

Project : Y240116710

Date.2024.06.24

REV: A2

Antenna SPEC

Customer name: 国光Customer project: Spark 2Part Number: EAN00383B&T P/N: 74220394

Spec.: Built-in antenna -2.4G- Black 1.37 tin wire -1 generation terminal
-L=70mm-PCB-40.5×15.5×0.6mm

Sealed by corporation:

compilation	ver if y	approval
Qiucui ping	Huchong	Liulihua

Sealed by customer:

check	verify	approval

Contact information of B&T:

Contact person for sales: Longmingguo	MB:18576042661	E-mail: longmg@tech-now.com
Contact person for technical: Huchong	MB:15986832541	E-mai: huc@tech-now.com
Contact person for Quality: zengkang	MB:18188400229	E-mail: zengk@tech-now.com

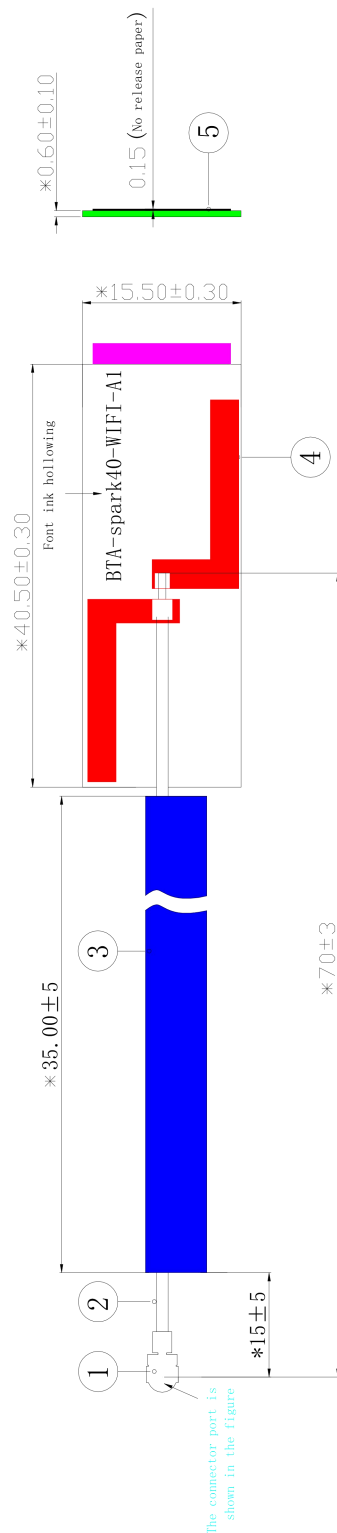
B&T Production address: No.2&3, 5/F, Building 8, No.218, Wenwu Middle Road,
Tangxun Street, Economic Development Zone, Mianyang, Sichuan Province,
P.R.China

表单编号: B&T-OR-EN-002 版本: B3

Contents

1、 Cover·····	1
2. Directory·····	3
3. Product drawing·····	4
4. Performance parameters Table ·····	5
5. Electrical performance test report·····	6-8
6. List of Material Composition and Hazardous Substances·····	9
7.packaging specification·····	10-11
8. Antenna installation position Diagram ·····	12
9. Antenna test darkroom placement·····	12
10. Reliability test requirements ·····	13

Version	modification date	Revised content
A0	24-1-31	
A0-0313	24-3-13	Update PCB board, silk screen, wire length specification, double-sided tape
A1	24-4-29	Update PCB shape/silk screen/circuit; wire length, sponge specifications,



Front view

Technical requirements

1. The antenna welding part is firm and the cable size is accurate (the holding force of the connector is $\geq 1\text{kgf}$).
2. The silk screen color is the original color of the substrate, and the font is clear and not easy to fall off.
3. “*” indicates the dimensions that are key to IQC inspection.
4. The packaging and quality standards refer to the Boontong Packaging Specifications and B&T Quality Standards respectively.
5. The materials comply with ROHS, REACH, VOC, California 65, PAHS, and TSCA.
6. The connector port identification direction

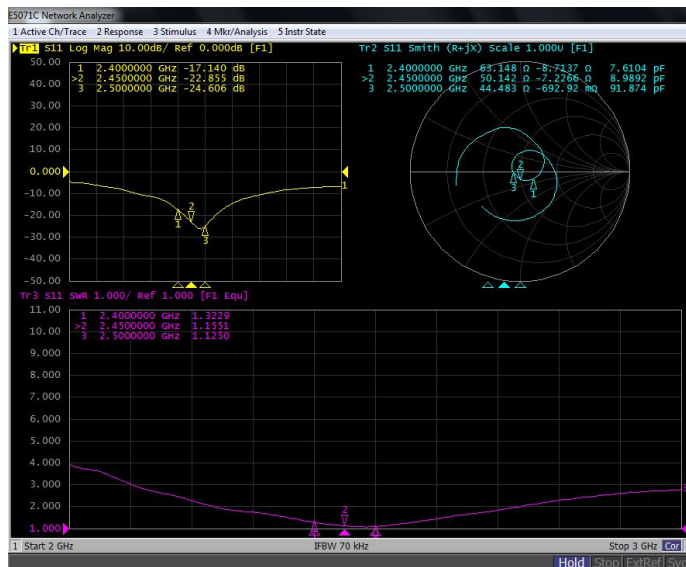
[illegible]

4、Properties ¶meter

Electrical Parameter	
Freq Range	2400~2500MHz
Characteristic Impedance	50 Ω
VSWR	≤ 1.5
The Max input power	<10w
Polarization mode	Polar linearization
Radiation mode	Omni directional
Connector style	terminal
Mechanical parameter	
Length	70 $\pm$ 3mm
Maintain the force	≥ 1 kg f
Coaxial cable	Black 1.37 tin tin wire
Salt spray test	24H
Environment parameter	
Operating Temp	-30 $^{\circ}$ C~65 $^{\circ}$ C

5、Electrical test report (Whole machine testing)

S11



Standing wave ratio data

WiFi antenna

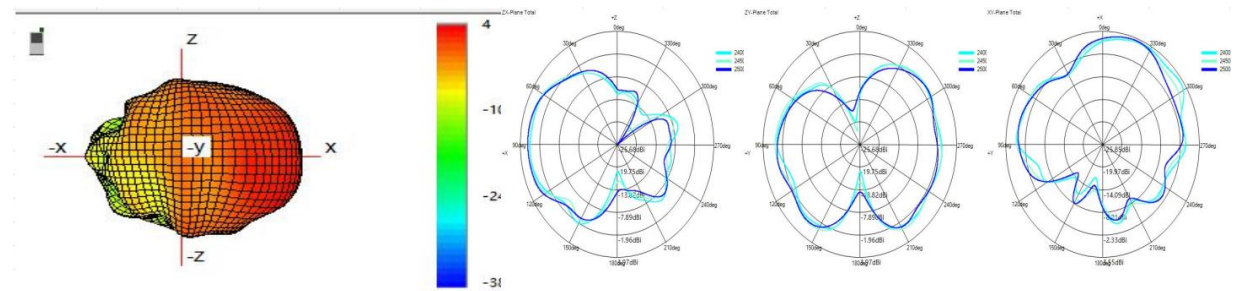
Freq/MHz	2400MHz	2450MHz	2500MHz
VSWR	1.32	1.15	1.12

➤ Antenna darkroom test data

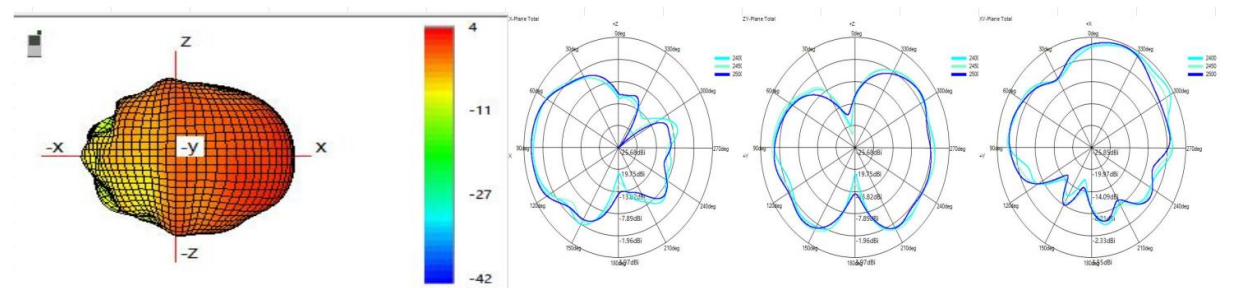
Frequency (MHz)	WiFi	
	Gain (dBi)	Efficiency (%)
2400	3.54	45.62
2410	3.40	45.61
2420	3.25	45.53
2430	3.01	45.21
2440	2.98	45.18
2450	3.03	45.66
2460	3.06	45.54
2470	3.21	45.31
2480	3.19	44.55
2490	3.24	44.05
2500	3.22	43.48

Antenna direction diagram

2400M 3D-E1-E2-H



2450M 3D-E1-E2-H

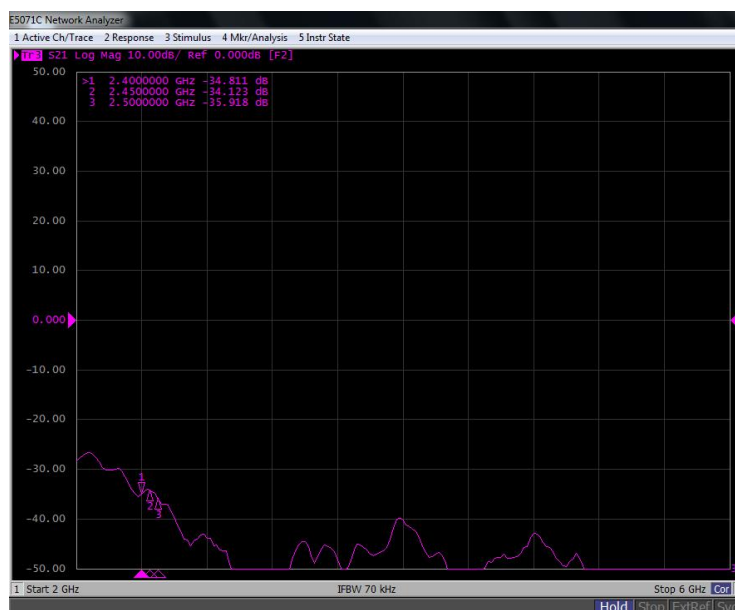


Active OTA test data

Sample	Device	Test item	Mode	Rate (Mbps)	Channel	frequency (MHz)	Results (dBm)	Value Transfer Results (dBm)
Spark2	CMW270	TRP	b (ACK)	11	1	2412	17.56	20.5
					7	2442	18.85	20.97
					13	2472	18.72	21.04
			n (ACK)	MCS7	1	2412	17.61	20.14
					7	2442	18.52	20.01
					13	2472	17.92	19.91
		TIS	b	11	1	2412	-83.88	-88
					7	2442	-82.9	-88
					13	2472	-83.8	-88
			n	MCS7	1	2412	-68.25	-73
					7	2442	-67.95	-73
					13	2472	-67.56	-72.5

DUT	Brust type	BR Packet type	Pattern type	Channel	Test Item	Results (dBm)	Value Transfer Results (dBm)
Spark2	Basic rate	DH5	PRBS9	0	TRP	4.2	7.78
					TIS	-82.77	-90
				39	TRP	4.13	7.48
					TIS	-84.34	-91
				78	TRP	3.25	6.85
					TIS	-82.27	-90

Antenna isolation S21



Freq/MHz	2400MHz	2450MHz	2500MHz
S21/dB	-34.81	-34.12	-35.91

➤ Qull distance test

BT range performance	
Test environment:	During the test, there is no interference source in an open environment
Device info:	Spark 2
Test method:	The DUT is placed on a flat ground (6 surfaces are tested in turn), the BTS is held in hand, and the music signal is played from the BTS to the DUT through Bluetooth, gradually increasing the distance between the DUT and the BTS. If the music plays normally, the DUT continues to move away from BTS; When the music starts to stutter or stutter, move back to the BTS until the music returns to normal. Use the above method to find the critical point and record the current Angle and distance
Assessment method:	There is no music stutter, no abnormal Bluetooth connection, no abnormal noise, then pass; If stutter, abnormal Bluetooth connection, and abnormal noise occur, fail is displayed



PHONE TYPE	0°	90°	180°	270°	Above	Underside
IPHONE12	50m	48m	50m	48m	48m	46m

6、List of Material Composition and Hazardous Substances

I t e m	Specifi cation	Texture of material	ROHS Test Results (PPM)						ICP test number	Test time
			Cd	Pb	Hg	Cr+6	PBB	PBDE		
1	1.37 wire	FEP	ND	ND	ND	ND	ND	ND	NGBPC24000131241	2024/1/16
		Tinned wire	ND	ND	ND	ND	ND	ND	CANEC23005577501	2023/7/7
2	Terminal	PBT	ND	2.24	ND	ND	ND	ND	ETR23705931	2023/8/4
		Phosphor Bronze	ND	6	ND	ND	ND	ND	CANEC24000977301	2024/1/22
3	PCB	FR-4	ND	11	ND	ND	ND	ND	SHAEC23017333401	2023/10/31
		OSP	ND	ND	ND	ND	ND	ND	CANEC24004013301	2024/3/14
4	Sponge	PU Sponge	ND	ND	ND	ND	ND	ND	A2230532385101004E	2023/10/21
		Tape	ND	ND	ND	ND	ND	ND	A2230621001101001	2023/11/30
5	Double-sid ed tape	Double-side d tape	ND	ND	ND	ND	ND	ND	A2230621001101001	2023/11/30

PACKING CRITERION

P/N: 74220394

Spec.: Built-in antenna -2.4G- Black 1.37 tin wire -1 generation terminal -L=70mm-PCB-40.5×15.5×0.6mm

一、contents of label(according to the customer's name, refer to the corresponding finished product label production requirements. If there is no requirement, it will follow the ordinary label requirements.)

Label for PE bag/ carton, L:10cm;W:6cm

buyer	*****		
vender	Sichuan B&T Technology Co., Ltd.		
Purchase No	*****		
Material No.	*****		
Part name	*****	QC	**
Q'ty/Unit	*****	Manufacture date	****.***
Trace code	*****	Running water number	*****

Label for PE bag/ carton, L:10cm;W:6cm

buyer	*****		
vender	Sichuan B&T Technology Co., Ltd.		
Purchase No	*****		
Material No.	*****		
Part name	*****	QC	**
Q'ty/Unit	*****	Manufacture date	****.***
Trace code	*****	Running water number	*****

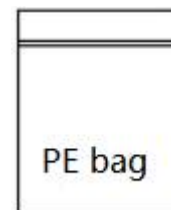
二、Packing requirement

Operating description:

1. inner packing:

50 PCS/ small bag,

200 PCS/ big bag

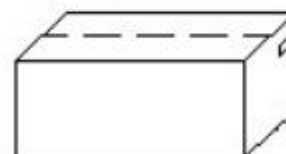


2. outer packing:

Quantity according to actual packing PCS/carton

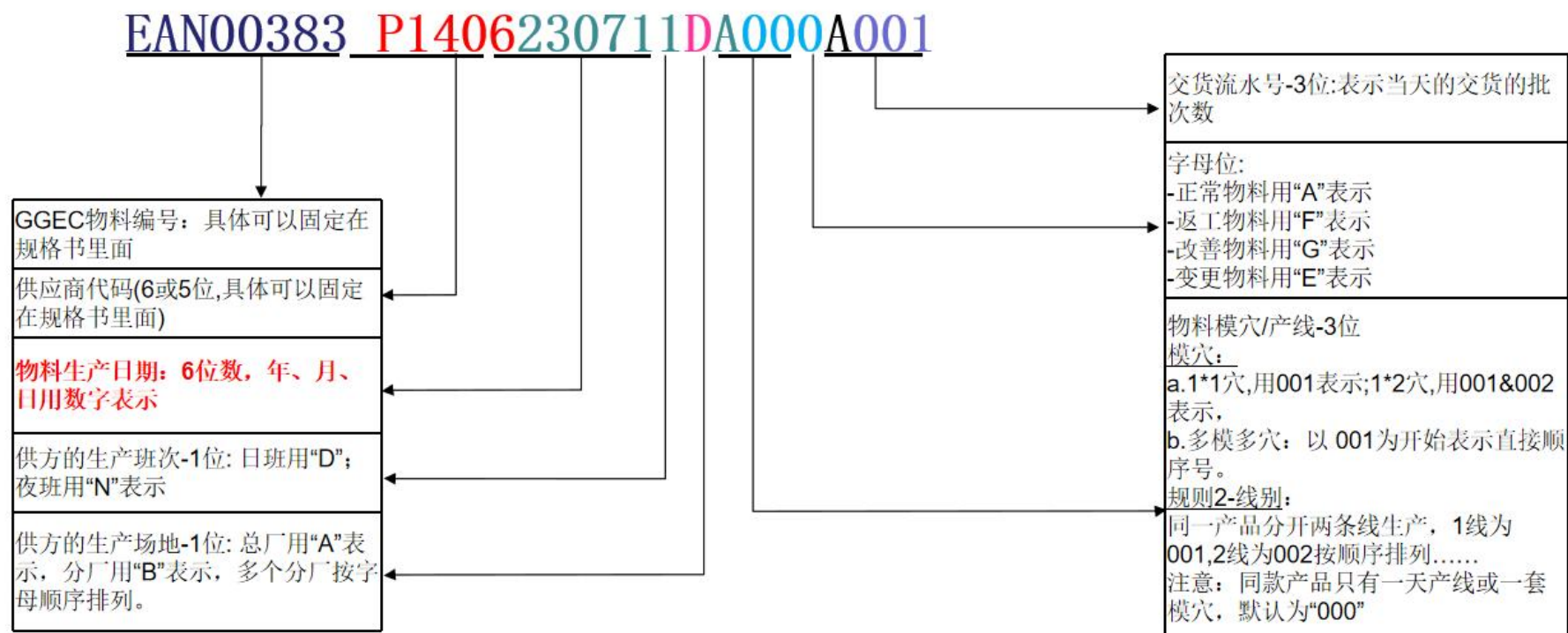


Carton

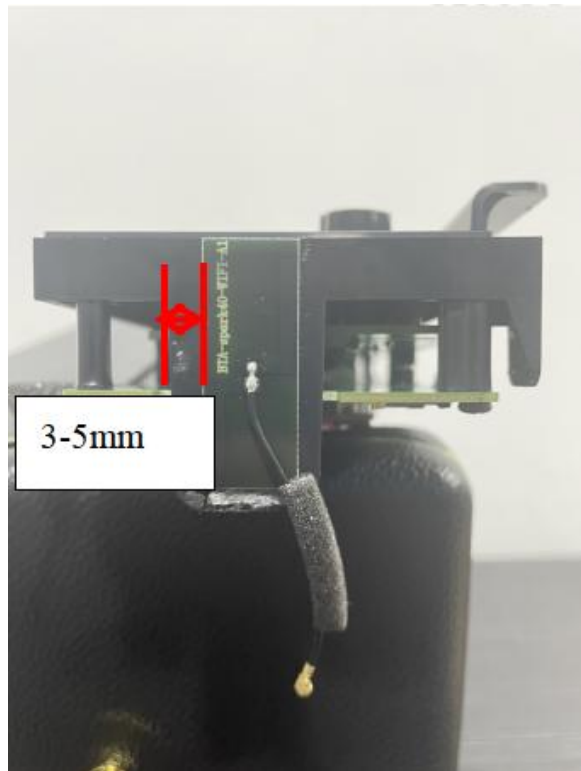


Notice:

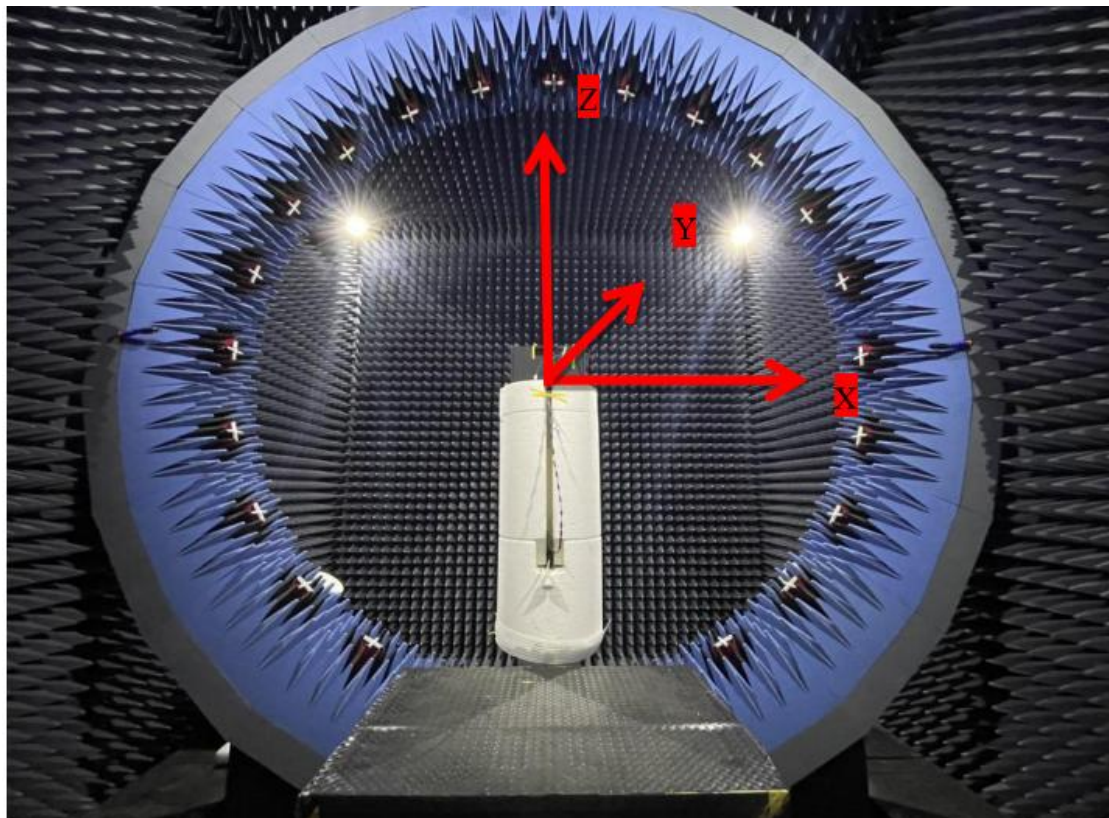
GGEC | 条形码打印规则



8、Antenna installation position Diagram



9、Antenna test darkroom placement



10、Reliability test requirements

No.	Reliability Test Name	Test Conditions	Evaluation Criteria
1	Constant Temperature and Humidity Test	High temperature: 70°C, Humidity: 80%RH for 24 hours; Low temperature: -40°C for 24 hours; Total duration 48 hours;	Before and after the test, the appearance requirements: The metal surface plating should have no peeling, cracks, wrinkling, separation, etc. Non-metal parts should not change color, have cracks, deformation, glue detachment, and other defects; Electrical performance tests should meet the standard requirements;
2	High and Low Temperature Shock Test	70°C for 2 hours, -40°C for 2 hours, 6 cycles, total 24 hours;	Before and after the test, the appearance requirements: The metal surface plating should have no peeling, cracks, wrinkling, separation, etc. Non-metal parts should not change color, have cracks, deformation, glue detachment, and other defects; Electrical performance tests should meet the standard requirements;
3	Salt Spray Test	Prepare a 5±1% NaCl solution, ensure the pH value of the salt solution is neutral (6.5~7.2); Pressure pot temperature 47±1°C, spray pressure maintained at 1.00±0.1kgf/cm ² , spray rate 1.0~2.0ml;/80cm ² /h; Test duration 24 hours;	The exposed area of the product surface should not have oxidation or rusting; Other areas after the salt spray test, the oxidation/rust area should be less than 1.0%;
4	Terminal Retention Force Test	Ambient temperature and humidity; Test retention force requirement: ≥10 kgf;	Terminals and cables should not fall off or loosen; After the test, the electrical performance should meet the standard requirements;
5	Terminal Insertion and Withdrawal Force Test	Ambient temperature and humidity; Terminals and sockets are normally connected, insertion force/withdrawal force ≥1.0 kgf;	Insertion force/withdrawal force should meet the requirements, and the terminals should not fall off or be damaged;