WP77xx

Customer Release Notes

Release 9

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Document History

Rev XX.YY	Date YYYY/MM/DD	Updates	Author
01.03	2018/05/25	Release 9	SL
01.02	2018/02/28	Release 8	SL
01.01	2017/12/29	Release 7	SL
01.00	2017/10/23	Creation - Release 6	SL

Table of Contents

1 Introduction

1.1 Scope of this document

This document describes WP77xx firmware releases.

1.2 Audience of this document

These release notes may be distributed to all direct and indirect customers.

2 Abbreviations and definitions

Abbreviation/Acronym	Definitions
AT	Access Terminal, Attention
LK	Little Kernel Linux bootloader
FDT	Firmware Download Tool
LPWA	Low-Power Wide-Area Wireless Technology
MCU	Microcontroller Unit – An onboard MCU enables Ultra Low Power modes of operation
PSM	Power Save Mode
QMI	Qualcomm MSM Interface, Qualcomm Modem Interface
ULPM	Ultra Low Power Mode

3 Related documentation

Ref. #	Doc. #	Document title
[1]	41111420	AirPrime WP77xx - Product Technical Specification
[2]	4118047	AirPrime WPx5xx/WP76xx/WP77xx - AT Command Reference
[3]	41110380	AirPrime WP Series – Preparing Your Devices For Deployment
[4]	41110866	AirPrime WPx5xx/WP76xx/WP77xx - Scalability Guide
[5]	41110418	AirPrime WP76xx Customer Release Notes

4 Compatibility

Hardware compatibility

Product compatibility list
WP7702 • *LTE Cat-M1; Bands 1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 26, 28* • *LTE CAT-NB1; Bands 1, 2, 3, 5, 8, 12, 13, 17, 18, 19, 20, 26, 28* • *GSM; Bands GSM 850, E-GSM 900, DCS 1800, PCS 1900* WP7700 • *LTE Cat-M1; Bands 1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 26, 28* • *LTE CAT-NB1; Bands 1, 2, 3, 5, 8, 12, 13, 17, 18, 19, 20, 26, 28*

5 SWI9X06Y Release 9

Release 9 includes a number of new features including PDN data multiplexing, QMI support for some existing features, PSM current consumption enhancements as well as several bug fixes. This release is intended as a PTCRB and AT&T final certification candidate to resolve several issues for carrier and industrial certification testing. It is important to note that:

- No GCF and PTCRB certification has been granted yet.
- AirVantage and FOTA is now supported

5.1 Software Release Description

5.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X06Y_02.16.04.00 019853 jenkins 2018/05/15 19:28:37
Linux Firmware	SWI9X06Y_02.16.02.00 2018-05-02_12:35:16
MCU Firmware	002.009
Legato Application Framework	18.03.0_8c7b8ac619d8a7402ad0dc6f42ba6daf
Binary Size	50MB (compressed binaries)
IMEI SV	2
Qualcomm Stack Version	MDM9206.LE.2.0-00122-STD.PROD-1.149002.1
Linux Kernel Version	Linux swi-mdm9x28 3.18.44 #2 PREEMPT Wed May 2 12:36:47 UTC 2018 armv7l GNU/Linux
Supported H/W	WP7702 DV1.1+ WP7700 DV 2.1+

5.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4773
Windows SDK	None
Skylight	None
Linux Drivers	S2.31N2.50
Linux SDK	SLQS04.00.14

5.1.3 Released Files and Download Processes

Function	Files	Carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
WP7702 Approved						
Windows one-click firmware upgrade tool	WP77xx_Release9_TMOBILE.exe	GENERIC (T-Mobile)	SWI9X06Y_02.13.02.00	002.009	SWI9X06Y_02.16.02.00	18.03.0
Test						
Windows one-click firmware upgrade tool	WP77xx_Release9_GENERIC.exe	GENERIC	SWI9X06Y_02.16.04.00	002.009	SWI9X06Y_02.16.02.00	18.03.0
	WP77xx_Release9_ATT.exe	ATT	SWI9X06Y_02.16.04.00	002.009	SWI9X06Y_02.16.02.00	18.03.0

Function	Files	Carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
	WP77xx_Release 9_VERIZON.exe	VERIZON	SWI9X06Y_02.16.04.00	002.009	SWI9X06Y_02.16.02.00	18.03.0
	WP77xx_Release 9_TELSTRA.exe	TELSTRA	SWI9X06Y_02.16.04.00	002.009	SWI9X06Y_02.16.02.00	18.03.0
From: https://source.sierrawireless.com/resources/airprime/software/wp77xx/wp77xx-firmware-release-9						

Function	Files
Firmware Components	9999999_9907618_SWI9X06Y_02.13.02.00_00_GENERIC_001.009_000.spk (T-Mobile) 9999999_9907618_SWI9X06Y_02.16.04.00_00_GENERIC_001.021_000.spk (GCF) 9999999_9907787_SWI9X06Y_02.16.04.00_00_ATT_001.019_000.spk 9999999_9908088_SWI9X06Y_02.16.04.00_00_VERIZON_001.009_000.spk 9999999_9908397_SWI9X06Y_02.16.04.00_00_TELSTRA_001.004_000.spk linux-SWI9X06Y_02.16.02.00.cwe legato-18.03.0.cwe mcufw_002.009_wp77_f1.cwe
From: https://source.sierrawireless.com/resources/airprime/software/wp77xx/wp77xx-firmware-release-9	

5.2 Software Changes Description

The WP77xx Release 9, based on modem version SWI9X06Y_02.16.04.00, is functionally equivalent to WP76xx Release 9 [5], with notable differences and features below.

ID	Title	Description	Impacted Domain
Legato			
Various	Legato 18.03.0	Legato 18.03.0 http://legato.io/legato-docs/latest/releaseNotes18030.html http://legato.io/legato-docs/latest/releaseNotes18020.html Upgrade from 18.01.0 in Release 8	Legato AF
Modem			
Core			
QTI9X07-2016	Add Qualcomm MDM9206.LE.2.0-00122-STD.PROD-1.149002.1	Adds Qualcomm baseline MDM9206.LE.2.0-00122-STD.PROD-1.149002.1	Qualcomm baseline (Release 9)
System			
QTI9X07-1813	WP77 crash during download package using X-modem	When attempting to perform XMODEM firmware download firmware over the modem USB AT port or the UART port, the device will crash every time. This feature is now fixed and supported.	Firmware Update
AT commands			
QTI9X07-1984	[WP77] SELMODE returns wrong setting	When selecting system mode via AT!SELMODE, the setting is not written into the device non-volatile memory and unable to persist across power cycles.	AT/SD
QTI9X07-1697	AT!BAND? returns Unknown Band	The device band mask will become shown as “Unknown” if the device changes between different RATs.	AT/SD

ID	Title	Description	Impacted Domain
QMI			
QTI9X07-1460	QMI_NAS_GET_CELL_LOCATION_INFO_REQ_MSG_V01 return error	Legato application and AVMS server was unable to retrieve the device's current cell location ID via QMI because the feature to report modem data statistics was disabled on this chipset. This feature has now been enabled, and the QMI command is working as expected to report the cell location ID.	QMI/NAS
Data			
QTI9X07-2015	[WP77] SWI Proxy not working	The feature to set Data Bridge Mode was disabled on the 9x06 chipset by default, causing the modem and Legato application to unable to share a data connection. This feature has been enabled and PDN data multiplexing is now supported.	Data Connectivity
QTI9X07-1917	[WP77] Re-enable TLS 1.2 in SO Task	Originally, the mdm9x06 chipset only supported TLS 1.1 for secure sockets. Now that TLS 1.2 support is added, this change will update the device to use TLS 1.2 by default.	Security
RF			
QTI9X07-1779	GSM Multislot Class BLER Failure	High BLER is observed on GSM low bands when using multiple slots on the downlink. The ASM switching timing was increased in the RF Driver to resolve this issue.	RF/Driver
QTI9X07-1948	[WP77] Update Default LTE Power Backoff RF NVs	LTE B2, B5, B12, B13, B26 power backoff NVs were updated to pass FCC certification.	RF/Cal
Network Access			
QTI9X07-1852	[WP7702][36.523-1][22.3.2.1][NB-IOT] AM RLC	NB-IOT UE RLC sets the poll bit in all RLC PDUs, which is not expected for GCF testing, but done to provide better data rate. The poll bit should not be set for all RLC PDU, instead it should only be set for the ones configured by the network.	NAS/ Protocol
Config			
QTI9X07-1955	Add NV psm_config_ext to EFSConfig XML and persistence list	The PSM sleep duration was adjusted to compensate for the device's boot-up time for better timing accuracy when performing the TAU with the network on wake up.	PSM
QTI9X07-1236	[WP7702][AT&T][LTE-CM1-4-6907] - CAT M - MO SMS wakes UE from PSM	The device was a few seconds delayed in performing the TAU with the network after waking up from PSM due to long boot up time. This was fixed by adjusting the PSM sleep duration to compensate for the boot up time.	PSM
QTI9X07-1249	[WP7702][AT&T][LTE-CM1-4-6908] - CAT M - MO DATA wakes UE from PSM	The device was a few seconds delayed in performing the TAU with the network after waking up from PSM due to long boot up time. This was fixed by adjusting the PSM sleep duration to compensate for the boot up time.	PSM

5.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Bugs			
QTI9X07-1308	Missing Java dependency for building LK bootloader	The Android Signing tools for the LK bootloader require Java Runtime Environment (JRE) to be installed on the host platform. JRE has not been added to the build environment, so must be installed on the build machine manually. Example, for Ubuntu 16.04: sudo apt-get install default-jre	Build
QTI9X07-1293	Current consumption – UART1 with AT+KSLEEP=1	If UART1 is mapped to AT commands with AT+KSLEEP=1 ***AND there is a physical UART connected***, the module consumes an average of ~10mA in idle and LPM modes.	Power
QTI9X07-959 QTI9X07-1121	Deficiencies in GPIO control from linux	While fixed in modem (see Release 7), certified images (PTCRB, AT&T, Verizon: SWI9X07Y_02.10.xx.00) do not benefit. A *new* linux patch for older modem versions has been simplified from the previous release. No configuration changes are required so future upgrades will work without reverting configuration. Reference DAYTONA-8683 for patch available from your Sierra support contact.	GPIO
QTI9X07-1007	PCM configuration not allowed by default	The ability to set a profile to use a particular interface is controlled by AT!AVPIFACEPREF (level 2 access). By default, PCM was not included so PCM could not be set with AT!AVCFG without first setting AT!AVPIFACEPREF=F. The factory default has been updated to make PCM available by default, however this will only benefit newly manufactured units so AT!AVPIFACEPREF=F is still required.	Audio
QTI9X07-1494	Legato - boot loop error when built with large database	Customer legato.cwe image must be small enough to fit into the LEFWKRO partition (8MB).	Legato

6 SWI9X06Y Release 8

Release 8 is intended as a certification refresh candidate to resolve several issues for carrier and industrial certification testing. It is important to note that:

- No GCF and PTCRB certification has been granted yet.
- AirVantage and FOTA now has basic functionality

6.1 Software Release Description

6.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X06Y_02.14.04.00 a03347 jenkins 2018/02/19 06:13:56
Linux Firmware	SWI9X06Y_02.14.04.00 2018-02-19_00:48:31
MCU Firmware	002.007
Legato Application Framework	18.01.0_7946ce7181b7425bad75f7086b992e9b
Binary Size	50MB (compressed binaries)
IMEI SV	2
Qualcomm Stack Version	MDM9206.LE.2.0-00115-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 6.2.0 (GCC)) #2 PREEMPT Mon Feb 19 01:13:41 UTC 2018
Supported H/W	WP7702 DV1.1+ WP7700 DV 2.1+

6.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4773
Windows SDK	None
Skylight	None
Linux Drivers	S2.31N2.49
Linux SDK	SLQS04.00.12

6.1.3 Released Files and Download Processes

Function	Files	Carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Windows one-click firmware upgrade tool	WP77xx_Release 7_TMOBILE.exe	GENERIC (T-Mobile)	SWI9X06Y_02.13.02.00	002.007	SWI9X06Y_02.14.04.00	18.01.0
	WP77xx_Release 7_GENERIC.exe	GENERIC (GCF, not approved)	SWI9X06Y_02.14.04.00	002.007	SWI9X06Y_02.14.04.00	18.01.0
	WP77xx_Release 7_ATT.exe	ATT (not approved)	SWI9X06Y_02.14.04.00	002.007	SWI9X06Y_02.14.04.00	18.01.0
From: https://source.sierrawireless.com/resources/airprime/software/wp77xx/wp77xx-firmware-release-8						

Function	Files
Firmware Components	9999999_9907618_SWI9X06Y_02.14.04.00_00_GENERIC_001.012_000.spk (GCF) 9999999_9907618_SWI9X06Y_02.13.02.00_00_GENERIC_001.009_000.spk (T-Mobile) 9999999_9907787_SWI9X06Y_02.14.04.00_00_ATT_001.011_000.spk linux-SWI9X06Y_02.14.04.00.cwe legato-18.01.0.cwe mcufw_002.007_wp77_f1.cwe
From: https://source.sierrawireless.com/resources/airprime/software/wp77xx/wp77xx-firmware-release-8	

6.2 Software Changes Description

The WP77xx Release 8, based on modem version SWI9X06Y_02.14.04.00, is functionally equivalent to WP76xx Release 8 [5], with notable differences and features below.

ID	Title	Description	Impacted Domain
Legato			
Various	Legato 18.01.0	Legato 18.01.0 http://legato.io/legato-docs/latest/releaseNotes18010.html Upgrade from Legato 17.11.0 in Release 7	Legato AF
Modem			
Core			
QTI9X07-1497	Add Qualcomm MDM9206.LE.2.0-00115-STD.PROD-1	Adds Qualcomm baseline MDM9206.LE.2.0-00115-STD.PROD-1	Qualcomm baseline (Release 8)
QTI9X07-1591	Increment IMEI SV to 2	IMEI SVN was incremented to 2 for this release	System
AT commands			
QTI9X07-583	Add support to select between LTE CAT-M1 and CAT-NB1 RATs	AT!SELCIOT was introduced to allow user to select between LTE CAT-M1 and CAT-NB1 operating modes	AT/SD
QTI9X07-1210	[WP77] Add AT command to set SNR scan level to optimize NB1 scanning time on eMTC	AT!SELSNR was introduced to allow user to configure the depth of scan on LTE NB1 networks to optimize scanning time	AT/SD
QMI			
QTI9X07-1436	WP7702 failed to retrieve data for Location object (lwm2m.6.0.x) with error "Resource does not exist"	Fixes an issue where the Position Report indication from the LOC engine is not being sent to inactive clients.	QMI/NAS
RF			
QTI9X07-1540	Update GSM Max Power Level NVs	GSM Max Power Level NVs were updated to pass FCC certification and to stay consistent with WPx5xx Antenna Gain settings	RF/NV
QTI9X07-1285	[WP77] RFCal Verification Failures on eMTC	Fixes numerous issues seen during LTE CAT-M1 RF Calibration Verification at factory	RF/Cal

6.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
Various	AirVantage Connectivity	AirVantage Connectivity now has basic functionality. Full validation is still being performed.	AirVantage

ID	Title	Description	Impacted Domain
Various	FOTA	FOTA support has been implemented and has basic functionality. Full validation is still being performed.	FOTA
Bugs			
LE-7418	avcControl will block other data connections from using that APN	If the Legato AirVantage connector has a connection established, any other data connect to that APN is blocked. Conversely if a data connection is already established on that APN, the Legato AirVantage connector cannot connect. ***The resolution is currently undergoing full testing for delivery in Release 9.***	Networking
LXSWIREF-273	Re-building kernel fails with Yocto 2.2 due to "metadata not deterministic" error	Every kernel build from the source distribution must be built from clean or before each kernel re-build, execute the following: `touch meta-swi/meta-swi-mdm9x28/recipes-kernel/linux/linux-quic_git.bb`	Build
QTI9X07-1308	Missing Java dependency for building LK bootloader	The Android Signing tools for the LK bootloader require Java Runtime Environment (JRE) to be installed on the host platform. JRE has not been added to the build environment, so must be installed on the build machine manually. Example, for Ubuntu 16.04: sudo apt-get install default-jre	Build
QTI9X07-599	Sierra SIM Connectivity	AT+COPS=2 shall NOT be used with this module to trigger any network steering	Connectivity
DAYTONA-8511	UART1 does not wake up on Rx	After a few seconds of idle time the UART enters a state of runtime suspend after which time serial activity from the host cannot wake the module to receive. This issue was introduced in Release 7. A patch to the linux distribution is available	UART
QTI9X07-780	Current consumption and data throughput – HSIC enabled	The module will not enter sleep mode if HSIC is enabled, ***and the host platform does not have an HSIC (ethernet) controller connected.*** Minimum power consumption while not in sleep mode is ~40mA. This has also been found to increase CPU loading and consequently CAT4 max downlink throughput is degraded in some cases. ***For platforms without a HSIC controller, this feature should be disabled with AT!CUSTOM="HSICENABLE",0***	Power, Throughput
QTI9X07-1293	Current consumption – UART1 with AT+KSLEEP=1	If UART1 is mapped to AT commands with AT+KSLEEP=1 ***AND there is a physical UART connected***, the module consumes an average of ~10mA in idle and LPM modes.	Power
QTI9X07-1001	Current consumption in PSM mode	Current consumption is not optimized in PSM mode. Significant improvements are planned for the next release. See Software Changes Description for the WP76xx Release 8 [5]. ULPM mode is not affected.	Power/PSM

7 SWI9X06Y Release 7

Release 7 is provided for customer samples to demonstrate initial PSM support, and is intended to resolve a number of issues for carrier and industrial certification testing. It is important to note that:

- Legato Application Framework is supported, but limited validation has been performed
- No formal GCF, PTCRB or Carrier certification testing has been performed.
- Linux Firmware source code will not be published to Source
- AirVantage and FOTA are not supported

7.1 Software Release Description

7.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X06Y_02.13.02.00 7cfe8a jenkins 2017/12/22 05:21:50
Linux Firmware	SWI9X06Y_02.13.02.00 2017-12-22_06:09:25
MCU Firmware	002.006
Legato Application Framework	17.11.0_3238a5a8f17311821611a475aba506b4
Binary Size	50MB (compressed binaries)
IMEI SV	1
Qualcomm Stack Version	MDM9206.LE.2.0-00109-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 6.2.0 (GCC)) #2 PREEMPT Fri Dec 22 06:18:41 UTC 2017
Supported H/W	WP7702 DV1.1+ WP7700 DV 2.1+

7.1.2 Software Tools Versions

S/W Tools Name	Version	
Windows Driver Package	B4773	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.31N2.49	**Important upgrade required for multi RMNET support.**
Linux SDK	SLQS04.00.11	

7.1.3 Released Files and Download Processes

Release 7 is provided as programmed hardware samples only. Software update packages are available upon request, and is not distributed on Source.

Function	Files	Carrier (not approved)	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Windows one-click firmware upgrade tool	WP77xx_Release7_GENERIC.exe	GENERIC	SWI9X06Y_02.13.02.00	002.006	SWI9X06Y_02.13.02.00	17.11.0
	WP77xx_Release7_ATT.exe	ATT	SWI9X06Y_02.13.02.00	002.006	SWI9X06Y_02.13.02.00	17.11.0

Function	Files	Carrier (not approved)	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Linux SPK files	WP77xx_Release7_GENERIC.spk	GENERIC	SWI9X06Y_02.13.02.00	002.006	SWI9X06Y_02.13.02.00	17.11.0
	WP77xx_Release7_ATT.spk	ATT	SWI9X06Y_02.13.02.00	002.006	SWI9X06Y_02.13.02.00	17.11.0

7.2 Software Changes Description

The WP77xx Release 7, based on modem version SWI9X06Y_02.13.02.00, is functionally equivalent to WP76xx Release 7 [5], with notable differences and features below.

ID	Title	Description	Impacted Domain
Legato			
Various	Legato 17.11.0	Legato 17.11.0 http://legato.io/legato-docs/latest/releaseNotes17110.html http://legato.io/legato-docs/latest/releaseNotes17100.html http://legato.io/legato-docs/latest/releaseNotes17090.html Upgrade from Legato 17.08.1 in Release 6	Legato AF
LE-7907	Legato APIs to support 3GPP eDRX (specification)	Adds support for Legato APIs used to configure eDRX	Legato, LPWA
Modem			
Core			
QTI9X07-1191	Add Qualcomm MDM9206.LE.2.0-00109-STD.PROD-1	Adds Qualcomm baseline MDM9206.LE.2.0-00109-STD.PROD-1	Qualcomm baseline (Release 7)
Various	eDRX	eDRX is supported. Legato API support have also been added.	LPWA
N/A	Extended Coverage	Extended Coverage mode A on LTE CAT M1 is supported but not tested. Pending validation during industrial certification	LPWA
Data			
QTI9X07-608	[WP7702] Consecutive data connection doesn't work using SLQS	Fixes the issue where user is unable to start a second consecutive data connection on Linux without resetting the device	DATA
AT commands			
QTI9X07-1259	Add LTE CAT M1 and CAT NB1 into AT!SELACQ	Adds support to allow user to configure the network acquisition order between LTE CAT M1, CAT NB1, and GSM to optimize scanning times. Currently, the user cannot set the preference of CAT M1 and NB1 networks separately.	AT
QTI9X07-1223	[9x06] Restore +CNUM, $QCPBMPREF AT commands	Re-enables AT+CNUM ad $QCPBMPREF AT commands	AT
QTI9X07-1274	[WP7702][AT&T][LTE-FLD-2-1502] - LTE Normal MM Detach From Idle Mode	Fixes an issue where AT+COPS=0 will return “SIM ERROR” after executing AT+COPS=2	AT
QTI9X07-1161	Incorrect RAT reported in AT+COPS on Cat-M1	Corrects the RAT displayed in AT+COPS output on LTE CAT-M1 network	AT
QMI			

ID	Title	Description	Impacted Domain
QTI9X07-1264	QMI_NAS_GET_TECHNOLOGY_PREFERENCE disabled in 9x06 build	Re-enables the following QMI commands to allow host to set RAT preference on the device: - QMI_NAS_GET_TECHNOLOGY_PREFERENCE - QMI_NAS_SET_TECHNOLOGY_PREFERENCE	QMI/NAS
QTI9X07-1123	[Unknown SIM State] on WP7702	Re-enables the QMI CAT service to handle Legato SIM management APIs	QMI/CAT
RF			
QTI9X07-1328	Update GSM backoff default NVs	Introduces GSM multi slot backoff for power consumption savings	RF/NV
QTI9X07-1329	GNSS Desense in LTE CATM Traffic	Adds GNSS Blanking to LTE Bands to reduce GNSS desense	RF/Driver
QTI9X07-1159	Default NV update, GSM Timing, LIMIT_VS_TEMP	Updates the default static NVs for GSM Timing and Limit vs. Temperature data	RF/NV
QTI9X07-1049	Crash during RF Cal/ Verification on Non-Signalling calls	Fixes a crash seen during LTE CATM RFCAL verification in non-signaling mode	RF
QTI9X07-1135	Make GSM PA optional for WP7700 HW	Removes GSM PA scanning on RFFE bus for WP7700 HW to fix the issue where device will be stuck in Factory Test Mode	RF/Driver
QTI9X07-1271	Remove B39 from default band mask	Qualcomm has removed LTE TDD support on this chipset, so B39 support has been removed	RF/Driver

7.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
Various	AirVantage Connectivity	AirVantage is not supported	AirVantage
Various	FOTA	FOTA is not supported	FOTA
Various	Partial AT support	This release does not support all planned AT commands.	AT
Various	PSM	PSM is supported in this release. Current consumption is still yet to be optimized.	LPWA
QTI9X07-1210	Long scanning time on LTE CAT NB1 networks	By Qualcomm's design, the UE will take an extended period of time (up to 20 minutes, may be even longer depending on network conditions) to scan for cells on the LTE NB1 network during the first initial attach. This will take even longer if there is no NB1 service available. In the case when there's no NB1 network, the user can use AT!SELACQ to set LTE-NB1 RAT to a lower priority so the NB1 cells are not scanned before CAT M1 and GSM.	Network Access

ID	Title	Description	Impacted Domain
Bugs			
LE-7418	avcControl will block other data connections from using that APN	If the Legato AirVantage connector has a connection established, any other data connect to that APN is blocked. Conversely if a data connection is already established on that APN, the Legato AirVantage connector cannot connect.	Networking
LXSWIREF-273	Re-building kernel fails with Yocto 2.2 due to "metadata not deterministic" error	Every kernel build from the source distribution must be from clean or before each kernel re-build, execute the following: touch meta-swi/meta-swimdm9x28/ recipeskernel/ linux/linux-quic_git.bb	Build
LXSWIREF-248	UBIFS: User partition corruption after number of power cuts	If power is cut suddenly, it is possible that data will be wiped out from UBIFS partition mounted @ /mnt/flash mount point.	Linux Filesystem
QTI9X07-583	AT!SELRAT support for LTE CAT-M1 and CAT-NB1	AT!SELRAT currently cannot be used for RAT selection between LTE CAT-M1 and CAT-NB1 networks. It can only be used to select between GSM and LTE. Please use AT!SELACQ for setting RAT preference in the meantime.	Network Access
QTI9X07-1322	WP modules boot into low power mode	If W_DISABLE feature is enabled (via AT!PCOFFEN), some hardware platforms (depending on line capacitance) may observe that this condition is incorrectly triggered on power up and the module stays in low power mode (radio off). To confirm if this is the case use at!pcinfo? to check if W_DISABLE is the condition holding the module in low power mode.	RF
QTI9X07-599	Sierra SIM Connectivity	AT+COPS=2 shall NOT be used with this module to trigger any network steering	Connectivity
QTI9X07-780	Current consumption – HSIC Enabled	The module will not enter sleep mode if HSIC is enabled, but host platform does not have ethernet controller connected. Minimum power consumption while not in sleep mode is ~40mA.	Power
QTI9X07-1224 QTI9X07-1225	Current consumption – UART1 mapped to AT	If UART1 is mapped to AT commands, the module consumes an average of ~10mA in idle and lpm modes.	Power
QTI9X07-1001	Current consumption in PSM mode	Current consumption is higher than expected in PSM mode because I2C bus is enabled	Power/PSM
QTI9X07-959 QTI9X07-1121	Deficiencies in GPIO control from linux	While fixed in modem (see above), certified images do not benefit. There is, however, a workaround for older modem versions. 1) Configure desired GPIOs in AT+WIOCFG with function=0 e.g. AT+WIOCFG=13,0 2) Remove the following lines from kernel/drivers/gpio/gpiolib-sysfs.c	GPIO
QTI9X07-1128	GPSREFLOC customization support	Customization to report reference location in NMEA stream is not supported	GNSS

ID	Title	Description	Impacted Domain
LXQMIDRV-216	Linux SDK	Tethered Linux host may freeze during suspend/resume stress testing	Drivers

8 SWI9X06Y Release 6

Release 6 is provided for initial customer samples and is intended to be the initial firmware candidate for carrier and industrial certification testing. It is important to note that:

- Legato Application Framework is not fully supported
- No formal GCF, PTCRB or Carrier certification testing has been performed.
- Linux Firmware source code will not be published to Source
- AirVantage and FOTA are not supported

8.1 Software Release Description

8.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X06Y_02.09.02.00 d875da jenkins 2017/10/22 22:48:21
Linux Firmware	SWI9X06Y_02.09.02.00 2017-10-22_23:00:42
MCU Firmware	002.004
Legato Application Framework	17.08.1_c073924cf80081f79fd125fae2f0d6cf
Binary Size	54MB (compressed binaries)
IMEI SV	1
Qualcomm Stack Version	MDM9206.LE.2.0-00103-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Sun Oct 22 23:14:48 UTC 2017
Supported H/W	WP7702 DV1.1+

8.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4762	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.29N2.44	
Linux SDK	SLQS04.00.10.1	

8.1.3 Released Files and Download Processes

Release 6 is provided as programmed hardware samples only. Software update packages are available upon request, and is not distributed on Source.

Download Option	Files
Windows	WP77xx_Release6_GENERIC_test.exe
SPK files	WP77xx_Release6_GENERIC_test.spk

8.2 Software Changes Description

The WP77xx Release 6, based on modem version SWI9X06Y_02.09.02.00, is functionally equivalent to WP76xx Release 6 [5], with notable differences and features below.

ID	Title	Description	Impacted Domain
Legato			
Various	Legato 17.08.1	Legato 17.08.1 http://legato.io/legato-docs/latest/releaseNotes17081.html	Legato AF
Modem			
Core			
QTI9X07-991	Add Qualcomm MDM9206.LE.2.0-00103-STD.PROD-1	Add Qualcomm MDM9206.LE.2.0-00103-STD.PROD-1	Qualcomm baseline (Release 6)
HW variants			
Various	WP77xx support added	BSP and RF driver support was added for WP7702 and WP7700.	RF/BSP

8.3 Feature Notes

8.3.1 Multi RMNET vs. QMAP

In previous generation devices, multiple RmNet interfaces were supported through dedicated BAM channel interfaces, configured via USB composition. This approach imposed a limit on the number of interfaces that could be simultaneously supported. To remove that limitation, QMAP was introduced to multiplex multiple virtual channels over a single interface. To make use of this feature, the number of interfaces must be set (AT!NETNUM) and new host drivers are required (S2.29N2.47 or later). Note, however, that in moving to multiple RmNet with QMAP only a single dedicated channel is supported. If only a single RmNet is required, operation in non QMAP mode (AT!NETNUM=0) is still supported with older drivers (S2.29N2.44).
See SLQS04.00.10.1 release package for more details. QMAP is not supported by the Windows driver, and only one RmNet interface will be exposed regardless of AT!NETNUM setting.

8.3.2 Voice/VoLTE

This commercial release does not support Audio, Voice or VoLTE.

8.4 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
Various	AirVantage Connectivity	AirVantage is not supported	AirVantage
Various	FOTA	FOTA is not supported	FOTA
Various	Partial AT support	This release does not support all planned AT commands.	AT
Various	PSM	PSM is not supported in this Release.	LPWA
Various	eDRX	eDRX is supported on the protocol level, but current consumption needs to be optimized.	LPWA
N/A	Extended Coverage	Extended Coverage mode A on LTE CAT M1 is supported but not tested. Pending validation during industrial certification	LPWA
Various	Linux Boot time is not optimized	Various debug capabilities and debug modules are included in the Kernel and Rootfs, which increases the Sierra Linux system boot time. Modem communication interfaces initialize after the kernel is started, and a delay is observed between USB enumeration and functional communication on the USB interfaces such as the Network adapter, Modem port, etc. Delays of approximately 5 seconds are measured on typical power up, and up to 25 seconds when Linux is starting up for the first time on blank flash.	Linux / Boot
Bugs			
QTI9X07-608	Consecutive Data Connection on Linux	On a Linux host, user is currently only able to make one data connection after boot up. The device needs to be reset if the first call is disconnected from the host and a second data connection is required. This does not affect Windows users.	Connectivity
QTI9X07-583	RAT selection and acquisition order for LTE CAT-M1 and CAT-NB1	There is currently no AT command to select RAT preference between LTE CAT M1 and NB1. The device will by default search for CAT M1 network first, and then NB1.	Network Access
LXSWIREF-211	Legato ECM Interface	ECM MAC address on the host doesn't match the WP for linux kernel 4.4.x hosts (e.g. Ubuntu 14.04 / 16.04) Note: This will be fixed in the next release.	USB / ECM
QTI9X07-599	Sierra SIM Connectivity	AT+COPS=2 shall NOT be used with this module to trigger any network steering	Connectivity
QTI9X07-310	Data from the UE to the DHCP server failed	When customization DHCPRELAYENABLE is enabled, allow only UDP packets for port 67 with target IP address 0xFFFFFFFF to be filtered to the internal DHCP server on modem. All others are sent to the air interface. Note: This will be fixed in the next release.	DHCP

ID	Title	Description	Impacted Domain
QTI9X07-780	Current consumption	The module will not enter sleep mode if: 1) HSIC is enabled, but host platform does not have ethernet controller connected. 2) Module is booted without USB connected, unless USB is subsequently connected. Minimum power consumption while not in sleep mode is ~40mA. PSM is not yet supported, however ULPM is.	Power
QTI9X07-959	GPIO24 defaults to high after exporting	Upon initial export of GPIO24 from sysfs it is initially high rather than input, no pull	GPIO
QTI9X07-995	Unable to get MS-Assisted GPS fix in some cases.	Device rejecting server SSL certificate because the key length is smaller than the minimum value. Pending Qualcomm CR 978483	GNSS

9 Troubleshooting

Please contact customer service for support and debug

10 Certification Description

Release 6 is not intended for customer use as industrial or carrier certification candidates.

11 Restrictions and Additional Information

This section presents additional information or restrictions that must be taken into account.

ID	Description (What/When)	Impacted Domain
Various	Modules should not be used on live networks	Certification