

HE01 2.4 GHz PCB antenna Specification

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1 KEYWORDS

- HE01
- 2.4 GHz
- Inverted F Antenna

2 INTRODUCTION

The PCB antenna used on the HE01 reference design is described in this application note.

This application note describes the antenna dimensions, the RF performance

and considerations for complying with regulatory limits when using this design.

The antenna design requires no more than 15.2 x 5.7 mm of space and ensures a VSWR ratio of less than 2 across the 2.4 GHz ISM band when connected to a 50 ohm source.

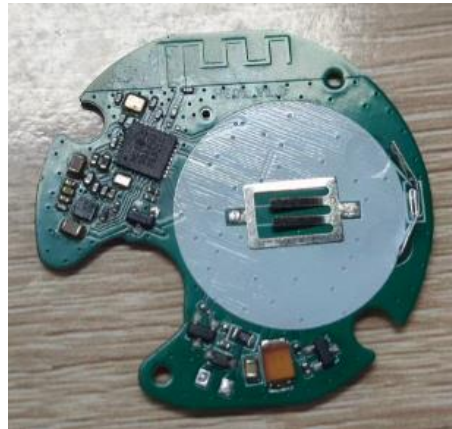


Figure 1: HE01

3 Testing Conditions

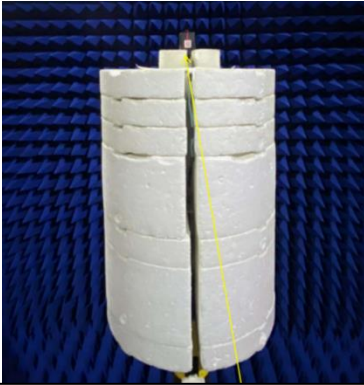


Figure 2:Testing environment

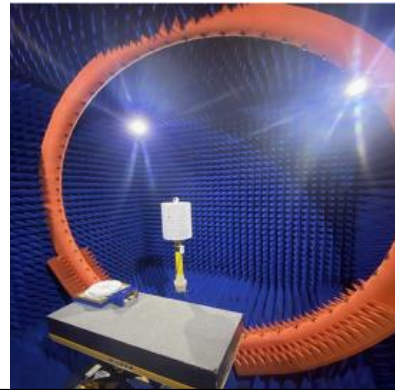


Figure 3:Testing 3D microwave darkroom(6m*6m*6m)

Product Testing Conditions

Parameters	Value
Working Temp	-30℃ ~ +60℃

3.1 Layout and Implementation

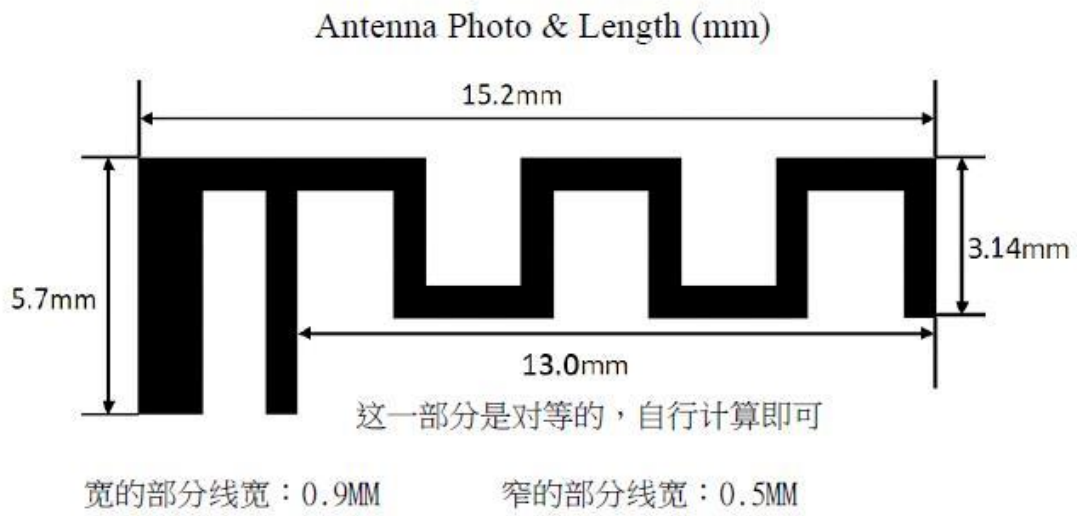
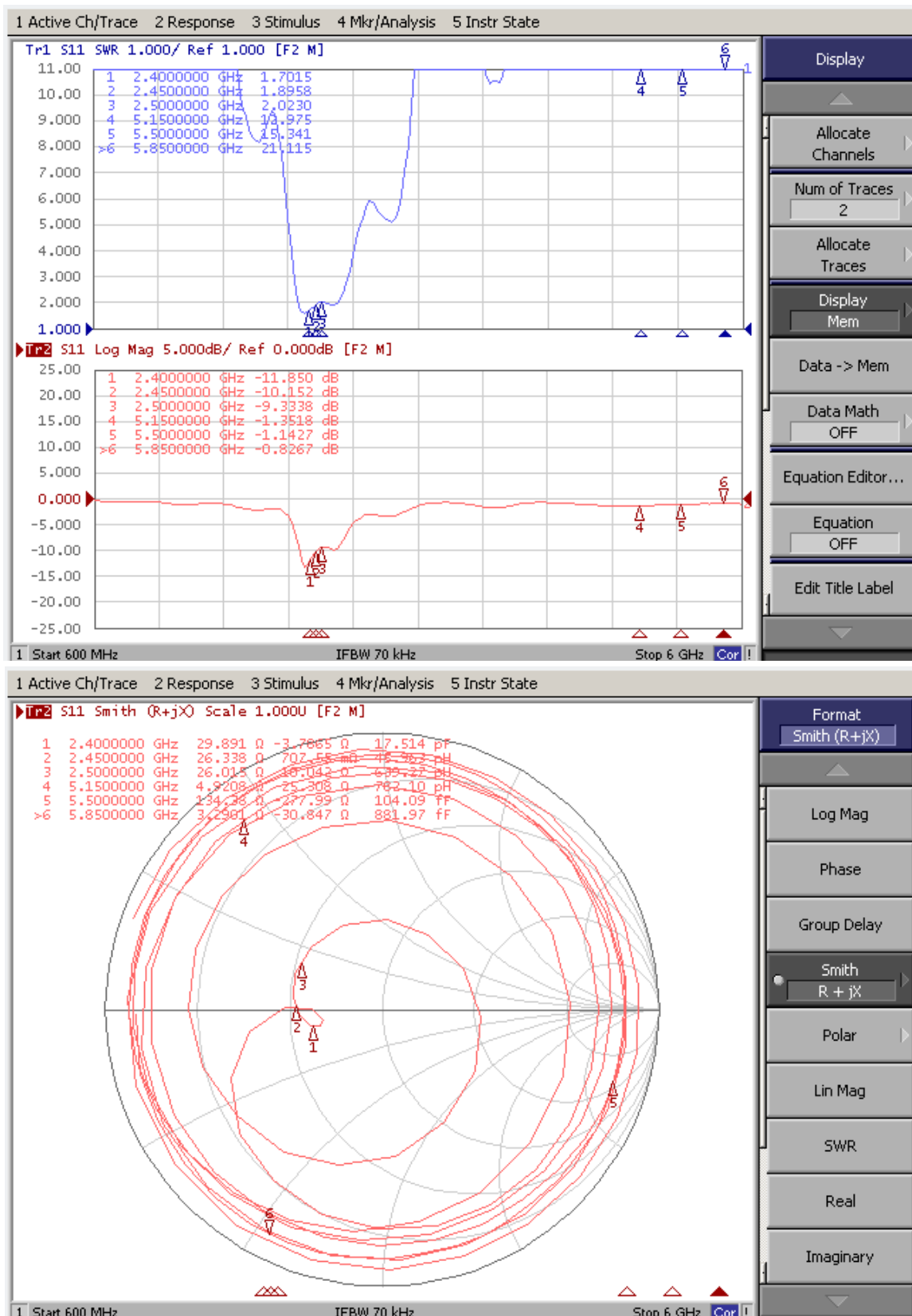


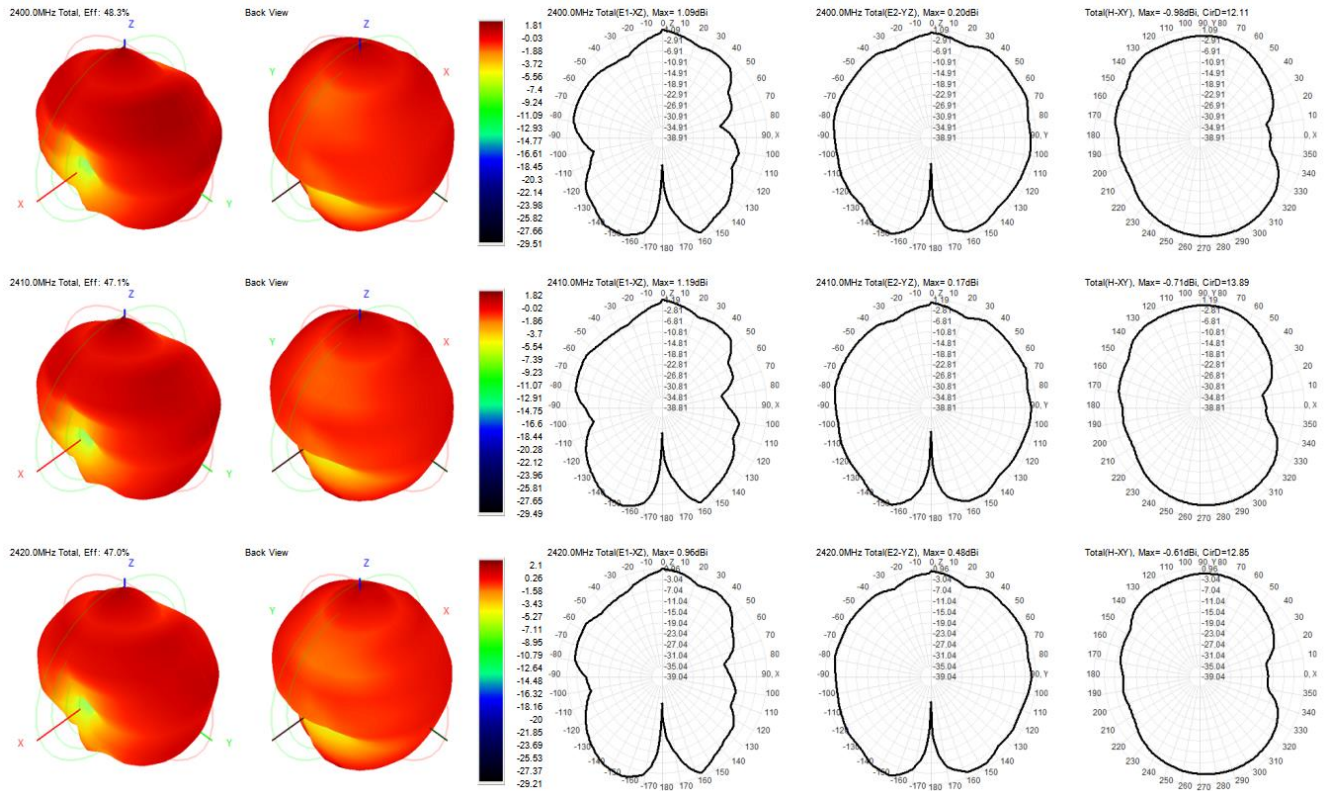
Figure 4: Antenna Dimensions

4 S Parameter_Return Loss&VSWR - Smith

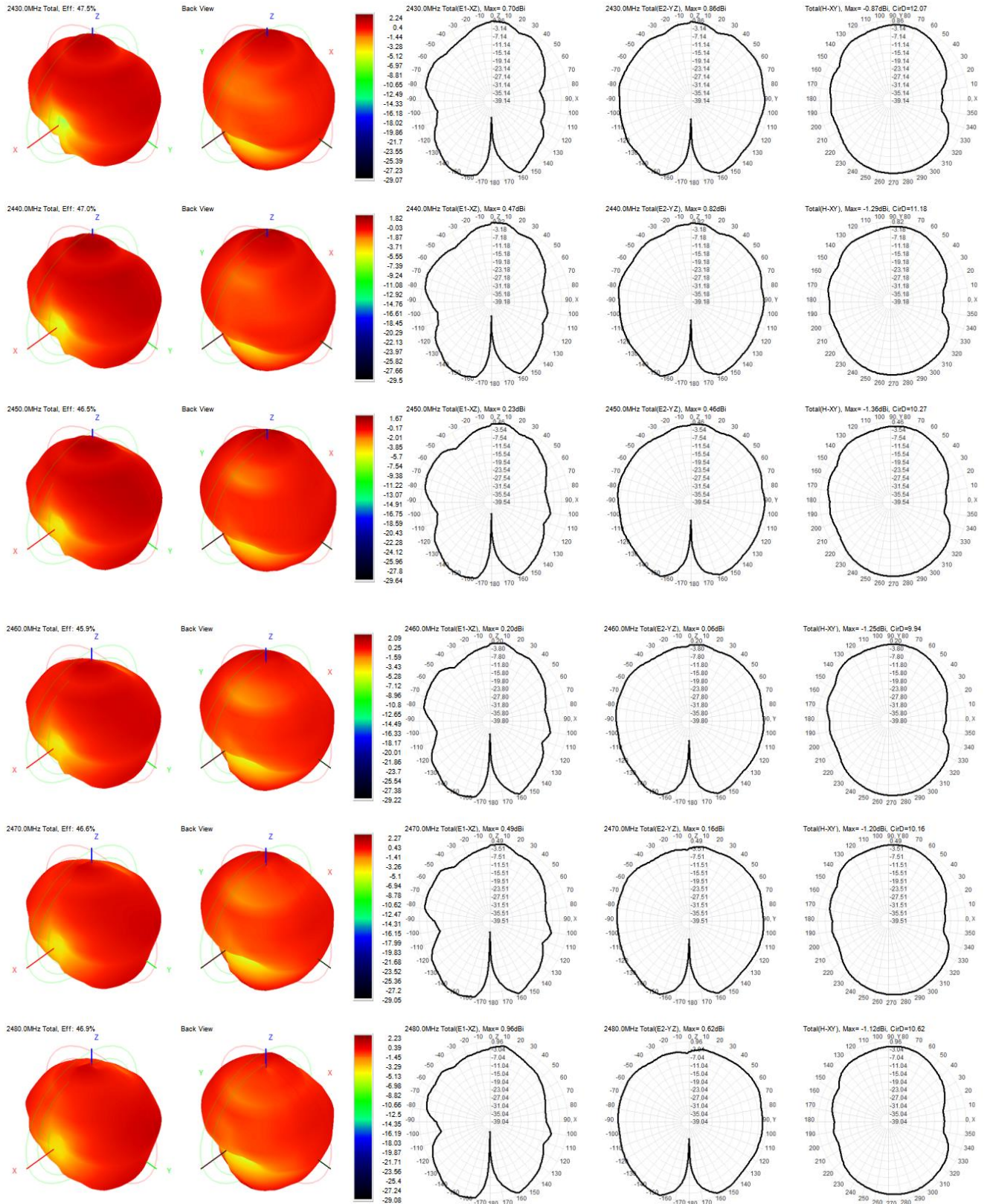


5 Efficiency and Gain

Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Gain (dBi)	1.81	1.82	2.10	2.24	1.82	1.67	2.09	2.27	2.23	2.53	2.51
Efficiency (%)	48.27	47.10	46.98	47.49	46.99	46.48	45.89	46.60	46.91	46.51	46.35

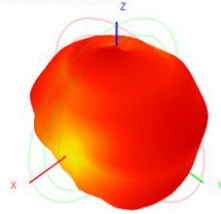


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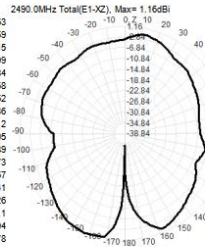
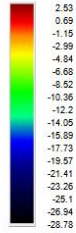
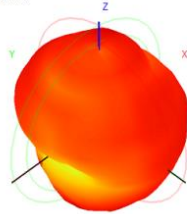


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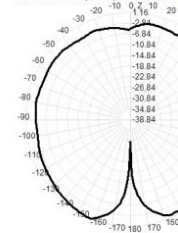
2490.0MHz Total, Eff: 46.5%



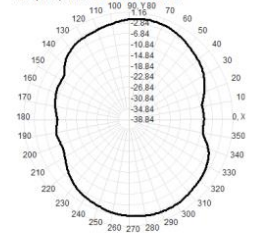
Back View



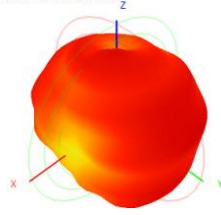
2490.0MHz Total(E2-YZ), Max= 1.04dBi



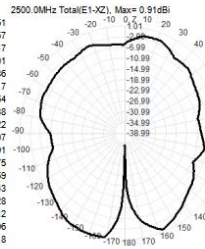
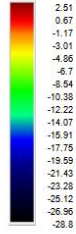
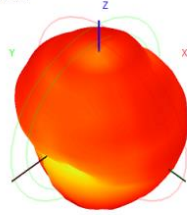
Total(H+XY), Max=-0.96dBi, C/D=10.75



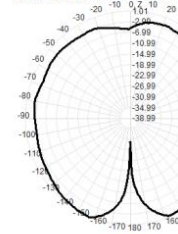
2500.0MHz Total, Eff: 46.3%



Back View



2500.0MHz Total(E2-YZ), Max= 1.01dBi



Total(H+XY), Max=-1.00dBi, C/D=10.36

