Tri-Band GPS, BDS, and GLNSS, Low Cost, Linearly Polarized, Omnidirectional Chip Antenna

Let us help tune and validate this antenna to your PCB, go to: www.johansontechnology.com/ipcantennaservices for details

1On test board 1575AT43A0040-EB2SMA

General Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>1575AT43A0040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (MHz)</td>
<td>1561 1575 1602</td>
</tr>
<tr>
<td>Ave. Radiated Efficiency</td>
<td>50% 50% 50%</td>
</tr>
<tr>
<td>Peak Gain (dBi typ.)</td>
<td>0.5 (XZ-Total) 0.5 (XZ-Total) 1.0 (XZ-Total)</td>
</tr>
<tr>
<td>Average Gain (dBi typ.)</td>
<td>-2.0 (XZ-Total) -2.0 (XZ-Total) -2.0 (XZ-Total)</td>
</tr>
<tr>
<td>Return Loss (min.)</td>
<td>9.5 dB 9.5 dB 9.5 dB</td>
</tr>
<tr>
<td>Input Power</td>
<td>3W max. (CW)</td>
</tr>
<tr>
<td>Reel Quantity</td>
<td>1,000</td>
</tr>
<tr>
<td>Storage Period</td>
<td>18 months max.</td>
</tr>
</tbody>
</table>

Operating Temperature | -40 to +85°C |
Storage Temperature | -40 to +85°C |
Recommended Storage Conditions of unused product on T&R | +5 to +35°C, Humidity 45~75%RH |

Part Number Explanation

<table>
<thead>
<tr>
<th>P/N Suffix</th>
<th>Packing Style</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Bulk (loose)</td>
<td>Suffix = S</td>
</tr>
<tr>
<td>E</td>
<td>T &amp; R</td>
<td>Suffix = E</td>
</tr>
<tr>
<td></td>
<td>100% Tin</td>
<td>Suffix = E or S</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L</th>
<th>0.276 ± 0.008</th>
<th>7.00 ± 0.20</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>0.079 ± 0.008</td>
<td>2.00 ± 0.20</td>
</tr>
<tr>
<td>T</td>
<td>0.031 ± .004/.008</td>
<td>0.80 ± +0.1/-0.2</td>
</tr>
<tr>
<td>a</td>
<td>0.020 ± 0.012</td>
<td>0.50 ± 0.30</td>
</tr>
</tbody>
</table>

Orderable EVB for evaluation, it comes with a female SMA connector. Go to: www.johansontechnology.com/component/samplerequest and ask for p/n 1575AT43A0040-EB1SMA

Need help laying out the antenna, want us to review your antenna design (free!), require the Gerber files for this EVB, or would like us to validate the new tuning values of your PCB (fee may apply) go to: www.johansontechnology.com/component/techquestion/

Line width should be designed to match 50ohm characteristic impedance, depending on your PCB material and thickness (distance to GND). CPWG (co-planar waveguide) trace type strongly suggested.
Mounting Considerations, End Mount, GPS/BDS/GLNSS 1.561/1.575/1.602GHz

Note: Matching circuits and component values will be different on the client’s design, depending on PCB layout, geometry, encasement, etc. It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values you see here are used when antenna is mounted on Johanson’s evaluation board.

Need help laying out the antenna, want us to review your antenna design (free!), require the Gerber files for this EVB, or would like us to measure your board, come up with the matching values, and validate on our anechoic chamber (fee may apply) go to: http://www.johansontechnology.com/ask-a-question

*Line width should be designed to match 50ohm characteristic impedance, depending on your PCB material and thickness (distance to GND)

Mounting Considerations, Corner Mount, GPS 1.575GHz Only
EVB 1, End Mount, Tri-Band GPS/BDS/GLNSS layout guidelines

This board has a female SMA connector on the opposite side

Would you like the layout files? Send us a message at:
http://www.johansontechnology.com/ask-a-question/

Order it here:
http://www.johansontechnology.com/request-a-sample

Return Loss and Impedance
## Typical Radiation Patterns on EVB 1, End Mount

Typical Radiation Patterns

### XY-V/XY-H

- **XY-cut scanning direction**
- **XY cut @1.575GHz**
- **Total**
- **Horizontal**

### XZ-V/XZ-H

- **XZ-cut scanning direction**
- **XZ cut @1.575GHz**
- **Total**
- **Horizontal**

### YZ-V/YZ-H

- **YZ-cut scanning direction**
- **YZ cut @1.575GHz**
- **Total**
- **Horizontal**

Johanson Technology, Inc. reserves the right to make design changes without notice. Please confirm the specifications and delivery conditions when placing your order. All sales are subject to Johanson Technology, Inc. terms and conditions.
Mounting Considerations, Corner Mount, Tri-Band GPS/BDS/GLNSS layout guidelines

Orderable EVB p/n: 1575AT43A0040-EB2SMA

Matching circuit and component values will be different, depending on PCB layout. Line width should be designed to match 50ohm characteristic impedance, depending on PCB material and thickness. CPWG (co-planar waveguide) type trace strongly recommended.

Test Board

Need help laying out the antenna, want us to review your antenna design (free!), require the Gerber files for this EVB, or would like us to validate the new tuning values of your PCB (fee may apply) go to: www.johansontechnology.com/component/techquestion/
Electrical Characteristics (T=25°C)

Return Loss

<table>
<thead>
<tr>
<th>freq, GHz</th>
<th>dB(S(1,1))</th>
</tr>
</thead>
<tbody>
<tr>
<td>m98</td>
<td>-17.667</td>
</tr>
<tr>
<td>freq=1.575GHz</td>
<td>dB(S(1,1))=-17.667</td>
</tr>
<tr>
<td>m99</td>
<td>-12.181</td>
</tr>
<tr>
<td>freq=1.561GHz</td>
<td>dB(S(1,1))=-12.181</td>
</tr>
<tr>
<td>m100</td>
<td>-18.790</td>
</tr>
<tr>
<td>freq=1.602GHz</td>
<td>dB(S(1,1))=-18.790</td>
</tr>
</tbody>
</table>
Typical Radiation Patterns on EVB 2, Corner Mount

- Radiation Patterns @ 1.561GHz

**YZ-Plane**

- +Y (Phi=90°)
- +X (Phi=0°)
- +Z (Theta=0°)

**YZ-Plane**

**XZ-Plane**

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Typical Radiation Patterns on EVB 2, Corner Mount

Radiation Patterns @ 1.575GHz

XY-Plane

YZ-Plane

XZ-Plane

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Typical Radiation Patterns on EVB 2, Corner Mount

- Radiation Patterns @ 1.602GHz

XY-Plane

YZ-Plane

XZ-Plane
### Antenna tuning, optimization, and validation services:

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

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

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

### Soldering Information

[www.johansontechnology.com/ipcsoldering-profile](http://www.johansontechnology.com/ipcsoldering-profile)

### MSL Info


### Packaging information

[www.johansontechnology.com/ipcpackaging.html](http://www.johansontechnology.com/ipcpackaging.html)

### For layout review contact our Applications Team at:

[www.johansontechnology.com/component/techquestion](http://www.johansontechnology.com/component/techquestion)

### RoHS Compliance