# GNSS + GPS L5 Chip Ant

**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

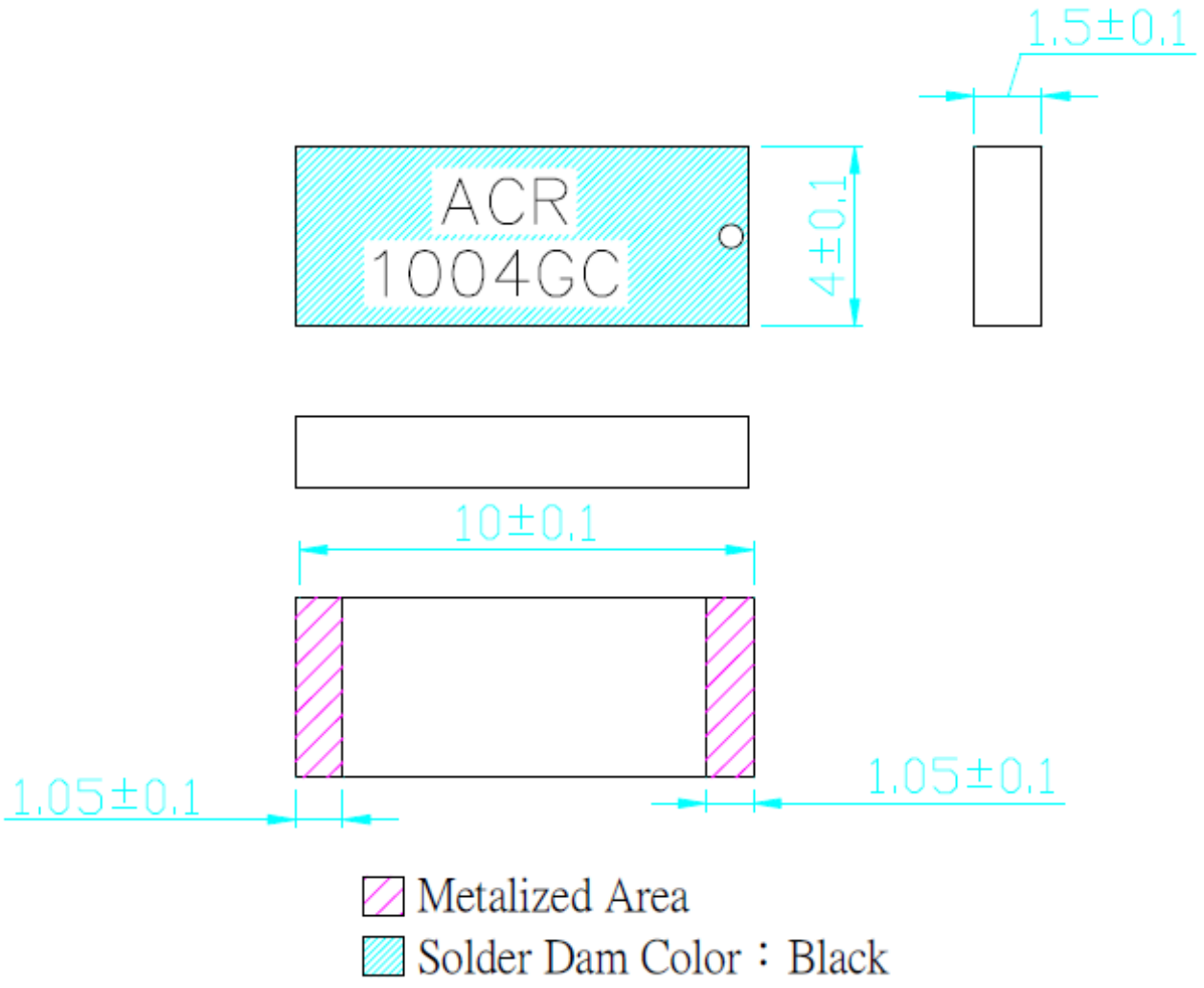
## Features

- Compact & Low-Profile Loop Antenna
- Centimeter Level Accuracy
- Multiband – Upper band GNSS + GPS L5
- L1 Peak Gain of 2.85 dBi
- L5 Peak Gain of 1.91 dBi
- Linear Polarization
- High Efficiency up to 80%

## Applications

- IoT
- M2M
- Automotive
- Tracking
- Fleet Management
- Smart Agriculture
- Smart City

## Product Dimensions




Unit : mm

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

# GNSS + GPS L5 Chip Ant

**ACR1004GC**

Request Samples Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Electrical Specification

| Parameter | Specification | | | Unit |
|---|---|---|---|---|
| | Min | Typ | Max | |
| Operating Frequency | 1166 | | 1186 | MHz |
| | 1561 | | 1610 | |
| Impedance | | 50 | | Ω |
| Return Loss | | | -12 | dB |
| Peak Gain (1166 to 1186 MHz) | | | 1.9 | dBi |
| Peak Gain (1561 to 1610 MHz) | | | 2.8 | |
| Polarization | | Linear | | |
| Azimuth Pattern | | Omni-directional | | |

## Mechanical Specification

| Parameter | Specification |
|---|---|
| Antenna Dimension | 10 x 4 x 1.5 mm |
| Mounting Type | Surface Mount |

## Environmental Specification

| Parameter | Specification |
|---|---|
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -40°C to +85°C |
| Relative Humidity | Up to 95% |
| Pb Free | Yes |
| RoHS/RoHS II Compliant | Yes |

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

**REVISED: 08-11-21**

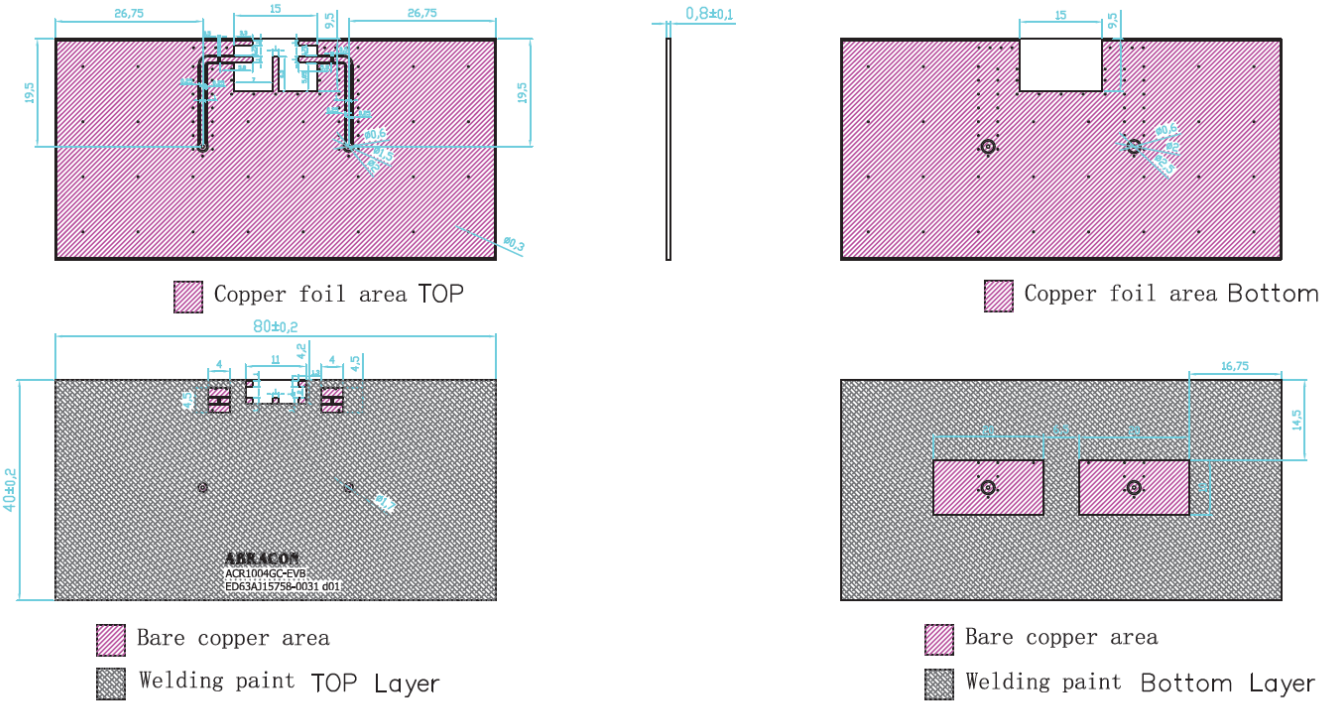
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Evaluation Board Dimensions




Unit : mm


ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858


**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

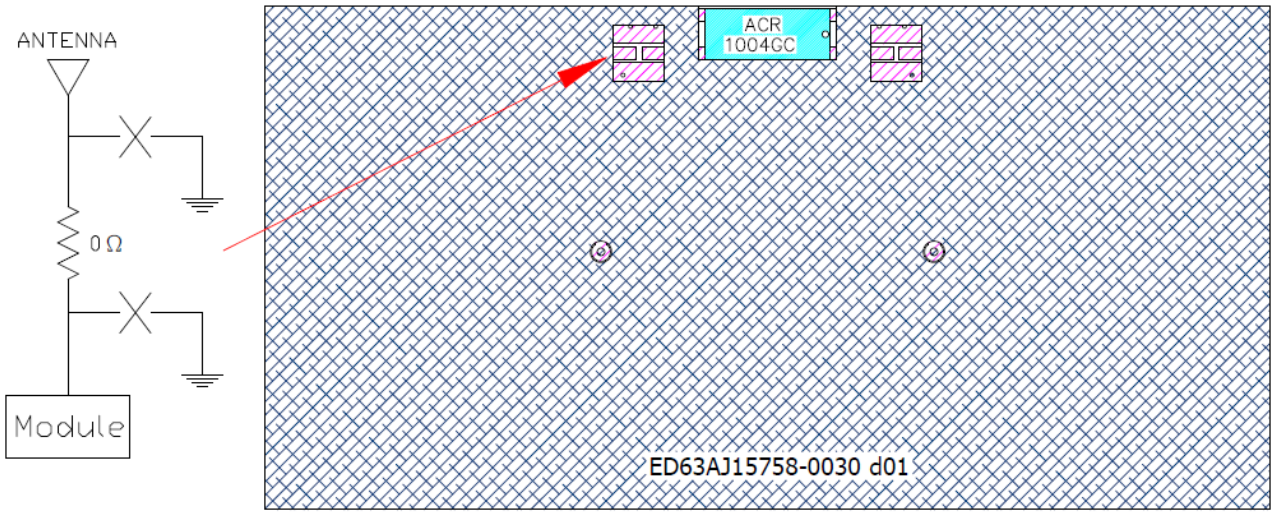
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

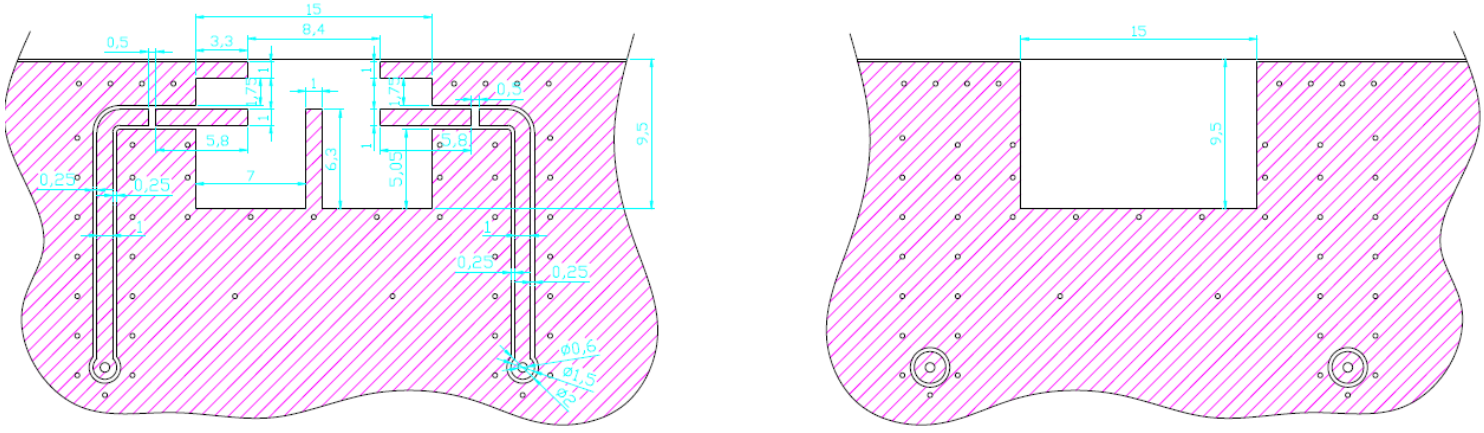
Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Evaluation Board with Matching Circuit




## Recommended Layout




**Unit**

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

# GNSS + GPS L5 Chip Ant

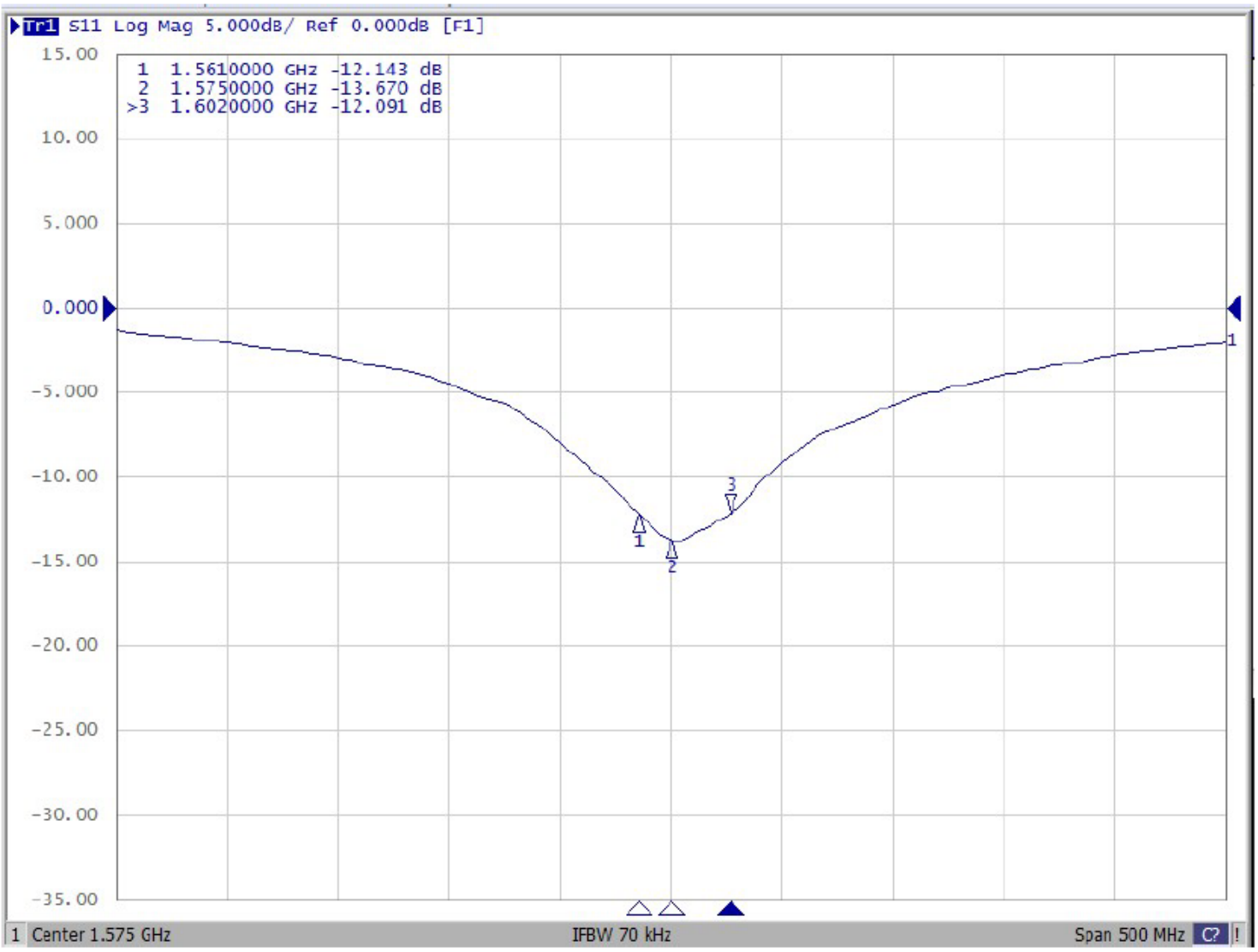
**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Return Loss

Upper band GNSS + GPS L1:




| Frequency (MHz) | S11 (dB) |
|---|---|
| 1561 | -12.14 |
| 1575 | -13.67 |
| 1602 | -12.09 |


ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858


**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

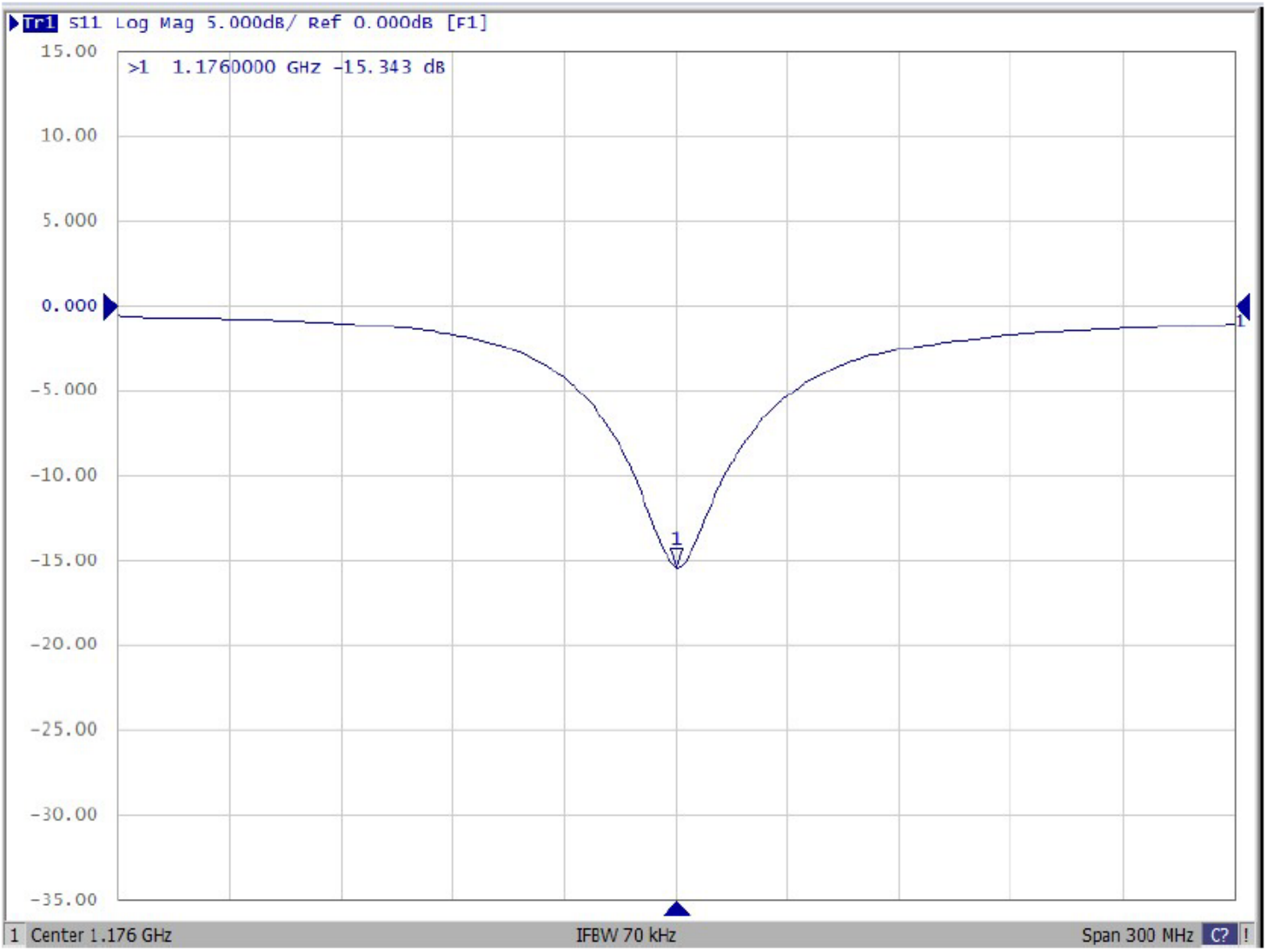
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

GPS L5:




| Frequency (MHz) | S11 (dB) |
|---|---|
| 1176 | -15.34 |


ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858


**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

# GNSS + GPS L5 Chip Ant

**ACR1004GC**

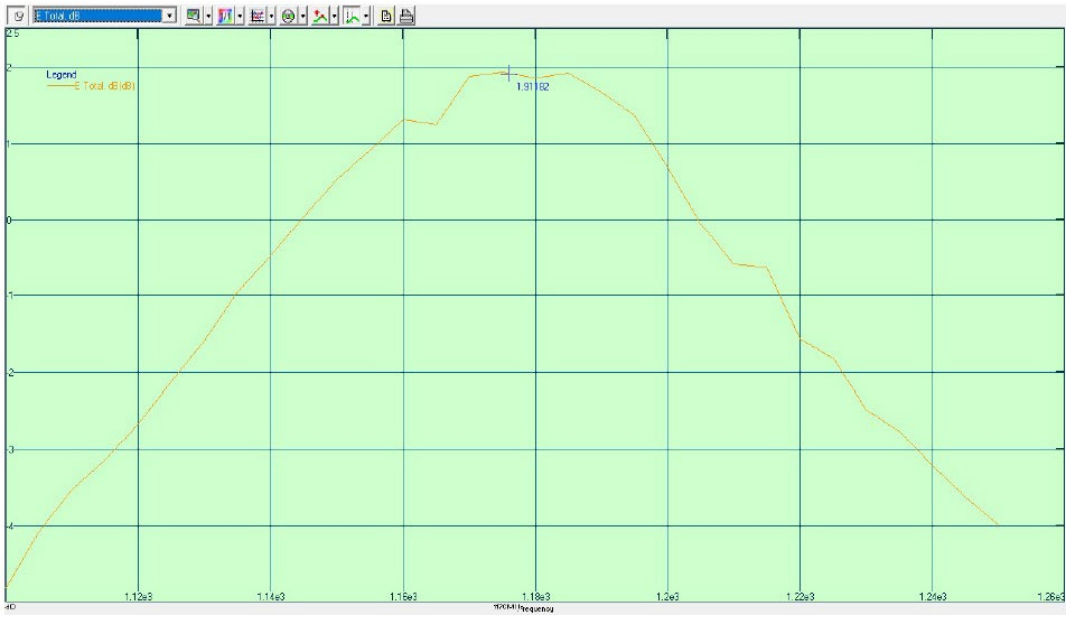
Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Peak Gain

Upper band GNSS + GPS L1:


GPS L5:




ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

For terms and conditions of sales, please visit:
www.abracon.com

**REVISED: 08-11-21**

ABRACON IS
ISO9001-2015
CERTIFIED

# GNSS + GPS L5 Chip Ant

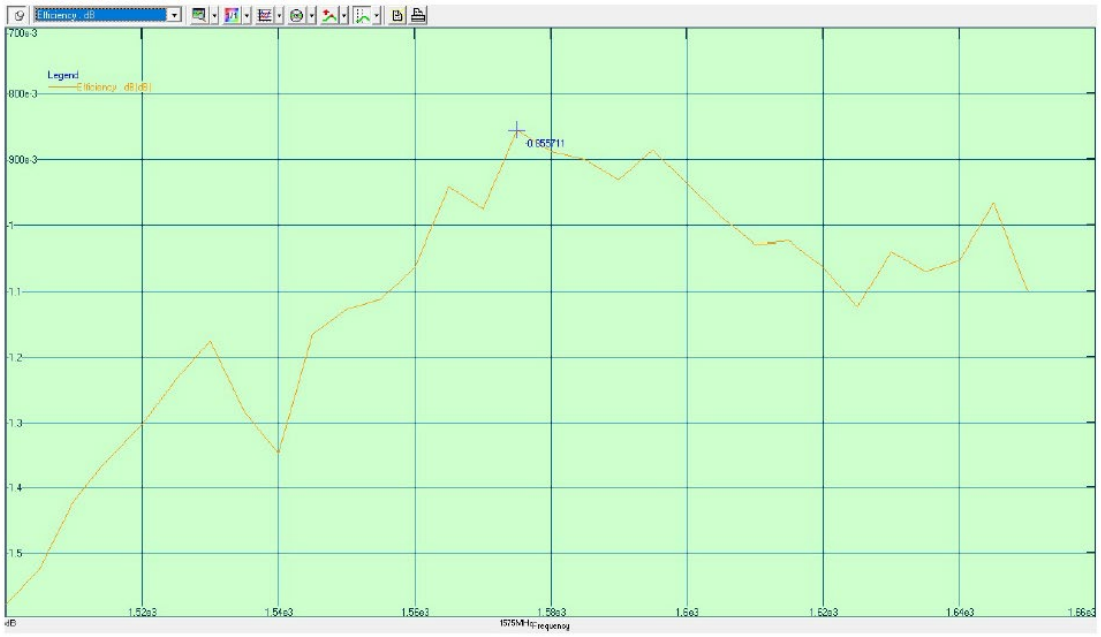
**ACR1004GC**

Request Samples | Check Inventory

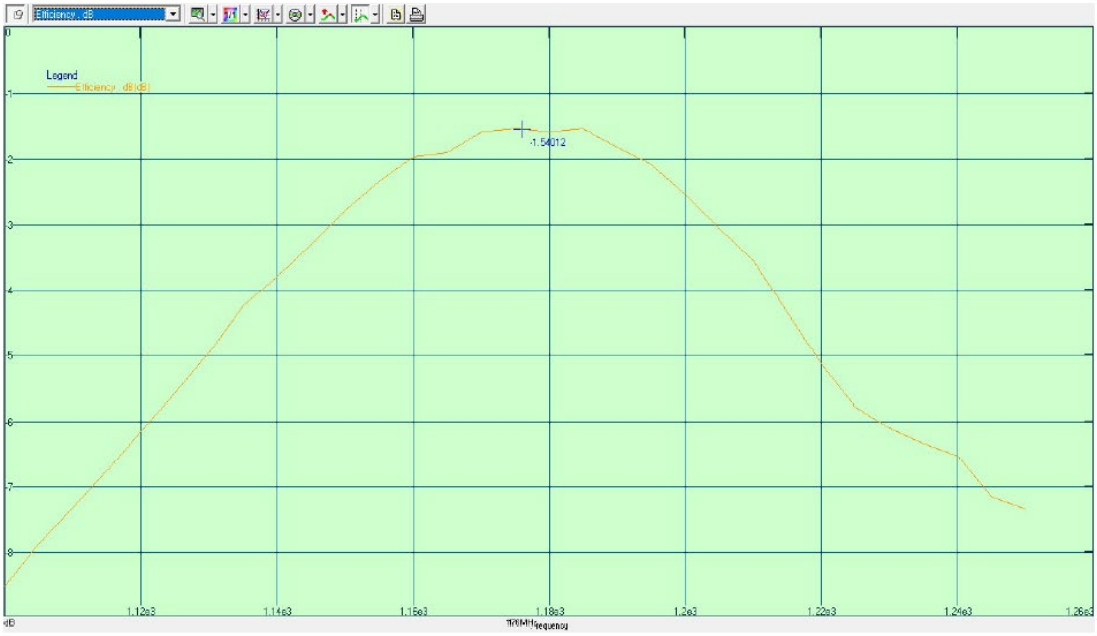
**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Average Gain

Upper band GNSS + GPS L1:




GPS L5:





ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

For terms and conditions of sales, please visit:
www.abracon.com


**REVISED: 08-11-21**

ABRACON IS
ISO9001-2015
CERTIFIED

# GNSS + GPS L5 Chip Ant

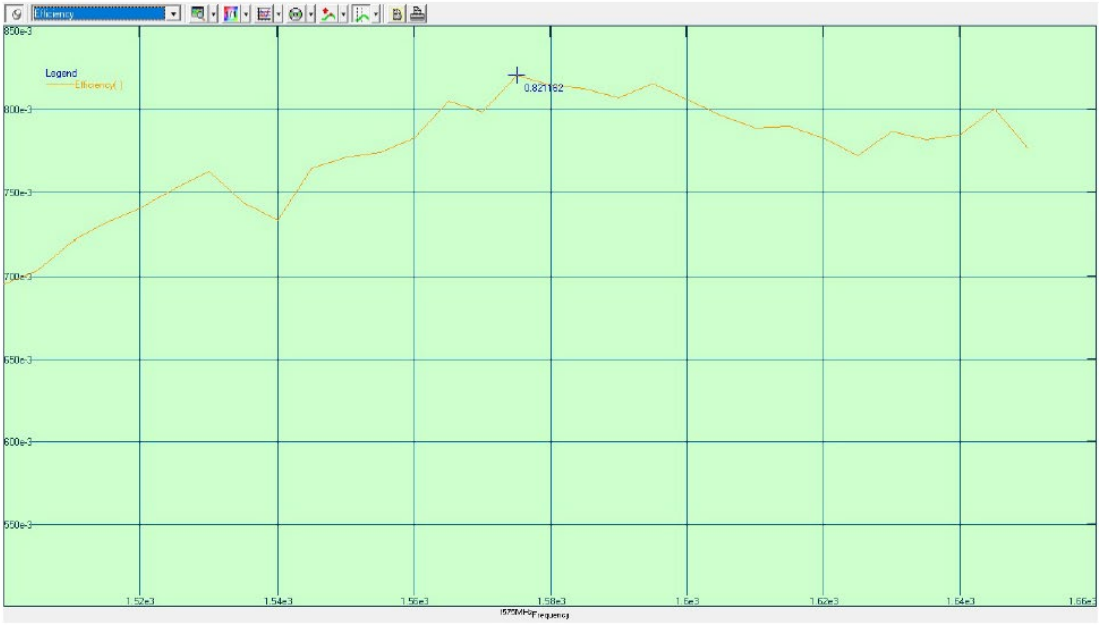
**ACR1004GC**

Request Samples | Check Inventory

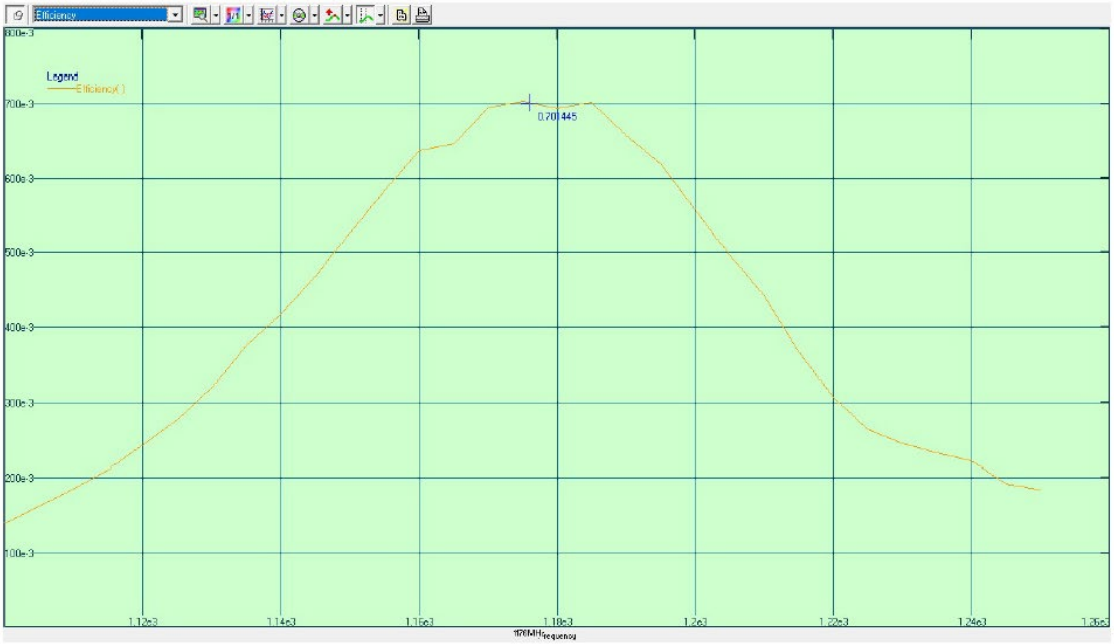
**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Efficiency

Upper band GNSS + GPS L1:




GPS L5:





ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

For terms and conditions of sales, please visit:
www.abracon.com


**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

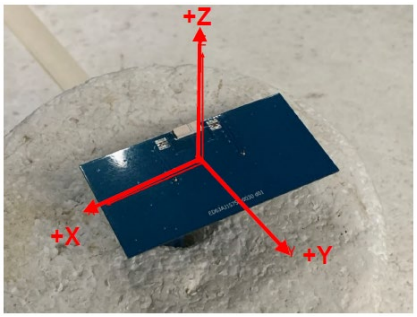
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

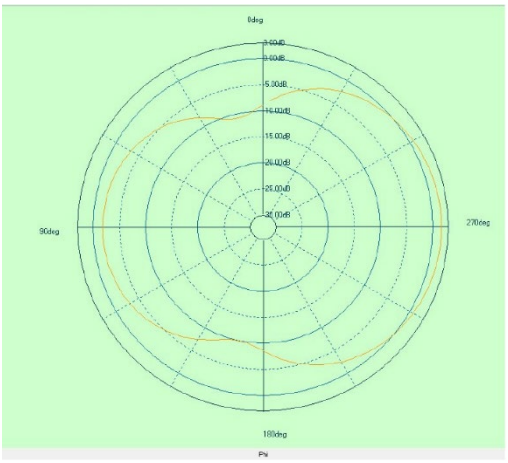
Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

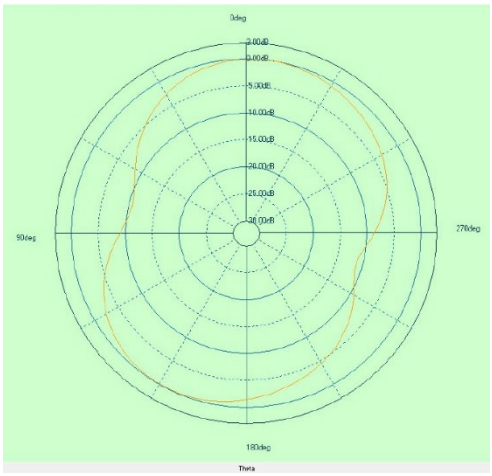
## Radiation Characteristics- 2D



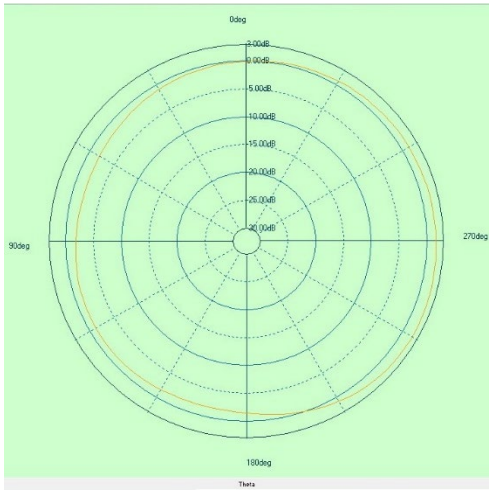

1176 MHz




XY-Plane




XZ-Plane




YZ-Plane

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

For terms and conditions of sales, please visit:
www.abracon.com

**REVISED: 08-11-21**

ABRACON IS
ISO9001-2015
CERTIFIED

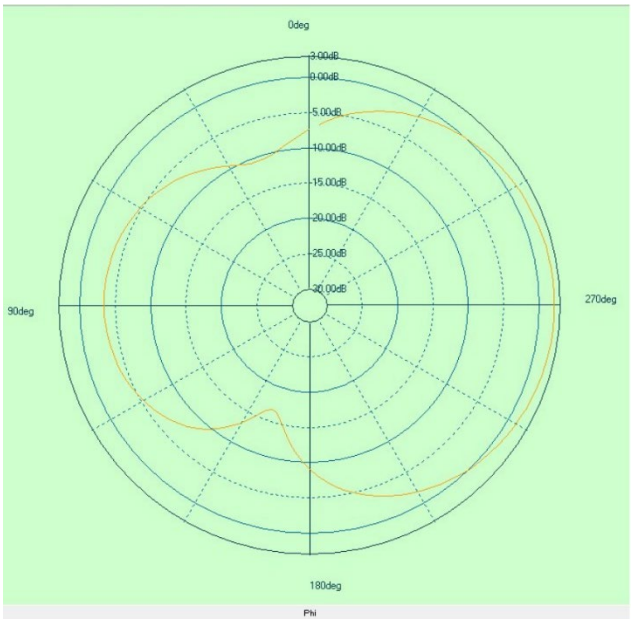
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

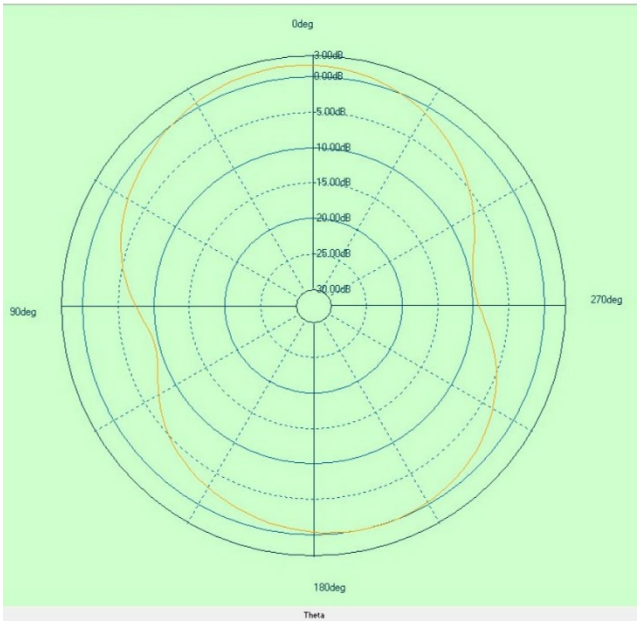
Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

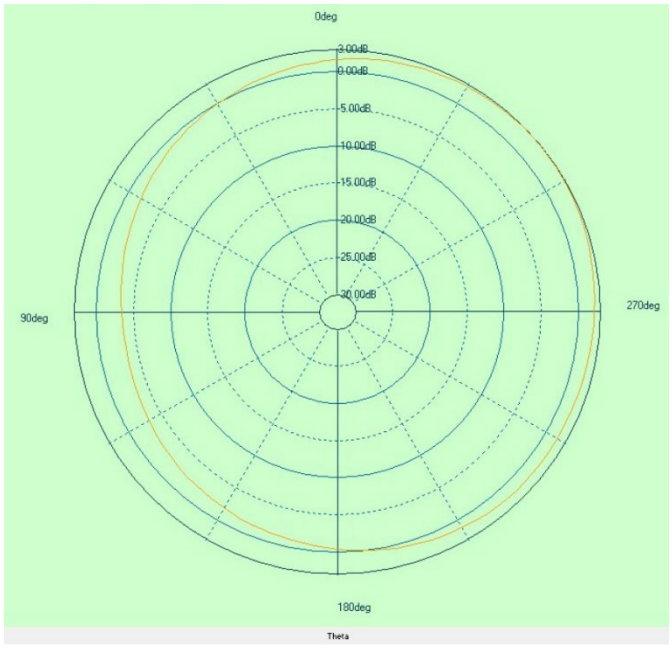
1561 MHz




XY-Plane




XZ-Plane




YZ-Plane

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

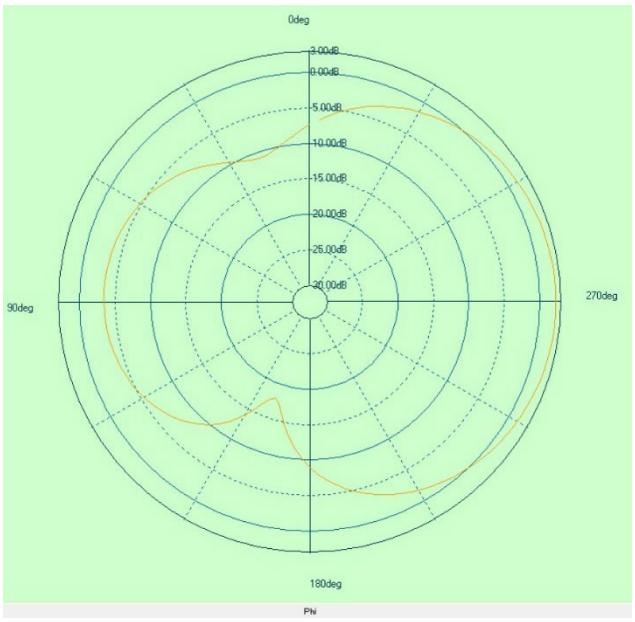
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

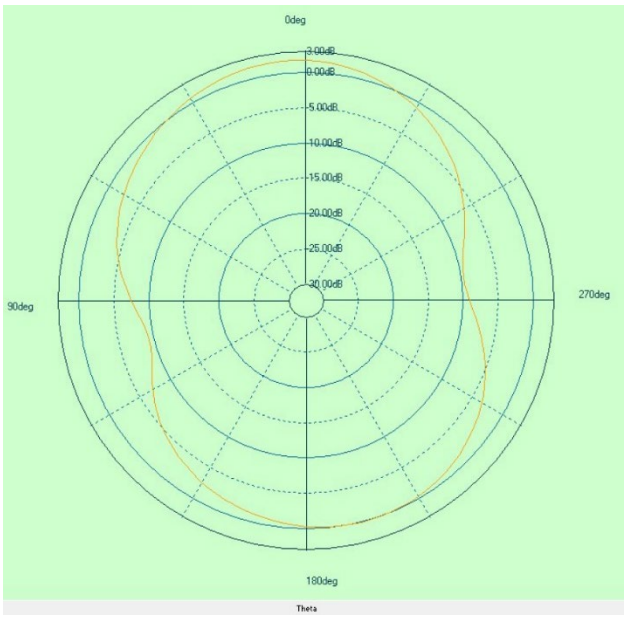
Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

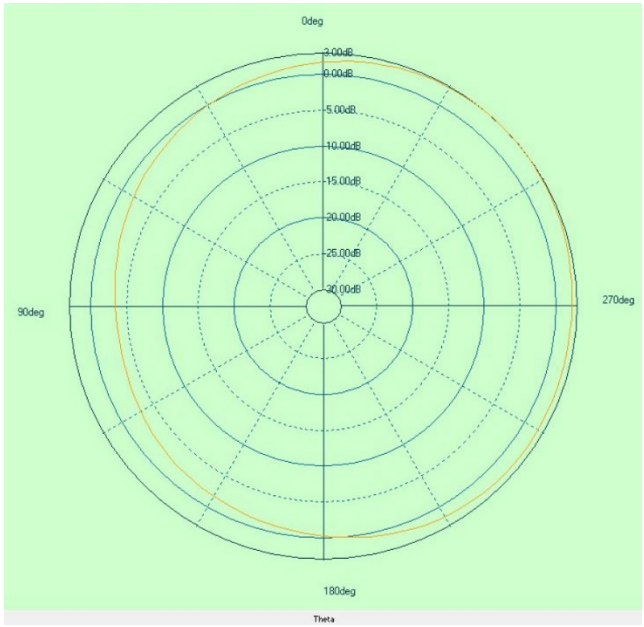
1575 MHz




XY-Plane




XZ-Plane




YZ-Plane

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

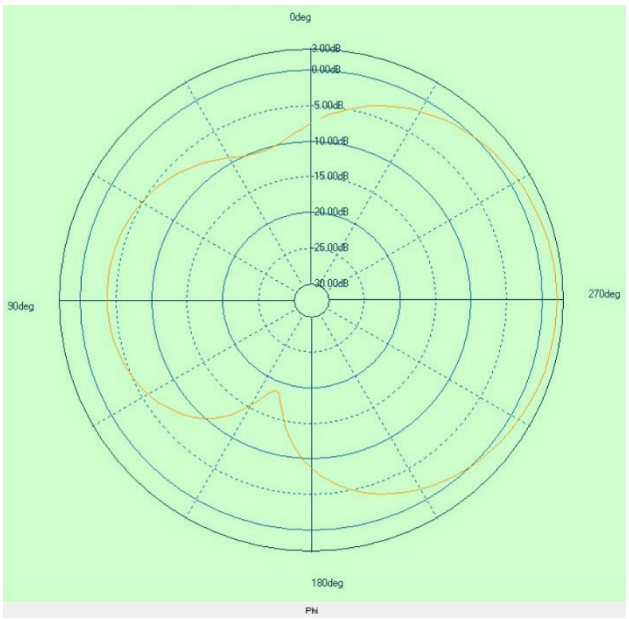
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

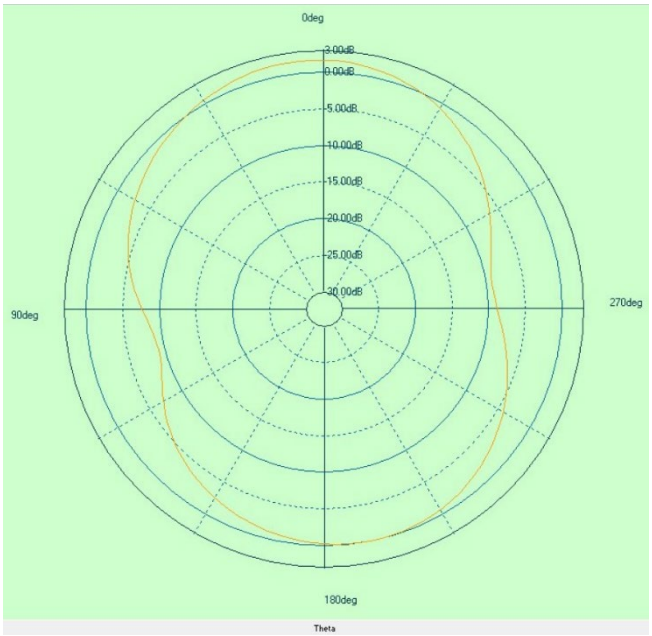
Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

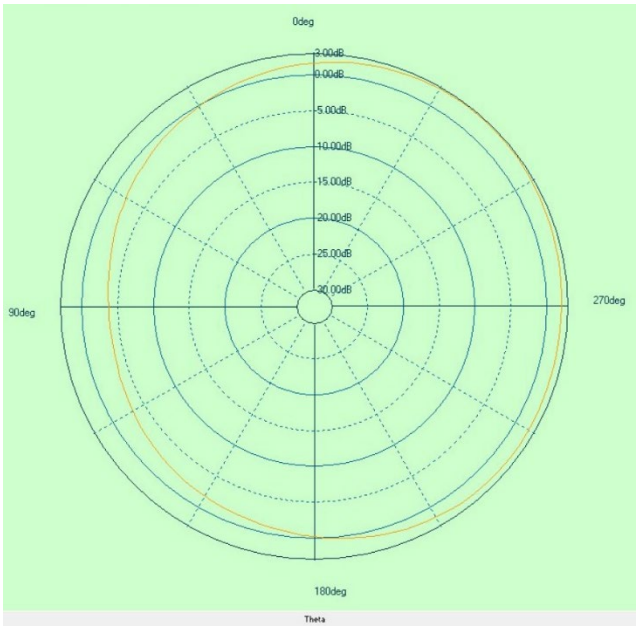
1602 MHz




XY-Plane




XZ-Plane




YZ-Plane

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

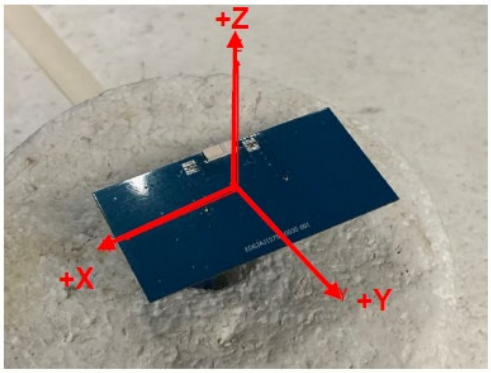
# GNSS + GPS L5 Chip Ant

**ACR1004GC**

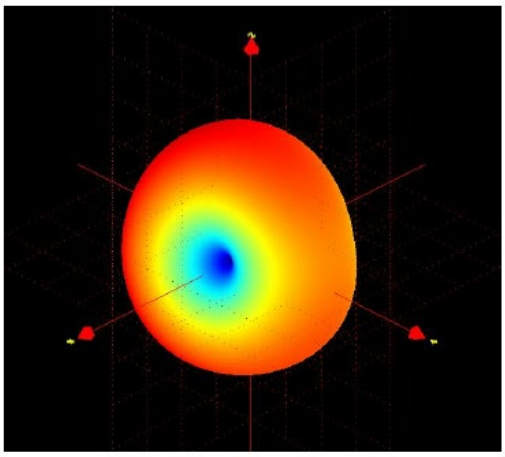
Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

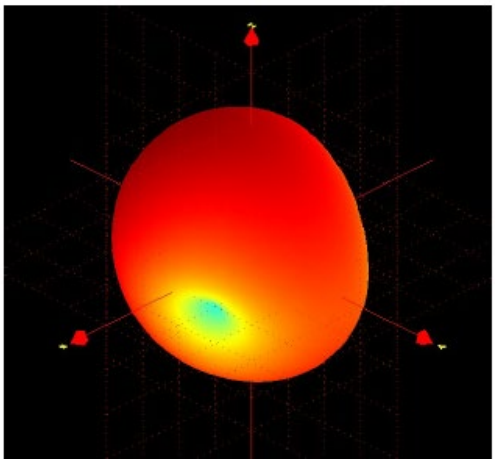
## Radiation Characteristics- 3D



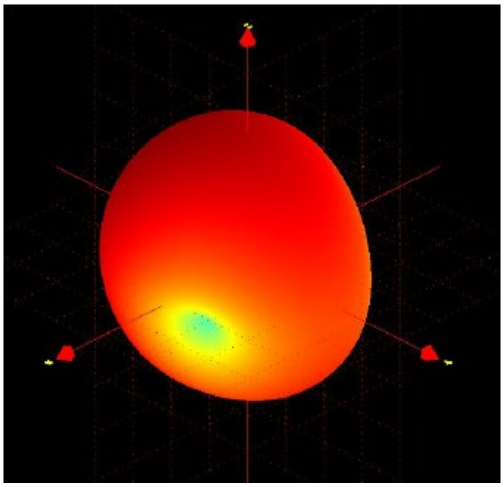

1176 MHz



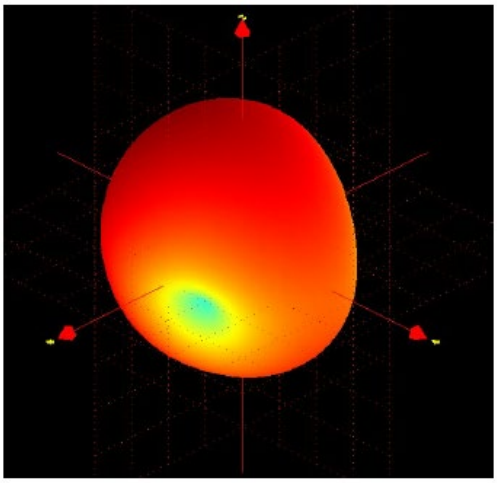
1561 MHz



1575 MHz



1602 MHz



ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

For terms and conditions of sales, please visit:
www.abracon.com

**REVISED: 08-11-21**

ABRACON IS
ISO9001-2015
CERTIFIED

# GNSS + GPS L5 Chip Ant

**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Reliability Test Report

| Test Condition | Test Exposure and Duration |
|---|---|
| Low Temperature test | Expose the specimen to -40°C for 16 hours and then to normal temperature/ humidity for 24 hours or more. After this test, examine its appearance and functions. |
| High-temperature test | Expose the specimen to +85°C for 16 hours and then to normal temperature / humidity for 24 hours or more. After this test, examine its appearance and functions. |
| High-temperature/high-humidity test | Subject the object to the environmental conditions of +85°C and 90-95% relative humidity for 96 hours, then expose it to normal temperature/humidity for 24 hours or more. After this test, examine its appearance and functions. |
| Thermal shock test | Subject the object to cyclic temperature change (-40°C for 30 minutes, then +85°C for 30 minutes) for 5 cycles, then expose to normal temperature/humidity for 24 hours or more. |
| Sinusoidal vibration test | Subject the object to vibrations of 5 to 200 to 5Hz swept in 10 minutes, 4.5G at maximum (2 mm amplitude), in X and Y directions for two hours each and in Z direction for four hours. After this test, examine its appearance functions. |
| Vibration test in packaged condition | Subject the object, which is packaged as illustrated, to vibrations of 15 to 60 to 15Hz swept in 6 minutes, 4G at maximum (2mm amplitude at maximum), applied in X, Y and Z directions for two hours each, i.e. six hours in total. After this test, examine its appearance and functions. |
| Free fall test in packaged condition | Drop the object, which is packaged as illustrated, to a concrete surface from the height of 90 cm, on one comer, three edges and six faces once each, i.e. 10 times in total. After this test, examine its appearance and functions. |
| Soldering heat resistance test | After the lead pins of the unit are soaked in solder bath at 260±5 °C for 10 seconds. After this test, examine its appearance and functions. |
| Adhesion test | The device is subjected to be soldered on test PCB. Then apply 0.5 Kg (5 N) of force for 5±1 second in the direction of parallel to the substrate (the soldering should be done by reflow and be conducted with care so that the soldering is uniform and free of defect by stress such as heat shock). |

# GNSS + GPS L5 Chip Ant

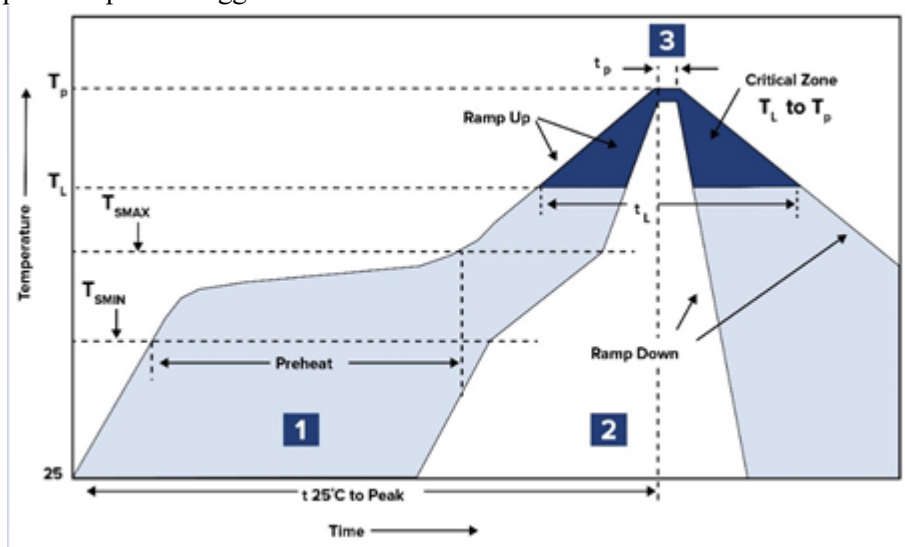
**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Reflow Profile

The chip antenna can be assembled using the following Pb-free assembly. According to the standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follows :




| Zone | Description | Temperature | Times |
|---|---|---|---|
| 1 | Preheat | $T_{SMIN}$ ~ $T_{SMAX}$<br>150°C ~ 200°C | 60 ~ 120 sec |
| 2 | Ramp-Up | $T_{SMAX}$ ~ $T_P$ : 3 °C/s | |
| 3 | Reflow | $T_L$<br>217°C | 30 ~ 100 sec |
| | Peak heat | $T_P$<br>260°C | 5 to 10 sec |
| | Ramp-Down | 6 °C/s | |
| Time from 25°C to Peak Temperature | | 8 minutes (max) | |
| Composition of solder paste | | 96.5Sn/3Ag/0.5Cu | |
| Solder Paste Model | | SHENMAO PF606-P26 | |

Soldering with Iron

- Soldering Iron Temperature : 270±10 ℃
- Apply pre-heating at 120 ℃ for 2~3 min.
- Complete soldering for each terminal within 3 s .
    - If the soldering iron temperature exceeds 270±10 ℃ or 3 seconds, it can damage the component.

**Note**: All temperature measurement points are on top surface of the component. If the temperature goes over the recommend, it will cause surface peeling or damage to the com

# GNSS + GPS L5 Chip Ant

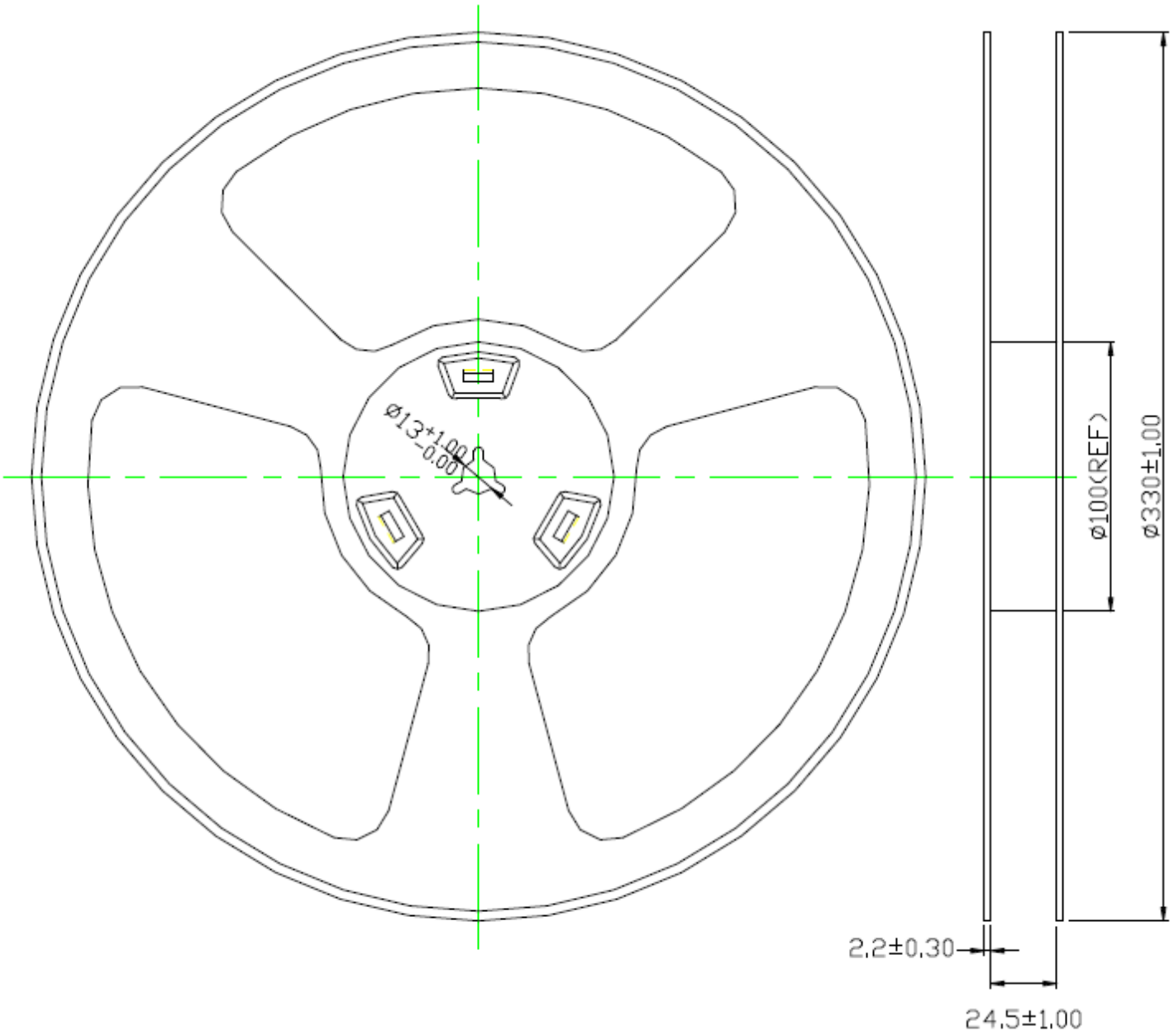
**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

## Packaging

Packaging type : Tape & Reel
Number of pieces per tape: 2000 pcs




Unit: mm

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

**REVISED: 08-11-21**

ABRACON IS ISO9001-2015 CERTIFIED

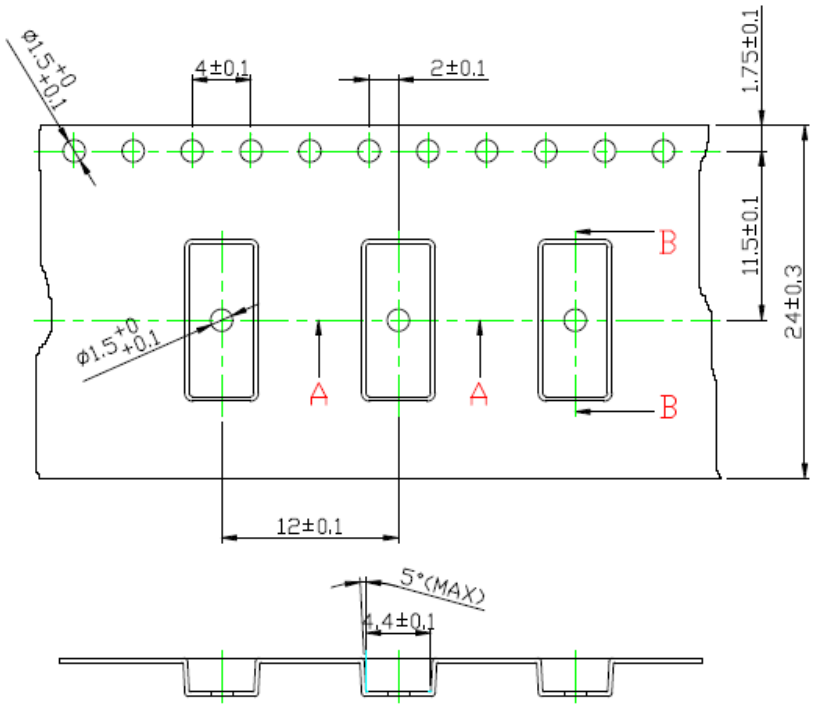
# GNSS + GPS L5 Chip Ant

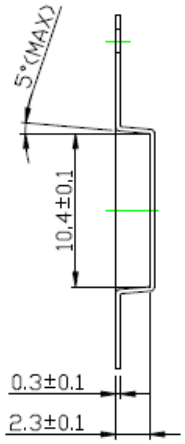
**ACR1004GC**

Request Samples | Check Inventory

**10 x 4 x 1.5 mm**
**RoHS/RoHS II Compliant**
**MSL Level = 1**

Tape Dimensions:

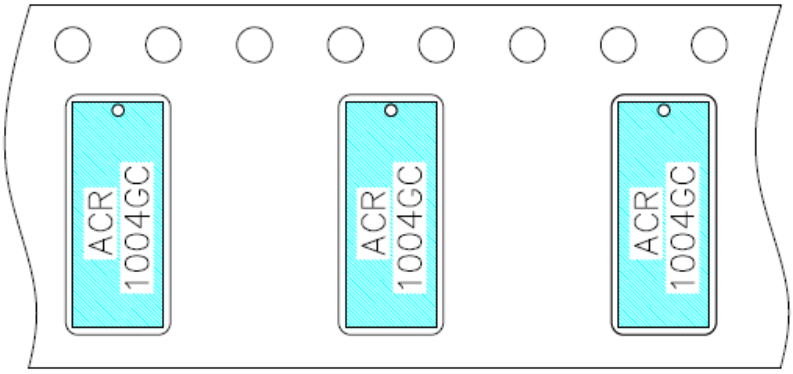



B-B SECTION




A-A SECTION




Unit: mm



ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

For terms and conditions of sales, please visit:
www.abracon.com

**REVISED: 08-11-21**

ABRACON IS
ISO9001-2015
CERTIFIED

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

ABRACON:
ACR1004GC