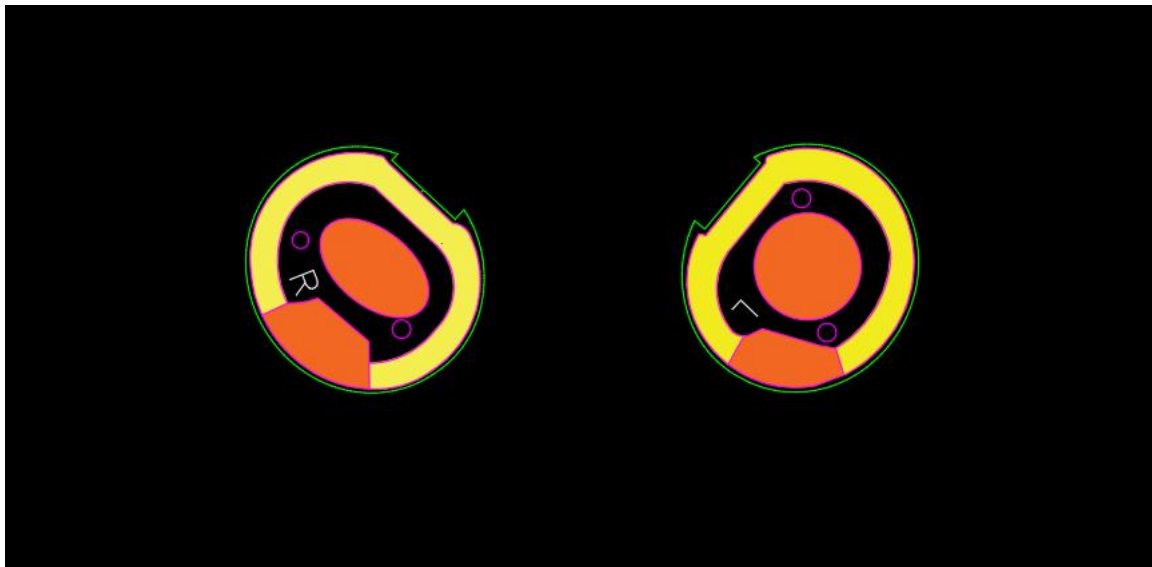


# WIFI /&BT FPC Antenna

## A2147(HA-A25T/A18T/Z250T)

### 1. Explanation of Product Number

|   |   |   |   |     |     |   |     |     |   |     |   |   |   |   |
|---|---|---|---|-----|-----|---|-----|-----|---|-----|---|---|---|---|
| S | 2 | B | 4 | B   | B   | 1 | F   | 3   | B | 0   | 1 | 0 | 0 | 0 |
|   |   |   |   | (1) | (2) |   | (3) | (4) |   | (5) |   |   |   |   |
|   |   |   |   |     |     |   |     |     |   |     |   |   |   |   |



### Product Description:

|                                                                                                                             |                    |                                                                                  |      |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------|------|
| Tolerances (Unless otherwise specified)<br>X : $\pm 1$ X.X : $\pm 0.1$ X.XX : $\pm 0.01$<br>Angle : $\pm$ Hole Dia. : $\pm$ |                    | 深圳市福伯特电子有限公司                                                                     |      |
| Scale :                                                                                                                     | Unit: mm           | Fbetter International (H.K.) Co.LTD.<br>Professional Elec. Component Distributer |      |
| Drawn By : Shelley                                                                                                          | Checked By : Simon |                                                                                  |      |
| Designed By :Simon                                                                                                          | Approved By :Kevin |                                                                                  |      |
| TITLE: WIFI FPCB Antenna                                                                                                    |                    | PART NO.                                                                         | REV. |
|                                                                                                                             |                    |                                                                                  | A    |

(1) Product Categories:

B:BT Antenna

(2) Dimensions:

B1: 10.38\*10.7\*0.13(mm)

(3) Material:

F: FPC

(4) Working Frequencies:

1B: 2.4G-2.5G

(5) Antenna Series:

01: Serial number

## 2. Features

\*Stable and reliable in performances

\*RoHS compliance

\*Low cost

## 3. Applications

\*WIFI IEEE802.11/BT

## 4. Description

\* YINGFENMG FPCB antenna series are specially designed for 2.4G-2.5G band application. Based on YINGFENG proprietary designs and processes, this FPCB antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.

## 5. Antenna Electrical Specifications :

| Characteristics    | Specifications      |          |         | Unit     |
|--------------------|---------------------|----------|---------|----------|
| Outline Dimensions | 10.38*10.7*0.13     |          |         | mm       |
| Frequency          | 2400~2500           |          |         | MHz      |
| Impedance          | 50                  |          |         | $\Omega$ |
| Polarization       | Linear Polarization |          |         |          |
| Return Loss Table  | Return Loss         |          |         |          |
| Freq.Band          | 2.4G Hz             | 2.45G Hz | 2.5G Hz |          |
| dB                 | -16.98              | -29.81   | 17.34   |          |

Tolerances (Unless otherwise specified)

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$

Scale :      Unit: mm

Drawn By : Shelley      Checked By : Simon

Designed By :Simon      Approved By :Kevin

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Professional Elec. Component Distributer

TITLE: WIFI FPCB Antenna

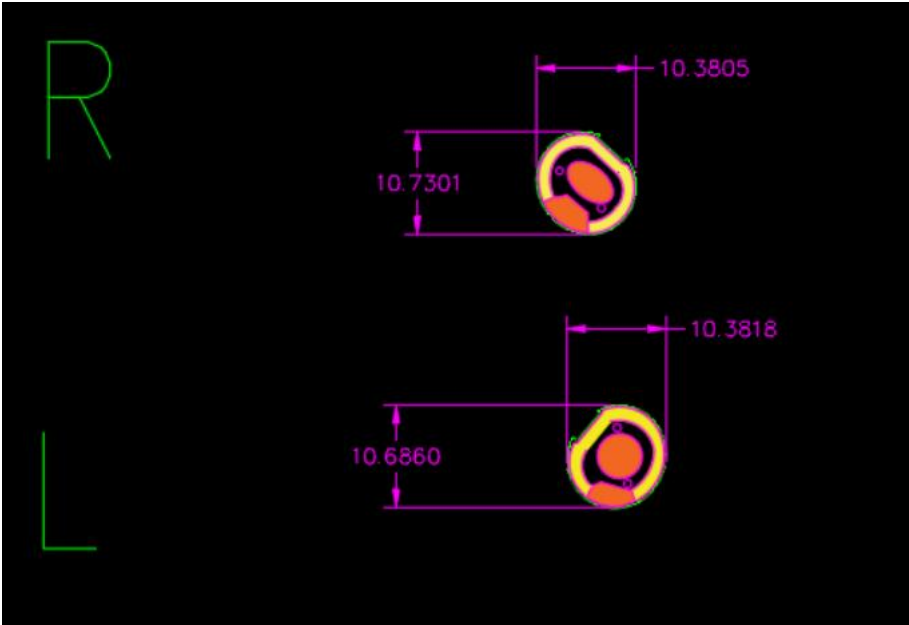
PART  
NO.

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A

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6. Dimensions (unit: mm)

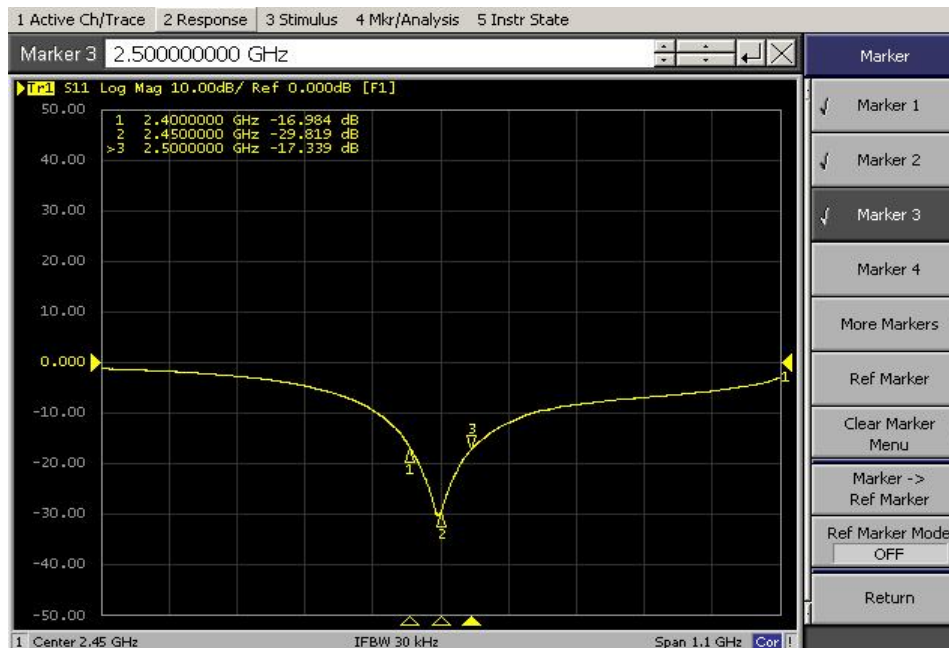


|                                                                                                                        |                    |                                                                                      |      |
|------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------|------|
| Tolerances (Unless otherwise specified)<br>X : ± 1      X.X : ± 0.1      X.XX : ± 0.01<br>Angle : ±      Hole Dia. : ± |                    | 深圳市福伯特电子有限公司                                                                         |      |
| Scale :                                                                                                                | Unit: mm           | Fbetter International (H.K.) Co.LTD.<br><br>Professional Elec. Component Distributer |      |
| Drawn By : Shelley                                                                                                     | Checked By : Simon |                                                                                      |      |
| Designed By :Simon                                                                                                     | Approved By :Kevin |                                                                                      |      |
| TITLE:    WIFI FPCB Antenna                                                                                            |                    | PART<br>NO.                                                                          | REV. |
|                                                                                                                        |                    |                                                                                      | A    |

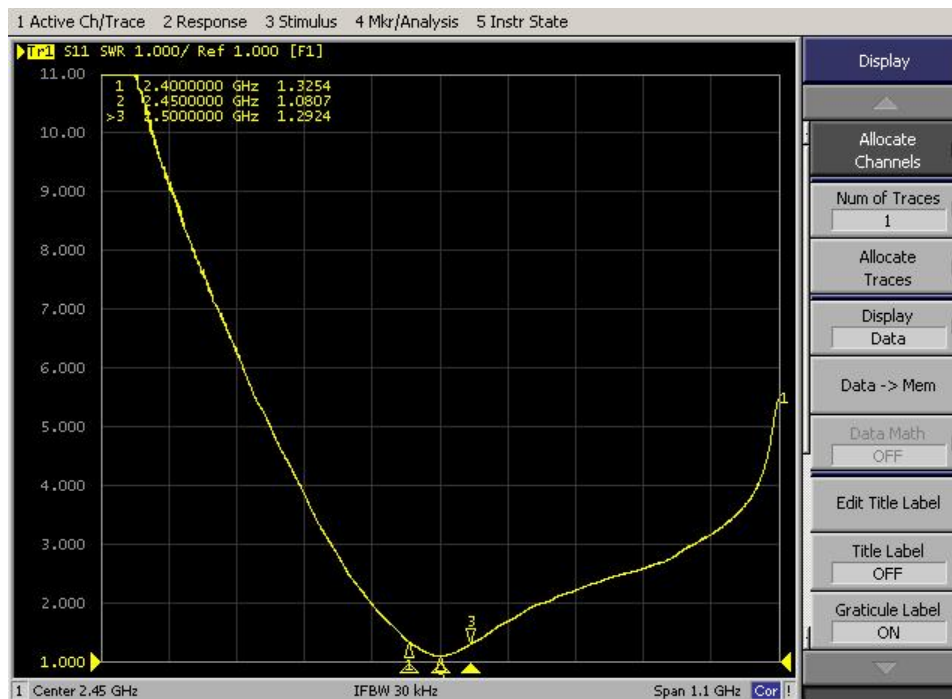
公差:  $\pm 0.5\text{mm}$

## 7. Measurement Characteristics:

### (1) Return Loss



### (2) VSWR



#### Tolerances (Unless otherwise specified)

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$

Scale :      Unit: mm

Drawn By : Shelley      Checked By : Simon

Designed By : Simon      Approved By : Kevin

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TITLE: WIFI FPCB Antenna

PART  
NO.

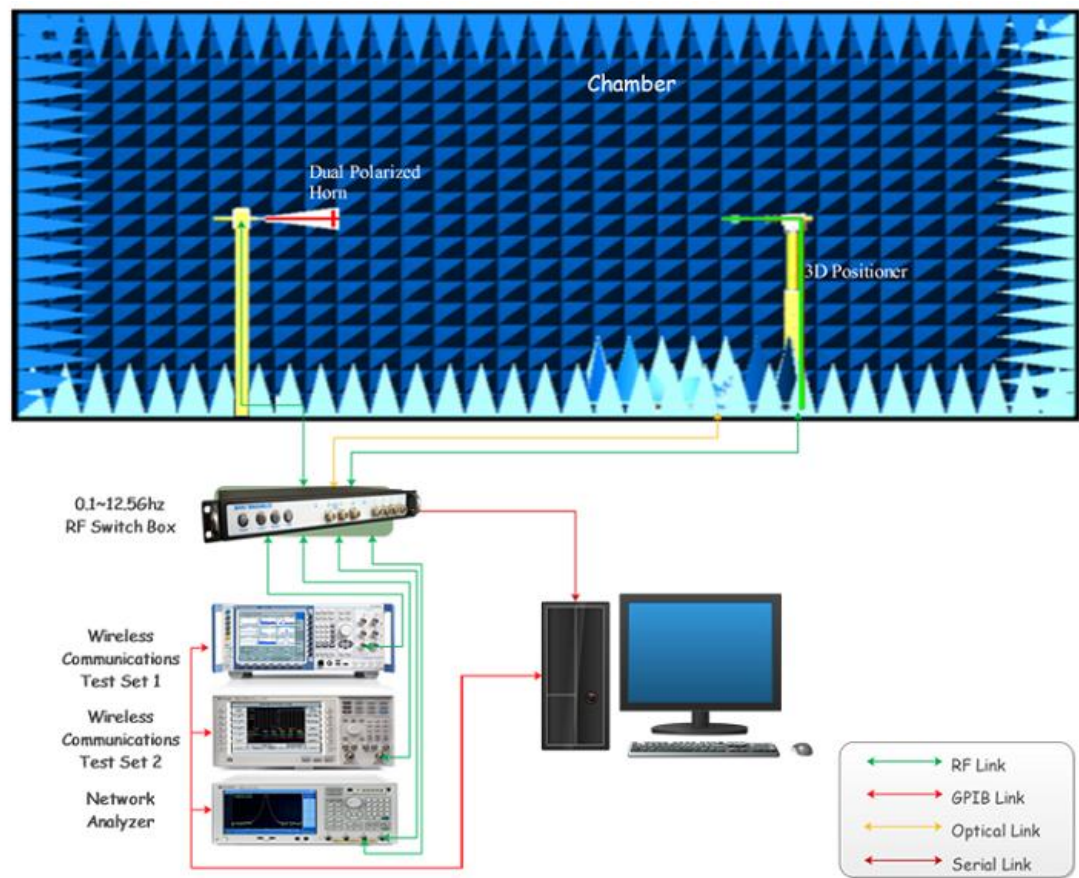
S2B4BB1F3B01000

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8. Three D Radiation Pattern measurements



Conduction  
R

|                                                                   |          |             |
|-------------------------------------------------------------------|----------|-------------|
| <b>TRM/CA/01/C (Output Power)</b><br>Packet Length Tested: DH1    |          |             |
| <b>Hopping ON</b>                                                 | Any      | Limits      |
| Average Power                                                     | 8.34 dBm |             |
| Max Power                                                         | 8.56 dBm | < 20.00 dBm |
| Min Power                                                         | 8.12 dBm | > -6.00 dBm |
| Peak Power                                                        | 8.68 dBm | < 23.00 dBm |
| Total Packets Failed                                              | 0        |             |
| Total Packets Tested                                              | 100      |             |
| Result                                                            | Pass     |             |
| <b>TRM/CA/08/C (Initial Carrier)</b><br>Packet Length Tested: DH1 |          |             |
| <b>Hopping ON</b>                                                 | Any      | Limits      |
| Average Offset                                                    | -0.7 kHz |             |
| Max Offset                                                        | 4.5 kHz  | <= 75 kHz   |
| Min Offset                                                        | -6.8 kHz | <= 75 kHz   |
| Total Packets Failed                                              | 0        |             |
| Total Packets Tested                                              | 100      |             |
| Result                                                            | Pass     |             |

L

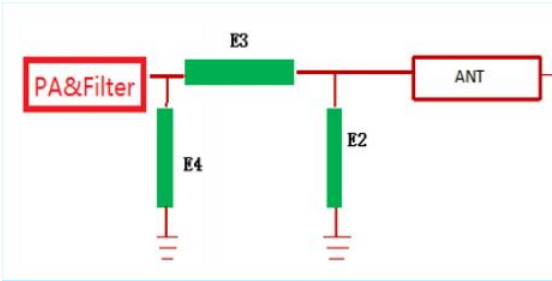
Overall Result: PASS

|                                                                   |          |             |
|-------------------------------------------------------------------|----------|-------------|
| <b>TRM/CA/01/C (Output Power)</b><br>Packet Length Tested: DH1    |          |             |
| <b>Hopping ON</b>                                                 | Any      | Limits      |
| Average Power                                                     | 8.31 dBm |             |
| Max Power                                                         | 8.49 dBm | < 20.00 dBm |
| Min Power                                                         | 8.07 dBm | > -6.00 dBm |
| Peak Power                                                        | 8.59 dBm | < 23.00 dBm |
| Total Packets Failed                                              | 0        |             |
| Total Packets Tested                                              | 100      |             |
| Result                                                            | Pass     |             |
| <b>TRM/CA/08/C (Initial Carrier)</b><br>Packet Length Tested: DH1 |          |             |
| <b>Hopping ON</b>                                                 | Any      | Limits      |
| Average Offset                                                    | -0.3 kHz |             |
| Max Offset                                                        | 3.0 kHz  | <= 75 kHz   |
| Min Offset                                                        | -5.1 kHz | <= 75 kHz   |
| Total Packets Failed                                              | 0        |             |
| Total Packets Tested                                              | 100      |             |
| Result                                                            | Pass     |             |

|                                                                                                                               |                    |                                          |      |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------|------|
| <b>Tolerances (Unless otherwise specified)</b><br>X : ± 1      X.X : ± 0.1      X.XX : ± 0.01<br>Angle : ±      Hole Dia. : ± |                    | 深圳市福伯特电子有限公司                             |      |
| Scale :                                                                                                                       | Unit: mm           | Fbetter International (H.K.) Co.LTD.     |      |
| Drawn By : Shelley                                                                                                            | Checked By : Simon | Professional Elec. Component Distributer |      |
| Designed By :Simon                                                                                                            | Approved By :Kevin |                                          |      |
| TITLE: WIFI FPCB Antenna                                                                                                      |                    | PART NO.                                 | REV. |
|                                                                                                                               |                    | S2B4BB1F3B01000                          | A    |
|                                                                                                                               |                    | OF 6                                     |      |

match

| Ele ment | paramete<br>r value ( R/L) |
|----------|----------------------------|
| ANT      | FPC                        |
| E2       | NC                         |
| E3       | 2nh                        |
| E4       | 2.4pf                      |
|          |                            |



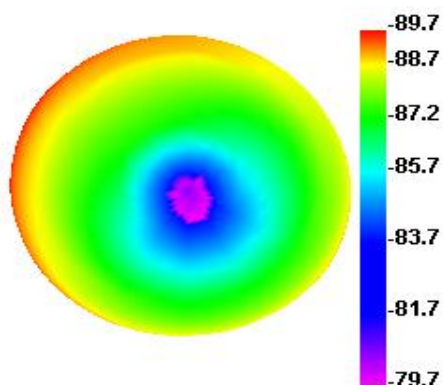
|                                                                                                                               |                    |                                                                                                    |                        |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------|------------------------|
| <b>Tolerances (Unless otherwise specified)</b><br>X : ± 1      X.X : ± 0.1      X.XX : ± 0.01<br>Angle : ±      Hole Dia. : ± |                    | 深圳市福伯特电子有限公司                                                                                       |                        |
| Scale :                                                                                                                       | Unit: mm           | <b>Fbetter International (H.K.) Co.LTD.</b><br><br><b>Professional Elec. Component Distributer</b> |                        |
| Drawn By : Shelley                                                                                                            | Checked By : Simon |                                                                                                    |                        |
| Designed By :Simon                                                                                                            | Approved By :Kevin |                                                                                                    |                        |
| <b>TITLE:    WIFI FPCB Antenna</b>                                                                                            |                    | <b>PART NO.</b>                                                                                    | <b>S2B4BB1F3B01000</b> |
|                                                                                                                               |                    |                                                                                                    | <b>REV. A</b>          |

## 9.OTA Radiation Pattern

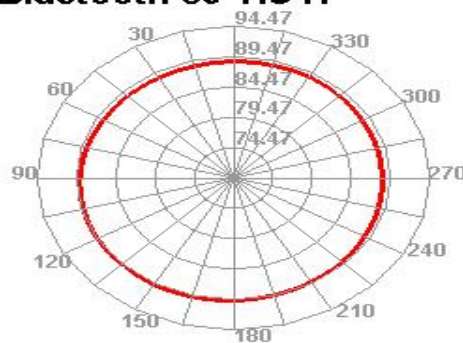
### 9-1.3D Gain Pattern (Radiation Pattern at 2450 MHz)

| R (free field)  |               |        |        |
|-----------------|---------------|--------|--------|
| Test            | Bluetooth TIS |        |        |
| Result          | 0             | 39     | 78     |
| Frequency (MHz) | 2402          | 2441   | 2480   |
| TRP (dBm)       | 0.77          | 1.88   | 1.37   |
| TIS (dBm)       | -87.31        | -88.52 | -89.04 |

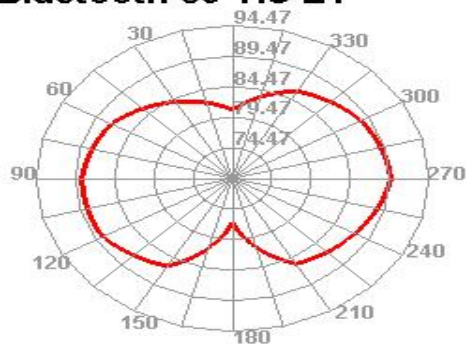
#### Bluetooth 39 TIS



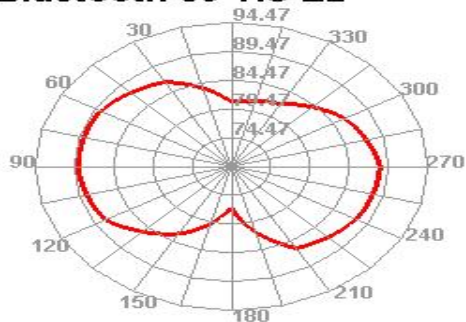
#### Bluetooth 39 TIS H



#### Bluetooth 39 TIS E1



#### Bluetooth 39 TIS E2



#### Tolerances (Unless otherwise specified)

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$

Scale :      Unit: mm

Drawn By : Shelley      Checked By : Simon

Designed By : Simon      Approved By : Kevin

深圳市福伯特电子有限公司

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Professional Elec. Component Distributer

TITLE: WIFI FPCB Antenna

PART  
NO.

S2B4BB1F3B01000

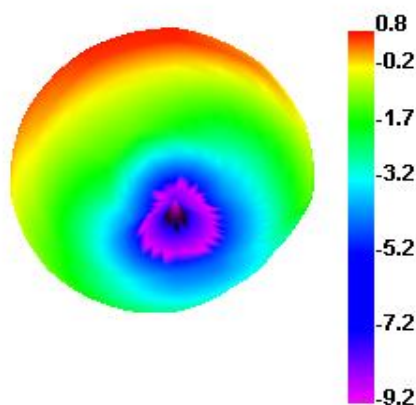
REV.

A

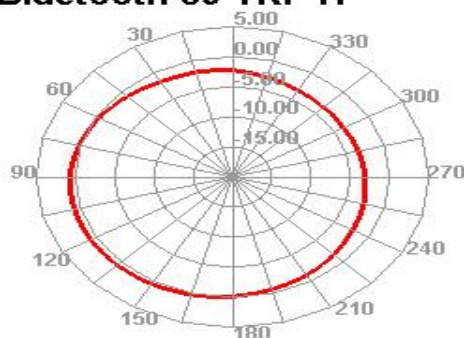
OF 6

| L (free field)  |               |        |        |
|-----------------|---------------|--------|--------|
| Test            | Bluetooth TIS |        |        |
| Result          | 0             | 39     | 78     |
| Frequency (MHz) | 2402          | 2441   | 2480   |
| TRP (dBm)       | 0.23          | 1.14   | 1.67   |
| TIS (dBm)       | -88.23        | -89.43 | -88.34 |

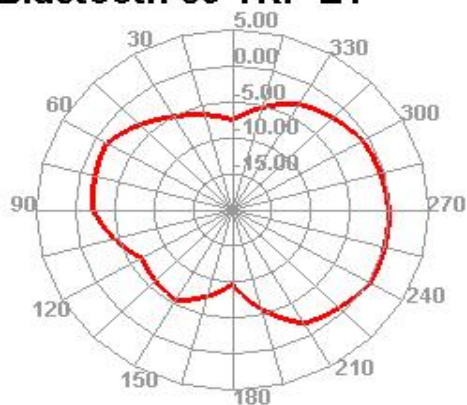
**Bluetooth 39 TRP**



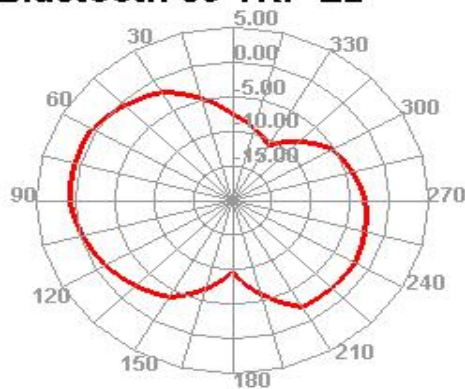
**Bluetooth 39 TRP H**



**Bluetooth 39 TRP E1**



**Bluetooth 39 TRP E2**



**Tolerances (Unless otherwise specified)**

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$

Scale :      Unit: mm

Drawn By : Shelley      Checked By : Simon

Designed By : Simon      Approved By : Kevin

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**TITLE:** WIFI FPCB Antenna

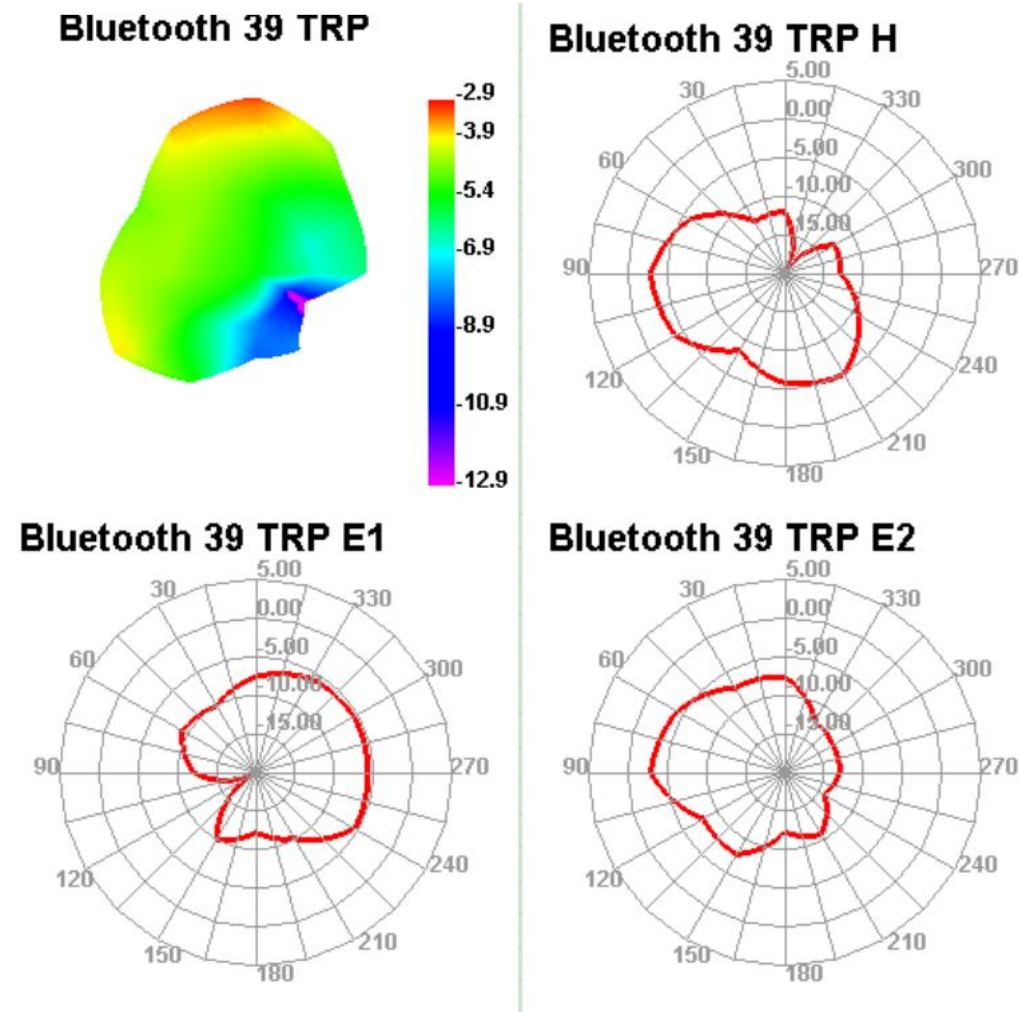
**PART  
NO.**

**S2B4BB1F3B01000**

**REV.**

**A**

| R (headform)    |               |        |        |
|-----------------|---------------|--------|--------|
| Test            | Bluetooth TIS |        |        |
| Result          | 0             | 39     | 78     |
| Frequency (MHz) | 2402          | 2441   | 2480   |
| TRP (dBm)       | -6.26         | -7.19  | -7.2   |
| TIS (dBm)       | -80.13        | -79.67 | -78.13 |



|                                                                                                                               |                    |                                                                                                    |                         |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------|-------------------------|
| <b>Tolerances (Unless otherwise specified)</b><br>X : ± 1      X.X : ± 0.1      X.XX : ± 0.01<br>Angle : ±      Hole Dia. : ± |                    | <div>深圳市福伯特电子有限公司</div>                                                                            |                         |
| Scale :                                                                                                                       | Unit: mm           | <b>Fbetter International (H.K.) Co.LTD.</b><br><br><b>Professional Elec. Component Distributer</b> |                         |
| Drawn By : Shelley                                                                                                            | Checked By : Simon |                                                                                                    |                         |
| Designed By :Simon                                                                                                            | Approved By :Kevin |                                                                                                    |                         |
| <b>TITLE:   WIFI FPCB Antenna</b>                                                                                             |                    | <b>PART NO.</b>                                                                                    | <b>S2B4BB1F3B01000</b>  |
|                                                                                                                               |                    |                                                                                                    | <b>REV.</b><br><b>A</b> |



## 9-2.complete machine Efficiency Table

R

| Passive Test For BT |       |        |       |
|---------------------|-------|--------|-------|
| Freq                | Effi  | Effi   | Gain  |
| (MHz)               | (%)   | (dB)   | (dBi) |
| 2400                | 12.44 | -9.05  | -3.36 |
| 2410                | 12.31 | -9.1   | -3.56 |
| 2420                | 11.94 | -10.03 | -4.6  |
| 2430                | 12.26 | -9.89  | -4.44 |
| 2440                | 13.18 | -10.37 | -4.93 |
| 2450                | 12.94 | -10.03 | -4.63 |
| 2460                | 10.02 | -10.96 | -5.57 |
| 2470                | 10.36 | -10.78 | -5.37 |
| 2480                | 10.33 | -11.35 | -5.99 |

L

| Passive Test For BT |       |        |       |
|---------------------|-------|--------|-------|
| Freq                | Effi  | Effi   | Gain  |
| (MHz)               | (%)   | (dB)   | (dBi) |
| 2400                | 10.79 | -12.37 | -4.45 |
| 2410                | 10.51 | -12.59 | -4.65 |
| 2420                | 11.48 | -13.49 | -5.51 |
| 2430                | 12.05 | -12.97 | -5.08 |
| 2440                | 12.29 | -12.76 | -5.91 |
| 2450                | 11.19 | -12.08 | -4.4  |
| 2460                | 11.63 | -12.5  | -4.09 |
| 2470                | 10.97 | -11.57 | -4.44 |
| 2480                | 10.95 | -11.58 | -4.73 |

### Tolerances (Unless otherwise specified)

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$

Scale :      Unit: mm

Drawn By : Shelley      Checked By : Simon

Designed By : Simon      Approved By : Kevin

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Professional Elec. Component Distributer

TITLE: WIFI FPCB Antenna

PART  
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S2B4BB1F3B01000

REV.  
A

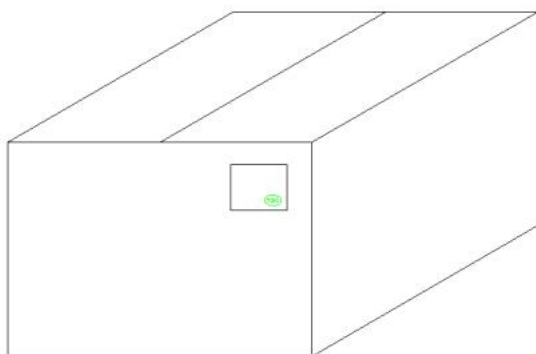
OF 6

## 10.Revision Control:

| Revision | Date        | Content | Remark |
|----------|-------------|---------|--------|
| A        | Mar.12.2022 |         | N/A    |

### Packaging method

The FPC antenna is assembled and affixed to the customer supply shell material, and the quantity is subject to the actual order.



### Tolerances (Unless otherwise specified)

X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$

Angle :  $\pm$       Hole Dia. :  $\pm$

Scale :      Unit: mm

Drawn By : Shelley      Checked By : Simon

Designed By : Simon      Approved By : Kevin

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