

# Testing Report

Customer Name: Globe Electric Company Inc.

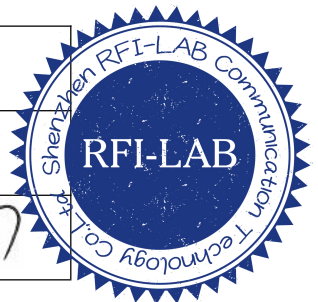
Product Name: Security light with sensor

Sample Model: 17000213

Reference Standard: *GB/T 9410-2008; ANSI/IEEE Std 149-1979*

Issue Date: 2023.7.27

|                 |                 |
|-----------------|-----------------|
| Engineer: Zkmis | Date: 2023.7.27 |
| Auditor: Eason  | Date: 2023.7.27 |
| Approver: Jaron | Date: 2023.7.27 |



## Version

| Version No. | Date      | Description                   | Formulate | Approval |
|-------------|-----------|-------------------------------|-----------|----------|
| A0          | 2023.7.27 | For the first time, formulate | Zkris     | Eason    |
|             |           |                               |           |          |
|             |           |                               |           |          |

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## 1.General Information

## 1.1 General information of testing institutions

|                  |                                                                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>      | Shenzhen RFI-LAB Communication Technology Co., Ltd.                                                                                                           |
| <b>Address</b>   | 10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ                                                                                                           |
| <b>Tel</b>       | 13682621346                                                                                                                                                   |
| <b>E-mail</b>    | rfi-lab@tech-now.com                                                                                                                                          |
| <b>Equipment</b> | All the equipment used in the report is fixed in Zone B, West Side of 1/F, Building 1, Tingwei Industrial Park, No.6 Liufang Road, Bao 'an District, Shenzhen |

## 1.2 Testing principle



### 1.3 Test equipment

| Equipment        | Model No.    | Serial No.     | Manufacturer | Calibration date | Next calibration date |
|------------------|--------------|----------------|--------------|------------------|-----------------------|
| OTA Test System  | RayZone-5000 | RFI-LAB-RF-D00 | GTS          | 2023.3.14        | 2025.3.13             |
| Network Analyzer | E5071C       | RFI-LAB-RF-D01 | KEYSIGHT     | 2023.5.11        | 2024.5.10             |
| Network Analyzer | E5071C       | RFI-LAB-RF-C02 | KEYSIGHT     | 2023.5.11        | 2024.5.10             |

### 1.4 Test environment

|             |           |
|-------------|-----------|
| Temperature | 23.6°C    |
| Humidity    | 58%RH     |
| Pressure    | 100.14kPa |

### 1.5 Statement

- (1) The test results in the report are only applicable to the tested samples and the tested samples work under the environment described in the report.
- (2) Only Shenzhen RFI-LAB Communication Technology Co., Ltd. have the right to modify the report, and the modification information shall be annotated in the revision form.
- (3) Any objection to this report shall be raised within 30 days after formal confirmation of the report.
- (4) This report is invalid if there is any evidence that the sample information provided is falsified.
- (5) The report is invalid without the signature of the auditor and approver.

## 2.Sample Information

### 2.1 Client information

|                     |                                               |
|---------------------|-----------------------------------------------|
| <b>Name</b>         | Globe Electric Company Inc.                   |
| <b>Address</b>      | 150 Oneida, Montreal, Quebec, Canada, H9R 1A8 |
| <b>Contacts</b>     | Celine                                        |
| <b>Tel</b>          | 0755 22191752-801                             |
| <b>E-mail</b>       | celinez@globe-electric.com                    |
| <b>Manufacturer</b> | GLOBE ELECTRIC COMPANY INC.                   |

### 2.2 Description of EUT(S)

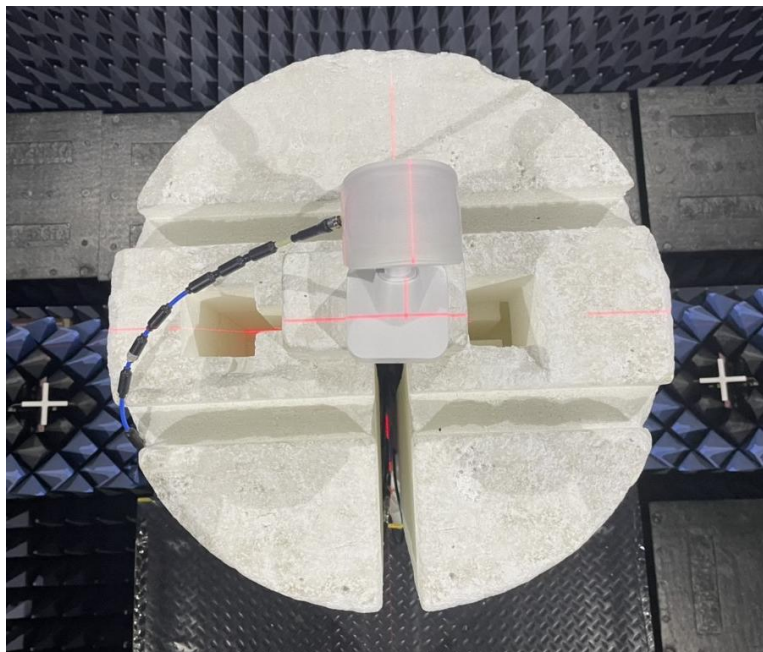
|                        |                                                  |
|------------------------|--------------------------------------------------|
| <b>Product Name</b>    | Security light with sensor                       |
| <b>Sample Model</b>    | 17000213                                         |
| <b>Antenna Size</b>    | /                                                |
| <b>Serial No.</b>      | /                                                |
| <b>Antenna Type</b>    | PCB Antenna                                      |
| <b>Test Item</b>       | VSWR;Antenna gain; Efficiency; Radiation pattern |
| <b>Frequency Range</b> | 2400MHz-2500MHz                                  |
| <b>Received Date</b>   | 2023.7.26                                        |
| <b>Test Date</b>       | 2023.7.27                                        |
| <b>Remark</b>          | The length of the RF cable is 90mm               |

## 2.3 EUT appearance

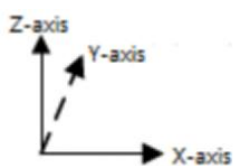
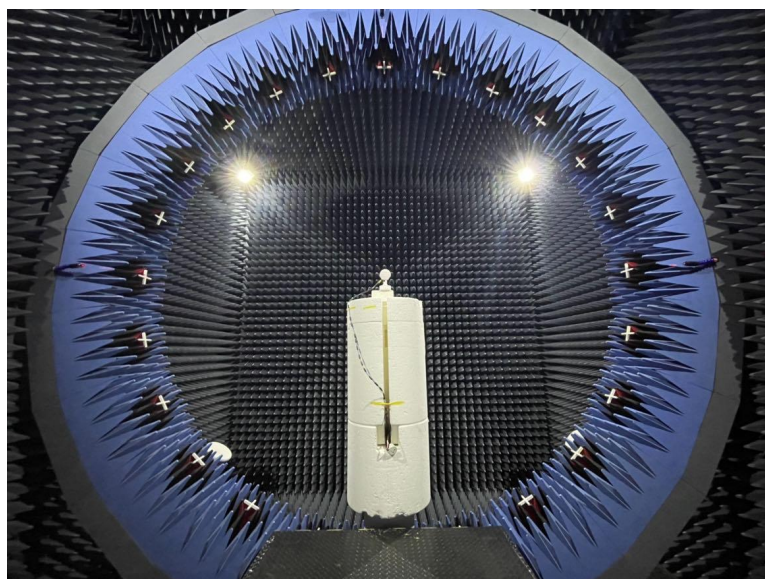


## 2.4 EUT setup photo of free space OTA testing

Planform



Front view



## 3. Test Results

### 3.1 Test standard

| Name                         | Parameter            | Method                                                               | Standard no.           |
|------------------------------|----------------------|----------------------------------------------------------------------|------------------------|
| Mobile communication antenna | Antenna gain         | Generic specification for antennas used in the mobile communications | GB/T 9410-2008         |
|                              | Radiation pattern    |                                                                      |                        |
|                              | VSWR                 |                                                                      |                        |
| Antenna                      | Radiation efficiency | IEEE Standard Test Procedures for Antennas                           | ANSI/IEEE Std 149-1979 |
|                              | Gain and directivity |                                                                      |                        |

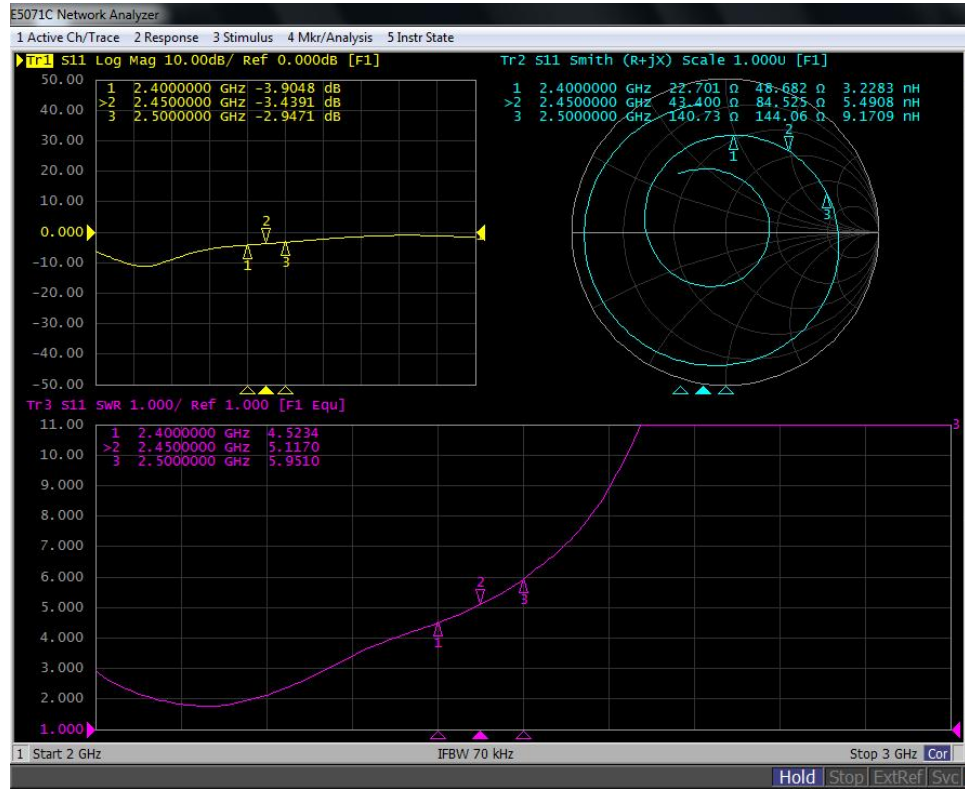
### 3.2 Test uncertainty

The uncertainty was calculated on the basis of the GUM published by ISO, using the inclusion factor of  $K=2$  and the 95% confidence level to express the extended uncertainty.

| Item                 | Uncertainty         |
|----------------------|---------------------|
| VSWR                 | $\pm 0.3$           |
| Antenna gain         | $\pm 0.72\text{dB}$ |
| Radiation efficiency | $\pm 0.72\text{dB}$ |

## 3.3 Test data

### 3.3.1 VSWR parameters



### 3.3.2 VSWR data

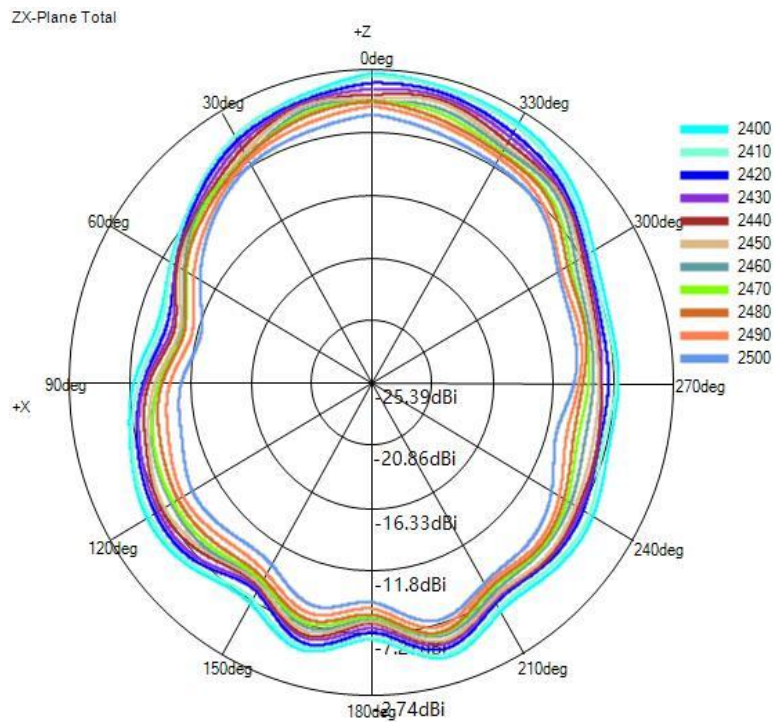
| Frequency/MHz | 2400   | 2450   | 2500   |
|---------------|--------|--------|--------|
| VSWR          | 4.5234 | 5.1170 | 5.9510 |

### 3.3.3 Typical free space efficiency and gain

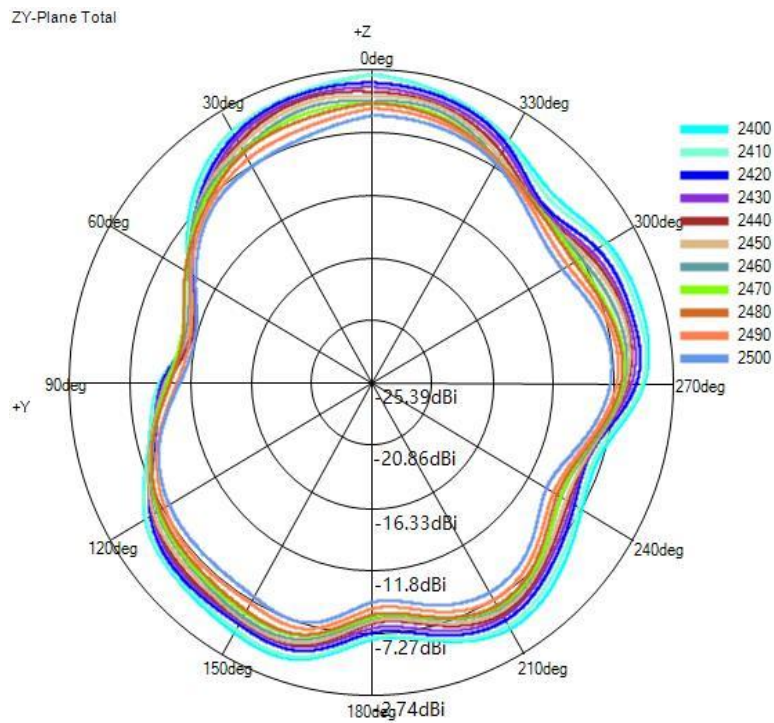
| Frequency/MHz | 2400  | 2410  | 2420  | 2430  | 2440  | 2450  | 2460  | 2470  | 2480  | 2490  | 2500  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Gain/dBi | -2.74 | -2.98 | -3.41 | -3.63 | -3.71 | -3.82 | -4.07 | -4.18 | -4.34 | -4.78 | -5.15 |
| Efficiency/%  | 26.31 | 25.03 | 22.84 | 21.54 | 20.63 | 19.77 | 18.66 | 17.89 | 17.18 | 15.59 | 14.00 |

### 3.3.4 Typical free space radiation pattern

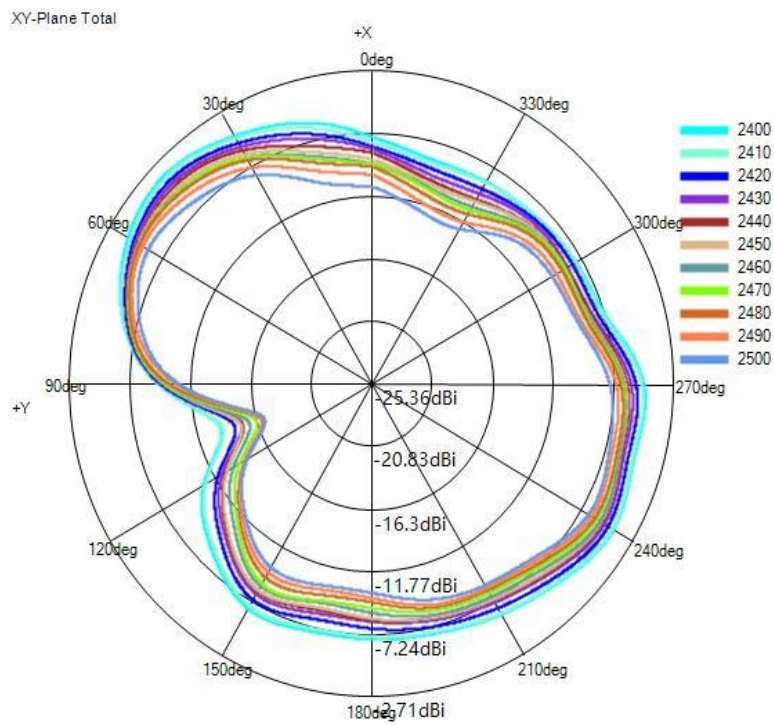
(1) X-Z Plane(unit:dBi):



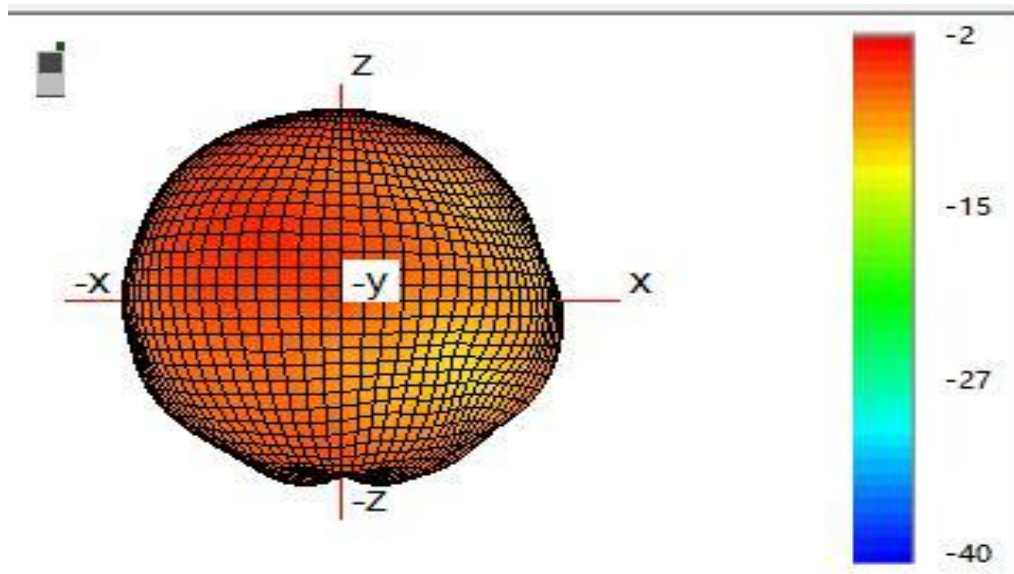
(2) Y-Z Plane(unit:dBi):



(3) X-Y Plane(unit:dBi):



(4) Typical Free Space 3D Radiation Pattern at 2.4GHz(unit:dBi):



End

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