

# PCB BT Antenna Test Report

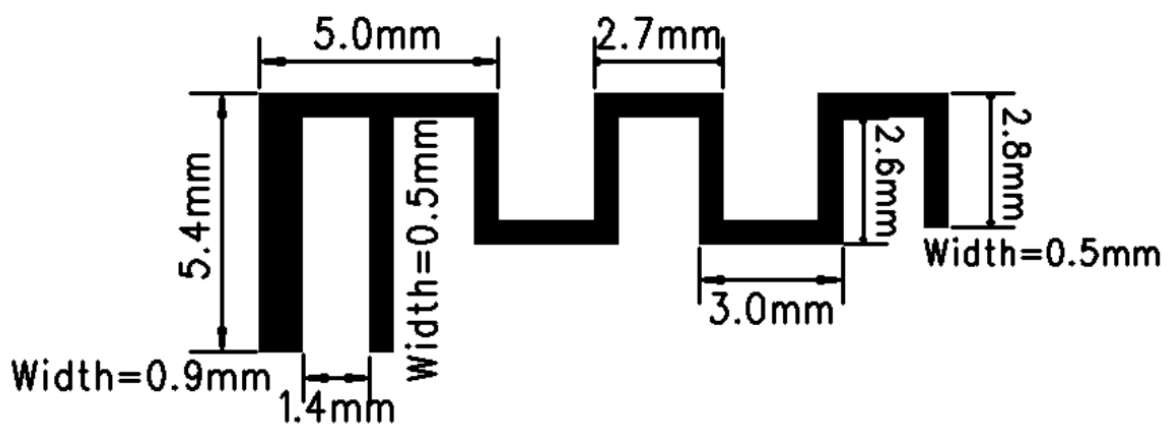
Manufacturer:: Rayleigh Labs Technology (ShenZhen) CO., LTD.

## Introduction of antenna

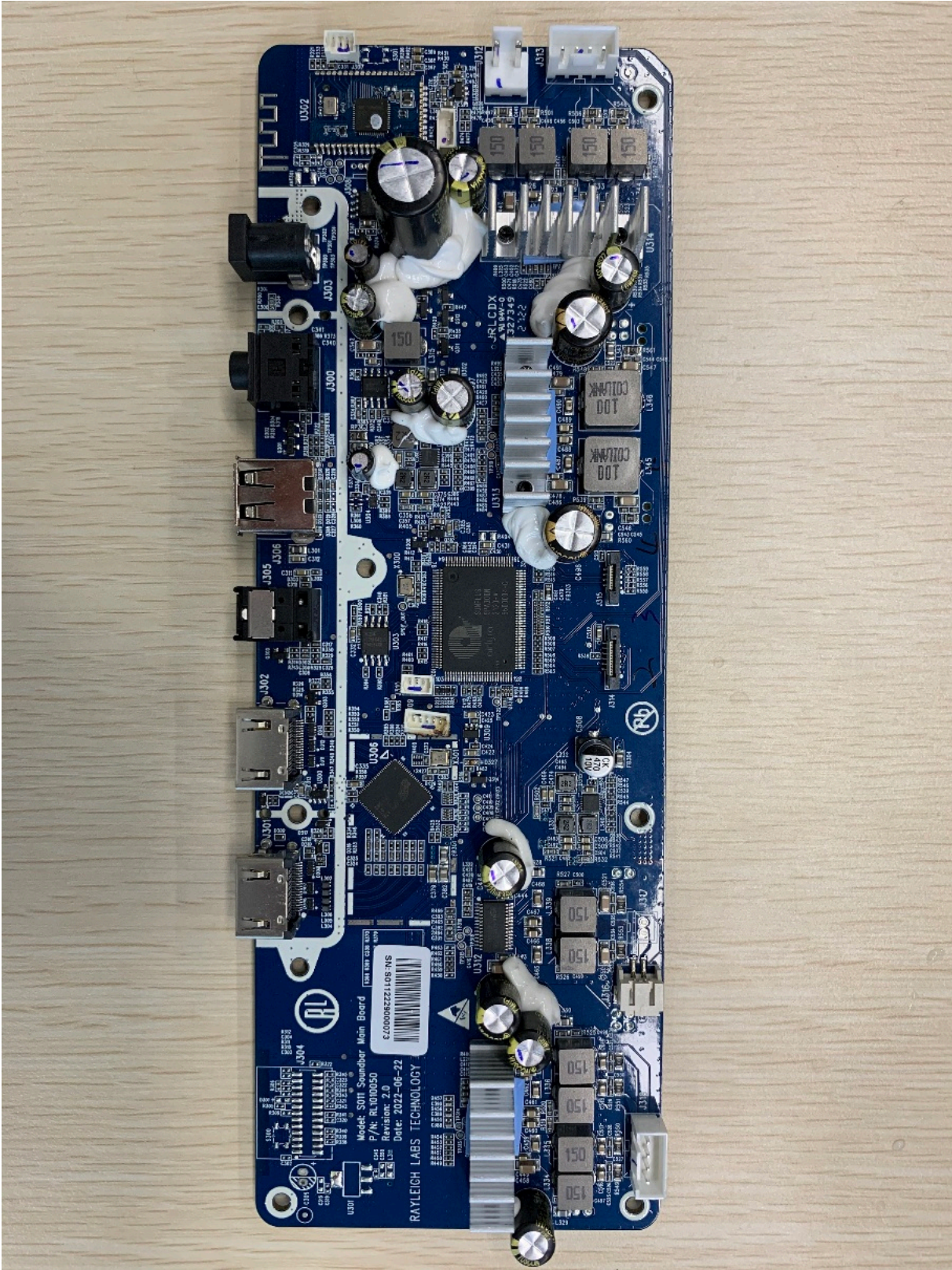
Our Soundbar speaker's antenna is directly made on the Main PCB board. The antenna is copper potable tin injection process, copper foil thickness: 1OZ, sheet material is FR - 4 thickness 1.6mm material.

## Antenna shape

### 1. Size :



2. Picture :



Antenna parameters

The Bluetooth antenna operates at 2402-2480MHz and generates resonance in this frequency band. The next table is the main parameter of the antenna.

| Bluetooth built-in antenna |                  |
|----------------------------|------------------|
| Frequency (MHz)            | 2402 ~ 2480 MHz  |
| VSWR                       | $\leq 1.92$      |
| Impedance                  | 50 Ohm Nominal   |
| Return Loss                | -8.5 dB Max      |
| Radiation                  | Omni-directional |
| Gain (Peak)                | 0 dBi            |
| Polarization               | Linear, Vertical |
| Admitted Power             | 2W               |
| Connector                  | Tin              |

### Antenna gain detection report

|                    |                |               |              |
|--------------------|----------------|---------------|--------------|
| Spectrum Detector: | Agilent E5071B | Test Date :   | Mar 15, 2019 |
| Test By:           | Tang           | Temperature : | 21°C         |
| Test Result:       | PASS           | Humidity :    | 65 %         |
| Modulation:        | GFSK           |               |              |

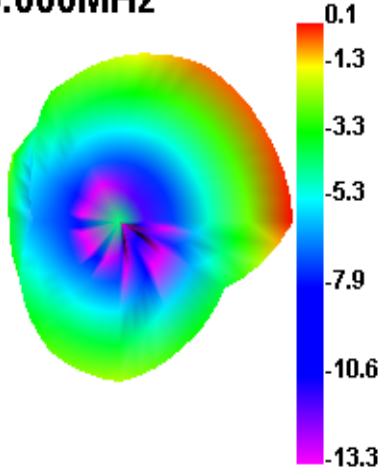
### Maximum gain value

| Frequency VNA (MHz) | Max Gain (dB) |
|---------------------|---------------|
| 2400                | -0.45         |
| 2410                | -0.35         |
| 2420                | -0.1          |
| 2430                | -1.19         |

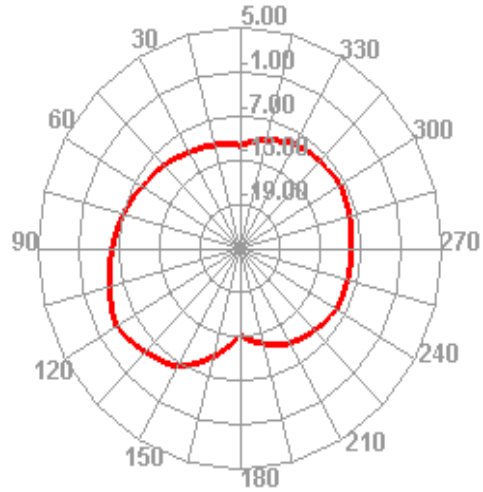
|      |       |
|------|-------|
| 2440 | -1.64 |
| 2450 | -0.39 |
| 2460 | -1.12 |
| 2470 | -1.18 |
| 2480 | 0.00  |
| 2490 | -1.28 |
| 2500 | -1.32 |

**Directional map:**

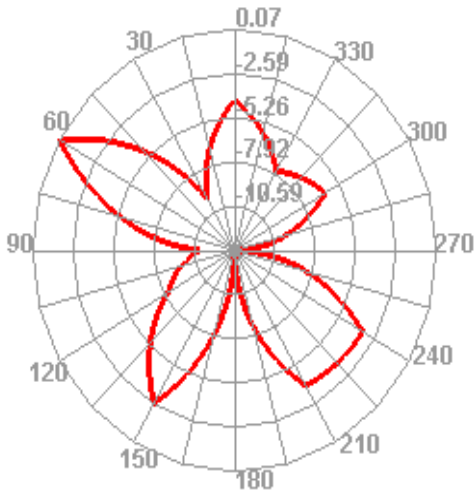
**2400.000MHz**



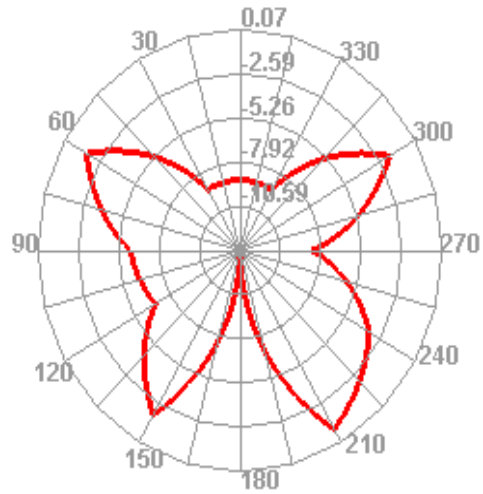
**2400.000MHz H**



**2400.000MHz E1**

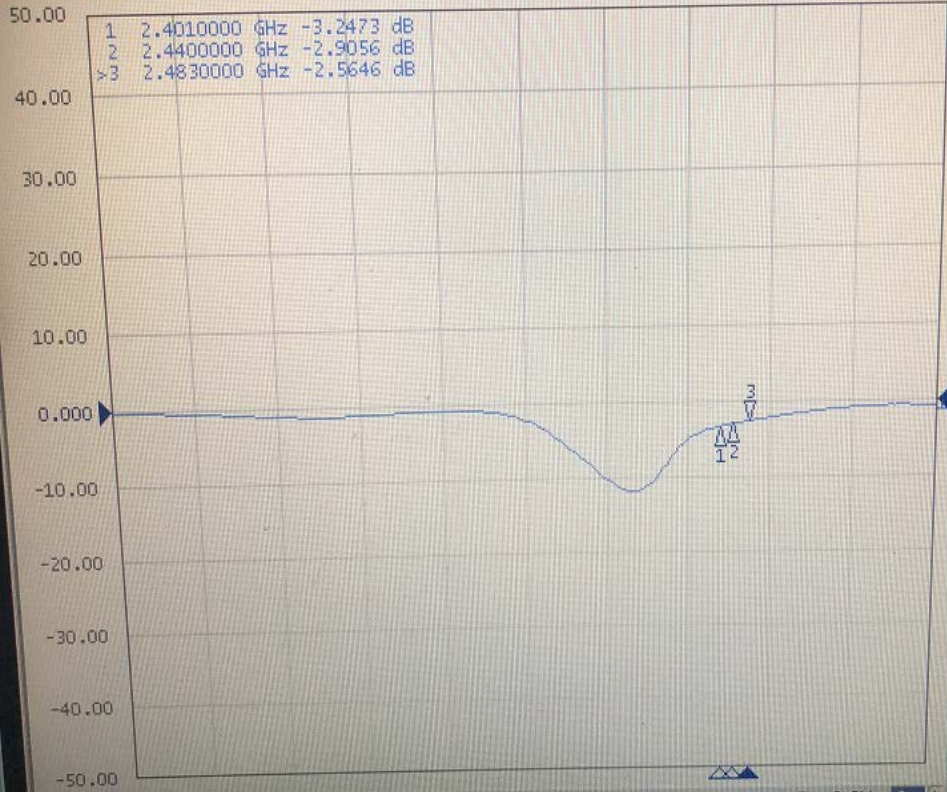


**2400.000MHz E2**



S22 Log Mag 10.00dB/ Ref 0.000dB [F1 M]

|    |               |            |
|----|---------------|------------|
| 1  | 2.4010000 GHz | -3.2473 dB |
| 2  | 2.4400000 GHz | -2.9056 dB |
| >3 | 2.4830000 GHz | -2.5646 dB |



Start 700 MHz IFBW 70 kHz Stop 3 GHz Cor |

Meas Stop ExtRef Ready Svc 2019-03-15 18:22

Display

Allocate Channels

Num of Traces 1

Allocate Traces

Display Mem

Data -> Mem

Data Math OFF

Edit Title Label

Title Label OFF

Graticule Label ON