.32         | -21.39       | AVG      |
| 5   |     | 1.3140       | 25.68                    | 10.62                   | 36.30                    | 56.00         | -19.70       | QP       |
| 6   |     | 1.3140       | 7.68                     | 10.62                   | 18.30                    | 46.00         | -27.70       | AVG      |
| 7   |     | 2.8820       | 22.14                    | 10.63                   | 32.77                    | 56.00         | -23.23       | QP       |
| 8   |     | 2.8820       | 5.82                     | 10.63                   | 16.45                    | 46.00         | -29.55       | AVG      |
| 9   |     | 6.6660       | 17.03                    | 10.71                   | 27.74                    | 60.00         | -32.26       | QP       |
| 10  |     | 6.6660       | 1.58                     | 10.71                   | 12.29                    | 50.00         | -37.71       | AVG      |
| 11  |     | 26.5740      | 7.30                     | 11.02                   | 18.32                    | 60.00         | -41.68       | QP       |
| 12  |     | 26.5740      | -4.46                    | 11.02                   | 6.56                     | 50.00         | -43.44       | AVG      |

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

|                |              |                    |         |
|----------------|--------------|--------------------|---------|
| Temperature:   | 24°C         | Relative Humidity: | 54 %    |
| Pressure:      | 101kPa       | Phase :            | Neutral |
| Test Voltage : | AC 120V/60Hz | Test Mode:         | Mode 1  |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|
| 1   | *   | 0.1660       | 41.12                    | 10.71                   | 51.83                    | 65.16         | -13.33       | QP       |
| 2   |     | 0.1660       | 24.12                    | 10.71                   | 34.83                    | 55.16         | -20.33       | AVG      |
| 3   |     | 0.4260       | 31.86                    | 10.56                   | 42.42                    | 57.33         | -14.91       | QP       |
| 4   |     | 0.4260       | 19.38                    | 10.56                   | 29.94                    | 47.33         | -17.39       | AVG      |
| 5   |     | 1.4100       | 29.31                    | 10.62                   | 39.93                    | 56.00         | -16.07       | QP       |
| 6   |     | 1.4100       | 12.95                    | 10.62                   | 23.57                    | 46.00         | -22.43       | AVG      |
| 7   |     | 2.9300       | 26.10                    | 10.63                   | 36.73                    | 56.00         | -19.27       | QP       |
| 8   |     | 2.9300       | 10.01                    | 10.63                   | 20.64                    | 46.00         | -25.36       | AVG      |
| 9   |     | 5.7940       | 22.19                    | 10.68                   | 32.87                    | 60.00         | -27.13       | QP       |
| 10  |     | 5.7940       | 5.73                     | 10.68                   | 16.41                    | 50.00         | -33.59       | AVG      |
| 11  |     | 27.3340      | 6.98                     | 11.02                   | 18.00                    | 60.00         | -42.00       | QP       |
| 12  |     | 27.3340      | -4.18                    | 11.02                   | 6.84                     | 50.00         | -43.16       | AVG      |

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

## 7. Radiated emissions

### 7.1.Limit

☒ Except for Class A devices (at 3m):

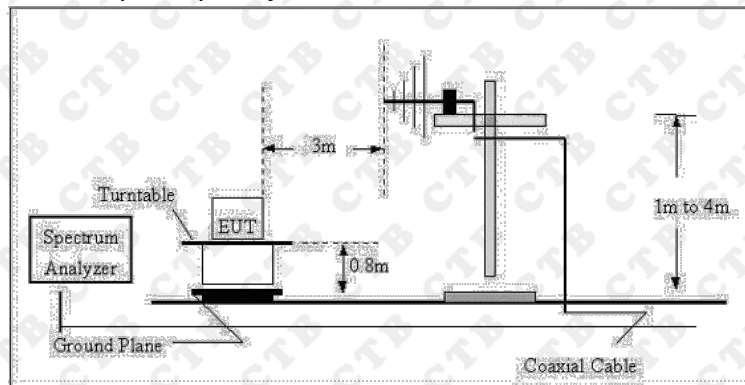
| Frequency of emission<br>(MHz) | Field strength (microvolts/meter) |                |
|--------------------------------|-----------------------------------|----------------|
|                                | (microvolts/meter)                | (dB $\mu$ V/m) |
| 30-88                          | 100                               | 40             |
| 88-216                         | 150                               | 43.5           |
| 216-960                        | 200                               | 46             |
| Above 960                      | 500                               | 54             |

☐ For Class A devices (at 10m):

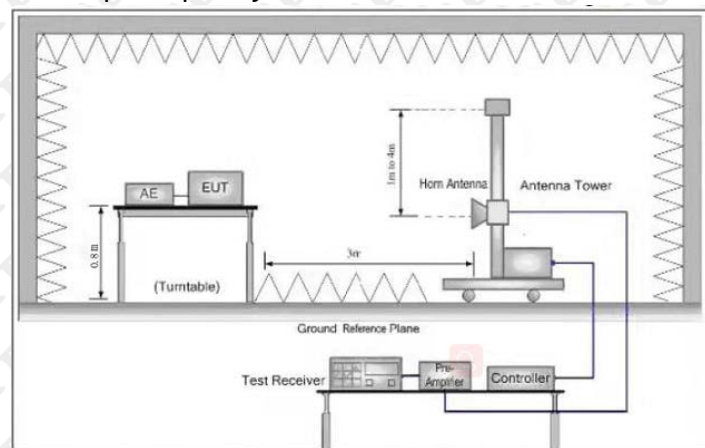
| Frequency of emission<br>(MHz) | Field strength (microvolts/meter) |                |
|--------------------------------|-----------------------------------|----------------|
|                                | (microvolts/meter)                | (dB $\mu$ V/m) |
| 30-88                          | 90                                | 39             |
| 88-216                         | 150                               | 43.5           |
| 216-960                        | 210                               | 46.4           |
| Above 960                      | 300                               | 49.5           |

### 7.2. Test setup

Radiated Emission Test Set-Up Frequency Below 1 GHz



Radiated Emission Test Set-Up Frequency Above 1GHz



The radiated tests were performed in 3 meter Chamber test site, using the setup accordance with the ANSI C63.4:2014.

### 7.3.EMI test receiver setup and spectrum analyzer setup

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

| Frequency Range | RBW    | Video B/W | IF B/W | Detector |
|-----------------|--------|-----------|--------|----------|
| 30MHz-1000MHz   | 100kHz | 300kHz    | 120kHz | QP       |
| Above 1GHz      | 1MHz   | 3MHz      | /      | PK       |
|                 | 1MHz   | 10Hz      | /      | AVG      |

### 7.4.Test procedure

1. The measurement was performed in a semi-anechoic chamber, and instruments used were followed clause 4 of ANSI C63.4
2. Detailed test procedure was following clause 8 of ANSI C63.4.

### 7.5.Corrected Amplitude & Margin Calculation

1. The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

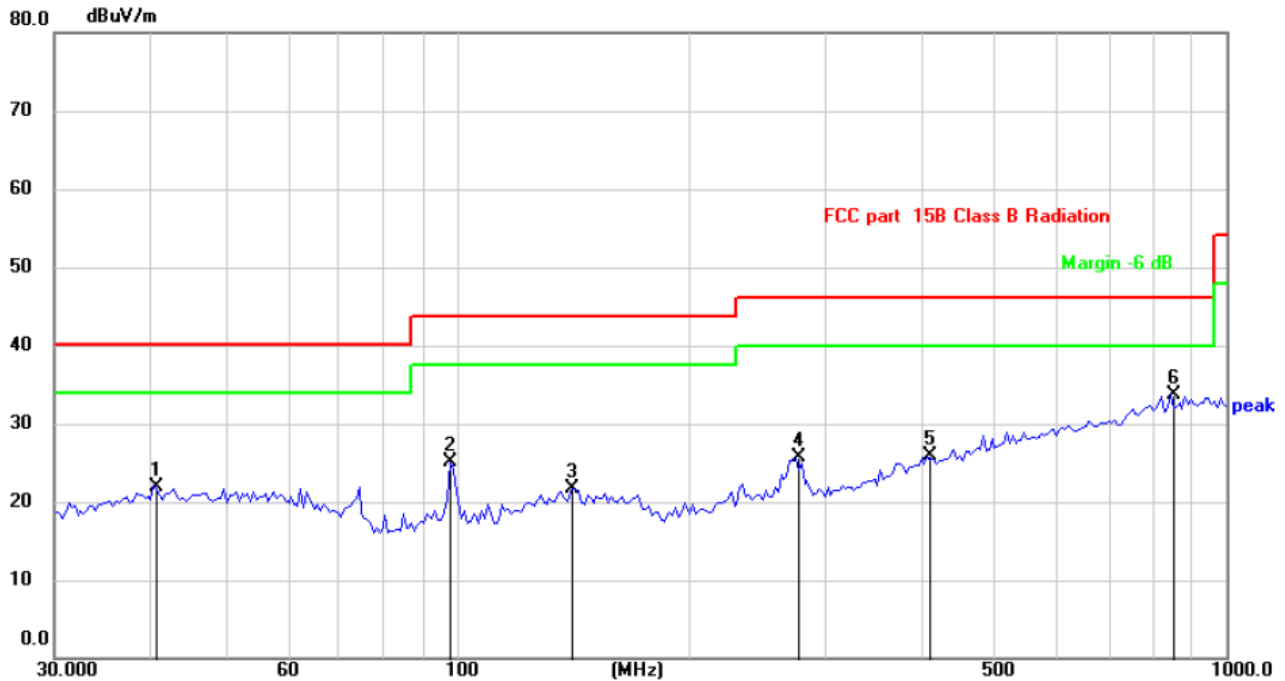
2. The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## 7.6. Test results

### Up to 1GHz:

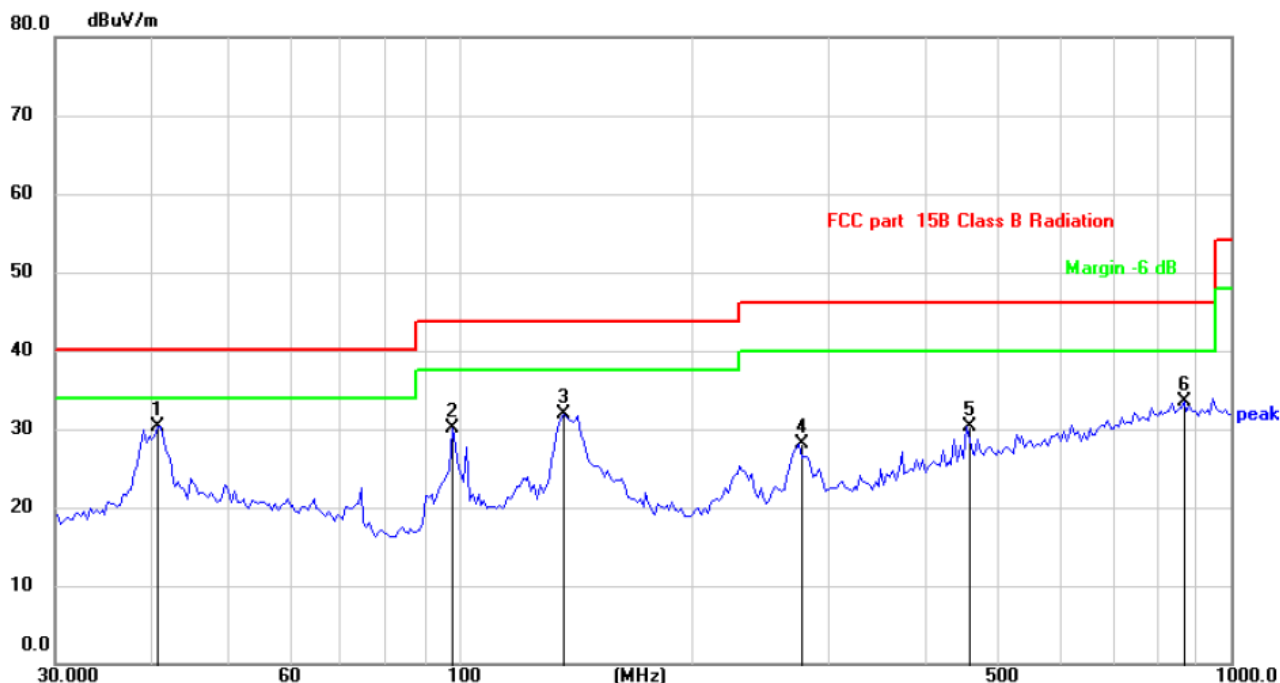
|                |              |                    |            |
|----------------|--------------|--------------------|------------|
| Temperature:   | 24°C         | Relative Humidity: | 54 %       |
| Pressure:      | 101kPa       | Polarization :     | Horizontal |
| Test Voltage : | AC 120V/60Hz | Test Mode:         | Mode 1     |



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over   |          |
|-----|-----|----------|---------------|----------------|-------------|-------|--------|----------|
|     |     | MHz      | dBuV          | dB             | dBuV/m      | dB/m  | dB     | Detector |
| 1   |     | 40.4172  | 27.29         | -5.29          | 22.00       | 40.00 | -18.00 | QP       |
| 2   |     | 97.9699  | 34.02         | -8.86          | 25.16       | 43.50 | -18.34 | QP       |
| 3   |     | 141.5777 | 27.22         | -5.45          | 21.77       | 43.50 | -21.73 | QP       |
| 4   |     | 275.6399 | 31.23         | -5.45          | 25.78       | 46.00 | -20.22 | QP       |
| 5   |     | 408.9460 | 27.44         | -1.47          | 25.97       | 46.00 | -20.03 | QP       |
| 6   | *   | 846.5708 | 27.55         | 6.11           | 33.66       | 46.00 | -12.34 | QP       |

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

|                |              |                    |          |
|----------------|--------------|--------------------|----------|
| Temperature:   | 24°C         | Relative Humidity: | 54 %     |
| Pressure:      | 101kPa       | Polarization :     | Vertical |
| Test Voltage : | AC 120V/60Hz | Test Mode:         | Mode 1   |



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measure-ment | Limit | Over   |          |
|-----|-----|----------|---------------|----------------|--------------|-------|--------|----------|
|     |     | MHz      | dBuV          | dB             | dBuV/m       | dB/m  | dB     | Detector |
| 1   | *   | 40.7730  | 35.65         | -5.30          | 30.35        | 40.00 | -9.65  | QP       |
| 2   |     | 97.9699  | 38.95         | -8.86          | 30.09        | 43.50 | -13.41 | QP       |
| 3   |     | 136.6993 | 37.65         | -5.67          | 31.98        | 43.50 | -11.52 | QP       |
| 4   |     | 275.6399 | 33.49         | -5.45          | 28.04        | 46.00 | -17.96 | QP       |
| 5   |     | 454.3100 | 30.76         | -0.38          | 30.38        | 46.00 | -15.62 | QP       |
| 6   |     | 869.1302 | 27.36         | 6.15           | 33.51        | 46.00 | -12.49 | QP       |

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

## 8. Photographs of test setup

### Radiated Emission



### Conducted Emission



## 9. Photographs of EUT

EUT photo 1



EUT photo 2



EUT photo 3



\*\*\*End of report\*\*\*