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: 7/31/2018

Page 1 of 10

General Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>0830AT54A2200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Frequencies</strong></td>
<td>Tuning Version 1</td>
</tr>
<tr>
<td>Frequency (MHz)</td>
<td>700 - 800</td>
</tr>
<tr>
<td></td>
<td>1700 - 2100</td>
</tr>
<tr>
<td>Return Loss (dB)</td>
<td>3.5 min.</td>
</tr>
<tr>
<td><strong>Peak Gain</strong></td>
<td>2.0 typ. (dBi)</td>
</tr>
<tr>
<td>measured on EB1/2</td>
<td>-1.6 typ. (dBi)</td>
</tr>
<tr>
<td><strong>Average Gain</strong></td>
<td>-1.6 typ. (dBi)</td>
</tr>
<tr>
<td>measured on EB1/2</td>
<td>-1.2 typ. (dBi)</td>
</tr>
<tr>
<td>Power Capacity (W)</td>
<td>3 max. (CW)</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage Conditions for unused product on T&amp;R and max shelf period</td>
<td>+5°C to +35°C</td>
</tr>
<tr>
<td>Humidity 45~75%RH</td>
<td>18 mos. max</td>
</tr>
</tbody>
</table>

Part Number Explanation

<table>
<thead>
<tr>
<th>P/N Suffix</th>
<th>Packing Style</th>
<th>Suffix = S</th>
<th>eg. 0830AT54A2200S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T &amp; R</td>
<td>Suffix = E</td>
<td>eg. 0830AT54A2200E</td>
</tr>
<tr>
<td></td>
<td>100% Tin</td>
<td>Suffix = None</td>
<td>eg. 0830AT54A2200(E or S)</td>
</tr>
<tr>
<td>Evaluation Boards</td>
<td>Tuning Version 1: 0830AT54A2200-EB1SMA (large)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tuning Version 2: 0830AT54A2200-EB4SMA (small)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mechanical Dimensions

<table>
<thead>
<tr>
<th>In</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.591 ± 0.008</td>
</tr>
<tr>
<td>W</td>
<td>0.157 ± 0.008</td>
</tr>
<tr>
<td>T</td>
<td>0.059 ± 0.008</td>
</tr>
<tr>
<td>a</td>
<td>0.039 ± 0.012</td>
</tr>
</tbody>
</table>

Terminal Configuration

<table>
<thead>
<tr>
<th>No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FEED</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
</tr>
</tbody>
</table>

Top View

Side View

Bottom View

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High Frequency Ceramic Solutions

LTE Multi-Band Ceramic Antenna, SMD. Ideal for Cellular, IoT, CAT M1, and NB (Narrow Band) Applications

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.

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? Contact us here:
https://www.johansontechnology.com/ask-a-question

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

Order this pre-tuned EVB for Evaluation!
Click on: https://www.johansontechnology.com/request-a-sample
And mention which tuning version you need:
Tuning Version 1: 0830AT54A2200-EB3SMA
Tuning Version 2: 0830AT54A2200-EB4SMA

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**P/N: 0830AT54A2200**

**Detail Specification:** 7/31/2018

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

**Units in mm**

![Diagram of antenna setup with dimensions and layout recommendations for tuning versions 1 and 2.](attachment:image.png)

Order this pre-tuned EVB for Evaluation! Click on: [https://www.johansontechnology.com/request-a-sample](https://www.johansontechnology.com/request-a-sample) And mention which tuning version you need:
- Tuning Version 1: 0830AT54A2200-EB1SMA
- Tuning Version 2: 0830AT54A2200-EB2SMA

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?

[https://www.johansontechnology.com/ask-a-question](https://www.johansontechnology.com/ask-a-question)

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This section should be clear of all metal layers (antenna clearance)

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

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

<table>
<thead>
<tr>
<th>freq, GHz</th>
<th>m11</th>
<th>dB(S(1,1)) = -4.540</th>
</tr>
</thead>
<tbody>
<tr>
<td>700.0MHz</td>
<td>freq=700.0MHz</td>
<td></td>
</tr>
<tr>
<td>750.0MHz</td>
<td>freq=750.0MHz</td>
<td></td>
</tr>
<tr>
<td>800.0MHz</td>
<td>freq=800.0MHz</td>
<td></td>
</tr>
<tr>
<td>1.700GHz</td>
<td>freq=1.700GHz</td>
<td></td>
</tr>
<tr>
<td>2.100GHz</td>
<td>freq=2.100GHz</td>
<td></td>
</tr>
<tr>
<td>1.900GHz</td>
<td>freq=1.900GHz</td>
<td></td>
</tr>
<tr>
<td>2.500GHz</td>
<td>freq=2.500GHz</td>
<td></td>
</tr>
</tbody>
</table>

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](https://www.johansontechnology.com/request-a-sample)

Reference p/n: 0830AT54A2200-EB1SMA

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

Typical 2D radiation patterns @ 750MHz

Typical 2D radiation patterns @ 750MHz

Typical 2D radiation patterns @ 750MHz

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P/N: 0830AT54A2200

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

Typical 2D radiation patterns @ 1900MHz

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

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

![Graph showing dB(S(1,1)) vs freq, GHz with marked frequencies and dB values for m1 to m6.](image)

- m1: freq=824.0MHz, dB(S(1,1))=-5.637
- m2: freq=960.0MHz, dB(S(1,1))=-6.244
- m3: freq=1.710GHz, dB(S(1,1))=-5.573
- m4: freq=2.690GHz, dB(S(1,1))=-7.989
- m5: freq=900.0MHz, dB(S(1,1))=-11.412
- m6: freq=2.200GHz, dB(S(1,1))=-9.452

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](https://www.johansontechnology.com/request-a-sample)

Reference p/n: 0830AT54A2200-EB2SMA
P/N: 0830AT54A2200

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

Typical 2D radiation patterns @ 900MHz

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

Typical 2D radiation patterns @ 2200MHz

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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
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MSL Info
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Packaging information
https://www.johansontechnology.com/tape-reel-packaging

For layout review contact our Applications Team at:
https://www.johansontechnology.com/ask-a-question

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https://www.johansontechnology.com/rohs-compliance

Would you like us to review your layout for free? Need an embedded antenna recommendation for your application? Contact us at:
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