

# "High Frequency Ceramic Solutions"

## Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

Detail Specification: 5/31/2017

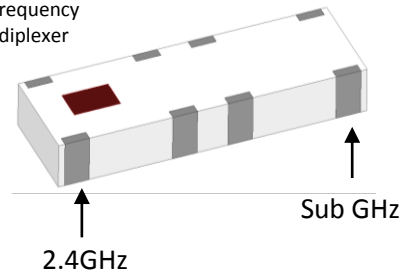
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AEC-Q200 qualification available.

### General Specifications

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

Separate Frequency Feeds! No diplexer needed.



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

<sup>1</sup>Measured 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)
<b>Evaluation Board</b>		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?

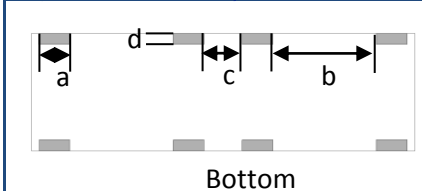
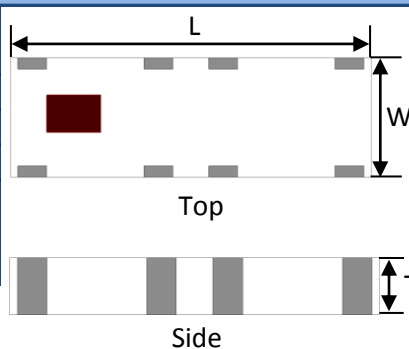
Evaluation Board Optimized for BOTH EU 868 & US/Americas/Japan and 2.4GHz: 0900AD47A2450-EB1SMA

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

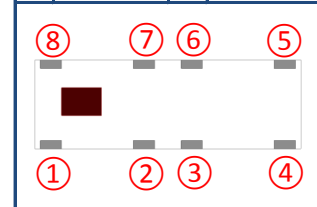
### Mechanical Dimensions

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



### 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

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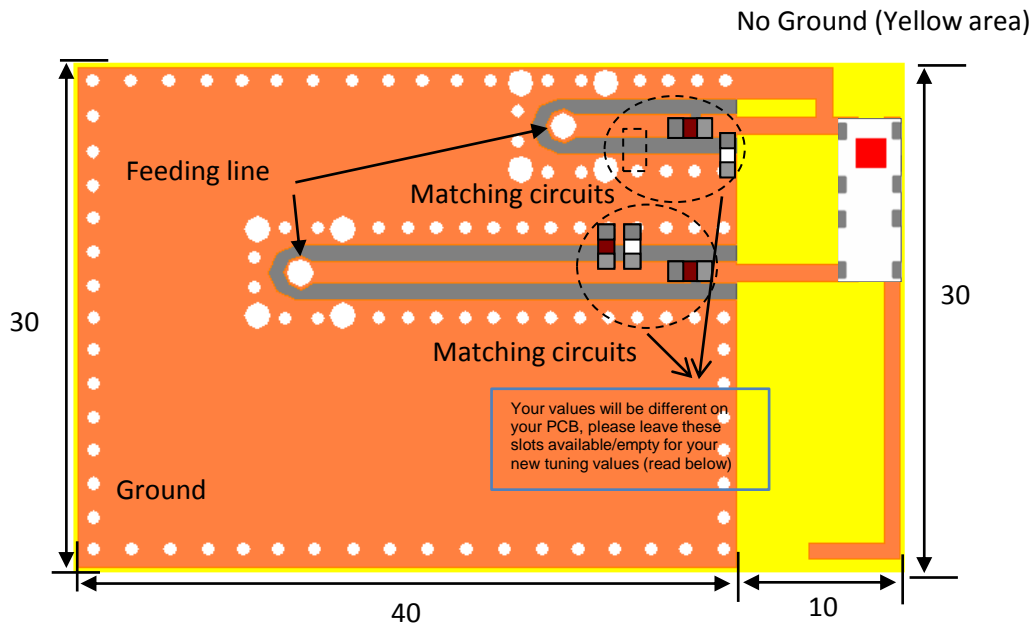
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

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



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

Units in mm

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

To order a pre-tuned 50Ω EVB above with two female SMA connectors, click here:  
[www.johansontechnology.com/request-a-sample](http://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:

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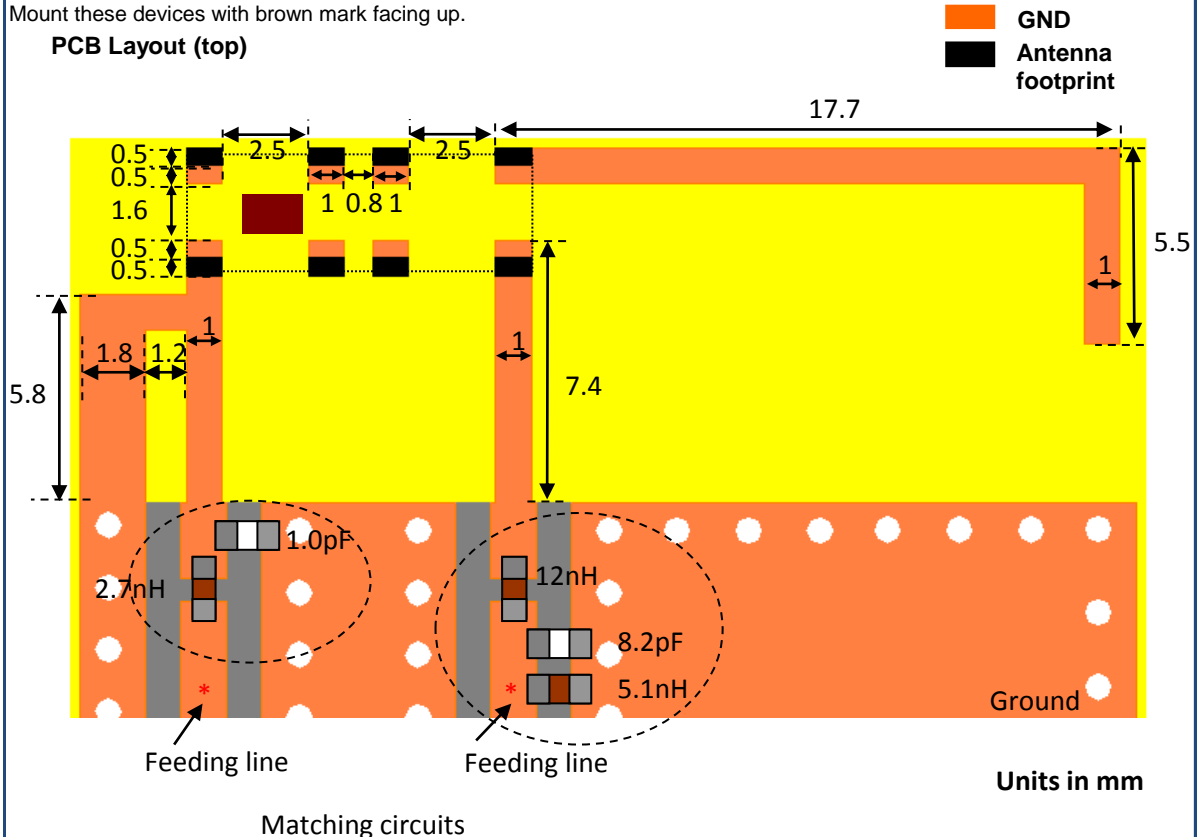
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## Mounting Considerations 1: Evaluation Board p/n: 0900AD47A2450-EB1SMA/EB2.EB3 Antenna Footprint Detail

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.

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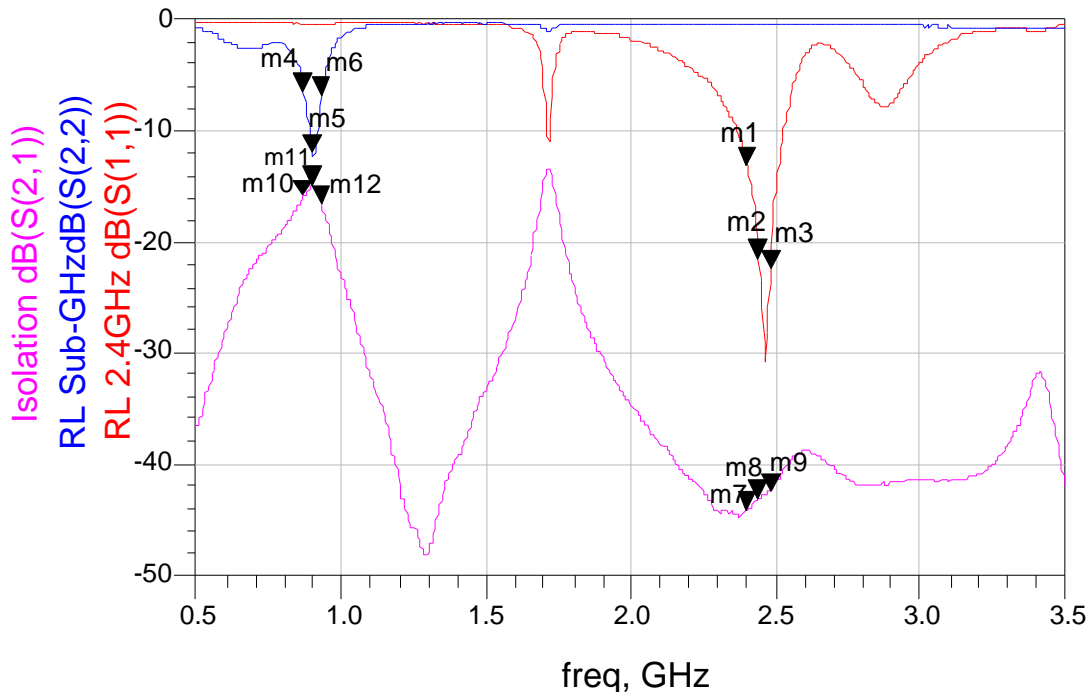
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## Mounting Considerations 1: Typical Antenna response Performance (T=25°C)

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

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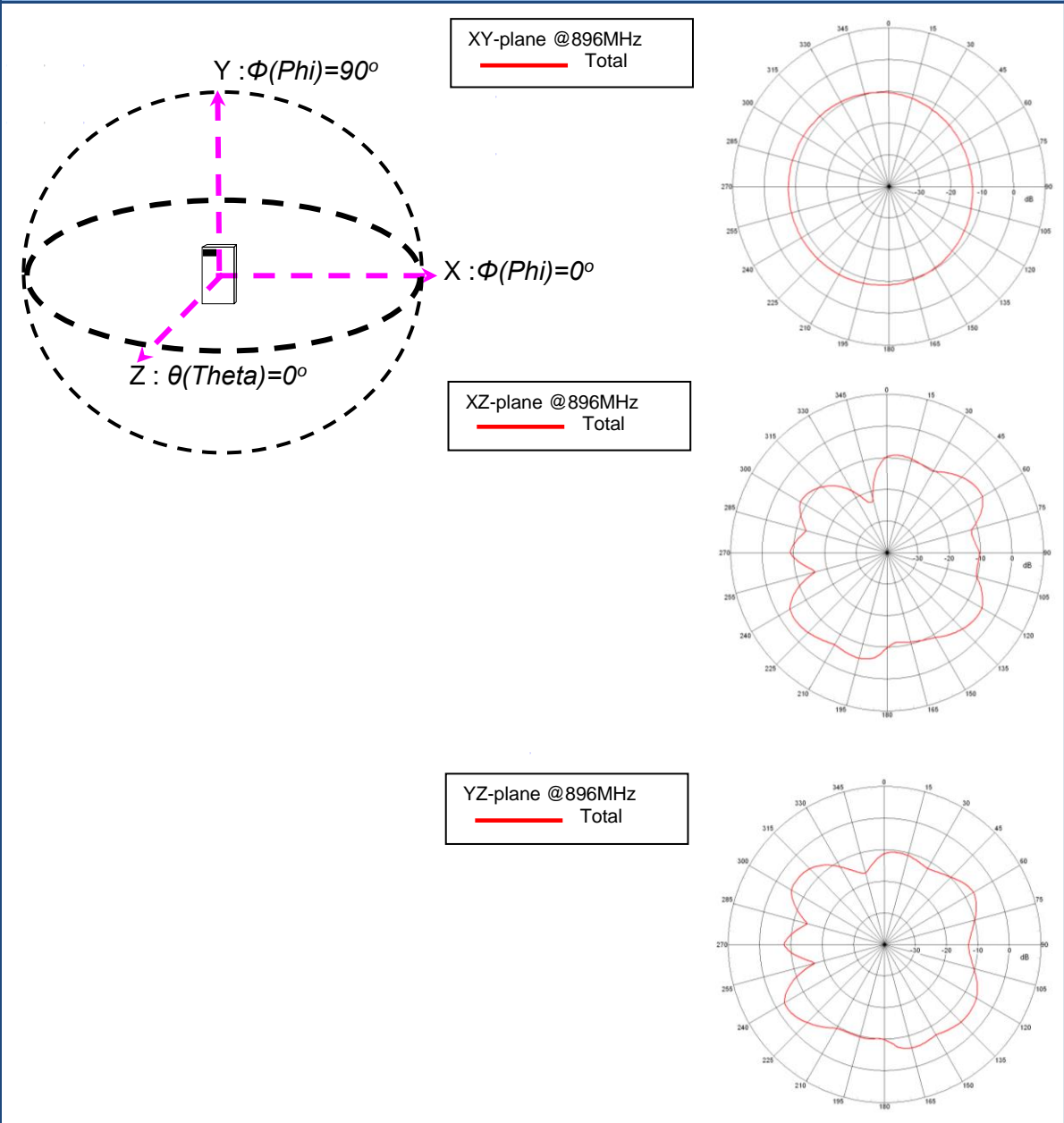
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# "High Frequency Ceramic Solutions"

## Mounting Considerations 1: Typical EM Radiation Performance @900MHz Band (T=25°C)



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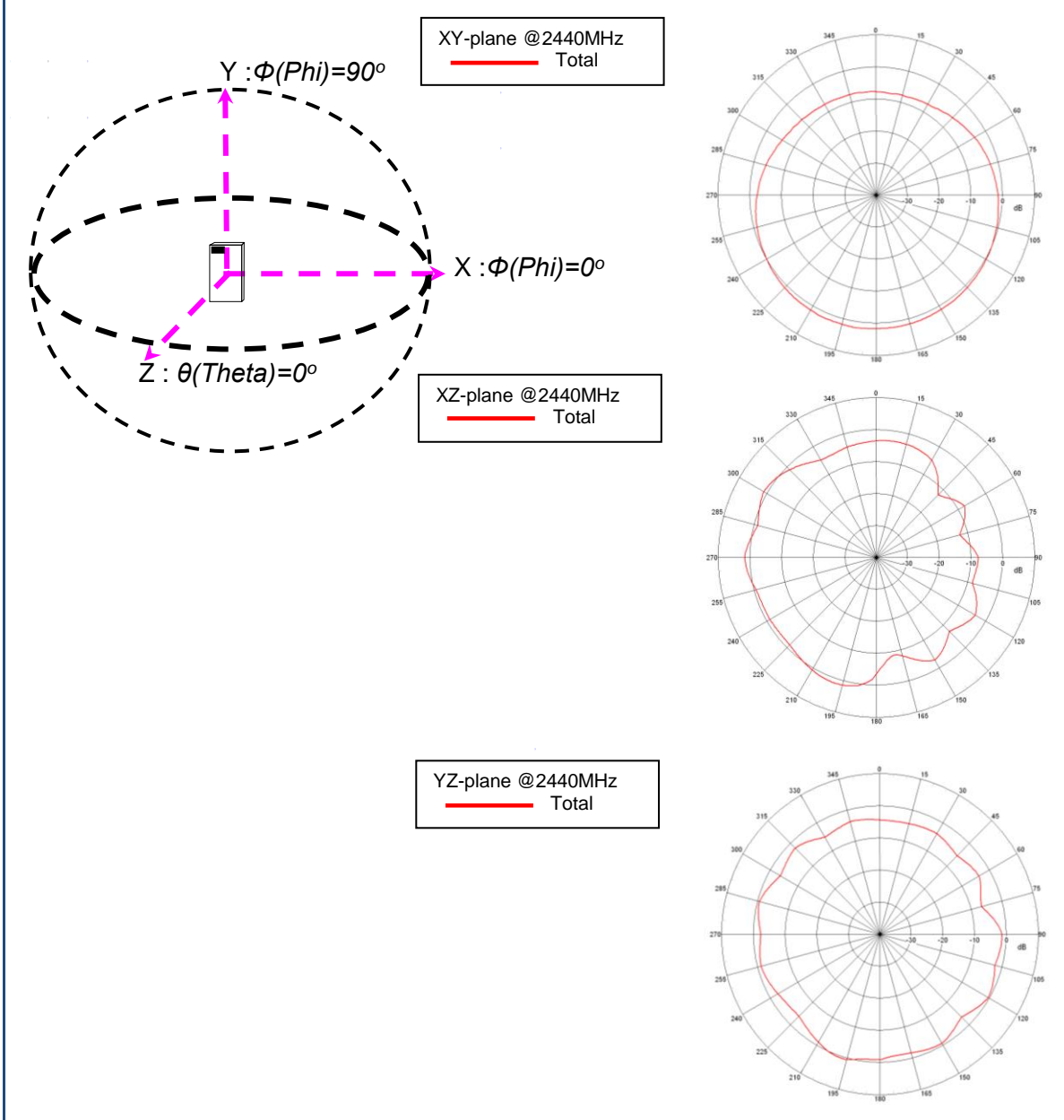
Dual Band 868-928 MHz/2.4 GHz Chip Antenna

P/N 0900AD47A2450

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## Mounting Considerations 1: Typical EM Radiation Performance @ 2.4GHz band (T=25°C)



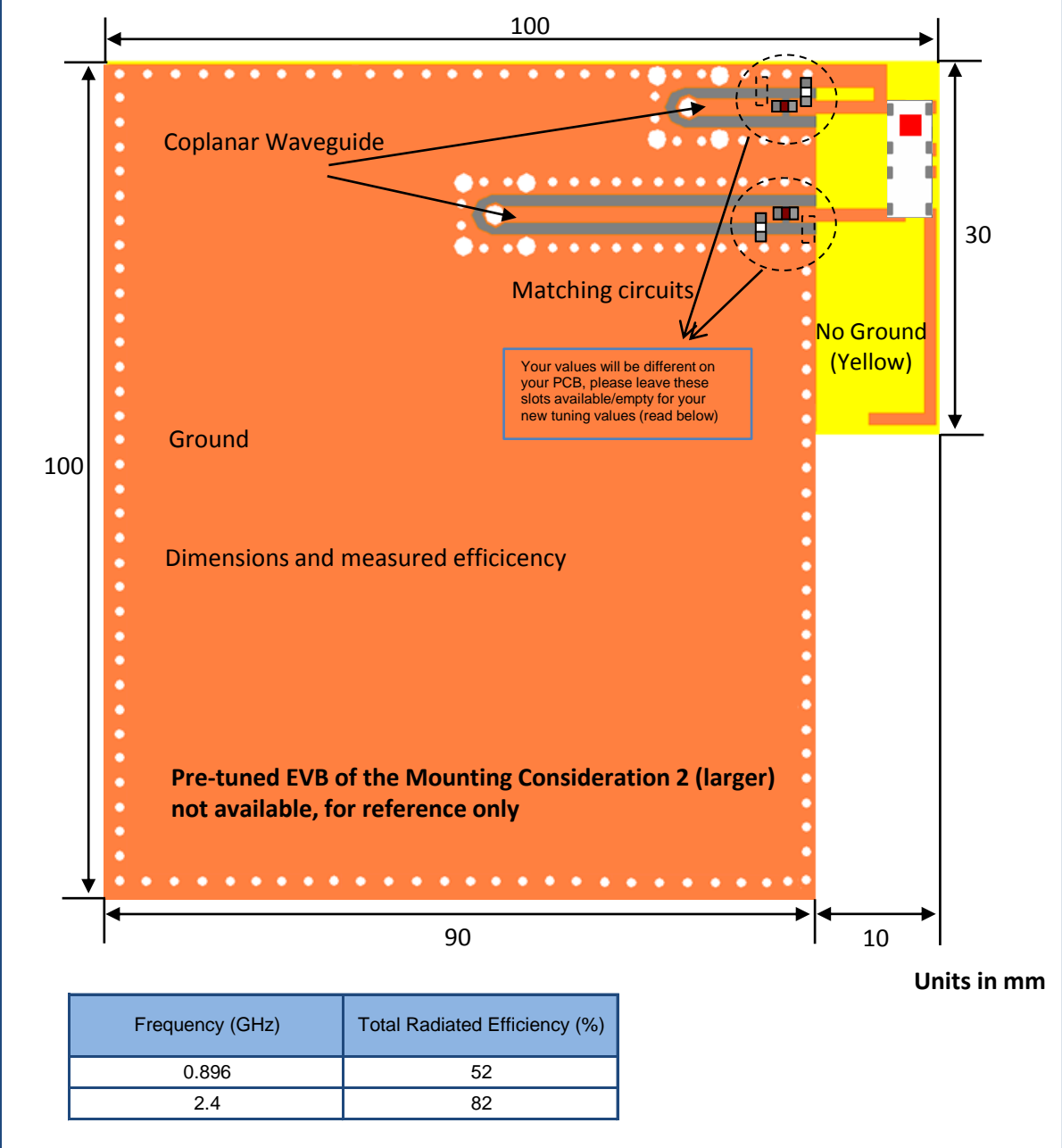
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## Mounting Considerations 2: Larger Evaluation Board (Reference)



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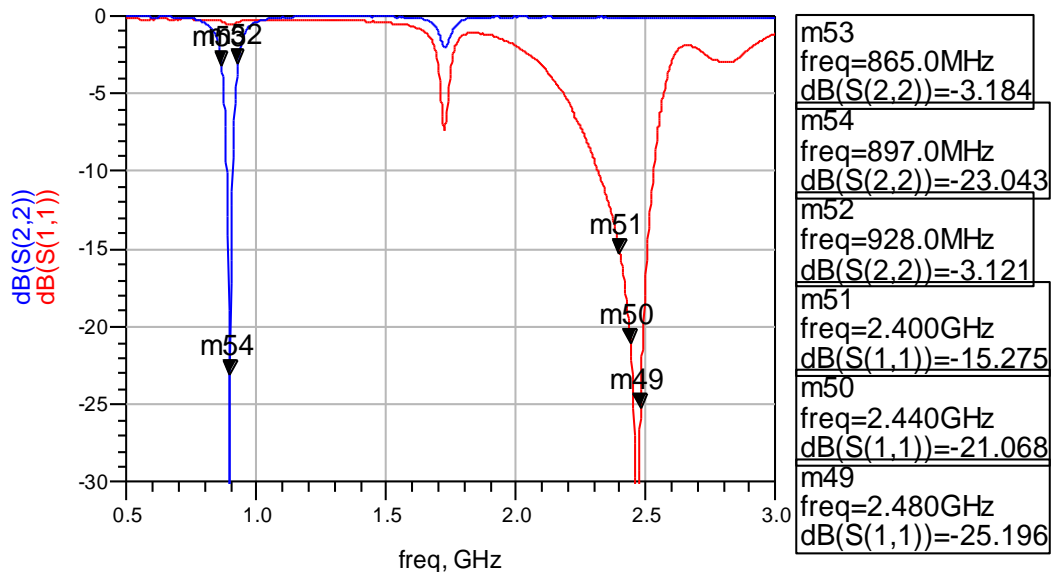
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## Mounting Considerations 2: Typical Antenna response Performance (T=25°C)

Return Loss



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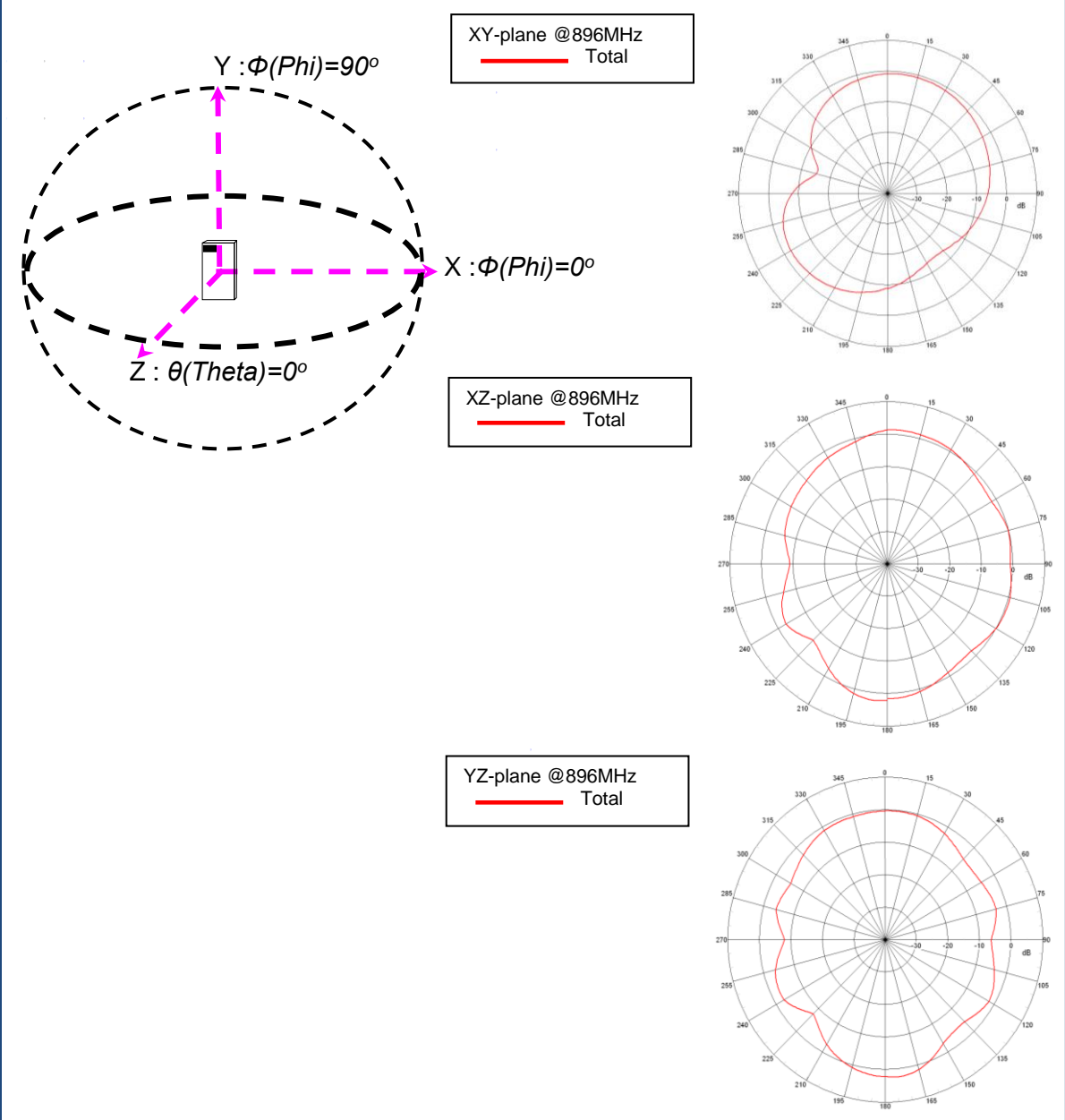


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 Detail Specification: 5/31/2017

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## Mounting Considerations 2: Typical EM Radiation Performance @900MHz Band (T=25°C)



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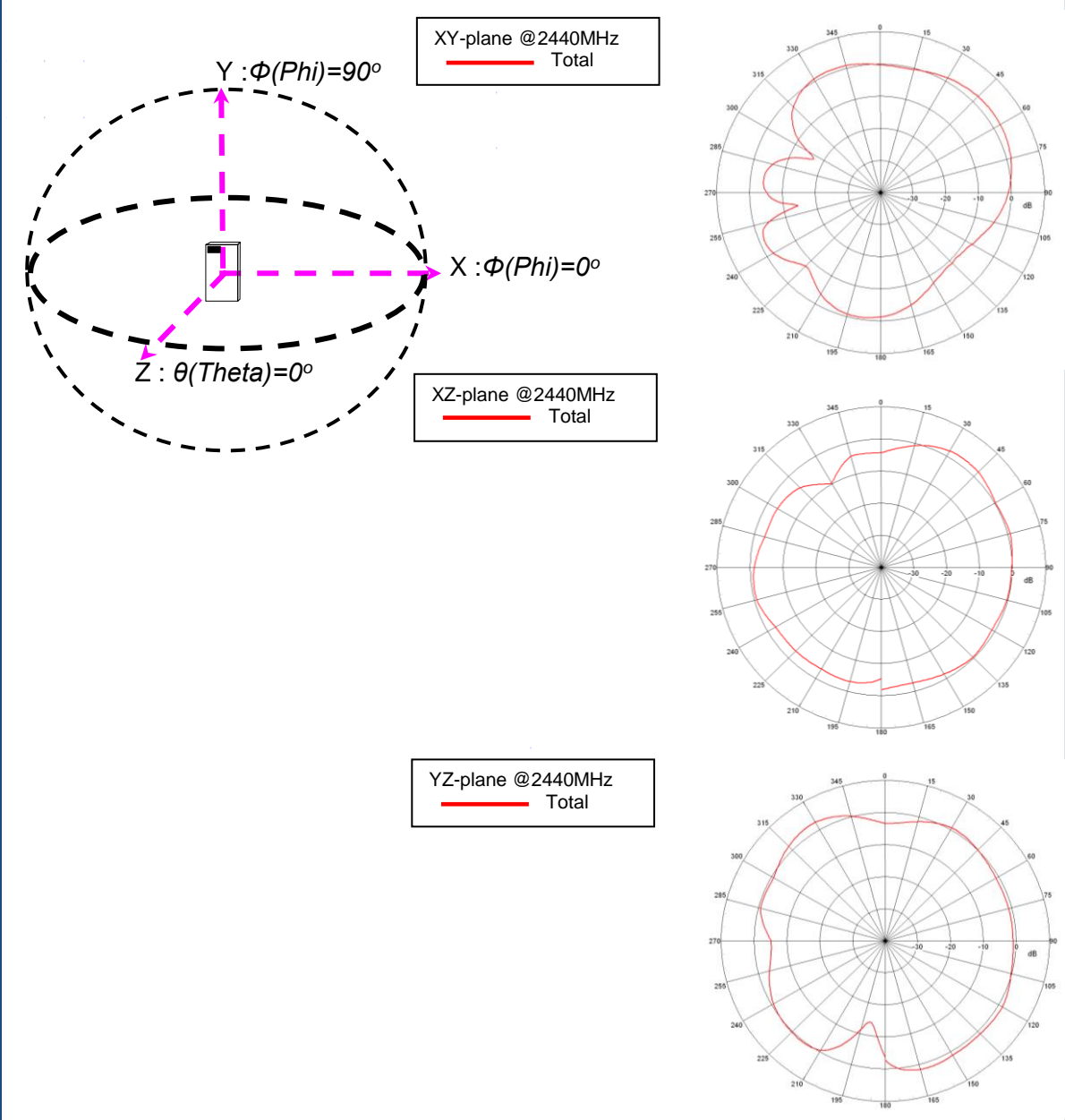


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## Mounting Considerations 2: Typical EM Radiation Performance @ 2.4GHz band (T=25°C)



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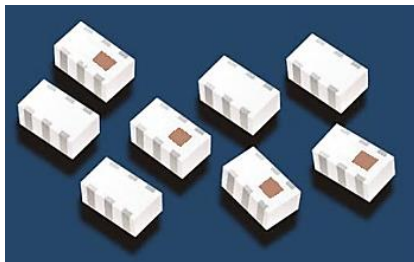
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## Single Feed Configuration with Diplexer Option

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.

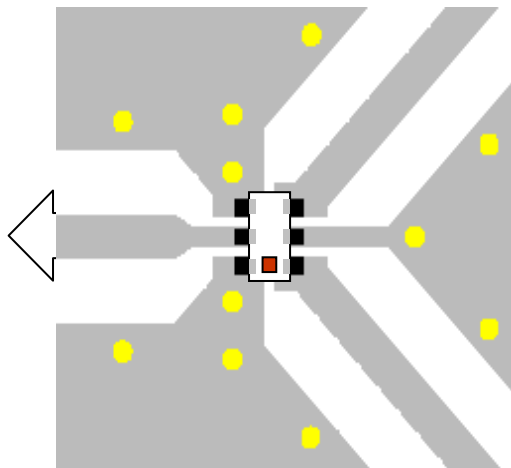


0900DP15A2450

For more information about our diplexers go to:  
[www.johansontechnology.com/diplexers](http://www.johansontechnology.com/diplexers)

For assistance with PCB layout or general component inquiries, please go to:  
[www.johansontechnology.com/ask-a-question](http://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](http://www.johansontechnology.com/diplexers)

Would you like the diplexer layout file? Please go to: [www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question)

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## Antenna tuning, optimization, and validation services:

[www.johansontechnology.com/ipc-antenna-services](http://www.johansontechnology.com/ipc-antenna-services)

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

[www.johansontechnology.com/antennas](http://www.johansontechnology.com/antennas)

## For more information about our diplexers:

[www.johansontechnology.com/diplexers](http://www.johansontechnology.com/diplexers)

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

[www.johansontechnology.com/ipc-antenna-services](http://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.

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