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APN Content Level	BASIC	INTERMEDIATE	<input checked="" type="checkbox"/>	ADVANCED	Confidentiality	Public	<input checked="" type="checkbox"/>	Private	<input type="checkbox"/>	
Hardware Compatibility	Product Line	AirPrime	Series	MC73xx						
				MC74xx						
Software Compatibility	ALL			Document Type	Application Note		Technical Note	<input checked="" type="checkbox"/>		



1 Version

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2 Introduction

This document 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/technical note, contact your regional Sierra Wireless Product Marketing Manager.

3 Overview

The Sierra Wireless AirPrime MC73xx and MC74xx modules can enumerate in different states.

It is imperative for host applications to be aware of the different states and handle them appropriately.

This document covers the Qualcomm MDM9x15 and MDM9x30-based MC73xx and MC74xx modules. The document will explain the different enumeration states, the reasons for entering said states, and how the host can exit these states.

4 Glossary

Term/Initials	Definition

5 Relevant QMI APIs and AT Commands

5.1 QMI APIs

- GetPower()/SetPower()
- SLQSGetDeviceMode()
- SLQSGetFirmwareInfo()
- GetImagesPreference()/SetImagesPreference()
- UpgradeFirmware2k()

5.2 AT Commands

- AT!GSTATUS?
- AT!PCINFO?
- AT+CFUN
- AT!EROPTION
- AT!GOBIMPREF(73xx)
- AT!IMPREF(74xx)

6 Module Enumeration States

The following subsections define the available module enumeration states.

6.1 ONLINE Mode

ONLINE mode is the module's default mode of operation. In this mode, the module:

- Will enumerate all ports,
- Will respond to AT and QMI commands, and
- Will attach to the network and perform network related activities.

The ONLINE Mode enumerates the following:

- 1 (or 2) QMI interface(s)
- 3 ttyUSB ports
- Radio ONLINE and able to perform network related operations\

6.2 LOW POWER Mode

LOW POWER mode is also known as AIRPLANE mode. In this mode, the module:

- Will enumerate all ports,
- Will respond to AT and QMI commands, and
- Will not attach to the network or perform any network related activities.
- AT!PCINFO? will provide the reason for entering this state, as presented in the table below.

Reason	Corrective Action
Firmware Preference Mismatch (because of an interrupted FW download process or because it was set incorrectly)	<ul style="list-style-type: none"> • Re-Download correct FW package • Set correct image preference
User choice (+CFUN or W_DISABLE)	n/a
Temperature threshold was crossed	Investigate and root cause
Voltage threshold was crossed	Investigate and root cause

The LOW POWER Mode enumerates the following:

- 1 (or 2) QMI interface(s)
- 3 ttyUSB ports
- Radio OFFLINE and will not attach to network

6.3 BOOT and HOLD Mode

In BOOT and HOLD mode, the host can take either one of the below two options:

- Collect crash dump and reset the module, or
- Re-Download correct firmware package to the module.

Reason	Corrective Action
AT!EROPTION was set to 0 (USB DOWNLOAD) and there was a module crash	Collect crash dump from the module and then reset the module
Power to the module was removed during a FW upgrade process	Re-Download the correct firmware package - UpgradeFirmware2k()
AT!EROPTION was set to 0 (USB DOWNLOAD) and there was a module crash during the download process	This is extremely rare. Ensure AT!EROPTION is set to 1(RESET) before the firmware download process begins. The FW has recovery mechanisms which will not kick in if EROPTION is set to 0.

The BOOT and HOLD Mode enumerates only the following:

- 1 ttyUSB port

7 Support

For direct clients: contact your Sierra Wireless FAE

For distributor clients: contact your distributor FAE

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8 Document History

Revision	Date	History
1.0	April 17, 2017	Creation

9 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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