

"High Frequency Ceramic Solutions"

1.575 & 1.602 GHz GPS/GLONASS SMD Chip Antenna

P/N 1575AT54A0010

Detail Specification: 1/15/2016

Page 1 of 8

General Specifications

| | | | |
|--------------------------------|-----------------|---|--------------------------------|
| Part Number | 1575AT54A0010 | Reel Quantity | 500 pcs |
| Frequency (MHz)* | 1575 - 1605 MHz | Operating Temperature | -40 to +85°C |
| Peak Gain (YZ-total) | 1.3 dBi typ. | Storage Temperature | -40 to +85°C |
| Average Gain (YZ-total) | -0.7 dBi typ. | Recommended Storage Conditions of uninstalled product still on T&R | +5 ~ +35 °C, Humidity 45~75%RH |
| Return Loss | 9.5 dB min. | | |
| Impedance | 50 Ω | Storage Period | 18 months max. |
| Power Capacity | 2W max. (CW) | | |

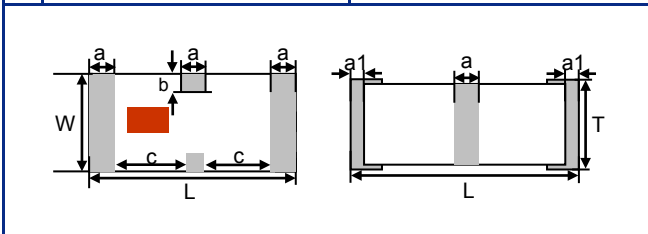
*Plus 5MHz of guard band on each side

Part Number Explanation

| P/N Suffix | Packing Style | Bulk | Suffix = S | e.g.. 1575AT54A0010S |
|------------|-------------------|----------|-----------------|-----------------------------|
| | | T & R | Suffix = E | e.g.. 1575AT54A0010E |
| | Termination style | 100% Tin | Suffix = E or S | e.g.. 1575AT54A0010(E or S) |

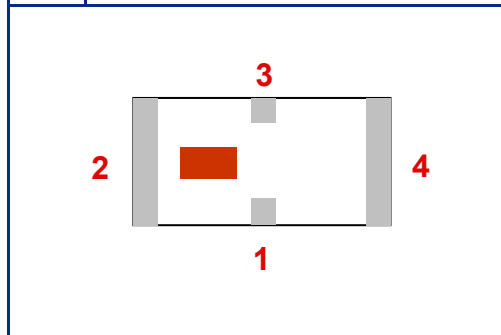
Mechanical Dimensions

| | In | mm |
|-----------|---------------|--------------|
| L | 0.591 ± 0.008 | 15.00 ± 0.20 |
| W | 0.157 ± 0.008 | 4.00 ± 0.20 |
| T | 0.126 ± 0.008 | 3.20 ± 0.20 |
| a | 0.039 ± 0.008 | 1.00 ± 0.20 |
| a1 | 0.020 ± 0.008 | 0.50 ± 0.20 |
| b | 0.020 ± 0.008 | 0.50 ± 0.20 |
| c | 0.236 ± 0.008 | 6.00 ± 0.20 |



Terminal Configuration

| No. | Function |
|----------|---------------|
| 1 | Feeding Point |
| 2 | GND |
| 3 | NC |
| 4 | GND |



Want the layout file of this antenna for all the layout suggestions? Send us a message at: www.johansontechnology.com/ask-a-question

Let us assist you with the antenna design, layout and characterization, contact our RF Applications Team at: www.johansontechnology.com/ask-a-question

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www.johansontechnology.com

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GPS-only Mounting Considerations

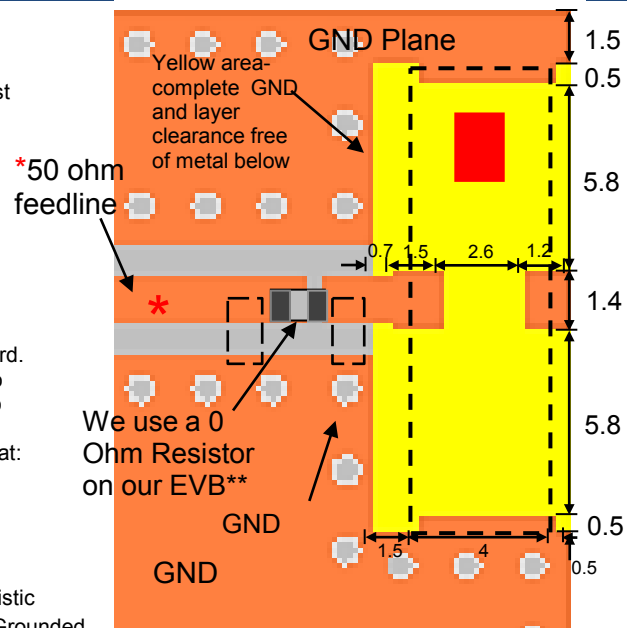
EVB Johanson with SMA (orderable!)
reference p/n: 1575AT54A0010-EB1SMA and go to:
www.johansontechnology.com/component/samplerrequest

Want the layout file of this? Send us a message at:
www.johansontechnology.com/ask-a-question

****Note 2:** It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different. Go to: <http://johansontechnology.com/tuning> and see how to obtain the new values. If you need further antenna assistance help, contact our RF Applications Eng Team at:

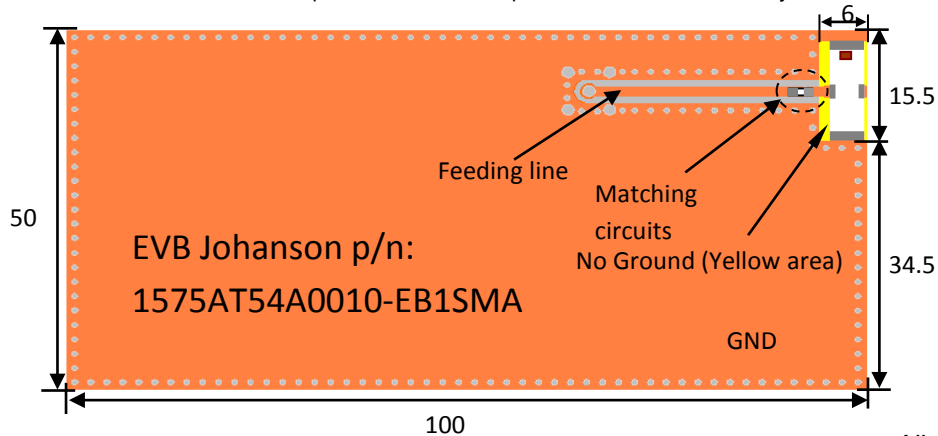
www.johansontechnology.com/ask-a-question

* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness. Grounded CPWG will provide best results!



All units in mm

Johanson SMA test board-top view: Overall GND plane can be smaller, this is just for reference



All units in mm

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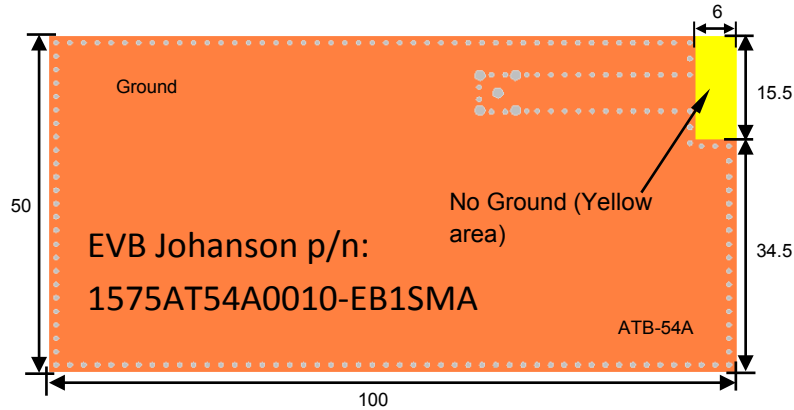
P/N 1575AT54A0010

Detail Specification: 1/15/2016

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GPS-only Mounting Considerations

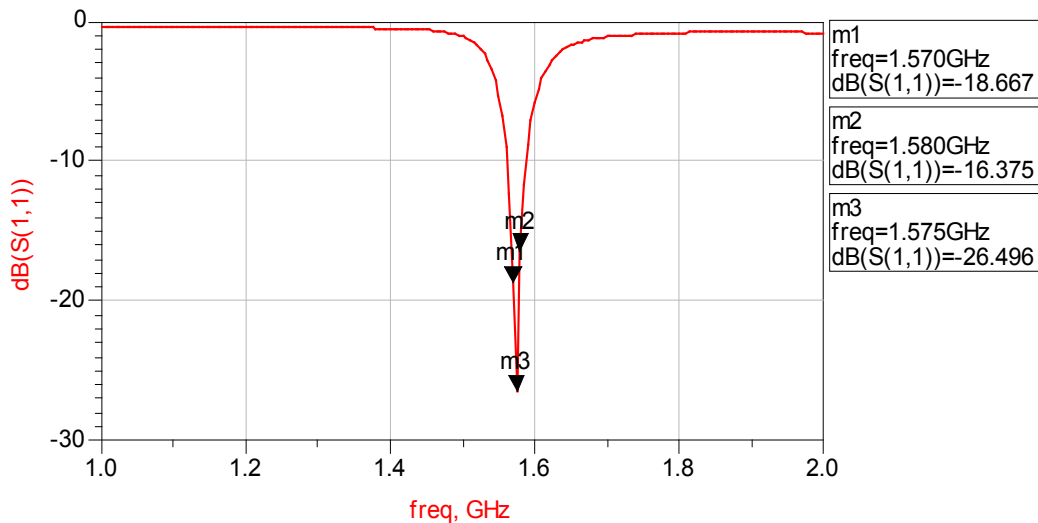
Johanson SMA test board-top view: Overall GND plane may be smaller, this is just for reference



Order this pre-tuned EVB! Limited to one per customer: www.johansontechnology.com/request-a-sample

Typical Electrical Characteristics for GPS only (T=25°C)

Return Loss / Without Matching Circuits



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GPS + GLONASS Mounting Considerations

* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

EVB Johanson with SMA (orderable!)
reference p/n: 1575AT54A0010-EB2SMA and go to:
www.johansontechnology.com/component/samplerequest

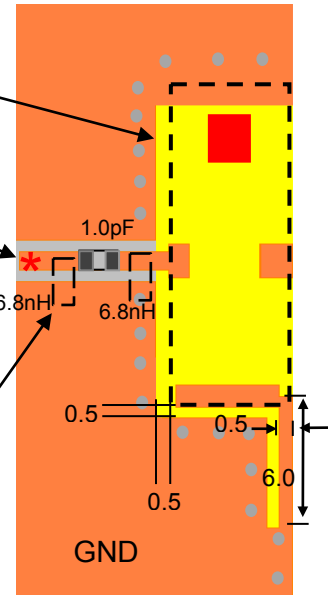
****Note 2:** It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different. Go to:
<http://johansontechnology.com/tuning> and see how to obtain the new values. If you need further help, contact our RF Applications Eng Team at:

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Yellow area-
complete GND
and layer
clearance free of

*50 ohm
feedline

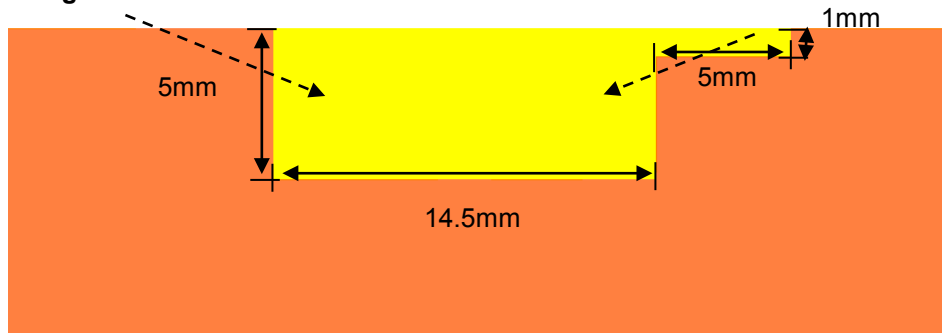
We use a 6.8nH
shunt, 1pF series,
and 6.8nH shunt
on our EVB, but**



All units in mm

Bottom view:

No ground area



Request layout file at: www.johansontechnology.com/ask-a-question Mention "GPS + GLONASS Mounting Considerations" layout file

All units in mm

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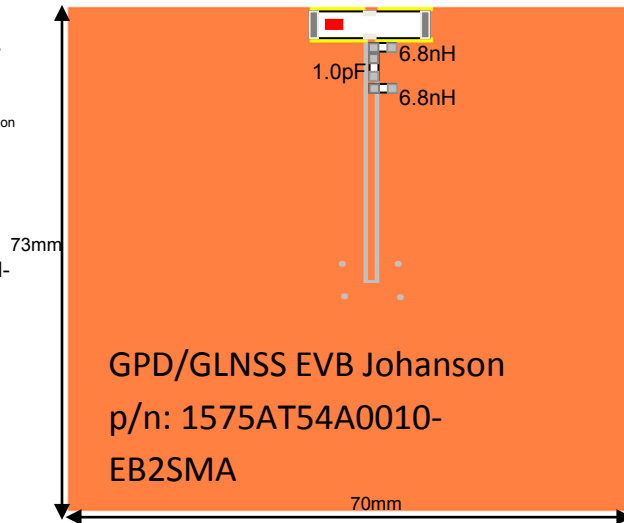
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GPS + GLONASS Mounting Considerations

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Johanson SMA test board-
top view: Overall GND
plane can be smaller, this
is just for reference



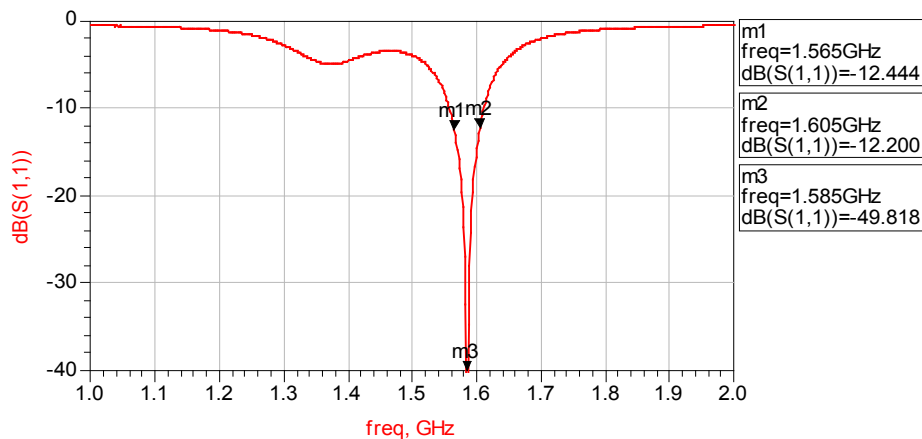
For GPS+GLNSS operation, please mount the antenna in the middle and at the edge of your PCB for optimum performance and enhanced bandwidth.

This EVB is for evaluation purposes and your design does not need to follow this layout exactly.

Order this pre-tuned EVB! Limited to one per customer: www.johansontechnology.com/request-a-sample

Typical Electrical Characteristics for GPS + GLONASS (T=25°C)

Return Loss / Without Matching Circuits



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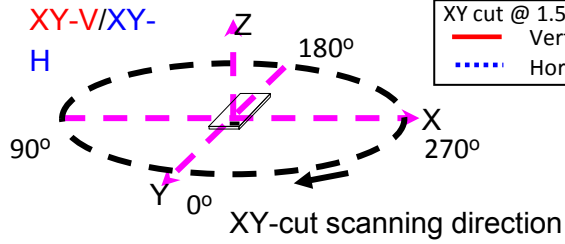
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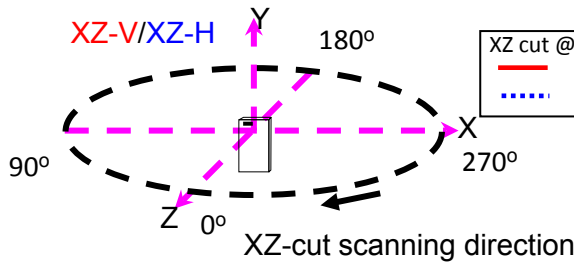
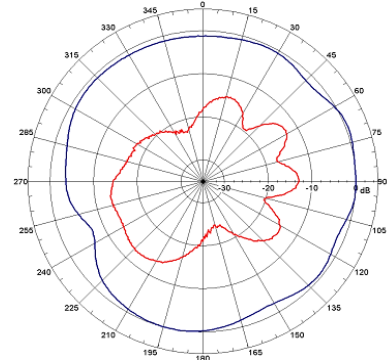
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GPS Typical Electrical Characteristics (T=25°C)

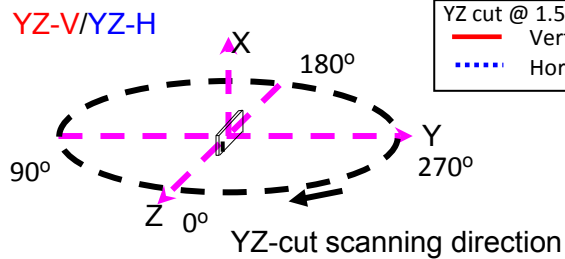
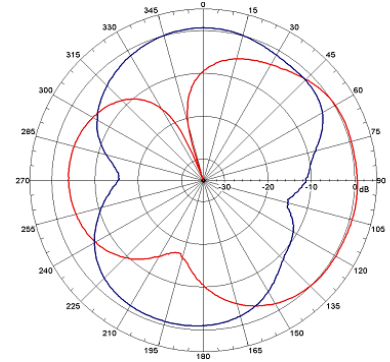
Typical Radiation Patterns



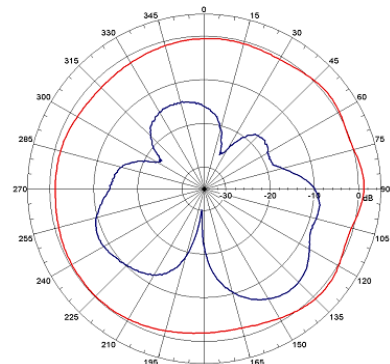
XY cut @ 1.575GHz
— Vertical
- - - Horizontal



XZ cut @ 1.575GHz
— Vertical
- - - Horizontal



YZ cut @ 1.575GHz
— Vertical
- - - Horizontal



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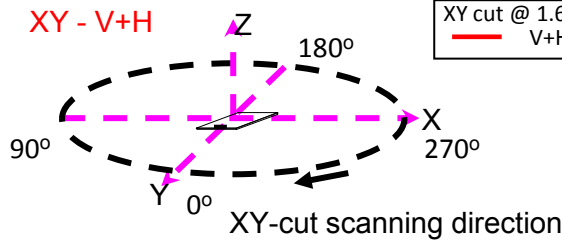
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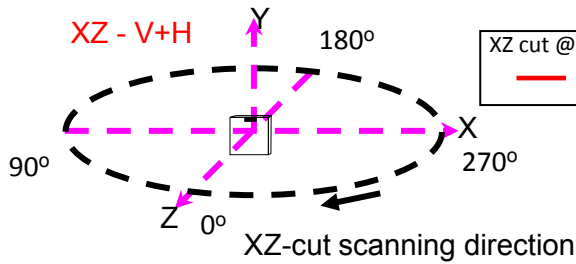
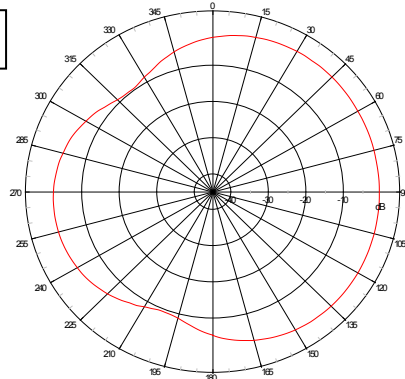
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GLNASS Typical Electrical Characteristics (T=25°C)

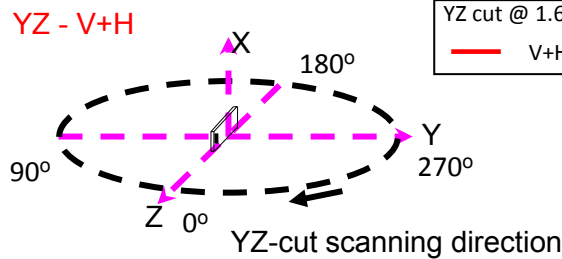
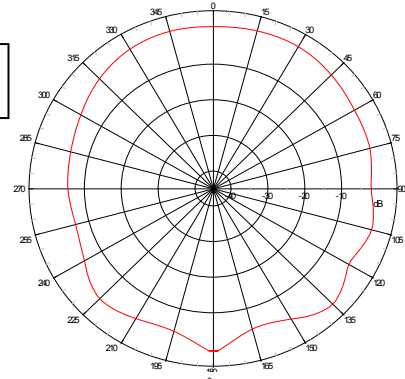
Typical Radiation Patterns: Vertical and Horizontal Cuts are added together in these plots



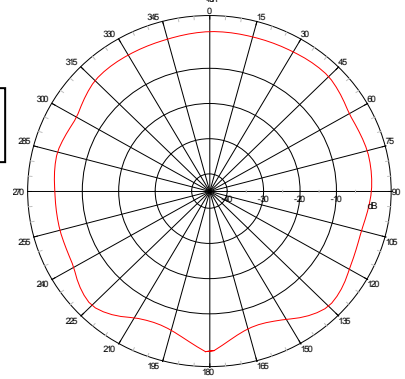
XY cut @ 1.602GHz
— V+H



XZ cut @ 1.602GHz
— V+H



YZ cut @ 1.602GHz
— V+H



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Antenna layout review, tuning, and characterization services

www.johansontechnology.com/ipcantennaservices

More SMD Chip Antennas at:

www.johansontechnology.com/antennas

Soldering Information

www.johansontechnology.com/ipcsoldering-profile

Antenna layout and tuning techniques (How to obtain the new antenna matching values)

www.johansontechnology.com/tuning

Packaging information

www.johansontechnology.com/ipcpackaging.html

RoHS Compliance

www.johansontechnology.com/technical-notes/rohs-compliance.html

MSL Info

www.johansontechnology.com/technical-notes/msl-rating.html

P/N Explanation and Breakdown

www.johansontechnology.com/ipc-pn-explained

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Technical Author: Manuel Carmona



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