

Antenna Testing Report

Customer : CND

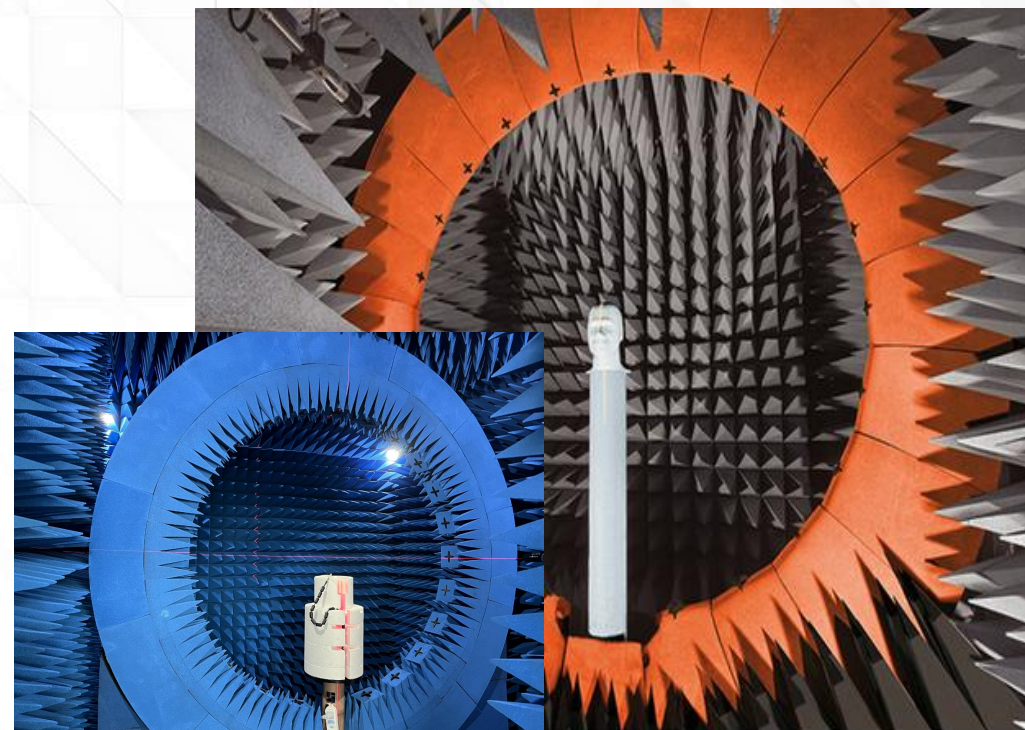
Project Name : TF channel1

Report version: March 19, 2025 A5

Author: Yuan Jiahua

catalogue:

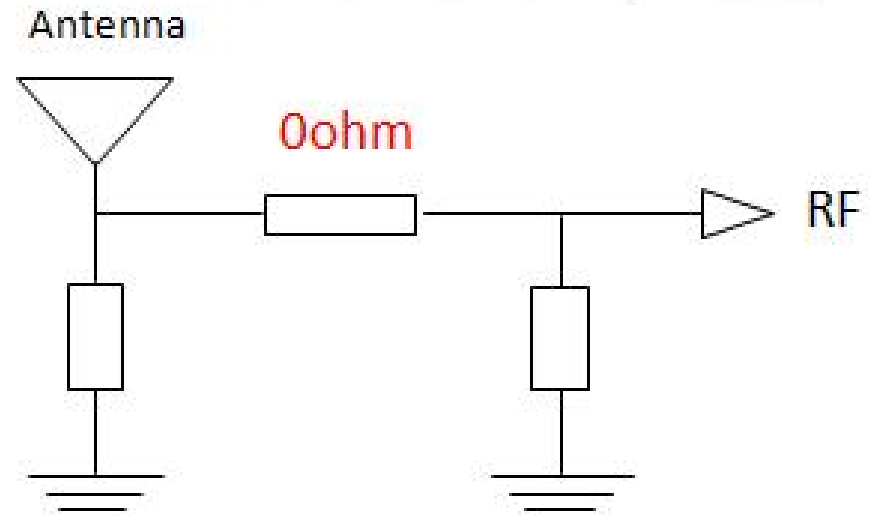
1. Project Overview
2. Report version
3. Company and test environment profile
4. Matching Circuit
5. Antenna assembly
6. Environment Specification
7. main antenna related data
8. wifi antenna related data
9. Sum up



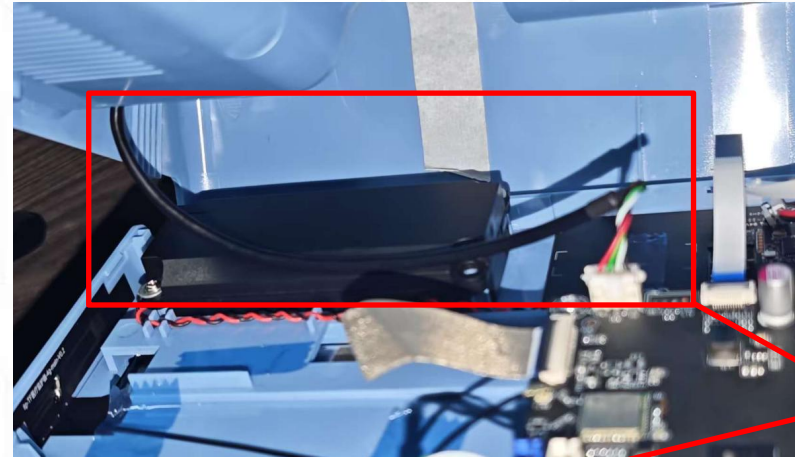
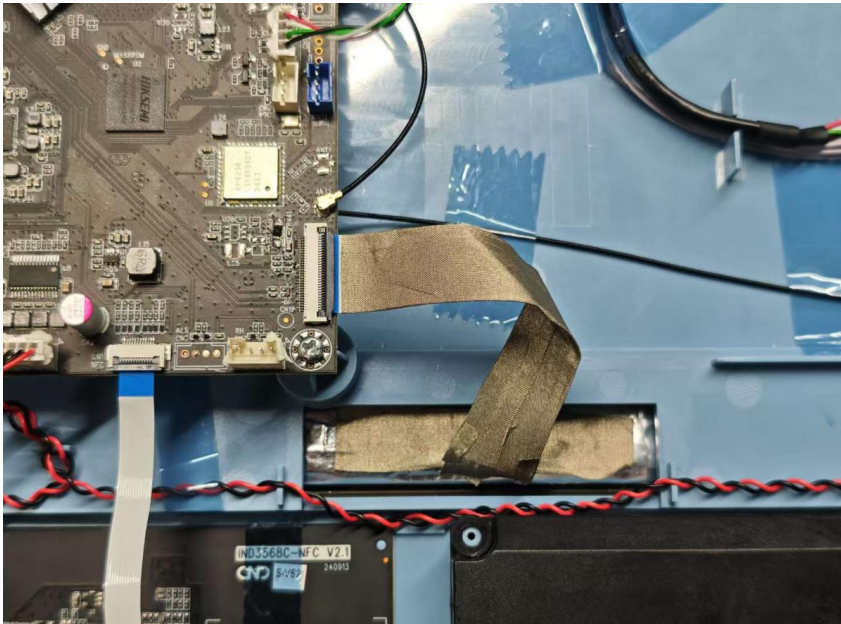
Verions	Time	Update description
A0	2024.11.04	First release debugging data
A1	2024.11.11	Mount the antenna to the front housing of the machine
A2	2024.12.13	New housing state optimizes antenna performance
A3	2025.02.21	The new machine updates the test data
A4	2025.03.14	Added environmental treatment to optimize antenna performance
A5	2025.03.19	New WiFi antenna test data update
A6		
A7		
A8		
A9		

Prototype status	Pilot production	Project pictures
Device type	Medical device	
Number of antennas	3	
Frequency band	CN LTE:B1/3/5/8/38/39/40/41 US LTE:B2/4/5/12/13/17/25/26/41 wifi 2.4/5.8G a/b/g/n	
Antenna version	4G V0.2/WiFi V0.2	
Structural form	FPC+coaxial line+Generation 1 IPEX	
Environment Specification	No change	
Matching Circuit	No change	

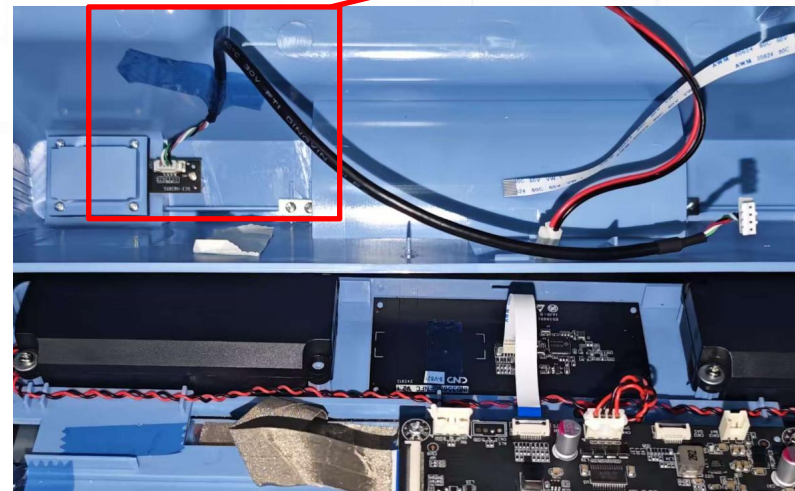
No change

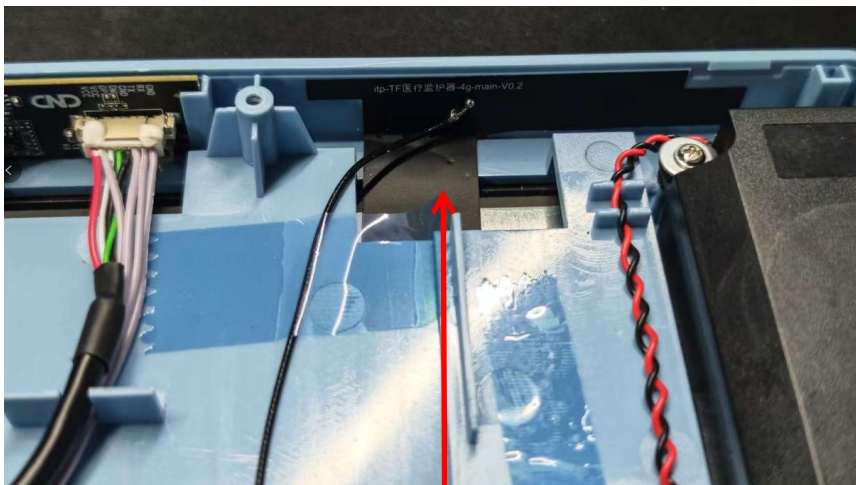


The cable of the screen is wrapped with conductive cloth, which is grounded

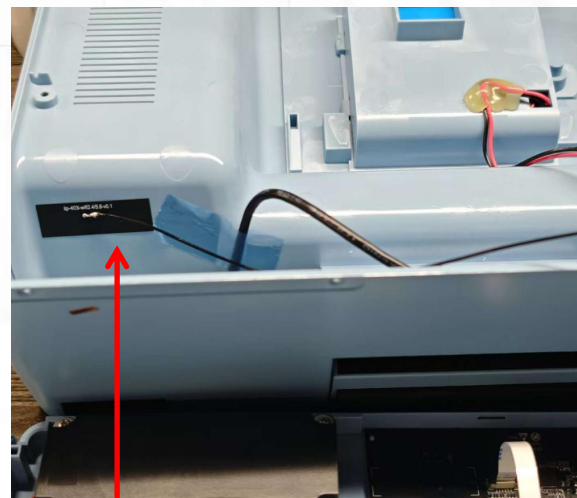


Place cables away from antennas

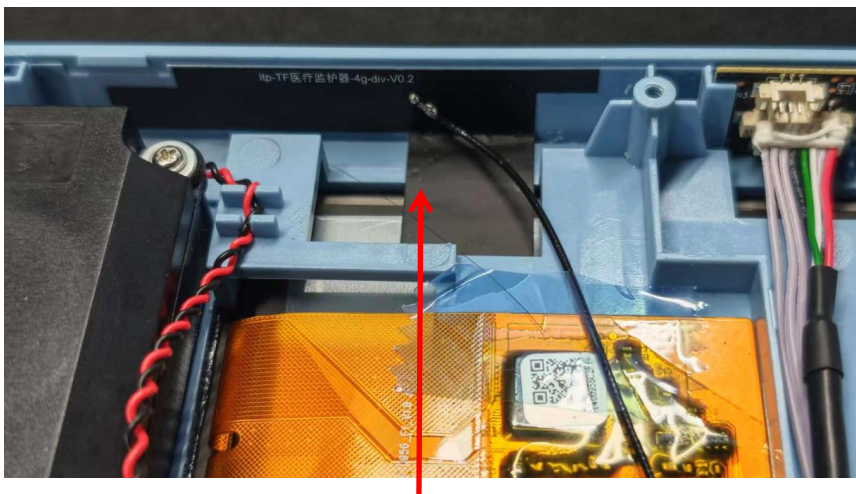




Main antenna

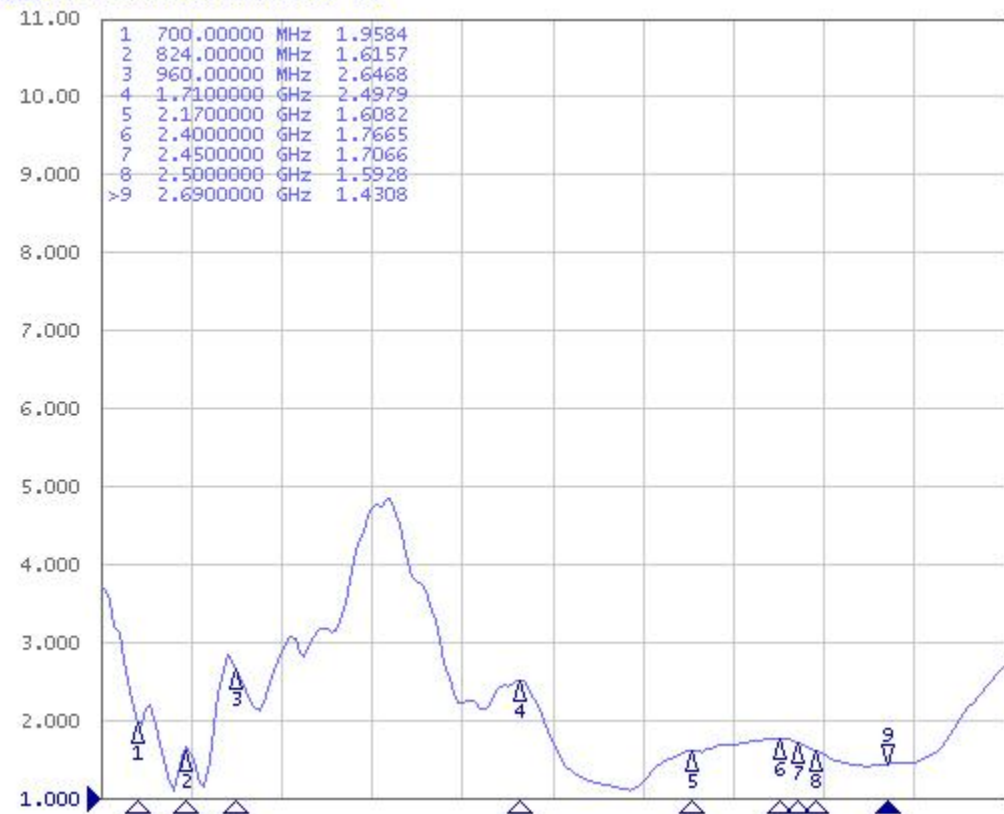


WiFi antenna



Div antenna

► Tr1 S44 SWR 1.000/ Ref 1.000 [M]

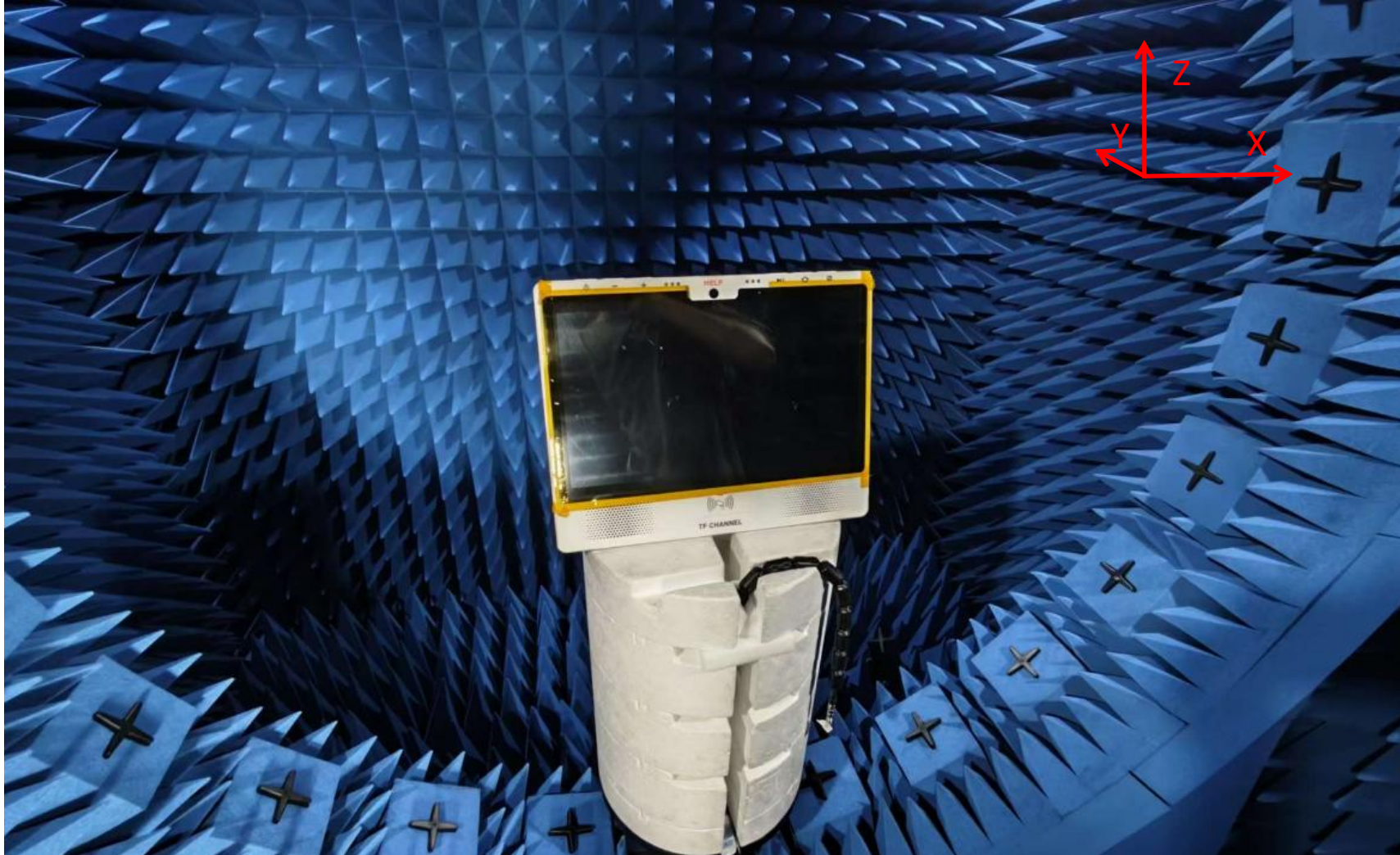


Frequency/Mhz	MaxGain/dBi	Efficiency / %
700	1.78	38.73
710	1.68	43.05
720	1.34	41.11
730	1.35	41.3
740	1.56	48.19
750	1.78	44.36
760	1.74	39.54
770	1.43	41.21
780	1.54	43.75
790	1.44	45.29
800	1.18	35.73
810	1.21	35.65
820	0.57	35.08
830	0.41	35.24
840	0.3	36.64
850	0.6	38.82
860	0.55	36.39
870	1.15	36.64
880	1.04	34.91
890	0.57	31.7
900	0.71	32.96
910	0.17	30.13
920	-0.51	25.29
930	0.04	25.23
940	0.38	25.7
950	0.09	23.33
960	0.86	27.16

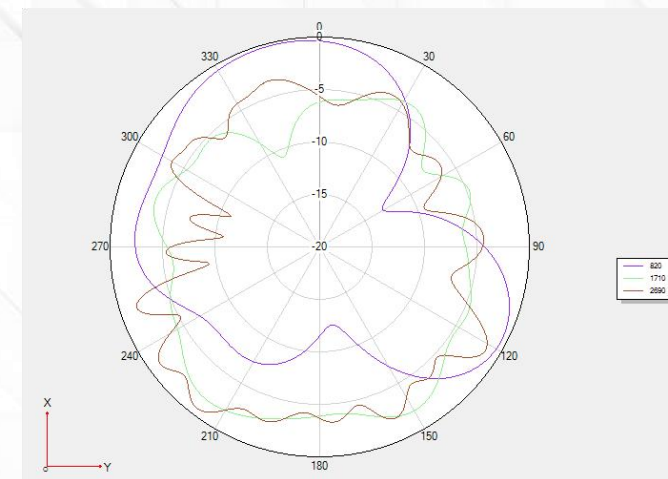
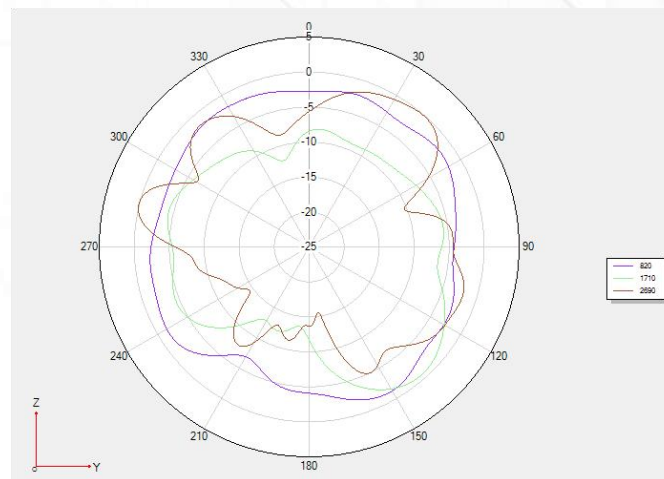
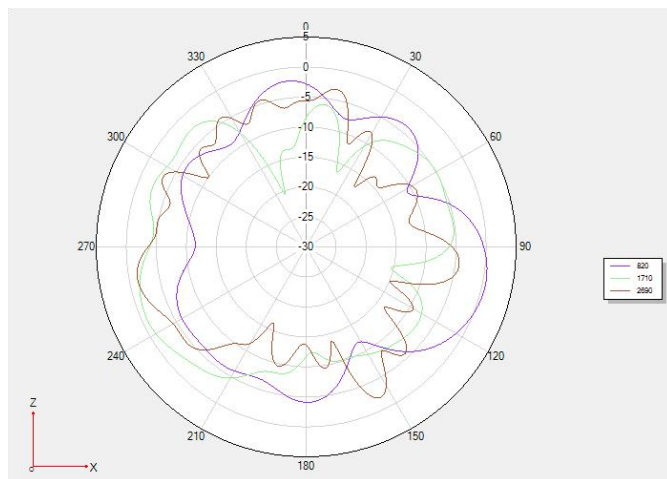
Frequency/Mhz	MaxGain/dBi	Efficiency / %
1710	1.42	31.7
1730	0.61	30.69
1750	2.04	41.69
1770	2.13	46.13
1790	1.7	45.29
1810	1.91	46.99
1830	2.3	50.47
1850	2.42	45.6
1870	2.47	47.53
1890	2.4	46.56
1910	2.36	50.47
1930	2.46	47.32
1950	2.36	44.67
1970	2.05	46.99
1990	1.91	45.39
2010	1.3	40.55
2030	2.34	41.88
2050	1.62	38.82
2070	1.35	35.73
2090	1.52	38.99
2110	1.1	38.02
2130	0.84	33.5
2150	1.48	37.76
2170	1.17	37.41

Frequency/Mhz	MaxGain/dBi	Efficiency / %
2190	1.39	37.84
2210	1.64	37.84
2230	1.32	37.15
2250	0.55	35.48
2270	0.66	35.97
2290	0.56	34.12
2310	1.25	36.81
2330	1.65	35.89
2350	1.57	34.67
2370	1.5	36.64
2390	1.65	34.12
2410	1.67	32.89
2430	2.31	37.76
2450	1.89	34.91
2470	1.45	32.06
2490	1.83	35.16
2510	2.24	36.73
2530	1.93	34.2
2550	2.11	36.48
2570	1.78	35.81
2590	1.73	34.91
2610	1.64	34.67
2630	1.33	34.75
2650	1.29	35.24
2670	1.06	34.59
2690	0.99	33.65

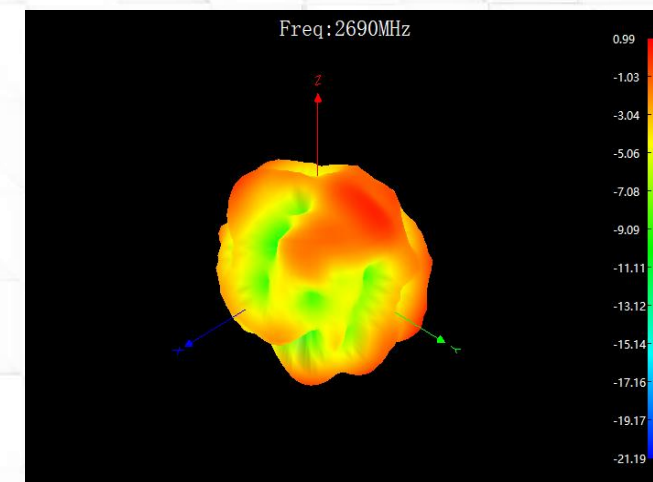
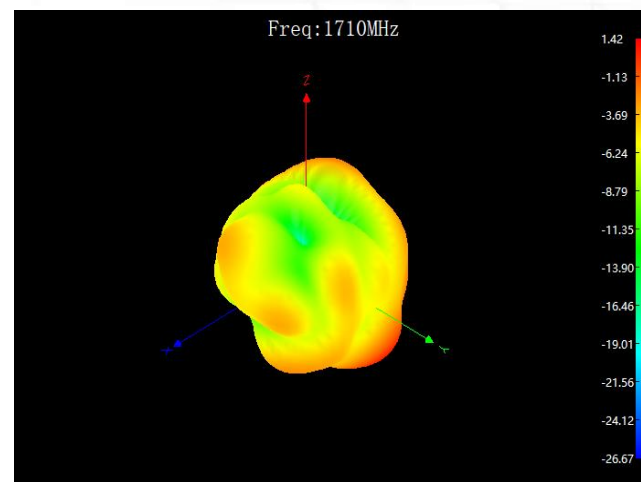
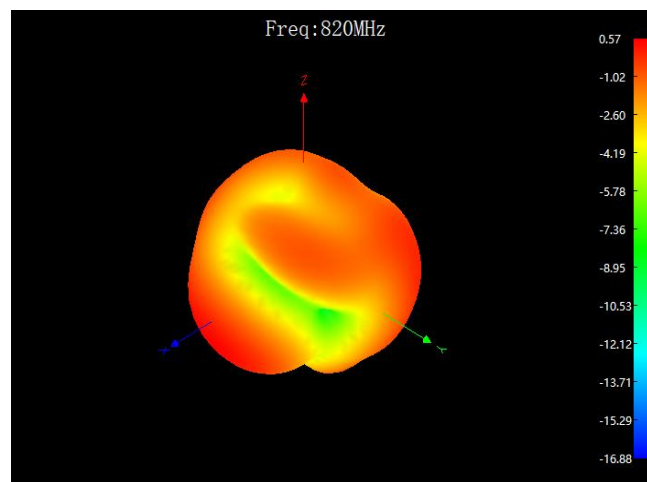
Radiation pattern



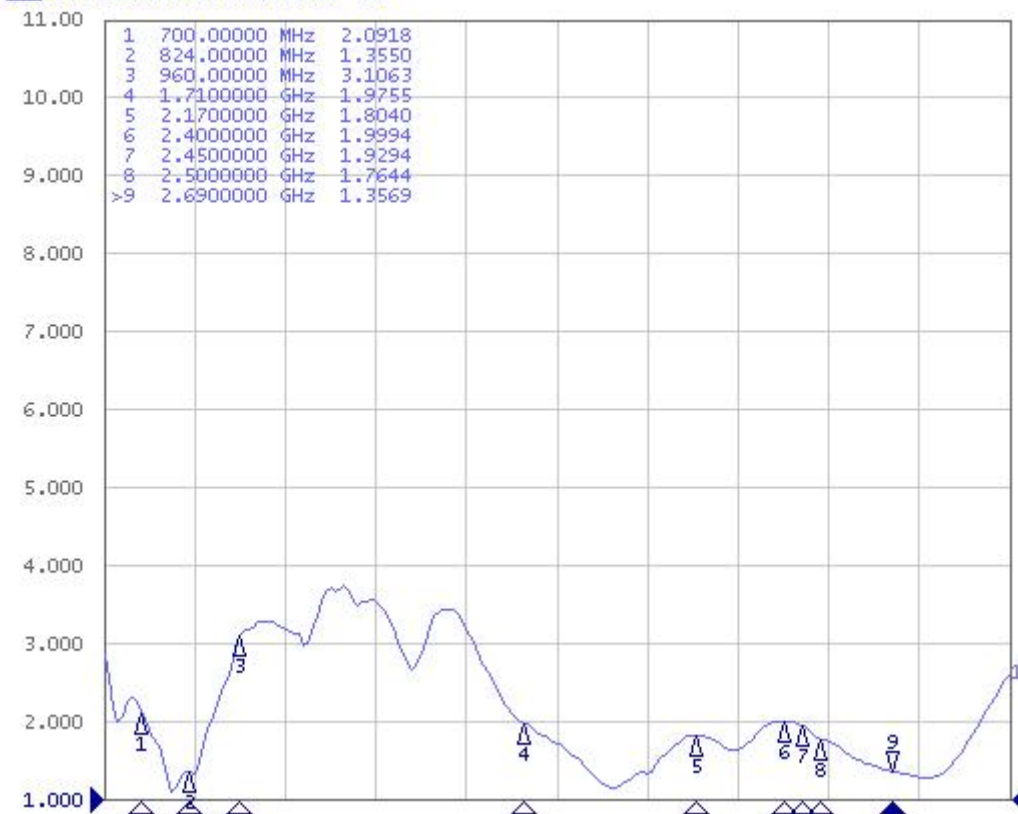
2D cross-sectional view



3D



Tr1 S44 SWR 1.000/ Ref 1.000 [M]



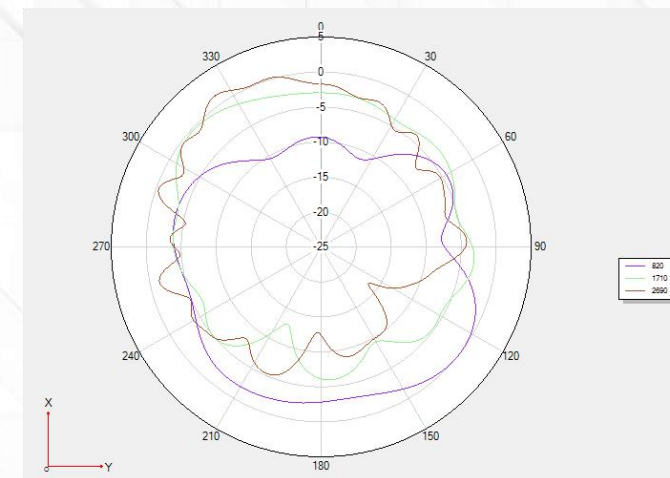
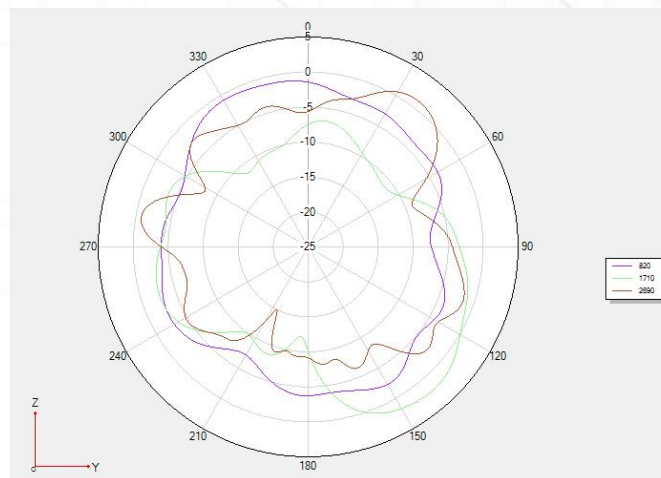
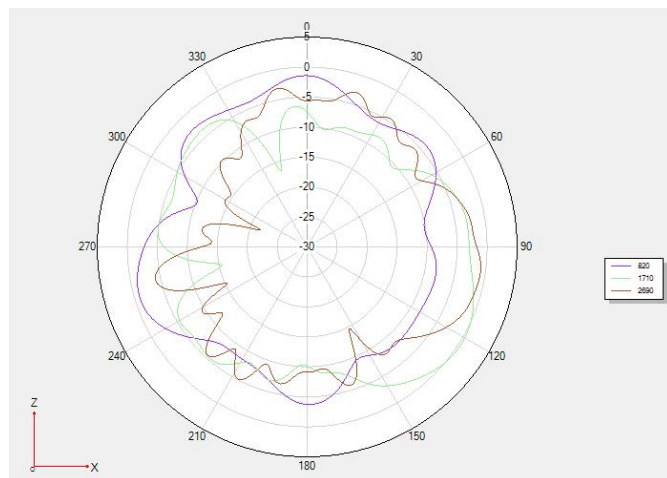
Frequency/Mhz	MaxGain/dBi	Efficiency / %
700	1.53	35.4
710	1.48	38.19
720	1.64	34.75
730	1.48	33.5
740	1.42	39.63
750	1.31	37.41
760	1.53	34.2
770	1.51	36.73
780	1.52	38.99
790	1.47	40.18
800	-0.22	32.36
810	0.46	33.73
820	0.47	34.28
830	0.18	32.66
840	0.24	32.14
850	0.95	33.27
860	0.49	31.33
870	0.32	31.7
880	0.02	30.34
890	0.01	27.61
900	0.59	27.67
910	0.02	24.43
920	-1.11	20.84
930	-1.34	21.33
940	-1.01	22.13
950	-1.1	20.45
960	-0.45	22.08

Frequency/Mhz	MaxGain/dBi	Efficiency / %
1710	2.15	39.63
1730	1.68	35.32
1750	2.34	42.56
1770	2.26	42.56
1790	1.88	39.45
1810	1.87	41.11
1830	2.38	45.39
1850	2.23	41.69
1870	2.47	44.67
1890	2.26	43.35
1910	2.36	46.77
1930	2.34	43.15
1950	2.08	39.54
1970	2.14	41.02
1990	2.45	40.74
2010	2.34	38.02
2030	2.47	41.5
2050	1.46	37.33
2070	0.23	32.21
2090	0.59	35.4
2110	0.84	35.48
2130	0.65	32.81
2150	0.95	35.4
2170	0.83	33.19

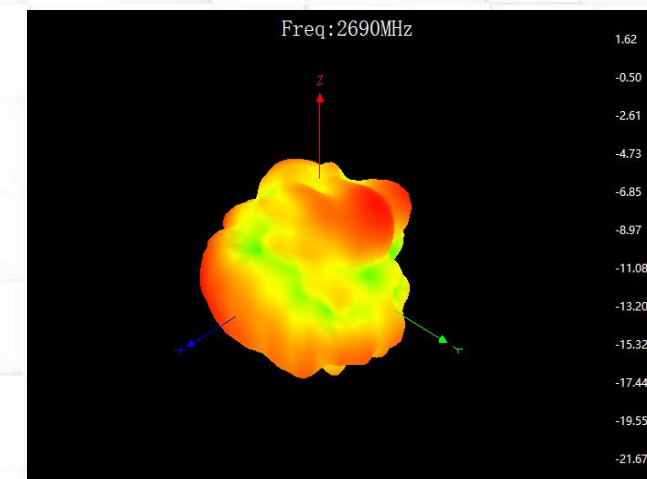
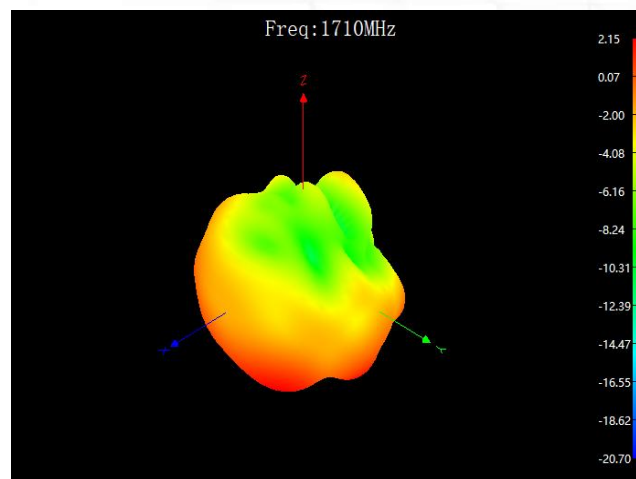
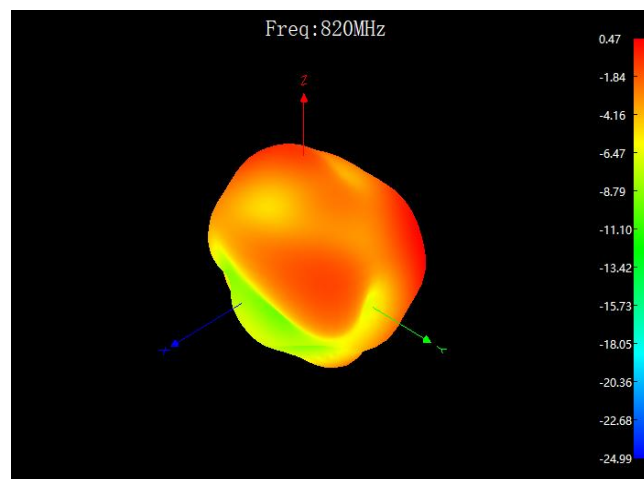
Frequency/Mhz	MaxGain/dBi	Efficiency / %
2190	0.97	32.96
2210	1.36	33.19
2230	1.29	33.04
2250	0.75	32.06
2270	0.25	33.34
2290	0.03	32.28
2310	0.23	34.83
2330	0.35	33.73
2350	0.45	32.36
2370	0.89	33.5
2390	1	30.9
2410	1.36	30.42
2430	1.64	34.75
2450	1.39	32.51
2470	0.69	30.06
2490	0.5	32.96
2510	0.72	32.73
2530	0.64	30.41
2550	1.12	33.34
2570	1.17	33.57
2590	1.33	34.2
2610	1.63	34.51
2630	1.45	34.91
2650	1.41	35.32
2670	1.58	34.83
2690	1.62	34.59

DIV antenna Passive data

2D cross-sectional view



3D



CN

Measurement	Band	Channel	Total
TRP	FDD_B1(10MHz)	18050	19.96
TRP	FDD_B1(10MHz)	18300	20.37
TRP	FDD_B1(10MHz)	18550	21.01
TIS(RSSI)	FDD_B1(10MHz)	550	-92.24
TRP	FDD_B3(10MHz)	19250	16.67
TRP	FDD_B3(10MHz)	19575	16.54
TRP	FDD_B3(10MHz)	19900	16.96
TIS(RSSI)	FDD_B3(10MHz)	1900	-88.13
TRP	FDD_B5(10MHz)	20450	18.89
TRP	FDD_B5(10MHz)	20525	19.61
TRP	FDD_B5(10MHz)	20600	19.33
TIS(RSSI)	FDD_B5(10MHz)	2600	-88.46
TRP	FDD_B8(10MHz)	21500	18.75
TRP	FDD_B8(10MHz)	21625	20.38
TRP	FDD_B8(10MHz)	21750	19.34
TIS(RSSI)	FDD_B8(10MHz)	3750	-88.1

Measurement	Band	Channel	Total
TRP	TDD_B38(20MHz)	37850	19.22
TRP	TDD_B38(20MHz)	38000	19.34
TRP	TDD_B38(20MHz)	38150	19.63
TIS(RSSI)	TDD_B38(20MHz)	38150	-93.98
TRP	TDD_B39(20MHz)	38350	19.1
TRP	TDD_B39(20MHz)	38450	19.21
TRP	TDD_B39(20MHz)	38550	19.22
TIS(RSSI)	TDD_B39(20MHz)	38550	-88.27
TRP	TDD_B40(20MHz)	38750	18.83
TRP	TDD_B40(20MHz)	39150	19.13
TRP	TDD_B40(20MHz)	39550	19.43
TIS(RSSI)	TDD_B40(20MHz)	39550	-92.35
TRP	TDD_B41(20MHz)	40340	20.49
TRP	TDD_B41(20MHz)	40620	19.48
TRP	TDD_B41(20MHz)	41140	20.3
TIS(RSSI)	TDD_B41(20MHz)	41140	-90.74

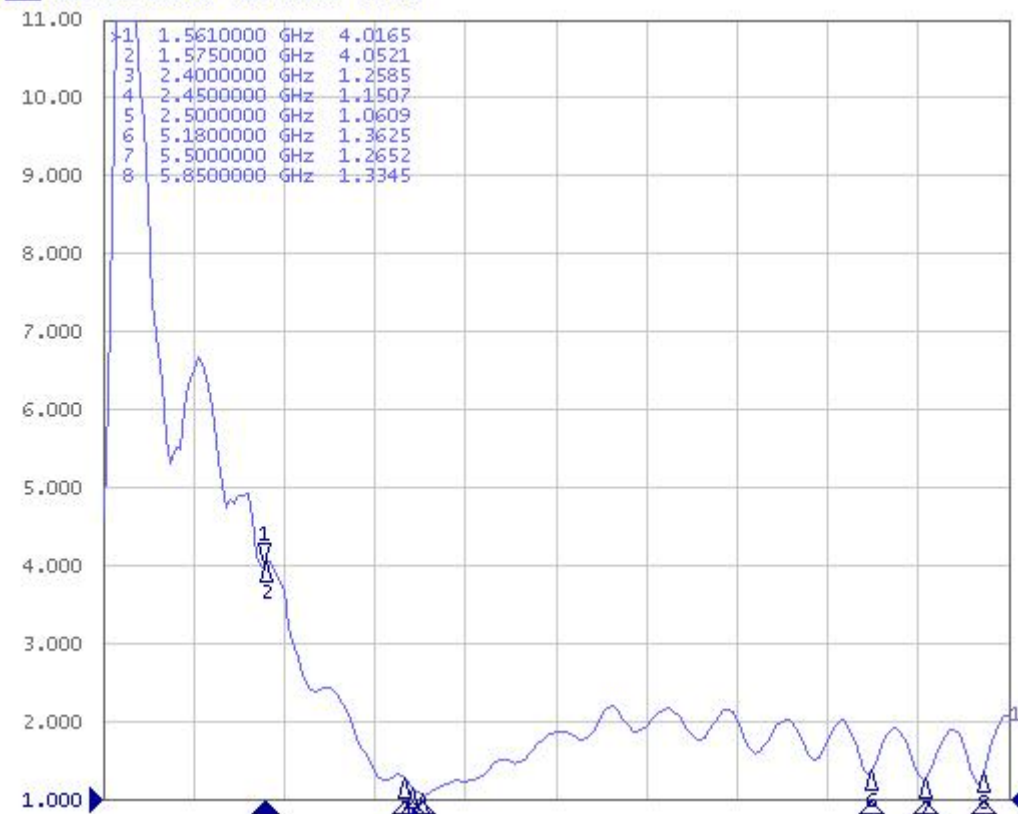
LTE OTA test data (turn on the screen)

US

Measurement	Band	Channel	Total
TRP	FDD_B2(10MHz)	18650	19.01
TRP	FDD_B2(10MHz)	18900	19.42
TRP	FDD_B2(10MHz)	19150	19.83
TIS(RSSI)	FDD_B2(10MHz)	1150	-93.96
TRP	FDD_B4(10MHz)	20000	18.61
TRP	FDD_B4(10MHz)	20175	18.49
TRP	FDD_B4(10MHz)	20350	18.46
TIS(RSSI)	FDD_B4(10MHz)	2350	-93.72
TRP	FDD_B5(10MHz)	20450	19.23
TRP	FDD_B5(10MHz)	20525	19.64
TRP	FDD_B5(10MHz)	20600	19.99
TIS(RSSI)	FDD_B5(10MHz)	2600	-88.3
TRP	FDD_B12(5MHz)	23035	19.64
TRP	FDD_B12(5MHz)	23095	19.48
TRP	FDD_B12(5MHz)	23155	19.53
TIS(RSSI)	FDD_B12(5MHz)	5155	-86.23

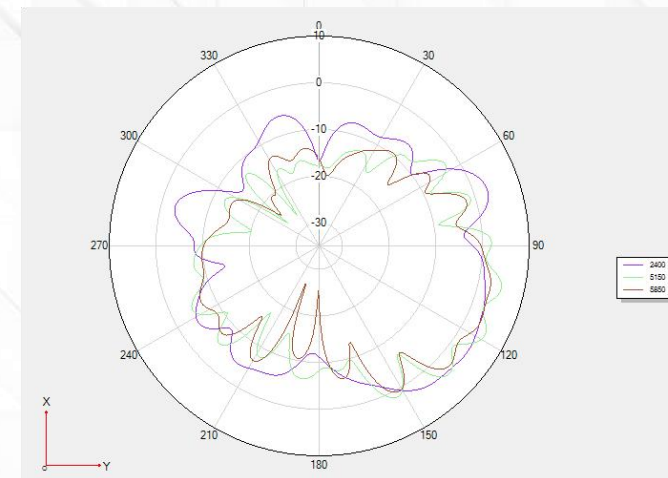
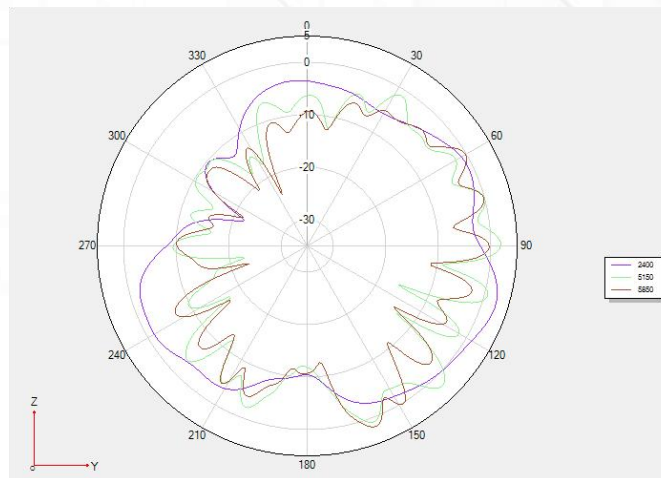
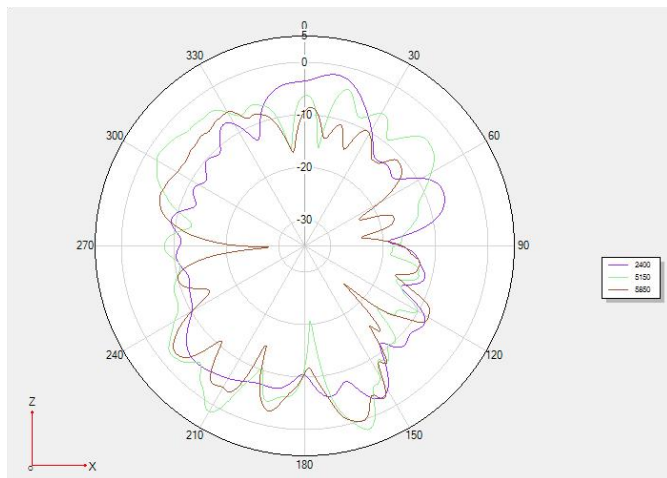
Measurement	Band	Channel	Total
TRP	FDD_B13(10MHz)	23230	18.72
TIS(RSSI)	FDD_B13(10MHz)	5230	-86.14
TRP	FDD_B17(10MHz)	23780	19.08
TRP	FDD_B17(10MHz)	23790	19.52
TRP	FDD_B17(10MHz)	23800	19.62
TIS(RSSI)	FDD_B17(10MHz)	5800	-85.35
TRP	FDD_B25(5MHz)	26065	18.61
TRP	FDD_B25(5MHz)	26365	18.98
TRP	FDD_B25(5MHz)	26665	19.57
TIS(RSSI)	FDD_B25(5MHz)	8665	-94.72
TRP	FDD_B26(5MHz)	26715	19.39
TRP	FDD_B26(5MHz)	26865	19.58
TRP	FDD_B26(5MHz)	27015	20.64
TIS(RSSI)	FDD_B26(5MHz)	9015	-88.99
TRP	TDD_B41(20MHz)	40340	19.29
TRP	TDD_B41(20MHz)	40620	19.39
TRP	TDD_B41(20MHz)	41140	19.85
TIS(RSSI)	TDD_B41(20MHz)	41140	-91.47

Tr1 S11 SWR 1.000/ Ref 1.000 [RO M]

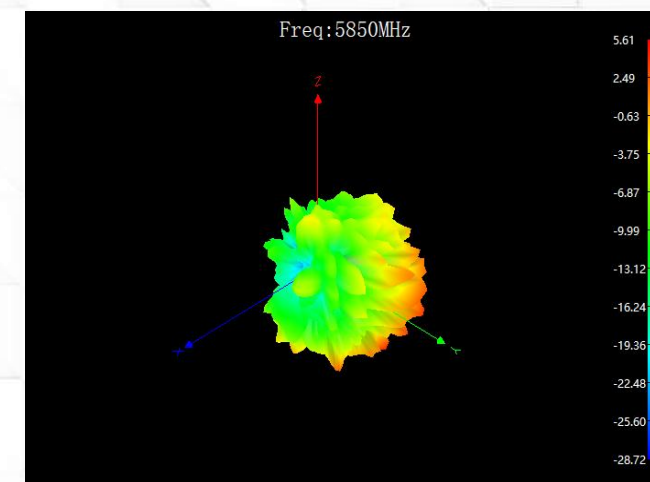
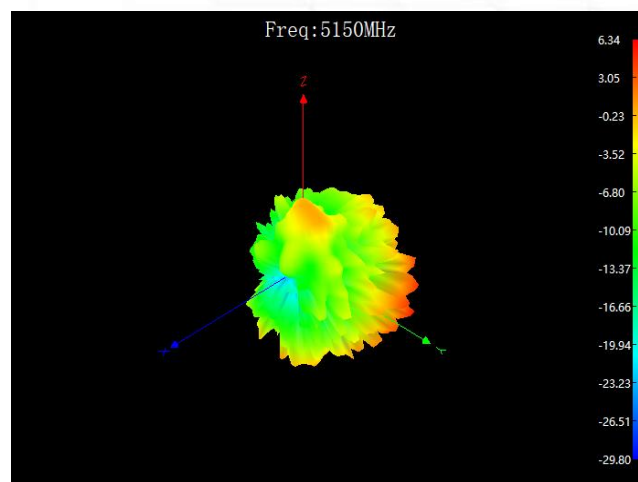
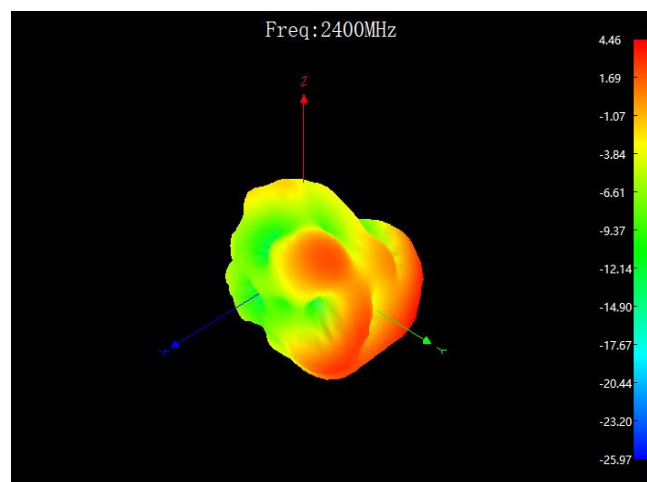


Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	3.46	42.76
2410	3.26	41.4
2420	3.47	43.65
2430	3.46	42.95
2440	3.48	42.36
2450	3.64	43.05
2460	3.55	42.66
2470	3.49	41.5
2480	3.76	43.35
2490	3.47	43.05
2500	3.26	41.5
5150	4.34	35.06
5200	4.21	34.84
5250	4.35	33.13
5300	4.51	35.43
5350	4.59	32.92
5400	4.29	34.7
5450	4.21	35.96
5500	4.08	34.69
5550	3.94	34.9
5600	3.9	31.67
5650	3.72	34.62
5700	3.62	33.11
5750	4.11	31.23
5800	4.9	30.85
5850	3.61	30.36

2D cross-sectional view



3D



Measurement	Band	Channel	Total
TRP	WIFI_B (11M)	1	15
TRP	WIFI_B (11M)	7	14.26
TRP	WIFI_B (11M)	13	14.13
TIS(EIRP)	WIFI_B (11M)	13	-83.85
TRP	WIFI_G (54M)	1	13.32
TRP	WIFI_G (54M)	7	12.65
TRP	WIFI_G (54M)	13	12.82
TIS(EIRP)	WIFI_G (54M)	13	-70.38
TRP	WIFI_A (54M)	36	15.18
TRP	WIFI_A (54M)	149	15.55
TRP	WIFI_A (54M)	165	15.62
TIS(EIRP)	WIFI_A (54M)	165	-73.12

1. The matching circuit is unchanged;
2. The cable of the screen is wrapped with conductive cloth, which is grounded, LTE TIS performance improved;
3. The test data of the new WiFi antenna is normal when the screen is on.

Thank You

深圳研发中心：广东省深圳市光明区光明大道南太云创谷4栋809