

# NGCL1206UV1R575G2TRF

## GPS / WIFI Ceramic Chip Antenna



### Features

- Stable and reliable performance
- Good isolation between GPS bands and WiFi (Bluetooth) bands
- Compatible with individual signal input or combined signal input
- Low profile, compact size
- SMT processes compatible
- RoHS Compliant



### Applications

- For GPS applications
- For Wi-Fi/ Bluetooth/ BLE/ZigBee/2.4GHz applications
- For wireless devices when both GPS and Wi-Fi(Bluetooth) functions are needed, e.g., Smart phone, Tablet PC, Tracker, Real time video recorder. Smart watch...etc

### Specifications

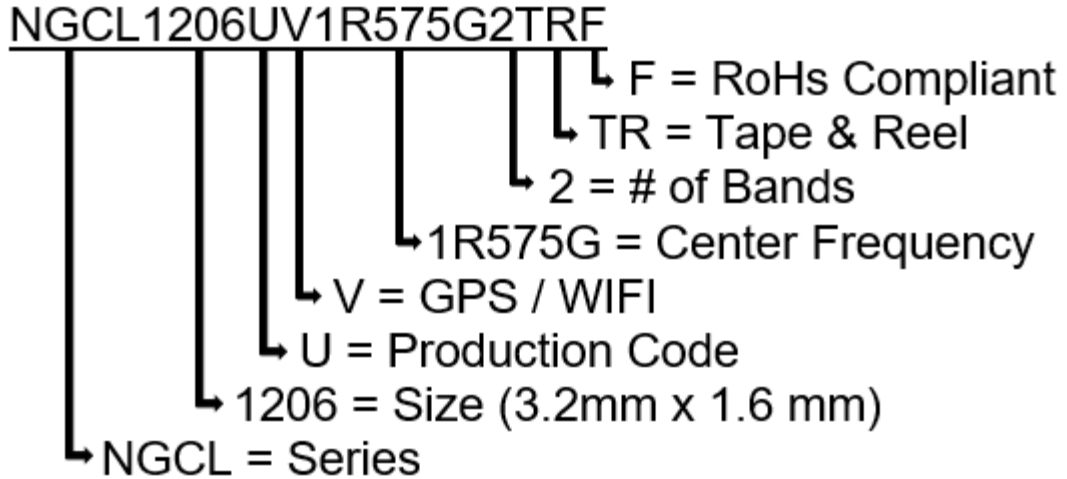
Electrical Table #1		
	GPS Band	WiFi & Bluetooth
Frequency Range	1575.42 MHz	2400~2500 MHz
Center Frequency		2442 MHz
Isolation(S21)	≤ -20 typ.	≤ -16 typ.
Peak Gain	1.3 dBi typ.	1.8 dBi typ.
Efficiency	61% typ.	68% typ.
V.S.W.R	2.0 Max	
Polarization	Linear	
Impedance	50Ω	
Environmental		
Operating Temperature	-40°C~+85°C	
Storage Temperature	-5°C~+40°C	
Relative Humidity	20% to 70%	
Maximum Input Power	2 W	
Shelf Life	1 year	
RoHS Compliant	Yes	

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## Part Number Breakdown

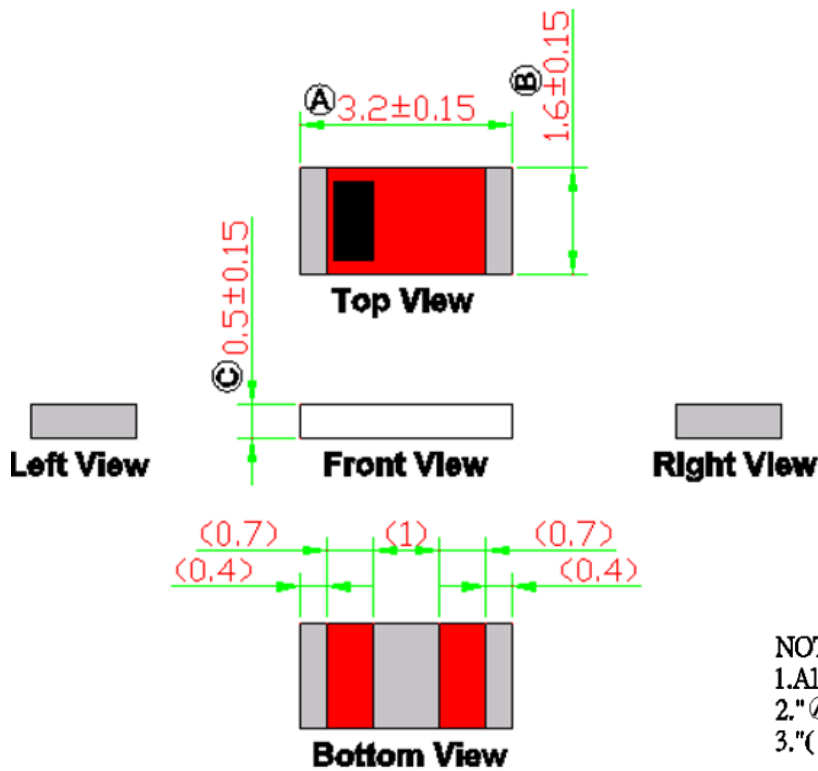


## Pin Definition



PIN	1	2	3
Soldering PAD (Individual signal)	GPS Signal	Wi-Fi & B.T. Signal	Tuning / Ground
Soldering PAD (Combined signal)	Tuning / Ground	Tuning / Ground	GPS & Wi-Fi (B.T.) Signal

### Dimension Drawing



**NOTE:**

1. All materials are RoHS 2.0 compliant.
2. "A~C" Critical Dimensions.
3. "( )" Reference Dimensions.

### Dimensions (mm) & Mechanical

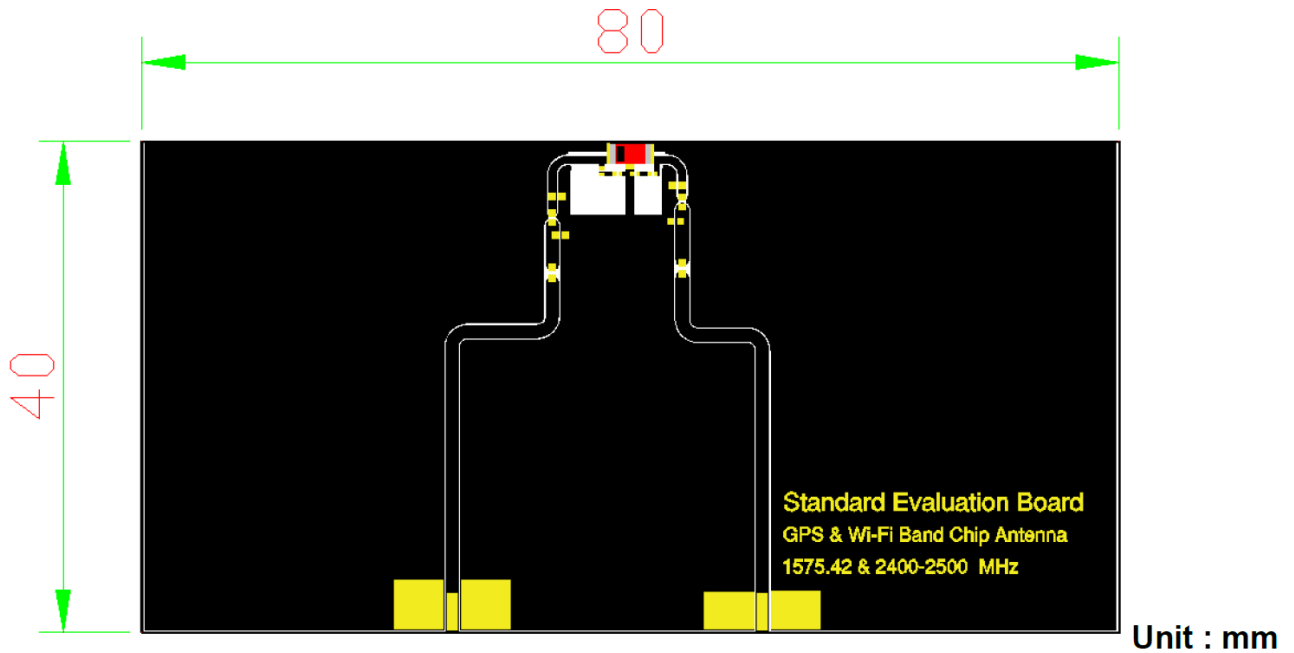
Body Length (A)	$3.2 \pm 0.15$
Width (B)	$1.6 \pm 0.15$
Thickness (C)	$0.5 \pm 0.15$
Connection Type	SMT
Ground Plane	80 mm x 40 mm
Material	Ceramic

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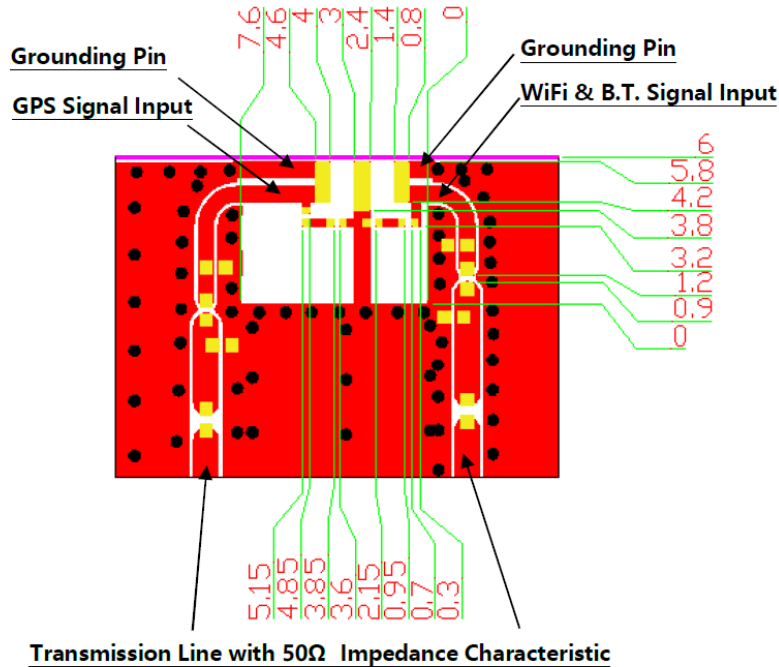


## Evaluation Board

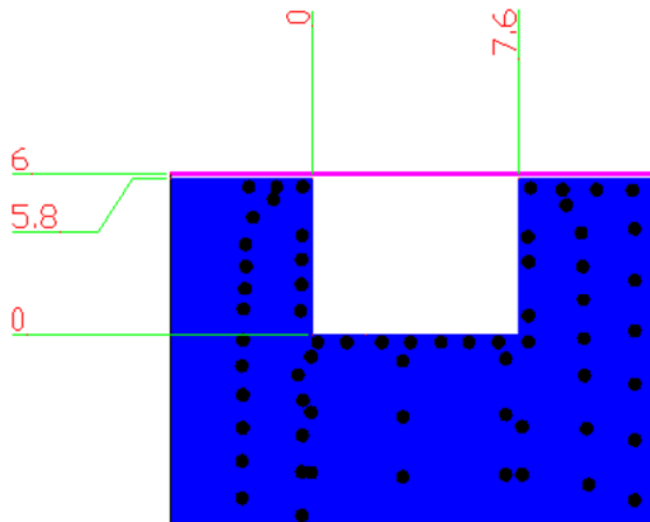


### Solder Land Pattern

The gold areas represent the solder land pattern. Any recommendations on the matching circuit will be provided according to the customer's installation conditions.

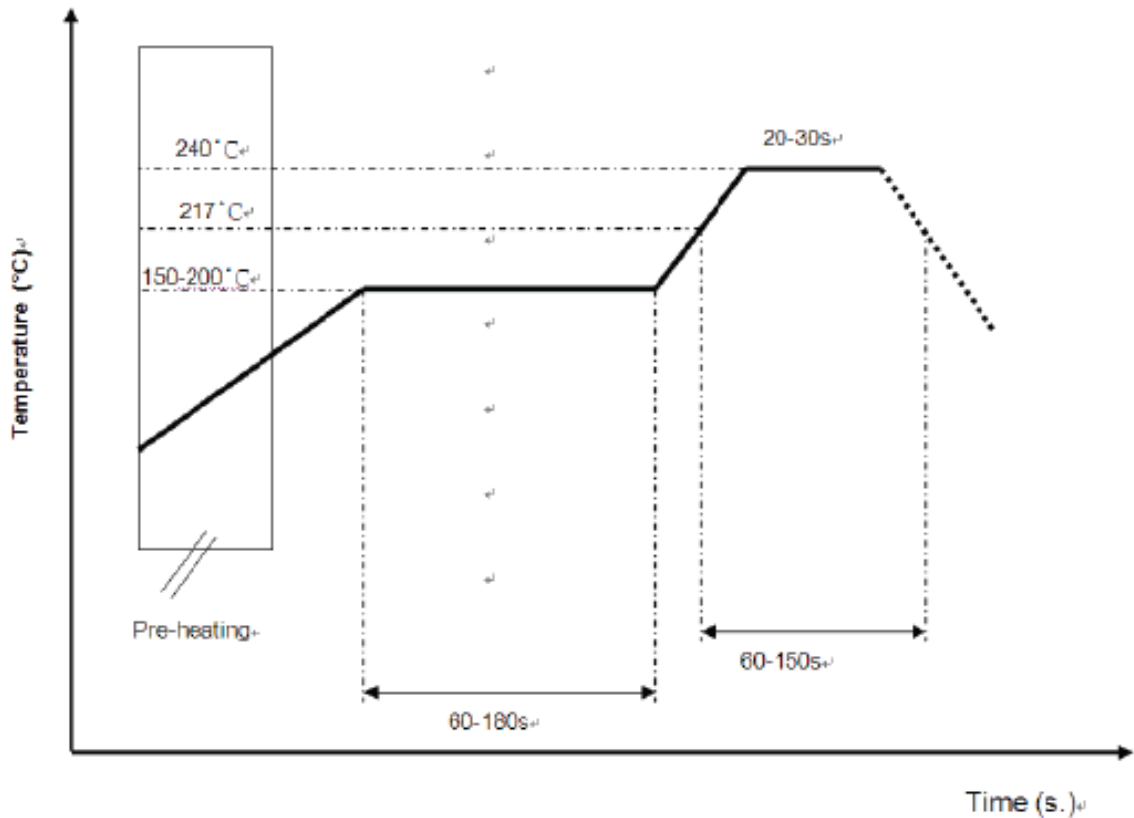


Top View



Bottom View

### Typical Soldering Conditions

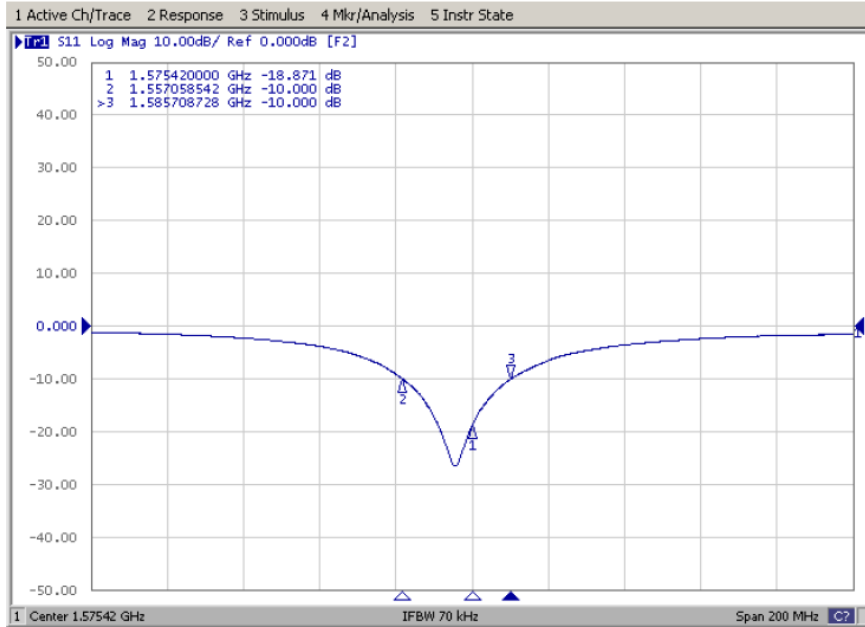


\*Recommended solder paste alloy: SAC305 (Sn96.5 /Ag3 /Cu0.5) Lead Free solder paste.

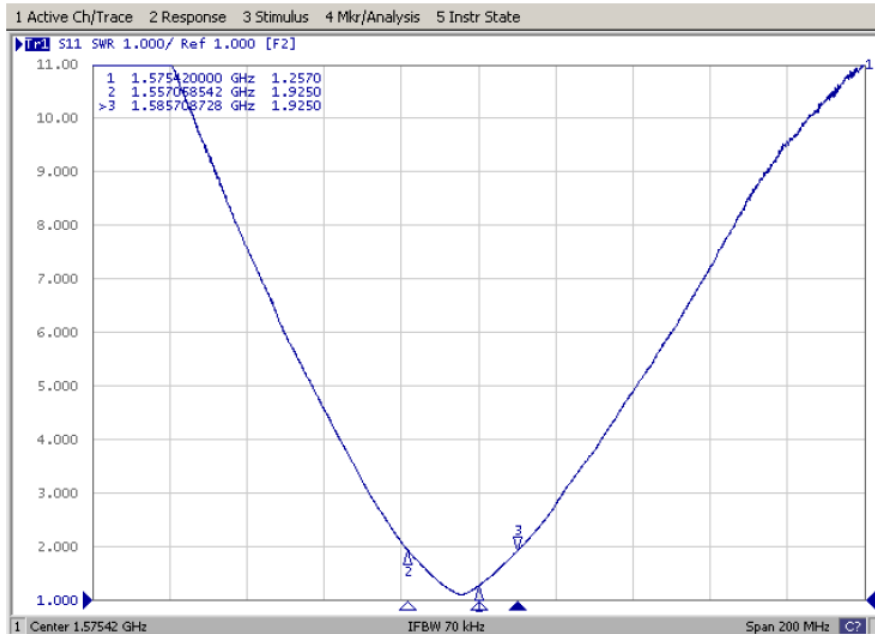


### Return Loss & VSWR OF GPS Band

#### Return Loss ( $S_{11}$ )



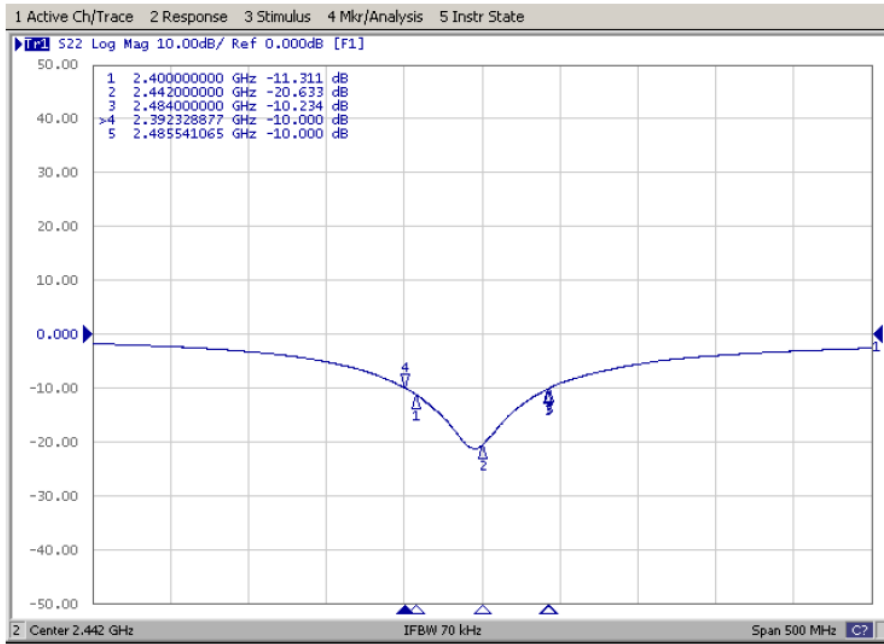
#### VSWR( $S_{11}$ )



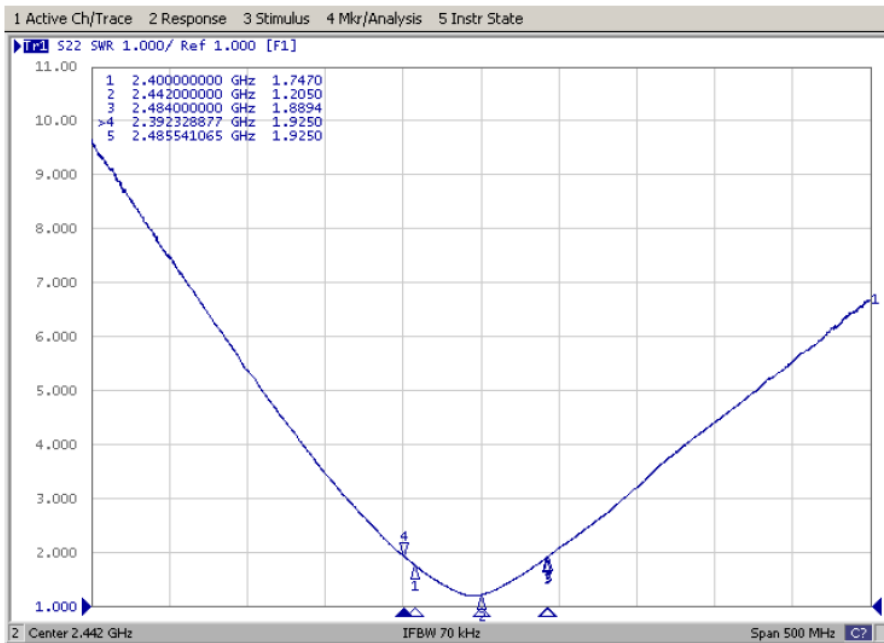


### Return Loss & VSWR OF WIFI / Bluetooth Band

#### Return Loss ( $S_{11}$ )



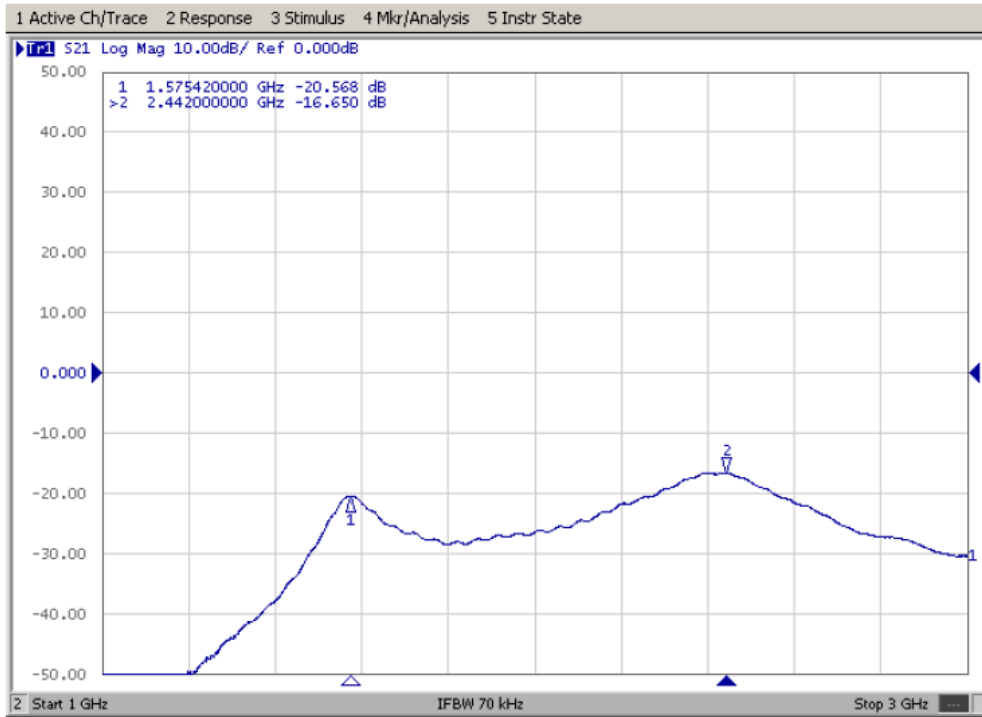
#### VSWR( $S_{11}$ )





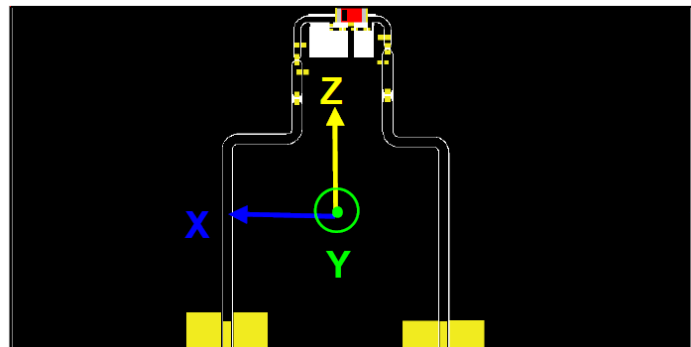
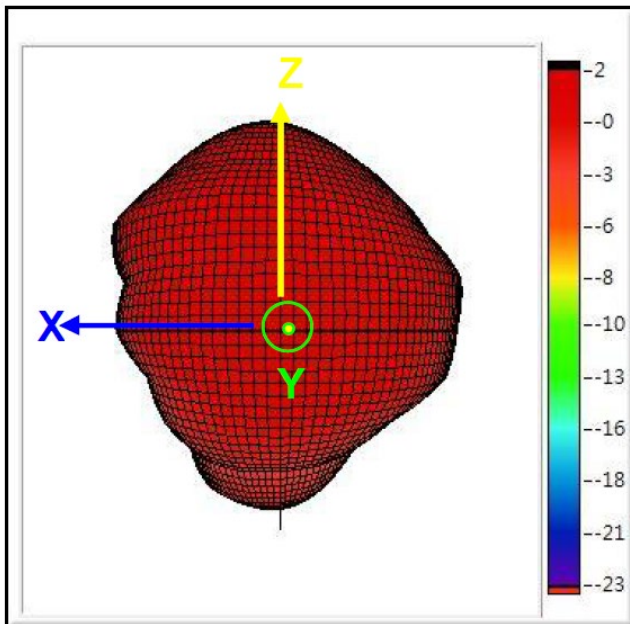
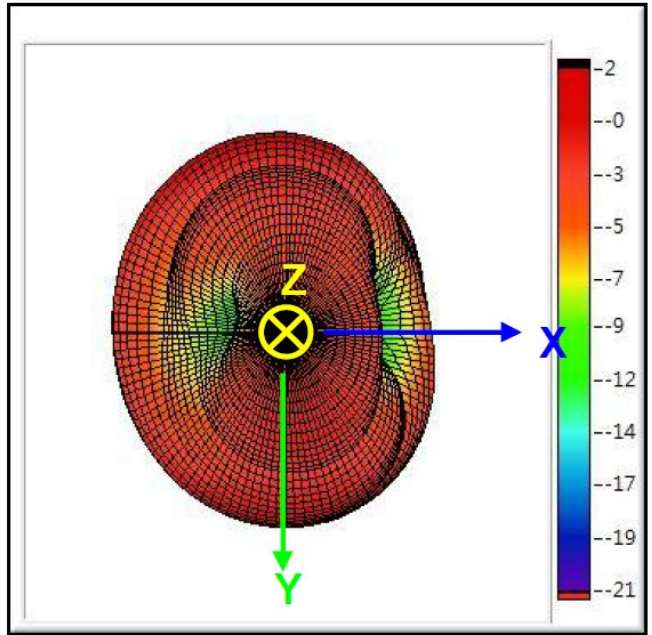
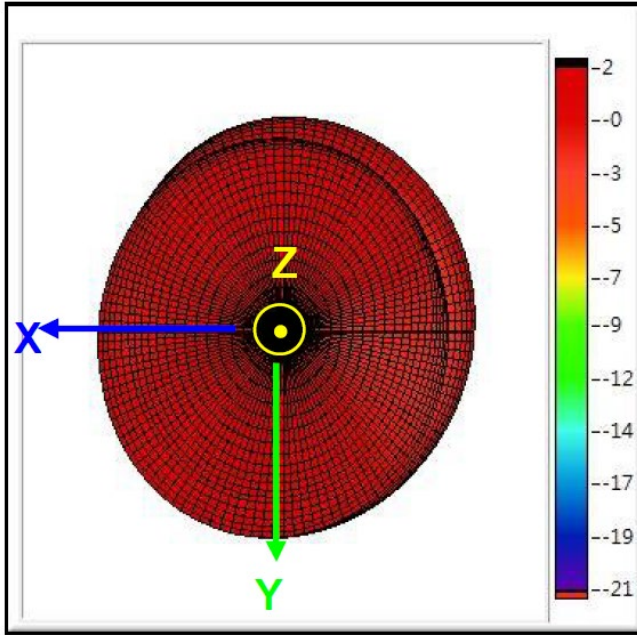


### Isolation between GPS Band & WIFI / Bluetooth



### Radiation Patterns

3D Radiation Gain Pattern GPS Band @ 1575.42 MHz



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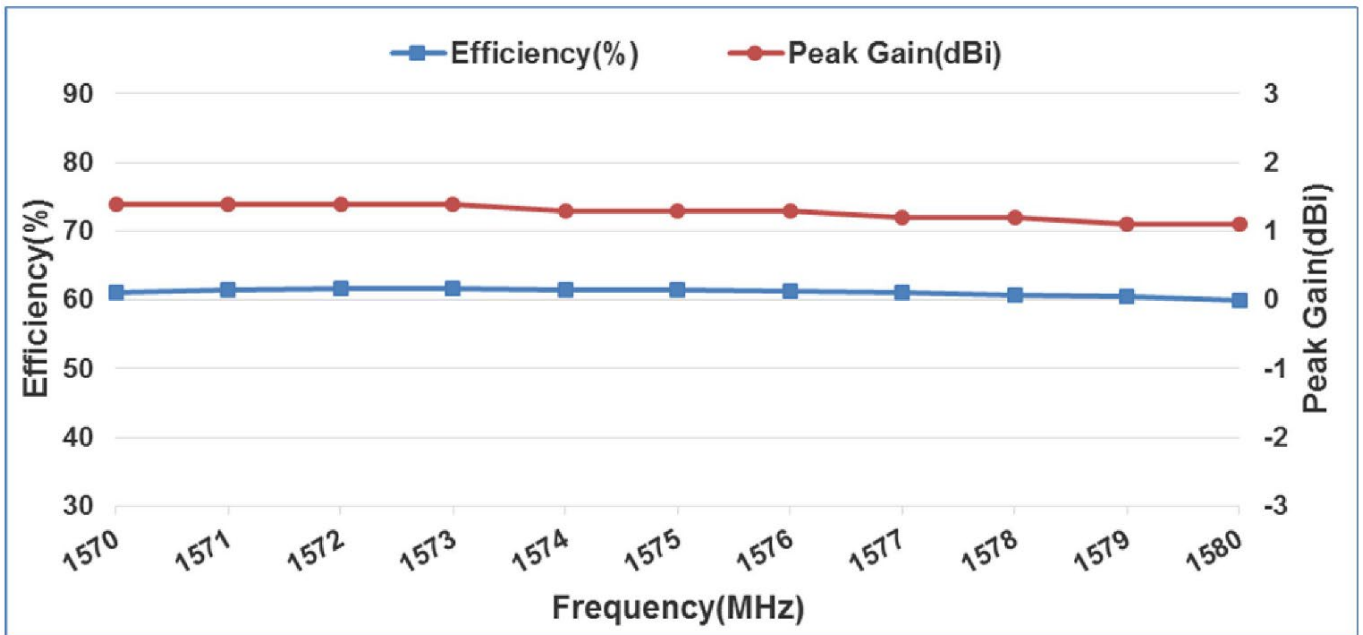
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## 3D Efficiency Table

Frequency(MHz)	1570	1571	1572	1573	1574	1575	1576	1577	1578	1579	1580
Efficiency(dB)	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-2.2	-2.2	-2.2
Efficiency(%)	61.0	61.4	61.7	61.6	61.4	61.4	61.3	61.0	60.7	60.6	60.0
Peak Gain(dBi)	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1

## 3D Efficiency vs. Frequency

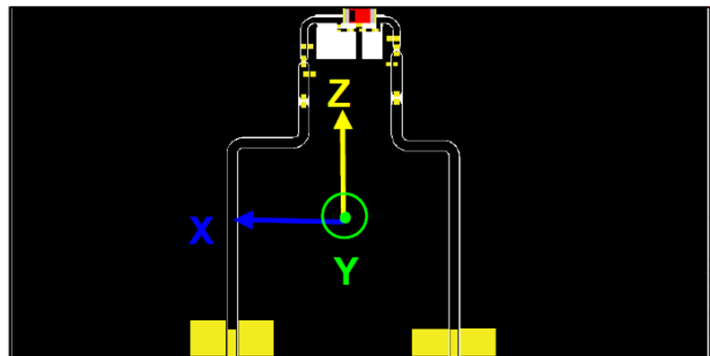
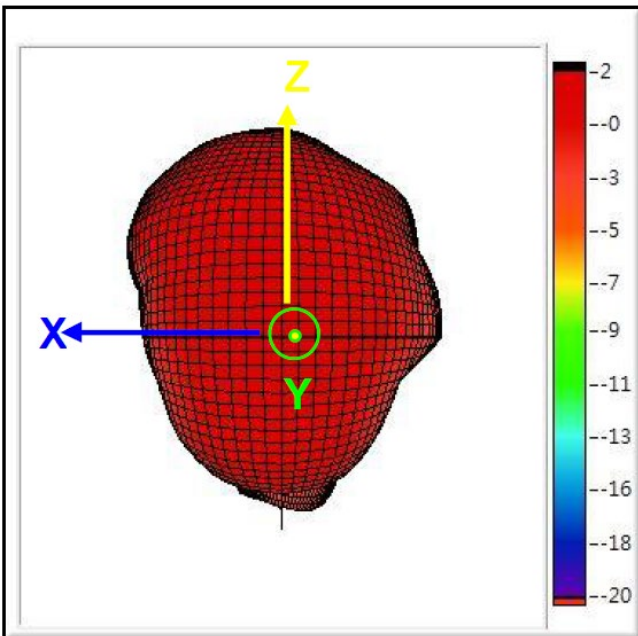
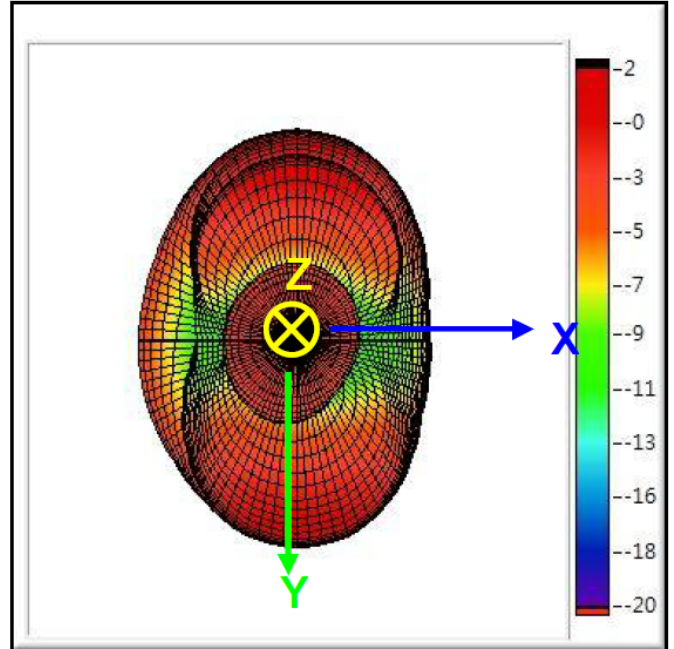
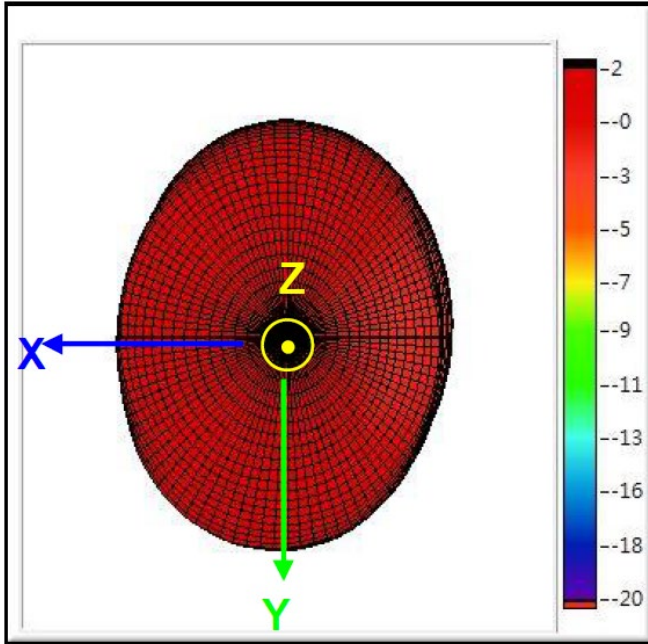


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## GPS / WIFI Ceramic Chip Antenna



### 3D Radiation Gain Pattern WIFI /Bluetooth @ 2442 MHz



# NGCL1206UV1R575G2TRF

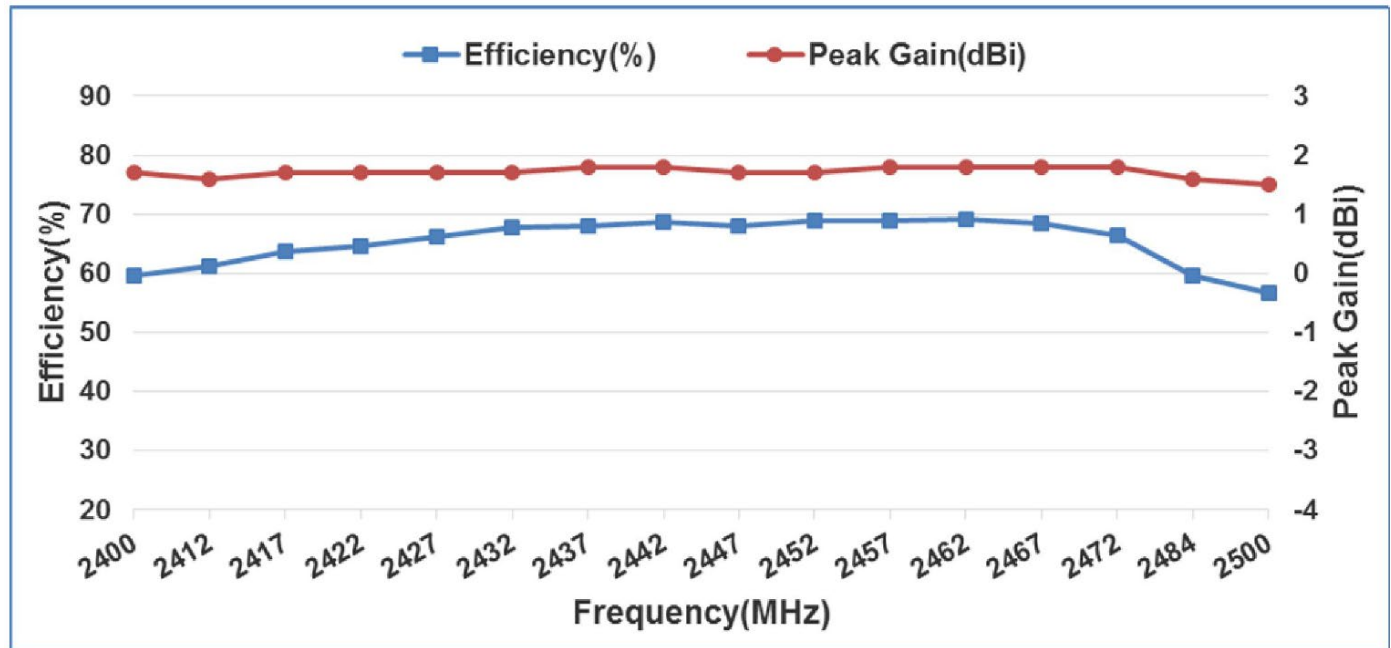
GPS / WIFI Ceramic Chip Antenna



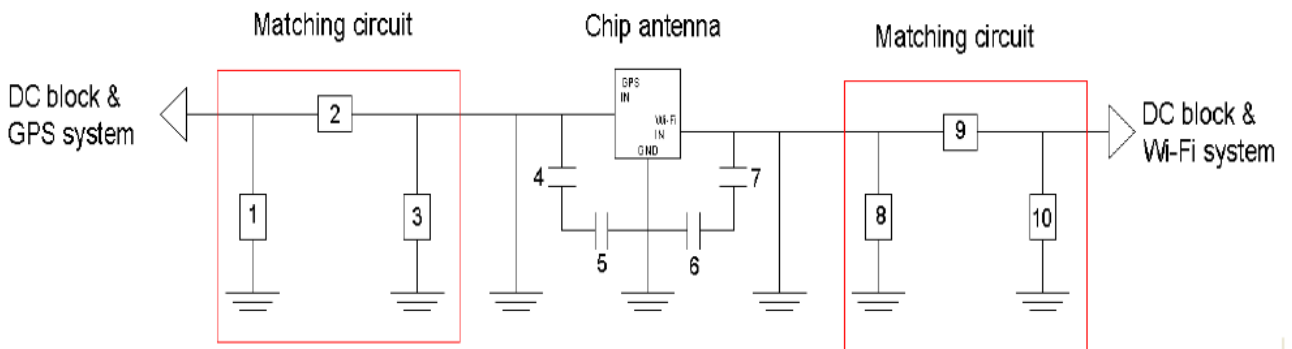
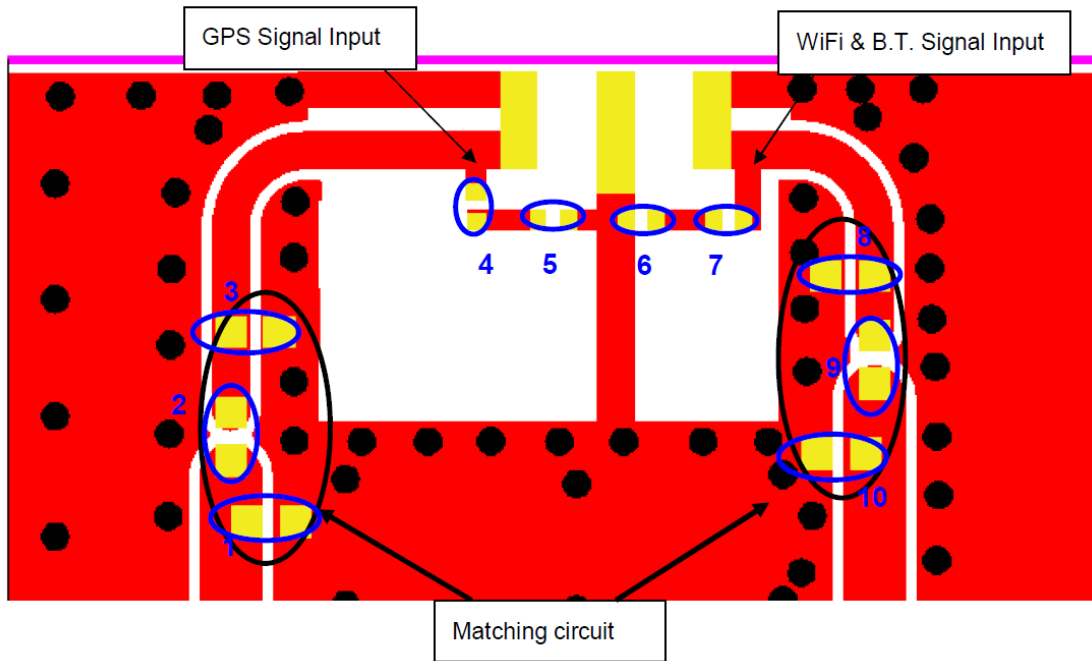
## 3D Efficiency Table

Frequency(MHz)	2400	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462	2467	2472	2484	2500
Efficiency(dB)	-2.2	-2.1	-2.0	-1.9	-1.8	-1.7	-1.7	-1.6	-1.7	-1.6	-1.6	-1.6	-1.6	-1.8	-2.2	-2.5
Efficiency(%)	59.6	61.1	63.8	64.7	66.1	67.7	68.1	68.7	68.1	68.9	69.0	69.2	68.5	66.4	59.7	56.6
Peak Gain(dBi)	1.7	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.7	1.8	1.8	1.8	1.8	1.6	1.5

## 3D Efficiency vs. Frequency



### Frequency Tuning & Matching Circuit





### System Matching Circuit Component

Location	Description	Tolerance	NIC Part Number
1,3,8,&10	N/A	-	-
2	4.7nH, (0402)	±0.3nH	<a href="#">NML04D4N7TRF</a>
4 Fine Tuning Element	2.7pF, (0201)	±0.05pF	<a href="#">NMC-Q0201NPO2R7A50TRPF</a>
5 Fine Tuning Element	1pF, (0201)	±0.05pF	<a href="#">NMC-Q0201NPO1R0A50TRPF</a>
6 Fine Tuning Element	0.6pF, (0201)	±0.05pF	<a href="#">NMC-Q0201NPO0R6A50TRPF</a>
7 Fine Tuning Element	0.8pF, (0201)	±0.05pF	<a href="#">NMC-Q0201NPO0RA50TRPF</a>
9	0Ω, (0402)	-	<a href="#">NRC04Z0TRF</a>
DC Block	22pF, (0402)	±5%	<a href="#">NMC-Q0402NPO220J50TRPF</a>

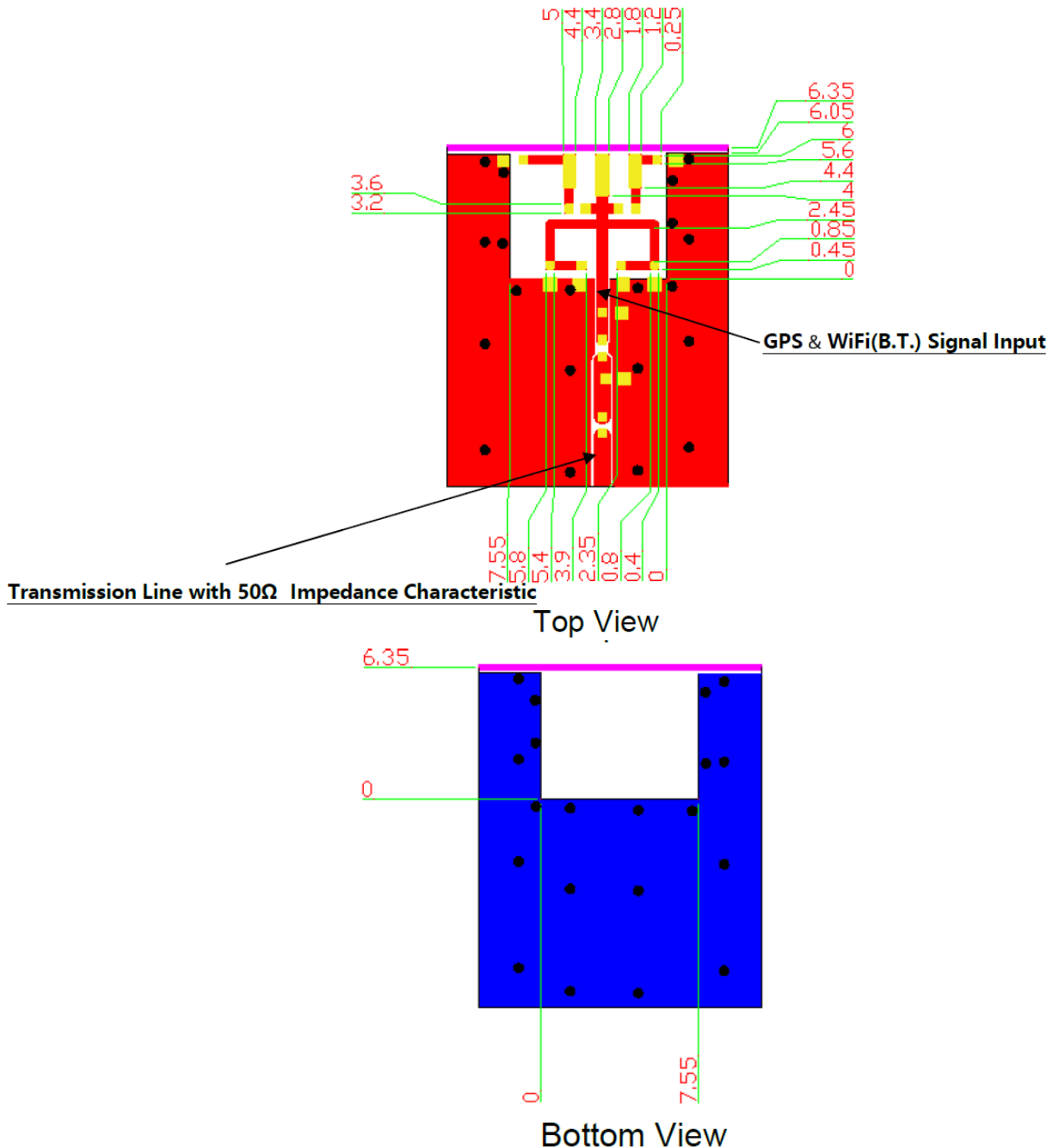
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### Solder Land Pattern

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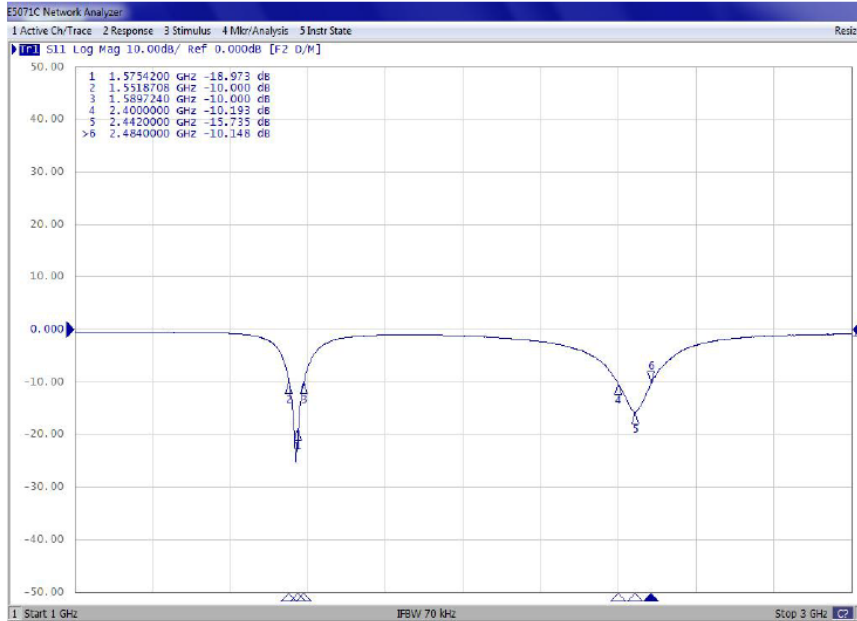
### Specifications

Electrical Table #2	
<b>GPS Band</b>	
Frequency	1575.42 MHz
Peak Gain	2.0 dBi typ.
Efficiency	65% typ.
V.S.W.R	2.0 Max
Polarization	Linear
Impedance	50Ω
<b>WiFi &amp; Bluetooth</b>	
Frequency Range	2400~2500 MHz
Center Frequency	2442 MHz
Gain	-0.4 dBi typ.
Efficiency	54% typ.
VSWR (@ center frequency)*	2.0 Max.
Polarization	Linear
Impedance	50Ω

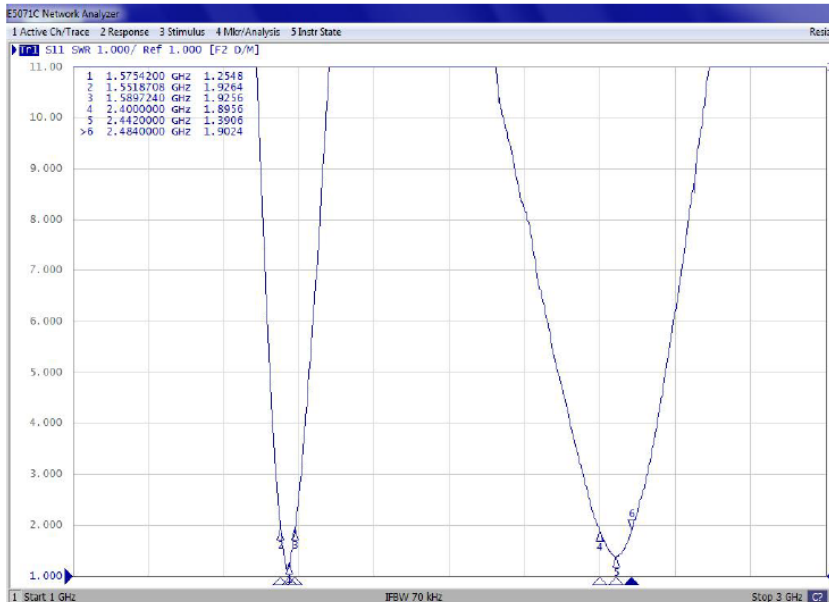


### Return Loss & VSWR

### Return Loss (S<sub>11</sub>)



### VSWR(S<sub>11</sub>)

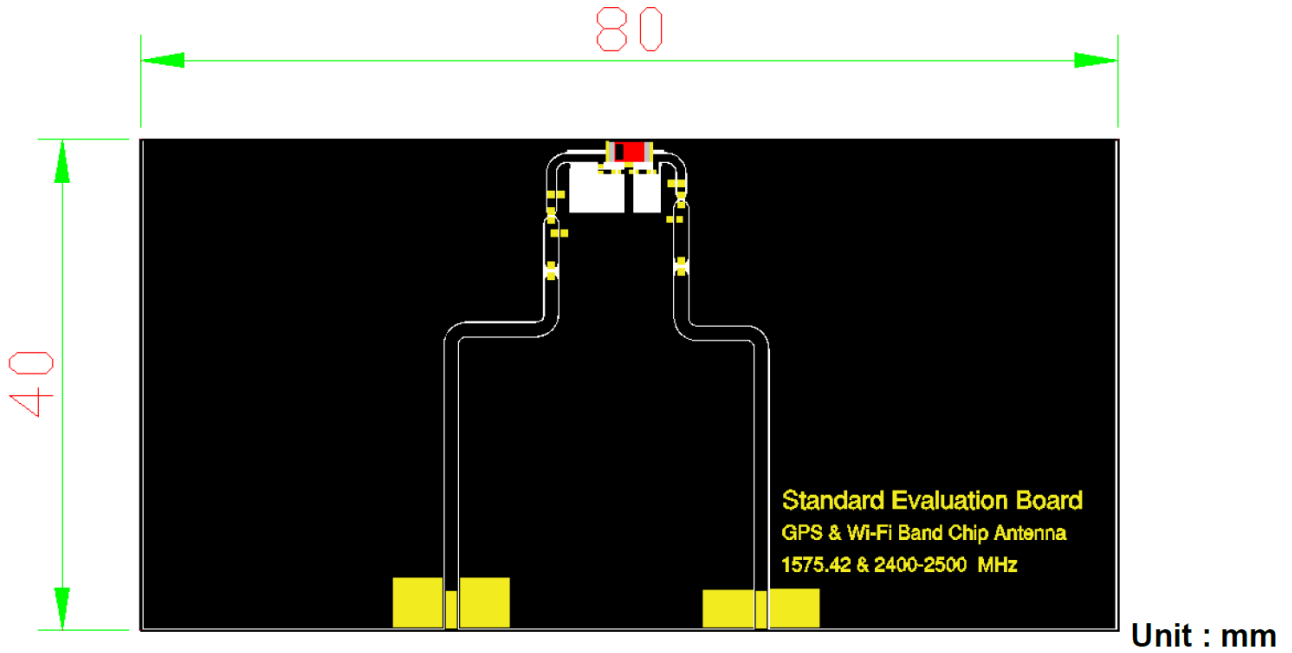


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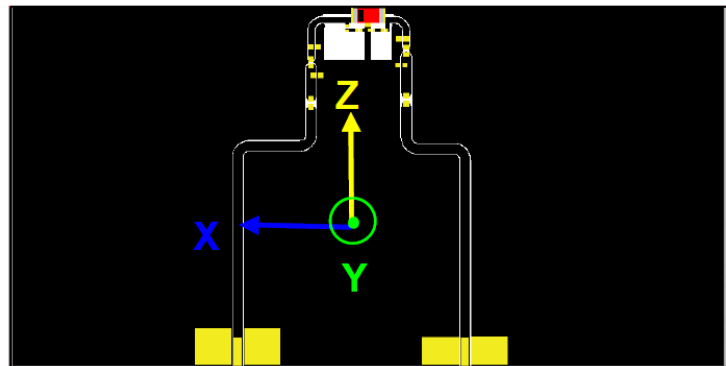
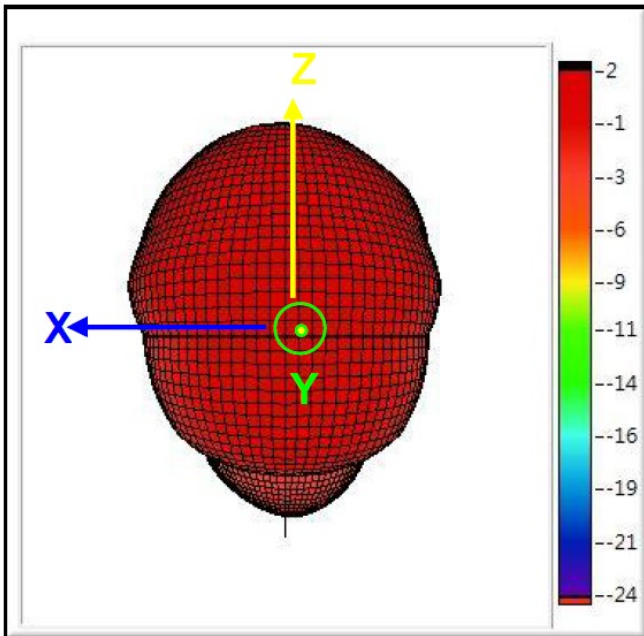
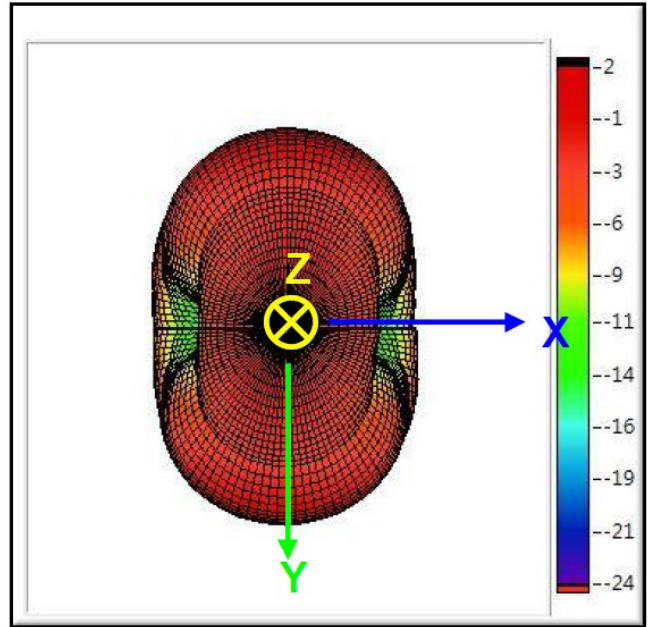
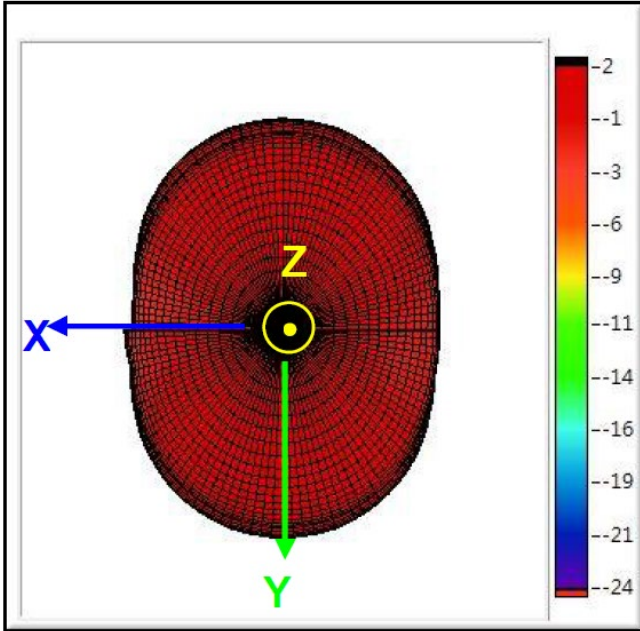


## Evaluation Board



### Radiation Patterns

3D Radiation Gain Pattern GPS Band @ 1575.42 MHz



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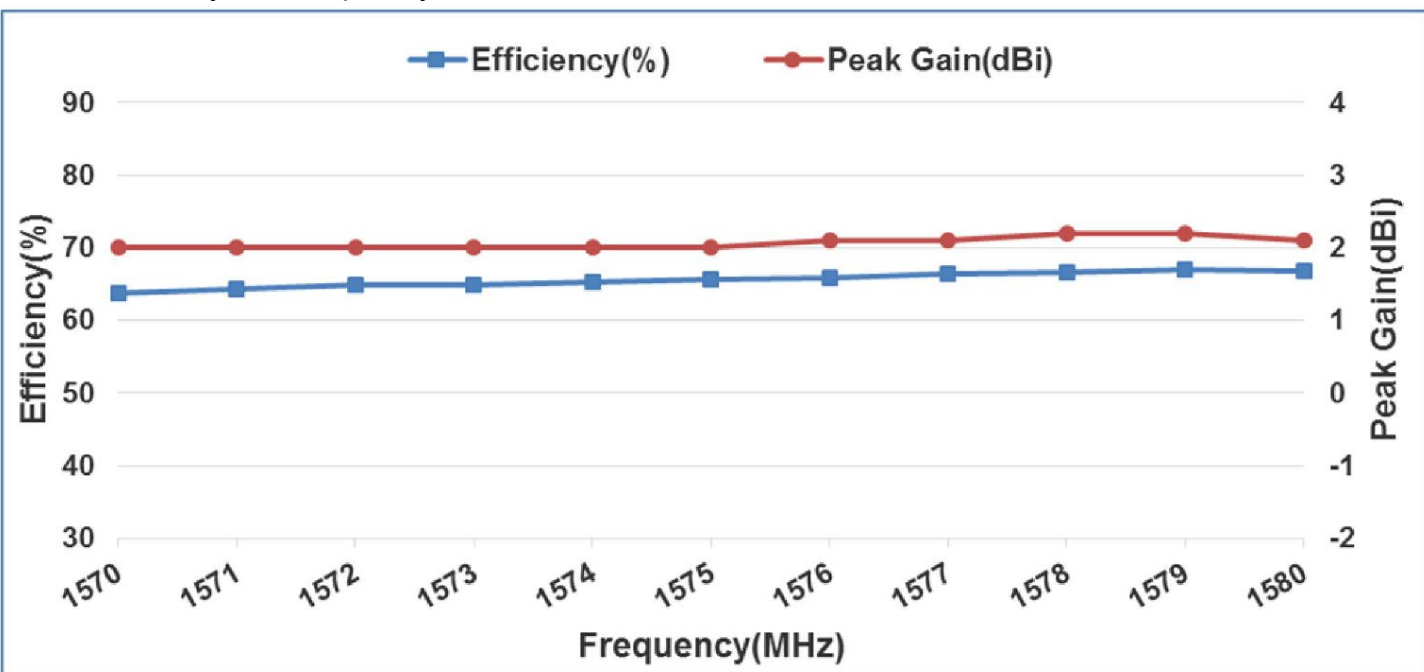
GPS / WIFI Ceramic Chip Antenna



## 3D Efficiency Table

Frequency(MHz)	1570	1571	1572	1573	1574	1575	1576	1577	1578	1579	1580
Efficiency(dB)	-2.0	-1.9	-1.9	-1.9	-1.9	-1.8	-1.8	-1.8	-1.8	-1.7	-1.8
Efficiency(%)	63.7	64.4	65.0	65.0	65.2	65.6	65.9	66.4	66.7	67.0	66.8
Peak Gain(dBi)	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.1

## 3D Efficiency vs. Frequency

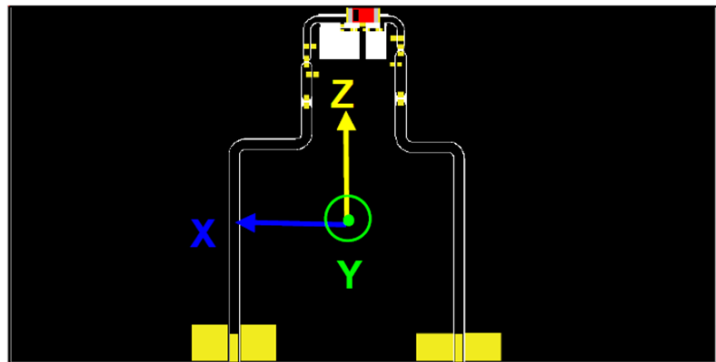
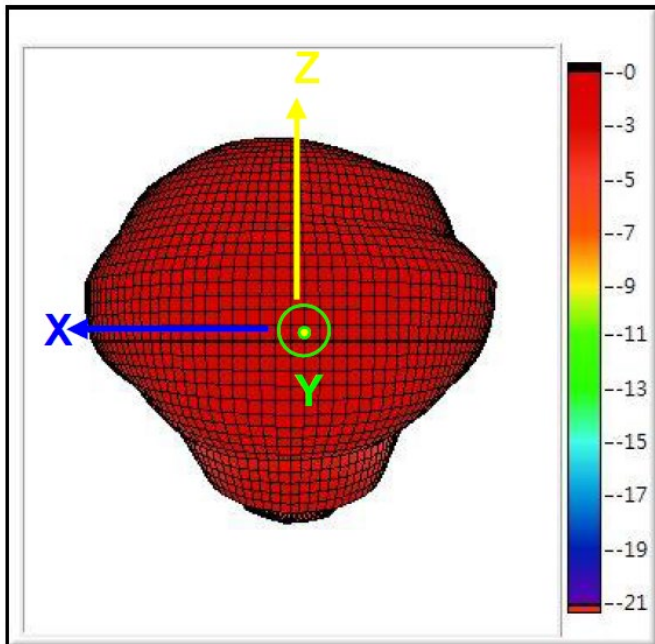
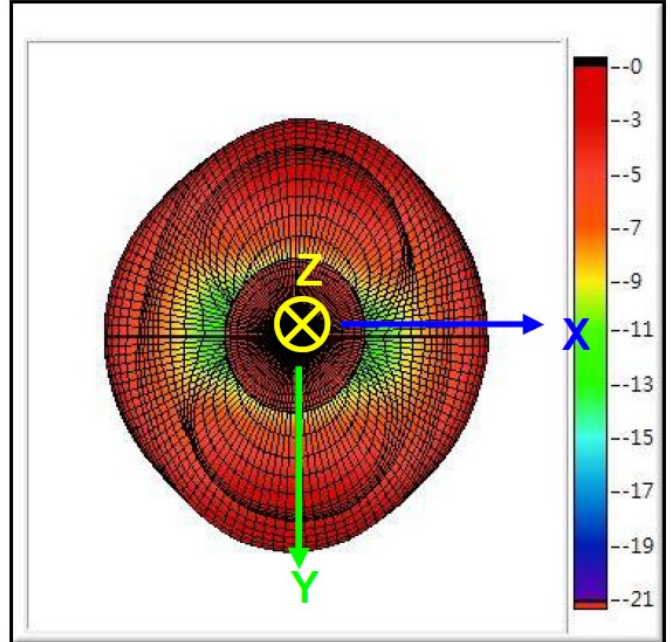
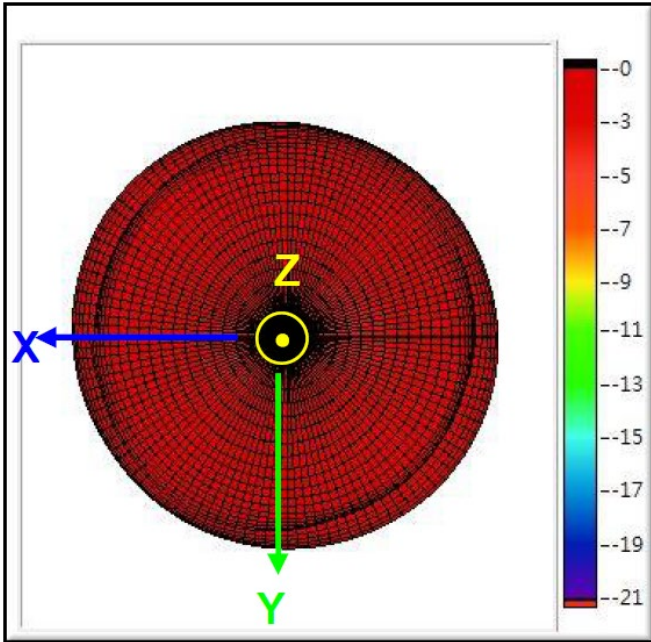


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GPS / WIFI Ceramic Chip Antenna



## 3D Radiation Gain Pattern WIFI /Bluetooth @ 2442 MHz



# NGCL1206UV1R575G2TRF

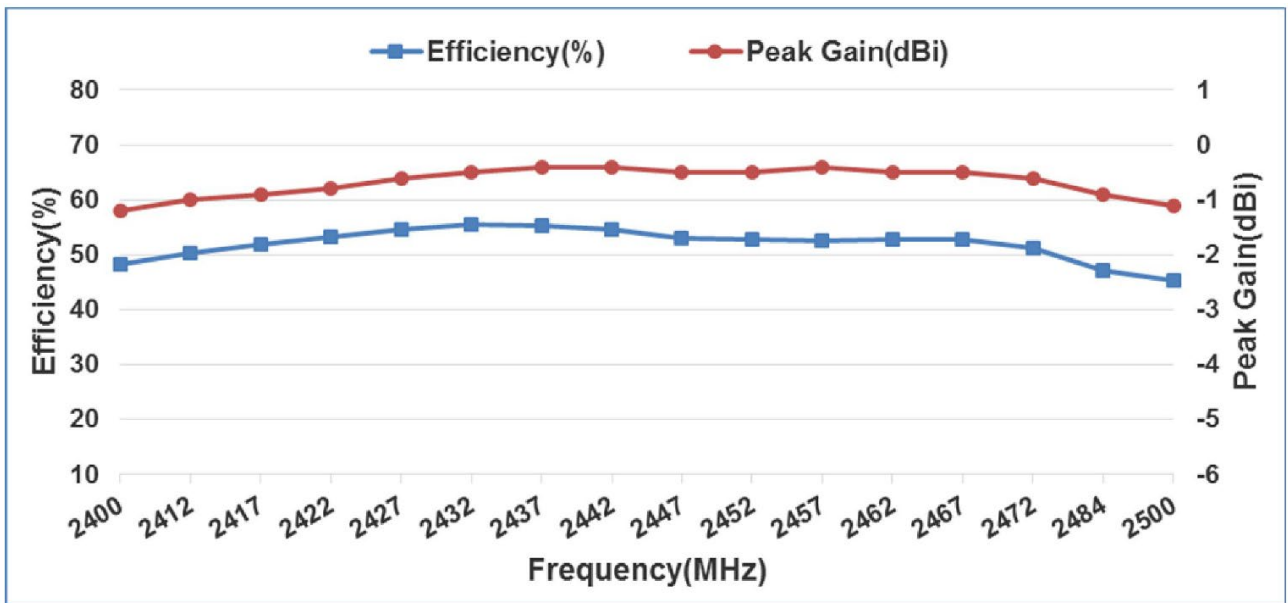
GPS / WIFI Ceramic Chip Antenna



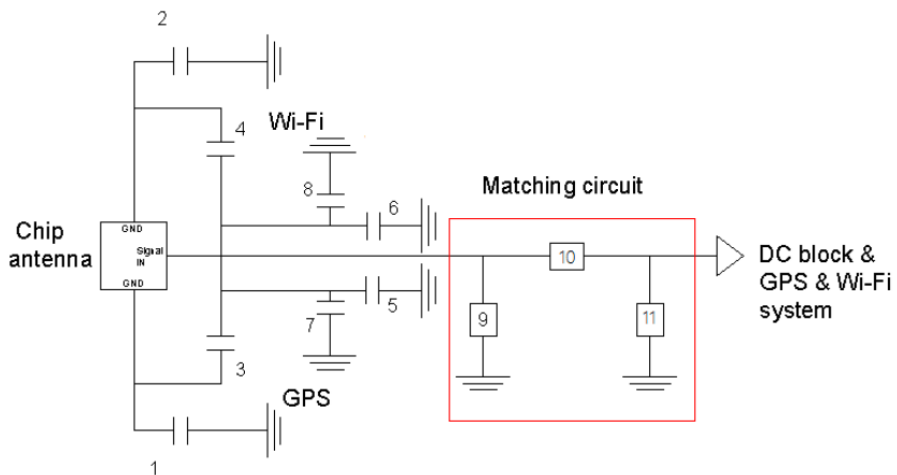
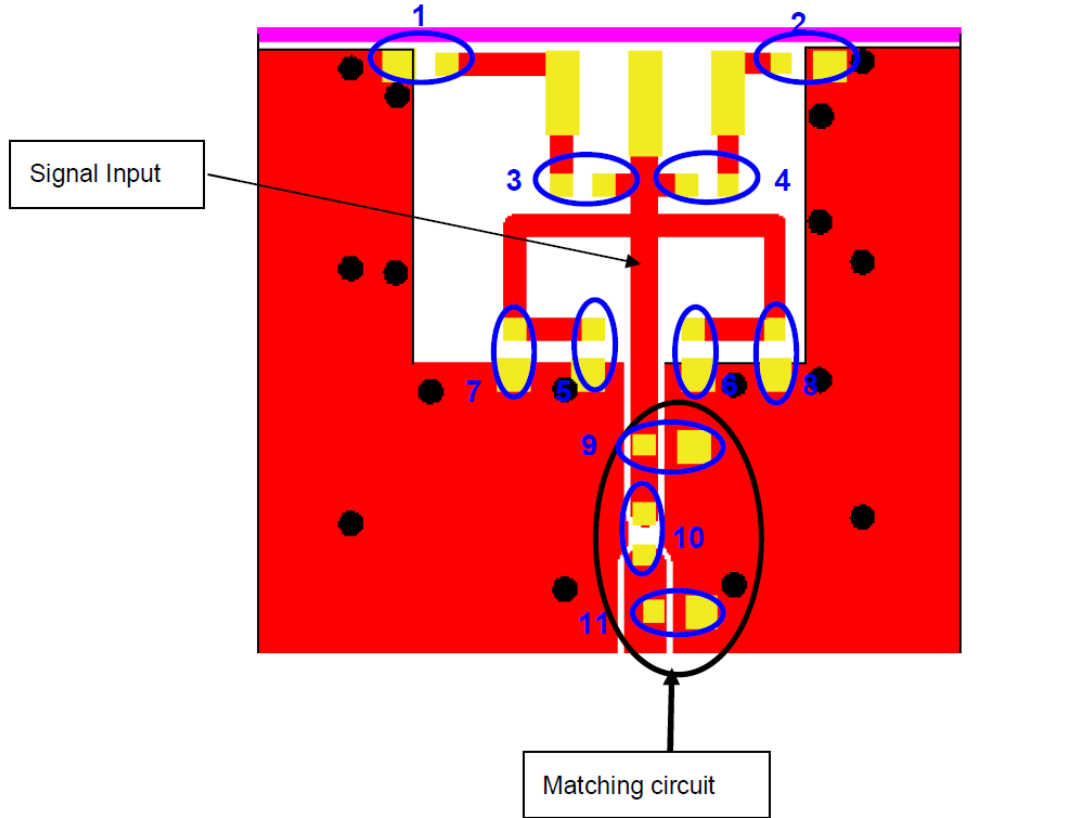
## 3D Efficiency Table

Frequency(MHz)	2400	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462	2467	2472	2484	2500
Efficiency(dB)	-3.2	-3.0	-2.9	-2.7	-2.6	-2.6	-2.6	-2.6	-2.8	-2.8	-2.8	-2.8	-2.8	-2.9	-3.3	-3.4
Efficiency(%)	48.2	50.2	51.8	53.3	54.5	55.5	55.2	54.7	53.0	52.8	52.6	52.8	52.8	51.1	47.1	45.2
Peak Gain(dBi)	-1.2	-1.0	-0.9	-0.8	-0.6	-0.5	-0.4	-0.4	-0.5	-0.5	-0.4	-0.5	-0.5	-0.6	-0.9	-1.1

## 3D Efficiency vs. Frequency



### Frequency Tuning & Matching Circuit







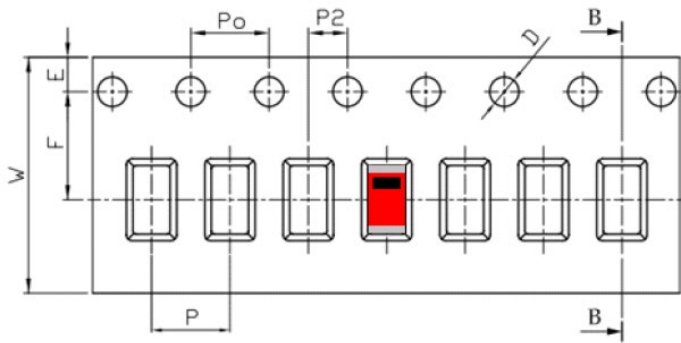
### System Matching Circuit Component

Location	Description	Tolerance	NIC Part Number
1	4.3pF, (0402)	±0.1pF	<a href="#">NMC-L0402NPO4R3B50TRPF</a>
2	2.2pF, (0402)	±0.05pF	<a href="#">NMC-Q0402NPO2R2A50TRPF</a>
3	1.5pF, (0201)	±0.05pF	<a href="#">NMC-Q0201NPO1R5A50TRPF</a>
4	0.8pF, (0201)	±0.05pF	<a href="#">NMC-Q0201NPO0R8A50TRPF</a>
5	39pF, (0402)	±5%	<a href="#">NMC-Q0402NPO390J50TRPF</a>
6	0Ω, (0402)	-	<a href="#">NRC04Z0TRF</a>
7,8,&11	N/A	-	-
9	1.5pF, (0402)	±0.05pF	<a href="#">NMC-Q0402NPO1R5A50TRPF</a>
10	0Ω, (0402)	-	<a href="#">NRC04Z0TRF</a>
DC Block	22pF, (0402)	±5%	<a href="#">NMC-Q0402NPO220J50TRPF</a>

### Packing

- (1) Quantity/Reel: 5000 pcs/Reel
- (2) Plastic tape:

a. Tape Drawing



b. Tape Dimensions (unit: mm)

Feature	Specifications	Tolerances
W	12.00	±0.30
P	4.00	±0.10
E	1.75	±0.10
F	5.50	±0.10
P <sub>2</sub>	2.00	±0.10
D	1.50	+0.10 -0.00
P <sub>0</sub>	4.00	±0.10
10P <sub>0</sub>	40.00	±0.20

c. Reel Drawing

