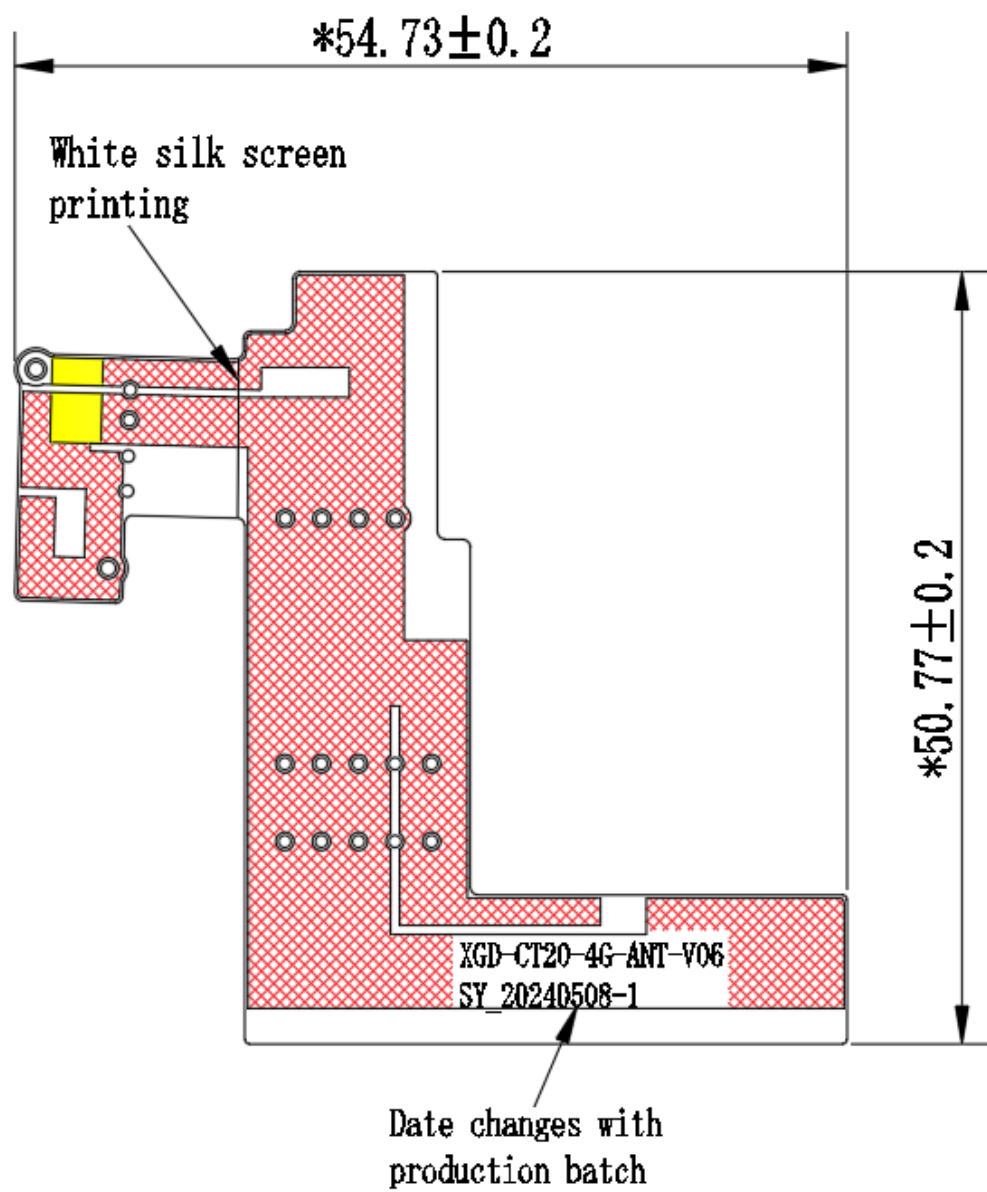


Manufacturer:SunnywayTechnology (China)Co.,
Ltd.

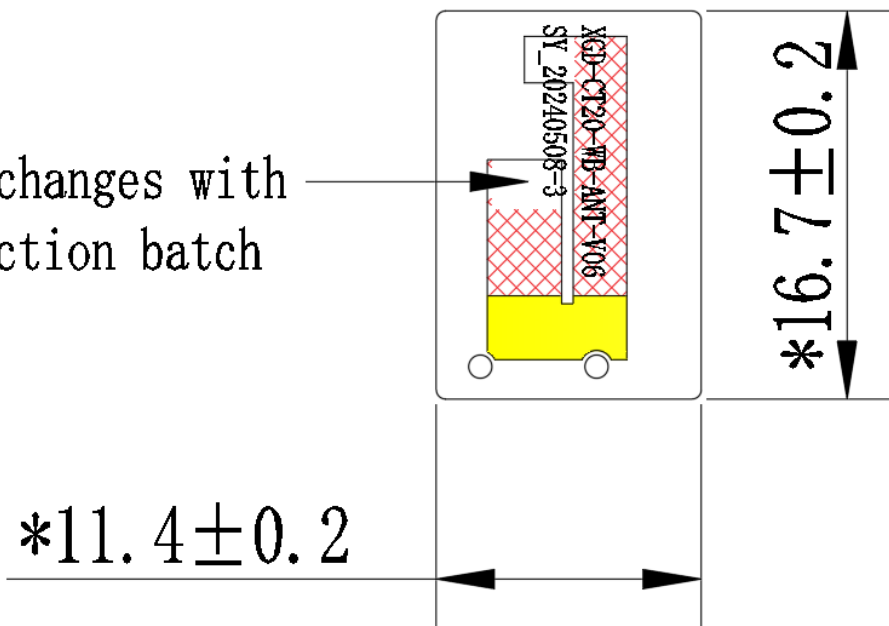
Address:Floor 6, Building 5, Nam Tai Inno Park,
Guangming District, Shenzhen

MAIN ANT

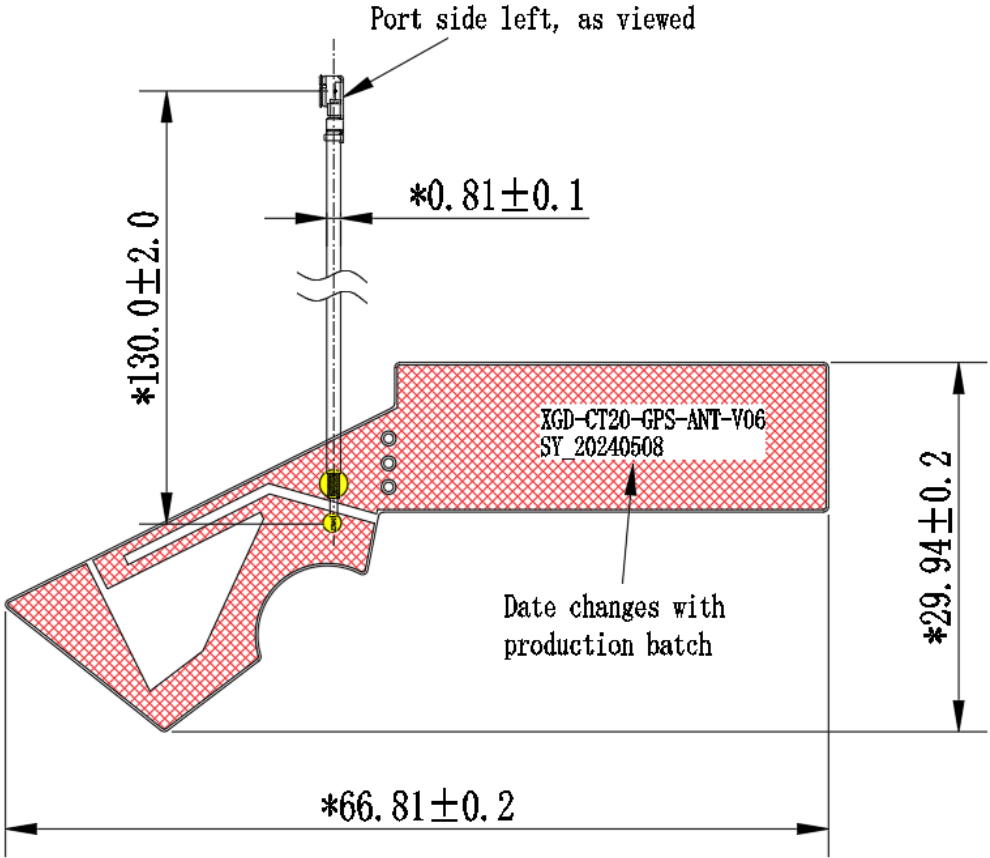


WiFi ANT

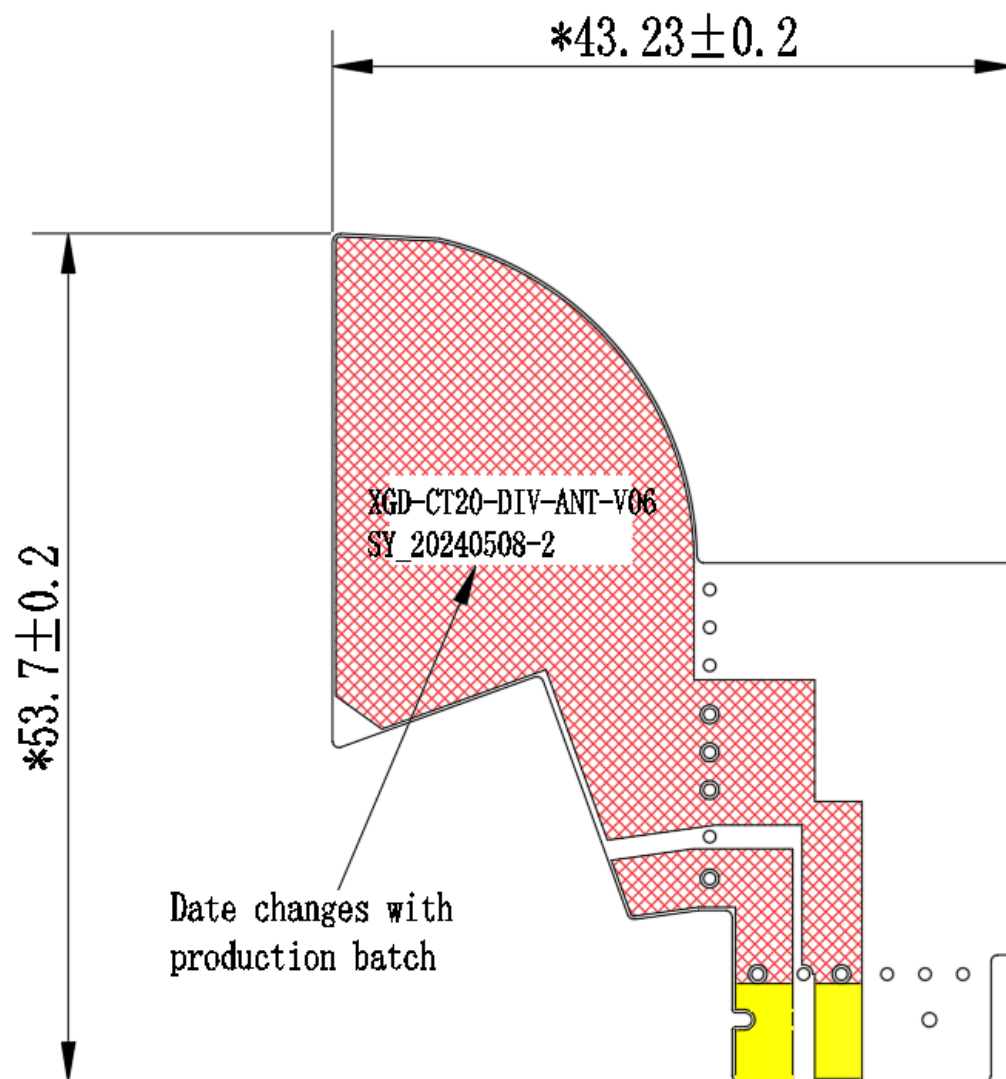
Date changes with
production batch



GPS ANT

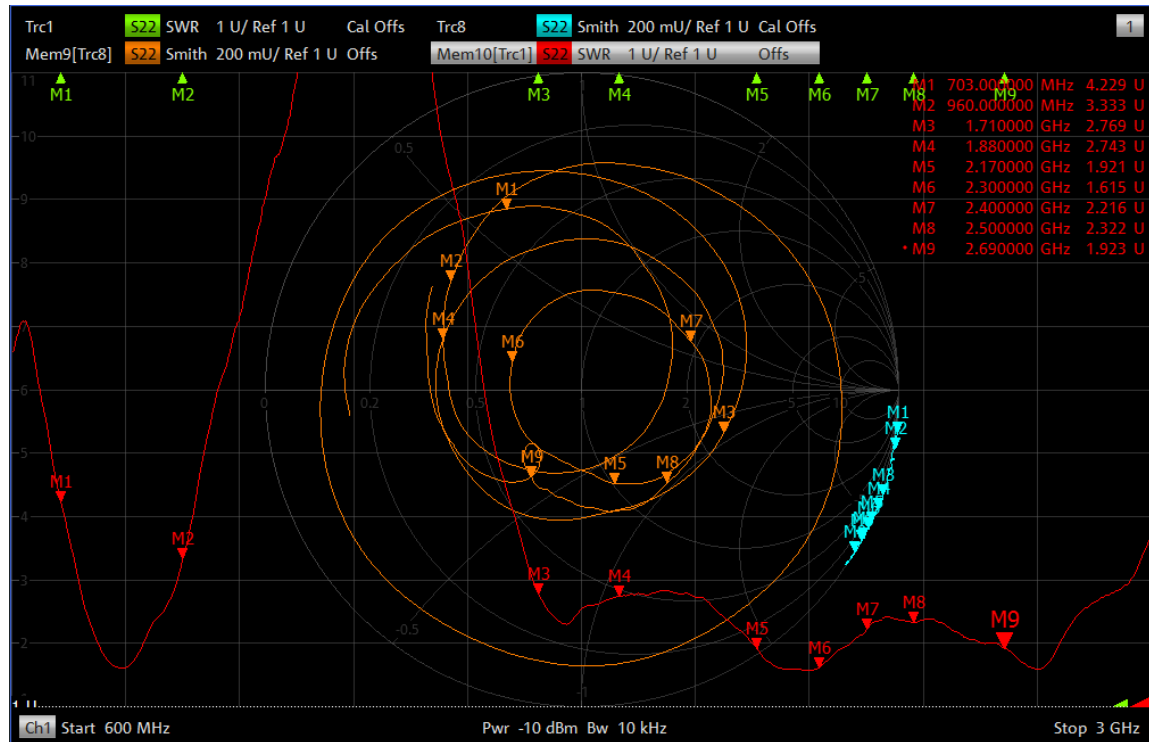


DIV ANT



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

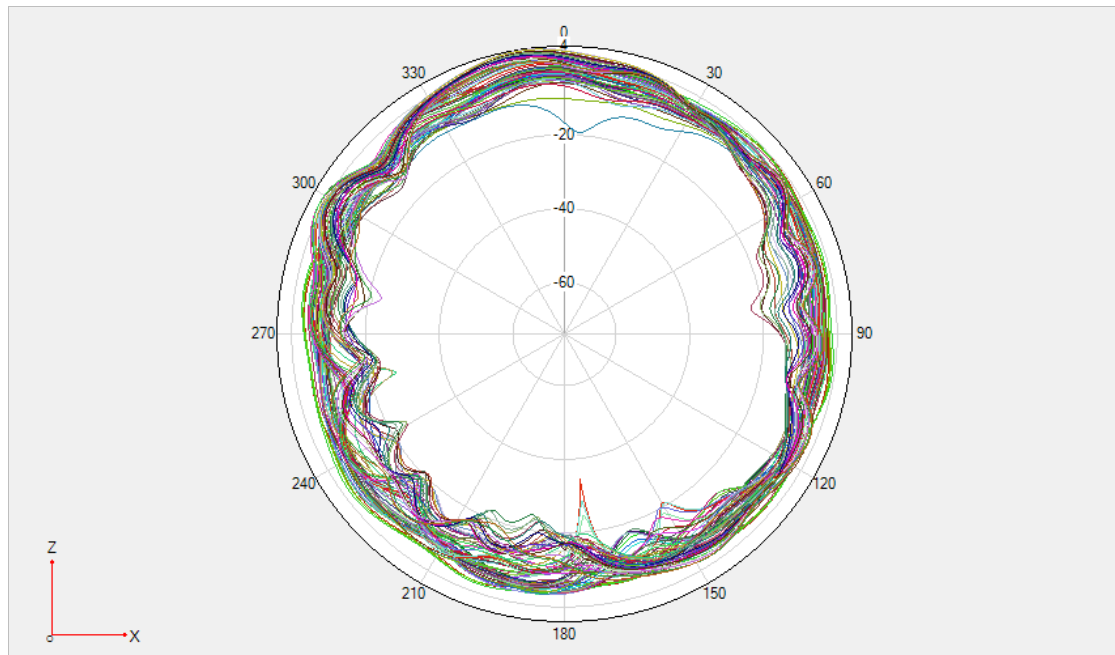


chart 1 Phi 0 2D

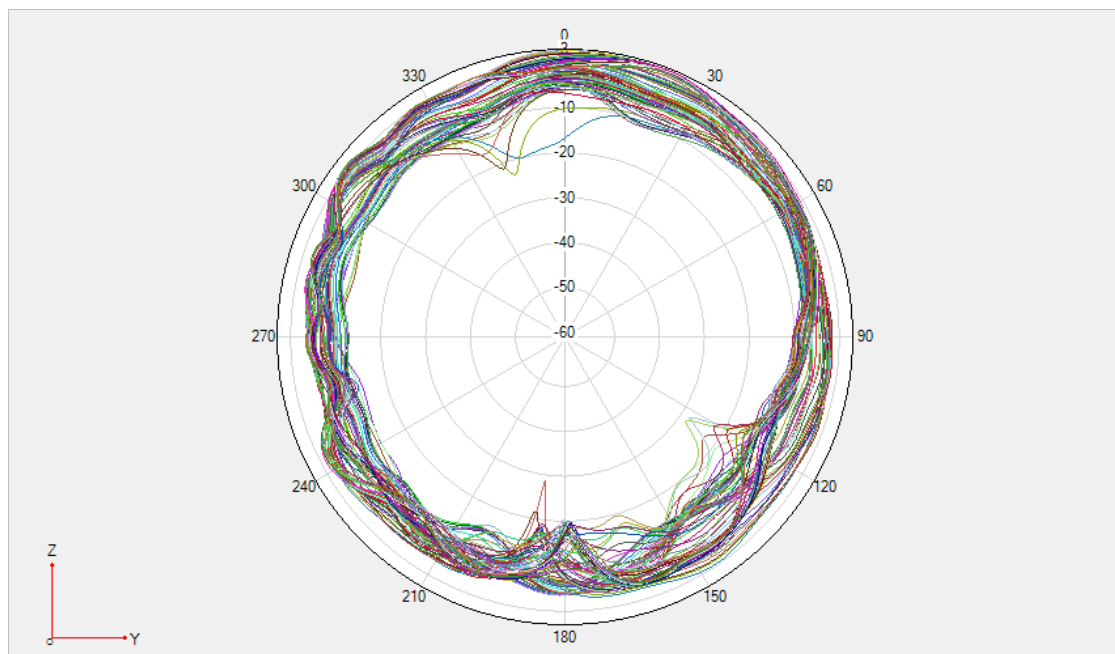


chart 2 Phi 90 2D

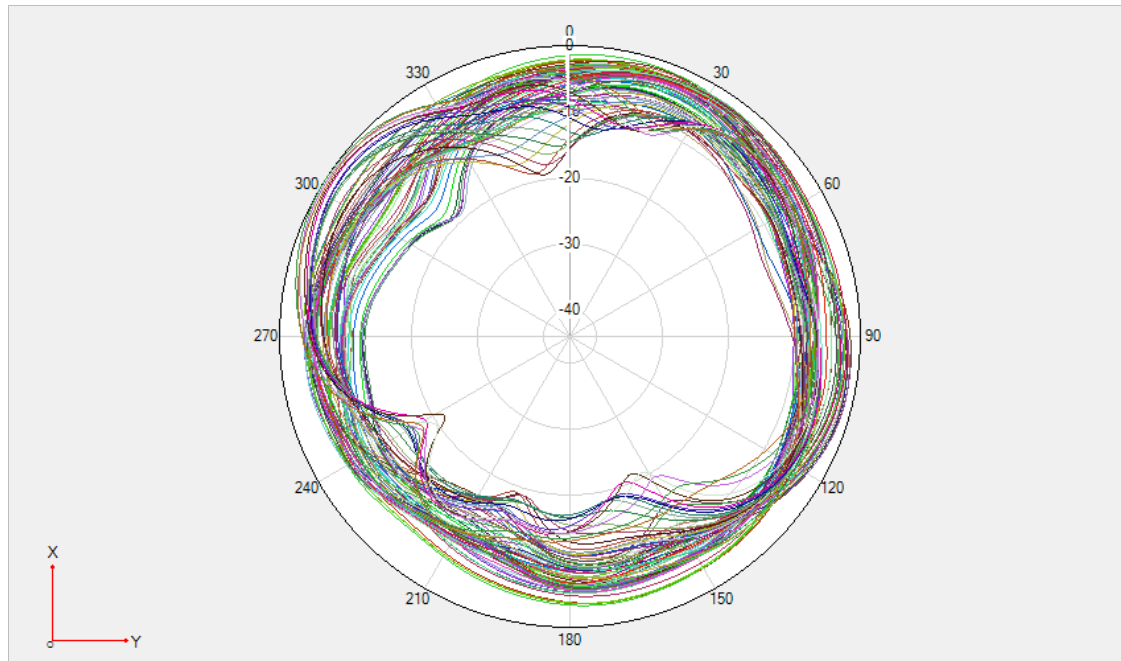


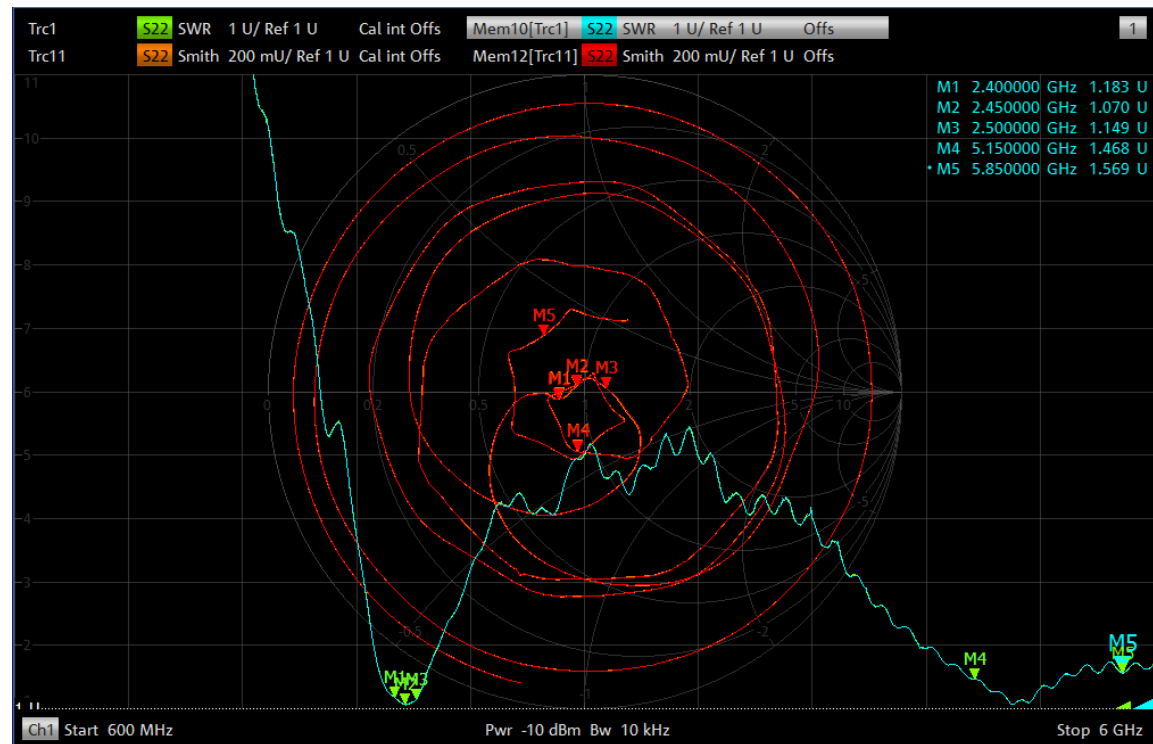
chart 3 Theta 90 2D

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

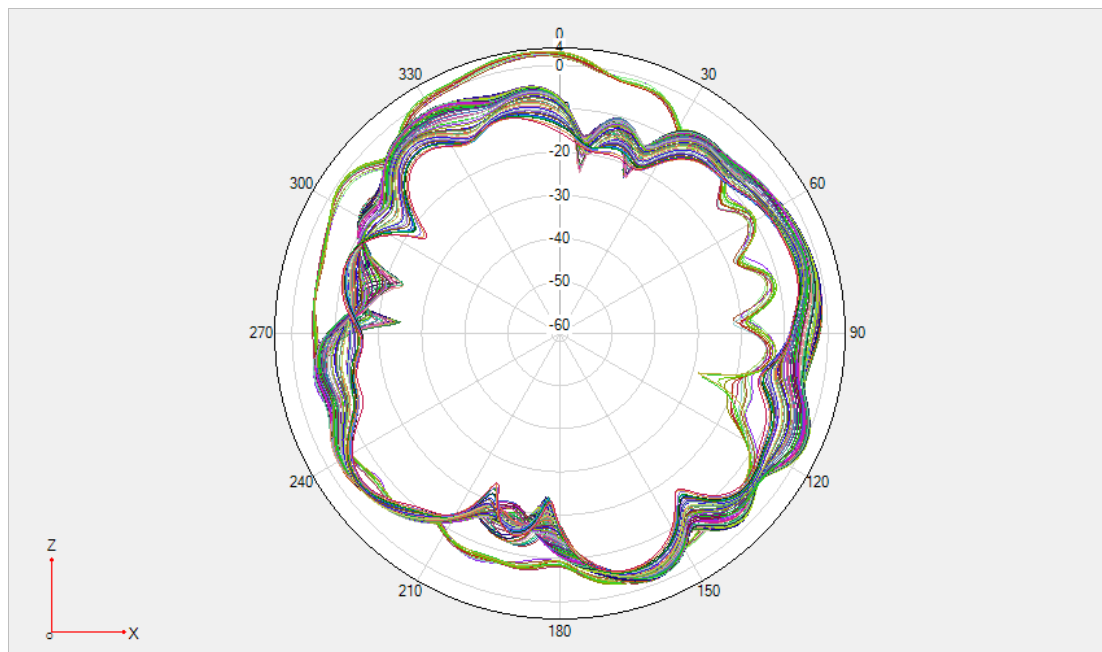


chart 4 Phi 0 2D

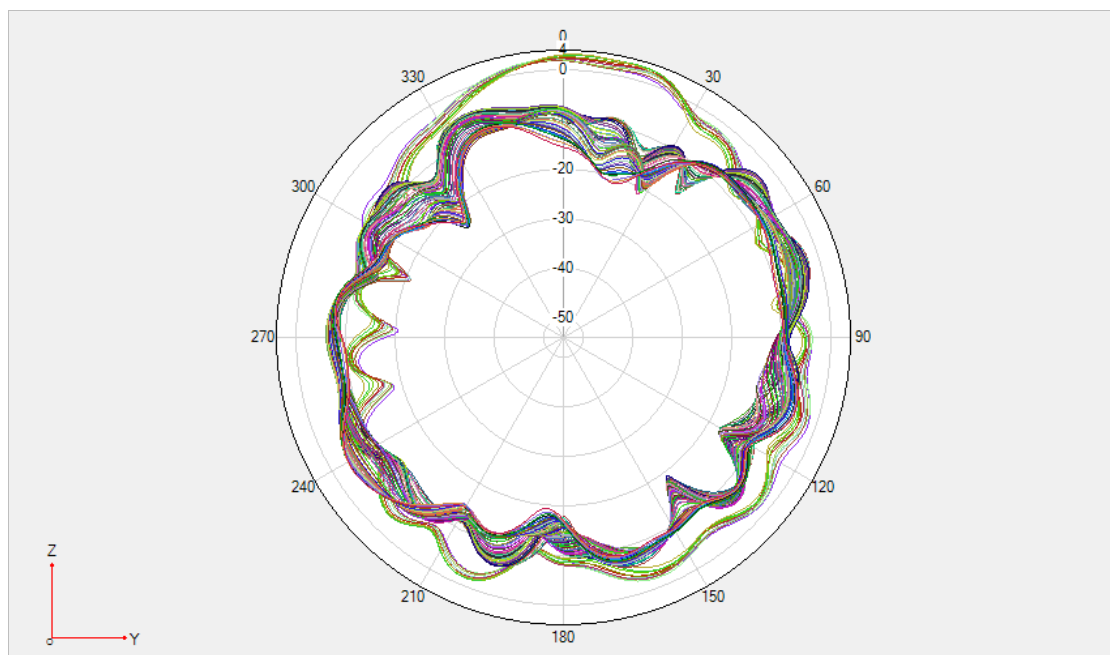


chart 5 Phi 90 2D

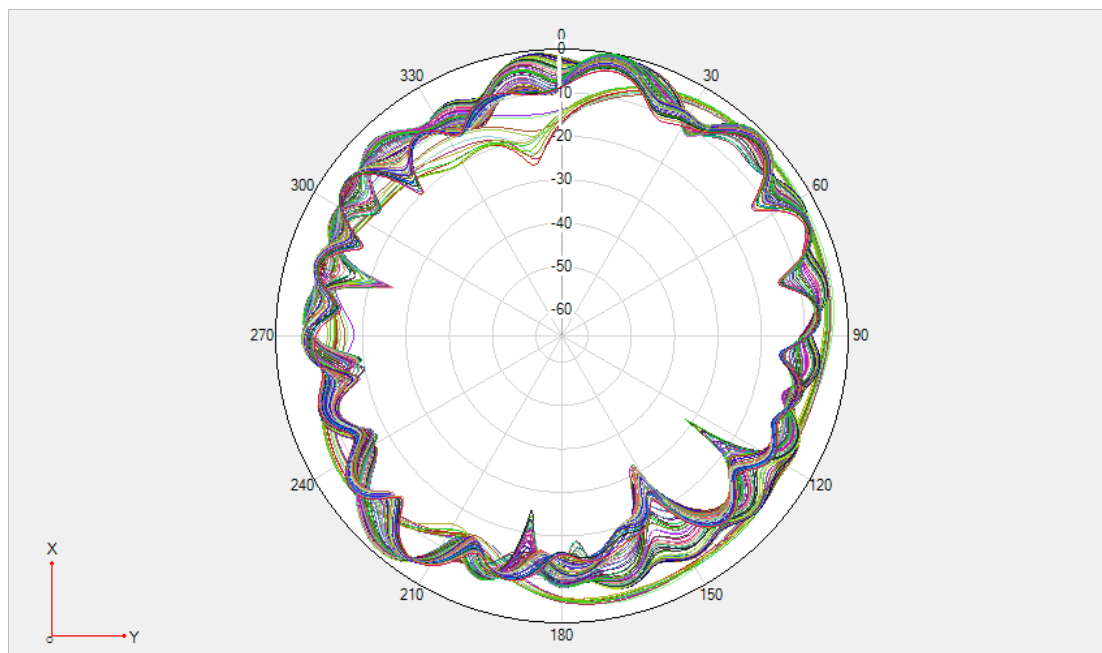


chart 6 Theta 90 2D

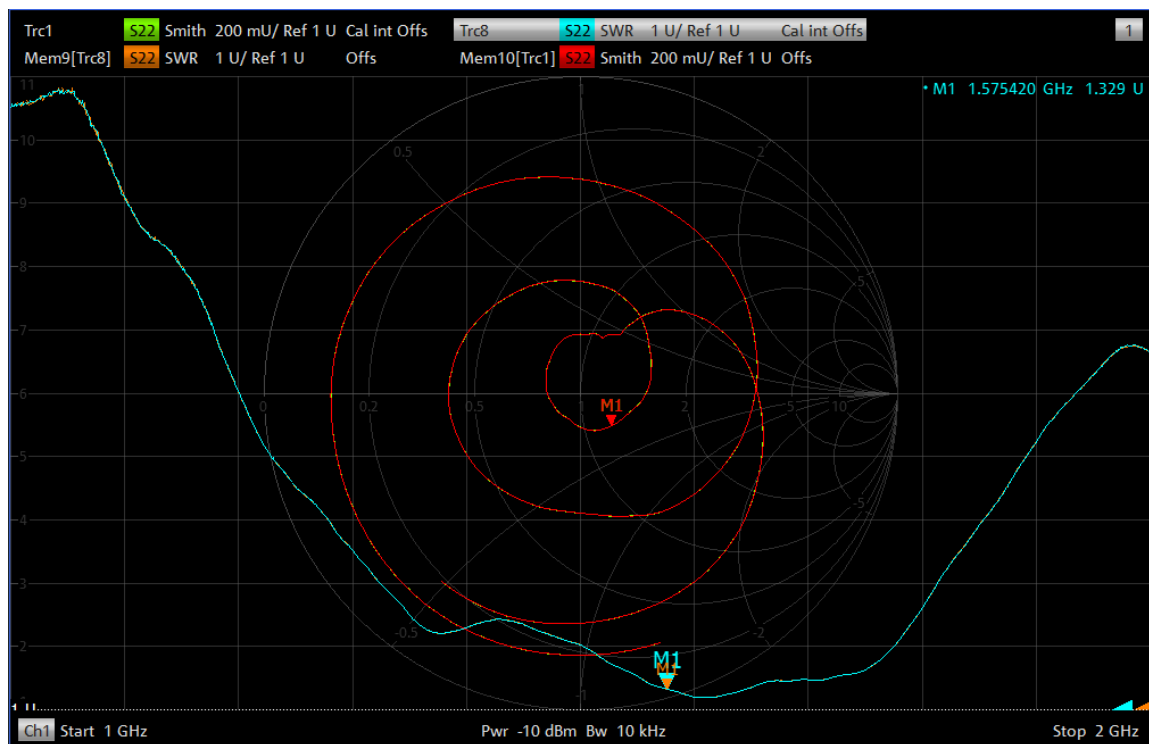
4、 antenna OTA data :

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

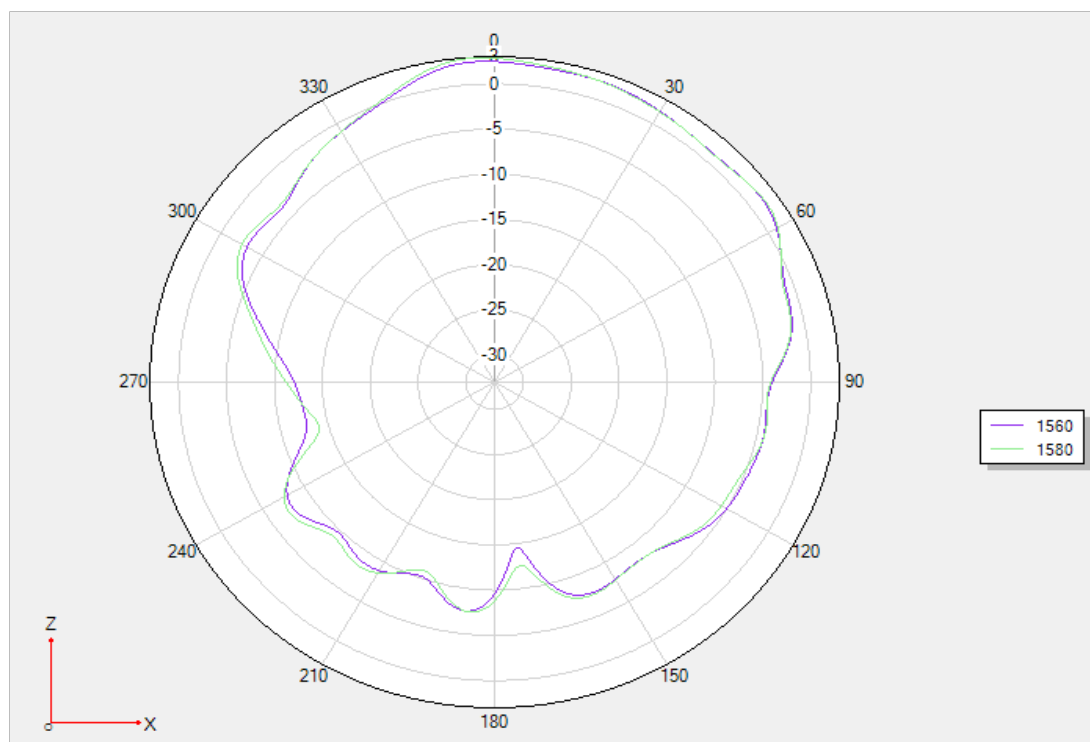


chart 7 Phi 0 2D 图

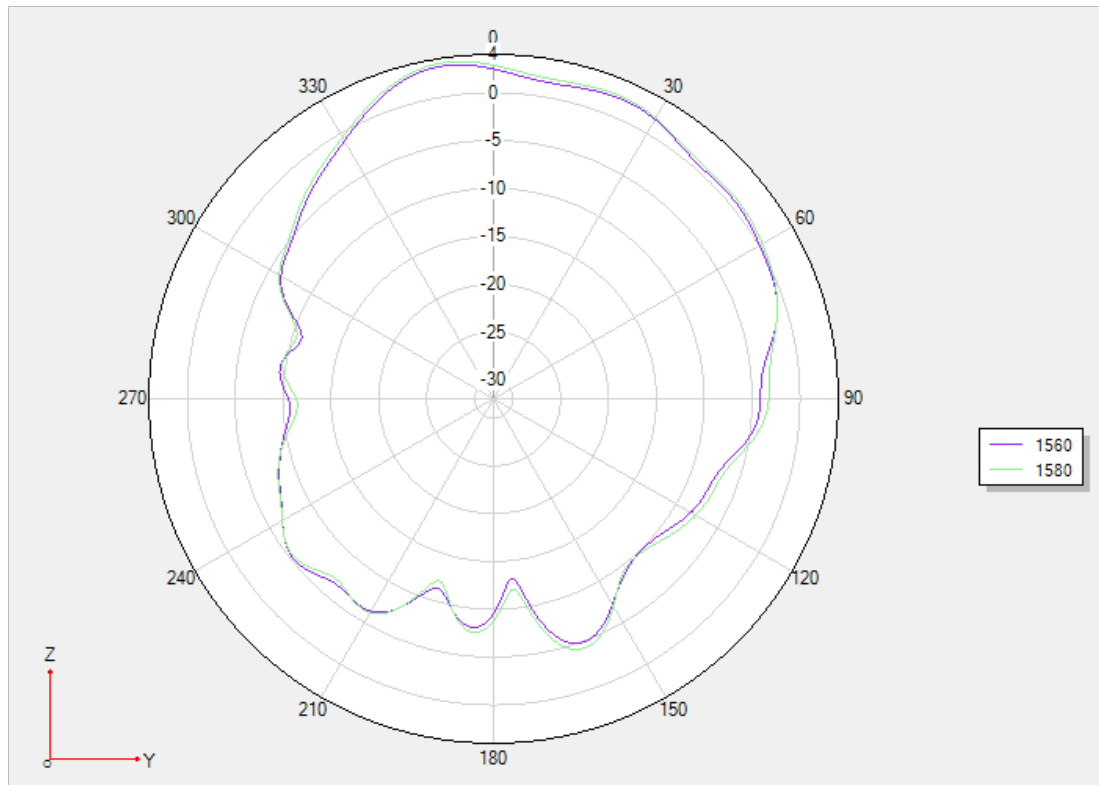


chart 8 Phi 90 2D

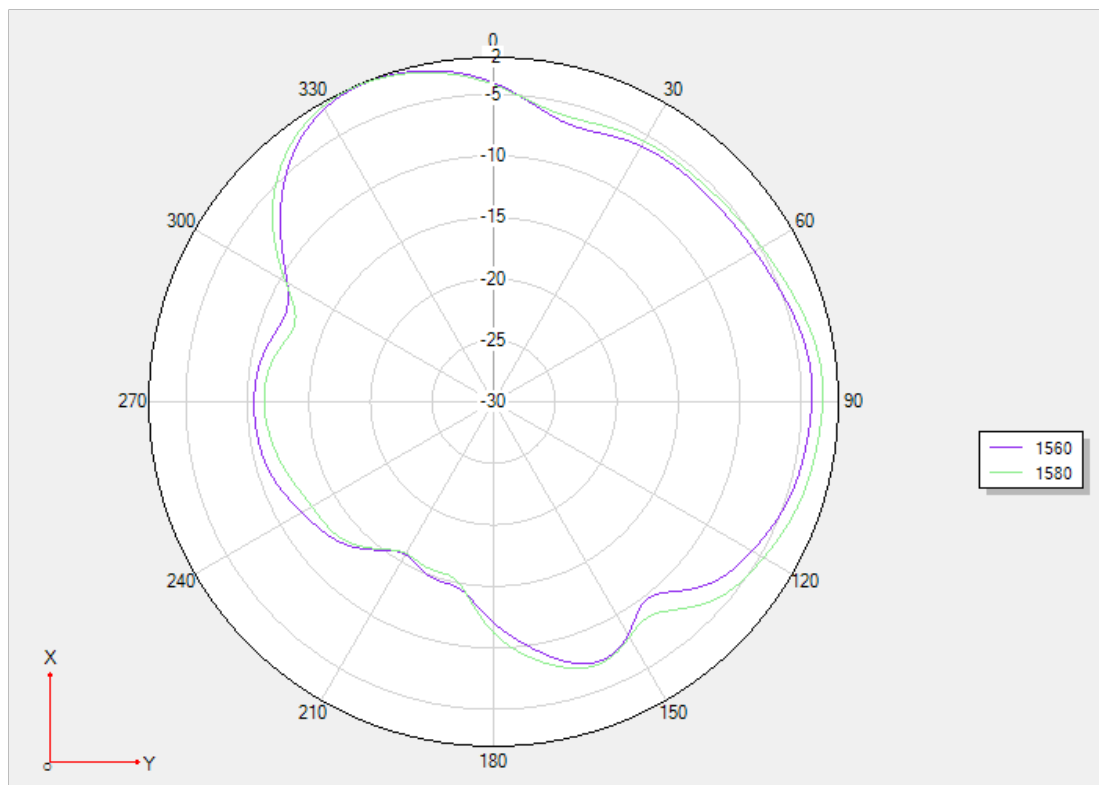


chart 9 Theta 90 2D

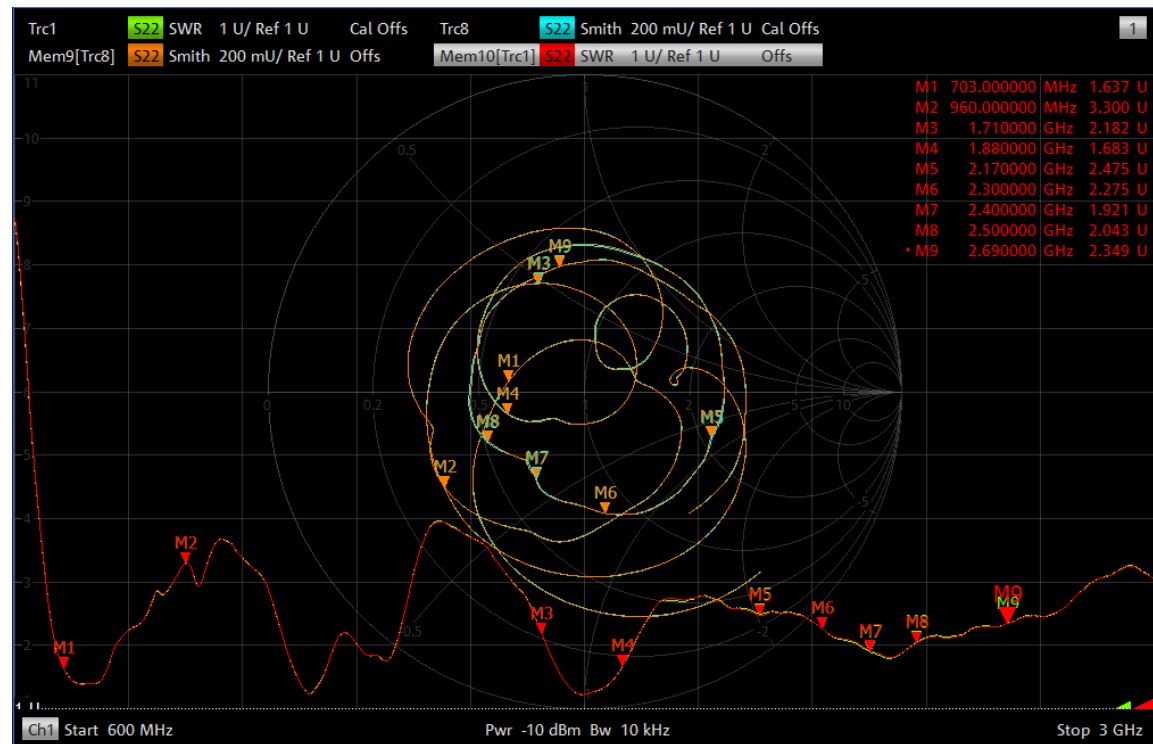
4、 antenna OTA data :

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

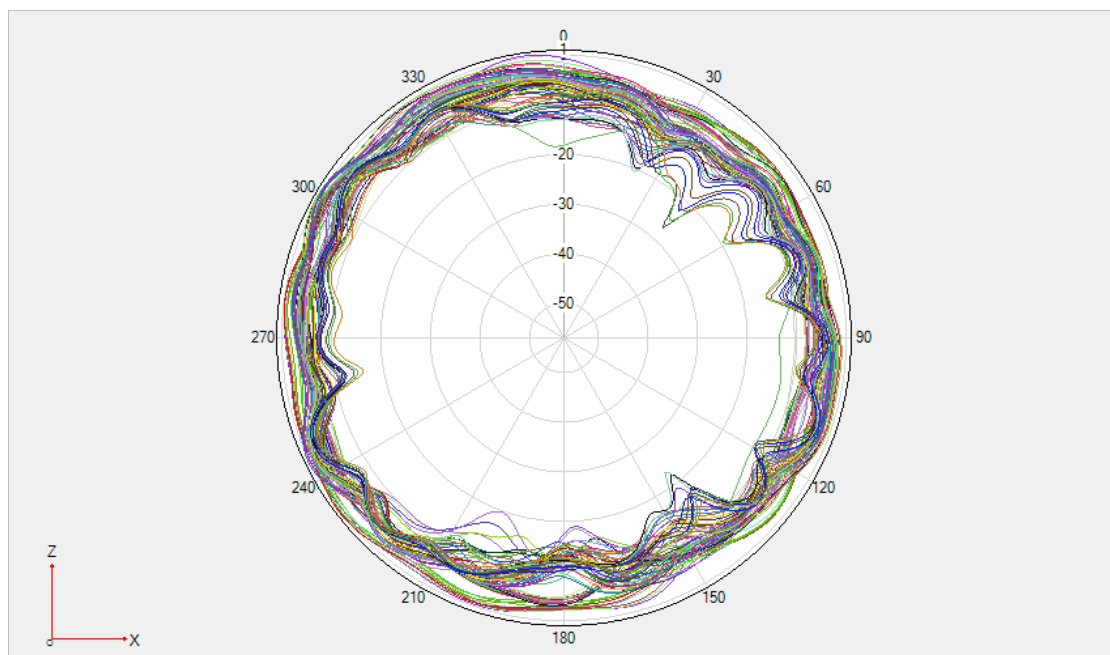


chart 10 Phi 0 2D 图

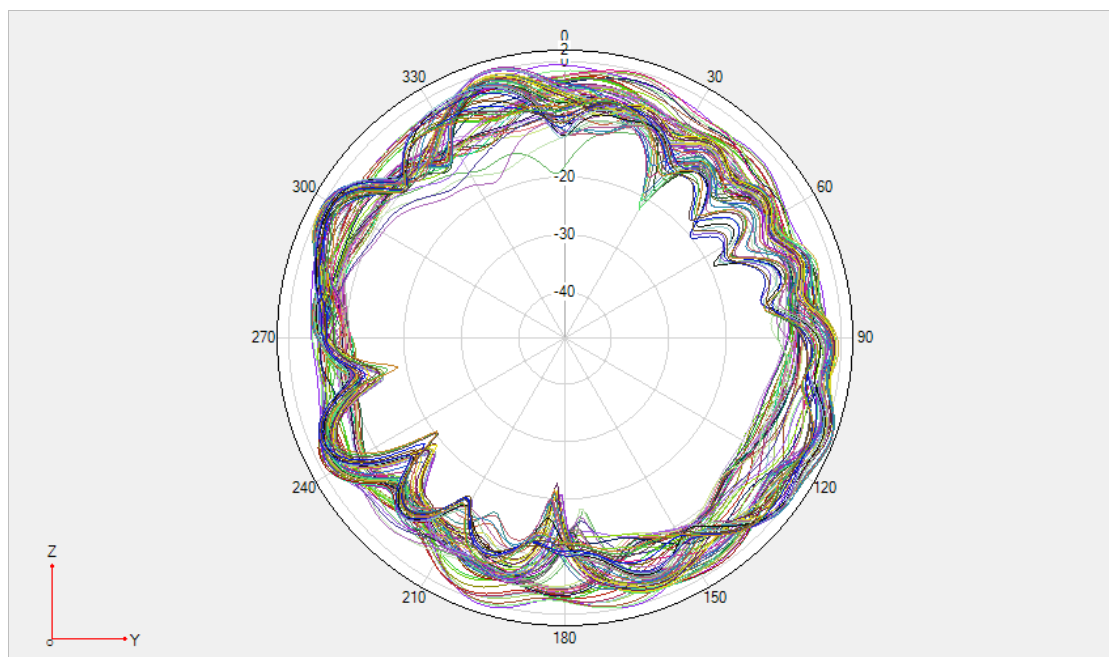


chart 11 Phi 90 2D

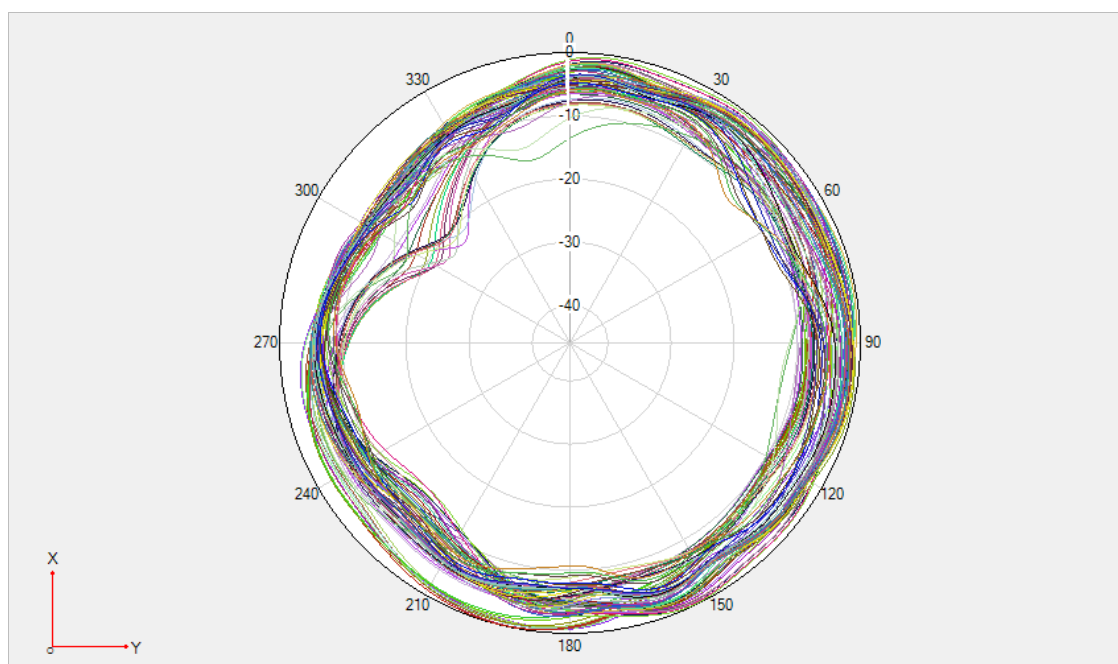


chart 12 Theta 90 2D