

FCC TEST REPORT  
for  
Neo-Neon (Viet Nam) Development Co., Ltd

LED Low Voltage Outfit

Model No. : FCB-XM-3D-PG0104-CW-Z, FCB-XM-3D-PG0104-MU-Z

FCC ID: 2AWEL-VN002

Prepared for : Neo-Neon (Viet Nam) Development Co., Ltd  
Address : GIA LE INDUSTRIAL ZONE, DONG XUAN COMMUNAL,  
DONG HUNG DISTRICT, THAI BINH PROVINCE,  
VIETNAM

Prepared by : Shenzhen Accurate Technology Co., Ltd.  
Address : 1/F., Building A, Changyuan New Material Port, Science &  
Industry Park, Nanshan District, Shenzhen, Guangdong,  
P.R. China.

Tel: +86-755-26503290  
Fax: +86-755-26503396

Report No. : ATE20200506  
Date of Test : May 16, 2020  
Date of Report : May 22, 2020

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## Test Report Certification

Applicant : Neo-Neon (Viet Nam) Development Co., Ltd  
Address : GIA LE INDUSTRIAL ZONE, DONG XUAN COMMUNAL,  
DONG HUNG DISTRICT, THAI BINH PROVINCE, VIETNAM  
Manufacturer : Neo-Neon (Viet Nam) Development Co., Ltd  
Address : GIA LE INDUSTRIAL ZONE, DONG XUAN COMMUNAL,  
DONG HUNG DISTRICT, THAI BINH PROVINCE, VIETNAM  
Product : LED Low Voltage Outfit  
Model No. : FCB-XM-3D-PG0104-CW-Z, FCB-XM-3D-PG0104-MU-Z  
Trade name : N/A

Measurement Procedure Used:

### **FCC Rules and Regulations Part 15 Subpart B Class B ANSI C63.4: 2014**

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. 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 Accurate Technology Co., Ltd. Is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : May 16, 2020

Date of Report : May 22, 2020

Prepared by :

(Tina Zhang, Engineer)

Approve & Authorized Signer :

(Martin Lü, Manager)

## 1. TEST RESULTS SUMMARY

| Test Items                    | Test Standard         | Test Results |
|-------------------------------|-----------------------|--------------|
| Power Line Conducted Emission | FCC Part 15 Subpart B | Pass         |
| Radiated Emission             | FCC Part 15 Subpart B | Pass         |

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

|                         |   |                                                                                                                                                                                |
|-------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                 | : | LED Low Voltage Outfit                                                                                                                                                         |
| Model No.               | : | FCB-XM-3D-PG0104-CW-Z,<br>FCB-XM-3D-PG0104-MU-Z<br>(Note: FCB-XM-3D-PG0104-CW-Z is the main test model. Please refer to chapter 2.3 for the specific difference of the model.) |
| Rating                  | : | AC 100-240V, 50/60Hz                                                                                                                                                           |
| Trade Mark              | : | n.a.                                                                                                                                                                           |
| Remark(s)               | : | The EUT highest operating frequency provided by Manufacturer is less than 108MHz, the radiated emission measurement shall be made up to 1GHz.                                  |
| Applicant Address       | : | Neo-Neon (Viet Nam) Development Co., Ltd<br>GIA LE INDUSTRIAL ZONE, DONG XUAN COMMUNAL, DONG HUNG DISTRICT, THAI BINH PROVINCE, VIETNAM                                        |
| Manufacturer Address    | : | Neo-Neon (Viet Nam) Development Co., Ltd<br>GIA LE INDUSTRIAL ZONE, DONG XUAN COMMUNAL, DONG HUNG DISTRICT, THAI BINH PROVINCE, VIETNAM                                        |
| Date of sample received | : | May 12, 2020                                                                                                                                                                   |
| Date of Test            | : | May 16, 2020                                                                                                                                                                   |
| Sample Number           | : | 2000453                                                                                                                                                                        |

### 2.2. Accessory and Auxiliary Equipment

n.a.

### 2.3. Model difference declaration

FCB-XM-3D-PG0104-CW-Z, FCB-XM-3D-PG0104-MU-Z are identical in interior structure, electrical circuits and components, except for the model name and appearance.

Note: "Z" represents color of LED: -R, -Y, -A, -G, -B, -O, -PI, -PP, -W, -WW, CW, -GO, -M, or blank (Blank for conventional model). "W" for white, "WW" for warm white, "CW" for cold white, "GO" for golden, "G" for green, "B" for blue, "O" for orange, "R" for red, "Y" for yellow, "A" for amber, "PI" for pink, "PP" for purple, "M" for multi-color.

## 2.4. Description of Test Facility

- EMC Lab : Recognition of accreditation by Federal Communications Commission (FCC)  
The Designation Number is CN1189  
The Registration Number is 708358
- Listed by Innovation, Science and Economic Development Canada (ISED)  
The Registration Number is 5077A-2
- Accredited by China National Accreditation Service for Conformity Assessment (CNAS)  
The Registration Number is CNAS L3193
- Accredited by American Association for Laboratory Accreditation (A2LA)  
The Certificate Number is 4297.01
- Name of Firm : Shenzhen Accurate Technology Co., Ltd.
- Site Location : 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

## 2.5. Measurement Uncertainty

- Radiated emission expanded uncertainty (9kHz-30MHz) : U=2.66dB, k=2
- Radiated emission expanded uncertainty (30MHz-1000MHz) : U=4.28dB, k=2
- Radiated emission expanded uncertainty (1G-18GHz) : U=4.98dB, k=2
- Radiated emission expanded uncertainty (18G-26.5GHz) : U=5.06dB, k=2
- Conduction Emission Expanded Uncertainty (Mains ports, 9kHz-30MHz) : U=2.72dB, k=2
- Conduction Emission Expanded Uncertainty (Telecommunication ports, 150kHz-30MHz) : U=2.94dB, k=2

### 3. MEASURING DEVICE AND TEST EQUIPMENT

#### 3.1. The Equipment Used to Conducted Emission Measurement

| Item                                          | Equipment                              | Manufacturer    | Model No. | Serial No. | Last Cal.   | Cal. Interval |
|-----------------------------------------------|----------------------------------------|-----------------|-----------|------------|-------------|---------------|
| 1.                                            | Test Receiver                          | Rohde & Schwarz | ESCS30    | 100307     | Jan.4, 2020 | 1 Year        |
| 2.                                            | Test Receiver                          | Rohde & Schwarz | ESPI      | 100396/003 | Jan.4, 2020 | 1 Year        |
| 3.                                            | Test Receiver                          | Rohde & Schwarz | ESPI      | 101526/003 | Jan.4, 2020 | 1 Year        |
| 4.                                            | Test Receiver                          | Rohde & Schwarz | ESR       | 101817     | Jan.4, 2020 | 1 Year        |
| 5.                                            | L.I.S.N.                               | Schwarzbeck     | NLSK8126  | 8126431    | Jan.4, 2020 | 1 Year        |
| 6.                                            | L.I.S.N.                               | Rohde & Schwarz | ESH3-Z5   | 100305     | Jan.4, 2020 | 1 Year        |
| 7.                                            | L.I.S.N.                               | Rohde & Schwarz | ESH3-Z5   | 100310     | Jan.4, 2020 | 1 Year        |
| 8.                                            | L.I.S.N.                               | Rohde & Schwarz | ESH3-Z6   | 100132     | Jan.4, 2020 | 1 Year        |
| 9.                                            | L.I.S.N.                               | Rohde & Schwarz | ESH3-Z6   | 100979     | Jan.4, 2020 | 1 Year        |
| 10.                                           | Pulse Limiter                          | Rohde & Schwarz | ESH3-Z2   | 100305     | Jan.4, 2020 | 1 Year        |
| 11.                                           | Pulse Limiter                          | Rohde & Schwarz | ESH3-Z2   | 100312     | Jan.4, 2020 | 1 Year        |
| 12.                                           | Pulse Limiter                          | Rohde & Schwarz | ESH3-Z2   | 100815     | Jan.4, 2020 | 1 Year        |
| 13.                                           | 50Ω Coaxial Switch                     | Anritsu Corp    | MP59B     | 6200283936 | Jan.4, 2020 | 1 Year        |
| 14.                                           | 50Ω Coaxial Switch                     | Anritsu Corp    | MP59B     | 6200283933 | Jan.4, 2020 | 1 Year        |
| 15.                                           | 50Ω Coaxial Switch                     | Anritsu Corp    | MP59B     | 6200506474 | Jan.4, 2020 | 1 Year        |
| 16.                                           | VOLTAGE PROBE                          | Schwarzbeck     | TK9416    | N/A        | Jan.4, 2020 | 1 Year        |
| 17.                                           | RF CURRENT PROBE                       | Rohde & Schwarz | EZ-17     | 100048     | Jan.4, 2020 | 1 Year        |
| 18.                                           | 8-Wire Impedance Stabilisation Network | Schwarzbeck     | CAT5 8158 | 8158-0035  | Jan.4, 2020 | 1 Year        |
| 19.                                           | RF Coaxial Cable                       | SUHNER          | N-2m      | No.2       | Jan.4, 2020 | 1 Year        |
| 20.                                           | RF Coaxial Cable                       | SUHNER          | N-2m      | No.3       | Jan.4, 2020 | 1 Year        |
| 21.                                           | RF Coaxial Cable                       | SUHNER          | N-2m      | No.14      | Jan.4, 2020 | 1 Year        |
| Conducted Emission Test Software: ES-K1 V1.71 |                                        |                 |           |            |             |               |

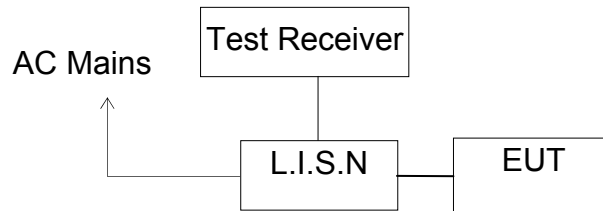
### 3.2. The Equipment Used to Radiated Emission Measurement

| Item | Equipment                                        | Manufacturer         | Model No.                | Serial No. | Last Cal.   | Cal. Interval |
|------|--------------------------------------------------|----------------------|--------------------------|------------|-------------|---------------|
| 1.   | Spectrum Analyzer                                | Agilent              | E7405A                   | MY45115511 | Jan.4, 2020 | 1 Year        |
| 2.   | Spectrum Analyzer                                | Rohde&Schwarz        | FSV40                    | 101495     | Jan.4, 2020 | 1 Year        |
| 3.   | Test Receiver                                    | Rohde&Schwarz        | ESCS30                   | 100307     | Jan.4, 2020 | 1 Year        |
| 4.   | Test Receiver                                    | Rohde& Schwarz       | ESPI                     | 100396/003 | Jan.4, 2020 | 1 Year        |
| 5.   | Test Receiver                                    | Rohde& Schwarz       | ESPI                     | 101526/003 | Jan.4, 2020 | 1 Year        |
| 6.   | Test Receiver                                    | Rohde& Schwarz       | ESR                      | 101817     | Jan.4, 2020 | 1 Year        |
| 7.   | Bilog Antenna                                    | Schwarzbeck          | VULB9163                 | 9163-194   | Jan.4, 2020 | 1 Year        |
| 8.   | Bilog Antenna                                    | Schwarzbeck          | VULB9163                 | 9163-323   | Jan.4, 2020 | 1 Year        |
| 9.   | Log.-Per.Antenna                                 | Schwarzbeck          | VUSLP<br>9111B           | 9111B-074  | Jan.4, 2020 | 1 Year        |
| 10.  | Biconical Broad Band Antenna                     | Schwarzbeck          | VHBB<br>9124+BBA<br>9106 | 9124-617   | Jan.4, 2020 | 1 Year        |
| 11.  | Loop Antenna                                     | Schwarzbeck          | FMZB1516                 | 1516131    | Jan.4, 2020 | 1 Year        |
| 12.  | Horn Antenna                                     | Schwarzbeck          | BBHA9120D                | 9120D-655  | Jan.4, 2020 | 1 Year        |
| 13.  | Horn Antenna                                     | Schwarzbeck          | BBHA9120D                | 9120D-1067 | Jan.4, 2020 | 1 Year        |
| 14.  | Vertical Active Monopole Antenna                 | Schwarzbeck          | VAMP 9243                | 9243-370   | Jan.4, 2020 | 1 Year        |
| 15.  | Pre-Amplifier                                    | Compliance Direction | RSU-M2                   | 38322      | Jan.4, 2020 | 1 Year        |
| 16.  | Pre-Amplifier                                    | Agilent              | 8447D                    | 294A10619  | Jan.4, 2020 | 1 Year        |
| 17.  | Pre-Amplifier                                    | Rohde&Schwarz        | CBLU11835<br>40-01       | 3791       | Jan.4, 2020 | 1 Year        |
| 18.  | Pre-Amplifier                                    | A.H. System          | PAM-0118                 | 135        | Jan.4, 2020 | 1 Year        |
| 19.  | 50 Coaxial Switch                                | Anritsu Corp         | MP59B                    | 6200237248 | Jan.4, 2020 | 1 Year        |
| 20.  | 50 Coaxial Switch                                | Anritsu Corp         | MP59B                    | 6200506474 | Jan.4, 2020 | 1 Year        |
| 21.  | RF Coaxial Cable                                 | Schwarzbeck          | N-5m                     | No.1       | Jan.4, 2020 | 1 Year        |
| 22.  | RF Coaxial Cable                                 | Schwarzbeck          | N-1m                     | No.6       | Jan.4, 2020 | 1 Year        |
| 23.  | RF Coaxial Cable                                 | Schwarzbeck          | N-1m                     | No.7       | Jan.4, 2020 | 1 Year        |
| 24.  | RF Coaxial Cable                                 | SUHNER               | N-3m                     | No.8       | Jan.4, 2020 | 1 Year        |
| 25.  | RF Coaxial Cable                                 | RESENBERGER          | N-3.5m                   | No.9       | Jan.4, 2020 | 1 Year        |
| 26.  | RF Coaxial Cable                                 | SUHNER               | N-6m                     | No.10      | Jan.4, 2020 | 1 Year        |
| 27.  | RF Coaxial Cable                                 | RESENBERGER          | N-12m                    | No.11      | Jan.4, 2020 | 1 Year        |
| 28.  | RF Coaxial Cable                                 | RESENBERGER          | N-0.5m                   | No.12      | Jan.4, 2020 | 1 Year        |
| 29.  | RF Coaxial Cable                                 | SUHNER               | N-2m                     | No.13      | Jan.4, 2020 | 1 Year        |
| 30.  | RF Coaxial Cable                                 | SUHNER               | N-0.5m                   | No.15      | Jan.4, 2020 | 1 Year        |
| 31.  | RF Coaxial Cable                                 | SUHNER               | N-2m                     | No.16      | Jan.4, 2020 | 1 Year        |
| 32.  | RF Coaxial Cable                                 | RESENBERGER          | N-6m                     | No.17      | Jan.4, 2020 | 1 Year        |
| 33.  | Radiated Emission Test Software: EZ EMC V1.1.4.2 |                      |                          |            |             |               |

## 4. AC POWER LINE CONDUCTED EMISSION MEASUREMENT

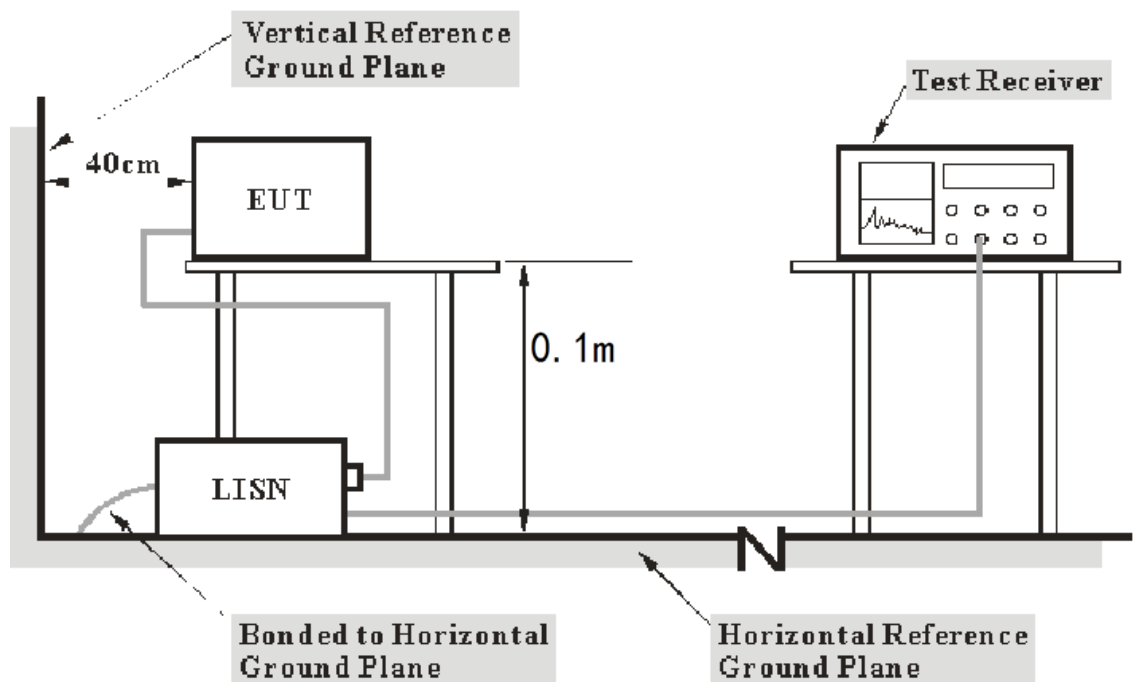
### 4.1. Block Diagram of Test Setup

#### 4.1.1. Block diagram of connection between the EUT and simulators



(EUT: LED Low Voltage Outfit)

#### 4.1.2. Test System 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.

## 4.2.AC Power Line Conducted Emission Limits (Class B)

| Frequency<br>(MHz)                                                                                       | Limit dB( $\mu$ V) |               |
|----------------------------------------------------------------------------------------------------------|--------------------|---------------|
|                                                                                                          | Quasi-peak Level   | Average Level |
| 0.15 - 0.50                                                                                              | 66.0 – 56.0 *      | 56.0 – 46.0 * |
| 0.50 - 5.00                                                                                              | 56.0               | 46.0          |
| 5.00 - 30.00                                                                                             | 60.0               | 50.0          |
| NOTE1: The lower limit shall apply at the transition frequencies.                                        |                    |               |
| NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz. |                    |               |

## 4.3.Test mode description

Test mode: ON

## 4.4.Manufacturer

The 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

### 4.4.1.LED Low Voltage Outfit (EUT)

Model Number : FCB-XM-3D-PG0104-CW-Z

Manufacturer : Neo-Neon (Viet Nam) Development Co., Ltd

## 4.5.Operating Condition of EUT

4.5.1.Setup the EUT and simulator as shown as Section 4.1.

4.5.2.Turn on the power of all equipment.

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

## 4.6.Test Procedure

The EUT is put on the plane 0.1m high above the ground by insulating support and 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 lines 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 ANSI C63.4: 2014 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9kHz.

## 4.7.Data Sample

| Frequency (MHz) | Transducer value (dB) | QuasiPeak Level (dB $\mu$ V) | Average Level (dB $\mu$ V) | QuasiPeak Limit (dB $\mu$ V) | Average Limit (dB $\mu$ V) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) |
|-----------------|-----------------------|------------------------------|----------------------------|------------------------------|----------------------------|-----------------------|---------------------|--------------------|
| X.XX            | 10.6                  | 25.3                         | 17.0                       | 59.0                         | 49.0                       | 33.7                  | 32.0                | Pass               |

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dB $\mu$ V) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dB $\mu$ V) = Limit stated in standard

Calculation Formula:

Margin = Limit (dB $\mu$ V) - Level (dB $\mu$ V)

## 4.8.Measurement Results

**Pass.**

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

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

Emissions attenuated more than 20 dB below the permissible value are not reported.

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

The spectral diagrams are attached as below.

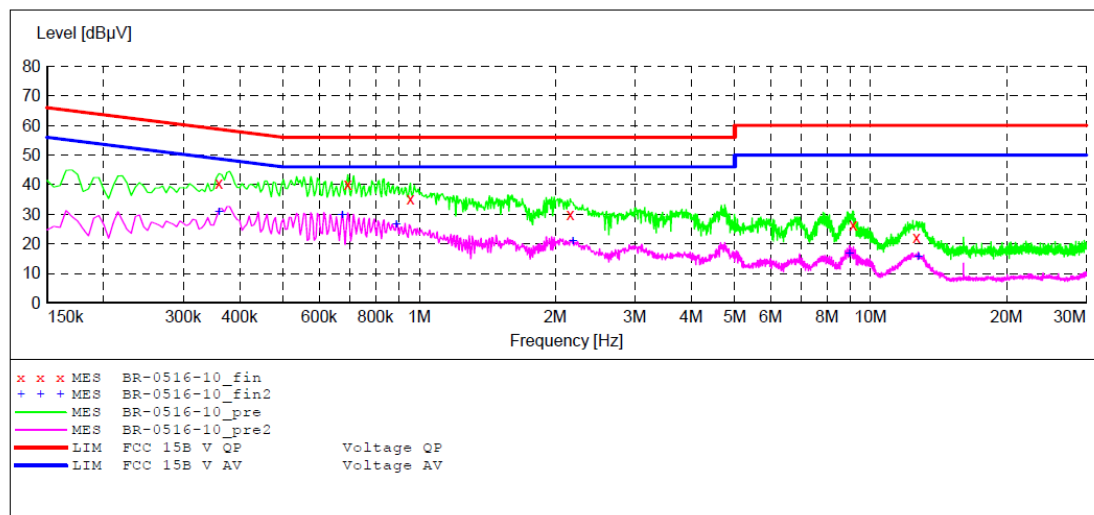
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: LED Low Voltage Outfit M/N:FCB-XM-3D-PG0104-CW-Z  
 Manufacturer: Neo-Neon (Viet Nam) Development Co., Ltd.  
 Operating Condition: ON  
 Test Site: 1#Shielding Room  
 Operator: Ben  
 Test Specification: N 120V/60Hz  
 Comment: Report No.:ATE20200506  
 Start of Test: 5/16/2020 / 10:52:10AM

### SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008  
 Average  
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



### MEASUREMENT RESULT: "BR-0516-10\_fin"

5/16/2020 10:55AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.360000         | 40.60         | 10.6         | 59            | 18.1         | QP       | N    | GND |
| 0.695000         | 40.10         | 10.8         | 56            | 15.9         | QP       | N    | GND |
| 0.955000         | 35.10         | 10.8         | 56            | 20.9         | QP       | N    | GND |
| 2.160000         | 30.00         | 11.0         | 56            | 26.0         | QP       | N    | GND |
| 9.130000         | 26.30         | 11.3         | 60            | 33.7         | QP       | N    | GND |
| 12.625000        | 22.30         | 11.3         | 60            | 37.7         | QP       | N    | GND |

### MEASUREMENT RESULT: "BR-0516-10\_fin2"

5/16/2020 10:55AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.360000         | 31.00         | 10.6         | 49            | 17.7         | AV       | N    | GND |
| 0.675000         | 29.90         | 10.8         | 46            | 16.1         | AV       | N    | GND |
| 0.890000         | 26.80         | 10.8         | 46            | 19.2         | AV       | N    | GND |
| 2.190000         | 20.90         | 11.0         | 46            | 25.1         | AV       | N    | GND |
| 8.980000         | 16.90         | 11.3         | 50            | 33.1         | AV       | N    | GND |
| 12.760000        | 15.60         | 11.3         | 50            | 34.4         | AV       | N    | GND |

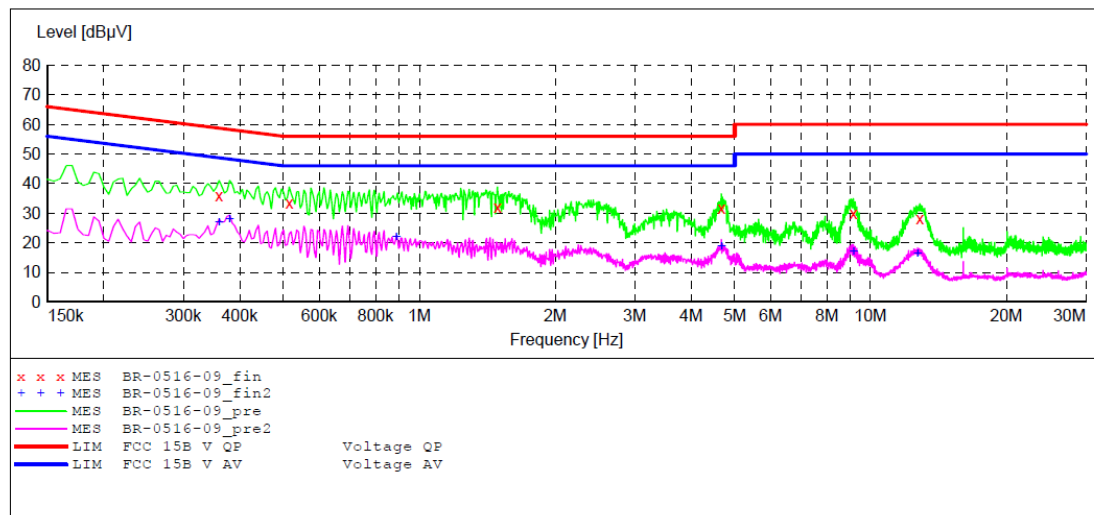
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: LED Low Voltage Outfit M/N:FCB-XM-3D-PG0104-CW-Z  
 Manufacturer: Neo-Neon (Viet Nam) Development Co., Ltd.  
 Operating Condition: ON  
 Test Site: 1#Shielding Room  
 Operator: Ben  
 Test Specification: L 120V/60Hz  
 Comment: Report No.:ATE20200506  
 Start of Test: 5/16/2020 / 10:48:27AM

### SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008  
 Average  
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



### MEASUREMENT RESULT: "BR-0516-09\_fin"

5/16/2020 10:51AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.360000         | 35.80         | 10.6         | 59            | 22.9         | QP       | L1   | GND |
| 0.515000         | 33.40         | 10.7         | 56            | 22.6         | QP       | L1   | GND |
| 1.490000         | 31.90         | 10.9         | 56            | 24.1         | QP       | L1   | GND |
| 4.670000         | 31.50         | 11.1         | 56            | 24.5         | QP       | L1   | GND |
| 9.160000         | 29.90         | 11.3         | 60            | 30.1         | QP       | L1   | GND |
| 12.865000        | 28.30         | 11.3         | 60            | 31.7         | QP       | L1   | GND |

### MEASUREMENT RESULT: "BR-0516-09\_fin2"

5/16/2020 10:51AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.360000         | 27.10         | 10.6         | 49            | 21.6         | AV       | L1   | GND |
| 0.380000         | 28.30         | 10.7         | 48            | 20.0         | AV       | L1   | GND |
| 0.890000         | 22.00         | 10.8         | 46            | 24.0         | AV       | L1   | GND |
| 4.670000         | 18.80         | 11.1         | 46            | 27.2         | AV       | L1   | GND |
| 9.160000         | 17.30         | 11.3         | 50            | 32.7         | AV       | L1   | GND |
| 12.715000        | 16.60         | 11.3         | 50            | 33.4         | AV       | L1   | GND |

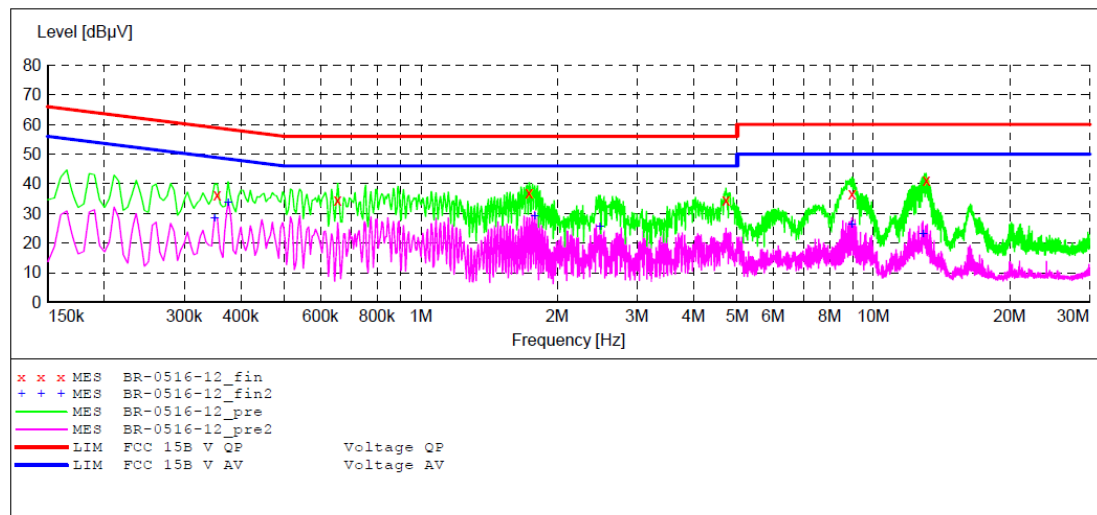
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: LED Low Voltage Outfit M/N:FCB-XM-3D-PG0104-CW-Z  
 Manufacturer: Neo-Neon (Viet Nam) Development Co., Ltd.  
 Operating Condition: ON  
 Test Site: 1#Shielding Room  
 Operator: Ben  
 Test Specification: L 240V/60Hz  
 Comment: Report No.:ATE20200506  
 Start of Test: 5/16/2020 / 11:00:58AM

### SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008  
 Average  
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



### MEASUREMENT RESULT: "BR-0516-12\_fin"

5/16/2020 11:04AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.355000         | 36.40         | 10.6         | 59            | 22.4         | QP       | L1   | GND |
| 0.655000         | 34.40         | 10.8         | 56            | 21.6         | QP       | L1   | GND |
| 1.735000         | 36.80         | 10.9         | 56            | 19.2         | QP       | L1   | GND |
| 4.720000         | 34.40         | 11.1         | 56            | 21.6         | QP       | L1   | GND |
| 8.970000         | 36.70         | 11.3         | 60            | 23.3         | QP       | L1   | GND |
| 13.075000        | 41.30         | 11.3         | 60            | 18.7         | QP       | L1   | GND |

### MEASUREMENT RESULT: "BR-0516-12\_fin2"

5/16/2020 11:04AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.350000         | 28.40         | 10.6         | 49            | 20.6         | AV       | L1   | GND |
| 0.375000         | 33.90         | 10.7         | 48            | 14.5         | AV       | L1   | GND |
| 1.785000         | 29.30         | 11.0         | 46            | 16.7         | AV       | L1   | GND |
| 2.490000         | 25.80         | 11.0         | 46            | 20.2         | AV       | L1   | GND |
| 8.960000         | 26.20         | 11.3         | 50            | 23.8         | AV       | L1   | GND |
| 12.865000        | 23.10         | 11.3         | 50            | 26.9         | AV       | L1   | GND |

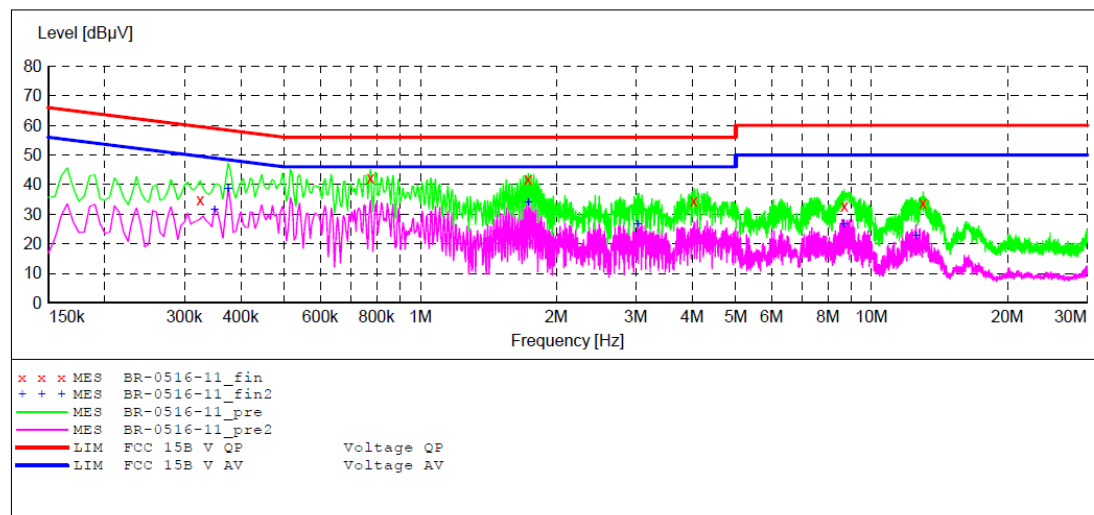
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: LED Low Voltage Outfit M/N:FCB-XM-3D-PG0104-CW-Z  
 Manufacturer: Neo-Neon (Viet Nam) Development Co., Ltd.  
 Operating Condition: ON  
 Test Site: 1#Shielding Room  
 Operator: Ben  
 Test Specification: N 240V/60Hz  
 Comment: Report No.:ATE20200506  
 Start of Test: 5/16/2020 / 10:56:45AM

### SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008  
 Average  
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



### MEASUREMENT RESULT: "BR-0516-11\_fin"

5/16/2020 11:00AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.325000         | 34.70         | 10.6         | 60            | 24.9         | QP       | N    | GND |
| 0.775000         | 42.20         | 10.8         | 56            | 13.8         | QP       | N    | GND |
| 1.735000         | 41.80         | 10.9         | 56            | 14.2         | QP       | N    | GND |
| 4.040000         | 34.30         | 11.1         | 56            | 21.7         | QP       | N    | GND |
| 8.690000         | 32.80         | 11.3         | 60            | 27.2         | QP       | N    | GND |
| 13.000000        | 33.80         | 11.3         | 60            | 26.2         | QP       | N    | GND |

### MEASUREMENT RESULT: "BR-0516-11\_fin2"

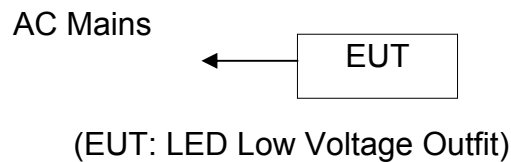
5/16/2020 11:00AM

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.350000         | 31.50         | 10.6         | 49            | 17.5         | AV       | N    | GND |
| 0.375000         | 38.80         | 10.7         | 48            | 9.6          | AV       | N    | GND |
| 1.735000         | 34.10         | 10.9         | 46            | 11.9         | AV       | N    | GND |
| 3.030000         | 26.80         | 11.1         | 46            | 19.2         | AV       | N    | GND |
| 8.680000         | 26.80         | 11.3         | 50            | 23.2         | AV       | N    | GND |
| 12.535000        | 23.00         | 11.3         | 50            | 27.0         | AV       | N    | GND |

## 5. RADIATED EMISSION MEASUREMENT

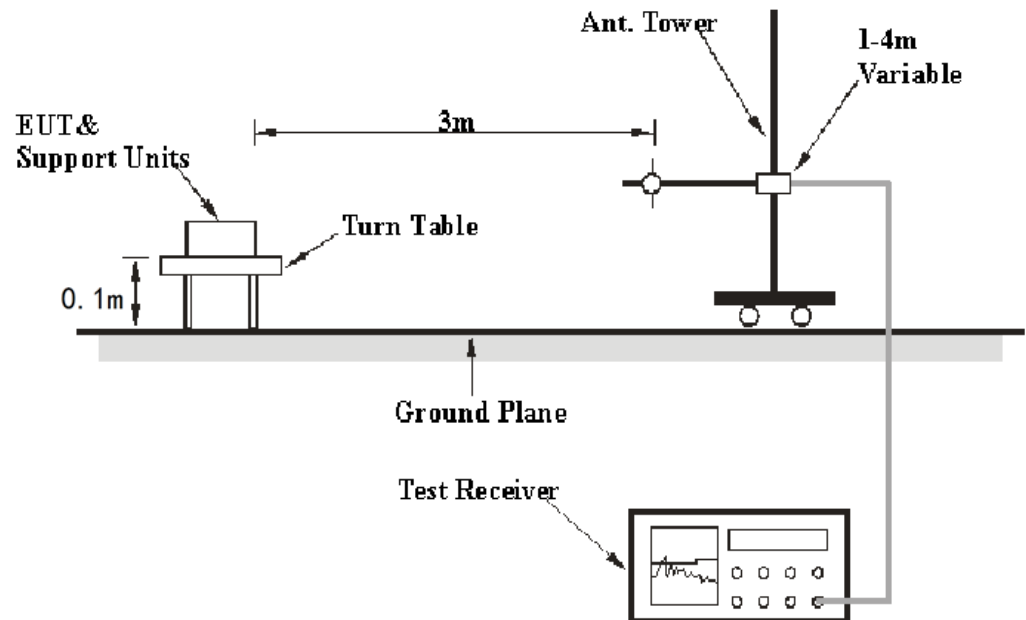
### 5.1. Block Diagram of Test

#### 5.1.1. Block diagram of connection between the EUT and simulators



#### 5.1.2. Block diagram of test setup (In chamber)

Radiated Emission Test Set-Up, Frequency 30MHz- 1GHz



## 5.2. Radiated Emission Limit (Class B)

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

| Frequency<br>MHz                                                                                                                                                                                                                                                                                                                           | Distance<br>Meters | Field Strengths Limit |                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|----------------------------|
|                                                                                                                                                                                                                                                                                                                                            |                    | $\mu\text{V/m}$       | $\text{dB}(\mu\text{V/m})$ |
| 30-88                                                                                                                                                                                                                                                                                                                                      | 3                  | 100                   | 40.0                       |
| 88-216                                                                                                                                                                                                                                                                                                                                     | 3                  | 150                   | 43.5                       |
| 216-960                                                                                                                                                                                                                                                                                                                                    | 3                  | 200                   | 46.0                       |
| Above 960                                                                                                                                                                                                                                                                                                                                  | 3                  | 500                   | 54.0                       |
| Remark:<br>(1) Emission level $\text{dB}(\mu\text{V}) = 20 \log \text{Emission level } \mu\text{V/m}$ .<br>(2) The smaller limit shall apply at the cross point between two frequency bands.<br>(3) Distance is the distance in meters between the measuring instrument antenna and the closest point of any part of the device or system. |                    |                       |                            |

## 5.3. Test Mode Description

Test mode: ON

## 5.4. Manufacturer

The 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.

### 5.4.1. LED Low Voltage Outfit (EUT)

Model Number : FCB-XM-3D-PG0104-CW-Z

Manufacturer : Neo-Neon (Viet Nam) Development Co., Ltd

## 5.5. Operating Condition of EUT

5.5.1. Setup the EUT and simulator as shown as Section 5.1.

5.5.2. Turn on the power of all equipment.

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

## 5.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.1 meter high above ground. The turntable 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 an 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 (calibrated bilog 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.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.

Note: The EUT highest operating frequency provided by Manufacturer than less 108MHz, the radiated emission measurement shall be made up to 1GHz.

| 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.                                                                  |
| 1.705–108 .....                                                                                  | 1000.                                                                |
| 108–500 .....                                                                                    | 2000.                                                                |
| 500–1000 .....                                                                                   | 5000.                                                                |
| Above 1000 .....                                                                                 | 5th harmonic of the highest frequency or 40 GHz, whichever is lower. |

### 5.7.Data Sample

| Frequency (MHz) | Reading (dB $\mu$ v) | Factor (dB/m) | Result (dB $\mu$ v/m) | Limit (dB $\mu$ v/m) | Margin (dB) | Remark |
|-----------------|----------------------|---------------|-----------------------|----------------------|-------------|--------|
| X.XX            | 49.83                | -22.03        | 27.80                 | 43.50                | -15.70      | QP     |

Frequency(MHz) = Emission frequency in MHz

Reading(dB $\mu$ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m)= Antenna factor + Cable Loss – Amplifier gain

Result(dB $\mu$ v/m) = Reading + Factor

Limit (dB $\mu$ v/m)= Limit stated in standard

Margin (dB) = Result(dB $\mu$ v/m) - Limit (dB $\mu$ v/m)

Calculation Formula:

Margin(dB) = Result (dB $\mu$ v/m)–Limit(dB $\mu$ v/m)

Result(dB $\mu$ v/m)= Reading(dB $\mu$ v)+ Factor(dB/m)

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.

### 5.8.Measurement Result

**Pass.**

The frequency range from 30MHz to 1000MHz is investigated.

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.



## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: JP2019 #79

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: LED Low Voltage Outfit

Mode: ON

Model: FCB-XM-3D-PG0104-CW-Z

Manufacturer: Neo-Neon (Viet Nam) Development Co., Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

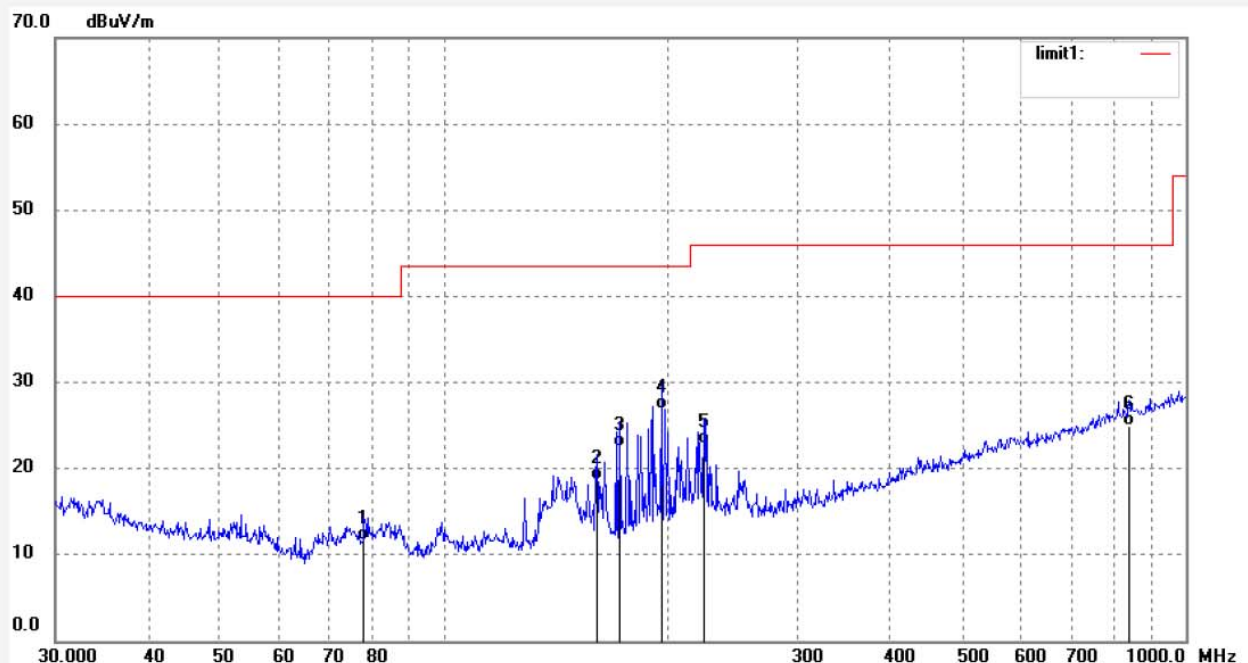
Date: 2020/05/16/

Time: 11/16/26

Engineer Signature: Ben

Distance: 3m

Note: Report NO.:ATE20200506



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 78.1389     | 29.20            | -17.61      | 11.59           | 40.00          | -28.41      | QP       | 100         | 219           |        |
| 2   | 160.9089    | 34.21            | -15.53      | 18.68           | 43.50          | -24.82      | QP       | 100         | 310           |        |
| 3   | 172.5988    | 37.17            | -14.65      | 22.52           | 43.50          | -20.98      | QP       | 100         | 112           |        |
| 4   | 196.5098    | 40.30            | -13.47      | 26.83           | 43.50          | -16.67      | QP       | 100         | 65            |        |
| 5   | 224.5193    | 35.23            | -12.46      | 22.77           | 46.00          | -23.23      | QP       | 100         | 21            |        |
| 6   | 839.1818    | 25.24            | -0.36       | 24.88           | 46.00          | -21.12      | QP       | 100         | 173           |        |



## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg.A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: JP2019 #80

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: LED Low Voltage Outfit

Mode: ON

Model: FCB-XM-3D-PG0104-CW-Z

Manufacturer: Neo-Neon (Viet Nam) Development Co., Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

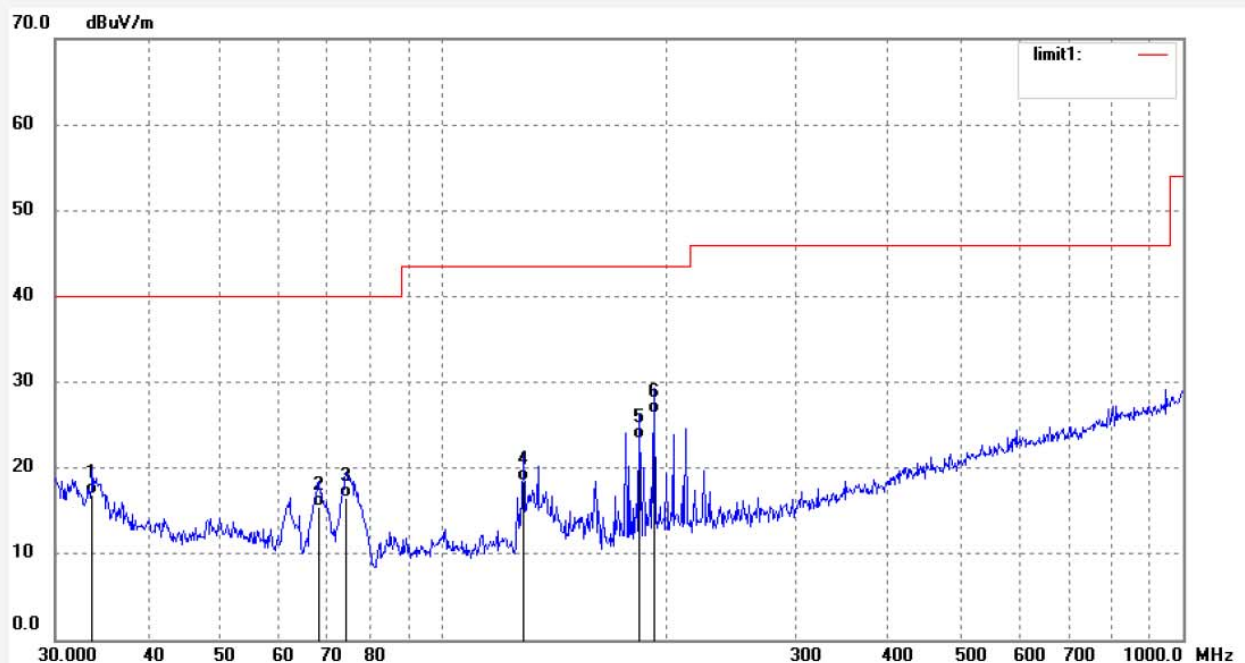
Date: 2020/05/16/

Time: 11/17/49

Engineer Signature: Ben

Distance: 3m

Note: Report NO.:ATE20200506



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 33.6802     | 27.94            | -11.02      | 16.92           | 40.00          | -23.08      | QP       | 100         | 98            |        |
| 2   | 68.1514     | 32.50            | -16.97      | 15.53           | 40.00          | -24.47      | QP       | 100         | 31            |        |
| 3   | 74.1351     | 34.15            | -17.64      | 16.51           | 40.00          | -23.49      | QP       | 100         | 172           |        |
| 4   | 128.5630    | 33.37            | -14.82      | 18.55           | 43.50          | -24.95      | QP       | 100         | 330           |        |
| 5   | 184.4898    | 37.15            | -13.79      | 23.36           | 43.50          | -20.14      | QP       | 100         | 167           |        |
| 6   | 193.0945    | 39.82            | -13.54      | 26.28           | 43.50          | -17.22      | QP       | 100         | 318           |        |

## 6. PHOTOGRAPHS

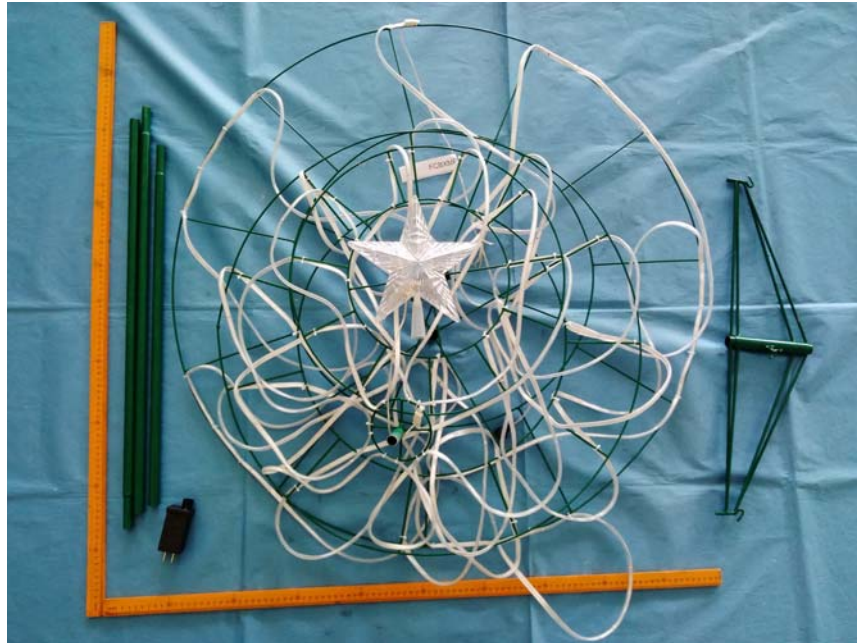
### 6.1.Photo of AC Power Line Conducted Emission Measurement

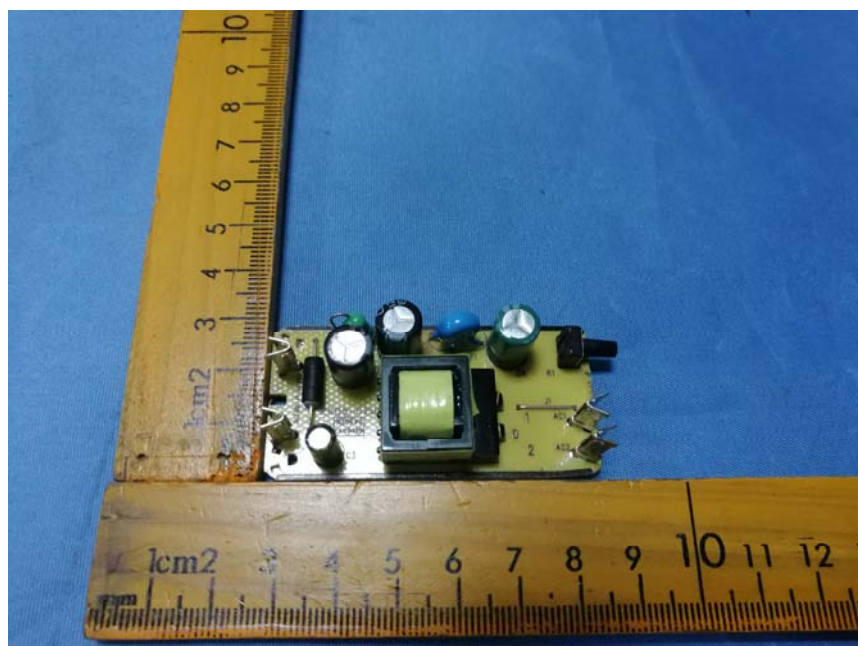


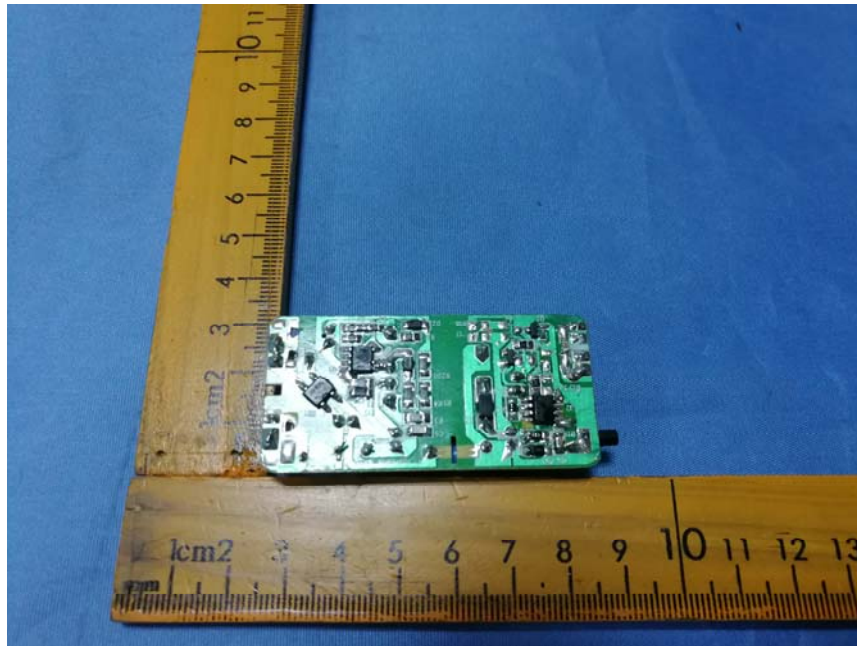
### 6.2.Photo of Radiation Emission Measurement



### 6.3.Photo of EUT







**\*\*\*\*\* End of Test Report \*\*\*\*\***