

**Molex's class-leading 2.4/5GHz standalone antennas combine ground-plane-independent design with high-radiation efficiency to give customers better connectivity and reduced development time for wireless devices**

Key to any wireless applications that impact the most critical design variables such as power efficiency, antenna coverage and radio-link quality is the antenna's Total Radiation Efficiency. Molex's 2.4 and 5GHz dual-band, standalone antennas offer customers maximum radiation efficiencies over a wide range of wireless applications, with the convenience of easy-to-use and easy integration features.

Molex's series 47950 antennas include the small footprint 34.5 by 9.00mm version that delivers 75% minimum total efficiency in the 2.4GHz band, with a minimum of 60% in the 5GHz band. The hallmark of this product is its small footprint, since it fits into many wireless devices easily. The larger 35.9 by 15.90mm version antenna is for applications that require the highest level of RF performance. It gives an efficiency of at least 80% in the 2.4GHz band with a 70% minimum in the 5GHz band. These products can be used in wireless applications including †Wi-Fi access points, consumer electronics, telemedicine devices and more.

Another important feature of Molex's 2.4/5GHz standalone antenna is its dipole-style design which makes it independent from the PCB dimensions used in the wireless application. Molex's 2.4/5GHz standalone antennas are ground-independent and can be applied in any device without the constraints and concerns of PCB grounding or PCB ground-induced radiation.

Molex's 2.4 and 5GHz standalone antennas are very easy to use. Simply peel off the liner from the polyflexible adhesive tape of the antenna and stick it in the desired location within the device casing. With its mini coaxial cable and terminal MHF connector, the antenna then connects to the device radio via an MHF SMT receptacle.

For more information visit our website at:  
[www.molex.com/link/standard\\_antennas.html](http://www.molex.com/link/standard_antennas.html)

**2.4/5 GHz Standalone Antennas, RoHS-compliant, Halogen-free**

**47950 2.4/5 GHz Standalone Antennas, 34.90 by 9.00mm (1.37 by 0.34") and 35.90 by 15.90mm (1.41 by 0.61") variants**



*Typical 2.4 / 5 GHz Standalone Antennas with 100.0mm (3.94") miniature coaxial cables and \*I-PEX MHF connectors*

**FEATURES AND BENEFITS**

- Ground-plane-independent design significantly reduces costs and engineering resources needed to tune and optimize ground-plane-dependent antennas
- High-radiation efficiency 34.9 by 9.00 mm (1.37 by 0.34") version antenna offers Total Efficiency values of 75% minimum in the 2.4GHz band and 60% minimum in the 5GHz band
- Higher radiation efficiency 35.9 by 15.90 mm (1.41 by 0.61") version antenna offers Total Efficiency values of 80% minimum in the 2.4 GHz band and 70% minimum in the 5GHz band
- Poly-flexible, double-sided adhesive tape on antenna enables easy peel-and-stick mounting anywhere within the device casing
- Robust coaxial cable to flexi-antenna with Pull Force of over 18.0N ensures maximum reliability of antenna
- Choice of several miniature coaxial cable length options provides for maximum flexibility for antenna placement in the wireless device

**SPECIFICATIONS**

**Reference Information**

Packaging: Tray  
 Mates With:  
 I-PEX MHF SMT Receptacle  
 (Part number: 20279-001E-01)  
 Use With:  
 Use With: Any Wi-Fi radio device  
 Designed In: mm  
 RoHS: Yes  
 Halogen Free: Yes  
 Glow Wire Compliant: No

**Electrical Specifications**

(2.4 GHz) include:  
 f\_start (MHz): 2400  
 f\_end (MHz): 2483.5  
 Return Loss S11 (dB): Refer table  
 Total Eff. (dB): Refer table  
 Peak Gain (dBi): Refer table  
 Polarization: Linear  
 Input Impedance (Ohms): 50  
 (5 GHz) include:  
 f\_start (MHz): 4900  
 f\_end (MHz): 5900  
 Return Loss S11 (dB): Refer table  
 Total Eff. (dB): Refer table

Peak Gain (dBi): Refer table  
 Polarization: Linear  
 Input Impedance (Ohms): 50

**Mechanical**

Pull Force: > 18.0N (4.05 lb force)

**Physical**

Thickness: 0.10mm (0.004")  
 Operating Temperature: -30 to +75°C

\* I-PEX and MHF are either trademarks or registered trademarks of I-PEX Co., Ltd  
 †Wi-Fi is a registered trademarks of the Wi-Fi Alliance

## 2.4/5 GHz Standalone Antennas, RoHS-compliant, Halogen-free

### Return Loss

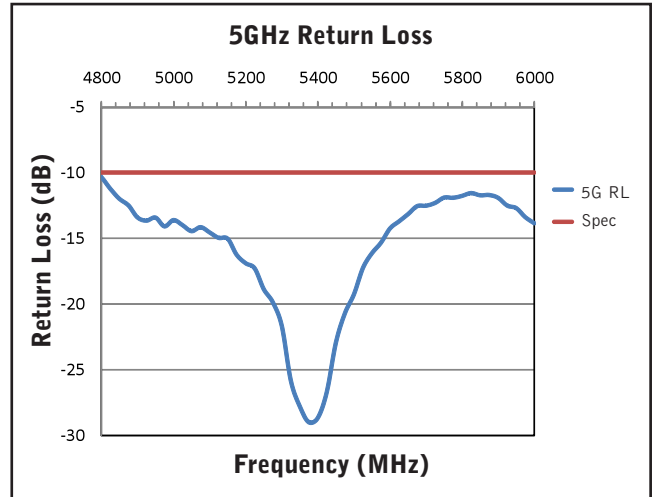
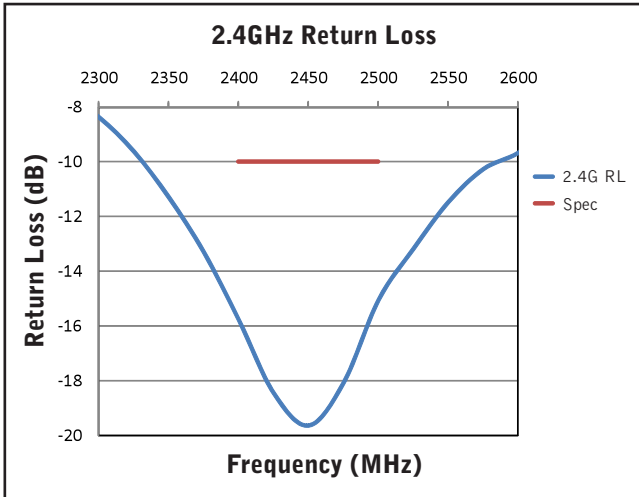


Figure 1: Antenna Return Loss (S11) for 2.4 and 5 GHz measured on a 1mm-thick plate of PC/ABS material

### Efficiency

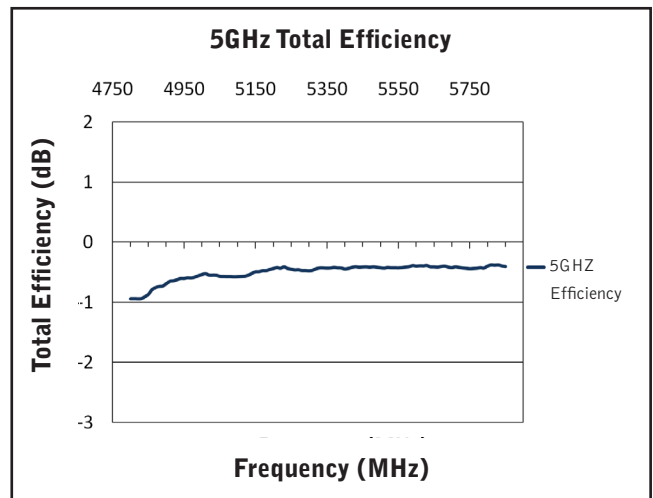
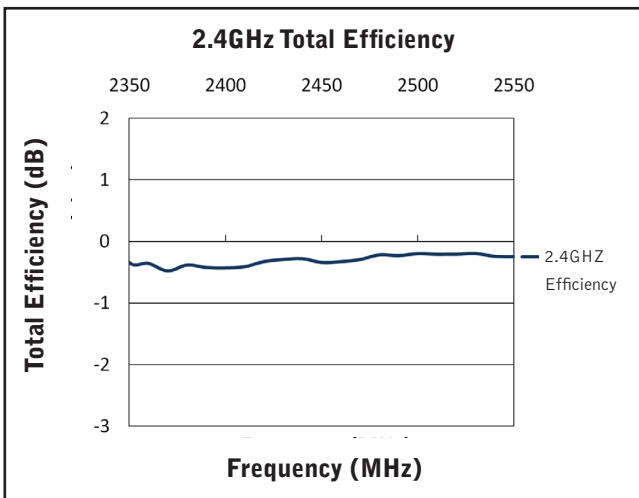


Figure 2: Antenna Total Efficiency (including Mismatch Loss) for 2.4 and 5 GHz measured on a 1mm-thick plate of PC/ABS material

**2.4/5 GHz Standalone Antennas, RoHS-compliant, Halogen-free**

**Radiation Plots 2.4 GHz**

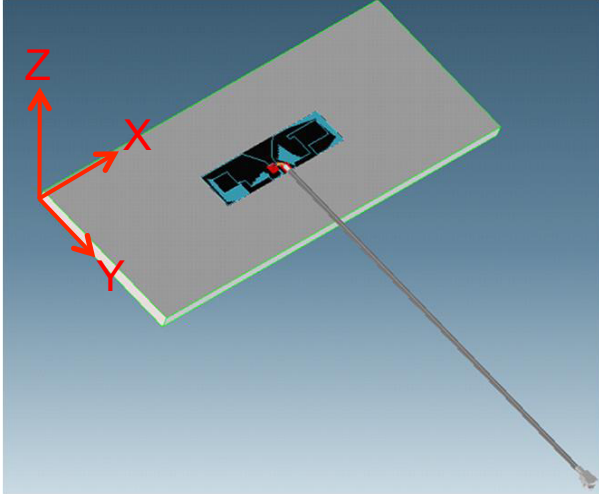


Figure 3a: Antenna on a 1mm-thick PC/ABS material plate

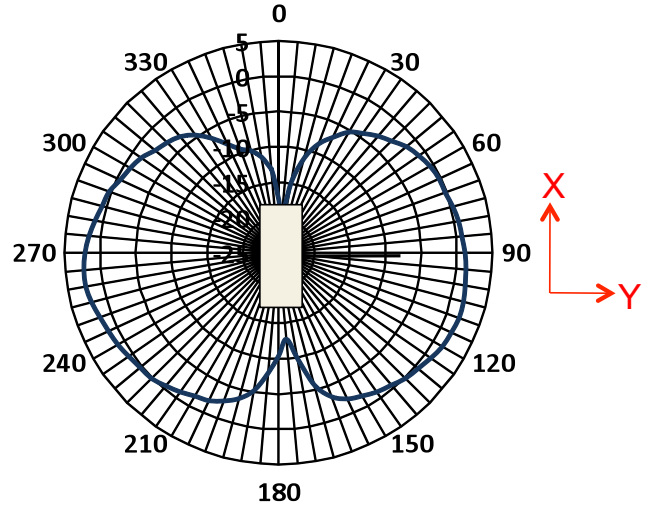


Figure 3b: Radiation diagram of X-Y plane showing combined polarizations at 2.45 GHz

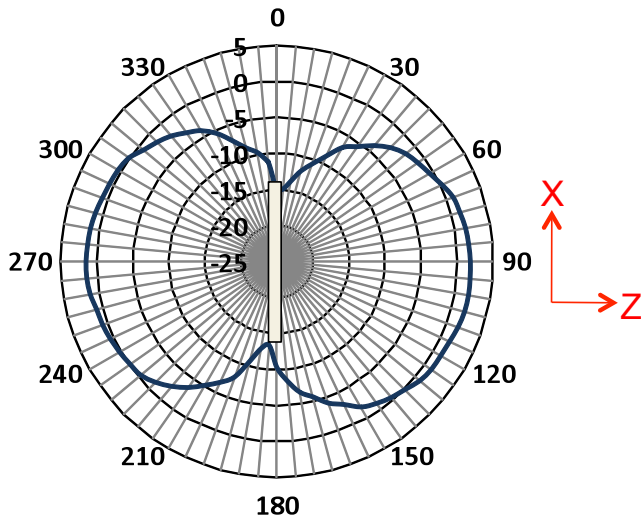


Figure 3c: Radiation diagram of X-Z plane showing combined polarizations at 2.45 GHz

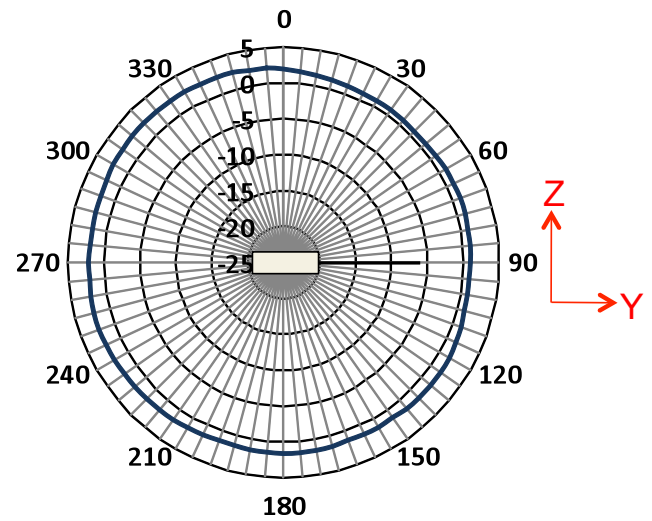


Figure 3d: Radiation diagram of Z-Y plane showing combined polarizations at 2.45 GHz

## 2.4/5 GHz Standalone Antennas, RoHS-compliant, Halogen-free

### Radiation Plots 5 GHz

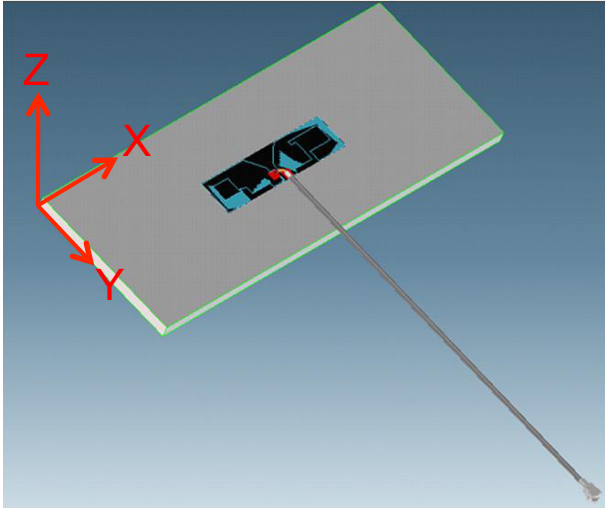


Figure 3e: Antenna on a 1mm-thick PC/ABS material plate

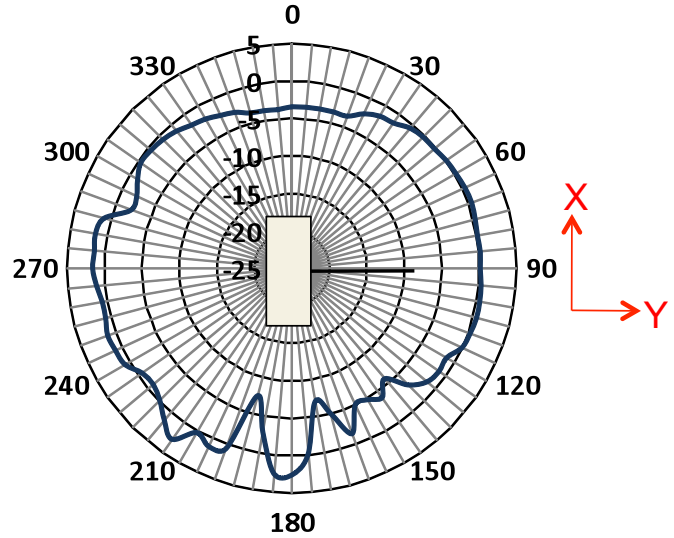


Figure 3f: Radiation diagram of X-Y plane showing combined polarizations at 5.45 GHz

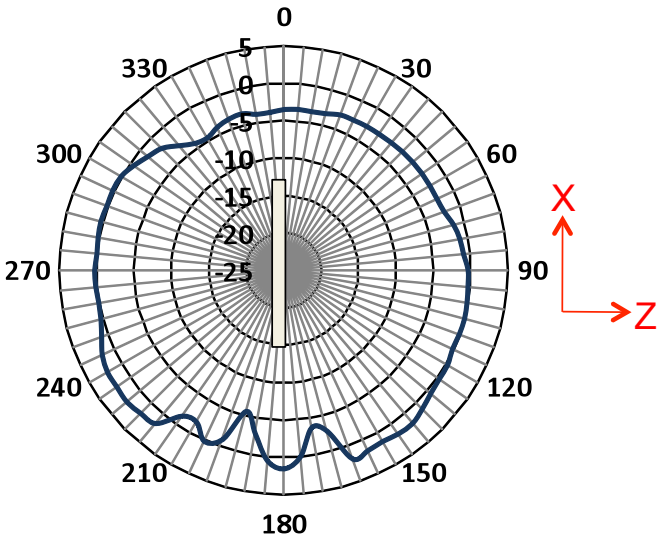


Figure 3g: Radiation diagram of X-Z plane showing combined polarizations at 5.45 GHz

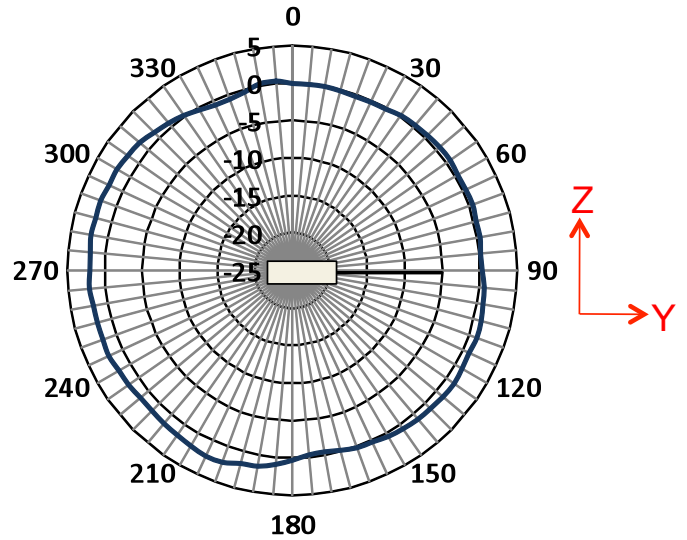
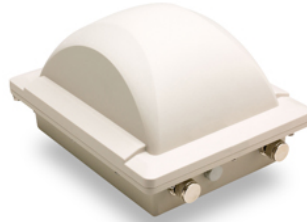


Figure 3h: Radiation diagram of Z-Y plane showing combined polarizations at 5.45 GHz

## APPLICATIONS

- Telecommunication Applications
  - Wireless Wi-Fi access points
  - Wireless Wi-Fi routers
  - Wi-Fi devices
  - Wireless LAN (WLAN)
  - IEEE 802.11b/g/n devices
- Industrial Applications
  - Machine-to-machine (M2M) communications
  - Smart meters
  - 2.4 GHz <sup>§</sup>ZigBee IEEE 802.15.4 devices
  - 2.4 GHz and 5 GHz Industrial, Scientific and Medical (ISM) band systems and wireless devices
- Consumer Electronics (CE) Applications
  - Cameras
  - Mobile gaming devices
  - Personal navigation devices
  - Wireless internet TV and audio devices
- Automotive Applications
  - <sup>‡</sup>Bluetooth devices
  - Infotainment systems
  - Mobile hotspots
- Medical Applications
  - Telemedicine- and telehealth devices



Wireless Wi-Fi access points



Wireless Wi-Fi router



Mobile gaming devices

**2.4/5 GHz Standalone Antennas,  
RoHS-compliant,  
Halogen-free**

## ORDERING INFORMATION

Order No.	Flexi-Antenna Dimensions	Miniature Coaxial Cable Lengths (mm/inches)	Frequency Range (GHz)	Return Loss S11 (db)	Peak Gain (dBi)	Total Efficiency (%)
47950-1011	35.90 by 15.90mm (1.41" by 0.61")	150.0mm (5.91")	2.4 - 2.5	<-10	3.0	> 80
			4.8 - 5.85		4.8	> 70

Manufacturer: Guang Zhou Jie Quan Electronic Co.,Ltd

Model:2.4G WIFI

<sup>‡</sup>Bluetooth is a registered trademark of Bluetooth SIG  
<sup>§</sup>ZIGBEE is a registered trademark of trademark of ZigBee Alliance