Keysight UXR/MXR/EXR–Series Real–Time Oscilloscopes Software

This software is designed to run on:

- Keysight Infiniium UXR-Series oscilloscopes.
- Keysight Infiniium MXR-Series oscilloscopes.
- Keysight Infiniium EXR-Series oscilloscopes.

Version 11.20.00001

Released Date:	21 Sep 2021
Operating System:	Windows 10

New Features and Enhancements for UXR-Series

- New D9010WSAA software package
    - Realtime Spectrum Analysis (RTSA) bandwidth up to 160 MHz when ordered with UXR000-601 or UXR000-602.
    - RTSA standard bandwidth of 40 MHz.
- New D9020WSAA software package
    - Realtime Spectrum Analysis (RTSA) bandwidth up to 320 MHz when ordered with UXR000-602, or up to 160 MHz when ordered with UXR000-601.
    - RTSA standard bandwidth of 40 MHz.
- Implements a caching scheme to reduce the time required to change volts/div, sample rate, bandwidth and channel skew settings.
- Provides N4391EM4/5/6C license recognition on the UXR for the N4391B Optical Modulation Analyzer.
- Adds support for the MX0020A (10 GHz), MX0021A (13 GHz), MX0022A (16 GHz), MX0024A (20 GHz), and MX0025A (25 GHz) InfiniiMax high-speed differential probe amplifiers, all of which use the Autoprobe-2 interface.

KEYSIGHT TECHNOLOGIES

New Features and Enhancements for MXR/EXR-Series

- Adds IF Magnitude Trigger which is a trigger mode that allows the user to trigger on the Digital Down Converted signal.
- Enhancement to the transient response test in the D9010PWRA "Power Supply Analysis Software" to specify the overshoot in either voltage or percent and to allow a much lower value for overshoot (current limit is 1% and new limit is less than 0.1%).

New Features and Enhancements for UXR- and MXR/EXR-Series

- Enhancements to the D9010PAMA "Pulse Amplitude Modulation PAM-N Analysis Software"
    - o Adds support for PAM6 and PAM8 including Thresholds, Realtime Eyes, Eye Measurements, CTLE/FFE/DFE Equalization, CDR, Jitter/Noise Measurements, and SER.
    - o Adds noise removal for PAM4 12E J3U/J4U/J6U measurements.
    - o Enables the Vrms Area measurement (entire display) for PAM4 signals.
- Enhancement to D9020JITA and D9010JITO "EZJIT Complete Software" to add a cross-correlated period measurement to support PCIe5/6.
- Enhancement to D9010MCDP "MIPI CSI and DSI Protocol Decode/Trigger Software (C-PHY and D-PHY)" to add CSI2 v3.0 over CPHY v2.0.
- Enhancement to D9010MCDP "MIPI CSI and DSI Protocol Decode/Trigger Software (C-PHY and D-PHY)" to add CSI2 v3.0 over CPHY v2.0.
- Adds hardware-accelerated Mask Test.
- Adds the ability to build multiple waveforms on top of each other for Offline analysis in a similar way to how multiple waveform acquisitions accumulate on the oscilloscope.
- Adds a Total Harmonic Distortion FFT measurement.
- Updates the Phase Noise application to work with mmWave Extension Bandwidth Windows (Frequency Extension signal type).

New SCPI Grammar (refer to Programmer's guide for details)

- :FUNCtion<F>:ADEMod <source>
- :HOSTed:EOACquisition {ON | OFF}
- :MEASure:RJDJ:SCOPe:RJ:CALibrate
- :MEASure:FFT:THDistortion(?) Signal,[PEAK|MANual],Param,Peak#
- :MEASure:PN:DESKew
- :MTESt:CPOLygons {ON | OFF}
- :MTESt:HWMask:UHWMask {ON | OFF}
- :MTESt:HWMask:ACTive?
- :MTESt:STATistics {UI | WAVeforms | BOTH}
- :POWer:SIGNals:OVERshoot:UNITs(?) <PERCent:VOLT>

- :SYSTem:ERRor 293 Concave Mask (HW can't do concave polygons)
- :SYSTem:ERROR 294 (Out Of HW Mask Resources)
- :WAVeform:DATA <X_origin>,<X_increment>,<Y_origin>,<Y_increment>,<IEEE_block_data>
- Several ":MEASure" commands and queries have been added to support PAM6 and PAM8
- Several ":REPository" commands and queries have been added to support Data Analytics (KS6800A) remote interface

Notes

- The LXI Conformance Committee approved the application for UXR/MXR/EXR Scopes as being conformant to LXI Device Specification 2016 (LXI Core 2016 Device and LXI Extended Functions: VXI-11 Discovery and Identification, and HiSLIP) based on Self Certification.
- Updates the LXI version to CCL LXI 5.2.3 M1.
- Updates the Pathwave Calibration Advisor to version 1.44.
- Removes IVL restricted licenses from the demo all trial license.

Bug Fixes

- Includes bug fixes from the 06.70.00001 Infiniium software release.
- Adds a Charge measurement to the Mixed measurements. It was missing.
- Fixes an issue with Phase Noise averaging resetting.
- Fixes an issue with the waveform colors not loading properly into Offline for composite waveforms.
- Fixes an issue with the ":POWer:CLResponse:APPly" SCPI command not working the second time it is executed.
- Fixes an issue with the N280XA InfiniiMax III probe calibration calling for the wrong fixture, E2655 rather than MX0104A or N5443A.
- Fixes an incorrect measurement result for FFT channel power and power spectral density for Vrms units.
- Disables Differential Channels mode when the probe external scaling is different between the two channels.
- Fixes an issue where jitter measurements on waveforms saved to .bin format were showing a phase jump.
- Allows tracking RF markers for the Phase Noise plot and changes the markers enabled by the Phase Noise Wizard to use tracking RF markers rather than X-position markers.
- Fixes the loop bandwidth setting (correct value is 5 MHz) for the DisplayPort UHBR10, UHBR13.5 and UHBR20 CDR presets.
- Fixes an issue with the Trigger Event Register returning an incorrect value. This issue was found running the D9030SATC "SATA 6Gb/s Compliance Test Application."
- Fixes an OPC (Operation Complete) query timeout issue. This issue was found running the D9010USBC "USB 2.0 Transmitter Compliance Test Application."

Known Bugs

- HW Mask Test "stop on failure" does not work for channels 5-8 of the MXR/EXR series. There is a plan to fix this in the 11.30 release.
- MXR/EXR Roll Mode does not support digital channels. There is a plan to fix this in the 11.30 release.
- MXR/EXR "Trigger on Search" does not support digital channels. There is a plan to fix this in the 11.30 release.

Version 11.15.00203

Released Date:	4 Aug 2021
Operating System:	Windows 10

Enhancements

- Adds functionality to Variable Length Segmented mode to support ending the acquisition after a user specified time. Previously, it only ended after a specified number of segments.
- To reduce measurement uncertainty, this software version modifies the PAM4 12-Edge measurements to require at least 100 patterns.

Bug Fixes

- Includes several bug fixes for Ethernet 1000Base-T1 (D9020AUTP license) protocol trigger.
- Reduces the pre-trigger delay added to the MSO channels. This was causing acquisitions with MSO channels enabled to take longer to complete than expected.
- Fixes a vertical scaling defect with Vertical Autoscale for channels with Infiniisim enabled.
- Enables PCIe Gen1 and Gen2 protocol decode for the D9010PCIP license.
- Modifies the D9010PWRA Power Supply Test Software offset calibration to use the probe's offset/gain cal.
- Fixes a defect causing the Infiniium software to hang when running the D9010SFPC SFP+ Ethernet Compliance Test Application.
- Fixes a defect where the channel waveform is not plotted in differential channel mode with Infiniisim graphs turned off. This defect only occurs when probes are connected to the input channels.
- Fixes a crash in the MIPI M-PHY UniPro Protocol decode software found running on the MXR-series oscilloscopes.

Version 11.15.00201

Released Date:	7 July 2021
Operating System:	Windows 10

Enhancements

- Updates the Infiniium Software Updater to treat xx.xx.xxxx and x.x.x.x versions as the same version. For example, 02.10.0014 and 2.10.14.0 are the same version.
- Updates the End User License Agreement (EULA) to version 1-July-2021 (5991-3402)

Bug Fixes

- Changes the factory default setting for the "Auto Power On" user preference to OFF for UXR, MXR and EXR series oscilloscopes.

Version 11.15.00101

Released Date:	25 June 2021
Operating System:	Windows 10

Enhancements

- Modifies the PAM4 jitter algorithm for the 12-Edge Sigma-n DataCom measurement to work with closed eyes.
- Improves the robustness of the PAM4 12-edge jitter measurements for closed eyes.
- Enables Ethernet 1000BaseT1 trigger (D9020AUTP license).
- Updates the MXR/EXR to recognize the PD1000-60002 probe.

Bug Fixes

- Adds Windows10 support to the Infiniium installer so that it installs VC++2013 (x86 and x64) redistributables. These redistributables are required for some compliance test applications.
- Fixes an issue than can potentially default the calibration factors on the UXR when upgrading from 10.11 or older software versions to 11.15.00001.
- Fixes an issue where turning on a second channel with Infiniisim enabled can halt the acquisition.
- Fixes an issue on the MXR/EXR where an overload can occur performing default setup with a 50-ohm probe connected to one of the channels.
- Fixes the :CALibrate:STATus query to return the correct string for a 2-channel UXR oscilloscope.

- Fixes an intermittent crash that was found running PAM4 12-edge jitter measurements on deep memory with Infiniisim enabled.
- Fixes an issue in the ":MEASure:CLOCk:METHod:OJTF" command where it was not having an effect on the CDR settings.
- Fixes an intermittent issue on the UXR-series oscilloscopes which adds 125ps of delay to the aux trigger path after cycling power.

Version 11.15.00001

Released Date:	21 May 2021
Operating System:	Windows 10

Enhancements for UXR-Series

- Adds 2->4 channel upgrade options for the UXR-series AP models.
- Adds support for N7010A (30GHz Active Termination Adapter) and N7024A (6GHz Power Rail Probe) for all UXR-series. Previously, these were only supported for UXR frames with 3.5mm input connectors.
- Adds CDR edge direction into the measurement setup panel for the clock TIE measurement to simplify user setup.
- Includes several updates to PAM4 CDR, equalization and jitter to support IEEE 802.3ck D1.4 spec and PCIe6:
    - New CTLE and CDR functions for PCIe6
    - Improves the 12E measurements to work with high BER signals
    - 12E Jitter and Jrms, J4U, J6U, EOJ measurement on PRBS9Q and PCIe6 52-bit pattern
    - SNDR Sigma-n measurement
    - Improves pattern averaging to work on closed eyes.
- New Protocol Decode Support:
    - 400G FEC Decode (Included with D9010FECP and D9020BDLP, requires D9010PAMA)
    - DP 2.0 Phase 1 – Aux Channel Decode

Enhancements for MXR and EXR-Series

- Adds new 1.6 Gpts Combined Flexible Memory upgrade options.
- Provides support for a new family of high-bandwidth single-ended passive probes. (Note that Infiniium software 11.10.00202 also supports these probes):
    - PP0001A Passive probe, Hi-Z+, 10:1, 1 GHz, 300 Vrms
    - PP0002A Passive probe, Hi-Z+, 100:1, 800 MHz, 1200 Vrms
    - PP0003A Passive probe, Hi-Z+, MMCX interface, 10:1, 1 GHz, 30 Vrms
    - PP0004A Auto-probe 1 adapter for high bandwidth passive probes
- New Protocol Decode Support:
    - DP 2.0 Phase 1 – Aux Channel Decode and Trigger (Included with D9010EMBP and D9010USBP)
    - Ethernet 1000BaseT1 Decode (D9020AUTP license)

New SCPI Grammar (refer to Programmer's guide for details)

- :ANALyze:SIGNal:PATTern:INVert {ON | OFF}
- :ANALyze:SIGNal:PATTern:REVerse {ON | OFF}
- :MEASure:PAM:PRBS13q:PATTern {P13Q, PCI6, FILE}
- :MEASure:PAM:PRBS13q:PFILe <pattern file path>
- :MEASure:PN:INFO?

Notes

- Changes the UXR factory default user preference "Auto Power On" setting to ON.
- Updates the packaging to include KLM 5.4 version of the Keysight License Manager.
- Updates the "maximum" and "yellow maximum" counts reported to the Asset Management software for the UXR 1.85mm and 1.00mm attenuators to be 250K and 225K respectively. Previously, these cycle counts were 2M and 1.8M respectively. Also adds a method for service centers to reset the attenuator cycle count.
- Reduces the RTSA bandwidth enabled by the "demoall" license to 160MHz.

Bug Fixes

- Fixes a timeout issue that occurs running the FlexRT Optical Dark Calibration for the N7004A and N7005A Optical to Electrical Converters.
- Fixes the measurement result shown on the MXR/EXR-series oscilloscopes when a signal is clipped.
- Fixes an issue where the Frequency Mast Trigger mask is drawn in the wrong location for horizontal references other than 50%.
- Fixes a bug preventing the uploading or more than one data set into the K6810A/K6820A/KS6899 Pathwave Measurement Analytics.
- Fixes an issue blocking transporting of licenses from a UXR/MXR/EXR-series oscilloscope.
- Fixes an issue causing the incorrect memory depth to be calculated by the PAM4 wizard when jitter/noise is not selected.
- Fixes an issue that was blocking measurement statistics in the Output Ripple measurement when the histogram is enabled for the MXR/EXR Power Application.
- Fixes an issue with vertical autoscale not scaling the signal properly when Infiniisim is enabled with a transfer function which has a gain greater than one.
- Fixes an issue in the Infiniium installer where an error message is displayed indicating that the Wibukey.dll cannot be installed properly.
- Fixes issues with the ":WGEN:PRBS:LENGth" SCPI command.
- Fixes the UXR keyboard selftest to include the Aux trigger button.
- Fixes a failure occurring in the skew calibration for the N2830A probe.
- Reduces the time required on the MX0023A InfiniiMax 25 GHz RC probe to change the attenuation setting.

Version 11.10.00202

Released Date:	9 April 2021
Operating System:	Windows 10

Enhancements

- Modifies the jitter algorithm for 12-Edge measurements to use Time Interval Error rather than measuring edge jitter from the start of the waveform. This reduces the measured jitter for some waveforms.
- Adds SCPI support for RS-232 / UART serial decoding.
- Provides a popup dialog to update the MX0023A probe firmware when a probe with out-of-date firmware is connected to the oscilloscope. Using MX0023A probes with out-of-date probe firmware can result in long delays when attaching the probe or when changing attenuation setting. The most current version of MX0023A probe firmware is 6.4.
- Allows D9020BDLP "Complete Infiniiium Protocol Trigger/Decode Bundle" on the MXR and EXR series.

Bug Fixes

- Fixes an issue with the FFT display disappearing for Center Frequencies > 10GHz on a Digital Down Converted waveform.
- Fixes an issue with the Host ID not being detected after cycling power.
- Fixes a false failure of the acquisition memory self test.
- Fixes an issue with the Power Spectral Density measurement showing "-N.N" result when Vrms units are selected for an FFT Magnitude function.
- Fixes an issue in the Infiniium Software Updater showing "Compatibility Issues" for the D9030SATC SATA6G Test App.
- Fixes an issue with the phase noise application, the carrier power was calculated with the wrong reference impedance in differential channel mode. It was calculated with 50 ohms but should be calculated with 100 ohms.
- Fixes an issue switching to RTSA (Real Time Spectrum Analyzer) mode. An error message was reported, "This entry isn't a valid selection. The sampling mode control has not been modified."
- Fixes the autoset feature for PAM-4 thresholds. Autoset was not working when the existing threshold levels were outside of the eye.
- Fixes a crash that could occur when reordering measurements using "move up" and "move down".
- Fixes an issue where the oscilloscope application could crash after selecting File->Exit.

Version 11.10.00105

Released Date:	12 March 2021
Operating System:	Windows 10

Enhancements for UXR-Series

- Adds CTLE presets and 5th order PLL to support PCIe 5.0
- Adds a variable length segmented mode for use by the PathWave Vector Signal Analysis (89600 VSA) software for RADAR DRFM/Jammer test.
- Adds IF magnitude trigger for use with Digital Down Conversion.
- Adds software Zone Trigger support for the following functions, FFT Magnitude, Multiply and Equalization. The main driver for this feature is to do Zone Trigger on the post-DFE equalization lane signal for DDR5.
- Adds a new measurement called "Duty Cycle Adjustment" to support the DDR5 compliance test application. This is a set of measurements requested by DDR5 customers who need to evaluate the duty cycle of each "phase" of the DQS (strobe) signal.
- Adds multi-channel mask test up to 8 channels for the UXR series. This feature is already available for the MXR and EXR series.
- Adds history mode for the UXR series. This feature is already available for the MXR and EXR series.
- Adds 8 waveform memories for the UXR series. This feature is already available for the MXR and EXR series.
- Adds Fault Hunter for the UXR series. This feature is already available for the MXR and EXR series.
- New Protocol Decode Support:
    - PCIe Gen 5 (D9010PCIP license)
    - USB4 – Tunneling USB3.2 (D9010USBP license)
    - USB4 – Tunneling PCIe3.1 (D9010USBP license)

Enhancements for MXR- and EXR-Series

- Adds software Zone Trigger support for FFT Magnitude and Multiply functions.
- Provides basic MultiScope support.
- Increases the maximum number of segments per channel to 31K. Previously it was 5K.
- New Protocol Decode Support:
    - USB4 LS Trigger (D9010USBP license)
    - MDIO Decode/Trigger (D9010EMBP and D9010BDLP licenses)
    - RFFE Hardware Trigger (D9010MPLP license)
    - SVID Spec Rev (v1.93, VR14) (D9010LSSP license)

Other Enhancements for UXR-, MXR-, and EXR-Series

- Adds a new calibration service feature called the "Pathwave Calibration Advisor", to remind customers when calibration is due and to make is easy to request calibration service. These reminders can be turned off for customers who do not want this feature.
- Accelerates the runtime speed of the EZJIT jitter analysis software. The greatest acceleration occurs when running Periodic mode, using Spectral RJ separation. Other modes like Random mode and Tail-fit will also receive some acceleration.
- Adds the ability to measure eye width and eye jitter in UI units. Refer to Help and the Programmer's guide for more information.
- Adds a 60dB/Decade filter shape for the TIE Filter accessed from the Advanced tab in the Jitter/Noise Setup dialog.
- Some improvements have been made for screen capture. The time to render an inverted screen capture has been accelerated. The Platinum theme has been reworked to fix inverted-screen printing issues.
- Adds a new check box in the Display setup dialog to enable/disable the Color Grade Legend. Also adds remote SCPI grammar to support this.
  - :DISPLay:CGRade:LEGend <ON|OFF>
  - :Diplay:CGRade:LEGend?
- Adds SCPI grammar for saving a measurement report. The report can be saved as PDF or MHTML format.
  - :DISK:SAVE:MREPort <filename.pdf|mht>
- Adds SCPI grammar for reordering measurements within the results table.
  - :MEASurement<1-20>:POSition <1-20>
  - :MEASurement<1-20>: POSition?
- Adds SCPI grammar for specifying the layout format to be used to organize grids in the waveform area.
  - :DISPlay:GRATicule:GLAYout{SVERtical | SHORizontal | TVERtical | THORizontal}, [<area>]

Notes

- For safety reasons, the maximum high-impedance voltage offset for the MXR and EXR series is reduced to +/-40 V. Previously, it was +/100 V.

Bug Fixes

- Fixes an issue with the hardware assisted jitter results de-converging for transitions greater than 10M.
- Reduces the probe offset error resulting from the Gain/Offset probe calibration for the N7000A-3A InfiniiMax III+ probes.

- Fixes a bug in the SVID protocol decoder falsely triggering on an error type of "End Pattern Error".
- Fixes a bug with delta Y markers that was found on the MXR 8-channel oscilloscope.
- Fixes a mapping bug in the Utilities > Front Panel Sources feature.
- Fixes the MXR-Series/EXR-Series front-panel Touch button behavior
- Fixes bugs in the Precision Cable/Probe feature.
- Fixes a bug with the wrong date being saved for the :WAVeform:PREamble query and for the Multipurpose quick save feature.

Version 11.06.00501 (MXR/EXR-Series)

Released Date:	6 January 2021
Operating System:	Windows 10

Notes

- Protocol trigger on search for digital channels is not available

Bug Fixes

- Fixes an issue impacting the VSA software. The Spectral center frequency resolution is too coarse causing a rotation error in VSA up to 50 KHz.

Version 11.06.00401 (MXR/EXR-Series)

Released Date:	17 November 2020
Operating System:	Windows 10

Notes

- Protocol trigger on search for digital channels is not available

Bug Fixes

- Fixed slow trigger rate when using HRO mode
- Fixed issue with D9010JITA and D9010SCNA licenses not being recognized
- Fixed issue with RTSA color scheme changing on loading a setup multiple times
- Fixed issue where FMT does not appear on screen or appears in the wrong position
- Fixed issue with DDC 2GHz span not working with 500MHz and 1GHz models
- Fixed issue with :MEASURE:THRESHOLDS:PERCENT not accepting some valid values
- Fixed a performance issue saving segmented data

Version 11.05.00801 (MXR-Series)

Released Date:	2 September 2020
Operating System:	Windows 10

Enhancements

- Added arbitrary waveform generator editor

Notes

- Protocol trigger on search for digital channels is not available

Bug Fixes

- Fixed issue with RTSA on channels 5-8
- Fixed issue with N2820A and N2821A probes

Version 11.05.00602 (MXR-Series)

Released Date:	31 July 2020
Operating System:	Windows 10

Notes

- Protocol trigger on search for digital channels is not available

Bug Fixes

- Fixed intermittent hardware initialization failures
- Fixed time tags not appearing during segmented acquisitions with HW DDC

Version 11.05.00514 (MXR-Series)

Released Date:	26 June 2020
Operating System:	Windows 10

Enhancements

- Added Real Time Spectrum Analyzer (RTSA)
- Added Frequency Mask Trigger for RTSA
- Added HW DDC
- Added frequency extension for HW DDC
- Added support for protocols on channels 5-8 when a protocol uses more than 4 channels
- Added support for MIPI DPHY 4 lanes with clock channel
- Added support for new D9011BDLP protocol bundle

Notes

- Protocol trigger on search for digital channels is not available

Version 11.00.02105 (Initial Release, MXR-Series)

Released Date:	27 May 2020
Operating System:	Windows 10

Version 10.25.01202 (Patch 6, UXR-Series)

Released Date:	18 December 2020
Operating System:	Windows 10

Bug Fixes

- Reduces the time to initialize the MX0023A probe when it is connected to an oscilloscope channel.
- Fixes FFE auto set taps when a pattern is specified in the Signal Type setup panel.
- Fixes an Infiniisim issue that occurs when enabling the display graphs. The Infiniisim transfer function was not applied properly to the channel.
- Fixes an issue impacting the VSA software. The Spectral center frequency resolution is too coarse causing a rotation error in VSA up to 500 KHz.
- Reduces the time required to switch attenuator range in the MX0023A probe.
- Fixes an issue causing questionable rise/fall time measurements on a PAM4 Realtime Eye.
- Fixes an issue preventing the channel BW limit filter from being applied to measurement data when Fast Plot is enabled.
- Fixes an issue found by the M8070B software when connected to the UXR oscilloscope as a Realtime Error Detector. This issue was causing a high BER with PAM4 line coding.
- Fixes an issue causing time shifts in the waveform data, for channel bandwidths set below 11.9GHz, found while running Precision Cable.
- Fixes an issue in the UXR software causing zero-valued Rj measurement results found while running the D9021HDMC HDMI compliance application.

Version 10.25.01104 (Patch 5, UXR-Series)

Released Date:	17 November 2020
Operating System:	Windows 10

Enhancements

- Speeds up saving segmented waveforms to a file and offloading segmented waveforms.
- Adds a de-skew feature for the Keysight A400GE-QDD test system using the UXR oscilloscope to support SSPRQ100 test patterns.
- Adds support for a new 10GHz, 4-channel UXR model

- o UXR0104A   Infiniium UXR Real-Time Oscilloscope, 10 GHz, 128 GSa/s, 4Ch
- o N2129BU-020   Bandwidth upgrade – 4Ch Infiniium UXR Real-Time Oscilloscope 10 GHz to 13 GHz
- Adds support for new mmWave Wideband Analsysis Acceleration and Extension Options/Upgrades
  - o N2163A-082   5 GHz Configurable mmWave Extension Badnwidth Window – DC to 82 GHz Frequency Range
  - o N2163A-083   Upgrade Maximum Frequency for 5 GHz mmWave Extension Bandwidth Window from 82 GHz to 110 GHz
  - o N2163A-020   Upgrade 10 GHz to 20 GHz Configurable mmWave Extension Bandwidth Window
  - o N2163A-030   Upgrade 20 GHz to 30 GHz Configurable mmWave Extension Bandwidth Window
- Adds support for new mmWave Factory Installed Options
  - o UXR0000-682   5 GHz Configurable mmWave Extension Bandwidth Window - DC to 82GHz Frequency Range
  - o UXR0000-620   20GHz Configurable mmWave Extension Bandwidth Window
  - o UXR0000-630   30GHz Configurable mmWave Extension Bandwidth Window
- Adds support to launch the FlexRT software from within the UXR GUI. The FlexRT software adds the TDECQ optical measurement to the UXR series oscilloscopes.

Bug Fixes

- Fixes the :CHANnel<N>:PROBe <attenuation_factor>[,\{RATio | DECibel}] command.
- Fixes an issue causing the D9040EDPV eDP compliance test application to abort the Peak-to-Peak voltage tests.
- Fixes a performance issue within the UXR when connected to the N4391B Optical Modulation Analyzer.

Version 10.25.01003 (Patch 4, UXR-Series)

Released Date:	26 October 2020
Operating System:	Windows 10

Bug Fixes

- Fixes an issue causing the oscilloscope to hang when the MX0023A probe is disconnected from a channel.
- Replaces the "Long Operation" message with a more descriptive message when the MX0023A probe is connected to a channel. The new message is "MX0023A probe detected, computing probe transfer function which will take a minute."

Version 10.25.01001 (Patch 3, UXR–Series)

Released Date:	12 October 2020
Operating System:	Windows 10

Bug Fixes

- Fixes the optical power measurement gain for the N7005A 60GHz O/E Converter.
- Fixes an infinite jitter measurement result being reported to the D9040DPPC Display Port Compliance Test Application.

Version 10.25.00902 (Patch 2, UXR–Series)

Released Date:	17 September 2020
Operating System:	Windows 10

Enhancements

- Adds PMAX-Normalized (PRBS13Q) algorithm for computing DFE taps to the Equalization Auto Tap Setup dialog.
- Reduces the minimum OJTF Loop Bandwidth for PAM4 CDR to 1MHz.
- Adds probe bandwidth to the CHAN<X>:PROBE:INFO? Query
- Improves the performance of the SCPI :WAVeform:SEGMented:XLISt? query.

Bug Fixes

- Fixes a UXR software issue with running the M8070B System Software in the Real Time Error Detector configuration.
- Fixes the DC Offset/Gain Cal for the MX0023A InfiniiMax 25 GHz RC probe with MX0105A SMA probe head.
- Fixes an issue causing "A long operation is occurring" message to appear when connecting the MX0023A InfiniiMax 25 GHz RC probe to the oscilloscope channel.
- Fixes a crash when sending the SCPI query, :MEASure:PAM:PRBS13q:EDGE:EOJ?
- Fixes an issue where the Protocol listing display does not automatically go to the trigger point after a trigger event even though the waveform does.
- Fixes several issues with UXR Multiscope when hosted from a PC.
- Fixes an issue with colorgrade of a differential waveform showing two waveforms shifted in time.
- Fixes defects effecting the following compliance test applications:
  - o D9040DPPC Display Port
  - o D9040EDPV eDP
  - o D9010EBZC 10GBASE–T Ethernet

o   D9021HDMC HDMI

Notes

- Includes features and bug fixes from the 6.55.00902 Infiniium Oscilloscope software. Refer to the release notes for this software versions for more details, https://www.keysight.com/main/software.jspx?ckey=2488819&lc=eng&cc=US&nid=-11143.0.00&id=2488819.

Version 10.25.00702 (Patch 1, UXR-Series)

Released Date:	17 July 2020
Operating System:	Windows 10

Enhancements

- Provides support for the N7005A 60GHz O/E Converter.

Bug Fixes

- Fixes issues impacting the BitifEye N5991 HDMI 2.1 Receiver Test including Data Jitter Calibration and Cable Inter-Pair Skew Test failures.
- Fixes an issue causing the UXR to hang while running the BitifEye N5991 USB4 1.1 Receiver Test.
- Fixes the Auto Deskew feature for differential channels when running with a channel bandwidth filter enabled.
- Fixes an issue restoring the default setup behavior for channel voltage units after running the N7004A O/E Converter dark cal.
- Fixes an issue when selecting a Current probe. It was always selecting N7019A.
- Fixes the control button functions for the N2750A/51A/52A InfiniiMode Differential Active Probes.
- Fixes an issue with loading a composite file saved from a differential channel waveform. Sometimes, only part of the waveform was loaded.
- Fixes an issue with incorrectly reporting dynamic range when using the N5449A High Impedance adapter.
- Fixes the deskew channel control in the Phase Noise application setup wizard. It was failing for cases when the edge direction was set to Both.
- Fixes the Help->"Check for Updates..." feature. A message box would pop up displaying that "C:\Program Files\Keysight\Infiniium\Apps\SwUpdater\Download\LatestAppinfo.xml" is missing.
- Fixes an issue preventing an AC Gain setting great than 1 for CTLE equalization.

- Fixes an issue with the Auto Setup feature for the MIPI D-PHY Protocol Decode application causing ADC clipping. Changing the voltage offset to eliminate the clipping caused the decoder to quite decoding or worse, the oscilloscope application to crash.
- Fixes an issue where the lane index was not being setup properly for in-place DFE.

Notes

- Includes features and bug fixes from the 6.55.00702 Infiniium Oscilloscope software. Refer to the release notes for this software versions for more details, https://www.keysight.com/main/software.jspx?ckey=2488819&lc=eng&cc=US&nid=-11143.0.00&id=2488819.

Version 10.25.00607 (Release, UXR-Series)

Released Date:	15 June 2020
Operating System:	Windows 10

Enhancements

- Includes features and bug fixes from the 6.55.00401 and 6.55.00504 Infiniium Oscilloscope software. Refer to the release notes for these software versions for more details, https://www.keysight.com/main/software.jspx?ckey=2488819&lc=eng&cc=US&nid=-11143.0.00&id=2488819.
- Changes the reported oscilloscope temperature as a delta from the calibration temperature rather than as an absolute temperature.
- Adds enhancements to support 802.3ck/OIF Reference Receiver. These include (1) 3-pole, 2-zero CTLE's with multiple gain stages, (2) 4'th order Butterworth noise reduction filter, (3) new CTL presets and (4) Vertical Eye Closure measurement.
- Adds N2129RU bandwidth and memory options available to select rental partners.
- Adds support for the D9020BDLP protocol bundle.
- Increases the maximum bandwidth setting for the UXR0702AP and UXR0704AP models to 73.5GHz. Previously, the maximum bandwidth setting was 70GHz.

Bug Fixes

- Fixes bugs impacting the D9010EBSC IEEE 802.6 compliance test application.
- Fixes a TIE filter error found when running the DisplayPort compliance test application.
- Fixes an eye diagram screen shot issue found when running the D-PHY compliance application.
- Fixes a probe head selection bug.
- Fixes an issue in PCIe protocol decode with TS2 packets being labeled as "Unknown Packet."

- Prevents the "Offline" oscilloscope application installed on a PC from starting automatically after an OS reboot.

Version 10.20.00703 (Patch Release, UXR-Series)

Released Date:	28 May 2020
Operating System:	Windows 10

Enhancements

- Clamps the Sin(x)/x Auto interpolation factor to a maximum of 16:1 to improve performance. Still allows a manual setting of 32:1 for applications that require it.

Bug Fixes

- Provides bug fixes impacting several compliance Tx test applications including HDMI, PCIe, SFP+, SATA, SAS, MIPI, C-PHY, D-PHY, M-PHY, Ethernet, eDP, and DDR4.
- Provides bug fixes for some Rx compliance test solutions including MIPI, HDMI, and C-PHY.
- Fixes an issue that can cause waveform distortion when running with differential channels combined with Infiniisim, BW limit or equalization. This distortion can also impact jitter measurement results.
- Fixes an issue causing PAM4 jitter measurement results and histograms to degrade with setting changes.
- Fixes in incorrectly labeled Infiniisim transfer function graph when using adjacent differential channels.
- Fixes a trigger jitter test failure found during manufacturing performance verification.
- Fixes an issue causing information messages to show up in the screen shots.

Version 10.20.00503 (Patch Release, UXR-Series)

Released Date:	27 Mar 2020
Operating System:	Windows 10

Bug Fixes

- Sets the standard memory depth to 200Mpts. For 10.20.00501, it was defaulting to 10Mpts.
- Fixes an Infiniium Offline crash occurring near the end of the oscilloscope start up sequence. This crash occurs for installations of 10.20.00501 on a PC that already had a 6.xx version of Offline installed.

Version 10.20.00501 (Release, UXR-Series)

Released Date:	13 Mar 2020
Operating System:	Windows 10

Enhancements

- Includes the features and bug fixes from the 6.40 Infiniium oscilloscope software.
- Includes the features and bug fixes from the 6.50 Infiniium oscilloscope software.
- Adds Multiscope support (standard feature, no license required) to connect up to 10 frames (40 channels).
- Adds support for the UXR0051AP model (1-channel, 1mm input, 5GHz BW) targeted for mmWave analysis.
- Adds support for the DP0001A Differential probe 400 MHz 2000V.
- The behavior of the ":CHAN<N>:ISIM:STATe <State>" command is changing to improve Infiniisim performance. The new behavior is to disable Infiniisim graphs when the Infiniisim state is set to ON, which enables hardware acceleration of Infiniisim.
- Makes 3rd order PLL CDR standard. Before it was only available with the Thunderbolt compliance test application.

Bug Fixes

- Fixes the Menu button on the N7003A InfiniiMax III probe.
- Fixes a signal integrity issue with differential channels where one leg of the differential channel was getting the wrong DC voltage gain factor correction applied. This problem only occurred for a few of the volts/div settings. The symptom could exhibit some distortion of the differential signal and a small Vpp error of less than 5%.
- Fixes a hardware CDR issue found running 480 Mb/s 1010 pattern where the CDR is unable to recover the clock. This issue only occurred when the RTE was not being plotted.
- Fixes an issue where the real time eye is plotted and measured incorrectly with the "Infiniisim Display Graphs" option disabled.
- Fixes a bi-modal jitter issue on differential channel waveforms when the "Fast Plot" option is disabled.

Notes

- This version of software is updated to support compliance test applications that have been updated to run on 2-channel UXR models.
- This software version has not been fully tested and confirmed to work with all the compliance test applications. A newer version of 10.20 will be available once this testing is complete.

-   With this software version, the UXR0000-0HW "Infiniium UXR Real-Time Oscilloscope Hardware Acceleration upgrade – Included" license, is no longer required to enable hardware acceleration. The license can still be installed but the software ignores it.
-   The revision for the ".wfm" file format is incremented to SIG_REV_L. The ".wfm" format changed with the UXR 10.00 release but the revision was not updated to reflect the change. This oversight is corrected with this release. This change is necessary to provide ".wfm" compatibility between Infiniium oscilloscopes. Version 06.55 or newer is required for A/X/S/V/Z series Infiniium oscilloscopes to be compatible with 10.20 ".wfm" files.

Version 10.12.05302 (Patch Release, UXR-Series)

Released Date:	31 Jan 2020
Operating System:	Windows 10

Bug Fixes

-   Fixes an issue with 59GHz factory installed bandwidth licenses (UXR0592A, UXR0594A, UXR0592AP, UXR0594AP) not being recognized.
-   Fixes an issue with the *OPC (operation complete) query timing out. This issue is causing some compliance test applications to time out during execution.

Notes

-   The 10.12.05302 version is not compatible with all compliance test applications. Please upgrade to 10.20.0xxxx when it becomes available or downgrade to 10.11.05004 if running one of the following test applications:
    -   D9010ETHC Ethernet 10M/100M/1G
    -   D9010EBZC 10GBASE-T Ethernet
    -   D9030SATC SATA6G
    -   D9010USBC USB 2.0
    -   D9040DPPC DisplayPort

Version 10.12.05208 (UXR-Series)

Released Date:	12 Dec 2019
Operating System:	Windows 10

Enhancements

-   Adds support for Hardware Accelerated Digital Down Conversion.
    -   The standard software without a license provides 40MHz bandwidth.
    -   The standalone license, UXR0000-601, and upgrade option, N2163A-601, provides 40 MHz to 160 MHz bandwidth.
    -   The standalone license, UXR0000-602, and upgrade option, N2163A-602, provides 40 MHz to 2 GHz bandwidth.
-   Add support for the mmWave Wideband Analsysis Acceleration and Extension Package, UXR0000-MWA. This package includes
    -   UXR0000-02G (2 Gpt memory option)
    -   UXR0000-610 (10 GHz mmWave Extension option)
    -   UXR0000-602 (2 GHz bandwidth DDC option).

Bug Fixes

-   Fixes issues with the differential channel auto de-skew control. It now works properly when the oscilloscope is stopped and it works properly for input signals with DC offset.
-   Fixes an issue where the oscilloscope app was crashing on startup after installing the Equalization license.

Notes

-   The 10.12.05208 version is not compatible with all compliance test applications. Please upgrade to 10.20.0xxxx when it becomes available or downgrade to 10.11.05004 if running one of the following test applications:
    -   D9010ETHC Ethernet 10M/100M/1G
    -   D9010EBZC 10GBASE-T Ethernet
    -   D9030SATC SATA6G
    -   D9010USBC USB 2.0
    -   D9010CPHC MIPI C-PHY

Version 10.11.05004 (Patch Release, UXR-Series)

Released Date:	14 Oct 2019
Operating System:	Windows 10

Enhancements

- Improves the usability of the optional timebase calibration to (1) set the default to "not run", (2) make it clearer that an external 10MHz frequency reference is required, and (3) allow the user to skip the timebase calibration, which occurs at the end of the calibration, without impacting the rest of the calibration.

Bug Fixes

- Fixes some issues with adjusting and applying channel-channel skew.
- Fixes the bandwidth upgrade license for up upgrade on a UXR AP model from 59GHz to 70GHz.
- Fixes a licensing issue where the license could disappear while running the oscilloscope and then reappear after restarting the oscilloscope.
- Fixes an issue where the real time eye was resetting when doing operations such as turning on/off the histogram or adding/deleting a measurement.
- Fixes an issue where the oscilloscope application was crashing when disconnecting the N7010A probe from a channel input.
- Fixes a CDR loss-of-lock issue when running the Display Port compliance application for 2MHz and lower SJ frequencies.
- Fixes a DFE equalization issue where the taps were only having half of the intended effect.
- Fixes an equalization issue where DFE was not being applied if CTLE or FFE equalization was also enabled.
- Fixes an issue where running the self test was leaving the oscilloscope in a bad state causing additional baseline noise and spurs in the FFT.

Version 10.11.04711 (UXR-Series)

Released Date:	22 Jul 2019
Operating System:	Windows 10

Notes

–   This software version updates FPGA firmware, which takes several minutes, and requires unplugging the power cord to complete the update.

Enhancements

–   Modifies the channel-channel skew calibration to correct for more vertical ranges.

–   Hardware accelerates explicit-clock clock recovery.

–   Adds a simple phase noise demo file.

–   Removes the internal temperature report from the Help->About dialog.

–   Sets the default to "OFF" for the "Display Infiniisim Graphs" control to enable hardware acceleration of Infiniisim by default.

–   Adds the PAM3 demo.

–   Adds the USB 3.2 demos.

–   Adds an "Auto Power On" user preference to automatically restart the oscilloscope after input power has been removed and then reapplied.

–   For install packages that update the power monitor/control FPGA, such as 10.11, this software adds a new message at the end of the software install process requesting the user to physically disconnect and then reconnect the power cord.

Bug Fixes

–   Fixes some issues with adjusting and applying channel-channel skew.

–   Fixes a phase shift in the trigger position caused by enabling a differential channel (CSG-14828).

–   Fixes an issue preventing the "Precision Cable" feature from being enabled.

–   Fixes defects blocking the following compliance apps, D-PHY, DDR2 and USB3.

–   Reduces the input sensitivity to voltage overload for UXR models with 1.85mm and 1mm inputs.

–   Fixes an invalid VISA address reported by IO Libs when connecting with USB.

–   Fixes an issue preventing the tracking of life cycle information for number of power cycles and power-on time.

–   Fixes a hardware plotting issue that occurs intermittently for deep records when a Real Time Eye is also being displayed and most of the data is on screen. When this issue occurs, the data plotted is corrupted and/or the plotter locks up.

–   Fixes a filter delay issue causing a bad data result when running hardware accelerated FFE/CTLE equalization on a differential channel.

Version 10.10.04601 (Patch Release, UXR-Series)

Released Date:	11 Jun 2019
Operating System:	Windows 10

Bug Fixes

–   Fixes a waveform data corruption issue that occurs for differential channels and 4-port InfiniiSim. This issue is most noticeable with signal input frequencies that are 1/8, 1/16, 1/32, …, $1/2^N$ of the sampling rate.
–   Reduces the input sensitivity to voltage overload for UXR models with 1.85mm and 1mm inputs.

Version 10.10.04514 (UXR-Series)

Released Date:	20 May 2019
Operating System:	Windows 10

Enhancements

–   Supports all UXR models.
–   Adds licenses and upgrades for the following new UXR models.
    o   UXR0252AP, UXR0254AP, UXR0402AP, UXR0404AP, UXR0702AP, UXR0704AP
–   Adds support for the N2852A AP3->AP2 probe adaptor.
–   Adds licenses and upgrades for the "mmWave Configurable Bandwidth Window" feature.
    o   UXR0000-605 "5 GHz mmWave Configurable Bandwidth Window"
    o   UXR0000-610 "10 GHz mmWave Configurable Bandwidth Window"
–   Adds precision probe and precision cable support for the UXR models with 1.85mm and 1.00mm inputs.
–   Adds hardware acceleration for the following features:
    o   Differential channels
    o   4-port Infiniisim
    o   FFE and CTLE equalization

Version 10.05.04305 (UXR-Series)

Released Date:	8 Mar 2019
Operating System:	Windows 10

Enhancements

– Adds support for UXR-Series oscilloscopes with 40 GHz of bandwidth or greater.

Version 10.00.04201 (Patch Release, UXR-Series)

Released Date:	26 Feb 2019
Operating System:	Windows 10

Bug Fixes

– Fixes an issue in the Help-About dialog which was showing an incorrect model number.

Version 10.00.04104 (Patch Release, UXR-Series)

Released Date:	31 Jan 2019
Operating System:	Windows 10

Enhancements

– Adds support to read the calibration data from the N2127A calibration module and utilize this data to improve the magnitude and phase response calibration.
– Supports the free license which enables hardware acceleration for clock data recovery and real time eye plotting.
– Provides support for Rev. 7 oscillator boards.
– Provides 100MHz as an available calibration output signal.

Bug Fixes

– Fixes a touch screen focus issue which can render the touch screen inoperative until the scope app is iconified and restored.
– Fixes an intermittent issue that can cause the power supply to shut down due to an erroneous overheating indicator.
– Fixes "Quick Jitter" available from the Analyze pulldown menu.
– Fixes auto set thresholds in the Crosstalk wizard.
– Fixes an issue where no signal is acquired when running a mask with 1 waveform.

- Fixes an issue where saving on "osc" file type resets the number of real-time eye waveforms to one.
- Speeds up the acquisition and downloading of short waveform data records.
- Fixes an FFT error that occurs at low frequency with averaging enabled.
- Fixes a "Data Out of Range" error occurring at oscilloscope startup.
- Fixes the Pattern Average math function.
- Fixes auto-zero inconsistent results with the N7026A probe.
- Fixes issues causing failures in the following compliance applications:
  - N5412 SAS
  - N6472A IEEE 802.3 bs/cd
  - N5411 SATA
  - DDR5 TX Validation
  - U7232 DisplayPort
  - N6469 eDP1.4

Version 10.00.03902 (Patch Release, UXR-Series)

Released Date:	21 Nov 2018
Operating System:	Windows 10

Bug Fixes

- Fixes an issue that was reducing the maximum memory depth to less than 100Mpts.
- Fixes an input overload issue that was occurring during probe calibration.
- Fixes issues impacting the Display Port, Embedded Display Port, Ethernet, DDR4, and PAM4 compliance applications.
- Fixes a defect leaving the touch screen disabled after the scope application is exited.
- Provides software support for the N7024A probe.
- Fixes the DC Gain/Offset calibration for the N7000A, N70001A, N70002A, N70003A, N2830A, N2831A and N2832A probes.
- Adds an update for the Keysight license manager, 6.0.2, to fix dongle-based licenses.

Version 10.00.03801 (Patch Release, UXR-Series)

Released Date:	03 Oct 2018
Operating System:	Windows 10

Bug Fixes

- Fixes external probe scaling.
- Fixes an issue causing the DDR4 compliance application to fail.
- Fixes an issue causing the SAS4 compliance application to fail.
- Fixes an issue with probe correction filters not being removed when the probe is removed.
- Fixes vertical autoscale of a differential channel waveform.
- Fixes an issue where the Infiniium app remains active after exiting.
- Fixes a precision probe calibration issue.
- Fixes a touch screen focus issue where touch loses focus with the oscilloscope application.

Version 10.00.03709 (Patch Release, UXR-Series)

Released Date:	14 Sep 2018
Operating System:	Windows 10

Bug Fixes

- Fixes an install issue found at AMC with the setup.exe file.
- Fixes two BW limit filter issues (WIT 557903 and WIT 557921)

Version 10.00.03708 (Initial Release, UXR-Series)

Released Date:	13 Sep 2018
Operating System:	Windows 10