



深圳市昱晟通讯设备有限公司

Yusheng Communications-equipment Co.,LTD

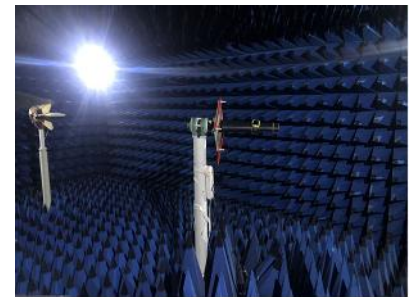
For Wuhan Qiwu Technology Co., Ltd.
3 / F, Creative workshop, No.04, District D, Creative world, No.16
Yezhihu West Road, Hongshan District, Wuhan City, Hubei
Province China

antenna test report

Radio: Hong Yuankai

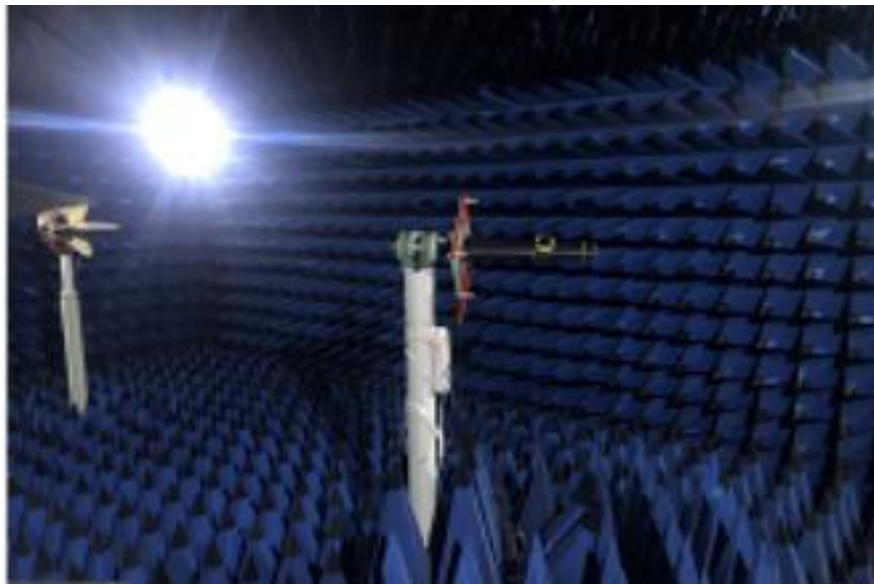
Date: 2026-7-21

Contact: 15119409299



Project development environment

As we transition from the internet era to the intelligent age, China is actively building a digital society and smart cities. Over the next 5-10 years, both consumer electronics and IoT markets will demonstrate tremendous growth potential. The wireless communications sector remains highly diversified. Leveraging its core strengths in antenna technology and comprehensive capabilities, Yusheng is committed to delivering competitive professional-grade product solutions that meet market demands.



YuSheng Communications product portfolio covers nearly all antenna applications for wireless terminal devices, including automotive antennas, high-precision surveying and mapping antennas, UAV ground/satellite data navigation systems, high-precision positioning antennas, medical device wireless transmission solutions, consumer-grade antennas (mobile phone, PAD, laptop antennas), base station/intrusive distribution antennas, smart wearable antennas (smartwatches, TWS earbuds), security home antennas, and various intelligent devices utilizing wireless data transmission and control technologies.

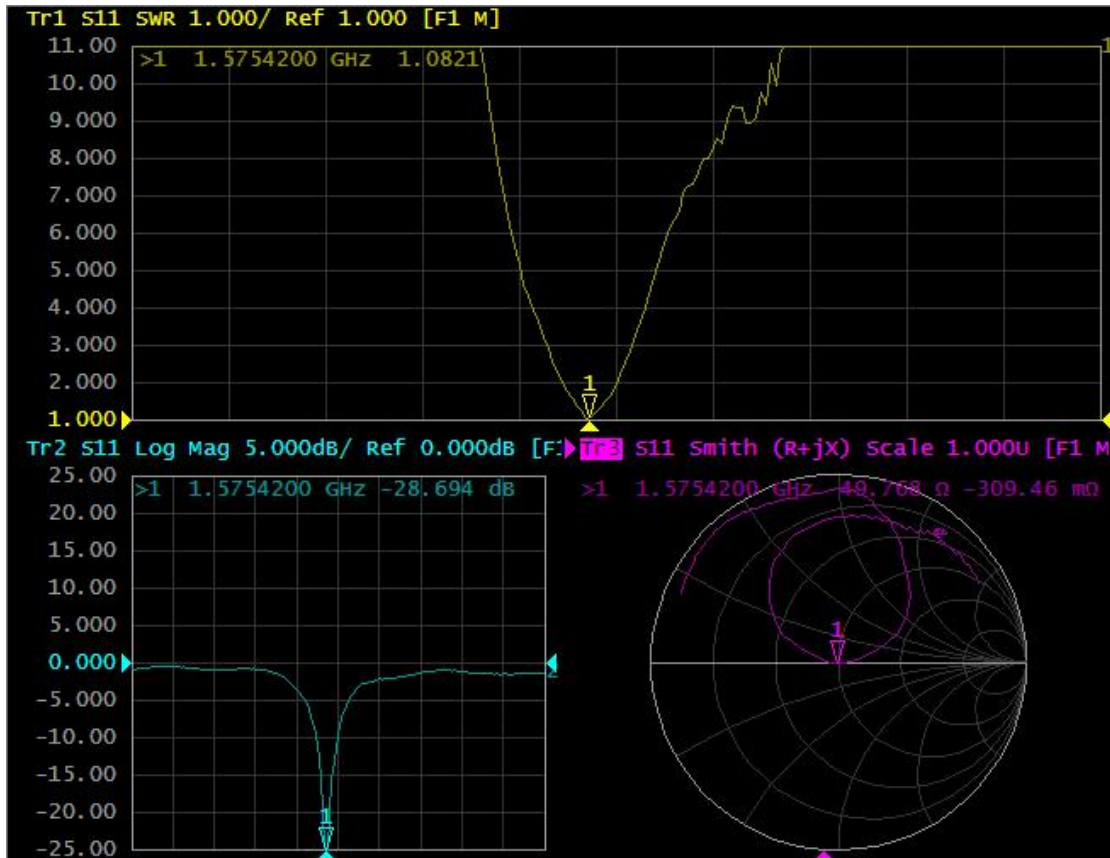
Project debugging
introduction

type				
template	motherboard			
Band and antenna material	BG04	frequency range		material quality
		antenna	GPS L1:1575.42MHz GPS L5:1176MHz BT1:2400MHz-2500MHz BT2:2400MHz-2500MHz WIFI:2400MHz-2500MHz	FPC/FPC+coax ial cable
	Follow customer requirements			

Report version outline

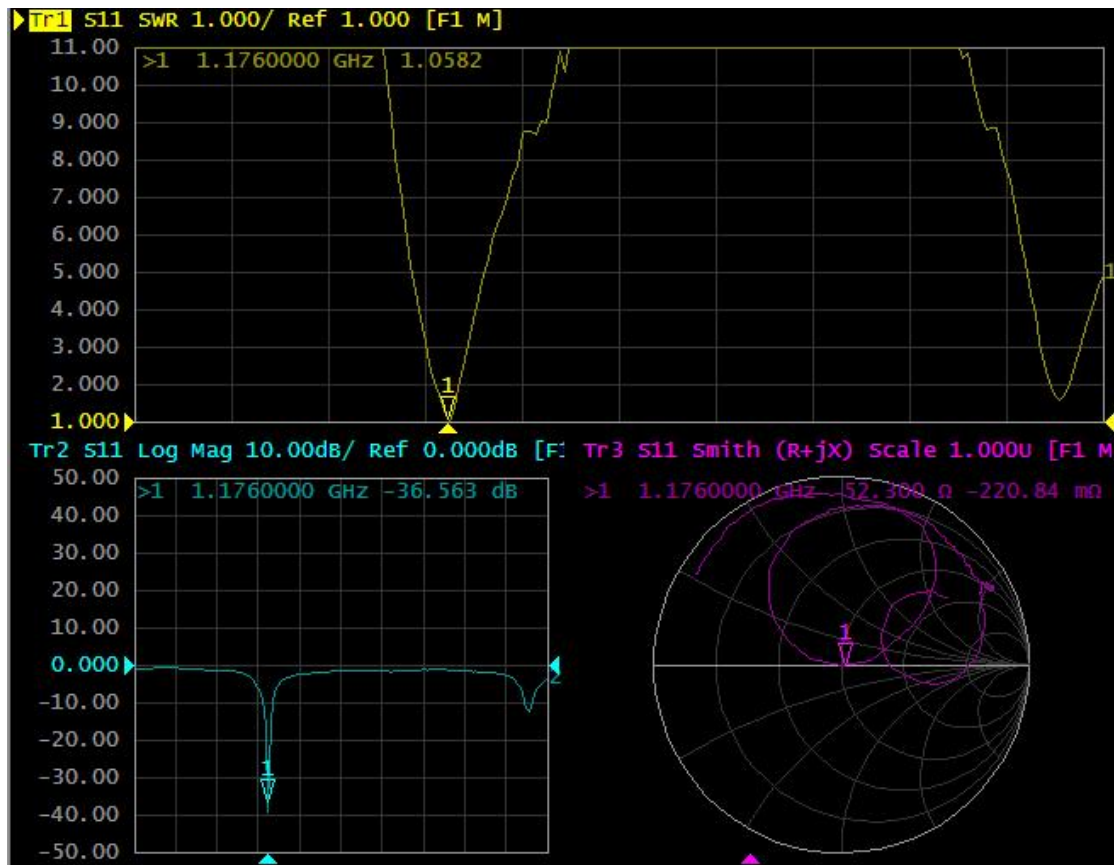
Report version	Report time	The problems solved by this antenna development
V0.1	2026-03-04	Initial Commissioning Report
V0.2	2026-03-05	Initial Commissioning Report (Additional Antenna 5)
V0.3	2026-03-09	Optimization and Debugging Report (3D-printed shell material does not contain metal powder)
V0.4	2026-05-26	Complete System Debugging Report
V0.5	2026-07-17	Full-System Testing and Optimization Report
V0.6	2026-07-21	Full-System Testing and Optimization Report (includes Apple logo directional diagram)

Antenna passive parameters- GPS L1



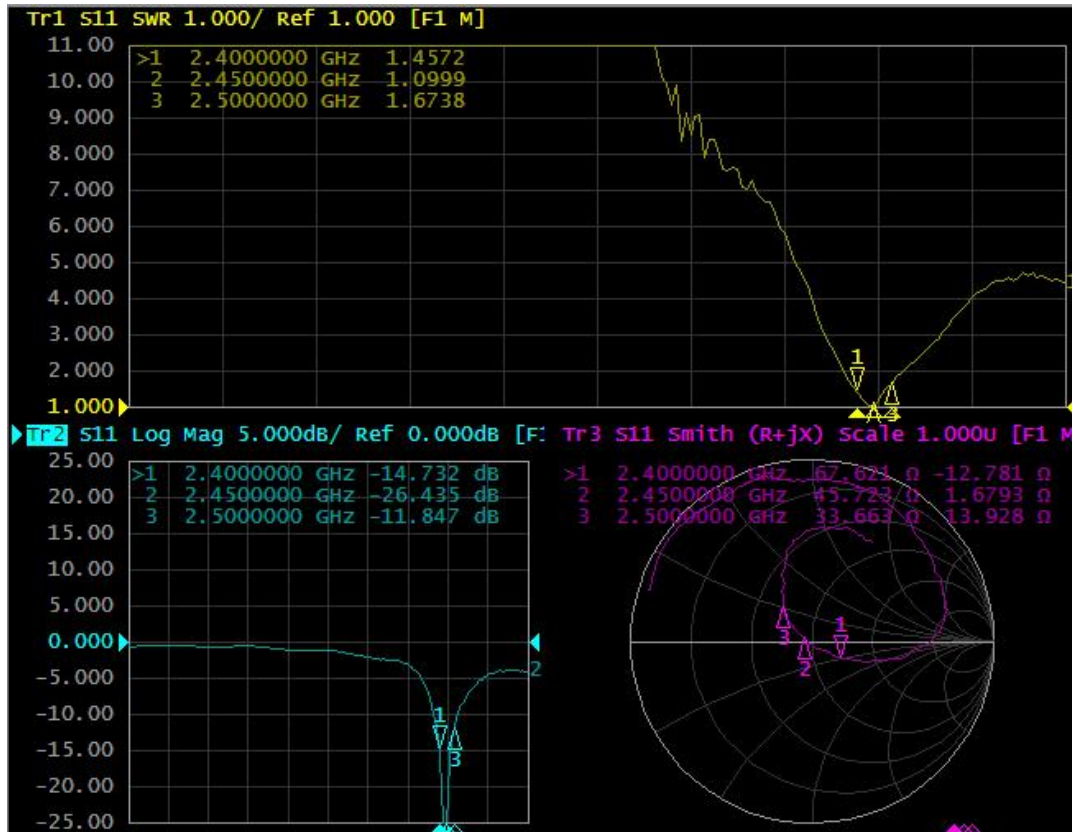
Freq	Effi (%)	Effi (dB)	Gain (dBi)
1555	51.6%	-2.88	1.6
1560	52.1%	-2.83	1.63
1565	52.6%	-2.79	1.75
1570	53.0%	-2.76	1.88
1575	53.4%	-2.73	1.92
1580	53.1%	-2.75	1.89
1585	52.6%	-2.79	1.83
1590	51.9%	-2.85	1.74

Antenna passive parameters- GPS L5



Freq	Effi (%)	Effi (dB)	Gain (dBi)
1155	47.1%	-3.27	0.65
1160	48.1%	-3.18	0.78
1165	48.7%	-3.12	0.93
1170	49.1%	-3.09	1.08
1176	50.1%	-3.00	1.23
1180	50.5%	-2.96	1.12
1185	50.0%	-3.01	1.01
1190	49.1%	-3.09	0.91

Antenna passive parameters- BT1-for BLE



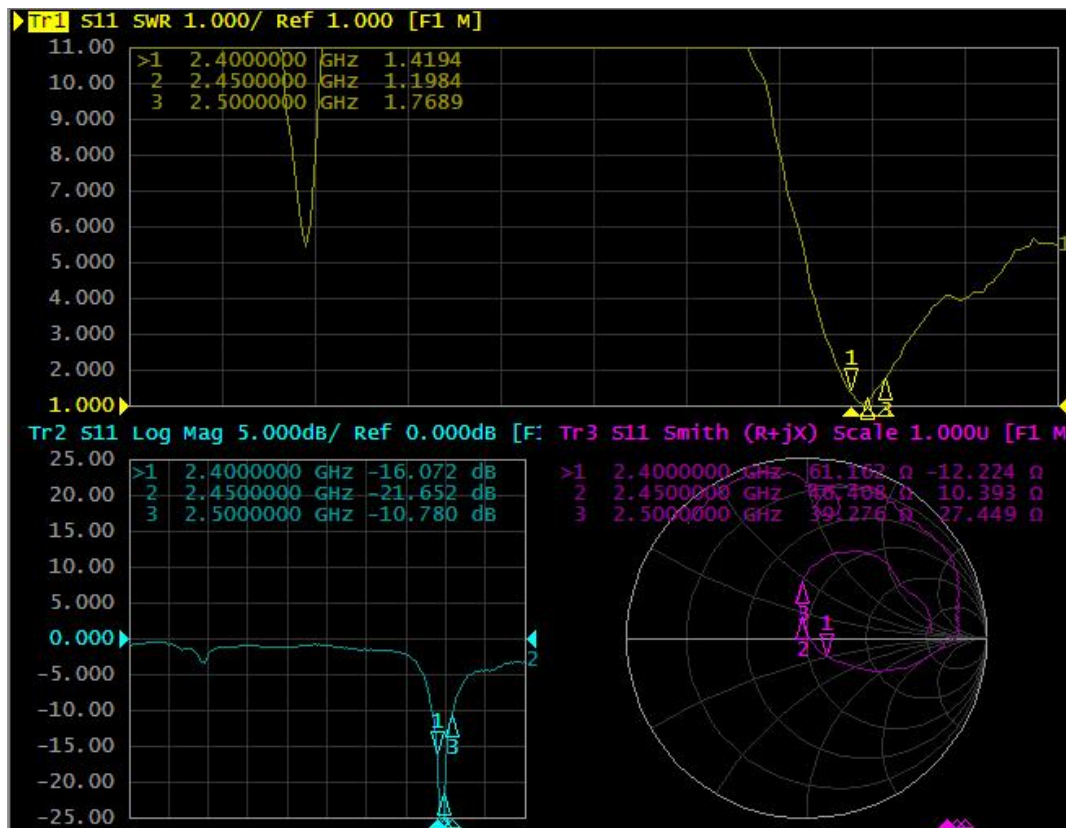
Freq	Effi (%)	Effi (dB)	Gain(dBi)
2400	39.5%	-4.03	-1.12
2410	40.0%	-3.98	-1.14
2420	40.6%	-3.91	-1.1
2430	41.0%	-3.87	-1.07
2440	41.5%	-3.82	-1.02
2450	41.2%	-3.85	-1.15
2460	40.7%	-3.90	-1.32
2470	40.3%	-3.94	-1.42
2480	40.1%	-3.97	-1.48

Antenna passive parameters- BT2-for ANT+



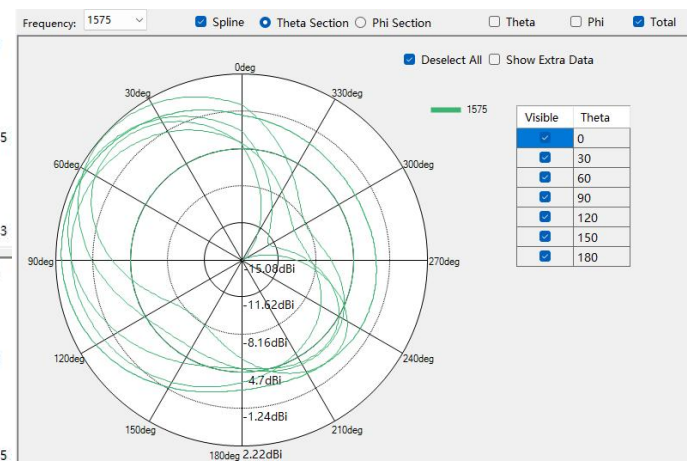
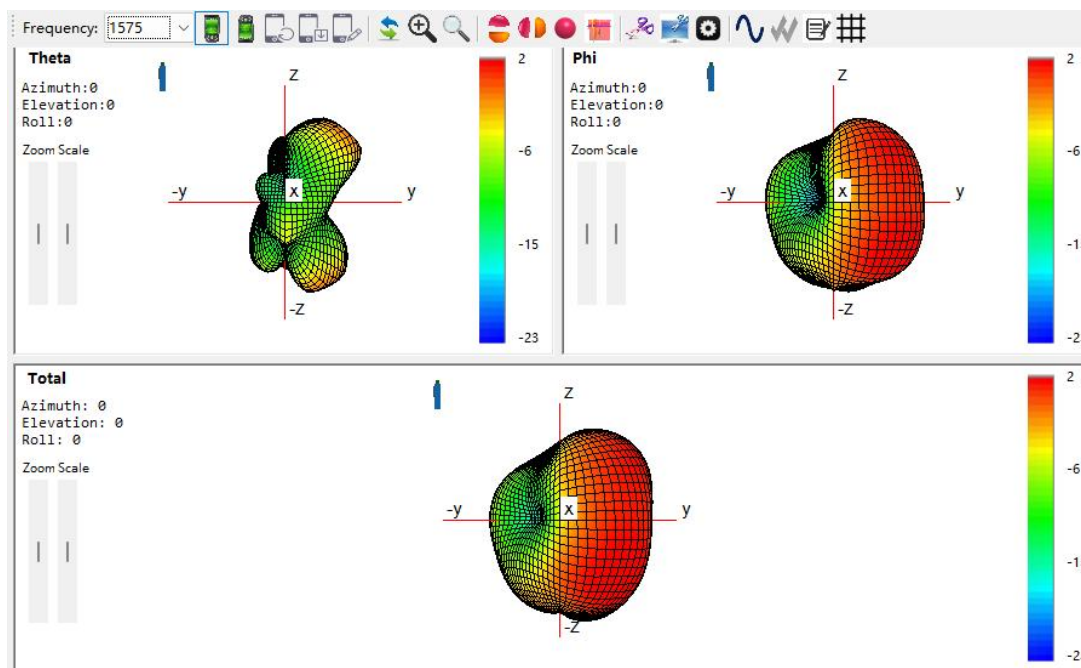
Freq	Effi (%)	Effi (dB)	Gain(dBi)
2400	38.2%	-4.18	-1.68
2410	38.8%	-4.11	-1.39
2420	39.4%	-4.05	-1.01
2430	40.1%	-3.97	-0.91
2440	40.6%	-3.91	-0.82
2450	40.4%	-3.94	-0.75
2460	40.1%	-3.97	-0.73
2470	39.8%	-4.00	-0.95
2480	39.2%	-4.06	-1.08

Antenna passive parameters- WIFI

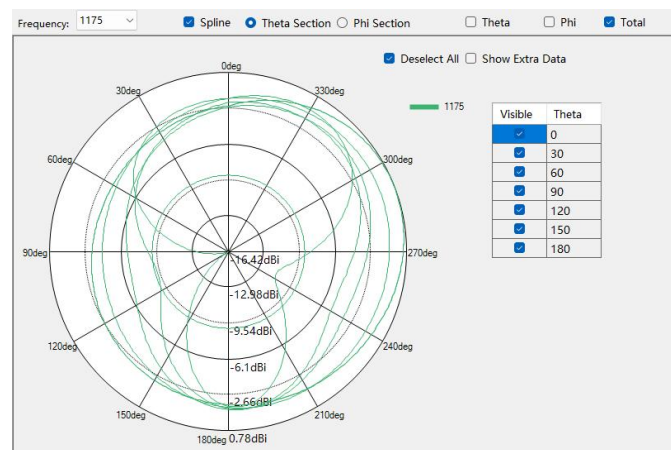
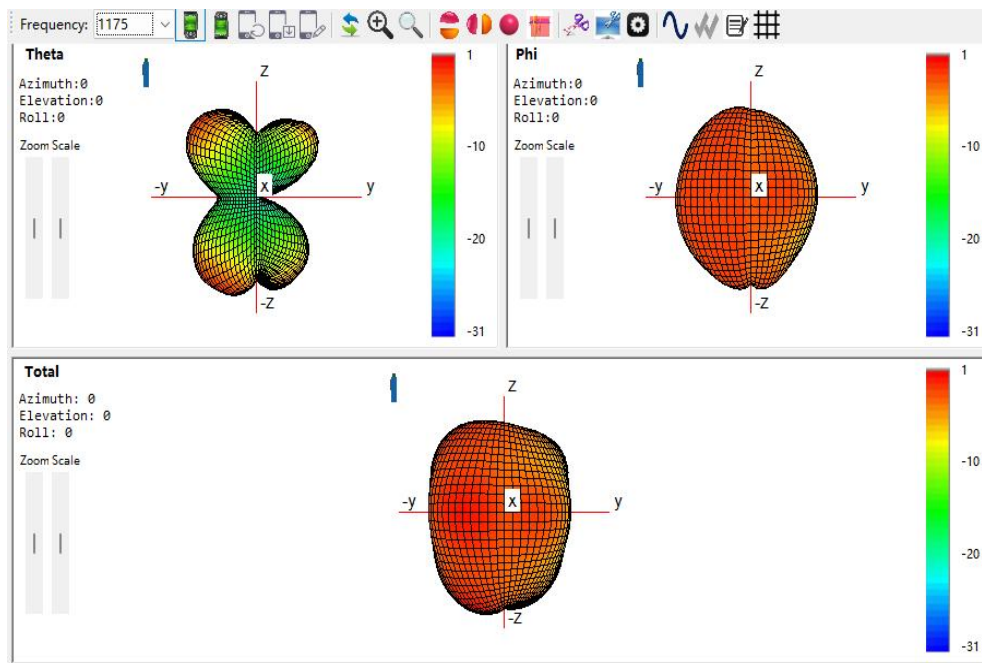


Freq	Effi (%)	Effi (dB)	Gain(dBi)
2400	38.4%	-4.16	0.01
2410	39.2%	-4.07	0.19
2420	39.8%	-4.00	0.38
2430	40.2%	-3.96	0.51
2440	40.7%	-3.91	0.58
2450	40.3%	-3.94	0.50
2460	40.1%	-3.97	0.23
2470	39.7%	-4.01	0.09
2480	39.0%	-4.09	0.02

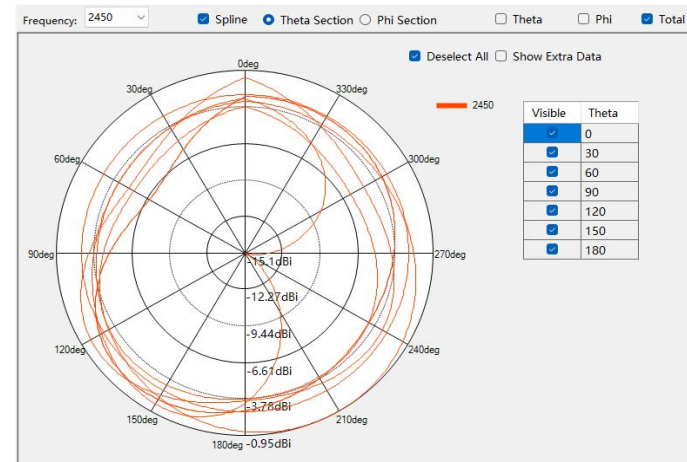
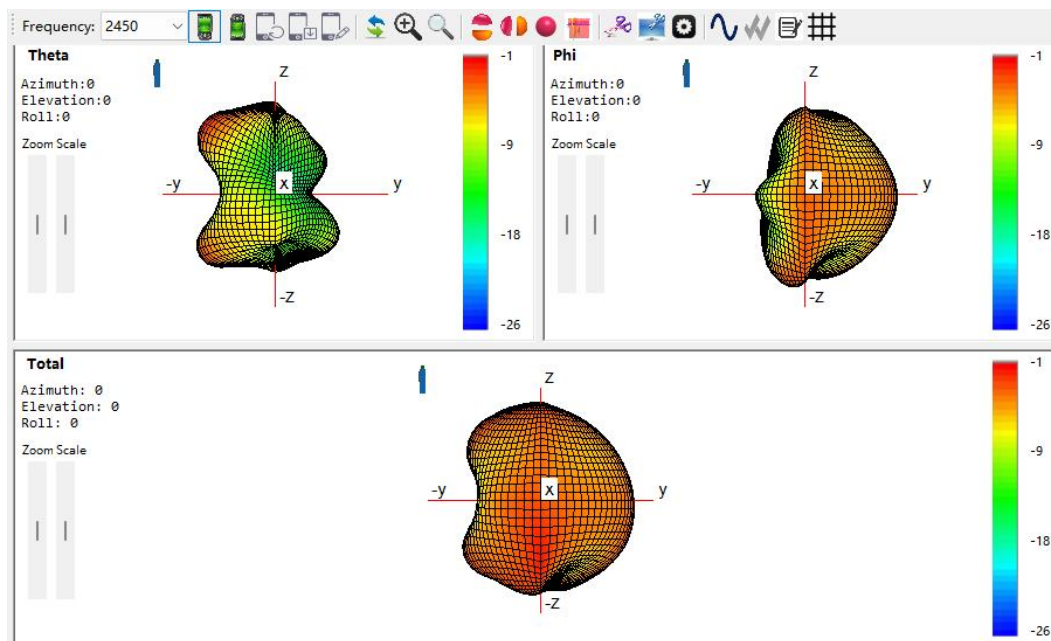
GPS L1 Antenna - Apple Diagram and Directional Pattern



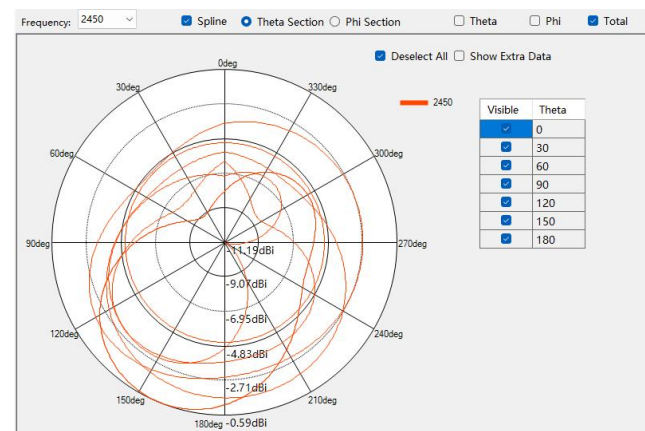
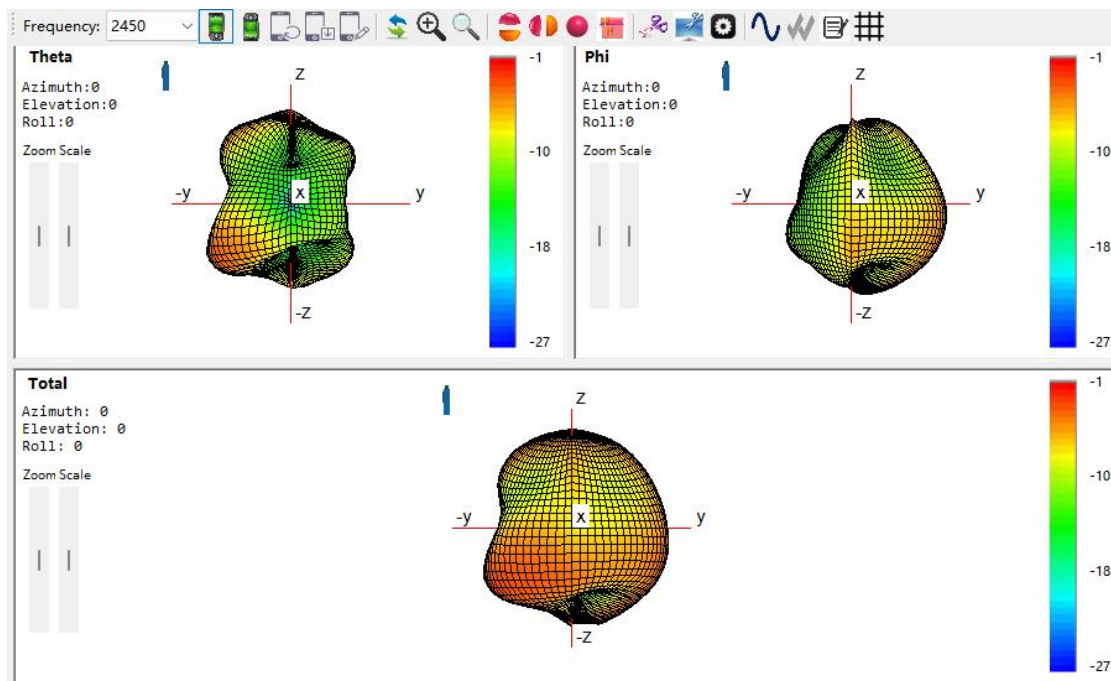
GPS L5 Antenna - Apple Diagram and Directional Pattern



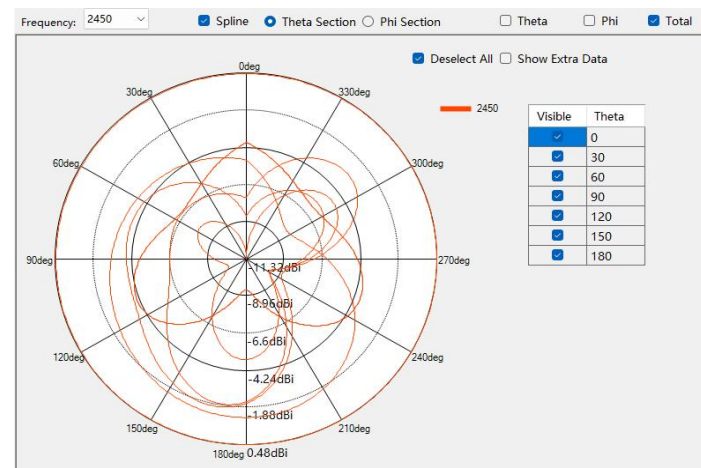
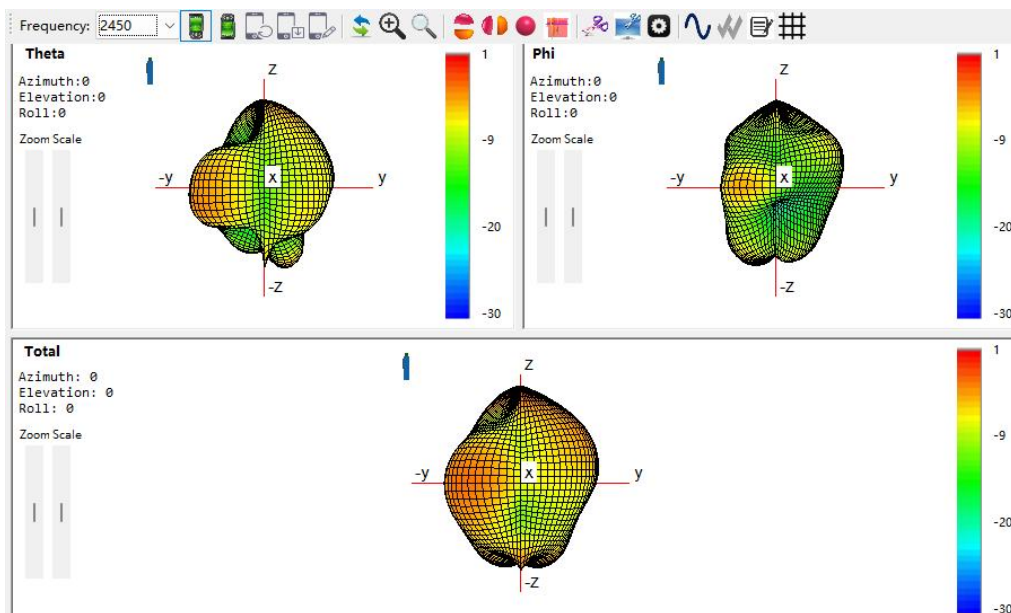
BT1 Antenna - Apple Diagram and Directional Pattern



BT2 Antenna - Apple Diagram and Directional Pattern



WIFI Antenna - Apple Diagram and Directional Pattern



Thank you!



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