

Project Antenn天线N2202项目天线测试报告

Antenna N2202 Project Antenna Test Reporta Test Report

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Project: N2202

Antenna N2202 Project Antenna Test Report

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项目调试简介Introduction to project commissioning

 项目调试简介Introduction to project commissioning

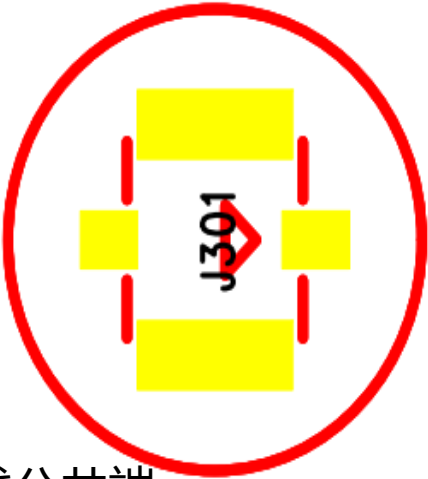
板型	整机mobile phone						
天线概况 Antenna overview	主天线 Main antenna	频段band		天线状态 Antenna status	天线形式 Antenna form	设计区域 Design area	匹配改动 Match Changes
		2G	GSM2/3/5/8/W1/2/4/5/8/BC0/BC1/BC10	FPC	PIFA	sample bottom 手机底部	有yes
		3G					
		4G	FDD1/2/3/4/5/7/8/12/13/17/18/19/20/25/28AB/30/66/TDD34/38/39/40/41				
		5G	N/A				无no
	其他天线 other antenna	BT/WIFI	2. 4G/5. 0	FPC	PIFA	sample top 手机顶部	有yes
		GPS	1575. 42MHz				有yes
		分集LTE	FDD1/2/3/4/5/7/8/12/13/17/18/19/20/25/28AB/30/66/TDD34/38/39/40/41	FPC	PIFA	sample top 手机顶部	有yes
样机状态 sample status	P2201-717试产机 Trial production sample		环境处理 Environmental treatment				

报告版本提要Report Version Summary

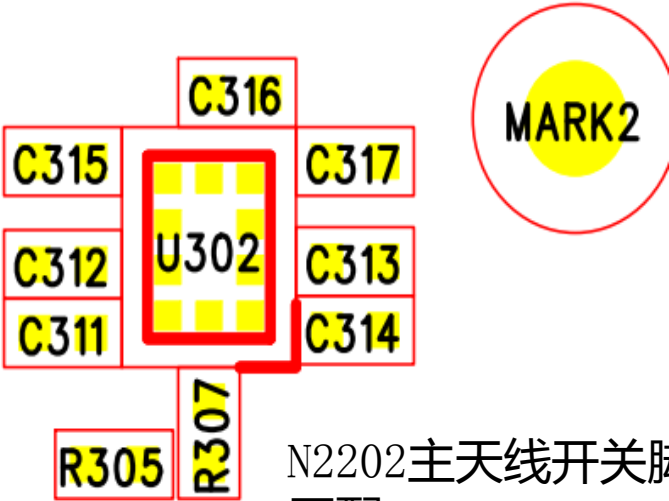
版本version	日期date	内容概况Content overview
N2202	20221118	初步调天线报告Preliminary antenna adjustment report
N2202	20221119	验证样品Validation sample
N2202	20221219	贴片主板SMD PCBA

主天线匹配电路Main antenna matching circuit

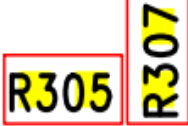
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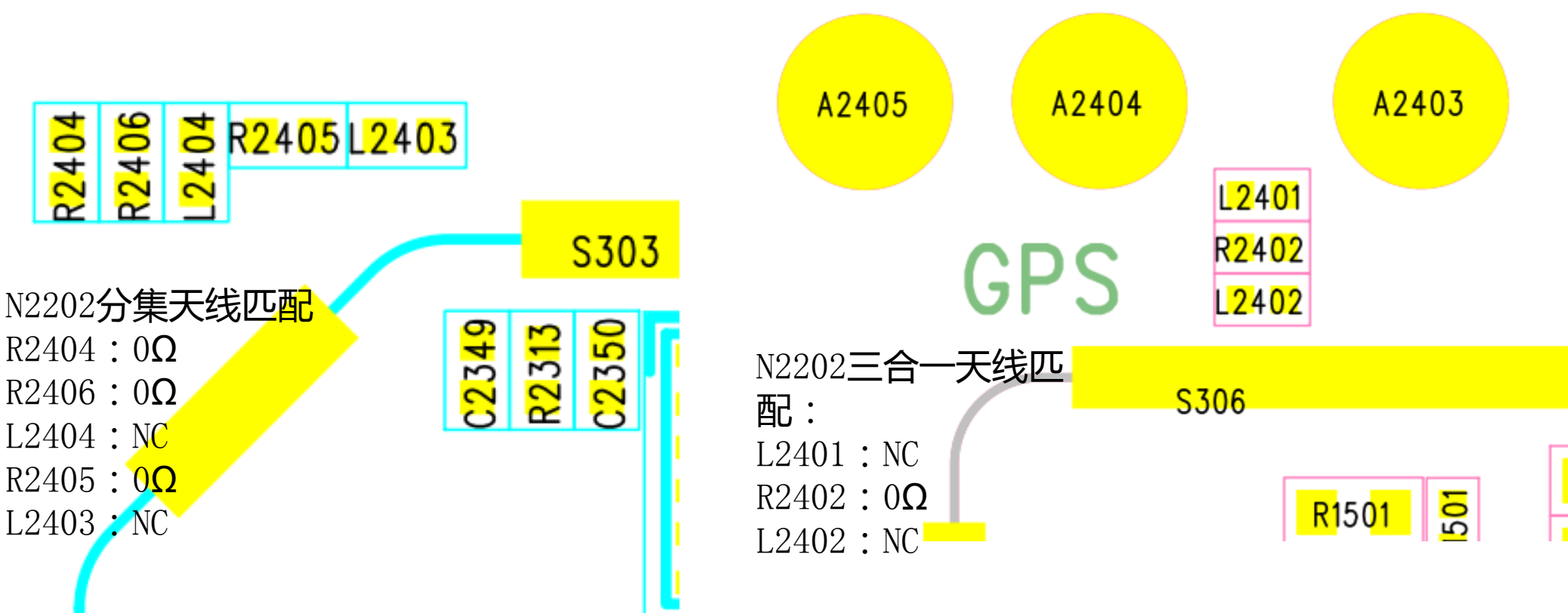
N2202主天线公共端
匹配：
R301 : 0Ω
C302 : 12nH



N2202主天线开关脚
匹配：
R305 : 22nH
R307 : 0Ω
C311 : 10nH
C312 : 18nH
C313 : NC
C314 : 0Ω

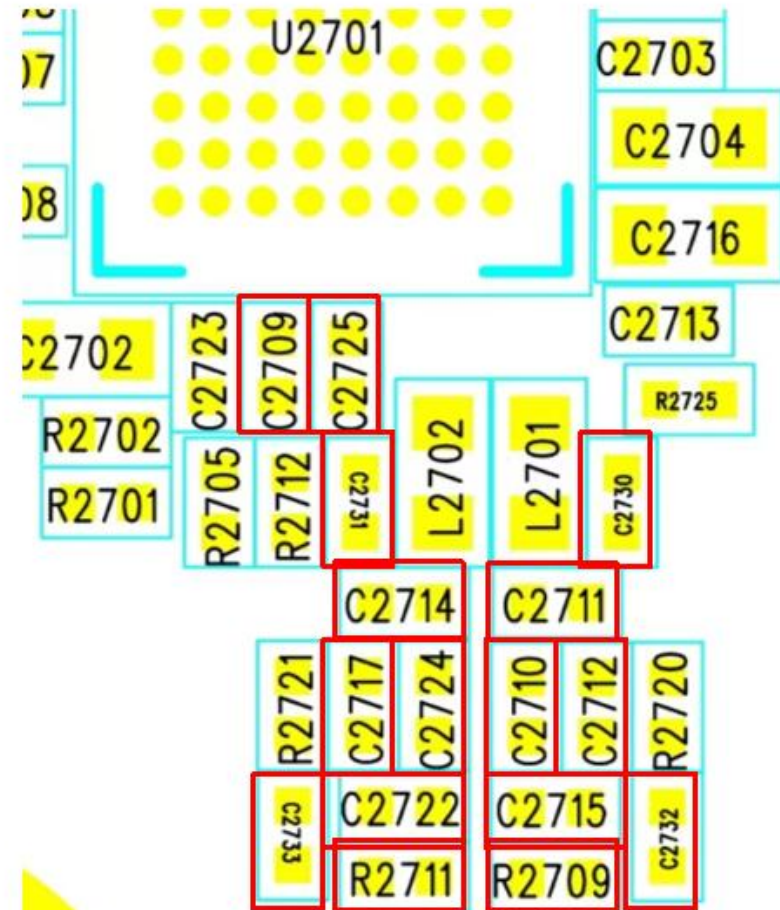


副天线匹配电路Slave antenna matching circuit



NFC天线匹配电路NFC antenna matching circuit

元件 Element	更改前 Before change	更改后 After change
C2709、C2725 (0201)	10nF	10nF
C2730、C2731 (0201)	220pF	220pF
C2711、C2714 (0201)	680pF	680pF
C2710、C2724 (0201)	22pF	15pF
C2712、C2717 (0201)	56pF	56pF
C2715、C2722 (0201)	120pF	120pF
C2732、C2733 (0201)	4. 7pF	NC
R2711、R2709 (0201)	0 Ω	0 Ω



主天线开关频段分路Main antenna switching frequency band shunt

N2202射频匹配和开关频段分路如下： RF matching and switching frequency band branching are as follows			
频段band	位号/开关通道 Tag No./switch channel	匹配 matching	备注 remark
GSM:900/1800/1900 WCDMA:B1/2/4/8/BC1 LTE:B1/2/3/4/7/8/25/30/66/ 34/38/39/40/41	RF1 (C314)	0欧姆	
LTE : B12/17/28AB	RF2 (C313)	NC	
GSM:850 WCDMA:B5/BC0/BC10 LTE : B5/18/19/20/26	RF3 (C311)	10NH	
LTE:B13	RF (C312)	18nH	

主天线暗室数据Main antenna anechoic chamber data

MAYA ANT TRP&TIS parameter Summary of N2202						
BAND	GSM900			DCS1800		
CHANNEL	1	62	124	512	698	885
TRP (dBm)	26.5	26.8	27.4	24.1	24.7	25.6
TIS (dBm)			-101.2			-103.5
BAND	GSM850			PCS1900		
CHANNEL	128	190	251	512	661	810
TRP (dBm)	26.6	26.9	27.2	25.7	25.8	25.6
TIS (dBm)			-101.5			-103.4
BAND	WCDMA2100			WCDMA1900		
CHANNEL	10562	10700	10838	9262	9400	9538
TRP (dBm)	18.0	17.4	17.1	18.0	18.2	18.1
TIS (dBm)			-103.8			-103.9
BAND	WCDMA1700			WCDMA850		
CHANNEL	1312	1413	1513	4132	4183	4233
TRP (dBm)	16.3	16.8	17.0	16.3	16.1	15.9
TIS (dBm)			-103.7			-102.5

主天线暗室数据Main antenna anechoic chamber data

MAYA ANT TRP&TIS parameter Summary of N2202						
BAND	WCDMA900			CDMA-BC0		
CHANNEL	2937	3013	3088	1013	384	777
TRP (dBm)	15.8	16.3	16.5	17.4	17.3	17.1
TIS (dBm)			-102.1			-101.4
BAND	CDMA-BC1			CDMA-BC10		
CHANNEL	25	600	1175	476	580	684
TRP (dBm)	18.8	18.7	18.4	17.6	17.6	17.4
TIS (dBm)			-101.8			-102.6
BAND	FDD-1			FDD-2		
CHANNEL	18100	18300	18500	18650	18900	19150
TRP (dBm)	17.6	17.6	17.7	18.1	18.3	18.0
TIS (dBm)			-91.5			-91.6
BAND	FDD-3			FDD-4		
CHANNEL	19250	19575	19900	20000	20175	20350
TRP (dBm)	15.8	16.3	17.2	15.9	16.2	16.5
TIS (dBm)			-92.3			-91.8

主天线暗室数据Main antenna anechoic chamber data

MAYA ANT TRP&TIS parameter Summary of N2202						
BAND	FDD-5			FDD-7		
CHANNEL	20450	20525	20600	20800	21100	21400
TRP (dBm)	16.5	16.4	16.2	16.5	16.7	16.2
TIS (dBm)			-89.7			-91.8
BAND	FDD-8			FDD-12		
CHANNEL	21500	21625	21750	23060	23095	23130
TRP (dBm)	16.0	16.8	17.2	16.5	16.5	16.6
TIS (dBm)			-89.5			-90.3
BAND	FDD-13			FDD-17		
CHANNEL	23181	23230	23279	23780	23790	23800
TRP (dBm)	15.9	16.3	16.2	16.5	16.8	17.1
TIS (dBm)			-89.1			-89.4
BAND	FDD-18			FDD-19		
CHANNEL	23900	23925	23950	24050	24075	24100
TRP (dBm)	16.2	16.4	16.4	16.1	16.2	16.0
TIS (dBm)			-90.1			-89.5

主天线暗室数据Main antenna anechoic chamber data

MAYA ANT TRP&TIS parameter Summary of N2202						
BAND	FDD-20			FDD-25		
CHANNEL	24200	24300	24400	26090	26365	26640
TRP (dBm)	16.2	16.2	16.0	18.0	18.1	17.9
TIS (dBm)			-89.6			-91.4
BAND	FDD-26			FDD-28AB		
CHANNEL	26740	26865	26990	27211	27435	27659
TRP (dBm)	16.3	16.4	16.0	16.6	16.5	15.8
TIS (dBm)			-90.2			-89.3
BAND	FDD-66			FDD-30		
CHANNEL	132022	132322	132622	27685	27710	27735
TRP (dBm)	15.9	16.4	17.3	16.4	16.5	16.4
TIS (dBm)			-90.2			-89.2
BAND	TDD-34			TDD-38		
CHANNEL	36250	36275	36300	37850	38000	38150
TRP (dBm)	17.7	17.8	18.0	16.2	16.2	15.8
TIS (dBm)			-90.5			-90.4

主天线暗室数据Main antenna anechoic chamber data

MAYA ANT TRP&TIS parameter Summary of N2202						
BAND	TDD-39			TDD-40		
CHANNEL	38350	38450	38550	38750	39150	39550
TRP (dBm)	17.9	18.0	17.6	15.9	16.1	16.2
TIS (dBm)			-91.0			-89.2
BAND	TDD-39			WIFI-B		
CHANNEL	39750	40620	41490	L	M	H
TRP (dBm)	16.3	16.2	15.9	12.4	12.6	12.3
TIS (dBm)			-90.7	--	--	-82.9

BAND	WIFI-G			WIFI-N		
CHANNEL	L	M	H	L	M	H
TRP (dBm)	10.6	10.8	10.1	10.0	10.2	9.6
TIS (dBm)	--	--	-70.5	--	--	-66.3
BAND	WIFI-A			WIFI-AC		
CHANNEL	L	M	H	L	M	H
TRP (dBm)	10.1	10.4	11.0	9.7	10.2	10.8
TIS (dBm)	--	--	-70.6	--	--	-66.8

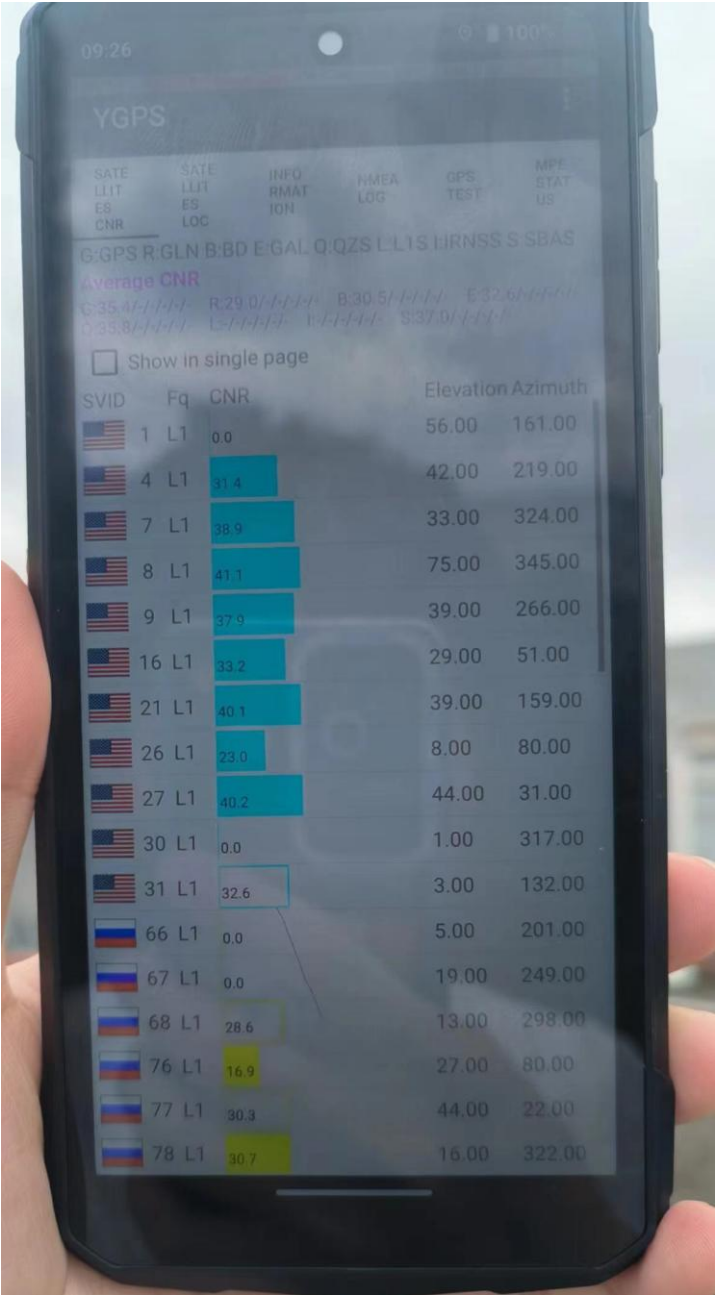
GPS实际测试结果（GPS独立方案）
GPS actual test results (GPS independent scheme)

GPS天线实际测试效果

GPS antenna test result:

测试项Test items	测试结果Test result
搜星总数total	10
In use卫星数	8
最大SNR值max	41.1
SNR≥40星数	2-3
冷启动定位时间time	70S

测试结论：性能OK。
Test conclusion: OK.



WIFI实际测试结果 Wifi Actual test results

WIFI/BT/GPS实测报告

WIFI实测效果：
距离路由器10m信号强度

BT实测效果
正面无障碍距离：8m
距人体距离：5m
通话3分钟无杂音流畅.



NFC实际测试结果

Nfc Actual test results

	距离
Type1	3.5cm
Type2	3.4cm
Type3	3.0cm
Type4	1.5cm

测试距离用的垫片



无源报告Passive Data

主天线增益

Frequency	Efficiency	Efficiency . dB	Gain . dB	Frequency	Efficiency	Efficiency . dB	Gain . dB	Frequency	Efficiency	Efficiency . dB	Gain . dB
880000000	17.13%	-7.623626	-1.387839001	700000000	16.82%	-7.742333562	-2.950096405	1710000000	22.38%	-6.356683137	-2.20340627
888000000	19.77%	-7.03996	-1.181325765	705000000	19.17%	-7.173831368	-2.025054594	1759500000	24.97%	-6.182603099	-1.100037826
896000000	19.65%	-7.067075	-1.123203773	710000000	17.76%	-7.504616545	-2.287498419	1809000000	26.04%	-5.843784317	-1.593668777
904000000	22.63%	-6.860149	-1.055848363	715000000	20.43%	-6.664564357	-1.884136083	1858500000	26.11%	-5.832045233	-1.543146526
912000000	23.15%	-6.518428	-0.941041277	720000000	17.56%	-7.555940404	-2.163836494	1908000000	29.74%	-5.266903373	-1.159119443
920000000	25.63%	-5.953335	-0.742009923	725000000	21.02%	-6.773580635	-1.648280082	1957500000	33.01%	-4.814123175	-0.162511671
928000000	27.21%	-5.652794	-0.483579899	730000000	17.51%	-7.567887031	-2.485859007	2007000000	31.75%	-4.981884893	0.16305763
936000000	30.72%	-5.126383	-0.055492354	735000000	20.89%	-6.79968329	-1.939273748	2056500000	33.70%	-4.72430297	1.440545935
944000000	31.51%	-4.496675	0.148395004	740000000	16.30%	-7.878380695	-2.991374966	2106000000	32.29%	-4.909876349	1.447143267
952000000	30.82%	-4.838397	-0.163509251	745000000	19.96%	-6.997496487	-2.649838211	2155500000	30.41%	-5.170248199	1.040256742
960000000	24.36%	-6.132927	-0.692633692	750000000	15.99%	-7.961814952	-3.373237525	2205000000	28.73%	-5.416298111	-0.196874572
Frequency	Efficiency	Efficiency . dB	Gain . dB	Frequency	Efficiency	Efficiency . dB	Gain . dB	2254500000	23.34%	-6.319810399	-1.40418522
790000000	16.82%	-7.742334	-2.093083367	740000000	14.28%	-8.453703596	-3.502937435	2304000000	21.65%	-6.64570411	-0.932972083
799000000	19.17%	-7.173831	-1.964394687	744000000	15.42%	-8.120075303	-3.231564016	2353500000	23.66%	-6.260168517	-0.148914812
808000000	20.76%	-6.904617	-1.878381761	748000000	14.29%	-8.450894437	-2.549168859	2403000000	26.82%	-5.715184614	-0.024974901
817000000	22.53%	-6.676713	-1.552822851	752000000	14.77%	-8.30482198	-2.152647439	2452500000	28.26%	-5.488202464	0.11398583
826000000	23.56%	-6.45594	-1.299135752	756000000	16.44%	-7.841849426	-1.928386597	2502000000	34.51%	-4.62008354	1.203794883
835000000	25.02%	-6.073581	-1.002288102	760000000	14.59%	-8.359767106	-1.384171847	2551500000	34.34%	-4.641999543	1.484647259
844000000	27.51%	-5.577887	-0.8487729	764000000	17.90%	-7.471972242	-1.244381519	2601000000	31.80%	-4.975485277	2.145877891
853000000	29.89%	-5.199683	-0.285750566	768000000	15.22%	-8.175554039	-1.869749154	2650500000	29.70%	-5.272294774	2.553616856
862000000	27.30%	-5.678381	-0.844383294	772000000	17.16%	-7.653581011	-2.402568196	2700000000	26.35%	-5.792984102	2.42816507
871000000	25.96%	-6.197496	-0.23186967	776000000	16.92%	-7.7172297	-2.728117095				
880000000	23.99%	-6.561815	-1.382872604	780000000	16.52%	-7.820888057	-3.464408298				

无源报告Passive Data

分集天线增益

Frequency	Efficiency	Efficiency . dB	Gain . dB		Frequency	Efficiency	Efficiency .	Gain . dB
800000000	10.61%	-9.743108644	-4.300718911		1710000000	13.61%	-8.6616	-2.406293144
816000000	11.71%	-9.313658472	-4.24770557		1759500000	15.63%	-8.06015	-1.828228512
832000000	12.62%	-8.989849962	-3.676436956		1809000000	16.15%	-7.91843	-1.699135752
848000000	13.66%	-8.645988964	-2.799551755		1858500000	22.63%	-6.45333	-1.202288102
864000000	13.51%	-8.693117079	-2.268475315		1908000000	24.26%	-6.15174	-0.750731778
880000000	13.58%	-8.672357114	-2.023122339		1957500000	33.53%	-4.74573	1.143788482
896000000	14.06%	-8.519592206	-1.882593193		2007000000	29.36%	-5.32258	0.316501717
912000000	14.30%	-8.44700301	-1.967754897		2056500000	26.32%	-5.79747	0.512167972
928000000	14.11%	-8.504416413	-2.299345497		2106000000	23.27%	-6.33135	0.042411122
944000000	12.80%	-8.929560274	-2.829106952		2155500000	21.74%	-6.62659	-1.227467352
960000000	10.95%	-9.604339809	-3.631589621		2205000000	21.74%	-6.62814	-1.238616622
					2254500000	19.14%	-7.1804	-1.760041483
					2304000000	16.72%	-7.76724	-1.61104845
					2353500000	17.20%	-7.64438	-0.1513929
					2403000000	18.97%	-7.21922	1.475261251
					2452500000	19.88%	-7.01662	1.685227155
					2502000000	24.80%	-6.05596	1.634801419
					2551500000	31.87%	-4.9668	2.212241761
					2601000000	33.00%	-4.81475	1.732832743
					2650500000	33.55%	-4.74261	1.683792846
					2700000000	37.86%	-4.21874	3.221060263

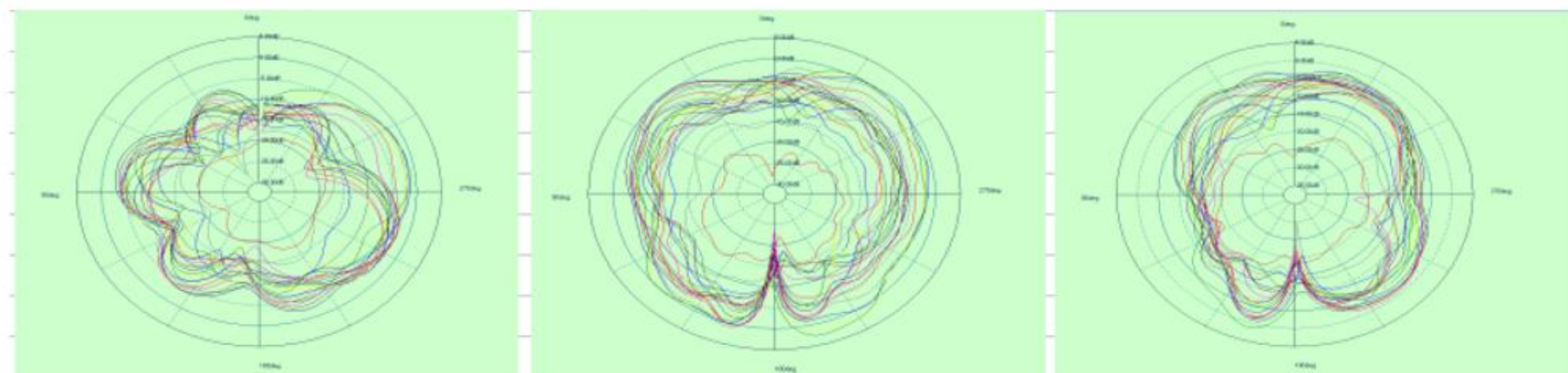
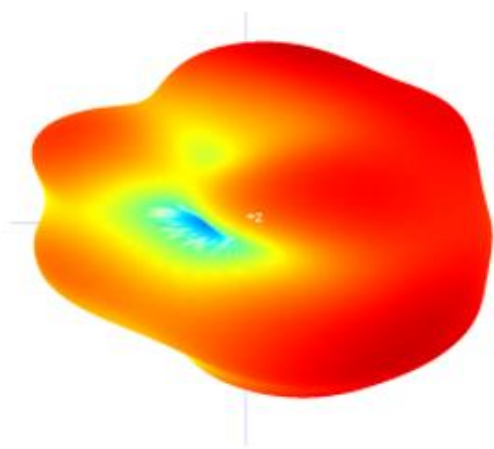
无源报告Passive Data

三合一天线增益

Frequency	Efficiency	Efficiency . dB	Gain . dB		Frequency	Efficiency	Efficiency . dB	Gain . dB
1570000000	40.89%	-3.883806597	1.942174945		5200000000	23.78%	-6.237291779	0.285588824
1571000000	40.73%	-3.90119605	1.946664928		5230000000	23.54%	-6.282123929	1.282409698
1572000000	40.50%	-3.925500144	1.952311877		5260000000	24.75%	-6.064858994	1.133412569
1573000000	40.22%	-3.955716405	1.951179653		5290000000	24.49%	-6.109922851	0.948538199
1574000000	39.97%	-3.982982124	1.949086741		5320000000	23.66%	-6.26066738	0.777244473
1575000000	39.77%	-4.004110287	1.94213695		5350000000	21.63%	-6.649926967	0.58904394
1576000000	39.68%	-4.014715959	1.942993643		5380000000	23.24%	-6.337553174	1.384942508
1577000000	39.68%	-4.014505901	1.954588439		5410000000	27.21%	-5.652041472	1.849016842
1578000000	39.74%	-4.008055999	1.969576925		5440000000	30.69%	-5.129632761	1.993088008
1579000000	39.76%	-4.005555339	1.989257222		5470000000	31.19%	-5.059361308	1.595807331
1580000000	39.64%	-4.018803201	1.999159708		5500000000	33.70%	-4.724154087	1.776248331
					5530000000	35.45%	-4.5035735	2.111510156
Frequency	Efficiency	Efficiency . dB	Gain . dB		5560000000	35.09%	-4.548029436	2.038070503
2400000000	24.95%	-6.029277529	0.195631958		5590000000	32.12%	-4.932638463	2.124015576
2410000000	26.46%	-5.773883541	0.242498157		5620000000	30.22%	-5.19746221	1.676146296
2420000000	27.21%	-5.652794113	0.268772439		5650000000	29.17%	-5.35086139	1.927871123
2430000000	29.14%	-5.354835636	0.286466459		5680000000	29.43%	-5.312396137	2.102231037
2440000000	29.58%	-5.290012587	0.305617145		5710000000	28.49%	-5.452484062	1.712627596
2450000000	29.69%	-5.273432464	0.598051546		5740000000	28.89%	-5.392756461	1.994300476
2460000000	30.65%	-5.135834939	1.005535789		5770000000	31.29%	-5.046467278	2.698623412
2470000000	32.01%	-4.946902767	1.538055868		5800000000	29.78%	-5.261355174	2.621151268
2480000000	31.23%	-5.05473544	1.649710473					
2490000000	30.69%	-5.129947968	1.840170442					
2500000000	30.74%	-5.12238775	2.094661693					

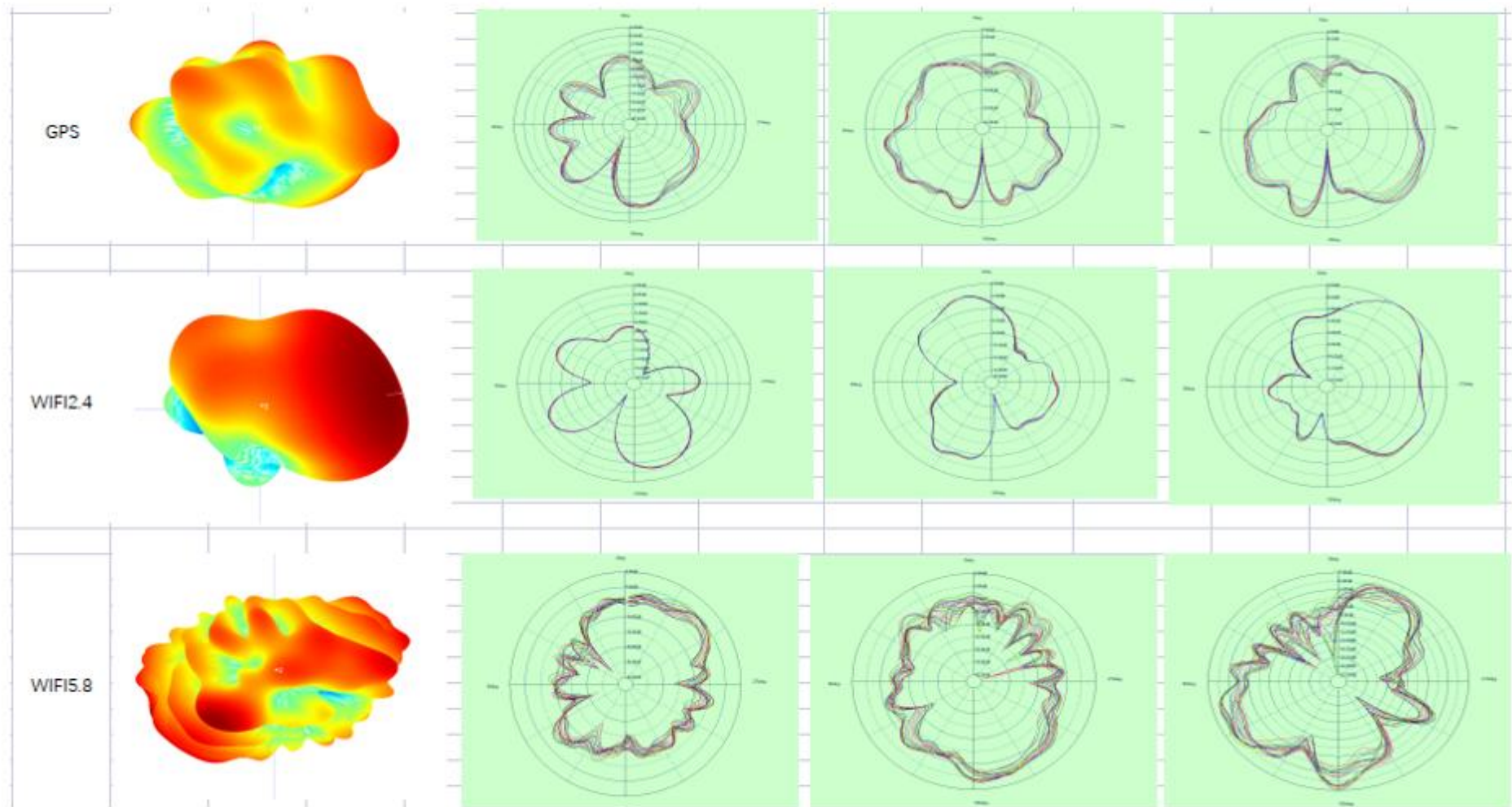
无源报告Passive Data

主线方向图

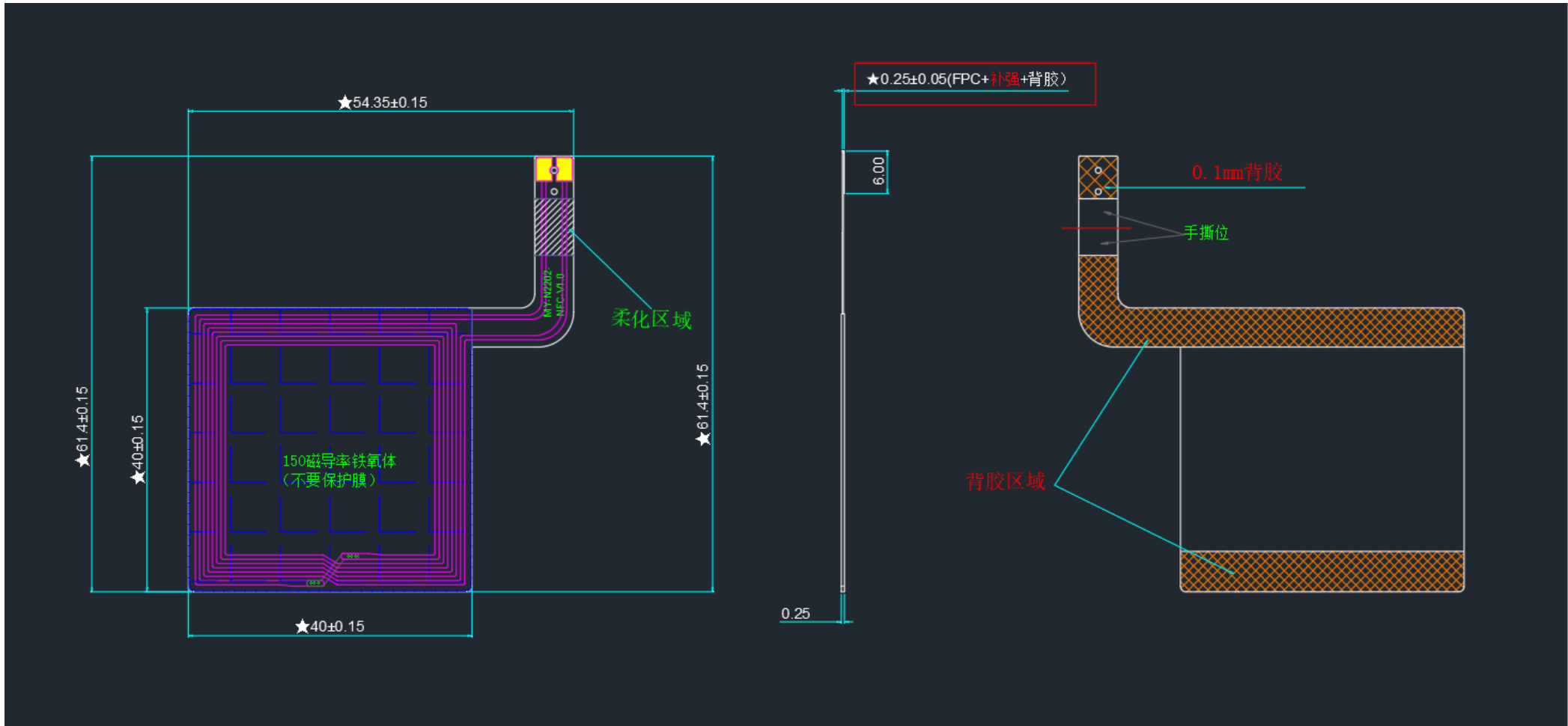


无源报告Passive Data

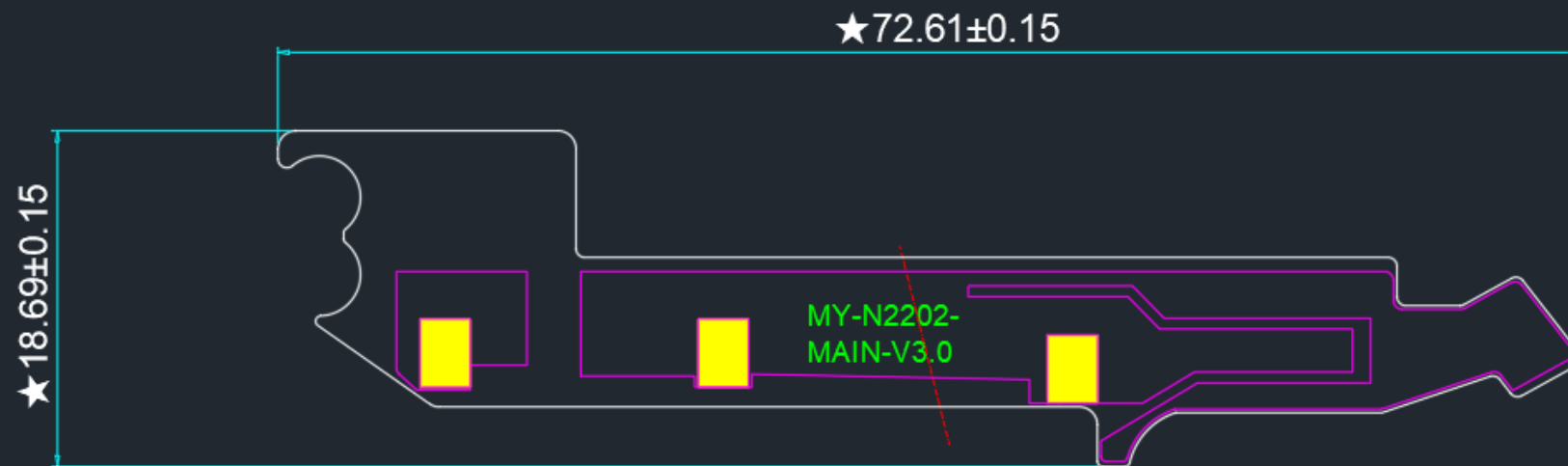
三合一天线方向图



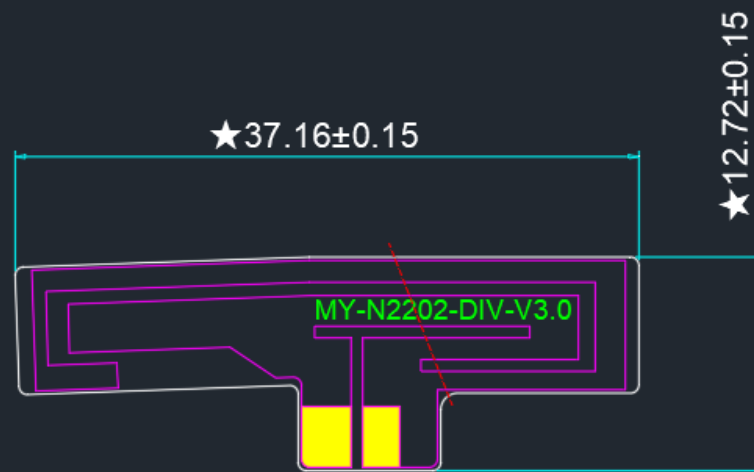
天线尺寸示意图Antenna size diagram



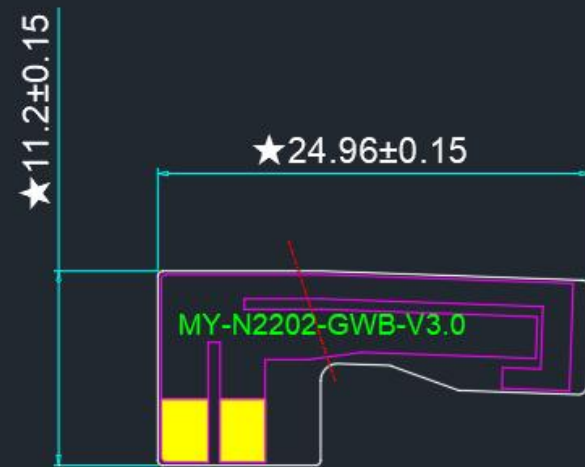
天线尺寸示意图Antenna size diagram



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附加说明Additional instructions

-  请仔细确认报告中提到的匹配电路是否修改、以及环境处理是否导入，这将直接影响天线性能。
Please carefully confirm whether the matching circuit mentioned in the report is modified and whether the environmental treatment is imported, which will directly affect the antenna performance.
-  本报告所提供的参数仅为客户给到我司调测样机的参数，不代表贵司最终项目的最终量产状态。
The parameters provided in this report are only those provided by the customer to our company for testing the prototype, and do not represent the final mass production status of your company's final project.
-  倘若贵司有最新试产、或者更新状态（更换物料、更新软件、更换环境处理等）的样机，请尽快交由我司进行验证，以确认天线性能是否受到影响。
If your company has a prototype with the latest trial production or updated status (changing materials, updating software, changing environmental treatment, etc.), please submit it to our company for verification as soon as possible to confirm whether the antenna performance is affected
-  倘若贵司需要送往第三方复测或者送往客户测试，请务必将需要测试的机器交由我司进行测试确认，因为主板的一致性、装配的一致性，以及天线组装差异等因素，均可能导致天线参数的偏差。
If your company needs to send the machine to a third party for retest or to a customer for testing, please be sure to submit the machine to be tested to our company for testing and confirmation, because the consistency of the motherboard, the consistency of the assembly, and the difference in the antenna assembly and other factors may lead to the deviation of the antenna parameters.

