

# RF Exposure Report

**FCC ID:2BLY8-A21-13W**

**Report No.** : SSP24100098-3E

**Applicant** : Zheng Zhou Wan Nai De Shang Mao You Xian Gong Si Co., LTD

**Product Name** : SMART LED BULB

**Model Name** : A21-13W

**Test Standard** : FCC CFR 47 PART 1.1307(b)

**Date of Issue** : 2024-11-01



**Shenzhen CCUT Quality Technology Co., Ltd.**

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**Test Report Basic Information**

**Applicant**.....: Zheng Zhou Wan Nai De Shang Mao You Xian Gong Si Co., LTD  
liang cang lu 1 hao yuan 1 hao lou 1 dan yuan 2 hao hui ji qu, zheng zhou shi  
Address of Applicant.....: he nan sheng, China

**Manufacturer**.....: Zheng Zhou Wan Nai De Shang Mao You Xian Gong Si Co., LTD  
liang cang lu 1 hao yuan 1 hao lou 1 dan yuan 2 hao hui ji qu, zheng zhou shi  
Address of Manufacturer.....: he nan sheng, China

**Product Name**.....: SMART LED BULB

**Brand Name**.....: Franqual

**Main Model**.....: A21-13W

**Series Models**.....: BR30-15W, GU10-5W

FCC CFR 47 PART 1.1307(b)

**Test Standard**.....: KDB 447498 D01 v06

**Date of Test** .....: 2024-10-12 to 2024-11-01

**Test Result**.....: PASS

**Tested By** .....: Coke Huang (Coke Huang)

**Reviewed By**.....: Lieber Ouyang (Lieber Ouyang)

**Authorized Signatory**.....: Lahm Peng (Lahm Peng)



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### Revision History

| Revision | Issue Date | Description     | Revised By |
|----------|------------|-----------------|------------|
| V1.0     | 2024-11-01 | Initial Release | Lahm Peng  |
|          |            |                 |            |
|          |            |                 |            |
|          |            |                 |            |
|          |            |                 |            |

## 1. General Information

### 1.1 Product Information

|  |                    |
|--|--------------------|
| Product Name:  | SMART LED BULB     |
| Trade Name:  | Franqual           |
| Main Model:  | A21-13W            |
| Series Models:   | BR30-15W, GU10-5W  |
| Rated Voltage:   | Input:AC·120V/60Hz |
| Hardware Version:  | V1.0               |
| Software Version:  | V1.0               |
| Note 1: The test data is gathered from a production sample, provided by the manufacturer.<br>Note 2: The color of appearance and model name of series models listed are different from the main model, but the circuit and the electronic construction are the same, declared by the manufacturer. |                    |

| Wireless Specification |  |
|------------------------|--|
| Wireless Standard:     | Bluetooth BLE, 802.11b/g/n   |
| Operating Frequency:   | BT: 2402MHz ~2480MHz, 2.4GHz WiFi: 2412 MHz ~2462 MHz  |
| RF Output Power:       | BLE: -6.34dBm, 2.4GHz WiFi: 11.8dBm  |
| Antenna Gain:          | 0dBi   |
| Type of Antenna:       | PCB Antenna  |
| Type of Device:        | <input type="checkbox"/> Portable Device <input checked="" type="checkbox"/> Mobile Device <input type="checkbox"/> Modular Device |

### 1.2 Test Facilities

|  |   |
|--|---|
| Laboratory Name:   | <b>Shenzhen CCUT Quality Technology Co., Ltd.</b><br>1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China |
| CNAS Laboratory No.:   | L18863  |
| A2LA Certificate No.:  | 6893.01   |
| FCC Registration No.:  | 583813  |
| ISED Registration No.:   | CN0164  |
| All measurement facilities used to collect the measurement data are located at 1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China. |   |

## 2. RF Exposure

### 2.1 Standard and Limit

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### Limits for Maximum Permissible Exposure (MPE)

| Frequency range (MHz)                                   | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures        |                               |                               |                                     |                          |
| 0.3-3.0   | 614                           | 1.63                          | *(100)                              | 6                        |
| 3.0-30  | 1842/f                        | 4.89/f                        | *(900/f <sup>2</sup> )              | 6                        |
| 30-300  | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1500  |                               |                               | f/300                               | 6                        |
| 1500-100,000  |                               |                               | 5                                   | 6                        |
| (B) Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
| 0.3-1.34  | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34-30   | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30-300  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300-1500  |                               |                               | f/1500                              | 30                       |
| 1500-100,000  |                               |                               | 1.0                                 | 30                       |

f = frequency in MHz

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>,  $P_{out}$  = output power to antenna in mW;

$G$  = gain of antenna in linear scale,  $\pi = 3.1416$ ;

$r$  = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance  $r$  where the MPE limit is reached.

#### Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

## 2.2 Test Data and Results

For BLE

| Mode | Output power to antenna (dBm) | Tune-up Power(dBm) | Max Tune-up Power(dBm) | Output power to antenna (mW) | Power Density at R=20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Result |
|------|-------------------------------|--------------------|------------------------|------------------------------|---|-----------------------------|--------|
| GFSK | -6.34                         | -6(±1)             | -5                     | 0.32                         | 0.0001  | 1.0                         | PASS   |

For 2.4G WiFi

| Mode    | Output power to antenna (dBm) | Tune-up Power(dBm) | Max Tune-up Power(dBm) | Output power to antenna (mW) | Power Density at R=20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Result |
|---------|-------------------------------|--------------------|------------------------|------------------------------|---|-----------------------------|--------|
| 802.11b | 11.8                          | 11(±1)             | 12                     | 15.85                        | 0.0032  | 1.0                         | PASS   |

BLE antenna gain =0dBi, 2.4G WiFi antenna gain=0dBi,

The device supports simultaneous transmission of WiFi and Bluetooth

Calculations for simultaneously transmit

| Mode       | Ratios | Result | Limit | Result |
|------------|--------|--------|-------|--------|
| BLE        | 0.0001 | 0.0033 | 1     | PASS   |
| 2.4G Wi-Fi | 0.0032 |        |       |        |

So a SAR test is not required