Release Notes
SWAA087 – April 2011

Adeneo Embedded-WL127x Release Notes

This document describes the release notes of the Adeneo Embedded WL127x M6 release for the WiLink™6. This release works for the Microsoft® Windows® Embedded CE (WinCE) OS M6 delivery for the Texas Instruments WiLink version 6 wireless LAN solution.

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1 Overview

This document describes the release notes of the Adeneo Embedded WL127x M6 release for the WiLink™6. This release works for the Microsoft® Windows® Embedded CE (WinCE) OS M6 delivery for the Texas Instruments WiLink version 6 wireless LAN solution.

This release includes the following components:

- WLAN driver: provides mobile WLAN connectivity solution for home/SoHo, public, and enterprise environments
- Bluetooth driver: integrated to Windows Embedded CE Microsoft MSFT WinCE6.0 R3 BT Stack

This release was developed and tested on a AM3715 EVM with a WL1271 daughterboard. **This release is based on the TI WL1271 M6 Linux release.**
The release has been tested limited to functional usage of Wifi and Bluetooth in some use cases. The document has been updated with relevant changes w.r.t M4, however the assumption while updating the document is that the areas of software which have not been changed do not need any updated information.

2 Release Tracking

This release's APIs have been finalized to enable early porting. No modifications are expected to the following sections:

- WLAN driver APIs to the Configuration Utility Application
- WLAN Driver APIs to the network layer
- OS adaptation layer

2.1 Testing Environment

This version was developed and tested using the following equipment and configuration:

- TI EVM AM3715 RevG
- Mistral EVM WLAN Module for WL1271, Rev B
- Microsoft Windows Embedded CE 6.0 R3
- TI Unified BSP (BSP_WINCE_ARM_A8_01_01_00)

2.2 Wireless LAN

This section describes the WLAN station (STA) driver release operating on a Windows Embedded CE OS platform. The WLAN driver components are listed in Table 1.

Table 1. WiLink6.1 Driver Components

Component	Version
WLAN driver for Windows Embedded CE	6.1.0.0.149
Firmware version	6.1.0.0.349

2.2.1 Specification Compliance

- 802.11b
- 802.11g
- 802.11d
- 802.11e
- 802.11i
- 802.11n

2.2.2 Supported Features and Standards

General:

- Infrastructure and ad hoc (IBSS) operation
- ATE and BIP
- Scan and roaming
- Filtering
- Power control

QOS:

- WMM
- EDCA (EDCF)
- U-APSD
- TXOP

Security:

- WiFi WPA and WPA2
- WEP
- TKIP
- AES

Power Save:

- Legacy 802.11 power-saving scheme, in accordance with 802.11-2007
- U-APSD as defined by WMM-PS.

Host Interface:

- SDIO 4-bit, operating at 24-MHz clock; Multiblock operation is supported.

2.2.3 Standards Supported by Driver

This release supports the following standards:

- WiFi WPA, WPA2
- WiFi WMM, WMM-PS
- WiFi 802.11n

2.2.4 Constraints and Limitations

2.2.4.1 Software Limitations

This release has these software limitations:

- Interoperability with RaLink AP Module during sleep, because AP beacons drift over time
- Interoperability with Cisco1250 AP in case of WEP and fragmentation (because of AP bug)
- Interoperability with Cisco1250 AP in case of TCP Rx AES + Block acknowledgement (because of AP bug)
- Limited performance of TKIP Rx UDP (as a result of Cisco AP abnormal behavior)
- Limited stability of Tx traffic with short frames (on non-BE ACs)

2.2.4.2 Hardware Limitations

This release has these hardware limitations:

- EEPROM is not supported.
- WL1271/3 Power On Reset timing issue:
  - In some cases, the WL127x device may fail to wake up upon host request because of a timing issue in the POR module. The host driver should contain implementation to work around this issue; when the wake-up command is sent, the host should set a 200-ms timer. If a response from the chip is not received before the timer expiration, the host should toggle the Shutdown line, re-send the first command, and reset the 200-ms timer. The host driver should be able to perform up to five cycles of this sequence. The probability of problem re-occurrence after implementing this workaround is negligible (0.118% to 6%).

2.2.4.3 RF System Limitation

This release has this RF system limitation:

- Some performance degradation over temperature may be observed as a result of different R_{TRIM} calibration.

2.2.4.4 Constraints

This release has these constraints:

- Configuration of short/long doze with N*Beacon or N*DTIM may lead to application failure when the sleep time is compared to application protocol expiration time.
- Supported and validated on PG2.0 only
- Degraded RF performance without proper NVS, including Tx BIP information

2.2.4.5 WiFi Certification

- WiFiMode key should apply to True during WiFi certification tests
- Buffer size in Chariot scripts that send data to the SUT should be changed to 1456 bytes instead of 29K bytes; all other scripts that send data to other STAs in the test bed should remain with default buffer size
- 802.11n pre-certification is pending ASD approval by WiFi
- RoamScanEnable key enables/disables Roaming and Scanning at initialization

2.3 Bluetooth

This section describes the Bluetooth driver release operating on a Windows Embedded CE OS platform.

The Bluetooth Driver provides connection between WiLink6 127x and the Microsoft WinCE6.0 Bluetooth protocol stack.

The Bluetooth driver components are listed in Table 2.

Table 2. BT Driver Components

Component	Version
Firmware	2.0.31
BT Service Pack	2.25
BT InitScript	brf61_7.2.31.bts
BTHCI Driver	6.1.0.0.2

2.3.1 Specification Compliance

This release complies with the following specification:

- BT2.1 release + EDR (Lisbon)

2.3.2 Features

This release has the following features:

- Bluetooth QoS
- Advanced BT use-cases
- Improved ACL Connection Scheduling Algorithms
- Faster AFH channel detection for voice and data
- Bluetooth eHCILL (sleep mode enable) is supported
- BT was verified with the following reference clock rates:
  - 38.4 MHz
  - 26 MHz

2.3.3 Constraints and Limitations

This release has the following constraints and limitations:

- AFH Channels: Channel assessment for enabling and disabling channels has not been fully tuned, causing some interfering frequencies not to be marked for removal, and some frequencies are removed when not necessary.

2.3.4 Known Issues

This release has these known issues:

- Refer to the Bluetooth Service Pack release note for more information regarding known and fixed issues.

3 Fixed Bugs

Fixed bugs for the M6 release

4 Errata List

The following defects were detected in this release.

5 Terms and Abbreviations

Table 4 lists many of the terms and abbreviations used in this document.

Table 4. Terms and Definitions

Abbreviation/Term	Definition
ACK	Acknowledgment
AFH	Adaptive frequency hopping
AP	Access point
API	Application programming interface
APSD	Automatic power save delivery
ARP	Address resolution protocol
ASD	Application specific device
BGA	Ball grid array
BSS	Basic service set
BSSID	Basic service set identifier
CCK	Complimentary code keying
CCX	Cisco compatible extensions
CLI	Command line interface
CUDK	Configuration utility developer's kit
EDCA	Enhanced distributed channel access
ELP	Extensive low power
ERP	Effective radiated power
eSCO	Extended synchronous connection oriented
FW	Firmware
HDK	Hardware design kit
IE	Information element
KVM	Keyboard video mouse
LO	Local oscillator
MOS	Mean opinion score
MSD	Most significant digit
NVS	Nonvolatile system
OAL	Original equipment manufacturer (OEM) adaptation layer
OFDM	Orthogonal frequency division multiplexing
OS	Operating system
PER	Packet error rate
PF	Persistence factor
QoS	Quality of service
RM	Radio module
RSSI	Receive signal strength indicator
RTP	Release to production
RX	Receive
SG	Soft Gemini
SIFS	Sent interface space
SM	Sleep mode
SNR	Signal-to-noise ratio
SPI	Serial Peripheral Interface
SPS	Schedule passive scan
SSID	Service set identifier
STA	Station

Table 4. Terms and Definitions (continued)

Abbreviation/Term	Definition
SUT	Station under test
TI	Texas Instruments
TIM	Traffic indicator message
TSM	Traffic stream metrics
TSPEC	Traffic specification
TU	Time unit
TX	Transmit
TXOP	Transmit opportunity
U-APSD/UPSD	Unscheduled automatic power save delivery
UP	User priority
VoIP	Voice over Internet protocol
WEP	Wired equivalent privacy
WIPP	Wireless IP phone
WLAN	Wireless local area network
WMM	Wireless multimedia
WPA	Wireless protected access

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