White Paper

July, 2002

T200/T202

Sony Ericsson

Contents

Preface

Purpose of this document

The Sony Ericsson T200/T202 White Paper is designed to give the reader a deeper technical understanding of how the T200/T202 is designed, and of how it interacts with other media. This document will make it easier to integrate the T200/T202 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

More information, useful for product, service and application developers, is published on the Sony Ericsson Mobilityworld. The site at http://www.ericsson.com/mobilityworld/ contains up-to-date information about technologies, products and tools.

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Product overview

The T200/T202 is a dedicated mobile Internet phone. One long press on the Access key and the user is instantly connected to news, entertainment and e-shopping. A WAP 1.2.1 browser makes Internet connection available and safe, and GPRS makes it fast.

With its built-in antenna, round shapes and a large display, the T200/T202 has a smooth design that fits perfectly in the hand.

The T200/T202 will be available on all GSM 900, 1800 and 1900 markets in the 2nd quarter of 2002.

For a list of the Chinese version features, see “Chinese version” on page 23.

Key functions and features

One-button access to the mobile Internet
With the T200/T202, the mobile Internet is always at hand. One long press on the Access button and you are there – instantly. The T200/T202 takes care of the connection so that users can concen-

trate on what they are looking for – news, entertainment or the latest fashionable sites.

The Access key is assigned to a WAP address. The default address for non-customized products is the address for Sony Ericsson Mobile Internet. This address can be changed by the user.

Sony Ericsson customers can choose to have the address to their own WAP site assigned instead.

The Access key is also an option key. This key gives you the most common options for the function currently in use.

GPRS

The success of the mobile Internet is dependent on a wide range of services, easy-to-use products, large displays and speed. The T200/T202 is a GPRS phone, supporting GPRS 3+1 timeslots. Consequently, by receiving data on 3 radio channels, the speed can be up to 43.2 kbps when browsing the mobile Internet. Basically, this is as fast as the modem many people have at home today when using their PC for browsing the Web.

In short, GPRS…

- Uses Internet-style packet based technology.
- Lets you stay permanently connected to the mobile Internet, but only uses the radio link for the time it takes to transfer data (you only pay for what you get).
- Gives you constant connection with speedy data transfer.
- Allows you to receive calls and messages during GPRS activities without interrupting the transmission. The data session is simply paused while the call is in progress.

Secure WAP

M-commerce is expected to be a growing part of the mobile Internet. Trading, banking and shopping have been possible via the Internet for quite some time, building upon the foundation of the built-in security features. It is these features that have been adapted to and implemented in the WAP protocol and the layer called WTLS, Wireless Transport Layer Security. WTLS consists of three security classes, where class 3 provides the highest security.

The T200/T202 supports WAP 1.2.1, the latest version of the Wireless Application Protocol that includes WTLS class 3. With the most advanced version of WTLS, full security is guaranteed when trading, banking or shopping online. WTLS class 3 includes the following security features:

- Encryption of a message, ensuring that only the sender and the recipient can read the contents of a message.
- Server authentication, meaning that the message is encrypted and users can verify that they really are communicating with the WAP gateway they believe they are connected to.
- Client authentication, ensuring that users are who they claim to be.

Messaging – EMS and Mobile chat

EMS lets users send black and white pictures, animations, sound effects, ring signals and formatted text to each other. With Mobile chat, text messaging is made easier since a chat session opens up immediately when a text message is received from a phone.

T9™ Text Input for quicker messaging

The T200 supports the predictive text input method T9™ Text Input. Predictive text input makes it fast and easy to write text messages. It works by searching a word database to anticipate which word you are writing. You only have to press each key once, even if the letter you want is not the first letter on the key. You can also add new words to the database.

Functions and features for productivity

The phone book

The phone book is one of the most used features of mobile phones. That is why a lot of work has been put into developing a phone book that is easy to use and offers quick access. The phone book in the T200/T202 lets you save up to 250 contacts.

Short-cuts

It is easy to access contacts in the phone book when you make a call. Just press and hold down the button with the letter that the name you are looking for starts with. You instantly enter the phone book and find the first name that starts with that letter. Then you just scroll to find the name you are looking for.

Picture phone book - see who's calling

The T200/T202 lets you assign a picture or an icon stored in the phone to an entry stored in the phone book. When a person calls or sends an SMS, a picture or an icon of your choice will be shown in the display as well as the name. You can also assign a ring-signal to an entry in the phone book. When a person calls or sends an SMS, that particular ring-signal will be heard, together with the name in the display.

The pictures used for Caller ID can be…

- Any of the EMS pictures stored in the phone from the start
- Pictures that have been received via EMS messages
- Any operator defined picture.

Naturally, the T200/T202 also supports name and number presentation as well as CLI restriction. It also allows the user to assign a ring signal to a certain number in the phone book.

Up-to-date with the calendar

The calendar of the T200/T202 keeps the user on the right track. It has two different views: month and week. and an appointment view. It also supports week numbering.

Option key

The Access key is also an option key. This key gives you the most common options for the function currently in use.

Profiles

The profile feature: a group of settings preset to suit a certain environment. The profiles are also related to intelligent accessories such as a desktop charger, a portable or vehicle handsfree; useful for company integration with call forwarding etc. Some phone accessories select a profile automatically. For example, when you place your phone in a car handsfree unit, the “In car” profile is chosen. There are seven pre-programmed profiles: *Normal*, *Meeting*, *In car*, *Outdoors*, *Port h-free (portable handsfree)*, *Home*, *Office*.

You cannot create more profiles, but you can change the settings for a profile. A profile with no accessories associated, such as *Meeting* or *Normal*, must be chosen manually.

Accessories

A wide range of Sony Ericsson **accessories** are available, such as *ComuniCam MCA-10, MP3 Handsfree HPM-10,* to enhance productivity further.

Services on the network

The T200/T202 supports the **SIM Application Toolkit (online services)**, which makes it possible for operators to provide new services to existing users over the air, including new menus and functions in the phone.

Triple band support

Dual band support means that you can use the phone on GSM 900, 1800 and1900 networks.

Extras for fun

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 six pre-defined, replaceable pictures or an operator defined picture

It is also possible to use a Sony Ericsson's RS 232 Cable or USB Cable to transfer content to the phone from the My Animation PC software, found at http://www.SonyEricsson.com/.

Start-up and shutdown shows

Another way to make the T200/T202 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 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 an RS232 Cable or USB Cable from the My Animation software, found at http://www.SonyEricsson.com/.

Games

For some people, playing a game is a good way to relax. The T200/T202 includes games for different moods and skills.

Ring signals

There are four ways to find a catchy ring signal for the T200/T202. One way is to choose any of the pre-programmed ring signals in the phone. Another way is to compose up to eight new ring signals and choose one of them. It is also possible to download a ring signal from a WAP site or receive a catchy tune in an EMS message from a friend or a company that sells ring signals.

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) and Mobile chat.

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 T200/T202 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.

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 chatsession 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 works with phones made by other manufacturers.

WAP services

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

The WAP browser in the T200/T202 is compliant with WAP 1.2.1, including security according to WTLS class 3. It is designed for WML and cannot read ordinary HTML pages, but it is suitable for interaction with customer services, e. g. ticket reservation. It is also handy when you want to access text-based information, such as timetables, share prices, exchange rates, Internet banking and other interactive services.

Using WAP in the T200/T202

The built-in WAP browser gives the user portable, fast and secure access to a wide variety of services, with the possibility of personalized services. WAP in the T200/T202 offers new opportunities to companies and service providers:

Push service

A useful feature for companies and service providers to push contents or service indications to work groups or customers. This is used for notifications, mail alerts, messaging, news, stock quotes, contacts, meeting requests, games etc.

Provide settings

Using SMS messages, configuration settings can be sent over the air, OTA, 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

When creating a WAP service, you want to make sure that the user experience is what you intend, regardless of client device type. The function User Agent Profile is supported by the T200/T202 to allow the contents to be automatically optimized for the phone.

Several bearer types

The T200/T202 accesses WAP over a standard GSM Data connection as well as over a GPRS connection. SMS is available as bearer type also. (Network-dependent services.)

Options button

During WAP browsing, the options button on the T200/T202 gives the user immediate access to a dynamic option menu when using WAP services, similar to a mouse right-click in PC programs.

Bandwidth efficiency

One of the key advantages WAP has over text-based HTML pages on mobile devices, is the bandwidth efficiency for communication. This is due partly to the fact that the WAP application is communicated to the wireless devices in the form of binary encoded data. Over a GPRS connection, bandwidth is used even more efficiently.

Easy create for WAP

Creating a WAP service is no harder than creating an Intranet/Internet service today since WML and WMLScript are based on well-known Internet technology. New market segments can be addressed by launching innovative mobile Value Added Services.

Using standard tools

It is possible for the service creator to use standard tools like ASP or CGI to generate content dynamically. You can utilize existing investments in databases etc. that are the basis of existing Internet services. Create a service once and make it accessible on a broad range of wireless networks.

Maintain customer base

You can adapt existing Internet services to WAP. The actual binary encoding can be handled by the WAP Gateway which makes it possible to create WAP applications using the text-based language WML and other tools. In fact, existing HTML-based applications on the Internet can be viewed in the WAP browser, if an automatic conversion is performed in the WAP Gateway.

Improve productivity

Improve and simplify the communication flow within an organization by making information available to mobile users. A company or organization can use a WAP gateway to provide a secure connection to the company network for their users.

The WAP profiles

The T200/T202 holds a number of WAP profiles, each with a group of network settings and a home page. If you provide a corporate WAP service on your Intranet, it is useful to enter an Intranet WAP profile in user phones. The WAP profile holds network settings and user identification. Users can switch easily between corporate services and WAP services on the Internet, simply by switching WAP profile.

Bearer type characteristics

The phone accesses WAP services over SMS or IP, where IP can be provided either over GSM Data or GPRS, depending on network services.

Typical differences which distinguish the bearer types are listed below.

GPRS access

- Connection is maintained “constantly”, as required by the application, and data is transmitted in packets. This means that the phone is connected almost all the time without using network capacity.
- Higher transmission speed than with GSM Data and SMS access.
- Pricing of GPRS can be dependent on the actual use of bandwidth, which means very low cost when no data is sent or received, while the phone remains connected to the WAP service.
- When transmitting large amounts of data, bandwidth can be increased automatically to allow faster transmission speed.
- GPRS is ideal for Complex Pull services, Browsing, Data transfer, Provisioning, Pager service, Messaging services, Info services, Push initiations.

GSM data access

- Circuit connection of data call, which means that the phone is connected during the entire WAP session.
- Comparably higher transmission speed than with SMS access.
- Pricing of GSM Data access can be compared to pricing of data calls in the network.
- GSM Data is suitable for Complex Pull services, Browsing and Data transfer.
- GSM Data is not suitable for Provisioning, Pager service.

SMS access

- SMS point-to-point is used and not SMS Cell Broadcast.
- Connection is maintained by the automatic exchange of ”messages” between the phone and the SMS Service Centre.
- Comparably lower transmission speed than with GSM Data access.
- Pricing of SMS access can be compared to pricing of the normal SMS service in the network.
- MS is suitable for Messaging services, Info services, Push initiations, Provisioning.
- MS is not suitable for Browsing, Data transfer.

The WAP Gateway provides services in the company’s Intranet, a banking or stock trading service on the Internet, or access to other WAP applications on web addresses anywhere on the Internet. A Gateway is identified by an IP number or by a phone number, depending on access type.

Security using WAP

The T200/T202 supports WAP 1.2.1, a version of the Wireless Application Protocol that includes WTLS class 3.

When using certain WAP services,the user may want more security than normal, for example when using banking services.The user establishes a secure connection between the phone and the WAP gateway.

To use such connections, certificates have to be saved in the phone.The certificates are made available so that users can download them from certain WAP sites. An access key is needed when accessing certain WAP sites or when reviewing certificates.The user is asked to enter it before a secure WAP connection is established.

WTLS class 3 includes the following security features:

- Encryption of a message, ensuring that only the sender and the recipient can read the contents of a message.
- Server authentication, meaning that the message is encrypted and users can verify that they really are communicating with the WAP gateway they believe they are connected to.
- Client authentication, ensuring that users are who they claim to be.

Configuration of WAP settings

An easy way to perform the WAP configuration of a single phone is by using the step-by-step WAP configurator provided on the Sony Ericsson Mobile Internet. The configurator utilizes OTA provisioning, and it is available on http://www.SonyEricsson.com, no login required.

A manual configuration is made using the menu system in the phone. This is described in the User's Guide.

Push services

These are useful for sending updated WAP site contents or WAP links to mobile users. Examples of services that can be implemented using push services:

- Notification of new voice mails, etc. Instant messaging and chat.
- News, sport results, weather forecasts, financial information (stock quotes etc).
- Personal Information Manager (PIM) - delivery of contacts, meeting requests etc.
- Fill up a smart card with e-cash.
- Interactive games, e.g. play poker with a friend.

In the T200/T202, the user selects whether to allow push messages or not. There are two different forms of Push services:

Service Indication (SI)
This is basically a text message to the user containing a link to a URL carried by the SI. If the user decides to load the suggested URL, normal WAP browsing commences.

Service Loading (SL)
This means that the WAP site content is immediately loaded and executed on the client, or alternatively is loaded and stored in the cache for later use. In both cases, the SL is loaded without any user intervention.

When a service indication is received in the T200/T202, it is presented to the user in one of the following ways:

- High
  Immediately displays the message irrespective of current activity.
- Medium
  Message is immediately displayed, unless the user is engaged in another activity. In this case the message is indicated to the user, who retrieves it later from the inbox.
- Low
  Message is not immediately displayed. Instead it is put in the Inbox, and an indication is given in the standby screen.

In the T200/T202 push message inbox, a list shows the first part of each received message, newest first. The user decides to read or delete the message, and whether to load the suggested URL in the WAP browser.

Over-the-air provisioning of WAP settings

To simplify configuring WAP settings in a number of phones, all settings can be sent as an SMS message to each phone. This makes it easy for an operator, a service provider or a company to distribute settings for Internet/Intranet, and WAP, without having to configure each phone manually. This also makes it easy to upgrade the services provided to the users, without the need for users to perform any manual configuration.

- The OTA configuration message is distributed via SMS point-to-point.
- The setup information is a binary encoded XML message, according to WBXML. To receive information about OTA specifications, please contact your local Sony Ericsson representative for consumer products. A configurator that utilizes OTA provisioning can be tested on Sony Ericsson Mobile Internet.
- The user is not alerted about new settings until the ongoing browsing session ends. Furthermore, settings are not changed during an ongoing browsing session.
- The necessary user interaction is limited to receiving and accepting/rejecting the configuration message, and selecting which WAP profile to allocate the settings to.
- Security can be handled using a keyword identifier displayed on the screen as a shared secret between the SMS sender and recipient. It is important that the user can verify that the configuration message is authentic.

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 us access to personalized communications, information and entertainment anytime, anywhere.

With the T200/T202, the mobile Internet is always with you. One long press on the Access key and you're there – instantly. The Access key is assigned to a WAP address. The default address for non-customized products is the address for Sony Ericsson Mobile Internet. This address can be changed by the user. Sony Ericsson customers can choose to have the address to their own WAP site assigned instead.

The T200/T202 also enables new technologies such as mobile positioning to create new commercial and productivity solutions.

Data connections

In order to browse via WAP or use an Internet connection, the user must have a data communication connection configured in the phone. Such a connection is called a Data connection. This connection contains specific settings and parameters for the connection, for example, the address to the appropriate server. Several Data connections can be saved in the T200/T202, with different settings. To make it easier for the user, Data connections can be provided by the operator in a message over the air, OTA provisioning.

Advantages of Data connections include:

- Once the data connections are defined and named, the user does not have to enter the settings for the connection again.
- Data connections can be re-used at any time.
- When working with WAP or the Internet, the user simply selects which Data connection they want to use for the activity.
- Data connections are used for both GSM Data and GPRS connection settings.
- Data connections contain choice of bearer type for WAP and corresponding bearer specific parameters.
- Data connections contain all settings for the Internet access point, whether a modem pool

phone number or an IP address, and the user ID and password.

Mobile positioning

The geographic location of mobile subscribers can be used to provide them with related information and a variety of services. Sony Ericsson's Mobile Positioning System (MPS) is a network-dependent service, and gives operators a fast and cost-effective way to establish and roll out location-based services.

More information regarding possibilites with and technologies for mobile positioning is available at http://www.SonyEricsson.com/mobilepositioning

Note: *Available with U.S version only.*

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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 to enhance the capabilities for data communication. Data traffic is increasing enormously over both wired and wireless networks. This growth in demand for Internet access and services reflects the explosion in demand for mobile communications. Users want access to the Internet while they are away from their offices and homes.

The main applications driving the wireless Internet development are web browsing and pull content, also known as web clipping. User surveys have found that a vast majority of executives and business professionals want wireless Internet access for web browsing with both text and graphic capabilities! The demand for high-speed Internet access will be the key driver for coming generations of wireless services equal to, or faster than wired, and GPRS can deliver this mobile Internet function. GPRS will allow innovative services to be created, enabling new and previously inaccessible market segments to be addressed, increasing customer loyalty and reducing churn. Machine-to-machine and person-to-machine communications will become possible.

GPRS applications can be developed both as horizontal and vertical applications. Vertical applications can, for example, be operations like police and emergency, taxi, and delivery or automated services such as vending machines, supervision and vehicle tracking. Horizontal applications are generic, such as Internet access, messaging, e-commerce and entertainment. One of the advantages of GPRS is that it will profit from the global coverage of exisiting GSM networks. Therefore, applications developed for GPRS can be deployed on a large scale, increasing revenues for network operators and service providers. GPRS also provides an ideal secure medium for connections to private networks, banking and financial services.

The T200/T202 supports GPRS, which means that the data is sent in packages. The phone

remains connected to the network all the time without using any transmission capacity, until data needs to be sent or received.

Using GPRS in the T200/T202

Instead of occupying a whole voice channel for the duration of the call, data is sent in small packets as needed, just like IP on the Internet. Capacity is used only when data is being sent or received, which means that it is possible to be “constantly” connected, as required by the application in use.

The GPRS specification includes four coding schemes that allow data speeds of 9,050 bps, 13,400 bps, 15,600 bps and 21,400 bps respectively. The T200/T202 works with the first two coding schemes, but data speed will naturally vary according to network configuration.

The GSM system's design limits the ability to use all eight time slots. Instead, the T200/T202 uses up to three time slots for receiving data, and one slot for transmitting.

Information about the identity of the phone and the 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. In the T200/T202, multiple PDP context settings can be set via the menu system, or by OTA provisioning.

Using GPRS with the T200/T202 has several advantages, for example:

- Constant connection
  Keep an open connection to 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.
- Cost efficient
  As GPRS is an IP-based connection, this means that a high transmission capacity is only used when needed. This makes it possible to stay connected via GPRS, whereas keeping a constant circuit switched connection would be more expensive.
- WAP over GPRS
  Access the Internet via WAP and be constantly connected. The user can run WAP functions such as browsing.
- Data communication
  Using GPRS, this provides data and Internet/Intranet access, for a PC, PDA or handheld device connected via the RS 232 Cable.
- Data and voice
  The T200/T202 can maintain a data connection when conducting a voice call.
- Provide settings
  The GPRS configuration settings can be sent from the provider over the air, OTA. This way, the user can use GPRS without making any settings in the phone.
- User controlled settings
  Full user control is enabled in the T200/T202. In the Data connections menu, the user can set up multiple descriptions and access advanced settings for GPRS, for example Data compression and Quality of Service.

Modem and AT commands

The T200/T202 contains a complete GSM modem. This provides data communication, as well as Internet/Intranet access, for a connected PC, PDA or handheld device. Once the PC/PDA is connected to the phone using a cable, and the appropriate software is installed, the modem in the phone works in a similar way to a PC Card modem, or an external modem.

In the T200/T202, AT commands are used both for:

- controlling the data communication between the PC and the remote service
- configuring and requesting settings and behaviours in the phone, from a connected PC or PDA

GSM data communication

The built-in data capability turns the phone into a modem when connected to a PC/PDA. The T200/T202 offers the user data connection anytime, anywhere, unmatched by fixed telephone networks. Each GSM channel is divided into eight repeating time slots. A normal GSM voice or data call is circuit switched, and only one time slot is used for each call. The data speed is, therefore, limited to 9,600 bps.

GPRS enables constant connection

With GPRS, the connection is maintained “constantly”, and data is transmitted in packets. Pricing of GPRS can be dependent on the actual use of bandwidth, which means very low cost when no data is sent or received, while the phone remains connected.

This section outlines the AT commands supported by the T200/T202. The information here can be of use for advanced users, to indicate the possibilities they have to:

- develop new communications software
- add the T200/T202 to an application’s list of compatible modems
- adjust the settings of their mobile telephone and modem

The modem in the T200/T202 supports the V.25ter command set, which is the standard communication set used by modems.

The T200/T202 is compatible with industry de facto extensions, ETSI 07.05, 07.07 and 07.10.

Overview of AT command functions

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

The built-in modem can be set to any one of three modes of operation. These are:

Off-line command mode

The built-in modem is placed in off-line command mode when first started and is ready for entry of AT commands.

On-line data mode

Allows “normal” operation of the built-in modem, exchanging data or facsimile with the remote modem.

On-line command mode

You can switch to on-line command mode when you want to send AT commands to the built-in modem while still remaining connected to the remote modem.

The AT commands in the T200/T202 are grouped as follows:

- Control and Identification
- Call Control
- Interface Commands
- Data Compression
- Mode Management
- Audio Control
- Accessory Menus
- Accessory Authentication
- Voice Call Control
- Accessory Identification
- GSM DTE-DCE Interface Commands
- GSM Call Control
- GSM Data
- GSM High Speed Circuit Switched Data
- GSM Network Services
- GSM USSD
- GSM Facility Lock
- GSM Mobile Equipment, Control and Status
- GSM Mobile Equipment Error Control
- GSM SMS and PDU Mode
- GSM GPRS
- GSM Phonebook
- GSM Clock, Date and Alarm Handling
- GSM Subscriber Identification
- Sony Ericsson Specific AT Commands for GSM

In-phone functions and features

**Subscription and/or network-dependent*

In-phone functions and features		
A	Alarm clock with snooze function	Yes
B	Background light	Yes, blue
	Background pictures	Yes, 6 which can be edited by the user + 1 customised
	Bookmarks (URL memory)	Yes, 24 user-defined and 1 for customization
C	Calculator	Yes
	Calendar	Yes, (month and week view)
	Call barring*	Yes
	Call divert*	Yes
	Call hold*	Yes
	Call screening*	Yes
	Call list (last dialled, answered and missed calls)	Yes, 30 entries
	Call time/call cost (a.k.a Advice of Charge, Information/Charging)*	Yes
	Call transfer*	Yes
	Calling card service	Yes

In-phone functions and features		
	Calling Line Identification (CLI)	Yes, with name or number, personal ring signal and pictures
	Clock	Yes
	Closed User Groups (CUG)*	Yes, 9
	Conference calls*	Yes
	CSD, Circuit Switched Data*	Yes
D	Data accounts	10 (which can be customised)
	Date	Yes
	EMS (Enhanced Messaging Service)*	Yes
	EMS, own pictures/icons	Yes, 10
	EMS, pre-defined pictures/icons	35
	EMS, animations	Yes
	External antenna connector	Yes
F	Fixed Dialling Numbers (FDN)*	Yes
G	Games	Yes, 5 games
	GPRS (General Packet Radio Services)*	Yes
H	High Speed Data (HSCSD)	Yes
	Input methods	T9™ Text Input, multitap alphabetic (GSM standard), Bopomofo, Pinyin and Stroke
	Internet button	Yes
	Keypad lock	Yes
L	Languages	43
M	Memory check	Yes
	Mobile chat	Yes
	Modem	Yes, built-in
O	Option key	Yes
P	Phone book	Up to 250 contacts in phone + SIM
	Phone book groups	10
	Phone lock	Yes
	Picture phone book	Yes
	Profiles	Yes, 7
R	Re-dialling, automatic	Yes
	Ring signals, pre-programmed	Yes

In-phone functions and features		
	Ring signals, own/customized	8
	Ring signals, exchange	Yes, via EMS
	Shortcuts	Yes
	SIM Application Toolkit*	Yes
	SIM card lock	Yes
	Sleeping display	Yes
	SMS (Short Message Service)*	Yes
	SMS, long messages (a.k.a. concatenated SMS)*	Yes, up to 6 messages of 160 characters each
	SMS Cell Broadcast*	Yes
	SMS counter	Yes
	SMS templates	Yes, 10 templates of 30 characters each
	Speech coding	Enhanced, Full and Half Rate
	Speed dialling	Yes
	Start-up/Shutdown shows	Yes, 3 (1 standard, 1 own, 1 customised)
	Status menu	Yes
	Stopwatch	Yes
T	Timer	Yes
	Two Line Service* (a.k.a Alternate Line Service, ALS)	Yes
V	Vibrating alert	Yes
W	WAP browser	Yes, WAP 1.2.1 browser
	WAP certificates	VeriSign, GlobalSign, Baltimore, Entrust
	WTLS for added WAP security*	Yes, WTLS class 3

Network-dependent features

SMS and EMS messaging

The T200/T202 is capable of sending and receiving SMS, EMS messages and linked messages.

- With the Short Message Service, a user can send text messages containing up to 160 characters to and from GSM mobile stations
- With the linked SMS, the user can link several SMS messages together to create a longer message (network-dependent service)

A Service Centre (SC) acts as a a storage and forwarding centre. The T200/T202 also supports using SMS as a bearer type for connecting to WAP.

SMS consists of two basic services:

- Mobile Originated SMS (from a mobile station to an SMS-C)
- Mobile Terminated SMS (from an SMS-C to a mobile station)

For Mobile Originated SMS, an SMS message is sent from a Mobile Station to the SMS-C where it is forwarded to its destination. This can be

another Mobile Station, or a terminal in the fixed network.

A Mobile Terminated SMS is when an SMS message is forwarded from the SMS-C to a Mobile Station. When the Mobile Station receives the message, it returns a delivery report saying the transfer was successful.

Fixed dialling and Restricted calls

For a company or an organization, it can be useful to restrict phone calls. Fixed Dialling allows you to preset a number of digits, for example area codes. This restricts the user to making calls only to numbers which use the preset digits as leading digits. Fixed Dialling makes use of the PIN2, and it requires fixed dial fields on the SIM card. Check with your operator about this feature.

The Restrict Calls service allows you to block outgoing or incoming calls in certain situations, for example international calls.

SIM application toolkit

The SIM Application Toolkit (SIM AT) is a smart card-centric method of deploying programs that apply only to GSM and to SMS and USSD transports. Programs must be distributed on smart cards. WAP is an Internet-centric method of deploying programs that is independent of network technology. Programs and content are kept centrally on web servers and downloaded as required. While there is some overlap, WAP is a particularly good choice when deploying programs that also have an HTML version for desktop use. Work is currently underway on building interfaces between the two technologies.

For an operator, a company or service provider, SIM AT offers a powerful way to deploy programs and services to users, without the need for new or upgraded equipment. All necessary setup and programming is distributed to users over the air, directly to their phones. In the T200/T202, a separate menu is available for functions residing on the SIM card. These can include submenus for controlling functions, and also functions which allow the phone to initiate calls, send data, and display information to the user.

SIM AT services supported by the T200/T202

Service	Mode	Support in T200/ T202
CELL BROADCAST DOWNLOAD		Yes

Service		**Mode**	**Support in T200/ T202**
DISPLAY TEXT		General: Support for packed and unpacked format in SMS default alphabet as well as UCS2 alphabet	Yes
	bit 1:	0 = normal priority	Yes
		1 = high priority	Yes
	bit 8:	0 = clear message after a delay	Yes
		1 = wait for user to clear message	Yes
GET INKEY		General: The GET_INKEY requires that the user press "Yes" to confirm his/her choice	Yes
	bit 1:	0 = digits (0-9, *, # and +) only	Yes
		1 = alphabet set	Yes
	bit 2:	0 = SMS default alphabet	Yes
		1 = UCS2 alphabet	Yes
	bit 3:	0 = character sets defined by bit 1 and bit 2 are enabled	No
		1 = character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested	No
GET INPUT		General: No. of hidden input characters	20
	bit 1:	0 = digits (0-9, *, # and +) only	Yes
		1 = alphabet set	Yes
	bit 2:	0 = SMS default alphabet	Yes
		1 = UCS2 alphabet	Yes
	bit 3:	0 = ME may echo user input on the display	Yes
		1 = user input not to be revealed in any way	Yes
	bit 4:	0 = user input to be in unpacked format	Yes
		1 = user input to be in SMS packed format	Yes
	bit 8:	0 = no help information available	Yes
		1 = help information available	No
MORE TIME			Yes
PLAY TONE			Yes
POLLING OFF			Yes
POLL INTERVAL			Yes

Service		Mode	Support in T200/ T202
PROVIDE LOCAL INFORMATION		'00' = Location Information (MCC, MNC, LAC and Cell Identity)	Yes
		'01' = IMEI of the ME	Yes
		'02' = Network Measurement results	No
		'03' = Date, time and time zone (DTTinPLI)	No
REFRESH		General: The reset option requests the user to wait while the phone restarts	Yes
		'00' =SIM Initialization and Full File Change Notification	Yes
		'01' = File Change Notification	Yes
		'02' = SIM Initialization and File Change Notification	Yes
		'03' = SIM Initialization	Yes
		'04' = SIM Reset	Yes
SELECT ITEM			Yes
SEND SHORT MESSAGE	bit 1:	0 = packing not required	Yes
		1 = SMS packing by the ME required	Yes
SEND SS			Yes
SEND USSD			Yes
SET UP CALL		General: Capability configuration	Yes
		Set-up speech call CallParty Subaddress DTMF support	No
			Yes
		'00' = set up call, but only if not currently busy on another call	Yes
		'01' = set up call, but only if not currently busy on another call, with redial	Yes
		'02' = set up call, putting all other calls (if any) on hold	Yes
		'03' = set up call, putting all other calls (if any) on hold, with redial	Yes
		'04' = set up call, disconnecting all other calls (if any)	Yes
		'05' = set up call, disconnecting all other calls (if any), with redial	Yes
SET UP MENU			Yes

Service	Mode	Support in T200/ T202
SMS PP DOWNLOAD		Yes

User interaction with SIM AT

DISPLAY TEXT

Text of up to 160 characters (80 UCS coded) is supported.

Text clearing times

- 10-20 seconds. 60-second timeout limit for the user to clear the text.

'Key' responses

- 'Long NO' – Proactive session terminated by user.
- 'NO' – Backward move in proactive session. Any other key clears display if the command is performed successfully.

GET INKEY

Prompt for a one-character input. Pressing 'YES' without entering a character gives warning message "Minimum 1 character".

'Key' responses

- 'CLR' clears current character.
- 'Long NO' terminates the proactive session.
- 'NO' – Backward move in proactive session.
- 'YES' – Command performed successfully.

GET INPUT

Prompt for character input. Pressing 'YES' without entering a character gives warning message "Minimum 'no.' characters". The phone will refuse to accept further input when maximum response length is exceeded.

MMI Maximum Response lengths

- Digits Only – 160 characters
- SMS default alphabet characters – 160 characters
- Hidden Characters (digits only) – 20 characters

'Key' responses'

- 'CLR' clears current character/characters.
- 'Long No' terminates the proactive session.
- 'NO' – Backward move in proactive session.
- 'YES' – Command performed successfully.

REFRESH

When a refresh command is executed by the phone, it displays the message "Please wait" and then restarts.

SELECT ITEM

Scroll to highlight item for selection. The maximum number of items supported by the phone within one Select Item command is 30.

'Key' responses

- Down arrow – Scroll down list.
- Up arrow – Scroll up list.
- Long 'No' terminates proactive session.
- 'NO' – Backward move in proactive session.
- 'YES' – Command performed successfully.

SEND SHORT MESSAGE

Default message "Sending message, please wait" can be replaced for the Alpha Identifier text, or suppressed completely if a null text is provided. Responses are "MESSAGE FAILED" or "MESSAGE SENT".

'Key' responses

- Long 'No' or 'NO' terminates the proactive session.

SET UP CALL

If the ME is on a call when the command 'Set up Call, putting all other calls on hold' is sent, the user will see the text 'Setting up a call current call will be held'. If the 'YES' key is pressed the current call will be put on hold and the new call set up. If the ME is on a call when the command 'Set Up Call, disconnecting all other calls' is sent, the user will see the text 'Setting up a call current call will be disconnected'. If the 'YES' key is pressed the current call will be disconnected and the new call set up.

SET UP MENU

Incorporates a SIM Application Toolkit Menu Item into the ME's main menu structure. From the standby display the right or left arrow buttons can be pressed to select the Menu Items. (Note: The SIM AT menu option is found in the 'Extras' menu.)

If an Alpha Identifier is supplied in the Set Up Menu command this is used as the SIM AT entry in the ME's main menu. If no alpha identifier is supplied and only one item provided, then this item is used as header. If no alpha identifier is supplied and several items are found in the menu, a default title is used. If the SIM AT Menu Item is selected using the 'YES' key all the items sent in the Set Up Menu command will be available for selection, in the same way as the Select Item command. A limit of 30 menu items has been set within this command.

'Key' responses

- Down arrow – Scroll down list.
- Up arrow – Scroll up list.
- Side key: Scrolls the menu.
- 'YES' – Envelope (Menu Selection).

Chinese version

The T200 comes in two different versions, the "T200" and "T200c". The only difference between these two versions is that they support different languages.

The T202 only comes in one version, which supports a complete Chinese interface with two input methods, Pinyin and Stroke.

EMS is supported in all versions.

The Chinese version has five games.

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) and SMS.

bFTP
binary File Transfer Protocol.

Bookmark
A URL and header/title stored in the phone.

Browsing session
From the first access of content until the termination of the connection.

Calling Line Identification (CLI)
Shows the number of the person calling you in your mobile phone display. You can then make an informed choice as to whether or not to take the call. Bear in mind that not all numbers can be displayed. To use this service, it must be supported by your network.

Card
A single WML unit of navigation and user interface. May contain information to present to the user, instructions for gathering user input, etc.

CGI
Common Gateway Interface.

CS
Circuit Switched.

CSD
Circuit Switched Data.

Deck
A collection of WML cards.

DTMF or Touch Tone
Dual Tone Multi-Frequency signal – codes sent as tone signals. Used for telephone banking, accessing an answering machine, etc.

Triple band
GSM 900/1800/1900. Your phone is a Triple band phone, which means that you can use your phone on the GSM 900, the GSM 1800 and the GSM 1900 network.

e-GSM
Extended GSM, e-GSM, are new frequencies specifiied by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed (Network-dependent). It allows operators to transmit and receive just outside GSM's core 900 frequency band. This extension gives increased network capability, which favours both the user and the operators.

EFR
Enhanced Full Rate, speech coding.

EMS
Enhanced Message Service. Allows the user to add simple pixel pictures and animations, sounds and melodies to a text message. The EMS 3GPP standard also includes text formatting.

ETSI
European Telecommunications Standards Institute.

FR
Full Rate, speech coding.

Gateway
A WAP Gateway typically includes the following functions:

- A Protocol Gateway – the protocol gateway translates requests from the WAP protocol stack to the WWW protocol stack (HTTP and TCP/IP).
- Content Encoders and Decoders – the content encoders translate Web content into compact encoded formats to reduce the size and number of packets travelling over the wireless data network.

GIF
Graphics Interchange Format.

GPRS
General Packet Radio Services.

GSM
Global System for Mobile Communications. GSM is 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
The GSM systems family includes GSM 900, GSM 1800 and GSM 1900. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant.

GSM 1800
Also known as DCS 1800 or PCN, this is a digital network working on a frequency of 1800 MHz. It is used in Europe and Asia-Pacific.

GSM 1900
Also known as 'American GSM', or PCS, operates on a frequency of 1900MHz.

HDML
Handheld Device Markup Language.

HDTP
Handheld Device Transport Protocol.

HR
Half Rate, speech coding.

HSCSD
High Speed Circuit Switched Data.

HTML
HyperText Markup Language.

HTTP
HyperText Transfer Protocol.

Image
WBMP or GIF image contained in a Card.

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 your mobile phone, just as an ordinary browser does in your computer. The micro browser uses small file sizes and the bandwidth of the wireless-handheld network.

MMI
Man-Machine Interface.

MS
Mobile Station.

MT
Mobile Termination.

OTA
Over-the Air Configuration. To provide settings for the phone by way of sending a message, SMS, over the network to the phone. This reduces the need for the user to configure the phone manually.

PDA
Personal Digital Assistant.

PDP
Packet Data Protocol.

Phone book
A memory in your mobile phone or SIM card where phone numbers can be stored and accessed by name or position.

Picture phone book
Lets you assign a picture or an icon stored in the phone to an entry stored in the phone book.

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
Subscriber Identity Module card – a card that must be inserted in any GSM-based mobile

phone. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized but both types have the same functions. Your phone uses the small plug-in card.

SMIL
Synchronized Multimedia Integration Language. Allows the user to create MMS messages appearing like PowerPoint-style presentations on the mobile.

SMS
Short Message Service. Allows messages of up to 160 characters to be sent and received via the network operator's message centre to your mobile phone. Messages are stored if the phone is off or out of reach ensuring that they reach you. To use this service, it must be supported by your network.

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. Handheld devices, low bandwidth, binary coded, a deck/card metaphor to specify a service. A card is typically a unit of interaction with the user, that is, either presentation of information or request for information from the user. A collection of cards is called a deck, which usually constitutes a service.

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 used for authoring services, fulfilling the same purpose as HyperText Markup Language (HTML) does on the World Wide Web (WWW). In contrast to HTML, WML is designed to fit small handheld devices.

WMLScript
WMLScript can be used to enhance the functionality of a service, just as, for example, JavaScript may be utilized in HTML. It makes it possible to add procedural logic and computational functions to WAP-based services.

Wireless Session Protocol.

WTLS
Wireless Transport Layer Security.

WWW
World Wide Web.

XML
Extensible Markup Language.

Related information

Documents

- The T200/T202 User's Guide
- Sony Ericsson T200/T202 FAQ
- AT Command Reference Manual
- WAP June2000 (WAP 1.2.1) Specification

Links

- http://www.SonyEricsson.com/
- http://www.SonyEricsson.com/wap/
- http://www.SonyEicsson.com/mobilityworld/
- http://www.gprsworld.com/
- http://www.extendedsystems.com/
- http://www.bluetooth.com/
- http://www.imc.org/
- http://www.3gpp.org/
- http://www.irda.com/
- http://www.etsi.fr/
- http://www.wapforum.org/
- http://www.imc.org/pdi/

Trademarks and acknowledgements

Technical specifications

General

Product name	T200/T202
System	GSM phase 2 recommendations. GSM 900 (CTR 19 and CTR 20), GSM 1800 (CTR 31 and CTR 32), GSM 1900 (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 numbers	1130501-BV, 1130501-CN

Exterior description

Size	105x48x22 mm
Weight	85 grams
Display size	101 pixels wide, 67 pixels high
Graphic display	4 grey scale
Text size	medium
Text rows	Up to 5
Colour	Icy blue Ebony black
Keypad	17 keys and 2 volume keys (5 different keypads: Latin, Arabic, Thai, Hebrew, Chinese)

Ambient temperatures

Operating	Max: +55°C, Min -10°C
Storage	Max: +70°C, Min -40°C
Charging	Max: +35°C, Min 0°C

Supported Man-Machine Interface (MMI) languages

Depending on software in the phone, these languages are supported:

MMI	T9™ Text Input	Zi8	Keypad	Markets & manual
English, French, Arabic,	English, French		Latin	Bangladesh (ENs), India (ENs), Pakistan (ENs)
English, Indonesian, Tagalog Vietnamese	English		Latin	Indonesia (IN), Philippines (ENs) Vietnam (ENs)
English, Malay,	English		Latin	Singapore (ENs), Sri Lanka (ENs) Malaysia (ENs)
English, Thai	English, Thai		Latin Thai	Thailand (TH+EN)
English, Chinese Simplified (ZS)		English, Stroke, PinYin Default: Pinyin	Latin/ Stroke/ Pin Yin	China (ZS), Singapore (ENsc), Malaysia (ENsc)
English, Chinese Traditional (ZC)		English, Stroke, PinYin Default: Stroke	Latin/ Stroke	Hong Kong (ZC)
English, Chinese Traditional (ZC)		English, Stroke, BoPoMoFo Default: Bopomofo	Latin/ Stroke/ Bopomofo	Taiwan (ZC)
English, Estonian, Russian	English		Latin	Estonia (ET+RU)
English, Latvian, Lithuanian, Russian	English		Latin	Latvia (LV+RU), Lithuania (LT+RU)
English, Polish, Russian	English		Latin	Poland (PL), Russia and Ukraine (RU)
English, Croatian, Serbian, Slovenian	English		Latin	Bosnia, Hercegovina and Croatia (HR), Serbia (SR+ENs), Slovenia (SL)
English, Czech, Slovakian, Hungarian	English		Latin	Czech Republic (CS), Slovak Republic (SK)
English, Turkish, Russian	English		Latin	Turkey (TR+RU)
English, Greek, Albanian	English		Latin	Greece and Albania (EL+ENs+SQ)

MMI	T9™ Text Input	Zi8	Keypad	Markets & manual
English, Romanian, Hungarian, Bulgarian,	English, German		Latin	Hungary (HU), Romania (RO+ENs), Bulgaria (BG)
English, Arabic, Hebrew, Russian	English		Hebrew	Israel (HW+RU+ENs)
English, French, Arabic, Farsi	English, French, Arabic		Arabic	Bahain, Kuwait, Oman and Qatar (AR+ENs), Iran (FA+ENs), Lebanon, Saudi Arbia and UAE (AR+ENs)
English, Arabic, French	English, French		Latin	Northern Africa (AR+ENs+FR), Morocco (AR+ENs+FR)
English, Portuguese, Spanish	English, Portuguese, Spanish		Latin	Portugal (PT), Spain (ES)
English, French, German,	English, French, German,		Latin	Australia (ENs), New Zealand (ENs), Pakistan (ENs), Austria (ENs+DE), Germany (ENs), France (FR), Ireland, UK and Kenya (ENs), Italy (IT+ENs), Switzerland (DE+FR+ENs), Kenya (ENs), Nigeria (ENs)
English, Sotho, Zulu	English, French, Portuguese		Latin	South Africa (ENs+ST+ZU), Southern Africa (ENs+FR+PT)
English, Danish, Dutch, French	English, Danish, Dutch, French		Latin	Belgium (FR, NL, ENs), Denmark (DA), Netherlands (NL)
English, Finnish, Swedish, Norwegian	English, Finnish, Swedish, Norwegian		Latin	Finland (SV+FI), Sweden (SV), Norway (NO)
English, French, German, Italian	English, French, German, Italian		Latin	Italy (IT), Switzerland (DE+FR+ENs)
US English, Canadian French, Latin American Spanish	US English, Canadian French		Latin	Canada (AE+CF), USA (XL+AE)
Brazilian Portuguese, Latin American Spanish	Brazilian Portuguese, L A Spanish		Latin	Brazil (PB), Chile (XL), Venezuela (XL), El Salvador (XL), Jamaica (XL)

Talk and standby times

Built-in Li-Ion, 700 mAh	Talk time	Up to 13 hours
	Standby time	Up to 220 hours

Speech coding

Dimension	Full rate	Enhanced full rate
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	

Performance and technical characteristics

Dimension	GSM 900	GSM 1800	GSM 1900
Frequency range	TX: 880 – 914 MHz RX: 925 – 959 MHz	TX: 1710 – 1785 RX: 1805 – 1880	TX: RX:
Channel spacing	200 kHz	200 kHz	200 kHz
Number of channels	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	
Modulation	GMSK	GMSK	GMSK
TX Phase Accuracy	< 5º RMS Phase error (burst)	< 5º RMS Phase error (burst)	< 5º RMS Phase error (burst)
Duplex spacing	45 MHz	95 MHz	
Frequency stability	+/- 0.1	+/- 0.1	+/- 0.1
Voltage operation (nominal)	3.6 Volts	3.6 Volts	3.6 Volts
Transmitter RF power output	33 dBm Class 4 (2W peak)	30 dBm Class 1 (1W peak)	
Transmitter Output impedance	50 ¾	50 ¾	50 ¾
Transmitter Spurious emission	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz (according to GSM spec.)	< - 30 dBm (according to GSM spec.)	
Receiver RF level	Better than – 102 dBm	– 102 dBm	
Receiver RX Bit error rate	< 2.4%	< 2.4%	< 2.4%

WAP browser technical data

Feature	Support in the T200/T202 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)

Feature	Support in the T200/T202 WAP browser
Character sets *	UTF8 (Default), USAASCII, Latin1, UCS2
Clear cache	Yes
Colour	High resolution grey scale display (four grey scales)
Home page	Yes, up to 5 different, one for each WAP profile
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
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)
WAP profiles	5 WAP profiles, each with its own settings
WTLS (security)	Yes, WTLS Class 1 - Encoding WTLS Class 2 - Encoding + Server Authentication. Root Certificates needed in phone WTLS Class 3 - Encoding + Server Authentication + Client Certification. Root Certificates needed in phone

GPRS technical data

Dimension	Support in T200/T202
Data rates	Multislot class 8 supported CS-1, CS-2 9,050 bps, supported (network-dependent)
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: Support of 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) SMS over GPRS (SMS-MT, SMS-MO) supported
QoS	QoS negotiation supported Reliability class 1-5 supported Mean and peak throughput rate limited by multislot class 8 and CS-4
PDP context	10 PDP context descriptions stored in mobile PDP context description is edited via application in mobile, AT-command or via OTA Simultaneous PDP contexts not supported Network requested PDP context not supported
SIM	GPRS aware, as well as non GPRS aware SIMs are supported

Built-in GSM data modem technical data

Dimension	Support in the T200/T202	
Standards	AT commands industry standard, ETSI 07.05 and 07.07 and 07.10, V.25ter command set supported	
Data rates, Circuit Switched (CSD)	Download data rate	Up to 19,200 or 28,800 bps (depending on base rate) no compression, with V.42bis compression up to four times higher transmission rates depending on the data type

Dimension	Support in the T200/T202	
	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	

Cell broadcast service

Feature	**Support in the T200/202**
User notification of the reception of a CB message	Message displayed on screen
Handling of reception of several unread messages	The last message overwrites the previous one
Support of all CMBI from 0 to 65535	Yes
File support	CBMI and CBMID
Support CB SIM data download	Yes
Support of all applicable Data Coding Scheme values as defined in 3G TS 23.038 V3.3.0	Yes
Ability to display in a understandable way a message with a DCS “language unspecified” whatever language is set in the SIM card	Yes
Ability to extract a phone number or short number of a CB message to re-use it (to send an SMS or call the sender)	Yes
Support of multi-page CB-messages	Yes

Short message service

Feature	**Support in the T200/202**
SMS Center Number	It is possible to pre-record the SMS Center Number.
Pictures	It is possible to insert a picture/an icon into the text message. EMS compliant mobile handsets will be able to see the picture correctly.
Input methods	Predictive text input

Feature	**Support in the T200/202**
Reply to messages	It is possible to reply to received messages by SMS, phone call, ...
Message creation methods support	Predictive writing
Enhanced predictive writing method by:	
predictive keyboard which replaces the PDA keypad, alphabet keypad, keyboards for numbers, punctuation and symbols	Yes, the Chatboard accessory
copy, cut and paste words	No
teaching of predictive words that are not in the predictive dictionary	Yes
Possibilities when creating a message:	
save a sent message in a “sent items” folder	Yes
insert a line in the message	Yes
assign a validity period to the message	Yes
print via IrDA	No
use predefined messages	Yes
Possibilities when receiving a message:	
reply to the sender	Yes (only to the sender, not to all or part of the message recipients)
forward the message	Yes
save the message in the inbox	Yes
get delivery time and date	Yes
print via IrDA	No
Possibilities of the previously sent message:	
delivery report of the message	Yes
forward the message	Yes
save the message in the Inbox	Yes
know the remaining capacity storage	Yes
print via IrDA	No
Possibilities of the previously received message:	
reply to the sender	Yes (only to the sender, not to all or part of the message recipients)
save the message in the Inbox	Yes

Feature	Support in the T200/202
forward the message	Yes
know the remining capacity storage	Yes
Supported ways for replying to a received SMS:	
via SMS	Yes
via phone call (set up a call to the number contained in the message body)	Yes
via WAP call (go to the WAP address contained in the message body)	Yes
via USSD session	No
Possibility to offer the user the ability of sending an SMS to a list of recipients	Yes, using Phone Book groups
Possibility to write an e-mail address as a recipient adress	No
SMS storage	In the SIM and in the handset.

Instant messaging/Chat

Feature	Support in the T200/202
Support of instant messaging	No
Chat application	Yes, SMS as the radio bearer.

Consumer pack includes:

- 1 Mobile phone T200/T202
- 1 Standard battery BST-24
- 1 Standard charger, CST-13
- 1 User guide.
- 1 Sony Ericsson Service and Support Leaflet.
- 1 SAR leaflet,

1 Accessory leaflet