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R600/R602



Content

| | |
|--|----|
| Preface | 3 |
| Purpose of this document | 3 |
| Product overview | 4 |
| R600/R602 — always online with the Mobile Internet | 4 |
| Functions and features for productivity | 4 |
| WAP services | 4 |
| Using WAP in the R600/R602 | 4 |
| Bearer type characteristics | 5 |
| Gateway characteristics | 5 |
| WAP security | 5 |
| Configuration of WAP settings: OTA Provisioning | 6 |
| Other configuration methods for WAP settings | 6 |
| Push services | 6 |
| Mobile Internet | 7 |
| Data connections | 7 |
| General Packet Radio Services | 7 |
| Using GPRS in the R600/R602 | 8 |
| Modem and AT commands | 9 |
| GSM Data communication | 9 |
| AT commands support | 9 |
| Functions and features | 10 |
| Network-dependent features | 10 |
| In-phone functions and features | 11 |
| SIM Application Toolkit | 12 |
| SIM AT services supported by the R600/R602 | 12 |
| Terminology and abbreviations | 13 |
| Related information | 16 |
| Technical specifications | 16 |

Preface

Purpose of this document

The Ericsson R600/R602 white paper is designed to give the reader a deeper technical understanding of how the R600/R602 is designed and how it interacts with other media. This document will make it easier to integrate the R600/R602 with the IT and communications solutions of a company or organization.

People who can benefit from this document include:

- Corporate buyers
- IT professionals
- Software developers
- Support engineers
- Business decision-makers

The best place to find accessories to support your phone and daily life is at Sony Ericsson Mobile Internet. This site, at www.SonyEricssonMobile.com/mobileinternet/, contains downloadable pictures, games, news, information and a host of links to other sites.

More information, useful for product, service and application developers, is published on Ericsson Mobility World. This site, at www.ericsson.com/mobilityworld, contains up-to-date information about technologies, products and tools.

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Product overview

The R600 comes in two versions, R600s and R600sc. The only difference between the two versions is the languages they support. In this document, the name R600 stands for both versions. The R602 only comes in one version. Besides EMS text formatting, the R602 is identical to the R600 in terms of design and features.

R600/R602 — always online with the Mobile Internet

Secure WAP

Internet browsing and secure mobile services are provided by WAP. The built-in browser supports WAP 1.2.1, with push services and secure transaction methods (such as digital signatures). Depending on network services, the R600/R602 provides WAP over GPRS with a constant connection.

GPRS

The R600/R602 enables high speed data communication and WAP browsing with a constant connection. In GSM Data connections, high transmission rates and fast download speeds are supported. Furthermore, by supporting GPRS, the R600/R602 is designed to remain always online, with a cost efficient IP connection enabling rapid data transmission.

Functions and features for productivity

Dual band support

For using the R600/R602 on GSM 900 or GSM 1800 networks.

User interface

A full graphic display with greyscales and easy-to-navigate, user interface software. Predictive text input, (eZiText) makes typing quick and easy.

Profiles feature

Groups of settings preset to suit certain environment profiles, such as “in car”, “meeting”, “home”, etc. Numbered shortcuts make it possible to prepare settings into a favourites menu for quick and easy access.

Services on the network

The SIM Application Toolkit (online services) makes it possible for operators to provide new services – including new menus and functions – to users over the air.

WAP services

The typical WAP client is a small, portable device connected to a wireless network. This includes mobile phones, pagers, smart phones, PDAs and other small devices. Of course, compared to desktop and laptop computers, these devices are limited by user interface, low memory and low computing power.

The WAP browser in the R600/R602 is compliant with WAP 1.2.1 and includes WTLS class 2 as well as mechanisms for digital signatures. It is designed for WML and cannot read ordinary HTML pages, but it is suitable for interaction with customer services such as, for example, ticket reservation services. It is also designed to access text-based information such as timetables, share prices, exchange rates, Internet banking and other interactive services.

Using WAP in the R600/R602

The built-in WAP browser in the R600/R602 gives the user portable, fast and secure access to a wide variety of services, including personalized services, with new opportunities for business, individuals and service providers:

Push services

Businesses and service providers can “push” content or service indications to work groups and/or customers. Examples of pushed content would be mail alerts, messaging, news, stock quotes, contacts, meeting requests, etc.

Provide settings

Using SMS infrastructure, configuration settings can be sent over the air so that the user does not need to configure the WAP access settings manually. WAP settings may also be customized by the operator.

Adapt to phone type

The User Agent Profile function allows content to be automatically optimized for the R600/R602, ensuring that a WAP service is provided with the intended user experience.

Security

Service providers can offer information-sensitive services with a high degree of security (compliant with Wireless Transport Layer Security [WTLS] classes 1 and 2).

Several bearer types

The R600/R602 accesses WAP over a standard GSM Data connection as well as over a GPRS connection.

Bandwidth efficiency

Unlike traditional Internet services, WAP services are relayed to wireless devices as binary encoded data, maximizing bandwidth efficiency. A GPRS connection further increases efficiency.

Easy create for WAP

Creating a WAP service is no harder than creating an Internet/intranet service, as WML and WMLScript are based on well-known Internet languages such as HTML and JavaScript.

Standard tools

Service creators can use standard tools such as ASP or CGI to generate content dynamically. Services can be created once and then made accessible to a broad range of wireless networks.

Maintain customer base

Existing Internet services can be adapted to WAP. The necessary binary encoding is handled by a WAP Gateway, allowing HTML-based services to be viewed on the WAP browser of the R600/R602.

Improve productivity

A business can use a WAP gateway to provide a secure connection to its corporate network, improving internal communication flow by making information available to mobile as well as office users.

The WAP profiles

The R600/R602 can store ten WAP profiles, each with a group of network settings and a home page. A WAP profile holds network settings and user identification, allowing the user to switch easily between, for example, corporate services and WAP services simply by changing profile.

Bearer type characteristics

The R600/R602 accesses IP. (IP can be provided over either GSM Data or GPRS, depending on network services.)

Typical differences among bearer types are listed below.

GPRS Access

- The connection is maintained constantly, with transmission capacity being used by the application in use on an as-needed basis. Data are transmitted in packets.

- Higher transmission speed than that of GSM Data or SMS access.
- Potential for volume-based tariffing, meaning that the user is charged for volume of data transmitted rather than the net duration of time the phone is connected.
- When transmitting large amounts of data, bandwidth can be increased automatically to allow faster transmission speed.
- Ideal for complex pull services, browsing, data transfer, provisioning, pager services, messaging services, information services, push initiations.

GSM Data Access

- Provides a switched-circuit connection for data transmission, which means that the phone is connected for the duration of the WAP session.
- Higher transmission speed than that of SMS access.
- Pricing is comparable to that of data calls in the network.
- Suitable for complex pull services, browsing and data transfer.
- Not suitable for provisioning, pager services.

Gateway characteristics

A WAP Gateway provides Internet/intranet as well as WAP services to the mobile browser. A gateway is identified by an IP number or by a phone number, depending on access type.

WAP security

For certain WAP services, such as banking services, a secure connection between the phone and WAP gateway is necessary. An icon in the display of the R600/R602 indicates when a secure connection is in use.

The R600/R602 is based on the WAP 1.2.1 specification suite, in which security functionality is specified by a technology called Wireless Transport Layer Security (WTLS). The WAP protocols for handling connection, transport and security are structured in layers, with security handled by the WTLS layer, operating above the transport protocol layer. WTLS classes define the levels of security for a WTLS connection:

- WTLS class 1 involves encryption with no authentication.
- WTLS class 2 involves encryption with server authentication.

Server authentication. Requires a server certificate stored at the server side and a root certificate stored at the client side.

Certificates

For secure connections, the phone must store certificates. There are two types of certificates:

Trusted certificate. A certificate that guarantees that a WAP site is genuine. If the phone has a stored certificate of a certain type, it means the user can trust all WAP Gateways that use the certificate. Trusted certificates can be pre-installed in the phone, pre-installed in the SWIM or downloaded from the trusted supplier's WAP page.

Configuration of WAP settings: OTA Provisioning

To simplify the configuration of WAP settings in the R600/R602, all settings can be sent to the phone as an SMS message. This makes it easy for an operator, a service provider or a company to distribute settings for Internet, intranet and/or WAP services access, precluding the user from having to configure the phone manually. This also makes it easy to upgrade services, as users need not manually change configurations for new services.

- The OTA configuration message is distributed via SMS point-to-point.
- The setup information is a binary encoded XML message (WBXML). To receive information about OTA specifications, please contact your local Ericsson representative for consumer products. A configurator that utilizes OTA provisioning can be tested on the Ericsson Mobile Internet.
- The user is alerted about new settings at the end of the browsing session in use. Settings are not changed during an ongoing browsing session.
- OTA provisioning user interaction is limited to receiving and accepting/rejecting the configuration message and selecting the WAP profile to which the setting is to be allocated.
- Security can be handled using a keyword identifier, displayed on the screen as a shared secret between the SMS sender and receiver. (The configuration message should be verified as authentic.)

Other configuration methods for WAP settings

An easy way to perform WAP configuration in the R600/R602 is by using the step-by-step WAP configurator found on the Ericsson Mobile Internet. The configurator utilizes OTA provisioning (above) and is available at <http://www.sonyericssonmobile.com/>.

Manual configuration can be made by using the menu system in the phone. (Described in the User's Guide.)

Push services

Examples of WAP services that can be "pushed" include the following:

- Notifications of new e-mail, voice mail, etc.
- News, sports results, weather forecasts, financial information
- Personal Information Manager (PIM) information (contacts, meeting requests, etc.)
- Smartcard e-cash
- Interactive games

The user can authorize the reception of push services.

Service Indication (SI) and Service Loading (SL) push services

There are two different types of push services: Service Indication and Service Loading.

Service Indication (SI). An SI service sends a text message with a URL of a WAP page to the browser. If the user decides to load the URL, normal WAP browsing commences. When an SI is received by the R600/R602, the user can load it immediately, postpone it or delete it. Received SIs are stored in the Push Inbox and can be viewed and loaded at a later time. The Push Inbox displays a list containing the first part of each received message. The list is sorted by action attribute (high/medium/low) or reception time of message.



Mobile Internet

The Mobile Internet offers much more than mobile access to the Internet. It opens up a whole new range of situation-based services – services that give the user anytime, anywhere access to personalized communications, information and entertainment. The R600/R602 affords access to these services as well as to WAP-adapted Internet services. The R600/R602 is also designed to take advantage of new technologies such as mobile positioning, which will create new commercial and productivity solutions.

Data connections

In order to browse via WAP or use the e-mail program, the user must first establish a connection for data communication. A data connection contains specific settings and parameters to connect to an appropriate server. Multiple data connections can be saved in the R600/R602. Pre-configured data connections can be provided by the operator using OTA provisioning.

Advantages of data connections include the following:

- Once the data connections are defined and named, the user does not have to re-enter them for every connection.
- Individual data settings for working with WAP, e-mail or the Internet can be stored and activated as needed.
- Data connections can be used for both GSM Data and GPRS connection settings.
- Bearer type for WAP and corresponding bearer-specific parameters may be selected.
- Data connections contain all necessary settings and parameters, including modem pool phone number or IP address, user ID and password.

General Packet Radio Services

The introduction of GPRS (General Packet Radio Services) is one of the key steps in the evolution of today's GSM networks for enhancing the capabilities of data communication. Data traffic is increasing enormously (over both wired and wireless networks), with the growth in demand for Internet access and services paralleling that for mobile communications. Users want access to the Internet while they are away from their offices and homes, and surveys have found that the vast majority of business professionals want the ability to send and receive e-mail, browse the Web and transmit text and graphics on a portable device. That is why the main applications driving Mobile Internet development are e-mail clients and Web browsers.

The demand for high-speed Internet access will be the key driver for coming generations of wireless services, and GPRS can deliver the necessary speed. GPRS allows innovative services to be created, enabling new and previously inaccessible market segments to be addressed and increasing customer loyalty.

GPRS applications can be developed as both horizontal and vertical. Vertical applications are specific, including those for operations such as reaching police and emergency, taxi, delivery or automated services (vending machines, supervision, vehicle tracking). Horizontal applications are more generic and include those for Internet access, e-mail, messaging, e-commerce and entertainment.

GPRS is able to take advantage of the global coverage of existing GSM networks. Applications developed for GPRS can be deployed on a large scale and can reap the associated benefits. GPRS also provides a secure medium for connections to private networks, banking and financial services.

With GPRS, the R600/R602 sends data in “packets” at a very high speed. The R600/R602 remains connected to the network at all times, using transmission capacity only when data are sent or received.

In GPRS, data is sent in packets, and up to four time slots can be combined to provide the necessary bandwidth, up to 40 200 bps for receiving data, depending on coding scheme.

Using GPRS in the R600/ R602

Instead of occupying an entire voice channel for the duration of a data session, the R600/R602 sends/receives data in small packets, as needed, much like IP on the Internet. Because of this, the R600/R602 maintains a constant online connection, its data transmission abilities summoned by the application in use on an as-needed basis.

The GPRS specification includes four coding schemes, which allow data speeds of 9050 bps, 13 400 bps, 15 600 bps and 21 400 bps. The R600/R602 works with the first two coding schemes, although data speed naturally will vary according to network configuration.

The GSM system limits the ability to use all eight time slots, so the R600/R602 uses up to three time slots for receiving data and one slot for transmitting. This means the speed for receiving data can reach 40 200 bps; for sending data, up to 13 400 bps.

Information about the identity of the phone and characteristics of the connection are described in the PDP context (Packet Data Protocol context). This information is stored both in the phone and in the mobile network so that each phone is identified and “visible” to the system. Multiple PDP context settings can be set in the R600/R602’s menu system or by OTA provisioning.

Using GPRS with the R600/R602 offers several distinct advantages:

Constant connection. Keep an open connection to an e-mail system or the company network, staying online to receive and send messages at all times. All connection settings can be managed by using the data connections feature.

High speed. Gain access automatically to increased bandwidth when downloading large files, images, etc.

Cost efficient. Use transmission capacity only when needed, potentially reducing costs.

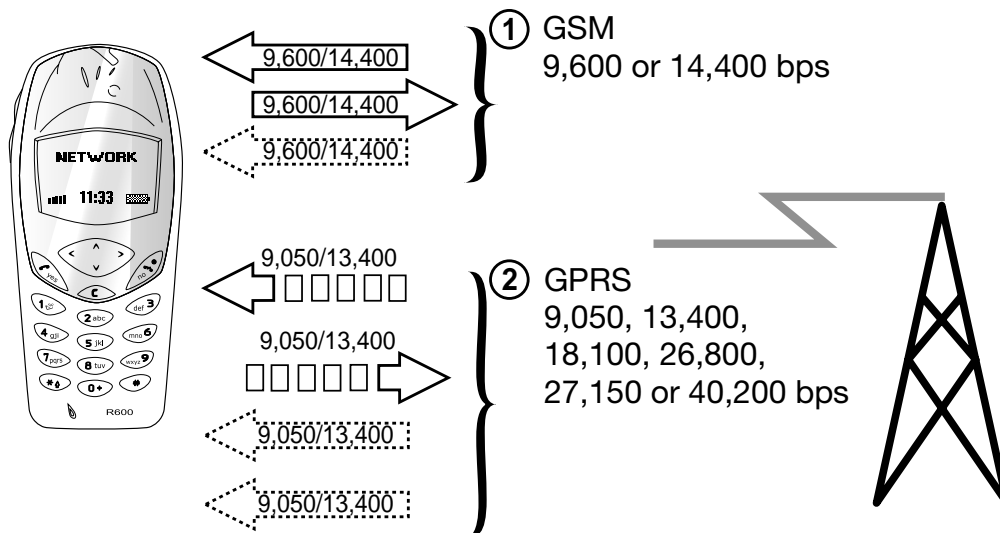
WAP over GPRS. Access the Internet via WAP at high speed and with a constant connection.

Data communication. Transfer data and access the Internet or an intranet with a PC, PDA or handheld device connected via cable.

Provide settings. Receive GPRS configuration settings from the provider over the air, precluding the need for manual configuration.

User controlled settings. Take advantage of full user control in the data connections menu, establishing multiple descriptions and accessing advanced settings for GPRS (such as those for data compression and quality of service).





1. A normal GSM call uses only one of eight repeating time slots in the GSM channel, giving a data speed of 9 600 bps. The R600/R602 supports a more efficient coding scheme, giving data speeds of up to 14 400 bps (with necessary network support).

2. In GPRS data are sent in packets, with up to three time slots being combined to provide the necessary bandwidth. The result is up to 40 200 bps for receiving data (depending on coding scheme).

Modem and AT commands

The R600/R602 contains a complete GSM modem, providing data communication as well as Internet/ intranet access through a connected PC, PDA or other handheld device. Once the PC/PDA is connected to the phone using a cable, and the appropriate software is installed, the modem in the R600/R602 works much like a PC Card modem or an external modem.

AT commands in the R600/R602 are used for both controlling the data communication between the PC and remote service and configuring and requesting settings and behaviours from a connected PC or PDA.

GSM Data communication

The R600/R602's built-in data transmission capability turns the phone into a modem when connected to a PC or PDA. The R600/R602 can establish a data connection anytime, anywhere and at speeds comparable to those of fixed-line networks.

Each GSM channel is divided into eight repeating time slots. A normal GSM call uses only one of these time slots in the GSM channel, giving a data speed of 9 600 bps.

The R600/R602 supports a more efficient coding scheme, giving data speeds of up to 13 400 bps (depending on the network).

AT commands support

This section outlines the AT commands supported by the R600/R602. This information may be useful to advanced users, enabling them to:

- develop new communications software
- add the R600/R602 to an application's list of compatible modems
- adjust the settings of their mobile telephone and modem

The modem in the R600/R602 supports the V.25ter command set, which is the standard communication set used by modems.

The R600/R602 is compatible with industry extensions ETSI 07.05, 07.07 and 07.10.

Overview of AT command functions

AT commands are used to configure the mobile telephone, to request information about the current configuration or operational status of the mobile phone and to test availability for and request the range of valid parameters, when applicable, for an AT command.

The built-in modem can be set in one of three modes of operation:

Off-line Command Mode. The command mode for entry of AT commands (activated when the device is first turned on).

On-line Data Mode. Allows normal operation of the built-in modem, for exchanging data or facsimiles with a remote modem.

On-line Command Mode. For sending AT commands to the built-in modem while remaining connected to a remote modem.

The AT commands in the R600/R602 are grouped as follows:

- Control and Identification
- Interface Commands
- Audio Control
- GSM 07.10
- GSM DTE-DCE Interface Commands
- GSM Call Control
- GSM Data
- GSM Mobile Equipment, Control and Status
- GSM SMS and PDU Mode
- GSM GPRS
- GSM Clock
- WAP Browser

Functions and features

Please refer to the User's Guide for a complete description and instructions for use.

Network-dependent features

Messaging

More than 15 billion text messages are sent world-wide between mobile phones each month (January, 2001). The consumers' needs to express themselves in ways beyond voice were highly underestimated by the industry when SMS was introduced in the late 90s. The success of SMS, however, is the springboard for existing and coming messaging services, such as Enhanced Messaging Service (EMS), Mobile chat and e-mail.

EMS – Enhanced text messaging

EMS lets users send greyscale pictures, animations, sound effects, ring signals and formatted text to each other. EMS is based on SMS text messaging and is a GSM standard developed by 3GPP, Third Generation Partnership Programme. Unlike Nokia's Picture Messaging, EMS works with phones that do not support EMS, simply by allowing the receiving phone to ignore the EMS items and only display the text.

The R600/R602 supports most of the features specified in the EMS standard. It has a number of pre-defined EMS pictures stored in the phone, plus space for user-defined pictures that can be sent to other phones in EMS messages. Moreover, there are pre-programmed animations and sound effects that can be used to enhance a message and make it more personal.

The R600/R602 also has a picture editor that lets users create a new picture based on a pre-defined one, or change a picture they have received in a message or create new ones.

Mobile chat

Mobile chat is an SMS-based chat function, which is different from ordinary SMS messages in that the old messages stay in the display, similar to chat sessions on the Internet. Each writer is distinguished by a nickname.

Mobile chat makes text messaging easier since a chat session opens up immediately when a text message is received from a phone. Chat sessions are automatically saved for an hour, letting the user resume the communication when interrupted.

The Mobile chat function of the R600/R602 works with phones made by other manufacturers.

Fixed dialling and restricted calls

Fixed dialling allows for restricting certain phone calls by using a pre-set number of digits, for example area codes, to define allowable calls. Fixed dialling makes use of PIN2 and requires fixed dial fields on the SIM Card. Restricted calls allows for blocking of outgoing or incoming calls – for example, international calls.

More network-dependent features

- Advice of charge charging
- Advice of charge information
- Automatic time zone
- Call barring
- Call hold
- Call screening
- Call transfer
- Call waiting
- Calling Line Identification, CLI
- Closed User Groups
- Conference calls
- EFR, Enhanced Full Rate speech coding
- e-GSM
- FR, Full Rate speech coding
- GPRS (3+1 time slots)
- GSM 900/1800 dual band
- GSM phase 2+
- HR, Half Rate speech coding
- International roaming
- Phone book on SIM
- SIM Application Toolkit
- Two-line service /Alternate Line Service (ALS)
- Unified messaging
- Voice mail
- WAP 1.2.1

In-phone functions and features

Profiles

A profile is a group of settings pre-set to suit a certain environment or function. Profiles can also be used for accessories such as a desktop charger or a portable handsfree. They are also useful for handling company integration with call forwarding and other like services. Some phone accessories select a profile automatically. For example, when a portable handsfree is attached to the R600/R602, the “Portable handsfree” profile is chosen.

Predictive text input (eZiText)

With predictive text input (eZiText), the R600/R602 can recognize the most commonly used words beginning with a certain letter, making the writing of text messages and

e-mail quick and convenient (language support dependent). For example, if 2, 6 and 3 are pressed, the word “and” appears, as this is the most commonly used word with that combination of letters. The user can toggle between predictive and manual text input.

The “#” button

In a certain feature, press and hold the “#” button to display a list of options. This is possible in, for example, Phone Book, Call Info, Messages, Calendar, Call diversion or Call waiting.

Phone book

Companies and other organizations may have need for multiple R600/R602 with a common set of phone book entries:

- Prepare the phone book on one SIM card in one R600/R602. Copy the contents from this SIM card to the R600/R602’s memory. Place into this R600/R602 the SIM cards of all other R600/R602s, copying the contents to them from memory.

Background pictures

The user can have a background picture in the display, to bring extra life to the phone when it is in standby mode. The background pictures can be:

- one of five pre-defined pictures
- an operator defined picture
- a user-defined picture

The user-defined picture can be an EMS picture stored in the phone from the start, operator-defined, received via EMS or downloaded from a WAP page, and stored by the user or created by using the picture editor.

Start-up and shutdown shows

Another way to make the R600/R602 more personal is to have a user-defined start-up and shutdown show. Every time the phone is turned on or off, an animation, with or without sound, appears in the display. There is also one Sony Ericsson-defined show and one operator-defined show stored in the phone. As with the background picture, the user-defined show can use any of the EMS pictures or it can be a show downloaded to the phone via the RS232 Cable.

Screen saver and sleep mode

The screen saver is activated when the phone has been idle for 26 seconds. There is a pre-defined screen saver at the purchase of the phone, but the user can choose his/her own image/animation as a screen saver. After a short period of time the screen saver changes to sleep mode, to save power.

More in-phone features

- Alarm clock
- Background light (green)
- Built-in modem
- Calendar
- Contacts
- Calculator
- Data transfer
- Ericsson ring signal logotype
- External antenna connector
- Full graphic display, up to 4 rows of text
- Games
- Last dialled numbers
- Missed calls
- Received calls list
- Ring signal composition
- SIM Application Toolkit
- Stop watch
- Timer
- Vibrating alert
- WAP browser

SIM Application Toolkit

The SIM Application Toolkit (SIM AT) enables GSM, SMS and USSD transport-based applications to be distributed on smartcards. For companies, operators and service providers, this is a powerful way to provide programs and services to users, as all necessary setup and programming is sent over the air directly to users' phones.

In the R600/R602 a separate menu is available for functions residing on the SIM card. These can include submenus for controlling functions as well as functions for initiating calls, sending data and displaying information.

WAP, on the other hand, represents an Internet-based method for providing applications independent of network technology. Applications and content are kept centrally on Web servers and downloaded as required. There is some overlap between WAP and SIM AT (for example, WAP is particularly good for providing applications that have an HTML version for desktop use), and work is currently underway to build interfaces between the two technologies.

SIM AT services supported by the R600/R602

Support SIM/USIM

- SPN
- SDN
- Operator name string
- Information number
- FDN
- ASN
- CSP
- Co-operative network list

3v/5v SIM

GSM default toolkit features

- GSM default alphabet support
- Cell broadcast download
- SMS-PP download
- Event download
- Command result

Commands

- Get inkey
- Get input
- Menu selection

- More time
- Play tone
- Polling off
- Poll interval
- Profile download
- Refresh
- Select item
- Send SMS
- Send supplementary services
- Send USSD
- Setup Call
- Setup menu

Terminology and abbreviations

3GPP

3rd Generation Partnership Project

API

Application Programming Interface

Bearer

The method for accessing WAP from the phone, for example GSM Data (CSD)

bFTP

binary File Transfer Protocol

Bookmark

A URL and header/title stored in the phone

Browsing session

The period from the first access of content until the termination of the connection

Calling Line Identification (CLI)

Displays the number of the calling party (not all numbers can be displayed; service is network-dependent)

Card

A single WML unit of navigation and user interface; may contain information for the user, instructions for input, etc.

CGI

Common Gateway Interface

CS

Circuit-Switched

CSD

Circuit-Switched Data

Deck

A collection of WML cards

DTMF or Touch Tone

Codes sent as tone signals; used for telephone banking, accessing an answering machine, etc.

e-GSM (Extended GSM)

New frequencies specified by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed, allowing operators to transmit and receive just outside GSM's core 900 frequency band

EMS

Enhanced Messaging Service

EFR

Enhanced Full Rate (speech coding)

FR

Full Rate (speech coding)

Gateway

Translates requests from a WAP protocol stack to a WWW protocol stack (HTTP and TCP/IP) and Web content into binary-encoded formats to reduce the size and number of packets travelling over a wireless data network

GIF

Graphics Interchange Format

GPRS

General Packet Radio Services

GSM

(Global System for Mobile Communications) The world's most widely-used digital mobile phone system, now operating in over 100 countries around the world, particularly in Europe and Asia-Pacific.

GSM 900

A digital network working on the 900 MHz frequency

GSM 1800

A digital network (also known as DCS 1800 or PCN), used in Europe and Asia-Pacific, working on the 1800 MHz frequency.

HDML

Handheld Device Markup Language

HDTP

Handheld Device Transport Protocol

HR

Half Rate (speech coding)

HTML

HyperText Markup Language

HTTP

HyperText Transfer Protocol

Image

WBMP or GIF

ISP

Internet Service Provider

ITTP

Intelligent Terminal Transfer Protocol

LAN

Local Area Network

ME

Mobile Equipment

Micro browser

Accesses and displays the Internet contents in a mobile phone, much like an ordinary computer browser

MIR

Medium speed infrared

MMI

Man-Machine Interface

MS

Mobile Station

MT

Mobile Termination

OTA (Over-the-Air)

Configuration for sending phone settings over the network, reducing the need for the user to configure the phone manually

PDA

Personal Digital Assistant

PDP

Packet Data Protocol

Phone book

A memory area in the mobile phone or SIM card where phone numbers can be stored and accessed by name or position

PIM

Personal Information Management

SC

Service Centre (for SMS)

Service provider

A company that provides services and subscriptions to mobile phone users

SI

Service Indication

SL

Service Loading

SIM card

A card that must be inserted into any GSM-based mobile phone and containing subscriber details, security information and memory for a personal directory of numbers.

SMS

A store-and-forward service allows messages of up to 160 characters to be sent and received among mobile phones via the network operator's message centre.

SS

Supplementary Services

TCP/IP

Transmission Control Protocol/Internet Protocol

TE

Terminal Equipment

TLS

Transport Layer Security

URL

Uniform Resource Locator

USSD

Unstructured Supplementary Services Data

VAS

Value Added Service

WAE

Wireless Application Environment

WAP

Wireless Application Protocol

WAP application

A collection of WML cards, with the new context attribute set in the entry card.

WAP service

A WML application residing on a Web site

WBMP

WAP Bitmap

WBXML

Wireless Binary Extensible Markup Language

WDP

Wireless Datagram Protocol

WML

(Wireless Markup Language) A markup language for authoring WAP services, similar to HTML.

WMLScript

A scripting language for enhancing WAP services, similar to JavaScript.

WSP

Wireless Session Protocol

WTLS

Wireless Transport Layer Security

WWW

World Wide Web

XML

Extensible Markup Language

Related information

Technical specifications

The consumer pack includes the following:

- Mobile phone R600/R602
- Standard battery BST-20 (700 mAh)
- Standard Charger CST-10
- Ericsson service and support leaflet
- User's guide
- Sony Ericsson Announcement leaflet

General

| | |
|---------------|--|
| Product name | R600/R602 |
| System | GSM phase 2 recommendations. GSM 900 (CTR 19 and CTR 20), GSM 1800 (CTR 31 and CTR 32) and e-GSM supported |
| Speech coding | HR, FR, EFR supported, where available, for high speech quality |
| SIM card | Small plug-in card, 3V or 5V type |
| Type number | 1102001-BV, 1102001-CN |

Exterior description

| | |
|-----------------|--|
| Size | 105 x 45 x 20 mm |
| Weight | with battery: 82 grams |
| Display size | 101 pixels wide, 67 pixels high |
| Graphic display | 4 greyscales |
| Text size | 3 sizes (depending on software version) |
| Text rows | up to 6 rows of text, depending on text size |
| Colour | Luminous Champagne, Ice Blue |
| Keypad | 16 keys and a side key |

Ambient temperatures

| | |
|-----------|-----------------------|
| Operating | Max: +55°C, Min -10°C |
| Storage | Max: +85°C, Min -40°C |
| Charging | Max: +45°C, Min 0°C |

Supported Man—Machine Interface (MMI) languages

R600s Standard language configuration 1

- Input: Alphabetic.
- eZiText input method: Alphabetic (English, Danish, Dutch, Finnish, Norwegian, Spanish, Swedish).
- MMI languages: English, Danish, Dutch, Finnish, Norwegian, Spanish, Swedish.

R600s Standard language configuration 2

- Input: Alphabetic.
- eZiText input method: Alphabetic (English, French, German, Greek, Italian, Portuguese).
- MMI languages: English, Albanian, Arabic, Bulgarian, Croatian, French, German, Greek, Hebrew, Hungarian, Italian, Portuguese, Romanian, Russian, Serbian, Slovakian.

R600s Standard language configuration 3

- Input: Alphabetic.
- eZiText input method: Alphabetic (English, French, Turkish).
- MMI languages: Arabic, Brazilian Portuguese, Czech, English, Estonian, Farsi, French, LA Spanish, Latvian, Lithuanian, Polish, Russian, Slovenian, Sotho, Turkish, Vietnamese, Zulu.

R600s Asian language configuration

- Input: Alphabetic.
- eZiText input method: Alphabetic (English, Thai).
- MMI languages: English, Indonesian, Malay, Tagalog, Vietnamese, Chinese Simplified, Thai.

R600sc China language configuration

- Input: Alphabetic
- eZiText input method: Chinese (stroke), Bopomofo, Pinyin and Alphabetic (English).
- MMI languages: English, Chinese Simplified, Chinese Traditional.

R602 China language configuration

- Input: Alphabetic
- eZiText input method: Chinese (stroke), Bopomofo, Pinyin and Alphabetic (English).
- MMI languages: English, Chinese Simplified, Chinese Traditional.

Performance and technical characteristics

| Dimension | GSM 900/E-GSM 900 | GSM 1800 |
|-------------------------------|---|--------------------------------------|
| Frequency range | TX: 880 - 914 MHz RX: 925 - 959 MHz | TX: 1710 - 1785 RX: 1805 - 1880 |
| Channel spacing 200 kHz | Channel spacing 200 kHz | Channel spacing 200 kHz |
| Number of channels | 174 Carriers *8 (TDMA) | 374 Carriers *8 (TDMA) |
| Modulation GMSK | Modulation GMSK | Modulation GMSK |
| TX Phase Accuracy | <5° RMS Phase error (burst) | <5° RMS Phase error (burst) |
| Duplex spacing | 45 MHz | 95 MHz |
| Frequency stability | +/-0.1 | +/-0.1 |
| Voltage operation (nominal) | 3.7 Volts | 3.7 Volts |
| Transmitter RF power output | 33 dBm Class 4 (2W peak) | 30 dBm Class 1 (1W peak) |
| Transmitter output impedance | 50Ω | 50Ω |
| Transmitter spurious emission | <-36 dBm up to 1GHz <-30 dBm over 1GHz (according to GSM spec.) | <-30 dBm (according to GSM spec.) |
| Receiver RF level | Better than -102 dBm | Better than -102 dBm |
| Receiver RX bit error rate | <2.4% | <2.4% |

Current consumption, talk time, standby time

| Dimension | Value in GSM 900 |
|----------------------|---------------------------------|
| Transmission current | Average ~ 280ma (Power level 5) |
| Standby current | <10 ma |
| Talk time | 2-4 hours |
| Standby time | up to 150 hours |

Speech coding

| Dimension | Full Rate | Enhanced Full Rate |
|----------------|-----------------------|--------------------|
| Type | Type RPE/LPC with LTP | ACELP |
| Bit rate | 13.0 Kbp/s | 12.2 Kbp/s |
| Frame duration | 20 ms | 20 ms |
| Block length | 260 bits | 244 bits |
| Class 1 bits | 182 bits | |
| Class 2 bits | 78 bits | |

WAP browser technical data

| Feature | Support in the R600/R602 WAP browser |
|--|--|
| Back to previous page | Yes |
| Bearer type GPRS (IP) | Yes |
| Bearer type GSMData (IP) | Yes, ISDN and analog |
| Bearer type SMS | Yes (point-to-point) |
| Bookmarks | Yes, up to 25 named bookmarks for easy access to frequently visited pages |
| Bookmark export/import | Yes, can be sent and received as link using SMS |
| Cache | Yes (size 8 kbyte). |
| Character sets | *UTF8 (Default), USAASCII, Latin1, UCS2 |
| Clear cache | Yes |
| Color | High resolution grey scale display (four grey scales) |
| Home page | Yes, one valid for all WAP profiles |
| Hyperlinks in text | Yes, highlighted by inverse video |
| Hyperlinks in images | Yes, indicated by a frame |
| Image animation | No |
| Image formats | GIF (interlaced and non-interlaced), WBMP, no transparent layers. |
| Network settings | Up to 5 different settings available by selecting WAP profile (Intranet, Internet, Banking, Gateway, etc) |
| OTA support | Yes |
| PPP authentication PAP, CHAP and MS-CHAP | PPP Authentication PAP, CHAP and MS-CHAP |
| Reload page | Yes |
| Tables | Yes |
| User agent profiles | Yes, list of client characteristics – e.g. display size |
| WAP/WML | WAP June2000 (WAP 1.2.1) |
| | *)When creating WML applications, it is recommended always to save the page contents as UTF8, and that this is clearly indicated in the pages before publishing. This ensures that the contents of the application can be viewed, regardless of character sets used in gateways and the phone. All characters are not supported in all phones. The software version depends on which market the phone is associated to. Also, please note that the phone may not support input on a WAP Service which uses certain characters (languages), even if those characters are supported for browsing in the phone. |
| WAP profiles | 10 WAP profiles, each with its own settings |

| Feature | Support in the R600/R602 WAP browser |
|-----------------|--|
| WTLS (security) | Yes WTLS Class 1 – Encoding. WTLS Class 2 – Encoding + Server Authentication. Root Certificates needed in phone. |

GPRS technical data

| Dimension support in R600/R602 | Dimension support in R600/R602 |
|--------------------------------|---|
| Data rates | Multislot class 4 supported. All coding schemes. 9,050 bps, 13,400 bps supported (network-dependent). |
| Downlink data rate | Up to 40,200 bps for packet data communication, using 3 time slots in coding scheme CS-2. |
| Uplink data rate | Up to 13,400 bps for packet data communication, using 1 time slot in coding scheme CS-2. |
| Mode of operation | Class B and Class C modes of operation supported Network Operation Modes I, II and III handled by mobile. It is possible for the user to choose which of the Circuit Switched and GPRS services should be favoured. |
| R Reference point | Physical layer: 1.0 and RS232. PPP is supported as L2 layer in the R reference point. Authentication algorithms PAP, CHAP and MS-CHAP supported. |
| IP connectivity | PDP type IP is supported. IP termination in mobile or TE (laptop, PDA) supported. TCP/IP header compression supported. |
| Application | WAP over GPRS supported (UDP/IP and GPRS-SMS). |
| QoS | QoS negotiation supported. Reliability class 1-5 supported. Mean and peak throughput rate limited by multislot class 8 and CS-4. |
| SIM | GPRS aware, as well as GPRS non-aware, SIMs are supported. |

Built-in GSM data modem technical data

| Dimension | Support in the R600/R602 |
|-----------|---|
| Standards | AT commands industry standard, ETSI 07.05 and 07.07 and 07.10, V.25ter command set supported. |

| Dimension | Support in the R600/R602 | |
|---------------------------------------|--------------------------|---|
| Data rates, Circuit Switched (CSD) | Download data rate. | Up to 9,600 or 14,400 bps (depending on base rate) for GSM Data communication. No compression with V.42bis compression up to four times higher transmission rates depending on the data type. |
| | Upload data rate. | Up to 9,600 or 14,400 bps (depending on base rate) for GSM Data communication. No compression with V.42bis compression up to four times higher transmission rates depending on the data type. |
| Data rates, GPRS | See GPRS Technical data. | |

Index

A

AT commands 9

C

Certificates in WAP security 6

E

EMS, Enhanced text messaging 10

Exterior 16

eZiText Input 11

F

Functions 9, 10

G

GPRS 7

 Technical data 19

GPRS access characteristics 5

GSM

 Technical data 19

GSM Data access characteristics 5

L

Languages 16

M

Mobile chat 10

Mobile Internet 7

Modem 9

N

Network 4

P

Performance 17

Product overview 4

Profiles 4

Push inbox 6

S

Service indication 6

SIM application toolkit 12

Speech coding 17

Standby time 17

Start-up and shutdown shows 11

T

Talk time 17

Technical specifications 16

Temperatures 16

Terminology 13

Type number 16

U

User interface 4

W

WAP 4

 Gateway 5

 Over-the-air 6

 Push services 6

 Security 5

 Settings 6

 SMS access 5

 Technical data 18