Migration Guide

AirPrime MC809x, MC9090, SL809x and SL9090

SIERRA WIRELESS®

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Document History

Version	Date	Updates
1.0	June 17, 2014	Creation
2.0	July 28, 2014	Added MC809x and MC9090 information
2.1	September 01, 2014	Added 4.2 Power Supply
2.2	September 15, 2014	Updated 3 Certification
2.3	October 10, 2014	Updated Table 10 AirPrime MC809x and MC9090 Pin Description
2.4	December 17, 2015	Updated: • 2 Firmware Compatibility • 3 Certification • 4.2 Power Supply
2.5	January 08, 2016	Added 4.1 Chipset Change on the MC809x and SL809x

Contents

List of Tables

1. Introduction

The re-spin versions of the MC809x (with variants MC8090 and MC8092), MC9090, SL809x (with variants SL8090 and SL8092) and SL9090 were created to replace EOL components.

This document aims to provide information with migrating applications to the re-spin versions and focuses on firmware and certification changes as the legacy modules are pin-compatible with the re-spin versions.

2. Firmware Compatibility

As in the legacy version, the AirPrime MC9090 and SL9090 re-spin versions will continue to support AT commands supported on legacy MC9090 and SL9090 modules, and the RIL/SDK will still be based on QMI interfaces.

Note: Legacy MC9090 and SL9090 firmware cannot be upgraded to recent re-spin MC9090 and SL9090 firmware due to a difference in the firmware structure.

The first set of officially released re-spin MC9090 and SL9090 firmware are as follows:

- Safe image SWI6600X_02.02.03.00
- Carrier image SWI6600U_02.04.04.00 UMTS
- SWI6600H_02.04.04.00 generic CDMA (including China Telecom)
- SWI6600V_02.04.04.00 Verizon
- SWI6600S_02.04.04.00 Sprint

AirPrime MC809x and SL809x re-spin modules, on the other hand, would now also support QMI and NDIS interfaces and will be migrated from Qualcomm 1.X baseline to Qualcomm 3.X.

Information in the following sub-sections is focused on describing the AirPrime MC809x and SL809x re-spin modules.

2.1. Host Firmware

2.1.1. Windows Embedded

2.1.1.1. Windows CE SDK

AirPrime MC809x and SL809x re-spin versions will still use Sierra GSM SDK in addition to using Sierra Gobi SDK; no interface breaks are foreseen in the migration.

Table 1. Windows CE SDK

	Legacy MC809x and SL809x	Re-spin MC809x and SL809x
API	Sierra GSM SDK	Sierra GSM SDK and Sierra Gobi SDK
Control Interface	CnS	CnS and QMI
Data Interface	Direct IP	Direct IP and NDIS

2.1.1.2. Windows Mobile RIL

Because Windows Mobile RIL API is standard, no interface break is foreseen in the re-spin migration.

Table 2. Windows Mobile RIL

	Legacy MC809x and SL809x	Re-spin MC809x and SL809x
API	Windows RIL	Windows RIL
Control Interface	AT	QMI and AT
Data Interface	PPP/Direct IP	NDIS and PPP/Direct IP

2.1.2. Linux SDK

AirPrime MC809x and SL809x re-spin versions will still use Sierra Linux CnS SDK in addition to using Sierra Linux QMI SDK; no interface breaks are foreseen in the migration.

Table 3. Linux SDK

	Legacy MC809x and SL809x	Re-spin MC809x and SL809x
API	Sierra Linux CnS SDK	Sierra Linux CnS SDK and Sierra Linux QMI SDK
Control Interface	CnS	CnS and QMI
Data Interface	Direct IP	Direct IP and NDIS

2.1.3. Android RIL

Because Android RIL API is standard, no interface break is foreseen in the re-spin migration.

Table 4. Android RIL

	Legacy MC809x and SL809x	Re-spin MC809x and SL809x
API	Android RIL	Android RIL
Control Interface	AT	QMI and AT
Data Interface	PPP/Direct IP	NDIS and PPP/Direct IP

2.2. Modem Firmware

2.2.1. USB Interface

The MC809x and SL809x re-spin modules will still have a dedicated AT port and DUN data service and AT can happen simultaneously.

Refer to document [7] AirCard/AirPrime USB Driver Developer's Guide for more information.

Table 5. USB Port Interface

	Legacy MC809x and SL809x	Re-spin MC809x and SL809x
PID	68A3	68A3 and 9011
Service	Modem+NDIS+AT+CnS+DM+NMEA	Modem+NDIS+AT+CnS+DM+NMEA and Modem+NDIS+DM+NMEA

2.2.2. Host Interface

The AirPrime MC809x and SL809x re-spin versions will continue to support CnS/Direct IP in addition to supporting QMI/NDIS. Also, re-spin modules will still allow the use of **AT!SCACT** to establish a data session.

Table 6. Host Interface

Interfaces	Legacy MC809x and SL809x	Re-spin MC809x and SL809x
Control Interface	CnS	CnS and QMI
	AT	AT and QMI
Data Interface	Direct IP	Direct IP and NDIS

Table 7. Host Interface for Dial-Up

Interfaces	Legacy MC809x and SL809x	Re-spin MC809x and SL809x
Control Interface	AT	AT
Data Interface	PPP	PPP

3. Certification

The AirPrime MC809x, MC9090, SL809x and SL9090 re-spin versions will be certified for the following standards.

Table 8. AirPrime MC809x, MC9090, SL809x and SL9090 Re-spin Certifications

Standard	SL8090	SL8092	SL9090	MC8090	MC8092	MC9090
FCC, IC	✓		✓	✓		✓
CE	✓	✓	✓		✓	✓
PTCRB	✓		✓	✓		✓
GCF		✓			✓	
GCF FT		✓			✓	
ATT	✓		✓	✓		✓
JRF, JPA	✓			✓	✓	
NTT	✓			✓		
Verizon			✓			✓
Sprint			✓			✓
Rogers			✓			✓
Aeris						✓

The following table specifies the impact of the MC809x, MC9090, SL809x and SL9090 re-spin modules on customer applications and provides guidance on updating approvals.

Table 9. Impact and Recommendations for Integrating Re-spin Modules

Re-spin Module	Approval	Impact
MC8090 and SL8090	FCC and IC	• New FCC ID and IC number are needed • Retesting for EIRP, RSE is required • Retesting for SAR, HAC is required if the end device is portable
	PTCRB	• OTA retesting requires if the customer device has a fixed antenna or if the antenna is less than 20cm long • IMEISV check is required (test duration is 2 minutes) • RSE will be spot checked ▪ No full span testing ▪ 2G will be spot checked, while 3G will be fully retested • SIM Electric No SIM Electric will not be required if there are no modifications to the customer application design
	CE	• Full retesting of EIRP, RSE, SAR is required for 3G; spot check is required for 2G • EMC spot check is required for EMS test items
	JRF/JPA	There will be a new JRF process after the SL8090 re-spin gets approval; additional paper work would be needed to add customer antenna
	NTT	OTA and performance must be retested
	AT&T	A new AT&T integration process will be required
	Rogers	A new Rogers integration process will be required

Re-spin Module	Approval	Impact
MC8092 and SL8092	CE	• Full retesting of EIRP, RSE, SAR is required for 3G; spot check is required for 2G • EMC spot check is required for EMS test items
	GCF	• 30% of the GCF integration scope will be checked • RSE will be spot checked ▪ No full span testing ▪ 2G will be spot checked, while 3G will be fully retested • SIM Electric No SIM Electric will not be required if there are no modifications to the customer application design
MC9090 and SL9090	FCC and IC	• New FCC ID and IC number are needed • Retesting for EIRP, RSE is required • Retesting for SAR, HAC is required if the end device is portable
	PTCRB	• OTA retesting requires if the customer device has a fixed antenna or if the antenna is less than 20cm long • IMEISV check is required (test duration is 2 minutes) • RSE will be spot checked ▪ No full span testing ▪ 2G will be spot checked, while 3G will be fully retested • SIM Electric No SIM Electric will not be required if there are no modifications to the customer application design
	CE	• Full retesting of EIRP, RSE, SAR is required for 3G; spot check is required for 2G • EMC spot check is required for EMS test items
	AT&T	A new AT&T integration process will be required
	Rogers	A new Rogers integration process will be required

4. Hardware Compatibility

4.1. Chipset Change on the MC809x and SL809x

The chipset of the MC809x and SL809x has been changed from MDM6200 to MDM6600. Both chipsets are the same hardware-wise, with the only difference being the internal fuse map; the MDM6600 supports CDMA, while the MDM6200 does not.

4.2. Power Supply

The power supply requirements for the MC809x, MC9090, SL809x and SL9090 re-spin modules remain unchanged.

4.3. Form Factor and Pin Out

Form factor and pin outs remain unchanged in the MC809x, MC9090, SL809x and SL9090 re-spin modules. For detailed information about hardware features, please refer to the product technical specifications listed in section 5.1 Reference Documents.

Table 10. AirPrime MC809x and MC9090 Pin Description

Pin #	MC809x		MC9090	
	Signal Name	Description	Signal Name	Description
1	NC	Not connected	WAKE_N	Wake Host Interface
2	VCC_3V6	3.6 V supply	VCC_3V3	3.3 V supply
3	NC	Not connected	NC	Not connected
4	GND	Ground	GND	Ground
5	NC	Not connected	NC	Not connected
6	GPIO_0	General purpose I/O	GPIO_0	General purpose I/O
7	NC	Not connected	NC	Not connected
8	EXT_VREG_USIM	USIM VCC supply	EXT_VREG_USIM	USIM VCC supply
9	GND	Ground	GND	Ground
10	EXT_USIM_DATA	USIM I/O pin	EXT_USIM_DATA	USIM I/O pin
11	VREF_1V8	1.8 V LDO	VREF_1V8	1.8 V LDO
12	EXT_USIM_CLK	USIM clock	EXT_USIM_CLK	USIM clock
13	NC	Not connected	NC	Not connected
14	EXT_USIM_RESET	USIM reset	EXT_USIM_RESET	USIM reset
15	GND	Ground	GND	Ground
16	NC	Not connected	NC	Not connected
17	NC	Not connected	NC	Not connected
18	GND	Ground	GND	Ground
19	NC	Not connected	NC	Not connected

Pin #	MC809x		MC9090	
	Signal Name	Description	Signal Name	Description
20	W_DISABLE_N	Wireless disable	W_DISABLE_N	Wireless disable
21	GND	Ground	GND	Ground
22	NC	Not connected	NC	Not connected
23	NC	Not connected	NC	Not connected
24	VCC_3V6	3.6 V supply	VCC_3V3	3.3 V supply
25	NC	Not connected	NC	Not connected
26	GND	Ground	GND	Ground
27	GND	Ground	GND	Ground
28	NC	Not connected	NC	Not connected
29	GND	Ground	GND	Ground
30	NC	Not connected	I2C_SCL	I^2C Serial Clock
31	NC	Not connected	NC	Not connected
32	WAKE_N	Wake Host Interface	I2C_SDA	I^2C Serial Data
33	SYSTEM_RESET_N	Reset	SYSTEM_RESET_N	Reset
34	GND	Ground	GND	Ground
35	GND	Ground	GND	Ground
36	USB_D-	USB data negative	USB_D-	USB data negative
37	GND	Ground	GND	Ground
38	USB_D+	USB data positive	USB_D+	USB data positive
39	VCC_3V6	3.6 V supply	VCC_3V3	3.3 V supply
40	GND	Ground	GND	Ground
41	VCC_3V6	3.6 V supply	VCC_3V3	3.3 V supply
42	LED_FLASH	LED driver	LED_FLASH	LED driver
43	GND	Ground	GND	Ground
44	GPIO_1	General purpose I/O	GPIO_1	General purpose I/O
45	UART1_CTS_N/ PCM_CLK	UART Clear To Send/ PCM Clock	UART1_CTS_N/ PCM_CLK	UART Clear To Send/ PCM Clock
46	GPIO_3	General purpose I/O	GPIO_3	General purpose I/O
47	UART1_RTS_N/ PCM_DIN	UART Request To Send/ PCM Data In	UART1_RTS_N/ PCM_DIN	UART Request To Send/ PCM Data In
48	GPIO_2	General purpose I/O	GPIO_2	General purpose I/O
49	UART1_RXD/ PCM_DOUT	UART Receive Data/ PCM Data Out	UART1_RXD/ PCM_DOUT	UART Receive Data/ PCM Data Out
50	GND	Ground	GND	Ground
51	UART1_TXD/ PCM_SYNC	UART Transmit Data/PCM Sync Out	UART1_TXD/ PCM_SYNC	UART Transmit Data/PCM Sync Out
52	VCC_3V6	3.6 V supply	VCC_3V3	3.3 V supply

Table 11. AirPrime SL809x and SL9090 Pin Description

Pin #	SL809x		SL9090	
	Signal Name	Description	Signal Name	Description
1	GPIO_3	General Purpose I/O	GPIO_3	General purpose I/O

Pin #	SL809x		SL9090	
	Signal Name	**Description**	**Signal Name**	**Description**
2	GPIO_2	General Purpose I/O	GPIO_2	General purpose I/O
3	GPIO_1	General Purpose I/O	GPIO_1	General purpose I/O
4	GPIO_0	General Purpose I/O	GPIO_0	General purpose I/O
5	NC	Not connected	NC	Not connected
6	EXT_VREG_USIM	USIM VCC Supply	EXT_VREG_USIM	USIM VCC supply
7	EXT_USIM_RESET	USIM reset	EXT_USIM_RESET	USIM reset
8	EXT_USIM_DATA	USIM I/O pin	EXT_USIM_DATA	USIM I/O pin
9	EXT_USIM_CLK	USIM Clock	EXT_USIM_CLK	USIM clock
10	VREF_1V8	1V8 LDO	VREF_1V8	1.8 V LDO
11	SPI_CS_N	SPI Chip Select	I2S_SCLK	I2S Clock
12	SPI_CLK	SPI Clock	I2S_WS	I2S Word Select
13	SPI_DATA_MOSI	SPI Master Output	I2S_MCLK	I2S Master Clock
14	SPI_DATA_MISO	SPI Master Input	I2S_DOUT	I2S Data Output
15	NC	Not connected	NC	Not connected
16	NC	Not connected	I2C_SDA	I2C Serial Data
17	NC	Not connected	I2C_SCL	I2C Serial Clock
18	NC	Not connected	NC	Not connected
19	GND	Ground	GND	Ground
20	GND	Ground	GND	Ground
21	GND	Ground	GND	Ground
22	ANT_DRX	Diversity Antenna	ANT_DRX	Diversity antenna
23	GND	Ground	GND	Ground
24	NC	Not connected	NC	Not connected
25	NC	Not connected	NC	Not connected
26	NC	Not connected	NC	Not connected
27	NC	Not connected	NC	Not connected
28	GND	Ground	GND	Ground
29	ANT_PRM	Main Antenna	ANT_PRM	Main (primary) antenna
30	GND	Ground	GND	Ground
31	NC	Not connected	NC	Not connected
32	NC	Not connected	NC	Not connected
33	NC	Not connected	NC	Not connected
34	NC	Not connected	NC	Not connected
35	GND	Ground	GND	Ground
36	ANT_GPS	GPS Antenna	ANT_GPS	GPS antenna
37	GND	Ground	GND	Ground
38	GND	Ground	GND	Ground
39	GND	Ground	GND	Ground
40	NC	Not connected	NC	Not connected
41	DNC	Do not connect	DNC	Do not connect
42	VCC_3V6	3.6 V Supply	VCC_3V6	3.6 V supply
43	POWER_ON_N	Power on	POWER_ON_N	Power on

Pin #	SL809x		SL9090	
	Signal Name	**Description**	**Signal Name**	**Description**
44	VCC_3V6	3.6 V Supply	VCC_3V6	3.6 V supply
45	UART1_TXD	UART Transmit Data	UART1_TXD	UART Transmit Data
46	UART1_RXD	UART Receive Data	UART1_RXD	UART Receive Data
47	UART1_CTS_N	UART Clear To Send	UART1_CTS_N	UART Clear To Send
48	UART1_RTS_N	UART Request to Send	UART1_RTS_N	UART Request To Send
49	NC	Not connected	NC	Not connected
50	USB_D+	USB Data +	USB_D+	USB Data +
51	USB_D-	USB Data -	USB_D-	USB Data -
52	GND	Ground	GND	Ground
53	NC	Not connected	DNC	Do not connect
54	NC	Not connected	DNC	Do not connect
55	NC	Not connected	NC	Not connected
56	NC	Not connected	DNC	Do not connect
57	NC	Not connected	DNC	Do not connect
58	NC	Not connected	NC	Not connected
59	NC	Not connected	NC	Not connected
60	LED_FLASH	LED driver	LED_FLASH	LED driver
61	WAKE_N	Wake Host Interface	WAKE_N	Wake Host Interface
62	W_DISABLE_N	Wireless disable	W_DISABLE_N	Wireless disable
63	SYSTEM_RESET_N	Reset	SYSTEM_RESET_N	Reset
64	PCM_SYNC	PCM Frame Sync Out	PCM_SYNC	PCM Sync Out
65	PCM_DOUT	PCM Data Output	PCM_DOUT	PCM Data Out
66	PCM_DIN	PCM Data Input	I2S_DIN	I2S Data In
67	PCM_CLK	PCM Clock	PCM_CLK	PCM Clock
68	BUZZER_EN	Buzzer enable	BUZZER_EN	Buzzer enable
69	TDI	Test Data Input	TDI	Test Data Input
70	TMS	Test Mode Select	TMS	Test Mode Select
71	TCK	Test Clock	TCK	Test Clock
72	TRST_N	Test Reset	TRST_N	Test Reset
73	TDO	Test Data Output	TDO	Test Data Output
74	RTCK	Return TCK	RTCK	Return TCK

5. References

5.1. Reference Documents

[1] AirPrime MC8090 and MC8092 Product Technical Specification and Customer Design Guidelines

Reference: 4110931

[2] AirPrime MC9090 Product Technical Specification and Customer Design Guidelines

Reference: 4112965

[3] AirPrime SL809x Product Technical Specification and Customer Design Guidelines

Reference: 4111941

[4] AirPrime SL9090 Product Technical Specification and Customer Design Guidelines

Reference: 4111766

[5] AirCard/AirPrime UMTS Supported AT Command Reference

Reference: 2130617

[6] AirPrime SL9090/MC9090 AT Commands Interface Guide

Reference: 4112834

[7] AirCard/AirPrime USB Driver Developer's Guide

Reference: 2130634

5.2. List of Abbreviations

Abbreviation	Definition
AMSS	Automatic Message Switching System
API	Application Programming Interface
CnS	Control and Status – Sierra Wireless' proprietary hot interface protocol
EOL	End of life
NDIS	Network Driver Interface Specification
PPP	Point-to-Point Protocol
QMI	Qualcomm MSM Interface
RIL	Radio Interface Layer
SDK	Software Development Kit

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