Environment Test Report

Product Information

Sample name	Model	Quantity
LoRaWAN gateway	RAK7246 (Raspberry Pi 0+ + RAK2246 EU868)	1

Test Project

No.	Test item	Temperature conditions
1	Low-temperature storage test	-10 ℃
2	Low-temperature work test	-10 ℃
3	High-temperature storage test	65 ℃
4	High-temperature work test	65 ℃

Test Equipment

Test equipment	Model	Quantity
Multi-channel temperature tester	WD-08A	1
Environmental test chamber	Mini BTC 03	1
Equipment being tested	RAK7246 (Raspberry Pi 0+ + RAK2246 EU868)	1
LoRa Nodes	RAK5205	7

Pictures of the Test Equipment

Figure 1: Multi-channel temperature tester

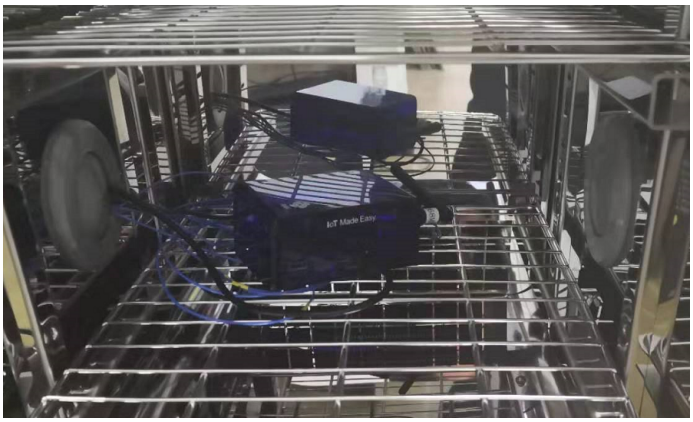

Figure 2: RAK7246

Figure 3: Enviromental test chamber

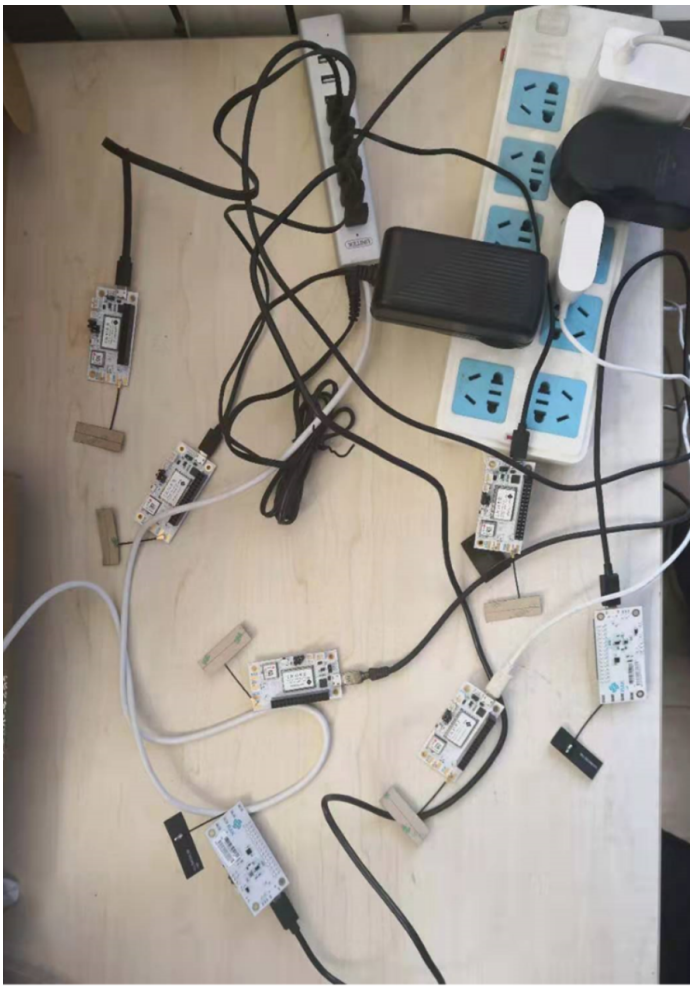

Figure 4: LoRa nodes

Test Requirements

- Low-temperature storage test:

Place the DUT in the temperature chamber and set the low temperature to -10° C. The DUT can power up and login via SSH when all temperature monitoring points reach -10°C.

- Low-temperature work test:

a. When all test points reach -10° C, The DUT can power up and login via SSH.

b. It can connect to the cloud server to send and receive LoRa packets.

c. The LAN port and Wi-Fi work well.

- High-temperature storage test:

Place the DUT in the temperature chamber and set the high temperature to 65° C. The DUT can power up and login via SSH when all temperature monitoring points reach 65° C.

- High-temperature work test:

a. When all test points reach 65° C, The DUT can power up and login via SSH.

b. It can connect to the cloud server to send and receive LoRa packets.

c. The LAN port and Wi-Fi work well.

- Temperature monitoring points of RAK7246:

Chains	Monitoring point	Color	Max temperature
ch1	Raspberry Pi 0' CPU	RED	89° C
ch2	Raspberry Pi 0' power chip	YELLOW	88.1° C
ch3	Raspberry Pi 0' Wi-Fi module	BLUE	87.6° C
ch4	Heat dissipation aluminum of RAK2245	PURPLE	85.8° C
ch5	The internal temperature of the environmental test chamber	WHITE	65° C

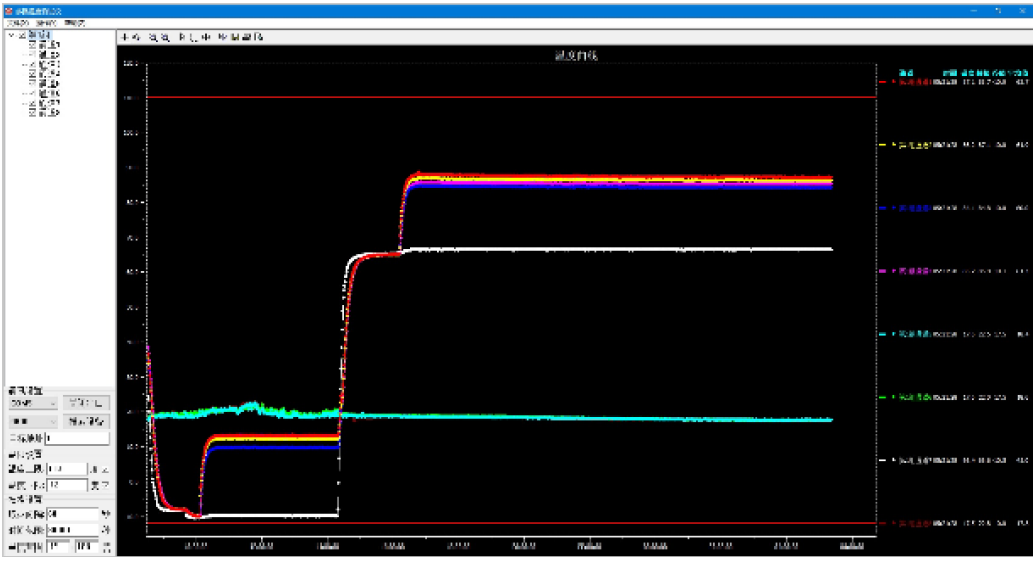

Figure 5: Temperature monitoring points

Test Results

Test project	Test result	Conclusion
Low-temperature storage	The DUT can power up and login via SSH.	PASS
Low-temperature work	Can send and receive LoRa packets normally and the Wi-Fi also works well.	PASS
High-temperature storage	The DUT can power up and login via SSH.	PASS
High-temperature work	Can send and receive LoRa packets normally and the Wi-Fi also works well.	PASS

Figure 6: Send and recieve LoRa packets at -10° C

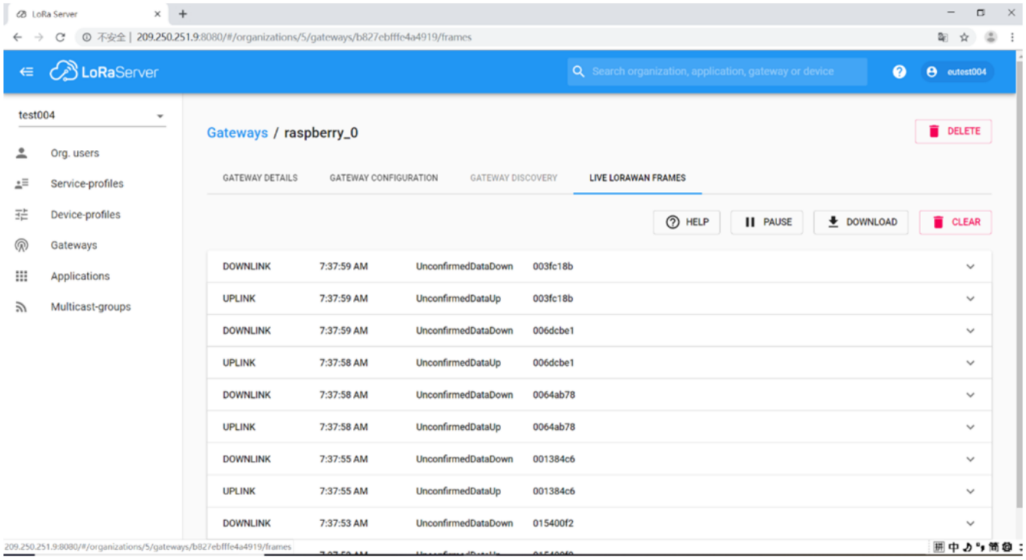

Figure 7: Send and recieve packets at 65° C

Figure 8: Wi-Fi works well at -10° C

Figure 9: Wi-Fi works well at 65° C

Test Date and Location

Item	Information
Test date:	20 November 2019
Test location:	Room 307, building 3, Guofeng Meitang building, Huilongguan town, Beijing
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Last Updated: 5/17/2021, 8:59:24 AM