

Shenzhen Etheta Communication  
Technology Co., Ltd.  
(Shenzhen R&D)

Customer: TCL Communication Ltd.

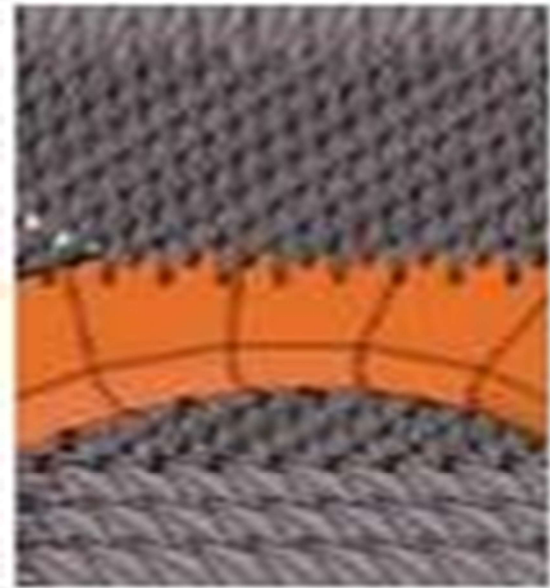
Project name: Encore TF

Product name: Encore TF- cellular &wifi antenna

Material: FPC

Date: 2022.12.23

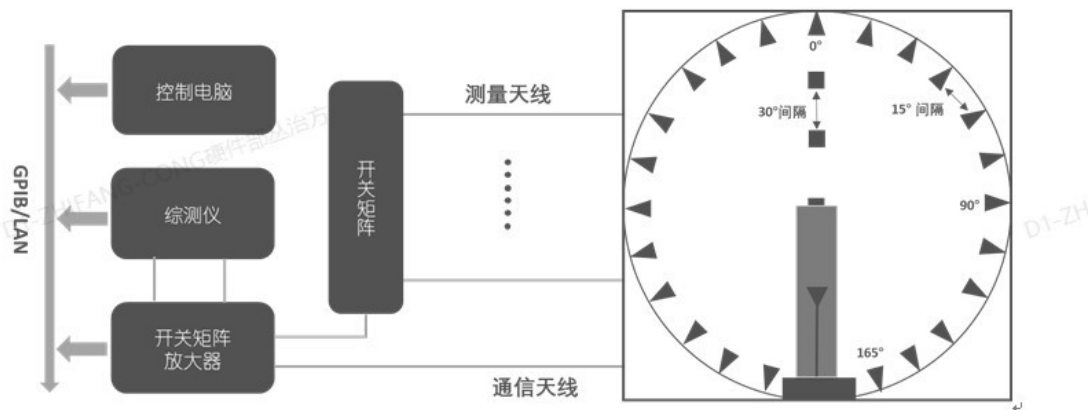
1: chamber room introduction and testing scope



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/ax

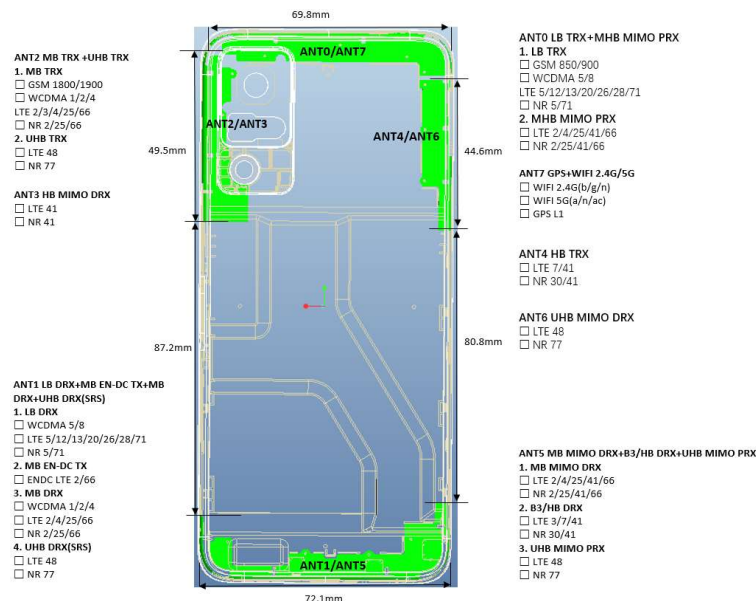
### 2: test system introduction:



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_800M			
Frequency (M Hz)	AVG Gain	efficiency (%)	Peak Gain
800	-8.50	14.11	-5.28
810	-7.67	17.09	-4.21
820	-7.07	19.65	-3.34
830	-6.63	21.74	-2.7
840	-6.42	22.79	-2.25
850	-6.47	22.53	-2.06
860	-6.86	20.61	-2.31
870	-7.35	18.39	-2.81
880	-7.62	17.3	-3.36
890	-7.87	16.32	-3.82
900	-8.59	13.85	-4.56
910	-9.42	11.43	-5.34
AVG	-7.54	17.98	-3.50

ANTO_700M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
700	-8.86	13.01	-5.06
710	-7.65	17.2	-4.32
720	-7.31	18.58	-4.09
730	-7.59	17.41	-4.3
740	-8.08	15.57	-4.59
750	-8.63	13.71	-5.1
760	-9.31	11.71	-5.72
770	-	9.96	-6.47
780	-	8.63	-7
790	-	7.55	-7.38
800	-	6.48	-7.84
AVG	-9.20	12.71	-5.62

ANTO_780M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
730	-8.06	15.63	-4.45
740	-8.91	12.84	-5.11

750	-7.54	17.62	-4.35
760	-6.75	21.15	-3.56
770	-6.63	21.74	-3.41
780	-6.79	20.95	-3.45
790	-7.14	19.3	-3.6
800	-7.64	17.22	-3.9
AVG	-7.43	18.31	-4.00

ANTO_680M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
660	-6.60	21.85	-3.77
670	-6.75	21.13	-3.87
680	-6.98	20.06	-4.13
690	-7.31	18.59	-4.41
700	-7.57	17.49	-4.46
AVG	-7.04	19.82	-4.13

ANT2_1700M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
1700	-4.46	35.77	-1.84
1710	-4.40	36.3	-1.81
1720	-4.23	37.75	-1.66
1730	-4.09	38.97	-1.63
1740	-3.99	39.95	-1.65
1750	-3.91	40.69	-1.53
1760	-3.88	40.94	-1.27
1770	-3.85	41.16	-1.15
1780	-3.86	41.14	-1.12
1790	-3.87	41.01	-1.16
1800	-3.84	41.28	-1.2
1810	-3.87	41.02	-1.24
1820	-3.85	41.18	-1.19
1830	-3.90	40.69	-1.2
1840	-3.94	40.33	-1.17
1850	-4.13	38.61	-1.22
1860	-4.32	37.03	-1.22
1870	-4.53	35.24	-1.28
1880	-4.80	33.12	-1.33
AVG	-3.55	39.06	-1.36

ANT2_1900M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
1880	-4.80	33.12	-1.33
1890	-5.06	31.19	-1.39
1900	-5.19	30.27	-1.38
1910	-5.31	29.42	-1.4
1920	-5.60	27.53	-1.64
1930	-5.74	26.64	-1.79
1940	-5.88	25.84	-1.85
1950	-5.94	25.47	-1.89
1960	-6.10	24.56	-2.06
1970	-6.23	23.84	-2.32
1980	-6.38	23.02	-2.52
1990	-6.52	22.27	-2.53
AVG	-5.73	26.93	-1.84

ANT2_3300M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
3300	-5.08	31.04	-1.01
3350	-4.19	38.12	-0.41
3400	-3.83	41.42	-0.28
3450	-3.48	44.88	0.18
3500	-3.51	44.59	-0.05
3550	-3.76	42.07	-0.3
3600	-4.34	36.79	-0.96
3650	-5.19	30.29	-1.69
3700	-5.93	25.5	-2.34
3750	-6.55	22.12	-2.63
3800	-6.23	23.82	-2.22
3850	-6.28	23.57	-2.24
3900	-6.45	22.64	-1.72
3950	-6.57	22.02	-1.78
4000	-6.43	22.73	-2.35
AVG	-5.93	31.44	-1.32

ANT4_2500M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
2500	-5.14	30.59	-0.16
2510	-5.28	29.64	-0.41
2520	-5.47	28.37	-0.75
2530	-5.65	27.21	-1.13
2540	-5.79	26.36	-1.5
2550	-5.72	26.82	-1.67
2560	-5.45	28.5	-1.55
2570	-5.17	30.38	-1.39
2580	-4.97	31.84	-1.27
2590	-4.85	32.73	-1.23
2600	-4.84	32.82	-1.31
2610	-4.87	32.55	-1.45
2620	-4.89	32.44	-1.5
2630	-4.97	31.87	-1.68
2640	-5.13	30.72	-1.84
2650	-5.32	29.38	-2.09
2660	-5.66	27.18	-2.23
2670	-6.10	24.55	-2.35
2680	-6.45	22.63	-2.18
2690	-6.34	23.25	-1.61
AVG	-5.40	28.99	-1.47

ANT4_2350M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
2300	-1.53	28.37	-5.47
2310	-1.37	29.44	-5.31
2320	-1.28	30.48	-5.16
2330	-1.13	31.54	-5.01
2340	-1	32.09	-4.94
2350	-0.79	32.64	-4.86
2360	-0.63	33	-4.82
AVG	-1.10	31.08	-5.08

ANT1_1900M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
1880	-3.77	42.01	0.72
1890	-3.87	41.04	0.74

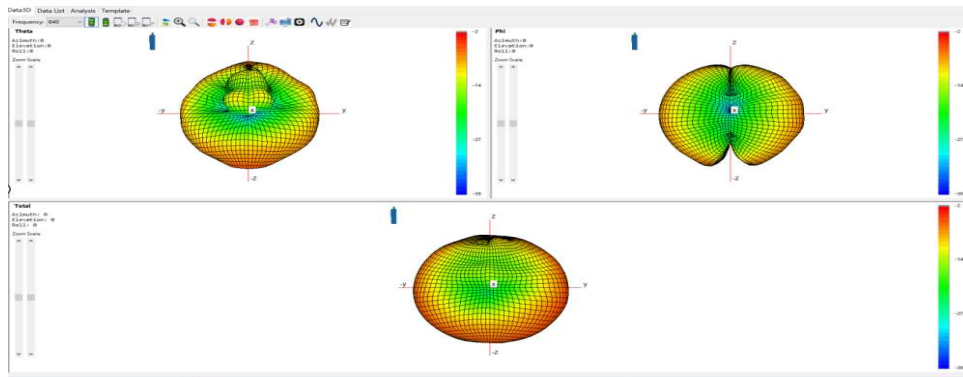
1900	-3.77	42.02	0.9
1910	-3.66	43.03	0.95
1920	-3.70	42.66	0.76
1930	-3.68	42.86	0.66
1940	-3.69	42.77	0.59
1950	-3.73	42.37	0.65
1960	-3.85	41.23	0.63
1970	-3.94	40.36	0.61
1980	-4.06	39.29	0.55
1990	-4.15	38.42	0.54
2000	-4.16	38.38	0.61
AVG	-3.85	41.26	0.69

ANT1_1700M			
Frequency (MHz)	AVG Gain	efficiency (%)	Peak Gain
1700	-5.26	29.79	-1.67
1710	-5.17	30.44	-1.35
1720	-4.97	31.85	-0.95
1730	-4.77	33.37	-0.64
1740	-4.58	34.8	-0.45
1750	-4.42	36.11	-0.38
1760	-4.31	37.07	-0.44
1770	-4.20	38.01	-0.6
1780	-4.12	38.74	-0.59
1790	-4.04	39.47	-0.49
1800	-3.91	40.69	-0.22
1810	-3.84	41.34	-0.05
1820	-3.69	42.74	0.16
1830	-3.62	43.46	0.31
1840	-3.51	44.56	0.47
1850	-3.58	43.9	0.46
1860	-3.58	43.87	0.6
1870	-3.67	42.96	0.67
1880	-3.77	42.01	0.72
AVG	-4.16	38.69	-0.23

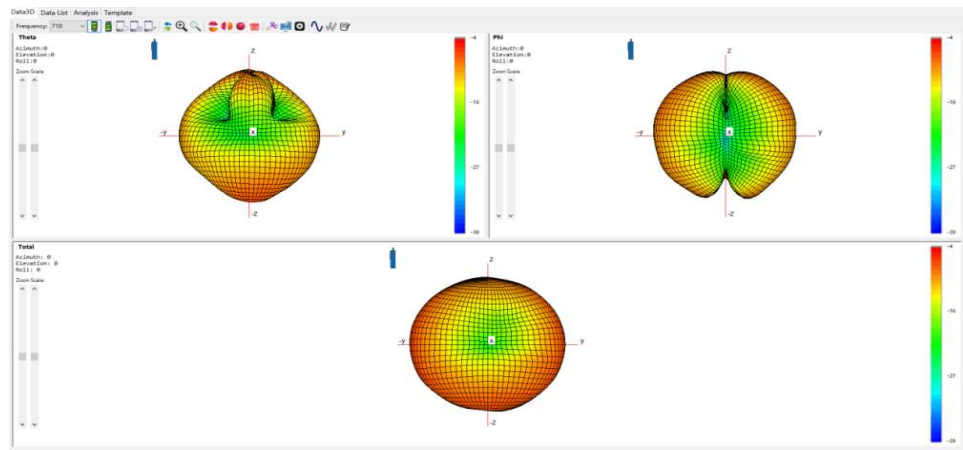


# 3D Pattern

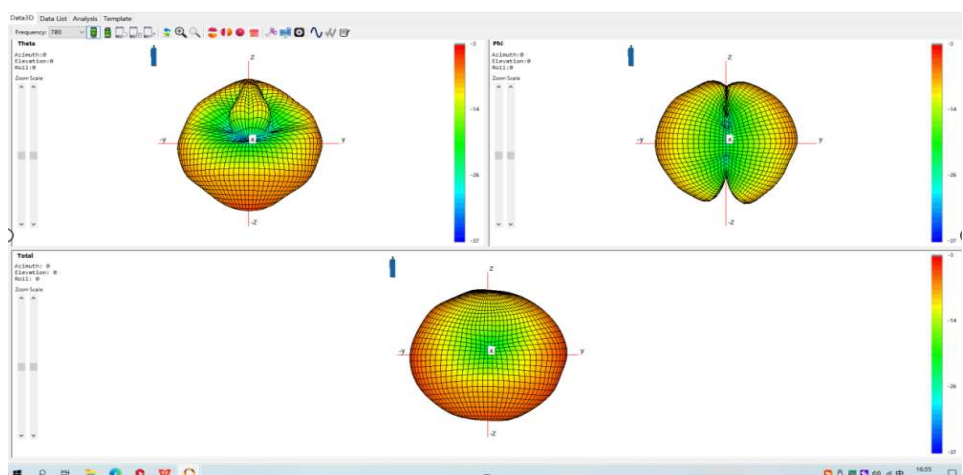
## ANT 0\_ 800M (Frequency=840MHz)



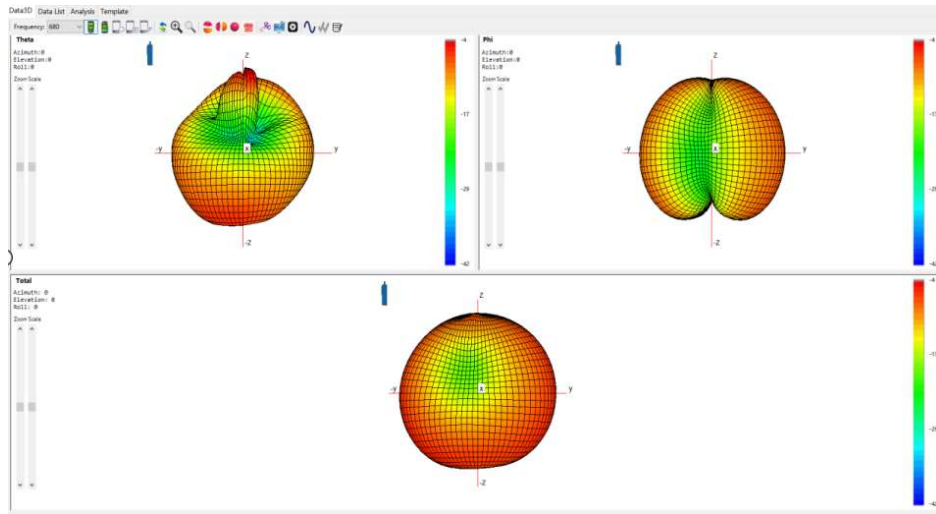
## ANT 0\_ 700M (Frequency=710MHz)



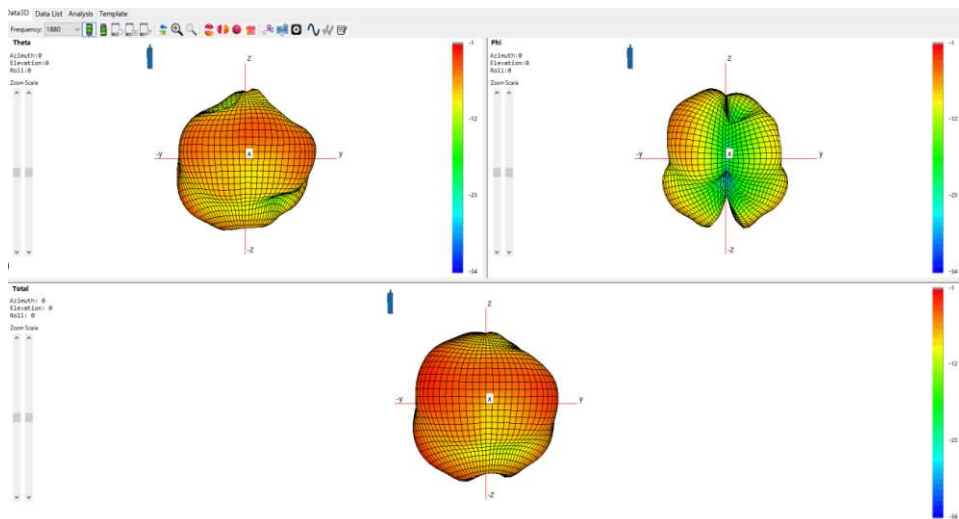
## ANT 0\_ 700M (Frequency=780MHz)



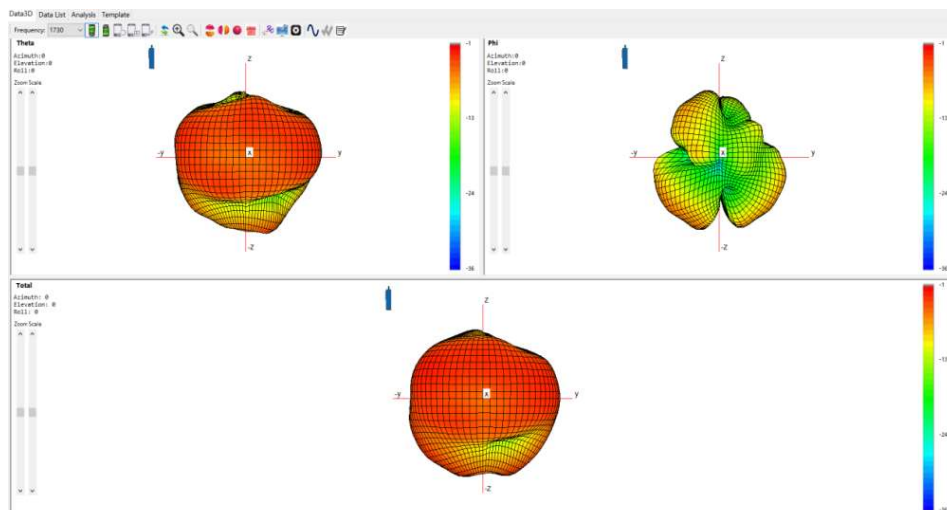
## ANT 0\_ 600M (Frequency=680MHz)



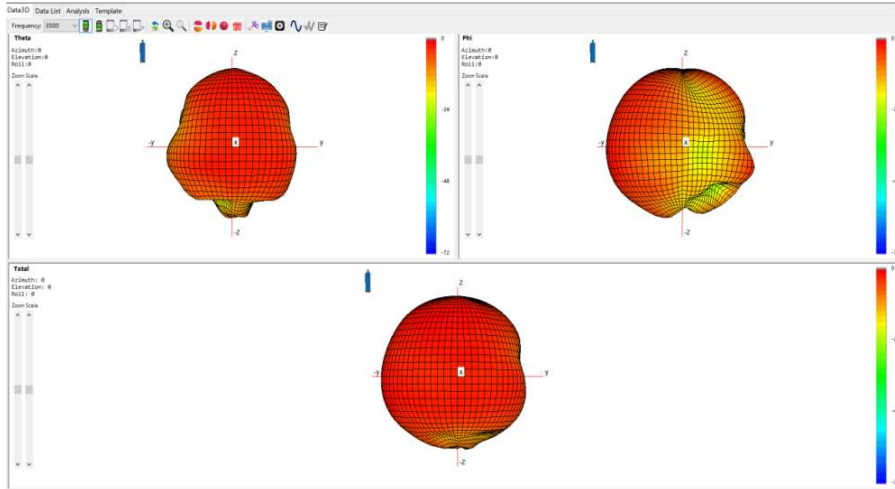
## ANT 2\_ 1900M (Frequency=1880MHz)



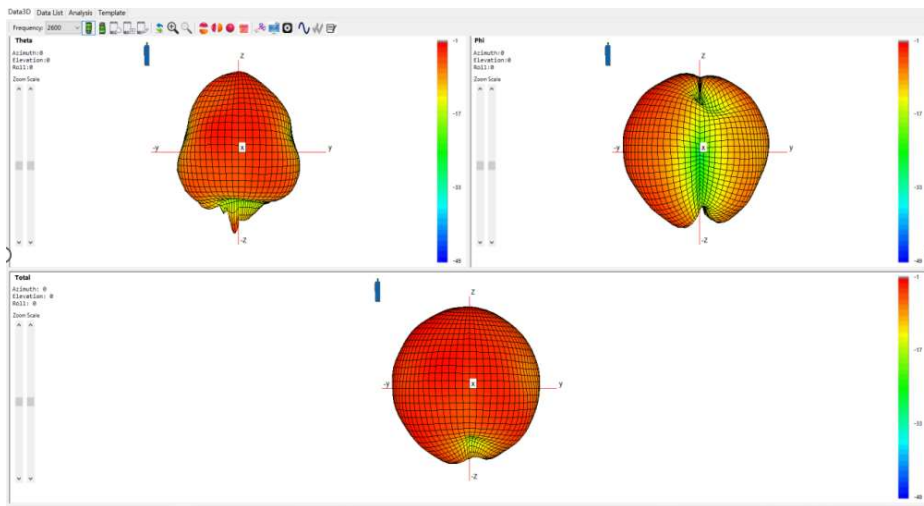
## ANT 2\_ 1700M (Frequency=1730MHz)



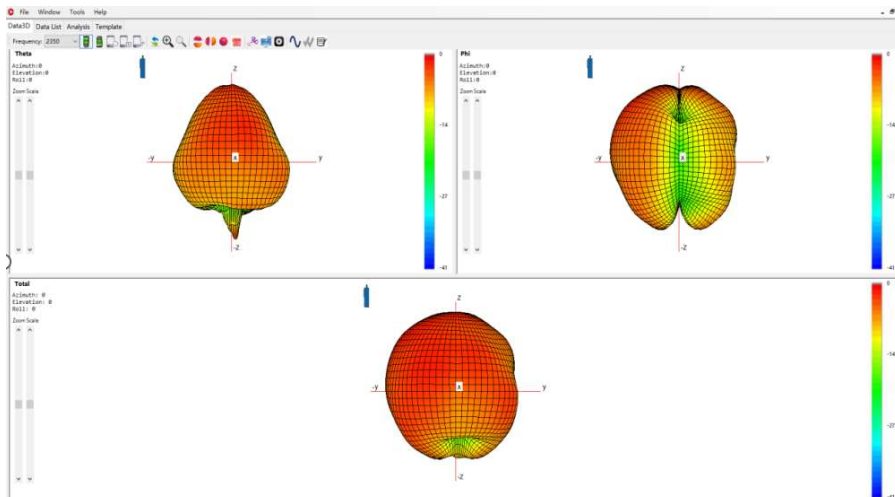
## ANT 2\_ 3300M (Frequency=3500MHz)



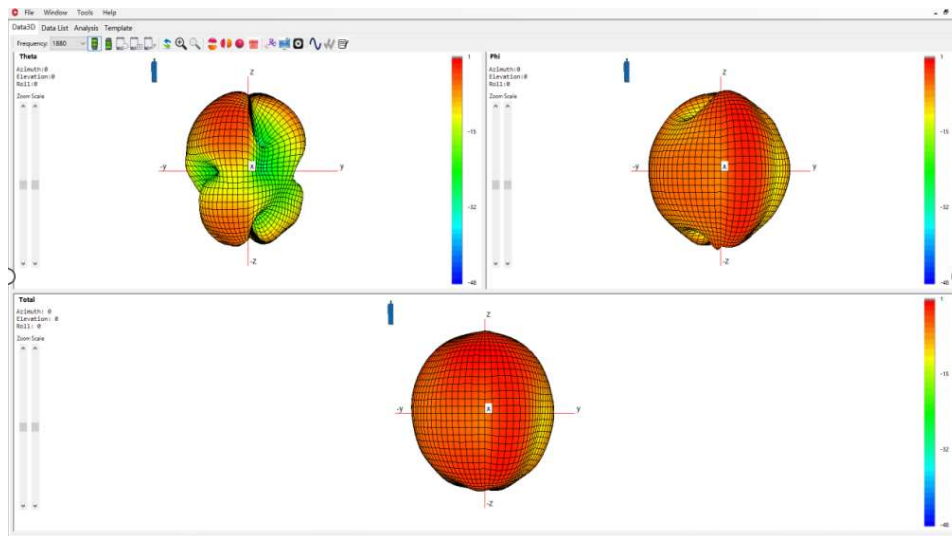
## ANT 4\_ 2500M (Frequency=2600MHz)



## ANT 4\_ 2300M (Frequency=2350MHz)



## ANT 1\_1900M (Frequency=1880MHz)



## ANT 1\_1700M (Frequency=1730MHz)

