SIM7080 Series_HTTP(S)_Application Note

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About Document

Document Information

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Revision	Date	Owner	Status / Comments
1.00	Sept 16,2019	Jiangting.Ding	First Release
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Related Documents

[1] SIM7080 Series_AT Command Manual_V1.02

This document applies to the following products:

Name	Type	Size (mm)	Comments
SIM7080G	CAT-M/NB	17.6*15.7 *2.3	N/A
SIM7070G/SIM7070E	CAT-M/NB/EGPRS	24*24*2.4	N/A
SIM7070G-NG	NB/EGPRS	24*24*2.4	N/A
SIM7090G	CAT-M/NB	14.8*12.8*2.0	N/A

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Contents

1 Purpose of this document

Based on module AT command manual, this document will introduce HTTP(S) application process.

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

2 HTTP Introduction

HTTP (HyperText Transfer Protocol) is an application layer protocol. When you browse a web page, the browser and the web server will send and receive data on the Internet through the HTTP protocol. HTTP is a stateless protocol based on request and response patterns. That is what we usually call Request/Response.

2.1 Characteristic

➢ Support client/server mode;

✧ Simple and fast

When a client requests a service from a server, it only needs to pass the request method and path. Because the HTTP protocol is simple, the program size of the HTTP server is small, and the communication speed is fast.

✧ Flexible

HTTP allows the transfer of any type of data object. The type being transferred is marked by Content-Type;

✧ No connection

No connection means limiting the processing of only one request per link. After the server processes the client's request and receives the customer's response, the server disconnects the link. This way, the transmission time can be saved.

✧ Stateless

The HTTP protocol is a stateless protocol. Stateless means that the protocol has no memory for transaction processing. A lack of state means that if subsequent processing requires the previous information, it must be retransmitted, which may result in an increase in the amount of data transferred per connection. On the other hand, it responds faster when the server does not need previous information.

2.2 Request Method

According to the HTTP standard, HTTP requests can use a variety of request methods.

HTTP 1.0 defines three request methods: the GET, POST, and HEAD methods.

HTTP1.1 adds six new request methods: OPTIONS, PUT, PATCH, DELETE, TRACE, and CONNECT methods.

No	Method	Description
1	GET	Make a request to a specific resource.
2	HEAD	Ask the server for a response that is consistent with the GET request, except that the response body will not be returned. This method can obtain the meta information contained in the response message header without having to transmit the entire response content.
3	POST	Submit data to a specified resource for processing requests (such as submitting a form or uploading a file). The data is included in the request body. POST requests may result in the creation of new resources and/or modifications to existing resources.
4	PUT	Uploads its latest content to a specified resource location.
5	DELETE	Requests the server to delete the resource identified by the Request-URI.
6	CONNECT	H The HTTP/1.1 protocol is reserved for proxy servers that can connect connections to pipes.
7	OPTIONS	Returns the HTTP request method supported by the server for a particular resource. You can also test the functionality of the server by sending a '*' request to the web server.
8	TRACE	Echoes requests received by the server, primarily for testing or diagnostics.
9	PATCH	It is a supplement to the PUT method for local updating of known resources.

The SIM7080 series supports several methods: GET, POST, PUT, PATCH and HEAD.

3 AT Commands for HTTP(S)

Command	Description
AT+SHCONF	Set HTTP(S) Parameter
AT+CSSLCFG	Analysis SSL Configure
AT+SHSSL	Select SSL Configure
AT+SHCONN	HTTP(S) Connection
AT+SHBOD	Set Body
AT+SHAHEAD	Add Head

AT+SHPARA	Set HTTP(S) Para
AT+SHCPARA	Clear HTTP(S) Para
AT+SHCHEAD	Clear Head
AT+SHSTATE	Query HTTP(S) Connection Status
AT+SHREQ	Set Request Type
AT+SHREAD	Read Response Value
AT+SHDISC	Disconnect HTTP(S)

For detail information, please refer to "SIM7080 Series_AT Command Manual_V1.00".

4 Bearer Configuration

Usually module will register PS service automatically.

4.1 PDN Auto-activation

AT Command	Response	Description
AT+CPIN?	+CPIN: READY OK	Check SIM card status
AT+CSQ	+CSQ: 27,99 OK	Check RF signal
AT+CGREG?	+CGREG: 0,1 OK	Check PS service
AT+COPS?	+COPS: 0,0,"CHN-CT",9 OK	Query Network information, operator and network mode 9, NB-IOT network
AT+CGNAPN	+CGNAPN: 1,"ctnb" OK	Query CAT-M or NB-IOT network after the successful registration of APN
AT+CNACT=0,1	OK +APP PDP: 0,ACTIVE	Activating network bearing
AT+CNACT?	+CNACT: 0,1,"10.94.36.44" +CNACT: 1,0,"0.0.0.0" +CNACT: 2,0,"0.0.0.0" +CNACT: 3,0,"0.0.0.0" OK	Get local IP

5 HTTP(s) Samples

5.1 HTTP Function

5.1.1 HTTP GET

AT Command	Response	Description
AT+SHCONF="URL","http://www.yahoo.com"	OK	Set up server URL
AT+SHCONF="BODYLEN",1024	OK	Set HTTP body length
AT+SHCONF="HEADERLEN",350	OK	Set HTTP head length
AT+SHCONN	OK	HTTP build
AT+SHSTATE?	+SHSTATE: 1 OK	Get HTTP status
AT+SHCHEAD	OK	Clear HTTP header
AT+SHAHEAD="Accept","text/html, */*"	OK	Add header content
AT+SHAHEAD="User-Agent","IOE Client"	OK	Add header content
AT+SHAHEAD="Content-Type","application/x-www-form-urlencoded"	OK	Add header content
AT+SHAHEAD="Connection","keep-alive"	OK	Add header content
AT+SHAHEAD="Cache-control","no-cache"	OK	Add header content
AT+SHREQ="http://www.yahoo.com/",1	OK +SHREQ: "GET",301,8	Set request type is GET. Get data size is 8.
AT+SHREAD=0,8	OK +SHREAD: 8 redirect	Read data length is 8 Data is "redirect"
AT+SHDISC	OK	Disconnect HTTP connect

5.1.2 HTTP POST/PUT

AT Command	Response	Description
AT+SHCONF="URL","http://www.yahoo.com"	OK	Set up server URL
AT+SHCONF="BODYLEN",1024	OK	Set HTTP body length
AT+SHCONF="HEADERLEN",350	OK	Set HTTP head length
AT+SHCONN	OK	HTTP build
AT+SHSTATE?	+SHSTATE: 1	Get HTTP status

	OK	
AT+SHCHEAD	OK	Clear HTTP header
AT+SHAHEAD="Accept","text/html, */*"	OK	Add header content
AT+SHAHEAD="User-Agent","IOE Client"	OK	Add header content
AT+SHAHEAD="Content-Type","application /x-www-form-urlencoded"	OK	Add header content
AT+SHAHEAD="Connection","keep-alive"	OK	Add header content
AT+SHAHEAD="Cache-control","no-cache"	OK	Add header content
AT+SHBOD=7,10000	> reciept OK	Set body content
AT+SHCPARA	OK	Clear body content parameter
AT+SHPARA="product","apple"	OK	Add body content parameter
AT+SHPARA="price","1"	OK	Add body content parameter
AT+SHREQ="http://www.yahoo.com/",3	+SHREQ: "POST",301,8	Set request type is POST Get data size is 8.
AT+SHREQ="http://www.yahoo.com/",2	+SHREQ: "PUT",301,8	Set request type is PUT Get data size is 8.
AT+SHREAD=0,8	OK +SHREAD: 8 redirect	Read data length is 8 Data is "redirect"
AT+SHDISC	OK	Disconnect HTTP connect

5.2 HTTPS Function

5.2.1 HTTPS download and convert SSL Certificate

AT Command	Response	Description
AT+CFSINIT	OK	Init FS AT command
AT+CFSWFILE=3,"baidu_root_ca.cer",0,128 2,1000	DOWNLOAD OK	After download, sent certificate file through the serial port.1282 is certificate size. Send CA file success
AT+CFSTERM	OK	Free data buffer
AT+CSSLCFG="convert",2,"baidu_root_ca.c er"	OK	Conversion CA certificate format. 2 means CA type. baidu_root_ca.cer is CA certificate name.

5.2.2 HTTPS GET

AT Command	Response	Description
AT+CSSLCFG="sslversion",1,3	OK	Configure SSL/TLS version
AT+SHSSL=1,"baidu_root_ca.cer"	OK	Set HTTP SSL Configure
AT+SHCONF="URL","https://www.baidu.com"	OK	Set connect server parameter
AT+SHCONF="BODYLEN",1024	OK	Set max body length
AT+SHCONF="HEADERLEN",350	OK	Set max header length
AT+SHCONN	OK	Connect HTTPS server
AT+SHSTATE?	+SHSTATE: 1 OK	Get HTTP status
AT+SHCHEAD	OK	Clear HTTP header
AT+SHAHEAD="Accept","text/html, */*"	OK	Add header content
AT+SHAHEAD="User-Agent","IOE Client"	OK	Add header content
AT+SHAHEAD="Content-Type","application/x-www-form-urlencoded"	OK	Add header content
AT+SHAHEAD="Connection","keep-alive"	OK	Add header content
AT+SHAHEAD="Cache-control","no-cache"	OK	Add header content
AT+SHREQ="https://www.baidu.com/",1	OK +SHREQ: "GET",200,227	Set request type is GET. Get data size is 227
AT+SHREAD=0,10	OK +SHREAD: 10 <html> <h	Read data length is 10 Data is <html> <h
AT+SHDISC	OK	Disconnect HTTP connect

5.2.3 HTTPS POST/PUT

AT Command	Response	Description
AT+CSSLCFG="sslversion",1,3	OK	Configure SSL/TLS version
AT+SHSSL=1,"baidu_root_ca.cer"	OK	Set HTTP SSL Configure
AT+SHCONF="URL","https://www.baidu.com"	OK	Set connect server parameter
AT+SHCONF="BODYLEN",1024	OK	Set max body length
AT+SHCONF="HEADERLEN",350	OK	Set max header length
AT+SHCONN	OK	Connect HTTPS server
AT+SHSTATE?	+SHSTATE: 1	Get HTTP status

	OK	
AT+SHCHEAD	OK	Clear HTTP header
AT+SHAHEAD="Accept","text/html, */*"	OK	Add header content
AT+SHAHEAD="User-Agent","IOE Client"	OK	Add header content
AT+SHAHEAD="Content-Type","application /x-www-form-urlencoded"	OK	Add header content
AT+SHAHEAD="Connection","keep-alive"	OK	Add header content
AT+SHAHEAD="Cache-control","no-cache"	OK	Add header content
AT+SHBOD=7,10000	> reciept OK	Set body content
AT+SHCPARA	OK	Clear body content para
AT+SHPARA="product","apple"	OK	Add body content para
AT+SHPARA="price","1"	OK	Add body content para
AT+SHREQ="https://www.baidu.com/",3	+SHREQ: "POST",302,225	Set request type is POST Get data size is 225.
AT+SHREQ="https://www.baidu.com/",2	+SHREQ: "PUT",302,225	Set request type is PUT Get data size is 225.
AT+SHREAD=0,10	OK +SHREAD: 10 <html> <h	Read data length is 10 Data is <html> <h
AT+SHDISC	OK	Disconnect HTTP connect

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