Shenzhen Etheta Communication

Technology Co., Ltd.

（Shenzhen R&D）

Customer：TCL Communication Ltd.

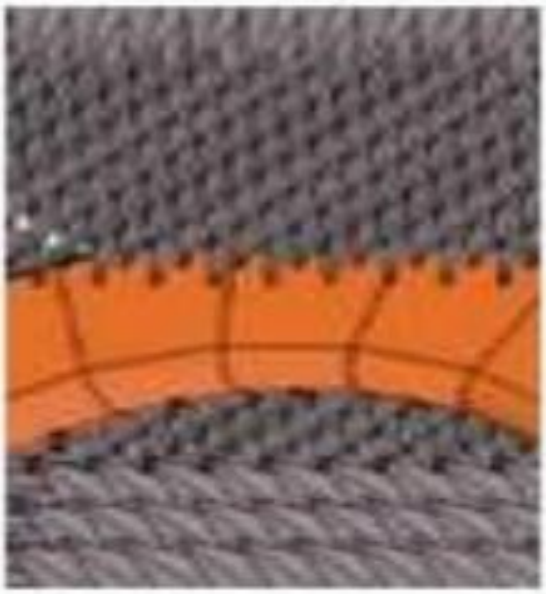
Project name：Optimus

Product name：Optimus- cellular &wifi antenna

Material：FPC

Date：2024.03.04

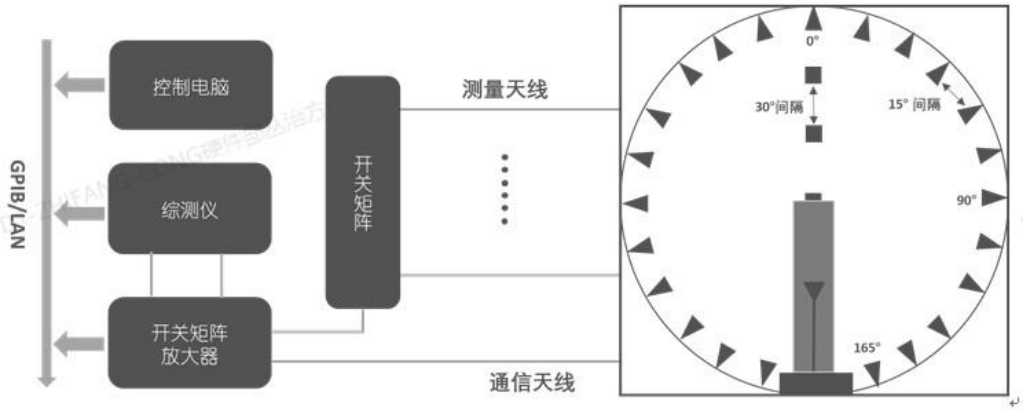
1: chamber room introduction and testing scope



Our company has a number of OTA test darkrooms, ranging from 400MHz to 8.5ghz, which can provide passive test and active test (including OTA overall 2G,3G,4G,5GFR test, WiFi multi-mode test, GPS active test, Bluetooth active test, which can provide antenna gain and efficiency. 2D orientation and apple chart analysis and upper and lower hemisphere efficiency values, mutual disturbance correlation coefficient test items

WIFI a/b/g/n/ac/a

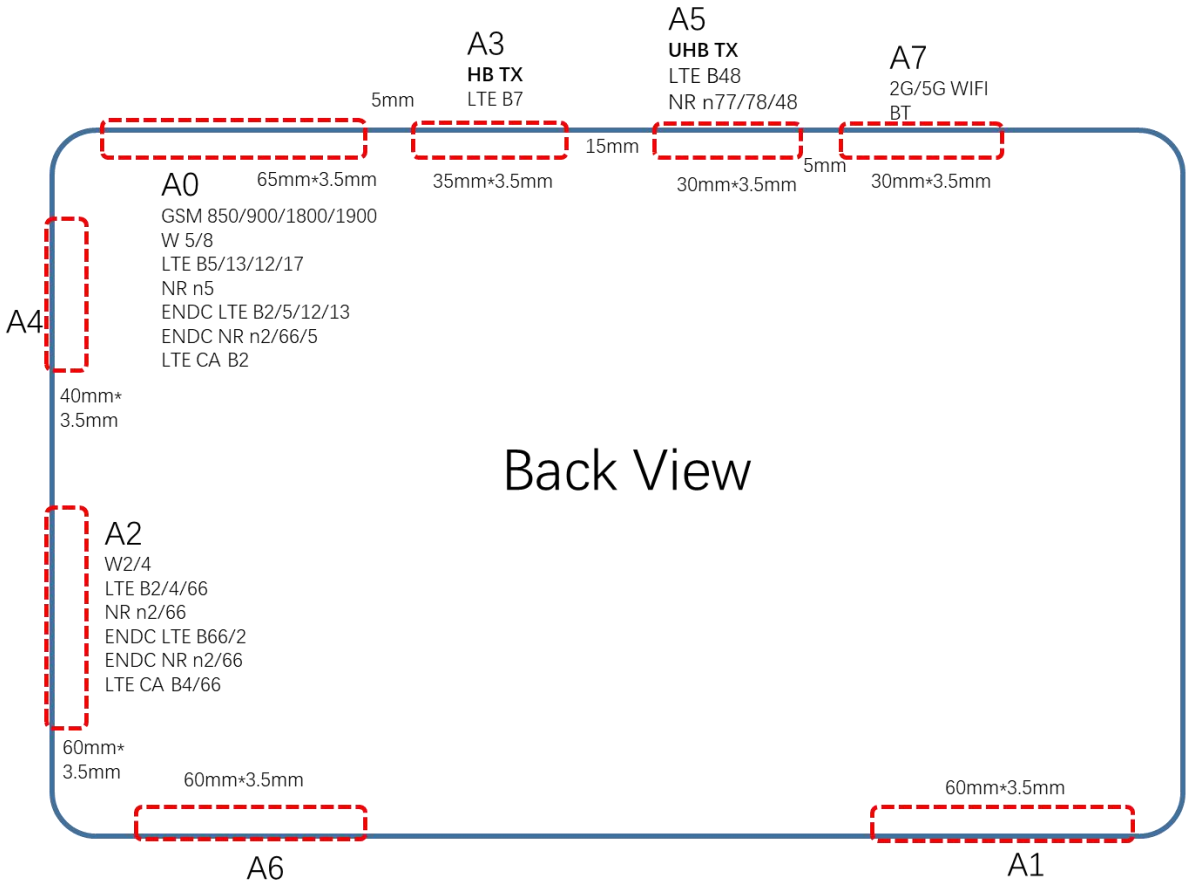
2： test system introduction:



The figure above shows the connection and control process between the darkroom of our company and the testing system and computer. The testing system has the characteristics of accurate, fast and simple testing
The operation interface is simple and humanized

3： Test result

Antenna placement:



ANTO_900M		
Frequency(MHz)	AVG Gain	efficiency (%)
880	-5.55	28%
890	-5.76	27%
900	-6.21	24%
910	-6.73	21%
920	-7.23	19%
930	-7.84	16%
940	-8.56	14%
950	-9.24	12%
960	-9.96	10%
AVG	-7.5	19%

ANTO_850M		
Frequency(MHz)	AVG Gain	efficiency（%）
820	-4.57	35%
830	-3.82	42%
840	-3.28	47%
850	-3.12	49%
860	-3.37	46%
870	-3.88	41%
880	-4.64	34%
890	-5.38	29%
900	-4.57	35%
AVG	-4.0	32%

ANTO_770M		
Frequency(MHz)	AVG Gain	efficiency（%）
820	-5.08	31%
830	-5.41	29%
840	-5.50	28%
AVG	-5.3	29%

ANTO_700M		
Frequency(MHz)	AVG Gain	efficiency（%）
700	-8.71	13%
710	-8.30	15%
720	-7.83	16%
730	-7.24	19%
740	-6.87	21%
750	-6.33	23%
760	-6.01	25%
AVG	-7.3	19%

ANT0_1800M		
Frequency(MHz)	AVG Gain	efficiency (%)
1700	-4.72	34%
1720	-5.02	31%
1740	-5.31	29%
1760	-5.50	28%
1780	-5.61	27%
1800	-5.71	27%
1820	-5.88	26%
1840	-6.00	25%
1860	-5.98	25%
1880	-6.43	23%
AVG	-5.50	27%

ANT0_1900M		
Frequency(MHz)	AVG Gain	efficiency (%)
1840	-5.43	29%
1860	-4.71	34%
1880	-4.16	38%
1900	-3.89	41%
1920	-3.81	42%
1940	-3.89	41%
1960	-4.11	39%
1980	-4.45	36%
2000	-4.83	33%
AVG	-4.2	37%

ANT2_1800M

Frequency(MHz)	AVG Gain	efficiency (%)
1700	-4.05	39%
1720	-4.30	37%
1740	-4.00	40%
1760	-3.83	41%
1780	-3.89	41%
1800	-4.14	39%
1820	-4.55	35%
1840	-4.84	33%
1860	-5.32	29%
1880	-5.96	25%
AVG	-4.50	36%

ANT2_1900M		
Frequency(MHz)	AVG Gain	efficiency (%)
1840	-3.5	44%
1860	-3.2	47%
1880	-3.3	46%
1900	-3.4	45%
1920	-3.6	44%
1940	-4.0	39%
1960	-4.3	37%
1980	-4.0	40%
2000	-3.8	41%
AVG	-3.7	42%

ANT3_2500M		
Frequency(MHz)	AVG Gain	efficiency (%)
2500	-5.08	31%
2520	-5.08	31%
2540	-4.82	33%
2560	-4.29	37%
2580	-4.29	37%
2600	-4.86	33%
2620	-4.89	32%
2640	-4.31	37%
2660	-4.48	36%

2680	-4.69	34%
2700	-5.08	31%
AVG	-4.30	34%

ANT5_3300M		
Frequency(MHz)	AVG Gain	efficiency (%)
3300	-4.01	40%
3340	-3.59	44%
3380	-3.47	45%
3420	-3.28	47%
3460	-3.23	48%
3500	-3.40	46%
3540	-3.40	46%
3580	-3.37	46%
3620	-3.53	44%
3660	-3.68	43%
3700	-4.04	39%
3740	-4.32	37%
3780	-4.27	37%
3820	-4.32	37%
3860	-4.43	36%
3900	-4.56	35%
3940	-4.69	34%
3980	-4.96	32%
4020	-4.91	32%
4060	-4.93	32%
4100	-5.50	28%
4140	-5.90	26%
4180	-6.30	23%
AVG	-4.20	38%

ANT7_1575M		
Frequency(MHz)	AVG Gain	efficiency (%)
1550	-4.37	37%
1560	-4.63	34%
1570	-4.94	32%
1580	-5.06	31%
1590	-5.31	29%
1600	-5.74	27%
1610	-6.22	24%
1620	-6.73	21%
1630	-7.14	19%
1640	-7.67	17%
1650	-8.28	15%
1660	-8.74	13%
AVG	-6.4	24%

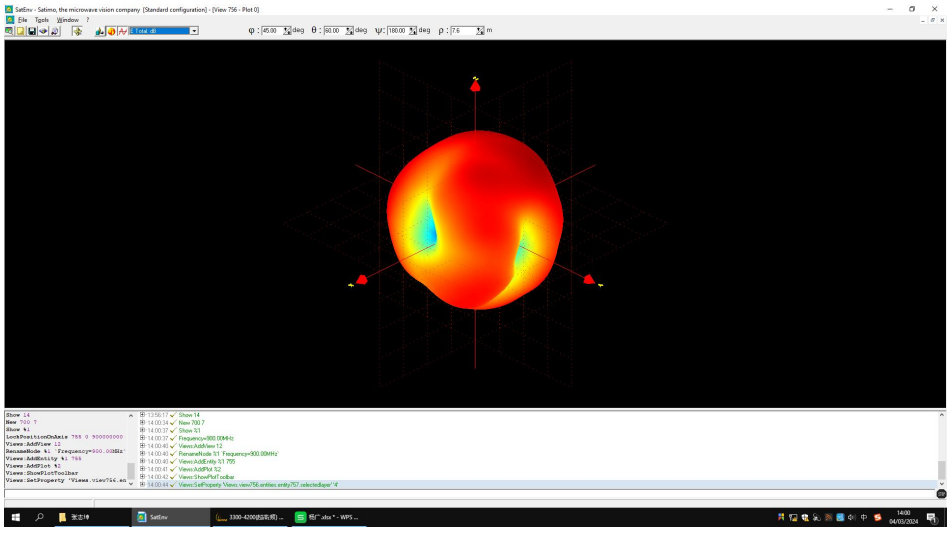
ANT7_2500M		
Frequency(MHz)	AVG Gain	efficiency (%)
2400	-4.13	39%
2410	-4.15	38%
2420	-4.33	37%
2430	-4.39	36%
2440	-4.51	35%
2450	-4.75	34%
2460	-4.81	33%
2470	-4.90	32%
2480	-5.02	32%
2490	-5.05	31%
2500	-5.13	31%
AVG	-4.5	34%

ANT7_5000M		
Frequency(MHz)	AVG Gain	efficiency (%)
5150	-4.15	28%
5200	-4.17	28%
5250	-4.39	29%

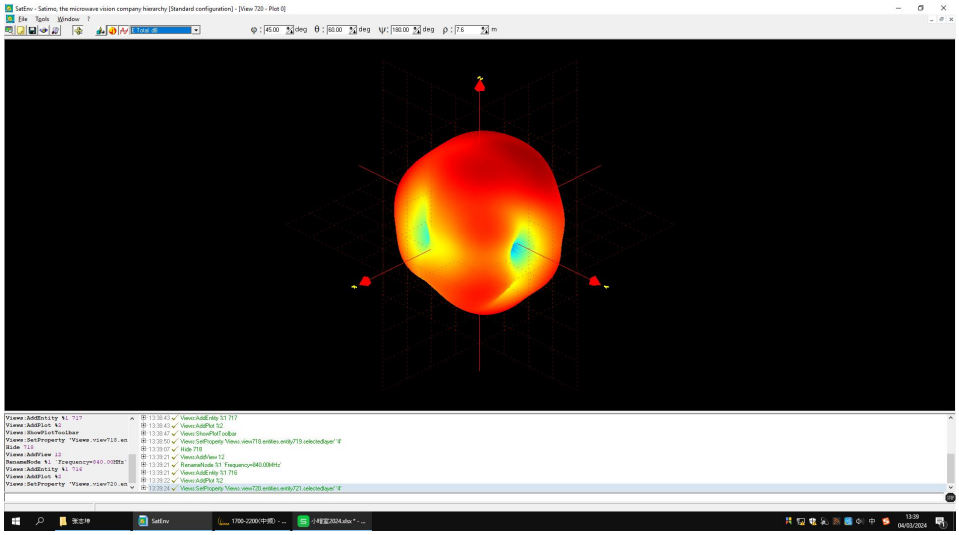
5300	-4.46	29%
5350	-4.60	29%
5400	-4.88	32%
5450	-5.01	31%
5500	-5.14	28%
5550	-5.32	27%
5600	-5.40	26%
5650	-5.49	26%
5700	-5.60	24%
5750	-5.46	23%
5800	-5.32	23%
5850	-5.40	21%
AVG	-5.2	30%

3D Pattern

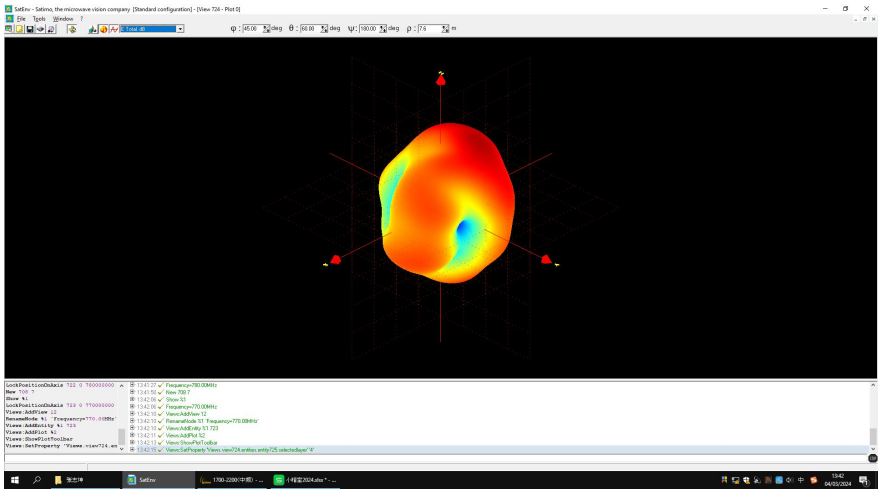
ANT 0_ 900M (Frequency=900MHz)



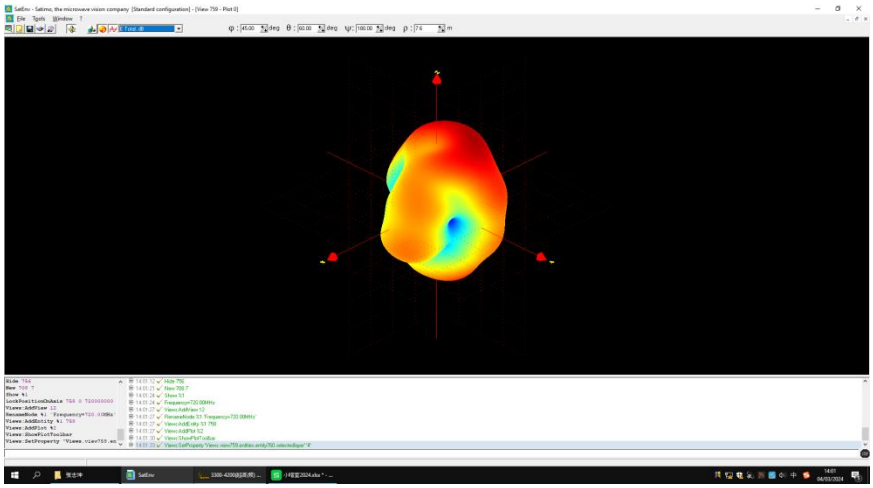
ANT 0_ 850M (Frequency=840MHz)



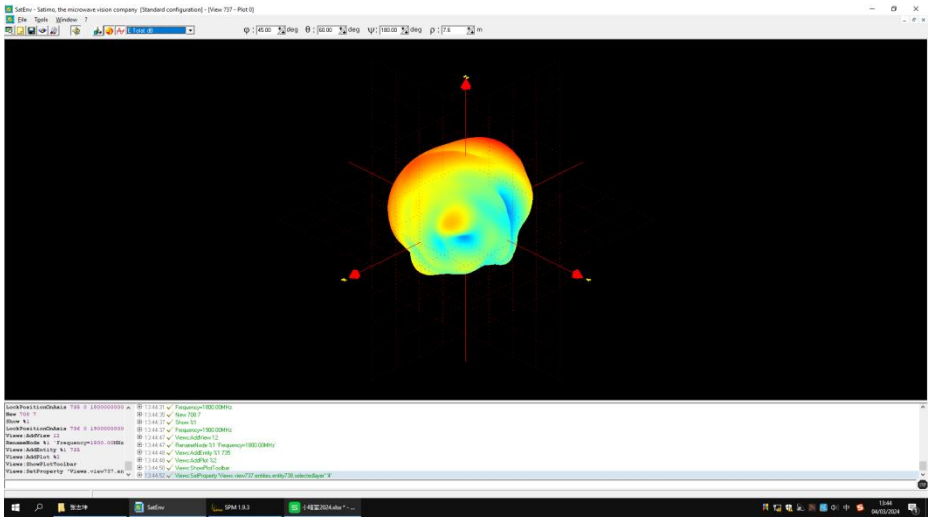
ANT 0_ 770M (Frequency=770MHz)



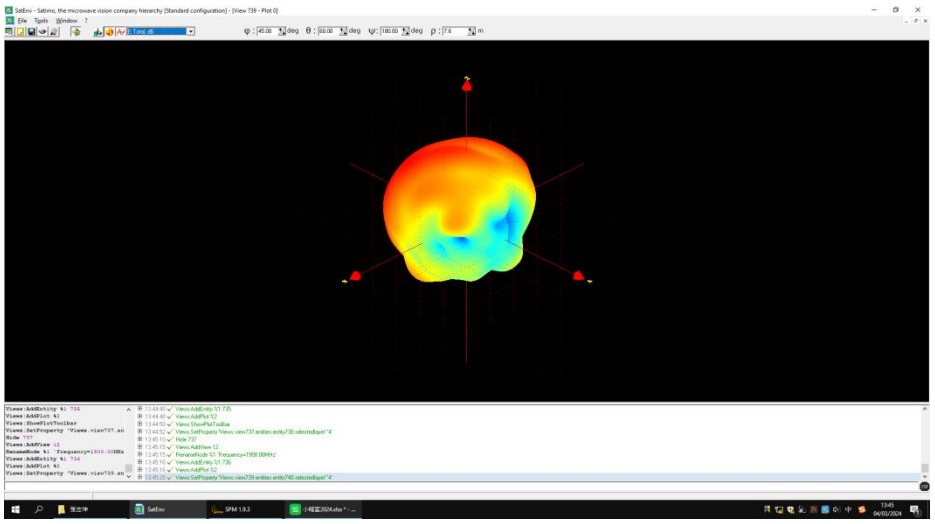
ANT 0_ 700M (Frequency=720MHz)



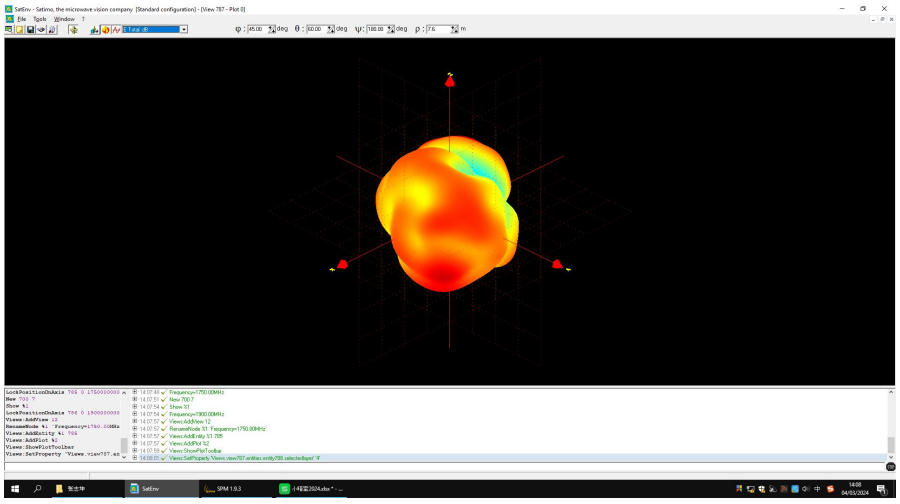
ANT 0_ 1800M (Frequency=1800MHz)



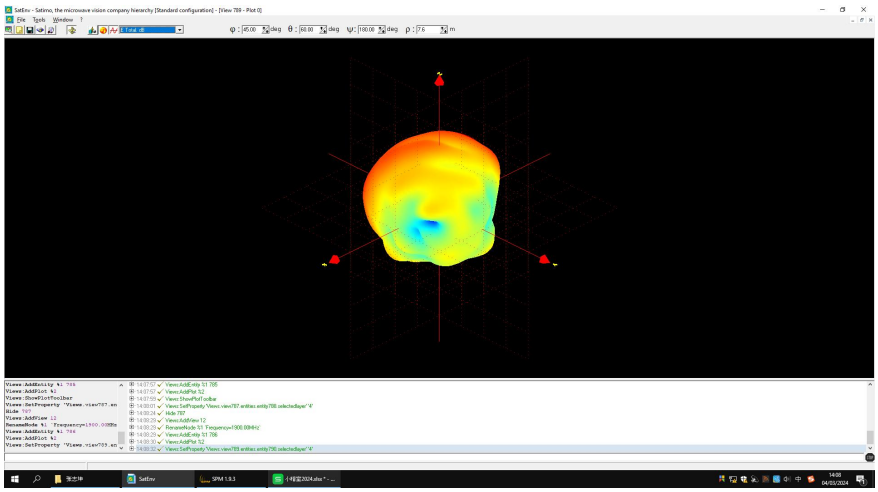
ANT 0_ 1900M (Frequency=1900MHz)



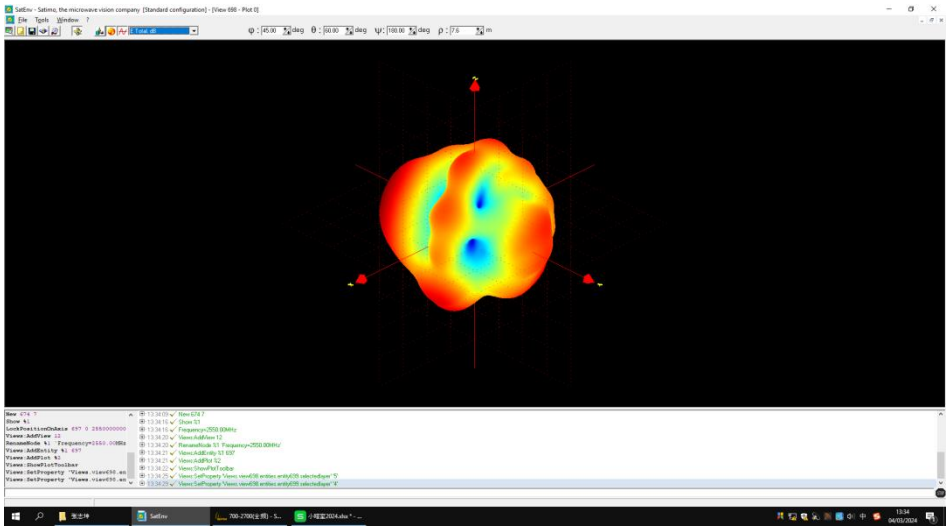
ANT 2_ 1800M (Frequency=1750MHz)



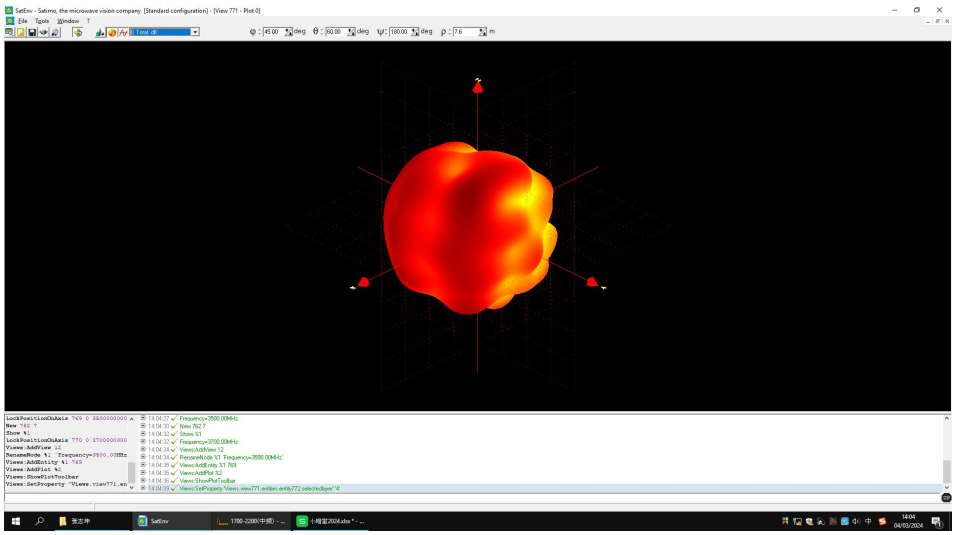
ANT 2_ 1900M (Frequency=1900MHz)



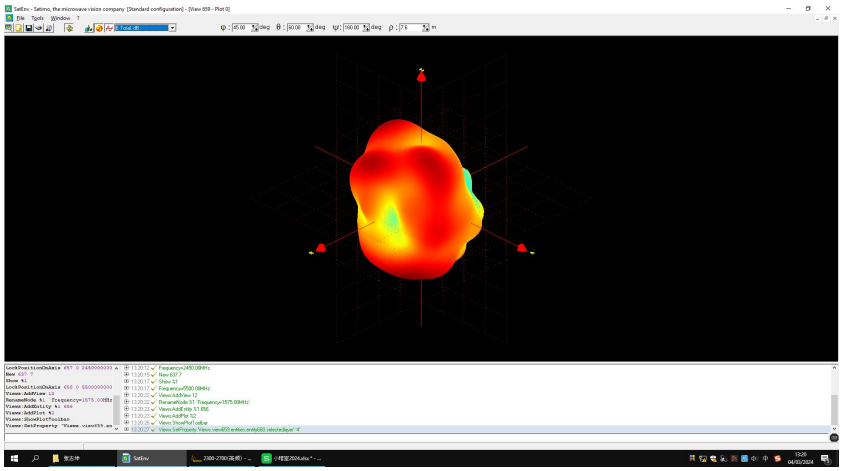
ANT 3_ 2500M (Frequency=2550MHz)



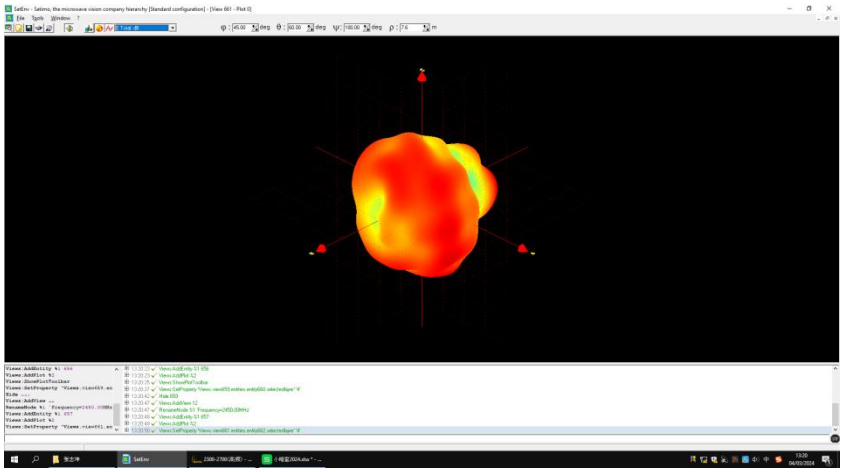
ANT 5_ 3300M (Frequency=3500MHz)



ANT 7_ 1575M (Frequency=1575MHz)



ANT 7_ 2400M (Frequency=2450MHz)



ANT 0_ 5000M (Frequency=5500MHz)