

Unlicensed Transmitters: Approved Antennas List

WiFi

<i>Manufacturer</i>	<i>Antenna</i>	<i>Description</i>	<i>Type</i>	<i>Length (mm)</i>	<i>Width (mm)</i>	<i>Other Info</i>	<i>Connector Type</i>	<i>Notes</i>
Johanson Technology	2450AD14A5500	Dual Band 2.45/5 GHz Mini Chip Antenna Peak gain of 1.0dBi (xz plane) at 2.4GHz 4.0dBi (xz plane) at 5GHz (refer to datasheet)	Chip Antenna	1.6	0.8	On board	n/a	Ant1
Johanson Technology	2450AD18A6050	2.4, 5, and 6GHz Mini Chip Antenna Peak gain of 2.0dBi (yz plane) at 2.4GHz, 1.5dBi (yz plane) at 5GHz, 2.7dBi (yz plane) at 6GHz (refer to datasheet)	Chip Antenna	3.2	1.6	On board	n/a	Ant2

Radar

<i>Manufacturer</i>	<i>Antenna</i>	<i>Description</i>	<i>Type</i>	<i>Length (mm)</i>	<i>Width (mm)</i>	<i>Other Info</i>	<i>Connector Type</i>	<i>Notes</i>
Socionext Inc	SC1233AR3 Integrated Antenna	SC1233AR3 Integrated Antenna	Patch Antenna	n/a	n/a	Integral Antenna	n/a	

"High Frequency Ceramic Solutions"

802.11 Dual Band 2.45/5 GHz Mini Chip Antenna. WiFi, WLAN, IoT

P/N 2450AD14A5500

Detail Specification: 11/6/2018

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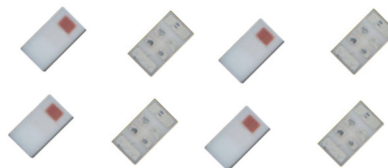
This is the Web version of this datasheet, for the full datasheet, please contact us at: <https://www.johansontechnology.com/ask-a-question>

General Specifications

Part Number	2450AD14A5500	
Frequency (MHz)	2400 - 2480	5150 - 5850
Ave. Rad Efficiency	60%	80%
Peak Gain (dBi typ.)	1.0 dBi typ. (XZ-Total)	4.0 dBi typ. (XZ-Total)
Average Gain (dBi typ.)	-3.5 dBi typ. (XZ-Total)	-2.5 dBi typ. (XZ-Total)
Return Loss (dB)	6 min.	6 min.
Impedance	50 Ω	
Input Power	2 Watts max. (CW)	

Let us help you with the antenna design, optimization, and tuning!

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



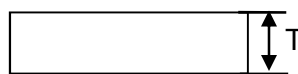
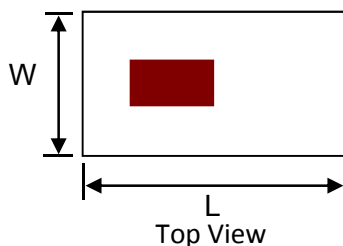
Storage Period	18 months max.
Storage Temperature	-40 to +85°C
Operating Temperature	-40 to +85°C
Reel Quantity	4000pcs

Part Number Explanation

P/N Suffix	Packing Style	Bulk (loose)	Suffix = S	e.g. 2450AD14A5500S
		T & R	Suffix = T	e.g. 2450AD14A5500T
		100% Tin	Suffix = T or S	e.g. 2450AD14A5500(T or S)
	Evaluation Board	2450AD14A5500-EB1SMA & 2450AD14A5500-EB2SMA		

Mechanical Dimensions

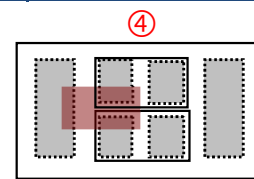
	In	mm
L	0.063 $\pm$ 0.004	1.60 $\pm$ 0.10
W	0.031 $\pm$ 0.004	0.80 $\pm$ 0.10
T	0.016 max.	0.40 max.



Side View

Terminal Configuration

No.	Function
1	GND
2	FEED
3	NC
4	NC



Top View looking "through" the component

If you'd like the complete datasheet which includes detailed gain performance, layout guidelines, application notes, small WiFi application layout, send us as message at:

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

As a bonus, you'll be assigned an RF Engineer to assist you in the design for free!

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Ver. 2.2

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802.11 Dual Band 2.45/5 GHz Mini Chip Antenna. WiFi, WLAN, IoT

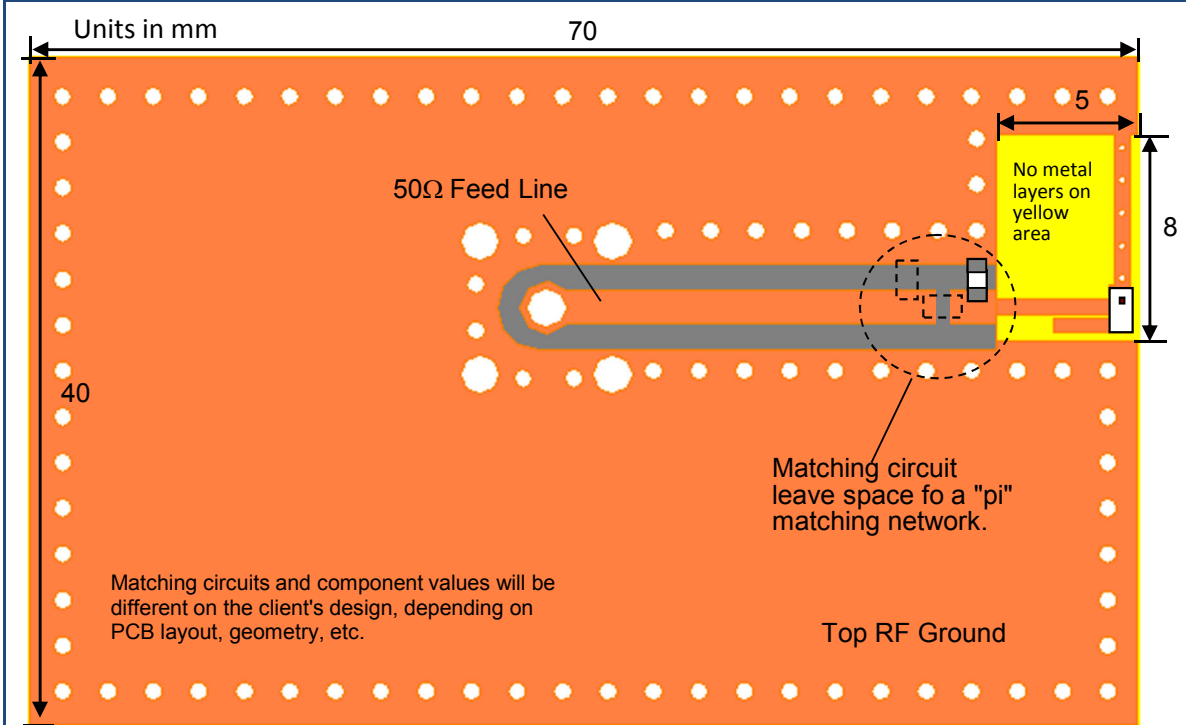
P/N 2450AD14A5500

Detail Specification: 11/6/2018

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Mounting Considerations 1: Evaluation Board, 65x70mm (Scenario 1 Terminal Configuration)



To order the ABOVE pre-tuned 50Ω EVB with a female SMA connector click here: <https://www.johansontechnology.com/request-a-sample>

Would you like the layout file of the above? Have antenna tuning issues? Please contact us if you have any questions regarding the implementation of this antenna in your PCB's layout. We'll be happy to guide you to maximize the antenna's performance.

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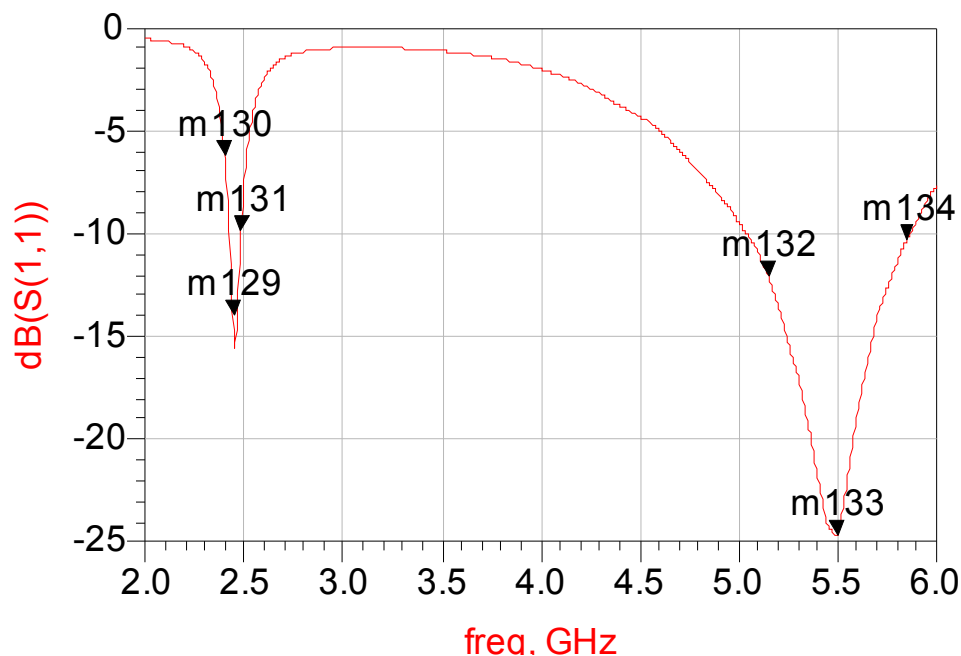
P/N 2450AD14A5500

Detail Specification: 11/6/2018

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Mounting Considerations 2: Typical Electrical Performance (T=25°C)



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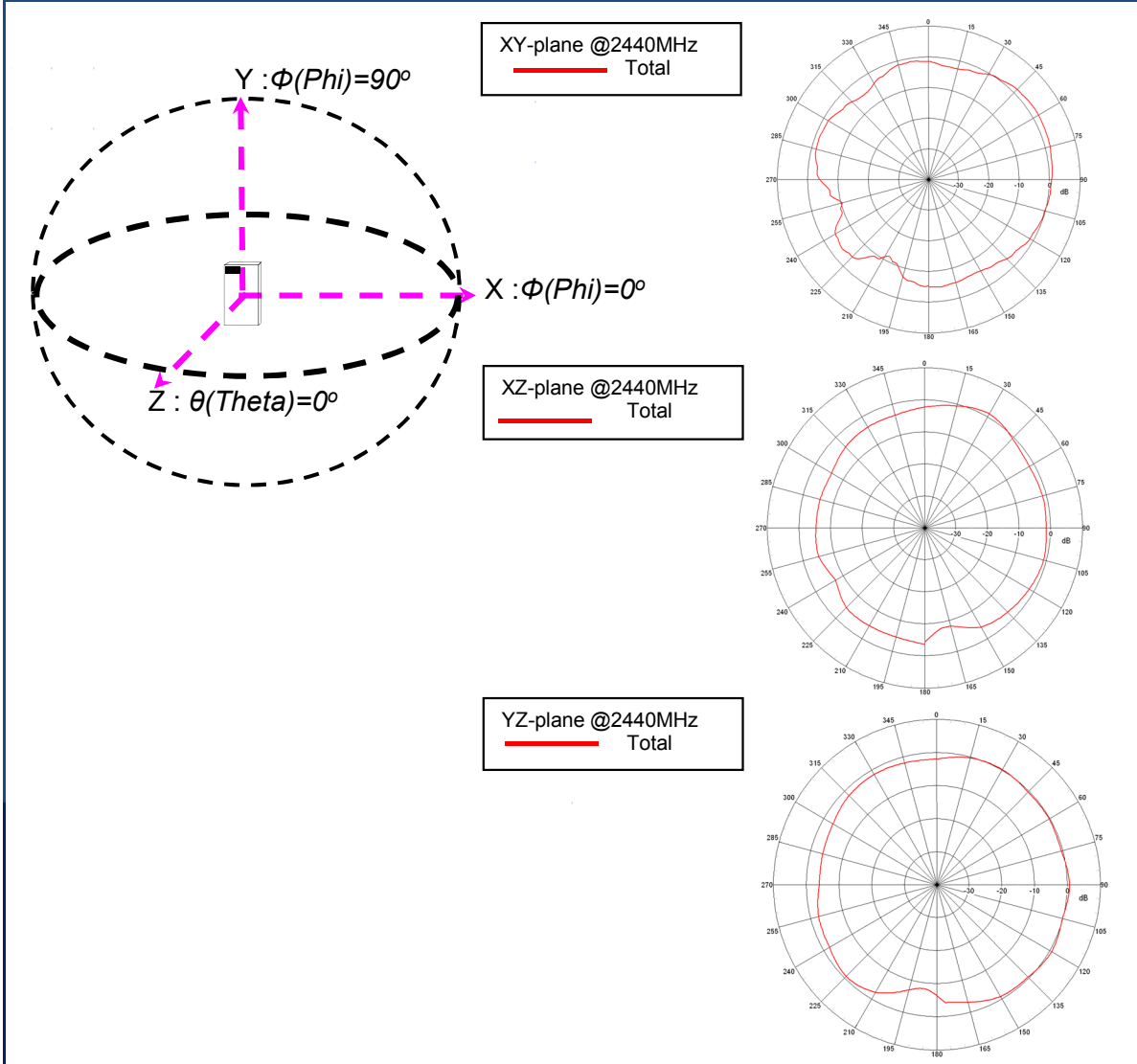
P/N 2450AD14A5500

Detail Specification: 11/6/2018

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Typical EM Radiation Performance @ 2.44GHz (T=25°C)



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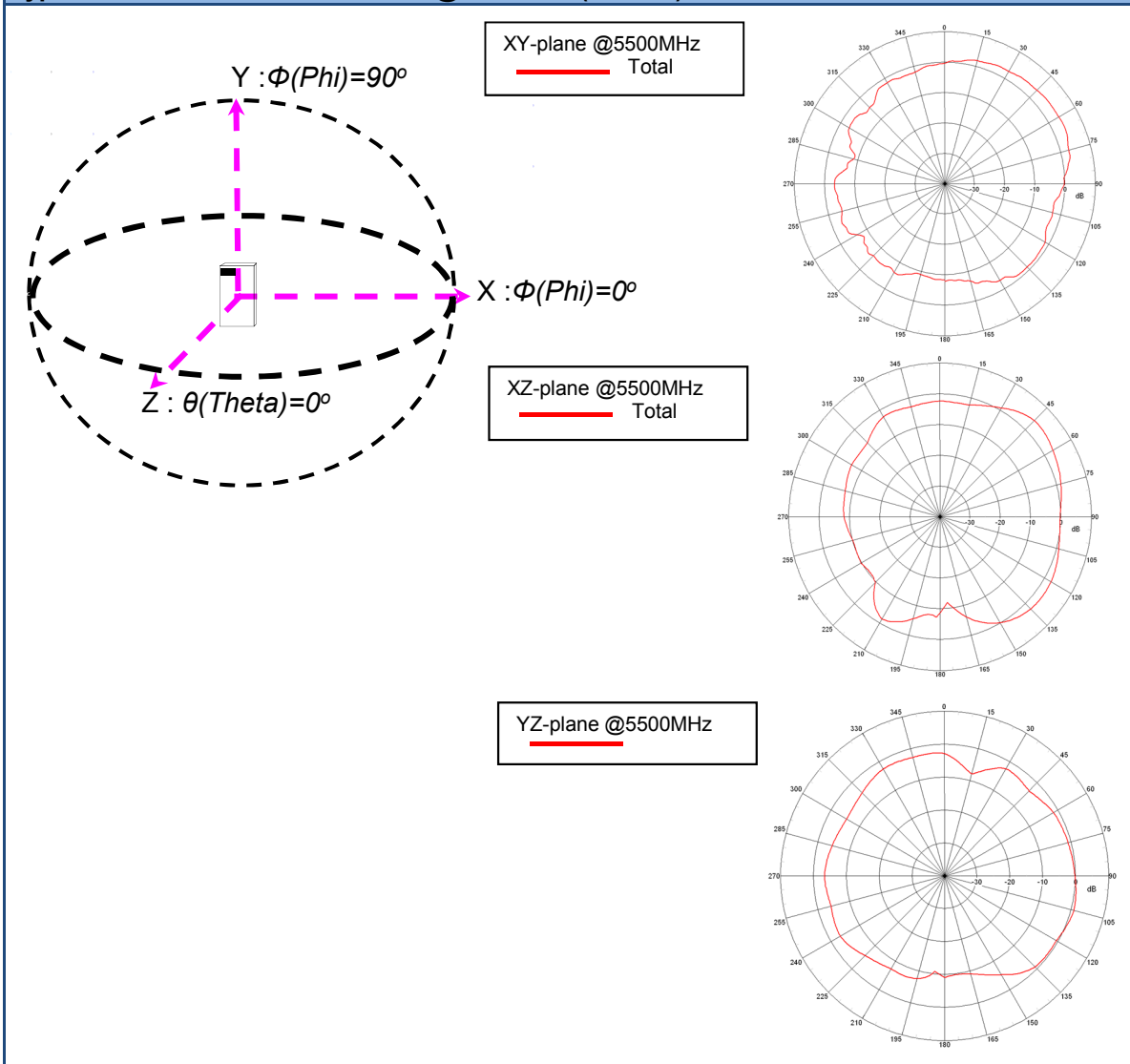
P/N 2450AD14A5500

Detail Specification: 11/6/2018

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Typical EM Radiation Performance @ 5.50 GHz (T=25°C)



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P/N 2450AD14A5500

Detail Specification: 11/6/2018

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

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

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

For more information about our diplexers:

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

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>

Need help designing the antenna in? Use our antenna design services!

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

2 Free layout reviews and if you need us to tune and characterize the antenna on your product (inside anechoic chamber) we can do that too. Small lab fee may apply for the latter.

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2.4, 5, and 6GHz BT/WiFi6E Mini Antenna, Single-feed, Tri-band, Corner Mount

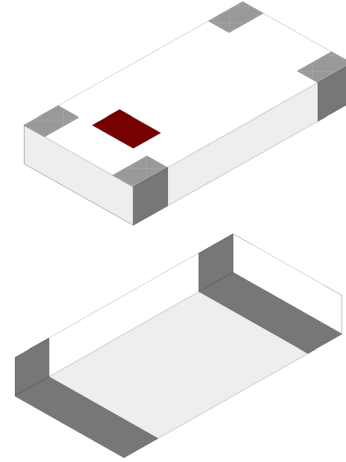
P/N 2450AD18A6050

Detail Specification: 10/20/2021

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General Specifications

Part Number	2450AD18A6050		
Frequency (MHz)	2400 - 2500	4900 - 5850	5850 - 7200
Peak Gain (dBi typ.)	+2.0 (YZ-plane)	+1.5 (YZ-plane)	+2.7 (YZ-plane)
Average Gain (dBi typ.)	-1.5 (YZ-plane)	-2.0 (YZ-plane)	-2.0 (YZ-plane)
Return Loss (dB)	6 min.	5 min.	5 min.
Radiation Efficiency % ¹	79	74	85
Impedance (Ω)	50		
Power Capacity (W)	3 max. (CW)		
Operating Temp.	-40°C to +85°C		
Reel Quantity (pcs./reel)	3,000		
Recommended Storage Conditions and Period for unused Product on T&R	+5°C to +35°C Humidity 45 - 75% RH 18 months max.		



Use this antenna with our diplexers and filters to split the signal into the corresponding RF path. Go to page 7 for the links.

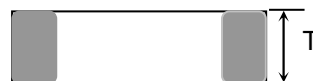
¹Efficiency measured on Johanson's evaluation board PN 2450AD18A6050-EB1SMA

Part Number Explanation

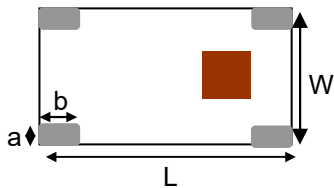
P/N Suffix	Packing Style	Bulk (loose pcs.)	Suffix = S	E.g. 2450AD18A6050S
		T & R	Suffix = E	E.g. 2450AD18A6050E
		100% Tin	Suffix = E or S	E.g. 2450AD18A6050(E or S)
	Evaluation Board	2450AD18A6050-EB1SMA (Pre-tuned with SMA connectors)		

Mechanical Dimensions

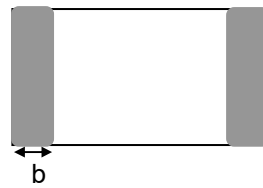
	In	mm
L	0.126 ± 0.008	3.20 ± 0.20
W	0.063 ± 0.008	1.60 ± 0.20
T	0.020 ± 0.004	0.50 ± 0.10
a	0.012 +0.004/+0.008	0.30 +0.1/-0.2
b	0.020 ± 0.004	0.50 ± 0.10



<Side view>



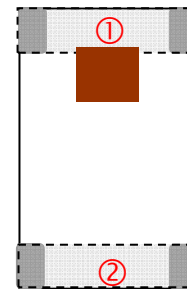
<Top view>



<Bottom view>

Terminal Configuration

No.	Function
1	Feed Point
2	NC



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2.4, 5, and 6GHz BT/WiFi6E Mini Antenna, Single-feed, Tri-band, Corner Mount

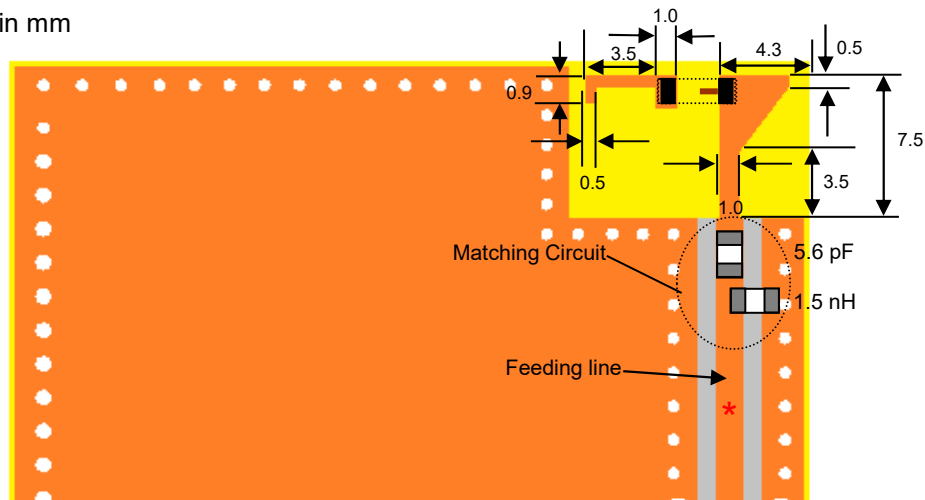
P/N 2450AD18A6050

Detail Specification: 10/20/2021

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Layout Recommendations

Unit in mm



Ask for the layout/gerber files at: <https://www.johansontechnology.com/ask-a-question>

- Solder Resist
- Land

Attention: 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!), or would like us to measure and derive 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/component/request-a-sample> and ask for p/n 2450AD18A6050-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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P/N 2450AD18A6050

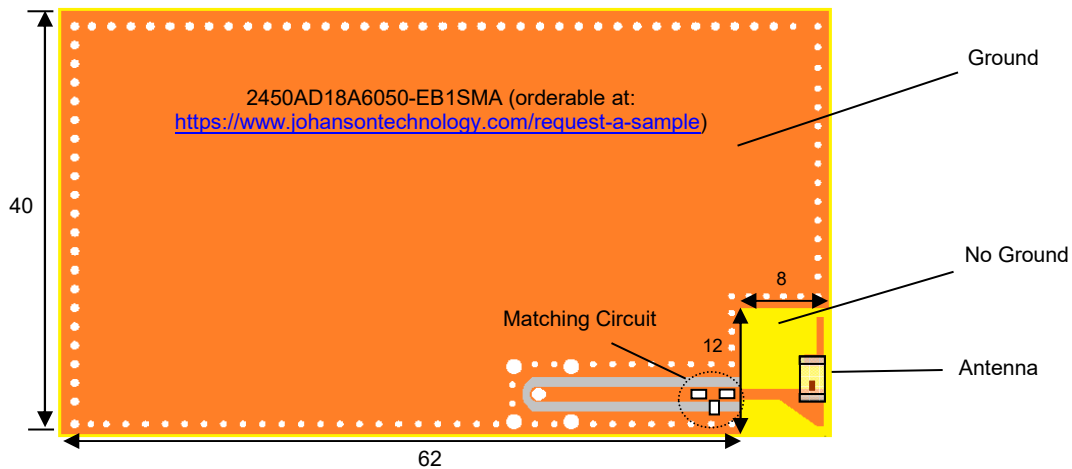
Detail Specification: 10/20/2021

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Johanson Technology Evaluation Board Mounting Configuration

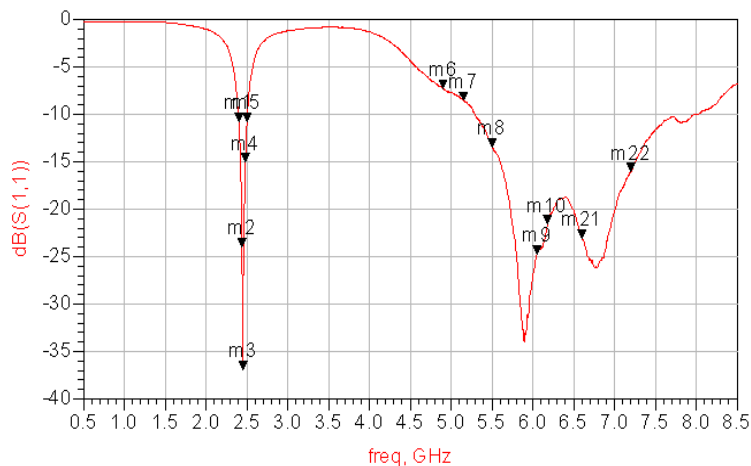
❖ Test Board-Top View

Unit in mm



Typical Electrical Characteristics (T=25°C)

Antenna Return Loss with Matching Circuits On Johanson EVB



m1	freq=2.400GHz	dB(S(1,1))=-10.756
m2	freq=2.440GHz	dB(S(1,1))=-23.983
m3	freq=2.450GHz	dB(S(1,1))=-36.886
m4	freq=2.480GHz	dB(S(1,1))=-15.047
m5	freq=2.500GHz	dB(S(1,1))=-10.778
m21	freq=6.600GHz	dB(S(1,1))=-23.053
m22	freq=7.200GHz	dB(S(1,1))=-16.091

m6	freq=4.900GHz	dB(S(1,1))=-7.277
m7	freq=5.150GHz	dB(S(1,1))=-8.522
m8	freq=5.500GHz	dB(S(1,1))=-13.415
m9	freq=6.050GHz	dB(S(1,1))=-24.728
m10	freq=6.175GHz	dB(S(1,1))=-21.581

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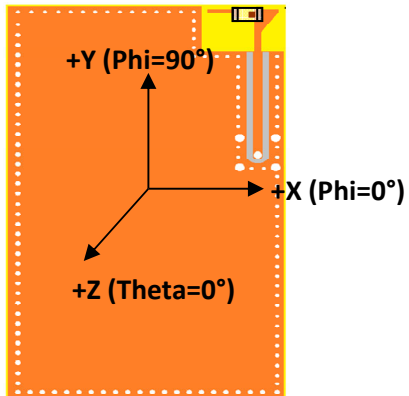
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Detail Specification: 10/20/2021

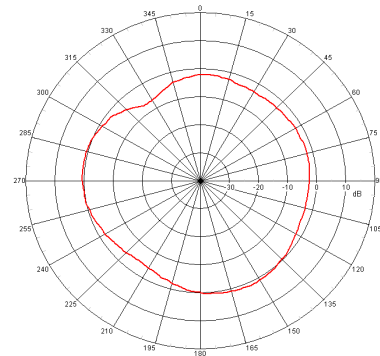
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Typical Radiation Patterns

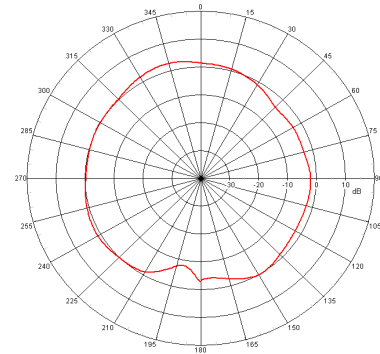
❖ Radiation Patterns @ 2.45GHz



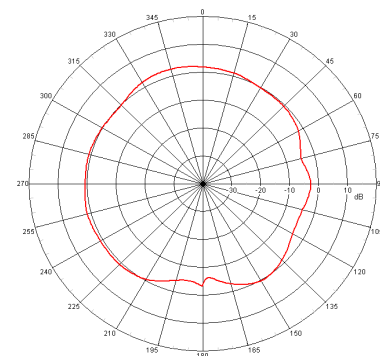
XY-Plane



YZ-Plane



XZ-Plane



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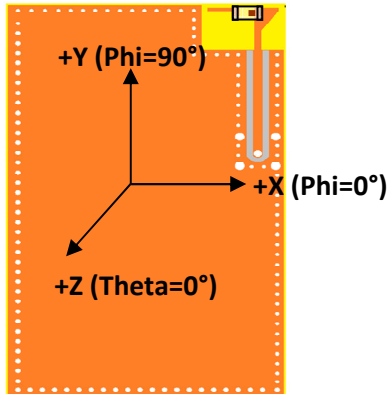
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Detail Specification: 10/20/2021

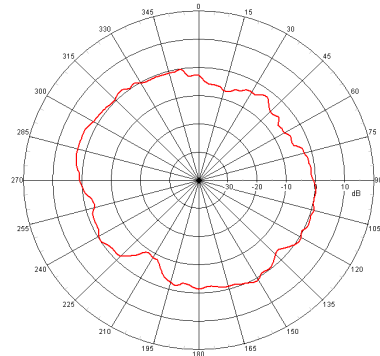
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Typical Radiation Patterns

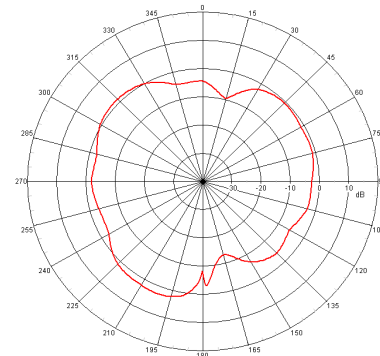
❖ Radiation Patterns @ 5.375GHz



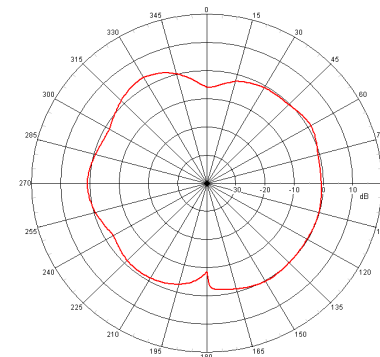
XY-Plane



YZ-Plane



XZ-Plane



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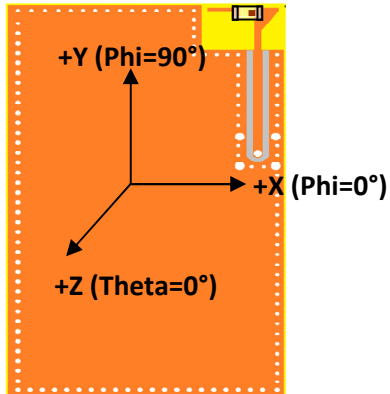
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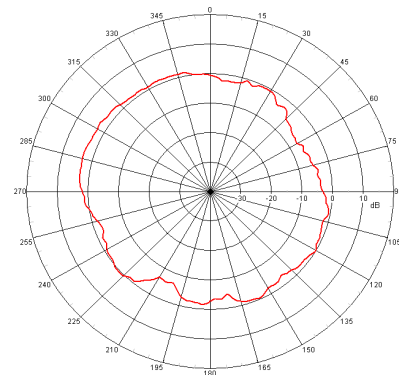
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Typical Radiation Patterns

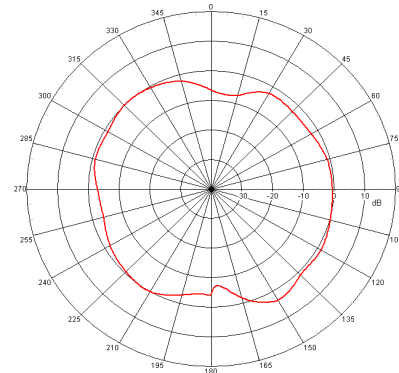
❖ Radiation Patterns @ 6.525GHz



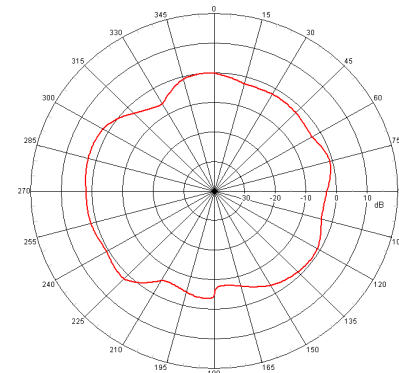
XY-Plane



YZ-Plane



XZ-Plane



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P/N 2450AD18A6050

Detail Specification: 10/20/2021

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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>

Diplexers Page

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

Band Pass Filters Page

<https://www.johansontechnology.com/band-pass-filters>

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