

## ANT-W63-FPC-SAH Series Flexible Embedded WiFi 6/6E FPC Antennas

The Linx ANT-W63-FPC-SAH series antennas are 12 mm x 12 mm adhesive flexible printed circuit (FPC) antennas for WiFi 6/WiFi 6E applications in the 2.4 GHz, 5 GHz and 6 GHz bands.

The ANT-W63-FPC-SAH antennas provide a ground plane independent dipole internal/ embedded antenna solution. The flexibility and adhesive backing makes the ANT-W63-FPC-SAH series easy to mount in RF transparent (e.g. plastic) enclosures, enabling environmental sealing and for protection from antenna damage.

Connection is made to the radio via a coaxial cable terminated in an MHF1/U.FL-type plug (female socket), or MHF4 plug (female socket) connector.



### Features

- Performance at 5.150 GHz to 5.895 GHz
  - VSWR:  $\leq 3.4$
  - Peak Gain: 7.2 dBi
  - Efficiency: 64%
- Performance at 5.950 GHz to 7.125 GHz
  - VSWR:  $\leq 2.4$
  - Peak Gain: 6.3 dBi
  - Efficiency: 53%
- Ground plane independent dipole antenna
- Compact, low-profile
  - 12.4 mm x 12.0 mm x 0.1 mm
- Adhesive backing permanently adheres to non-metal enclosures using 3M 467MP™/200MP adhesive
- Flexible to fit in challenging enclosures

### Applications

- WiFi/WLAN coverage
  - WiFi 6E (802.11ax)
  - WiFi 6 (802.11ax)
  - WiFi 5 (802.11ac)
  - WiFi 4 (802.11n)
  - 802.11b/g
- 2.4 GHz ISM applications
  - Bluetooth®
  - ZigBee®
- U-NII bands 1-8
- Internet of Things (IoT) devices
- Smart Home networking
- Sensing and remote monitoring

### Ordering Information

Part Number	Cable Length	Connector
ANT-W63-FPC-SAH50UF	50 mm (1.97 in)	U.FL
ANT-W63-FPC-SAH100UF	100 mm (3.94 in)	U.FL
ANT-W63-FPC-SAH150UF	150 mm (5.91 in)	U.FL
ANT-W63-FPC-SAH50M4	50 mm (1.97 in)	MHF4
ANT-W63-FPC-SAH100M4	100 mm (3.94 in)	MHF4
ANT-W63-FPC-SAH150M4	150 mm (5.91 in)	MHF4

Available from Linx Technologies and select distributors and representatives.

Table 1. Electrical Specifications

Parameter	ISM/WiFi	WiFi/U-NII 1-3	WiFi 6E
Frequency Range	2400 MHz to 2500 MHz	5150 MHz to 5895 MHz	5950 MHz to 7125 MHz
VSWR (max.)	3.4	3.4	2.4
Peak Gain (dBi)	0.6	7.2	6.3
Average Gain (dBi)	-5.6	-2.6	-3.3
Efficiency (%)	32	64	53
Polarization	Linear		
Radiation	Omnidirectional		
Impedance	50 $\Omega$		
Wavelength	1/2-wave		
Max Power	2 W		
Electrical Type	Dipole		

Electrical specifications and plots measured with the antenna on a 2 mm (0.08 in) thick plastic sheet.

Table 2. Mechanical Specifications

Part Number	Connection	Coaxial Cable, minimum inside bend radius	Weight
ANT-W63-FPC-SAH50UF	MHF1/U.FL-type plug	0.81 mm: 4.0 mm (0.16 in)	0.2 g (0.01 oz)
ANT-W63-FPC-SAH100UF	MHF1/U.FL-type plug	0.81 mm: 4.0 mm (0.16 in)	0.2 g (0.01 oz)
ANT-W63-FPC-SAH150UF	MHF1/U.FL-type plug	0.81 mm: 4.0 mm (0.16 in)	0.3 g (0.01 oz)
ANT-W63-FPC-SAH50M4	MHF4-type plug	0.81 mm: 4.0 mm (0.16 in)	0.1 g (0.01 oz)
ANT-W63-FPC-SAH100M4	MHF4-type plug	0.81 mm: 4.0 mm (0.16 in)	0.3 g (0.01 oz)
ANT-W63-FPC-SAH150M4	MHF4-type plug	0.81 mm: 4.0 mm (0.16 in)	0.3 g (0.01 oz)
Operating Temp. Range	-40 °C to +85 °C (-40 °F to 185 °F)		
Storage Temp. Range	-40 °C to +85 °C (-40 °F to 185 °F)		
Dimensions	12.4 mm x 12.0 mm x 0.1 mm (0.49 in x 0.47 in x 0.004 in)		

## Packaging Information

The ANT-W63-FPC-SAH antennas are packaged in bags of 100 pcs. Distribution channels may offer alternative packaging options.

## Antenna Mounting

The ANT-W63-FPC-SAH antenna is a flexible, adhesive backed antenna that allows it to be permanently installed onto non-metallic surfaces. The adhesive backing is 3M 467MP™/200MP, which provides outstanding adhesion to high surface energy plastics. The adhesive delivers excellent shear strength to resist slippage and edge lifting, but can be repositioned before the adhesive cures, allowing for accurate positioning. This adhesive is highly resistant to solvents, humidity and moisture, as well as heat up to 204 °C (400 °F) for short periods.

The antenna should never be bent to the point of creating a crease or allowing the angle of the bend to fall below 90 degrees (i.e. become acute) as this will impair function and may cause permanent damage.

Product Dimensions

Figure 1 provides dimensions for the ANT-W63-FPC-SAH series antenna.

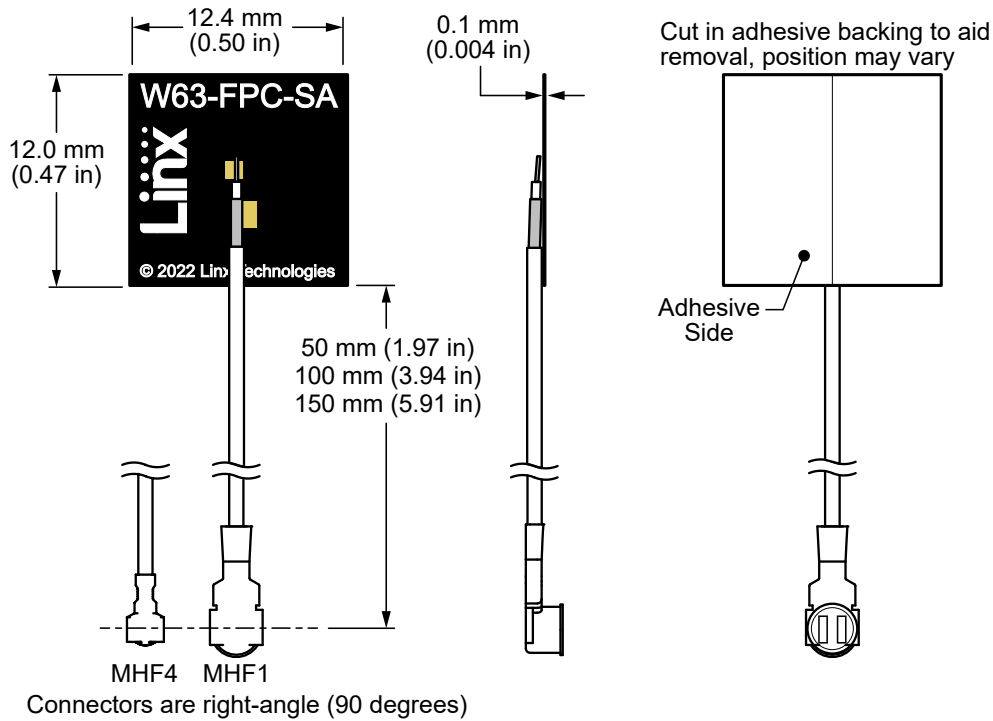


Figure 1. ANT-W63-FPC-SAH Series Antenna Dimensions

VSWR

Figure 2 provides the voltage standing wave ratio (VSWR) across the antenna bandwidth. VSWR describes the power reflected from the antenna back to the radio. A lower VSWR value indicates better antenna performance at a given frequency. Reflected power is also shown on the right-side vertical axis as a gauge of the percentage of transmitter power reflected back from the antenna.

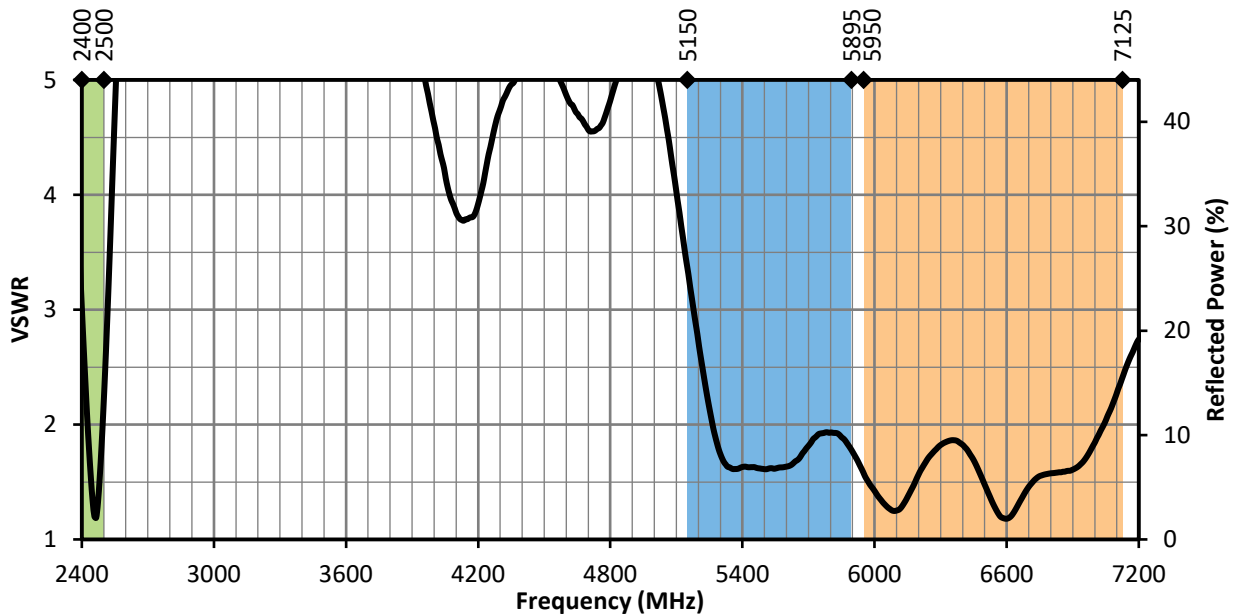


Figure 2. ANT-W63-FPC-SAH Antenna VSWR with Frequency Band Highlights

### Return Loss

Return loss (Figure 3), represents the loss in power at the antenna due to reflected signals. Like VSWR, a lower return loss value indicates better antenna performance at a given frequency.

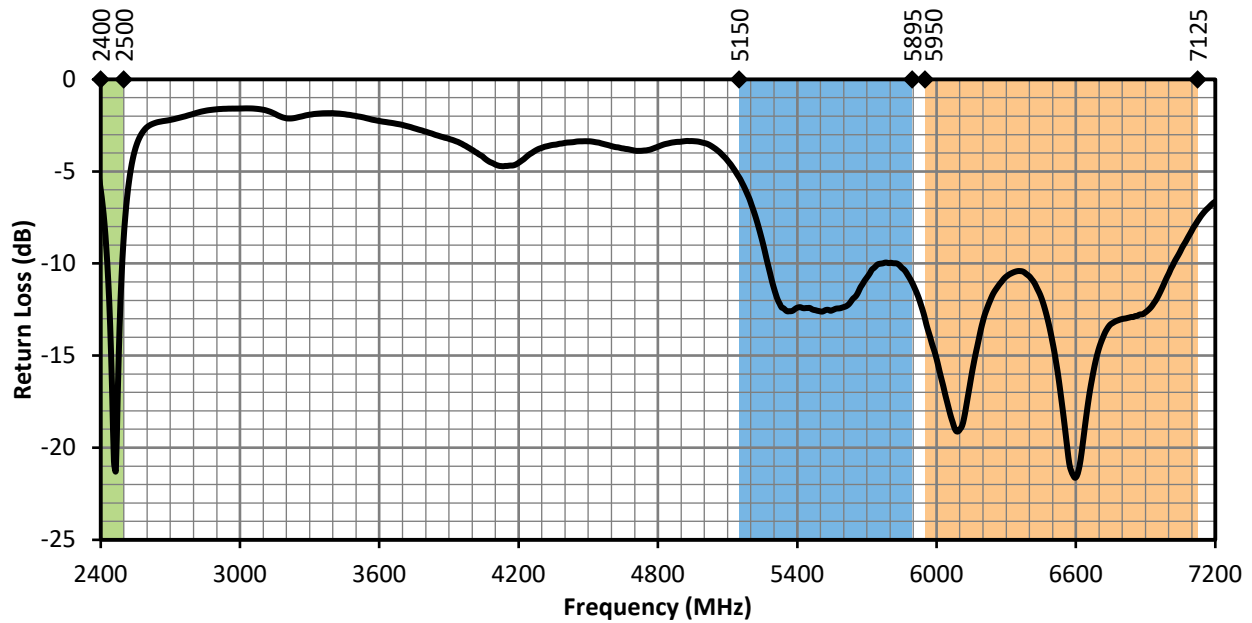


Figure 3. ANT-W63-FPC-SAH Antenna Return Loss with Frequency Band Highlights

### Peak Gain

The peak gain across the antenna bandwidth is shown in Figure 4. Peak gain represents the maximum antenna input power concentration across 3-dimensional space, and therefore peak performance, at a given frequency, but does not consider any directionality in the gain pattern.

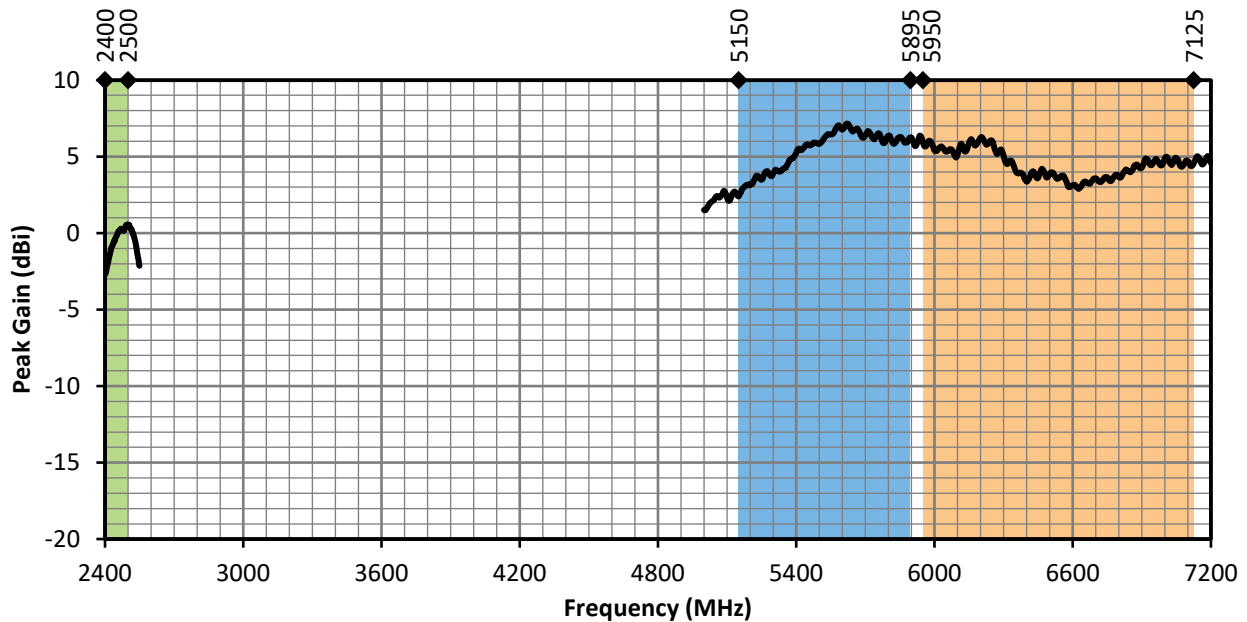


Figure 4. ANT-W63-FPC-SAH Antenna Peak Gain with Frequency Band Highlights

Average Gain

Average gain (Figure 5), is the average of all antenna gain in 3-dimensional space at each frequency, providing an indication of overall performance without expressing antenna directionality.

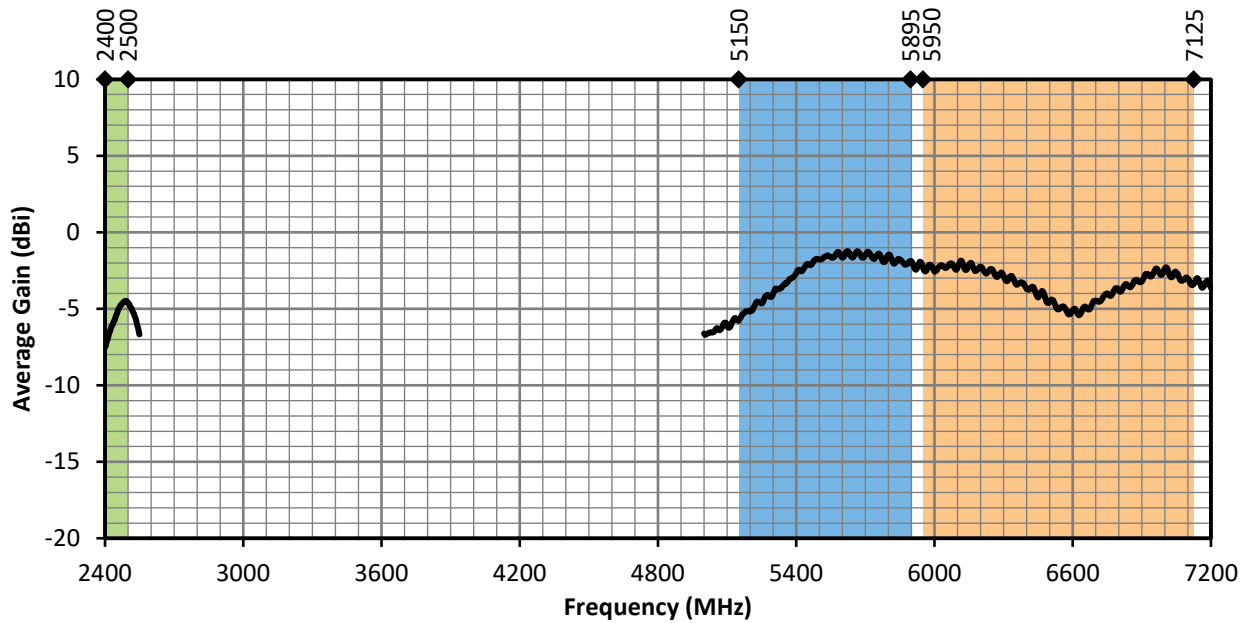


Figure 5. ANT-W63-FPC-SAH Antenna Average Gain with Frequency Band Highlights

Radiation Efficiency

Radiation efficiency (Figure 6), shows the ratio of power delivered to the antenna relative to the power radiated at the antenna, expressed as a percentage, where a higher percentage indicates better performance at a given frequency.

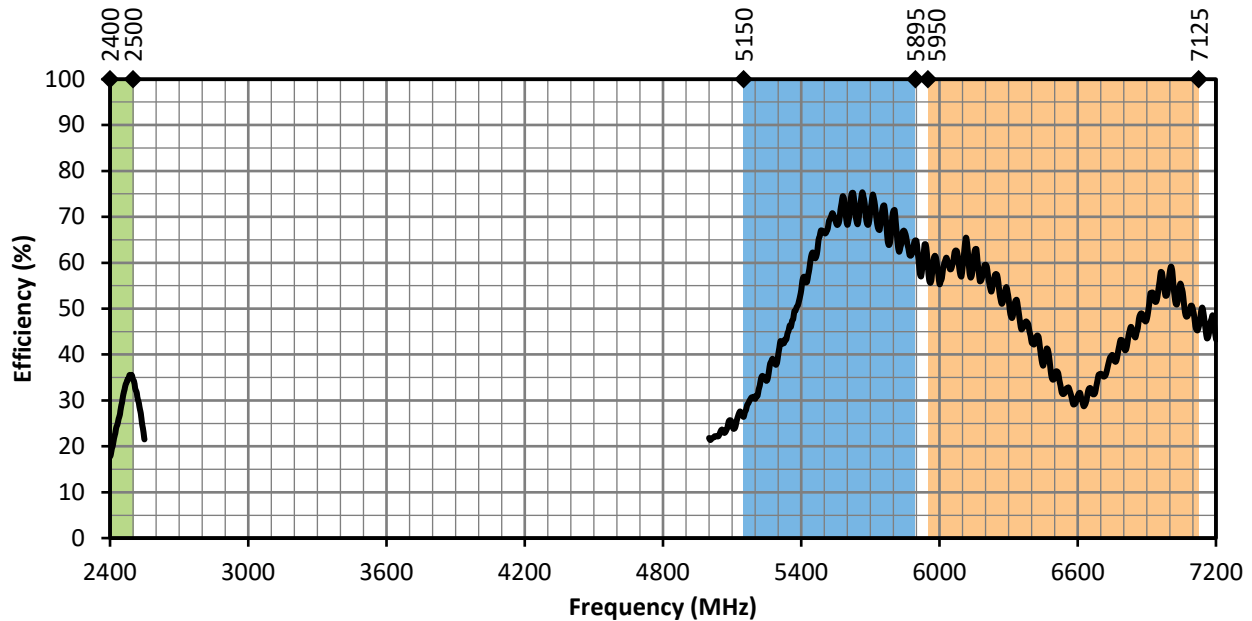
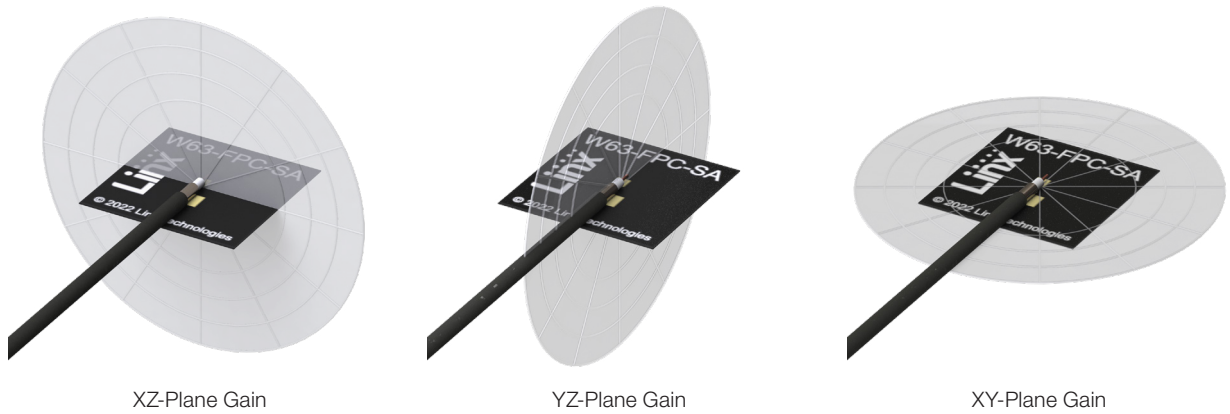


Figure 6. ANT-W63-FPC-SAH Antenna Radiation Efficiency with Frequency Band Highlights

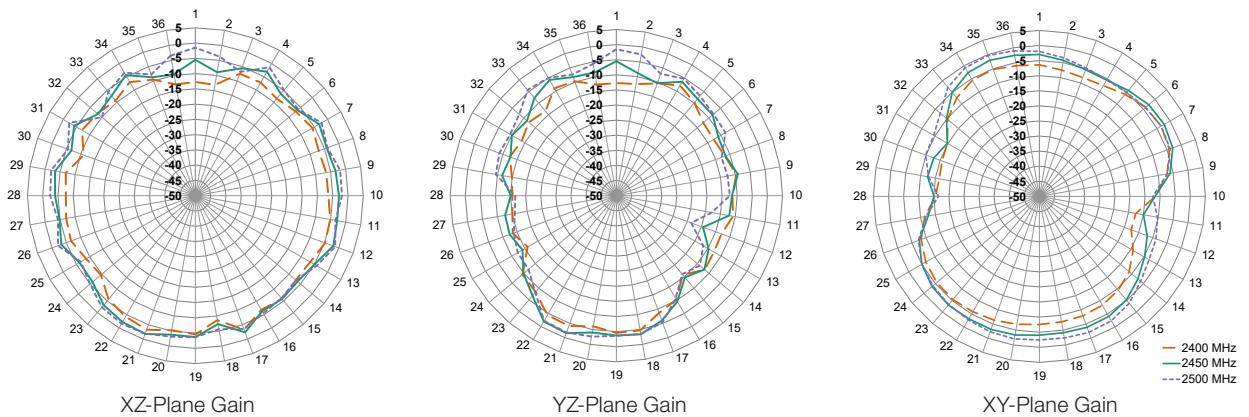
Radiation Patterns

Radiation patterns provide information about the directionality and 3-dimensional gain performance of the antenna by plotting gain at specific frequencies in three orthogonal planes. Antenna radiation patterns (Figure 7), are shown using polar plots covering 360 degrees. The antenna graphic above the plots provides reference to the plane of the column of plots below it. Note: when viewed with typical PDF viewing software, zooming into radiation patterns is possible to reveal fine detail.

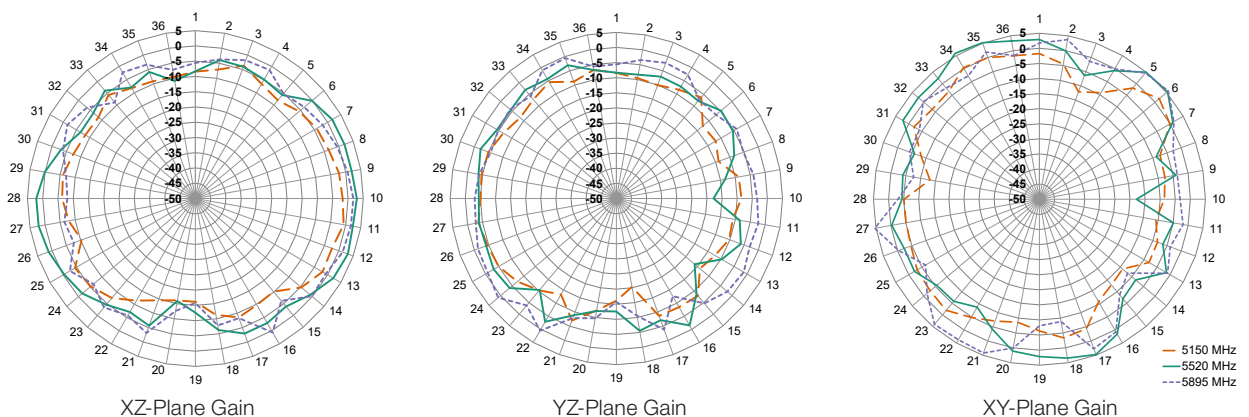
Radiation Patterns - Horizontal



2400 MHz to 2500 MHz (2450 MHz)



5150 MHz to 5895 MHz (5500 MHz)



Radiation Patterns

5950 MHz to 7125 MHz (6500 MHz)

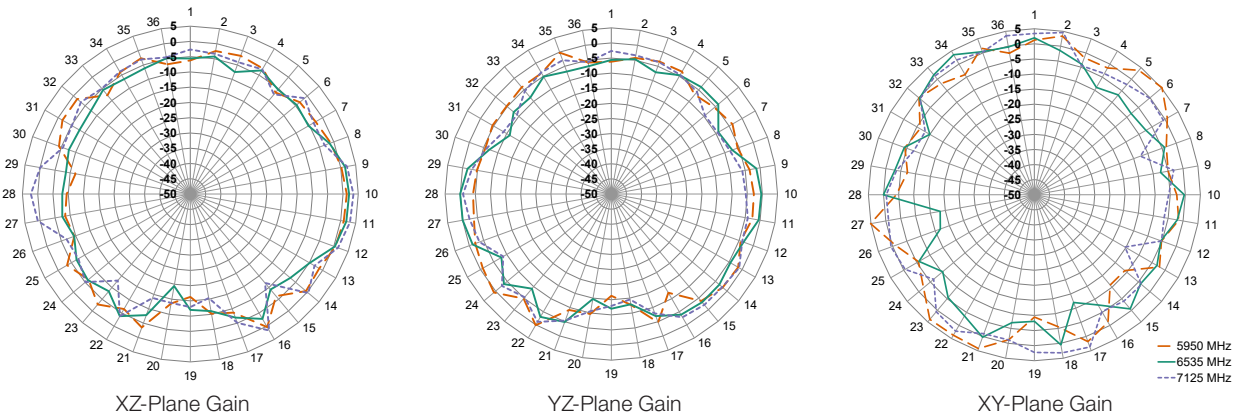


Figure 7. Radiation Patterns for ANT-W63-FPC-SAH Series Antenna