UANT®
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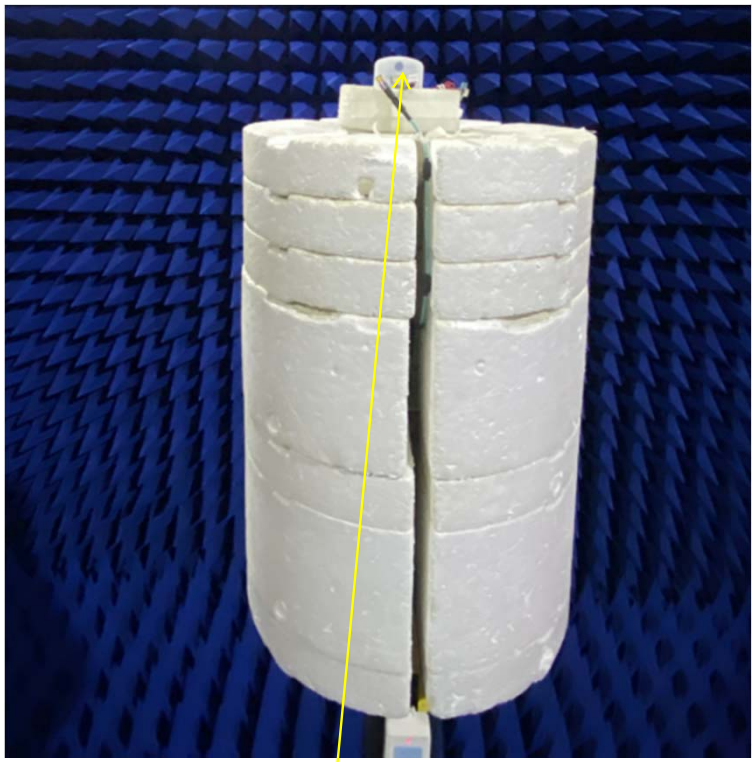
东莞市优比电子有限公司
Dongguan UB Electronics Co.,Ltd

Antenna Study

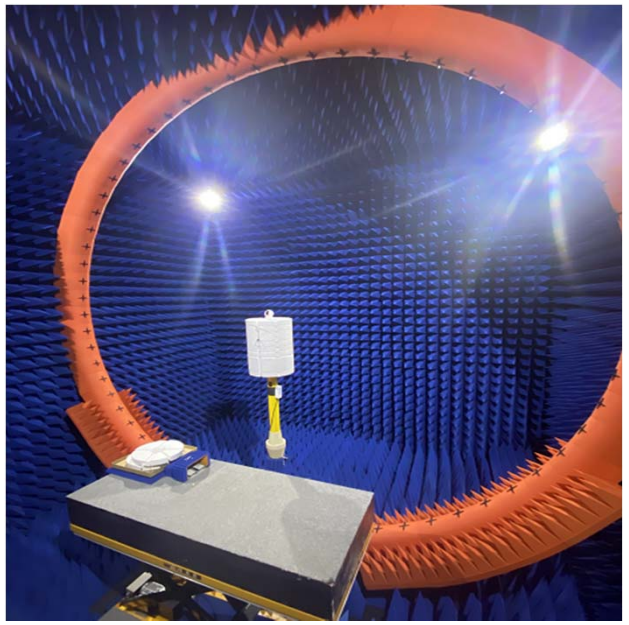
- **Client Name:TOWNSTEEL INC.**
- **Project Name：NET DOOR LOCK**
- **Debugging frequency band: 900/930/2400/2500HMz**
- **Valuation date： 2024.05.15**
- **Linkman contacts： gao shang 18925546490**

UB CONFIDENTIAL

Internal Antenna



Testing environment

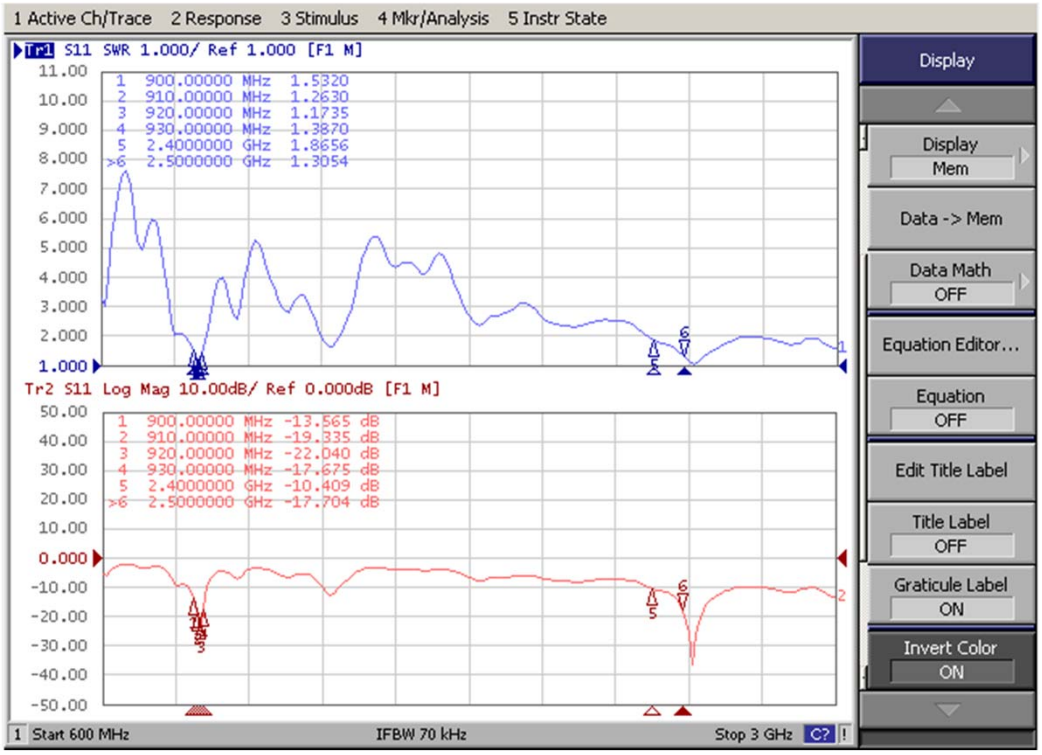


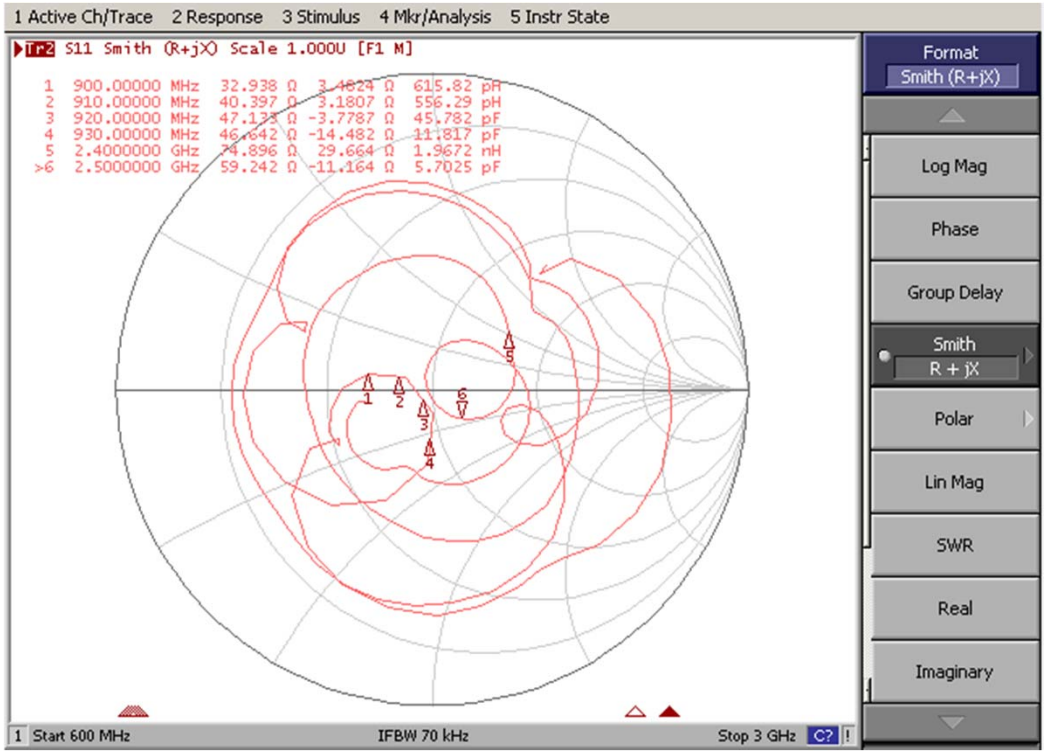
Testing 3D microwave darkroom(6m*6m*6m)

Internal Antenna

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

S Parameter_Return Loss&VSWR-Smith

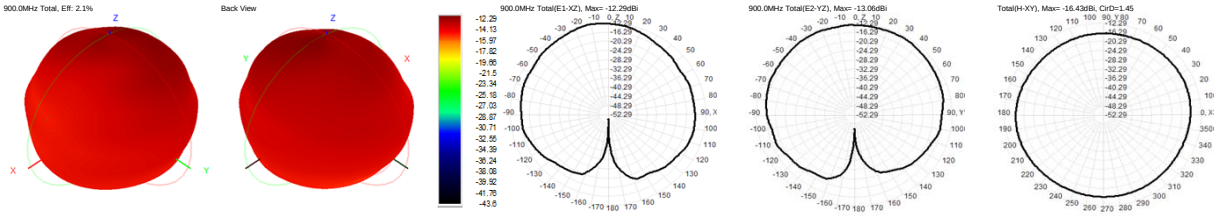


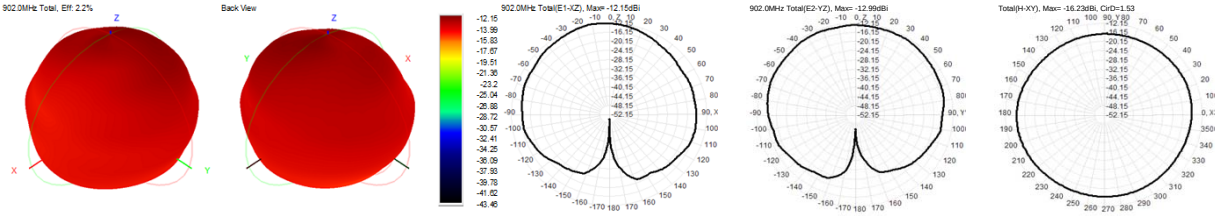


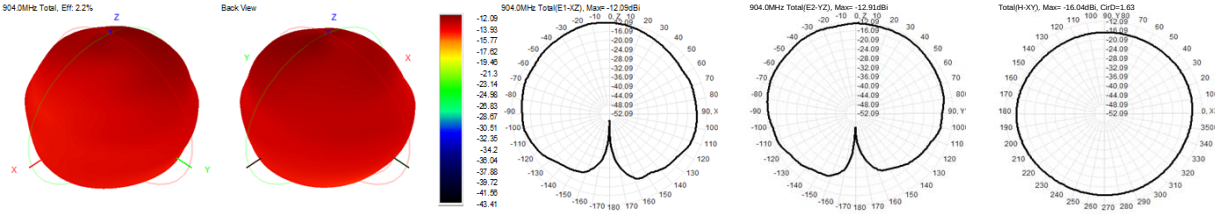
Efficiency and Gain

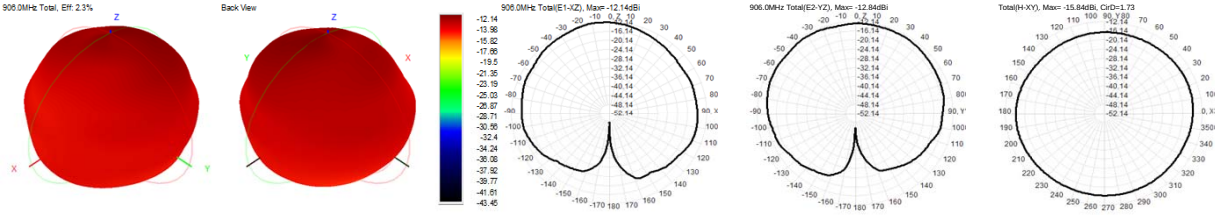
Frequency ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Frequency (MHz)	900.0	902.0	904.0	906.0	908.0	910.0	912.0	914.0	916.0	918.0	920.0	922.0	924.0	926.0	928.0	930.0
Gain (dBi)	-12.29	-12.15	-12.09	-12.14	-12.15	-12.03	-11.98	-11.96	-11.95	-11.98	-12.02	-12.05	-11.98	-11.88	-11.83	-11.89
Efficiency (%	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

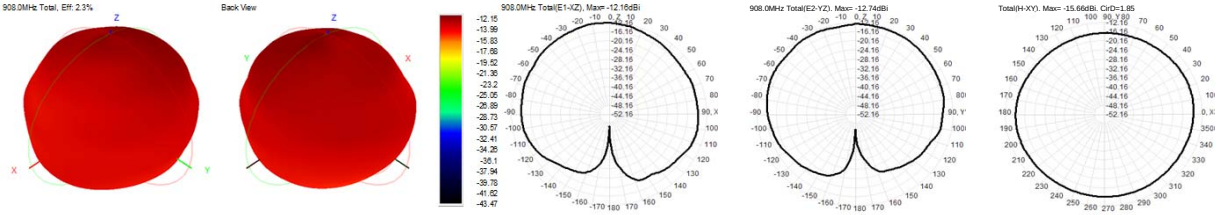
17	18	19	20	21	22	23	24	25	26	27
2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
-7.09	-8.02	-7.94	-8.05	-8.17	-8.23	-7.88	-7.85	-8.31	-8.01	-8.03
4.87	4.72	4.43	4.45	4.54	4.53	4.82	4.93	4.70	4.67	4.71

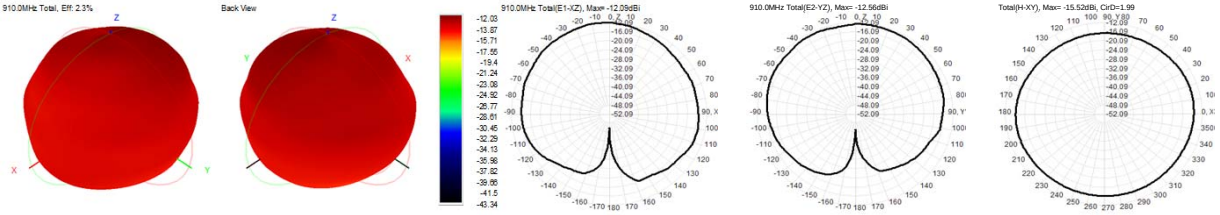

900.0MHz Total, Eff: 2.1%
Back View
900.0MHz Total(E1-XZ), Max= -12.29dBi
900.0MHz Total(E2-YZ), Max= -13.06dBi
Total(H-XY), Max= -16.43dBi, CirD=1.45

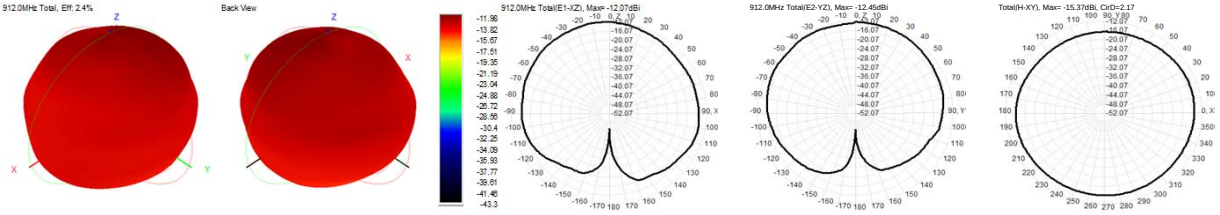

902.0MHz Total, Eff: 2.2%
Back View
902.0MHz Total(E1-XZ), Max= -12.15dBi
902.0MHz Total(E2-YZ), Max= -12.99dBi
Total(H-XY), Max= -16.23dBi, CirD=1.53

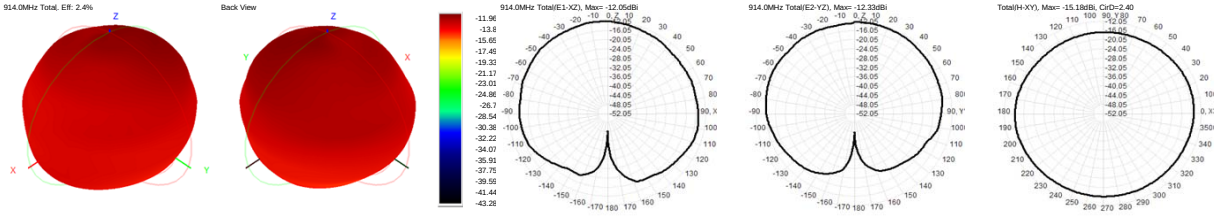

904.0MHz Total, Eff: 2.2%
Back View
904.0MHz Total(E1-XZ), Max= -12.09dBi
904.0MHz Total(E2-YZ), Max= -12.91dBi
Total(H-XY), Max= -16.04dBi, CirD=1.63

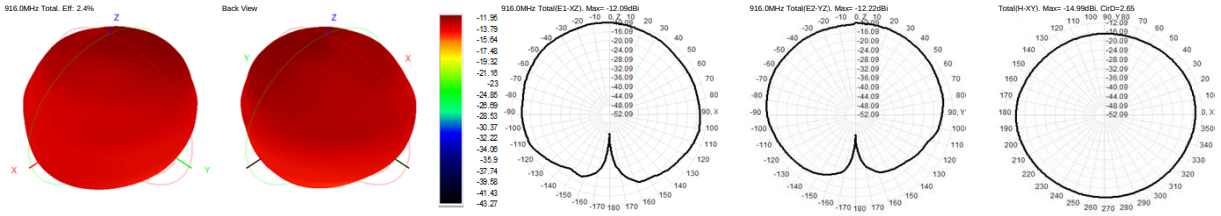

906.0MHz Total, Eff: 2.3%
Back View
906.0MHz Total(E1-XZ), Max= -12.14dBi
906.0MHz Total(E2-YZ), Max= -12.84dBi
Total(H-XY), Max= -15.84dBi, CirD=1.73

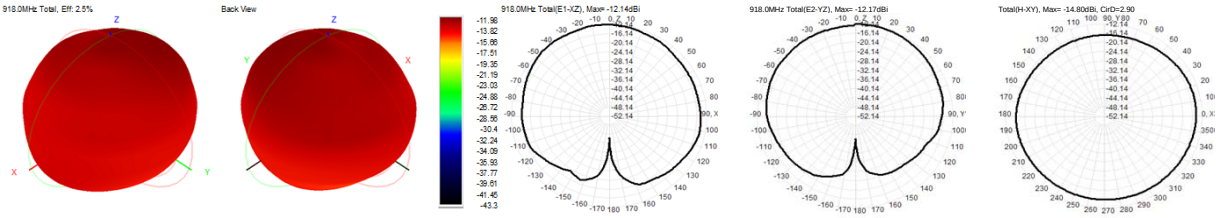

908.0MHz Total, Eff: 2.3%
Back View
908.0MHz Total(E1-XZ), Max= -12.16dBi
908.0MHz Total(E2-YZ), Max= -12.74dBi
Total(H-XY), Max= -15.66dBi, CirD=1.85

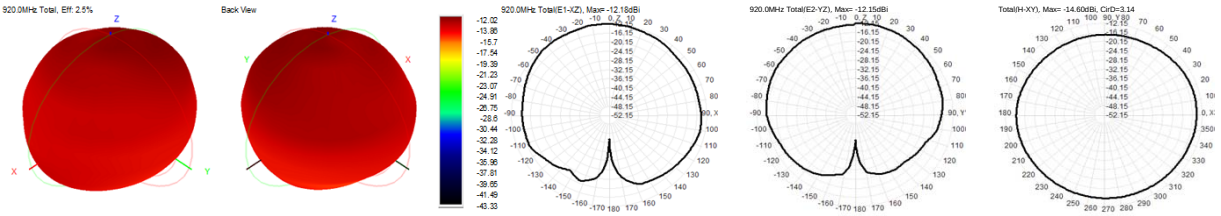

910.0MHz Total, Eff: 2.3%
Back View
910.0MHz Total(E1-XZ), Max= -12.09dBi
910.0MHz Total(E2-YZ), Max= -12.56dBi
Total(H-XY), Max= -15.52dBi, CirD=1.99

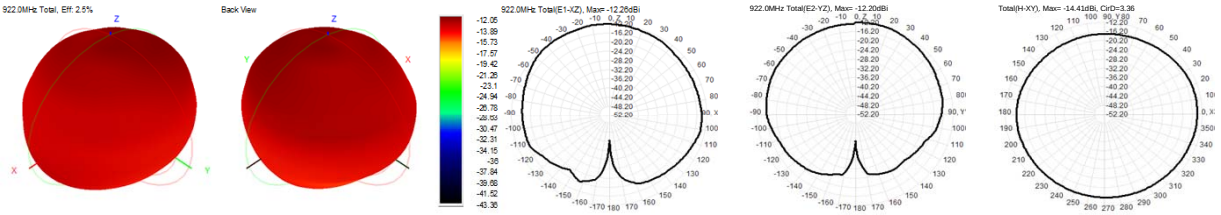

912.0MHz Total, Eff: 2.4%
Back View
912.0MHz Total(E1-XZ), Max= -12.07dBi
912.0MHz Total(E2-YZ), Max= -12.45dBi
Total(H-XY), Max= -15.37dBi, CirD=2.17

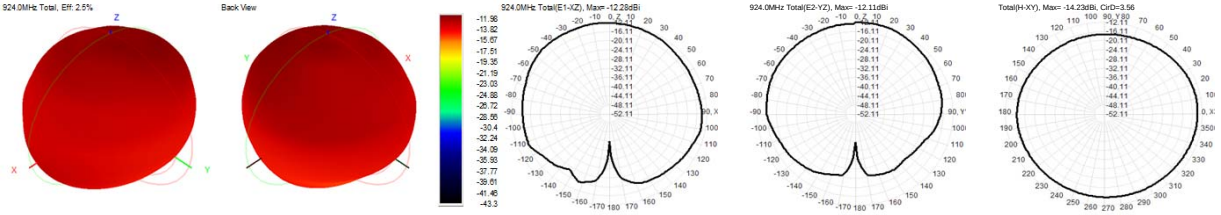

914.0MHz Total, Eff: 2.4%
Back View
914.0MHz Total(E1-XZ), Max= -12.05dBi
914.0MHz Total(E2-YZ), Max= -12.33dBi
Total(H-XY), Max= -15.18dBi, CirD=2.40

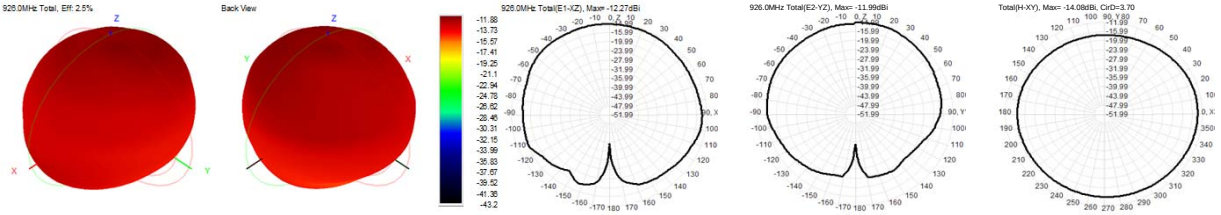

916.0MHz Total. Eff: 2.4%
Back View
916.0MHz Total(E1-XZ), Max= -12.09dBi
916.0MHz Total(E2-YZ), Max= -12.22dBi
Total(H-XY), Max= -14.99dBi, CirD=2.65


918.0MHz Total, Eff: 2.5%
Back View
918.0MHz Total(E1-XZ), Max= -12.14dBi
918.0MHz Total(E2-YZ), Max= -12.17dBi
Total(H-XY), Max= -14.80dBi, CirD=2.90


920.0MHz Total, Eff: 2.5%
Back View
920.0MHz Total(E1-XZ), Max= -12.18dBi
920.0MHz Total(E2-YZ), Max= -12.15dBi
Total(H-XY), Max= -14.60dBi, CirD=3.14


922.0MHz Total, Eff: 2.5%
Back View
922.0MHz Total(E1-XZ), Max= -12.26dBi
922.0MHz Total(E2-YZ), Max= -12.20dBi
Total(H-XY), Max= -14.41dBi, CirD=3.36


924.0MHz Total, Eff: 2.5%
Back View
924.0MHz Total(E1-XZ), Max= -12.28dBi
924.0MHz Total(E2-YZ), Max= -12.11dBi
Total(H-XY), Max= -14.23dBi, CirD=3.56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Back View
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926.0MHz Total(E2-YZ), Max= -11.99dBi
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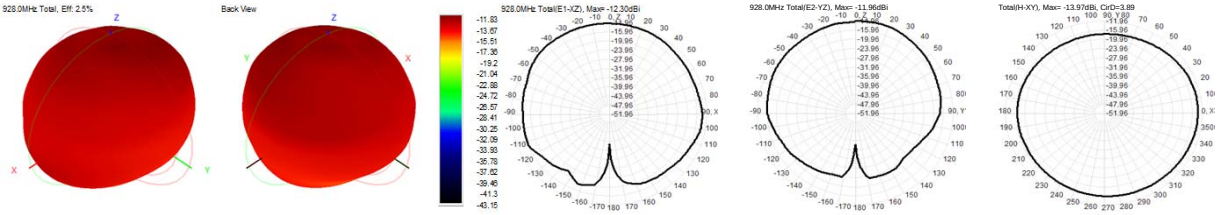
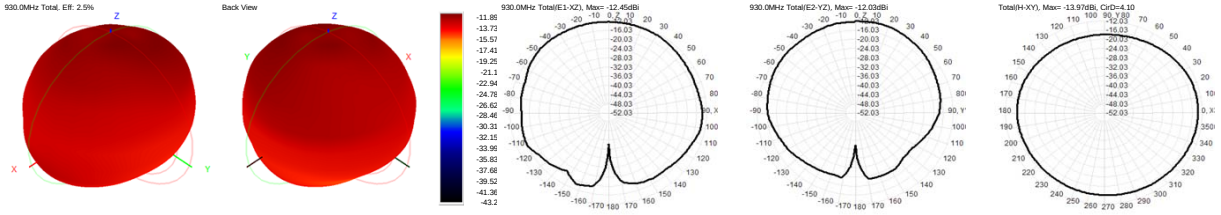
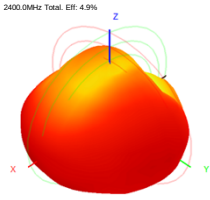
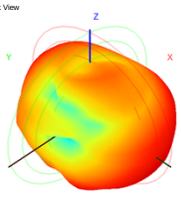

928.0MHz Total, Eff: 2.5%
Back View
928.0MHz Total(E1-XZ), Max= -12.30dBi
928.0MHz Total(E2-YZ), Max= -11.96dBi
Total(H-XY), Max= -13.97dBi, CirD=3.89

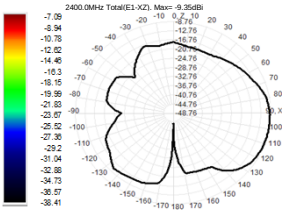

930.0MHz Total, Eff: 2.5%
Back View
930.0MHz Total(E1-XZ), Max= -12.45dBi
930.0MHz Total(E2-YZ), Max= -12.03dBi
Total(H-XY), Max= -13.97dBi, CirD=4.10

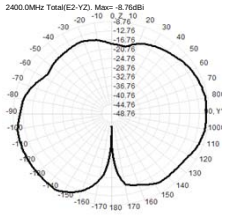
2400.0MHz Total, Eff: 4.9%

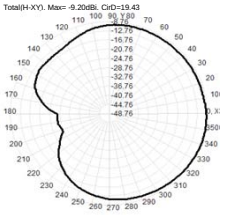


Back View

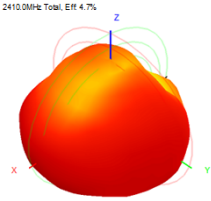




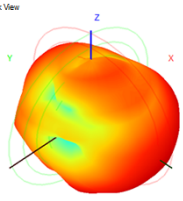


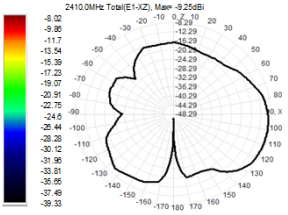


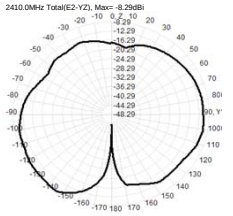
2410.0MHz Total, Eff: 4.7%

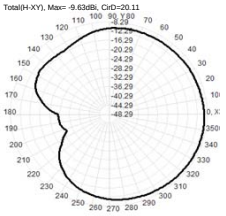


Back View

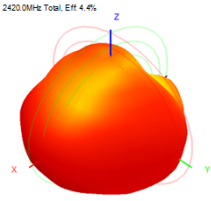




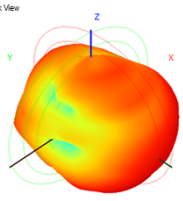


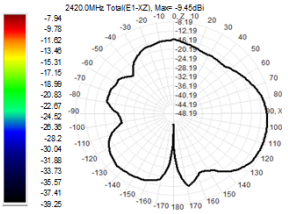


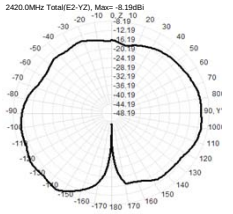
2420.0MHz Total, Eff: 4.4%

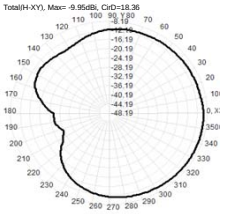


Back View

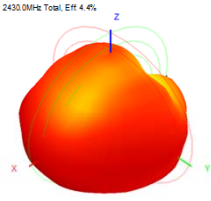




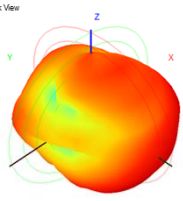


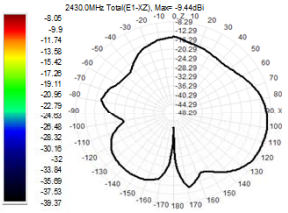


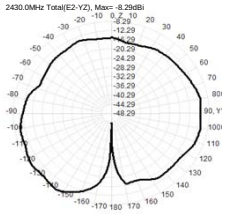
2430.0MHz Total, Eff: 4.4%

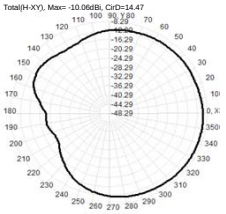


Back View

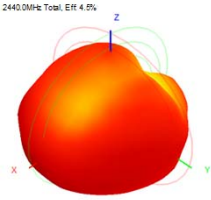




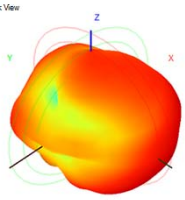


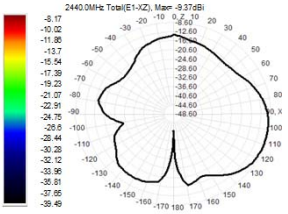


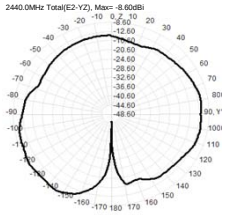
2440.0MHz Total, Eff: 4.6%

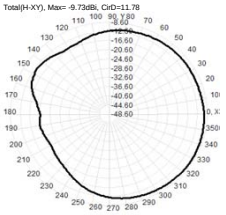


Back View

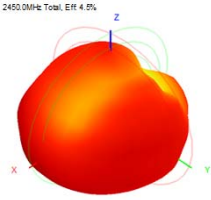




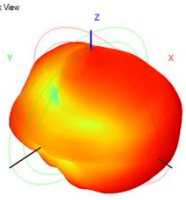


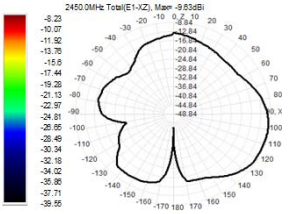


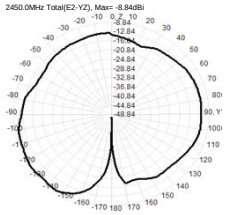
2450.0MHz Total, Eff: 4.5%

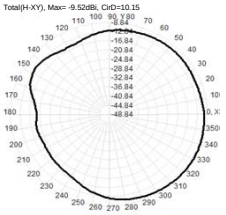


Back View

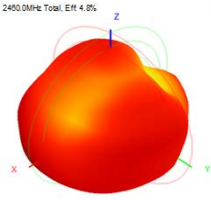




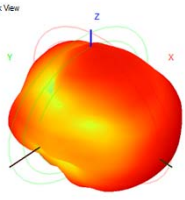


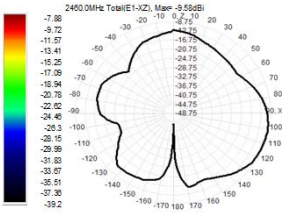


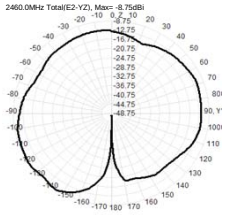
2460.0MHz Total, Eff: 4.8%

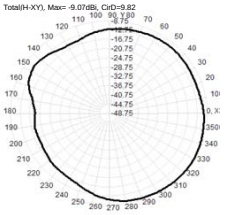


Back View

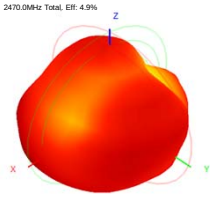




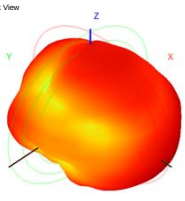


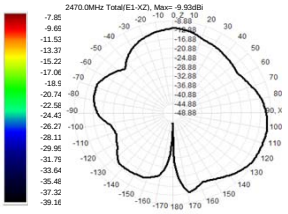


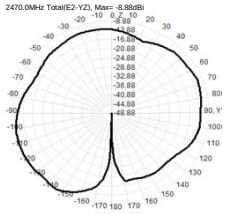
2470.0MHz Total, Eff: 4.9%

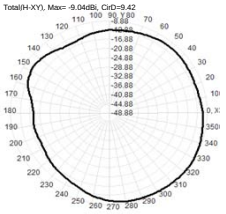


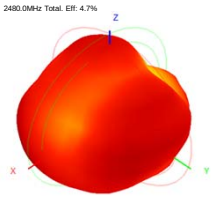
Back View

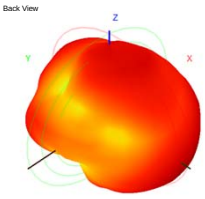


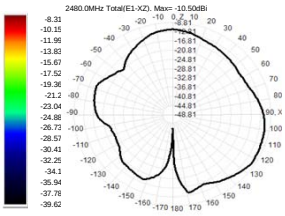




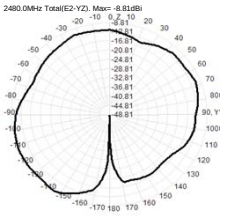


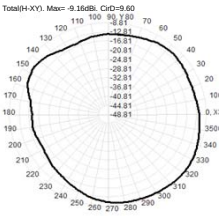

2480.0MHz Total, Eff: 4.7%
Z
X
Y

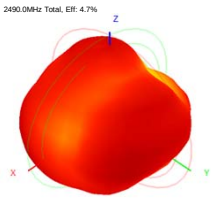

Back View
Z
Y
X

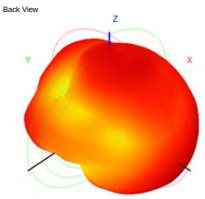

-8.31
-10.15
-11.96
-13.83
-15.67
-17.52
-19.36
-21.2
-23.04
-24.88
-26.73
-28.57
-30.41
-32.25
-34.1
-35.94
-37.78
-39.62

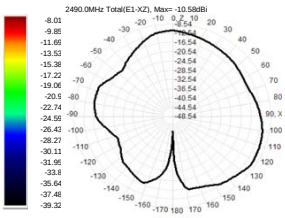
2480.0MHz Total(E1-XZ), Max= -10.50dBi


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

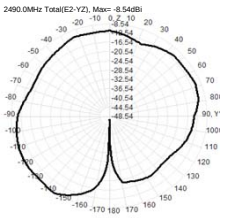

Total(H-XY), Max= -9.16dBi, CirD=9.60

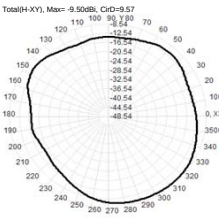

2490.0MHz Total, Eff: 4.7%
Z
X
Y

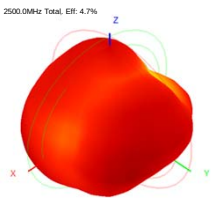

Back View
Z
Y
X

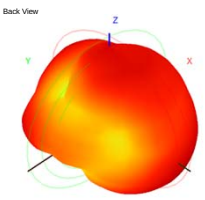

-8.01
-9.85
-11.66
-13.53
-15.38
-17.22
-19.06
-20.9
-22.74
-24.58
-26.43
-28.27
-30.11
-31.95
-33.8
-35.64
-37.48
-39.32

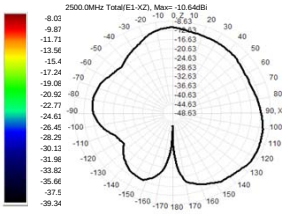
2490.0MHz Total(E1-XZ), Max= -10.58dBi


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

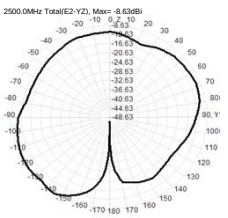

Total(H-XY), Max= -9.50dBi, CirD=9.57

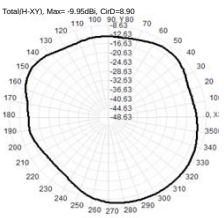

2500.0MHz Total, Eff: 4.7%
Z
X
Y

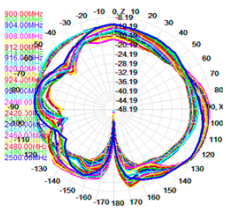

Back View
Z
Y
X

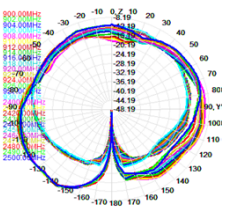

-8.03
-9.87
-11.71
-13.56
-15.4
-17.24
-19.08
-20.92
-22.77
-24.61
-26.45
-28.25
-30.13
-31.98
-33.82
-35.66
-37.5
-39.34

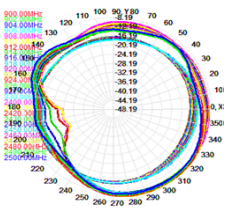
2500.0MHz Total(E1-XZ), Max= -10.64dBi


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


Total(H-XY), Max= -9.95dBi, CirD=8.90


900.00MHz
904.00MHz
908.00MHz
912.00MHz
916.00MHz
920.00MHz
924.00MHz
2400.00MHz
2440.00MHz
2480.00MHz
2500.00MHz


900.00MHz
904.00MHz
908.00MHz
912.00MHz
916.00MHz
920.00MHz
924.00MHz
2400.00MHz
2440.00MHz
2480.00MHz
2500.00MHz


900.00MHz
904.00MHz
908.00MHz
912.00MHz
916.00MHz
920.00MHz
924.00MHz
2400.00MHz
2440.00MHz
2480.00MHz
2500.00MHz