



# R7072\_HTTP(S)\_Application Note

LPWA Module

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# About Document

## Version History

Version	Date	Owner	What is new
V1.00	2021.05.31		First Release

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# Contents

<b>About Document.....</b>	<b>3</b>
Version History.....	3
<b>Contents.....</b>	<b>4</b>
<b>1 Introduction.....</b>	<b>5</b>
1.1 Purpose of the document.....	5
1.2 Related documents.....	5
1.3 Conventions and abbreviations.....	5
<b>2 HTTP Introduction.....</b>	<b>6</b>
2.1 Characteristic.....	6
2.2 Request Method.....	6
<b>3 AT Commands for HTTP(S).....</b>	<b>8</b>
<b>4 Bearer Configuration.....</b>	<b>9</b>
4.1 PDN activation.....	9
<b>5 HTTP(S) Samples.....</b>	<b>11</b>
5.1 HTTP Function.....	11
5.1.1 Send HTTP GET Request with authorization.....	11
5.1.2 Send HTTP GET Request.....	11
5.1.3 HTTP DOWNLOAD Download data.....	13
5.1.4 Send HTTP POST Request.....	14
5.1.5 Send HTTP PUT Request.....	15
5.1.6 Send HTTP HEAD Request.....	15
5.1.7 Check server support options.....	16
5.1.8 Send HTTP HTTPRACE Request.....	17
5.1.9 Send HTTP DELETE Request.....	18
5.1.10 Set HTTP timeout.....	19
5.1.11 HTTP HEADERSET.....	19
5.2 HTTP URC.....	19

# 1 Introduction

## 1.1 Purpose of the 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.

## 1.2 Related documents

[1] R7070 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 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	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 R7072 supports several methods: GET, POST, HEAD, OPTIONS,DELETE, and OPTIONS.

## 3 AT Commands for HTTP(S)

Command	DESCRIPTION
AT+HTTPAUTHOR	Send http request whit auth
AT+HTTPGET	Send http get request
AT+HTTPDOWNLOAD	Download data
AT+HTTPPOST	Send http post request
AT+HTTPPUT	Send http put request
AT+HTTPHEAD	Send http head request
AT+HTTPOPTIONS	Check functions supported by the server
AT+HTTPTRACE	Get all requests by clients
AT+HTTPDELETE	Delete all resources on server
AT+HTTPTIMEOUT	Setting timeout of HTTP server
AT+HTTPHEADERSET	Set page prioerties

For detail information, please refer to "R7070 Series\_AT Command Manual V1.00".

## 4 Bearer Configuration

### 4.1 PDN activation

**AT+CPIN?**

+CPIN: READY

// Check Status of SIM Card

OK

**AT+CSQ**

+CSQ: 27,99

// Check RF Signal

OK

**AT+CEREG?**

+CEREG: 0, 1, "1816", "52fa811c", 0

// Check Status of PS Service

OK

**AT+COPS?**

+COPS: 0,2, "46000", 0

// Check Information of Operator

OK

**AT+CGDCONT=1, "IP", "CMNET"**

// Set PDP context Parameters

OK

**AT+CGDCONT?**

+CGDCONT:1, "IP", "CMNET", "0.0.0.0", 0,0

// Check Information of PDP Context

OK

**AT+CFGDUALMODE?**

+CFGDUALMODE: 1,1

//

OK

**AT+CFGRATPRIO=?**

+CFGRATPRIO: DualModeRatPriority=[2,4](2-2G; 4-NB)

OK

AT+CFGRATPRIO=?

OK

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## 5 HTTP(S) Samples

### 5.1 HTTP Function

#### 5.1.1 Send HTTP GET Request with authorization

```
// HTTP get whit authorization
```

```
AT+CGACT=1
```

```
// activate PDP context
```

```
OK
```

```
AT+HTTPAUTHOR=
```

```
"http://101.231.214.90:60001/test/","test","123456"
```

```
// set the URL which will be accessed, for HTTP,  
the request URL begins with "HTTP://"
```

```
OK
```

```
+HTTPURC: 200
```

```
CONTENT-TYPE: TEXT/HTML
```

```
CONTENT-LENGTH: 4958
```

```
ACCEPT-RANGES: BYTES
```

```
SERVER: HFS 2.3K
```

```
SET-COOKIE: HFS_SID_=0.690894247032702;
```

```
PATH=/; HTTPONLY
```

```
CACHE-CONTROL: NO-CACHE, NO-STORE,
```

```
MUST-REVALIDATE, MAX-AGE=-1
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD
```

```
XHTML 1.0 TRANSITIONAL//EN">
```

```
<HTML>
```

```
.....
```

```
</HTML>
```

```
<!-- BUILD-TIME: 0.250 -->
```

#### 5.1.2 Send HTTP GET Request

```
// Following commands shows how to send a HTTP GET request to server, and how to read  
HTTP response.
```

```
AT+CGACT=1
```

```
// activate PDP context
```

```
OK
```

at+httpget="http://mail.sim.com"

//get the url data,and response content

OK

+HTTPURC: 200

SERVER: NGINX

DATE: TUE, 09 MAR 2021 07:00:49 GMT

CONTENT-TYPE: TEXT/HTML;CHARSET=UTF-8

CONTENT-LENGTH: 12003

CONNECTION: KEEP-ALIVE

VARY: ACCEPT-ENCODING

X-CACHE: FROM NTES\_QIYE

<!DOCTYPE HTML>

<HTML XMLNS="HTTP://WWW.W3.ORG/1999/XHTML">

<HEAD>

<META HTTP-EQUIV="CONTENT-TYPE"

CONTENT="TEXT/HTML;CHARSET=UTF-8" />

<META NAME="KEYWORDS" CONTENT="緬曼橋浼佻

笱閭,鋼海綽浼佻笱閭,浼佻笱閭 娉丿晰,鑿靛瓊閭

" />

<META NA

ME="DESCRIPTION" CONTENT="緬曼橋浼佻笱閭 鋼海綽楞  
甸潰縷佻縷鋼瑜紆甯 姪鑿儿垆鋼海綽浼佻笱閭 鏘岍紆錫 殢  
鏹墮殢鏘幫紆鏘例€ 嬌敕鑿戣勒究鏘蜂縷楠岍€ " />

<META NAME="TITLE" CONTENT="緬曼橋浼佻笱閭

- 浼佻笱淇℃C佻鏘桄甯涓瀳洛愷縷規??>

<TITLE>鏘?

瓊 鐳€ - 閭 鑿儿垆鋼海綽</TITLE>

.....

</SCRIPT>

<!--鑿九鎢枒旂湢閱樂 鎖惱ず鏘岍拑 DOMAINTYPE 鏘?->

<SCRIPT TYPE="TEXT/JAVASCRIPT" SRC=" ../JS/LOGINJ

S.JSP"></SCRIPT>

<SCRIPT TYPE="TEXT/JAVASCRIPT"

SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND  
EX/CSS/ ../JS/JQUERY.JS"></SCRIPT>

<SCRIPT TYPE="TEXT/JAVASCRIPT"

SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND  
EX/CSS/ ../JS/JQUERY-MIGRATE.JS"></SCR

IPT>

<SCRIPT TYPE="TEXT/JAVASCRIPT"

SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND  
EX/CSS/ ../JS/LANG\_ZHCN.JS"></SCRIPT>

<SCRIPT TYPE="TEXT/JAVASCRIPT"

SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND  
EX/CSS/ ../JS/SELECT\_NETWORK.JS"></SCRIPT>

```
<SC
RIPT                                TYPE="TEXT/JAVASCRIPT"
SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND
EX/CSS/./JS/LOGIN_UTIL.JS"></SCRIPT>
<SCRIPT                            TYPE="TEXT/JAVASCRIPT"
SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND
EX/CSS/./JS/JQUERY.JSONP-2.4.0.MIN.JS"></SCRIPT>

<SCRIPT                            TYPE="TEXT/JAVASCRIPT"
SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND
EX/CSS/./JS/SELECT_BANNER.JS"></SCRIPT>
<SCRIPT                            TYPE="TEXT/JAVASCRIPT"
SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND
EX/CSS/./JS/RESET_PWD.JS"></SCRIPT>
<SCRIPT TY
PE="TEXT/JAVASCRIPT"
SRC="//MIMGHZ.QIYE.163.COM/O/DOMAIN/202102032126/IND
EX/CSS/./JS/SELECT_CH.JS"></SCRIPT>
<SCRIPT                            TYPE="TEXT/JAVASCRIPT"
SRC="//MIMG.QIYE.163.COM/O/INDEX/LIB/SCRIPTS/QIYE_AL
GORITHM.JS"></SCRIPT>
</HTML>
OK
```

### 5.1.3 HTTP DOWNLOAD Download data

// Following commands shows how to send a HTTP DOWNLOAD request to server, and how to read HTTP response.

**AT+CGACT=1**

OK

**AT+HTTPDOWNLOAD="http://117.131.85.139:5134/test.txt"**

// start HTTP service, activate  
PDP context

OK

+HTTPURC: 200

+HTTPDLD:12

FSDFSDFSDFS

DOWNLOAD SUCCEED

## 5.1.4 Send HTTP POST Request

// HTTP POST

```

AT+CGACT=1 // Activate PDP context
OK
AT+HTTPPOST="url",27 //set the URL which will be accessed, for HTTP,
> http://117.131.85.139:5134/ the request URL begins with "HTTP://"
OK

AT+HTTPPOST="content_type",10 // Set http post content type
> text/plain
OK
AT+HTTPPOST="body_content ",5 // Set http post body content information
> 12345
OK
AT+HTTPPOST // Send http post request

Content_Type: text/plain

Content_Length: 5

12345

OK
+HTTPURC: 200

Content-Type: text/html
Content-Length: 4212 //content length is 4212,"... .." is that which
Accept-Ranges: bytes contents are omitted
Server: HFS 2.3 beta
Cache-Control: no-cache, no-store,
must-revalidate, max-age=-1
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML
1.0 Transitional//EN">
<html>
<head>
    <meta http-equiv="content-type"
content="text/html; charset=GB2312">
    <title>HFS </title>
    <link rel="stylesheet" h
ref="/?mode=section&id=style.css"
type="text/css">
    <script type="text/javascript"
src="http://ajax.googleapis.com/ajax/libs/jquery/

```

```
1.4.2/jquery.js"></script>
... ..

<td>12B<td>2021/3/9 17:45:12<td>4

</table>

</div>

</body>
</html>
<!-- Build-time:
0.007 -->
```

### 5.1.5 Send HTTP PUT Request

// HTTP PUT

|                                     |   |
|-------------------------------------|---|
| <b>AT+CGACT=1</b>                   | // activate PDP context   |
| OK                                  |   |
| <b>AT+HTTPPUT="url",27</b>          | //set the URL which will be accessed, for HTTP, the request URL begins with "HTTP://" |
| > http://117.131.85.139:5134/       |   |
| OK                                  |   |
| <b>AT+HTTPPUT="content_type",10</b> | //set content type  |
| > text/plain                        |   |
| OK                                  |   |
| <b>AT+HTTPPUT="content_name",7</b>  | // Set content name   |
| > put.txt                           |   |
| OK                                  |   |
| <b>AT+HTTPPUT</b>                   | // send HTTP PUT request  |
| OK                                  |   |
| <b>+HTTTPURC: 200</b>               |   |
| success,file created                |   |

### 5.1.6 Send HTTP HEAD Request

// HTTP HEAD

```
AT+CGACT=1 // activate PDP context
OK
AT+HTTPHEAD="http://117.131.85.139:5134/" //Sent HTTPHEAD request

OK
+HTTPURC: 200

Content-Type: text/html
Content-Length: 4213
Accept-Ranges: bytes
Server: HFS 2.3 beta
Cache-Control: no-cache, no-store,
must-revalidate, max-age=-1
```

### 5.1.7 Check server support options

```
// HTTPOPTIONS

AT+CGACT=1 // activate PDP context
OK
A AT+HTTPOPTIONS="http://www.baidu.com/" //Sent HTTP option request

OK
+HTTPURC: 302

Bdpagetype: 3
Connection: keep-alive
Content-Length: 154
Content-Type: text/html
Date: Wed, 10 Mar 2021 02:19:51 GMT
Location: // You can use this URL to check server options
https://www.baidu.com/search/error.html
Server: BWS/1.1
Set-Cookie: BDSVRTM=0; path=/
Traceid:
161534279108368819301013759513965717596
1
X-Ua-Compatible: IE=Edge,chrome=1
<html>
<head><title>302 Found</title></head>
<body bgcolor="white">
```

<center><h1>302 Found</h1></center>

<hr><center>nginx</center>

</body>

</html>

**AT+HTTPOPTIONS="https://www.baidu.com/search/error.html"**

//Send http options request

OK

+HTTPURC: 200

Allow: GET,HEAD,POST,OPTIONS,TRACE

Cache-Control: max-age=86400

Content-Length: 0

Content-Type: text/html

Date: Wed, 10 Mar 2021 02:24:42 GMT

Expires: Thu, 11 Mar 2021 02:24:42 GMT

P3p: CP=" OTI DSP COR IVA OUR IND COM "

Server: Apache

Set-Cookie:

BAIDUID=12878CB3C72CFCEEEEE11371EBDF

81D3:FG=1; expires=Thu, 10-Mar-22 02:24:42

GMT; max-age=31536000; path=/;

domain=.baidu.com; version=1

Vary: Accept-Encoding,User-Agent

### 5.1.8 Send HTTP HTTPTRACE Request

// HTTP HTTPTRACE

**AT+CGACT=1**

// activate PDP context

OK

**AT+HTTPTRACE="http://www.baidu.com/"**

//send HTTPTRACE request

OK

+HTTPURC: 302

Bdpagetype: 3

Content-Length: 154

Content-Type: text/html

Date: Wed, 10 Mar 2021 02:35:03 GMT

Location:

https://www.baidu.com/search/error.html

Server: BWS/1.1

Set-Cookie: BDSVRTM=0; path=/

```
Traceid:
161534370302330332261035103134044980810
3
X-Ua-Compatible: IE=Edge,chrome=1
<html>
<head><title>302 Found</title></head>
<body bgcolor="white">
<center><h1>302 Found</h1></center>
<hr><center>nginx</center>
</body>
</html>

AT+HTTPTRACE="https://www.baidu.com/search/error.html" //send HTTPTRACE request

OK
+HTTPURC: 200

Content-Type: message/http
Date: Wed, 10 Mar 2021 02:35:33 GMT
Server: Apache
Content-Length: 368
TRACE /search/error.html HTTP/1.1
Host: www.baidu.com
Bfe_logid: 9443450316174087991
Bfeip: 10.206.228.32
CLIENTIP: 117.136.120.163
CLIENTPORT: 61670
Go_bfe_logid: 9443450316174087991
Idc: nj

Ssl_header: 1
User-Agent: mUPnP-HTTP/3.0.2
X-Bfe-Device-Type: pc
X-Forwarded-For: 117.136.120.163
X-Forwarded-Port: 61670
X-Ssl-Header: 1
X-Trust-Ip-Header: 1
```

### 5.1.9 Send HTTP DELETE Request

```
// HTTP HTTPDELETE

AT+CGACT=1 // activate PDP context
OK
```

```
AT+HTTPDELETE="http://123.57.221.42/webdav1","put.txt" //send HTTPDELETE request
OK
+HTTPURC: 200
SUCCESS,FILE DELETED
```

### 5.1.10 Set HTTP timeout

```
// HTTP HTTPDELETE

AT+CGACT=1 // activate PDP context
OK
AT+HTTPTIMEOUT=20 //send HTTPDELETE request
OK
```

### 5.1.11 HTTP HEADERSET

```
// HTTP HTTPHEADERSET

AT+CGACT=1 // activate PDP context
OK
AT+HTTPHEADERSET="Connection:keep-alive;Accept-Language:pl,en-US;q=0.7,en;q=0.3;Content-Type:text/html" //set http header
OK
```

## 5.2 HTTP URC

information	describeration
<b>+HTTPURC: &lt;result_code&gt;</b>	<p>HTTP server response:</p> <p>&lt;result_code&gt;: HTTP result code. Please refer to RFC 2616 for detail.</p> <p>200 - OK</p> <p>401 - Unauthorized</p> <p>403 - Forbidden</p> <p>404 - Not Found</p> <p>500 - Internal Server Error</p> <p>501 - Not Implemented</p> <p>505 - HTTP Version not supported</p>