

# High Frequency Ceramic Solutions

2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified

P/N 2450AT45A100E-AEC

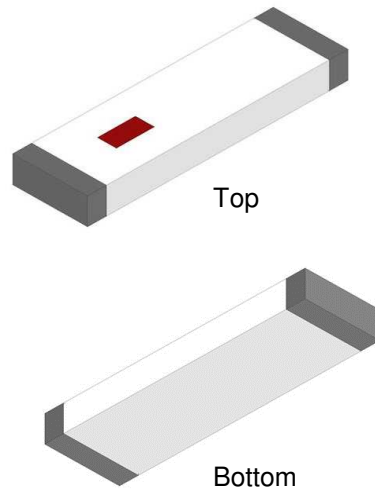
Detail Specification: 4/5/2021

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General Specifications	
Part Number	2450AT45A100E-AEC
Frequency Range (MHz)	2400 - 2500
Input Power	3W max. (CW)
Impedance	50 $\Omega$
Operating Temp	-40°C to +125°C
Recommended Storage Conditions and Period for unused Product on T&R	+5 to +35°C Humidity 45 - 75% RH 18 months max.
Reel Quantity (pcs/reel)	1,000
Peak Gain Based on Orientation	
Mounting Considerations 1: "Vertical Orientation" (Page 2)	2.2 dBi typ. (XZ-V)
Mounting Considerations 2: "Horizontal Orientation Type A" (Pages 5)	1.5 dBi typ. (XZ-V)
Mounting Considerations 3: "Horizontal Orientation Type B" (Pages 8)	1.3 dBi typ. (XZ-V)

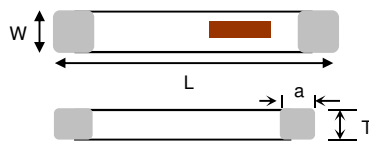
Let us help you with the antenna design, optimization, and tuning!

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Part Number Explanation				
P/N Suffix	Packing Style	Bulk (loose pcs.)	Suffix = S	e.g. 2450AT45A100S-AEC
		T & R	Suffix = E	e.g. 2450AT45A100E-AEC
		100% Tin	Suffix = None	e.g. 2450AT45A100(E or S)-AEC
	Evaluation Boards (1-port SMA antenna test boards, pre-tuned)	2450AT45A100-EB1SMA (Page 2)		
		2450AT45A100-EB2SMA (Page 5)		
		2450AT45A100-EB3SMA (Page 8)		

Mechanical Specifications		
	In	mm
L	0.374 $\pm$ 0.008	9.50 $\pm$ 0.20
W	0.079 $\pm$ 0.008	2.00 $\pm$ 0.20
T	0.047 $\pm$ 0.004/-0.008	1.20 $\pm$ 0.1/-0.2
a	0.020 $\pm$ 0.012	0.50 $\pm$ 0.30



Terminal Configuration	
No	Function
1	Feeding Point
2	NC



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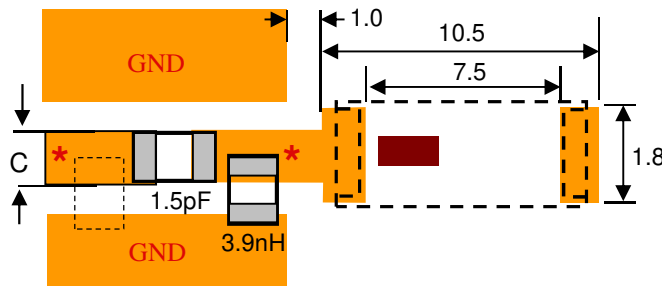
## Typical Electrical Specs for "Vertical Orientation" (T=25°C)

Frequency Range	2400 - 2500 MHz	Peak Gain	2.2 dBi typ. (XZ-V)
Return Loss	9.5 dB min.	Average Gain	1.0 dBi typ. (XZ-V)

## Mounting Considerations 1: "Vertical Orientation"

Mount these devices with brown mark facing up.

\*Line width should be designed to provide 50Ω impedance matching characteristics.



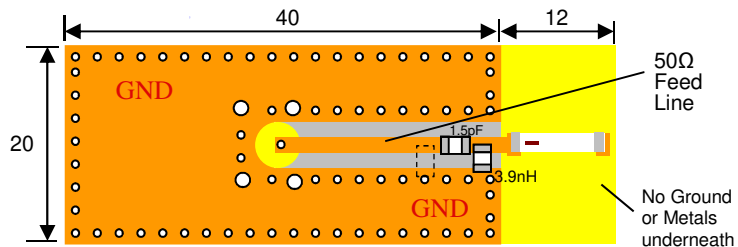
Units in mm

"C" Dimension will depend on the width of the trace required for it to have a 50ohm characteristic impedance (i.e. coplanar waveguide theory)

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Let us help you design this antenna to your PCB and/or optimize your layout for best radiated performance. Send us a message by clicking on the link above.

**Orderable Evaluation board:**  
**p/n: 2450AT45A100-EB1SMA**



Note: It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different, go to: <https://www.johansontechnology.com/tuning> and see how to obtain the new values. If you need further help, contact our RF Applications Eng Team at: <https://www.johansontechnology.com/ask-a-question>

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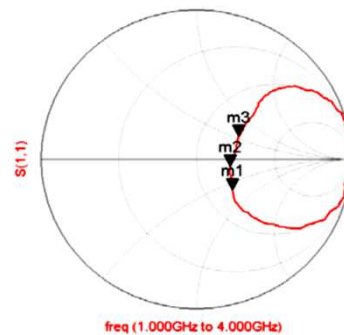
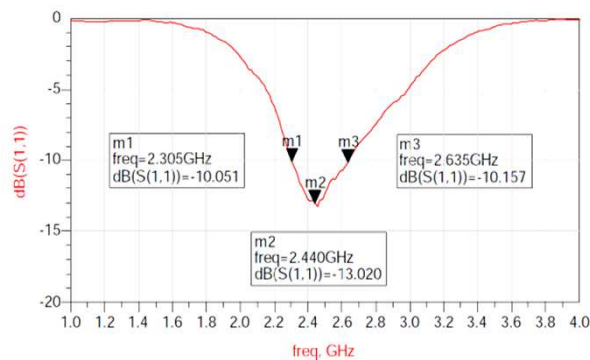
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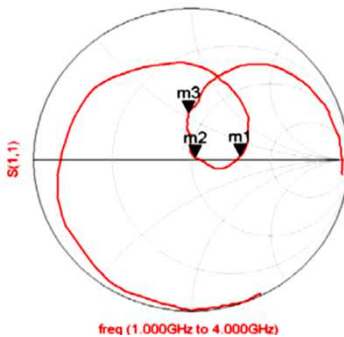
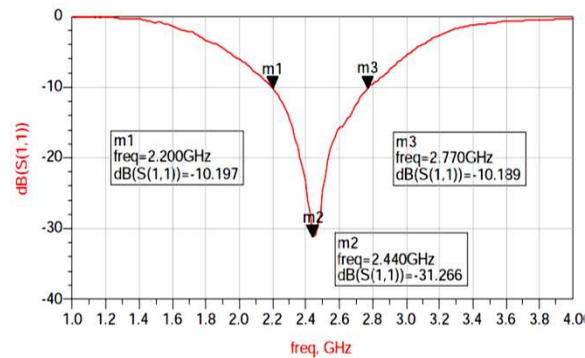
## Typical Electrical Characteristics for "Vertical Orientation" (T=25°C)

### Return Loss

a) Without a Matching Circuit



b) With a Matching Circuit



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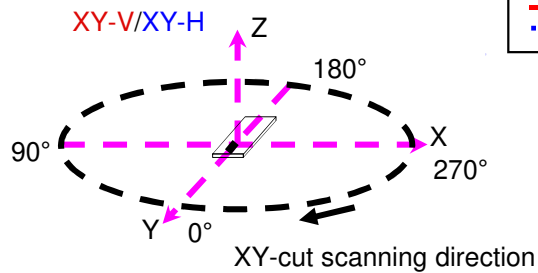
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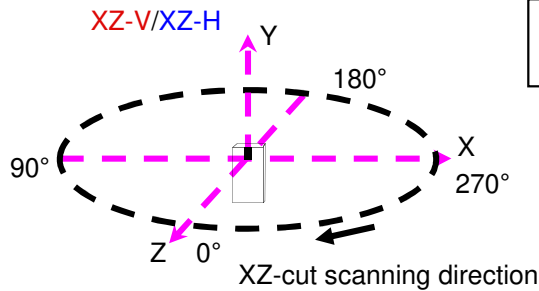
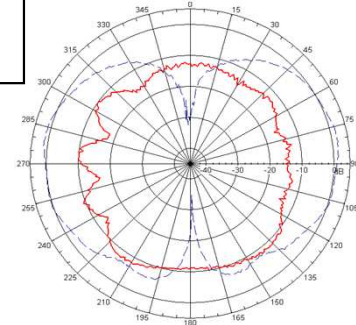
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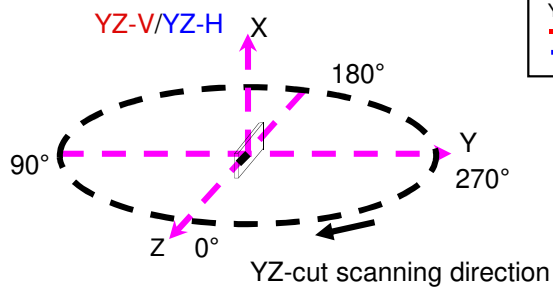
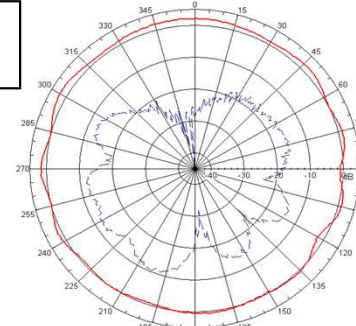
## Typical Radiation Patterns for "Vertical Orientation" (T=25°C)



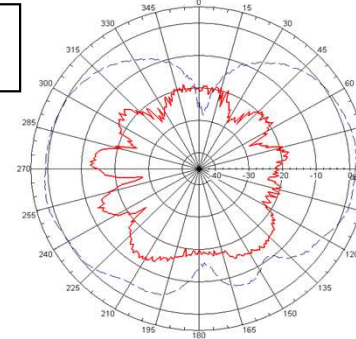
XY cut @2.45GHz  
— Vertical  
... Horizontal



XZ cut @2.45GHz  
— Vertical  
... Horizontal



YZ cut @2.45GHz  
— Vertical  
... Horizontal



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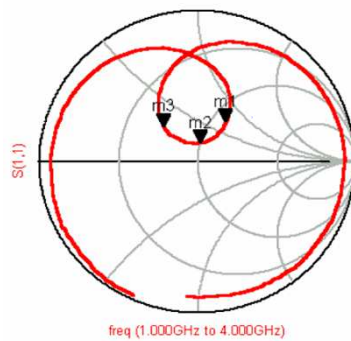
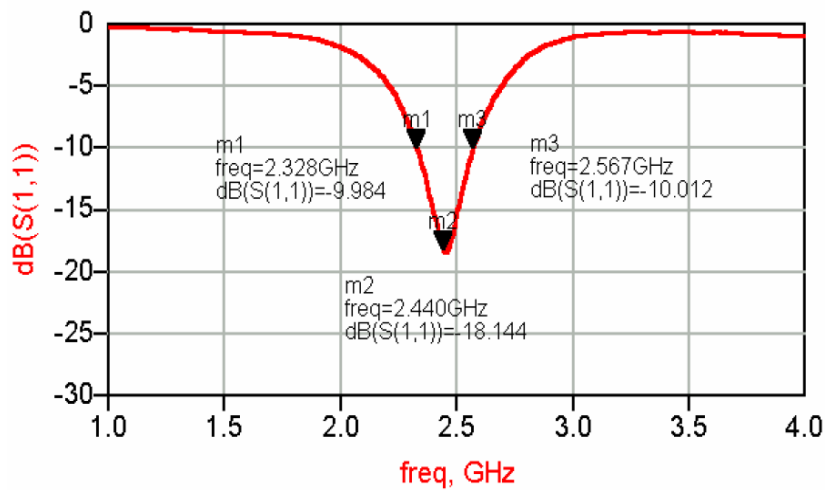
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## Typical Electrical Characteristics for "Horizontal Orientation Type A" (T=25°C)

### Return Loss



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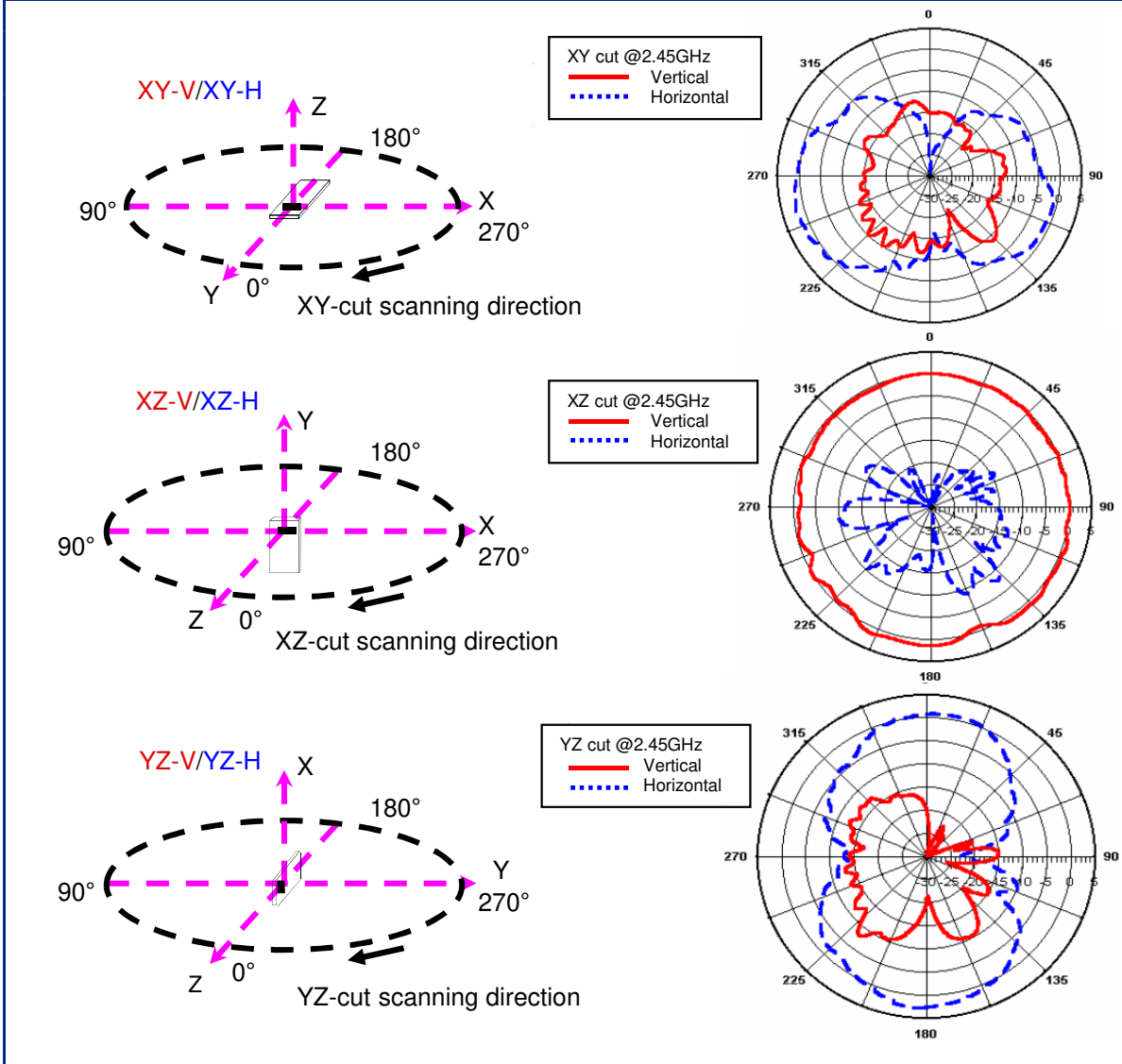
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## Typical Radiation Patterns for "Horizontal Orientation Type A" (T=25°C)



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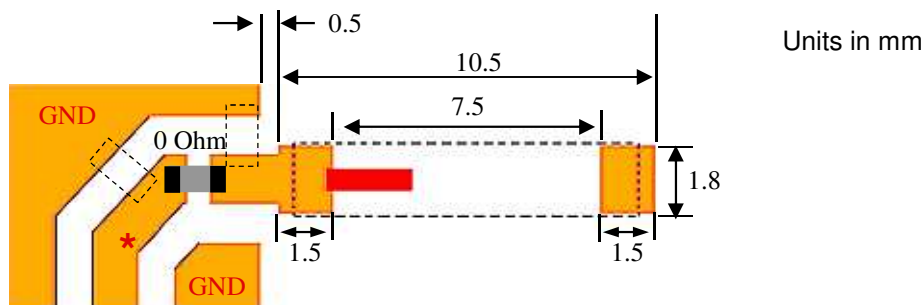
## Typical Electrical Specs for "Horizontal Orientation Type B" (T=25°C)

Frequency Range	2400 - 2500 MHz	Peak Gain	1.3 dBi typ. (XZ-V)
Return Loss	9.5 dB min.	Average Gain	0.6 dBi typ. (XZ-V)

## Mounting Considerations 3: "Horizontal Orientation Type B"

Mount these devices with brown mark facing up.

\* Line width should be designed to provide 50Ω impedance matching characteristics.

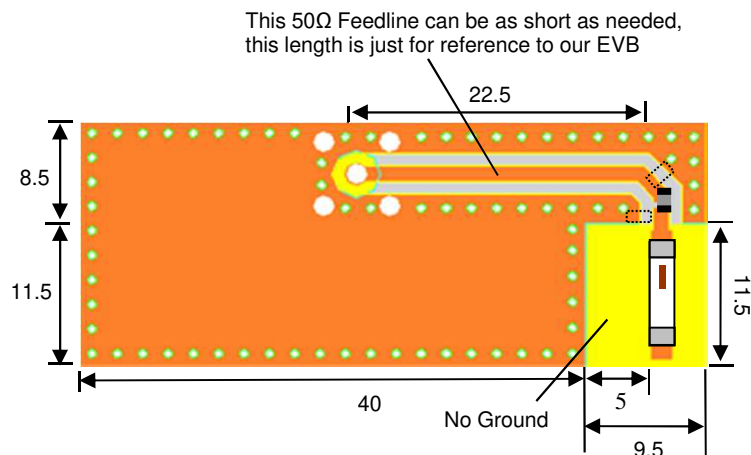


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**Orderable Evaluation board:**  
p/n: 2450AT45A100-EB3SMA



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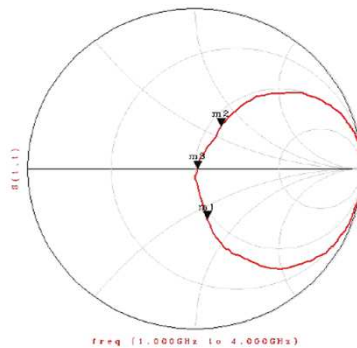
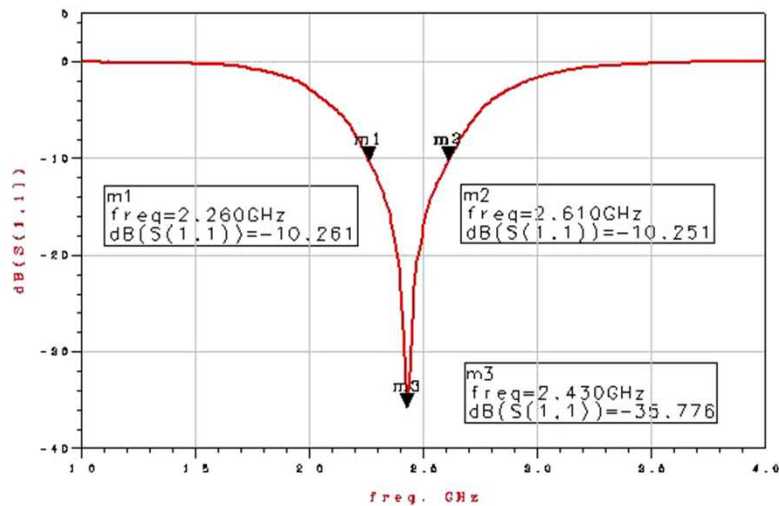
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## Typical Electrical Characteristics for "Horizontal Orientation Type B" (T=25°C)

### Return Loss



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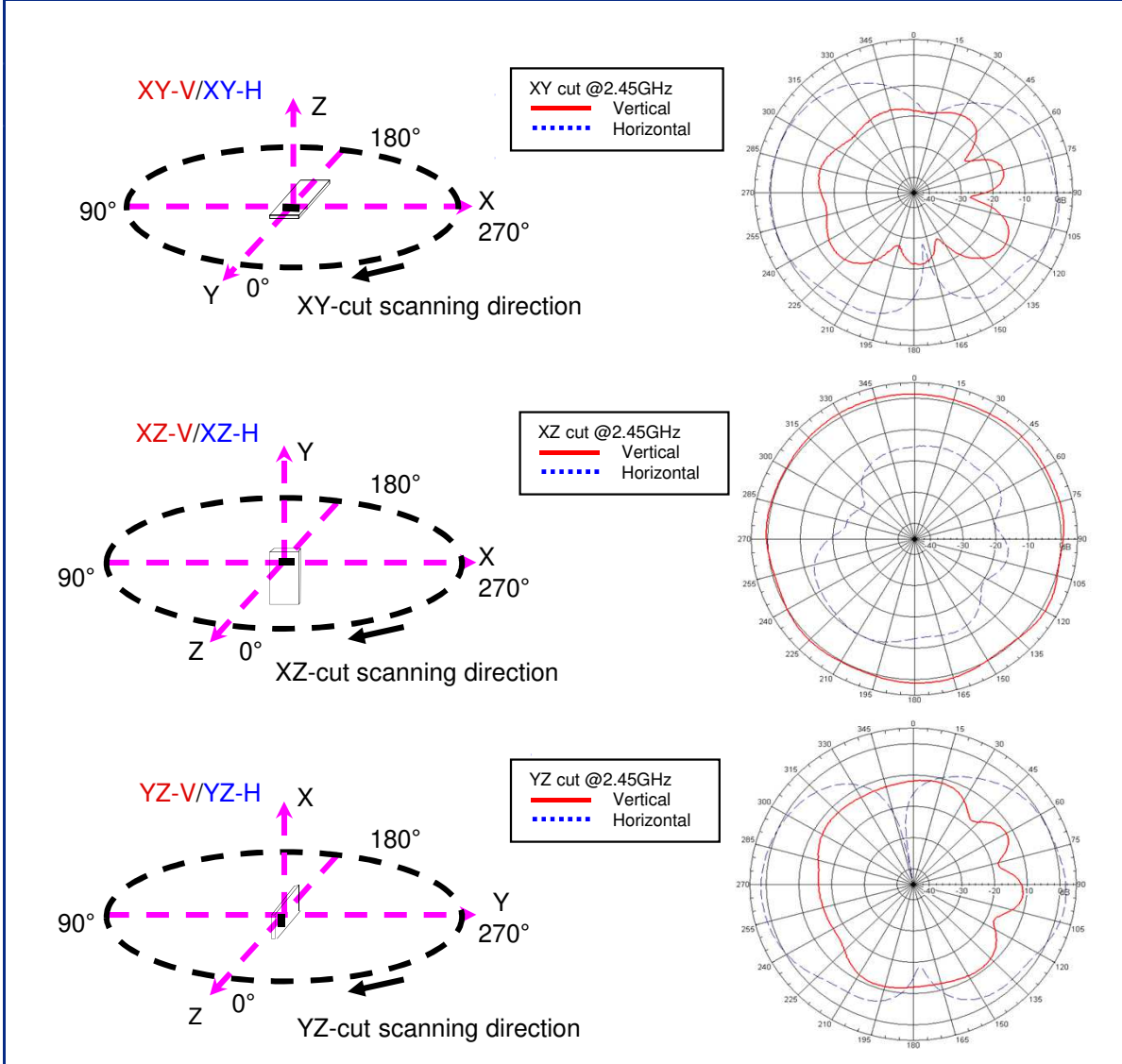
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## Typical Radiation Patterns for "Horizontal Orientation Type B" (T=25°C)



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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

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