



**Inventek Systems**  
Embedding Connectivity Everywhere

# **Inventek Systems**

**Wi-Fi Dual Band Antennas  
2.4 & 5 Ghz**

**P/N: W2.4-5P-U**



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## 1 General Description

The [Inventek](#) 2400-2500 and 4900-5900 MHz Dual Band Wi-Fi PCB (40 x 6.0 mm) antennas let you integrate Wi-Fi functionality into your product quickly and easily. It's suitable for a wide range of applications and recommended for use with Inventek eS-Wi-Fi modules.

## 2 Part Number Detail Description

### 2.1 Ordering Information

| Device    | Description  | Ordering Number |
|-----------|--|-----------------|
| W2.4-5P-U | 2400-2500 & 4900-5900 MHz Dual Band Wi-Fi PCB antenna with U.FI connector and 90 mm cable length | W2.4-5P-U       |

## 3 General Features

- Stable and reliable in performances
- PCB antenna has excellent sensitivity to consistently provide high signal reception efficiency
- Compact size
- RoHS compliance

## 4 Applications

- IEEE802.11 (b/g/n).
- Hand-held devices when WiFi (802.11 b/g/n) functions are needed.

## 5 Electrical Specifications

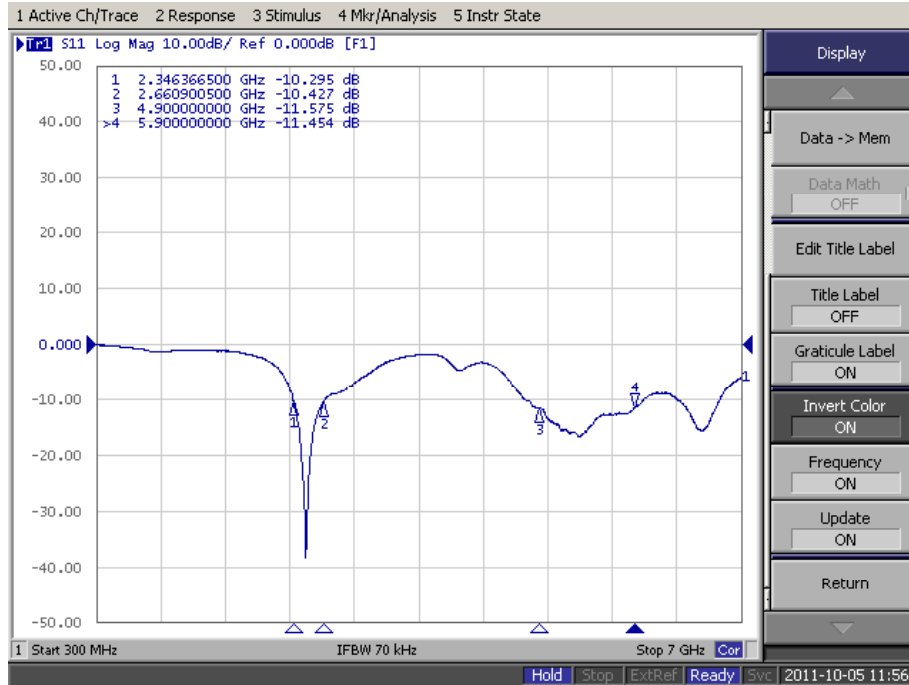
### 5.1 2400-2500 MHz Band

| Characteristics    |            | Specifications      | Unit     |
|--------------------|------------|---------------------|----------|
| Outline Dimensions |            | 40 x 6.0 x 0.5      | mm       |
| Center Frequency   |            | 2442                | MHz      |
| Bandwidth          |            | 100 min.            | MHz      |
| VSWR               |            | 2 max.              |          |
| Impedance          |            | 50                  | $\Omega$ |
| Polarization       |            | Linear Polarization |          |
| Gain               | Peak       | 2.6 (typical)       | dBi      |
|                    | Efficiency | 79 (typical)        | %        |

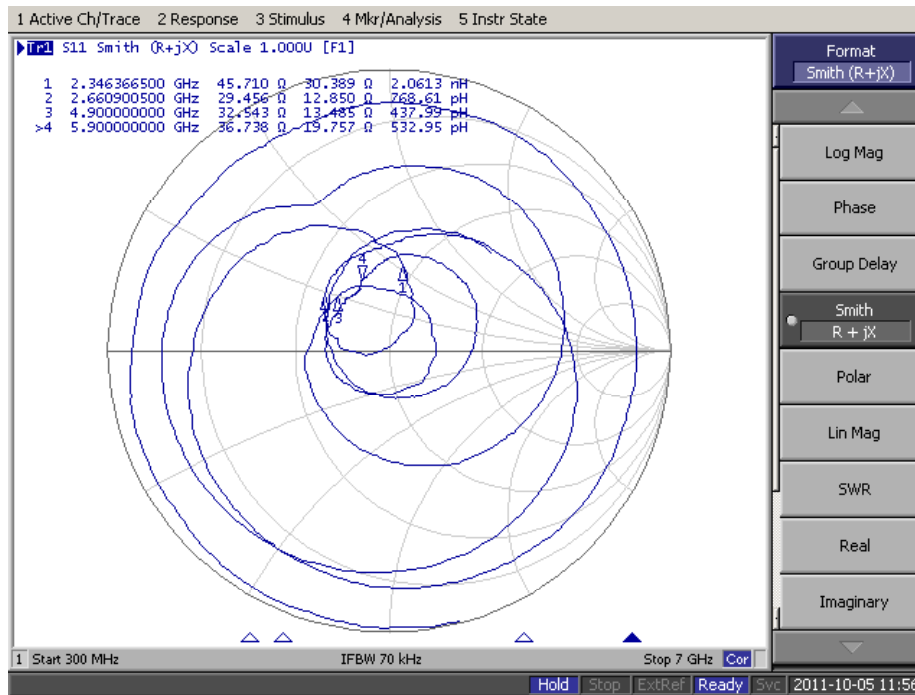
### 5.2 4900-5900 MHz Band

| Characteristics  |            | Specifications      | Unit     |
|------------------|------------|---------------------|----------|
| Center Frequency |            | 5400                | MHz      |
| Bandwidth        |            | 1000 min.           | MHz      |
| VSWR             |            | 2 max.              |          |
| Impedance        |            | 50                  | $\Omega$ |
| Polarization     |            | Linear Polarization |          |
| Gain             | Peak       | 3.3 (typical)       | dBi      |
|                  | Efficiency | 79 (typical)        | %        |

### 5.3 Return Loss ( $S_{11}$ )

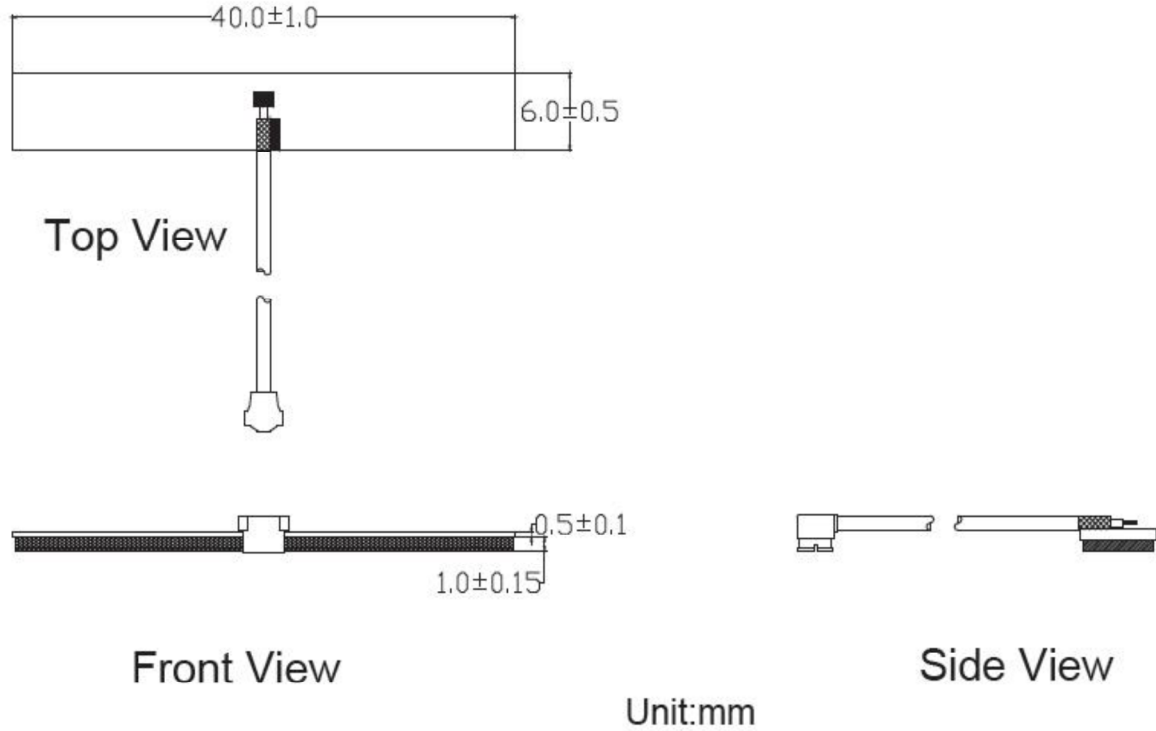


### 5.4 Smith Chart ( $S_{11}$ )



## 6 Antenna Dimensions (unit: mm)

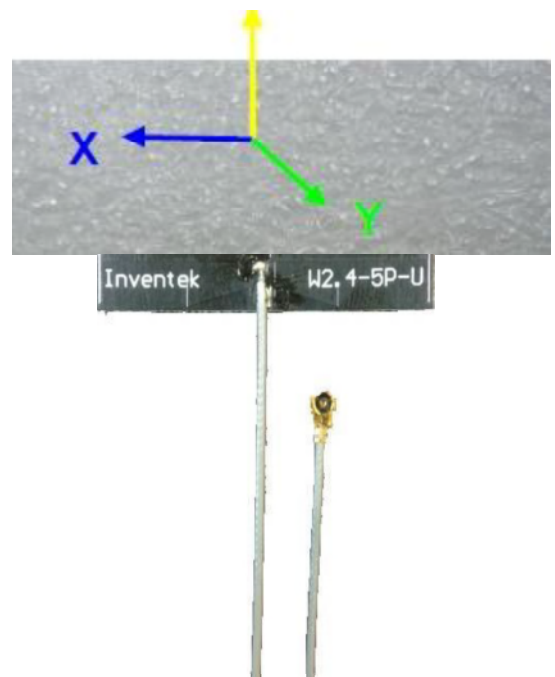
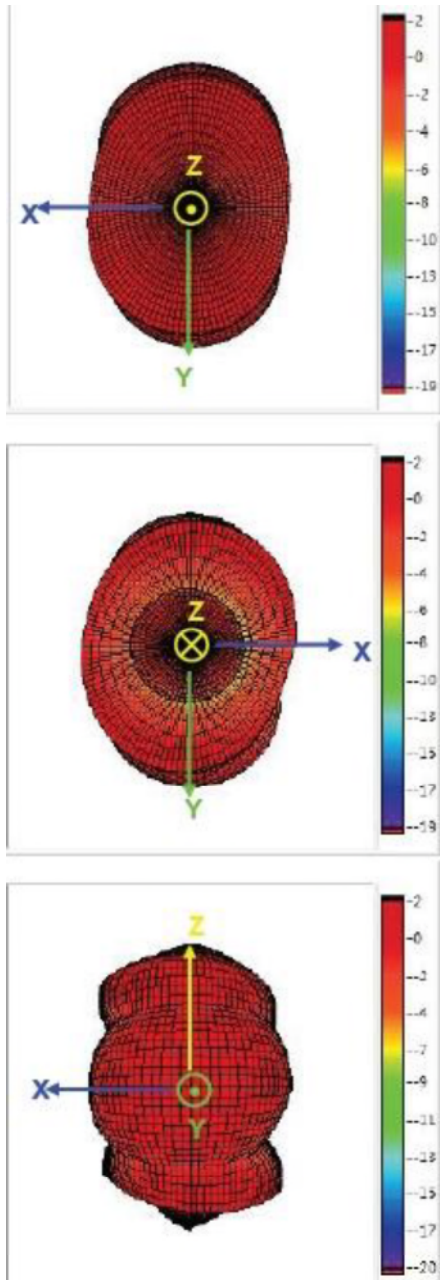
Our standard cable length is 90mm long. Custom cable lengths can be special order by request.



## 7 Radiation Pattern

### 7.1 2400-2500 MHz Band

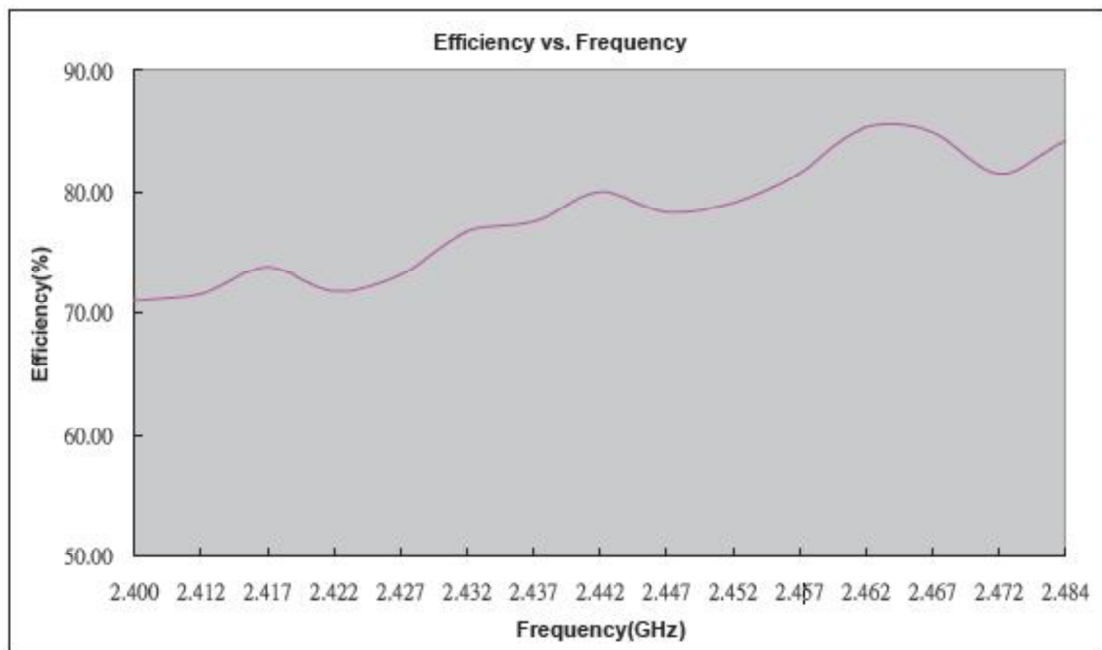
#### 7.1.1 3D Gain Pattern at 2442 MHz



### 7.1.2 Efficiency Table

| Frequency(GHz) | 2.400 | 2.412 | 2.417 | 2.422 | 2.427 | 2.432 | 2.437 | 2.442 | 2.447 | 2.452 | 2.457 | 2.462 | 2.467 | 2.472 | 2.484 |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficiency(dB) | -1.49 | -1.45 | -1.32 | -1.44 | -1.36 | -1.15 | -1.11 | -0.97 | -1.06 | -1.02 | -0.89 | -0.69 | -0.71 | -0.89 | -0.75 |
| Efficiency (%) | 70.96 | 71.61 | 73.79 | 71.78 | 73.11 | 76.74 | 77.45 | 79.98 | 78.31 | 79.10 | 81.51 | 85.26 | 84.83 | 81.51 | 84.20 |
| Gain(dBi)      | 2.11  | 2.21  | 2.34  | 2.26  | 2.33  | 2.49  | 2.52  | 2.68  | 3.07  | 3.21  | 3.50  | 3.73  | 3.69  | 3.39  | 3.42  |

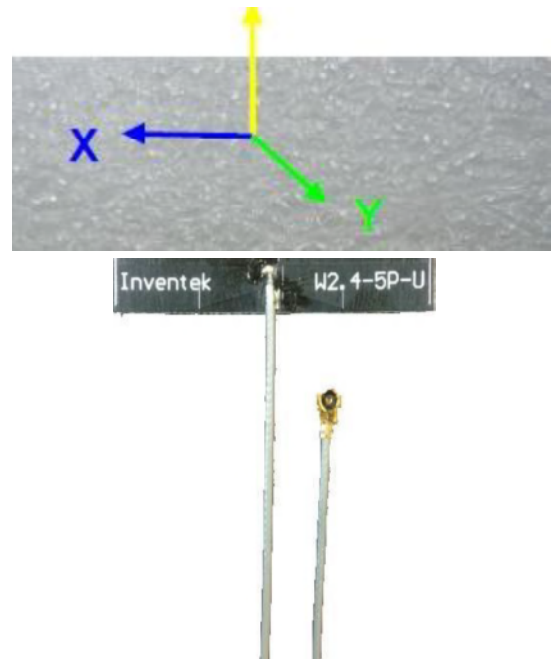
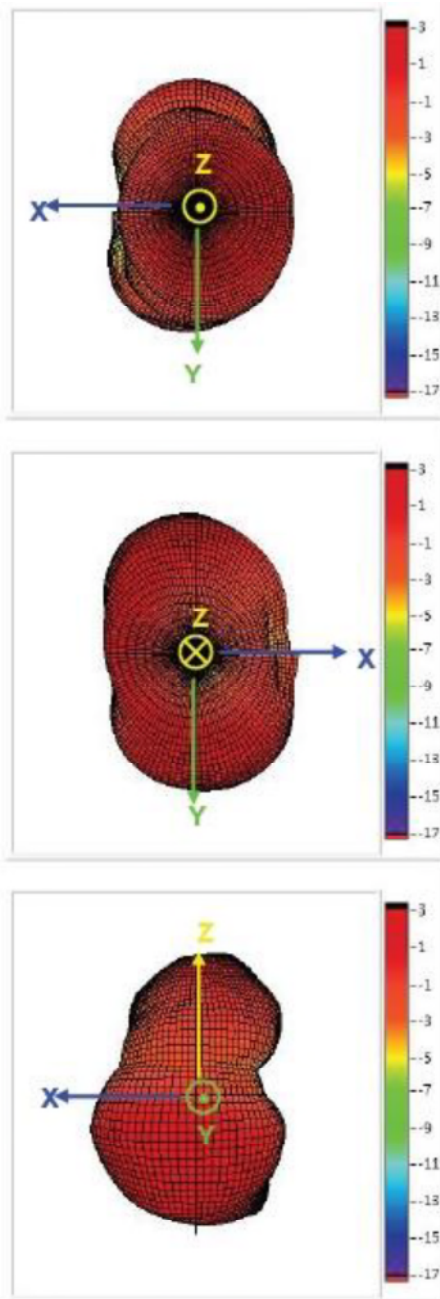
### 7.1.3 Efficiency vs. Frequency



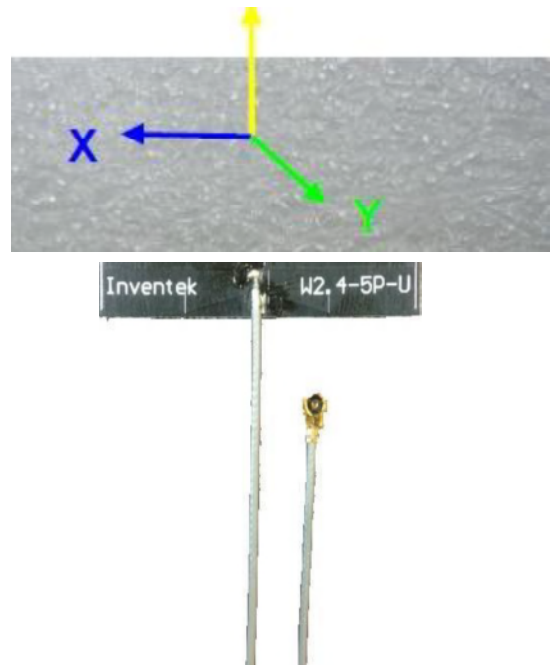
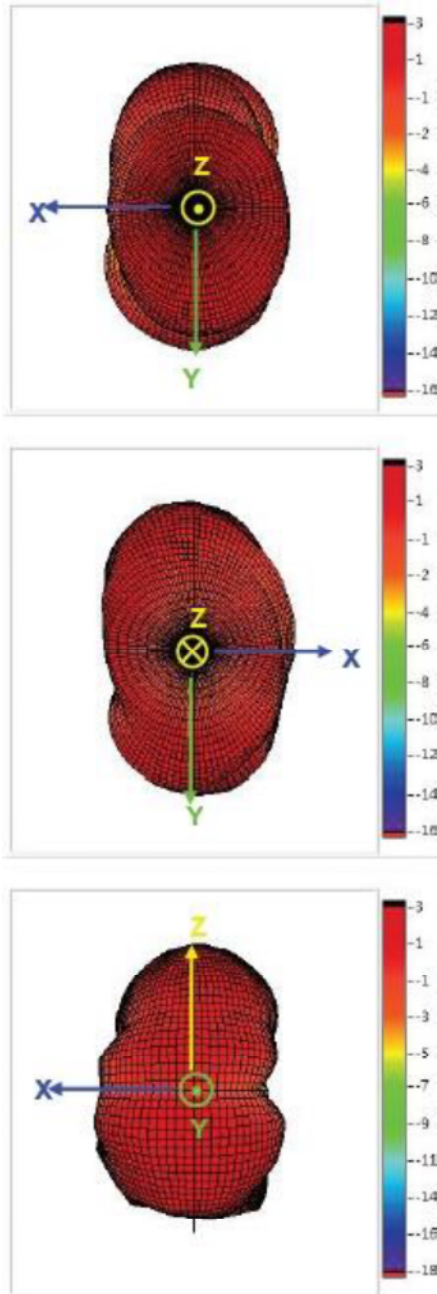


## 7.2 4900-5900 MHz Band

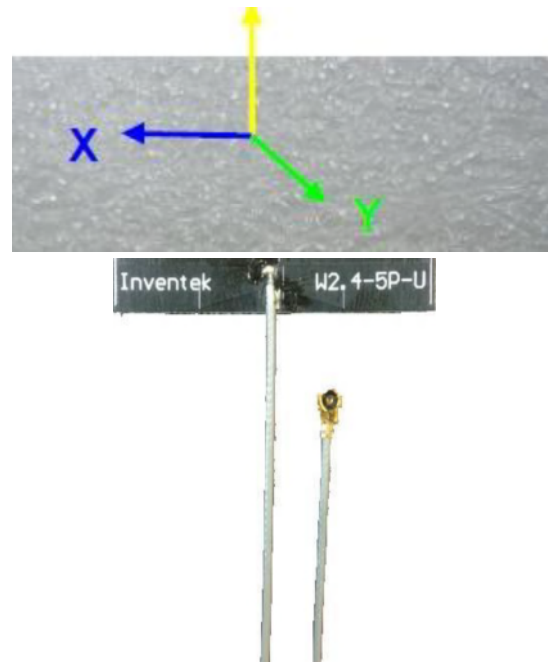
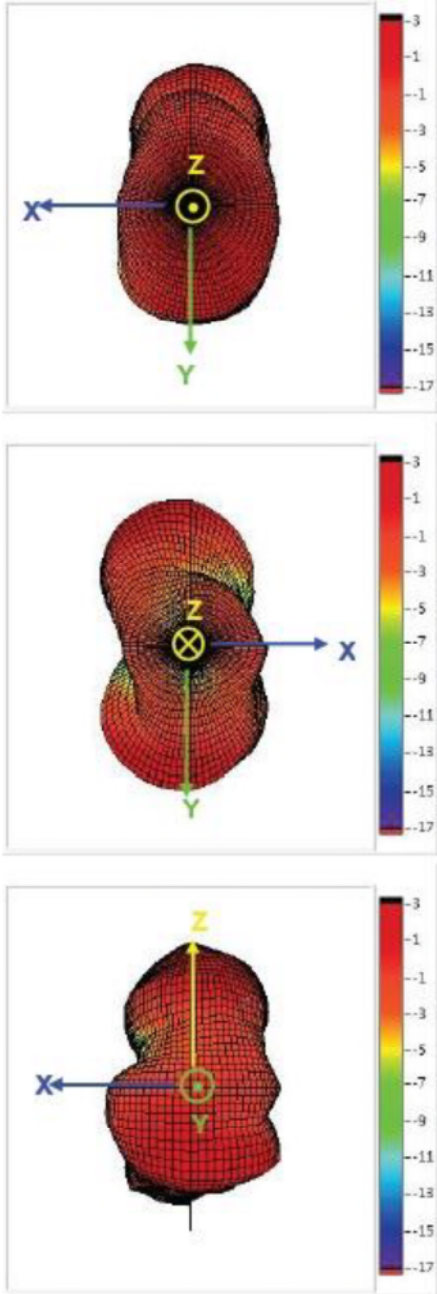
### 7.2.1 3D Gain Pattern at 5150 MHz



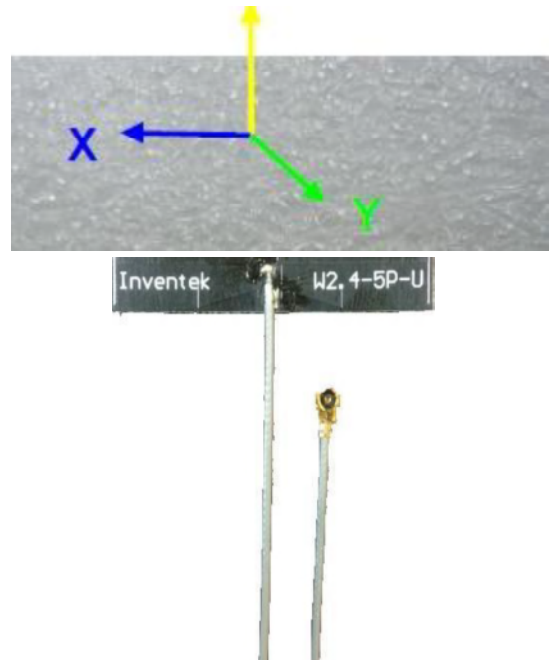
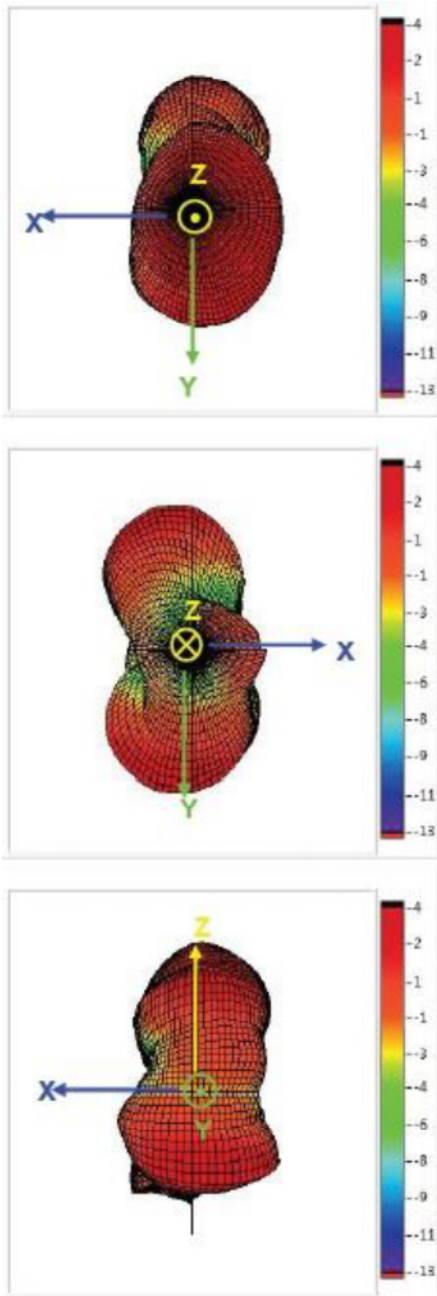
### 7.2.2 3D Gain Pattern at 5350 MHz



### 7.2.3 3D Gain Pattern at 5700 MHz



### 7.2.4 3D Gain Pattern at 5850 MHz

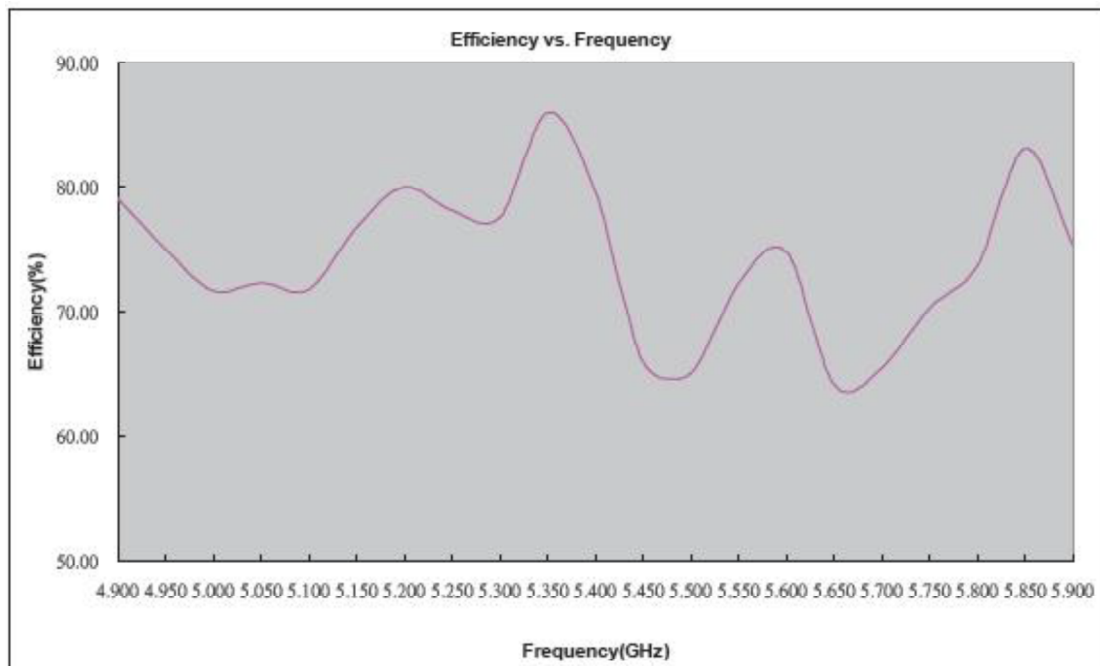


### 7.2.5 Efficiency Table

| Frequency(GHz) | 4.900 | 4.950 | 5.000 | 5.050 | 5.100 | 5.150 | 5.200 | 5.250 | 5.300 | 5.350 | 5.400 |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficiency(dB) | -1.02 | -1.25 | -1.45 | -1.41 | -1.44 | -1.15 | -0.97 | -1.07 | -1.11 | -0.66 | -0.99 |
| Efficiency (%) | 79.07 | 74.99 | 71.61 | 72.28 | 71.78 | 76.74 | 79.98 | 78.10 | 77.50 | 85.95 | 76.62 |
| Gain(dBi)      | 3.23  | 2.74  | 2.30  | 2.56  | 2.83  | 3.20  | 3.46  | 3.72  | 3.30  | 3.39  | 3.36  |

| Frequency(GHz) | 5.450 | 5.500 | 5.550 | 5.600 | 5.650 | 5.700 | 5.750 | 5.800 | 5.850 | 5.900 |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficiency(dB) | -1.81 | -1.87 | -1.41 | -1.26 | -1.93 | -1.85 | -1.53 | -1.33 | -0.80 | -1.23 |
| Efficiency (%) | 65.92 | 65.01 | 72.28 | 74.82 | 64.09 | 65.37 | 70.31 | 73.62 | 83.11 | 75.34 |
| Gain(dBi)      | 2.47  | 2.97  | 3.49  | 3.79  | 2.60  | 3.06  | 3.74  | 3.91  | 5.18  | 3.98  |

### 7.2.6 Efficiency vs. Frequency



## 8 RoHS

Restriction of Hazardous Substances (RoHS) directive has come into force since 1st July 2006 all electronic products sold in the EU must be free of hazardous materials, such as lead.

## 9 Revision Control

|                      |                                  |
|----------------------|----------------------------------|
| Document : W2.4-5P-U | 2.4_5GHz Dual Band Wi-Fi antenna |
| Internal Release     | DOC-DS-20080                     |

| Date      | Author | Revision | Comment     |
|-----------|--------|----------|-------------|
| 7/16/2014 | KMT    | 1.0      | Preliminary |

## 10 Contact Information

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