

# Reliability Test Report

<b>Product Name:</b>	<u>Ai-WB3-12F</u>
<b>Product Model:</b>	<u>Wi-Fi Series</u>
<b>Test Date:</b>	<b>2023.03.17–2023.03.23</b>
<b>Tested by:</b>	<b>Liu Qun</b>
<b>Reviewed by:</b>	<b>Lu Xingui</b>

## 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 an 8-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

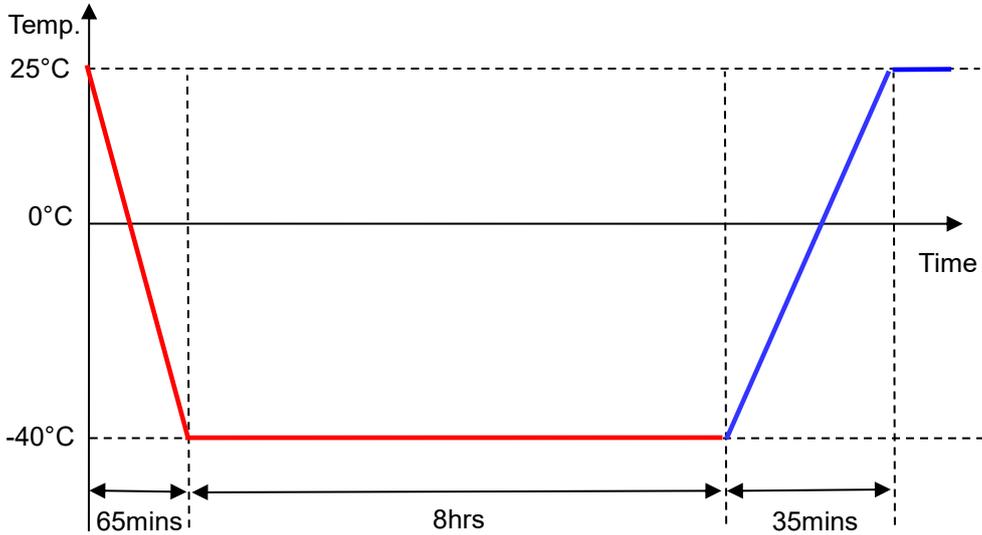
No.	Item	Image/Attachment
1	Reliability documentation	 <p>WB3系列模组可靠性测试说明(1).d</p>
2	Test equipment	
3	Sample placement	
4	Test reason	New product

### 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. If ping packets are confirmed not to be lost, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

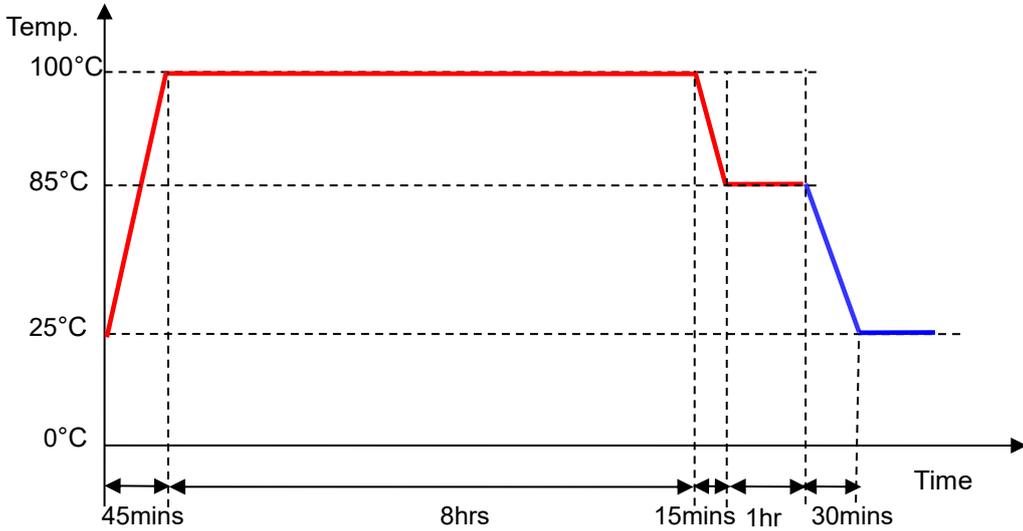
Sample Quantity	Test Data	Test Results
6PCS	<p>The test data section contains six screenshots of the ATKXPING software interface. Each screenshot shows the 'Ping 统计信息' (Ping Statistics) section with the following data:</p> <ul style="list-style-type: none"> <li>Sample 1: 2199 packets, 0 min, 71 max, 0.00% loss, 4.37 avg.</li> <li>Sample 2: 2157 packets, 0 min, 70 max, 0.00% loss, 3.14 avg.</li> <li>Sample 3: 2107 packets, 0 min, 69 max, 0.00% loss, 2.79 avg.</li> <li>Sample 4: 1927 packets, 0 min, 71 max, 0.00% loss, 4.54 avg.</li> <li>Sample 5: 1945 packets, 1 min, 71 max, 0.05% loss, 3.11 avg.</li> <li>Sample 6: 2024 packets, 0 min, 70 max, 0.00% loss, 3.23 avg.</li> </ul>	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:

1. During the hot start test, the module functions normally. If ping packets are confirmed not to be lost, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

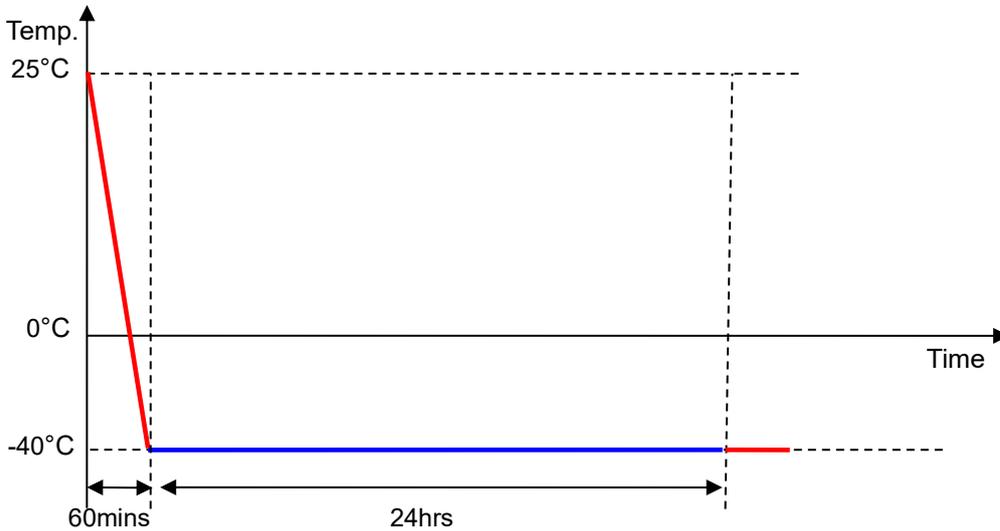
Sample Quantity	Test Data	Test Results
6PCS		PASS

## 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. No network disconnections occurred during the test. If ping packets are confirmed not to be lost, 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
6PCS	<p>The screenshot shows six instances of the ATXKPPING test software. Each instance displays the following statistics:</p> <ul style="list-style-type: none"> <li>Sample 1: Ping 5451302, Ping 最小值 1 毫秒, Ping 最大值 984 毫秒, Ping 平均值 7.61 毫秒, 超时 0.01 %.</li> <li>Sample 2: Ping 5442889, Ping 最小值 1 毫秒, Ping 最大值 996 毫秒, Ping 平均值 7.32 毫秒, 超时 0.01 %.</li> <li>Sample 3: Ping 5158200, Ping 最小值 2 毫秒, Ping 最大值 950 毫秒, Ping 平均值 7.52 毫秒, 超时 0.08 %.</li> <li>Sample 4: Ping 5453873, Ping 最小值 1 毫秒, Ping 最大值 958 毫秒, Ping 平均值 6.20 毫秒, 超时 0.01 %.</li> <li>Sample 5: Ping 5500000, Ping 最小值 1 毫秒, Ping 最大值 946 毫秒, Ping 平均值 7.24 毫秒, 超时 0.01 %.</li> <li>Sample 6: Ping 5444711, Ping 最小值 1 毫秒, Ping 最大值 965 毫秒, Ping 平均值 8.11 毫秒, 超时 0.01 %.</li> </ul>	PASS

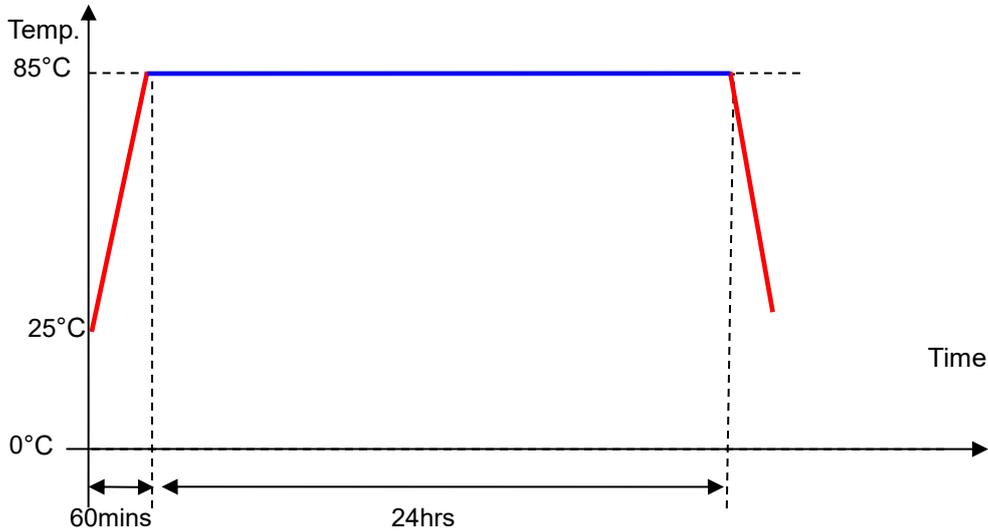
## 7. High Temperature Operation Test

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

Test Profile:

Is Power Off —

Is Power On —



### Test Criteria:

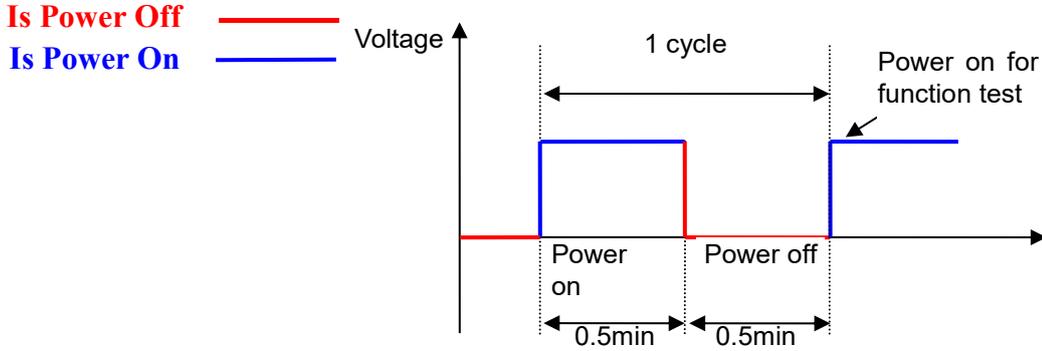
1. No network disconnections occurred during the test. If ping packets are confirmed not to be lost, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
6PCS	<p>The test data consists of six screenshots of the ATOKPING software interface. Each screenshot shows a successful ping test configuration and results. The 'Ping 统计值' (Ping Statistics) section in each window shows 0% packet loss and various response times (min, max, average). For example, the first window shows a target IP of 168.3.3 and a 0.02% loss rate. The sixth window shows a target IP of 168.3.14 and a 0.02% loss rate. All tests were completed successfully without any disconnections.</p>	PASS

## 8. AC Power On/Off Test with Temperature

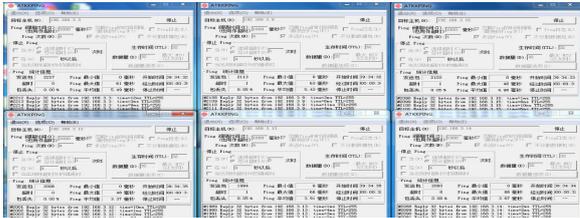
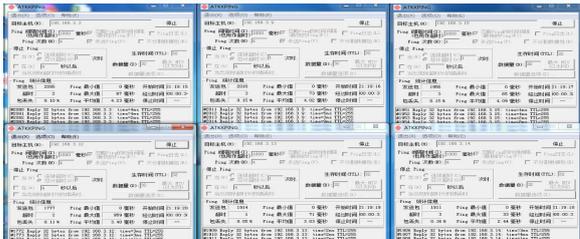
- Test Conditions:**
1. Power on: 30s; power off: 30s.
  2. Temperature: -40°C, 25°C + 93% RH, 85°C + 93% RH.
  3. Cycle: Each test condition cycles 200 times.

**Test Profile:**



**Test Criteria:**

1. After power-up, the module boots normally. During the test, if the module boots normally and there is connectivity for every ping packet, 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	6PCS		PASS
Power on/off at low temperature	6PCS		PASS
Power on/off at high temperature	6PCS		PASS

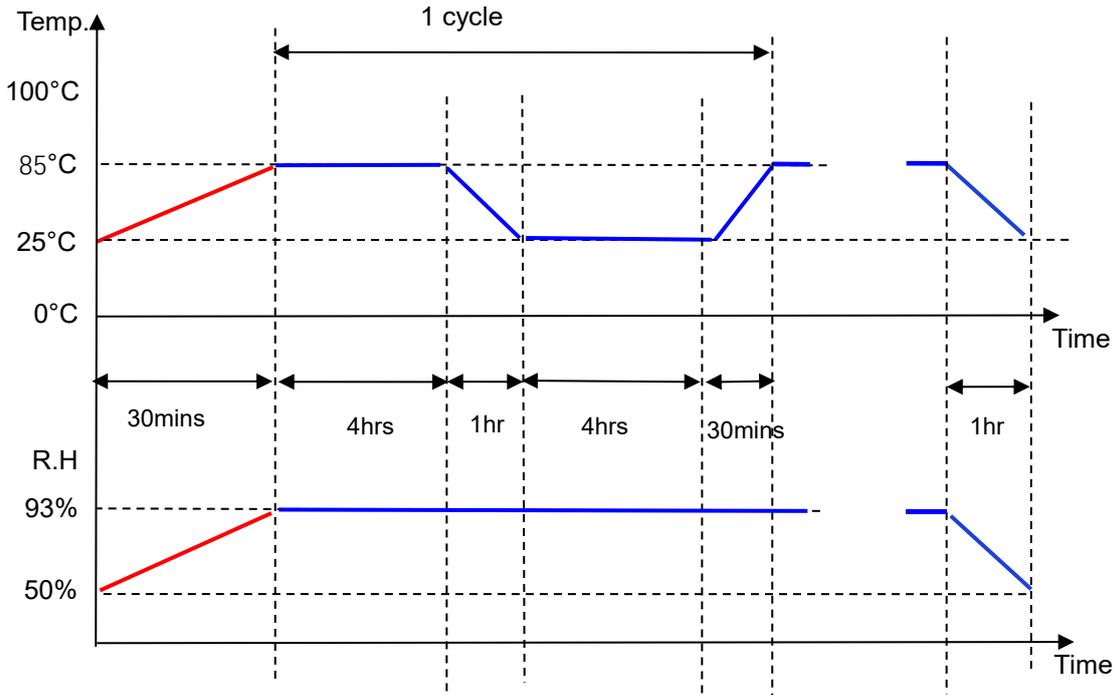
## 9. Alternating Hot and Humid Test

### 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. No network disconnections occurred during the test. If ping packets are confirmed not to be lost, 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
6PCS		PASS

# 10. Thermal Shock Test

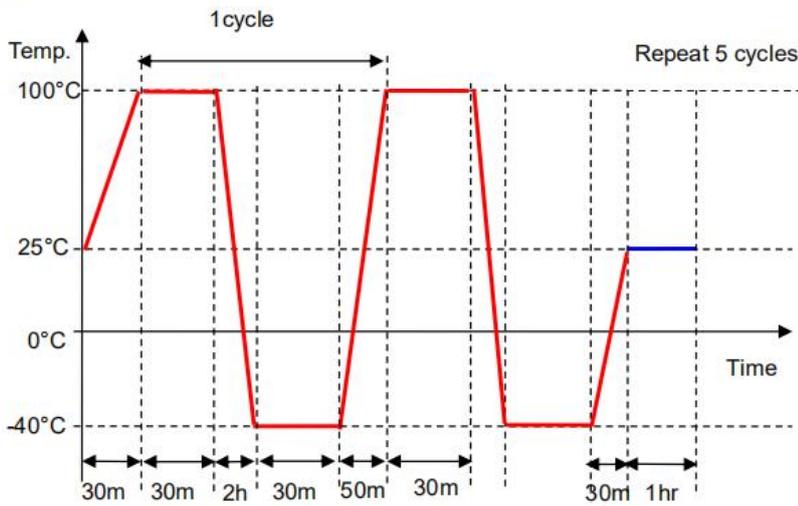
## Test Conditions:

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. After power-up, the module boots normally. If ping packets are confirmed not to be lost, 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
6PCS		PASS