

JC511 Host Module Antenna Specification

1. Company Information

Company Name: Shenzhen JiaGang Electronic Technology Co., Ltd.

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2. Product Introduction

This antenna is directly etched on the PCB, featuring high antenna efficiency and low cost.

3. Applications

- ① 2.4 GHz ISM band antenna applications
- ② Bluetooth, Wi-Fi (2.4 GHz only), smart home, and other IoT applications

4. Product Specifications

Parameter	Specification
Operating Frequency Range	2400 - 2500 MHz
Input Impedance	50 Ω
Return Loss	≤ 15 dB
Peak Gain	-1.46 dBi (Peak)
Polarization	2400 - 2500 MHz
Antenna Dimensions	11mm $\times$ 5.7mm
Substrate Material	FR4
Operating Temperature	-40 $^{\circ}$ C~+95 $^{\circ}$ C

5. 2D Radiation Patterns
① Phi 0° 2D Patterns

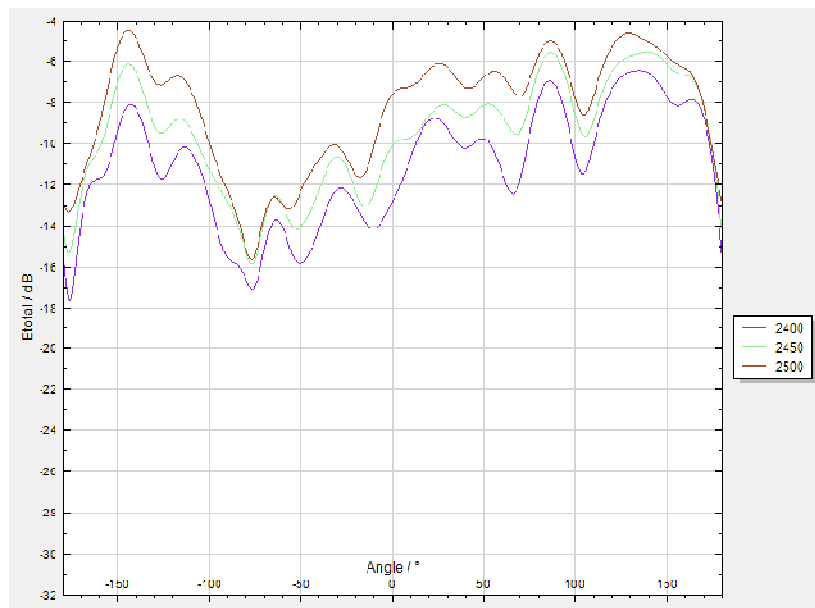


Figure 1: Total Gain vs. Azimuth Angle (2.4 – 2.5 GHz)

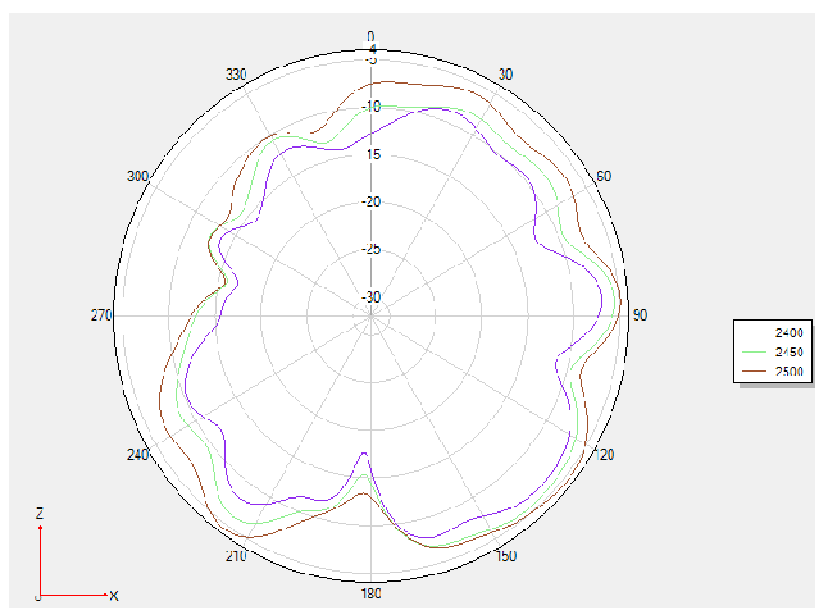


Figure 2: Total Gain Radiation Pattern (Polar Plot)

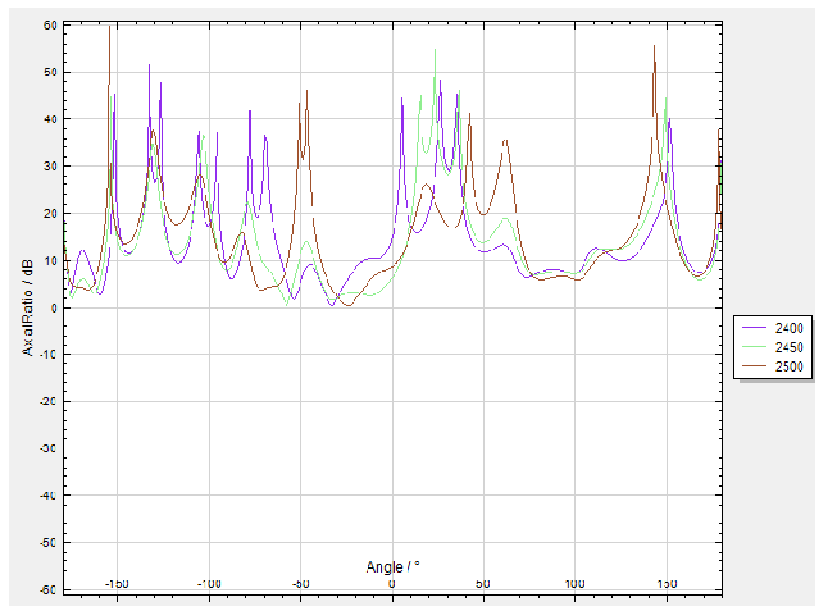


Figure 3: Axial Ratio vs. Azimuth Angle (2.4 – 2.5 GHz)

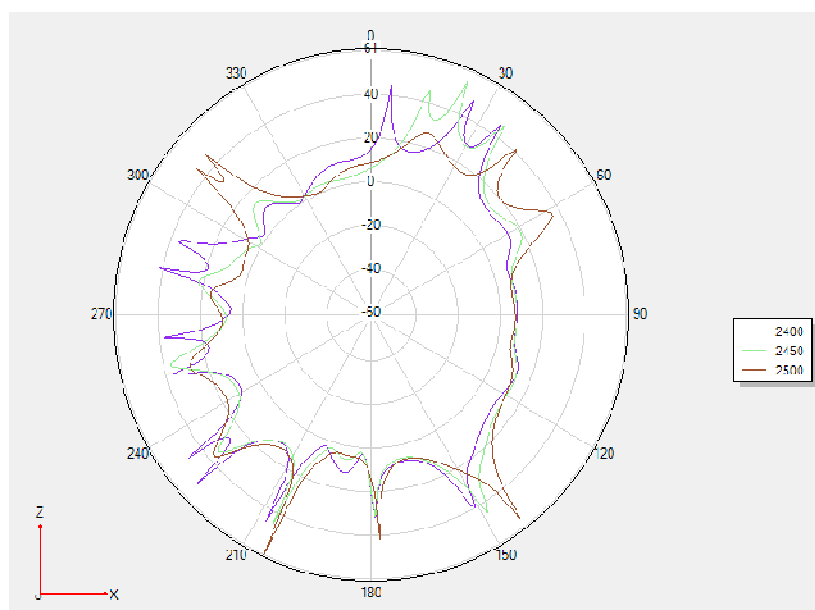


Figure 4: Axial Ratio Radiation Pattern (Polar Plot)

② Phi 90° 2D Patterns

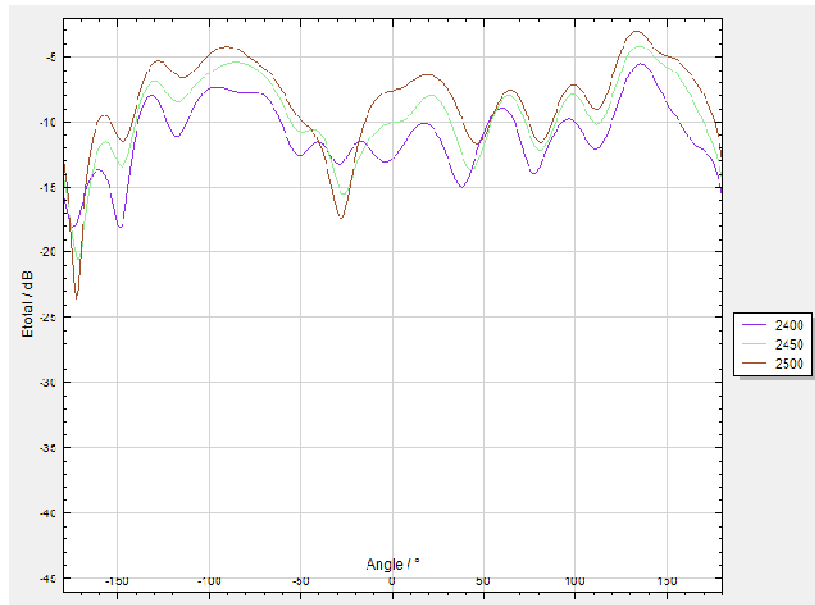


Figure 1: Total Gain vs. Azimuth Angle (2.4 – 2.5 GHz)

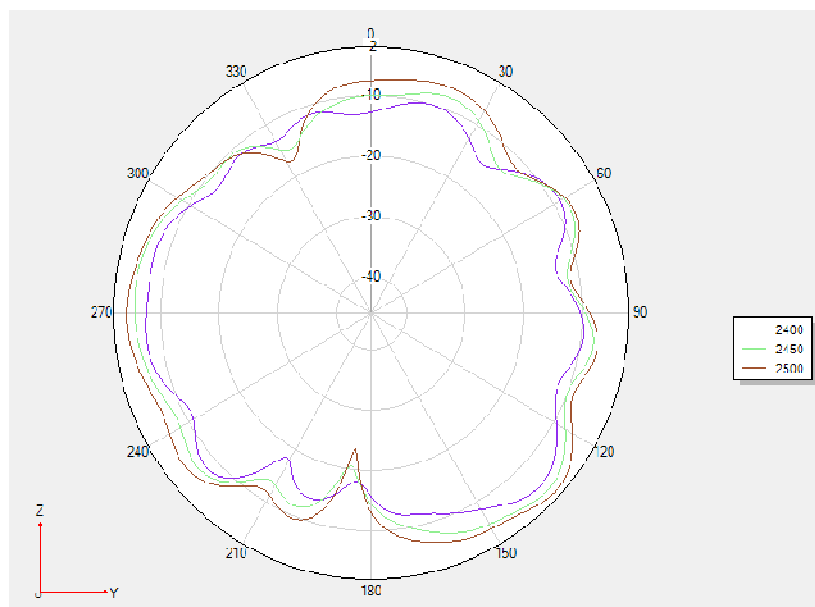


Figure 2: Total Gain Radiation Pattern (Polar Plot)

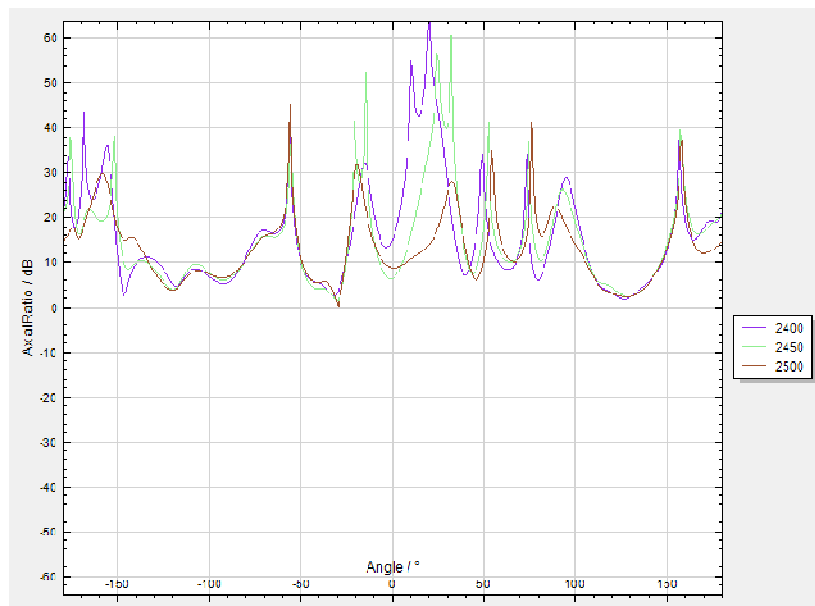


Figure 3: Axial Ratio vs. Azimuth Angle (2.4 – 2.5 GHz)

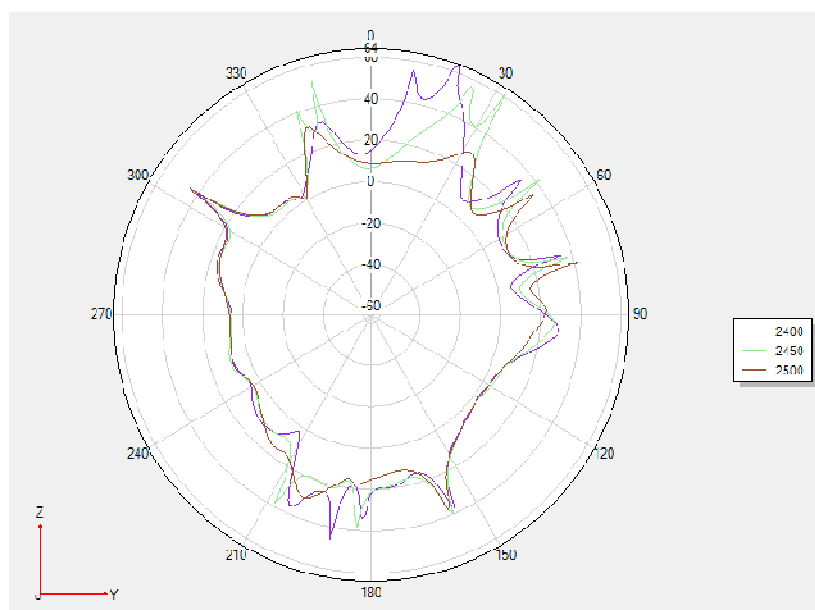


Figure 4: Axial Ratio Radiation Pattern (Polar Plot)

③ Theta 90° 2D Patterns

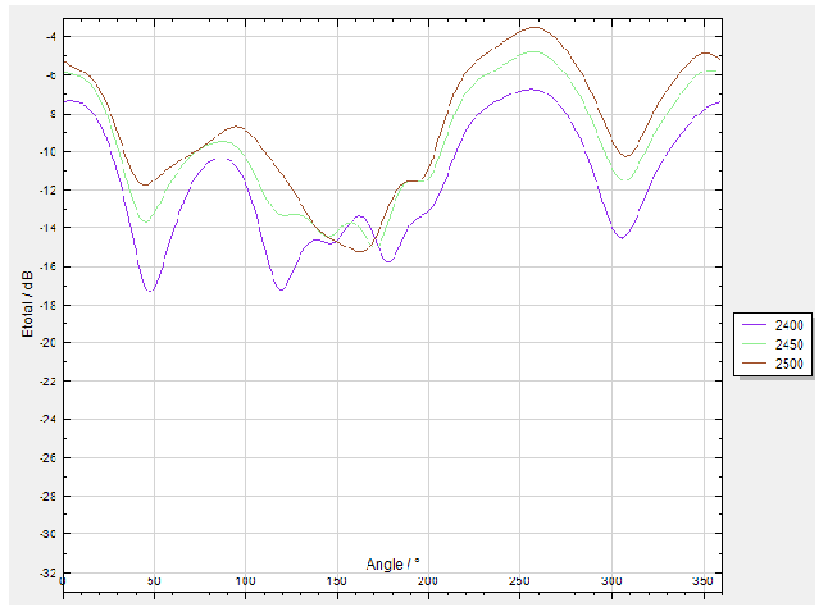


Figure 1: Total Gain vs. Azimuth Angle (2.4 - 2.5 GHz)

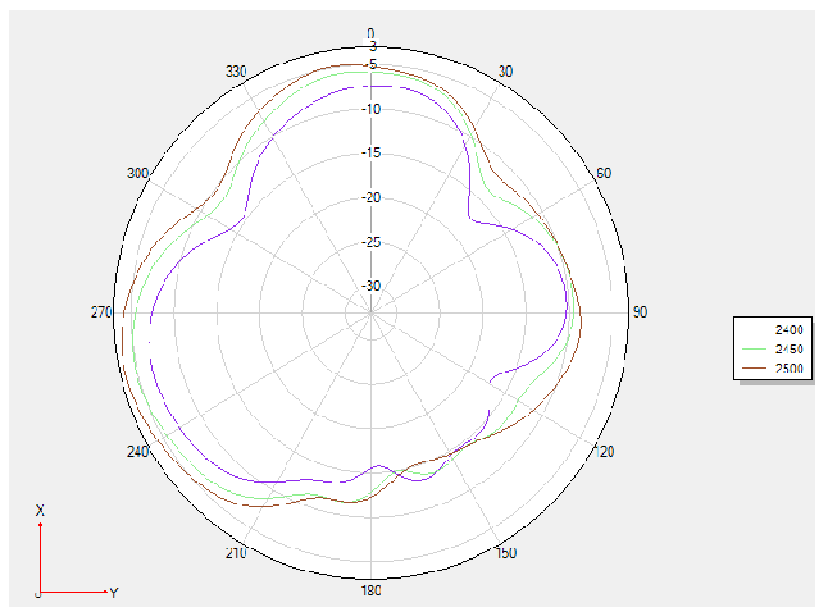


Figure 2: Total Gain Radiation Pattern (Polar Plot)

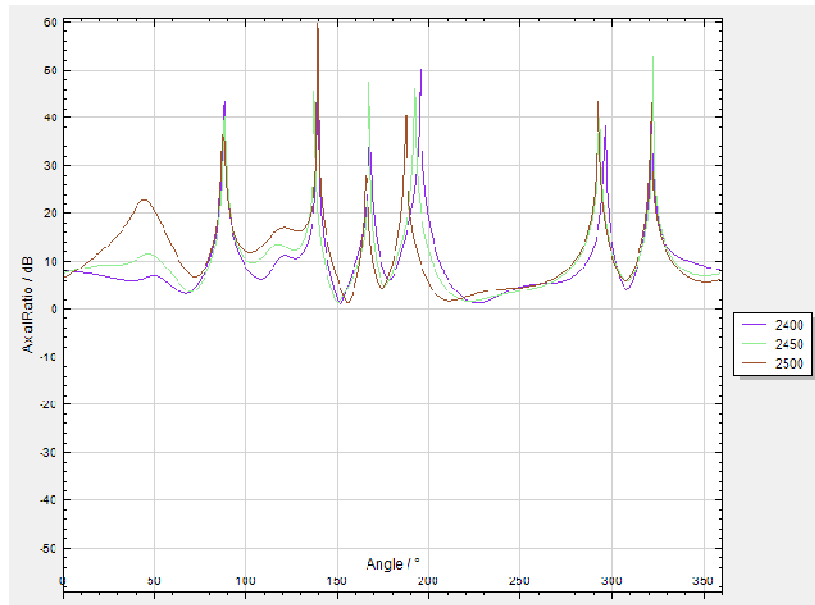


Figure 3: Axial Ratio vs. Azimuth Angle (2.4 – 2.5 GHz)

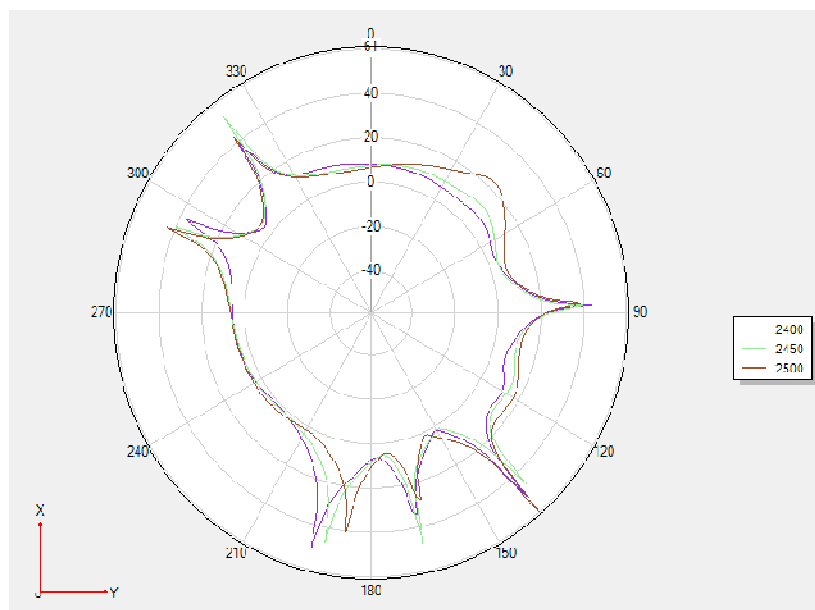
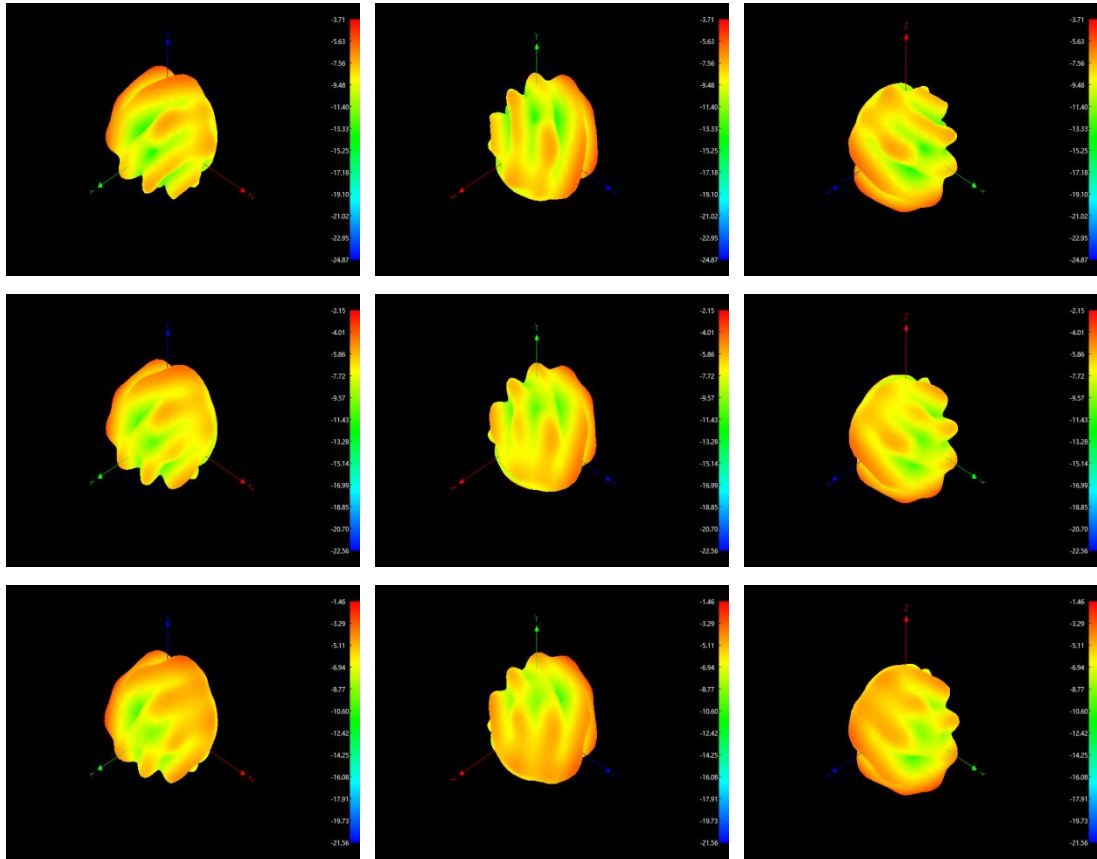


Figure 4: Axial Ratio Radiation Pattern (Polar Plot)

6. 3D Radiation Distribution



7. Radiation Efficiency

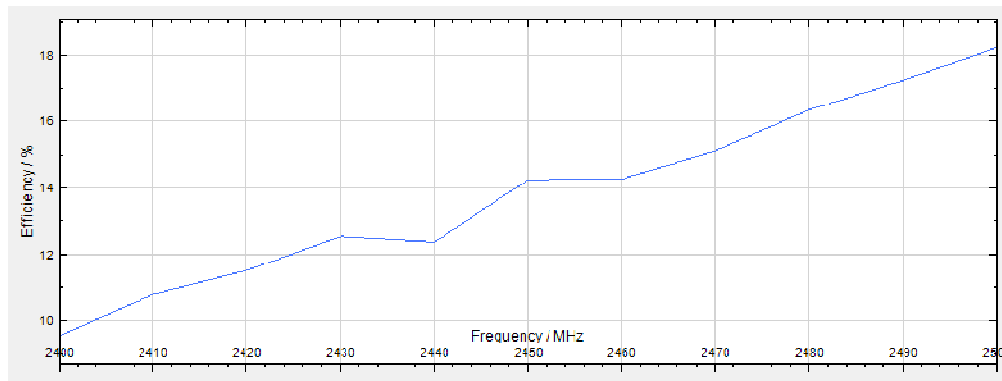


Figure 1: Antenna Efficiency vs. Frequency (in %)

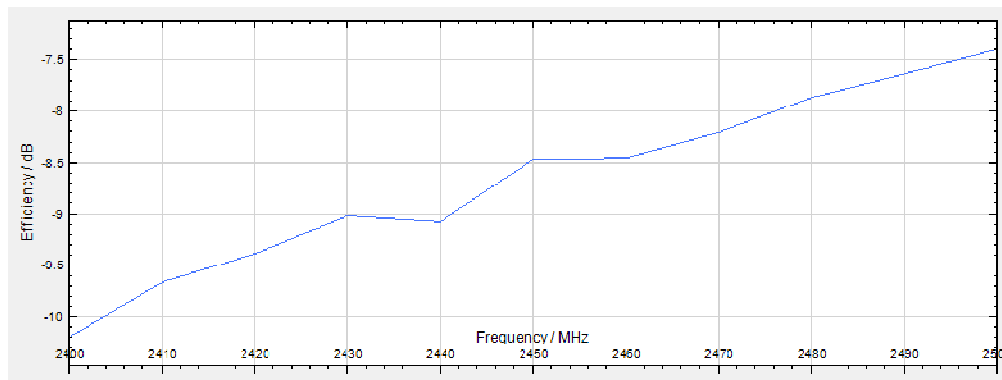
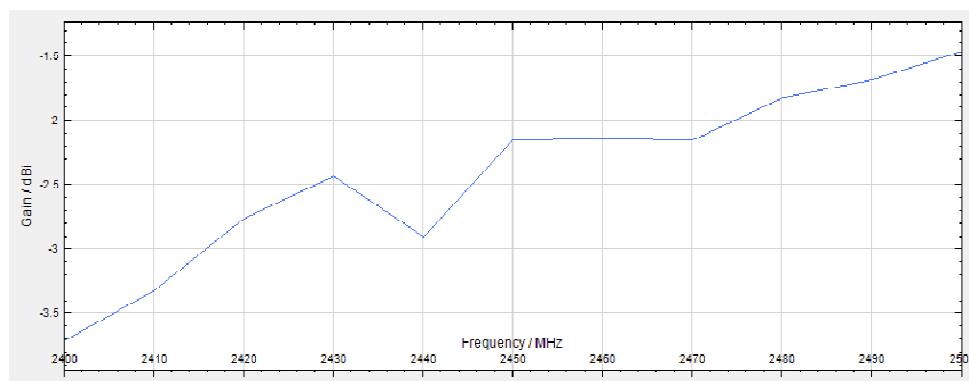


Figure 2: Antenna Efficiency vs. Frequency (in dB)

8. Gain Data

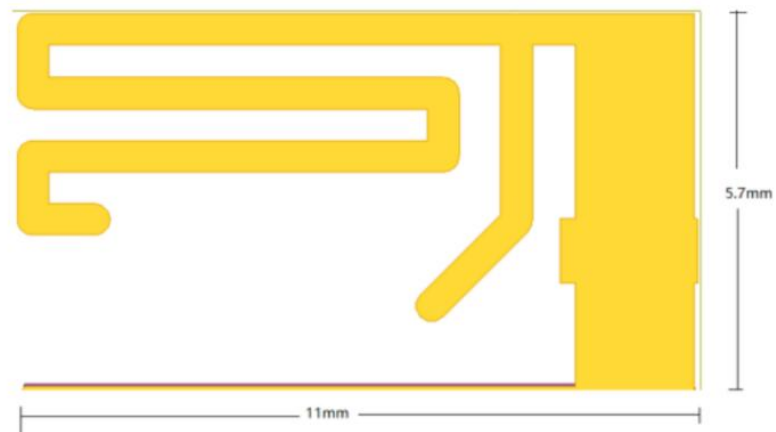


Antenna Peak Gain Variation across the 2.4 - 2.5 GHz ISM Band

9. Raw Data Tables

Frequency / MHz	Efficiency / dB	Efficiency / %	Gain/ dBi
2400	-10.19	9.57	-3.71
2410	-9.66	10.81	-3.32
2420	-9.38	11.53	-2.76
2430	-9.01	12.56	-2.43
2440	-9.07	12.39	-2.9
2450	-8.46	14.26	-2.15
2460	-8.45	14.29	-2.14
2470	-8.2	15.14	-2.15
2480	-7.86	16.37	-1.82
2490	-7.63	17.26	-1.68
2500	-7.39	18.24	-1.46

10. Antenna Dimensions



Matching Circuit Reference Design

