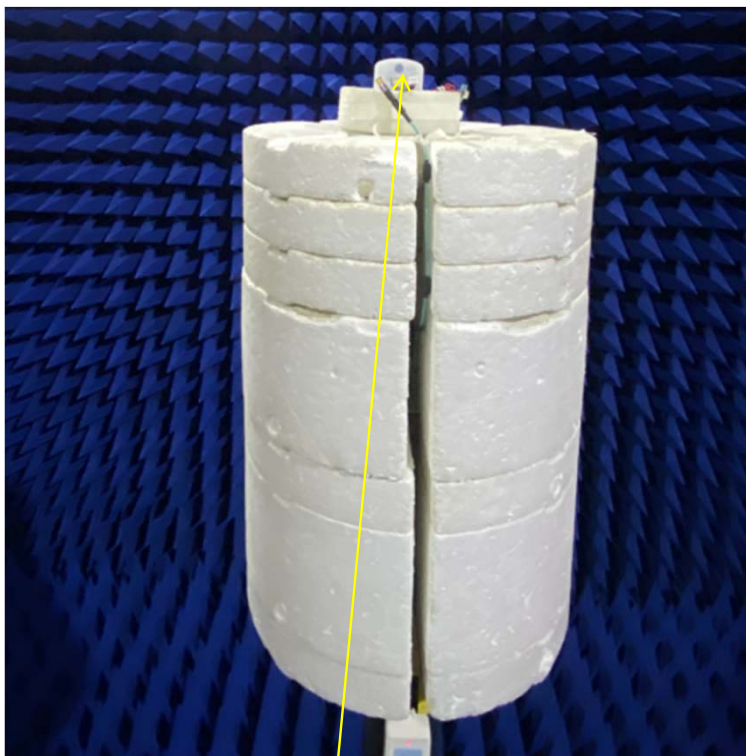


Antenna Study

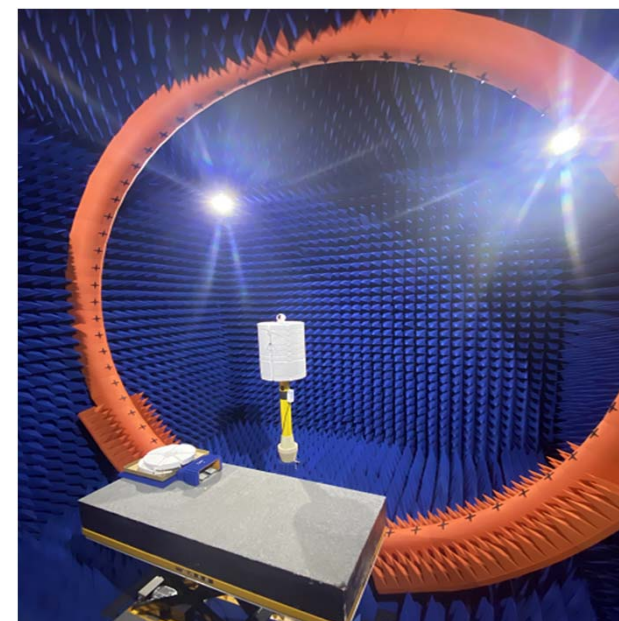
- **Client Name:TOWNSTEEL INC.**
- **Project Name : NET DOOR LOCK**
- **Debugging frequency band: 900/930/2400/2500HMz**
- **Valuation date: 2024.05.15**
- **Linkman contacts: gao shang 18925546490**

Internal Antenna

Dongguan UB Electronics Co., Ltd



Testing environment



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

Internal Antenna

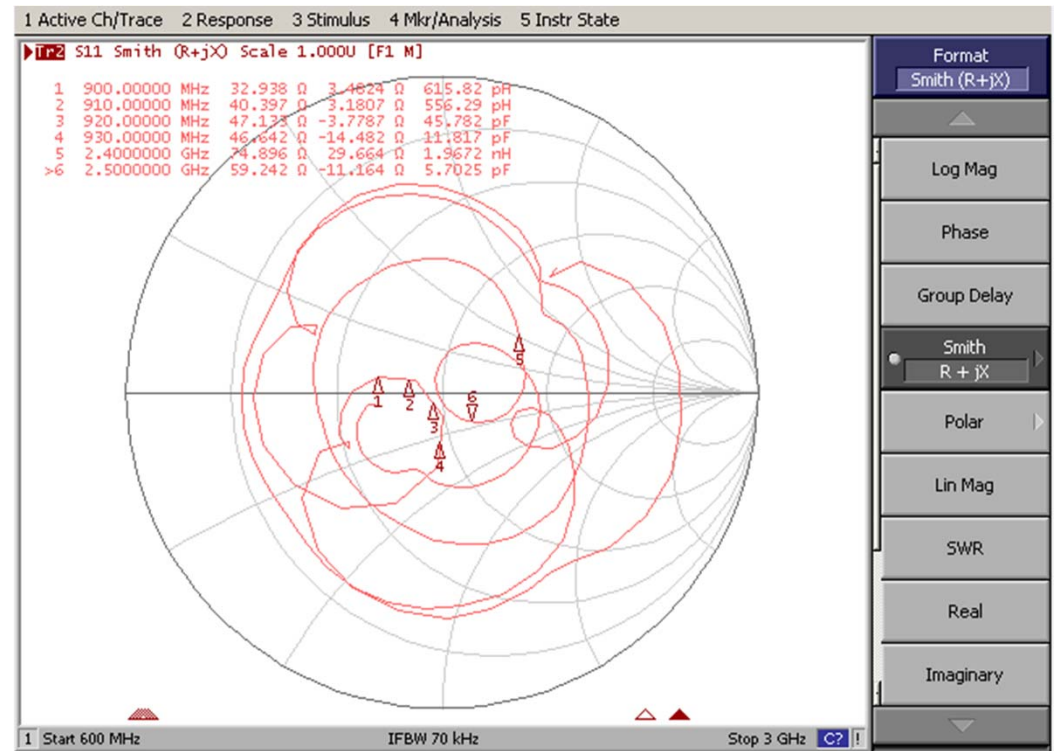
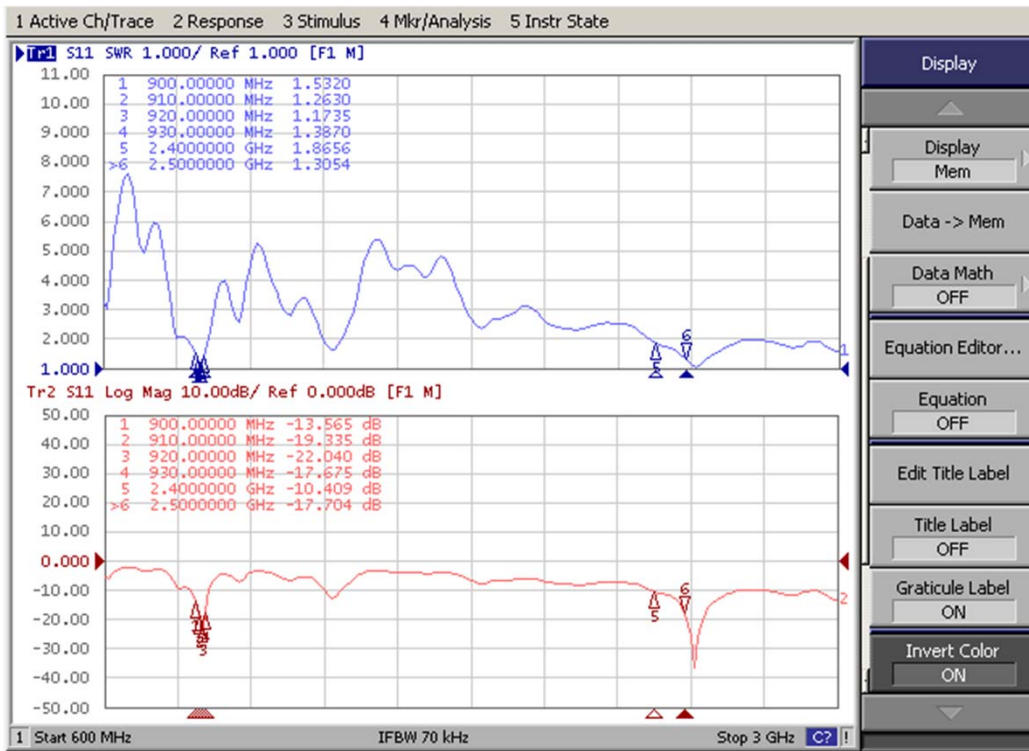
Dongguan UB Electronics Co., Ltd



- Antenna name: NDL-ANT
- Antenna Type: Internal Antenna
- Covers : 900/930/2400/2500MHz

Antenna

S Parameter_Return Loss&VSWR-Smith

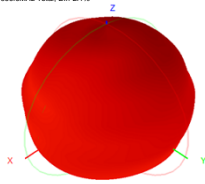


Efficiency and Gain

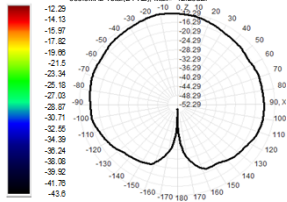
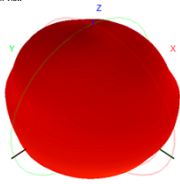
Frequency ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Frequency (MHz)	900.0	902.0	904.0	906.0	908.0	910.0	912.0	914.0	916.0	918.0	920.0	922.0	924.0	926.0	928.0	930.0
Gain (dBi)	-12.29	-12.15	-12.09	-12.14	-12.15	-12.03	-11.98	-11.96	-11.95	-11.98	-12.02	-12.05	-11.98	-11.88	-11.83	-11.89
Efficiency (%)	2.11	2.17	2.21	2.25	2.29	2.34	2.37	2.40	2.44	2.46	2.45	2.45	2.47	2.49	2.50	2.50

17	18	19	20	21	22	23	24	25	26	27
2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
-7.09	-8.02	-7.94	-8.05	-8.17	-8.23	-7.88	-7.85	-8.31	-8.01	-8.03
4.87	4.72	4.43	4.45	4.54	4.53	4.82	4.93	4.70	4.67	4.71

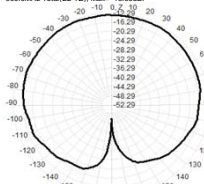
900.0MHz Total, Eff: 2.1%



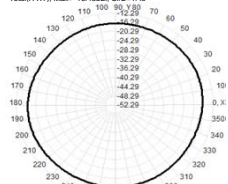
Back View



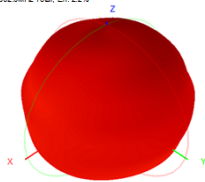
900.0MHz Total(E2-YZ), Max=-13.06dB



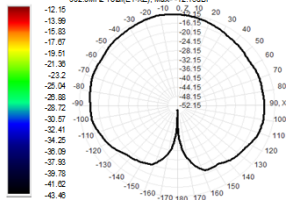
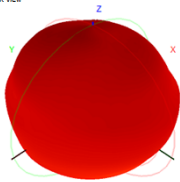
Total(H-XY), Max=-16.43dB, CrD=1.45



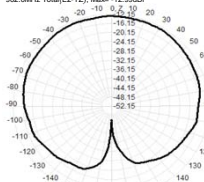
902.0MHz Total, Eff: 2.2%



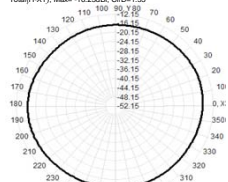
Back View



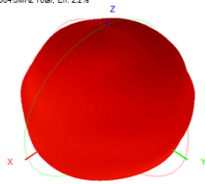
902.0MHz Total(E2-YZ), Max=-12.99dB



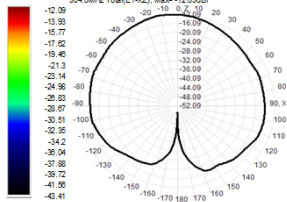
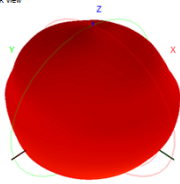
Total(H-XY), Max=-16.23dB, CrD=1.53



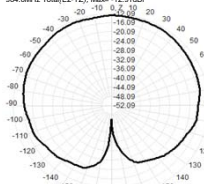
904.0MHz Total, Eff: 2.2%



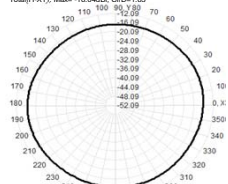
Back View



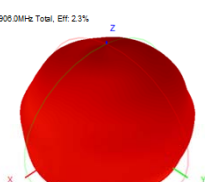
904.0MHz Total(E2-YZ), Max=-12.91dB



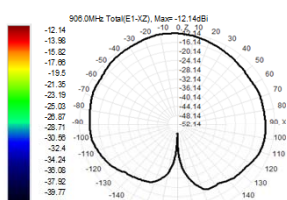
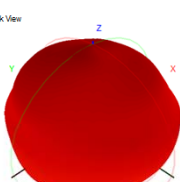
Total(H-XY), Max=-16.04dB, CrD=1.63



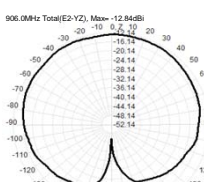
906.0MHz Total, Eff: 2.3%



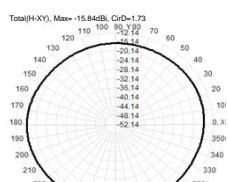
Back View



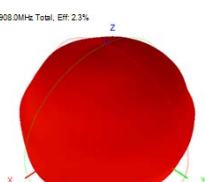
906.0MHz Total(E2-YZ), Max=-12.84dB



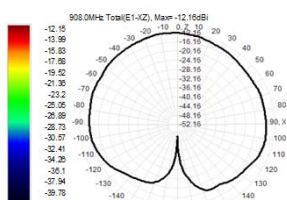
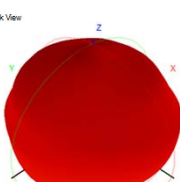
Total(H-XY), Max=-15.84dB, CrD=1.73



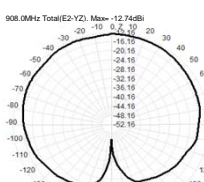
908.0MHz Total, Eff: 2.3%



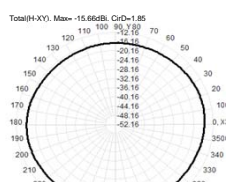
Back View



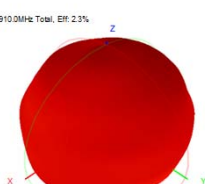
908.0MHz Total(E2-YZ), Max=-12.74dB



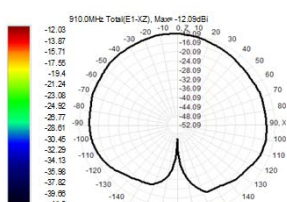
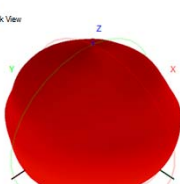
Total(H-XY), Max=-15.66dB, CrD=1.85



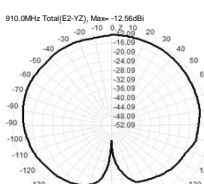
910.0MHz Total, Eff: 2.3%



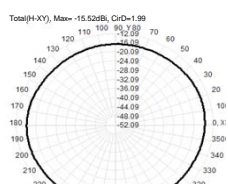
Back View



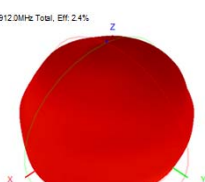
910.0MHz Total(E2-YZ), Max=-12.56dB



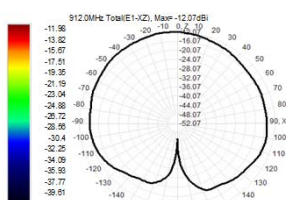
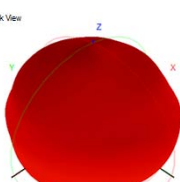
Total(H-XY), Max=-15.52dB, CrD=1.99



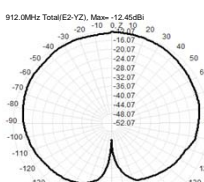
912.0MHz Total, Eff: 2.4%



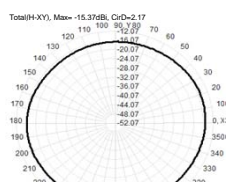
Back View



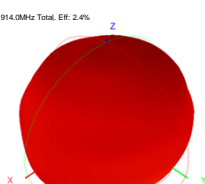
912.0MHz Total(E2-YZ), Max=-12.45dB



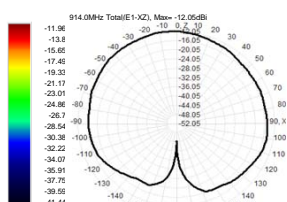
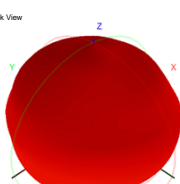
Total(H-XY), Max=-15.37dB, CrD=2.17



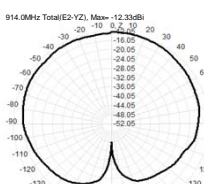
914.0MHz Total, Eff: 2.4%



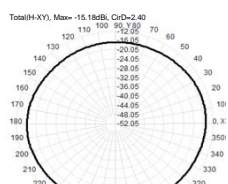
Back View

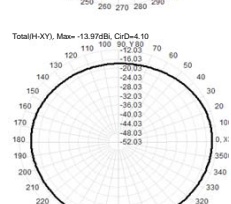
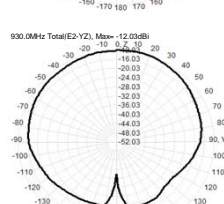
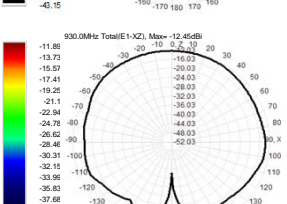
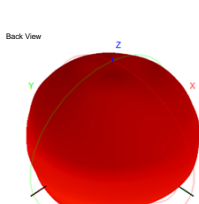
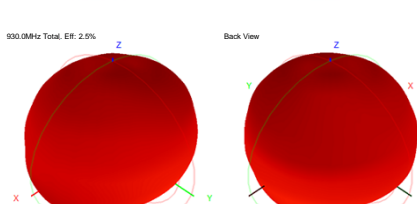
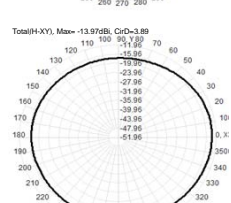
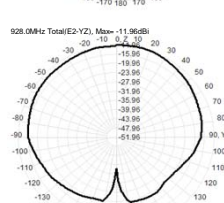
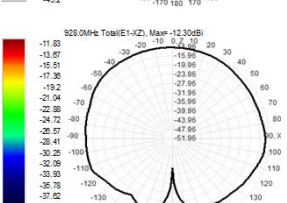
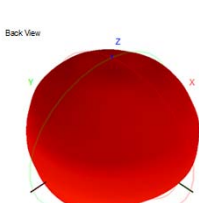
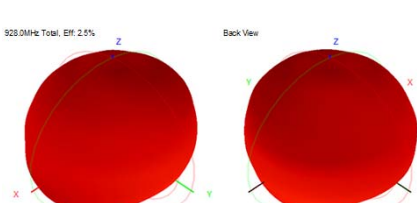
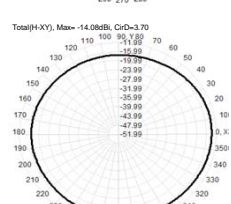
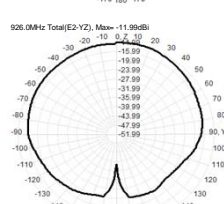
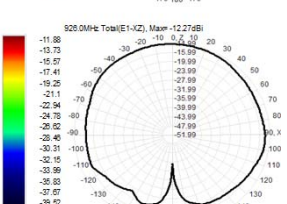
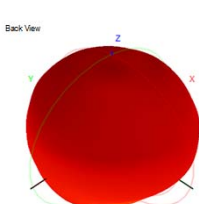
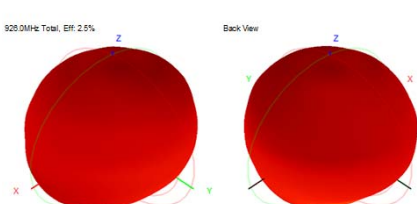
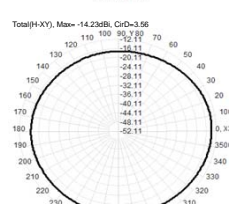
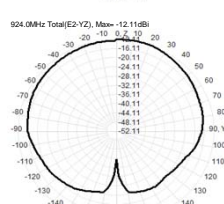
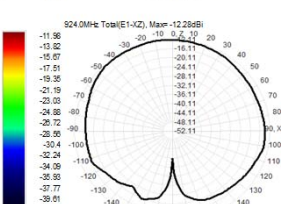
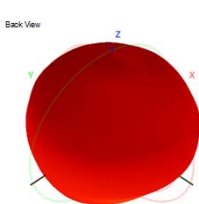
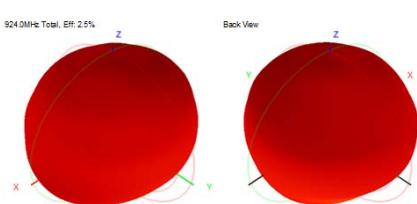
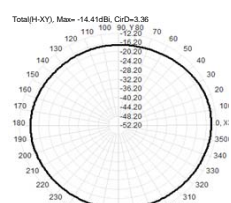
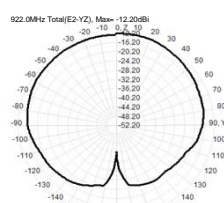
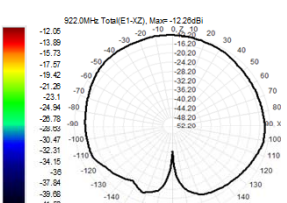
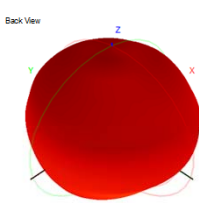
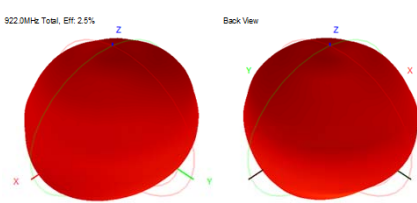
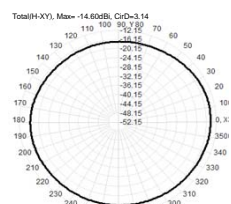
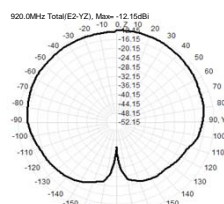
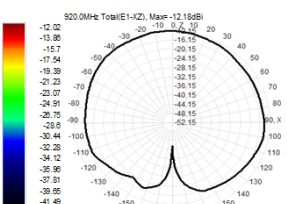
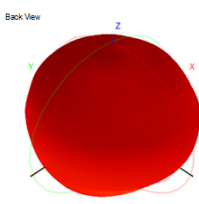
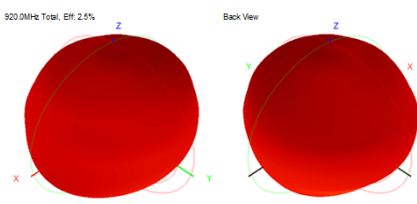
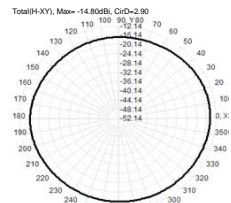
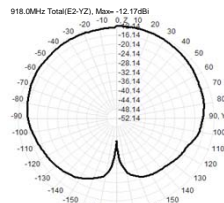
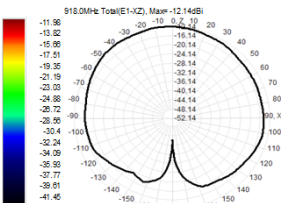
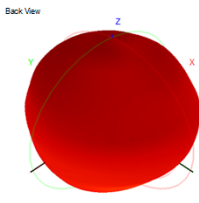
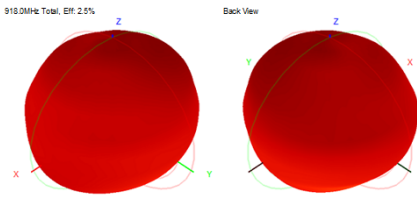
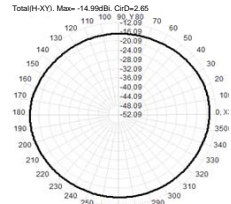
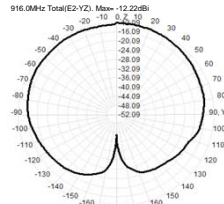
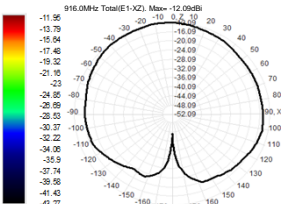
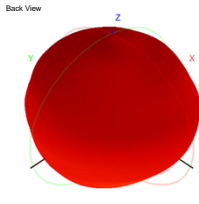
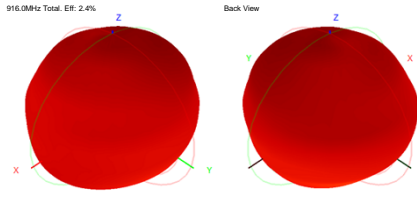


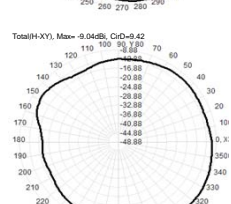
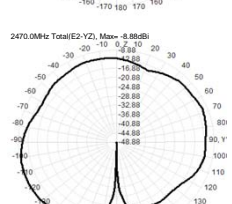
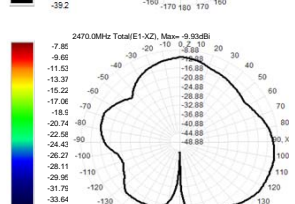
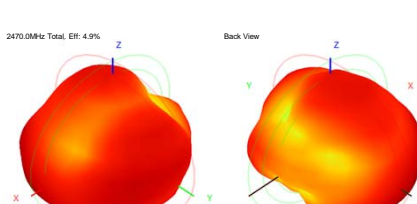
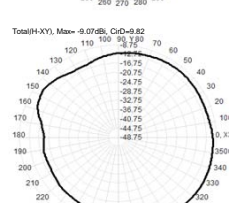
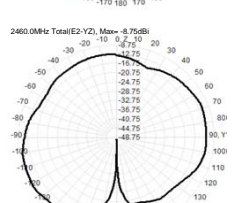
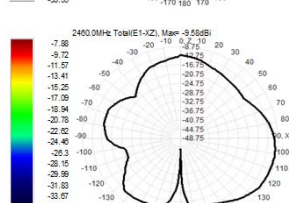
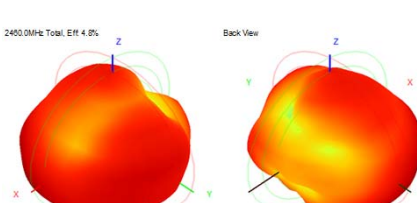
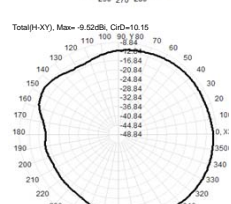
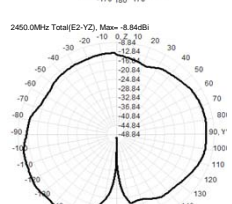
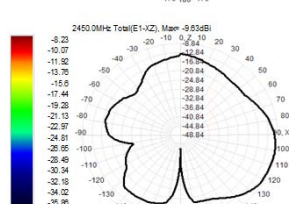
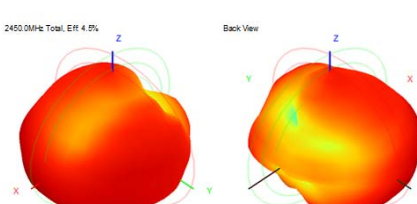
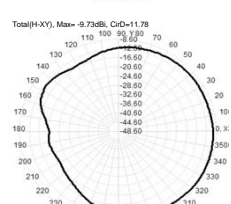
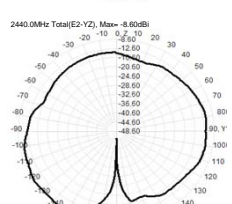
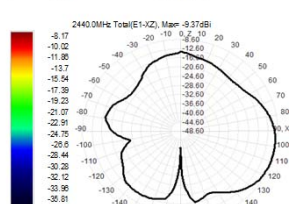
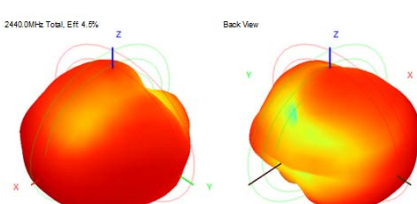
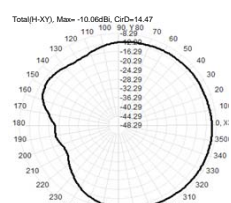
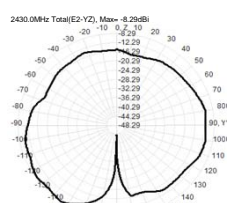
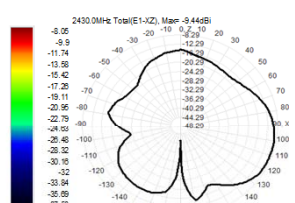
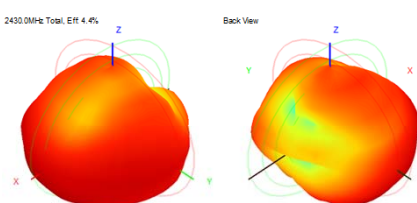
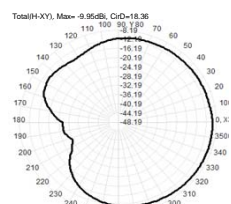
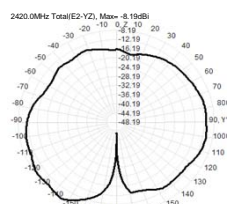
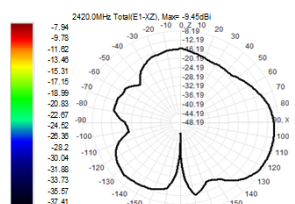
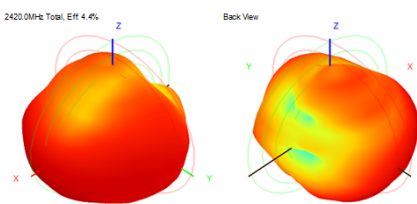
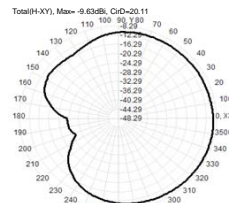
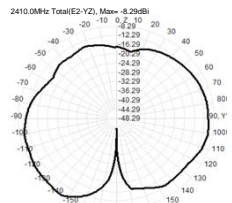
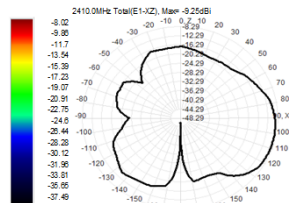
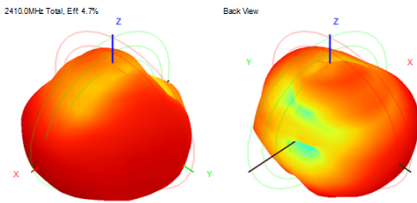
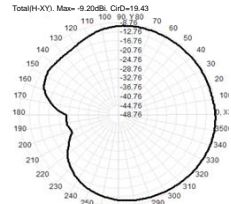
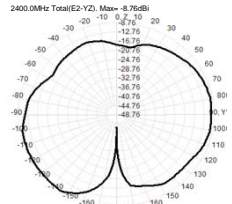
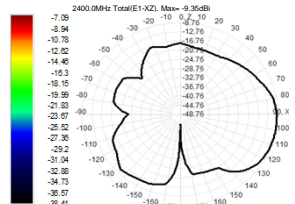
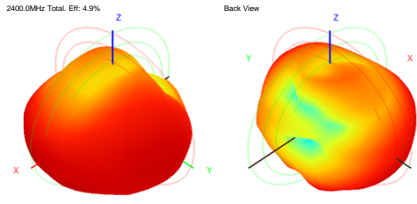
914.0MHz Total(E2-YZ), Max=-12.33dB



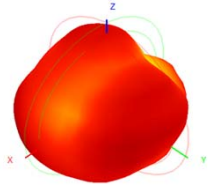
Total(H-XY), Max=-15.18dB, CrD=2.40



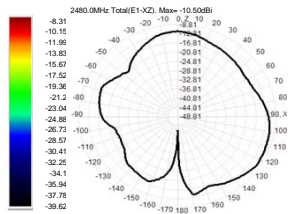
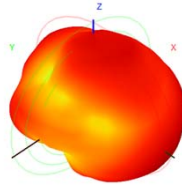




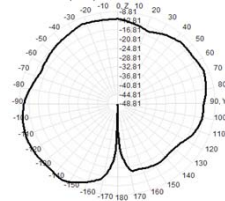
2480.0MHz Total Eff: 4.7%



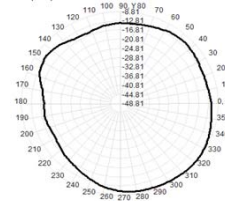
Back View



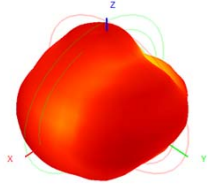
2480.0MHz Total(E2-YZ), Max=-8.81dBi



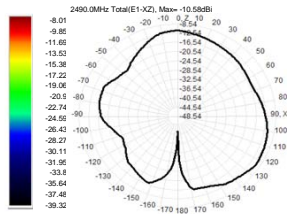
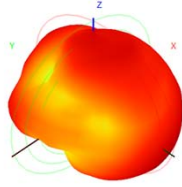
Total(H-XY), Max=-9.16dBi, C/D=0.60



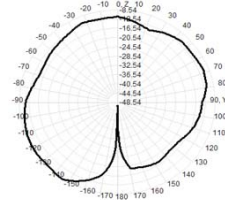
2490.0MHz Total Eff: 4.7%



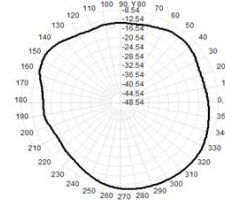
Back View



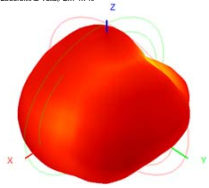
2490.0MHz Total(E2-YZ), Max=-8.54dBi



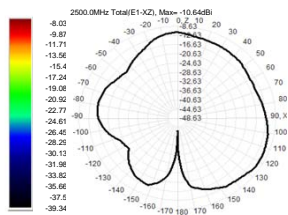
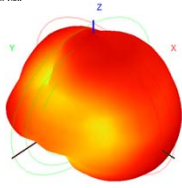
Total(H-XY), Max=-9.50dBi, C/D=0.57



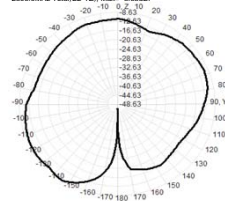
2500.0MHz Total Eff: 4.7%



Back View



2500.0MHz Total(E2-YZ), Max=-8.63dBi



Total(H-XY), Max=-9.95dBi, C/D=0.90

