



# SIM7070\_SIM7080\_SIM7090 Series\_SAT\_ Application Note

LPWA Module

## **SIMCom Wireless Solutions Limited**

Building B, SIM Technology Building, No.633, Jinzhong Road

Changning District, Shanghai P.R. China

Tel: 86-21-31575100

[support@simcom.com](mailto:support@simcom.com)

[www.simcom.com](http://www.simcom.com)

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### **SIMCom Wireless Solutions Limited**

Building B, SIM Technology Building, No.633 Jinzhong Road, Changning District, Shanghai P.R. China

Tel: +86 21 31575100

Email: [simcom@simcom.com](mailto:simcom@simcom.com)

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# About Document

## Version History

Version	Date	Owner	What is new
V1.00	2019.10.31	Xiaotao.qin	First Release
V1.01	2020.2.26	Wenjie.lai	Add product types
V1.02	2020.7.8	Ping.Zhang	All

## Scope

This document applies to the following products

Name	Type	Size(mm)	Comments
SIM7080G	CAT-M/NB	17.6*15.7 *2.3	N/A
SIM7070G/SIM7070E	CAT-M/NB/GPRS	24*24*2.4	N/A
SIM7070G-NG	NB/GPRS	24*24*2.4	N/A
SIM7090G	CAT-M/NB	14.8*12.8*2.0	N/A

# Contents

<b>About Document</b> .....	<b>3</b>
Version History.....	3
Scope.....	3
<b>Contents</b> .....	<b>4</b>
<b>1 Introduction</b> .....	<b>5</b>
1.1 Purpose of the document.....	5
1.2 Related documents.....	5
1.3 Conventions and abbreviations.....	5
<b>2 SAT Introduction</b> .....	<b>6</b>
<b>3 AT Commands for SAT</b> .....	<b>7</b>
<b>4 SAT Examples</b> .....	<b>8</b>
4.1 Display Text.....	8
4.2 Get Inkey.....	8
4.3 Get Input.....	9
4.4 Set Up Menu.....	9
4.5 Select Item.....	10
4.6 Send Short Message.....	10
4.7 Make a Voice Call.....	11

# 1 Introduction

## 1.1 Purpose of the document

Based on module AT command manual, this document will introduce SAT application process.

Developers could understand and develop application quickly and efficiently based on this document.

## 1.2 Related documents

[1] SIM7070\_SIM7080\_SIM7090 Series\_AT Command Manual

## 1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:

- ME (Mobile Equipment);
- MS (Mobile Station);
- TA (Terminal Adapter);
- DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface.

The controlling device at the other end of the serial line is referred to as following term:

- TE (Terminal Equipment);
- DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

## 2 SAT Introduction

SIM Application Toolkit (STK) is a standard of the GSM system which enables the subscriber identity module (SIM card) to initiate actions which can be used for various value-added services. Similar standards exist for other network and card systems, with the USIM Application Toolkit (USAT) for USIMs used by newer-generation networks being an example. A more general name for this class of Java Card-based applications running on UICC cards is the Card Application Toolkit (CAT).

The SIM Application Toolkit consists of a set of commands programmed into the SIM which define how the SIM should interact directly with the outside world and initiates commands independently of the handset and the network. This enables the SIM to build up an interactive exchange between a network application and the end user and access, or control access to, the network. The SIM also gives commands to the handset such as displaying menus and/or asking for user input.

STK has been deployed by many mobile operators around the world for many applications, often where a menu-based approach is required, such as Mobile Banking and content browsing.[1] Designed as a single application environment, the STK can be started during the initial power up of the SIM card[5] and is especially suited to low level applications with simple user interfaces.

In GSM networks, the SIM Application Toolkit is defined by the GSM 11.14 standard released in 2001. From release 4 onwards, GSM 11.14 was replaced by 3GPP TS 31.111 which also includes the specifications of the USIM Application Toolkit for 3/4G networks.

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## 3 AT Commands for SAT

Command	Description
AT+STIN?	Get Flash Data Buffer
AT+STGI	Get SAT information
AT+STGR	SAT Respond
AT+STK	STK Switch

For detail information, please refer to "SIM7070\_SIM7080\_SIM7090 Series\_AT Command Manual".

## 4 SAT Examples

### 4.1 Display Text

```
//Example of Display Text
AT+STIN?
+STIN:21

OK
AT+STGI=21 //Text display in UCS2.
+STGI:21,0,0,10,"00540065007300740021"

OK
AT+STGR=21
OK

+STIN: 25 (example)
```

### 4.2 Get Inkey

```
//Example of Get Inkey.
AT+STIN?
+STIN:22

OK
AT+STGI=22 //Response will indicate the format input
            information.
+STGI:22,1,0,12,"0069006E007000750074003A
"

OK
AT+STGR=22,"Y" //Refer to the response of AT+STGI=22, confirm
                the input format.
OK
```



+STIN: 24 (example)

### 4.3 Get Input

//Example of Get Input.

**AT+STIN?**

+STIN:23

OK

**AT+STGI=23**

//Response will indicate the format and min/max length of the input information.

+STGI:23,3,70,1,0,1,12,"0069006E007000750074003A"

OK

**AT+STGR=23,"597D"**

//Refer to the response of AT+STGI=23, confirm the input format and min/max length.

OK

+STIN: 24 (example)

### 4.4 Set Up Menu

//Example of Set Up Menu.

**AT+STIN?**

+STIN:25

OK

**AT+STGI=25**

//Menu text display as UCS2. The first line is menu title. Others are menu items.

+STGI:25,0,0,8,"004D0065006E0075",4

+STGI:25,1,12,"004D0065006E007500200031"

+STGI:25,2,12,"004D0065006E007500200032"

+STGI:25,3,12,"004D0065006E007500200033"

+STGI:25,4,12,"004D0065006E007500200034"

OK

**AT+STGR=25,1**

//After a submenu is selected, return +STIN: 24

usually. Then it should display the submenu information.

OK

+STIN: 24

## 4.5 Select Item

//Example of Select Item.

**AT+STIN?**

+STIN:24

OK

**AT+STGI=24**

//Items text display as UCS2. The first line is menu title. Title may be "00", it means no item title. Others are sub-items.

++STGI:24,0,0,0,0,"00",5

STGI:24,1,12,"004900740065006D00200031"

+STGI:24,2,12,"004900740065006D00200032"

+STGI:24,3,12,"004900740065006D00200033"

+STGI:24,4,12,"004900740065006D00200034"

+STGI:24,5,12,"004900740065006D00200035"

OK

**AT+STGR=24,1**

//After selected an item, different SIM/USIM cards will report different +STIN: command.

OK

+STIN: 23(example)

## 4.6 Send Short Message

//Example of Send Short Message.

**AT+STIN?**

//Send short message is a sub-item in items.

+STIN:24

OK

**AT+STGI=24**

//Items text display as UCS2.

```
+STGI:24,0,0,0,0,"00",2
+STGI:24,1,24,"006E006500770020006D006500
730073006100670065003A"
+STGI:24,2,10,"00730065006E0064003A"
```

OK

**AT+STGR=24,2**

//After selected the send message item, the short message will be sent, the report +STIN:21.

OK

+STIN: 21

## 4.7 Make a Voice Call

//Example of Make a Voice Call.

**AT+STIN?**

//Make a voice call is a sub-item in items. Select the specifically item, SAT should make a voice call.

+STIN:24

OK

**AT+STGI=24**

//Items text display as UCS2.

```
+STGI:24,0,0,0,0,"00",1
+STGI:24,1,20,"006D0061006B00650020006300
61006C006C003A"
```

OK

**AT+STGR=24,2**

//After selected the make call item, AT port will report a URC, indicate the call begin. If want to hang up the call, must execute AT+CHUP.

OK

```
+STIN: 24 (example)
VOICE CALL: BEGIN (URC)
```