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APN Content Level		BASIC		INTERMEDIATE	✓	ADVANCED		Confidentiality		Public	✓	Private
Hardware Compatibility		Product Line		AirPrime		Series		Q26xx			SL60xx	
								WMPxx				
								Q64				
Software Compatibility		Series				Q26xx : >7.X						
						OTHERS : ALL						



## 1 Version

Application Notes may be updated over their lifetime. To ensure you design with the correct version, please check the application notes page in [www.sierrawireless.com](http://www.sierrawireless.com) for latest versions.

## 2 Introduction

This Application Note (APN) is provided to Sierra Wireless distributors and clients to aid more rapid development of embedded applications using the Sierra Wireless portfolio of cellular solutions. To request a new application note, contact your regional Sierra Wireless Product Marketing Manager.

This application note starts with an introduction to MMS to educate the reader to understand the system architecture, and then explains how to use it on Sierra Wireless products.

## 3 Overview

The Multimedia Message Service (MMS), is intended to provide a rich set of content (pictures, audio, games etc) to subscribers. It supports both sending and receiving of rich content by properly enabled client devices. MMS is a non-real-time delivery service, much like SMS or email. The service utilises a store-and-forward usage model.

MMS is designed to be transported largely over IP and to interoperate with other IP services such as Email. MMS messages are typically transported over WAP/UDP, and are encoded using WAP MIME formats. The MMS messages are progressively getting transported by HTTP/TCP.

Multimedia messages can be originated by or terminate to end-user client devices (phones) or third party applications (typically used by MMS content providers, for advertisements for example).

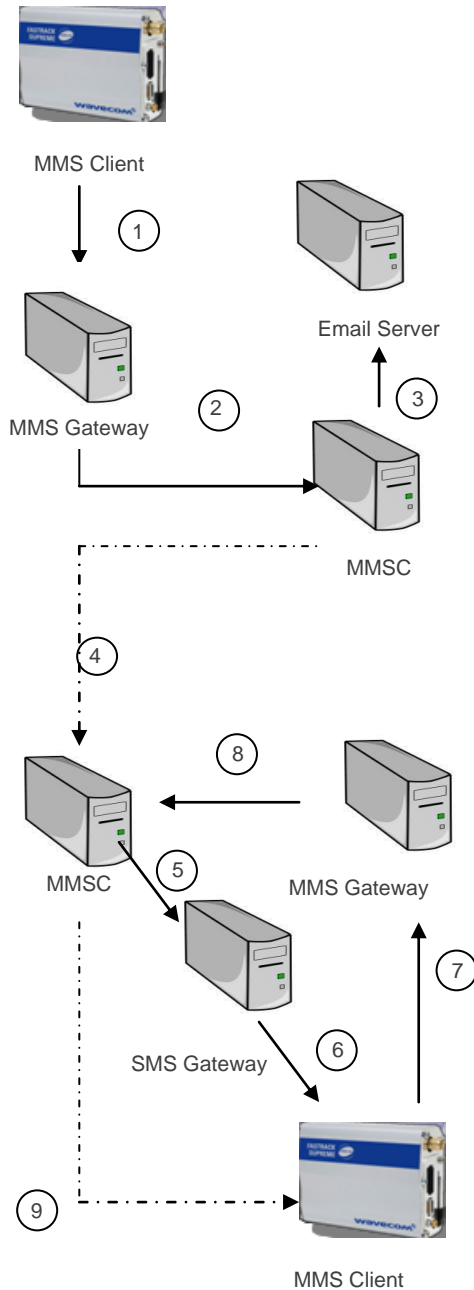


## 4 Glossary

Initials	Definition
HTTP	Hyper Text Transfer Protocol
IP	Internet Protocol
MMS	Multimedia Message Service
WAP	Wireless Application Protocol

## 5 Architecture of MMS

The following are the key components:



**MMS Client Device:** This is typically a device which supports WAP/HTTP & which intends to send/receive MMS. This could be a mobile phone or an MMS client running on a laptop.

**MMS Gateway:** This is the system element that the MMS Client device interacts with.

**MMSC:** This is the MMS switching center & also serves as the storage space for the MMS files.

**SMS Gateway:** This is used to notify the recipient about the received MMS.

## 6 How MMS Works

The steps are in relation to the numbers in the architecture diagram.

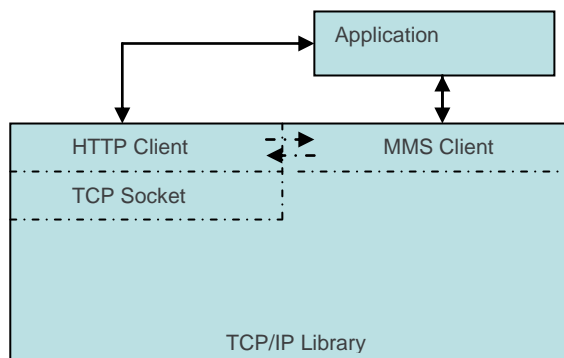
1. The MMS Client application of sender's device formats the data to be sent into an MMS file, ready to be sent over WAP or HTTP. This is sent to the MMS Gateway.
2. The MMS Gateway sends this to the MMSC. The MMSC also acts as the storage area for the MMS file till its retrieved.
3. In case the MMS message is sent to an Email address, the MMSC sends this to the Email server.
4. The MMSC can connect to other MMSCs in case the MMS message is to be delivered outside the network.
5. The MMSC of the recipient network sends a notification to the SMS Gateway with the MMS waiting information.
6. The SMS Gateway sends an SMS message to the MMS Client application of the receiver's device with the URL to retrieve the MMS file.
7. The MMS Client application of the receiver's device connects to its MMS Gateway using WAP or HTTP to download the MMS file.
8. MMS Gateway requests the MMS from the MMSC.
9. The MMS is downloaded to the MMS Client device.

## 7 MMS in Sierra Wireless Products

Sierra Wireless provides an MMS Client along with the TCP/IP Library, which can be used with already available HTTP Client to send/receive MMS.

An application can use these services through the MMS APIs. Custom AT commands can be developed and used if MMS needs to be sent from external micro-controllers.

The current architecture looks like this:



## 8 MMS APIs

### 8.1 wip\_mmsCreate()/wip\_mmsCreateOpts()

These APIs can be used to initialize the MMS structure. The mandatory parameters such as MSISDN number/email address, sender's number, subject and the call-back MMS handler function can be specified. The functions return an opaque MMS control structure, which should be passed on to all other MMS APIs. The call-back handler will be invoked to notify the events.

#### 8.1.1 Example snippet

```

p_mmsCtrl =
wip_mmsCreateOpts(
    WIP_COPT_MMS_STATUS, mms_statuscallback, NULL,
    WIP_COPT_MMS_SUBJECT, "MMS from S.W.",
    WIP_COPT_MMS_FROM, "0102030405", WIP_COPT_MMS_SENDER_VISIBILITY,
WIP_MMS_SENDER_HIDE,
    WIP_COPT_MMS_MESSAGE_CLASS, WIP_MMS_MESSAGE_PERSONAL,
    WIP_COPT_MMS_PRIORITY, WIP_MMS_PRIORITY_NORMAL,
    WIP_COPT_END);
    
```

## 8.2 wip\_mmsSetOpts() / wip\_mmsGetOpts()

These APIs can be used to set or get the various options associated with the MMS.

### 8.2.1 Example snippet

```
wip_mmsSetOpts(p_mmsCtrl, WIP_COPT_MMS_TO_PHONE, "0102030405", WIP_COPT_END);
```

## 8.3 wip\_mmsAddPart() / wip\_mmsRemovePart ()

These APIs can be used to add or remove the various components of the MMS. Currently, these APIs can be used to add or remove (already added) TEXT, JPEG & AMR formats.

Please be informed that only 1 part can be added at 1time. The API needs to be called multiple times to add multiple components.

### 8.3.1 Example snippet

```
wip_mmsAddPart(p_mmsCtrl, (u8*)mms_picture, sizeof(mms_picture),  
WIP_COPT_MMS_PART_JPG, "picture1.jpg", wm_strlen("picture1.jpg"),  
WIP_COPT_END);
```

## 8.4 wip\_mmsSend()

This API can be used to send the MMS. The HTTP client channel needs to be specified in this API long with the MMS control structure.

### 8.4.1 Example snippet

```
wip_mmsSend(p_mmsCtrl, httpChannel, "http://mms.orange.fr", NULL );
```

## 8.5 wip\_mmsClose()

This API can be used to release all resources (except the HTTP socket) related to the MMS.

### 8.5.1 Example snippet

```
wip_mmsClose(p_mmsCtrl);
```

# 9 How to Send/Receive MMS

## 9.1 Sending MMS

The application will use the MMS Client APIs for preparing the MMS; the settings, destinations, text, audio and graphics data are all supplied to the MMS Client through these APIs & the client formats them. The application, in addition, has to create an HTTP client socket for the MMS client.

Here is a stepwise guide to what the application needs to do:

1. Start the GPRS bearer using wip\_bearerxx() APIs.
2. Create an HTTP client socket using wip\_HTTPClientCreateOpts() API to the MMS server IP on port 8080.
3. Initialise the MMS using wip\_mmsCreateOpts() API; settings such as subject, sender's number, sender's visibility, message class & priority can be configured.
4. Use wip\_mmsSetOpts() API to set the destination; this could either be an MSISDN or an email address.
5. Use wip\_mmsAddPart() API to add the different parts one by one to the MMS; text, sound & pictures can be added.
6. Use wip\_mmsSend() API to send the MMS to the MMSC URL.
7. Use wip\_mmsClose() API when finished.

## 9.2 Receiving MMS

Receiving MMS is simpler. Once the MMS Client device is notified about the MMS through multiple PDU SMS messages, HTTP GET request can be used to retrieve the MMS.

The PDU message will contain the message type, message identifier, sender's phone number/email address, subject of the MMS message & the URL to retrieve the MMS file.

These are the steps to be followed:

1. Decode the PDU messages to get the URL from it.

2. Start the GPRS bearer using *wip\_bearerxx()* APIs.
3. Create an HTTP client socket using *wip\_HTTPClientCreateOpts()* API with the URL specified.
4. Use the HTTP GET request through *wip\_getFile()* API.

## 10 Limitations

- There is no WAP support to send MMS.
- The MMS Client accepts only 1 recipient (phone number or email address). If 2 (or more) recipients are specified, only the latest one will be considered as the recipient.
- Only Text, Jpeg & AMR formats are supported as of now.
- Each attachment size cannot exceed 2 MB.
- The attachment size also depends on amount of RAM available in your product.
- There is a limitation in the current Internet Library libraries which do not allow application to set "insert-address-token" in MMS ("insert-address-token" means the Operator can set the sender's phone number field in the MMS). Some operators might answer with "message format corrupt" in that case. This will be addressed in the upcoming Internet Library releases and will not conflict with the sample.

## 11 Information from Operator

This information will be required from the network operator in order to send/receive MMS.

- The GPRS APN, username & password.
- The MMS Gateway IP address & port.
- MMS URL.

## 12 Package Deliverables

This application note is delivered as a single compressed zip archive as follows:

Filename	Description
Multimedia Message Service Application Note and Sample.zip	Application Note & sample

### 12.1 Documentation

Filename	Description
Multimedia Message Service Application Note-Rev3.0.pdf	This application note, which defines the procedures to send & receive an MMS using TCP/IP Library.

### 12.2 Software

Folder Name	Description
Multimedia Message Service Sample	This includes complete source files of an MMS client application (sending) & the M2M workspace.

## 13 Software Compatibility Matrix

FW	Open AT Framework	Open AT Framework Libraries
R7.x	Open AT Framework v2.X	Internet Library

## 14 Support

For direct clients: contact your Sierra Wireless FAE

For distributor clients: contact your distributor FAE

For distributors: contact your Sierra Wireless FAE

## 15 Document History

Level	Date	History
001	September 9, 2009	Creation
002	February 12, 2010	Update with new SWI template
3.0	March 21, 2012	Update legal boilerplate contents and naming conventions. New reference: 2170038 Old reference: WM_DEV_OAT_APN_020 Update references in section 12.

## 16 Legal Notice

### Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

### Safety and Hazards

Do not operate the Sierra Wireless modem in areas where cellular modems are not advised without proper device certifications. These areas include environments where cellular radio can interfere such as explosive atmospheres, medical equipment, or any other equipment which may be susceptible to any form of radio interference. The Sierra Wireless modem can transmit signals that could interfere with this equipment. Do not operate the Sierra Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless modem MUST BE POWERED OFF. When operating, the Sierra Wireless modem can transmit signals that could interfere with various onboard systems.

**Note:** Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless modems may be used at this time.

The driver or operator of any vehicle should not operate the Sierra Wireless modem while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

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