

"High Frequency Ceramic Solutions"

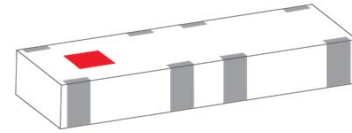
BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

Page 1 of 9

General Specifications

| | | | | | | |
|--|--------------------|--------------------|--------------------|--------------------|------------------------------|----------------|
| Part Number | 2450AD47A1590 | | | | | |
| Frequency (MHz) | 2400~2500 | 1561 | 1575 | 1602 | | |
| Peak Gain (dBi typ.) | 1.0 (YZ-Total) | 0.5 (YZ-Total) | 1.5 (YZ-Total) | 1.5 (YZ-Total) | | |
| Average Gain (dBi typ.) | -1.0 (YZ-Total) | -2.5 (YZ-Total) | -2.0 (YZ-Total) | -2.0 (YZ-Total) | | |
| Return Loss (dB) | 8 min. | 7.5 min. | 9.0 min. | 8 min. | Reel Quantity | 1,000 |
| Ave Radiation Efficiency %¹ (on JTI EVB) | 83 | 45 | 51 | 51 | Operating Temperature | -40 to +85°C |
| Isolation | 20 dB | 15 dB | 15 dB | 15 dB | Storage Temperature | -40 to +85°C |
| | | | | | Storage Period | 18 months max. |
| | | | | | Power Capacity | 2W max. (CW) |



¹On Johanson test board p/n: 2450AD47A1590-EB1SMA. EVB details on pages 2/3

Part Number Explanation

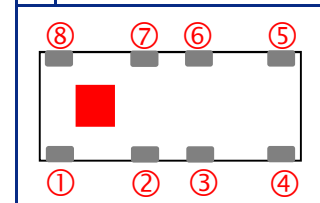
| | | | | |
|-------------------|-------------------------|--|-----------------|-----------------------------|
| P/N Suffix | Packing Style | Bulk (loose) | Suffix = S | e.g., 2450AD47A1590S |
| | | T & R | Suffix = E | e.g., 2450AD47A1590E |
| | | 100% Tin | Suffix = E or S | e.g., 2450AD47A1590(E or S) |
| | Evaluation Board | 2450AD47A1590-EB1SMA (Pre-tuned with SMA connectors) | | |

Mechanical Dimensions

| | In | mm |
|-----------|----------------------|-----------------|
| L | 0.394 ± 0.008 | 10.00 ± 0.20 |
| W | 0.126 ± 0.008 | 3.20 ± 0.20 |
| T | 0.059 ± 0.008 | 1.50 ± 0.20 |
| a1 | 0.031 ± 0.008 | 0.80 ± 0.20 |
| a2 | 0.106 ± 0.008 | 2.70 ± 0.20 |
| a3 | 0.039 ± 0.008 | 1.00 ± 0.20 |
| b | 0.012 ± 0.004/-0.008 | 0.30 ± 0.1/-0.2 |

Terminal Configuration

| No. | Function |
|-----|-----------------------|
| 1 | 2.4GHz Feed Point |
| 2 | GND |
| 3 | GND |
| 4 | 1.5-1.6GHz Feed Point |
| 5 | GND |
| 6 | GND |
| 7 | GND |
| 8 | GND |



Find out more about our antenna design assistance services at:

<http://www.johansontechnology.com/ipc-antenna-services>



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved

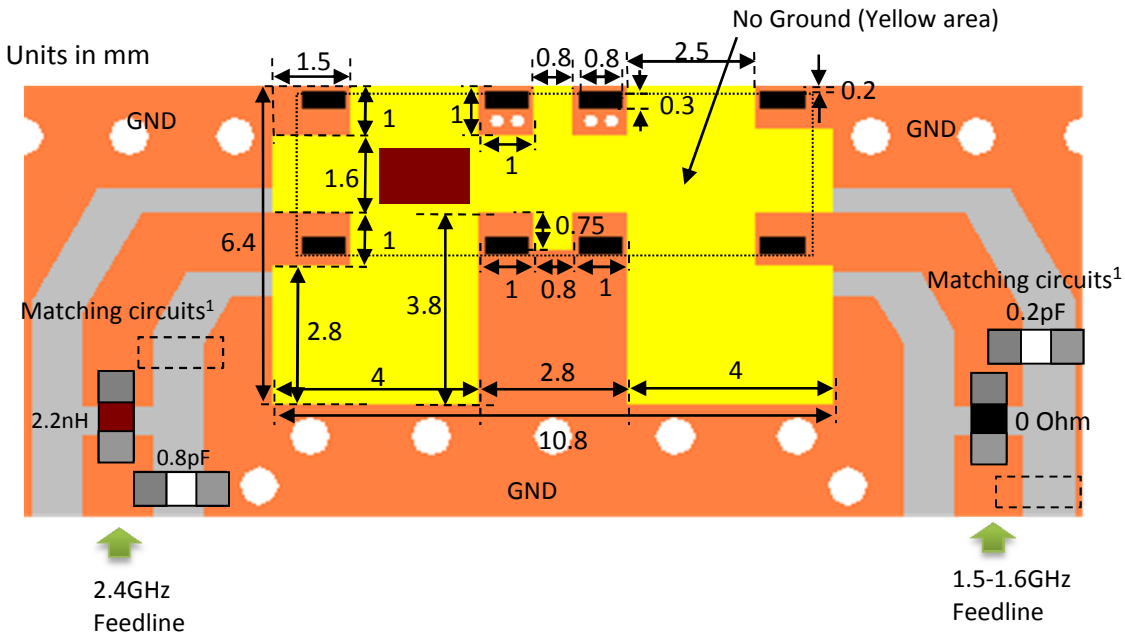
"High Frequency Ceramic Solutions"

BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

Page 2 of 9

Layout Recommendations



- Solder Resist
- Land

Would you like the layout file of the above? Contact our applications engineers at: www.johansontechnology.com/ask-a-question

¹Attention: Matching circuits and component values will be different on the client's design, depending on PCB layout, geometry, 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 validate the new tuning values of your PCB (fee may apply) go to: www.johansontechnology.com/ask-a-question

Orderable EVB for evaluation, it comes with a female SMA connector. Go to: www.johansontechnology.com/component/samplerrequest and ask for p/n 2450AD47A1590-EB1SMA

* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material, thickness, and preferably CPWG (co-planar wave guide) type.

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.



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

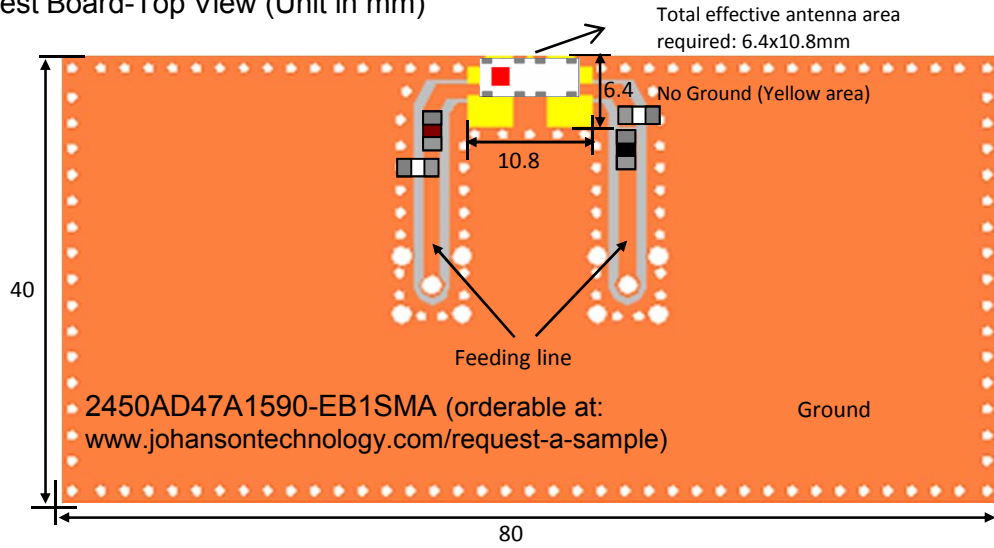
BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

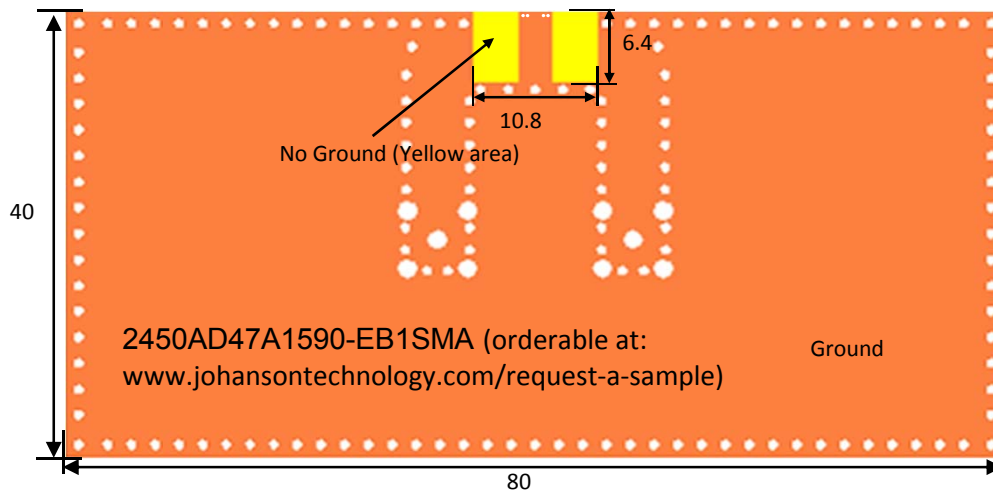
Page 3 of 9

Typical Electrical Characteristics (T=25°C)

❖ Test Board-Top View (Unit in mm)



❖ Test Board-Bottom View (Unit in mm)



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.



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

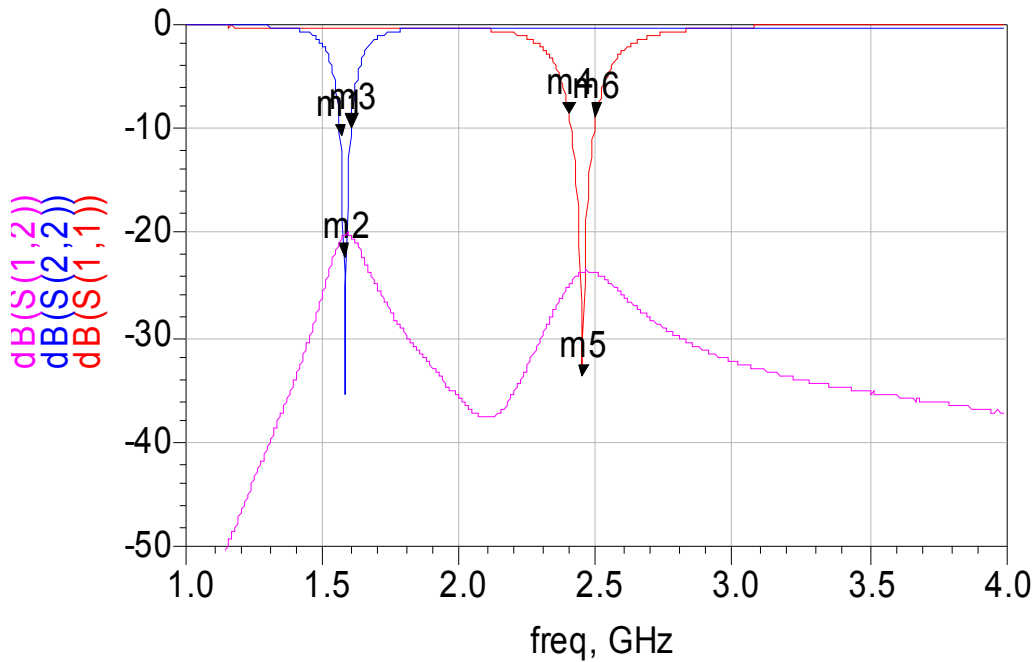
BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

Page 3 of 9

Typical Electrical Characteristics (T=25°C)

Return Loss and Isolation With Matching Circuits On Johanson EVB



| | |
|--------------------|--------------------|
| m1 | m4 |
| Freq=1.561GHz | Freq=2.400GHz |
| dB(S(2,2))=-10.697 | dB(S(1,1))=-8.678 |
| m2 | m5 |
| Freq=1.575GHz | Freq=2.450GHz |
| dB(S(2,2))=-22.294 | dB(S(1,1))=-33.793 |
| m3 | m6 |
| Freq=1.602GHz | Freq=2.500GHz |
| dB(S(2,2))=-9.842 | dB(S(1,1))=-8.901 |

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.



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

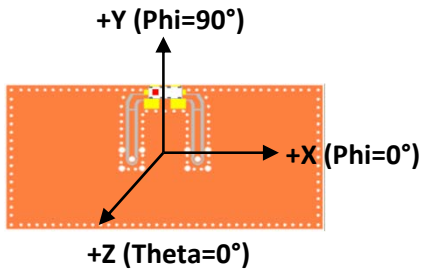
BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

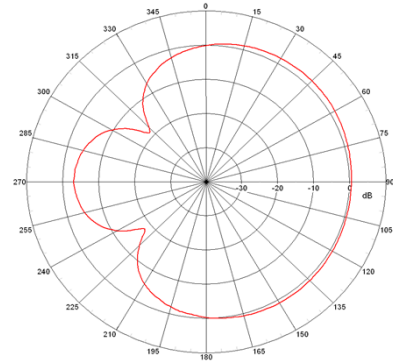
Page 5 of 9

Typical Radiation Patterns

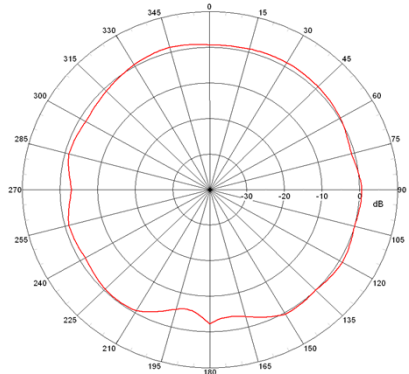
❖ Radiation Patterns @ 2.44GHz



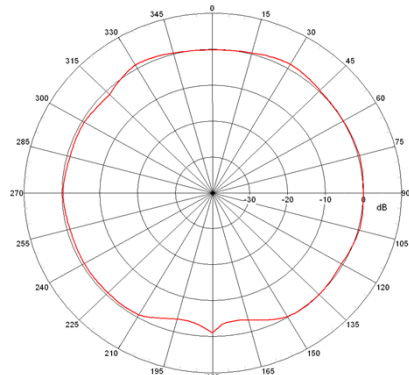
XY-Plane



YZ-Plane



XZ-Plane



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.



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

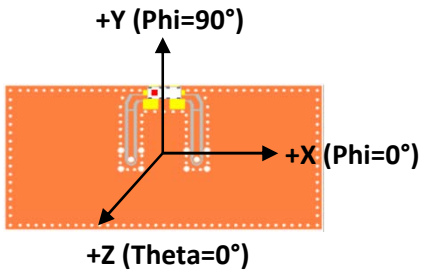
2015 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

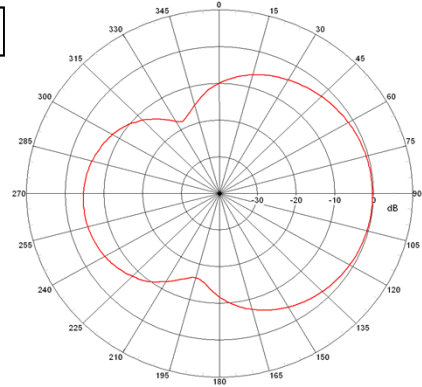
BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590
Detail Specification: 11/10/2015 Page 6 of 9

Typical Radiation Patterns

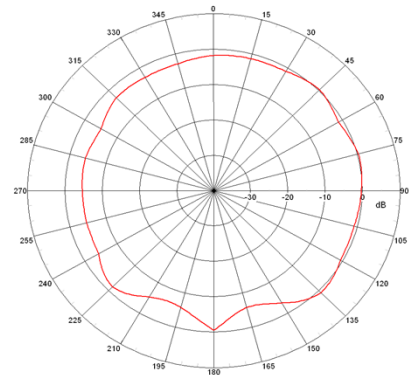
❖ Radiation Patterns @ 1.561GHz



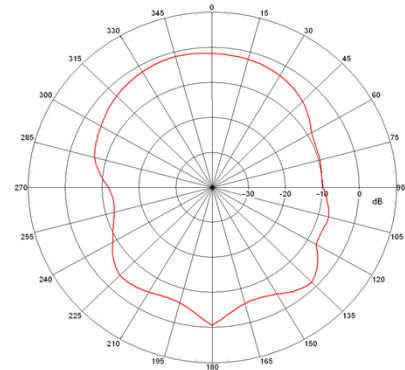
XY-Plane



YZ-Plane



XZ-Plane



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.



www.johansontechnology.com
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821
Ver 1.0 2015 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

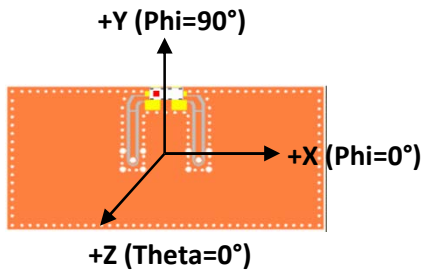
BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

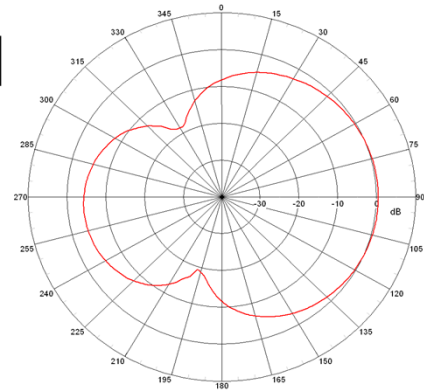
Page 7 of 9

Typical Radiation Patterns

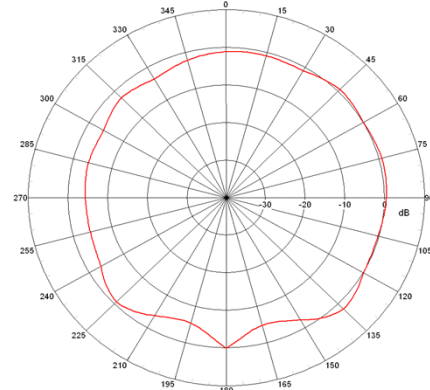
❖ Radiation Patterns @ 1.575GHz



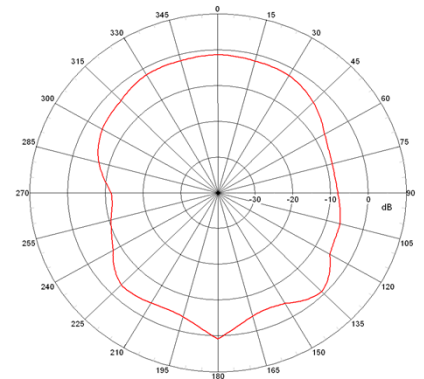
XY-Plane



YZ-Plane



XZ-Plane



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.



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

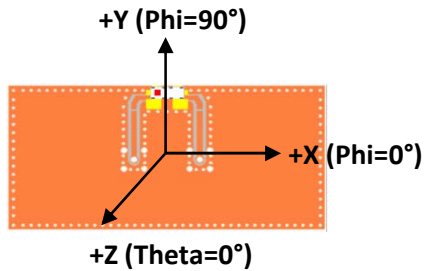
BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

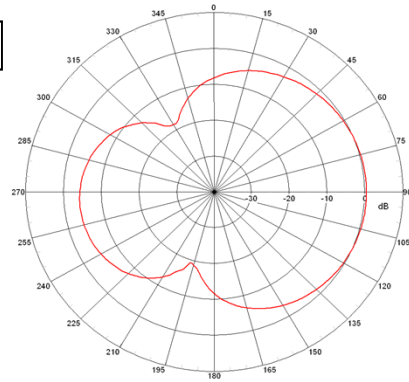
Page 8 of 9

Typical Radiation Patterns

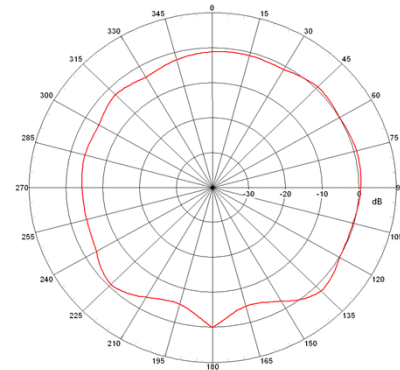
❖ Radiation Patterns @ 1.602GHz



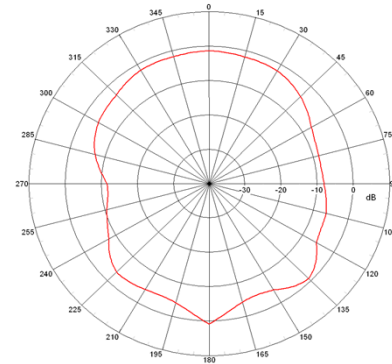
XY-Plane



YZ-Plane



XZ-Plane



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.



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved

"High Frequency Ceramic Solutions"

BT/WiFi and GPS/BDS/GLNSS Quad band, Dual Feed Chip Antenna: 2.4/1.561/1.575/1.602GHz, SMD P/N 2450AD47A1590

Detail Specification: 11/10/2015

Page 9 of 9

Antenna tuning, optimization, and validation services:

www.johansontechnology.com/ipcantennaservices

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

www.johansontechnology.com/antennas

Soldering Information

www.johansontechnology.com/ipcsoldering-profile

MSL Info

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

Packaging information

www.johansontechnology.com/ipcpackaging.html

For layout review contact our Applications Team at:

www.johansontechnology.com/component/techquestion

RoHS Compliance

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

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.



www.johansontechnology.com

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved