

Testing Report

Customer Name: Globe Electric Company Inc.

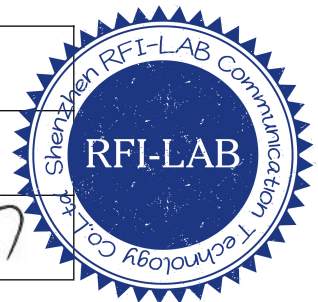
Product Name: Security light with sensor

Sample Model: 17000213

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

Issue Date: 2023.7.27

| | |
|------------------------|------------------------|
| Engineer: <i>Zkmis</i> | Date: <i>2023.7.27</i> |
| Auditor: <i>Eason</i> | Date: <i>2023.7.27</i> |
| Approver: <i>Aaron</i> | Date: <i>2023.7.27</i> |



Version

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

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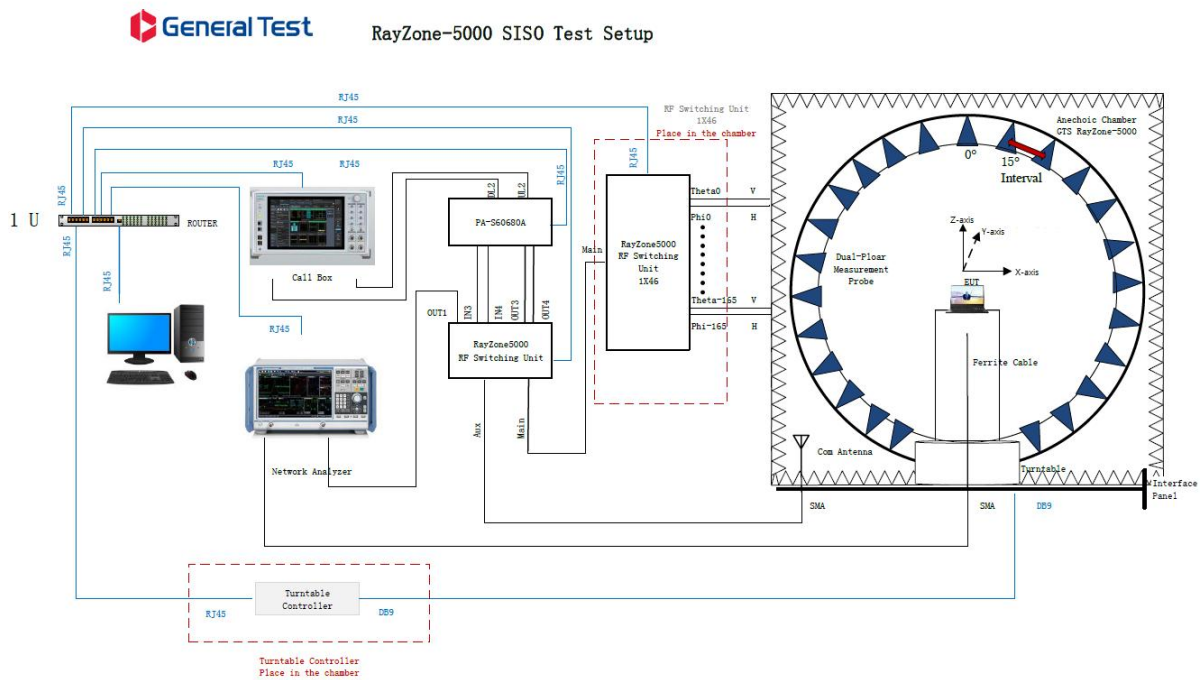
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1. General Information

1.1 General information of testing institutions

| | |
|------------------|---|
| Name | Shenzhen RFI-LAB Communication Technology Co., Ltd. |
| Address | 10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ |
| Tel | 13682621346 |
| E-mail | rfi-lab@tech-now.com |
| Equipment | 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

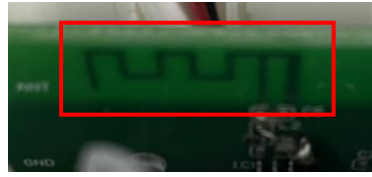
2.1 Client information

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

2.2 Description of EUT(S)

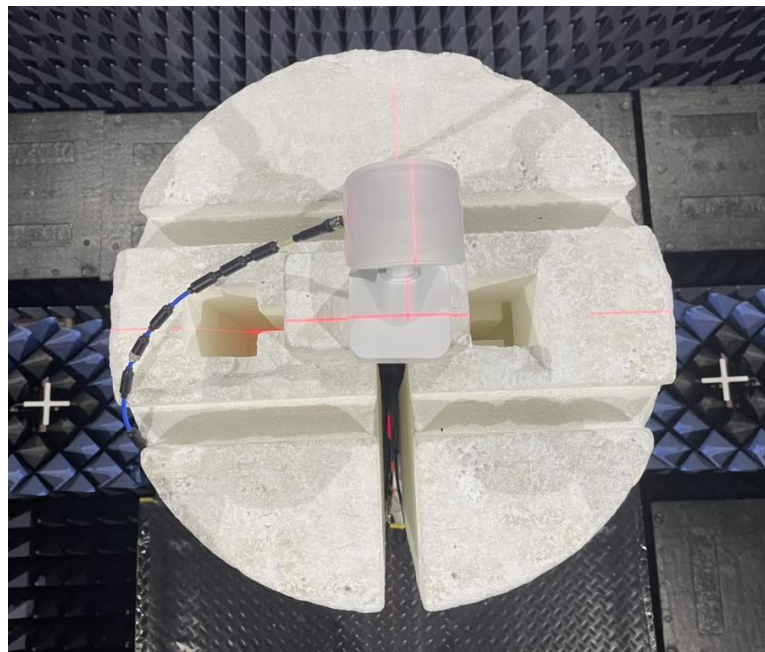
| | |
|------------------------|--|
| Product Name | Security light with sensor |
| Sample Model | 17000213 |
| Antenna Size | / |
| Serial No. | / |
| Antenna Type | PCB Antenna |
| Test Item | VSWR;Antenna gain; Efficiency; Radiation pattern |
| Frequency Range | 2400MHz-2500MHz |
| Received Date |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

2.3 EUT appearance

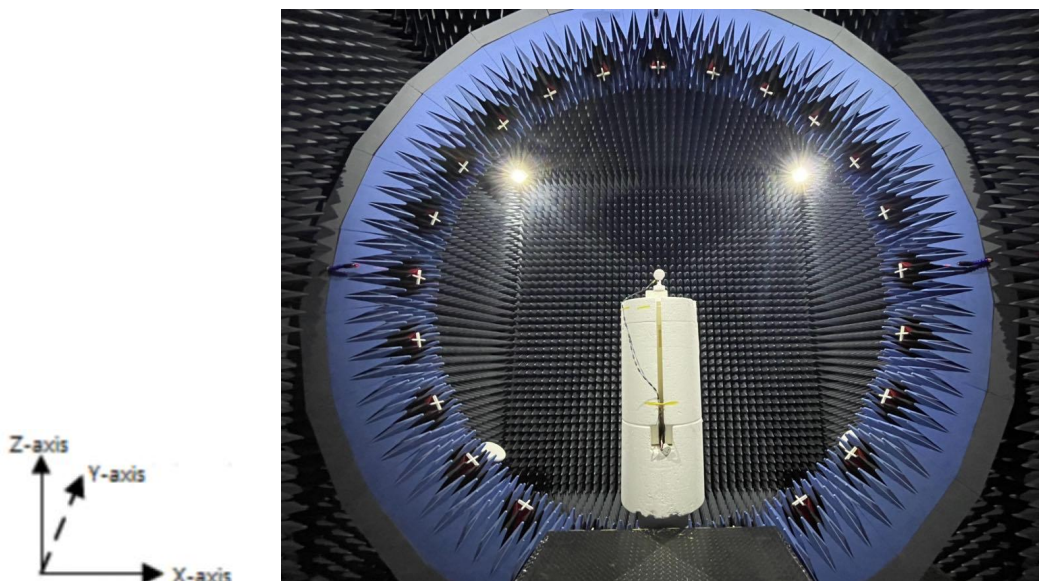


2.4 EUT setup photo of free space OTA testing

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 | | |

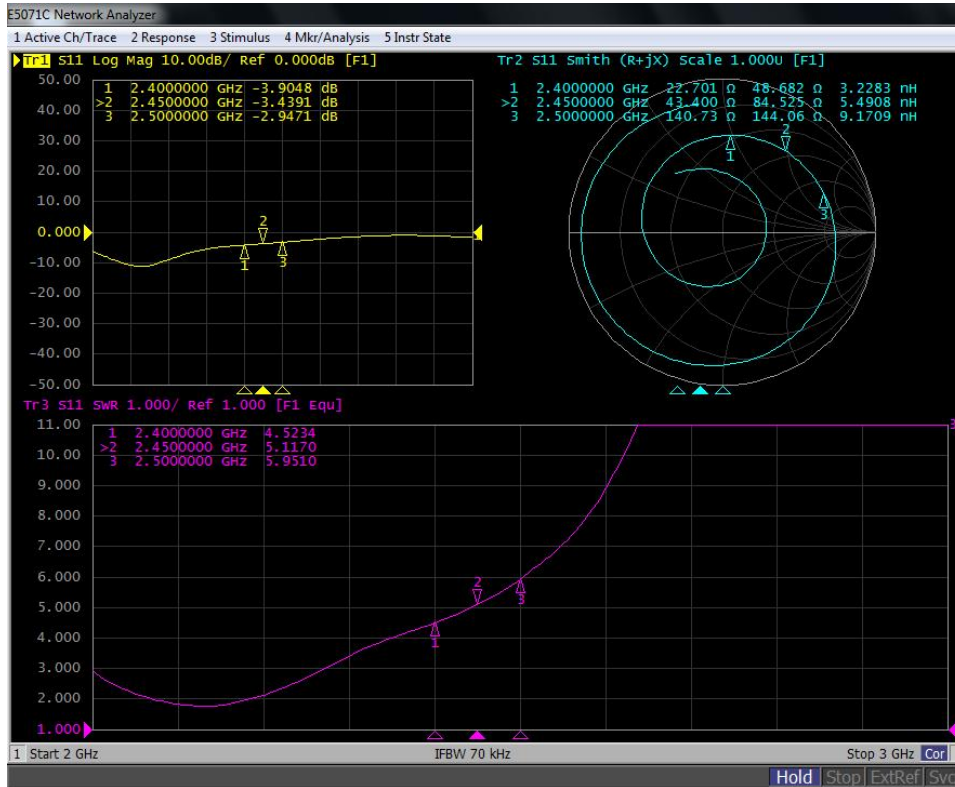
3.2 Test uncertainty

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 | ± 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

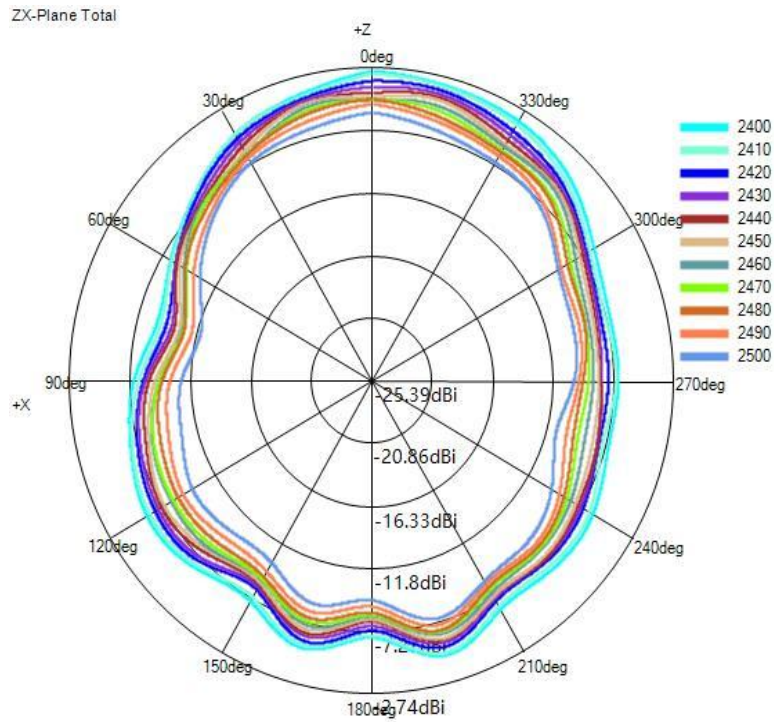
| Frequency/MHz | 2400 | 2450 | 2500 |
|---------------|--------|--------|--------|
| VSWR | 4.5234 | 5.1170 | 5.9510 |

3.3.3 Typical free space efficiency and gain

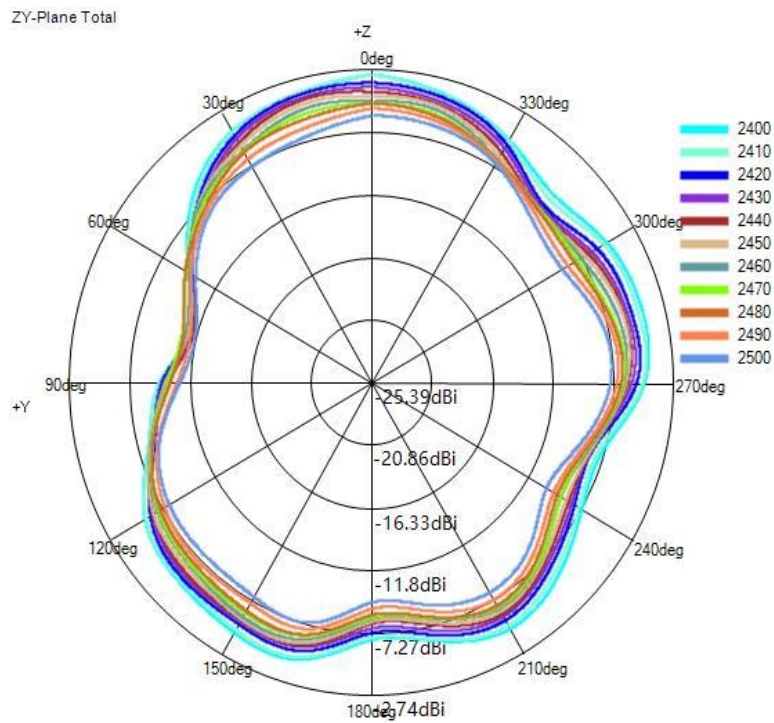
| Frequency/MHz | 2400 | 2410 | 2420 | 2430 | 2440 | 2450 | 2460 | 2470 | 2480 | 2490 | 2500 |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Gain/dBi | -2.74 | -2.98 | -3.41 | -3.63 | -3.71 | -3.82 | -4.07 | -4.18 | -4.34 | -4.78 | -5.15 |
| 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

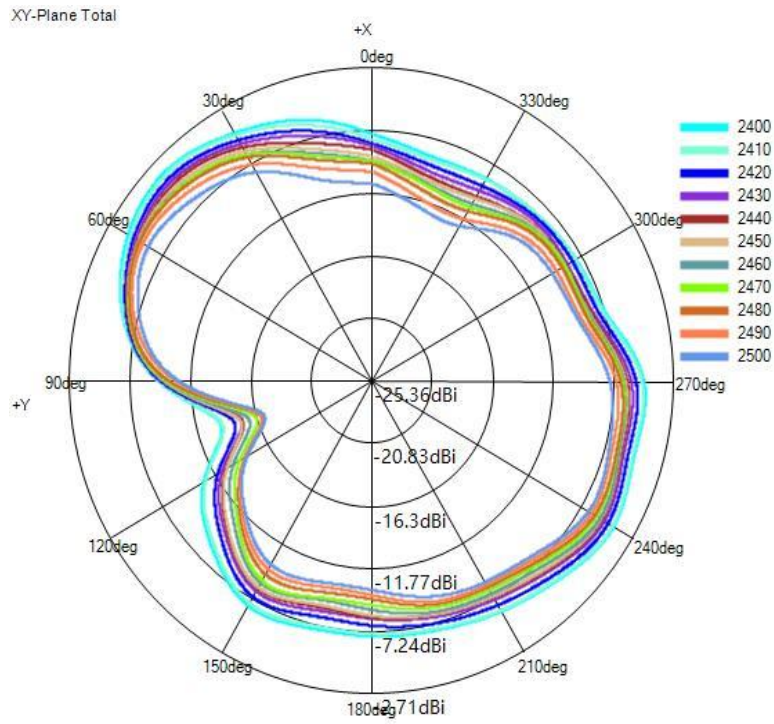
(1) X-Z Plane(unit:dBi):



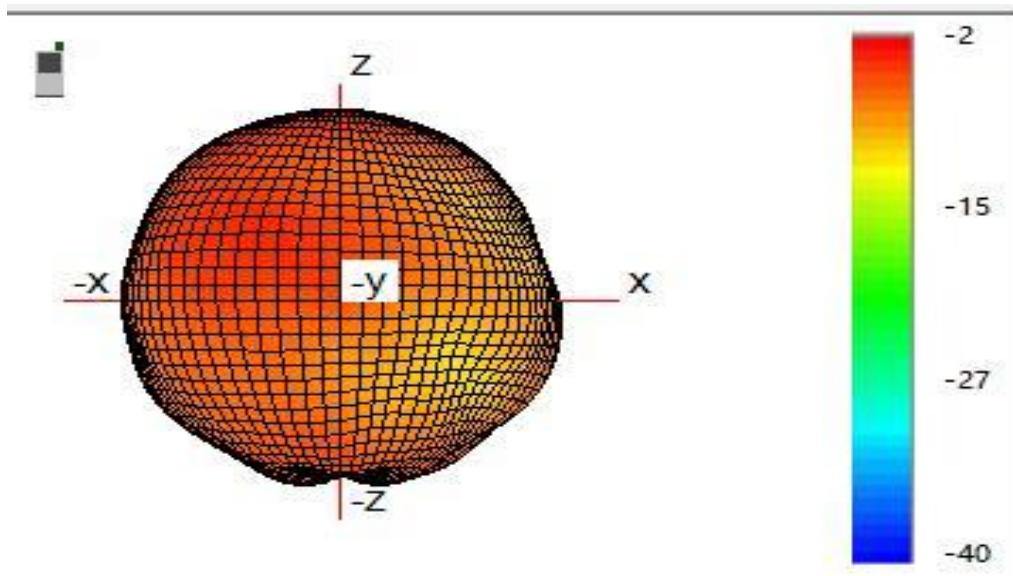
(2) Y-Z Plane(unit:dBi):



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



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



End

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