Wireless Protocol Suite Release Notes

Updated: January 27, 2026

Overview

This document contains release notes for Wireless Protocol Suite software and various hardware products. For full instructions on using the software and the hardware, please see the user manual and other documents provided with the software.

1. Release Notes for WPS 4.60

1.1.   *What's new*

Release Notes	X500e	X500	X240	Sodera
Wireless Protocol Suite software is now supported on macOS and Linux. • All major functionalities included. Refer to expert notes in Section 4. • Software can be downloaded from Teledyne LeCroy website.	*	*	*	
Software support for Frontline X240i designed for robust environments • New variant of X240. • Supports temperature -40°C to +70°C (-40°F to 158°F). • Can withstand vibrations and shocks.			*	
Removal of Premium Maintenance requirement for X240. • Software updates for X240 are now available at no additional cost.			*	
Support for Bluetooth Core 6.2 specification decodes • Short Connection Intervals, • LE Test Mode Enhancements, • HCI USB LE ISO, • CS Amplitude-based Attack Resilience.	*	*	*	
Support for Matter 1.4.2 specification.	*	*	*	
Updated Bluetooth Assigned Numbers to 2025-11-24.	*	*	*	
Improvements to Timing Analysis • Timing measurements are now sticky. • Packets from a piconet are grouped together in a single row. • Ability to add bookmarks via Timing Analysis view.	*	*	*	*

1.2. *Bug fixes*

Release Notes	X500e	X500	X240	Sodera
Resolved an intermittent issue with data capture when switching technologies.	*	*	*	*
Improved responsiveness when opening large HCI capture file.	*	*	*	
Updated HDT decoding.	*	*	*	
Resolved audio gaps in Whole Capture Export of Audio Streams.	*	*	*	
Fixed audio playback of older capture files.	*	*	*	
Improved LiveImport API library.	*	*	*	*

2. System Requirements

The following is a list of recommendations for the host machine that runs the Wireless Protocol Suite application and connects Frontline hardware: X500, X500e, X240, and Sodera.
For optimal performance, the software should run on a recent generation computer. However, the software should also operate on machines that are below the minimum requirements specified here, at the cost of slower performance, provided the memory, storage and display requirements are satisfied.

2.1. Software

Operating System:
- Windows 10 & 11 with latest Service Pack.
- macOS 14 (Sonoma)
- Ubuntu 24.04 LTS

2.2. Hardware

Processor:
- Core i5 processor at 2.7 GHz
- Apple M1 (8-core CPU)

Memory (RAM):
- This software application may use up to 4 GB of RAM in the host machine. For improved performance of the software, it is recommended that 8 GB of RAM be installed on the host machine.

Non-volatile Storage (SDD or Hard Disk):
- 600 MB is required for installing the Frontline Analyzer software on the host machine.
- At least 20 GB of additional storage space is needed for operation of the software application and for storing recorded data in files. Note that large captures can require multiple gigabytes and can quickly fill your available storage space.

Display:
- To take full advantage of the rich visualization and analysis of Wireless Protocol Suite application it is recommended that the display be set to at least 1050 lines of vertical resolution with at least 24-bit color depth.
- The minimum requirement for the display is a resolution of 1024x768 with at least 16-bit color depth.

3. Software Installation

Download the latest Wireless Protocol Suite installer from the website https://go.teledynelecroy.com/wps-software.

Once downloaded, double-click the installer, and follow the directions.

When the installation is complete pin the Wireless Protocol Suite icon to your taskbar.

4. Known Issues and Workarounds

1. Users working with custom methods related to adding vendor specific commands should reach out to the technical support team to get help on upgrading custom methods to match WPS 3.00 and later releases.
2. When capturing Wi-Fi 5 using Frontline X500 hardware, it takes about 10 secs before new packets show up the first time you start recording for a session. Subsequent captures are faster. Also, there is no delay when capturing Wi-Fi 6/6e.
3. When upgrading to WPS 4.30 the user may occasionally be prompted to update firmware twice, please accept both firmware prompts.
4. When capturing in the Continuous Capture mode using the Analyze All Sessions option, spectrum data (if configured) will only be displayed for the current session.
5. When updating the firmware on an X240 using WPS 4.40 for the first time, the unit will need to be manually powered back on following the update.
6. The following issues are specific to Wireless Protocol Suite on macOS:

   - After adding new bookmarks to an existing file, the application does not prompt to save changes. To mitigate this issue, save the capture explicitly using *Save As* under the *File* menu.
   - Automation API support and BT Snoop Overlay shall be supported in a future release.
   - Custom decoder filesets must be applied using *Install Fileset* under the *File* menu.
   - Limited documentation support for macOS and Linux is available.
   - Only a single instance of Wireless Protocol Suite can run concurrently on macOS. The application may occasionally fail to open, if this occurs, a hard reboot of the host computer will resolve the issue.

5. Previous Release Notes

5.1.   Release Notes for 4.50 (Release date: 11/20/2025)

5.1.1.   What's new

Release Notes	X500e	X500	X240	Sodera
Introducing new accessory product *Audio Analyzer Pod* that allows capturing analog I2S data. • Along with Logic Analyzer pod, allows measuring End-to-end, Transport, Presentation and Audio processing delays in a system. • Use Audio Expert System (AES) to measure audio latency in between any two audio streams - Analog I2S, Digital I2S, and over-the-air. • Alerts user of abnormal delays via Latency events in AES. Supports Bluetooth Classic and LE protocol.	*	*	*	
Improved group of LE devices by IRK association on Timing Analysis view.	*	*	*	*
Added a feature to load security keys via overlaying BTSnoop files over OTA.	*	*	*	*
Added support Voice Assistant Profile (VAS) d09r06.	*	*	*	*
Added support for Tire Pressure Monitoring (TPMS) d09r18	*	*	*	*
Updated support for Battery Service (BAS) 1.1.	*	*	*	*
Improved Automation API to add support for setting Truncate Wi-Fi packets via scripting.	*	*	*	
Added support for multibyte characters when opening, saving and loading capture files or BTSnoop files.	*	*	*	*

5.1.2.   *Bug fixes*

Release Notes	X500e	X500	X240	Sodera
Resolved issues with negative SIFS for first QoS Data after Trigger Basic.	*	*		
Improved system stability when an audio output not detected or selected.	*	*	*	*
Fixed a case when devices were incorrectly listed as "Previously captured devices" in Dual Mode capture.	*	*	*	*
Auto Analyze when modifying Audio Expert System buffer settings.	*	*	*	*
Fixed packet Start and End fields counts in PERStats view.	*	*	*	*
Improved warning messages as system approaches max file size.	*	*	*	*
Updated ZigBee decoding which was erroneously decoded as 6lowpan.	*	*	*	
Further updates to Wireless Protocol Suite to work with Microsoft's Bluetooth Virtual Sniffer (BTVS).				
Fixed decoding issue with Playback Speed UUID.	*	*	*	*
Fixed a corner case with missing device database when opening file.	*	*	*	*
General documentation updates.	*	*	*	*
General system stability improvements.	*	*	*	*

5.2.   Release Notes for 4.41 (Release date: 7/1/2025)

5.2.1. Bug fixes

Release Notes	X500e	X500	X240	Sodera
Resolved an issue with overlapping Wi-Fi packets in Timing Analysis view.	*	*	*	
Resolved issue related to opening of files in eExcursion mode.	*	*	*	
Improved Channel Sounding AA validation, Mode, and trailer bit detection.	*	*	*	
Fixed issue related to misalignment of spectrum during discontinuity.	*	*	*	*
Fixed compatibility of Wireless Protocol Suite to work with Microsoft's Bluetooth Virtual Sniffer (BTVS).	*	*	*	*
Resolved default option for X240 autoboot.			*	
Fixed false IFS errors in Coexistence view.	*	*	*	*
Fixed Shorter Connection Interval (SCI) Rate Indication parsing.	*	*	*	
Resolved issue related to Wi-Fi control trigger packets.	*	*	*	
Resolved issue related to device database refresh.	*	*	*	*
Fixed Mesh LPN Polling decoding.	*	*	*	*
Resolved decoding related to A-MSDU.	*	*	*	

5.3. Release Notes for 4.40 (Release date: 4/29/2025)

5.3.1. What's new

Release Notes	X500e	X500	X240	Sodera
Formal support for Bluetooth 6.1 specifications. Added support for Randomized RPA feature.	*	*	*	
Bluetooth draft specifications updates: SCI (FIPDr08), HDT LL (FIPD/CRr02), HDT HCI (FIPD/CRr03), SHP (d07r05).	*	*		
Enhanced Excursion (referred to as eExcursion now) mode feature allows capturing data on external storage via ethernet. Also, added support to allow data capture automatically when hardware is powered on. Refer to user manual for details.	*	*	*	
Added ability to autoboot X240 hardware which allows hardware to be power cycled remotely. Refer to user manual for details.			*	
RSSI Capture filter in "Wireless Filters" setting now enables packet discarding at the hardware level, improving capture performance in high RF environments. Refer to section "Known Issues and Workarounds" below for Sodera update.	*	*	*	
Supports configuration of Wi-Fi Scanner feature via automation API.	*	*	*	
Updated Assigned Numbers to 2025-03-13.	*	*	*	*

5.3.2. Bug fixes

Release Notes	X500e	X500	X240	Sodera
Resolved unexpected events in Audio Expert reference test mode.	*	*	*	*
Improved and resolved NACK packet numbers in compressed block ack.	*	*	*	

	X500e	X500	X240	Sodera
Resolved issue related to new bookmarks.	*	*	*	
Resolved issue related to HCI and OTA capture.			*	
Fixed timestamp issue when importing btsnoop log.	*	*	*	*
Improved detection of CS parameters, trailer bits, and duration.	*	*	*	
Resolved issue related automation issue to pcapng export.	*	*	*	
Fixed packet labels in Coexistence and Timing Analysis views.	*	*	*	*
Updated documentation for branch Method. See DecoderScript manual for details.	*	*	*	*
Resolved decoder issue related to CSIP.	*	*	*	

5.4.   Release Notes for 4.31 (Release date: 4/10/2025)
5.4.1.   Bug Fixes

Release Notes	X500e	X500	X240	Sodera
Updated documentation for AGC control via automation	*	*	*	

5.5.   Release Notes for 4.30 (Release date: 3/27/2025)
5.5.1.   What's new

Release Notes	X500e	X500	X240	Sodera
Automatically analyze a Bluetooth on-going connection without reconnecting devices after start recording.	*	*	*	*
Improvements to audio playback in the capture to series of files mode.	*	*	*	
Allows capturing raw RF spectrum data even without data packets.	*	*	*	*
Timing Analysis improvements: • Added an option to group devices based on device connections for Wi-Fi and 802.15.4. Bluetooth and Wi-Fi already supported. • Improved showing RTS and CTS subpacket types. • Improved showing first packet in the view.	*	*	*	*
Supports configuring gain controls via automation.	*	*	*	*
Allows adding dynamic session keys and source node IDs for Matter via Security Keys window.	*	*	*	*
Added provision to provide a bit-rate pointer in Audio Expert System.	*	*	*	*
Improved hardware boot-up time.	*	*	*	
Added decodes for Bluetooth draft specifications: • High Data Throughput (HDT) LL (CRr02). • HDT HCI decodes (CRr03). • Shorter connection Interval (SCI) (FIPDr08). • Advanced Headphone Profile (AHP) (d07r05).	*	*	*	*
Added new decodes related to Wi-Fi 7 MAC.	*	*	*	*
Updated user documentation and automation manual.	*	*	*	*

5.5.2.   Bug fixes

Release Notes	X500e	X500	X240	Sodera
Fixed capturability issue in wired technology affecting I2S, Logic, SPI at higher rates.	*	*	*	
Resolved issue related to MISO SPI bit shift.	*	*	*	
Resolved an issue related to exporting multiple files to Wireshark via automation.	*	*	*	
Resolved an issue related to SIFS in QoS Data.	*	*	*	
Improved automation startup sleep time.	*	*	*	
Fixed decodes related to Channel Sounding.	*	*	*	
Fixed decodes related to MFPC field for RSN capabilities.	*	*	*	*
Resolved an occasional syncing views issue related to packet selection.	*	*	*	*
General stability improvements.	*	*	*	*
Resolved Throughput Calculation Issue for 802.11be	*			

5.6. Release Notes for 4.26 (Release date: 12/10/2024)
5.6.1. Bug fixes

Release Notes	X500e	X500	X240	Sodera
Resolved issue related to Wi-Fi decryption	*	*	*	

5.7. Release Notes for 4.25 (Release date: 11/12/2024)
5.7.1. What's new

Release Notes	X500e	X500	X240	Sodera
Added an option to group devices based on device connections in Timing Analysis view. The grouping works for Bluetooth Classic and LE technologies. Wi-Fi and 802.15.4 are planned for future releases.	*	*	*	*
Added an ability to edit names of logic lines in Record Options that reflects in other views, such as Timing Analysis view.	*	*	*	
Improved and consistent navigation across all views. Added separate cursor options, such as "Point", "Pan", "Zoom", and "Measure" via UI and hotkeys.	*	*	*	*
Bluetooth Device Database now shows instantaneous RSSI and number of packets for each active device. This feature is already available for Wi-Fi data.	*	*	*	*
Added support for export to .pcapng file via Automation API.	*	*	*	*
Added support for Matter 1.3 specification.	*	*	*	

5.7.2. Bug fixes

Release Notes	X500e	X500	X240	Sodera
Resolved an issue with Wi-Fi ax capture stops recording new packets when HE Params not enabled.		*		
Fixed X500 capture issue on certain Wi-Fi channels		*		
Fixed a decoding issue with CGMS: Hypo and Hyper Alert.	*	*	*	*

Fixed AES playback related to AVDTP missing configuration.	*	*	*	*
Improved audio playback for CIS streams.	*	*	*	*
Resolved display filter issue related to 802.11 CF-End packet	*	*	*	
Improved start/stop capture stability in a congested environment	*	*	*	*

5.7.3. Firmware Versions in Release 4.25

- X500/X500e – FW: 202410222012; FPGA: 202410211414 | 202405161240; CPLD: 4.11.
- X240 – FW: 202407021437; FPGA: 202402051634 (Classic); 202402051417 (LE), 202402060609 (Wi-Fi), 202406011606 (802.15.4); 202311170542 (Dual), 202402280921 (CS) CPLD: 3.2. (No changes)
- Sodera – FW: 202102221955; FPGA: 202204181613; PIC:1.12. (No changes)

5.8. Release Notes for 4.20 (Release date: 9/24/2024)
5.8.1. What's new

Release Notes	X500e	X500	X240	Sodera
Formal support for Bluetooth v6.0 features • Channel Sounding • Decision based advertising filtering (DBAF) • ISOAL Enhancements • Monitoring advertisers • LL Extended Feature set • Frame space updates	*	*	*	
Support for Wi-Fi 7 MLO (multi-link operation). Capture on two 320 MHz channels simultaneously. Support for Automation API included.	*			
Updates to Wi-Fi 7 MAC information elements 1 & 2.	*			
Added support for device selection and other operation for Wireless device addresses, including both Bluetooth and Wi-Fi via Automation API.	*	*	*	*
Timing Analysis View Improvements • Added colors to logic lines to match physical lines. • Added color boundary to easily locate IFS packets.	*	*	*	*
Supports reference mode testing for LE Audio, in addition to Bluetooth Classic. • Allows customizing SINK buffer to match end devices.	*	*	*	*
Update Assigned Numbers for 2024-08-29.	*	*	*	*

5.8.2. Bug fixes

Release Notes	X500e	X500	X240	Sodera
Unable to analyze on both BT and Wi-Fi devices under certain conditions.	*	*	*	*

Resolved a regression issue with IRK resolution.	*	*	*	*
Resolved HCI_LE_CS_Subevent_Result_Continue incorrect decodes.	*	*	*	

5.8.3. Firmware Versions in Release 4.20

- X500e – FW: 202409162127; FPGA: 202407151310 | 202405161240; CPLD: 4.11 (updated).
- X500 – FW: 202409162127; FPGA: 202404301738 | 202405161240; CPLD: 4.11 (updated).
- X240 – FW: 202407021437; FPGA: 202402051634 (Classic); 202402051417 (LE), 202402060609 (Wi-Fi), 202406011606 (802.15.4); 202311170542 (Dual), 202402280921 (CS) CPLD: 3.2. (updated)
- Sodera – FW: 202102221955; FPGA: 202204181613; PIC:1.12. (No change)

5.9. Release Notes for 4.10 (Release date: 8/8/2024)
5.9.1. What's new

Release Notes	X500e	X240	Sodera
Timing Analysis View Improvements • Added an option to synchronize zooming across all views. • Improved showing various data packet types with additional colors. • Improved showing high level view of data capture when zoomed out. Error, retransmitted and other critical packets can be easily identified with additional color coding.	*	*	*
Logic lines color in the Record Options settings match physical wire colors.	*	*	
Improved showing LE retransmitted packets in yellow across all views.	*	*	*
Added submode, random sequence, marker position, main mode repetition calculations for Channel Sounding.	*	*	
Improvements to Wi-Fi Scanner to include additional information about 320MHz channels	*		
Matter/Thread: Decryption of 6LoWPAN fragmented MLE messages improvements.	*	*	
Updated icons on the main toolbar.	*	*	*

5.9.2. Bug fixes

Release Notes	X500e	X240	Sodera
Resolved WPS not decrypting 802.15.4 Thread traffic in specific directions.	*	*	
Resolved a regression issue with showing false 802.15.4 packets under certain conditions.	*	*	
Added further audio events in AES for CIS.	*	*	*
Fixed a regression issue with exporting spectrum data.	*	*	*

5.9.3. Firmware Versions in Release 4.15

- X500e – FW: 202407291636; FPGA: 202404301738 | 202405161240; CPLD: 4.11 (updated).
- X500 – FW: 202407291636; FPGA: 202404301738 | 202405161240; CPLD: 4.11 (updated).
- X240 – FW: 202401031810; FPGA: 202402051634 (Classic); 202402051417 (LE), 202402060609 (Wi-Fi), 202406011606 (802.15.4); 202311170542 (Dual), 202402280921 (CS) CPLD: 3.2. (updated)
- Sodera – FW: 202102221955; FPGA: 202204181613; PIC:1.12. (No change)

5.10. Release Notes for 4.05 (Release date: 7/11/2024)
5.10.1. Bug fixes

Release Notes	X500e	X240	Sodera
Improvement to Wi-Fi 6e capture performance under certain conditions.	*		
Resolved an issue with "nearly out of memory" and improved system performance.	*	*	
Resolved URI AD Element decoding	*	*	*
Resolved CGM Feature Field decoding	*	*	*

5.11. Release Notes for 4.00 (Release date: 6/18/2024)
5.11.1. What's new

Release Notes	X500e	X240	Sodera
Supports Wi-Fi 7 data capture and decode. Requires hardware upgrade from X500 to X500e. • Supports 1-2 spatial streams, 320 MHz channel width and MCS 12/13. • Supports scanning Wi-Fi 7 channels.	*		
Combined record and analyze operation • Removed "Start Analyze" operation. Automatically analyze the data and show it as it gets captured. • Allows adding/removing devices, and security keys while recording.	*	*	*
Supports Capture file segmentation • Automatically segment files based on file size, duration, number of frames, files, etc. • The feature is available via GUI and automation API.	*	*	*
Reintroduced reference mode testing in Audio Expert system.	*	*	*
Supports overlaying multiple BTSnoop files over OTA captures for time synchronized debugging.	*	*	*
Added Channel Selection Algorithm validation for CSA#3a and 3b. Channel violation is reported in real time during live capture.	*	*	
Allows opening capture files created with legacy product BPA600.	*	*	*

5.11.2. Bug fixes

Release Notes	X500e	X240	Sodera

Release Notes	X500	X240	Sodera
Added node ID key to MatterOptions.ini to fix invalid nonce when source id isn't tracked.	*	*	
Added expanded IPv6 header in reassembled Matter fragments.	*	*	
Added Matter Analysis QSG.	*	*	
Resolved issues with sync word errors for mSBC.	*	*	*
Allows exporting LE Test mode tab for both capture file and live capture.	*	*	*
Resolved several issues with opening btsnoop files.	*	*	*
Resolved issues with .csv export.	*	*	*
Resolved thread decryption issues.	*	*	
Resolved issue with periodic gaps in Wi-Fi data.	*		
Improved LE capture stability.	*	*	
Added fix for Out of Memory issue.	*	*	

5.12.   Release Notes for 3.26 (Release date: 4/7/2024)

5.12.1.   Bug Fixes

Release Notes	X500	X240	Sodera
Added decoding for Frame Space CR_r01.	*	*	
Updated Channel Sounding to d1.0r05.	*	*	
Updated decodes for Advance Headphone Profile (AHP) d07r01.	*	*	*
Fixed a regression issue with sync word errors for mSBC data.	*	*	*
Fixed a stability related issues with adding Matter passcode.	*	*	
Fixed issues with fragmented and non-fragmented payloads with IPv6 6LoWPAN.	*	*	
Fixes for export to .csv stopping before end of range.	*	*	*
Fixed an issue to allow exporting LE Test Mode tab via Automation.	*	*	*
Fixes for Bluetooth HCI Supervision_Timeout field shows invalid value for HCI_LE_Extended_Create_Connection [v1] command.	*	*	*
Fixes for missing CS_SYNC packets on test access address.	*	*	
Updated I2S Audio playback for 24 bit.	*	*	
Fixed Available_Sink_Contexts decoding issue.	*	*	*
Fixed zooming issue for initial packets drawn on Timeline view	*	*	*
Fixed clearing of files between record sessions	*	*	*

5.13.   Release Notes for 3.25 (Release date: 3/7/2024)

5.13.1.   What's New

Release Notes	X500	X240	Sodera
Added support for Channel Sounding in X240. Includes Channel Sounding spec updates.	*	*	
Added support for high level query-based filtering in the Summary pane. It allows searching for packets in the whole capture or protocol tabs. (Replaces Quick/Advance user filters in 2.60 and prior).	*	*	*

• Query auto complete. • Hints to create advance filters. • Highlighting syntax errors. • Easily create simple query using right click options in Summary and Decode panes. Enhance them to create complex queries.			
Added support for capturing data over Ethernet connection. The Start page to includes devices connected over Ethernet. Please see user manual to do the one-time configuration.	*	*	
Improved GATT handle resolution policy to resolve RPAs.	*	*	*
Added support for new medical profiles. • Elapsed Time Service (ETS) v1.0. • Generic Health Sensor Service (GHSS) v1.0.	*	*	*
Supports capture and decode of I2S Audio data and playback in Audio Expert system. Audio I2S sample capture file included in the software.	*	*	
Enhanced the packet display in Timing Analysis view to show common fields such as preamble, access address, payload CRC in Timing Analysis view for LE, Classic and Wi-Fi technologies. Timing measurements using left click and drag snaps to packet boundary as well as parts within the packet.	*	*	*
Improved packet filtering. Added three analyze options to Bluetooth Device Database: • Analyze All to/from selected devices. • Analyze only between selected devices. • Analyze All devices	*	*	*
Added support for showing key field values in decode pane. Allows adding custom fields via right click "Add to protocol summary".	*	*	*
Added support for LE Test mode feature via automation API.	*	*	*

5.13.2.   Bug Fixes

Release Notes	X500	X240	Sodera
Fixed a regression issue with Mesh decoding.	*	*	*
Improved WBS packets decoding and playback in AES.	*	*	*
Resolved issues with BIS LE audio packets in AES.	*	*	*
Resolved issues with CIS playback in AES under certain conditions.	*	*	*
Improvements to CRC packets and missing audio data for LEA.	*	*	
Improvements to 3-DH5 capture performance.	*	*	
Improvements to LE 2M capture performance under certain conditions.	*	*	
Fixed an issue where occasionally the hardware was left in a bad state showing no license or serial number until rebooted.	*		
Improved showing retransmitted packets when the original has a CRC error.	*	*	*
Improved Wi-Fi timestamps when capturing on two channels simultaneously.	*		
Fixed issues with frame selection losing focus when navigating between protocol tabs.	*	*	*
Improved selecting all devices for analysis in crowded environment.	*	*	*
Fixed a corner case where Timing Analysis view was sometimes black.	*	*	*
Fixed an issue with CSV export via automation.	*	*	*

	X500	X240	Sodera
Fixed Invalid payload filter does not clear - view left empty	*	*	*
Resolved an issue with showing RPA/NRPA/Static addresses with company ID.	*	*	*
Some Wi-Fi packets with FCS errors are missing (not drawn) in Timing Analysis.	*	*	
Fixed a display issue in Message Sequence Chart.	*	*	*
Several stability related improvements.	*	*	*

5.14.   Release Notes for 3.10 (Release date: 9/28/2023)

5.14.1.   What's new

Release Notes	X500	X240	Sodera
Added Wi-Fi Device Database dockable window for visualizing and selecting Wi-Fi devices, like Bluetooth Device Database. • Allows showing important device information, such as friendly name, RSSI, etc. • Allows device data maintenance and clean up.	*	*	
Added support for capturing two Wi-Fi channels simultaneously using two Wi-Fi cards in X500 (available with X500 Elite Wi-Fi 6/6e only).	*		
Added support for exporting Spectrum data via UI and Automation.	*	*	*
Restored creating custom tabs using filter criteria on a field in Decode or Summary pane using right-click option.	*	*	*
Added support for frame highlighting based on the selected field in the decode pane.	*	*	*
Added support for HCI UART baud rates greater than 4 Mbps – 5, 6, 8, 10 Mbps. Setting baud rate manually is preferred. See known issues list.	*	*	
Improved Wi-Fi decoding for - Sub-elements in BSSID, OWE, RSN info element, and OCI.	*	*	
Improvements to Block ACK decoding and display in the Timing Analysis view.	*	*	
Improvement to GATT Cache management. • GATT cache data are autosaved and autoloaded. • Deprecated organizing GATT cache by revisions.	*	*	*
Updated Channel Sounding LL, HCI and UUIDs to spec CR_PR.	*		
Updated assigned numbers and company IDs.	*	*	*
Move the wired devices option from Bluetooth Device Database to Analyzer toolbar.	*	*	*
Updated About window for analyzer hardware.	*	*	*

5.14.2.   Bug Fixes

Release Notes	X500	X240	Sodera
Fixed a regression issue with showing incorrect channel number for 802.15.4 technology.	*		
Fixed an issue with Audio Expert System missing for btsnoop files.	*	*	*
Improved capture performance on primary LE ADV Channels.	*		
Improved capture performance of Classic 3-DH5 packets.	*		

	X500	X240	Sodera
Resolved an issue with showing Bluetooth devices in the Device Database for some non-English version of the Windows OS.	*	*	*
Improved system performance when user runs out of disk space and saving capture file.	*	*	*
Resolved an issue with showing strange symbols for event timestamp in Audio Expert System.	*	*	*
Nearly out of memory – Improved performance for long duration captures.	*	*	*
Fixed a Block Ack Multi STA decoding issue.	*	*	

5.15.   Release Notes for 3.00 (Release date: 6/28/2023)
5.15.1.   What's new

Release Notes	X500	X240	Sodera
Single capture file with a new extension .CFAX that includes all types of data, such as .CFA, .SCAP, .WCAP and .SWD files. • Old CFA files are imported into CFAX for quicker file open next time. • Updated sample files to match .CFAX extension. • Allows opening files created with Harmony, PTS and virtual sniffing.	*	*	*
Improved performance during opening files, searching data, etc.	*	*	*
Increased the limit on capture file size from 3.2GB to 128GB. (Optimized the upper limit for performance and value.) • Larger buffer allows significantly increased analysis duration (ex.: during high throughput Wi-Fi capture)	*	*	*
Improved timestamp display resolution from 100 ns to 1 ns.	*	*	*
Significant updates to Audio Expert System (AES) feature. • Updated UI and integrated AES into main software as a dockable pane. • Migrated all major features and functionalities from the previous software. (Reference mode is not supported in this release) • Added Time ruler and navigation behavior consistent with other views.	*	*	*
Added support to allow exporting raw and wav data, and Audio events for the AES feature via Automation.	*	*	*
Several improvements to Timing Analysis (TA) view. • Added support to allow Zoom functionality using mouse wheel. • Device rows are color coded based on technology type – Classic devices as blue, LE devices as green and Wi-Fi devices as orange. • Improved ease of placing timing measurements in TA view via single left click and drag.	*	*	*
Matter 1.0: Added support for deobfuscation and decryption of encrypted packets. See expert note #1 in section 1.4 below. • Supports decrypting PASE protocol with Passcode, Manual pairing and QR code/NFC string payload. • Supports decrypting CASE protocol with IPK and Ephemeral private key.	*	*	
Matter 1.0: Added support for Service and Data Management Clusters.	*	*	

Minor improvement to allow copying Wi-Fi address from the Wi-Fi scanner window.	*	*	
Improved Search feature in Summary view and fixed several issues.	*	*	*
Improved Follow Live behavior. Clicking on a frame in the Summary view will disable Follow live during live capture.	*	*	*
Added decoding support to Electronic Shelf Label profile (ESL).	*	*	*
Added a message in Summary view to guide users regarding next steps to take after clicking on Start Record.	*	*	*
Updated Wireless Protocol Suite About window.	*	*	*
Improvement to Channel Sounding feature. Channel Sounding packets are now associated with a connection. Removed analyze option.	*		
Improved Stats View. 'Indicate Retransmits' option enabled by default.	*	*	*

5.15.2.   Bug Fixes 3.00

Release Notes	X500	X240	Sodera
Resolved issues with X500 decoding HCI UART when the High Level is 1.8V.	*		
Resolved Bluetooth LE incorrect decoding of CGM Specific Ops Control Point.	*	*	*
Bluetooth LE incorrect decoding of CGM Measurement.	*	*	*
Fixed an issue with BIS capture. Also, resolved unexpected BDADDR listed for BIS stream in AES.	*	*	*
Fixed a corner case with Error tab sometimes not showing.	*	*	*
Suppressed X240 Dual Mode Popup during automation.		*	
Fixed a regression issue decrypting Wi-Fi packets using TK.	*	*	
Fixed an issue with missing Wi-Fi categories in Stats view.	*	*	
Improvements to MSC features.	*	*	*
Fixed issues creating columns in summary pane for fields with same name.	*	*	*
Fixed an issue where X240 single mode technology was not enabled when users updated the license from Single mode to Dual mode.		*	
Improved X500 battery installation documentation. Also added a quick link to the document on the Start page and Help menu in the software.	*		

5.15.3.   Features deprecated or planned after 3.00 Release

Products/Features	Notes
Audio Expert reference mode	This feature is not available in 3.00 release and will be added with improvements in future releases.
ComProbe 802.11	Deprecated support for ComProbe 802.11 analyzer. The software does not allow live captures but allows opening old files (standalone 802.11 and Sodera+802.11) from previous software with this release.
Sodera LE	Deprecated support for Sodera LE analyzer. The software does not allow live captures or opening old Sodera LE files starting this release.
BPA and other legacy files	We continue to not support opening CPAS capture files, for legacy products such as BPA, NFC and SD. Please use legacy software.

Quick/Advance user filters	This feature is not available in 3.00 release and will be added with improvements in future releases.
Frames override	This feature is not available in 3.00 release and will be added with improvements in future releases.
Define decoder parameters and protocol stack	The "initial decoder parameters", "set subsequent decoder parameters", "define protocol stack" are deprecated starting this release.

5.15.4. Firmware Versions in Release 3.00

- X500 – FW: 202304251451; FPGA: 202302220704| 202302220742; CPLD: 4.11.
- X240 – FW: 202304241235; FPGA: 202207180902 (LE), 202207180753 (Classic); 202207181010 (Wi-Fi), 202207190620 (802.15.4); 202301300851 (Dual), CPLD: 03.2.
- Sodera – FW: 201102221955; FPGA: 202204181613; PIC:1.12. (No change)

5.16. Release Notes for 2.60 (Release date: 3/9/2023)

Release Notes	X500	X240	Sodera	802.11
Official support for Bluetooth 5.4 released specification.	*	*	*	
Added Support for unencrypted Matter v1.0 Protocol o Added support for Device Discovery and Commissioning –BTP, reassembly of BTP Segments, decodes for ATT and LE ADV Service Data o Added support for Transport Management and Messaging Framing – Added decodes for Secure Channel Protocol, BDX Protocol, UDC Protocol o Added support for Interaction Model – Status Codes, Blocks, Message Definitions, TLV schema o Added Support for System Model Specification – Descriptor, Binding, Label, Fixed Label, User Label, Access Control, Actions Cluster o Added support for Application Layer- Level Control and Color Control	*	*		
Added a new dual mode configuration to allow simultaneous capture of BR/EDR and LE using a single X240 hardware. (Already supported on X500 and Sodera)		*		
Removed option to manually select 2M LE. X240 and X500 capture 2M LE by default.	*	*		
Updated Channel Sounding decodes to r05 spec.	*			
Added a Record Option for capturing Channel Sounding data. (Removed the limitation in v2.50 to allow capture of all technologies, BR/EDR, LE, 802.11, Wi-Fi, spectrum, wired technologies along with Channel Sounding data.)	*			
Improved algorithm to reduce false channel sounding packets.	*			
Added Channel Selection command line tool for calculating channel number (frequency hopping) based on user parameters. Supports CSA#1 and CSA#2 for ACL, and CSA#2 for CIS and BIS. The CSA tool is	*	*	*	

Release Notes	X500	X240	Sodera	802.11
available in ..\Teledyne LeCroy Wireless\Wireless Protocol Suite 2.60 \Help and Tools\Channel Selection Algorithm.				
Added support for detecting Channel Selection algorithm (CSA), CSA#2 violations for BIS data. Failures are flagged as "CSA Validation Error" in Live mode.	*	*	*	
Improved Thread decodes for DTLS and TLSv1.3.	*	*		
Allows rearranging LE and BR/EDR tabs in Timeline view and 2.4 and 5 GHz tabs in the Coexistence view. The user settings are saved across sessions.	*	*	*	
Major UI updates to Start page during software launch.	*	*	*	*
Added an option to analyze on Bluetooth devices via right-click "Start Analyzing these Devices" on a security entry in the Security pane.	*	*	*	
Improved UI to show capture filter options on the Analyzer toolbar.	*	*	*	
Added an option to show or hide bookmarks on Timing Analysis view.	*	*	*	*
Improved Decode pane UI. o Allows copying "all selection", "field name", and "value" via right click on a field name in the Decode pane. o Fields not part of the packet/layer are grayed out.	*	*	*	*
Added a collapsible node for All Wi-Fi devices in Timing Analysis view. Allows dragging Wi-Fi devices out of the node for easier analysis.	*	*		*
Improved timestamp for Wi-Fi ax 6/6e data.	*			
Improved decoding of Wi-Fi extended capabilities information element fields.	*	*		
Improved the 802.11 Packet type filtering option.	*	*		
Improved Automation API to suppress UI popup messages.	*	*	*	*
Added an automation command for HTML export feature for all tabs, including PBAP for extracting phone book and message data.	*	*	*	*
Added an automation command to export Logic Signals.	*	*	*	
Added an example Python code "sample_wps_client.py" that works on Linux software that controls the Windows software running WPS. See Expert Notes #2 below.	*	*	*	
Updated documentation for Automation API.	*	*	*	

5.16.1.　　Bug Fixes

Release Notes	X500	X240	Sodera	802.11
Resolved a BIS subevent type detection issue.	*	*	*	
Resolved an issue with capturing Wi-Fi 5, MCS 9, 20 MHz data type when using Wi-Fi 6/6e configuration option.	*			
Fixed Audio LE issues for BIS – LC3 config issues and LE extended header decoding issues.	*	*	*	
Stability improvements when adding GATT cache keys.	*	*	*	

5.16.2.　　Firmware Versions in Release 2.60

- X500 – FW: 202302281644; FPGA: 202302170608| 202302170753; CPLD: 4.11.
- X240 – FW: 202302081344; FPGA: 202207180902 (LE), 202207180753 (Classic); 202207181010 (Wi-Fi), 202207190620 (802.15.4); 202301300851 (Dual), CPLD: 03.2.
- Sodera – FW: 201102221955; FPGA: 202204181613; PIC:1.12. (No change)
- 802.11 - FW: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.17.　　Release Notes for 2.50 (Release date: 12/2/2022)
5.17.1.　　What's New

Release Notes	X500	X240	Sodera	802.11
Initial support for capturing sync and tone Channel Sounding packets as per draft core spec CRr03. (Enable "Analyze LE Channel Sounding packets" from Analyze options to see Channel Sounding packets).	*			
Updates to ISOAL and Decision-based Adv filtering.	*			
Updates to Bluetooth Denver draft specs d1.0r07 for CSS, EAD and PAwR. Added support for Security Levels Characteristics.	*	*		
Added support for Thread 1.1.1 – 802.15.4 PHY and MAC, 6LoWPAN, MLE, ICMPv6, CoAP, Network Layer, Mesh Commissioning Protocol (CoP), Thread Management Framework (TMF), and Network Diagnostics (DTLS not supported yet).	*	*		
Added support for LC3 SWB playback for HFP 1.90 spec.	*	*	*	
Allows showing bookmarks added to the Summary pane in all other views, such as Timing Analysis.	*	*	*	*
Timing Analysis View improvements • Allows searching Bluetooth and Wi-Fi devices Timing Analysis view. • The "favorites" in Bluetooth Device Database appear on top as favorites in Timing Analysis view.	*	*	*	*
Added a python-based sample automation script.	*	*	*	*
Added support for capturing Wi-Fi 6E OFDMA packets associated with one device.	*			
Updated to the latest assigned UUID rev 11/07/2022.	*	*	*	

5.17.2.　　Bug Fixes

Release Notes	X500	X240	Sodera	802.11
Improved timing measurement between OTA and HCI.	*			
Improved capture performance of Wi-Fi 6e for long data packets.	*			
Improved Wi-Fi decoding.	*			
Improved stability with using Wi-Fi features when using record/stop record too quickly.	*			
Minor improvements to Automation using Sodera.			*	
Improved processing extra or unexpected characters in Wi-Fi Security menu.	*			
Resolved issues with displaying EIR UUIDs.	*	*	*	

Release Notes				
Resolved LC3 decoding issues.	*	*	*	
Resolved LE Test Mode selection not sticky.	*	*	*	
Resolved loud RSSI values being reported as "Weak" in packet.	*	*	*	
Resolved an issue where Device Database was blank after recording stopped in Sodera+802.11 mode.			*	*
Fixed several issues that incorrectly added addresses in the Timing Analysis view.	*	*	*	*
Fixed an issue where Bluetooth device nicknames were not shown in Timing Analysis view.	*	*	*	*
Resolved an issue showing special characters in Security pane.	*	*	*	
Resolved an issue where X240 firmware update showed downgrade complete after firmware upgrade.		*		
Improvements to HCI UART decoding when missing packets.	*	*	*	

5.17.3.   Firmware Versions in Release 2.50

- X500 – FW: 202211181519; FPGA: 202211291107| 202211102107; CPLD: 4.11.
- X240 – FW: 202207180741; FPGA: 202207180902 (LE), 202207180753 (Classic); 202207181010 (Wi-Fi), 202207190620 (802.15.4); CPLD: 03.2.
- Sodera – FW: 201102221955; FPGA: 202204181613; PIC:1.12.
- 802.11 - FW: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.18.   Release Notes for 2.40 (Release date: 8/5/2022)
5.18.1.   What's New

Release Notes	X500	X240	Sodera	802.11
Full support for Auracast broadcast audio. Updated all LE audio profiles to the latest released specification. Added two new sample files • Bluetooth LE Audio (LC3) Unicast.cfa • Bluetooth LE Audio (LC3) Broadcast.cfa	*	*	*	
Further updates to Bluetooth Channel Sounding draft FIPD r22 and HCI FIPD r13.	*	*	*	
Support for Wi-Fi WPA3 Enterprise decryption for 128-bit and 192-bit mode.	*	*		
Added support for ASHA encoded data playback.	*	*	*	
Added support for LDAC encoded data playback.	*	*	*	
Updates to UUIDs.	*	*	*	
Restored support for three panes in Raw data pane.	*	*	*	*
Restored back colors in raw data pane to match decode pane.	*	*	*	*
Added text to inform user about device limit in Timing Analysis view.	*	*	*	
Added support to decode Device Time Service (DTS).	*	*	*	
Improvements to HCI UART features • Improved autobaud feature to detect baud rate change during capture.	*	*		

Release Notes				
• Fixed an issue where incorrect baud rate caused subsequent failures. • Fixed an issue with capturing logic signals at high rate.				

5.18.2.   Bug Fixes

Release Notes	X500	X240	Sodera	802.11
Minor stability improvements.			*	
Fixed an issue with Apple LEA G.722 mode 3 codec playback.	*	*	*	
Fixed decoding issue with Frame Control Power Management.	*	*		
Timing Analysis: Packet type hidden under certain zoom.	*	*	*	*
Resolved delay between BIS streams in AES.	*	*	*	
Resolved decode issues with "Attribute data".	*	*	*	
Improved showing mesh data In Timing Analysis view.	*	*	*	
Improved UI to indicate when filtering in no addresses.	*	*	*	
Improved AES for retransmissions/immediate repetitions.	*	*	*	
Fixed decoding error for EATT Packets.	*	*	*	
Improved stability.	*	*	*	

5.18.3.   Firmware Versions in Release 2.40

- X500 – FW: 202207131646; FPGA: 202207181138| 202207181100; CPLD: 4.11.
- X240 – FW: 202207180741; FPGA: 202207180902 (LE), 202207180753 (Classic); 202207181010 (Wi-Fi), 202207190620 (802.15.4); CPLD: 03.2.
- Sodera – FW: 201102221955; FPGA: 202204181613; PIC:1.12.
- 802.11 - FW: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.19.   Release Notes for 2.35 (Release date: 5/24/2022)
5.19.1.   What's New

Release Notes	X500	X240	Sodera	802.11
Added support for Antenna Diversity that utilizes both Bluetooth receivers (Rx1 and Rx2) for improved capture performance.	*			
Initial support for Channel Sounding HCI decoding.	*	*	*	
Improved LC3 audio playback to detect codec parameter automatically without user defined LC3.ini file.	*	*	*	
Added support for CAP v1.0 and PBP (VSr04).	*	*	*	
Updates to LE Audio specs – HAS d1.0r01, BAP d1.01r03, CSIS d1.0r01, PACS d1.0r01, BASS d1.0.1r00, MCP d1.0.1r00.	*	*	*	
Updated GATT Supplement Specification (GSS) to v6.	*	*	*	
Updated Battery Service (BAS) to v1.1.	*	*	*	
Added ability to export Stats view data.	*	*	*	*

5.19.2.   Bug Fixes

Release Notes	X500	X240	Sodera	802.11
Resolved an issue where X500 battery won't indicate fully charged.	*			
Resolved an issue with LC3 audio playback for 16kHz 32kbps.	*	*	*	

5.19.3. Firmware Versions in Release 2.35

- X500 – FW: 202205131820; FPGA: 202204211101| 202204211025; CPLD: 4.11
- X240 – FW: 2021040270842; FPGA: 202204140914 (LE), 202201111312 (Classic); 201103311538 (Wi-Fi), 201103311631 (802.15.4); CPLD: 03.2 (No change).
- Sodera – FW: 202102221955; FPGA: 202102160739; PIC:1.12 (No change).
- 802.11 - FW: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.20. Release Notes for 2.30 (Release date: 5/2/2022)

5.20.1. What's New

Release Notes	X500	X240	Sodera	802.11
Initial support for the draft Bluetooth spec features: • Enhancements for Improved ISOAL Mode. • Decision-based Advertising Filtering. • HADM Channel Sounding (CS) LL decodes. • Encrypted Advertising Data (EAD). • Periodic Advertising with Responses (PAwR). • Coding Scheme Selection on Adv. (CSSA).	*	*	*	
Added support for 802.15.4 MAC protocol decoding.	*	*		
Timing Analysis now shows 802.15.4 packets.	*	*		
Support for HCI ISO.	*	*	*	
Support for GATT Constant Tone Extension Service (CTES).	*	*	*	
Support for GATT Binary Sensor Service (BSS).	*	*	*	
Support for A2DP 1.4 AAC object type decodes.	*	*	*	
Support for HFP 1.90 Super Wide Band (SWB) decodes.	*	*	*	
Support for Telephony Media and Audio Profile (TMAP).	*	*	*	
Updated 16-bit UUID to Rev 2022-04-04.	*	*	*	
Allows capturing spectrum data with full and truncated 802.11 packets.	*			
Added keyboard shortcuts for the following operations. • Start Record (Ctrl+E) • Start Analyze (Ctrl+Shift+E). • Clean (Ctrl+R) • Follow live (Spacebar)	*	*	*	*
Measurement modes are sticky in Timing Analysis view.	*	*	*	*
"Wi-Fi Security" dialog box is available in the main toolbar.	*	*		*
Added support for AAC-ELD codec for audio data playback.	*	*	*	
Added Role Summary Column to LE tabs - DATA/LL/SMP/CIS.	*	*	*	

5.20.2. Bug Fixes

Release Notes	X500	X240	Sodera	802.11
Fixed an issue with MSC synchronization with other panes.	*	*	*	
Resolved an issue with SCMS-T protected audio playback.	*	*	*	
Improved playback for AAC-ELD data for Apple-LEA devices.	*	*	*	
Fixed an issue with AES extracted file naming.	*	*	*	
Resolved LE retransmitted packets were not yellow colored on WPS PER pane.	*	*	*	
Fixed X500 packet timestamps out of frame number order (WCI-2 + 5GHz) issue.	*			
Resolved HCI_LE_Create_CIS_Connection incorrect order of arrayed parameters in decode.	*	*	*	
Resolved an issue with "Attribute data".	*	*	*	
Resolved an issue with Timing Analysis view packets with zero delta.	*	*	*	
Resolved incorrect direction in MSC.	*	*	*	
Resolved an issue with Timing Analysis view nicknames.	*	*	*	
Resolved an issue in X500 - Values for Antenna Signal Measurements for 802.11 are not Populated.	*			
Improvements to WPS automation – • Resolved issues with exporting specific tabs • Allow auto reversal of LTK and Link Key via automation.	*	*	*	
Fixed an issue with supervision timeout parsing.	*	*	*	
Documentation updates for TKIP.	*	*	*	
Fixed an issue with Service Discovery GroupID attribute parsing.	*	*	*	
Fixed an issue with Analyzer toolbar missing in very rare cases.	*	*	*	
Search in Summary view does not highlight in decode pane.	*	*	*	*
Resolved retransmit rate was wrong for LE ISO packets.	*	*	*	
Resolved a stability issue with LiveImportAPI_x64.dll.	*	*	*	*
Resolved an issue with Virtual Sniffing warning popup.	*	*	*	*

5.20.3.   Firmware Versions in Release 2.30

- X500 – FW: 202205101843; FPGA: 202204211101| 202204211025; CPLD: 4.11
- X240 – FW: 2021040270842; FPGA: 202204140914 (LE), 202201111312 (Classic); 202103311538 (Wi-Fi), 202103311631 (802.15.4); CPLD: 03.2 (No change).
- Sodera – FW: 202102221955; FPGA: 202102160739; PIC:1.12 (No change).

802.11 - FW: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.21.   Release 2.20 (Release date: 2/1/2022)
5.21.1.   What's New

Release Notes	X500	X240	Sodera	802.11
Added support for automation server for BR/EDR and LE in X500 (this feature is already supported in X240 and Sodera).	*			
Added support for automation server for Wi-Fi 5 and 6e in X500 (Wi-Fi 5 automation is already supported in X240).	*			

Release Notes	X500	X240	Sodera	802.11
Added support for automation server for HCI UART and USB in X500 (this feature is already supported in X240 and Sodera).	*			
Added support for automation server for 802.15.4. Supports exporting data to .csv and byte format.	*	*		
Added support for automation server for spectrum.	*		*	
Improved timestamps for Wi-Fi 5 and Bluetooth Coexistence analysis.	*			
Added support for *beta* WPA3 decryption for 802.11 technology. WPA3 Decoder Updates per spec 802.11-2020 and 802.11ax_D8.0_Oct2020. *Note: Please contact technical support to get assistance on WPA3 decryption.*	*			
Support for 160 MHz channel width for 6/6e technology.	*			
Improved support for G.722 and Heimdall codecs for Apple LE Audio.	*	*	*	
Timing Analysis View: Added technology-based filters.	*	*	*	*
Timing Analysis (TA) View: Added option to add nicknames to devices (Bluetooth, Wi-Fi, wired, logic signals). Bluetooth custom device name in TA is synchronized with Bluetooth device database.	*	*	*	
Timing Analysis View: Added measurements on hover over logic signals.	*	*	*	
Timing Analysis View: Added ability to move vertically using hand mode.	*	*	*	
Added automatic/manual clean up options to device database.	*	*	*	
Improvements to FW update dialog window.	*	*	*	
Added Record Options to menu item.	*	*	*	
Added support to automatically scroll to raw data for a selected field in the decode view.	*	*	*	*
Added indication that release notes are also available in Welcome Tour in Help menu.	*	*	*	*
Added support for Windows 11.				

5.21.2. Bug Fixes

Release Notes	X500	X240	Sodera	802.11
Fixed a decoding issue with LMP_supervision_timeout.	*	*	*	
Fixed a ATT decoding error for virtual sniffing capture files.				
Fixed an issue with manually entering desired Baud Rate.	*	*	*	
Fixed a direction issue on CONNECT_IND in MSC.	*	*	*	
Improved BR/EDR capture performance in X240 and X500. Resolved an occasional issue with EDR synchronization detection.	*	*		
Improved opening capture files from MS OneDrive and .bes file type.	*	*	*	*
Fixed an issue where fields were not highlighted in decode view after search.	*	*	*	*
Fixed an issue where PBAP property mask bits were flipped.	*	*	*	
Fixed a minor issue with LL_CHANNEL_STATUS_IND decoding.	*	*	*	
Fixed an issue with MAP protocol filter decoding.	*	*	*	

Fixed an issue with erroneous "unknown channel" for Wi-Fi 6 GHz.	*			

5.21.3. Firmware Versions in Release 2.20

- X500 – FW: 202201242216; FPGA: 202201251303 | 202112270054; CPLD: 4.11
- X240 – FW: 2021040270842; FPGA: 202201241007 (LE), 202201111312 (Classic); 202103311538 (Wi-Fi), 201103311631 (802.15.4); CPLD: 03.2 (Update needed).
- Sodera – FW: 202102221955; FPGA: 202102160739; PIC:1.12 (No change).
- 802.11 - FW: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.22. Release 2.10 (Release date: 11/9/2021)
5.22.1. What's New

Release Notes	X500	X240	Sodera	802.11

Added new features on X500 product (HCI is already supported on X240 and Sodera)
 	
- Support for Wi-Fi ax 2.4/5/6 GHz channels.
   o Spatial Streams 1 - 2
   o Channel Width 20, 40, 80 MHz
   o MCS 10/11 (1024 QAM)
- Support for HCI UART (H4, H5, BCSP, and WCI-2)
- Support for HCI SPI.
- Support for HCI USB (two ports).
- Support for Device Scanner for 2.4/5/6 GHz channels.
- Support for 802.11 ax Radio Tap decoding v2020.
- Support for optional external battery pack that allows about two hours of capture time.
	*			

Improved LHDC decoding.	*	*	*	

5.22.2. Bug Fixes

Release Notes	X500	X240	Sodera	802.11
The issue "Under certain known conditions, no packets show in the summary pane when clicking on Start Analyze" has been resolved now.	*	*	*	
Resolved the issue Stream RECONFIGURE transaction causes Audio Expert waveform to not display/playback.	*	*	*	
Resolved the issue AAC stream stops - 'Audio is muted' and 'Transport error' seen in Audio Expert System.	*	*	*	
Resolved timing issues with connecting three X240s that occurred on some PCs.		*		
Resolved an issue where Multi tech captures with Wi-Fi stop recording after some time with no reason.	*			

5.22.3.   Firmware Versions in Release 2.10

- X500 – FW: 202111011734; FPGA: 202109080846 | 202109211115; CPLD: 4.10
- X240 – FW: 2021040270842; FPGA: 202103311449 (LE), 202103311400 (Classic); 202103311538 (Wi-Fi), 202103311631 (802.15.4); CPLD: 03.2 (No change).
- Sodera – FW: 202102221955; FPGA: 202102160739; PIC:1.12 (No change).
- 802.11 - FW: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.23.   Release 2.00 (Release date: 9/28/2021)
5.23.1.   What's New

Introducing an All-in-one Wireless Protocol analyzer – Frontline X500. Includes two Bluetooth and Wi-Fi modules to capture all wireless technologies simultaneously. Details below:

- Supports capturing the latest Bluetooth 5.3 specification - **Bluetooth BR/EDR and LE**.
- Supports **capturing Wi-Fi 5 a/b/g/n/ac 4x4** (both truncated and full packets). Channels 20, 40, 80 MHz, 256 QAM. (Support for "Network Scanning" and Wi-Fi 6e is coming in the next release).
- Supports **capturing 802.15.4** technology.
- Supports **capturing 2.4 GHz spectrum**.
- **Automatic and manual gain** controls of Bluetooth radios. AGC is ON by default.
- Supports capturing up to **24 logic signals** via three logic pods.
- Supports **Excursion** captures.

Release Notes	X500	X240	Sodera	802.11
Introducing a new docking framework to allow custom views. • When you click and drag the title bar of a pane, a guide diamond appears. During the drag operation, when the mouse cursor is over one of the arrows in the diamond, a shaded area will appear that shows you where the window docks if you release the mouse button now. • Resolves an issue where settings reset when moving Windows on multiple monitors. • Allows docking panes in an undocked pane. • Indicates which pane is in focus with color coding. • Allows any number of splits horizontally and vertically. • Allows changing the width and height of the panes. • Allows docking panes by grabbing the top or bottom of a pane.	*	*	*	*
Improved "Record Options" dialog with new user interface.	*	*	*	
User interface improvements to the 'Capture File Changing' dialog.	*	*	*	*
User interface improvements to the Packet Error Rate view. Updates to tooltips.	*	*	*	
Updated 16-bit UUID to Rev 2021-09-21.	*	*	*	
Support for official BAP decoders v1.0.	*	*	*	
Updates to HAS decoders d09r02.	*	*	*	
Added a new sample capture files for Bluetooth Audio LE.	*	*	*	

Updates to Wi-Fi decoders to 2016 specification.	*	*		*

5.23.2. Bug Fixes

- Fixed MSC to show baseband connection created event some layers.
- "Updated channel map used" event points to the expected packet/time/event in MSC.
- Fixes to adjust scaling used for Absolute Volume 0,1.

5.24. Release 1.80 (Release date: 8/3/2021)
5.24.1. What's New

Release Notes	X240	Sodera	Sodera LE	802.11
Improvements to the Wi-Fi packet decoding.	*			*
Added support for virtual sniffing to allow sniffing HCI data via LiveImport API.				
Added support to export 802.15.4 raw packets to pcapng format.	*			
Improved pcapng export feature. Added support to allow exporting data from GUI.	*	*	*	*
Allows "Byte export" via Automation.	*	*	*	*
Added support to analyze LE packets with CRC errors.	*	*	*	
Official support for Bluetooth 5.3 released specification.	*	*		
Updated terminologies according to the Bluetooth 5.3 specification for Central/Peripheral, etc.	*	*	*	
Updates to Hearing Aid Spec (HAS) decoders to d09r02.	*	*		
Updates to Apple Hearing Aid decoders to R36.	*	*	*	
Improvements to Timing Analysis view. Supports navigation bar feature. Improved showing packet type information when zoomed out to certain level.	*	*	*	*
Enhanced tooltips information for various Views.	*	*	*	*
Added 10ms & 20ms zoom option for LE Timeline.	*	*	*	

5.24.2. Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Resolved DUT1 and DUT2 show same address for two CIS streams in Audio Expert.	*	*	*	
Fixed an issue in Message Sequence chart that showed some AUX ADV coming from wrong side.	*	*	*	
Improved BIS capture to account for the Extended Adv packet having the TxPower bit set in the packet when calculating the offset to the ACAD data.	*	*		
Minor enhancements to HTML export.	*	*	*	*
Fixed MAP decoder issue related to folder-listing version.	*	*		
Fixed an issue to show Japanese characters appropriately in title bar and recent files.	*	*	*	*

Release Notes	X240	Sodera	Sodera LE	802.11
Expandable nodes field can be added in the Summary pane as separate column to ease debugging.	*	*	*	*
Fixed event counter issue when error packets for LE overlap.	*	*	*	
Fixed an issue with incorrect direction for large connection interval.	*	*	*	
Fixed stability issue with BIS data.	*	*		
Minor decoding fixes to HCI_LE_Set_Extended_Advertising_Enable command.	*	*	*	
Fixed a decoding issue with WCI-2 data.	*	*		
Improved software behavior where orphaned processes caused undesirable behaviors.	*	*	*	

5.25. Release 1.73 (Release date: 7/13/2021)
5.25.1. Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Cleaned up installers.	*	*	*	*

5.26. Release 1.72 (Release date: 6/22/2021)
5.26.1. Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Fixed a licensing issue with X240.	*			

5.27. Release 1.71 (Release date: 6/4/2021)
5.27.1. Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Fixed software update notification that erroneously indicated that there was no internet connection.	*	*	*	
Minor documentation updates	*			
Fixed an issue with recognizing Bluetooth Expert license.	*	*	*	

5.28. Release 1.70 (Release date: 5/4/2021)
5.28.1. What's New

Release Notes	X240	Sodera	Sodera LE	802.11
Added support to capture **full Wi-Fi packets** using X240. Please see Expert Notes #1 below.	*			
Added support for filtering **FCS and Frame Type** packets for improved Wi-Fi capture performance.	*			

	X240	Sodera	Sodera LE	802.11
Added support to capture **HCI SPI** using X240 hardware. Supports timing measurement of these packets in "Timing Analysis" view.	*			
Migrated Logic Analyzer view as dockable pane and rebranded as **Timing Analysis view** to improve usability. The view is available through View menu item in toolbar.	*	*	*	*
Migrated **Security view as a dockable pane**. The view is available through View menu item in toolbar.	*	*	*	
Updated decoders for **HFP** v1.80, **A2DP** v1.3.2, **MAP** v1.4.2 and **PBAP** v1.2.3.	*	*		
Update **BAP** to validation_r16 Update **ASCS** to validation_r11 Update **PACS** to validation_r08 Update **BASS** to validation_r12	*	*		
Updates for **Bluetooth Sydney spec** – LE Enhanced connection update and AdvDataInfo in periodic advertising.	*	*		
Updated **CCP/TBS/GTBS/MCP/MCS** to revision 1.0.	*	*		
Updated **16-bit UUID** and Company ID.				
Added support for **show MIC** for both encrypted and decrypted CIS and BIS data.	*	*		
Added support to display **CIS payload counter** for all CIS packets.	*	*		
Added support for saving setting for **Raw Data** view.	*	*	*	*

5.28.2.　　Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Fixed multiple issues with CIS data packets decryption.	*	*		
Enhanced decoding for identifying vendor-specific A2DP commands.	*	*		
Improved display of HID report.	*	*		
Fixed an issue where occasionally Sodera stopped showing new devices in the software.	*	*		
Fixed an issue where DM3 packets are shown as 2DH3 packet types.	*	*		
Fixed an issue with mesh decoding related to sensor cadence status/set message.	*	*	*	
Fixed an issue with SPP packets were decoded as SCO improperly.	*	*		
Fixed an issue with link key copy paste.	*	*		
Stability improvements.	*	*	*	
Fixed an issue with packet tool tips in "Coexistence" view.	*	*	*	*
Improved X240 connectivity on certain PCs.	*			
Fixed an issue where default 'My Capture Files' save location not sticking.	*	*	*	*
Fixed a decoding issue with AdvData field for AUX packets not formatted into AD Elements.	*	*		
Updated Application Error Codes for GATT.	*	*	*	

Release Notes	X240	Sodera	Sodera LE	802.11
Fixed an issue when it's all-zero IRK on Public Addresses triggered an auto-checkbox to Analyze.	*	*	*	
Fixed typos for some fields using microseconds.	*	*	*	

5.28.3. Firmware Versions in Release 1.71

- X240 – Firmware: 202104020709; FPGA: 202103311538 (LE), 202103311400 (Classic); 202103311538 (Wi-Fi), 202103311631 (802.15.4); CPLD: 03.02 (**FW update required**).
- Sodera – Firmware: 202102221955; FPGA: 202102160739; PIC:1.12 (**FW update required**)
- Sodera LE – Firmware: 2.03; FPGA 16908385 (No change)
- 802.11 - Firmware: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.29. Release 1.60 (Release date: 2/1/2021)
5.29.1. What's New

Release Notes	X240	Sodera	Sodera LE	802.11
LE Audio updates: Added support for the following LE profile and services: * Bluetooth Audio Profile (BAP) validation_r07, BASS validation_r03, PACS validation_r03, ASCS validation_r05. * Audio Input Control Service (AICS) v1.0 * Microphone Input Control Service (MICS) d1.0r01 * Volume Control Offset Service (VOCS) v1.0 * Volume Control Service (VCS) v1.0 * Coordination Set Identification Service (CSIS) d1.0r06 * Hearing Aid Service (HAS) d07r05 * Updated adopted 16-bit UUID as on 2021-01-07.	*	*		
Bluetooth 5.2 Spec updates: Added support for BIS Subevent type classification.	*	*		
Bluetooth 5.2 Spec updates: Shows BIS payload counter for all BIS packets.	*	*		
Add support to show **ISO CIS/BIS packet on Throughput, Stats, Logic Analyzer and Coexistence view.**	*	*		
Migrated **Wireless Device dialog to a dockable pane**. Users can select, edit, search, etc., wireless devices from the main application.	*	*	*	
Support for **802.15.4** PHY packets at 250 kbps. Capture simultaneously with other technologies, such as LE using multiple hardware and CrossSync technology.	*			
Added capability to **auto detect baud rate** when configured for HCI UART.	*			
Added support for **Wi-Fi Device scanner** to help select channel to capture the data.	*			
Added "**Update PM**" button to check/update Premium Maintenance through the software.	*	*	*	

5.29.2. Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Fixed a decoding issue with HCI: Set CIG Parameters - RTN parameter marked as error	*	*		
Fixed an issue with opening capture files with Japanese character file name.	*	*	*	*
Fixed an with issue opening capture HCI btsnoop file.	*	*		
Fixed a packet reassembly issue with ISOAL framed PDUs.	*	*		
Fixed a minor handsfree +BIND decoder bug.	*	*		
Fixed a minor ATT_FIND_INFORMATION_RSP decoding issue.	*	*	*	
Fixed an issue with decoding Attribute ID 0x0023000b appearing as "unknown" for PnP SDP records.	*	*		
Fixed a minor decoding issue with OBEX Header - ApplicationParamaters - Tag (ID).	*	*		
Fixed Minor class - 'undefined' format is inconsistent with defined values format.	*	*		
Fixed automation server stability issue if 'Get... Info' or 'Get... FW' commands used before 'Start FTS'.	*	*		
Stability improvements.	*	*		

5.29.3. Firmware Versions in Release 1.60

- X240 – Firmware: 202101121016; FPGA: 202011171256 (LE), 202011171204 (Classic); 202101131201 (Wi-Fi), 202101071229 (802.15.4); CPLD: 03.02 (**FW update required**).
- Sodera – Firmware: 201911141635; FPGA: 202006090729; PIC:1.12 (No change)
- Sodera LE – Firmware: 2.03; FPGA 16908385 (No change)
- 802.11 - Firmware: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.30. Release 1.50 (Release date: 11/06/2020)
5.30.1. What's New

Release Notes	X240	Sodera	Sodera LE	802.11
Added initial support to **capture a/b/g/n/ac 802.11 packets** using X240 hardware. The data payload is truncated from the packets. This allows saving more packets in the capture file, faster processing, and not dropping packets. Users will be able to do the following operations: • Set channel (2.4 GHz and 5 GHz) • Set channel width (20, 40, 80) • Record/analyze/save/open 802.11 packets • Decode 802.11 packets with Radio Tap header (i.e. meta data)	*			

	X240	Sodera	Sodera LE	802.11
• Shows 802.11 packets on **all** views – Coexistence View, Throughput, Airtime Utilization, Logic Analzyer and Stats View. • Shows **RSSI** for 802.11 packets. • Capture 2.4 GHz **Spectrum** data along with 802.11 packets. • Capture 802.11 data via **Excursion** mode for PC free capture. • Capture 802.11 and **logic/UART data** simultaneously from a single hardware. • Added support to capture data based on **MAC addresses (**allows up to 8 MAC addresses).				
Added support for capturing **Bluetooth and 802.11 wireless** technologies simultaneously using multiple X240 hardware.	*			
Displays **packet's center frequency** in Decode pane, timeline and Coexistence View for BR/EDR and LE packets.	*			
Supports **HCI ISO data** classification for UART and USB.	*	*		
Support for Bluetooth LE Audio **LC3 playback** in Audio Expert for CIS and BIS data. Please see "2.3. Known Issues and Workarounds" below.	*	*		
Updated to the **latest support for BAP** to revision d09r07 and ASCS, BASS and PACS to revision d09r08.	*	*		
Added support for **Telephone Barrier Service** (TBS) and Call Control Profile (CCP) d1.0r00.	*	*		
Added support for **Media Control Service** (MCS) d09r12.	*	*		
Added support for **Bluetooth Sydney** draft spec d1.0r06_ext.	*	*		
Added support for **timing measurement in Logic Analyzer** view. The timing measurements are automatically shown when mouse hovers over a packet.	*	*	*	*
Improved **scroll and zoom feature** on Logic Analyzer view to **match** with the rest of the application.	*	*	*	*
Improved **packet selection between Logic Analyzer** and rest of the application. Selecting packet on the summary or other views automatically selects packets in Logic analyzer.	*	*	*	*
Displays **UTF-8 Japanese characters** in Raw data view profiles, such as MAP or AVRCP.	*	*	*	*

5.30.2. Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Fixes the issue where CIS HCI packets were decoded as SCO with error.	*	*		
Fix for column created from duplicate field name shows only first field decoded.	*	*	*	
Shows reassembled packets correctly in the raw data pane.	*	*	*	*
Fixed a minor decoding issue with HCI AVRCP browsing.	*	*		
Fixed a Mesh decoding issue.	*	*	*	

| Stability improvements. | * | * | * | * |

5.31. Release 1.40 (Release date: 8/18/2020)

Release Notes	X240	Sodera	Sodera LE	802.11
Explore the *new* analyzer toolbar to manage hardware settings from within the main application. Check out the "Welcome Tour" that guides you through the new changes when you launch the software for the first time or via "Help" menu later.	*	*	*	
Added support to capture Bluetooth Classic and LE data using two X240 hardware synchronized using a CATC Sync cable.	*			
Added support for Bluetooth 5.2 ISOAL features for CIS and BIS.	*	*		
Added a toolset to export 802.11 packets to pcapng format.				*
Added support to reassemble packets for Authorization Control Profile (ACP).	*	*		
Added sample captures. Links to the capture files are available on the Start page or via the File menu.	*	*	*	*
Improvements to the Stats view to show stats on each technology row.	*	*	*	*
Added C# sample for Automation.	*	*	*	*
Added the ability to open the relevant help section of the user manual via F1.	*	*	*	*
Indication of a view's current open/close status added to View menu.	*	*	*	*

5.31.1. Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Fixed an issue with identifying direction on the first CIS Event Counter packet.	*	*		
Fixed an issue where VERSION_IND packets were marked with incorrect BDADDR.	*	*	*	
Fixed an issue with unexpected header bytes in SBC frames.	*	*		
Fixed an issue with capturing 2M AUX_ADV_IND or subsequent AUX_CONNECT packets in Sodera LE.			*	
Fixed a stability issue with MWS-WCI2.	*			
Fixed an issue where frame lost focus after adding bookmark and users were unable to navigate using arrow keys.	*	*	*	*
Fixed an issue where bookmark shortcut executes twice.	*	*	*	*
Fixed an issue with navigating using keyboard keys (arrows up/down) in the Decode pane.	*	*	*	*
Fixed an issue in the Coexistence view where error packets were not outlined in red.	*	*	*	*
Fixed an issue with column filtering LMP opcode.	*	*		

Fixed a decoding issue with 'Conn_Latency' field units.	*	*		
Fixed an issue with HTML export of baseband layer.	*	*	*	
Significant performance and stability improvements.	*	*	*	

5.31.2.   User Notes

- The following analyzers - Sodera, Sodera LE, X240 and 802.11 are **compatible** with laptops with Device Guard Credential software.
- It is occasionally observed that on certain laptops, the X240 analyzer does not connect back after firmware update. To fix the problem, disconnect all power sources to the analyzer and connect again.

5.31.3.   Firmware Versions in Release 1.40

- X240 – Firmware: 202007151427; FPGA: 202007230758 (LE), 202007230700 (Classic); CPLD: 03.02 (**FW update required**).
- Sodera – Firmware: 201911141635; FPGA: 202006090729; PIC:1.12 (**FW update required**)
- Sodera LE – Firmware: 2.03; FPGA 16908385 (No change)
- 802.11 - Firmware: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.32.   Release 1.30 (Release date: 5/11/2020)

Release Notes	X240	Sodera	Sodera LE	802.11
Allow capturing data for wired technologies – 16 Logic signals and HCI-UART.	*			
Added Hotkey options for various common operations.	*	*	*	*
Added ability to drag n' drop fields from "Decode" view to "Summary" view as a new column.	*	*	*	*
Added ability to dynamically expand/collapse tree nodes in "Decode" view based on packet context.	*	*	*	*
Added ability to grab pane via left click on the mouse and make small moves in the pane.				*
Added support to Channel Map Update Indication (0x28) and LE Supported Features (0x27) that comes over ACAD.	*	*		
Added a new "Stats View" to show data rates for BR/EDR, LE and 802.11 packet by data types and rates.	*	*	*	*
Added support for aptX-HD decode, playback and export.	*	*		
Added a new "Automatic Gain Control" feature that helps user control the gain on the hardware and improves sensitivity in the upper range.	*			
Added a new "Manual Gain Control" feature that lets user control the gain manually in preset intervals.	*			
Added a toolset to export LE packets to Wireshark.	*	*	*	
Further improvements to ISOC-BIS decryption.	*	*		
Improvements to column filtering on "Summary" View.	*	*	*	*
Added support for BAP Profile – BASS, ASCS, and PACS services.	*	*		

Added an option to synchronize PER Stats with other views.	*	*	*	
Minor improvements to Logic Analyzer view.	*	*	*	

5.32.1.   Bug Fixes

Release Notes	X240	Sodera	Sodera LE	802.11
Fixed burst number (BN) decoding bug in the LL_CIS_REQ PDU.	*	*		
UPF65: Fixed an issue with LEPC decoding of TxPower in LL_POWER_CHANGE_RSP and L_POWER_CHANGE_IND.	*	*		
UPF65: Fixed an issue with traversal of BIS data packets with CRC errors.	*	*		
UPF65: Fixed UUID mapping issue with ATT_Multiple_Variable_RSP in EATT.	*	*		
Fixed an issue with remembering last file location folder.	*	*	*	*
Fixed an issue where close LAP addresses caused failure to decrypt data during reconnection.	*	*		
Fixed several issues with Automation feature.	*	*	*	*
Stability improvements while saving large capture files.				*

5.32.2.   Firmware Versions in Release WPS 1.30

- X240 – Firmware: 202005071347; FPGA: 202004061643 (LE), 202005061533 (Classic); CPLD: 03.02 (FW update required).
- Sodera – Firmware: 201911141635; FPGA: 202001271042; PIC:1.12 (No change)
- Sodera LE – Firmware: 2.03; FPGA 16908385 (No change)
- 802.11 - Firmware: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.33.   Release 1.21 (Release date: 3/14/2020)

Release Notes	X240	Sodera	Sodera LE	802.11
Performance improvements to the Frontline X240 analyzer.	*			

- Firmware Versions in Release WPS 1.21
  - X240 – Firmware: 202002270737, 202002270842; FPGA: 202003120018; CPLD: 03.02 (FW update required).
  - Sodera – Firmware: 201911141635; FPGA: 202001271042; PIC:1.12 (No change)
  - Sodera LE – Firmware: 2.03; FPGA 16908385 (No change)
  - 802.11 - Firmware: FPGA: 2.9; Application: 1.5; Interface: 1.4 (No change)

5.34.   Release 1.20 (Release date: 1/31/2020)

Release Notes	X240	Sodera	Sodera LE	802.11
Added support for Bluetooth 5.2 BIS decryption.	*	*		
Added support for Bluetooth 5.2, HCI commands (CIS/BIS).	*	*		

Added support for Bluetooth 5.2 feature - Power Control (LE and HCI)	*	*		
Added support for Bluetooth 5.2 feature - EATT (LE and HCI).	*	*		
Added support for ASHA protocol decoding.	*	*		
Added a toolset to export BR/EDR packets to Wireshark.	*	*		
Added a new feature "Airtime Utilization" that shows packet duration over time for Bluetooth and Wi-Fi packets.	*	*	*	*
Introduced a new feature to allow filtering on columns in Summary Pane. Please see user manual to learn more about the feature.	*	*	*	*
Added support for Automation. Compatible with previous scripts using Legacy software.	*	*	*	*
Updated decoders and methods support to Visual Studio 2019. Customers should recompile their existing methods in Visual Studio 2019.	*	*	*	*
Improvements to Zoom functionality. Added consistency across all views.	*	*	*	*
Added legend to Timeline and Coexistence views. In the view, go to "Display" and select "Show Legend".	*	*	*	*
Resolved an issue related to not capturing BIG INFO on sub-event 0.	*	*		
Fixed decoding of LE extended header (ACAD).	*	*	*	
Fixed a Subinterval decoding issue.	*	*		
Fixed an issue where packet footnote text overlapped at certain Zoom level.	*	*	*	*
Fixed an issue where packets were delayed in high RF environment.		*		
Fixed a minor decoding issue with HCI supervision timeout.	*	*	*	*

5.35.   Release 1.10 (Release date: 12/18/2019)

- Launching a brand new Frontline X240 Wireless Wideband Analyzer. Please refer to datasheet and QSG to learn more about the hardware.
  - Supports capturing released and draft Bluetooth specs for both Bluetooth BR/EDR and LE.
  - Supports capturing spectrum data.
  - Supports Excursion mode for PC free captures.
  - Flexible configuration options are available.
  - Note: For the best user experience, it is recommended to use the X240 analyzer on a PC that supports USB Power Delivery.
- Known Issue: Occasional issues with USB connection and enumeration.
- No changes in other products – Frontline Sodera, Sodera LE, and 802.11.

5.36.   Release 1.01 (Release date: 11/19/2019)

Release notes	Sodera	Sodera LE	802.11
Added scale markers for Throughput view.	*	*	*

Added show packet and packet outline in Coexistence View.	*	*	*
Added a feature to copy data from Decode pane.	*	*	*
Added support for decoding characteristics for Authorization Control Service (ACS).	*	*	
Early access support for Bluetooth Milan.SPEC.d1.0r06_CSS.d9.0r06_ext sniffing. Supports capturing and decoding all CIS data. Supports capturing and decoding unencrypted BIS data.	*		
Fixed an issue where occasionally Sodera failed with error message "signal strength too strong".	*		
Fixed a decoding issue with HCI decode for "AVDTP_GENERAL_REJECT".	*		
Added shortcut for release notes on Start Page.	*	*	*
Added support to capture 802.11 data using Frontline 802.11 hardware.	*		
Added support to capture Bluetooth and 802.11 data concurrently using ProbeSync functionality.	*		*
Added a feature to show number of bytes for highlighted field in decode pane.	*	*	*
Added a feature to show multiple panes (e.g. hex and binary pane) simultaneously. Please note - the user settings are not persistent after closing and reopening the application.	*	*	*
Added functionality to zoom using mouse wheel + CTRL key on various views.	*	*	*
Updated to Apple Accessory Interface Specification Release R31 for LEA, iAP and hearing aid.	*		
Resolved an issue related to pasting security information (Link key, LTK) from external program, e.g. btsnoop files.	*	*	
Other bug fixes and stability improvements.	*	*	*

Firmware Versions in Release WPS 1.01

- X240 – Firmware: 202001281019; FPGA: 202001270852; CPLD: 03.01
- Sodera – Firmware: 201911141635; FPGA: 202001271042; PIC:1.12
- Sodera LE – Firmware: 2.03; FPGA 16908385
- 802.11 - Firmware: FPGA: 2.9; Application: 1.5; Interface: 1.4

User notes

On certain systems running McAfee anti-virus or Device Guard software, they might interfere with software installation process, causing some or all of the following issues:

- "Driver Installer" error during the installation.
- Frontline Protocol Analysis application fails to launch after installation.
- Delay in receiving packets from the hardware.

Software packages signed by Teledyne LeCroy, Inc., do not contain any malware nor viruses. If you encounter any of these issues, please contact your IT administrator about adding Teledyne LeCroy, Inc in whitelist or exception list.

5.37.   Release 1.00 (Release date: 8/9/2019)

- Launching new "Wireless Protocol Suite" application based on feedback from customers to improve user experience with "ComProbe Protocol Analysis Software (CPAS)" software.
- The "Main Window" with single docking framework contains most views.
- The new "Start Page" shows connected hardware, recent files and other useful links for easy access.
- Modern toolbar buttons and revised menu items for contemporary look and ease of use.
- Simplified, standardized and improved various plugins by removing visual clutter, and redundant items.
- Supports data capture using Frontline Sodera and Sodera LE hardware.
- Compatible with CPAS captures file created with Sodera or Sodera LE hardware.
- The software installs under new location - "Teledyne LeCroy Wireless" folder in Start Menu.

User Notes

- Premium Maintenance (PM) *must* be up to date to use the new software. PM status can be check via Renew PM tool or through Event log in Sodera Datasource Window.
- To capture data with other hardware, such as BPA range of products and HSU, please use old CPAS software.
- To open capture files created with other hardware, such as BPA range of products and HSU, please use old CPAS software.
- Support for Automation is coming in the future releases.
- Beta support for custom decoders and methods is included in this release. Users must copy methods and decoders files from old location "user\Public\Documents\Frontline Test Equipment" to the new location "\Users\Public\Documents\Teledyne LeCroy Wireless" and recompile custom methods.
- Support for Live Import API is not included in this release.
- Older versions of the Apple LE Audio decoder fileset is not support in Wireless Protocol Suite software. Please contact to Teledyne LeCroy Support to receive an updated version of the Apple LE Audio fileset.
- Some performance degradation seen on large captures performed overnight.

6. Support

Online Download

Please periodically check Teledyne LeCroy Protocol Solutions Group's web site for software updates and other support related to this product. Software updates are available to those users with current Maintenance Agreements.

Web (SW downloads): https://go.teledynelecroy.com/wps-software

Online Support

Web: https://www.teledynelecroy.com/support/techhelp/
E-Mail: Frontline_TechSupport@Teledyne.com

Sales Information

Web: https://www.teledynelecroy.com/support/contact/