THE DATASHEET OF

W3000

Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

Features

- Multipurpose for various frequencies
- Omni directional radiation
- Low profile
- Compact size W x L x H (7 x 1.6 x 1.6 mm)
- Low weight (86 mg)
- Lead free materials
- Fully SMD compatible
- Lead free soldering compatible
- Tape and reel packing
- RoHS compliant product
- MSL 1

Applications

- Bluetooth, WLAN, WiFi
- IEEE 802.11b/g
- ZigBee IEEE 802.15.4
- 2.4 GHz WLAN
- 2.4 GHz ISM Band System
- 868 MHz ISM Band Systems
- GPS 1.575 GHz

Electrical specifications @ +25 °C

Note: Electrical characteristics depend on test board (GP) size and antenna positioning on GP and ground clearance area size. Matching and tuning circuit component values are case depended.

Pulse Finland Oy
Takatie 6
90440 Kempele, Finland
Tel: +358 207 935 500
Fax: +358 207 935 501
www.pulseeng.com/antennas

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Monopole 1.575 GHz

Typical performance

Board	Frequency Range [MHz]	Avg Gain [dBi]	Max Gain [dBi]	Efficiency [%] / [dB]	Return loss min. [dB]	Imped-ance [Ω]	Operating Temperature [° C]
Case #1 11x40mm	1565 – 1585	-3.5 (Peak) -3.9 (Band edges	0.1 (Peak) -0.2 (Band edges)	50/-3 (Peak) 45/-3.5 (Band edges)	-12	50	-40 to +85
Case #2 20x30mm		-3.9 (Peak) -4.1 (Band edges)	0.3 (Peak) 0 (Band edges)	50/-3 (Peak) 45/-3.5 (Band edges)	-15		
Case #3 37x80mm		-2.7 (Peak) -2.9 (Band edges)	2.0 (Peak) 1.7 (Band edges)	70/-1.55 (Peak) 65/-1.9 (Band edges)	-18		

Monopole 2.4 GHz

Typical performance

Board	Frequency Range [MHz]	Avg Gain [dBi]	Max Gain [dBi]	Efficiency [%] / [dB]	Return loss min. [dB]	Imped-ance [Ω]	Operating Temperature [° C]
Case #1 11x40mm	2400 – 2483.5	-4.1 (Peak) -3.7 (Band edges)	1.4 (Peak) 1.9 (Band edges)	65/-0.3 (Peak) 55/-0.6 (Band edges)	-18	50	-40 to +85
Case #2 20x30mm		-4.0 (Peak) -4.3 (Band edges)	2.2 (Peak) 1.5 (Band edges)	52/-2.9 (Peak) 46/-3.4 (Band edges)	-12		

ISM 868 MHz

Typical performance

Board	Frequency Range [MHz]	Avg Gain [dBi]	Max Gain [dBi]	Efficiency [%] / [dB]	Return loss min. [dB]	Imped-ance [Ω]	Operating Temperature [° C]
Case #1 20x40mm Vertical	858 – 878	-6.5 (Peak) -7 (Band edges)	-1.8 (Peak) -2.5 (Band edges)	29/-5.4 (Peak) 25/-6 (Band edges)	-10	50	-40 to +85
Case #2 20x40mm Horizontal		-6.5 (Peak) -6.8 (Band edges)	-1.4 (Peak) -2 (Band edges)	30/-5.3 (Peak) 28/-5.55 (Band edges)			

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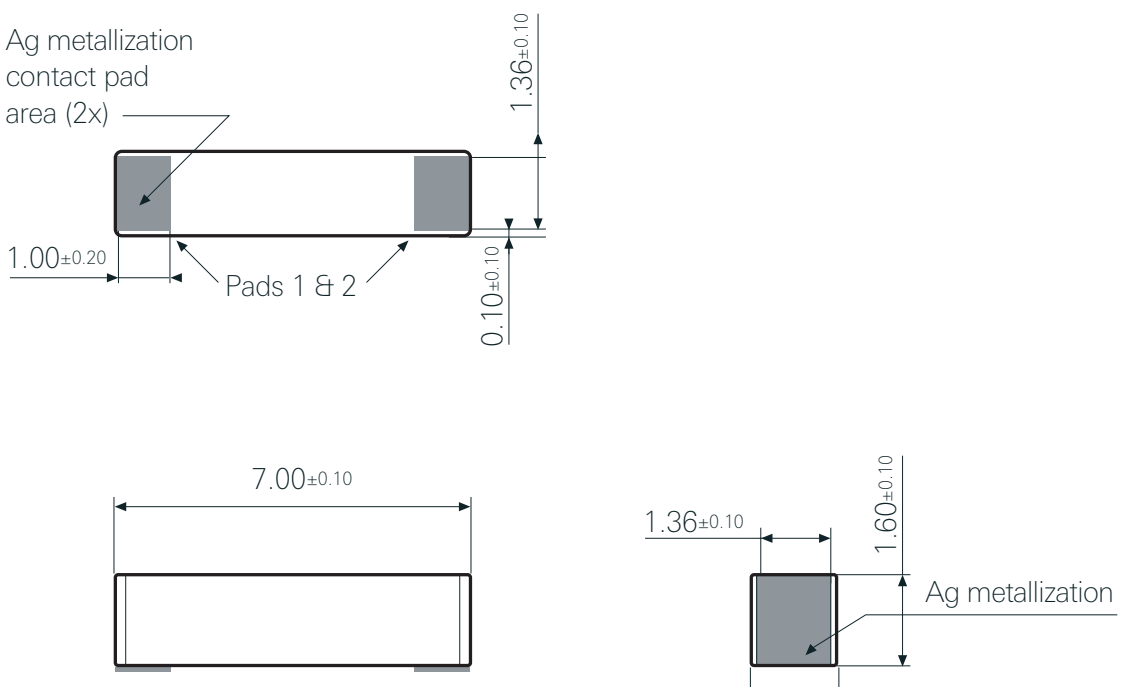
Terminal Configuration and Dimensions



Antenna features

No.	Terminal name	Terminal Dimensions
1	Feed / GND	1.00 x 1.36 mm
2	Feed / GND	1.00 x 1.36 mm

Antenna is symmetrical.
Either of terminals 1 or 2 can be feed / GND

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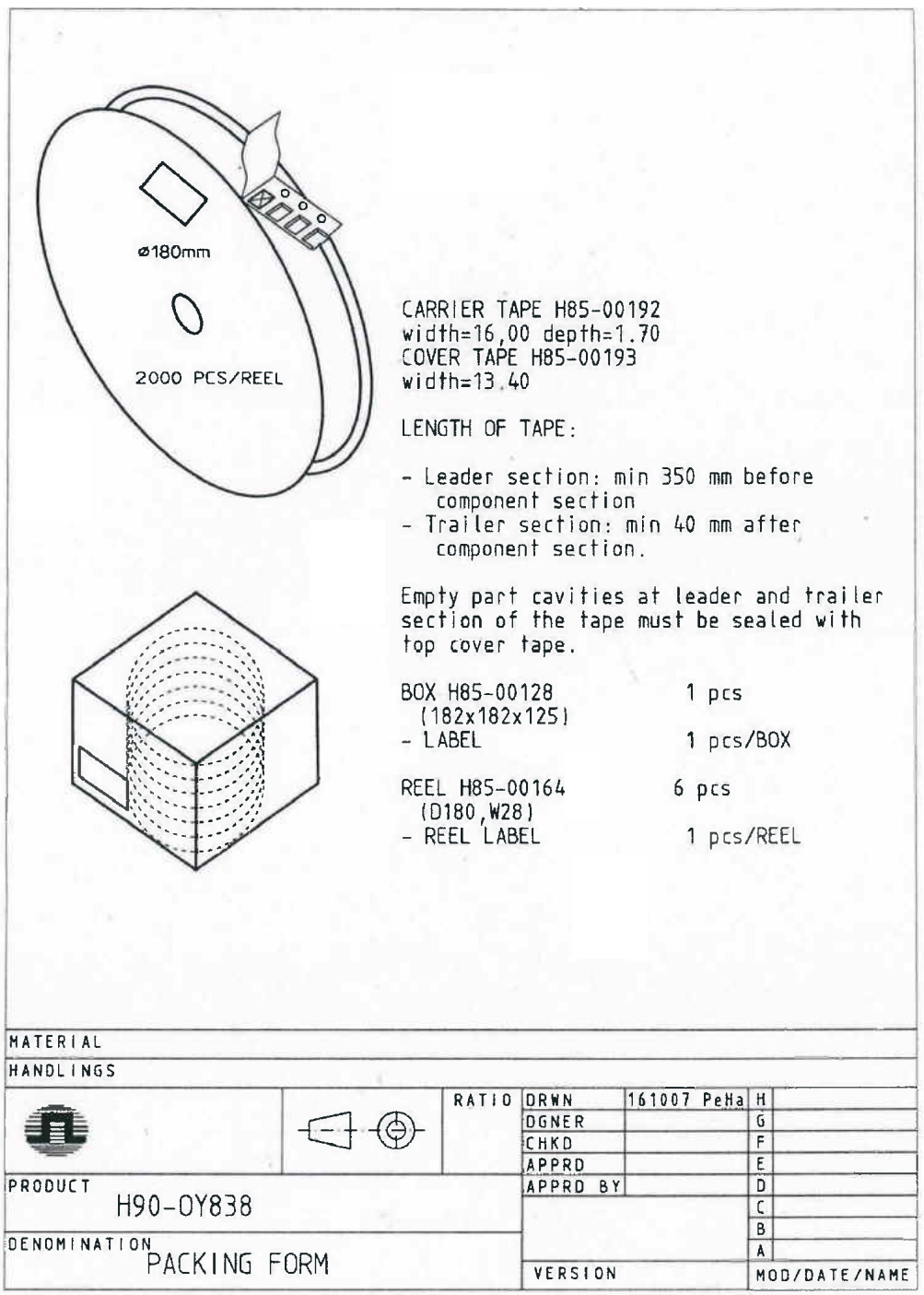
Packing Form



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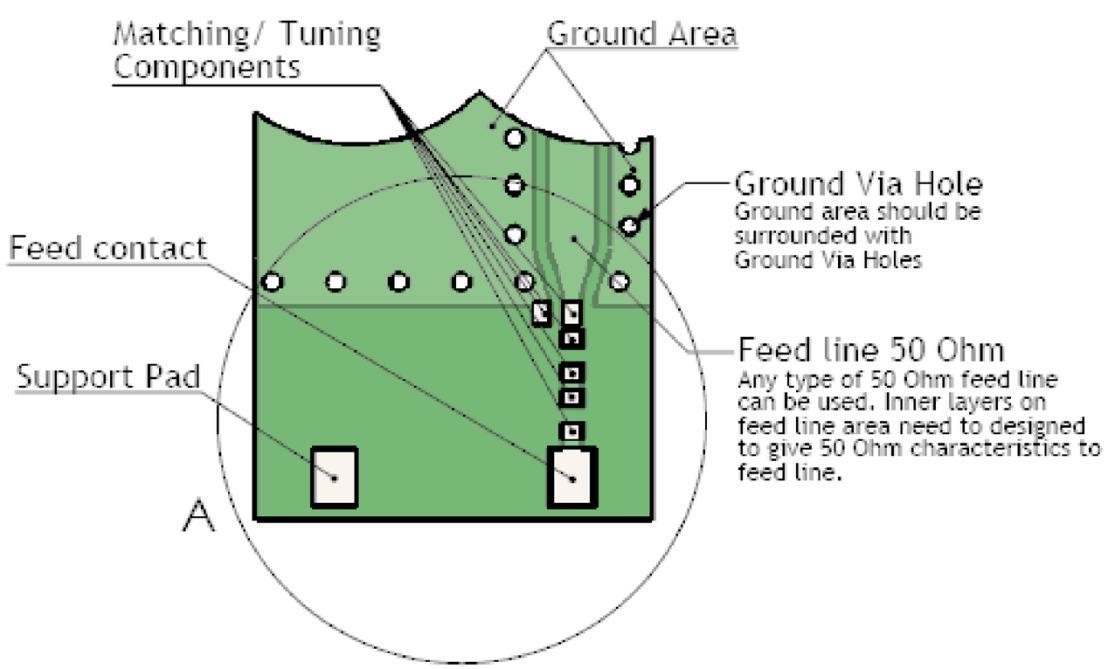
Antenna PWB Layout Specifications

Ground cleared under antenna, clearance area 11.00 x 6.00 mm

Matching and tuning component values depend on application and surrounding mechanics / materials.
Feed line should be designed to match 50 Ω characteristic impedance, depending on PWB material and thickness.
Recommended test board layout for electrical characteristic measurement, test board outline size 11 x 40 mm.
Recommended PWB manufacturing tolerances according to standard: IPC-A-600, revision G

PWB layout for W3000 Monopole Antenna

Note: All dimensions are in metric system.



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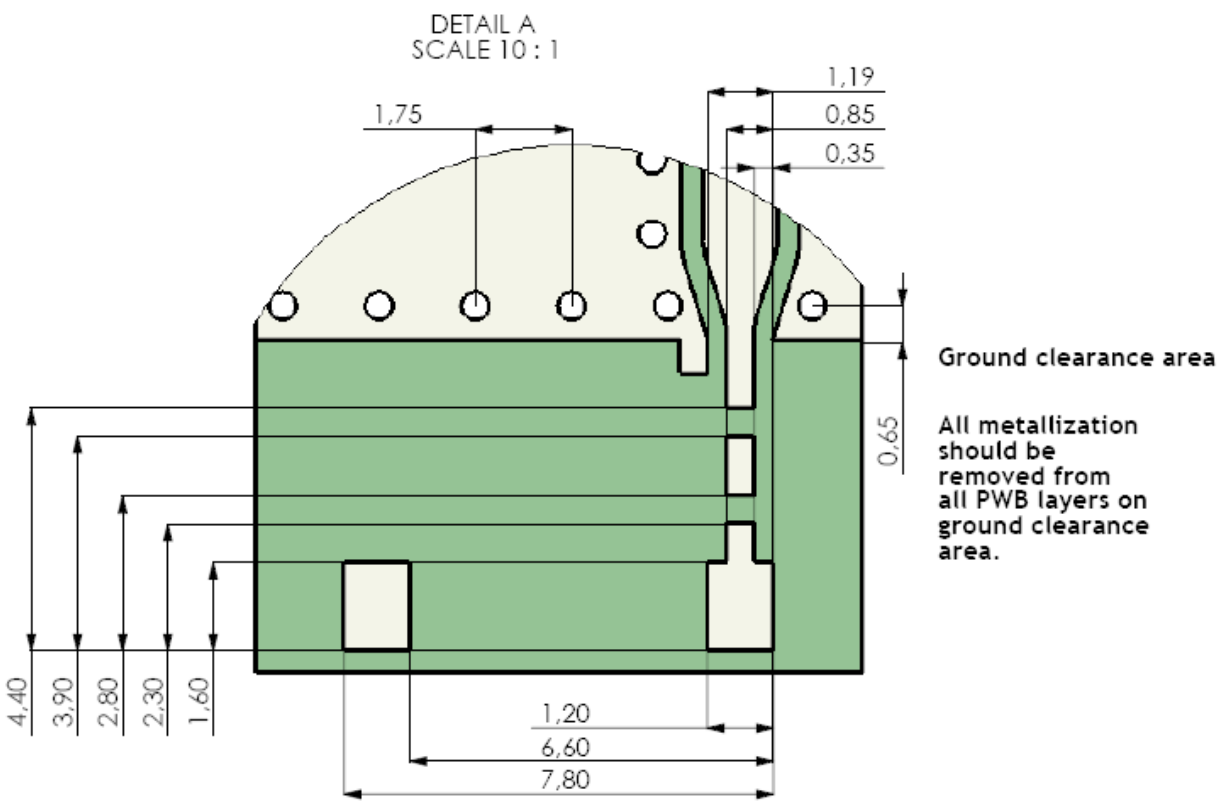
PWB Pad Dimensions



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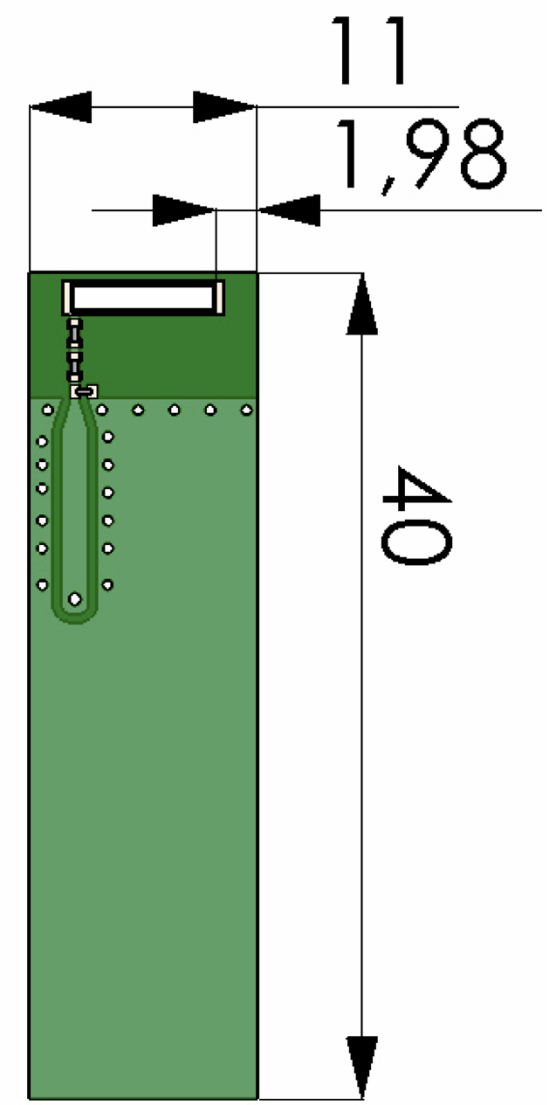
GPS Antenna Case #1

Board Size 40 x 11 mm

Recommended antenna position on PWB for W3000 MONOPOLE Antenna



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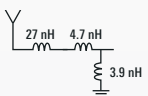
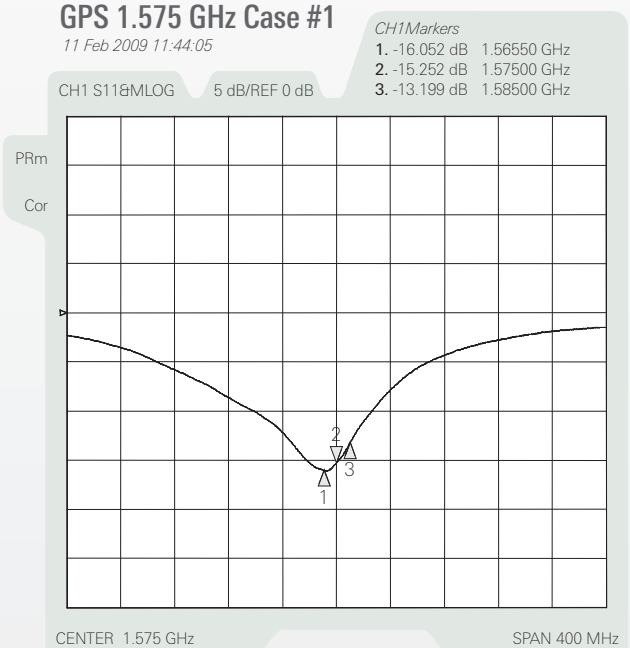
GPS Antenna Case #1, Test Set Up and Measurement Performance

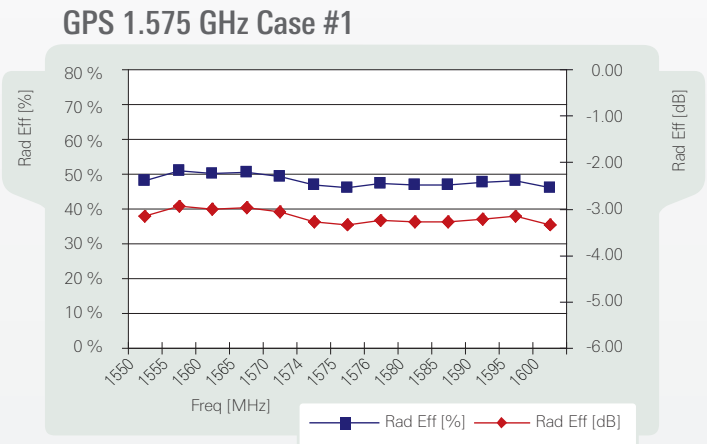
Ground cleared under antenna, clearance area 11.00 x 6.00 mm.

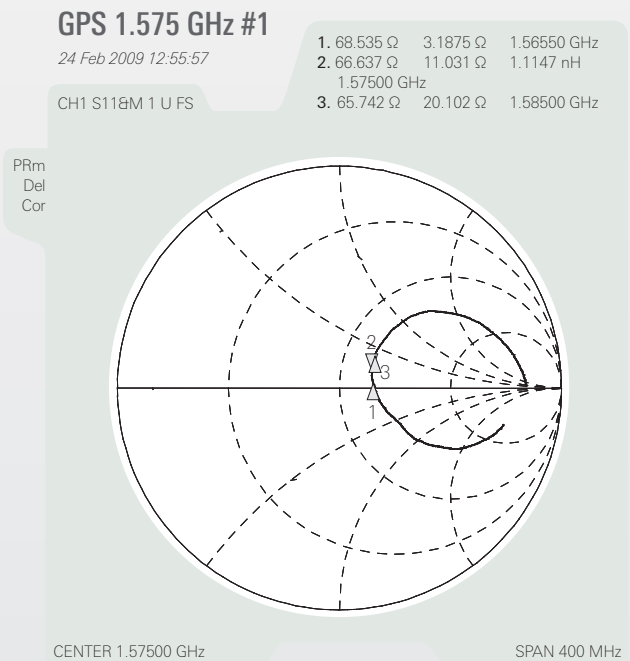
Typical Electrical Characteristics (T=25 °C)

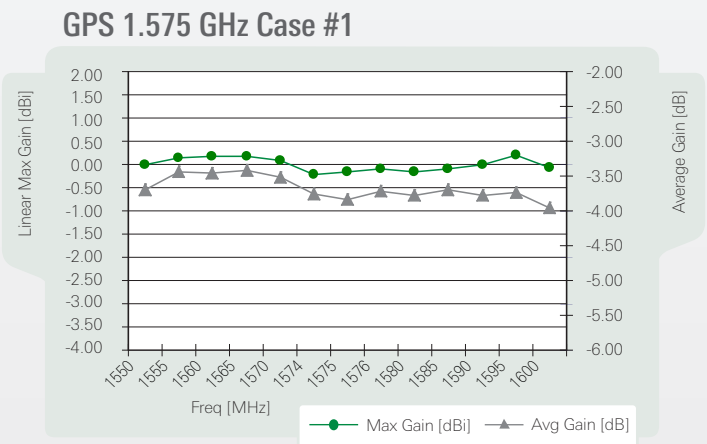
Measured on the 11 x 40 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.

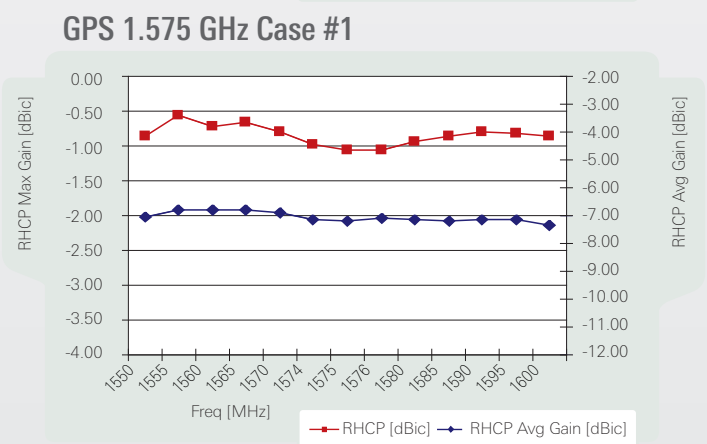












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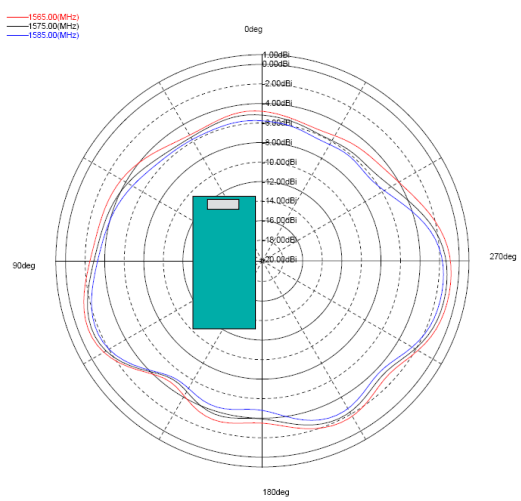
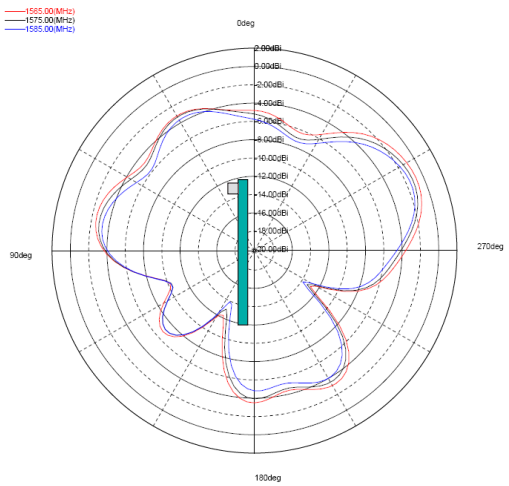
GPS Antenna Case #1

Typical Free Space Radiation Patterns

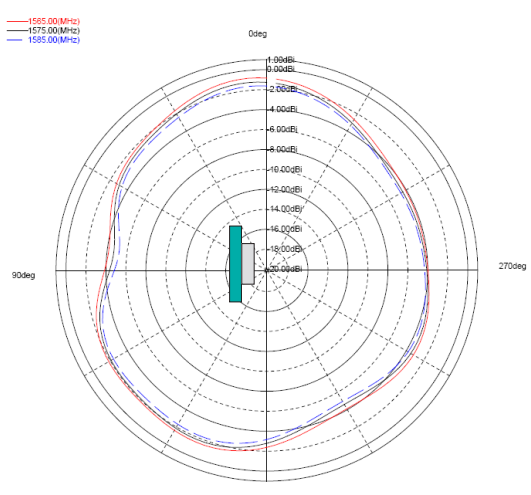
XZ-PLANE

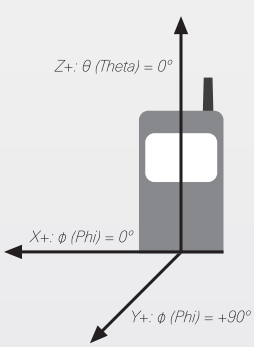


ZY-PLANE



XY-PLANE





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90440 Kempele, Finland
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Ceramic Monopole Antenna

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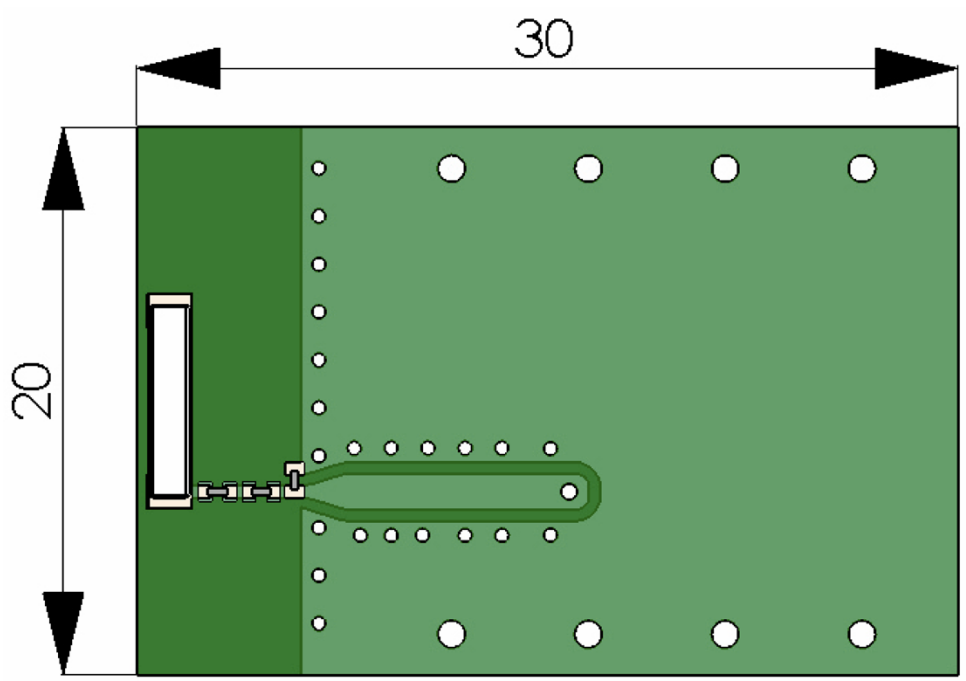
GPS Antenna Case #2

Board Size 20x30

Recommended antenna position on PWB for W3000 MONOPOLE Antenna



Pulse Finland Oy
Takatie 6
90440 Kempele, Finland
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Fax: +358 207 935 501
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Ceramic Monopole Antenna

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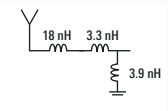
GPS Antenna Case #2, Test Set Up and Measurement Performance

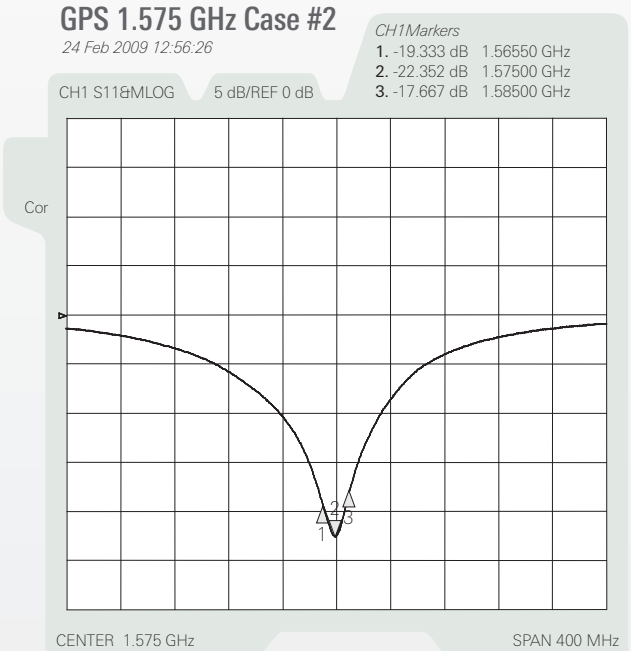
Ground cleared under antenna, clearance area 20.00 x 6.00 mm.



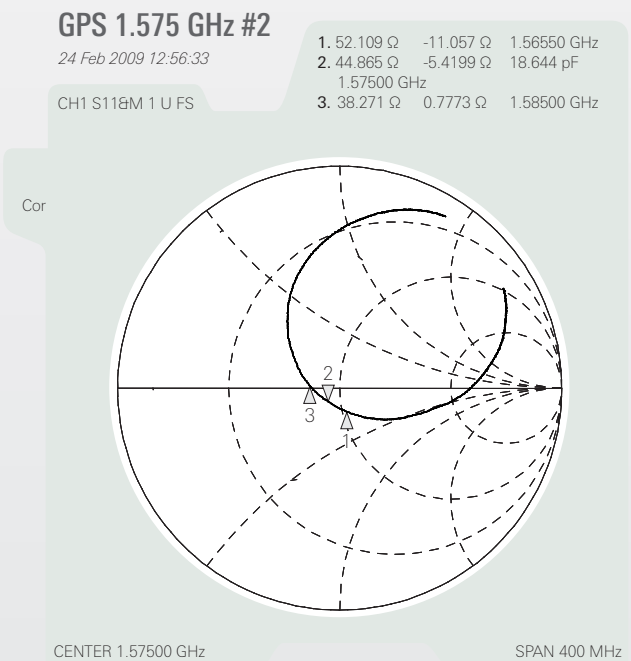
Typical Electrical Characteristics (T=25 °C)

Measured on the 30 x 20 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.

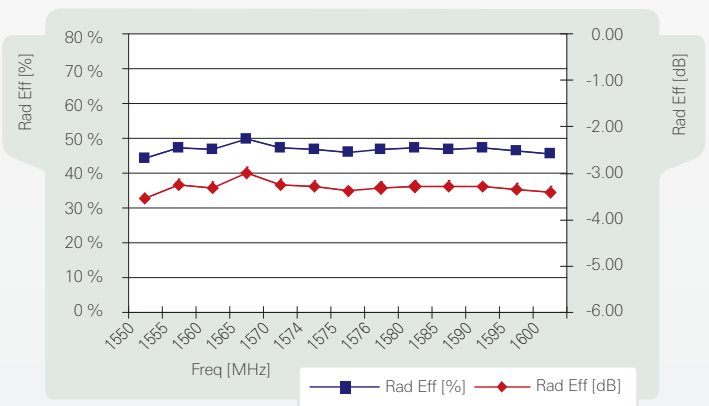
GPS 1.575 GHz Case #2



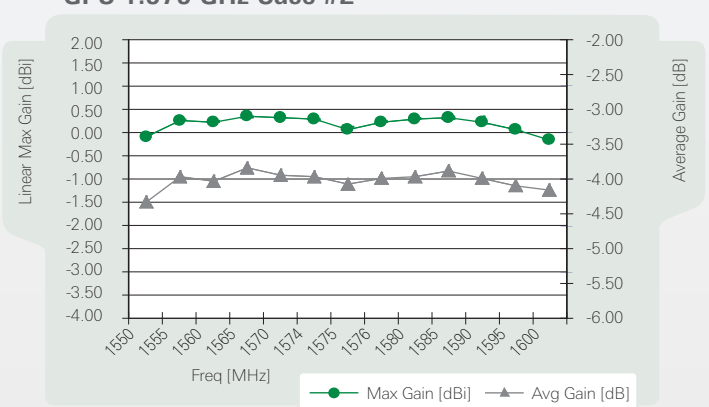
GPS 1.575 GHz #2



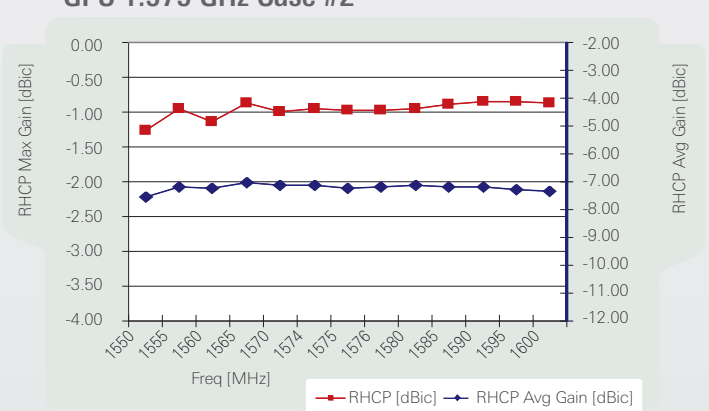
GPS 1.575 GHz Case #2



GPS 1.575 GHz Case #2



GPS 1.575 GHz Case #2



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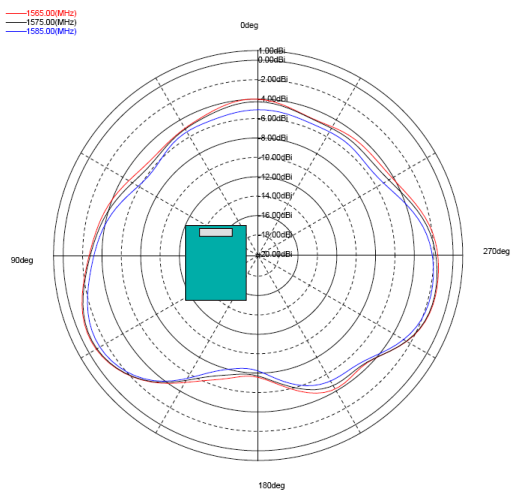
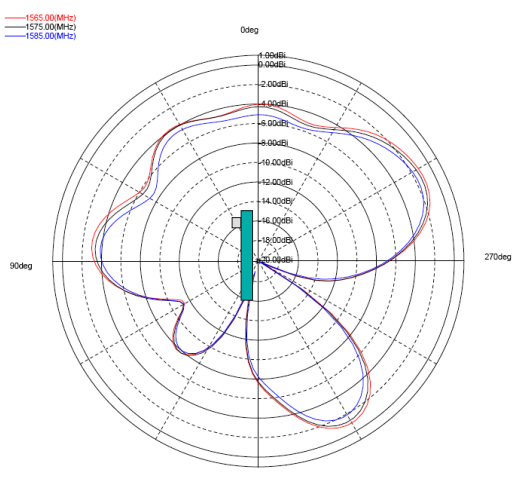
GPS Antenna Case #2

Typical Free Space Radiation Patterns

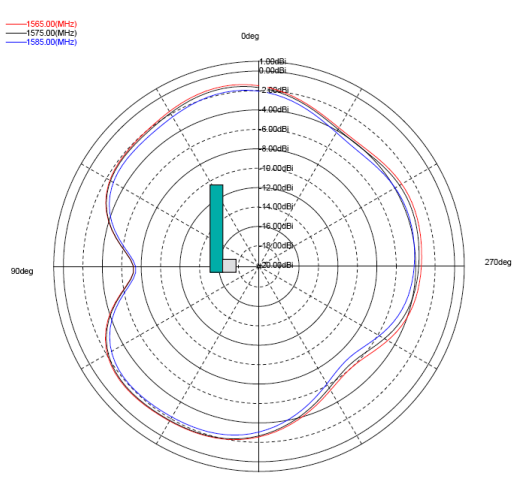
XZ-PLANE

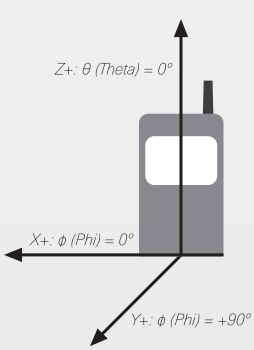


ZY-PLANE



XY-PLANE





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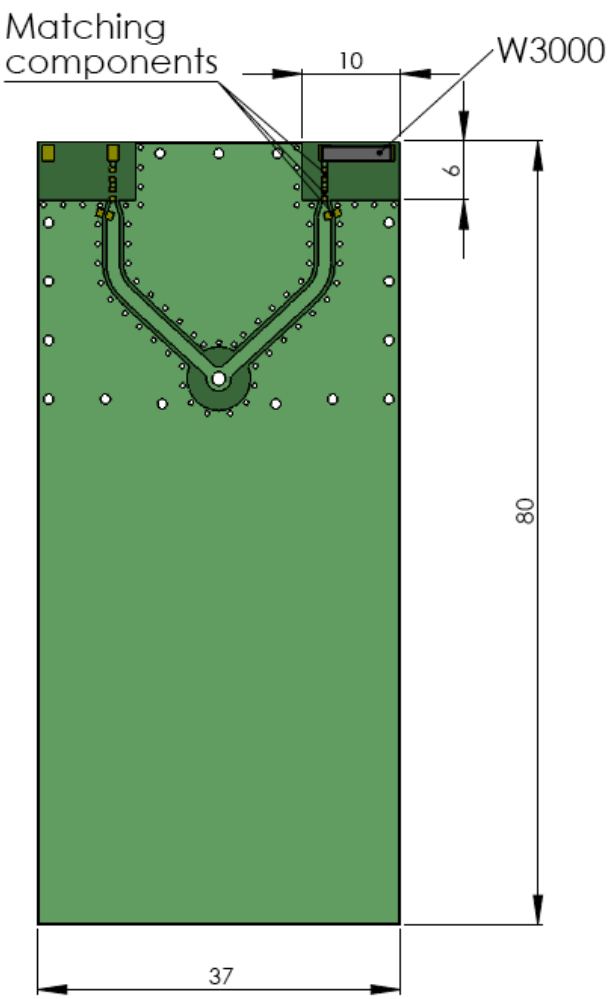
GPS Antenna Case #3

Board Size 37 x 80 mm

Recommended antenna position on PWB for W3000 MONOPOLE Antenna



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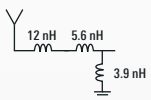
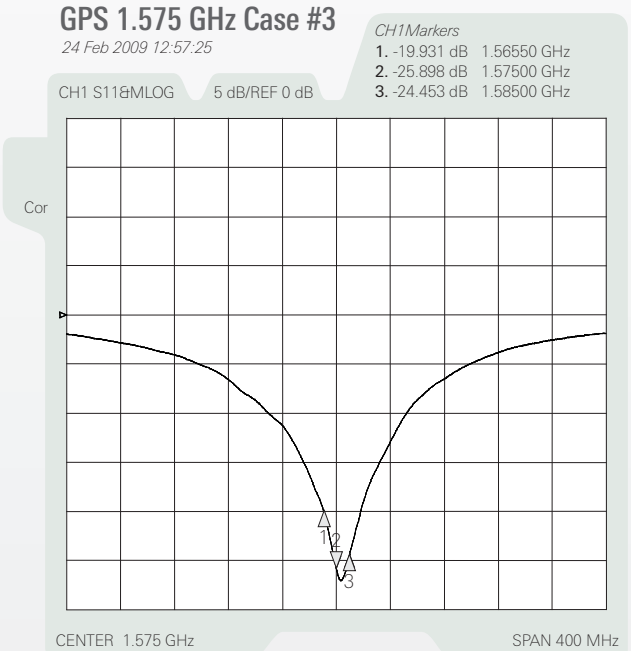
GPS Antenna Case #3, Test Set Up and Measurement Performance

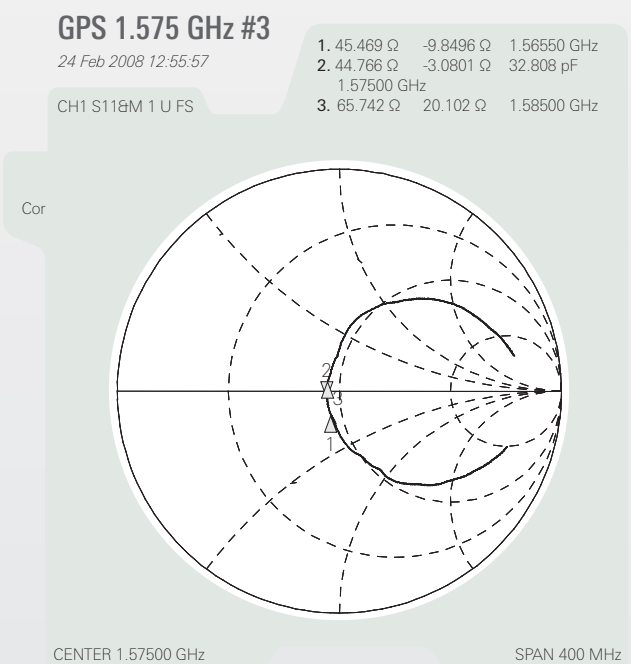
Ground cleared under antenna, clearance area 20.00 x 6.00 mm.

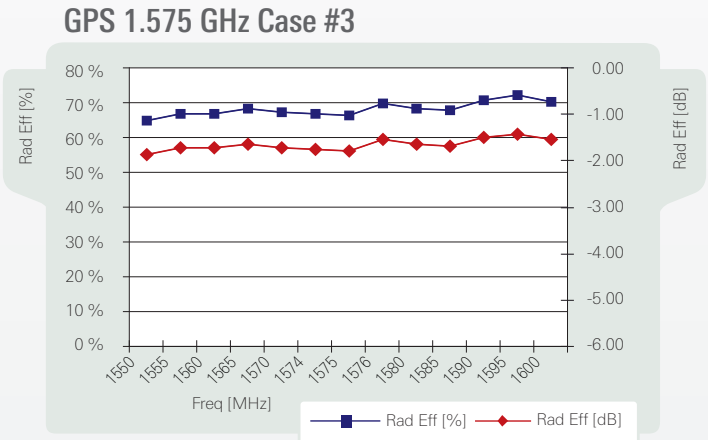


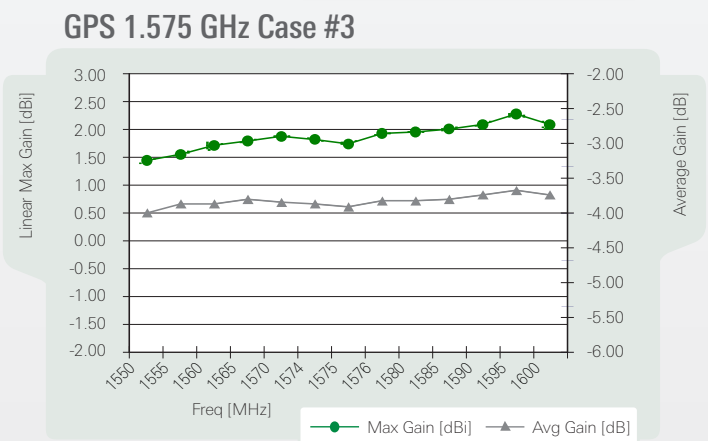
Typical Electrical Characteristics (T=25 °C)

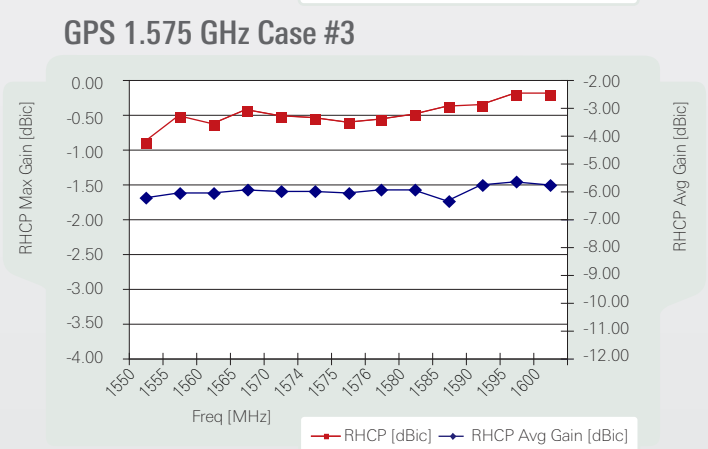
Measured on the 30 x 20 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.











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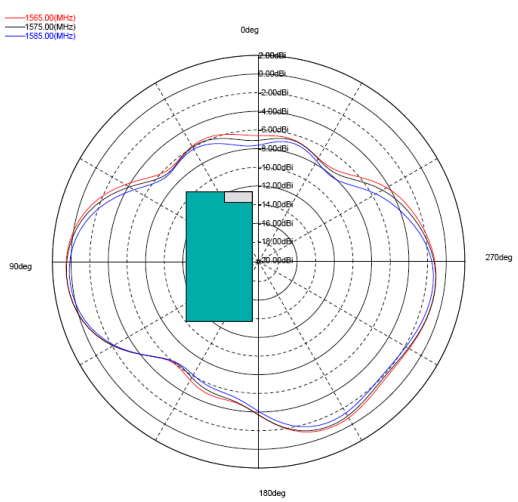
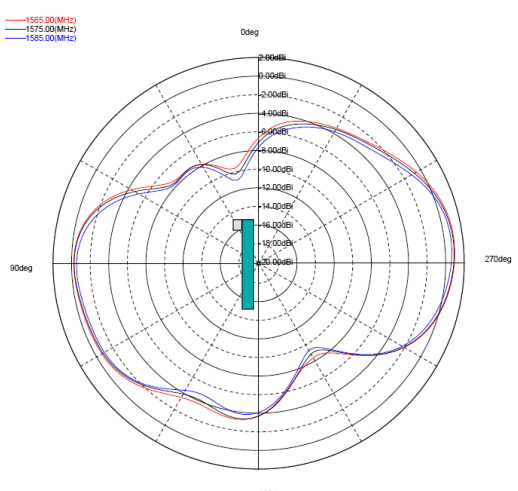
GPS Antenna Case #3

Typical Free Space Radiation Patterns

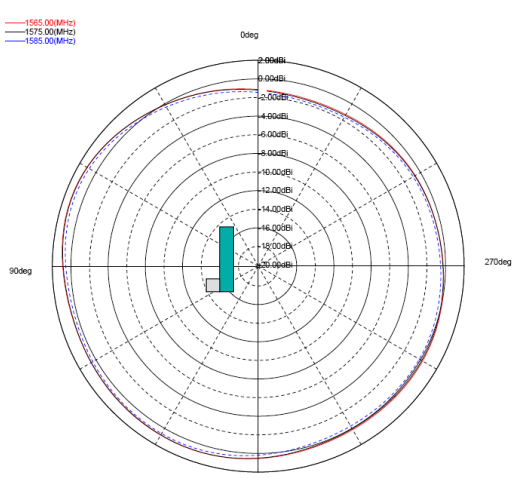
XZ-PLANE

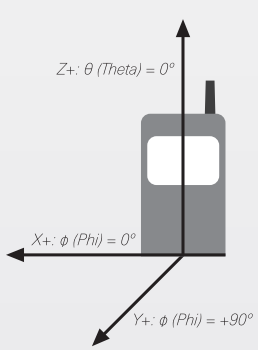


ZY-PLANE



XY-PLANE





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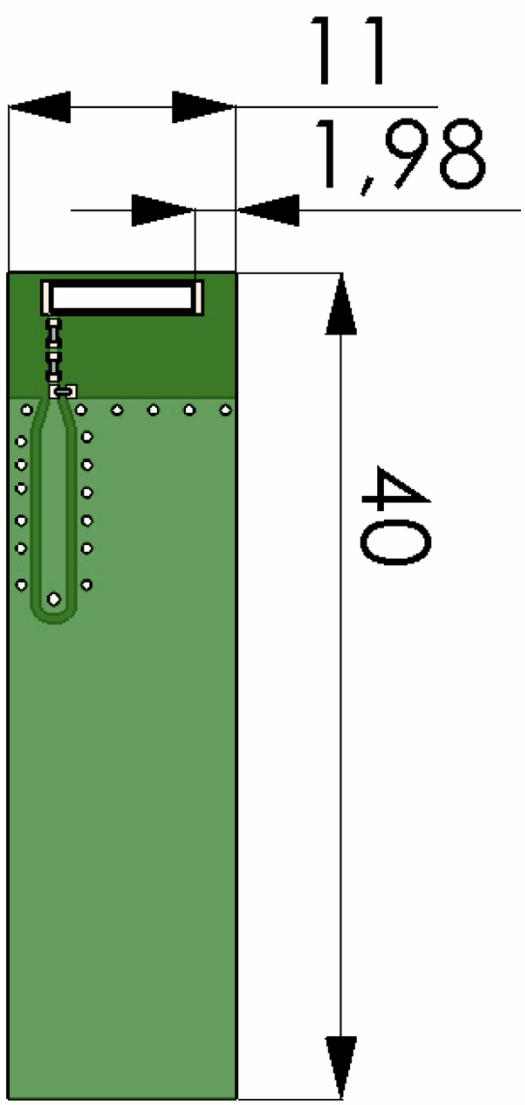
WiFi Antenna Case #1

Board Size 40 x 11 mm

Recommended antenna position on PWB for W3000 MONOPOLE Antenna



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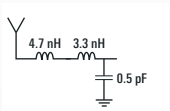
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #1, Test Set Up and Measurement Performance

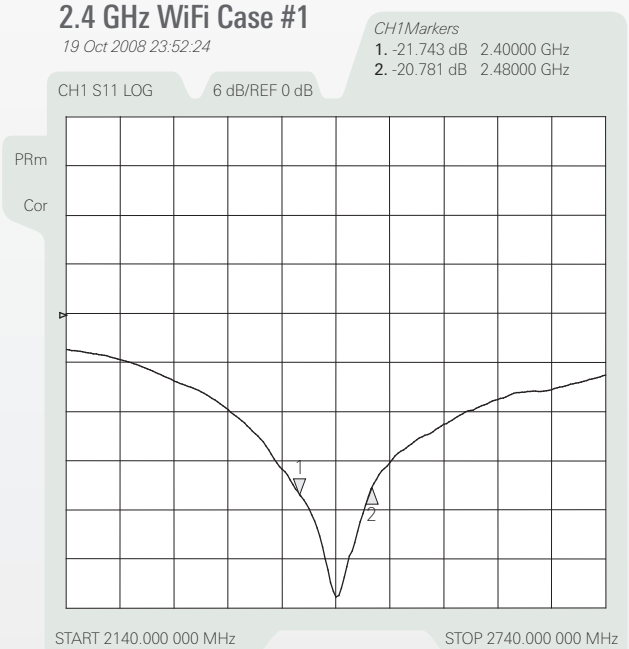
Ground cleared under antenna, clearance area 11.00 x 6.00 mm.



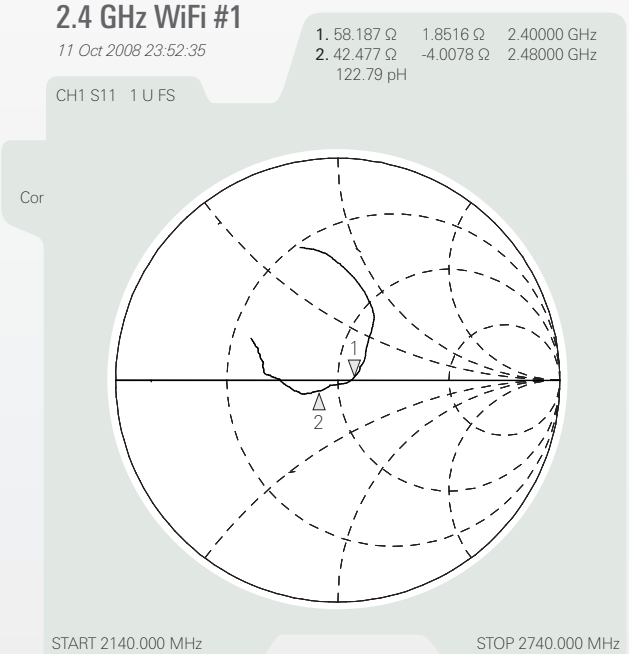
Typical Electrical Characteristics (T=25 °C)

Measured on the 11 x 40 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.

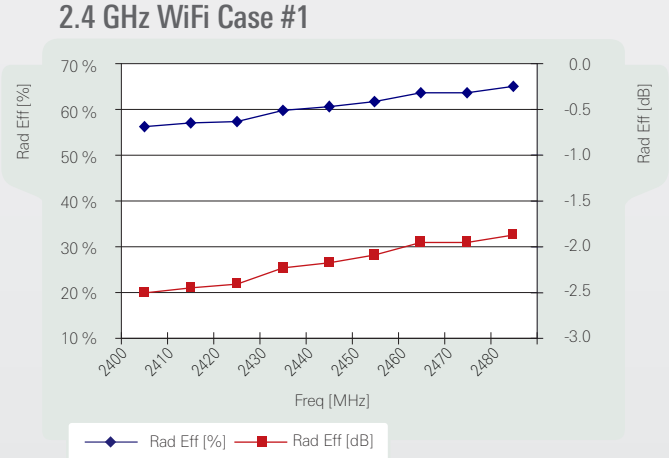
2.4 GHz WiFi Case #1



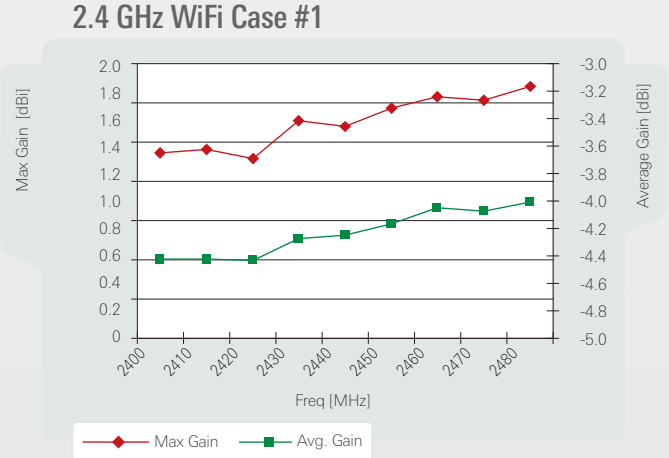
2.4 GHz WiFi #1



2.4 GHz WiFi Case #1



2.4 GHz WiFi Case #1



Pulse Finland Oy
Takatie 6
90440 Kempele, Finland
Tel: +358 207 935 500
Fax: +358 207 935 501
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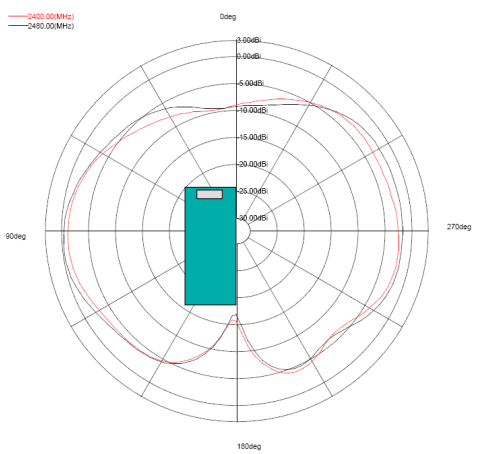
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

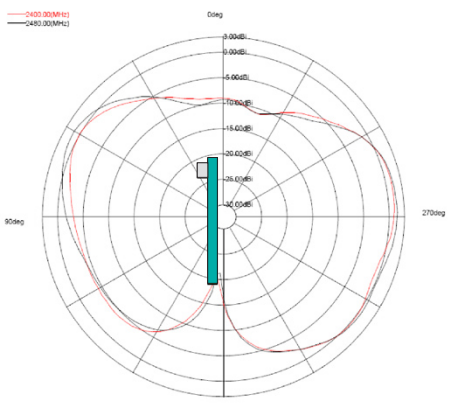
WiFi Antenna Case #1

Typical Free Space Radiation Patterns

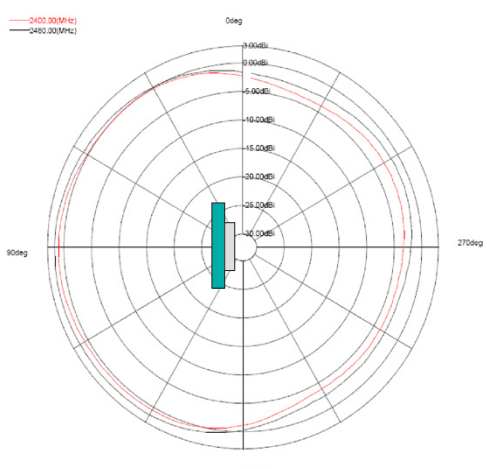
XZ-PLANE

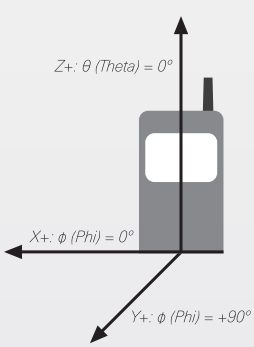


ZY-PLANE



XY-PLANE





Pulse Finland Oy
Takatie 6
90440 Kempele, Finland
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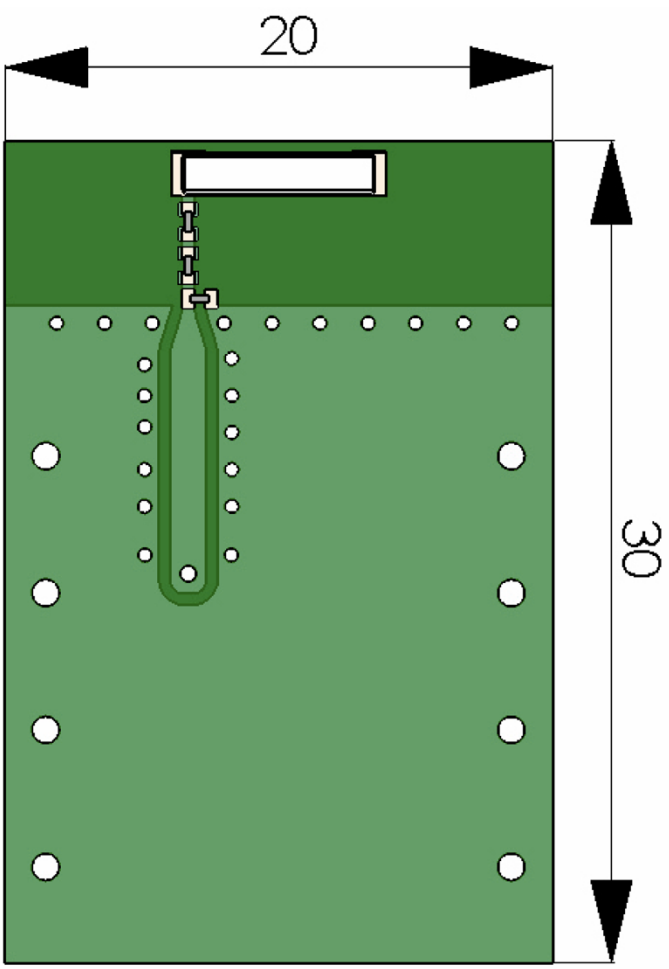
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #2

Board Size 20 x 30 mm

Recommended antenna position on PWB for W3000 MONOPOLE Antenna



Pulse Finland Oy
Takatie 6
90440 Kempele, Finland
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Fax: +358 207 935 501
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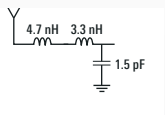
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #2, Test Set Up and Measurement Performance

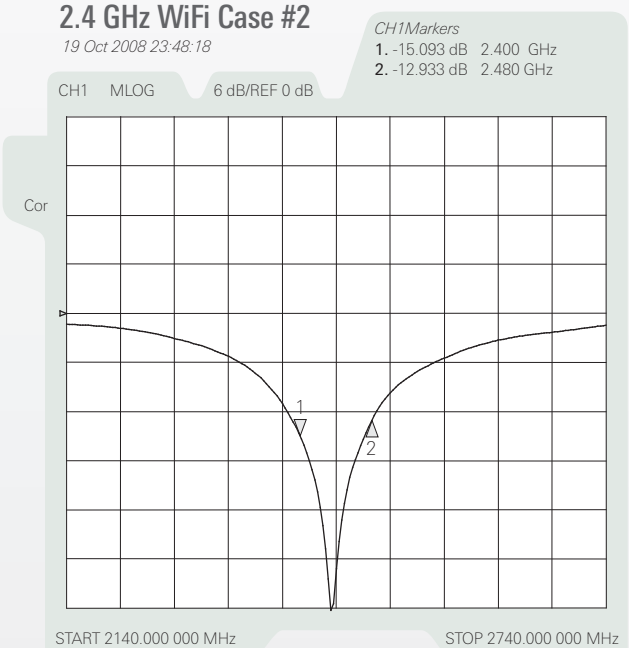
Ground cleared under antenna, clearance area 20.00 x 6.00 mm.



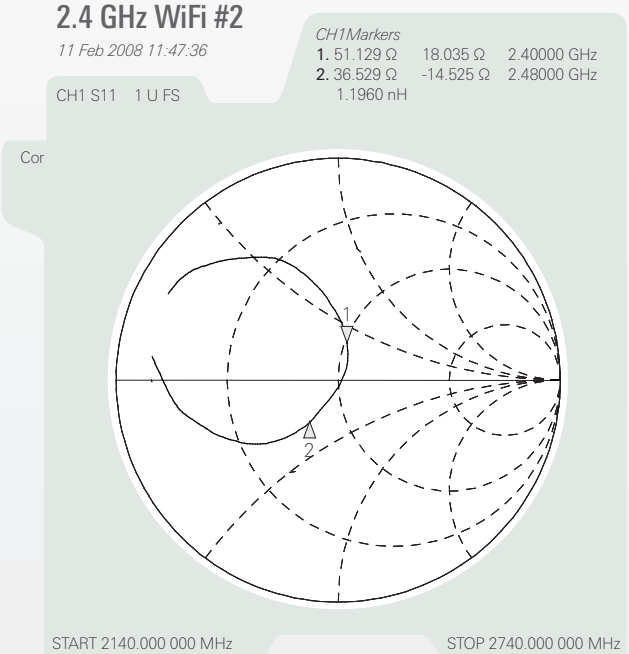
Typical Electrical Characteristics (T=25 °C)

Measured on the 30 x 20 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.

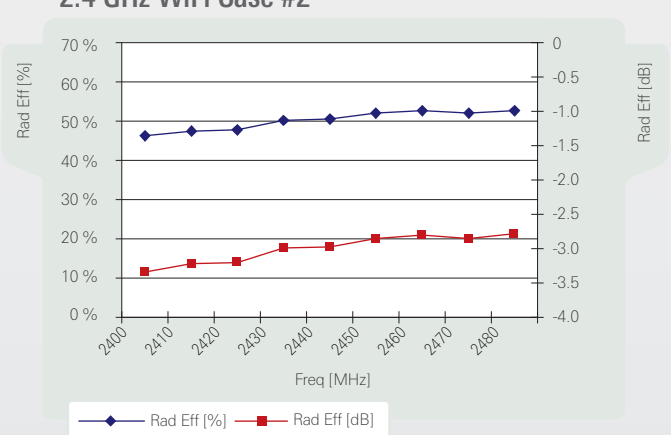
2.4 GHz WiFi Case #2



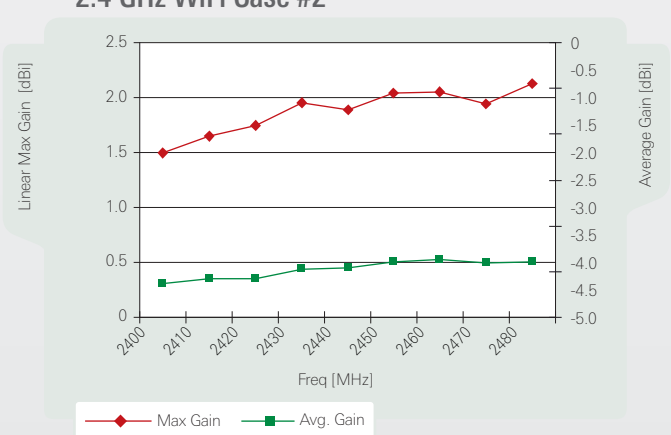
2.4 GHz WiFi #2



2.4 GHz WiFi Case #2



2.4 GHz WiFi Case #2



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90440 Kempele, Finland
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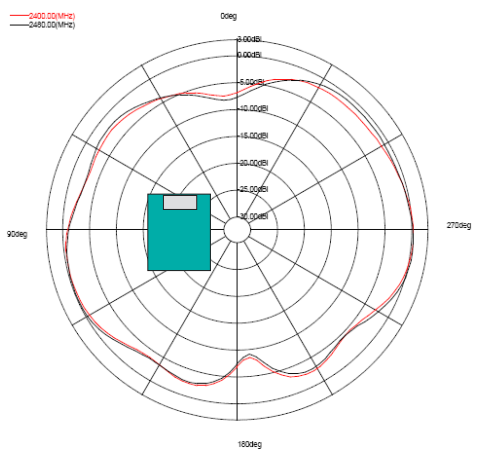
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

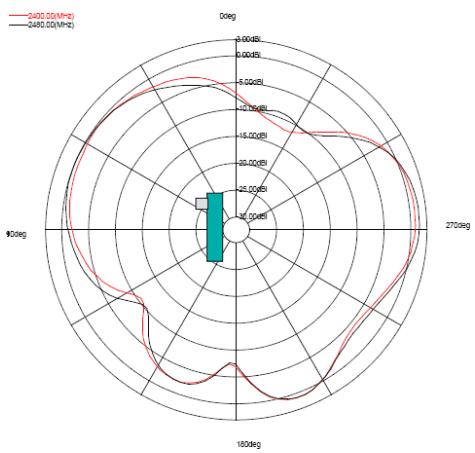
WiFi Antenna Case #2

Typical Free Space Radiation Patterns

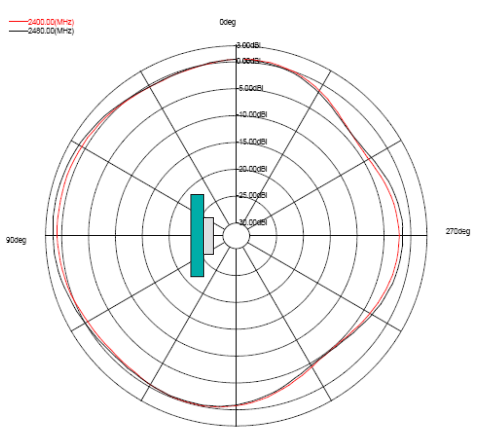
XZ-PLANE

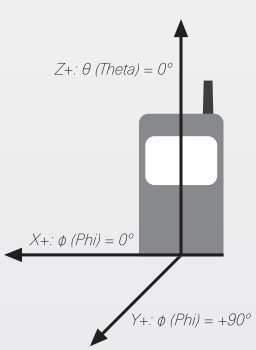


ZY-PLANE



XY-PLANE





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Takatie 6
90440 Kempele, Finland
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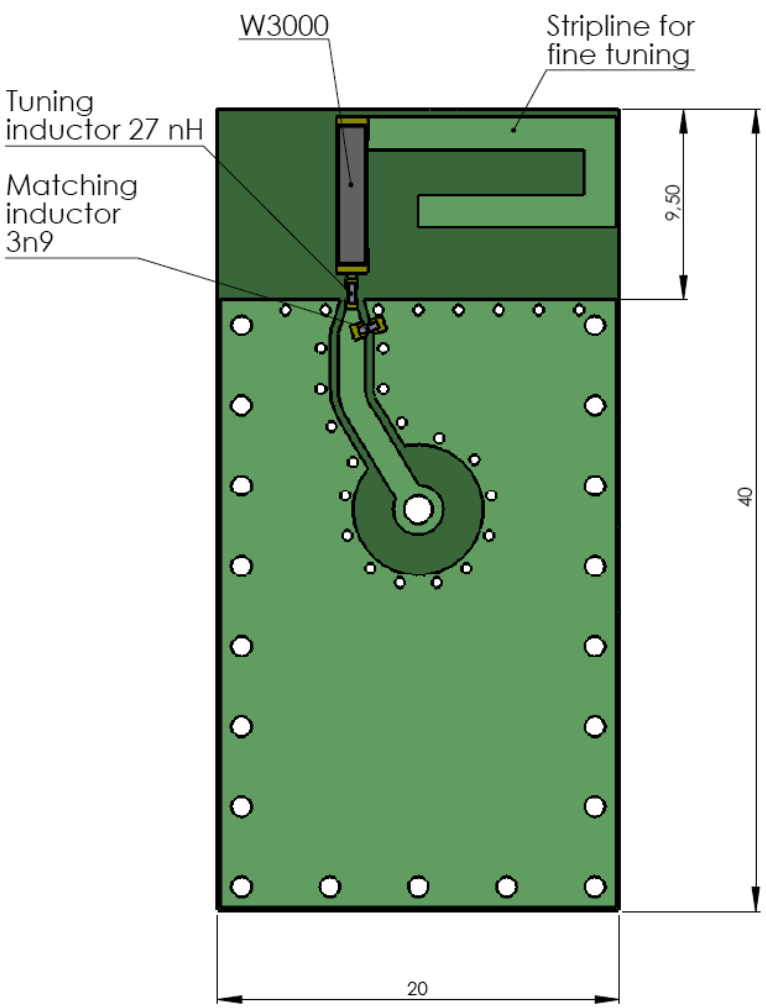
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

ISM 868 MHz Antenna Case #1

Board Size 20 x 40 mm

Recommended antenna position on PWB for W3000 MONOPOLE Antenna



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Takatie 6
90440 Kempele, Finland
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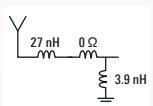
Ceramic Monopole Antenna

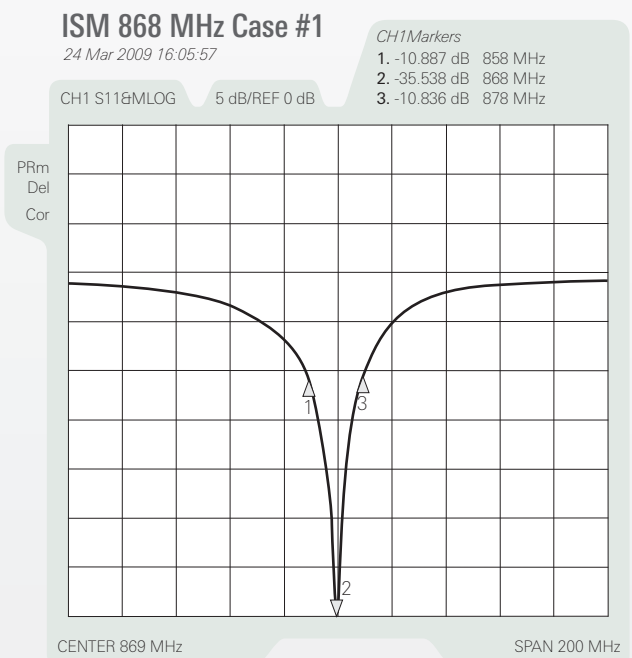
Ground cleared under antenna. Pulse Part Number: W3000

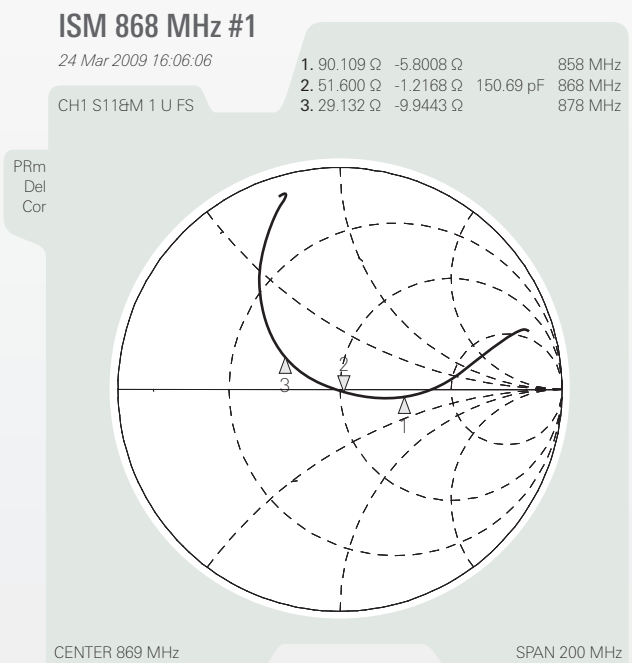
ISM 868 MHz Antenna Case #1, Test Set Up and Measurement Performance

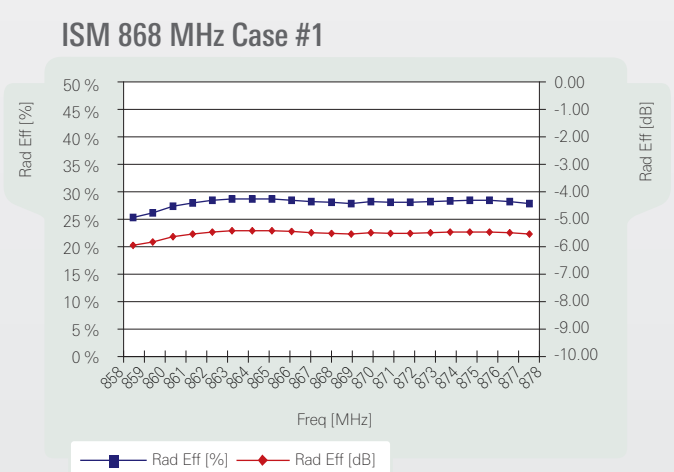
Typical Electrical Characteristics (T=25 °C)

Measured on the 20 x 40 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.









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Takatie 6
90440 Kempele, Finland
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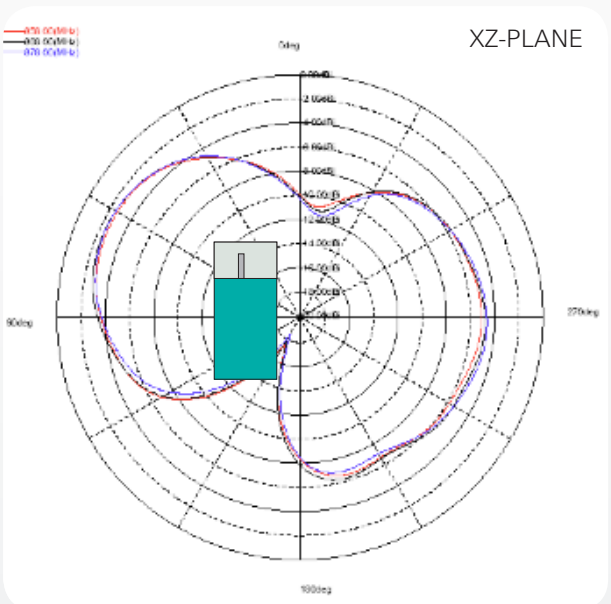
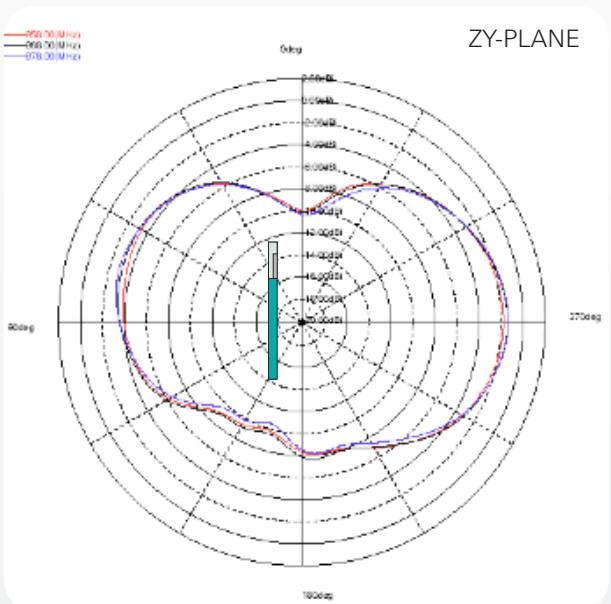
Ceramic Monopole Antenna

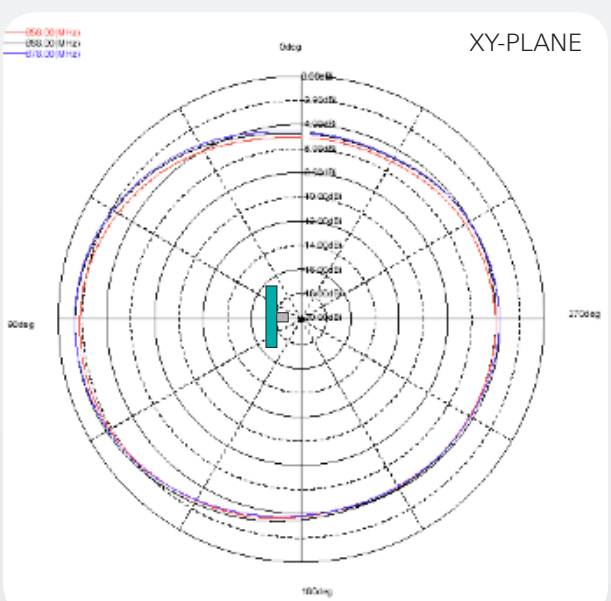
Ground cleared under antenna. Pulse Part Number: W3000

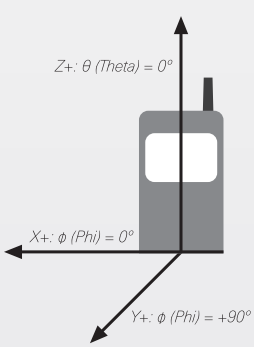
ISM 868 MHz Antenna Case #1

Typical Free Space Radiation Patterns









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90440 Kempele, Finland
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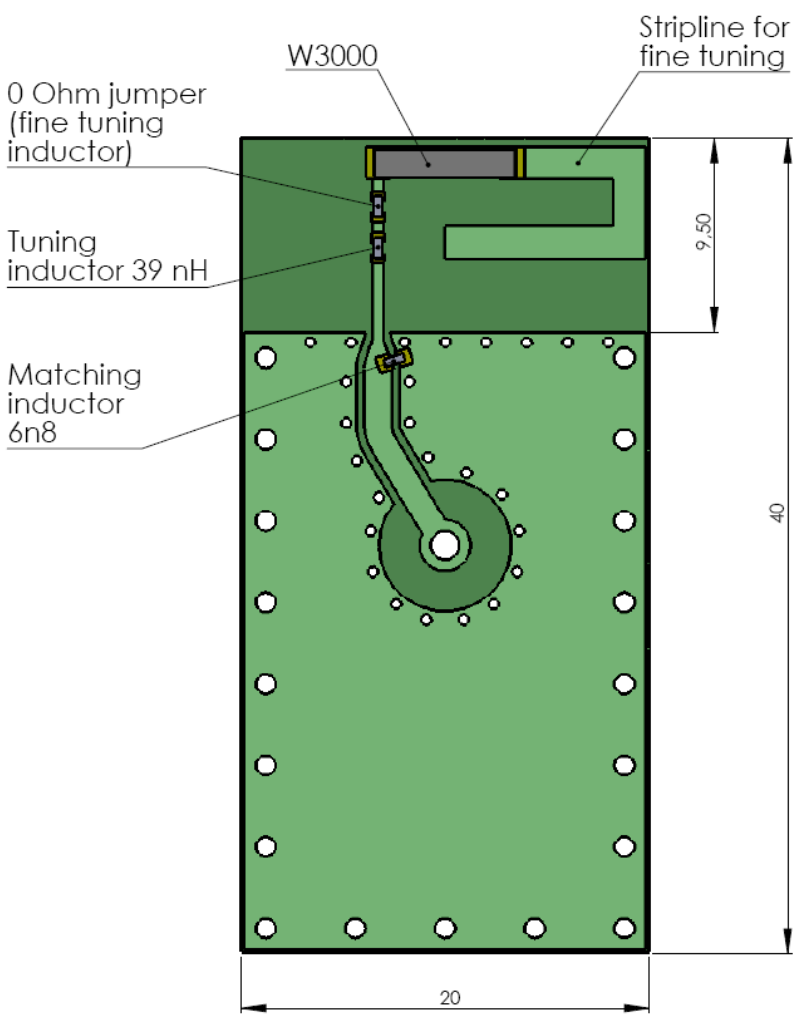
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

ISM 868 MHz Antenna Case #2

Board Size 20 x 40 mm

Recommended antenna position on PWB for W3000 MONOPOLE Antenna



Pulse Finland Oy
Takatie 6
90440 Kempele, Finland
Tel: +358 207 935 500
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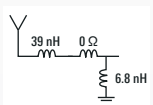
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

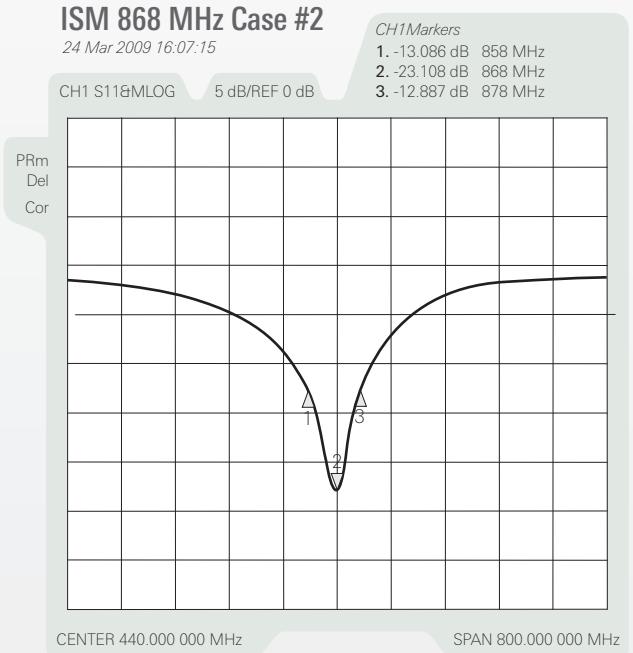
ISM 868 MHz Antenna Case #2, Test Set Up and Measurement Performance

Typical Electrical Characteristics (T=25 °C)

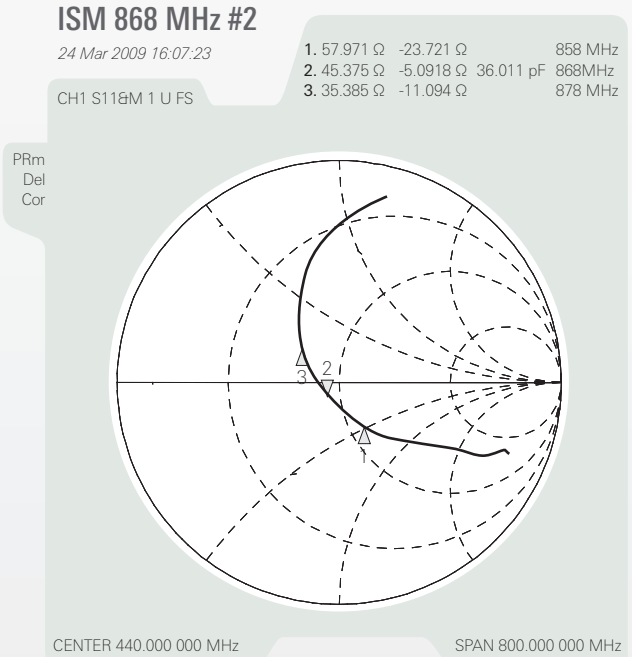
Measured on the 20 x 40 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain



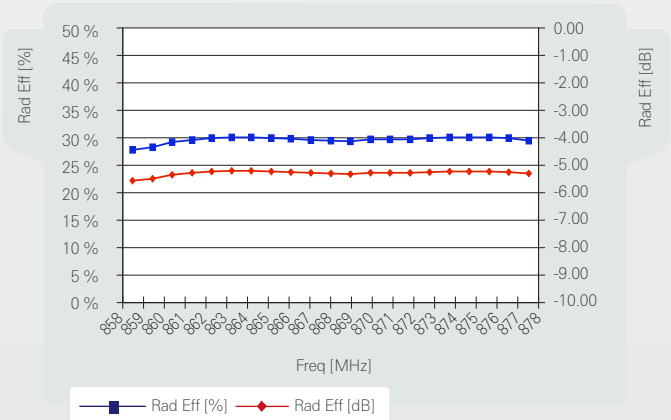
ISM 868 MHz Case #2



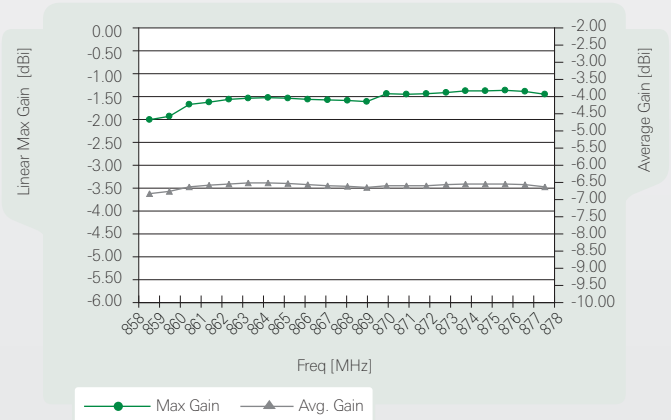
ISM 868 MHz #2



ISM 868 MHz Case #2



ISM 868 MHz Case #2



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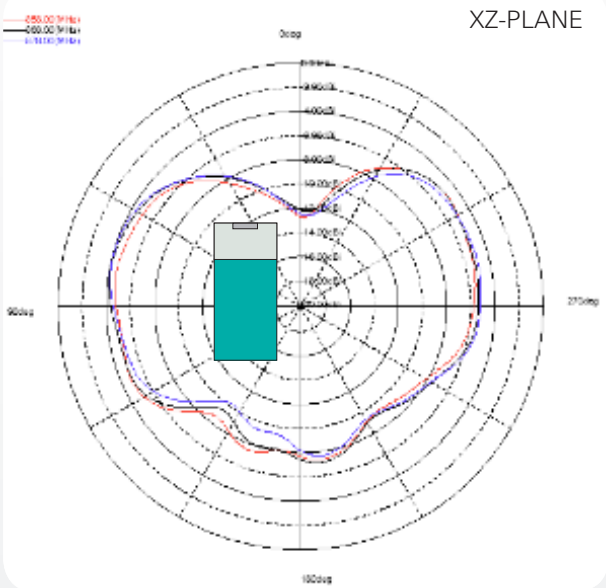
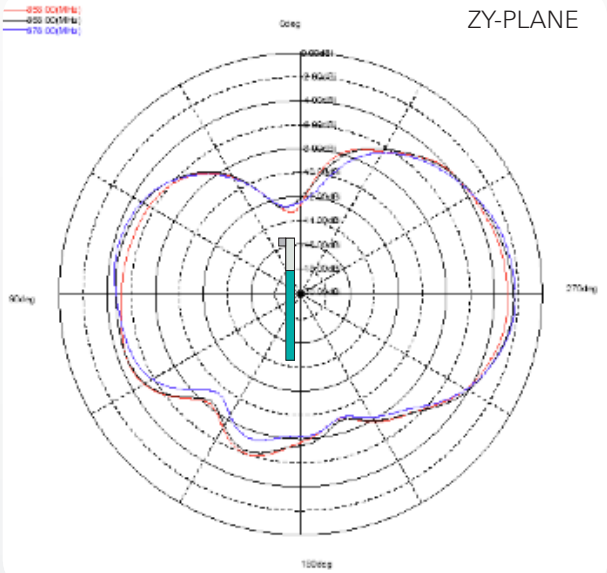
ISM 868 MHz Antenna Case #2

Typical Free Space Radiation Patterns

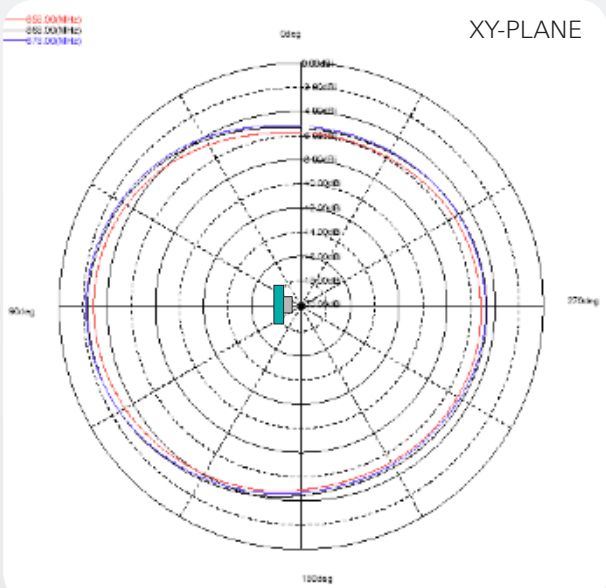
XZ-PLANE

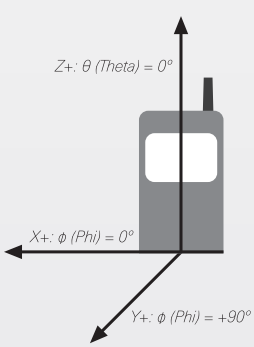


ZY-PLANE



XY-PLANE





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For More Information, Please Contact

Pulse Finland Oy
Takatie 6
FI-90440 Kempele
Finland
Tel. +358 207 935 500
Fax +358 207 935 501 (sales)

Domicile: Kempele
Business ID: 1933992-8
firstnamesurname@pulseeng.com
www.pulseeng.com/antennas

Pulse World Wide Headquarters
12220 World Trade Drive
San Diego, CA 92128
U.S.A.
Tel. +1 858 674 8100
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