# eA380-135 CPE

# Product Description

**Issue**     V2.3

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**HUAWEI TECHNOLOGIES CO., LTD.**

# Huawei Technologies Co., Ltd.

# Contents

# 1 Product Overview

## Introduction

The Huawei eA380-135 V1R1 CPE is the Long Term Evolution (LTE) customer premises equipments (CPE). As a wireless gateway, the eA380-135 can be deployed outdoors to provide services such as data collection and video surveillance.

The eA380-135 V1R1 CPE supports LTE Release 11/12. The eA380-135 provides the following functions:

- Data service
- Wi-Fi Service
- Security service
- Local and remote maintenance and management
- Data routing

## Product Features

The eA380-135 is developed based on the same hardware and software platform. The eA380-135's main features are as follows:

- **Multiple LTE band connectivity**
  Support multiple LTE TDD Band:
  eA380-135:3.5GHz（B43）
- 1T4R for B43
- **2CC CA (Intra-band Contiguous)**
- **4×4 MIMO**
- **High speed experience**
- LTE DL Category12,UL Category 13
  5MHz,10MHz,15MHz,20MHz bandwidth
- **Wireless LAN Access Point**
  For wireless LAN connectivity with integrated 802.11b/g/n access point,support maximum 4 different SSID. Wireless security features including standard WLAN WEP,WPA,WPA2 encryptions.
- **Soft SIM**
- **Frequency lock(band,frequency,cell)**

- **Flexible networking capabilities**

  Provide high-speed routing capability.Comprehensive set of networking and IP protocols such as bridging,routing,DNS, DHCP server,and NAT.

  Support Routing behind MS and DHCP relay.

  GRE transparent ethernet bridging (L2VPN over GRE).

  UE direct connect.

  Support L2TP

  Dual APN,one for voice and the other for data

- **Flexible security services**

  Support packet filtering firewall.Provide instant protection to block potential security risks and intrusion attempts.

- **Web-based Configuration**

  Built-in web based configuration supports local administration and management with User-friendly Web interface.

- **TR069-Based Device management**

  Support the CPE WAN Management Protocol (CWMP) as specified in Broadband Forum TR-069 Amendment II.Support remote software installation, setting of configuration and status parameters.

- **Antenna**

  Built-in LTE and WLAN high gain antenna with high performance.

- **Outdoor adaptability**

  IP65 dust and water proof

  Surge protection in outdoor environments

- **Others**

  User-friendly design of LED indicator shows the status of equipment.

  Supports Windows XP,Windows Vista,Windows 7,Linux,MAC.Compatible with Browser include Internet Explorer, Firefox,Chrome,Safari.

## Appearance

**Figure 1-1** Appearance of eA380-135

# 2 Application Scenarios

The eA380-135 is specially designed for outdoor deployment to obtain better wireless access performance to the LTE network.

The eA380-135 is intended to be deployed in wISP network. They can also be deployed in industrial,public security and enterprise network if the performance is acceptable to the network operator.

- LTE access function:The eA380-135 adopt the LTE access technology at the WAN side.
- LAN access function:One 1000Mbps high-speed Ethernet interfaces are provided at the LAN side.
- AP function: An 802.11 b/g/n-compliant WLAN AP interface is provided,used for wireless networking at home. The interface is compliant with the IEEE802.11 b/g/n standard and the WEP-OPEN,WEP-SHARED,WPA-PSK(TKIP),WPA-PSK(AES), WPA2-PSK(TKIP),WPA2-PSK(AES) security authentication.
- DHCP/DNS: The DHCP server dynamically allocates IP addresses to PCs.
- WEB management: You can configure, modify and query the configuration information of the eA380-135.
- IP route protocol and NAT:High-speed routing capability. With the built-in NAT,the eA380-135,together with LTE terminals,can provide flexible broadband access solutions and networking schemes.

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**Figure 2-1** The eA380-135 deployed in wISP network
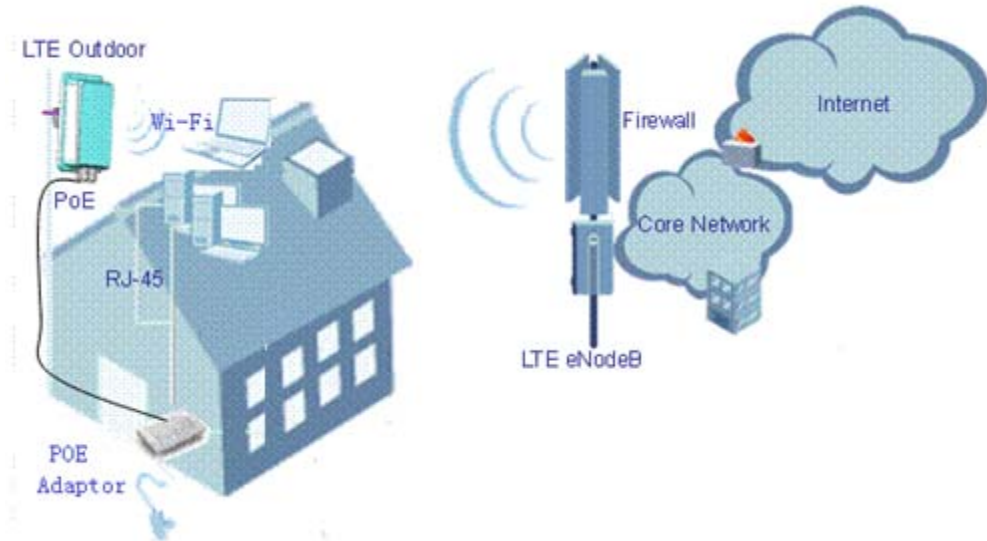


**Figure 2-2** The eA380-135 deployed in industrial network
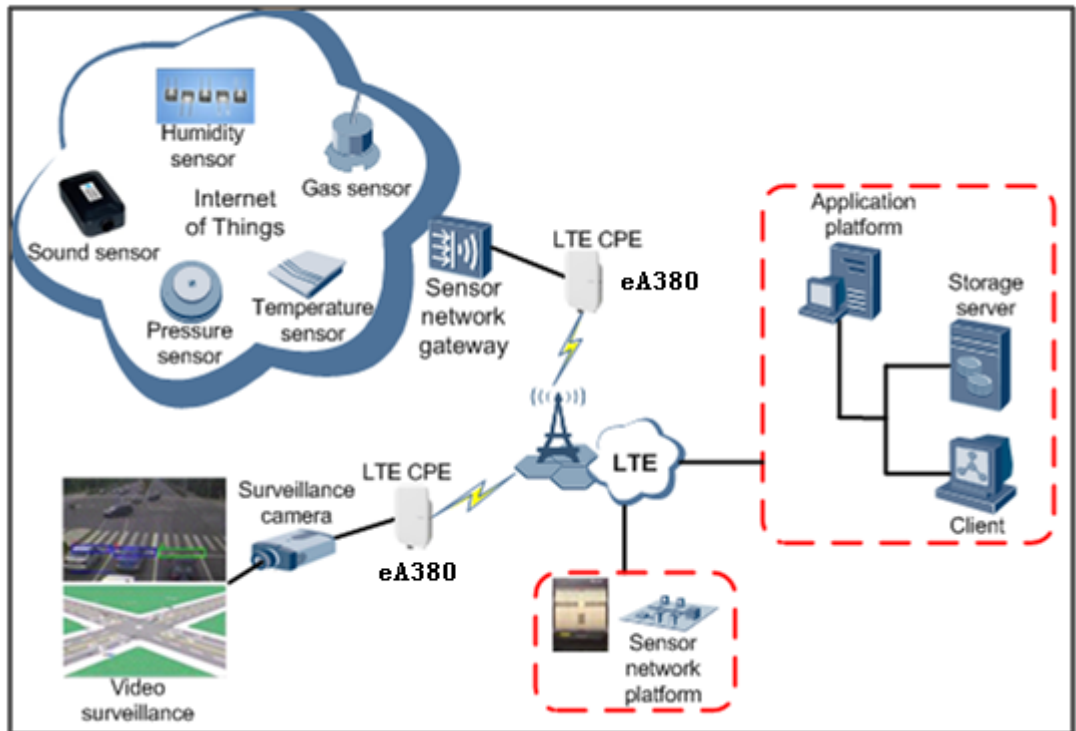
**Figure 2-3** The eA380-135 connected to a video camera.
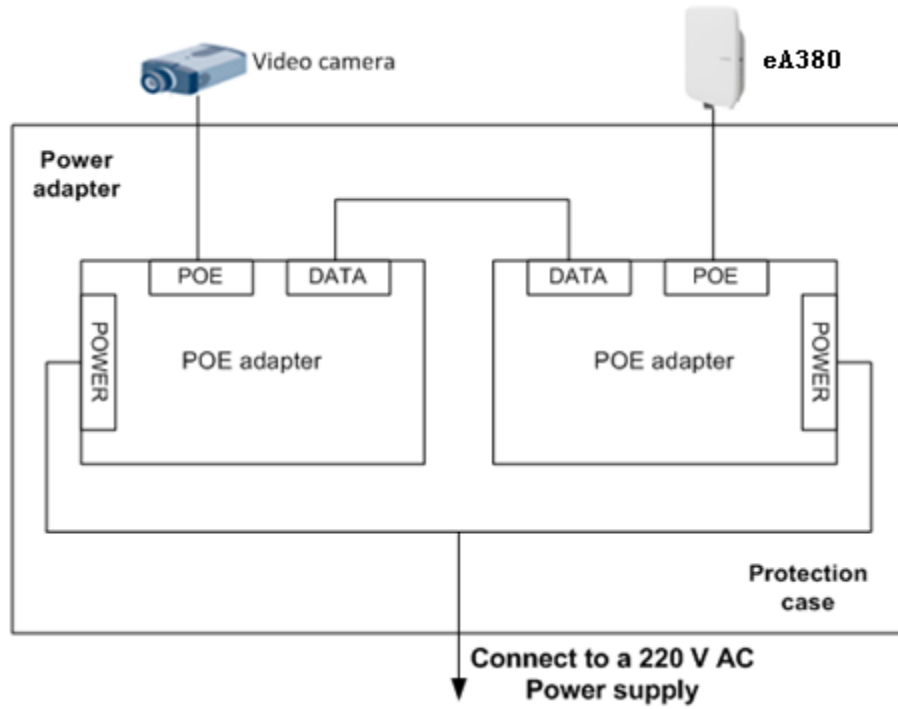


**Figure 2-4** The eA380-135 connected to multiple devices
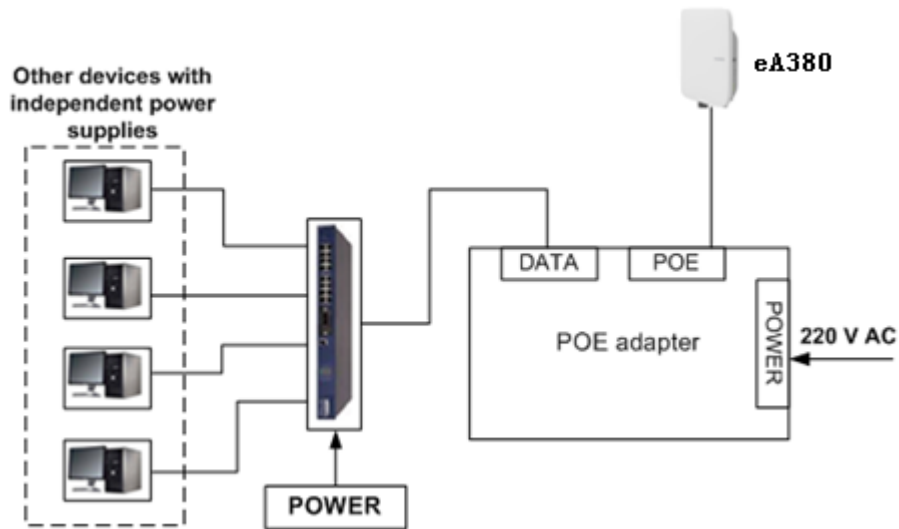
# 3 Technical Specifications

## 3.1 Hardware

**Table 3-1** Technical specifications of eA380-135

| Category | | Description |
|---|---|---|
| Technical standard | | WAN:LTE 3GPP Release 11 |
| | | LAN:IEEE 802.3/802.3u |
| | | WLAN:IEEE 802.11b/g/n |
| Working frequency band | LTE | eA380-135: LTE TDD (3600 MHz to 3800 MHz) |
| | WLAN | 2.400 GHz ~ 2.4835 GHz[2] |
| External interface | | • 1 Ethernet and voice interface (RJ45): 10/100/1000Base-TX Ethernet, POE combined<br>• 1 USB interface(for local maintenance only)<br>• 1 SIM card slot |
| LED indicator | | • One POWER indicator<br>• One LAN indicator<br>• Three LTE signal strength indicators |
| Maximum transmit power | LTE | • 23 dBm (±2) |
| | WLAN | • 16dBm(±2 dB) |
| EIRP | LTE | • 37 dBm |
| Receiving sensitivity | LTE | eA380-135<br>B43:<br>• < -99 dBm/5 MHz<br>• < -96 dBm/10 MHz<br>• < -93 dBm/20 MHz |

| Category | | Description |
|---|---|---|
| | WLAN | • 802.11b: -92 dBm@1 Mbps, <br>                   -85 dBm@11 Mbps <br> • 802.11g: -88 dBm@6 Mbps <br>                   -73 dBm@54 Mbps <br> • 802.11n: <br>     HT20: -87 dBm@MCS0 <br>                -71 dBm@MCS7 <br>     HT40: -84 dBm@MCS0 <br>                -68 dBm@MCS7 |
| Power consumption | | <9W when heater off <br> <25W when heater works |
| Power supply | | • POE (should be powered by CAT-5e cable eight line ); AC 100V~240V,DC 48V/650mA |
| Dimensions (W×D×H) | | 258mmx220mmx66mm |
| Weight | | About 1kg (The power supply adapter is not included) |
| Water and dust proof | | IP65 |
| Temperature | | • Working temperature:-40℃~ +55℃ <br> • Storage temperature:-40℃  ~ +70℃ |
| Humidity | | 5% ~ 95% |
| Installation | | Mounted on poles or walls |

Tip: Within three months after the arrival,it is recommended to use the equipment,or store in the following environment:

● Temperature:-10 ℃ to 35 ℃

● Relative humidity (RH):30% RH to 85% RH

Storage environment should be equipped with temperature and humidity equipments and dehumidification equipment to monitor and adjust the temperature and humidity.

# 3.1.2 Antenna Specifications

**Table 3-2** eA380-135 LTE antenna specifications

| Item | eA380–135 |
|---|---|
| Band | 3600 to 3800 MHz (Band 43) |
| Gain | 13±1 dBi |
| Input | 50 ohm |

| Item | eA380–135 |
|---|---|
| impedance | |
| SWR | < 2 |
| Polarization | Dual cross polarization |
| Radiation pattern | Directional antenna |

**Table 3-3** WLAN antenna specifications

| Item | Description |
|---|---|
| Frequency | 2.4 GHz ~ 2.483 GHz |
| Input impedance | 50 Ω |
| Standing wave ratio | < 3 |
| efficiency | ≥50% |
| Gain | ≥2dBi |
| Polarization | Linear polarization |

# 3.2 Software

**Table 3-4** Software specifications

| Item | Description |
|---|---|
| Gateway | Router: The default routing address is 0.0.0.0. The default routing table items can be generated accordingly. |
| | Supports Address Resolution Protocol (ARP) |
| | Supports domain name service (DNS) |
| | Supports Internet Control Message Protocol (ICMP) |
| | NAT<br>• Supports Network Address Translation (NAT) and Network Address Port Translation (NAPT).<br>• Supports fragment message identification for normal NAT<br>• Supports NAT traverse |
| | DHCP server |

| Item | Description |
|------|-------------|
|  | • The default DHCP server address ranges from 192.168.1.2 to 192.168.1.254. The default gateway address is 192.168.1.1.<br>• The default DHCP lease is 24 hours.<br>• The DHCP server can be enabled or disabled.<br>• The DHCP server's address pool can be configured.<br>• The DHCP lease can be configured.<br>• IP address status such as the hostname, Media Access Control (MAC) address,IP address,and remaining DHCP lease can be displayed.<br>• Supports static IP address reservation<br>• Support DHCP relay. |
|  | Routing behind MS<br>UE direct connect |
| Firewall | Firewall switch<br>LAN MAC address filtering<br>IP address filtering<br>URL filtering<br>Security Parameter Index (SPI) filtering<br>Demilitarized Zone (DMZ)<br>Port forwarding<br>Service access control |
| LAN | Auto-negotiation between 10 Mbit/s /100 Mbit/s/1000 Mbit/s<br>MDI/MDIX auto-sensing<br>Compatible with IEEE 802.3/802.3u |
| WLAN | SSID broadcast and hiding is supported. |
|  | Authentication:<br>• Open System authentication<br>• Shared Key authentication<br>• 64/128-digit WEP encryption<br>• 256-digit WPA-PSK/ WPA2-PSK encryption<br>• AES ciphering algorithm<br>• TKIP and AES ciphering algorithm synchronously |
|  | MAC address authentication:<br>• Up to 16 MAC address items. |
|  | Ratio adjustment:<br>• Automatically<br>• Manually |
|  | STA management:<br>• Supports limit of access users (up to 32 users) |

| Item | Description |
|---|---|
| Upgrade | Supports TR-069 upgrade and local upgrade. |
| SIM | Supports PIN management and SIM card authentication soft SIM |
| Dial-up connection | Supports automatic and manual connection |
| Importing and exporting configuration | Encrypt and back up the current configuration, and then restore from a backup configuration |

# 3.3 User Interfaces

**Table 3-5** User interfaces (gateway)

| Item | Description |
|---|---|
| Configuration | LAN:<br>• DHCP<br>• IP address |
| | WAN:<br>• WAN connection configuration, such as the user name, password,and APN<br>• Network search mode<br>• Band type<br>• Dial-up connection type<br>• Frequency lock(band, frequency, cell) |
| | WLAN:<br>• Wireless status<br>• SSID<br>• Mode (802.11 b/g/n)<br>• Channel<br>• Hidden SSID<br>• Tx Rate<br>• Authentication (Open System and Shared Key)<br>• Security (WEP and WPA and WPA2)<br>• Access list (MAC) |
| | Firewall:<br>• Firewall switch<br>• LAN MAC address filtering<br>• IP address filtering |

| Item | Description |
|------|-------------|
| | • Security Parameter Index (SPI) filtering<br>• URL filtering<br>• DMZ<br>• Port forwarding<br>• Service access control |
| Status | Signal strength and SINR<br>Network type<br>Network connection status<br>SIM card state<br>Operator name and system mode |
| Others | Network connection settings:<br>• Automatic network registration<br>• Manual network registration |
| | Select network connection type: LTE |

# 4 Services and Applications

## Data Services

The eA380-135 provides access to LTE wireless broadband networks with high-speed data services.

## Small-Scale LAN

Devices can connect to the eA380-135 by wired connection to use data services. A LAN consisting of multiple computers can be built using external hubs, Ethernet switches,or routers.

## Security Services

The eA380-135 has firewall functions which enable users to protect their computers when accessing the Internet.

## Firewall

The following firewall functions are provided:

- Firewall switch:Enable or disable the network connection's firewall.
- LAN MAC address filtering:Prevent devices with specified MAC addresses from accessing the network.
- LAN IP filtering: Prevent devices with specified IP addresses from accessing computers on the LAN.
- URL filtering:Prevent computers on the LAN from visiting specified URLs.

## Local Management and Maintenance

The eA380-135 supports local configuration to manage devices,configure network parameters,and help ensure that the device functions properly and stably.

## Remote Management and Maintenance

The eA380-135 supports remote configuration to manage devices,configure network parameters, and query the status by TR069.

# 5 Adopted Standards

## Communication Protocols

Table 5-1 lists the standards and communication protocols supported by the eA380-135.

**Table 5-1** eA380-135' standards and communication protocols

| Item | Description |
|---|---|
| Physical layer | RFC894 |
| ARP | RFC826 |
| IP | RFC791,RFC1122,RFC1071,RFC1141, RFC1624, RFC792,RFC950,RFC1256 |
| ICMP | RFC792,RFC950,RFC1256 |
| TCP | RFC793 |
| UDP | RFC768 |
| DHCP | RFC1531,RFC1533 |
| NAT | RFC1631 |

## Wireless Port

The eA380-135's wireless Uu port complies with LTE R11/12.

# 6 FCC Statement

eA380-135' FCC Statement

**FCC Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

**FCC Radiation Exposure Statement**

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and it also complies with Part 15 of the FCC RF Rules. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and consider removing the no-collocation statement.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:   (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Caution!**

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

# 7 Packing List

Table 6-1 describes the eA380-135' packing list.

**Table 7-1** eA380-135' packing list

| Item | Quantity | Description |
|---|---|---|
| eA380-135 | 1 | Standard |
| Quick installation guide | 1 | Standard |
| Installation accessory | 1 | Standard |

# 8 Acronyms and Abbreviations

This section lists the acronyms and abbreviations related to the eA380-135.

**Table 8-1** List of acronyms and abbreviations

| Acronym/Abbreviation | Full Name |
| --- | --- |
| ARP | Address Resolution Protocol |
| CPE | Customer Premises Equipment |
| DHCP | Dynamic Host Configuration Protocol |
| DMZ | Demilitarized Zone |
| DNS | Domain Name Service |
| ICS | Implementation Conformance Statement |
| ICMP | Internet Control Message Protocol |
| LTE | Long Term Evolution |
| MAC | Media Access Control |
| MSN | Windows Messenger |
| NAPT | Network Address Port Translation |
| NAS | Non-Access-Stratum |
| NAT | Network Address Translation |
| PDCP | Packet Data Convergence Protocol |
| RLC | Radio Link Control |
| RRC | Radio Resource Control |
| RTU | Remote Terminal Unit |
| SPI | Security Parameter Index |
| SSID | Service Set Identifier |
| UE | User Equipment |

| Acronym/Abbreviation | Full Name |
|---|---|
| USIM | Universal Subscriber Identity Module |