

# Reliability Test Report

Product Name: VC-01

Product Model: Voice Series

Test Date: 2022/04/20–2022/04/26

Tested by: Liu Qun

Reviewed by: Lu Xingui



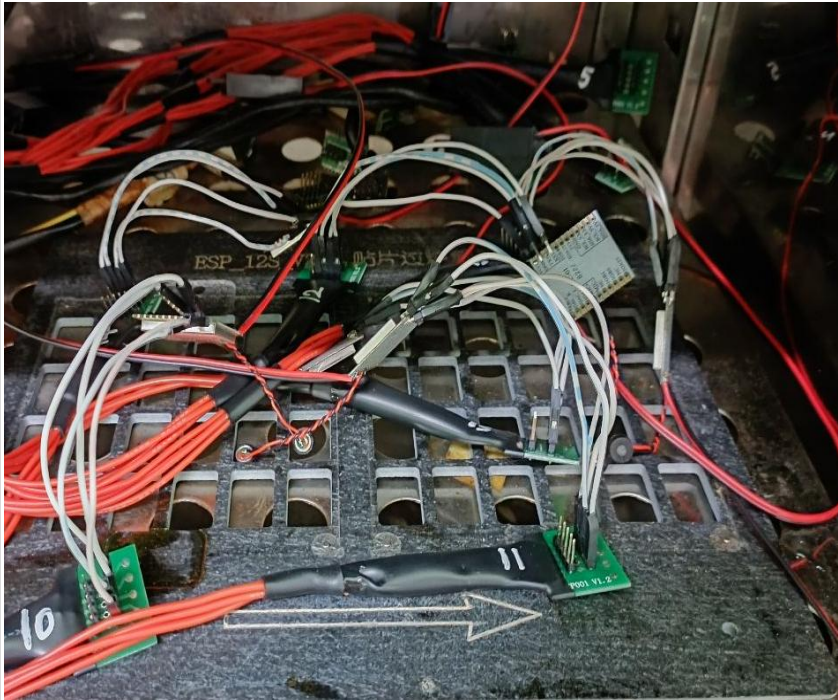
## 1. Inspection Plan

No.	Process Name	Inspection Item	Inspection Equipment	Sampling Level (Refer to GB/T 2828.1-2003)	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 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 Test duration: 24h
5	AC power on/off test with temperature	A) Temperature: -40°C B) Temperature: 25°C C) Temperature: 85°C 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, soak for 30min at each temperature. Temperature transition time: 50min for heating, 2h for cooling. Test duration: 5 cycles

### 3. Test Preparation

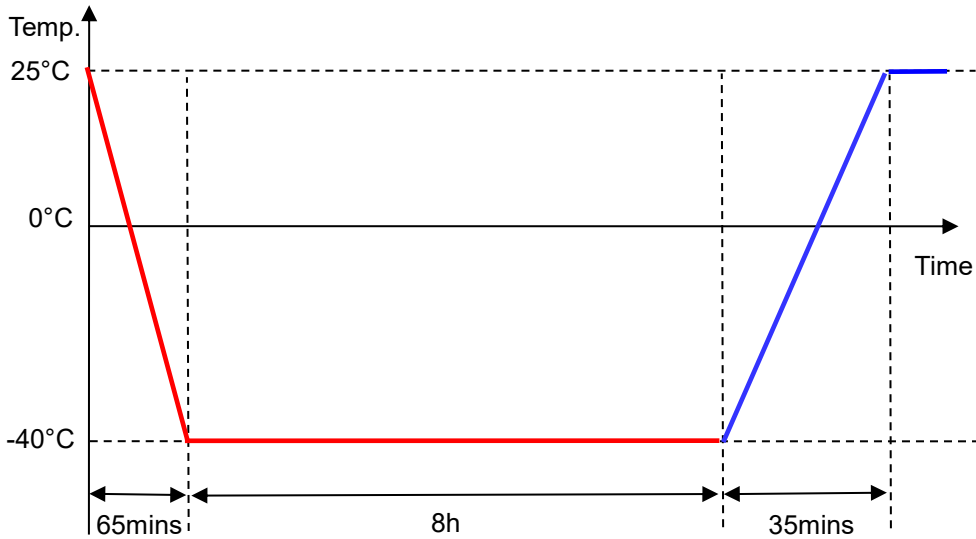
No.	Item	Image/Attachment
1	Reliability documentation	 VC系列可靠性测试说明文件20220
2	Test equipment	
3	Sample placement	
4	Test reason	New product

### 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 module operation, speak the wake-up word “Hello, Xiao An” directly towards the microphone (MIC). If reception is displayed on the software window, the module is considered to be functional.
2. After the test, the product operates normally and shows no visible damage such as shrinkage, peeling, or discoloration.

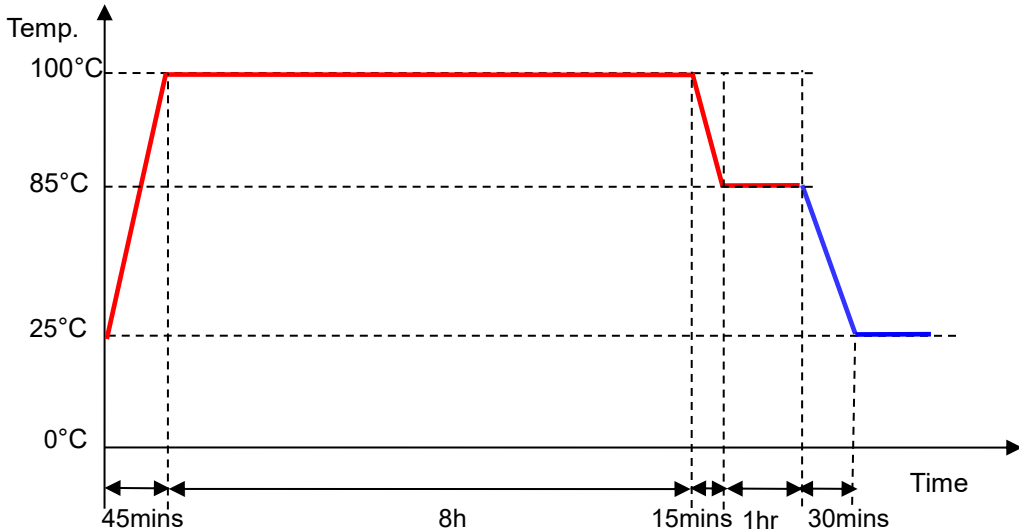
Sample Quantity	Test Data	Test Results
Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6	<p>The test data section contains six screenshots of a serial port communication software interface. Each screenshot shows a 'Clear window' button, a 'Send file' button, and a 'Send' button. The 'Send' button is highlighted in red in each image. The software displays received data in a text area, showing responses to the wake-up command. The screenshots correspond to units 1 through 6, with the 'Send' button highlighted in red in each case, indicating successful communication.</p>	PASS

## 5. High Temperature Storage Test

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

**Test Profile:**

Is Power Off —  
Is Power On —



**Test Criteria:**

1. During module operation, speak the wake-up word “Hello, Xiao An” directly towards the microphone (MIC). If reception is displayed on the software window, the module is considered to be functional.
2. After the test, the product operates normally and shows no visible damage such as shrinkage, peeling, or discoloration.

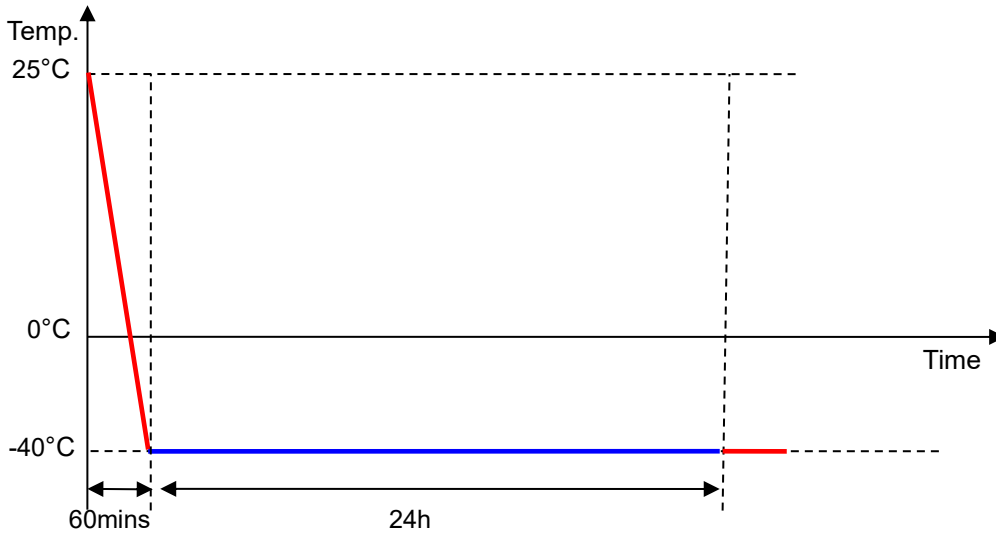
Sample Quantity	Test Data	Test Results
Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6		PASS

## 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. During module operation, speak the wake-up word “Hello, Xiao An” directly towards the microphone (MIC). If reception is displayed on the software window, the module is considered to be functional.
2. After the test, the product operates normally and shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6		PASS

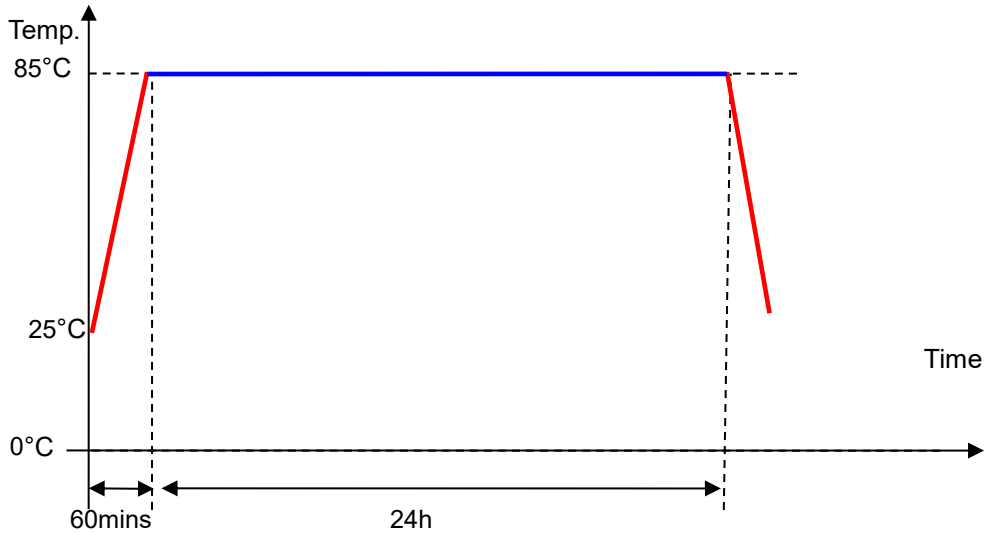
## 7. High Temperature Operation Test

**Test Conditions:** Operate at 85°C for 24h.

**Test Profile:**

Is Power Off ——

Is Power On ——



**Test Criteria:**

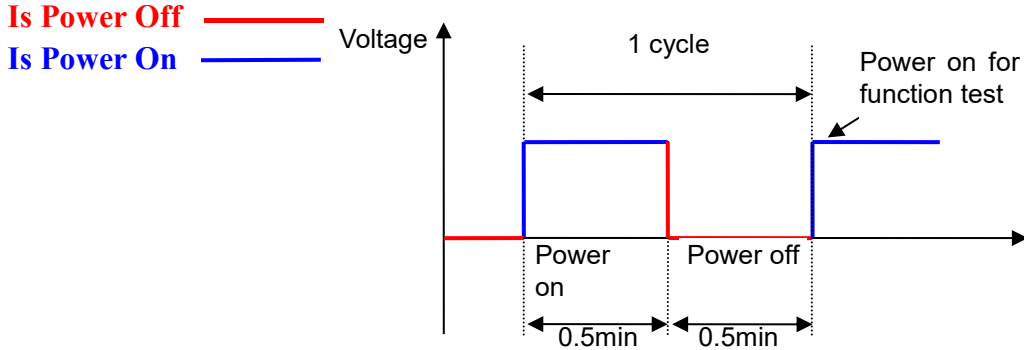
1. During module operation, speak the wake-up word “Hello, Xiao An” directly towards the microphone (MIC). If reception is displayed on the software window, the module is considered to be functional.
2. After the test, the product operates normally and shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6	<p>The test data section contains six screenshots of a serial port communication software interface. Each screenshot shows a 'Send' button and a log window with the following data:                     <ul style="list-style-type: none"> <li>COM39: [13:50:17.521] ← 21010102, [13:50:28.129] ← 10101</li> <li>COM40: [13:50:17.584] ← 21010102, [13:50:28.160] ← 10101</li> <li>COM41: [13:50:17.490] ← 21010102, [13:50:28.082] ← 10101</li> <li>COM42: [13:50:17.531] ← 21010102, [13:50:28.129] ← 10101</li> <li>COM43: [13:50:17.490] ← 21010102, [13:50:28.082] ← 10101</li> <li>COM44: [13:50:17.504] ← 21010102, [13:50:28.160] ← 10101</li> </ul>                     The software interface also shows port settings like 'COM39 USB Serial Port', 'RTS DTR 波特率: 115200', and '发送' (Send) buttons.                 </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, 85°C.
  3. Cycle: Each test condition cycles 200 times.

**Test Profile:**



**Test Criteria:**

1. During module operation, speak the wake-up word “Hello, Xiao An” directly towards the microphone (MIC). If reception is displayed on the software window, the module is considered to be functional.
2. After the test, the product operates normally and shows no visible damage such as shrinkage, peeling, or discoloration.

Item	Sample Quantity	Test Data	Test Results
Power on/off at room temperature	Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6		PASS
Power on/off at low temperature	Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6		PASS
Power on/off at high temperature	Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6		PASS

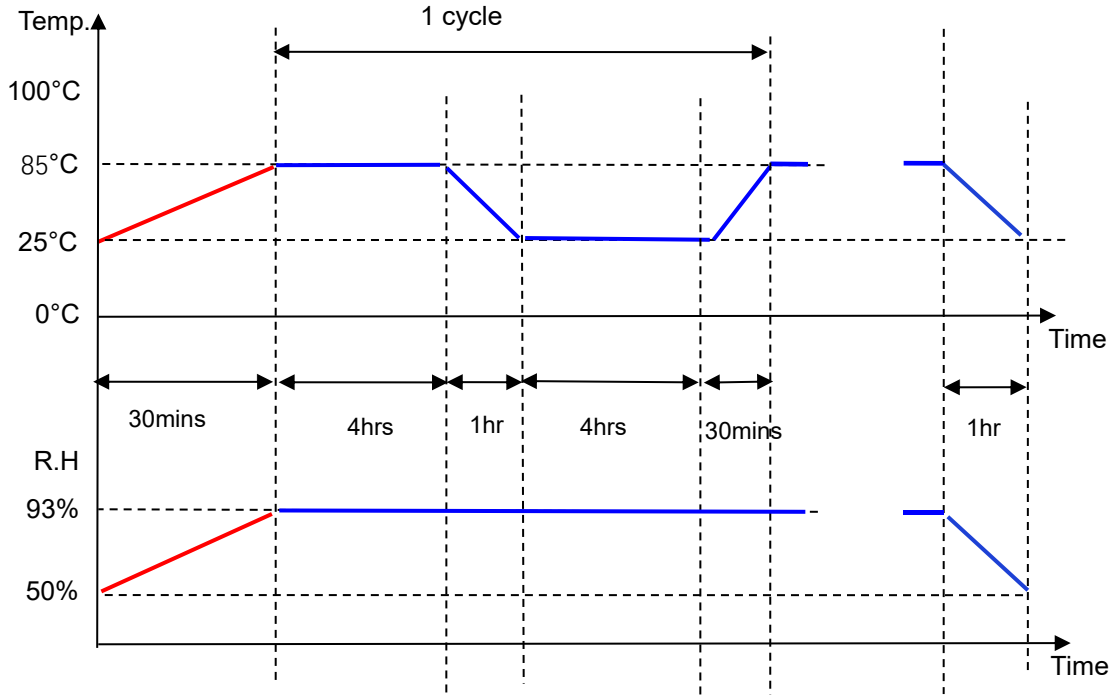
## 9. Alternating Hot and Humid Test

### 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. During module operation, speak the wake-up word “Hello, Xiao An” directly towards the microphone (MIC). If reception is displayed on the software window, the module is considered to be functional.
2. After the test, the product operates normally and shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6		PASS

## 10. Thermal Shock Test

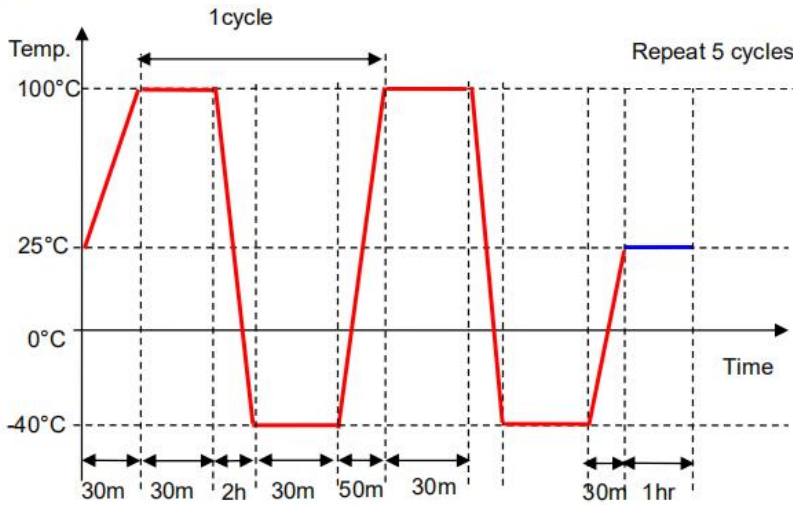
### Test Conditions:

Power-off test. Temperature cycling between -40–100°C, 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. During module operation, speak the wake-up word “Hello, Xiao An” directly towards the microphone (MIC). If reception is displayed on the software window, the module is considered to be functional.
2. After the test, the product operates normally and shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
<p>Unit 1 Unit 2 Unit 3 Unit 4 Unit 5 Unit 6</p>		<p>PASS</p>