



The world's first flexible PIFA (patented) dual-band antenna specifically designed for installation on metal surfaces. The flexible PIFA design provides for consistent performance across a broad array of enclosures and enables adhering the antenna to flat and curved surfaces.

FEATURES AND BENEFITS

- Specifically tuned for direct mounting on metal surfaces.
- Ability to be flexed in either concave or convex directions without sacrificing antenna performance, providing more flexibility in placement of antenna.
- Small size and adhesive-backing give further mounting flexibility within your product design
- Both 2.4 GHz and Dual-Band 2.4/5.5 GHz antennas available to best address your technical application

ELECTRICAL SPECIFICATIONS		
Operating Frequency (MHz)	2400 - 2480	4900 - 5900
Peak Gain – Typ (dBi)	1.7	5.2
Peak Gain – Max (dBi)	1.9	5.8
VSWR (Typ)	<2.5:1	<2.8:1
VSWR (Max)	<2.5:1	<3.0:1
Max Gain ±30 above Horizon (dBi)	N/A	4.6
Efficiency (%)	37	49
Nominal Impedance (Ohms)	50	
Max Power @ 25°C (Watts)	10	
Polarization	Linear H/V for each radiator	
Azimuth Beam Width	Omnidirectional	

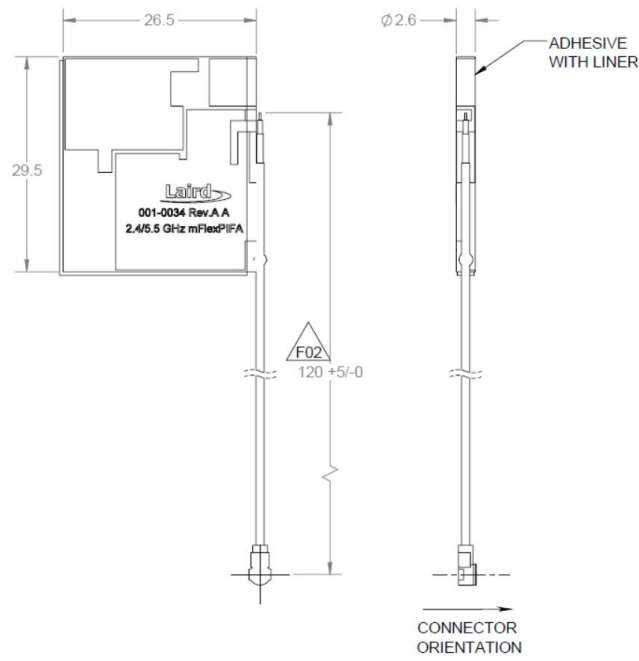
MECHANICAL SPECIFICATIONS	
Dimensions – mm (in.)	29.5 x 26.5 x 2.6 (1.16 x 1.043 x 0.102)
Weight – g (oz.)	0.0034g
Cable Type	Ø1.13, Grey

ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature	-30°C to +70°C (-22°F to +158°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Material Substance Compliance	RoHS Compliant

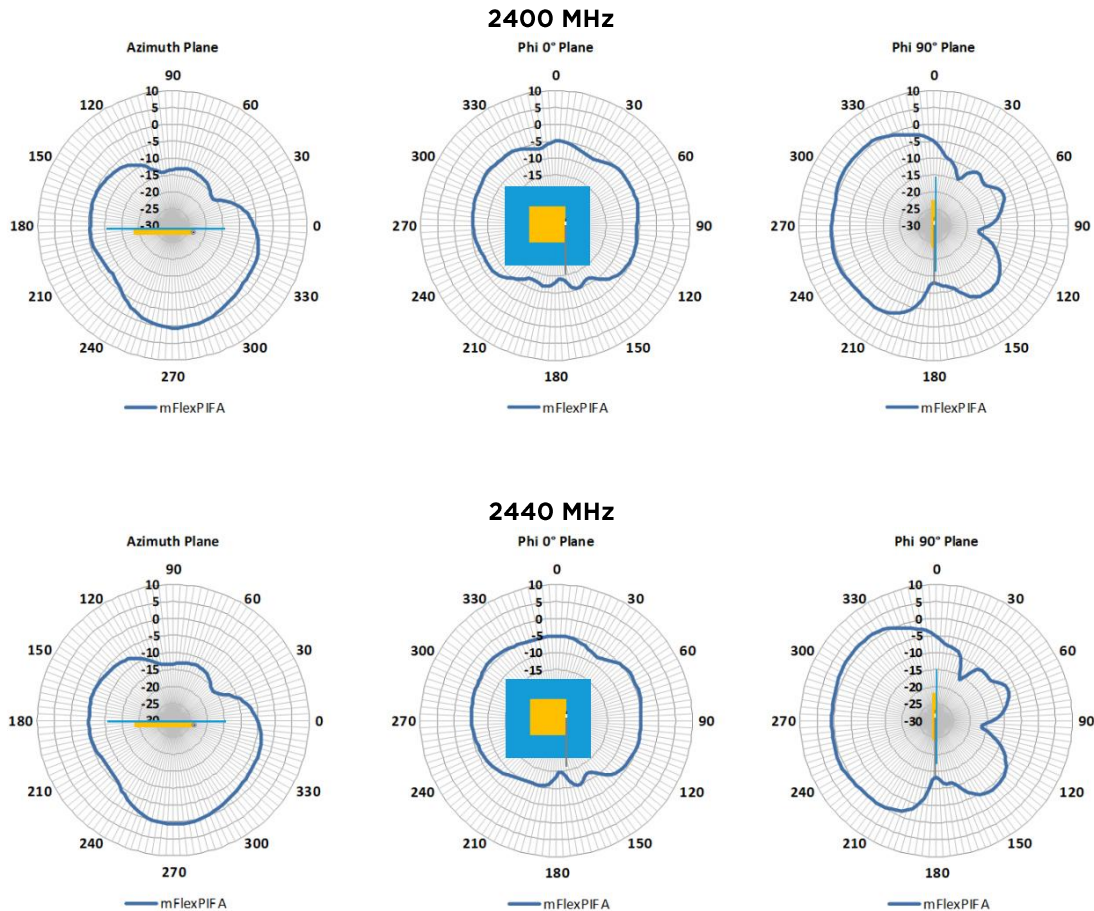
CONFIGURATION

PART NUMBER	CABLE LENGTH	CONNECTOR
001-0034	120 +5/-0	MHF1

MECHANICAL DRAWING

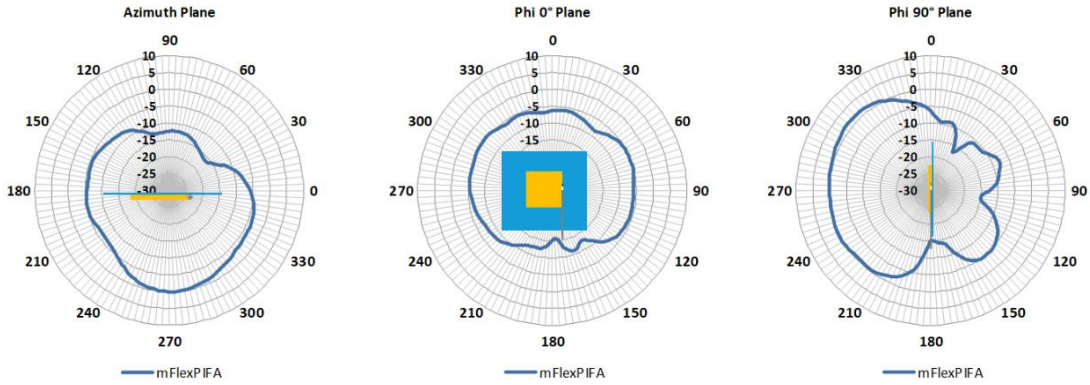


RADIATION PATTERNS

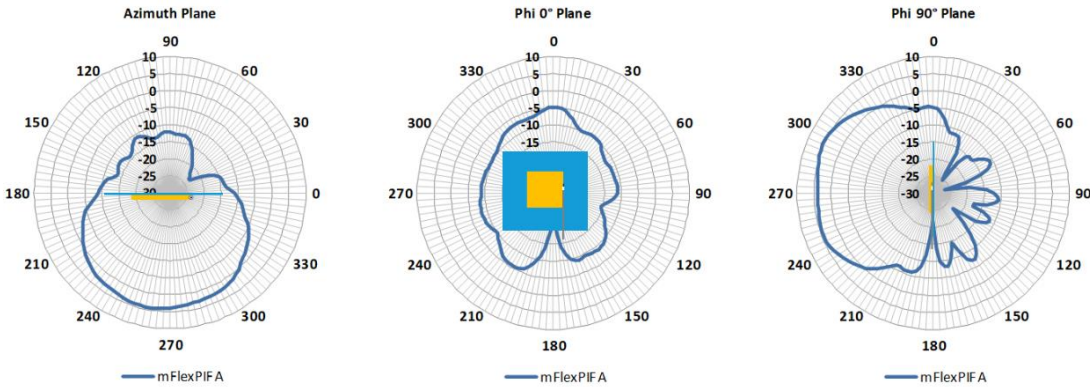


RADIATION PATTERNS

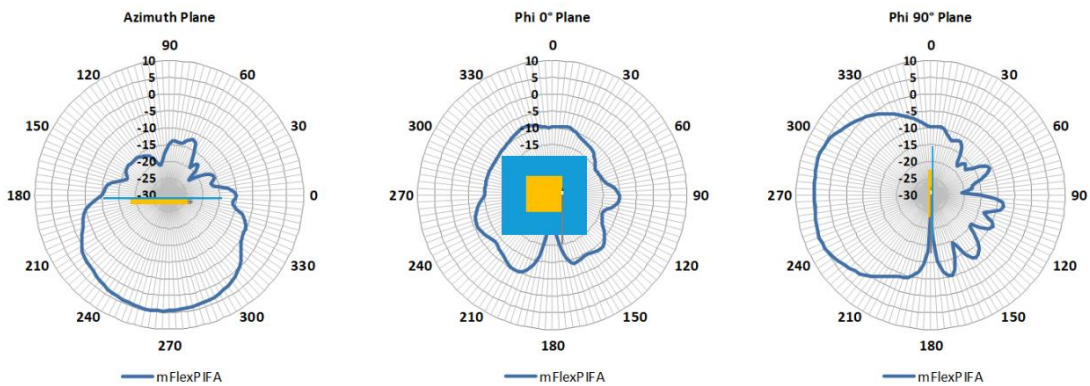
2480 MHz



4900 MHz

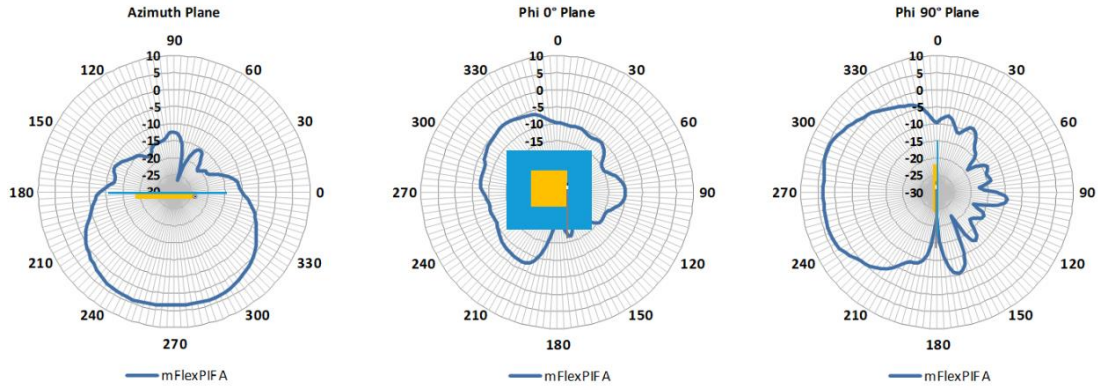


5150 MHz

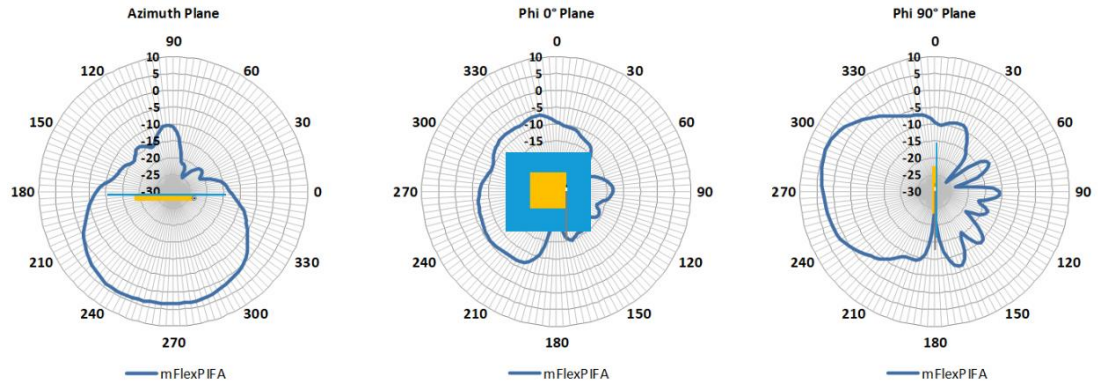


RADIATION PATTERNS

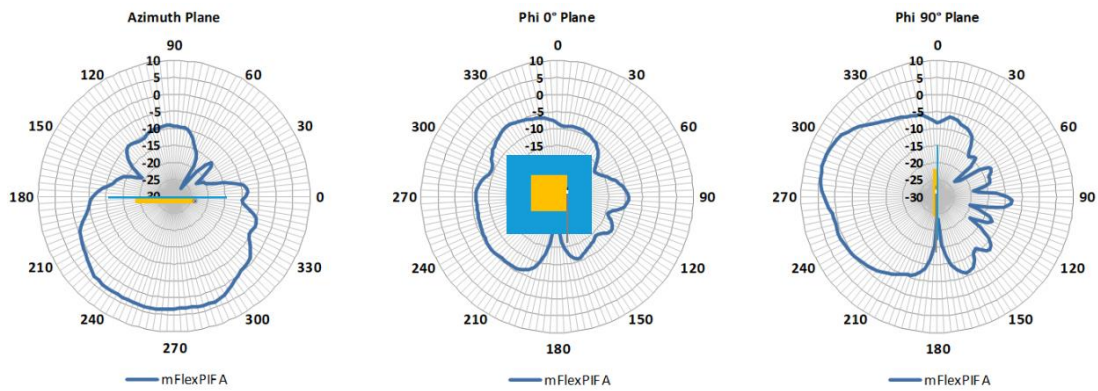
5500 MHz



5800 MHz



5900 MHz



PRODUCT PLACEMENT

This section provides recommendations for placement of the mFlexPIFA dual band antenna. This section also provides recommendations to help prevent the following degradations:

- Degradations to reflection parameters of the antenna (VSWR or return loss)
- Degradations to the spatially-averaged gain or efficiency of the antenna
- Degradations to the peak gain or directivity of the antenna

Initial Placement

The mFlexPIFA dual-band antenna is designed to be attached to metal surfaces encountered in packaging of wireless communications devices. The nominal attachment surface that is used in its design and characterization is a 100 mm X 100 mm, x.x mm thick, brass sheet. The antenna should be centered within the lateral plane of the metal sheet as shown in [Figure 1](#).

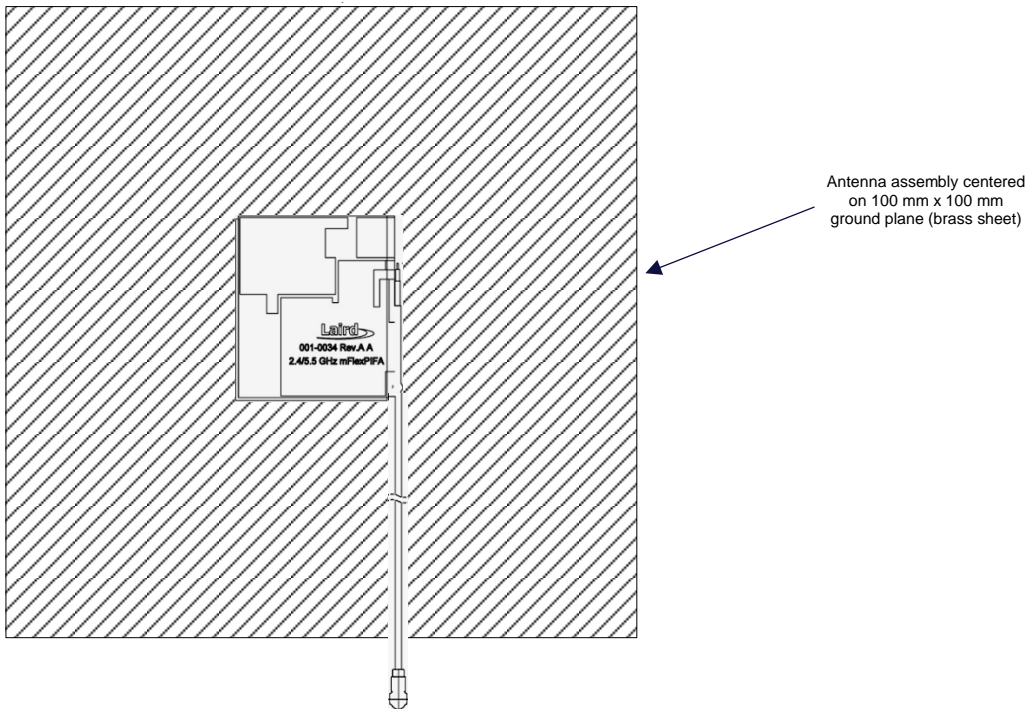


Figure 1: Nominal placement of the mFlexPIFA dual-band antenna on 100 mm X 100 mm, x.x mm thick, brass sheet

Co-Planar Ground Plane Edge Coupling and Clearance

During the design and development of the mFlexPIFA dual-band antenna, perturbation studies were conducted to check proximity effects of structures and materials normally encountered in the electronic packaging of wireless communication devices. The first of which is a dielectric sheet that is co-planar to the antenna base ground plane.

The recommended minimum spacing between the dielectric sheet and the antenna is 8 mm to minimize any performance degradations to the reflection parameters (VSWR, return loss), spatially-averaged gain (efficiency), or peak spatial gain (directivity). The drawings presented in [Figure 2](#) represents the proper clearance between the antenna array and a co-planar dielectric sheet.

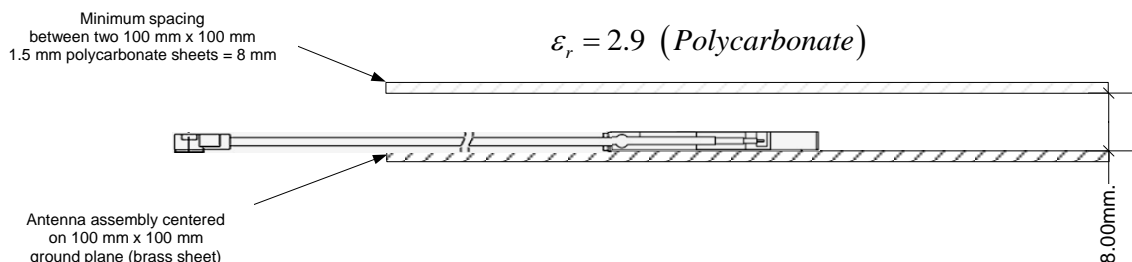


Figure 2: Minimum clearance between antenna mounted on ground plane with a co-planar dielectric sheet above antenna is 8 mm

Mounting on Dielectric Surfaces

The mFlexPIFA dual-band antenna can be mounted on a dielectric surface, however, expected the maximum VSWR to degrade from 2.5:1 to 3.0:1 for the 2.4 GHz band and degrade from 3.0:1 to 3.5:1 VSWR. The reference configuration for this perturbation test is shown in [Figure 3](#).

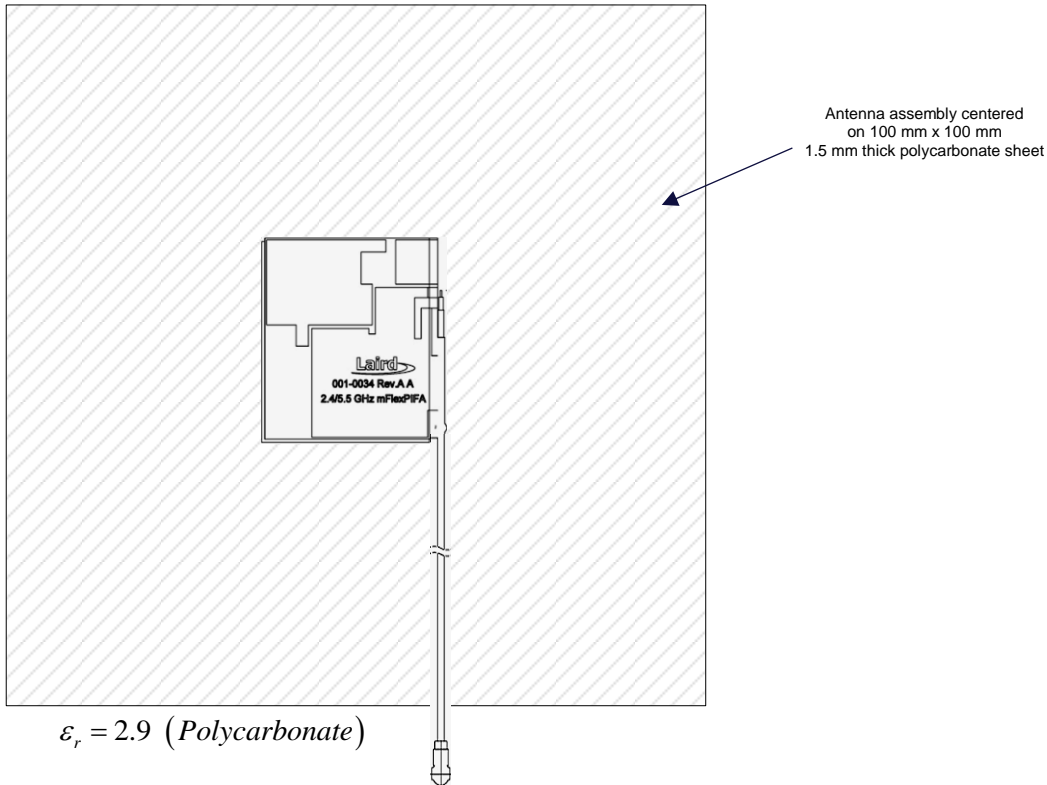


Figure 3: Reference arrangement for VSWR degradation test for the mFlexPIFA dual band antenna

Operation on Dielectric Curved Surfaces

One of the benefits of the flexible nature of antenna, it can be placed on curved surfaces. The array has been tested on convex curved metal surfaces with a radius of curvature of 30 mm (as shown in [Figure 4](#)) without degradation to performance.

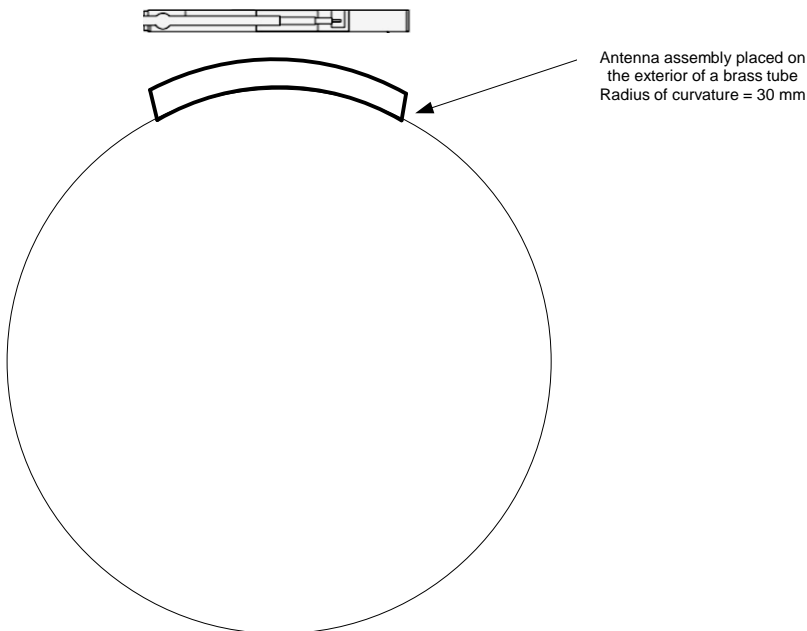


Figure 4: Operation of the antenna array on a metal curved surface

Operation on Ground Plane Edges

The reference position for the mFlexPIFA dual-band antenna on a 100 mm X 100 mm ground plane is centered. However, the antenna may be placed at various edge positions with a minimum of degradation. The preferred edge positions are the middle and bottom left positions. However, if the top position is desired, expect small degradations in VSWR 2.5:1 to 2.6:1 in the 2.4 GHz band and 3.0:1 to 3.5:1 for the 5 GHz band. The edge positions used in the perturbation study are shown in [Figure 5](#).

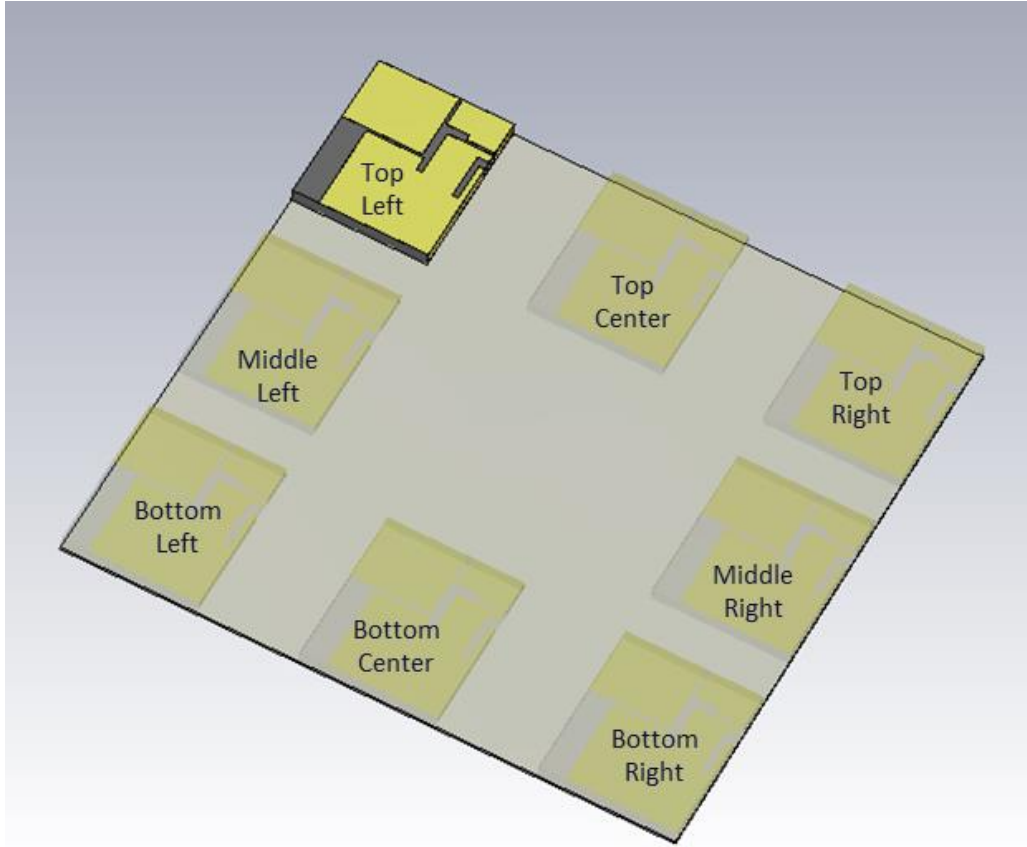


Figure 5: Possible edge placements on a 100 mm X 100 mm ground plane

Summary Recommendations

The following is a summary of our recommendations:

- Initial placement – Place the antenna on any metal sheet or surface. Reference surface area is 100 mm x 100 mm.
- Clearance to co-planar, coupled dielectric sheets – The minimum clearance is 8 millimeters.
- Mounting on dielectric surfaces – Not recommended, unless stated degradations are acceptable.
- Operation on curved surfaces – Convex radius of curvature: 30 mm, typical.
- Edge positioning on ground plane: Middle and bottom positions are preferred as shown in [Figure 5](#).

Americas: +1.847 839.6925
IAS-AmericasSales@lairdtech.com
Europe: +44.1628.858941
IAS-EUSales@lairdtech.com
Asia: IAS-AsiaSales@lairdtech.com
Middle East and Africa: +44.1628.858941
IAS-MEAUSales@lairdtech.com
www.lairdtech.com



Laird 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 Laird 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 Laird product is installed. Useful lifetime of the original end product may vary but is not to exceed five (5) years from the original date of the end product purchase.

Any information furnished by Laird Inc. and its agents is believed to be accurate and reliable. All specifications are subject to change without notice. Responsibility for the use and application of Laird materials rests with the end user, since Laird and its agents cannot be aware of all potential uses. Laird makes no warranties as to the fitness, merchantability or suitability of any Laird materials or products for any specific or general uses. Laird shall not be liable for incidental or consequential damages of any kind. All Laird products are sold pursuant to the Laird Terms and Conditions of sale in effect from time to time, a copy of which will be furnished upon request.

© Copyright 2018 Laird Inc. All Rights Reserved. Laird, Laird Technologies, the Laird Logo, and other marks are trademarks or registered trademarks of Laird Inc. or an affiliate company thereof. Other product or service names may be the property of third parties. Nothing herein provides a license under any Laird or any third party intellectual property rights.

