

E06 Sapphire Project

天线调试报告

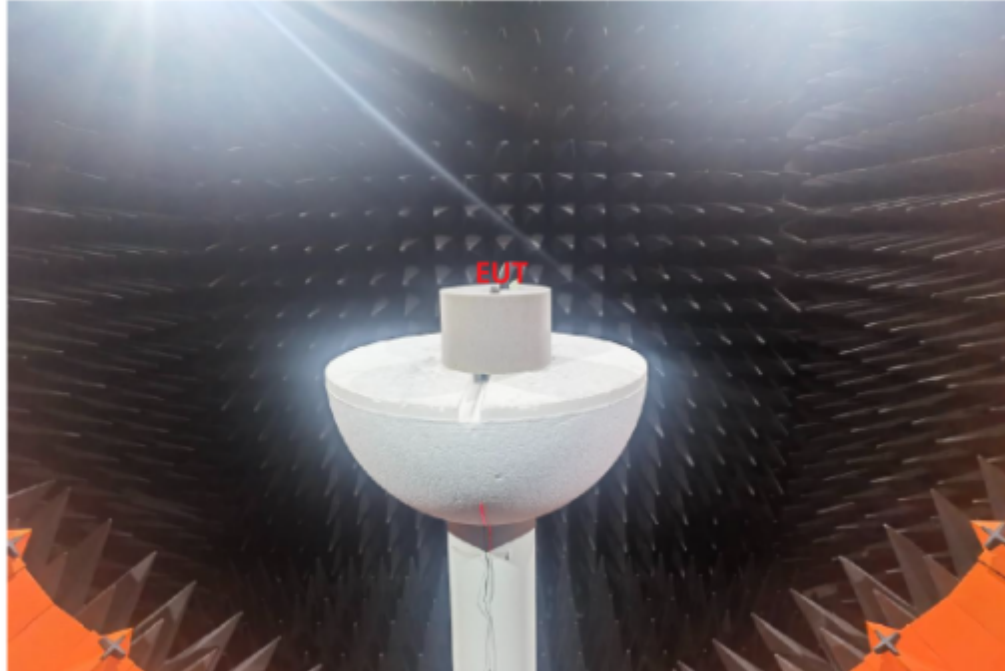
目录

Catalog

- 1 Schematic diagram of testing environment-测试环境示意图**
- 2 Antenna Performance Overview-天线性能概述**
- 3 Related material bom-相关物料BOM**
- 4 Passive test data-无源测试数据**

Designer: Joseph Xing
Check : Pengfei Wang
Date : 2025-09-05
Versions : V3.0

1. Schematic diagram of testing environment-测试环境示意图



2.1 Antenna Performance Overview-天线性能概述 (S11 Data-S11数据)

Conclusion: The final debugging is completed, and the S11 data is as follows:. –最终调试完成， S11数据如下：

S11	Peak gain 增益(dBi)		Radiated efficiency 效率(dB)		Return Loss 回波损耗(dB)	
	2.4G		2.4G		2.4G	
Free space 自由空间	2.4GHz	1.06	2.4GHz	-6.35	2.4GHz	-15.38
	2.44GHz	2.0	2.44GHz	-6.27	2.44GHz	-14.05
	2.48GHz	1.08	2.48GHz	-8.04	2.48GHz	-7.00
BT-Head die-R R边头模数据	2.4GHz	-4.82	2.4GHz	-10.86	2.4GHz	-9.85
	2.44GHz	-4.56	2.44GHz	-10.41	2.44GHz	-22.82
	2.48GHz	-4.77	2.48GHz	-10.47	2.48GHz	-13.65

2.2 Antenna Performance Overview-天线性能概述 (OTA Data-OTA数据)

Conclusion: OTA data completion, the active and passive efficiency of the head module are consistent, and there is no Desense generated. -OTA数据完成, 头模有源效率与无源效率相符, 无Desense产生。

Conduction data-传导数据			BT	
Frequency band-频段	Mode-模式	Channel-信道	Power-功率	Sensitivity-灵敏度
BT (2.4G)	BR (DH5)	CH0	8.98	-96
		CH39	9.07	-95.5
		CH78	9.45	-95.5

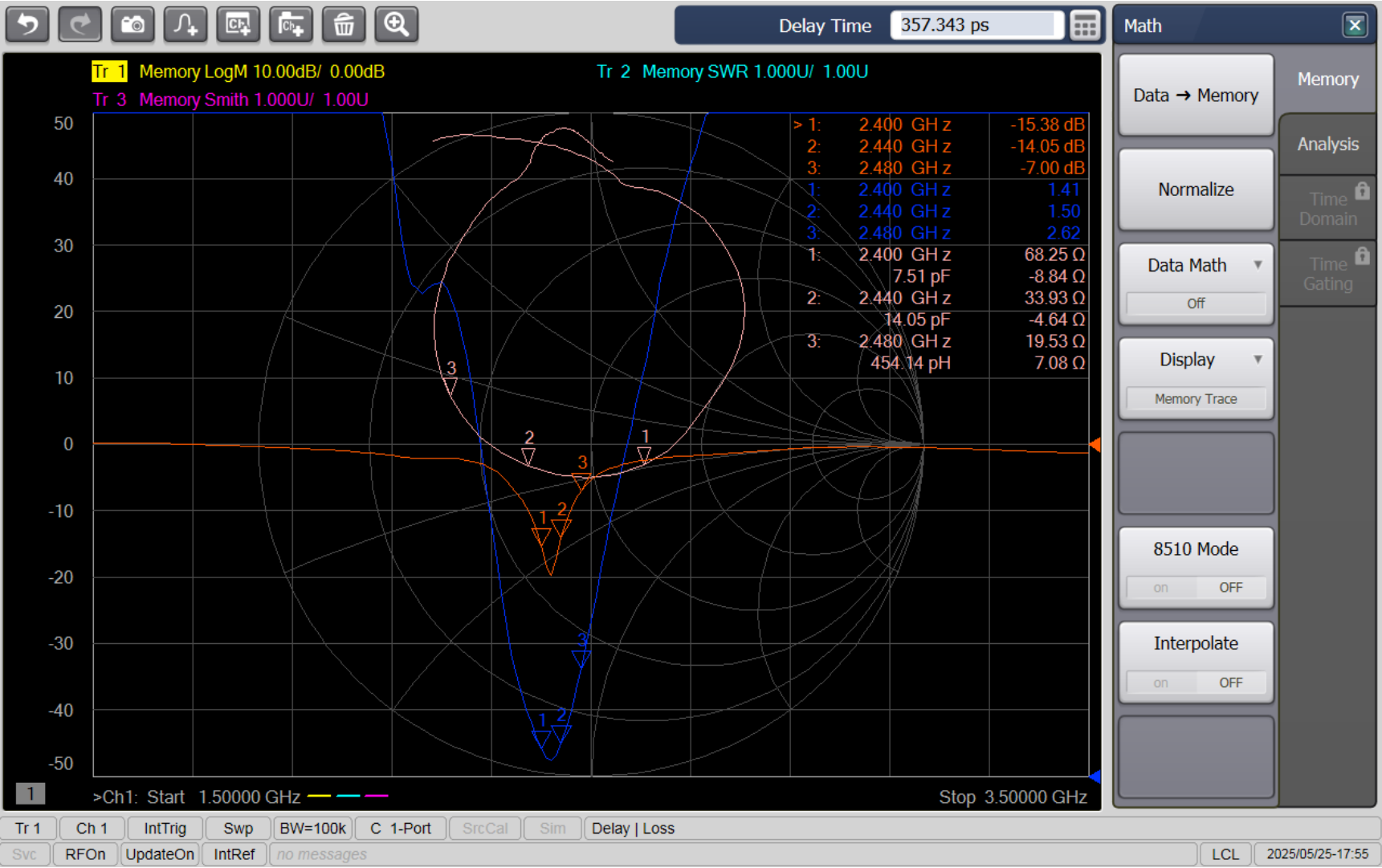
OTA			BT (Head model data) BT(头模数据)	
Frequency band-频段	Mode-模式	Channel-信道	TRP	TIS
BT (2.4G)	BR (DH5)	CH0	-2.52	-85.22
		CH39	-1.96	-85.07
		CH78	-2.21	-85.61

3.1 Related material bom-相关物料BOM

Conclusion: The final debugging of BT and NFC antennas has been completed, and the matching combinations are as follows.–BT与NFC天线的最终调试已完成，匹配组合如下。

匹配物料BOM	位号	料值
NFC	C52	33pf
	C48	120pf
	C54	NC
	C53	NC
BT	C7	NC
	R12	0Ω
	C6	NC
	C55	0Ω
	C5	5.6pf

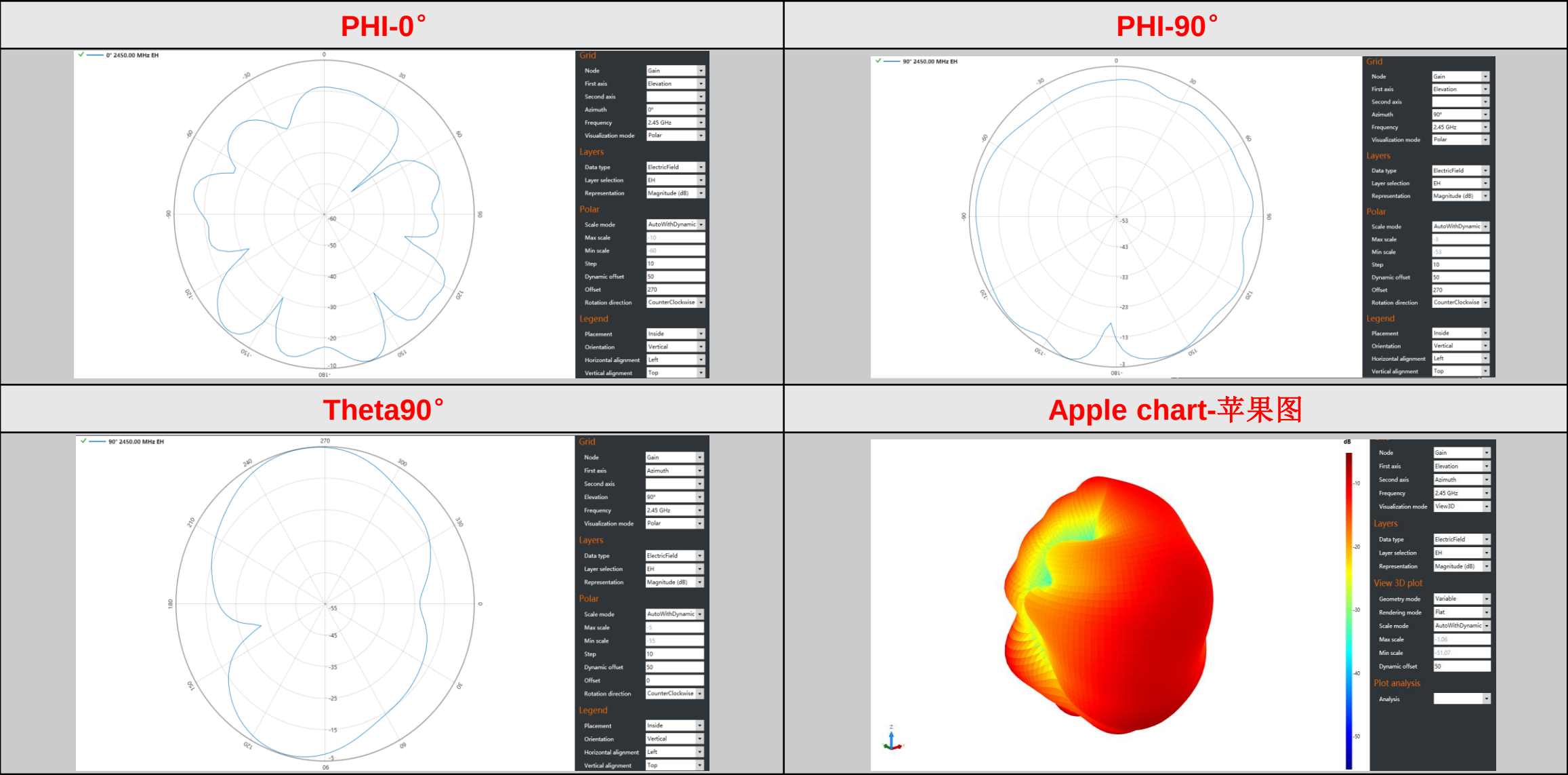
4.1 Passive Test-无源测试 (S11 free space-自由空间的S11)



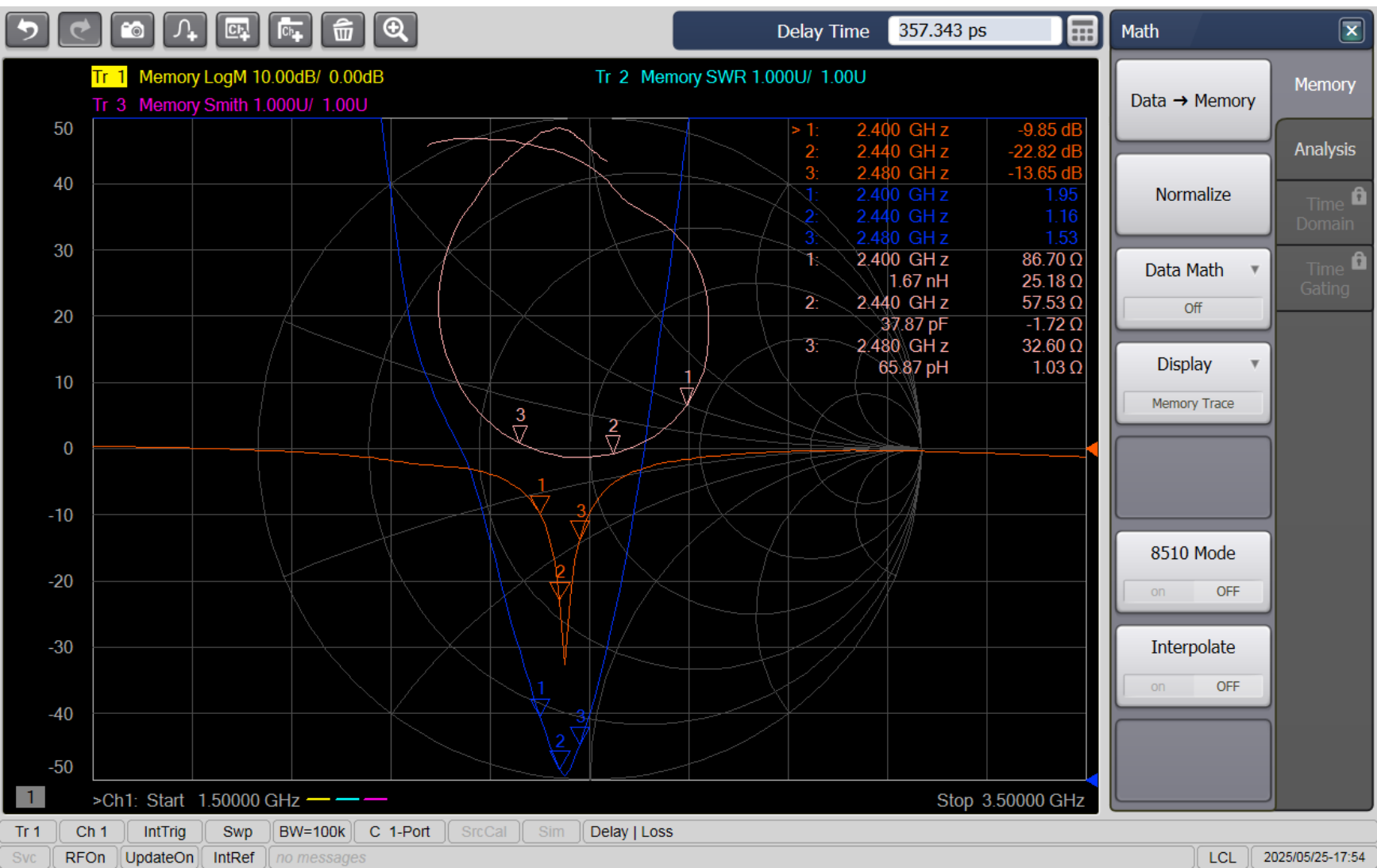
Efficiency & Gain 效率与增益

Frequency (MHz)	Efficiency (dB)	Gain (dBi)
2.4	-6.35	1.06
2.405	-6.25	1.21
2.41	-6.22	1.36
2.415	-6.13	1.60
2.42	-6.13	1.69
2.425	-6.15	1.82
2.43	-6.21	1.82
2.435	-6.18	1.92
2.44	-6.28	2.0
2.445	-6.96	1.84
2.45	-7.12	1.85
2.455	-7.27	1.63
2.46	-7.35	1.68
2.465	-7.52	1.48
2.47	-7.64	1.45
2.475	-7.90	1.17
2.48	-8.04	1.08

4.2 Passive Test-无源测试 (The direction of the free space -自由空间的方向图)



4.3 Passive Test-无源测试 (The s11 of the head of the right ear-右耳头模的S11)

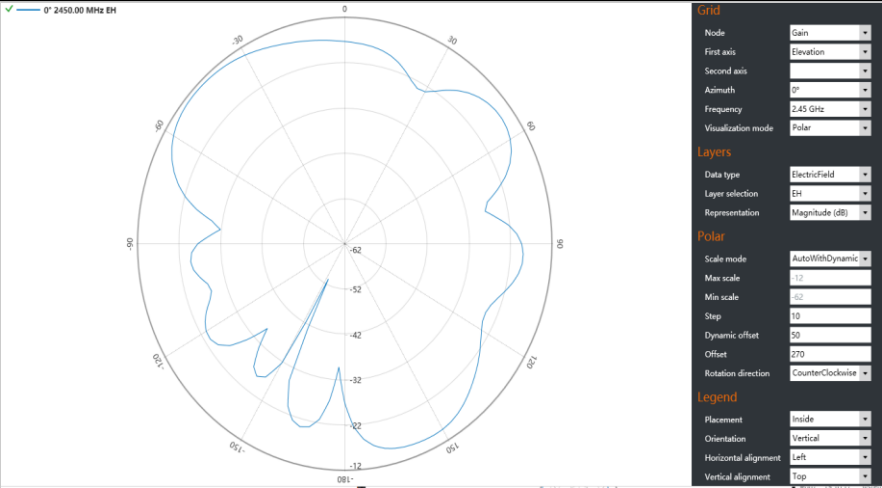


Efficiency & Gain 效率与增益

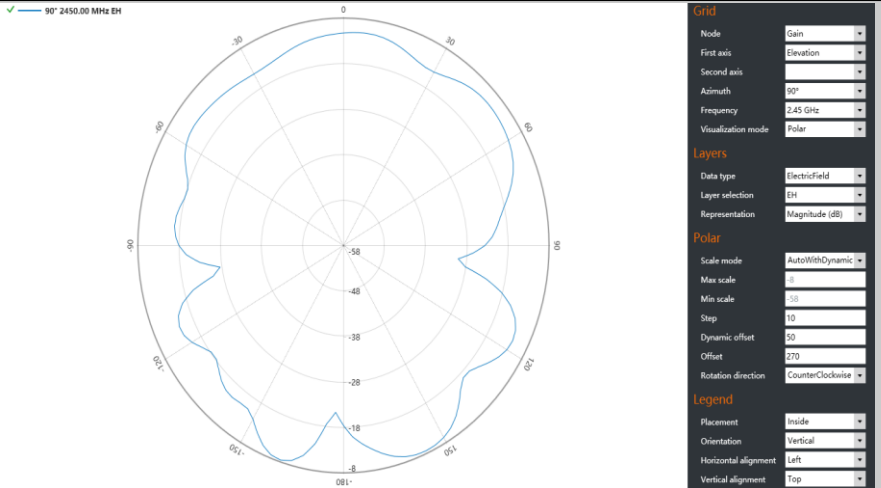
Frequency (MHz)	Efficiency (dB)	Gain (dBi)
2.4	-10.86	-4.82
2.405	-10.73	-4.77
2.41	-10.65	-4.69
2.415	-10.56	-4.56
2.42	-10.51	-4.61
2.425	-10.47	-4.59
2.43	-10.46	-4.60
2.435	-10.42	-4.63
2.44	-10.41	-4.56
2.445	-10.42	-4.58
2.45	-10.41	-4.58
2.455	-10.40	-4.61
2.46	-10.42	-4.65
2.465	-10.42	-4.70
2.47	-10.43	-4.71
2.475	-10.39	-4.74
2.48	-10.47	-4.77

4.4 Passive Test-无源测试 (Right ear diagram-右耳方向图)

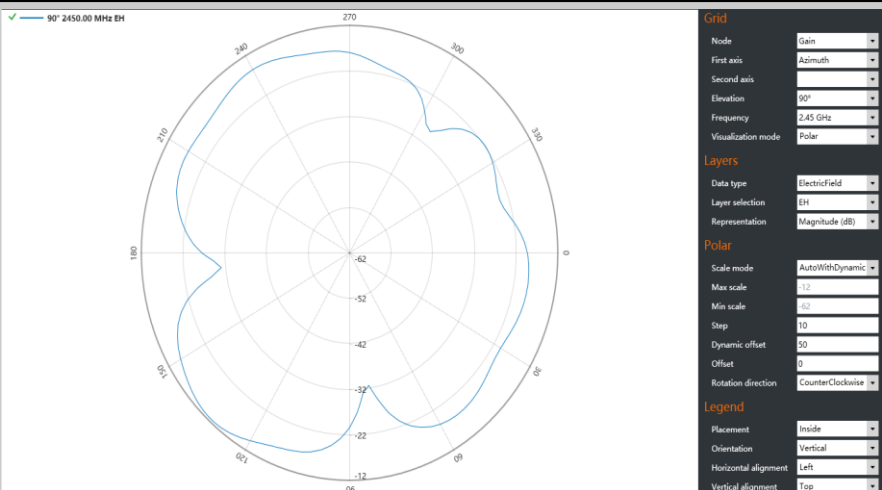
PHI-0°



PHI-90°



Theta90°



Apple chart-苹果图

