



Bluetooth Antenna  
specification&Test report

Yichip Microelectronics

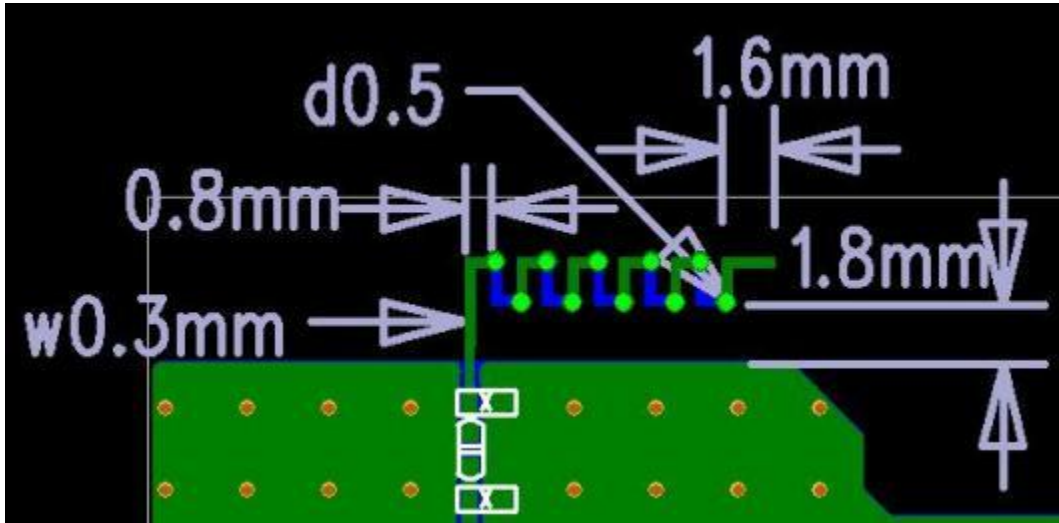
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|                 |                                                                            |
|-----------------|----------------------------------------------------------------------------|
| Test Ccompany   | TA Technology (Shanghai) Co., Ltd.                                         |
| Test Address    | Building 1, No. 400, Fangchun Road, China (Shanghai) Pilot Free Trade Zone |
| Test Date       | 2020/7/24                                                                  |
| Test Instrument | Keysight E5071B                                                            |

### antenna design specification

Antenna dimensions as blow picture show: the material is FR4 and the thickness is 1.6mm of PCB.

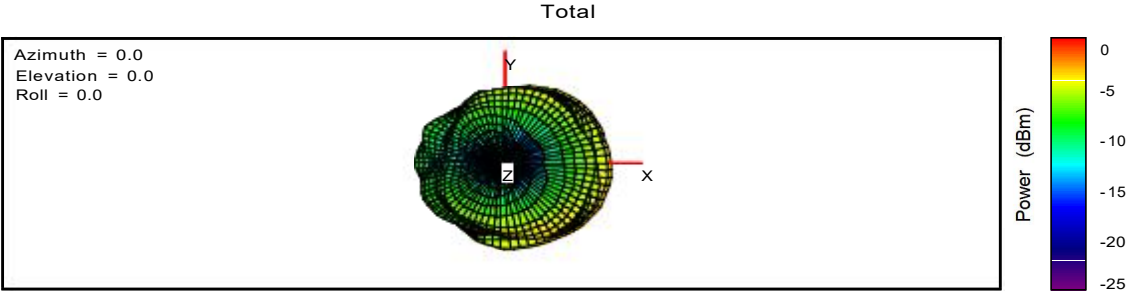
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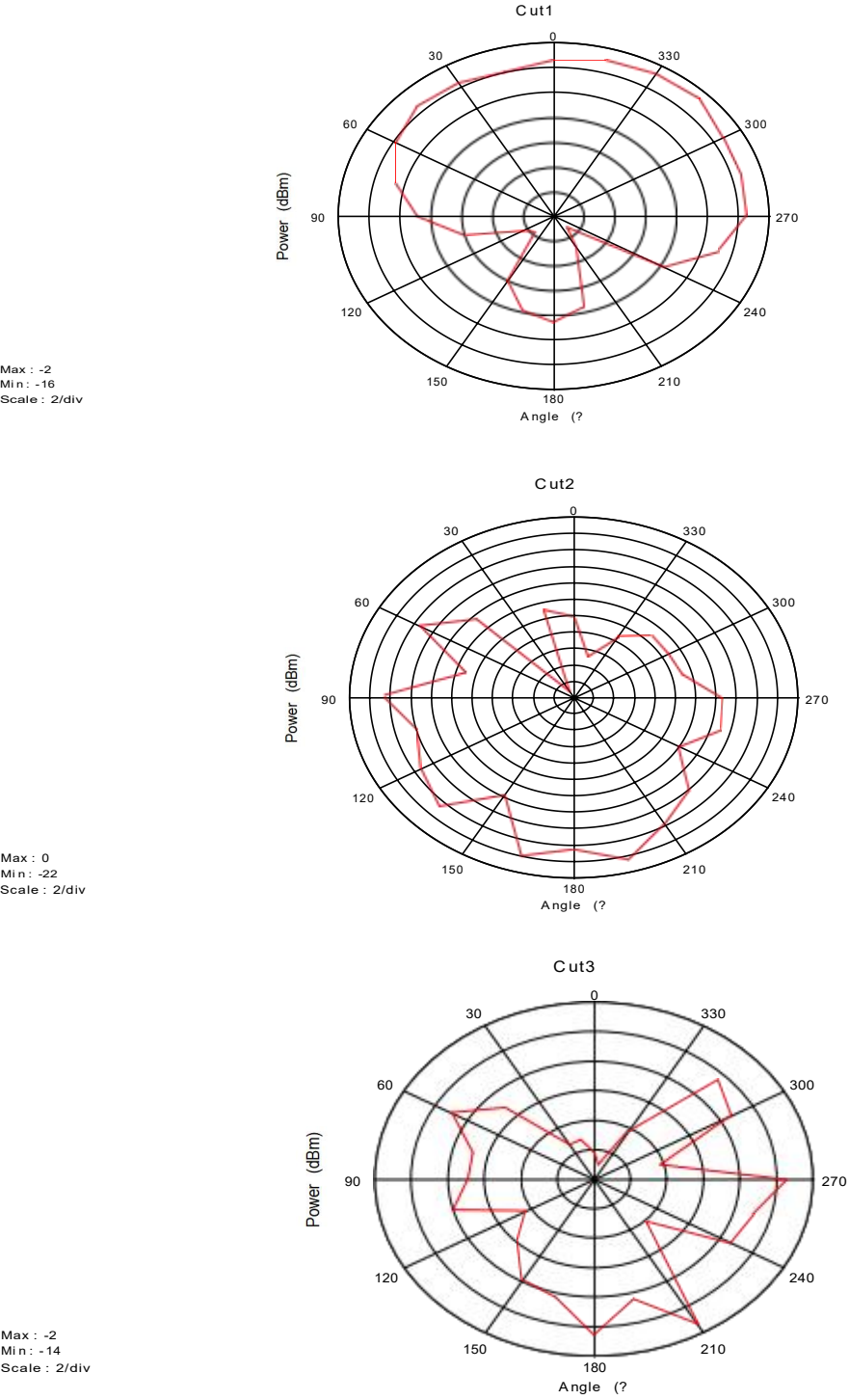
Gian and Efficiency

| Frequency (MHz) | Efficiency(%) | Gain(dBi) |
|-----------------|---------------|-----------|
| 2300            | 13.17         | -1.57     |
| 2320            | 19.08         | -0.76     |
| 2340            | 22.65         | -0.41     |
| 2360            | 22.62         | -0.12     |
| 2380            | 18.03         | -0.42     |
| 2400            | 14.86         | -0.93     |
| 2420            | 12.54         | -1.17     |
| 2440            | 9.92          | -2.03     |
| 2460            | 7.46          | -2.47     |
| 2480            | 6.11          | -2.98     |
| 2500            | 5.39          | -3.83     |

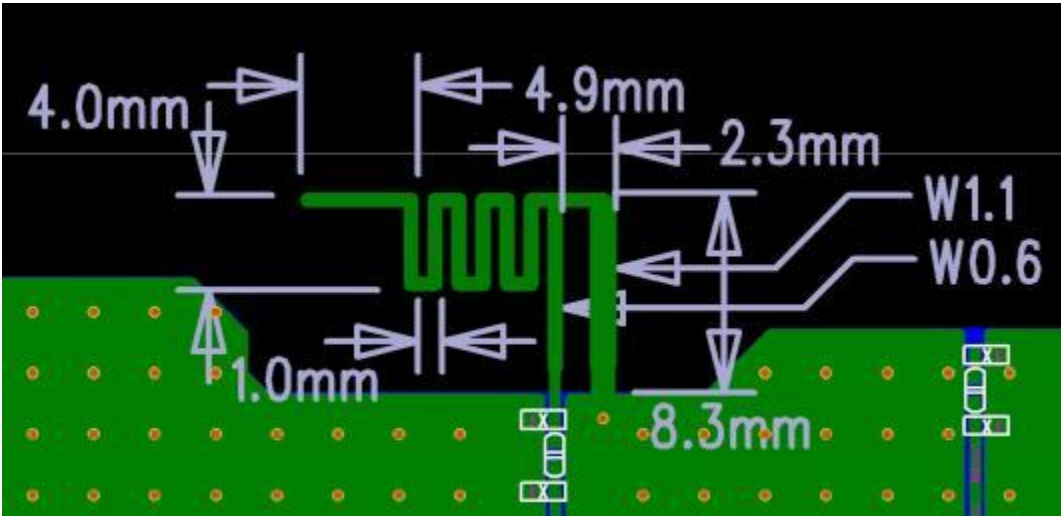
3D and 1D Radiation Patterns



**2440M TRP 1**



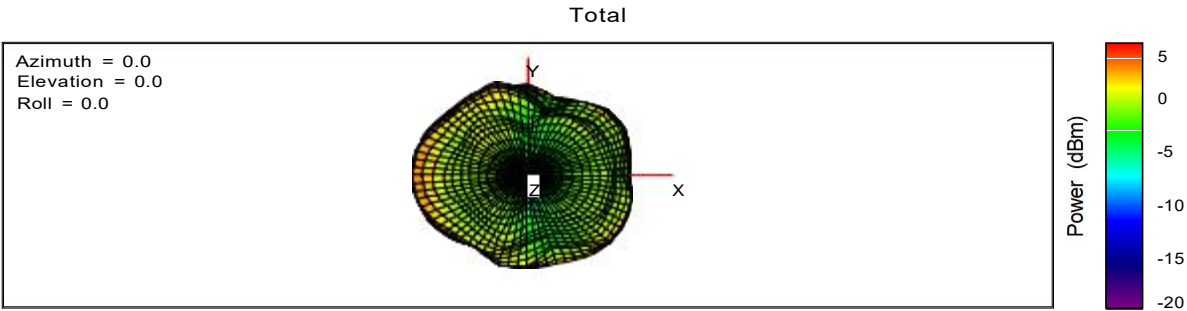
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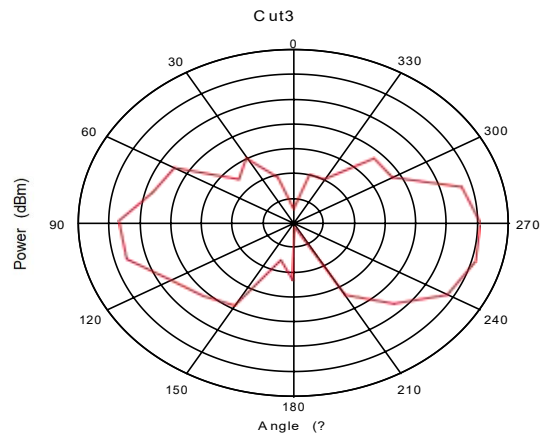
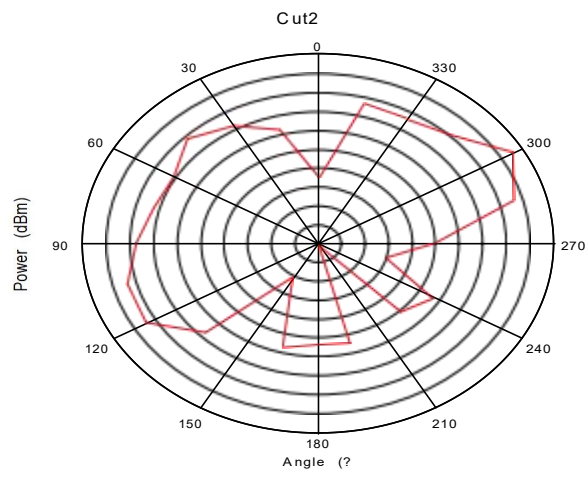
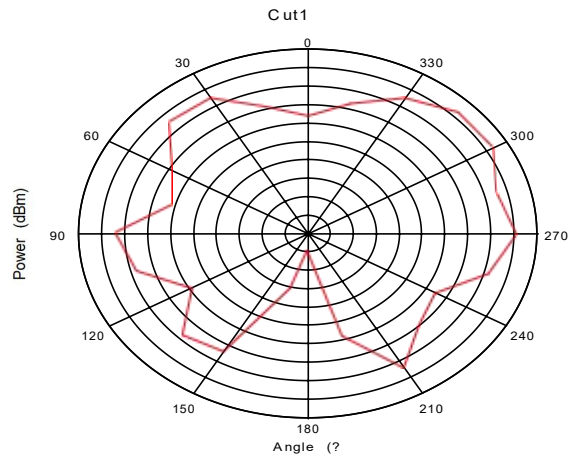


Gian and Efficiency

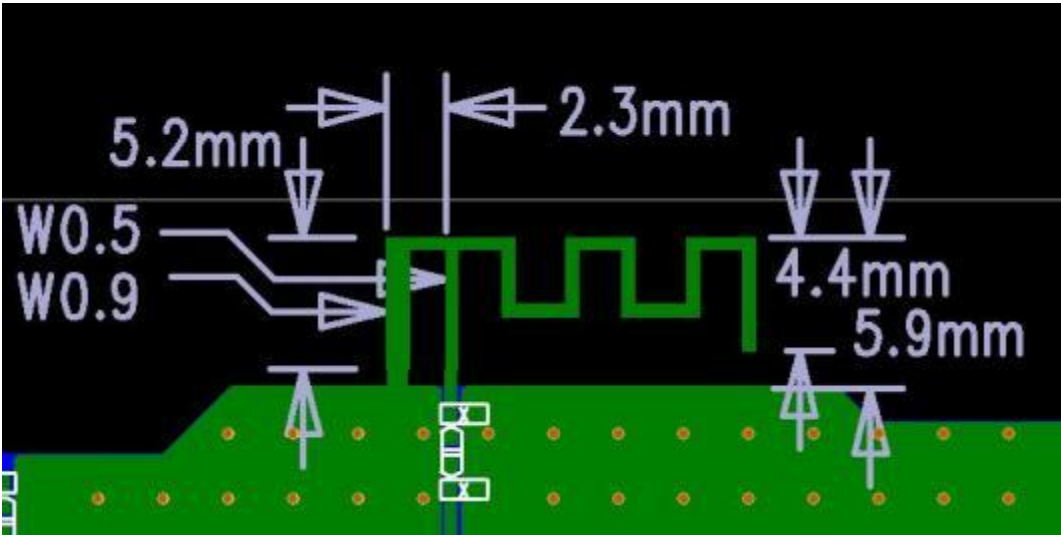
| Frequency<br>(MHz) | Efficiency(%) | Gain(dBi) |
|--------------------|---------------|-----------|
| 2300               | 28.41         | -1.40     |
| 2320               | 38.63         | -0.11     |
| 2340               | 42.82         | 0.36      |
| 2360               | 47.04         | 0.41      |
| 2380               | 47.39         | 0.58      |
| 2400               | 53.31         | 0.73      |
| 2420               | 63.69         | 2.10      |
| 2440               | 66.14         | 2.52      |
| 2460               | 64.61         | 2.72      |
| 2480               | 63.93         | 2.79      |
| 2500               | 65.00         | 2.97      |
| 2520               | 60.03         | 2.90      |
| 2540               | 58.27         | 3.12      |

3D and 1D Radiation Patterns





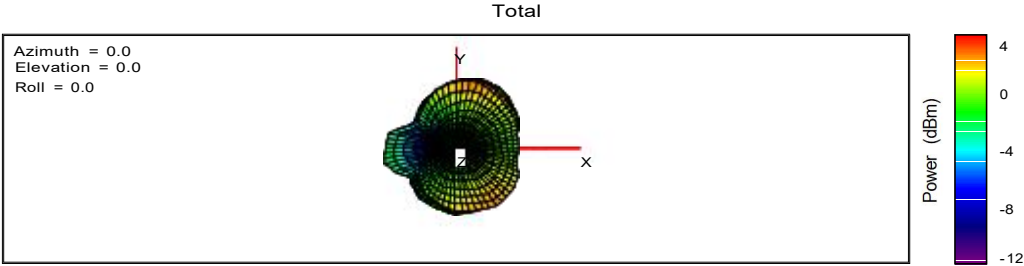
ANT3



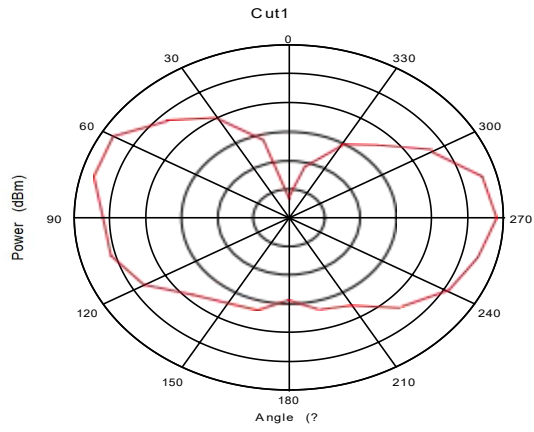
Gian and Efficiency

| Frequency (MHz) | Efficiency(%) | Gain(dBi) |
|-----------------|---------------|-----------|
| 2280            | 33.54         | 0.70      |
| 2300            | 27.85         | -0.04     |
| 2320            | 29.01         | 0.44      |
| 2340            | 26.23         | 0.07      |
| 2360            | 24.64         | -0.83     |
| 2380            | 22.00         | -1.24     |
| 2400            | 24.76         | -1.52     |
| 2420            | 31.57         | 0.20      |
| 2440            | 38.13         | 0.87      |
| 2460            | 39.98         | 1.04      |
| 2480            | 41.93         | 1.30      |
| 2500            | 45.60         | 1.66      |
| 2520            | 44.01         | 2.12      |
| 2540            | 43.24         | 2.24      |

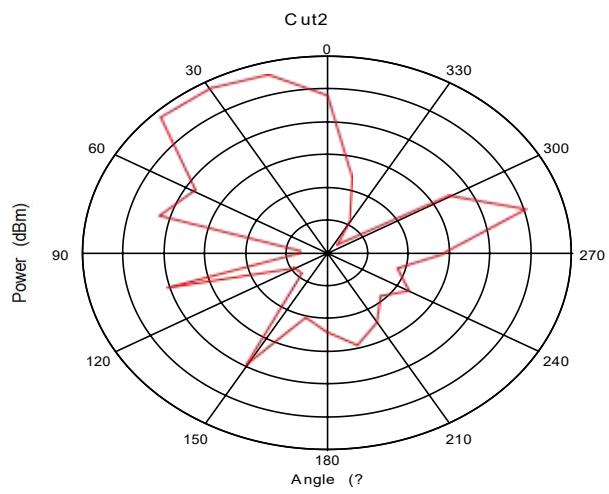
3D and 1D Radiation Patterns



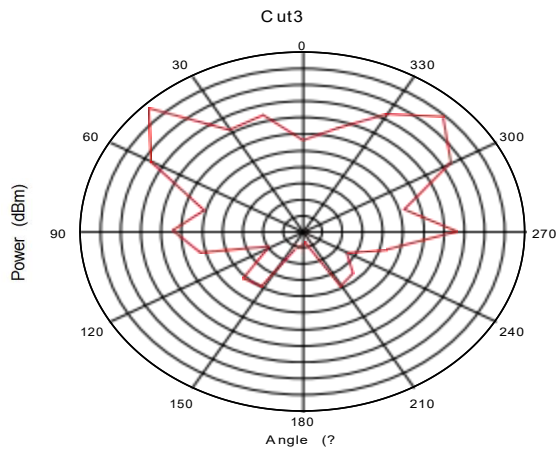
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Scale : 2/div



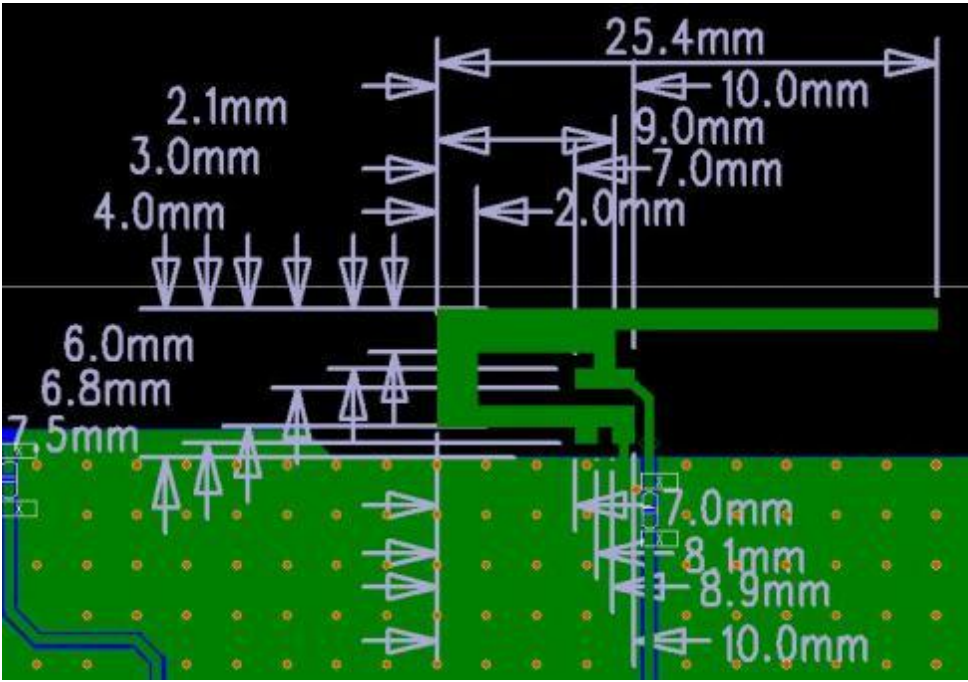
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Scale : 2/div



Max : 3  
Min : -8  
Scale : 1/div



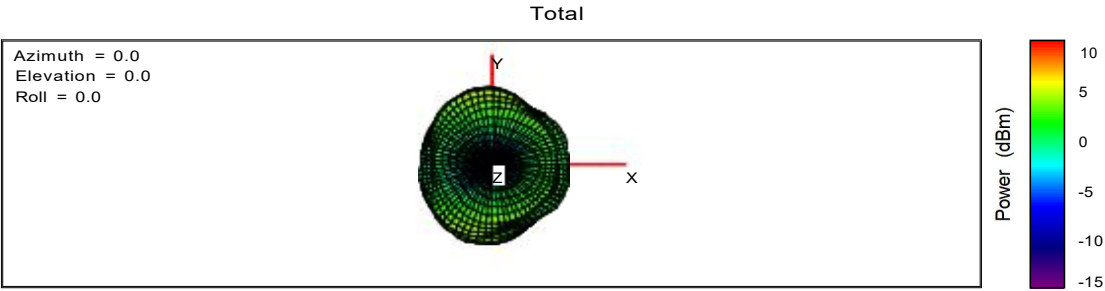
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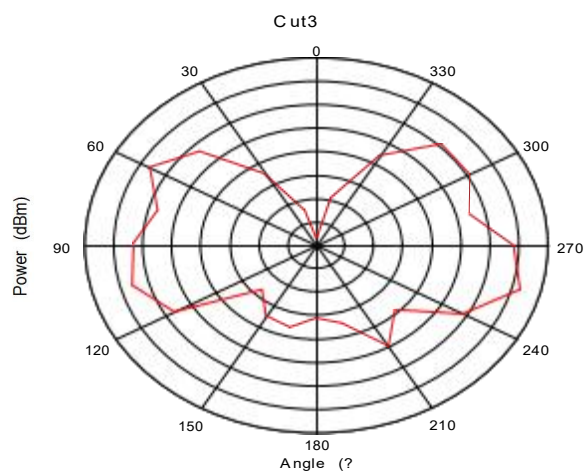
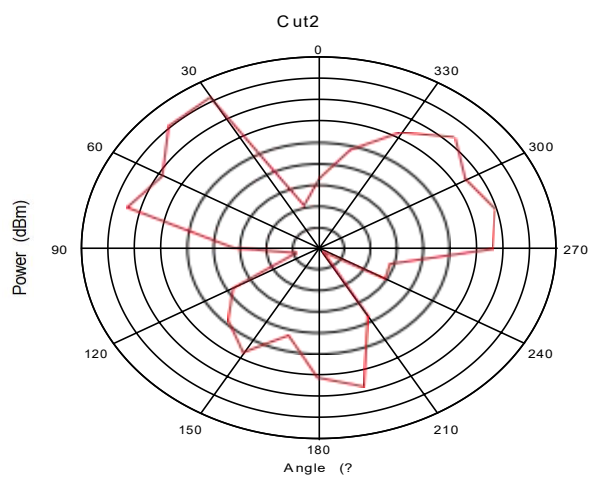
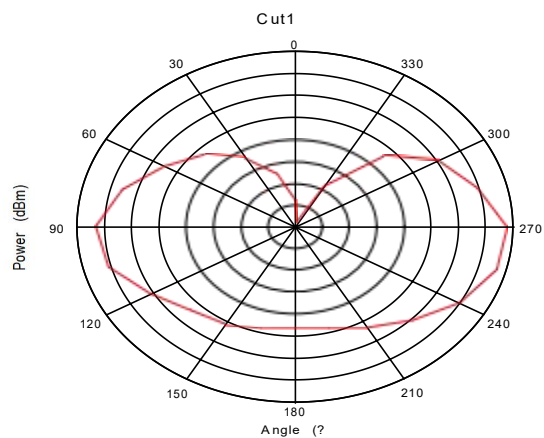
Gian and Efficiency

| Frequency (MHz) | Efficiency(%) | Gain(dBi) |
|-----------------|---------------|-----------|
| 2300            | 43.36         | 2.00      |
| 2320            | 47.26         | 2.58      |
| 2340            | 45.70         | 2.08      |
| 2360            | 46.13         | 1.08      |
| 2380            | 44.94         | 1.76      |
| 2400            | 47.46         | 2.08      |
| 2420            | 53.66         | 2.83      |
| 2440            | 54.07         | 3.01      |
| 2460            | 49.87         | 3.01      |
| 2480            | 46.80         | 2.73      |
| 2500            | 46.67         | 2.44      |
| 2520            | 41.75         | 1.76      |
| 2540            | 39.78         | 1.30      |

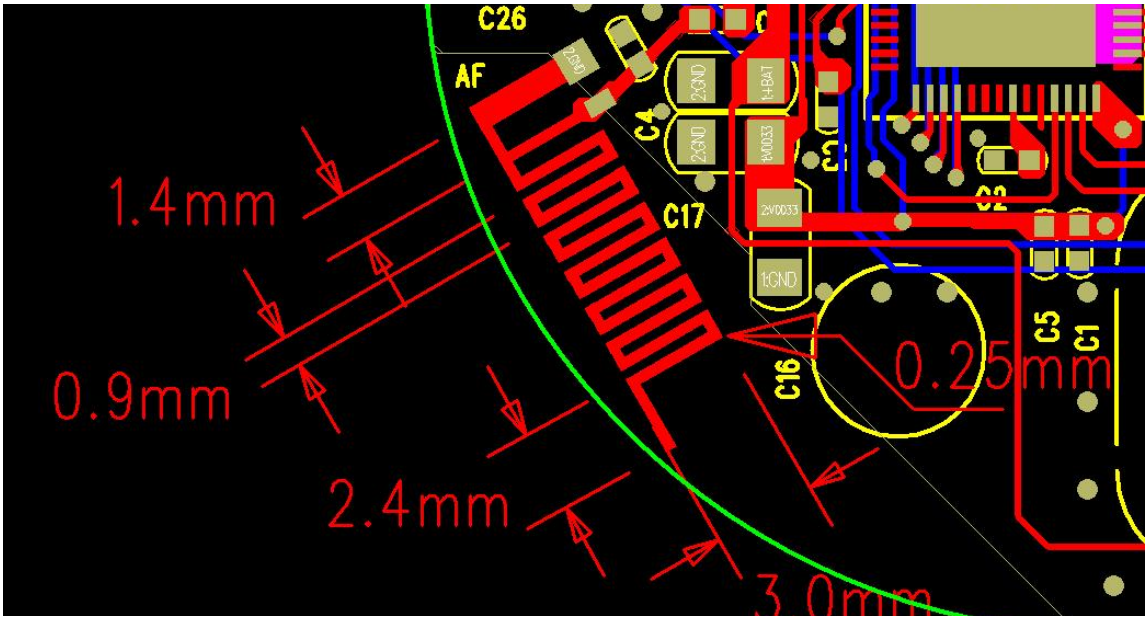
3D and 1D Radiation Patterns







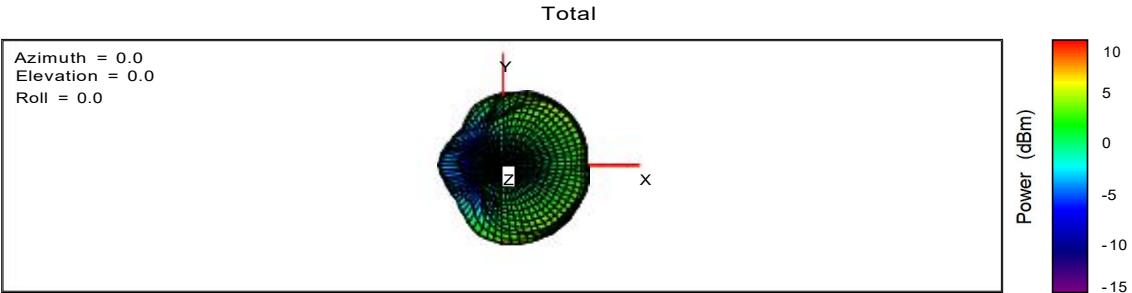
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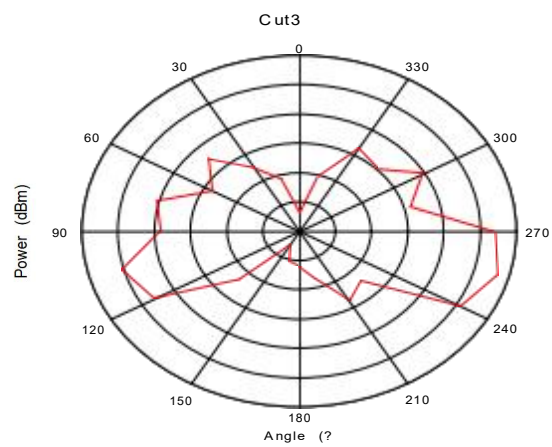
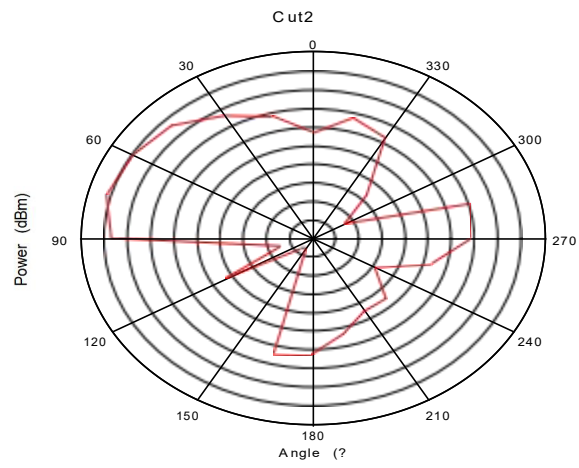
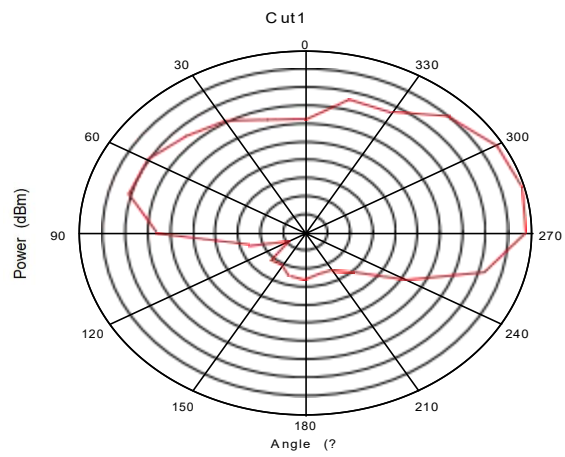


Gian and Efficiency

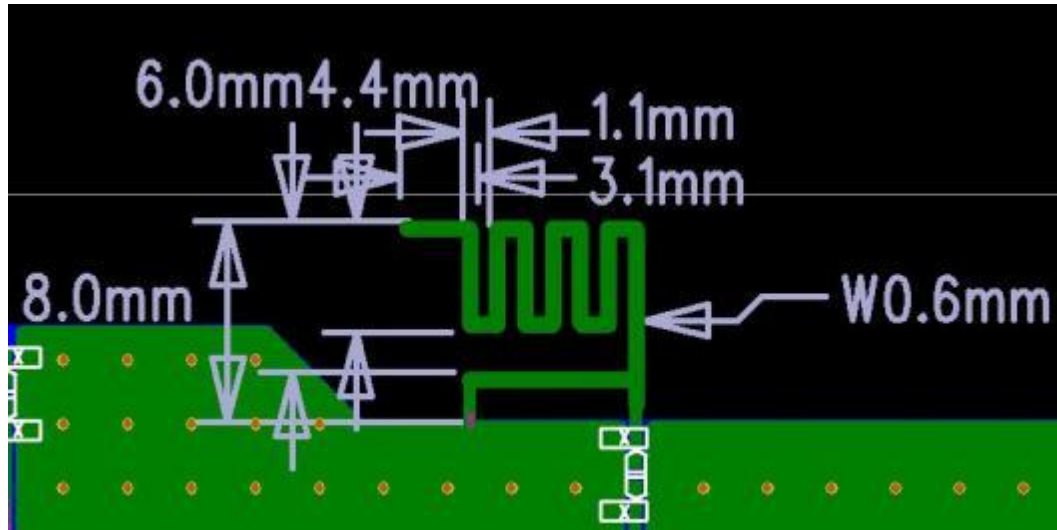
| Frequency (MHz) | Efficiency(%) | Gain(dBi) |
|-----------------|---------------|-----------|
| 2300            | 34.81         | -0.14     |
| 2320            | 38.90         | 0.50      |
| 2340            | 38.95         | 1.16      |
| 2360            | 40.11         | 1.28      |
| 2380            | 39.28         | 1.80      |
| 2400            | 41.77         | 2.20      |
| 2420            | 49.71         | 2.34      |
| 2440            | 50.23         | 2.58      |
| 2460            | 45.91         | 2.45      |
| 2480            | 42.46         | 2.09      |
| 2500            | 41.10         | 2.01      |
| 2520            | 35.58         | 0.96      |
| 2540            | 32.43         | 0.44      |

3D and 1D Radiation Patterns





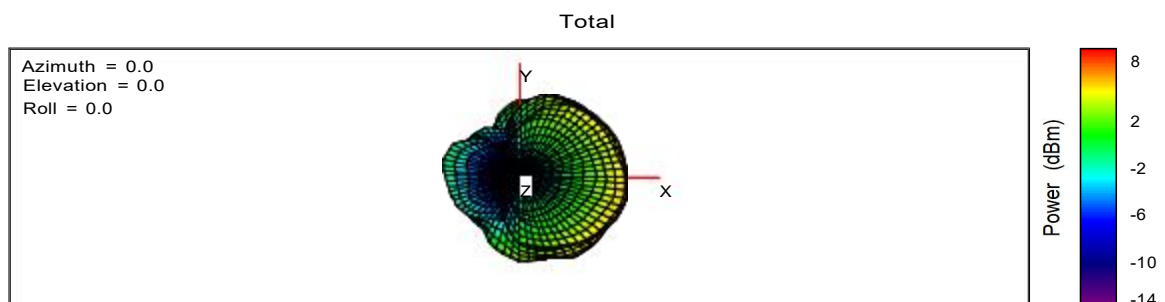
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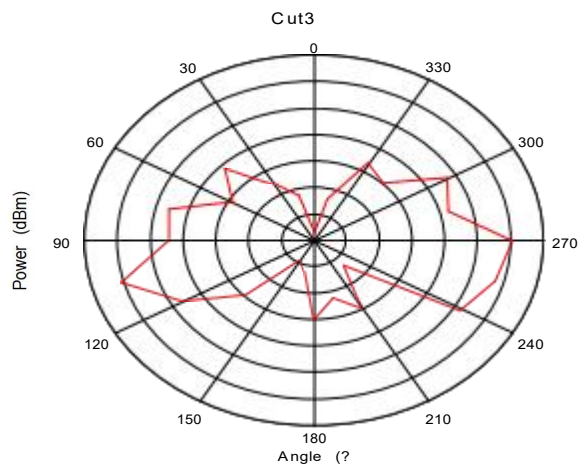
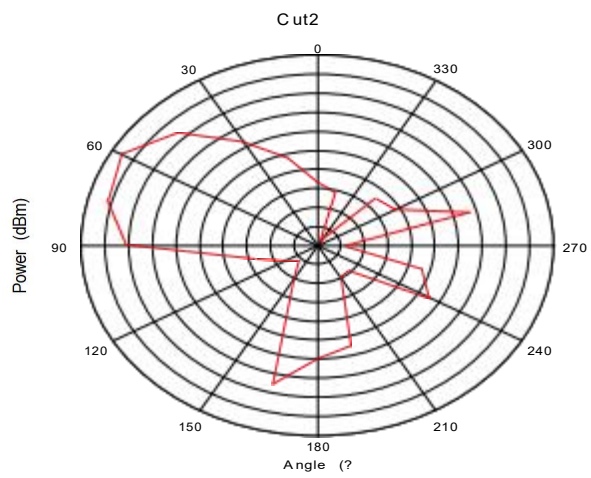
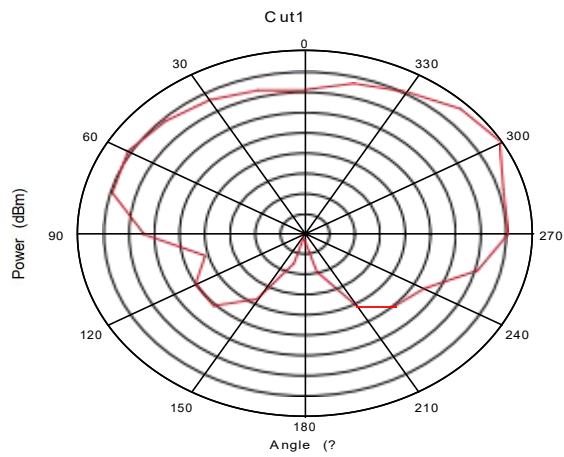


Gian and Efficiency

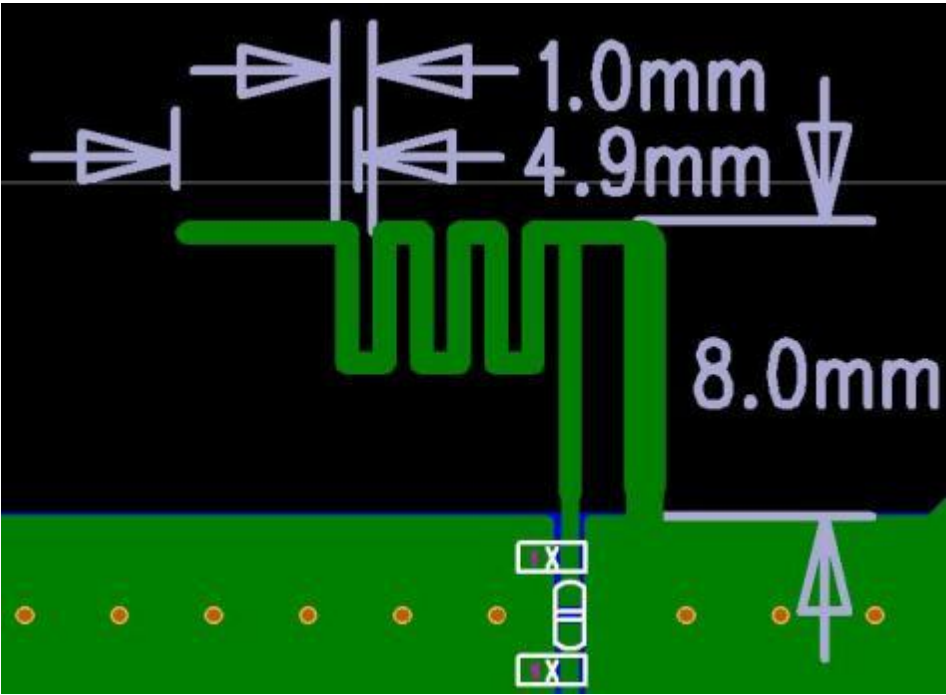
| Frequency (MHz) | Efficiency(%) | Gain(dBi) |
|-----------------|---------------|-----------|
| 2300            | 42.68         | 0.78      |
| 2320            | 46.24         | 1.56      |
| 2340            | 44.62         | 2.23      |
| 2360            | 44.44         | 2.69      |
| 2380            | 42.81         | 3.27      |
| 2400            | 46.29         | 3.85      |
| 2420            | 56.89         | 4.41      |
| 2440            | 60.27         | 4.33      |
| 2460            | 57.59         | 3.73      |
| 2480            | 55.54         | 3.66      |
| 2500            | 56.50         | 4.05      |
| 2520            | 50.26         | 3.52      |
| 2540            | 47.76         | 3.49      |

3D and 1D Radiation Patterns





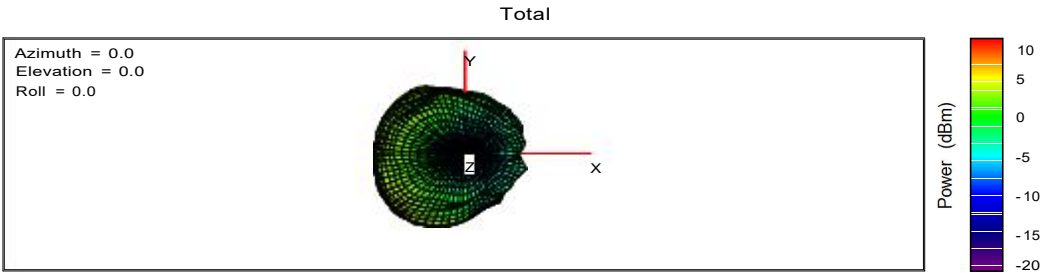
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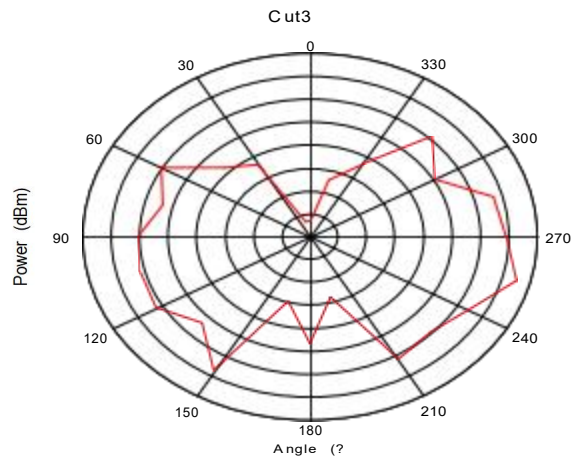
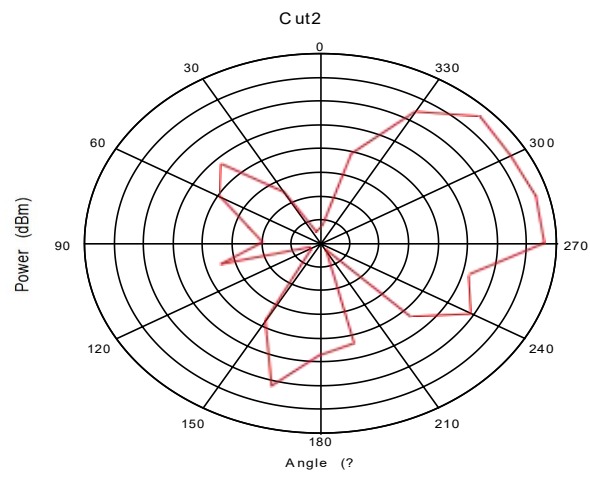
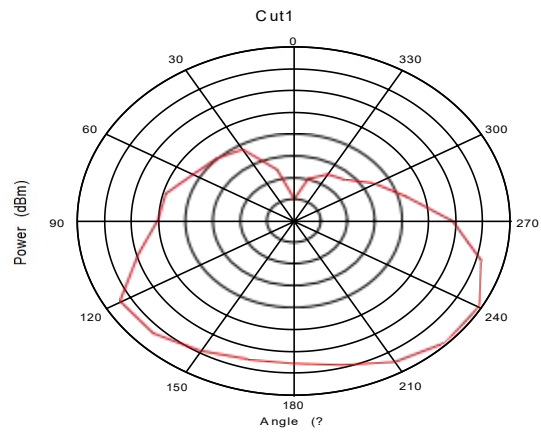


Gian and Efficiency

| Frequency (MHz) | Efficiency(%) | Gain(dBi) |
|-----------------|---------------|-----------|
| 2300            | 51.44         | 2.59      |
| 2320            | 58.82         | 3.33      |
| 2340            | 57.60         | 3.39      |
| 2360            | 55.64         | 3.16      |
| 2380            | 48.67         | 2.63      |
| 2400            | 47.27         | 2.25      |
| 2420            | 51.45         | 2.14      |
| 2440            | 54.40         | 2.19      |
| 2460            | 56.94         | 2.51      |
| 2480            | 60.41         | 3.02      |
| 2500            | 64.59         | 3.26      |
| 2520            | 63.59         | 3.50      |
| 2540            | 64.52         | 3.71      |

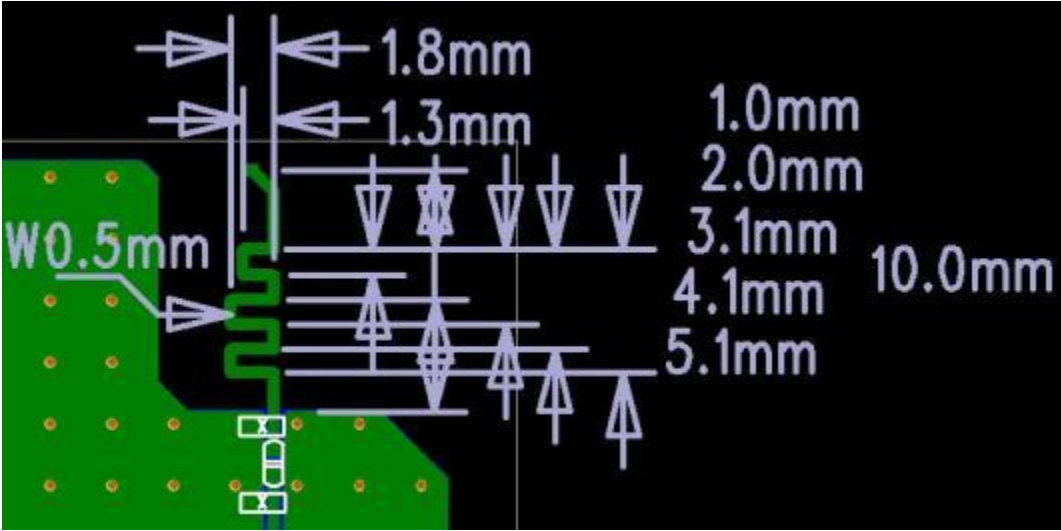
3D and 1D Radiation Patterns







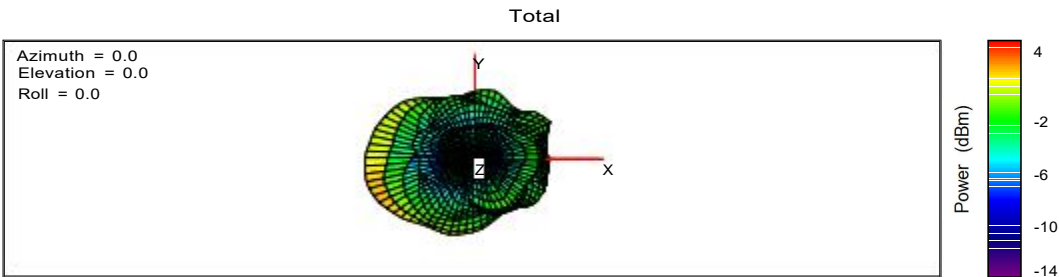
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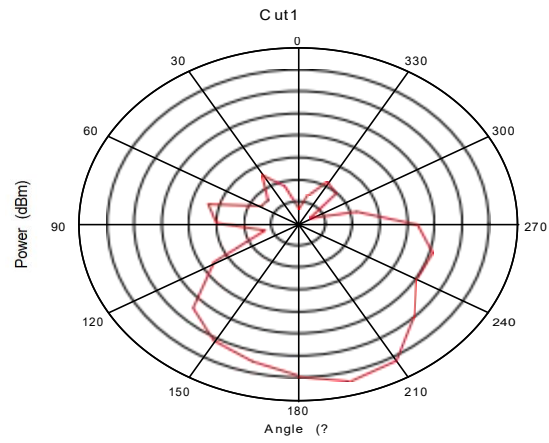
Gian and Efficiency

| Frequency (MHz) | Efficiency(%) | Gain(dBi) |
|-----------------|---------------|-----------|
| 2300            | 12.77         | -2.33     |
| 2320            | 20.15         | -0.40     |
| 2340            | 25.71         | 0.95      |
| 2360            | 30.32         | 1.59      |
| 2380            | 30.90         | 1.63      |
| 2400            | 33.26         | 2.52      |
| 2420            | 38.93         | 3.55      |
| 2440            | 38.73         | 3.34      |
| 2460            | 36.32         | 2.93      |
| 2480            | 35.23         | 2.87      |
| 2500            | 35.82         | 2.53      |
| 2520            | 33.02         | 1.93      |
| 2540            | 31.62         | 1.42      |

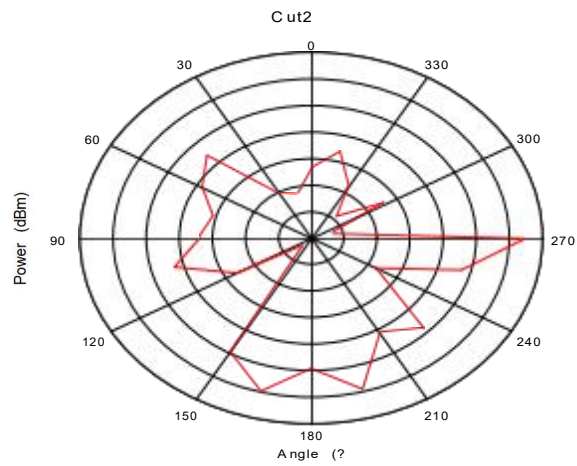
3D and 1D Radiation Patterns



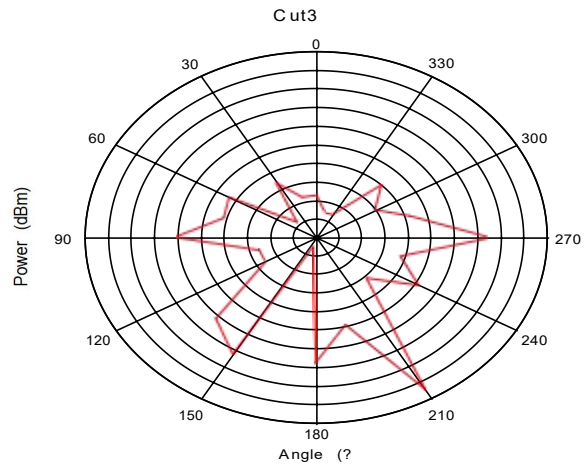




Max : 4  
Min : -4  
Scale : 1/div



Max : 4  
Min : -10  
Scale : 2/div



Max : 3  
Min : -7  
Scale : 1/div

ANT1-ANT8 5dbm TRP test result:

| Band | ANT  | Frequency | Result (dBm) | Note |
|------|------|-----------|--------------|------|
| BT   | ANT1 | 2440      | -6.50        | 1    |
|      | ANT2 | 2440      | -0.58        | 2    |
|      | ANT3 | 2440      | -2.91        | 3    |
|      | ANT4 | 2440      | 0.92         | 4    |
|      | ANT5 | 2440      | 0.09         | 5    |
|      | ANT6 | 2440      | 0.34         | 6    |
|      | ANT7 | 2440      | 0.14         | 7    |
|      | ANT8 | 2440      | -2.14        | 8    |