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This document is related to the following products:

## **APPLICABILITY TABLE**

PRODUCT	P/N
UC864-E	4990250031
UC864-G	4990250030
UC864-WD	4990250050
UC864-WDU	49902500051



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# 1 Introduction

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## 1.1 Scope

This document aims to help those who want to use a remote SIM with a Telit WCDMA module using Bluetooth SAP profile.

### 1.2 Audience

The audience is expected to be familiar with WCDMA technologies as well as provide sound experience with module controlling through AT commands.

# 1.3 Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit's Technical Support Center (TTSC) at:

TS-EMEA@telit.com

TS-NORTHAMERICA@telit.com

TS-LATINAMERICA@telit.com

TS-APAC@telit.com

#### Alternatively, use:

http://www.telit.com/en/products/technical-support-center/contact.php

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

http://www.telit.com





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To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

# 1.4 Document Organization

This document contains the following chapters:

<u>"Chapter 1: "Introduction"</u> provides a scope for this document, target audience, contact and support information, and text conventions.

"Chapter 2: "System Overview" gives a brief overview about the spectrum of features.

<u>"Chapter 3: "Software Architecture Details"</u> provides a broad description of the software architecture of the entire system.

<u>"Chapter 4: "SIM Access Profile"</u> describes the profile as far as structure, entities, and protocols involved.

<u>"Chapter 5: "Setup and installation"</u> describes in details the stept to take in order to set up the entire system.

<u>"Chapter 6: "Connection with a SAP server"</u> provides an example of the sequence of AT commands needed to connect the BT SAP Client Telit UC864 to the capable Bluetooth phone (SAP server).

<u>"Chapter 7: "AT Commands"</u> provides information about dedicated AT commands that activate the Remote SIM feature in the Telit module.





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### 1.5 Text Conventions



<u>Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.</u>



Caution or Warning — Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.



Tip or Information — Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

### 1.6 Related Documents

The following is a list of applicable documents downloadable from the Download Zone section of Telit's website <a href="http://www.telit.com">http://www.telit.com</a>

- a) Telit AT Commands Reference Guide.
- b) Sim Access Profile Specification (Bluetooth doc)

## 1.7 Document History

Revision	Date	Changes
Rev0	2009-03-11	initial release



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# 2 System Overview

## 2.1 General system

The External Host (which runs the customer application) controls directly Telit module with standard Telit AT command using BT profiles like Sim Access Profile.

The Sim Access Profile (SAP) defines a protocol and related procedures that allow access to a remote SIM card using Bluetooth (BT).

In such a system, the Telit module accesses the remote SIM, which is in the remote BT device, through the BT USB dongle, using a Bluetooth link.

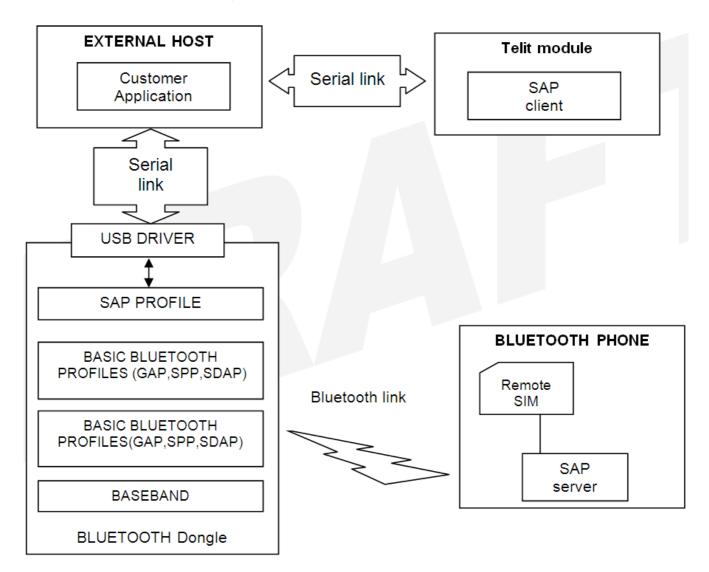
This feature allows the registration of the Telit module in GSM, GPRS and UMTS networks using all the subscription information stored in the remote SIM.



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# 3 Software architecture details

The following picture shows the software architecture of the entire system, when Telit SAP Client is not yet activated:





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As it can be seen from the scheme, no Bluetooth protocol layers are implemented in the External Host: lower Bluetooth protocol stack and basic BT profiles are in the Bluetooth dongle. In a first phase, standard AT Command can be used after the External Host creates a BT link between the SAP client and the server.

When the BT link has been established and the Telit SAP client is running, only standard AT commands are available. Issuing these kinds of commands, the External Host can use all the GSM, GPRS and UMTS functions offered by the Telit module.

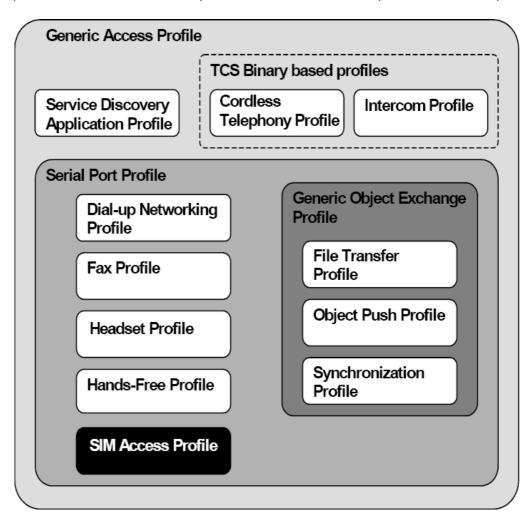
The SAP Server should be implemented by the remote BT device (E.g. a BT phone).



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# 4 Sim Access Profile

This picture shows the Bluetooth profile structure and the dependencies of the profiles.

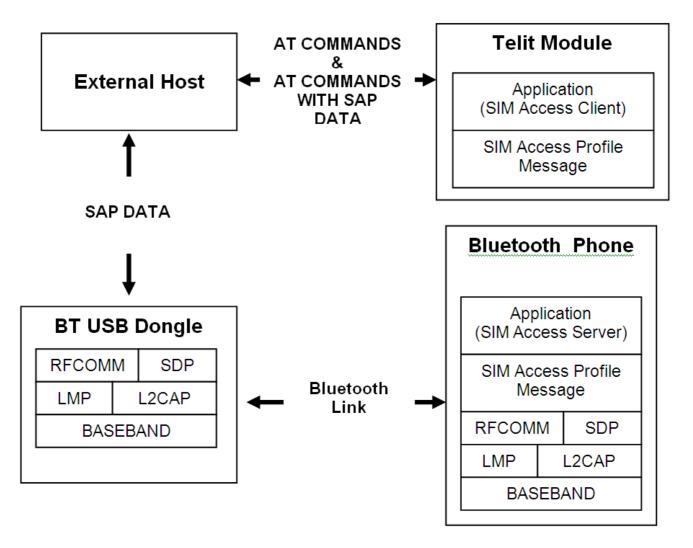


The Sim Access Profile is an extension of both the Serial Port Profile and the Generic Access Profile.



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The picture below shows the protocols and entities used in this profile; it also shows where each part is implemented.



The following roles are defined for this profile:





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- SIM Access Client
- SIM Access Server

The SIM Access Server has direct access to the SIM. It assists the SAP Client in accessing and controlling the SIM via the Bluetooth link and act as a mediator for all messages (APDUs) exchanged between the SAP Client and the SIM.

### 4.1 Telit SAP Client

Telit SAP implementation supports the features that are mandatory in the BT specs for a SAP client.

- Connection management
- Transfer APDU
- Transfer ATR
- Power SIM ON
- Report status
- Error handling



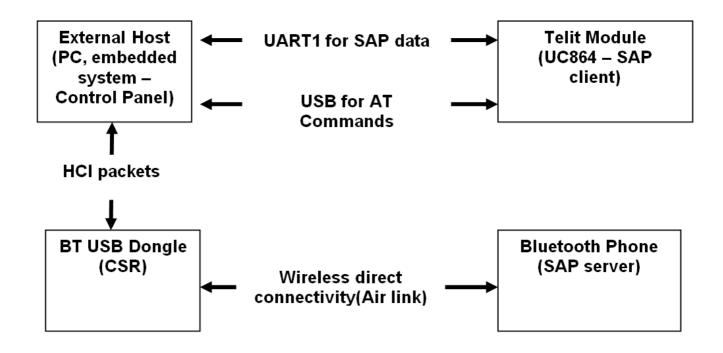


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# 5 Setup and Installation

In order to setup the entire system, the next steps shall be followed:

- 1) Install the UC864 USB drivers
- 2) Note the numbers of the 3 COM ports in Control Panel. (e.g. COM4, COM1, COM6)
- 3) Install JAVA
- 4) Plug in the Bluetooth dongle and install the CSR drivers. It may be necessary to manually intervene and point Windows at 'usbspi.inf'. Don't allow any automatic installation of Widcom, Toshiba or other stacks. Check in Windows Control Panel that driver is CSR 1.24





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# 6 Connection with a SAP server

This chapter provides an example of the sequence of AT commands needed to connect the BT SAP Client Telit UC864 to the capable Bluetooth phone (SAP server).

### 6.1 Procedure to activate and run Telit SAP Client

In a first phase, the External host has established a bluetooth link to the USB dongle using SAP profile.

Now the system is ready to enter in SAP mode.

The following command starts the Telit SAP client. It uses some specific parameters. More details about this command are given in Chapter 8.

```
AT#RSEN=1,1,0,2,0
OK
```

If the Telit SAP Client starts successfully, the following URC (Unsolicited Result Code) message will be sent toward the External Host if the SAP:

#RSEN=1

After that, SIM data will be exchanged between Client and Server using SAP messages.

## 6.2 Use SAP feature

Once the SAP is active the External Host can send standard AT COMMAND in order to place a call, send and receive SMS, connect via GSM, GPRS and UMTS network. Before using these functions, if required, the SIM PIN must be issued with the standard AT COMMAND:

AT+CPIN=1234 OK





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## 6.3 Exit from SAP mode

Once the preliminary exchange of SAP messages between SAP Client and SAP Server is completed, the External Host can stop the Telit SAP Client, issuing the specific AT Command:

AT#RSEN=0 OK



#### NOTE:

It has been seen that this command works properly only after the module finishes reading completely the remote SIM.

If the Telit SAP Client stops successfully, the following URC (Unsolicited Result Code) message will be sent to the External Host:

#RSEN=0

## 6.3.1 Link supervision

Each physical link has a timer that is used for link supervision. This timer is used to detect physical link loss caused by devices moving out of range, or being blocked by interference, a device's power-down, or other similar cases of failure.



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# 7 AT commands

In the following paragraph you can find more information about dedicated AT commands that activate the Remote SIM feature in the Telit module.

## 7.1 #RSEN — Remote SIM Enable

### #RSEN - Remote SIM Enable

AT#RSEN=<mode>[, | Set command is used to enable/disable the Remote SIM feature.

<sapformat>[, <role>[,

<muxch>[.

Parameters:

#### <mode>

0 - disable

1 - enable

#### <sapformat>

0 - X-SAP

1 - binary SAP (default)

#### <role>

0 - remote SIM Client (default)

1 - remote SIM Server (unsupported)

<muxch> - MUX Channel Number; mandatory if <mode>=1

### and <sapformat>=1

1..3 - dummy value

<beacon> - retransmition timer of SAP Connection Request

0 - only one transmition (default)

1..100 - timer interval in seconds.

#### NOTES:

If the module has a SIM inserted, when it receives the enable Command:

- de-register from the actual network
- de-initialize the current SIM.

NOTE for **<sapformat>=1** (binary SAP): while RSEN is activate SAP connection status is signalled with following URC:

#RSEN: <conn>





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#RSEN - Remote SIM Enable		
	where	
	<pre><conn> - connection status 0 - disconnected</conn></pre>	
	1 - connected	
AT#RSEN?	Read command returns the connection status of Remote SIM feature	
AT#RSEN=?	Test command returns all supported values of Remote SIM Enable command	



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### **List of Acronyms** 8

BT	Bluetooth
SAP	Sim Access Profile
SDAP	Service Discovery Application Profile
SPP	Serial Port Profile