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### **General Notes**

The information in this document will help customers use multimedia message service (MMS) on Sim306 module.

Following functions are provided by Sim306:

- (1) Download MMS subject, picture and text to module from serial port
- (2) Query the status of download
- (3) Set and save recipients of MMS
- (4) Set the URL of multimedia message switch center(MMSC)
- (5) Manage MMS box
- (6) Send MMS

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## Introduction

AT commands are provided by Sim306 for creating MMS and sending to specified address through WAP. UCS2 coding scheme is used for MMS subject and text, and JPEG format is supported for picture. Module will save the subject, text and picture in ram for next use until the new one is downloaded or module power down. The recipient address can be either mobile phone number or email address, module will differentiate automatically.

After the initialization is finished on module power up, "MMS READY" will be given to serial port. And if GPRS is attached to the network, MMS can be sent then. To justify whether GPRS is attached, AT+CGATT command can be used.

Picture above text format is applied for MMS and the default period of validity is a week (the period of validity is decided by network practically).

## 1. How to set the URL of MMSC

The default URL of MMSC is <http://mmsc.monternet.com>, which is the URL of China Mobile MMSC. Sim306 provide AT+CMMSURL command to set and save it for user. It can not be used when MMS is being sent, otherwise ERROR will be returned.

## 2. How to download subject, text and picture of MMS

AT+CMMSDOWN command is used for downloading subject, text and picture of MMS. The first parameter of this command is the kind of object to be downloaded. "TITLE", "TEXT", "PIC" represent that the object to be downloaded is subject, text and picture of MMS. The second parameter is the size of the object. The maximum size supported of MMS subject and text is 40 bytes and 100 bytes, and the maximum size of picture is 60 Kbytes. In practice, some mobile terminal and e-mail box do not support 40 bytes subject, so there maybe a cutoff in it. The third parameter is the maximum time for downloading and when it expires, the download process will come to an end whether the data has been received completely or not. The parameter must be set to above 2000ms for subject and text download, and above 5000ms for picture, which ensure the serial port has enough time to switch back to AT command mode. Big endian UCS2 coding scheme should be used for MMS subject and text, so the size of subject and text should be an even number. After the command is executed successfully, "CONNECT" will be given, and DCD pin is set to active, then data should be downloaded to module. During the download process, the serial port is in data mode and no AT command can be interpreted except that escape sequence is used to switch serial port from data mode to AT command mode. A prompt which represent result of download process will be given after the download is completed and DCD pin will be set to inactive. The detailed interpretation of the prompt will be introduced in the next segment.

For example, when download a picture of 1689 bytes to module, following steps should be taken:

```
AT+CMMSDOWN="PIC",1689,50000
```

It indicates that the object to be downloaded is the picture of MMS which is 1689 bytes, and the maximum download time is 50000ms. After it is executed successfully, "CONNECT" will be given and DCD pin is set to active, module is ready for picture downloading. "PIC\_END" will be given when download is completed successfully, and PIC\_FAIL or PIC\_EXCEED will be given if unsuccessfully. Escape sequence can be used to escape the download process and AT+CMMSCLOSE can terminate it. The escape sequence is "+++", and to use this sequence, there should be 500ms idle period before and after this sequence. Besides, the interval between each '+' should not exceed 20ms. DCD pin will be set to inactive after download.

### 3. How to query the status of download and sending

AT+CMMSSTATUS command can be used to query the status of download and sending. "INITIAL" represent no data has been downloaded. "BEGIN" represent the download process is running. "END" represent the download has been completed successfully. "FAIL" represent insufficient data has been received. "EXCEED" represent the data length exceeds the expected.

SUBJECT status:

```
TITLE_INITIAL,
TITLE_BEGIN,
TITLE_END,
TITLE_FAIL,
TITLE_EXCEED
```

TEXT status:

```
TEXT_INITIAL,
TEXT_BEGIN,
TEXT_END,
TEXT_FAIL,
TEXT_EXCEED
```

PIC status:

```
PIC_INITIAL,
PIC_BEGIN,
PIC_END,
PIC_FAIL,
PIC_EXCEED
```

MMS sending status:

MMS_INITIAL,	//MMS has not been sent
MMS_SEND_OK,	//MMS has been sent successfully
MMS_NETWORK_ERROR,	//network error
MMS_NETWORK_DISCONNECTING,	//network is disconnecting
MMS_NETWORK_DISCONNECTED,	//net work has been disconnected
MMS_SEND_GENERAL_ERR,	//general error

MMS_EDITOR_INIT_ERROR,	//editor initialization error
MMS_ADD_PIC_ERROR,	//adding picture error
MMS_ADD_TEXT_ERROR,	//adding text error
MMS_NO_MEMORY_ERROR,	//not enough memory error
MMS_TIMEOUT,	//sending timeout error
MMS_SAVE_ERROR,	//saving MMS error
MMS_PARENT_APP_ERROR,	//MMS application error
MMS_SEND_PROC_ERROR	//sending procedure error

The result of AT+CMMSSTATUS query command is:

+CMMSSTATUS:

MMSTITLE: <title status>

MMSTEXT: <text status>

MMSPIC: <pic status>

MMSSEND:<send status>

OK

## 4. How to set and save the address of recipient

AT+CMMSRECP command can be used for saving the address of recipient to flash. This will simplify the MMS send command.

## 5. How to send MMS

AT+CMMSSEND command is used for sending MMS. If there is address parameter in the command, it will be used as the recipient address. If there is no such address, the address which is set and saved by AT+CMMSRECP will be used instead.

When command is executed successfully, "OK" will be returned. That means module begin to send MMS. Otherwise "ERROR" will arise. After the sending process, if module sends MMS successfully, "MMS OK" will be returned. Otherwise "MMS FAIL" will arise. The maximum time for the prompt is 360 seconds.

## 6. How to manage message box

MMS will not be saved in box if be sent successfully, but will do on failing. AT+CMMSDELETE command can be used to query or empty message box.

AT+CMMSDELETE query command returns the number of each box and has the following meanings:

I: number of messages in In box(include MMS and SMS)  
 O: number of messages in Out box  
 S: number of messages in Sent box  
 D: number of messages in Draft box  
 T: number of messages in Template box  
 A: number of messages in Archive box  
 AT+CMMSDELETE execution command will delete all messages in each box.

## 7. AT Commands

### 7.1 AT+CMMSCURL set URL of MMSC

AT+CMMSCURL set URL of MMSC	
Test command +CMMSCURL=?	Response +CMMSCURL: "MMSC URL"
Read command + CMMSCURL?	Response +CMMSCURL:<mmsc_url> See set command
Set command +CMMSCURL=< mmsc_url>	Response OK ERROR Parameter <mmsc_url> a string parameter which indicates mmsc url
Execution Command +CMMSCURL	Response ERROR
Reference	Note

### 7.2 AT+CMMSDOWN start MMS download

AT+CMMSDOWN start mms download	
Test command +CMMSDOWN= ?	Response +CMMSDOWN: "TYPE", "SIZE", "MAX TIME"
Read command + CMMSDOWN?	Response ERROR

Set command +CMMSDOWN =<type>,<size>, <time>	Response CONNECT ERROR Parameter <type> a string parameter which indicates type of downloaded data “title”: mms title data “text”: mms text data “pic”: mms pic data <size> size in bytes of the downloaded data. Even size for “title” and “text” data. <time> maximum time in milliseconds to download data
Execution Command +CMMSDOWN	Response ERROR
Reference	Note

### 7.3 AT+CMMSSTATUS query the status of download and sending

AT+CMMSSTATUS query the status of download and sending	
Test command + CMMSSTATUS =?	Response ERROR
Read command + CMMSSTATUS?	Response + CMMSSTATUS: MMSTITLE: <title state> MMSTEXT: <text state> MMSPIC: <pic state> MMSEND: <send state>  OK Parameter <title state> a string which indicate the title download status TITLE_INITIAL initial state TITLE_BEGIN downloading state TITLE_END download completed successfully TITLE_FAIL less data than needed TITLE_EXCEED more data than needed <text state> a string which indicate the text download status

	<p>TEXT_INITIAL      initial state</p> <p>TEXT_BEGIN        downloading state</p> <p>TEXT_END          download completed successfully</p> <p>TEXT_FAIL            less data than needed</p> <p>TEXT_EXCEED        more data than needed</p> <p>&lt;pic state&gt;        a string which indicate the pic download status</p> <p>PIC_INITIAL        initial state</p> <p>PIC_BEGIN          downloading state</p> <p>PIC_END            download completed successfully</p> <p>PIC_FAIL            less data than needed</p> <p>PIC_EXCEED        more data than needed</p> <p>&lt;send state&gt;       a string which indicate the mms sending status</p> <p>MMS_INITIAL,</p> <p>MMS_SENDING,</p> <p>MMS_SEND_OK,</p> <p>MMS_NETWORK_ERROR,</p> <p>MMS_NETWORK_DISCONNECTING,</p> <p>MMS_NETWORK_DISCONNECTED,</p> <p>MMS_SEND_GENERAL_ERR,</p> <p>MMS_EDITOR_INIT_ERROR,</p> <p>MMS_ADD_PIC_ERROR,</p> <p>MMS_ADD_TEXT_ERROR,</p> <p>MMS_NO_MEMORY_ERROR,</p> <p>MMS_TIMEOUT,</p> <p>MMS_SAVE_ERROR,</p> <p>MMS_PARENT_APP_ERROR,</p> <p>MMS_SEND_PROC_ERROR,</p> <p>MMS_END</p>
Execution Command + CMMSTATUS	Response ERROR
Reference	Note

#### 7.4 AT+CMMSCLOSE terminate the download process

AT+CMMSCLOSE terminate the download process	
Test command +CMMSCLOSE= ?	Response ERROR



Read command +CMMSCLOSE?	Response ERROR
Execution Command +CMMSCLOSE	Response OK ERROR
Reference	Note

## 7.5 AT+CMMSSEND start MMS sending

AT+CMMSSEND start mms sending	
Test command +CMMSSEND=?	Response +CMMSSEND: "ADDRESS"
Read command + CMMSSEND?	Response ERROR
Set command +CMMSSEND =<address>	Response OK ERROR Parameter <address>      a string parameter which indicates address of recipients.
Execution Command +CMMSSEND	Response OK
Reference	Note

## 7.6 AT+CMMSRECP set and save MMS recipient

AT+CMMSRECP set and save mms recipient	
Test command +CMMSRECP=?	Response +CMMSRECP: "ADDRESS"  OK
Read command + CMMSRECP?	Response +CMMSRECP:<address> Parameters: see set command

Set command +CMMSRECP=< address>	Response OK ERROR Parameter <address>      a string parameter which indicates address of recipients.
Execution Command +CMMSRECP	Response ERROR
Reference	Note

## 7.7 AT+CMMSDELETE manage message box

AT+CMMSDELETE manage message box	
Test command +CMMSDELETE =?	Response ERROR
Read command +CMMSDELETE ?	Response + CMMSDELETE: I: <input>, O: <output>, S: <sent>, D: <draft>, T: <template>, A: <archive> <input> number of mms in archive box <output> number of mms in output box <sent> number of mms in sent box <draft> number of mms in draft box <template> number of mms in template box <archive> number of mms in archive box  See set command
Set command + CMMSDELETE =	Response ERROR
Execution Command + CMMSDELETE	Response ERROR OK Delete all mms in outbox.
Reference	Note

## 8. Procedure and Example

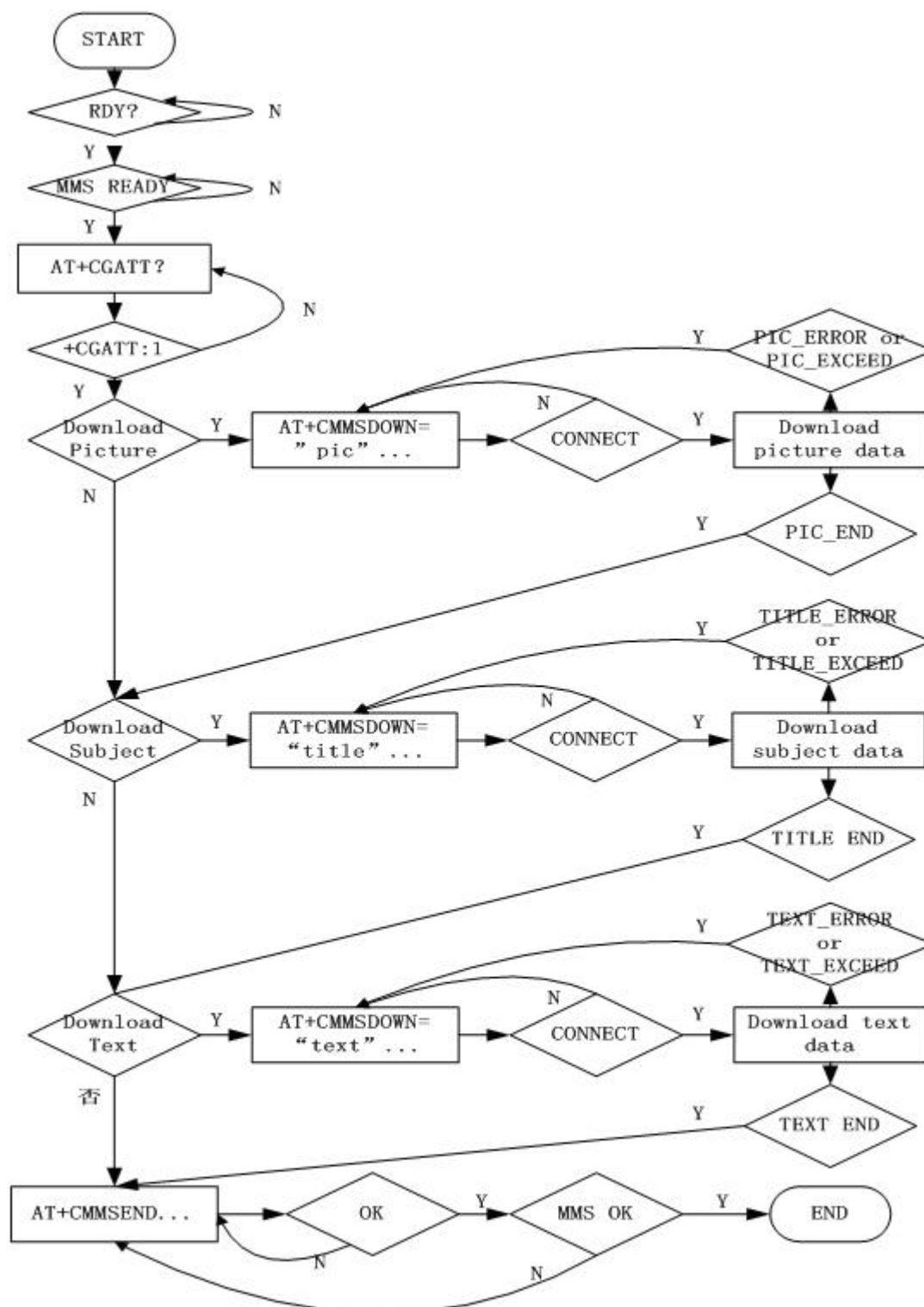


Figure 1: MMS Procedure Recommended

Example 1:

```

RDY // "RDY" is received, wait for "MMS READY"
MMS READY // MMS is ready, mms operation is permitted now
AT+CGATT? // query the GPRS attach status
+CGATT: 1 // GPRS has been attached
OK

AT+CMMSDOWN="PIC",1689,50000 //download picture, size is 1689,
// Maximum download time is 50000ms. If it is executed successfully,
// "CONNECT" will be returned, otherwise "ERROR" will arise
CONNECT // "CONNECT" arises, which means it is
// able to download now, DCD pin will be set
// active.
..... //download data to serial port now
PIC_END // "PIC_END" arise, it means picture has
// been downloaded successfully. DCD is set
// inactive

AT+CMMSDOWN="TITLE",6,5000 //download subject of MMS, big endian
// UCS2 data is needed, the size must be
// even number
CONNECT // "CONNECT" arise, then data can be downloaded
..... // big endian UCS2 data is downloaded here, for example,
// if the word "HELLO" is used as subject of MMS, the
// following data should be downloaded to serial port:
// 0X48, 0X45, 0X4C, 0X4C, 0X4F. For Chinese words
// "大家好", 0X59 0X27 0X5B 0XB6 0X59 0X7D should
// be downloaded
TITLE_END //data has been received successfully, DCD is set inactive
AT+CMMSDOWN="TEXT",6,5000 //the operation is the same with subject download
CONNECT
.....
TEXT_END

AT+CMMSSEND="13917999479" //send MMS to mobile phone number 13917999479
OK //if module returns "OK", please wait for
// "MMS OK" or "MMS FAIL" which means
// succeed or fail to send MMS. If "ERROR"
// returns, please use this command to send
// MMS again
MMS OK // "MMS OK", it means send MMS successfully

```

示例二:

```

AT+CMMSCURL=" http://mmsc.monternet.com" //set MMSC URL and save it to flash.

```

```

OK
AT+CMMSDOWN="PIC",1689,50000
.....
PIC_END
AT+CMMSRECP="hello@163.com"           //set default recipient and save to flash.
AT+CMMSSEND                             //send MMS to default recipient
OK
MMS FAIL                               //send MMS fail
AT+CMMSSTATUS?                          //query the failing reason
MMSTITLE: TITLE_INITIAL
MMSTEXT: TEXT_INITIAL
MMSPIC: PIC_END
MMSSEND: MMS_NETWORK_ERROR             //network error

OK

AT+CGATT?                               //query GPRS attach status
+CGATT: 1                             //GPRS has been attached, it is able to send again
OK
AT+CMMSSEND                             //send MMS to default recipient again
OK
MMS OK

```

## 8. Matter to be concerned and resumption process in case of failure

Hardware flow control is used for data downloaded. If the download speed is too high for module to receive, CTS will be set inactive. Then data download should be suspended until CTS is set to active again. In fact, download speed between 5-7 Kbytes on 115200 baud rate is a good choice which will not engender flow control and ensure a relative high download speed.

MMS box will be emptied when sending a new MMS.

If a MMS need to be sent repeatedly, there is no need to download subject, text and picture again, it will be saved in memory until new download begin or module power down.

In case of MMS failure, the following steps should be adopted:

(1) Using AT+CGATT to query GPRS attach status, wait until the status is 1. If it can not attach to GPRS network, AT+CFUN command can be used. Firstly using AT+CFUN=0, and then AT+CFUN=1 to restart protocol stack..

- (2) If GPRS is attached, using AT+CMMSDELETE to empty all boxes
- (3) If it still fails, maybe the network signal strength is low, please wait for longer time to send it again.
- (4) If all the above steps have been taken, but it still fails, the last method is to restart module.