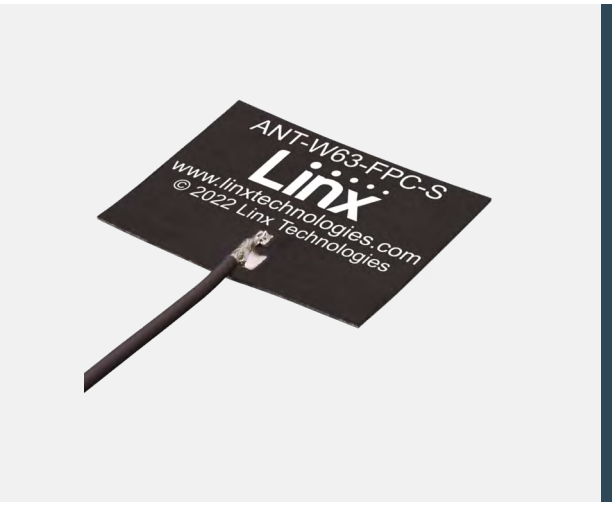



# ANT-W63-FPC-SH Series

## Flexible Embedded WiFi 6/6E FPC Antennas

The Linx ANT-W63-FPC-SH series antennas are 25 mm x 20 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-SH antennas provide a ground plane independent dipole internal/embedded antenna solution. The flexibility and adhesive backing make the ANT-W63-FPC-SH 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 2.4 GHz to 2.5 GHz
  - VSWR: ≤ 1.5
  - Peak Gain: 4.7 dBi
  - Efficiency: 90%
- • Performance at 5.950 GHz to 7.125 GHz
  - VSWR: ≤ 1.8
  - Peak Gain: 8.5 dBi
  - Efficiency: 81%
- Ground plane independent dipole antenna
- Compact, low-profile
  - 25.3 mm x 20.3 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-SH50UF | 50 mm (1.97 in) | U.FL |
| ANT-W63-FPC-SH100UF | 100 mm (3.94 in) | U.FL |
| ANT-W63-FPC-SH150UF | 150 mm (5.91 in) | U.FL |
| ANT-W63-FPC-SH200UF | 200 mm (7.87 in) | U.FL |
| ANT-W63-FPC-SH50M4 | 50 mm (1.97 in) | MHF4 |
| ANT-W63-FPC-SH100M4 | 100 mm (3.94 in) | MHF4 |
| ANT-W63-FPC-SH150M4 | 150 mm (5.91 in) | MHF4 |
| ANT-W63-FPC-SH200M4 | 200 mm (7.87 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.) | 1.5 | 1.6 | 1.8 |
| Peak Gain (dBi) | 4.7 | 7.8 | 8.5 |
| Average Gain (dBi) | -0.6 | -1.0 | -1.3 |
| Efficiency (%) | 90 | 83 | 81 |

| | |
|---|---|
| Polarization | Linear |
| Radiation | Omnidirectional |
| Impedance | 50 Ω |
| 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-SH50UF | MHF1/U.FL-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.4 g (0.01 oz) |
| ANT-W63-FPC-SH100UF | MHF1/U.FL-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.6 g (0.02 oz) |
| ANT-W63-FPC-SH150UF | MHF1/U.FL-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.7 g (0.03 oz) |
| ANT-W63-FPC-SH200UF | MHF1/U.FL-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.9 g (0.03 oz) |
| ANT-W63-FPC-SH50M4 | MHF4-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.4 g (0.01 oz) |
| ANT-W63-FPC-SH100M4 | MHF4-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.5 g (0.02 oz) |
| ANT-W63-FPC-SH150M4 | MHF4-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.7 g (0.02 oz) |
| ANT-W63-FPC-SH200M4 | MHF4-type plug | 1.13 mm: 5.0 mm (0.20 in) | 0.8 g (0.03 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 | 25.3 mm x 20.3 mm x 0.1 mm (1.00 in x 0.80 in x 0.004 in) | | |

## PACKAGING INFORMATION

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

## ANTENNA MOUNTING

The ANT-W63-FPC-SH 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-SH series antenna.

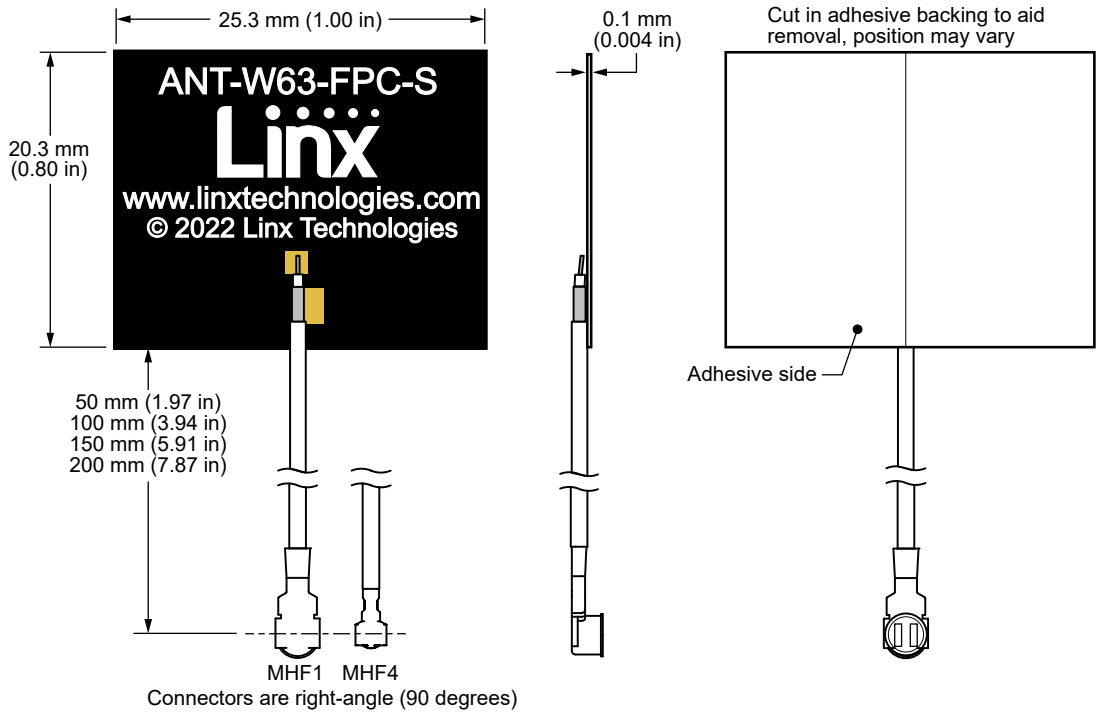



Figure 1. ANT-W63-FPC-SH Series Antenna Dimensions

## 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.

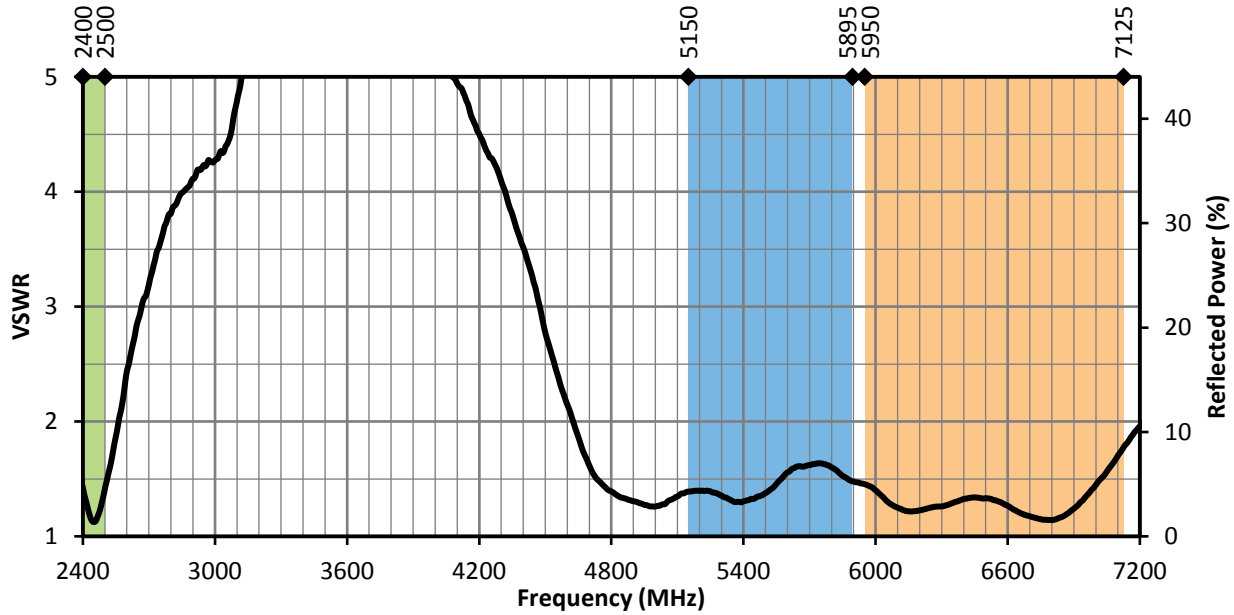



Figure 2. ANT-W63-FPC-SH Antenna VSWR with Frequency Band Highlights

## 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.

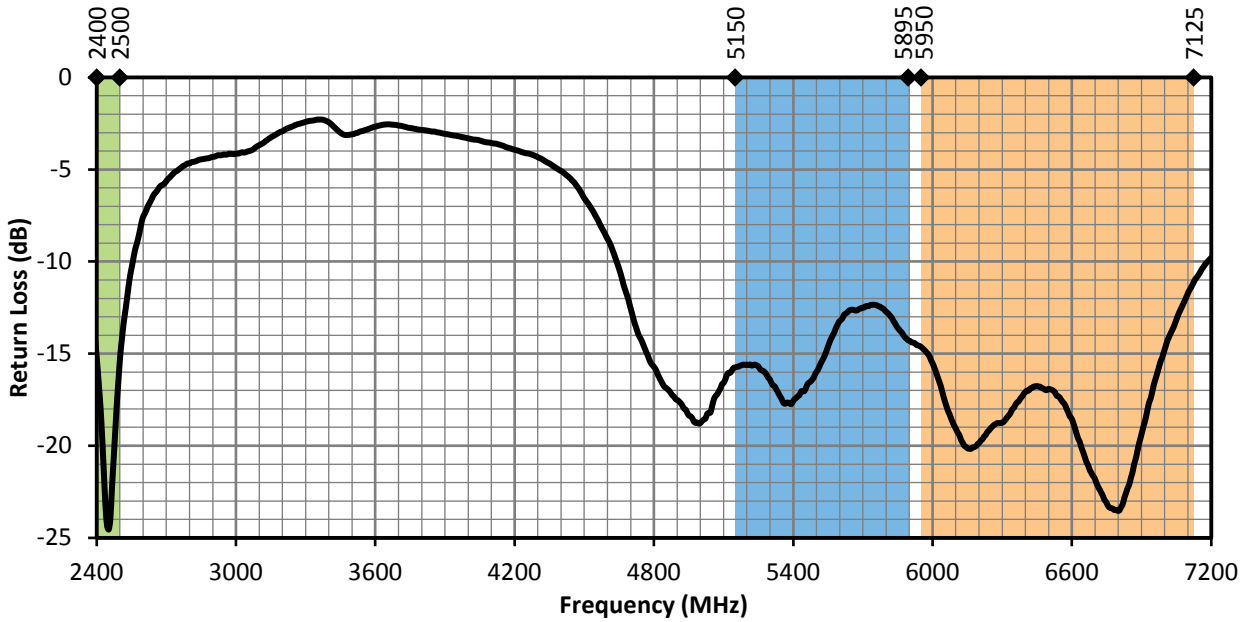



Figure 3. ANT-W63-FPC-SH Antenna Return Loss with Frequency Band Highlights

## 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.

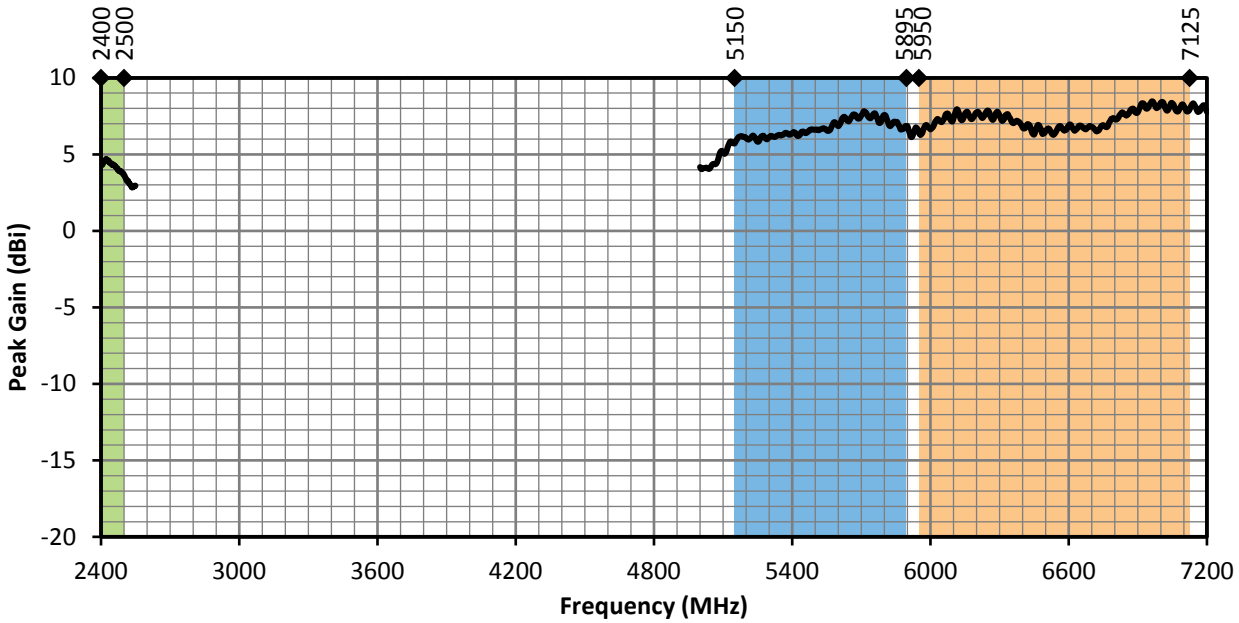



Figure 4. ANT-W63-FPC-SH Antenna Peak Gain with Frequency Band Highlights

## 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.

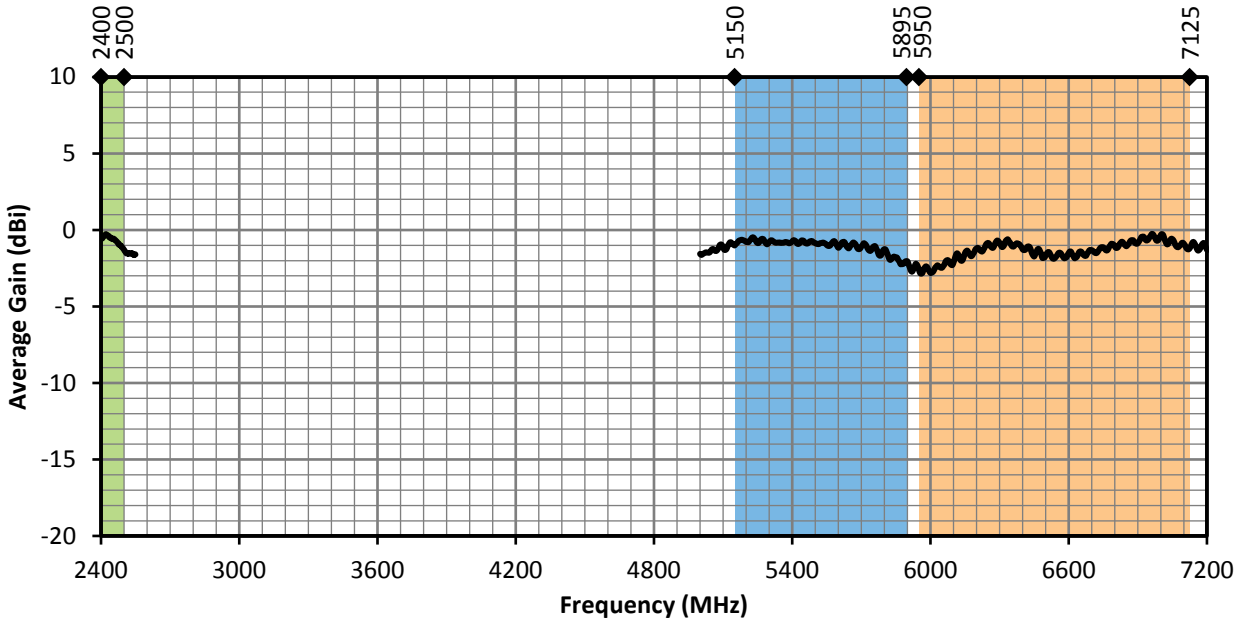



Figure 5. ANT-W63-FPC-SH Antenna Average Gain with Frequency Band Highlights

## 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.

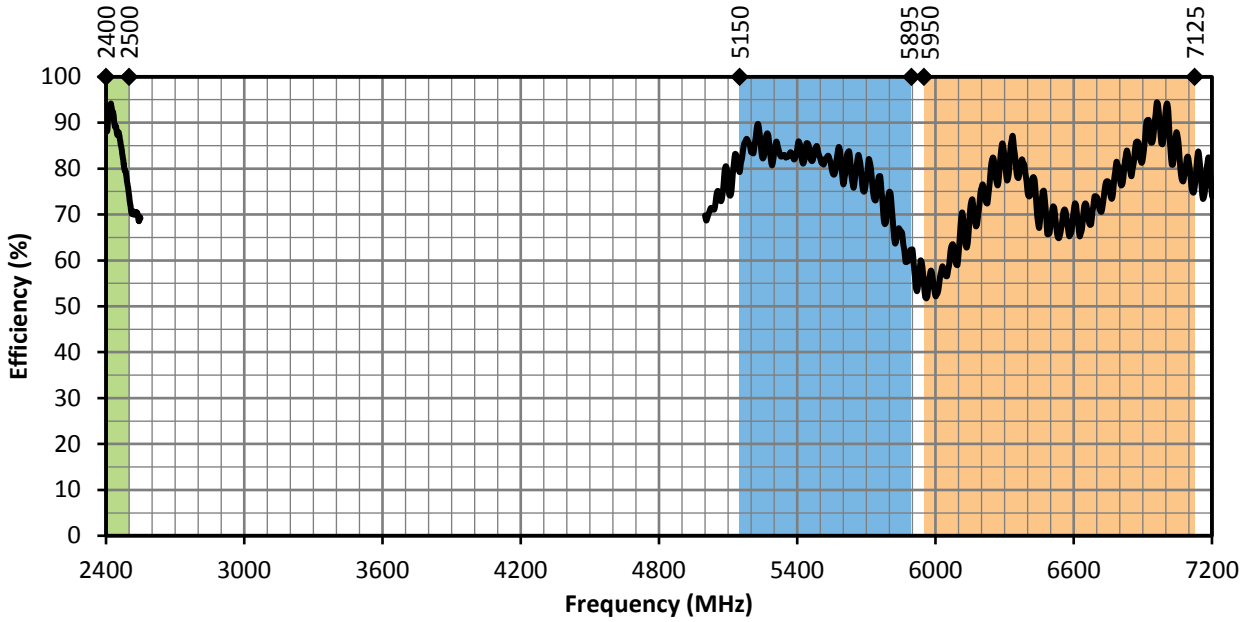
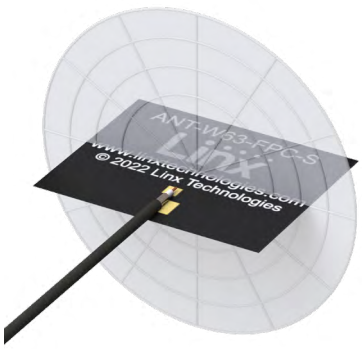



Figure 6. ANT-W63-FPC-SH Antenna Radiation Efficiency with Frequency Band Highlights

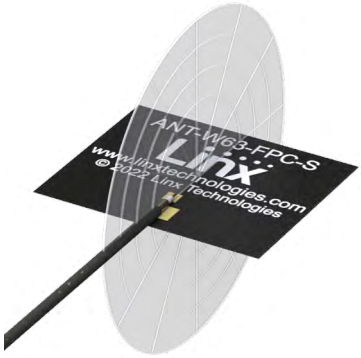
## RADIATION PATTERNS

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



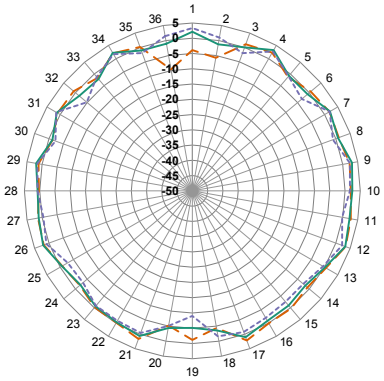

XZ-Plane Gain



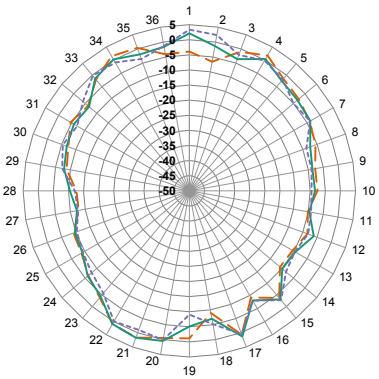

YZ-Plane Gain

XY-Plane Gain

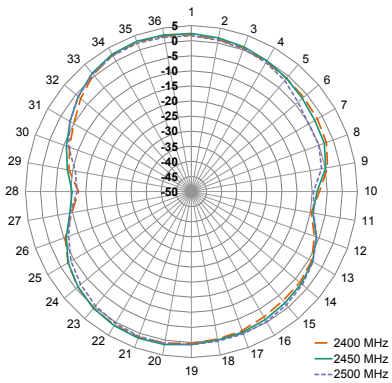
## 2400 MHz to 2500 MHz (2450 MHz)



XZ-Plane Gain

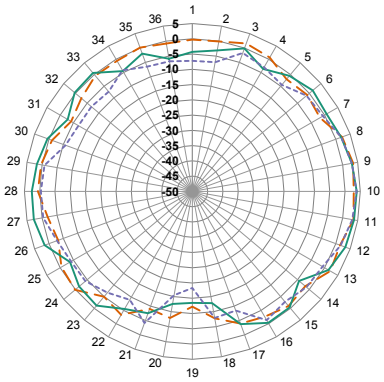


YZ-Plane Gain

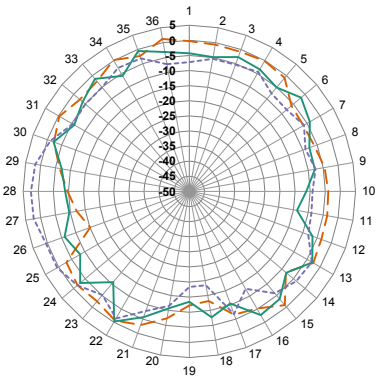



XY-Plane Gain

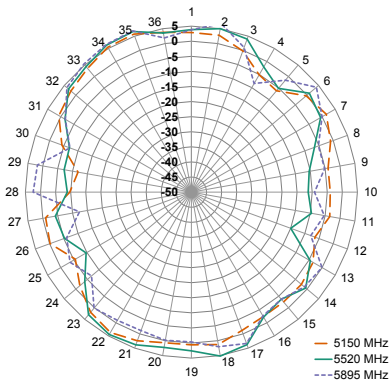
## 5150 MHz to 5895 MHz (5500 MHz)



XZ-Plane Gain

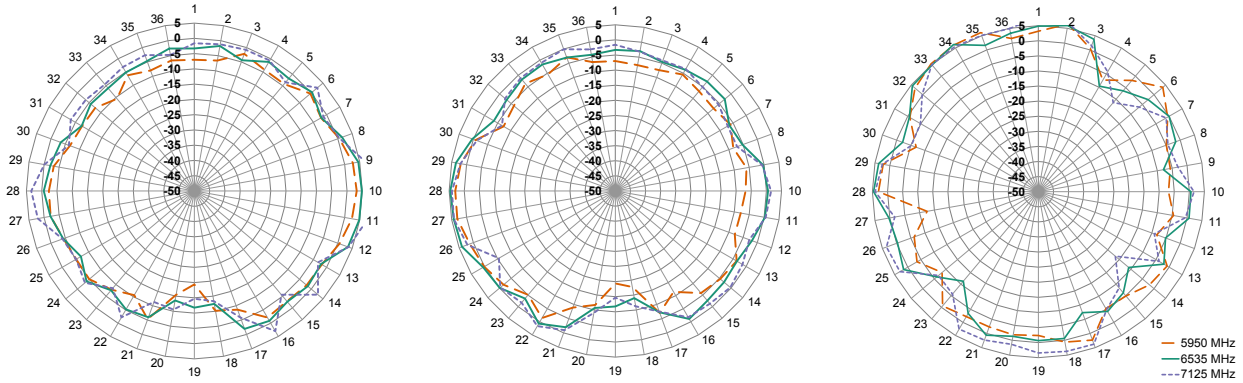


YZ-Plane Gain




XY-Plane Gain

## 5950 MHz to 7125 MHz (6500 MHz)




XZ-Plane Gain YZ-Plane Gain XY-Plane Gain

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

### TE TECHNICAL SUPPORT CENTER

| | |
|---|---|
| USA: | +1 (800) 522-6752 |
| Canada: | +1 (905) 475-6222 |
| Mexico: | +52 (0) 55-1106-0800 |
| Latin/S. America: | +54 (0) 11-4733-2200 |
| Germany: | +49 (0) 6251-133-1999 |
| UK: | +44 (0) 800-267666 |
| France: | +33 (0) 1-3420-8686 |
| Netherlands: | +31 (0) 73-6246-999 |
| China: | +86 (0) 400-820-6015 |

### te.com

TE Connectivity, TE, TE connectivity (logo), Linx and Linx Technologies are trademarks owned or licensed by the TE Connectivity Ltd. family of companies. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

TE Connectivity warrants to the original end user customer of its products that its products are free from defects in material and workmanship. Subject to conditions and limitations TE Connectivity will, at its option, either repair or replace any part of its products that prove defective because of improper workmanship or materials. This limited warranty is in force for the useful lifetime of the original end product into which the TE Connectivity product is installed. Useful lifetime of the original end product may vary but is not warrantied to exceed one (1) year from the original date of the end product purchase.

©2022 TE Connectivity. All Rights Reserved.

**10/22** **Original**