

1 KEYWORDS

- *P1Beacon*
- *2.4 GHz*
- *Inverted F Antenna*

2 INTRODUCTION

The PCB antenna used on the P1Beacon 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: P1Beacon

3 Testing Conditions

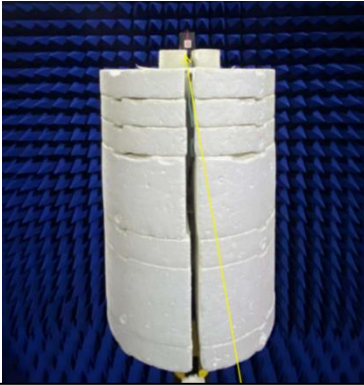


Figure 2:Testing environment

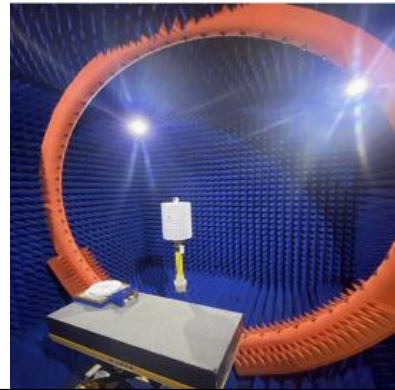


Figure 3:Testing 3D microwave darkroom(6m*6m*6m)

Product Testing Conditions

Parameters	Value
Working Temp	-30℃ ~ +60℃

3.1 Layout and Implementation

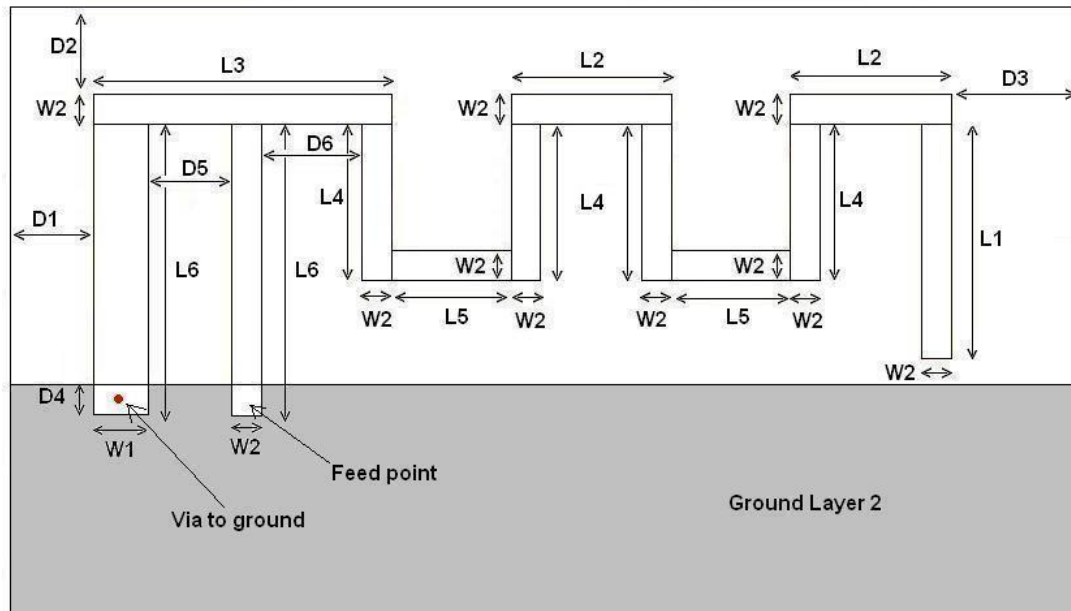
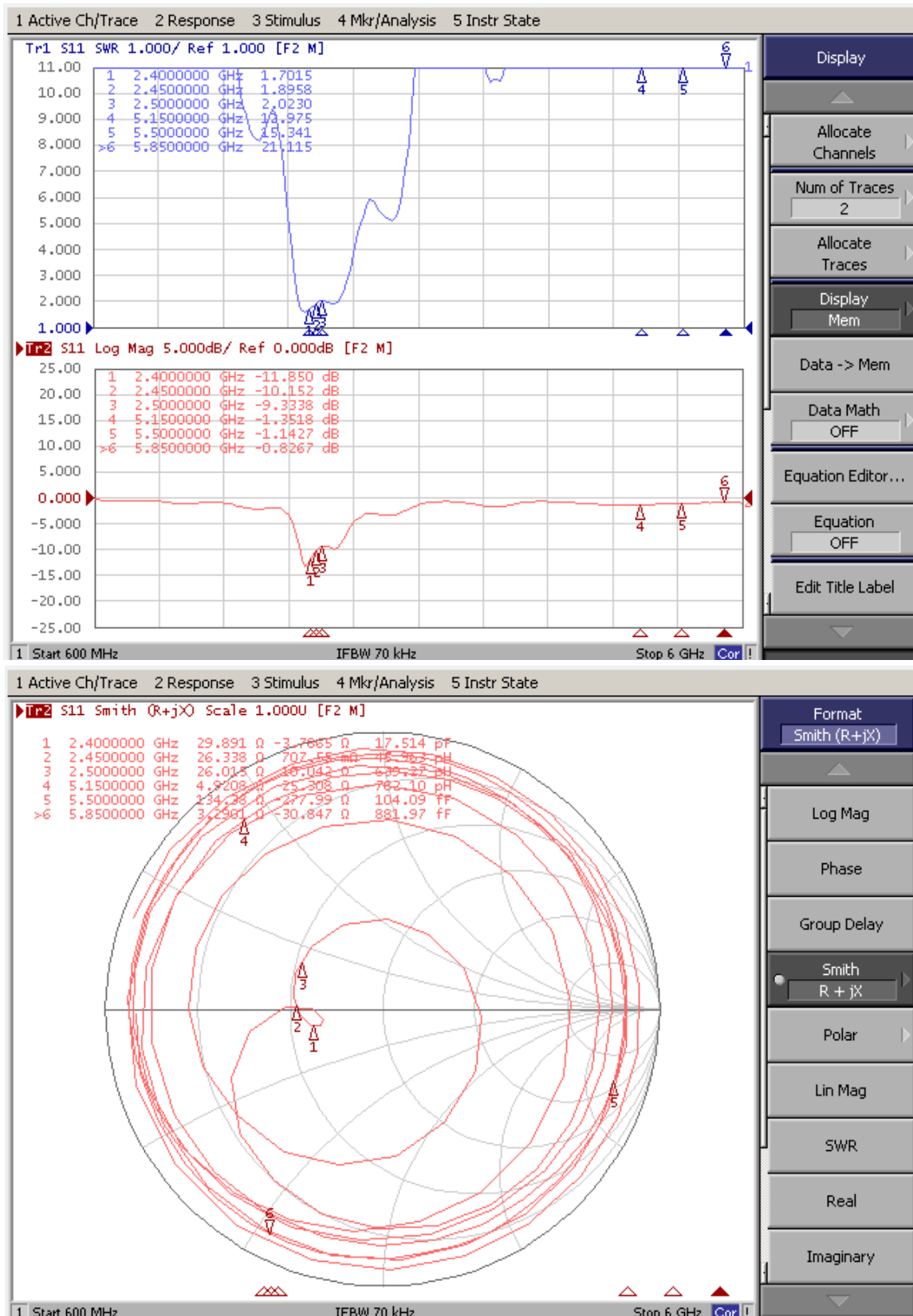


Figure 4: Antenna Dimensions

L1	3.94 mm
L2	2.70 mm
L3	5.00 mm
L4	2.64 mm
L5	2.00 mm
L6	4.90 mm
W1	0.90 mm
W2	0.50 mm
D1	0.50 mm
D2	0.30 mm
D3	0.30 mm
D4	0.50 mm
D5	1.40mm
D6	1.70 mm

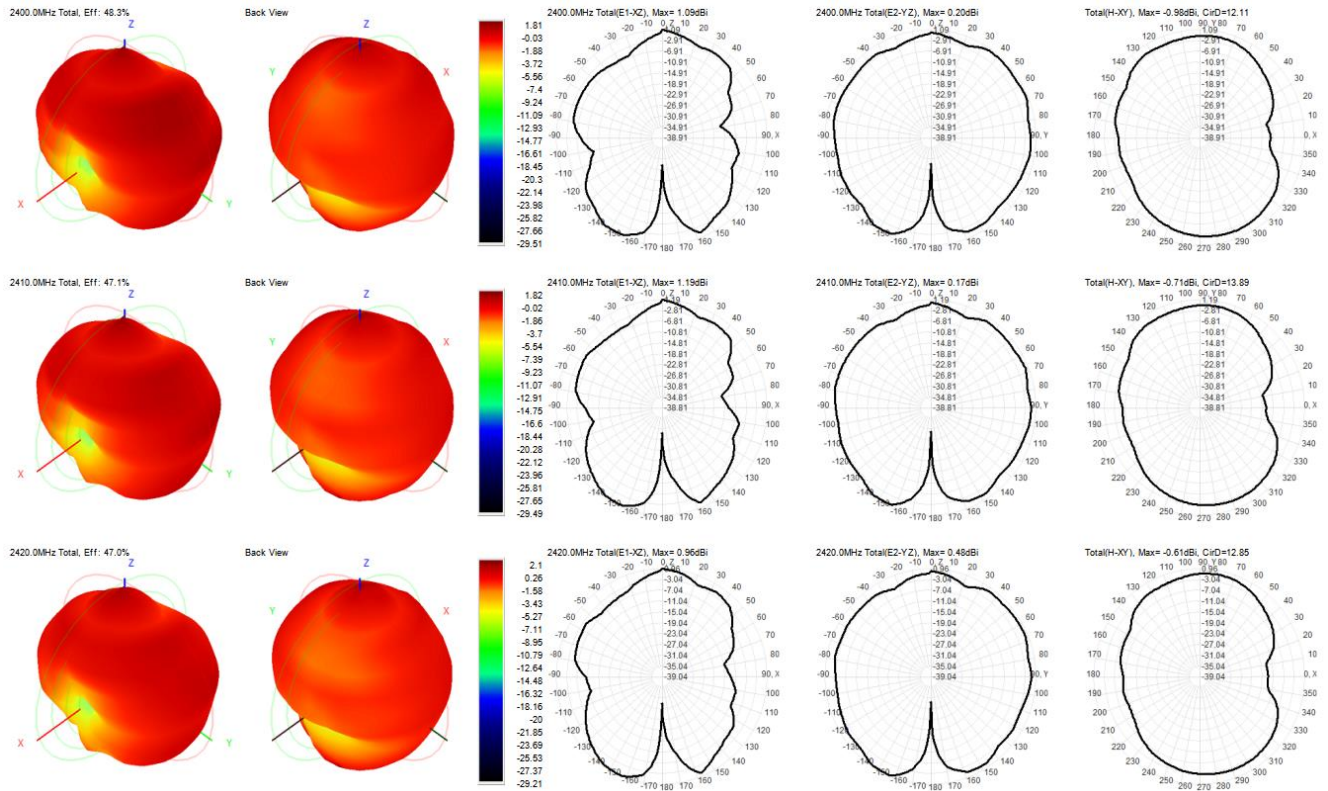
Table 1: Antenna Dimensions

4 S Parameter_Return Loss&VSWR - Smith

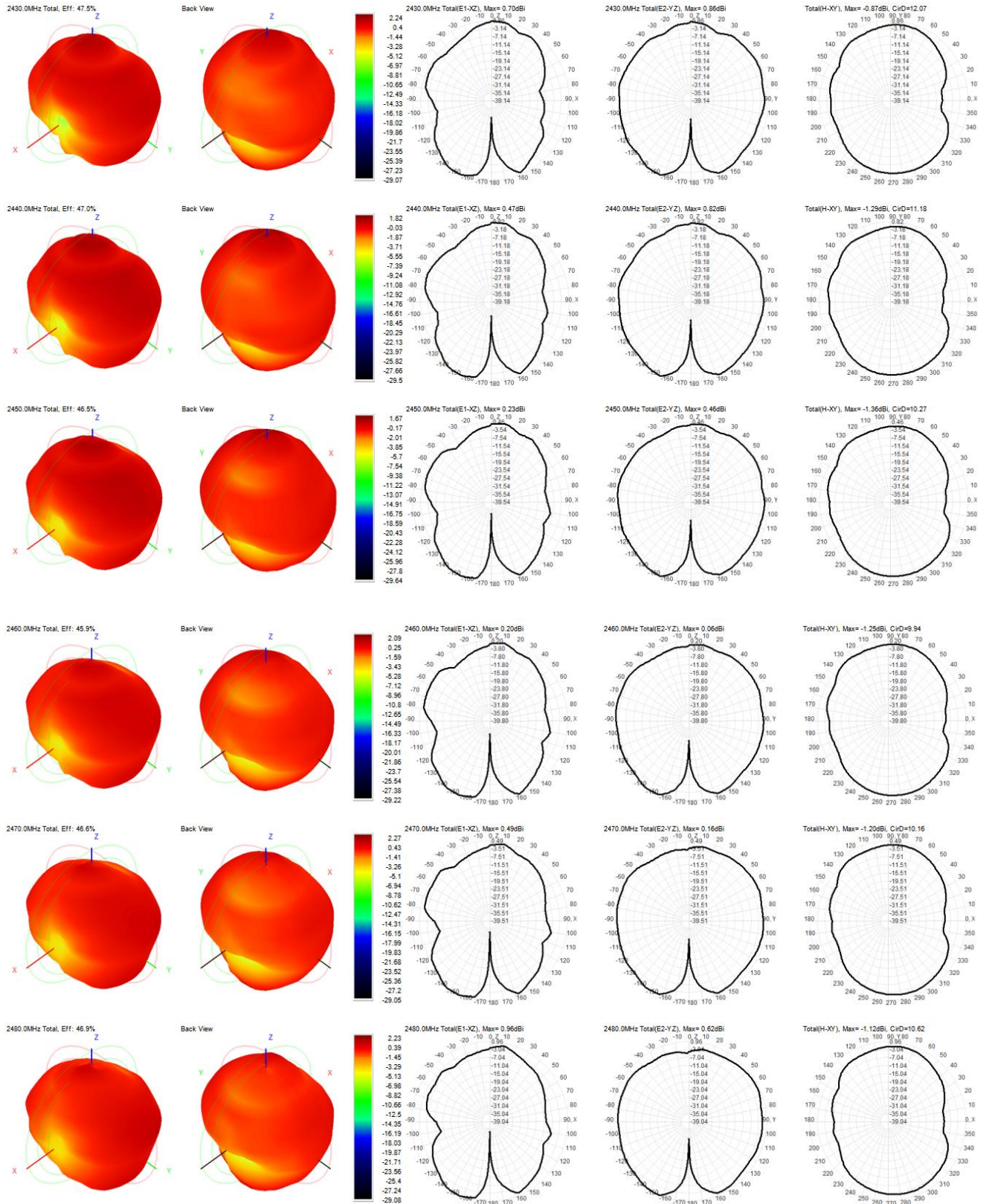


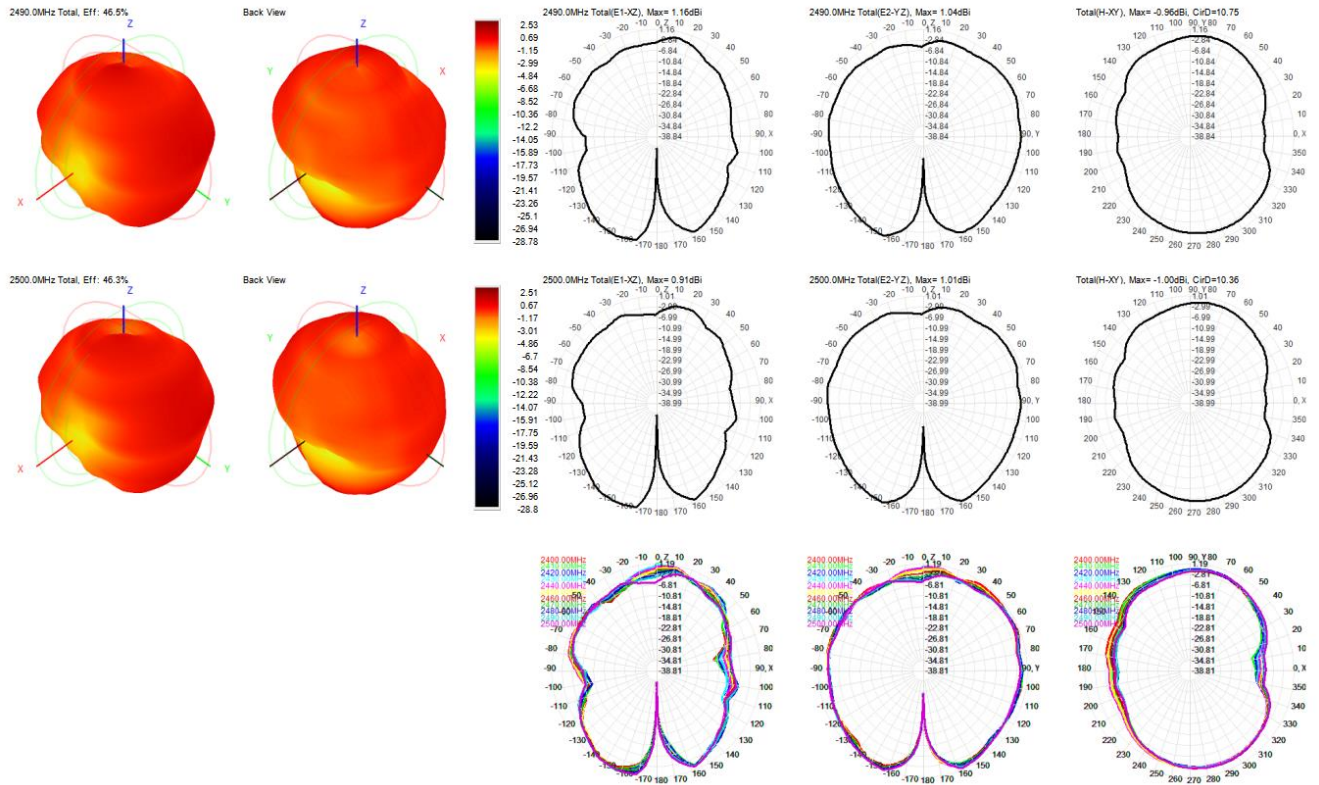
5 Efficiency and Gain

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



KKM



KKM

Manufacturer information:

KKM Company Limited

3CDE, Building6, Baoneng Science&Technology Park, Qingxiang Rd, Longhua Street,Longhua District,Shenzhen City,Guangdong Province, China