



SIM7500_SIM7600 Series_SAT_Application Note

LTE Module

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About Document

Version History

Version	Date	Owner	What is new
V2.00	2020.8.6	Wenjie Lai	Update the format
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Scope

This document applies to SIM7500 series and SIM7600 series.

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1 Introduction

1.1 Purpose of the document

Based on module AT command manual, this document presents the AT command of SAT operation and application examples.

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

1.2 Related documents

[1] SIM7500_SIM7600 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);
SAT	SIM Application Toolkit
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
URC	Unsolicited Result Code
UMTS	Universal Mobile Telecommunications System
USIM	Universal Subscriber Identity Module
WCDMA	Wideband Code Division Multiple Access
ANDROID	Android platform
RIL	Radio Interface Layer

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;

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2 AT Command Examples

2.1 Initialization

Before SAT session, following AT sequence in the list is recommended.

It is strongly recommended that the response timer value be modified to allow the required response data.

NOTE: The application must input correct SIM PIN if required. Otherwise the STK cannot be used.

AT command	Description
AT+STIN?	Every time the SIM Application issues a Proactive Command, via the ME, the TA will receive an indication. This indicates the type of Proactive Command issued. AT+STGI must then be used by the TA to request the parameters of the Proactive Command from the ME. Upon receiving the +STGI response from the ME, the TA must send AT+STGR to confirm the execution of the Proactive Command and provide any required user response, e.g. a selected menu item.
AT+STGI?	Regularly this command is used upon receipt of an URC "+STIN" to request the parameters of the Proactive Command. Then the TA is expected to acknowledge the AT+STGI response with AT+STGR to confirm that the Proactive Command has been executed. AT+STGR will also provide any user information, e.g. a selected menu item. The Proactive Command type value specifies to which "+STIN" the command is related.
AT+STGR	The TA is expected to acknowledge the AT+STGI response with AT+STGR to confirm that the Proactive Command has been executed. AT+STGR will also provide any user information, e.g. a selected menu item. Module will report URC for next command automatically after AT+STGR executed.
AT+STKFMT	Decoded format or PDU format are supported, but only one can be used after power up.
AT+STSM	To acquire the setup main menu info, PDU format only
AT+STENV	Send envelope request to UIM chosen from main menu. PDU format only.

2.2 Command Description

2.3 Decoded Format Command Example

2.3.1 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)

2.3.2 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)

2.3.3 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"

+STGI: 23,2,20,1,0,1,12,"0069006E007000750074003A"

OK

//If<rsp_format> is UCS2:

AT+STGR=23,"88884444"

+STIN: 24 (example)

OK

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

//If<rsp_format> is numer only:

AT+STGR=23,"88884444"

+STIN: 24 (example)

OK

2.3.4 Setup menu

//Example of Setup menu

AT+STIN?

+STIN: 25

OK

AT+STGI=25

+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"

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

OK

AT+STGR=25,1

OK

+STIN: 24

//After a submenu is selected, return +STIN: 24 usually. Then it should display the submenu information.

2.3.5 Select item

//Example of Select item

AT+STIN?

+STIN: 24

OK

AT+STGI=24

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

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

//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: 24,2,12,"004900740065006D00200032"  
+STGI: 24,3,12,"004900740065006D00200033"  
+STGI: 24,4,12,"004900740065006D00200034"  
+STGI: 24,5,12,"004900740065006D00200035"
```

OK

AT+STGR=24,1

OK

+STIN: 23 (example)

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

2.4 PDU Format Command Example

2.4.1 Send Envelope Command

//Example of Send Envelope command

AT+STIN?

+STSM:

```
25,0,120,120,"D07681030125008202818285078  
065B052BF529B8F0A018070ED70B963A88350  
8F06028070AB94C38F0A03806D41884C77ED4  
FE18F0A048081EA52A9670D52A18F0A058062  
4B673A97F34E508F0606808D854FE18F0A078  
05A314E50753162118F0A0880767E53D8751F6  
D3B8F0A09806D596C5F98919053"
```

OK

AT+STENV=25,"D30782020181900101"

OK

+STIN: 24 (proactive command select a
sub-item reported)

//Setup main menu info got first before envelope
command sent.

//Send the envelope command to modem

2.4.2 Select Item

//Example of Select Item

+STIN: 24 (proactive command select a sub-item reported)

AT+STGI=24

+STGI:

```
24,0,48,48,"D02E8103012400820281828509807  
0ED70B963A883508F0A018053057F574E078C"
```

//Get the proactive command PDU info

618F0C02809177917777ED6D88606F"

OK

AT+STGR=30,"810301240002028281830100900101" //User sends the result of "select item" operation.

OK

+STIN: 81 (session end) //Modem indicate session end

2.5 Android PDU Format Command Example

2.5.1 Android RIL Request or UNSOL Report of SAT

//Example of Android RIL Request or UNSOL Report of SAT

AT+STFMT=1

OK

//1 as RAW format, 0 as decoded format; need to reboot device after this command. This command should be set in the initiate function call.

AT+STSM?

+STSM:

25,0,120,120,"D07681030125008202818285078065B052BF529B8F0A018070ED70B963A883508F06028070AB94C38F0A03806D41884C77ED4FE18F0A048081EA52A9670D52A18F0A0580624B673A97F34E508F0606808D854FE18F0A07805A314E50753162118F0A0880767E53D8751F6D3B8F0A09806D596C5F98919053"

//RIL received the setup main menu from modem, then it query the pdu buffer of main menu and send it to android framework with RIL_UNSQL_STK_PROACTIVE_COMMAND.

OK

AT+STENV=25,"D30782020181900101"

OK

//Android framework issued the envelope command with pdu buffer to RIL as RIL_REQUEST_STK_SEND_ENVELOPE_COMMAND. RIL sends the pdu buffer to modem by this AT command.

AT+STGI=24

+STGI:

24,0,48,48,"D02E81030124008202818285098070ED70B963A883508F0A018053057F574E078C618F0C02809177917777ED6D88606F"

//Modem response the envelope command with proactive command 24 – "select item", RIL send this pdu buffer to android framework as RIL_UNSQL_STK_PROACTIVE_COMMAND

OK

AT+STGR=30,"810301240002028281830100900 //Android framework response the proactive

101"

OK

+STIN: 81

command to RIL with
RIL_REQUEST_STK_SEND_TERMINAL_RESP
ONSE, RIL send the response pdu buffer to
modem

//+STIN: 81 Modem indicated the session end, RIL
send this event to android with
RIL_UNSOL_STK_SESSION_END

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