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Dongguan UB Electronics Co.,Ltd
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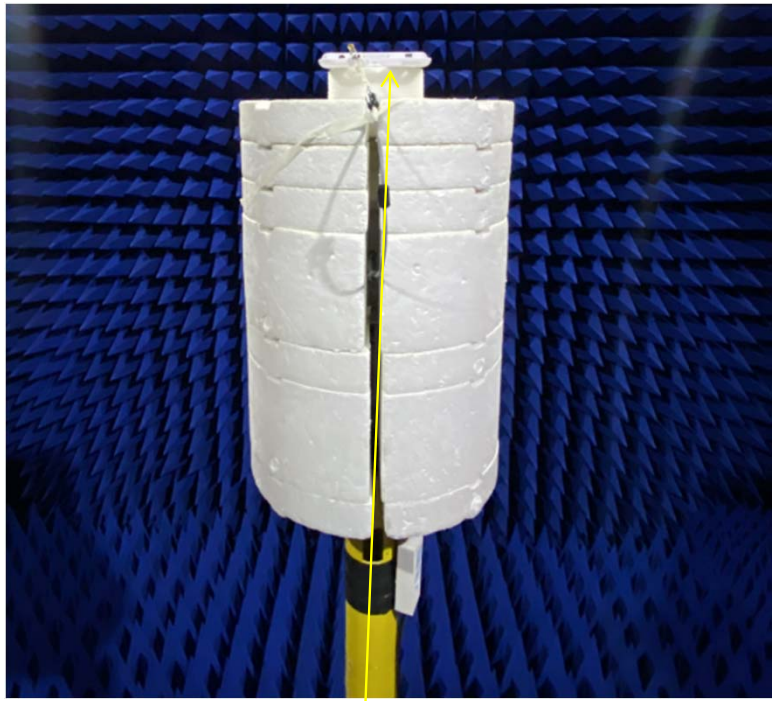
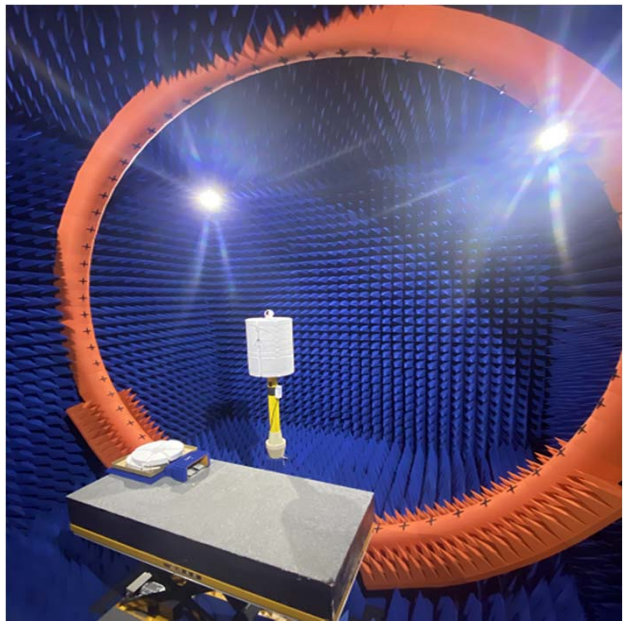
Antenna Study

- **Client Name:Marukan Co.,Ltd**
- **Project Name:Automatic Cat Litter Box**
- **Debugging frequency band: 2400-2500**
- **Valuation date： 2023.10.25**

PCB Antenna & Internal Antenna

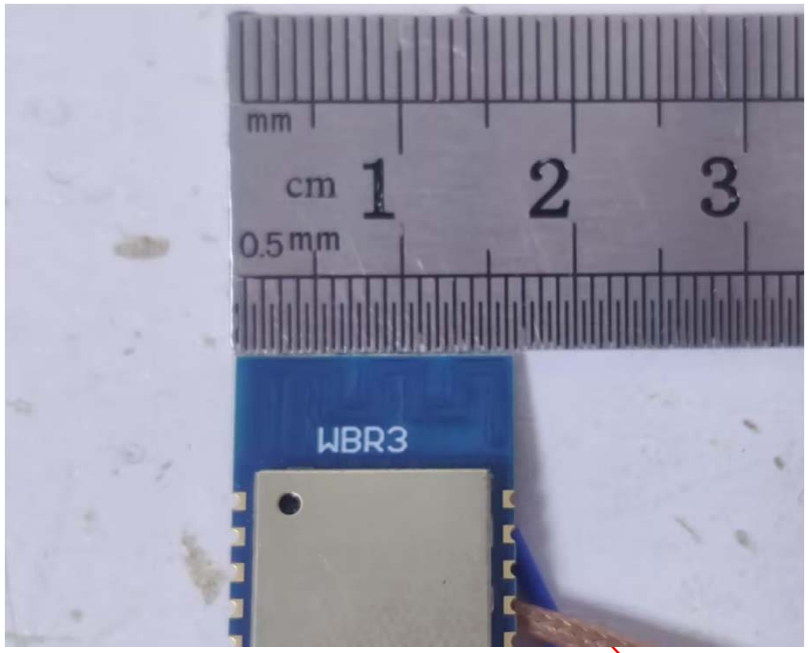


Testing environment



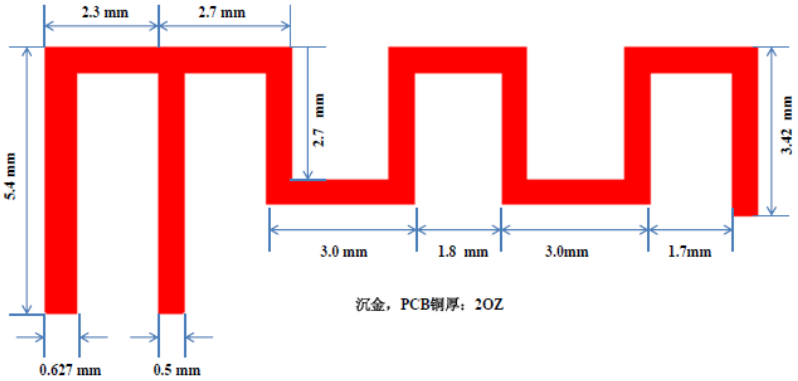
Testing 3D microwave darkroom(6m*6m*6m)

PCB Antenna & Internal Antenna & Antenna Dimension

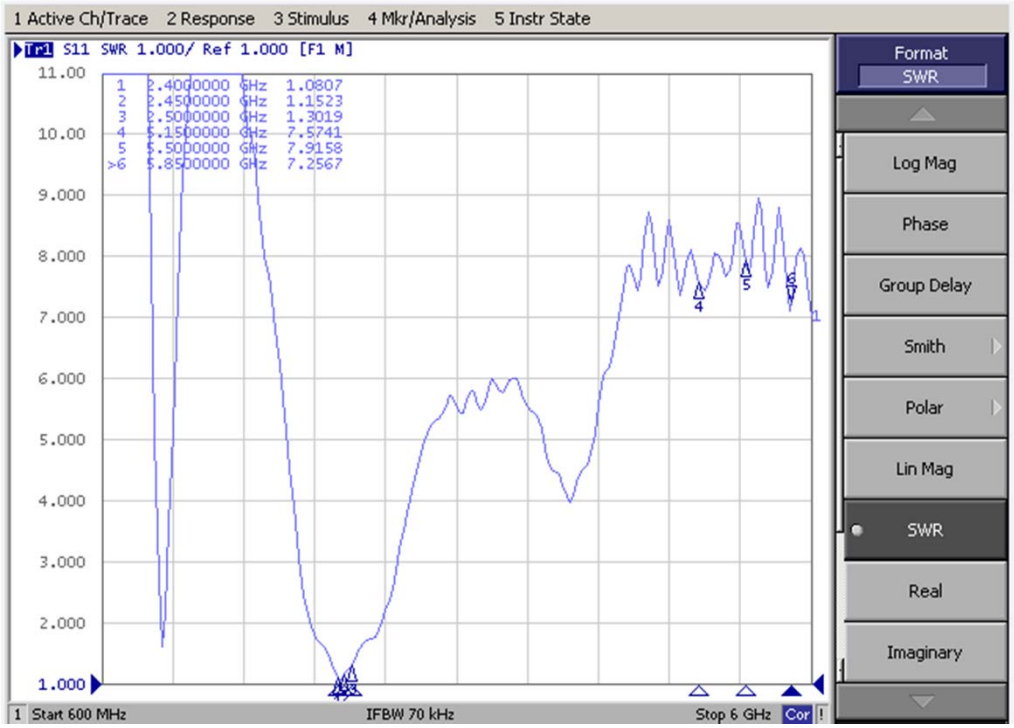


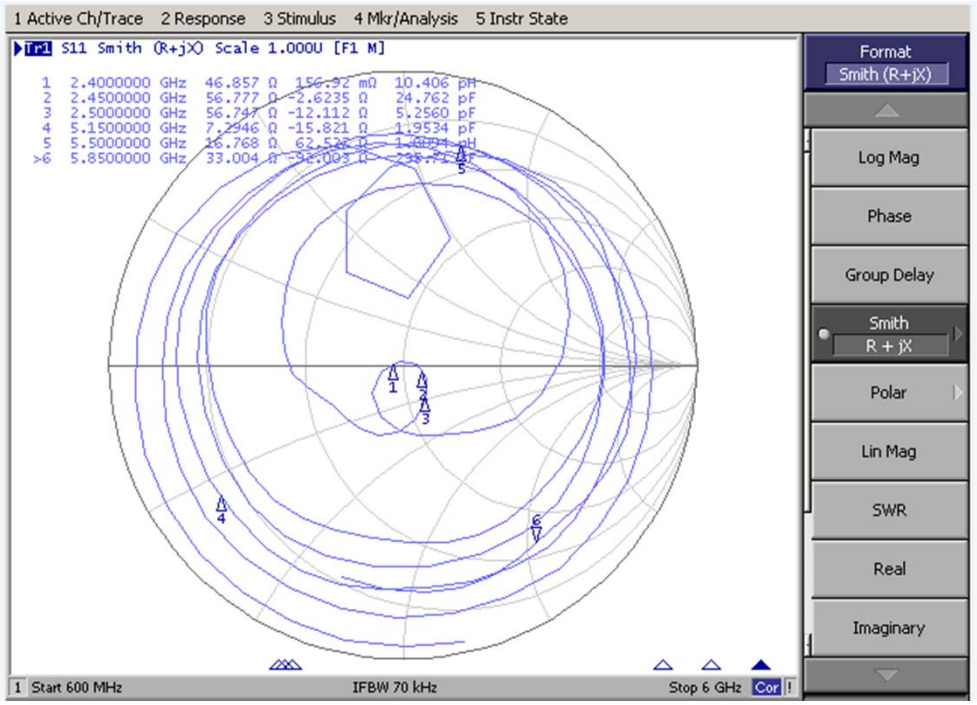
Antenna 15x6mm

- Antenna name: PCB Antenna
- Covers： 2.4G



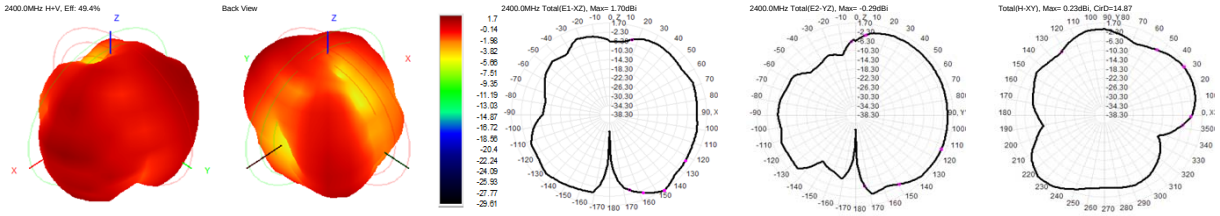
S Parameter_Return Loss&VSW（BT）

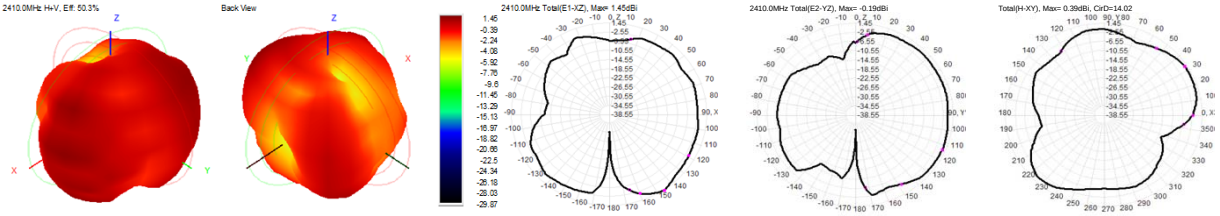


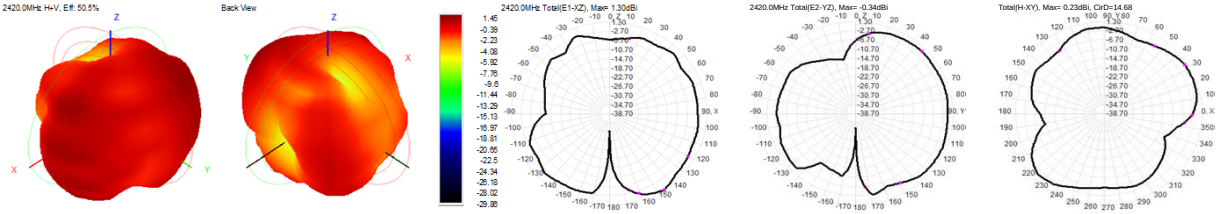


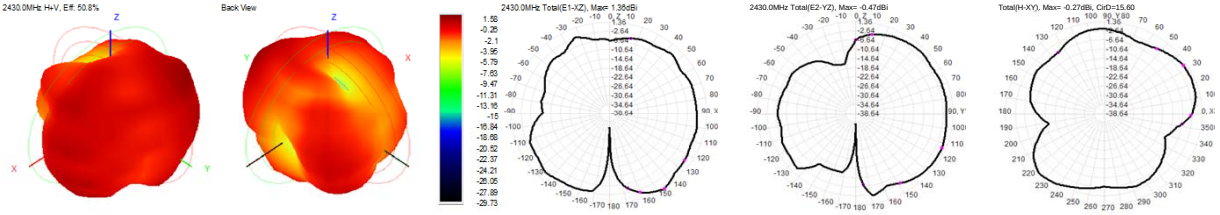
Efficiency and Gain-Smith

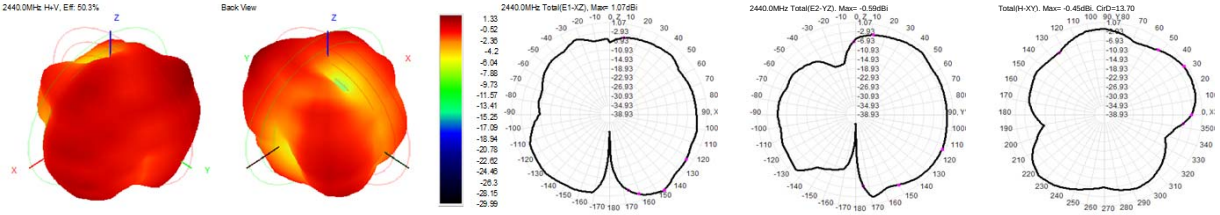
Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Gain (dBi)	2.70	2.45	2.45	2.58	3.00	2.46	2.89	2.99	2.76	2.42	2.31
Efficiency (%)	49.45	50.27	50.52	50.78	50.29	51.09	52.22	51.99	50.42	49.80	49.29

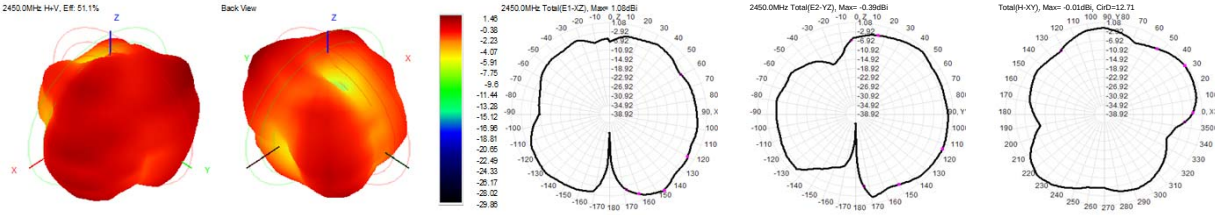

2400.0MHz H+V, Eff: 49.4%
Back View
2400.0MHz Total(E1-XZ), Max= 1.70dBi
2400.0MHz Total(E2-YZ), Max= -0.29dBi
Total(H-XY), Max= 0.23dBi, CirD=14.87

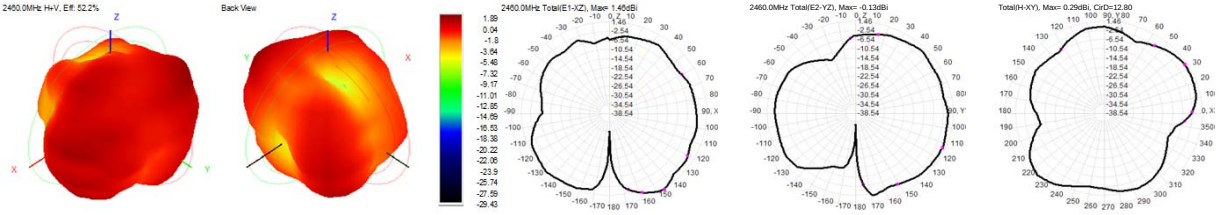

2410.0MHz H+V, Eff: 50.3%
Back View
2410.0MHz Total(E1-XZ), Max= 1.45dBi
2410.0MHz Total(E2-YZ), Max= -0.19dBi
Total(H-XY), Max= 0.39dBi, CirD=14.02

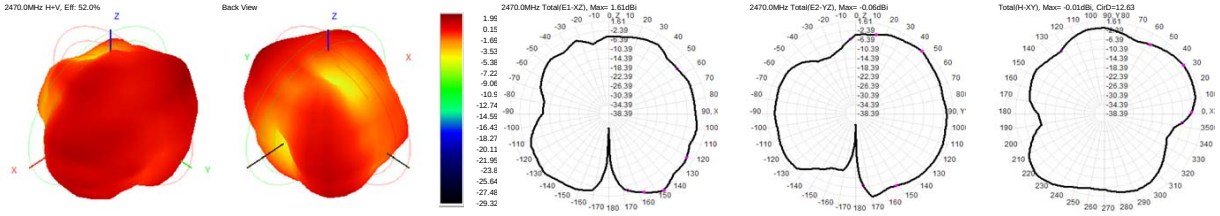

2420.0MHz H+V, Eff: 50.5%
Back View
2420.0MHz Total(E1-XZ), Max= 1.30dBi
2420.0MHz Total(E2-YZ), Max= -0.34dBi
Total(H-XY), Max= 0.23dBi, CirD=14.68

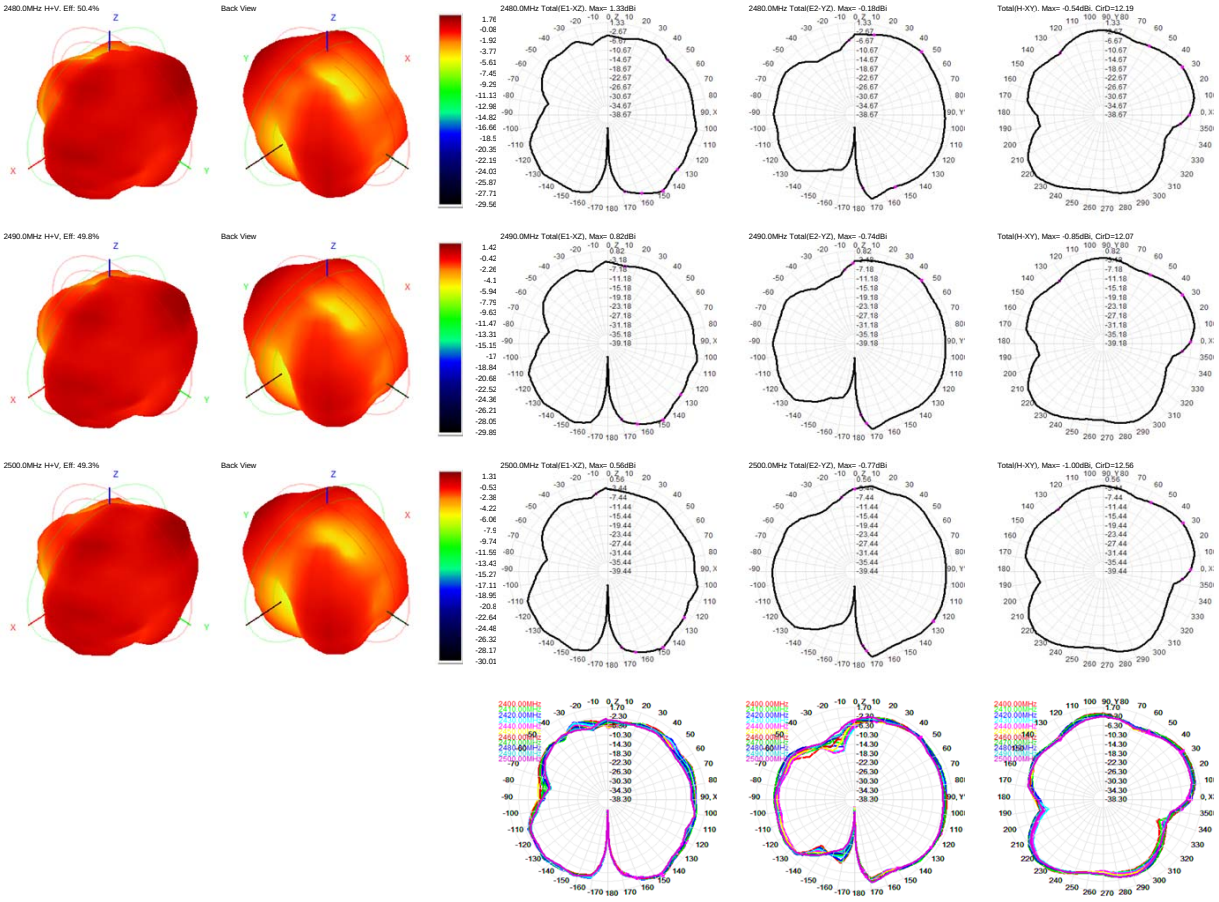

2430.0MHz H+V, Eff: 50.8%
Back View
2430.0MHz Total(E1-XZ), Max= 1.36dBi
2430.0MHz Total(E2-YZ), Max= -0.47dBi
Total(H-XY), Max= -0.27dBi, CirD=15.60


2440.0MHz H+V, Eff: 50.3%
Back View
2440.0MHz Total(E1-XZ), Max= 1.07dBi
2440.0MHz Total(E2-YZ), Max= -0.59dBi
Total(H-XY), Max= -0.45dBi, CirD=13.70


2450.0MHz H+V, Eff: 51.1%
Back View
2450.0MHz Total(E1-XZ), Max= 1.08dBi
2450.0MHz Total(E2-YZ), Max= -0.39dBi
Total(H-XY), Max= -0.01dBi, CirD=12.71


2460.0MHz H+V, Eff: 52.2%
Back View
2460.0MHz Total(E1-XZ), Max= 1.46dBi
2460.0MHz Total(E2-YZ), Max= -0.13dBi
Total(H-XY), Max= 0.29dBi, CirD=12.80


2470.0MHz H+V, Eff: 52.0%
Back View
2470.0MHz Total(E1-XZ), Max= 1.61dBi
2470.0MHz Total(E2-YZ), Max= -0.06dBi
Total(H-XY), Max= -0.01dBi, CirD=12.63


2480.0MHz H+V, Eff: 50.4%
Back View
2480.0MHz Total(E1-XZ), Max= 1.33dBi
2480.0MHz Total(E2-YZ), Max= -0.18dBi
Total(H-XY), Max= -0.54dBi, CirD=12.19
2490.0MHz H+V, Eff: 49.8%
Back View
2490.0MHz Total(E1-XZ), Max= 0.82dBi
2490.0MHz Total(E2-YZ), Max= -0.74dBi
Total(H-XY), Max= -0.85dBi, CirD=12.07
2500.0MHz H+V, Eff: 49.3%
Back View
2500.0MHz Total(E1-XZ), Max= 0.56dBi
2500.0MHz Total(E2-YZ), Max= -0.77dBi
Total(H-XY), Max= -1.00dBi, CirD=12.56
2400.00MHz
2420.00MHz
2440.00MHz
2460.00MHz
2480.00MHz
2500.00MHz