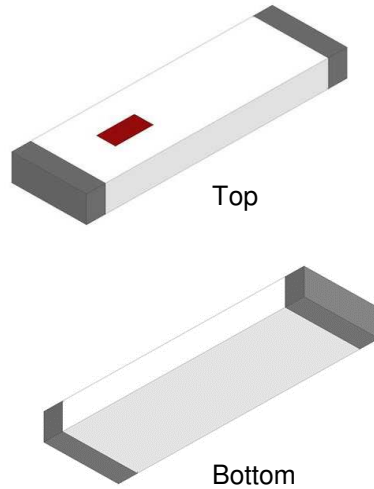


# High Frequency Ceramic Solutions

**2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified**      **P/N 2450AT45A100E-AEC**  
 Detail Specification: 4/5/2021 Page 1 of 11

General Specifications	
Part Number	2450AT45A100E-AEC
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)

Let us help you with the antenna design, optimization, and tuning!  
<https://www.johansontechnology.com/ask-a-question>



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 ± 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

Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>  
 4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821  
 Ver 1.2      2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

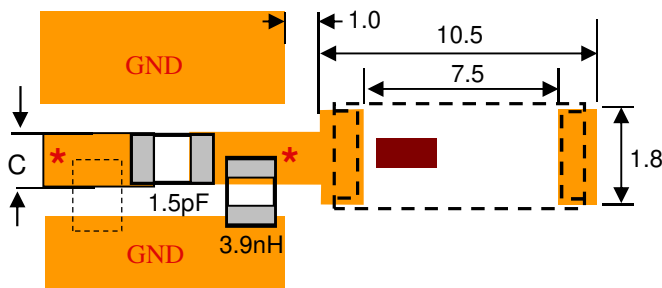
**2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified**      **P/N 2450AT45A100E-AEC**  
 Detail Specification:      4/5/2021      Page 2 of 11

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.



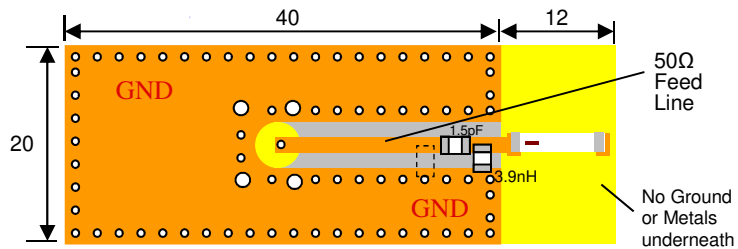
Units in mm

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

Want the layout file of this? Send us a message at:  
<https://www.johansontechnology.com/ask-a-question>

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>

Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>  
 4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821  
 Ver 1.2      2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

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

P/N 2450AT45A100E-AEC

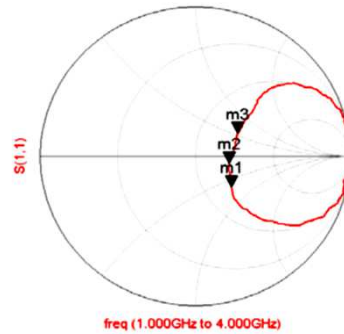
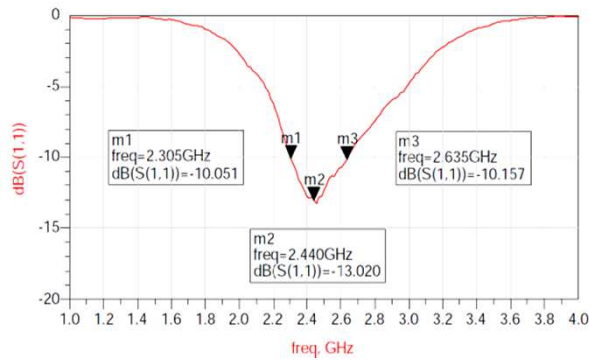
Detail Specification: 4/5/2021

Page 3 of 11

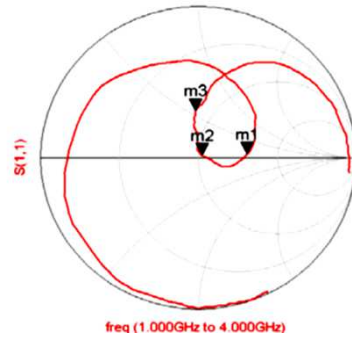
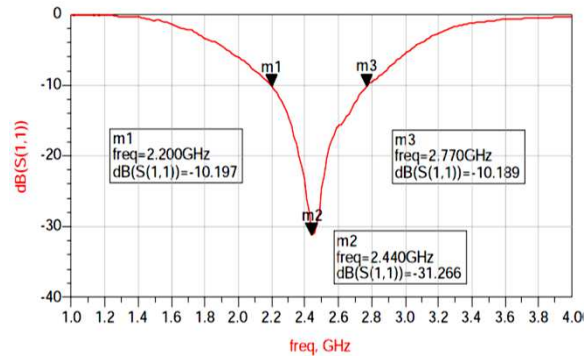
## Typical Electrical Characteristics for "Vertical Orientation" (T=25°C)

### Return Loss

a) Without a Matching Circuit



b) With a Matching Circuit



Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

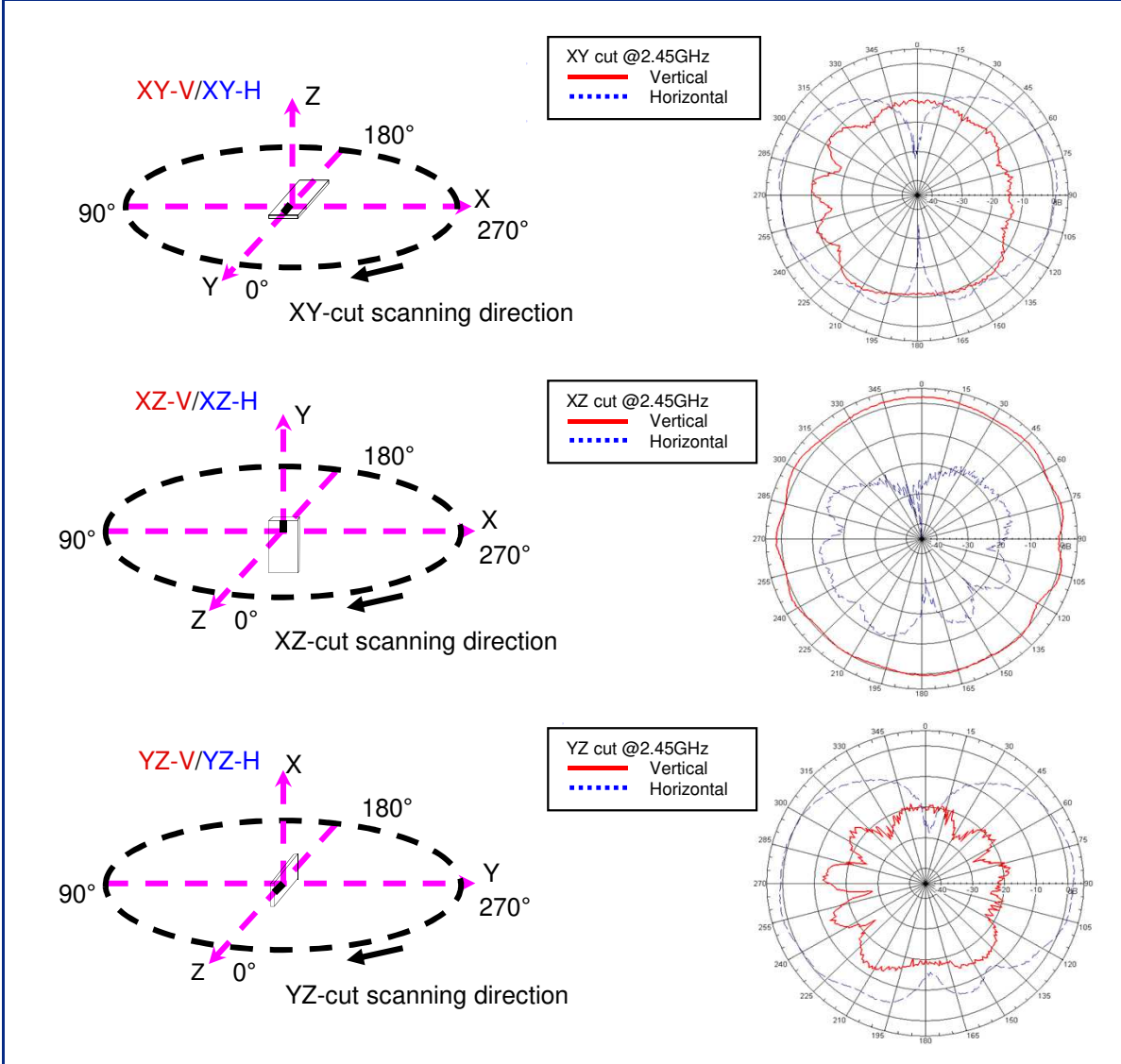
2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified

P/N 2450AT45A100E-AEC

Detail Specification: 4/5/2021

Page 4 of 11

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



Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

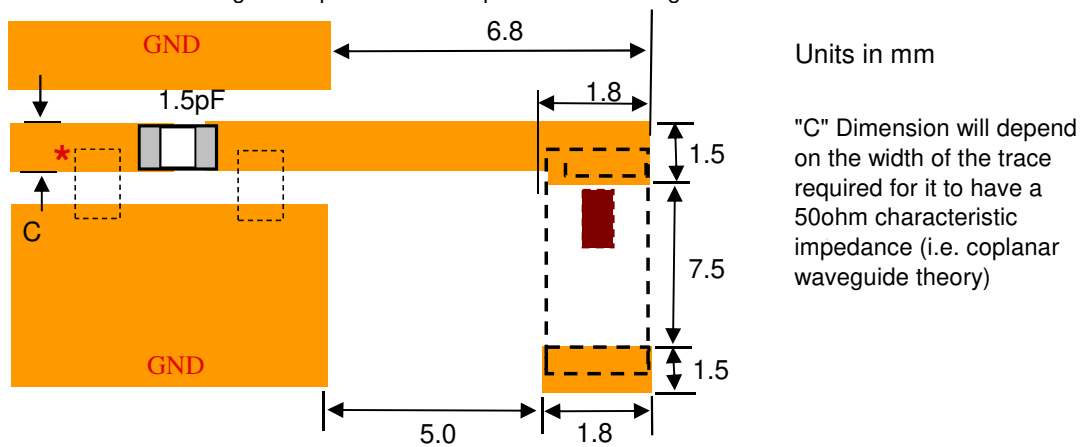
**2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified**      **P/N 2450AT45A100E-AEC**  
 Detail Specification: 4/5/2021 Page 5 of 11

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.

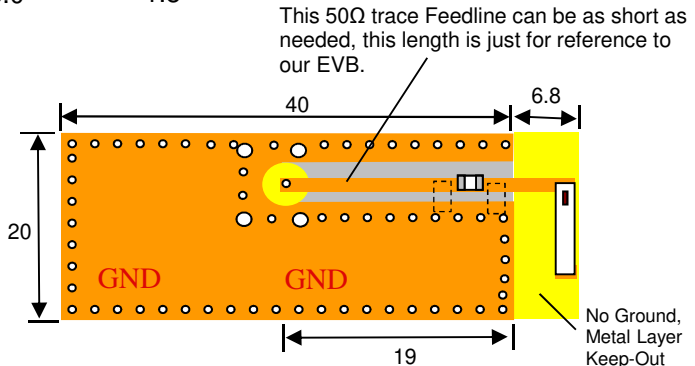
\*Line width should be designed to provide 50Ω impedance matching characteristics.



Want the layout file of this? Send us a message at:  
<https://www.johansontechnology.com/ask-a-question>

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-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>

Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>  
 4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821  
 Ver 1.2      2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

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

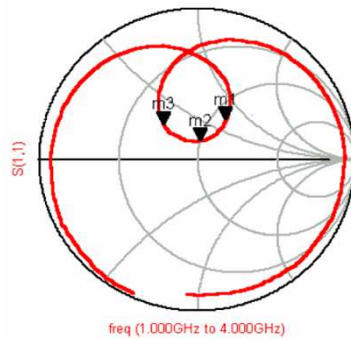
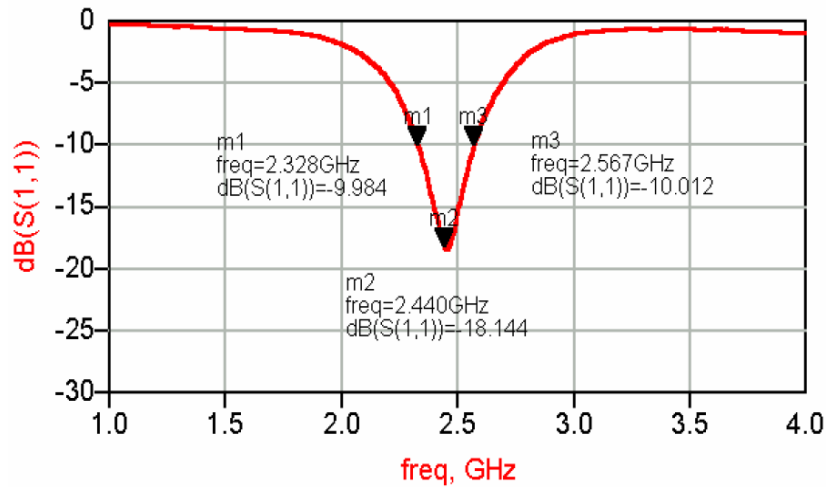
P/N 2450AT45A100E-AEC

Detail Specification: 4/5/2021

Page 6 of 11

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

### Return Loss



Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

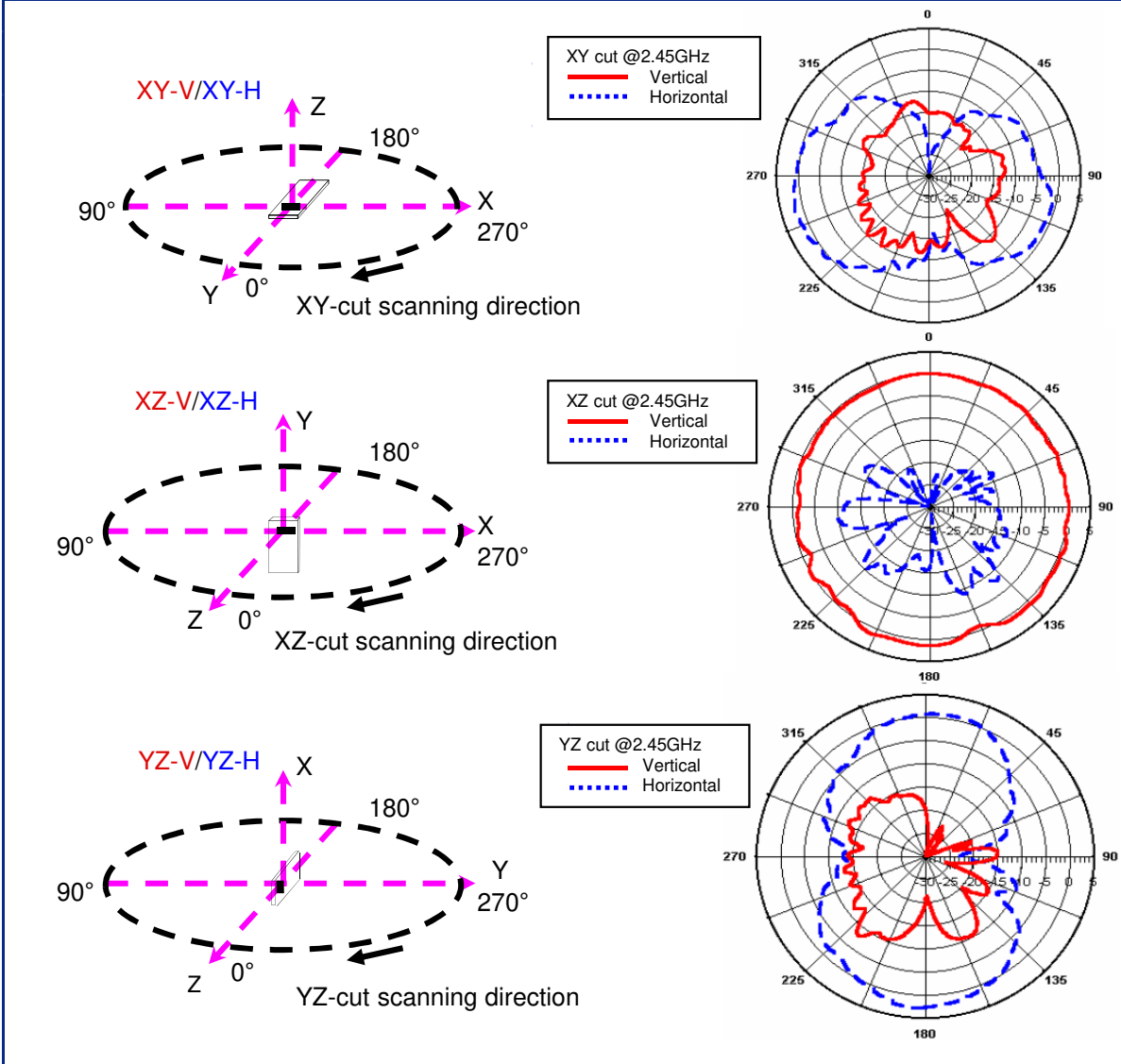
2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified

P/N 2450AT45A100E-AEC

Detail Specification: 4/5/2021

Page 7 of 11

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



Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

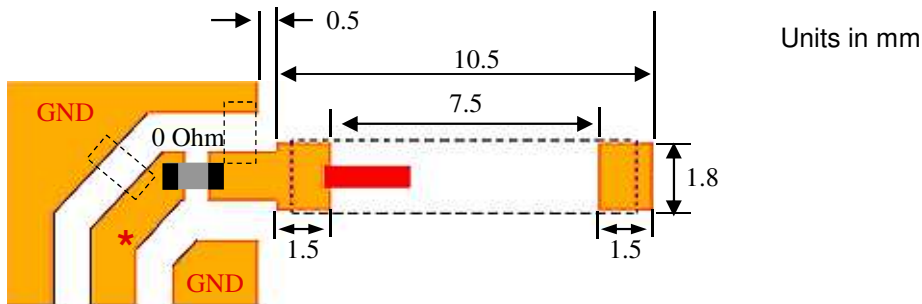
<b>2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified</b>	<b>P/N 2450AT45A100E-AEC</b>
Detail Specification: 4/5/2021	Page 8 of 11

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.



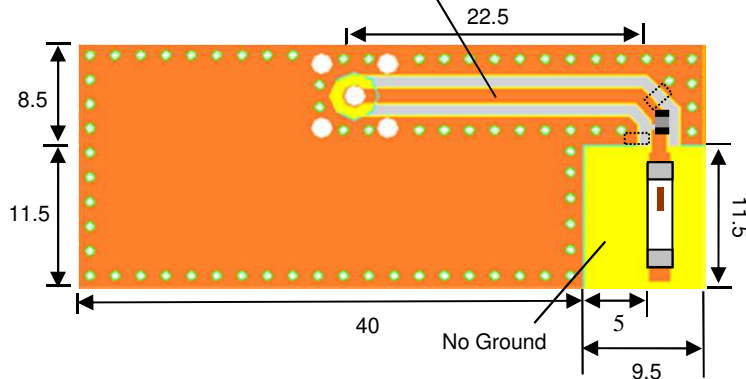
This 50Ω Feedline can be as short as needed, this length is just for reference to our EVB

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

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

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-EB3SMA



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>

Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved



# High Frequency Ceramic Solutions

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

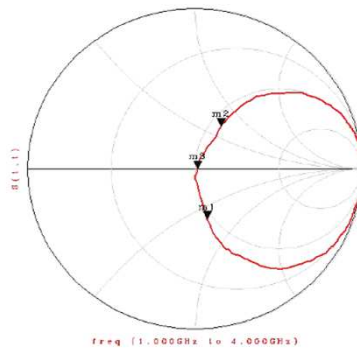
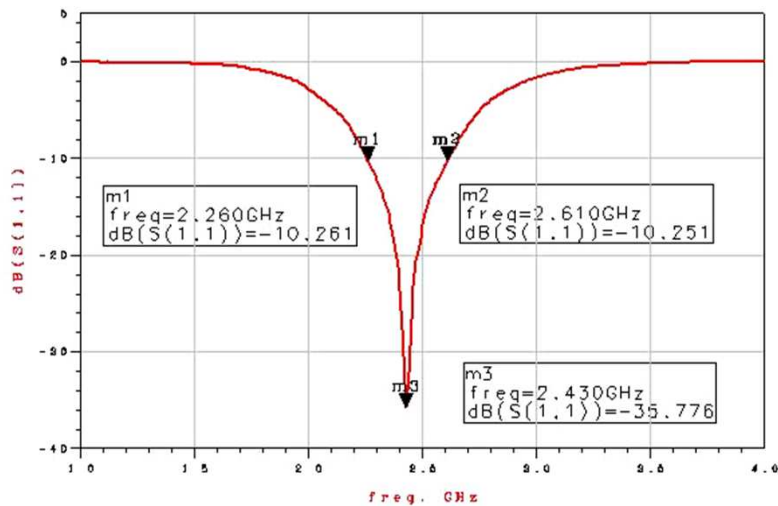
P/N 2450AT45A100E-AEC

Detail Specification: 4/5/2021

Page 9 of 11

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

### Return Loss



Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

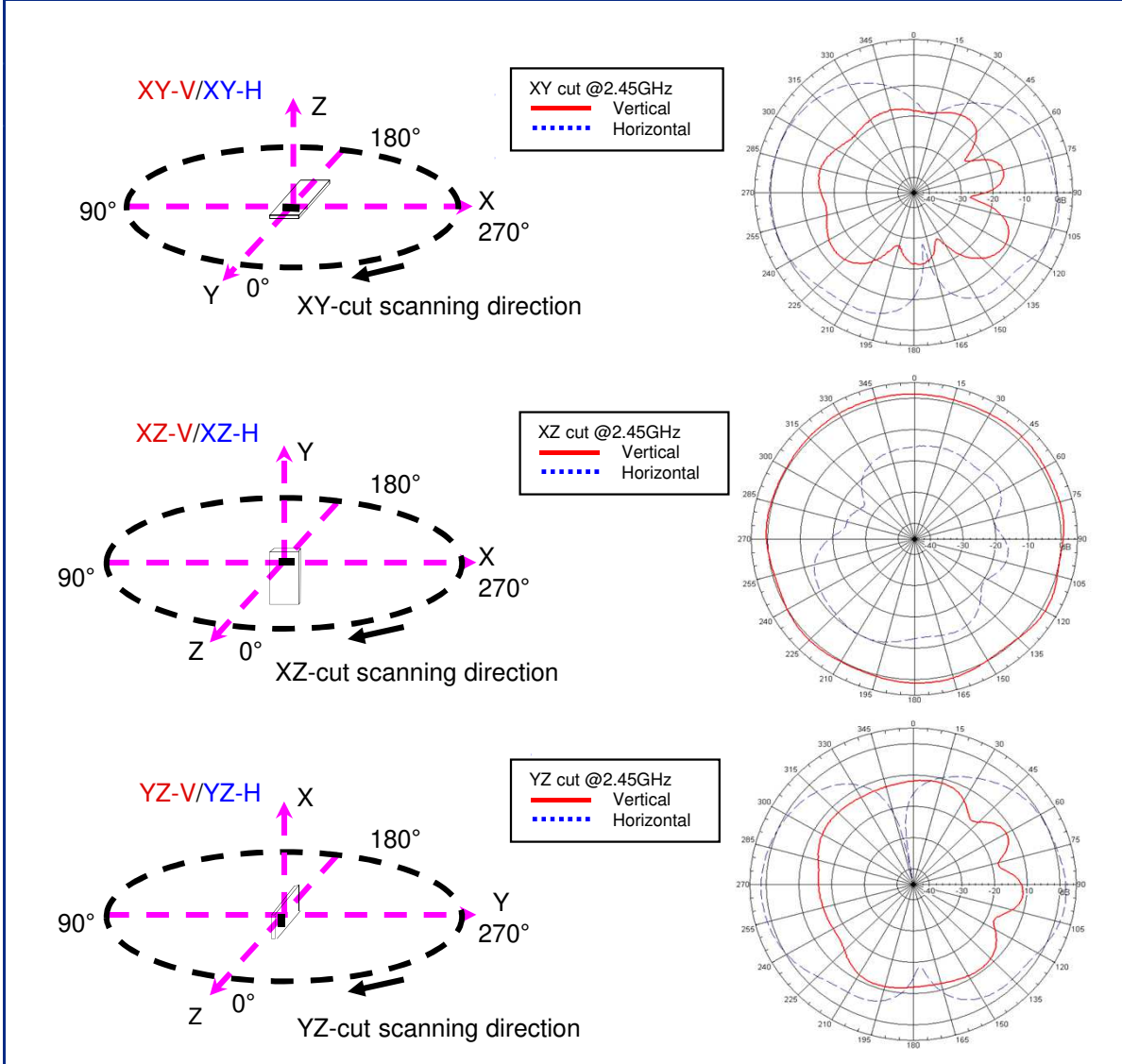
2.45 GHz High Gain SMD Chip Antenna, AEC-Q200 Qualified

P/N 2450AT45A100E-AEC

Detail Specification: 4/5/2021

Page 10 of 11

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



Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

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

P/N 2450AT45A100E-AEC

Detail Specification: 4/5/2021

Page 11 of 11

## 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>

Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



<https://www.johansontechnology.com>

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.2

2021 Johanson Technology, Inc. All Rights Reserved