### General Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>0830AT54A2200</th>
</tr>
</thead>
</table>

#### Operating Frequencies

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Tuning Version 1</th>
<th>Tuning Version 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>700 - 800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1700 - 2100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>824 - 960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1710 - 2690</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Return Loss (dB)

- Tuning Version 1: 3.5 min.
- Tuning Version 2: 4.5 min.

#### Peak Gain

- Tuning Version 1: 2.0 typ. (dBi)
- Tuning Version 2: 2.0 typ. (dBi)

#### Average Gain

- Tuning Version 1: -1.8 typ. (dBi)
- Tuning Version 2: -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

---

### Part Number Explanation

<table>
<thead>
<tr>
<th>P/N Suffix</th>
<th>Packing Style</th>
<th>Evaluation Boards</th>
</tr>
</thead>
<tbody>
<tr>
<td>bulk</td>
<td>Suffix = S</td>
<td>Tuning Version 1: 0830AT54A2200-EB1SMA (large)</td>
</tr>
<tr>
<td>T &amp; R</td>
<td>Suffix = E</td>
<td>Tuning Version 2: 0830AT54A2200-EB2SMA (large)</td>
</tr>
<tr>
<td>100% Tin</td>
<td>Suffix = None</td>
<td>Tuning Version 1: 0830AT54A2200-EB3SMA (small)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tuning Version 2: 0830AT54A2200-EB4SMA (small)</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

- Pin 2 must be soldered onto the PCB for mechanical stability

---

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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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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

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.

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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Mounting Style, Standard: Tuning versions 1 and 2

Units in mm

Order this pre-tuned EVB for Evaluation!
Click on: https://www.johansontechnology.com/request-a-sample

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

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

Matching Circuit

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

60 (may be shorter, this is just for reference)

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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>m11</th>
<th>freq=700.0MHz</th>
<th>dB(S(1,1))=-4.540</th>
</tr>
</thead>
<tbody>
<tr>
<td>m12</td>
<td>freq=800.0MHz</td>
<td>dB(S(1,1))=-5.040</td>
</tr>
<tr>
<td>m13</td>
<td>freq=1.700GHz</td>
<td>dB(S(1,1))=-9.885</td>
</tr>
<tr>
<td>m14</td>
<td>freq=2.100GHz</td>
<td>dB(S(1,1))=-10.641</td>
</tr>
<tr>
<td>m15</td>
<td>freq=750.0MHz</td>
<td>dB(S(1,1))=-7.999</td>
</tr>
<tr>
<td>m16</td>
<td>freq=1.900GHz</td>
<td>dB(S(1,1))=-12.691</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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Detail Specification: 4/6/2020

P/N: 0830AT54A2200

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

Typical 2D radiation patterns @ 750MHz

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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

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

Typical 2D radiation patterns @ 900MHz

Typical 2D radiation patterns @ 900MHz

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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Detail Specification: 4/6/2020

IoT Multi-band Solution Application Note 90

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

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