

Reliability Test Report

Product Name: TB-04

Product Model: Bluetooth Series

Test Date: 2021/07/22-2021/07/26

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Reviewed by: Zhou Yuming


1. Inspection Plan


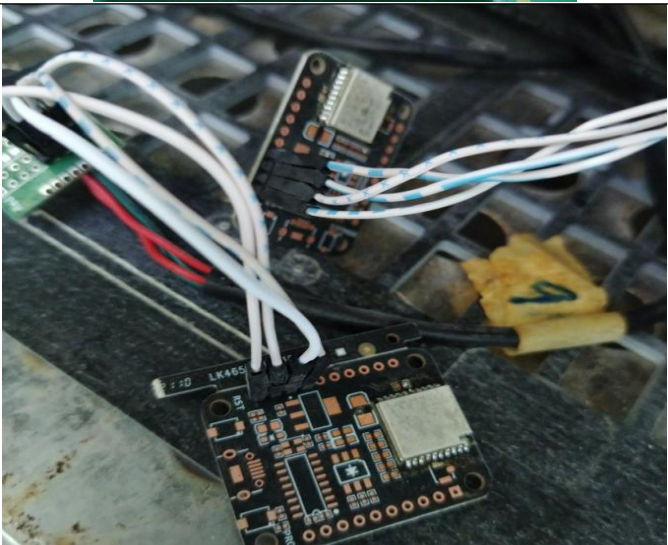
No.	Process Name	Inspection Item	Inspection Equipment	Sampling Level (Refer to GB/T 2828.1-2003)	Acceptable Quality Level		
					CR (Critical Defect)	MA (Major Defect)	MI (Minor Defect)
1	Reliability test	High/low temperature storage; high/room/low temperature power on/off; high/low temperature operation	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 restoring to -25°C and a 1-hour soak, 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: -20°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: -20°C B) Temperature: 25°C C) Temperature: 85°C Cycle each condition 50 times, with 30s ON and 30s OFF

3. Test Preparation

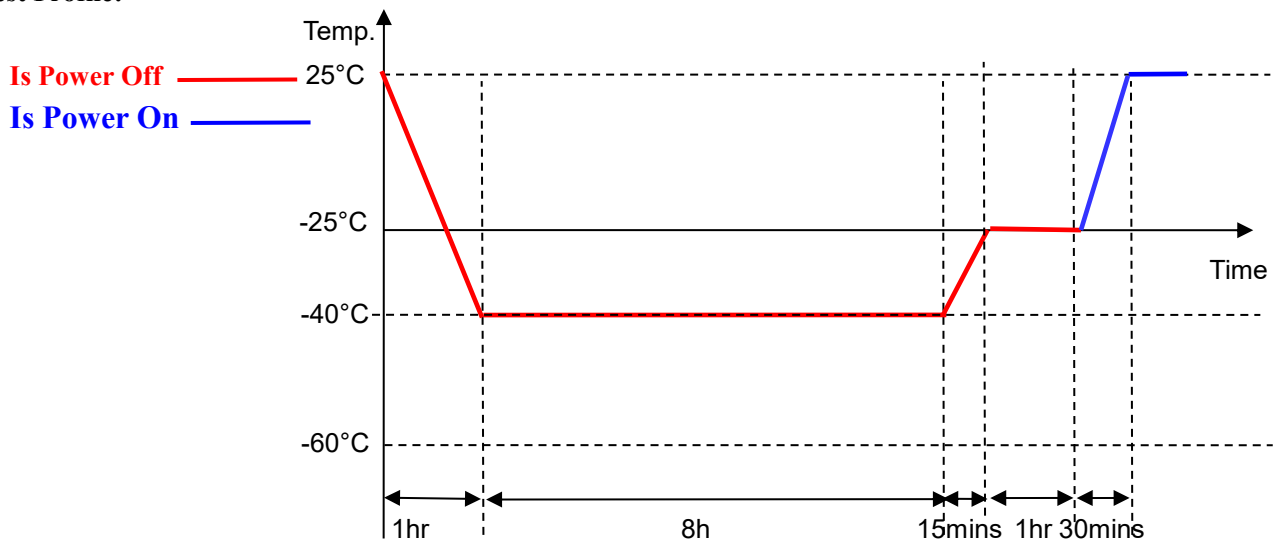
No.	Item	Image/Attachment
1	Reliability documentation	 TB蓝牙可靠性测试说明.doc

2	Test equipment	
3	Sample placement	
4	Test reason	<p>Pilot production of 91240085 TB-04 19010002 Bluetooth Chip - TLRSR8250F512ET32-SDK_V3.4.1-QFN32-5x5-Tape & Reel</p>

4. Low Temperature Storage Test

Test Conditions: Power-off test. Store the product at -40°C for 8h, then restore it to -25°C for a 1-hour soak, and perform a cold start test.

Test Profile:



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.

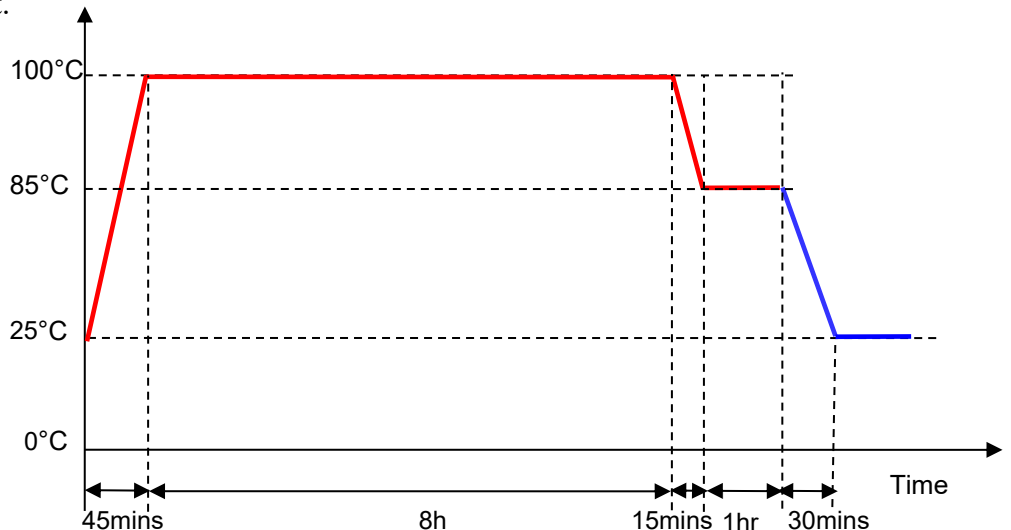
Sample Quantity	Test Data	Test Results
Unit 1 Unit 2	Ai-Thinker 94:C9:60:1B:05:81 NOT BONDED -74 dBm CONNECT	PASS
	N/A 3E:4D:EB:D6:97:82 NOT BONDED -91 dBm	
	Ai-Thinker 94:C9:60:1B:03:7F NOT BONDED -71 dBm CONNECT	
	N/A 62:1C:FC:8F:72:3F NOT BONDED -96 dBm CONNECT	
	N/A 49:8E:2F:3F:DB:65 NOT BONDED -88 dBm CONNECT	
	Ai-Thinker 94:C9:60:1B:03:77 NOT BONDED -74 dBm CONNECT	
	Ai-Thinker 94:C9:60:1B:05:A4 NOT BONDED -72 dBm CONNECT	

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:

Temp.
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.

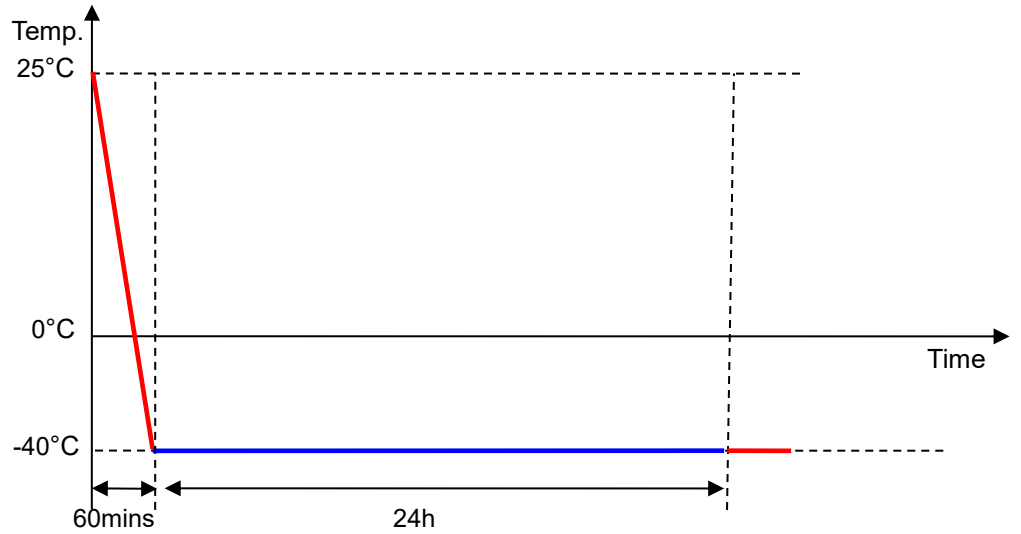
Sample Quantity	Test Data	Test Results
<p>Unit 1 Unit 2</p>		<p>PASS</p>

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.

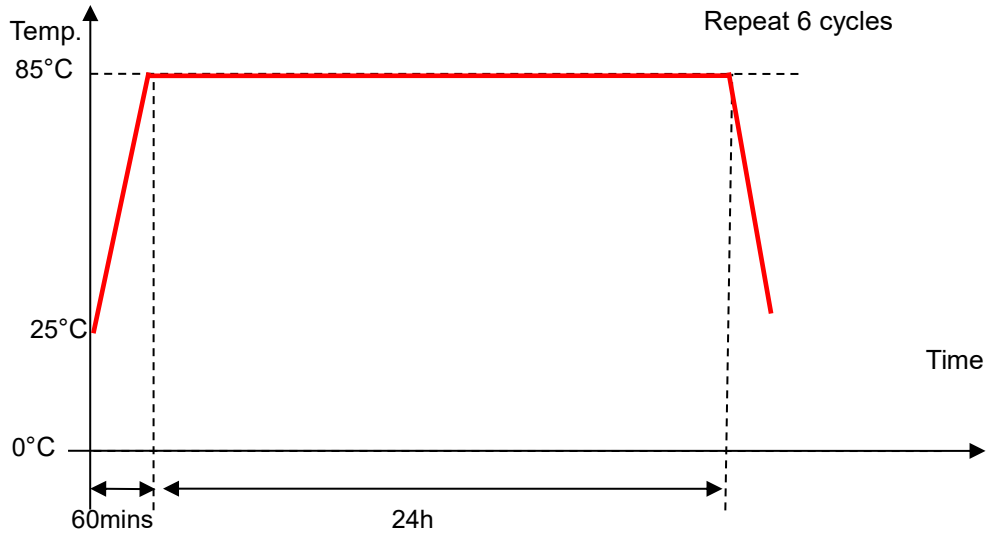
Sample Quantity	Test Data	Test Results
Unit 1 Unit 2	<div style="border: 1px solid #ccc; padding: 5px;"> Ai-Thinker 94:C9:60:1B:03:77 NOT BONDED -74 dBm CONNECT </div>	PASS
	<div style="border: 1px solid #ccc; padding: 5px;"> N/A 70:D1:89:1C:78:AF NOT BONDED -71 dBm </div>	
	<div style="border: 1px solid #ccc; padding: 5px;"> N/A 6D:1A:A7:3B:4A:36 NOT BONDED -100 dBm </div>	
	<div style="border: 1px solid #ccc; padding: 5px;"> N/A 72:B4:03:8C:47:2F NOT BONDED -91 dBm CONNECT </div>	
	<div style="border: 2px solid #00aaff; padding: 5px;"> Ai-Thinker 94:C9:60:1B:05:81 NOT BONDED -76 dBm CONNECT </div>	
	<div style="border: 1px solid #ccc; padding: 5px;"> Ai-Thinker 94:C9:60:1B:03:7F NOT BONDED -56 dBm CONNECT </div>	
	<div style="border: 2px solid #00aaff; padding: 5px;"> Ai-Thinker 94:C9:60:1B:05:A4 NOT BONDED -65 dBm CONNECT </div>	

7. High Temperature Operation Test

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

Test Profile:

Is Power Off —
Is Power On —



Test Criteria:

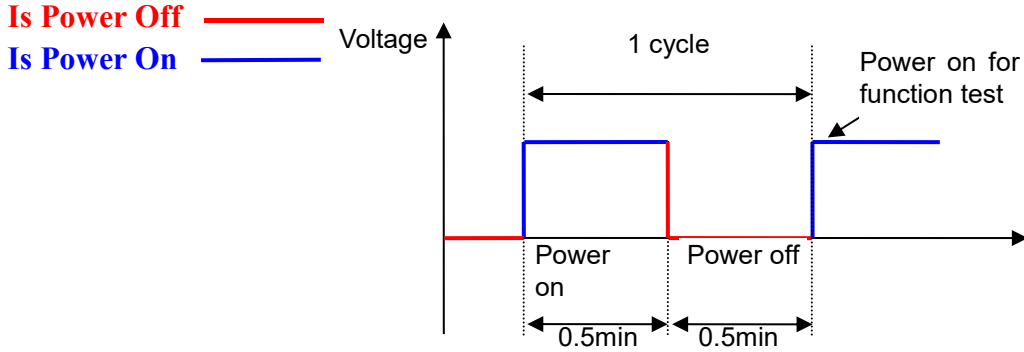
1. No network disconnections occurred during the test. If ping packets are confirmed not to be lost, the module is considered to be functional.
2. After the test, the product shows no visible damage such as shrinkage, peeling, or discoloration.

Sample Quantity	Test Data	Test Results
<p>Unit 1 Unit 2</p>	<p>The screenshot shows a mobile application interface for BLE debugging. At the top, the time is 8:04 and the battery is at 74%. The title is 'BLE调试助手'. Below the title, there are two tabs: 'Scanner' (selected) and 'Bonded'. Under the 'Scanner' tab, there is a list of discovered BLE devices. Each device entry includes a Bluetooth icon, the device name, its MAC address, the status 'NOT BONDED', and the signal strength in dBm. A 'CONNECT' button with a three-dot menu is next to each entry. The devices listed are: N/A (56:65:A9:AF:5D:68, -79 dBm), Ai-Thinker (94:C9:60:1B:03:7F, -56 dBm), Ai-Thinker (94:C9:60:1B:03:77, -58 dBm), Ai-Thinker (94:C9:60:1B:05:81, -88 dBm), Ai-Thinker (94:C9:60:1B:05:A4, -70 dBm), and N/A (30:AE:A4:30:D8:81).</p>	<p>PASS</p>

8. AC Power On/Off Test with Temperature

- Test Conditions:**
1. Power on: 30s; power off: 30s.
 2. Temperature: -20°C, 25°C, 85°C.
 3. Cycle: Each test condition cycles 200 times.

Test Profile:



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.

Item	Sample Quantity	Test Data	Test Results
Power on/off at room temperature	Unit 1 Unit 2		PASS

<p>Power on/off at low temperature</p>	<p>Unit 1 Unit 2</p>		<p>PASS</p>
<p>Power on/off at high temperature</p>	<p>Unit 1 Unit 2</p>		<p>PASS</p>