



Bei Si

Sample acknowledgment

Parts Approval Sheet

Supplier:	<u> Nqi </u>	Parts Name:	<u> BT-L Antenna </u>
Type/Spec:	<u> ES1 </u>	Parts NO:	<u> Nqi-ES1-BT-L-FB-V9 </u>
Brand:	<u> Nqi </u>	Quantity:	<u> JS-11300285 </u>
Send out Date:	<u> 2023/11/29 </u>	Document No:	<u> Nqi-RD-SPEC-20231118 </u>
Approve Date:	<u> </u>	Version:	<u> V9 </u>

Supplier		Customer	
Approved By	Prepared By	Engineering Dept	Quality Dept

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Recognition book CV (Resume)

(Date)	(Versins)	(Reasons for change)	(Content of change)	(Note)
2023. 10. 27	V10			First edition
2023. 11. 20	V9	Optimize the assembly consistency	Appearance and routing change, version upgrade	Second edition hairstyle

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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)	1.01dBi
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°C ~ 65°C
storage temperature (Storage temperature)	-30°C ~ 75°C

Assembly

摆线方式

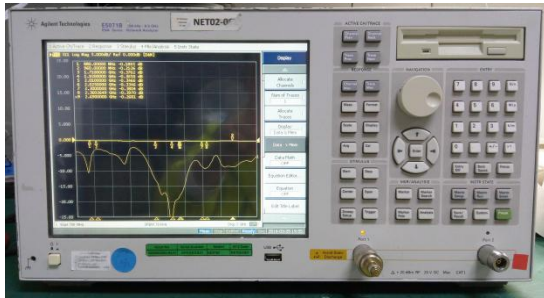
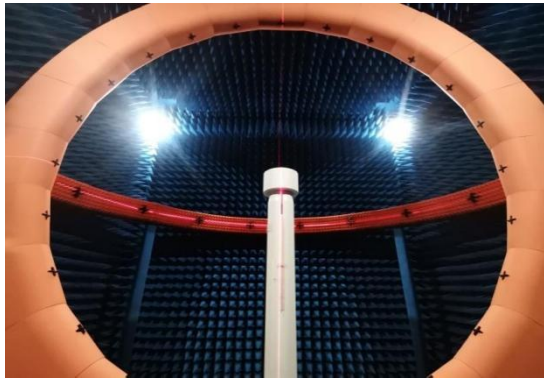


电池线摆在板子底下

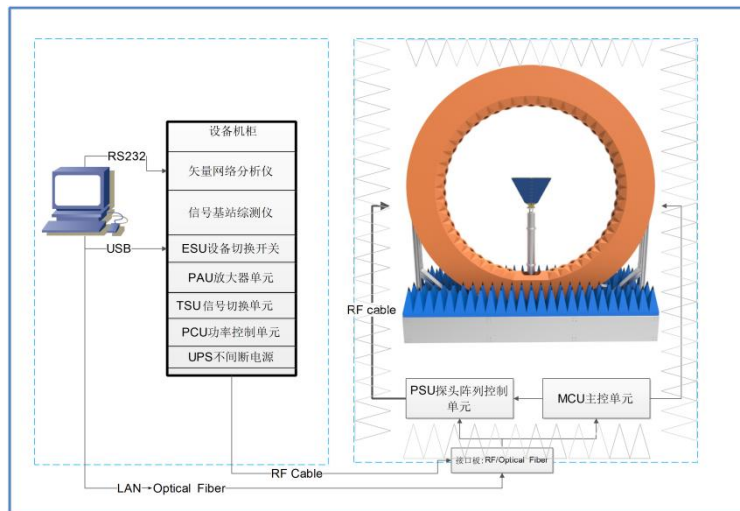


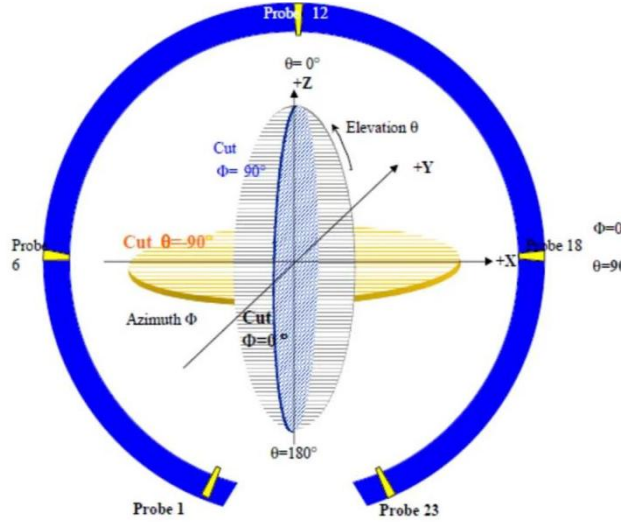
B. Test the equipment and the items:

(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)

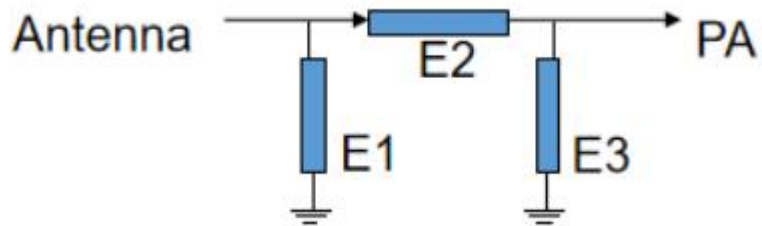


C.Dark room (chamber) connection and coordinates:





D. Antenna matching network (Antenna matching network) :

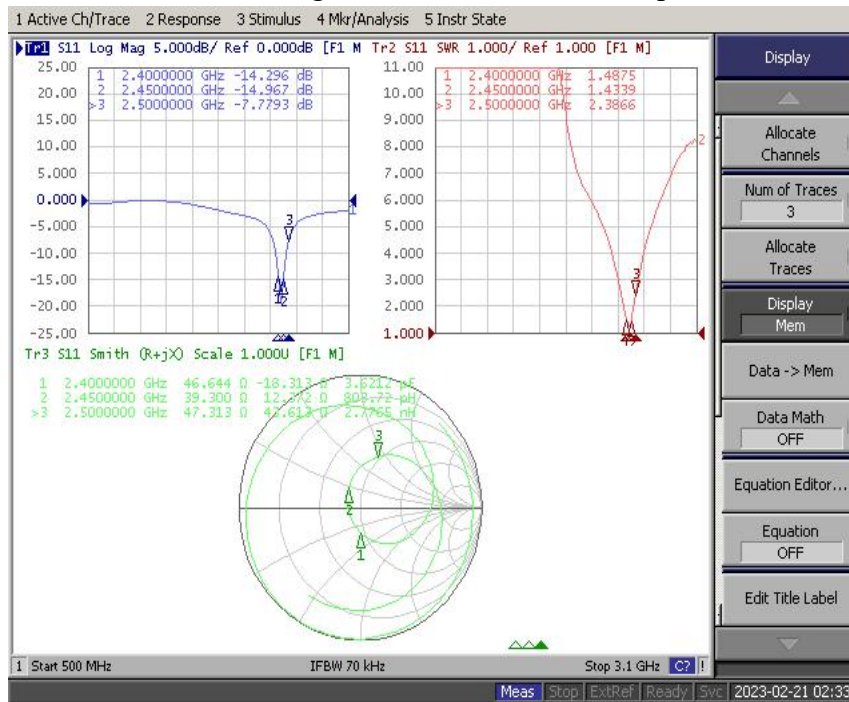


	Element	(Value)
L	E1	NC
	E2	2.4NH
	E3	NC

E. Electrical performance test data of the antenna :

E. 1. Antenna passive parameter

E.1.1. Antenna echo loss / standing wave ratio / Smith circle plot (RL/VSWR/Smith Chant)



E. 1. 2. Antenna efficiency / gain (Effeciency/Gain) free space

Frequency	Efficiency	MAXGain
MHz	%	dB
2400	29.6	1.01
2410	30.29	0.8
2420	31.16	0.86
2430	29.12	0.46
2440	29	0.31
2450	27.78	-0.1
2460	26.82	-0.43
2470	25.49	-0.86
2480	24	-1.37
2490	23.71	-1.61
2500	22.48	-1.88



headform

Frequency	Efficiency	MAXGain
MHz	%	dB
2400	10.77	-3.25
2410	9.47	-3.43
2420	9.63	-3.56
2430	8.11	-4.07
2440	8.2	-4.18
2450	7.55	-4.66
2460	7.56	-5.05
2470	7.04	-5.23
2480	6.6	-5.45
2490	6.55	-5.75
2500	5.92	-5.94

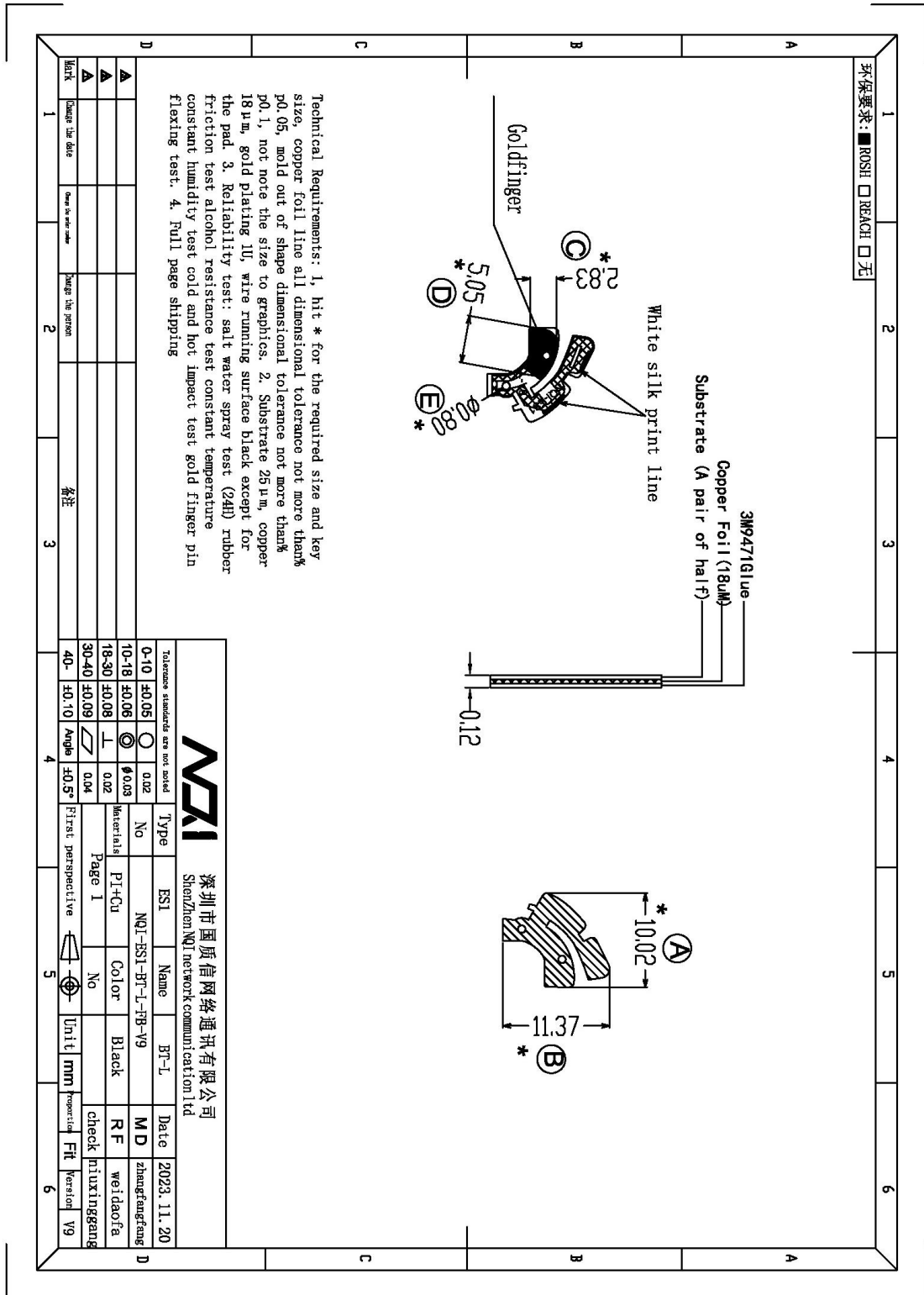
E. 2Antenna active parameters

E. 2.1 TRP/TIS

	#	Type	Band	Channel	1# Total	2# Total	3# Total
NQI Head model	1	TRP	BLUETOOTH	0	-0.72	1.76	0.79
	2	TRP	BLUETOOTH	39	0.77	2.86	1.51
	3	TRP	BLUETOOTH	78	2.87	3.15	3.28
	4	TIS (EIRP)	BLUETOOTH	0	-82.92	-83.33	-84.48
	5	TIS (EIRP)	BLUETOOTH	39	-83.44	-84.71	-85.27
	6	TIS (EIRP)	BLUETOOTH	78	-85.58	-85.67	-86.7
basews Head model	#	Type	Band	Channel	Total	Total	Total
	1	TRP	BLUETOOTH	0	-4.94	-4.45	-5
	2	TRP	BLUETOOTH	39	-3.29	-3.22	-3.7
	3	TRP	BLUETOOTH	78	-1.71	-3.65	-2.94
	4	TIS (EIRP)	BLUETOOTH	0	-81.25	-81.77	-80.96
	5	TIS (EIRP)	BLUETOOTH	39	-82.35	-82.54	-81.84
6	TIS (EIRP)	BLUETOOTH	78	-83.56	-82.83	-82.81	
NQI free space	#	Type	Band	Channel	Total	Total	Total
	1	TRP	BLUETOOTH	0	2.49	5.21	3.61
	2	TRP	BLUETOOTH	39	4.03	7.21	5.34
	3	TRP	BLUETOOTH	78	7.01	8.62	7.71
	4	TIS (EIRP)	BLUETOOTH	0	-87.22	-87.96	-86.98
	5	TIS (EIRP)	BLUETOOTH	39	-87.1		
6	TIS (EIRP)	BLUETOOTH	78	-89.02			




F. Antenna structure drawing:





G.Antenna packaging drawings:

Stage name: PCS inspection package		Product number: E51		Effective time: 2023.11.25		Version: A																																																																			
		Product name: B7-L		No: /		Page number: 1 page total 1 page																																																																			
<p>Typography</p> 				<p>Materials:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO</th> <th>PART NUMBER</th> <th>PART NAME</th> <th>QTY</th> <th>VENDER</th> <th>NOTE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> <td>/</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p>Use tools and equipment: Finger Gloves</p> <p>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.</p> <p>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.</p>				NO	PART NUMBER	PART NAME	QTY	VENDER	NOTE	1	/	/	/	/	/																																																						
NO	PART NUMBER	PART NAME	QTY	VENDER	NOTE																																																																				
1	/	/	/	/	/																																																																				
Made:	He Ping	check:	hejian	Approve:	Yang Xiaoyin																																																																				

Packing instruction book

H.Key dimension inspection report:

Dimension inspection report									
customer)	Bei Si		Project				ES1		
材质 (material)	FPC		Environmental protection				<input checked="" type="checkbox"/> <input type="checkbox"/>		
			Non-environmentally friendly				<input type="checkbox"/> <input checked="" type="checkbox"/>		
外观检查项目 (Appearance Inspection Items)	<input type="checkbox"/> 漏漆 (Paint leakage)		<input type="checkbox"/> 断线 (Off line)		<input type="checkbox"/> 短路 (Short)				
	<input type="checkbox"/> 划伤 (Scratch)		<input type="checkbox"/> 脏污 (Dirt)		<input type="checkbox"/> 开裂 (cracking)				
	不良数 (Number of bad) :		0		<input checked="" type="checkbox"/> 轻微 (Slight)		<input checked="" type="checkbox"/> 严重 (Serious)		<input checked="" type="checkbox"/> 致命 (Deadly)
外观判定结果 (Appearance judgment result) : 合格 (ok) <input checked="" type="checkbox"/> 不合格 (NG) <input type="checkbox"/>									
Functional or dimensional inspection records									
NO	检查序号 (Serial number)	尺寸公差 (Size tolerance)	检查结果 (Result)					检测仪器 (Equipment)	判定 (determine)
			1	2	3	4	5		
FPC	A	10.02±0.2	10.03	10.04	10.05	10.01	10.02	DN	OK
	B	11.37±0.2	11.38	11.39	11.4	11.37	11.36	DN	OK
	C	2.83±0.2	2.84	2.85	2.86	2.82	2.81	DN	OK
	D	5.05±0.2	5.06	5.07	5.08	5.04	5.03	DN	OK
	E	0.8±0.05	0.8	0.8	0.8	0.8	0.8	DN	OK
总体判定: 合格 (ok) <input checked="" type="checkbox"/> 不合格 (NG) <input type="checkbox"/> 不合格处理方式 (Treatment of nonconforming products) : 返工 (rework) <input type="checkbox"/> 特采使用 (For the temporary use) <input type="checkbox"/>									
计量仪器代号说明 (Description of measuring instrument code) : 投影仪 (Projector)-PP 塞规 (Plug gauge)-PG 高度规 (Height gauge)-HG 角度规 (Angle gauge)-AG 游标卡尺 (Vernier caliper)-N 数显卡尺 (Digital caliper)-DN 外径千分尺 (Outside micrometer)-M									



I.Environment and reliability test:

I.1.Salt spray test report

ShenZhen NQI network communication ltd

Salt spray test report

Product name	BT-L antenna	Sample Q'ty	2PCS	Test date	2023/11/28
Customer	Bei Si	Part/No.	NQI-ES1-BT-L-F8-V9	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 barrel temperature		47±1℃			
Test room relative humidity		85±2%RH			
Pressure of compressed air		1.00±0.01KG/CMF			
Sample place angle		15-30°			
Collected volume of salt spray		1.0-2.0ml(80cm²/H)			
Result of measurement					
I. 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: weidaofa

Approval:



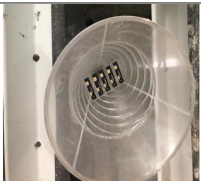

niuxinggang

I.2.Cryogenic storage test

ShenZhen NQi network communication ltd			
Cryogenic storage test report			
Report date of November 25, 2023		Report no: 20231125-1	
Product name	BT-L antenna	No	NQI-ES1-BT-L-FB-V9
PART NAME ATION		CUSTOMER P/N	
Customers	Bei Si	Number of tests	2PCS
CUSTOMER		CHECK QTY	
Test criteria	Enterprise standards	Test time	2023/11/22 2023/11/25
TEST STANDARD		THE TEST OF TIME	
一. Test conditions/methods			
The samples were stored at $-40 \pm 3^{\circ} \text{C}$ 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	Lo Wing-sau	check	Chen Yicai
INSPECTOR		CHECKED BY	

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

H.3.Test photos

IV. Test photos				
1. Pre-test sample		2. Test photos		
				
3. Test diagram		4. Graphic representation of the post-test samples		
				
V. The test involves equipment information				
serial number	The name of the device	Specifications and models	Calibration date	Time for next calibration
1	le constant temperature and hu	LX-150G	2023.1.26	2024.1.25

End of report