Test Project

Module C - Smart home/office applications

ICT Network Infrastructure

Submitted by:
Xu Jun - China Telecom Score Evaluation Co., Ltd. Shanghai Branch, Independent Test Project Designer
Takuo Kikuchi, Independent Test Project Validator

Contents

Introduction **3**
Description of project and tasks **3**
Instructions to the Competitor **3**
Preparation 3
Tasks: FTTR and Smart Home System Installation and Verification 4
Simulated Scenario and Application Requirements *4*
Task 1: FTTR System Installation and Verification *4*
Task 2: Smart Home Device Installation and Verification *4*
Task 3: Zigbee Smart Scene Automation and Verification *5*

© WorldSkills International

Introduction

Based on the application requirements and competition simulation scenario conditions, select appropriate cables and terminal devices for network deployment to meet requirements such as Wi-Fi coverage, smart home functionality, security monitoring, and privacy protection.

Description of project and tasks

This project consists of mandatory tasks only. The tasks may be partially adjusted according to changes in the competition simulation scenarios, cable and consumable supplies, equipment and facilities, and application requirements. Where unexpected circumstances require changes to the installation conditions, the Skill Management Team shall notify all Competitors before the start of the task.

Instructions to the Competitor

The competition time is three (3) hours.

Preparation

In addition to the familiarization period on C-2, a one-hour preparation period will be provided before the start of the three-hour competition period. The activities performed during this preparation period are not assessed unless otherwise specified.

During the preparation period, Competitors may inspect the supplied devices, confirm application operation, complete the specified account registration and verify WAN availability. Installation, device addition, configuration, measurement, camera selection and completion of the Competitor Record Form shall not begin until the competition period starts.

- Check that the hardware, system, and "Test" software of the integrated test instrument (PDA) are operating normally, and confirm that the system language is set to English.
- Inspect the integrated test instrument (PDA) and confirm that the installed "Speed Test," "HeatMap," and "Wi-Fi Analysis" software are operating normally, with the language set to English.
- Confirm that the mobile communication function of the integrated test instrument (PDA) is operating normally and that SMS messages can be received properly.
- Inspect the tablet and confirm that the "Aqara Home" app is installed and functioning properly. Set the application language to English, complete registration using the phone number of the PDA as the username, and log in to the app via SMS verification.
- Verify that the WAN-side network is operational.
- Do not set any security passwords on the tablet or integrated test instrument (PDA), including power-on passwords, screen lock passwords, or similar restrictions.

© WorldSkills International

Tasks: FTTR and Smart Home System Installation and Verification

Module C consists of the following work elements. Competitors shall complete each task in accordance with the requirements specified below.

Simulated Scenario and Application Requirements

- The simulated scenario for this task is a residential home. The main work areas are the living room, dining room, second bedroom, and master bedroom.
- An indoor information cabinet is installed at the entrance.
- The indoor information cabinet is connected to all information outlets through concealed conduits.
- No AC power outlet is available at the entrance.
- The client requires seamless whole-home Wi-Fi coverage using an FTTR (Fiber to the Room) all-optical network.
- The client requires surveillance cameras at the entrance, in the living room, and in the master bedroom for security monitoring and response to falls or other emergencies. In the master bedroom, surveillance functionality shall be balanced with the occupant's privacy.

Task 1: FTTR System Installation and Verification

- Route the drop fiber cable from the optical distribution box to the indoor information cabinet. Terminate both ends and connect them to the corresponding port of the ZTE FTTR master unit (G7615V2), ensuring normal operation of the optical broadband WAN network.
- Route one drop fiber cable from the information box to the wall outlet position in the living room. Terminate both ends and connect them to the corresponding port of the ZTE FTTR slave unit (G1612).
- During construction, correctly use the ZTE 5-core indoor terminal box (GF378-OP-WASCU-5A5) to reserve capacity for future expansion connections. In addition, install the ZTE 2-core indoor terminal box (GF378-OP-WASCU-2B2-04) at the wall outlet position and protect the outlet termination section using a semi-permanent link structure.
- After successful installation, the FTTR master and slave units are pre-registered, and no login or configuration operation is required. The default SSID and password indicated on the master unit shall be used. No modification of the wireless configuration is required.
- Competitors shall measure and record the received optical power at the optical WAN port of the FTTR master unit and at the optical input of the FTTR slave unit. Each measured value shall be within the separately specified acceptance range.

Task 2: Smart Home Device Installation and Verification

- Competitors shall select the necessary cables and consumables and determine suitable cabling routes and installation locations for the specified terminal devices.
- The tablet, integrated test instrument (PDA), and smart home gateway may be connected to either the FTTR master unit or the FTTR slave unit via Wi-Fi or a wired connection.
- The following devices shall be successfully added to the Aqara Home application installed on the tablet and made accessible through the application. For the Aqara Human Presence Sensor FP2, competitors shall verify and record its operating status and detection status through the application.
    - Aqara Human Presence Sensor FP2
    - Aqara Smart Gateway M2
- Competitors shall analyse the client requirements, the functions of the available cameras, and the actual installation conditions. Based on this analysis, competitors shall select and install the most appropriate camera at each designated location. Each available camera shall be installed once.
- The following cameras are available for installation:
    - Aqara Smart Camera G5 Pro

- Aqara Smart Camera E1
- Dahua Camera (DH-SD2C405NB-GNY-A-PV-S2)

- Competitors shall record each selected camera, its installation location, and the basis for its selection. After installation, competitors shall verify and record the required functions, network connectivity, and real-time live-video display of each camera. For the camera installed in the master bedroom, competitors shall verify and record the function used to balance surveillance with occupant privacy.
- Real-time live video from the Aqara Smart Camera G5 Pro and Aqara Smart Camera E1 shall be verified through the Aqara Home application. The Dahua Camera shall be made accessible through the specified monitoring application or interface.
- Parameters not specified in this Test Project may be configured by competitors, provided that the required functionality, network operation, security, and verification conditions are maintained.

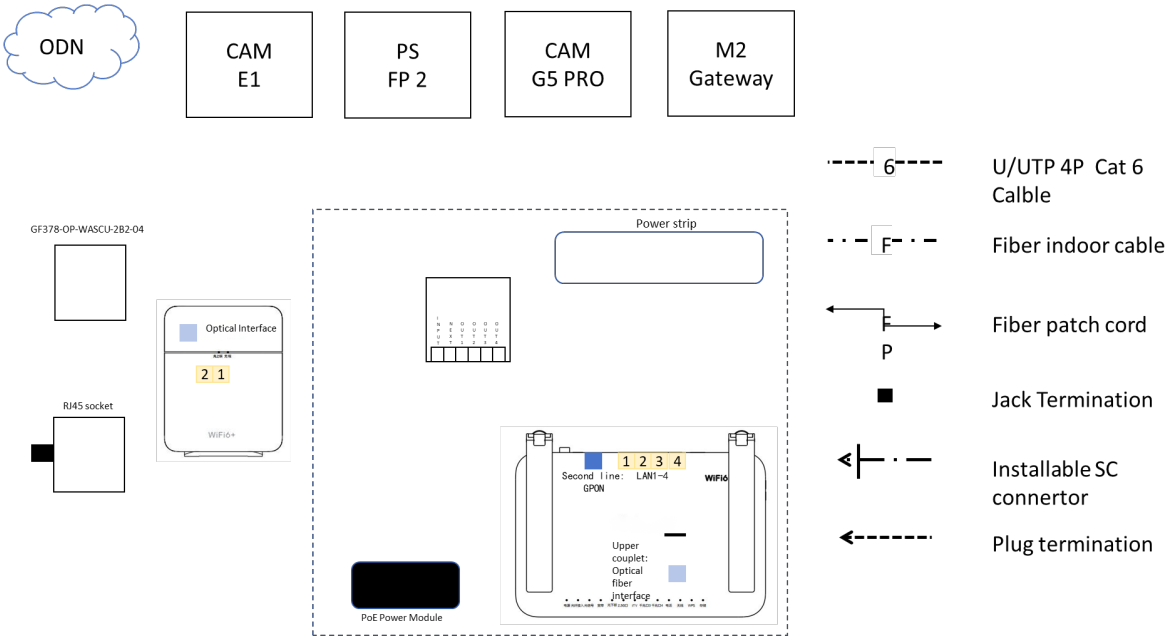


Figure 1. FTTR and Smart Home System Configuration

Task 3: Zigbee Smart Scene Automation and Verification

The Zigbee 3.0 Gateway used in Task 3 is a separate device from the Aqara Smart Gateway M2 used in Task 2. All Zigbee devices specified in Task 3 shall be added only to the Zigbee 3.0 Gateway specified for Task 3.

- The following devices shall be added to the Zigbee 3.0 Gateway:
  - Zigbee Temperature and Humidity Sensor;
  - Zigbee Light Bulb;
  - Zigbee Smart Plug Adapter;
  - Zigbee Human Motion Sensor;
  - Zigbee Wireless Scene Button; and
  - Zigbee Door Magnetic Sensor.

The Zigbee devices specified in Task 3 shall be connected to the Zigbee 3.0 Gateway.

Competitors shall add the specified Zigbee devices to the Zigbee 3.0 Gateway and configure the following automation rules:

© WorldSkills International

- When the Zigbee Human Motion Sensor detects motion, the Zigbee light bulb shall turn on. When no motion has been detected for 20 seconds, the light bulb shall turn off. Configure the no-motion delay to 20 seconds. Verify that the light bulb turns off within the separately specified allowable response time after the 20-second no-motion period has elapsed.
- When the Zigbee door magnetic sensor detects that the door has been opened, the Zigbee light bulb shall turn on. When the door is closed, the light bulb shall turn off.
- The Zigbee Wireless Scene Button shall control the Zigbee light bulb as follows:

  Single press: turn the light bulb on or off;

  Double press: set the light bulb to 100% brightness; and

  Long press: set the light bulb to 20% brightness.

- Each automation rule shall be verified separately. During the verification of each automation rule, Competitors may temporarily disable other automation rules that could affect the verification result. After completing the individual verification of all automation rules, Competitors shall re-enable all specified automation rules and confirm that all required automation rules are present and enabled in the final configuration.
- When the relative humidity measured by the Zigbee Temperature and Humidity Sensor reaches 70% or higher, the adapter shall turn on. When the relative humidity falls below 65%, the adapter shall turn off.

Competitors shall activate each specified trigger condition and verify that the corresponding device performs the required action. The configured trigger conditions, actions, and verification results shall be recorded.

© WorldSkills International

Module C Competitor Record Form

Smart Home/Office Applications

Competitor No. **Date**

Instructions: Record the verification results and tick the applicable box. Where separate acceptance criteria are specified, apply those criteria.

Task 1 FTTR System Installation and Verification

Received Optical Power Measurement Record

No.	Measurement Point	Received Optical Power (dBm)	Acceptance Criteria	Result
1	FTTR Master Unit (G7615V2) Optical WAN Port			□ Pass □ Fail
2	FTTR Slave Unit (G1612) Optical Input			□ Pass □ Fail

Task completion status:

☐Completed ☐Partially completed ☐Not completed Unresolved item(s):

Task 2 Smart Home Device Installation and Verification

Aqara Human Presence Sensor FP2 Verification Record

Verification Item	Result	Details / Displayed Status
Operating Status in the Aqara Home App	□ Normal □ Abnormal	
Human Presence Detection Status	□ Detected □ Not Detected	

Verification Item	Expected Status	Actual Status	Result
Person present in detection area	Presence detected		□ Pass □ Fail
Person absent from detection area	No presence detected		□ Pass □ Fail

Aqara Device Addition and Verification Record

Device	Added to Aqara Home	Online Status	Result
Aqara Smart Gateway M2	□ Yes □ No	□ Online □ Offline	□ Pass □ Fail
Aqara Human Presence Sensor FP2	□ Yes □ No	□ Online □ Offline	□ Pass □ Fail

Camera Selection, Installation, and Verification Record

Use each of the three cameras once. Record the basis for selection and the verification results, and paste a capture of the live video displayed during verification.

Camera 1 Installation Location: Entrance

Selection / Verification	□ G5 Pro □ E1 □ Dahua Camera	□ Required Functions □ Network Connectivity	□ Real-Time Live-Video Display □ Pass □ Fail
Basis for Selection			
Live-Video Capture	Paste live-video capture here		

Camera 2 Installation Location: Living Room

Selection / Verification	□ G5 Pro □ E1 □ Dahua Camera	□ Required Functions □ Network Connectivity	□ Real-Time Live-Video Display □ Pass □ Fail
Basis for Selection			
Live-Video Capture	Paste live-video capture here		

Verify both the normal surveillance state and the state with the occupant privacy function activated, and paste one capture of each state.

Selection/ Verification	□ G5 Pro □ E1 □ Dahua Camera	□ Required Functions □ Network Connectivity	□ Real-Time Live-Video Display □ Pass □ Fail
Basis for Selection			
Occupant Privacy Function	Function Used:		□ Operation Verified

Live-Video Capture

Normal Surveillance State	Occupant Privacy Function Activated
Paste capture here	

Task completion status:

☐Completed ☐Partially completed ☐Not completed Unresolved item(s):

Task 3 Zigbee Smart Scene Automation and Verification

Zigbee Device Addition Verification

Added Device	Added Device	Added Device	Added Device
□ Temperature and Humidity Sensor	□ Light Bulb	□ Smart Plug Adapter	□ Human Motion Sensor
□ Wireless Scene Button	□ Door Magnetic Sensor	□ Zigbee 3.0 Gateway	Addition Result: □ Pass □ Fail

Automation Rule Configuration and Verification Record

Verify each rule individually. Temporarily disable other automation rules that control the same device, and confirm that all configured values meet the requirements.

No.	Trigger	Expected Action	Actual Operation	Result
1a	Motion detected	Light ON		□ Pass □ Fail
1b	No motion for 20 s	Light OFF		□ Pass □ Fail
2a	Door opened	Light ON		□ Pass □ Fail
2b	Door closed	Light OFF		□ Pass □ Fail
6a	Humidity ≥70%	Adapter ON		□ Pass □ Fail
6b	Humidity <65%	Adapter OFF		□ Pass □ Fail

Final configuration verification

All required automation rules are present and enabled: □ Pass □ Fail

Task completion status:

☐Completed ☐Partially completed ☐Not completed Unresolved item(s):