

"High Frequency Ceramic Solutions"

Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

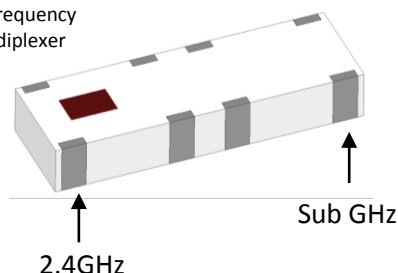
Page 1 of 12

AEC-Q200 qualification available.

General Specifications

Part Number	0900AD47A2450	
Frequency (MHz)	865 - 928	2400 - 2480
Avg. Rad Efficiency ¹	27%	56%
Peak Gain (dBi typ.)	-1.0 dBi typ. (XZ-Total)	2.5 dBi typ. (XZ-Total)
Average Gain (dBi typ.)	-4.5 dBi typ. (XZ-Total)	-0.5 dBi typ. (XZ-Total)
Return Loss (dB)	3 min.	6 min.
Impedance	50 Ω	
Input Power	2 Watts max. (CW)	

Separate Frequency Feeds! No diplexer needed.



Storage Period	18 months max.
Storage Temperature	-40 to +85°C
Operating Temperature	-40 to +85°C
Reel Quantity	1000

¹Measured on a 30x40mm GND plane. Eval Board p/n 0900AD47A2450-EB1SMA (See pages 2-6 for details)

Part Number Explanation

P/N Suffix	Packing Style	Bulk (loose)	Suffix = S	e.g. 0900AD47A2450S
		T & R	Suffix = E	e.g. 0900AD47A2450E
		100% Tin	Suffix = E or S	e.g. 0900AD47A2450(E or S)
	Evaluation Board	0900AD47A2450-EB1SMA, 0900AD47A2450-EB2SMA, 0900AD47A2450-EB3SMA		

Need an EVB optimized for E.U. 868/2.4G or U.S./Americas/Japan 915/2.4G for improved performance on the Sub GHz band?

Evaluation Board Optimized for BOTH EU 868 & US/Americas/Japan and 2.4GHz: 0900AD47A2450-EB1SMA

Evaluation Board Optimized for US-Americas Japan 902-930MHz (max performance) only and 2.4GHz: 0900AD47A2450-EB2SMA

Evaluation Board Optimized for EU 868MHz (max performance) only and 2.4GHz: 0900AD47A2450-EB3SMA

Mechanical Dimensions

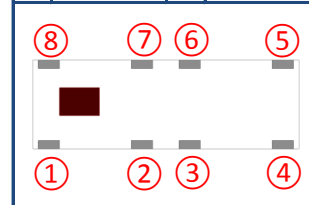
	In	mm
L	0.39 ± 0.008	10.0 ± 0.2
W	0.13 ± 0.008	3.2 ± 0.2
T	0.06 ± 0.008	1.5 ± 0.2
a	0.03 ± 0.008	0.8 ± 0.2
b	0.11 ± 0.008	2.7 ± 0.2
c	0.04 ± 0.008	1.0 ± 0.2
d	0.01 +0.004/-0.008	0.3 +0.1/-0.2

Bottom view diagram of the antenna structure. It shows a rectangular layout with four vertical bars. Dimension 'a' is the width of the leftmost bar. Dimension 'c' is the gap between the first and second bars. Dimension 'b' is the gap between the second and third bars. Dimension 'd' is the width of the rightmost bar. A red square is located on the leftmost bar.

Top and Side view diagrams of the antenna structure. The top view shows a rectangular layout with four vertical bars. Dimension 'L' is the total length. Dimension 'W' is the width. A red square is located on the leftmost bar. The side view shows the profile of the structure, with dimension 'T' indicating the thickness of the substrate.

Terminal Configuration

No.	Function	No.	Function
1	2.4GHz Port	5	NC
2	NC	6	NC
3	NC	7	NC
4	<1GHz Port	8	NC



Even though pins 2, 3, 5, 6, 7, and 8 are NC ("No Connect"), they must be soldered down to the landing pad for proper operation

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



www.johansontechnology.com

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

Ver. 2.0

2017 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

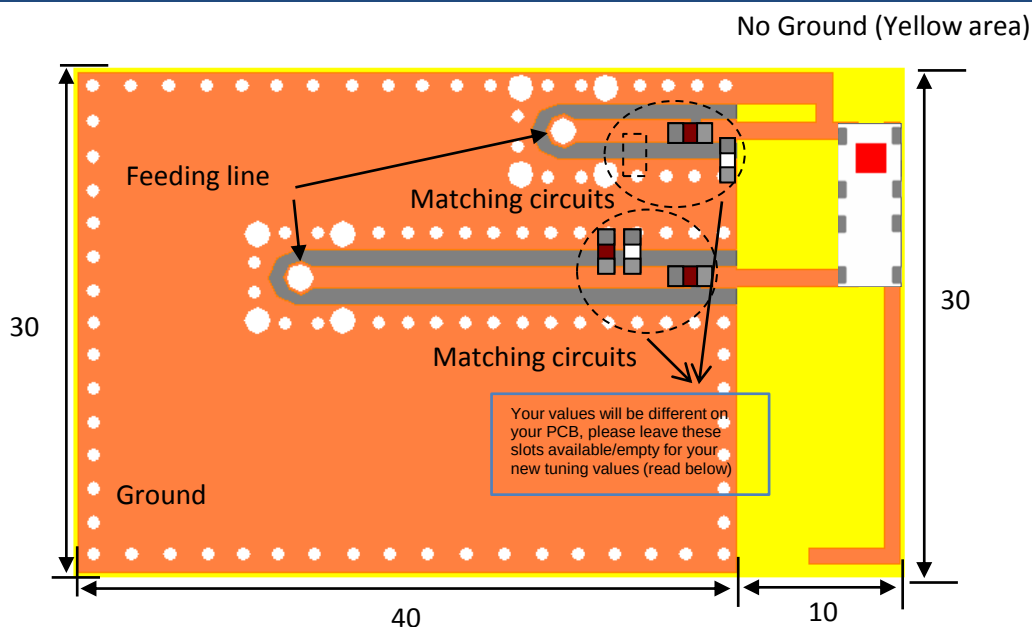
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 2 of 12

Mounting Considerations 1: Evaluation Board p/n: 0900AD47A2450-EB1SMA



Evaluation Board p/n: 0900AD47A2450-EB1SMA/EB2SMA/EB3SMA

Frequency (GHz)	Total Radiated Efficiency (%)
0.896	27
2.4	56

Units in mm

To order a pre-tuned 50Ω EVB above with two female SMA connectors, click here:

www.johansontechnology.com/request-a-sample

Reference p/n: 0900AD47A2450-EB1SMA (optimized for US/EU+2.4G), 0900AD47A2450-EB2SMA (optimized for US+2.4G), or 0900AD47A2450-EB3SMA (optimized for EU+2.4G)

Would you like the layout file of the above? Would you like us to tune the antenna for your on your PCB?

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.

Contact our RF Engineers at:

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.



www.johansontechnology.com
 4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821
 Ver. 2.0 2017 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

Dual Band 868-928 MHz/2.4 GHz Chip Antenna		P/N 0900AD47A2450
Detail Specification:	5/31/2017	Page 3 of 12

Detail Specification: 5/31/2017

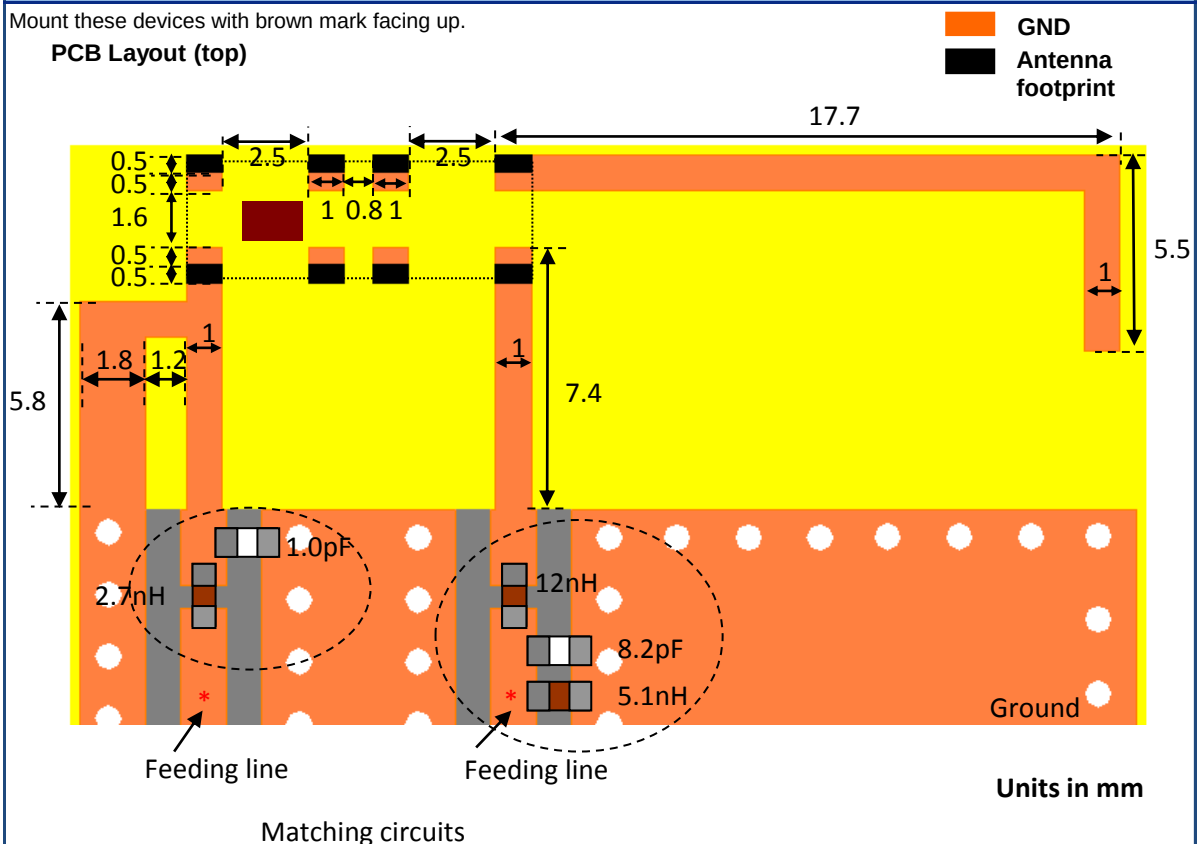
P/N 0900AD47A2450

Page 3 of 12

Mounting Considerations 1: Evaluation Board p/n: 0900AD47A2450-EB1SMA/EB2.EB3 Antenna Footprint Detail

Mount these devices with brown mark facing up.

PCB Layout (top)



The L/C values above ONLY apply to our EVB, yours will be different. If you need help finding out which values to use on your PCB, please read below:

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.

Contact our RF Engineers at:

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.

"High Frequency Ceramic Solutions"

Dual Band 868-928 MHz/2.4 GHz Chip Antenna

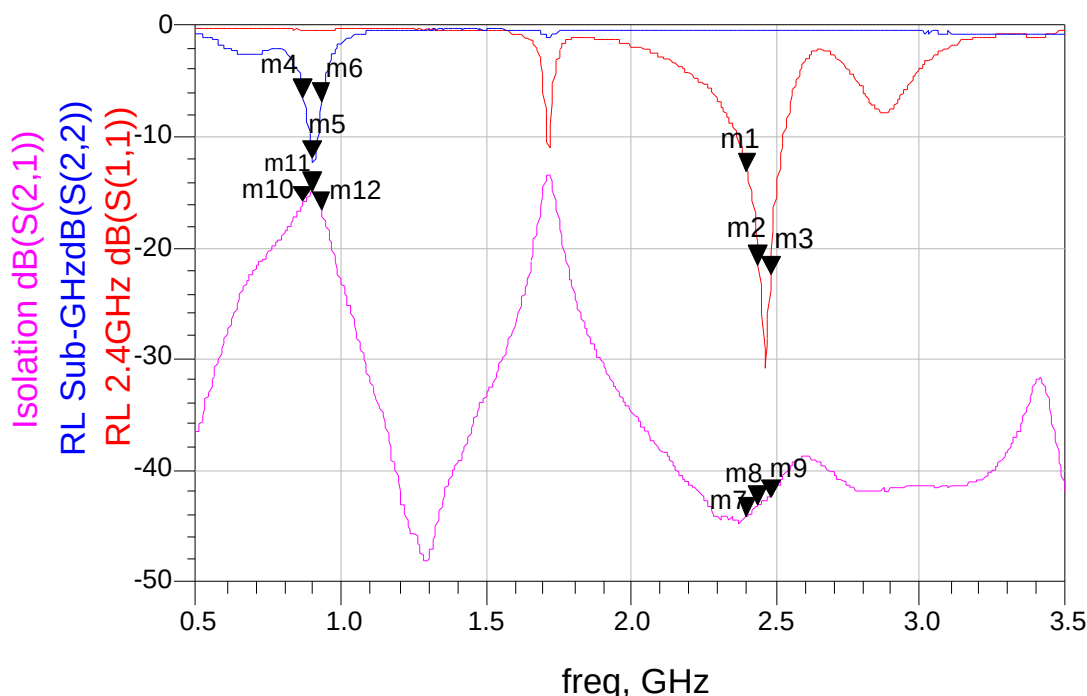
P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 4 of 12

Mounting Considerations 1: Typical Antenna response Performance (T=25°C)

Return Loss and Isolation



m1 freq=2.400GHz dB(S(1,1))=-13.210	m5 freq=896.0MHz dB(S(2,2))=-12.022	m9 freq=2.480GHz dB(S(2,1))=-42.394
m2 freq=2.440GHz dB(S(1,1))=-21.451	m6 freq=928.0MHz dB(S(2,2))=-6.789	m10 freq=868.0MHz dB(S(2,1))=-15.927
m3 freq=2.480GHz dB(S(1,1))=-22.425	m7 freq=2.400GHz dB(S(2,1))=-44.254	m11 freq=896.0MHz dB(S(2,1))=-14.992
m4 freq=868.0MHz dB(S(2,2))=-6.534	m8 freq=2.440GHz dB(S(2,1))=-43.149	m12 freq=928.0MHz dB(S(2,1))=-16.553

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



www.johansontechnology.com

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

Ver. 2.0

2017 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

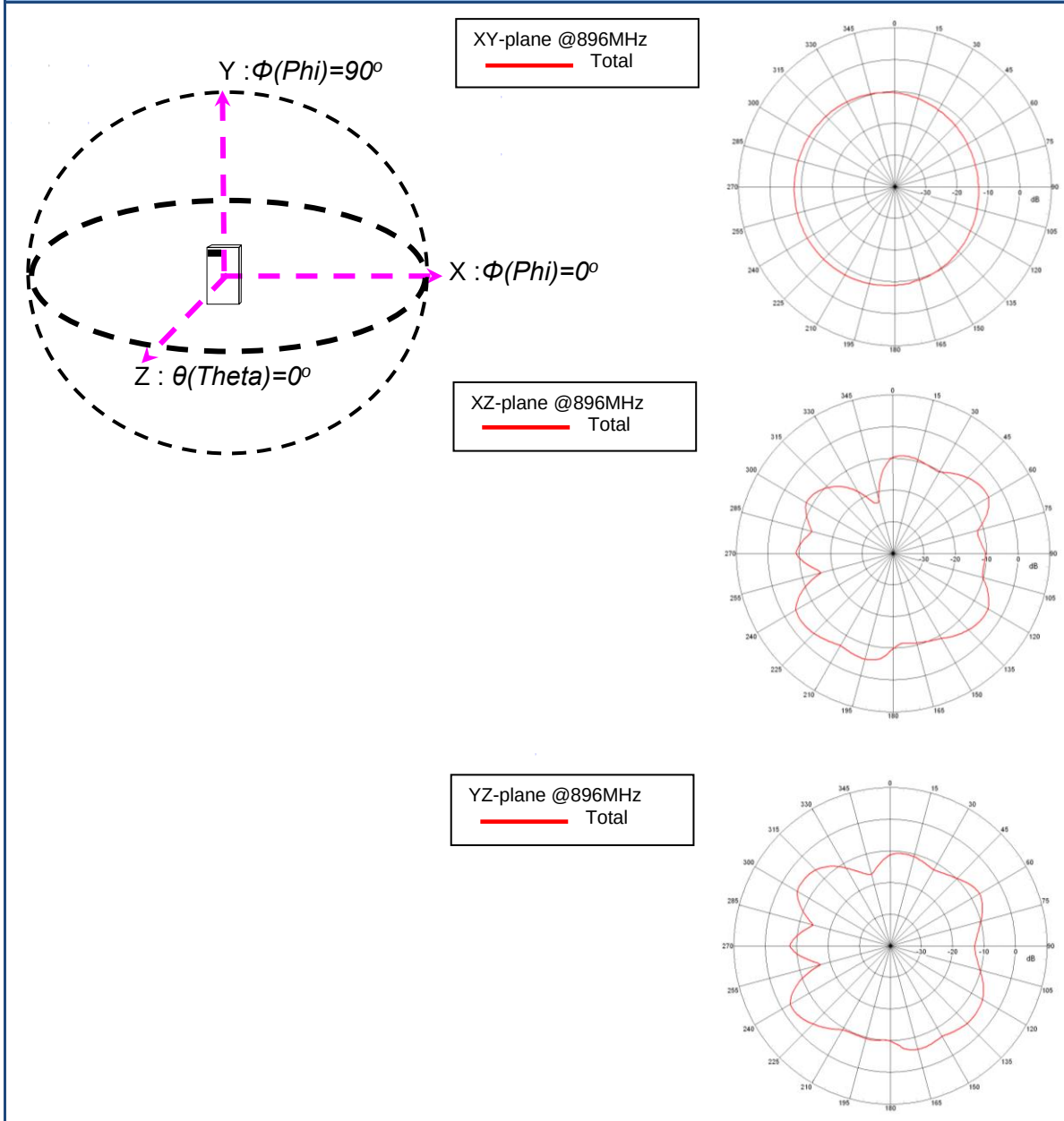
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 5 of 12

Mounting Considerations 1: Typical EM Radiation Performance @900MHz Band (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.

"High Frequency Ceramic Solutions"

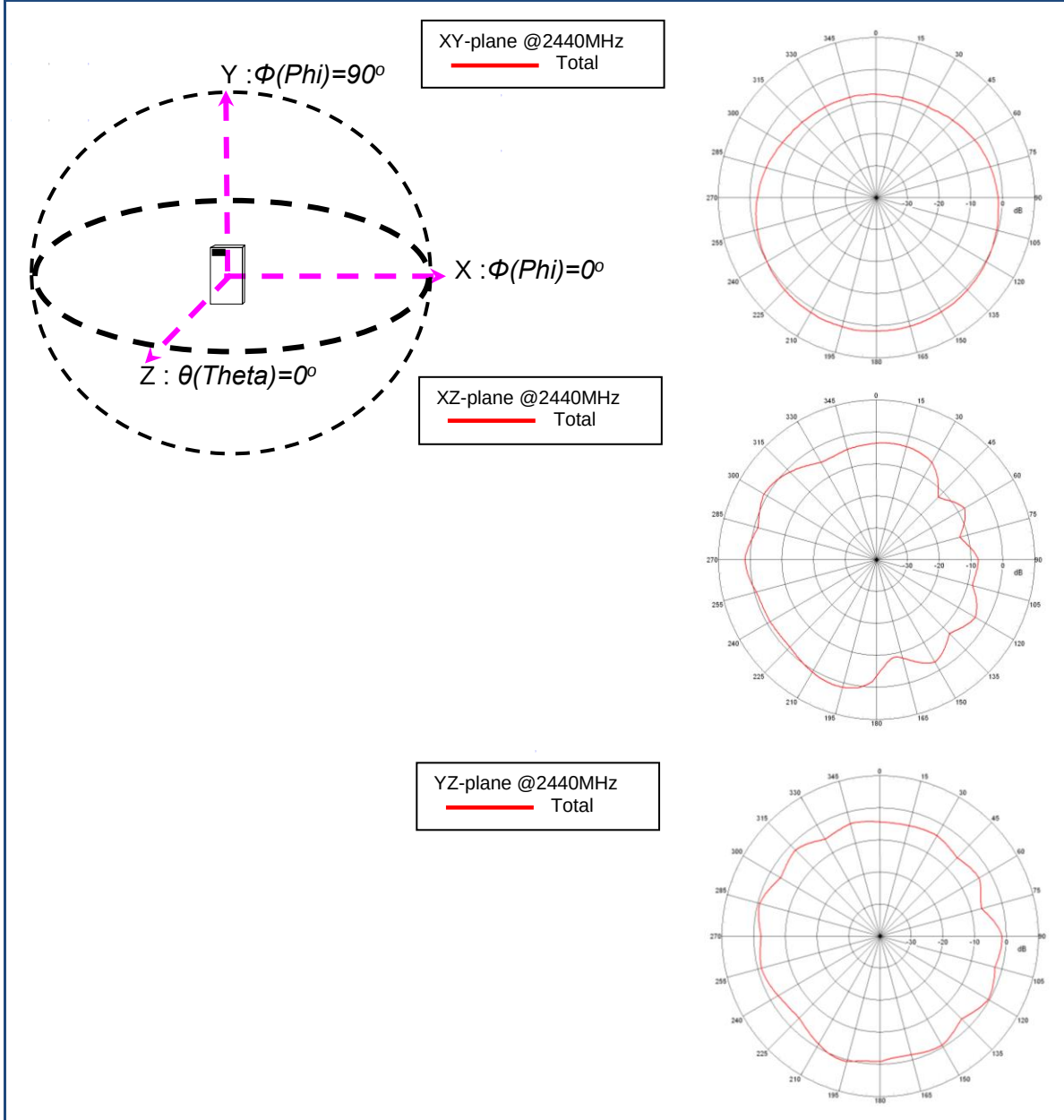
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 6 of 12

Mounting Considerations 1: Typical EM Radiation Performance @ 2.4GHz band (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.

"High Frequency Ceramic Solutions"

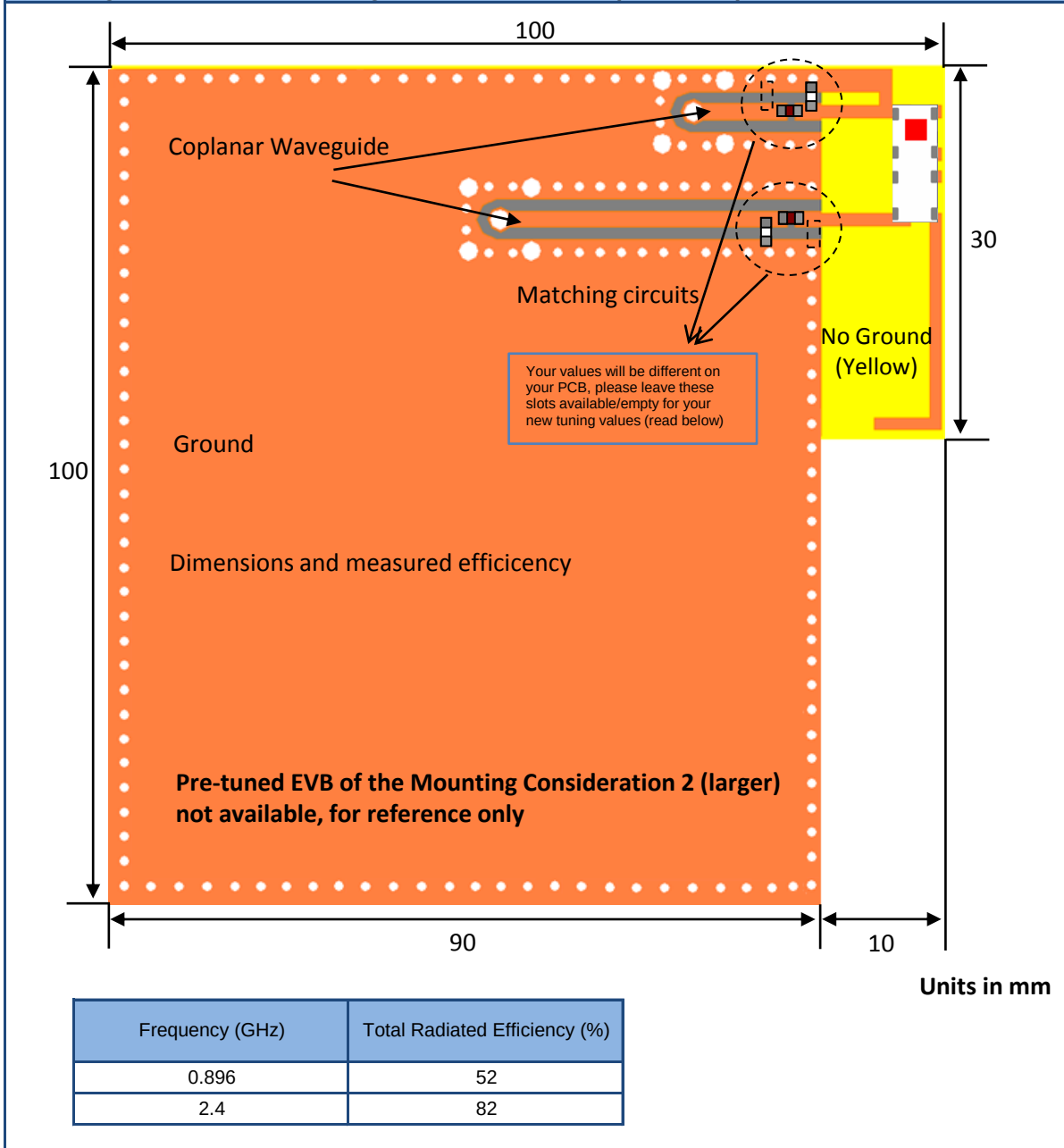
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 7 of 12

Mounting Considerations 2: Larger Evaluation Board (Reference)



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



www.johansontechnology.com
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821
Ver. 2.0 2017 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

Dual Band 868-928 MHz/2.4 GHz Chip Antenna

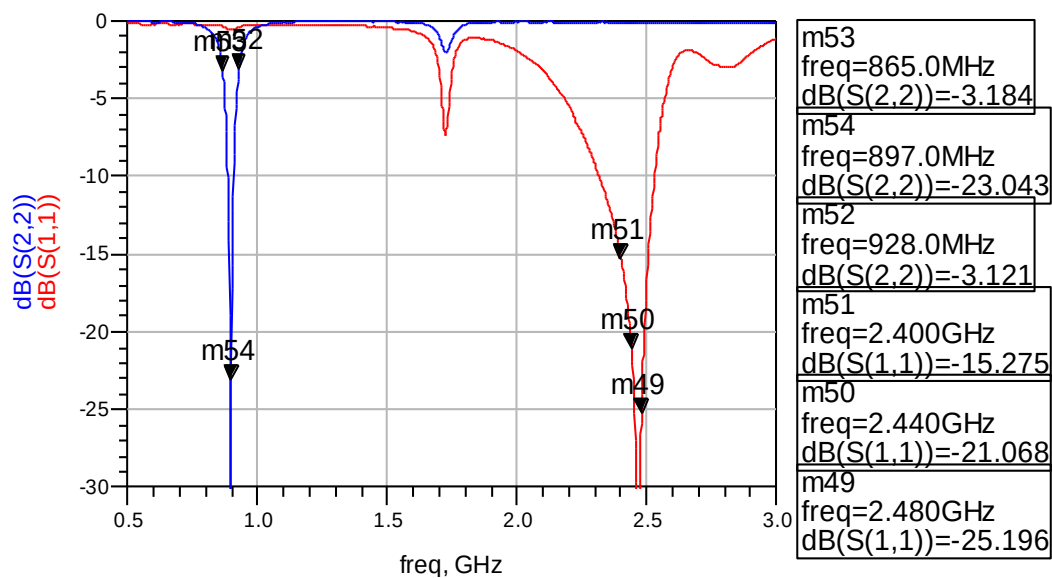
P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 8 of 12

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

Return Loss



Would you like us to tune the antenna for your on your PCB?

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.

Contact our RF Engineers at:

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.



www.johansontechnology.com
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821
Ver. 2.0

2017 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

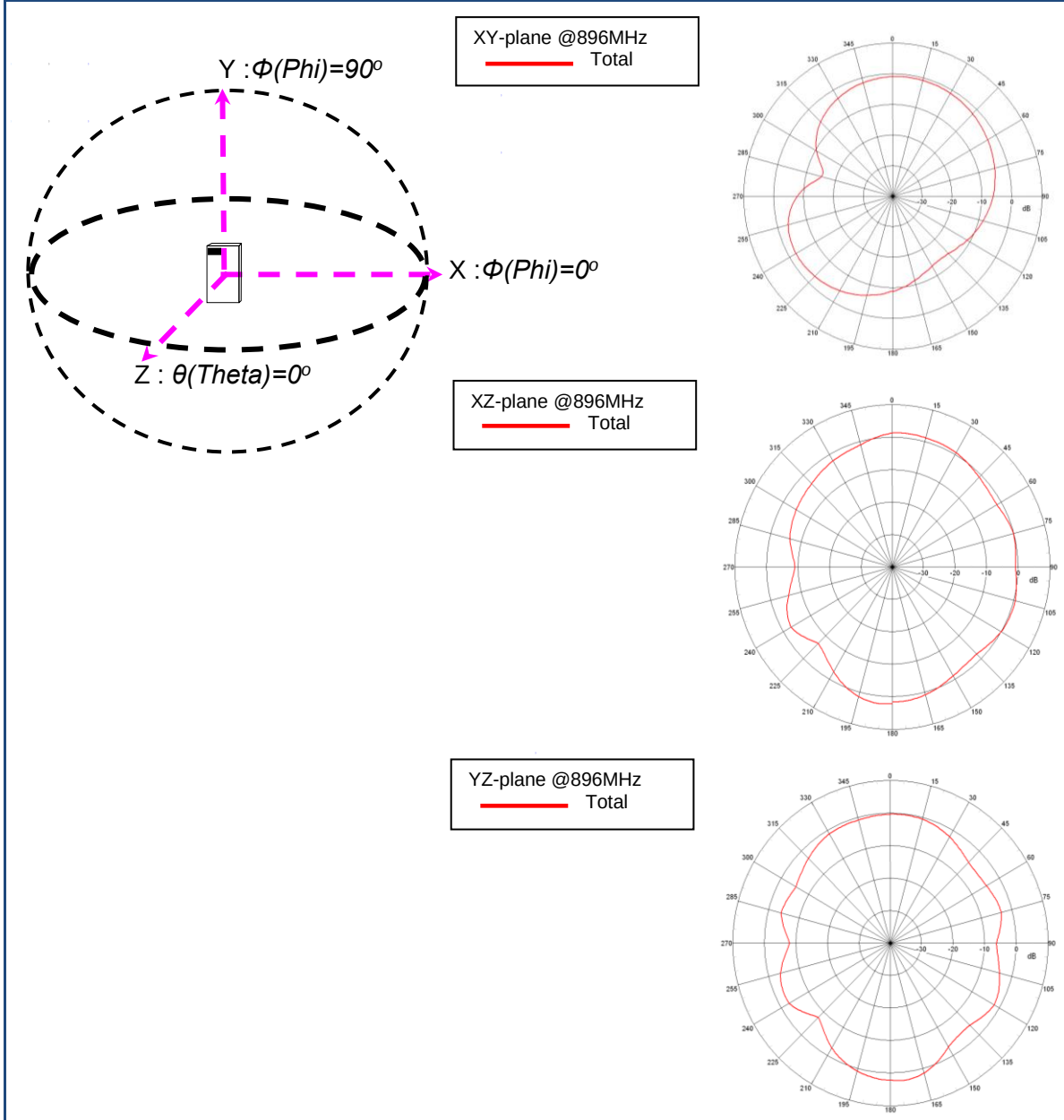
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 9 of 12

Mounting Considerations 2: Typical EM Radiation Performance @900MHz Band (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.

"High Frequency Ceramic Solutions"

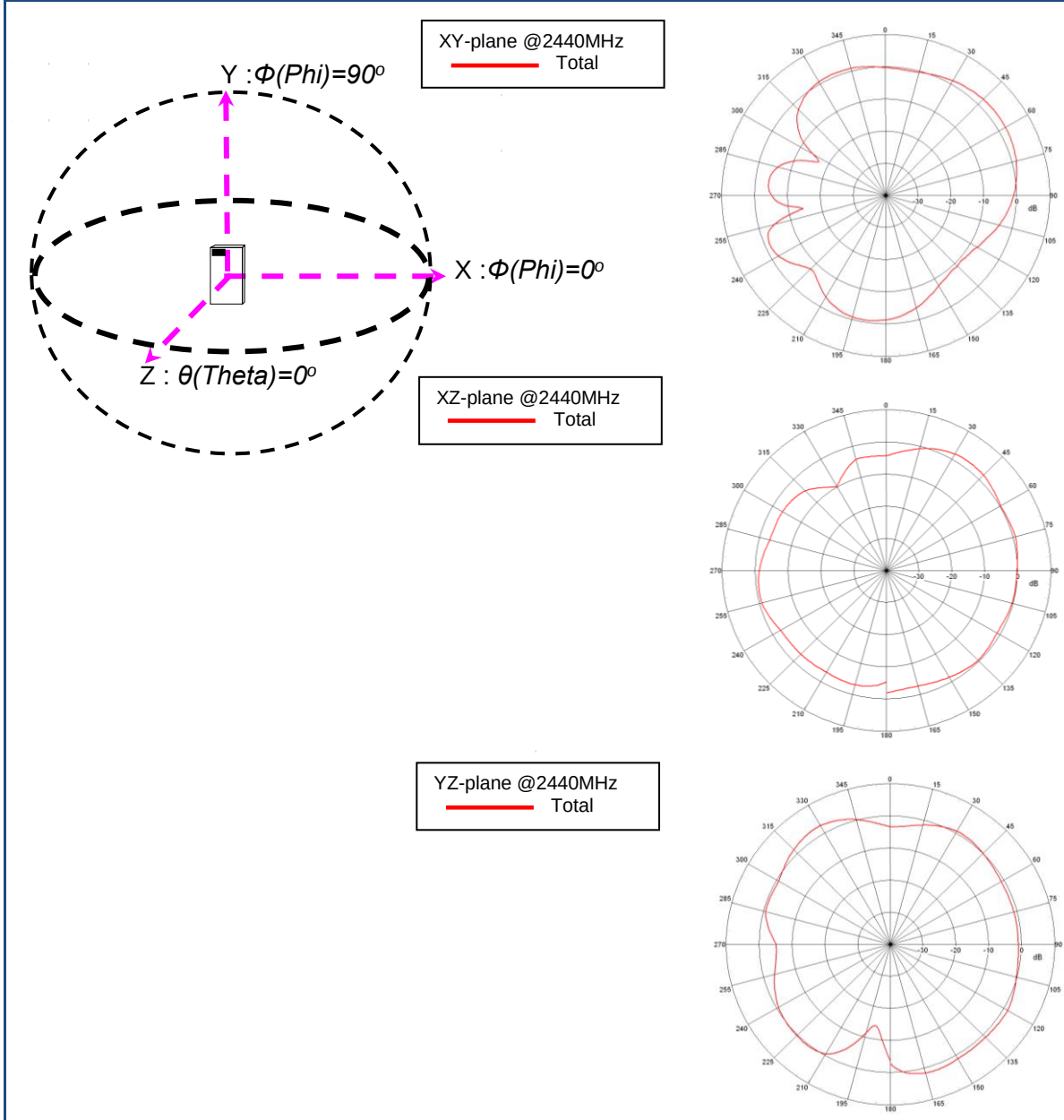
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 10 of 12

Mounting Considerations 2: Typical EM Radiation Performance @ 2.4GHz band (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.

"High Frequency Ceramic Solutions"

Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

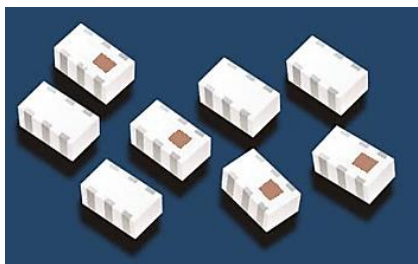
Detail Specification: 5/31/2017

Page 11 of 12

Single Feed Configuration with Diplexer Option

If there's a single 900/2.4G combined feed coming from the chipset, Johanson Technology offers a diplexer option to separate and filter the 900M and 2.4G signals. The recommended p/n is: 0900DP15A2450

Pairing a 900MHz low pass filter with a 2.4GHz high pass filter not only separates the two signals but provides harmonic attenuation to fulfill regulation qualification for industry standards.

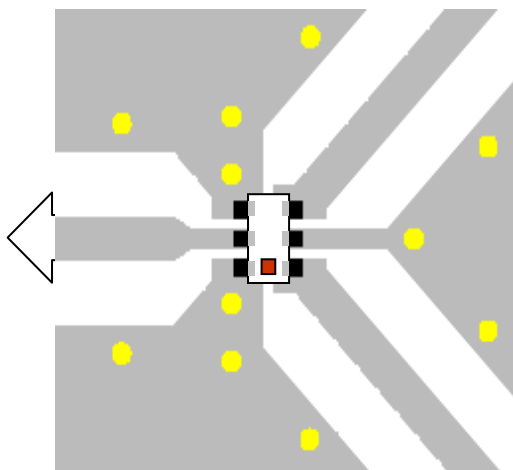


0900DP15A2450

For more information about our diplexers go to:
www.johansontechnology.com/diplexers

For assistance with PCB layout or general component inquiries, please go to:
www.johansontechnology.com/ask-a-question

"Dual Band
900/2.4G,
single channel
chipset"



Mini chip
diplexer
footprint for
reference only,
please get the
datasheet at:

www.johansontechnology.com/diplexers

Would you like the diplexer layout file? Please go to: 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.



www.johansontechnology.com
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821
Ver. 2.0

2017 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

Page 12 of 12

Antenna tuning, optimization, and validation services:

www.johansontechnology.com/ipc-antenna-services

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

www.johansontechnology.com/antennas

For more information about our diplexers:

www.johansontechnology.com/diplexers

Soldering Information

www.johansontechnology.com/ipcsoldering-profile

MSL Info

www.johansontechnology.com/msl-rating

Packaging information

www.johansontechnology.com/tape-reel-packaging

For layout review contact our Applications Team at:

www.johansontechnology.com/ask-a-question

RoHS Compliance

www.johansontechnology.com/rohs-compliance

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

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.

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



www.johansontechnology.com
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821
Ver. 2.0 2017 Johanson Technology, Inc. All Rights Reserved

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Johanson:](#)

[0900AD47A2450E](#) [0900AD47A2450001E](#)