TI Wireless Tools Package

This getting started guide provides basic information about the RF system debug and calibration software tools included in the TI wireless tools package, including a detailed reference for each tool.

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1 Introduction

The wireless tools package includes the following applications:

- WLAN Real-Time Tuning Tool (RTTT)
- *Bluetooth*® Logger
- WLAN gLogger
- Link Quality Monitor (LQM)
- HCITester Tool

These applications provide all of the capabilities required to debug and monitor the WLAN/*Bluetooth*/*Bluetooth* low energy firmware with a host, perform RF validation tests, run pretest for regulatory certification testing, and debug hardware and software platform integration issues.

2 Requirements

2.1 System Requirements

The TI wireless tools package requires the following components:

- Minimum requirements: PC running Pentium® II
- Operating systems: Windows® 2000, Windows XP, Windows 7
- Serial communication port (RS-232) or USB port with UART-to-USB adapter (to enable the RS232 interface on the WiLink 8.0 device, see *WL18xx Module Hardware Integration User's Guide*)
- Access to WL_UART_DBG pin
- Access to BT_UART_DBG pin
- Access to *Bluetooth* HCI UART lines

Debug and calibration tools for WLAN and *Bluetooth* require four UART ports. The most efficient way to drive these ports to the PC is to use a UART-to-USB converter (not included in the wireless tools package). TI recommends using the WL18XXCOM82SDMMC SDMMC-to-COM8 adapter with the TI WL1837MODCOM8I module or the WL1835MODCOM8B module on the COM8 board.

NOTE: Multiple UART-to-USB adapters are available on the market, such as the FTDI Chip™ development modules.

2.2 WL18XXCOM82SDMMC Configuration

The WL18XXCOM82SDMMC adapter board is preconfigured to operate with a host platform rather than in debug mode. Perform the following steps for operation with the wireless tools package:

1. Disconnect J6 and connect to J20 (enables the 3.3-V LDO to supply from the onboard USB).
2. J7, J8, J10, J11 (short 2–3): set the HCI to the FTDI chip.
3. J9, J12 (short 1–2): set the enable lines from on board tact switch.
4. If the WL1835MODCOM8B or WL1837MODCOM8I evaluation module is used, plug the module into the COM8 connector (J1).

   If the COM8Q module is used, the J2 jumper must be assembled first, and then the COM8Q can be plugged into the COM8 connector (J1).
5. Connect a mini-USB-to-USB-A cable between the PC and the J22 mini-USB connector on the board.
6. The FTDI drivers are installed automatically. The applications can operate the device using the following port sequence (from lowest to highest):

   (a) HCITester

   (b) *Bluetooth* Logger

   (c) RTTT

   (d) WLAN gLogger

For more information, see *WL18xxCOM82SD WL18xx MMC and UART Adapter Board User's Guide*.

2.3 Configuration Requirements

The TI wireless tools package applications require the latest versions of the following configuration files:

NOTE: Ensure that you download the most up-to-date branch of the git based on the appropriate NLCP package release.

- WiLink 8 WLAN NLCP package release
  - WiLink 8 WLAN firmware
  - WiLink 8 WLAN .ini files
- WL128x R5 SP8 release:
  - WL128x firmware:
    - wl128x-fw-4-mr.bin
    - wl128x-fw-4-sr.bin
    - wl128x-fw-4-plt.bin
  - WL128x INI files
- WL127x R5 SP8 release:
  - WL127x firmware:
    - wl127x-fw-4-mr.bin
    - wl127x-fw-4-sr.bin
    - wl127x-fw-4-plt.bin
  - WL127x INI files
- WiLink 8 TI *Bluetooth* release
  - XML file
  - *Bluetooth* script
  - ILI configuration file

NOTE: The XML, *Bluetooth* script, and ILI configuration files support all of the WiLink family and are based on the BTS naming format; for more information on the WL128x and prior releases, follow the README file.

3 Installation

When the TI wireless tools package is installed, an icon for each installed tool is created in the Wireless Tools folder in the Start menu and on the desktop.

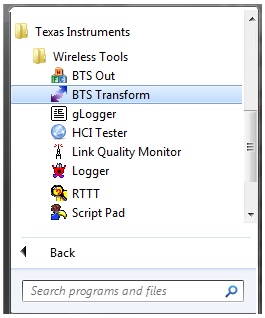

Figure 1. Wireless Tools Folder

The installation files are in the directory named *Wireless Tools* at the installation path configured during installation. By default, the files are at the following path:

C:\Program Files (x86)\Texas Instruments\Wireless Tools

NOTE: Throughout this document, the directory in which the installation files reside is referred to as *Installation directory*.

4 Wireless Tools Package Applications

4.1 Real-Time Tuning Tool (RTTT)

The RTTT application is a Microsoft® Windows® based tool that operates, tests, and calibrates WL1273, WL1283, and WL18xx WLAN chipset designs during development and evaluation. The RTTT application focuses on the RF side of the WLAN chipset, providing an easy-to-use GUI to control the WLAN transceiver and (using a spectrum analyzer/vector signal analyzer/signal generator) validate the RX and TX RF characteristics of the device. The RTTT also enables the WLAN RF tests required for regulatory certification compliance.

Figure 2 shows the main window of the RTTT application.

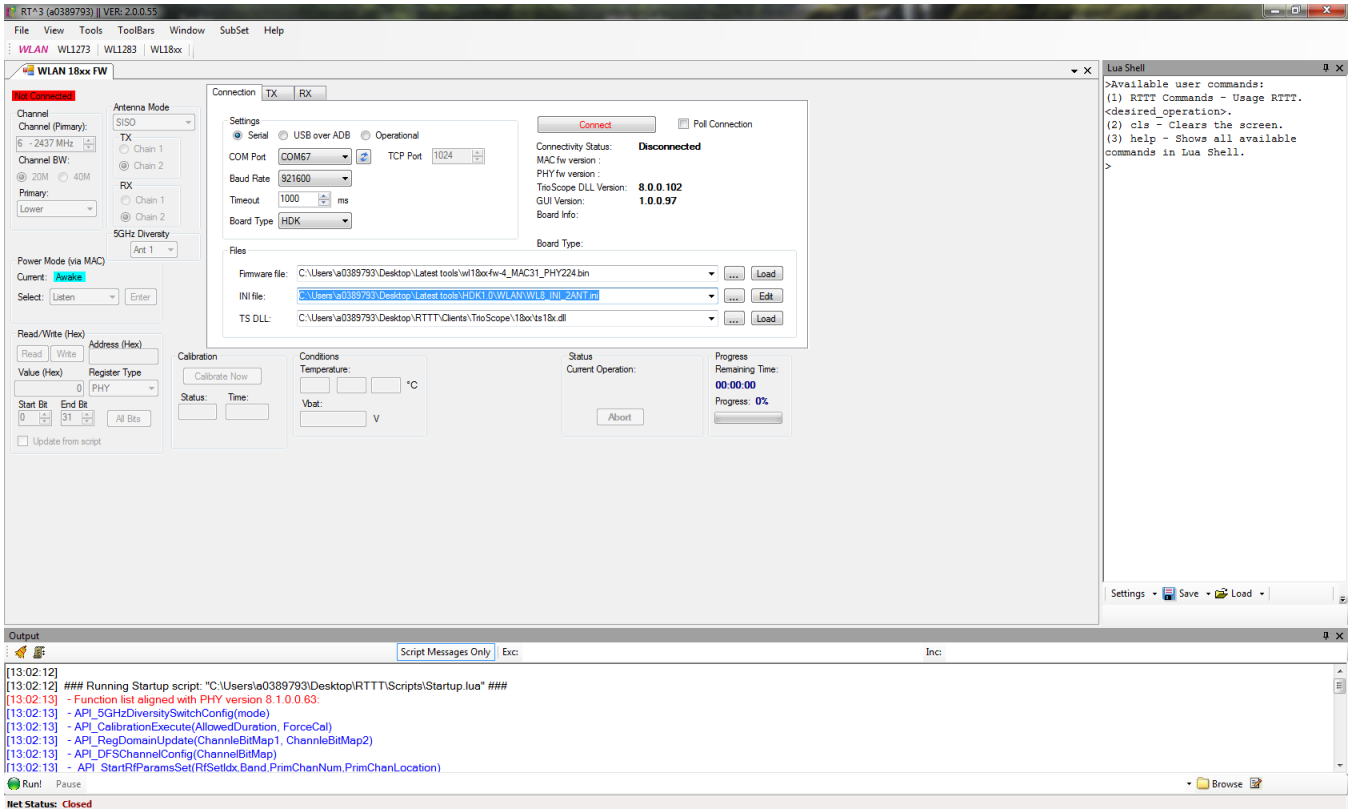

Figure 2. WLAN RTTT Main Working Window

For more information, see *Real-Time Tuning Tool (RTTT) User's Guide*.

NOTE: The *Real-Time Tuning Tool (RTTT) User's Guide* is also available with the wireless tools package installation at *Installation directory*\Doc\SWAU085.pdf.

4.2 *Bluetooth* **Logger Application**

The *Bluetooth* Logger application traces log messages generated by the *Bluetooth* host controller and monitors protocol transactions. The *Bluetooth* Logger uses embedded plug-ins, the TI Island Message Trace and the Protocol Viewer, to record the log messages and display host-controller interface (HCI) and link manager protocol (LMP) transactions between the connected devices graphically.

Figure 3 shows the *Bluetooth* Logger main working window.

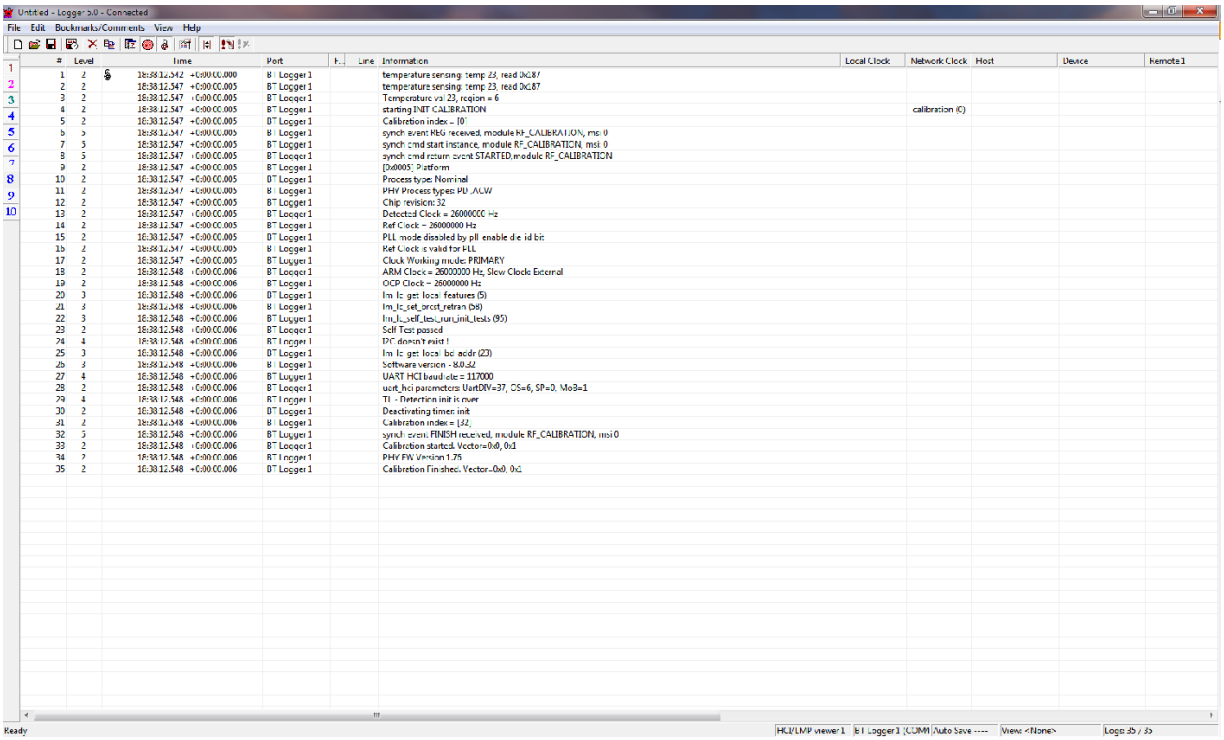

Figure 3. *Bluetooth* **Logger Main Working Window**

For more information, see *Bluetooth Logger and Link Quality Monitor (LQM) Tool User's Guide.*

NOTE: The *Bluetooth Logger and Link Quality Monitor (LQM) Tool User's Guide* is also available with the wireless tools package installation at *Installation directory*\Doc\SWAU058.pdf.

4.3 WLAN gLogger Tool

The WLAN gLogger software tool is a Microsoft Windows-based application that records messages from the WiLink WLAN firmware and develops, debugs, and monitors the WLAN IP.

Figure 4 shows the WLAN gLogger user interface window.

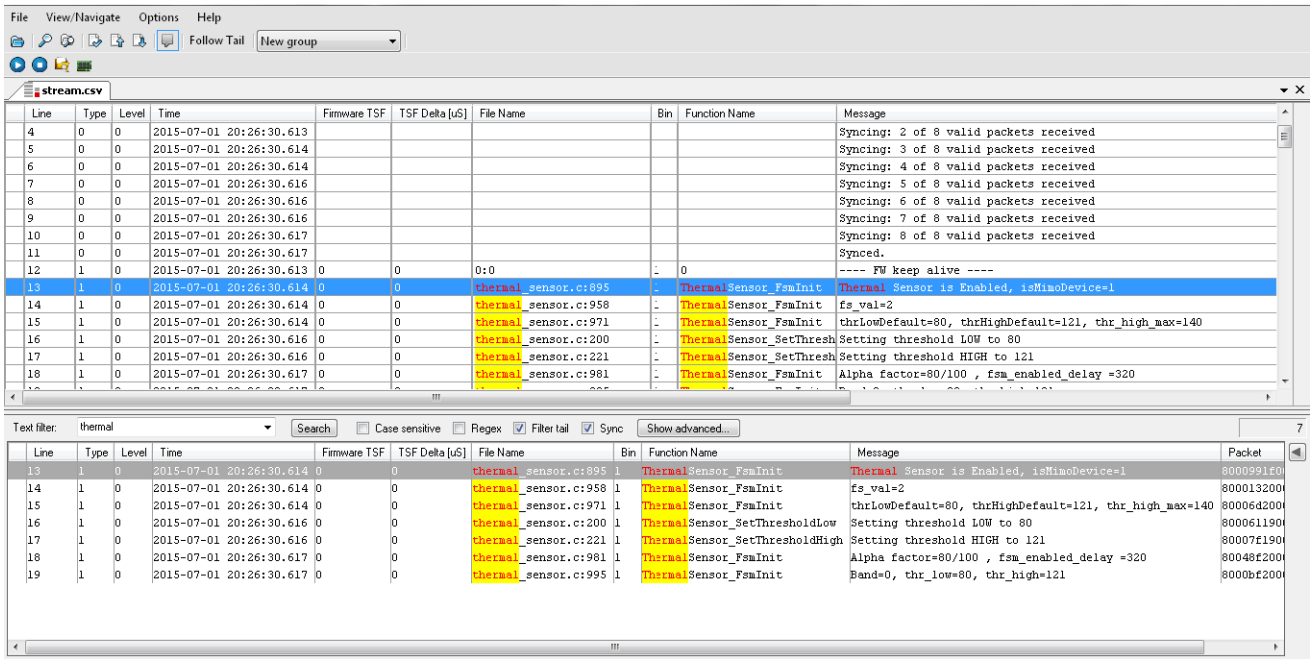

Figure 4. WLAN gLogger User Interface Window

For more information, see *WiLink WLAN gLogger Tool User's Guide.*

NOTE: The *WiLink WLAN gLogger Tool User's Guide* is also available with the wireless tools package installation at *Installation directory*\Doc\SWRU435.pdf.

4.4 Link Quality Monitor (LQM) Application

The *Bluetooth* LQM application monitors system behavior using the received signal strength indication (RSSI), link throughput, and adaptive frequency hopping (AFH) map table of all active *Bluetooth* and *Bluetooth* low-energy links in run time.

NOTE: On Win XP, the highest COM port supported is 10.

Figure 5 shows the *Bluetooth* LQM user interface window.

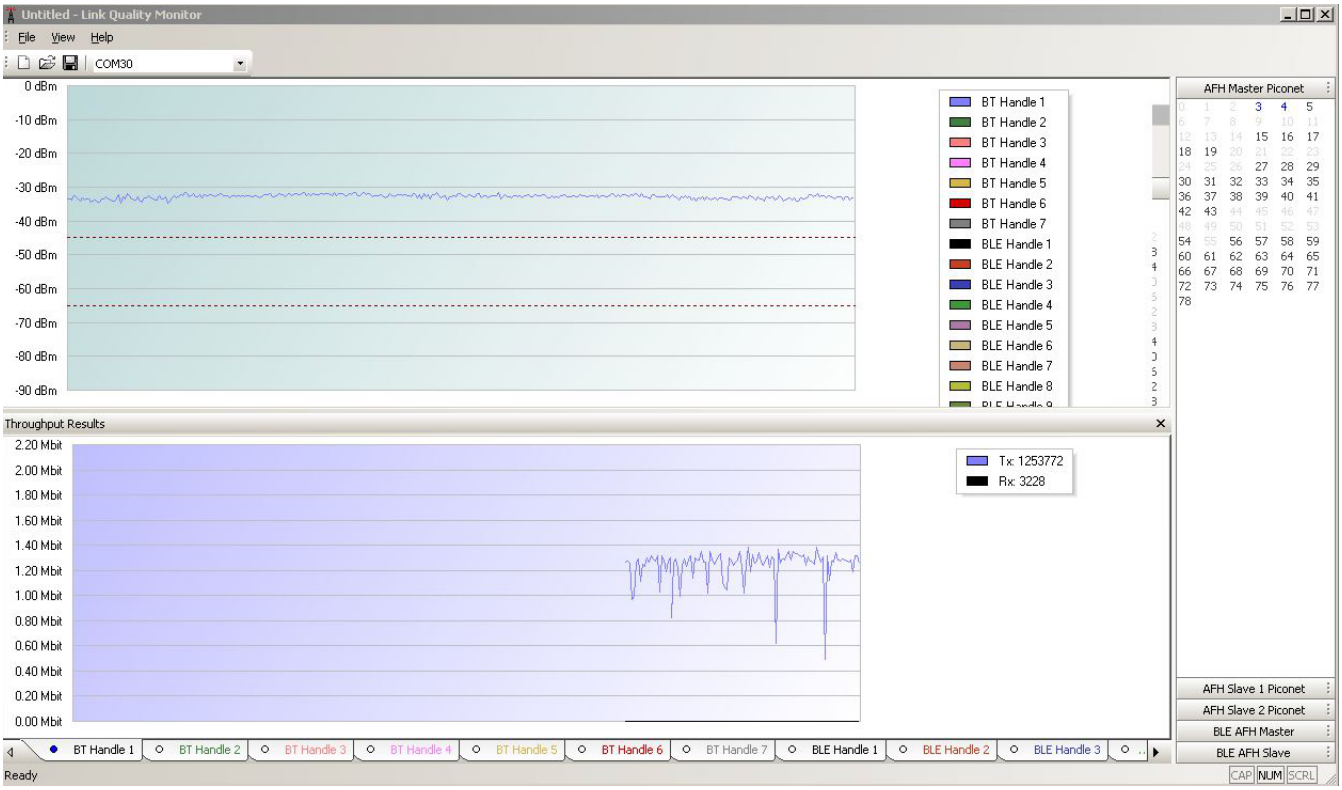

Figure 5. *Bluetooth* **LQM User Interface Window**

For more information, see *Bluetooth Logger and Link Quality Monitor (LQM) Tool User's Guide.*

NOTE: The *Bluetooth Logger and Link Quality Monitor (LQM) Tool User's Guide* is also available with the wireless tools package installation at *Installation directory*\Doc\SWAU058.pdf.

4.5 HCITester Tool

The HCITester software tool enables HCI testing capabilities for TI *Bluetooth* devices. The tester includes the following plug-in applications:

- BTS Out: Sends the BTS to the device on a specified port and baud rate
- BTS transform: Converts the BTS format to Hex command strings
- Script Pad: Allows the text file to be saved in BTS format in the HCI tester

The tester enables the following capabilities:

- Sending HCI scripts using HCI commands and events
- Automatic control of the device sleep mode
- Control of the *Bluetooth* transceiver and (using the spectrum analyzer/vector signal analyzer/signal generator) validation of both RX and TX RF characteristics of the device
- *Bluetooth* and *Bluetooth* low energy TX and RF tests required for regulatory certification compliance

Figure 6 shows the main working window of the HCITester tool.

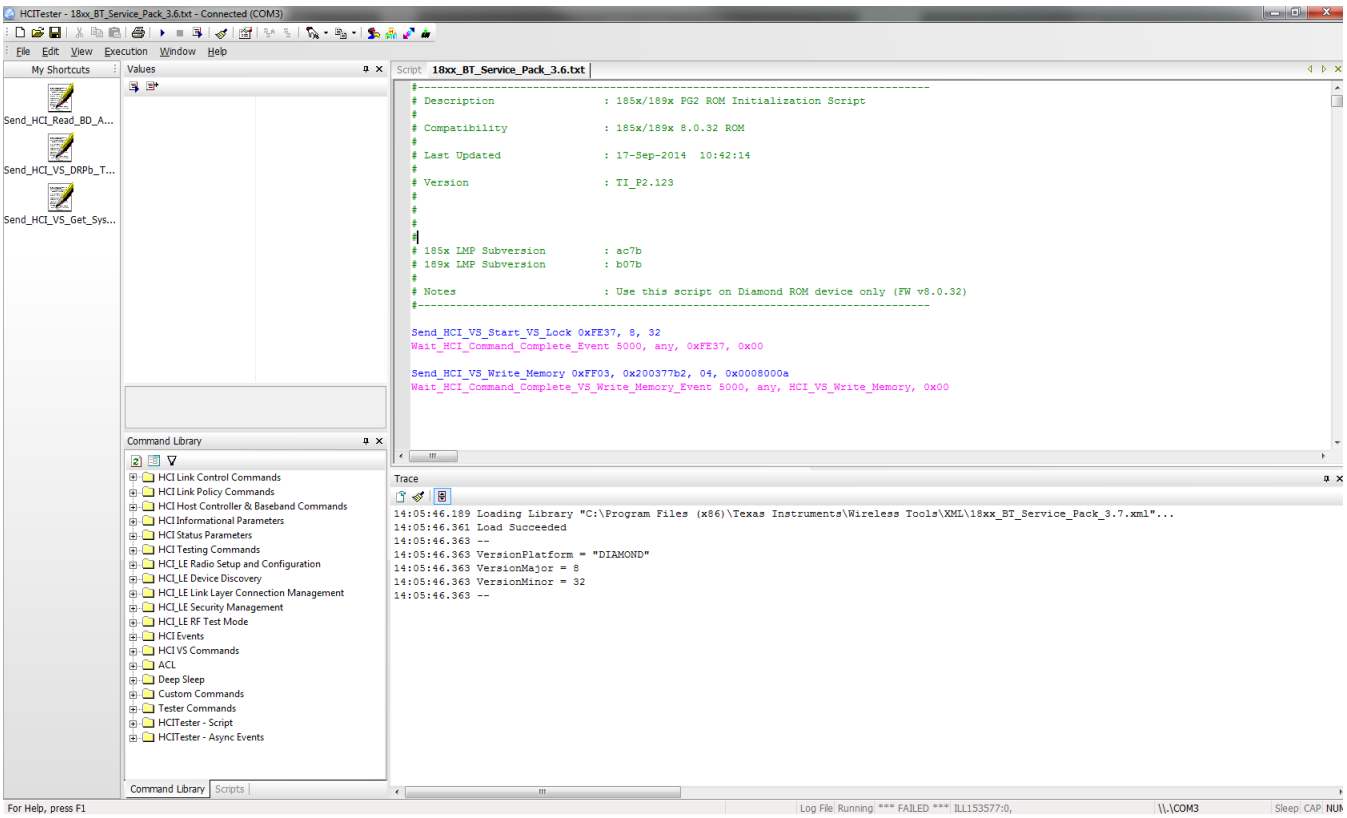

Figure 6. HCITester Main Working Window

For more information, see *HCITester User's Guide.*

NOTE: The *HCITester User's Guide* is also available with the wireless tools package installation at *Installation directory*\Doc\SWRU136.pdf.

Terms and Abbreviations

Table 1 lists terms and abbreviations.

Table 1. Terms and Abbreviations

Term	Description
AFH	Adaptive frequency hopping
BER	Bit error rate
BT	*Bluetooth*
GUI	Graphical user interface
HCI	Host controller interface
Host/host PC	A PC connected to the device through the serial port
LMP	Link manager protocol
LQM	Link quality monitor
MCU	Microcontroller unit
PER	Packet error rate
RF	Radio frequency
RSSI	Received signal strength indication
RTTT	WLAN Real-Time Tuning Tool
SW	Software
VS	Vendor-specific

Revision History

DATE	REVISION	NOTES
November 2016	A	Fixed link to the *Real-Time Tuning Tool (RTTT) User's Guide*
September 2015	*	Initial Release

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