

DCAG0003

Dielectric Chip Antenna (5.0x2.5x0.55 mm)



This specification covers the dielectric chip antenna for GPS and GLONASS

Product Specifications

Working Frequency: 1575.42 MHz; 1602MHz

Dimension: 5.0×2.5×0.55 mm

Return Loss: GPS < -10dB ; GPS with GLONASS < -5dB

VSWR: GPS < 2.0 ; GPS with GLONASS < 3.5

Peak Gain: 1.0 dBi (typ)

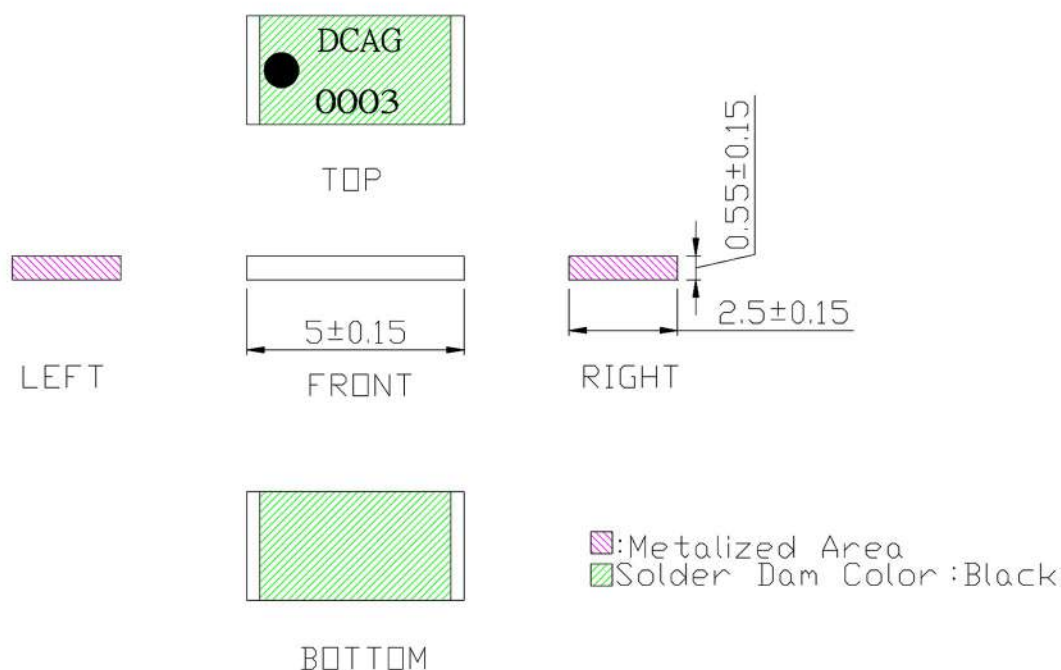
Polarization: Linear

Azimuth: Omni-directional

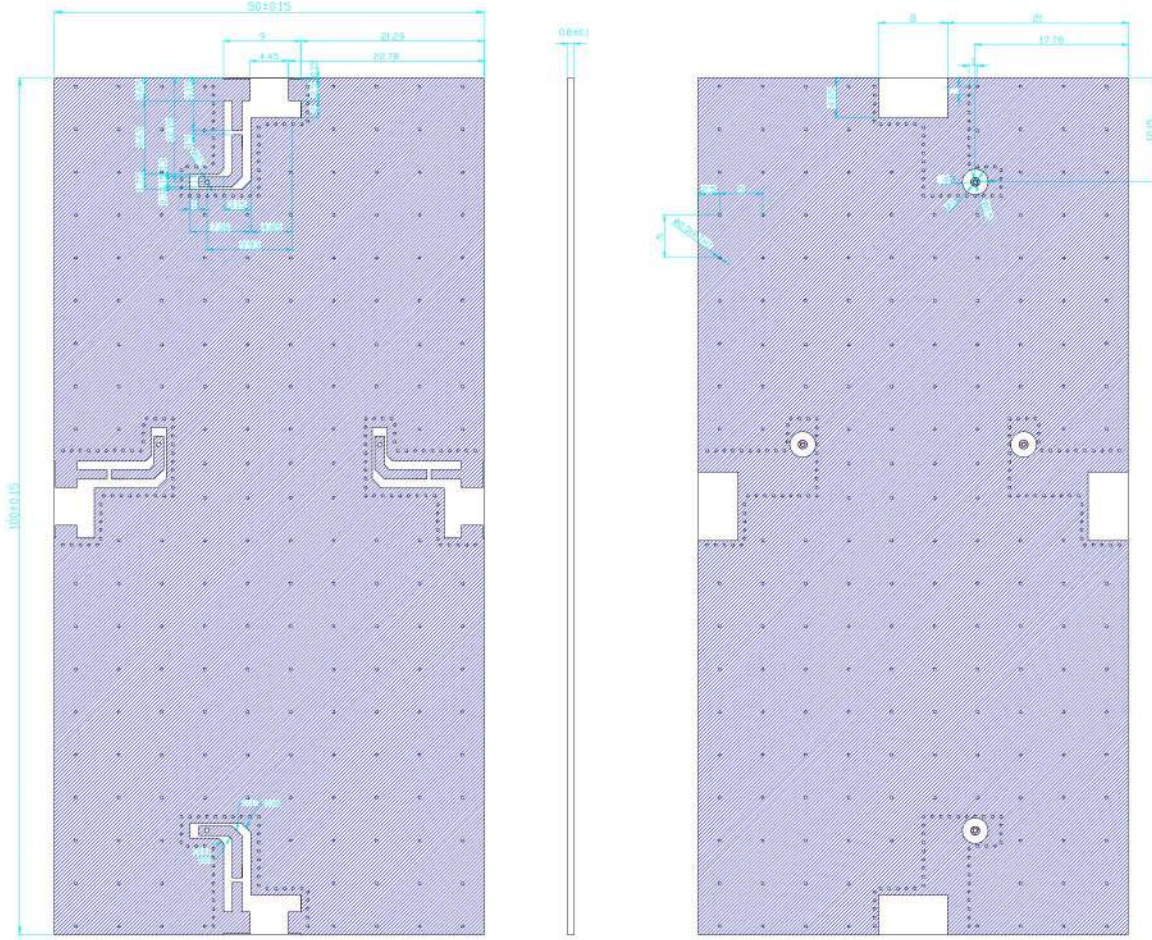
Impedance: 50 Ω

Operating Temperature: -40~105°C

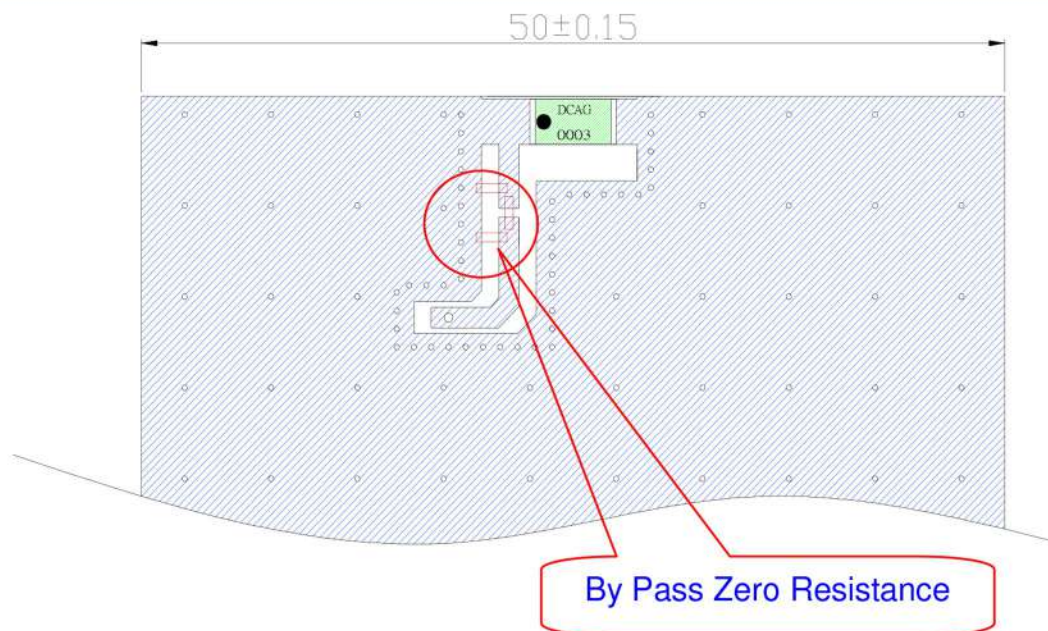
Antenna Dimensions



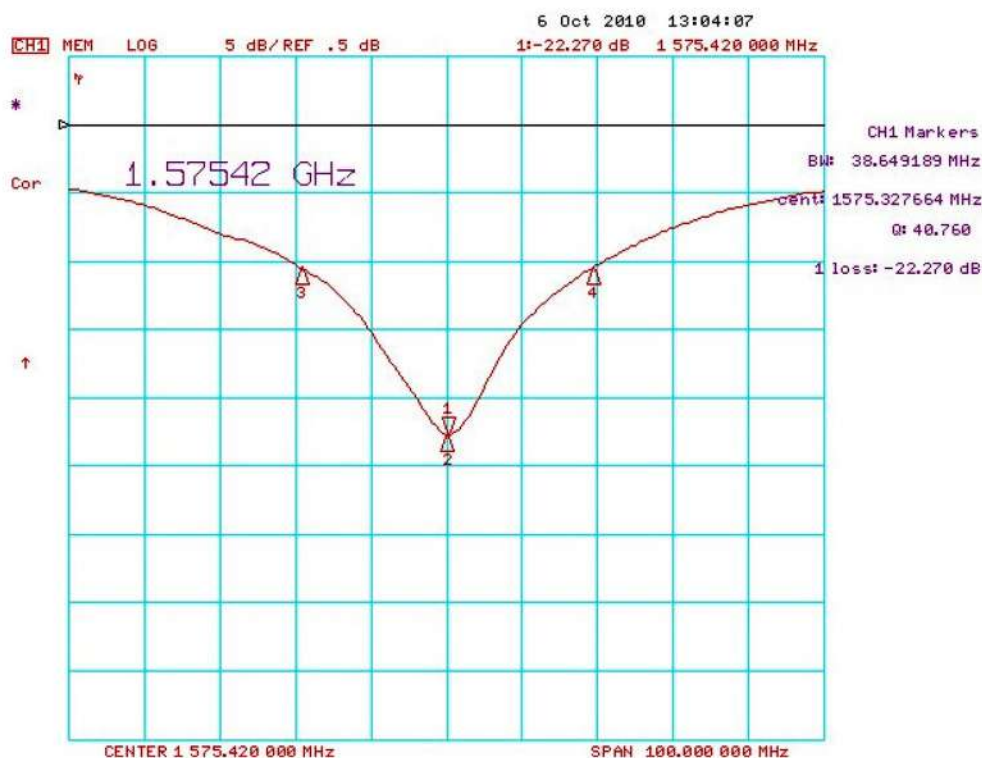
Demo Board Dimension



Antenna Measurement on Demo Board: GPS Matching Circuit

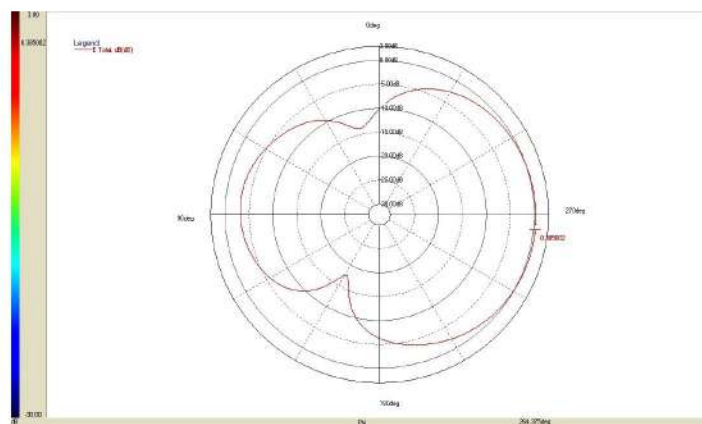


Responsive Curve (Work Frequency)

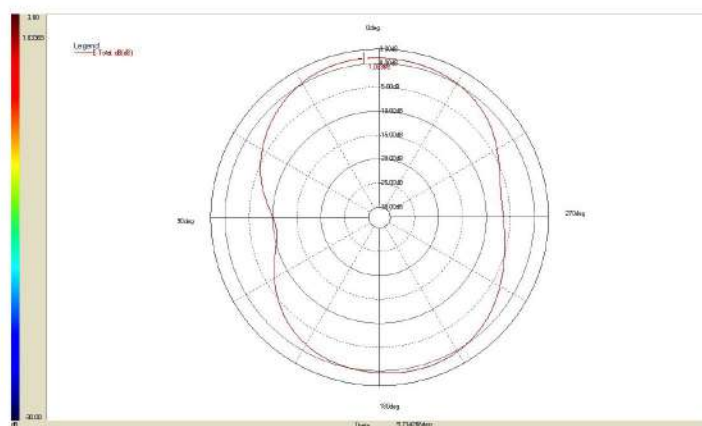


Item	Frequency	Return Loss	Bandwidth
Value	1575.42 MHz	-22.27dB	38.64 MHz

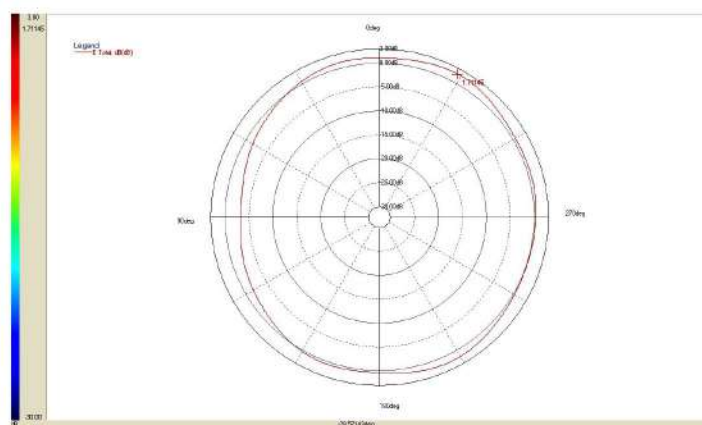
Electrical Performance



XY-Plane 1575.42MHz



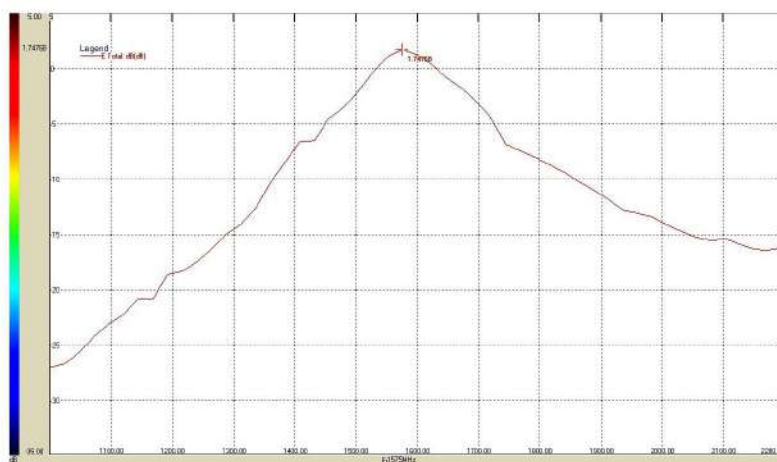
XZ-Plane 1575.42MHz



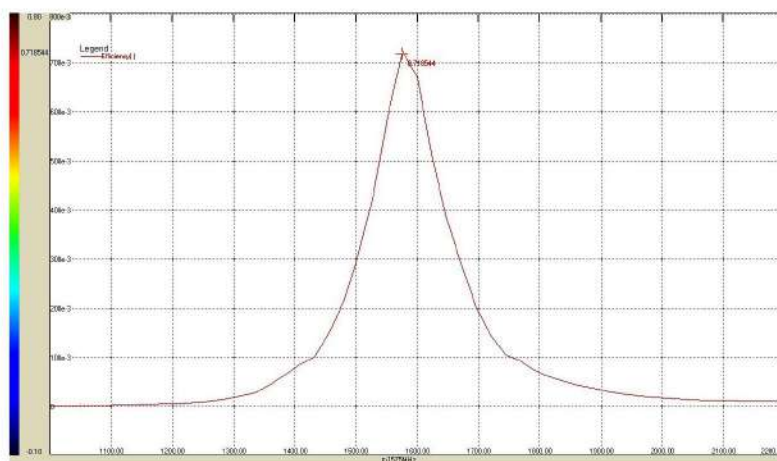
YZ-Plane 1575.42MHz

1575.42MHz	Peak Gain
XZ-Plane	0.38
YZ-Plane	1.03
XY-Plane	1.71

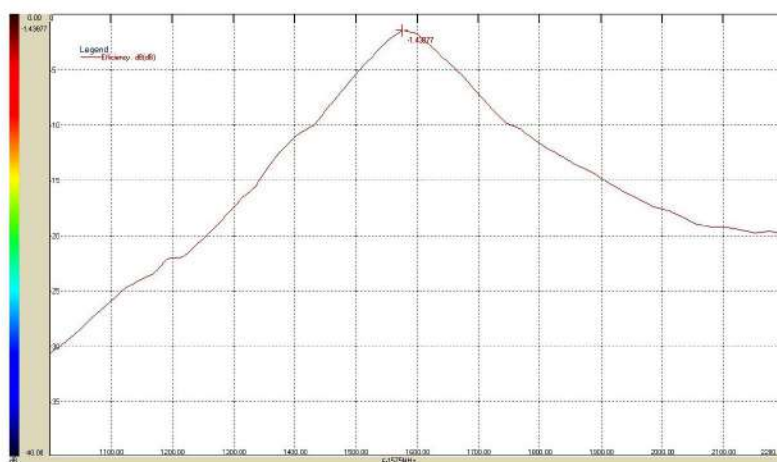
(Unit : dBi)



Peak Gain



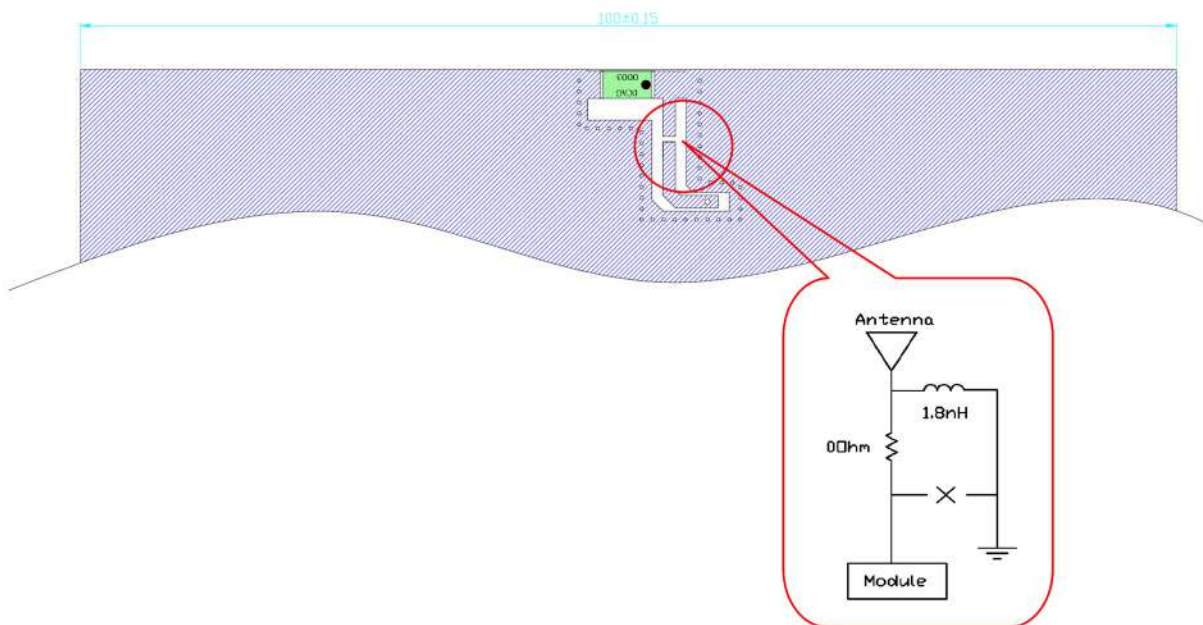
Efficiency



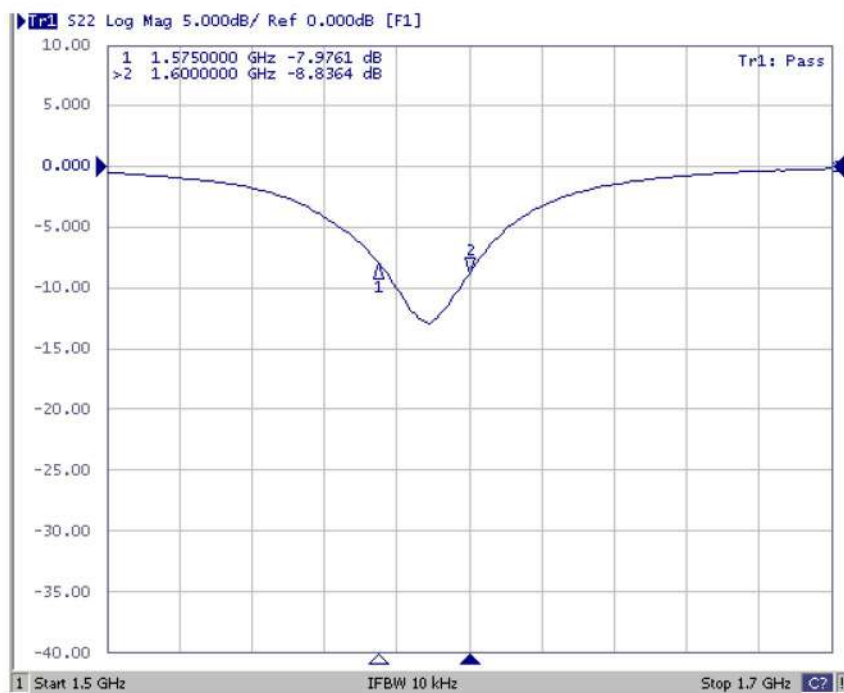
Average Gain

Item	Peak Gain	Efficiency	Average
Value	1.74 dBi	71.85%	-1.43 dBi

GPS with GLONASS Matching Circuit

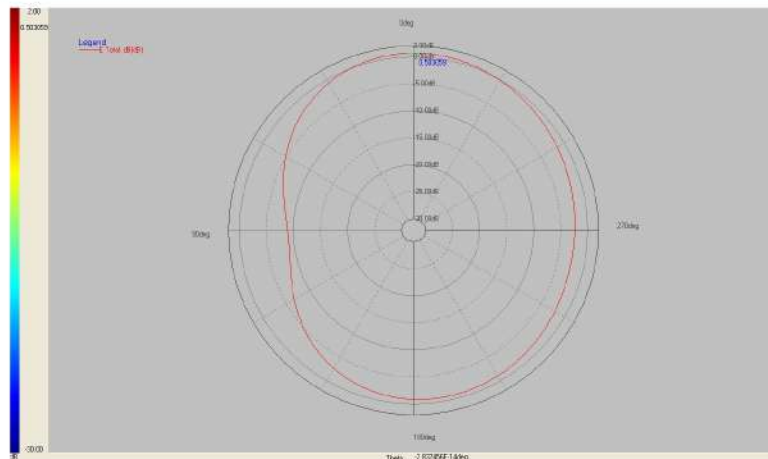


Response Curve

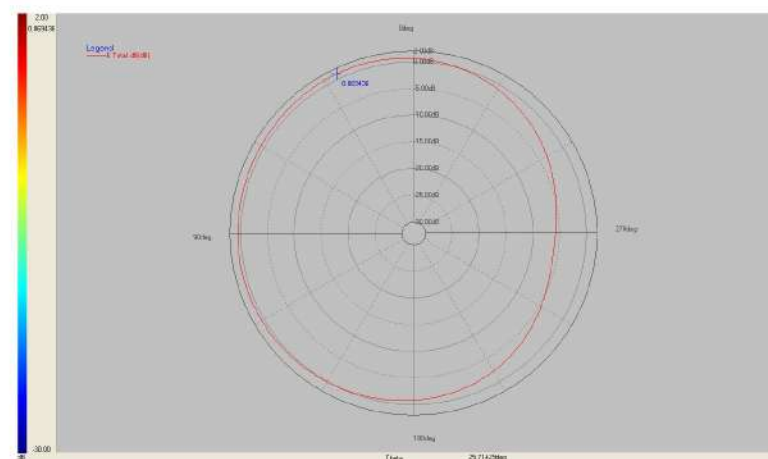


Frequency(MHz)	1575	1602
S22 Return Loss(dB)	-7.97	-8.83

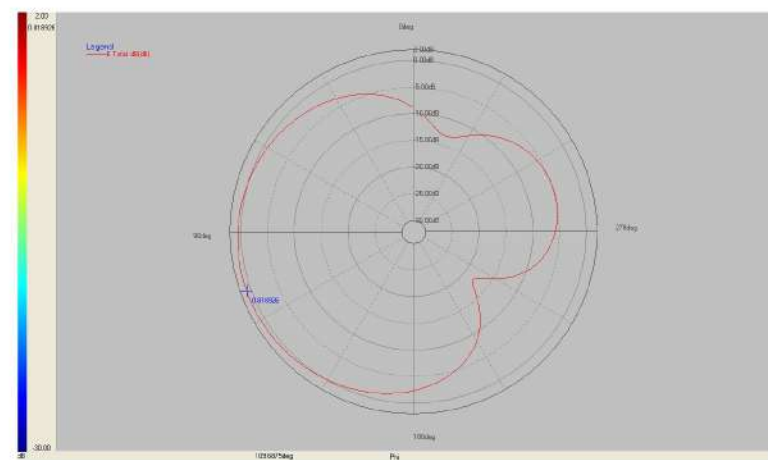
Electrical Performance



1575.42MHz X-Z Plane



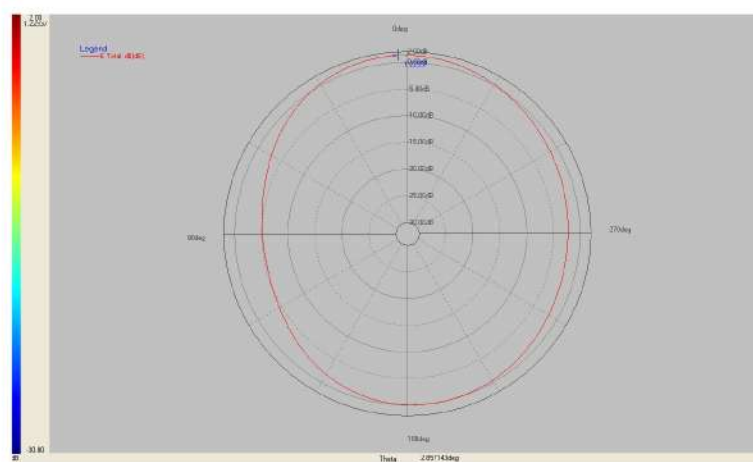
1575.42MHz Y-Z Plane



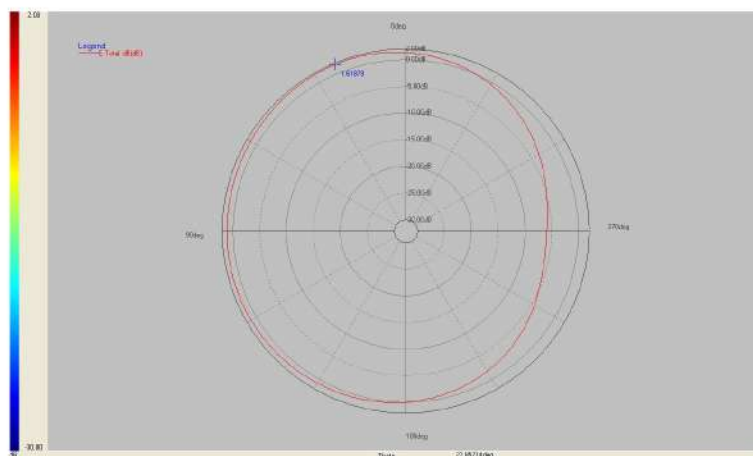
1575.42MHz X-Y Plane

1575.42MHz	Peak Gain
XZ-Plane	0.50
YZ-Plane	0.86
XY-Plane	0.81

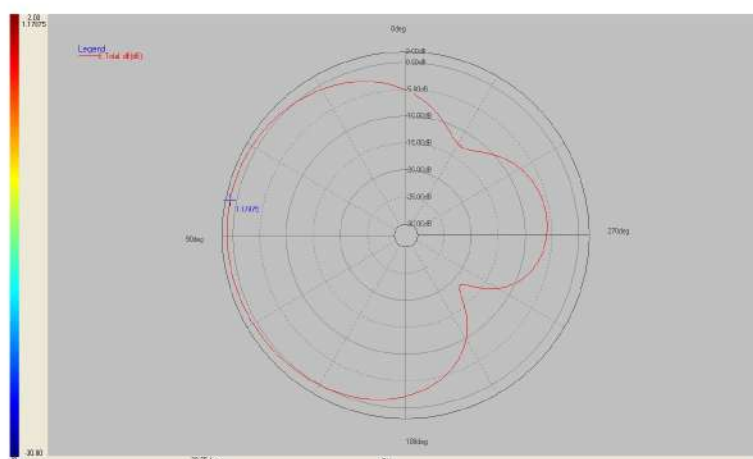
(Unit : dBi)



1602MHz X-Z Plane



1602MHz X-Z Plane



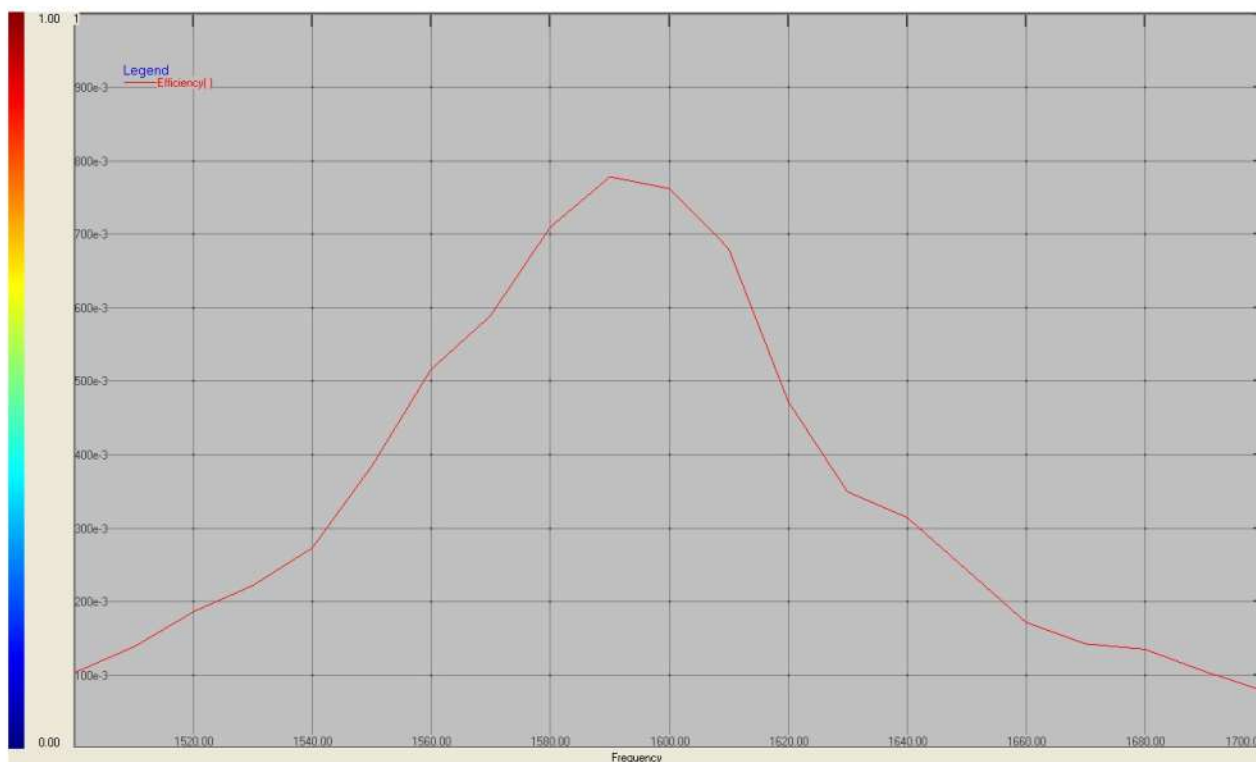
1602MHz X-Y Plane

1602MHz	Peak Gain
XZ-Plane	1.22
YZ-Plane	1.61
XY-Plane	1.17

(Unit : dBi)



Peak Gain



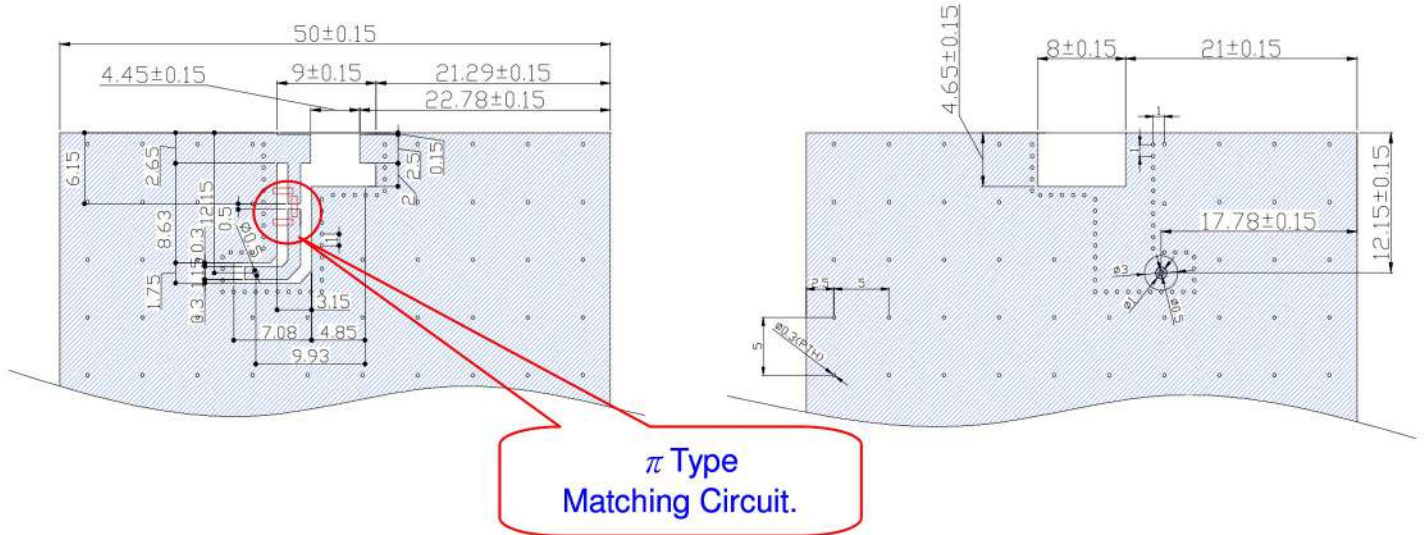
Efficiency



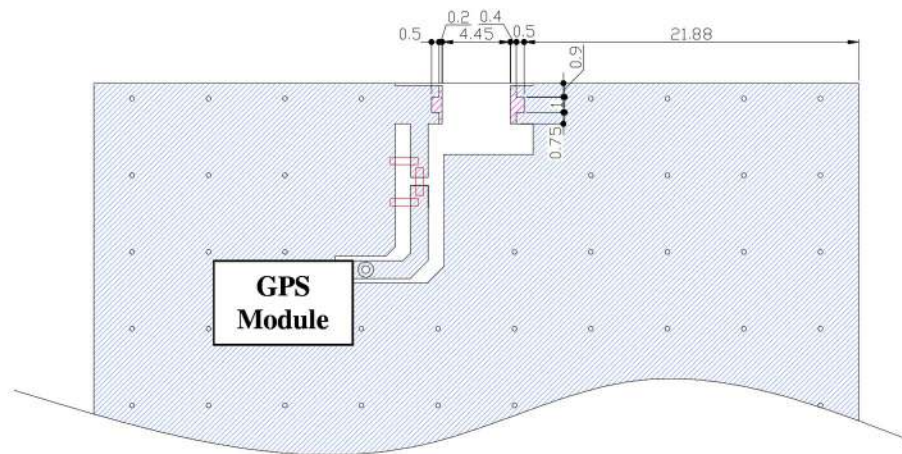
Average Gain

Frequency(MHz)	1575.42	1602
Peak Gain(dBi)	1.16	1.73
Efficiency (%)	64.97	76.23
Average Gain(dBi)	-1.87	-1.17

Customers Requirement Layout Dimension: Layout Dimension



Single and Pad Layout Dimension



Environmental Conditions

Operating conditions

The antenna has the electrical characteristics given in Tables 1 in the temperature range of -40°C to $+85^{\circ}\text{C}$ and under the environmental conditions of $+40^{\circ}\text{C}$ and 0-95% r.h.

Storage temperature range

The storage temperature range of product is -40°C to $+85^{\circ}\text{C}$.

Reliability Tests

Low-temperature test

Expose the specimen to -40°C for 500 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 $+85^{\circ}\text{C}$ for 500 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 $+85^{\circ}\text{C}$ and 90-95% r.h. for 96 hours, then expose 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 , 30 minutes \leftrightarrow $+85^{\circ}\text{C}$, 30 minutes) for 5 cycles, the expose its to normal temperature/ humidity for 24 hours or more.

Vibration Test

Sinusoidal vibration test

Subject the object to vibrations of 5 to 200 to 5Hz swept in 10 minutes, 4.5G at maximum (2mm 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 corner, 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

The lead pins of the unit are soaked in solder bath at $260 \pm 5^{\circ}\text{C}$ 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 0.5Kg (5N) of force for 5 ± 1 seconds 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).

Warranty

If any defect occurs from the product during proper use within a year after delivery, it will be repaired or replaced free of charge.

Other

Any question arising from this specification manual shall be solved by arrangement made by both parties.

- Antenna pattern use an Ag / Ni / Sn electrode.
- Please don't use the corrosion gas (sulfur gas, chlorine gas) in the atmosphere.
- Please don't direct solder onto the silver electrode of antenna pattern.

Delivery Mode

Pieces/tape : 3000

