

Reliability Test Report

| | |
|-----------------------|----------------------------|
| Product Name: | Ai-M62-32S |
| Product Model: | <u>Wi-Fi Series</u> |
| Test Date: | 2023.5.6-2023.5.13 |
| Tested by: | Liu Qun |
| Reviewed by: | Lu Xingui |

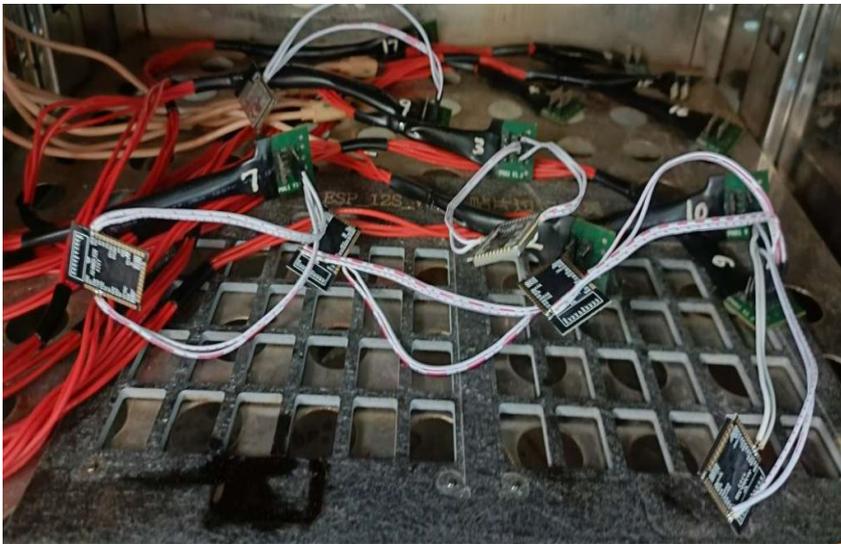
1. Inspection Standard

| 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

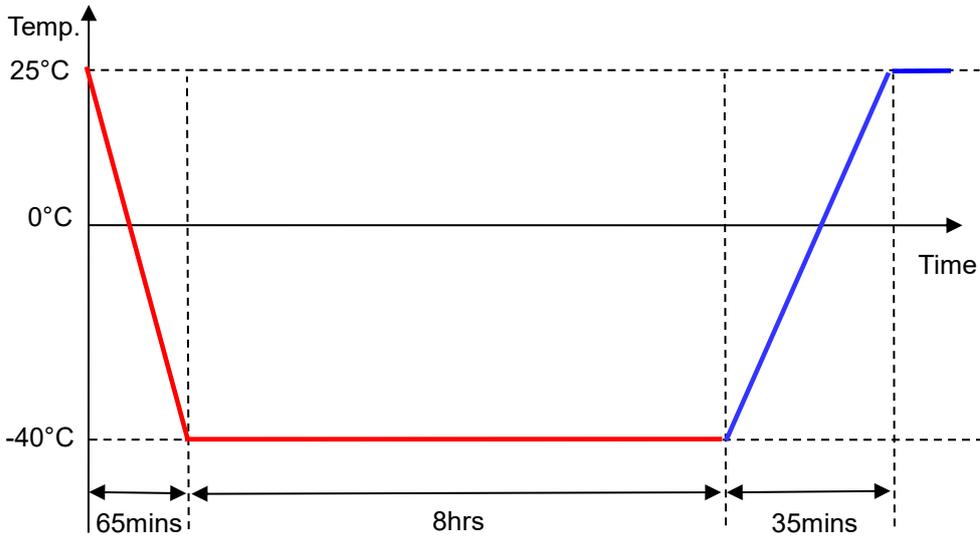
| No. | Item | Image/Attachment |
|-----|---------------------------|---|
| 1 | Reliability documentation |  Ai-M61系列 可靠性WIFI测试说 |
| 2 | Test equipment |  |
| 3 | Sample placement |  |
| 4 | Test reason | New product reliability verification |

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.

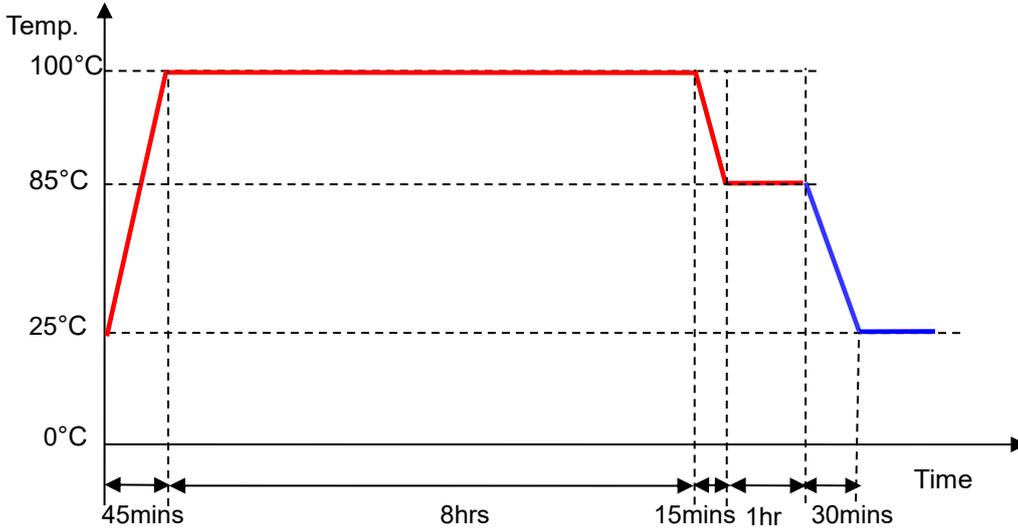
| Sample Quantity | Test Data | Test Results |
|-----------------|---|--------------|
| 6PCS | <p>The figure shows six screenshots of the ATKXPING software interface, arranged in a 2x3 grid. Each screenshot displays the 'Ping 统计值' (Ping Statistics) section. The data for each screenshot is as follows:</p> <ul style="list-style-type: none"> Screenshot 1: 发送包: 2149, Ping 最小值: 2 毫秒, Ping 最大值: 48 毫秒, Ping 平均值: 6.49 毫秒, 包丢失: 0.00%. Screenshot 2: 发送包: 2063, Ping 最小值: 2 毫秒, Ping 最大值: 52 毫秒, Ping 平均值: 4.54 毫秒, 包丢失: 0.00%. Screenshot 3: 发送包: 2054, Ping 最小值: 2 毫秒, Ping 最大值: 29 毫秒, Ping 平均值: 4.92 毫秒, 包丢失: 0.00%. Screenshot 4: 发送包: 1746, Ping 最小值: 2 毫秒, Ping 最大值: 95 毫秒, Ping 平均值: 6.83 毫秒, 包丢失: 0.11%. Screenshot 5: 发送包: 1909, Ping 最小值: 2 毫秒, Ping 最大值: 37 毫秒, Ping 平均值: 5.32 毫秒, 包丢失: 0.00%. Screenshot 6: 发送包: 1969, Ping 最小值: 2 毫秒, Ping 最大值: 27 毫秒, Ping 平均值: 5.71 毫秒, 包丢失: 0.00%. | 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.

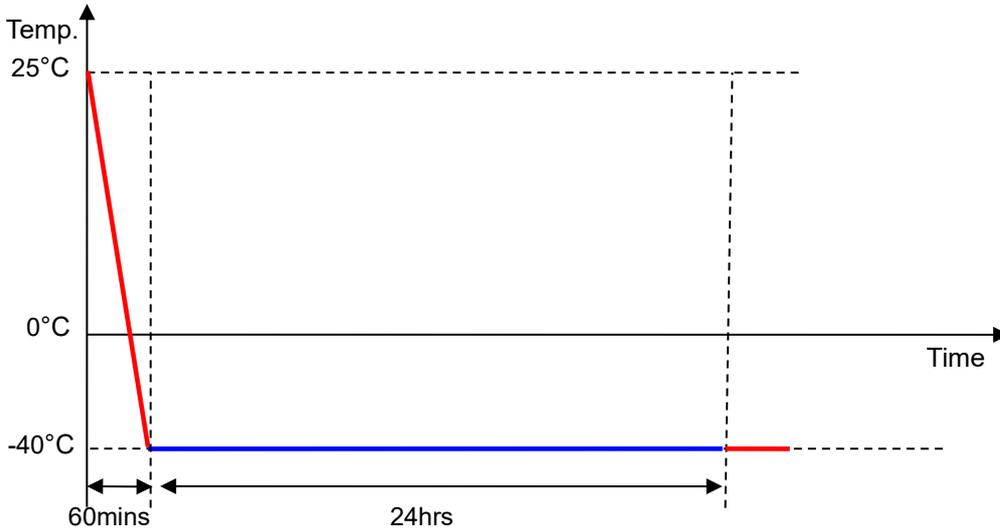
| Sample Quantity | Test Data | Test Results |
|-----------------|-----------|--------------|
| 6PCS | | PASS |

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:

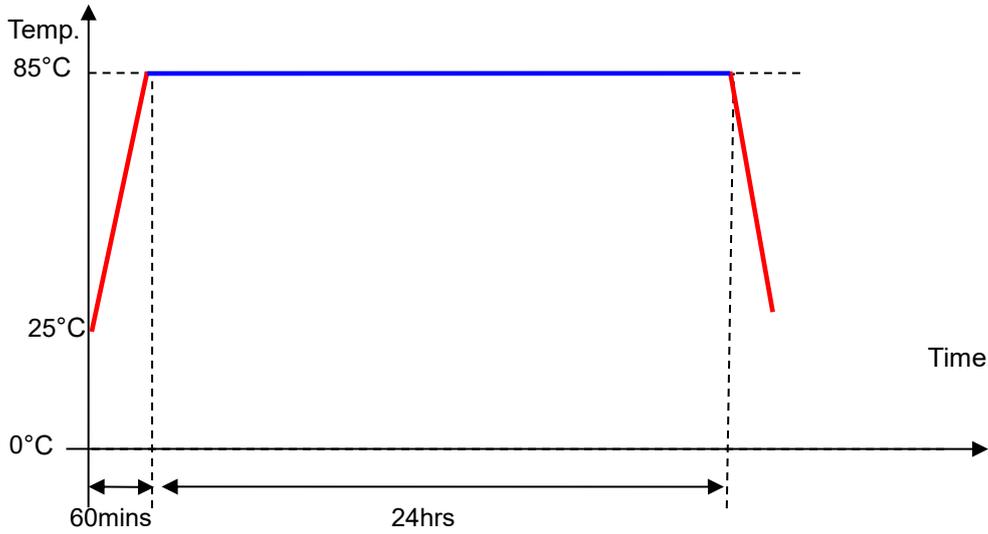
1. No network disconnections occurred during the test. If ping packets are confirmed not to be lost, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

| Sample Quantity | Test Data | Test Results |
|-----------------|--|--------------|
| 6PCS | <p>The test data consists of six screenshots of the ATKOPING software interface. Each screenshot shows a successful ping test to a target IP address (192.168.3.9, 192.168.3.0, 192.168.3.12, 192.168.3.3, 192.168.3.10, 192.168.3.10). The statistics for each test include: <ul style="list-style-type: none"> 发送包 (Packets Sent): 5064221, 4034896, 4076550, 3785, 3658, 5056956 Ping 最小值 (Min Ping): 2 毫秒 (2 ms) Ping 最大值 (Max Ping): 1011 毫秒 (1011 ms) Ping 平均值 (Avg Ping): 5.17 毫秒 (5.17 ms), 6.45 毫秒 (6.45 ms), 5.88 毫秒 (5.88 ms) 丢包率 (Packet Loss): 0.05% 丢包数 (Packets Lost): 0 </p> | PASS |

7.High Temperature Operation Test

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

Test Profile:



Test Criteria:

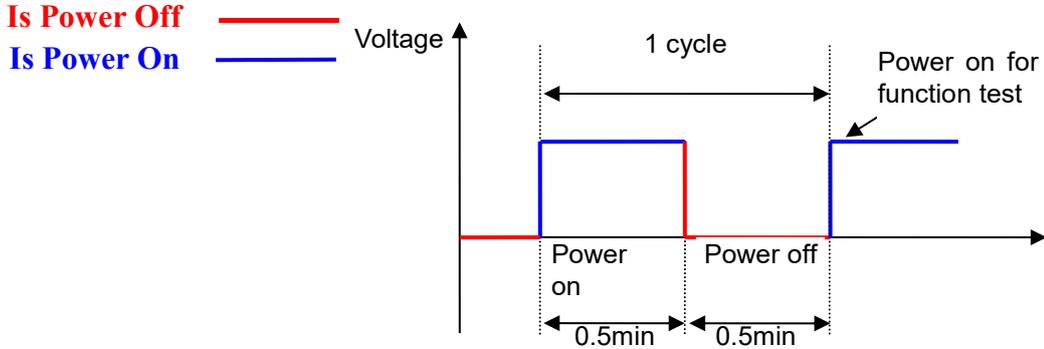
1. No network disconnections occurred during the test. If ping packets are confirmed not to be lost, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

| Sample Quantity | Test Data | Test Results |
|-----------------|---|--------------|
| 6PCS | <p>The test data consists of six screenshots of the ATKOPING 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"> 发送包 (Packets Sent): 3942464 Ping 最小值 (Min): 2 毫秒 Ping 最大值 (Max): 1009 毫秒 Ping 平均值 (Avg): 8.95 毫秒 超时 (Timeout): 3984 丢包率 (Loss): 0.10 % <p>Each screenshot also displays a list of successful ping replies with details like IP addresses and response times.</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 |

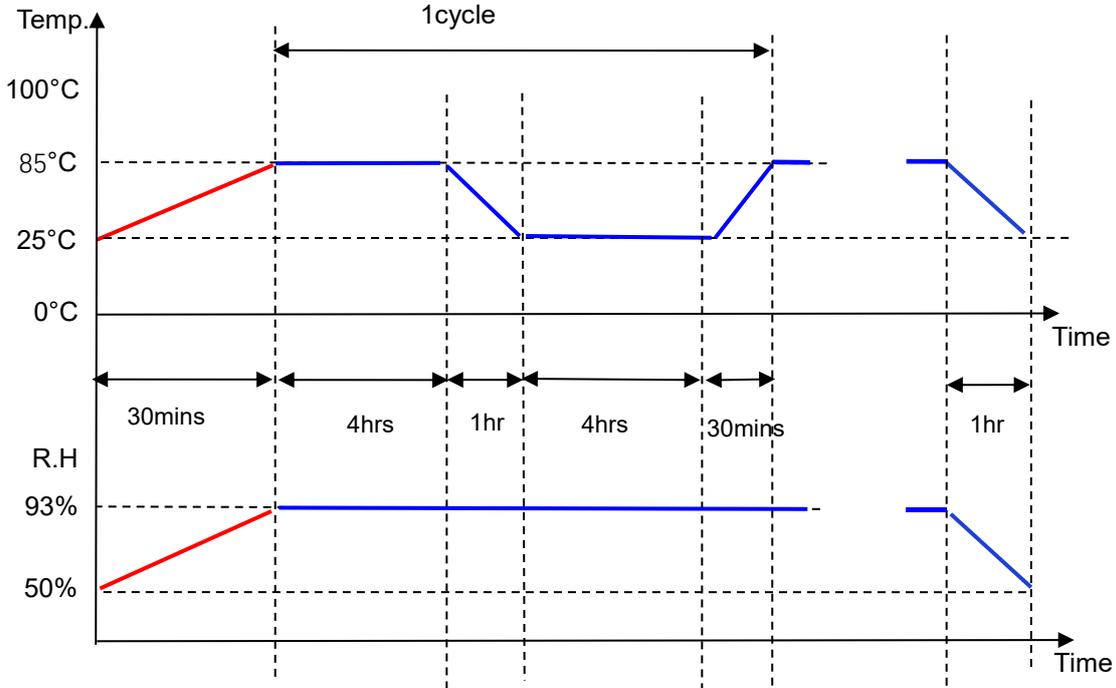
9. Alternating Hot and Humid Test

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

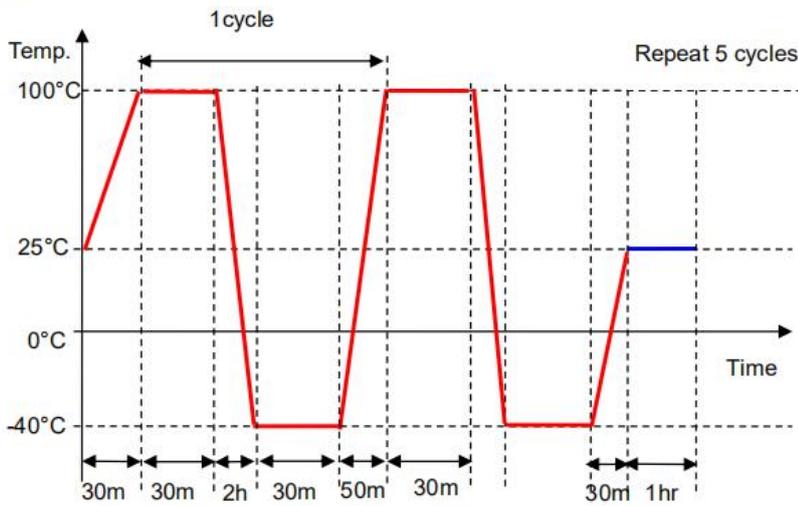
Test Conditions:

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 |