SH-Link®
RF 射频

5G Antenna

Product Specification

ODM PN：V1695-007-A-1

OC：

Version	Date	Author	Note
1.0			

1 Product specification

1.1 5G antenna section

(1) Frequency Range:

ANT5：1710-2690MHZ/3300-5000MHZ
ANT6：1710-2690MHZ/3300-5000MHZ
ANT7：700-960MHZ/1710-2690MHZ/3300-5000MHZ
ANT8：700-960MHZ/1710-2690MHZ/3300-5000MHZ

(2) V.S.W.R: 824~960＜5、1710~2690＜3、3300-5000＜3.0

(3) Loss >-5dB

(4) Impedance: 50Ω

V.S.W.R：≤5(LTE main antenna)/≤5（LTE Aux antenna）；
Gain：≤5.5dBi（LTE main antenna）/≤5.5-1dBi(LTE Aux antenna)；

1.2 Environment

(1)Operation Temp.：-35℃～+85℃；
(2)Storage Temp.：-40℃～+90℃；
(3)IP Protection：IP67

2 Antenna appearance

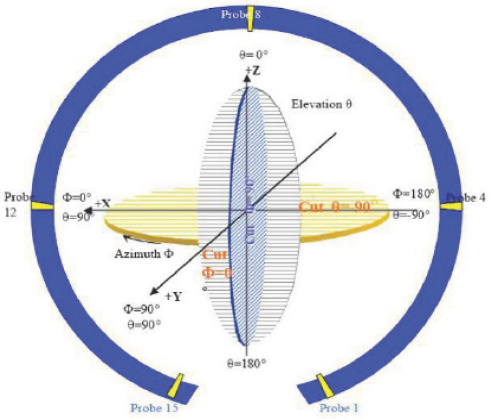
2.1 Antenna picture

3 Antenna Test environment

3.1 Passive test equipment

Antenna characteristics were tested by Agilent E5071C vector network analyzer.

Antenna radiation characteristics were tested by ET Satimo Starlab 3D near field microwave anechoic chamber. The test coordinate system is shown in the figure below.

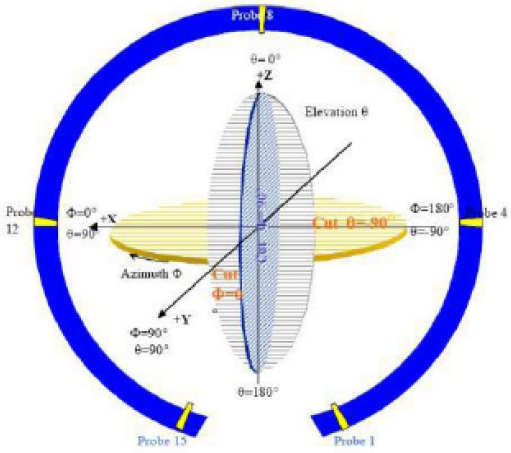


3D MICRO WAVE ANECHOIC CHAMBER COORDINATE SYSTEM (BACK VIEW)

3.2 Active test equipment

Integrated test machine used Agilent 8960.

Antenna radiation characteristic test used ET Satimo Starlab 3D near field microwave anechoic chamber. The test coordinate system is shown in the figure below.

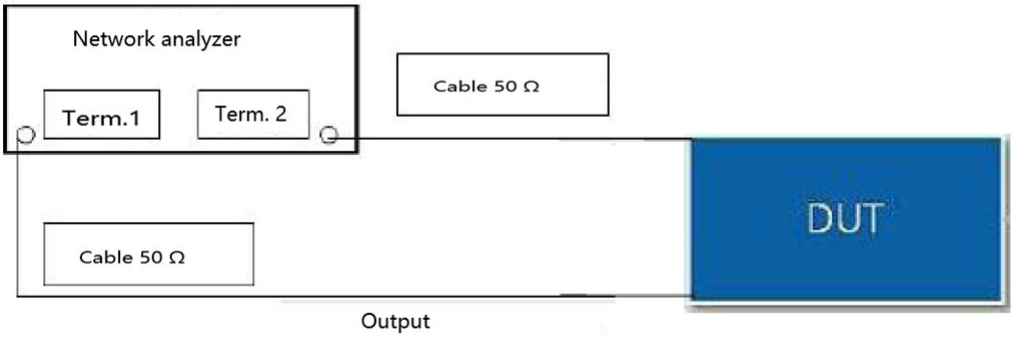


3D MICRO WAVE ANECHOIC CHAMBER COORDINATE SYSTEM (BACK VIEW)

3.3 Test equipment photos

(AMS 8500 ANECHOIC CHAMBER)

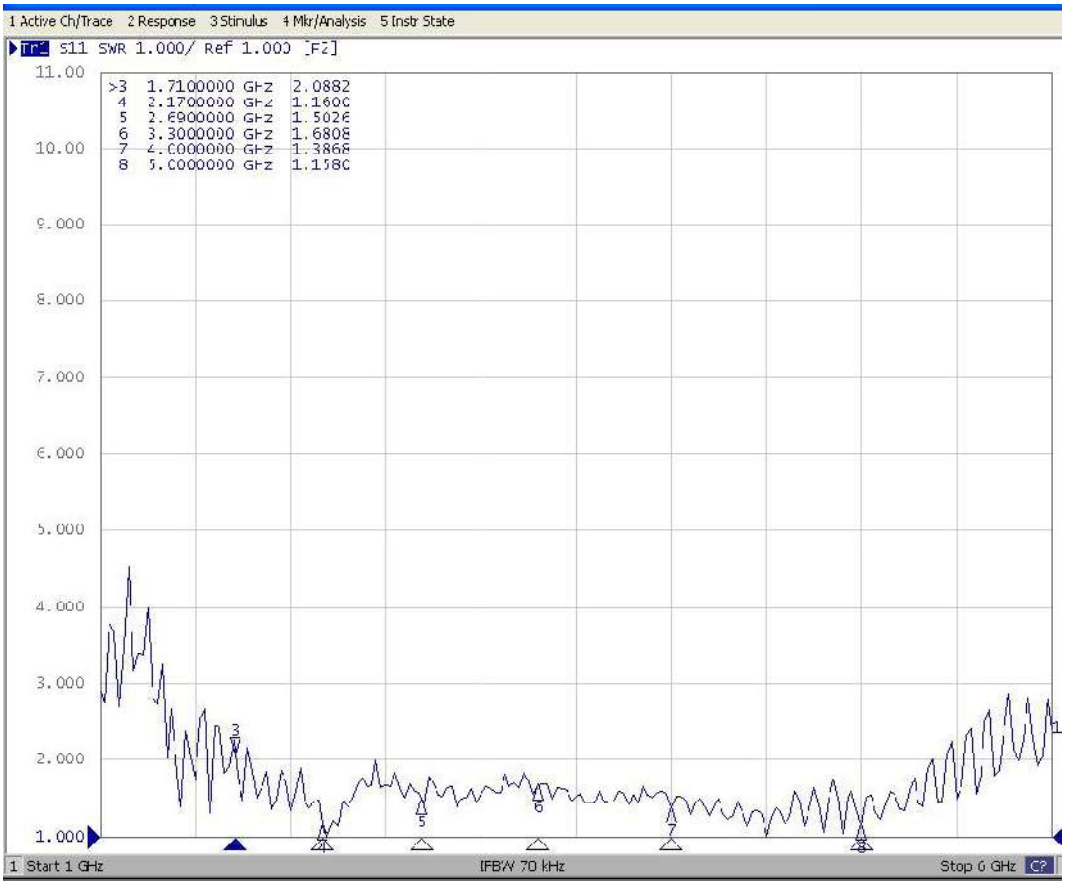
3.4 Network analyzing test figure



4 Antenna Test Result

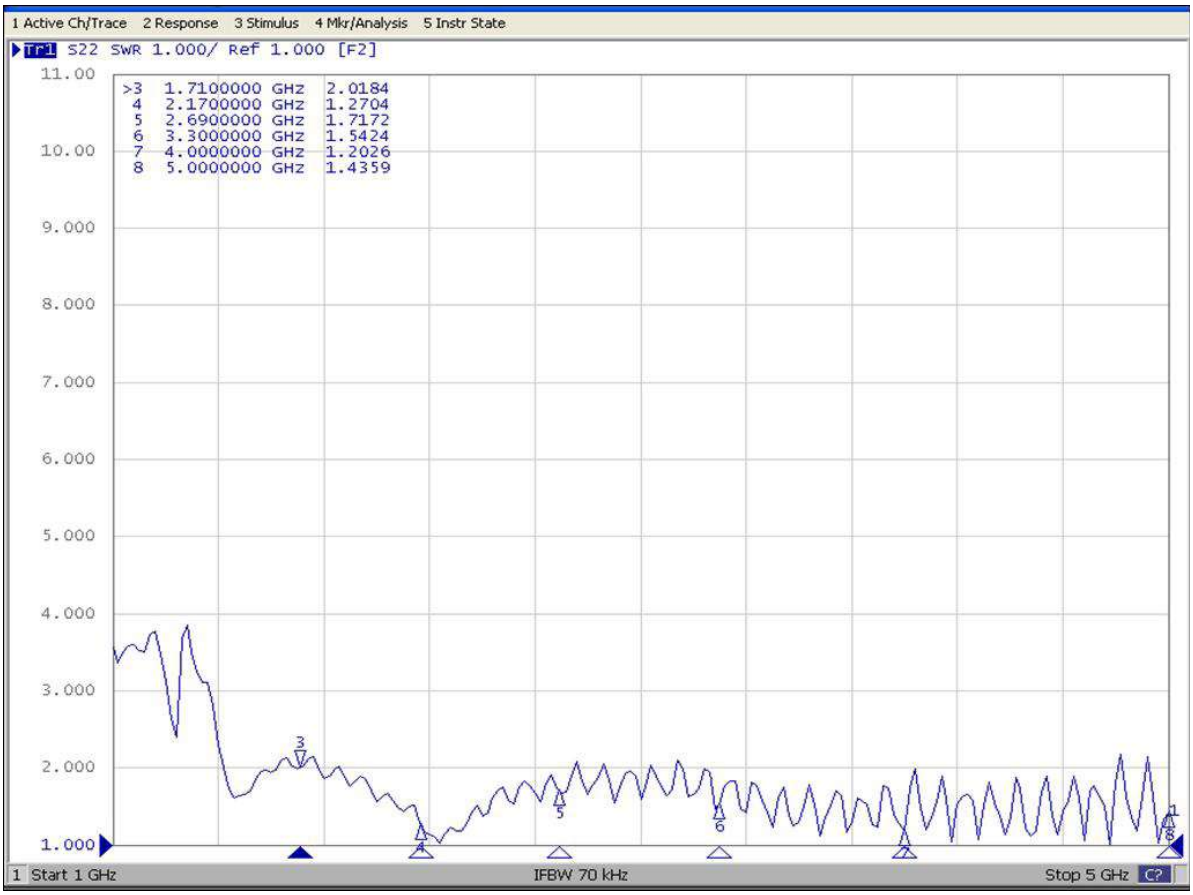
4.1 5G Antenna passive VSWR

ANT5



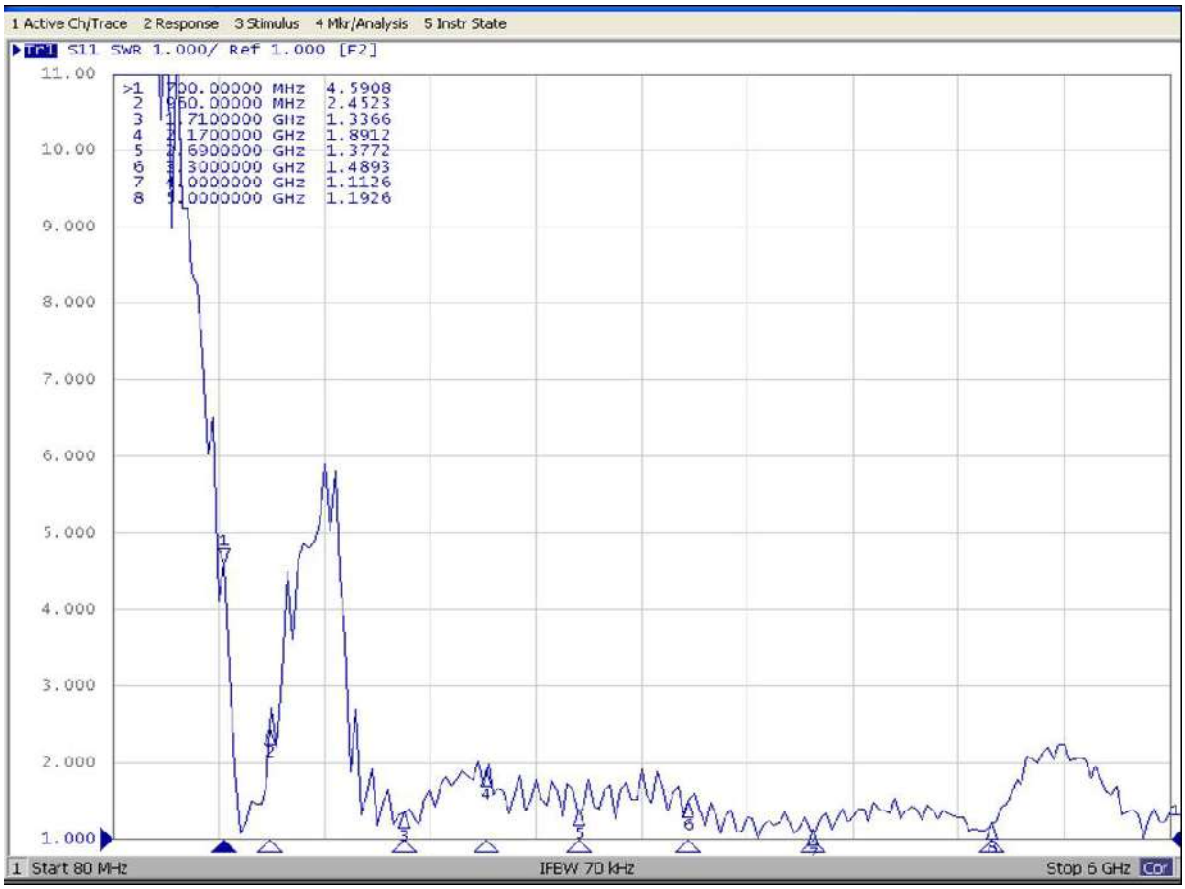
MARKER	Frequency/MHz	VSWR
3	1710	2.08
4	2170	1.16
5	2690	1.5
6	3300	1.68
7	4000	1.38
8	5000	1.15

ANT6:



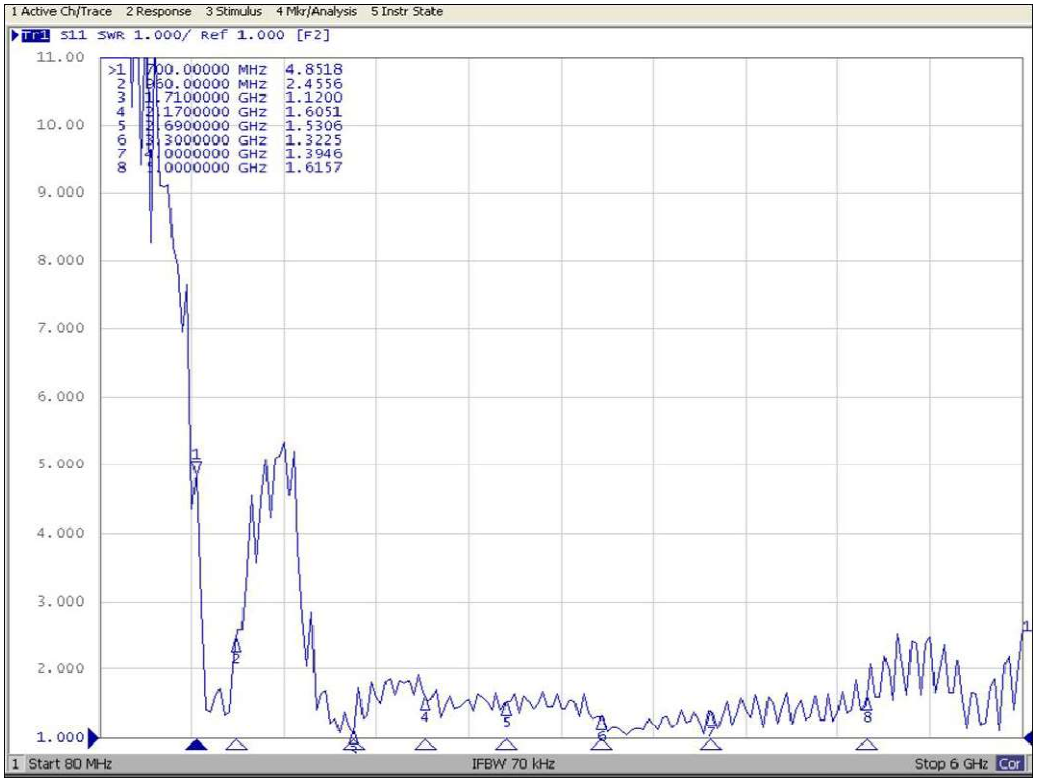
MARKER	Frequency/MHz	VSWR
3	1710	2.01
4	2170	1.27
5	2690	1.71
6	3300	1.54
7	4000	1.2
8	5000	1.43

ANT7:



MARKER	Frequency/MHz	VSWR
1	700	4.59
2	960	2.45
3	1710	1.33
4	2170	1.89
5	2690	1.37
6	3300	1.48
7	4000	1.11
8	5000	1.19

ANT8:



MARKER	Frequency/MHz	VSWR
1	700	4.85
2	960	2.45
3	1710	1.12
4	2170	1.6
5	2690	1.53
6	3300	1.32
7	4000	1.39
8	5000	1.61

4.2 5G Antenna Gain Efficiency Data

ANT5											
频点	效率	损耗	增益	频点	效率	损耗	增益	频点	效率	损耗	增益
1710	49.36%	-3.07	0.67	2460	53.19%	-2.74	3.83	4050	36.19%	-4.41	4.73
1740	46.37%	-3.34	0.63	2490	51.51%	-2.88	3.89	4100	39.75%	-4.01	4.79
1770	47.58%	-3.23	0.53	2520	52.79%	-2.77	4.24	4150	39.84%	-4	4.83
1800	48.11%	-3.18	0.45	2550	53.52%	-2.71	4.38	4200	41.40%	-3.83	4.89
1830	46.98%	-3.28	0.4	2580	53.38%	-2.73	4.42	4250	41.26%	-3.85	4.8
1860	46.90%	-3.29	0.18	2610	54.29%	-2.65	4.46	4300	41.30%	-3.84	4.6
1890	46.55%	-3.32	0.26	2640	56.12%	-2.51	4.73	4350	39.90%	-3.99	4.2
1920	45.11%	-3.46	0.79	2670	55.11%	-2.59	4.81	4400	40.02%	-3.98	4.04
1950	46.13%	-3.36	0.92	2700	54.32%	-2.65	4.75	4450	36.12%	-4.42	4.02
1980	48.55%	-3.14	1.73					4500	34.73%	-4.59	3.95
2010	48.78%	-3.12	1.89	3300	44.06%	-3.56	4.41	4550	33.57%	-4.74	3.8
2040	51.72%	-2.86	2.05	3350	40.73%	-3.9	4.04	4600	33.49%	-4.75	3.95
2070	53.05%	-2.75	2.26	3400	42.68%	-3.7	4.34	4650	33.55%	-4.74	3.9
2100	53.98%	-2.68	2.57	3450	39.57%	-4.03	4	4700	33.66%	-4.73	3.75
2130	54.55%	-2.63	2.81	3500	42.04%	-3.76	4.42	4750	32.40%	-4.89	3.33
2160	57.37%	-2.41	3.17	3550	38.96%	-4.09	4.23	4800	32.15%	-4.93	3.89
2190	61.80%	-2.09	3.96	3600	41.50%	-3.82	4.39	4850	30.73%	-5.12	3.52
2220	61.57%	-2.11	3.87	3650	36.95%	-4.32	3.98	4900	30.15%	-5.21	3.44
2250	61.20%	-2.13	3.82	3700	39.07%	-4.08	4.47	4950	31.96%	-4.95	3.84
2280	59.04%	-2.29	3.55	3750	35.81%	-4.46	4.43	5000	30.44%	-5.17	3.76
2310	56.84%	-2.45	3.2	3800	39.19%	-4.07	4.53	/	/	/	/
2340	57.80%	-2.38	3.22	3850	37.04%	-4.31	4.68	/	/	/	/
2370	56.62%	-2.47	3.12	3900	38.40%	-4.16	4.73	/	/	/	/
2400	54.58%	-2.63	3.63	3950	35.95%	-4.44	4.76	/	/	/	/
2430	54.69%	-2.62	3.81	4000	38.35%	-4.16	4.79	/	/	/	/

ANT6											
频点	效率	损耗	增益	频点	效率	损耗	增益	频点	效率	损耗	增益
1710	0.4725	-3.26	0.75	2460	0.5673	-2.46	2.15	4050	0.4691	-3.29	3.04
1740	0.4597	-3.38	0.52	2490	0.571	-2.43	2.11	4100	0.416	-3.81	2.69
1770	0.4687	-3.29	0.44	2520	0.5743	-2.41	1.74	4150	0.4854	-3.14	3.52
1800	0.4865	-3.13	0.64	2550	0.5588	-2.53	1.57	4200	0.4351	-3.61	3.1
1830	0.4781	-3.2	0.96	2580	0.5665	-2.47	1.52	4250	0.4766	-3.22	3.65
1860	0.4763	-3.22	1.13	2610	0.5671	-2.46	1.26	4300	0.4214	-3.75	3.16
1890	0.4782	-3.2	1.09	2640	0.5705	-2.44	1.21	4350	0.4516	-3.45	3.4
1920	0.4909	-3.09	1.15	2670	0.5662	-2.47	1.44	4400	0.3966	-4.02	2.85
1950	0.4916	-3.08	1.09	2700	0.5559	-2.55	1.59	4450	0.437	-3.6	3.4
1980	0.5061	-2.96	1.1					4500	0.3596	-4.44	2.56
2010	0.5223	-2.82	1.35	3300	0.4811	-3.18	2.21	4550	0.4053	-3.92	2.97
2040	0.5403	-2.67	1.84	3350	0.5142	-2.89	2.39	4600	0.3666	-4.36	2.42
2070	0.5514	-2.59	2.17	3400	0.4831	-3.16	2.1	4650	0.3981	-4	2.68
2100	0.5469	-2.62	2.27	3450	0.5016	-3	2.41	4700	0.3717	-4.3	2.47
2130	0.566	-2.47	2.64	3500	0.5002	-3.01	2.35	4750	0.3798	-4.2	2.71
2160	0.5663	-2.47	3.09	3550	0.5005	-3.01	2.23	4800	0.3693	-4.33	2.13
2190	0.5745	-2.41	3.35	3600	0.46	-3.37	1.81	4850	0.3588	-4.45	2.42
2220	0.5528	-2.57	3.6	3650	0.4936	-3.07	2.13	4900	0.3495	-4.57	1.91
2250	0.5647	-2.48	3.66	3700	0.4399	-3.57	1.84	4950	0.3397	-4.69	2.54
2280	0.5659	-2.47	3.2	3750	0.5063	-2.96	2.6	5000	0.3208	-4.94	2.27
2310	0.5823	-2.35	3.01	3800	0.4646	-3.33	2.35	/	/	/	/
2340	0.5821	-2.35	2.74	3850	0.4987	-3.02	2.7	/	/	/	/
2370	0.5782	-2.38	2.37	3900	0.447	-3.5	2.42	/	/	/	/
2400	0.5709	-2.43	1.92	3950	0.4727	-3.25	2.8	/	/	/	/
2430	0.576	-2.4	1.9	4000	0.4124	-3.85	2.34	/	/	/	/

ANT7											
频点	效率	损耗	增益	频点	效率	损耗	增益	频点	效率	损耗	增益
700	0.311	-5.07	-2.02	950	0.4478	-3.49	-0.15	2150	0.4449	-3.52	0.52
710	0.3399	-4.69	-0.87	960	0.4204	-3.76	-0.33	2170	0.4652	-3.32	0.9
720	0.3612	-4.42	0.35					2190	0.4775	-3.21	1.27
730	0.364	-4.39	0.49	1710	0.4865	-3.13	2.05	2210	0.481	-3.18	1.23
740	0.3733	-4.28	0.5	1730	0.4921	-3.08	2.12	2230	0.5082	-2.94	1.29
750	0.3904	-4.08	0.3	1750	0.4754	-3.23	1.89	2250	0.5283	-2.77	1.19
760	0.4272	-3.69	0.73	1770	0.473	-3.25	1.86	2270	0.5329	-2.73	0.91
770	0.4502	-3.47	1.03	1790	0.4832	-3.16	2.01	2290	0.5411	-2.67	1.33
780	0.4792	-3.19	1.23	1810	0.4809	-3.18	1.99	2310	0.5709	-2.43	2
790	0.4974	-3.03	1.58	1830	0.4565	-3.41	1.78	2330	0.5788	-2.37	2.34
800	0.536	-2.71	1.66	1850	0.4464	-3.5	1.71	2350	0.5668	-2.47	2.56
810	0.5457	-2.63	1.71	1870	0.4499	-3.47	1.71	2370	0.5665	-2.47	2.9
820	0.5609	-2.51	1.61	1890	0.4553	-3.42	1.84	2390	0.584	-2.34	3.37
830	0.5832	-2.34	1.21	1910	0.4578	-3.39	1.83	2410	0.6079	-2.16	3.79
840	0.5581	-2.53	2.01	1930	0.4514	-3.45	1.65	2430	0.5858	-2.32	3.59
850	0.5661	-2.47	2.36	1950	0.4537	-3.43	1.64	2450	0.5596	-2.52	3.31
860	0.5801	-2.36	2.48	1970	0.4546	-3.42	1.68	2470	0.5775	-2.38	3.47
870	0.5833	-2.34	2.51	1990	0.4573	-3.4	1.67	2490	0.6038	-2.19	3.67
880	0.5955	-2.25	2.53	2010	0.4654	-3.32	1.4	2510	0.6	-2.22	3.64
890	0.581	-2.36	2.52	2030	0.4661	-3.32	1.14	2530	0.5718	-2.43	3.37
900	0.5171	-2.86	1.7	2050	0.4555	-3.42	0.98	2550	0.555	-2.56	3.15
910	0.4823	-3.17	0.99	2070	0.4664	-3.31	1.11	2570	0.575	-2.4	3.31
920	0.4806	-3.18	0.69	2090	0.473	-3.25	1.13	2590	0.5881	-2.31	3.27
930	0.4762	-3.22	0.39	2110	0.4619	-3.35	0.87	2610	0.588	-2.31	3.07
940	0.4662	-3.31	0.08	2130	0.4412	-3.55	0.49	2630	0.587	-2.31	2.96

ANT7											
频点	效率	损耗	增益	频点	效率	损耗	增益	频点	效率	损耗	增益
2650	0.5898	-2.29	2.9	4350	0.4626	-3.35	3.68	/	/	/	/
2670	0.5835	-2.34	2.78	4400	0.4432	-3.53	4.09	/	/	/	/
2690	0.5936	-2.26	2.79	4450	0.3912	-4.08	4.03	/	/	/	/
4500	0.3776	-4.23	4.28	/	/	/	/				
3300	0.4922	-3.08	2.56	4550	0.3788	-4.22	4.89	/	/	/	/
3350	0.4875	-3.12	2.33	4600	0.3512	-4.55	5.04	/	/	/	/
3400	0.4936	-3.07	2.61	4650	0.3857	-4.14	5.27	/	/	/	/
3450	0.4948	-3.06	2.86	4700	0.3794	-4.21	5.22	/	/	/	/
3500	0.5084	-2.94	3.35	4750	0.3611	-4.42	5.5	/	/	/	/
3550	0.4931	-3.07	3.55	4800	0.3578	-4.46	5.36	/	/	/	/
3600	0.4835	-3.16	3.61	4850	0.3469	-4.6	5.23	/	/	/	/
3650	0.5068	-2.95	3.61	4900	0.3043	-5.17	4.75	/	/	/	/
3700	0.5166	-2.87	3.49	4950	0.2653	-5.76	4.4	/	/	/	/
3750	0.526	-2.79	3.27	5000	0.2479	-6.06	3.88	/	/	/	/
3800	0.5052	-2.97	3.49	/	/	/	/	/	/	/	/
3850	0.5149	-2.88	3.63	/	/	/	/	/	/	/	/
3900	0.5001	-3.01	3.77	/	/	/	/	/	/	/	/
3950	0.4935	-3.07	3.49	/	/	/	/	/	/	/	/
4000	0.5093	-2.93	3.21	/	/	/	/	/	/	/	/
4050	0.4846	-3.15	3.12	/	/	/	/	/	/	/	/
4100	0.4952	-3.05	3.86	/	/	/	/	/	/	/	/
4150	0.4762	-3.22	3.88	/	/	/	/	/	/	/	/
4200	0.4984	-3.02	4.1	/	/	/	/	/	/	/	/
4250	0.5067	-2.95	3.87	/	/	/	/	/	/	/	/
4300	0.4759	-3.22	3.72	/	/	/	/	/	/	/	/

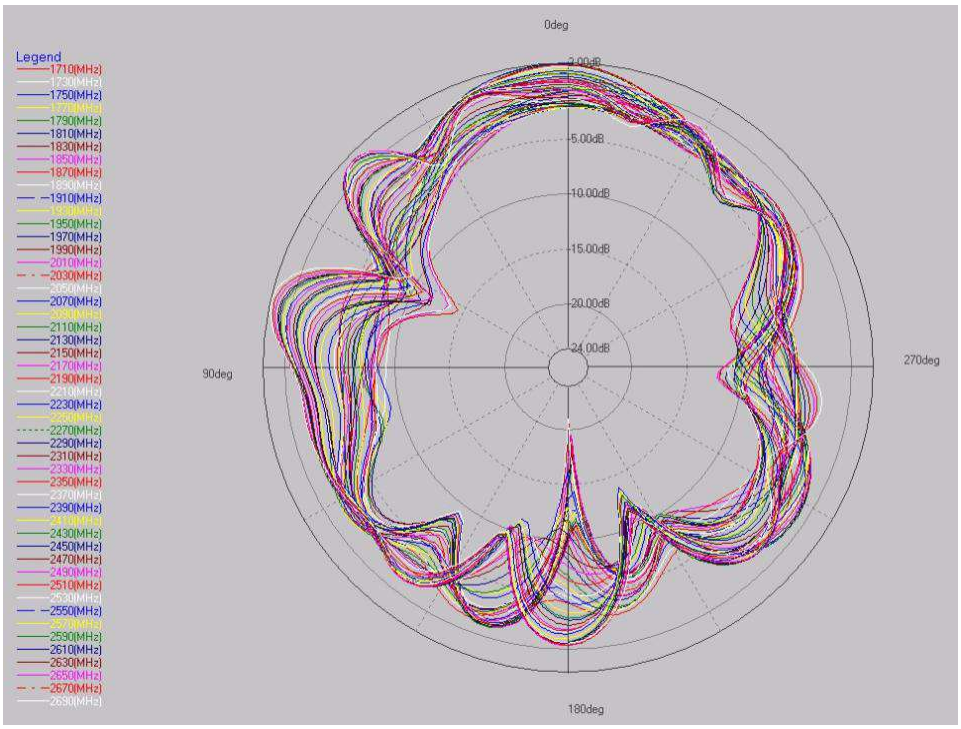
ANT8											
频点	效率	损耗	增益	频点	效率	损耗	增益	频点	效率	损耗	增益
700	0.2782	-5.56	-2.62	950	0.3821	-4.18	1.07	2150	0.5037	-2.98	1.74
710	0.3042	-5.17	-2.13	960	0.3479	-4.59	0.59	2170	0.5146	-2.89	1.79
720	0.3288	-4.83	-1.39					2190	0.5133	-2.9	1.73
730	0.3558	-4.49	0.33	1710	0.5332	-2.73	1.86	2210	0.5198	-2.84	2.13
740	0.3811	-4.19	1.7	1730	0.5176	-2.86	1.45	2230	0.5473	-2.62	2.72
750	0.4087	-3.89	1.79	1750	0.4995	-3.01	0.95	2250	0.5499	-2.6	2.65
760	0.429	-3.68	2.36	1770	0.5005	-3.01	1.18	2270	0.5507	-2.59	2.44
770	0.4659	-3.32	2.52	1790	0.4958	-3.05	1.6	2290	0.5704	-2.44	2.85
780	0.4847	-3.15	2.64	1810	0.4757	-3.23	1.46	2310	0.5925	-2.27	3.35
790	0.4974	-3.03	2.42	1830	0.4519	-3.45	1.11	2330	0.5845	-2.33	3.51
800	0.5136	-2.89	1.4	1850	0.4458	-3.51	1.27	2350	0.5727	-2.42	3.52
810	0.5228	-2.82	1.7	1870	0.4432	-3.53	1.6	2370	0.5896	-2.29	3.77
820	0.5292	-2.76	2.09	1890	0.4431	-3.54	1.56	2390	0.6094	-2.15	3.81
830	0.5115	-2.91	2.44	1910	0.4461	-3.51	1.16	2410	0.6027	-2.2	3.89
840	0.4845	-3.15	2.46	1930	0.4296	-3.67	0.65	2430	0.5652	-2.48	3.94
850	0.4632	-3.34	2.17	1950	0.4204	-3.76	0.78	2450	0.5704	-2.44	4.01
860	0.451	-3.46	1.75	1970	0.4274	-3.69	1.27	2470	0.6074	-2.17	4.09
870	0.4521	-3.45	1.36	1990	0.4417	-3.55	1.37	2490	0.5996	-2.22	4.18
880	0.4736	-3.25	1.2	2010	0.4461	-3.51	1.13	2510	0.5719	-2.43	4.2
890	0.511	-2.92	1.44	2030	0.4286	-3.68	1.06	2530	0.57	-2.44	4.09
900	0.5273	-2.78	1.74	2050	0.4389	-3.58	1.43	2550	0.5756	-2.4	4.17
910	0.496	-3.05	2.06	2070	0.474	-3.24	1.63	2570	0.5791	-2.37	4.21
920	0.461	-3.36	2.53	2090	0.4849	-3.14	1.28	2590	0.5679	-2.46	4.22
930	0.4507	-3.46	2.65	2110	0.4818	-3.17	1.15	2610	0.5716	-2.43	4.28
940	0.4255	-3.71	2.17	2130	0.4797	-3.19	1.39	2630	0.5758	-2.4	4.32

ANT8											
频点	效率	损耗	增益	频点	效率	损耗	增益	频点	效率	损耗	增益
2650	0.5801	-2.36	4.42	4350	0.4249	-3.72	3.52	/	/	/	/
2670	0.5964	-2.24	4.52	4400	0.3801	-4.2	3.94	/	/	/	/
2690	0.6132	-2.12	4.55	4450	0.391	-4.08	3.88	/	/	/	/
4500	0.359	-4.45	4.13	/	/	/	/				
3300	0.4133	-3.84	2.41	4550	0.3619	-4.41	4.74	/	/	/	/
3350	0.4448	-3.52	2.18	4600	0.3628	-4.4	4.88	/	/	/	/
3400	0.4438	-3.53	2.46	4650	0.36	-4.44	4.89	/	/	/	/
3450	0.4644	-3.33	2.71	4700	0.3752	-4.26	4.85	/	/	/	/
3500	0.4676	-3.3	3.19	4750	0.3537	-4.51	4.93	/	/	/	/
3550	0.4634	-3.34	3.4	4800	0.3236	-4.9	4.79	/	/	/	/
3600	0.4394	-3.57	3.46	4850	0.3107	-5.08	4.67	/	/	/	/
3650	0.4328	-3.64	3.45	4900	0.3091	-5.1	4.1	/	/	/	/
3700	0.4152	-3.82	3.34	4950	0.292	-5.35	3.74	/	/	/	/
3750	0.4302	-3.66	3.12	5000	0.2759	-5.59	3.23	/	/	/	/
3800	0.4263	-3.7	3.34	/	/	/	/	/	/	/	/
3850	0.4381	-3.58	3.48	/	/	/	/	/	/	/	/
3900	0.4244	-3.72	3.62	/	/	/	/	/	/	/	/
3950	0.4423	-3.54	3.34	/	/	/	/	/	/	/	/
4000	0.4113	-3.86	3.05	/	/	/	/	/	/	/	/
4050	0.4325	-3.64	2.97	/	/	/	/	/	/	/	/
4100	0.407	-3.9	3.71	/	/	/	/	/	/	/	/
4150	0.4361	-3.6	3.73	/	/	/	/	/	/	/	/
4200	0.4245	-3.72	3.94	/	/	/	/	/	/	/	/
4250	0.4425	-3.54	3.72	/	/	/	/	/	/	/	/
4300	0.4085	-3.89	3.56	/	/	/	/	/	/	/	/

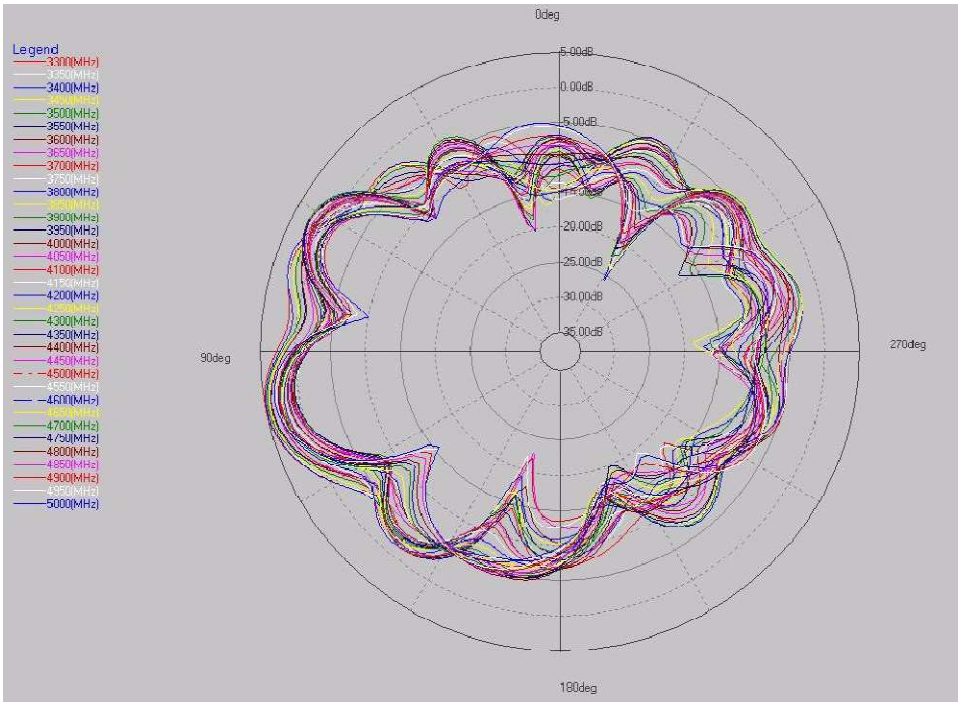
4.3 5G Antenna Pattern

ANT5:

1710-2690MHz

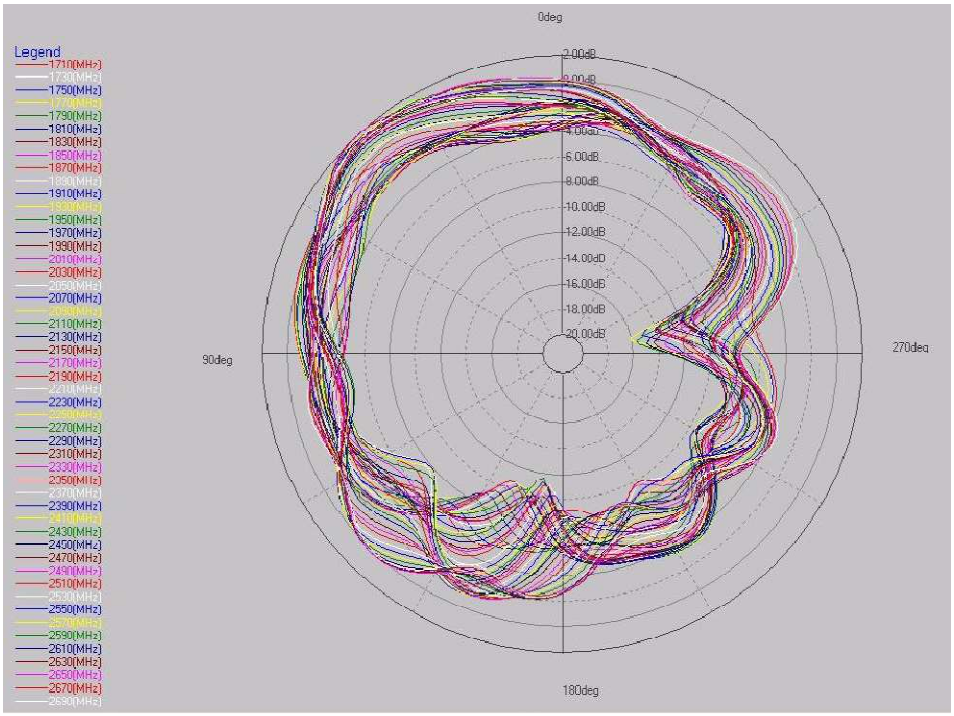


3300-5000MHz

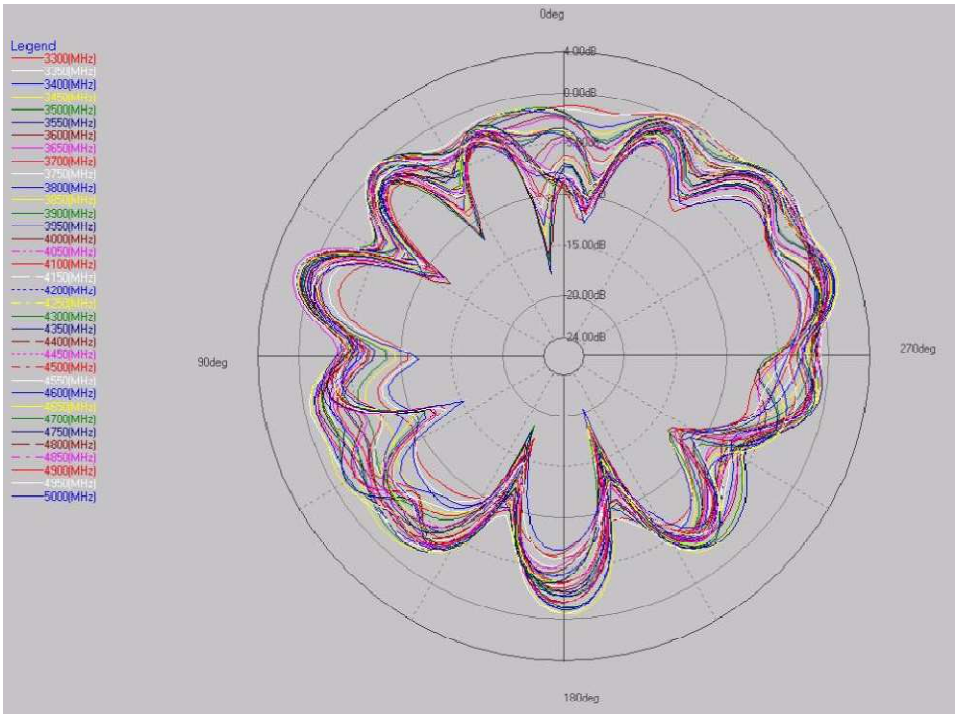


ANT6:

1710-2690MHz

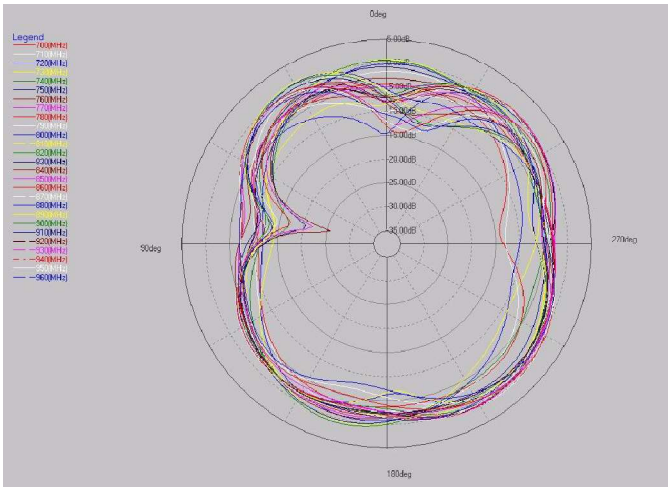


3300-5000MHz

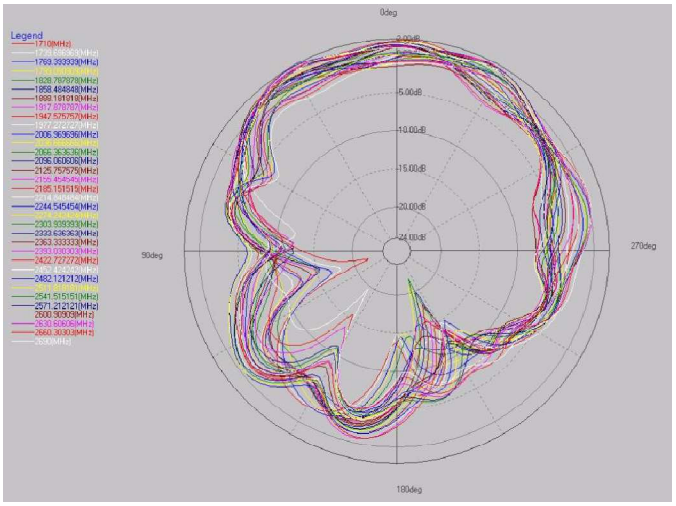


ANT7:

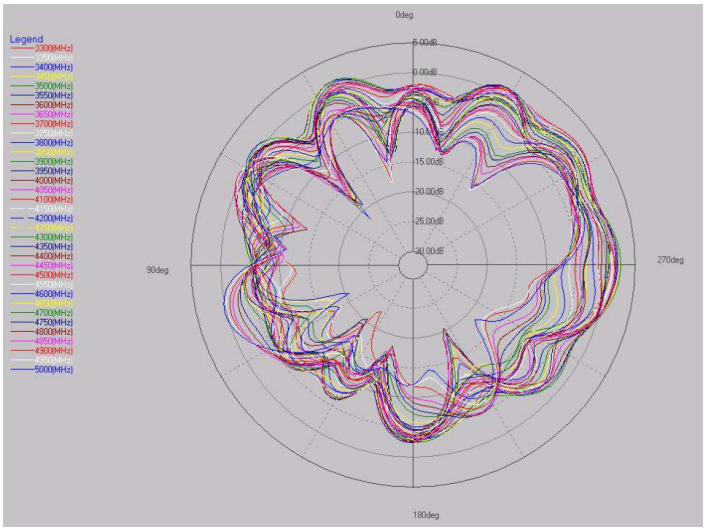
700-960MHz



1710-2690MHz

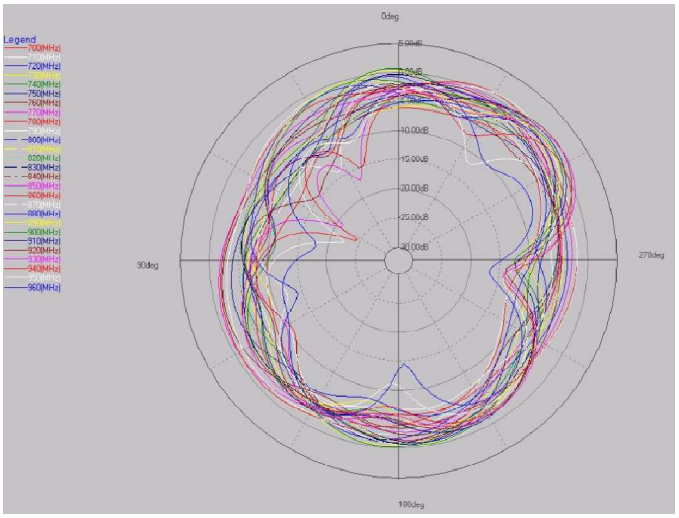


3300-5000MHz

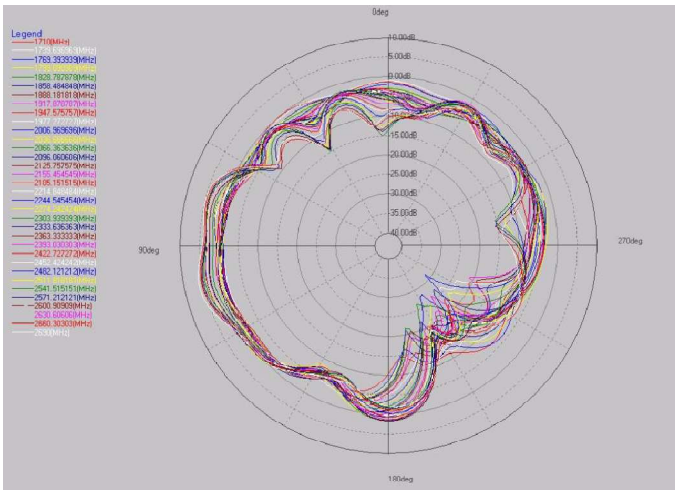


ANT8:

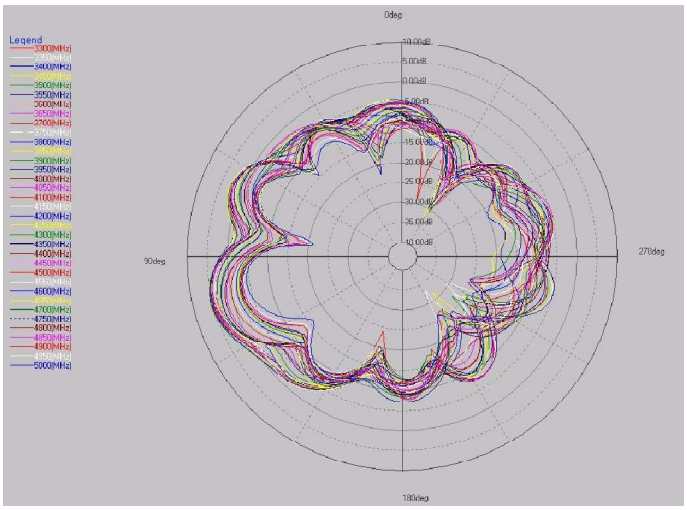
700-960MHz



1710-2690MHz



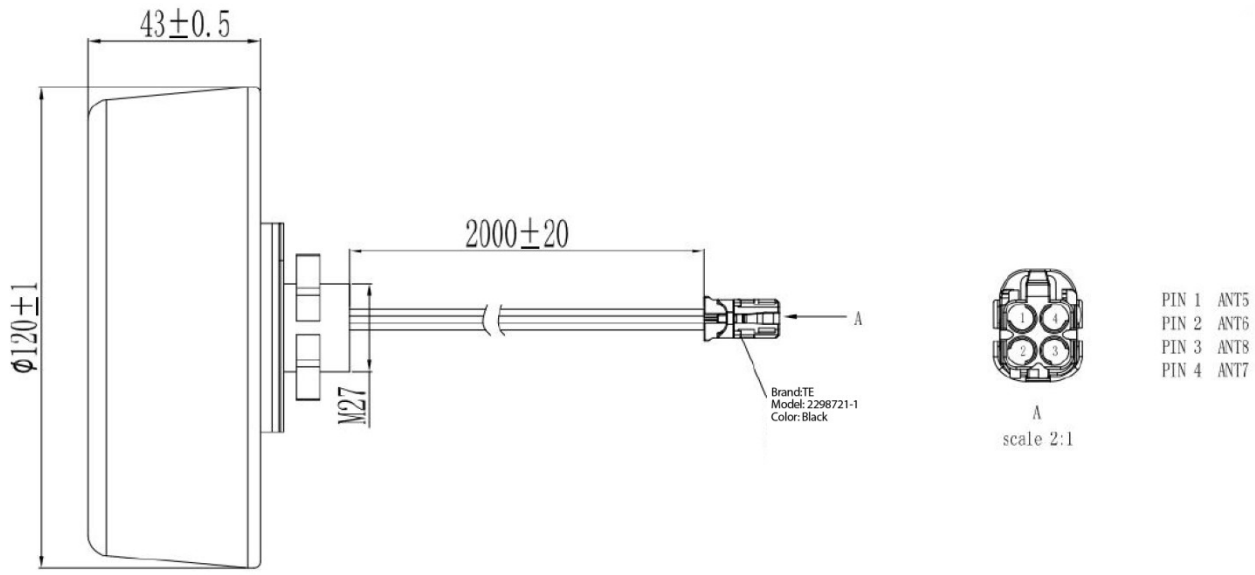
3300-5000MHz



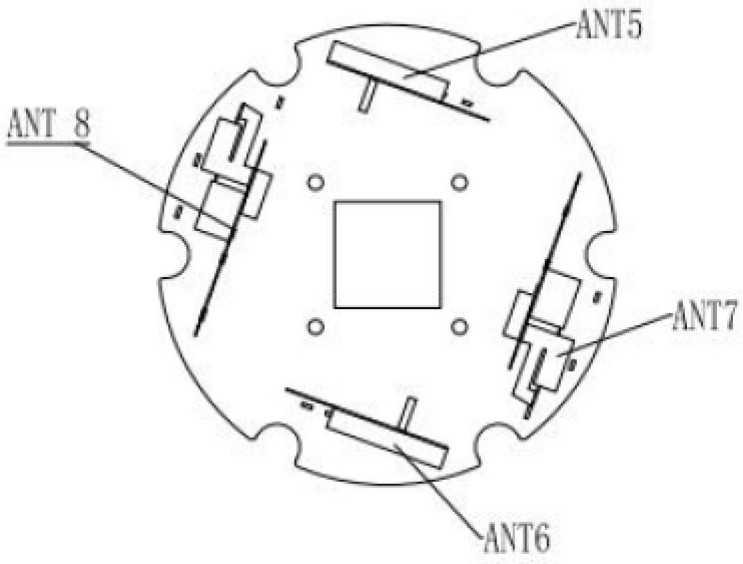
5 Key material

NO.	Part name	Specification	Color	Mark
1	Shell	ASA	Black	
2	PCB	FR4	Green	
3	Threaded hardware	SUS304	Original Color	
4	Slit nut	SUS304	Original Color	
5	Serrated gasketSUS304		Original Color	
6	Sealing ring	silicone	translucent	
7	copper nut	Brass	Yellow	
8	Connector	TE:2298721-1	Black	
9	Antenna shrapnel	C7701	Original Color	

6 Antenna Structure



Antenna location figure



Antenna reference installation position
Hole size: φ28,
Plate thickness of 2mm