

## Antenna Specifications

### BLE:

Manufacturer: Rigel Technology (S) PTE LTD Manufacturer

Address: 20 CHANGI BUSINESS PARK CENTRAL 2, RIGEL INNOVATION CENTRE, Singapore 486031

PCB Part No.: R1001

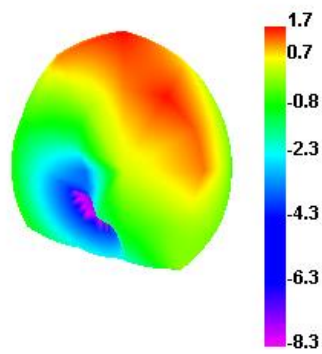
Antenna Type: PCB Printed Antenna (板载天线)

BLE Antenna Dimension: 10.85 x 4.90 x 0.035mm

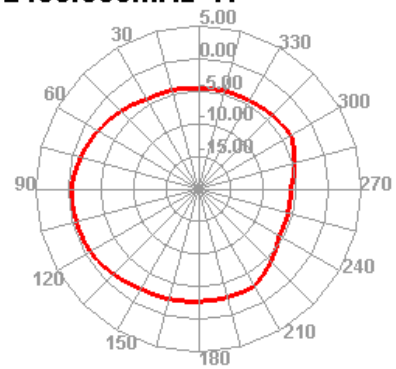


|                       |                    |
|-----------------------|--------------------|
| Frequency Range (MHz) | 2402MHz to 2480MHz |
| Gain (dBi)            | 1.7                |

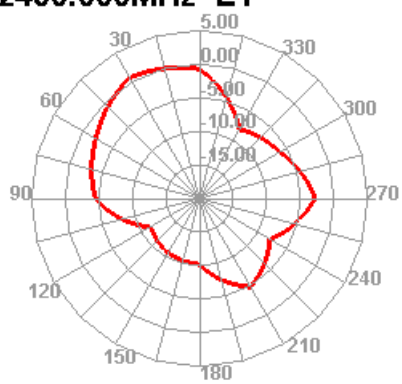
2450.000MHz



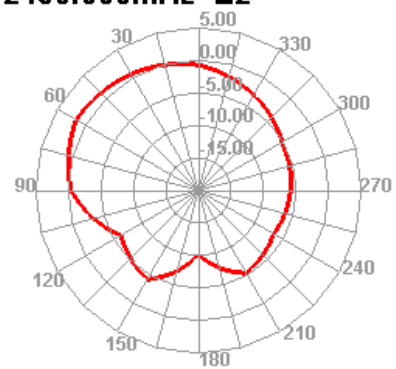
2450.000MHz H



2450.000MHz E1



2450.000MHz E2



## Wifi:

Manufacturer: ESPRESSIF SYSTEMS (SHANGHAI) CO., LTD.

Manufacturer Address: Suite 204, Block 2, 690 Bibo Road, Zhang Jiang Hi-Tech Park, Shanghai, China (201203)

Module Part No.: ESP32-WROOM-32D

Antenna Type: PCB Printed Antenna (板载天线)

WiFi Antenna Dimension: 14.5 x 6.0 x 0.035mm



|                       |                         |
|-----------------------|-------------------------|
| Frequency Range (MHz) | 2412MHz to 2462MHz      |
| Directivity (dBi)     | 1 (Omni-directional)    |
| Gain (dBi)            | 3.71                    |
| Input Impedance (ohm) | 50                      |
| Polarization Type     | Horizontal and Vertical |
| V.S.W.R               | <1.4                    |

### Gain and Efficiency

| Model     | Test Item | Test State | Frequency (MHz) | Efficiency (dB) | Gain (dB) | Note         |
|-----------|-----------|------------|-----------------|-----------------|-----------|--------------|
| ESP-ANT A | Gain      | Free Space | 2400            | 67.24           | 3.08      | Vertical 30° |
|           |           |            | 2402            | 68.24           | 3.18      |              |
|           |           |            | 2410            | 70.74           | 3.27      |              |
|           |           |            | 2420            | 77.67           | 3.66      |              |
|           |           |            | 2430            | 78.20           | 3.71      |              |
|           |           |            | 2440            | 78.11           | 3.68      |              |
|           |           |            | 2450            | 77.14           | 3.64      |              |
|           |           |            | 2460            | 74.79           | 3.52      |              |
|           |           |            | 2470            | 75.60           | 3.60      |              |
|           |           |            | 2480            | 74.55           | 3.52      |              |
|           |           |            | 2490            | 73.05           | 3.56      |              |
|           |           |            | 2500            | 71.38           | 3.48      |              |

