A76XX Series_ LBS_Application Note

LTE Module

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About Document

Version History

Version	Date	Chapter	What is new
V1.00	2020.6.19		New version
V1.01	2021.02.03	All	Add support on A7678 Series
	2021.06.08	2.2	Adjust the latitude and longitude of their format
V1.02	2021.11.08	Scope	Scope description is updated

Scope

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. This document applies to A1803S Series, A1603 Series, A1601 Series and A1802 Series.

Contents

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.

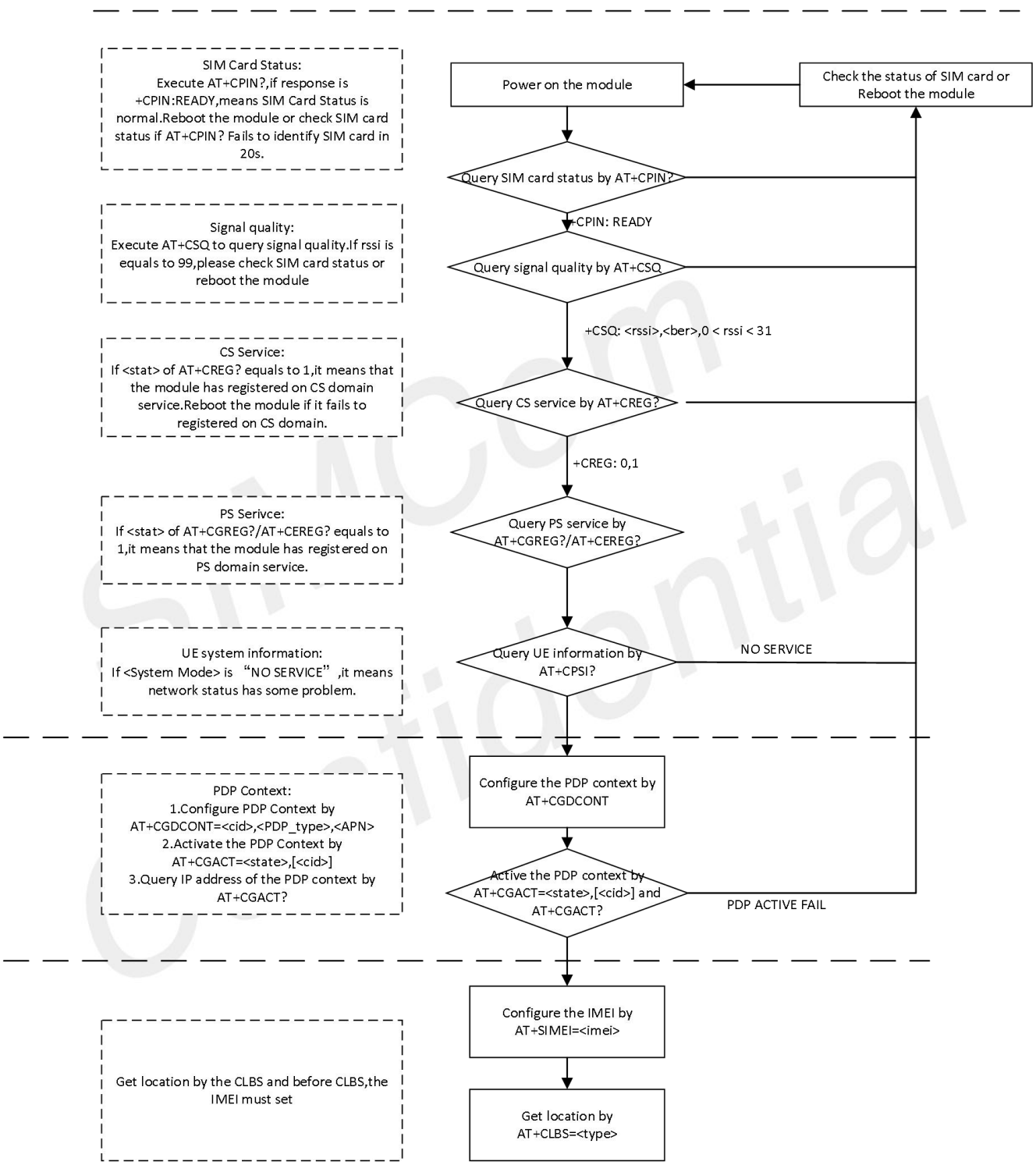
1.2 Related documents

[1] A76XXSeries_AT Command Manual

1.3 Conventions and abbreviations

PDP Packet Data Protocol;
LBS Location Based Services;
URC Unsolicited result codes;
DNS Domain Name Server;
UTC Coordinated Universal Time;
YYYY/MM/DD Year/Month/Day;
HH:MM:SS Hour:Minute:Second;
IMEI International Mobile Equipment Identity;
UCS2 Unicode

1.4 The process of LBS AT Commands



1.5 Error Handling

1.5.1 Failed to Get Location

If it is failed to get location, please check the following aspects:
1. Query the status of the specified PDP context by AT+CGACT? command to check whether the specified PDP context has been activated.
2.When the <ret_code> in the URC :+CLBS: <ret_code>[,<latitude>,<longitude>,<acc>,<date>,<time>] is not 0, it indicates an error code,please refer to the chapter 2.2.1.
For more details, pleaserefer to the chapter 2.2

2 AT Commands for LBS

2.1 Overview of AT Commands for LBS

Command	Description
AT+CLBS	Base station location

2.2 Detailed Description of AT Commands for LBS

2.2.1 AT+CLBS Base station location

The write command is used to base station location.

AT+ CLBS Base station location	
Test Command **AT+CLBS=?**	Response 1) **+CLBS: (1,2,3,4,9),(1-15),(-180.000000-180.000000),(-90.000000-90.000000),(0,1)** **OK**
Write Command **AT+CLBS=<type>[,<cid>[,[<longitude>,<latitude>],[<lon_type>]]]**	Response **OK** 1)type = 1,get latitude and longitude **+CLBS: <ret_code>[,<latitude>,<longitude>,<acc>]** 2)type = 2,get detail address **+CLBS: <ret_code>[,<detail_addr>]** 3)type = 3,get access times

	+CLBS: <ret_code>[,<times>] 4)type = 4,get latitude longitude and date time **+CLBS:** **<ret_code>[,<latitude>,<longitude>,<acc>,<date>,<time>]** 5)type = 9, report positioning error **+CLBS: <ret_code>** 6) **+CLBS: <ret_code>** **ERROR**
Parameter Saving Mode	NO_SAVE
Maximum Response Time	9S
Reference	3GPP TS 27.007

Defined Values

<type>	A numeric parameter which specifies the location type. 1 use 3 cell's information 2 get detail address 3 get access times 4 get latitude longitude and date time 9 report positioning error
<cid>	A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…15
<longitude>	Current longitude in degrees.
<latitude>	Current latitude in degrees.
<detail_addr>	Current detail address. It based the UCS2 coding. Each 4 characters in the URC is for one UCS2 character.
<acc>	Positioning accuracy.
<lon_type>	The type of longitude and latitude 0 WGS84，the default type 1 GCJ02.
<times>	access service times.
<data>	service date(UTC, the format is YYYY/MM/DD).
<time>	service time(UTC, the format is HH:MM:SS).
<ret_code>	The result code. 0 Success 1 Parameter error returned by server. 2 Service out of time returned by server. 3 Location failed returned by server. 4 Query timeout returned by server.

	5 Certification failed returned by server. 6 Server LBS error success. 7 Server LBS error failed. 80 Report LBS to server success 81 Report LBS to server parameter error 82 Report LBS to server failed 110 Other Error 8 LBS is busy. 9 Open network error. 10 Close network error. 11 Operation timeout. 12 DNS error. 13 Create socket error. 14 Connect socket error. 15 Close socket error. 16 Get cell info error. 17 Get IMEI error. 18 Send data error. 19 Receive data error. 20 NONET error. 21 Net not opened.

NOTE

The LBS is only support in GSM/WCDMA /LTE net mode.It needs to make sure the network available before executing the AT+CLBS write command.

3 LBS Examples

Before LBS related operations, we should ensure the following:
Ensure GPRS network is available:

```
AT+CSQ
+CSQ: 23,0

OK
AT+CREG?
+CREG: 0,1

OK
AT+CGREG?
+CGREG: 0,1

OK
```

3.1 Get location

Following commands shows how to get location

```
AT+SIMEI=864424040019280                    //set IMEI first if no IMEI
OK
AT+CLBS=1                                   //type = 1,get latitude and longitude
OK

+CLBS: 0,29.489428,106.638084,550
AT+CLBS=2                                   // type = 2,get detail address
OK

+CLBS:
0,91cd5e865e02002053575cb8533a002073899
a6c8def002097608fd15de54e1a548c4fe1606f5
31690e875354fe178147a7696620028897f90e8
```

```
520696620029
AT+CLBS=3                                   // type = 3,get access times
OK

+CLBS: 0,0
AT+CLBS=4                                   // type = 4,get latitudelongitude and date time
OK

+CLBS:
0,29.489428,106.638084,550,2020/6/17,9:34:16
```