





# 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)

**NOTE:** This document is issued by MORLAB, the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.





# DIRECTORY

- 1. Technical Information ..... 3
  - 1.1. Manufacturer and Factory Information ..... 3
  - 1.2. Equipment Under Test (EUT) Description ..... 3
- 2. Test Results ..... 4
  - 2.1. Applied Reference Documents ..... 4
  - 2.2. Test Conditions ..... 4
  - 2.3. Test Results lists ..... 4
- Annex A Photographs ..... 5
- Annex B Figures ..... 6
  - 1. 2D Radiation Pattern ..... 6
  - 2. 3D Radiation Pattern ..... 8
- Annex C Photographs ..... 10
- Annex D General Information ..... 12
  - 1.1 Identification of the Responsible Testing Laboratory ..... 12
  - 1.2 Identification of the Responsible Testing Location ..... 12
  - 1.3 Test Equipments Utilized ..... 12

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

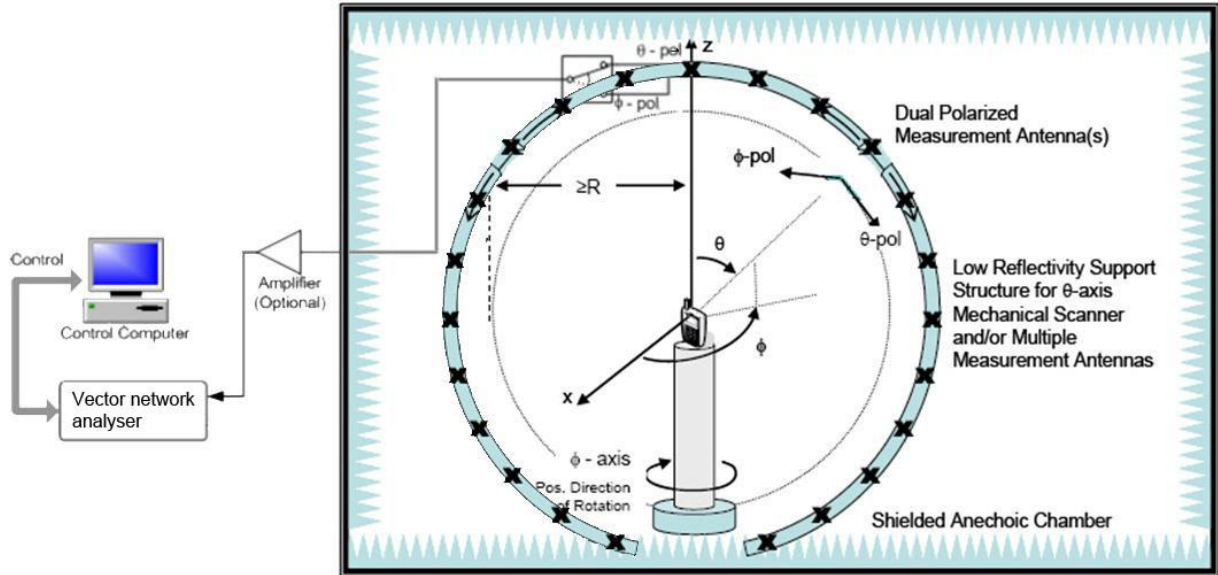
### 2.3. Test Results lists

#### 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

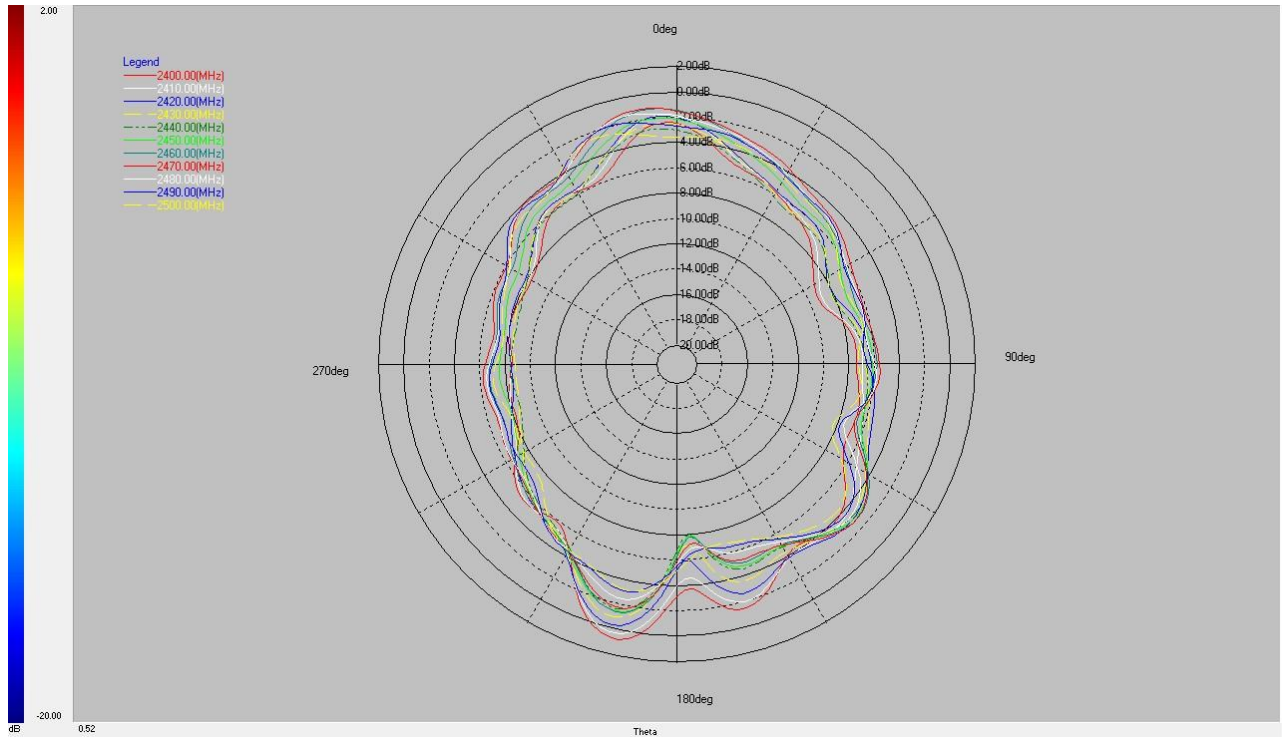
### 1. Test Setup



## Annex B Figures

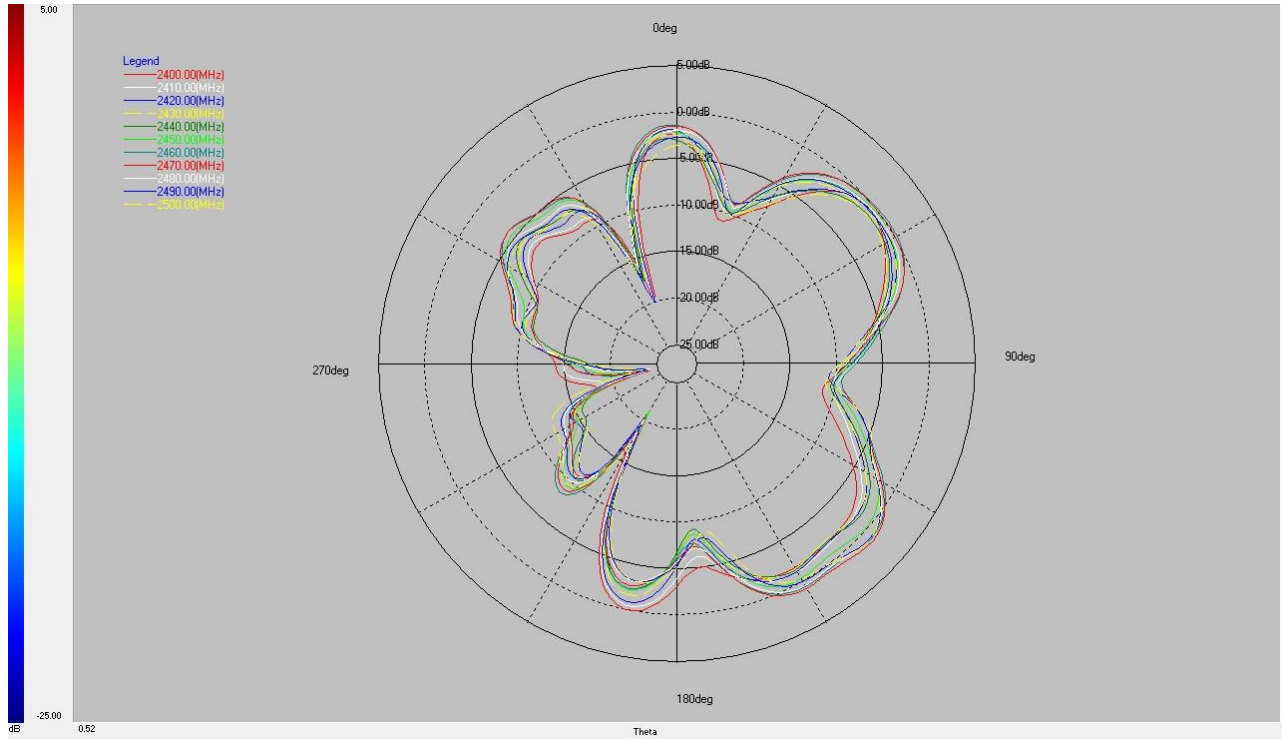
### 1. 2D Radiation Pattern

Phi=0°

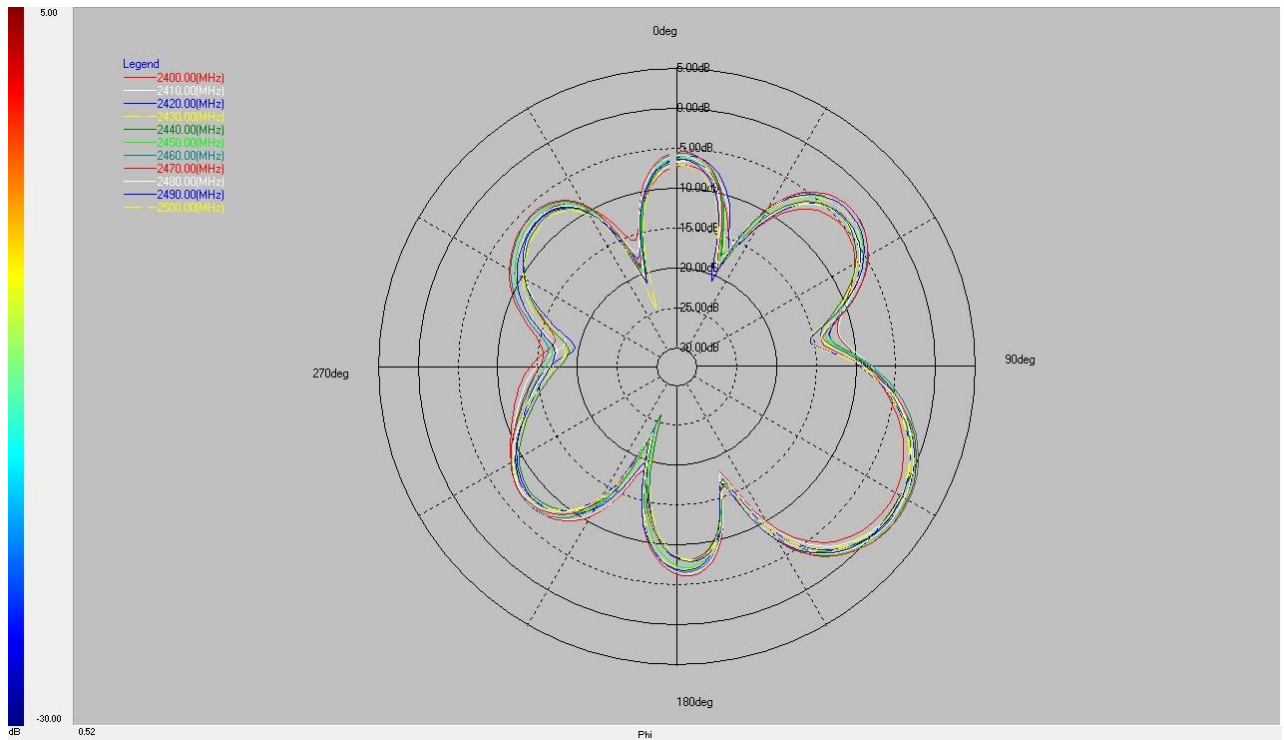




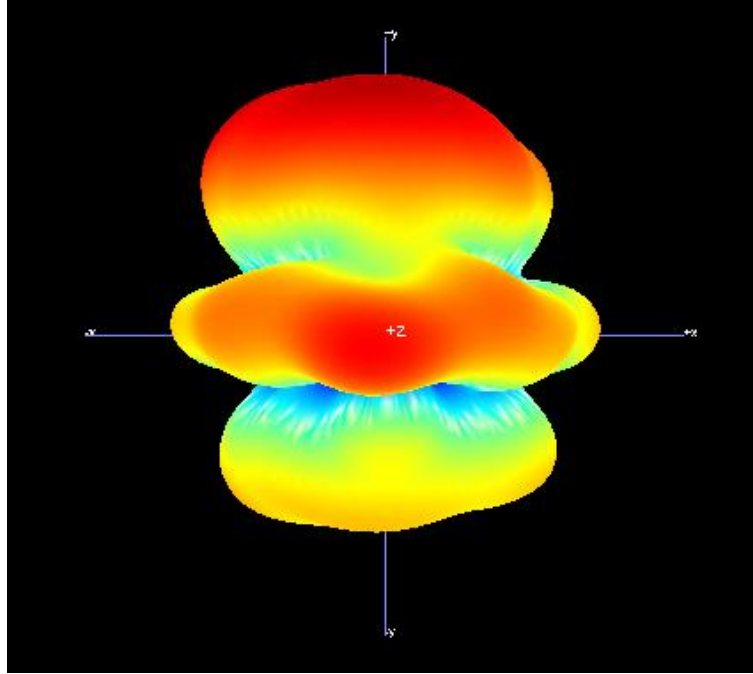
Phi=90°



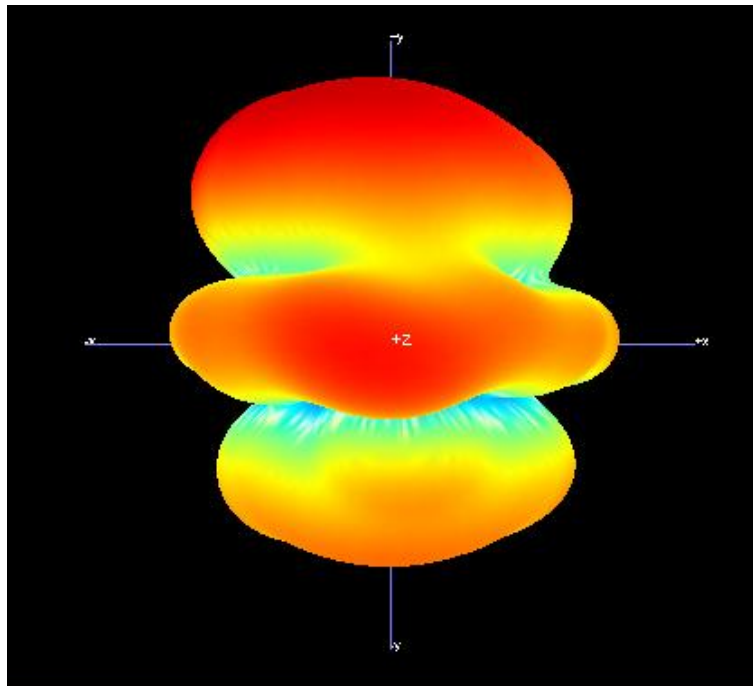
Theta=90°



## 2. 3D Radiation Pattern

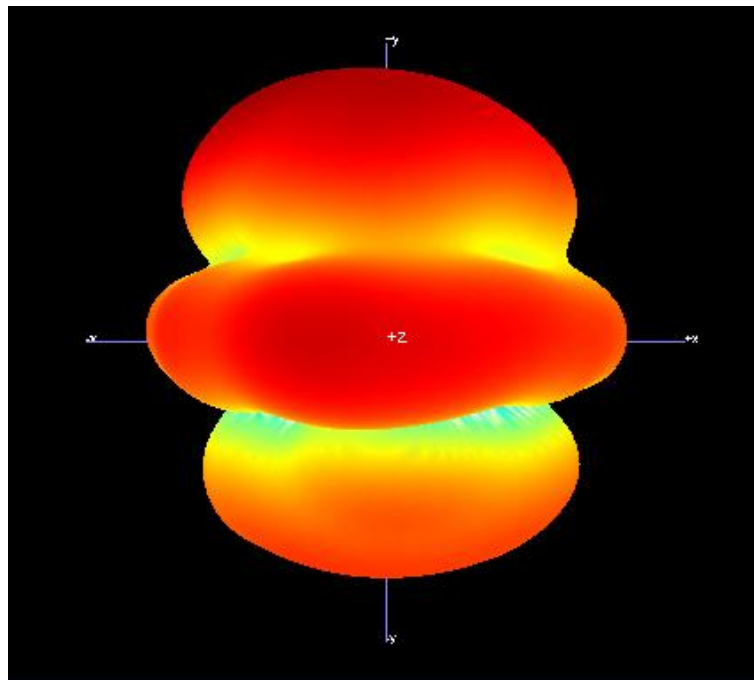


2400MHz



2440MHz

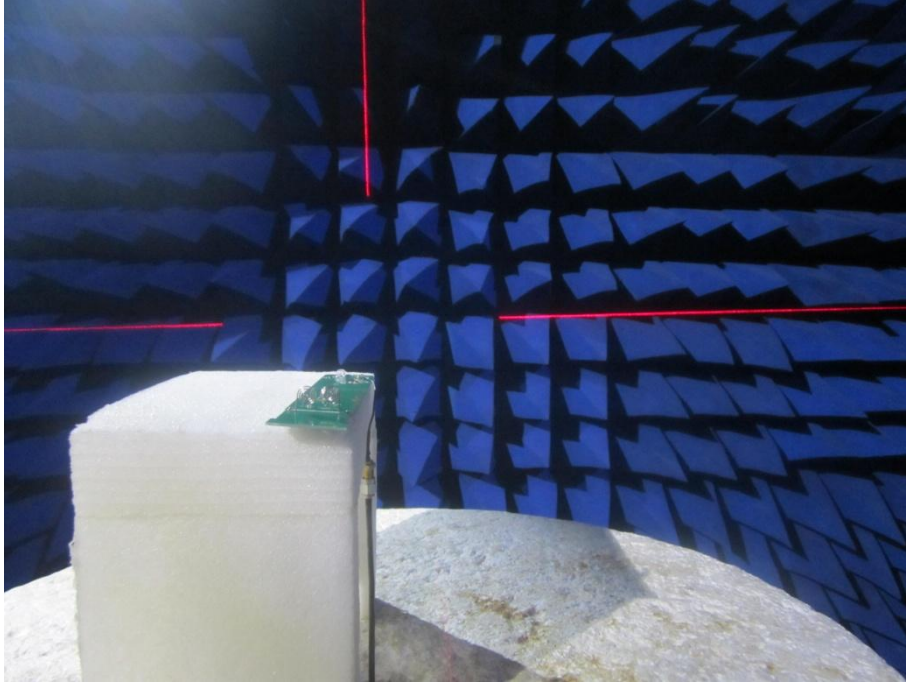




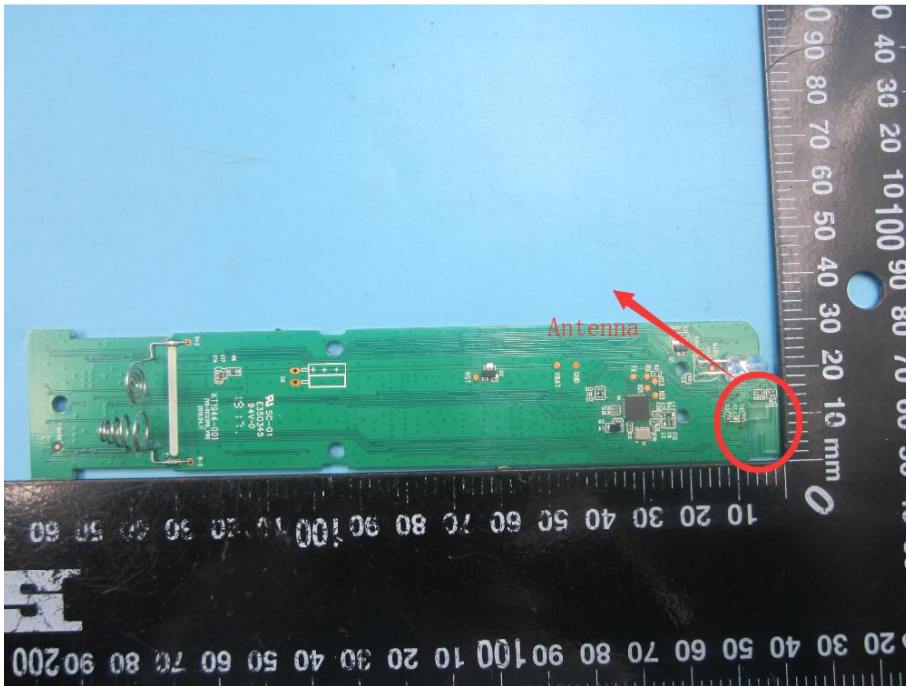
2480MHz

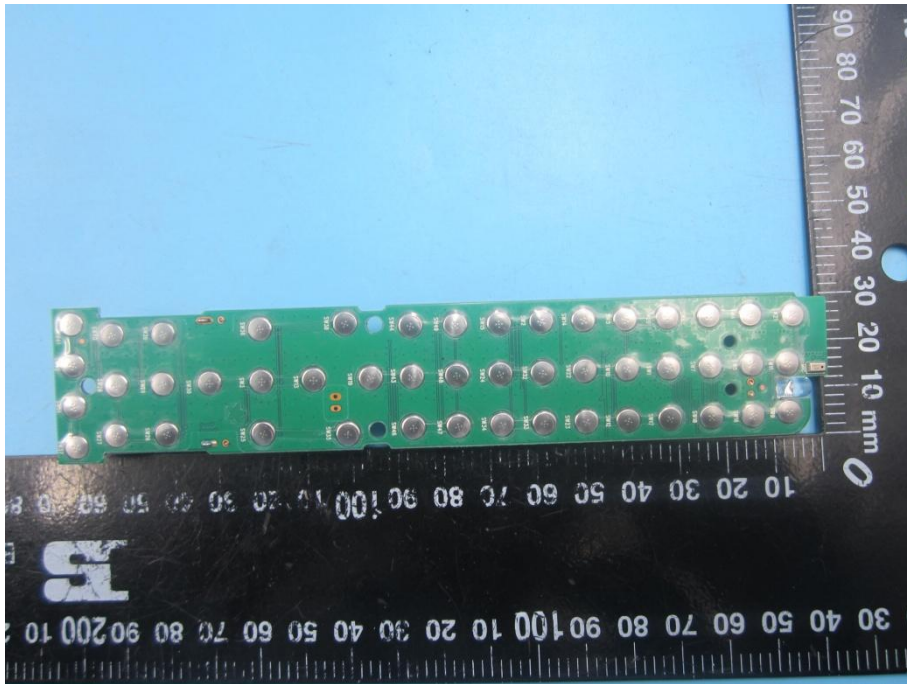
## Annex C Photographs

### 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. 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 —————