

Reliability Test Report

Product Name:	RF433 Series
Product Model:	Ai-SG01_V1.0
Test Date:	2025.11.03-2025.11.12
Tested by:	Dong Wenchao
Reviewed by:	An Sanchao

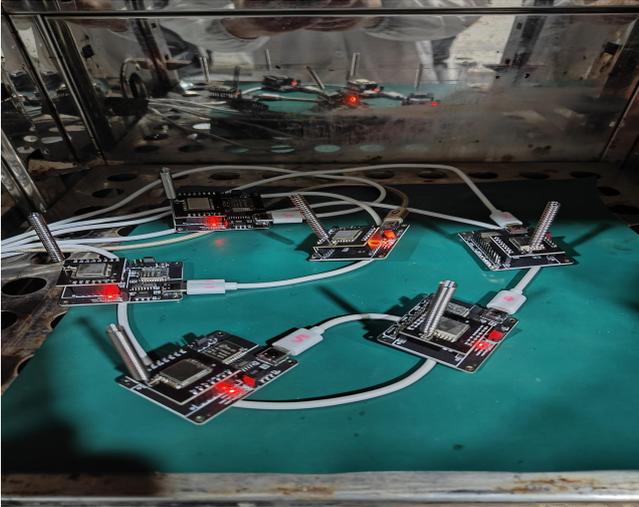
1. Inspection Standard

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

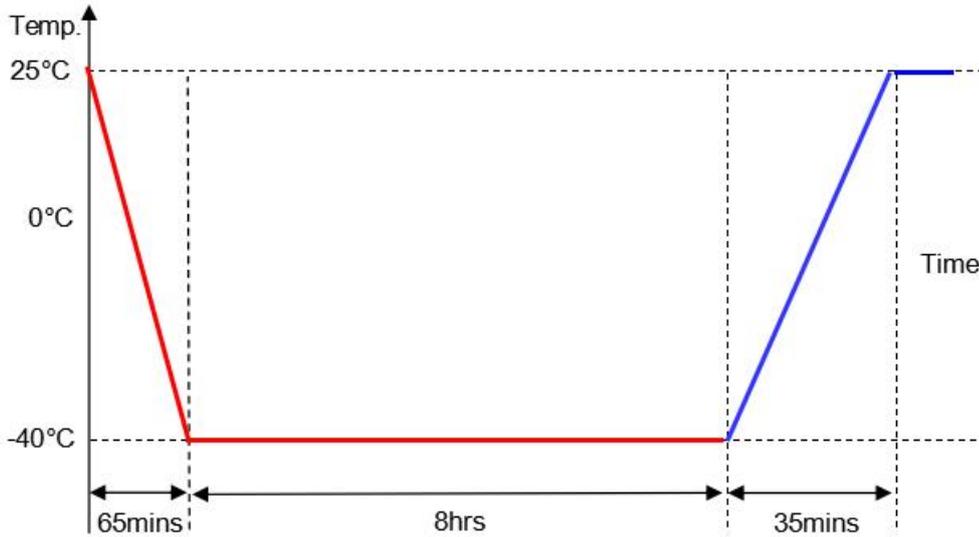
No.	Item	Image/Attachment
1	Reliability documentation	 Ai-SG01可靠性测试说明20251103.dc
2	Test equipment	
3	Sample placement	
4	Test reason	New product reliability test (91130008)

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 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 operating normally and is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

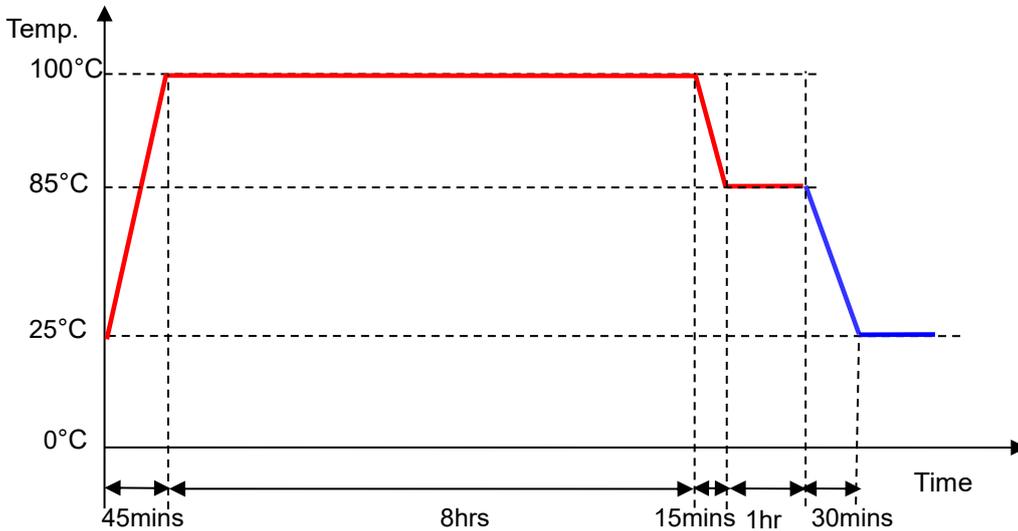
Sample Quantity	Test Data	Test Results
6PCS	<p>The screenshot displays multiple windows of test data logs. The logs show network traffic statistics, including packet counts and loss rates, and temperature monitoring data. The data indicates successful communication and stable temperature control during the test.</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:

1. During the hot start test, the module functions normally. Power on the module and 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 operating normally and is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

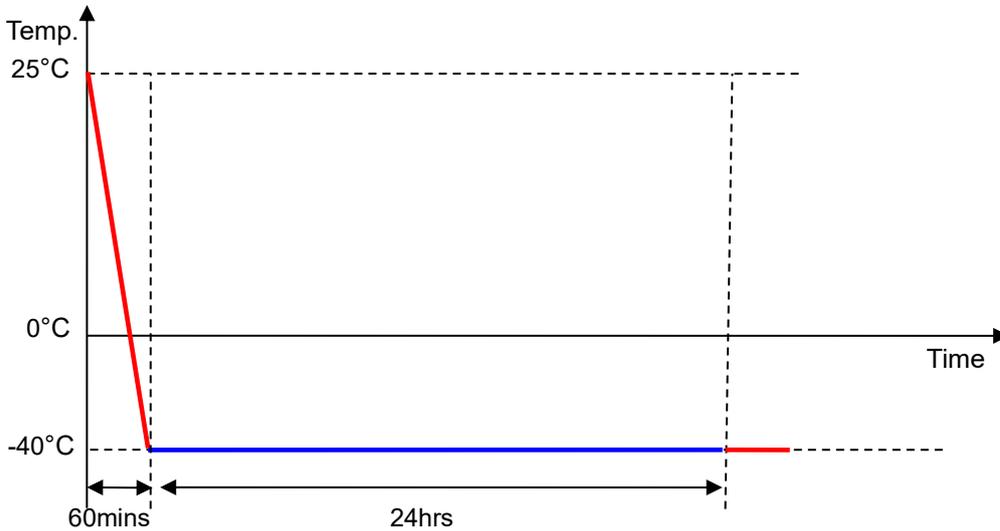
Sample Quantity	Test Data	Test Results
6PCS		PASS

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. Connect the module properly and 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 operating normally and is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

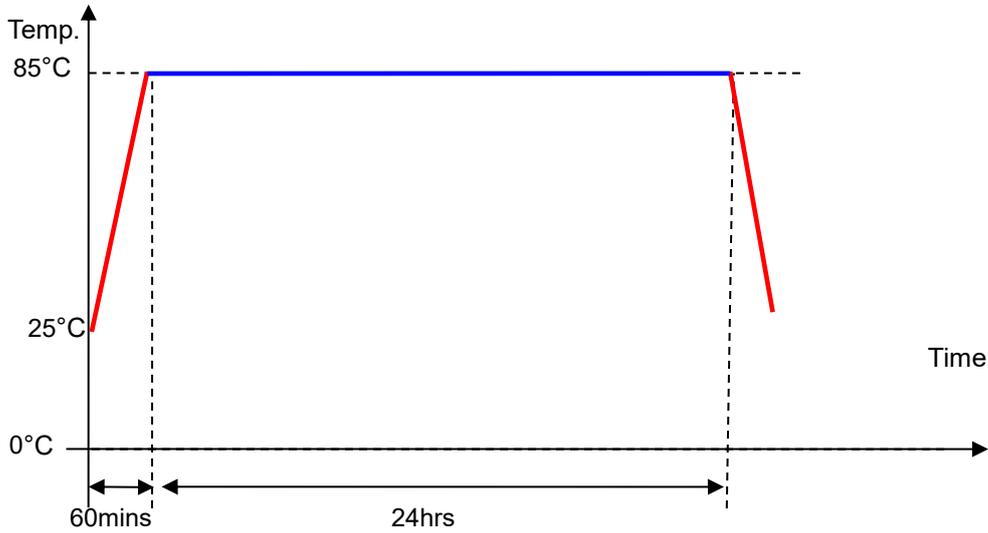
Sample Quantity	Test Data	Test Results
6PCS	<p>The screenshot displays multiple windows of test data logs. Each window shows a list of network packets with columns for time, source/destination IP, and status. The logs indicate successful transmission and reception of packets across various samples.</p>	PASS

7. High Temperature Operation Test

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

Test Profile:

Is Power Off ——
Is Power On ——



Test Criteria:

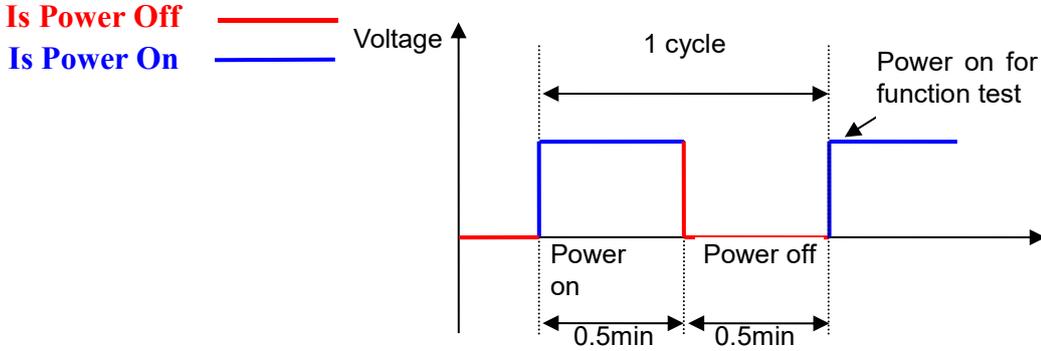
1. Connect the module properly and start the test after power-on. If LOG information on the interface shows that packets are being transmitted and received, and the packet loss rate is less than 1%, the module is operating normally and is considered to be functional.
2. After the test, the product shows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

Sample Quantity	Test Data	Test Results
6PCS	<p>The screenshot displays a network log interface with multiple columns of data. It shows details for various network interfaces, including IP addresses, MAC addresses, and statistics for transmitted and received packets. The data is organized into several tables, each representing a different sample or test run.</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. Connect the module properly and 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 operating normally and 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

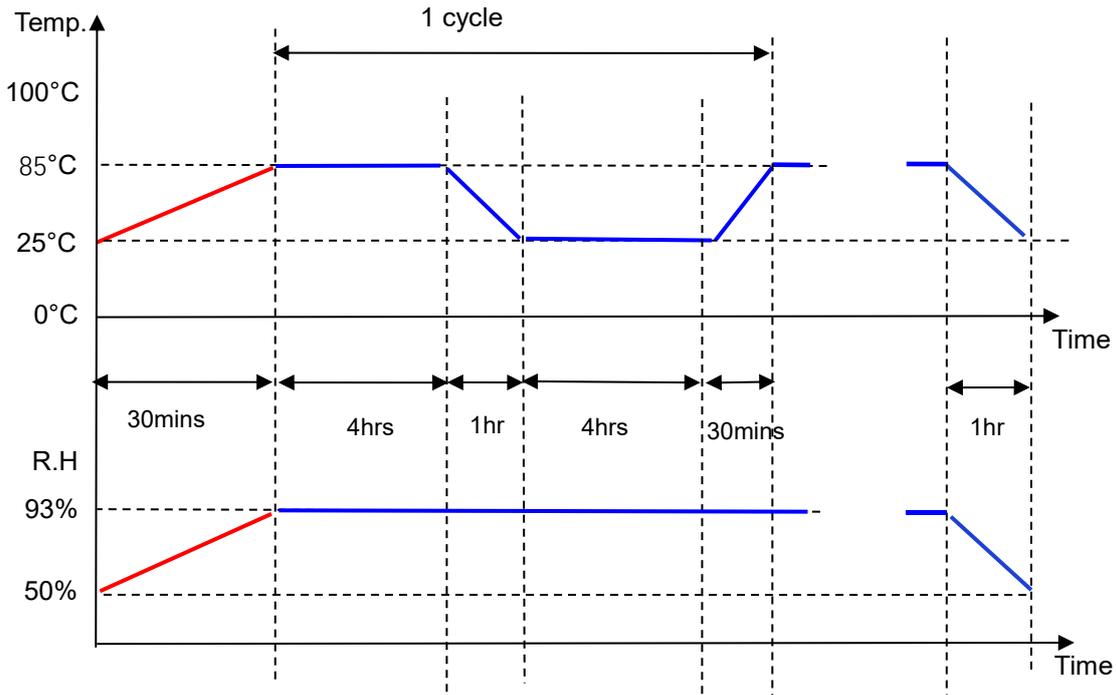
Test Conditions:

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. Connect the module properly and 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 operating normally and 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

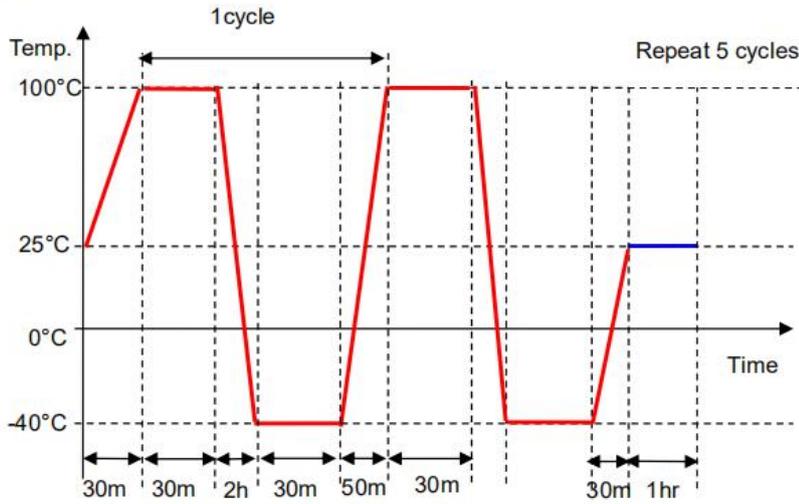
10. Thermal Shock Test

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. Connect the module properly and 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 operating normally and 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