SIM7000 Series_PING _Application Note

LPWA Module

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About Document

Version History

Version	Date	Owner	What is new
V1.00	2017.09.08	Xiangning.Meng	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	

Contents

1 Introduction

1.1 Purpose of the document

Based on module AT command manual, this document will introduce PING 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 PING Introduction

PING is a computer network administration software utility used to test the reachability of a host on an Internet Protocol (IP) network. It is available for virtually all operating systems that have networking capability, including most embedded network administration software.

Ping measures the round-trip time for messages sent from the originating host to a destination computer that are echoed back to the source. The name comes from active sonar terminology that sends a pulse of sound and listens for the echo to detect objects under water.

Ping operates by sending Internet Control Message Protocol (ICMP) echo request packets to the target host and waiting for an ICMP echo reply. The program reports errors, packet loss, and a statistical summary of the results, typically including the minimum, maximum, the mean round-trip times, and standard deviation of the mean.

The command-line options of the ping utility and its output vary between the numerous implementations. Options may include the size of the payload, count of tests, limits for the number of network hops (TTL) that probes traverse, and interval between the requests. Many systems provide a companion utility ping6, for testing on Internet Protocol version 6 (IPv6) networks, which implement ICMPv6.

3 AT Commands for PING

Command	Description
AT+SNPDPID	Select PDP Index for PING
AT+SNPING4	Sends an IPv4 PING
AT+SNPING6	Sends an IPv6 PING

For detail information, please refer to "SIM7000 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+CGDCONT=1,"IP",""   //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,"CHN-CT",9   mode 9, NB-IOT network

OK
AT+CGNAPN   //Query the APN delivered by the network after the
                                            CAT-M or NB-IOT network is successfully
                                            registered.
+CGNAPN: 1,"ctnb"   //"ctnb" is APN delivered by the CAT-M or NB-IOT
                                            network. APN is empty under the GSM network.

OK
AT+CNCFG=1,"ctnb","cdma","1234"   //Before activation please use AT+CNCFG to set
                                            APN\user name\password if needed.

OK
AT+CNACT=1   //Activate network
OK

+APP PDP: ACTIVE
AT+CNACT?   //Get local IP
+CNACT: 0,1,"10.94.36.44"

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+CGDCONT=1,"IP","ctnb"   //Set the APN manually
OK
AT+CFUN=1   //Enable RF
OK

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

OK
AT+CGNAPN   //Query the APN delivered by the network after the CAT-M or NB-IOT network is successfully registered.

+CGNAPN: 1,"ctnb"   //"ctnb" is APN delivered by the CAT-M or NB-IOT

OK   network. APN is empty under the GSM network.
AT+CNCFG=1,"ctnb","cdma","1234"   //Before activation please use AT+CNCFG to set APN\user name\password if needed.

OK
AT+CNACT=1   //Activate network
OK

+APP PDP: ACTIVE
AT+CNACT?   //Get local IP
+CNACT: 0,1,"10.94.36.44"

OK

5 PING Examples

5.1   PING request for IPv4

//Example of PING request for IPv4	
AT+CNACT=0,1	//App Network Active.
OK	
+APP PDP: 0,ACTIVE	
AT+SNPDPID=0	//Select PDP Index for PING.
OK	
AT+SNPING4="www.baidu.com",3,16,1000	//Sends IPv4 Ping request.
+SNPING4: 1,180.97.33.108,147	
+SNPING4: 2,180.97.33.108,546	
+SNPING4: 3,180.97.33.108,278	
OK	

5.2   PING request for IPv6

//Example of PING request for IPv6.	
AT+CNACT=0,1	//App Network Active.
OK	
+APP PDP: 0,ACTIVE	
AT+SNPDPID=0	//Select PDP Index for PING.
OK	
AT+SNPING6="ipv6.baidu.com",3,16,1000	//Sends IPv6 Ping request.
+SNPING6: 1,2400:da00:2::29,147	
+SNPING6: 2,2400:da00:2::29,546	
+SNPING6: 3,2400:da00:2::29,278	
OK	