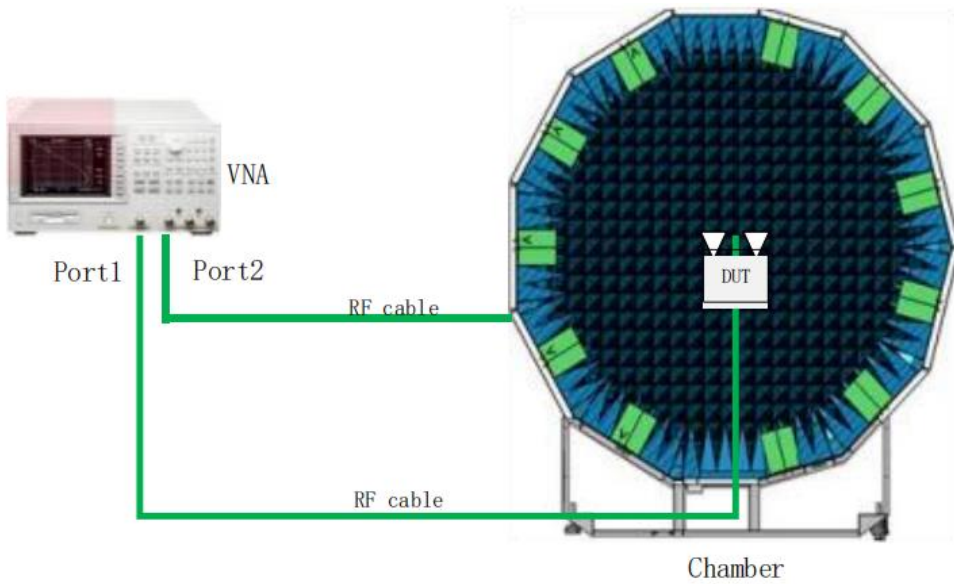


Type and shape of antenna	IFA Antenna
Directional characteristics	Omni-directional
Deflection Characteristics of Antenna	Linear
Type of connection with transmitter	antenna shrapnel
Manufacturer	Huizhou Speed Wireless Technology Co.Limited Kunshan Innwave Communication Technology Co., LTD
Measuring Organization	Huizhou Speed Wireless Technology Co.Limited Kunshan Innwave Communication Technology Co., LTD

1.EUT Reference Setup

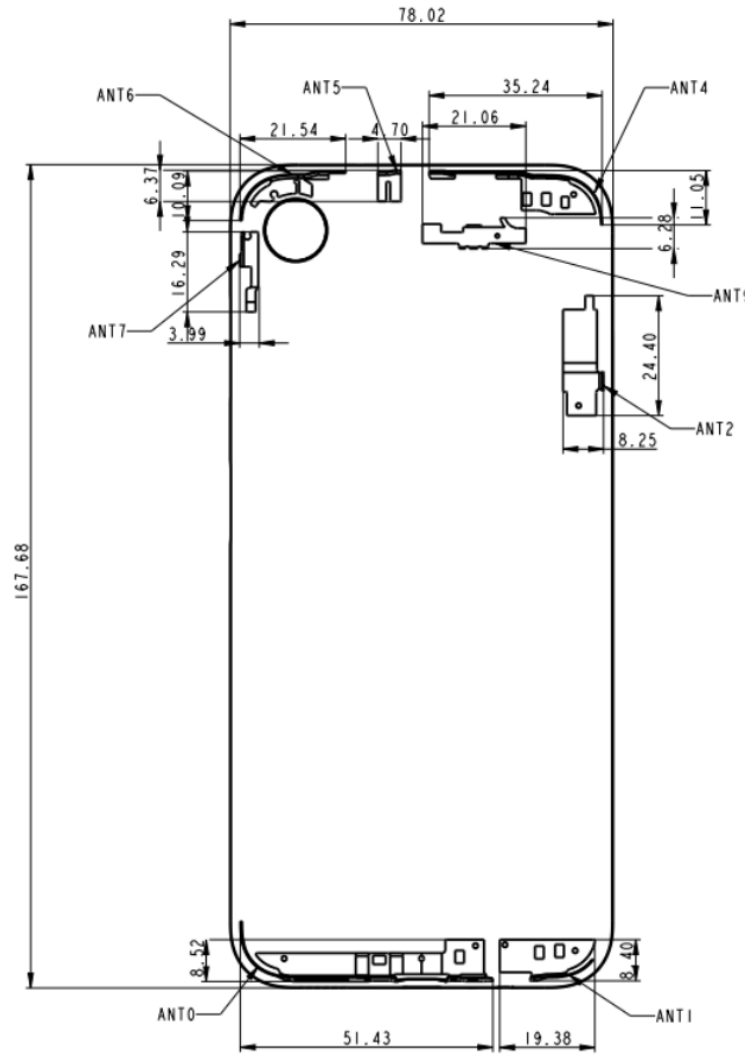


Tester	Zhangchong/Yaoqiang
Actual date of testing	2022-10-09
Test description	Use an anechoic chamber to measure the radiation pattern and antenna gain. The GTS laboratory operates at 0.6-5.9GHz. The chamber's reflection level in the range of 0.6GHz to 5.9 GHz is typically ≤ 25 dB. Standard dipoles are used to calibrate for path loss and magnetic ring lines are used to suppress feeder emissions, so we can measure antenna gain.

Test Equipment List

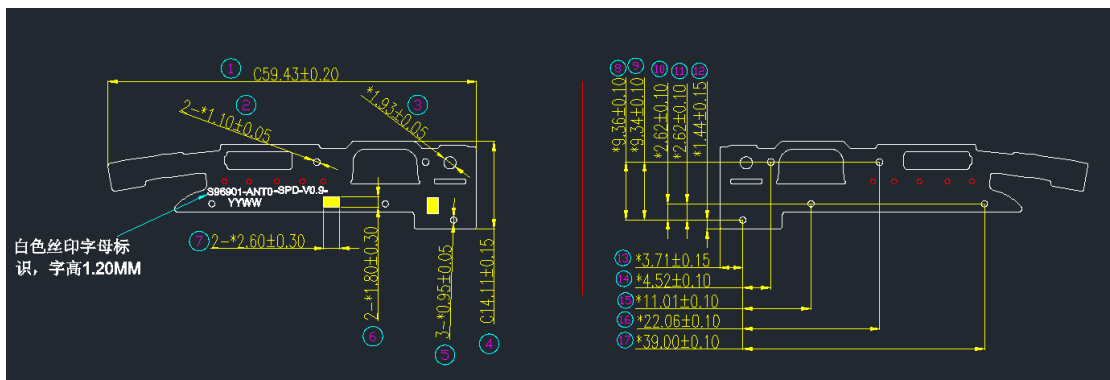
Name of test equipment	Model	Manufacturer	Cal.Due Date	Calibration Interval
Pattern Measurement Software	General Test	Ray Zone 1800	NA	NA
Network Analyzer	Agilent	E5071B	2023-03-05	One year

2. Antenna distribution



3. Antenna Pattern

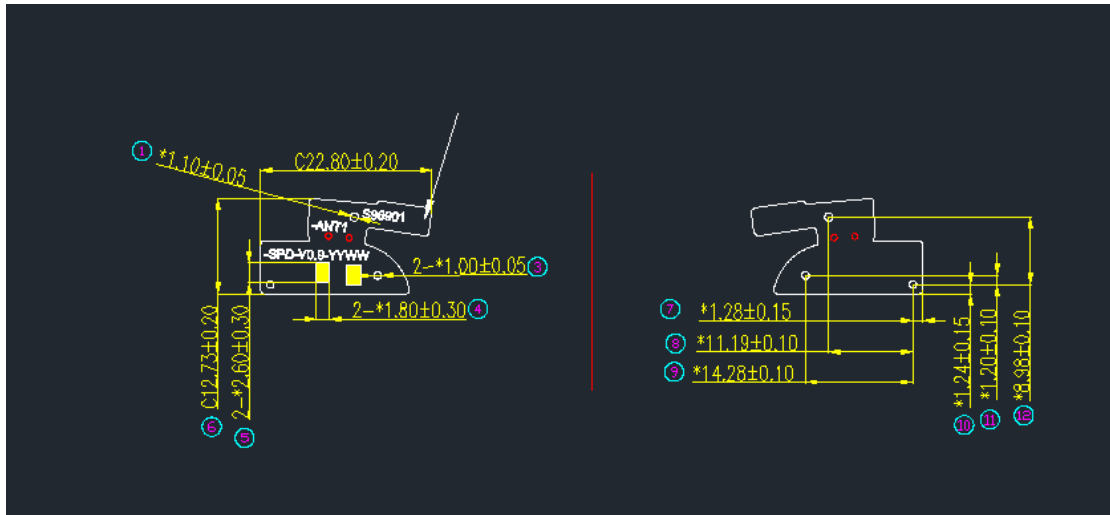
ANT0



Front

Back

ANT1



Front

Back

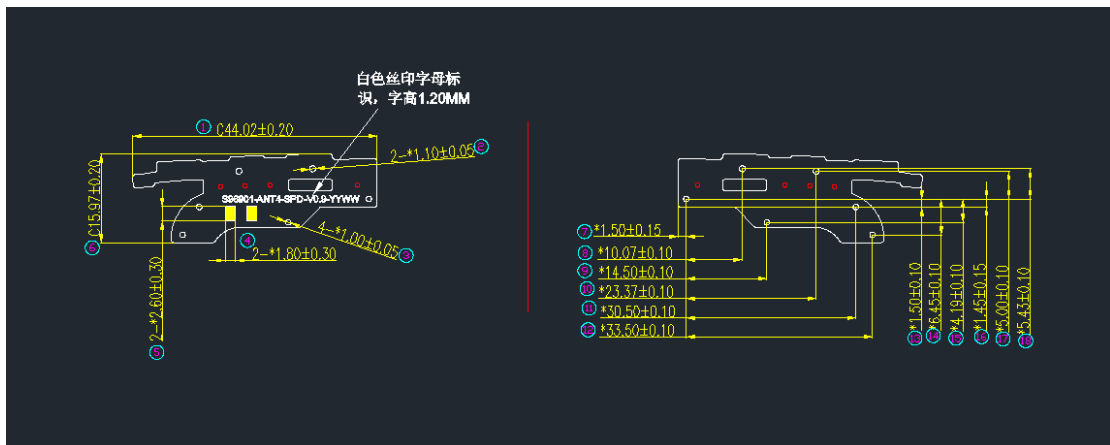
ANT2



Front

Back

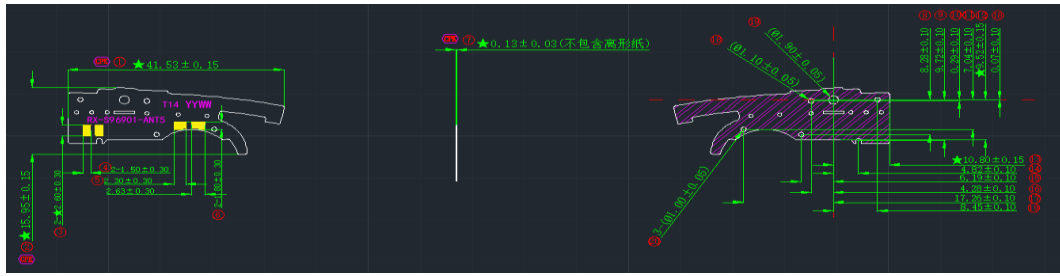
ANT4



Front

Back

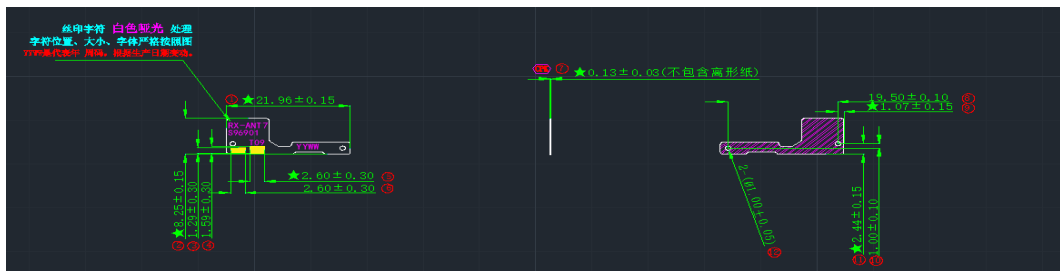
ANT5+6



Front

Back

ANT7



Front

Back

ANT9



Front

Back

4. Antenna Gain:

ANTO

Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)
700	-3.51	2300	-0.65
710	-2.87	2320	-0.17
720	-2.62	2340	0.14
730	-2.51	2360	0.07
740	-2.79	2380	-0.22
750	-3.01	2400	-0.71
760	-3.13	2500	-0.37
770	-3.32	2520	-0.14
780	-3.48	2540	-0.12
790	-4.08	2560	-0.21
800	-3.39	2580	-0.38
810	-3.48	2600	-0.6
820	-3.07	2620	-0.86
830	-2.78	2640	-1.19
840	-2.69	2660	-1.72
850	-2.64	2680	-1.79
860	-2.65	2700	-2.01
870	-2.8		
880	-2.44		
890	-2.05		
900	-1.72		
910	-1.58		
920	-1.77		
930	-1.89		
940	-2.27		
950	-3.19		
960	-4.22		

ANT1

Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)
1700	-0.41	1960	-3.03
1720	-0.12	1980	-3.27
1740	-0.08	2000	-3.43
1760	0.09	2020	-3.56
1780	0.04	2040	-3.79
1800	0.25	2060	-4.14
1820	0.57	2080	-4.81
1840	0.67	2100	-4.92
1860	0.17	2120	-4.88
1880	-0.5	2140	-4.8
1900	-1.15	2160	-5.01
1920	-1.84	2180	-5.03
1940	-2.49	2200	-5.39

ANT2

Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)
1800	-4.8	2340	-3.6	2660	-2.3
1810	-4.3	2350	-3.7	2670	-1.8
1820	-4.3	2360	-3.8	2680	-1.6
1830	-4.0	2370	-3.6	2690	-1.2
1840	-3.4	2380	-3.6	3300	-3.6
1850	-3.2	2390	-3.5	3350	-2.7
1860	-3.4	2400	-3.6	3400	-1.9
1870	-3.4	2500	-4.2	3450	-0.9
1880	-3.3	2510	-3.6	3500	-1.6
2110	-2.3	2520	-3.2	3550	-1.4
2120	-2.6	2530	-2.6	3600	-1.1
2130	-2.5	2540	-2.1	3650	-1.9
2140	-2.8	2550	-1.5	3700	-1.3
2150	-2.7	2560	-1.3	3750	-0.7
2160	-2.7	2570	-1.4	3800	0.8
2170	-2.7	2580	-1.6	3850	0.4
2180	-2.6	2590	-2.1	3900	-0.2
2190	-2.6	2600	-2.1	3950	-0.8
2200	-2.0	2610	-1.8	4000	0.2
2300	-2.7	2620	-1.6	4050	-0.4

2310	-2.9	2630	-1.5	4100	0.9
2320	-3.2	2640	-1.7	4150	0.1
2330	-3.6	2650	-2.0	4200	0.7

ANT4

Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)
730	-5.83	1700	0.36	2120	-1.48
740	-5.46	1720	-0.01	2140	-1.36
750	-5.23	1740	-0.46	2160	-1.01
760	-5.22	1760	-0.37	2180	-0.53
770	-5.42	1780	-0.33	2300	-0.02
780	-5.71	1800	-0.64	2320	0.37
790	-6.39	1820	-0.76	2340	0.29
800	-6.19	1840	-1.04	2360	-0.11
810	-6.53	1860	-0.74	2380	-0.66
820	-6.53	1880	-1.02	2400	-0.45
860	-5.85	1900	-1.17	2500	-0.03
870	-5.7	1920	-1.96	2520	-0.18
880	-5.07	1940	-2.08	2540	-0.26
890	-4.6	1960	-2.19	2560	-0.21
900	-4.48	1980	-2.17	2580	-0.12
910	-4.68	2000	-1.74	2600	-0.2
920	-5.13	2020	-1.81	2620	-0.33
930	-4.93	2040	-1.82	2640	-0.37
940	-4.52	2060	-1.75	2660	-0.29
950	-5.34	2080	-1.45	2680	-0.44
960	-6.64	2100	-1.43	2700	-0.45

ANT5+6

Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)
3300	-0.7	1560	0.6	5150	-0.6
3350	0.9	1570	0.5	5200	1.4
3400	1.6	1580	0.5	5250	1.5
3450	2.4	1590	0.0	5300	1.2
3500	2.2	1600	0.1	5350	1.2

3550	1.9
3600	2.4
3650	3.0
3700	3.5
3750	2.9
3800	3.1
3850	2.1
3900	2.3
3950	1.2
4000	1.4
4050	0.7
4100	0.9
4150	-0.1
4200	-0.1

1610	0.3
1620	0.2
2400	0.1
2410	0.2
2420	0.2
2430	0.4
2440	0.4
2450	0.3
2460	0.1
2470	-0.3
2480	-0.2
2490	-0.4
2500	-0.2

5400	0.6
5450	0.7
5500	0.5
5550	-0.2
5600	-0.2
5650	0.8
5700	-0.6
5750	0.5
5800	0.6
5850	0.5

ANT7

Frequency (MHz)	Gain (dBi)
1800	-3.6
1810	-3.6
1820	-3.4
1830	-3.5
1840	-3.9
1850	-3.9
1860	-3.7
1870	-3.1
1880	-3.1
2110	-1.2
2120	-0.9
2130	-1.0
2140	-1.4
2150	-1.6
2160	-1.8
2170	-1.6
2180	-1.5
2190	-1.8
2200	-2.0
2300	-3.1
2310	-3.1
2320	-3.0
2330	-3.4

Frequency (MHz)	Gain (dBi)
2340	-3.7
2350	-3.8
2360	-3.9
2370	-4.1
2380	-4.4
2390	-4.7
2400	-4.9
2500	-5.4
2510	-5.1
2520	-5.1
2530	-5.0
2540	-4.9
2550	-4.9
2560	-5.0
2570	-4.8
2580	-4.6
2590	-4.5
2600	-4.3
2610	-4.4
2620	-4.5
2630	-4.4
2640	-4.7
2650	-4.9

Frequency (MHz)	Gain (dBi)
2660	-5.4
2670	-4.6
2680	-4.6
2690	-4.3
3300	-2.3
3350	-3.0
3400	-3.1
3450	-3.8
3500	-3.3
3550	-4.8
3600	-4.8
3650	-5.1
3700	-4.7
3750	-6.2
3800	-6.2
3850	-7.0
3900	-5.5
3950	-6.5
4000	-5.8
4050	-5.4
4100	-4.9
4150	-5.1
4200	-4.7

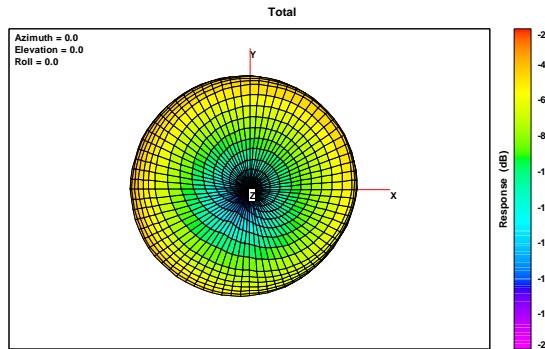
ANT9

Frequency (MHz)	Gain (dBi)
3300	-2.9
3350	-1.4
3400	0.5
3450	0.0
3500	-0.9
3550	-1.3
3600	-2.1
3650	-3.6
3700	-4.0
3750	-2.9
3800	-1.7
3850	-1.9
3900	-0.9
3950	-1.6
4000	-1.5
4050	-2.2
4100	-2.9
4150	-4.1
4200	-4.3

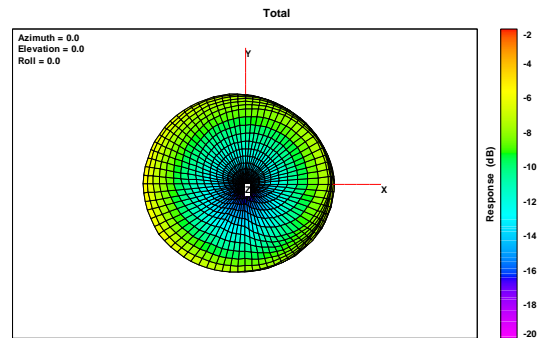
5.3D map

ANT0

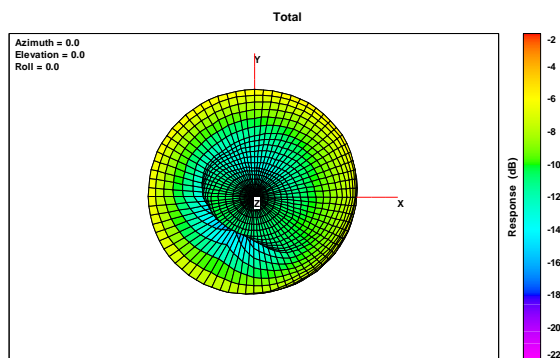
750MHz



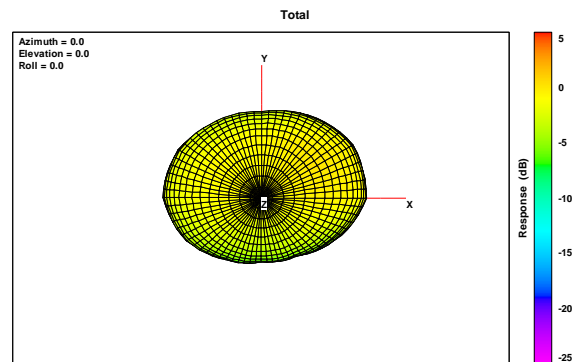
820MHz



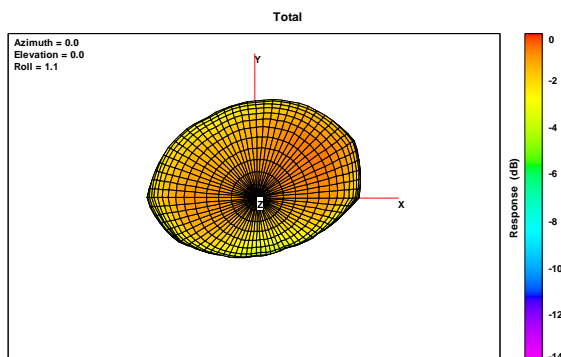
920MHz



2500MHz

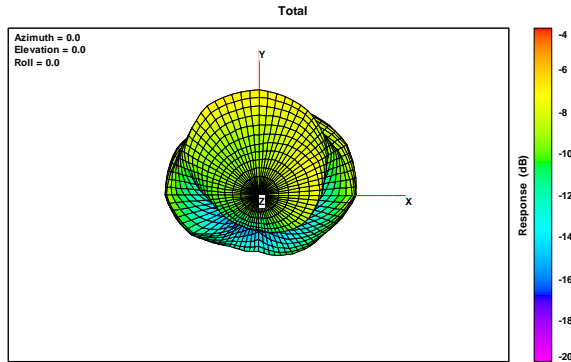


2600MHz

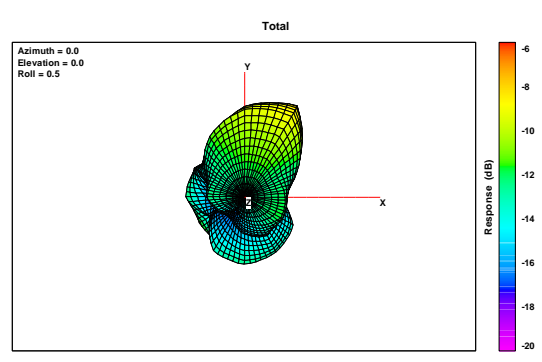


ANT1

2000MHz

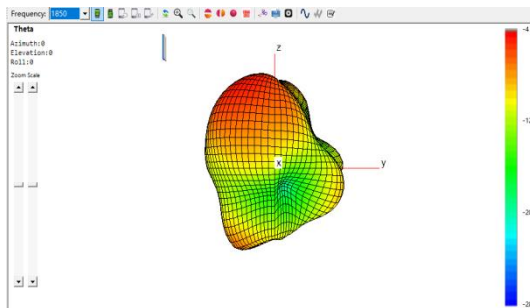


4700MHz

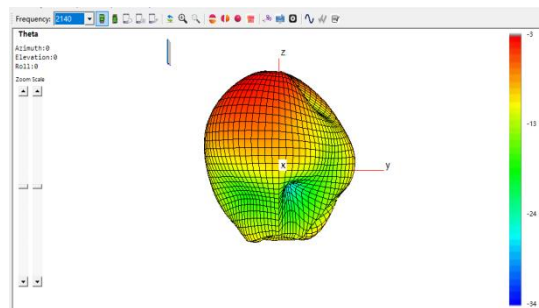


ANT2

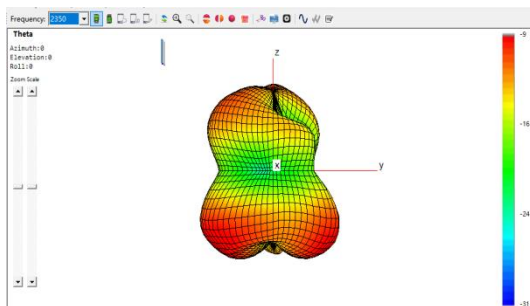
1850MHz



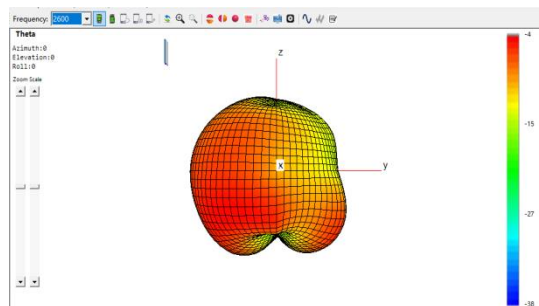
2140MHz



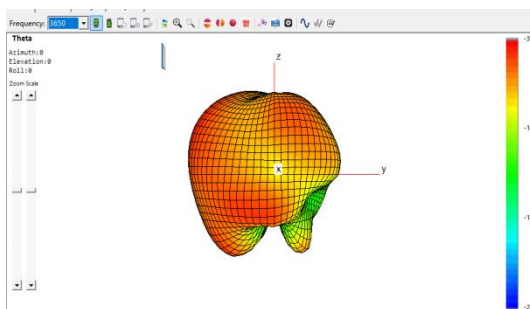
2350MHz



2600MHz

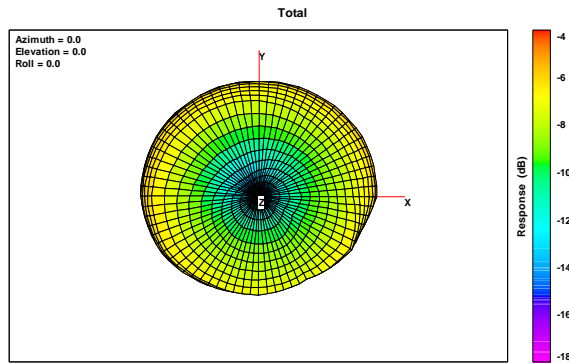


3650MHz

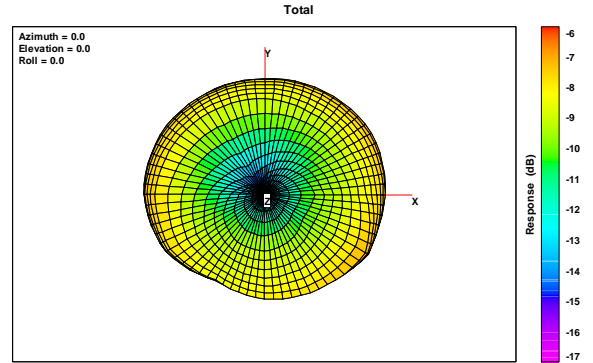


ANT4

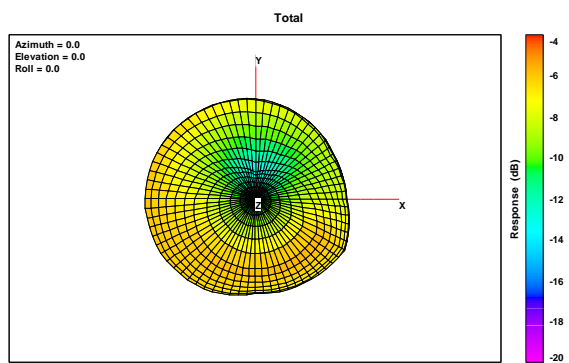
770MHz



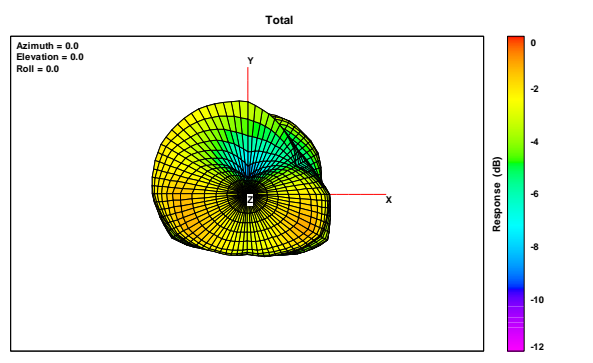
800MHz



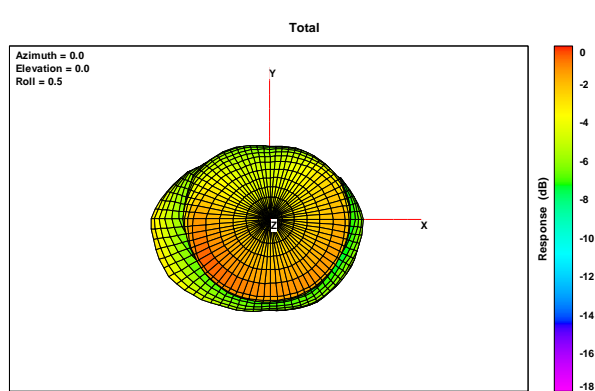
940MHz



1850MHz

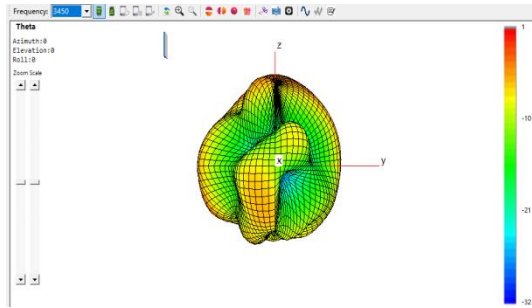


2600MHz

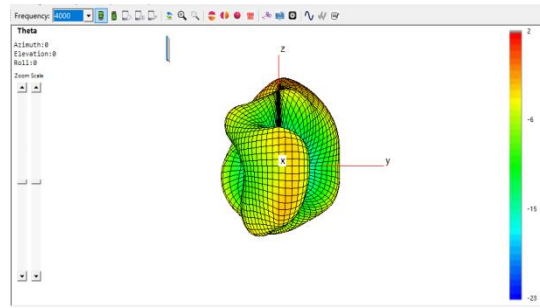


ANT5

3450MHz

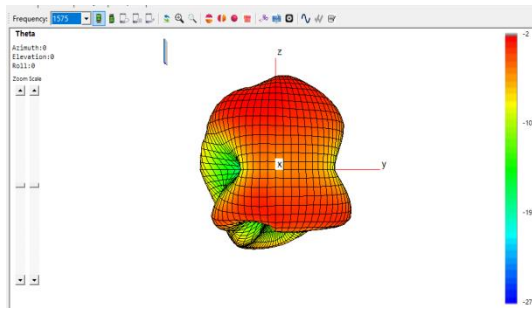


4000MHz

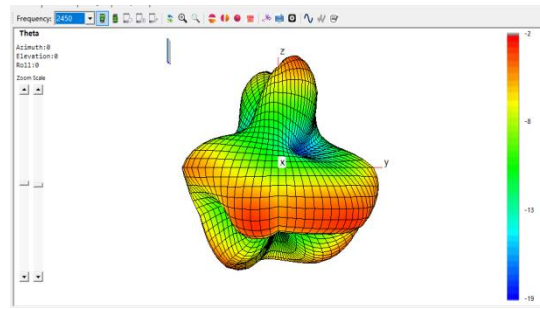


ANT6

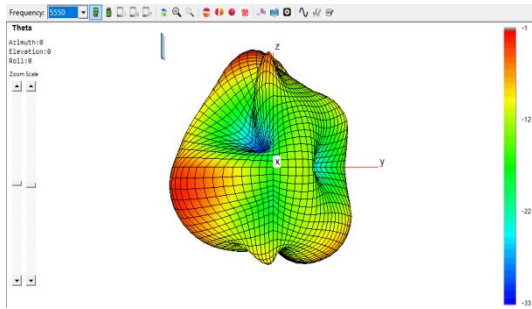
1575MHz



2450MHz

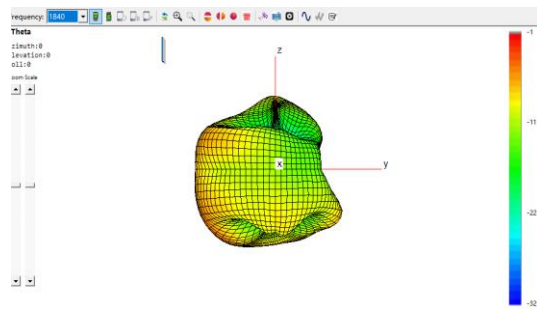


5550MHz

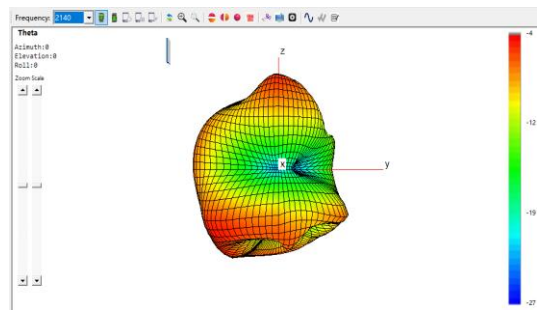


ANT7

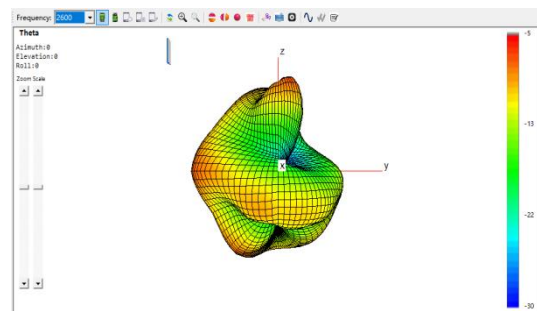
1840MHz



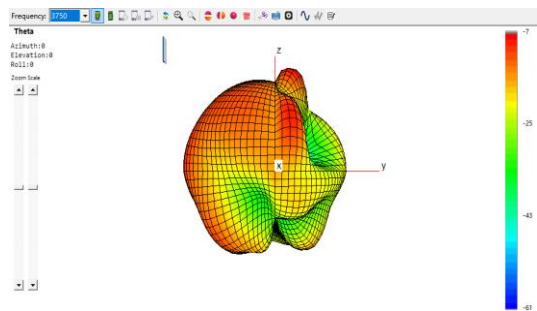
2140MHz



2600MHz

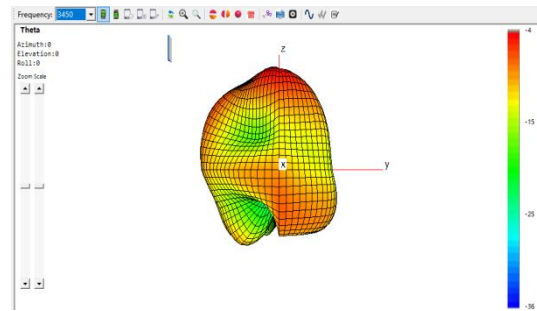


3750MHz



ANT9

3450MHz



4000MHz

