



DK0109 Antenna Test Report

Antenna Design And Test Report

Date: 2026.8.14

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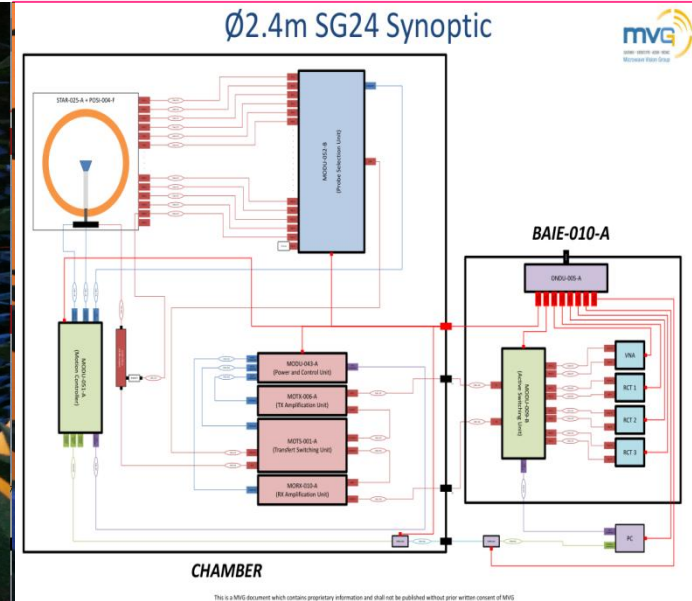
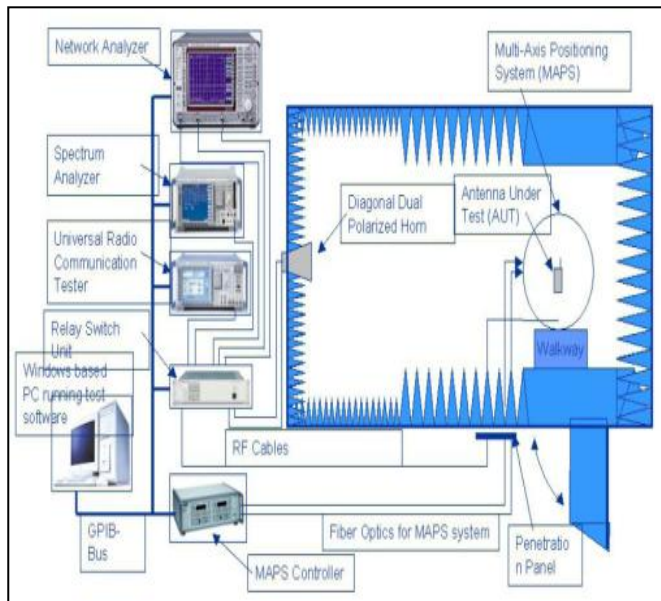
Active Report

07

Conclusion



Test Environment



Darkroom system : MVG SG24LT (Satmio)

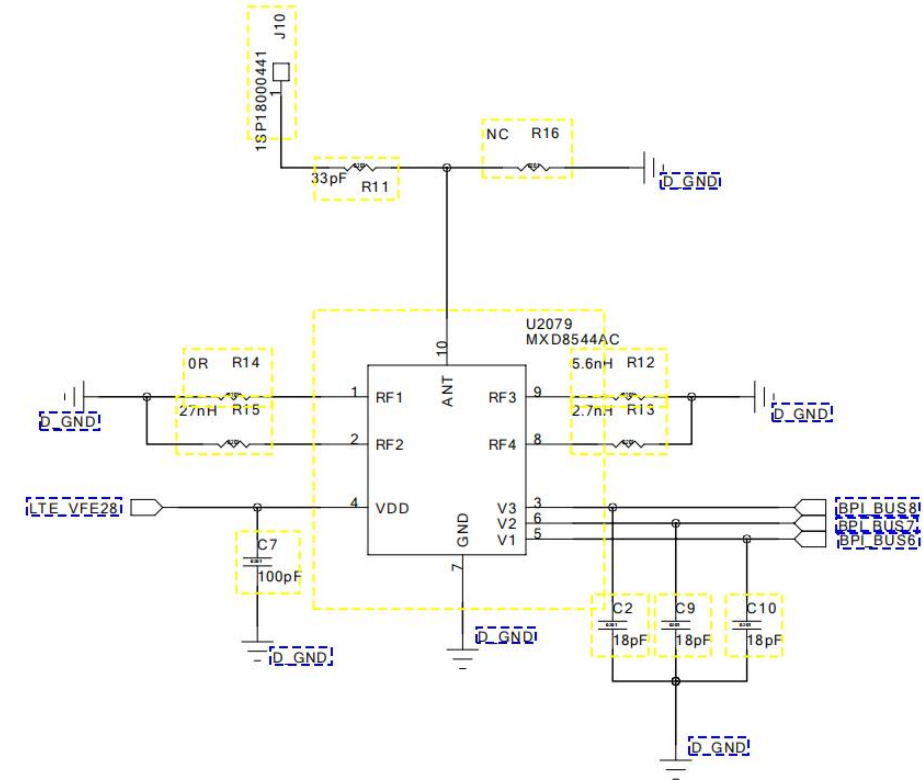
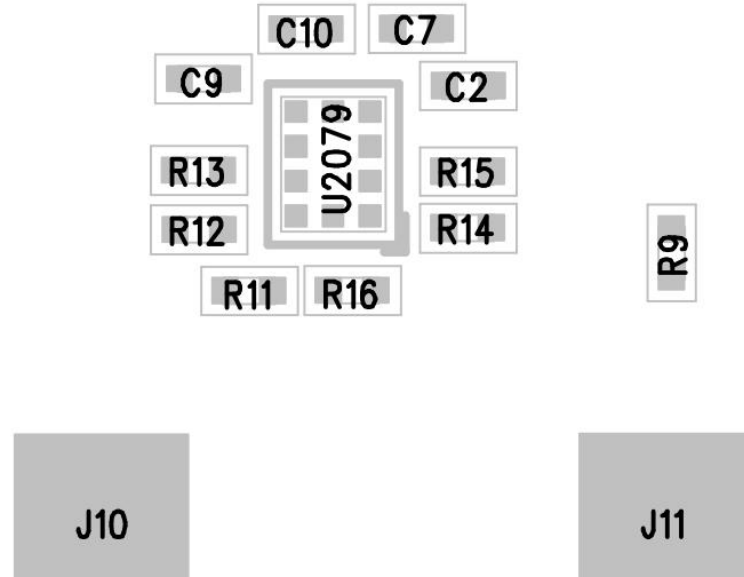
Main Antenna Switch Logic

RF switch	Matching	Control frequency band
RF1		GSM:900/1800/1900 WCDMA:B1/2/4/8 LTE:B1/2/3/4/7/8/38/40/41/66
RF2		LTE:B12/17/28
RF3		GSM:850 WCDMA:B5 LTE : B5/18/19/20/26
RF4		LTE:13

Matching Circuit

main antenna design

Element	Value
R1	0Ω
C5	0.5pF
R8	2.7nH
C6	10nH
R14-RF1	0Ω
R15-RF2	NC
R16	18nh
R12-RF3	8.2nh
R13-RF4	NC
R11	22PF



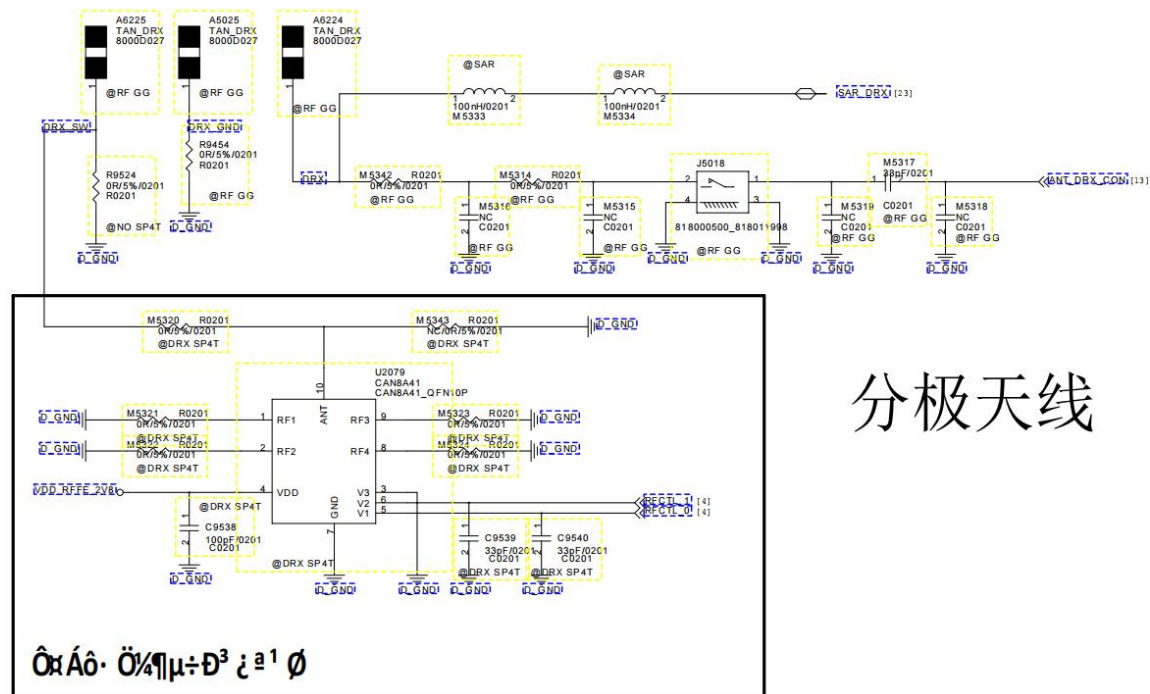
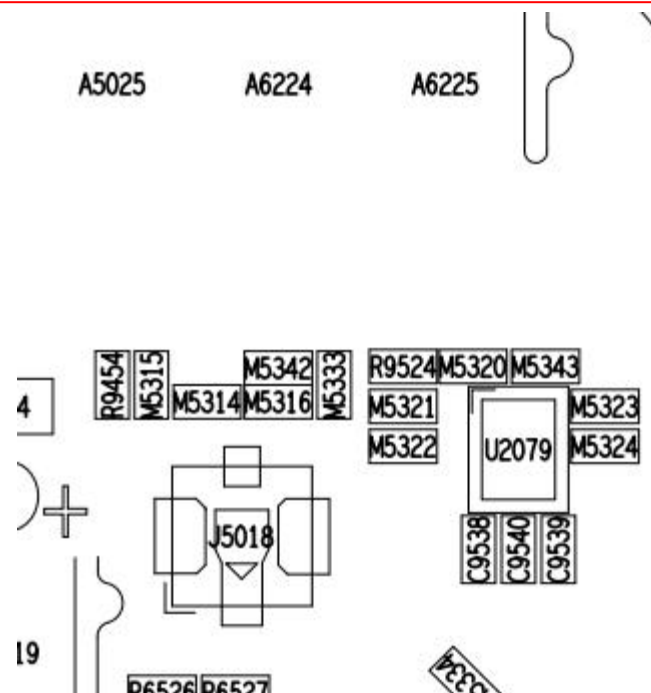
Diversity Antenna Switch Logic

RF switch	Matching	Control frequency band
RF1		GSM:900/1800/1900 WCDMA:B1/2/4/8 LTE:B1/2/3/4/7/8/38/40/41/66
RF2		LTE:B12/17/28
RF3		GSM:850 WCDMA:B5 LTE : B5/18/19/20/26
RF4		LTE:13

Matching Circuit

DRX antenna

Element	Value
M5316	0.5pF
M5314	3nH
M5315	9.1nH
M5321-RF1	0Ω
M5322-RF2	12nh
M5323-RF3	3.9nh
M5324-RF4	18nh

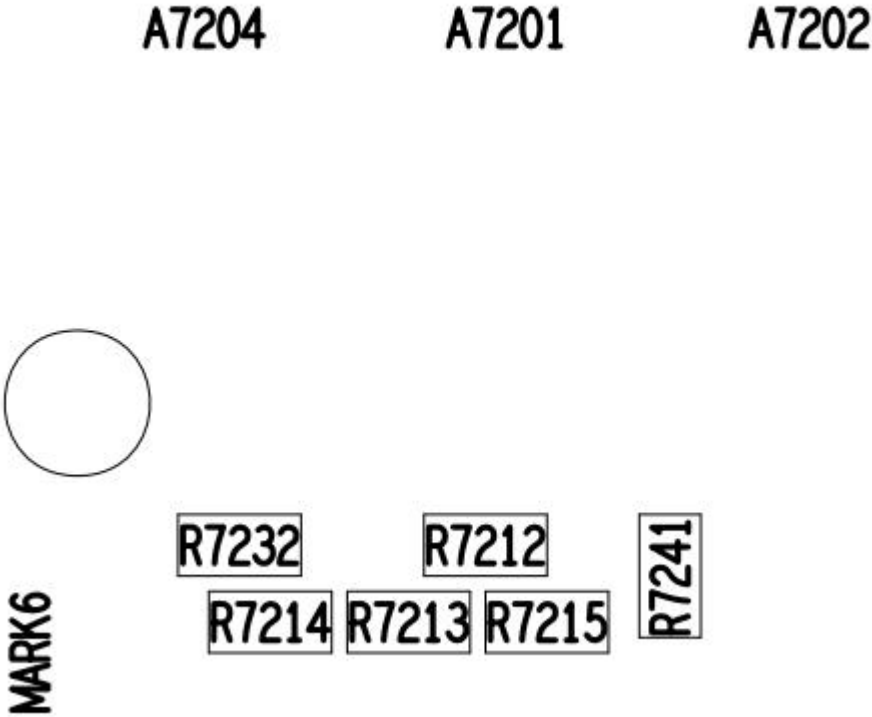


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Matching Circuit

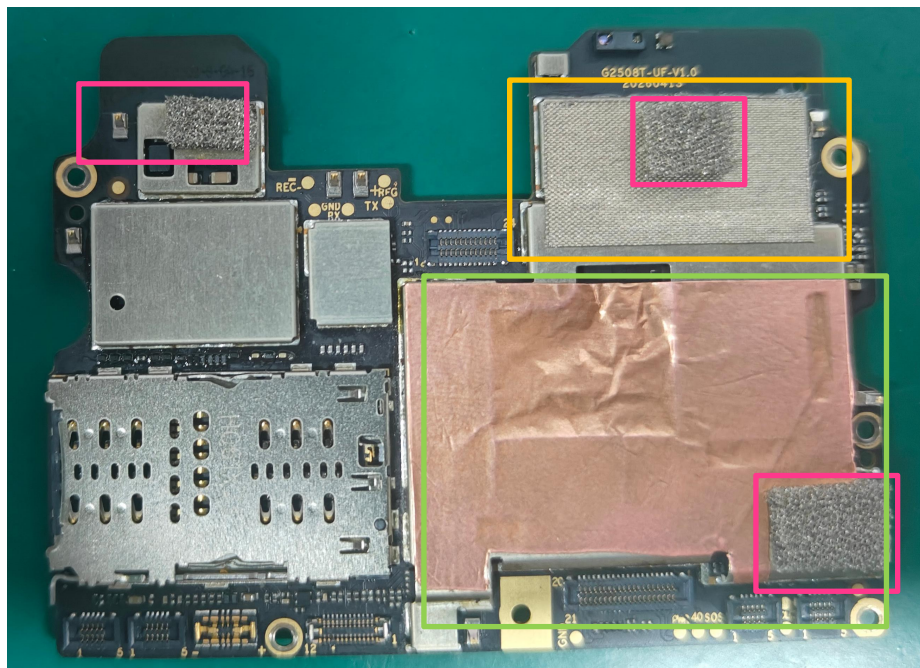
GWB antenna	
Element	Value
R7232	0Ω
R7241	0Ω
R7212	0Ω
R7213	0Ω



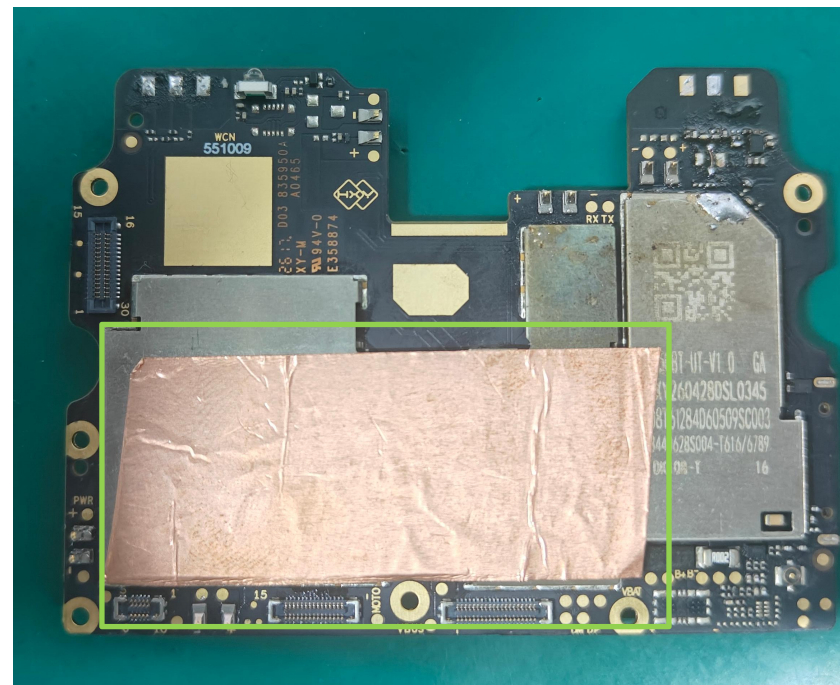
Element	Value	Value
0201	Before change	After change
C5220	22pF	82pF
C5221	22pF	82pF
C5225	100pF	47pF
C9060	NC	22pF
C5224	NC	22pF
C5223	33pF	33pF
C5226	33pF	33pF



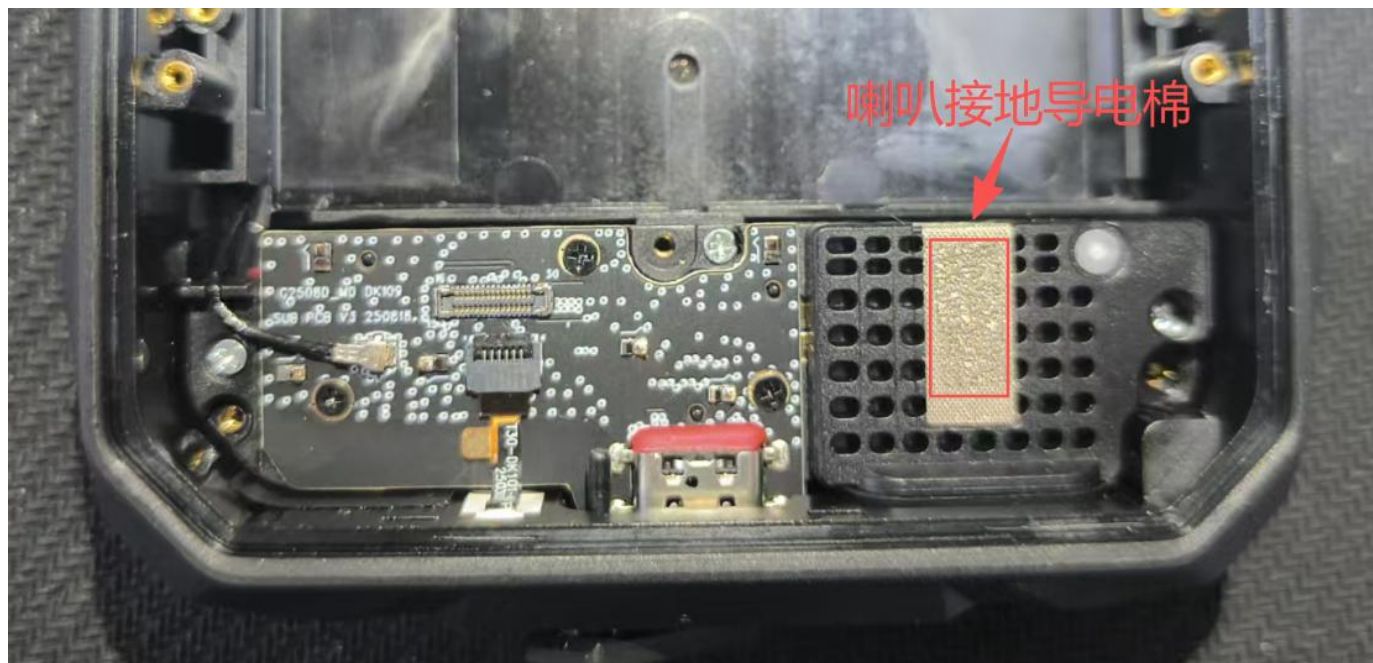
Environmental Treatment



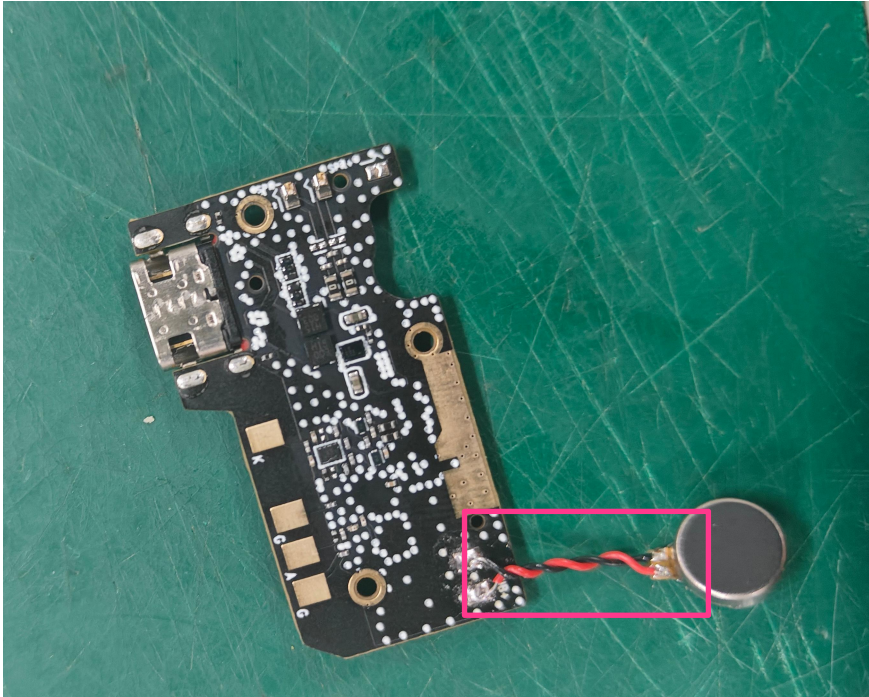
Add conductive foam at the red- boxed area in the figure to achieve sufficient grounding with the metal cover
Add conductive fabric at the yellow- boxed area for proper shielding.



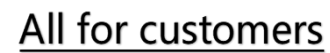
Add copper foil at the green- boxed area for shielding.



Add foam to the conductive fabric area of the lower bracket (red-boxed) to ensure adequate grounding. Omitting this will affect 700 MHz data performance.

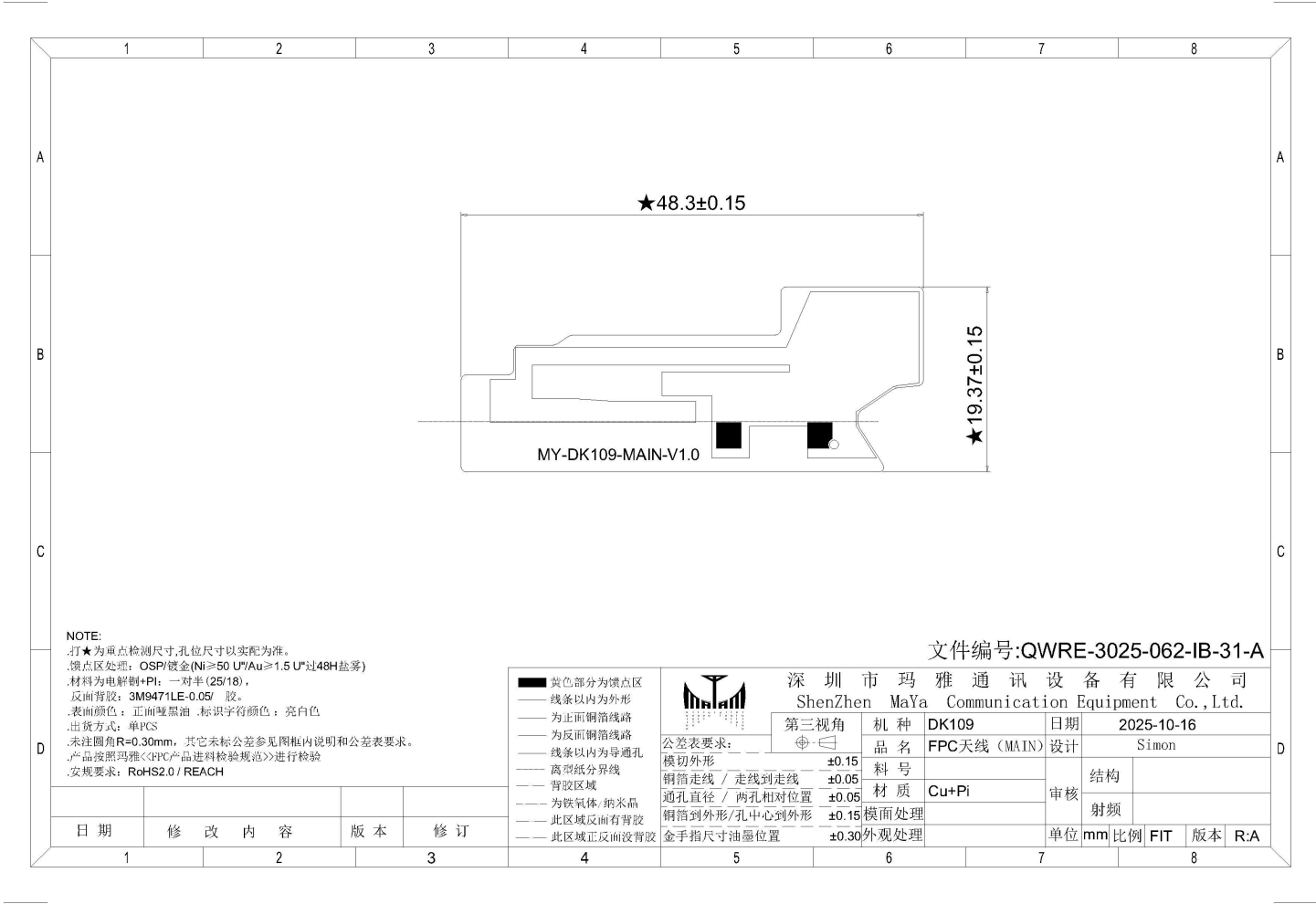


Wire twisting is required for the motor.



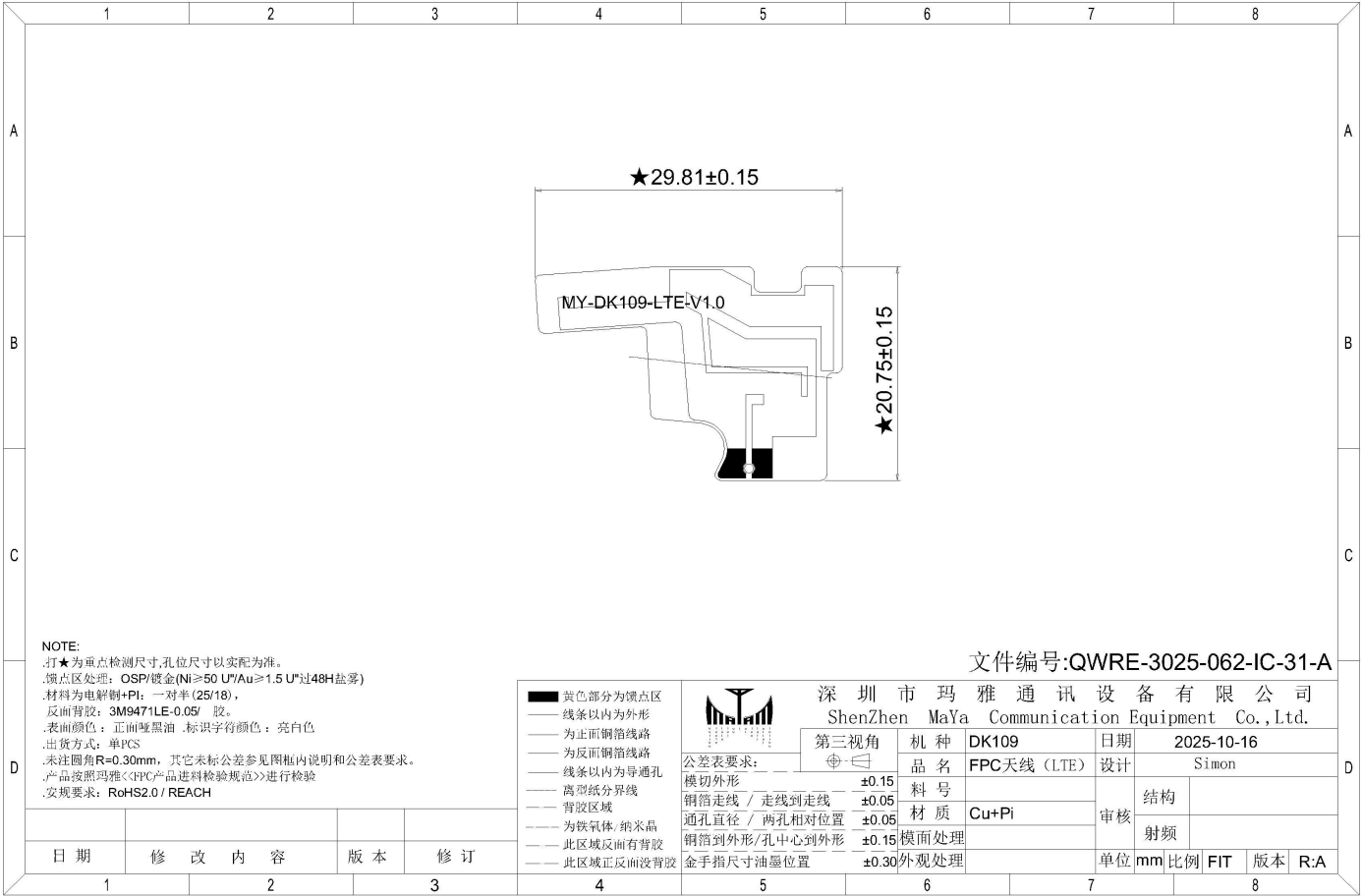


Antenna Size Drawing



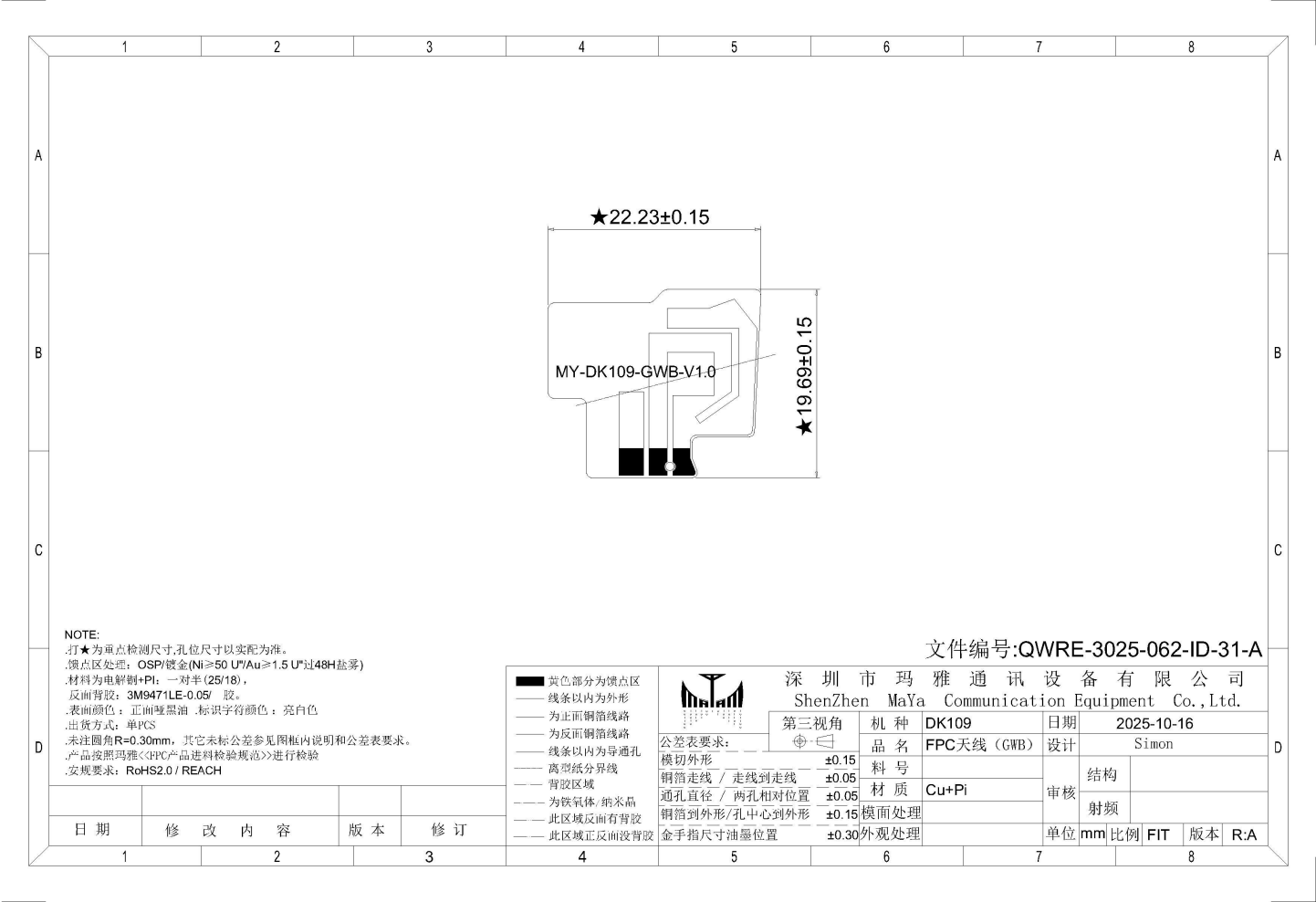


Antenna Size Drawing





Antenna Size Drawing



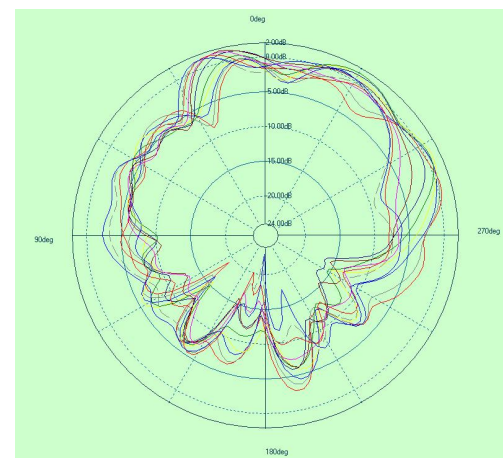
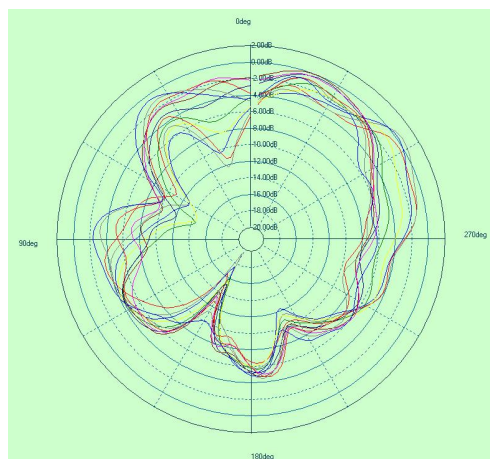
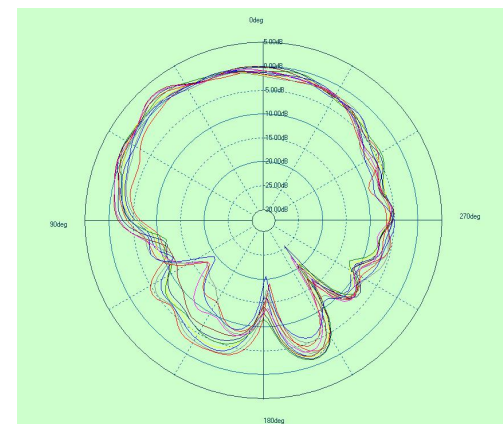
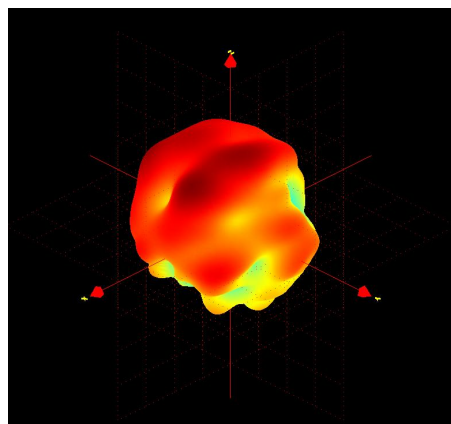
WIFI passive Efficiency, Gain

1			1			1			1			1			1		
Frequency	Efficiency	Efficiency . dB	Frequency	Gain . dBi		Frequency	Efficiency	Efficiency . dB	Frequency	Gain . dBi		Frequency	Efficiency	Efficiency . dB	Frequency	Gain . dBi	
1570Mhz	42.9%	-3.67868	1570Mhz	1.183573		2400Mhz	25.5%	-7.58118	2400Mhz	-1.74488		5200Mhz	34.3%	-4.64769	5200Mhz	1.018611	
1571Mhz	43.0%	-3.66053	1571Mhz	1.152677		2410Mhz	24.4%	-7.85716	2410Mhz	-2.00832		5260Mhz	34.9%	-4.56644	5260Mhz	1.385395	
1572Mhz	43.0%	-3.66302	1572Mhz	1.108748		2420Mhz	23.7%	-8.04733	2420Mhz	-2.29784		5320Mhz	35.6%	-4.49032	5320Mhz	1.513337	
1573Mhz	42.9%	-3.67322	1573Mhz	1.034148		2430Mhz	23.4%	-8.11573	2430Mhz	-2.52792		5380Mhz	36.7%	-4.35029	5380Mhz	2.090143	
1574Mhz	42.9%	-3.6799	1574Mhz	1.044479		2440Mhz	22.9%	-8.2705	2440Mhz	-2.90813		5440Mhz	36.7%	-4.35918	5440Mhz	1.96339	
1575Mhz	42.9%	-3.6745	1575Mhz	1.135076		2450Mhz	22.5%	-8.38651	2450Mhz	-3.2264		5500Mhz	37.0%	-4.31714	5500Mhz	2.089817	
1576Mhz	43.1%	-3.65841	1576Mhz	1.165772		2460Mhz	22.0%	-8.5291	2460Mhz	-3.37977		5560Mhz	36.1%	-4.42769	5560Mhz	2.744116	
1577Mhz	43.3%	-3.63108	1577Mhz	1.206617		2470Mhz	21.9%	-8.56562	2470Mhz	-3.28455		5620Mhz	33.7%	-4.72906	5620Mhz	2.647143	
1578Mhz	43.6%	-3.60641	1578Mhz	1.239189		2480Mhz	22.0%	-8.5301	2480Mhz	-3.12734		5680Mhz	32.5%	-4.88095	5680Mhz	2.508929	
1579Mhz	43.7%	-3.59076	1579Mhz	1.213146		2490Mhz	22.0%	-8.55387	2490Mhz	-2.91545		5740Mhz	32.4%	-4.89377	5740Mhz	2.364551	
1580Mhz	43.8%	-3.58901	1580Mhz	1.198295		2500Mhz	22.1%	-8.52237	2500Mhz	-2.56666		5800Mhz	34.8%	-4.58974	5800Mhz	2.285144	

Measuring instrument : Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer Darkroom system : MVG SG24LT (Satmio)

2.4G Passive pattern

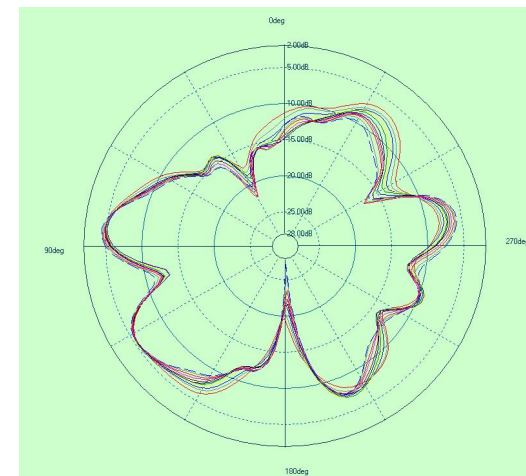
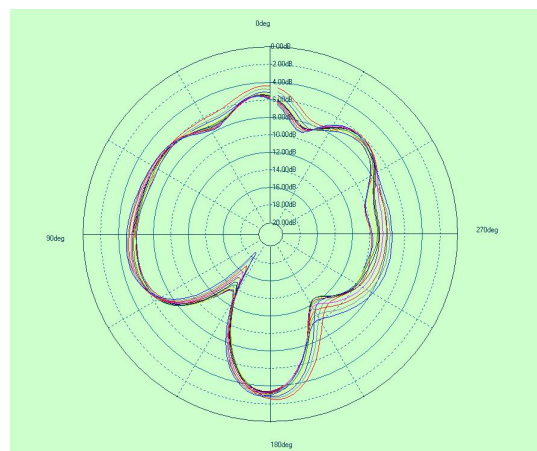
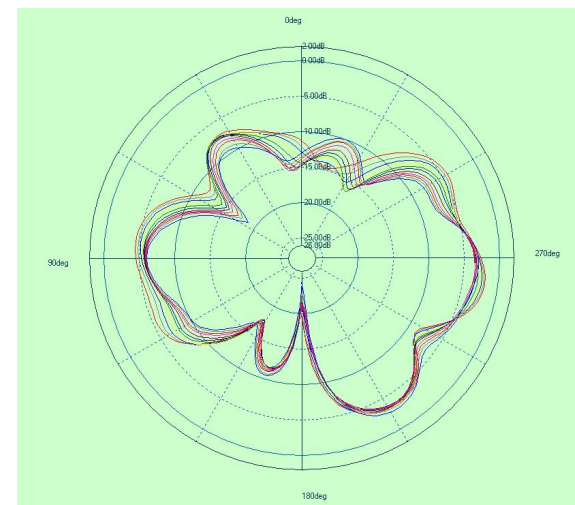
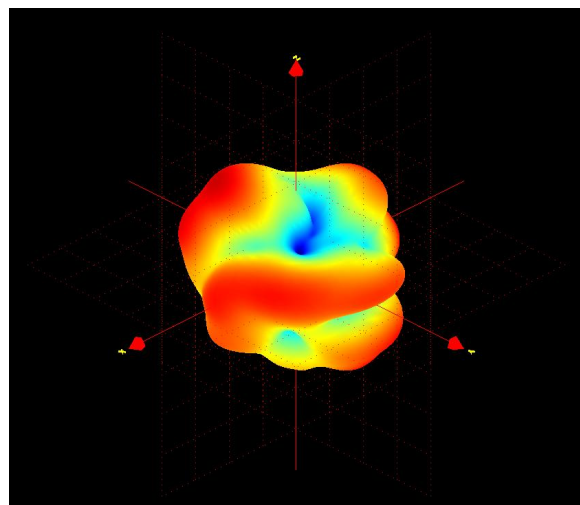
Gain:
2.4Ghz: 2.29dbi



Measuring instrument : Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer Darkroom system : MVG SG24LT (Satmio)

5.8G Passive pattern

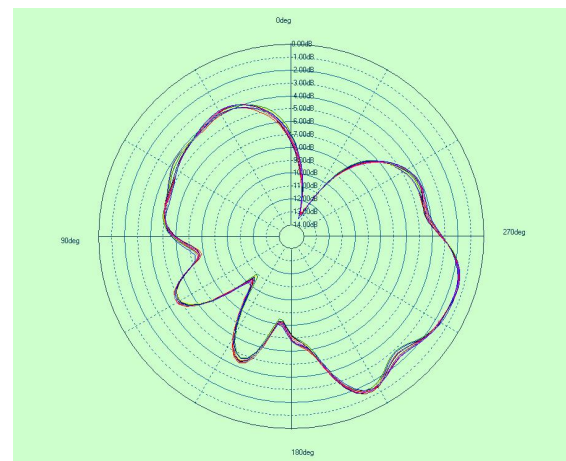
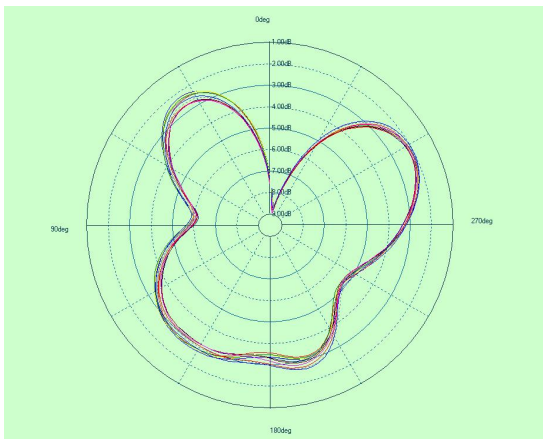
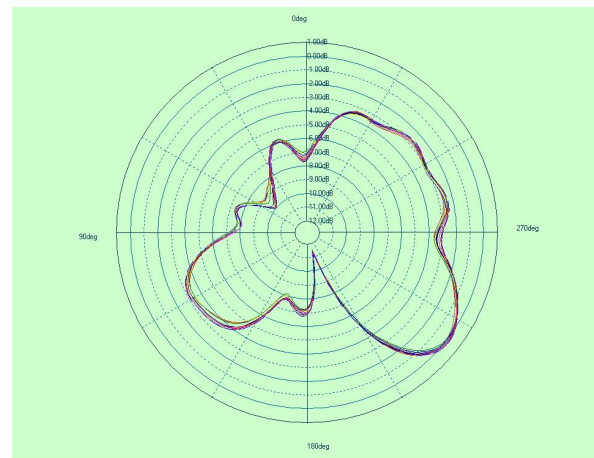
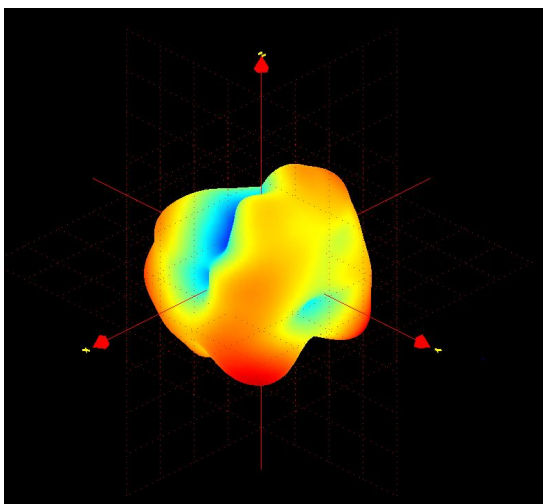
Gain:
5.8Ghz: -1.74dbi



Measuring instrument : Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer Darkroom system : MVG SG24LT (Satmio)

GPS Passive pattern

Gain:
1.575Ghz: 1.14dbi



Measuring instrument : Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer Darkroom system : MVG SG24LT (Satmio)

antenna passive Efficiency, Gain

1			1	
Frequency	Efficiency	Efficiency . dB	Frequency	Gain . dBi
701Mhz	23.5%	-5.09104	701Mhz	-1.9596
702Mhz	23.9%	-5.59157	702Mhz	-1.80297
703Mhz	24.0%	-6.41526	703Mhz	-1.72197
1			1	
Frequency	Efficiency	Efficiency . dB	Frequency	Gain . dBi
880Mhz	15.5%	-8.09102	880Mhz	-1.97025
884Mhz	17.4%	-7.59316	884Mhz	-0.90703
888Mhz	18.0%	-7.43854	888Mhz	-1.52872
892Mhz	16.6%	-7.7997	892Mhz	-1.13867
896Mhz	19.3%	-7.14682	896Mhz	-0.90306
900Mhz	17.5%	-7.56961	900Mhz	-0.99213
904Mhz	20.8%	-6.82555	904Mhz	0.01003
908Mhz	19.8%	-7.02474	908Mhz	-0.43081
912Mhz	20.3%	-6.91854	912Mhz	0.405587
916Mhz	22.4%	-6.49305	916Mhz	0.644308
920Mhz	21.2%	-6.74037	920Mhz	0.801882
924Mhz	25.0%	-6.0231	924Mhz	1.24423
928Mhz	22.6%	-6.45082	928Mhz	0.96082
932Mhz	24.6%	-6.08539	932Mhz	1.451261
936Mhz	24.9%	-6.03452	936Mhz	1.190784
940Mhz	23.7%	-6.25071	940Mhz	1.133884
944Mhz	26.0%	-5.85063	944Mhz	0.928461
948Mhz	22.6%	-6.45703	948Mhz	0.512472
952Mhz	24.6%	-6.09299	952Mhz	0.666216
956Mhz	23.0%	-6.38764	956Mhz	0.227244
960Mhz	22.0%	-6.57401	960Mhz	0.049195

Measuring instrument : Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer Darkroom system : MVG SG24LT (Satmio)

antenna passive Efficiency, Gain

1			1		1			1	
Frequency	Efficiency	Efficiency . dB	Frequency	Gain . dBi	Frequency	Efficiency	Efficiency . dB	Frequency	Gain . dBi
796Mhz	26.4%	-5.746816524	796Mhz	-1.903058635	1700Mhz	25.8%	-5.875701794	1700Mhz	0.719041116
800Mhz	24.6%	-6.169605807	800Mhz	1.345959129	1750Mhz	26.1%	-5.83201184	1750Mhz	-0.651947725
804Mhz	23.9%	-6.025547492	804Mhz	0.206526205	1800Mhz	26.8%	-5.718199296	1800Mhz	0.489027365
808Mhz	24.0%	-6.224744663	808Mhz	-0.234312076	1850Mhz	28.9%	-5.396643135	1850Mhz	1.599868064
812Mhz	24.5%	-6.118536825	812Mhz	0.602082744	1900Mhz	32.8%	-4.837208303	1900Mhz	1.717801595
816Mhz	26.6%	-5.693047729	816Mhz	0.840803654	1950Mhz	34.6%	-4.614075907	1950Mhz	1.566153788
820Mhz	25.3%	-5.940372593	820Mhz	0.998377617	2000Mhz	31.0%	-5.091535211	2000Mhz	0.39459454
824Mhz	25.1%	-5.223101443	824Mhz	1.244230007	2050Mhz	28.1%	-5.513531546	2050Mhz	-0.87047524
828Mhz	22.8%	-6.450822422	828Mhz	1.157315661	2100Mhz	26.0%	-5.842407489	2100Mhz	-1.441656875
832Mhz	24.8%	-6.085391254	832Mhz	1.647757439	2150Mhz	26.0%	-5.855380123	2150Mhz	-1.723363185
836Mhz	25.0%	-6.034520289	836Mhz	1.387279882	2200Mhz	28.5%	-5.446424517	2200Mhz	-1.344815105
840Mhz	23.8%	-6.250711268	840Mhz	1.330380365	2250Mhz	30.5%	-5.15827008	2250Mhz	-1.381204055
844Mhz	26.1%	-5.850634337	844Mhz	1.124957217	2300Mhz	29.4%	-5.320580048	2300Mhz	-0.983254015
848Mhz	22.7%	-6.457027744	848Mhz	0.708967913	2350Mhz	29.4%	-5.314824012	2350Mhz	-0.082219919
852Mhz	24.7%	-6.092994167	852Mhz	0.862712304	2400Mhz	30.5%	-5.155617054	2400Mhz	0.474981633
856Mhz	23.1%	-6.387635222	856Mhz	0.423739489	2450Mhz	32.6%	-4.866849968	2450Mhz	1.063598447
860Mhz	22.1%	-6.574007264	860Mhz	0.245691008	2500Mhz	37.8%	-4.229787565	2500Mhz	1.588454304
					2550Mhz	40.3%	-3.945531496	2550Mhz	2.467033431
					2600Mhz	38.8%	-4.114596354	2600Mhz	2.536312926
					2650Mhz	35.0%	-4.559403612	2650Mhz	2.884090121
					2700Mhz	30.7%	-5.124136828	2700Mhz	1.988283851

Measuring instrument : Agilent Technologies E5071B 300kHz-8.5GHz ENA Series Network Analyzer Darkroom system : MVG SG24LT (Satmio)