



深圳市河文天线技术有限公司 (研发部)

Human Antenna Electrical Report

Customer: 毅华通讯

Project Name: 1803A无源测试

RF Engineer: 熊锡巍

Testing Date: 2023-11-03

Operating band: GSM/WCDMA/TLT-FDD/TDD

1.Revision History

Date	Revision	Description of changes
2023-11-03	TA	Measured with FPC sample

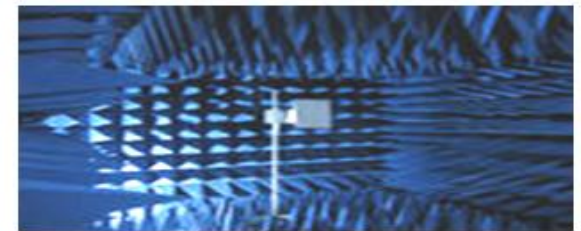
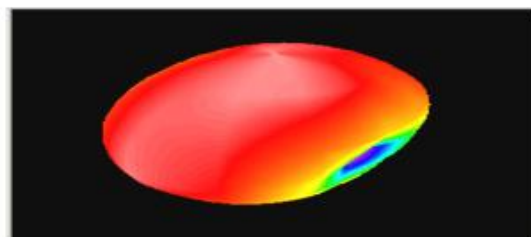
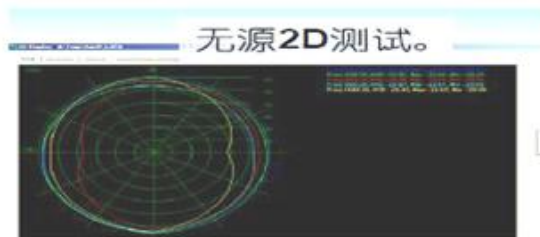
2. Project brief

NO.	ITEMS	DETAILS
1	工作频段 Operating band	GSM/WCDMA//TLT-FDD/TDD
2	频率范围 Frequency range	GSM/824~960MHz, 1710~2690MHz
3	天线类型 Antenna Type	PIFA
4	天线材质及实现形式	天线采用 FPC 支架上面。
5	主板版本 The mainboardversion	
6	输入阻抗 Input Impedance	50（Ω）
7	增益 Gain	

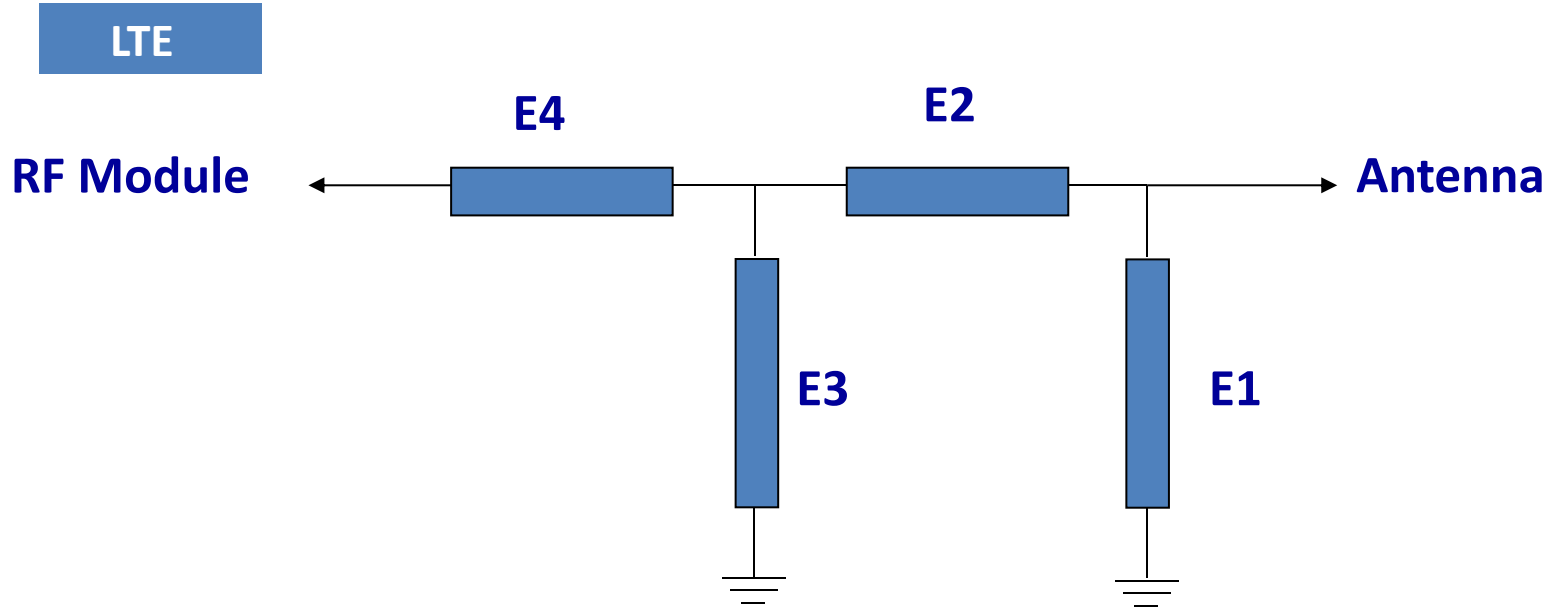
RF	熊锡巍	187 1893 6792
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3.Test system and equipment

	测试项目	设备
1. S参数	1. 回波损耗 2. 驻波比	网络分析仪: HP 8753D/R3765CH
2. 耦合功率测试	1. 发射功率 2. 接收灵敏度	GSM 测试仪: Agilent 8960 E5515C LTE 测试仪: 8820C/CMW500
3. 辐射模式与增益	1. 辐射模式 2. 天线增益	1. 暗室: 7x4x3 m (ETS-3D) 2. 网络分析仪: HP 8753D



4. Matching Circuits

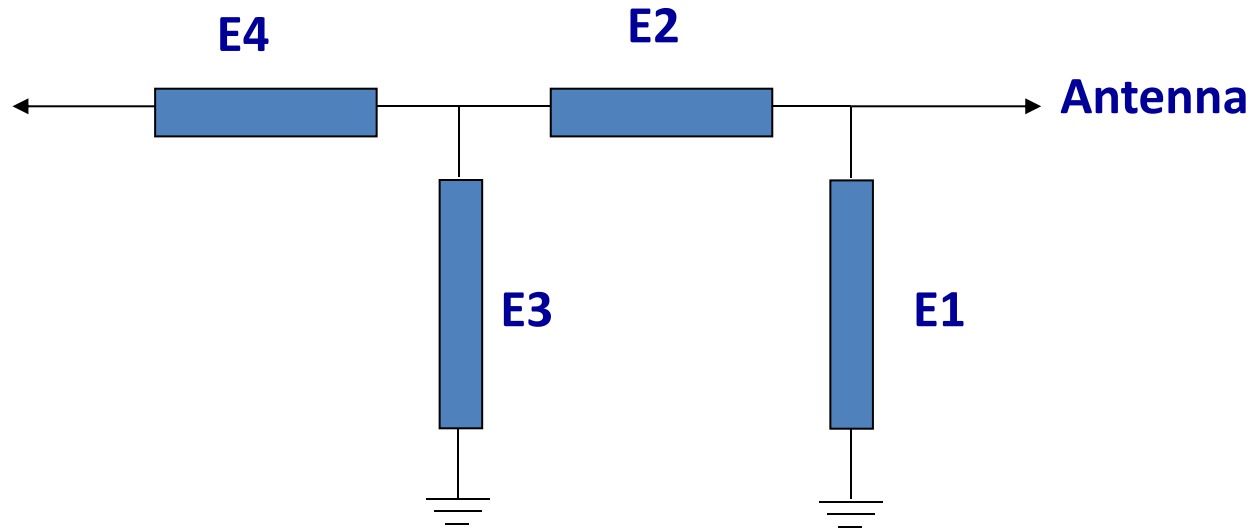


Element	Value	Vender
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		

Matching Circuits

三合一

RF Module

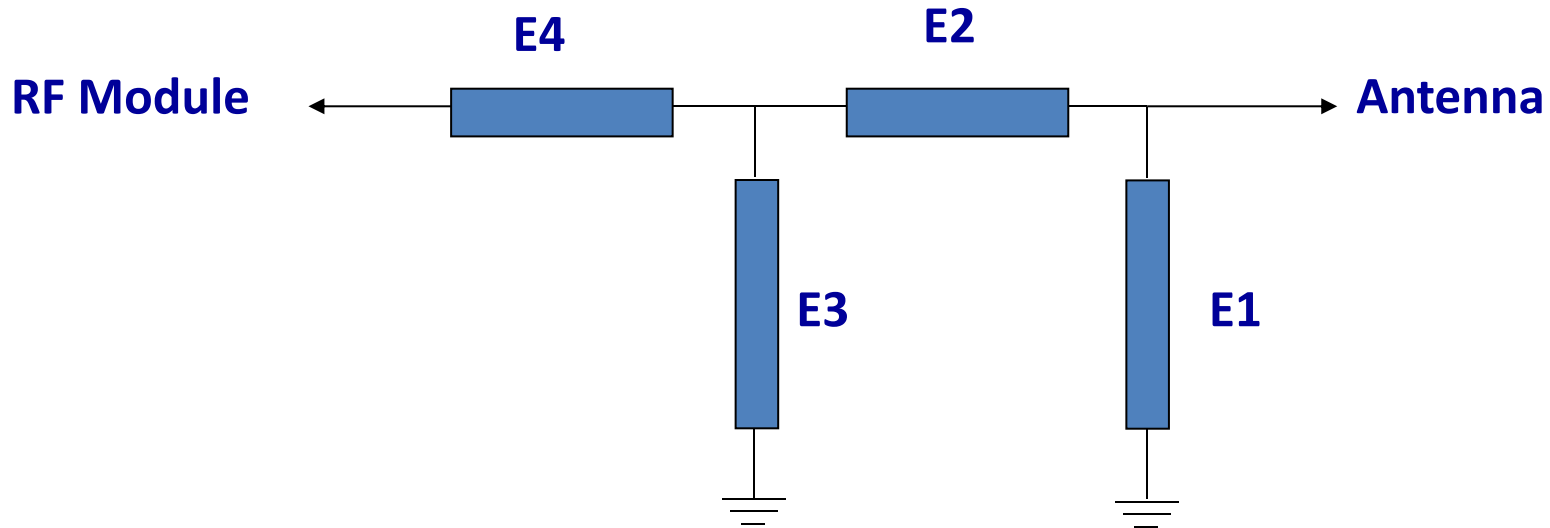


Element	Value	Vender
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		

原匹配电路无修改

Matching Circuits

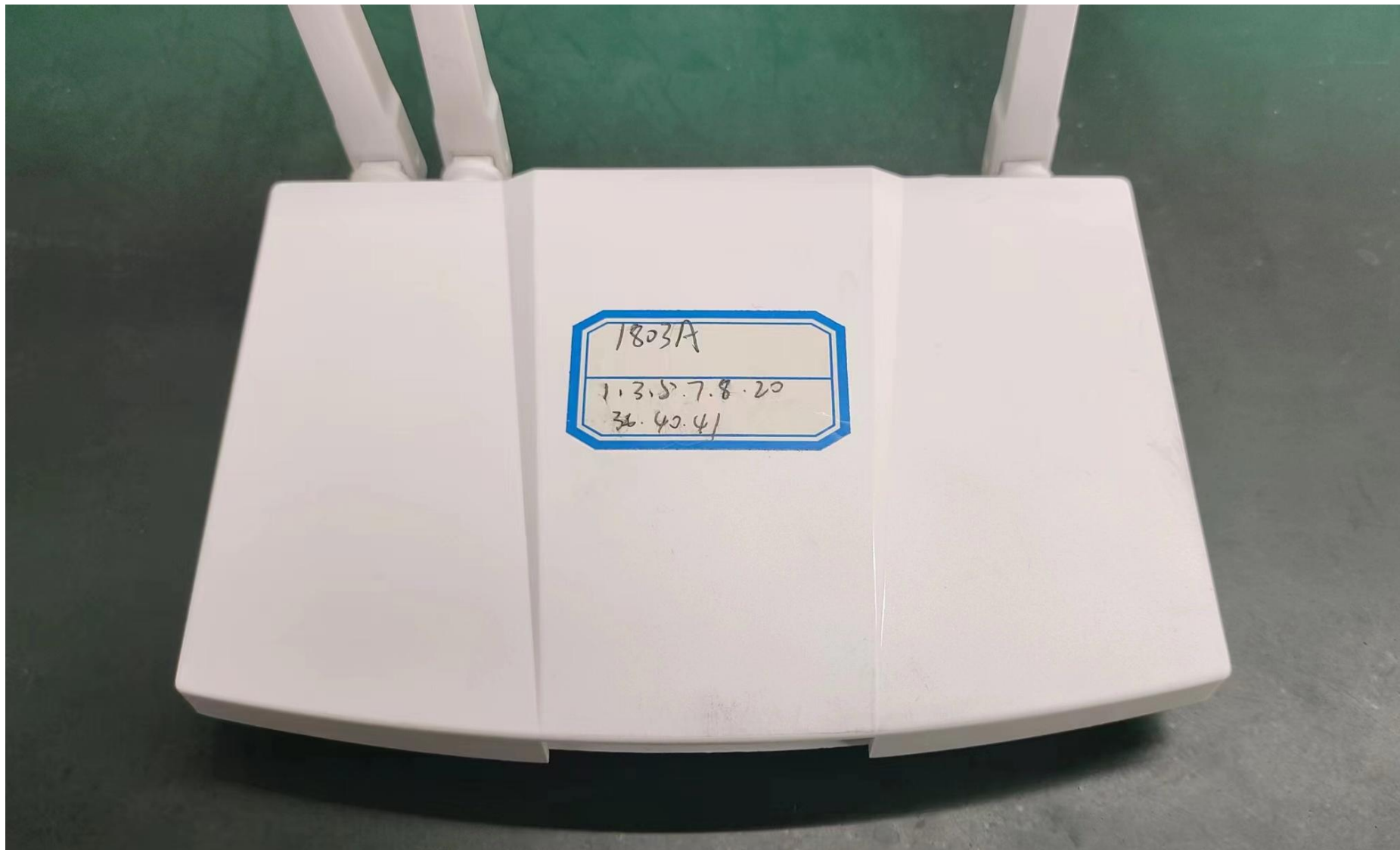
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Element	Value	Vender
E1(0402)		
E2(0402)		
E3(0402)		
E4(0402)		

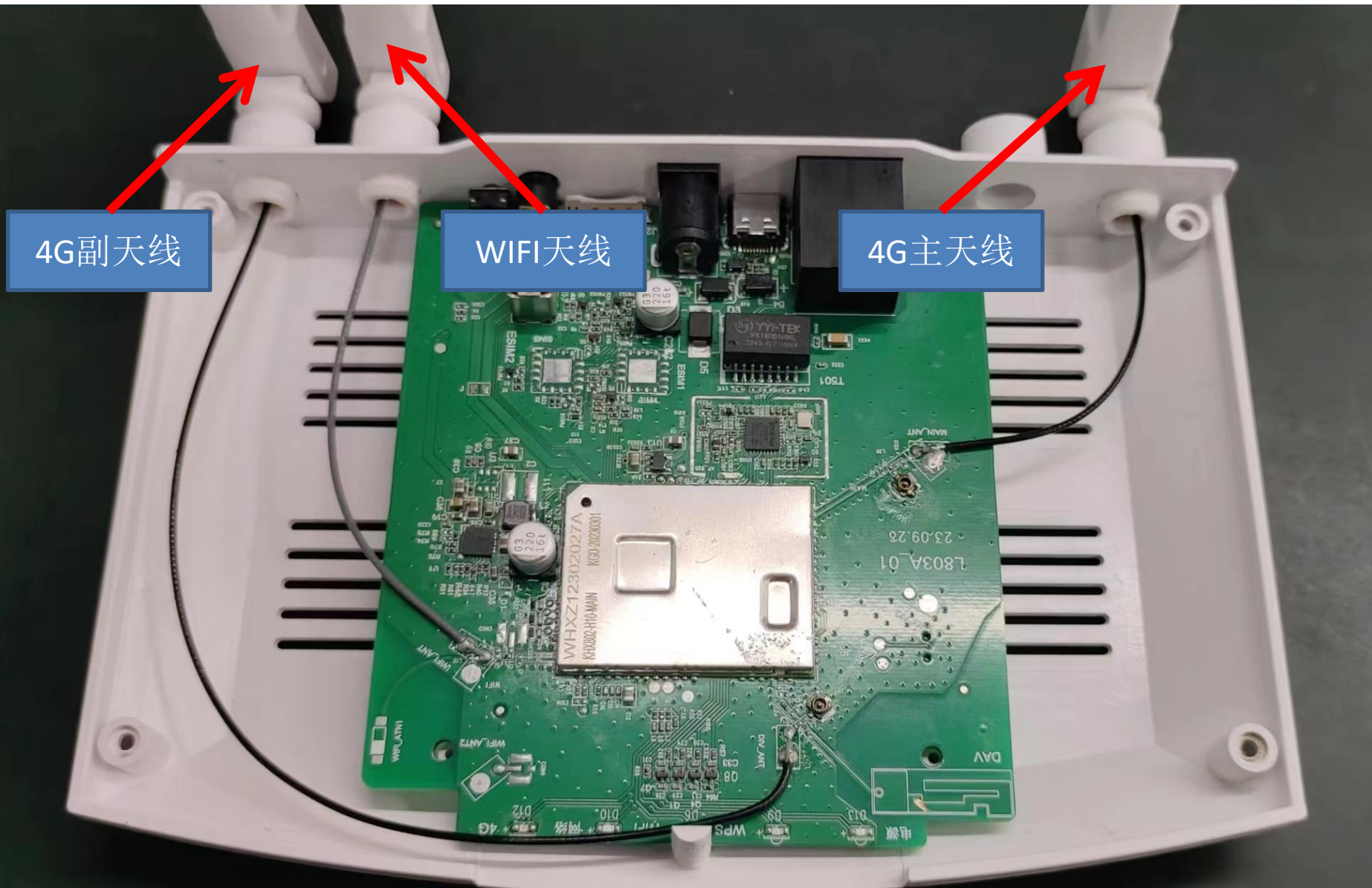
原匹配电路无修改

整机图片



天线装配图

同轴线也按照图中方式进行摆放焊接



WIFI 0 无源效率及增益

Frequency	Efficiency	Efficiency / %
2400	-1.48	71.12
2420	-1.4	72.44
2440	-1.61	69.02
2460	-1.86	65.16
2480	-1.8	66.07
2500	-2.15	60.95
2520	-2.31	58.75
2540	-2.59	55.08

Frequency	MaxGain/c	AvgGain/dBi
2400	5.12	-1.48
2420	5.4	-1.4
2440	5.48	-1.61
2460	4.79	-1.86
2480	4.85	-1.8
2500	4.47	-2.15
2520	4.36	-2.31
2540	3.86	-2.59

WIFI 1 无源效率及增益

Frequency	Efficiency	Efficiency / %	Frequency	MaxGain/c	AvgGain/dBi
2400	-1.49	70.96	2400	5.46	-1.49
2420	-1.39	72.61	2420	5.05	-1.39
2440	-1.58	69.5	2440	5.17	-1.58
2460	-1.82	65.77	2460	5.34	-1.82
2480	-1.77	66.53	2480	5.32	-1.77
2500	-2.07	62.09	2500	4.48	-2.07
2520	-2.18	60.53	2520	4.54	-2.18
2540	-2.46	56.75	2540	4.37	-2.46

LTE DIV 无源效率及增益

Frequency	Efficiency	Efficiency /
650	-2.96	50.58
700	-5.26	29.79
750	-4	39.81
800	-1.35	73.28
850	-2.55	55.59
900	-2.71	53.58
950	-3.28	46.99
1000	-3.1	48.98
1700	-2.05	62.37
1750	-1.98	63.39
1800	-2.26	59.43
1850	-1.91	64.42
1900	-2.33	58.48
1950	-2.6	54.95
2000	-2.17	60.67
2050	-2.01	62.95
2100	-2.08	61.94
2150	-2.16	60.81
2200	-1.89	64.71
2250	-1.75	66.83
2300	-1.62	68.87
2350	-1.79	66.22
2400	-1.93	64.12
2450	-1.92	64.27
2500	-1.86	65.16
2550	-1.97	63.53
2600	-2.19	60.39
2650	-2.19	60.39
2700	-2.42	57.28

Frequency	MaxGain/c	AvgGain/dB
650	1.93	-2.96
700	1.33	-5.26
750	2.27	-4
800	3.88	-1.35
850	0.04	-2.55
900	1.43	-2.71
950	2.63	-3.28
1000	3.06	-3.1
1700	3.54	-2.05
1750	2.08	-1.98
1800	2.12	-2.26
1850	3.34	-1.91
1900	2	-2.33
1950	1.84	-2.6
2000	1.81	-2.17
2050	1.89	-2.01
2100	1.86	-2.08
2150	2.15	-2.16
2200	2.98	-1.89
2250	2.24	-1.75
2300	2.46	-1.62
2350	2.84	-1.79
2400	1.88	-1.93
2450	2.28	-1.92
2500	3.3	-1.86
2550	3.95	-1.97
2600	3.65	-2.19
2650	2.65	-2.19
2700	2.59	-2.42

LTE MAIN 无源效率及增益

Frequency	Efficiency	Efficiency / %
650	-6.74	21.18
700	-3.34	46.34
750	-1.41	72.28
800	-1.21	75.68
850	-2.11	61.52
900	-2.71	53.58
950	-2.72	53.46
1000	-4.08	39.08
1700	-2.22	59.98
1750	-1.87	65.01
1800	-1.74	66.99
1850	-1.35	73.28
1900	-1.41	72.28
1950	-1.46	71.45
2000	-1.49	70.96
2050	-1.64	68.55
2100	-1.79	66.22
2150	-1.61	69.02
2200	-1.5	70.79
2250	-1.45	71.61
2300	-1.27	74.64
2350	-1.19	76.03
2400	-1.29	74.3
2450	-1.44	71.78
2500	-1.48	71.12
2550	-1.54	70.15
2600	-1.62	68.87
2650	-1.47	71.29
2700	-1.71	67.45

Frequency	MaxGain/c	AvgGain/dBi
650	-0.68	-6.74
700	4.4	-3.34
750	4.03	-1.41
800	4.39	-1.21
850	1.82	-2.11
900	2.12	-2.71
950	1.5	-2.72
1000	1.17	-4.08
1700	2.92	-2.22
1750	2.42	-1.87
1800	3.98	-1.74
1850	5.89	-1.35
1900	4.71	-1.41
1950	3.34	-1.46
2000	2.61	-1.49
2050	2.13	-1.64
2100	2.28	-1.79
2150	1.79	-1.61
2200	1.85	-1.5
2250	1.98	-1.45
2300	2.89	-1.27
2350	3.55	-1.19
2400	3.53	-1.29
2450	3.08	-1.44
2500	3.97	-1.48
2550	4.24	-1.54
2600	3.36	-1.62
2650	2.85	-1.47
2700	2.85	-1.71

整机暂无环境处理

The end , thanks!