

Flip F Bluetooth antenna specification

Version number: V1.0

Release date: 2025-01-01

1. Product overview

Antenna type: inverted F antenna (IFA)

Application scenarios: Bluetooth (2.4GHz ISM band, such as BLE 5.0/5.1/5.2)

Features: miniaturization, low cost, PCB integrated design, omnidirectional radiation, etc

2. electrical character

Parameter	Specification values	Test condition
Service frequency	2400~2480 MHz	Bluetooth frequency band
Impedance	50Ω (±10%)	Reference plane: PCB ground plane
Standing wave ratio (VS-WR)	≤2.0	Center frequency 2450MHz
Return loss (S11)	≤-10 dB	In the range of 2400~2480 MHz
Gain	0 dBi (typical value)	Free space
Productiveness	≥70%	With PCB, ground plane
Polarization mode	Linear polarization	

3. Mecha-

nical

character

istic

dimension

s:

Total length (L): 21 mm (λ/4 wavelength design) Short circuit pin height (H): 6.3 mm Feed point position:

3.3 mm short of the lead

material:

Radiation source: PCB copper layer
(thickness 1 oz)

Substrate: FR4 (dielectric constant $\epsilon =$
4.4, thickness 1.2 mm)

4. Design

parameter

structure

diagram:



PCB layout requirements:

The antenna area needs to be clear (no wiring or metal)

The ground plane extends below the antenna by at least 15~ 30 mm

Short circuit pin and feed point spacing: 2~ 5 mm

5. environmental suitability

Working temperature: -40 ~ +85

Humidity: 95% RH (non-condensing)

6. Test certification

Standard compliance:

FCC CFR 47 Part 15 (if applicable)

ETSI EN 300 328 (if applicable)

Measured data:

Use a vector network analyzer (VNA) to test S11.

The radiation efficiency and gain were tested in a dark room.

7. matters need attention

Antenna performance is affected by surrounding metal objects, and clearance requirements must be strictly followed. Impedance matching fine tuning (such as π type matching network) should be done during mass production.