



SIM7070_SIM7080_SIM7090 Series_Email _Application Note

LPWA Module

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About Document

Version History

Version	Date	Owner	What is new
V1.00	2019.10.12	Wenjie.Lai	First Release
V1.01	2020.2.26	Yulong.Zheng	Add SSL and examples
V1.02	2020.7.8	Wenjie.Lai	All

Scope

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/GPRS	24*24*2.4	N/A
SIM7070G-NG	NB/GPRS	24*24*2.4	N/A
SIM7090G	CAT-M/NB	14.8*12.8*2.0	N/A

Contents

About Document.....	3
Version History.....	3
Scope.....	3
Contents.....	4
1 Introduction.....	5
1.1 Purpose of the document.....	5
1.2 Related documents.....	5
1.3 Conventions and abbreviations.....	5
2 Email Introduction.....	6
2.1 Introduction.....	6
2.2 Email Address.....	6
2.3 Email Protocol.....	7
3 AT Commands for Email.....	8
4 Bearer Configuration.....	9
4.1 PDN Auto-activation.....	9
4.2 APN Manual Configuration.....	10
5 Email Examples.....	12
5.1 Synchronize time.....	12
5.2 Send an Email.....	12
5.3 Send an Email with an attachment.....	13
5.4 Send a UTF-8 Email.....	14
5.5 Retrieve the Email.....	15
5.6 Delete the Email.....	16
5.7 Get the Email's size and unique-id.....	17
5.8 Email Send Encrypted Mail with Normal Port.....	18
5.9 Email Send Encrypted Mail with Encryption Port.....	19
5.10 Email Receive Encrypted Mail with Encryption Port.....	20

1 Introduction

1.1 Purpose of the document

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

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

1.2 Related documents

[1] SIM7070_SIM7080_SIM7090 Series_AT Command Manual

[2] SIM7070_SIM7080_SIM7090 Series_SSL_Application Note

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 Email Introduction

2.1 Introduction

Electronic mail (email or e-mail) is a method of exchanging messages ("mail") between people using electronic devices. Invented by Ray Tomlinson, email first entered limited use in the 1960s and by the mid-1970s had taken the form now recognized as email. Email operates across computer networks, which today is primarily the Internet. Some early email systems required the author and the recipient to both be online at the same time, in common with instant messaging. Today's email systems are based on a store-and-forward model. Email servers accept, forward, deliver, and store messages. Neither the users nor their computers are required to be online simultaneously; they need to connect only briefly, typically to a mail server or a webmail interface for as long as it takes to send or receive messages or to download it.

Originally an ASCII text-only communications medium, Internet email was extended by Multipurpose Internet Mail Extensions (MIME) to carry text in other character sets and multimedia content attachments. International email, with internationalized email addresses using UTF-8(which you can send Chinese email body), has been standardized, but as of 2017 it has not been widely adopted.

The history of modern Internet email services reaches back to the early ARPANET, with standards for encoding email messages published as early as 1973 (RFC 561). An email message sent in the early 1970s looks very similar to a basic email sent today.

2.2 Email Address

The format of an email address consists of three parts: User identifier + @ + domain name

The first part "USER" represents the account of the user's mailbox. For the same mail receiving server, this account must be unique;

The second part "@" is a separator. @ is the symbol of "at", which means "at".

The third part is the domain name of the mail receiving server of the user mailbox.

The domain_name here is the identifier of the domain name, that is, the domain name of the mail destination to which the mail must be delivered. Somebody is the email address on the domain. The suffix generally represents the nature of the domain name and the region code. The domain name is really

technically a mail switch, not a machine name.

2.3 Email Protocol

There are several common email protocols: SMTP, POP3, IMAP. These several protocols are defined by the TCP / IP protocol family.

SMTP (Simple Mail Transfer Protocol): SMTP is mainly responsible for how the underlying mail system transfers mail from one machine to another. The normal and startSSL port is 25, and the SSL port is 465.

POP (Post Office Protocol): The version is POP3. POP3 is a protocol for transmitting mail from an email box to a local computer. The normal port is 110, and the SSL port is 995, no startSSL.

IMAP (Internet Message Access Protocol): The version is IMAP4, which is an alternative protocol to POP3. It provides new functions of mail retrieval and mail processing, so that users can see the summary of the title of the mail without downloading the body of the mail. The client software can operate on the mail and folder directories on the server. The IMAP protocol enhances the flexibility of e-mail, and also reduces the direct harm of spam to the local system, and at the same time saves users the time to check the e-mail. In addition, the IMAP protocol can remember the user's operations on the mail in the offline state (such as moving mail, deleting mail, etc.) will be automatically executed the next time the network connection is opened. The normal port is 143, and the SSL port is 993, no startSSL.

Support for SSL connections is integrated into most popular email client programs.

In addition, many encryption technologies are also applied to the sending and receiving and reading of e-mail. They can provide encryption strengths ranging from 128 to 2048 bits. Both unidirectional and symmetric key encryption are widely supported

SIM7070_SIM7080_SIM7090 Series support SMTP and POP3 protocols.

3 AT Commands for Email

Command	Description
AT+EMAILCID	Set Email bearer profile identifier
AT+EMAILTO	Set timeout value of SMTP/POP3 server response
AT+SMTPSRV	Set SMTP server address and port
AT+SMTPAUTH	Set user name and password for SMTP authentication
AT+SMTPFROM	Set sender address and name
AT+SMTPCRPT	Set the Email recipient(to/cc/bcc) address and name
AT+SMTPSUB	Set the Email subject
AT+SMTPBODY	Set the Email body
AT+SMTPFILE	Set the Email attachment
AT+SMTPSEND	Send the Email
AT+SMTPFT	Transfer the Email attachment
AT+SMTPCS	Set the Email charset
AT+POP3SRV	Set POP3 server and account
AT+POP3IN	Log in POP3 server
AT+POP3NUM	Get Email number and total size
AT+POP3LIST	Get the specific Email size
AT+POP3UIDL	Get the specific Email unique-id
AT+POP3CMD	Get multi-line response
AT+POP3READ	Read multi-line response
AT+POP3DEL	Mark the specific Email to delete
AT+POP3RSET	Unmark the emails that be marked as deleted
AT+POP3OUT	Log out POP3 server

For detail information, please refer to “SIM7070_SIM7080_SIM7090 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+CGATT? //Check PS service. 1 indicates PS has attached.
+CGATT: 1

OK
AT+COPS? //Query Network information, operator and network.
+COPS: 0,0,"CHN-CT",9 //Mode 9 means 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=0,1,"ctnb" //Before activation please use AT+CNCFG to set
//APN\user name\password if needed.

OK
AT+CNACT=0,1 //Activate network, Activate 0th PDP.
OK
+APP PDP: 0,ACTIVE
  
```

```

AT+CNACT? //Get local IP
+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

```

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. Some operators need to
                             //set APN first when registering the network.

OK
AT+CFUN=1 //Enable RF

OK

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

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=0,1,"ctnb" //Before activation please use AT+CNCFG to set
                     //APN\user name\password if needed.

OK
AT+CNACT=0,1 //Activate network, Activate 0th PDP.

OK

```

+APP PDP: 0,ACTIVE

AT+CNACT?

//Get local IP

+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

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5 Email Examples

5.1 Synchronize time

To ensure that the received email has the correct time, first the time must be synchronized.

//Example of Synchronize time

```
AT+CNTPCID? //Query GPRS bearer profile's ID
+CNTPCID: 1

OK
AT+CNTP="ntp1.aliyun.com",32 //Set server and time zone
OK
AT+CNTP //Synchronize Network Time
OK

+CNTP: 1,"2018/12/26,10:36:49"
AT+CCLK? //Query clock time
+CCLK: "18/12/26,10:36:57+32"

OK
```

5.2 Send an Email

//Example of Send an Email

```
AT+EMAILCID=0 //Set parameters of Email
OK
AT+EMAILTO=30 //Set the timeout value of SMTP/POP3 server
//response is 30 seconds.
OK
AT+SMTPSRV="mail.sim.com",25 //Set SMTP server address and port
OK
```

```
AT+SMTPAUTH=1,"john","123456" //Set user name and password
OK
AT+SMTPFROM="john@sim.com","john" //Set sender address and name
OK
AT+SMTPRCPT=0,0,"john@sim.com","john" //Set the recipient(To:)
OK
AT+SMTPRCPT=1,0,"john@sim.com","john" //Set the recipient(Cc:)
OK
AT+SMTPRCPT=2,0,"john@sim.com","john" //Set the recipient(Bcc:)
OK
AT+SMTPSUB="Test" //Set the subject
OK
AT+SMTPBODY=19 //Set the body
DOWNLOAD
This is a new Email

OK
AT+SMTPSEND //Send the Email
OK

+SMTPSEND: 1
```

5.3 Send an Email with an attachment

//Example of Send an Email with an attachment

```
AT+EMAILCID=0 //Set parameters of Email
OK
AT+EMAILTO=30 //Set parameters of Email
OK
AT+SMTPSRV="mail.sim.com",25 //Set SMTP server address and port
OK
AT+SMTPAUTH=1,"john","123456" //Set user name and password
OK
AT+SMTPFROM="john@sim.com","john" //Set sender address and name
OK

AT+SMTPRCPT=0,0,"john@sim.com","john" //Set the recipient (To:)
OK
```

```

AT+SMTPRCPT=1,0,"john@sim.com","john" //Set the recipient (Cc:)
OK
AT+SMTPRCPT=2,0,"john@sim.com","john" //Set the recipient (Bcc:)
OK
AT+SMTPSUB="Test" //Set the subject
OK
AT+SMTPBODY=19 //Set the body
DOWNLOAD
This is a new Email

OK
AT+SMTMPFILE=1,"test.txt",0 //Set the attachment
OK
AT+SMTPSEND //Send the Email
OK
+SMTPFT: 1,1360 //URC indicates that the attachment may be
send.1360 is the max length of data which can be
sent at a time. It depends on the network status.
AT+SMTMPFT=100 //SMTP client requests to send 100 bytes.
Response will indicates that user must input 100
bytes for transferring now.

+SMTPFT: 2,100
..... //Input data

OK
+SMTPFT: 1,1360 //URC indicates that more data can be sent
AT+SMTMPFT=0 //The attachment has been transferred completely.
OK
+SMTPSEND: 1 //URC indicates that the entire email has been
send successfully

```

5.4 Send a UTF-8 Email

//Example of Send UTF-8 Email

```

AT+EMAILCID=0 //Set parameters of Email
OK
AT+EMAILTO=30 //Set parameters of Email
OK
AT+SMTPCS="UTF-8" //Set the mail charset

```

```
OK
AT+SMTPSRV="mail.sim.com",25           //Set SMTP server address and port
OK
AT+SMTPAUTH=1,"john","123456"         //Set user name and password
OK
AT+SMTPFROM="john@sim.com","john"     //Set sender address and name
OK
AT+SMTPRCPT=0,0,"john@sim.com","john" //Set the recipient(To:)
OK
AT+SMTPRCPT=1,0,"john@sim.com","john" //Set the recipient(Cc:)
OK
AT+SMTPRCPT=2,0,"john@sim.com","john" //Set the recipient(Bcc:)
OK
AT+SMTPSUB="54455354"                 //Set the subject
OK
AT+SMTPBODY=40                        //Set the body
DOWNLOAD
38546869732069732061206E657720456D61696
C

OK
AT+SMTPSEND                           //Send the Email
OK

+SMTPSEND: 1
```

5.5 Retrieve the Email

//Example of Retrieve an Email

```
AT+EMAILCID=0                         //Set parameters of Email
OK
AT+EMAILTO=30                          //Set parameters of Email
OK
AT+POP3SRV="mail.sim.com","john","123456 //Set POP3 server and account
",110
OK
AT+POP3IN                               //Log in POP3 server
OK
```

```
+POP3IN: 1
AT+POP3NUM //Get Email number and total size
OK

+POP3NUM: 1,2,11124
AT+POP3LIST=1 //Get the specific Email's size
OK

+POP3LIST: 1,1,5556
AT+POP3CMD=4,1 //Retrieve the specific Email
OK

+POP3CMD: 1
AT+POP3READ=1460 //Get the Email content
+POP3READ: 1,1460
...

OK
AT+POP3READ=1460
+POP3READ: 1,1460
...

OK
AT+POP3READ=1460 //The Email's content is read completely
+POP3READ: 2,1183
...

OK
AT+POP3OUT //Log out POP3 SERVER
OK

+POP3OUT: 1
```

5.6 Delete the Email

//Example of Delete an Email

```
AT+EMAILCID=0 //Set parameters of Email
OK
AT+EMAILTO=30 //Set parameters of Email
OK
```

```
AT+POP3SRV="mail.sim.com","john","123456 //Set POP3 server and account
",110
OK
AT+POP3IN //Log in POP3 server
OK

+POP3IN: 1
AT+POP3NUM //Get Email number and total size
OK

+POP3NUM: 1,2,11124
AT+POP3DEL=1 //Mark the Email to delete
OK

+POP3DEL: 1
AT+POP3OUT //Log out POP3 SERVER
OK

+POP3OUT: 1
```

5.7 Get the Email's size and unique-id

//Example of Get Email's size and unique-id

```
AT+EMAILCID=0 //Set parameters of Email
OK
AT+EMAILTO=30 //Set parameters of Email
OK
AT+POP3SRV="mail.sim.com","john","123456 //Set POP3 server and account
",110
OK
AT+POP3IN //Log in POP3 server
OK

+POP3IN: 1
AT+POP3NUM //Get Email number and total size
OK

+POP3NUM: 1,2,35797
AT+POP3LIST=1 //Get the specific Email's size
```

OK

+POP3LIST: 1,1,16601

AT+POP3UIDL=1

//Get the specific Email's unique-id

OK

+POP3UIDL: 1,1,

AAAFOPdCAAav60+tkSFqRqk3/6ogog+g

AT+POP3OUT

//Log out POP3 SERVER

OK

+POP3OUT: 1

5.8 Email Send Encrypted Mail with Normal Port

//Example of Send an Encrypted Email with Normal Port

AT+EMAILCID=0

//Set parameters of Email

OK

AT+EMAILTO=30

//Set parameters of Email

OK

AT+EMAILSSL=2,0,"email.cer","email.pem"

//Set EMAIL begin encrypt transmission with normal port. <ssltype>=2 means startssl.

OK

AT+SMTPSRV="SMTP.GMAIL.COM"

//Set SMTP server address, port is omitted, means use the default ports: 25

OK

AT+SMTPAUTH=1,"account","password"

//Set user name and password

OK

AT+SMTPFROM="account@GMAIL.COM","account"

//Set sender address and name

OK

AT+SMTPSUB="Test"

//Set the subject

OK

AT+SMTPRCPT=0,0,"john@sim.com","john"

//Set the recipient (To:)

OK

AT+SMTPBODY=19

//Set the body

DOWNLOAD

This is a new Email

```
OK
AT+SMTPSEND //Send the Email
OK
+SMTPSEND: 1
```

5.9 Email Send Encrypted Mail with Encryption Port

//Example of Send an Encrypted Email with Encryption Port

```
AT+EMAILCID=0 //Set parameters of Email
OK
AT+EMAILTO=30 //Set parameters of Email
OK
AT+EMAILSSL=1,0,"email.cer","email.pem" //Set EMAIL begin encrypt transmission with
normal port. <ssltype>=1 means SSL.
OK
AT+SMTPSRV="SMTP.GMAIL.COM" //Set SMTP server address, port is omitted, means
use the default ports: 465
OK
AT+SMTPAUTH=1,"account","password" //Set user name and password
OK
AT+SMTPFROM="account@GMAIL.COM","acc //Set sender address and name
ount"
OK
AT+SMTPSUB="Test" //Set the subject
OK
AT+SMTPRCPT=0,0,"john@sim.com","john" //Set the recipient (To:)
OK
AT+SMTPBODY=19 //Set the body
DOWNLOAD
This is a new Email

OK
AT+SMTPSEND //Send the Email
OK
+SMTPSEND: 1
```

5.10 Email Receive Encrypted Mail with Encryption Port

//Example of Receive an Encrypted Email with Encryption Port

```

AT+EMAILCID=0 //Set parameters of Email
OK
AT+EMAILTO=30 //Set parameters of Email
OK
AT+EMAILSSL=1,0,"email.cer","email.pem" //Set EMAIL begin encrypt transmission with
normal port
OK
AT+POP3SRV="mail.sim.com","john","123456" //Set POP3 server and account, port is omitted,
" means use the default ports 110
OK
AT+POP3IN //Log in POP3 server
OK
+POP3IN: 1
AT+POP3NUM //Get Email number and total size
OK
+POP3NUM: 1,2,11124
AT+POP3LIST=1 //Get the specific Email's size
OK
+POP3LIST: 1,1,5556
AT+POP3CMD=4,1 //Retrieve the specific Email
OK
+POP3CMD: 1
AT+POP3READ=1460 //Get the Email content
+POP3READ: 1,1460
...
OK
AT+POP3READ=1460 //The Email's content is read completely
+POP3READ: 2,1183
...
OK
AT+POP3OUT //Log out POP3 SERVER
OK

```

+POP3OUT: 1

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