

White Paper

November 2004

J200



Sony Ericsson

Preface

Purpose of this document

The Sony Ericsson J200 White Paper is designed to give the reader a deeper technical understanding of how the Sony Ericsson J200 is designed, and of how it interacts with other media. This document will make it easier to integrate the J200 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
- Content providers

More information, useful for product, service and application developers, is published at Sony Ericsson Developer World, www.SonyEricsson.com/developer, which contains up-to-date information about technologies, products and tools.

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Online Developer Resources

On www.SonyEricsson.com/developer, developers will find all documentation and tools such as phone White Papers, Developers Guidelines, SDK's and API's etc. The developer web site also contains discussion forums monitored by our Sony Ericsson Developer Support team, a searchable Knowledge Base of support queries and solutions, Tips & Tricks, example code etc. To stay up to date on development issues, register and subscribe to the monthly Sony Ericsson Developer Newsletter.

Sony Ericsson Developer Support

Sony Ericsson offers developers professional technical support services. The service can be purchased from the developer web portal, as part of the Sony Ericsson Core and Core+ membership package or as individual support incidents. There are two levels of support, described below.

The Basic E-mail Developer Support is an annual support service included in the Core membership that provides developers with all the basics to successfully develop world-class applications for Sony Ericsson products. With this support contract, developers get access to Sony Ericsson developer support engineers via e-mail with same-day response, five technical support incidents as well as the ability to purchase more.

The Priority E-mail Developer Support is an annual support service included in the Core+ membership that equips professional developers with everything they need to successfully develop world-class applications for Sony Ericsson products. With this support contract, developers get priority access to Sony Ericsson developer support engineers via e-mail with fast response times and up to 50 technical support incidents.

Document history

Change history

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Product overview

The J200 is the latest member of Sony Ericsson's attractive and affordable range of mobile phones. It features a crisp colour display with 4096 colours making it fun to use. You can personalize the phone with the integrated themes or download new content such as polyphonic ringtones and wallpapers. With GPRS (General Packet Radio Services), the J200 offers a fast and satisfying mobile Internet experience.

The J200 is a triple band 900/1800/1900 product, which will start shipping in Q4 2004.

Key functions and features

The J200 has an innovative interface that enables fast and efficient use. The main menu that provides an overview of all functions and features in the phone, is easily reached by pressing the joystick in standby. The main menu is accessible during an ongoing call, this feature allows multitasking - an air time generator.

Actions in the J200 are always carried out in the most efficient way, and in standby there is a visible status bar at the top of the display. The status bar extends the usage of non-voice features by displaying icons and indicators of ongoing calls.

The user can enjoy the ultimate viewing experience offered by the phone's 4096 full colour display. The display has 128 x 128 pixels and offers maximum information with the least scrolling.



Polyphonic ringtones

Pleasing to the ear, polyphonic ringtones can play up to 40 voices simultaneously. The word "polyphony" means playing with several voices at the same time. Almost all music that we listen to consists of polyphonic melodies.

Ringtones

There are several ways to find a catchy ringtone for the J200. One way is to choose any of the pre-programmed ringtones in the phone. It is also possible to download a ringtone from a WAP site, receive a tune via infrared, or receive it in an EMS message from a friend or a company that sells ringtones. Up to 8 polyphonic ringtones of 30kb can be downloaded. When the phone's memory is full the user must delete content in order to free up space for new content.

Display

The J200 display is an STN LCD (Super Twisted Nematic Liquid Crystal Display) with 4096 colours. It measures 128 x 128 pixels, which is larger than those offered by many other phones on the market. Compared to 256 colour displays, the contouring effect that arises in colour gradients is less visible on 4096 colour displays, resulting in a smoother transition from, for example, a darker to a lighter nuance.

A large colour display makes it funnier to browse content that is stored in your phone, like pictures, themes and wallpapers, and when online, using mobile Internet, you are able to enjoy colourful web pages. Such displays take mobile gaming to a totally new level, making gaming the certain choice when you have some time to spare, for example while travelling or waiting for the bus.

EMS (Enhanced Messaging Service)

Enhanced Messaging Service (EMS) adds a new powerful functionality to the well-known SMS standard. With it, mobile phone users can add life to SMS text messaging in the form of pictures, animations, sound and formatted text. This gives the users new ways to express feelings, moods and personality in SMS messages. Apart from messaging, users will enjoy collecting and swapping pictures and ringtones and other melodies, downloading them from the Internet or editing them directly on the phone.

EMS uses existing SMS infrastructure and industry standards, keeping investments to a minimum for operators and providing a familiar user interface and compatibility with existing phones and with other manufacturers.

Nokia Smart Messaging

The J200 supports Nokia Smart Messaging by allowing the user to receive, store, and use pictures and ringtones included in messages sent from Nokia phones. The max size of a picture is 2016 pixels (72x28). It is also possible to send a Nokia push message.

Internet 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 Internet browser in the J200 is compliant with WAP 1.2.1, including security according to WTLS class 2. It is designed for WML and cannot read ordinary HTML pages, but it is suitable for interaction with services, such as ticket reservation. It is also handy when you want to access text-based information, for example newsreading, timetables, share prices, exchange rates, Internet banking and other interactive services.

GPRS

GPRS uses Internet-style packet based technology. It uses the radio link only for the duration of time that it transfers data. GPRS offers the user the speed needed for satisfactory mobile Internet usability. The J200 supports the GPRS 4+1 standard, which is the fastest GPRS standard to date.

Image editor

The J200 supports Sony Ericsson Image Editor. You can download the software to your PC from www.SonyEricsson.com.

The Image Editor lets you crop, zoom, rotate and adjust colour, contrast and brightness settings for many PC image file formats, and send them via Infrared directly to your phone. Use this fun soft-

ware to create wallpapers for your phone and edit images to send to your friends. Or make perfect shots of your friends for your Picture phonebook - and build up the best-looking set of contacts around!

Infrared

Infrared communication creates a data link between two communications devices through an infrared beam of light. On the J200, this link is used to connect with other phones, like the Sony Ericsson T610, and other hardware supporting the standard. Key benefits of using the J200 with its built-in infrared transceiver are, for example, the true wireless communication and the exchange of ringtones and wallpapers between compatible phones.

Triple band support

Triple band support means that you can use the phone on three types of GSM networks; the J200 can be used on GSM 900, 1800, and 1900 networks.

Co-branding

It is possible for a co-brand inlay to be placed on the front of the phone, in the area below the keypad. Sony Ericsson offers high quality print on the co-brand inlay, with good resistance to external stress.

Settings

Operators can customize many settings in the phone, such as data communication settings, the download links in the menu system, and the handling of long text messages, for example.

Content

Much of the content in the phone can be customized. For example:

- Start-up display
- Polyphonic ringtones
- SMS/EMS templates
- Themes
- Wallpapers

More in-phone functions

Keys to efficiency

The layout of the keys is one of many new and improved elements in the J200, helping the user to find functions and features in the phone quickly and easily. Conveniently and ergonomically grouped together, the Yes and No keys, a joystick, an option key and the “C” key enable the user to navigate, select and perform actions.

Joystick

The J200 has an easy-to-use joystick which allows you to easily navigate the new J200 menu system. When you arrive at the required function in a menu, instead of pressing the Yes key, gently press the centre of the joystick and the selected feature is activated.

Option key

The option key provides the user with a list of options while in a function.

- In standby, press to turn on or off silent mode, activate IR, see the status menu.
- In standby, press and hold for instant WAP-access.
- During an ongoing call, press to control calling functions, for example, *Turn off tones*, *Hold call*, and *Join calls*.
- When writing a text message, press for a list of options, for example to insert an item in the message or to select text format or input language. Another way to access the input language menu when writing a text message, is by pressing and holding the “#” key.

“C” key

The “C” key is used to delete items and to turn sounds on and off.

Themes

The already popular themes in Sony Ericsson mobile phones have been further developed and improved in the J200, enabling the user to personalize the phone with pictures, colours, wallpapers, and the like. The J200 comes with four embedded themes and all their features are displayed in the

large 4096 colour screen, which gives a unique user experience. As a customization, themes can be replaced by the operator.

Wallpapers

The user can have a wallpaper in the display, to bring extra life to the phone when in standby mode. The wallpaper can be one of up to 10 pre-defined, replaceable pictures or an operator defined picture. It is also possible for users to download wallpapers from WAP sites. Up to 14 wallpapers 15 kb can be downloaded. When the phone’s memory is full the user must delete content in order to free up space for new content.

Games

The latest development of mobile phones with large colour displays and polyphonic sounds has taken mobile gaming to new heights. What was once mainly greyscale, dull games with poor sound, is now exciting action games in thousands of colours and with impressive sound effects.

The J200 features popular games for different moods and skills. Examples of such games are:

- Black deal
- Casino wheel
- Deep abyss

In addition to impressive graphics and sounds, the J200 is also equipped with force-feedback functionality, a popular feature of many games that are developed for mobile phones today.

Start-up show

One way to make the J200 more personal is to have a user-defined start-up show. Each time the phone is turned on, an animation or picture, with or without sound, appears in the display. There is one Sony Ericsson-defined show stored in the phone, and it is also possible to have one operator/customer defined show. As with the wallpaper, the user-defined show can use any of the pictures stored in the phone.

Services on the network

The J200 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.

Direct download links

The direct download link is a function designed to encourage downloading of content via WAP to enrich the user experience. Furthermore the download link also tries to influence the user to use WAP-based services and get used to using data oriented services on the network. Direct download links works with both GSM and GPRS.

The *Fun&Games* menu includes a *Download* link, which directs the user to, for example, the Sony Ericsson WAP site, where there are links to Pictures and Sounds, available for download. Please note that this menu is operator, network and subscription dependent.

It is possible for operators to include an additional link with their own URL and generic name for all languages.

T9™ Text Input for quicker messaging

The J200 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. Of course, the J200 also lets you add new words to the word database.

Phonebook

The phonebook is one of the most useful features of mobile phones. The phonebook in the J200 lets you save up to 200 entries. An additional number of entries can be saved on your SIM card. The number depends on what SIM card you are using.

Picture Phonebook - see who's calling!

The J200 lets you assign a picture or an icon stored in the phone to an entry stored in the Phonebook. When that person calls, a picture or an icon of your choice is shown in the display as well as the name. It is also possible to assign a ringtone to an entry in

the phonebook. When that person calls, a particular ringtone is heard, and the name of the person calling is shown in the display.

The pictures used for Caller ID can be:

- Any of the EMS pictures that come with the phone.
- Pictures that have been received via EMS messages.
- Any operator-defined picture stored in *My Pictures*.
- Pictures downloaded via WAP, (for example from www.SonyEricsson.com/fun)

The J200 also supports name and number presentation as well as CLI restriction.

Shortcuts

It is easy to access the phone numbers in the phonebook 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 phonebook and find the first name that starts with that letter. Then you just scroll to find the name you are looking for.

Up-to-date with the calendar

The calendar of the J200 keeps you on the right track. It has four different views: day, week, month and the all tasks view.

Profiles

The profile feature is a group of settings preset to suit a certain environment. The profiles are also related to intelligent accessories such as a desktop charger or a portable handsfree, useful for company integration with call forwarding. Some phone accessories select a profile automatically. For example, when you attach a portable handsfree to your J200, the *Port h-free* profile is chosen. There are seven pre-programmed profiles: *Normal*, *Meeting*, *In car*, *Outdoors*, *Port h-free (portable hands-free)*, *Home*, *Office*.

You cannot create more profiles, but you can change the settings for a profile.

Alarm clock

The J200 has a built-in alarm clock, which can be set to ring at a specific time within 24 hours, or recurrently at a specific time on several days. You

can have both these alarms set at the same time. Note that even if you have set your phone to silent, the alarm signals ring. The alarm clock also rings if the phone is turned off.

Auto time zone

The phone comes with an *Auto time zone* functionality. When this is enabled, you are prompted to update the time when your phone changes network and the time sent out from the network operator differs from the time in your phone. If you press Yes, the time is updated automatically. This functionality is useful while travelling abroad, across different time zones.

Packaging

The J200 is the first Sony Ericsson product to use our new *Entry level* packaging concept. Based upon a more compact box measuring 119 x 109 x 58 mm, this concept offers a small, neat package that helps to promote the smallness and neatness of the product itself. Moreover, the decreased weight and volume results in less pallet space leading to reduced shipping costs and less storage space.



Technologies in detail

Internet services

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 with new opportunities for business, individuals, and service providers.

Using the Internet with J200

Push service

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

Provide settings

Using text 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 can 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 J200 to allow the contents to be automatically optimized for the phone.

Several bearer types

The J200 accesses WAP over a standard GSM Data connection as well as over a GPRS connection (network-dependent services.)

Option key while browsing

During browsing, a press on the option key gives the user immediate access to an option menu while using WAP services, similar to right-clicking the mouse 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.

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 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 J200 holds up to five 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 easily switch between corporate services and WAP services on the Internet, simply by switching WAP profile.

Connection-orientated WAP

The J200 supports connection-oriented WAP over GSM as well as GPRS data. In general, this means that the connection between the WAP browser in the phone and the WAP Gateway is maintained in a session with error recovery services. This provides high reliability with a reduced risk of errors in transmission, and improves efficiency in WAP browsing.

Bearer type characteristics

The J200 accesses WAP services over IP. IP can be provided either over GSM Data or GPRS, depending on network services.

Typical differences that distinguish the bearer types are listed below.

GSM data access

- Circuit connection of data calls, means that the phone is connected during the entire WAP session.
- Pricing is comparable to that of data calls in the network.

GPRS access

- The connection is maintained “constantly”, with data transmitted in packets, and transmission capacity of the application in use on an as-needed basis.
- GPRS offers higher transmission speed than with GSM Data or SMS access.
- Pricing of GPRS can be dependent on the actual use of bandwidth, which means the user is charged for the volume of data transmitted, rather than the duration of the connection.
- While 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, info services, push initiations.

Security using WAP

The J200 supports WAP 1.2.1, a version of the Wireless Application Protocol that includes WTLS class 2.

While 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 secure connections, certificates have to be saved in the phone. The J200 comes with a number of pre-installed WAP certificates, so called *trusted certificates*.

WTLS class 2 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.

Configuration of WAP settings

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

A manual configuration is made using the menu system in the phone. This is described in the user guide.

To simplify configuration of 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.

- 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.
- 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 the 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.

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. Instant messaging and chat.
- News, sport results, weather forecasts, financial information (such as stock quotes).
- Fill up a smart card with e-cash.
- Interactive games, for example, play poker with a friend.

In the J200, 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 J200, 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 J200 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.

WAP with GPRS

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 J200, the mobile Internet is always with you. The default address for non-customized products is the address to the Sony Ericsson WAP site.

This address can be changed by the user, who may also add his or her own bookmarks to favourite WAP sites. Operators can take advantage of the customization possibilities offered by Sony Ericsson, and have the address of their own WAP site assigned instead.

Data connections

In order to browse via WAP, the user must have a data communication connection configured in the phone. This connection contains specific settings and parameters to connect to an appropriate server. Several data connections can be saved in the J200. To make it easier for the user, data connections can be provided by the operator via OTA provisioning. For more information about configuration of WAP settings, see “Configuration of WAP settings” on page 14.

- Bearer type for WAP and corresponding bearer-specific parameters may be selected.
- Data connections contain the necessary settings for the Internet access point, including modem pool phone number or IP address, user ID and password.

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.
- Individual data settings for working with WAP can be stored and activated as needed.
- Data connections can be used for both GSM Data and GPRS connection settings.

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.

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 creation of innovative services, makes it possible to address new and previously inaccessible market segments and increases 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 banking and financial services.

Using GPRS in the J200

Instead of occupying an entire voice channel for the duration of a data session, the J200 sends/receives data in small packets, as needed, much like IP on the Internet. Because of this, the J200 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 – CS1, CS2, CS3 and CS4 – that allow data speeds of 9,050 bps, 13,400 bps, 15,600 bps and max 21,400 bps per slot, respectively. The J200 works with all four coding schemes, but data speed naturally varies according to network configuration. At the moment, CS-3 and CS-4 are not supported in any live network, i.e, present speed is limited to 53,600 bps.

The GSM system limits the ability to use all eight time slots, so the J200 uses up to four time slots for receiving data, and one slot for transmitting. This means the speed for receiving data is up to 85,600 bps and up to 21,400 bps for sending data.

Using GPRS with the J200 has several advantages, for example:

- Constant connection
- High speed

- Automatic access to increased bandwidth while downloading large files such as pictures and sounds
- Cost efficiency
- Use of transmission capacity only when needed to reduce cost
- WAP over GPRS
- Access to Internet via WAP at high speed and with a constant connection.
- Provide settings
- Receive GPRS configuration settings from the provider over the air, OTA, making manual configuration unnecessary.
- User controlled settings
- Take advantage of full user control in the data connections menu, establishing multiple descriptions and accessing advanced settings for GPRS.

Interruption of GPRS data account

When the user is using WAP via GPRS on the J200, the GPRS connection is automatically disconnected when the user answers an incoming call. However, when the call has ended, the user is given the possibility to resume the WAP session.

SIM application toolkit

The SIM Application Toolkit (SIM AT) is a smart card-centric method of deploying programs that applies 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 while 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 J200, a separate menu is available for functions residing on the SIM card. These can include submenus for controlling functions, and also functions that allow the phone to initiate calls, send data, and display information to the user.

Digital Rights Management

Digital Rights Management (DRM) is a technology that enables secure distribution, promotion and sale of Digital Media.

The J200 includes implementation of EMS ODI (Object Distribution Indicator) limited forwarding (Sony Ericsson proprietary forward lock for EMS content).

While downloading content via WAP, the J200 includes support for OMA (Open Mobile Alliance) defined DRM solution forward lock, meaning that content is packaged in a DRM package and delivered to the device. The support of forward lock means that it is not possible to forward the downloaded content to any other device. Forward lock is useful for all types of content that the provider wants to charge for.

Related information such as the “OMA-Download-DRM, v1.0” specification can be found at www.openmobilealliance.org.

Write protection and copyright

Operators may choose to have some of the customized content in the phone write protected, so that it cannot be deleted from the phone.

There is also the option to copyright customized content in the phone, such as pictures and sounds. A copyrighted picture or sound cannot be redistributed via IR or EMS, for example, and in the user interface, the “Send” option for the item is greyed out.

Online Developer Resources

On www.SonyEricsson.com/developer, developers will find all documentation and tools such as phone White Papers, Developers Guidelines, SDK's and API's etc. The developer Web site also contains discussion forums monitored by our Sony Ericsson

Developer Support team, a searchable Knowledge Base of support queries and solutions, Tips & Tricks, example code etc. To stay up to date on development issues, register and subscribe to the monthly Sony Ericsson Developer Newsletter.

Sony Ericsson Developer Support

Sony Ericsson offers developers professional technical support services. The service can be purchased from the developer Web portal, as part of the Sony Ericsson Core and Core+ membership package or as individual support incidents. There are two levels of support, described below:

- The Basic E-mail Developer Support is an annual support service included in the Core membership that provides developers with all the basics to successfully develop world-class applications for Sony Ericsson products. With this support contract, developers get access to Sony Ericsson developer support engineers via e-mail with same-day response, five technical support incidents as well as the ability to purchase more.
- The Priority E-mail Developer Support is an annual support service included in the Core+ membership that equips professional developers with everything they need to successfully develop world-class applications for Sony Ericsson products. With this support contract, developers get priority access to Sony Ericsson developer support engineers via e-mail with fast response times and up to 50 technical support incidents.

Infrared transceiver

Infrared communication creates a data link between two communications devices through an infrared beam of light. On the J200, this link is used to connect with other phones (for example, the Sony Ericsson T610), and other hardware supporting the standard. The Infrared Data Association (IrDA) has set the hardware and software standards that form the infrared communication links. The J200 complies with the IrDA 1.2 specification, which defines how mobile telephony and communication devices can exchange information.

Connection via infrared

IrDA is a point-to-point communication link between two infrared ports. The infrared beam has to be directed towards the target infrared port and as long as the two infrared ports are within sight and range, the devices exchange data. For optimal performance, place the J200 within 20-30 cm and in direct line with the infrared port on the other device. An advantage of the proximity of devices is reduced risk of transmitting data to other devices nearby. An infrared link is a serial connection,

which means that data bits are sent one after another in a long stream. The IrDA-SIR Data Link Standard is a protocol that makes transmission of data faultless. The standard provides a high level of noise immunity, which means that the connection should not be affected by standard fluorescent light and electromagnetic fields – making it suitable for the modern office environment. However strong sunlight may affect the connection.

Infrared transceiver technical data

IrDA standard	1.2
Data rates	9.6 to 115.2 kbps
Maximum distance to receiver	30 cm
Supported protocols	OBEX, IrLAP, IrTinyTP, IrLMP

Messaging

Today a large number of text messages are sent worldwide between mobile phones. 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 exist-

ing other messaging services, such as Enhanced Messaging Service (EMS). The added value in SMS messaging will create new revenue that can be shared between the network operators, the application aggregators and the content providers.

EMS (Enhanced Messaging Service)

EMS uses existing SMS infrastructure and industry standards, keeping investments to a minimum for operators and providing a familiar user interface and compatibility with existing phones.

Sounds and melodies

EMS gives the user the ability to send and receive melodies. These melodies can be pre-defined sounds, sounds downloaded from the Internet, sounds received in SMS messages or sounds composed by the user on the phone keypad or a PC.

Several sounds and melodies can be inserted in one message, and they can be combined with pictures.

Pictures, animations and formatted text

Phones supporting EMS include a set of pre-defined animations for inserting in SMS messages. New pictures and animations are downloaded from the Internet or received in SMS messages. Several pictures can be inserted in one message, and they can be combined with sounds and melodies. The users can format text in messages with different styles and sizes.

Concatenated messages (long SMS)

A part of the EMS standard is the support for concatenated messages, which means that the phone is able to automatically combine several messages both when creating and receiving EMS. This is useful to be able to build and display messages with rich content since the amount of information in each SMS is limited by the SMS standards.

Compatible with SMS standards

Users have found EMS as easy to use as SMS. In January 2001, 15 billion SMS messages were sent every month worldwide. Roughly 80% of this traffic was user-to-user i.e. mobile phone users sending short messages to each other using the keypad of the phone to enter text. The remaining 20% consisted of downloads and notifications of different kinds.

Huge business potential

Network operators can now enhance their services and attract more customers by offering pictures, animations, ringtones and melodies for download at their portals. Operators can charge more per EMS message since it contains more data. Thereby EMS adds more value to the operators and to the end users.

Standards

The Enhanced Messaging Service (EMS) standard has evolved and is now stable and complete as a part of the 3rd Generation Partnership Project (3GPP) technical specification. Most major mobile phone manufacturers and most operators are actively contributing to the 3GPP standards.

EMS dynamics

An EMS message can be sent to a mobile phone that does not support EMS, or only supports part of EMS. All the EMS elements - text formatting,

pictures, animations and sounds - are located in the message header. The EMS contents are ignored by a receiving phone that does not support the standard. Only the text message will be displayed to the receiver. This is true consumer-friendly standardization.

Examples of EMS contents and applications

A wide range of contents, applications and services may be developed. Below is a list of examples and areas where messaging can be enhanced with EMS.

User-to-user message

Messages usually originating from the keypad of a mobile phone can include pictures, animations, melodies, formatted text with EMS.

Voice and e-mail notifications

Notifying mobile phone users that they have new voice or fax mail messages waiting - including icons or melodies with EMS.

Unified messaging

The user typically receives a short message notifying them that they have a new message in their unified messaging box, with icons or formatted text further enhancing the message.

Internet e-mail alerts

An Internet e-mail alert is provided in the form of a short message that typically details the sender of the e-mail, the subject field and first few words of the e-mail message, and in this case formatted text is excellent to identify message elements.

Ringtones

Downloading ringtones from the Internet.

News & commercials

World news illustrated, sports scores and news headlines, finance and stock market news with diagrams and tickers, commercial product promotions, weather reports with maps, tunes from TV commercials as ringtones.

Info & entertainment

Ringtones, e-greetings, football club logo, joke-of-the-day illustrated by pictures or sound, horoscopes, movie-related animation or theme song,

TV show promotions, music artist promotions, lottery results, food and drink pictures and recipes, mood-related pictures.

Corporate

Flight schedules, pre-installed corporate logos, map snippets and travel info, company branded icons and ring tones, corporate e-mail notifications, affinity programmes where companies notify customers of product updates, banks notifying cus-

tomers about new services and interest rates, call centres providing answers to questions about a product, vehicle positioning combining EMS with Global Positioning System (GPS) position information, job dispatch with delivery addresses for sales or courier package delivery, using EMS in a retail environment for credit card authorization, remote monitoring of machines for service and maintenance purposes.

Polyphonic ringtones

Early Ericsson mobile phones supported a proprietary non-polyphonic format called eMelody. Owing to the musical limitations of eMelody, and the popularity of creating, sending, and downloading ring melodies, Ericsson and Sony Ericsson, together with other manufacturers created the more advanced non-polyphonic sound format – iMelody.

The development of mobile phones did not stop with iMelodies, and today, many Sony Ericsson phones (the J200 for example), come with built-in support for polyphonic sounds and ringtones, using the MIDI and SMAF formats.

MIDI – Musical Instrument Digital Interface – is a specification for a communications protocol principally used to control electronic musical instruments. MIDI is today a well known standard used by musicians, composers, and arrangers.

A MIDI signal or file does not contain any music. It contains text information as binary data about what, when, and how an instrument or melody is played. When this data reaches a synthesizer, the synthesizer translates it into music.

The development from the iMelody format to the MIDI format is a revolution in the sound quality. The MIDI files are small, and perfect for mobile devices, which have limited storage capacity.

Protocol

The J200 has a hardware synthesizer chip, built into the mobile phone. The software controls the MIDI files, and makes sure they fit into the hardware chip. It is possible to modify the dynamics of the sound.

The J200 supports the MIDI 1.0 detailed specification. Please visit www.midi.com for more information.

Also, the SMF0, SMF1 and SMAF formats are supported. SMAF, which is a multimedia data format invented by the YAMAHA® CORPORATION, stands for "Synthetic music Mobile Application

Format". The SMAF specification defines a format for multimedia files which can be played back on handheld portable devices. Please visit smaf-yamaha.com for more information.

Rich musical ringtones – 40 voices

The human ear can perceive sounds from approximately 20 Hz up to 20 kHz. In most GSM mobile phones, the speech sound range is from 300 Hz to 3400 Hz, which is good enough for speaking, but quite poor for music. The J200 can handle up to more than 20 kHz, which means excellent sound quality.

The J200 has a dedicated speaker for ringtones and sounds, to ensure the best possible sound quality. This speaker is situated on the side of the phone, ensuring that no discomfort is felt if a second call is received during an ongoing call.

The quality of the sound heard from the speakers depends on many different things, for example on the synthesizer, the amplifier, or the speakers. An important factor for sound quality is the number of voices. The human ear cannot separate each voice if the number of voices increases above 16 or so, because then the voices merge together. But the nuances in music increase, and the music is experienced as more sophisticated if the number of voices increases. Many modern sound modules in synthesizers used by musicians have 16, 24 or 32 note polyphony. The number of voices used in the J200 is 40, which gives rich musical ringtones.

Combined wavetable and FM sound synthesis

Sony Ericsson has chosen to implement a combination of Wavetable (8 voices) and FM synthesis (32 voices), which consists of sampled real instruments (mainly percussion sounds) and generated synthetic tones.



In-phone functions and features

*Subscription and/or network-dependent

A	Alarm clock with snooze function	Yes
B	Background light	Yes
	Bookmarks (URL memory)	Yes, 25
C	Calculator	Yes
	Calendar	Yes, (day, week, month and all tasks 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	No
	Calling Line Identification (CLI)	Yes, with name or number, personal ring-tone and pictures
	Clock	Yes
	Closed User Groups (CUG)*	10
	Conference calls*	Yes
	Copyright protection	Yes, possible with copyright protection via EMS and DRM according to OMA level 1
CSD, Circuit Switched Data*	Yes	
D	Date	Yes
	Display	Yes, 4096 colours, 128 x 128 pixels
E	EMS (Enhanced Messaging Service)*	Yes
	EMS, pre-defined pictures/icons	20
	EMS, animations	Yes, 15 pre-installed
	EMS, text formatting	Yes. Size, style and alignment. Not applicable to Chinese characters
	EMS, sounds	10

F	Fixed Dialling Numbers (FDN)*	Yes
G	Games	Yes, 3 pre-installed: Black deal, Casino wheel, Deep abyss
	GPRS (General Packet Radio Service)	Yes, 4+1
I	Infrared	Yes, IrMC 1.2
	Input methods	T9™ Text Input, multitap alphabetic (GSM standard), Hindi, Bopomofo, Pinyin (simplified) and Stroke
K	Keypad lock	Yes
N	Nokia Smart Messaging	Yes
O	Option key	Yes
P	Phonebook	Up to 200 entries in phone + SIM
	Phonebook groups	10
	Phone lock	Yes
	Picture Phonebook	Yes
	Profiles	Yes, 7
R	Re-dialling, automatic	Yes
	Ringtones, monophonic	Yes, 10 predefined + 10 user editable
	Ringtones, polyhonic	Yes
	Ringtones, exchange	Yes, monophonic via EMS and infrared. Polyphonic via infrared only.
	Joystick	Yes
S	Shortcuts	Yes
	SIM Application Toolkit*	Yes
	SIM card lock	Yes
	Sleep mode	Yes
	SMS (Short Message Service)*	Yes
	SMS, long messages (a.k.a. concatenated SMS)*	Yes, up to 10 linked messages of 160 characters each
	SMS Cell Broadcast*	Yes
	SMS counter	Yes
	SMS templates	Yes, 10 pre-defined + 10 user-defined
	Speech coding	Enhanced, Full and Half rate coding
	Speed dialling	Yes
	Start-up show	Yes

	Status menu	Yes
	Stopwatch	Yes
T	Timer	Yes
V	Vibrating alert	Yes
W	Wallpaper	Yes, 10 + 14 can be downloaded
	WAP browser	Yes, WAP 1.2.1 browser
	WTLS for added WAP security*	Yes, WTLS class 2

Network-dependent features

SMS and EMS messaging

The J200 is capable of sending and receiving SMS, EMS messages and concatenated 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 storage and forwarding centre.

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.

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.

Facts and figures

Technical specifications

General

Product name	J200
SAR measurements: figures	10 g Cenelec standard: 0,72 W/kg 1 g according to IEEE: 0,87 W/kg
System	GSM phase 2 recommendations. GSM 900, GSM 1800 (3GPP TS 51.010-1) and GSM 1900
Speech coding	FR, EFR, HR supported where available, for high speech quality.
SIM card	Small plug-in card, 3V type
Type numbers	AAB-1021021-BV, AAB-1021021-CN

Talk and standby times

Li-Polymer, 700 mAh	Talk time	Up to 4,5 hours
	Standby time	Up to 200 hours

Exterior description

Size	101 x 43,3 x 18,8 mm
Weight with battery	74 g
Display size	128 pixels wide, 128 pixels high
Colour display, main display	4096 colours
Text size	Medium
Text rows	7 Latin 7 Chinese
Colour	Frosty white Midnight blue
Keypad	Keyboard supporting 16 keys plus joystick (4 directions and centre select). 8 different keypads: Latin, Thai, Hindi, Chinese, Bopomofo.
Speaker	Two speakers supporting two modes: receiver and ringer (polyphonic).

Ambient temperatures

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

Standard language configurations

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

Standard language config.	MMI	T9™ Text Input + other input methods	Keypad	Markets	Manual
1	English, Albanian, Arabic, Croatian, Czech, Greek, Hebrew, Serbian	English, Czech, Greek, Croatian, Serbian), Multitap, GDA (abc...), Cyrillic, Greek, Arabic, Hebrew, Numeric, URL	Latin Arabic Hebrew	Southern Africa, Israel, Czech Republic, Croatia, Bosnia Herzegovina, Serbia, Greece, Albania, Australia, New Zealand	HR, CS, SR, EN, IW, EL, SQ, FR, PT
3	English, Arabic, Farsi, French, Turkish	English, French, Turkish, Multitap, GDA (abc...), Cyrillic, Arabic, Numeric, URL	Latin Arabic Hindi	Northern Africa, Turkey, Iran, Lebanon, Saudi Arabia, Bangladesh, India, Pakistan, UAE, Bahrain, Morocco, Kenya, Nigeria	FR, EN, TR, FA, AR
6	American English, Canadian French, Brazilian Portuguese, LA Spanish	English, French, Portuguese, Spanish), Multitap, GDA (abc...), Numeric, URL	Latin	Brazil, Venezuela, Jamaica, El Salvador, Paraguay, Dominican Republic	PB, AE, XL
Asian	English, Malay, Tagalog, Vietnamese, Thai, Indonesian	English, Thai, Multitap, GDA (abc...), Thai, Numeric, URL	Latin Thai	Philippines, Indonesia, Thailand, Singapore, Malaysia, Vietnam, Sri Lanka	EN, IN, TH

Standard language config.	MMI	T9™ Text Input + other input methods	Keypad	Markets	Manual
Chinese	Chinese Simplified, English	English, Stroke, Pinyin (simplified) + Multitap, Numeric	Latin Stroke	Singapore, Malaysia	EN
	Chinese Simplified, English	English, Stroke, Pinyin (simplified) + Multitap, Numeric	Latin Stroke	China Mainland	ZS
	Chinese Traditional, English	English, Stroke, Pinyin (simplified) + Multitap, Numeric	Latin Stroke	Hong Kong	ZH
	Chinese Traditional, English	English, Stroke, Pinyin (Traditional) + Multitap, Numeric	Latin Stroke	Hong Kong	ZH
	Chinese Traditional, English	English, Stroke, Bopomofo + Multitap, Numeric	Latin Stroke Bopomofo	Taiwan	ZT

The user interface of the J200 is available in 22 languages:

Albanian, American English, Arabic, Brazilian Portuguese, Canadian French, Chinese Simplified, Chinese Traditional, Croatian, Czech, English, Farsi, French, Greek, Hebrew, Indonesian, LA Spanish, Malay, Serbian, Tagalong, Thai, Turkish, Vietnamese.

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: 1850 - 1910 RX: 1930 - 1990
Channel spacing	200 kHz	200 kHz	200 kHz
Number of channels	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 MHz	95 MHz	80MHz
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)	30 dBm Class 1 (1W peak)
Transmitter Output impedance	50 Ω	50 Ω	50 Ω

Dimension	GSM 900	GSM 1800	GSM 1900
Transmitter Spurious emission	Better than -36 dBm up to 1 GHz Better than -30 dBm over 1 GHz	Better than -36 dBm up to 1 GHz Better than -30 dBm over 1 GHz	Better than -36 dBm up to 1 GHz Better than -30 dBm over 1 GHz
Receiver RF level	Better than – 102 dBm	Better than – 102 dBm	Better than – 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%	< 2.4%

WAP browser technical data

Feature	Support in the J200 WAP browser
Back to previous page	Yes
Bearer type	Circuit switched CSD analogue and ISDN, packet switched GPRS.
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, 5 kb
Character sets *	UTF8 (Default), US-ASCII, Latin1, UCS2
Clear cache	Yes
Display	High resolution 4096 colour display
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	JPEG, WBMP, GIF (non-interlaced), 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 and 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)

Feature	Support in the J200 WAP browser
WAP profiles	5 WAP profiles, each with its own settings
WTLS (security)	Yes, WTLS Class 1 - Encryption WTLS Class 2 - Encryption + Server Authentication. Root Certificates needed in phone

WAP operator technical data

Feature	Support for WAP in the J200
WAP Browser	
Version	1,21 baseline
WAP Provisioning	
Total Parameter sets	5
Parameter set list	Name Startpage IP settings: CSD phone no., CSD Data rate, CSD dial type GPRS APN, password request, allow calls, authentication, quality of services IP address UserId and password Security on/off Show images on/off
Manual selection	Yes, between Analog (V32) and Digital (V110)
Parameter sets include	WAP/CSD, WAP/GPRS (different sets)
Factory pre-configuration	WAP/CSD (possibility to lock a setting), WAP/GPRS
OTA	WAP/CSD, WAP/GPRS configuration possible
Simultaneous OTA	WAP/CSD, WAP/GPRS configuration possible
Single OTA	one of WAP/CSD or WAP/GPRS configuration is possible
Bookmarks	Not empty by default
URL format	Underlined
Security mechanism	
OTA provisioning (if empty)	Operator verification through a code, included in the OTA data. This code is shown to the user who can choose installation or not.
Interface (if empty)	An Install question is asked with the code, if available. The user has to choose if a new WAP profile shall be created or an existing profile shall be replaced.
Re-provisioning (Set 1 filled)	As above
Interface (Set 1 filled)	As above

Feature	Support for WAP in the J200
Carrier reset/provisioning	Yes, but not if the set is pre-configured in the factory and locked.
Applicative provisioning	
Preferred bearer customization	Yes
Other applications/features	No
Technologies	
Openwave OTA	No
Provisioning bearer	SMS
Parameter sets available	5
Parameter sets for OTA modification	5
PUSH	
Content types	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	No
Session Initiation Application (SIA)	No
Man Machine Interface	
SI/content retrieval postponing	Yes
SI menu structure accessibility	WAP services, Push inbox.
SL reception warning	The user can make a choice if a dialogue is wanted or not before loading the SL. WAP services/options/common/Push access/prompt.
SIA reception warning	No
Cache size limitations	If the inbox is full and a new push is received, the oldest push in the inbox will be discarded.
Number of push messages	Depending on the size of the push messages. Around 20 push messages with a size of 250 bytes can be stored.
Push de-activate	Yes. WAP services/options/common/Push access/Off.
Dynamic push menu changes	No. There are no changes in the menus when activating/deactivating push.
Security	
Mechanisms for push	None
Trust with PPG	Only pre-defined certificates.
WSP push sessions	1
Denial of service/spoofing	Yes

Feature	Support for WAP in the J200
User agent profile	Yes
UA profile content sent at beginning of WSP session	No
URL sent pointing to the UA profile at the beginning of WSP session	Yes
URL location	On the manufacturer web site.
WTAI	Yes
WTA Make Call	Yes
WTA Send DTMF	No
WTA Add Phonebook	Yes
Other WTA/WTAI	No
DOWNLOAD	
WAP solutions	
SAR/WSP/HTTP GET solution to download content over WAP	Yes
Download Fun from Openwave	No
Other download content over WAP	Yes. Content limited to 2 kb is downloaded without using SAR.
Features	
Download application/product memory check	Yes
Downloaded object solution	Yes. The user is asked if the content is to be saved.
DRM download support	Yes, level 1.
UAP indication for downloading	Yes
Other features	Yes. Store, delete, forward, use, manage.
Object formats	
Ringtones	audio/iMelody, other/eMelody, vMel, MIDI, SMAF.
Wallpapers	Image/WBMP, GIF, JPG.
Pictures	Image/WBMP, GIF, JPG.
Audio files	used: i-Melody, MIDI, SMF, SMAF. not used: audio/MPEG4, MP3, WAV
GRAPHICAL USER INTERFACE	
Man Machine Interface	
Soft keys	None

Feature	Support for WAP in the J200
Separate/dedicated back or erase keys	No
Screen backlight on when browsing	Yes
Predictive writing for WAP sessions	Yes
"http://" string displayed automatically when entering URLs	Not displayed but the "http://" is added automatically to the URL.
Elements	
Number of display lines for a WAP connection	4 to 7 plus Title, depending on the selected font size.
Pop-up menus	Yes. Single select list to conserve space.
Radio buttons	Yes. Single select list to conserve space.
Check boxes	Yes. Boolean selection.
Push buttons	No
Horizontal rules	Yes. Separate sections of WML card.

GPRS technical data

Feature	Support in the J200
Compatible GPRS and SMG specifications	ETSI R97 SMG 31 bis
Data rates	Multi slot class 8 supported (4+1) CS-1, CS-2, CS-3, CS-4 9,050 bps, 13,400 bps, 15,600 bps, 21,400 bps supported (network-dependent)
Indicator of attachment to the GPRS service	Yes, an icon in the top left corner, a filled triangle if attached 
Indicator of PDP context activation	Yes, an icon on the right side. Animated globe
Data volume counter	The Data volume counter details the volume of data exchanged in bytes for the up/down link for last call for each PDP context. The Total data counter details the sum of all GPRS sessions (i.e. not the sum of total data received + sent during the last GPRS session.) The total data counter can be reset by the user.
Medium Access Modes	Dynamic allocation
Support of Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III

Feature	Support in the J200
Support of GPRS/CS combined procedures	Yes
Network control mode	NC0
Support of access in 2 phases	Yes
Support of PRACH on 11 bits	Yes
Support of GPRS re-selection C31/C32	Yes
Support of static and dynamic addressing	Yes
Support of power control Uplink and Downlink	Uplink = yes, Downlink is a network feature
Support of ciphering algorithms	GEA1
Support of compression algorithms	No
Support of the QoS modification procedure	Yes, when initiated by the network (not by the handset)
Interfaces to external devices supported by the phone	IrDA, Datarate = SIR & MIR, max 115.2 kbps
Downlink data rate	Up to 85,600 bps for packet data communication, using 4 time slots in coding scheme CS-4
Uplink data rate	Up to 21,400 bps for packet data communication, using 1 time slot in coding scheme CS-4
Mode of operation	Class B and Class C modes of operation supported. It is possible for the user to choose if the Circuit Switched services should be favoured.
R Reference point	Physical layer: PPP is supported as L2 layer in the R reference point Authentication algorithms PAP, CHAP supported
IP connectivity	PDP type IP is supported IP termination in mobile
Application	WAP over GPRS supported (UDP/IP and GPRS-SMS) SMS over GPRS (SMS-MT, SMS-MO) supported
QoS	QoS negotiation supported. Default requested QoS sent by the handset at PDP context activation is reliability Class 3. Peak/Mean/Delay/Precedence Class: subscribed. Precedence class supported (1,2,3) Reliability class 1-5 supported Delay classes supported (1,2,3,4) Mean and peak throughput rate limited by multi slot class 4 and CS-4

Feature	Support in the J200
PDP context	10 PDP context descriptions stored in mobile PDP context description is edited via application in mobile 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

Cell broadcast service

Feature	Support in the J200
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 CBMI from 0 to 65534	Yes
File support	CBMI
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 clearly a message with a DCS "language unspecified" whatever be the language 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)	No
Support of multi-page CB messages	Yes

Short message service (SMS)

Feature	Support in the J200
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 (T9)
Message creation methods support	Predictive writing
Enhanced predictive writing method by:	
copy, cut and paste words	No
teaching of predictive words that are not in the predictive dictionary	Yes

Feature	Support in the J200
Possibilities when creating a message:	
save the message in a “unsent items” folder	Yes
save a sent message in a “sent items” folder	Yes
insert a line in the message	No
assign a validity period to the message	Yes
print via IrDA	No
use predefined templates	Yes
Possibilities while 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 for previously sent message:	
delivery report of the message	Yes
forward the message	Yes
print via IrDA	No
Possibilities for 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
forward the message	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
Enabling SMS to a list of recipients	Yes, using Phonebook groups
Possibility to write an e-mail address as a recipient address	No
SMS storage	In the SIM and in the phone.

Enhanced message service (EMS)

Feature	Support in the J200
Level of compliance supported by the mobile handset regarding the specifications described in release 99.	Enhanced Messaging Service (EMS) according to the standard 3GPP TS 23.040 v4.2.0, with the addition of the ODI feature from 3GPP TS 23.040 v5.0.0.
Number of messages that the mobile handset is able to handle to generate a concatenated message	10
Storage capacity	Up to 100 messages in the phone. The total storage capacity depends on the storage space of the SIM.
Outgoing messages	It is possible to choose whether to send the message or not after writing it.
Incoming messages	<ul style="list-style-type: none"> • A pre-defined signal is heard once all parts of the message have been received or when a timeout occurs. • It is possible to re-use the content of an EMS message. Sounds, pictures, text formatting, can be inserted in a new message, if the object is not protected using ODI.
Concatenated messages	A receipt is received in the mobile handset when all parts of a concatenated message have been delivered.
Attachments	It is possible to attach pictures, animations and sounds to an EMS message.
Sounds	Chimes high, chimes low, ding, tada, notify, drum, claps, fanfare, chords high, chords low.
I-melody	Yes, version 1.2.
Melodies	<p>It is possible to...</p> <ul style="list-style-type: none"> • edit and create melodies by using the phone keypad. • send and receive melodies via EMS. • download melodies and commercial tunes from Web/WAP portals. • create melodies on Web/WAP portals.
WBMP	Yes
Picture sizes	16x16 mm, 32x32 mm, variable size receipts in black and white.
Pictures	<p>It is possible to...</p> <ul style="list-style-type: none"> • send and receive pictures via EMS. • receive pictures in enhanced messages originated by service providers.

Feature	Support in the J200
Animations	The mobile handset supports the following animations: I am ironic, I am glad, I am sceptic, I am sad, WOW!, I am crying. Plus the other 9 defined in 23.040 v4.3.0. It is possible to... <ul style="list-style-type: none"> send and receive colour animations.
TP-PID field value given by the mobile handset before sending an EMS message	0x00

Tone and percussion maps in the J200

The J200 has a tone bank of 128 (0-127) instrument. The instruments are complemented by 47 percussion sounds, see “Percussion map” on page 41.

Tone map

Pch#	Instrument	Param. type	Pch#	Instrument	Param. type
0	Acoustic Grand Piano	FM	64	Soprano sax	FM
1	Bright Acoustic Piano	FM	65	Alto Sax	FM
2	Electric Grand Piano	FM	66	Tenor Sax	FM
3	Honky-tonk Piano	FM	67	Baritone Sax	FM
4	Electric Piano 1	FM	68	Oboe	FM
5	Electric Piano 2	FM	69	English Horn	FM
6	Harpsichord	FM	70	Bassoon	FM
7	Clavi	FM	71	Clarinet	FM
8	Celesta	FM	72	Piccolo	FM
9	Glockenspiel	FM	73	Flute	FM
10	Music Box	FM	74	Recorder	FM
11	Vibraphone	FM	75	Pan Flute	FM
12	Marimba	FM	76	Blown Bottle	FM
13	Xylophone	FM	77	Shakuhachi	FM
14	Tubular Bells	FM	78	Whistle	FM
15	Dulcimer	FM	79	Ocarina	FM
16	Drawbar Organ	FM	80	Lead 1 (square)	FM
17	Percussive Organ	FM	81	Lead 2 (sawtooth)	FM

Pch#	Instrument	Param. type	Pch#	Instrument	Param. type
18	Rock Organ	FM	82	Lead 3 (calliope)	FM
19	Church Organ	FM	83	Lead 4 (chiff)	FM
20	Reed Organ	FM	84	Lead 5 (charang)	FM
21	Accordion	FM	85	Lead 6 (voice)	FM
22	Harmonica	FM	86	Lead 7 (fifths)	FM
23	Tango Accordion	FM	87	Lead 8 (bass + lead)	FM
24	Acoustic Guitar (nylon)	FM	88	Pad 1 (new age)	FM
25	Acoustic guitar (steel)	FM	89	Pad 2 (warm)	FM
26	Electric Guitar (Jazz)	FM	90	Pad 3 (polysynth)	FM
27	Electric Guitar (clean)	FM	91	Pad 4 (choir)	FM
28	Electric Guitar (muted)	FM	92	Pad 5 (bowed)	FM
29	Overdriven Guitar	FM	93	Pad 6 (metallic)	FM
30	Distortion Guitar	FM	94	Pad 7 (halo)	FM
31	Guitar Harmonics	FM	95	Pad 8 (sweep)	FM
32	Acoustic Bass	FM	96	Fx1 (rain)	FM
33	Electric Bass (finger)	FM	97	Fx2 (soundtrack)	FM
34	Electric Bass (pick)	FM	98	Fx3 (crystal)	FM
35	Fretless Bass	FM	99	Fx4 (atmosphere)	FM
36	Slap Bass 1	FM	100	Fx5 (brightness)	FM
37	Slap Bass 2	FM	101	Fx6 (goblins)	FM
38	Synth Bass 1	FM	102	Fx7 (echoes)	FM
39	Synth Bass 2	FM	103	Fx8 (sci-fi)	FM
40	Violin	FM	104	Sitar	FM
41	Viola	FM	105	Banjo	FM
42	Cello	FM	106	Shamisen	FM
43	Contrabass	FM	107	Koto	FM
44	Tremolo Strings	FM	108	Kalimba	FM
45	Pizziano Strings	FM	109	Bag pipe	FM
46	Orchestral Harp	FM	110	Fiddle	FM
47	Timpani	FM	111	Shanai	FM
48	String Ensemble 1	FM	112	Tinkle Bell	FM

Pch#	Instrument	Param. type	Pch#	Instrument	Param. type
49	String Ensemble 2	FM	113	Agogo	FM
50	Synth String 1	FM	114	Steel Drums	FM
51	Synth String 2	FM	115	Woodblock	FM
52	Choir Aahs	FM	116	Taiko Drum	FM
53	Voice Oohs	FM	117	Melodic Tom	FM
54	Synth Voice	FM	118	Synth Drum	FM
55	Orchestra Hit	FM	119	Reverse Cymbal	FM
56	Trumpet	FM	120	Guitar Fret Noise	FM
57	Trombone	FM	121	Breath Noise	FM
58	Tuba	FM	122	Seashore	FM
59	Muted Trumpet	FM	123	Bird Tweet	FM
60	French Horn	FM	124	Telephone Ring	FM
61	Brass Section	FM	125	Helicopter	FM
62	Synth Brass 1	FM	126	Applause	FM
63	Synth Brass 2	FM	127	Gunshot	FM

Percussion map

Note#	Instrument	Param. type	Note#	Instrument	Param. type
24	SeqClick H	FM	55	Splash Cymbal	PCM
25	Brush Tap	FM	56	Cowbell	FM
26	Brush Swirl L	FM	57	Crash Cymbal 2	PCM
27	Brush Slap	FM	58	Vibraslap	FM
28	Brush Swirl H	FM	59	Ride Cymbal 2	PCM
29	Snare Roll	FM	60	Bongo H	FM
30	Castanet	FM	61	Bongo L	FM
31	Snare L	PCM	62	Conga H Mute	FM
32	Sticks	FM	63	Conga H Open	FM
33	Bass Drum L	PCM	64	Conga L	FM
34	Open Rim Shot	FM	65	Timbale H	FM
35	Bass Drum M	PCM	66	Timbale L	FM

Note#	Instrument	Param. type	Note#	Instrument	Param. type
36	Bass Drum H	PCM	67	Agogo H	FM
37	Closed Rim Shot	FM	68	Agogo L	FM
38	Snare M	PCM	69	Cabasa	FM
39	Hand Clap	FM	70	Maracas	FM
40	Snare H	PCM	71	Samba Whistle H	FM
41	Floor Tom L	PCM	72	Samba Whistle L	FM
42	Hi-Hat Closed	PCM	73	Guiro Short	FM
43	Floor Tom H	PCM	74	Guiro Long	FM
44	Hi-Hat Pedal	PCM	75	Claves	FM
45	Low Tom	PCM	76	Wood Block H	FM
46	Hi-Hat Open	PCM	77	Wood Block L	FM
47	Mid Tom L	PCM	78	Cuica Mute	FM
48	Mid Tom H	PCM	79	Cuica Open	FM
49	Crash Cymbal 1	PCM	80	Triangle Mute	FM
50	High Tom	PCM	81	Triangle Open	FM
51	Ride Cymbal 1	PCM	82	Shaker	FM
52	Chinese Cymbal	PCM	83	Jingle Bell	FM
53	RideCymbal Cup	FM	84	Belltree	FM
54	Tamboulin	FM			

USSD technical data

Feature	Support in the J200
USSD support	GSM Phase 1/ 2 (Cross-phase compatibility). GPRS behaviour according to class B
Mode support -mode	MMI-mode supported. No application mode support (not needed for any application).
MMI-mode details	<ul style="list-style-type: none"> • USSD messages displayed until removed by user • It is possible to scroll up and down the text in USSD messages

Image format – technical data

Format	Visible	Max	Animation	Colours	Visible colours	Transparency support
GIF	128 x 128 pics	128 x 128 pixels	No	256	256	Yes
JPEG	128 x 128 pics	128 x 128 pixels	No	16.8 mil.	4096	No
WBMP	128 x 128 pics	128 x 128 pixels	No	Black/White	2	No

Images – downloading to phone

Feature	File type	Max. size	PC/IrDA	Phone-to-phone	WAP
EMS icons	WBMP	WxH<=1024 pixels	Yes	Yes	Yes
Images	GIF, WBMP; JPG	Limited by the memory	Yes	Yes	Yes

SIM AT services supported by the J200

Service	Mode	Support in J200
CELL BROADCAST DOWNLOAD		Yes
DISPLAY TEXT	Text of up to 240 characters (120 UCS2 coded.)	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	Yes
	1 = character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested	Yes

Service	Mode	Support in J200
GET INPUT	General: No. of hidden input characters	11
	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
LAUNCH BROWSER		No
MORE TIME		Yes
PLAY TONE		Yes
POLLING OFF		Yes
POLL INTERVAL		Yes
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 DTMF		No
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	No

Service	Mode	Support in J200
	Subaddress DTMF support	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 IDLE MODE		No
SET UP MENU		Yes
SMS PP DOWNLOAD		Yes

User interaction with SIM AT

Display text

Text of up to 240 characters (120 UCS2 coded) is supported.

Text clearing times are 10-20 seconds. 60-second time-out 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 the maximum response length is exceeded.

MMI Maximum Response lengths:

- Digits Only – 160 characters
- SMS default alphabet characters – 160 characters
- Hidden Characters (digits only) – 11 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 - SIM Reset 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 by 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 sees the text 'Setting up a call current call will be held'.

Press the 'YES' key to put current call on hold and set up new call.

If the ME is on a call when the command 'Set Up Call, disconnecting all other calls' is sent, the user sees the text 'Setting up a call current call will be disconnected'.

Press the 'YES' key to disconnect the current call and set up the new call.

Set up menu

Incorporates a SIM Application Toolkit Menu Item into the ME's main menu structure. From the standby display, the joystick can be used to scroll to and select the Menu Items. (Note: The SIM AT menu option is found in the 'Connectivity' 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 are 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:

- Joystick down – Scroll down list.
- Joystick up – Scroll up list.
- 'YES' – Envelope (Menu Selection).

Chinese versions

The J200 comes in different Chinese versions, the J200i for Hong Kong, Singapore, Malaysia and Taiwan, and the J200c for China Mainland. The only difference between these Chinese versions is that they support different languages and input methods.

Both the J200i and the J200c contain a Lunar calendar.

For more information about the Chinese versions, see "Standard language configurations" on page 28.

Terminology and abbreviations

3GPP

3rd Generation Partnership Project.

Bearer

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

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.

CB

Cell Broadcast. Cell Broadcast is a mobile technology that allows messages to be broadcast to all mobile handsets and similar devices within a designated geographical area. The broadcast range can vary, from a single cell to the entire network. This technology is used to deploy location-based subscriber services, such as regional auctions, local weather, traffic conditions and “nearest” services (like requesting the nearest service station or restaurant).

CBMI

Cell Broadcast Message Identifier

CGI

Common Gateway Interface.

CS

Circuit Switched.

CSD

Circuit Switched Data.

Deck

A collection of WML cards.

DRM

Digital Rights Management; controlling copying and distribution of contents, with respect to intellectual property rights.

DTMF

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

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. The GSM systems family includes GSM 900, GSM 1800 and GSM 1900.

HTML

HyperText Markup Language.

HTTP

HyperText Transfer Protocol.

IrDA

Infrared Data Association.

ISP

Internet Service Provider.

LAN

Local Area Network.

ME

Mobile Equipment.

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.

Phonebook

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

Picture Phonebook

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

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.

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.

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, GSM 1800, and the GSM 1900 network.

URL

Uniform Resource Locator.

USSD

Unstructured Supplementary Services Data.

VAS

Value Added Service.

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.

WSP

Wireless Session Protocol.

WTLS

Wireless Transport Layer Security.

WWW

World Wide Web.

XML

Extensible Markup Language.

Related information

Documents

- The J200 User Guide
- Sony Ericsson J200 FAQ
- AT Command Reference Manual
- WAP June2000 (WAP 1.2.1) Specification

Links

- www.SonyEricsson.com
- www.SonyEricsson.com/fun
- www.SonyEricsson.com/developer
- www.imc.org
- www.irda.org
- www.estl.org
- www.openmobilealliance.org
- www.imc.org/pdi
- smaf-yamaha.com

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Consumer pack content

- 1 Mobile phone J200
- 1 Standard battery BST-35
- 1 Standard charger, CST-13
- 1 User Guide
- 1 Sony Ericsson Service and Support leaflet
- 1 SAR leaflet

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