Shenzhen XingmanSmartTechnologyCo.,Ltd.

Sample acknowledgment

Parts Approval Sheet

Supplier:	**NQI**	**Parts Name:**	**FPC Antenna**
Type/Spec:	**G10**	**Parts NO:**	**NQI-G10-BT-FB-V13**
Brand:	**NQI**	**Quantity:**	**ET.GZX10NQIA3**
Send out Date:	**2023/06/29**	**Document No:**	**NQI-RD-SPEC-20230629**
Approve Date:		**Version:**	**V13**

Supplier		Customer	
Approved By	**Prepared By**	**Engineering Dept**	**Quality Dept**

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Tel: +86-0755-28500656
Fax: +86-0755-28700656

Recognition book CV (Resume)

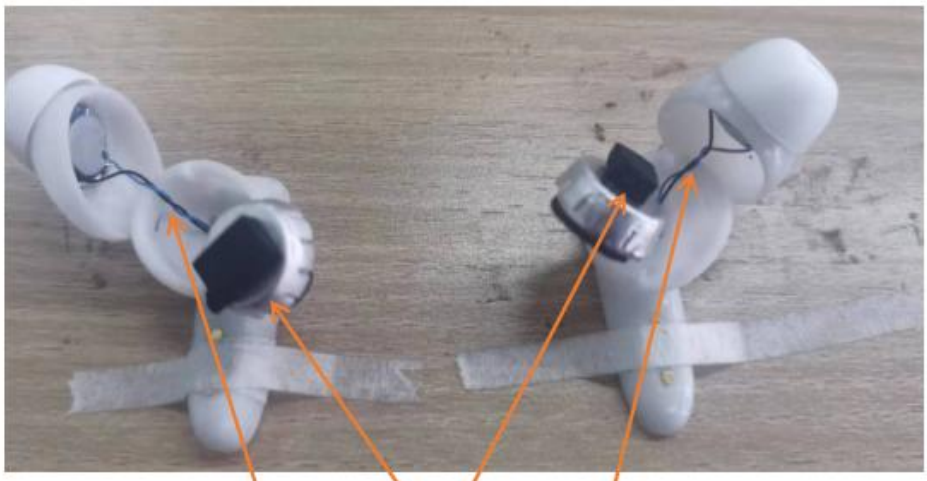
(Date)	(Versins)	(Reasons for change)	(Content of change)	(Note)
2023.06.29	V13			First edition

Contents

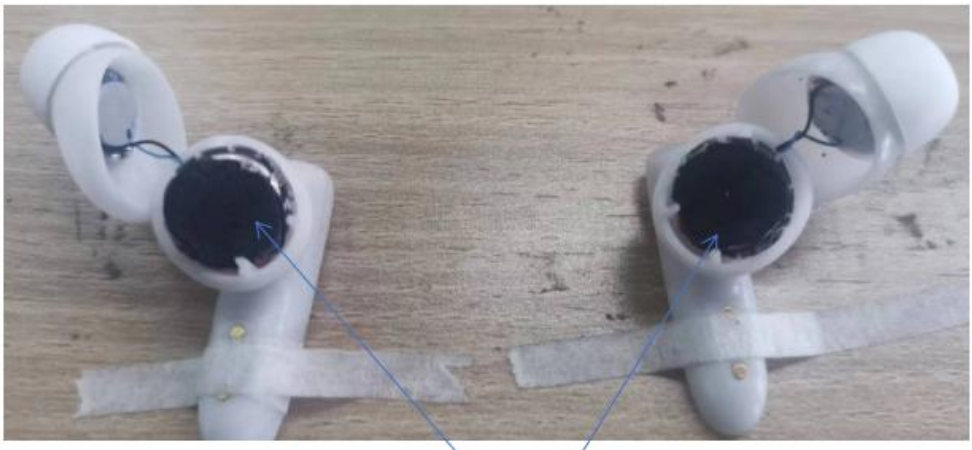
A. Samples and instructions

（Electrical Specifications）	
frequency range （Frequency range）	（2400-2500)MHz
characteristic impedance （impedance）	50 ohm
voltage standing-wave ratio （VSWR）	≤3
Peak gain（Gain）	0.16dBi
Polarized form（Polarization）	level
radiation direction （Radiation direction）	omnidirectional
Connection Mode Description	
connector（ connector）	/
Cable specifications （Cable specifications）	/
Working/Storage temperature	
working temperature （Working temperature）	-30℃～65℃
storage temperature （Storage temperature）	-30℃～75℃

Assembly



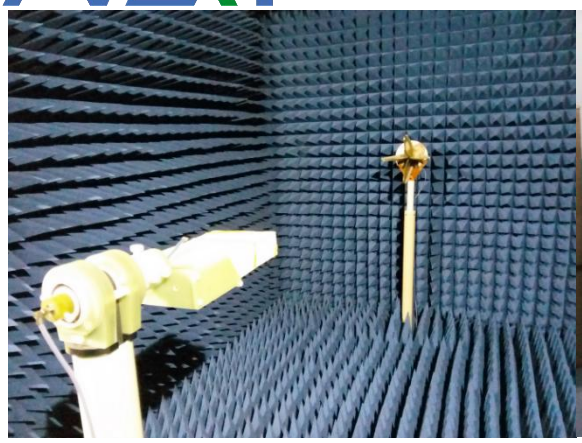
This side is close to the motherboard surface, and the total length of the left and right batteries and speaker wires is 35mm

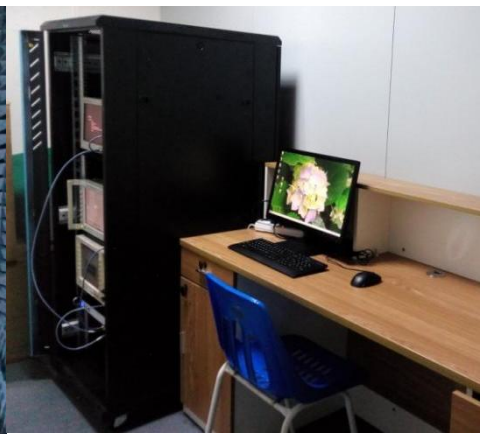


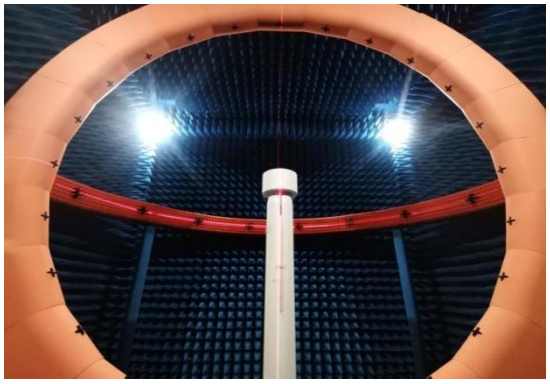
The battery and speaker cable are twisted 5 turns each. After the battery is installed, as shown in the figure, the battery ear is facing the speaker, and the battery outlet is facing away from the speaker cable

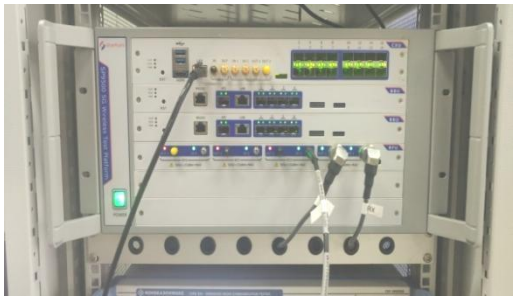
B. Test the equipment and the items：

（Class）	（Test item）	（Equipment）
1. S parameter	1. return loss (RL) 2. standing-wave ratio （VSWR） 3.The original Smith（Smith chart）	Net points（VNA）: Agilent E5071B R&S ZVB8 Protek A333
2. Coupling test （ Coupling testing）	1. transmitting power （MAX Power） 2. receiving sensitivity （MIN Sens）	1.2G/3G Tester： Agilent 8960 2.The coupling box：TESCOM TC-5060A 3. 3D Chamber：ETS 3D Chamber（5x3x3 ）
3. 3D passive test （ Passive Test）	1.efficiency（Effeciency） 2. gain（Gain） 3.radiation pattern （Radiation pattern）	1. 3D Chamber：TEM24 3D Chamber（5x5x5） ETS 3D Chamber（5x3x3） 2. 网分（VNA）：Agilent E5071B R&S ZVB8
4.3D Active Test （Active Test）	1. 3D power（TRP） 2.3D sensitivity（TIS） 3.throughput rate （Throughput rate）	1. 3D Chamber：TEM24 3D Chamber（5x5x5） ETS 3D Chamber（5x3x3） 2.2G/3G Tester: Agilent 8960 3.4G Tester：MT8820C/CMW500 4.WIFI/BT/NB-iot Tester：CMW500 5. 5G Tester：SP9500-CTS 6.Head：HEAD-P10（FACE-P10）

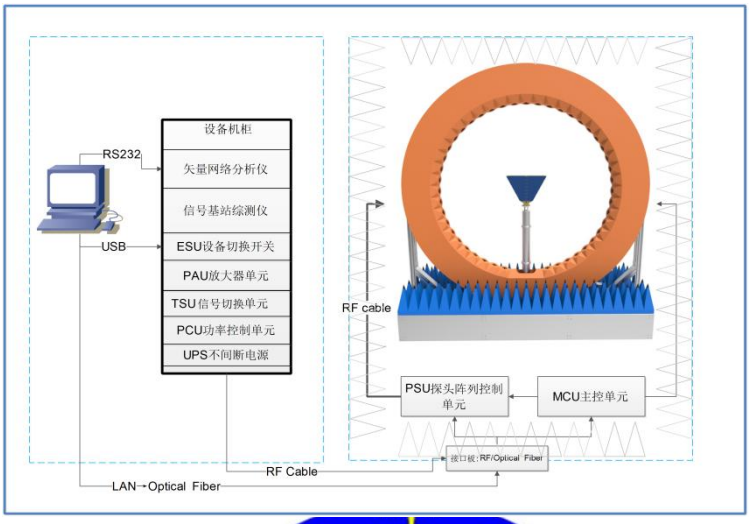


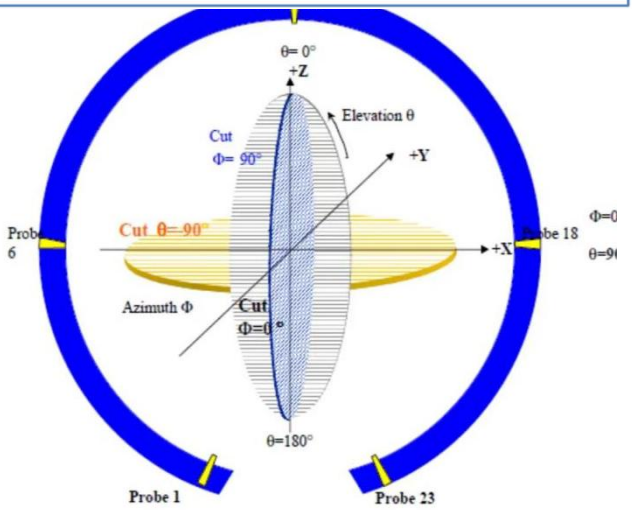




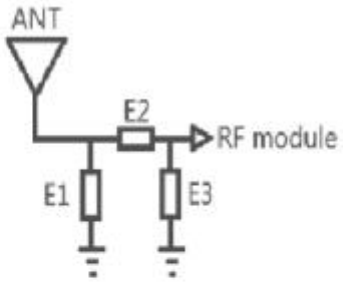


C. Dark room connection and coordinates（Chamber connection and coordinates ）：





D. Antenna matching network（Antenna matching network）：

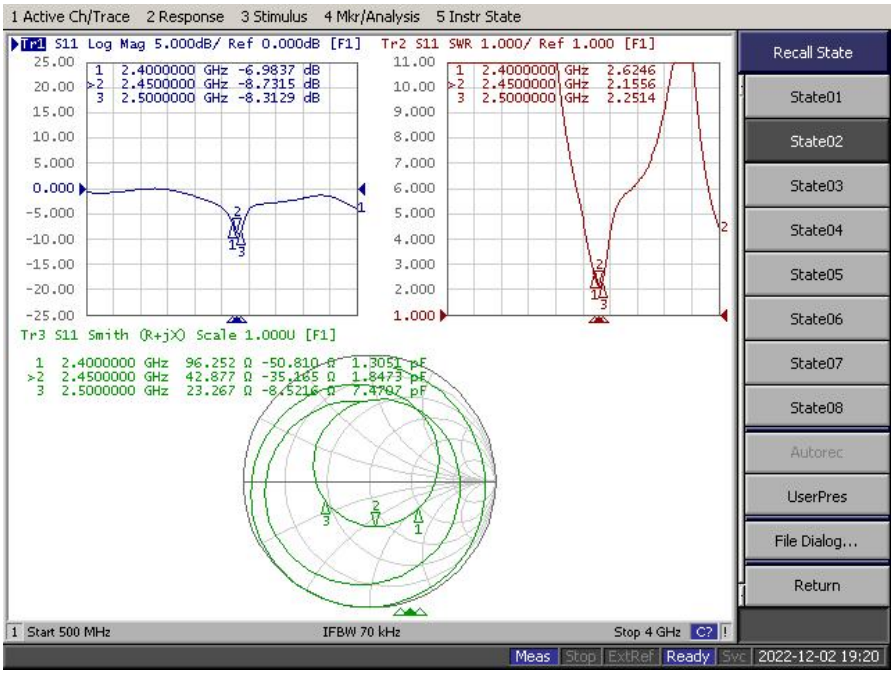


Element	L（Value）	R（Value）
E1(0201)	NF	NF
E2(0201)	0Ω	0Ω
E3(0201)	NF	NF

E. Electrical performance test data of the antenna：

5.1. Antenna passive parameter

5.1.1.Antenna echo loss / standing wave ratio / Smith circle plot（RL/VSWR/Smith Chant）



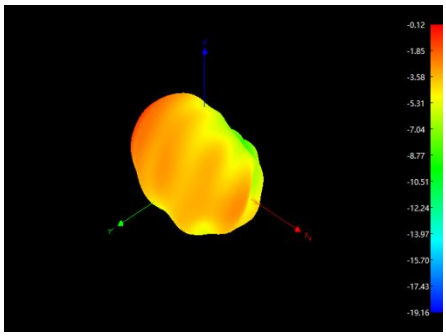
5.1.2. Antenna efficiency / gain (Effeciency/Gain)

Frequency MHz	Efficiency dB	Efficiency %	Gain dB
2400	-6.64	21.68	-0.12
2410	-6.63	21.73	-0.23
2420	-6.35	23.17	0.16
2430	-6.67	21.53	-0.55
2440	-6.44	22.7	-0.41
2450	-6.55	22.13	-0.71
2460	-6.89	20.46	-0.92
2470	-6.92	20.32	-0.83
2480	-6.98	20.04	-0.83
平均值	-6.67	21.52	-0.49

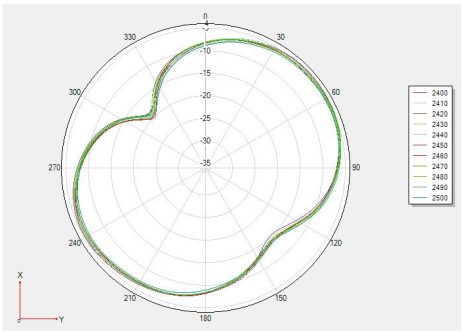
5.1.3 Free-space radiation direction map and apple field strength map

2400MHz

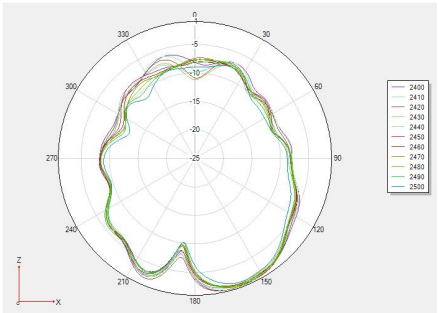
3D radiation direction



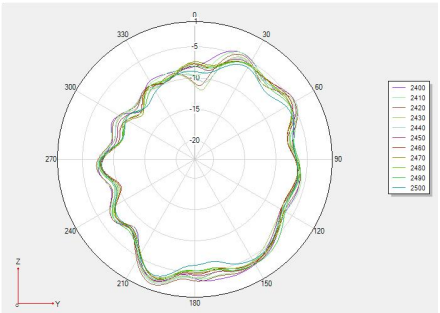
H-face (XY plane)



E1 face (XZ plane)



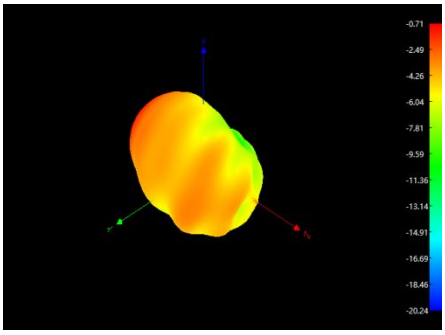
E2 face (YZ plane)

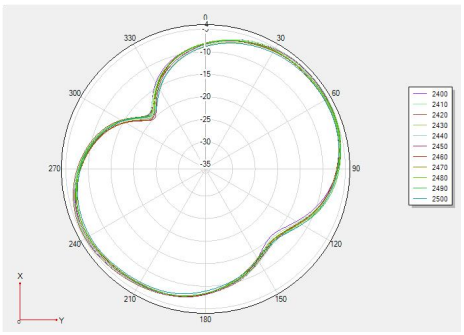


2450MHz

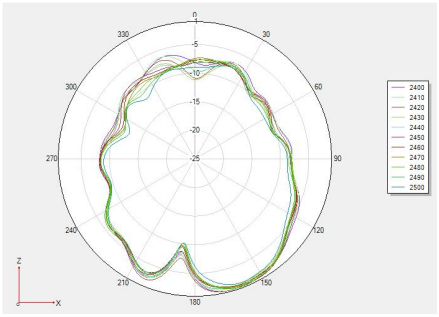
3D radiation direction

H plane (XY plane)

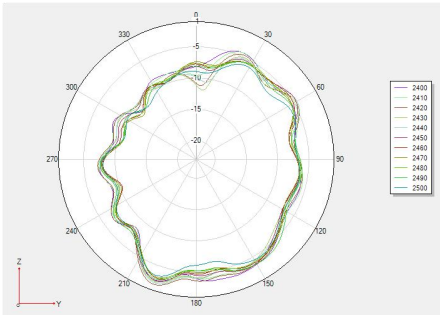




H plane (XY plane)

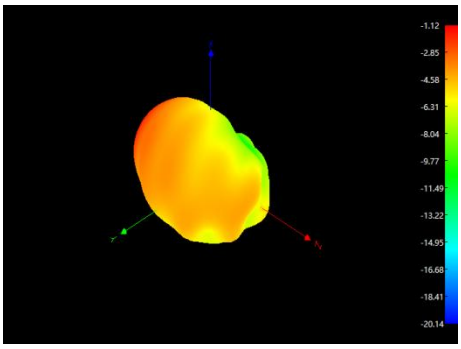


E2 face (YZ plane)

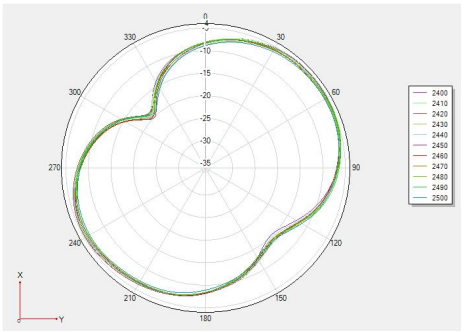


2500MHz

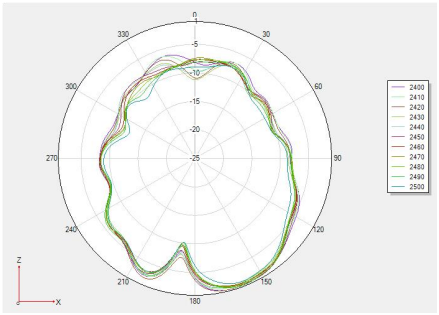
3D radiation direction



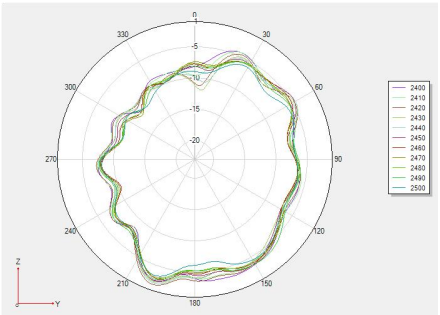
H-face (XY plane)



E1 face (XZ plane)



E2 face (YZ plane)



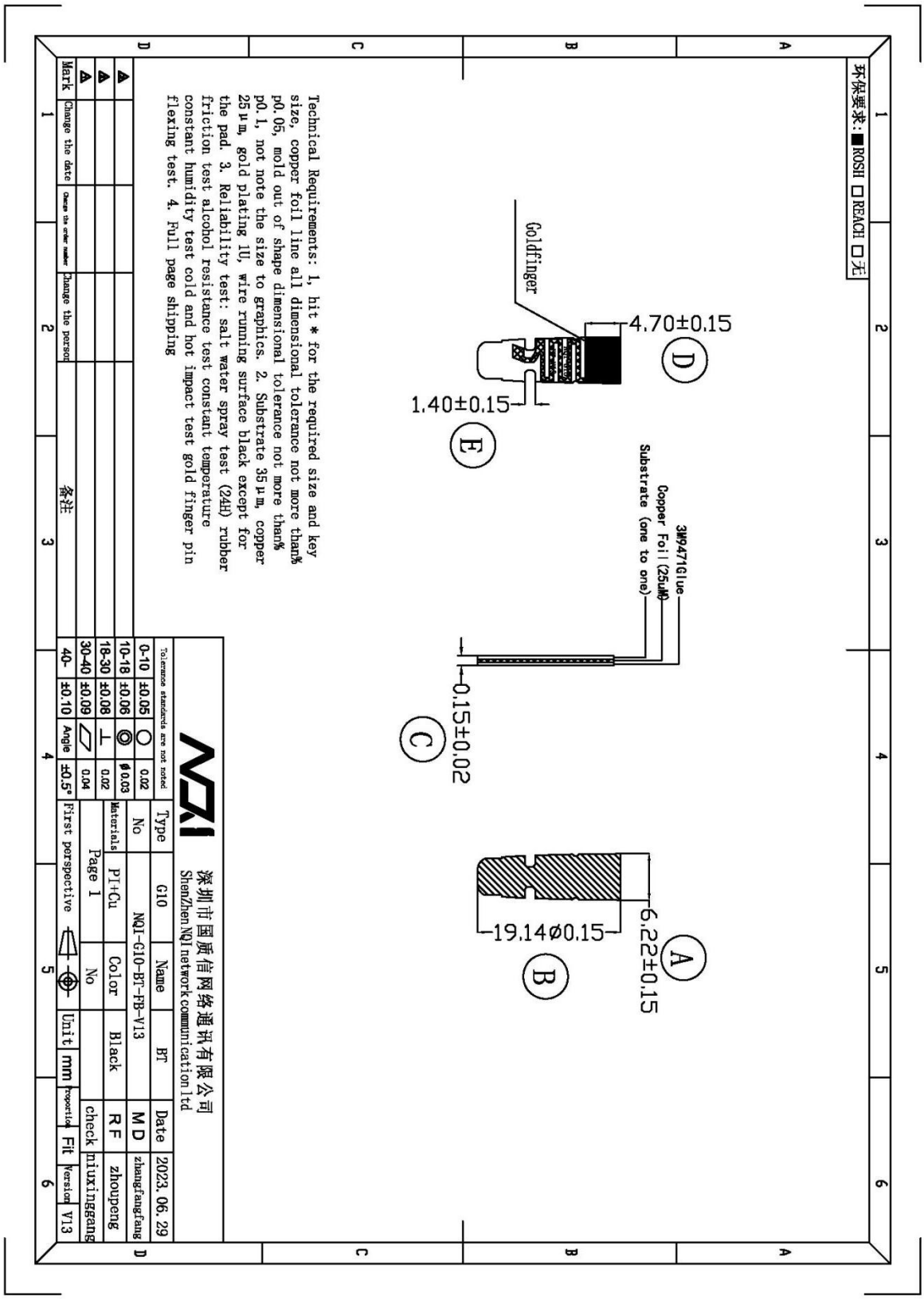
5.2Antenna active parameters

5.2.1 TRP/TIS

NQI ANT TRP&TIS parameter Summary of G10 L				
free space	Test	Bluetooth TRP		
	Result	0	39	78
	TRP(dBm)	-0.97	0.43	0.06
	TIS(dBm)	-77.21	-78.01	-78.54
Second generation head ear mold	Test	Bluetooth TRP		
	Result	0	39	78
	TRP(dBm)	-3.03	-2.97	-3.11
	TIS(dBm)	-75.52	-76.06	-76.11

NQI ANT TRP&TIS parameter Summary of G10 R				
free space	Test	Bluetooth TRP		
	Result	0	39	78
	TRP(dBm)	-0.61	1.21	-0.58
	TIS(dBm)	-76.89	-77.69	-77.45
Second generation head ear mold	Test	Bluetooth TRP		
	Result	0	39	78
	TRP(dBm)	-2.93	-2.58	-3.02
	TIS(dBm)	-75.31	-76.1	-76.05

F. Antenna structure drawing：

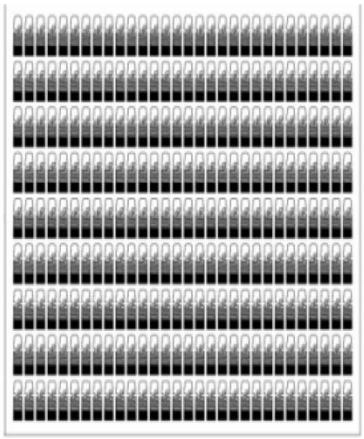


G. Antenna packaging drawings：

Packing instruction book

Stage name: PCS inspection package	Product number: G10	Effective time: 2023.06.29	Version: A
	Product name: BT	No: /	Page number: 1 page total 1 page

Typography



Materials:

NO	PART NUMER	PART NAME	QTY	VENDER	NOTE
1	/	/	/	/	/

Use tools and equipment:

Finger Gloves

Operation Steps:

1: Check the appearance of the product is flat, there is no dirt, scratches, copper leakage, poor printing and other undesirable phenomena.

2: Key dimension inspection (see engineering drawing)

3: The product is arranged in PE bag according to the rule; if it is found to be defective, remove the defective product;

4: Mass output goods to be packed, affixed to the outer box label; label location requirements consistent。

Points to note:

1: It is forbidden to have crease, fracture, copper leakage, poor gold plating and serious size problems during appearance detection;

2: The material number and quantity corresponding to each product shall be indicated确;

Made:	He Ping	check:	hejuan	Approved	Yang Xiaoyin

H. Key dimension inspection report:

Dimension inspection report									
customer)	Bo lu ke		Project			G10			
(material)	FPC		Environmental protection Non-environmentally friendly						
(Appearance Inspection Items)	☐ (Paint leakage) ☐ (Off line) ☐ (Short) ☐ (Scratch) ☐ (Dirt) ☐ (cracking)								
	(Number of bad): 0 Slight) (Serious) (Deadly) (Appearance judgment result): (ok) (NG)								
Functional or dimensional inspection records									
NO	(Serial number)	(Size tolerance)	(Reuslt) 1	2	3	4	5	(Equipment)	(determine)
FPC	FPC widemm	6.22±0.15	A	6.2	6.1	6.2	6.2	DN	OK
	FPCLongmm	19.14±0.15	B	19.1	19.1	19.1	19.2	DN	OK
	FPCThickmm	0.15±0.02	C	0.14	0.14	0.15	0.15	DN	OK
	Gold finger widthmm	4.7±0.15	D	4.7	4.7	4.7	4.7	DN	OK
	Gap widthmm	1.4±0.15	E	1.3	1.4	1.4	1.4	DN	OK
(ok)	(NG)		(Treatment of nonconforming products):						
			(rework) (For the temporary use)						
(Description of measuring instrument code): (Projector)-PP (Plug gauge)-PG Height gauge)-HG (Angle gauge)-AG (Vernier caliper)-N (Digital caliper)-DN (Outside micrometer)-M									

I. Environment and reliability test：

9.1.Salt spray test report

ShenZhen NQI network communication Itd

Salt spray test report

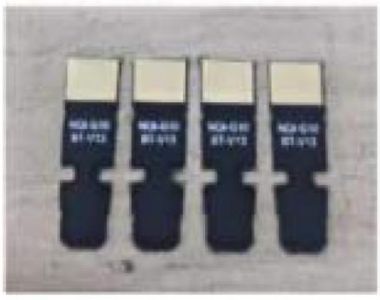
Product name	G10	Sample Q'ty	2PCS	Test date	2023/6/29
Customer	Bo lu ke	Part/No.	NQI-G10-BT-FB-V13	Product spec.	FPC
Test time	≤8H ≤12H ≤24H ≤48H ≤72H				
Test Item	Salt spray test				

Test Requirement

Condition items	Setting	Reference
Concentration of salt solution	5±1%	GB/T10125-1997
PH of salt solution	6.5-7.2	
Test room Temperature	35±2℃	
Salt solution barrel temperature	35±2℃	
Saturated air barreltemperature	47±1℃	
Test room relative humidity	85±2%RH	
Pressure of compressed air	1.00±0.01KG/CM²	
Sample place angle	15-30°	
Collected volume of salt spray	1.0-2.0ml(80cm²/H)	

Result of measurement

1. Test diagram & test method

Pre-test sample	Sample after test	Result determination
		≤合格 ≤不合格 ≤特采

Controlled form: NQI-ST-01

Producer:zhangfangfang Checked:zhoupeng Approval: niuxinggang

9.2.Cryogenic storage test

ShenZhen NQI network communication Itd

Cryogenic storage test report

Report date 202329 June　　Report no: 20220115-1

Product name	G10 antenna	No	NQI-G10-BT-FB-V13
PART NAME ATION		CUSTOMER P/N	
Customers	Bo lu ke	Number of tests	2PCS
CUSTOMER		CHECK QTY	
Test criteria	Enterprise standards	Test time	2023/06/27 2023/06/29
TEST STANDARD		THE TEST OF TIME	

一. Test conditions/methods

The samples were stored at -40 ± 3 ° C for 48 hours and at room temperature for 2 hours.

二. Criteria

After the test, to meet the following requirements, that is, qualified;

1. FPC appearance no discoloration, foaming, ink off, deformation, viscosity unchanged;

2. Voltage standing wave ratio (VSWR) test qualified

三. Test results

Description of test results

1. The overall appearance of the sample is good, FPC appearance no discoloration, blistering, coating off, deformation;
2. The test waveform is consistent with the seal sample.

FINAL RESULT	PASS		REJECT
Inspector INSPECTOR	Lo Wing-sau	check CHECKED BY	Chen Yicai

The form number: WI-QC-036/B01/A0

9.3.Test photos