



SIM7000 Series_LBS _Application Note

LPWA Module

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About Document

Version History

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V1.00	2017.11.19	Ping.Zhang	First Release
V1.01	2020.07.28	Wenjie.Lai	All

Scope

This document applies to the following products

Name	Type	Size(mm)	Comments
SIM7000E/C/A/G	Cat-M1(/NB1/EGPRS)	24*24	
SIM7000E-N SIM7000C-N	NB1	24*24	

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1 Introduction

1.1 Purpose of the document

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

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

1.2 Related documents

[1] SIM7000 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 LBS Function

LBS (Location Based Service), which acquires the location information (geographic coordinates, or geodetic coordinates) of the mobile terminal user through the telecom mobile operator's radio communication network (such as GPRS network, CDMA network) or external positioning method (such as GPS). A value-added service that provides users with corresponding services under the support of the information system (English abbreviation: GIS, Geographic Information System) platform.

The location-based service refers to a value-added service that provides the corresponding service to the user through the radio communication network or external positioning mode of the telecommunication mobile operator to obtain the location information of the mobile terminal user and the GIS platform.

It includes two meanings: first, to determine the geographic location of the mobile device or user; second, to provide various types of information services related to the location. It refers to various types of service systems related to positioning, referred to as "location services". Therefore, LBS is to use the Internet or wireless network to complete positioning and service functions between fixed users or mobile users.

3 AT Commands for LBS

Command	Description
AT+CLBS	Base station Location
AT+CLBSCFG	Base station Location configure

3.1 AT+CLBS Base station Location

AT+CLBS Base station Location	
Test Command AT+CLBS=?	Response +CLBS: (1,3,4,9),(1-3),(-180.000000-180.000000),(-90.000000-90.000000),(0,1) OK Parameters See Write Command
Write Command AT+CLBS=<type>,<cid>,[<longitude>,<latitude>],[<lon_type>]	Response OK 1) <type>=1,get longitude and latitude +CLBS: <locationcode>[,<longitude>,<latitude>,<acc>] OK 2) <type>=3,get access times +CLBS: <locationcode>[,<times>] OK 3) <type>=4,get longitude latitude and date time +CLBS: <locationcode>[,<longitude>,<latitude>,<acc>,<date>,<time>] OK 4) <type>=9, report positioning error +CLBS: <locationcode> OK If error is related to ME functionality: +CME ERROR: <err>

Parameters

<type>

- 1 Use 3 cell's information
- 3 Get access times
- 4 Get longitude latitude and date time
- 9 Report positioning error

<cid>

Network parameters, refer to AT+SAPBR

<locationcode> 0 Success

If the operation failed, the location code is not 0, such as:

- 1 Location Failed
- 2 Time Out
- 3 NET Error
- 4 DNS Error
- 5 Service Overdue
- 6 Authenticate Failed
- 7 Other Error
- 80 Report LBS to server success
- 81 Report LBS to server parameter error
- 82 Report LBS to server failed

<longitude> Current longitude in degrees

<latitude> Current latitude in degrees

<acc> Positioning accuracy

<lon_type> The type of longitude and latitude

- 0 WGS84, the default type
- 1 GCJ02

<times> Access service times

<date> Service date

<time> Service time

Reference

Note

If customers feel that the positioning error is too large, <type>=9 can be used to report this information. The error can be improved by this information.

3.2 AT+CLBSCFG Base station Location configure

AT+CLBSCFG Base station Location configure

Test Command

AT+CLBSCFG=?

Response

+CLBSCFG: (0,1),(1-3),"ParamValue"

OK

Parameters

See Write Command

<p>Write Command AT+CLBSCFG=<operate>,<para>[,<value>]</p>	<p>Response +CLBSCFG: 0,<para>,<value></p> <p>OK or OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p><operate> 0 Read operator 1 Set operator</p> <p><para> 1 Customer ID 2 Times have used positioning command 3 Server's address <u>lbs-simcom.com:3002</u> (Default)</p> <p><value> The value of parameter If <operate> is 1 and <para> is 3, <value> can be set.</p>
<p>Reference</p>	<p>Note</p> <p>Server's address of "lbs-simcom.com:3002" is free. The other servers are charged.</p> <p>If you want to use the charged address, the IMEI, customer information and software version must be provided to SIMCom.</p>

4 Bearer Configuration

4.1 PDN Auto-activation

//Example of PDN Auto-activation.

```

AT+CPIN? //Check SIM card status
+CPIN: READY

OK
AT+CGDCONT=1,"IP","APN" //Configure APN for registration when needed
OK
AT+CSQ //Check RF signal
+CSQ: 27,99

OK
AT+CGATT? //Check PS service.
+CGATT: 1 //1 indicates PS has attached.

OK
AT+COPS? //Query Network information, operator and network
+COPS: 0,0,"460 01",9 mode 9, NB-IOT network

OK
AT+SAPBR=3,1,"APN","CMNET" //Configure APN of bearer profile 1
OK
AT+SAPBR=1,1 //To open a wireless bearer.
OK
AT+SAPBR=2,1 //To query IP address of wireless bearer
+SAPBR:1,1,"10.89.193.1"

OK
AT+SAPBR=0,1 //To close the wireless bearer
OK
+SAPBR 1: DEACT Wireless bearer is released by network

```

5 LBS Examples

5.1 Activate bearer profile

```
AT+SAPBR=3,1,"APN","CMNET" //Set the correct APN
OK

AT+SAPBR=1,1 //Active bearer context
OK

AT+SAPBR=2,1 //Read bearer parameter
+SAPBR: 1,1,"10.89.193.1"
OK
```

5.2 Get location

```
AT+CLBSCFG=0,3 //Get LBS server's address
+CLBSCFG: 0,3,"lbs-simcom.com:3002"
OK

AT+CLBS=1,1 //Get current longitude , latitude and Precision
+CLBS: 0,121.359544,31.220071,550
OK

AT+CLBS=4,1 //Get current longitude , latitude , Precision and date time
+CLBS:
0,121.359544,31.220071,550,2019/05/09,08:01:0
7
OK
```

5.3 Deactivate bearer profile

AT+SAPBR=0,1

//Deactivate bearer context

OK

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