



Advanced Technology & Communications

Alterlock_Antenna Report

2023.12.15

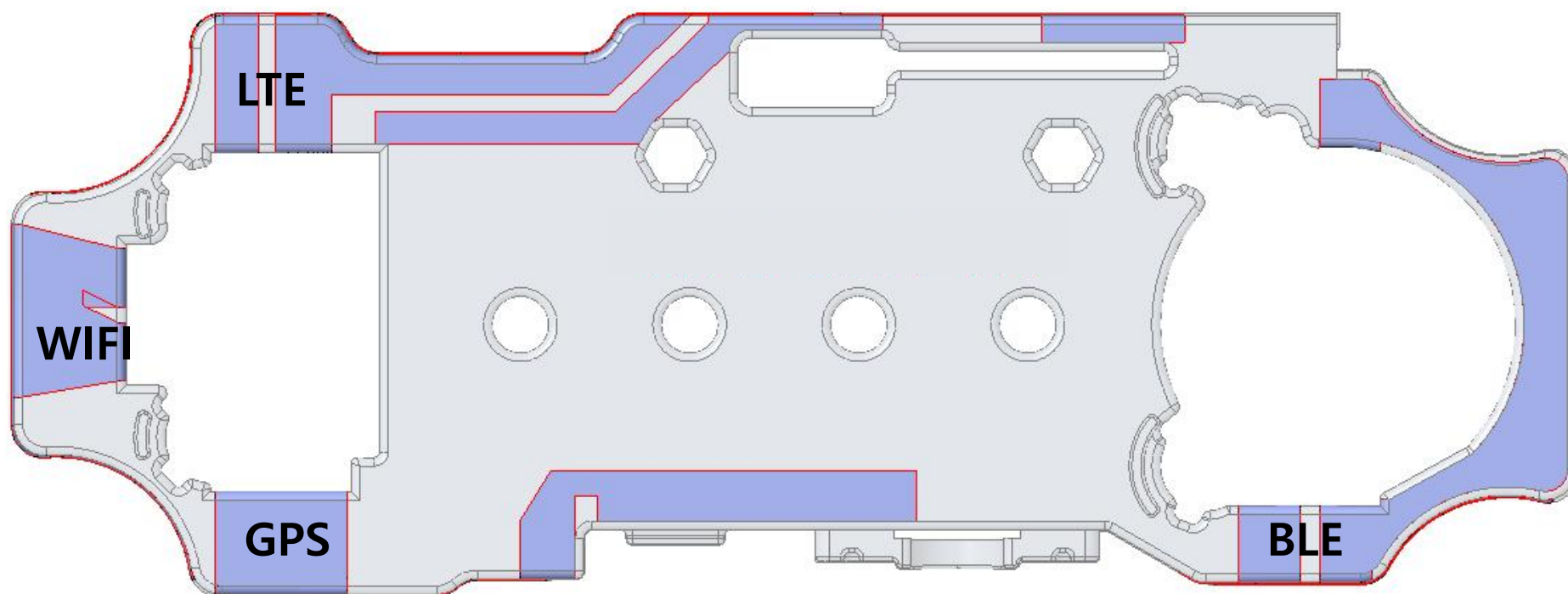
AT&C TECHNOLOGIES(SHENZHEN)CO.,LTD.

201, Building C, Building 5, Skyworth Innovation Valley, Tangtou 1 Road, Tangtou Community,
Shiyan Street, Bao'an District, Shenzhen

Antenna Model: 14-008-0128

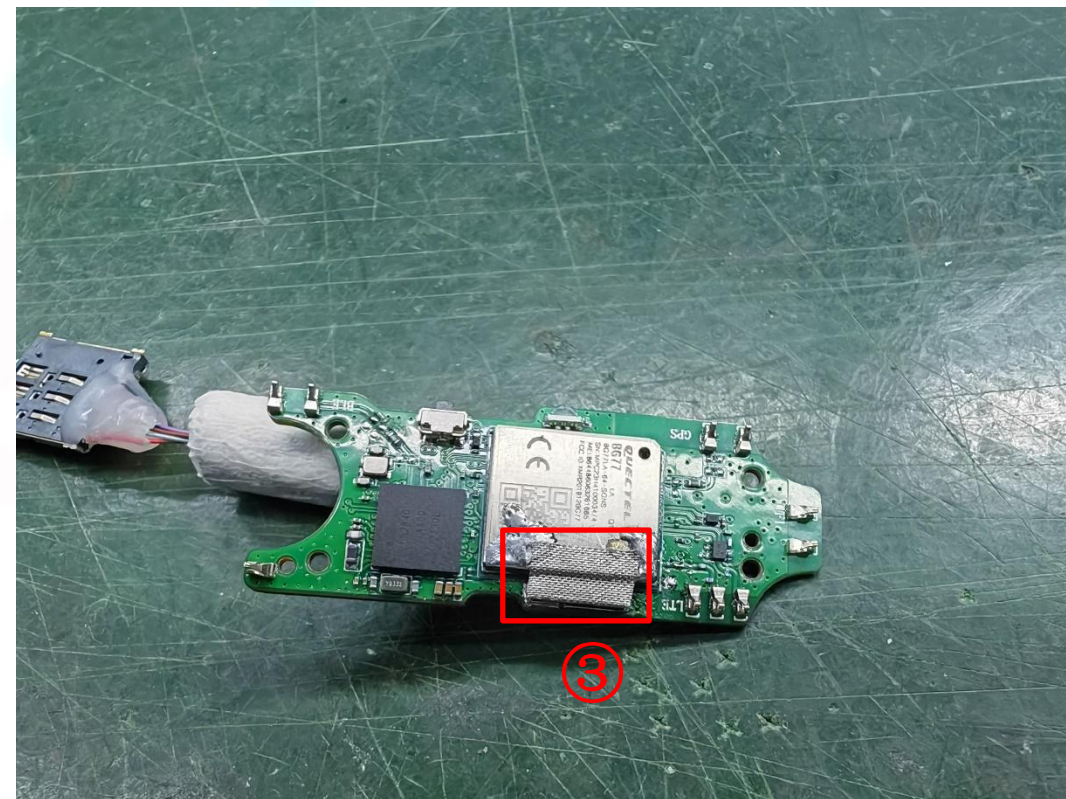
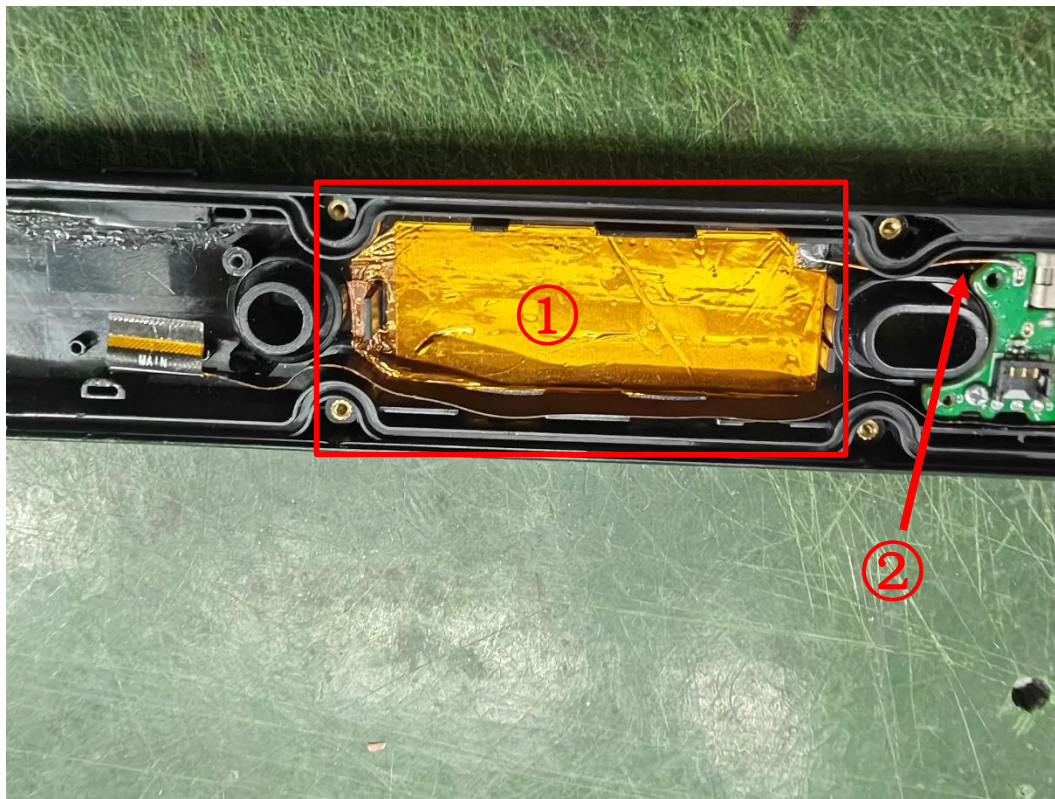
● Alterlock Antenna Info (天线信息)

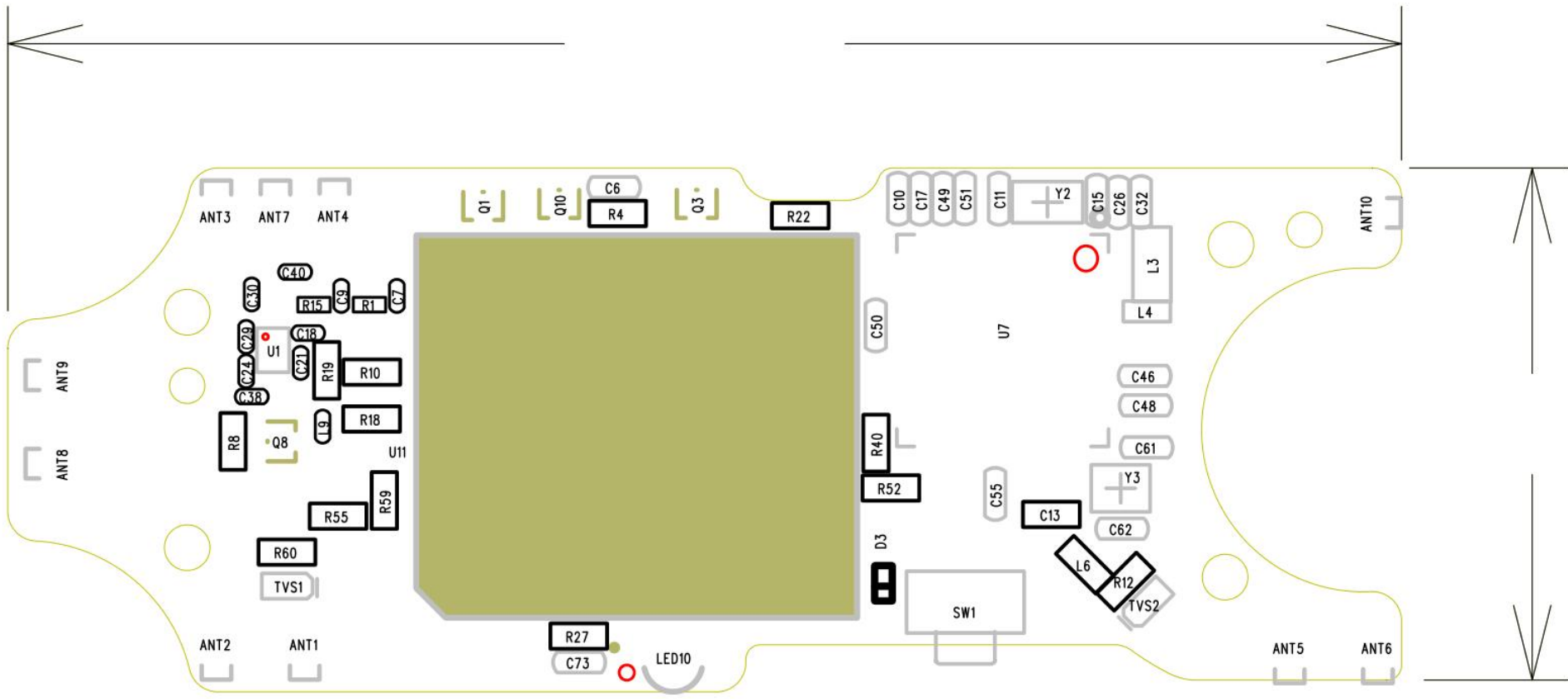
1. Type of the antenna (天线类型) : LDS
2. Placement of the antenna (天线位置) : as shown below (如下图示意)
3. The name of the antenna (天线名字) : ATC GEN-V3
4. Coverage (覆盖范围) : 4G/WIFI/BLE/GPS



● Alterlock _Environmental Treatment (环境处理)

1. Extend the ground of the main board by increasing the copper skin . (通过贴铜皮的方式, 延长主板地)
2. The copper skin is connected to the USB board using a copper wire . (铜皮使用铜线和USB板连接在一起)
3. By pasting conductive cloth, the shielding effect is increased . (通过粘贴导电布, 增加屏蔽效果)



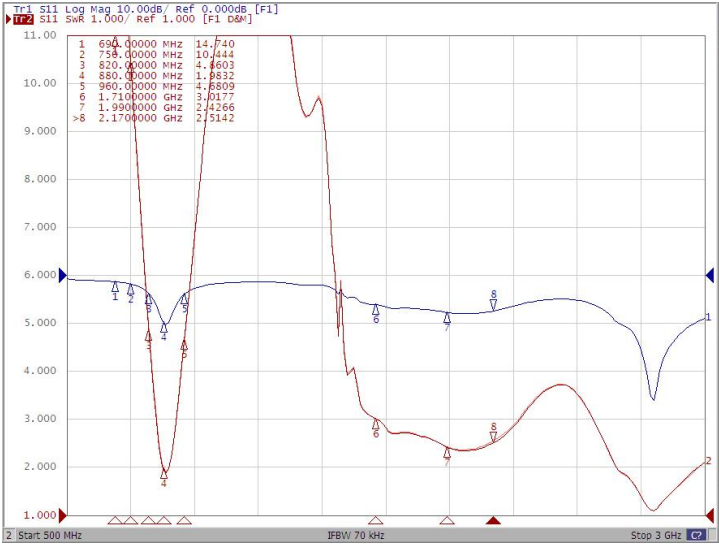


LTE RF			LTE RF Switch	
C40	12nh		C30	10NH
R15	4.7PF		C29	0Ω
C9	NA		C24	4.2NH
R1	0Ω		C18	NA
C7	NA		C21	NA

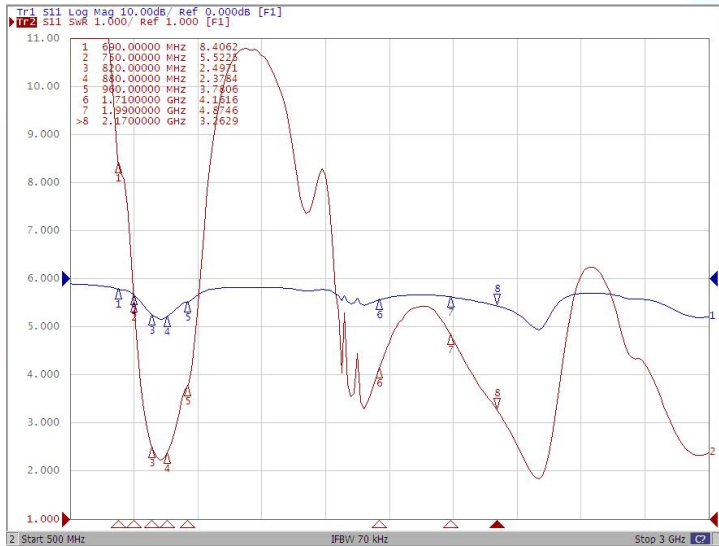
WIFI+BLE+GPS match remains unchanged

	BAND	Frequency
RF1	B1/B2/B3/B4/B8/B66	880-960/1710-2175MHz
RF2	B5/B18/B19/B20	790-890MHz
RF3	B12/B13/B28	690-800MHz

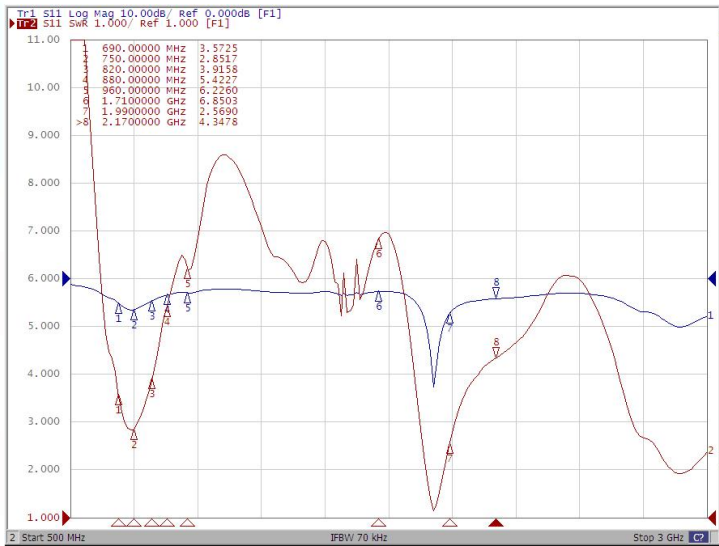
RF1



RF2

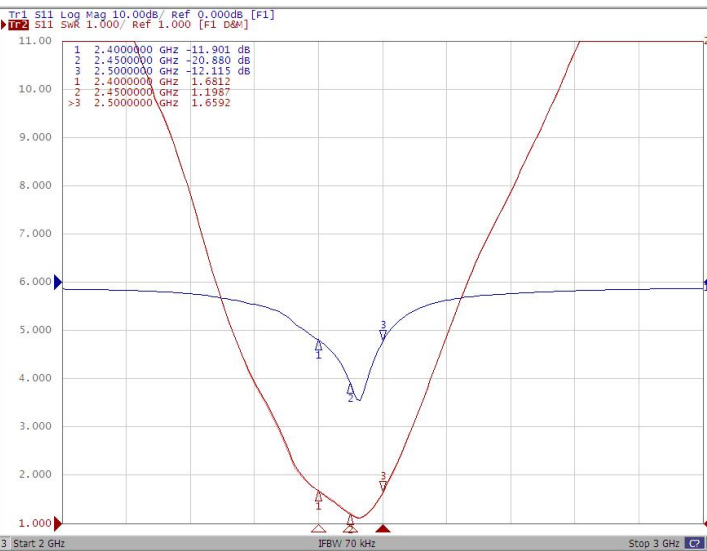


RF3

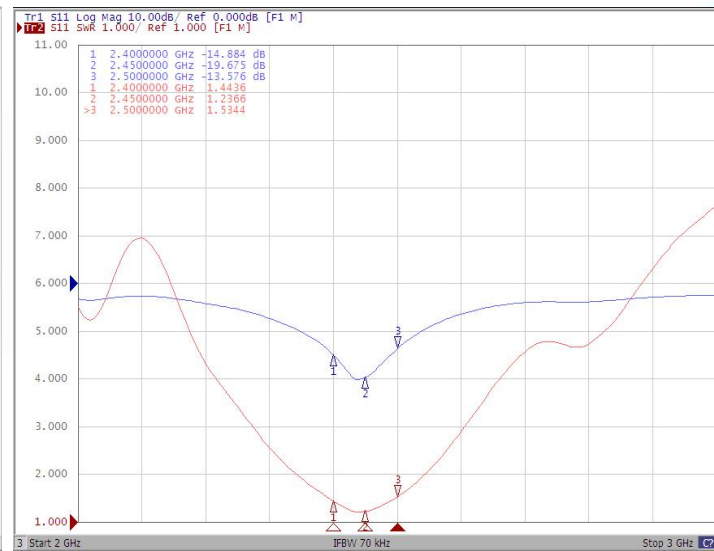


	Frequency
WIFI	2400-2500MHz
BLE	2400-2500MHz
GPS	1575MHz

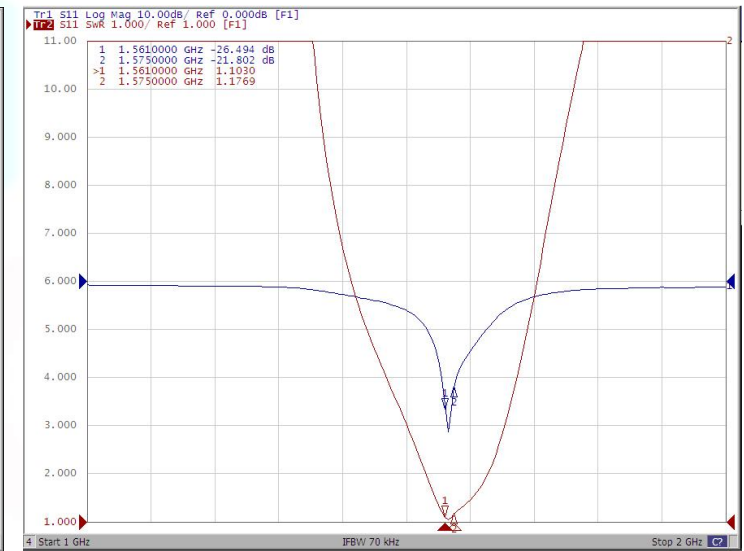
WIFI



BLE



GPS

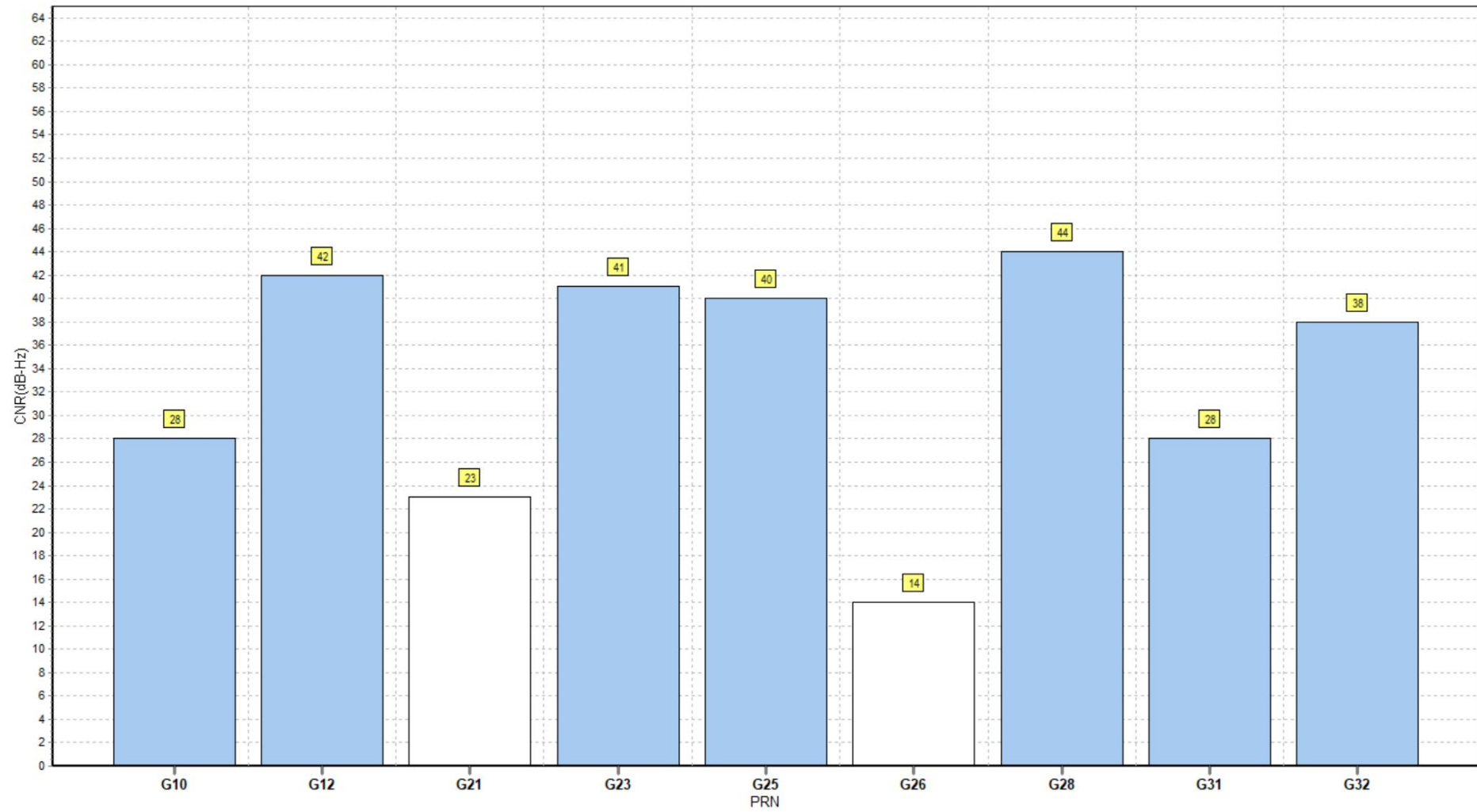


LTE-RF1 Passive Test Results			LTE-RF2 Passive Test Results			LTE-RF3 Passive Test Results		
Frequency(MHz)	Efficiency(%)	Max Gain(dBi)	Frequency(MHz)	Efficiency(%)	Max Gain(dBi)	Frequency(MHz)	Efficiency(%)	Max Gain(dBi)
880	31%	-1.62	790	23%	-2.33	690	16%	-3.64
890	31%	-1.58	800	25%	-2.17	700	17%	-3.40
900	31%	-1.87	810	26%	-2.14	710	17%	-3.31
910	30%	-2.09	820	27%	-2.07	720	18%	-3.17
920	29%	-2.09	830	29%	-1.72	730	19%	-3.04
930	28%	-2.12	840	29%	-1.76	740	18%	-3.12
940	26%	-2.43	850	29%	-1.95	750	18%	-3.18
950	23%	-3.05	860	27%	-2.18	760	18%	-3.19
960	21%	-3.40	870	25%	-2.29	770	19%	-3.10
1710	35%	1.33	880	23%	-2.73	780	19%	-3.11
1730	36%	1.67	890	20%	-3.24	790	19%	-3.03
1750	39%	2.50				800	20%	-2.82
1770	38%	2.19						
1790	40%	2.54						
1810	41%	2.32						
1830	44%	2.64						
1850	43%	2.59						
1870	40%	2.43						
1890	38%	1.81						
1910	36%	2.02						
1930	32%	1.38						
1950	32%	1.32						
1970	29%	1.23						
1990	28%	0.57						
2110	27%	0.71						
2130	27%	0.94						
2150	27%	0.93						
2170	25%	0.87						

1. switch on the ground foot and complete the piecewise through debugging and matching (690-960MHz的带宽对于天线来说太大了，所以需要在地脚上增加一个开关，通过调试匹配分段完成)

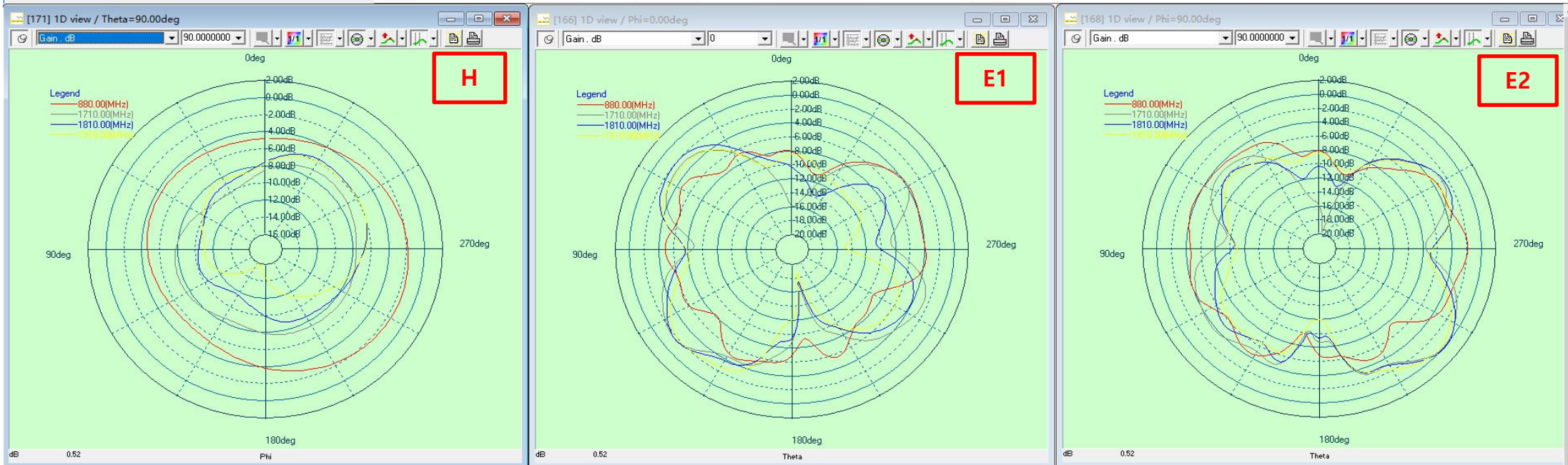
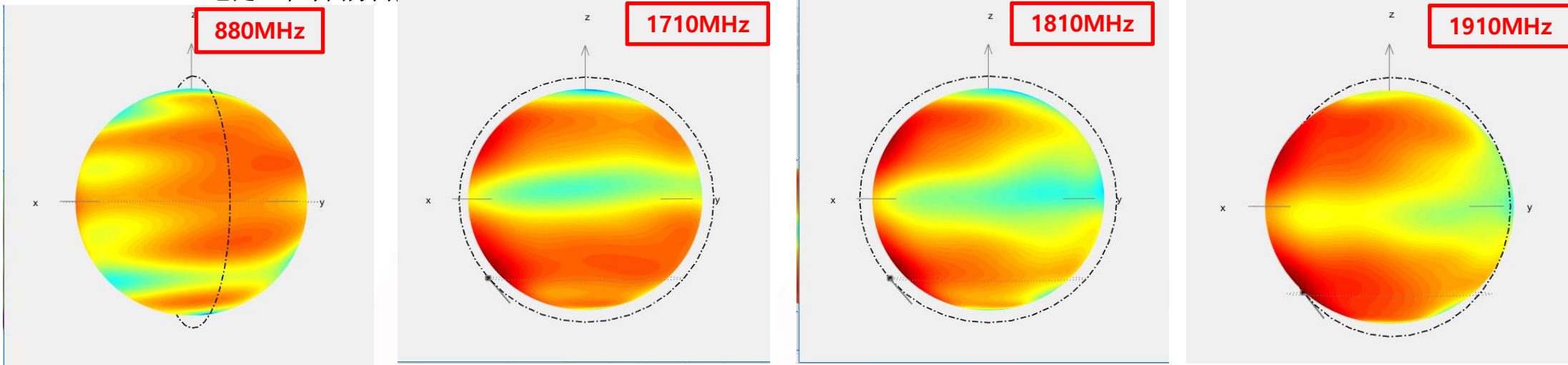
2. The performance of the low-frequency antenna obtained by debugging the switch will decrease with the decrease of frequency (通过调试开关得到的低频天线的性能会随着频率的降低而降低)

WiFi Passive Test Results			BLE Passive Test Results			GPS Passive Test Results		
Frequency(MHz)	Efficiency(%)	Max Gain(dBi)	Frequency(MHz)	Efficiency(%)	Max Gain(dBi)	Frequency(MHz)	Efficiency(%)	Max Gain(dBi)
2400	52%	2.89	2400	40%	1.34	1561	42%	-0.032
2410	53%	2.84	2410	42%	1.65	1575	41%	0.285
2420	54%	2.84	2420	43%	1.91			
2430	55%	2.80	2430	43%	2.28			
2440	57%	2.91	2440	43%	2.45			
2450	57%	3.15	2450	43%	2.40			
2460	56%	3.35	2460	42%	2.35			
2470	55%	3.46	2470	41%	2.41			
2480	54%	3.62	2480	40%	2.34			
2490	55%	3.83	2490	38%	2.18			
2500	54%	3.82	2500	35%	1.79			



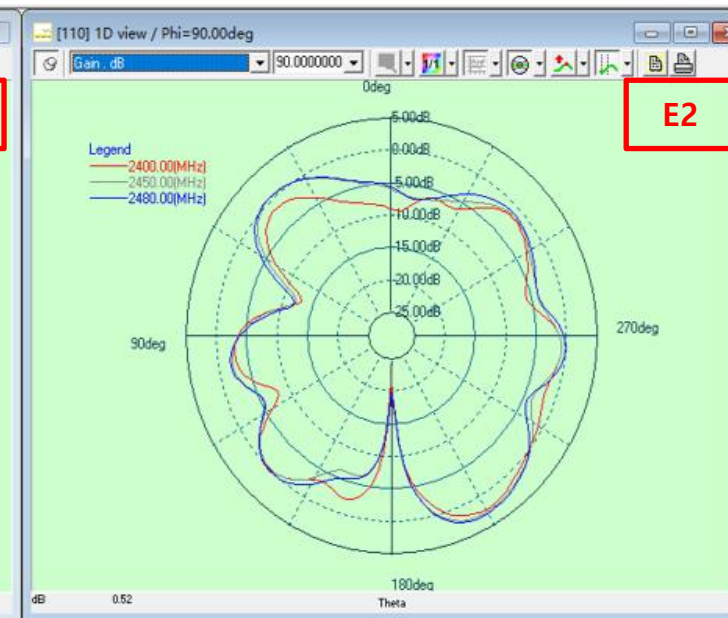
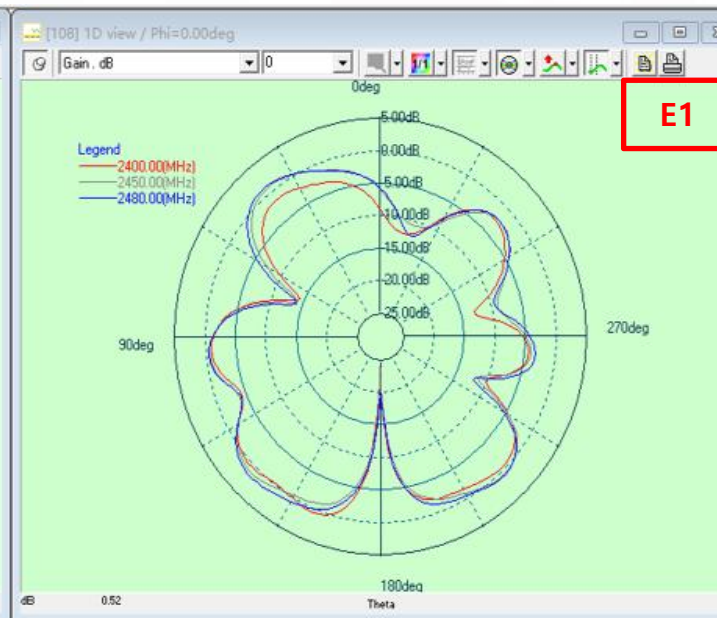
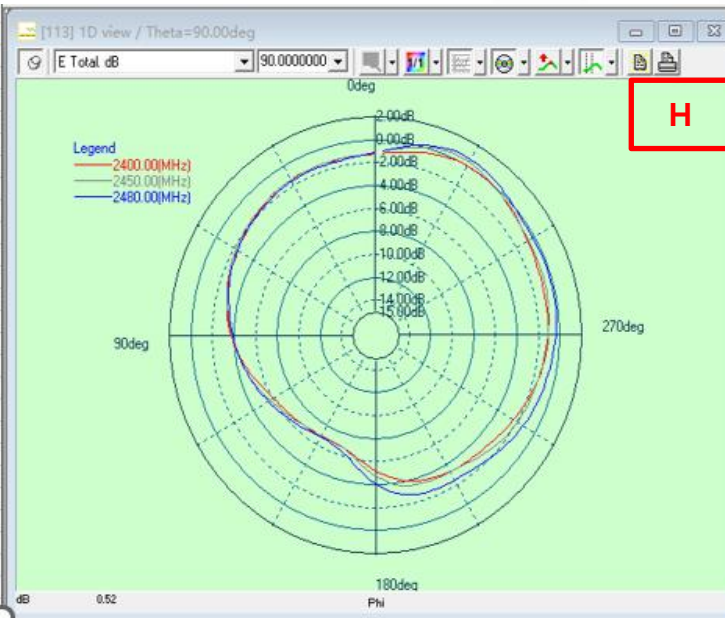
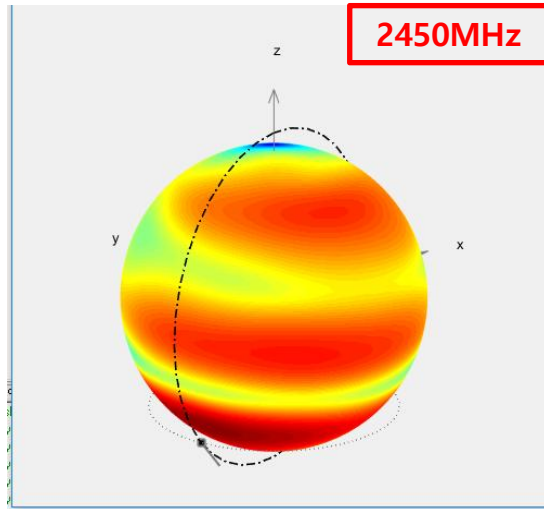
Alterlock LTE_Performance : 3D/2D Radiation Pattern (3D/2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)



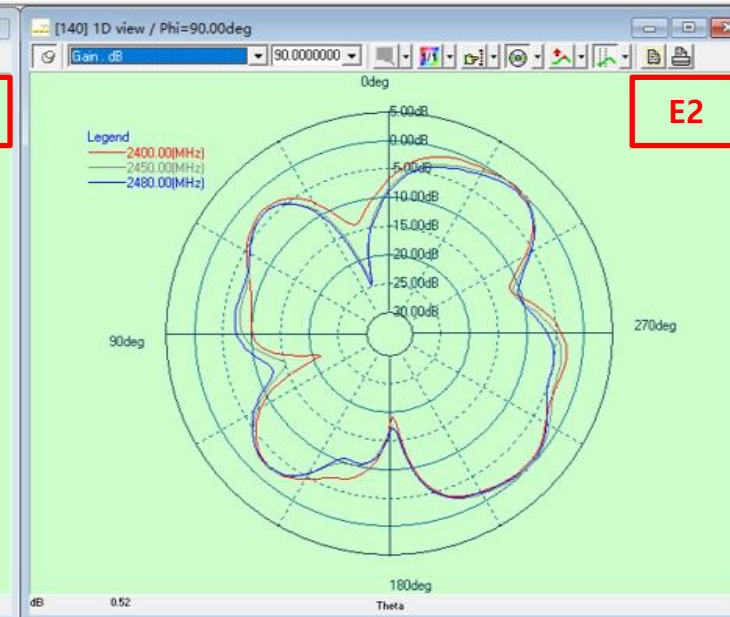
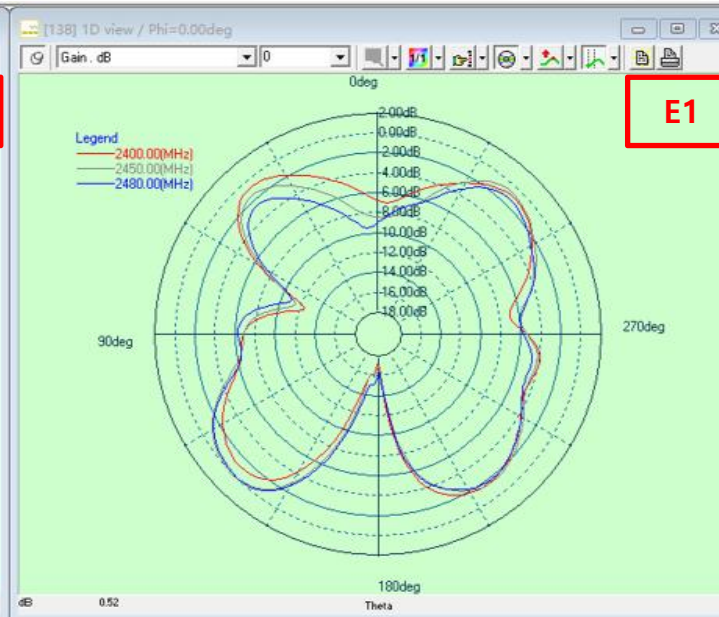
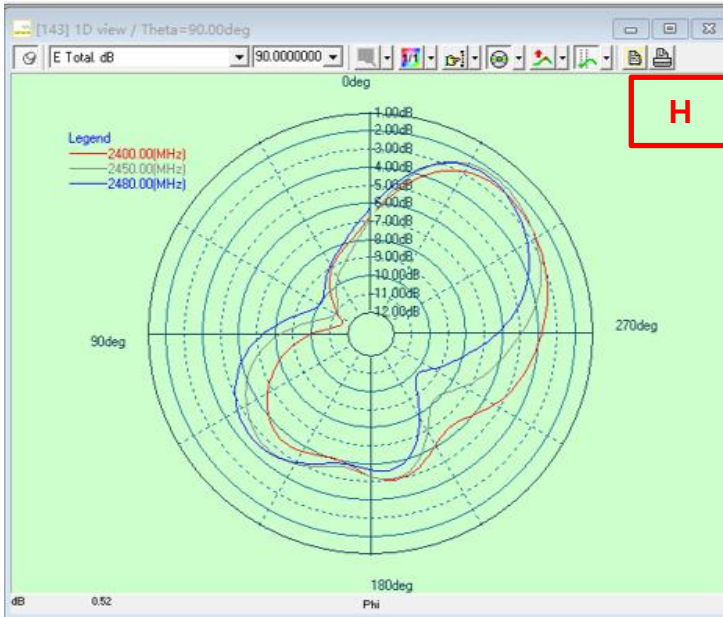
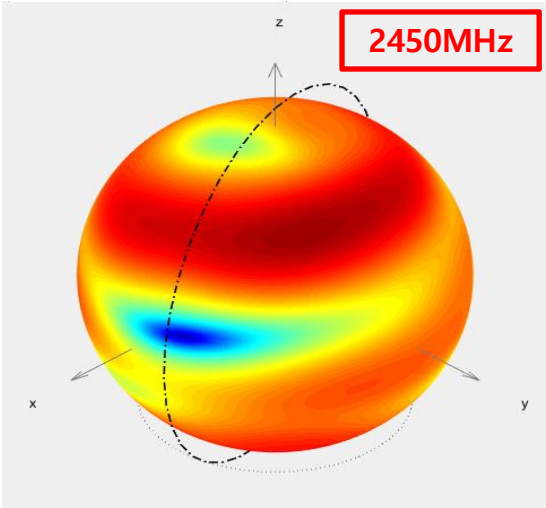
● Alterlock **WIFI** _Performance : 3D/2D Radiation Pattern (3D/2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)



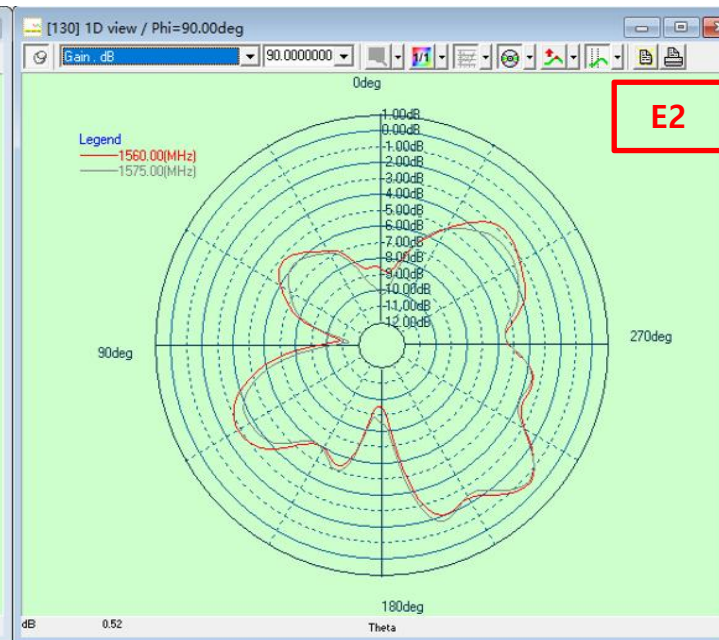
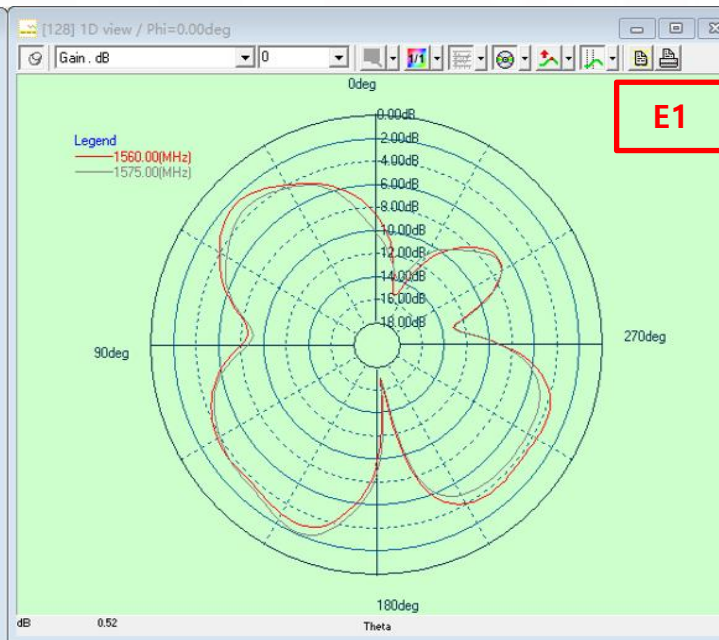
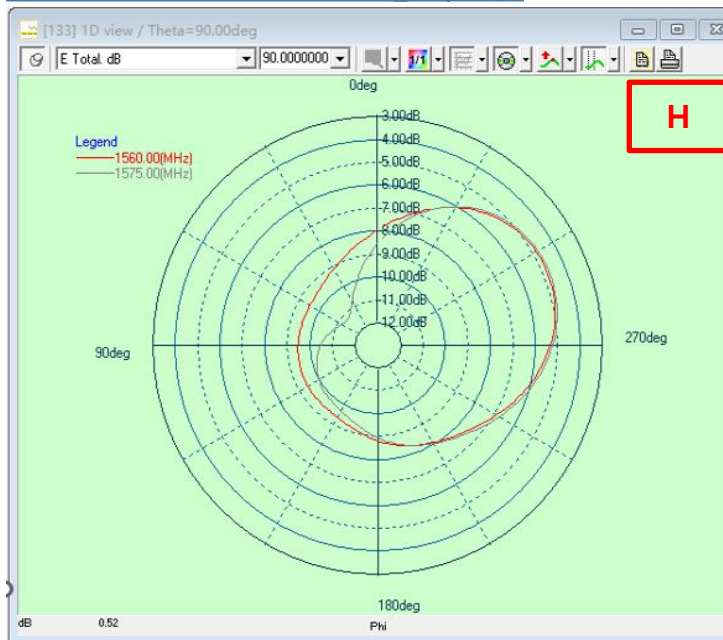
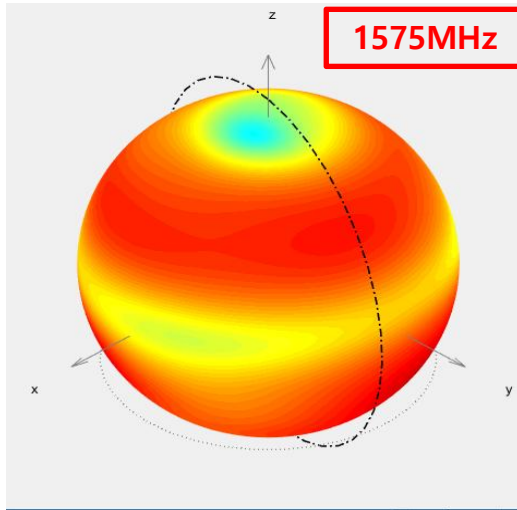
● Alterlock BLE_Performance : 2D Radiation Pattern (2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)



● Alterlock **GPS** _Performance : 2D Radiation Pattern (2D辐射方向图)

1. Azimuth Pattern H-Plane (水平方向图为H平面) : "H", X-Y plane
2. Elevation Pattern E1, E2-Plane (垂直方向图为E1, E2-平面) : "E1", "E2", X-Z plane(E1), Y-Z plane(E2)
3. It is a structure that supplements the distortion of the horizontal plane in the vertical plane and has a gentle sphere shape in three dimensions. (它是三维球面方向图, 在二维水平和垂直的剖面)



● Alterlock Antenna Summary (天线总结)

1. The performance of the antenna is basically OK. (天线性能基本达标)
2. Pay attention to the environmental treatment of the antenna (注意天线的环境处理)
3. The low frequency 690-800MHz/790-890MHz is achieved through switch debugging matching, so the antenna performance will be attenuated (低频690-800MHz/790-890MHz是通过开关调试匹配实现的, 因此会使天线性能下降)

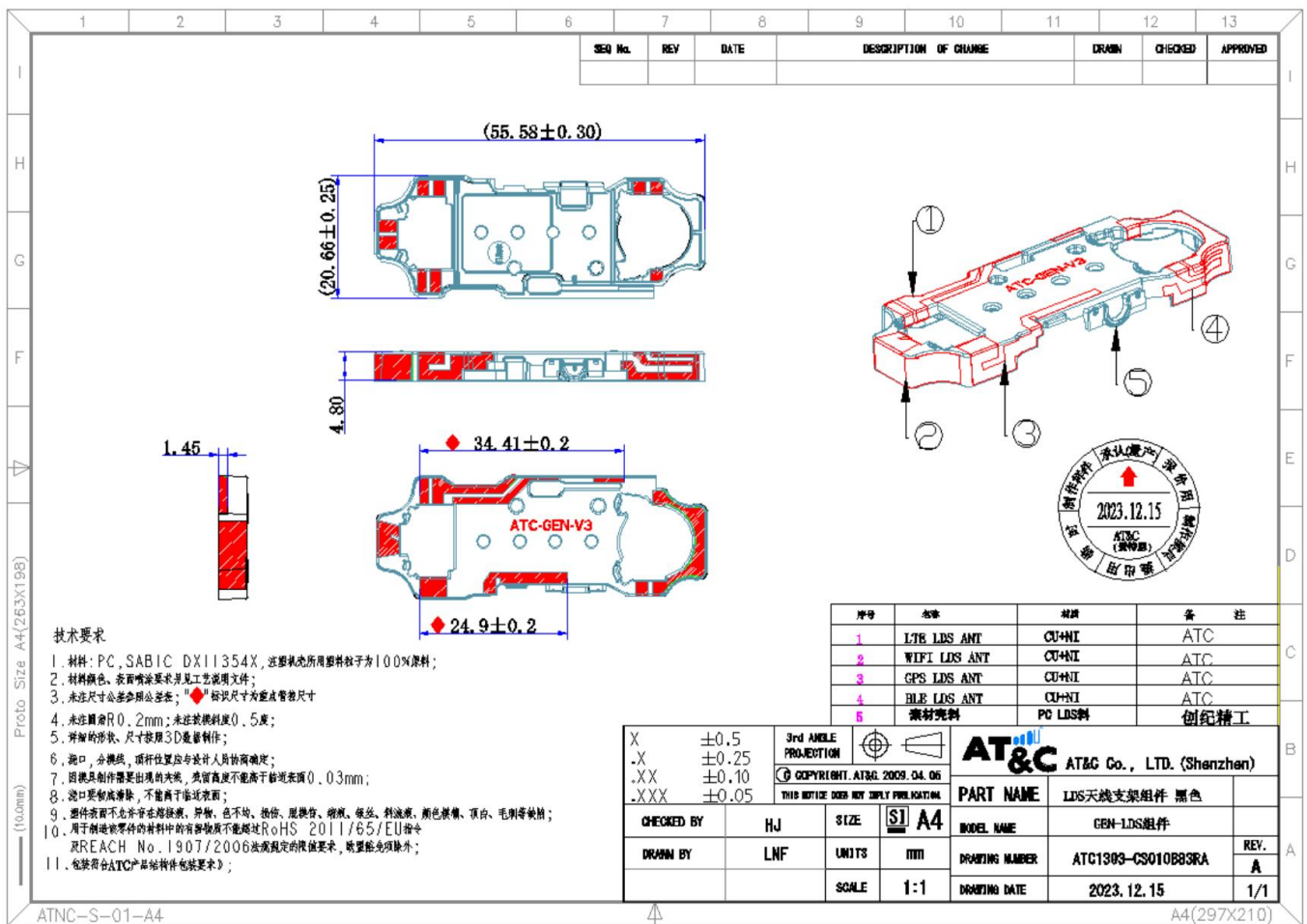
*** Please let me know if there is a change in the device. And if have any questions, please communicate promptly***

*** (如果机器有变化, 请通知我司; 如果有任何问题, 请及时沟通) ***

Thank You!!

天线组件图

Customer 客户	创世讯联	Written By 制作	LNF	Orig. Date 制作日期	2023.12.15
Part Number 料号	ATC1393-CS010B83RA	Revised By 校订	SHIN	Revised Date 校订日期	2023.12.15
Description 零件名称	LDS 天线组件	Approved By 确认	HJ	Approved Date 确认日期	2023.12.15



编号	尺寸性质	尺寸	下差	上差	1	2	3	Upper	Lower	判定	供方评审意见	客户评审意见	量具
1	重点	34.41	-0.20	0.20	34.49	34.47	34.44			PASS			PJ
2	重点	24.9	-0.20	0.20	24.95	24.96	24.90			PASS			PJ
3	普通	1.45	-0.10	0.10	1.48	1.46	1.45			PASS			PJ