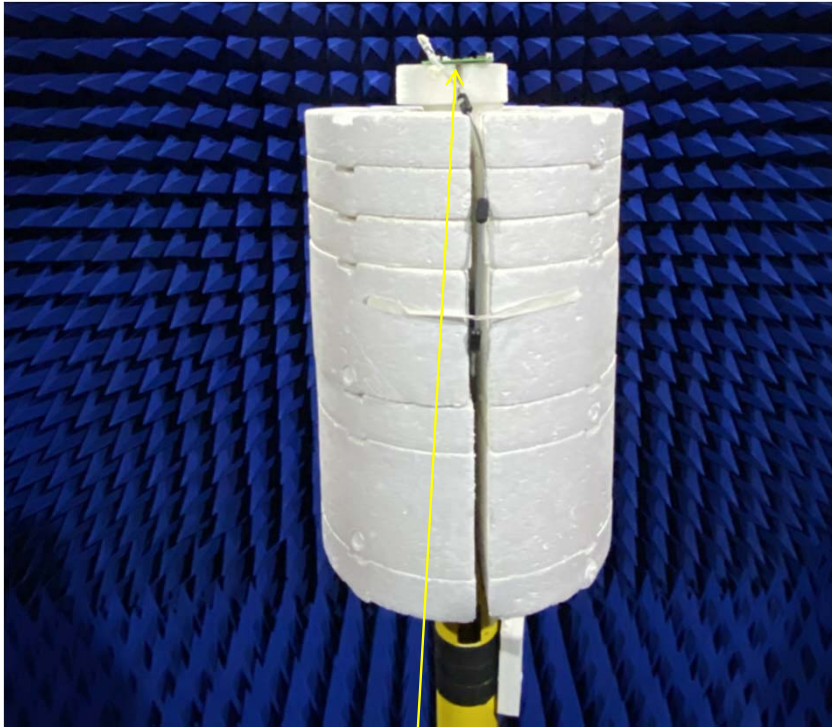


Antenna Study

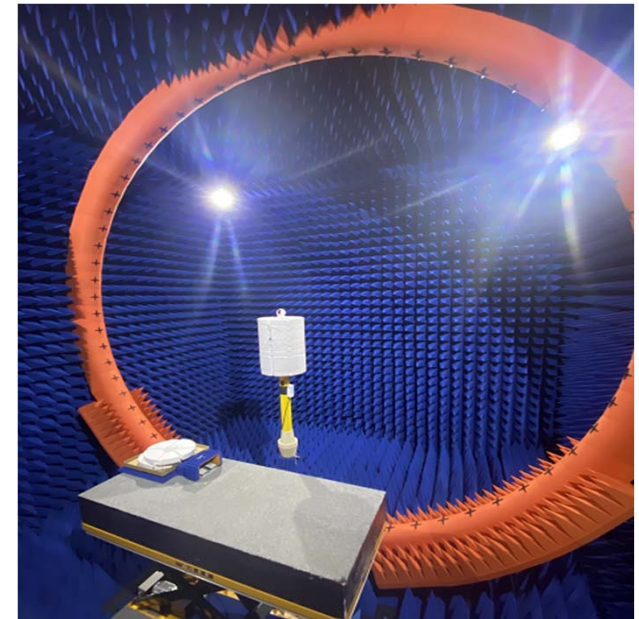
- **Client Name:Fuzhou Conssin Lighting Co.,Ltd**
- **Project Name:ZBP 2000 Main control panel**
- **Debugging frequency band: 2400-2500MHz**
- **Valuation date: 2023.03.15**

Internal Antenna

Dongguan UB Electronics Co., Ltd



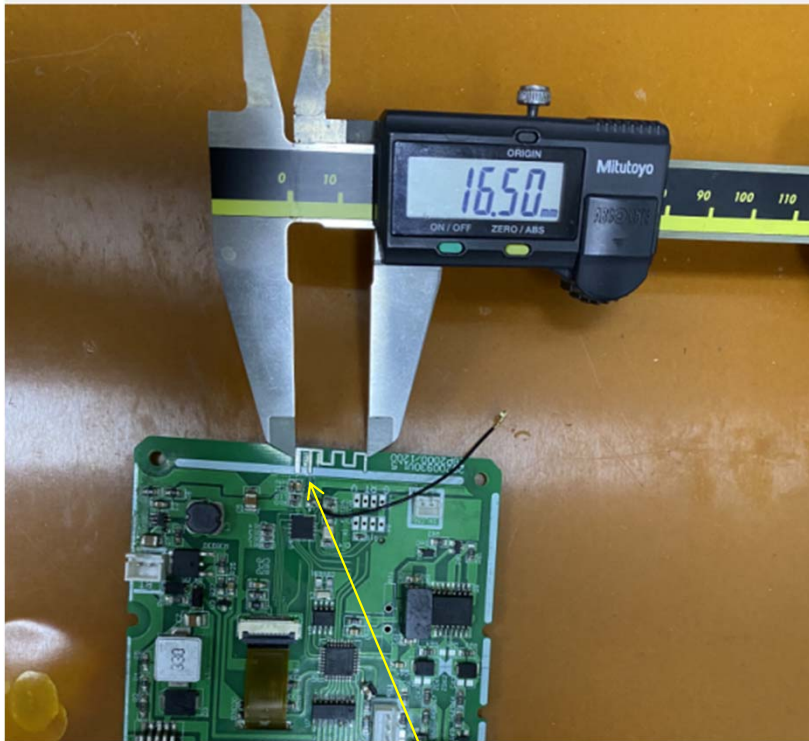
Testing environment



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

External Antenna

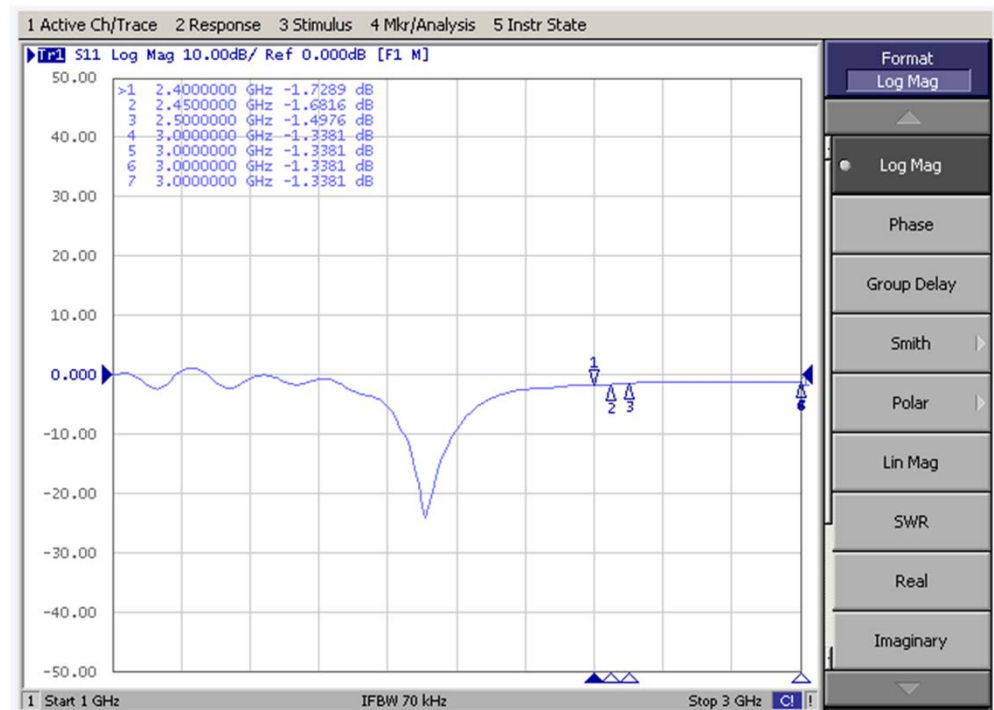
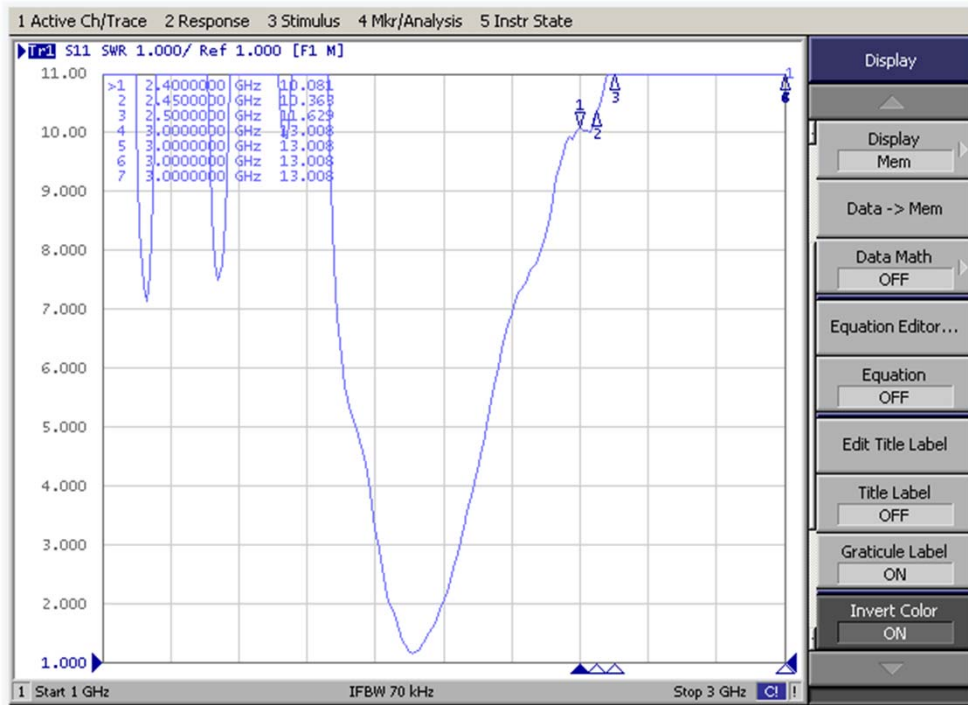
Dongguan UB Electronics Co., Ltd



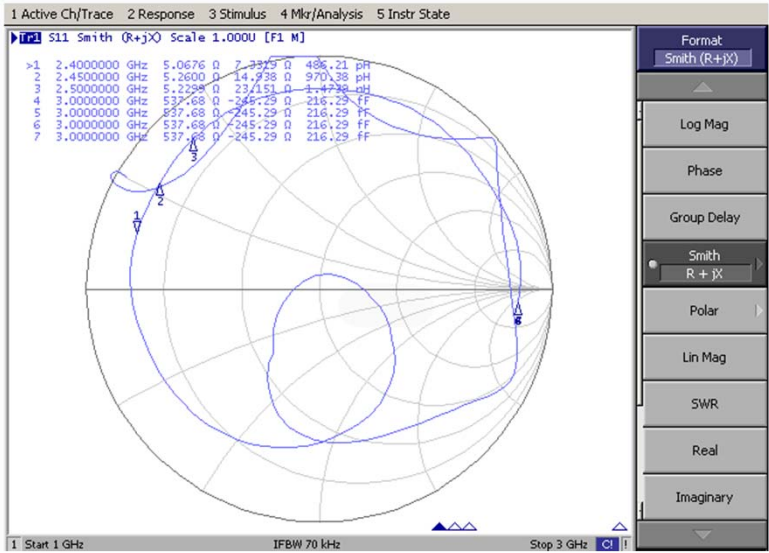
Antenna

- Antenna name: 2.4G
- Antenna Type: PIFA
- Covers : 2400-2500MHz

S Parameter_Return Loss&VSWR



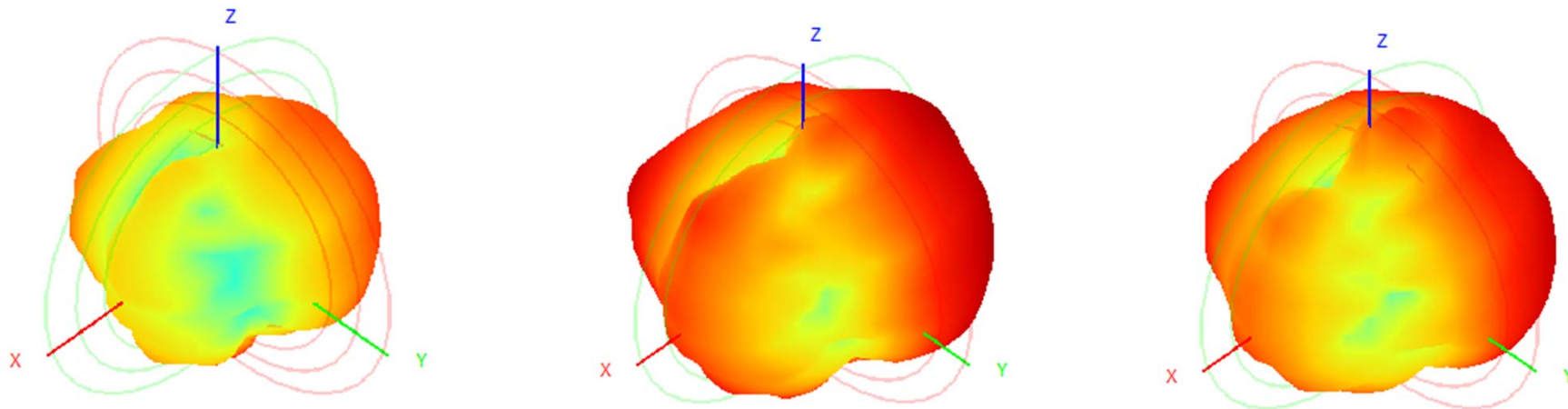
Efficiency and Gain-Smith



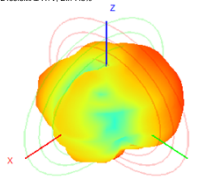
Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Gain (dBi)	-1.27	-2.14	-5.70	-6.48	-6.32	-7.46	-7.71	-7.69	-8.11	-6.53	-7.25
Efficiency (%)	7.49	7.25	6.57	6.38	6.12	5.90	6.06	5.80	5.21	5.25	4.94

Freespace Environment Performance – WIFI

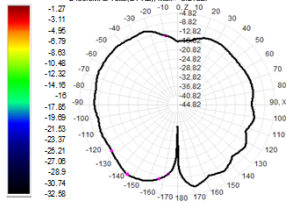
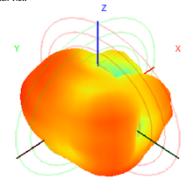
Dongguan UB Electronics Co., Ltd



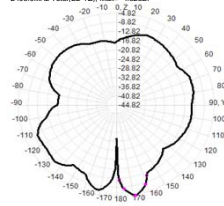
2400.0MHz H+V, Ef: 7.5%



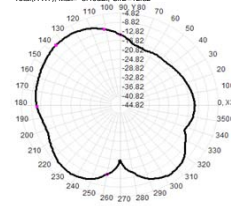
Back View



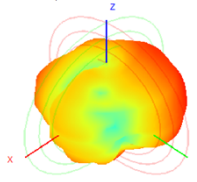
2400.0MHz Total(E+YZ), Max= -4.82dB



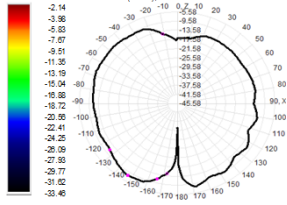
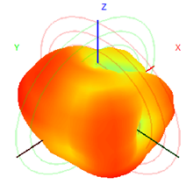
Total(H+XY), Max= -8.10dB, C/D=12.82



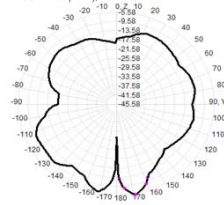
2410.0MHz H+V, Ef: 7.3%



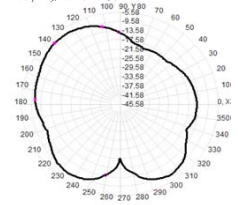
Back View



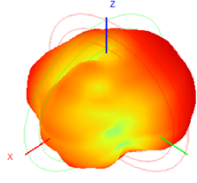
2410.0MHz Total(E+YZ), Max= -5.58dB



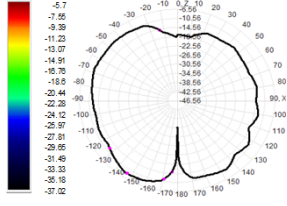
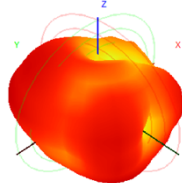
Total(H+XY), Max= -8.12dB, C/D=13.77



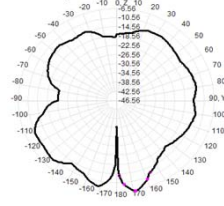
2420.0MHz H+V, Ef: 6.8%



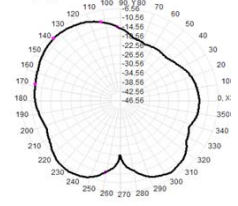
Back View



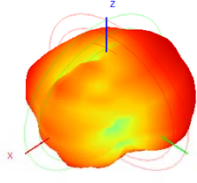
2420.0MHz Total(E+YZ), Max= -6.56dB



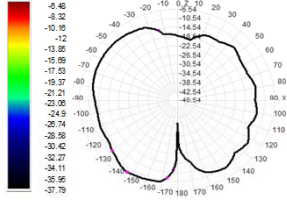
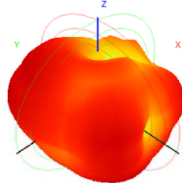
Total(H+XY), Max= -8.50dB, C/D=14.22



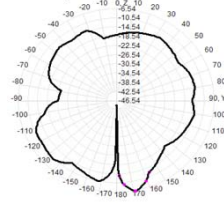
2430.0MHz H+V, Ef: 6.4%



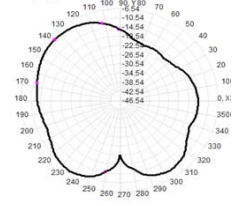
Back View



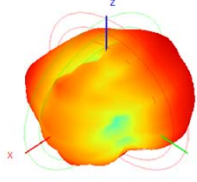
2430.0MHz Total(E+YZ), Max= -6.56dB



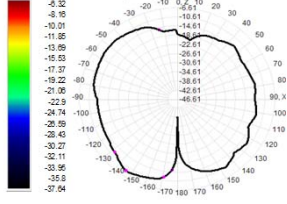
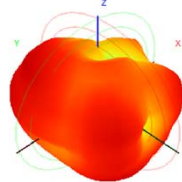
Total(H+XY), Max= -8.68dB, C/D=13.75



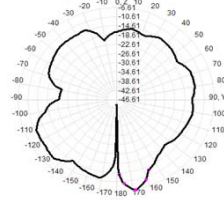
2440.0MHz H+V, Ef: 6.1%



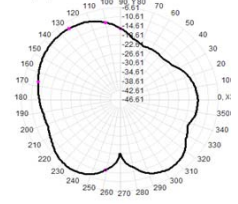
Back View



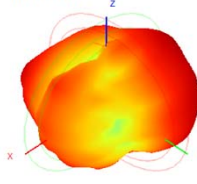
2440.0MHz Total(E+YZ), Max= -6.61dB



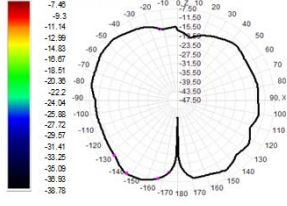
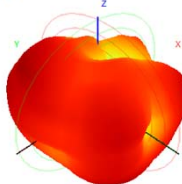
Total(H+XY), Max= -9.48dB, C/D=13.78



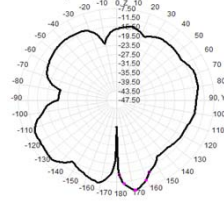
2450.0MHz H+V, Ef: 5.9%



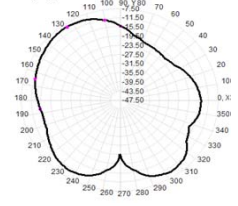
Back View



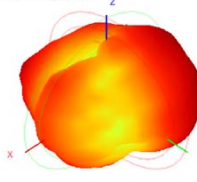
2450.0MHz Total(E+YZ), Max= -7.50dB



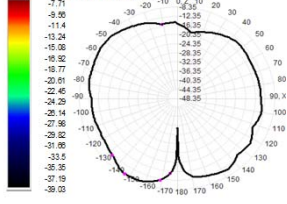
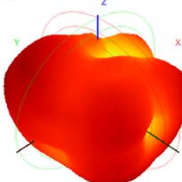
Total(H+XY), Max= -8.99dB, C/D=14.67



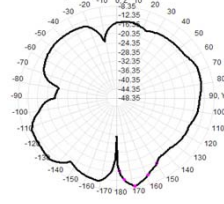
2460.0MHz H+V, Ef: 6.1%



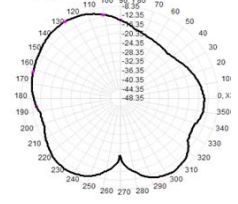
Back View



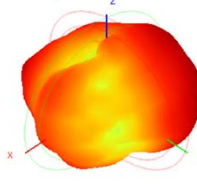
2460.0MHz Total(E+YZ), Max= -9.90dB



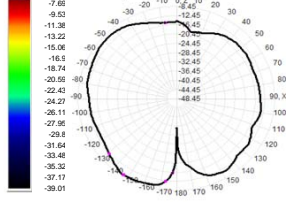
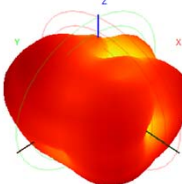
Total(H+XY), Max= -8.35dB, C/D=14.91



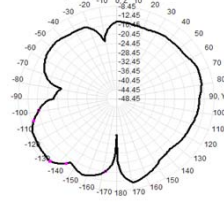
2470.0MHz H+V, Ef: 5.8%



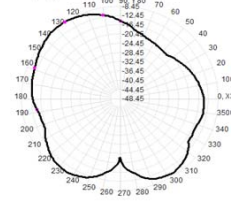
Back View



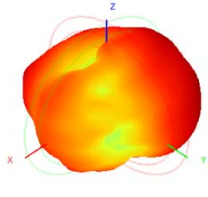
2470.0MHz Total(E+YZ), Max= -10.57dB



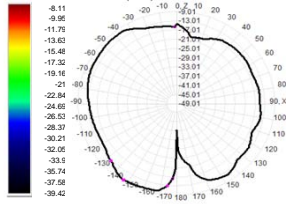
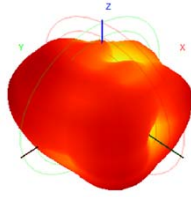
Total(H+XY), Max= -8.46dB, C/D=14.44



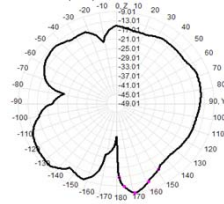
2480.0MHz H+V, Eff: 5.2%



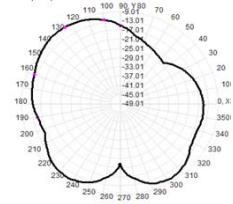
Back View



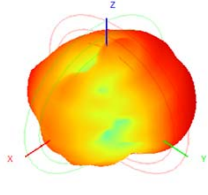
2480.0MHz Total(E2-YZ), Max=-9.52dBi



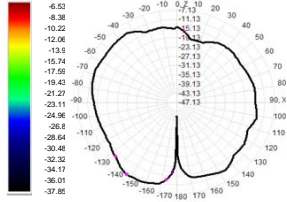
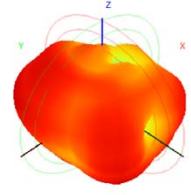
Total(H+V), Max=-9.01dBi, C/D=15.15



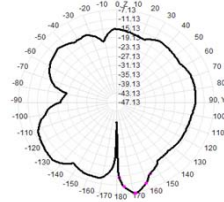
2490.0MHz H+V, Eff: 5.2%



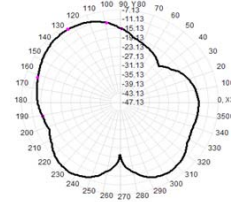
Back View



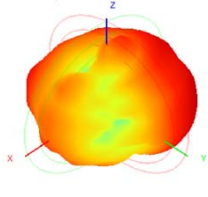
2490.0MHz Total(E2-YZ), Max=-7.13dBi



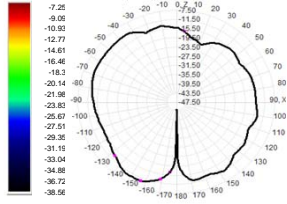
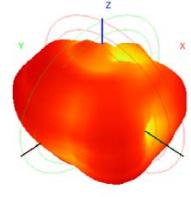
Total(H+V), Max=-9.16dBi, C/D=16.02



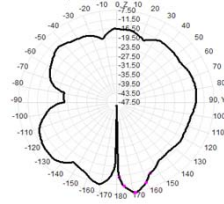
2500.0MHz H+V, Eff: 4.9%



Back View



2500.0MHz Total(E2-YZ), Max=-7.50dBi



Total(H+V), Max=-9.46dBi, C/D=16.82

