



WP76xx

Customer Release Notes

Release 9

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Document History

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01.00	2016/12/20	Creation – Release 1	RK
01.01	2017/03/03	Release 2	RK
01.02	2017/03/15	Release 2 update to reflect limited DV3 sample availability	RK
01.03	2017/04/24	Release 2.1	RK
01.04	2017/05/23	Release 3	RK
01.05	2017/07/03	Release 4	RK
01.06	2017/07/10	Release 4.1 Updated Release 4 Known Issues	RK
01.07	2017/08/08	Release 5	RK
01.08	2017/10/27	Release 6	SA
01.09	2017/12/05	Release 6.1	SA/KW
01.10	2018/01/09	Release 6.2	SA/KW
01.11	2018/01/09	Release 7	SA
01.11.1	2018/01/31	Release 6.2.1 and 7.0.1	SA
01.10.1	2018/02/07	Release 6.2.1	SA
01.12.1	2018/02/27	Release 8	SA/KY
01.13	2018/05/02	Release 9	SA
01.14	2018/06/07	Remove extra PTS reference (section 3)	KY
01.14.1	2018/08/01	Add three known issues (section 5.3)	KY
01.14.2	2018/08/15	Add one more known issues (section 5.3)	KY

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1 Introduction

1.1 Scope of this document

This document describes WP76xx 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
CS	Circuit Switched
EDL	Emergency Download
FDT	Firmware Download Tool
GCF	Global Certification Forum
LK	Little Kernel Linux bootloader
MCU	Microcontroller Unit – An onboard MCU enables Ultra Low Power modes of operation
MR	Maintenance Release
PSM	Power Saving Mode
QMI	Qualcomm Messaging Interface
SDP	Software Download Protocol
ULPM	Ultra Low Power Mode

3 Related documentation

Ref. #	Doc. #	Document title
[1]	4119652	AirPrime WP76xx - Product Technical Specification
[2]	4118047	AirPrime WPx5xx/WP76xx - AT Command Reference
[3]	41110380	AirPrime WP Series – Preparing Your Devices For Deployment
[4]	41110866	AirPrime WPx5xx/WP76xx - Scalability Guide

4 Compatibility

Hardware compatibility

Product compatibility list
WP7601 - LTE Cat-4, LTE bands 4/13
WP7601-1 - LTE Cat-1, LTE bands 4/13
WP7603 - LTE Cat-4, LTE bands 2/4/5/12, WCDMA bands 2/4/5
WP7603-1 - LTE Cat-1, LTE bands 2/4/5/12, WCDMA bands 2/4/5
WP7607 - LTE Cat-4, LTE bands 1/3/7/8/20/28, WCDMA bands 1/8, GSM900/1800
WP7607-1 - LTE Cat-1, LTE bands 1/3/7/8/20/28, WCDMA bands 1/8, GSM900/1800
WP7608 - LTE Cat-4, LTE bands 1/3/5/8/40/41(partial) WCDMA bands 1/3/8, GSM900/1800
WP7608-1 - LTE Cat-1, LTE bands 1/3/5/8/40/41(partial) WCDMA bands 1/3/8, GSM900/1800
WP7609 - LTE Cat-4, LTE bands 1/3/5/7/8/28, WCDMA bands 1/3/5/8, GSM900/1800



5 SWI9X07Y Release 9

Release 9 has many new features, adding WP7607 GCF compliance, PDN data multiplexing, QMI support for some existing features, PSM current consumption enhancements as well as several bug fixes. No carrier MRs are planned on this release.

To re-iterate and clarify the note made for Release 7 and 8, this release is only GCF certified so changes in Modem Firmware are only available in the SWI9X07Y_02.16.02.00 Generic modem package. Carrier certified Modem Firmware versions (SWI9X07Y_02.10.xx.00) are compatible with the other Release 9 components (Legato/Linux Distro/MCU Firmware), but only benefit from changes outside the Modem Firmware component. Specifically, for the changes listed in [Section 5.2 Software Changes Description](#) only those identified under Legato Framework and Linux Distribution are applicable for carrier certified packages.

5.1 Software Release Description

5.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.16.02.00 000000 jenkins 2018/04/19 19:59:02
Linux Firmware	SWI9X07Y_02.16.02.00 2018-04-19_22:03:13
MCU Firmware	002.009
Legato Application Framework	18.03.0_b463e04cf08fb8d8f1ea5ee00d7894c0
Binary Size	58MB (compressed binaries)
IMEI SV	4
Qualcomm Stack Version	MDM9607.LE.2.0-00110.3.146307.1
Linux Kernel Version	3.18.44 (jenkins@jenkins) (gcc version 6.2.0 (GCC)) #2 PREEMPT Thu Apr 19 22:05:25 UTC 2018
Supported H/W	WP7601 DV5.2+, WP7603 DV5.2+, WP7607 DV2.1+, WP7608 DV1.1+, WP7609 DV2.1+

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	SLQS04.00.13

5.1.3 Released Files

File	Carrier	Modem Firmware	Config	Linux Distribution	Base Legato System	MCU Firmware	Comment
WP7601/WP7601-1 Approved							
WP76xx_Release-9_GENERIC.exe	GENERIC (GCF)	SWI9X07Y_02.16.02.00	002.032_000	SWI9X07Y_02.16.02.00	18.03.0	002.009	GCF Approved
WP76xx_Release-9_VERIZON.exe	VERIZON	SWI9X07Y_02.10.00.00	002.014_002	SWI9X07Y_02.16.02.00	18.03.0	002.009	Carrier Approved
WP7603/WP7603-1 Approved							
WP76xx_Release-9_PTCRB.exe	GENERIC (PTCRB)	SWI9X07Y_02.10.01.00	002.015_001	SWI9X07Y_02.16.02.00	18.03.0	002.009	PTCRB Approved

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WP76xx_Release-9_ATT.exe	ATT	SWI9X07Y_02.10.01.00	002.015_001	SWI9X07Y_02.16.02.00	18.03.0	002.009	Carrier Approved
WP7607 Approved (WP7607-1 Pending)							
WP76xx_Release-9_GENERIC.exe	GENERIC (GCF)	SWI9X07Y_02.16.02.00	002.032_000	SWI9X07Y_02.16.02.00	18.03.0	002.009	GCF Approved
WP7608/WP7608-1 Approved							
None							
WP7609 Approved							
None							
Test							
WP76xx_Release-9_ATT.exe	ATT	SWI9X07Y_02.16.02.00	002.032_000	SWI9X07Y_02.16.02.00	18.03.0	002.009	Test
WP76xx_Release-9_VERIZON.exe	VERIZON	SWI9X07Y_02.16.02.00	002.032_000	SWI9X07Y_02.16.02.00	18.03.0	002.009	Test
WP76xx_Release-9_TELSTRA.exe	TELSTRA	SWI9X07Y_02.16.02.00	002.032_000	SWI9X07Y_02.16.02.00	18.03.0	002.009	Test

Function	Files
Firmware components	9999999_9907152_SWI9X07Y_02.16.02.00_00_GENERIC_002.032_000.spk (GCF) 9999999_9907152_SWI9X07Y_02.10.01.00_00_GENERIC_002.015_001.spk (PTCRB) 9999999_9907256_SWI9X07Y_02.10.01.00_00_ATT_002.015_001.spk 9999999_9907255_SWI9X07Y_02.10.00.00_00_VERIZON_002.014_002.spk linux-SWI9X07Y_02.16.02.00.cwe legato-18.03.0.cwe mcufw_002.009_wp76_f1.cwe
From: https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-9/	

5.2 Software Changes Description

The following are changes in Release 9 since the last release, Release 8.

This is the first release with WP7607 GCF approval:
https://www.globalcertificationforum.org/pub_product/6983.html

ID	Title	Description	Impacted Domain
Legato Framework			
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
Linux Distribution			
QT19X07-1607 QT19X07-1651	Upgrade Linux Distro to LXSWI2.2-3.0, based on Yocto 2.2.2	Upgrade to head of yocto 2.2 (yocto 2.2.2+) for security fixes in: <ul style="list-style-type: none"> • curl • binutils • zlib • glibc 	Yocto baseline

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ID	Title	Description	Impacted Domain
QT19X07-780	HSIC enabled with no host controller consumes excessive current and CPU	Fixed an issue of an endless failure loop in the HSIC driver when enabled with no host controller present. This was causing excessive current consumption and reducing max data throughput in some cases.	Kernel HSIC driver
QT19X07-1406 QT19X07-1001	Optimize PSM power consumption	Current consumption in PSM mode is now ~7uA, the same as ULPM. Enhancements to the MCU firmware are included in this release to achieve this.	PSM
QT19X07-1411	Add support for USB Raw Data ACM interface	Allows re-purposing NMEA port as debug port per forum post: http://forum.legato.io/t/custom-legato-yocto-usb-serial-port/2218/5?u=alegato	USB
DAYTONA-8511 QT19X07-1602	UART1 does not wake up on received data	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. (Introduced in Release 7) The issue is now fixed.	UART
LXSWIREF-273	Re-building kernel fails with Yocto 2.2 due to "metadata not deterministic" error	This build failure has now been addressed. No additional operations are required for a successful build.	Build
QT19X07-1806	Conflicting BT feature flags in kernel	Flags in the kernel to enable Bluetooth were inadvertently set by default. These have now been reverted to disabled as Bluetooth is not included by default.	Kernel
QT19X07-1485 QT19X07-1446	Stop building 2K images	Images for NAND flash parts with 2K page have been unsupported since Release 6. Build support has now also been removed.	Build
QT19X07-1814	add Linux raw images to build artifacts	Add Linux raw/unsigned images to build artifacts so that the tag meta build artifact can be used to sign Linux images	Build
Modem Firmware			
Core			
QT19X07-1533 QT19X07-1719 QT19X07-1868 QT19X07-1890 QT19X07-1947	Multiple Qualcomm updates to: MDM9607.LE.2.0-00110-STD.PROD-3.146307.1	<u>Includes:</u> Various fixes for WP7607 GCF and SIM CR2149848 / QT19X07-781 - Support of AT+CRSM command with P1 parameter as 0 CR 2068590 / QT19X07-1868 - avoid USSD CS fall back during active call QT19X07-1550 – GNSS performance CR 2054204 – fix authentication failure for the O2 DE operator (VoLTE Supplementary Services) WP7607 is GCF certified on this baseline.	Primarily for WP7607 GCF
RF			

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ID	Title	Description	Impacted Domain
QT19X07-1403	SAR GPIO support	An enhancement to the SAR backoff mechanism added in Release 8, support for a GPIO to enable SAR has been added.	RF SAR backoff
QT19X07-1168	Incorrect default GSM SAR limit	For variants supporting GSM (WP7807/09) the correct default limit of 32 dBm is now set. It was 127 dBm.	RF SAR backoff
QT19X07-937	Jamming Detection for LTE	Jamming detection was added in Release 6, but only worked correctly for WCDMA. This extends support to LTE.	Jamming detection
QT19X07-1874	Add a QMI message to get the jamming event report activation status	Adds the GET function for existing QMI_SWI_M2M_JAMMING_SET_EVENT_REPORT_REQ_V01 for Legato / SDK access	Jamming detection
Protocol / certification			
Various	WP7607 GCF VoLTE	The WP7607 has received GCF certification with VoLTE. The GENERIC carrier PRI has all VoLTE configuration for certification, however VoLTE must be enabled at the SKU level to activate it for the carrier.	GCF VoLTE
QT19X07-509	Optimize operability with Sierra SIM	Resolved the issue that STK Location Status Envelope Event (Limited Service) was not reliably sent when UE was camped on LTE and then detached (e.g. AT+COPS=2).	Network connectivity
QT19X07-1665	WP7607 GCF - UE didn't send a SUPL POS INIT on con-022	Fix AT!GPSMTLRSETTINGS to configure the device response behavior.	SUPL
QT19X07-1721	AT!IMSTESTMODE does not work	AT!IMSTESTMODE is required to force IMS deregistration for some test cases. This feature was previously only available for Verizon carrier PRI, but has now been expanded to any IMS enabled configuration.	IMS
QT19X07-1751 QT19X07-1621	Update TS.25 list to March 05 2018	Default TS.25 list updated	GCF
Data connectivity			
LE-7418 QT19X07-1129 QT19X07-1130 QT19X07-1778 QT19X07-1766	avcControl will block other data connections from using that APN	<p>If the Legato AirVantage connector had a connection established, any other data connect to that APN is blocked. Conversely if a data connection was already established on that APN, the Legato AirVantage connector could not connect.</p> <p>This change allows data connections to be multiplexed between Legato and modem interfaces. The multiplex function is automatically activated as required without additional user intervention.</p>	Data connectivity

ID	Title	Description	Impacted Domain
QT19X07-1153	Add AT/QMI to configure MTU Size	Increase max MTU size to 2000, configurable via AT!SCUMMTU and QMI_WDS_SWI_SET_MTU Configured setting may be queried via AT!SCUMMTU? and QMI_WDS_SWI_GET_MTU and takes effect on reset	Data connectivity
QT19X07-1445	Add QMI support for AT!NETNUM configuration	Existing AT!NETNUM setting is now configurable via QMI_SWI_DMS_SET_USB_NET_NUM_REQ_V01 and queried with QMI_SWI_DMS_GET_USB_NET_NUM_REQ_V01	Data connectivity
QT19X07-1558	Unable to start PDP activation for TC 27.22.4.27.3/1	PDP activation within BIP could only perform successfully in manual mode. Support for auto-mode is now added.	Data connectivity
UART			
QT19X07-1225	Modules cannot sleep if UART1 is mapped to AT service	Now UART1 mapped as AT service, the module can sleep with either of these conditions: <ul style="list-style-type: none"> • AT+KSLEEP=1 & UART1 unplugged • AT+KSLEEP=0 & UART1 plugged & (DTR off or AT&D1) 	Power
QT19X07-1146	Write command AT+IFC returns ERROR	XON/XOFF was displayed as an option in AT+IFC=?. This has now been removed as XON/XOFF is not supported.	UART
USIM			
QT19X07-1120	Cannot get EID from eUICC on WP76xx	Previously, legato cm sim tool would not display EID. This has been fixed. From linux console: root@swi-mdm9x28:~# cm sim info ... EID: xxxxxxx As per AT+CCID	eUICC
AT commands – please refer to AirPrime WPx5xx/WP76xx/WP77xx AT Command Reference or 3GPP TS27.007 for details on each command.			
QT19X07-1865	AT!CUSTOM="CSDDISABLE"	Add ability to enable / disable CSD	Sierra AT
QT19X07-669 QT19X07-688	AT+CIND	2 issues addressed with AT+CIND <ul style="list-style-type: none"> • "call" parameter of +CIND is always 1 • +CIND not support "message" parameter 	3GPP AT
QT19X07-781	AT+CRSM	Fixed the issue that on failure, the command did not respond with <sw1> and <sw2> parameters per spec	3GPP AT
QT19X07-1190	AT+POWERWAKE AT+POWERMODE	ULPM/ AT command support is ported from WPx5 with extensions for PSM	Sierra AT
QT19X07-1596	AT+CREG persistence	AT+CREG, AT+CEREG, AT+CGREG settings are now persistent across resets.	3GPP AT
QT19X07-1785 QT19X07-1786	AT!DAGSRXBURST	Support added.	Sierra AT
QT19X07-1388	AT+CPUC returns "SIM failure" when sending write command with valid values of <currency> and <ppu>	Although the values were being written, the return code was wrong. This has now been corrected.	3GPP AT

ID	Title	Description	Impacted Domain
QT19X07-1612	AT+KCELL response format	AT+KCELL returns Neighbour <GSM_CI> as 8hex digits instead of 4. This has been corrected.	Sierra AT
QT19X07-1761	AT!ICCID? response format	Fixed the missing '!' in "!ICCID" response.	Sierra AT
QT19X07-1845 QT19X07-1912	Add default persistence to list of NV items	Some recently added configuration options were not being persisted across images switches and firmware upgrades. These have now been updated. The following commands are affected: AT*PSSTKI AT*PSRDBS AT!CUSTOM="EXTUIMSWITCHEN" AT!CUSTOM="BOOTUARTDLOADEN" AT+CREG AT+CGREG AT+CEREG AT+CNMI AT+KSREP AT+KSLEEP AT!FWUPDATE AT!RXDEN	Config
GNSS			
QT19X07-494	Add EXT_GPS_LNA_EN configurability	Add AT!CUSTOM="EXTGPSLNAEN" 0 - disable (don't turn GPS LNA on) 1 - enable (turn on GPS LNA during active tracking session).	GNSS
QT19X07-1811	Add AT!GNSSAPPINFO	AT!GNSSAPPINFO added to set App ID and Password for Verizon SUPL	GNSS
QT19X07-1467	Add AT!GNSSDPOMODE	AT!GNSSDPOMODE is added to enable/disable GNSS DPO (low power operational) mode.	GNSS
QT19X07-1550 QT19X07-1634	Standalone GNSS fix fail intermittently	GNSS fix was observed to fail intermittently (~50%). This was traced back to a change in Release 6. It is now corrected.	GNSS
QT19X07-1562	Enable GAL and BDS by default	Previously Beidou and Galileo were only enabled outside the US. They are now unconditionally enabled by default to improve TTFF.	GNSS
QT19X07-1345	GPSXTRADATAENABLE and GPSXTRATIMEENABLE support option 2-Enable	WP76 was using 1- enable. This was incompatible with WPx5 and EM74 that use 2-enable. WP76 is now aligned with the other platforms.	GNSS
Audio			
QT19X07-1419	QMI command to set Audio Profile is extremely slow	A 5 second delay in some cases has been reduced to 0.5 sec.	Audio
Temperature			
QT19X07-1009	Device stops enumerating at high critical temperature	The high critical temperature has been reduced to 115C to go to LPM before system shutdown.	Thermal Protection
Low power modes			

ID	Title	Description	Impacted Domain
QT19X07-1225	Modules cannot sleep if UART1 is mapped to AT service	Now UART1 mapped as AT service, the module can sleep with either of these conditions: <ul style="list-style-type: none"> • AT+KSLEEP=1 & UART1 unplugged • AT+KSLEEP=0 & UART1 plugged & (DTR off or AT&D1) 	Power
QT19X07-1466	PSM - ULPM fallback mode	PSM and ULPM perform similar functions in putting the module to its lowest power state (essentially off) for an extended period of time to save the most power. PSM is more efficient as the network is aware of the module in this state and reduces signaling and wasted data traffic as a result. It is a challenge for an application to recognize when this opportunity is available, however, so to simplify the process, a request to enter ULPM per existing APIs will select PSM as the more efficient option when available.	Power
QT19X07-1778	Persist PSM related NVs	PSM configuration is now persisted across firmware upgrades and image switches.	Power
Security			
QT19X07-1557	SDP security for EDL	Reduced/removed functionality for several SDP commands to reduce vulnerability to certain attacks. Backward compatibility with FDT2 is maintained.	Boot
Stability / Performance			
QT19X07-1009	Modem stuck in Persistent LPM after disabling CFUNPERSISTEN	In rare cases it has been reported that after entering LPM with AT+CFUN=0 that the module was unable to return online with AT+CFUN=1 despite having no other reason to prevent it. This state is now removed.	LPM
QT19X07-1728	Long boot times trigger recovery mechanism	Sierra monitor provides a recovery mechanism for cases where the module does not boot. If, however, thermal mitigation (due to higher temperatures) or extra customizations extend the boot time beyond the timeout value the recovery mechanism was being triggered unnecessarily. The timeout value has now been extended to 60 seconds leaving adequate margin for any variation.	Boot
Diagnostics / Indicators			
QT19X07-1595 QT19X07-1872	WWAN LED displays "data active" pattern when in LTE attached state	It was observed that on LTE that the data active LED state was always on while attached. This has been corrected to only come on during an active data session.	LEDs
QT19X07-485	AT!GSTATUS command reports RSCP in WCDMA instead of RSSI	RSSI value is now properly displayed.	RF status
QT19X07-1051	AT!GSTATUS Cell ID decimal value incorrect on WCDMA	The AT!GSTATUS WCDMA cell ID provided in hex was correct, but the decimal equivalent was incorrect.	RF status

ID	Title	Description	Impacted Domain
QT19X07-1227	QMI_DMS_SWI_GET_RE SET_INFO_REQ_V01 returns wrong reset cause in case of warm reset	After warm reset, the reset query was incorrectly returning type 0 (unknown) and source 0 (unknown). It now returns 1 (warm) and source 1 (user requested). To test, execute: cm info	RF status
QT19X07-1735	Firmware version string in QXDM logs	Changed the default Qualcomm Version Directory to a platform version specific string. Having the Sierra version string in the log allows us to better debug a log by knowing exactly what firmware version was used.	QXDM Logs
QT19X07-1376	!NI notification	Fixed !NI notification not returned when module deregister/register to network	Network status
QT19X07-1378	!EONS notification	Fixed !EONS notification not returned when module deregister/register to network	Network status
QT19X07-1668	+WVMI notification	Fixed +WVMI notification not returned when the modem receives a voice mail	Voice status
MCU Firmware			
MCU-94	Provide temporary data storage for embedded host during ULPM/PSM	Temporary storage is used for storing real time data in MCU during ULPM/PSM state to avoid writing to flash.	RTC
MCU-93	Provide elapsed ULPM/PSM time on wakeup	By knowing the ULPM/PSM start and elapsed time, the current time can be determined.	RTC
MCU-90	Implement PSM/ULPM synchronization	This mode of PSM operation allows the module to assume the lowest power state possible, equivalent to ULPM (~7uA).	PSM/ULPM
MCU-95	Restore ADC3 as a wakeup source	Ability to use ADC3 as a wakeup source for ULPM/PSM was removed for pre- production hardware. It has now been restored so both ADC2 and 3 are available for this purpose.	PSM/ULPM

5.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Bugs			
QT19X07-1308	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
QT19X07-1293	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
QT19X07-959 QT19X07-1121	Deficiencies in GPIO control from linux	While fixed in modem (see Release 7), certified images (PTCRB, AT&T, Verizon: SW19X07Y_02.10.xx.00) do not benefit. A <i>new</i> 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
QT19X07-1007	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
QT19X07-1494	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
QT19X07-2197 QT19X07-2273	Crash when AT port URC on USB during selective suspend	A crash was observed intermittently when using AT over USB and the apps processor came out of sleep to generate a URC (e.g. +CNMI message on incoming SMS).	Kernel
QT19X07-2217	Module cannot resume sleep after ending a voice call if no codec on host platform	In the case where no codec is installed on the host platform, after a voice call has ended the module could not go back to sleep mode. This has been fixed in the linux kernel alsa driver.	Kernel

ID	Title	Description	Impacted Domain
QT19X07-1653 QT19X07-2156	Instability at low temperature	Intermittent instability issues have been observed at low temperature (below -20C), including loss of sync in sleep mode and UART not working on boot. Test results to date have been inconclusive. Investigation is ongoing.	Connectivity



6 SWI9X07Y Release 8

Release 8 is a minor update from Release 7.0.1 adding PSM current consumption enhancements and CS data support as well as several bug fixes. No carrier MR is planned on this release.

To re-iterate and clarify the note made for Release 7, this release is only GCF certified so changes in modem are only available in the SWI9X07Y_02.14.04.00 Generic modem package. Carrier certified modem versions (SWI9X07Y_02.10.xx.00) are compatible with the other Release 8 components (legato/linux/mcu), but only benefit from changes outside the modem. Specifically, for the changes listed in [Section 5.2 Software Changes Description](#) only those identified under Legato Framework and Linux Distribution are applicable for carrier certified packages.

6.1 Software Release Description

6.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.14.04.00 000000 jenkins 2018/02/14 20:19:41
Linux Firmware	SWI9X07Y_02.14.04.00 2018-02-14_21:13:44
MCU Firmware	002.007
Legato Application Framework	18.01.0_607d14ac5f0edd90fada704659a46736
Binary Size	56MB (compressed binaries)
IMEI SV	4
Qualcomm Stack Version	MDM9607.LE.2.0-00095-STD.PROD-1
Linux Kernel Version	3.18.44 (jenkins@jenkins) (gcc version 6.2.0 (GCC)) #2 PREEMPT Wed Feb 14 21:24:42 UTC 2018
Supported H/W	WP7601 DV5.2+, WP7603 DV5.2+, WP7607 DV2.1+, WP7608 DV1.1+, WP7609 DV2.1+

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

Function	Files	carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Windows one click firmware upgrade tool	WP76xx_Release-8_GENERIC.exe	GENERIC (GCF)	SWI9X07Y_02.14.04.00	002.007	SWI9X07Y_02.14.04.00	18.01.0
	WP76xx_Release-8_PTCRB.exe	GENERIC (PTCRB)	SWI9X07Y_02.10.01.00	002.007	SWI9X07Y_02.14.04.00	18.01.0
	WP76xx_Release-8_ATT.exe	ATT	SWI9X07Y_02.10.01.00	002.007	SWI9X07Y_02.14.04.00	18.01.0
	WP76xx_Release-8_VERIZON.exe	VERIZON	SWI9X07Y_02.10.00.00	002.007	SWI9X07Y_02.14.04.00	18.01.0

From: <https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-8/>

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Function	Files
Firmware components	9999999_9907152_SWI9X07Y_02.14.04.00_00_GENERIC_002.025_000.spk (GCF) 9999999_9907152_SWI9X07Y_02.10.01.00_00_GENERIC_002.015_001.spk (PTCRB) 9999999_9907256_SWI9X07Y_02.10.01.00_00_ATT_002.015_001.spk 9999999_9907255_SWI9X07Y_02.10.00.00_00_VERIZON_002.014_002.spk linux-SWI9X07Y_02.14.04.00.cwe legato-18.01.0.cwe mcufw_002.007_wp76_f1.cwe
From: https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-8/	

6.2 Software Changes Description

The following are changes in Release 8 since the last release, Release 7.0.1.

ID	Title	Description	Impacted Domain
Legato Framework			
Various	Legato 18.01.0	Legato 18.01.0 http://legato.io/legato-docs/latest/releaseNotes18010.html Upgrade from 17.11.0 in Release 7 / 7.0.1	Legato AF
Various	AirVantage	Some stability improvements have been made to AirVantage connectivity. AirVantage FOTA is fully supported.	AirVantage
Linux Distribution			
QT19X07-1532 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. A solution was ported from an upstream solution: ubifs: Fix journal replay wrt. xattr nodes	Linux file system
QT19X07-1067 QT19X07-1068 QT19X07-771	PSM power optimization	In conjunction with updates in MCU 002.007, enhancements to swimcu kernel driver and SWIAPP reduce PSM power consumption from 106uA (in Release 7) to 24uA. The final target of 7uA is planned for Release 9.	Power saving
QT19X07-1380	swimcu: implement sysfs support for PSM	Integrate PSM and ULPM by aliasing time and enable configuration in PSM and boot_source swimcu_pm sysfs nodes	Power saving
QT19X07-1357	Device fails to enumerate after EFS recovery with MCU watchdog enabled	If a system reboot was initiated with MCU watchdog enabled it would not restart. The MCU watchdog is now disabled before the restart is initiated.	MCU watchdog
QT19X07-1455	ltc2942 driver gets stuck entering ULPM	Allows support for mangOH Red LTC2942 battery gauge chip. See https://github.com/mangOH/mangOH/tree/master/linux_kernel_modules/ltc294x	MangOH Red

ID	Title	Description	Impacted Domain
QTI9X07-1468	Date not updated on Linux	A small timing change between linux and modem QMI service caused time service sync to fail on startup. The timing window is widened to ensure successful sync.	System Time
Modem Firmware			
Core			
QTI9X07-1408	Add Qualcomm MDM9607.LE.2.0-00095-STD.PROD-1	Includes: CR 2141793: [GNSS] Horizontal values are not changing under good signal conditions CR 826787: TX Power backoff and DL throttling cannot work simultaneously for thermal mitigation CR 2123868: (QTI9X07-1040) CS data support	GNSS, Thermal mitigation, CS data
RF			
QTI9X07-1322	WP760x modules boot into low power mode	If W_DISABLE feature is enabled (via AT!PCOFFEN), some hardware platforms (depending on line capacitance) were observe to boot in low power mode (radio off). This is now fixed in SWI9X07Y_02.14.02.00. A patch is available for carrier certified images if required.	RF
QTI9X07-1520 QTI9X07-1537	Add dual GSM band support for WP7609	Dual GSM bands (900MHz and 1800MHz) support added for WP7609 (same as WP7607)	RF
QTI9X07-1399 QTI9X07-1510	WP7607/7609 RF optimizations	Optimize the RF performance for WCDMA phase discontinuity, some update the 2G and optimize the LTE B7 current consumption	RF
QTI9X07-1415 QTI9X07-1489	WP7608 RF optimizations	improve RF performance and optimization	RF
QTI9X07-673	Implement SAR backoff mechanism	To support SAR backoff, the following AT Commands are added: AT!SARBACKOFF AT!MAXPWR AT!SARSTATE AT!SARSTATEDFLT The following QMI commands are added: QMI_SWI_SAR_GET_BACKOFF_VALUE QMI_SWI_SAR_SET_BACKOFF_VALUE QMI_SWI_SAR_GET_DEFAULT_STATE QMI_SWI_SAR_SET_DEFAULT_STATE	SAR backoff
UART			
QTI9X07-1225	Modules cannot sleep if UART1 is mapped to AT service	The following cases are now handled: case 1: UART1 unplugged, AT+KSLEEP=1 case 2: UART1 plugged, AT+KSLEEP=0, DTR off See QTI9X07-1293 in Known Issues for UART1 plugged, AT+KSLEEP=1	Power
QTI9X07-1386	Add AT!CUSTOM option to enable FW download over UART on Boot	AT!CUSTOM="BOOTUARTDLOADEN",1 enables fallback to local download over UART if no USB enumeration.	Firmware update

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ID	Title	Description	Impacted Domain
QT19X07-1231	Add support for Xmodem local download feature over UART	Support firmware download over UART AT port using Xmodem protocol.	Firmware update
USIM			
QT19X07-1544	USIM Terminal profile cache update not applied	Terminal Profile sent to the SIM does not contain the Sierra modifications (e.g. disabling voice-related TPs). This is corrected.	GSTK
AT commands – please refer to AirPrime WPx5xx/WP76xx/WP77xx AT Command Reference for details on each command.			
QT19X07-629 QT19X07-1417	ATS0, ATV not persistent	The values set with ATS0=x and ATVx are now saved with AT&W and restored on reset.	AT
QT19X07-1385	AT+IPR command does not work without entering SIM PIN	+IPR command returns ERROR when PIN restricted.	AT
QT19X07-1404	MS does not respond with correct CCLK values	GCF TC 27.22.4.15.1/4 - "PROVIDE LOCAL INFORMATION, Date, Time, Time Zone" fails to return user time.	AT
QT19X07-1461	AT+CGDCONT cannot persistently clear APN across image switch	APN cannot be cleared across image switch	NV
QT19X07-933	+KSREP returns wrong URC in SIMLOCK state	+KSUP: 3 and +KSREP: 1,3 weren't returned for MEP lock.	AT
QT19X07-974	A crash observed repeatedly executing AT+CCID?	Issuing the commands AT+CCID? or AT+CPINR continuously and very fast causes a crash.	AT
QT19X07-1291	ATIADC temperature values wrong for negative temperatures	ATIADC? gives wrong negative temperature values.	DEVICE
QT19X07-690	Cannot set some baud rates which are listed by command AT+IPR=?	Error will return when selecting some baud rates value using AT+IPR	AT
QT19X07-671	!PCVOLTLIMITS - The low critical value is set to 0 with invalid decimal ASCII input	Wrong input which is not decimal can make value change for !PCVOLTLIMITS command.	AT
QT19X07-1391	ATX0 does not disable BUSY display	When call ends by USER BUSY status, module display BUSY regardless ATX value.	AT
QT19X07-1398	Missing <alpha> parameter in response of AT+CMGR command after setting AT+CPBW command	Name of phone address corresponding to phonebook was not displayed in text mode when reading delivery SMS.	SMS
Various	Whitespace corrections	Changes to whitespace (blank space, blank lines) have been made to align with documentation and/or other platforms: AT+CREG AT+CSCB AT+KRFMUTE AT!PCVOLT	AT
GNSS			

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ID	Title	Description	Impacted Domain
QT19X07-1496	Unable to persistently disable GNSS DPO	It is required that DPO (Dynamic Power Optimization) is disabled for DR Sync enabled, however the implementation re-enables DPO for DR Sync disabled, which is not necessarily desired. This has been corrected	GNSS
QT19X07-1128	AT!GPSREFLOC customization support	Customization to report reference location in NMEA stream is supported as per WPx5 and EM74/75.	GNSS
QT19X07-1037	No \$PQGSV display.	Beidou NMEA display added	GNSS
QT19X07-1024	AT!GPSLOC? Heading display 360.0 deg	Heading show 0 or 360 degrees for the same direction	GNSS
QT19X07-1096	AT!GPSNMEASENTENC E=? returns wrong response	AT!GPSNMEASENTENCE=? returns incorrect bitmask information	GNSS
Audio			
QT19X07-1427	No audio after loading Legato 17.11.0	When a full firmware package is loaded audio works, but when just the legato or linux is loaded on top of that, audio would not work. This was caused by a timing change between linux and modem initialization. The time window has been widened to ensure success.	Audio
QT19X07-1432	Audio config out of sync on Release 7 with carrier cert modem	A fix to !AVSETPROFILE range was made in Release 7, but as a consequence put the linux component (SWIAPP) out of sync with older (carrier certified) modem images. To resolve this, the fix to QT19X07-804 has been reverted. Although audio profiles 6-9 are again available, to ensure future compatibility it is recommended not to use them.	Carrier cert audio
Diagnostics			
QT19X07-1164	Mechanism to retrieve crash string on secure devices	Added Sahara commands to read device model, version, serial number and crash string. Support to extract this information will be provided in a future FDT release.	Diagnostics
MCU Firmware			
Core			
QT19X07-771 MCU-78	Improve RTC_ALARM hardware timer accuracy	A timer autocalibration method has been added at startup to compensate for per-device variations in MCU RTC to improve PSM timer accuracy.	Power saving
QT19X07-1067 MCU-89	Implement PSM/ULPM synchronization	To reduce PSM power consumption, the MCU now enters its lowest power state while in PSM mode.	Power saving

6.3 Known Issues

This section presents all known issues in this release.

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. 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
QT19X07-1308	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
QT19X07-599	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 from your Sierra support contact.	UART
QT19X07-780	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

ID	Title	Description	Impacted Domain
QT19X07-1293	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
QT19X07-1001	Current consumption - PSM mode	Current consumption is not optimized in PSM mode. Significant improvements are planned for the next release. See Software Changes Description above. ULPM mode is not affected.	Power
QT19X07-959 QT19X07-1121	Deficiencies in GPIO control from linux	<p>While fixed in modem (see Release 7), certified images do not benefit. There is, however, a workaround for older modem versions.</p> <ol style="list-style-type: none"> 1) Configure desired GPIOs in AT+WIOCFG with function=0 e.g. AT+WIOCFG=13,0 2) Apply patch to: kernel/drivers/gpio/gpiolib-sysfs.c Available from your Sierra support contact. 	GPIO



7 SWI9X07Y Release 7.0.1

Release 7.0.1 addresses an issue with the AT&T and GENERIC carrier PRI APN configuration. All other components are unchanged from Release 7. See also Release 6.2.1 for the equivalent change to Release 6.2.

To re-iterate and clarify the note made for Release 7, this release is only GCF certified so changes in modem are only available in the SWI9X07Y_02.13.02.00 Generic modem package. Carrier certified modem versions (SWI9X07Y_02.10.xx.00) are compatible with the other Release 7.0.1 components (legato/linux/mcu), but only benefit from changes outside the modem. Specifically, for the changes listed in [Section 6.2 Software Changes Description](#) only those identified under Legato Framework and Linux Distribution are applicable for carrier certified packages.

7.1.1 Released Files and Download Processes

Function	Files
Firmware components	9999999_9907152_SWI9X07Y_02.13.02.00_00_GENERIC_002.018_001.spk (GCF) 9999999_9907152_SWI9X07Y_02.10.01.00_00_GENERIC_002.015_001.spk (PTCRB) 9999999_9907256_SWI9X07Y_02.10.01.00_00_ATT_002.015_001.spk 9999999_9907255_SWI9X07Y_02.10.00.00_00_VERIZON_002.014_002.spk linux-SWI9X07Y_02.13.02.00.cwe legato-17.11.0.cwe mcufw_002.006_wp76_f1.cwe
From: https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-7,-d,-0,-d,-1/ Contact Sierra wireless technical support for directions on correcting any modules you may have in hand with incorrect APN settings	

7.2 Software Changes Description

The following change is made in Release 7.0.1 since Release 7.

ID	Title	Description	Impacted Domain
Configuration			
GENERIC (OEMPRI-5966) AT&T (OEMPRI-5950)	Remove VoLTE APNs from carrier PRI	<p>Although VoLTE support was disabled in the AT&T and Generic carrier PRIs for certification, the VoLTE APNs were retained in the released PRIs. APN1: nxtgenphone APN2: ims APN3: sos These have now been reverted to the data centric profile. APN1: "broadband" (AT&T) OR "" (Generic) APN2 & APN3: not set All new units shipped will have this set correctly. For units already shipped a one-click tool (windows) and .nvu file (linux) are available to make this update.</p> <p>Without the tool, the following AT command may update APN1: AT+CGDCONT=1,"IPV4V6","broadband" Or AT+CGDCONT=1,"IPV4V6",""," but APN2 and 3 cannot be cleared.</p> <p>Note that due to profile persistence, just updating the firmware to Release 7.0.1 by the usual method will not update the APNs from their previous values.</p>	Carrier PRI

7.3 Known Issues

In addition to the known issues already identified in Release 7 in the next section, the following issues have since been found in Release 7 / 7.0.1.

ID	Title	Description	Impacted Domain
Bugs			
QT19X07-1461	AT+CGDCONT cannot persistently clear APN across image switch	<p>As noted in the above description for updating APNs via AT command, persistence is not removed by setting a null APN, eg.:</p> <p>AT+CGDCONT=2 Should remove APN2 from the carrier profile, however, the previous setting will be restored from back up upon firmware update or image switch.</p>	Modem



ID	Title	Description	Impacted Domain
QT19X07-1427	No audio after loading Legato 17.11.0	Although audio works correctly when a full release package is loaded, subsequently loading just the legato or linux (or combination thereof) causes audio to stop working. Reloading the modem/PRI component or the complete release package is required to resolve the issue.	Audio
QT19X07-1286	GSM factory test	[WP7607] FTM AT command for GSM Tx & Rx do not work.	FTM

8 SWI9X07Y Release 7

Release 7 is primarily for AT command enhancements and operation over UART. An upgrade to yocto 2.2 and some other minor feature enhancements are also included. This release is only GCF certified so changes in modem are only available in the Generic package. Carrier certified modem versions are compatible with other Release 7 components, so they may benefit from changes outside the modem.

8.1 Software Release Description

8.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.13.02.00 000000 jenkins 2017/12/21 20:55:43
Linux Firmware	SWI9X07Y_02.13.02.00 2017-12-21_22:08:07
MCU Firmware	002.006
Legato Application Framework	17.11.0_31b9a1260bc1e45310ccf15491352a01
Binary Size	58MB (compressed binaries)
IMEI SV	4
Qualcomm Stack Version	MDM9607.LE.2.0-00085-STD.PROD-1
Linux Kernel Version	3.18.44 (jenkins@jenkins) (gcc version 6.2.0 (GCC)) #2 PREEMPT Thu Dec 21 22:18:24 UTC 2017
Supported H/W	WP7601 DV5.2+, WP7603 DV5.2+, WP7607 DV2.1+, WP7608 DV1.1+, WP7609 DV2.1+

8.1.2 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	SLQS04.00.12	

8.1.3 Released Files and Download Processes

Function	Files	carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Windows one click firmware upgrade tool	WP76xx_Release-7_GENERIC.exe	GENERIC (GCF)	SWI9X07Y_02.13.02.00	002.006	SWI9X07Y_02.13.02.00	17.11.0
	WP76xx_Release-7_PTCRB.exe	GENERIC (PTCRB)	SWI9X07Y_02.10.01.00	002.006	SWI9X07Y_02.13.02.00	17.11.0
	WP76xx_Release-7_ATT.exe	ATT	SWI9X07Y_02.10.01.00	002.006	SWI9X07Y_02.13.02.00	17.11.0
	WP76xx_Release-7_VERIZON.exe	VERIZON	SWI9X07Y_02.10.00.00	002.006	SWI9X07Y_02.13.02.00	17.11.0

From: <https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-7/>

Function	Files
Firmware components	9999999_9907152_SWI9X07Y_02.13.02.00_00_GENERIC_002.018_000.spk 9999999_9907152_SWI9X07Y_02.10.01.00_00_GENERIC_002.015_000.spk 9999999_9907256_SWI9X07Y_02.10.01.00_00_ATT_002.015_001.spk 9999999_9907255_SWI9X07Y_02.10.00.00_00_VERIZON_002.014_002.spk linux-SWI9X07Y_02.13.02.00.cwe legato-17.11.0.cwe mcufw_002.006_wp76_f1.cwe

From: <https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-7-components/>

8.2 Software Changes Description

The following are changes in Release 7 since the last point release, Release 6.2.

ID	Title	Description	Impacted Domain
Legato Framework			
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 Upgrade from 17.09 in Release 6.1 / 6.2	Legato AF
Various	AirVantage	Some improvements have been made to AirVantage connectivity. AirVantage FOTA is fully supported.	AirVantage
Linux Distribution			
QT19X07-1122	Upgrade to yocto 2.2	Upgrade from yocto 1.7 for better security updates going forward. The kernel remains unchanged at 3.18. While this change should be transparent to most users, it does break backward compatibility with older prebuilt legato versions. An upgrade to Legato 17.11.0 is required in tandem with this.	System

ID	Title	Description	Impacted Domain
QT19X07-1180	Update hostname	Previously, the linux hostname was locked to swi-mdm9x28 (inherited from parent project based on mdm9x28). The option is now available to change this at build time, although the default has not been changed on prebuilt images. To override the default, specify the TARGET_HOSTNAME environment variable at build time.	System
QT19X07-198	Thermal management support	Thermal management is a feature of the MDM9x07 offering configurable mitigation levels at which uplink throughput and max Tx power may be throttled to reduce heat generation under extreme data use cases.	Thermal mitigation
Modem Firmware			
Core			
QT19X07-1198	Add Qualcomm MDM9607.LE.2.0-00085-STD.PROD-1	Includes: CR 978483 (QT19X07-995): Unable to get MS-Assisted GPS fix for SSL cert < 256 bytes	System
QT19X07-1193	Increment IMEI SV	IMEI SVN was incremented to 4 for this release	System
RF			
QT19X07-982	WP7601 LTE B13 max power accuracy improvement	Minor RF optimization. Not cert impacting.	LTE
QT19X07-981	WP7603 UMTS B2 phase discontinuity improvement	Minor RF optimization. Not cert impacting.	UMTS
QT19X07-1183	WP7607_09 improve temp compensation	Temperature optimization.	Thermal protection
QT19X07-1101	[WP7607] Modules report that GSM A5 ciphering not supported	Add WP7607/08 to internal GSM support list.	GSM
UART			
QT19X07-330	8-wire UART	With UART1 mapped to AT command console, full 8-wire UART support is now available. AT!MAPUART=1,1	UART1
QT19X07-1103	Add support for local download over UART	Added firmware download over UART with firehose protocol.	Firmware download
QT19X07-668 QT19X07-692	Dialup networking over UART.	Data calls using ATD*99***1# are now supported on UART1.	DUN
QT19X07-722 QT19X07-1104	Baud rate not persistent, fixed at 9600	UART1 baud rate now configurable, persistent between 9600 - 921600	UART
QT19X07-1226	AT!MAPUART, set UART1 default value to 0	As noted in the known issues below, an extra 10mA current draw is observed when UART1 is mapped to AT port so the default is to not allocate UART1.	UART
AT commands – please refer to AirPrime WPx5xx/WP76xx/ WP77xx AT Command Reference for details on each command.			
QT19X07-450	Support AT+KSLEEP command	HL equivalent command to control sleep with DTR is added. See details in WP AT Command Reference.	UART

ID	Title	Description	Impacted Domain
QT19X07-453	Support AT*PSRDBS command	AT*PSRDBS is used to select the frequency band of the modem. Equivalent to AT!DASBAND.	RF
QT19X07-564	AT commands for SIM Tool Kit	Host commands: o AT!STKC o AT!STKGC o AT!STKCR o AT!STKPD o AT!STKMS • Host notifications: o !STKC o !STKN	SIM
QT19X07-456	Add support for Xmodem local download feature over USB	AT+WFWUPD command added to support xmodem firmware download compatible with HL AT+WSD	Firmware download
QT19X07-176	Add !UIMREGSTATE and !UIMSTATUS Notifications	Notifications enabled with AT+WUSLMSK.	SIM
QT19X07-1216	Update AT!RXDEN=0 to set ml1_num_rx_ant for single antenna deployments	Update the existing AT!RXDEN command to disable the Rx1 antenna (if customers are deploying a single-antenna product) on LTE. This will affect Cat-1 UE products.	RF
QT19X07-1094	no URC is sent from the module after a module reboot, until an AT command is executed	Flow control was blocking URC output. Flow control is now re-initialized on boot up.	AT URC
QT19X07-1042	[WP7601 Verizon] SMS +CMTI indication missing storage area field	Indication of receipt of SMS now displays "ME" or "TE" storage indication	SMS
QT19X07-1207	AT+KSREP, URC does not display on USB and UART port	Fixed AT+KREP URC.	AT URC
QT19X07-677	Module crashes when executing !DASTXON on unsupported bands	Check for unsupported bands added.	Factory
QT19X07-665	+CGATT reports searching for a new operator after manual detach	Changed to "not searching" status after manual detach from the network.	3GPP
QT19X07-693	+CNMI not saved after a reset	Added persistence.	3GPP
QT19X07-694	AT+CSQ can not work without SIM card	Added support without SIM installed.	3GPP
QT19X07-762	*PSSTKI failed with Mode 0 and 1	Modes 2 and 3 supported. Add support for 0 and 1.	SIM
QT19X07-763	*PSSTKI returns OK instead of +CME ERROR: 10 when executing without SIM card	Fixed error return code.	SIM
QT19X07-906	Extra line spacing between ring indicator	Extra space removed on AT console between RING notification on incoming call.	Voice
QT19X07-944	+KCELL returns a blank space in LTE cell list	Remove an extra space in output string.	Network

ID	Title	Description	Impacted Domain
QT19X07-1109	Remove PA_THERM2 from AT!PCTEMP and AT!PATEMP outputs	An entry for PA_THERM2 was included in the AT interface, but that thermistor does not exist on this platform so it was removed. The value was not being used in any protection algorithms. This is only a cosmetic change.	Thermal protection
QMI commands			
QT19X07-490	QMI_NAS_GET_SERVING_SYSTEM_MSG is responded with corrupt network descriptor	Fix corrupted pname in serving system response	Network
QT19X07-529	Relay QMI_SWI_M2M_AVMS_* commands to Legato	Modem support for Legato based AirVantage implementation. Legato portion to follow in a future release.	AirVantage
QT19X07-337	Notification of EFS recovery	Added QMI message and indications for EFS recovery: QMI_DMS_SWI_GET_FS_RECOVERY_INFO_REQ / RESP	Recovery
GPIO			
QT19X07-805	Add support for GPIO 28-31	When not allocated for ANTSEL feature, GPIO 28-31 may be used for general purpose from modem (AT / QMI), linux (sysfs), or Legato gpio service.	GPIO
QT19X07-959 QT19X07-1121	Deficiencies in GPIO control from linux	Issues were found with several GPIOs when exported in sysfs. Initial values were incorrect (GPIO24) or could not be controlled as output (GPIO8, 13,33). GPIOs noted were observed to have problems, but there are likely others impacted.	GPIO
Audio			
QT19X07-919	Missing DTMF tones after start/stop WWAN play in last voice call	Restored ability to pass DTMF tones in call after WWAN play is used.	Voice
QT19X07-804	!AVSETPROFILE parameter range issues	!AVSETPROFILE – supports out of profile range (6-9) Fix reverted in Release 8 with QT19X07-1432 to maintain sync with carrier cert modem images.	Audio
MCU Firmware			
Core			
QT19X07-1133 / MCU-91	Extra reboot required when loading MCUFW from blank	Issues were found when loading a firmware package requiring a MCU update causing the MDM and MCU to be out of sync after the update.	Firmware update

8.3 Known Issues

This section presents all known issues in this release.

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
QT19X07-1322	WP760x 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
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 file system
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-swi-mdm9x28/recipes-kernel/linux/linux-quic_git.bb	Build
QT19X07-1308	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
QT19X07-599	Sierra SIM Connectivity	AT+COPS=2 shall NOT be used with this module to trigger any network steering	Connectivity
QT19X07-780	Current consumption – HSIC enabled	The module will not enter sleep mode if HSIC is enabled, and host platform does not have ethernet controller connected. Minimum power consumption while not in sleep mode is ~40mA.	Power
QT19X07-1224 QT19X07-1225	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
QT19X07-1001	Current consumption - PSM mode	Current consumption is not optimized in PSM mode. Significant improvements are planned for the next release. ULPM mode is not affected.	Power

ID	Title	Description	Impacted Domain
QT19X07-959 QT19X07-1121	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. 3) Configure desired GPIOs in AT+WIOCFG with function=0 e.g. AT+WIOCFG=13,0 4) Apply patch to: kernel/drivers/gpio/gpiolib-sysfs.c Available from your Sierra support contact.	GPIO
QT19X07-1128	GPSREFLOC customization support	Customization to report reference location in NMEA stream is not supported	GNSS
QT19X07-1040	CS Data	Circuit-switched data calls are not supported	Data
LXQMIDRV-216	Linux SDK	Tethered Linux host may freeze during suspend/resume stress testing	Drivers



9 SWI9X07Y Release 6.2.1

Release 6.2.1 addresses an issue with the AT&T and GENERIC carrier PRI APN configuration. All other components are unchanged from Release 6.2. Since there are no firmware changes, AT&T and PTCRB certification remains valid. See also Release 7.0.1 for the equivalent change to Release 7.

9.1.1 Release identification

See Release 6.2. No changes to firmware versions.

9.1.2 Software Tools Versions

See Release 6.2. No changes to tools or drivers.

9.1.3 Released Files and Download Processes

Function	Files	carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Windows one click firmware upgrade tool	WP76xx_Release-6.2.1_GENERIC.exe	GENERIC (GCF, PTCRB)	SWI9X07Y_02.10.01.00	002.005	SWI9X07Y_02.11.01.00	17.09.0
	WP76xx_Release-6.2.1_ATT.exe	ATT	SWI9X07Y_02.10.01.00	002.005	SWI9X07Y_02.11.01.00	17.09.0
	WP76xx_Release-6.2.1_VERIZON.exe	VERIZON	SWI9X07Y_02.10.00.00	002.005	SWI9X07Y_02.11.01.00	17.09.0

Contact Sierra wireless technical support for access to this release.

Function	Files
Firmware components	9999999_9907152_SWI9X07Y_02.10.01.00_00_GENERIC_002.015_001.spk 9999999_9907256_SWI9X07Y_02.10.01.00_00_ATT_002.015_001.spk 9999999_9907255_SWI9X07Y_02.10.00.00_00_VERIZON_002.014_002.spk linux-SWI9X07Y_02.11.01.00.cwe legato-17.09.0.cwe mcufw_002.005_wp76_f1.cwe

Contact Sierra wireless technical support for directions on correcting any modules you may have in hand with incorrect APN settings

9.2 Software Changes Description

The following change is made in Release 6.2.1 since Release 6.2.

ID	Title	Description	Impacted Domain
	Configuration		

ID	Title	Description	Impacted Domain
GENERIC (OEMPRI-5966) AT&T (OEMPRI-5950)	Remove VoLTE APNs from carrier PRI	<p>Although VoLTE support was disabled in the AT&T and Generic carrier PRIs for certification, the VoLTE APNs were retained in the released PRIs. APN1: nxtgenphone APN2: ims APN3: sos These have now been reverted to the data centric profile. APN1: "broadband" (AT&T) OR "" (Generic) APN2 & APN3: not set All new units shipped will have this set correctly. For units already shipped a one-click tool (windows) and .nvu file (linux) are available to make this update.</p> <p>Without the tool, the following AT command may update APN1: AT+CGDCONT=1, "IPV4V6", "broadband" Or AT+CGDCONT=1, "IPV4V6", "" but APN2 and 3 cannot be cleared.</p> <p>Note that due to profile persistence, just updating the firmware to Release 6.2.1 by the usual method will not update any APNs from their previous values.</p>	Carrier PRI

9.3 Known Issues

In addition to the known issues already identified in Release 6.2 in the next section, the following issues have since been found in all 6.x releases.

ID	Title	Description	Impacted Domain
Bugs			
Multiple	Linux security vulnerabilities	The linux distribution is currently based on yocto 1.7. KRACK (wifi vulnerability) and other vulnerabilities have been identified, many of which have been resolved in yocto 2.2 (available in Release 7).	Linux distribution
QT19X07-1461	AT+CGDCONT cannot persistently clear APN across image switch	<p>As noted in the above description for updating APNs via AT command, persistence is not removed by setting a null APN, eg.:</p> <p>AT+CGDCONT=2</p> <p>Should remove APN2 from the carrier profile, however, the previous setting will be restored from back up upon firmware update or image switch.</p>	Modem



ID	Title	Description	Impacted Domain
QT19X07-959 QT19X07-1121	Deficiencies in GPIO control from linux	Issues were found with several GPIOs when exported in sysfs. Initial values were incorrect (GPIO24) or could not be controlled as output (GPIO8, 13,33). GPIOs noted were observed to have problems, but there are likely others impacted. There is a workaround that may be applied: <ol style="list-style-type: none"> 1) Configure desired GPIOs in AT+WIOCFG with function=0 e.g. AT+WIOCFG=13,0 2) Apply patch to: kernel/drivers/gpio/gpiolib-sysfs.c Available from your Sierra support contact.	GPIO

10 SWI9X07Y Release 6.2

Release 6.2 is certified for GCF, PTCRB and AT&T on WP7603 and WP7603-1. There are no changes to legato or mcu components, and 1 isolated change in linux since Release 6.1. The version number of the generic image has advanced, but all other changes are isolated to AT&T OMADM requirements so will not impact generic functionality. A Verizon certification candidate package with the updated linux distribution is also included.

10.1 Software Release Description

10.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.10.01.00 000000 jenkins 2017/12/03 03:05:33
Linux Firmware	SWI9X07Y_02.11.01.00 2018-01-09_06:28:04
MCU Firmware	002.005
Legato Application Framework	17.09.0_064b6ea498d226380743dcf18e415f87
Binary Size	58MB (compressed binaries)
IMEI SV	3
Qualcomm Stack Version	MDM9607.LE.2.0-00080-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Tue Jan 9 06:57:31 UTC 2018
Supported H/W	WP7601 DV5.2+, WP7603 DV5.2+, WP7607 DV2.1+, WP7608 DV1.1+, WP7609 DV2.1+

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10.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4773
Windows SDK	None
Skylight	None
Linux Drivers	S2.30N2.48
Linux SDK	SLQS04.00.11

10.1.3 Released Files and Download Processes

Function	Files	carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Windows one click firmware upgrade tool	WP76xx_Release-6.2_GENERIC.exe	GENERIC (GCF, PTCRB)	SWI9X07Y_02.10.01.00	002.005	SWI9X07Y_02.11.01.00	17.09.0
	WP76xx_Release-6.2_ATT.exe	ATT	SWI9X07Y_02.10.01.00	002.005	SWI9X07Y_02.11.01.00	17.09.0
	WP76xx_Release-6.2_VERIZON.exe	VERIZON	SWI9X07Y_02.10.00.00	002.005	SWI9X07Y_02.11.01.00	17.09.0

Contact Sierra wireless technical support for access to this release.

Function	Files
Firmware components	9999999_9907152_SWI9X07Y_02.10.01.00_00_GENERIC_002.015_000.spk 9999999_9907256_SWI9X07Y_02.10.01.00_00_ATT_002.015_000.spk 9999999_9907255_SWI9X07Y_02.10.00.00_00_VERIZON_002.014_002.spk linux-SWI9X07Y_02.11.01.00.cwe legato-17.09.0.cwe mcufw_002.005_wp76_f1.cwe

Contact Sierra wireless technical support for access to this release.

10.2 Software Changes Description

The following are changes in Release 6.2 since the last point release, Release 6.1.

ID	Title	Description	Impacted Domain
Linux Distribution			
QT19X07-1323	Sierra Monitor utility restored	The Sierra Monitor utility for memory corruption recovery added in Release 2.1 was inadvertently disabled in an unrelated change in Release 6. It has been restored.	Recovery
Modem			
Core			
QT19X07-1192	Increment IMEI SV	IMEI SVN was incremented to 3 for this release	System
Certification			



ID	Title	Description	Impacted Domain
QT19X07-1113 QT19X07-1187	Alert AT&T server if Host Device Detail changes	AT&T CDR-DVM-1602 requires a notification to the OMADM server if Host details are modified	AT&T
QT19X07-1178	Handle WP7603-1 product on AT&T OMADM server	AT&T OMADM server is unable to handle a dash in the product name. We replace dash with underscore when reporting the product to the server	AT&T
QT19X07-1189	Add Time Zone in reports to OMADM server	Activation Date and Update Time were updated to include time zone information	AT&T
Configuration			
QT19X07-1178 OEMPRI-5492	Second OMADM account	Need to provision a second DM account as per AT&T CDR-DVM-3955 requirements	AT&T

10.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
Various	AirVantage Connectivity	This release is not fully AirVantage compliant. FOTA is supported. AirVantage support via QMI is not available.	AirVantage
Various	Linux SLQS APIs	Some SLQS APIs are not supported yet	SLQS/QMI
Bugs			
QT19X07-599	Sierra SIM Connectivity	AT+COPS=2 shall NOT be used with this module to trigger any network steering	Connectivity
QT19X07-780	Current consumption	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
QT19X07-1001	Current consumption in PSM mode	Current consumption is higher than expected in PSM mode because I2C bus is enabled	Power
QT19X07-959	GPIO24 defaults to high after exporting	Upon initial export of GPIO24 from sysfs it is initially high rather than input, no pull	GPIO
QT19X07-995	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
QT19X07-1128	GPSREFLOC customization support	Customization to report reference location in NMEA stream is not supported	GNSS
QT19X07-1103	Firmware update over UART	Firmware update over UART is not supported	System



ID	Title	Description	Impacted Domain
QT19X07-198	Thermal Mitigation	Thermal Mitigation is not supported. Basic thermal protection is available via AT!PCVOLT	System
QT19X07-330	8-wire UART	8-wire UART is not supported	System
QT19X07-1040	CS Data	Circuit-switched data calls are not supported	Data
QT19X07-564	AT commands for SIM Toolkit	AT commands for SIM Toolkit are not supported	AT
LXQMIDRV-216	Linux SDK	Tethered Linux host may freeze during suspend/resume stress testing	Drivers
LXQMISDK-1048	IPv4v6 SLQS data call in QMAP mode	Unable to establish an IPv4v6 connection in QMAP mode	Drivers

Note: WP76xx Release 7 will move from Yocto 1.7 (Dizzy) to Yocto 2.2 (Morty).

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11 SWI9X07Y Release 6.1

Release 6.1 is primarily intended as an incremental release to address blocking certification issues that remained in Release 6. This release obtained GCF approval for WP7601. This is a TA candidate for Verizon for WP7601, and PTCRB for WP7603. Both are currently pending final approval as of this writing. AT&T certification for WP7603 is still blocked on minor defects.

11.1 Software Release Description

11.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.10.00.00 000000 jenkins 2017/11/02 23:09:00
Linux Firmware	SWI9X07Y_02.11.00.00 2017-11-10_18:57:48
MCU Firmware	002.005
Legato Application Framework	17.09.0_064b6ea498d226380743dcf18e415f87
Binary Size	58MB (compressed binaries)
IMEI SV	1
Qualcomm Stack Version	MDM9607.LE.2.0-00080-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Fri Nov 10 19:22:02 UTC 2017
Supported H/W	WP7601 DV5.2+, WP7603 DV5.2+, WP7607 DV2.1+, WP7608 DV1.1+, WP7609 DV2.1+

11.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4773
Windows SDK	None
Skylight	None
Linux Drivers	S2.30N2.48
Linux SDK	SLQS04.00.11

11.1.3 Released Files and Download Processes

Download Option	Files
Windows EXE	WP76xx_Release6.1_GENERIC_test.exe WP76xx_Release6.1_VERIZON_test.exe
SPK files	WP76xx_Release6.1_GENERIC_test.spk WP76xx_Release6.1_VERIZON_test.spk
	https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-6-d-1/
Component files	9999999_9907152_SWI9X07Y_02.10.00.00_00_GENERIC_002.012_000.spk 9999999_9907255_SWI9X07Y_02.10.00.00_00_VERIZON_002.014_002.spk linux-SWI9X07Y_02.11.00.00_00.cwe legato-17.09.0.cwe mcufw_002.005_wp76_f1.cwe

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Download Option	Files
	https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-6,-d,-1-components/

11.2 Software Changes Description

The following are changes in Release 6.1, based on modem version SWI9X07Y_02.10.00.00 since the last major release, Release 6.0, based on modem version SWI9X07Y_02.09.02.00.

ID	Title	Description	Impacted Domain
Legato			
Various	Legato 17.09.0	Legato 17.09.0 http://legato.io/legato-docs/latest/releaseNotes17090.html Upgrade from 17.08.1 in Release 6.	Legato AF
Linux			
QT19X07-1064 QT19X07-914 QT19X07-913	PSM support	Custom PSM Daemon server configuration file for orderly shutdown support, PSM support in swimcu kernel driver	PSM
LXSWIREF-211 QT19X07-1054	USB ECM interface is not brought up as cdc_ether fails with error -22	Fixed an issue in ECM gadget where 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)	USB / ECM
QT19X07-1027	USB suspend failure on powerup	Fixed issue where the Linux processor would not enter power collapse until USB was removed/restored, if the USB was not connected on power up.	USB-SS
QT19X07-581	MCU watchdog support	A feature was added in swimcu to allow the MDM to configure the MCU to force a MDM reset if a specified period of time passes without a watchdog refresh from the MDM. This feature is accessible via sysfs interface.	Watchdog
QT19X07-1116	Unable to create a socket from a sandboxed application	Fixed "socket" creation failure when using a sandboxed application. Issue was observed with sample application "modemDemo".	Dev Studio
Modem			
Core			
QT19X07-1081	Add Qualcomm MDM9607.LE.2.0-00080-STD.PROD-1	Includes cert fixes: CR 2100387 - [36.521-3] RRM Failures CR 2081941 - [VZW][IMS REG & RETRY][TC 2.20] UE sends 2 extra 60 second SIP Register attempts in between Step 12 & Step 13	Qualcomm baseline
Certification			
QT19X07-939	GCF Certification	Addressed an issue with RRM Failures noted above in the Qualcomm stack update. All remaining GCF issues are now resolved in this release.	Industry cert

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ID	Title	Description	Impacted Domain
QT19X07-912 QT19X07-837	Verizon Certification	SIP re-registration was not compliant with some corner case scenarios. All remaining Verizon cert issues are now resolved in this release.	Carrier cert
QT19X07-939 QT19X07-1071	PTCRB Certification	Addressed an issue with RRM Failures noted above and an issue with msRadioAccessCap length causing failures on some test equipment. All remaining PTCRB issues are now resolved in this release.	Industry cert
Configuration			
QT19X07-1125 QT19X07-1041	VZW MotiveIOT - IMS nodes not persistent across Factory Reset	Add IMS and APN nodes to persistence list	Verizon
QT19X07-1082	AT&T Host ID NV not persistent	An OEM PRI change in Release 6 must be in place for this feature to perform correctly	AT&T
QT19X07-1070	Add PSM NVs	Add PRI support for PSM configuration, NAS timers, and Extended PSM Timer	PSM
OEMPRI-4955	[WP7601/03] Remove VoLTE from Generic PRI	VoLTE removed for GCF / PTCRB certification	GCF / PTCRB
AT Commands			
QT19X07-1017	Make CREG/CGREG/CEREG values persistent	This completes change QT19X07-627 from Release 6 to add persistence to these commands.	AT function
QT19X07-953	+KCELL Missing <PLMN> parameter in <GSM cell information> and <UMTS cell information>	Missing parameters added.	AT function
QT19X07-946	+KCELL return incorrect cell information about <nbLTEcells>	The cell # (parameter 1) was 1 less than the correct value.	AT function
QT19X07-888	AT!NETNUM? lock level	AT!NETNUM was changed to lock level 1 (no lock) for get/set in Release 6. The set operation has been restored to lock level 2.	AT function
QMI			
QT19X07-1002	Update QMI_QOS_SWI_READ_D ATA_STATISTICS	A minor improvement to set discarded packets and bytes counter to zero when data bearer is released	QMI
QT19X07-904	QMI_DMS_SWI_GET_C WE_PKGS_INFO does not send TLV 0x15 Carrier ID	Add support for TLV 0x15 Carrier ID	QMI
Network			
QT19X07-310	Data from the UE to the DHCP server failed	Customization DHCPRELAYENABLE is now properly supported.	DHCP
GNSS			
QT19X07-1086	AT!GPSPOID added	Restored legacy command to get/set GPS_UMTS_PDE_SERVER_PORT	GNSS
SMS			
QT19X07-911	Class 0 and 3 SMS message not saved to SIM as default	In a clean/fresh modem AT+CPMS will display default storage as "SM" but the default route of class none SMS is stored to "ME".	SMS



ID	Title	Description	Impacted Domain
Temperature protection			
QT19X07-1023	PA thermistor range inconsistent with WP76/77 temperature limits	Decreased the lower calibration limit from -40C to -50C to properly detect the -45C specified	Temperature
Stability			
QT19X07-745	Module resets continuously if !ANTSEL is set with customization BANDSELEN disabled.	Certain logic was bypassed with BANDSELEN disabled, so that with ANTSEL enabled, invalid values were used.	ANTSEL
QT19X07-570	Crash at SC task due to IPRXPACKETSTATS_TIMER: Exception recieved tid=73 inst=835cfa24	Fixed a crash that would occur randomly in ~0.3% of cases when resuming from selective suspend or warm boot.	Suspend/Resume
QT19X07-1079	Avoid reading EEPROM at bootup	A custom IoT card responding on I2C address 0x52 was interfering with a Qualcomm boot configuration feature preventing the module from booting. This read is now removed, which also reduces boot time by ~200msec.	Boot
MCU			
MCU-86	Reset support for production WP7601/03	A change in power control circuitry in WP7601/03 DV7.1 (pre-production) units required a change in logic in MCU to support proper module reset. This change is also compatible with older units.	Reset
MCU-87	PSM support	Adds support for Phase 1 PSM support that leaves the PMIC powered and I2C active.	PSM

11.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
QT19X07-1113 QT19X07-1189 QT19X07-1178	Certification	There are known AT&T carrier certification failures in this release. Issues are currently under analysis and may require firmware changes to address.	AT&T
Various	AirVantage Connectivity	This release is not fully AirVantage compliant. FOTA is supported. AirVantage support via QMI is not available.	AirVantage
Various	Linux SLQS APIs	Some SLQS APIs are not supported yet	SLQS/QMI
Bugs			
QT19X07-599	Sierra SIM Connectivity	AT+COPS=2 shall NOT be used with this module to trigger any network steering	Connectivity

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ID	Title	Description	Impacted Domain
QT19X07-780	Current consumption	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
QT19X07-1001	Current consumption in PSM mode	Current consumption is higher than expected in PSM mode because I2C bus is enabled	Power
QT19X07-959	GPIO24 defaults to high after exporting	Upon initial export of GPIO24 from sysfs it is initially high rather than input, no pull	GPIO
QT19X07-995	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
QT19X07-1128	GPSREFLOC customization support	Customization to report reference location in NMEA stream is not supported	GNSS
QT19X07-1103	Firmware update over UART	Firmware update over UART is not supported	System
QT19X07-198	Thermal Mitigation	Thermal Mitigation is not supported. Basic thermal protection is available via AT!PCVOLT	System
QT19X07-330	8-wire UART	8-wire UART is not supported	System
QT19X07-1040	CS Data	Circuit-switched data calls are not supported	Data
QT19X07-564	AT commands for SIM Toolkit	AT commands for SIM Toolkit are not supported	AT
LXQMIDRV-216	Linux SDK	Tethered Linux host may freeze during suspend/resume stress testing	Drivers
LXQMISDK-1048	IPv4v6 SLQS data call in QMAP mode	Unable to establish an IPv4v6 connection in QMAP mode	Drivers

Note: WP76xx Release 7 will move from Yocto 1.7 (Dizzy) to Yocto 2.2 (Morty).



12 SWI9X07Y Release 6

Release 6 is provided for customer samples and for ongoing carrier and industrial certification testing.

12.1 Software Release Description

12.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.09.02.00 000000 jenkins 2017/10/17 22:59:59
Linux Firmware	SWI9X07Y_02.09.02.00 2017-10-17_23:00:11
MCU Firmware	002.004
Legato Application Framework	17.08.1_79ea64be7e2ee55dfe7d561a41e1a08a
Binary Size	58MB (compressed binaries)
IMEI SV	1
Qualcomm Stack Version	MDM9607.LE.2.0-00075-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Tue Oct 17 23:17:35 UTC 2017
Supported H/W	WP7601 DV5.2+, WP7603 DV5.2+, WP7607 DV2.1+, WP7608 DV1.1+, WP7609 DV2.1+

12.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4762	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.29N2.44 (no QMAP) / S2.29N2.47 (QMAP)	
Linux SDK	SLQS04.00.10.1	

12.1.3 Released Files and Download Processes

Download Option	Files
Windows EXE	WP76xx_Release6_GENERIC_test.exe
SPK files	WP76xx_Release6_GENERIC_test.spk
	https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-6/
Component files	9999999_9907152_SWI9X07Y_02.09.02.00_00_GENERIC_002.009_000.spk linux-SWI9X07Y_02.09.02.00_00.cwe legato-17.08.1.cwe mcufw_002.004_wp76_f1.cwe
	https://source.sierrawireless.com/resources/airprime/software/wp76xx/wp76xx-firmware-release-6-components/

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12.2 Software Changes Description

The following are changes in Release 6, based on modem version SWI9X07Y_02.09.02.00 since the last major release, Release 5.0, based on modem version SWI9X07Y_02.06.02.00. Content of minor releases 5.1 and 5.2 of limited scope and distribution primarily for certification labs are included in this description.

ID	Title	Description	Impacted Domain
Legato			
Various	Legato 17.08.1	Legato 17.08.1 http://legato.io/legato-docs/latest/releaseNotes17081.html http://legato.io/legato-docs/latest/releaseNotes17072.html Upgrade from 17.06 in Release 5.	Legato AF
Various	AirVantage FOTA	Of particular note in the Legato updates, AirVantage FOTA now has basic functionality.	AirVantage
Linux			
QT19X07-787 LXSWIREF-38	ECM related fixups	Previously ECM was not reachable. Some work is still ongoing. See known deficiencies.	ECM
QT19X07-129	Enable UBI scrub for WP	Mitigate potential for file system corruption	UBI
QT19X07-438	Safe power down sequence for a legato application	Previously, the powerdown/ULPM sequence would issue an emergency shutdown to linux. This has been changed to an orderly shutdown to allow apps to clean up.	Shutdown
QT19X07-389	move COWORK and MODE regions to SSMEM	Modified the implementation to use the new Sierra shared memory architecture.	SSMEM
QT19X07-755	'bsinfo -l' returns incorrect information	e.g. for WP7603: root@swi-mdm9x28:~# /usr/bin/bsinfo -c Hw Config (08X): 00180D05 root@swi-mdm9x28:~# /usr/bin/bsinfo -f Feature Flag (016X): 0000000000000004 root@swi-mdm9x28:~# /usr/bin/bsinfo -t Hw Type (02X): 0D root@swi-mdm9x28:~# /usr/bin/bsinfo -r Hw Rev (02X): 18 root@swi-mdm9x28:~# /usr/bin/bsinfo -l WP7603 - 00	info
QT19X07-950	Cannot 'fastboot boot' kernel	A change in SDRAM location was causing fastboot to fail	fastboot
LXSWIREF-146	SMACK	Various SMACK fixes and improvements	SMACK
Modem			
Core			
QT19X07-735	Add Qualcomm MDM9607.LE.2.0-00065-STD.PROD-1	Add Qualcomm MDM9607.LE.2.0-00065-STD.PROD-1 Includes key fixes identified during carrier certification testing.	Qualcomm baseline (Release 5.1)

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ID	Title	Description	Impacted Domain
QT19X07-843	Add Qualcomm MDM9607.LE.2.0-00070-STD.PROD-1	Add Qualcomm MDM9607.LE.2.0-00070-STD.PROD-1 Includes key fixes identified during carrier certification testing.	Qualcomm baseline (Release 5.2)
QT19X07-642	Add Qualcomm MDM9607.LE.2.0-00075-STD.PROD-1	Add Qualcomm MDM9607.LE.2.0-00075-STD.PROD-1 Includes key fixes identified during carrier certification testing.	Qualcomm baseline (Release 6)
Certification			
QT19X07-759	WCDMA Rx level dips upon Tx activation	Broadly impacting issue affecting basic RF connectivity	PTCRB
QT19X07-718	Unable to provision EFS file ims_hybrid_enable causing failure to IMS register	Conflicting PRI processes were reverting IMS configuration causing IMS registration to fail on boot.	Verizon
QT19X07-790	[VZW] Support 3GPP2 SMS, AT SMS enhancements	Initial implementation of Verizon had 3GPP SMS format instead of 3GPP2. This has been corrected.	Verizon
Various	Verizon Certification	Most, but not all Verizon issues resolved in this release.	Verizon
Various	AT&T Certification	Most, but not all AVL/AT&T issues resolved in this release.	AT&T
HW variants			
Various	WP7607 support added		RF/BSP
Various	WP7608 support added		RF/BSP
Various	WP7609 support added		RF/BSP
AT Commands			
QT19X07-710	AT!CFUNPERSISTEN added	Added feature AT!CFUNPERSISTEN to enable persistence of AT+CFUN state	AT function
QT19X07-725 QT19X07-727 QT19X07-840	Unsolicited notifications added	AT!MUSLEN=1 must be set to enable notifications (was not required on WPx5). This is now enabled by default. Added: RING (AT+WUSLMSK=20000000, 0) +CSQ (AT+WUSLMSK= 00000004 ,0) +PACSP disabled if the ENS flag is not enabled (AT&T requirement)	AT function
QT19X07-454	Support AT+KMCLASS command	Set GPRS and EGPRS multislot class	AT function
QT19X07-795	Support AT!IDSDEBUGPRINT command	Used in Verizon testing to confirm Motive session connectivity	AT function
QT19X07-455	Support AT+KRFMUTE command	Adjust max tx power	AT function
QT19X07-449	Support AT+KCELL command	Display cell information	AT function
QT19X07-451	Support AT+KSIMSEL command	Control external SIM multiplexer	AT function
QT19X07-648	AT!MADC?X doesn't work < 0C	Due to mishandling of negative temperature values, ADC could not be read.	AT function

ID	Title	Description	Impacted Domain
QT19X07-733	Add AT!DA commands for FTM TX tests in LTE and WCDMA	Ported from EM74xx Command sequence for WCDMA FTM TX test: AT!DAFTMACT AT!DASBAND=<band_id> AT!DASCHAN=<channel> AT!DASTXON AT!DAWSTXPWR=1,<pwr> AT!DAWSTXPWR=0,<pwr> AT!DASTXOFF Command sequence for LTE FTM TX test: AT!DAFTMACT AT!DASBAND=<band_id> AT!DALSTXBW=<bandwidth> AT!DALSRXBW=<bandwidth> AT!DASCHAN=<channel> AT!DALSTXMOD=0 AT!DALSWAVEFORM=1,12,0,19 AT!DALSNSVAL=1 AT!DASTXON AT!DALSTXPWR=1,<pwr> AT!DALSTXPWR=0,<pwr> AT!DASTXOFF	AT function
QT19X07-888	AT!NETNUM? lock level	AT!NETNUM was originally added at lock level 2, but changed to lock level 1 (no lock) for ease of use.	AT function
QT19X07-602	Hardware ID incorrect	AT!HWID? added. AT!BSINFO Revision corrected	AT function
QT19X07-645	Network status not reported	After reset, the USB port had to be closed and re-opened to resume network status updates due to mishandling of flow control.	AT function
QT19X07-782	+CGSN does not return OK	The value was returned correctly, but no OK followed.	AT format
QT19X07-374	AT+CRSM=242 without SIM, returns "+CME ERROR: memory failure"	Corrected to return "SIM is not inserted"	AT format
QMI			
QT19X07-881	QMI_DMS_SWI_GET/SET_CUST_FEATURES length misalignment	QMI access to CUSTOM feature configuration was not handled correctly causing a corrupt response.	QMI
GNSS			
QT19X07-511	AT!GPSEND returns error when there is no active GPS session	Improved to handle this case without error	GNSS
QT19X07-544	AT!GPSFIX doesn't update after getting TTF	GPS task received notification from QMI that the session had finished, but did not update the session state for SINGLESHOT	GNSS
QT19X07-643	Add AT!GPSXTRAINITDNLD	Qualcomm XTRA support	GNSS
Voice / Audio			
QT19X07-562	Valid Assignment of AT!AVCFG Produces ERROR	Setting of valid TTY and HF parameters in AT!AVCFG were failing	Audio

ID	Title	Description	Impacted Domain
Various	VoLTE removal	While VoLTE testing did progress significantly through Verizon and GCF certification it was decided to disable VoLTE from Carrier PRIs to expedite final TA. As of this release Generic PRI still has VoLTE enabled, but will be removed in future.	VoLTE
Various	Sync AR758x audio functionality	Various voice/audio enhancements were ported from AR758x for call feature certification, both CS and VoLTE	Voice
QT19X07-562	PCM / I2S digital audio interface	The audio physical interface can now be configured for external PCM or I2S operation; physical interface 0 and 1, respectively.	Voice
QT19X07-662	Cannot enumerate USB ports in Linux after setting USB Composition with Audio Interface	Audio initialization aborted in the absence of a wm8944 codec. It now registers a stub codec to enable initialization to complete for other audio interfaces.	Audio
IO			
QT19X07-717	+WIOCFG configuration is not persistent after resetting except GPIO2	All available GPIOs could be configured with AT+WIOCFG, but except for GPIO2 they would all revert to defaults (func=0) on reboot. Consequently they were never accessible via sysfs or Legato.	GPIO (Release 5.1)
LXSWIREF-126	GPIO linux export	AT+WIOCFG func 16 (embedded host) now required to allow export from linux sysfs	GPIO
QT19X07-479	Resolve LED notification issues - part 2	When the device is powered up, gstatus reports Online (No Service) but does not blink the correct pattern.	LED
QT19X07-127 QT19X07-815	GPIO6 configurability	GPIO6, used as Reset_Out for mangOH, was made configurable as it is also used for AT+KSIMSEL. Setting func=0 allows it to be used for Reset_Out if SIMSEL is not enabled. It is only visible in AT+WIOCFG list on newly manufactured units, however.	GPIO
QT19X07-884	Unable to access GPIOs 36,37,38 and 40 via Legato	MCU GPIOs were not accessible from linux sysfs due to exclusion from AT+WIOCFG list. They are now automatically accessible from sysfs.	GPIO
QT19X07-443	Ring GPIO signal not asserted	The RING signal was not being asserted when configured to do so on incoming events.	RING
QT19X07-382	SAFE_PWR_REMOVE	The SAFE_PWR_REMOVE signal is now being asserted when the power down sequence is complete.	SAFE_PWR_REMOVE
LXSWIREF-173	Remove some forced paths to have TI WiFi wl18xx driver working over SDIO	Was restricted to SDIO in 1-bit mode. Removing these changes allows SDIO to work in 4-bits mode.	SDIO
Security			

ID	Title	Description	Impacted Domain
QT19X07-303 QT19X07-520	Linux side image authentication	Use open source Android kernel signature format which is available in public domain support both: a) single cert embedded in Android signature; b) cert chain: signing cert in Android signature + CA certs right after the signature	Secure boot
QT19X07-383	Jamming Detection	Jamming detection support ported from WPx5xx, including: AT!CUSTOM="JAMENABLE",1 AT+WUSLMSK=10,1 AT+WJAMTHRESH / +WJAM and QMI_SWI_M2M_SET_EVENT_JAMMING_REPORT / QMI_SWI_M2M_JAMMING_IND	Modem
QT19X07-938	Buffer overflow on IPv6 profile creation	Add Qualcomm CR 2074769 to avoid buffer overflow when an invalid IPv6 address of size greater than 16 bytes is processed.	Modem
Power consumption			
QT19X07-749	debug wakeup source preventing modem to enter power collapse	Selective Suspend was not working while connected via USB. A Qualcomm debug wake up source was interfering with the ability of the modem to enter power collapse when the USB is connected until a subsequent disconnect/reinsertion of the USB cable. It was removed.	Selective suspend
QT19X07-900	eDRX configuration added	NV files added to support eDRX configuration in the PRI.	AT&T
Temperature protection			
QT19X07-110	High temperature/voltage protection	Temperature ADCs are statically calibrated.	Voltage, temperature limits
QT19X07-676	Extend operating voltage/temperature range on WP7607 / 09	Extend operating voltage/temperature range to fit VBAT=3.2V min and Class B Op. Temp., including 2G maxTX setting	Voltage, temperature limits
QT19X07-657	!PATEMP - The temp state is not changed when the PATEMPLIMITS is changed.	Added functionality to track temperature state.	Temp. limits
QT19X07-766	Update PCTEMP and PCVOLT Limits.	PCTEMP and PCVOLT monitoring limits are too tight and causing call drops at high temperatures. These were adjusted to match PTS.	Voltage, temperature limits
QT19X07-768	!PCINFO the State is not changed to LowPowerMode	State change event was disabled internally. Now enabled.	Voltage, temperature limits
QT19X07-994	Device stops enumerating at ~85 degrees C	Thermal mitigation algorithm was acting contrary to configured thresholds. It is now disabled until it can be properly fixed.	Thermal mitigation
Stability			
QT19X07-783	Reading ADC3 with Legato crashes SWIAPP	An incorrect mapping of ADC index caused an invalid pointer reference	Legato
QT19X07-752	Module hangs after 50 loops running AT+CREG stress test	Due to race condition, at!reset and resource check happen at the same time. Unlikely under normal circumstances.	AT



ID	Title	Description	Impacted Domain
QTI9X07-224	Add support for FOTA image switching	Previously, FOTA would leave modem in LPM due to improper image preference configuration after the update.	FOTA
QTI9X07-553	Improve USB startup failure mechanism	Previously, if any USB function enabled in AT!USBCOMP fails, then USB would fail to enumerate. Now impact is isolated to only the failing function.	USB
QTI9X07-934	ATi8 crashes modem on development yocto build	As the ATi8 string content depends on the build environment, in some cases the string length exceeded the max, triggering an ABORT. Now in such cases, the result will just be truncated.	AT
QTI9X07-128	EFS recovery – boot loader	Optimized EFS recovery mechanism equivalent to EM74xx.	AT
MCU			
MCU-84	Added ULPM support for WP7607 and WP77xx	Differences in power control circuitry in early DV units required additional logic in MCU to support ULPM wakeup.	ULPM

12.3 Feature Notes

12.3.1 AirVantage

AirVantage connectivity is available in this release in uncertified form for application development and demonstration via Legato and AT commands only. Full production support will follow in a future release. In particular, AirVantage FOTA/SOTA are available for basic use cases, but not of production quality. Notable deficiencies are provided below.

12.3.2 Multi RMNET and 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.

12.3.3 Voice/VoLTE

VoLTE is enabled in the Generic carrier PRI, however this has not received industry certification (GCF or PTCRB). It may be used for lab testing if desired. As VoLTE will not be included in initial certification it will be disabled in future releases. CS voice will continue to be supported.

12.4 Known Issues

This section presents all known issues in this release.

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ID	Title	Description	Impacted Domain
Features			
Various	Certification	There are known carrier certification failures in this release, and ongoing testing in progress.	Certification
Various	AirVantage Connectivity	Some AT+WDS indications for AirVantage client control are not supported in this release. AirVantage is not accessible via QMI. AirVantage is not accessible via Legato with a tethered data connection on the same APN. FOTA completion is not automatically reported to the server. SOTA operations will not resume if interrupted.	AirVantage
Various	Partial AT support	This release does not support all planned AT commands.	AT
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			
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
QT19X07-599	Sierra SIM Connectivity	AT+COPS=2 shall NOT be used with this module to trigger any network steering	Connectivity
QT19X07-310	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
QT19X07-780	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
QT19X07-959	GPIO24 defaults to high after exporting	Upon initial export of GPIO24 from sysfs it is initially high rather than input, no pull	GPIO

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ID	Title	Description	Impacted Domain
QT19X07-995	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

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13 SWI9X07Y Release 5

Release 5 is provided for customer samples and for ongoing carrier and industrial certification testing.

13.1 Software Release Description

13.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.06.02.00 000000 jenkins 2017/08/05 01:02:55
Linux Firmware	SWI9X07Y_02.06.02.00 2017-08-05_02:18:27
MCU Firmware	002.003
Legato Application Framework	17.06.0_8d46c3b13c39af3bb1fa97556821e0ad
Binary Size	58MB (compressed binaries)
IMEI SV	1
Qualcomm Stack Version	MDM9607.LE.2.0-00061-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Sat Aug 5 02:27:29 UTC 2017
Supported H/W	WP7601 DV3+, WP7603 DV3+

13.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4653	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.28N2.44	
Linux SDK	04.00.08	

13.1.3 Released Files and Download Processes

Download Option	Files
Windows	None
CWE/NVU files	None
Windows Firmware and Configuration upgrade tools	None



13.2 Software Changes Description

ID	Title	Description	Impacted Domain
Legato			
Various	Legato 17.06.0	Legato 17.06.0 http://legato.io/legato-docs/latest/releaseNotes17060.html	Legato AF
Linux			
QT19X07-514	Add ADC3 support	ADC3 is routed externally in DV6 hardware, and accessible via AT, QMI, and Legato interfaces in this release.	ADC
QT19X07-536	HSIC device driver prevents sleep mode	Various issues in the HSIC device drivers are resolved to allow the WP to enter sleep mode when HSIC is enabled.	Sleep
QT19X07-590	GPIO 25 mapping	External GPIO 25 is remapped internally in DV6 and newer hardware. Update GPIO mapping in Linux software accordingly	GPIO
QT19X07-121	Multiple RmNet support	Added support for multiple RmNet network interfaces over USB	USB
LXSWIREF-116	Provide correct LK source in Linux distribution	Previous releases contained incorrect source code for the LK Linux bootloader	LK / Linux distribution
Modem			
QT19X07-642	Add Qualcomm MDM9607.LE.2.0-00061-STD.PROD-1	Add Qualcomm MDM9607.LE.2.0-00061-STD.PROD-1 Includes key fixes identified during carrier certification testing.	Qualcomm baseline
QT19X07-121	Multiple RmNet support	Added configuration option and control interface for multiple RmNet support	USB
QT19X07-487	USB Composition inconsistency between Download and Application modes	Made USB enumeration values in Firmware Download mode and Application modes consistent. Changes were made to Download mode to use Sierra Wireless product information. Previous releases used default Qualcomm device info.	USB
QT19X07-396	DR_SYNC	Added support for PPS DR_SYNC signal	GNSS
QT19X07-539	AT+CNUM / AT+CSIM	Resolved deficiencies in these commands identified during carrier certification.	AT
QT19X07-534 / QT19X07-554 / QT19X07-559	VoLTE enablement for carrier and industrial certification testing	Configuration packages created to support VoLTE for AT&T, Verizon, and Generic carriers	VoLTE
QT19X07-577	QMI divergence between AR and WP product lines for RF_STATUS	Fixed QMI divergence in variable naming for QMI_DMS_SWI_RF_STATUS_READ_REQ. This allows for a common Legato platform adaptation for Sierra products lines.	QMI
QT19X07-604	Crash with IPv6 disabled	Fixed continuous device reset if IPv6 were disabled by device customization "IPV6ENABLE".	Stability

13.3 Known Issues

This section presents all known issues in this release.

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ID	Title	Description	Impacted Domain
Features			
Various	Certification Testing	There are known carrier certification failures in this release, and ongoing testing in progress.	Certification
Various	AirVantage Connectivity	AT+WDS Commands for AirVantage client control are not supported in this release. AirVantage connectivity is not supported in this release.	AirVantage
Various	Partial AT support	This release does not support all planned AT commands.	AT
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
Limitation	EXT_GPIO8	The customer should not connect an external pull-up resistor to this pin unless Secure Boot is enabled. The boot configuration for this pin is to enable Modem Secure Boot. If signed images have not been used (not available in older samples), the modem will fail to boot.	Boot / Stability / BSP
Limitation	EXT_GPIO35	On samples prior to Release 3 availability, the customer should not have an external pull-up resistor connected to this pin. The boot configuration for this pin is to boot from the USB interface if this pin is high, which is not supported. This is resolved in Release 3 OEM configuration by writing to fuses to force the device to boot from NAND memory.	Boot / Stability / BSP
Bugs			
LXSWIREF-88	Legato ECM Interface	The Legato ECM interface DHCP configuration is as a default gateway, and the host is assigned a bridge0 IP address of 192.168.225.2. This causes a host (Linux or Windows) to use the ECM interface as the default gateway and will break the host's internet connectivity while ECM is enabled. In Windows, the Legato ECM interface can be disabled in the Device Manager as a temporary workaround. In Linux, the ECM interface (usb0) can be disabled, or the eth1 interface can be added as the default routing option, e.g.: sudo route add default eth1 sudo dhclient eth1	USB / ECM

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ID	Title	Description	Impacted Domain
QT19X07-544	AT Commands to check GPS fix status fail during NMEA tracking session	AT!GPSLOC? and AT!GPSSTATUS? fail to return accurate result, though position is known and reported correctly in NMEA stream	AT / GPS
DAYTONA-366	GPIO Configuration Persistence	GPIO Configuration is not persistent across power cycles	GPIO
DAYTONA-467	CFUN Persistence	AT+CFUN Power mode persistence is not supported in this release. Customization "CFUNPERSISTEN" is implemented but	GPIO
QT19X07-440	Sleep Mode power consumption	System has not been configured for entering Sleep Mode by default. Power Consumption does not reach the level expected in Sleep mode.	Power Consumption



15 SWI9X07Y Release 4.1

Release 4.1 is a repackaging of components delivered in Release 4, with a downgraded Legato Application Framework (AF). The Legato AF is downgraded from the official Legato 17.05.0 to the snapshot release provided in the Release 3 package, to avoid a concurrent data connection issue where the avcControl Legato application automatically connects with the default APN, and prevents a user/host data connection with the same profile.

15.1 Software Release Description

15.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.04.04.00 000000 jenkins 2017/07/01 01:17:25
Linux Firmware	SWI9X07Y_02.04.04.00 2017-07-01_02:14:09
MCU Firmware	002.001
Legato Application Framework	17.05.0.rc5_6346074e23ec18579a6d0124c7425d0f
Binary Size	58MB (compressed binaries)
IMEI SV	1
Qualcomm Stack Version	MDM9607.LE.2.0-00055-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Sat Jul 1 02:24:10 UTC 2017
Supported H/W	WP7601 DV3+, WP7603 DV3+

15.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4653	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.28N2.43	
Linux SDK	04.00.07	

15.1.3 Released Files and Download Processes

Download Option	Files
Windows	None
CWE/NVU files	None
Windows Firmware and Configuration upgrade tools	None

15.2 Software Changes Description

ID	Title	Description	Impacted Domain
Features			
Various	Legato 17.05 pre-release snapshot	<p>This release includes an unreleased snapshot of the Legato 17.05 Application Framework. The final release for 17.05 will be released externally in the next few weeks, and may contain significant improvements.</p> <p>Note: This is a downgrade from Release 4, to avoid a known issue with Legato 17.05.0, where the avcControl Legato application automatically connects with the default APN, and prevents a user/host data connection with the same profile.</p>	Legato AF

15.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
LXSWIREF-38	Legato ECM Interface	<p>The Legato ECM interface DHCP configuration is as a default gateway, and the host is assigned an autoconfiguration IP address in the 169.254.xx.xx range.</p> <p>This causes a host (Linux or Windows) to use the ECM interface as the default gateway and will break the host's internet connectivity while ECM is enabled.</p> <p>In Windows, the Legato ECM interface can be disabled in the Device Manager as a temporary workaround.</p> <p>In Linux, the ECM interface (usb0) can be disabled, or the eth1 interface can be added as the default routing option, e.g.:</p> <pre>sudo route add default eth1 sudo dhclient eth1</pre> <p>On target, the issue can be worked around by adding firewall rules to allow ECM to use the bridge0 interface. Refer to Section 16.4 for details.</p>	USB / ECM
LE-7295	fwupdate fails with Legato 17.05	Legato fwupdate tool fails to download CWE file to device over SSH.	Legato / fwupdate
QT19X07-544	AT Commands to check GPS fix status fail during NMEA tracking session	AT!GPSLOC? and AT!GPSSTATUS? fail to return accurate result, though position is known and reported correctly in NMEA stream	AT / GPS
LXQMISDK-916	SLQS Firmware download application does not support 9x07 device type	SLQS version 04.00.08, not yet released, introduces the "-d 9x07" device type support to perform firmware download with this product family.	SLQS



ID	Title	Description	Impacted Domain
Various	AirVantage Connectivity	The AirVantage device client is supported in this release but not fully validated. AT Commands for AirVantage client control are not supported in this release.	AirVantage
Various	Partial AT support	This release does not support all planned AT commands.	AT
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
QT19X07-121	Multiple-RMNET support over USB is not supported	Multiple RMNET support over USB is not available in this release.	USB
Various	Secure Boot	Secure Boot is supported in firmware but not enabled during sample preparation for this release.	Security
Limitation	EXT_GPIO8	The customer should not connect an external pull-up resistor to this pin unless Secure Boot is enabled. The boot configuration for this pin is to enable Modem Secure Boot. If signed images have not been used (not available in Release 3), the modem will fail to boot.	Boot / Stability / BSP
Limitation	EXT_GPIO35	On samples prior to Release 3 availability, the customer should not have an external pull-up resistor connected to this pin. The boot configuration for this pin is to boot from the USB interface if this pin is high, which is not supported. This is resolved in Release 3 OEM configuration by writing to fuses to force the device to boot from NAND memory.	Boot / Stability / BSP
Bugs			
QT19X07-440	Sleep Mode power consumption	System has not been configured for entering Sleep Mode by default. Power Consumption does not reach the level expected in Sleep mode.	Power Consumption

15.4 ECM Interface Configuration

Known issue LXSWIREF-38 is a temporary regression caused by an optimization in progress to the ECM interface configuration on target. In Release 4.1, the ECM interface enumerates over USB, but is unreachable. The following changes can be applied as a workaround to make the ECM interface reachable. Another Linux console interface (UART, ADB, or Ethernet) must be used to execute this workaround. Alternatively, the change can be executed in source code and compiled from the Sierra Wireless source code release.

Add firewall rules to enable routing over bridge0, by adding the following entries to /etc/iptables/rules.v4

Sierra Wireless confidential ©

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```
-A INPUT -i bridge0 -p tcp -m tcp --dport 22 -j ACCEPT  
-A INPUT -i bridge0 -p icmp -m icmp --icmp-type 8 -j ACCEPT  
-A INPUT -i bridge0 -p udp --dport 67:68 --sport 67:68 -j ACCEPT
```

This change can be added to `/meta-swi/meta-swi-mdm9xxx/recipes-core/init-ifupdown/files/rules.v4` as a compile time change.

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16 SWI9X07Y Release 4

Release 4 is provided to support intermediate product milestones including:

- Updated certification candidate, including continued testing at Verizon Wireless, AT&T, and GCF/PTCRB.
- New customer samples and sample upgrades

16.1 Software Release Description

16.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.04.04.00 000000 jenkins 2017/07/01 01:17:25
Linux Firmware	SWI9X07Y_02.04.04.00 2017-07-01_02:14:09
MCU Firmware	002.001
Legato Application Framework	17.05.0_25871ae2b862a7caeb1ec09fc1770333
Binary Size	58MB (compressed binaries)
IMEI SV	1
Qualcomm Stack Version	MDM9607.LE.2.0-00055-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Sat Jul 1 02:24:10 UTC 2017
Supported H/W	WP7601 DV3+, WP7603 DV3+

16.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4653	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.28N2.43	
Linux SDK	04.00.07	

16.1.3 Released Files and Download Processes

Download Option	Files
Windows	None
CWE/NVU files	None
Windows Firmware and Configuration upgrade tools	None

16.2 Software Changes Description

ID	Title	Description	Impacted Domain
Features			
QT19X07-493	Qualcomm LE.2.0 Baseline	Integrated Qualcomm Post CS MDM9607.LE.2.0-00055-STD.PROD-1 release.	Modem / Certification
Various	Legato 17.05	Legato 17.05 http://legato.io/legato-docs/latest/releaseNotes17050.html	Legato AF
QT19X07-504 QT19X07-424 QT19X07-481 QT19X07-502	Audio Calibration	Audio calibration and related configuration commands are updated in this release. Quality tested on Sierra Wireless mangOh Green platform is demonstrably improved. 3GPP Certification testing of audio quality is in progress.	Audio
QT19X07-312	EXT_GPS_LNA_EN	Added support for EXT_GPS_LNA_EN pin as per PTS description.	GNSS
Bug Fixes			
QT19X07-125	Disable addb when ADB is disabled	The addb (Android Debug Bridge Daemon) is disabled when the external ADB interface is disabled, improving startup and shutdown time, and disabling unnecessary daemon.	Linux / addb
DAYTONA-324	GNSS Autostart configuration is not supported	Fixed GPS Autostart configuration.	GNSS / AT
DAYTONA-329	All NMEA sentence are duplicated	Fixed duplication of NMEA sentences in NMEA stream	GNSS / NMEA
QT19X07-469	AT Command read of ADC0 does not respond	Fixed unresponsive terminal after reading ADC0 via AT!MADC?10 command.	ADC / AT
QT19X07-480	QMI not working after Carrier package update	QMI Interface did not come up successfully on first boot following a full carrier configuration update with modem firmware. This change resolved firmware upgrade but causes a regression in ECM configuration, described in Known Issues, LXSWIREF-38.	Firmware Upgrade
QT19X07-525	AT&T Test case: GSM-BTR-1-2506	Device failed to send IMEI SV in TERMINAL RESPONSE message. IMEI SV was updated to a certifiable value (01). The value was previously a non-valid 00, for initial certification submission.	ATT Certification
QT19X07-538	AT&T Test case: GSM-BTR-1-5714	Fixed MEP Locking logic to allow SIM locking by carrier requirement.	ATT Certification
QT19X07-342	WWAN LED blink pattern	The WWAN LED blink state is initialized correctly at device startup.	WWAN LED

16.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			

ID	Title	Description	Impacted Domain
LXSWIREF-38	Legato ECM Interface	<p>The Legato ECM interface DHCP configuration is as a default gateway, and the host is assigned an autoconfiguration IP address in the 169.254.xx.xx range.</p> <p>This causes a host (Linux or Windows) to use the ECM interface as the default gateway and will break the host's internet connectivity while ECM is enabled.</p> <p>In Windows, the Legato ECM interface can be disabled in the Device Manager as a temporary workaround.</p> <p>In Linux, the ECM interface (usb0) can be disabled, or the eth1 interface can be added as the default routing option, e.g.:</p> <pre>sudo route add default eth1 sudo dhclient eth1</pre> <p>On target, the issue can be worked around by adding firewall rules to allow ECM to use the bridge0 interface. Refer to Section 16.4 for details.</p>	USB / ECM
LE-7295	fwupdate fails with Legato 17.05	Legato fwupdate tool fails to download CWE file to device over SSH.	Legato / fwupdate
QT19X07-544	AT Commands to check GPS fix status fail during NMEA tracking session	AT!GPSLOC? and AT!GPSSTATUS? fail to return accurate result, though position is known and reported correctly in NMEA stream	AT / GPS
LXQMISDK-916	SLQS Firmware download application does not support 9x07 device type	SLQS version 04.00.08, not yet released, introduces the "-d 9x07" device type support to perform firmware download with this product family.	SLQS
Various	AirVantage Connectivity	The AirVantage device client is supported in this release but not fully validated. AT Commands for AirVantage client control are not supported in this release.	AirVantage
Various	Partial AT support	This release does not support all planned AT commands.	AT
Various	Linux Boot time is not optimized	<p>Various debug capabilities and debug modules are included in the Kernel and Rootfs, which increases the Sierra Linux system boot time.</p> <p>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.</p>	Linux / Boot
QT19X07-121	Multiple-RMNET support over USB is not supported	Multiple RMNET support over USB is not available in this release.	USB
Various	Secure Boot	Secure Boot is supported in firmware but not enabled during sample preparation for this release.	Security

ID	Title	Description	Impacted Domain
Limitation	EXT_GPIO8	The customer should not connect an external pull-up resistor to this pin unless Secure Boot is enabled. The boot configuration for this pin is to enable Modem Secure Boot. If signed images have not been used (not available in Release 3), the modem will fail to boot.	Boot / Stability / BSP
Limitation	EXT_GPIO35	On samples prior to Release 3 availability, the customer should not have an external pull-up resistor connected to this pin. The boot configuration for this pin is to boot from the USB interface if this pin is high, which is not supported. This is resolved in Release 3 OEM configuration by writing to fuses to force the device to boot from NAND memory.	Boot / Stability / BSP
Bugs			
QT19X07-440	Sleep Mode power consumption	System has not been configured for entering Sleep Mode by default. Power Consumption does not reach the level expected in Sleep mode.	Power Consumption
LE-7418	Legato avcControl application consumes the default PDN	<p>The Legato avcControl application initiates a data connection on startup, using the modem default APN. A USB client (i.e. bit-pipe device) is not able to initiate a data connection on the same APN.</p> <p>Solutions: Release 4.1 reverts the Legato release and temporarily avoids this issue until it can be resolved in a formal Legato update.</p> <p>A Legato developer may wish to continue using the official Legato 17.05.0 release, in which case they may choose to disable avcControl from starting automatically to prevent this issue. This can be done by issuing the following command in the Linux console:</p> <pre>config set /apps/avcControl/startManual true bool</pre> <p>They may also rebuild Legato AF from source, with avcControl disabled or removed. Add the following to the .adefs source file for avcControl (/apps/platformServices/airVantage/avcControl.ade) <pre>start: manual</pre></p>	Connectivity

16.4 ECM Interface Configuration

Known issue LXSWIREF-38 is a temporary regression caused by an optimization in progress to the ECM interface configuration on target. In Release 4, the ECM interface enumerates over USB, but is unreachable. The following changes can be applied as a workaround to make the ECM interface reachable. Another Linux console interface (UART, ADB, or Ethernet) must be used to execute this



workaround. Alternatively, the change can be executed in source code and compiled from the Sierra Wireless source code release.

Add firewall rules to enable routing over bridge0, by adding the following entries to /etc/iptables/rules.v4

```
-A INPUT -i bridge0 -p tcp -m tcp --dport 22 -j ACCEPT
-A INPUT -i bridge0 -p icmp -m icmp --icmp-type 8 -j ACCEPT
-A INPUT -i bridge0 -p udp --dport 67:68 --sport 67:68 -j ACCEPT
```

This change can be added to /meta-swi/meta-swi-mdm9xxx/recipes-core/init-ifupdown/files/rules.v4 as a compile time change.

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17 SWI9X07Y Release 3

Release 3 is provided to support intermediate product milestones including:

- Verizon Wireless Safe-For-Network (SFN) candidate
- GCF/PTCRB Certification candidate
- Initial AT&T AVL Certification candidate
- Customer samples, including pre-release snapshot of Legato 17.05 Application Framework

17.1 Software Release Description

17.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.03.03.00 000000 jenkins 2017/05/22 15:11:01
Linux Firmware	SWI9X07Y_02.03.03.00 2017-05-22_15:44:17
MCU Firmware	002.001
Legato Application Framework	17.05.0.rc5_6346074e23ec18579a6d0124c7425d0f
Binary Size	58MB (compressed binaries)
IMEI SV	0
Qualcomm Stack Version	MDM9607.LE.2.0-00050-STD.PROD-1
Linux Kernel Version	Linux version 3.18.44 (jenkins-slave@jenkins) (gcc version 4.9.1 (GCC)) #2 PREEMPT Mon May 22 15:44:20 UTC 2017
Supported H/W	WP7601 DV3+, WP7603 DV3+

17.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4653	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.27N2.40	
Linux SDK	04.00.04	

17.1.3 Released Files and Download Processes

Release 3 is provided as programmed hardware samples only. Software update packages are not provided for this release, and upgrades from previous releases are not supported.

Download Option	Files
Windows	None
CWE/NVU files	None
Windows Firmware and Configuration upgrade tools	None

Template #:	4124005	Revision:	01.14.2
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17.2 Software Changes Description

ID	Title	Description	Impacted Domain
Features			
QT19X07-412	Qualcomm LE.2.0 Baseline	Integrated Qualcomm Post CS MDM9607.LE.2.0-00050-STD.PROD-1 release.	Modem / Certification
Various	Legato 17.05 pre-release snapshot	This release includes an unreleased snapshot of the Legato 17.05 Application Framework. The final release for 17.05 will be released externally in the next few weeks, and may contain significant improvements.	Legato AF
QT19X07-332	32KHz and 20MHz Digital clock outputs	External clock outputs are supported, including AT/QMI interfaces for control of the 20MHz clock.	BSP
QT19X07-422	Linux support for WP77xx variants	Added support for upcoming MDM9x06 based WP77xx variants to the common Linux image.	Linux BSP
LXSWIREF-55	ECM and Ethernet support	ECM and Ethernet interfaces are now fully supported, including standard ECM configuration with 192.168.2.2 address to match the previous WP generation.	Linux / Networking
QT19X07-311	Legato AF fwupdate support	Legato fwupdate utility is enabled and supported for FW and Application updates over networking interfaces.	Legato AF / fwupdate
QT19X07-264	Ring Indicator	Ring Indicator feature enabled, including AT, QMI, and Legato interfaces	RI
QT19X07-281	QMI interfaces for GPIO	Added QMI support for GPIO control	GPIO
QT19X07-405	Wolfson WM8944 Codec	Added support for WM8944 codec, available on the mangOh Green platform	Audio
QT19X07-404	Carrier Provisioning	Added internal interface to support carrier provisioning for OMA credentials	Carrier / OMA
QT19X07-339	USB Selective Suspend	USB Selective Suspend is supported in this release.	USB
Bug Fixes			
QT19X07-276	Consecutive SLQS data connections fail to provide routable interface	A DHCP failure with a Linux host was resolved, allowing consecutive connections to be routable as expected. Prior to this update, an initial connection was routable, but subsequent connections did not establish a successful data interface with the Linux host	DHCP / SLQS
QT19X07-319	Sierra QMI responses use wrong Type in result TLV	Legato AF is updated to use corrected Sierra QMI response formats.	Legato
QT19X28-910	Crash during software reset	A system synchronization failure during software reset caused an intermittent crash. This most notably caused an attempt to enter Firmware Download mode to fail if the device crashed instead of completing the reset procedure.	System / Stability
LXSWIREF-13	Build standalone kernel	Resolved compiler warnings to allow the kernel to be built outside of the Yocto environment.	Kernel

17.3 Known Issues

This section presents all known issues in this release.



ID	Title	Description	Impacted Domain
Features			
Various	MCU Features	MCU ADC wake-up support is not available in this release. MCU-related AT commands are not supported in this release.	MCU / ULPM
QT19X07-355	Audio / Voice	Audio/Voice is enabled in this release, but calibration and quality testing is incomplete.	Audio
Various	AirVantage Connectivity	The AirVantage device client is supported in this release but not fully validated. AT Commands for AirVantage client control are not supported in this release.	AirVantage
Various	Partial AT and QMI SDK support	This release does not support all planned AT commands or QMI messages used by Sierra SDK. This release contains numerous improvements since Release 2.1, but does not reach full planned support.	AT / QMI / SDK
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
QT19X07-121	Multiple-RMNET support over USB is not supported	Multiple RMNET support over USB is not available in this release.	USB
Various	Secure Boot	Secure Boot is supported in firmware but not enabled during sample preparation for this release.	Security
Limitation	EXT_GPIO8	The customer should not connect an external pull-up resistor to this pin unless Secure Boot is enabled. The boot configuration for this pin is to enable Modem Secure Boot. If signed images have not been used (not available in Release 3), the modem will fail to boot.	Boot / Stability / BSP
Limitation	EXT_GPIO35	On samples prior to Release 3 availability, the customer should not have an external pull-up resistor connected to this pin. The boot configuration for this pin is to boot from the USB interface if this pin is high, which is not supported. This is resolved in Release 3 OEM configuration by writing to fuses to force the device to boot from NAND memory.	Boot / Stability / BSP
Bugs			

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ID	Title	Description	Impacted Domain
QT19X07-125	Disable adbd when ADB is disabled	The adbd (Android Debug Bridge Daemon) is running even when the external ADB interface is disabled. This is inefficient and also results in periodic info level log messages from the USB gadget driver, e.g.: [33.774614] read descriptors [33.774697] read strings	Linux / adbd
QT19X07-342	WWAN LED blink pattern	The WWAN LED blink state is not initialized correctly at power up, and will exhibit the behaviour for LPM mode at startup regardless of the operating state.	WWAN LED
QT19X07-440	Sleep Mode power consumption	System has not been configured for entering Sleep Mode by default. Power Consumption does not reach the level expected in Sleep mode.	Power Consumption
DAYTONA-324	GNSS Autostart configuration is not supported	AT!GPSAUTOSTART=2 configuration is not yet supported in this release.	GNSS / AT
DAYTONA-329	All NMEA sentence are duplicated	NMEA sentences are duplicated in the NMEA stream.	GNSS / NMEA
QT19X07-469	AT Command read of ADC0 does not respond	Using AT!MADC?10 to read from ADC0 does not return on the terminal, and subsequent terminal input is blocked until a device reset is performed. Other ADC reads are working as expected.	ADC / AT



18 SWI9X07Y Release 2.1

Release 2.1 is provided in limited quantities to support intermediate product milestones including:

- Initial Verizon Wireless Safe-For-Network (SFN) candidate
- GCF/PTCRB Certification candidate
- Feature complete support for improved factory processes including Secure Boot provisioning and Pre-Programmed Flash

This release is not intended for customer samples due to the following limitations:

- Minimal internal validation, with exception of key improvements included in this release.
- No formal Legato Application Framework release to support critical Modem interface changes
- No formal Linux SDK/driver validation performed with this release
- No formal GCF, PTCRB or Carrier certification testing has been completed
- Linux Firmware source code will not be published to Source

18.1 Software Release Description

18.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.01.03.00 000000 jenkins 2017/04/18 20:15:32
Linux Firmware	SWI9X07Y_02.01.03.00 2017-04-18_21:11:27
MCU Firmware	002.001
Legato Application Framework	17.03.0.rc6_23c3d736d247f0c4af79942eb30c59ba
Binary Size	58MB (compressed binaries)
IMEI SV	0
Qualcomm Stack Version	MDM9607.LE.2.0-00035-STD.PROD-1
Linux Kernel Version	Linux swi-mdm9x28 3.18.31 #2 PREEMPT Tue Apr 18 21:24:29 UTC 2017 armv7l GNU/Linux
Supported H/W	WP7601 DV3+, WP7603 DV3+

18.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4653	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.27N2.40	
Linux SDK	04.00.04	

18.1.3 Released Files and Download Processes

Release 2.1 is provided as programmed hardware samples only. Software update packages are not provided for this release, and upgrades from previous releases are not supported.

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Download Option	Files
Windows	None
CWE/NVU files	None
Windows Firmware and Configuration upgrade tools	None

18.2 Software Changes Description

ID	Title	Description	Impacted Domain
Features			
QT19X07-314	Qualcomm LE.2.0 Baseline	Integrated Qualcomm MDM9607.LE.2.0-00035-STD.PROD-1. Baseline includes planned support for key modem features PSM and eDRX. These features are not yet supported in this release.	Modem / Certification
QT19X07-253	Add FASTBOOTEN Customization	FASTBOOTEN customization allows the Linux bootloader Fastboot interface to be enabled independently from the Linux ADB shell.	Linux LK
QT19X07-263	Initial new variant support	Preliminary (non-RF) support of new hardware variants WP7605 and WP7607	Hardware Support
QT19X07-37	Configurable UART services	Added support for configurable UART services via ATIMAPUART command.	UART
QT19X07-239	AT+CCID Support for Sierra eUICC	+CCID response enhanced to provide eUICC ID field when available	Sierra eUICC
QT19X07-44 / QT19X07-279	External GPIO support	External GPIO support via AT, QMI, and sysfs. GPIO 38-41 are not yet supported.	GPIO
MCU-71	ULPM Support	Implement MDM control logic to allow system to enter ULPM. Customer interfaces to support this mode are not yet fully supported.	MCU / ULPM
MCU-44	USB Detection	Detect USB_VBUS and relay signal to MDM as to provide USB detection mechanism. MDM handling of this signal is not fully implemented.	MCU / USB
QT19X07-222	Sierra Monitor utility	Sierra Monitor utility added to detect malfunctioning modem image, and recover from Image Switching slots if possible.	Stability
QT19X07-91	Enhanced Shared Memory Framework	A more robust Shared Memory framework is developed for long term independent development of Modem and Linux subsystems.	Stability
QT19X07-260 / QT19X07-262	Factory Pre-calibration Restore Point	A pre-calibration restore point is created to facilitate factory processes involving Secure Boot.	Factory
Bug Fixes			

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ID	Title	Description	Impacted Domain
QT19X07-162	Fix interface order in USB composition to conform to legacy Sierra Wireless port mapping for Linux OS host	The updated default port mapping conforms to Sierra Wireless convention: /dev/ttyUSB0 - DM Port /dev/ttyUSB1 - NMEA Port /dev/ttyUSB2 - AT Command Port	USB
QT19X07-319	Sierra QMI responses use wrong Type in result TLV	Several custom Sierra QMI objects were implemented with a specification violation, where the result TLV used the incorrect Type. This was observed in Linux SDK interactions, and is resolved in this release. Note that the affected QMI objects were M2M-centric and not observed in Windows applications. This change causes a temporary incompatibility with the Legato image included in this release, listed below.	QMI

18.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
Various	MCU Features	MCU ULPM Mode and GPIO/ADC external API support (Legato, AT) is not available in this release.	MCU / ULPM
QT19X07-339	USB Selective Suspend	USB Selective Suspend is not supported in this release. This prevents a Linux wake lock from being released, preventing Sleep mode power consumption levels from being reached.	USB
QT19X07-355	Audio / Voice	Audio / Voice is not supported in this release	Audio
Various	AirVantage Connectivity is not supported	The AirVantage device client is unavailable for this platform in this release.	AirVantage
Various	Partial AT and QMI SDK support	This release does not support all planned AT commands or QMI messages used by Sierra SDK. This release contains numerous improvements since Release 2, but does reach full support.	AT / QMI / SDK
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			

Template #:	4124005	Revision:	01.14.2
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ID	Title	Description	Impacted Domain
LE-6265	Legato ECM Interface	<p>The Legato ECM interface DHCP configuration is as a default gateway.</p> <p>This causes a host (Linux or Windows) to use the ECM interface as the default gateway and will break the host's internet connectivity while ECM is enabled.</p> <p>In Windows, the Legato ECM interface can be disabled in the Device Manager as a temporary workaround.</p> <p>In Linux, the ECM interface (usb0) can be disabled, or the eth1 interface can be added as the default routing option, e.g.:</p> <pre>sudo route add default eth1 sudo dhclient eth1</pre>	USB / ECM
QT19X07-319	Sierra QMI responses use wrong Type in result TLV	<p>Several QMI messages were implemented incorrectly in both Modem and Legato. Due to the issue being identical on both systems, no performance issue was previously observed on target. QT19X07-319 resolved the Modem side issues, and the Legato Application Framework has not yet been updated with the corresponding change, leading to a regression in QMI compatibility.</p>	Legato



19 SWI9X07Y Release 2

Release 2 is provided for sample recipients of WP7601 and WP7603 DV2 and DV3 hardware.

- a. Software validation:
 - No formal GCF, PTCRB or Carrier certification testing has been performed. This release will be submitted for GCF and PTCRB certification, but it is not expected to be certified without further changes.
- b. Source code availability:
 - Linux Firmware source code will not be published to Source
- c. Future firmware upgrade support:
 - Samples are not provisioned with AirVantage credentials, and therefore will not be able to connect to the Sierra Wireless AirVantage server in the future.
 - Samples are not provisioned with carrier-specific parameters related to OMADM, and therefore will not be able to connect to Carrier OMADM servers in the future.
 - DV3 Samples are available in very limited quantity. Due to flash memory incompatibility between DV2 and DV3 (and above), DV2 samples provided with this release will not be upgradeable to future firmware releases.
- d. Feature support:
 - This release does not include full WP76xx feature support.

19.1 Software Release Description

19.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_02.00.03.00 000000 jenkins 2017/02/27 06:17:46
Linux Firmware	SWI9X07Y_02.00.03.00 2017-02-27_06:49:24
MCU Firmware	002.000
Legato Application Framework	16.10.0.wp76xx_5545c7d3120e7a0971a4a11d2226ad19
Binary Size	58MB (compressed binaries)
IMEI SV	0
Qualcomm Stack Version	MDM9607.LE.2.0-00025-STD.PROD-2
Linux Kernel Version	3.18.31 #2 PREEMPT Mon Feb 27 07:07:04 UTC 2017 armv7l GNU/Linux
Supported H/W	WP7601 DV2 and DV3, WP7603 DV2 and DV3

19.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4653	
Windows SDK	None	
Skylight	None	

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S/W Tools Name	Version	Resource file
Linux Drivers	S2.27N2.40	
Linux SDK	04.00.04	

19.1.3 Released Files and Download Processes

Release 2 is provided as programmed hardware samples only. Software update packages are not provided for this release, and upgrades from Release 1 are not supported.

Download Option	Files
Windows	None
CWE/NVU files	None
Windows Firmware and Configuration upgrade tools	None

19.2 Software Changes Description

ID	Title	Description	Impacted Domain
Features			
QT19X07-246	Qualcomm LE.2.0 Baseline	Integrated Qualcomm MDM9607.LE.2.0-00025-STD.PROD-2. Baseline includes planned support for key modem features PSM and eDRX. These features are not yet supported in this release.	Modem / Certification
QT19X07-182	MCU programming interface	MCU firmware is included in this release, but is not feature complete. ULPM and MCU-managed GPIO and ADCs are not supported.	MCU / ULPM
QT19X07-47	Partial External GPIO control	External GPIO control is supported in this release via AT commands +WIOW/+WIOR/+WIOCFG. Legato APIs for GPIO control are not supported.	GPIO
QT19X07-150	Micro SD	Resolved an internal GPIO conflict to fix support of the external SDIO interface and allow Micro SD memory to be mounted on mangOH	uSD
QT19X07-163	RAM / Flash partitioning optimization	RAM and Flash partitioning has been optimized to provide 256MB flash and 150MB RAM to the Linux system.	Memory
QT19X07-220	Memory with 2K page size	Added support for generating and loading firmware images using 2K page size flash. This memory is used on DV3 hardware and above.	Memory
QT19X07-207	Legato ECM Interface	The Legato ECM interface is enabled and supports SSH with default static IP address 192.168.225.1.	USB / ECM
QT19X07-240	Dual SIM interface	Resolve stability issues with dual SIM support, and enable interfaces for selecting second SIM	SIM
QT19X07-179	Carrier Image Switching	Carrier Image Switching is supported in this release.	Certification
Bug Fixes			

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ID	Title	Description	Impacted Domain
QT19X07-273	Fix cellular data connectivity via Legato applications	Added modem support for APIs required by Legato Modem Service prior to establishing cellular data connectivity.	Legato / Connectivity

19.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Features			
Various	MCU Features	MCU ULPM Mode and GPIO/ADC support is not available in this release.	MCU / ULPM
QT19X07-126	External GPIO control	External GPIO control via Linux sysfs and Legato is not supported in this release.	GPIO
MCU-44	USB Selective Suspend	USB Selective Suspend is not supported in this release. This prevents a Linux wake lock from being released, preventing Sleep mode power consumption levels from being reached.	USB
Various	Audio / Voice	Audio / Voice is not supported in this release	Audio
Various	AirVantage Connectivity is not supported	The AirVantage device client is unavailable for this platform in this release.	AirVantage
Various	Partial AT and QMI SDK support	This release does not support all planned AT commands or QMI messages used by Sierra SDK.	AT / QMI / SDK
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			
LE-6265	Legato ECM Interface	The Legato ECM interface DHCP configuration is as a default gateway. This causes a host (Linux or Windows) to use the ECM interface as the default gateway and will break the host's internet connectivity while ECM is enabled. In Windows, the Legato ECM interface can be disabled in the Device Manager as a temporary workaround. In Linux, the ECM interface (usb0) can be disabled, or the eth1 interface can be added as the default routing option, e.g.: <code>sudo route add default eth1</code> <code>sudo dhclient eth1</code>	USB / ECM

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ID	Title	Description	Impacted Domain
QT19X07-162	Linux USB Port mapping	<p>This release includes the following USB port mapping on a Linux host platform:</p> <p>/dev/ttyUSB0 - DM Port /dev/ttyUSB1 - AT Command Port /dev/ttyUSB2 - NMEA Port</p> <p>The expected port mapping should be:</p> <p>/dev/ttyUSB0 - DM Port /dev/ttyUSB1 - NMEA Port /dev/ttyUSB2 - AT Command Port</p>	Linux USB

20 SWI9X07Y Release 1

Release 1 is provided for initial sample recipients of WP7601 and WP7603 DV2 hardware. Significant limitations related to early sample delivery include:

e. Software validation:

- Sierra has performed minimal functional validation.
- Legato Application Framework has not been formally validated.
- No formal GCF, PTCRB or Carrier certification testing has been performed.
- Linux Firmware source code will not be published to Source

f. Future firmware upgrade support:

- This release uses a generic CWE image type that will be deprecated in future releases. Upgrades to future firmware releases will not be supported.
- Samples are not provisioned with AirVantage credentials, and therefore will not be able to connect to the Sierra Wireless AirVantage server in the future.
- Samples are not provisioned with carrier-specific parameters related to OMADM, and therefore will not be able to connect to Carrier OMADM servers in the future.

g. RF calibration:

- Samples are not individually calibrated. Devices are loaded with a calibration file from a single calibrated device, and are not expected to match production quality or fully meet 3GPP requirements.

h. Feature support:

- This release does not include full WP76xx feature support.

20.1 Software Release Description

20.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X07Y_01.00.02.00 000000 jenkins 2016/12/17 02:19:17

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Component	Revision
Linux Firmware	SWI9X07Y_01.00.02.00 2016-12-17_02:44:34
MCU Firmware	None
Legato Application Framework	16.10.0_423bd939a089fff35bac1deedeb1c3d6
Binary Size	59MB (compressed binaries)
IMEI SV	0
Qualcomm Stack Version	MDM9607.LE.1.1-00050-STD.PROD-2
Linux Kernel Version	3.18.20 #2 PREEMPT Sat Dec 17 03:12:05 UTC 2016 armv7l GNU/Linux
Supported H/W	WP7601 DV2, WP7603 DV2

20.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4484	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.26N2.39	
Linux SDK	04.00.00	

20.1.3 Released Files and Download Processes

Release 1 is provided as programmed hardware samples only. Software update packages are not made available for this release.

Download Option	Files
Windows	None
CWE/NVU files	None
Windows Firmware and Configuration upgrade tools	None

20.2 Software Changes Description

This is the initial release for WP76xx samples.

20.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Stability			
QT19X07-189	Device crashes if UIM2 interface is enabled	The device resets during power up if the UIM2 interface is enabled. Samples will be configured with the interface disabled.	SIM

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ID	Title	Description	Impacted Domain
Features			
QT19X07-182	MCU programming interface	MCU firmware is not available for this release. ULPM Mode is not available in this release	MCU / ULPM
QT19X07-126	External GPIO control	External GPIO control is not supported in this release.	GPIO
QT19X07-150	Micro SD support	Micro SD support is intermittent in this release	uSD
QT19X07-163	RAM / Flash partitioning is not optimized	RAM and Flash partitioning has not been optimized to provide maximum capability to the Linux subsystem.	Memory
Various	Legato ECM Interface	The Legato ECM interface IP configuration is not initialized in this release.	USB / ECM
Various	USB Selective Suspend	USB Selective Suspend is not supported in this release	USB
Various	Audio / Voice	Audio / Voice is not supported in this release	Audio
Various	Configuration	Factory configuration processes are not fully supported, and therefore samples are available with minimal custom configuration.	Configuration
Various	Carrier Image Switching	Carrier-specific image support is not available in this release	Certification
Various	AirVantage Connectivity is not supported	The AirVantage device client is unavailable for this platform in this release.	AirVantage
Various	Partial AT and QMI SDK support	This release does not support all planned AT commands or QMI messages used by Sierra SDK.	AT / QMI / SDK
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.	Linux / Boot

21 Troubleshooting

Please contact customer service for support and debug

22 Certification Description

Release 1 is not intended for industrial or carrier certification.

23 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

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