# SIM82XX_SIM83XX Series _SMS_Application Note

**5G Module**

| Document Title: | SIM82XX_SIM83XX Series_SMS_Application Note |
|---|---|
| Version: | 1.01 |
| Date: | 2021.11.25 |
| Status: | Released |

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# About Document

## Version History

| Version | Date | Author | What is new |
|---------|------|--------|-------------|
| V1.00 | 2020.8.6 | Siwei.Liu | Update the format |
| V1.01 | 2021.11.25 | Siwei.Liu | Update the format |

## Scope

This document applies to the SIMCom SIM820X series, SIM821X series, SIM826X series and SIM83XX series.

# Contents

# 1 Introduction

## 1.1 Purpose of the document

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

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

## 1.2 Related documents

[1] SIM82XX_SIM83XX 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  SMS Introduction

The SMS service is a store and forward service. In other words, the short message is not sent directly from the sender to the receiver, but is always forwarded through the short message service center. If the recipient is unconnected (possibly the phone is turned off), the message will be sent when the recipient connects again.

**For the purposes of the present document, the following abbreviations apply:**

- **AT**　　　Attention; the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE
- **CSD**　　Circuit Switched Data
- **DCE**　　Data Communication Equipment; Data Circuit terminating Equipment
- **DCS**　　Digital Cellular Network
- **DTE**　　Data Terminal Equipment
- **DTMF**　Dual Tone Multi–Frequency
- **EDGE**　Enhanced Data GSM Environment
- **EGPRS**　Enhanced General Packet Radio Service
- **GPIO**　General–Purpose Input/Output
- **GPRS**　General Packet Radio Service
- **GSM**　　Global System for Mobile communications
- **HSDPA**　High Speed Downlink Packet Access
- **HSUPA**　High Speed Uplink Packet Access
- **I2C**　　Inter–Integrated Circuit
- **IMEI**　　International Mobile station Equipment Identity
- **IMSI**　　International Mobile Subscriber Identity
- **ME**　　Mobile Equipment
- **MMS**　　Multimedia message system
- **MO**　　Mobile–Originated
- **MS**　　Mobile Station
- **MT**　　Mobile–Terminated; Mobile Termination
- **PCS**　　Personal Communication System
- **PDU**　　Protocol Data Unit
- **PIN**　　Personal Identification Number
- **PUK**　　Personal Unlock Key
- **SIM**　　Subscriber Identity Module
- **SMS**　　Short Message Service
- **SMS–SC**　Short Message Service – Service Center
- **TA**　　Terminal Adaptor; e.g. a data card (equal to DCE)
- **TE**　　Terminal Equipment; e.g. a computer (equal to DTE)
- **UE**　　User Equipment
- **UMTS**　Universal Mobile Telecommunications System
- **URL**　　Uniform resource locator

- **USIM**         **Universal Subscriber Identity Module**
- **WCDMA**     **Wideband Code Division Multiple Access**

- **Conflict AT Commands**

Following AT commands cannot be used with SMS AT commands together, they will cause a conflict:

    Call AT Commands.

- **SMS Coding**

SMS have TEXT mode and PDU mode

PDU Mode

In this mode, user can send and receive Chinese SMS and English SMS

It support codes: 7-bit, 8bit UCS2

- **TEXT Mode**

GSM/CDMA/WCDMA/TDSCDMA/LTE(CMCC UNICOM):

User can use AT+CSCS set the SMS coding ("IRA", "GSM", "UCS2")

It can send and receive Chinese SMS and English SMS

# 3 AT Commands for SMS

| Command | Description |
|---|---|
| AT+CSMS | Select message service |
| AT+CPMS | Preferred message storage |
| AT+CMGF | Select SMS message format |
| AT+CSCA | SMS service center address |
| AT+CSCB | Select cell broadcast message indication |
| AT+CSMP | Set text mode parameters |
| AT+CSDH | Show text mode parameters |
| AT+CNMA | New message acknowledgement to ME/TA |
| AT+CNMI | New message indications to TE |
| AT+CGSMS | Select service for MO SMS messages |
| AT+CMGL | List SMS messages from preferred store |
| AT+CMGR | Read message |
| AT+CMGS | Send message |
| AT+CMSS | Send message from storage |
| AT+CMGW | Write message to memory |
| AT+CMGD | Delete message |
| AT+CMGMT | Change message status |
| AT+CMVP | Set message valid period |
| AT+CMGRD | Read and delete message |
| AT+CMGSEX | Send message |
| AT+CMSSEX | Send multi messages from storage |

For detail information, please refer to "SIM82XX_SIM83XX Series_AT Command Manual".

# 4 SMS function

## 4.1 Set Preferred Message Storage

The purpose of this section is to help users to start with SMS storageSelect memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc. These values will be saved after the module restarts

| <mem1> | String type, memory from which messages are read and deleted (commands List Messages AT+CMGL, Read Message AT+CMGR and Delete Message AT+CMGD).<br>"ME" and "MT"    FLASH message storage<br>"SM"                SIM message storage<br>"SR"                Status report storage (not used in CDMA/EVDO mode) |
|---|---|
| <mem2> | String type, memory to which writing and sending operations are made (commands Send Message from Storage AT+CMSS and Write Message to Memory AT+CMGW).<br>"ME" and "MT"      FLASH message storage<br>"SM"                SIM message storage |
| <mem3> | String type, memory to which received SMS is preferred to be stored (unless forwarded directly to TE; refer command New Message Indications AT+CNMI).<br>"ME"                FLASH message storage<br>"SM"                SIM message storage GSM phase 2+. |

## 4.2 Read SMS

### 4.2.1 List SMS Messages from Preferred Store

This command is used to return messages with status value <stat> from message storage <mem1> to the TE. If the status of the message is 'received unread', after this, the status in the storage will be changed to 'received read'.

```
AT+CMGL="ALL"
+CMGL: 0,"REC UNREAD","+861388927xxxx","","21/06/24,14:54:53+32"
mo
+CMGL: 1,"REC UNREAD","+861388927xxxx","","21/06/24,14:57:34+32"
lp

OK
```

### 4.2.2  Read SMS

This command is used to return message with location value <index> from message storage <mem1> to the TE

```
AT+CMGR=0
+CMGR: "REC UNREAD","+861388927xxxx","","21/06/24,14:54:53+32"
mo

OK
AT+CMGR=1
+CMGR: "REC UNREAD","+861388927xxxx","","21/06/24,14:57:34+32"
lp

OK
```

### 4.2.3  Delete SMS

This command is used to delete message from preferred message storage <mem1> location <index>. If <delflag> is present and not set to 0 then the ME shall ignore <index> and follow the rules for <delflag> shown below.

```
AT+CMGD=1
OK
```

### 4.2.4  Write Message to Memory

```
AT+CMGF=1
OK
```

```
AT+CSCS="IRA"
OK
AT+CMGW="13012832788" <CR>
>ABCD<ctrl-Z/ESC>
+CMGW: 1

OK

AT+CMGF=1
OK
AT+CSCS="UCS2"
OK
AT+CMGW="00310033003000310032003800330032003700380038"<CR>

>4F60597D003100320033<ctrl-Z/ESC> (你好 123)

+CMGW: 2

OK
```

## 4.3   Edit/Send SMS

### 4.3.1  Send Message from Scratch

This command is used to send message from a TE to the network (SMS-SUBMIT).:

```
AT+CMGF=1
OK
AT+CSCS="IRA"
OK
AT+CMGS="13012832788"<CR>
>ABCD<ctrl-Z/ESC>
+CMGS: 46

OK
AT+CMGF=1
OK
AT+CSCS="UCS2"
OK
AT+CMGS="00310033003000310032003800330032003700380038"<CR>
```

>4F60597D003100320033<ctrl-Z/ESC> (你好 123)

+CMGS: 47

OK

## 4.3.2  Send Message from Storage

This command is used to send message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND):

**AT+CMSS=3**
**+CMSS: 0**

**OK**
**AT+CMSS=3, "13012345678"**
**+CMSS: 55**

**OK**
**AT+CSCS="UCS2"**
**OK**
**AT+CMSS="003100330030000310032003800330032003700380038"**
**+CMSS: 56**

**OK**

# 4.4  Receive SMS

## 4.4.1  New Message Indications to TE

Command AT+CNMI is used to select the procedure how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF). If set <mt>＝2, <mt>＝3 or <ds>＝1, make sure <mode>＝1, otherwise it will return error.
These values will be saved after the module restarts

| <mode> | |
|---|---|
| | 0 – Buffer unsolicited result codes in the TA. If TA result code |

| | |
|---|---|
| | buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.<br><br>1 – Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.<br><br>2 – Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE. |
| **<mt>** | The rules for storing received SMS depend on its data coding scheme, preferred memory storage (AT+CPMS) setting and this value:<br><br>0 – No SMS-DELIVER indications are routed to the TE.<br><br>1 – If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem3>,<index>.<br><br>2 – SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code:<br>+CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled); or<br>+CMT:<br><oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>, <length>]<br><CR> <LF><data><br>(text mode enabled, about parameters in italics, refer command Show Text Mode Parameters AT+CSDH).<br><br>3 – Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1. |
| **<bm>** | ( not used in CDMA/EVDO mode )<br><br>The rules for storing received CBMs depend on its data coding scheme, the setting of Select CBM Types (AT+CSCB) and this value:<br><br>0 – No CBM indications are routed to the TE. |

| | |
|---|---|
| | 2 – New CBMs are routed directly to the TE using unsolicited result code:<br>+CBM: <length><CR><LF><pdu> (PDU mode enabled); or<br>+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled) |
| **<ds>** | （not used in CDMA/EVDO mode）<br><br>0 – No SMS-STATUS-REPORTs are routed to the TE.<br><br>1 – SMS-STATUS-REPORTs are routed to the TE using unsolicited result code:<br>+CDS: <length><CR><LF><pdu> (PDU mode enabled); or<br>+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)<br><br>2 – If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem3>,<index>. |
| **<bfr>** | 0 – TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 to 2 is entered (OK response shall be given before flushing the codes).<br><br>1 – TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1 to 2 is entered. |

# 5 SMS AT Command Samples

| | |
|---|---|
| **AT+CMGF=1** | Set SMS system into text mode, as opposed to PDU mode. |
| **OK** | |
| **AT+CPMS="SM","SM","SM"** | Select memory storages. |
| **+CPMS: 0,40,0,40,0,40** | |
| | |
| **OK** | |
| **AT+CNMI=2,1** | Set new message indications to TE. |
| **OK** | |
| **AT+CMGS="+861358888xxxx"** | Set new message indications to TE. |
| **>This is a test <Ctrl+Z>** | |
| **+CMGS: 34** | |
| | |
| **OK** | |
| **+CMTI: "SM",1** | Unsolicited notification of the SMS arriving. |
| **AT+CMGR=1** | Read SMS message that has just arrived. |
| **+CMGR:                    "REC UNREAD","+861388927xxxx","","21/06/24,14: 57:34+32"** | NOTE: The number should be the same as that given in the +CMTI notification. |
| **lp** | |
| | |
| **OK** | |
| **AT+CMGR=1** | Reading the message again changes the status to "READ" from "UNREAD". |
| **+CMGR:                    "REC READ","+861388927xxxx","","21/06/24,14:57: 34+32"** | |
| **lp** | |
| | |
| **OK** | |
| **AT+CMGS="+861358888xxxx"** | Send another SMS to myself. |
| **>Test again<Ctrl+Z>** | |
| **+CMGS: 35** | |
| | |
| **OK** | |
| **+CMTI: "SM",2** | Unsolicited notification of the SMS arriving. |
| **AT+CMGL="ALL"** | Listing all SMS messages. |
| **+CMGL:                    0,"REC READ","+861388927xxxx","","21/06/24,14:54: 53+32"** | |
| **mo** | |

```
+CMGL:                                            1,"REC
UNREAD","+861388927xxxx","","21/06/24,14:
57:34+32"
lp

OK
```

| | |
|---|---|
| **AT+CMGD=1** | Delete an SMS message. |
| **OK** | |
| **AT+CMGL="ALL"** | List all SMS messages to show message has been |
| | deleted. |

```
+CMGL:                                            0,"REC
READ","+861388927xxxx","","21/06/24,14:54:
53+32"
mo

OK
```