

# Instrument Software Revision History

## ★ Keysight S910xA 5G Multi-Band Vector Transceiver

**Note: Starting from version S.35.55, the instrument software combines the Service Manager and TRX firmware.**

**S91xxA S.35.55 May, 2024**

### Enhancement:

- Added command "SYSTem:PRESet:EXTention" to preset the entire solution, including Service Manager and Blocker(XSA-33055)
- Supported Marker Table in ACP/CHP (XSA-39175)

### Issues Resolved:

- Resolved a configuration issue of S9100A service manager (XSA-39552)
- Resolved an issue of peak power when using a peak detector in ACP and CHP measurements (XSA-39548)
- Resolved an issue which M9300A reference source is not configured correctly (XSA-40749)
- Resolved an issue of XApps crashed after hours of test (XSA-41382)
- Resolved an issue of high noise floor in Tx Off Power (XSA-42325)
- Resolved an issue of Gate Delay Time is not recalled from state file (XSA-42879)

## ★ Keysight S910xA 5G Multi-Band Vector Transceiver

**M941x M.33.56 Jan, 2023**

### Enhancement:

- Support "E" Apps
- Support SCPI recorder
- VMA Enhancements
  - Digital Demod: Add "Selected Segment" in Advanced Setup
  - Custom OFDM: Add DVB-TH and ISDB-T preset
  - Improve Optimize EVM algorithm for DVB-S2X which is not OFDM signal

- **5G NR Enhancements**

- Update Demod Info recall to handle VXG's new state file
- Enhance to show "composite EVM" and "composite channel power" of multiple CCs
- Large Freq Error lock range support (for R17 NTN: Non-Terrestrial Networks)
- Enhance Recording + State for sequential mode
- Optimize EVM iteration mode
- PvT Multi-burst enhancement in EVM
- Multi-Meas enhancement: support Sequential Acquisition to cover wider ACLR/SEM span than HW BW
- EVM MIMO Info Table to support Symbol Clock Error result per each path
- DL FR1 NR-TM2b & 3.1b (1024 QAM) RB setting recall files
- Add DL FR1 NR-TM2b & 3.1b (1024 QAM) to RB Alloc Preset
- Mod Analysis enhancement: TS38.521 UL EVM calc. to exclude Transient time
- Support NRTM-PN23 mode for PDSCH reference IQ generation
- Enable noise correction for Tx On/Off power measurements with SAMM
- Deep Capture Support

**Issues Resolved:**

- Center frequency is set incorrectly in 5G NR ACP. (XSA-24923)
- X-Apps freezes and crashes in VMA mode. (XSA-25475)
- RF start frequency is clipped when Freq Mode is List in Noise Figure. (XSA-26901)
- Source Power is incorrect after switching Modulation On/Off. (XSA-27377)
- Screen freeze after running measurements in VMA. (XSA-29265)
- DL CRC failure in 5G NR EVM measurement. (XSA-29758)
- Standard Preset sets Span incorrectly after Meas Preset or CONF:CHP in 5G NR(XSA-31067)
- Trigger1 acquired incorrectly intermittently (XSA-31411)

**S910xA Service Manager 2.26.0 28-Sep-2022**

**Issues Resolved:**

- Fix a defect in Blocker systems where the spectral inversion was not removed on a \*RST.

## ★ Keysight S910xA 5G Multi-Band Vector Transceiver

## **M941x M.32.57\_F0027 Oct, 2022**

### **Issues Resolved:**

- DL CRC fail issue for PDSCH (XSA-29758)

## ★ **Keysight S910xA 5G Multi-Band Vector Transceiver**

## **M941x M.32.57 Sept, 2022**

### **Enhancement:**

- **VMA Enhancements**
  - Support "Clock Error" in result
  - Custom OFDM measurement supports band stitching
- **LTE-Adv FDD Enhancements**
  - Mod Analysis \*.evms file saving function
  - ACP to support 8 or more offsets
- **5G NR Enhancements**
  - EM to support MIN(MAX(ABS, REL), ABS2) limit requirement for FR2 DL
  - Meas Preset follow-on: CA test case support
  - Marker Trace support for IBE limit lines
  - Support slot as analysis boundary in EVM
  - SCPI command for MIMO TAE
  - R17 DL FR1 1024QAM decoding function
  - Additional MIMO calibration process
  - PvT to support multiple bursts over 10 ms (1 frame)
  - Update definition of UL MIMO/TxDiv EVM
  - ACP to support 8 or more offsets
  - Mod Analysis: Apply Preset to IBE Limit Threshold from P\_RB
  - Support \*.orb (ORAN studio IQ data) file recalling for playback
  - Support SW Band Stitching capability

### **Issues Resolved:**

- Channel Power measurement is slow when Gate is On. (XSA-14422)
- VXT module is invisible after firmware upgrade. (XSA-21188)
- 5GNR PAVT is not working at some FR2 frequency ranges. (XSA-21265)

- Error reported when pressing “Restore Defaults All Mode” in 5GNR. (XSA-21276)
- Video BW annotation disappears in Zero Span. (XSA-21696)
- DDR4 initialization failure. (XSA-21869)
- Incorrect source amplitude unit. (XSA-23079)
- 5GNR/LTE Channel Power Span can’t be recalled correctly. (XSA-23249)
- \*.mat file saved in IQ Analyzer mode is unreadable for MATLAB. (XSA-23473)
- “SYST:CAL:ROW4:DUPL” doesn’t work. (XSA-23586)
- “SYST:CAL:FREQ:OFFS” doesn’t work. (XSA-23701)
- X-Apps hang while running WLAN measurements. (XSA-24121)
- \*.s2p correction file is not available in Noise Figure. (XSA-24302)
- SSB common SCS display error. (XSA-25022)
- IF Flatness failure when BW = 600 MHz/1.2 GHz. (XSA-28150, XSA-28688)
- Infinite FPGA upgrade even after power cycle. (XSA-27900)
- X-Apps will crash if you keep refreshing waveform list on GUI and loading waveform via SCPI. (XSA-27992)

### **S910xA Service Manager 2.25.2 9-Jun-2022**

#### **Enhancement:**

- Support HB2 15 GHz DUT IF Channel Cards
- Support S9106AC solutions for four TRX modules and two independent DUT IF channels
- Add support for chassis trigger configuration through the Service Manager’s SCPI interface
- Update the configuration of the LO distribution module in the E7770 to manage two independent LO frequencies
- Support command “:SERV:SYST:INFO?” to query the system information of Service Manger

#### **Issues Resolved:**

- Fix a defect in the Configuration Tool with PCI enumeration on HP Z4 computers
- Fix a defect where the switching was being improperly invoked on RFIO HD port use

## **★ Keysight S910xA 5G Multi-Band Vector Transceiver**

### **M941x M.29.66 15-Dec-2021**

#### **Enhancement:**

- N9085EM0E 5G NR Measurement application

- Make PAVT measurement support Spur Avoidance (XSA-21265)
- Support Y9065EM0E license
- Improve the GUI display update mechanism
- Improve the amplitude correction function
  - Fix the related timing related crash (such as XSA-22321)

### **Issues Resolved:**

- Fix the unexpected setting conflict message when Port is set to None and center frequency = 28 GHz in S9100A/S9101A system (XSA-21441)
- Improve the external correction accuracy when spur avoidance is on under some conditions (XSA-21274)
- Clear the unexpected alignment required message that is displayed due to sweep not being updated (XSA-22323)
- Fix a software crash when configuring a MIMO setup in 89600 VSA software with M9411A as primary and M9410A as secondary module (XSA-22822)
- Incorrect trigger source for Gate after preset caused system to hang (XSA21166)
- Fix a Gate trigger issue in the Swept SA measurement in the Spectrum Analyzer application (XSA-21812)
- Corrected the center frequency of auto range in IQ Waveform, Monitor Spectrum, PAVT and CCDF measurements when frequency offset is not zero. (XSA-21266)
- Improve grammar of information message for Adjust Range function when “Continue Averaging” function is on. (XSA-21554)
- Clear all the status register bits at the beginning of 5G NR EVM measurement setup (XSA-21283)
- Fix the invalid/stale trace data in Fast Spectral Measurements after a preceding IQ Time acquisitions when in single sweep mode. (XSA-21339)
- Improve the Frame trigger in 5G NR EVM when measuring Test Model 2 signal. (XSA-21578)
- Make Video Trigger level max/min coupled with external gain in EVM, Monitor Spectrum and IQ Waveform measurements (XSA-21804)
- Fix a crash in the GSM/EDGE application (XSA-22192)
- Make S9100A/S9101A work when reference module is not installed in the timing slot of the PXI chassis (XSA-21939)
- Fix power measurement variations seen when using Corrections vs. Complex Corrections vs. External Gain (XSA-22390)

### **S910xA Service Manager 2.24.8 15-Dec-2021**

### **Issues Resolved:**

- Don't limit the amplitude difference between the "wanted" and "blocking" signals if using the non-RRH paths. When using the RRH differences > 50 dB caused the wanted signal to be in the noise due to the up-conversion chain in the RRH.
- New CIU Driver extensions to support the HB2 channel cards extended to 15 GHz.
- Require S9100AF15 license to enable use of the 15 GHz HB2 channel cards.
- Fix defects with configuring "MIMO" solutions – directly affects S9106AC 2IF.
- Added configuration support for S9106AC 4UP and 2IF systems.
- Disambiguate S9106AC-2IF and S9100A-BLK solutions in the configuration tool
- Fix a problem distinguishing between 15 GHz and 12 GHz channel cards.
- Embed the .NET 4.7.1 installer because the Microsoft URL's are now broken via InstallShield.
- Fix a problem with switch configurations generated by the Configuration Tool for S9106AC-2IF solutions.

## ★ Keysight S910xA 5G Multi-Band Vector Transceiver

***M941x M.29.55 12-July-2021***

### **Enhancement:**

- Sequencer Analyzer on M9411A with SQC option
- Partial Alignment: User can select frequency range for alignment to reduce alignment time.
- ACP Enhancements
  - Allow results to be displayed as Watts
- VMA Digital Demod Enhancements
  - Support IQ Symbol Group Delay vs Time trace
  - Support Wi-SUN MR-OQPSK presets)

- LTE-Adv FDD Enhancements
  - Support PDSCH decoding when RB Auto-Detect Mode = Power Based
- NB-IoT Enhancements
  - NB-IoT follow-on: Support NPDCCH decoding
- C-V2X Transmit On/Off Enhancements
  - Add UL On Power Ref & Tol limit settings
- LTE-Adv TDD Enhancements
  - Support PDSCH decoding when RB Auto-Detect Mode = Power Based
- 5G NR Overall Enhancements
  - Update limits based on TS38.141 v.16.5.0 (2020-09)
  - Add FR1 BS Type 1-O for ACP/SEM/PvT presets
  - Adjust Limit Mask for Freq Range for ACP/SEM/Transmit On/Off Powerpresets,
  - Multi-Meas in Mod Analysis: support ACP/OBW/SEM
  - Update "RB Alloc Preset" to add new NR-TM
  - Support precise aggregated channel bandwidth configuration based on TS38.141 & TS38.521 definitions
  - Meas Preset follow-on: UE Power Class/FR2 UL Channel Type
  - Preset Span/IFBW to Spectrum Monitor/IQ Waveform/CCDF)
- 5G NR Transmit On/Off Power Enhancements
  - Add SCPI command to return Pass/Fail for each measured metric
  - Add UL On Power Ref & Tolerance limit settings
  - Support Trace/Display graphical annotations

### **Issues Resolved:**

- Add time alignment error (TAE) for MIMO with 4CC CA in MISO mode
- VXT2 Video trigger (Holdoff: Below, Slope: Negative) has inaccurate delay when sample rates > 375 MSa/s
- VXT2 Video trigger delay is not accurate at sample rates > 375 MSa/s
- Improper message pop up when deleting a recalled waveform
- 3GPP Conformance Test setting is not enabled when recalling a 5G NR X-App state file
- Cannot load waveforms with number of IQ pairs that are not multiples of 64 bytes
- Unexpected pop-up warning when loading some 5GNR EVM state files
- Marker search "Next Peak" behavior doesn't work as expected when Marker Function = Band Power
- The measurement "GMSK Phase & Freq Error" in GSM mode does not work correctly

- Saving a .screen state on one station and recalling on another station will overwrite correction registers
- Observed incorrect RF burst trace line in LTE TDD waveform measurement using RF Burst trigger
- Continuous averaging feature improvement is required to support different range values and different input ports for two layers measurement with sub-block integrated power in OBUE



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## **M941x M.26.63 S910xA 11-June-2021**

### **Software Changes:**

- Fixed calibration time increasing issue
- Corrections mis-applied after switching HD port
- PVT test Ramp down measurement failed at DUTIF and RRH frequency
- Rx EVM demodulation is unstable at high power using external trigger source and frame trigger
- SCPI (STAT:OPER:COND?) response is too slow sometimes
- Off Power test result with average is a few dB better than without average
- Error when opening the XSA application
- Noise correction with auto range does not work properly
- ACLR is different with different range value
- Recall Correction button is not included on Transmit On/Off Power user interface
- Underscore of waveform name is missed in current waveform display
- Failed to install upgrade licenses
- Recall Menu and Directory selection do not work properly
- "Apply Preset (to All CCs)" changes Periodic trigger sync source to RFB
- XSA crashes when deleting/loading arb waveforms

## **Service Manager 2.21.11 11-June-2021**

### **Software Changes:**

- Fixed Configurator falsely identifying an S9108AC-002 as a mmWave system
- Added detection of options 001 and 002 for S9108AC
- Use command line options when stating the Service Manager so that the SCPI server can be started as hislip, telnet, or socket.
- Added the ability to write/read system serial number and undiscoverable system options into the registry and a registry (.reg) file. Insert this information in SCPI queries that can be used to identify the systems.
- Lower the SCPI amplitude limit to -120 dBm for conformance testing.
- Add configuration for S9101A+TR2+BLK
- Add configuration handling for the S9108A FR1 Auxiliary Switching system.

Note: The label (XSA-xxxxx) at the end of each item refers to that item's tracking number in Keysight's internal software issue tracking system.

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## **M941x M.26.57**

### **Software Changes:**

- Resolved issues where Noise Correction calculations were not updated correctly
- Resolved several issues with the user corrections not being applied correctly
- Negative Source Trigger Delay added
- Improvements to Spur Avoidance amplitude accuracy
- Resolved output power issues using the HD port
- Resolved ACLR discrepancies related to different ranging values
- Resolved external Periodic Trigger issues when switching the sync source between Internal and External triggers
- Resolved trigger issues with the RF Source in “Trigger + Run” and “Reset and Run”
- Resolved performance issues with the 5GNR Transmit ON/OFF measurement
- Improved the Source output trigger jitter and latency performance

## **S910xA Service Manager 2.20.12**

### **Software Changes:**

- Addressed a rare Down conversion issue preventing the Remote Radio Head from being set up properly
- Added support for M9353B module
- Update SCPI server limits to -120 to +20dBm to match M9410A data sheet for blocker applications

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## **M941x M.24.48**

### **Software Changes:**

- Defect fixed if the RMS of a waveform was 0.

## **S910xA Service Manager 2.18.1**

### **Software Changes:**

- No updates

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## **M941x M.24.45 S910xA**

### **Software Changes:**

- Defect fixed for 5G NR Transmit On/Off with spur Avoidance
- Defect fixed with single sweep mode and auto ranging.
- Defect fixed causing software dead-lock when switching ports in continuous sweep mode and adjust for minimum clipping is enabled.
- Fixed a mismatch in reported channel power between spectrum emission measurement and channel power measurement when using the M1740A Transceiver.
- Fixed a defect handling external amplitude correction files

## **S910xA Service Manager 2.18.1**

### **Software Changes:**

- Enabled temperature compensation in the M1740A Transceivers
- Defect fixed that caused a dead-lock in the S910x Service Manager
- Corrected a SCPI definition for so [:SOURce]:CONFigure:PORT[:OUTPut] to accept “RFOut” so that “RFO” would be accepted as a parameter.
- Swap the LO ports used by the E7770 CIU for systems with more than two channel cards

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## **M941x M.24.39**

### **Software Changes:**

- Address carrier power difference with spur avoidance enabled
- Improvements in the use of spur dodging
- Correct memory manager construction in the VXT
- Reset trigger delay before alignments
- Fix LTE PvT “fail on periodic trigger with sync on RF burst or external trigger”
- Fix LTE PvT “burst not found” with external trigger
- Corrected waiting on external trigger when using periodic triggering once the trigger has occurred
- Fix noise pedestal discrepancy during transmit on/off measurements
- Correct information bandwidth in transmit on/off measurements for 4x100 Mhz configuration
- Fix frequency default switching ports
- Correct transmit on/off power limits

Note: The label (XSA-xxxxx) at the end of each item refers to that item's tracking number in Keysight's internal software issue tracking system.

## **S910xA Service Manager 2.15.4**

### **Software Changes:**

- Fixed a deadlock if repeatedly clicking “Check Status” in the service manager
- Corrected the termination of E7770 services on shutdown
- Lower the allowed millimeter frequency to 22.7 GHz
- Implementation of SCPI services for S910x Blocker solutions
- Fixed noise correction configuration in the multichannel solutions
- Allow the Services to be started as a non-Administrative user
- Check that the IO Libraries is running before starting hardware services

Note: The label (XSA-xxxxx) at the end of each item refers to that item's tracking number in Keysight's internal software issue tracking system.