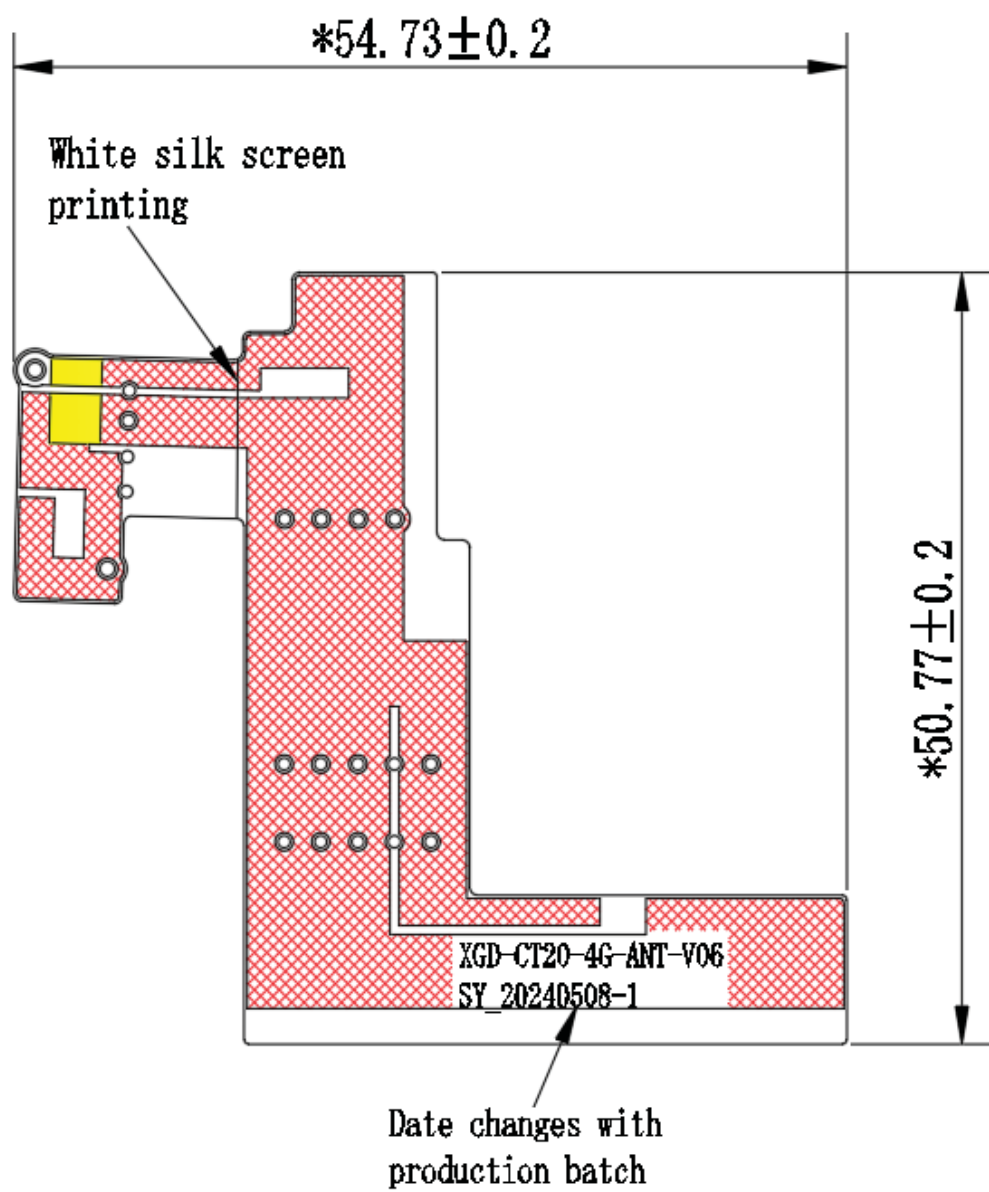


Manufacturer:SunnywayTechnology (China)Co.,
Ltd.

Address:Floor 6, Building 5, Nam Tai Inno Park,
Guangming District, Shenzhen

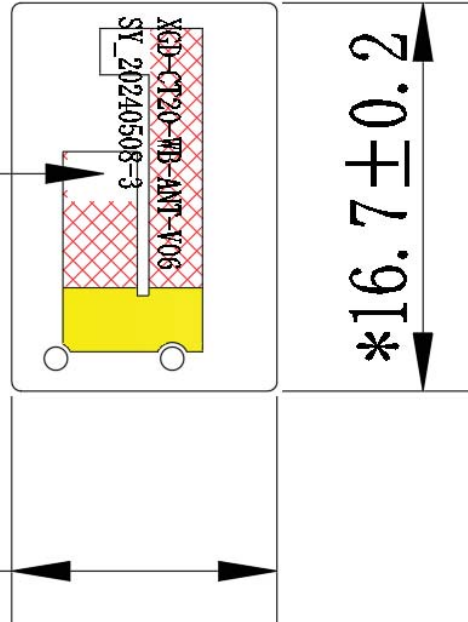
MAIN ANT



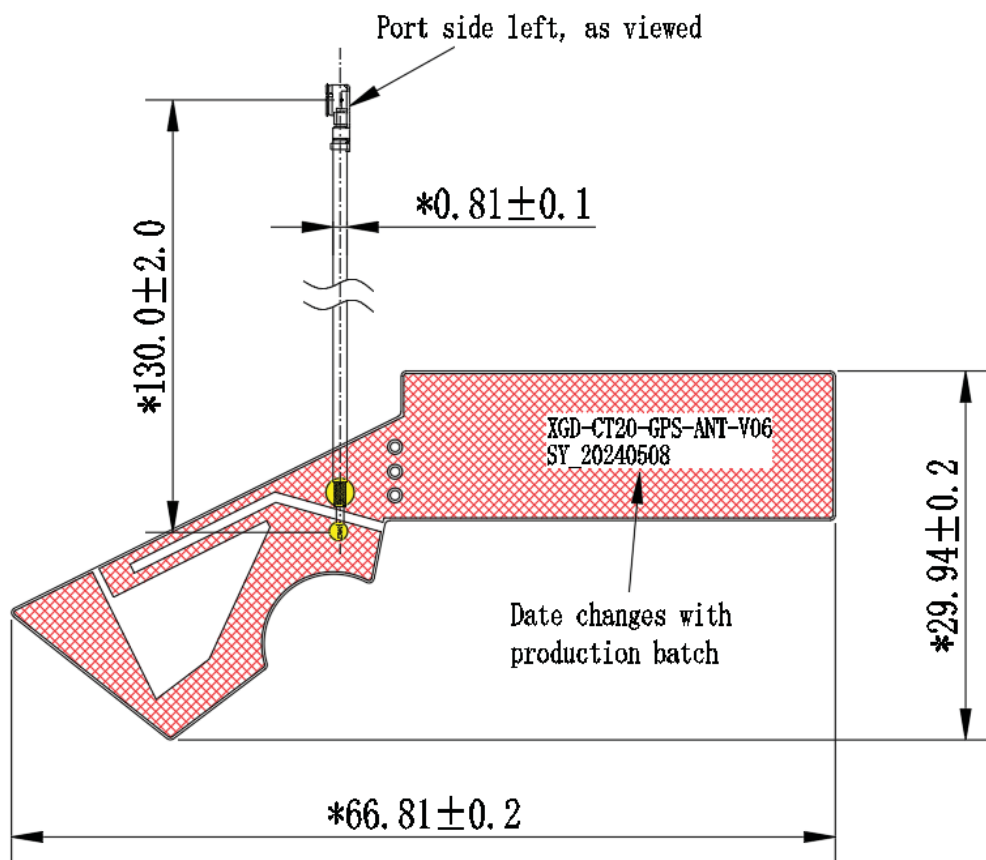
WiFi ANT

Date changes with
production batch

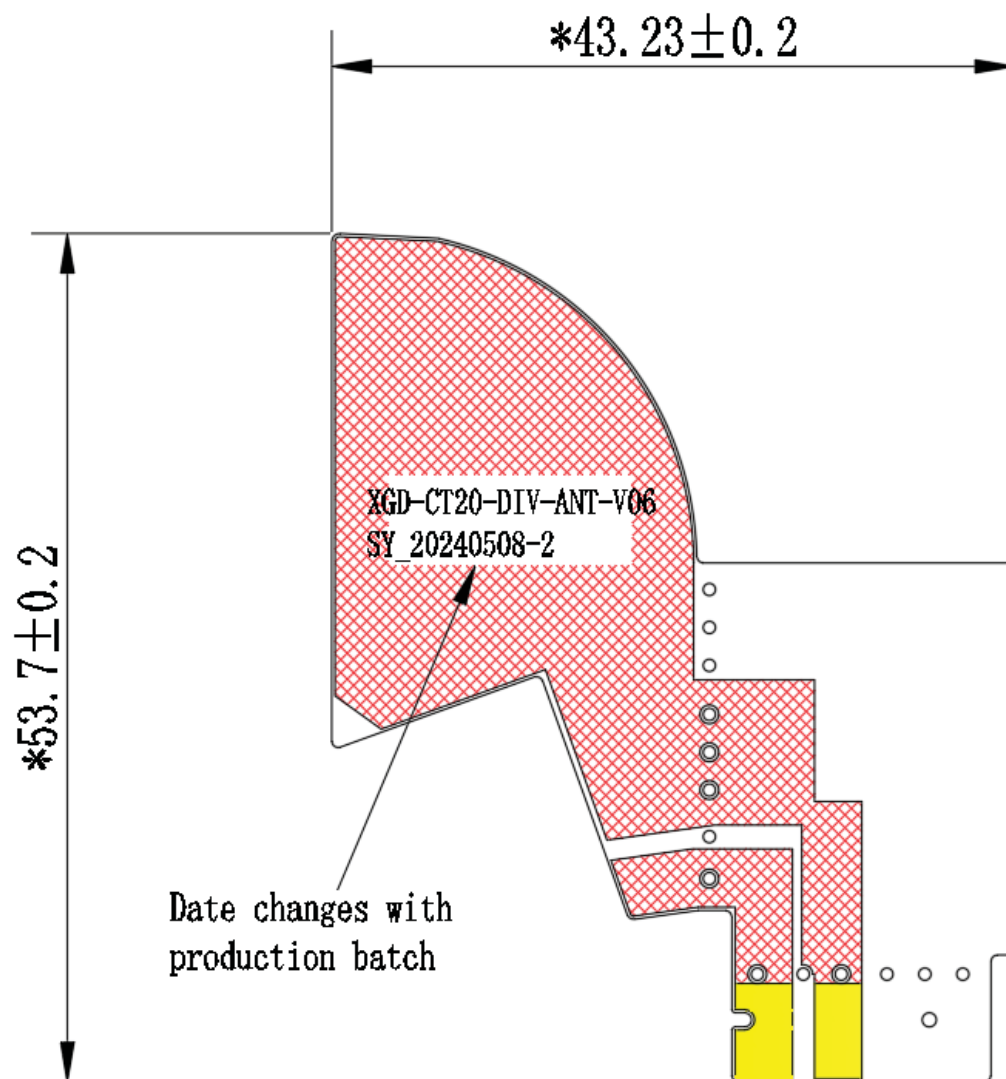
*11.4±0.2



GPS ANT

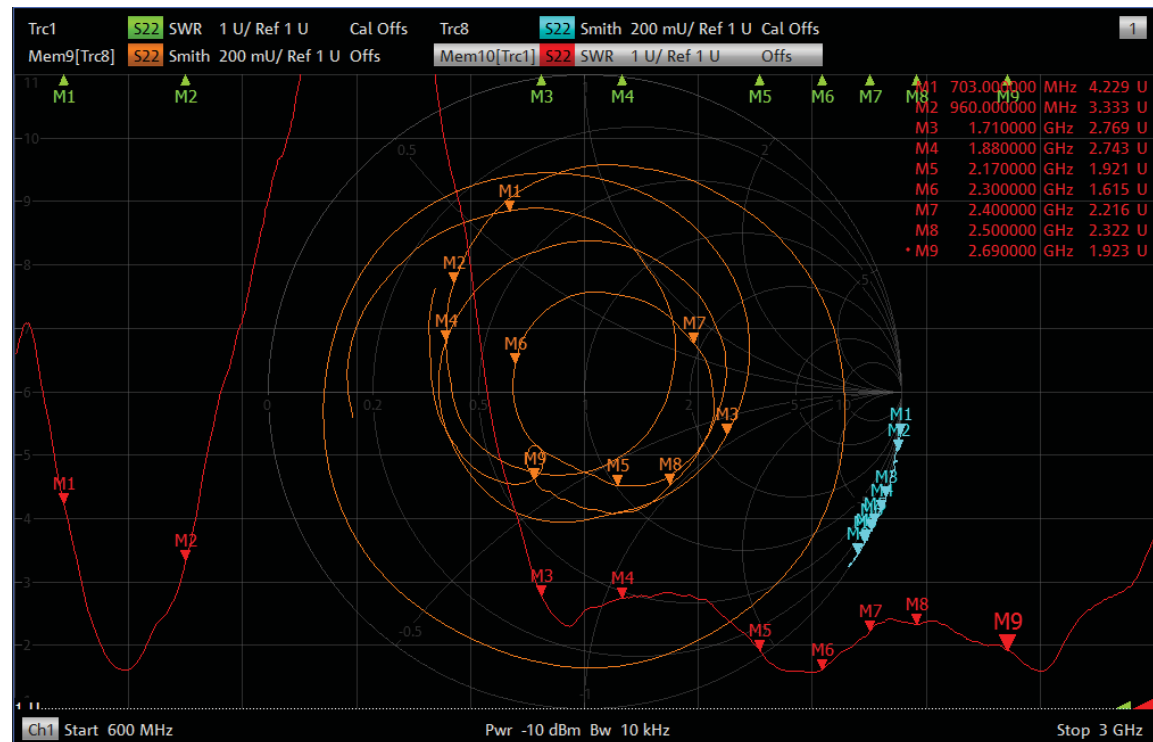


DIV ANT



1、MAIN antenna

1、Passive performance test parameters



2、antenna passive data :

Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi		Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
700	-7.06	19.68	-2.44		1920	-3.94	40.41	-0.69
710	-7.10	19.48	-3.03		1940	-3.94	40.34	-0.98
720	-6.89	20.47	-3.38		1960	-3.83	41.41	-0.67
730	-6.53	22.25	-3.23		1980	-3.77	41.99	-0.12
740	-5.91	25.67	-2.14		2000	-3.88	40.9	0.02
750	-5.28	29.63	-0.86		2020	-3.99	39.92	-0.06
760	-4.65	34.27	0.04		2040	-3.78	41.92	0.19
770	-4.32	36.98	-0.06		2060	-3.87	41.05	0.23
780	-4.33	36.92	-0.32		2080	-3.72	42.51	0.5
790	-4.12	38.77	-0.07		2100	-3.65	43.19	0.96
800	-4.31	37.1	-1.73		2120	-3.42	45.48	1.74
810	-4.28	37.29	-1.25		2140	-3.48	44.91	1.57
820	-4.40	36.3	-1.31		2160	-3.39	45.81	1.65
830	-4.34	36.85	-0.9		2180	-3.46	45.08	1.82
840	-4.54	35.18	-1.09		2200	-3.54	44.28	2.11
850	-4.75	33.5	-1.15		2220	-3.86	41.12	1.73
860	-4.81	33.07	-1.03		2240	-4.17	38.31	1.28
870	-4.89	32.44	-0.93		2260	-4.36	36.61	1.32
880	-4.96	31.93	-1.21		2280	-4.22	37.86	1.72
890	-5.21	30.14	-1.63		2300	-4.19	38.12	1.94
900	-5.39	28.92	-2.37		2320	-3.76	42.06	3.06
910	-5.73	26.71	-3.14		2340	-3.86	41.12	3.29
920	-5.82	26.18	-3.56		2360	-3.58	43.81	3.98
930	-5.98	25.24	-3.89		2380	-3.66	43.04	3.92
940	-5.88	25.85	-3.71		2400	-3.65	43.19	3.96
950	-5.89	25.78	-3.54		2420	-3.89	40.83	3.49
960	-5.97	25.28	-3.59		2440	-3.67	42.96	3.58
					2460	-3.85	41.19	3.18
1700	-3.65	43.11	1.2		2480	-3.57	43.96	3.4
1720	-3.49	44.75	1.25		2500	-3.61	43.57	3.34
1740	-3.51	44.59	0.7		2520	-3.51	44.59	3.29
1760	-3.65	43.11	0.13		2540	-3.55	44.12	3.13
1780	-4.15	38.44	-0.71		2560	-3.44	45.32	2.97
1800	-4.38	36.49	-1.05		2580	-3.52	44.51	2.82
1820	-4.17	38.25	-0.5		2600	-3.28	46.98	2.92
1840	-4.20	38.05	-0.25		2620	-3.35	46.22	2.63
1860	-4.17	38.25	-0.35		2640	-3.11	48.9	2.66
1880	-4.08	39.04	-0.77		2660	-3.19	47.93	2.51
1900	-3.99	39.92	-0.78		2680	-3.08	49.26	2.6
					2700	-3.35	46.22	2.29

3、 Directional diagram

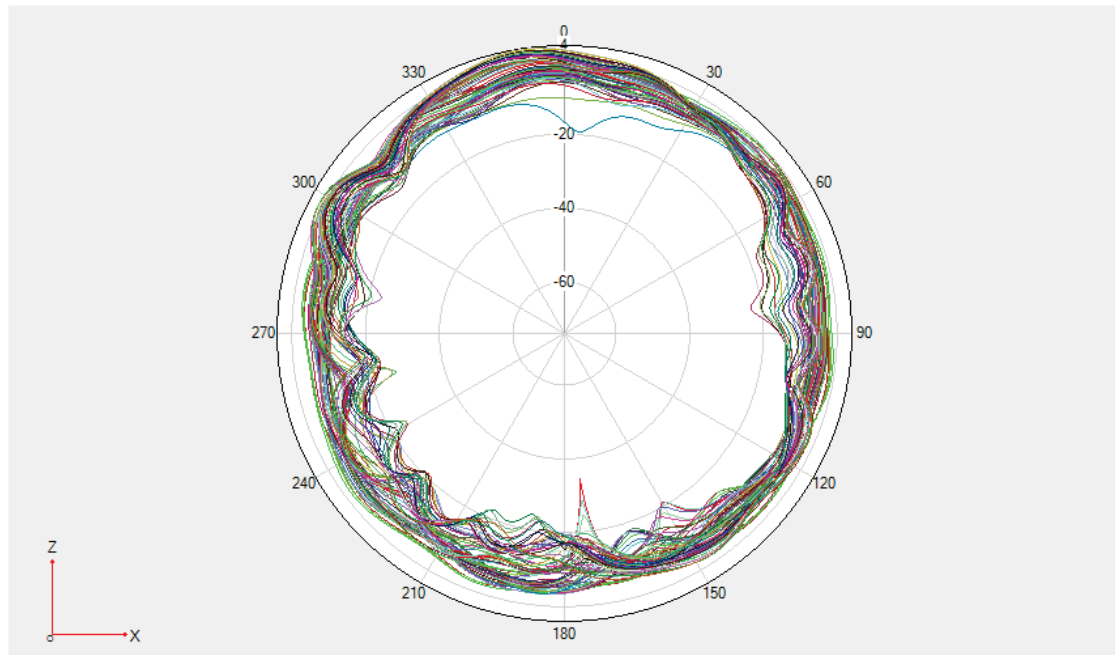


chart 1 Phi 0 2D

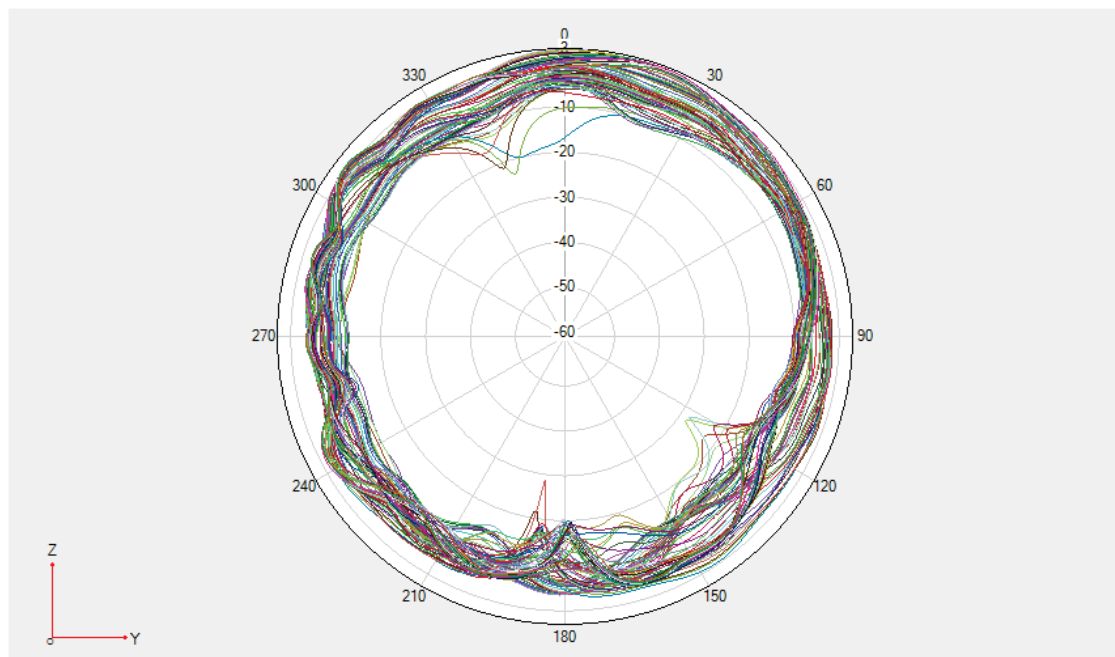


chart 2 Phi 90 2D

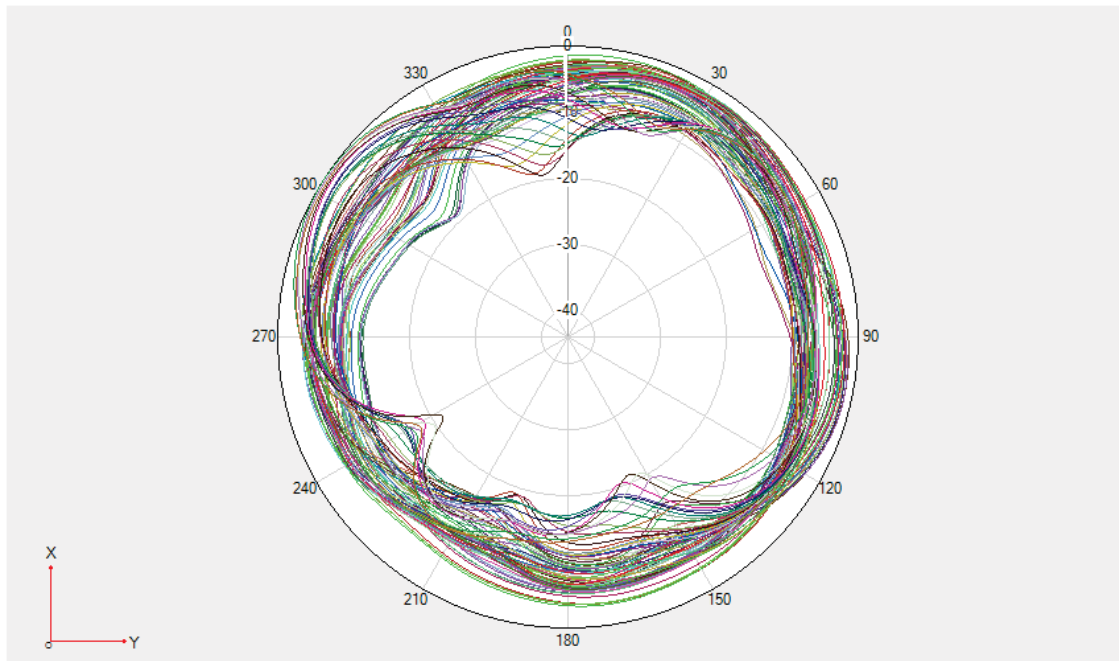


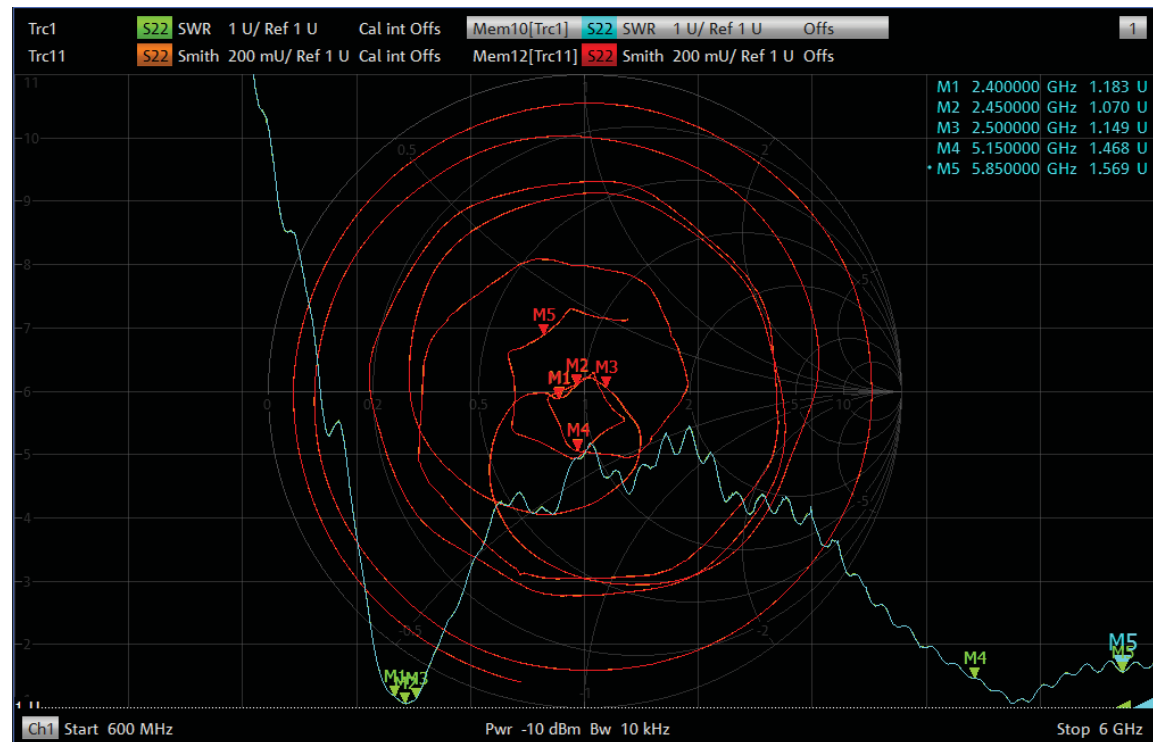
chart 3 Theta 90 2D

4、 antenna OTA data :

Measurement	Band	Total(dBm)		Measurement	Band	Total(dBm)
TRP	FDD_B1(10MHz)	20.21		TRP	FDD_B20(10MHz)	20
TRP	FDD_B1(10MHz)	19.92		TRP	FDD_B20(10MHz)	19.09
TRP	FDD_B1(10MHz)	20.92		TRP	FDD_B20(10MHz)	19.3
TIS(RSSI)	FDD_B1(10MHz)	-96.12		TIS(RSSI)	FDD_B20(10MHz)	-91.92
TRP	FDD_B3(10MHz)	20.39		TRP	FDD_B28(10MHz)	18.46
TRP	FDD_B3(10MHz)	21.25		TRP	FDD_B28(10MHz)	18.23
TRP	FDD_B3(10MHz)	20.73		TRP	FDD_B28(10MHz)	18.34
TIS(RSSI)	FDD_B3(10MHz)	-95.96		TIS(RSSI)	FDD_B28(10MHz)	-91.94
TRP	FDD_B5(10MHz)	19.24		TRP	TDD_B38(20MHz)	19.84
TRP	FDD_B5(10MHz)	18.84		TRP	TDD_B38(20MHz)	20.03
TRP	FDD_B5(10MHz)	19.09		TRP	TDD_B38(20MHz)	20.23
TIS(RSSI)	FDD_B5(10MHz)	-93.3		TIS(RSSI)	TDD_B38(20MHz)	-93.94
TRP	FDD_B7(10MHz)	20.47		TRP	TDD_B40(20MHz)	20.69
TRP	FDD_B7(10MHz)	20.12		TRP	TDD_B40(20MHz)	20
TRP	FDD_B7(10MHz)	19.38		TRP	TDD_B40(20MHz)	19.75
TIS(RSSI)	FDD_B7(10MHz)	-92.86		TIS(RSSI)	TDD_B40(20MHz)	-93.98
TRP	FDD_B8(10MHz)	19.58		TRP	TDD_B41(20MHz)	20.46
TRP	FDD_B8(10MHz)	19.31		TRP	TDD_B41(20MHz)	20
TRP	FDD_B8(10MHz)	18.95		TRP	TDD_B41(20MHz)	19.67
TIS(RSSI)	FDD_B8(10MHz)	-92.71		TIS(RSSI)	TDD_B41(20MHz)	-91.39

2、WiFi antenna

1、Passive performance test parameters



2、 antenna passive data :

Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-4.84	32.81	2.49
2410	-4.89	32.43	2.69
2420	-5.19	30.27	2.28
2430	-5.02	31.48	2.66
2440	-4.97	31.84	2.86
2450	-4.98	31.77	3.06
2460	-5.21	30.13	3.07
2470	-5.07	31.12	3.29
2480	-5.05	31.26	3.44
2490	-5.14	30.62	3.39
2500	-5.37	29.04	3.49

5150	-6.15	24.27	2
5170	-6.19	24.04	1.87
5190	-6.04	24.89	2.02
5210	-6	25.12	1.89
5230	-6.1	24.55	1.7
5250	-5.92	25.59	1.82
5270	-6.11	24.49	1.59
5290	-6.02	25	1.57
5310	-6.08	24.66	1.63
5330	-6.02	25	1.83
5350	-6.23	23.82	1.56
5370	-6.21	23.93	2.02
5390	-6.24	23.77	2.27
5410	-6.21	23.93	2.35
5430	-6.23	23.82	2.53
5450	-6.29	23.5	2.67
5470	-6.02	25.01	2.61
5490	-6.02	25.01	2.76
5510	-6.06	24.8	2.88
5530	-6.17	24.18	2.68
5550	-6.29	23.48	2.59
5570	-6.08	24.65	2.71
5590	-5.92	25.61	2.84
5610	-5.91	25.65	2.93
5630	-5.96	25.37	2.91
5650	-6.08	24.68	2.57
5670	-6.04	24.91	2.62
5690	-5.85	26.01	2.37
5710	-5.86	25.92	2.2
5730	-5.91	25.66	1.8
5750	-5.86	25.95	1.97
5770	-5.94	25.46	1.81
5790	-6.10	24.52	1.62
5810	-6.03	24.94	1.83
5830	-6.19	24.03	1.57
5850	-6.18	24.11	1.6

3、Directional diagram

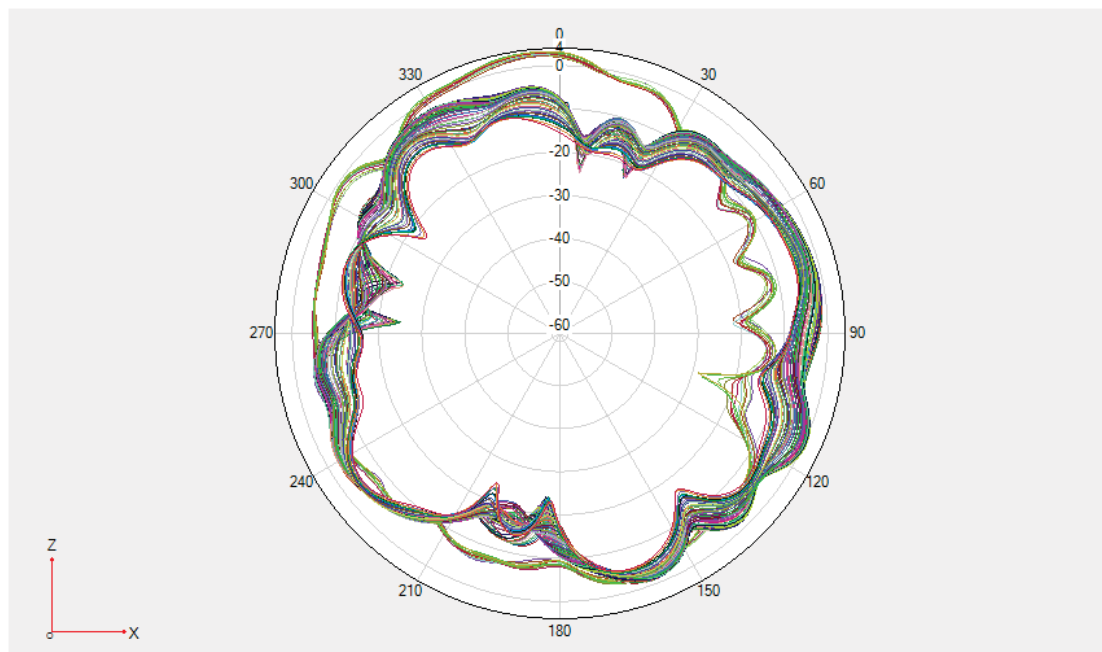


chart 4 Phi 0 2D

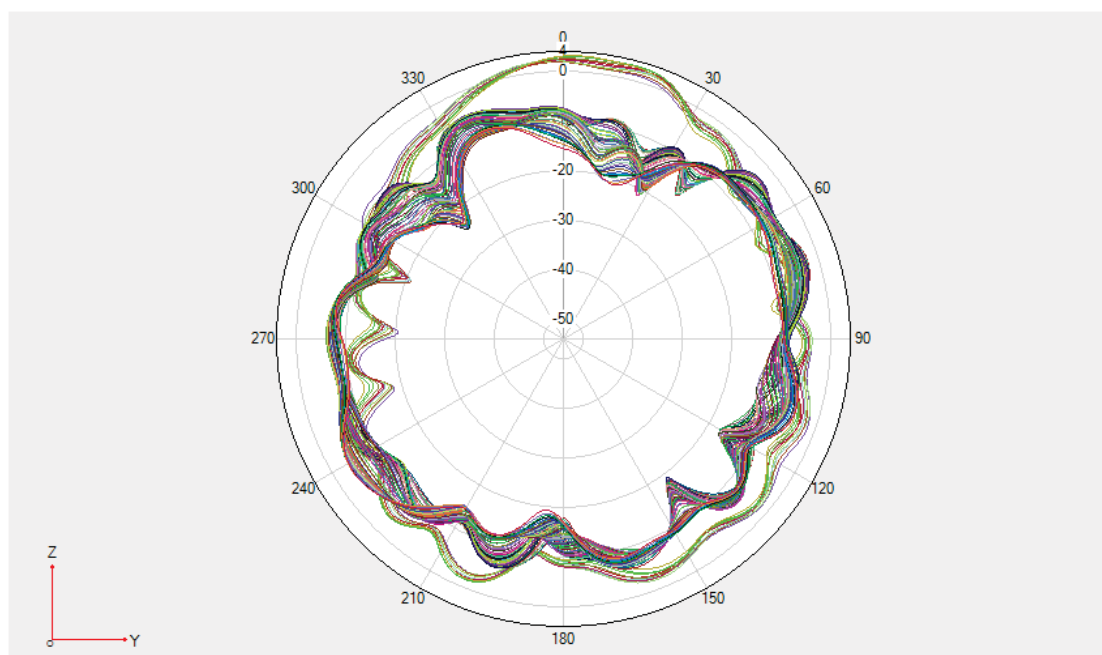


chart 5 Phi 90 2D

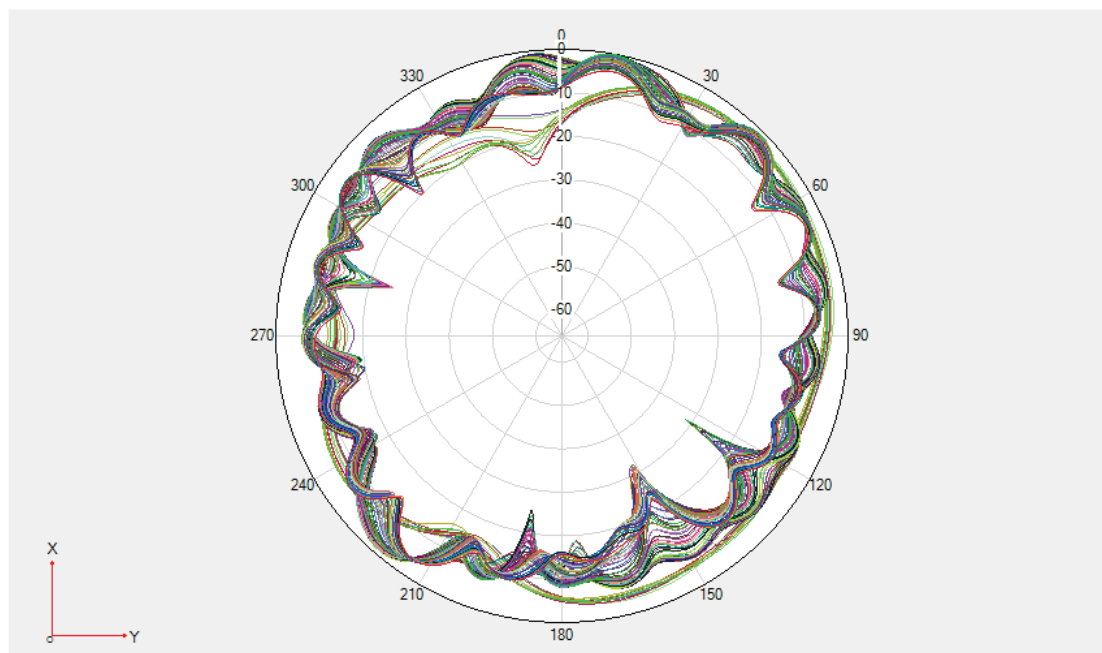


chart 6 Theta 90 2D

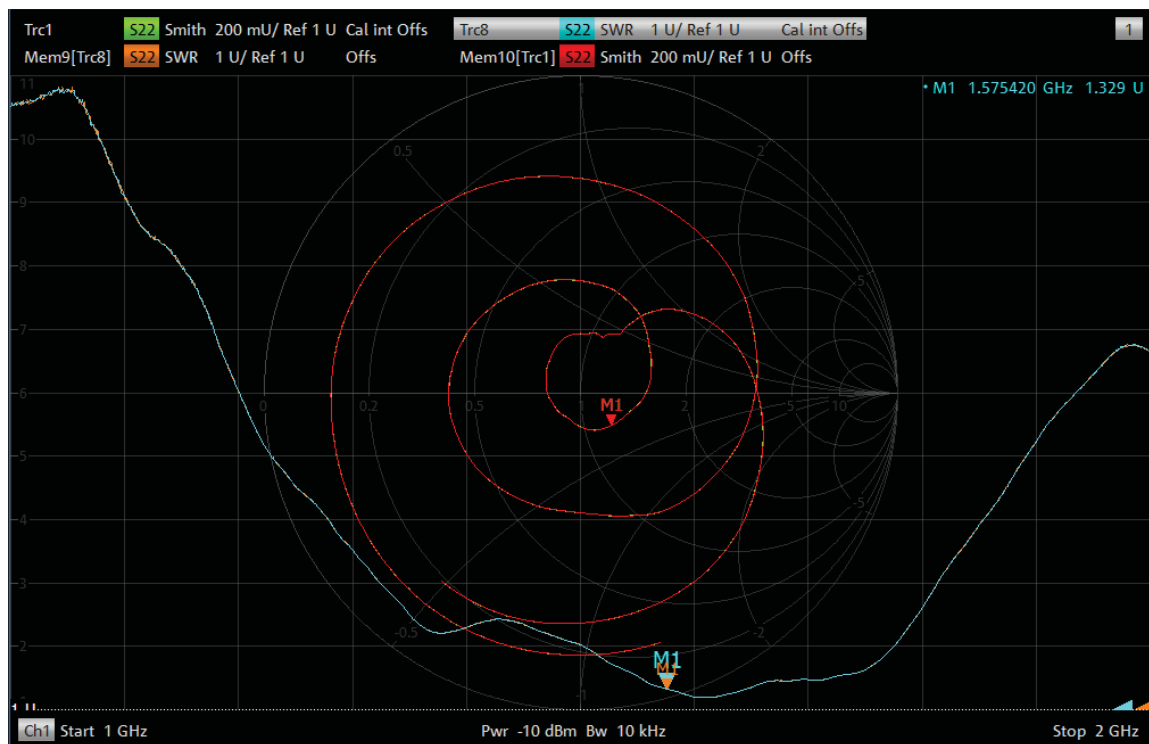
4、 antenna OTA data :

WIFI OTA

Measurement	Band	Channel	Total(dBm)
TRP	WIFI_B (11M)	1	11.87
TRP		6	12.65
TRP		11	12.99
TIS(EIRP)		11	-83.06
TRP	WIFI_G (54M)	1	11.25
TRP		6	11.59
TRP		11	12.18
TIS(EIRP)		11	-70.12
TRP	WIFI_N_ISM (65M)	1	10.36
TRP		6	10.67
TRP		11	11.14
TIS(EIRP)		11	-67.52
TRP	WIFI_A (54M)	36	8.95
TRP		149	9.35
TRP		165	8.95
TIS(EIRP)		165	-70.37
TRP	WIFI_N_UNII (65M)	36	5.81
TRP		149	7.72
TRP		165	6.84
TIS(EIRP)		165	-66.41

3、GPS antenna

1、Passive performance test parameters



2、antenna passive data :

Frequency/Mhz	Efficiency / dB	Efficiency / %	TopHalfEff/ dB	TopHalfEff / %	MaxGain/dBi
1560	-3.76	42.07	-6.38	23.04	3.35
1561	-3.74	42.27	-6.35	23.19	3.36
1562	-3.72	42.46	-6.32	23.34	3.37
1563	-3.68	42.85	-6.28	23.57	3.41
1564	-3.65	43.15	-6.22	23.88	3.45
1565	-3.61	43.55	-6.18	24.12	3.51
1566	-3.56	44.06	-6.11	24.51	3.59
1567	-3.54	44.26	-6.08	24.67	3.62
1568	-3.55	44.16	-6.08	24.67	3.59
1569	-3.59	43.75	-6.12	24.43	3.5
1570	-3.64	43.25	-6.19	24.04	3.36
1571	-3.65	43.15	-6.21	23.96	3.34

1572	-3.65	43.15	-6.19	24.04	3.32
1573	-3.61	43.55	-6.15	24.28	3.35
1574	-3.55	44.16	-6.05	24.83	3.44
1575	-3.45	45.19	-5.91	25.65	3.59

3、Directional diagram

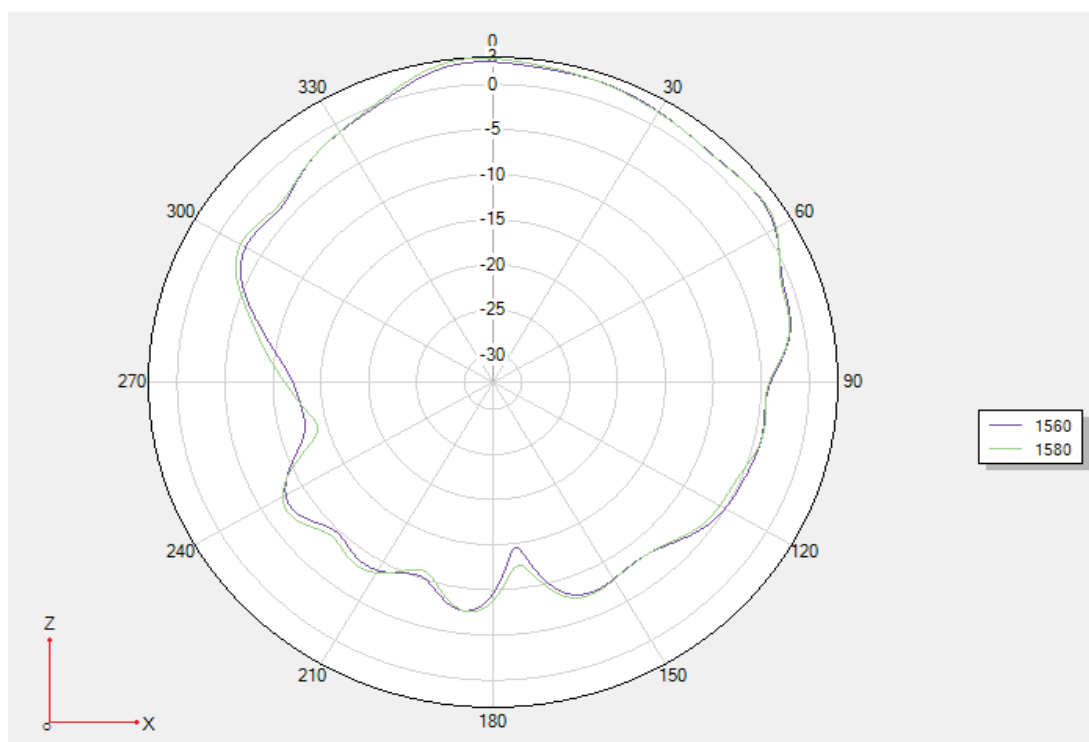


chart 7 Phi 0 2D 图

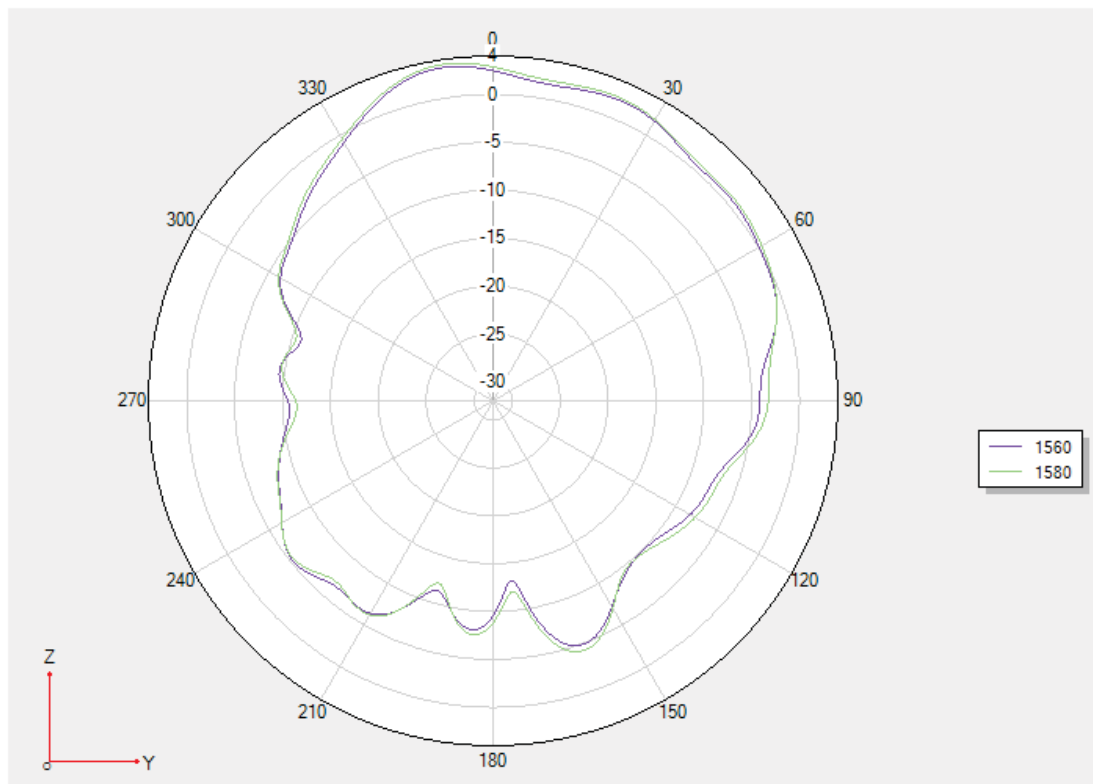


chart 8 Phi 90 2D

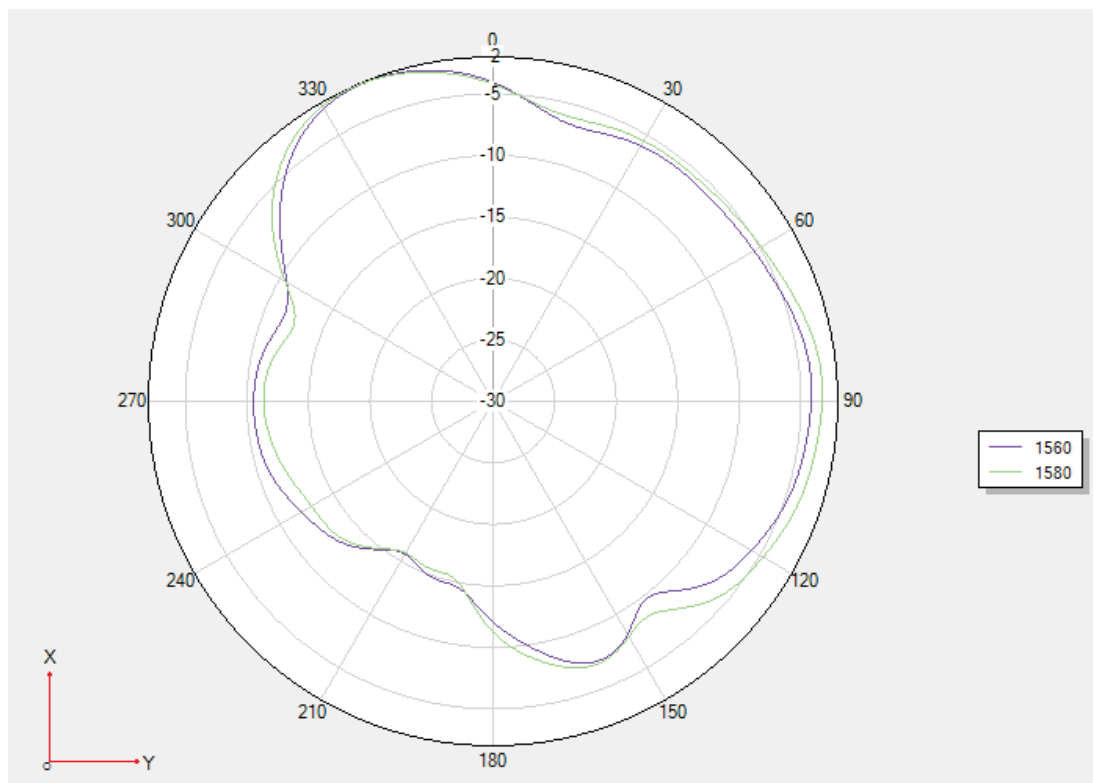


chart 9 Theta 90 2D

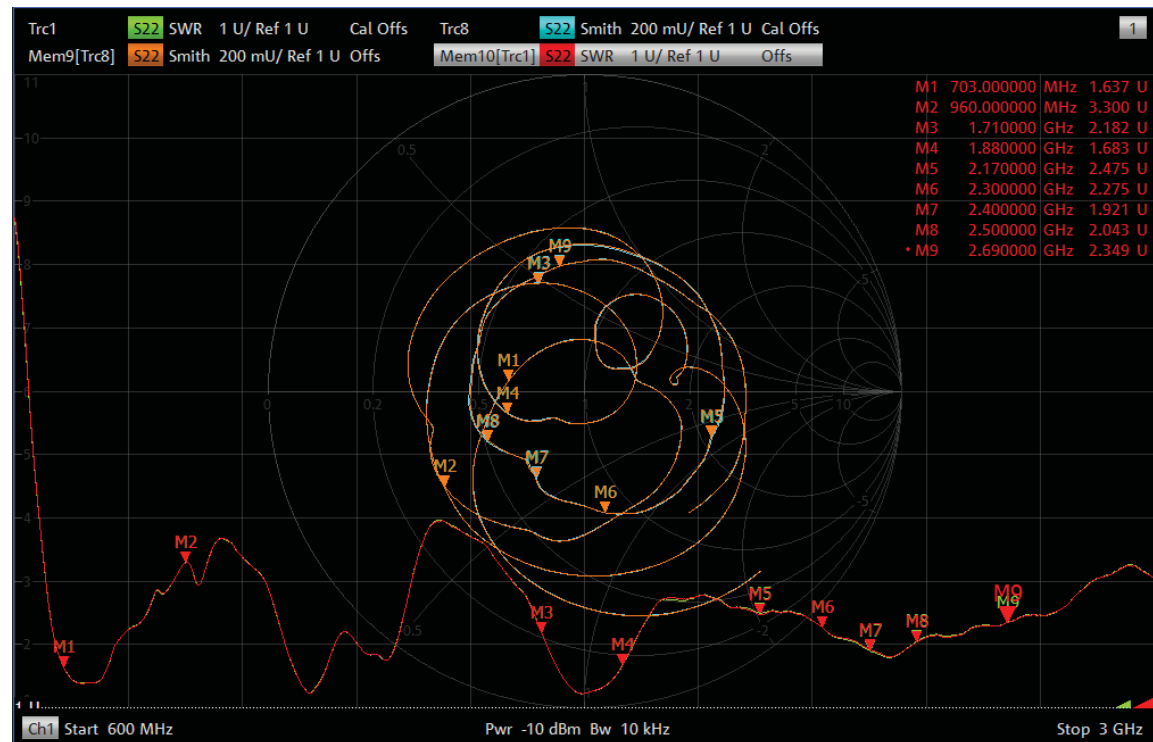
4、 antenna OTA data :

GPS OTA

Type	CNO(dBm)	UHS(dBm)	PIGS(dBm)	TIS(dBm)
Gps	28.08	-138.28	-141.62	-142.85

4、DIV antenna

1、Passive performance test parameters



2、antenna passive data :

Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
700	-5.42	28.71	0.69
710	-5.45	28.5	0.31
720	-5.33	29.32	0.17
730	-5.28	29.66	-0.43
740	-5.01	31.55	-0.21
750	-4.89	32.42	0.19
760	-4.80	33.12	0.36
770	-4.84	32.8	0.12
780	-5.22	30.06	-0.3
790	-5.31	29.43	-0.22
800	-5.88	25.84	-2.39
810	-6.13	24.36	-2.39
820	-6.31	23.41	-2.53

830	-6.16	24.23	-2.32
840	-6.21	23.92	-2.61
850	-6.18	24.1	-2.67
860	-6.06	24.77	-2.59
870	-6.04	24.86	-2.49
880	-5.97	25.32	-2.51
890	-6.05	24.82	-2.51
900	-5.84	26.09	-1.95
910	-5.97	25.28	-2.17
920	-6.06	24.77	-2.52
930	-6.55	22.14	-3.03
940	-6.56	22.06	-2.96
950	-6.87	20.56	-3.43
960	-7.19	19.09	-4.13
1700	-6.46	22.62	-1.37
1720	-6.13	24.36	-1.3
1740	-5.75	26.63	-1.48
1760	-5.04	31.36	-0.47
1780	-4.53	35.27	-0.16
1800	-4.33	36.92	-0.04
1820	-3.82	41.48	0.6
1840	-3.61	43.55	0.68
1860	-3.76	42.07	0.21
1880	-4.09	38.96	0.03
1900	-4.15	38.5	0.11
1920	-4.07	39.2	0.21
1940	-4.32	36.99	-0.15
1960	-4.48	35.62	-0.37
1980	-4.45	35.9	-0.36
2000	-4.52	35.34	-0.88
2020	-4.66	34.17	-1.04
2040	-4.43	36.05	-0.78
2060	-4.44	35.97	-0.92
2080	-4.27	37.43	-0.94
2100	-4.14	38.57	-0.43
2120	-3.95	40.24	0.26
2140	-4.08	39.04	-0.08
2160	-4.06	39.28	-0.02
2180	-4.03	39.51	0.26
2200	-4.08	39.12	0.61
2220	-4.28	37.36	0.52
2240	-4.43	36.05	0.47

2260	-4.52	35.34	0.41
2280	-4.22	37.81	0.65
2300	-4.38	36.48	0.22
2320	-4.22	37.81	0.77
2340	-4.43	36.05	0.65
2360	-4.21	37.96	1.04
2380	-4.40	36.33	1.03
2400	-4.17	38.27	1.46
2420	-4.45	35.9	1.43
2440	-4.38	36.48	1.62
2460	-4.63	34.44	1.48
2480	-4.53	35.27	1.77
2500	-4.76	33.44	1.63
2520	-4.65	34.31	2
2540	-4.86	32.67	2.03
2560	-4.84	32.8	2
2580	-4.97	31.85	1.57
2600	-5.06	31.18	1.15
2620	-5.49	28.23	0.53
2640	-5.36	29.1	0.73
2660	-5.73	26.73	0.35
2680	-5.80	26.28	0.19
2700	-6.07	24.72	-0.33

3、Directional diagram

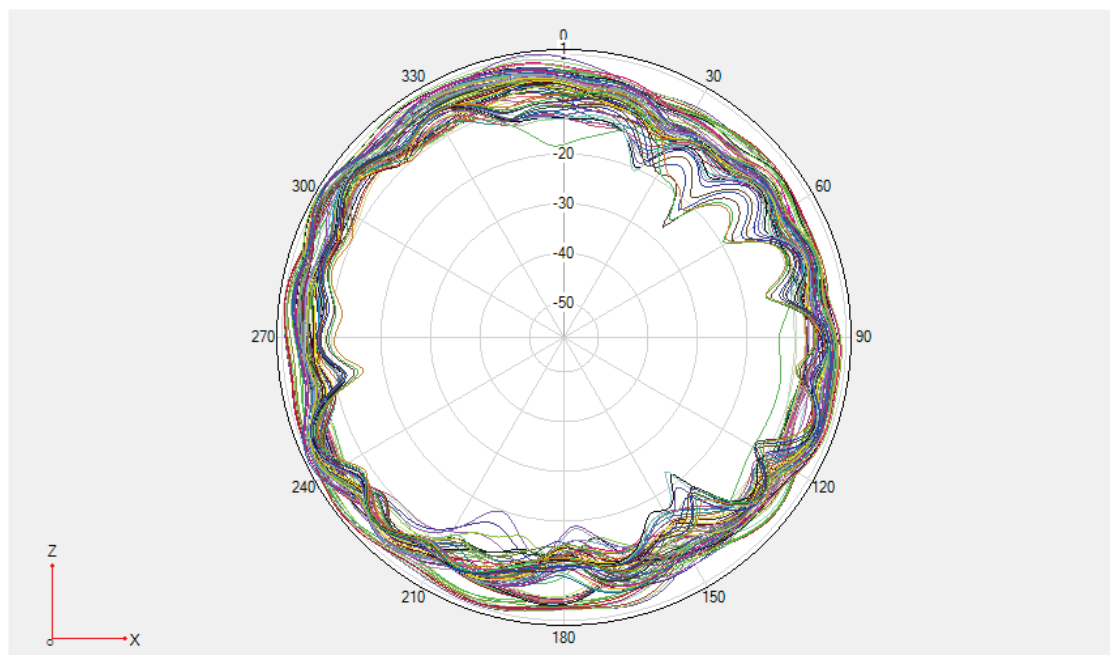


chart 10 Phi 0 2D 图

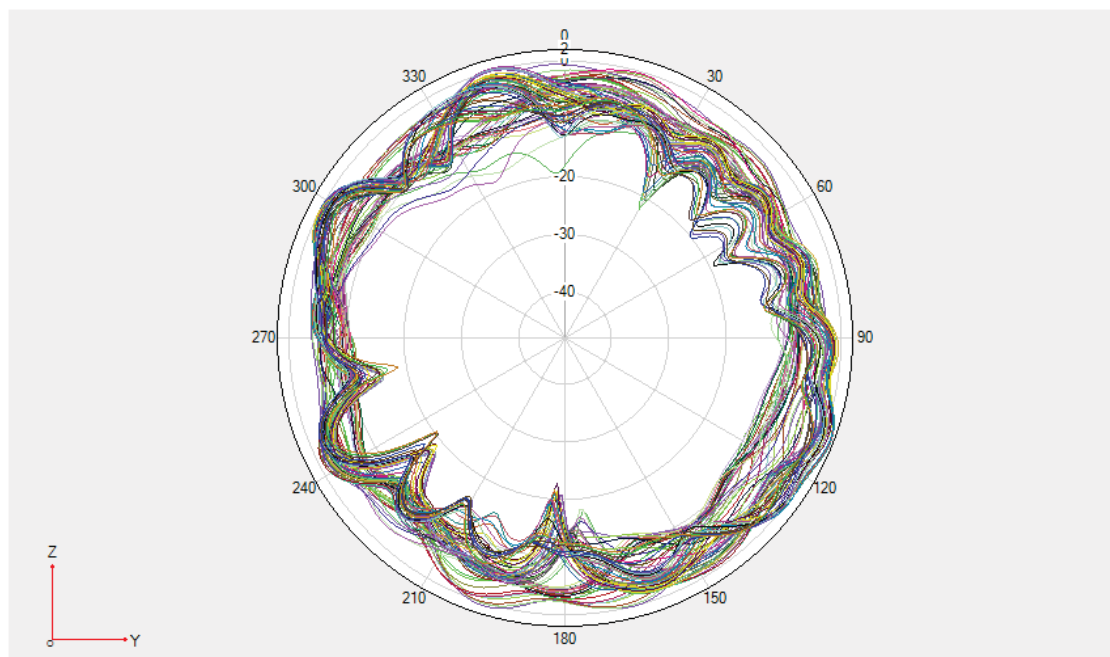


chart 11 Phi 90 2D

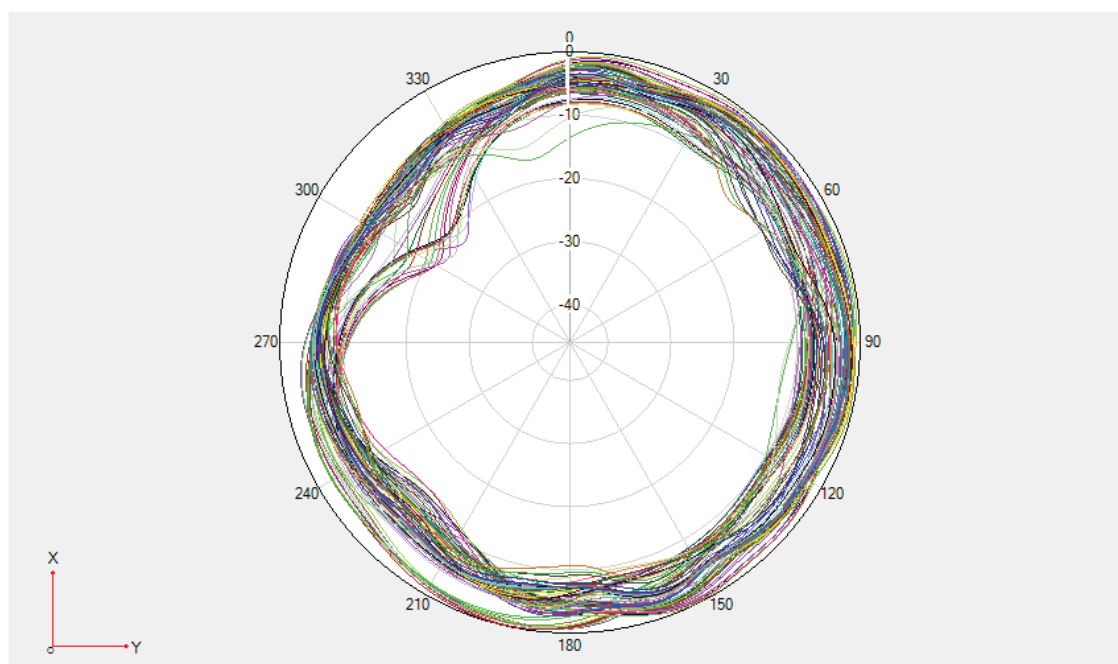


chart 12 Theta 90 2D