EC2x&EG2x-G&EG9x&EM05 Series

SMTP Application Note

LTE Standard Module Series

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Our aim is to provide customers with timely and comprehensive service. For any assistance, please contact our company headquarters:

Quectel Wireless Solutions Co., Ltd.

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236   Email: info@quectel.com

Or our local office. For more information, please visit: http://www.quectel.com/support/sales.htm.

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About the Document

Revision History

Version	Date	Author	Description
1.0	2017-12-08	Duke XIN/ Haley HUANG	Initial
1.1	2020-07-29	Luffy LIU	1. Added EG25-G and EG21-G modules and related information. 2. Added AT+QSMTPCFG="bodyoriginal" (Chapter 2.2.1). 3. Added the condition of configuring <mode> to 1 in AT+QSMTPDST (Chapter 2.2.2).

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1 Introduction

Quectel EC2x&EG9x&EG2x-G&EM05 series modules provide an SMTP interface that you can use to send email from applications you develop. This document is a reference guide to all the AT commands defined for SMTP.

Table 1: Applicable Modules

Module Series	Model
EC2x series	EC21 Series
	EC25 Series
	EC20 R2.1
EG2x-G	EG21-G
	EG25-G
EG9x series	EG91 series
	EG95 series
EM05 series	EM05 series

1.1. Introduction of SSL Type

There are three kinds of connections between SMTP client and SMTP server:

- Without SSL
- SSL
- STARTTLS

Some SMTP servers do not support connection without SSL, while some can support all of them. You can select the connection method according to the mail service provider.

These three kinds of connections can be set by **<SSL_type>** parameter in **AT+QSMTPCFG="ssltype"**.

1. If **<SSL_type>** is 0, it means "without SSL". In this case, SSL function will not be used, and emails are sent with insecure connection. The port of SMTP server depends on mail service provider, and is port 25 usually.
2. If **<SSL_type>** is 1, it means "SSL". In this case, emails are sent with SSL/TLS encrypted SMTP. The port of SMTP server depends on mail service provider, and is port 465 or 587 usually.
3. If **<SSL_type>** is 2, it means "STARTTLS". In this case, the normal insecure connection can be upgraded to secure connection through STARTTLS function, for sending the mail data. The port of SMTP server depends on mail service provider, and is port 25, 465 or 587 usually.

1.2. The Process of Sending Email

As EC2x&EG9x&EG2x-G&EM05 series modules support SMTP protocol, emails can be sent easily by module SMTP AT commands. The general process is as follows:

Step 1: Configure and activate a PDP context.
　1) Configure **<APN>**, **<username>**, **<password>** and other parameters of a PDP context by **AT+QICSGP**. See *document [3]* for details.
　　If QoS settings need to be updated, configure them by **AT+CGQMIN**, **AT+CGEQMIN**, **AT+CGQREQ** and **AT+CGEQREQ** commands. For more details, see *document [5]*, *document [6]* and *document [7]*.
　2) Activate the PDP context by **AT+QIACT**.
　3) Configure the PDP context ID for SMTP by **AT+QSMTPCFG="contextid",<contextID>**.

Step 2: Configure SMTP server and user account.
　1) Configure SSL type by **AT+QSMTPCFG="ssltype",<SSL_type>**. If **<SSL_type>** is SSL or STARTTLS, choose an SSL context by **AT+QSMTPCFG="sslctxid",<SSL_ctxID>** and configure the **<SSL_ctxID>** by **AT+QSSLCFG="ciphersuite",<SSL_ctxID>,<ciphersuites>**. For more details about these commands, see *document [8]*.
　2) Configure SMTP server by **AT+QSMTPCFG="smtpserver",<srvaddr>,<srvport>**. **<srvaddr>** and **<srvport>** depend on the mail service provider.
　3) Configure account information by **AT+QSMTPCFG="account",<username>,<password>**.
　4) Configure sender information by **AT+QSMTPCFG="sender",<sender_name>,<sender_email>**.

Step 3: Edit the email content.
　1) Configure the recipient by **AT+QSMTPDST**.
　2) Configure the subject of email by **AT+QSMTPSUB**.
　3) Configure the body of email by **AT+QSMTPBODY**.
　4) Add attachments for the email by **AT+QSMTPATT**. The attachments can be RAM, UFS or SD files. And the files can be uploaded to RAM, UFS or SD card by **AT+QFUPL**. After sending email

successfully, the file should be deleted by **AT+QFDEL**. For more details of these commands, see *document [4]*.

Step 4: Send email.

Send the email by **AT+QSMTPPUT**. It will take some time to send the email depending on the total size of attachments and network status. When the sending action ends, **+QSMTPPUT: <err>,<protocol_error>** will be returned.

Step 5: Clear the email content.

AT+QSMTPCLR will clear the email content configured in **Step 3**. The attached files should be deleted by **AT+QFDEL**. For more details of these commands, see *document [4]*. Then repeat **Step 3** and **4**. If the SMTP server information and user information need to be changed, then **Step 2** to **Step 4** should be repeated.

If emails have not been sent for a long time, such as 30 minutes or even longer, the PDP context should be deactivated by **AT+QIDEACT=<contextID>**. For more details, see *document [3]*.

1.3. Description of Data Mode

The COM port of EC2x&EG9x&EG2x-G&EM05 series modules has two working modes: AT command mode and data mode. In AT command mode, the inputted data via COM port will be treated as AT command, while in data mode, it will be treated as data.

Inputting **+++** or pulling up DTR (**AT&D1** should be set first) can make the module exit from data mode. To prevent the **+++** from being misinterpreted as data, the following sequence should be followed:

1) Do not input any character within 1s or longer before inputting **+++**.
2) Input **+++** within 1s, and no other characters can be inputted during the time.
3) Do not input any character within 1s after **+++** has been inputted.

When **AT+QSMTPBODY** is executed, the COM port will enter into data mode. All inputted data will be the body of email. If the inputted data reaches the **<body_length>** or the time reaches **<input_time>**, the port will exit from data mode automatically. If the inputted data is less than the **<body_length>**, finish editing body by inputting **+++** or changing DTR level from low to high before **<input_time>** reaches. In such case, the COM port cannot reenter data mode by executing **ATO**.

2 Description of SMTP AT Commands

2.1. AT Command Syntax

2.1.1. Definitions

- **<CR>**   Carriage return character.
- **<LF>**   Line feed character.
- **<...>**   Parameter name. Angle brackets do not appear on command line.
- **[...]**   Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on command line. When an optional parameter is omitted, the new value equals its previous value or its default setting, unless otherwise specified.
- <u>Underline</u>   Default setting of a parameter.

2.1.2. AT Command Syntax

The **AT** or **at** prefix must be added at the beginning of each command line. Entering **<CR>** will terminate a command line. Commands are usually followed by a response that includes **<CR><LF><response><CR><LF>**. Throughout this document, only the response **<response>** will be presented, **<CR><LF>** are omitted intentionally.

Table 2: Type of AT Commands and Responses

Test Command	AT+<cmd>=?	This command returns the list of parameters and value ranges set by the corresponding Write Command or internal processes.
Read Command	AT+<cmd>?	This command returns the currently set value of the parameter or parameters.
Write Command	AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]	This command sets the user-definable parameter values.
Execution Command	AT+<cmd>	This command reads non-variable parameters affected by internal processes in the module.

2.2. SMTP Related AT Commands

2.2.1. AT+QSMTPCFG   Configure Parameters for SMTP Server

This command configures the SMTP server, user account and SSL settings.

AT+QSMTPCFG Configure Parameters for SMTP Server	
Test Command **AT+QSMTPCFG=?**	Response **+QSMTPCFG: "account",<username>,<password>** **+QSMTPCFG: "sender",<sender_name>,<sender_email>** **+QSMTPCFG: "smtpserver",<srvaddr>,<srvport>** **+QSMTPCFG: "contextid",(**range of supported **<contextID>**s**)** **+QSMTPCFG: "sslctxid",(**range of supported **<SSL_ctxID>**s**)** **+QSMTPCFG: "ssltype",(**range of supported **<SSL_type>**s**)** **+QSMTPCFG: "bodyoriginal",(**list of supported **<body_switch>**s**)** **OK**
Write Command **AT+QSMTPCFG="account"[,<user name>,<password>]**	Response If the optional parameters are omitted, query the current setting: **+QSMTPCFG: "account",<username>,<password>** **OK** If the optional parameters are specified, set the user account: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QSMTPCFG="sender"[,<send er_name>,<sender_email>]**	Response If the optional parameters are omitted, query the current setting:**+QSMTPCFG:** **"sender",<sender_name>,<sender_email>** **OK** If the optional parameters are specified, set the sender's information: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QSMTPCFG="smtpserver"[,<s rvaddr>,<srvport>]**	Response If the optional parameters are omitted, query the current setting: **+QSMTPCFG: "smtpserver",<srvaddr>,<srvport>**

	OK If the optional parameters are specified, set the SMTP server: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QSMTPCFG="contextid"[,<co ntextID>]**	Response If the optional parameter is omitted, query the current setting: **+QSMTPCFG: "contextid",<contextID>** **OK** If the optional parameter is specified, set the PDP context index: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QSMTPCFG="sslctxid"[,<SSL _ctxID>]**	Response If the optional parameter is omitted, query the current setting: **+QSMTPCFG: "sslctxid",<SSL_ctxID>** **OK** If the optional parameter is specified, set the SSL context ID: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QSMTPCFG="ssltype"[,<SSL_ type>]**	Response If the optional parameter is omitted, query the current setting: **+QSMTPCFG: "ssltype",<SSL_type>** **OK** If the optional parameter is specified, set the SSL type: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QSMTPCFG="bodyoriginal"[,< body_switch>]**	Response If the optional parameter is omitted, query the current setting: **+QSMTPCFG: "bodyoriginal",<body_switch>** **OK** If the optional parameter is specified, set whether to enable to

	send SMTP body with no charset: **OK** Or **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will not be saved.

Parameter

<username>	String type. The user name for authentication. The maximum size is 50 bytes.
<password>	String type. The password for authentication. The maximum size is 50 bytes.
<sender_email>	String type. The email address of the sender. The maximum size is 50 bytes.
<sender_name>	String type. The sender's name that will be shown when the recipient receives the email. The maximum size is 50 bytes.
<srvaddr>	String type. The IP address or domain name of the SMTP server. The maximum size is 50 bytes.
<srvport>	Integer type. The port of the SMTP server. The default value is 25. It may be different depending on different SMTP server. For details, query the corresponding mail service provider.
<contextID>	Integer type. The PDP context ID. Range: 1–16. Default value: 1. It should be activated by **AT+QIACT** before sending an email. For details, see *document [3]*.
<SSL_ctxID>	Integer type. SSL context ID used for SMTP. Range: 0–5. Default value: 1. You can configure the SSL parameters by **AT+QSSLCFG**. For details, see *document [8]*.
<SSL_type>	Integer type. The SSL type. You can choose the SSL type according to the mail service provider, since some SMTP servers do not support sending email without SSL. 0 Without SSL 1 SSL 2 STARTTLS
<body_switch>	Integer type. Enable/disable to send the SMTP body with no charset. 0 Disable to send SMTP body with no charset. 1 Enable to send SMTP body with no charset, and send original SMTP body.
<err>	Integer type. The error code of the operation. See *Chapter 5*.

2.2.2. AT+QSMTPDST   Add or Delete Recipients

This command adds or deletes recipients. The maximum number of recipients is 20, including CC recipients and BCC recipients.

AT+QSMTPDST Add or Delete Recipients	
Test Command **AT+QSMTPDST=?**	Response **+QSMTPDST: (**list of supported **<mode>**s**),(**range of supported **<type>**s**),<emailaddr>** **OK**
Read Command **AT+QSMTPDST?**	Response **[+QSMTPDST: <type>,<emailaddr>]** **[...]** **OK**
Write Command **AT+QSMTPDST=<mode>[,<type>[,< emailaddr>]]**	Response If the format is correct and it is not sending an email: **OK** Or **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will not be saved.

Parameter

<mode>	Integer type. Add or delete recipients.
	0 Delete.
	1 Add. In this case, **<type>** and **<emailaddr>** should be specified.
<type>	Integer type. The type of recipients.
	1 All recipients
	2 CC recipients
	3 BCC recipients
<emailaddr>	String type. The email address of recipients. The maximum size is 50 bytes.
<err>	Integer type. The error code of the operation. See **Chapter 5**.

Example

```
//Add recipients.
AT+QSMTPDST=1,1,"quectel_test@aol.com"          //Add all the recipients.
OK
AT+QSMTPDST=1,2,"quectel_test@21cn.com"         //Add CC recipients.
```

```
OK
AT+QSMTPDST?
+QSMTPDST: 1,"quectel_test@aol.com"
+QSMTPDST: 2,"quectel_test@21cn.com"

OK
//Delete all recipients.
AT+QSMTPDST=0                                        //Delete all the recipients.
OK
AT+QSMTPDST?
OK
```

2.2.3. AT+QSMTPSUB   Edit the Subject of an Email

This command edits the subject of an email. If **<charset>** is not ASCII, the inputted data should be the hex string of the original subject.

AT+QSMTPSUB Edit the Subject of an Email	
Test Command **AT+QSMTPSUB=?**	Response **+QSMTPSUB: (**range of supported **<charset>**s**),<subject>** **OK**
Read Command **AT+QSMTPSUB?**	Response **+QSMTPSUB: <charset>,<subject>** **OK**
Write Command **AT+QSMTPSUB=<charset>,<subject>**	Response **OK** Or **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<charset>	Integer type. The character set of the subject. 0 ASCII 1 UTF-8 2 GB2312 3 BIG5
<subject>	String type. The subject of the email. If **<charset>** is 0, this string will be the subject of the email. Otherwise, it is formatted as a hex string, e.g. "41" means the hex value

"0x41". If the character set is ASCII, the length of **<subject>** is 0–100 in unit of byte. If the character set is not ASCII, the length of **<subject>** should be even and the range is 0–200 in unit of byte.

<err>	Integer type. The error code of the operation. See **Chapter 5**.

Example

//Add subject for an email and the **<charset>** is ASCII.
AT+QSMTPSUB=0,"TEST SMTP"   //Edit the subject and the character set is ASCII.
OK
AT+QSMTPSUB?   //Query subject of the email.
+QSMTPSUB: 0,"TEST SMTP"

OK
//Add the subject for email and the **<charset>** is UTF8. "7465737420534D5450" is the hex string of "TEST SMTP".
AT+QSMTPSUB=1,"7465737420534D5450"   //Edit subject and the character set is UTF8.
OK
AT+QSMTPSUB?   //Query the subject of the email.
+QSMTPSUB: 1,"7465737420534D5450"

OK

2.2.4. AT+QSMTPBODY   Edit the Body of an Email

This command edits the body of an email. When **AT+QSMTPBODY**=**<charset>,<body_length>[,<input_time>]** is executed, the module will enter into data mode. All inputted data will be the body of email. If the inputted data reaches the **<body_length>** or the time reaches **<input_time>**, the module will exit from data mode automatically. If the inputted data is less than the **<body_length>**, finish editing body by inputting **+++** or changing DTR level from low to high before reaching **<input_time>**. The maximum size of the email body is 10 Kbytes. The actual body length is the inputted data length.

AT+QSMTPBODY Edit the Body of an Email	
Test Command **AT+QSMTPBODY=?**	Response **+QSMTPBODY: (**range of supported **<charset>**s**),(**range of supported **<body_length>**s**),(**range of supported **<input_time>**s**)** **OK**
Read Command **AT+QSMTPBODY?**	Response **OK**
Write Command	Response

AT+QSMTPBODY=\<charset\>,\<body_length\>[,\<input_time\>]	If the format is correct and it is not sending an email, enter data mode: **CONNECT** \<Input body data\> **+QSMTPBODY: \<input_length\>** **OK** If there is any error: **+CME ERROR: \<err\>**
Maximum Response Time	Determined by **\<input_time\>**
Characteristics	/

Parameter

\<charset\>	Integer type. The character set of the body. 0 ASCII 1 UTF-8 2 GB2312 3 BIG5
\<body_length\>	Integer type. The specific length of body. If the length of inputted data is less than the specific value **\<body_length\>**, exit from data mode by executing **+++**. The actual length of the body is the inputted data length. Range: 1–10240. Unit: byte.
\<input_length\>	Integer type. The actual length of the inputted body.
\<input_time\>	Integer type. The maximum time to upload email body from COM port. Range: 1–65535. Default value: 90. Unit: second.
\<err\>	Integer type. The error code of the operation. See **Chapter 5**.

Example

//Edit email body and the body length is 100 bytes.
AT+QSMTPBODY=0,100,120   //Edit email body. The character set of the body is ASCII, and the maximum input length is 100 bytes and the maximum input time is 120 s.
CONNECT
\<Input 100 bytes data\>   //Input 100 bytes data.
+QSMTPBODY: 100

OK
//If the actual inputted data is less than the specified length, finish editing the body by inputting **+++**.
AT+QSMTPBODY=0,100,120   //Edit email body. The character set of the body is ASCII, and the maximum input length is 100 bytes and the maximum input time is 120 s.

CONNECT
<Input 90 bytes data>
//Input **+++**.
+QSMTPBODY: 90

OK
//If the actual inputted data is less than specified length and the maximum input time expires, the module will end the editing of body automatically.
AT+QSMTPBODY=0,100,120   //Edit email body. The character set is ASCII, and the maximum input length is 100 bytes and the maximum input time is 120 s.
CONNECT
<Input 90 bytes data>
//120 s later.
+QSMTPBODY: 90

OK

2.2.5. AT+QSMTPATT   Add or Delete Attachments for an Email

Attachments for email can be added by **AT+QSMTPATT=1**. When an attachment is added, the file index should be specified. As a result, different attachments should have different file index. The maximum number of attachments is 10.

The attachments can be RAM, UFS or SD files (RAM files are strongly recommended). Files can be uploaded to RAM, UFS or SD card by **AT+QFUPL**. After the email is sent successfully, the files in RAM, UFS or SD card should be deleted by **AT+QFDEL**. For more details of these commands, see *document [4]*. The mail service provider may have some restriction on the size of a single file and the total size.

AT+QSMTPATT=0 can be used to delete all attachments.

AT+QSMTPATT Add or Delete Attachments for an Email	
Test Command **AT+QSMTPATT=?**	Response **+QSMTPATT: (**range of supported **<mode>**s**),(**range of supported **<file_index>**s**),<file_name>** **OK**
Read Command **AT+QSMTPATT?**	Response **[+QSMTPATT: <file_index>,<file_name>,<file_size>]** **[...]** **OK**
Write Command	Response

AT+QSMTPATT=<mode>[,<file_index >[,<file_name>]]	OK Or +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will not be saved.

Parameter

<mode>	Integer type. Add or delete the attachment.
	0 Delete.
	1 Add. In this case, **<file_index>** and **<file_name>** should be specified.
<file_index>	Integer type. The index of the attachment. Range: 1–10.
<file_name>	String type. The file name of the attachment to be added. The maximum size is 50 bytes.
<file_size>	Integer type. The size of the attachment. Unit: byte.
<err>	Integer type. The error code of the operation. See **Chapter 5**.

Example

//Add attachments from RAM. After the email is sent, the file uploaded to RAM should be deleted by **AT+QFDEL**. The detailed example is shown as follows:

AT+QFUPL="RAM:test.txt",200,300,1   //Upload a file to RAM. The file will be saved as "*test.txt*" and the maximum size of file is 200 bytes. 300 indicates timeout, and 1 indicates ACK mode. For details, see **document [4]**.

CONNECT
<Input 200 bytes data>
+QFUPL: 200,707

OK
AT+QFLST="RAM:*"
+QFLST: "RAM:test.txt",200

OK
AT+QSMTPATT=1,1,"RAM:test.txt"   //Add an attachment for email and the file index is 1.
OK
AT+QSMTPATT?   //Query the attachments.
+QSMTPATT: 1,"RAM:test.txt",200

OK
//Delete all attachments.
AT+QSMTPATT=0   //Delete all attachments for the email.

OK
AT+QSMTPATT?   //Query the attachments.
OK

2.2.6. AT+QSMTPCLR   Clear the Content of an Email

This command clears all the configurations of **AT+QSMTPDST**, **AT+QSMTPSUB**, **AT+QSMTPBODY** and **AT+QSMTPATT**.

AT+QSMTPCLR Clear the Content of an Email	
Test Command **AT+QSMTPCLR=?**	Response **OK**
Execution Command **AT+QSMTPCLR**	Response **OK** Or **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<err>   Integer type. The error code of the operation. See **Chapter 5**.

Example

AT+QSMTPCLR   //Clear the recipients, subject, body and attachments for
                                          the email.
OK
AT+QSMTPDST?   //Query the recipients of the email.
OK
AT+QSMTPSUB?   //Query the subject of the email.
+QSMTPSUB: 0,""

OK
AT+QSMTPATT?   //Query the attachments of the email.
OK

2.2.7. AT+QSMTPPUT   Send an Email

It may take some time for an email to be completely sent, which depends on the total size of attachments and network status. Please do not send the email again before receiving **+QSMTPPUT:**

<err>,<protocol_error> which indicates the ending of sending an email. If **<err>** is not 0, the email can be resent by executing **AT+QSMTPPUT=<timeout>** directly.

AT+QSMTPPUT Send an Email	
Test Command **AT+QSMTPPUT=?**	Response **+QSMTPPUT: (**range of supported **<timeout>**s**)** **OK**
Write Command **AT+QSMTPPUT=<timeout>**	Response If the format is correct and it is not sending an email: **OK** **+QSMTPPUT: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**
Maximum Response Time	Determined by **<timeout>**
Characteristics	/

Parameter

<timeout>	Integer type. The maximum time to send an email. The range is 60–65535. Unit: second.
<err>	Integer type. The error code of the operation. See **Chapter 5**. If it is 0, it means the operation is successful.
<protocol_error>	Integer type. For reference only. Indicates the original error code from SMTP server which is defined in SMTP protocol. For details, see **Chapter 6**. If it is 0, it is invalid.

Example

AT+QSMTPPUT=300	//Send the email and the maximum time is 300 s.
OK	
+QSMTPPUT: 0,0	//The email has been sent successfully.

3 Examples

3.1. Send an Email without SSL

Sending an email without SSL means that SSL function will not be used, and the email will be sent with insecure connection. For example:

```
//Step 1: Configure and activate the PDP context.
AT+QICSGP=1,1,"UNINET","","",1          //Configure PDP context 1. APN is "UNINET" for
                                          China Unicom.

OK
AT+QIACT=1                               //Activate PDP context 1.
OK                                       //Activated successfully.
AT+QIACT?                                //Query the state of PDP context.
+QIACT: 1,1,1,"10.7.157.1"


OK
AT+QSMTPCFG="contextid",1                //Set the PDP context ID as 1. The PDP context
                                          ID must be activated first.

OK
//Step 2: Configure SMTP server and user account.
AT+QSMTPCFG="ssltype",0                  //Set the SSL type as "without SSL" for SMTP. In
                                          this case, SSL function will not be used, and
                                          emails will be sent with insecure connection.

AT+QSMTPCFG="smtpserver","smtp.163.com",25   //Set the IP address or domain name and port of
                                          SMTP server. The port of SMTP server depends
                                          on mail service provider.

OK
AT+QSMTPCFG="account","sishen664551","wq664551"  //Set username and password.
OK
AT+QSMTPCFG="sender","sishen664551","sishen664551@163.com"  //Set sender name and sender
                                          address. The sender name
                                          will be shown when the
                                          email is received.

OK
//Step 3: Edit the email content.
AT+QSMTPDST=1,1,"quectel_test@163.com"   //Add the recipient and the recipient type is all
```

OK

AT+QSMTPDST=1,2,"quectel_test@21cn.com" //Add the recipient and the recipient type is CC recipients.

OK

AT+QSMTPDST?

+QSMTPDST: 1,"quectel_test@163.com"

+QSMTPDST: 2,"quectel_test@21cn.com"

OK

AT+QSMTPSUB=0,"TEST SMTP" //Edit subject and the character set of the body is ASCII.

OK

AT+QSMTPSUB? //Query the subject of email.

+QSMTPSUB: 0,"TEST SMTP"

OK

AT+QSMTPBODY=0,100,120 //Edit email body and the character set of the body is ASCII. The maximum input length is 100 bytes and the maximum input time is 120 s.

CONNECT

<Input 100 bytes data>

+QSMTPBODY: 100

OK

AT+QFUPL="RAM:smtp1.txt",100,200,1 //Upload a file to RAM. The file will be saved as "*smtp1.txt*" and the maximum size of file is 100 bytes. 200 indicates timeout, and 1 indicates ACK mode. See *document [4]* for more details.

CONNECT

<Input 100 bytes data>

+QFUPL: 100,707

OK

AT+QFLST="RAM:*"

+QFLST: "RAM:smtp1.txt",100

OK

AT+QSMTPATT=1,1,"RAM:smtp1.txt" //Add an attachment for email and the file index is 1.

OK

AT+QSMTPATT? //Query the attachment.

+QSMTPATT: 1,"RAM:smtp1.txt",100

OK

//Step 4: Send the email.

AT+QSMTPPUT=300   //Send the email and the maximum time is 300 s.

OK

//It may take a few minutes.

+QSMTPPUT: 0,0   //Send email successfully.

//Step 5: Clear the email content and deactivate the PDP context.

AT+QSMTPCLR   //Clear recipients, subject, body and attachments.

OK

AT+QFDEL="RAM:smtp.txt"   //Delete the file as attachment.

OK

//Please repeat **Step 3** and **Step 4** to re-send emails. Of course, you can also repeat **Step 2** to **Step 4** to re-send emails.

AT+QIDEACT=1   //Deactivate the PDP context which is activated for SMTP.

OK

3.2. Send an Email with SSL

Sending an email with SSL means that emails will be sent over SSL/TLS encrypted SMTP. The port of SMTP server depends on the mail service provider, and it is the port 465 or 587 usually. As compared with sending email without SSL, sending email over SSL additionally needs SMTP server and user account configuration.

//Configure SSL type.

AT+QSMTPCFG="ssltype",1   //Set the SSL type as 1, which means emails will be sent over SSL.

OK

AT+QSMTPCFG="sslctxid",1   //Choose SSL context 1 for SMTP.

OK

AT+QSSLCFG="ciphersuite",1,0xffff   //Configure SSL cipher suite type as 0xffff, which means all cipher suite types will be supported.

OK

AT+QSSLCFG="seclevel",1,0   //Configure SSL security level as 0 which means the SSL CA certificate is not needed.

OK

AT+QSSLCFG="sslversion",1,1   //Configure SSL version as 1 which means TLS1.0.

OK

//Configure SMTP server.

AT+QSMTPCFG="smtpserver","smtp.163.com",25   //Set SMTP server address and port.

OK

//As the SMTP server is different, the account information will be different as well. As an example, the following information is provided.

AT+QSMTPCFG="account","sishen664551","wq664551"   //Set username and password.
OK
AT+QSMTPCFG="sender","sishen664551","sishen664551@163.com" //Set sender name and sender address.

OK

3.3. Send an Email with STARTTLS

Sending an email with STARTTLS means that the normal insecure connection will be upgraded to secure one through STARTTLS function, thus for sending the mail data. In this case, there is also a need for SMTP server and user account configuration. The port of SMTP server depends on the mail service provider, and it is the port 25, 465 or 587 usually.

//Configure SSL type.
AT+QSMTPCFG="ssltype",2   //Set the SSL type as 2, which means emails will be sent over STARTTLS.

OK
AT+QSMTPCFG="sslctxid",1   //Choose SSL context 1 for SMTP.
OK
AT+QSSLCFG="ciphersuite",1,0xffff   //Configure SSL cipher suite type as 0xffff, which means all cipher suite types will be supported.

OK
AT+QSSLCFG="seclevel",1,0   //Configure SSL security level as 0, which means the SSL CA certificate is not needed.

OK
AT+QSSLCFG="sslversion",1,1   //Configure SSL version as 1 which means TLS1.0.
OK
//Configure SMTP server.
AT+QSMTPCFG="smtpserver","smtp.163.com",25   //Set SMTP server address and port.
OK
//As the SMTP server is different, the account information will be different as well. As an example, the following information is provided.
AT+QSMTPCFG="account","sishen664551","wq664551"   //Set username and password.
OK
AT+QSMTPCFG="sender","sishen664551","sishen664551@163.com"   //Set sender name and sender address.

OK

4 Error Handling

4.1. SMTP AT Command Execution Fails

When executing SMTP AT commands, if response **ERROR** is received from the module, please check whether the (U)SIM card is inserted, and whether **+CPIN: READY** is returned when executing **AT+CPIN?**. If **+CPIN: READY** is not returned, the (U)SIM card is not ready.

4.2. PDP Activation Fails

If it is failed to activate a PDP context by **AT+QIACT**, please check the following configurations:

1. Query whether the PS domain is attached or not by **AT+CGATT?**. If not, please execute **AT+CGATT=1** to attach PS domain.
2. Query the PS domain status by **AT+CGREG?** and make sure the PS domain has been registered.
3. Query the PDP context parameters by **AT+QICSGP=<contextID>** and make sure the APN of the specified PDP context has been set.
4. Make sure the specified PDP context ID is neither used by PPP nor activated by **AT+CGACT**.
5. According to 3GPP specifications, the module only supports three PDP contexts activated simultaneously, so please make sure the number of activated PDP contexts is no more than 3.

If all above configurations are correct, but activating the PDP context by **AT+QIACT** command still fails, please reboot the module to resolve this issue. After rebooting the module, please check the configurations mentioned above for at least three times and each time at an interval of 10 minutes to avoid frequently rebooting the module.

4.3. DNS Parse Fails

When executing **AT+QSMTPPUT**, if **+QSMTPPUT: 653,0** is returned, please check the following aspects:
1. Make sure the domain name of SMTP server is valid.
2. Query the status of PDP context by **AT+QIACT?** to make sure the specified PDP context has been activated successfully.

4.4. Error Response of AT+QSMTPPUT

+QSMTPPUT: <err>,<protocol_error> will be returned after executing **AT+QSMTPPUT**.

If **<err>** is not 0, it indicates the sending fails. Please resend the email. If resending is not successful, please deactivate the PDP context by **AT+QIDEACT** and re-activate the PDP context by **AT+QIACT** to resolve this issue. If activating the PDP context fails, see *Chapter 4.2* to resolve it.

If the **<protocol_error>** is not 0, it indicates the error code replied from SMTP server. Please check the issue according to the protocol error code. For example, if **<protocol_error>** is 535 (authentication failed), it indicates **<username>** or **<password>** may be wrong. If **<protocol_error>** is 530 (access denied), it means the emails are sent too often, and the SMTP server rejects to post the emails. For more details, see *RFC2821* (Simple Mail Transfer Protocol).

5 Summary of Error Codes

The error code **<err>** indicates an error related to mobile equipment or network. The details about **<err>** are described in the following table.

Table 3: Summary of Error Codes

<err>	Meaning
651	Unknown error
652	The SMTP server is busy, such as uploading the body or sending an email.
653	Failed to get IP address according to the domain name.
654	Network error, such as failed to activate GPRS/CSD context, failed to establish the TCP connection with the SMTP server or failed to send an email to the SMTP server, etc.
655	Unsupported authentication type
656	The connection for the SMTP server is closed by peer.
657	GPRS/CSD context is deactivated.
658	Timeout
659	No recipient for the SMTP server
660	Failed to send an email
661	Failed to open a file
662	No enough memory for the attachment
663	Failed to save the attachment
664	The input parameter is wrong
665	SSL authentication failed
666	Service not available, closing transmission channel

667	Requested mail action not taken: mailbox unavailable
668	Requested action aborted: local error in processing
669	Requested action not taken: insufficient system storage
670	Syntax error, command unrecognized
671	Syntax error in parameters or arguments
672	Command not implemented
673	Bad sequence of commands
674	Command parameter not implemented
675	<domain> does not accept mail (see *RFC1846*)
676	Access denied
677	Authentication failed
678	Requested action not taken: mailbox unavailable
679	User not local; please try <forward-path>
680	Requested mail action aborted: exceeded storage allocation
681	Requested action not taken: mailbox name not allowed
682	Transaction failed

6 Summary of SMTP Protocol Error Codes

The protocol error code **<protocol_error>** indicates an error replied from SMTP server. See *RFC2821* (Simple Mail Transfer Protocol). The details about **<protocol_error>** are described in the following table.

Table 4: Summary of SMTP Protocol Error Codes

<protocol_error>	Meaning
421	Service not available, closing transmission channel
450	Requested mail action not taken: mailbox unavailable
451	Requested action aborted: local error in processing
452	Requested action not taken: insufficient system storage
500	Syntax error, command unrecognized
501	Syntax error in parameters or arguments
502	Command not implemented
503	Bad sequence of commands
504	Command parameter not implemented
521	<domain> does not accept mail (see *RFC1846*)
530	Access denied
535	Authentication failed
550	Requested action not taken: mailbox unavailable
551	User not local; please try <forward-path>
552	Requested mail action aborted: exceeded storage allocation
553	Requested action not taken: mailbox name not allowed

554	Transaction failed

7 Appendix A References

Table 5: Related Documents

SN	Document Name	Remark
[1]	RFC2821	Simple Mail Transfer Protocol
[2]	RFC3207	SMTP service extension for secure SMTP over transport layer security
[3]	Quectel_LTE_Standard_TCP(IP)_Application_ Note	EC2x&EG9x&EG2x-G&EM05 series TCP/IP application note
[4]	Quectel_LTE_Standard_FILE_AT_Application_ Note	EC2x&EG9x&EG2x-G&EM05 series FILE application note
[5]	Quectel_EC25&EC21_AT_Commands_Manual	EC25&EC21 series AT commands manual
[6]	Quectel_EG9x_AT_Commands_Manual	EG9x series AT commands manual
[7]	Quectel_EM05_AT_Commands_Manual	EM05 series AT commands manual
[8]	Quectel_EC2x&EG9x&EM05_SSL_AT_ Commands_Manual	EC2x&EG9x&EM05 series SSL AT commands manual

Table 6: Terms and Abbreviations

Abbreviation	Description
ACK	Acknowledgement
BCC	Blind Carbon Copy
CC	Carbon Copy
CSD	Circuit Switched Data
DNS	Domain Name Server
DTR	Data Terminal Ready
GPRS	General Packet Radio Service

PDP	Packet Data Protocol
PPP	Point-to-Point Protocol
PS	Packet Switch
RAM	Random Access Memory
SD	Secure Digital
SMTP	Simple Mail Transfer Protocol
SSL	Security Socket Layer
TA	Terminal Adapter
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UFS	Universal Flash Storage
(U)SIM	(Universal) Subscriber Identity Module