Shenzhen Maya Communication Equipment Co., Ltd.

Product Performance and Specifications

Maya Antenna R&D Department

Material name: _____

Sample color: _____

Sample type: FPC

Customer model: _____

■Mold sample ☐other

Supplier: Shenzhen Maya Communication Equipment Co., Ltd.

Draft	structure	品质	quality	Sample delivery date

client:

department	confirm	date	state	Signature and seal
electronic				
structure				
quality				
project				

1、Confidentiality requirements : Shenzhen Maya Communication Equipment Co., Ltd. already owns the proprietary technology of this product and is not allowed to disclose it to any company or

individual without the written consent of Shenzhen Maya Communication Equipment Co., Ltd.

2. Special reminder : Before signing this document, all parties must carefully read the "Special Terms" and the contents of the catalog. After the representatives of both parties sign, it is deemed that they have reached an agreement on the contents of this document and have no objection, and both parties are willing to abide by it together.

Special Terms

1. About performance and structure confirmation

★Please confirm the appearance and performance of the product before signing the confirmation letter.

★Please provide the final trial production machine to us or bring it back to us for verification before mass production.

★Since the product in this acknowledgment is a highly sensitive object, please be sure to keep the test gold machine for subsequent tracing.

★Since this product is a customized item and has a highly targeted use, when customers replace materials or use it for non-specified projects, please be sure to send the changed materials or machines for non-specified projects back to our company to verify the RF performance. Otherwise, it may cause serious hidden dangers that the usage status is inconsistent with the design status. We will perform functional confirmation on our sealed and debugged prototypes to ensure that our debugged samples are fully functional and prevent antenna performance errors caused by abnormal functions.

2. About product storage issues

★Due to the printing ink on the surface of this product, the adhesive on the back and the electroplated objects, please make sure that the temperature is between 23℃-27℃, the relative humidity is below 60% during storage or transportation, and it is stored or transported in an environment without strong acid, sulfur or oxygen.

★Since the adhesive backing of this product has strict requirements on the environment, please be sure to assemble the product within the optimal use period after receiving it to ensure the reliability of the product.

3. Product Usage Agreement

★Due to the special structure of this product, please make sure to fully contact with the object to be adhered when using this product, and there must be no residual chemical agents (release agents, etc.) on the object to be adhered, or try not to use raw materials with release agents. To ensure the product's usable condition, please clean the surface of the object to be adhered before using this product to ensure that there is no chemical residue on the surface of the object to be adhered.

4. Quality statement of this product

★ Due to the influence of the above-mentioned factors, the optimal usage period

of this product is recommended to be within 1 to 2 months . Exceeding the period will affect the product's use effect. Our company provides lifelong consulting and paid replacement services for this product.

★This product is a special customized device. Please be sure to inspect the product appearance, quantity, performance, etc. within 7 days after receiving the product in accordance with the agreed standards of this "Product Performance and Specification Acknowledgement". If you fail to do so within the deadline, the quality of this product will be deemed to meet the agreed standards of both parties.

★Verification method: Compare with the project seal sample of the letter of acknowledgment.

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1. Customer antenna debugging and design required frequency band

frequency	Frequency band
2G	850/900/1800/1900
3G	WCDMA - 1 2 5 8
4G	LTE-1/2/3/4/5/7/8/12/1 7 / 19/ 20/26/28/38/40/41/66
5G	NR-1/2/3/5/7/8/20/26/28/38/40/41/66/77/78
other	GPS WIFI BT NFC

2. Mobile phone and antenna diagram

Mobile phone

ANT1 antenna

ANT 2 antenna

ANT 3/4 antenna

ANT 5/6/WGB antenna

ANT 7/8 antenna

NFC antenna

3. Electrical properties

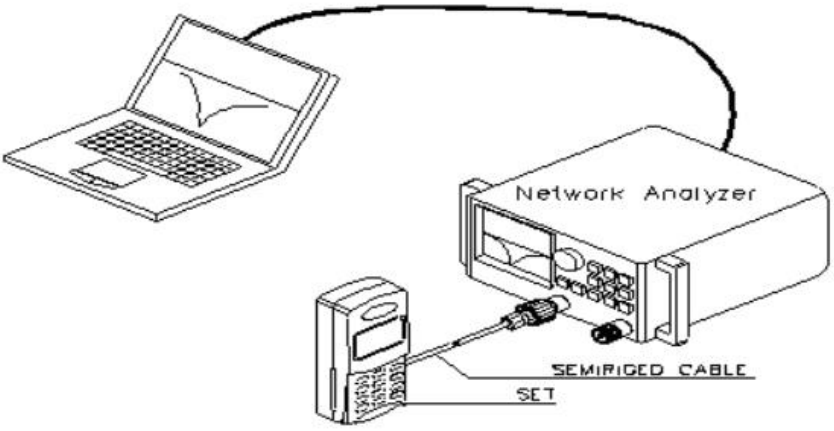
3.1 Test method description and data

Device Name	use
Vector Network Analyzer	S11/Impedance/ Passive Test
Agilent 8960 SP6010 R&S CMU200	Mobile communication equipment testing including GSM, GPRS, EDGE, CDMA2000, 1xEV-DO, TD-SCDMA, WCDMA, HSDPA
R&S CMW500 MT8820C	Including TD-SCDMA, WCDMA, Mobile communication equipment testing for HSDPA, LTE, WIFI, and GPS
SP9500E	Including 5G, SA, NSA
Agilent E4438C	Testing Active GPS
MVG Chamber	Passive Test / OTA active Test / Efficiency/Gain

3.2 Passive Test Report

Test equipment: Network analyzer

Test method: Use a 50 -ohm CABLE cable to export from the instrument test port, calibrate it with a calibration piece, and then connect it to the SMA connector of the mobile phone tool . Record the return loss or standing wave ratio data corresponding to the relevant frequency points.



测试示意图

3.3 Active Test Report

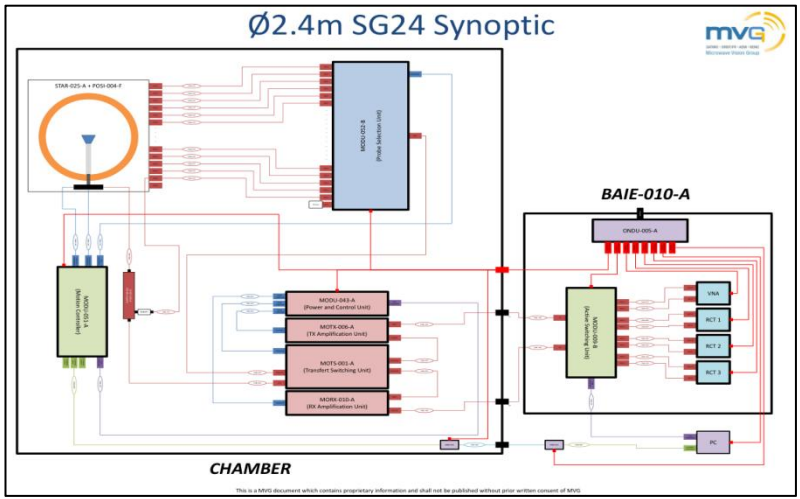
TRP/TIS

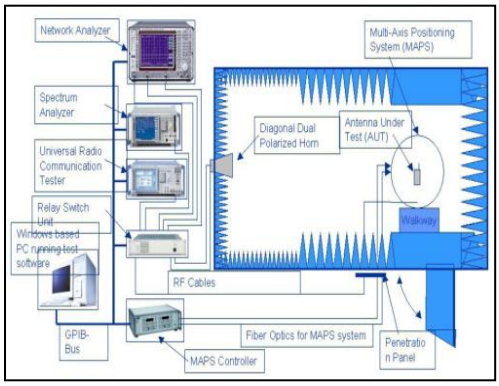
Test tools: comprehensive tester, network analyzer, full radio wave far-field ETS , French MVG SG24LT (Satmio) near-field 3D microwave darkroom, high-precision positioning system and its controller and computer with automatic test program Test environment :temperature 22 ℃ ±3 ℃, humidity 60% ± 15% Test method: Use EST or Satimo 24LT system software TRP test method and calculation When conducting TRP test, DUT (Device Under Test) is in the maximum transmission power state, select high, medium and low channels for testing, and control the position of DUT through the positioning system . In steps of 15 degrees, Measure the effective radiated power (EIRP) of each point in three-dimensional space , and calculate the average value on the sphere by integration. The calculation formula is as follows:

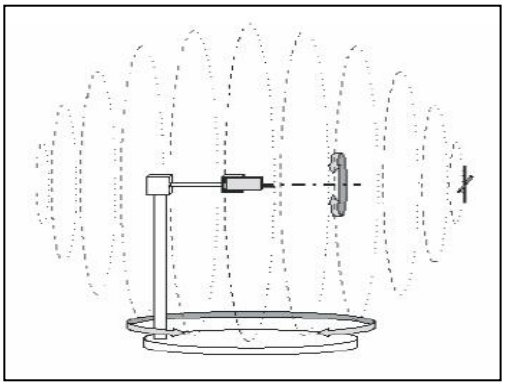
$$TRP \cong \frac{\pi}{2NM}\sum_{i=1}^{N-1}\sum_{j=0}^{M-1}\left[EiRP_{\theta}(\theta_i,\phi_j)+EiRP(\theta_i,\phi_j)\right]\sin(\theta_i)$$

performing TIS testing, the DUT is in the maximum transmit power state. Select three channels, high, medium and low, for testing. By controlling the position of the DUT , With a step length of 30 degrees, Measure the receiving sensitivity of each point in three-dimensional space, The average value on the sphere is calculated by integration, and the calculation formula is as follows:

$$TIS \cong \frac{\pi}{N}$$




Network Analyzer
Multi-Axis Positioning System (MAPS)
Spectrum Analyzer
Diagonal Dual Polarized Horn
Antenna Under Test (AUT)
Universal Radio Communication Tester
Relay Switch Unit
Windows based PC running test software
Walkway
RF Cables
GPIB-Bus
Fiber Optics for MAPS system
Penetratio n Panel
MAPS Controller



3.4 Active OTA TRP/TIS Data

GSM	TRP	TIS
GSM900	25.46	
	25.87	
	25.62	-101.48
GSM850	25.81	
	25.88	
	25.67	-101.24
DCS1800	26.15	
	26.26	
	26.26	-103.52
PCS1900	26.26	
	26.45	
	26.06	-103.4

WCDMA	TRP	TIS
W1	17.51	
	17.12	
	16.93	-102.81
W2	17.88	
	17.62	
	17.54	-105.29
W5	16.22	
	16.62	
	16.64	-102.54
W8	15.8	
	16.52	
	16.68	-102.19

LTE	TRP	TIS
B1 (10M)	18.02	
	18.34	
	17.62	-93.16
B2 (10M)	18.75	
	18.37	
	18.62	-92.7
B3 (10M)	17.04	
	18.48	
	18.8	-91.34
B4 (10M)	17.19	
	17.94	
	18.53	-90.13
B5 (10M)	15.86	
	16.4	
	16.38	-90.08
B7 (10M)	16.93	
	17.19	
	17.56	-89.55
B8 (10M)	15.56	
	16.41	
	16.44	-90.32

LTE	TRP	TIS
B12 (10M)	15.86	
	16.13	
	16.28	-92.4
B17 (10M)	15.54	
	15.82	
	15.95	-92.6
B19 (10M)	15.96	
	15.84	
	15.86	-90.74
B20 (10M)	16.22	
	16.02	
	16.16	-91.08
B26 (10M)	15.54	
	16.16	
	16.25	-89.83
B28 (10M)	15.62	
	16.1	
	16.07	-92.54
B38 (20M)	19.72	
	19.95	
	19.87	-89.3

LTE	TRP	TIS
B40 (20M)	19.03	
	19.43	
	19.88	-88.07
B41 (20M)	20.08	
	20.28	
	20.01	-89.24
B66 (10M)	17.24	
	17.54	
	17.56	-90.29

NR	TRP	TIS
N1 (20M)	19.12	
	19.42	
	19.65	-93.02
N2 (20M)	19.78	
	19.62	
	19.24	-90.15
N3 (20M)	20.33	
	19.99	
	20.8	-91.73
N5 (20M)	17.01	
	17.25	
	17.54	-88.53
N7 (20M)	19.26	
	20.15	
	20.24	-90.18
N8 (20M)	16.75	
	17.23	
	17.62	-87.63
N20 (20M)	18.05	
	18.12	
	18.24	-86.01

NR	TRP	TIS
N26 (20M)	17.35	
	17.7	
	18.8	-85.5
N28 (20M)	17.12	
	17.20	
	17.43	-89.45
N38 (20M)	22.49	
	22.85	
	22.2	-91.14
N40 (20M)	15.87	
	16.04	
	16.48	-85.2
N41 (100M)	22.27	
	22.51	
	22.27	-83.67
N66 (20M)	18.15	
	18.37	
	18.63	-91.17

NR	TRP	TIS
N77 (100M)	19.88	
	22.28	
	19.95	-85.32
N78 (100M)	19.63	
	21.28	
	21.92	-87.05

WIFI	TRP	TIS
B	13.54	
	11.72	
	12.13	-81.57
A	12.01	
	11.53	
	11.49	-70.24
GPS	CN-38.9	-152.2

3.5 Passive Test Data

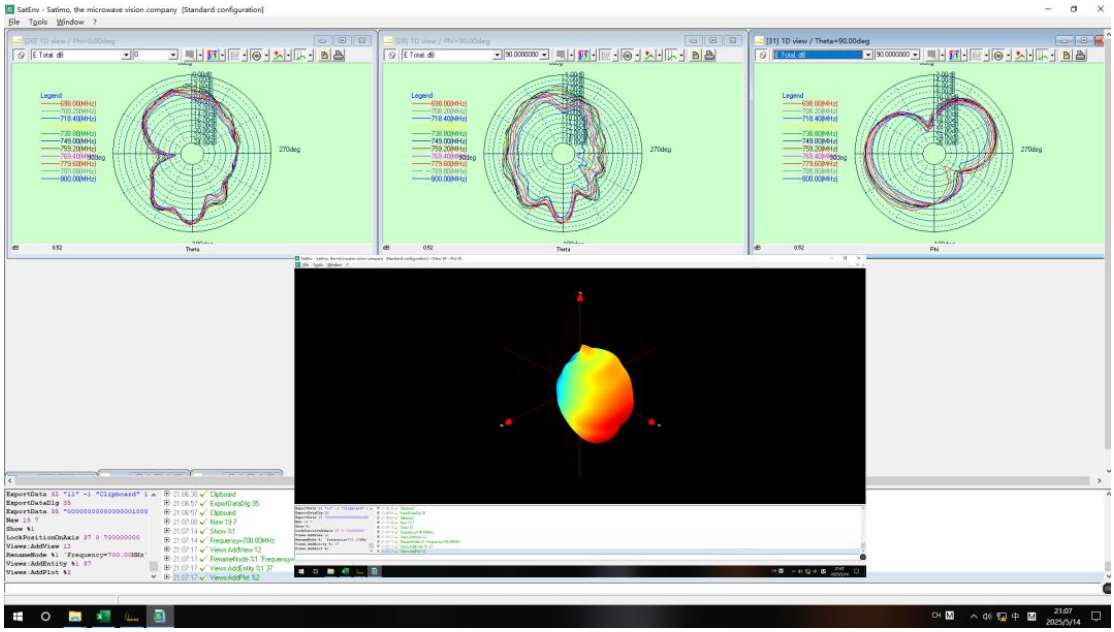
Efficiency Gain

2G	Frequency(MHz)	Efficiency (%)	Gain . dBi
GSM850	824-894	15.94	-1.77
GSM900	880-960	16.11	-2.82
DCS1800	1710-1880	28.76	0.77
PCS1900	1850-1990	31.64	0.62
3G			
W1	1920-2170	31.68	0.66
W2	1850-1990	31.64	0.62
W5	824-894	15.94	-1.77
W8	880-960	16.11	-2.82
4G			
LTE-B1	1920-2170	31.68	0.66
LTE-B2	1850-1990	31.64	0.62
LTE-B3	1710-1880	28.76	0.77
LTE-B4	1710-2155	28.76	0.77
LTE-B5	824-894	15.94	-1.77
LTE-B7	2500-2690	32.41	2.33
LTE-B8	880-960	16.11	-2.82
LTE-B12	698-746	16.05	-3.16
LTE-B17	704-746	16.05	-3.16
LTE-B19	835-885	15.94	-1.77
LTE-B20	824-894	15.94	-1.77
LTE-B26	824-894	15.94	-1.77
LTE-B28	708-798	16.04	-3.18
LTE-B38	2500-2690	32.41	2.33
LTE-B40	2300-2400	37.24	1.78
LTE-B41	2500-2690	32.41	2.33
LTE-B66	1710-2170	28.76	0.77
5G			
N1	1920-2170	31.68	0.66
N2	1850-1990	31.64	0.62
N3	1710-1880	28.76	0.77
N5	824-894	15.94	-1.77
N7	2500-2690	32.41	2.33
N8	880-960	16.11	-2.82

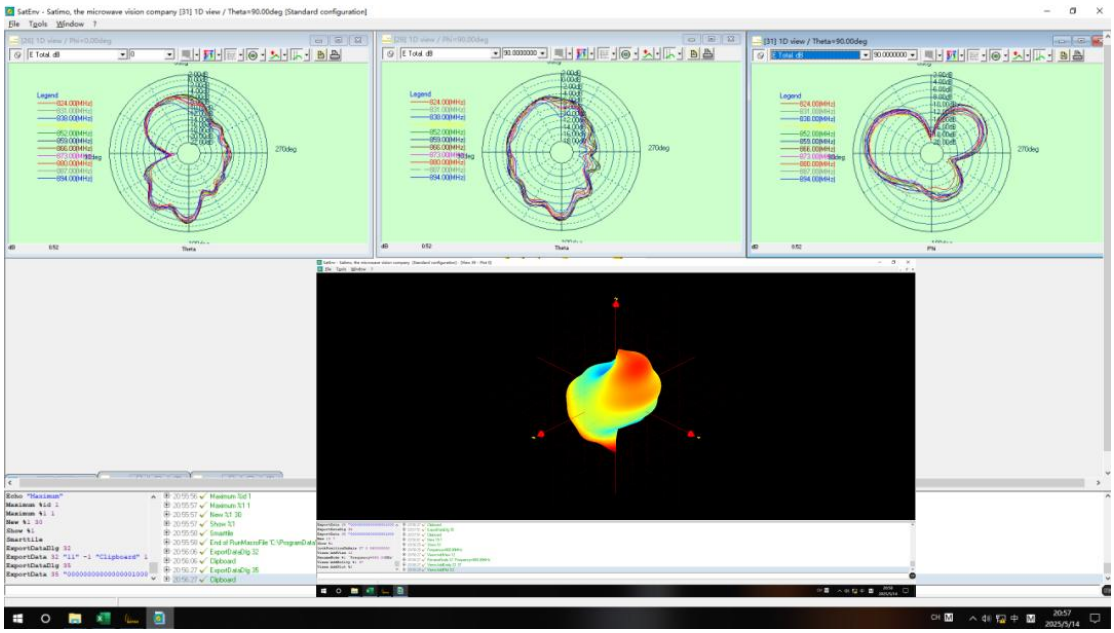
N20	824-894	15.94	-1.77
N26	824-894	15.94	-1.77
N28	708-798	16.04	-3.18
N38	2500-2690	32.41	2.33
N40	2300-2400	37.24	1.78
N41	2500-2690	32.41	2.33
N66	1710-2170	28.76	0.77
N77	3300-4200	24.15	-0.72
N78	3300-3800	30.29	0.82
2.4G-WIFI	2400-2500	32.09	0.99
5.8G-WIFI	5100-5800	46.24	1.62
BT	2400-2500	32.09	0.99
GPS	1570-1580	32.75	-0.55

Passive pattern

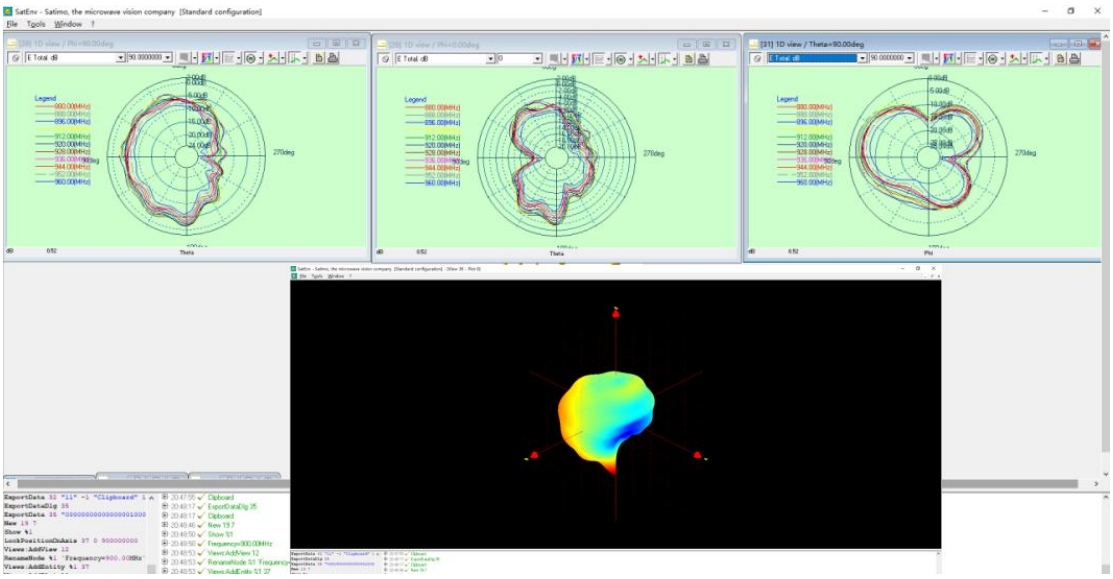
698-800MHz



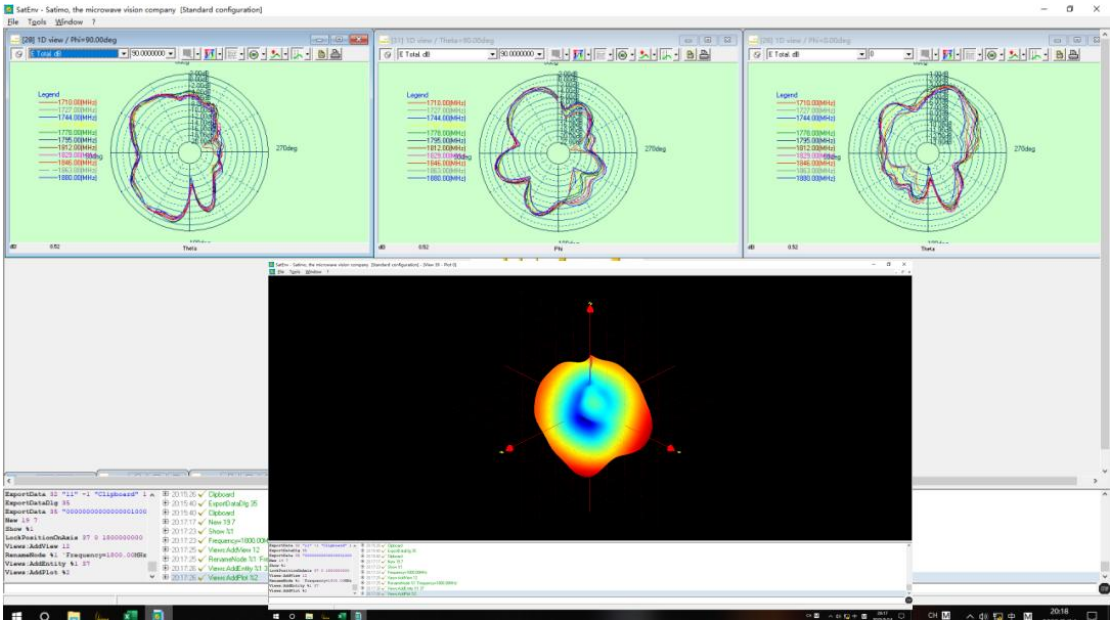
824-894MHz



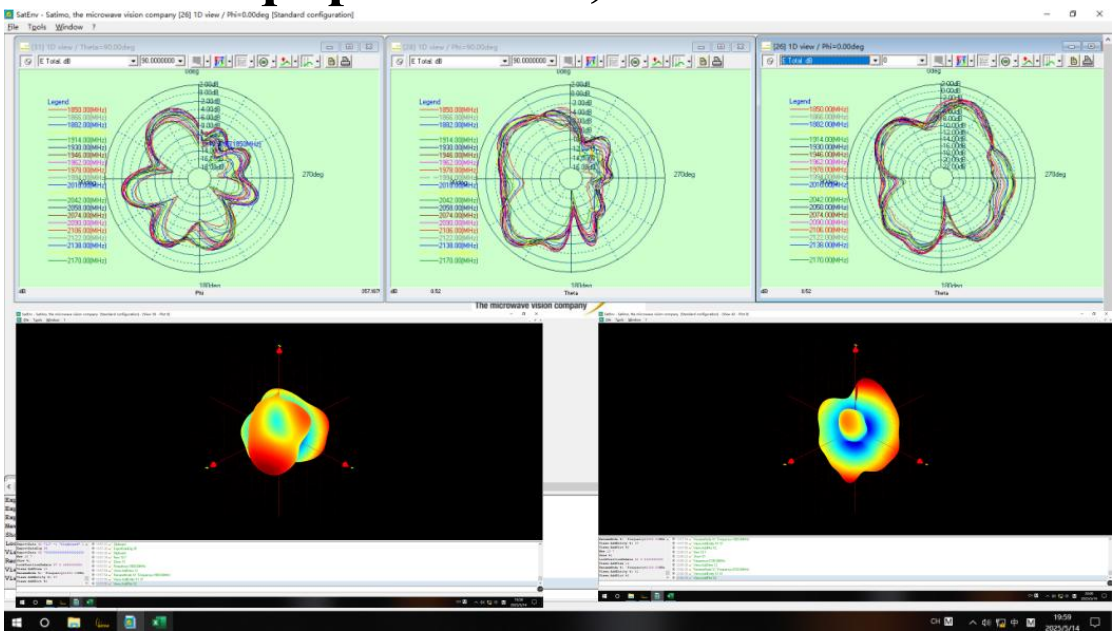
880-960MHz



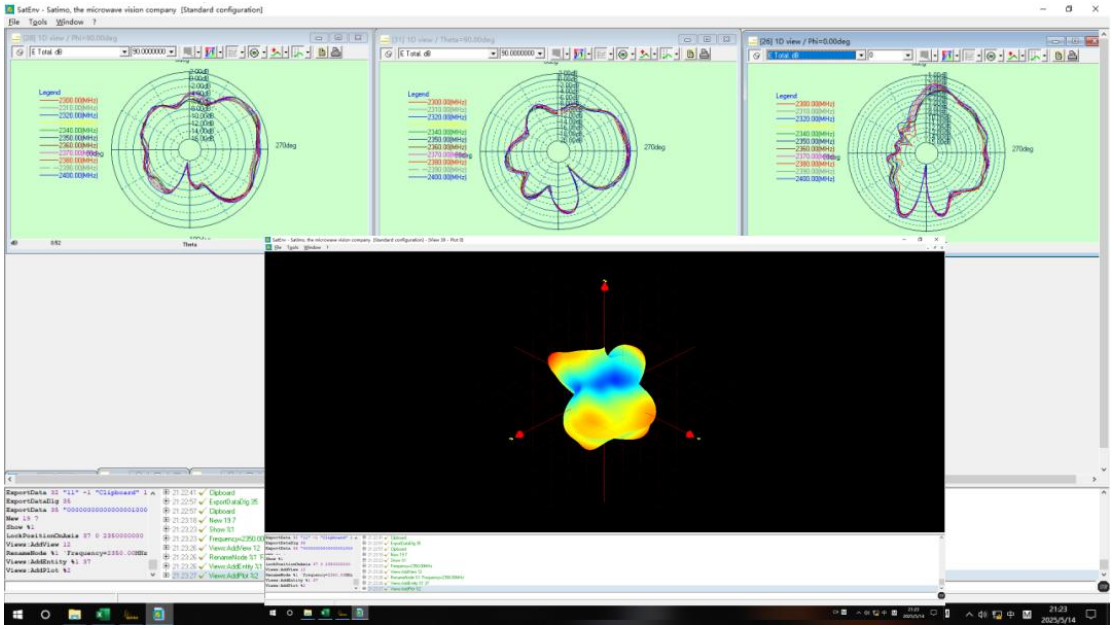
1710-1880MHz



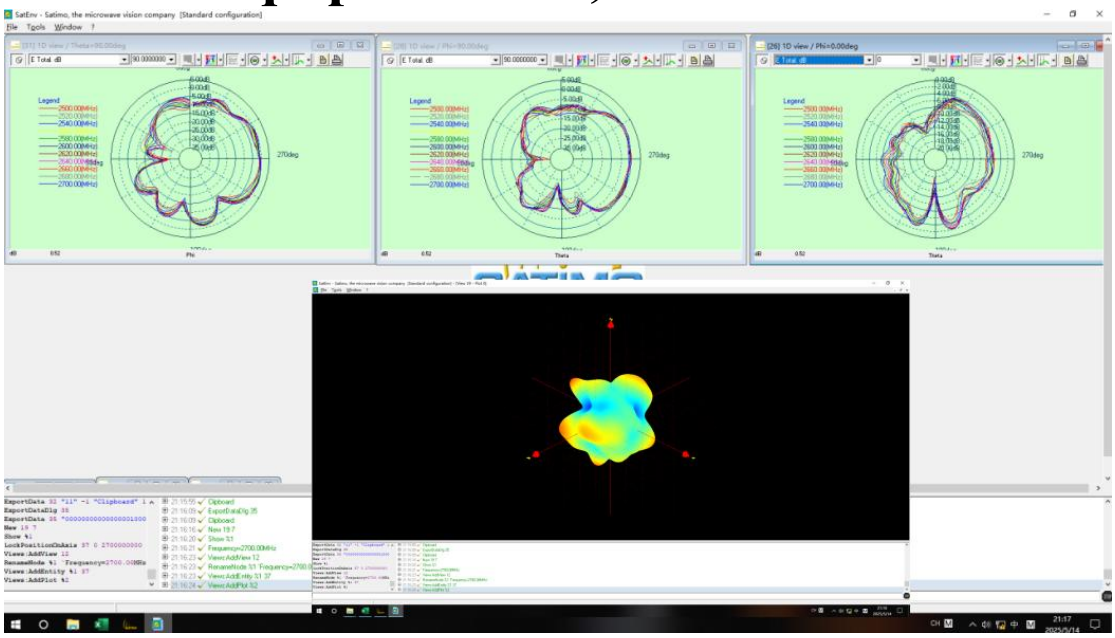
1850-2170MHz



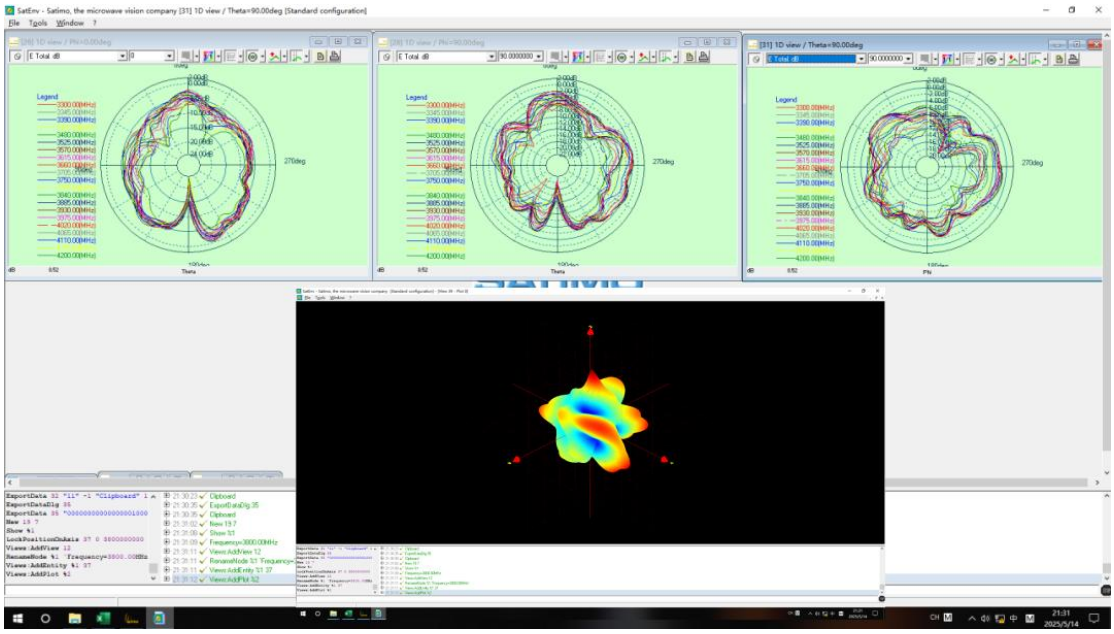
2300-2400MHz



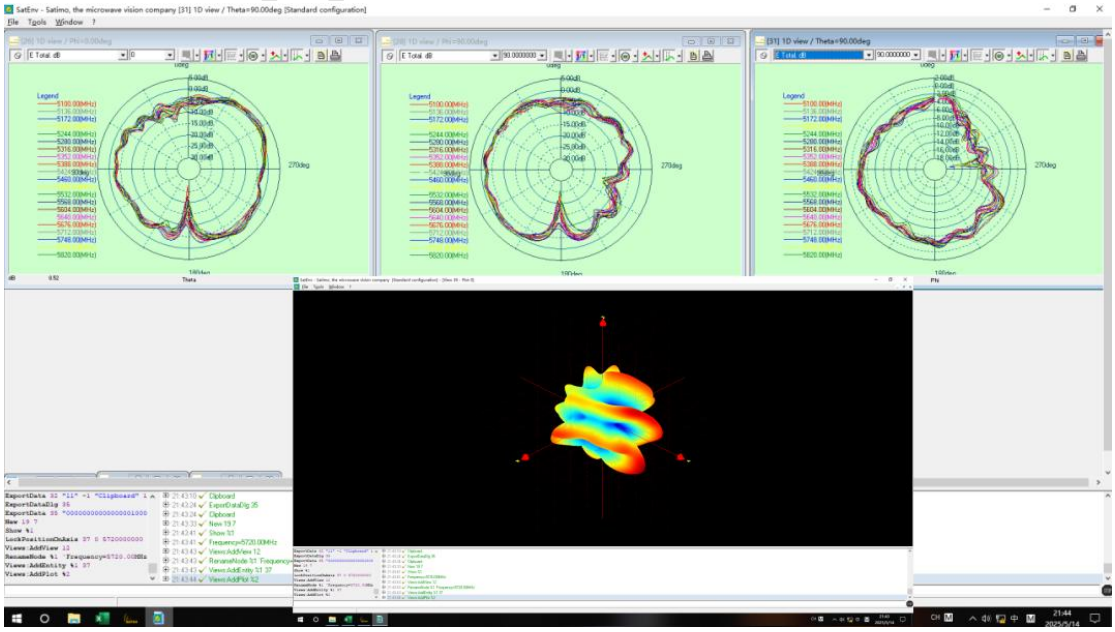
2500-2700MHz



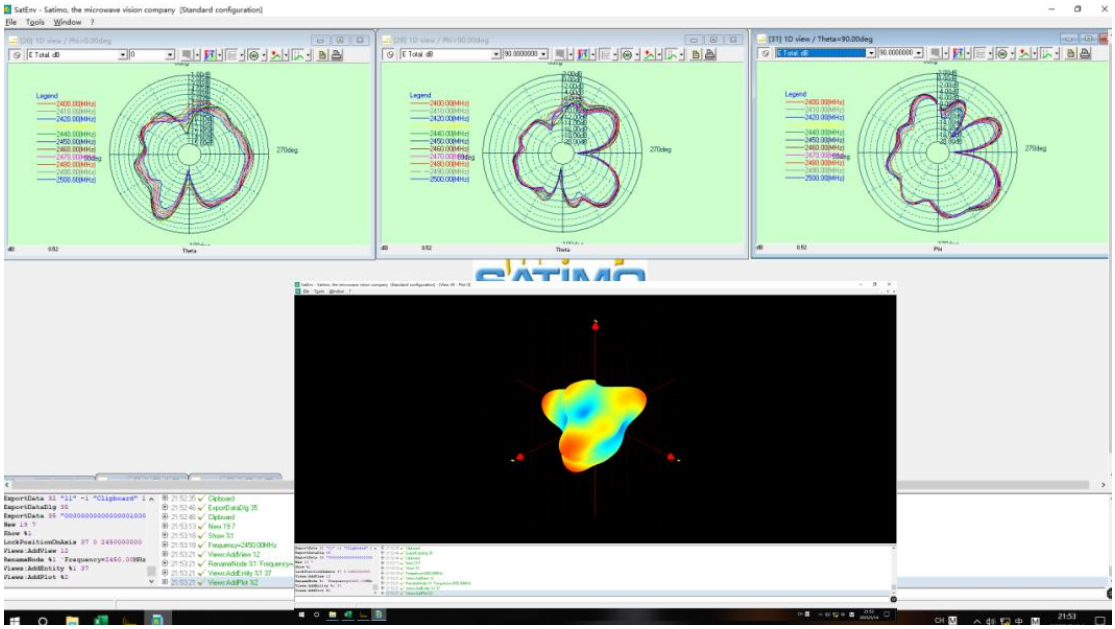
3300-4200MHz



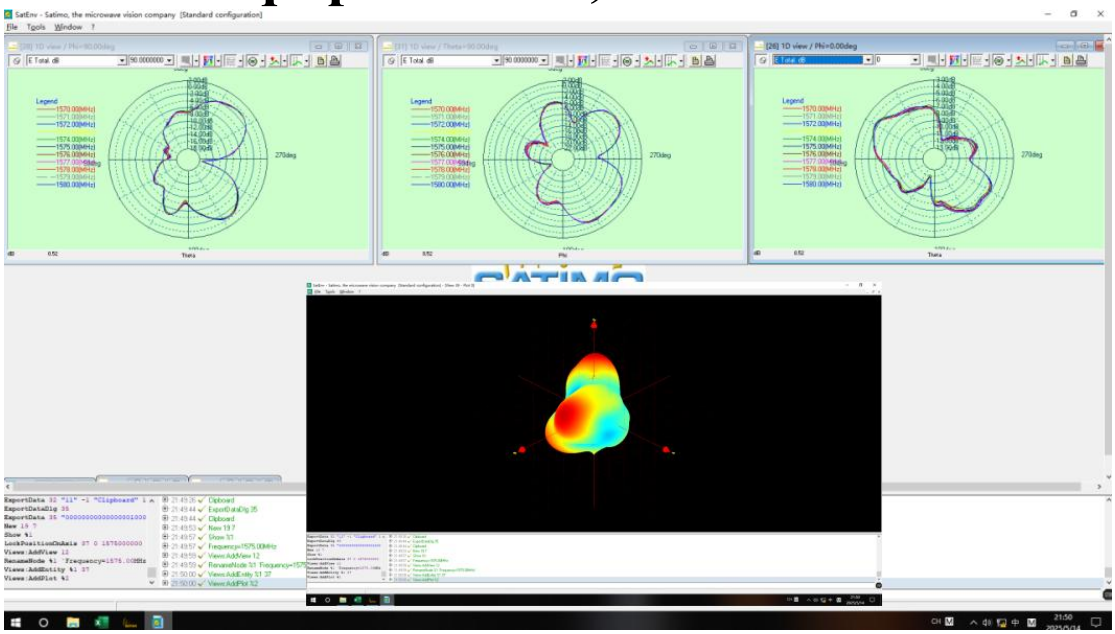
WIFI-5.8G



WIFI-2.4G/BT



GPS-1575MHz

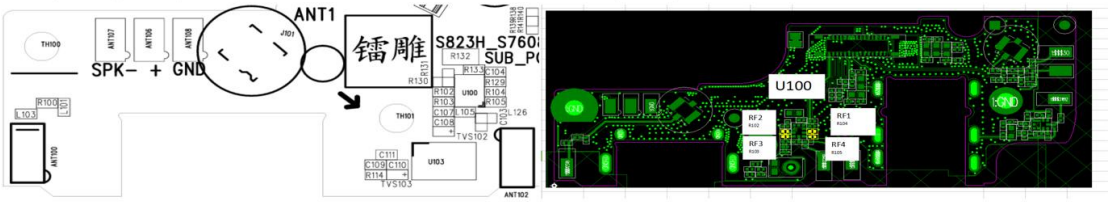


4. Matching circuit description

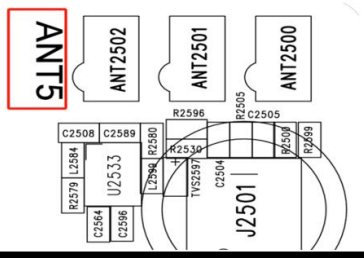
ANT1天线匹配电路有更改。
主路L103-8.2nH。
R104-3.9nH，R102-0欧，R103-18nH，R105-5.6nH

开关逻辑

U100	RF1	3/4/5G:B5；4G:B19；4/5G:B20,B26
	RF2	2/3/4/5G:B8；2G:B5RX
	RF3	4G:B12,17；4/5G:28AB
	RF4	2G:B5TX

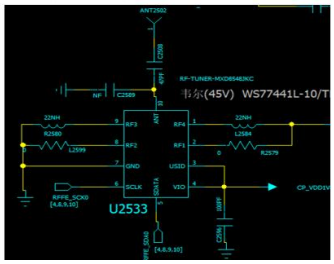


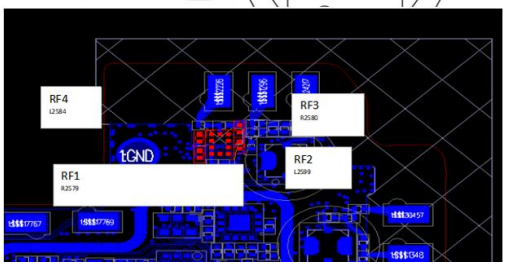
ANT5天线匹配电路有更改。
C2504-0.75pF，C2505-6.8nH。
R2579-0欧，L2599-NC，R2580-18nH，L2584-1.0pF.



开关逻辑

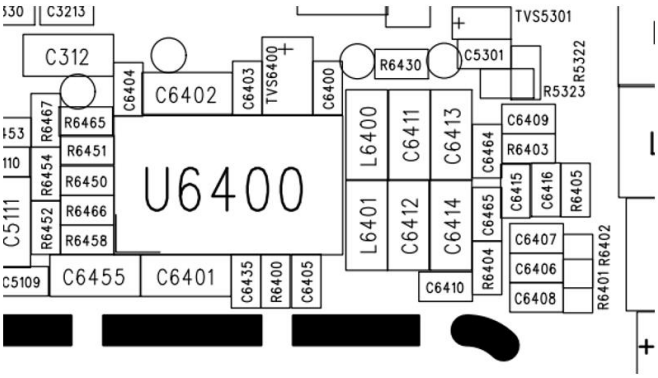
U2533	RF1	2/3/4/5G:B2；2/4/5G:B3,3/4/5G:B1；4/5G:66;4G；B4
	RF2	4G:B12,17；4/5G:28AB
	RF3	2/3/4/5G:B5,8；4G:B19；4/5G:B20,B26
	RF4	4/5G:B40
隔离态，达到断路	RF5	4/5G:B7,B38,B41





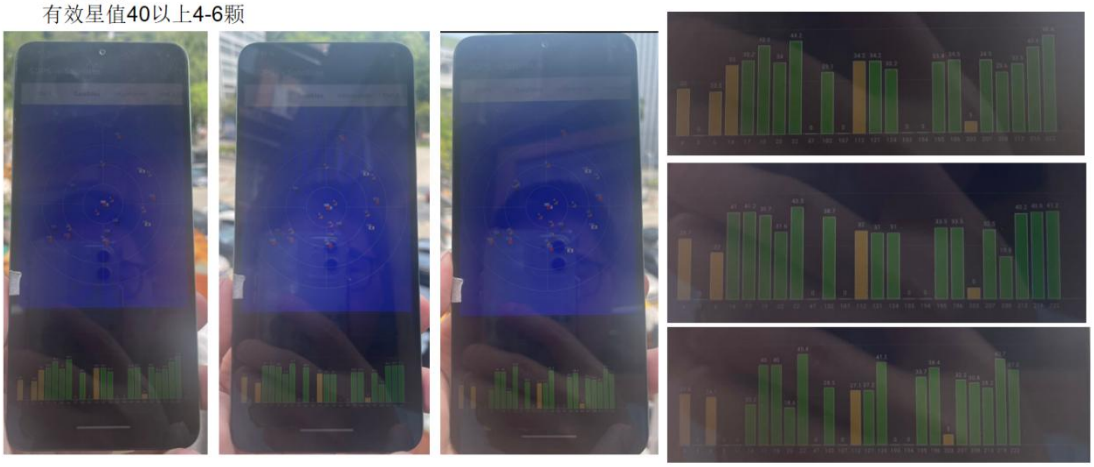
NFC匹配电路

元件 Element	更改前	更改后
C6413(0402):	82pF	68pF
C6414(0402):	82pF	68pF
C6415(0201):	82pF	39pF
C6416(0201):	15pF	NC



5. GPS NFC Test Report

GPS实测
有效星值40以上4-6颗



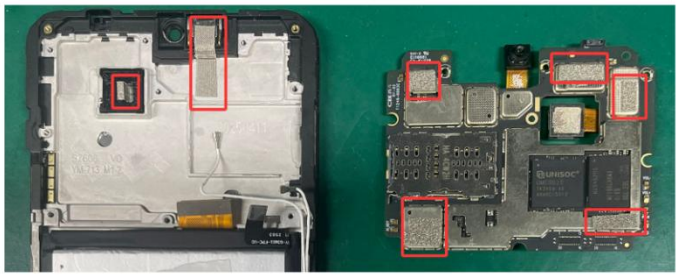
NFC通讯距离

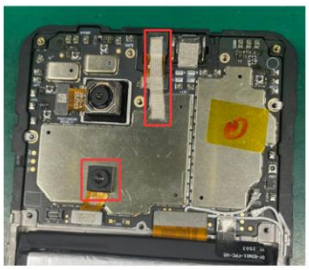
	距离
Type1	4.5cm
Type2	4.0cm
Type3	3.5cm
Type4	2.0cm
Type5	5.0cm

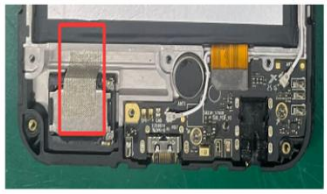
测试距离用的垫片

6. Environmental treatment

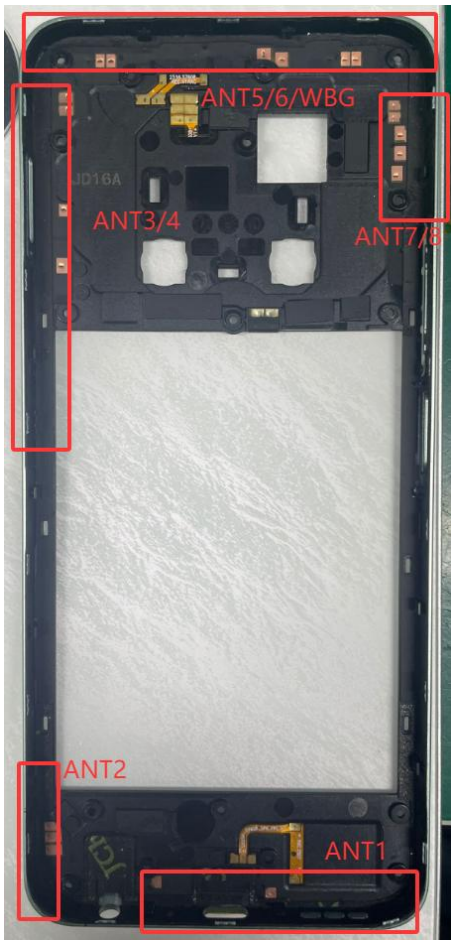
备注：红框示意前后摄像头、听筒、喇叭、马达预留接地。
主板贴导电海绵与中框接地。



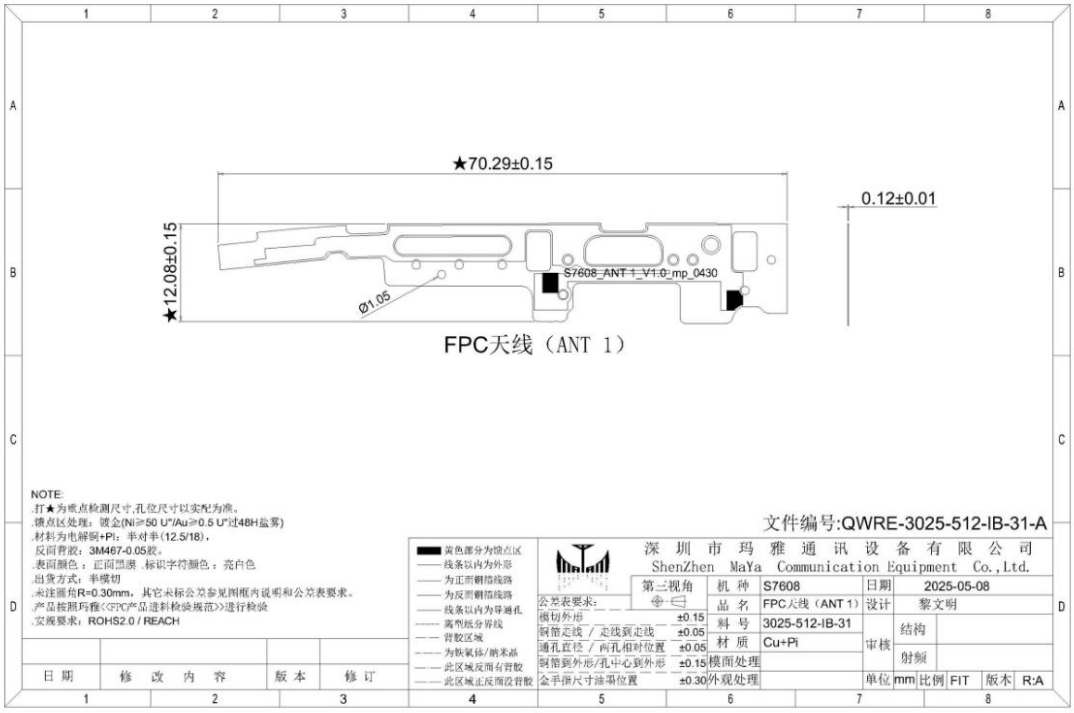


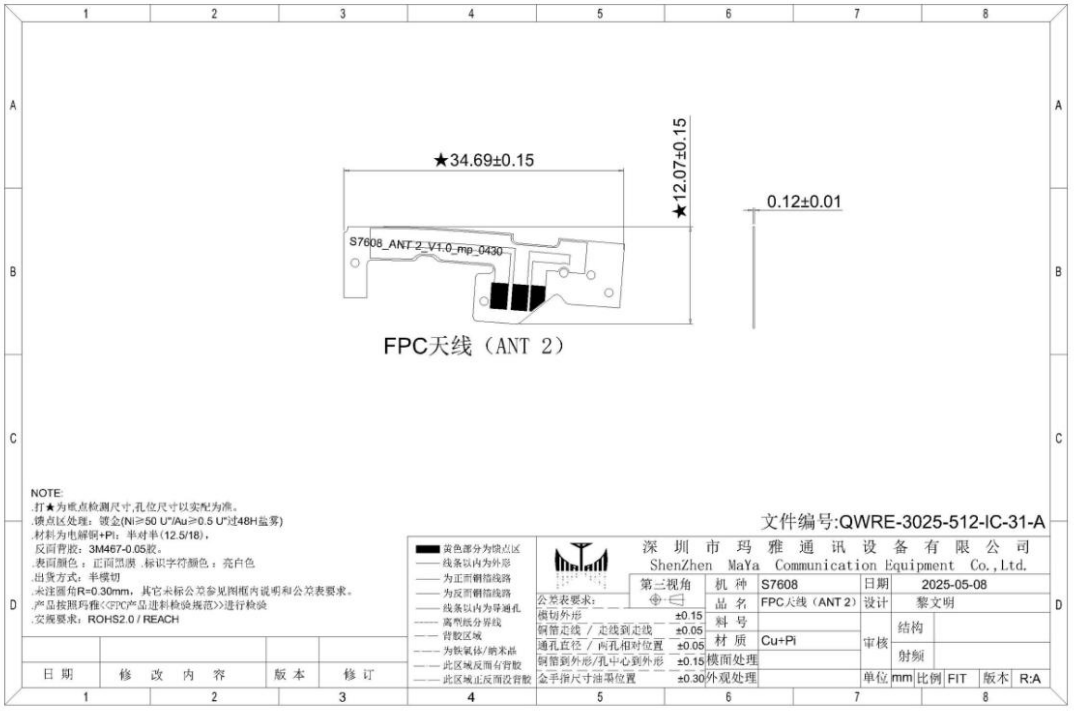


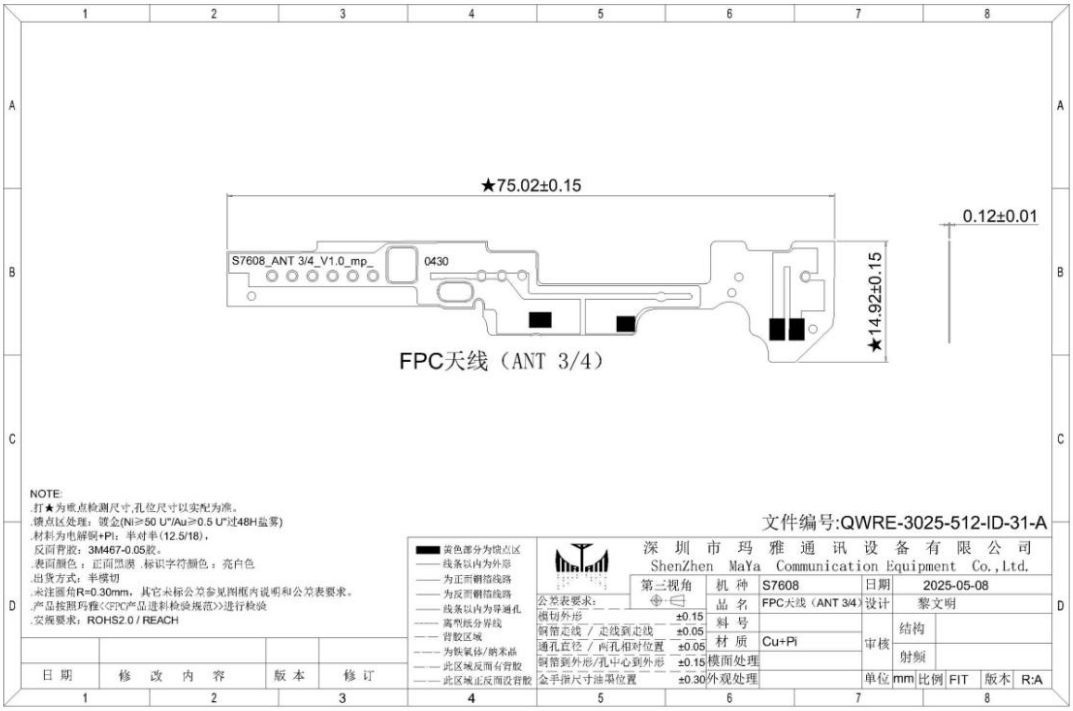
Antenna location

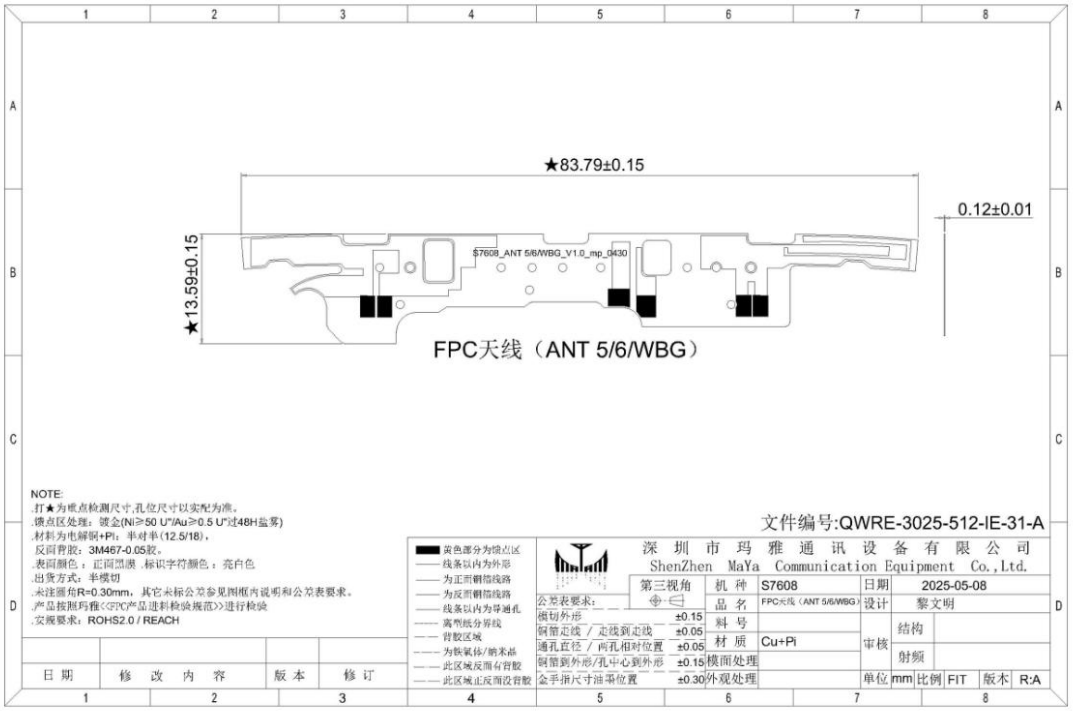


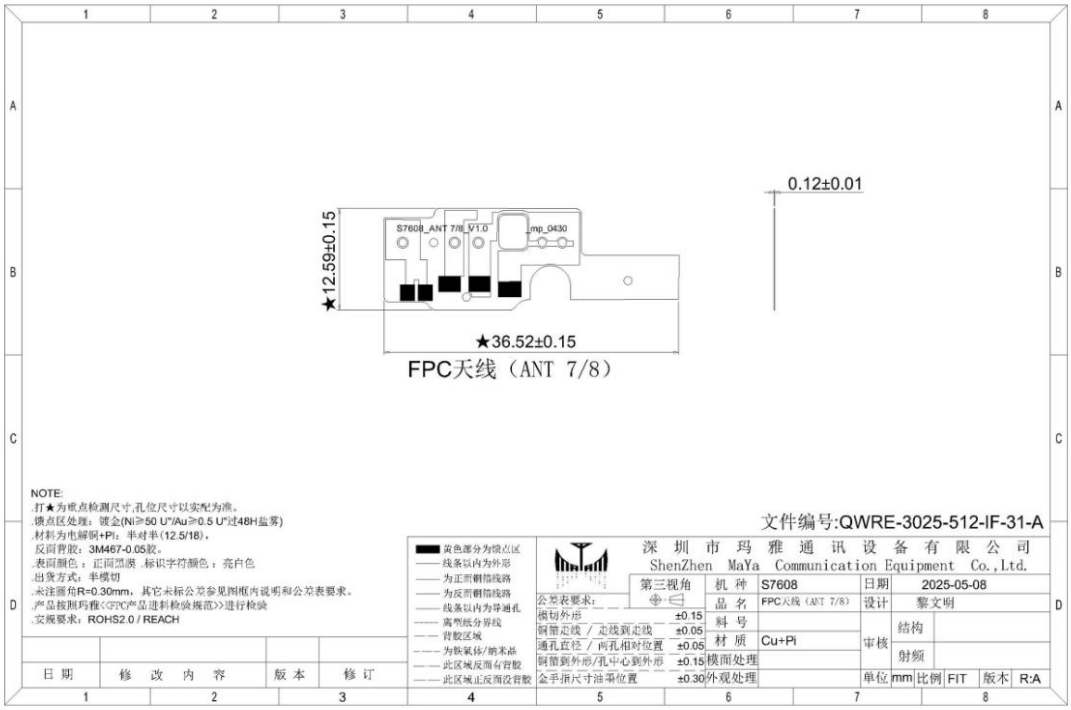
7. Structural drawings






★75.02±0.15
0.12±0.01
S7608_ANT 3/4_V1.0_mp_
0430
★14.92±0.15
FPC天线（ANT 3/4）
NOTE:
.打★为重点检测尺寸,孔位尺寸以实配为准。
.镀点区处理：镀金(Ni≥50 U"/Au≥0.5 U"过48H盐雾)
.材料为电解铜+PI，半对半(12.5/18)，
反面背胶：3M467-0.05胶。
.表面颜色：正面黑漆 .标识字符颜色：亮白色
.出货方式：半模切
.未注圆角R=0.30mm，其它未标公差参见图框内说明和公差表要求。
.产品按照玛雅《FPC产品进料检验规范》进行检验
.安规要求：ROHS2.0 / REACH
文件编号:QWRE-3025-512-ID-31-A
黄色部分为镀点区
线条以内为外形
为正面铜箔线路
为反面铜箔线路
线条以内为导通孔
离型纸分界线
背胶区域
为铁氧体/纳米晶
此区域反面有背胶
此区域正反面没背胶
深圳市玛雅通讯设备有限公司
ShenZhen MaYa Communication Equipment Co.,Ltd.
第三视角
机种 S7608
日期 2025-05-08
品名 FPC天线（ANT 3/4）
设计 黎文明
公差表要求：
模切外形 ±0.15
铜箔走线 / 走线到走线 ±0.05
通孔直径 / 两孔相对位置 ±0.05
铜箔到外形/孔中心到外形 ±0.15
金手指尺寸油墨位置 ±0.30
料号
材质 Cu+Pi
模面处理
外观处理
审核
结构
射频
单位 mm 比例 FIT 版本 R:A
日期 修改内容 版本 修订


★83.79±0.15
0.12±0.01
★13.59±0.15
S7608_ANT 5/6/WBG_V1.0_mp_0430
FPC天线（ANT 5/6/WBG）
NOTE:
.打★为重点检测尺寸,孔位尺寸以实配为准。
.镀点区处理：镀金(Ni≥50 U"/Au≥0.5 U"过48H盐雾)
.材料为电解铜+PI，半对半(12.5/18)，
反面背胶：3M467-0.05胶。
.表面颜色：正面黑漆 .标识字符颜色：亮白色
.出货方式：半模切
.未注圆角R=0.30mm，其它未标公差参见图框内说明和公差表要求。
.产品按照玛雅《FPC产品进料检验规范》进行检验
.安规要求：ROHS2.0 / REACH
文件编号:QWRE-3025-512-IE-31-A
黄色部分为镀点区
线条以内为外形
为正面铜箔线路
为反面铜箔线路
线条以内为导通孔
离型纸分界线
背胶区域
为铁氧体/纳米晶
此区域反面有背胶
此区域正反面没背胶
深圳市玛雅通讯设备有限公司
ShenZhen MaYa Communication Equipment Co.,Ltd.
第三视角
机种 S7608
日期 2025-05-08
品名 FPC天线（ANT 5/6/WBG）
设计 黎文明
公差表要求：
模切外形 ±0.15
铜箔走线 / 走线到走线 ±0.05
通孔直径 / 两孔相对位置 ±0.05
铜箔到外形/孔中心到外形 ±0.15
金手指尺寸油墨位置 ±0.30
料号
材质 Cu+Pi
模面处理
外观处理
审核
结构
射频
单位 mm 比例 FIT 版本 R:A
日期 修改内容 版本 修订


0.12±0.01
★12.59±0.15
S7608_ANT 7/8_V1.0
mp_0430
★36.52±0.15
FPC天线（ANT 7/8）
NOTE:
.打★为重点检测尺寸,孔位尺寸以实配为准。
.镀点区处理：镀金(Ni≥50 U"/Au≥0.5 U"过48H盐雾)
.材料为电解铜+Pi，半对半(12.5/18)，
.反面背胶：3M467-0.05胶。
.表面颜色：正面黑胶 .标识字符颜色：亮白色
.出货方式：手模切
.未注圆角R=0.30mm，其它未标公差参见图框内说明和公差表要求。
.产品按照玛雅《FPC产品进料检验规范》进行检验
.交板要求：ROHS2.0 / REACH
文件编号:QWRE-3025-512-IF-31-A
黄色部分为镀点区
线条以内为外形
为正面铜箔线路
为反面铜箔线路
线条以内为导通孔
离型纸分界线
背胶区域
为铁氧体/纳米晶
此区域反面有背胶
此区域正反面没背胶
深圳市玛雅通讯设备有限公司
ShenZhen MaYa Communication Equipment Co.,Ltd.
第三视角
公差表要求：
模切外形 ±0.15
铜箔走线 / 走线到走线 ±0.05
通孔直径 / 两孔相对位置 ±0.05
铜箔到外形/孔中心到外形 ±0.15
全手插尺寸油墨位置 ±0.30
机种 S7608
品名 FPC天线（ANT 7/8）
料号
材质 Cu+Pi
模面处理
外观处理
日期 2025-05-08
设计 黎文明
审核
结构
射频
单位 mm 比例 FIT 版本 R:A
日期 修改内容 版本 修订

PTRX RX0为主发

HB PTRX
LB+MB(1800,1900,3G RXMIMO)
GSM/WCDMA/LTE/NR 8(RX1)
GSM/WCDMA/LTE/NR 5(RX1)
LTE 12(RX1)
LTE 17(RX1)
LTE 19(RX1)
LTE/NR 20(RX1)
LTE/NR 26(RX1)
LTE/NR 28(RX1)

WCDMA 1(RX1)
GSM/WCDMA 2 (RX1)
GSM 3(RX1)
LTE/NR B1(RX2)
LTE/NR B3(RX2)
LTE B4(RX2)
LTE/NR B66(RX2)

LTE/NR B7(RX0)
LTE/NR B38(RX0)
LTE/NR B40(RX0)
LTE/NR B41(RX0)

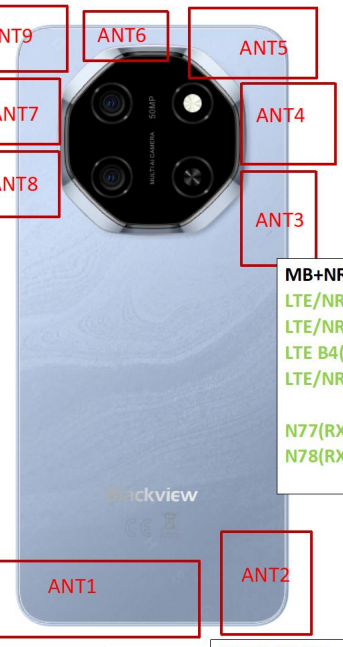
WIFI5G+NR
n77 (RX2)
n78 (RX2)

GPSL1+WIFI2.4

NR
n77 (RX3)
n78 (RX3)

MB+HB
LTE/NR B1(RX3)
LTE/NR B3(RX3)
LTE B4(RX3)
LTE/NR B66(RX3)

LTE/NR B7(RX1)
LTE/NR B38(RX1)
LTE/NR B40(RX1)
LTE/NR B41(RX1)



HB+NR PTRX
n77 (RX0)
n78 (RX0)
LTE/NR B7(RX2)
LTE/NR B38(RX3)
LTE/NR B40(RX3)
LTE/NR B41(RX3)

MB+NR
LTE/NR B1(RX1)
LTE/NR B3(RX1)
LTE B4(RX1)
LTE/NR B66(RX1)

N77(RX1)
N78(RX1)

LB PTRX
GSM/WCDMA/LTE/NR 8(RX0)
GSM/WCDMA/LTE/NR 5(RX0)
LTE 12(RX0)
LTE 17(RX0)
LTE 19(RX0)
LTE/NR 20(RX0)
LTE/NR 26(RX0)
LTE/NR 28(RX0)

MB PTRX+HB
WCDMA/LTE/NR 1(RX0)
GSM/WCDMA/LTE/NR 2(RX0)
GSM/LTE/NR 3(RX0)
LTE 4(RX0)
LTE/NR 66(RX0)

LTE 7(RX3)
LTE/NR 38(RX2)
LTE/NR 40(RX2)
LTE/NR 41(RX2)