

Introduction

The antenna is an F-shaped antenna used on F1 riding fans. The antenna is designed for use on 2.4GHz.

This document is used to describe the detailed parameters of the antenna, such as the performance of the antenna and the use of standard restrictions.

The reference design size of the antenna requires 18mm*6mm space to place the antenna to ensure that the antenna guarantees the 50ohm impedance design.

1. Antenna design

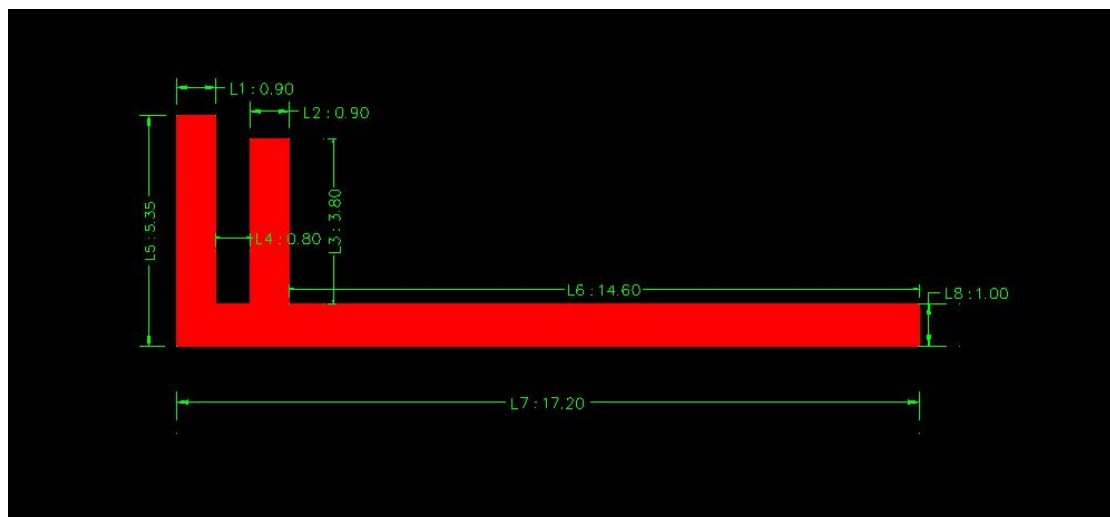
The antenna design refers to the F-shaped antenna design. And the antenna design is completely designed according to 50ohm impedance at 2.45Ghz. Therefore, there is no need to add more components for antenna matching.

2. Simulation design

We use antenna simulation software and design software for antenna simulation design and testing. The specific performance of the antenna is shown in the following network diagram. The performance parameters of the vertical line feedback antenna in the coordinate, and the working frequency of the horizontal line feedback antenna in the coordinate.

3. Layout and Implementation

A small change in the antenna may cause a large change in the performance of the antenna. Therefore, it is strongly recommended to design the antenna according to the reference design drawings.



L1	0.9mm
L2	0.9mm
L3	3.8mm
L4	0.8mm
L5	5.35mm
L6	14.6mm

L7	17.2mm
L8	1.0mm

4. Test requirements

In order to ensure that the antenna can also ensure good performance on the PCB, we need to ensure that there is enough space for the antenna to be used on the PCB. The PCB requires the welding to function properly. This test uses an external battery for testing.

4.1 Testing Result

All the reflection measurements were performed with a network analyzer connected to a semi-rigid coax cable, which was soldered to the feed point of the antenna. Because of the small size antenna and the small ground plane this kind of measurements is heavily affected by the presence and placement of the coax cable. This influence can result in a small uncertainty in resonance frequency and measured reflection. Typically different placement of the semi-rigid coax cable could change the resonance frequency with 5 -10 MHz and the reflection with 3 - 4 dB.

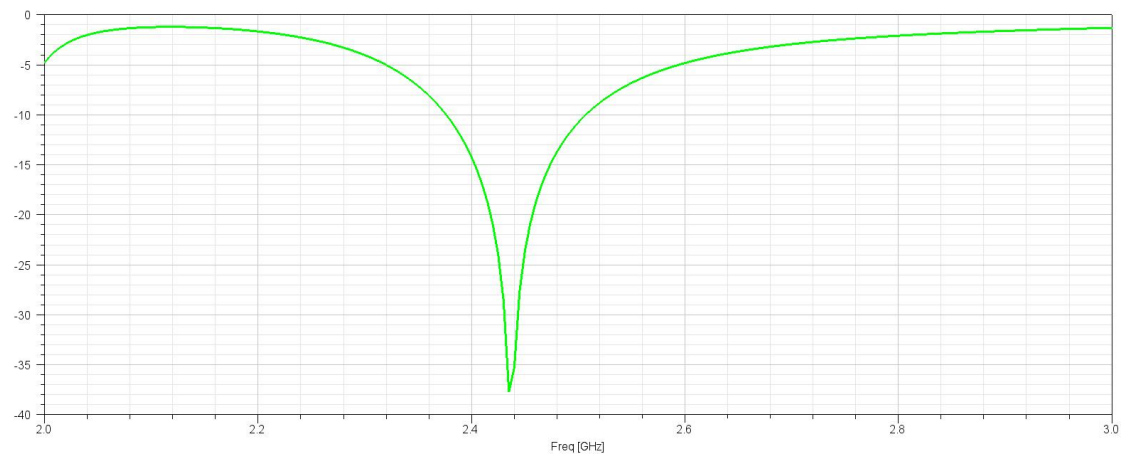
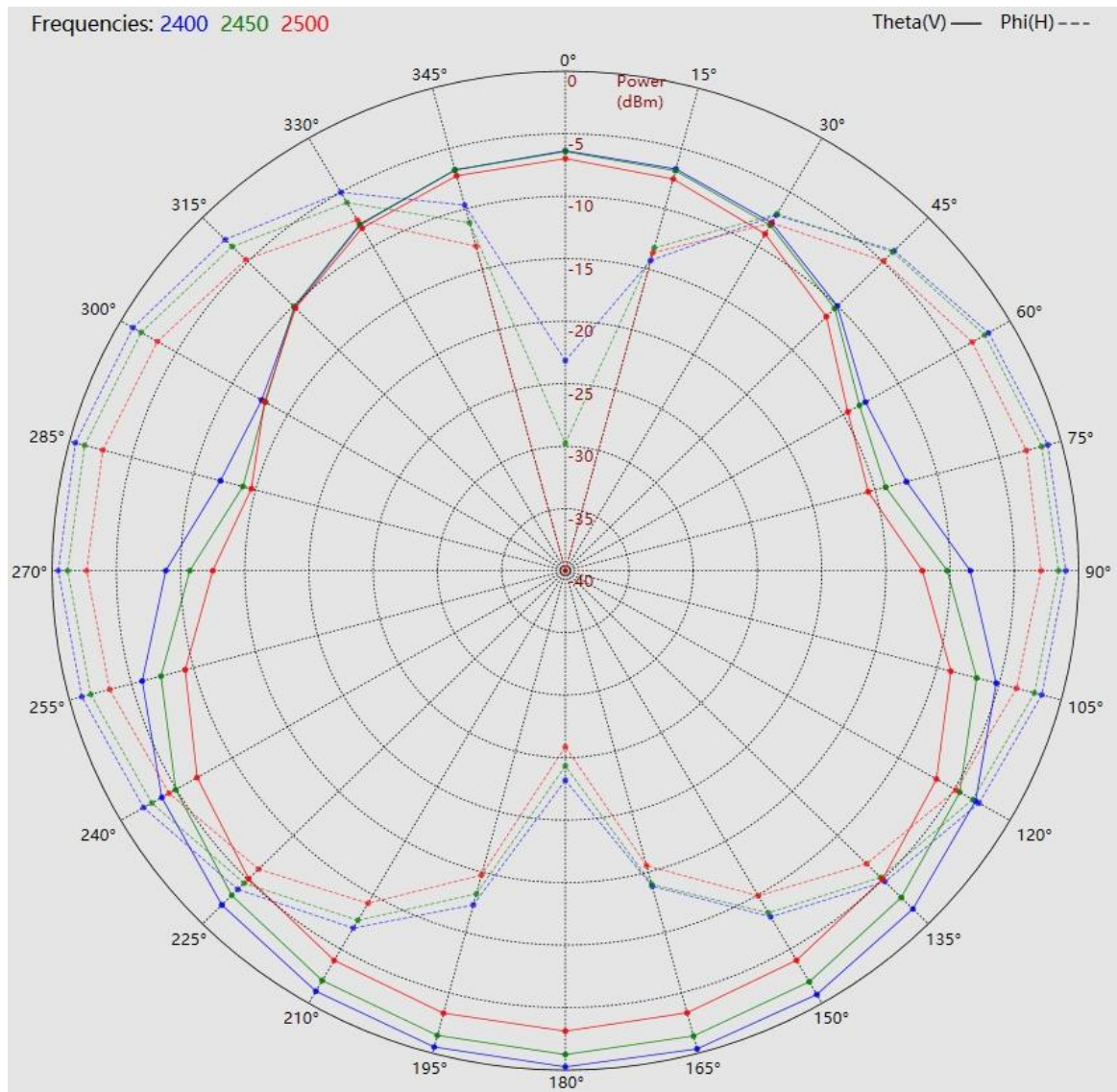


Figure 2 S11



Center Frequency	2400MHz	2450MHz	2500MHz
	-0.83	0.00	-0.99
MAX. Gain(dBi)	0		