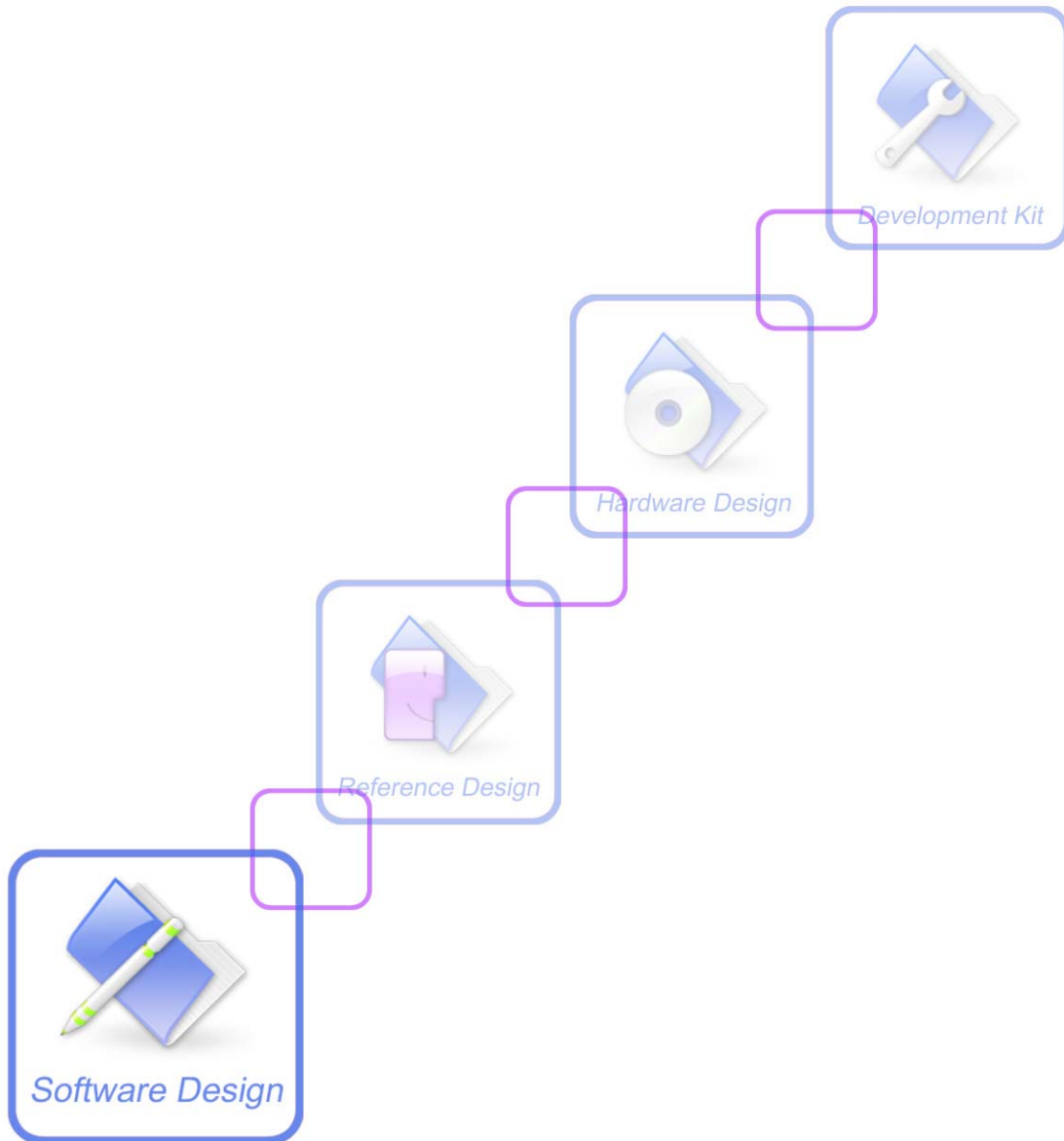


MMS Application Note



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Version History

Version	Chapter	Comments
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Contents

Version History	2
Contents	3
1. Introduction.....	4
1.1 Overview	4
1.2 References	4
1.3 Terms and Abbreviations	4
2. MMS Quick Start – Setting.....	6
2.1 Set MMSC URL.....	6
2.2 Set MMS proxy address	6
2.3 Set MMS sending parameters.....	6
2.4 Set MMS system parameters	7
2.5 Other Setting	7
3. Create a MMS	8
3.1 Begin editing a MMS	8
3.2 Set the recipients/cc/bcc of the MMS.....	8
3.3 Delete the recipients/cc/bcc of the MMS	8
3.4 Set the subject of the MMS	8
3.5 Add a text file to the MMS	9
3.6 Add a picture to the MMS	9
3.7 Add a audio file to the MMS	9
3.8 Add a video file to the MMS	10
3.9 Add a file in EFS of module to the MMS.....	10
3.10 Delete a file in the MMS	11
3.11 Stop editing the MMS.....	11
4. Save/load MMS in mail box	11
4.1 Save the MMS	11
4.2 Load the MMS	12
4.3 Delete the MMS	12
5. View the MMS in memory.....	12
5.1 View the main information in MMS.....	12
5.2 Read a file in MMS	13
5.3 Snatch a file in MMS.....	13
6. Send the MMS in memory	13
7. Receive a WAP push indication of MMS.....	14
8. Receive a MMS in MMSC.....	14
9. Unsolicited Result code of MMS	15
9.1 Indication of Sending/Receiving MMS.....	15
9.2 Summary of CME ERROR codes for MMS	16
10. MMS AT Command Samples.....	17
11. Conflict AT Commands.....	19

1. Introduction

1.1 Overview

This document gives the usage of SIM52XX MMS functions, user can get useful information about the SIM52XX MMS functions quickly through this document.

The MMS functions are provided in AT command format, and they are designed for customers to design their MMS applications easily. User can access these MMS AT commands through UART/ USB interface which communicates with SIM52XX module.

SIM52XX MMS features:

- Basic MMS editing functions.
- Support attachment of UNICODE/UTF8/ASCII format text file.
- Support attachment of JPG/GIF/TIFF/PNG/MIDI/WAV/AMR/MPEG format file
- Support adding attachments from inner EFS or external MCU.
- Support manual maximum MMS size setting required by operator.
- Support HTTP/WAP protocol to transfer MMS.

1.2 References

The present document is based on the following documents:

- [1] SIMCOM_SIM5360_ATC_EN_V0.05.doc.

1.3 Terms and Abbreviations

For the purposes of the present document, the following abbreviations apply:

- AT ATtention; the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE
- CSD Circuit Switched Data
- DCE Data Communication Equipment; Data Circuit terminating Equipment
- DCS Digital Cellular Network
- DTE Data Terminal Equipment
- DTMF Dual Tone Multi-Frequency
- EDGE Enhanced Data GSM Environment
- EGPRS Enhanced General Packet Radio Service
- GPIO General-Purpose Input/Output
- GPRS General Packet Radio Service
- GSM Global System for Mobile communications

- HSDPA High Speed Downlink Packet Access
- HSUPA High Speed Uplink Packet Access
- I2C Inter-Integrated Circuit
- IMEI International Mobile station Equipment Identity
- IMSI International Mobile Subscriber Identity
- ME Mobile Equipment
- MMS Multimedia message system
- MO Mobile-Originated
- MS Mobile Station
- MT Mobile-Terminated; Mobile Termination
- PCS Personal Communication System
- PDU Protocol Data Unit
- PIN Personal Identification Number
- PUK Personal Unlock Key
- SIM Subscriber Identity Module
- SMS Short Message Service
- SMS-SC Short Message Service – Service Center
- TA Terminal Adaptor; e.g. a data card (equal to DCE)
- TE Terminal Equipment; e.g. a computer (equal to DTE)
- UE User Equipment
- UMTS Universal Mobile Telecommunications System
- URL Uniform resource locator
- USIM Universal Subscriber Identity Module
- WCDMA Wideband Code Division Multiple Access

2. MMS Quick Start – Setting

The purpose of this section is to help get you start with MMS setting.

2.1 Set MMSC URL

Usually the MMSC URL is a HTTP URL, like <http://192.168.1.2:7082/xst=test>. When using the AT+CMMSURL command, just use the URL without [HTTP://](http://) part as the parameter. Following is the MMSC URL setting example:

```
AT+CMMSURL="192.168.1.2:7082/xst=test"
```

2.2 Set MMS proxy address

Sim52XX MMS module supports two types of MMS proxy(WAP and HTTP), Both MMS proxy use standard IP address and port, So the setting is very easy:

- ◆ Set MMS proxy using WAP method:

```
AT+CMMSPROTO=0, "192.168.1.2", 7084
```

The first parameter “0” means using WAP method, and the following two parameters mean the MMS proxy address is “192.168.1.2”, and it’s UDP port is 7084.

- ◆ Set MMS proxy using HTTP method:

```
AT+CMMSPROTO=1,"192.168.1.2", 7082
```

The first parameter “1” means using HTTP method, and the following two parameters mean the MMS proxy address is “192.168.1.2”, and it’s TCP listening port is 7082.

How ever, user doesn’t need to set both WAP and HTTP MMS proxy addresses. When user operates MMS, one method is enough. For compatibility reason, we recommend user to use HTTP method.

2.3 Set MMS sending parameters

When sending a MMS, user can set the sending parameters like following:

AT+CMMSSENDCFG=2,3,1,1,2,4

This AT command supports setting six parameters, and they include the following setting:

- The valid time of MMS
- The priority of MMS
- Whether need delivery report
- Whether need read report
- Whether to show the address of the sender
- The class of MMS

Each parameter has its own range, for detailed description, please refer to the corresponding MMS AT command document^[1].

2.4 Set MMS system parameters

This AT command supports setting four parameters, and Usually only the first parameter needs to be set. The setting example is in the following:

AT+CMMSSYSSET=102400

For different region, this parameter means the maximum MMS PDU size supported by the carrier, and the default maximum MMS PDU size is 307200.

2.5 Other Setting

For MMS needs to communicate with MMSC through PS region, the following setting needs to be done:

AT+CGSOCKCONT=1,"IP","myasn"

In this example, the first parameter is the profile number of CGSOCKCONT, and "IP" is the protocol stack type that MMS will use. "myasn" is the ASN that will be used for PDP activation, this parameter should be set to the real ASN string set by carrier.

3. Create a MMS

3.1 Begin editing a MMS

The following begins editing a new MMS:

```
AT+CMMSEDIT=1
```

After calling this command, MMS module will create a new empty MMS in the memory. Whenever the *AT+CMMSEDIT* command is called, any MMS content in the memory will be lost. So before calling *AT+CMMSEDIT=(0 or 1)*, make sure you have saved the MMS you wanted using *AT+CMMSSAVE=(0 or 1)*.

3.2 Set the recipients/cc/bcc of the MMS

The following AT commands add two recipients, a copy recipient and a secure copy recipient:

```
AT+CMMSRECP="15032184336"  
AT+CMMSRECP="s2@gmail.com"  
AT+CMMSCC="13311837651"  
AT+CMMSBCC="15034209886"
```

3.3 Delete the recipients/cc/bcc of the MMS

The following AT commands delete two recipients, a copy recipient and a secure copy recipient:

```
AT+CMMSDELRECP="15032184336"  
AT+CMMSDELRECP="s2@gmail.com"  
AT+CMMSDELCC="13311837651"  
AT+CMMSDELBCC="15034209886"
```

3.4 Set the subject of the MMS

```
AT+CMMSDOWN="TITLE",10  
>test title  
OK
```

This command can be separated to two steps: first, input `AT+CMMSDOWN="TITLE",10` , It means user wants to input a title of 10 bytes. If the MMS is editable now, it will output `>` to client, Then user inputs the content of the title, like `test title` in this example.

If user wants to input a subject of UCS2 format, The “FFFE” or “FEFF” (0xFFFE or 0xFEFF) must be added in front of the title content indicating the endian type of the UCS2.

3.5 Add a text file to the MMS

User can add a text file to the MMS up to the maximum PDU size set in `AT+CMMSSYSSET`. Following is the example:

```
AT+CMMSDOWN="TEXT",1000,"t1.txt"  
>...(text file content of 1000 bytes)  
OK
```

This command is similar to the previous setting the subject, and it can be separated to two steps too: first, input `AT+CMMSDOWN="TEXT",1000,"t1.txt"` , It means user wants to add a text file of 1000 bytes, and it's file name is "t1.txt". If the MMS is editable now, it will output `>` to client, Then user inputs the content of the file.

If user wants to input a text of UCS2 format, the “FFFE” or “FEFF” (0xFFFE or 0xFEFF) must be contained in front of the file content indicating the endian type of the UCS2.

3.6 Add a picture to the MMS

User can add a picture file to the MMS up to the maximum PDU size set in `AT+CMMSSYSSET`. Following is the example:

```
AT+CMMSDOWN="PIC",1000,"t1.jpg"  
>...(picture file content of 1000 bytes)  
OK
```

This command is similar to the previous adding a text file, and it can be separated to two steps too: first, input `AT+CMMSDOWN="PIC",1000,"t1.jpg"` , It means user wants to add a jpeg file of 1000 bytes, and it's file name is "t1.jpg". If the MMS is editable now, it will output `>` to client, Then user inputs the content of the file.

3.7 Add a audio file to the MMS

User can add a video file to the MMS up to the maximum PDU size set in `AT+CMMSSYSSET`.

Following is the example:

```
AT+CMMSDOWN="AUDIO",10000,"t1.amr"  
>...(amr file content of 10000 bytes)  
OK
```

This command is similar to the previous adding a text file, and it can be separated to two steps too: first, input `AT+CMMSDOWN="AUDIO",10000,"t1.amr"`, It means user wants to add a jpeg file of 10000 bytes, and it's file name is "t1.amr". If the MMS is editable now, it will output > to client, Then user inputs the content of the file.

3.8 Add a video file to the MMS

User can add a video file to the MMS up to the maximum PDU size set in `AT+CMMSSYSSET`. Following is the example:

```
AT+CMMSDOWN="VIDEO",10000,"t1.3pg"  
>...(video file content of 10000 bytes)  
OK
```

This command is similar to the previous adding a text file, and it can be separated to two steps too: first, input `AT+CMMSDOWN="VIDEO",10000,"t1.3pg"`, It means user wants to add a jpeg file of 10000 bytes, and it's file name is "t1.3pg". If the MMS is editable now, it will output > to client, Then user inputs the content of the file.

3.9 Add a file in EFS of module to the MMS

User can add a file(text, pic, audio, video) to the MMS up to the maximum PDU size set in `AT+CMMSSYSSET`. Following is the example:

```
AT+CMMSDOWN="FILE",1,"t1.txt"  
AT+CMMSDOWN="FILE",2,"t1.jpg"  
AT+CMMSDOWN="FILE",3,"t1.amr"  
AT+CMMSDOWN="FILE",6,"t1.3pg"
```

This command is used to add a file in the EFS of the module to the editing MMS. For this example, it adds four files to the MMS (c:\t1.txt, c:\Picture\t1.jpg, c:\Video\t1.amr, d:\Video\t1.3gp). The first parameter "FILE" means user wants to add a file in module EFS to the editing MMS. The second parameter represents the directory that contains the file in EFS. The third parameter represents the name of the file to be added.

Currently, only the following file extensions are supported:

.txt;.htm;.html;.jpg;.jpeg;.gif;.png;.mid;.midi;.wav;.amr;.mp3;.mpeg;.mpg;.mp4;.3gpp;.3gp;

3.10 Delete a file in the MMS

User can delete a file in the MMS. Following is the example:

```
AT+CMMSDELFILE=<index>
```

This command is used to delete a file in the MMS. The parameter *<index>* means user wants to delete the *<index>* file in the MMS. This parameter depends on how many files contained in the MMS, and it range is 0 to (number of files -1). For example, if user wants to delete the third file in the MMS, the AT command should be *AT+CMMSDELFILE=2*.

3.11 Stop editing the MMS

The following stops editing the MMS:

```
AT+CMMSEDIT=0
```

After calling this command, MMS module will empty the MMS in the memory, and any MMS editing operation will be forbidden. Whenever the *AT+CMMSEDIT* command is called, any MMS content in the memory will be lost. So before calling *AT+CMMSEDIT=(0 or 1)*, make sure you have saved the MMS you wanted using *AT+CMMSSAVE=(0 or 1)*.

4. Save/load MMS in mail box

4.1 Save the MMS

User can save an edited or received MMS into the mail box using the following command:

```
AT+CMMSSAVE=<index>
```

This command saves the MMS in memory to mail box *<index>*. Totally, there are two mail boxes in MMS module (0 and 1), and the only parameter of this command represents the mail box number that the MMS needs to be saved in. For example, if user wants to save the mms to the second mail box, the AT command should be *AT+CMMSSAVE=1*.

4.2 Load the MMS

User can read a MMS from the mail box using the following command:

```
AT+CMMSVIEW=<index>
```

This command loads the MMS from mail box <index>, and shows the MMS's main information. Totally, there are two mail boxes in MMS module (0 and 1), and the only parameter of this command represents the mail box number that the MMS needs to be loaded. For example, if user wants to load the MMS from the second mail box, the AT command should be *AT+CMMSVIEW=1*.

4.3 Delete the MMS

User can clear the MMS in the mail box using the following command:

```
AT+CMMSDELETE=<index>
```

This command deletes the MMS in mail box <index>. Totally, there are two mail boxes in MMS module (0 and 1), and the only parameter of this command represents the mail box number that the MMS needs to be loaded. For example, if user wants to delete the MMS in the second mail box, the AT command should be *AT+CMMSDELETE=1*.

If user wants to delete both MMS messages in mail boxes, the following command can be used:

```
AT+CMMSDELETE
```

This command deletes both MMS messages in mail boxes.

5. View the MMS in memory

5.1 View the main information in MMS

If user want to view the editing/received MMS contained in memory, the following commands should be used:

```
AT+CMMSVIEW
```

This command has no parameter, and it just shows the main information of the MMS in memory.

5.2 Read a file in MMS

If user want to read a file in MMS contained in memory, the following commands should be used:

AT+CMMSREAD=<index>

This command is used to read a file in the MMS. The parameter *<index>* means user wants to read the *<index>* file in the MMS. This parameter depends on how many files contained in the MMS , and it range is 0 to (number of files -1). For example, if user wants to read the third file in the MMS, the AT command should be *AT+CMMSREAD=2*. If the file is a text file , the output will be UCS2 little endian format, and in the output, No 0xFFFE is added in front of the file content.

5.3 Snatch a file in MMS

If user want to snatch a file in MMS in memory, the following commands should be used:

AT+CMSSNATCH=<index>,<dir>,"<filename>"

This command is used to snatch a file in the MMS and save it to the EFS of module. The parameter *<index>* means user wants to snatch the *<index>* file in the MMS. This parameter depends on how many files contained in the MMS , and it range is 0 to (number of files -1). The *<dir>* parameter is the directory number, and the *<filename>* is the filename for the file saved in EFS. For example, if user wants to snatch the third file in the MMS, and save it to as *"/Multimedia/Video/2.jpg"*, the AT command should be *AT+CMSSNATCH=2,3,"2.jpg"*. If the file is a text file , the saved file will be in UCS2 little endian format, and in the output, 0xFFFE is added in front of the file content.

6. Send the MMS in memory

User can use the following commands to send a MMS:

AT+CMMSSEND

This command sends the MMS in memory to MMSC. After calling this command, it will return OK immediately if the status check is successful, and the MMS sending operation will run in background. When the sending is finished, MMS module will report the result.

- ◆ Following is a successful operation example:

```
AT+CMMSSEND
OK
...(other AT commands interaction)
+CMMSSEND:0
```

- ◆ Following is failed operation example:

```
AT+CMMSSEND
OK
...(other AT commands interaction)
+CMMSSEND:<err>
```

The last report of +CMMSSEND:<err> means it failed to send the MMS, the <err> 's range is from 170 to 191. For example, if the <err> is 190, it will report +CMMSSEND:190.

Note: The maximum transaction time for MMS sending is 1 hour.

7. Receive a WAP push indication of MMS

When MMSC received a new MMS for the current user, it will send a WAP push SMS to module, and the +WAP_PUSH_MMS indication will be reported to user, Following is an example:

```
+WAP_PUSH_MMS: "15001843625","RROpJGJVyjeA","http://192.168.1.2/RROpJGJVyjeA",
"09/03/17,17:14:41+32",0,13338
```

In this example, the new MMS URL is "http://192.168.1.2/RROpJGJVyjeA" . User can use AT+CMMSRECV="http://192.168.1.2/RROpJGJVyjeA" to receive this MMS later.

8. Receive a MMS in MMSC

User can use the following commands to receive a MMS:

```
AT+CMMSRECV="<url>"
```

This command receives the MMS in memory to MMSC. After calling this command, it will return OK immediately if the status check is successful, and the MMS receiving operation will run in background. When the receiving is finished, MMS module will report the result.

- ◆ Following is a successful operation example:

```
AT+CMMSRCEV="http://192.168.1.2/RROpJGJVyjeA"
OK
...(other AT commands interaction)
+CMMSRECV:0
```

- ◆ Following is failed operation example:

```
AT+CMMSRCEV="http://192.168.1.2:7082/NScYJXX80VXC"
OK
...(other AT commands interaction)
+CMMSRECV:<err>
```

The last report of +CMMSRECV:<err> means it failed to receive the MMS, the <err> 's range is from 170 to 191. For example, if the <err> is 190, it will report +CMMSRECV:190.

The AT+CMMSRECV="url" command can only be executed in MMS edit disable status(AT+CMMSEDIT=0).

Note: The maximum transaction time for MMS receiving is 1 hour.

9. Unsolicited Result code of MMS

9.1 Indication of Sending/Receiving MMS

MMS Sending	Description
+CMMSSEND:<err>	This indication means the result of sending MMS. If successful, it reports +CMMSSEND:0, or else, it report +CMMSSEND:<err>
MMS Notification	Description
+WAP_PUSH_MMS:<sender>,<transaction_id>,<location>,<timestamp>,<class>,<size>	This indication means there is a new MMS received in the MMS center.
MMS Receiving	Description

+CMMSRECV:<err>	This indication means the result of receiving MMS. If successful, it reports +CMMSRECV:0, or else, it report +CMMSRECV:<err>
-----------------	--

Defined values

< sender>	The sender address of the received MMS
<transaction_id>	The X-Mms-Transaction-ID of the received MMS
<location>	The X-Mms-Content-Location of the received MMS
<timestamp>	The timestamp of the WAP push message
<class>	The X-Mms-Class of the received MMS <ul style="list-style-type: none"> 0 – Expired 1 – Retrieved 2 – Rejected 3 – Deferred 4 – Unrecognized
<size>	The size of the received MMS

Examples

```
+WAP_PUSH_MMS
+WAP_PUSH_MMS: "15001844675", "RROpJGJVyjeA", "http://211.136.112.84/RROpJGJVyjeA"
,"09/03/17,17:14:41+32",0,13338
```

9.2 Summary of CME ERROR codes for MMS

Code of <err>	Description
201	Unknown error for mms
171	MMS task is busy now
172	The mms data is over size
173	The operation is over time
174	There is no mms receiver
175	The storage for address is full
176	Not find the address
177	Invalid parameter
178	Failed to read mms
179	There is not a mms push message (reserved)
180	Memory error

181	Invalid file format
182	The mms storage is full
183	The box is empty
184	Failed to save mms
185	Busy editing mms now
186	Not allowed to edit now
187	No content in the buffer
188	Failed to receive mms
189	Invalid mms pdu
190	Network error
191	Failed to read file in UE

10. MMS AT Command Samples

Set the parameters	Comments
AT+CMMSURL="192.168.1.2:7082/xst=test" OK	Set the MMS center URL without "http://"
AT+CMMSPROTO=1,"10.0.0.172",80 OK	Use HTTP protocol to send/receive MMS, set the IP address and port of MMS proxy to "10.0.0.172" and 80
AT+CMMSSENDCFG=6,3,0,0,2,4 OK	Set the parameter of MMS to send. This is unnecessary to set.
Send MMS	Comments
AT+CGSOCKCONT=1,"IP","myapn" OK	Set the PDP context profile.
AT+CMMSEDIT=1 OK	Set the edit mode to 1.
AT+CMMSDOWN="TITLE",10 >Test title OK	Set the title of MMS to "Test title".
AT+CMMSDOWN="FILE",3,"1.jpg" OK	Add the "C:\VideoCall\1.jpg" in EFS of module to the MMS body.
AT+CMMSDOWN="TEXT",120,"t1.txt" >My test content....(file content, 120 bytes) OK	Add a text file named "t1.txt" with length of 120 bytes.
AT+CMMSRECP="13918181818"	Add a recipient of "13918181818"

OK	
AT+CMMSRECP=" T1@TEST.COM "	Add a recipient of T1@TEST.COM
OK	
AT+CMMSCC="15013231222"	Add a copy recipient of "15013231222"
OK	
AT+CMMSSAVE=1	Save the MMS to mail box of index 1.
OK	
AT+CMMSSEND	Send the MMS.
OK	
+CMMSSEND: 0	After MMS is sent successfully, This command indicates success of sending. If failed, +CME ERROR:<err> will be reported.
Receive MMS	Comments
+WAP_PUSH_MMS: "15001844675","RROpJGJVyeA","http://211.136.112.84/RROpJGJVyeA" ,"09/03/17,17:14:41+32",0,13338	Receiving a new MMS notification.
AT+CGSOCKCONT=1,"IP","myapn"	Set the PDP context profile.
OK	
AT+CMMSEEDIT=0	Set the mms edit mode to 0.
OK	
AT+CMMSRECV="http://211.136.112.84/RROpJGJVyeA"	Receive MMS using the location contained in +WAP_PUSH_MMS indication.
OK	
+CMMSRECV: 0	After MMS is received successfully, this command indicates success of receiving. If failed, +CME ERROR:<err> will be reported.
AT+CMMSSAVE=0	If receiving successfully, save it to mail box.
OK	

11. Conflict AT Commands

Following AT commands cannot be used with MMS AT commands together:

- TCP/IP Related AT Commands.
- FTP/HTTP/EMAIL/GPS AT Commands.

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