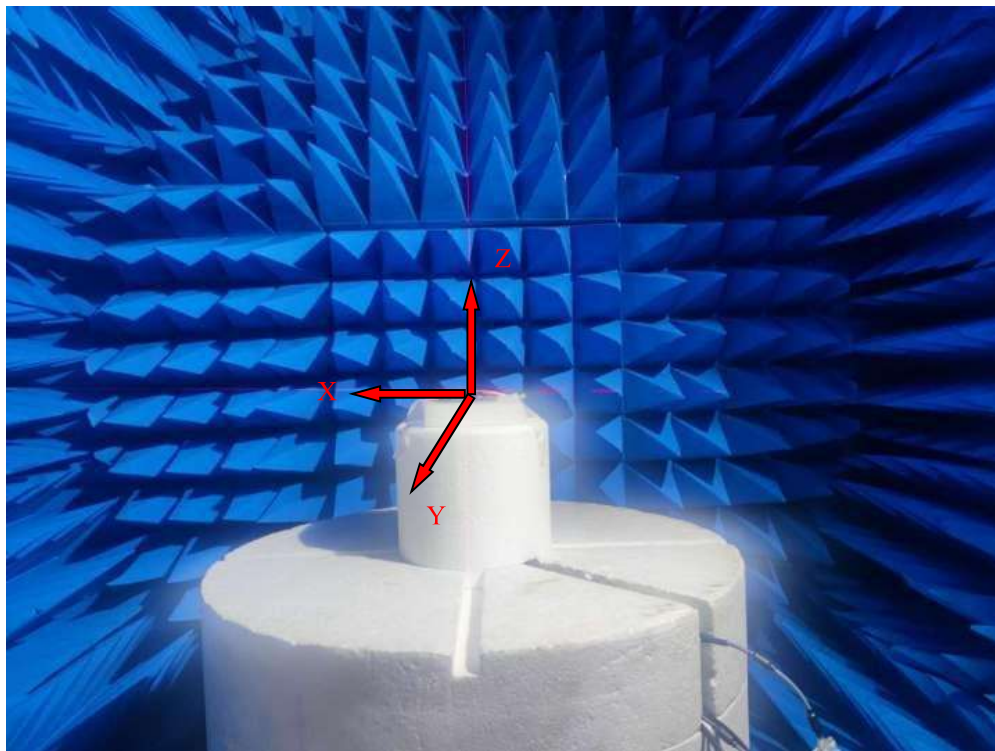


2.4G-2.48G frequency band onboard PCB antenna test report

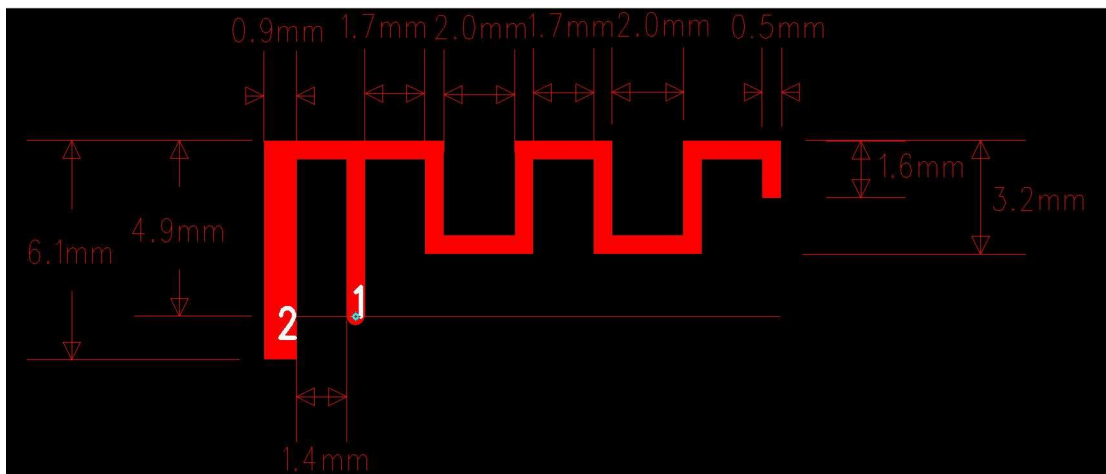
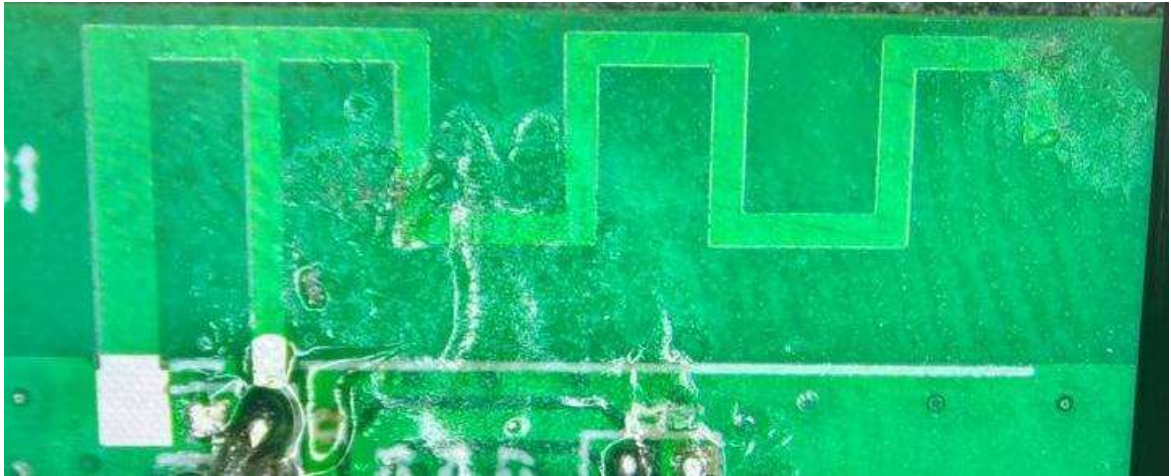
SPECIFICATIONS

| | |
|------------------------|-------------|
| Frequency (MHz) | 2400-2480 |
| Peak Gain (dBi) | 2.499 |
| Average Gain (dBi) | > -4 |
| VSWR | < 3.2 |
| Impedance (Ω) | 50 Ω |
| Antenna Type | PCB |
| Polarization | Linear |

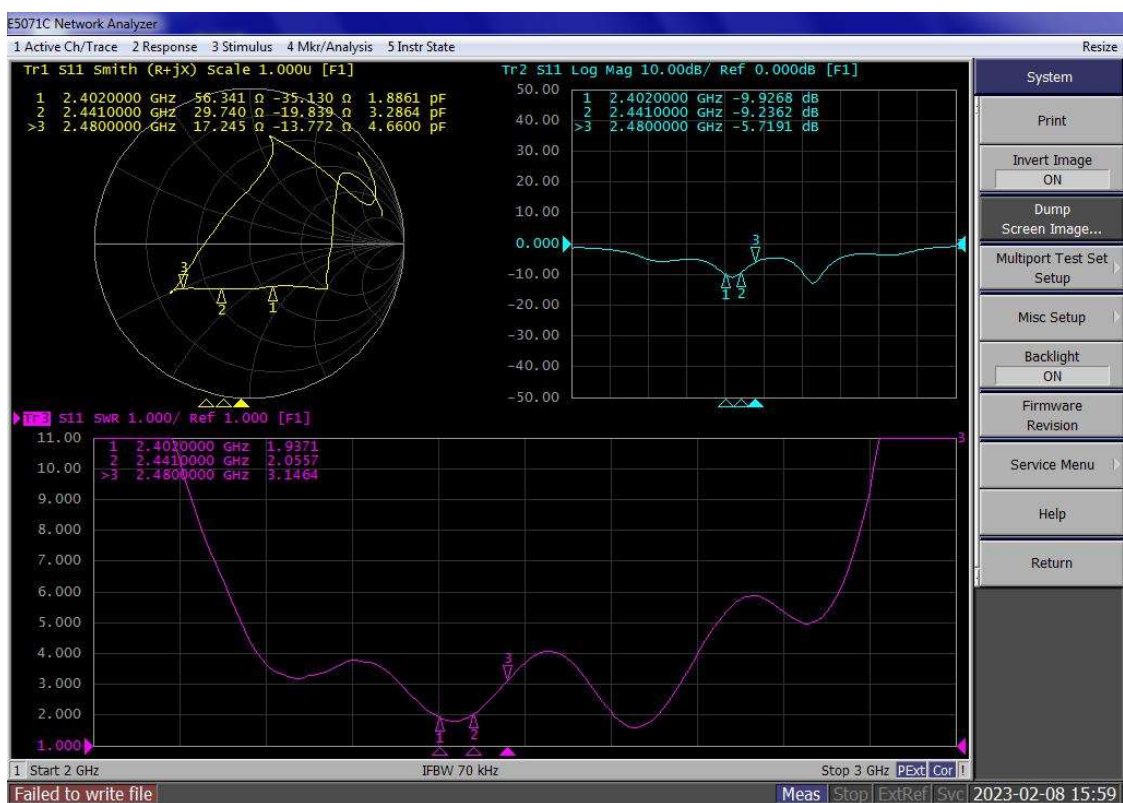
Testing environment



Physical antenna and dimensions



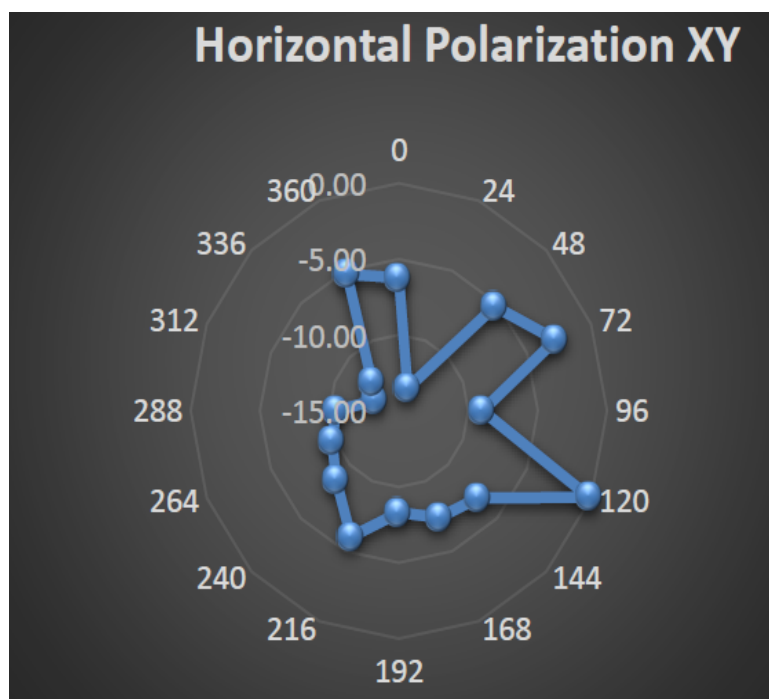
Passive S-parameters of antenna: Standing Wave Ratio (VSWR), Return Loss, and Smith Chart



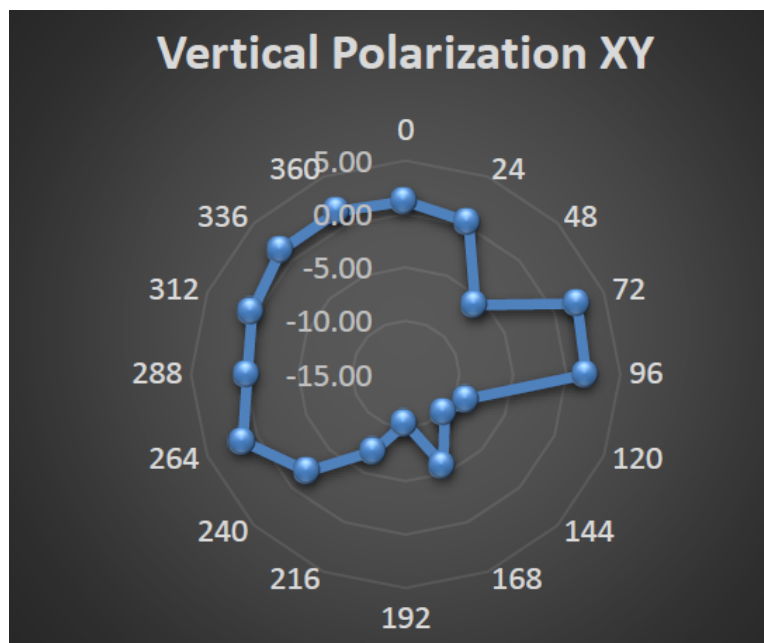
Antenna efficiency and gain

| Frequency (MHz) | Gain (dBi) | Efficiency (%) | AverageGain (dBi) | Efficiency (dB) |
|-----------------|------------|----------------|-------------------|-----------------|
| 2400 | 1.433 | 59.329% | -2.717 | -2.267 |
| 2410 | 0.927 | 51.861% | -3.416 | -2.852 |
| 2420 | 0.829 | 52.112% | -3.166 | -2.831 |
| 2430 | 0.881 | 49.299% | -3.258 | -3.072 |
| 2440 | 1.192 | 50.672% | -3.144 | -2.952 |
| 2450 | 1.688 | 53.067% | -2.735 | -2.752 |
| 2460 | 2.194 | 59.423% | -2.276 | -2.260 |
| 2470 | 2.118 | 56.680% | -2.438 | -2.466 |
| 2480 | 2.499 | 61.727% | -2.112 | -2.095 |
| Average | 1.529 | 54.908% | -2.806 | -2.616 |
| Peak | 2.499 | 61.727% | -2.112 | -2.095 |

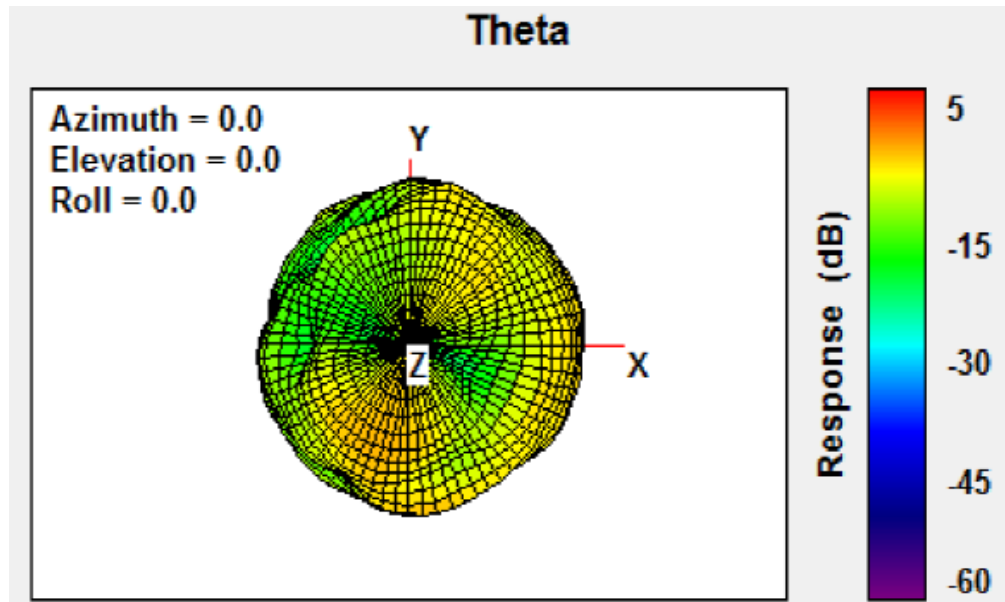
2440MHz 2D-Theta Pattern



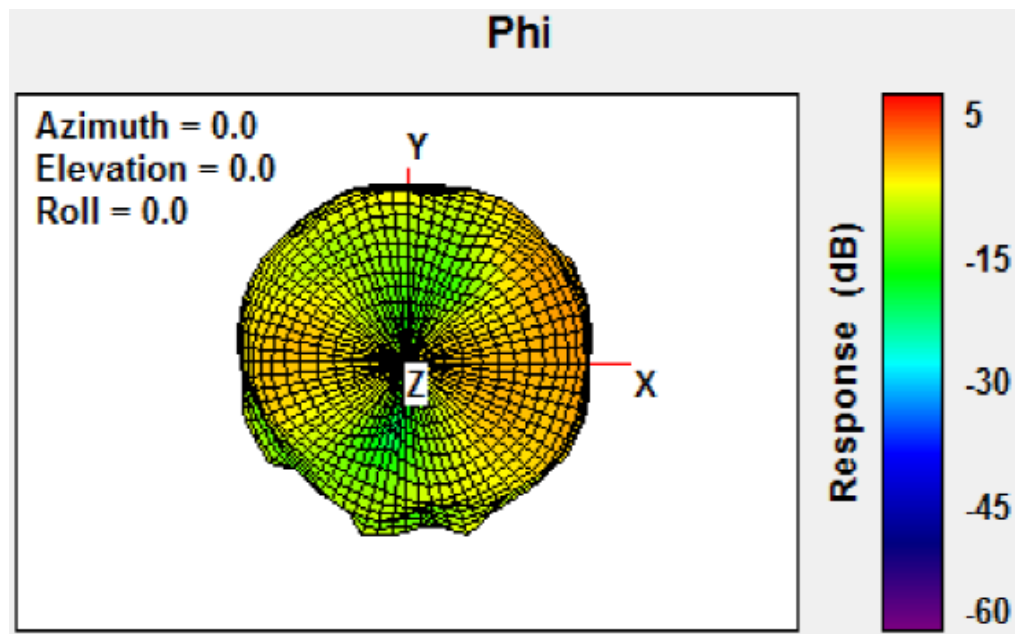
2440MHz 2D-Phi Pattern



2440MHz 3D-Horizontal Pattern



2440MHz 3D-Vertical Pattern



2440MHz 3D-Total Pattern

