SIM7028 Series_COAP _Application Note

LPWA Module

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About Document

Version History

Revision	Date	Chapter	Description
V1.00	2022.7.13	All	New version
V1.01	2022.10.24	All	Added the details

Scope

This document presents the AT Command Set for SIMCom SIM70XX Series.

Name	Type	Size(mm)	Comments
SIM7028	NB2	17.6*15.7	Band 1/2/3/4/5/8/12/13/14/17/18/19/20/25/26/28/66/70/85

Contents

1 Introduction

1.1 Purpose of the document

This document mainly introduces how to use the CoAP function of the SIM7028 module through AT commands.

1.2 Related documents

[1] SIM7028 Series_AT Command Manual

2 CoAP AT Commands

2.1 Overview

Command	Description
AT+COAPSTART	Init the CoAP service
AT+COAPSTOP	Deinit the CoAP service
AT+COAPOPEN	Connect to the special server
AT+COAPCLOSE	Disconnect from the special server
AT+COAPHEAD	Config the head of the message
AT+COAPOPTION	Config the option of the message
AT+COAPSEND	Send the message to the special server
AT+COAPSENDTX	Send the message to the special server by transparent transmission

2.2 Detailed Description

2.2.1 AT+COAPSTART   Init the CoAP service

AT+COAPSTART is used to init the CoAP context. You must execute AT+COAPSTART before any other CoAP related operations.

AT+COAPSTART Init the CoAP Service	
Test Command **AT+COAPSTART=?**	Response **OK**
Execution Command **AT+COAPSTART**	Response 1) **OK** 2) **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

Examples

AT+COAPSTART
OK

2.2.2 AT+COAPSTOP   Deinit the CoAP service

AT+COAPSTOP is used to Deinit the CoAP context When you are no longer using the COAP service, use this command.

AT+COAPSTOP Deinit the CoAP service	
Test Command **AT+COAPSTOP=?**	Response **OK**
Execution Command **AT+COAPSTOP**	Response 1) **OK** 2) **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

Examples

AT+COAPSTOP
OK

2.2.3 AT+COAPOPEN   Connect to the special server

AT+COAPOPEN Connect to the special server	
Test Command **AT+COAPOPEN=?**	Response **OK**
Execute Command **AT+COAPOPEN=<server>,<serverport>**	Response 1)If the registration request is successfully sent, but no successful registration response is received **OK** 2)If the registration request is successfully sent, and successful registration response is received **OK**

	+COAPOPEN:<coap_id>
	3)
	ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

Defined Values

<server>	The CoAP server address URL or ipaddress
<serverport>	The CoAP server port,the range is from 0 to 65535.
<coap_id>	The CoAP session ID.the range is from 0 to 1.

Examples

AT+COAPOPEN=?
OK
AT+COAPOPEN="47.108.134.22",5683
OK

+COAPOPEN:0

2.2.4 AT+COAPCLOSE   Disconnect from the special server

AT+COAPCLOSE Disconnect from the special server	
Test Command **AT+COAPCLOSE=?**	Response **OK**
Write Command **AT+COAPCLOSE=<coap_id>**	Response 1) **OK** 2) **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

Defined Values

<coap_id>	AT+COAPOPEN return the CoAP session ID.the range is from 0 to 1.

Examples

AT+COAPCLOSE=0
OK

2.2.5 AT+COAPHEAD   Config the head of the message

AT+COAPHEAD Config the head of the message	
Test Command **AT+COAPHEAD=?**	Response **OK**
Write Command **AT+COAPHEAD=<coap_id>,<msgId>,<tkl>,<token>**	Response 1) **OK** 2) **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

Defined Values

<coap_id>	AT+COAPOPEN return the CoAP session ID.the range is from 0 to 1.
<msgId>	The CoAP message ID,the range is 0 to 65535.
<tkl>	The length of token,the range is 0 to 8.
<token>	The token of CoAP message.

Examples

AT+COAPHEAD=?
OK
AT+COAPHEAD=0,35691,1,"1"
OK

2.2.6 AT+COAPOPTION   Config the option of the message

AT+COAPOPTION Config the option of the message	
Test Command **AT+COAPOPTION=?**	Response **OK**
Write Command **AT+COAPOPTION=<coap_id>,<opt_count>,<optNum>,<optValue>…..**	Response 1) **OK** 2) **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

Defined Values

<coap_id>	AT+COAPOPEN return the CoAP session ID.the range is from 0 to 1.
<opt_count>	The num of option you want to config.the range is 0 to 10.
<optNum>	The type of option.
<optValue>	The value of the option

Examples

AT+COAPOPTION=?
OK
AT+COAPOPTION=0,1,7,"5683"
OK

2.2.7 AT+COAPSEND   Send the message to the special server

AT+COAPSEND Send the message to the special server	
Test Command **AT+COAPSEND=?**	Response **OK**
Write Command **AT+COAPSEND=<coap_id>,<type>,<method>[,<data_len>,<data>]**	Response 1) **OK** 2) **ERROR**
Parameter Saving Mode	NO_SAVE

Max Response Time	5000ms
Reference	

Defined Values

<coap_id>	AT+COAPOPEN return the CoAP session ID.the range is from 0 to 1.
<type>	The message type of CoAP,it can set "con","non","ack","rst".
<method>	The message method of CoAP,it can set "get","post","put","delete","fetch","patch","ipatch".
<data_len>	The data length of CoAP message.the range is 1 to 255.
<data>	The data of CoAP message

Examples

AT+COAPSEND=?
OK
AT+COAPSEND=0,"con","get",5,"12345"
OK

2.2.8 AT+COAPSENDTX　Send the message to the special server by transparent transmission

AT+COAPSENDTX　Send the message to the special server by transparent transmission	
Test Command **AT+COAPSENDTX=?**	Response **OK**
Write Command **AT+COAPSENDTX=<coap_id>,<type>,<method>,<data_len>**	Response 1) **>** **OK** 2) **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	5000ms
Reference	

Defined Values

<coap_id>	AT+COAPOPEN return the CoAP session ID.the range is from 0 to 1.

<type>	The message type of CoAP,it can set "con","non","ack","rst".
<method>	The message method of CoAP,it can set "get","post","put","delete","fetch","patch","ipatch".
<data_len>	The data length of CoAP message.the range is 1 to 2000.

Examples

```
AT+COAPSENDTX=?
OK
AT+COAPSENDTX =0,"con","get",5
>
01234
OK
```

3 CoAP Related URCs

This chapter gives CoAP related URCs and their descriptions.

3.1 Overview

URC	Description
+COAPRECV: "request", from session \<coap_id>,\<received code>,\<received tid>[,\<len>,\<data>]	When the CoAP server sends a request, if the module receives such request, this URC will be reported.
+COAPRECV: "response", from session \<coap_id>,\<received code>,\<received tid>[,\<len>,\<data>]	When the CoAP server sends a response, if the module receives such request, this URC will be reported.

3.2 Detailed Description

3.2.1 Description of Request URC

Receive the request message from server	
+COAPRECV: "request", from session \<coap_id>,\<received code>,\<received tid>[,\<len>,\<data>]	Notify the request from CoAP server

Defined Values

\<coap_id>	The CoAP session ID. The range is from 0 to 1.
\<received code>	The received code of the message
\<received tid>	The received tid of the message
\<len>	The response data len.
\<data>	The response data.

3.2.2 Description of Response URC

Receive the response message from server	
+COAPRECV: "response", from session \<coap_id>,\<received code>,\<received tid>[,\<len>,\<data>]	Notify the response from CoAP server

Defined Values

\<coap_id>	The CoAP session ID. The range is from 0 to 1.
\<received code>	The received code of the message
\<received tid>	The received tid of the message
\<len>	The response data len.
\<data>	The response data.

4 Example

Before all FOTA related operations, we should check network status:

AT+CESQ   //Query signal quality
+CESQ: 99,99,255,255,22,58

OK
AT+CEREG?   //Query network registration status.
+CEREG: 0,1

OK
AT+CGPADDR   //Query the allocated IP address for the default PDN
+CGPADDR: 0,"11.102.241.134"

OK

4.1 Send CoAP Request to the CoAP Server

Following commands shows how to communicate with a COAP server.

// Init CoAP service

AT+COAPSTART

OK

// Acquire one client which will connect to a CoAP server

AT+COAPOPEN="183.230.40.39", 5683

OK

+COAPOPEN: 0
// Set the head information

AT+COAPHEAD=0,35691,1,"1"

OK
// Set the option information

AT+COAPOPTION=0,2,11,"bs",15,"ep=866651069979741;460042251325392"

OK

// Send the CoAP message

AT+COAPSEND=0,"con","post"

OK

// Receive a response

+COAPRECV:response,from session 0,2.04,35691

// Receive a request

+COAPRECV:request,from session 0,0.04,19771

// Close the CoAP client

AT+COAPCLOSE=0

OK

// Deinit the CoAP service

AT+COAPSTOP

OK

// Send the CoAP message

AT+COAPSEND=0,"con","post"