Nghiên cứu tài liệu, bản đặc tả kỹ thuật và reference design của thiết bị 5G Wifi

Customer Premises Equipment: Một thuật ngữ viễn thông để chỉ bất kỳ thiết bị nào đặt tại cơ sở của khách hàng. ADSL modem, bridge, router là các CPE.

Huawei 5G CPE Pro2

(<https://consumer.huawei.com/en/routers/5g-cpe-pro-2/specs/>)

Chức năng chính:

* 1. **Data Services**

The H122-373 có thể kết nối mạng thông qua mạng di động và mạng Internet. Bằng cách kết nối H122-373 sử dụng Wifi hoặc cáp mạng, người dùng có thể sử dụng dịch vụ Internet tốc độ cao và thiết lập mạng cục bộ (LAN).

**3.1.1 Accessing the Internet through a Mobile Network (5G/LTE)**

The H122-373's LAN/WAN port can be connected to a wall-mounted Ethernet port using a

network cable

**3.1.2 Accessing the Internet through an Ethernet Network**

The H122-373 can access the Internet through mobile networks.

**3.2 SMS**

The H122-373 supports message writing/sending/receiving and group sending (up to 50

-contacts at a time)

**3.3 Security Service**

The H122-373 supports comprehensive and robust security services. It provides a firewall

function and PIN protection mechanisms. These features allow users to connect their

computers to the Internet and simultaneously protect their computers against security threats

from the Internet.

**3.3.1 Firewall Service**

The H122-373 supports the enabling or disabling of a firewall on the network connection,

which protects the device and network from attacks by hackers on the Internet and controls

access to the Internet

**3.3.2 MAC Filtering**

The H122-373 supports configuration of the Media Access Control (MAC) address filtering to

restrict network access.

**3.3.3 Wi-Fi Authentication**

The gateway supports the following user authentication protocols for Wi-Fi:

* No encryption
* WEP, WPA2-PSK, WPA3-SAE, WPA/WPA2-PSK, WPA2-PSK /WPA3-SAE

**3.4 VPN Function**

VPN tunneling involves establishing and maintaining a logical network connection (that may

contain intermediate hops). On this connection, packets constructed in a specific VPN

protocol format are first encapsulated within some other base or carrier protocol, then

transmitted between the VPN client and server, and finally decapsulated on the receiving side.

The H122-373 supports L2TP and PPTP tunneling protocols

**3.4.1 VPN Client**

VPN tunneling involves establishing and maintaining a logical network connection (that may

contain intermediate hops). On this connection, packets constructed in a specific VPN

protocol format are first encapsulated within some other base or carrier protocol, then

transmitted between the VPN client and server, and finally decapsulated on the receiving side.

The H122-373 supports L2TP and PPTP tunneling protocols

**3.4.2 VPN Pass-Through**

The H122-373 supports L2TP/PPTP VPN pass-through for the LAN side device. The LAN

side device can create a VPN tunnel to the VPN server.

**3.5 IP Pass-Through (optional)**

The H122-373 obtains the WAN IP address and passes it through to the PC (Case 1) or Router

(Case 2), and then the PC (Case 1) or Router (Case 2) can directly use the WAP IP address.

**3.6 IPv6 Only and IPv4v6 Dual Stack**

**3.6.1 IPv4v6 Dual Stack**

The H122-373 provides dual stack function.

**3.6.2 IPv6 Only (CLAT) (optional)**

The H122-373 supports IPv6 only with the transition solution CLAT for IPv4 device.

When the IPv6 only (CLAT) function is enabled, NAT-based functions (like DMZ/Port

Forwarding/Port tigger) cannot be used.

When an IPv4 device accesses the Internet, the performance is degraded because packets need

to be packetized and unpacked. However, IPv6 devices are not affected.

**3.7 Multi-APN (optional)**

The H122-373 supports the establishment and maintenance of two APNs. These two APN

connections isolate data and remote management services on an operator's network

**3.8 5GHz Preferred**

Priority usage of 5 GHz Wi-Fi band over 2.4 GHz band when signal strength is equal to

increase connection speeds.

The product will support two SSIDs when 5 GHz preferred is enabled. The first SSID

includes 2.4 GHz Wi-Fi and 5GHz Wi-Fi, which provides 5 GHz preferred capabilities. The

second SSID ending with '\_5G' is an independent 5 GHz Wi-Fi. Customers can choose

according to their needs.

The product also supports two SSIDs when 5 GHz preferred is disabled. The first SSID is

only 2.4 GHz Wi-Fi, the second SSID is 5 GHz Wi-Fi ending with '\_5G'. Customers can

choose according to their needs

**3.9 HiLink**

Supports HiLink routers to connect to H122-373 through the H button to create an

expanded network.

Supports quick connection between a HiLink device (such as Honor set-up boxes, Honor

handsets and HUAWEI handsets running on EMUI 5.0 and later) and H122-373 through

the H button

**3.10 Customer management**

**3.10.1 WebUI**

The H122-373 supports local configuration through the Web UI. You can perform device

management and network configuration to ensure normal and stable performance

**3.10.2 HUAWEI AI Life APP**

Scan the QR code (can be found in the Quick Start Guide and Web UI) to download the

HUAWEI AI Life APP and configure the router from your phone.

The H122-373 supports Operator maintenance through the TR-069. Operator remote manages

the CPE software update/parameters configuration via TR-069

**3.11 Operator maintenance (optional)**

The H122-373 supports Operator maintenance through the TR-069. Operator remote manages

the CPE software update/parameters configuration via TR-069.

**3.12 HOTA**

The H122-373 supports the HOTA feature, which allows users to remotely update the device

firmware through the HOTA server.

HTC 5G Hub

Là một thiết bị di động 5G thông minh, cung cấp một điểm truy cập không dây.

Tính năng:

* 5G/4GX mobile multimedia smart hub for 5G/4G network
* Wi-Fi 6 technology and supports up to 20 Wi-Fi enabled devices
* 1GB Ethernet connection
* All-day battery life
* Allows smooth 4K video streaming and low latency for gaming
* Integrated display and speakers

**Specification:**

**Phần cứng:**

**Qualcomm® Snapdragon™ 855 Octa-Core, with Snapdragon™ X50 5G Modem**

Snapdragon 855 là hệ thống ARM LTE 64-bit hiệu năng cao tích hợp trên chip do Qualcomm thiết kế và được giới thiệu vào cuối năm 2018. Được chế tạo trên quy trình TSMC 7nm, 855 có bốn lõi tiết kiệm điện năng Kryo 485 Silver hoạt động ở tốc độ 1,8 GHz cùng với ba lõi hiệu năng cao Kryo 485 Gold hoạt động ở 2,42 GHz và một lõi Kryo 485 Gold hiệu năng cao hơn hoạt động ở 2,84 GHz. Snapdragon 855 tích hợp hoạt động GPU Adreno 640 ở 600 MHz và có modem X24 LTE, bộ xử lý tín hiệu số (DSP) Hexagon 690 và bộ xử lý tín hiệu hình ảnh Spectra 380.

* X24 LTE modem
  + LTE Category 20
  + Downlink:
    - 2 Gbps peak
    - 7x20 MHz carrier aggregation
    - Up to 256-QAM
    - Up to 4x4 MIMO on five carriers
    - Full-Dimension MIMO (FD-MIMO)
    - Maximum 20 spatial streams
  + Uplink:
    - 316 Mbps peak
    - 3x20 MHz carrier aggregation
    - Up to 2x 106Mbps LTE streams
    - Up to 256-QAM
    - Uplink data compression
* LTE FDD, LTE TDD including CBRS support, LAA, LTE Broadcast, WCDMA (DB-DC-HSDPA, DC-HSUPA), TD-SCDMA, CDMA 1x, EV-DO, GSM/EDGE
* WiFi
  + Standards: 802.11ax, 802.11ac Wave 2, 802.11a/b/g, 802.11n
  + Spectral Bands: 2.4 GHz, 5 GHz, 6 GHz
* Bluetooth
  + Bluetooth 5.0
  + 2 Mbps

Snapdragon 855 có thể được ghép nối với modem X50 5G của Qualcomm (chip bên ngoài) và chip giao diện RF (RFFE) để mang đến hỗ trợ 5G NR, sub-6 GHz và mmWave.

* 5G Technology: 5G NR[[17]](https://en.wikipedia.org/wiki/Qualcomm_Snapdragon_LTE_modem#cite_note-17)
* 5G Spectrum: mmWave, sub-6 GHz
* 5G Modes: TDD, NSA (non-standalone)
* 5G mmWave specs: 800 MHz bandwidth, 8 carriers, 2x2 MIMO
* 5G sub-6 GHz specs: 100 MHz bandwidth, 4x4 MIMO
* mmWave Features: Dual-layer polarization in downlink and uplink, Beam forming, Beam steering, Beam tracking
* 5G Peak Download Speed: 5000 Mbit/s
* Samsung 10nm FinFET process
* Chipsets: Snapdragon X50 5G Modem

**Qualcomm®60GHz Wi-Fi chipset and Qualcomm® 2×2 Wi-Fi 6-ready chipset**