

Reliability Test Report

Product Name:	BW16
Product Model:	BW16_V1.2
Test Date:	2024.07.17–2024.07.24
Tested by:	Kang Penghui
Reviewed by:	An Sanchao

1. Inspection Standard

No.	Process Name	Inspection Item	Inspection Equipment	Sampling Level (Refer to GB/T 2828.1-2012)	Acceptable Quality Level		
					CR (Critical Defect)	MA (Major Defect)	MI (Minor Defect)
1	Reliability test	High/low temperature storage; high/room/low temperature power on/off; high/low temperature operation; alternating hot and humid; thermal shock	Constant temperature and humidity chamber	Normal single sampling, special inspection S-1	0 accept, 1 reject		

2. Test Items

No.	Item	Test Conditions
1	Low temperature storage test	Test conditions: -40°C Test duration: 8h After a 1-hour soak at -40°C, perform a cold start test.
2	High temperature storage test	Test conditions: 100°C + 93% RH Test duration: 8h After restoring to 85°C and a 1-hour soak, perform a hot start test.
3	Low temperature operation test	Test conditions: -40°C Test duration: 24h
4	High temperature operation test	Test conditions: 85°C + 93% RH Test duration: 24h
5	AC power on/off test with temperature	A) Temperature: -40°C B) Temperature: 25°C + 93% RH C) Temperature: 85°C + 93% RH Cycle each condition 200 times, with 30s ON and 30s OFF.
6	Alternating hot and humid test	A) Operate at 85°C + 93% RH for 4h; B) Operate at 25°C + 93% RH for 4h; Cycle steps A and B for a total of 2 cycles.
7	Thermal shock test	Test conditions: -40°C–100°C + 93% RH, soak for 30min at each temperature. Temperature transition time: 50min for heating, 2h for cooling. Test duration: 5 cycles

3. Test Preparation

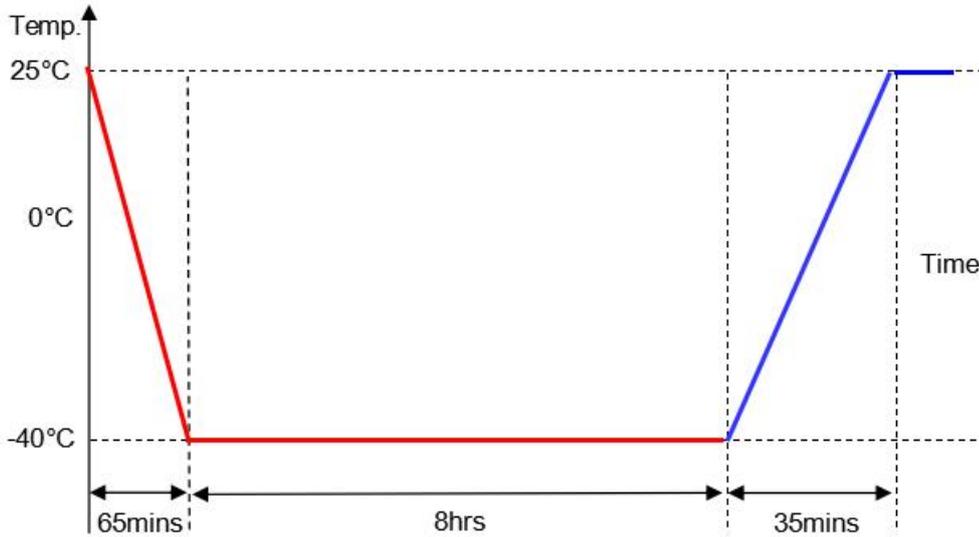
No.	Item	Image/Attachment
1	Reliability documentation	Refer to the BW16 series reliability documentation
2	Test equipment	
3	Sample placement	
4	Test reason	Reliability test for pilot production with material replacement (91250028)

4. Low Temperature Storage Test

Test Conditions: Power-off test. Store the product at -40°C for 8h, then perform a cold start test.

Test Profile:

Is Power Off —
Is Power On —



Test Criteria:

1. During the cold start test, the module functions normally. Power on the module and send commands to start the test. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

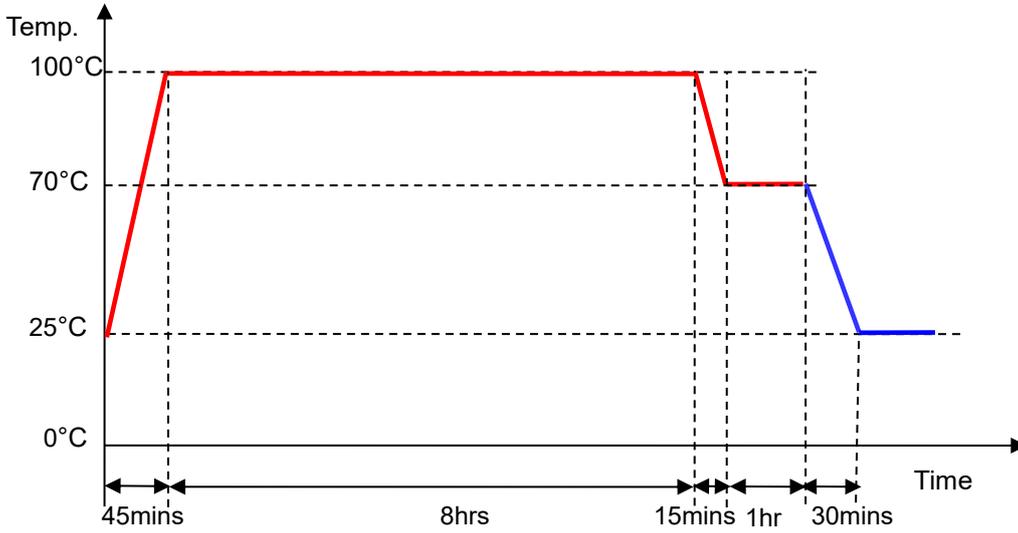
Sample Quantity	Test Data	Test Results
5PCS	<p>The screenshots show the ATOKPING software interface for five different samples. Each window displays 'Ping 统计信息' (Ping Statistics) with fields for '发送包' (Packets Sent), 'Ping 最小值' (Min Ping), 'Ping 最大值' (Max Ping), 'Ping 平均值' (Avg Ping), and '包丢失' (Packet Loss). All samples show 0% packet loss and successful ping responses. For example, Sample 1 shows 2727 packets sent, a min ping of 0ms, and a max ping of 54ms.</p>	PASS

5. High Temperature Storage Test

Test Conditions: Power-off test. Store the product at 100°C + 93% RH for 8h, then restore it to 85°C + 93% RH for a 1-hour soak, and perform a hot start test.

Test Profile:

Is Power Off ——
Is Power On ——



Test Criteria:

- During the hot start test, the module functions normally. Send commands to start the test after power-on. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is considered to be functional.
- After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

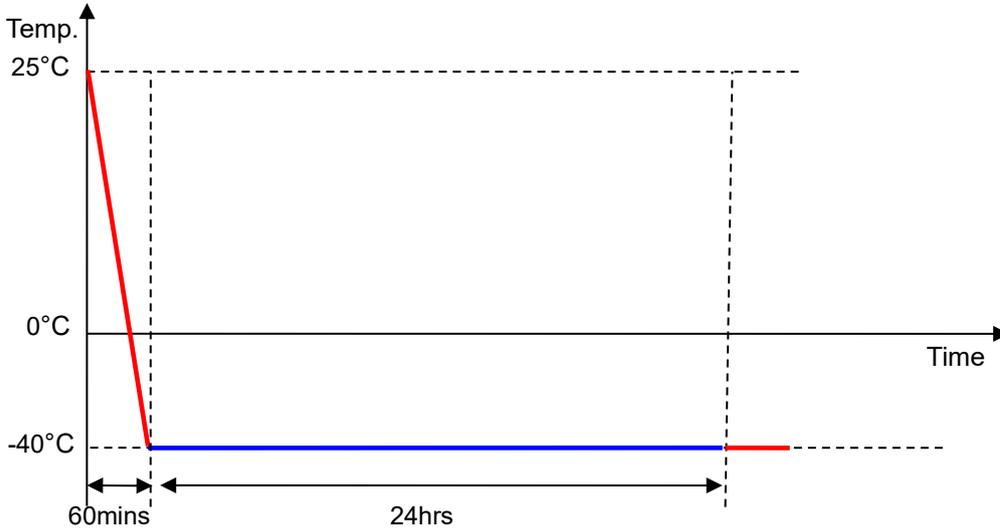
Sample Quantity	Test Data	Test Results
5PCS		PASS

6. Low Temperature Operation Test

Test Conditions: Power-on test. Operate at -40°C for 24h.

Test Profile:

Is Power Off —
Is Power On —



Test Criteria:

1. Connect the module properly and send commands to start the test after power-on. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
5PCS	<p>The test data consists of five screenshots of the ATCKPING application interface. Each screenshot shows a successful ping test to a specific IP address (192.168.50.57, 192.168.50.210, 192.168.50.110, 192.168.50.104, and 192.168.50.178). The logs include details such as 'Ping 统计信息' (Ping statistics), '发送包' (Packets sent), '接收包' (Packets received), '丢包率' (Packet loss rate), and '存活时间' (Survival time). All tests show a 0% packet loss rate and successful completion.</p>	PASS

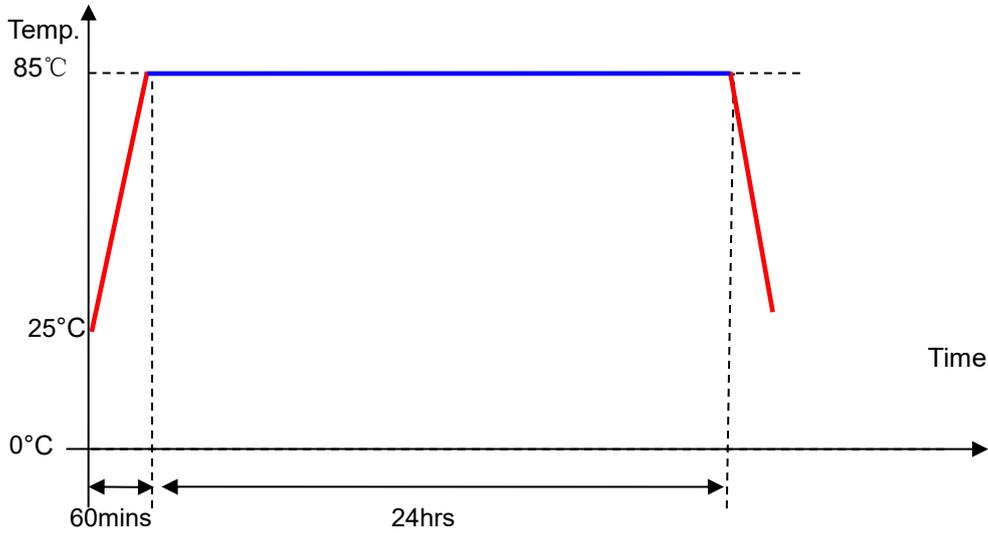
7. High Temperature Operation Test

Test Conditions: Power-on test. Operate at 85°C+ 93% RH for 24h.

Test Profile:

Is Power Off ——

Is Power On ——



Test Criteria:

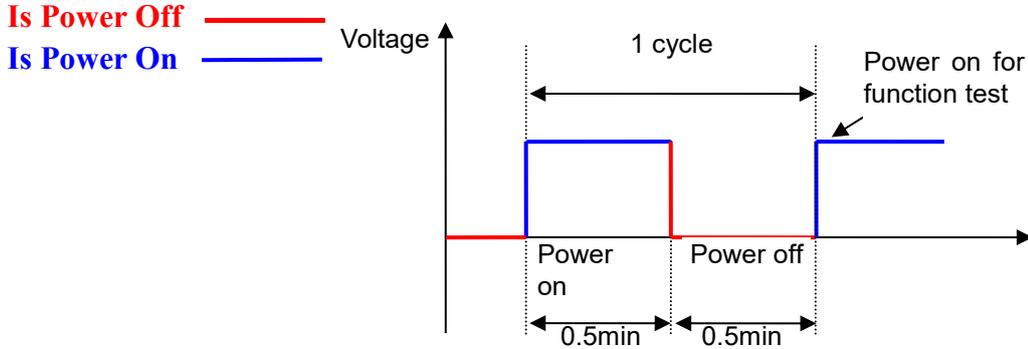
1. Connect the module properly and send commands to start the test after power-on. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
5PCS		PASS

8. AC Power On/Off Test with Temperature

- Test Conditions:**
1. Power on: 30s; power off: 30s.
 2. Temperature: -40°C, 25°C + 93% RH, 85°C + 93% RH.
 3. Cycle: Each test condition cycles 200 times.

Test Profile:



Test Criteria:

1. Connect the module properly and send commands to start the test after power-on. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

Item	Sample Quantity	Test Data	Test Results
Power on/off at room temperature	5PCS		PASS
Power on/off at low temperature	5PCS		PASS
Power on/off at high temperature	5PCS		PASS

9. Alternating Hot and Humid Test

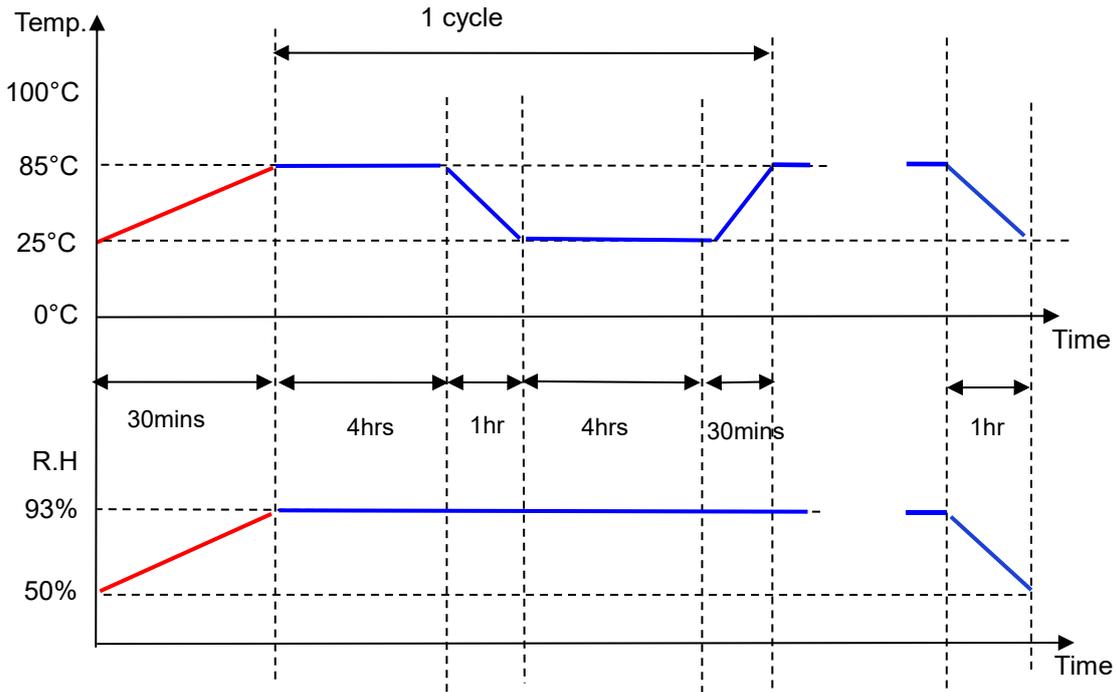
Test Conditions:

1. Operate at 85°C + 93% RH for 4h;
 2. Operate at 25°C + 93% RH for 4h;
- Cycle step 1 and step 2, a total of 2 cycles.

Test Profile:

Is Power Off ——

Is Power On ——



Test Criteria:

1. Send commands to start the test after power-on. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
5PCS		PASS

10. Thermal Shock Test

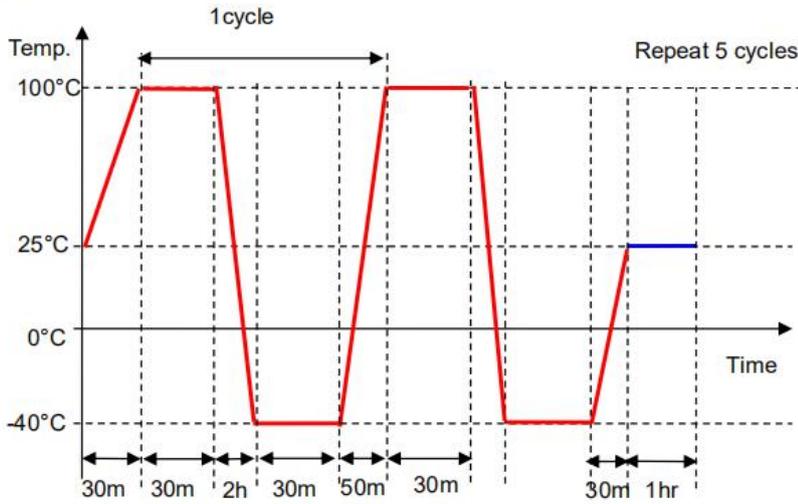
Test Conditions:

Power-off test. Temperature cycling between -40–100°C + 93% RH, with a heating time of 50min and a cooling time of 2h. Each stage is held for 30min, for a total of 5 cycles.

Test Profile:

Is Power Off

Is Power On



Test Criteria:

1. Connect the module properly and send commands to start the test after power-on. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
5PCS		PASS