



# SIM7020 Series\_LWM2M \_Application Note

LPWA Module

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# About Document

## Version History

Version	Date	Owner	What is new
V1.00	2018.04.10	Linshu Guan	First Release.
V1.01	2018.06.07	Albert Meng	Revised
V1.02	2019.05.10	Wenjie.lai	Update bear configuration
V1.03	2020.06.10	Xiaohui Xu	All

## Scope

This document applies to the following products

Name	Type	Size(mm)	Comments
SIM7020C	NB1	17.6*15.7	Band 1/3/5/8
SIM7020E	NB1	17.6*15.7	Band 1/3/5/8/20/28
SIM7030	NB1	16*18	Band 1/3/5/8
SIM7060	NB1+GNSS	24*24	Band 5/8
SIM7020G	NB2	17.6*15.7	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85
SIM7060G	NB2+GNSS	24*24	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85

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# 1 Introduction

## 1.1 Purpose of the document

Based on module AT command manual, this document will introduce LWM2M application process.

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

## 1.2 Related documents

[1] SIM7020 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 LWM2M Introduction

The full name of LWM2M is Lightweight Machine-To-Machine, which is an Internet of things protocol defined by OMA (open Mobile Alliance). It can be used on embedded devices with limited resources (including storage, power consumption, etc.).

The LWM2M protocol has the following features:

- 1) The protocol is based on the REST architecture.
- 2) The protocol delivery is achieved through the CoAP protocol.
- 3) The protocol defines a compact, efficient and scalable data model

LWM2M defines three logical entities:

- 1) LWM2M Server.
- 2) LWM2M client is responsible for executing the server commands and reporting the execution results.
- 3) LWM2M boot server The Bootstrap server is responsible for configuring the LWM2M client

## 3 AT Commands for LWM2M

Command	Description
<b>AT+CLMCONF</b>	Configure LwM2M instance and create the connection
<b>AT+CLMADDOBJ</b>	Add LwM2M object
<b>AT+CLMDELOBJ</b>	Delete LwM2M object
<b>AT+CLMREAD</b>	Read notification and command
<b>AT+CLMWRITE</b>	Write notification and command
<b>AT+CLMEXECUTE</b>	Execute notification and command
<b>AT+CLMNOTIFY</b>	Notify data change
<b>AT+CLMDEL</b>	Delete LwM2M instance
<b>+CLMOBSERVE</b>	Indicated an observe command
<b>+CLMPARAMETER</b>	Indicated an observer's parameter
<b>+CLMERR</b>	Indicated there are some errors

For detail information, please refer to "SIM7020 Series\_AT Command Manual".

## 4 Bearer Configuration

Usually module will register PS service automatically.

### 4.1 PDN Auto-activation

//Example of PDN Auto-activation.

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

OK
AT+CSQ //Check RF signal
+CSQ: 20,0

OK
AT+CGREG? //Check PS service
+CGREG: 0,1

OK
AT+CGACT? //Activated automatically.
+CGACT: 1,1

OK
AT+COPS? //Query Network information, operator and network
+COPS: 0,2,"46000",9 mode 9, NB-IOT network

OK
AT+CGCONTRDP //Attached PS domain and got IP address
+CGCONTRDP: automatically.
1,5,"cmnbiot","100.80.73.123.255.255.255.0"

OK
```



## 4.2 APN Manual configuration

If not attached automatically, could configure correct APN setting.

//Example of APN Manual configuration.

```
AT+CFUN=0 // Disable RF
+CPIN: NOT READY

OK
AT*MCGDEFCONT="IP","cmnbiot" // Set the APN manually
OK
AT+CFUN=1 //Enable RF
OK

+CPIN: READY
AT+CGREG? //Inquiry PS service .1 indicates PS has attached.
+CGREG: 0,1

OK
AT+CGCONTRDP //Attached PS domain and got IP address
+CGCONTRDP: automatically
1,5,"cmnbiot","100.80.73.123.255.255.255.0"

OK
```

## 5 LWM2M Examples

//Example of LWM2M Service.

```
AT+CLMCONF="182.150.27.21","5683","1222","sim702 //Create LWM2M connection
0test","IPv4",100 //If succeed, LWM2M server instance id
+CLMCONF: 0 will return.

OK
AT+CLMADDOBJ=0,5,2,8,0,1,2,3,4,5,6,7 //Create object.
OK
AT+CLMDELOBJ=0,5 //Delete object.
OK
+CLMREAD: 0,5,2,1,1 //Got READ message
AT+CLMREAD=0,5,2,1,1,"S",5,"abcde" //Read
OK
+CLMWRITE: 0,5,2,1,1,"S",4,"abcd" //Got WRITE message
AT+CLMWRITE=0,0 //Write.
OK
+CLMEXECUTE: 0,5,2,1,3,"abc" //Got execute message
AT+CLMEXECUTE=0,0 //Execute.
OK
+CLMOBSERVE: 0,0,5,2,3 //Got OBSERVE message
+CLMPARAMETER:0,5,2,3,1,0,200,300,2,0,5,0,1 //With parameters
AT+CLMNOTIFY=0,5,2,3 //Notify configuration.
OK
AT+CLMDEL=0 //Disconnect and delete instance.
OK
```