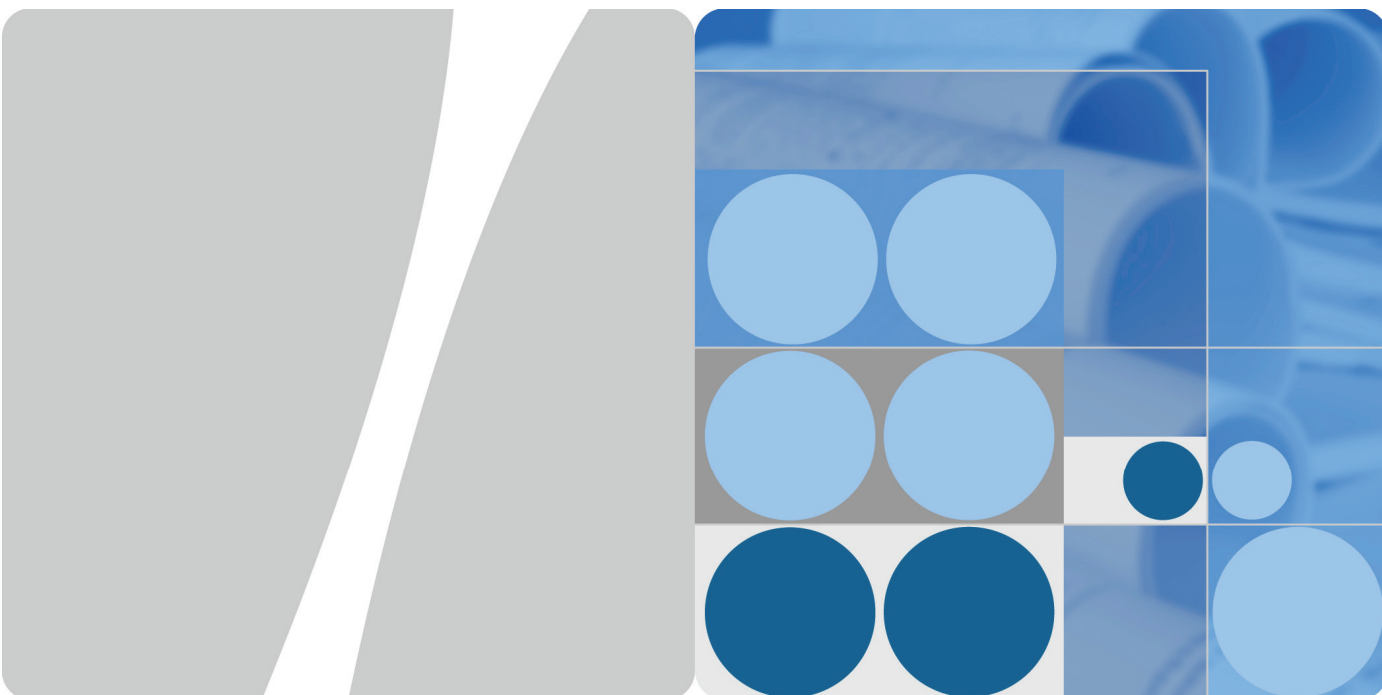


Product Description



HUAWEI B683 Wireless Gateway
V100R001

Issue 01
Date 2010-11-19

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Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and may not be activated or may be limited by local network operators or network service providers, thus the descriptions herein may not exactly match the product or its accessories you purchase.

About This Document

Summary

This document provides information for product features, main functions and services, technical specifications and technical references. .

This document includes:

| Chapter | Details |
|-----------------------------|---|
| 1 Product Overview | Describes the appearance and main services of product |
| 2 Features | Describes the product features |
| 3 Technical Specifications | Describes the specifications of product hardware, software and user interface |
| 4 Services and Applications | Describes the main functions and applications |
| 5 System Structure | Describes the product system structure |
| 6 Technical References | Describes Standards and Communication Protocols of the DATACOM Products |
| 7 Packing List | Describes the devices and accessories of the product |



NOTE

The document is an invitation to offer but not an offer. It is intended to describe the general features and functions of products. The features and functions of certain products vary with requirements of customers.

History

| Issue | Details | Date |
|-------|--------------------------|------------|
| 01 | Initial draft completed. | 2010-11-19 |
| | | |

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1 Product Overview

The B683 wireless gateway (hereinafter referred to as the B683) is a wireless HSPA+ 3G gateway, which provides users with flexible and diversified 3G and 2G data access services.

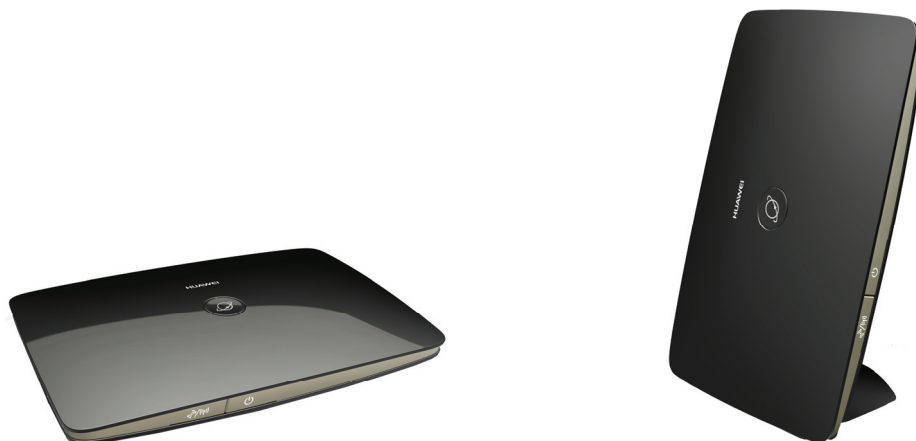
B683 supports the following standards:

- HSPA+ (High Speed Packet Access Plus)
- HSUPA (High Speed Uplink Packet Access)
- HSDPA (High Speed Downlink Packet Access)
- WCDMA (Wideband Code Division Multiple Access)
- GSM (Global System for Mobile Communications)
- GPRS (General Packet Radio Service (System))
- EDGE (Enhanced Data Rates for Global Evolution)

B683 supports wired and wireless network access, and provides data routing service.

B683 provides the following services:

- Data service
- SMS
- Security Service
- Local maintenance management function



B683 appearance

2 Features

The B683 mainly supports the following features:

- Multiple network environments. Supports HSPA+/HSUPA/HSDPA/WCDMA/GSM/GPRS/EDGE
- High speed experience. Supports data services of maximum rate of HSPA+ (DL 28Mbit/s; UL5.76Mbit/s), HSPA (DL 7.2Mbit/s; UL5.76Mbit/s), 384kbit/s WCDMA, 236.8kbit/s EDGE, and 85.6kbit/s GPRS
- 802.11b/g/n
- WPS
- Built-in DHCP Server, DNS RELAY and NAT
- Security services. Provides instant protection to block potential security risks and intrusion attempts.
- Intuitionistic and convenient Web-based management.
- Windows 2000/ Windows XP/ Windows Vista/ Windows 7
- User-friendly design of LED indicator. Easy to observe the status of equipment
- Receiving diversity and load equalizer
- Built-in WCDMA/GSM and WLAN high gain antenna
- External main diversity antenna interface
- USB 2.0 host interface

3 Technical Specifications

3.1 Hardware Specifications

Table 3-1 Technical specifications of the B683

| Item | Description | |
|--------------------------------|---|---------------|
| Technical standard | <ul style="list-style-type: none">• WAN: HSPA+/HSUPA/HSDPA/WCDMA/GSM/GPRS/EDGE• LAN: IEEE 802.3/802.3u• WLAN: IEEE 802.11b/g/n | |
| Working frequency band | HSPA/WCDMA: 2100/900MHz | |
| | WLAN: 2.4GHz~2.4835GHz | |
| | GSM/GPRS/EDGE: 1900M/1800M/900M/850M | |
| External interface/ Indicators | <ul style="list-style-type: none">• One power switch: ON/OFF• One WLAN/WPS button• One Reset button• One dialing button• External antenna interface (SMA)• Four auto-sensing Ethernet interfaces (RJ45 and MDI/MDIX auto-sensing): 10/100Base-T• One POWER (Power Adapter) interface• One USB 2.0 host interface• One Internet status indicator• One WLAN/WPS indicator• One USB indicator• One Power indicator• Four LINK/ACTIVE indicators (indicating the connection status of the corresponding Ethernet interface) | |
| Maximum | WCDMA | 24dBm (+1/-3) |

| | | |
|-----------------------|--|---|
| transmit power | WLAN | <ul style="list-style-type: none"> • 802.11b: 17dBm (+2/-2) • 802.11g: 13dBm (+2/-2) • 802.11n: 12dbm (+2/-2) |
| | GSM | <ul style="list-style-type: none"> • 850M/900M, 33dBm (+2/-2) • 1800M/1900M, 30dBm (+2/-2) |
| Receiving sensitivity | WCDMA | <ul style="list-style-type: none"> • Band VIII: dBm/3.84 MHz, -114DPCH_Ec <REFSENS>; -103.7<REF-or> • Band I: dBm/3.84 MHz; -117DPCH_Ec <REFSENS>; -106.7<REF-or> |
| | GSM | 850/900/1800/1900M, better than -102dBm |
| | WLAN | <ul style="list-style-type: none"> • 802.11g: -65 dBm@54 Mbps • 802.11b: -76 dBm@11 Mbps/-82 dBm@1 Mbps • 802.11n: -64dBm@MCS7(BW=20MHz)/-61dBm@MCS7(BW=40MHz) |
| Power consumption | <10 W | |
| AC/DC power supply | <ul style="list-style-type: none"> • AC: 100V - 240V • DC: 5V, 2A | |
| Dimensions (W×D×H) | 180mm × 123mm × 32.5mm | |
| Weight | < 300g (excluding the power adapter) | |
| Temperature | <ul style="list-style-type: none"> • Working temperature: -10℃ - +45℃ • Storage temperature: -20℃ - +70℃ | |
| Humidity | 5% - 95% | |

3.2 Antenna Specifications

3.2.1 Build-in Antenna

Table 3-2 GSM/WCDMA main antenna specifications

| Item | Description |
|-----------------|--|
| Frequency | <ul style="list-style-type: none"> • 824~960MHz • 1710~1990MHz • 1920~2170MHz |
| Input impedance | 50 Ω |

| Item | Description |
|---------------------|---|
| Standing wave ratio | < 3.0 (after being matched) All frequency points |
| H side gain | ≥1dBi (horizontal level peak value) |
| Polarization | Linear polarization |

Table 3-3 WCDMA sub diversity antenna specifications

| Item | Description |
|---------------------|--|
| Frequency | <ul style="list-style-type: none">• 869~960MHz• 1805~1880MHz• 2110~2170MHz |
| Input impedance | 50 Ω |
| Standing wave ratio | < 3.0 (after being matched, all frequency points) |
| Gain | ≥ 0dBi (horizontal level peak value) |
| Polarization | Linear polarization |

Table 3-4 WLAN main diversity antenna specifications

| Item | Description |
|---------------------|--|
| Frequency | 2.4GHz~2.4835GHz |
| Input impedance | 50 Ω |
| Standing wave ratio | < 2.5 |
| H side gain | Horizontal level minimum value: >-2dBi Horizontal level average value: >-1dBi |
| Polarization | Linear polarization |

Table 3-5 External GSM/WCDMA main diversity antenna specifications(Optional)

NOTE

- Signals may be weak in some areas; thus, you can choose whether to use the external antenna.
- The external antenna is an optional accessory.
- The external antenna can be used indoor only.

| Item | Description |
|--------------------------------|--|
| Frequency | <ul style="list-style-type: none"> • 824~960MHz • 1710~1990MHz • 1920~2170MHz |
| Input impedance | 50 Ω |
| Standing wave ratio | < 3 (after being matched, all frequency points) |
| H side gain | \geq 2dBi (horizontal level peak value) |
| Polarization | Linear polarization (vertical) |
| Length of the connection cable | 1m |
| Interface standard | SMA-C-J1.5 |

3.3 Software Specifications

Table 3-6 Software specifications

| Item | Description |
|---------|--|
| Gateway | Router: <ul style="list-style-type: none"> • Supports static routing • Supports the default routing (the routing address is 0.0.0.0). You can set the WAN connection to the default routing to generate default routing table items |
| | Supports ARP |
| | Supports ICMP |
| | Supports DNS Relay |
| | NAT: <ul style="list-style-type: none"> • Supports NAT, NAPT (compliant with RFC2663, RFC3022 and RFC3027) • Supports fragment message identification for normal NAT • Supports ALG • Supports NAT traverse of VPN related protocol (PPTP and L2TP) |

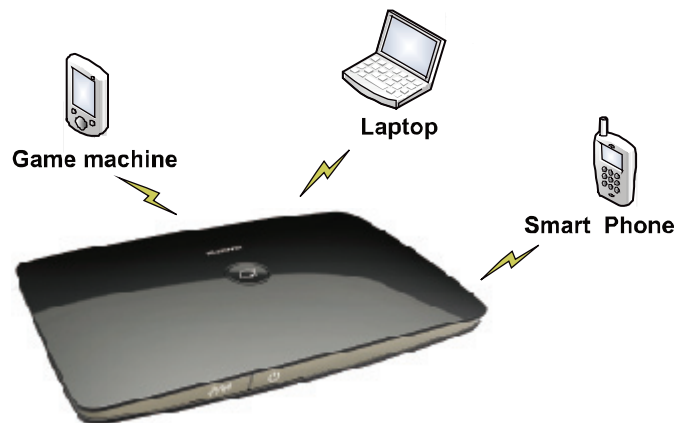
| Item | Description |
|----------------|---|
| | DHCP Server: <ul style="list-style-type: none"> The default IP addresses of the DHCP server is from 192.168.1.100 to 192.168.1.200. The default gateway address is 192.168.1.1 The default DHCP lease is 24 hours The DHCP Server can be enabled or disabled The address pool of the DHCP server can be configured. The lease can be configured The IP address status can be displayed, such as the host name, MAC address, IP address, and remaining lease |
| Data service | <ul style="list-style-type: none"> HSPA+: DL 28Mbit/s UL 5.76Mbit/s HSPA: DL 7.2Mbit/s UL 5.76Mbit/s WCDMA PS: DL 384kbit/s UL 384kbit/s WCDMA CS: DL 64kbit/s UL 64kbit/s EDGE: DL 236.8kbit/s UL 236.8kbit/s GPRS: DL 85.6kbit/s UL 85.6kbit/s GSM CS: DL 14.4kbit/s UL 14.4kbit/s WLAN: <ul style="list-style-type: none"> 802.11b: 11Mbit/s, 5.5Mbit/s, 2Mbit/s, 1Mbit/s 802.11g: 54Mbit/s, 48Mbit/s, 36Mbit/s, 24Mbit/s, 18M bit/s, 12Mbit/s, 9Mbit/s, 6Mbit/s 802.11n: HTC40 MCS7(300M)、HTC20 MCS7(144.4M) |
| SMS | <ul style="list-style-type: none"> Writing/Sending/Receiving Group sending (up to 10 contacts at a time) Storage: Up to 250 messages can be saved in SIM card of the B683 Messages prompt SMS center number settings |
| Firewall setup | <ul style="list-style-type: none"> Firewall Switch LAN MAC Filter URL Filter LAN IP Filter Virtual Server Port triggering DMZ Service UPnP Service ACL settings ALG settings |

| Item | Description |
|--------------------|--|
| LAN | <ul style="list-style-type: none"> • 10Mbit/s and 100Mbit/s auto-negotiation • MDI/MDIX auto-sensing • IEEE802.3/802.3u is compatible |
| WLAN | SSID broadcast and hiding are supported. |
| | Supports Wi-Fi |
| | Supports WPS |
| | Authentication: <ul style="list-style-type: none"> • Open System authentication • Shared Key authentication • ASCII • 64/128-digit WEP encryption • WPA-PSK/ WPA2-PSK encryption • TKIP ciphering algorithm • AES ciphering algorithm • TKIP and AES ciphering algorithm synchronously |
| | MAC address authentication: <ul style="list-style-type: none"> • White list • Black list • The preceding two lists cannot coexist. • Up to 16 MAC address items. |
| | Ratio adjustment: <ul style="list-style-type: none"> • Automatically • Manually |
| | STA management: <ul style="list-style-type: none"> • Supports inquiry of STA status • Supports limit of access users (up to 32 users) |
| System requirement | <ul style="list-style-type: none"> • Windows 2000, Windows XP, Windows Vista, Windows 7 • Your computer's hardware system should meet or exceed the recommended system requirements for the installed version of OS • Internet Explorer: IE 6.0、IE7.0、IE8.0/ Firefox 3.5、Firefox 3.6/ Safari 5.0/Opera 10.5/Chrome 5.1 • Display resolution: 1024*768 or above |

4 Services and Applications

4.1 Wireless Router

The B683 can be used as a wireless router when the Wi-Fi is enabled. You can access the Internet service through setting up the wireless network connection with the B683.



4.2 SMS

The B683 supports message writing/sending/receiving and group sending (up to 10 contacts at a time). You can manage messages through the Web page, such as inbox, outbox, draft.

4.3 Security Service

Its various security features, such as the firewall, user authentication, and PIN protection, protect users against security threats from the Internet when users are using network services.

4.4 Local management and maintenance

The B683 supports local configuration through the Web page. You can accomplish device management, network configuration and ensure normal and stable performance.

5 System Structure

Figure 5-1 shows the system architecture.

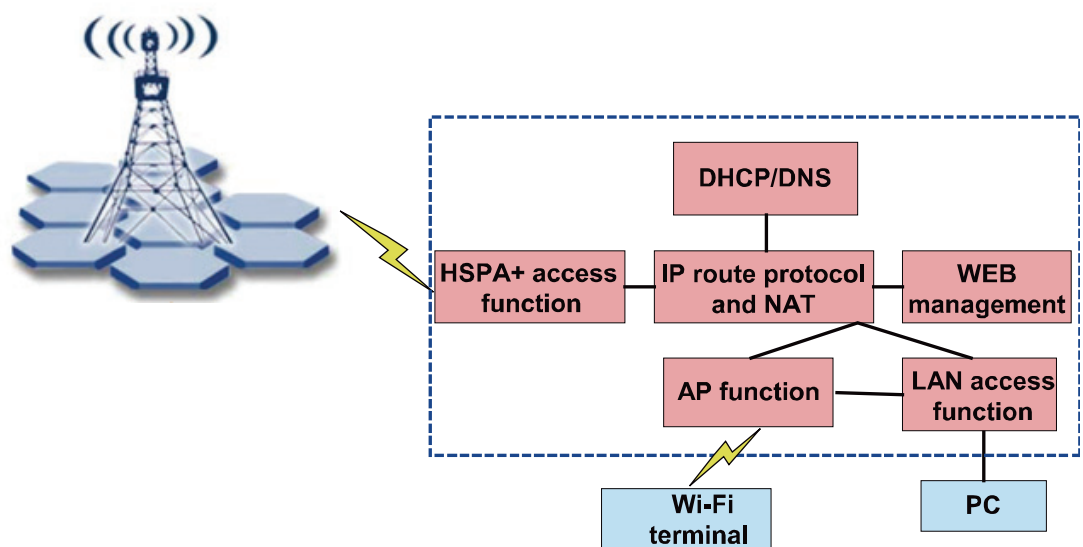


Figure 5-1 System architecture

The following describes modules shown in Figure 5-1.

- **HSPA+ access:** The B683 adopts the HSPA+ access technology at the WAN side. The B683 can access the 3G broadband packet-based network through the point-to-point protocol (PPP) dial-up.
- **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 WPA-PSK /WPA2-PSK/WEK security authentication.
- **DHCP/DNS:** The DHCP server dynamically allocates IP addresses to PCs. The DNS parses domain names.
- **Web management:** You can configure, modify and query the configuration information of the B683.
- **Routing and NAT:** High-speed routing capability. With the built-in NAT, the B683, together with 3G terminals, can provide flexible broadband access solutions and networking schemes.

6

Technical References

6.1 Standards and Communication Protocols

6.1.1 Standards and Communication Protocols of the DATACOM Products

Table 6-1 Standards and communication protocols of the DATACOM products

| Item | Description |
|----------------|--|
| Physical layer | RFC894 |
| PPP | RFC1915, RFC1962, RFC1994, RFC2433, RFC2759, RFC1332, RFC1877, RFC1471, RFC1570, RFC2484, RFC1717, RFC1934, RFC1990, RFC1334, RFC1974, RFC1661 |
| ARP | RFC826 |
| IP | RFC791, RFC1122, RFC1071, RFC1141, RFC1624, RFC792, RFC950, RFC1256 |
| ICMP | RFC792, RFC950, RFC1256 |
| TCP | RFC793 |
| UDP | RFC768 |
| DHCP | RFC1531, RFC1533 |
| NAT | RFC1631 |

6.1.2 Standards and Communication Protocols of the Wireless Interface

The wireless interface conforms to the WCDMA R99, R4, R5, R6, R7 standards.

Table 6-2 Standards and communication protocols of the wireless interface

| Item | Description |
|----------------------------------|---|
| Layer1 Specifications (Physical) | Physical Layer – General Description TS 25.201 (V3.1.0) Physical Channels and Mapping of Transport Channels onto Physical Channels (FDD) TS 25.211 (V3.5.0) Multiplexing and Channel Coding (FDD) TS 25.212 (V3.5.0) Spreading and Modulation (FDD) TS 25.213 (V3.4.0) Physical Layer – Procedures (FDD) TS 25.214 (V3.5.0) Physical Layer – Measurements (FDD) TS 25.215 (V3.5.0) |
| Layer 2 Specifications (MAC/RLC) | MAC Protocol Specification TS 25.321 (V3.6.0) RLC Protocol Specification TS 25.322 (V3.5.0) |
| Layer 3 Specifications (RRC) | UE Interlayer Procedures in Connected Mode TS 25.303 (V3.6.0) UE Procedures in Idle Mode TS 25.304 (V3.5.0) RRC Protocol Specification TS 25.331 (V3.5.0) |
| Layer 3 NAS/Core Network (MCM) | Service accessibility TS 22.011(Release 5, June 2005) Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode TS 23.122 (Release 5, June 2005) Mobile Radio Interface Signaling Layer 3-General Aspects TS 24.007 (Release 5, June 2005) Mobile Radio Interface Layer 3 Specification-Core Network TS 24.008 (Release 5, June 2005) |
| GSM Protocol Specifications | Mobile Radio Interface Layer 3 Specification, Radio Resource Control Protocol TS 04.18 (V8.10.0) Mobile Station - Base Station System (MS - BSS) interface; Data Link (DL) Layer Specification TS 04.06 (V8.11.0) Digital Cellular Telecommunications System (Phase 2+); Multiplexing and Multiple Access on the Radio Path TS 05.02 (V8.9.0) Technical Specification Group GERAN; Channel coding TS 05.03 (V8.6.1) Digital Cellular Telecommunications System (Phase 2+); Radio Subsystem Link Control TS 05.08 (V8.a.0) Digital Cellular Telecommunications System (Phase 2+); Radio Subsystem Synchronization TS 05.10 (V8.8.0) |

| Item | Description |
|---------------------------------|---|
| GPRS Protocol Specifications | <p>Overall Description of the GPRS Radio Interface; stage 2 TS 3.64 (V8.8.0)</p> <p>Mobile Radio Interface Layer 3 Specification TS 04.08 (V8.0.0)</p> <p>Mobile Radio Interface Layer 3 Specification: Radio Resource Control Protocol TS 04.18 (V8.10.0)</p> <p>General Packet Radio Service (GPRS): Mobile Station (MS) – Base Station System (BSS) interface; Radio Link Control / Medium Access Control (RLC/MAC) protocol TS 04.60 (V8.10.0)</p> <p>Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification TS 04.64 (V8.6.0)</p> <p>Mobile Station - Serving GPRS Support Node (MS-SGSN); Sub-network Dependent Convergence Protocol (SND CP) TS 04.65 (V8.1.0)</p> <p>Multiplexing and Multiple Access on the Radio Path TS 05.02 (V8.9.0)</p> <p>Channel Coding TS 05.03 (V8.6.1)</p> <p>Modulation TS 05.04 (V8.3.0)</p> <p>Radio Transmission and Reception TS 05.05 (V8.10.0)</p> <p>General Packet Radio Service (GPRS); Stage 1 TS 22.060 (V3.5.0)</p> <p>Mobile Execution Environment (MexE) TS 23.057 (V3.4.0)</p> <p>General Packet Radio Service (GPRS) Service description; stage 2 TS 23.060 (V8.8.0)</p> |
| General Specifications | <p>UE Capability Requirements TR 21.904 (V3.3.0)</p> <p>UE Radio Access Capabilities TR 25.926 (V3.2.0)</p> <p>Vocabulary TR 25.990 (V3.0.0)</p> <p>Radio Interface Protocol Architecture TS 25.301 (V3.6.0)</p> <p>Services Provided by the Physical Layer TS 25.302 (V3.7.0)</p> <p>Synchronization in UTRAN Stage 2 TS 25.402 (V3.4.0)</p> |
| Performance/Test Specifications | <p>UE Radio Transmission and Reception (FDD) TS 25.101 (V3.5.0)</p> <p>Common Test Environments for User Equipment (UE) TS 34.108 (V3.2.0)</p> <p>Special Conformance Testing Functions TS 34.109 (V3.2.0)</p> <p>Terminal Conformance Specification TS 34.121 (V3.3.0)</p> <p>User Equipment (UE) Conformance Specification; Part 1: Protocol Conformance TS 34.123-1 (V3.2.0)</p> <p>User Equipment (UE) Conformance Specification; Part 2: Protocol Conformance TS 34.123-2 (V3.2.0)</p> |

| Item | Description |
|---------------------------------|---|
| Performance/Test Specifications | Terminal Conformance Specification, Radio Transmission and Reception (FDD) TS 34.121 (V3.3.0) User Equipment (UE) Conformance Specification; Part 1: Protocol Conformance TS 34.123-1 (V3.2.0) S48 User Equipment (UE) Conformance Specification; Part 2: Implementation Conformance Statement (ICS) Specification TS 34.123-2 (V3.2.0) |
| USIM Specifications | SIM and IC Card Requirements TS 21.111 (V3.3.0) 3rd Gen. Partnership Proj Tech. Spec. Group Terminals; USIM App. Toolkit (USAT) TS 31.111 (V3.3.0) |

7

Packing List

Table 7-1 shows the devices and accessories of the B683.

Table 7-1 Packing list

| Description | Quantity | Remarks |
|----------------------|----------|----------|
| Wireless Gateway | 1 | Standard |
| Quick Start | 1 | Standard |
| Power supply adapter | 1 | Standard |
| Warranty card | 1 | Optional |
| External Antenna | 1 | Optional |
| Ethernet cable | 1 | Optional |
| Pedestal | 1 | Optional |

A

Acronyms and Abbreviations

| | |
|----------|-------------------------------------|
| 3G | The Third Generation |
| A | |
| AC | Alternating Current |
| ARP | Address Resolution Protocol |
| AP | Access Point |
| APN | Access Point Name |
| D | |
| DHCP | Dynamic Host Configuration Protocol |
| DNS | Domain Name Server |
| DL | down link, downlink |
| H | |
| HSPA | High Speed Packet Access |
| HSPA+ | High Speed Packet Access Plus |
| HSDPA | High Speed Downlink Packet Access |
| HSUPA | High Speed Uplink Packet Access |
| HLR | Home Location Register |
| I | |
| IP | Internet Protocol |
| ICMP | Internet Control Message Protocol |
| L | |
| LAN | Local Area Network |
| LED | Light Emitting Diode |
| L2TP | Layer 2 Tunneling Protocol |

| | |
|----------|--|
| M | |
| MSC | Mobile Switching Center |
| N | |
| NAT | Network Address Translation |
| P | |
| PSTN | Public Switched Telephone Network |
| POTS | Plain Old Telephone Service |
| PPTP | Point to Point Tunneling Protocol |
| R | |
| RTT | Radio Transmission Technology |
| S | |
| SOHO | Small Office Home Office |
| SCP | Service Control Point |
| SGSN | Serving GPRS Support Node |
| SDRAM | Synchronous Dynamic Random Access Memory |
| T | |
| TKIP | Temporal Key Integrity Protocol |
| U | |
| UMTS | Universal Mobile Telecommunications System |
| UL | up link, uplink |
| V | |
| VLR | Visitor Location Register |
| VPN | Virtual Private Network |
| W | |
| WAN | Wide Area Network |
| WCDMA | Wideband CDMA |
| Wi-Fi | Wireless Fidelity |