

Antenna Test Report

Product Name:	Wireless Transceiver Module
Product Model:	WKCT2VM2511
Frequency:	2.4GHz+5GHz
Test Date:	2025.09.02
Test Objective:	Antenna Performance Test
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Approved by:	Gao Zhao

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Revision history

Version	Date	Status
V1.0	2025-09-02	First Version

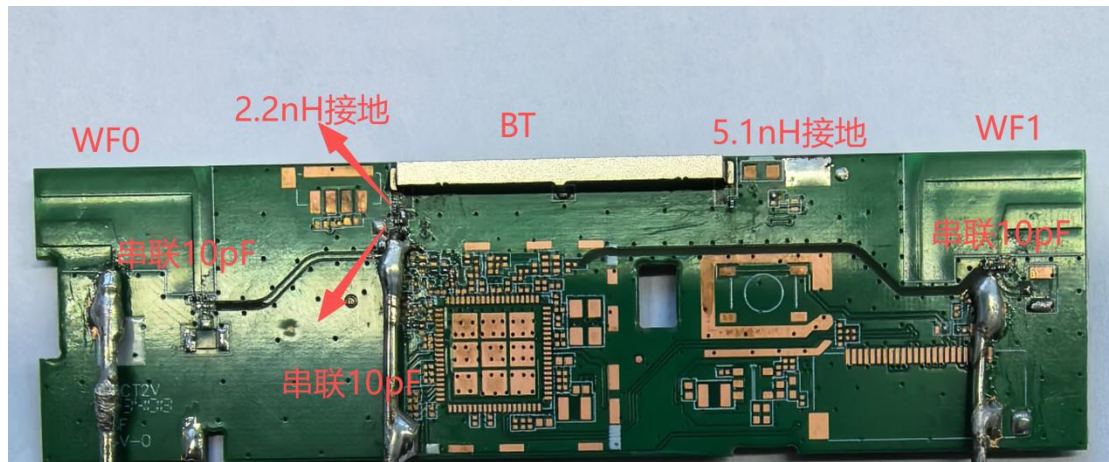
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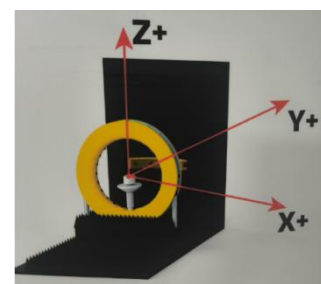
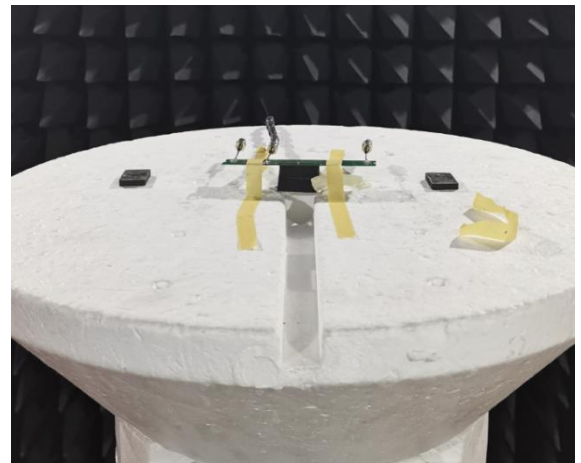
1、 Antenna Position

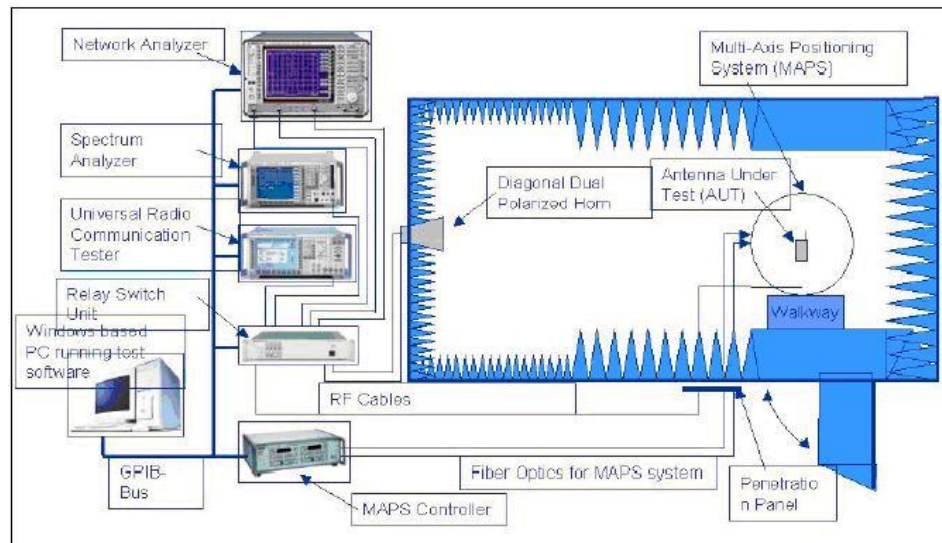
1.1 Module Placement Requirements

1.1.1、 WIFI: PCB Antenna; BT: Metal Antenna, Free Space Test



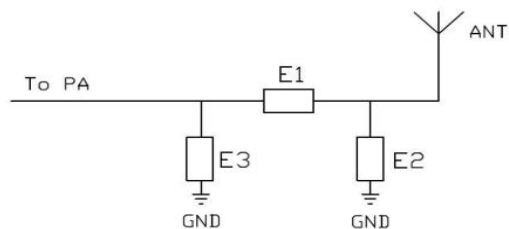
2、 Test Environment



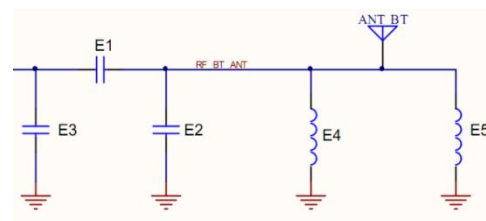


3、Antenna Matching

WF Matching Circuit



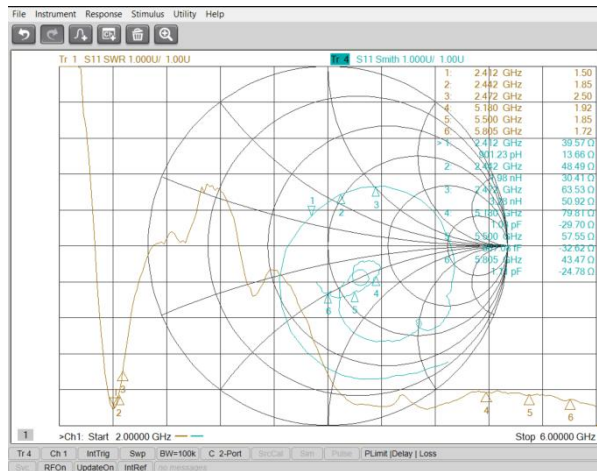
BT Matching Circuit



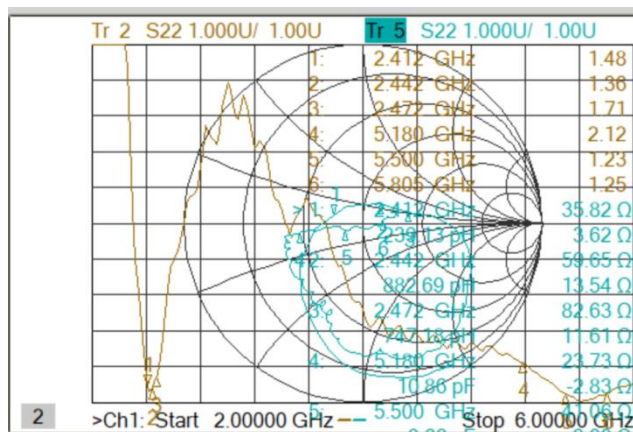
Matching Note	WF0	WF1	BT
E1	10pF	10pF	10pF
E2	/	/	/
E3	/	/	/
E4			2.2nH
E5			5.1nH

4、 Antenna VSWR

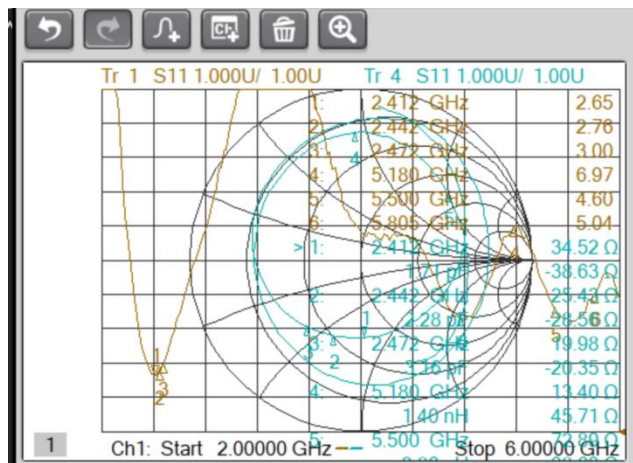
4.1 WF0



4.2 WF1



4.3 BT

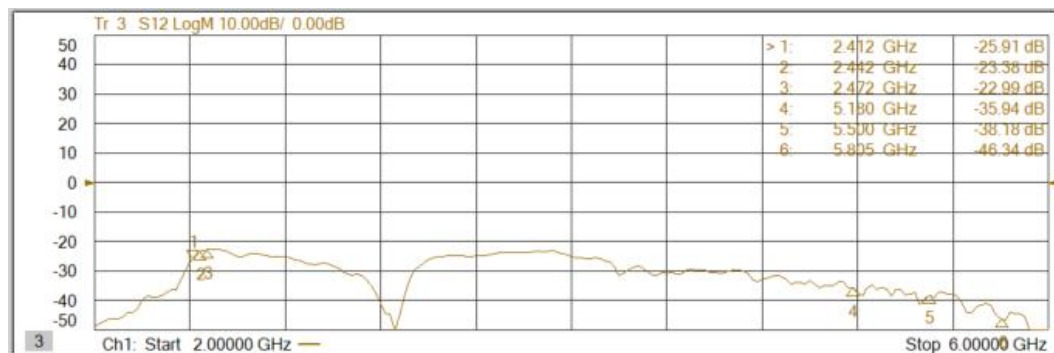


5、Antenna Isolation

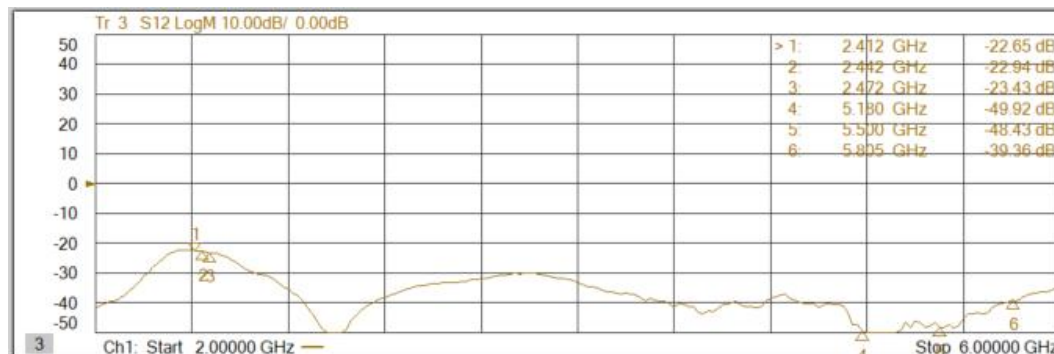
5.1 Isolation Requirement

		Min.Spec.			备注
		WIFI5	WIFI6	WIFI7	
Isolation(dB)	BT0 to wifi0	25	25	25	2G band
	BT0 to wifi1	25	25	25	
	BT1 to wifi0	X	25	X	
	BT1 to wifi1	X	25	X	
	BT0 to BT1	X	18	X	
	wifi0 to wifi1	>15(2G band) >15(5G band)	>15(2G band) >17(5G band) >17(6G band)	>18(2G band) >20(5G band) >17(6G band)	

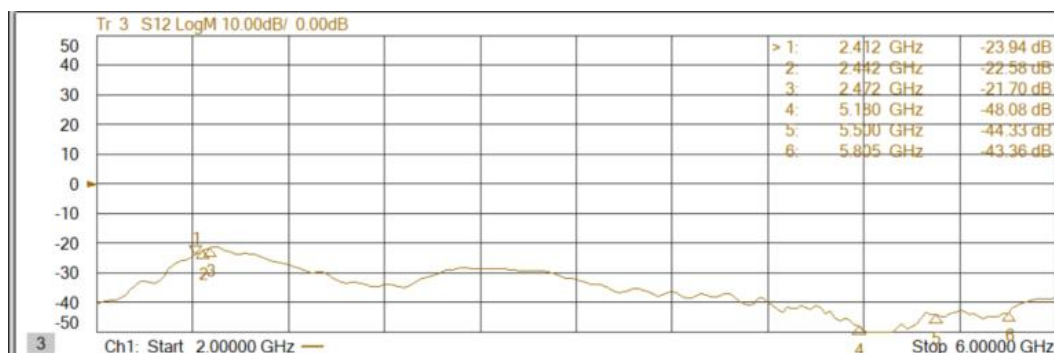
5.2 WF0 & WF1



5.3 WF0 & BT

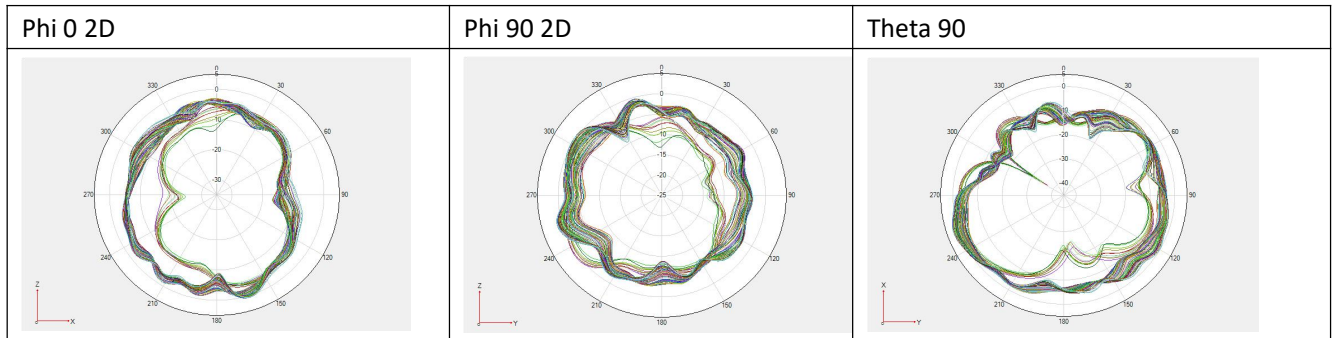


5.4 WF1 & BT

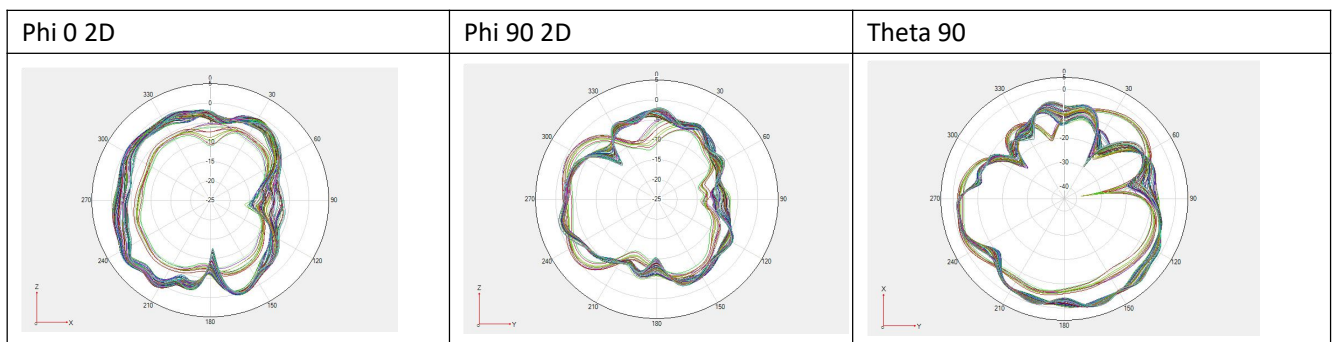


6、Radiation Pattern

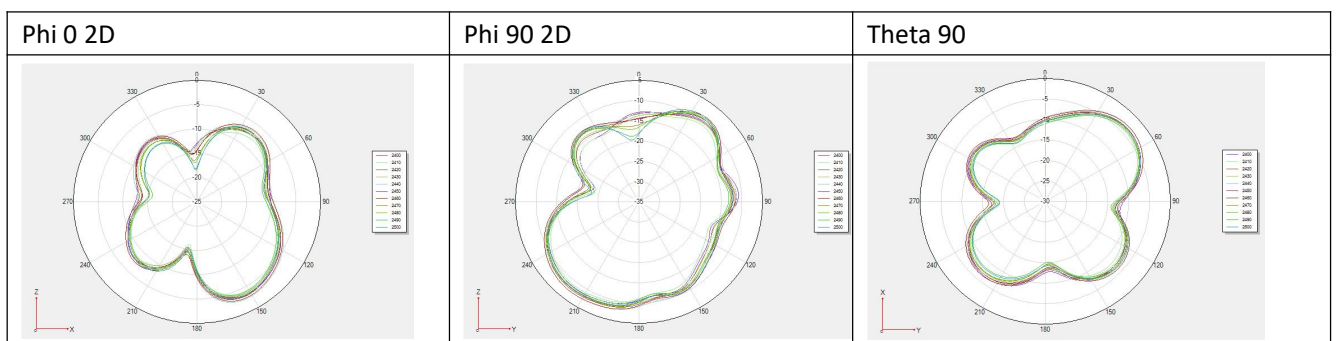
6.1 WF0 Radiation Pattern



6.2 WF1 Radiation Pattern

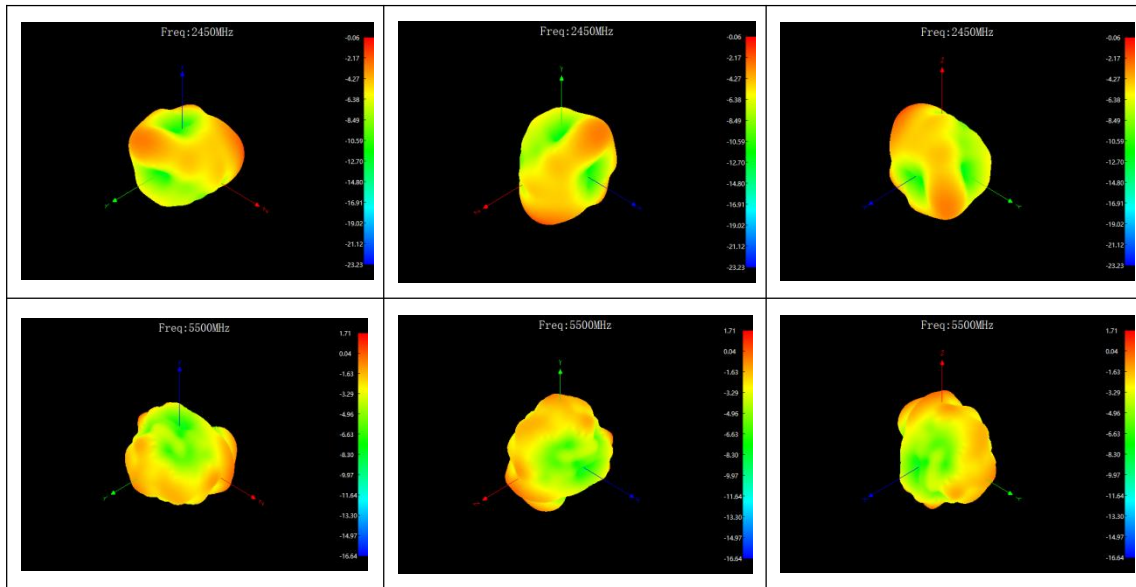


6.3 BT Radiation Pattern

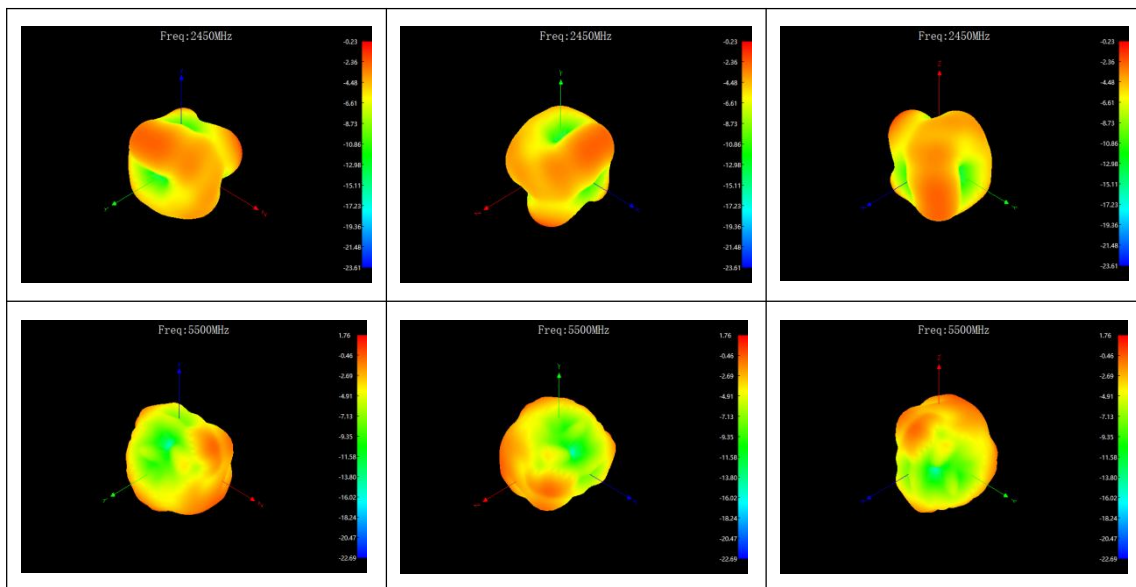


7、 3D Etotal

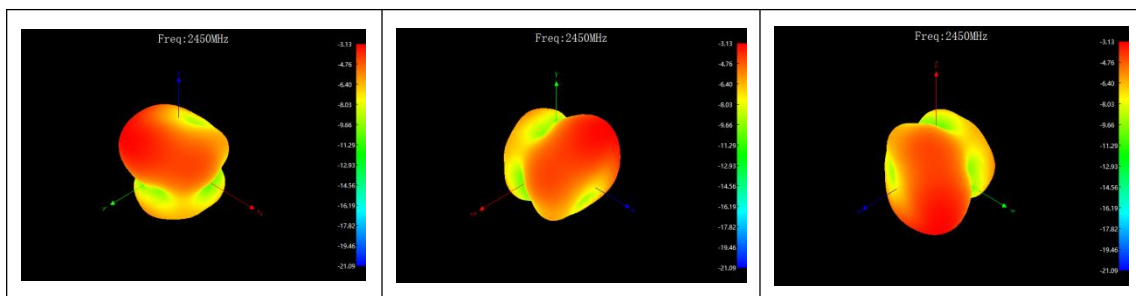
7.1 WF0 3D Pattern



7.2 WF1 3D Pattern



7.3 BT 3D Pattern



8、 Antenna Efficiency and Gain

8.1 WF0&WF1 Antenna Efficiency and Gain

WIFI0				WIFI1		
Frequency/Mhz	MaxGain/dBi	Efficiency / %		Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	0.71	36.14		2400	0.09	38.28
2410	-0.06	31.77		2410	-0.55	34.28
2420	0.49	35.56		2420	0.14	39.54
2430	-0.03	32.66		2430	-0.3	37.33
2440	0.5	36.31		2440	0.28	42.46
2450	-0.06	32.28		2450	-0.23	38.37
2460	0.54	36.06		2460	0.44	43.15
2470	-0.25	31.62		2470	-0.35	37.58
2480	-0.52	30.13		2480	-0.63	35.89
2490	-1.5	25		2490	-1.65	29.85
2500	-1.09	27.73		2500	-1.18	33.34
5150	0.61	46.67		5150	0.3	57.81
5160	0.38	45.29		5160	0.14	56.62
5170	0.6	47.1		5170	0.4	58.88
5180	0.39	46.77		5180	0.4	58.75
5190	0.69	49.89		5190	0.7	62.23
5200	0.41	48.53		5200	0.49	59.98
5210	0.5	48.42		5210	0.51	60.39
5220	0.38	45.29		5220	0.41	57.81
5230	0.86	48.87		5230	0.7	62.37
5240	0.71	47.42		5240	0.59	59.84
5250	1.06	50.82		5250	0.76	63.1
5260	1	49.55		5260	0.67	60.95
5270	1	51.05		5270	0.84	63.24
5280	1.05	50.82		5280	0.89	62.95
5290	1.01	52.84		5290	1.05	63.97
5300	1.14	53.21		5300	1.03	63.24
5310	1.02	53.33		5310	1.15	63.53
5320	0.93	52		5320	1.01	62.52
5330	0.86	51.88		5330	1.11	63.24
5340	1.03	52.84		5340	1.02	63.53
5350	1.23	54.45		5350	1.11	63.39
5360	1.32	54.45		5360	1.09	62.66

5370	1.37	54.2		5370	1.24	63.24
5380	1.41	55.34		5380	1.43	64.71
5390	1.59	57.02		5390	1.58	66.37
5400	1.48	57.68		5400	1.44	65.77
5410	1.52	58.61		5410	1.32	65.61
5420	1.23	56.49		5420	1.15	63.39
5430	1.45	57.94		5430	1.42	66.68
5440	1.33	57.41		5440	1.25	65.61
5450	1.55	58.61		5450	1.27	65.77
5460	1.54	57.54		5460	1.26	63.68
5470	1.87	59.29		5470	1.53	65.46
5480	1.6	57.54		5480	1.59	65.31
5490	1.82	59.57		5490	1.81	68.23
5500	1.71	58.88		5500	1.76	66.22
5510	1.91	60.39		5510	1.86	67.45
5520	1.56	57.15		5520	1.65	64.12
5530	1.69	60.26		5530	1.67	68.39
5540	1.49	57.54		5540	1.46	65.92
5550	1.61	60.39		5550	1.59	68.87
5560	1.62	58.48		5560	1.39	65.77
5570	1.57	59.98		5570	1.54	67.92
5580	1.61	58.88		5580	1.47	68.23
5590	1.46	59.43		5590	1.54	68.23
5600	1.62	60.67		5600	1.4	68.39
5610	1.64	62.52		5610	1.47	68.23
5620	1.7	61.66		5620	1.15	66.53
5630	1.36	58.21		5630	1.18	64.42
5640	1.38	56.75		5640	1.17	64.71
5650	1.6	59.29		5650	1.39	66.99
5660	1.69	60.81		5660	1.36	67.3
5670	1.79	59.84		5670	1.36	65.61
5680	1.78	59.98		5680	1.52	66.22
5690	1.93	59.57		5690	1.51	66.99
5700	2	60.12		5700	1.58	67.45
5710	2.18	61.09		5710	1.33	66.83
5720	2.08	60.67		5720	1.27	65.46
5730	2.2	61.38		5730	1.12	66.68
5740	1.92	59.16		5740	0.9	65.01
5750	1.97	58.61		5750	0.99	65.61
5760	1.91	59.29		5760	0.94	65.61
5770	2.33	63.1		5770	1.26	68.23
5780	2.14	61.52		5780	1.13	66.53
5790	2.01	58.08		5790	1.04	63.83

5800	1.88	56.36		5800	1.04	62.23
5810	2.19	58.48		5810	1.34	64.57
5820	2.31	59.7		5820	1.33	64.86
5830	2.46	61.66		5830	1.41	65.92
5840	2.34	59.43		5840	1.26	63.68
5850	2.44	61.24		5850	1.51	66.53

8.2 BT Efficiency and Gain

BT		
Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	-3.34	21.33
2410	-4.02	18.32
2420	-3.26	20.89
2430	-3.5	20.32
2440	-2.61	24.6
2450	-3.13	22.49
2460	-2.67	24.55
2470	-3.58	20.94
2480	-3.41	21.68
2490	-3.93	19.32
2500	-3.35	21.28