



REPORT No. : SZ19050127E10


# TEST REPORT


**Applicant** : SHARP ELECTRONICS(M) SDN. BHD.

**PRODUCT NAME** : 2.4G PCB Antenna

**MODEL NAME** : GB419

**ISSUE DATE** : 2019-05-17

Edited by:   
Chi Shide(Rapporteur)

Approved by:   
Andy Yeh(Technical Director)

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SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.  
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,  
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555  
Http://www.morlab.cn

Fax: 86-755-36698525  
E-mail: service@morlab.cn





# DIRECTORY

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| Change History |            |                   |
|----------------|------------|-------------------|
| Issue          | Date       | Reason for change |
| 1.0            | 2019-05-17 | First edition     |
|                |            |                   |

# 1. Technical Information

**Note:** Provide by manufacturer.

## 1.1. Manufacturer and Factory Information

|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| <b>Applicant:</b>            | SHARP ELECTRONICS (M) SDN. BHD.                                               |
| <b>Applicant Address:</b>    | 1A, Persiaran Kuala Langat, Section 27,40400 Shah Alam, Selangor Darul Ehsan. |
| <b>Manufacturer:</b>         | SHARP ELECTRONICS (M) SDN. BHD.                                               |
| <b>Manufacturer Address:</b> | 1A, Persiaran Kuala Langat, Section 27,40400 Shah Alam, Selangor Darul Ehsan. |
| <b>Factory:</b>              | SHARP ELECTRONICS (M) SDN. BHD.                                               |
| <b>Factory Address:</b>      | 1A, Persiaran Kuala Langat, Section 27,40400 Shah Alam, Selangor Darul Ehsan. |

## 1.2. Equipment Under Test (EUT) Description

|                  |           |
|------------------|-----------|
| Wireless Type    | Bluetooth |
| Hardware Version | N/A       |
| Software Version | N/A       |

## 2. Test Results

### 2.1. Applied Reference Documents

Leading reference documents for testing:

| No. | Identity               | Document Title                             |
|-----|------------------------|--------------------------------------------|
| 1   | ANSI/IEEE Std 149-2008 | IEEE Standard Test Procedures for Antennas |

### 2.2. Test Conditions

Test Environment Conditions:

|                    |                  |
|--------------------|------------------|
| Relative Humidity: | 25 ... 75 %      |
| Temperature:       | +10 °C to +30 °C |

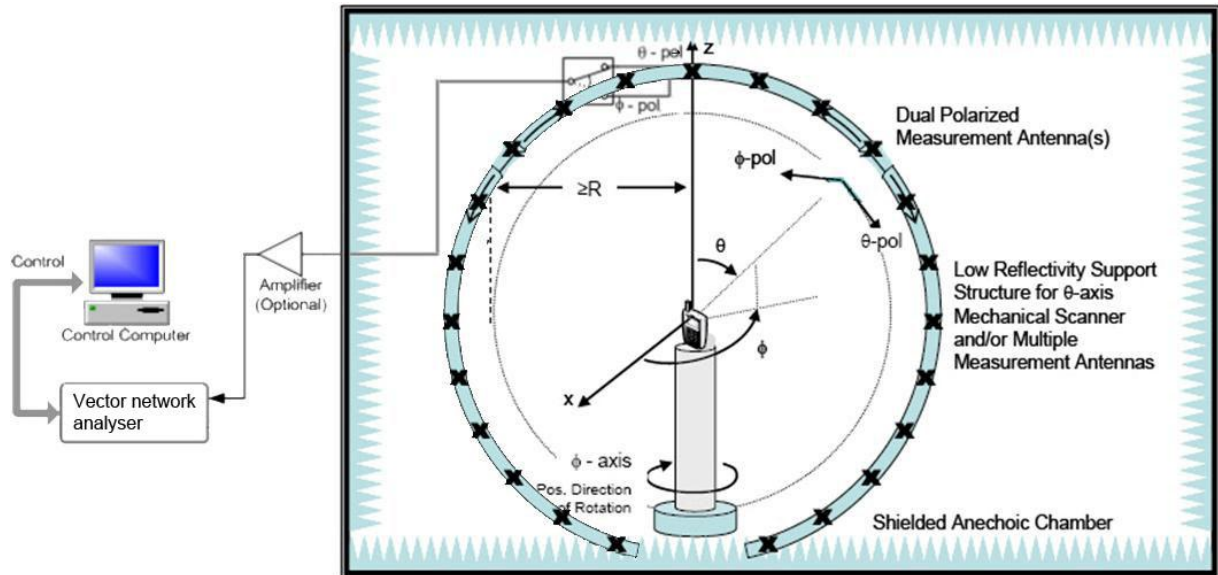
### 2.3. Test Results lists

#### 2.3.1. Gain and Efficiency

| Frequency | Gain(dBi) |
|-----------|-----------|
| 2400MHz   | 0.79      |
| 2410MHz   | 0.35      |
| 2420MHz   | 1.38      |
| 2430MHz   | 1.28      |
| 2440MHz   | 1.21      |
| 2450MHz   | 1.50      |
| 2460MHz   | 1.89      |
| 2470MHz   | 1.77      |
| 2480MHz   | 1.23      |
| 2490MHz   | 1.22      |
| 2500MHz   | 1.43      |

## Annex A Photographs

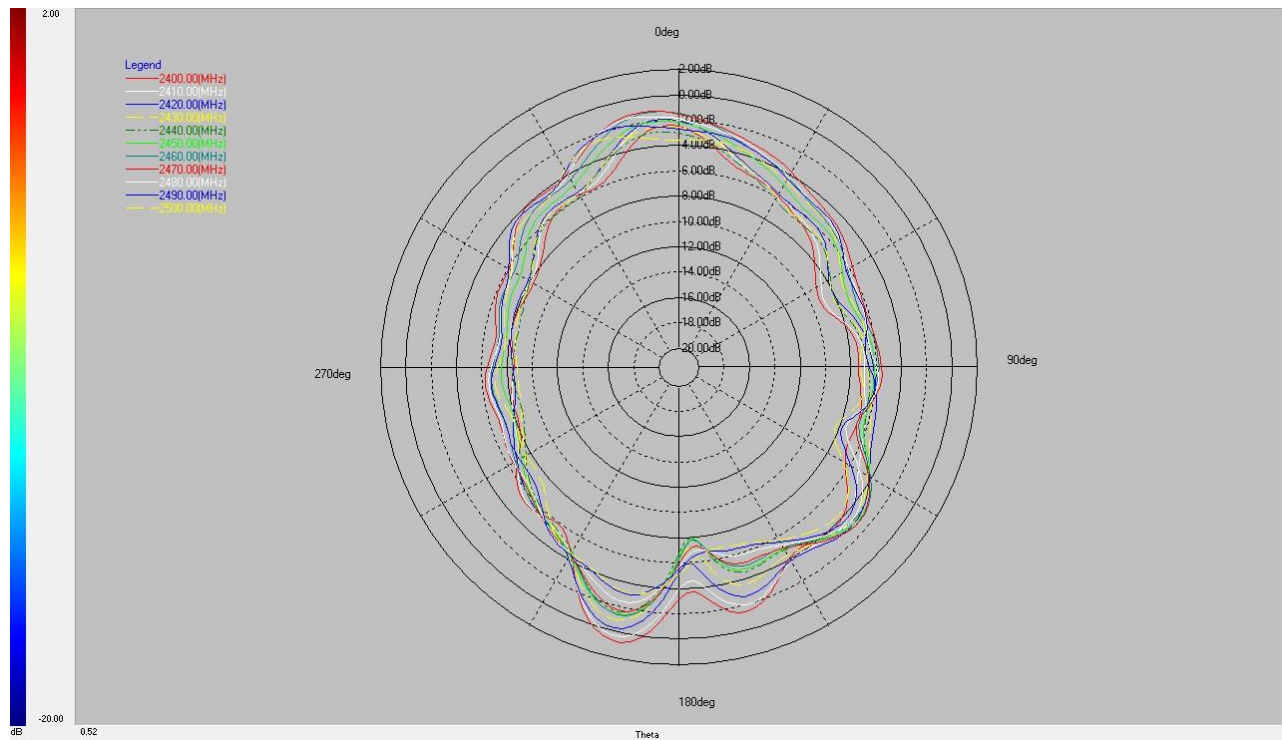
### 1. Test Setup



## Annex B Figures

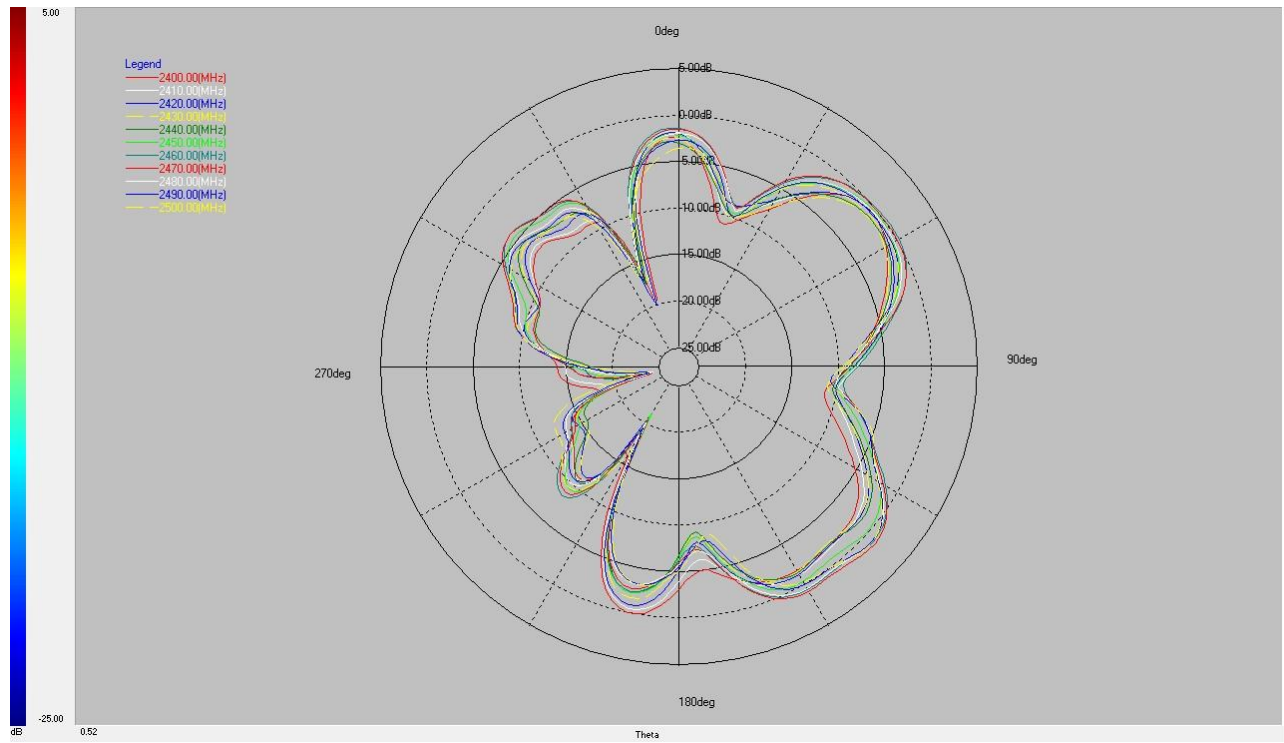
### 1. 2D Radiation Pattern

Phi=0°

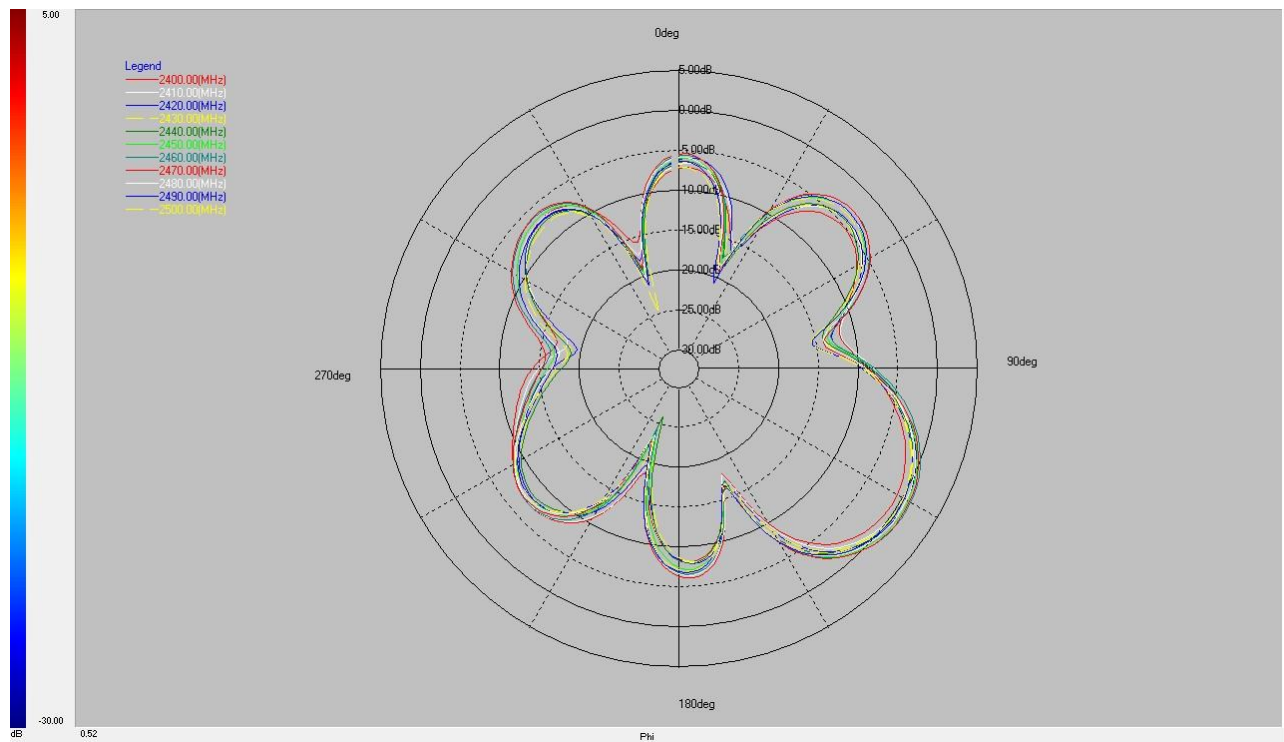




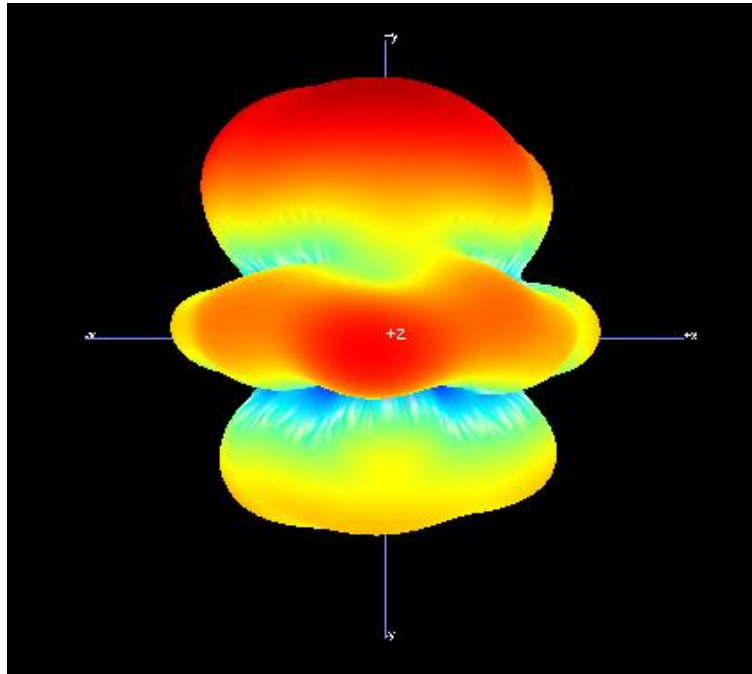
Phi=90°



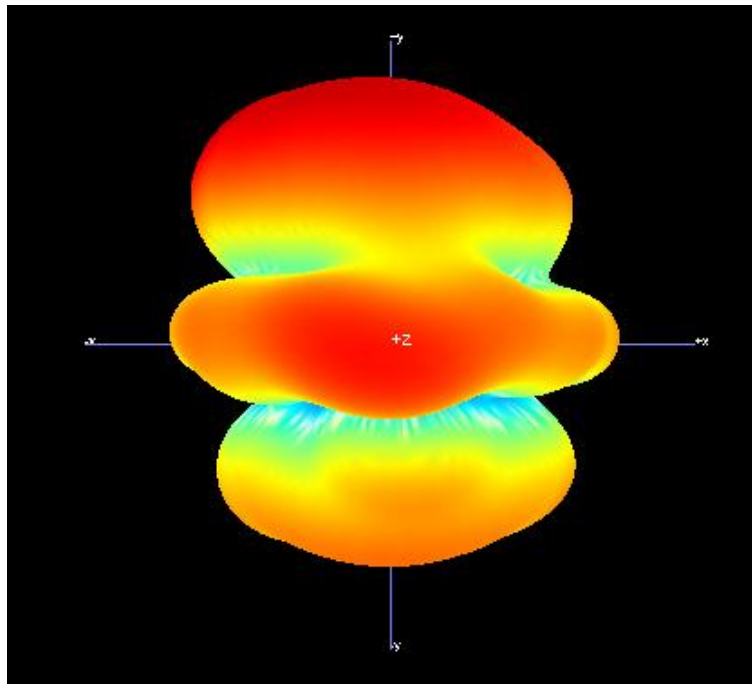
Theta=90°



## 2. 3D Radiation Pattern

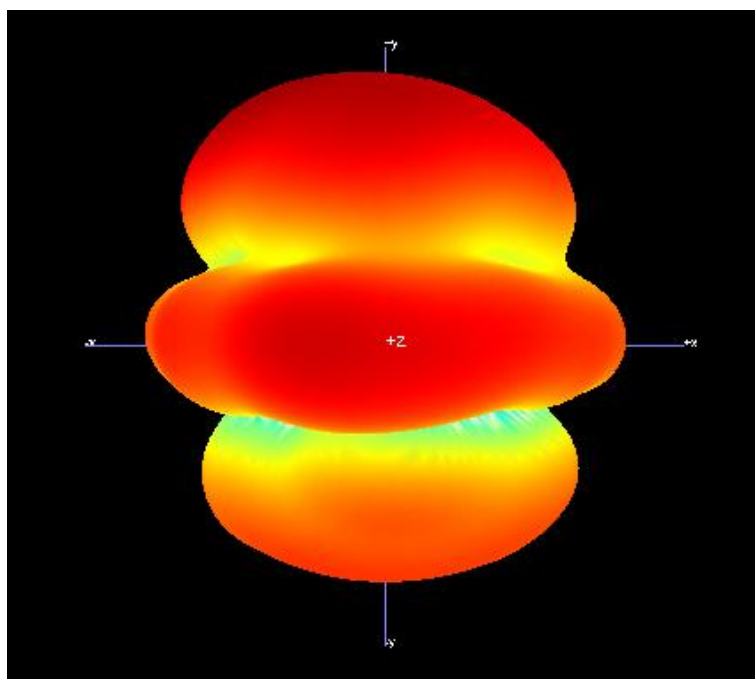


2400MHz



2440MHz

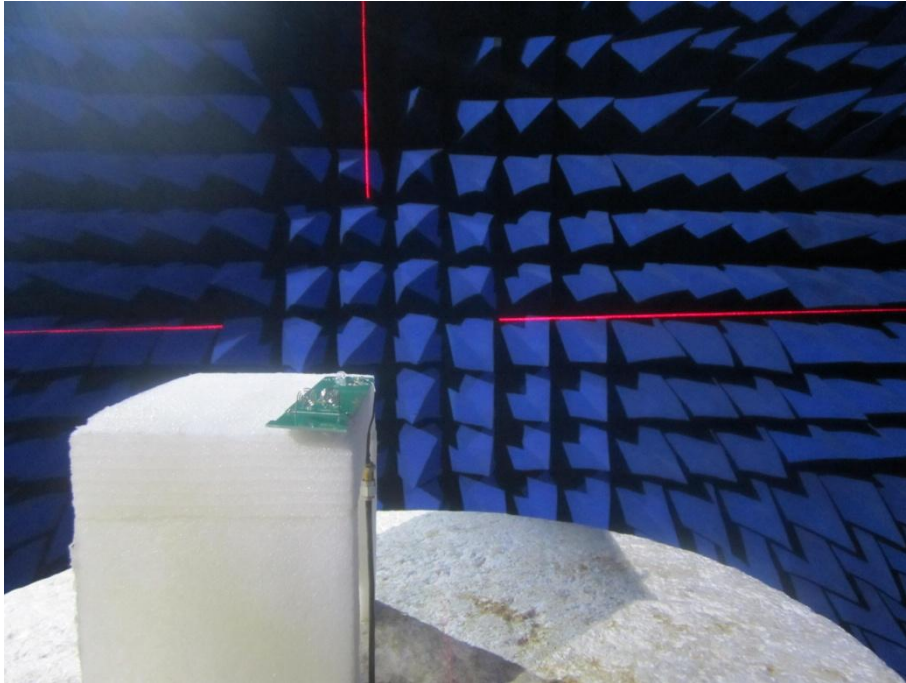




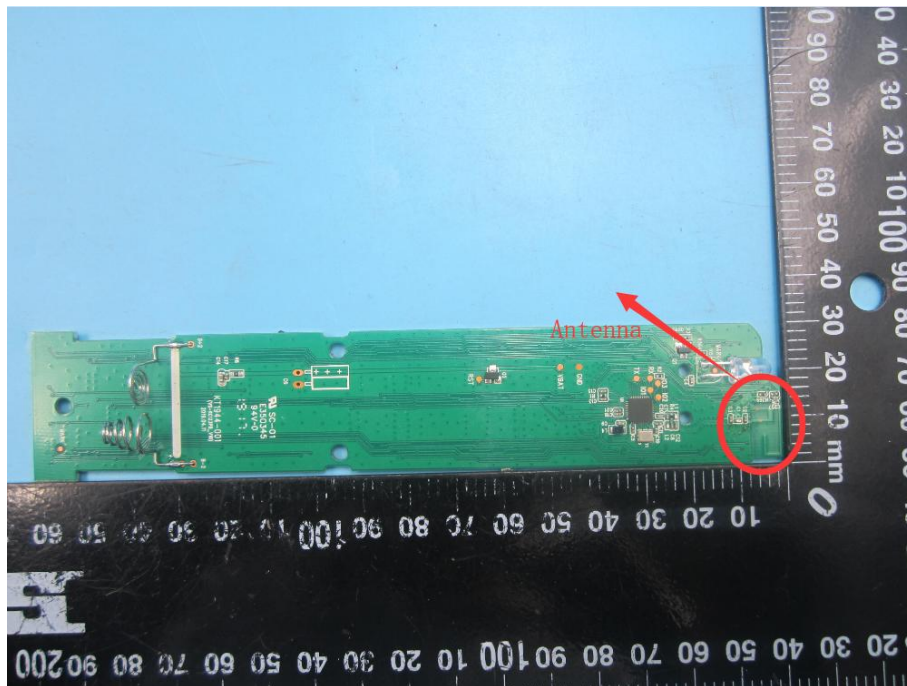
2480MHz

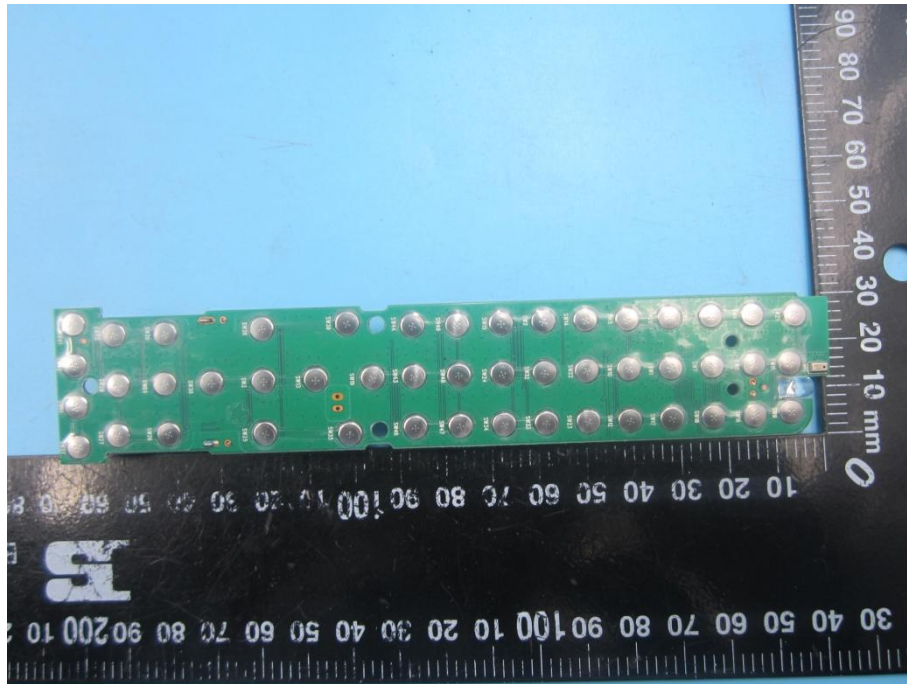
## Annex C Photographs

### 1. Test environment



### 2. EUT







## Annex D General Information

### 1.1 Identification of the Responsible Testing Laboratory

|                               |                                                                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Company Name:                 | Shenzhen Morlab Communications Technology Co., Ltd.                                                                              |
| Department:                   | Morlab Laboratory                                                                                                                |
| Address:                      | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |
| Responsible Test Lab Manager: | Mr. Su Feng                                                                                                                      |
| Telephone:                    | +86 755 36698555                                                                                                                 |
| Facsimile:                    | +86 755 36698525                                                                                                                 |

### 1.2 Identification of the Responsible Testing Location

|          |                                                                                                                                  |
|----------|----------------------------------------------------------------------------------------------------------------------------------|
| Name:    | Shenzhen Morlab Communications Technology Co., Ltd.<br>Morlab Laboratory                                                         |
| Address: | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |

### 1.3 Test Equipments Utilized

#### 1.3.1 List of Test Equipment

| No. | Type                                        | Specification         |
|-----|---------------------------------------------|-----------------------|
| 1   | E5071C Vector Network Analyzer              | Manufacturer: Agilent |
| 2   | 4*4*4 Full Anechoic Chamber                 | Manufacturer: Satimo  |
| 3   | SG24 Multi-probe Antenna Measurement System | Manufacturer: Satimo  |

————— END OF REPORT —————