White paper

April 2009

W205

Multi-media Slider

Sony Ericsson

Preface

Purpose of this document

This White paper will be published in several revisions as the phone is developed. Some of the headings and tables in this document therefore contain limited information. Additional information and facts will be added in later revisions.

The aim of this White paper is to provide an understanding of the main functions and features of this phone. Some features are network- or service-dependent and may not be available in all countries or regions.

People who can benefit from this document include:

- Operators
- Service providers
- Software developers
- Support engineers
- Application developers

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Sony Ericsson Developer World

On www.sonyericsson.com/developer, developers will find documentation and tools such as phone White papers, Developers guidelines for different technologies, SDKs and relevant APIs. The Web site also contains discussion forums monitored by the Sony Ericsson Developer Support team, an extensive Knowledge Base, Tips & Tricks, example code and news.

Sony Ericsson also offers technical support services to professional developers. For more information about these professional services, visit the Sony Ericsson Developer World Web site.

Document history

Change history		
2009-04-07	Version 1	First revision
2009-05-14	Version 2	Second revision
2009-06-11	Version 3	Third revision
2009-06-17	Version 4	Fourth revision
2009-09-16	Version 5	Fifth revision

Contents

Product overview

W205 is an affordable Walkman™ slider that combines a complete package of entertainment features with an eye-catching navigation design to create a good Walkman™ experience. Users can play music, watch video clips, and even listen to FM (Frequency Modulation) radio with RDS (Radio Data System).

To energise the entertainment experience, TrackID™ allows users to find information on music that they hear and like on the radio, or from another external source.

W205 provides a great radio feature that adds to the user experience. The portable hands-free device also serves as the FM radio antenna. This allows the user to listen to as many as twenty saved channels. The user can set a favourite channel as a wake up alarm, and the mono speaker means that the fun can be shared with others. Recording from the radio is also possible.

The multiple phonebook makes it easy to organise contacts. It includes one shared phonebook and four individual phonebooks. Contacts in the shared phonebook are displayed in each of the individual phonebooks, and contacts in an individual phonebook can be shown in one or in several individual phonebooks. The user can select this mode in order to the phone with other people. Users can switch between shared phonebooks and private phonebooks to filter out shared contacts from their own contacts.

The 1.3 megapixel camera makes it easy to capture memorable moments and events of daily life, and view the pictures and video clips at any time on the screen. We can quickly share pictures with our friends using MMS (Multimedia Messaging Service), and we can also send pictures and video clips using Bluetooth™ wireless technology.

W205 also includes a lot of other handy features, such as Torch, Alarm, Calculator, Calendar, Zi™ text input, SMS, MMS and Java MIDP 2.0.

Note: To continuously update information on the implemented technology and functionality of this product, this White paper will be released in updated revisions.

Key features

Walkman™ player

The Walkman player converts the phone into a portable music player that supports the different audio formats SP-Midi, G-Midi, SMF0, SMF1, iMelody, AMR, MP3, AAC, 3GP, MP4, M4A. The dedicated Walkman™ shortcut key enables users to quickly access their music files with just one press. The folder system enables users to, for example, organise their favourite songs into groups and create playlists.

Music controls

With dedicated music controls, the user can easily control the Walkman™ player during playback. The music controls and their functions are:

- Play or pause the music
- Fast forward or move between tracks
- Rewind or move between tracks

TrackID™

TrackID™ enables the user to identify a track playing in the room or from the radio. After sampling a few seconds of the song, the phone connects to an online database that identifies the song and returns the title, artist and album information.

FM Radio

The FM radio and RDS (Radio Data System) offers instant and easy access to FM radio channels. RDS displays the information that is sent out by the radio station currently turned in directly on the screen. The user can just plug in the handsfree that works as an antenna and start listening to the radio. The radio can also be used as an alarm signal.

Radio recording

The user can record favourite songs or programs on the radio while listening. The recorded radio clips can be played back and set as ringtones.

1.3 megapixel camera

A built-in 1.3 megapixel camera makes it easy to capture moments of everyday life and then view the pictures and video clips later on the screen. We can quickly share pictures with our friends using MMS, and we can also send pictures and video clips using Bluetooth™ wireless technology.

Multiple phonebook

The multiple phonebook makes it easy to organise contacts. It includes one shared phonebook and four individual phonebooks. Contacts in the shared phonebook are displayed in each individual phoneook, and contacts in an individual phonebook can be shown in only one or in several of the individual phonebooks. The user can select this mode when sharing the phone with other people. Users can switch between the shared phonebook and private phonebooks to filter out shared contacts from their own contacts.

Picture phonebook

The user can assign a picture or an icon saved in the phone to an entry in the phonebook. When that person calls, the picture chosen 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, the ringtone chosen is heard, and the name of the caller is shown in the display.

Multimedia messaging service (MMS)

Multimedia Messaging Service (MMS) is the logical extension of SMS and EMS. MMS enables the user to combine sound and image into multimedia messages.

Bluetooth™ wireless technology

Several devices (simultaneous Bluetooth™ connections) can be connected up to 10 metres (33 feet) away using Bluetooth wireless technology. For example, when the phone rings, it can be answered with a Bluetooth headset. Images can be sent wirelessly to another phone. The phone and a computer can exchange data such as images, vCards, music files and calendar data. Bluetooth version 1.0 is supported.

1.8 inch colour screen

The 128x160 pixel 65k colour screen enhances viewing and facilitates high-quality entertainment.

Alarm

The user can set an alarm to sound at a certain time. The user can set a favourite station as the alarm ringtone and wake up to their chosen channel.

USB 2.0

The user can exchange information between the phone and the PC using a USB cable. Windows standard drivers are used so there is no need to install any extra software on the PC. If there is no USB cable in the kit, the user may have to purchase one separately.

WAP 2.0 XHTML™

This is a mobile Internet standard that enables the user to access specially designed Internet sites. WAP 2.0 supports colour and interactive lists.

Java™

The user can download additional applications that are information- and entertainment-based. This gives users a chance to personalise the functions and features of their phones, and developers the opportunity to create new applications.

Gaming

Gaming is a very popular feature in mobile phones. With Java™, users can download new games and skill levels to further enhance their entertainment experience. Several games are included in the phone at purchase.

Polyphonic sound

The phone can use polyphonic ringtones and 32 simultaneous sounds.

Calendar

The phone also includes a fully-functioning calendar with day, week and month views, as well as reminders.

Vibrating alert

The phone vibrates so that the user can feel an incoming call.

Images


Sony Ericsson
10:38
07-Apr-09
W205


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10:38
07-Apr-09
W205


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Technologies in detail

This chapter includes short descriptions of the technologies available in this product compared to two other Sony Ericsson products.

Functions and features

The table below compares the technologies available in W205 with those in R306 and T303.

Feature	W205	R306	T303
Alarm clock	Yes	Yes	Yes
Antenna Built-in	Yes	Yes	Yes
Backlight Illuminates the phone screen	Yes	Yes	Yes
Battery	3.6V, 950 mAh, Lithium Polymer	3.6V, 930 mAh, Lithium Polymer	3.6 V, 930 mAh, Lithium Polymer
Battery charging time	At least 90% charged within 2 hours	At least 90% charged within 2 hours	At least 90% charged within 2 hours
Bluetooth™ wireless technology Wireless connectivity between devices. Support for specification of the Bluetooth System	Yes	Yes	Yes
Business card exchange For exchanging contact information	Yes	Yes	No
Calculator	Yes	Yes	Yes
Calendar	Yes: fully functional calendar with day, week and month views and reminders	Yes: fully functional calendar with day, week and month views and reminders	Yes: fully functional calendar with Today and All view. Reminder can be set. No synchronisation
Call list View calls made and calls received	Yes	Yes	Yes
Camera 1.3 megapixel camera	Yes	Yes	Yes
Camera key	No	No	Yes, shortcut on the navigation key
Camera album	Yes	Yes	Yes
Camera file browser	Yes	Yes	No

Feature	W205	R306	T303
Chinese input method Text input methods based on Simplified or Traditional Chinese; Bopomofo, Pinyin or Stroke	Yes	Yes	Yes
Clock Clock visible on the screen	Yes	Yes	Yes
Co-branding area	7 x 22 mm	7 x 22 mm	8 x 22 mm
Colour	Ambient Black, Creamy White	Coffee Black, Champagne White	Dark metal: black front, black back Bright metal: silver front, silver back
Contacts	Yes: phonebook with fields for name, number, email address, Web address, picture, ringtone, title, address info, personal info and birthday. Save up to 1000 contacts, depending on available memory	Yes: phonebook with fields for name, number, email address, Web address, picture, ringtone, title, address info, personal info and birthday. Save up to 1000 contacts.	Yes: phonebook with fields for phone number, and name. Save up to 500 contacts (1500 phone numbers in total)
Conference calls Support for multi-party calling	Yes	Yes	Yes
Content online Downloadable pictures and ringtones are available online	Yes	Yes	Yes
Copyright protection - DRM DRM (Digital Rights Management) features the rights and copy protection of downloaded content (audio, pictures, music tones and entertainment features such as games etc.)	Yes: DRM v1.0 forward lock, combined delivery, separated delivery	Yes: DRM v1.0 forward lock	Yes: Level 1 forward lock
CSS Cascading Style Sheets, the de facto standard style sheet language on the Web, specified by W3C	Yes: limited	Yes: limited	Yes: limited

Feature	W205	R306	T303
Design	Slider phone, with eye catching navigation design	Clamshell, with hidden sub-display in front	Slider phone with a hairline finish front, hairline finish and rubber/ plastic back
Device Management (DM) DM uses GPRS as bearer of the provisioning data, once basic network connectivity is in place. This allows the operator to access the phone, and to check and set different settings such as Network connectivity (GPRS), MMS, and WAP. DM is achieved by supporting Over The Air provisioning 7.1 (OTA), OMA Client Provisioning 1.1 (CP) and OMA DM 1.1.2	No	No	No
Digital camera menu	Yes	No	Yes
Digital zoom	Yes, 2x for VGA	Yes, up to 4x	Yes, 2x for VGA 4x for QVGA
DOM2 Document Object Model (DOM) Level 2 HTML Specification, specified by W3C	No	No	No
EMS (Enhanced Messaging Service) Text messaging (SMS) with pictures and sounds	Yes	Yes	Yes
Exterior description Length (mm): Width (mm): Thickness (mm):	 92 47 16.4	 90 47.9 15.8	 83 47 14.7
Fast port A system connector that enables faster data transfer between the phone and computer	Yes (without computer connection support)	Yes (without computer connection support)	Yes (without computer connection support)
File manager Folder structure storage for saving and organising pictures, sounds and other phone content	Yes	Yes	Yes
FM radio with RDS FM radio with presets, with auto and manual search. The handsfree is used as an antenna. The radio can also be used as an alarm	Yes	Yes	Yes: Frequency range 87.5-108 MHz, channel search step 0.05 MHz

Feature	W205	R306	T303
Games download Replace the in-phone games with new ones	Yes	Yes	Yes
Games embedded	Yes	Yes	Yes
GPRS General Packet Radio Services is a communications standard that enables the transfer of packet data similar to Internet at 28.8 Kbps - 58.6 Kbps. We recommend that you have GPRS to use MMS and content download services	Yes: multislot class 8 supported (4+1)	Yes: multislot class 10 supported (4+2)	Yes: multislot class 10 supported (4+2)
HTML HyperText Markup Language, the standard Internet communications protocol	Yes	Yes	Yes
Icon Desktop A graphic icon desktop with interactive icons	Yes	Yes	Yes: grid view (9 icons)
Icon display The front display lights up and shows information about new events	Yes	Yes	Yes
Infrared port A wireless connector for connecting the phone to a computer or another infrared device in order to share pictures and sounds	No	No	No
Internet security Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping	Yes	Yes	No
Java™ Support for Java technology	Yes: Java 2, Micro Edition	Yes: Java 2, Micro Edition	Yes
Keys - Dedicated radio keys	No	Yes: 3 preset channel keys and 2 radio frequency search keys	No

Feature	W205	R306	T303
Keys - Navigation and more	• 4+1 way navigation key with preset shortcuts • 2 selection keys • Shortcut key • C key • Call key • End/on/off key • Walkman™ key (navigation key up)	• 4+1 way navigation key • 2 selection keys • Shortcut key • C (Clear) key • Call key • End/on/off key • Radio key (navigation key up)	• 4+1 way navigation key with preset shortcuts • 2 selection keys • Shortcut key • C key • Call key • End/on/off key
Keys - Keypad	12 alphanumeric keys	12 alphanumeric keys	12 alphanumeric keys
Keys - side	Volume key	• Volume key • Audio enhancer key	No
Keypad lock Lock the phone keys to prevent accidental activation of a function in the phone	Yes	No	Yes
Lunar calendar A calendar system used in China and other parts of Asia. A lunar month is the time that it takes the moon to complete its full cycle of 29.5 days	Yes	Yes	Yes
Memory (built-in) Phone memory that is free for the user to save pictures, sounds, and more	Up to 5.0 MB	Up to 5.0 MB	Up to 8.0 MB
Memory card (M2 card)	Yes, supports up to 2GB	No	No
Menu shortcuts Dedicating shortcuts to frequently used phone functions	Yes	Yes	Yes (fixed shortcuts)
MMS (Multimedia Messaging Service) Multimedia messaging with text and sound	Yes	Yes	Yes
Multiple phonebook	Yes	No	No
Music listening time	Up to 13.5 hours	No	

Feature	W205	R306	T303
Walkman™ player A digital music system for playing music files, organising tracks into groups and creating playlists. A practical play/stop function makes it easy to listen to music	Yes	No	No
Networks	GSM (R97) Dual-band: • 850/1900 • 900/1800	GSM (R97) Tri-band: a variant: GSM 850, GSM 1800, GSM 1900 i and c variant: e-GSM 900, GSM 1800, GSM 1900	GSM (R99) Tri-band: • 900/1800/1900 • 850/1800/1900
OTA settings WAP and other settings can be sent over-the-air to the phone	Yes	Yes	Yes
Picture gallery A thumbnail image gallery	Yes	Yes	Yes
Picture phonebook Add a picture to a saved contact. The picture appears on the screen when the saved contact calls	Yes	Yes	Yes
Picture wallpaper Background picture seen on the screen when the phone is in standby mode	Yes	Yes	Yes
Polyphonic ringtones	32	32	32
Zi™ text input When you write text, predictive text input software predicts what word you are writing and finishes it for you. The prediction is based on words used previously and a customisable dictionary	Yes	Yes	Yes
Radio listening time With PHF (portable handsfree) With speaker	 Up to 15 hours Up to 7.5 hours	To be decided	To be decided

Feature	W205	R306	T303
Radio shortcut	No	Yes, Navigation key up	No
Redial Identify and redial the most recent caller	Yes	Yes	Yes
Screen Type: Size: Resolution: Technology: Colours displayed together: Keypad backlight colour:	 Full graphical 1.8 inches 128x160 pixels TFT (Thin Film Transistor) 65,000 (16 bit) Yellow	 Full graphical 1.9 inches 128x160 pixels TFT 65,000 (16 bit) White	 Full graphical 1.8 inches 128x160 pixels TFT 65,000 (16 bit) Blue
Screen saver A screen saver is activated when the phone has not been used for a while and goes into 'sleep mode'	Yes	Yes	Yes
Shut down menu Shut down the phone, lock the keys, turn on silent mode or activate a profile	No	No	No
SIM card lock Protect your SIM card with a four-digit PIN code	Yes	Yes	Yes
Sleep mode A power saving feature that minimises battery consumption when the phone is in standby	Yes	Yes	Yes
SMS, long (Text messaging) Concatenated SMS text messaging	Yes, up to 6 catenations	Yes, up to 6 concatenations	Yes, up to 6 concatenations
Sony Ericsson Update Service Download the latest operator approved version of the mobile phone software via a computer	Yes	Yes	Yes
Speakerphone Loudspeaker suitable for using the phone as an office handsfree	Yes	Yes	Yes

Feature	W205	R306	T303
Speed dialling Allocating contacts in the phonebook to specific keys on the keypad	Yes	Yes	Yes
Standby time	Up to 425 hours	Up to 410 hours	Up to 400 hours
Status view The screen shows the network being used, the time and other status information	Yes	Yes	Yes
Stereo speakers	No	Yes	No
Stopwatch	Yes	Yes	Yes
Talk time	Up to 9 hours	Up to 9 hours	Up to 9 hours
Tasks Keeps track of important things that the user has to do	Yes	Yes	Yes
Theme Phone menu texts and background graphics	Yes	Yes	Yes
Timer	Yes	Yes	Yes
TrackID™ Identify music heard on the radio or from other external sources	Yes	Yes	Yes
USB connectivity support Connect the phone to a computer using a USB cable. The memory in the phone appears on the computer screen as a mass storage device	Yes (but USB charging not supported)	Yes	No (but support for USB charging and USB mass storage)
Vibrating alert The phone vibrates when a call comes in	Yes	Yes	Yes
Video viewing	Yes	Yes	No
Viewfinder Use the camera to preview a picture before it is taken	Yes	Yes	Yes
Voicemail Voicemail service for automatic answering and message recording	Yes	Yes	Yes

Feature	W205	R306	T303
Voice memo A mini recording device in the phone that records voice messages or other sounds	Yes	Yes	Yes
WAP A mobile Internet standard for accessing specially designed Internet sites	Yes, 2.0	Yes	Yes, 2.0
WAP 2.0 XHTML A mobile Internet standard for accessing specially designed Internet sites. WAP 2.0 supports colour and interactive lists	Yes, limited	Yes, limited	Yes, XHTML Mobile profile 1.0
Weight With battery:	90 g	93 g	93 g

Facts and figures

This chapter contains a detailed listing of all of the technical data relating to this product. Comprehensive descriptions of performance and technical characteristics are presented in table format for quick and easy access.

Technical specifications

General technical data

System	GSM/GPRS, Dual-band 900/1800 or 850/1900 MHz
Speech coding	HR, FR, EFR, AMR supported where available, for high speech quality
GSM SIM/USIM card	Small plug-in card, 1.8 V and 3 V
Memory (user free)	Up to 5.0 MB (Min. 5.0 MB)
Data transfer speeds	Up to 85.6 Kbps (downlink) Up to 21.4 Kbps (uplink)

Performance and technical characteristics

Dimension	**GSM 850**	**GSM 900**	**GSM 1800**	**GSM 1900**
Frequency range (MHz)	TX: 824–849 RX: 869–894	TX: 880–915 RX: 925–960	TX: 1710–1785 RX: 1805–1880	TX:1850–1910 RX:1930–1990
Channel spacing	200 kHz	200 kHz	200 kHz	200 kHz
Number of channels	124 Carriers *8 (TDMA)	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK	GMSK	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 MHz	45 MHz	95 MHz	80 MHz
Frequency stability	+/- 0.1ppm	+/- 0.1ppm	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.7 V	3.7 V	3.7V	3.7 V
Transmitter RF power output	33 dBm Class 4 (2 W peak)	33 dBm Class 4 (2 W peak)	30 dBm Class 1 (1 W peak)	30 dBm Class 1 (1 W peak)
Transmitter output impedance	50 ohm	50 ohm	50 ohm	50 ohm
Transmitter spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than – 102 dBm	Better than – 102 dBm	Better than – 102 dBm	Better than – 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%	< 2.4%	< 2.4%

USSD technical data

Feature	Support
USSD support	GSM Phase 1/2 (Cross-phase compatibility) GPRS behaviour according to class 8
Mode support mode	UI-mode supported SAT initiated USSD supported
UI-mode details	It is possible to scroll up and down in USSD messages

GPRS technical data

Dimension	Support
Compatible GPRS and SMG specifications	Release 97 according to ETSI specification
Data rates	Multislot 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, a filled G symbol appears in the top left corner if attached
Indicator of PDP context activation	No
Medium Access Modes	Dynamic allocation
Support for Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III
Support for GPRS combined procedures	Yes
Network control mode	NC0 and 2
Support for access in 2 phases	Yes
Support for PRACH on 11 bits	Yes
Support for GPRS re-selection C31/C32	Yes
Support for static and dynamic addressing	Yes
Support for power control Uplink and Downlink	Uplink = yes, Downlink is a network feature
Support for ciphering algorithms	GEA1, GEA2
Support for compression algorithms	No

Dimension	Support
Support for the QoS modification procedure	Yes, when initiated by the network (not by the mobile phone)
Downlink data rate	Up to 85.6 Kbps for packet data communication, using 4 time slots in coding scheme CS-4
Uplink data rate	Up to 21.4 Kps for packet data communication, using 1 time slots in coding scheme CS-4
Mode of operation	Class B and Class C modes of operation supported
IP connectivity	PDP type IP is supported.
Application	WAP over GPRS supported (TCP/UDP/IP and GPRS-SMS)
QoS	QoS negotiation supported. Default requested QoS sent by the mobile phone 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
PDP context	10 PDP context descriptions are saved in the phone. PDP context description is edited via application in mobile, AT-command or via OTA. 1 PDP is supported
SIM	GPRS aware, as well as non-GPRS aware, SIM cards are supported

SIM AT services supported

Service		Mode	Support
CALL CONTROL BY SIM			Yes
DATA DOWNLOAD TO SIM		Cell Broadcast SMS	Yes 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

Service		Mode	Support
GET INKEY		General: The GET_INKEY requires that the user confirms 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
GET INPUT		General: Number of hidden input characters	252
	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 screen	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	Yes
LAUNCH BROWSER			No
MORE TIME			Yes
PLAY TONE			Yes
POLLING OFF			Yes
POLL INTERVAL			Yes
PROVIDE LOCAL INFORMATION		'00' = Location Information (MCC, MNC, LAC and Cell Identity)	Yes
		'01' = IMEI of the ME	Yes
		'02' = Network Measurement results	Yes
		'03' = Date, time and time zone (DTTinPLI)	Yes
		'04' - Language setting	Yes

Service		Mode	Support
		'05' - Timing advanced	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			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	No
		Set-up speech call CallParty	Yes
		Sub address 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 EVENT LIST		'00' = MT call	Yes
		'01' = Call connected	Yes
		'02' = Call disconnected	Yes
		'03' = Location status	Yes

Service	Mode	Support
	'04' = User activity	Yes
	'05' = Idle screen available	Yes
	'06' = Card reader status	N/A
	'07' = Language selection	Yes
	'08' = Browser termination	No
	'09' = Data available	No
	'OA' = Channel status	No
SET UP IDLE MODE		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		No
OPEN CHANNEL		No
CLOSE CHANNEL		No
RECEIVE DATA		No
SEND DATA		No
GET CHANNEL STATUS		No

User Interaction with SIM AT

Display text

Text clearing times are 2-35 seconds and a 30-second time-out limit for the user to clear the text. 'Key' responses:

- 'Back' – Backward move in proactive session.

'OK'/'Back' clears the screen if the command is performed successfully.

Get inkey

Prompt for a one-character input. Pressing 'OK' without entering a character gives the warning message "Minimum 1 character". 'Key' responses:

- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

Get input

Prompt for character input. The phone will refuse to accept further input when the maximum response length is exceeded. UI Maximum Response lengths:

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

'Key' responses:

- 'Clear' – Clear current character.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

Select item

Scroll to highlight an item for selection. 'Key' responses:

- Navigation key press down – Scroll down list.

- Navigation key press up – Scroll up list.
- ‘Back’ – Backward move in proactive session.
- ‘OK’ – 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. Default responses are “MESSAGE FAILED” or “MESSAGE SENT”. ‘Key’ responses:

- ‘Back’ – End the proactive session.

Set up menu

Incorporates a SIM Application Toolkit Menu Item into the main menu structure.

If an Alpha Identifier is supplied in the Set Up Menu command, this is used as the SIM AT entry in the main menu. 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 by pressing ‘Select’, all the items sent in the Set Up Menu command will be available for selection, in the same way as the Select Item command.

Audio and Video

File types	Formats	Extensions
Audio (All formats listed are supported ringtone file formats)	MP3 AAC-LC MP4 M4A 3GP AMR-NB General MIDI (GM) SP-MIDI SMF0 SMF1 iMelody	.mp3 .aac .mp4 .m4a .3gp .amr .mid .mid .mid .mid .imy
Video (including audio part)	MP4 (Video: MPEG4, Audio: AAC-LC) 3GPP™ (Video: MPEG4, H.263, Audio: AMR-NB, AAC-LC)	.mp4 .3gp
Video encoding	MPEG-4 Visual Simple Profile Level 0	
Video decoding	MPEG-4 Visual Simple Profile Level 0,1 H.263 Profile 0, Levels 10, 20, 45	
Audio encoding	AMR-NB	

File types	Formats	Extensions
Audio decoding	MPEG-1/2/2.5, audio layer 3 AMR-NB AAC-LC General MIDI (GM) SP-MIDI	
Radio recording	Low Quality: Encoding @ 16 kHz / 16 kbps / Stereo, using 16kHz input stream 5 MB of user free memory will result in ~40 min of recording High Quality: Encoding @ 16 kHz / 64 kbps / Stereo, using 16kHz input stream 5 MB of user free memory will result in ~10 min of recording	

Java™

Feature	Functionalities
Java™ Platform, Micro Edition	• JSR-75 PDA Optional Packages , FILE API ONLY • JSR 118 MIDP 2.0 J2ME Mobile Information Device Profile • JSR-120 J2ME Wireless Messaging API • JSR-135 J2ME Mobile Media API • JSR 139 CLDC 1.1 Connected Limited Device Configuration • JSR 185 JTWI Java™ Technology for the Wireless Industry • Nokia UI API

1.3 Megapixel camera

Facts and figures	
Picture sizes (resolution)	1.3 megapixel
Digital zoom	2.0x zoom
Colour depth	24 bit (8 bit per RGB channel), 65k colours
Camera memory	Phone memory, memory card (M2) support up to 2 GB
Formats	JPEG
Sharing via	MMS, Bluetooth™
Reset file number	Yes (only pictures in memory card can be reset file number)
Video recorder	
Video size (resolution)	128x96

Facts and figures	
Frame rate	15 fps (frames per second)
Video camera settings bar	
Video clip length	Depends on memory
Turn on/off microphone	Off, On
Video camera setup	

Pictures and animations

Image decoders

Decoder	Details	Size	Colour depth	File format
GIF	87a/89a	320x240 pixels	256	GIF
JPEG	ISO/IEC JPEG Baseline DCT Progressive DCT Non-differential Huffman coding Symbol 'SOF2'	1.3 megapixel		JFIF v1.02 EXIF
BMP	The bitmap image format used by Windows®	XRAM dependent, default is VGA	24 bit	
WBMP				

Image encoders

Decoder	Details	Size	Colour depth	File format
GIF	89a			
JPEG	ISO/IEC JPEG Baseline DCT Non-differential Huffman coding Symbol 'SOF0'	1.3 megapixel		JFIF v1.02
BMP	The bitmap image format used by Windows®	XRAM dependent, 320x240 pixels	24 bit	

Short Messaging Service

Feature	Support
SMS centre number	It is possible to pre-load the SMS centre number
Pictures	It is possible to insert a picture or an icon into a text message. EMS compliant mobile phones will be able to see the picture correctly
Input methods	Zi™ text input and multitap
Reply to messages	It is possible to reply to messages received by SMS or phone call
Message creation methods support	Predictive writing and multitap
Possibilities when creating a message:	
Save a sent message in a “Sent messages” folder	Yes
Insert a line in the message	Yes
Possibilities when receiving a message:	
Reply to the sender	Yes
Forward the message	Yes
Save the message on the SIM card	Yes
Get delivery time and date	Yes
Possibilities of the messages previously sent:	
Delivery report of the message	Yes
Forward the message	Yes
Save the message on the SIM card	Yes
Know the remaining capacity storage	No, but notification when 95% full
Possibilities of the message previously received:	
Reply to the sender	Yes
Save the message on the SIM card	Yes
Forward the message	Yes
Know the remaining capacity storage	No, but notification when 95% full
Supported ways of replying to a received text message:	
Via SMS	Yes
Via MMS	Yes
Via email	No

Feature	Support
via phone call (set up a call to the number contained in the message body)	Yes
via WAP (go to the WAP address contained in the message body)	Yes
via USSD session	No
Possibility to send a text message to a list of recipients	Yes
Possibility to write an email address as a recipient address	Yes
SMS storage	On the SIM card and in the phone
Nokia Picture Messaging	No, only support for receiving

Enhanced Messaging Service

Feature	Support
Number of messages that the mobile phone is able to handle to generate a concatenated message	Up to 6 concatenations
Capacity storage	Up to 500 messages, depending on available memory
Outgoing messages	It is possible to: • See how many short messages an EMS message consists of before sending • Choose whether or not to send the message after writing
Incoming messages	• A 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 and pictures can be inserted into a new message, if the object is not protected using ODI
Concatenated messages	A receipt is received in the mobile phone when all parts of a concatenated message have been delivered
Insert objects	It is possible to add 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

Feature	Support
Melodies	It is possible to: • Send and receive melodies via EMS, if the melodies are not protected by ODI. • Download melodies and commercial tunes from WAP portals. • Create melodies on WAP portals.
WBMP	Yes
Picture sizes	Small (16x16 pixels), large (32x32 pixels), variable (maximum 128 bytes according to EMS standard)
Pictures	It is possible to: • Send and receive pictures via EMS, if the pictures are not protected by ODI. • Create pictures on WAP portals. • Download pictures from WAP portals. • Receive pictures in enhanced messages that originate from service providers.
Animations	The mobile phone supports the following animations: Angry, Confused, Crying, Devil, Flirty, Glasses, Happy, Indifferent, Kiss, Laughter, Love, Sad, Sceptical, Tongue, Wink and Wow as defined in 3GPP™ TS 23.040 v4.4.0. It is possible to send and receive colour animations
TP-PID field value given by the mobile phone before sending an EMS message	0 x 00

Multimedia Messaging Service

Feature	Support
MMS/GPRS parameters placement	MMS is connected to an Internet profile. An Internet profile is connected to a Data Account. A Data Account contains GPRS parameters
Possibility to pre-configure the MMS parameters in factory	MMS/GPRS: Yes
Possibility to configure the MMS parameters by OTA provisioning	MMS/GPRS: Yes
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	MMS/GPRS: Yes
Possibility for only one parameter from the parameters set to be OTA provisioned	MMS/GPRS: No
OTA provisioning solution	OTA Settings Specification v7.1 © Ericsson and Nokia

Feature	Support
Supplier indication of realised interoperability tests between its MMS User Agent and MMS Relay/Server from other suppliers	Yes
Support of a standard or a proprietary procedure for OTA provisioning of MMS parameters	Proprietary
Functionalities that the user is able to set during message composition:	• Email recipient address • Message Cc recipient(s) address(es) • MSISDN recipient address
The user can insert multimedia elements into multimedia messages from:	• File Manager • Camera • Contacts • Calendar • Sound recorder
Possibility for sent messages to be memorised in a folder in the phone memory	Yes
Actions that the user can perform after message notification:	• Always download • Roaming • Always ask
Actions that the user can perform after message retrieval:	• Reply to the sender of the message (MMS) • Forward the message (SMS/MMS) • Delete the message • Call the sender of a message • View details • Save items
Multimedia codecs/formats supported for audio	SP-Midi, G-Midi, SMF0, SMF1, AMR, MP3, iMelody, AAC, 3GP, MP4, M4A
Multimedia codecs/formats supported for image	JPEG, GIF87, GIF89A, WBMP, BMP
Supported formats for message presentation:	• Message body + attachments • SMIL version as described in OMA MMS IOP document version 1.0
Maximum message size that can be handled by the phone for a message	Maximum size is 300k and can be customised

Bluetooth™ technical data

Dimension	Support
Bluetooth capability statement	This phone supports Bluetooth Specification, version 1.0
Bluetooth profiles	Generic Access Profile Headset Profile Handsfree Profile Object Push Profile
Connectable devices	All products supporting Bluetooth spec. 1.1, or higher, and at least one of the profiles above
Coverage area	Varies due to radio performance on remote device and the occurrence of obstacles. Up to 10 metres (33 feet)
Transmission power	Class 1, typical +3 dBm or 2mW
Frequency band	2.4 GHz – the unlicensed ISM band
Power consumption	GSM host processor excluded: • Standby, Bluetooth On mode: <0.6 mA • Voice to headset (HV3 master): 11 mA (7 mA with EDR functionality, 2EV3 master). Dependent on various parameters such as if the phone is master or slave • Data mode average: 27mA at 172.8 Kbps symmetrical (DH1)

Browser technical data

Feature	Support in the browser
Back to previous page	Yes
Bearer type GPRS (IP)	Yes
Bookmark Export/Import	Yes, can be sent and received using SMS
Cache	Yes
Character sets*	UTF-8 (Default), USASCII, Latin1, UCS2. *) When creating WML applications, we recommend that all page content is always saved as UTF-8, and that this is clearly indicated in the pages before publishing. This ensures that the application content can be viewed regardless of the character sets used in gateways and the phone. All characters are not supported in all phones. The software version depends on the market that the phone is associated with. Note that the phone may not support input on a WAP Service that uses certain characters (languages), even if these characters are supported for browsing in the phone
Clear cache	Yes
Colour	Colour screen
Home page	Yes, up to 20 different. One for each WAP profile

Feature	Support in the browser
HTML version for browser	Mobile Profile 1.0, WML 1.3
Hyperlinks in text	Yes, highlighted as blue text
Hyperlinks in images	Yes, indicated by a frame
Image animation	Yes
Image formats	GIF (including animated) WBMP, no transparent layers, JPEG, BMP
Network settings	Up to 20 different settings available by selecting WAP profile
OTA support	Yes
PPP authentication	PAP supported
Reload page	Yes
User Agent Profiles	Yes, list of client characteristics, for example, screen size
WAP/WML	WAP 1.2.1/WML 1.3
Internet profiles	Up to 20 Internet profiles, each with its own settings

Operator technical data

Feature	Support for WAP	
WAP Browser		
Version	2 baseline	
Security mechanism		
Bearer	**Ericsson-Nokia solution**	**OMA Client Provisioning**
Interface		
Bearer	**Ericsson-Nokia solution**	**OMA Client Provisioning**
OTA via SMS	A question whether to install, with the code if available is asked. The user may have to choose to create a new profile or to replace an existing profile	For NETWPIN, the user is asked to accept to install the settings received. For USERPIN, USERNETWPIN and USERPINMAC, the user is subsequently asked to enter a PIN code that is a shared secret between the service provider and the user
Re-provisioning Interface	**Ericsson-Nokia solution**	**OMA Client Provisioning**
OTA via SMS	Same interface as above	If the settings previously installed were privileged or have higher priority, it may not be possible to install them again until the terminal has been reset. Otherwise, proceed as above

Feature	Support for WAP
Carrier reset/provisioning	Yes, but not if the set is pre-configured in the factory and locked
Applicative provisioning	
Preferred bearer customisation	No
Email customisation	No
Other applications/features	Yes (MMS)
Technologies	
Openwave OTA	No
Other	Yes, Ericsson-Nokia solution. OTA Settings Specification v7.1
Provisioning bearer	SMS
Parameter sets available	< or = 20 (total number of Internet profiles)
Parameter sets for OTA modification	< or = 10 (total number of Internet profiles)
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	Internet, push inbox
SL reception warning	The user can choose if a dialogue is wanted or not before loading the SL
SIA reception warning	Yes
Cache size limitations	The oldest push in the inbox will be discarded
Number of push messages	Depends on the number of push messages. Around 20 push messages can be saved
Push de-activate	No
Dynamic push menu changes	No, there are no changes in the menus when activating or deactivating push
Security	
Mechanisms for push	No
WSP push sessions	No

Feature	Support for WAP
HTTP push session	No
User agent profile	
UA profile content sent at beginning of WSP session	Yes
URL sent pointing to the UA profile at the beginning of a WSP session	Yes
URL location	On the manufacturer WAP site
WTAI	
WTA Make Call	Yes
WTA Send DTMF	No
WTA Add Phonebook	Yes
DOWNLOAD	
WAP solutions	
HTTP GET solution to download content over WAP	Yes
Download Fun from Openwave	No
Other download content over WAP	Yes, download limit (HTTP protocol)
Download application/product memory check	Yes
Downloaded object solution	Yes. The user is informed where the content is saved and asked if it should be used at once or later
Other features	Yes. Save and use
Object formats	
	All formats that are supported in the phone can be downloaded
GRAPHICAL USER INTERFACE	
Man Machine Interface	
Selection keys	Yes
Separate/dedicated back or delete keys	Yes
Screen backlight on when browsing	Yes
Predictive writing	Yes
“http://” string displayed automatically when entering URLs	No
Elements	

Feature	Support for WAP
Pop-up menus	No
Radio buttons	Yes, in XHTML
Check boxes	Yes, in XHTML
Buttons	Available as XHTML form controls

Abbreviations

3GPP™

3rd Generation Partnership Project. Collaboration between a number of telecommunications standards bodies to specify 3G. 3GPP also maintains and develops the specifications for GSM

AMR

Adaptive Multi-Rate. 3GPP standard for speech coding (compression)

API

Application Programming Interface

CS

Circuit Switched. Connection from A to B that has a fixed bandwidth and is maintained over a period of time, for example, a voice telephone call

CS-1 to CS-4

Coding Scheme. Determines the data rate per timeslot in GPRS

CSD

Circuit Switched Data. A GSM service that provides a CS data connection at a rate of 9.6 or 14.4 Kbps

CSS

Cascading Style Sheet

DM

Device Management. DM uses GPRS as bearer of the provisioning data, once basic network connectivity is in place. This allows the operator to access the phone, and to check and set different settings such as Network connectivity (GPRS), MMS, and WAP

DRM

Digital Rights Management; Controls copying and distribution of content, with respect to intellectual property rights

DTMF

Dual Tone Multi Frequency. A method of coding digits as a combination of two audible tones

e-GSM

Extended GSM. New frequencies specified 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 increases network capability

EFR

Enhanced Full Rate, speech coding

EMS

Enhanced Messaging Service. An extension of SMS enabling pictures, animations, sound and text formatting to be added to text messages. 3GPP has included EMS in the standards for SMS

ETSI

European Telecommunications Standards Institute

FR

Full Rate, speech coding

GIF

Graphics Interchange Format. Format for storing images that also supports animated images. Highly compressed by limiting the colour palette to 16 or 256 colours

GPRS

General Packet Radio Services

GSM

Global System for Mobile Communications. The GSM system family includes GSM 850, GSM 900, GSM 1800 and GSM 1900

HR

Half Rate, speech coding

HSCSD

High Speed Circuit Switched Data

HTML

HyperText Markup Language

HTTP

HyperText Transfer Protocol

IETF

Internet Engineering Task Force

JPEG

Joint Photographic Experts Group, best known for the JPG format for still image compression

MIDI

Musical Instrument Digital Interface

ME

Mobile Equipment (phone excluding SIM card)

MMI

Man-Machine Interface. Same as User Interface (UI)

MMS

Multimedia Messaging Service, logical extension of SMS and EMS. MMS defines a service that enables sound and images to be combined into multimedia messages

MPEG

Moving Picture Experts Group. A working group of ISO/IEC in charge of the development of standards for coded representation of digital audio and video

ODI

Object Distribution Indicator. Part of EMS release 4.3, ODI is a mechanism for controlling distribution of content (pictures, melodies etc.) within short messages

OMA

Open Mobile Alliance. Promotes interoperability and a wireless standard for delivering email, text-based Web pages and data to mobile phones, PDAs, pagers and other mobile terminals

OTA

Over-the Air Configuration. Provides settings for the phone by sending a text message using 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

PIM

Personal Information Management. Generic term for applications such as Contacts, Calendar and Tasks

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

SMS

Short Messaging Service. Allows messages of up to 160 characters to be sent and received via the network operator's message centre to a mobile phone

SS

Supplementary Services

SSL

Secure Socket Layer

UI

User interface

URL

Uniform Resource Locator. The global address of documents and other resources on the World Wide Web

USSD

Unstructured Supplementary Services Data. Narrow-band GSM data 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 a request for information from the user. A collection of cards is called a deck, which usually constitutes a service

WBMP

Wireless BitMap. A graphic format optimised for mobile computing devices

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

WSP

Wireless Session Protocol

XHTML

Extensible HyperText Markup Language

Related information

Documents

- Sony Ericsson User guide
- Sony Ericsson FAQ
- AT Command Reference Manual
- WAP 1.2.1 Specifications

Links

- www.sonyericsson.com/
- www.ericsson.com/mobilityworld/
- www.midi.org
- www.extendedsystems.com
- www.gsmworld.com/
- www.imc.org
- www.imc.org/pdi/
- www.etsi.fr
- www.wapforum.org
- www.w3.org/TR/xhtml-basic/
- www.cognimatics.com

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