

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)

[illegible]

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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℃ ～65℃	
storage temperature (Storage temperature)	-30℃ ～75℃	

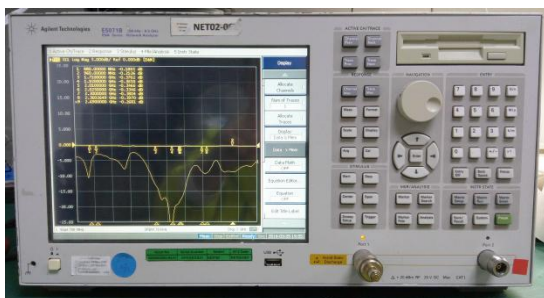
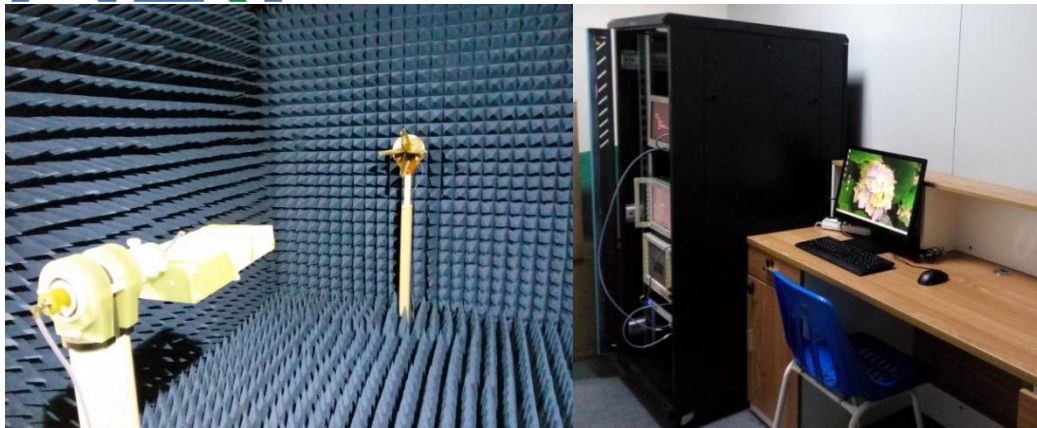
Assembly



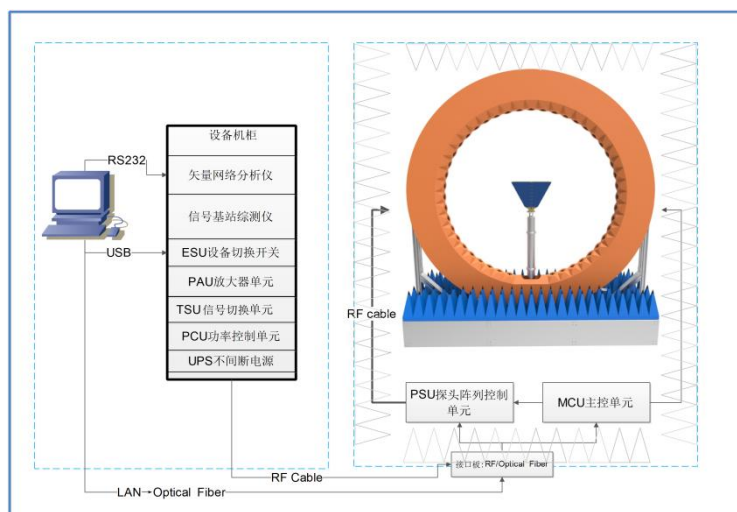


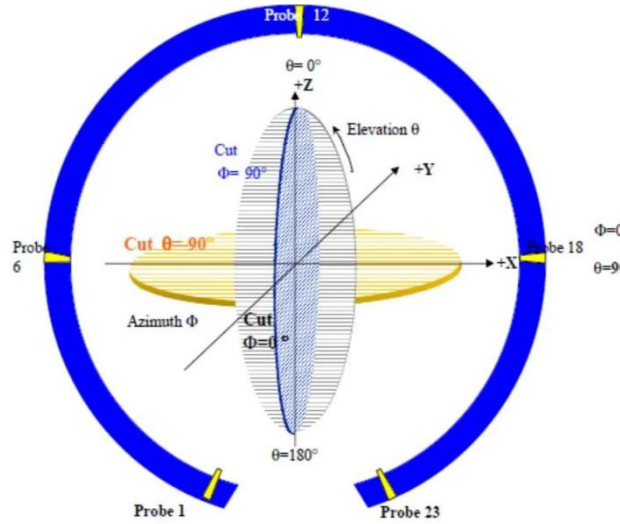
B. Test the equipment and the items:

(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: TESCO 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)

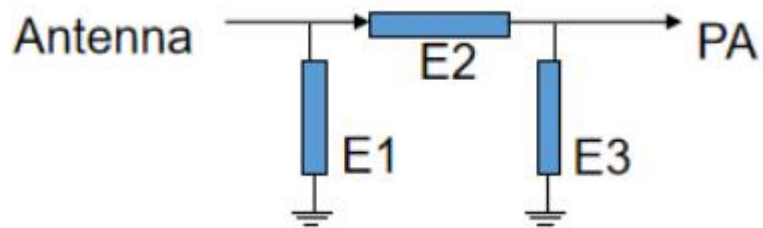


C.Dark room (chamber) connection and coordinates:





D. Antenna matching network (Antenna matching network) :



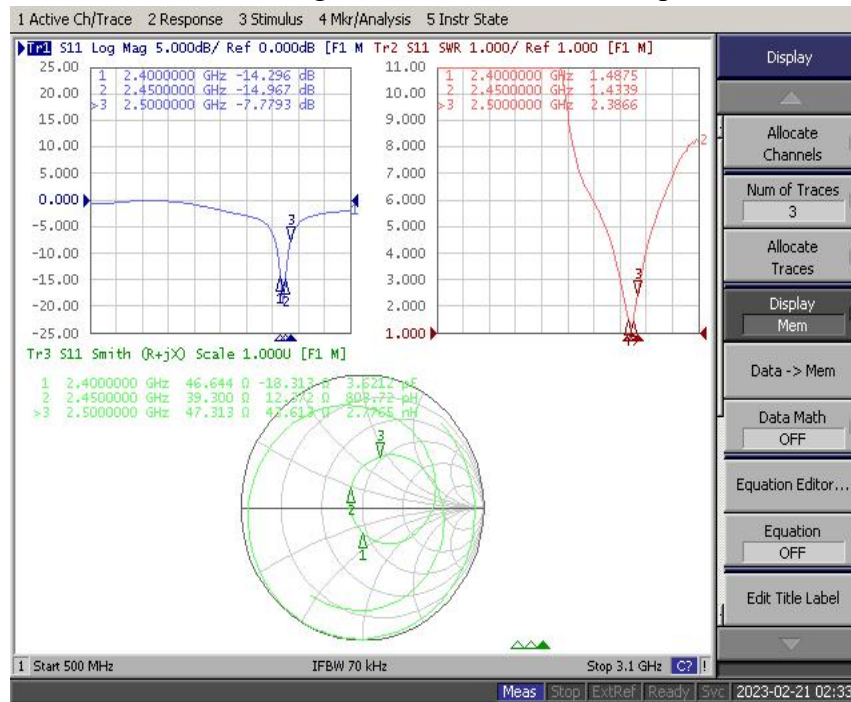
L	Element	(Value)
	E1	NC
	E2	2.4NH
	E3	NC



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

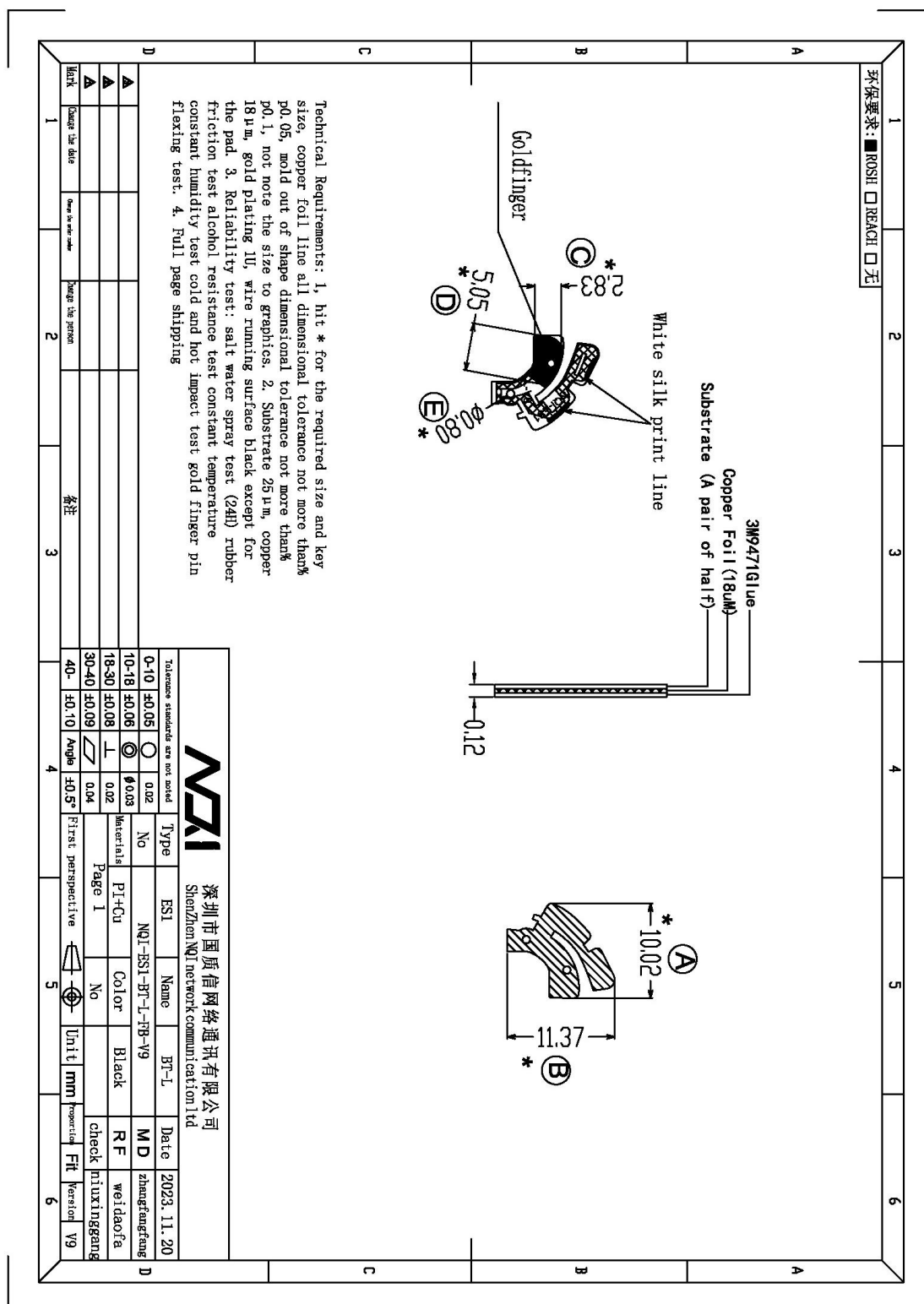
Frequency	Efficiency	MAXGain
MHz	%	dB
2400	10.77	-3.25
2410	9.47	-3.43
2420	9.63	-3.56
2430	8.11	-4.07
2440	8.2	-4.18
2450	7.55	-4.66
2460	7.56	-5.05
2470	7.04	-5.23
2480	6.6	-5.45
2490	6.55	-5.75
2500	5.92	-5.94

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	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	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: ES1		Effective time: 2023.11.25		Version: A	
Product name: B7-L		No: /		Page number: 1 page total 1 page			
Typography 		Materials:					
		NO	PART NUMBER	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;							
Made:	He Ping	check:	hejian	Approved	Yang Xiaoyin		



H.Key dimension inspection report:

Dimension inspection report									
customer)	Bei Si		Project				ES1		
材质 (material)	FPC		Environmental protection				☒ ☐		
			Non-environmentally friendly				☐ ☒		
外观检查项目 (Appearance Inspection Items)	☐ 漏漆 (Paint leakage)		☐ 断线 (Off line)		☐ 短路 (Short)				
	☐ 划伤 (Scratch)		☐ 脏污 (Dirt)		☐ 开裂 (cracking)				
	不良数 (Number of bad) :		0		☒ 轻微 (Slight)		☒		
			严重 (Serious)		☒ 致命 (Deadly)		☒		
外观判定结果 (Appearance judgment result) : 合格 (ok) ☒ 不合格 (NG) ☐									
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) ☒ 不合格 (NG) ☐ 不合格处理方式 (Treatment of nonconforming products) : 返工 (rework) ☐ 特采使用 (For the temporary use) ☐									
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-FB-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/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: zhangfangang

Checked: weidaofa

Approval:

niuxingang

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

四. Test photos				
1.Pre-test sample		2.Test photos		
				
3.Test diagram		4.Graphic representation of the post-test samples		
				
五. The test involves equipment information				
erial 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