

# High Frequency Ceramic Solutions

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

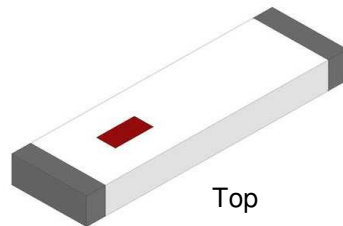
Detail Specification: 4/5/2021

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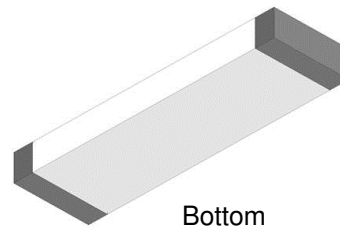
General Specifications	
Part Number	2450AT45A100
Frequency Range (MHz)	2400 - 2500
Input Power	3W max. (CW)
Impedance	50 Ω
Operating Temp	-40°C to +125°C
Recommended Storage Conditions and Period for unused Product on T&R	+5 to +35°C Humidity 45 - 75% RH 18 months max.
Reel Quantity (pcs/reel)	1,000
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)

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### Part Number Explanation

P/N Suffix	Packing Style	Bulk (loose pcs.)	Suffix = S	e.g. 2450AT45A100S	
		T & R	Suffix = E	e.g. 2450AT45A100E	
		100% Tin	Suffix = None	e.g. 2450AT45A100(E or S)	
	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 ± 0.008	9.50 ± 0.20
W	0.079 ± 0.008	2.00 ± 0.20
T	0.047 +.004/-.008	1.20 +0.1/-0.2
a	0.020 ± 0.012	0.50 ± 0.30

### Terminal Configuration

No	Function
1	Feeding Point
2	NC

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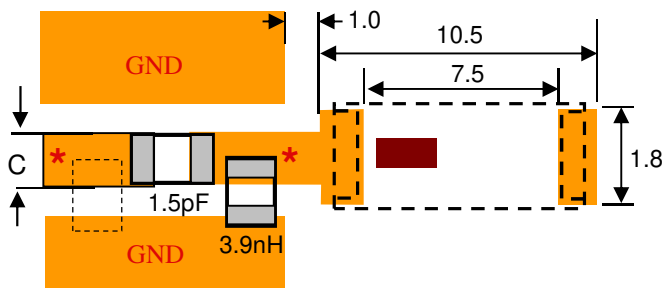
### Typical Electrical Specs for "Vertical Orientation" (T=25°C)

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.



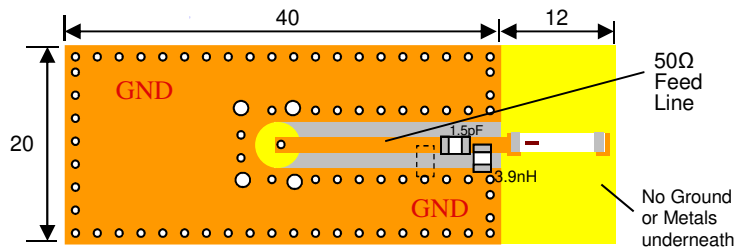
Units in mm

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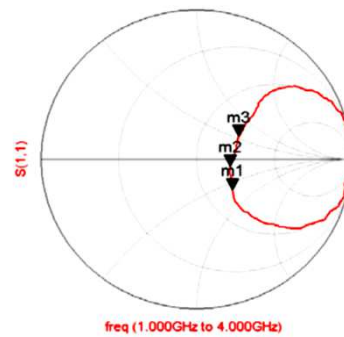
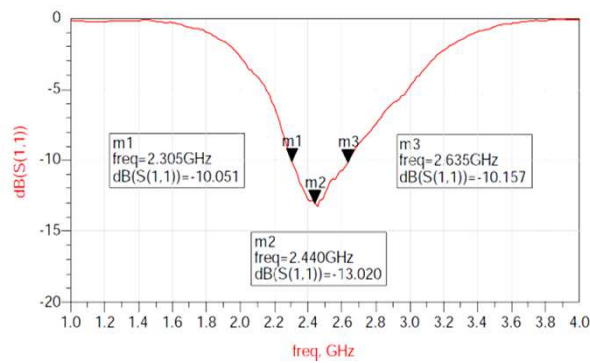
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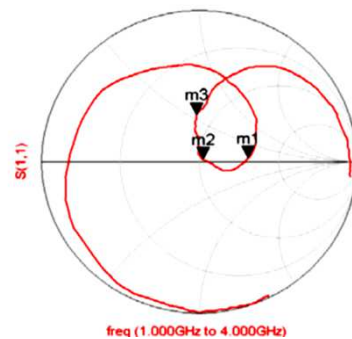
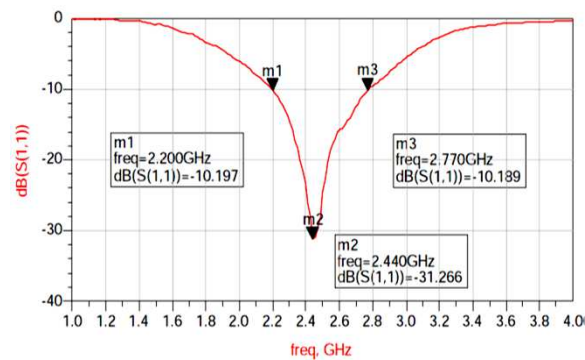
### Typical Electrical Characteristics for "Vertical Orientation" (T=25°C)

#### Return Loss

a) Without a Matching Circuit



b) With a Matching Circuit



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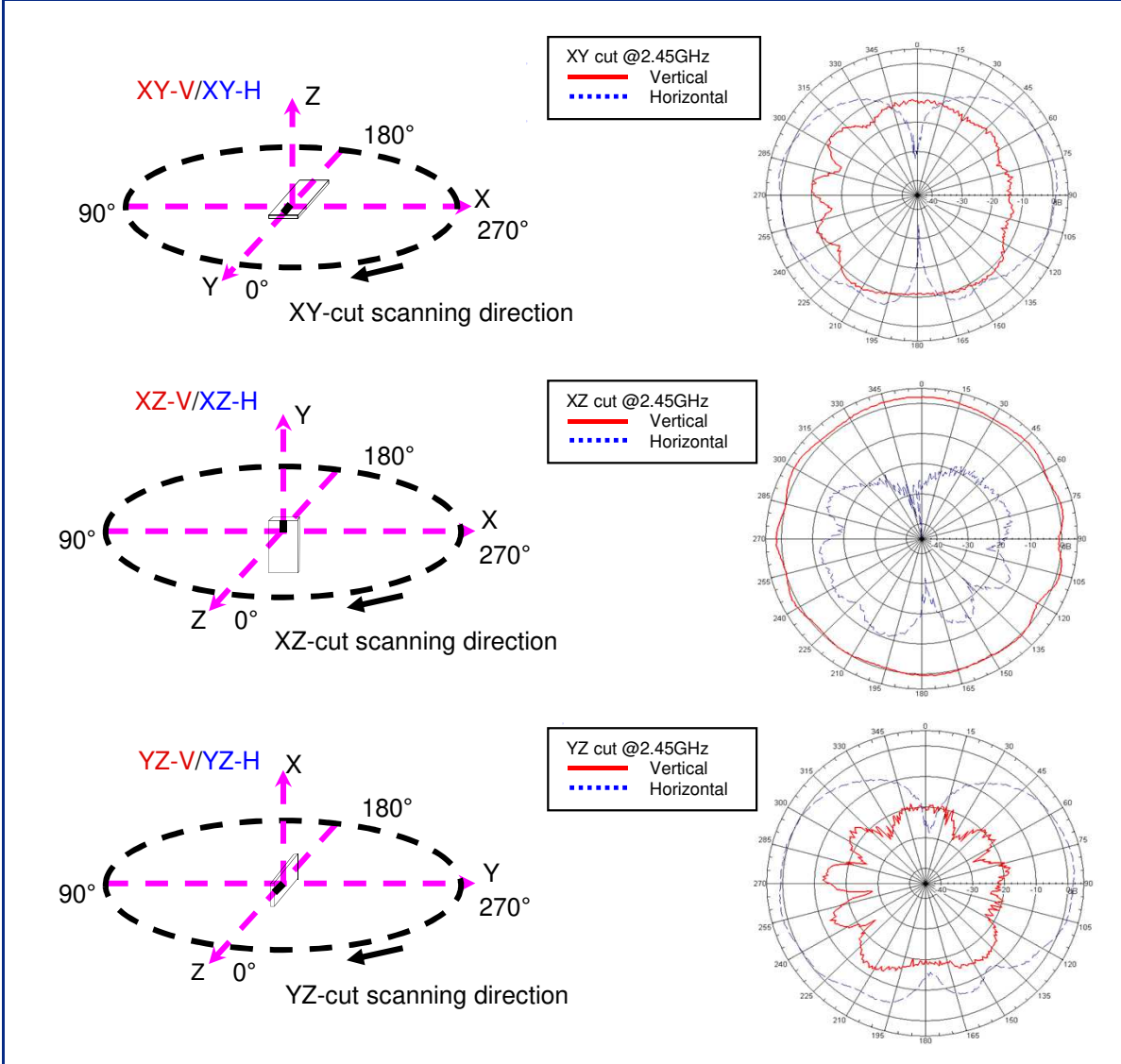
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## Typical Radiation Patterns for "Vertical Orientation" (T=25°C)



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## 2.45 GHz High Gain SMD Chip Antenna

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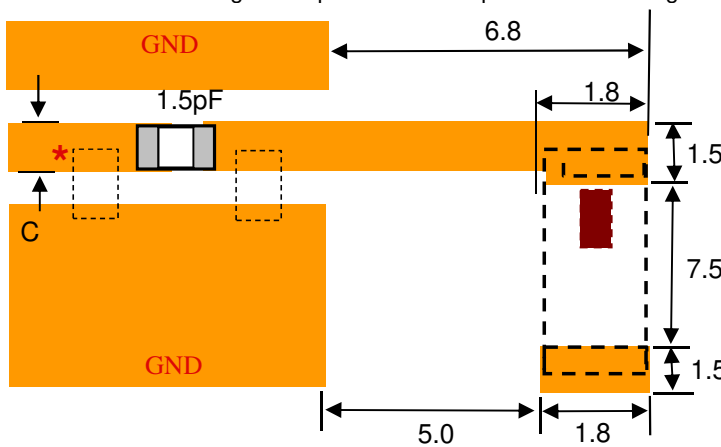
### Typical Electrical Specs for "Horizontal Orientation Type A" (T=25°C)

Frequency Range	2400 - 2500 MHz	Peak Gain	1.5 dBi typ. (XZ-V)
Return Loss	9.5 dB min.	Average Gain	0.0 dBi typ. (XZ-V)

### Mounting Considerations 2: "Horizontal Orientation Type A"

Mount these devices with brown mark facing up.

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



Units in mm

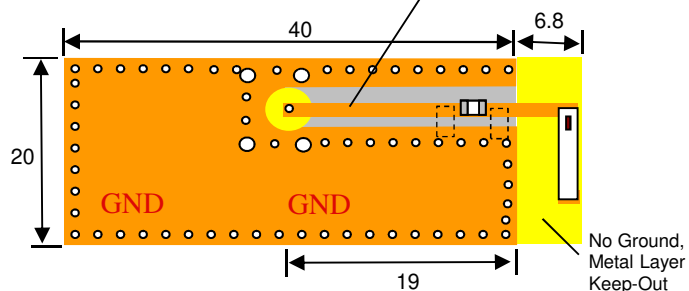
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**Orderable Evaluation board:**  
**p/n: 2450AT45A100-EB2SMA**

This 50Ω trace Feedline can be as short as needed, this length is just for reference to our EVB.



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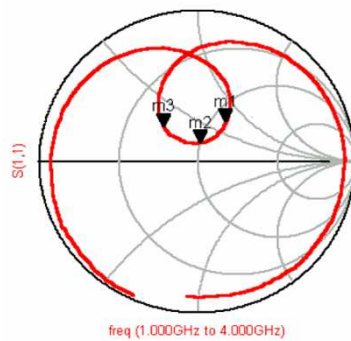
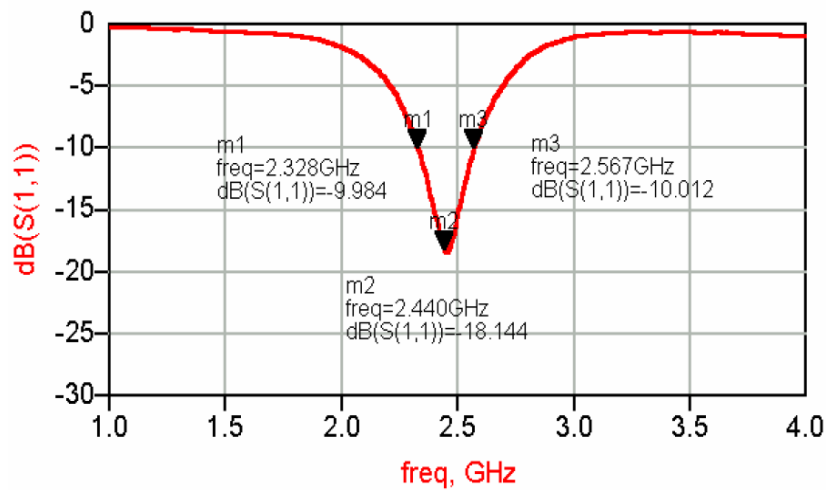
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## Typical Electrical Characteristics for "Horizontal Orientation Type A" (T=25°C)

### Return Loss



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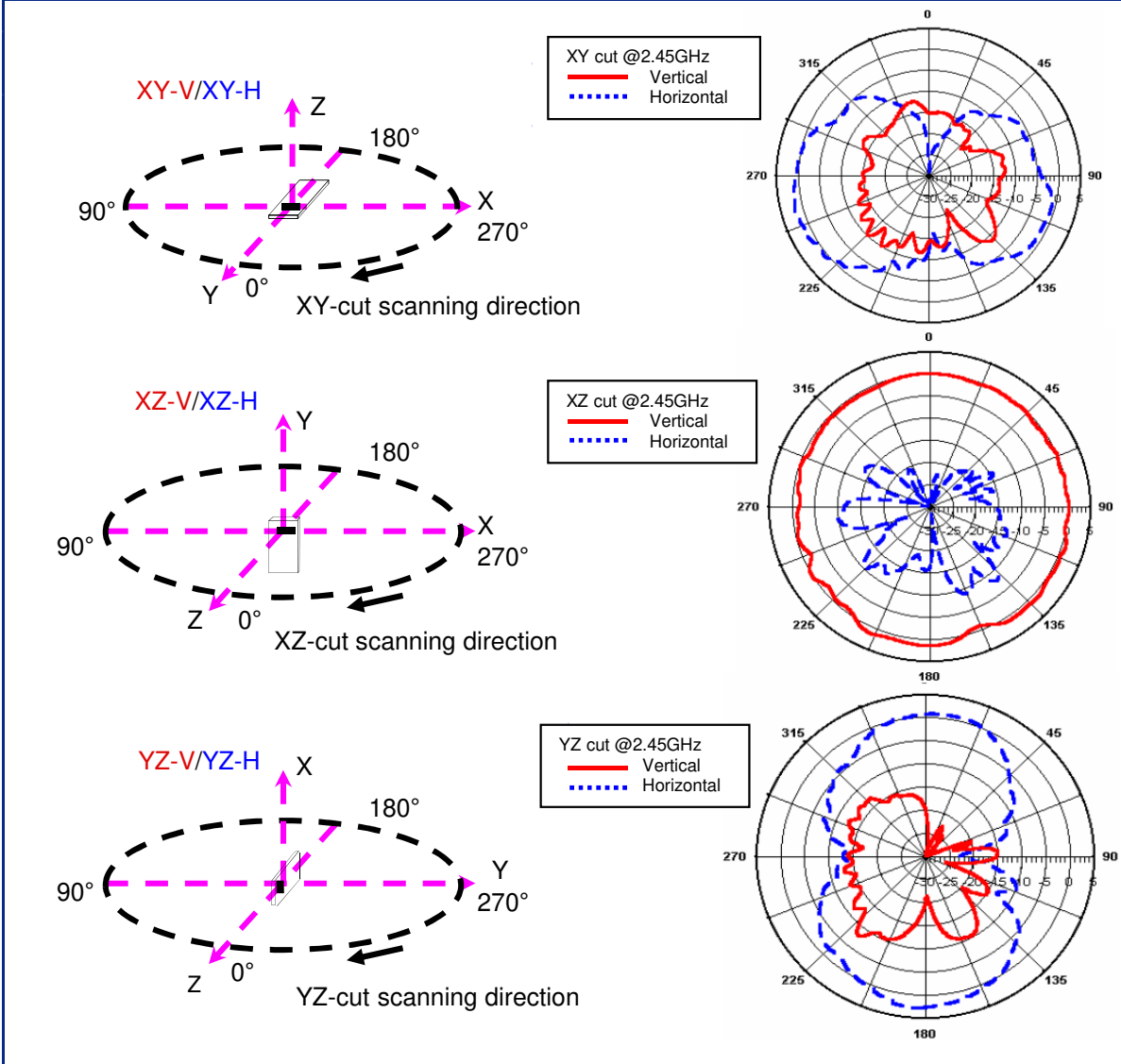
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## Typical Radiation Patterns for "Horizontal Orientation Type A" (T=25°C)



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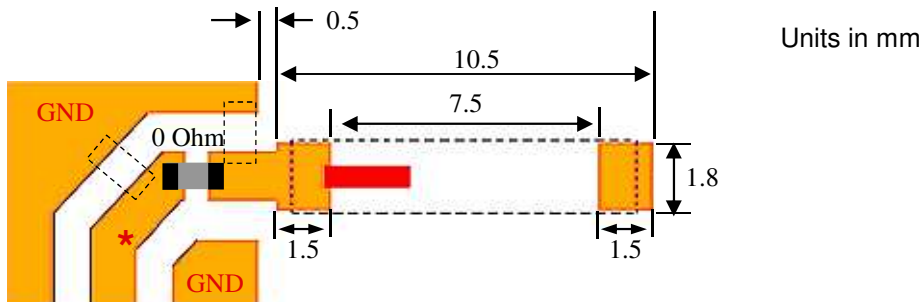
### Typical Electrical Specs for "Horizontal Orientation Type B" (T=25°C)

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.

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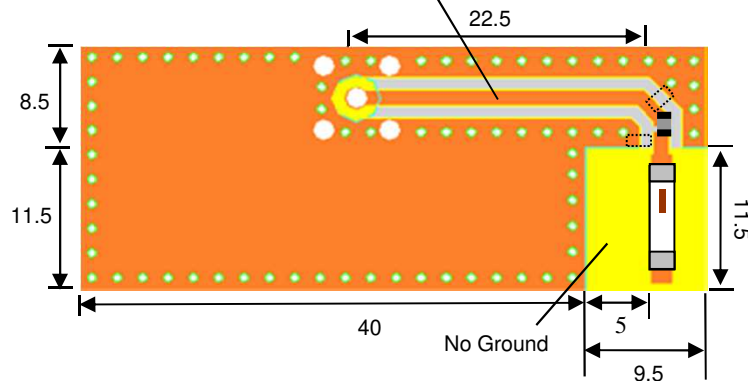
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**Orderable Evaluation board:**  
p/n: 2450AT45A100-EB3SMA



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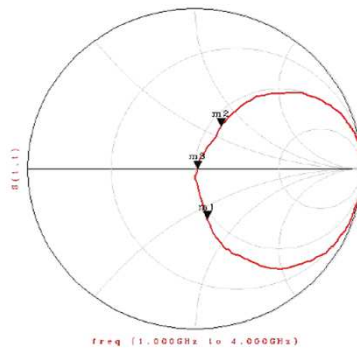
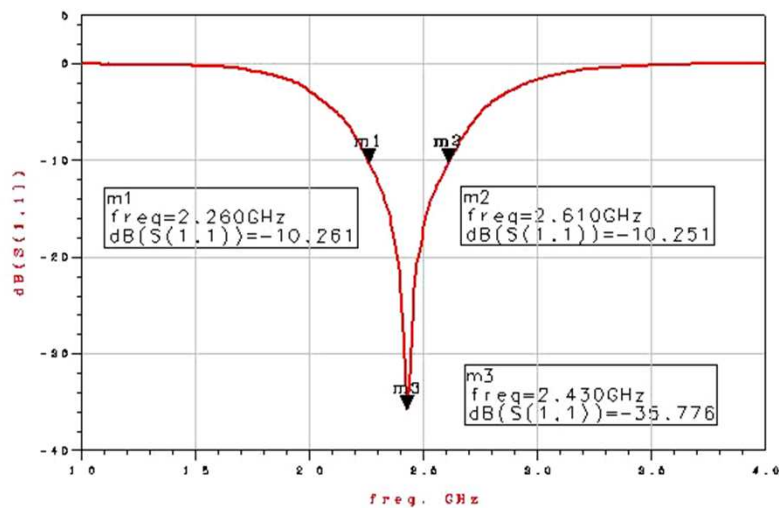
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## Typical Electrical Characteristics for "Horizontal Orientation Type B" (T=25°C)

### Return Loss



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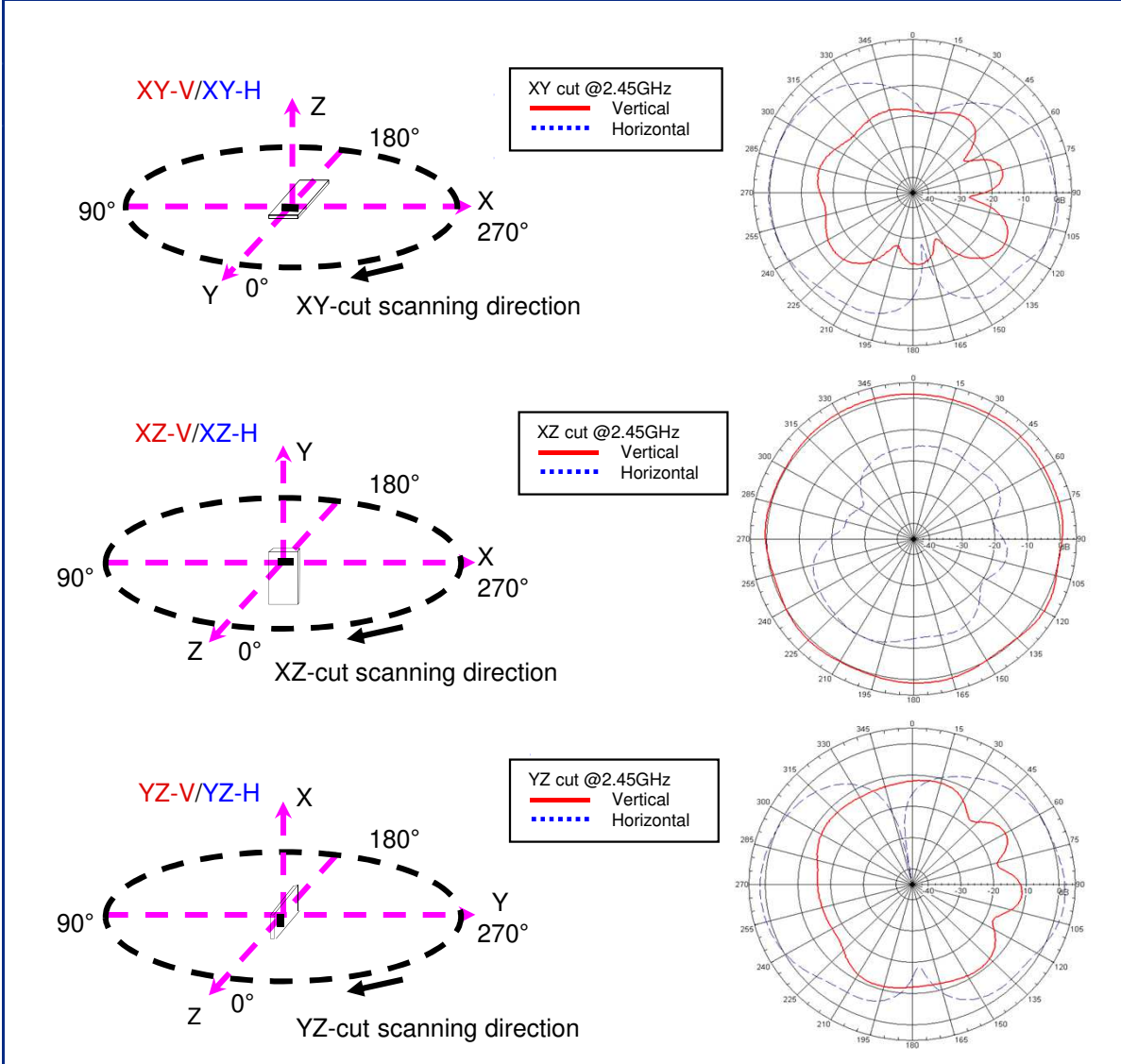
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## Typical Radiation Patterns for "Horizontal Orientation Type B" (T=25°C)



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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:

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### RoHS Compliance

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