

WLAN Ceramic Chip Antenna 2450MHz – Evaluation Kit



AMCA31-2R450G-S1F-T3-EVB

Request Samples



Check Inventory



44 x 20 x 10 mm

RoHS/RoHS II Compliant

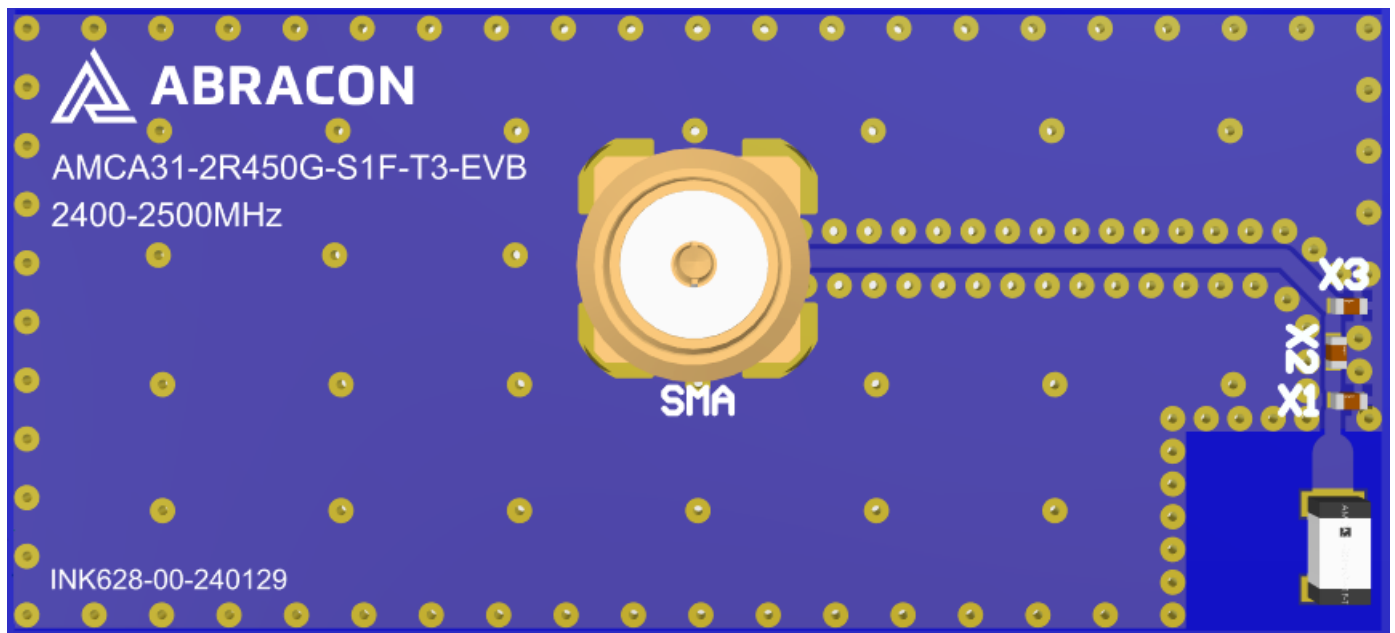
MSL Level = 1

Description

The AMCA31-2R450G-S1F-T3-EVB evaluation kit is designed to provide a means to facilitate engineering evaluation of the “WLAN Ceramic Chip Antenna 2450MHz”: AMCA31-2R450G-S1F-T3

The kit includes an evaluation board with SMA connector + three additional antennas for further testing.

Product Image



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Electrical Specification

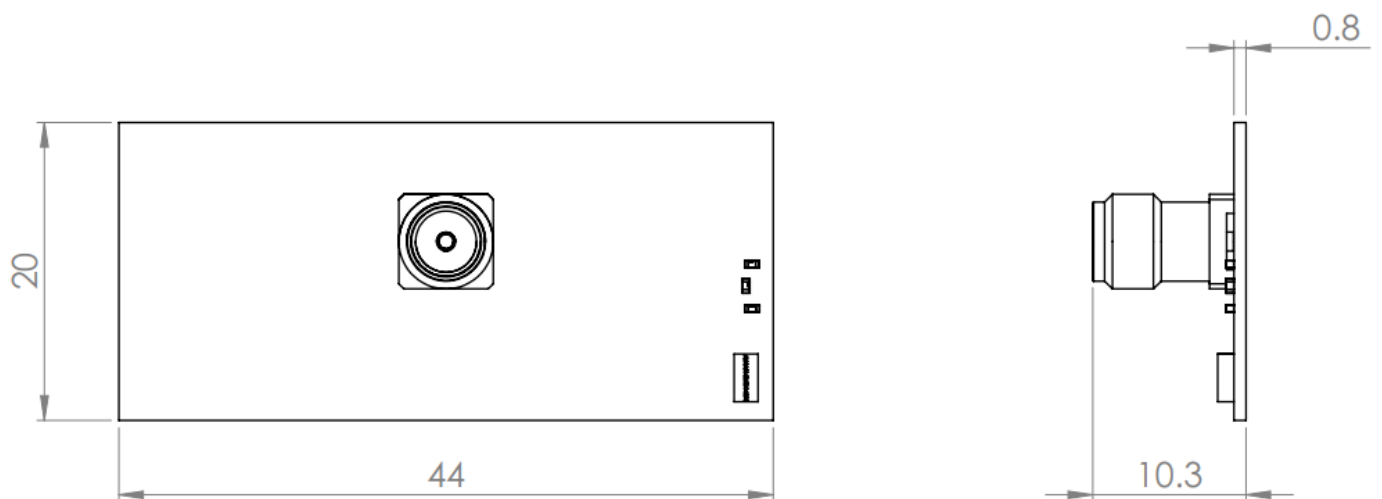
Parameter	Specification	Unit
Operating Frequency	2400 - 2500	MHz
Return Loss	≤ -12.5	dB
VSWR	≤ 1.6	:1
Polarization	Linear	-
Peak Gain	2.3	dBi
Minimum Total Efficiency	-1.8 (66)	dB (%)
Average Total Efficiency	-1.4 (72)	dB (%)
Maximum Total Efficiency	-1.2 (76)	dB (%)
Impedance	50	Ω
Radiation Pattern	Omni-directional	-
Input Power	< 3	W

Note: All measurements were conducted on the evaluation board in free space. Performance will vary depending on the ground plane, application, and environment.

Mechanical Specification

Parameter	Specification
Evaluation Board Dimensions	44 x 20 x 10 mm
Evaluation Board Ground Plane Dimensions	44 x 20 mm

Product Dimensions



Unit: mm



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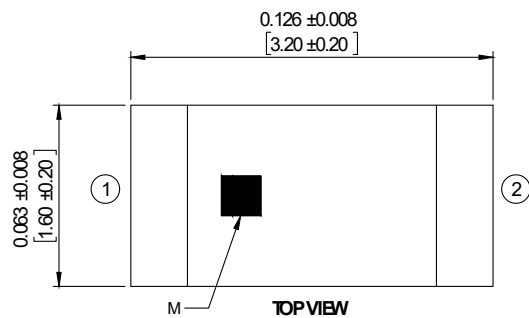


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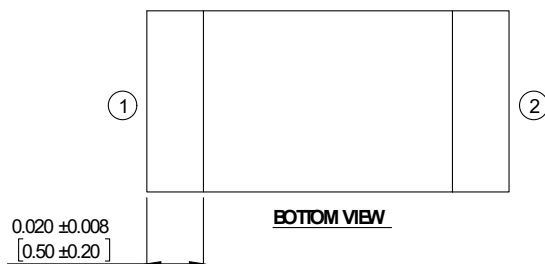
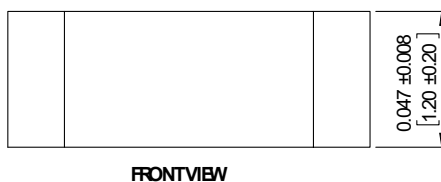
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Antenna Dimensions and Terminal Configuration



Symbol	Description
①	Antenna Feed
②	NC (not connected)
M	Mark



Unit: Inches [mm]



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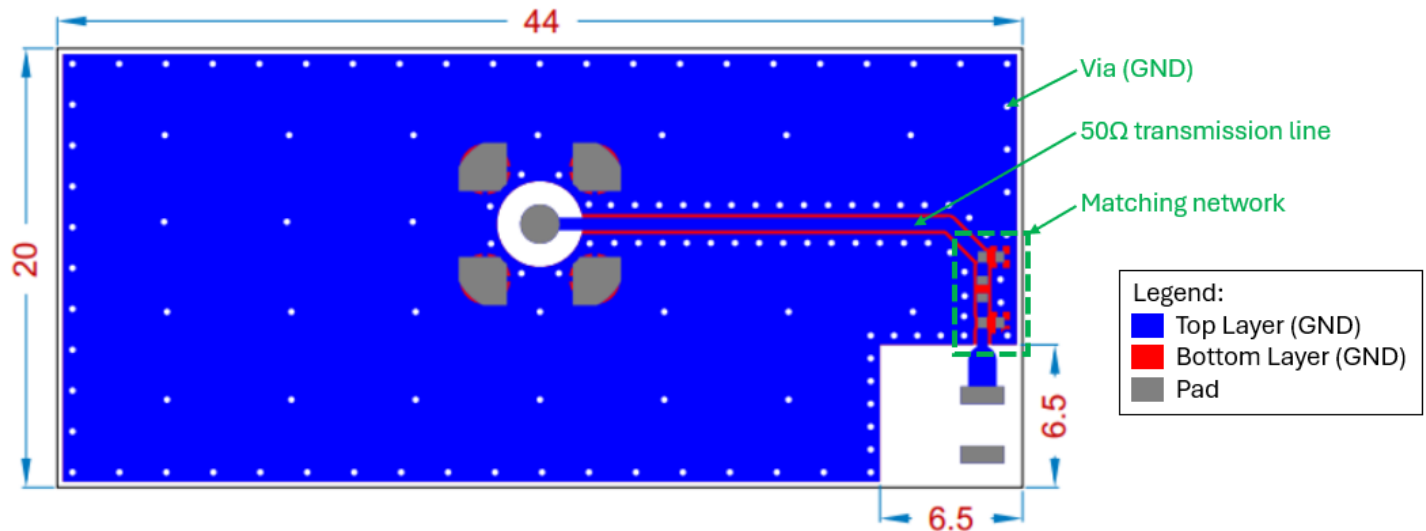
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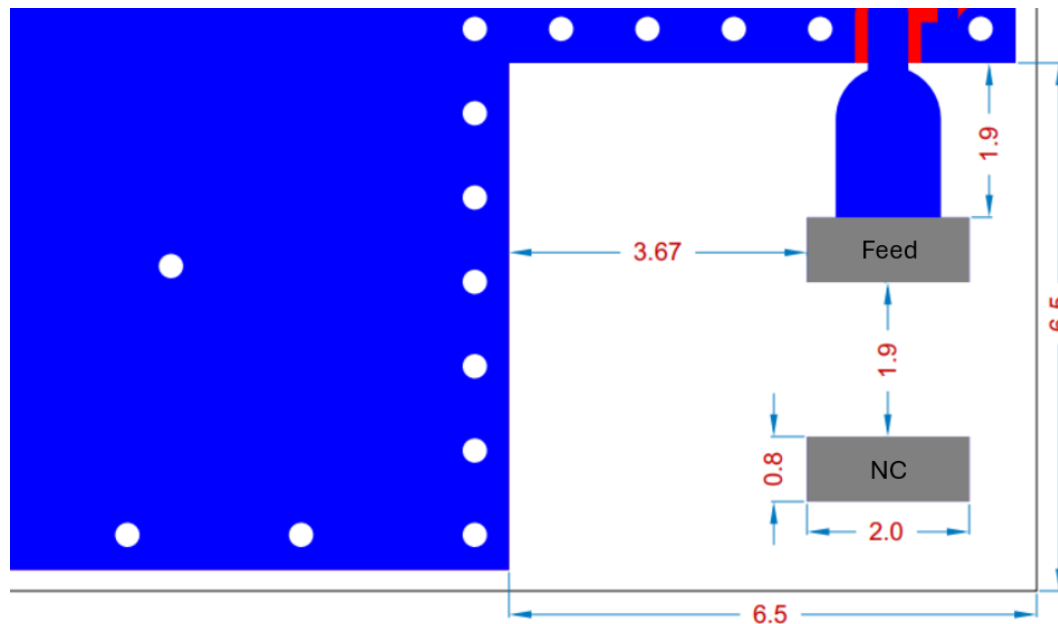
Recommended PCB layout

If there are several layers in the PCB, there is an advantage to add vias for smooth interconnection of the ground areas to avoid splits in the ground plane. It is also important that the ground clearance is respected through all layers of the PCB. It is recommended to implement a matching network to optimize the antenna impedance in your application.

The transmission line should be kept as short as possible and be designed to have a characteristic impedance of 50Ω.



Detailed view of antenna pads and copper clearance:



Unit: mm

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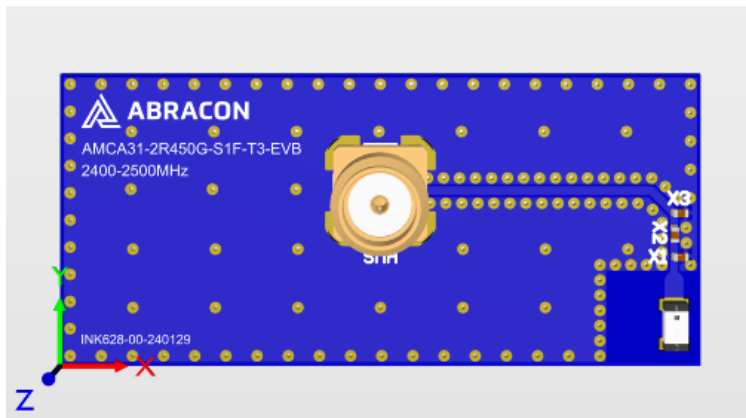
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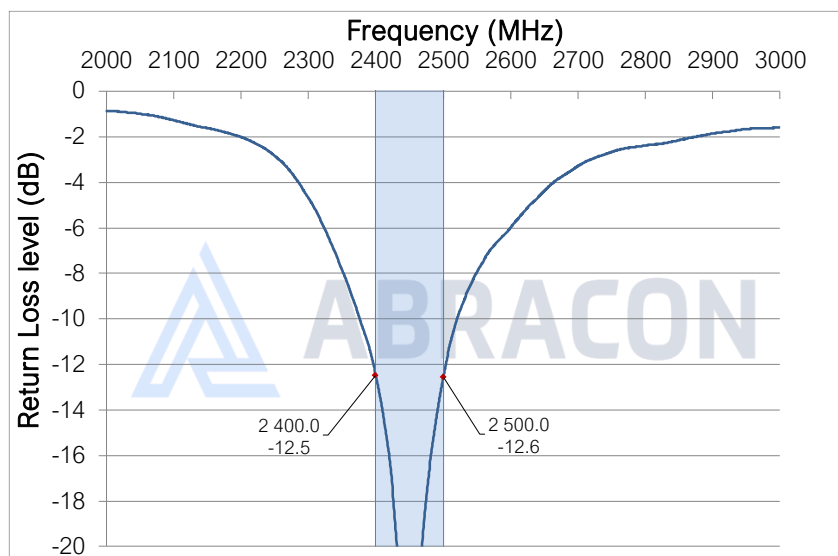
MSL Level = 1

Measurement Setup

The antenna measurements were all done in free space, with the chip antenna implemented on its evaluation board (AMCA31-2R450G-S1F-T3-EVB) that has a PCB size of 44 by 20 (X by Y) mm:



Reflection Characteristics – Return Loss



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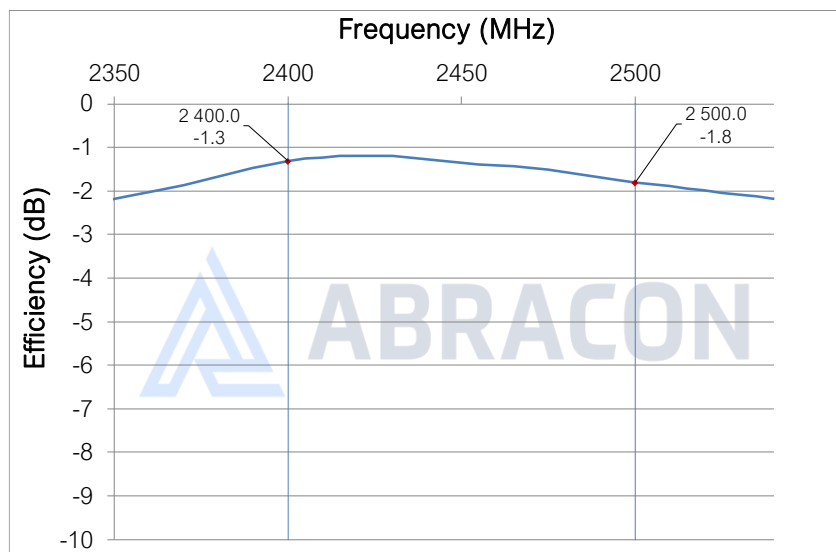


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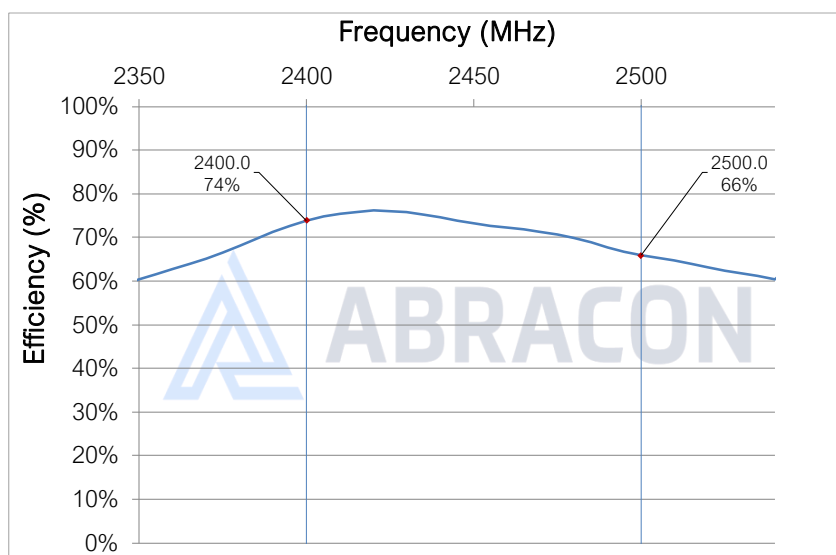
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MSL Level = 1

Radiation Characteristics – Total Efficiency (dB)



Radiation Characteristics – Total Efficiency (%)

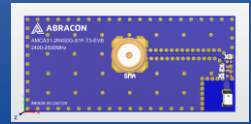


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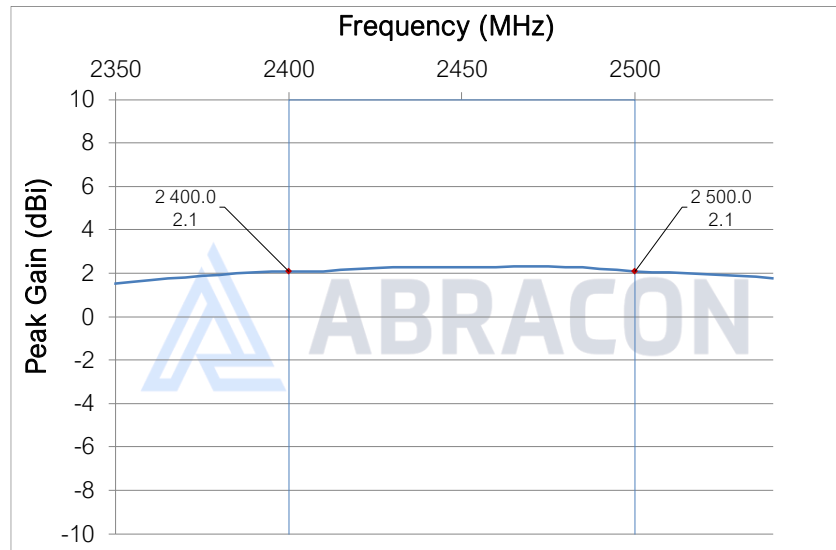


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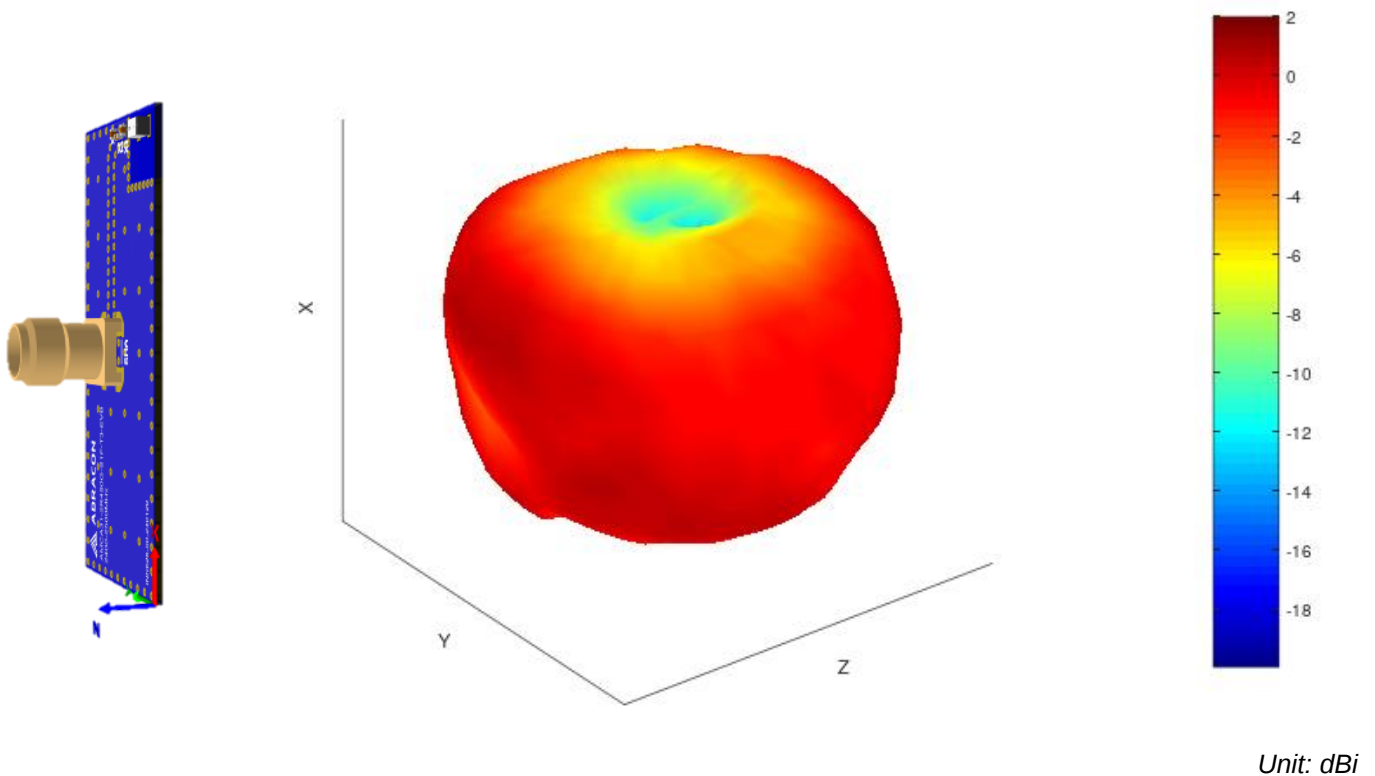
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Radiation Characteristics – Maximum Gain



Radiation Characteristics – 3D Pattern @ 2450 MHz



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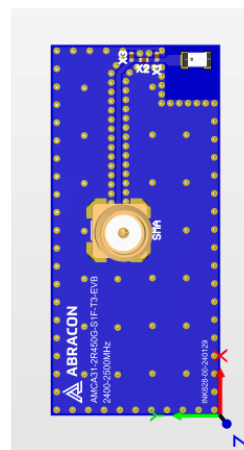
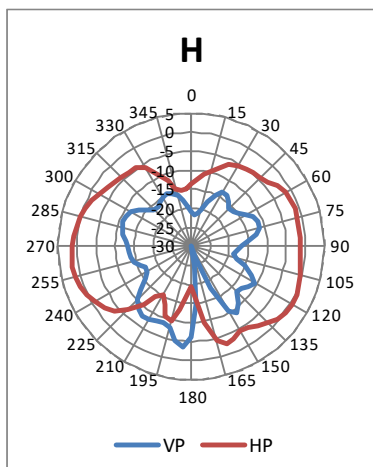
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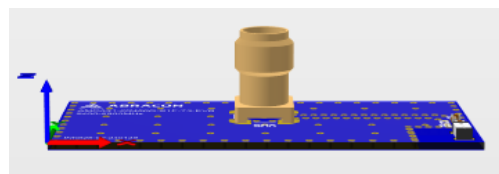
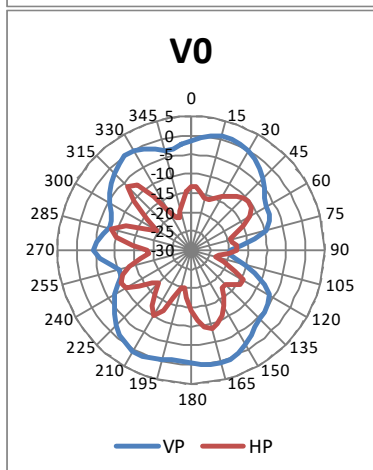
MSL Level = 1

Radiation Characteristics – 2D Pattern @ 2450 MHz

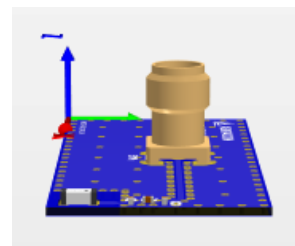
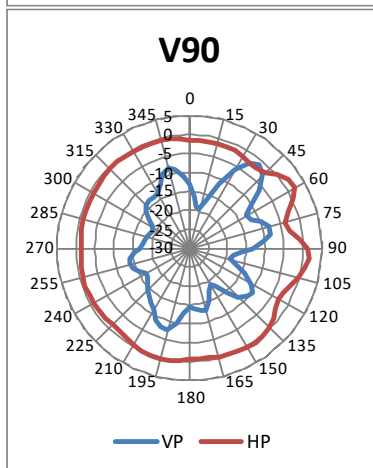
XY-plane:



XZ-plane:



YZ-plane:



VP: Vertical Polarization
HP: Horizontal Polarization

Unit: dBi



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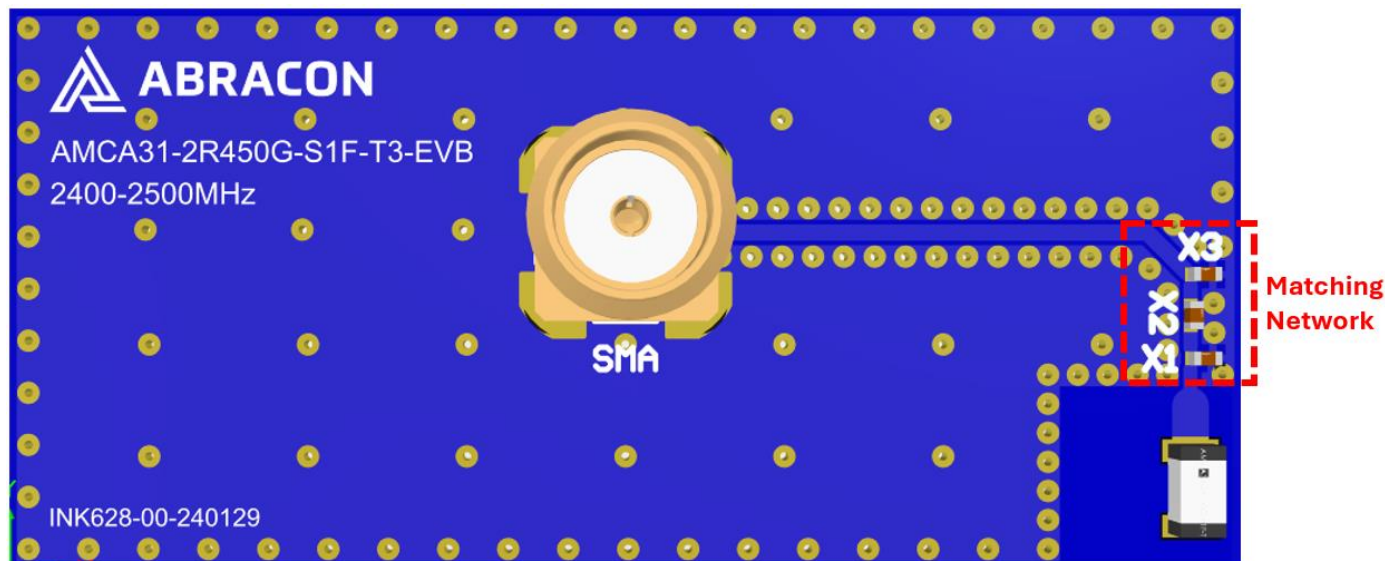
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Evaluation Board Outline & Matching Circuit

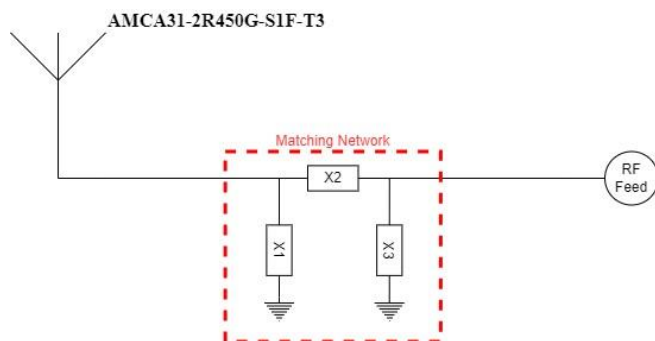
The evaluation board (AMCA31-2R450G-S1F-T3-EVB) is developed to simplify antenna testing and evaluation. It has an arbitrary size of 44 x 20 mm and includes an SMA connector. The purpose is to give a reference design for an optimal antenna implementation. The evaluation board can also be used to test other implementations by cutting and soldering the PCB into any device.



Evaluation board outline

The evaluation board has a matching circuit implemented next to the antenna. This is aimed to enable optimization possibilities for the user. The component positions are sized for 0402 (1005 metric) SMD components.

The antenna needs a matching circuit to adjust the resonant frequency balance. When delivered, the evaluation board is tuned for optimum balance at 2.4 – 2.5 GHz using the following (can be replaced by equivalent):



X1 = 9.7 nH (Murata LQW15AN9N7G00D)

X2 = 8.3 nH (Murata LQW15AN8N3C10D)

X3 = not mounted

However, it is common that the resonant frequency will shift during implementation in an arbitrary device. Therefore, this matching may be changed with other values/components/brands for compensation of such effects.

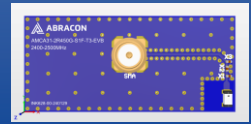


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Packaging Information

The evaluation kit consists of one complete evaluation board + three additional AMCA31-2R450G-S1F-T3 antennas.

One evaluation kit per Box

34 Boxes per Carton

Dimension of the Box: 15 x 10 x 4 cm

Dimension of the Carton: 43 x 34 x 19 cm

ATTENTION: Abracon LLC's products are Commercial-Off-The-Shelf ('COTS'), which are designed, intended, and validated for use in commercial, industrial, and automotive applications. The customer is responsible for testing and verifying the performance of an Abracon solution to meet their system-level requirements.



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