



WP8548 and WP750x

Customer Release Notes

Release 16.1

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Document History

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01.02	2015/10/22	Release 6 upgrade instructions	RK
01.03	2015/11/13	Release 7	RK
01.04	2015/12/15	Release 8	KW
01.05	2016/02/16	Release 9	RK
01.06	2016/02/29	Release 9 upgrade instructions URL change	RK
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01.08	2016/05/06	Release 10.1	RK
01.09	2016/06/07	Release 11	RK
01.10	2016/08/22	Release 12	SA
01.11	2016/09/23	Release 12.2	SA
01.12	2016/12/16	Release 13	SA/KW
01.13	2017/01/31	Release 13.1	SA
01.14	2017/05/03	Release 14	SA
01.15	2017/12/11	Release 15	SA
01.16	2018/09/04	Release 16	SA
01.16.1	2018/11/14	Release 16.1	SA

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1 Introduction

1.1 Scope of this document

This document describes changes in the SWI9X15Y 7.0 line of firmware.

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
AF	Application Framework (Legato)
AT	Access Terminal, Attention
CS	Circuit Switched
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
QMI	Qualcomm Messaging Interface
ULPM	Ultra Low Power Mode

3 Related documentation

Ref. #	Doc. #	Document title
[R-1]	4117452	SWI9X15Y 6.0 Customer Release Notes
[R-2]	4116440	AirPrime WP75xx/WP8548 - Product Technical Specification
[R-3]	4118047	AirPrime WPx5xx/WP76xx/WP77xx - AT Command Reference

4 Compatibility

Hardware compatibility

Product compatibility list
WP8548 – WCDMA bands 1/2/5/6/8/19, GSM 850/900/1800/1900



Product compatibility list
WP7504 – LTE bands 2/4/5/12/17/25/26, WCDMA bands 2/4/5, CDMA 0/1/10
WP7502 – LTE bands 1/3/7/8/20, WCDMA bands 1/8, GSM 900/1800

5 SWI9X15Y 7.0 Release 16.1

WPx5xx release 16.1 is a minor legato upgrade from Release 16, from Legato 18.06.1 to 18.06.4. There are no changes from Release 16 to linux, modem, or mcu component versions. Modem firmware SWI9X15Y_07.13.07.00 has now been approved for PTCRB, AT&T, and Sprint and carrier packages are included in this release.

5.1 Software Release Description

5.1.1 Release identification

Component	Revision
Legato Application Framework	18.06.4_a2b118ed13919cebd20f9d71e8810748

5.1.2 Released Files

Files	Carrier	Modem Firmware	Config	MCU Firmware	Linux Distribution	Base Legato System	Comment
WP8548 Approved							
WPx5xx_Release-16.1_GENERIC.exe	GENERIC	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.4	GCF / PTCRB Approved
WPx5xx_Release-16.1_ATT.exe	ATT	SWI9X15Y_07.13.07.00	001.036_000	002.004	SWI9X15Y_07.13.05.00	18.06.4	Carrier Approved
WP7502 Approved							
WPx5xx_Release-16.1_GENERIC.exe	GENERIC	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.4	GCF Approved
WP7504 Approved/Pending							
WPx5xx_Release-16.1_GENERIC.exe	GENERIC	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.4	GCF/ PTCRB Approved
WPx5xx_Release-16.1_ATT.exe	ATT	SWI9X15Y_07.13.07.00	001.036_000	002.004	SWI9X15Y_07.13.05.00	18.06.4	Carrier Approved
WPx5xx_Release-16.1_SPRINT.exe	SPRINT	SWI9X15Y_07.13.07.00	001.027_000	002.004	SWI9X15Y_07.13.05.00	18.06.4	Carrier Approved
from https://source.sierrawireless.com/resources/legato/wpfirmwarerelease16.1/							

Function	Files
Firmware components	Modem: Generic: 9999999_9904559_SWI9X15Y_07.13.07.00_00_GENERIC_001.040_000.spk ATT: 9999999_9904559_SWI9X15Y_07.13.07.00_00_ATT_001.036_000.spk Sprint: 9999999_9904559_SWI9X15Y_07.13.07.00_00_SPRINT_001.027_000.spk MCU: mcufw_002.004.cwe Linux: linux-SWI9X15Y_07.13.05.00.cwe Legato: legato-18.06.04.cwe (from https://source.sierrawireless.com/resources/legato/wpfirmwarerelease16.1/)

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5.1.3 Available Memory

RAM

105756 kB

*Value is read from the MemAvailable parameter in /proc/meminfo

5.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 16.

5.2.1 Corrections / Improvements

The following defects have been corrected in Release 16.1 since Release 16.

ID	Title	Description	Component
Legato			
18.06.4	Upgrade from 18.06.1	<ul style="list-style-type: none"> LE-10540 - SPI service support restored LE-10821 - QMI AVMS applications support LE-11375 - Service/AirVantageConnector - Disable user agreements by default 	Legato AF

5.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Component
Stability			
LXSWI9X1517-238	Kernel starving for data on network loss	When the device loses its connection to the network while sending uplink data, the kernel may freeze for ~40secs before starting to process user space again	Linux Distribution
QT19X1555-1207	Can't boot with NMEA service mapped to UART2	See QT19X1555-1205. A workaround was added to prevent the AT command from being executed, but the underlying issue is still in place.	Modem Firmware
Power			
QT19X1555-1216	Idle current too high with UIM2 active	UIM2 functionality was corrected (QT19X1555-1118), however idle current consumption is ~10mA higher when UIM2 is active compared to UIM1.	Modem Firmware
QT19X1555-1202	UART1 Tx held high prevents sleep mode	When using UART1 as the primary AT interface, holding Tx high prevents the module from entering sleep resulting in current consumption in the ~40mA range. mangOH holds UART1 Tx low, but other platforms may hold it high.	Linux



ID	Title	Description	Component
I/O			
LXSWIREF-805	Update WP85 IIO channel types	The IIO channel types for the WP85 need to be updated since the MangOH yellow uses a bosch sensor that reports gas resistance currently unsupported in the kernel. This will be available in the next release. A simple patch may be applied to the existing kernel if needed.	Linux Distribution
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	Linux Distribution
LXSWI9X1517-81	External PCM configuration needs reset to take effect	If after using PCM master mode on a particular audio profile, then using a different configuration, then returning to PCM master mode, a reset is required for PCM master mode to generate a clock again.	Linux Distribution
GNSS			
QT19X1555-143	Unable to get MS-Assisted GPS fix for SSL cert < 256 bytes	Some carriers such as Telus require a SSL cert of 128 bytes for MS-Assisted GPS. This is not currently supported.	Modem

6 SWI9X15Y 7.0 Release 16

WPx5xx release 16 is a MR release planned for PTCRB, AT&T, and Sprint. If issues are found in certification testing they will be corrected in a point release with minimal changes.

Release 16 also includes an upgrade to Legato 18.06.1 and yocto 2.2 (linux kernel version unchanged) offering substantial functional, stability, and security improvements over Release 15, as well as better compatibility with WP76/77. As a consequence of the legato upgrade, AirVantage connectivity is now supported through legato.

6.1 Software Release Description

6.1.1 Release identification

Component	Revision
Modem Firmware	SWI9X15Y_07.13.07.00 92cfd2c jenkins 2018/08/22 19:18:52
Linux Firmware	SWI9X15Y_07.13.05.00 2018-08-04_23:48:5
MCU Firmware	002.004
Legato Application Framework	18.06.1_4e248f24126aa11a2eb65050f7664c90
Binary Size	52 MB (compressed binaries)
IMEI SV	47
Qualcomm Stack Version	M9615ACETWMLZD551351026.1.118659.1
Linux Kernel Version	3.14.29ltsi-yocto-standard (jenkins@jenkins) (gcc version 6.2.0 (GCC)) #2 PREEMPT Sat Aug 4 23:41:40 UTC 2018

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Component	Revision
Supported H/W	WP8548, WP7504, WP7502

6.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4836
Skylight	N/A
Linux Drivers	S2.33N2.52
Linux SDK	SLQS04.00.15

6.1.3 Released Files

Files	Carrier	Modem Firmware	Config	MCU Firmware	Linux Distribution	Base Legato System	Comment
WP8548 Approved/Pending							
WPx5xx_Release-16_GENERIC.exe	GENERIC (GCF)	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	GCF Approved
WPx5xx_Release-16_PTCRB.exe	GENERIC (PTCRB)	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	PTCRB Approval - Pending
WPx5xx_Release-16_ATT.exe	ATT	SWI9X15Y_07.13.07.00	001.036_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	Carrier Approval - Pending
WP7502 Approved							
WPx5xx_Release-16_GENERIC.exe	GENERIC (GCF)	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	GCF Approved
WP7504 Approved/Pending							
WPx5xx_Release-16_GENERIC.exe	GENERIC (GCF)	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	GCF Approved
WPx5xx_Release-16_PTCRB.exe	GENERIC (PTCRB)	SWI9X15Y_07.13.07.00	001.040_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	PTCRB Approval - Pending
WPx5xx_Release-16_ATT.exe	ATT	SWI9X15Y_07.13.07.00	001.036_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	Carrier Approval - Pending
WPx5xx_Release-16_SPRINT.exe	SPRINT	SWI9X15Y_07.13.07.00	001.027_000	002.004	SWI9X15Y_07.13.05.00	18.06.1	Carrier Approval - Pending
from https://source.sierrawireless.com/resources/legato/wpfirmwarerelease16/							

Function	Files
Firmware components	Modem: Generic: 9999999_9904559_SWI9X15Y_07.13.07.00_00_GENERIC_001.040_000.spk MCU: mcufw_002.004.cwe Linux: linux-SWI9X15Y_07.13.05.00.cwe Legato: legato-18.06.01.cwe (from https://source.sierrawireless.com/resources/legato/wpfirmwarerelease16/)
Windows Drivers	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from https://source.sierrawireless.com/resources/legato/drivers-for-wp75xx_wp76xx_wp8548-series-modules---build-4836/
Documentation	AirPrime WP75XX WP8548 Product Technical Specification Rev13 AirPrime WPx5xx AT Command Reference r6 http://source.sierrawireless.com/devices/wp-series/wp8548/

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6.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 15.

6.2.1 Corrections / Improvements

The following feature additions and defect corrections have been addressed in Release 16.

ID	Title	Description	Component
Legato			
18.06.1	Upgrade from LE 16.10.4 to 18.06.1	This is a major architectural change including over 1 year of development. It aligns Legato with WP76 / 77 Release 10 / 9.1 respectively.	Legato AF
Linux			
QT19X1555-1251 QT19X1555-1253 QT19X1555-1262	Upgrade to yocto 2.2	While no major changes have been made to the linux kernel, yocto has been upgraded from 1.7 to 2.2 to support the Legato upgrade and provide better security with newer libraries compatible with WP76/77.	Linux, Toolchain
GCF			
QT19X1555-1221	Increment IMEI SVN	The IMEI SVN is incremented to 47	Modem Firmware
QT19X1555-1287	Update TS.25 list	Update TS.25 list displayed with AT+COPN to 9 July 2018	Modem Firmware
QMI Interface			
QT19X1555-1231	Unable to mute audio using QMI	QMI_SWI_M2M_AUDIO_SET_AVMMUTE_REQ_V01 has been corrected to mute audio	Linux binaries
QT19X1555-1165	QoS QMI notification does not provide bearer ID of dedicated bearer	The QMI notification that is sent by the modem when a QoS dedicated bearer is created did not include "BearerIdTlv". This has been corrected.	Modem Firmware
AirVantage			
QT19X1555-1086 QT19X1555-1254 QT19X1555-1266 QT19X1555-1271	Upgrade to Legato AirVantage connector	Release 14 added the ability to upgrade to the Legato AirVantage connector, but this release officially upgrades to a Legato version that supports it. See Legato release notes.	Legato
QT19X1555-1285	FOTA failed from AVC1.0 to AVC2.0	An inconsistency in version format (node /3/0/3) between legacy modem based AVC1.0 and new Legato based AVC2.0 was causing a FOTA failure in upgrade. The modem based AVC1.0 version format has been changed to match Legato so the FOTA bundle is independent of the firmware version being upgraded from.	Modem Firmware
Network connectivity			
QT19X1555-1246	SWI-Proxy - Embedded RMNET SW Data path over shared UM interface	SWI-Proxy has been ported from the WP76/77 to enable sharing of the data path between a tethered host (using SLQS) and Legato (for FOTA or Legato applications).	Modem Firmware
GNSS			
QT19X1555-1168	Add support for DR-Sync	Support for AT!GPSIDREN=1 has been added to enable DR-Sync	Modem Firmware
QT19X1555-1144	Xtra download failed	AT!GPSXTRAINITDNLN was failing to load GPS XTRA data. This has been corrected.	Modem Firmware

ID	Title	Description	Component
IO			
QT19X1555-1228	Couldn't wake up WPx5 from USB-SS Mode using the GPIO pins	When setting edge attribute for wakeable GPIOs in linux, the apps processor was not being woken from sleep. This has been corrected.	Linux
QT19X1555-1260	WP7504 ANT_CNTL not being set correctly for WCDMA	On some bands, ANT_CNTL0 was not going high when configured to do so. This has been corrected.	Modem Firmware
QT19X1555-1281	BANDSELEN customization not persistent	AT!CUSTOM="BANDSELEN" setting is now persistent across image switches and firmware updates.	Modem Firmware
QT19X1555-1242	WWAN LED displays "data active" pattern when in LTE attached state	The WWAN LED would previously blink on attach to LTE. This has been corrected to display solid on attach consistent with other RATs.	Modem Firmware
QT19X1555-1267	UART1 RI is active high	All UART control lines are active low. The RI line has been changed to active low for consistency.	Modem Firmware
SAR			
QT19X1555-1229 QT19X1555-1258	SAR GPIO support	The configuration is persistent across resets, image switches, and firmware upgrades.	Modem
SIM / eUICC			
QT19X1555-1250	le_sim_OpenLogicalChannel() Can't open a logical channel	QMI_UIM_OPEN_LOGICAL_CHANNEL_REQ_V01 added to support Legato API	Modem Firmware
AT Commands			
QT19X1555-1222	Add support for AT+WHWV	AT+WHWV has been added to return the hardware version	Modem Firmware
QT19X1555-1223	Add support for AT+WMSN	AT+WMSN has been added to return the serial number	Modem Firmware
QT19X1555-1224	Add customization to reboot on AT+CFUN=1	AT!CUSTOM="CFUNRESET",1 has been added to cause AT+CFUN=1 to behave as AT+CFUN=1,1 (force reset). This is disabled by default.	Modem Firmware
QT19X1555-1234	Add support for AT+CCED	Support for 3GPP command at+cced=0,3 has been added.	Modem Firmware
QT19X1555-1236	AT&D and +IFC don't save the settings on hardware UART	DTR control and flow control settings are now persistent.	Modem Firmware
QT19X1555-1282	AT!POWERWAKE fails to set ADC wakeup sources	AT!POWERWAKE=3,... (set ADC wakeup) was intermittently failing to set the ADC as a ULPM wakeup trigger. This has been fixed.	Linux binaries
QT19X1555-1159	!ANTSEL - query's response format mismatch	The return string for AT!ANTSEL? has been changed to match WP76, i.e. replace !ANTSEL: x,a,b,c,d with BAND x: a, b, c, d	Modem Firmware
Stability / Reliability			
LXSWI9X1517-252	UBIFS: User partition corruption after number of power cuts	After repeated power cuts without orderly shutdown it is possible to lose the UBIFS partition mounted @ /mnt/flash This has been fixed.	Linux kernel

6.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Component
AirVantage			
LE-10821	QMI AVMS applications don't work	Support for AVMS via QMI is not supported in the initial upgrade to Legato 18.06.1. This is supported in Release 16.1 (Legato 18.06.4)	Legato
Stability			
LXSWI9X1517-238	Kernel starving for data on network loss	When the device loses its connection to the network while sending uplink data, the kernel may freeze for ~40secs before starting to process user space again	Linux Distribution
QT19X1555-1207	Can't boot with NMEA service mapped to UART2	See QT19X1555-1205. A workaround was added to prevent the AT command from being executed, but the underlying issue is still in place.	Modem Firmware
Power			
QT19X1555-1216	Idle current too high with UIM2 active	UIM2 functionality was corrected (QT19X1555-1118), however idle current consumption is ~10mA higher when UIM2 is active compared to UIM1.	Modem Firmware
QT19X1555-1202	UART1 Tx held high prevents sleep mode	When using UART1 as the primary AT interface, holding Tx high prevents the module from entering sleep resulting in current consumption in the ~40mA range. mangOH holds UART1 Tx low, but other platforms may hold it high.	Linux
I/O			
LE-10540	Unable to use SPI service	The SPI device is missing in /dev hence it is not possible to start the Legato SPI service. This is addressed in Release 16.1 (Legato 18.06.4)	Legato
LXSWIREF-805	Update WP85 IIO channel types	The IIO channel types for the WP85 need to be updated since the MangOH yellow uses a bosch sensor that reports gas resistance currently unsupported in the kernel. This will be available in the next release. A simple patch may be applied to the existing kernel if needed.	Linux Distribution
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	Linux Distribution
LXSWI9X1517-81	External PCM configuration needs reset to take effect	If after using PCM master mode on a particular audio profile, then using a different configuration, then returning to PCM master mode, a reset is required for PCM master mode to generate a clock again.	Linux Distribution



ID	Title	Description	Component
GNSS			
QT19X1555-143	Unable to get MS-Assisted GPS fix for SSL cert < 256 bytes	Some carriers such as Telus require a SSL cert of 128 bytes for MS-Assisted GPS. This is not currently supported.	Modem

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7 SWI9X15Y 7.0 Release 15

WPx5xx release 15 is a minor maintenance release to address some critical issues.

7.1 Software Release Description

7.1.1 Release identification

Component	Revision
Modem Firmware / Carrier PRI	9999999_9904559_SWI9X15Y_07.12.14.00_00_GENERIC_001.034_000
Yocto	SWI9X15Y_07.12.14.00 2017-11-29_20:54:53
Kernel	3.14.29ltsi-961ca71325_ed9f616cc8
Legato AF	16.10.4_544dbbbb32195d877e35a6648db67c1b
MCU	002.004
Binary Size	56MB (compressed binaries)
IMEI SV	46
Qualcomm Stack Version	M9615ACETWMLZD551351026.1.118659.1
Supported HW	WP8548, WP7504, WP7502

7.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4773
Skylight	4670 (not for commercial use)
Linux Drivers	S2.30N2.48
Linux SDK	04.00.11

7.1.3 Released Files

Function	Files	carrier	Modem Firmware	MCU Firmware	Linux Distribution	Base Legato System
Windows one click firmware upgrade tool	WPx5xx_Release-15_GENERIC.exe	GENERIC (GCF)	SWI9X15Y_07.12.14.00	002.004	SWI9X15Y_07.12.14.00	16.10.4
	WPx5xx_Release-15_PTCRB.exe	GENERIC (PTCRB)	SWI9X15Y_07.12.09.00	002.004	SWI9X15Y_07.12.14.00	16.10.4
	WPx5xx_Release-15_ATT.exe	ATT	SWI9X15Y_07.12.09.00	002.004	SWI9X15Y_07.12.14.00	16.10.4
	WPx5xx_Release-15_SPRINT.exe	SPRINT	SWI9X15Y_07.12.09.00	002.004	SWI9X15Y_07.12.14.00	16.10.4

from <https://source.sierrawireless.com/resources/legato/wpfirmwarerelease15/>

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Function	Files
Firmware components	Firmware- Generic: 9999999_9904559_SWI9X15Y_07.12.14.00_00_GENERIC_001.034_000.spk TA from Release 14: PTCRB: 9999999_9904559_SWI9X15Y_07.12.09.00_00_GENERIC_001.033_000 ATT: 9999999_9904367_SWI9X15Y_07.12.09.00_00_ATT_001.028_000 Sprint: 9999999_9905133_SWI9X15Y_07.12.09.00_00_SPRINT_001.020_000 Note that due to incompatibilities introduced in Release 14, Legato 16.10.3+ must NOT be combined with SWI9X15Y_07.11.xx (Release 13.1) or older modem component. See section Legato AF / modem incompatibility for details. MCU: mcufw_002.004.cwe Yocto: boot-yocto_wp85.cwe Legato AF: legatoz-16.10.4.cwe (from https://source.sierrawireless.com/resources/legato/wpfirmwarerelease15/)
Windows Drivers	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from https://source.sierrawireless.com/resources/legato/drivers-for-wp75xx_wp76xx_wp8548-series-modules---build-4653/
Documentation	AirPrime WP75XX WP8548 Product Technical Specification Rev13 AirPrime WPx5xx AT Command Reference r4 http://source.sierrawireless.com/devices/wp-series/wp8548/

7.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 14.

7.2.1 Corrections / Improvements

The following defects have been addressed in Release 15.

ID	Title	Description	Component
Legato			
16.10.4	Upgrade from LE 16.10.3	2 issues are fixed in this release: <ul style="list-style-type: none"> - Unable to read IMSI in Legato on some units - Legacy app won't compile in 16.10.3 framework 	Legato
QT19X1555-1124	Unable to register new AT commands on client restart	Multiple clients may register for AT command forwarding, but if one client restarted it was not able to re-register and the system needed to be reset to recover. A client may now re-register upon restart.	Modem Firmware
Linux			
QT19X1555-1140 LXSWI9X1517-247 MCU-69	Safe power down sequence for a legato application	AT!POWERDOWN, ULPM, and Linux poweroff now perform the same orderly shutdown sequence as AT!RESET.	Linux, MCU
QMI Interface			

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ID	Title	Description	Component
QT19X1555-1141	Carrier PRI TLV (0x17 and 0x18) for QMI_DMS_SWI_GET_CW E_PKS_INFO cannot be accessed by Legato	QMI_DMS_SWI_GET_CWE_PKS_INFO internally supported carrier PRI name and version (TLV 0x17 and 0x18), but this needed to be added to the interface definition for legato to access them.	QMI
QT19X1555-1163	QMI_NAS_GET_SERVING_SYSTEM_MSG NetworkDesc Corrupt for ATT/Generic FW	If the data for network name was encoded, extra handling was required to properly populate this field to be presented correctly.	Modem Firmware
LWM2M / AirVantage			
QT19X1555-1166	Crash when reading particular IMEI by AirVantage client	IMEI's containing the numeric sequence 2553 or 2573 were being incorrectly parsed resulting in access to memory out of bounds having unpredictable consequences including modem crash.	Modem Firmware
Network			
IMEI SVN	Increment IMEI SVN	The IMEI SVN is incremented to 46 after Release 14 TA at 45.	Modem Firmware
GPS			
QT19X1555-1154	Modem crash after 1 day with active GPS tracking session on	There was an apparent memory leak observed under certain conditions with GPS tracking on, eventually causing an assert. Upgrade to Qualcomm service branch r551351026.1.118659.1 to address this. Qualcomm CRs: 833912, 971372	Modem Firmware
IO			
QT19X1555-1201	cannot set CUSTOM value: BANDSELEN - Antenna Select feature failing	The antenna select feature AT!ANTSEL is available if enabled via AT!CUSTOM="BANDSELEN",1, however this was disabled by default and protected at lock level 3. It has been relaxed to lock level 2.	Modem Firmware
SAR			
QT19X1555-1199	Add AT!SARBACKOFF offset from max tx power	Make AT!SARBACKOFF command compatible with EM/MC74xx. Return offset from max tx power set through AT!MAXPWR	Modem Firmware
SIM / eUICC			
QT19X1555-1118	VCC and Reset line 'pulsing' on UIM2 disrupting eUICC.	Due to interactions between UIM1 and UIM2 clocks, UIM2 was unstable when UIM1 was disabled. UIM2 power is now stable. UIM1 and UIM2 interfaces now perform similarly.	Modem Firmware
QT19X1555-1152	Incorrect UICC Terminal Profile sent on power-up	Byte 17 bit 7 and 8 to indicate E-UTRAN and HSDPA support were not being reported immediately after powerup. Only after UICC was hotswapped. Applicable to WP75xx only.	Modem Firmware
QT19X1555-1095	In dual SIM operation, insertion/removal of the inactive SIM causes instability	With the fix to QT19X1555-1216 dual SIM now operates as expected.	Modem Firmware
Manufacturing test			
QT19X1555-713	Add support for TX power configuration in LTE under FTM	Add LTE support for: AT!DALSTXMOD AT!DALSNSVAL AT!DALSTXPWR	Modem Firmware

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ID	Title	Description	Component
Boot			
QT19X1555-1193	Unplanned response on I2C 0x52 on boot causes boot fail.	External hardware (e.g. IoT card) responding on I2C address 0x52 was interacting with a Qualcomm boot configuration function intended for their reference platform. This feature was removed.	Boot loader
QT19X1555-1205	Can't boot after configuring NMEA service mapped to UART2 interface.	Setting AT!MAPUART=4,2 was found to prevent booting. This command is now disabled so the feature cannot be enabled from the AT command interface. Will investigate root cause to restore this feature in a future release.	Modem Firmware

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7.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Component
AirVantage			
QT19X1555-830	LWM2M node 4.0.4 defects	<p>1. Only one address is returned per context. If it is an IPV4V6 context, it chooses the IPv6 address. Therefore, the IPv4 address isn't being reported to the server.</p> <p>2. If you query the instances fast enough, it is returning the wrong data. <code>at+wds=3,0,"/4/0/4/0"</code> 10.96.187.172 OK <code>at+wds=3,0,"/4/0/4/1"</code> 10.96.187.172 OK <code>at+wds=3,0,"/4/0/4/1"</code> øE OK</p> <p>3. Right now, the AirVantage server will show the contents of node 4.0.4.0 as the "IP Address" to the user. This may or may not be the address that provides data connectivity to AirVantage.</p>	Modem Firmware
Stability			
LXSWI9X1517-238	Kernel starving for data on network loss	When the device loses its connection to the network while sending uplink data, the kernel may freeze for ~40secs before starting to process user space again	Linux Distribution
LXSWI9X1517-252	UBIFS: User partition corruption after number of power cuts	After repeated power cuts without orderly shutdown it is possible to lose the UBIFS partition mounted @ /mnt/flash A linux patch is available upon request.	Linux
QT19X1555-1207	Can't boot with NMEA service mapped to UART2	See QT19X1555-1205 above. A workaround was added to prevent the AT command from being executed, but the underlying issue is still in place.	Modem Firmware
Power			
QT19X1555-1216	Idle current too high with UIM2 active	UIM2 functionality was corrected (QT19X1555-1118), however idle current consumption is ~10mA higher when UIM2 is active compared to UIM1.	Modem Firmware
QT19X1555-1202	UART1 Tx held high prevents sleep mode	When using UART1 as the primary AT interface, holding Tx high prevents the module from entering sleep resulting in current consumption in the ~40mA range. mangOH holds UART1 Tx low, but other platforms may hold it high.	Linux

ID	Title	Description	Component
I/O			
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	Linux Distribution
LXSWI9X1517-81	External PCM configuration needs reset to take effect	If after using PCM master mode on a particular audio profile, then using a different configuration, then returning to PCM master mode, a reset is required for PCM master mode to generate a clock again.	Linux Distribution



8 SWI9X15Y 7.0 Release 14

WPx5xx release 14 includes Qualcomm security updates and improvements in preparation for AT&T and Sprint Maintenance Releases as well as forward compatibility for future AirVantage feature development. Many defects found in Release 13.1 are also addressed. Note that some fundamental issues with Sierra QMI definitions were corrected in this release making it incompatible with Release 13.1 and prior releases. Further details are provided in section [Legato AF / modem incompatibility](#).

8.1 Software Release Description

8.1.1 Release identification

Component	Revision
Modem Firmware / Carrier PRI	9999999_9904559_SWI9X15Y_07.12.09.00_00_GENERIC_001.033_000
Yocto	SWI9X15Y_07.12.09.00 2017-04-27_02:18:19
Kernel	3.14.29tsi-961ca71325_ab5094eade
Legato AF	16.10.3_7776bb75a488e0db67b0d24975b46dd0
MCU	001.011
Binary Size	56MB (compressed binaries)
IMEI SV	45
Qualcomm Stack Version	M9615ACETWMLZD551351026.1
Supported H/W	WP8548, WP7504, WP7502

8.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4653
Skylight	4670 (not for commercial use)
Linux Drivers	S2.28N2.42
Linux SDK	04.00.06

8.1.3 Released Files

Function	Files
Windows one-click firmware upgrade tool	WPx5xx_Release-14_GENERIC.exe (from https://source.sierrawireless.com/resources/legato/wpfirmwarerelease14/) ** ATT and Sprint packages will be posted once certification is received. **



Function	Files
Firmware components	Firmware-Generic: 9999999_9904559_SWI9X15Y_07.12.09.00_00_GENERIC_001.033_000.spk ** ATT and Sprint modem firmware will be posted once certification is received. ** Note that due to incompatibilities introduced in this release, Legato 16.10.3 must NOT be combined with SWI9X15Y_07.11.xx (Release 13.1) or older modem component. See section Legato AF / modem incompatibility for details. MCU: mcufw_001.011.cwe Yocto: boot-yocto_wp85.cwe Legato AF: legatoz.cwe (from http://source.sierrawireless.com/resources/legato/wpfirmwarerelease14/)
Windows Drivers	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from https://source.sierrawireless.com/resources/legato/drivers-for-wp75xx_wp76xx_wp8548-series-modules---build-4653/
Documentation	AirPrime WP75XX WP8548 Product Technical Specification Rev13 (when available) AirPrime WPx5xx AT Command Reference r3 (when available) http://source.sierrawireless.com/devices/wp-series/wp8548/

8.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 13.

8.2.1 New Features

Title	Description	Component
Certification		
Qualcomm upgrade	Upgrade to Qualcomm stack M9615ACETWMLZD551351026.1. - multiple improvements and security fixes since the previous update	Modem Firmware
WP7504/WP8548 AT&T certification	WP7504 and WP8548 AT&T Maintenance release certification is in progress on this release. Results are still pending. Certification was previously received on Release 12.2 (SWI9X15Y_07.11.11.00)	Modem Firmware
WP7504 Sprint certification	WP7504 Sprint Maintenance release certification is in progress on this release. Results are still pending. Certification was previously received on Release 12 (SWI9X15Y_07.11.09.00).	Modem Firmware
TS.25 list update	Update hard coded TS.25 list to 20-Feb-2017	Modem Firmware
AirVantage Ready	The generic release is certified as AirVantage Ready.	Firmware + Platform Software Package
IMEI SVN	Increment IMEI SVN to 45	Modem Firmware
AirVantage		
AVC2 upgradability	A new, Legato based AirVantage client (AVC2) is currently under development. As development is not yet complete, this release will continue to support AirVantage through the legacy client AVC1 that includes all functionality from WPx5xx Release 13.1. Hooks have been added to allow for AVC2 to assume control with a future Legato AF upgrade when available. - AirVantage credentials support for AVC2 - Method to enable/disable AVC1 over QMI	Modem Firmware

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	- AVC1 -> AVC2 FOTA support - AVC2 -> AVC1 FOTA support - AVC2 SOTA support - forward AT+WDS configuration commands to AVC2	
GPS		
QMI to configure NMEA port auto-tracking GNSS session values	Port from EM/MC74xx: <ul style="list-style-type: none"> ▪ QMI_SWILOC_GET_AUTO_START_SETTINGS ▪ QMI_SWILOC_SET_AUTO_START_SETTINGS 	Modem Firmware
Power / MCU		
ULPM AT command support	Add AT command support to set wakeup triggers and enable ULPM. See AT command spec for details on usage.	Modem Firmware, Linux Distribution
MCU upgradability	Add support for future upgradability to MCU 2.xx for better feature compatibility with WP76xx.	Linux Distribution
eUICC		
AT+CCID	Add support for AT+CCID Reads Integrated Circuit Card ID and eUICC Card ID (if applicable) of the SIM card. See AT command spec for details on usage.	Modem Firmware
Security		
Firewall	Close network access to all interfaces except PING, SSH and DHCP over usb0 (ECM interface).	Linux Distribution
Remove security keys from QXDM Logs	Remove printing of PSK and PSKID in QXDM logs	Modem Firmware
Remove external host access to internal SWI QMI Services (SFS)	SFS now only accessible to internal hosts.	Modem Firmware
Remove gdbserver	For licensing and security reasons, gdb server has been removed from rootfs in the default build configuration and moved to the toolchain	Linux Distribution
QCT: Critical security bulletin - CVE-2017-6211	Critical security bulletin addressing supplementary service buffer overflow released after M9615ACETWMLZD551351026.1 was incorporated into the stack.	Modem Firmware
Legato AF		
16.10.3	devMode removed from default build	Legato AF

8.2.2 Corrections / Improvements

The following defects have been addressed in Release 14.

ID	Title	Description	Component
QMI Interface			
QT19X1555-1057	Sierra QMI response result code uses wrong field id of 0x01 instead of 0x02	Many of the Sierra QMIs returned the result code in field id 0x01 instead of 0x02 which didn't match the specification. This has been fixed aligning with EM/MC74xx. As a consequence of this change, previous Legato AF versions are incompatible with this modem release and all that follow. See section Legato AF / modem incompatibility for details.	Modem Firmware, Legato AF, SDK

ID	Title	Description	Component
LWM2M / AirVantage			
QTI9X1555-971	LWM2M AVC DM session fails if DM credentials are shorter than Bootstrap credentials	Certain (non AirVantage) LWM2M servers with shorter credentials than the Bootstrap server could not be used due to this issue.	Modem Firmware
QTI9X1555-908	Modem crashes after issuing an incomplete AT+WDSW command	e.g. AT+WDSW=3 caused the module to crash	Modem Firmware
QTI9X1555-939	Fix LWM2M UTC Offset (3.0.14) when in western hemisphere	UTC offset shows value: "-248:00" , i.e: at+wds=3,0,"/3/0/14" -248:00	Modem Firmware
Network			
QTI9X1555-1009	TLS fails if network does not provide NITZ	When the NITZ information is not provided by the attached network, the installation FW /Bundle fails as the TLS certificate requires a valid date. Now, if not provided by NITZ, a timer server is queried on the network.	Linux Distribution
QTI9X1555-980	Network Operator name truncated or blank	The QMI object QMI_NAS_GET_PLMN_NAME to query network operator (e.g. via Skylight) was returning incorrect information. This has been corrected.	Modem Firmware
QTI9X1555-762	AT notification for NI only occurs if valid network matched	A network that is not listed in the hard-coded TS.25 list would not generate a !NI ARUSL notification.	Modem Firmware
LXSWI9X1517-123	Cannot establish IPV6 connection while SMACK is enabled	If a global IPV6 address is added to eth0/bridge0, Linux kernel crashed when a TCP IPV6 packet was received.	Linux Distribution
QTI9X1555-1073	Inaccurate radio protocol capability returned	WP7504 was returning FALSE to HSUPA and WCDMA support. WP7502 was returning TRUE to CDMA support. This resulted in some minor command and capability inaccuracies.	Modem Firmware
QTI9X1555-1080	Read IMEISV via QMI	IMEISV added to QMI_DMS_GET_DEVICE_SERIAL_NUMBERS response	Modem Firmware
GPS			
QTI9X1555-1026	GPSCLRASSIST does not clear Galileo assistance data	Fixed ability to clear Galileo assistance data, e.g. at!gpsclrassist=1,0,0,0	Modem Firmware
QTI9X1555-1074	GPSCOLDSTART/ GPSCLRASSIST clears gpsloc and TTFE when gps tracking	The GPS TTFE and location data were cleared on AT!GPSCOLDSTART even if it failed: e.g. at!gpscoldstart ErrCode = 18 OK at!gpsstatus? Current time: 2017 03 27 0 19:47:36 2017 03 27 0 19:47:36 Last Fix Status = NONE 2017 03 27 0 19:47:36 Fix Session Status = NONE No TTFE available	Modem Firmware
IO			
QTI9X1555-161	19.2MHz System Clock fails to remain on after call is ended	Previously if the system clock was active (e.g. AT+WEXTCLK=1,1) when a voice call was started, the end of the voice call would disable the clock. The clock will now remain on until both the voice call has ended and the clock is disabled by the application.	Modem Firmware

ID	Title	Description	Component
QTI9X1555-974	AT+KSLEEP requires reboot to take effect	Release 13 added a compatibility feature from HL to control sleep via DTR. As originally implemented, a reset was required for changes to this configuration for take effect. It may now be updated at runtime.	Modem Firmware
QTI9X1555-994	Local audio record not working out of call	Previously, recording of audio to a local file (e.g. with AT!AVAUDIO) was supported while in call, but would only recorded silence if no call was active. Recording of audio out of call is now supported.	Linux Distribution, Legato AF
Firmware Update			
QTI9X1555-1016	fwupdate does not work with mcufw.cwe or .spk package alone	Fixed an issue preventing fwupdate from loading a file containing only a mcu image.	Modem Firmware
QTI9X1555-1007	Image Switching QMI IDL fixes from 9x07	Corrected/added some image switching QMI DMS Commands incorrect/missing (ex. QMI_DMS_SWI_GET_FIRMWARE_CURR).	Modem Firmware
QTI9X1555-931	QMI_DMS_SWI_GET_CWE_PKS_INFO to be updated to match latest spec to provide carrier PRI name and version	Added support for QMI object QMI_DMS_SWI_GET_CWE_PKS_INFO TLVs 0x17 and 0x18.	Modem Firmware

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8.3 Known Issues

This section presents all known issues in this release.

8.3.1 Legato AF / modem firmware incompatibility

As part of QTI9X1555-1057, some corrections were made to long standing issues with the QMI interface. This aligns the Sierra QMI response result codes with EM/MC74xx, WP76xx, and newer members of these product families. Our policy is generally to maintain backward compatibility with older modem images, but as a consequence of the fundamental nature of this change, Legato AF version 16.10.2 and older may not be combined with modem firmware version SWI9X15Y_07.12.xx or newer and Legato AF version 16.10.3 and newer may not be combined with modem firmware version SWI9X15Y_07.11.xx or older. Any Legato – Modem interaction such as fwupdate (and FOTA), AirVantage features, GPIO/ADC access and secure file system access, among others, would be impacted. There may also be other unforeseen functional or stability consequences and therefore such combinations are not supported.

8.3.2 Other known issues

ID	Title	Description	Component
AirVantage			
QTI9X1555-830	LWM2M node 4.0.4 defects	<p>1. Only one address is returned per context. If it is an IPV4V6 context, it chooses the IPv6 address. Therefore, the IPv4 address isn't being reported to the server.</p> <p>2. If you query the instances fast enough, it is returning the wrong data. at+wds=3,0,"/4/0/4/0" 10.96.187.172 OK at+wds=3,0,"/4/0/4/1" 10.96.187.172 OK at+wds=3,0,"/4/0/4/1" øE OK</p> <p>3. Right now, the AirVantage server will show the contents of node 4.0.4.0 as the "IP Address" to the user. This may or may not be the address that provides data connectivity to AirVantage.</p>	Modem Firmware
Stability			
QTI9X1555-1077	WP8548 attached to specific network via UMTS 900 chronically crashes on data connection.	Under investigation. So far only observed on one module on one particular commercial network.	Modem Firmware
LXSWI9X1517-238	Kernel starving for data on network loss	When the device loses its connection to the network while sending uplink data, the kernel freeze for ~40secs before starting to process user space again	Linux Distribution
Power			

ID	Title	Description	Component
QT19X1555-1079	Safe power down sequence for a legato application	AT!RESET executes an orderly shutdown of apps whereas AT!POWERDOWN does an emergency shutdown. An orderly shutdown is preferred in both cases.	Linux Distribution, MCU Firmware
I/O			
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	Linux Distribution
LXSWI9X1517-81	External PCM configuration needs reset to take effect	If after using PCM master mode on a particular audio profile, then using a different configuration, then returning to PCM master mode, a reset is required for PCM master mode to generate a clock again.	Linux Distribution
SIM			
QT19X1555-1118	VCC and Reset line 'pulsing' on UIM2 disrupting eUICC	When the modem is active, the control lines to SIM slot 2 are as expected, but in low power mode, the VCC and Reset lines start pulsing unexpectedly at ~1 second intervals. This behavior is suspected to affect eUICC when in SIM slot 2, the full extent of which is still under investigation.	Modem Firmware
QT19X1555-1095	In dual SIM operation, insertion/removal of the inactive SIM causes instability	If while actively using SIM1 (in UIM1) and SIM2 (in UIM2) is removed, SIM1 stops working. Upon re-insertion of SIM2, the modem becomes unstable with AT+CIMI and AT+CCID commands causing a crash.	Modem Firmware



9 SWI9X15Y 7.0 Release 13.1

WPx5xx release 13.1 addresses a few major AVMS issues found since release 13. It also includes a PRI update for configuration enhancement.

9.1 Software Release Description

9.1.1 Release identification

Component	Revision
Modem Firmware / Carrier PRI	9999999_9904559_SWI9X15Y_07.11.22.00_00_GENERIC_001.032_000
Yocto	SWI9X15Y_07.11.21.00 2016-12-07_20:57:53
Kernel	3.14.29ltsi-a00e464379_b0ce579abb
Legato AF	16.10.1_a6a25fbda05738774857dccb9fd76a99
MCU	001.011
Binary Size	56MB (compressed binaries)
IMEI SV	43
Qualcomm Stack Version	M9615ACETWMLZD551351013.1.63410.1.65027.1
Supported H/W	WP8548, WP7504, WP7502

9.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4581
Windows SDK	None
Skylight	4567
Linux Drivers	S2.26N2.39
Linux SDK	04.00.03

9.1.3 Released Files

Function	Files
Windows one-click firmware upgrade tool	WPx5xx_Release-13.1_GENERIC.exe (from https://source.sierrawireless.com/resources/legato/wpfirmwarerelease13_1/)
Firmware components	Firmware-Generic: 9999999_9904559_SWI9X15Y_07.11.22.00_00_GENERIC_001.032_000.spk MCU: mcufw_001.011.cwe Yocto: boot-yocto_wp85.cwe Legato AF: legatoz.cwe (from http://source.sierrawireless.com/resources/legato/wpfirmwarerelease13_1/)
Windows Drivers	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from http://source.sierrawireless.com/resources/legato/drivers-for-wp-series-modules---build-4581/

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Function	Files
Documentation	AirPrime WP75XX WP8548 Product Technical Specification Rev12 AirPrime WPx5xx AT Command Reference r3 (when available) http://source.sierrawireless.com/devices/wp-series/wp8548/

9.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 13. Only the Legato AF and modem / carrier PRI components are impacted.

9.2.1 New Features

None.

9.2.2 Corrections / Improvements

The following defects have been addressed in Release 13.1.

ID	Title	Description	Component
Legato 16.10.1			
LE-5981	Sync Status in Warning state	On AirVantage, the sync status warns of unknown applications. This issue does not affect device operation. This is resolved in Legato AF 16.10.1	Legato AF
AirVantage			
QT19X1555-983 QT19X1555-966	FOTA reliability	During secure socket transactions such as FOTA / SOTA downloads, data was sometimes not delivered to the device, causing the download to fail.	Modem
QT19X1555-915	LWM2M: Set default pmax in firmware to disable.	The value of pmax (default max Notification interval) will be set to 0 (disabled) when firmware containing this change is installed on the device, regardless of previous pmax setting.	Modem
PRI support			
QT19X1555-989	IPCHANNELRATEEN customization lost on upgrade	The IPCHANNELRATEEN customization was not properly backed up, causing it to be lost on an upgrade or image switch	Modem
QT19X1555-985	WWAN LED displays incorrect pattern in LPM	WWAN LED patterns for each power state are set in the PRI. The actual pattern observed for LPM regardless of the PRI setting was always on.	Modem

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9.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Component
AirVantage			
QT19X1555-1009	FOTA/SOTA fails if the attached network doesn't authorize the update of the local time	When the NITZ information is not provided by the attached network, the installation FW /Bundle fails as the TLS certificate requires a valid date. As a workaround, the current date may be manually set via AT!TIME, e.g. <code>at!time=2017,01,31,00,00,00</code> OR via the kernel console: <code>echo -e "at!time=2017,01,31,00,00,00\r" microcom -t500 /dev/ttyAT</code>	Modem
QT19X1555-939	AVMS LWM2M device object UTC offset has an incorrect value	UTC offset shows value: "-248:00", e.g.: <code>at+wds=3,0,"/3/0/14"</code> <code>-248:00</code> OK	Modem
QT19X1555-830	LWM2M node 4.0.4 defects	1. Only one address is returned per context. If it is an IPV4V6 context, it chooses the IPv6 address. Therefore, the IPv4 address isn't being reported to the server. 2. If you query the instances fast enough, it is returning the wrong data. <code>at+wds=3,0,"/4/0/4/0"</code> <code>10.96.187.172</code> OK <code>at+wds=3,0,"/4/0/4/1"</code> <code>10.96.187.172</code> OK <code>at+wds=3,0,"/4/0/4/1"</code> <code>øE</code> OK 3. Right now, the AirVantage server will show 4.0.4.0 as the "IP Address" to the user. This may or may not be the address that provides data connectivity to AirVantage.	Modem
LE-6113	Synchronize warning in AirVantage due to the application model LEGATO _modified	When an application is loaded onto a Legato installation, a subsequent sync operation returns the warning in Sync Status due to "_modified" appended to the version: "Application read in the system is not available or unknown [WP8548_LE,16.10.1_a6a25fbda05738774857dccb9fd76a99_modified]"	Legato AF
I/O			

ID	Title	Description	Component
QT19X1555-161	System Clock conflict with audio	<p>If the system clock is configured to be permanently on, i.e. <code>AT+WEXTCLK=1,1</code>, the clock is disabled at the termination of audio activity. Conversely, if audio is active and the system clock is disabled, audio will stop until reinitiated.</p> <p>This issue limits the use of the external clock to non-audio platforms.</p>	Modem
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	<p>In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.</p>	Yocto
MOLWP9X15-25	4-wire UART2	<p>RTS/CTS not supported on UART2. Workaround: Use UART1 if hardware flow control is required.</p>	Modem

10 SWI9X15Y 7.0 Release 13

WPx5xx release 13 generic carrier package combined with Legato 16.10.0 brings several feature enhancements and bug fixes, particularly for the AirVantage client, SLQS 4.x Lite QMI support, and I/O support extensions as noted in section 5.2.

Legato 16.10.0 adds a new Developer Mode, to assist customers in configuring module and developing applications. This mode is enabled by default, and should be disabled prior to commercial deployment. See the following URL for further details:

<http://legato.io/legato-docs/latest/howToDevMode.html>

10.1 Software Release Description

10.1.1 Release identification

Component	Revision
Modem Firmware / Carrier PRI	9999999_9904559_SWI9X15Y_07.11.21.00_00_GENERIC_001.031_000
Yocto	SWI9X15Y_07.11.21.00 2016-12-07_20:57:53
Kernel	3.14.29ltsi-a00e464379_b0ce579abb
Legato	16.10.0_30575dab549eed507d413088125ae08c
MCU	001.011
Binary Size	56MB (compressed binaries)
IMEI SV	43
Qualcomm Stack Version	M9615ACETWMLZD551351013.1.63410.1.65027.1
Supported H/W	WP8548, WP7504, WP7502

10.1.2 Software Tools Versions

S/W Tools Name	Version
Windows Driver Package	B4581
Windows SDK	None
Skylight	4567
Linux Drivers	S2.26N2.39
Linux SDK	04.00.03

10.1.3 Released Files

Function	Files
Windows one-click firmware upgrade tool	WPx5xx_Release-13_GENERIC.exe (Release 13 was retracted, see http://source.sierrawireless.com/resources/legato/wpfirmwarerelease13_1/)



Function	Files
Firmware components	Firmware-Generic: SWI9X15Y_07.11.21.00 / 001.030_760 MCU: mcufw_001.011.cwe Yocto: boot-yocto_wp85.cwe Legato: legato.cwe (Release 13 was retracted, see http://source.sierrawireless.com/resources/legato/wpfirmwarerelease13_1/) Note that while most components may be upgraded to the current release, for carrier certified images (as noted above), the modem version must be fixed to the certified version. Therefore most of the features/fixes described in these release notes are not available. Those that are modem independent are highlighted in the change description.
Windows Drivers	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from http://source.sierrawireless.com/resources/legato/drivers-for-wp-series-modules--build-4581/
Documentation	AirPrime WP75XX WP8548 Product Technical Specification Rev12 AirPrime WPx5xx AT Command Reference r3 http://source.sierrawireless.com/devices/wp-series/wp8548/ (when available)

10.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 12.2. As described above, the release consists of multiple components. This serves 2 purposes:

- Allows customers to modify the yocto/legato components (distributed at <http://legato.io>) to package with the other components for their specific needs
- Allows customers to upgrade yocto / legato / MCU components while keeping modem component at a version certified by a specific carrier, as noted in [Released Files](#).

The software changes refer to the product features when all components have been upgraded to Release 13 / Legato 16.10. To better understand the feature set when only upgrading a subset of components a column showing the component(s) in which the feature / fix is contained is provided. As a consequence, Sprint and AT&T certified firmware (on modem releases 07.11.09.00 and 07.11.11.00 respectively) will not benefit from any features or fixes with a modem component when upgrading yocto/legato/mcu components.

10.2.1 New Features

Title	Description	Component
Certification		
WP7502 GCF certification	All issues with WP7502 GCF certification (including voice) resolved in SWI9X15Y_07.11.12.00 (incremental modem changes from Release 12.2)	Modem
IMEI SVN	Increment IMEI SVN to 43	Modem
AirVantage		
Time Series, part #1	- User app can create a time series on a resource of an asset instance, offline. [le_avData_StartTimeSeries] - Data points (string, integer, float, boolean) can then be cumulated into the time series, offline, using 2 methods: a) [le_avdata_SetString, le_avdata_SetInt, le_avdata_SetFloat or le_avdata_SetBool] Periodical time series, interval between each sample is predefined in step 1 : user app does not have the ability to assign a particular timestamp to a sample. cumulated data point's timestamp is automatically assigned by Legato.	Modem / Legato

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	<p>b) [le_avdata_RecordString, le_avdata_RecordInt, le_avdata_RecordFloat or le_avdata_RecordBool] user app can assign a particular timestamp to a data point (so not necessary periodic series)</p> <p>The above API calls may notify the user app of memory overflow situation, in this event, sample can no longer be cumulated into the serie</p> <ul style="list-style-type: none"> - User app can push the time series to AV, only online (AVC connection). [le_avdata_PushTimeSeries] <p>error is returned if no AVC connection</p> <p>Limitations:</p> <ul style="list-style-type: none"> - Cumulated series are not stored in flash, possible loss of data if app crashes/stops/restarts, module reboot - One time series per resource. - Can only push series (step 3) when online, possible loss of data when pushing series offline - No ACK, although step 3 succeeds, the user app does not have confirmation that the series has been received by AV. Possible loss of data if network/server issue. - 1K block size 	
LWM2M: Change default pmax in firmware from 60 seconds	Unless otherwise specified by the network, Observe data was sent every 60 seconds. This was increased to 12 hours.	Modem
SLQS 4.x Lite QMI support		
Reset Cause QMI objects	QMI_DMS_SWI_INDICATION_REGISTER_REQ /RESP QMI_DMS_SWI_GET_RESET_INFO_REQ /RESP QMI_DMS_SWI_GET_RESET_INFO_IND	Modem
Channel rates per PDN/QMI Control Point	QMI_WDS_SWI_GET_CURRENT_IP_CHANNEL_RATE	Modem
LOC Auto Start QMI objects	QMI_SWILOC_GET/SET_AUTO_START_SETTINGS	Modem
Get/set customizations by name string	TLV 0x20 in QMI_DMS_SWI_GET_CUST_FEATURES	Modem
Good / Dropped Rx/Tx Bytes and Packets	QMI_WDS_SWI_RM_TRANSFER_STATISTICS	Modem
EPS dedicated bearers-related fixes	QMI_QOS_SWI_READ_DATA_STATISTICS	Modem
Suppress QoS flow notifications	AT!CUSTOM: FLOWNOTIDISABLE	Modem
I/O		
GPIO 28-31 Support	<p>The 4 I/O lines that support Antenna Control functionality now have the alternate function to be used as standard GPIOs in a manner similar to other GPIOs (configurable for modem or embedded host) E.g. AT+WIOCFG?</p> <p>...</p> <p>+WIOCFG: 28,16,0,0,1,0,0 +WIOCFG: 29,16,0,0,1,0,0 +WIOCFG: 30,16,0,0,1,0,0 +WIOCFG: 31,16,0,0,1,0,0</p> <p>...</p> <p>When configured for embedded host, these GPIO are accessible via standard sysfs: sys/class/gpio. E.g.</p>	Modem

	echo 28 > /sys/class/gpio/export	
GPIO 36, 38, 39 IRQ support	In addition to the GPIOs that already support IRQ, 36, 38, and 39 may be used. These are also the 3 possible GPIO ULPM boot sources. E.g. echo rising > /sys/class/gpio/gpio36/edge	Yocto
Add GPIO 39 boot source to sysfs for ULPM	In addition to GPIO 36 and 38, GPIO 39 may be used as a GPIO ULPM boot source, adding: /sys/module/swimcu_pm/boot_source/gpio39	Yocto / Legato
add ADC boot source to sysfs for ULPM	In addition to timer and GPIO, ADC 2 or 3 may now be configured as a ULPM boot source (only one at a time). /sys/module/swimcu_pm/adc/interval /sys/module/swimcu_pm/boot_source/adc/adc2/above /sys/module/swimcu_pm/boot_source/adc/adc2/below /sys/module/swimcu_pm/boot_source/adc/adc2/select /sys/module/swimcu_pm/boot_source/adc/adc2/triggered	Yocto / Legato / MCU
UART1 power control	AT+KSLEEP has been added to control how UART1 DTR affects low power mode of the module. By default it behaves the same as before with low power mode determined internally.	Modem
UART1 control lines from sysfs	UART1 control lines may now be accessed as aliased GPIO lines from sysfs similar to how RI is already supported, e.g. echo DTR > /sys/class/gpio/export cat /sys/class/gpio/gpioDTR/value Note that AT!RIOWNER=1 is required to allocate UART1 control lines to embedded host.	Modem / Yocto / Legato
SIM		
External SIM selection support	AT+KSIMSEL is added to support external UIM multiplexer compatible with HL.	Modem

10.2.2 Corrections / Improvements

The following defects have been addressed in Release 13.

ID	Title	Description	Component
Cert			
QT19X1555-783	Fix AT+COPN handling of extended-ASCII char input	Address issue with handling "Türkiye"	Modem
QT19X1555-784	QMI_NAS_GET_PLMN_NAME not using Sierra TS25 dynamic list	QMI adapted to reflect correct dynamic TS25 list aligned with AT+COPN.	Modem
QT19X1555-759	[WP7502][GCF] UE Crashes during reselection to 2G	Crashing on TS 34.121-1 TC 8.2.3.1/8.2.3.2/8.2.3.3	Modem
QT19X1555-858	OMA-DM unable to process out of sequence concatenated WAP Bootstrap SMS	Bootstrap failures were observed in poor coverage due to out-of-order WAP messages. These are now correctly re-ordered.	Modem

ID	Title	Description	Component
AirVantage			
QT19X1555-806 QT19X1555-824 QT19X1555-825 QT19X1555-837 QT19X1555-918	Server Connectivity	Automatically perform DTLS resume if connectivity to the server is lost to ease burden on application for managing connection. Issues with SOTA failures, Observe cancelled on restart, and no LE_AVC_SESSION_STOPPED event on lost session also resolved with this fix.	Modem / Legato
QT19X1555-860	Reboot recovery	Observe does not work upon module reboot	Modem
QT19X1555-826 QT19X1555-855 QT19X1555-869 QT19X1555-886	Stability	Various, infrequently observed crash occurrences have been fixed: calling AT+WDSG, in al_event_set, when registering device to AVMS, during long interval Observe testing	Modem / Legato
QT19X1555-833	LWM2M profile array indexing	at+wdss indexing errors corrected	Modem
QT19X1555-885	LWM2M: Increase default pmax in firmware	Unless otherwise specified by the network, Observe data was sent every 60 seconds, which is generally too frequent. The default was increased to 12 hours. Note, however, that this default does not take effect with firmware download, only on newly manufactured modules.	Modem
AT / QMI			
QT19X1555-875	Carrier name truncated for QMI_NAS_GET_HOME_NETWORK_MSG	Account for longer network name as it may expand through decoding, depending on encoding scheme.	Modem
QT19X1555-817	QMI_DMS_SWI_GET_CWE_PKGS_INFO_REQ_V01 returns error	Some strings needed to be increased to accommodate version lengths	Modem
QT19X1555-847	Second QMI interface does not work over USB	Sync AT!USBCOMP with QMI configuration when multiple RMNET interfaces are enabled in the USB composition	Modem
QT19X1555-853	QMI_QOS_SWI_READ_DATA_STATS TX packet and TX packet drop counters are incorrect	TX dropped packet and byte counters are always reset to 0 on the default data bearer when switching uplink throughput from default to dedicated data bearers in LTE	Modem
QT19X1555-218	AT!CUSTOM support alignment	Only list features in AT!CUSTOM? that can be set with the current access level	Modem
I/O			
LXSWI9X1517-127	sierra_spidev.h is missing certain macros	Replace sierra_spi with linux spidev. SPI now supported under: /dev/spidev0.0	Yocto
(QT19X1555-753) LXSWI9X1517-144	GPIO strange behaviour	Inconsistent behavior was observed on GPIO2, 13, 33 during functional test of supported GPIOs. In particular, GPIO2 was found to only be able to operate properly as an output if it was first configured as input with pull up. The resolution was to explicitly initialize all GPIO as input / no pull on boot up.	Yocto
Stability			
MCU-47	I2C bus lock up	I2C bus locks up and MCU communication is lost after multiple ULPM or ADC accesses. The I2C driver on the MCU was reworked to address this issue.	MCU

ID	Title	Description	Component
MCU-66	Extra WP reset on MCU firmware update	On first boot up after an MCU firmware update the WP was resetting unnecessarily. This reset has been removed.	MCU
Power optimization			
QT19X1555-944	Idle current too high	<p>Changes introduced after Release 12 prevented the module from achieving the lowest current consumption while idle. Values ~15mA were measured when ~3mA was expected. See PTS section Power Consumption.</p> <p>Note that Legato 16.10 by default prevents LPM operation with app: devMode. To test power consumption, you must stop this app, e.g. from kernel console: app stop devMode</p> <p>To prevent it from restarting on reset you must disable devMode auto-start from your build.</p>	Modem

10.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Component
AirVantage			
LE-5981	Sync Status in Warning state	On AirVantage, the sync status warns of unknown applications. This issue does not affect device operation. This is resolved in Legato 16.10.1	Legato
QT19X1555-965	Stop/Start application failed with error	On rare occasions, a read failure (lwm2m.max.attempts.exceeded) is seen when starting or stopping an application from the AirVantage server. Workaround is to attempt the operation again.	TBD
QT19X1555-966	Install application failed with error	On rare occasions, a read failure (lwm2m.9: request failed) is seen when installing an application. Workaround is to attempt the operation again.	TBD
I/O			
QT19X1555-161 QT19X1555-630	System Clock conflict with audio	If the system clock is configured to be permanently on, i.e. AT+WEXTCLK=1,1, the clock is disabled at the termination of audio activity. Conversely, if audio is active and the system clock is disabled, audio will stop until reinitiated. This issue limits the use of the external clock to non-audio platforms.	Modem
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	Yocto
MOLWP9X15-25	4-wire UART2	RTS/CTS not supported on UART2. Workaround: Use UART1 if hardware flow control is required.	Modem



11 SWI9X15Y 7.0 Release 12.2

Release 12.2 is a modem-only update from Release 12 primarily to address remaining AT&T certification issues. Note that a preliminary Release 12.1 was available for a limited time, but has now been replaced with Release 12.2. Release 12.1 will not be supported going forward.

11.1 Software Release Description

11.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.11.11.00 2016/09/20 16:36:44
Modem	SWI9X15Y_07.11.11.00 2016/09/20 16:36:44
No change from Release 12 for components below:	
Yocto	SWI9X15Y_07.11.09.00 2016-08-11_20:51:24
Kernel	3.14.29ltsi-c14b887744_0c284d02b3
Legato	16.07.0_cd4985660a55cc9a6f9a2ed28bcc757e
MCU	001.005
Binary Size	55MB (compressed binaries)
IMEI SV	42
Qualcomm Stack Version	M9615ACETWMLZD551351013.1.63410.1.65027.1
Supported HW	WP8548, WP7504, WP7502

11.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4484	
Windows SDK	None	
Skylight	4567	
Linux Drivers	S2.25N2.37	
Linux SDK	04.0.01	

11.1.3 Released Files and Download Processes

Download Option	Files
Windows	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from: http://source.sierrawireless.com/
CWE/NVU files	Various PRI Packages
Windows Firmware and Configuration upgrade tools	Firmware and configuration download instructions are available at https://source.sierrawireless.com/resources/legato/wpfirmwarerelease12_2/



11.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 12.

11.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
WP8548/7504 AT&T Certification – no known issues remaining.			
QT19X1555-813	SSL handshake failing with Mformation OMA-DM Server on AT&T WCDMA	Resolved SSL issue on AT&T for ODIS.	AT&T Certification
QT19X1555-254	+CSVM not returning voicemail number	Return voicemail number from SIM on AT+CSVM?	AT&T Certification
QT19X1555-718	[31.121][8.4] - 8.4 UICC presence detection - failed on 2nd slot	TC 8.4 fails on second SIM slot.	PTCRB Certification
WP7502 GCF Certification – Still open issues. See Known Issues section			
QT19X1555-786	[WP7502][WP8548][51.010-4][27.22.2] SAT Terminal Profile : Enable item 3.5 and 8.8 if Voice enabled	UICC Terminal Profile for 2G corrected when voice enabled.	GCF Certification
Data connectivity			
QT19X1555-764	Fails to make a data connection if a username and password is included in startdatasession2	If user modifies the APN or profile authentication info with SINGLEAPNSWITCH feature enabled, a data connection will fail. Windows customers are impacted by this if they change the APN using Windows VANUI and find that they are unable to connect to the new APN.	Data
AirVantage			
QT19X1555-696	LWM2M Observe: Implement sequence number for Observe notifications	Previously sequence number of 0 was always used cause observe feature to end unexpectedly in some situations.	AirVantage
QT19X1555-645	Time Series (AirVantage - application data)	Allow external host to specify content-format in QMI Notification message. Note that further development is required in other components for this feature to be complete at a system level.	AirVantage
QT19X1555-795	AVC interpret server's WRITE (using COAP_POST) as CREATE command	Interpretation of COAP POST messages from the server was incorrect causing CoAP POST on the Legato object instance to trigger a LWM2M CREATE which is rejected.	AirVantage
QT19X1555-780	[LWM2M] When the device connects to the server, the supported object list is not correct for object 9 (software management)	Remove prefix "lwm2m" from FW version in object 9.	AirVantage
QT19X1555-818	[LWM2M] Application uninstall could need to stop and start the session	Stop and start the session on AirVantage uninstall.	AirVantage

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11.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
WP7502 - GCF cert			
QT19X1555-759	[WP7502][GCF] UE Crashes during reselection to 2G	Crashing on TS 34.121-1 TC 8.2.3.1/8.2.3.2/8.2.3.3 This issue has been fixed and will be available in a later release.	RF
Various	[WP7502] RF and protocol issues	Under investigation with chip vendor	RF
Stability			
QT19X1555-690	I2C stops working during stress test for MCU ULPM / ADC2,3	After ~100+ iterations of ULPM execution or ADC2,3 read, the I2C bus locks up and MCU communication is lost until reset. This issue has been resolved and the fix may be applied with an updated MCU image (MCU version 001.007) if required. This fix will be included in Release 13.	I2C
I/O			
QT19X1555-161 QT19X1555-630	System Clock conflict with audio	If the system clock is configured to be permanently on, i.e. AT+WEXTCLK=1,1, the clock is disabled at the termination of audio activity. Conversely, if audio is active and the system clock is disabled, audio will stop until reinitiated.	System clock
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	USB
LE-4624	TI wl18xx WiFi IoT module support consumes external GPIO42	The WiFi module driver configures GPIO42 and prevents it from being used for other purposes, even if the WiFi module is not present.	GPIO
QT19X1555-753	GPIO strange behaviour	Inconsistent behavior was observed on GPIO2, 13, 33 during functional test of supported GPIOs. In particular, GPIO2 was found to only be able to operate properly as an output if it was first configured as input with pull up.	GPIO



12 SWI9X15Y 7.0 Release 12

This section describes the changes since the previous release.

12.1 Software Release Description

12.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.11.09.00 2016/08/11 18:03:20
Modem	SWI9X15Y_07.11.09.00 2016/08/11 18:03:20
Yocto	SWI9X15Y_07.11.09.00 2016-08-11_20:51:24
Kernel	3.14.29ltsi-c14b887744_0c284d02b
Legato	16.07.0_cd4985660a55cc9a6f9a2ed28bcc757e
MCU	001.005
Binary Size	55MB (compressed binaries)
IMEI SV	42
Qualcomm Stack Version	M9615ACETWMLZD551351013.1.63410.1.65027.1
Supported H/W	WP8548, WP7504, WP7502

12.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4484	
Windows SDK	None	
Skylight	4567	
Linux Drivers	S2.25N2.36	
Linux SDK	03.3.16	

12.1.3 Released Files and Download Processes

Download Option	Files
Windows	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from: http://source.sierrawireless.com/
CWE/NVU files	Various PRI Packages
Windows Firmware and Configuration upgrade tools	Firmware and configuration download instructions are available at https://source.sierrawireless.com/resources/legato/wpfirmwarerelease12/

12.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 11.

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12.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
Various	Legato 16.07.0	This release package includes and was validated with Legato 16.07.0. Legato release notes are available at http://www.legato.io .	Legato AF
Certification			
MOLWP9X15-7	WP7504 GCF Certification	GCF Certification Received	GCF Certification
MOLWP9X15-2	WP7504 Sprint Certification	All known WP7504 Sprint certification issues have been addressed in preparation for Sprint Lab entry.	Carrier Certification
MOLWP9X15-4	WP8548/WP7504 PTCRB Certification	Various items identified during lab and field testing for WP8548/WP7504 PTCRB certification. See section on known issues for outstanding issues.	PTCRB Certification
MOLWP9X15-3 MOLWP9X15-5	WP8548/WP7504 AT&T Certification	Various carrier-specific certification items identified during lab and field testing for WP8548 and WP7504 AT&T certification. See section on known issues for outstanding issues.	Carrier Certification
MOLWP9X15-67	WP7502 GCF Certification	Various items identified during lab and field testing for WP7502 GCF certification. See section on known issues for outstanding issues.	GCF Certification
Various	Voice improvements	Busy tone generation. Various voice call improvements identified during audio stress testing. See section on known issues for outstanding issues.	Audio Certification
AirVantage			
QT19X1555-101 QT19X1555-125	Server connection reliability	Failure to register under certain circumstances corrected.	AirVantage
QT19X1555-653 QT19X1555-695	Observe feature improvements	LWM2M TLV length 255 handling fixed. MCU firmware version added to AV rev string	AirVantage
Various	FOTA reliability	Several FOTA failure scenarios addressed.	AirVantage
QT19X1555-714 QT19X1555-731	AVMS Stability	AVMS client crashes under certain corner cases fixed.	AirVantage
Image switch			
QT19X1555-697 QT19X1555-669	Image switch support	Added support for image switch on customer built images	Image switch
I/O Interfaces			
LXSWI9X1517-45	uSD card support	A conflict between uSD card and WiFi card added in Release 11 is corrected allowing boot time detection of uSD card.	uSD
QT19X1555-69	UART2 disable	Disable UART2 when AT!MAPUART is 0 to conform to AT command spec	UART
QT19X1555-673 QT19X1555-668	ADC support	ADC0 – 3 are now all fully supported via AT!MADC, QMI, or Legato. Value returned in mV (decimal).	ADC
QT19X1555-337	External antenna control	External antenna control lines are now supported when enabled with AT!CUSTOM="BANDSELEN" and AT!ANTSEL	RF

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ID	Title	Description	Impacted Domain
QT19X1555-676	GPIO6 modem support	When configured for modem control via AT+WIOCFG=6,4, GPIO6 is now available as a GPIO to the modem and not used by the apps kernel for RESET_OUT_N (e.g. for mangOH). The default configuration will continue to be under apps kernel control.	GPIO
QT19X1555-757	Fix modem RI functionality on modem side	Fix persistence of AT!RIOWNER=0 so that it doesn't have to be executed after every boot to take effect.	Modem Ring Indicator
QT19X1555-536	RF sensitivity improvements	APT/internal GPIO64 was inadvertently programmed to generate a PWM signal which degraded diversity and GLONASS sensitivity. This has been corrected.	RF
AT / QMI Interfaces			
QT19X1555-512	W_DISABLE pin notification	The state of the W_DISABLE pin is now accurately represented in QMI.	QMI
QT19X1555-412	Get MSISDN	Fixed a bug with DMS_GET_MSISDN that incorrect length is returned for ISMI field.	QMI
QT19X1555-553	QMI on USB	Fix an issue where device cannot send and respond to USB traffic through EP0 that has packet size of n*64 bytes	QMI
QT19X1555-155	AT!GSTATUS?	Fix an issue that causes AT!GSTATUS to show incorrect band and channel in a 1xRTT only network when !SELRAT is not set to 09 (CDMA only)	AT
MOLWP9X15-33	AT!POWERDOWN	Add support for AT!POWERDOWN to power off MDM (lowest power state of WP module). To power the module back on, assert reset or toggle power switch from off to on. Also, asserting RESET with power switch off performs emergency power off.	AT / Power control
GPS			
QT19X1555-67	DR_SYNC	Fix GPS DR_SYNC signal generation	GPS
QT19X1555-411	GNSS Assistance Data	Clear TTFB on AT!GPSCLRASSIST=0,0,0,0 to assist in testing warm/hot start scenarios	GPS
QT19X1555-641	GNSS performance	Update some GPS NV default settings for WP7504 to pass 3GPP2 CS0036	GPS

12.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
WP8548/WP7504 - PTCRB			
QT19X1555-718	[31.121][8.4] - 8.4 UICC presence detection - failed on 2nd slot	TC 8.4 fails on second SIM slot. A resolution has been verified and will be available in the next release.	SIM
WP8548/WP7504 – AT&T Cert			
QT19X1555-266	[WP7504][AT&T][LTE-BTR-1-9062] - PS Start Value was missing from WCDMA UE Capability Info	Test case applicability being debated.	RF
QT19X1555-742	[WP7504][WP8548][AT&T] - Some AMR tests are failing due to low MOS score	Uplink MOS score below that required in some test cases. Audio calibration optimization being reviewed.	Audio Certification
WP7502 - GCF cert			
QT19X1555-725	[51.010-1][20.7] UE connects to wrong cell in 2G	May be a test procedure issue. Retest pending.	RF
QT19X1555-759	[WP7502][GCF] UE Crashes during reselection to 2G	Crashing on TS 34.121-1 TC 8.2.3.1/8.2.3.2/8.2.3.3	RF
I/O			
QT19X1555-161 QT19X1555-630	System Clock conflict with audio	If the system clock is configured to be permanently on, i.e. AT+WEXTCLK=1,1, the clock is disabled at the termination of audio activity. Conversely, if audio is active and the system clock is disabled, audio will stop until reinitiated.	System clock
QT19X1555-466	USB Audio interfaces do not load correctly on Windows when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	USB
QT19X1555-690	I2C stops working during stress test for MCU ULPM / ADC2,3	After ~100+ iterations of ULPM execution or ADC2,3 read, the I2C bus locks up and MCU communication is lost until reset. Some progress is being made on this issue, but a complete solution is not yet available.	I2C
LE-4624	T1 w18xx WiFi IoT module support consumes external GPIO42	The WiFi module driver configures GPIO42 and prevents it from being used for other purposes, even if the WiFi module is not present.	GPIO
QT19X1555-753	GPIO2, 13 and 33 strange behaviour	Inconsistent behavior was observed on GPIO2, 13, 33 during functional test of supported GPIOs. In particular, GPIO2 was found to only be able to operate properly as an output if it was first configured as input with pull up.	GPIO



13 SWI9X15Y 7.0 Release 11

This section describes the changes since the previous release.

13.1 Software Release Description

13.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.10.04.00 2016/06/01 20:30:40
Modem	SWI9X15Y_07.10.04.00 2016/06/01 20:30:40
Yocto	SWI9X15Y_07.10.04.00 2016/06/02 06:32:28
Kernel	3.14.29ltsi-c14b887744_39dcf2256d
Legato	16.04.0_63633d9200de787b7c2a6dca03d2cff3
Binary Size	55MB (compressed binaries)
IMEI SV	41
Qualcomm Stack Version	M9615ACETWMLZD551351010.1
Supported HW	WP8548, WP7504, WP7502

13.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4484	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.25N2.36	
Linux SDK	03.03.16	

13.1.3 Released Files and Download Processes

Download Option	Files
Windows	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from: http://source.sierrawireless.com/
CWE/NVU files	Various PRI Packages
Windows Firmware and Configuration upgrade tools	Firmware and configuration download instructions are available at https://source.sierrawireless.com/resources/legato/wpfirmwarerelease11/

13.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 10.1.

13.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
Various	Legato 16.04.0	This release package includes and was validated with Legato 16.04.0. Legato release notes are available at http://www.legato.io .	Legato AF
90537	Legato AF Secure Filesystem APIs	Fixed firmware support of Legato Secure Filesystem APIs.	Legato AF
91342 91526 91622	Legato AF QMI compatibility improvements	Improved Legato AF QMI compatibility with Linux and Modem images by statically linking QMI libraries in Legato AF This improves the independence of Legato AF from the Linux and Modem images.	Legato AF
Various	UBIFS support for USERRW partition	UBIFS support is added for the user read/write partition, mtd4. The mtd4 partition now defaults to UBIFS on next boot if erased entirely. The partition is unaffected if not erased.	Linux FS
Various	Sprint Certification improvements	Various carrier-specific certification items identified during lab and field testing	Carrier Certification
Various	AT&T Certification improvements	Various carrier-specific certification items identified during lab and field testing	Carrier Certification
Various	Audio certification improvements	Various voice call improvements identified during lab and field testing	Audio Certification
91943 92288	Fastboot Support in Linux LK	Fastboot support in the Linux bootloader can be configured with AT commands via the "FASTBOOTEN" customization: <i>Level 2 Unlock command:</i> AT!ENTERCND="A710" <i>Enable:</i> AT!CUSTOM="FASTBOOTEN",01 <i>Disable:</i> AT!CUSTOM="FASTBOOTEN",00	Linux LK
Various	UART1 4-wire Operation	Added HS serial driver to support 4-wire operation on UART1	Linux, UART
90263 91943	USB Composition improvements	USB composition configuration is now more flexible, configured by bitmask for supported interfaces. Refer to AT!USBCOMP=? for details.	USB
89334	LWM2M Observe Feature	Added support for LWM2M Observe functionality	AVMS
91307	LWM2M Block Transfer Mode	Added support for LWM2M Block Transfer Mode	AVMS
90678	Improved FOTA component management	Improved FOTA model to support the independent upgrade of system components	AVMS
88831	ADC Support	Added AT and QMI support for all four WP external ADC interfaces.	Linux, AT, QMI
91122	Optimized sleep mode power consumption	Optimized sleep mode power consumption by configuring internal GPIO correctly in the sleep state.	BSP
89766	Add support to handle LK compression in CWE	LK Compression is now supported when downloading a CWE packaged by the SWICWE tool	CWE
91829	Fix modem RI functionality on modem side	Add support for Modem Ring Indicator functionality on UART1 RI when AT!RIOWNER=0	Modem Ring Indicator

ID	Title	Description	Impacted Domain
92231	Fix intermittent external 19.2MHz System Clock when configured to be on by AT+WEXTCLK	System clock was being disabled during Modem sleep mode. This solution overrides a failure in the voting mechanism by forcing the clock and XO core on during sleep mode. <i>Limitation: The clock is shared with the external PCM interface, and will be disabled at the termination of a voice call as the PCM interface is disabled. This issue remains under investigation (4729).</i>	System Clock
90622	Galileo Support is enabled by default	Galileo support is enabled on new devices starting from this release.	GPS
4508	Fixed support of mounting a peripheral USB drive	Mounting a peripheral USB drive was inadvertently disabled in the previous release.	Peripheral USB
Various	Audio is enabled in applicable Carrier configurations for this release	AT&T and Generic carrier configurations support the Audio feature	Audio
90400	I2C Reliability during repetitive ULPM stress testing	Fixed an intermittent I2C failure which caused a failure to re-enter ULPM mode until the next power cycle or software reset.	ULPM
4592	Fixed a crash observed while attempting to mount from an absent microSD	A crash was resolved when attempting to mount an unplugged microSD card. <i>Note: See known issues below – microSD support is not supported in this release.</i>	SD
86131	Fix support of Antenna Control pins	External Antenna Control functionality is restored by isolating these pins from the Sound driver for the WP platform. <i>Note: This fix is pending validation</i>	ANT_CNTL

13.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
88818	Remove POWER_ON_N signal requirement from power-on conditions when ULPM mode is supported	The assertion of the POWER_ON_N signal consumes 0.828mA due to internal circuitry of WP8548/WP7502/WP7504. To achieve minimal ULPM power consumption, the requirement for this signal at power-up must be removed. In this release, the customer may implement the POWER_ON_N signal as a pulse in order to satisfy the power-on condition, then restore the minimal power consumption mode by de-asserting the signal once the device has powered up.	ULPM
4729	System Clock disabled at completion of voice call	If the system clock is configured to be permanently on, i.e. AT+WEXTCLK=1, 1, the clock is disabled at the termination of a voice call.	System clock
86145	TX_ON not configured with valid thresholds	TX_ON configuration needs to be updated in order to assert the signal on presence of transmit power.	TX_ON



ID	Title	Description	Impacted Domain
88878	DR_SYNC default configuration is not valid	Commands to enable/disable DR_SYNC operation do not adequately configure the feature, and the DR_SYNC pin is not generating a pulse.	DR_SYNC
92410	Busy tone generation not supported in voice calls	The busy tone is not generated	Audio, GCF, PTCRB
4595	USB Audio interfaces do not load correctly when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled. This is caused by conflicting USB compliance versions between the ECM and Audio drivers. This issue prevents the Windows host from entering Selective Suspend on the USB bus. This issue is being avoided by removing Audio from the USB composition in this release.	USB
5072	TI wl18xx WiFi IoT module support conflicts with microSD interface	The WiFi module driver uses resources required by the SDIO interface and prevents the mangOH microSD slot from functioning even if the WiFi module is not present.	SDIO
4815	TI wl18xx WiFi IoT module support consumes external GPIO42	The WiFi module driver configures GPIO42 and prevents it from being used for other purposes, even if the WiFi module is not present.	GPIO
Various	WiFi applications are not built when Legato is built within the Yocto environment	Legato AF WiFi applications are not included when the Yocto legato-af recipe is used. The applications are included when the Legato AF is built separately from the Yocto environment. Future releases of the Legato AF will not compile within this version of the Yocto environment, but will be supported in corresponding new Yocto releases.	Legato AF, WiFi

14 SWI9X15Y 7.0 Release 10.1

This section describes the changes since the previous release.

14.1 Software Release Description

14.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.09.02.00 2016/03/31 20:05:28
Modem	SWI9X15Y_07.09.02.00 2016/03/31 20:05:28
Yocto	SWI9X15Y_07.09.02.02 2016/04/15 02:39:24
Kernel	3.14.29ltsi-13c67b16ff_922830eb31
Legato	16.01.2_9e91388c2b14980a4d419259910a4d65
Binary Size	53MB (compressed binaries)
IMEI SV	41
Qualcomm Stack Version	M9615ACETWMLZD551351007.1
Supported H/W	WP8548, WP7504, WP7502

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14.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4484	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.25N2.36	
Linux SDK	03.03.15	

14.1.3 Released Files and Download Processes

Download Option	Files
Windows	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from: http://source.sierrawireless.com/
CWE/NVU files	Various PRI Packages
Windows Firmware and Configuration upgrade tools	Firmware and configuration download instructions are available directly through your Sierra Wireless FAE.

14.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 10.

14.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
Various	Added Linux support for MangOH WiFi reference design	Linux support is added for MangOH reference design with TI wl18xx WiFi IoT module	MangOH / WiFi

14.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Various	Audio is not supported	Audio is not supported in this release. Voice call control functionality is disabled. The USB audio interface is exposed by default.	Audio
86131	Antenna Control pins not working	External Antenna Control functionality is broken	ANT_CNTL
86145	TX_ON not configured with valid thresholds	TX_ON configuration needs to be updated in order to assert the signal on presence of transmit power.	TX_ON
81378	ADC Support	External ADC interfaces are supported in sysfs only.	ADC



ID	Title	Description	Impacted Domain
88818	Remove POWER_ON_N signal requirement from power-on conditions when ULPM mode is supported	<p>The assertion of the POWER_ON_N signal consumes 0.828mA due to internal circuitry of WP8548/WP7502/WP7504. To achieve minimal ULPM power consumption, the requirement for this signal at power-up must be removed.</p> <p>In this release, the customer may implement the POWER_ON_N signal as a pulse in order to satisfy the power-on condition, then restore the minimal power consumption mode by de-asserting the signal once the device has powered up.</p>	ULPM
90400	I2C Failure observed during repetitive ULPM stress testing	An intermittent I2C failure causes a failure to re-enter ULPM mode until the next power cycle or software reset.	ULPM
90537	Legato secure file system backup not supported	A storage location for the secure file system backup routines is not yet implemented for the WP, causing Legato backup routines to fail.	Legato / SFS
4595	USB Audio interfaces do not load correctly when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled.	USB
4508	Mounting a peripheral USB drive is not supported	Mounting a peripheral USB drive was inadvertently disabled.	Peripheral USB
4173	4-Wire UART on UART1 is not supported	An HS 4-wire UART driver is not yet included in this release.	UART
TBD	Fastboot is disabled	Fastboot is disabled due to an inflexible USB configuration limiting the ability to enable Fastboot independently. Fastboot is to be supported in future releases.	Fastboot
4592	Crash while mounting from an absent microSD	A crash occurs when attempting to mount an unplugged microSD card.	SD
90622	Galileo Support is not enabled by default	Galileo support is not enabled in this release.	GPS

15 SWI9X15Y 7.0 Release 10

This section describes the changes since the previous release.

15.1 Software Release Description

15.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.09.02.00 2016/03/31 20:05:28
Modem	SWI9X15Y_07.09.02.00 2016/03/31 20:05:28
Yocto	SWI9X15Y_07.09.02.00 2016/03/31 22:35:29
Kernel	3.14.29ltsi-13c67b16ff_922830eb31
Legato	16.01.2_9e91388c2b14980a4d419259910a4d65
Binary Size	45MB (compressed binaries)
IMEI SV	41

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Component	Revision
Qualcomm Stack Version	M9615ACETWMLZD551351007.1
Supported H/W	WP8548, WP7504, WP7502

15.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4484	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.25N2.36	
Linux SDK	03.03.15	

15.1.3 Released Files and Download Processes

Download Option	Files
Windows	The Windows Driver package is available directly through your Sierra Wireless FAE or can be downloaded from: http://source.sierrawireless.com/
CWE/NVU files	Various PRI Packages
Windows Firmware and Configuration upgrade tools	Firmware and configuration download instructions are available at https://source.sierrawireless.com/resources/legato/wpfirmwarerelease10/

15.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 9.

15.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
Various	Legato 16.01.2	This release package includes and was validated with Legato 16.01.2. Legato release notes are available at http://www.legato.io .	Legato
90183	Qualcomm M9615ACETWMLZD551351007.1	Notable fix for stability issue observed in Release 9: CR 764733: Fix intermittent crash observed on WP7504 during operation with CDMA and UMTS/GSM enabled simultaneously	Modem
80393 2865 4075 4491	Add support for USB Selective Suspend	USB Selective Suspend is supported, additionally adding handling of /dev/usb_link wakelock, allowing the system to enter the power collapse state (sleep mode) and reach minimal power consumption.	USB

Template #:	4117965	Revision:	01.16
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ID	Title	Description	Impacted Domain
4370	Clean up USB audio gadget on restart	Sound PCM devices were not properly closed when the audio gadget was disabled, causing the kernel to busy-loop while trying to open a previously unclosed PCM device.	USB
89234	GCF TC 27.22.4.29.1/1 - PDP not open when the SIM requires	Fix STK Terminal Profile to adapt to whether voice call support is enabled or disabled	GCF
90234	WP7504 - Add RF driver support for LTE Band 17	Added LTE Band 17 support for WP7504	RF
88837	WP7502 - ILPC, Open Loop Power and PRACH power on WCDMA B1, B8 and LTE B7	Default calibration updates for WP7502 to improve ILPC, Open loop power, and PRACH power on WCDMA B1, B8, and LTE B7	RF
88838	Fix Power Control state machine to prevent device from remaining in Low Power Mode after returning from critical low temperature	The modem enters Low Power Mode when the temperature falls below a critical threshold. This fixes a bug in the state machine where the modem was incorrectly stuck in Low Power Mode after the temperature rose back to within the normal range.	Power Control
Various	Update AirVantage Agent	Various stability and performance updates to the AirVantage agent	AirVantage
89693	Wakeup from ULPM on timer fails intermittently	When timer-based ULPM wakeup was enabled, an intermittent timer configuration issue resulted in the device remaining in ULPM until the next power cycle.	ULPM
None	User updates of GPIO configuration are lost when updating to latest release	The GPIO configuration was previously forced to predefined values in every release. The accompanying configuration files with this release will maintain the customer's GPIO configuration.	GPIO

15.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
Various	Audio is not supported	Audio is not supported in this release. Voice call control functionality is disabled. The USB audio interface is exposed by default.	Audio
86131	Antenna Control pins not working	External Antenna Control functionality is broken	ANT_CNTL
86145	TX_ON not configured with valid thresholds	TX_ON configuration needs to be updated in order to assert the signal on presence of transmit power.	TX_ON
81378	ADC Support	External ADC interfaces are supported in sysfs only.	ADC



ID	Title	Description	Impacted Domain
88818	Remove POWER_ON_N signal requirement from power-on conditions when ULPM mode is supported	The assertion of the POWER_ON_N signal consumes 0.828mA due to internal circuitry of WP8548/WP7502/WP7504. To achieve minimal ULPM power consumption, the requirement for this signal at power-up must be removed. In this release, the customer may implement the POWER_ON_N signal as a pulse in order to satisfy the power-on condition, then restore the minimal power consumption mode by de-asserting the signal once the device has powered up.	ULPM
90400	I2C Failure observed during repetitive ULPM stress testing	An intermittent I2C failure causes a failure to re-enter ULPM mode until the next power cycle or software reset.	ULPM
90537	Legato secure file system backup not supported	A storage location for the secure file system backup routines is not yet implemented for the WP, causing Legato backup routines to fail.	Legato / SFS
4595	USB Audio interfaces do not load correctly when ECM is enabled	In Windows a Yellow Bang is observed on the USB Audio interfaces when ECM is enabled.	USB
4508	Mounting a peripheral USB drive is not supported	Mounting a peripheral USB drive was inadvertently disabled.	Peripheral USB
4173	4-Wire UART on UART1 is not supported	An HS 4-wire UART driver is not yet included in this release.	UART
TBD	Fastboot is disabled	Fastboot is disabled due to an inflexible USB configuration limiting the ability to enable Fastboot independently. Fastboot is to be supported in future releases.	Fastboot
4592	Crash while mounting from an absent microSD	A crash occurs when attempting to mount an unplugged microSD card.	SD
90622	Galileo Support is not enabled by default	Galileo support is not enabled in this release.	GPS

16 SWI9X15Y 7.0 Release 9

This section describes the changes since the previous release.

16.1 Software Release Description

16.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.08.02.00 2016/02/05 23:29:29
Modem	SWI9X15Y_07.08.02.00 2016/02/05 23:29:29
Yocto	SWI9X15Y_07.08.02.00 2016/02/06 02:38:29
Kernel	3.14.29ltsi-5d7a6bf7c6_ed88cc68b5
Legato	16.01.0.Beta_aa0684bddf31f5ea2d457b53d2218972
Binary Size	45MB (compressed binaries)

Template #:	4117965	Revision:	01.16
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Component	Revision
IMEI SV	41
Qualcomm Stack Version	M9615ACETWMLZD5513404.1.42262.1
Supported H/W	WP8548, WP7504, WP7502

16.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4431	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.25N2.36	
Linux SDK	03.03.14	

16.1.3 Released Files and Download Processes

Download Option	Files
Windows	Install Driver B4431
CWE/NVU files	Various PRI Packages
Windows Firmware and Configuration upgrade tools	Firmware and configuration download instructions are available at https://source.sierrawireless.com/resources/legato/wpfirmwarerelease9/

16.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 8.

16.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
Various	Legato 16.01.0.Beta	This release package includes and was validated with Legato 16.01.0.Beta. Legato release notes are available at http://www.legato.io .	Legato
Various	Legato Installation Improvements	Legato installation is significantly faster. An installation failure observed while testing unexpected power removals during installation is also resolved.	Legato/ Installation
3466	Improve decoupling of Legato QMI PA and Modem firmware	Legato no longer must be compiled with the identical QMI libraries as the modem firmware	Legato/ QMI PA/ Compatibility
Various	Added support for Ultra Low Power Modes (ULPM)	Legato APIs are provided in this release to control the ULPM behaviour, including support for timer- and GPIO-based wakeup triggers.	ULPM

Template #:	4117965	Revision:	01.16
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ID	Title	Description	Impacted Domain
Various	Added Device Tree support	Enabled Device Tree to ease the effort to add new drivers for external customers/developers.	Yocto
3543	Do not provide unsupported image types for WP75/WP85	Removed 2k.yaffs2 from Yocto rootFS image generation. These images were not supported by the release, but were made available for download.	Yocto
87729	Yocto support on WP7502/WP7504	A bug in a Release 8 user application was attempting to mount the root FS partition with a new format shortly after the first power up, causing the partition to be erased.	Yocto
85089	CWE/SPK files can be loaded by directly using Legato fwupdate tool	A previous limitation requiring a FOTA package for the fwupdate tool has been removed, and CWE/SPK files can be loaded directly.	fwupdate
3927	ECM interface is enabled and routed by default	The ECM interface was previously enumerated but required further steps to enable the connection. This change provides an IP address to the host by default on the ECM interface, when enumerated.	ECM
88405	Qualcomm stack baseline	Update Qualcomm stack baseline to M9615ACETWMLZD5513404.1.42262.1 <ul style="list-style-type: none"> Significant improvement for GSM sensitivity. Multiple stability and security fixes identified by Qualcomm. 	Modem
88639	Stability with Sprint configuration	Heap exhaustion was observed frequently with a Sprint carrier configuration. Extra allocation is expected and the heap was increased to accommodate the requirement.	Modem Stability
Various	AirVantage	Various LWM2M updates for AirVantage	AirVantage
85796	On-board Image Switching	Added initial on-board image switching capability	Image Switching
Various	RF Drivers for WP75xx	Updated RF drivers and default configuration for WP7502/WP7504.	RF

16.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
80393	USB Selective Suspend not supported	USB Selective Suspend is not supported yet. Additional side effect of this asserts /dev/usb_link wakelock, preventing the system from entering power collapse state and reaching minimal power consumption.	USB
Various	Audio is not supported	Audio is not supported in this release. Voice call control functionality is disabled. The USB audio interface is exposed by default.	Audio
Various	FOTA	FOTA support is added in this release, but due to limitations of previous releases, FOTA cannot be used to upgrade a device to this release.	FOTA

ID	Title	Description	Impacted Domain
88767	Crash observed during multimode operation on WP7504.	An intermittent crash has been observed when testing on lab test equipment with multimode enabled. The issue can be avoided by disabling CDMA, but is rarely observed even with CDMA enabled	Stability/ WP7504
86131	Antenna Control pins not working	External Antenna Control functionality is broken	ANT_CNTL
86145	TX_ON not configured with valid thresholds	TX_ON configuration needs to be updated in order to assert the signal on presence of transmit power.	TX_ON
81378	ADC Support	External ADC interfaces are supported in sysfs only.	ADC
88035	GCF TC 27.22.4.29.1/1 - PDP not open when the SIM requires	SIM Toolkit related test case failure blocking GCF certification on this release	GCF
88818	Remove POWER_ON_N signal requirement from power-on conditions when ULPM mode is supported	<p>The assertion of the POWER_ON_N signal consumes 0.828mA due to internal circuitry of WP8548/WP7502/WP7504. To achieve minimal ULPM power consumption, the requirement for this signal at power-up must be removed.</p> <p>In this release, the customer may implement the POWER_ON_N signal as a pulse in order to satisfy the power-on condition, then restore the minimal power consumption mode by de-asserting the signal once the device has powered up.</p>	ULPM

In Addition to the listed known issue, the following features have not been tested.
 Firmware download over UART
 Internal RTC
 VGPIO pin



17 SWI9X15Y 7.0 Release 8

This section describes the changes since the previous release.

17.1 Software Release Description

17.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.05.01.00 2015/12/08 01:28:58
Modem	SWI9X15Y_07.05.01.00 2015/12/08 01:28:58
Yocto	SWI9X15Y_07.05.01.00 2015/12/08 01:28:58
Kernel	3.14.29ltsi-bfda7d39c8_b6c4f16553
Legato	15.10.1.Beta_6b0f919f6d57fc5af6930499ec253a0b
Binary Size	45MB (compressed binaries)
IMEI SV	40
Qualcomm Stack Version	M9615ACETWMLZD5513303
Supported HW	WP8548, WP7504

17.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4382	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.25N2.36	
Linux SDK	03.03.13	

17.1.3 Released Files and Download Processes

Download Option	Files
Windows	Install Driver B4382
CWE/NVU files	Various PRI Packages



Download Option	Files
Windows Firmware and Configuration upgrade tools	<p>Instructions:</p> <ol style="list-style-type: none"> 1) This procedure assumes the module is starting from Release 7. If the module is running something older than Release 7, please follow the upgrade instructions from that release first. 2) This procedure involves simple executables run on a Windows operating system. The module must enumerate a "DM" serial port over USB to execute this procedure. If the module is enumerating as an ECM device only (i.e. Ethernet over USB), please use the command "configEcm off" on the Linux shell to allow DM to enumerate in the USB composition. 3) Download the Carrier configuration packages from the link below. 4) Run the Carrier configuration tool: 9999999_9904559_SWI9X15Y_07.05.01.00_00_GENERIC_001.013_000-field.exe NOTE: This tool includes the modem and application processor firmware and carrier specific configuration. The modem will boot in Online mode following the application of this configuration. 5) Run the Legato upgrade tool: legato-15.10.1.exe 6) Optional: If ECM-only enumeration is desired, access the A5 console via UART, Ethernet, or USB (ADB), and issue command "configEcm on". Alternatively use "configEcm" to list optional parameters for the ECM configuration. <p>Links:</p> <ol style="list-style-type: none"> 1) Carrier Configurations: Generic Carrier http://downloads.sierrawireless.com/legato/1510/wp85/9999999_9904559_SWI9X15Y_07.05.01.00_00_GENERIC_001.013_000-field.exe 2) Legato: http://downloads.sierrawireless.com/legato/1510/wp85/legato-15.10.1.exe

17.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 7.

17.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
85659 / 86259 / 3633	Product Name update	Remove -G from product name	System
3572	Remove WP71 target	Remove wp71 build target	System
Various	WP750x	Add initial support for WP750x hardware variants	System
Various	Legato 15.10.1.Beta	This release package includes and was validated with Legato 15.10.1.Beta.	Legato
86447	Legato version string	Updated file location to retrieve Legato version	Legato

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ID	Title	Description	Impacted Domain
86312	Qualcomm stack baseline	Update Qualcomm stack baseline to M9615ACETWMLZD5513303	Modem
Various	AirVantage	Various LWM2M updates for AirVantage	AirVantage
85609 / 3588	GSM high band desense	Fix issues with desense during voice call in high band GSM Rx path	RF
86096	UART2	Service map to UART2 should return ERROR	AT
85575	AT!LTEINFO	Add support for AT!LTEINFO	AT

17.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
80393	USB Selective Suspend not supported	USB Selective Suspend is not supported yet. Additional side effect of this asserts <code>/dev/usb_link</code> wakelock, preventing the system from entering power collapse state and reaching minimal power consumption.	USB
Various	ADC Support	Some ADC interfaces (2-3) are not implemented	ADC
Various	On-board Image Switching	On-board Image Switching is not supported in this release. Host-based Image Switching is supported. A Generic carrier configuration will be provided.	Image Switching
Various	Audio is not supported	Audio is not supported in this release. The USB audio interface is exposed by default, and call control functionality is supported, but sound is not functional.	Audio
Various	Firmware upgrade via Developer Studio is not supported in this release	Customer cannot use Developer Studio to upgrade to this release.	Developer Studio
Various	YAFFS2 Not supported for rootfs	YAFFS2 is not supported for rootfs image, but is available when building the WP85 release from source. If loading rootfs directly, use the squashfs "2k.ubi" image, example: <code>mdm9x15-image-minimal-swi-mdm9x15.2k.ubi</code> The CWE files generated by the build process contain the squashfs image.	rootfs format
None	FOTA	FOTA is not yet officially supported	FOTA

In Addition to the listed known issue, the following features have not been tested.

- Firmware download over UART
- Internal RTC
- VGPIO pin

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18 SWI9X15Y 7.0 Release 7

This section describes the changes since the previous release.

18.1 Software Release Description

18.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.04.06.00 2015/10/30 10:49:23
Modem	SWI9X15Y_07.04.06.00 2015/10/30 10:49:23
Application	SWI9X15Y_07.04.06.00 2015/10/30 13:25:12
Legato	15.10.0.Beta
Binary Size	45MB (compressed binaries)
IMEI SV	40
Qualcomm Stack Version	AMSS 9x15 5.5.1.32 Post CS (M9615ACETWMLZD55132)
Supported H/W	WP8548-G – DV2 and above

18.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4368	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.25N2.35	
Linux SDK	03.03.12	

18.1.3 Released Files and Download Processes

Download Option	Files
Windows	Install Driver B4368
CWE/NVU files	Various PRI Packages

Download Option	Files
Windows Firmware and Configuration upgrade tools	<p>Instructions:</p> <ol style="list-style-type: none"> 7) This procedure involves simple executables run on a Windows operating system. The module must enumerate a "DM" serial port over USB to execute this procedure. If the module is enumerating as an ECM device only (i.e. Ethernet over USB), please use the command "configEcm off" on the Linux shell to allow DM to enumerate in the USB composition. 8) Download the Customer and Carrier configuration packages from the links below. 9) Run the applicable Customer configuration tool (see Links below for instructions): 1102621_9904889_WP8548-G_07.04.06.00_00_Generic_001.000_000-field.exe Or 9101011_5501011_WP8548-G_07.04.06.00_00_DevKit_001.013_000-field.exe NOTE: This tool includes the full Release 7 firmware, including Legato 15.10.0.Beta, and several important platform related configuration. The modem will boot in Airplane mode if this is the first application of this configuration. 10) Run the Carrier configuration tool: 9999999_9904559_SWI9X15Y_07.04.06.00_00_GENERIC_001.010_000-field.exe NOTE: This tool includes the modem and application processor firmware and carrier specific configuration. The modem will boot in Online mode following the application of this configuration. 11) Optional: If ECM-only enumeration is desired, access the A5 console via UART, Ethernet, or USB (ADB), and issue command "configEcm on". Alternatively use "configEcm" to list optional parameters for the ECM configuration. <p>Links:</p> <ol style="list-style-type: none"> 3) Customer Configurations: Select the appropriate customer configuration to upgrade your device. Execute AT command AT!PRIID? to determine the correct upgrade path. <ol style="list-style-type: none"> i. "PRI Part Number: 9904889" - Beta release generic configuration http://downloads.sierrawireless.com/legato/1510/wp85/1102621_9904889_WP8548-G_07.04.06.00_00_Generic_001.000_000-field.exe ii. "PRI Part Number: 5501011" - Early sample configuration http://downloads.sierrawireless.com/legato/1510/wp85/9101011_5501011_WP8548-G_07.04.06.00_00_DevKit_001.013_000-field.exe 4) Carrier Configurations: Generic Carrier http://downloads.sierrawireless.com/legato/1510/wp85/9999999_9904559_SWI9X15Y_07.04.06.00_00_GENERIC_001.010_000-field.exe

18.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 6.

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18.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
Various	Legato 15.10.0.Beta	This release package includes and was validated with Legato 15.10.0.Beta.	Legato
84306	Fixed GPIO configuration preventing system from entering LPM	An incorrect GPIO configuration caused a Wake lock to be held indefinitely on the application processor, preventing the processor from entering low power mode	Sleep
Various	Fixed Data connectivity failures observed with Linux SDK 03.03.11	Data Connectivity is resolved in Linux SDK release 03.03.12. SWI9X15Y Release 7 was validated with SDK 03.03.12.	Linux SDK
85171	Added default support for ECM Interface	ECM Interface may be enumerated by default, depending on customer preference.	USB
85410	Fixed modem instability when LWM2M Observe feature is enabled on the AVMS server	When a specific AVMS feature is enabled on the server, devices without this fix will reset upon connecting to the AVMS server. The AVMS feature is not enabled on the server at the time of this release, but will be enabled in the future. Devices with AVMS connectivity in the field must have this fix when the feature becomes active.	AVMS/ Stability
3423	Fixed device selection for YAFFS2 at mount time	Fixed assumption that the device passed to mount command is always mtd device. This issue led to file system erasure if the device passed to mount command was not mtd device.	Storage/ Stability

18.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
80393	USB Selective Suspend not supported	USB Selective Suspend is not supported yet. Additional side effect of this asserts <code>/dev/usb_link</code> wakelock, preventing the system from entering power collapse state and reaching minimal power consumption.	USB
Various	ADC Support	Some ADC interfaces (2-3) are not implemented	ADC
Various	On-board Image Switching	On-board Image Switching is not supported in this release. Host-based Image Switching is supported. A Generic carrier configuration will be provided.	Image Switching
Various	Audio is not supported	Audio is not supported in this release. The USB audio interface is exposed by default, and call control functionality is supported, but sound is not functional.	Audio
Various	Firmware upgrade via Developer Studio is not supported in this release	Customer cannot use Developer Studio to upgrade to this release.	Developer Studio

ID	Title	Description	Impacted Domain
3234	Module does not fully boot if no UART is available to the A5	<p>Default configuration assigns UART2 to the A5 console. If the UART mapping is modified to assign neither UART to the A5, the boot process does not complete, and the device cannot be re-configured to remove the faulty configuration.</p> <p>Recovery from this issue requires a firmware image to be downloaded containing a solution for the root cause, which is not available yet.</p> <p>UART allocation is modified using AT!MAPUART. Please do not modify the UART allocation via AT commands with this release due to this issue.</p>	Stability
Various	YAFFS2 Not supported for rootfs	<p>YAFFS2 is not supported for rootfs image, but is available when building the WP85 release from source. If loading rootfs directly, use the squashfs "2k.ubi" image, example: mdm9x15-image-minimal-swi-mdm9x15.2k.ubi</p> <p>The CWE files generated by the build process contain the squashfs image.</p>	rootfs format
None	MangOH Ethernet and USB type A in GSM mode	<p>During GSM transmit bursts an LDO on MangOH DV2 may signal poor power quality, which triggers a short (1.5msec) pulse on the RESET_IN and System_Reset signals.</p> <p>The System_Reset pulse triggers a reset of the USB3503 and LAN9514 devices on MangOH, putting them out of sync with the WP8548-G, and connectivity of the Ethernet port and USB Type A connector is lost.</p> <p>MangOH DV3 resolves this issue by removing R402 based on findings that the LDO's power quality assessment is not valid for this use. Users of MangOH DV2 may intermittently experience loss of Ethernet/USB Type A connection during and after GSM transmit.</p>	MangOH/ HSIC

In Addition to the listed known issue, the following features have not been tested.
 Firmware download over UART
 Internal RTC
 VGPIO pin

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19 SWI9X15Y 7.0 Release 6

This section describes the changes since the previous release.

19.1 Software Release Description

19.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.04.01.01 2015/10/01 17:45:03
Modem	SWI9X15Y_07.04.01.01 2015/10/01 17:45:03
Application	SWI9X15Y_07.04.01.01 2015/10/01 20:53:40
Legato	15.09.0.Beta
Binary Size	45MB (compressed binaries)
IMEI SV	40
Qualcomm Stack Version	AMSS 9x15 5.5.1.32 Post CS (M9615ACETWMLZD55132)
Supported H/W	WP8548-G – DV2

19.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4368	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.24N2.34	
Linux SDK	03.03.10	

19.1.3 Released Files and Download Processes

Download Option	Files
Windows	Install Driver B4368
CWE/NVU files	Various PRI Packages



Download Option	Files
Windows Firmware and Configuration upgrade tools	<p>Instructions:</p> <p>12) Download the Customer and Carrier configuration packages from the links below.</p> <p>13) Run the Customer configuration tool: 9101011_5501011_WP8548-G_07.04.01.01_00_DevKit_001.012_000-field.exe NOTE: This tool includes the full Release 6 firmware, including Legato 15.09.0.Beta, and several important platform related configuration changes. The modem will boot in Airplane mode following the application of this configuration.</p> <p>14) Run the Carrier configuration tool: 9999999_9904559_SWI9X15Y_07.04.01.01_00_GENERIC_001.009_000-field.exe NOTE: This tool includes the modem and application processor firmware and carrier specific configuration. The modem will boot in Online mode following the application of this configuration.</p> <p>Links:</p> <p>5) Generic Customer Configuration http://downloads.sierrawireless.com/legato/1509/wp85/9101011_5501011_WP8548-G_07.04.01.01_00_DevKit_001.012_000-field.exe</p> <p>6) Generic Carrier Configuration http://downloads.sierrawireless.com/legato/1509/wp85/9999999_9904559_SWI9X15Y_07.04.01_01_00_GENERIC_001.009_000-field.exe</p>

19.2 Software Changes Description

This section describes significant changes since SWI9X15Y 7.0 Release 5.

19.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
83943	Add Qualcomm M9615ACETWMLZD55132	Add Qualcomm M9615ACETWMLZD55132	Modem
Various	Legato 15.09.0.Beta	This release package includes and was validated with Legato 15.09.0.Beta.	Legato
2739	Ring Indicator (RI) APIs	Ring Indicator GPIO is provided in sysfs with alias "gpioRI" for all supported product types, to provide a single interface to Legato RI APIs.	BSP
82928	Safe Power Remove pin	Added support for the Safe Power Remove pin (SAFE_PWR_REMOVE)	BSP
83726	Wake on WWAN pin	Added support for Wake on Wireless WAN feature (WAKE_ON_WWAN pin)	BSP
80448	TX_ON pin	Added support for TX_ON feature, disabled by default. Currently configurable per SKU – no customer configurability available yet.	BSP
83414	Fixed intermittent crash observed during Application-Over-the-Air (AOTA) download from AVMS	Resolved unreleased resources leading to possibility of insufficient flash client availability during AOTA	Stability
83465	Add customization to control kernel boot messages on console	Kernel boot time can be reduced by disabling debug messages on console. Default configuration for samples enables boot messages for debugging support.	Kernel

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ID	Title	Description	Impacted Domain
Various	Firmware Over the Air	FOTA will be supported when upgrading from this release to a newer release. Upgrading to this release from a previous release may fail to complete due to multiple known issues with previous releases, and will result in the AVMS job being stuck in progress.	AVMS FOTA
None	Validated Clock outputs	Validated System and Sleep clock outputs	External Clocks

19.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
80393	USB Selective Suspend not supported	USB Selective Suspend is not supported yet. Additional side effect of this prevents the system from entering power collapse state and reaching minimal power consumption.	USB
Various	ADC Support	Some ADC interfaces (2-3) are not implemented	ADC
Various	On-board Image Switching	On-board Image Switching is not supported in this release. Host-based Image Switching is supported. A Generic carrier configuration will be provided.	Image Switching
Various	Audio is not supported	Audio is not supported in this release. The USB audio interface is exposed by default, and call control functionality is supported, but sound is not functional.	Audio
84306	Incorrect GPIO configuration preventing system from entering LPM	An incorrect GPIO configuration causes a Wake lock to be held indefinitely on the application processor, preventing the processor from entering low power mode	Sleep
Various	Data connectivity failures with Linux SDK 03.03.11	Data Connectivity failures observed with Linux SDK release 03.03.11. SWI9X15Y Release 6 was validated successfully with SDK 03.03.10.	Linux SDK
Various	Firmware upgrade via Developer Studio is not supported in this release	Customer cannot use Developer Studio to upgrade to this release.	Developer Studio
85171	ECM Interface	ECM Interface is not enumerated by default	USB

In Addition to the listed known issue, the following features have not been tested.

- Firmware download over UART
- Internal RTC
- VGPIO pin

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20 SWI9X15Y 7.0 Release 5

This section describes the initial external SWI9X15Y 7.0 release.

20.1 Software Release Description

20.1.1 Release identification

Component	Revision
Boot loader	SWI9X15Y_07.03.03.00 2015/08/19 14:47:45
Modem	SWI9X15Y_07.03.03.00 2015/08/19 14:47:45
Application	SWI9X15Y_07.03.03.00 2015/08/19 19:05:12
Legato	15.08.0.Beta.rc2
Binary Size	45MB (compressed binaries)
IMEI SV	40
Qualcomm Stack Version	AMSS 9x15 5.5.1.31 Post CS (M9615ACETWMLZD55131)
Supported H/W	WP8548-G – DV2

20.1.2 Software Tools Versions

S/W Tools Name	Version	Resource file
Windows Driver Package	B4323	
Windows SDK	None	
Skylight	None	
Linux Drivers	S2.24N2.33	
Linux SDK	03.03.10	

20.1.3 Released Files and Download Processes

Download Option	Files
Windows	Install Driver B4323
CWE/NVU files	Various PRI Packages

20.2 Software Changes Description

This section describes significant changes since SWI9X15Y 6.0 Release 4.1 [R-1].

20.2.1 Validated Corrections / Improvements

ID	Title	Description	Impacted Domain
Various	Linux kernel 3.14.29	Upgrade kernel to Linux swi-mdm9x15 3.14.29ltsi-yocto-standard	OS



ID	Title	Description	Impacted Domain
80974	Partition table allocates 256MB flash for Linux (previously	Partition table update applies to new samples only. Field upgrade devices retain the original Linux flash partition sizes.	Storage
81984	W_DISABLE polarity is inversed	W_DISABLE switch polarity was implemented incorrectly in SWI9X15Y 6.0. After upgrading devices, the switch will need to be inverted in order for the modem to enable the radio (i.e. disable Airplane Mode)	W_DISABLE
3108	WP8548-G GPIO support in sysfs	Add support for external GPIO in GPIO class driver, allowing for a sysfs entry in /sys/class/gpio/ for external GPIO pins accessible by the application processor	GPIO
81833	DR_SYNC Support	Add support for GPS Dead Reckoning	DR_SYNC
81376	Update Reset Pin debounce time to match PTS documentation	Reset Pin debounce time is 32msec as per PTS	RESET_IN
81640	Enable modem voice call control	Modem call control is supported in this release. See Known Issues for limitations.	Voice
81379	Disable unsolicited notifications on the AT port	Sierra unsolicited notifications on the AT interface are disabled by default.	AT

20.3 Known Issues

This section presents all known issues in this release.

ID	Title	Description	Impacted Domain
80393	USB Selective Suspend not supported	USB Selective Suspend is not supported yet. Additional side effect of this prevents the system from entering power collapse state and reaching minimal power consumption.	USB
80448	TX_ON Indicator is not supported	TX_ON Indicator is not supported	TX_ON
Various	ADC Support	Some ADC interfaces (2-3) are not implemented	ADC
Various	On-board Image Switching	On-board Image Switching is not supported in this release. Host-based Image Switching is supported. A Generic carrier configuration will be provided with initial samples.	Image Switching
2739	Ring Indicator Legato APIs not supported	Ring Indicator pin is not exposed to Legato for use with Legato APIs.	Legato PA
82928	Safe Power Remove pin	Safe Power Remove pin is not implemented	BSP
Various	Audio is not supported	Audio is not supported in this release. The USB audio interface is exposed by default, and call control functionality is supported, but sound is not functional.	Audio
83414	Intermittent crash observed during Application-Over-the-Air (AOTA) download from AVMS	Intermittent crash observed during AOTA download from AVMS.	Stability

In Addition to the listed known issue, the following features have not been tested.
 Field upgrade support from SWI9X15Y 6.0 Releases
 Firmware download over UART
 Internal RTC

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VGPIO pin
Clock output pins
External antenna control
WAKE pin

21 Troubleshooting

Please contact customer service for support and debug

22 Certification Description

The last AT&T and Sprint carrier certifications were received on Release 14.

23 Restrictions and Additional Information

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

ID	Description (What/When)	Impacted Domain