

## 1 KEYWORDS

- *K7WBeacon*
- *2.4 GHz*
- *Inverted F Antenna*

## 2 INTRODUCTION

The PCB antenna used on the K7WBeacon 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.

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### 3 Testing Conditions

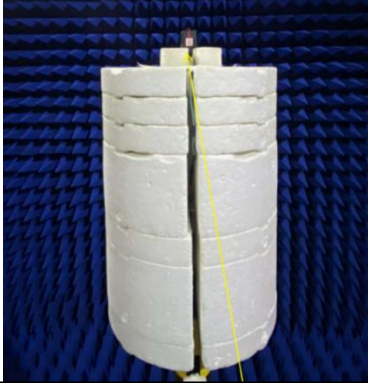


Figure 2: Testing environment

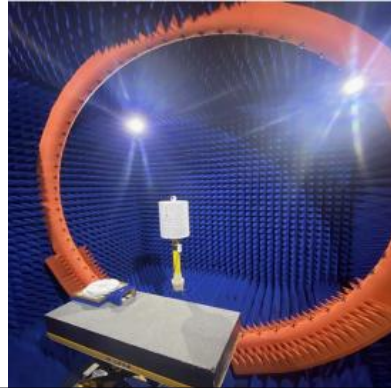
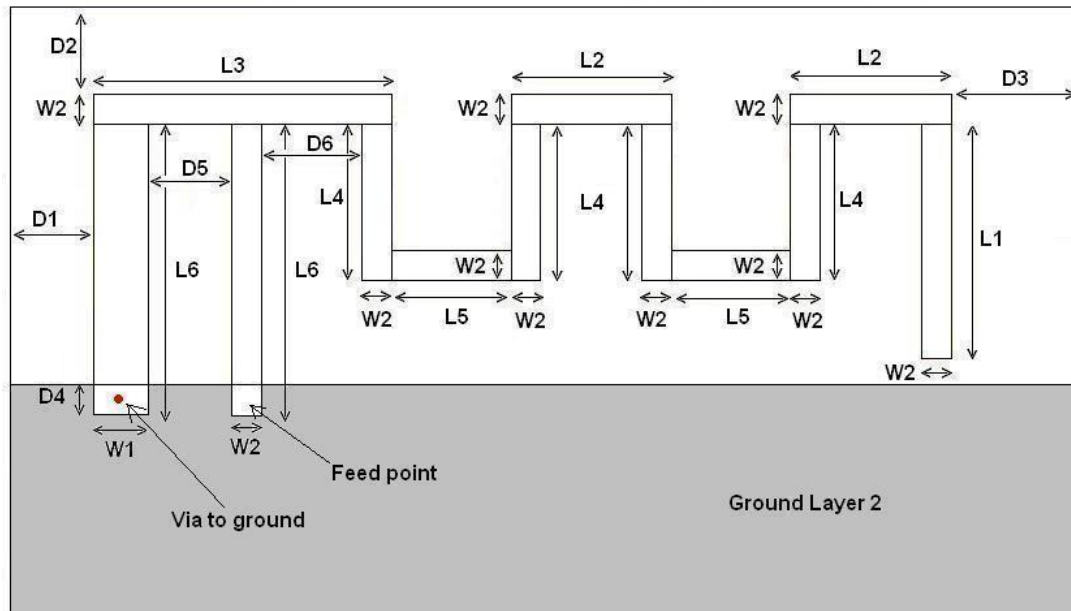


Figure 3: Testing 3D microwave darkroom(6m\*6m\*6m)

#### Product Testing Conditions

Parameters	Value
Working Temp	-30℃ ~ +60℃

### 3.1 Layout and Implementation

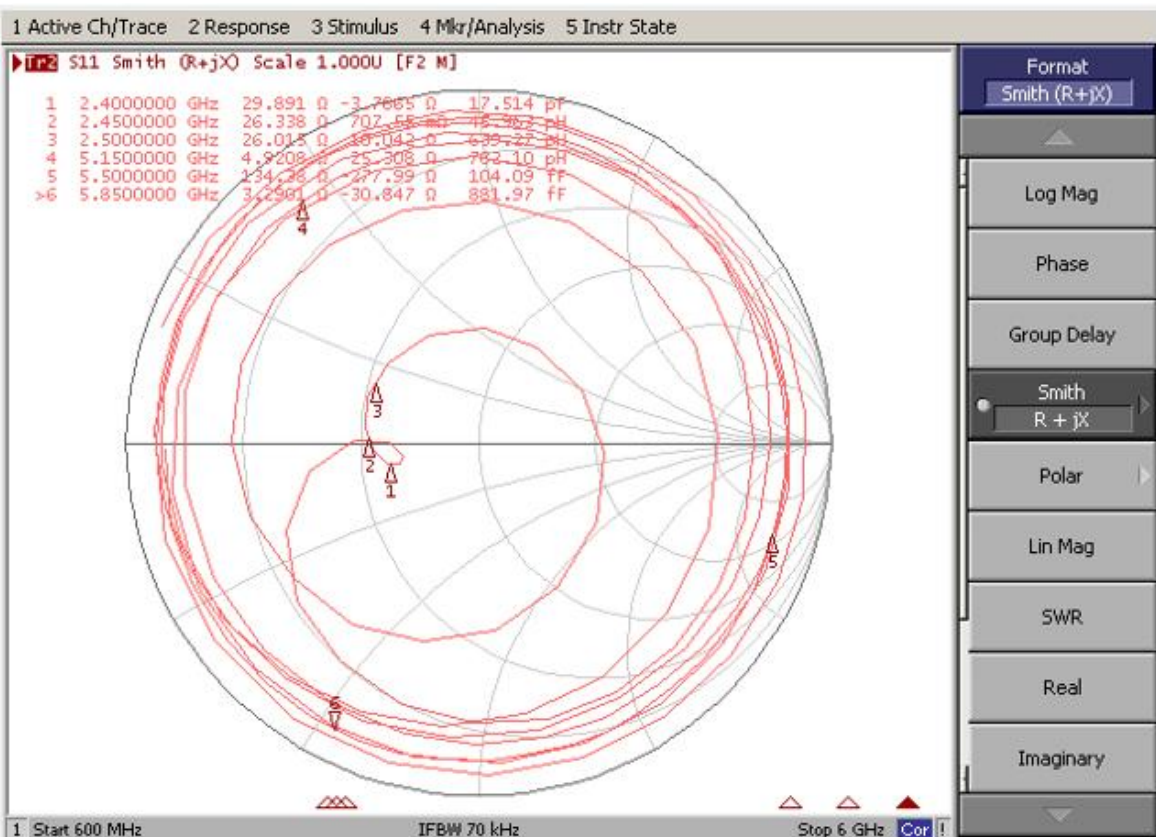
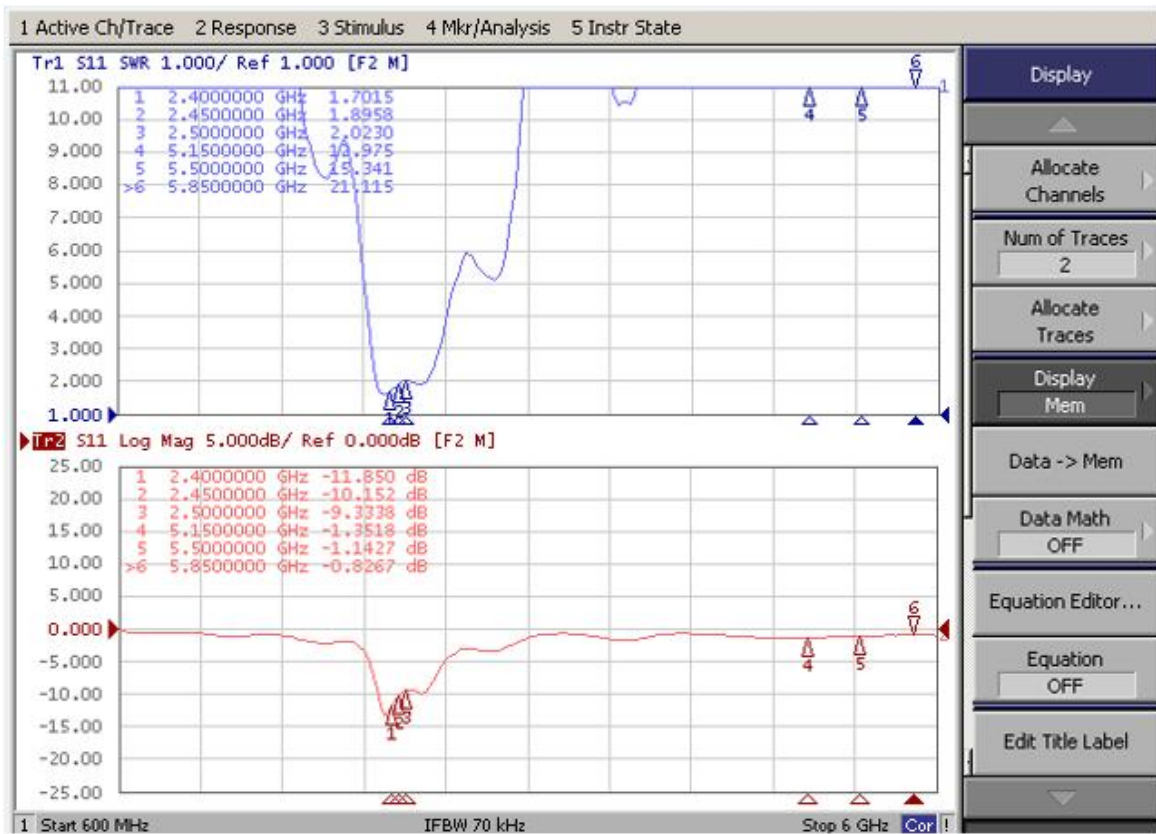


**Figure 4: Antenna Dimensions**

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

