

Reliability Test Report

Model: **6610-42**

V1.0

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Revision History

When a document is amended or modified, a revision record form must be filled in, with the important matters mainly filled in the description.

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1. Overview

1.1 Purpose

The purpose of conducting extreme tests on products in different environments is to find out possible problems in raw materials, structure, process, environmental adaptability, etc., so as to assist engineers in analyzing and improving them. Through repeated tests and improvements, the reliability indicators of products can be improved to meet the expected requirements.

Product images:



1.1. Specifications

Product Model :	6610-42	Power Specifications :	36W/12V/3A
Hardware version :	V1.0	Housing material :	Iron Shell

2. Test Conditions

— Laboratory temperature and humidity:

Temperature:

25±2.5 °C

Humidity:

55%±10%RH

— Reference standards:

GB/T 2423.1-2008 / IEC 60068-2-1 :2007 Low temperature test

GB/T 2423.2-2008 / IEC 60068-2-2 :2007 High temperature test

GB/T 2423.3-2006 / IEC 60068-2-78 :2001 Steady state damp heat test

GB/T 2423.4-2008 Cyclic damp heat test

GB/T 13543-1992 Low temperature storage test & high temperature storage test

— Testing tools:

name	model	quantity	use
Network Tester	NuStream-600i or BigTao6100	1	Test DUT protocol, reliability, etc.
AC Source	UP -1003	1	Adjust the DUT input voltage
Test computer	Lenovo	1	Run the test software of the relevant instruments
Fixture load	Self-developed	1	Power load
Switching fixture	DH48S- S	1	Schedule power on and off for DUT
Fiber Optic Kit	Commonly used in the market	2	Data transmission medium
Network cable	UTP cat.5e	several	Transmission medium
Constant temperature test chamber	KOWINTEST or TEMI880	1	Simulate different test environments

Remark:

The table contains all the test tools, fixtures, instruments, etc. that may be used in reliability testing of various products.

3. Reliability Test

3.1 Test Setup

3.1.1 Chamber Settings

The test engineer sets the chamber environment and continuous operation time according to the product specifications and our internal standards. Generally, the commercial products are set at low temperature -10℃ to 50℃, the semi-industrial products are set at -20℃ to 70℃, the industrial products are set at -40℃ to 85℃, and the humidity is set at 0% to 95%. If there are special instructions or special requirements, set them according to the corresponding instructions or requirements.

Test temperature I	Test temperature II
- 10 ℃	50 ℃

Refer to **Table-1** and **Table-2** for details. **Table-1**

Table- 1

Test Name	Test environment (℃, %RH)	Duration (hours)
Low temperature test	-10 ℃, 0% RH	15
High temperature test	50 ℃, 0%RH	15
Damp heat test	50 ℃, 95%RH	15
Low temperature storage test	- 40 ℃, 0%RH	12
High temperature storage test	70 ℃, 95%RH	12

Table- 2

Cyclic damp heat test environment setting		
Trial Phase	Test environment (℃, %RH)	Duration (hours)
Step 1	-10 ℃, 0% RH	1
Step 2	50 ℃, 95%RH	1
Step 3	-10 ℃, 0% RH	1
Step 4	50 ℃, 0%RH	1

Note:

In **Table-2** , Step 1 to Step 4 is a cycle. The number of cycles varies according to the duration of each stage. Generally, the number of cycles is between 2 and 6. If there are special requirements, set them according to the specific requirements.

3.1.2 Network Tester Settings

Basic settings for data flow: port rate settings are the same as DUT. The rate is full duplex, the port topology is **Pair** (even ports) or **Rotate** (odd ports), the line rate is the maximum rate value, 100% utilization, IFG, IBG is 96nSec, and the frame length is 64~1518 bytes (including 4 bytes of CRC). The general settings are as follows **Table-3**:

Table-3

Data flow parameter settings			
Stream Generation	Tx Rate Control		Auto Generate Tx Rate
	Stream Transmit Mode		Continuous
	Length (w/o CRC)		Random
	Frame Payload		Random
	Utilization (%)		100%
	Port Map	Pair	√
		Rotate	√
		One to Many	-
		Mesh	-
	IFG/IBG (bit time)		96nSec
Media Type Setup	Speed Mode		Auto Negotiation Mode
	Cable MDI- II /MDI-X Selection		Auto MDIX

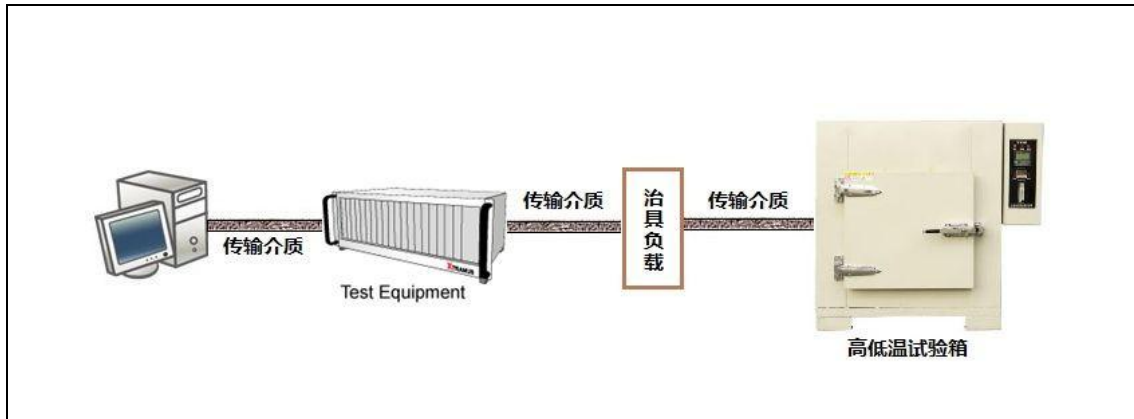
RFC2544 Basic settings: The port rate is set to the same as the rate of the DUT, and the port topology is generally **One to One** (even number) or **Rotate** (odd port), initial rate is 100%, frame length is 64~1518 Bytes (including 4 Bytes of CRC). The detailed settings are as follows **Table-4**:

Table-4

RFC2544 Parameter settings									
Test Setting	Duration(Secs)	Number of Trials		Learning Mode	Learning Retry	Packet Payload			
	30	1		Once	1	Random			
	Delay Time After Learning			0.5	Delay Time After Transmit		1		
	Frame Size （Bytes）			64/128/256/512/1024/1280/1518					
	Acceptable Loss （Packets）			0					
	Port Map	One to One		One to Many		Many to One	Rotate	Fully Meshed	
		√		√		√	√	√	
(Bi-Direction Custom) Edit	Throughput		Initial Rate （%）		Min Rate （%）		Max Rate （%）		Resolution （%）
			100.00		10.00		100.00		1.00
	Latency/ Packet Loss/ Back to Back			Initial Rate （%）		Step Rate （%）		Max Rate （%）	
				100.00		10.00		100.00	

3.2 Data Flow Test

3.2.1 Test Environment Topology Diagram



3.2.2 Test Methods

- 1) Build the test environment according to the test topology diagram, place the DUT in the chamber, and use the transmission medium (category 5e 100 Meter network cable & fiber kit - can be ignored for machines without SFP interface) Connect the port to the network tester port;
- 2) According to [Table-3](#) Table configuration network tester;
- 3) In order to prevent the protocol from periodically generating some data packets that affect the correctness of statistics, it is necessary to disable the relevant protocols of the management product, mainly including SPANNING-TREE/DHCP/IP IGMP SNOOPING/LACP, etc.
- 4) After everything is ready, start data forwarding, and then confirm whether the data stream TX and RX are equal to ensure that the DUT and network tester are running in the same setting;
- 5) [Table-1](#) and [Table-2](#) for the running time of each environment. The time of setting;
- 6) When the test time is up, stop data forwarding and record the test results on the network tester (save screenshots)

3.2.3 Judgment Criteria

The DUT is required to work normally under the corresponding test environment. The number of data packets sent by the port is consistent with the number of data packets received by the receiving port, the total number of packets sent and received is the same, there is no packet loss or multiple packets, and no other abnormal data packets are received, such as broadcast, undersize, oversize, etc.

3.2.4 Test Results

8 RJ45 Electrical port +18 Optical port

110V Low temperature test

Chassis	Card	Port	Stream	Tx Stream Frames	Rx Signature Stream Frames	Tx Frame Rate (fps)	Rx Frame Rate (fps)	Rx Sequence Errors	Rx IP Payload Errors	Rx IPv4 Checksum Errors	Rx FCS Errors
Chassis 0 (Sfp+6100) 192.168.0.180											
Cur 01: P0016C 16xGE Copper											
		Port1		8,416,030,080	8,416,157,798	0	0	N/A	0	0	0
		Port2		8,416,157,798	8,416,030,080	0	0	N/A	0	0	0
		Port3		8,416,164,240	8,416,161,257	0	0	N/A	0	0	0
		Port4		8,416,161,257	8,416,164,240	0	0	N/A	0	0	0
		Port5		8,416,167,993	8,416,158,838	0	0	N/A	0	0	0
		Port6		8,416,158,838	8,416,167,993	0	0	N/A	0	0	0
		Port7		8,416,160,961	8,416,156,567	0	0	N/A	0	0	0
		Port8		8,416,156,567	8,416,160,961	0	0	N/A	0	0	0
		Port9		8,416,033,686	8,416,168,168	0	0	N/A	0	0	0
		Port10		8,416,168,168	8,416,033,686	0	0	N/A	0	0	0
		Port11		8,416,159,866	8,416,158,293	0	0	N/A	0	0	0
		Port12		8,416,158,293	8,416,159,866	0	0	N/A	0	0	0
		Port13		8,416,159,315	8,416,164,431	0	0	N/A	0	0	0
		Port14		8,416,164,431	8,416,159,315	0	0	N/A	0	0	0
		Port15		8,416,028,275	8,416,165,104	0	0	N/A	0	0	0
		Port16		8,416,165,104	8,416,028,275	0	0	N/A	0	0	0
Cur 02: P0016D 16xGE Dual Media											
		Port1		8,416,158,403	8,416,160,770	0	0	N/A	0	0	0
		Port2		8,416,160,770	8,416,158,403	0	0	N/A	0	0	0
		Port3		8,416,160,958	8,416,161,422	0	0	N/A	0	0	0
		Port4		8,416,161,422	8,416,160,958	0	0	N/A	0	0	0
		Port5		8,416,152,944	8,416,026,930	0	0	N/A	0	0	0
		Port6		8,416,026,930	8,416,152,944	0	0	N/A	0	0	0
		Port7		8,416,154,762	8,416,160,203	0	0	N/A	0	0	0
		Port8		8,416,160,203	8,416,154,762	0	0	N/A	0	0	0
		Port9		8,416,038,099	8,416,161,310	0	0	N/A	0	0	0
		Port10		8,416,161,310	8,416,038,099	0	0	N/A	0	0	0

110V High temperature test

Chassis	Card	Port	Stream	Tx Stream Frames	Rx Signature Stream Frames	Tx Frame Rate (fps)	Rx Frame Rate (fps)	Rx Sequence Errors	Rx IP Payload Errors	Rx IPv4 Checksum Errors	Rx FCS Errors
Chassis 0 (Sfp+6100) 192.168.0.180											
Cur 01: P0016C 16xGE Copper											
		Port1		8,330,362,569	8,330,361,235	0	0	N/A	0	0	0
		Port2		8,330,361,235	8,330,362,569	0	0	N/A	0	0	0
		Port3		8,330,362,664	8,330,361,611	0	0	N/A	0	0	0
		Port4		8,330,361,611	8,330,362,664	0	0	N/A	0	0	0
		Port5		8,330,361,808	8,330,361,605	0	0	N/A	0	0	0
		Port6		8,330,361,605	8,330,361,808	0	0	N/A	0	0	0
		Port7		8,330,361,398	8,330,362,398	0	0	N/A	0	0	0
		Port8		8,330,362,398	8,330,361,398	0	0	N/A	0	0	0
		Port9		8,330,361,241	8,330,362,113	0	0	N/A	0	0	0
		Port10		8,330,362,113	8,330,361,241	0	0	N/A	0	0	0
		Port11		8,330,361,879	8,330,361,347	0	0	N/A	0	0	0
		Port12		8,330,361,347	8,330,361,879	0	0	N/A	0	0	0
		Port13		8,330,363,511	8,330,361,710	0	0	N/A	0	0	0
		Port14		8,330,361,710	8,330,363,511	0	0	N/A	0	0	0
		Port15		8,330,361,237	8,330,361,054	0	0	N/A	0	0	0
		Port16		8,330,361,054	8,330,361,237	0	0	N/A	0	0	0
Cur 02: P0016D 16xGE Dual Media											
		Port1		8,330,362,999	8,330,362,434	0	0	N/A	0	0	0
		Port2		8,330,362,434	8,330,362,999	0	0	N/A	0	0	0
		Port3		8,330,363,968	8,330,361,665	0	0	N/A	0	0	0
		Port4		8,330,361,665	8,330,363,968	0	0	N/A	0	0	0
		Port5		8,330,362,239	8,330,364,335	0	0	N/A	0	0	0
		Port6		8,330,364,335	8,330,362,239	0	0	N/A	0	0	0
		Port7		8,330,363,441	8,330,364,227	0	0	N/A	0	0	0
		Port8		8,330,364,227	8,330,363,441	0	0	N/A	0	0	0
		Port9									
		Port10									
		Port11									
		Port12									
		Port13		8,330,363,226	8,330,365,049	0	0	N/A	0	0	0
		Port14		8,330,365,049	8,330,363,226	0	0	N/A	0	0	0

110V Damp heat test

NAVTECH RSI

File View Control Statistics Tools Language Help

Function View

Main Counter

Port	W	X	Y	Z	AA	AB	AC	AD	Linked Ports
1	Best	(S, 1, 1)	(S, 1, 1)	(S, 1, 1)	(S, 1, 1)	(S, 1, 1)	(S, 1, 1)	(S, 1, 1)	Transmit: Capture:
2	WPA2	0x 00701	0x 00701	0x 00701	0x 00701	0x 00701	0x 00701	0x 00701	Transmit: Capture:
3	Transmit								Transmit: Capture:
4	Capture								Transmit: Capture:
5	Link	Link Up	Link Up	Link Up	Link Up	Link Up	Link Up	Link Up	Transmit: Capture:
6	Speed	Auto 10000 Full	Auto 10000 Full	Auto 10000 Full	Auto 10000 Full	Auto 10000 Full	Auto 10000 Full	Auto 10000 Full	Transmit: Capture:
7	Group	0x 00000000	0x 00000000	0x 00000000	0x 00000000	0x 00000000	0x 00000000	0x 00000000	Transmit: Capture:
8	To Packet	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	Transmit: Capture:
9	To Rate	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	8,416,030,080	Transmit: Capture:
10	To Packet Rate	0	0	0	0	0	0	0	Transmit: Capture:
11	To Rate (Mbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
12	To Rate (Gbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
13	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
14	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
15	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
16	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
17	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
18	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
19	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
20	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
21	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
22	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
23	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
24	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
25	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
26	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
27	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
28	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
29	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
30	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
31	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
32	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
33	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
34	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
35	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
36	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
37	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
38	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
39	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
40	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
41	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
42	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
43	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
44	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
45	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
46	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
47	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
48	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
49	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
50	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
51	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
52	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
53	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
54	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
55	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
56	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
57	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
58	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
59	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
60	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
61	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
62	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
63	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
64	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
65	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
66	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
67	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
68	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
69	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
70	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
71	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
72	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
73	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
74	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
75	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
76	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
77	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
78	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
79	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
80	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
81	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
82	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
83	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
84	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
85	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
86	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
87	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
88	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
89	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
90	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
91	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
92	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
93	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
94	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
95	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
96	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
97	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
98	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
99	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
100	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
101	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
102	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
103	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
104	To Rate (Pbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
105	To Rate (Ebps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
106	To Rate (Zbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
107	To Rate (Ybps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
108	To Rate (Xbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
109	To Rate (Wbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
110	To Rate (Vbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
111	To Rate (Ubps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
112	To Rate (Tbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Transmit: Capture:
113	To Rate (Pbps)	0.00	0.00	0.00	0.				

110V Cyclic damp heat test

Chassis Card Port Stream	Tx Stream Frames	Rx Signature Stream Frames	Tx Frame Rate (fps)	Rx Frame Rate (fps)	Rx Sequence Errors	Rx IP Payload Errors	Rx IPv4 Checksum Errors	Rx FCS Errors
Chassis1 (Sigtas6100):192.168.0.180								
Card1: P6016C 16xGE Copper								
Port1	14,200,833,082	14,200,840,320	0	0	N/A	0	0	0
Port2	14,200,840,320	14,200,833,082	0	0	N/A	0	0	0
Port3	14,200,826,497	14,200,831,992	0	0	N/A	0	0	0
Port4	14,200,831,992	14,200,826,497	0	0	N/A	0	0	0
Port5	14,200,834,518	14,200,838,085	0	0	N/A	0	0	0
Port6	14,200,838,085	14,200,834,518	0	0	N/A	0	0	0
Port7	14,200,712,339	14,200,833,075	0	0	N/A	0	0	0
Port8	14,200,833,075	14,200,712,339	0	0	N/A	0	0	0
Port9	14,200,827,816	14,200,829,617	0	0	N/A	0	0	0
Port10	14,200,829,617	14,200,827,816	0	0	N/A	0	0	0
Port11	14,200,702,625	14,200,697,114	0	0	N/A	0	0	0
Port12	14,200,697,114	14,200,702,625	0	0	N/A	0	0	0
Port13	14,200,698,330	14,200,699,807	0	0	N/A	0	0	0
Port14	14,200,699,807	14,200,698,330	0	0	N/A	0	0	0
Port15	14,200,832,935	14,200,713,803	0	0	N/A	0	0	0
Port16	14,200,713,803	14,200,832,935	0	0	N/A	0	0	0
Card2: P6016D 16xGE Dual Media								
Port1	14,200,830,836	14,200,832,053	0	0	N/A	0	0	0
Port2	14,200,832,053	14,200,830,836	0	0	N/A	0	0	0
Port3	14,200,699,122	14,200,700,354	0	0	N/A	0	0	0
Port4	14,200,700,354	14,200,699,122	0	0	N/A	0	0	0
Port5	14,200,834,832	14,200,830,170	0	0	N/A	0	0	0
Port6	14,200,830,170	14,200,834,832	0	0	N/A	0	0	0
Port7	14,200,828,882	14,200,830,978	0	0	N/A	0	0	0
Port8	14,200,830,978	14,200,828,882	0	0	N/A	0	0	0
Port9								
Port10								
Port11								
Port12								
Port13								
Port14								
Port15	14,200,830,418	14,200,823,911	0	0	N/A	0	0	0
Port16	14,200,823,911	14,200,830,418	0	0	N/A	0	0	0

220V Low temperature test

Chassis Card Port Stream	Tx Stream Frames	Rx Signature Stream Frames	Tx Frame Rate (fps)	Rx Frame Rate (fps)	Rx Sequence Errors	Rx IP Payload Errors	Rx IPv4 Checksum Errors	Rx FCS Errors
Chassis1 (Sigtas6100):192.168.0.180								
Card1: P6016C 16xGE Copper								
Port1	8,312,172,938	8,312,170,758	0	0	N/A	0	0	0
Port2	8,312,170,758	8,312,172,938	0	0	N/A	0	0	0
Port3	8,312,178,572	8,312,175,364	0	0	N/A	0	0	0
Port4	8,312,175,364	8,312,178,572	0	0	N/A	0	0	0
Port5	8,312,049,642	8,312,168,901	0	0	N/A	0	0	0
Port6	8,312,168,901	8,312,049,642	0	0	N/A	0	0	0
Port7	8,312,182,616	8,312,169,910	0	0	N/A	0	0	0
Port8	8,312,169,910	8,312,182,616	0	0	N/A	0	0	0
Port9	8,312,174,617	8,312,172,179	0	0	N/A	0	0	0
Port10	8,312,172,179	8,312,174,617	0	0	N/A	0	0	0
Port11	8,312,171,053	8,312,175,146	0	0	N/A	0	0	0
Port12	8,312,175,146	8,312,171,053	0	0	N/A	0	0	0
Port13	8,312,169,268	8,312,070,268	0	0	N/A	0	0	0
Port14	8,312,070,268	8,312,169,268	0	0	N/A	0	0	0
Port15	8,312,173,686	8,311,761,606	0	0	N/A	0	0	0
Port16	8,311,761,606	8,312,173,686	0	0	N/A	0	0	0
Card2: P6016D 16xGE Dual Media								
Port1	8,312,040,203	8,312,180,157	0	0	N/A	0	0	0
Port2	8,312,180,157	8,312,040,203	0	0	N/A	0	0	0
Port3	8,312,043,787	8,312,170,496	0	0	N/A	0	0	0
Port4	8,312,170,496	8,312,043,787	0	0	N/A	0	0	0
Port5	8,312,169,411	8,312,049,180	0	0	N/A	0	0	0
Port6	8,312,049,180	8,312,169,411	0	0	N/A	0	0	0
Port7	8,312,175,198	8,312,173,138	0	0	N/A	0	0	0
Port8	8,312,173,138	8,312,175,198	0	0	N/A	0	0	0
Port9	8,312,172,566	8,312,170,179	0	0	N/A	0	0	0
Port10	8,312,170,179	8,312,172,566	0	0	N/A	0	0	0

220V High temperature test

Chassis Card Port Stream	Tx Stream Frames	Rx Signature Stream Frames	Tx Frame Rate (fps)	Rx Frame Rate (fps)	Rx Sequence Errors	Rx IP Payload Errors	Rx IPv4 Checksum Errors	Rx FCS Errors
Chassis1 (Sigtas6100):192.168.0.180								
Card1: P6016C 16xGE Copper								
Port1	8,941,781,554	8,942,036,989	0	0	N/A	0	0	0
Port2	8,942,036,989	8,941,781,554	0	0	N/A	0	0	0
Port3	8,942,037,839	8,942,034,443	0	0	N/A	0	0	0
Port4	8,942,034,443	8,942,037,839	0	0	N/A	0	0	0
Port5	8,942,032,697	8,942,030,221	0	0	N/A	0	0	0
Port6	8,942,030,221	8,942,032,697	0	0	N/A	0	0	0
Port7	8,942,039,984	8,942,042,474	0	0	N/A	0	0	0
Port8	8,942,042,474	8,942,039,984	0	0	N/A	0	0	0
Port9	8,942,029,808	8,942,039,200	0	0	N/A	0	0	0
Port10	8,942,039,200	8,942,029,808	0	0	N/A	0	0	0
Port11	8,942,036,931	8,942,032,989	0	0	N/A	0	0	0
Port12	8,942,032,989	8,942,036,931	0	0	N/A	0	0	0
Port13	8,942,035,289	8,942,035,742	0	0	N/A	0	0	0
Port14	8,942,035,742	8,942,035,289	0	0	N/A	0	0	0
Port15	8,941,908,528	8,941,909,172	0	0	N/A	0	0	0
Port16	8,941,909,172	8,941,908,528	0	0	N/A	0	0	0
Card2: P6016D 16xGE Dual Media								
Port1	8,941,905,935	8,942,035,753	0	0	N/A	0	0	0
Port2	8,942,035,753	8,941,905,935	0	0	N/A	0	0	0
Port3	8,942,034,572	8,942,035,794	0	0	N/A	0	0	0
Port4	8,942,035,794	8,942,034,572	0	0	N/A	0	0	0
Port5	8,941,903,822	8,941,908,697	0	0	N/A	0	0	0
Port6	8,941,908,697	8,941,903,822	0	0	N/A	0	0	0
Port7	8,942,030,765	8,942,040,121	0	0	N/A	0	0	0
Port8	8,942,040,121	8,942,030,765	0	0	N/A	0	0	0
Port9	8,942,037,084	8,942,036,289	0	0	N/A	0	0	0
Port10	8,942,036,289	8,942,037,084	0	0	N/A	0	0	0

220V Damp heat test

Chassis	Card	Port	Stream	Tx Stream Frames	Rx Signature Stream Frames	Tx Frame Rate (fps)	Rx Frame Rate (fps)	Rx Sequence Errors	IP Payload Errors	IPv4 Checksum Errors	Rx FCS Errors
Chassis1 (BigTao6100): 192.168.0.180											
Card1: P6016C 16xGE Copper											
		Port1		8,330,362,569	8,330,361,235	0	0	N/A	0	0	0
		Port2		8,330,361,235	8,330,362,569	0	0	N/A	0	0	0
		Port3		8,330,362,664	8,330,361,611	0	0	N/A	0	0	0
		Port4		8,330,361,611	8,330,362,664	0	0	N/A	0	0	0
		Port5		8,330,361,808	8,330,361,925	0	0	N/A	0	0	0
		Port6		8,330,361,925	8,330,361,808	0	0	N/A	0	0	0
		Port7		8,330,361,398	8,330,362,398	0	0	N/A	0	0	0
		Port8		8,330,362,398	8,330,361,398	0	0	N/A	0	0	0
		Port9		8,330,361,241	8,330,362,113	0	0	N/A	0	0	0
		Port10		8,330,362,113	8,330,361,241	0	0	N/A	0	0	0
		Port11		8,330,361,879	8,330,361,347	0	0	N/A	0	0	0
		Port12		8,330,361,347	8,330,361,879	0	0	N/A	0	0	0
		Port13		8,330,363,511	8,330,361,710	0	0	N/A	0	0	0
		Port14		8,330,361,710	8,330,363,511	0	0	N/A	0	0	0
		Port15		8,330,361,237	8,330,361,054	0	0	N/A	0	0	0
		Port16		8,330,361,054	8,330,361,237	0	0	N/A	0	0	0
Card2: P6016D 16xGE Dual Media											
		Port1		8,330,362,999	8,330,362,434	0	0	N/A	0	0	0
		Port2		8,330,362,434	8,330,362,999	0	0	N/A	0	0	0
		Port3		8,330,363,968	8,330,361,665	0	0	N/A	0	0	0
		Port4		8,330,361,665	8,330,363,968	0	0	N/A	0	0	0
		Port5		8,330,362,239	8,330,364,335	0	0	N/A	0	0	0
		Port6		8,330,364,335	8,330,362,239	0	0	N/A	0	0	0
		Port7		8,330,363,441	8,330,364,227	0	0	N/A	0	0	0
		Port8		8,330,364,227	8,330,363,441	0	0	N/A	0	0	0
		Port9									
		Port10									
		Port11									
		Port12									
		Port13		8,330,363,226	8,330,365,049	0	0	N/A	0	0	0
		Port14		8,330,365,049	8,330,363,226	0	0	N/A	0	0	0

220V Cyclic damp heat test

Chassis	Card	Port	Stream	Tx Stream Frames	Rx Signature Stream Frames	Tx Frame Rate (fps)	Rx Frame Rate (fps)	Rx Sequence Errors	IP Payload Errors	IPv4 Checksum Errors	Rx FCS Errors
Chassis1 (BigTao6100): 192.168.0.180											
Card1: P6016C 16xGE Copper											
		Port1									
		Port2									
		Port3									
		Port4									
		Port5		10,753,810,586	10,753,811,500	0	0	N/A	0	0	0
		Port6		10,753,811,500	10,753,810,586	0	0	N/A	0	0	0
		Port7		10,753,810,521	10,753,809,838	0	0	N/A	0	0	0
		Port8		10,753,809,838	10,753,810,521	0	0	N/A	0	0	0
		Port9		10,753,811,033	10,753,810,747	0	0	N/A	0	0	0
		Port10		10,753,810,747	10,753,811,033	0	0	N/A	0	0	0
		Port11		10,753,810,381	10,753,811,793	0	0	N/A	0	0	0
		Port12		10,753,811,793	10,753,810,381	0	0	N/A	0	0	0
		Port13		10,753,810,117	10,753,811,062	0	0	N/A	0	0	0
		Port14		10,753,811,062	10,753,810,117	0	0	N/A	0	0	0
		Port15		10,753,810,025	10,753,809,236	0	0	N/A	0	0	0
		Port16		10,753,809,236	10,753,810,025	0	0	N/A	0	0	0
Card2: P6016D 16xGE Dual Media											
		Port1		10,753,809,915	10,753,812,342	0	0	N/A	0	0	0
		Port2		10,753,812,342	10,753,809,915	0	0	N/A	0	0	0
		Port3		10,753,810,042	10,753,811,296	0	0	N/A	0	0	0
		Port4		10,753,811,296	10,753,810,042	0	0	N/A	0	0	0
		Port5		10,753,810,429	10,753,810,054	0	0	N/A	0	0	0
		Port6		10,753,810,054	10,753,810,429	0	0	N/A	0	0	0
		Port7		10,753,810,733	10,753,810,563	0	0	N/A	0	0	0
		Port8		10,753,810,563	10,753,810,733	0	0	N/A	0	0	0
		Port9		10,753,811,494	10,753,809,982	0	0	N/A	0	0	0
		Port10		10,753,809,982	10,753,811,494	0	0	N/A	0	0	0
		Port11		10,753,811,115	10,753,812,123	0	0	N/A	0	0	0
		Port12		10,753,812,123	10,753,811,115	0	0	N/A	0	0	0
		Port13		10,753,811,245	10,753,810,992	0	0	N/A	0	0	0
		Port14		10,753,810,992	10,753,811,245	0	0	N/A	0	0	0

3.3 Throughput Test

3.3.1 Test Methods

- 1) According to 2.1 Build the test environment according to the test topology diagram in the figure, and put the DUT Place the Chamber and use a transmission medium (super 5 kind 100 Meter Ethernet Cable & Fiber Optic Kit -No SFP The machine with the interface can be ignored) connects the port to the network tester port;
- 2) In order to prevent the protocol from periodically generating some data packets that affect the correctness of statistics, it is necessary to disable the relevant protocols of the management product , mainly including SPANNING-TREE/DHCP/IP IGMP SNOOPING/LACP , etc.
- 3) Setting up Chamber Ambient to low temperature, temperature values refer to [Table-1](#) Parameters in ;
- 4) Waiting for Chamber After the environment is stable, click " Run " to start the test. After the test is completed, save the test data.
- 5) [Table-1](#) again Parameter settings in Chamber The environment is heated to high temperature, and when the temperature stabilizes, proceed to step 4.

3.3.2 Judgment Criteria

The DUT is required to pass the RFC2544 suite test. Its ability to handle (without packet loss) the maximum data flow, its ability to withstand a specific load, its speed in processing packets, and its ability to handle burst data (cache capacity) must comply with the RFC2544 standard.

3.3.3 Test Results

Test items	Cryogenic throughput	High temperature throughput
Temperature (°C)	- 10	50
Test Data	 Low temperature throughput. p d f	 High temperature throughput. p d f

3.4 Power On/Off Test

Mainly in 3 The tests were carried out under three conditions: room temperature, low temperature and high temperature.

3.4.1 Test Methods

- Reference 2.1 The test topology diagram in the figure connects the DUT , fixture load, and network tester through the transmission medium ;
- Set the network tester parameters: frame length is 64 Bytes, automatic test mode, test time is 10s , negotiation rate is 1000Mbps ;
- DUT Connect the power input port to the power on/off fixture (time counter) with a power on and 5 seconds based on the time required for the test and the time it takes to start the machine. As the counter continuously powers on for a certain period of time, the power-off time is based on the DUT Set a time to stop working completely;
- When testing in high and low temperature environments, edit Chamber Program testing;
- Mode 1: Room temperature environment, test times not less than 100 Second-rate;
- Mode 2: Low temperature environment, test times no less than 200 Second-rate;
- Mode 3: High temperature environment, test times no less than 300 Second-rate

3.4.2 Judgment Criteria

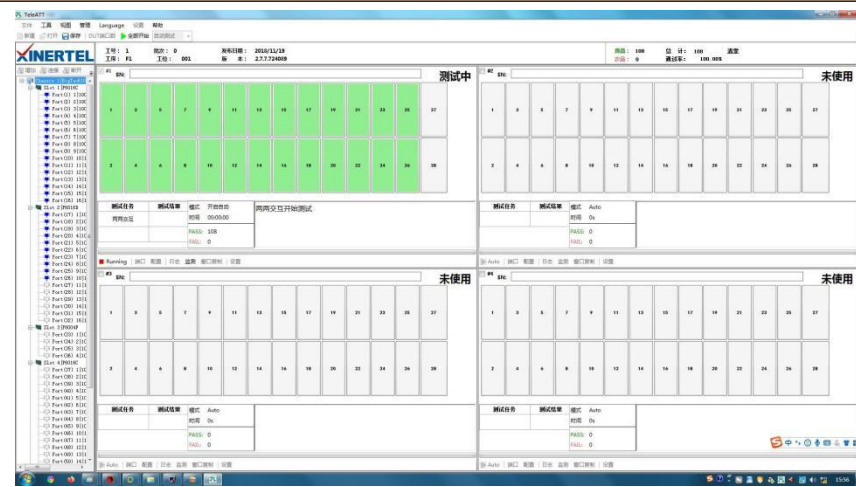
Requirements for DUT The load is normal during power-on, and each current test is a PASS , which can be checked through the good and bad product counts on the test software.

3.4.3 Test Results

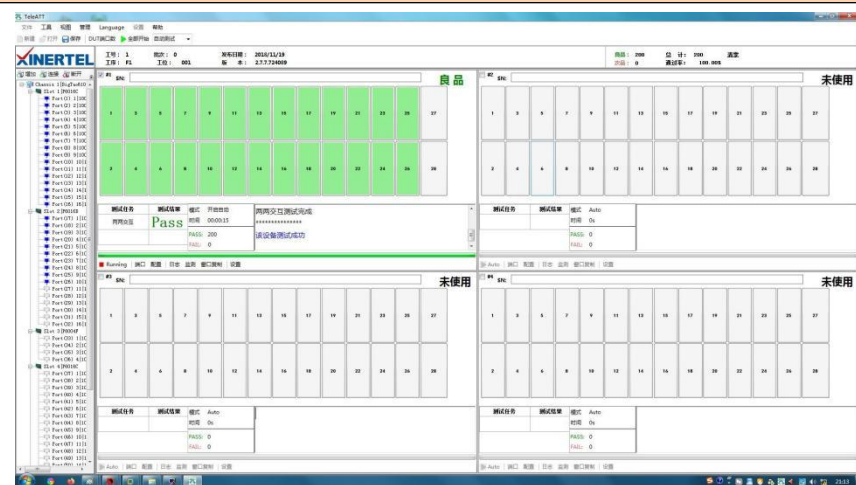
model	Temperature (°C)	Total times	Flow test count		PASS / FAIL
			Number of good products	Number of defective products	
Room temperature	25	108	108	0	PASS
Low temperature environment	- 10	200	200	0	PASS
High temperature environment	50	300	300	0	PASS

Related drawings

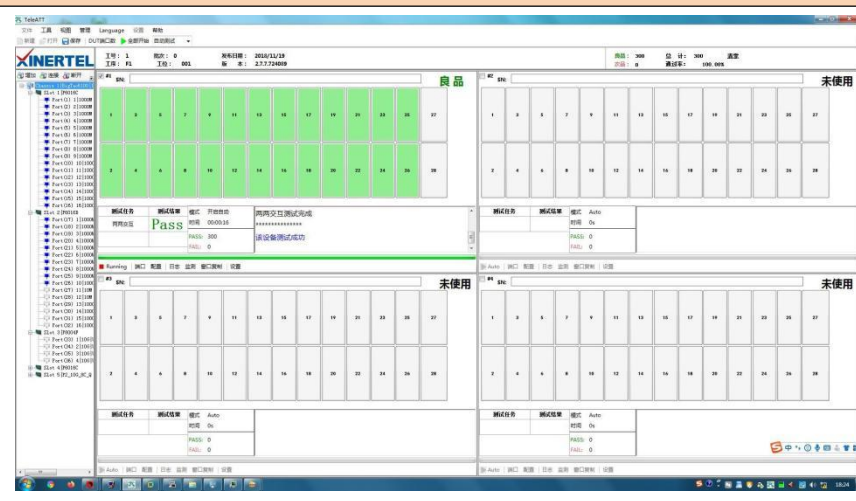
Room temperature



Low temperature environment



High temperature environment



3.5 Startup Test

While performing high and low temperature tests, startup tests should also be performed to observe whether the DUT can start and work normally under the two extreme conditions .

3.5.1 Low Temperature Startup Test

- According to 2.1 Build the test environment according to the test topology diagram in the figure, and put the DUT Placing Chamber Inside and powered;
- According to [Table-1](#) Setting up Chamber Low ambient temperature;
- After everything is set up, give the DUT Power off, store in low temperature environment for 120 minutes to ensure that the DUT Cool completely;
- After the storage time is up, test in the following modes:
- Mode 1: Interval 10 The switch is started once every minute and performs full load flow test as one cycle. The cycle lasts 5 minutes. Second-rate;
- Mode 2: Interval 20 The switch starts once every second and performs a full load flow test as one cycle, and the cycle lasts 20 times. Second-rate.

3.5.2 High Temperature Startup Test

- According to 2.1 Build the test environment according to the test topology diagram in the figure, and put the DUT Placing Chamber Inside and powered;
- According to [Table-1](#) Setting up Chamber High ambient temperature;
- After everything is set up, give the DUT Power off, store in high temperature environment for 120 minute;
- After the storage time is up, test in the following modes:
- Mode 1: Interval 5 The switch is started once every minute and performs full load flow test as one cycle. The cycle lasts 5 minutes. Second-rate;
- Mode 2: Interval 10 The switch starts once every second and performs a full load flow test as one cycle, and the cycle is 50 Second-rate.

3.5.3 Judgment Criteria

It is required that each time the switch is started, the traffic test should be conducted without any abnormalities such as packet loss or extra packets.

3.5.4 Test Results

Test items	Power-on duration (s)	Power failure duration (s)	Number of tests	Pass / Fail
Low temperature start	70	600	5	Pass
	70	20	20	Pass

High temperatu re start	70	300	5	Pass
	70	10	50	Pass

3.6 Storage Test

The storage temperature of general commercial products is -40 °C, 70 °C 95%RH, and the storage temperature of industrial-grade products is -40 °C, 85 °C 95%RH. After the storage test, the temperature is restored to normal to test whether the DUT can still work normally.

3.6.1 Low Temperature Storage Test

- DUT Placing Chamber Inside, according to [Table-1](#) Setting up Chamber Low ambient temperature;
- Ensure DUT All connection ports are vacant, the whole machine is powered off, and the storage time is [Table-1](#) duration in;
- After the storage time is up, let the DUT Return to room temperature and let stand for 2 Hours, do appearance inspection and function test.

3.6.2 High Temperature Storage Test

- DUT Placing Chamber Inside, according to [Table-1](#) Setting up Chamber High ambient temperature;
- Ensure DUT All connection ports are vacant, the whole machine is powered off, and the storage time is [Table-1](#) duration in;
- After the storage time is up, let the DUT Return to room temperature and let stand for 2 Hours, do appearance inspection and function test.

3.6.3 Judgment Criteria

The DUT appearance inspection requires that the casing has no cracks, deformation, paint peeling, discoloration, components are not damaged, etc., the functional test is normal, and the switch flow test is normal.

3.6.4 Test Results

Test items	Storage time (hours)	Functional testing		Appearance inspection
		Console mouth	Flow test	
Low temperature storage test	12	✓	✓	✓
High temperature storage test	12	✓	✓	✓

Note:

Test Pass Fill in " ✓ " for the test. Fill in " ✗ ".

4. Conclusion

6610-42 passed the reliability test and can withstand the corresponding environmental test.