

## Antenna Study

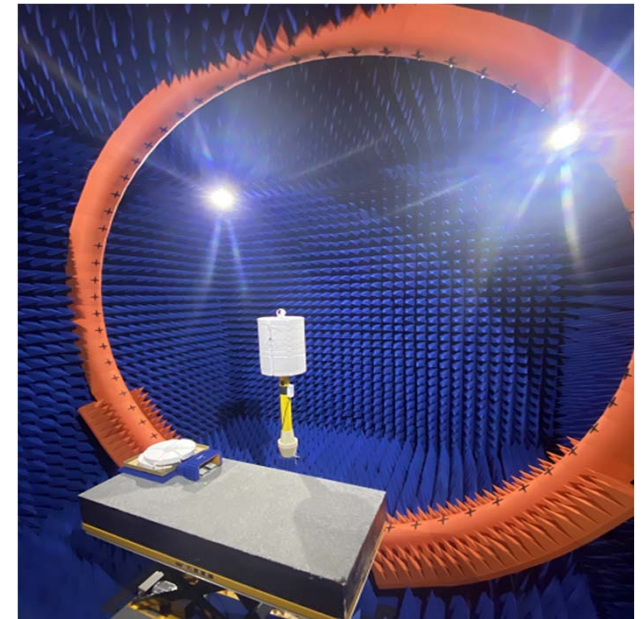
- **Client Name: 34ED LLC, DBA Centegix**
- **Project Name: Gateway**
- **Debugging frequency band: 2.4G**
- **Valuation date: 2023.07.25**

# Internal Antenna

Dongguan UB Electronics Co., Ltd



Testing environment



Testing 3D microwave darkroom(6m\*6m\*6m)

# Internal Antenna

Dongguan UB Electronics Co., Ltd

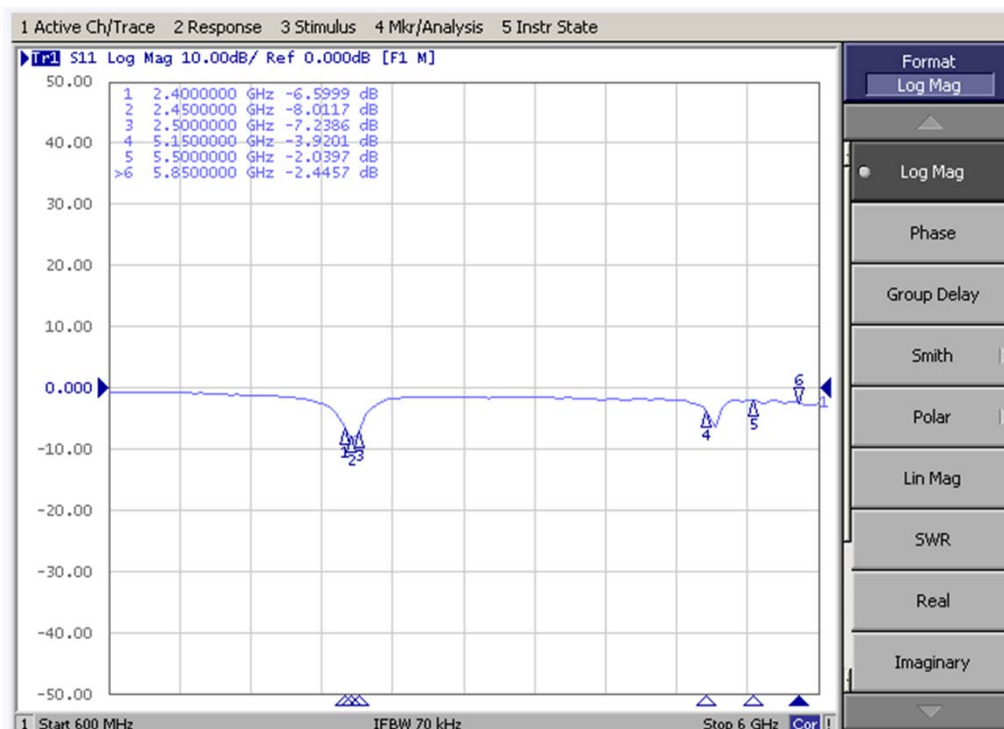
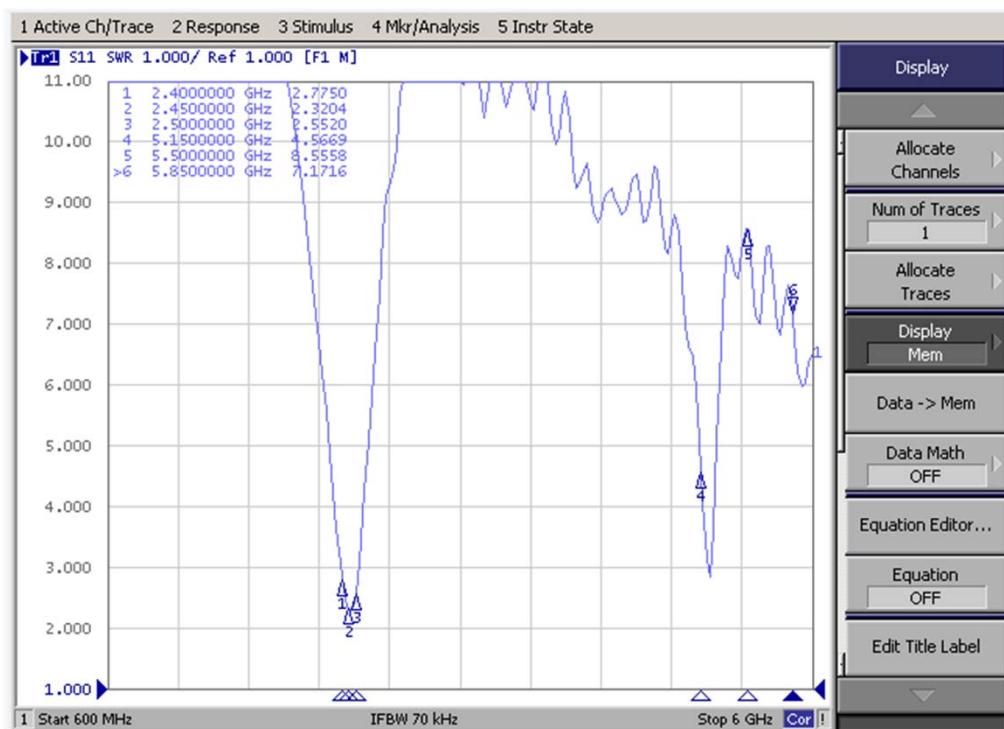


Antenna

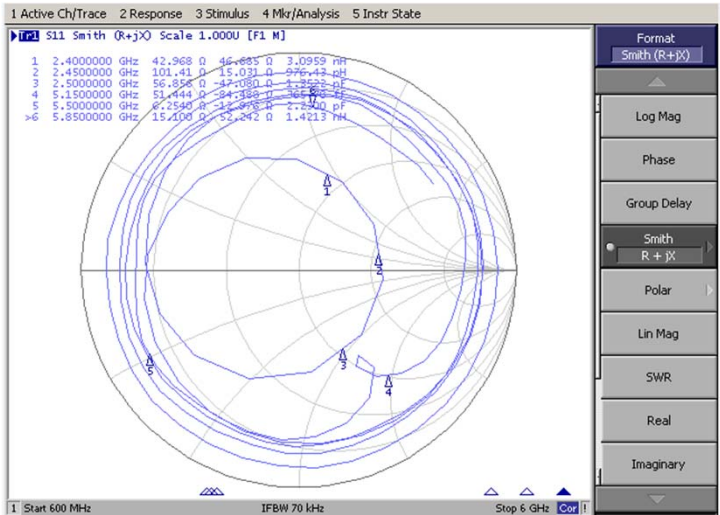
- Antenna name: 2.4G
- Antenna Type: Internal
- Covers : 2.4G

# S Parameter\_Return Loss&VSWR

Dongguan UB Electronics Co., Ltd



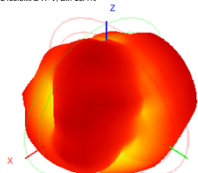
# Efficiency and Gain-Smith



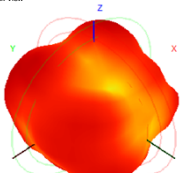
| Frequency ID    | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency (MHz) | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
| Gain (dBi)      | -2.55  | -2.61  | -2.72  | -2.86  | -3.08  | -2.82  | -2.50  | -2.63  | -2.80  | -3.09  | -3.15  |
| Efficiency (%)  | 16.40  | 16.77  | 16.92  | 16.99  | 16.91  | 17.03  | 17.44  | 17.14  | 16.63  | 16.17  | 15.78  |



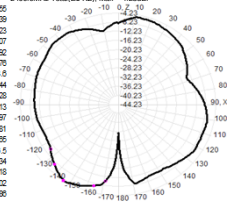
2400.0MHz H+V, Eff: 16.4%



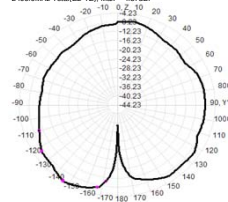
Back View



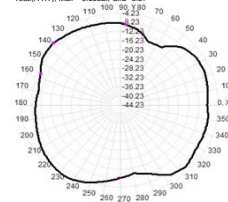
2400.0MHz Total(E1+XZ), Max= -4.23dBi



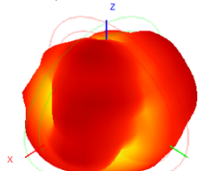
2400.0MHz Total(E2-YZ), Max= -4.57dBi



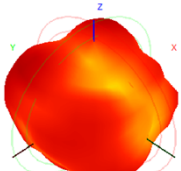
Total(H+V), Max= -6.16dBi, C/D=8.37



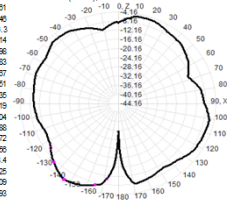
2410.0MHz H+V, Eff: 16.8%



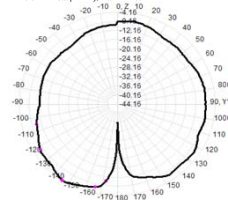
Back View



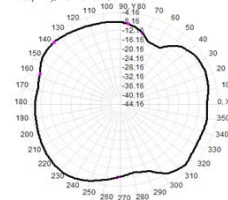
2410.0MHz Total(E1+XZ), Max= -4.20dBi



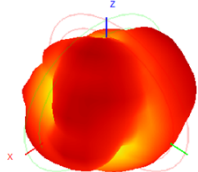
2410.0MHz Total(E2-YZ), Max= -4.16dBi



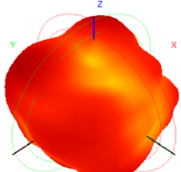
Total(H+V), Max= -6.15dBi, C/D=8.79



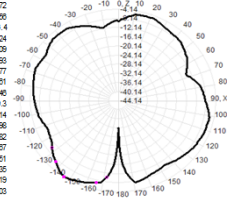
2420.0MHz H+V, Eff: 16.9%



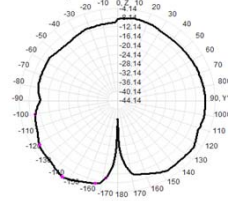
Back View



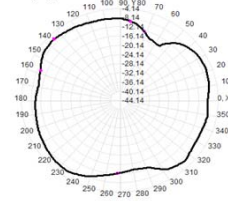
2420.0MHz Total(E1+XZ), Max= -4.30dBi



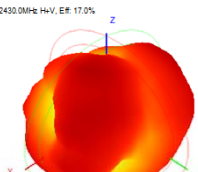
2420.0MHz Total(E2-YZ), Max= -4.14dBi



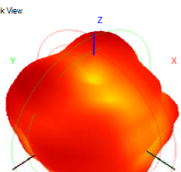
Total(H+V), Max= -6.43dBi, C/D=9.16



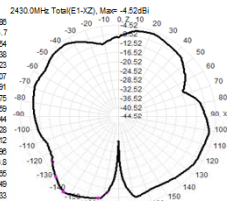
2430.0MHz H+V, Eff: 17.0%



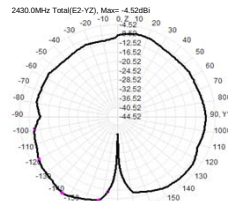
Back View



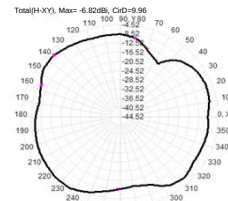
2430.0MHz Total(E1+XZ), Max= -4.50dBi



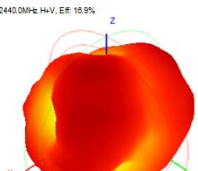
2430.0MHz Total(E2-YZ), Max= -4.50dBi



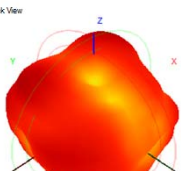
Total(H+V), Max= -6.62dBi, C/D=9.66



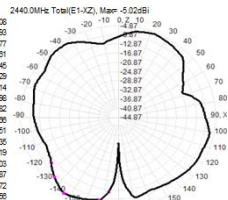
2440.0MHz H+V, Eff: 16.9%



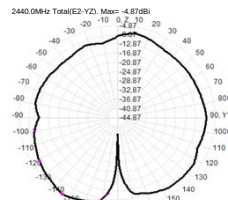
Back View



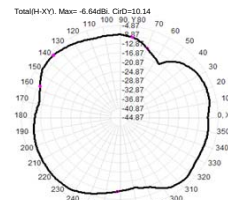
2440.0MHz Total(E1+XZ), Max= -5.02dBi



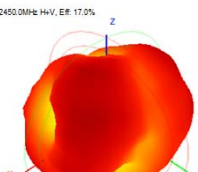
2440.0MHz Total(E2-YZ), Max= -4.87dBi



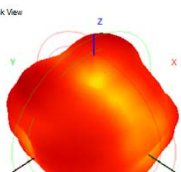
Total(H+V), Max= -6.64dBi, C/D=10.14



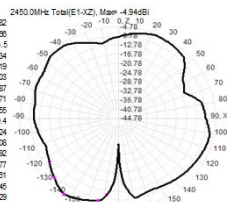
2450.0MHz H+V, Eff: 17.0%



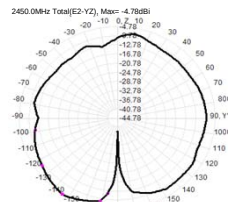
Back View



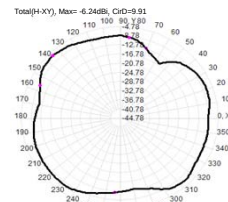
2450.0MHz Total(E1+XZ), Max= -4.94dBi



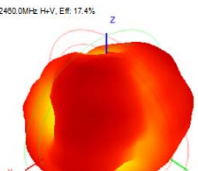
2450.0MHz Total(E2-YZ), Max= -4.78dBi



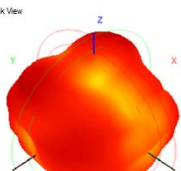
Total(H+V), Max= -6.24dBi, C/D=9.91



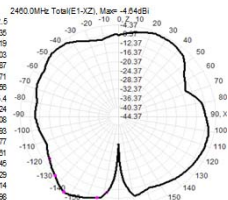
2460.0MHz H+V, Eff: 17.4%



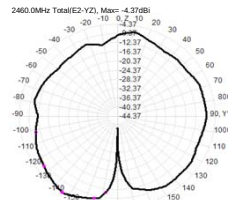
Back View



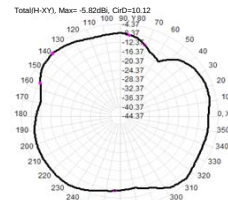
2460.0MHz Total(E1+XZ), Max= -4.64dBi



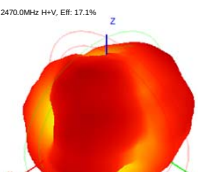
2460.0MHz Total(E2-YZ), Max= -4.37dBi



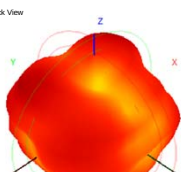
Total(H+V), Max= -6.82dBi, C/D=10.12



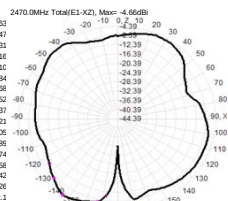
2470.0MHz H+V, Eff: 17.1%



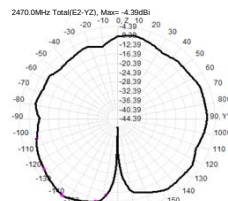
Back View



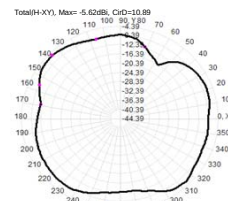
2470.0MHz Total(E1+XZ), Max= -4.66dBi



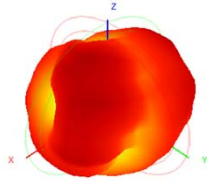
2470.0MHz Total(E2-YZ), Max= -4.39dBi



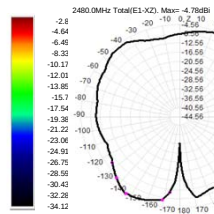
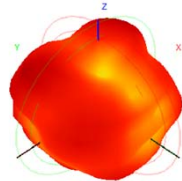
Total(H+V), Max= -6.63dBi, C/D=10.09



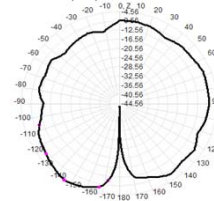
2480.0MHz H+V, EF: 16.6%



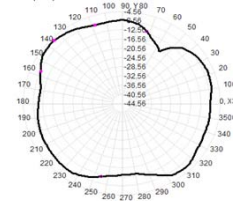
Back View



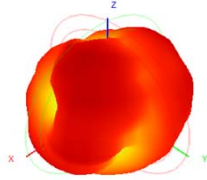
2480.0MHz Total(E2-YZ), Max=-4.56dBi



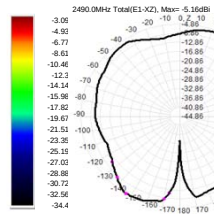
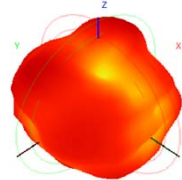
Total(H+V), Max=-5.70dBi, Crd=11.47



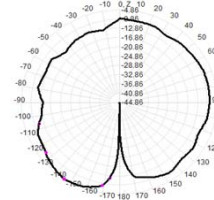
2490.0MHz H+V, EF: 16.2%



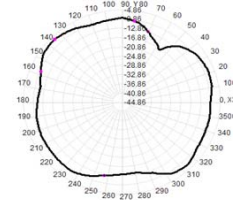
Back View



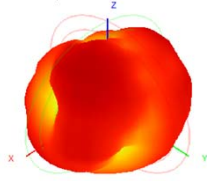
2490.0MHz Total(E2-YZ), Max=-4.86dBi



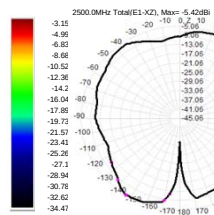
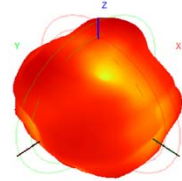
Total(H+V), Max=-6.34dBi, Crd=11.28



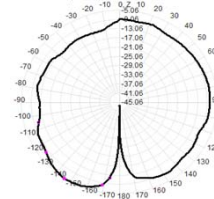
2500.0MHz H+V, EF: 15.8%



Back View



2500.0MHz Total(E2-YZ), Max=-5.06dBi



Total(H+V), Max=-6.83dBi, Crd=10.75

