

High Frequency Ceramic Solutions

BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna:
2.4/1.561/1.575/1.602GHz, SMD

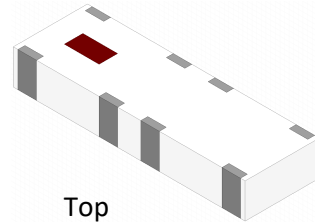
P/N 2450AD47A1590

Detail Specification: 10/28/2021

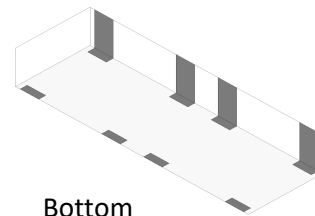
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General Specifications

Part Number	2450AD47A1590			
Frequency (MHz)	2400 - 2500	1561	1575	1602
Peak Gain (dBi typ.)	1.0 (YZ-Total)	0.5 (YZ-Total)	1.0 (YZ-Total)	0.5 (YZ-Total)
Average Gain (dBi typ.)	-1.0 (YZ-Total)	-2.0 (YZ-Total)	-2.0 (YZ-Total)	-3.0 (YZ-Total)
Return Loss (dB)	7.36 min.	7.36 min.	7.36 min.	7.36 min.
Isolation	20	15	15	15
Radiation Efficiency % ¹	79	47	50	41
Impedance (Ω)	50	50	50	50
Power Capacity (W)	2 max. (CW)			
Operating Temperature	-40°C to +85°C			
Reel Quantity (pcs./reel)	1,000			
Recommended Storage Conditions and Period for unused Product on T&R	+5°C to +35°C Humidity 45 - 75% RH 18 months max.			



Top



Bottom

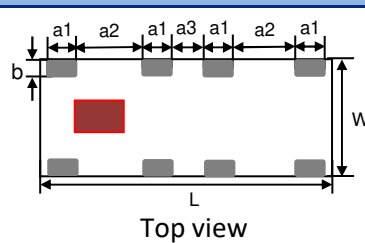
¹Efficiency measured on Johanson's evaluation board P/N: 2450AD47A1590-EB1SMA

Part Number Explanation

P/N Suffix	Packing Style	Bulk (loose pcs.)	Suffix = S	E.g. 2450AD47A1590S
		T & R	Suffix = E	E.g. 2450AD47A1590E
	Evaluation Board	2450AD47A1590-EB1SMA (Pre-tuned with SMA connectors)		

Mechanical Dimensions

	In	mm
L	0.394 ± 0.008	10.00 ± 0.20
W	0.126 ± 0.008	3.20 ± 0.20
T	0.059 ± 0.008	1.50 ± 0.20
a1	0.031 ± 0.008	0.80 ± 0.20
a2	0.106 ± 0.008	2.70 ± 0.20
a3	0.039 ± 0.008	1.00 ± 0.20
b	0.012 ± 0.004/-0.008	0.30 ± 0.1/-0.2



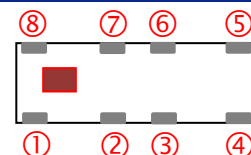
Top view



Side view

Terminal Configuration

No.	Function
1	2.4GHz Feed Point
2	GND
3	GND
4	1.5-1.6GHz Feed Point
5	GND
6	GND
7	GND
8	GND



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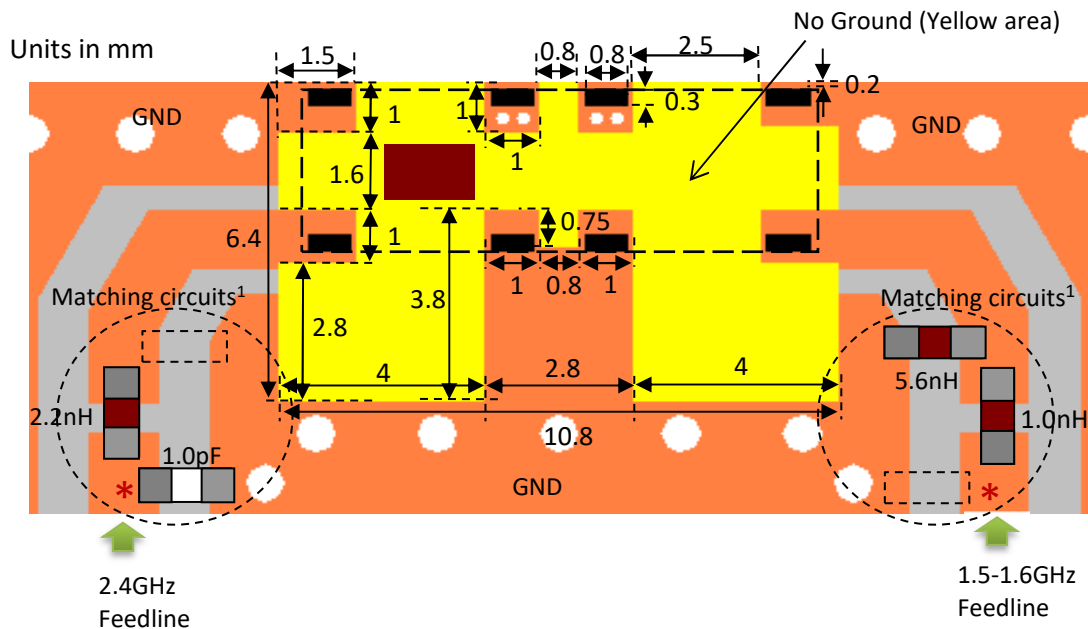
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Layout Recommendations



Orange Solder Resist

Black Land

Would you like the layout file of the above? Contact our applications engineers at:
<https://www.johansontechnology.com/ask-a-question>

¹Attention: Matching circuits and component values will be different on the client's design, depending on PCB layout, geometry, etc. It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values you see here are used when antenna is mounted on Johanson's evaluation board.

Need help laying out the antenna, want us to review your antenna design (free!), require the Gerber files for this EVB, or would like us to validate the new tuning values of your PCB (fee may apply) go to: <https://www.johansontechnology.com/ask-a-question>

Orderable EVB for evaluation, it comes with a female SMA connector. Go to: <https://www.johansontechnology.com/request-a-sample> and ask for p/n 2450AD47A1590-EB1SMA

* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material, thickness, and preferably CPWG (co-planar wave guide) type.

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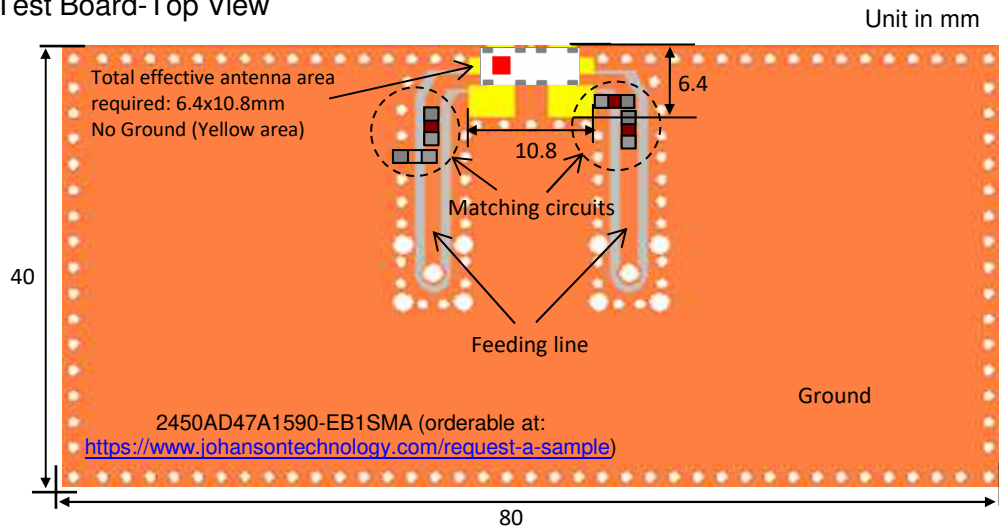
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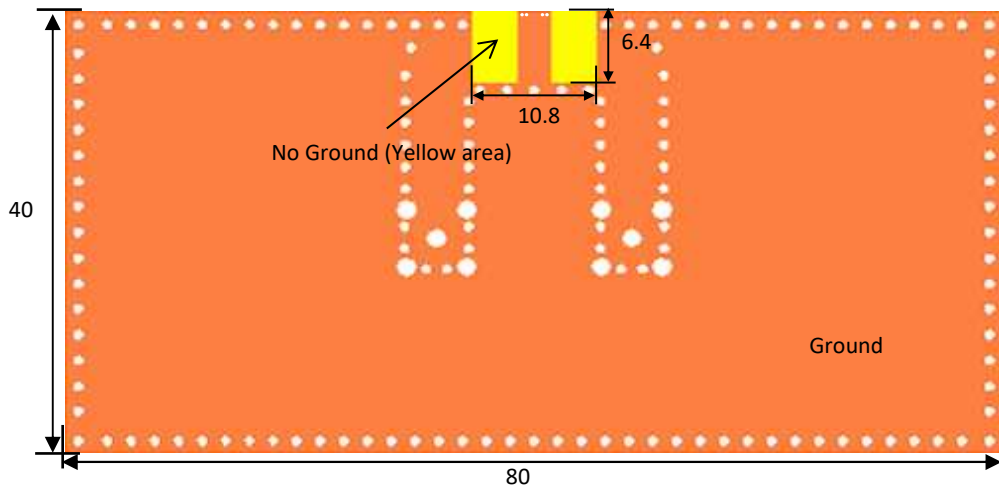
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Johanson Technology Evaluation Board Mounting Configuration

❖ Test Board-Top View



❖ Test Board-Bottom View



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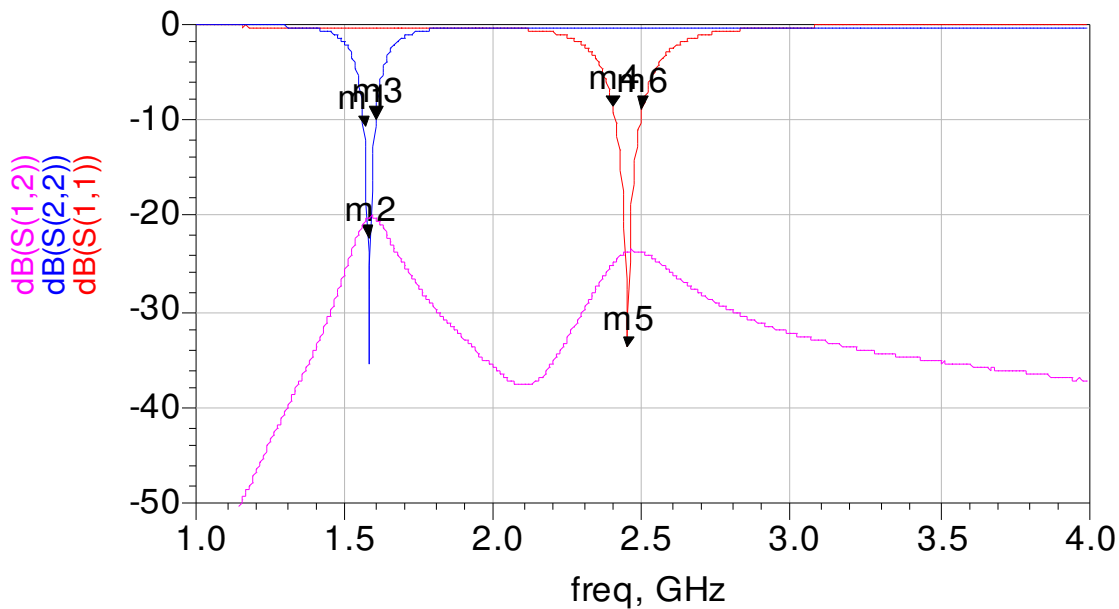
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Typical Electrical Characteristics (T=25°C)

Return Loss and Isolation With Matching Circuits On Johanson EVB



m1	m4
Freq=1.561GHz	Freq=2.400GHz
dB(S(2,2))=-10.697	dB(S(1,1))=-8.678
m2	m5
Freq=1.575GHz	Freq=2.450GHz
dB(S(2,2))=-22.294	dB(S(1,1))=-33.793
m3	m6
Freq=1.602GHz	Freq=2.500GHz
dB(S(2,2))=-9.842	dB(S(1,1))=-8.901

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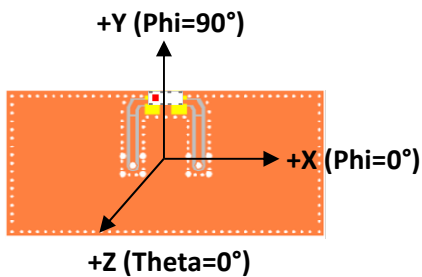
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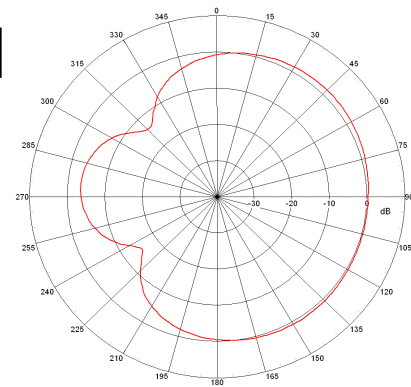
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Typical Radiation Patterns

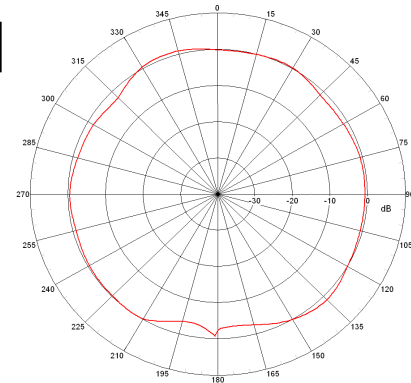
❖ Radiation Patterns @ 2.45GHz



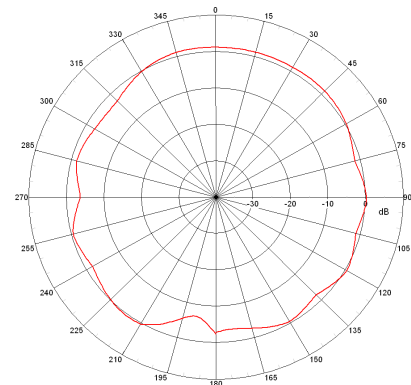
XY-Plane



YZ-Plane



XZ-Plane



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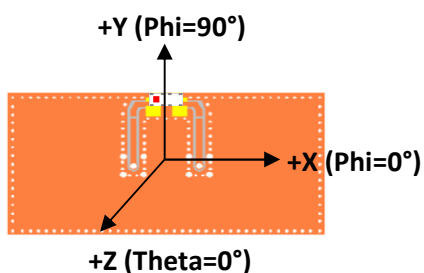
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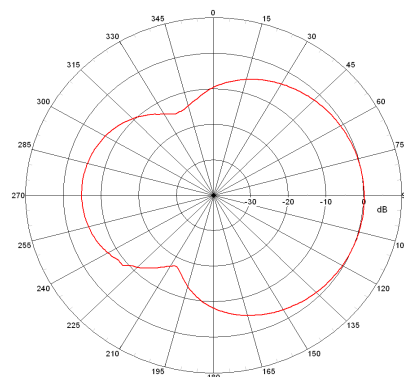
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Typical Radiation Patterns

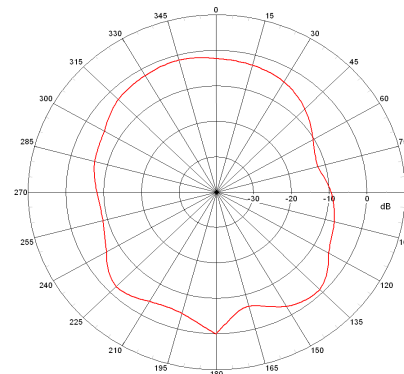
❖ Radiation Patterns @ 1.561GHz



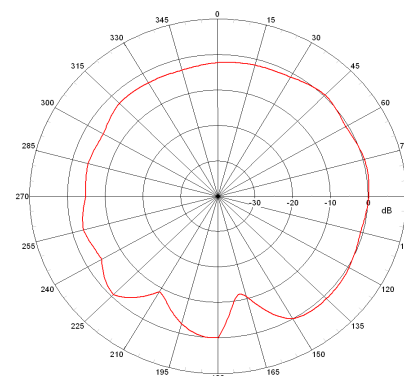
XY-Plane



YZ-Plane



XZ-Plane



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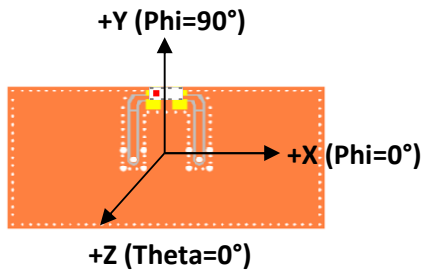
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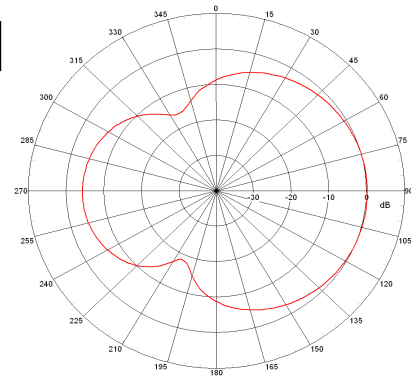
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Typical Radiation Patterns

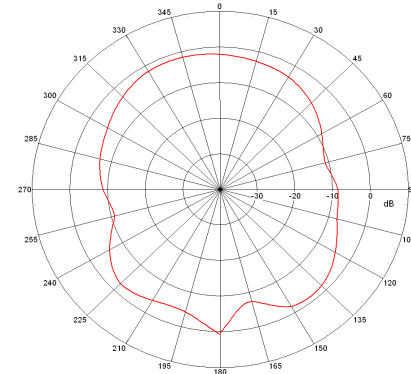
❖ Radiation Patterns @ 1.575GHz



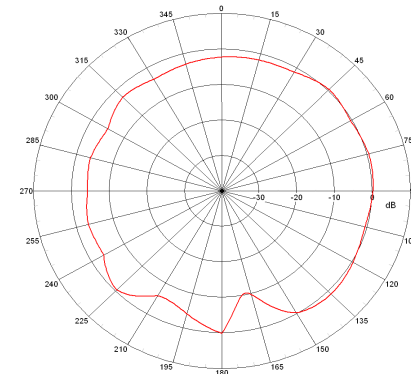
XY-Plane



YZ-Plane



XZ-Plane



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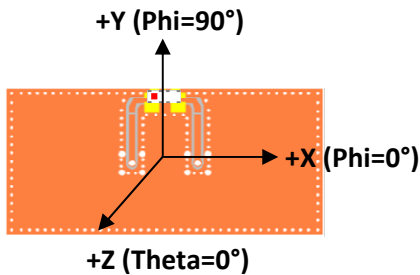
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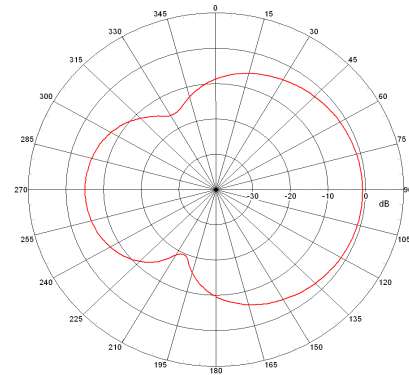
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Typical Radiation Patterns

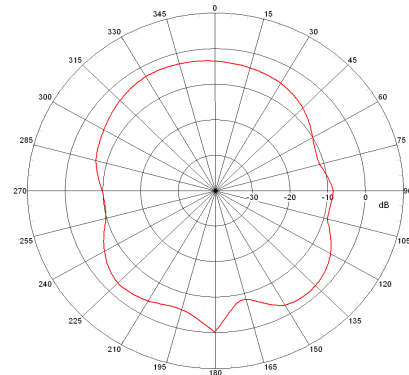
❖ Radiation Patterns @ 1.602GHz



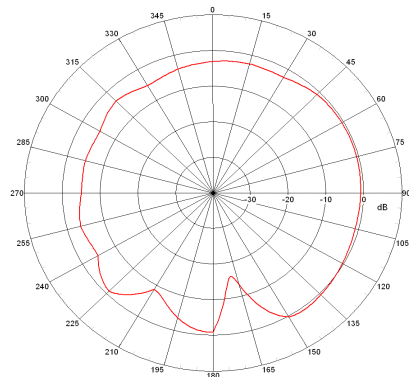
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YZ-Plane



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Antenna tuning, optimization, and validation services:

<https://www.johansontechnology.com/ipc-antenna-services>

For more antennas and to download measured S-parameters, go to:

<https://www.johansontechnology.com/antennas>

Soldering Information

<https://www.johansontechnology.com/ipcsoldering-profile>

MSL Info

<https://www.johansontechnology.com/msl-rating>

Packaging information

<https://www.johansontechnology.com/tape-reel-packaging>

For layout review contact our Applications Team at:

<https://www.johansontechnology.com/ask-a-question>

RoHS Compliance

<https://www.johansontechnology.com/rohs-compliance>

Recommended Storage Condition and Max Shelf Life

<https://www.johansontechnology.com/recommended-storage-conditions>

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