

Reliability Test Report

Product Name:	LoRaWAN Sensor Series
Product Model:	Ai-LoRaWS-1001_V1.1
Test Date:	2026.04.27–2026.05.08
Tested by:	Lv Xihuan
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/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 -20°C, perform a cold start test.
2	High temperature storage test	Test conditions: 75°C + 93% RH Test duration: 8h After restoring to 65°C and a 1-hour soak, perform a hot start test.
3	Low temperature operation test	Test conditions: -20°C Test duration: 24h
4	High temperature operation test	Test conditions: 65°C + 93% RH Test duration: 24h
5	Alternating hot and humid test	A) Operate at 65°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.
6	Thermal shock test	Test conditions: -40°C-75°C + 93% RH, soak for 30min at each temperature. Temperature transition time: 50min for heating, 2h for cooling. Test duration: 5 cycles

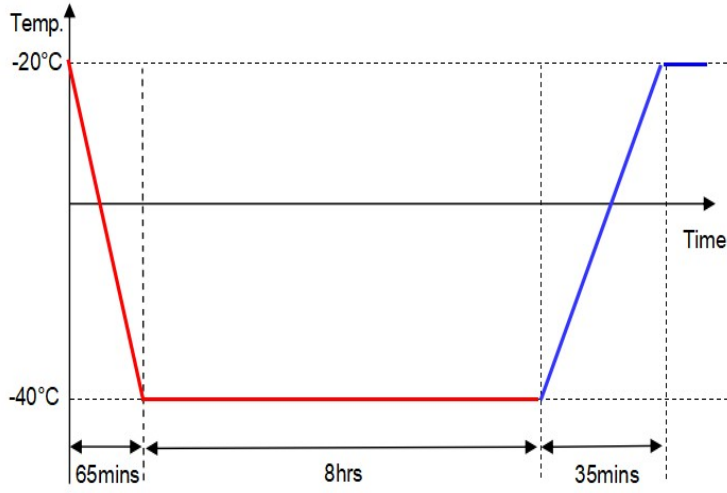
3. Test Preparation

No.	Item	Image/Attachment
1	Reliability documentation	 RG-03H+Ai-LoR aWS-1001可靠性
2	Test equipment	
3	Sample placement	
4	Test reason	New product reliability test (93250210)

4.Low Temperature Storage Test

Test Conditions: Power-off test. Store the product at -40°C for 8h, then restore it to -20°C, and perform a cold start test.

Test Profile:



Test Criteria:

1. During the cold start, the module functions normally. After connecting the gateway, power on and send commands to start the test. Observe the packet transmission and reception information; if the packet loss rate is less than 1%, the module is deemed to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

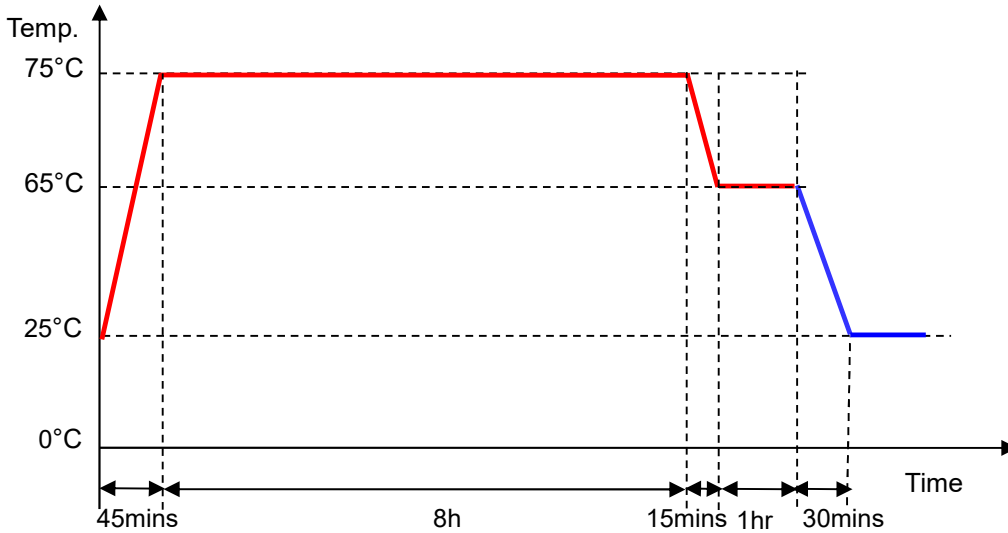
Sample Quantity	Test Data	Test Results
6PCS		PASS

5.High Temperature Storage Test

Test Conditions: Power-off test. Store the product at 75°C + 93% RH for 8h, then restore it to 65°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, the module functions normally. After connecting the gateway, power on and send commands to start the test. Observe the packet transmission and reception information; if the packet loss rate is less than 1%, the module is deemed 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 three screenshots of serial port data logs. Each screenshot shows a series of data points including temperature (e.g., 40.14 C, 40.18 C, 40.10 C) and humidity (e.g., 90.72%, 90.52%, 90.61%). The logs also show various command responses and system status information. The data indicates that the temperature and humidity levels were maintained within the specified test parameters throughout the duration of the test for all three samples.</p>	PASS

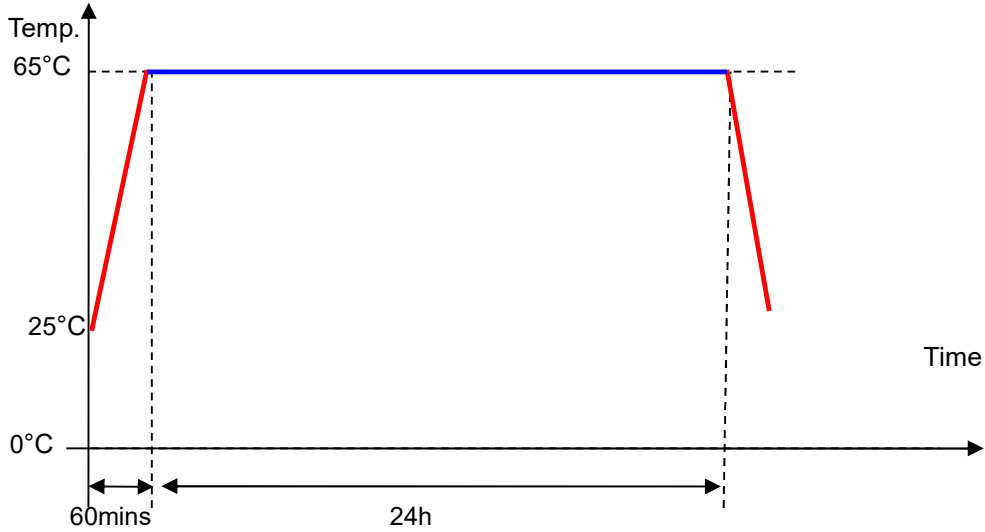
7.High Temperature Operation Test

Test Conditions: Power-on test. Operate at 65°C + 93% RH for 24h.

Test Profile:

Is Power Off _____

Is Power On _____



Test Criteria:

1. After connecting the gateway, power on and send commands to start the test. Observe the packet transmission and reception information; if the packet loss rate is less than 1%, the module is deemed 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 terminal logs. Each screenshot shows the following information: <ul style="list-style-type: none"> Temperature: 64.66 C, 64.70 C, 64.63 C, 64.66 C, 64.70 C, 64.63 C Humidity: 91.17%, 91.12%, 91.12%, 91.17%, 91.12%, 91.12% Packet Loss Rate: 0.00%, 0.00%, 0.00%, 0.00%, 0.00%, 0.00% Test Duration: 60000ms (60 minutes) </p>	PASS

8. Alternating Hot and Humid Test

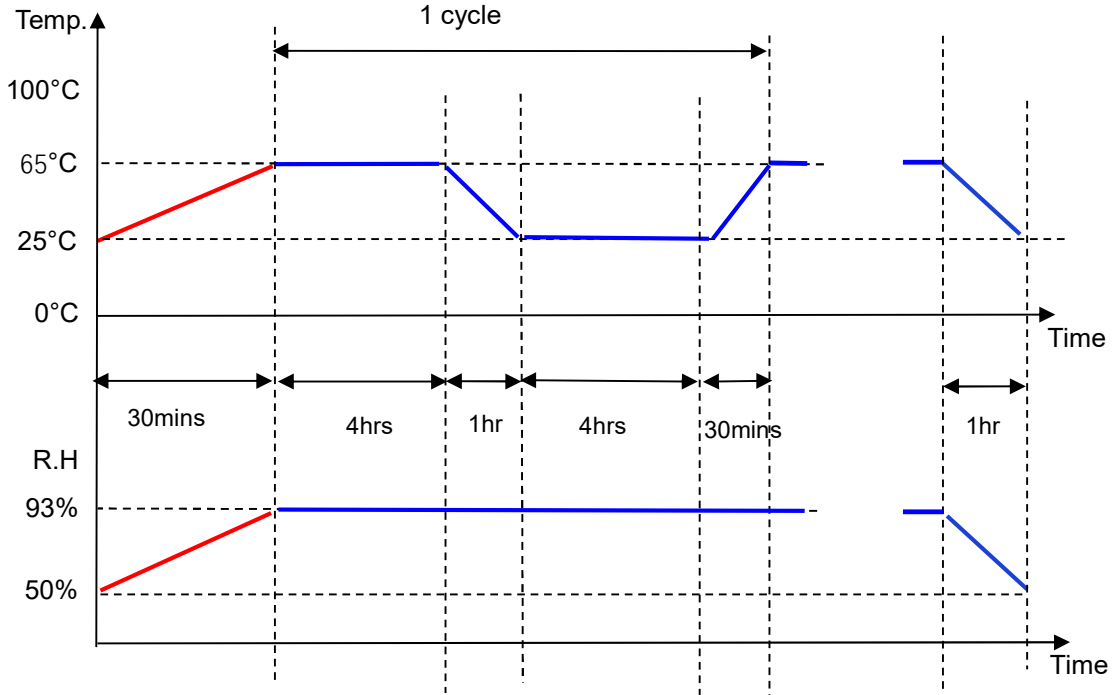
Test Conditions:

1. Operate at 65°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. After connecting the gateway, power on and send commands to start the test. Observe the packet transmission and reception information; if the packet loss rate is less than 1%, the module is deemed 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

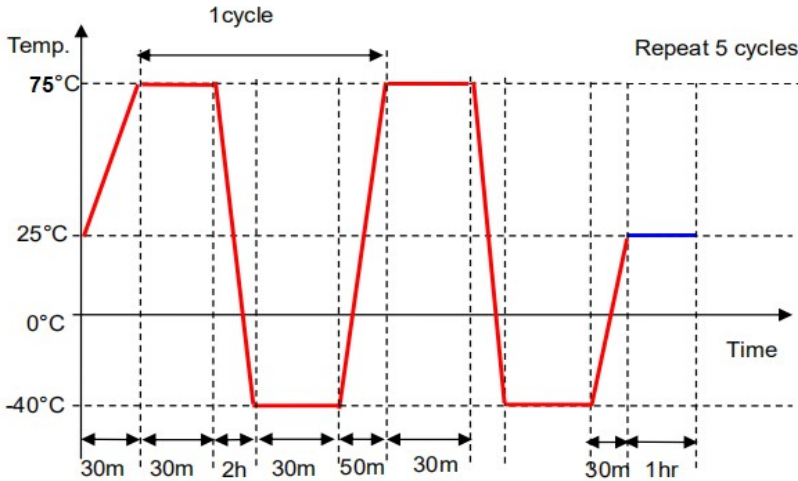
9. Thermal Shock Test

Test Conditions: Power-off test. Temperature/humidity cycling between -40–75°C + 93%, with a heating time of 50min and a cooling time of 2h. Hold each stage for 30min and run 5 cycles.

Test Profile:

Is Power Off

Is Power On



Test Criteria:

1. After connecting the gateway, power on and send commands to start the test. Observe the packet transmission and reception information; if the packet loss rate is less than 1%, the module is deemed 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
<p>6PCS</p>		<p>PASS</p>