

# White paper

June 2007

## W910i

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Sophisticated playfulness



Sony Ericsson

# Preface

## Purpose of this document

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This White paper will be published in several revisions as the phone is developed. Therefore, some of the headings and tables in this document contain limited information. Additional information and facts will be forthcoming in later revisions.

The aim of this White paper is to give the reader an understanding of the main functions and features of this phone.

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

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On [www.sonyericsson.com/developer](http://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, go to the Sony Ericsson Developer World Web site.

## Document history

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### Change history

2007-06-13	Version 1	First revision.
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# Product overview

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In a thin, stylish and exclusive slider design, the dynamic W910i takes games and music playing to the next level. The Walkman® player 3.0 offers fun and easy-to-use applications, helping the user to organize and discover music by mood, and to control the Walkman® player in a new way with the accelerometer shake control. Shake the phone to shuffle the music playlist, jump to another song, or control gaming functions. The power of the accelerometer and the dedicated gaming keys invite the user to new, playful and fun gaming experiences, further enhanced by the large, bright crystal screen. With PlayNow™ 4.0 and TrackID™ services, users are smoothly assisted in finding and downloading new music and games.

Features include:

- The latest Walkman® player with new features
- Shake control with music and gaming
- 3D gaming
- 2.36 inch bright crystal, high resolution screen
- The latest in 3G/HSPDA/EDGE technology for voice and video telephony
- 2 megapixel camera for pictures and video
- Easy-to-use horizontal digital camera menu
- Share video clips and full-size images via mobile blogging
- Web browser supporting HTML
- Web feeds
- FM radio with RDS and track identification
- A memory card slot for Memory Stick Micro™ (M2™) memory cards

The slim, sophisticated slider design of W910i boasts a high resolution screen, dedicated Walkman® control keys and gaming keys. Save video clips, pictures and music in the phone or by using the memory card slot, supporting up to 4 GB memory cards. A user-friendly media organizer helps the user to manage all media, such as video clips, pictures and music. The included Media manager software makes it easier to transfer and manage music, video clips, pictures and games between computer and phone. A USB cable is provided for you to synchronize or transfer files between phone and computer. A 1 GB Memory Stick Micro™ (M2™), a colour match memory card USB adapter and a stereo headset are also included.

Note: To provide continuously updated information about the implemented technology and functionality of this product, this White Paper will be released in updated revisions.

# Key features

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## **Walkman® player 3.0**

Located in Media, the Walkman® player converts the phone into a portable music player that supports AAC, AAC+, Enhanced ACC+, MP3, MP4, M4A, 3GP, AMR NB, AMR WB, WAV, S-MIDI, G-MIDI, RealAudio 8, WMA and Mobile XMF 1.0 audio formats. Access audio books and podcasts you have transferred from your computer. Smart lists, such as most played tracks and recently played tracks, are created automatically based on previous selections. Use SensMe™ to discover music by mood. The phone knows the mood of each song without having to enter information such as slow, fast, major, minor, acoustic, electric etc. Mark a song and a circle appears around this and encircles several other songs in the same mood creating a selection. No need to choose artist or album, just mood.

## **Music recognition - TrackID™**

Obtain title, artist and album information about songs you hear and like. Recording music from an external source, using the microphone. Or enter text to search for artist, track, album, lyrics and more.

## **PlayNow™ 4.0**

A unique and easy-to-use direct link for the downloading of content in the form of music files, games and images. You have access to a catalogue of more than 100,000 tracks from SonyBMG and other labels. For example, select PlayNow™ 4.0 and go straight to a live list of top music hits, available for full music track download. All formats that are supported by the phone will be supported. Music and images may be previewed before purchase.

## **Bluetooth™ audio streaming**

Listen to audio in compatible devices. By connecting a Bluetooth A2DP compatible accessory, such as a stereo Bluetooth headset or a Bluetooth music receiver, you can enjoy high quality stereo audio streaming wirelessly from the phone. Many A2DP accessories also support the Bluetooth Audio Video Remote Control Profile (AVRCP) allowing you to control the Walkman® player in the phone using the accessory interface.

## **Stereo widening**

The Stereo Widening and Mega Bass™ effects improve the sound experience when listening to music through a stereo Bluetooth headset, external stereo speakers or stereo portable handsfree headsets.

## **Shake control**

Shake the phone to shuffle the playlist, jump to another song, or control gaming functions.

## **3D Gaming**

Gaming is a very popular feature in mobile phones. Several premium quality 3D games are included in the phone at purchase. Shake the phone to control gaming functions. Tilt the phone forwards, backwards, left or right to accelerate, decelerate, turn left or turn right. Two action keys have been added to intensify the experience. With Java™, users can download new games and skill levels to further enhance their entertainment experience.

## **Java™**

Download additional applications which are information- and entertainment-based. This gives users a chance to personalize the functions and features in their phones, and developers the opportunity to create new applications. Java Platform 8 (JP-8), supports a range of new Java programming features including

instant messaging/chat and presence based functionality, handling banking, payment transactions, user identification and authentication through secure encryption technology.

### **2.36 inch colour screen**

The large 2.36 inch (240x320 pixels) full graphic QVGA 262k colour screen enhances viewing, facilitating high-quality multimedia and entertainment.

### **Media**

All media can be accessed directly from the desktop. Navigate seamlessly through captured photos and video clips, pictures, photo tags, music, videos and more.

### **Mobile TV**

Located in Media. View streaming video in Netchannels and organize your channels into favourites.

### **Video player**

Located in Media. Play stored and downloaded video clips.

### **2 Megapixel camera**

The main camera is 2 megapixel and includes 2.5x digital zoom with fixed focus, auto rotate and Photo fix to take quality pictures with ease. The horizontal user interface allows for easier camera handling. The main camera captures video clips with 4x digital zoom, and stores them in the phone or on a memory card. A picture or video clip can be shared as a picture message or email message with friends or family, or using any available transfer method, such as Bluetooth™. The phone supports QCIF size video recording.

### **Video call camera**

There is also a QCIF video call camera. Accessing video call mode via the main menu activates the QCIF video call camera.

### **Auto rotate**

Capturing a portrait photo with a horizontal camera, usually results in a picture which must be rotated manually when viewed later, in the phone. Auto rotate is a new feature, which enables W910i to register how the phone is oriented when the picture is taken, whether it is held in portrait or landscape mode. This information is saved with the picture. When viewed, the picture is automatically rotated and presented with the same orientation as it was originally taken.

### **Sony Ericsson Media Manager**

Music, photo and video clip management software is available on the CD which is included in the kit. Transfer music, videos and photos to and from your phone. Prepare files for transfer even when your phone is not connected to your computer. Search for and select music on your computer or audio CDs and convert your existing audio tracks to formats that are suitable for mobile use before transferring them to your phone. You can also subscribe to feeds such as video and music podcasts.

### **RDS FM Radio**

The FM radio with RDS (Radio Data System) offers instant and easy access to FM radio channels. The RDS function brings information directly to the screen, which is sent out by the currently tuned in radio station. Just plug in the handsfree that works as an antenna and start listening to desired music. The radio can also be used as an alarm signal.

### **Memory card reader**

The extra memory slot supports memory cards up to 4 GB. Different kinds of content (pictures, audio, video clips, etc.) can be stored on memory cards, and transferred to other memory cards – compatible consumer products, for example Sony digital cameras, camcorders, portable music players, TVs, photo printers and computers.

### **Media Transfer Protocol (MTP)**

With Media Transfer Protocol you can transfer media files and synchronize playlists when the phone is connected to the computer via the USB cable. It is possible to use MTP in Media transfer mode or Phone mode. MTP is supported by Windows Media Player 10 and 11 in Windows XP and in Windows Vista it is also supported.

### **Common Internet File System (CIFS)**

The Common Internet File System enables file transfer to and from your phone. The phone acts as a file server which allows you to copy and move files between your PC and the server. You can use this feature when connected via the USB cable or the Bluetooth connection.



# Images

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# Technologies in detail

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

# Functions and features

The following includes short descriptions of the technologies available in W910i compared to W850 and W950.

Feature	W910i	W850	W950
<b>3D games</b>	Yes	Yes	Yes
<b>3G enabled</b>  Technology that enables 384 Kbps data transfer and video telephony	Yes	Yes	Yes
<b>Activity menu (multi-tasking)</b>  The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks	Yes with enhanced functionality for background applications.	Yes with enhanced functionality for background applications.	Yes
<b>Alarm clock</b>  Set up to five individual times for single or recurring weekly alarms	Yes	Yes	Yes
<b>Auto rotate</b>  The picture appears as a landscape or portrait picture, as it was originally taken	Yes	No	No
<b>Backlight</b>  White backlight to illuminate the phone screen	Yes	Yes	Yes
<b>Battery</b>	BST-39 3.6V, 920mAh, Lithium Ion	3.6V, 900mAh, Lithium Polymer	BST-33, 900mAh
<b>Battery charging time</b>	At least 90% charged within 2 hours. Fully charged within 2.5 hours.	At least 90% charged within 2 hours. Fully charged within 2.5 hours.	Fully charged within 2.5 hours.
<b>Bluetooth™ audio streaming</b>  Listen to audio in compatible devices	Yes	Yes	Yes
<b>Bluetooth™ audio video remote control</b>  Control music player functions from a Bluetooth™ accessory, and control the volume in the accessory from the phone	Yes	Yes	Yes


Feature	W910i	W850	W950
<b>Bluetooth™ PAN</b>  Connect the phone to Internet using Bluetooth™	Yes		
<b>Bluetooth™ wireless technology</b>  Wireless connectivity between devices. Support for specification of the Bluetooth System, version 2.0	Yes	Yes	Yes
<b>Business card exchange</b>  Exchange contact information	Yes	Yes	Yes
<b>Calculator</b>	Yes	Yes	Yes
<b>Calendar</b>  Calendar with day, week and month views and reminders	Yes	Yes	Yes
<b>Call list</b>  View calls made and received	Yes	Yes	Yes
<b>Camera</b>	2 Megapixel	2 Megapixel	No
<b>Camera key</b>  A dedicated camera key. Press and hold to activate the integrated camera	Yes	Yes	No
<b>Camera file browser</b>  Browse the picture folder without leaving the camera function	Yes	Yes	No
<b>Camera keys on top</b>  When the camera is used in horizontal mode, the side keys with camera functionality are on top, for a digital still camera feel. For photo key functionality, see also “Keys - side and other” on page 18	Yes	Yes	No
<b>Camera menu</b>  Easy-to-use horizontal digital camera menu	Yes	Yes	No
<b>Chinese input method</b>  Chinese input methods: Text input methods based on Simplified or Traditional Chinese. Bopomofo, Pinyin or Stroke	Yes	Yes	Yes


Feature	W910i	W850	W950
<b>Clock</b>  On-screen clock	Yes	Yes	Yes
<b>Co-branding area</b>  	47.4 × 6.75 mm	21.8 x 6.51 mm	
<b>Code memo</b>  A safe place to store all PIN codes and other information. To access Code memo, only one PIN code is needed	Yes	Yes	Yes
<b>Colour</b>  	Noble Black Hearty Red	Precious Black Golden White	Mystic Purple
<b>Contacts</b>  Phonebook with fields for name, phone and fax numbers, email address, Web site, title, company address info, personal address info and birthday	Yes	Yes	Yes
<b>Conference calls</b>  Support for multiparty calling	Yes	Yes	Yes
<b>Connector A1 (Fast port)</b>  	Yes (side)	Yes (bottom)	Yes (bottom)
<b>Content online</b>  Downloadable pictures, games, themes, ringtones available online	Yes	Yes	Yes
<b>Copyright protection - DRM</b>  DRM (Digital Rights Management) features the rights and copy protection of downloaded content (audio, pictures, music tones, video, entertainment features such as games, Java applications etc)	Yes, OMA DRM 1.0 and OMA DRM 2.0	Yes	Yes
<b>Design</b>  	Slider form	Slider form	Stick form
<b>Device Management (DM)</b>  DM utilizes GPRS as a bearer (basic network connectivity needs to be in place) of the provisioning data and allows the operator to access the phone and check and send out different settings such as network connectivity (GPRS), email, MMS, WAP and Java™. Device Management is achieved by supporting OMA Client Provisioning 1.1 (CP) and OMA Device Management (DM) 1.2	Yes	Yes	Yes

Feature	W910i	W850	W950
<b>Digital zoom</b>	2.5x for pictures 4x for video clips 2x for video calls	2.5x for pictures 4x for video clips 2x for video calls	No
<b>Email</b>  Built-in email client with inbox, outbox, compose/send and other functions	Yes	Yes	Yes
<b>EMS (Enhanced messaging)</b>  Text messaging (SMS) with support for pictures and sounds	Yes	Yes	Yes
<b>Exterior description</b>  Size mm (Length x width x thickness/thinnest)	99.5 x 50 x 12.5	98 x 47 x 21	106 x 54 x 15
<b>Fast port</b>  A system connector which enables faster data transfer between the phone and a computer	Yes (side)	Yes (bottom)	Yes (bottom)
<b>File manager</b>  Folder structure storage to help store and organize pictures, sounds and other phone content	Yes	Yes	Yes
<b>Flight mode</b>  All phone radio transceivers are inactivated. Flight mode starts the phone so that only certain functions are available, such as the calendar, music player or a game. The phone may then be used in some areas, such as aeroplanes or hospitals, where full mobile phone functionality is not allowed  Bluetooth™ function availability in Flight mode	Yes  Yes	Yes	Yes
<b>FM radio with RDS</b>  FM radio with presets, auto and manual search. The handsfree is used as an antenna. The radio can also be used as an alarm signal	Yes	Yes	Yes
<b>FM radio with TrackID™</b>  Identify tracks playing on the radio	Yes	Yes	Yes
<b>Form factor</b>	Slider	Slider	Monolithic Stick

Feature	W910i	W850	W950
<b>Games download</b>  Replace in-phone games with new ones	Yes	Yes	Yes
<b>Games embedded</b>	Yes	Yes	Yes
<b>GPRS</b>  General Packet Radio Services - a communications standard enabling packet data transfer of 21.4 Kbps per time slot. Multislot class 10 supported (max 5 simultaneously)	Yes	Yes	Yes
<b>High Speed Data</b>  HSCSD - a communications standard enabling GSM data transfer 14.4–28.8 Kbps.  HSDPA - High Speed Downlink Packet Access	No  Yes	Yes  No	Yes  No
<b>Icon Desktop 12</b>  A graphic icon desktop with 12 interactive icons	Yes	Yes	Yes
<b>Image formats</b>  <b>2 MP</b> (1600x1200 pixels)  <b>1 MP</b> (1280x960 pixels)  <b>VGA</b> (640x480 pixels)  Note: MP = Megapixel	  Yes Yes Yes	  Yes Yes Yes	N/A
<b>Instant messaging (Wireless Village/My friends)</b>  Chat - several people can take part in a mobile messaging session. Instant messaging/Wireless Village server community	Yes	Yes	No
<b>Internet blogging</b>  Share up to full-size pictures over the Internet on your personal Web page. The size of uploaded pictures is dependent on customizations	Yes	Yes	No



Feature	W910i	W850	W950
<b>Internet browser</b>	Yes	Yes	Yes
cHTML - A mobile device adapted version of the standard Internet communications protocol HTML	Yes	Yes	Yes
Full HTML support, ECMA script, DOM level 1& 2, etc.)	Yes	Yes	Yes
Progressive download of video files	Yes	Yes	Yes
Direct access to Search Internet and Enter address	Yes	No	
<b>Internet security</b>	Yes, SSL/TLS	Yes, SSL/TLS	Yes
Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping			
<b>Java™</b>	Java 2, Micro Edition (J2ME™), Java 3D™	Java 2, Micro Edition (J2ME™), Java 3D™	Java 2, Micro Edition (J2ME™), Java 3D™
Support for J2ME™ technology			
Java Platform 8 (JP-8) Support for new Java programming features including instant messaging/chat, banking, payment transactions, user identification and authentication through secure encryption technology	Yes	No	No
<b>Keys - navigation and more</b>	8+1 navigation key	8+1 navigation key	Touch screen
	multimedia (play/stop) on navigation key center	multimedia (play/stop) on navigation key center	
	2 selection keys	2 selection keys	
		Back key	
	C (Clear) key	C (Clear) key	C (Clear) key
	Activity menu key	Activity menu key	
		Walkman® key	Walkman® key
	Red end key	Internet/operator key	
	Green call key		

Feature	W910i	W850	W950
<b>Keys - keypad</b>	12 alphanumeric	12 alphanumeric	12 alphanumeric
<b>Keys - side and other</b> 	volume/camera zoom key  Walkman® key on top  separate on/off key  camera key  A/B gaming keys. A/B keys using the camera (landscape orientation): Upper key: - camera shoot mode - video clip length Lower key: - night mode on/off	volume/camera zoom key     separate on/off key  camera key	volume key  multimedia (play/stop) key  back key  separate on/off key  Jog Dial
<b>Lunar calendar</b>  A calendar system used in China and other parts of Asia. A lunar month is determined by the period required for the moon to complete its full cycle of 29.5 days and is available in Chinese phone variants	Yes		
<b>Macromedia® Flash Lite™</b>  For impressive animated wallpapers, menus and other graphic elements	Yes	Yes	Yes
<b>Media</b>  A center for all media content with sideways navigation and a string of pearls look and feel. You can view photos and video clips, listen to music	Yes	No	No
<b>Media player</b>	See Walkman® player and Video player	See Walkman® player and Video player	See Walkman® player and Video player

Feature	W910i	W850	W950
<b>Mega Bass™</b>  An audio feature which enhances bass frequencies for better overall music experience	Yes	Yes	Yes
<b>Memory (built-in)</b>  Phone memory that is free to use (depending on software configuration/file content). Many applications share phone memory. The maximum amount of storage available for any one application, such as calendar entries, is affected by the amount of memory used by other applications, such as messaging, music, pictures and so on	Up to 40 MB	Up to 16 MB	Up to 4 MB
<b>Memory card reader (slot)</b>  A slot for inserting a micro peripheral storage device  Memory card support: Memory Stick Micro™ (M2™) Memory Stick PRO Duo™	Yes  Yes No	Yes  No Yes	No  No No
<b>Menu shortcuts</b>  A function making it possible to dedicate shortcuts to the most-used phone functions	Yes	Yes	Yes
<b>MMS (Multimedia messaging)</b>  Picture messaging with text and sound	Yes	Yes	Yes
<b>MMS video</b>  Support in the phone for sending video using MMS	Yes	Yes	Yes
<b>Modem</b>  Circuit Switched/Packet Switched Internet dial-up support	Yes	Yes	Yes
<b>MusicDJ™</b>  A sampler music tool with MIDI drum, guitar, keyboard, bass and brass loops in different music styles, which can be combined to create polyphonic ringtones	Yes	Yes	Yes
<b>Music listening time</b>	Up to 20 hours		

Feature	W910i	W850	W950
<b>Music tones</b>  Music tones, also called master tones, are DRM protected music by original artists. Various digital audio formats are supported	Yes	Yes	Yes
<b>My friends</b>  See Instant messaging	Yes	Yes	Yes
<b>Networks</b>  3G  HSDPA  GSM/GPRS/EDGE	UMTS 2100  HSDPA 2100  GSM (R99), 850, 900, 1800, 1900, E-GSM 900	UMTS 2100  GSM (R99) 900, 1800, 1900, E-GSM 900	UMTS 2100  GSM (R99) 900, 1800, 1900, E-GSM 900
<b>OMA Data Synchronization (SyncML)</b>  A device communications standard that enables remote synchronization between devices	Yes  SyncML 1.2 SyncML 1.1	Yes  SyncML 1.2 SyncML 1.1	Yes
<b>OTA settings</b>  Internet, email and other settings can be sent over the air to the phone	Yes	Yes	Yes
<b>PhotoDJ™</b>  A drawing tool in the phone where existing pictures can be altered	Yes	Yes	Yes
<b>Photo fix</b>  Improves an under-exposed picture by calculating and adjusting the light balance	Yes	No	No
<b>PictBridge</b>  Transfer images from the phone via USB cable directly to a printer, without a computer or photo editing software	Yes	Yes	
<b>Picture gallery</b>  A thumbnail image gallery where sections of several pictures can be viewed at the same time	Yes  Use photo tags	Yes	Yes

Feature	W910i	W850	W950
<b>Picture phonebook</b>  Add a picture to a stored contact. The picture appears on the screen when the stored contact calls	Yes	Yes	Yes
<b>PlayNow™ (direct link)</b>  Listen to music before you purchase and download to your phone	Yes	Yes	Yes
<b>PlayNow™ Games (direct link)</b>  Download and purchase games straight from the phone desktop	Yes	Yes	Yes
<b>Polyphonic voices</b>	72	40	40
<b>Predictive text input</b>	Yes	Yes	Yes
<b>Push email</b>	Yes	Yes	Yes
<b>RSS Reader</b>	See Web feeds	See Web feeds	See Web feeds
<b>Screen</b>  Type: Size: Resolution: Technology: Colours displayed together: Backlight colour:	Full graphical 2.36 inches 320 x 240 pixels TFT, QVGA 262,000 (18 bit) White	Full graphical 2.0 inches 320 x 240 pixels TFT, QVGA 262,000 (18 bit) White	Full graphical 2.6 inches 320 x 240 pixels TFT, QVGA 262,000 (18 bit) White
<b>Screen saver</b>	Yes	Yes	Yes
<b>Settings download (Ready to run)</b>  Set up functions, such as the Internet browser and picture messaging, that require a connection to the Internet. This function runs in the setup wizard or can also be chosen in the Settings menu. This function is not included in the setup wizard for customized phones	Yes	Yes	Yes
<b>Shake control</b>  Shake control for music and gaming	Yes	No	No
<b>SIM card lock</b>  The possibility to protect the SIM card with a four-digit PIN code	Yes	Yes	Yes

Feature	W910i	W850	W950
<b>SMS long (Text messaging)</b>  Concatenated SMS text messaging	Yes	Yes	Yes
<b>Sleep mode</b>  A power-saving feature that minimizes battery power consumed when the phone is in standby	Yes	Yes	Yes
<b>Sony Ericsson Remote Update Service</b>  Download the latest operator-approved software, over the air, for your mobile phone	Yes	Yes	No
<b>Sony Ericsson Update Service</b>  Connect the phone to an Internet-connected computer, download the latest operator-approved software from the web, <a href="http://www.sonyericsson.com/support">www.sonyericsson.com/support</a> and update the mobile device	Yes	Yes	Yes
<b>Sound recorder</b>  A recording device in the phone that can record voice messages or other sounds	Yes	Yes	Yes
<b>Speakerphone</b>	Yes	Yes	Yes
<b>Speed dialling</b>  Allocate contacts in the phone book to specific keys on the keypad	Yes	Yes	Yes
<b>Standby time</b>  GSM UMTS	Up to:  400 hours 350 hours	Up to 350 hours	Up to 340 hours
<b>Status view</b>  The screen shows the network being used, the time and other status information	Yes	Yes	Yes
<b>Stopwatch</b>	Yes	Yes	Yes
<b>SVG Tiny</b>  Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements	Yes SVG Tiny 1.2	Yes SVG Tiny 1.1	Yes

Feature	W910i	W850	W950
<b>Synchronization PC</b>  Synchronize and share phone content with a computer	Yes	Yes	Yes
<b>Talk time</b>  GSM UMTS	Up to:  9 hours 3.5 hours	Up to:  7 hours	Up to:  7.5 hours
<b>Tasks</b>  Keeps track of important things you have to do	Yes	Yes	Yes
<b>Themes</b>  Phone menu texts and background graphics	Yes	Yes	Yes
<b>Timer</b>  Set the phone to alert after a specific time	Yes	Yes	Yes
<b>TrackID</b>  Music recognition  Text search for artist, album, track, lyrics etc	Yes  Yes	Yes  No	Yes  No
<b>Twin camera</b>  Two cameras - a main megapixel camera capable of taking still pictures/recording video and an additional video call camera optimized for video calls located above the screen	Yes	Yes	No
<b>UMTS</b>  A 3G technology standard capable of data transfer 384 Kbps	Yes	Yes	Yes
<b>USB connectivity support</b>  Connect the phone to a computer with the USB cable provided and the memory in the phone appears on the computer screen as a mass storage device	Yes  USB 2.0 Hi-Speed	Yes	Yes
<b>USB ethernet emulation</b>  Connect to the Internet via the phone or the computer	Yes		

Feature	W910i	W850	W950
<b>Vibrating alert</b>  The phone vibrates when a call comes in	Yes	Yes	Yes
<b>Video blogging</b>  Share video clips over the Internet on your personal Web page. The size of uploaded video clips is dependent on customizations	Yes	No	No
<b>Video call camera</b>	Yes	Yes	No
<b>Video calling</b>  When you make a video call, the recipient can be seen in the screen. The service requires UMTS/WCDMA	Yes	Yes	No
<b>Video call talk time</b>	Up to 3 hours 20 minutes	Up to 1 hour 55 minutes	No
<b>VideoDJ™</b>  Create video sequences by combining different clips and adding music and images	Yes	Yes	Yes
<b>Video player</b>  Play video clips you have transferred or downloaded. Transfer video clips to another phone or a computer via available transfer method	Yes	Yes	Yes
<b>Video streaming</b>  Real-time streaming of video, for example, live cam. Media can also be downloaded and saved in the phone memory	Yes	Yes	Yes
<b>Viewfinder</b>  When using the camera, a picture can be previewed before it is captured	Yes	Yes	N/A
<b>Voice control</b>  Voice answer, reject and call. Assign voice commands to items in the phonebook and when a call is made, the voice command can be used instead of pressing keys	Yes	Yes	Yes
<b>Voicemail</b>  Support for voicemail operator service including automatic answering and message recording	Yes	Yes	Yes



Feature	W910i	W850	W950
<b>Walkman® key</b>  Get direct access to you music files without having to browse the menus. Press the Walkman® key to gain direct access to the Walkman® player	Yes	Yes	Yes
<b>Walkman® player 3.0</b>  A digital music player with sideways navigation and a string of pearls look and feel. Play music you have transferred or downloaded. Play music files in the folder system, organize your favourite tracks into groups and create various playlists. A practical play/stop function makes it easier to listen to music any time, anywhere. You can also manage settings and more	Yes	No	No
<b>WAP 1.2.1</b>  A mobile Internet standard to access specially designed Internet sites	Yes	Yes	Yes
<b>WAP 2.0 XHTML</b>  A mobile Internet standard to access specially designed Internet sites. WAP 2.0 supports colour and interactive lists	Yes	Yes	Yes
<b>Web feeds</b>  Frequently updated content delivered as feeds via a Web site, for example, news headlines in the browser	Yes	Yes	Yes
<b>Weight</b>	86 g	118 g	112 g

# Facts and figures

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

# Technical specifications

## General technical data

System	Quad-band GSM Release 99 recommendations, GSM-850 GSM 900, e-GSM 900, GSM 1800, GSM 1900 Single-band UMTS 2100 HSDPA, cat 6 supported
Speech coding	FR, EFR, AMR supported where available, for high speech quality.
GSM SIM/ UMTS USIM card	GSM SIM - GSM 11.11, UMTS SIM - 3GPP™ TS 31.101. Small plug-in card, 1,8 V and 3 V.
Memory	Up to 40 MB internal (depending on software configuration/file content) + extra slot for supported memory cards.
Data transfer speeds	Up to 3.6 Mbps (downlink, HSDPA, cat 6) Up to 384 Kbps (uplink, WCDMA R99)

## Performance and technical characteristics

Dimension	WCDMA 2100
Frequency range (MHz)	TX:1920–1980 RX:2110–2170
Channel spacing	5 MHz with 200 kHz channel rasters
Number of channels	277
Modulation	QPSK (WCDMA R99) QPSK/16 QAM (HSDPA)
TTI	10 ms (WCDMA R99) 2 ms (HSDPA)
TX Phase Accuracy	Error Vector Magnitude: <17.5%
Duplex spacing	190 MHz
Frequency stability	+/- 0.1 ppm
Voltage operation (nominal)	3.6 V
Transmitter RF power output	24dBm Class 3 (0.25 W peak)
Transmitter Output impedance	50 ohm
Transmitter Spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz (according to 3GPP™ spec.)

<b>Dimension</b>	<b>WCDMA 2100</b>
Receiver RF sensitivity	Better than -104.7 dBm @12.2 Kbps CS voice
Receiver RX Bit error rate	< 0.1%

<b>Dimension</b>	<b>GSM 850</b>	<b>GSM 900/ E-GSM 900</b>
Frequency range (MHz)	TX: 824–849 RX: 869–894	TX: 880–915 RX: 925–960
Channel spacing	200 kHz	200 kHz
Number of channels	124 Carriers *8 (TDMA)	174 Carriers *8 (TDMA)
Modulation	GMSK, 8PSK	GMSK, 8PSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 MHz	45 MHz
Frequency stability	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V
Transmitter RF power output	33 dBm Class 4 (2 W peak)	33 dBm Class 4 (2 W peak)
Transmitter Output impedance	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
Receiver RF sensitivity	Better than – 102 dBm	Better than – 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%

<b>Dimension</b>	<b>GSM 1800</b>	<b>GSM 1900</b>
Frequency range (MHz)	TX: 1710–1785 RX: 1805–1880	TX:1850–1910 RX:1930–1990
Channel spacing	200 kHz	200 kHz
Number of channels	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK, 8PSK	GMSK, 8PSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	95 MHz	80 MHz
Frequency stability	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V
Transmitter RF power output	30 dBm Class 1 (1 W peak)	30 dBm Class 1 (1 W peak)
Transmitter Output impedance	50 ohm	50 ohm

<b>Dimension</b>	<b>GSM 1800</b>	<b>GSM 1900</b>
Transmitter Spurious emission (according to specification)	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than – 102 dBm	Better than – 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%

## USSD technical data

<b>Feature</b>	<b>Support</b>
USSD support	GSM Phase 1/2 (Cross-phase compatibility)
Mode support	UI-mode supported SAT initiated USSD supported
UI-mode details	<ul style="list-style-type: none"> <li>It is possible to scroll the text up and down in USSD messages.</li> <li>It is possible to highlight embedded numbers and take actions accordingly.</li> </ul>

## GPRS technical data

<b>Dimension</b>	<b>Support</b>
Compatible GPRS and SMG specifications	Release 99 according to ETSI specification
Data rates	Multislot class 10 supported (max 5 simultaneously) CS-1, CS-2, CS-3, CS-4 9,050 bps, 13,400 bps, 15,600 bps, 21,400 bps supported (network-dependent).
Medium Access Modes	Dynamic allocation
Support of Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III
Support of GPRS/CS combined procedures	Yes
Network control mode	NC0 and 2
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

Dimension	Support
Support of power control Uplink and Downlink	Uplink = yes, Downlink is a network feature.
Support of ciphering algorithms	GEA1, GEA2, GEA3
Support of compression algorithms	Yes, V42bis and IP header compression.
Mode of operation	Class B and Class C modes of operation supported.
R Reference point	Physical layer: Support of RS232 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 or TE (laptop, PDA) supported
PDP context	10 PDP context descriptions stored in mobile PDP context description is edited via application in mobile, AT-command or via OTA Simultaneous PDP contexts are supported, maximum 4.
SIM	GPRS aware, as well as non-GPRS aware; SIM cards are supported.
AT commands	Some of the supported commands: AT+CGDCONT - DEFINE PDP CONTEXT AT+CGEQREQ - Quality of Service Profile (REQUESTED) AT+CGEQMIN - Quality of Service Profile (Minimum Acceptable) AT+CGATT - PACKET DOMAIN SERVICE ATTACH OR DETACH AT+CGACT - PDP CONTEXT ACTIVATE OR DEACTIVATE AT+CGDATA - ENTER DATA STATE
For more information, see <a href="http://www.sonyericsson.com/developer">www.sonyericsson.com/developer</a> .	

## SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
MO SMS CONTROL		No
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: No. 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 = phone may echo user input on the screen	Yes
	1 = user input not to be revealed in any way (see note)	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		Yes
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 phone	Yes
	'02' = Network Measurement results	Yes
	'03' = Date, time and time zone (DTTinPLI)	Yes
	'04' - Language setting	Yes
	'05' - Timing advance	Yes

Service	Mode	Support
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 phone required	Yes
SEND SS		Yes
SEND USSD		Yes
SET UP CALL	General: Capability configuration	Yes
	Set-up speech call CallParty	No
	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 re-dial	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 re-dial	Yes
SET UP EVENT LIST	'04' = set up call, disconnecting all other calls (if any)	Yes
	'05' = set up call, disconnecting all other calls (if any), with re-dial	Yes
	'00' = MT call	Yes
	'01' = Call connected	Yes
	'02' = Call disconnected	Yes
	'03' = Location status	Yes
	'04' = User activity	Yes
	'05' = Idle screen available	Yes



Service	Mode	Support
	'06' = Card reader status	Not Applicable
	'07' = Language selection	Yes
	'08' = Browser termination	Yes
	'09' = Data available	No
	'0A' = Channel status	No
SET UP IDLE MODE TEXT		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		Yes
CLOSE CHANNEL		Yes
RECEIVE DATA		Yes
SEND DATA		Yes
GET CHANNEL STATUS		Yes

## User Interaction with SIM AT

### Display text

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

Text clearing times are 5-20 seconds with a 60-second time-out limit for the user to clear the text. 'Key' responses:

- 'End key' – Proactive session terminated by user.
- 'Back' – Backward move in proactive session.

Any other key clears the screen if the command is performed successfully.

### Get inkey

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

- 'C' clears current character.
- 'End key' terminates the proactive session.

- '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 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:

- 'C' clears current character.
- 'End key' terminates the proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

### Select item

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

- Navigational key press down – Scroll down list.
- Navigational key press up – Scroll up list.
- 'End key' terminates proactive session.
- '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:

- 'End key' or 'Back' ends the proactive session.

### Set up call

If you are on a call when the commands 'Set up Call', 'putting all other calls on hold' are sent, the user will see the text 'Setting up a call current call will be held'. If 'OK' is pressed the current call will

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

### Set up menu

Incorporates a SIM Application Toolkit Menu Item into the phone's 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 phone's 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.

## Entertainment

### Audio and Video

File types	Formats	Extensions
Audio (All listed audio file formats are supported ringtone file formats)	MP4 MP3 M4A 3GPP™ AMR-NB AMR-WB WAV G-MIDI 1 SP-MIDI RealAudio ® 8 iMelody XMF WMA	.mp4 .mp3 .m4a .3gp .amr .awb, .amr .wav .mid .mid .ra, .rm .imy .xmf .wma
Video (including audio part)	MP4 (video: MPEG4, audio: AAC or AMR) 3GPP™ (video: MPEG4 or H.263, H.264, audio: AAC or AMR) RealVideo ® 8 WMV	.mp4 .3gp .rv, .rm wmv, .asf

File types	Formats	Extensions
Streaming transport	RTSP according to 3GPP™	
Video encoding	H.263 Profile 0, Level 10 MPEG-4 Simple Visual Profile Level 3	
Video decoding	MPEG-4 Simple Visual Profile Level 3 H.263 Profile 0, Level 10 H.264 Baseline Profile (Main subset), Level 1b RealVideo 8	
Audio encoding	AMR-NB AAC-LC	
Audio decoding	MP3 (MPEG-1/2/2.5, audio layer 3), AAC, AAC+, eAAC+, AMR-NB, AMR-WB, AMR-WB+, RealAudio 8 (depending on configuration), WMA version 2,7,8: Class 1, WMA version 9: Level 3, GM, GML, SP-MIDI.	

## Java™

Feature	Functionalities
<b>Java™ Platform, Micro Edition</b>	<ul style="list-style-type: none"> <li>• JSR-75 PDA/File</li> <li>• JSR-82 Bluetooth Wireless Technology API</li> <li>• JSR 118 MIDP 2.1</li> <li>• JSR-120/205 WMA 2.0</li> <li>• JSR-135 MMAPI 1.1</li> <li>• JSR 139 CLDC 1.1</li> <li>• JSR-172 Web Services</li> <li>• JSR-177 Security and Trust Services</li> <li>• JSR-180 SIP</li> <li>• JSR-184 Mobile 3D Graphics</li> <li>• JSR 185 Java™ Technology for the Wireless Industry</li> <li>• JSR-211 Content Handler</li> <li>• JSR-226 SVG</li> <li>• JSR-229 Payment</li> <li>• JSR-234 Adv Multimedia Supplements</li> <li>• JSR-238 Mobile Internationalization</li> <li>• JSR-239 OpenGL ES</li> <li>• JSR-248 Mobile Services Architecture</li> <li>• JSR-256 Mobile Sensor API</li> <li>• Nokia UI API</li> </ul>
<b>Java 3D</b>	<ul style="list-style-type: none"> <li>• Mascot Capsule Ver.3</li> <li>• JSR-139 OpenGL ES</li> <li>• JSR 184 Mobile 3D Graphics API for J2ME™</li> </ul>

# Imaging/Messaging

## 2 Megapixel camera

Facts and figures	
Digital still camera (DSC)	
Truecolour	Yes
Digital zoom	Main camera: 2.5x zoom (in VGA mode).
Autofocus	No
Photo fix	Improves an under-exposed picture by calculating and adjusting the light balance.
Still camera settings bar	
Shoot modes	Normal, Panorama, Frames, Burst.
Picture sizes (resolution)	<b>2 MP</b> (1600x1200 pixels) <b>1 MP</b> (1280x960 pixels) <b>VGA</b> (640x480 pixels) Note: MP = Megapixel.
Night mode	Off, On.
Self-timer	Off, On
Effects	Off, Black & white, Negative, Sepia.
White balance	Auto, Daylight, Cloudy, Fluorescent, Incandescent.
Picture quality	Normal, Fine.
Review	On, Off
Shutter sounds	Yes
Auto rotate	Off, On
Reset file number	Yes
Save to memory	Memory card, phone memory
Video recorder	
Video size (resolution)	QVGA 320x240pixels
Frame rate	15 fps (frames per second)
Digital zoom	Main camera: 4x zoom
Video camera settings bar	
Video clip length	Up to 2 hours, For picture message.

**Facts and figures**

Night mode	Off, On
Photo light	Off, On
Self-timer	Yes, same as camera
Effects	Yes, same as camera.
White balance	Yes, same as camera.
Microphone	Off, On.
Reset file number	Yes, same as camera.
Save to memory	Yes, same as camera.

## Video telephony

**Facts and figures**

Picture sizes (resolution)	QCIF (176x144 pixels) SQCIF (128x96 pixels)
Digital zoom	Video call camera: 2x zoom Main camera used for video telephony: 4x zoom
Night mode	Yes
White balance	Auto
Brightness	Yes
Video coding	H.263 MPEG-4 (Simple Visual Profile Level 0)
Audio coding	AMR

## Images

Images can be shared via Bluetooth connection, MMS, email message, computer file transfer or memory card.

The image size is limited by the amount of free RAM.

**Formats****Details**

JPEG	ISO/IEC JPEG Baseline DCT Progressive DCT Non-differential Unlimited size
GIF	87a, 89a, support for interlacement, animation and transparency Unlimited size

Formats	Details
BMP	Windows® bitmap format
PNG	Unlimited size
SVG	SVG Tiny 1.2
WBMP	Wireless bitmap Unlimited size

## Supported character sets

Decoding text (Incoming MMS)	
US-ASCII	UTF-7
ISO-8859-1	UTF-8
ISO-8859-2	UTF-16
Windows-1251	KOI8-R
ISO 10646 (UCS-2)	
Coding text (Outgoing MMS)	
UTF-8	

## Short Messaging Service

Feature	Support
SMS Service Centre Number	It is possible to pre-load the SMS Service Centre Number.
Pictures	It is possible to insert a picture or an icon into the text message. EMS compliant mobile phones will be able to see the picture correctly.
Reply to messages	It is possible to reply to received messages by SMS, MMS, voice message and email.
Input methods:	Predictive writing and multitap.
Copy and paste words	Yes
Teaching of predictive words that are not in the predictive dictionary	Yes
Possibilities when creating a message:	
Save a sent message in a "Sent items" folder	Yes
Insert a line in the message	Yes
Assign a validity period to the message	Yes

<b>Feature</b>	<b>Support</b>
Use predefined messages	Yes
Possibilities when receiving a message:	
Reply to the sender	Yes
Forward the message	Yes
Save the message on SIM	Yes
Get delivery time and date	Yes
Possibilities of the previously sent message:	
Delivery report of the message	Yes (if requested when sending).
Forward the message	Yes
Save the message on SIM	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM.
Possibilities of the previously received message:	
Reply to the sender	Yes
Save the message in the inbox	Yes
Forward the message	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM.
Supported ways for replying to a received SMS:	
Via SMS, MMS, voice message, email	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
Print via infrared	No
Possibility to enable the user to send an SMS to a list of recipients	Yes
Possibility to write an email address as a recipient address	Yes, if email gateway is present.
SMS storage	On the SIM and in the phone.
Nokia Picture Messaging	Yes

## Enhanced Messaging Service

Feature	Support
Level of compliance supported by the phone regarding the specifications described in release 99.	Enhanced Messaging Service (EMS) according to the standard 3GPP™ TS 23.040 v4.3.0, with the addition of the ODI feature from 3GPP™ TS 23.040 v5.0.0.
Number of messages that the phone is able to handle to generate a concatenated message	10
Capacity storage	Up to 1000 and the space on the SIM card.
Outgoing messages	It is possible to: <ul style="list-style-type: none"> <li>• see how many short messages an EMS message consists of before sending it.</li> <li>• choose whether to send the message or not after writing it.</li> </ul>
Incoming messages	<ul style="list-style-type: none"> <li>• A signal is heard once all parts of the message have been received or when a time-out occurs.</li> <li>• It is possible to re-use the content of an EMS message. Sounds, pictures, and animations can be inserted in a new message, if the object is not protected using ODI.</li> </ul>
Delivery report for concatenated messages	A receipt is received in the phone when all parts of a concatenated message have been delivered if a delivery report is requested when it is being sent.
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.
Melodies	It is possible to: <ul style="list-style-type: none"> <li>• receive (always), send via EMS (if not copyright protected).</li> <li>• download melodies and commercial tunes from WAP/WAP portals.</li> </ul>
WBMP	Yes
Picture sizes	16x16, 32x32 pixels, variable size in black and white.
Pictures	It is possible to: <ul style="list-style-type: none"> <li>• edit pictures using PhotoDJ™.</li> <li>• receive (always), send via EMS (if not copyright protected).</li> <li>• download pictures from WAP/WAP portals.</li> </ul>



Feature	Support
Animations	There is support for the following animations: Angry, Crying, Flirty, Happy, Kiss, Sad, Tongue, Wow, Confused, Devil, Glasses, Indifferent, Laughter, Sceptical and Wink, as defined in 3GPP™ TS 23.040 v4.3.0. It is possible to: <ul style="list-style-type: none"> <li>• send and receive animations.</li> </ul>
TP-PID field value given by the phone before sending an EMS message	0x00

## Multimedia Messaging Service

Feature	Support
MMS/CSD parameters and MMS/GPRS parameters placement	MMS is bound to a MMS profile. A MMS profile is bound to a Data account. A data account contains either CSD parameters or GPS parameters and possibly proxy settings.
Possibility to pre-configure the MMS parameters in factory	<ul style="list-style-type: none"> <li>• MMS/CSD: Yes</li> <li>• MMS/GPRS: Yes</li> </ul>
Possibility to configure the MMS parameters by OTA provisioning	<ul style="list-style-type: none"> <li>• MMS/CSD: Yes</li> <li>• MMS/GPRS: Yes</li> </ul>
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	<ul style="list-style-type: none"> <li>• MMS/CSD: Yes</li> <li>• MMS/GPRS: Yes</li> </ul>
Possibility for only one parameter, in the set of parameters, to be OTA provisioned	<ul style="list-style-type: none"> <li>• MMS/CSD: No</li> <li>• MMS/GPRS: No</li> </ul>
OTA provisioning solution	OMA provisioning
Supplier indication of realized interoperability tests between its MMS User Agent and MMS Relay/Server from other suppliers	Yes
Support of a standard procedure for OTA provisioning of MMS parameters	OMA provisioning
Functionalities that the user is able to set during message composition:	<ul style="list-style-type: none"> <li>• message subject</li> <li>• message priority</li> <li>• email recipient address</li> <li>• message Cc, Bcc recipient(s) address(es)</li> <li>• delivery report request</li> <li>• read report request</li> <li>• MSISDN recipient address</li> <li>• Delivery time</li> <li>• Validity period</li> </ul>

Feature	Support
From where can the user insert multimedia elements into multimedia messages:	File Manager Photo album Directly from camera Contacts Calendar Task Note Browser (vBookmark)
Possibility for sent messages to be memorized into a folder in phone memory	Yes
Actions that the user can perform after message retrieval:	<ul style="list-style-type: none"> <li>• reply to the sender of the message SMS/MMS</li> <li>• reply to the sender and to Cc, Bcc people SMS/MMS</li> <li>• forward the message</li> <li>• delete the message</li> <li>• save message in a dedicated folder</li> <li>• call the sender of a message</li> <li>• save item</li> <li>• mark as unread</li> <li>• details</li> </ul>
Multimedia codecs/formats supported for audio	AAC, AMR, MPEG Layer 3, Real 8, AWB, WAV, MP4, MIDI, iMelody, 3GPP™, XMF, M4A, WMA.
Multimedia codecs/formats supported for video	MPG4, 3GPP™, SDP, Real 8, WMV.
Multimedia codecs/formats supported for image	JPEG, GIF87, GIF89A, PNG, SVG, WBMP, BMP.
Supported formats for message presentation:	<ul style="list-style-type: none"> <li>• message body + attachments (email presentation)</li> <li>• SMIL version as described in OMA MMS IOP document version 1.2</li> </ul>
Maximum message size that can be handled by the phone for message	Content Class and Creation mode are applied. Maximum size can also be customized.
Maximum number of object supported in message	30 objects is standard. It is possible to increase the number through configuration.
Maximum text size	5,000 characters/text

## Email client technical data

Feature	Support
Bearer type UMTS (IP)	Yes
Bearer type GSM Data (IP)	Yes, GPRS, HSCSD, ISDN and analog

Feature	Support
Character sets	ISO: ISO-8859-1, ISO-8859-2, ISO-8859-5, ISO-8859-7, ISO-8859-9, ISO-8859-10 Windows: Windows-1251, Windows-1252, Windows-1254, Windows-1255, Windows-1258 US-ASCII Unicode: UTF-7, UTF-8, UTF-16 Japanese: Shift_JIS, ISO-2022-JP Cyrillic: KOI8-R Simplified Chinese: GB2312, GB18030 Traditional Chinese: Big5
OTA provisioning solution	Yes
Protocols	POP3 and IMAP4
Push email	IMAP Idle (extension of IMAP4Rev1), OMA Email Notification 1.0 and scheduled checking
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
Remote configuration	OMA Client Provisioning
HTML mail	Yes (tags removed)
Thumbnailed image attachments	Yes
Message management	User selectable inbox size, save messages to Memory Stick, arrange messages by categories Headers only or size limits
ESMTP	Yes
Background sending	Yes

# Connectivity

## Bluetooth™ technical data

Dimension	Support
Bluetooth capability statement	This phone supports Bluetooth Specification, version 2.0 with enhanced data rate (EDR).
Bluetooth profiles	Basic Imaging Profile Dial-up Networking Profile File Transfer Profile Generic Access Profile Generic Object Exchange Profile Handsfree Profile Headset Profile Human Interface Device (HID) Profile Java API Object Push Profile Personal Area Networking Profile Serial Port Profile Synchronization Profile SyncML OBEX binding Advanced Audio Distribution Profile (A2DP) Audio/Video Remote Control Profile Phonebook Access 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 +3dBm or 2mW
Frequency band	2.4 GHz - the unlicensed ISM band.
Power consumption	GSM host processor excluded: <ul style="list-style-type: none"> <li>• Standby, Bluetooth On mode: &lt;0.6mA</li> <li>• Voice to headset (HV3 master): 12 mA (8 mA with EDR functionality, 2EV3 master). Dependent on various parameters such as if the phone is master or slave.</li> <li>• Data mode average: 29 mA at 172.8 Kbps symmetrical (DH1).</li> </ul>
Data transmission rate	Up to 600 Kbps asymmetric and up to 350 Kbps symmetric from an application level.

## OMA Data Synchronization (SyncML) technical data

Feature	Support for Sync ML
SyncML compliance	The phone is fully SyncML compliant, having passed SyncML Conformance testing. SyncML 1.2 or SyncML 1.1.2 is used depending on configuration and both are supported in Server-alerted synchronization.
Basic data formats	Contacts: vCard 2.1, Calendar: vCalendar 1.0 (vEvent) Tasks: vCalendar 1.0 (vTodo) Notes: text/plain, Bookmarks:vBookmark 1.0
Possibility for operators to extend SyncML functionality.	The device may be configured to include preset SyncML settings, and to control whether SyncML 1.1 or SyncML 1.2 will be used.
Transport method for SyncML messages.	HTTP, HTTPS, OBEX (USB, Bluetooth)
Possibility for the user to configure login parameters (for example, username and password) to access the remote database.	Yes
Configuration parameters that can be entered/modified by the user.	Server URL, Username, User PWD, Paths to databases (Calendar, Contacts, Notes, Tasks and Bookmarks), UserID and PWD for databases, Databases to be synchronized (On/Off), Internet profile, Synchronization interval, Server ID and Server PWD, permission to allow server-alerted synchronization and roaming options. Can be provisioned with OMA Client provisioning v1.1 and OMA Device Management v1.2
Ability to deal with multiple servers.	Yes
Ability to perform conflict resolution actions.	No

## Microsoft® Exchange ActiveSync

Feature	Support for Exchange ActiveSync
Protocol version	The phone supports version 2.5 of Microsoft Exchange ActiveSync.
Supported applications	Email, Calendar, Phonebook
Transport method used	HTTP, HTTPS
Possibility for the user to configure login parameters for remote server	Yes
Configuration parameters that can be entered/modified by the user	Server URL, username, domain name, password, applications to sync, email message size, email attachment size, email date range, message alert sound, calendar date range, interval sync, secure connection, roaming option.

Feature	Support for Exchange ActiveSync
Ability to use multiple servers	No
Ability to perform conflict resolution	No

## Web browser technical data

Feature	Support in the browser
Bookmarks	Yes, with folders and sorting supported.
Bookmark Export/Import	Yes, can be sent and received using vBookmark format via, Bluetooth™, SMS, MMS and email.
Browser compliancy	<p>The Web browser is compliant with the following standards:</p> <p>HTML 4.01  XHTML Basic 1.0  XHTML 1.1, Module-based XHTML  XHTML Mobile profile  Compact HTML for Small Information Appliances  WML 1.3  Cascading Style Sheets, level 2 revision 1, CSS 2.1 Specification  WAP CSS Specification, Version 26-Oct-2001 (WAP-239-WCSS-20011026-a)  ECMA-script according to specifications found at <a href="http://www.ecma-international.org/publications/standards/Stnindex.htm">http://www.ecma-international.org/publications/standards/Stnindex.htm</a>  ECMAScript Mobile Profile  AJAX (Asynchronous JavaScript and XML)  Document Object Level Model 2 (DOM 2)  Scalable Vector Graphics, Mobile SVG Profile: SVG Tiny, version 1.2</p> <p>For further details, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com">http://developer.sonyericsson.com</a></p>
Browser version	Access NetFront 3.4
Cache	Yes (size 300 kB and 1 MB Flash).
Character sets *	<p>Most standard character sets, among others UTF-8 (Default), UTF-16, USASCII, Latin1, UCS2.</p> <p>For updated and detailed information, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com">http://developer.sonyericsson.com</a></p> <p>*) When creating WML applications, it is recommended to always save the page contents as UTF-8.</p>
Clear cache	Yes, persistent. By user interaction, at SIM card change or master reset.
Frames	Full Frame support: Frames, IFrames

Feature	Support in the browser
Image formats and animations	GIF (interlaced and non-interlaced) WBMP, JPEG, PNG, BMP and SVG. Animated GIFs, animated SVG and Flash.
Schemes	wtai, mailto:, smsto:, tel, rtsp, http, https
Streaming	Mobile TV, progressive download, RTSP, Java script controls.
Web feeds	RSS ticker, podcasts, enclosures, OPML import. No support for ATOM.
<b>User agent profile</b>	
User Agent Profiles	Yes, list of client characteristics - for example screen size. For details, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com">http://developer.sonyericsson.com</a>
URL sent pointing to the UA profile at the beginning of browser session	Yes. For details, see the <i>WAP User Agent strings and profiles for Sony Ericsson mobile phones</i> Developers guidelines at Developer World <a href="http://developer.sonyericsson.com">http://developer.sonyericsson.com</a>
<b>Download</b>	
OMA download functionality	Yes
HTTP GET solution to download content/ Uses browser for download	Yes
Other download content	Yes. No download limit when using 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.
UAP indication for downloading	Yes
Other features	Yes. Store, delete, forward, use, manage.
Object formats	All formats can be downloaded and stored, but only formats supported by the phone can be used by the phone.
Resume	Yes
Background download	Yes
Progressive download	Yes
Streaming	Yes
<b>Browser GUI</b>	
Selection keys	Yes. Green/Red paradigm plus two selection keys and centre navigation key.
Separate/dedicated back or erase keys	Yes

Feature	Support in the browser
Display backlight on when browsing	Yes
Predictive writing	Yes
“http://” string displayed automatically when entering URLs	Not displayed but the “http://” is added automatically to the URL.
“www” added automatically when entering URLs	No
Combined Search/Go To input field	Intelligent input field changes appearance (Search or Go to) depending on user input. “www”, “.com” and other URL syntax can be used to trigger the Go To appearance.
<b>Internet network features</b>	
Bluetooth (as local connection)	Yes
Infrared (as local connection)	No
Network settings	Yes
PPP Authentication	PAP, CHAP supported.
Security	HTTPS authentication TLS version 1 SSL version 3 WIM on SIM ICC X.509 certificate support, WAP Profile WPKI OTA download of trusted certificates
USB (as local connection)	Yes
<b>PUSH</b>	
<b>Content types</b>	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	No
Session Initiation Application (SIA)	Yes
<b>Man Machine Interface</b>	
SI/content retrieval postponing	Yes
SI menu structure accessibility	Messaging, Inbox
SL reception warning	The user can make a choice if a dialogue is wanted or not before loading the SL.
SIA reception warning	Yes



Feature	Support in the browser
Cache size limitations	The oldest push in the inbox will be discarded.
Number of push messages	Depends on the size of the push messages. Around 20 push messages with a size of 1024 bytes URL and 1024 bytes Indications for Service Indication can be stored.
Push deactivate	Yes
Dynamic push menu changes	No. There are no changes in the menus when activating/deactivating push.
<b>Security</b>	
Mechanisms for push	None
Trust with PPG	Sending a SIA is the most reliable.
WSP push sessions	No
HTTP push sessions	The White List (a setting to allow push messages only from certain addresses) is supported for IP address.
SMS connection-less push	The White List (a setting to allow push messages only from certain addresses) is supported for SMS Center.
Denial of service/spoofing	Setting to select when to allow push messages: Always, always ask or never. There is also a setting to select whether to allow push messages from all senders or only from certain addresses (the White List).

## Client Provisioning

Feature	Support
<b>Provisioning</b>	
<b>Provisioning types</b>	<b>OMA Client provisioning (v1.1)</b>
Total Parameter sets	10 (shared between the WAP provisioning types) < or = 10 (total number of data accounts)
Parameter set list	<div> name, homepage and homepage title (1st bookmark element), proxy/GW address, bookmarks (remaining bookmark elements), CSD phone number, CSD data rate, CSD dial type, GPRS APN, protocol authentication, GW authentication, secure connection on/off </div> <div> name, homepage, proxy/GW address, CSD phone number, CSD data rate, CSD dial type, CSD response timer, GPRS APN, protocol authentication, GW authentication, GPRS QoS </div>

Feature	Support
Parameter sets include	CSD, GPRS (different sets)
Factory pre-configuration	CSD (possibility to lock a setting), GPRS
<b>OTA</b>	CSD, GPRS configuration possible.
<b>Security mechanism</b>	
<b>Bearer</b>	<b>OMA Client Provisioning</b>
OTA via SMS	Uses security mechanism (SEC) methods according to OMA-WAP-ProvCont-v1_1-20050428-C (see <a href="http://www.openmobilealliance.org">www.openmobilealliance.org</a> ).
<b>Interface</b>	
<b>Bearer</b>	<b>OMA Client Provisioning</b>
OTA via SMS	For NETWPIN the user is asked to accept to install received settings. 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	OMA Client Provisioning
OTA via SMS	If the settings previously installed were privileged or have higher priority, it might not be possible to install the settings again unless the terminal is reset, otherwise as above.
Carrier reset/provisioning	Yes, but not if the set is pre-configured in the factory and locked.
SWIM	Not used for provisioning. The SWIM is only used for WAP security, both SSL/TLS connections and digital signatures.
<b>Applicative provisioning</b>	
Preferred bearer customization	Yes
Other applications/features	Yes (MMS, OMA Data Synchronization, Wireless Village, OMA Device Management, Streaming).
<b>Technologies</b>	
OMA Client provisioning	Yes, Client Provisioning version 1.1
Openwave OTA	No
Other	No
Provisioning bearer	SMS

Feature	Support
Parameter sets available	Yes
Parameter sets for OTA modification	Yes

# Abbreviations

## **3G**

Technology that enables 384 Kbps (up to 3,6 Mbps download with HSDPA) data transfer and video telephony.

## **3GPP™**

3rd Generation Partnership Project

## **AAC+**

Advanced Audio Coding

## **AMR**

Adaptive Multi Rate.  
Audio format for speech sounds.

## **API**

Application Programming Interface

## **Bluetooth PAN**

Bluetooth Personal Area Network

## **CS**

Circuit Switched

## **CSD**

Circuit Switched Data

## **DRM**

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

## **DTMF or Touch Tone**

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

## **EDGE**

Enhanced Data Rates for GSM Evolution

## **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 provides increased network capability.

## **eAAC+**

Enhanced Advanced Audio Coding

## **EDR**

Enhanced Data Rate.

## **EFR**

Enhanced Full Rate, speech coding.

## **EMS**

Enhanced Messaging 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.

## **FM**

Frequency Modulation of the (radio) carrier wave.

## **FR**

Full Rate, speech coding.

## **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 system family includes GSM 850, GSM 900, GSM 1800 and GSM 1900. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant.

## **HSCSD**

High Speed Circuit Switched Data. A communications standard enabling GSM data transfer 14.4 - 28.8 Kbps.

## **HSDPA**

High Speed Downlink Packet Access

## **HTML**

HyperText Markup Language

## **HTTP**

HyperText Transfer Protocol

## **JPEG**

Joint photographer expert group

## **MIDI**

Musical Instrument Digital Interface

## **ME**

Mobile Equipment

## **MMI**

Man-Machine Interface. See UI.

## **MP**

Megapixel

## **MP3**

Short for "MPEG-1 layer 3", an effective audio coding scheme.

## **MPEG4/MPG4**

MPEG-4 extends the earlier MPEG-1 and MPEG-2 algorithms with synthesis of speech and video, fractal compression, computer visualisation and artificial intelligence-based image processing techniques.

## **MT**

Mobile Termination

## **ODI**

Object Distribution Indicator

## **OMA**

Open Mobile Alliance

## **OTA**

Over-The-Air Configuration. To provide settings for the phone by way of sending an SMS message 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

## **PNG**

Portable Network Graphic

## **RDS**

Radio Data System

## **RSS**

Really Simple Syndication

## **RTSP**

Real Time Streaming Protocol session control.

## **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. The phone uses the small plug-in card.

## **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.

## **SP-MIDI**

SP-MIDI stands for Scalable Polyphony MIDI.

## **SS**

Supplementary Services

## **SSL**

Secure Socket Layer

## **TLS**

Transport Layer Security

## **TTI**

Transmission Time Interval

## **UI**

User interface

## **WCDMA**

## **URL**

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

## **USSD**

Unstructured Supplementary Services Data

## **vCard**

vCard automates the exchange of personal information typically found on a traditional business card, for use in applications such as Internet mail, voicemail, Web browsers, telephony applications, call centres, conferences, PIMs /PDAs, pagers, fax, office equipment and smart cards. vCard is specified by IETF.

## **VGA**

Video Graphics Array

## **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 WML 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.

## **WAV**

Windows media audio.

## **WBMP**

Wireless BitMap.  
A graphic format optimized for mobile computing devices.

Wideband Code Division Multiple Access

## **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**

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

## **WSP**

Wireless Session Protocol

## **WWW**

World Wide Web

## **XHTML**

Extensible HyperText Markup Language

## **XML**

Extensible Markup Language

# Related information

## Documents

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- Sony Ericsson User Guide
- Sony Ericsson FAQ
- AT Command Reference Manual
- WAP 2.0 Specifications

## Links

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- [www.sonyericsson.com](http://www.sonyericsson.com)
- [www.ericsson.com/mobilityworld](http://www.ericsson.com/mobilityworld)
- [www.midi.org](http://www.midi.org)
- [www.gsmworld.com](http://www.gsmworld.com)
- [www.bluetooth.com](http://www.bluetooth.com)
- [www.imc.org](http://www.imc.org)
- [www.3gpp.org](http://www.3gpp.org)
- [www.etsi.fr](http://www.etsi.fr)
- [www.openmobilealliance.org](http://www.openmobilealliance.org)
- [www.java.sun.com](http://www.java.sun.com)
- [www.memorystick.org/](http://www.memorystick.org/)
- [www.memorystick.com/](http://www.memorystick.com/)
- [www.w3.org/TR/xhtml1-basic](http://www.w3.org/TR/xhtml1-basic)

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