

# High Frequency Ceramic Solutions

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

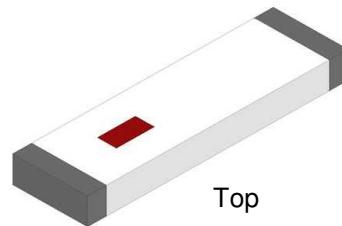
Detail Specification: 4/5/2021

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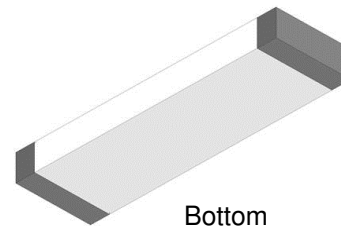
General Specifications	
Part Number	2450AT45A100
Frequency Range (MHz)	2400 - 2500
Input Power	3W max. (CW)
Impedance	50 Ω
Operating Temp	-40°C to +125°C
Recommended Storage Conditions and Period for unused Product on T&R	+5 to +35°C Humidity 45 - 75% RH 18 months max.
Reel Quantity (pcs/reel)	1,000
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/-0.008	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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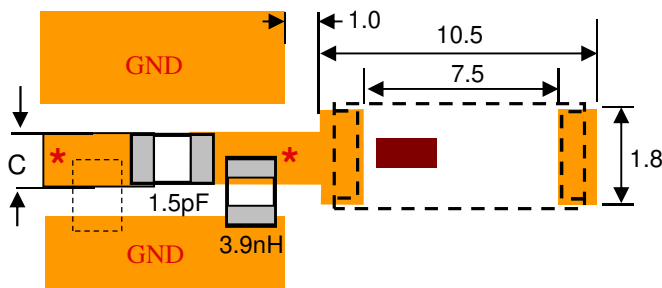
### Typical Electrical Specs for "Vertical Orientation" (T=25°C)

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.



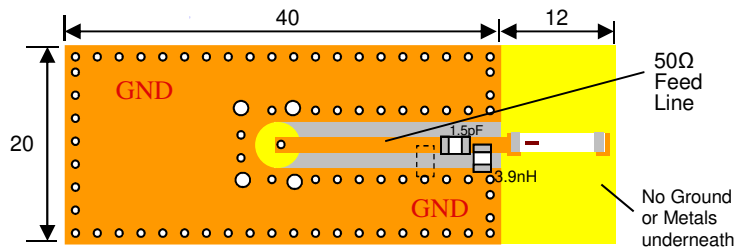
Units in mm

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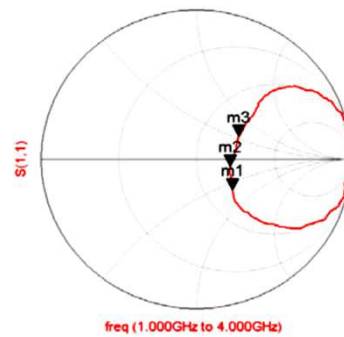
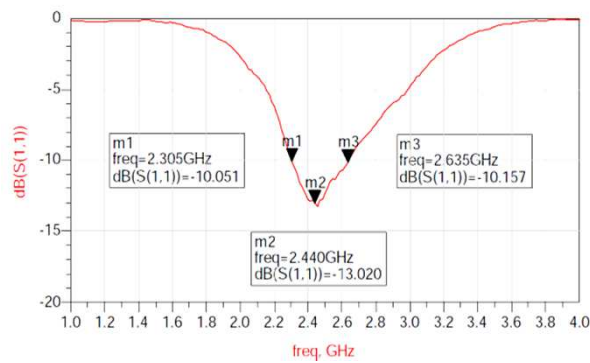
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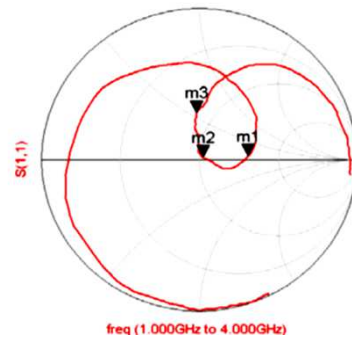
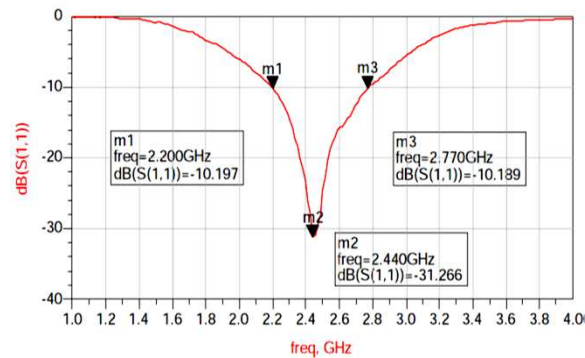
### Typical Electrical Characteristics for "Vertical Orientation" (T=25°C)

#### Return Loss

a) Without a Matching Circuit



b) With a Matching Circuit



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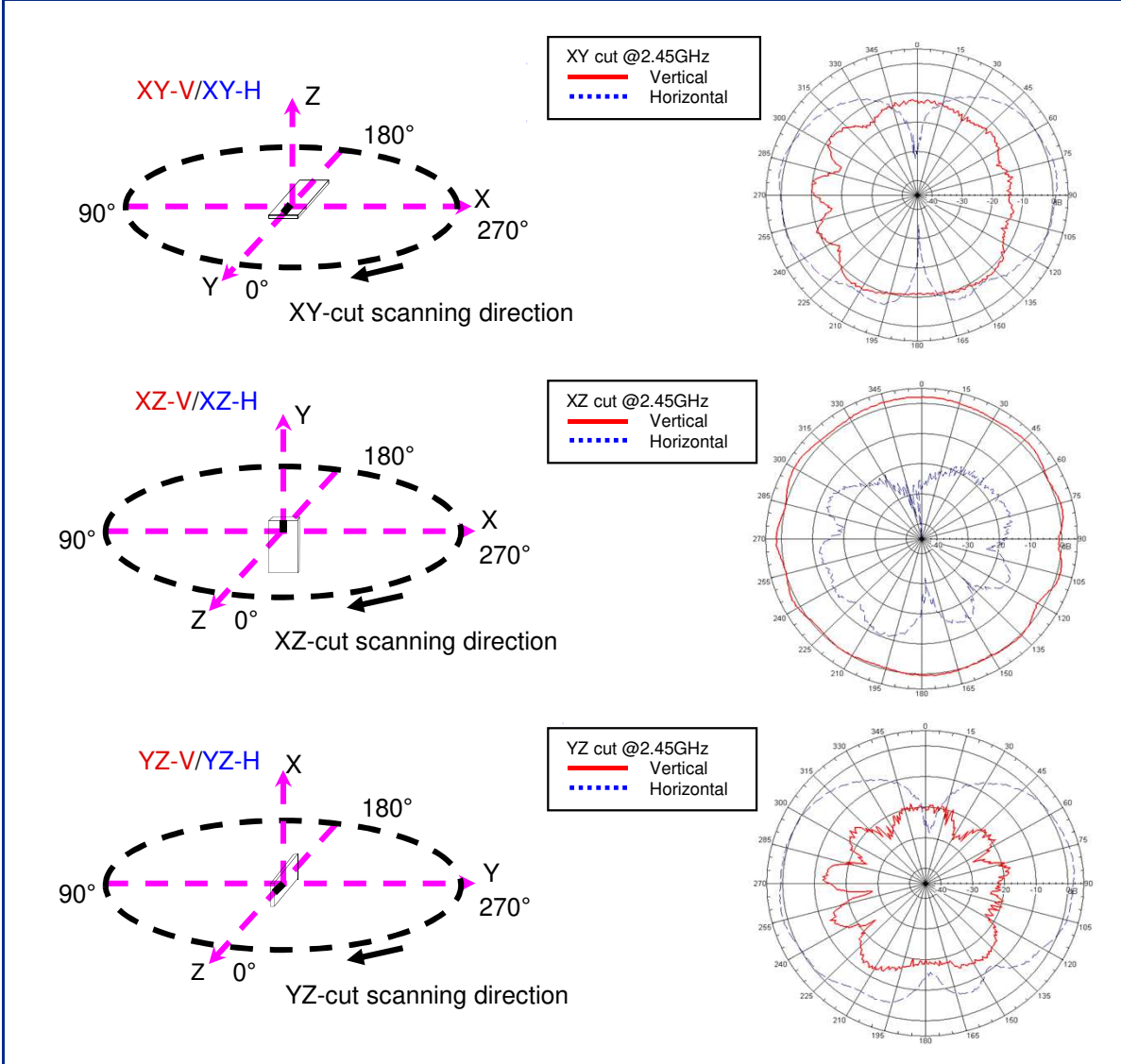
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## Typical Radiation Patterns for "Vertical Orientation" (T=25°C)



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## 2.45 GHz High Gain SMD Chip Antenna

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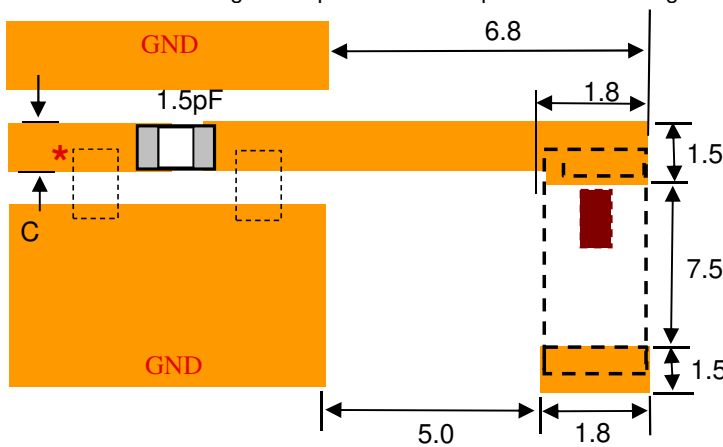
### Typical Electrical Specs for "Horizontal Orientation Type A" (T=25°C)

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.



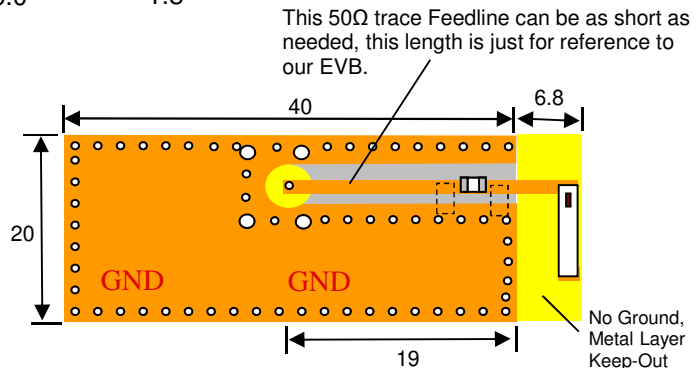
Units in mm

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



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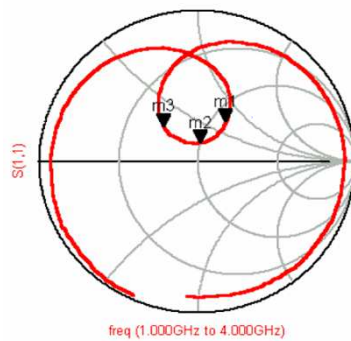
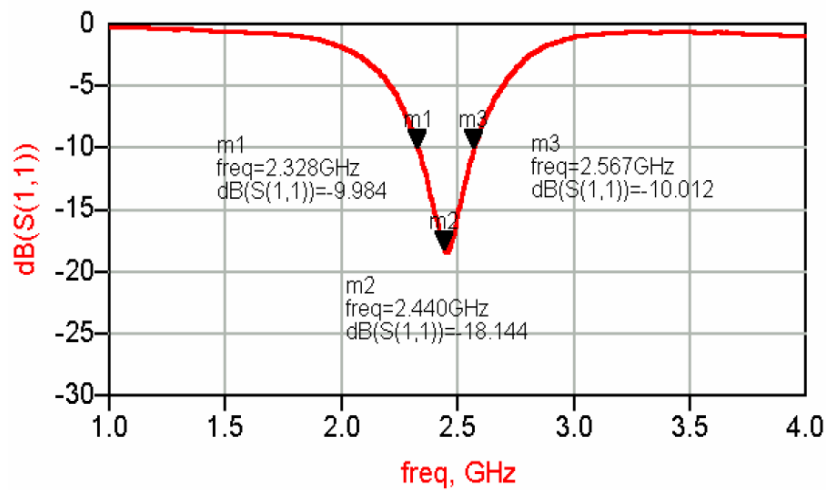
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## Typical Electrical Characteristics for "Horizontal Orientation Type A" (T=25°C)

### Return Loss



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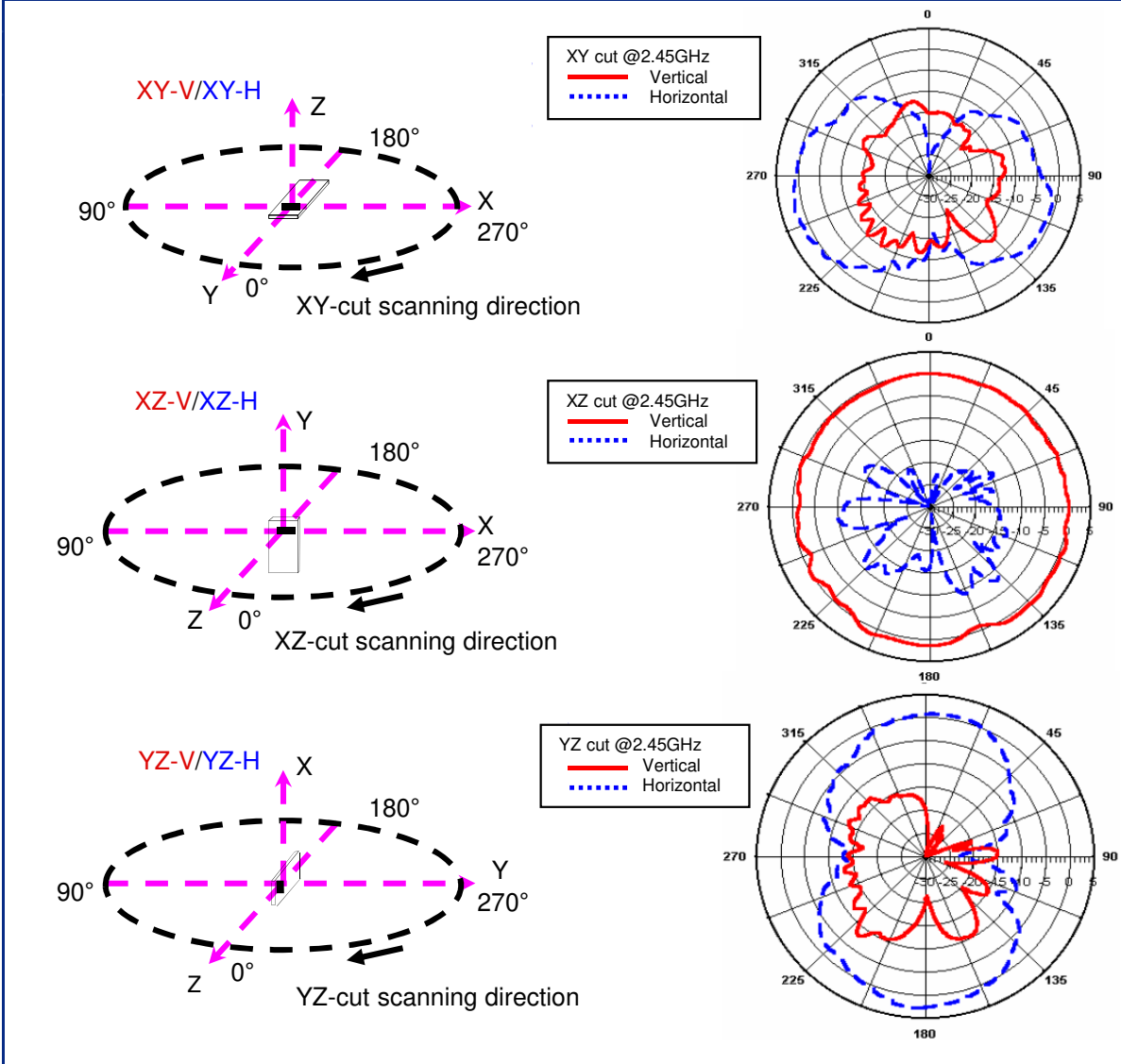
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## Typical Radiation Patterns for "Horizontal Orientation Type A" (T=25°C)



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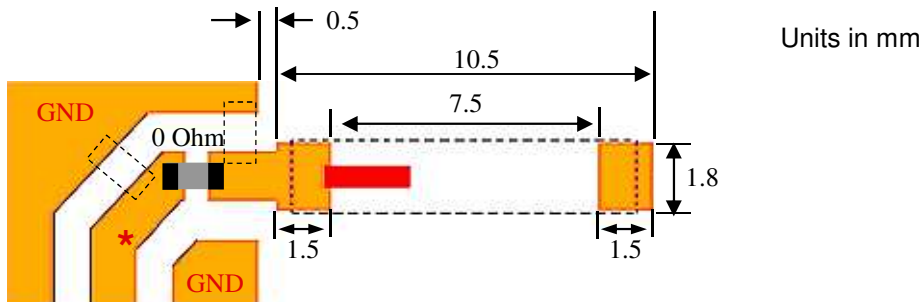
### Typical Electrical Specs for "Horizontal Orientation Type B" (T=25°C)

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.

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



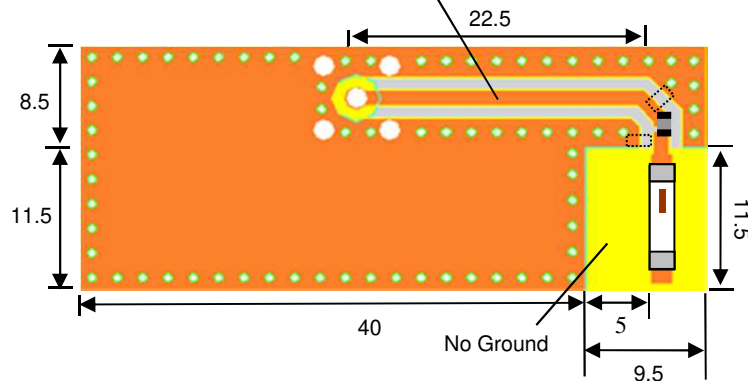
This 50Ω Feedline can be as short as needed, this length is just for reference to our EVB

Want the layout file of this? Send us a message at:

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



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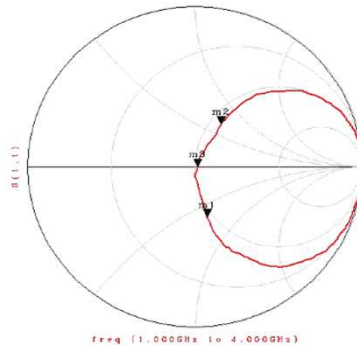
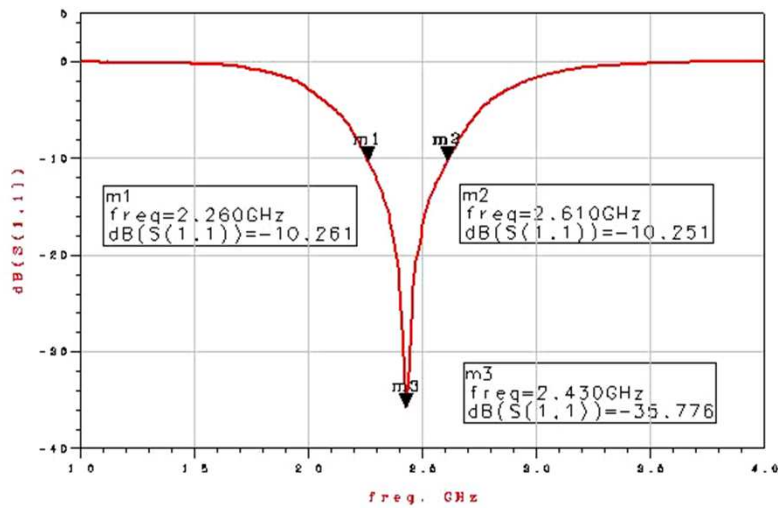
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## Typical Electrical Characteristics for "Horizontal Orientation Type B" (T=25°C)

### Return Loss



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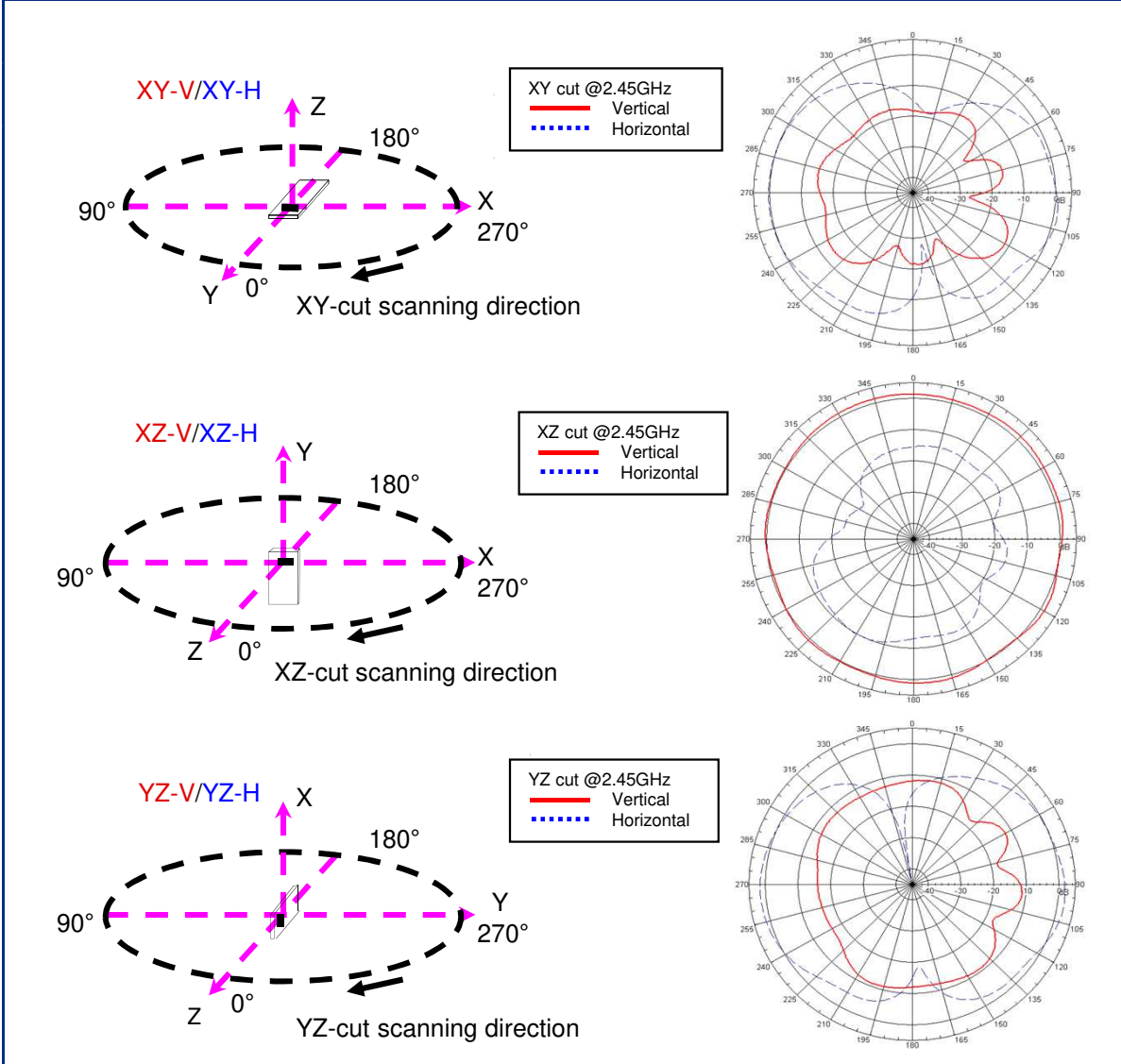
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## Typical Radiation Patterns for "Horizontal Orientation Type B" (T=25°C)



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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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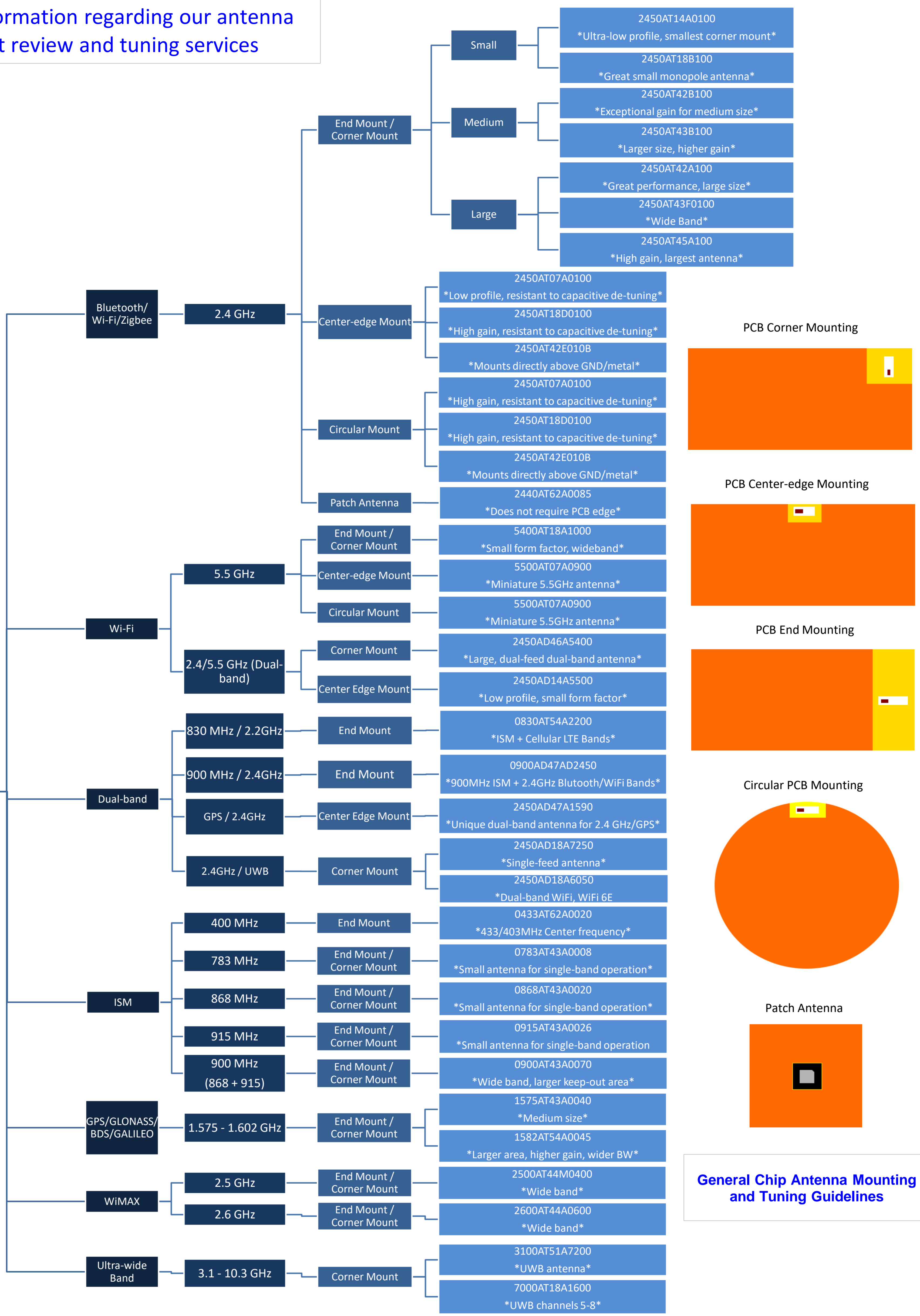
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# Chip Antenna Selection Guide

More information regarding our antenna layout review and tuning services

**Chip Antenna Selection**



**General Chip Antenna Mounting and Tuning Guidelines**

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