Datasheet

AC10600
WiFi 6 GHz Band FPC Antenna

The AC10600 flexible embedded WiFi 6E antenna supports the 6 GHz WiFi band (5.925 GHz - 7.125 GHz), supporting WiFi high band and MIMO applications. The flexibility and peel-and-stick adhesive backing make the AC10600 antenna easy to mount in unique and custom enclosures.

Connection is made to the radio via a 1.13 mm coaxial cable terminated in a U.FL-type plug connector. Various cable length options are available (See Ordering Information).

AC10600 embedded FPC antenna

Features

- Very high efficiency
- Dimensions 13.8 mm x 9.3 mm
- Performance at 5.9 GHz to 7.15 GHz
  - VSWR: 1.4
  - Peak Gain: 7.8 dBi
  - Efficiency: 80%
- MHF1/U.FL compatible plug termination

Applications

- WiFi/WLAN Coverage
  - MIMO applications
- U-NII bands 5-8
- Internet of Things (IoT) devices

Ordering Information

Part Number	Cable Length	Connector
AC10600-050	50 mm (1.97 in)	MHF1/U.FL-type plug (male)
AC10600-100	100 mm (3.94 in)	MHF1/U.FL-type plug (male)
AC10600-200	200 mm (7.87 in)	MHF1/U.FL-type plug (male)
AC10600-300	300 mm (11.80 in)	MHF1/U.FL-type plug (male)

Available from The Antenna Company (sales@antennacompany.com) and select distributors and representatives.

Table 1. RF/Electrical Specifications

AC10600	WiFi/U-NII 5-8
Parameter	5925 MHz to 7125 MHz
VSWR (max)	1.4
Peak Gain (dBi)	7.8
Average Gain (dBi)	-1.0
Average Efficiency (%)	80
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omnidirectional
Wavelength	½-wave
Max Power	2 W
Electrical Type	Dipole

Electrical specifications and plots measured with the AC10600-100 mounted on a 2 mm (0.08 in) thick sheet of ABS plastic.

Table 2. Mechanical Specifications

Part Number	Connection	Coaxial cable; minimum inside bend radius	Weight
AC10600-050	MHF1/U.FL-type plug (male)	1.13 mm: 5.0 mm (0.20 in)	0.4 g (0.02 oz)
AC10600-100	MHF1/U.FL-type plug (male)	1.13 mm: 5.0 mm (0.20 in)	0.4 g (0.02 oz)
AC10600-200	MHF1/U.FL-type plug (male)	1.13 mm: 5.0 mm (0.20 in)	0.5 g (0.02 oz)
AC10600-300	MHF1/U.FL-type plug (male)	1.13 mm: 5.0 mm (0.20 in)	0.5 g (0.02 oz)

Dimensions	13.8 mm x 9.3 mm x 0.27 mm (0.54 in x 0.37 in x 0.01 in)
Operating Temp. Range	-40 °C to +85 °C (-40 °F to 185 °F)

Antenna Mounting

The AC10600 antenna is a flexible antenna with adhesive backing that allows it to be permanently installed onto non-metallic surfaces. The adhesive backing is 3M 467MP™, 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.

Antenna Dimensions

The dimensions for the AC10600 are shown below in Figure 1.

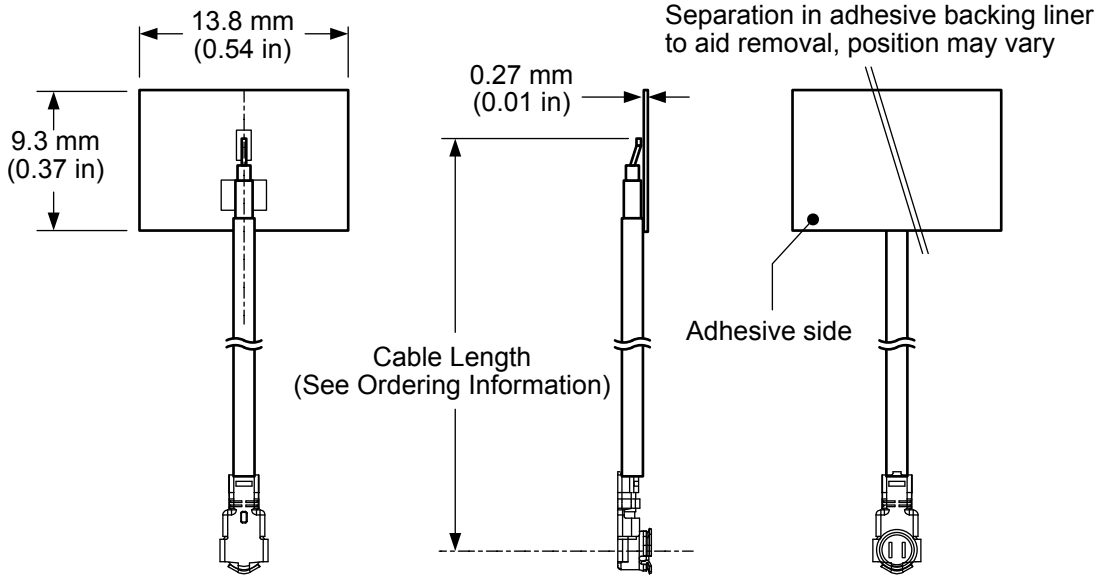


Figure 1. AC10600 Antenna Dimensions

VSWR

Figure 2 provides the voltage standing wave ratio (VSWR) across the antenna bandwidth. VSWR characterizes the power reflected from the antenna back to the transmitter. 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 measure of the percentage of transmitter power reflected back from the antenna.

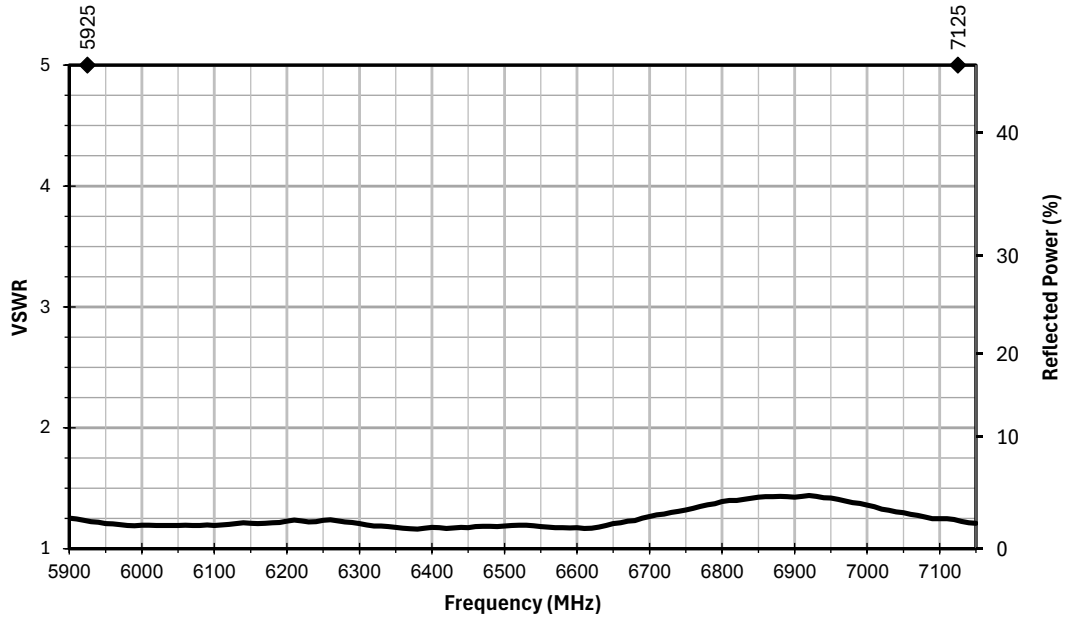


Figure 2. AC10600 Antenna VSWR

Return Loss

Return loss (Figure 3), represents the loss in power at the antenna due to reflected signals. A higher magnitude return loss indicates better performance. Return loss is the negative of input reflection coefficient, in decibels (dB), and the two values are often used interchangeably.

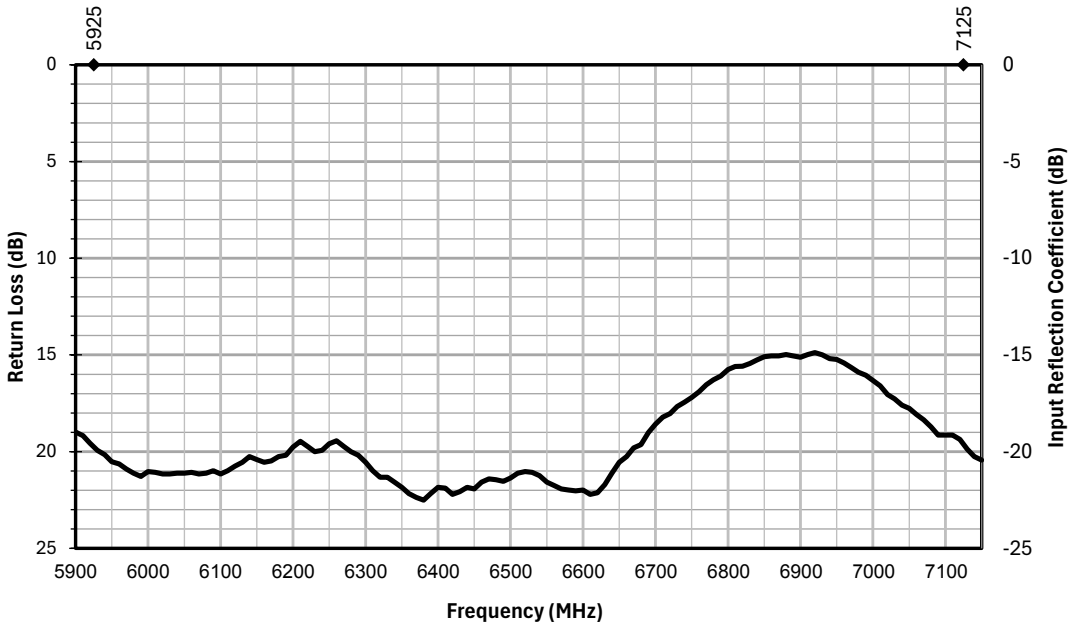


Figure 3. AC10600 Antenna Return Loss

Peak Gain

Peak gain, (See Figure 4) provides a measure of the maximum conversion of antenna input power to radio waves at a given frequency. Peak gain does not account for the directionality of gain in 3-dimensional space.

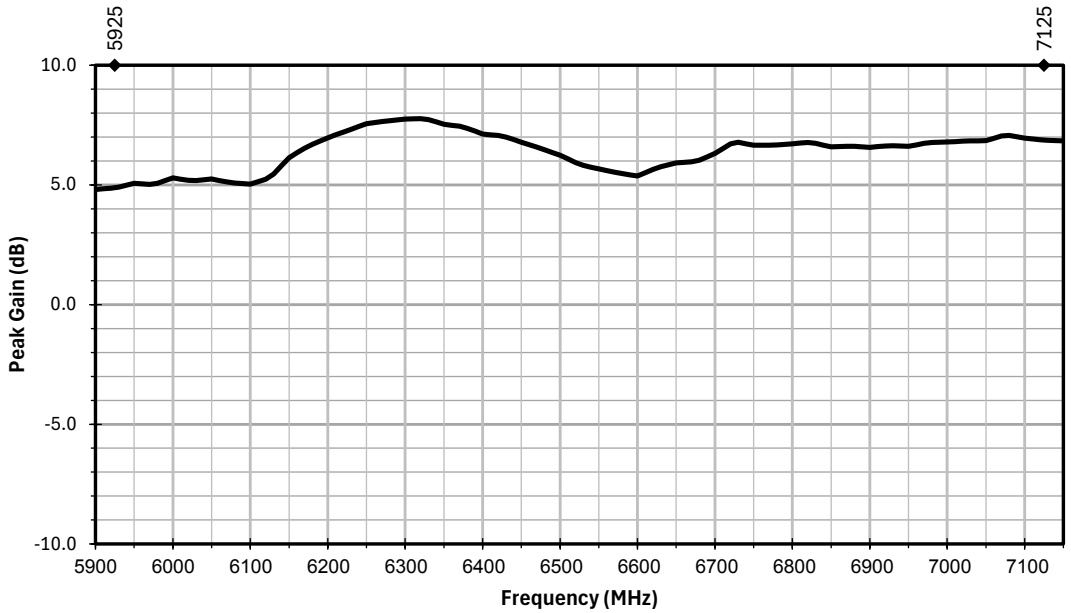


Figure 4. AC10600 Antenna Peak Gain

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.

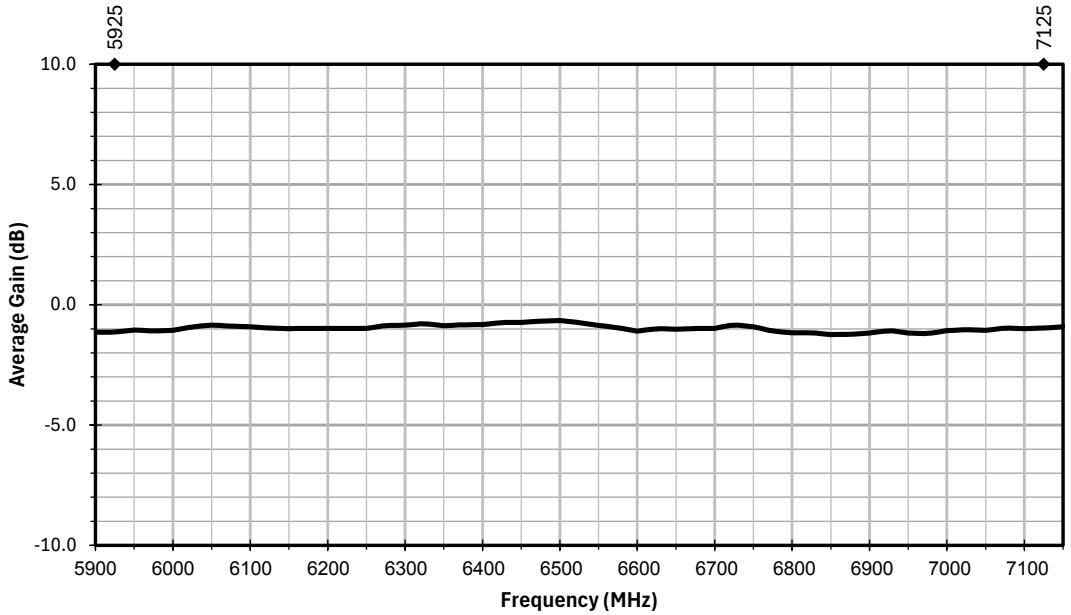


Figure 5. AC10600 Antenna Average Gain

Efficiency

Efficiency (Figure 6) is the ratio of power radiated by the antenna to the power delivered to the antenna terminals, expressed as a percentage, where a higher percentage indicates better performance at a given frequency.

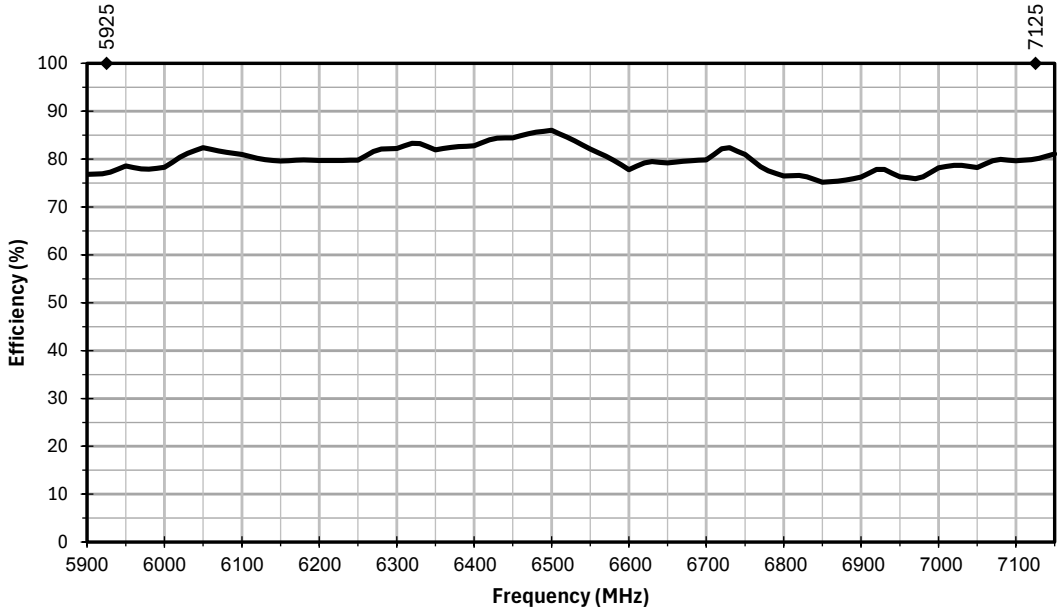
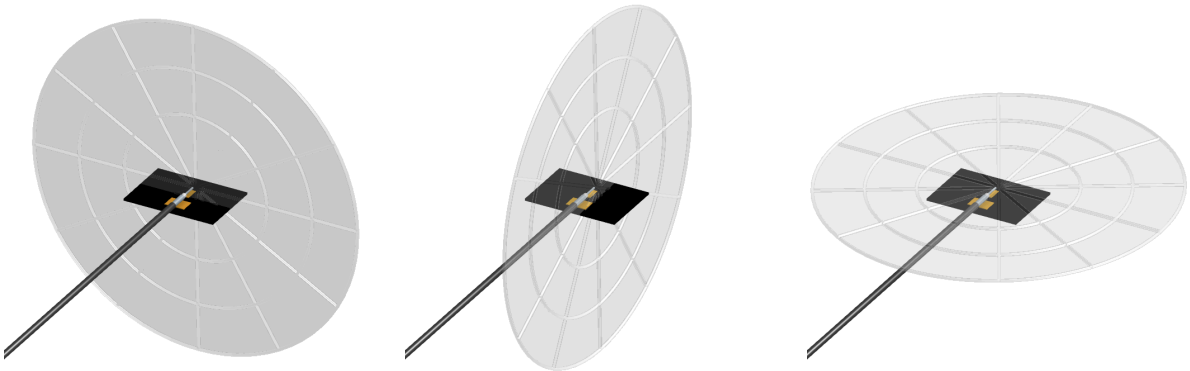


Figure 6. AC10600 Antenna Efficiency

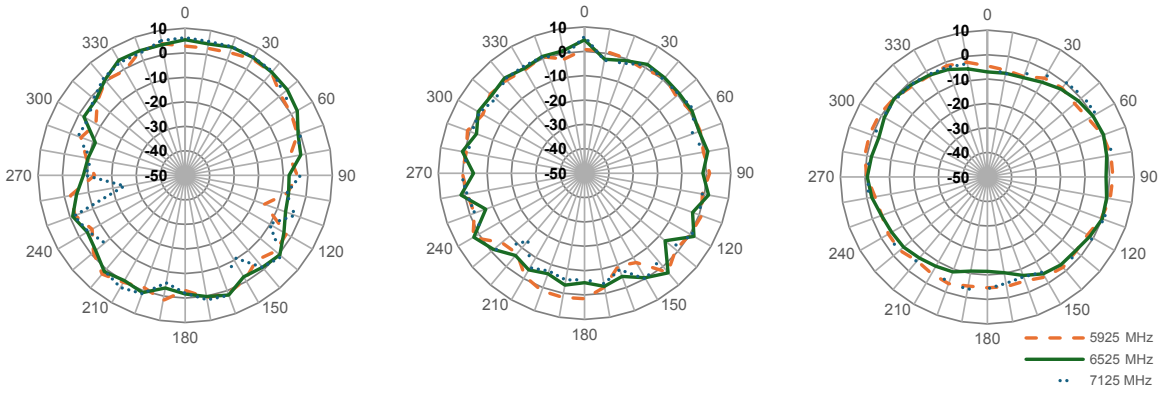
Radiation Patterns

Radiation patterns provide information about the directional performance of the antenna by plotting gain in three orthogonal planes at the high-, low- and center-frequencies of an antenna frequency band. Antenna radiation patterns (Figure 7), are shown using polar plots covering 360 degrees with the plane of reference depicted above the plots. 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

5925 MHz to 7125 MHz (6525 MHz)



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

Figure 7. Radiation Patterns for AC10600 Antenna

Packaging Information

The AC10600 antenna is individually packaged in a labeled polyethylene bag and then bulk packaged in a polyethylene bag in quantities of 100 pcs. Sealed bulk polyethylene bags are packed in cartons in quantities of 20 yielding 2000 pieces per carton. Carton dimensions are 340 mm x 340 mm x 200 mm (13.4 in x 13.4 in x 7.9 in).

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