

ANT-W63-FPC2-ccc-100 Flexible Embedded WiFi 7/6/6E Antenna

The Linx ANT-W63-FPC2 antenna is a flexible embedded multiband antenna offering excellent performance for WiFi 7/WiFi 6/WiFi 6E applications in the 2.4 GHz, 5 GHz and 6 GHz bands.

The ANT-W63-FPC2 provides a ground plane independent dipole embedded antenna solution comparable in performance to an external antenna. The flexibility and adhesive backing makes the W63-FPC2 antenna easy to mount in unique and custom enclosures, while enabling an environmentally sealed enclosure and protection from tampering or accidental antenna damage.

Connection is made to the radio via a 100 mm (3.94 in) long, 1.13 mm coaxial cable terminated in a U.FL-type plug (female socket) or MHF4 plug (female socket) connector.



Features

- Performance at 2.4 GHz to 2.5 GHz
 - VSWR: ≤ 2.4
 - Peak Gain: 3.2 dBi
 - Efficiency: 61%
- Performance at 5.925 GHz to 7.125 GHz
 - VSWR: ≤ 2.4
 - Peak Gain: 8.4 dBi
 - Efficiency: 57%
- Ground plane independent dipole antenna
- Compact, low-profile
 - 42.0 mm x 12.0 mm x 0.2 mm
- U.FL-type plug (female socket) Compatible with MHF1, AMC, UMCC
- MHF4-type plug (female socket)
- Adhesive backing permanently adheres to non-metal enclosures using 3M 467MP™/200MP adhesive
- Flexible to fit in challenging enclosures

Applications

- WiFi/WLAN coverage
 - WiFi 7 (802.11be)
 - 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	Description
ANT-W63-FPC2-UFL-100	WiFi 7/6/6E antenna on 100 mm of 1.13 mm coaxial cable and U.FL-type plug (female socket)
ANT-W63-FPC2-M4-100	WiFi 7/6/6E antenna on 100 mm of 1.13 mm coaxial cable and MHF4-type plug (female socket)

Available from Linx Technologies and select distributors and representatives.

Table 1. Electrical Specifications

Parameter	ISM/WiFi	WiFi/U-NII 1-3	WiFi 6E/U-NI 4-8
Frequency Range	2400 MHz to 2485 MHz	5150 MHz to 5850 MHz	5925 MHz to 7125 MHz
VSWR (max.)	2.4	1.4	2.4
Peak Gain (dBi)	3.2	7.7	8.4
Average Gain (dBi)	-2.3	-1.6	-2.9
Efficiency (%)	61	72	57
Impedance	50 Ω		
Wavelength	1/2-wave		
Electrical Type	Dipole		
Radiation	Omnidirectional		
Polarization	Linear		
Max Power	2 W		

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

Table 2. Mechanical Specifications

Parameter	Value
Connection	U.FL-type plug (female socket) or MHF4-type plug (female socket) on 100 mm (3.94 in) of 1.13 mm coaxial cable.
Operating Temp. Range	-40 °C to +80 °C
Weight	0.6 g (0.02 oz)
Dimensions	42.0 mm x 12.0 mm x 0.2 mm (1.65 in x 0.47 in x 0.01 in)

Product Dimensions

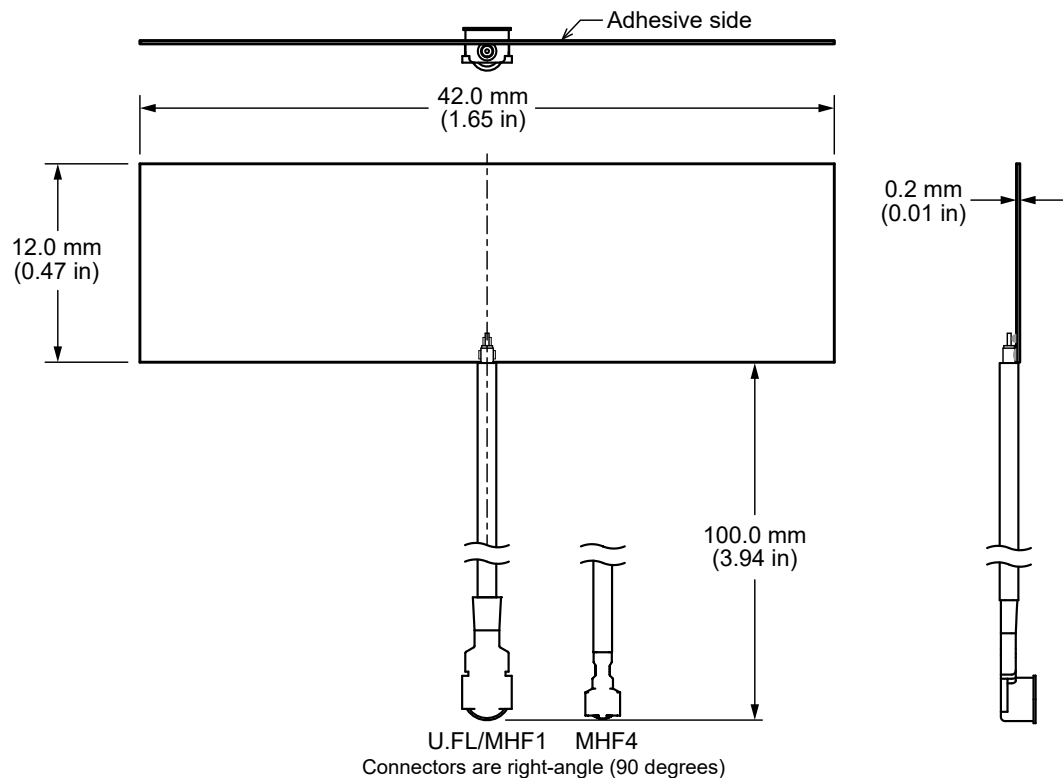


Figure 1. ANT-W63-FPC2-ccc-100 Dimensions

Antenna Mounting

The ANT-W63-FPC2-ccc-100 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 temporarily to allow for repositioning. 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.

Packaging Information

The ANT-W63-FPC2-ccc-100 antenna is packed in a clear bag of 100 pcs. Distribution channels may offer alternative packaging options.

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.

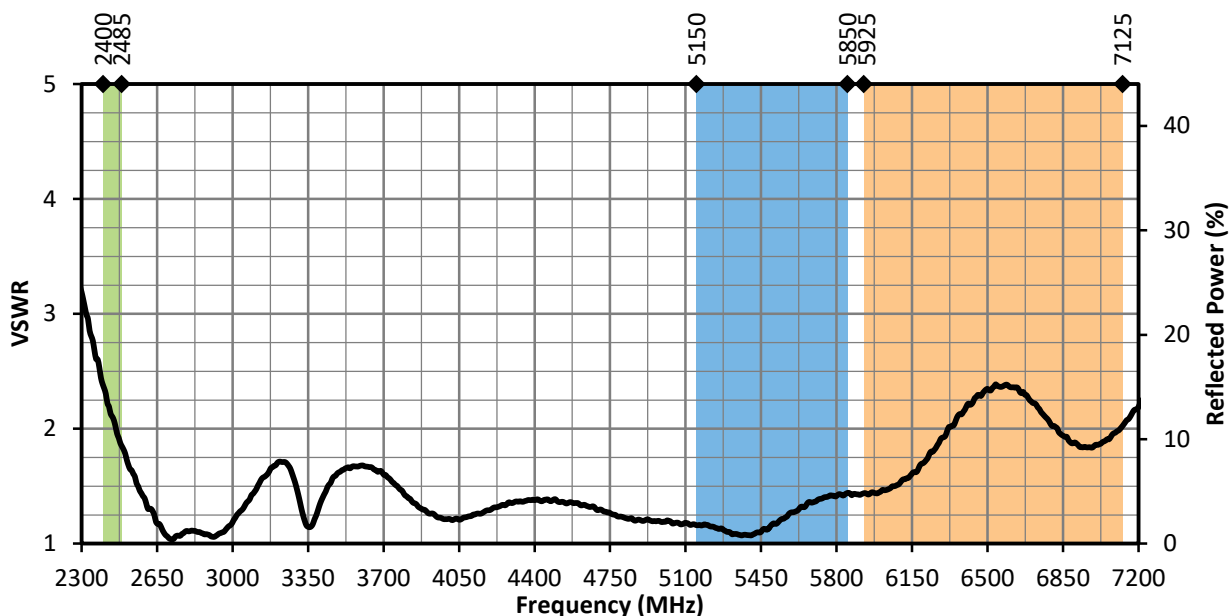


Figure 2. ANT-W63-FPC2-ccc-100 Antenna VSWR with Frequency Band Highlights

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.

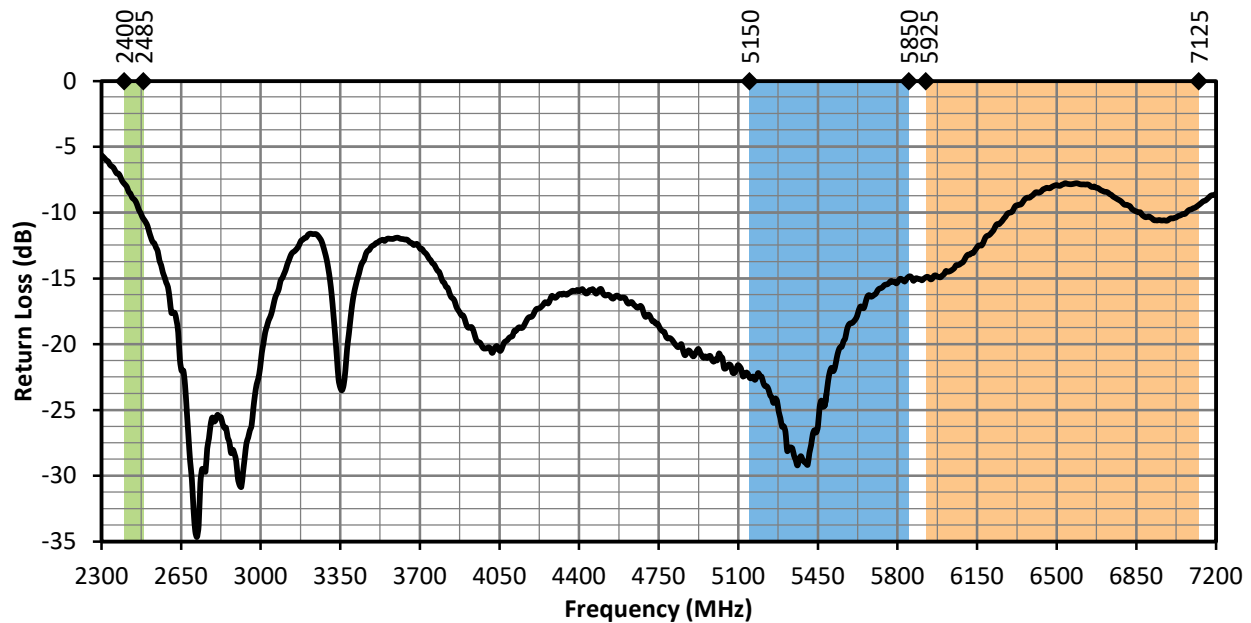


Figure 3. ANT-W63-FPC2-ccc-100 Antenna Return Loss with Frequency Band Highlights

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.

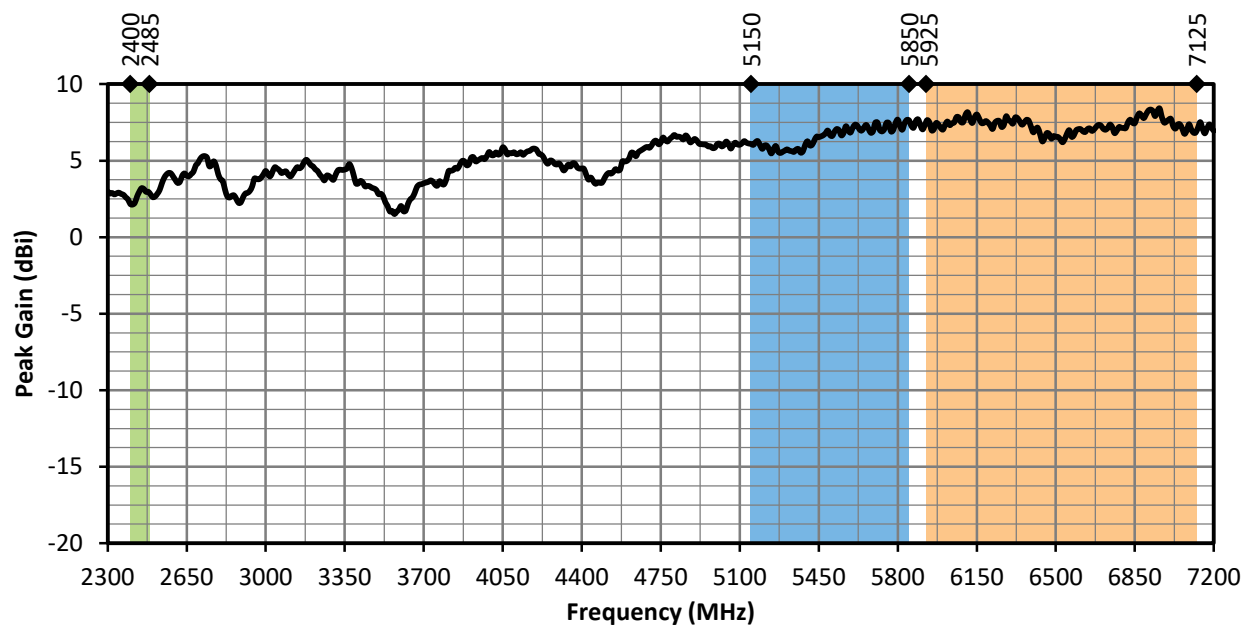


Figure 4. ANT-W63-FPC2ccc-100 Antenna Peak Gain with Frequency Band Highlights

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.

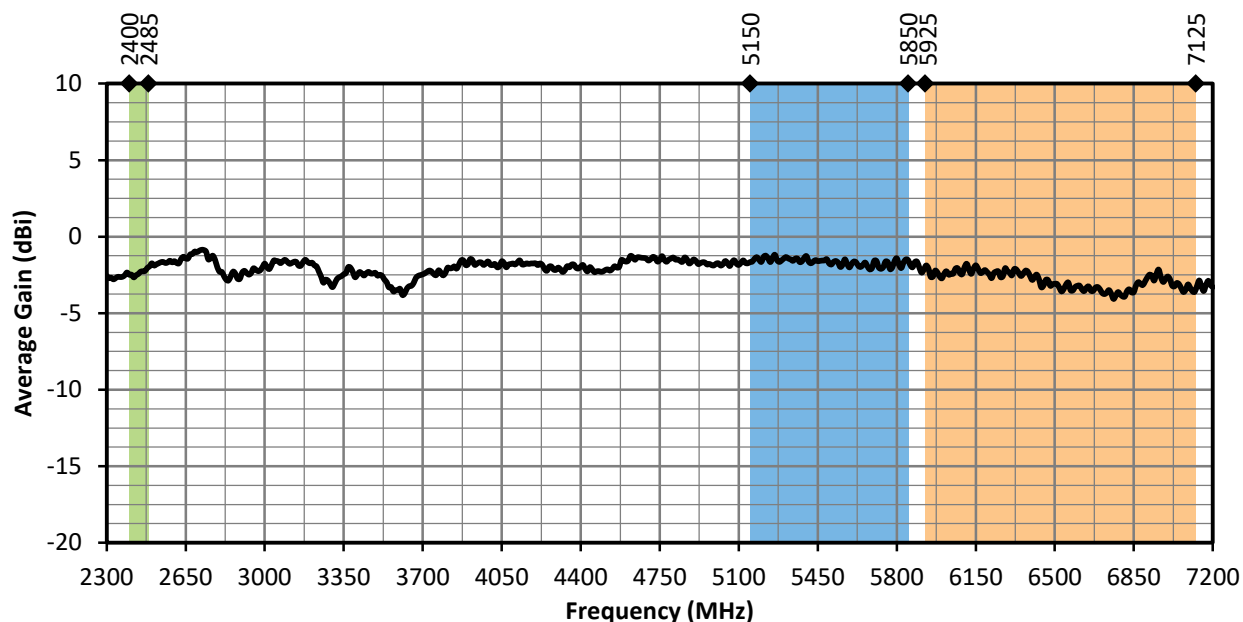


Figure 5. ANT-W63-FPC2-ccc-100 Antenna Average Gain with Frequency Band Highlights

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.

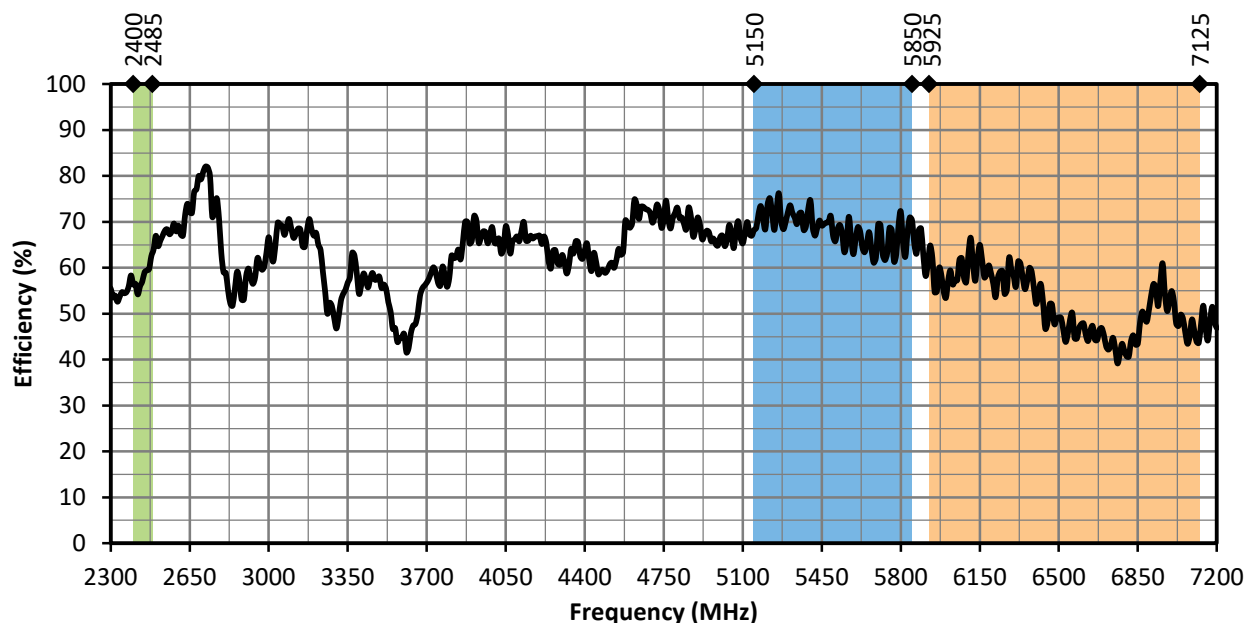
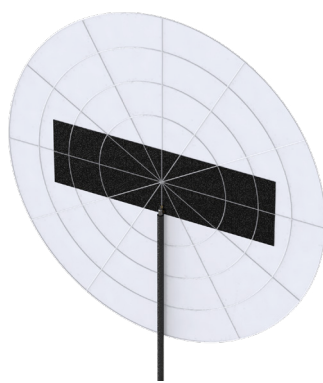


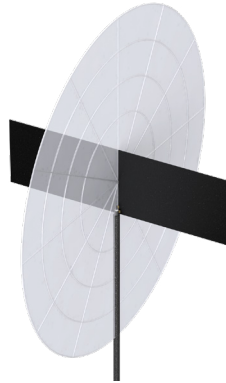
Figure 6. ANT-W63-FPC2-ccc-100 Antenna Radiation Efficiency with Frequency Band Highlights

Radiation Patterns

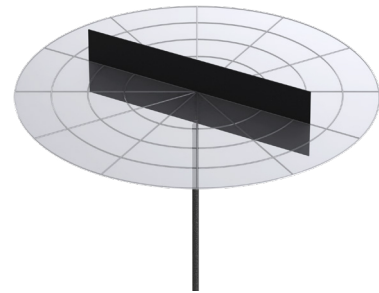
Radiation patterns provide information about the directionality and 3-dimensional gain performance of the antenna by plotting gain at specific frequencies in three orthogonal planes. Antenna radiation patterns (Figure 7), are shown using polar plots covering 360 degrees. The antenna graphic above the 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.



XZ-Plane Gain

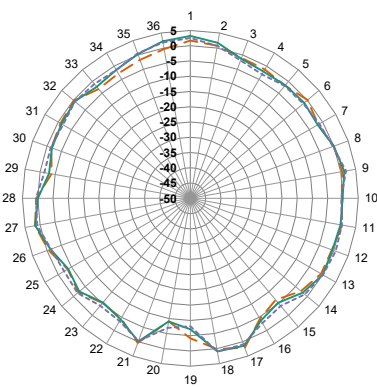


YZ-Plane Gain

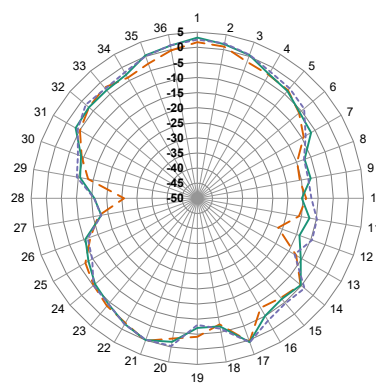


XY-Plane Gain

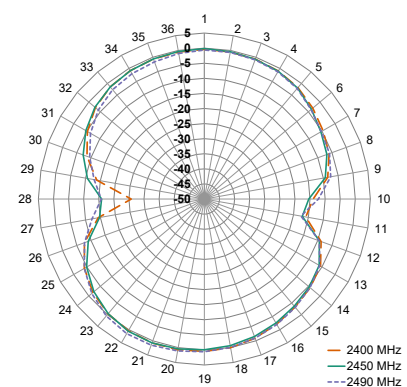
2400 MHz to 2485 MHz (2450 MHz)



XZ-Plane Gain

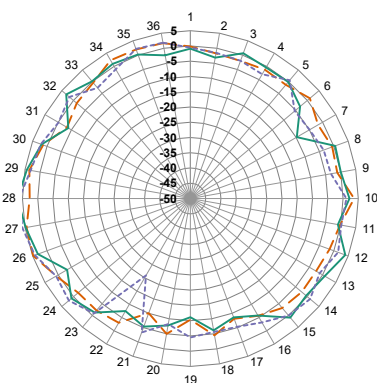


YZ-Plane Gain

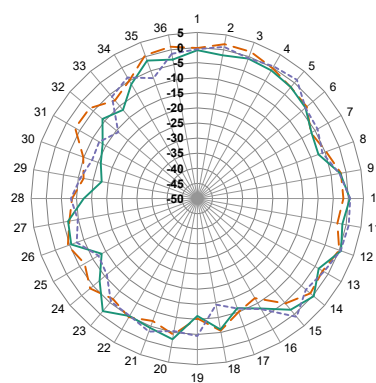


XY-Plane Gain

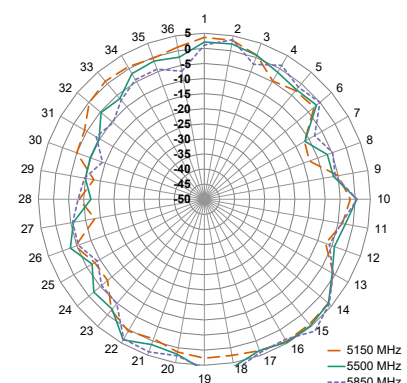
5150 MHz to 5850 MHz (5500 MHz)



XZ-Plane Gain



YZ-Plane Gain



XY-Plane Gain

Radiation Patterns

5925 MHz to 7125 MHz (6530 MHz)

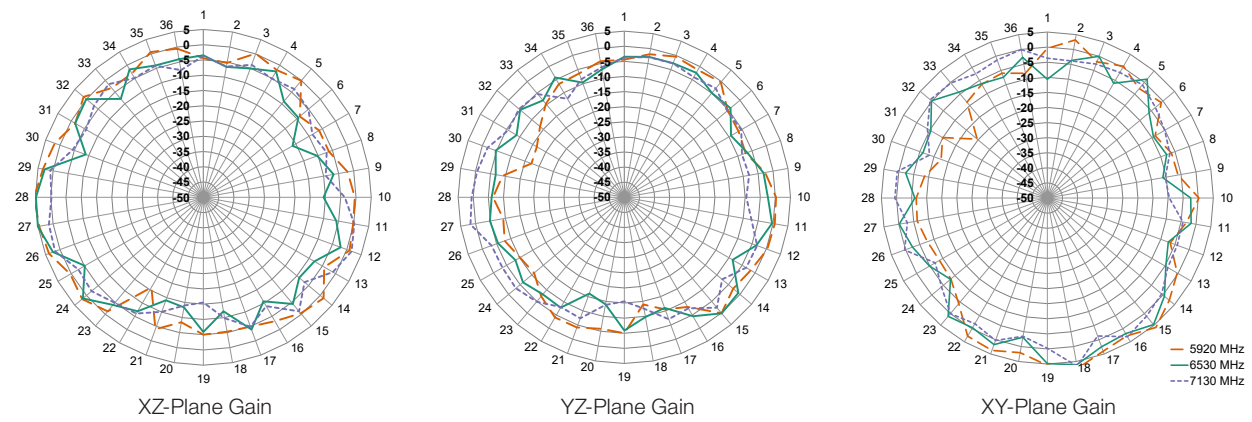


Figure 7. Radiation Patterns for ANT-W63-FPC2-ccc-100 Antenna

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