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# 1 Regulatory Compliance Statement

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## About This Chapter

This chapter provides the certification details for the *pBTS3701*:

- European Community CE Certification Declaration of Conformity (DoC)

## 1.1 European Community CE Certification DoC

Figure 1-1 European community CE certification DoC



For the following equipment

Product : WiMAX pico base station  
 Type Designation/Trademark: pBTS3701  
 Manufacturer's Name : Huawei Technologies Co., Ltd.  
 Manufacturer's Address : Bantian, Longgang District, Shenzhen, 518129  
Guangdong, P. R. China

is herewith confirmed to comply with the requirements set out in the Council Directive 1999/5/EC for radio equipment and telecommunications terminal equipment. For the evaluation of the compliance with this Directive, the following standards were applied:

Safety: EN 60950-1:2006

Health: Council Recommendation 1999/519/EC  
EN 50385:2002 EN 50384:2002

EMC : EN 301 489-1 V1.6.1 (2005-09)  
EN 301 489-4 V1.2.1(2002-08)

Radio: EN 302 326 V1.2.2 (2007-08)

Responsible for making this declaration is the:

Manufacturer  Authorised representative established within the EU

Person responsible for making this declaration

Name, Surname : Mr. Zhang Xinqwei  
 Position/Title : Regulatory Compliance Manager

ShenZhen  
(Place)

2008-09-27  
(Date)

[Signature]  
(Company stamp and legal signature)



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# 2 Regulatory Compliance Information

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## About This Chapter

The following table lists the contents of this chapter.

| Title                               | Description  |
|-------------------------------------|--|
| 2.1 Regulatory Compliance Standards | The regulatory compliance standards on EMC, safety, telecom, RF, health, and environmental protection. |
| 2.2 European Directives Compliance  | The compliance with European directives, including RoHS compliance and device recycling guide.         |
| 2.3 USA Regulatory Compliance       | The USA regulatory compliance, including FCC part 15.  |
| 2.4 Japanese Compliance             | The Japan regulatory compliance.   |
| 2.5 CISPR 22 Compliance             | The CISPR 22 regulatory compliance.  |

## 2.1 Regulatory Compliance Standards

The pBTS3701 complies with the standards listed in Table 2-1.

**Table 2-1** Regulatory compliance standards

| Discipline | Standards  |
|------------|--|
| EMC        | <ul style="list-style-type: none"> <li>• CISPR22 <i>Class B</i></li> <li>• CISPR24</li> <li>• EN55022 <i>Class B</i></li> <li>• EN50024</li> <li>• ETSI EN 300 386 <i>Class B</i></li> <li>• ETSI ES 201 468</li> <li>• ETSI EN 301 489 <i>Class B</i></li> <li>• CFR 47 FCC Part 15 <i>Class B</i></li> <li>• ICES 003 <i>Class B</i></li> <li>• AS/NZS CISPR22 <i>Class B</i></li> <li>• GB9254 <i>Class B</i></li> <li>• VCCI <i>Class B</i></li> <li>• CNS 13438 <i>Class B</i></li> <li>• IEC61000-3-2</li> <li>• IEC61000-3-3</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> </ul> |
| Safety     | <ul style="list-style-type: none"> <li>• IEC 60950-1</li> <li>• IEC/EN41003</li> <li>• EN 60950-1</li> <li>• UL 60950-1</li> <li>• CSA C22.2 No 60950-1</li> <li>• AS/NZS 60950.1</li> <li>• BS EN 60950-1</li> <li>• IS 13252</li> <li>• GB4943</li> </ul>  |
| RF         | <ul style="list-style-type: none"> <li>• ETSI EN 302 326-1</li> <li>• ETSI EN 302 326-2</li> <li>• ETSI EN 301 390</li> <li>• ETSI EN 301 126-1</li> <li>• ETSI EN 301 126-2-1</li> <li>• ETSI EN 301 126-2-3</li> <li>• CFR 47 FCC Part 2, CFR 47 FCC Part 27</li> </ul>  |



| Discipline               | Standards  |
|--------------------------|--|
| Health                   | <ul style="list-style-type: none"><li>• EN 50384</li><li>• EN 50385</li><li>• CFR 47 FCC Part 1, CFR 47 FCC Part 2</li></ul> |
| Environmental protection | RoHS   |
| Grounding                | <ul style="list-style-type: none"><li>• ITU-T K.27</li><li>• ETSI EN 300 253</li></ul>                                       |

## 2.2 European Directives Compliance

The pBTS3701 complies with the following European directives.

- 89/336/EC (EMC)
- 2006/95/EC (low voltage)
- 1999/5/EC (R&TTE)

Refer to Figure 1-1 for Huawei Declaration of Conformity.

The pBTS3701 complies with Directive 2002/95/EC, on the RoHS in electrical and electronic equipment. The device does not contain lead, mercury, cadmium, and hexavalent chromium and brominated flame retardants (polybrominated biphenyls (PBB) or polybrominated biphenyl ethers (PBDE)) except for those exempted applications allowed by RoHS directive for technical reasons.

The pBTS3701 complies with Directive 2002/96/EC on waste electrical and electronic equipment. Huawei is responsible for recycling its end-of-life devices. Contact Huawei local service center when recycling is required.

The main materials in the device are aluminums, plastics and electronic components. Most of the materials are recyclable.

Note the following for recycling at the end of life of the product:

- Remove the shell first in the disassembly.
- Send the shell to special institution for disposal because it contains chemical substance.
- Dispose of PCB separately because it contains hazardous substance.
- No hazardous substance is contained in the label printing ink and plastic paint, and no hazardous gas will emit when burning.
- Dispose of the yellow chromate conversion coating screw separately because it contains  $\text{Cr}^{6+}$ .
- Indicate the plastic marking reference, such as ISO1043, and EN50419.

## 2.3 USA Regulatory Compliance

### 2.3.1 FCC Part 15

The pBTS3701 complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device does not cause harmful interference.
- This device must sustain any interference received, including interference that may cause undesired operation.

If this device is modified without authorization from Huawei, the device may no longer comply with FCC requirements for *Class B* digital devices. In that a case, your right to use the device may be limited by FCC regulations. Moreover, you may be required to correct any interference to radio or television communications at your own expense.

This device 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 device generates, uses and radiates radio frequency energy. If it is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be judged by turning the device off and on, the user may take one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the device and receiver.
- Connect the device to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for assistance.

## 2.4 Japanese Compliance

### 2.4.1 VCCI

The pBTS3701 complies with VCCI *Class B* by Information Technology Equipment (ITE).

## 2.5 CISPR 22 Compliance

The pBTS3701 complies with CISPR 22 for *Class B* by the ITE.

# 3 Safety Information

## About This Chapter

The following table lists the contents of this chapter.

| Title                              | Description   |
|------------------------------------|---|
| 3.1 Overview                       | Safety precautions to be taken before installing and maintaining the Huawei device.                       |
| 3.2 Electricity Safety             | Information about the electricity safety.   |
| 3.3 Inflammable Environment        | Information about the inflammable environment safety.   |
| 3.4 Electromagnetic Field Exposure | Safety precautions on the Electromagnetic Field Exposure of the device and laser.                         |
| 3.5 Working at Heights             | Safety precautions to be taken before using the ladders or hoisting heavy objects.                        |
| 3.6 Mechanical Safety              | Safety precautions on drilling, on sharp objects, on handling fans, and on lifting heavy objects.         |
| 3.7 Miscellaneous                  | Safety precautions on inserting and removing boards, on bundling signal cables, and cabling requirements. |

## 3.1 Overview

### 3.1.1 Safety Precautions

This section describes the safety precautions to be taken before installing and maintaining the Huawei device.

- Before performing an operation, read the operation instructions and information about precautions to be taken, and follow them to prevent accidents. The Caution, Warning and Danger items in other documents do not cover all the safety precautions that must be followed. They are only supplementary information. The installation and maintenance personnel need to understand the basic safety precautions to be taken.
- When operating the device, obey the local safety regulations. The safety precautions provided in the documents are supplementary and shall be in compliance with the local safety regulations.
- When operating the Huawei device, in addition to the precautions, follow the specific safety instructions given by Huawei.
- The installation and maintenance personnel must receive training in safety precautions. Only qualified personnel can install or maintain the device.

### 3.1.2 General Requirements

To minimize the technically residual risk, it is imperative to obey the following rules. Read all the instructions before operation.

#### Installation

Tighten the thumbscrews by using a tool after both initial installation and subsequent access to the panel.

#### Power Supply

- For AC supplied model: The device applies to TN and TT power systems.
- For this device, a readily accessible disconnect device shall be incorporated in the building installation wiring.
- For AC supplied model: The plug-socket combination must be accessible at all times because it serves as the main disconnect device.

#### Human Safety

- Do not operate the device or cables at lightning strikes.
- For AC supplied model: To ensure the safety of the device and human body, unplug the AC power connector and do not use the fixed terminal in the lightning weather. Furthermore, do not touch the terminal or antenna connector in such weather.
- To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telecommunication network voltage (TNV) circuits.
- Do not wear jewelry or watches when you operate the device.

## Operator

- Only qualified and skilled personnel are allowed to install, configure, and disassemble the device.
- Only the personnel authorized are allowed to operate the device.
- Any replacement or change to the device or parts of the device (including the software) must be done by qualified or authorized personnel of Huawei.
- Any fault or error that might cause safety problems must be reported immediately to the person in charge.
- Only qualified personnel must remove or disable the safety facilities, or to troubleshoot and maintain the device.

Ensure that the instructions provided in this document are followed completely. The document also provides guidelines in selecting the measuring and testing device.

## 3.2 Electricity Safety

### 3.2.1 High Voltage



#### **DANGER**

The high voltage power supply offers power for the device operation. Direct or indirect contact (through damp objects) with high voltage and AC mains supply may result in fatal danger.

- During the installation of the AC power supply facility, follow the local safety regulations. The personnel who install the AC facility must be qualified to perform high voltage and AC operations.
- Do not wear conductive articles, such as watches, hand chains, bracelets and rings during the operation.
- When the operation is performed in a damp environment, make sure that the device is dry.



#### **WARNING**

Non-standard and improper high voltage operations may result in fire and electric shock. Therefore, you must obey the local rules and regulations when bridging and wiring AC cables. Only qualified personnel must perform high voltage and AC operations.

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### 3.2.2 Thunderstorm

**DANGER**

High voltage and AC operations are prohibited during thunderstorm.

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### 3.2.3 Tools

**WARNING**

Suggestion: Dedicated tools must be used during high voltage and AC operations. Avoid using ordinary tools.

---

### 3.2.4 High Electrical Leakage

**WARNING**

Ground the device before powering on the device. Otherwise, the personnel and device are in danger.

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If the "high electrical leakage" flag is stuck to the power terminal of the device, you must ground the device before powering it on.

### 3.2.5 Power Cable

**WARNING**

Installation and removal of live line are prohibited. Transient contact between the core of the power cable and the conductor may generate electric arc or spark, which may cause fire or eye injury.

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## CAUTION

- For the DC power supplied device, use 1.0 mm<sup>2</sup> or 18AWG minimum power supply cord.
  - For AC power supplied device, use 1.0 mm<sup>2</sup> or 18AWG minimum power supply cord.
  - Use the type H03VV-F or light PVC sheathed flexible cord based on IEC 60227.
- 

## 3.3 Inflammable Environment

Operating the electrical device in inflammable environment can be fatal.



## DANGER

Do not place the device in the environment that has inflammable and explosive air or fog. Do not perform any operation in this environment.

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## 3.4 Electromagnetic Field Exposure



## WARNING

Radio-frequency signals with high intensity are harmful to human body.

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### 3.4.1 Introduction

The BTS emits RF radiation (radiation hazard). Operators have to follow the related local regulations when erecting the BTS.

Operators of BTSs must also follow the related local regulations when erecting the BTS.

### 3.4.2 Limits and Guidelines on Exposure to Electromagnetic Fields

There are a number of international regulations, standards and guidelines for exposure to electromagnetic fields. Several European countries have adopted the recommendation of the council of the European Union. It was released on July 12, 1999 focusing on the harmful effects of exposure to electromagnetic fields (1999/519/EC). The recommendation is based on the guideline published by the ICNIRP.

Table 3-1 gives a comparison among regulations and reference levels applied in different countries.

**Table 3-1** Different regulations and reference

| Country                 | Limit 2500 MHz<br>E Electric Field Strength | Limit 2500 MHz<br>S Power Flux Density |
|-------------------------|---|--|
| ICNIRP<br>International | 61 V/m                                      | 10 W/m <sup>2</sup>                    |
| Europe (1999/519/EC)    | 61 V/m                                      | 10 W/m <sup>2</sup>                    |
| USA (CFR 47 FCC Part 1) | --  | 10 W/m <sup>2</sup>                    |

Reference levels are provided for exposure assessment to determine whether the basic restriction on exposure of humans to electromagnetic fields is exceeded. The basic restriction on exposure to electromagnetic fields is based on established health effects and biological considerations.

### 3.4.3 Location of Base Transceiver Station

The base transceiver station (BTS) is shielded from RF radiation hazards. The pBTS3701 does not cause danger to the public and workers under normal operation condition.

The pBTS3701 shall be regularly monitored and inspected after installation.

### 3.4.4 Prediction of the Exposure to Electromagnetic Fields

The section provides a theoretical approach to calculate possible exposure to electromagnetic radiation around a BTS antenna. Precise statements are possible either with measurements or complex calculations considering the complexity of the environment, such as soil conditions, nearby buildings and other obstacles. The complexity may cause reflections and deflection, scattering of electromagnetic fields.

The maximum output power (given in EIRP) of a BTS is usually limited by license conditions of the network operator.

For the pBTS3701, the maximum output power of the TRX is 500 mW (27dBm).

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P(W) \times G_{numeric}}{4 \times r^2(m) \times \pi}$$

Where

P = Maximum output power in W

G<sub>numeric</sub> = Numeric gain (see below)

r = Distance between the antenna and the point of exposure in meters

For the calculation of the numeric Gain:

$$G_{numeric} = 10^{\frac{GdB}{10}}$$



$$GdB = G_{antenna}(dBi) - B_{cable}(dB)$$

$B_{cable}$  = cable attenuation in dB

## 3.5 Working at Heights



### WARNING

When working at heights, be careful to prevent objects from falling.

---

When working at heights, shall comply with the following requirements.

- The personnel who work at heights must be trained.
- The operating machines and tools shall be carried and handled safely to avoid falling.
- Safety protection measures, such as wearing a helmet and a safety belt, shall be taken.
- In cold regions, wear warm clothes when performing high-altitude operation.
- All lifting appliances must be thoroughly checked before the work is started.

### 3.5.1 Safety Guide on Ladder Use

#### Checking the Ladder

Before using the ladder, first check if the ladder is in good condition. Make sure that you know the maximum weight that the ladder can support; overweight on the ladder is strictly prohibited.

#### Placing the Ladder

Slant angle is suggested to be 75 degrees. The slant can be measured with the angle square or with arms. When using a ladder, place the wider end of the ladder on the ground. Otherwise, take protective measures on the base part of the ladder to avoid skidding. Place the ladder on stable ground.

#### Climbing the Ladder

When climbing the ladder, note the following.

- Ensure the gravity center of your body does not deviate from the ladder edge.
- To lessen the danger and ensure the safety, hold your balance on the ladder before any operation.
- Do not climb higher than the fourth highest step of the ladder.
- If you are about to climb to the top, the length of the ladder shall be one meter higher than the eave.

## 3.6 Mechanical Safety

### 3.6.1 Drilling



#### **WARNING**

Drilling on the rack without permission is strictly prohibited. Drilling that does not satisfy the requirements concerned may damage the wires and cables inside the rack. If the metal shavings from the drilling fall into the rack, it may result in short circuit of the circuit boards.

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- Before drilling a hole on the rack, wear insulation gloves, and remove the cables inside the rack.
- During the drilling, ensure that your eyes are well protected. The hot shavings may injury to your eyes.
- Ensure that the metal shavings do not get into the rack.
- Non-standard drilling may damage the electromagnetic shielding performance of the rack.
- After drilling, clean the metal shavings in time.

### 3.6.2 Sharp Objects



#### **WARNING**

When carrying the device by hand, wear protection gloves to avoid injury by sharp objects.

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### 3.6.3 Lifting Heavy Objects



#### **WARNING**

When lifting heavy objects, do not stand or walk under the arm or the lifted object.

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## 3.7 Miscellaneous

### 3.7.1 Bundling Signal Cables



## CAUTION

- Bundle the signal cables separately from the strong current cables or high voltage cables.
- Maintain a minimum space of 150 mm between adjacent ties.

### 3.7.2 Cabling Requirements

When the temperature is below 0°C, moving the cable may damage the plastic skin of the cable. To ensure the construction safety, comply with the following requirements:

- When installing cables, ensure that the environment temperature is above 0°C.
- If cables are stored in the place below 0°C, move the cables into a place at a room temperature and store the cables for more than 24 hours before installation.
- Move the cables with care, especially when the temperature is below 0°C. Do not drop the cables directly from the vehicle.

### 3.7.3 General Requirements

Before you install and use the device, read these safety precautions carefully and observe them during operation.

- During storage, transportation and operation of the device, keep the device dry.
- During storage, transportation and operation of the device, avoid collision and crash of the device.
- Never attempt to dismantle the device by yourself. In case of any fault, contact the appointed maintenance center for repair.
- Without prior written consent, no organization or individual is permitted to make any change to the structure or safety design of the device. Huawei Technologies Co., Ltd. is not liable to any consequences or legal issues due to such changes.
- While using the device, observe all applicable laws, directives and regulations, and respect the legal rights of other people.

### 3.7.4 Environment Requirements

- Place the device at a well-ventilated place. Do not expose the device to direct sunlight.
- Keep the device clean and free of dust.
- Do not place any object on top of the device. Otherwise, the device may be too hot during operation. It can even be deformed or damaged by the heavy load.
- Keep at least 10 cm between the device and the closest object for heat dissipation.
- Do not place the device on or near any object that can easily catch fire, such as something made of rubber.
- Keep the device far away from any heat source or bare fire, such as a candle or an electric heater.
- Keep the device far away from any household appliance with strong magnetic field or electromagnetic field, such as a microwave oven or a refrigerator or a mobile phone.

### 3.7.5 Operating Requirements

- Do not let a child operate the device without guidance.
- Do not let a child play with the device or any accessory. Swallowing the accessories may lead to peril.
- Use the accessories provided or authorized by the manufacturer only.
- The power supply of the device shall meet the requirements of the input voltage of the device.
- The equipment shall be operated with the delivered power adapter.
- Before plugging or unplugging any cable, shut down the device and disconnect it from the power supply.
- While plugging or unplugging any cable, make sure that your hands are completely dry.
- Do not tread on, pull or over-bend any cable. Otherwise, the cable may be damaged, leading to malfunction of the device.
- Do not use an old or a damaged power cable.
- In case of exceptions, turn off the equipment and unplug the power supply immediately. Contact your supplier for maintenance. For example, if the equipment emits smoke, peculiar smell, or exceptional sounds.
- Avoid any object (such as metal shavings) from entering the device from the heat dissipation intakes.
- Do not scratch or abrade the shell of the device. This may lead to malfunctions of the device. The shed painting material may also lead to skin allergy.
- Please keep a safe distance of at least 3 cm between the antenna and any part of the body while the device is operating.

### 3.7.6 Cleaning Requirements

- Before cleaning the device, stop using it and disconnect it from the power supply.
- Use a piece of soft cloth to clean the device.
- Keep the power plug clean and dry. Using a dirty or wet power plug may lead to electric shock or other perils.