1   General

The *R190a Satellite* is a dual-mode phone capable of operation in both AMPS (800 MHz) networks as well as Satellite (1500 MHz) networks. This is a 4-Volt platform and supports many of the accessories available for the 4V family of Ericsson phones.
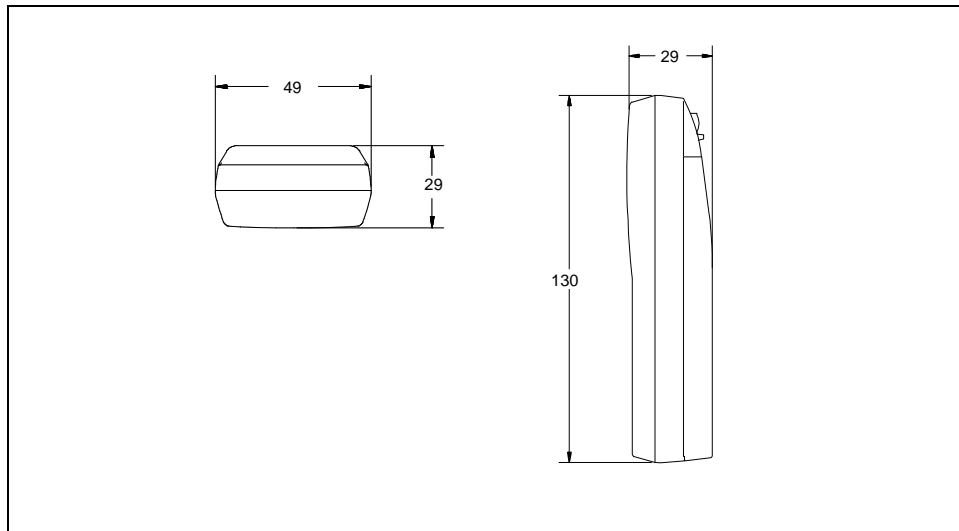
2   Mechanical Description

2.1   Dimensions

2.1.1   Case and Battery

The size of the Dual-Mode User Terminal, without antenna, is 130 x 49 x 29 mm with battery, as shown in the following figure:

2.1.2   Antenna

The dual-mode antenna extends the length and width (when antenna is in the stowed position) by no more than 18.5 mm in either direction.

2.1.3   Weight

The weight of the Dual-Mode User Terminals, without antenna, will be $\leq$ 205 g ± 5 g with battery. The antenna weighs 48.3 g.

2.2   Display

2.2.1   Display Format

The phone utilizes a 101 by 40 pixel, full graphic display using COG (Chip On Glass) technology. The module consists of a highly legible, transflective, positive FSTN (Film compensated Super Twist Nematic) display that operates over a broad temperature range. It is illuminated in a soft green and is backlit for low-light viewing.
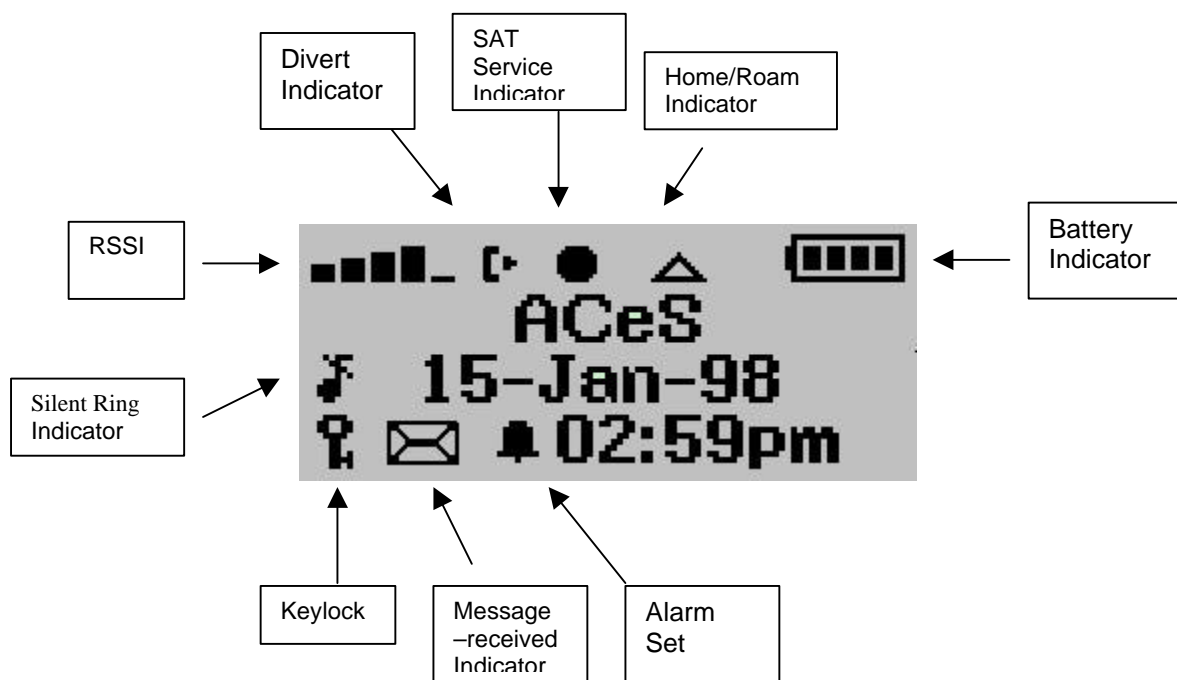
The display provides indications of the following (not full list):

Advantaged or disadvantaged service (Satellite mode)
Full or Limited Service States
Network operator name
Date and Time
Diverted line indicator
Roaming indication
Muted ring indicator
Five bar signal strength indicator
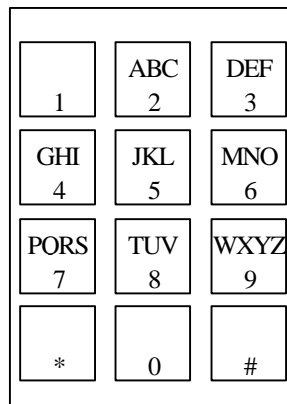Battery status
Lock status
Voice Mail
Alarm enabled
Other menu-related indications

2.3   Controls

2.3.1   Keypad

The keypad consists of a standard four row by three column numeric keypad, Yes, No, and Clr keys as well as two arrow keys for scrolling. The standard numeric keypad layout is shown below.

1	ABC 2	DEF 3
GHI 4	JKL 5	MNO 6
PORS 7	TUV 8	WXYZ 9
*	0	#

They keys are black with white lettering under clear plastic domes. There is a raised dot on the 5 key for orientation purposes. The international prefix character, '+', can be obtained with an extended press of the '0' key.

The Yes and No keys are used to originate, answer, and terminate calls as well as to aid in menu navigation.   The No key also serves as the power on/off key. Clr can be used to delete single or multiple characters from the display.

The arrow keys are used for menu scrolling.

The keypad can be backlit for low-light viewing.

2.3.2   Volume Controls

There are two keys on the side of the phone to allow volume control while on a call. These can be easily operated with either the index finger or the thumb for right or left handed users.

2.4   *Indicator Light*

There is a small LED (Light Emitting Diode) on the top of the casing. This light is visible from the front, sides, and back of the phone and indicates the status of the phone as follows;

- Green, slow-flashing indicates that the phone is in a service area and ready to operate
- Green, steady on indicates that the phone is either ready to operate with the handsfree equipment or is being charged.
- Green, rapid flashing indicates an incoming call.
- Red, flashing indicates that the battery capacity is too low to place or receive calls.

2.5   *Earphone*

The built-in pressure chamber earphone acts as a loudspeaker to the user and provides a high quality audio signal. The volume can be adjusted to six different levels.

2.6   *Transducer*

There is a transducer located at the top of the casing to provide audio signals in addition to those provided through the earphone. In particular, the ring signals, various alerts, and informational tones are emitted from the transducer rather than from the earphone. The ring signal can be selected from a variety of pitches and durations along with several well-known musical excepts. The melody may also be programmed by the user. Other alerts include network access, incorrect keypress, and low battery warning.

2.7   Microphone

The omnidirectional electret condenser microphone is located on the bottom of the case. Noise cancellation is provided within the signal processing algorithms.

2.8   Antenna

Although designed as a quadrafiler helix design to provide the RHCP (Right Hand Circular Polarization) for the Satellite mode, it can be driven as a monopole when operating in AMPS mode.

2.9   External Connector

A 14-pin external connector is provided at the bottom of the phone casing. It allows connection to the mobile office solutions for data and FAX capabilities, to battery chargers, and to hands-free accessories. It is also used for reprogramming the phones FLASH and EEPROM (Electrically Erasable Programmable Read Only Memory) memories. Furthermore, it can be connected to either a PC (using a special cable) or Log Plug test unit to log debug information output by the phone.

2.10 SIM Card

This phone accepts the 3V mini-SIM (Subscriber Interface Module) card. The SIM holder is located on the back of the phone underneath the battery. SIMs can be easily accessed in this area. A SIM is not required for AMPS operation.

3   Performance

3.1   Standby Time

The UT is required to have a standby time of 30.5 hours in Satellite mode when using a 700 mAh battery. It is anticipated that this time will be between 50 and 60 hours. Estimated standby time while in AMPS mode is 13-14 hours.

3.2   Talk Time

The UT is required to have 2.5 hours of talk time when under 50% DTX conditions in Satellite mode. This time is estimated using a 700 mAh battery. The actual talk time will likely by 3.6 hours for Satellite. Estimated talk time while in AMPS mode is 1 hour and 10 minutes.

3.3   Charging Time

Estimated battery charging time is less than two hours.

4   Features

4.1   Phone Book

The UT provides 84 20-digit and 15 80-digit phone numbers in internal memory. Additional phone numbers may be stored in the SIM. These may be searched by entry number or by name.

4.2   Network Selection

Satellite network selection is per SAIS 03.22.

4.3   Encryption

VGE-64 is supported in Satellite mode.

4.4   Clock

The real time clock can provide date and/or time information in a variety of user-selected formats. Additionally, an alarm function is included.

4.5   Calculator

A basic four-function calculator can be selected via the menus.

4.6   Calling Line ID Presentation and Restriction

In the AMPS mode, the calling party's phone number can be displayed if provided by the network. Also, the user may choose to prevent the network from presenting the user's phone number to called parties.

4.7   Voice Mail Indication

In AMPS mode, the UT will provide an indication (if information is provided by the network) that user has received voice mail.

5   Services

5.1   Voice

Quarter rate (basic) and half-rate (robust) voice are supported in the Satellite mode while analog voice is supported in AMPS mode.

5.2   Data

2400 bps, transparent data services are supported on a basic (quarter rate) Satellite channel. The current Mobile Office equipment for AMPS mode will allow data rates up to 28.8 kpbs.

5.3   FAX

G3 FAX can be supported at the data rates above when using the Mobile Office accessory.

5.4   DTMF Dialing

DTMF tones can be generated in the audio path in either AMPS or Satellite mode for such uses as voice mail access.