

*Figure 1 Galtronics 02102140-08042C Wi-Fi  
Dual Band PCB Antenna*

## Dual-Band Wi-Fi Antenna

02102140-08042C

Engineering Data Sheets

### Galtronics Embedded Antenna

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**Revision History (Required)**

<b>Revisions</b>	<b>Date</b>	<b>Note</b>
S1	Jan 4, 2024	Initial draft
S2	Jan 9, 2024	Updated
S3	Jan 10,2024	Updated
S4	Jan 16,2024	Updated

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## 1. Galtronics Dual Band Wi-Fi Antenna

The Galtronics 02102140-08042C antenna is a Dual Band Wi-Fi Antenna that operates in 2400-2500 MHz and 5150-5900 MHz bands. It provides high efficient radiation with good cost benefit. The antenna can be mounted on a customer device by double sided adhesive foam tape and connected to the radio through a U.FL connector.

## 2. Features

- Operates in 2400-2500 MHz and 5150-5900 MHz bands
- Peak gain: 1.91 dBi in 2400 MHz band and 3.29 dBi in 5000 MHz band.
- High efficiency
- U.FL connector interface
- Mounted by double sided adhesive foam tape

## 3. Specifications and Interface

Standard	Wi-Fi Dual Band
Frequency Range	2400-2500 MHz and 5150-5900 MHz
Peak Gain	1.91 dBi in 2400 MHz band and 3.29 dBi in 5000 MHz band
VSWR	2:1
Feed Impedance	50 $\Omega$
Power Handling	30 dBm
Interface	U.FL
Antenna Dimensions	33.6 mm x 17.6 mm x 0.64 mm (L x W x T)
Temperature range	Operating: -20° C to +60° C (-4° F to +140° F) Storage: -20° C to +60° C (-4° F to +140° F)
Humidity Range	Operating: 10% to 85% non-condensing Storage: 5% to 90% non-condensing

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### 4. Return Loss

The antenna was tested with antenna mounted on a 100 x 100 x 2.3mm ABS evaluation board with 1.6mm thickness double-sided tape and an 86 mm long cable (Cable Total Length is 100mm).

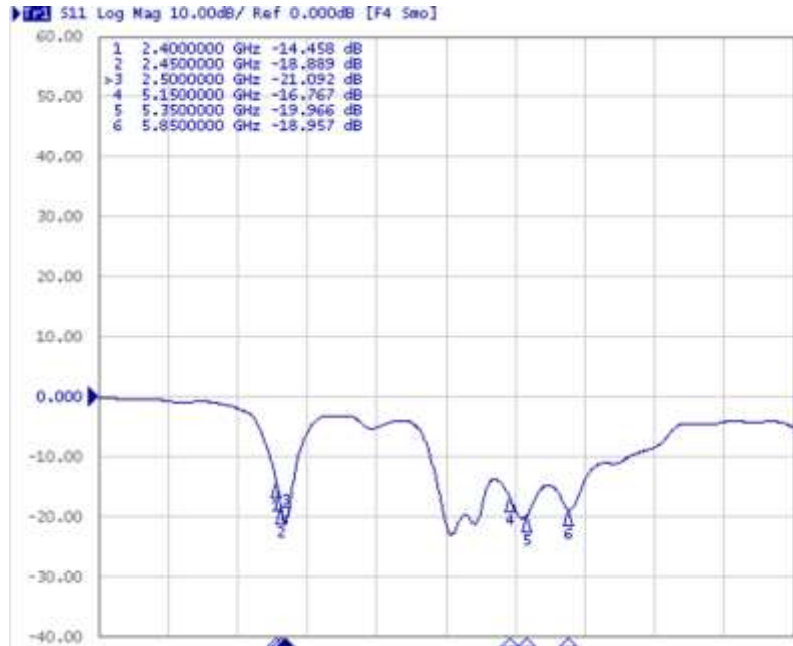


Figure 2 Return Loss

### 5. Gain, Directivity and Efficiency

Table 1 Peak Gain, Directivity & Efficiency

Dual Band	Frequency (MHz)	Peak Gain (dBi)	Antenna Directivity (dBi)	Terminal Efficiency (%)
Wi-Fi Antenna	2400	1.91	3.61	67.56%
	2450	1.87	3.48	69.08%
	2500	1.79	3.38	69.39%
<b>Average</b>				<b>68.68%</b>

Dual Band	Frequency (MHz)	Peak Gain (dBi)	Antenna Directivity (dBi)	Terminal Efficiency (%)
Wi-Fi Antenna	5150	2.88	4.39	70.61%
	5250	2.77	3.96	76.07%
	5350	2.97	4.27	74.20%
	5750	3.29	4.79	70.90%
	5850	3.29	4.81	70.36%
<b>Average</b>				<b>72.43%</b>

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### 6. Radiation Pattern

Figure 3 shows the antenna measurement coordinate system in anechoic chamber. Azimuth plane is XY plane ( $\Theta=90^\circ$ ), Elevation 1 plane is XZ plane ( $\Phi=0^\circ$ ) and Elevation 2 plane is YZ plane ( $\Phi=90^\circ$ ).

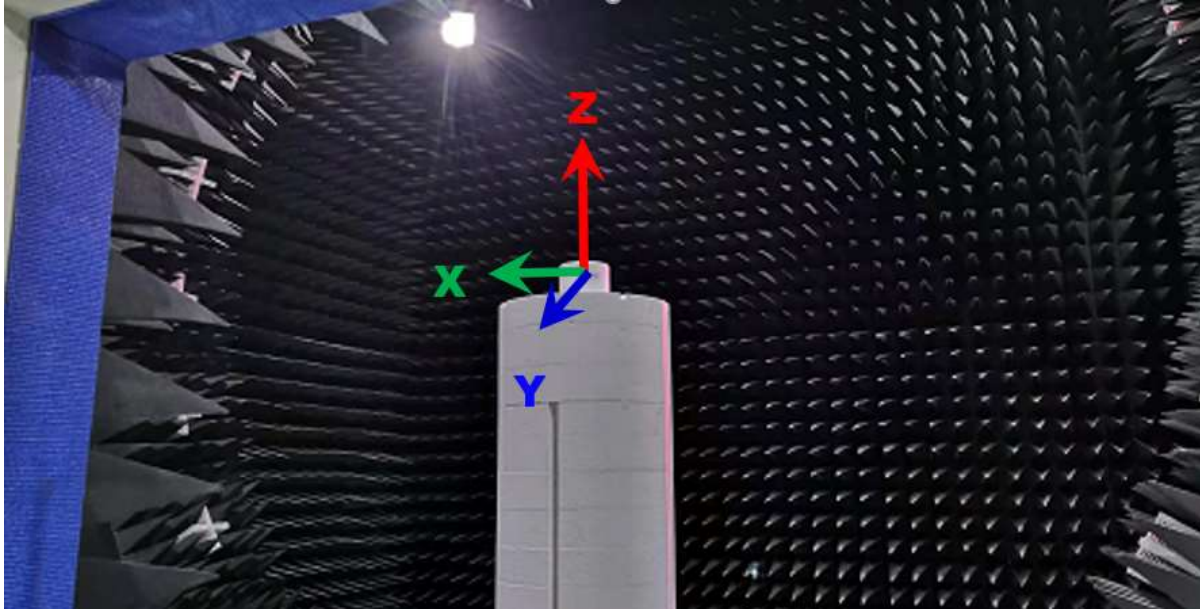
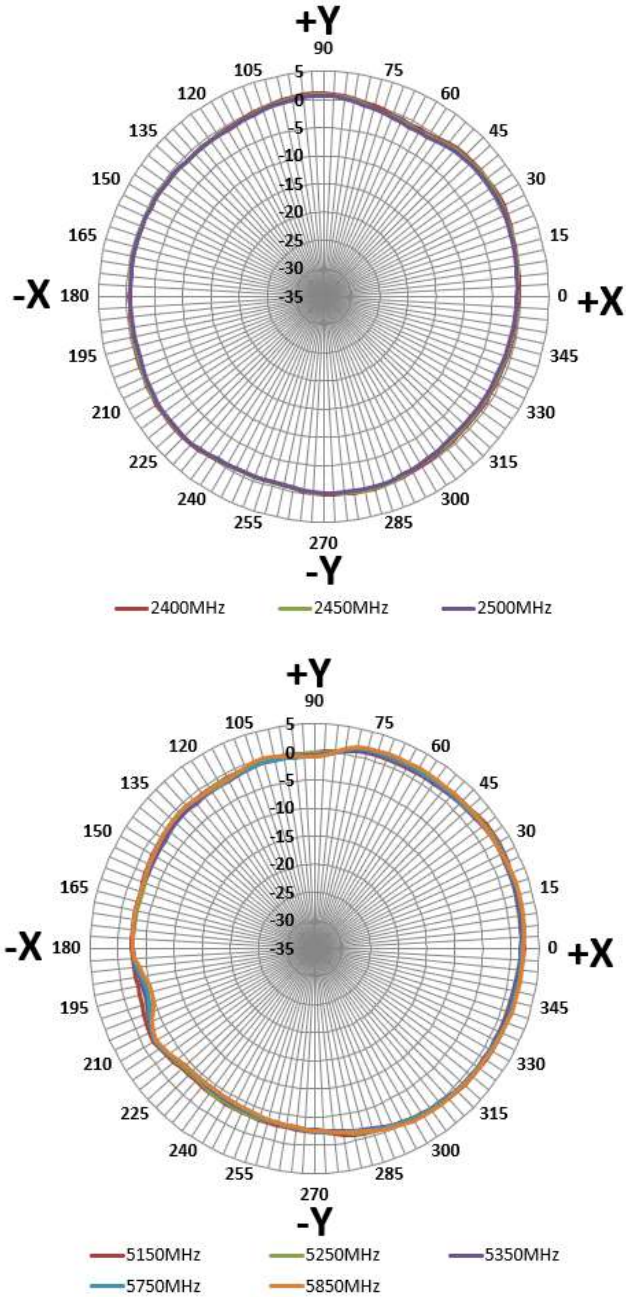


Figure 3 Measurement Orientation

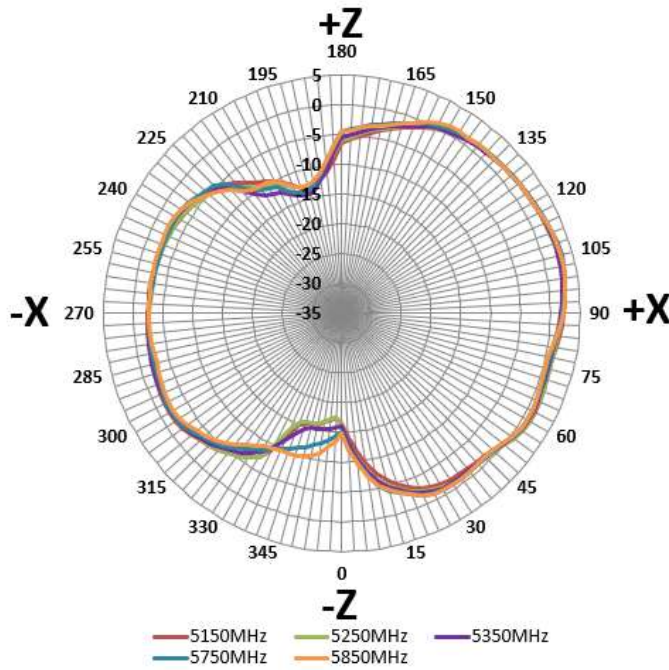
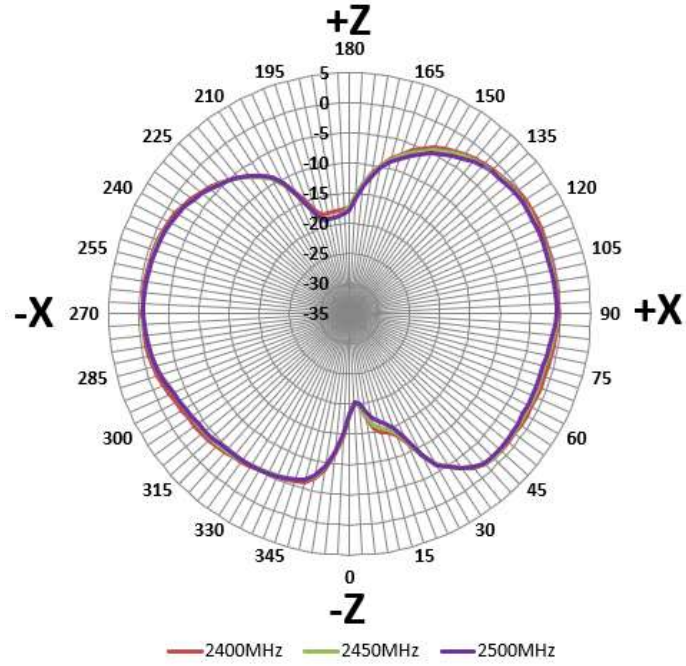
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Figure 3 (A), (B) and (C) show the radiation pattern in three major planes.



(A). Azimuth plane (XY plane) radiation pattern

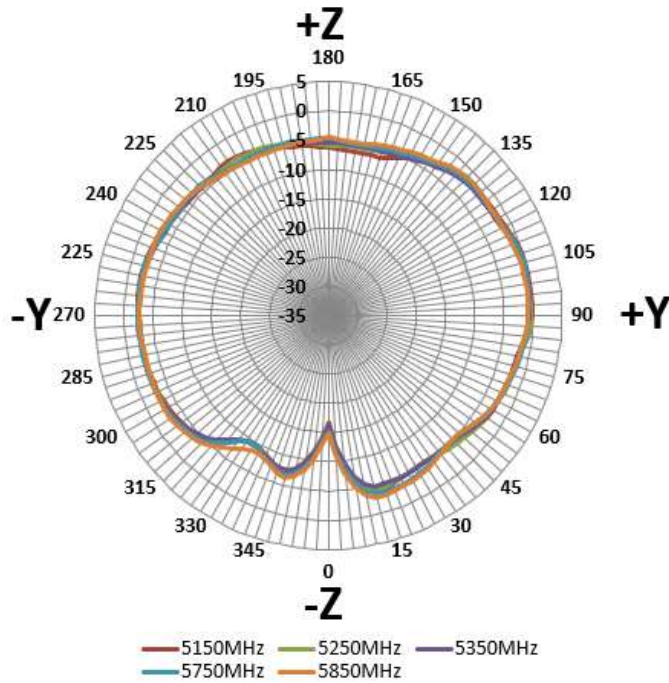
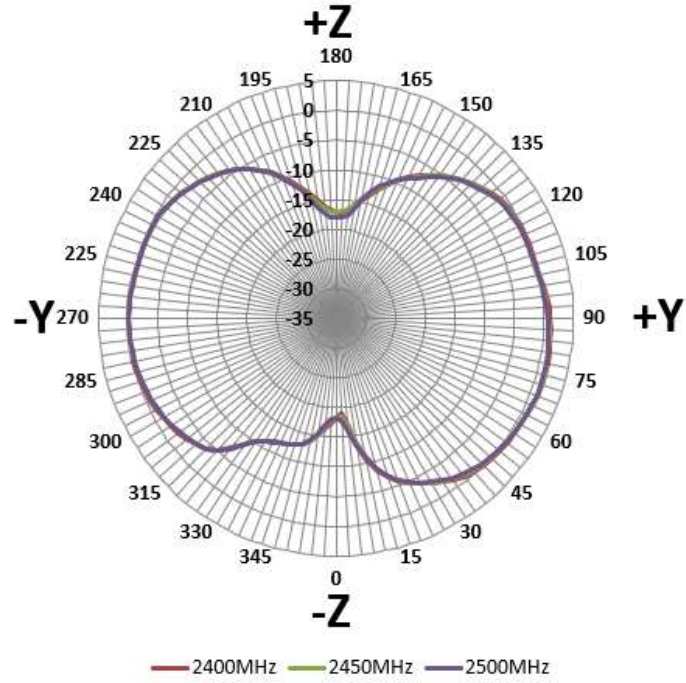
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(B). Elevation 1 plane (XZ plane) radiation pattern



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(C). Elevation 2 plane (YZ plane) radiation pattern

Figure 4 Radiation Patterns in Wi-Fi Dual Band.