

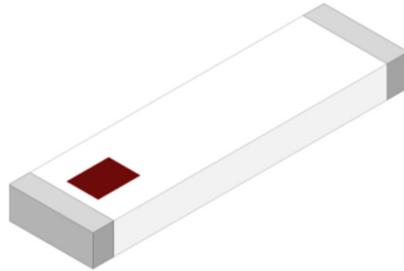
# High Frequency Ceramic Solutions

**LTE Multi-Band Ceramic Antenna, SMD. Ideal for Cellular, IoT, CAT M1, and NB (Narrow Band) Applications** P/N: 0830AT54A2200

Detail Specification: 4/6/2020

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General Specifications		
Part Number	0830AT54A2200	
Operating Frequencies	Tuning Version 1	Tuning Version 2
Frequency (MHz)	700 - 800	824 - 960
	1700 - 2100	1710 - 2690
	<b>Antenna-Switch Solution*</b>	
	700 - 960, GPS/GLONASS, 1710 - 2200, 2400 - 2480	
Return Loss (dB)	3.5 min.	4.5 min.
Peak Gain <small>measured on EB1/2</small>	2.0 typ. (dBi)	2.0 typ. (dBi)
Average Gain <small>measured on EB1/2</small>	-1.6 typ. (dBi)	-1.0 typ. (dBi)
Power Capacity (W)	3 max. (CW)	
Quantity/Reel	500	
Operating Temperature	-40°C to +85°C (may be expanded, ask us how)	
Storage Conditions for unused product on T&R and max shelf period	+5 to +35 °C Humidity 45 - 75%RH 18 mos. max	



Need help with the antenna layout or performance?  
We offer 2 free layout/optimization reviews!  
Contact our applications engineers at:  
<https://www.johansontechnology.com/ask-a-question>

\*All frequencies can be achieved in a combined antenna and switch solution. More information can be found in our Application Note 90 (Page 10)

Part Number Explanation			
P/N Suffix	Packing Style	Bulk	Suffix = S e.g. 0830AT54A2200S
		T & R	Suffix = E e.g. 0830AT54A2200E
		100% Tin	Suffix = None e.g. 0830AT54A2200(E or S)
	Evaluation Boards	Tuning Version 1: 0830AT54A2200-EB1SMA (large) Tuning Version 2: 0830AT54A2200-EB2SMA (large)	
		Tuning Version 1: 0830AT54A2200-EB3SMA (small) Tuning Version 2: 0830AT54A2200-EB4SMA (small)	

Mechanical Dimensions		
	In	mm
L	0.591 ± 0.008	15.00 ± 0.2
W	0.157 ± 0.008	4.00 ± 0.2
T	0.059 ± 0.008	1.50 ± 0.2
a	0.039 ± 0.012	1.00 ± 0.3

Side View

Top View

Bottom View

Terminal Configuration	
No.	Function
1	FEED
2	NC

Pin 2 must be soldered onto the PCB for mechanical stability

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## Mounting Style, Small: Tuning versions 1 and 2

Orderable p/ns

**Tuning Version 1: 0830AT54A2200-EB3SMA (small)**

**Tuning Version 2: 0830AT54A2200-EB4SMA (small)**

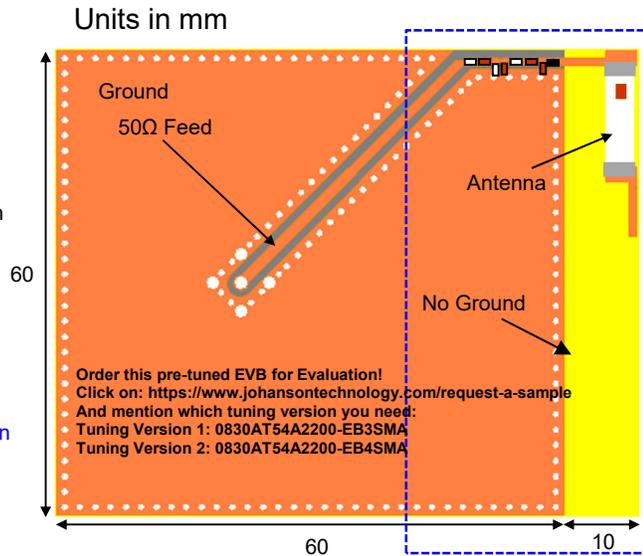
EB3SMA and EB4SMA are evaluation boards which overall size is reduced to demonstrate that this antenna can operate at reduced form factors. Go to page for the larger form factor sizes/examples

Would you like the layout file or us to review your layout?

Contact us by clicking on the link below:

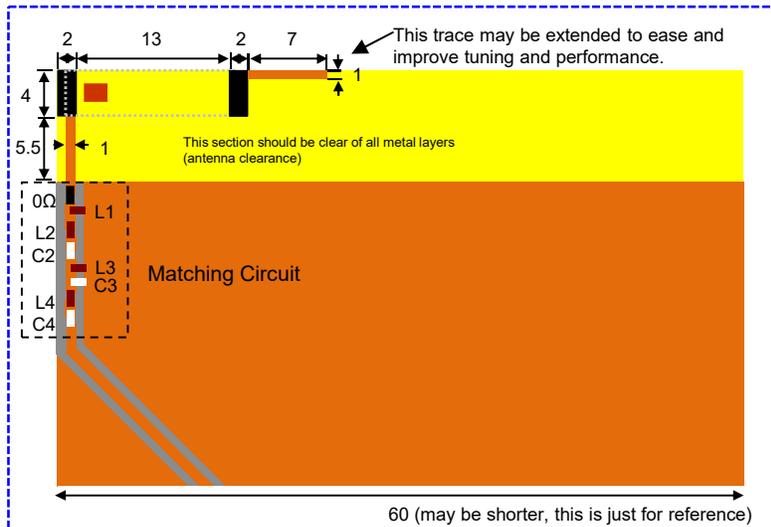
<https://www.johansontechnology.com/ask-a-question>

These are the layout recommendations for both tuning versions 1 and 2



Units in mm

It is recommended that the designer leave available slots for the topology of the network to the right. These particular antenna matching values are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different, just leave them empty until final assembly, then tune.



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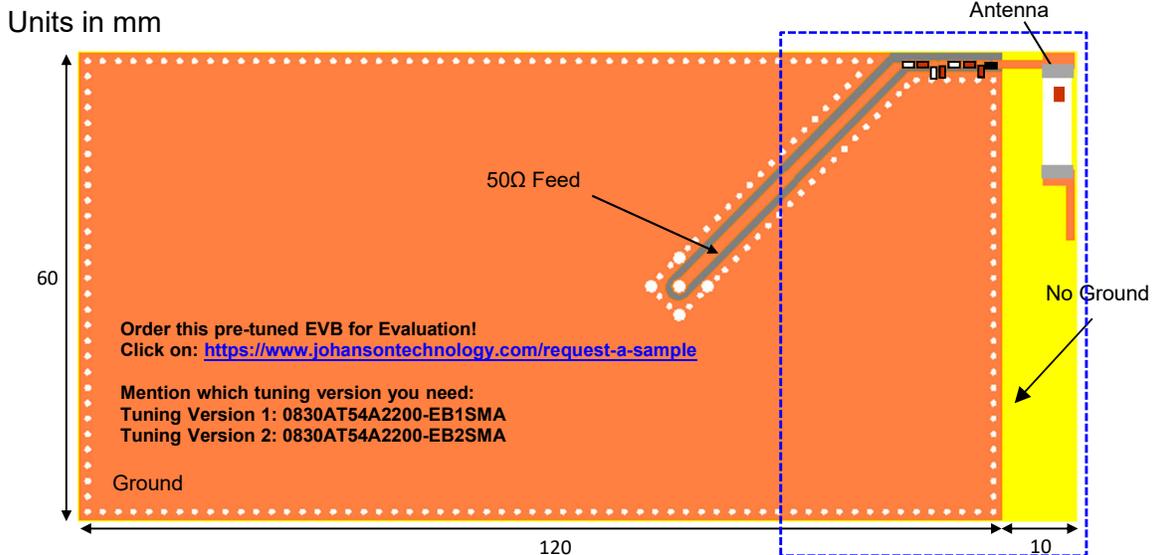
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## Mounting Style, Standard: Tuning versions 1 and 2



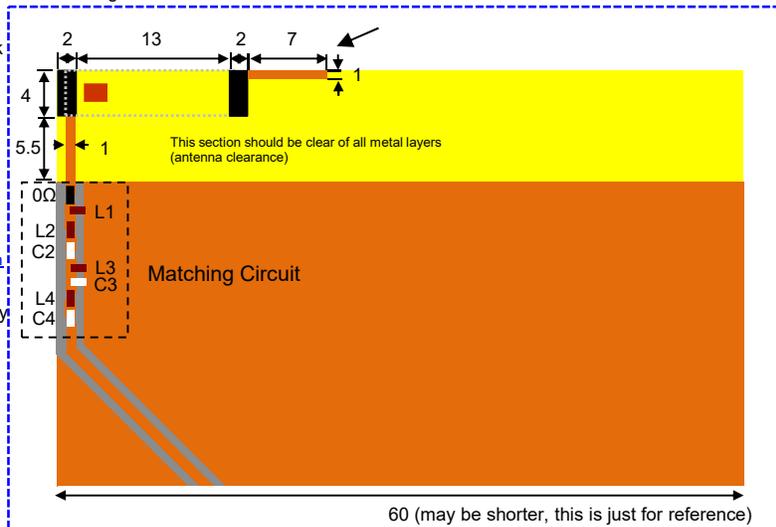
Units in mm

These are the layout recommendations for both tuning versions 1 and 2

It is recommended that the designer leave available slots for the topology of the network to the right. These particular antenna matching values are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different, just leave them empty until final assembly, then tune. Want us to tune it for you and need layout optimization?

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Would you like the layout file so you can copy and paste to your design? Having antenna tuning issues? Contact us by clicking on the link above



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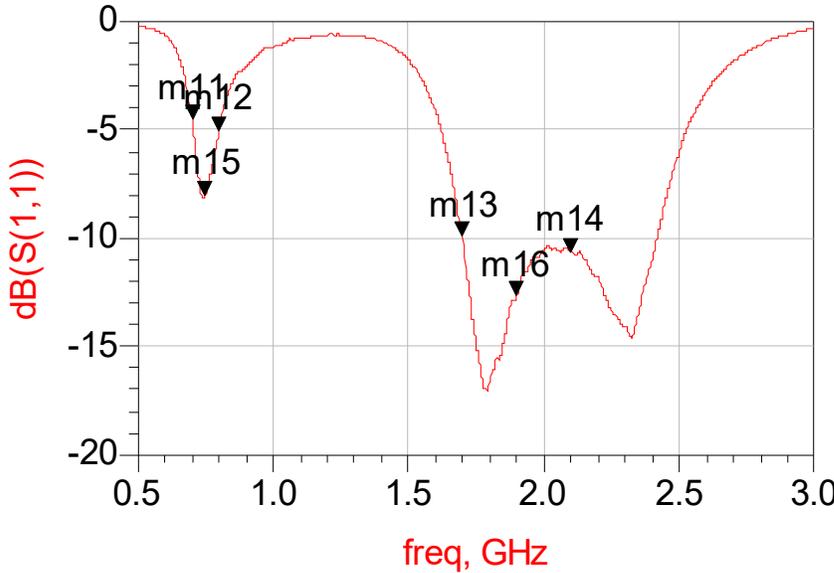
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## Typical Electrical Characteristics (T=25°C) Tuning Version 1

### Tuning Version 1: Evaluation Board p/n: 0830AT54A2200-EB1SMA



m11	freq=700.0MHz	$\text{dB}(S(1,1))=-4.540$
m12	freq=800.0MHz	$\text{dB}(S(1,1))=-5.040$
m13	freq=1.700GHz	$\text{dB}(S(1,1))=-9.885$
m14	freq=2.100GHz	$\text{dB}(S(1,1))=-10.641$
m15	freq=750.0MHz	$\text{dB}(S(1,1))=-7.999$
m16	freq=1.900GHz	$\text{dB}(S(1,1))=-12.691$

To order a pre-tuned 50Ω EVB with a female SMA connector for "Tuning Version 1" click here: <https://www.johansontechnology.com/request-a-sample>  
Reference p/n: 0830AT54A2200-EB1SMA

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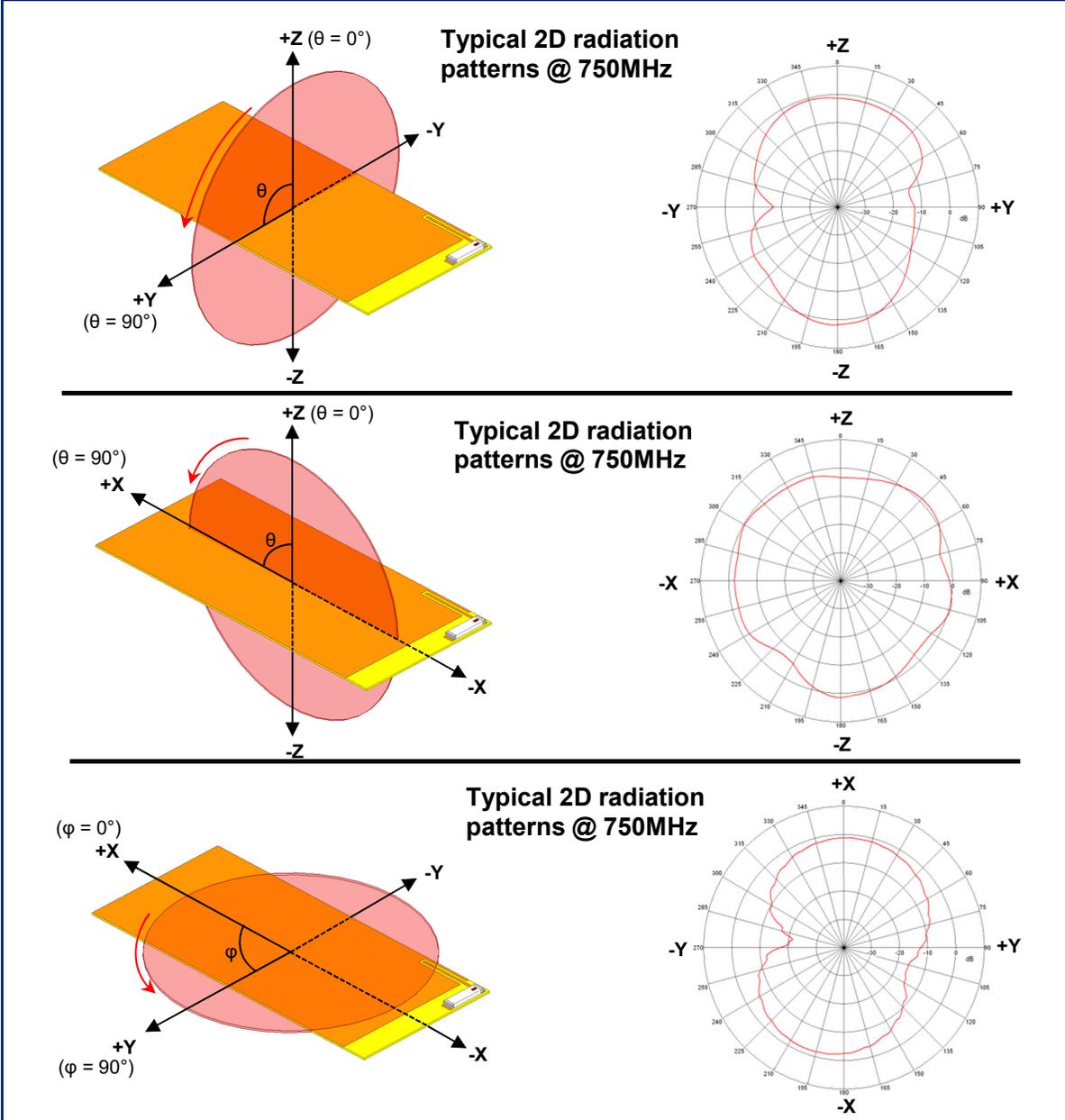
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LTE Multi-Band Ceramic Antenna, SMD. Ideal for Cellular, IoT, CAT M1, P/N: 0830AT54A2200 and NB (Narrow Band) Applications

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## Tuning Version 1: Radiation pattern and gain for P/N 0830AT54A2200-EB1SMA (Low Band)



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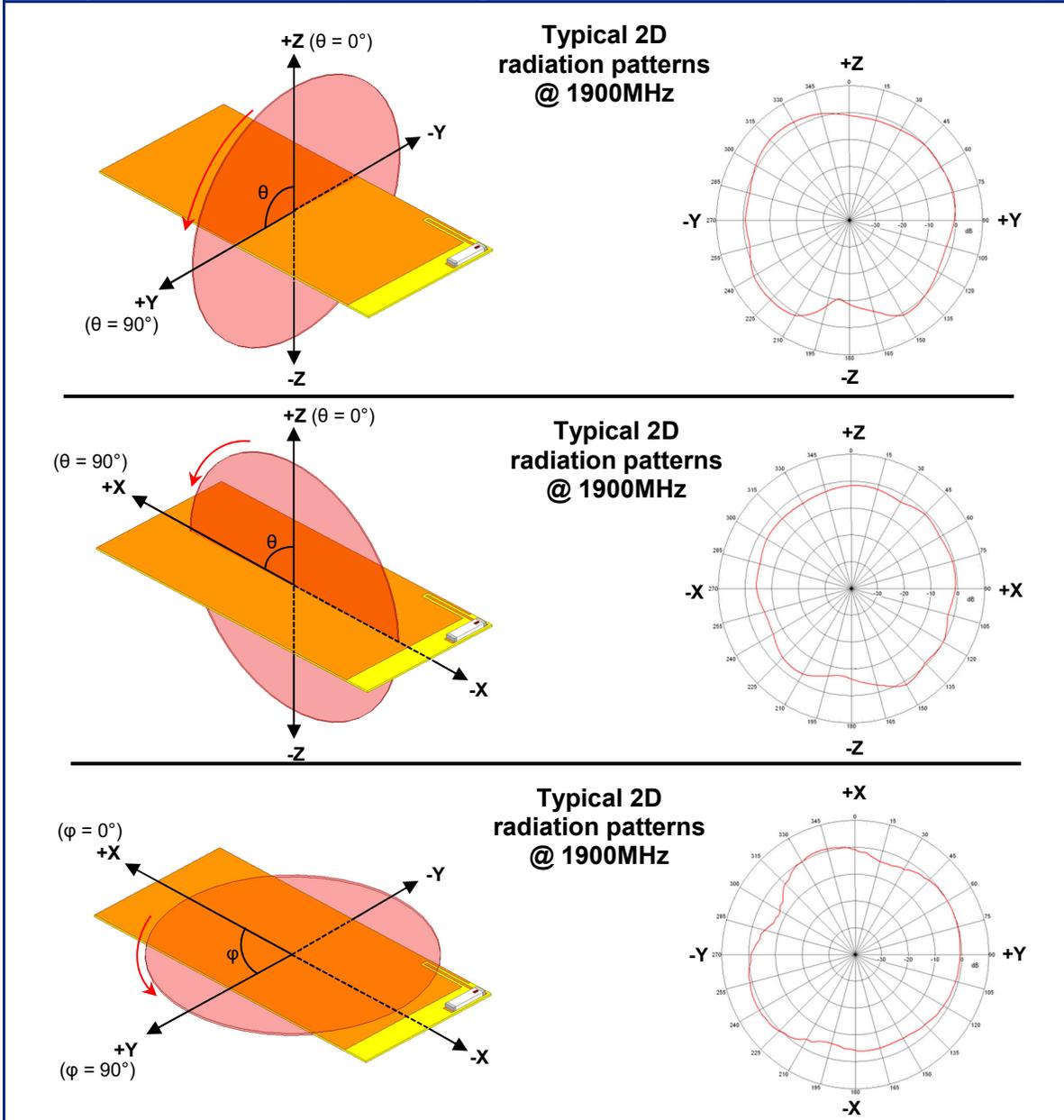
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**LTE Multi-Band Ceramic Antenna, SMD. Ideal for Cellular, IoT, CAT M1, and NB (Narrow Band) Applications** P/N: 0830AT54A2200

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## Tuning Version 1: Radiation pattern and gain for P/N 0830AT54A2200-EB1SMA (High Band)



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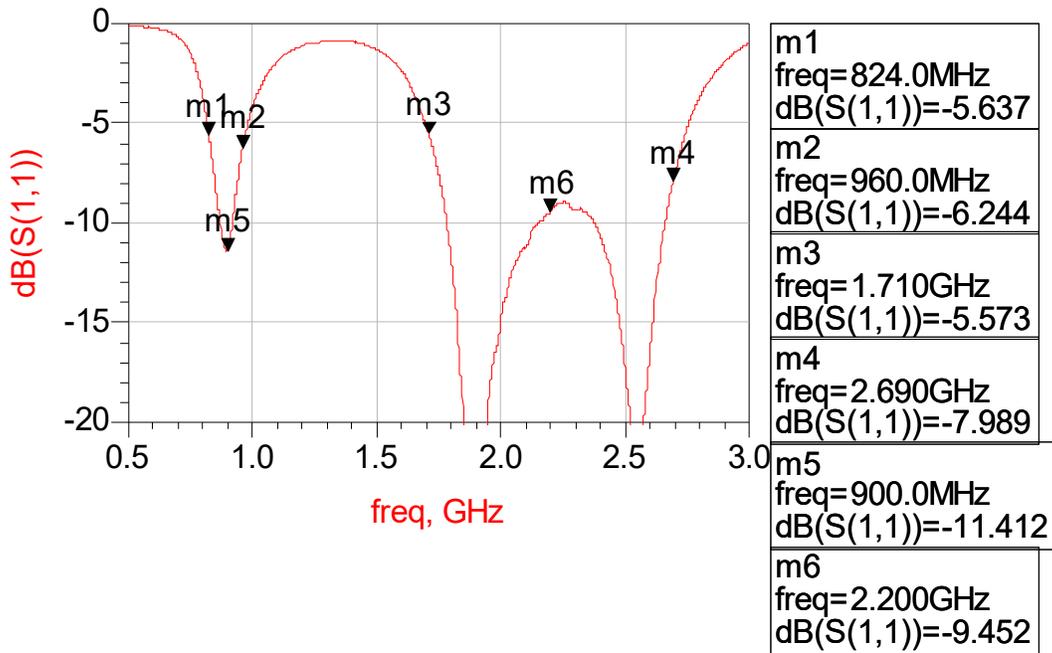
P/N: 0830AT54A2200

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## Typical Electrical Characteristics (T=25°C) Tuning Version 2

### Tuning Version 2: Evaluation Board p/n: 0830AT54A2200-EB2SMA



To order a pre-tuned 50Ω EVB with a female SMA connector for "Tuning Version 2" click here: <https://www.johansontechnology.com/request-a-sample>  
Reference p/n: 0830AT54A2200-EB2SMA

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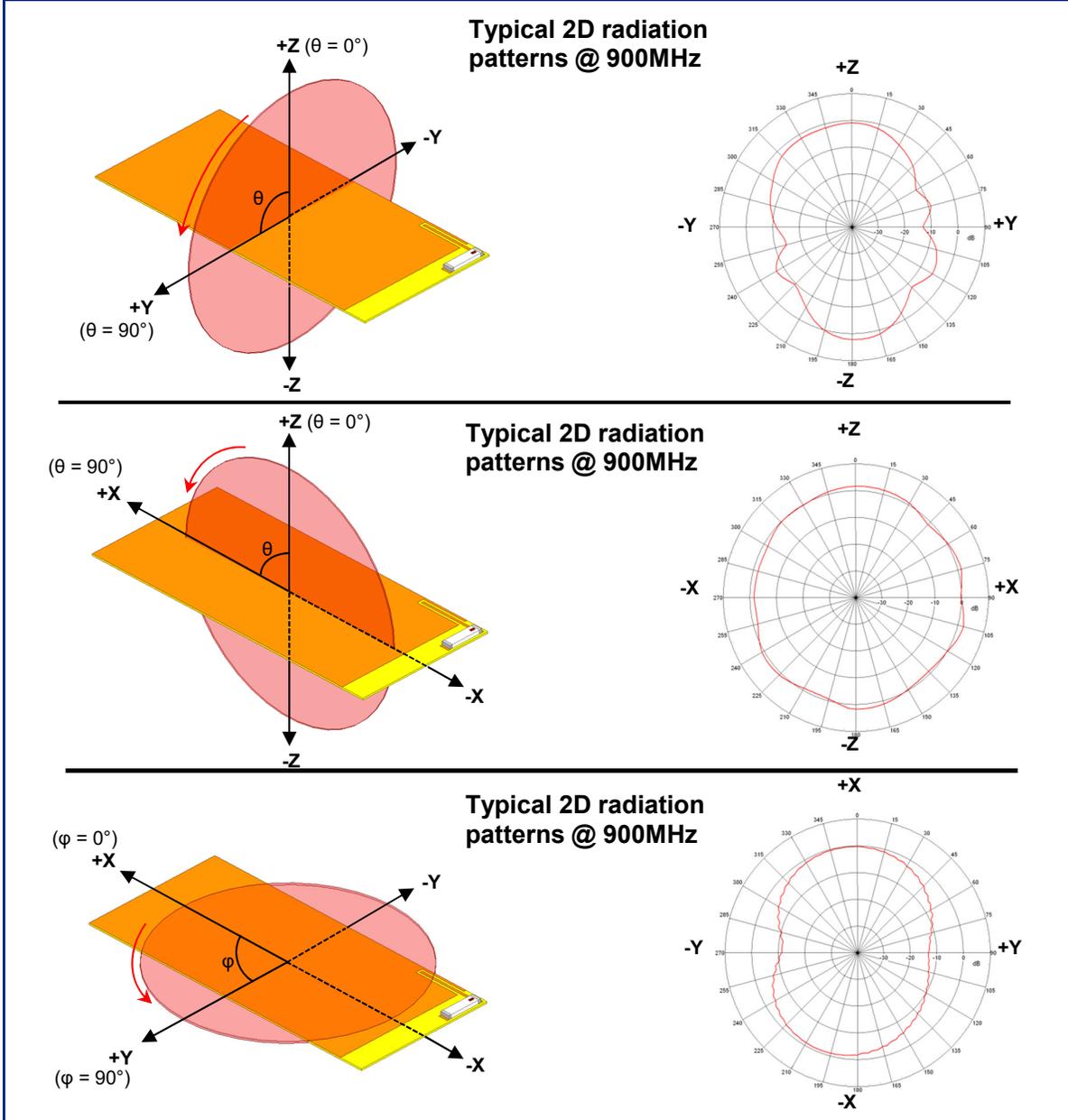
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**LTE Multi-Band Ceramic Antenna, SMD. Ideal for Cellular, IoT, CAT M1, P/N: 0830AT54A2200 and NB (Narrow Band) Applications**

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## Tuning Version 2: Radiation pattern and gain for P/N 0830AT54A2200-EB2SMA (Low Band)



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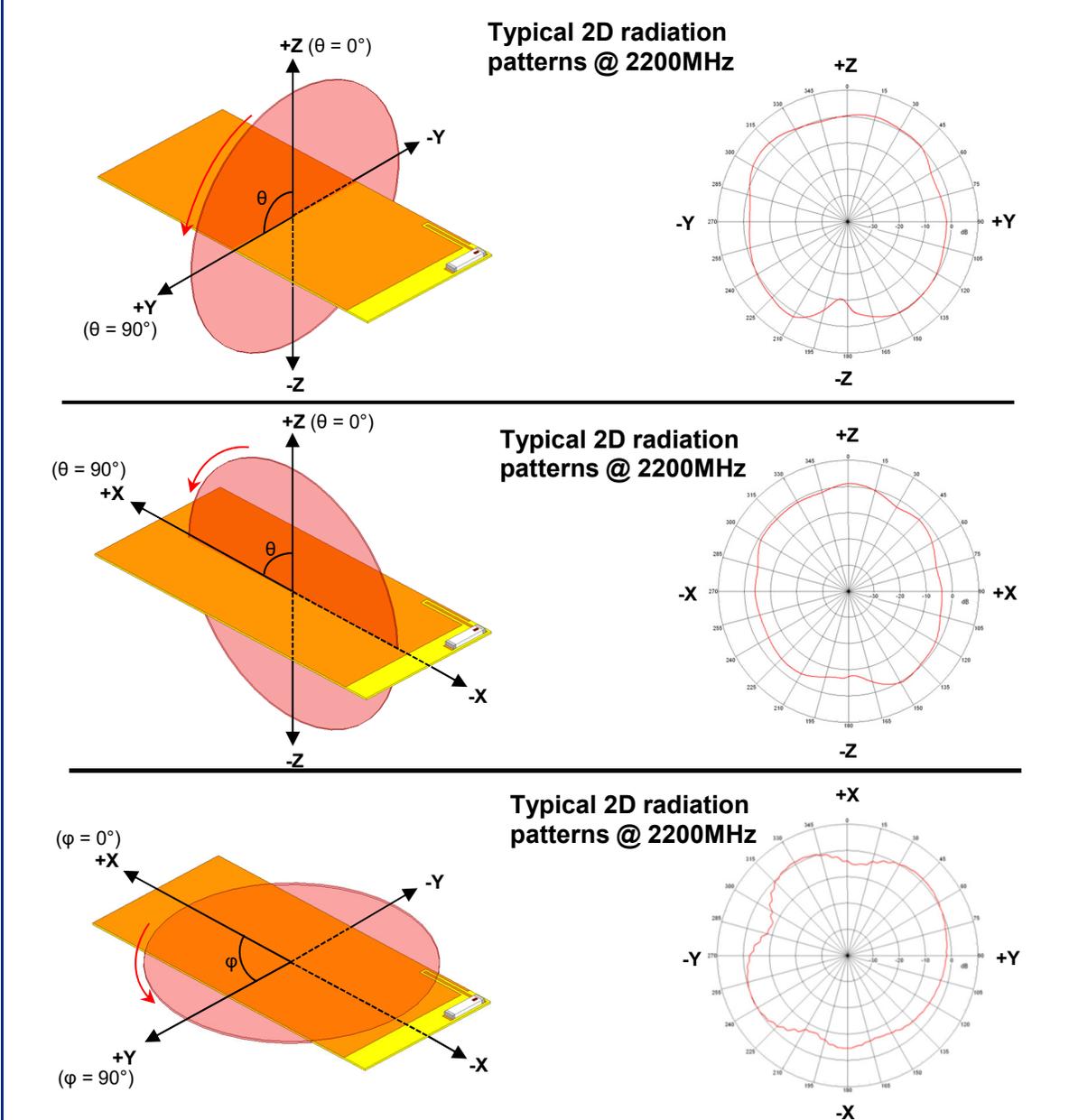
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## Tuning Version 2: Radiation pattern and gain for P/N 0830AT54A2200-EB2SMA (High Band)



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## IoT Multi-band Solution Application Note 90

<https://johansontechnology.com/downloads/iot-multiband-antenna-solution.pdf>

## 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>

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