

**Agilent V2901A
SignalMeister™ Integrated
RF Signal Analysis and
Generation Toolkit**

Software Release Notes



Agilent Technologies

Notices

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Sales and Technical Support

To contact Agilent for sales and technical support, refer to the “support” links on the following Agilent web resources:

- www.agilent.com/find/V2901A
(product-specific information and support)
- www.agilent.com/find/assist
(worldwide contact information for repair and service)

Information on preventing damage to your Agilent equipment can be found at www.agilent.com/find/tips.

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Safety Notices

The following safety precautions should be

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

Upgrade Notice

To find the latest version of the V2901A SignalMeister software, go to www.agilent.com/find/V2901A.

Instrument Firmware Requirements:

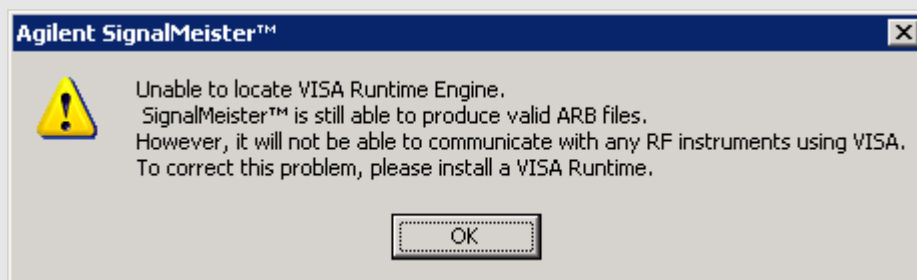
- To use V2901A SignalMeister release 4.0 with your Series V2800 VSA instrument, it must have firmware release 6.0 or greater. To download the latest firmware revision, go to www.agilent.com/find/V2820A.
- To use V2901A SignalMeister release 4.0 with your Series V2900 VSG instrument, it must have firmware release 4.0 or greater. To download the latest firmware revision, go to www.agilent.com/find/V2920A.

VISA Runtime Required

SignalMeister requires that you install a VISA Runtime to communicate with the RF instruments.

- The Agilent VISA Runtime engine is included in the Agilent IO Libraries Suite, available on the SignalMeister™ CD. Refer also to www.agilent.com/find/iosuite for the latest version of the suite.
- As an alternative, you can use the NI-VISA™ Runtime 4.1 engine (or higher), available from National Instruments.

If no VISA runtime is installed, you will be prompted with an error message when you launch SignalMeister:



Version 4.0 Release Overview

SignalMeister version 4.0 software release introduces 26 enhancements, and resolves 26 software concerns.

Version 4.0 Software Enhancements

4.0 Enhancement	Related UI
Added cross power to parameters table for WLAN 802.11n analysis. Related SCPI command is :PROJect<index>:WLAN<index>:CALCulate:CPOWER:DATA.	802.11n Analysis Parameters Table
Added SCPI commands to query the current averaged sweeps count for WLAN and WiMAX measurements: :PROJect<index>:WLAN<index>:CALCulate:AVERaged:SWEEps and :PROJect<index>:WiMAX<index>:CALCulate:AVERaged:SWEEps.	802.11xxx Analysis Parameters Table and 802.16e Analysis Parameters Table

4.0 Enhancement	Related UI
Added a SCPI command to perform a desired number of sweeps and then query the number of sweeps made. :INITiate:SWEeps <NR1>, where NR1 is the integer number of sweeps to make	802.11n Instrument Control
Added two SCPI commands to query the singular values trace data. :PROJ:WLAN:CALC:SVALues:DATA? and :PROJ:WIMax:CALC:SVALues:DATA?	802.11b Graph: Singular Values, 802.16e Graph: Singular Values
Added EVM MAX to summary data for 802.11b. Related SCPI command is :WLAN:CALC:SUMM:DATA?	802.11b Analysis Parameters Table
Added SEM OBW to WLAN analysis results table. Related SCPI command is :PROJect<index>:WLAN<index>:CALCulate:SEMask:DATA[1 2 3 4]	802.11b Analysis Parameters Table, 802.11n Analysis Parameters Table, and 802.11agjp Analysis Parameters Table
Added per stream RCE results to WiMAX parameters table. Related SCPI command is [:PROJect]:WIMax:CALC:RCE:STReam[:RMS]	802.16e Analysis Parameters Table
Added the ability to set/query the enable state of IQ Capture. When enabled, each measurement writes non-protected data to a file. Related SCPI commands are: [:PROJect<index>]:<AnalysisType><index>[:SENSe]:CAPTure:ENABle[:STATe] 0 1 ON OFF TRUE FALSE, [:PROJect<index>]:<AnalysisType><index>[:SENSe]:CAPTure:TYPE CSV DOUBle SINGle, [:PROJect<index>]:<AnalysisType><index>[:SENSe]:CAPTure:FILEName, and [:PROJect<index>]:<AnalysisType><index>[:SENSe]:CAPTure:METadata?	802.11xxx Analysis Parameters Table, General Purpose Analysis > IQ Capture
Added the ability to control the Ultra Low Phase Noise option through the Instrument Control Panel	802.11n Individual Instrument Settings
Added “Average table over N sweeps” to WLAN and WiMAX Parameters Tables	802.11xxx Analysis Parameters Tables and 802.16e Analysis Parameters Table
Added an ARB file object that represents multiple ARB files for SISO and MIMO.	Files > 4x Arb File > MIMO Arb File Configuration
Added support for WiMAX 64QAM CTC with 5/6 modulation code rate.	WiMAX 1x Analysis > Settings > WiMAX Settings > Map Parameters
Added a checked option for Symbol Randomization	802.16e Analysis Parameters Table >right-click Constellation diagram
Added a Channel Response Graph to the WiMAX Analysis Parameters Table	802.16e Analysis Parameters Table
Added support for viewing the file name of the active or selected project. The related SCPI command query is [PROJect]:FILEName?	ARB File Configuration Dialog
Added a phase versus symbol plot for WLAN analysis	802.11n Analysis Parameters Table, and 802.11agjp Analysis Parameters Table
Added WiMAX worst case flatness information to the Analysis Parameters Table. The related SCPI command is :CALCulate:FMARgin:DATA?	802.16e Analysis Parameters Table
Added the ability to adjust time delay, frequency shift, AWGN, gain imbalance, and IQ offset operation parameters, the related SCPI commands are: AWGN[:SENSe]:POWer, DELay[:SENSe]:TIME, SHIFt[:SENSe]:FREQuency, GIMBalance[:SENSe]:SCALE, IQOFFset[:SENSe]:I, and IQOFFset[:SENSe]:Q.	Operations Toolbox

4.0 Enhancement	Related UI
Added the ability to view the results of WLAN sweeps to determine if the sweep was successful and, if it was, whether the CRC is valid. The two related SCPI commands are: <code>CALCulate:DATA:VALid</code> and <code>CALCulate:PACKet:CRC</code>	802.11b Analysis Parameters Table, 802.11n Analysis Parameters Table, and 802.11agjp Analysis Parameters Table
Added "Binary Single Precision" as an IQ capture format.	General Purpose 1x Analysis Table
Added the ability to provide all cross power data for MIMO analysis. These results are not seen in the user interface. See PR11504, the SCPI command <code>[PROJECT<index>]:WLAN<index>:CALCulate:CPOW:DATA</code> was not implemented until this release.	See the first enhancement noted on page 3).
Added the ability to save auto-detected map information as a template file. The related SCPI command is <code>:PROJECT<index>:WIMax<index>:TEMPlate:SAVE</code>	WiMAX Map Parameter Table
Added the ability to allow automatic overwrite of power levels in ARB files	ARB File Configuration Dialog
Provided additional WLAN flatness results; channel flatness margin for WLAN measurements and peak to peak flatness on WLAN Magnitude Flatness trace. The related SCPI commands are <code>:CALC:WLAN:FMARgin?</code> and <code>:CALC:WLAN:MFLatness:PTPeak?</code>	802.11xxx Analysis Parameters Tables
Added common power setting in MIMO signal generators.	802.11n MIMO Analysis > Instrument Control Panel, 802.16e MMO Analysis > Instrument Control Panel
Added two pull-down fields in the WLAN PSDU Configuration dialog to display/set the type and subtype using the logical descriptions from the standard.	802.11n PSDU Configuration dialog, 802.11a,g,j,p PSDU Configuration dialog

Version 4.0 Software Critical Fixes

Critical fixes – Symptom	Resolution
PR13857: WLAN EVM values returned as a percentage by SCPI commands aren't being multiplied by 100.	A software enhancement was initiated to assure that correct values are returned when selecting % for WLAN EVM..
PR13863: <code>:PROJ1:WLAN1:SYST:ERR?</code> does not return an integer error number	SCPI error reporting was modified to return a -1 (related to a listing of error codes) instead of a line of text.
PR13853: IQ Importer is applying an incorrect ARB sample rate license requirement at 25MHz and 50MHz (next higher license)	The boundary conditions at 25 and 50 Msps were modified to allow 20 MHz and 40MHz operation respectively, instead of requiring the next higher license.
PR12850: WLAN PSDU packet type seems to switch control and data bits.	Added a software modification to change the orientation of the least/most significant bits to correct this condition.
PR13302: <code>:PROJx</code> is not optional in SignalMeister SCPI commands.	If <code>:PROJECT#</code> has never been sent, the currently selected workspace (that is, the active tab) becomes the active project. If the currently active project is closed, the newly selected workspace (if any) becomes the active project.
PR13393: BER/FER statistics don't update if executing remotely and the statistics window is not open	Added a software modification to correct this concern. You can now open a project, not open the analysis window, and send SCPI commands to sweep and get valid statistics.
PR13410: SignalMeister measurements need to report receiver overload.	Added OVERLOAD indicator on Instrument Settings panel. Overloads are reported as error 220.

Critical fixes – Symptom	Resolution
PR13417: WLAN 802.11b analysis - SCPI results do not match GUI results.	Added a software modification so that the parameters table is reset after each call to Optimize, so that the next data sweep and acquisition do not have values from the previous configuration.
PR11898: EVM degrades with using channel modeling, especially with STBC.	Added a software modification to correct this concern.
PR13657: WLAN data rate changing upon loading project.	Added a software modification to correct this concern.
PR13642: SignalMeister crashes when you supply an 'invalid' filename for IQ capture.	Added a software modification to correct this concern.
PR13777: 802.11a analysis :pack:info? command always returns 40 MHz BW	Added a software modification to correct this concern.
PR13820: load project with MCS 0 802.11n generation, switches to MCS1.	Added a software modification to correct this concern.
PR13807: SignalMeister fails to start if SyncFusion persistence files are corrupt.	Added a software modification to correct this concern.
PR13789: cdma2000 EXT Freq Field only allows 8 bits.	Added a software modification to correct this concern.
PR13772: :WLAN:CALCulate:CSUMmary:DATA? times out with incorrect channel number.	Added a software modification to correct this concern.
PR13744: AWGN operation doesn't allow for fractional dBc numbers.	Added a software modification to correct this concern.
PR13723: SyncFusion Incident ID: 60528 -- Resource (memory) leak with BarItem/BarUpdateInfo/BarItemId.	Added a software modification to correct this concern.
PR13710: SignalMeister Wimax MIMO Receive Power Calculated over too long a time span on second antenna, reports too low by 6 dB.	Added a software modification to correct this concern.
PR13618: SignalMeister wlan 802.11b :CALC:SUMM:DATA? returns units in power field.	Added a software modification to correct this concern.
PR13593: :WLAN:CALC:PACK:INFO? docs totally incorrect, and SCPI results missing some commas, and inconsistent 0, 1, TRUE, FALSE usage	Added a software modification to correct this concern, and modified documentation.
PR13554: Integer divide by zero error in demodulation of a really noisy WiMAX signal.	Added a software modification to correct this concern.
PR13500: Change units on 802.11a and 802.11n Quadrature Error measurement to degrees.	Added a software modification to correct this concern.
PR12796: Saving of analysis projects, with strip charts that have run, prevents the strip chart from displaying properly.	Added a software modification to correct this concern.
PR13432: Trigger Level Offset -- Limits need to change from -170->+40 to 0->+80dB.	Added a software modification to correct this concern.
PR12976: WLAN PSDU control allows MAC fields which don't exist for various frame type/subtypes.	Added a software modification to correct this concern. A look up table is added to the frame control dialog.

Version 3.0 Release Overview

SignalMeister version 3.0 software release includes the resolution of several software concerns and the introduction of the following enhancements.

- Signal analysis capability
- Integrated solution for generation and analysis
- Enhanced functionality and usability for MIMO applications for both signal generation and analysis
- Support for MIMO system configurations up to 8x8
- Expanded signal generation formats supported
- Expanded set of signal operations
- Enhanced user file import support

NOTE: SignalMeister™ Version 3.0 does NOT supersede Version 1.2.1. Version 3.0 does not provide TD-SCDMA waveform generation capability. Therefore, to generate waveforms for TD-SCDMA, plus any of the WLAN, WiMAX®, 3GPP, or 3GPP2 standards, you must install SignalMeister™ Versions 1.2.1 *and* 3.0.

Version 3.0 Software Enhancements

Enhancement	User Interface Location
WiMAX (802.16e OFDMA) signal analysis <ul style="list-style-type: none"> • SISO signal analysis • Wave2 MIMO signal analysis 	WiMAX folder in the Toolbox
WLAN (802.11a,b,g,j,n) signal analysis <ul style="list-style-type: none"> • SISO signal analysis – 802.11a,b,g,j,n • MIMO signal analysis – 802.11n 	WLAN folder in the Toolbox
Digital video signal generations <ul style="list-style-type: none"> • DVB-H • DVB-T 	Digital Video folder in the Toolbox
VSA simulator object <ul style="list-style-type: none"> • Enables software-only simulation from signal generation libraries to signal analysis libraries. 	Signal Analyzers folder in the Toolbox
New Signal Operations <ul style="list-style-type: none"> • Frequency shift • Time delay • MxN channel model up to 8x8 • Text labeling, which enables you to label items on block diagrams with text (located in the Elements menu). 	Operations folder in the Toolbox
Enhanced file import support <ul style="list-style-type: none"> • Enhanced import support for user signal files: MATLAB® binary files, ASCII files, and Bursted and non-bursted signals • Import ARB files 	Files folder in the Toolbox
Text labeling capabilities <ul style="list-style-type: none"> • Inserts an editable text block anywhere on the project worksheet. 	Elements menu
SCPI interface to SignalMeister including pass through commands.	n/a

Version 3.0 Software Critical Fixes

Critical fixes – Symptom	Resolution
PR11053: Need to generate more than one packet of information for WLAN signals.	A software enhancement was initiated to add multiple packets to allow more variation in the data stream.
PR11186: Want to be able to analyze ARB files.	Added an ARB file importer element to the Toolbox > Files folder.
PR11403: Want an editable text box to include with a project.	Added a Text Block element in the Elements menu that will allow you to place anywhere on a worksheet and add descriptive text.
PR11567: Long code mask limits are too large.	Added a software modification that allows a valid input range of 0 to 42 bits, or 0x3FFFFFFFFF.
PR11708: European PC settings can cause XML to be incorrectly interpreted.	A software modification was included to fix this problem.
PR11829: Want to be able to skip multiple prompt messages when reloading an ARB file.	Added a “Yes to All” option when reloading ARB files.
PR11920: Want to be able to force any instruments that are in MIMO mode off to turn on Even Second Out reference.	Changed the software functionality for MIMO mode. If MIMO mode is set to off, the Even Second Out reference is also set to off.
PR11936: Using the Ctrl Drag action does not copy element connectors.	Added a software modification to have the Ctrl Drag mouse action copy the element connectors along with the other selected elements.
PR11943: Double-clicking on a project file from a command line or Windows Explorer causes a new session of SignalMeister to open when another version of SignalMeister is already open.	Added a software modification to open another project tab within SignalMeister to accommodate a new project file.
PR11953: Need a list of all elements in a project that includes addressing for SCPI commands.	Added Show Project Manifest to the Projects menu.
PR12086 Double-clicking on a Connect Element function brings up “cannot connect” message.	Added a software modification to turn off the Connect mode before launching the Configuration dialog.
PR12156: The message prompt to save multiple projects should include the specific file names to avoid confusion.	Added a software modification to include the file name in the Save Changes message prompt.

Version 2.0 Release Overview

SignalMeister™ Version 2.0 is a single user interface that allows you to integrate multiple signal creation libraries and provides a rich set of waveform operations. The intuitive graphical user interface simplifies the process of defining ARB waveforms that conform to current standards for WLAN, WiMAX®, 3GPP, and 3GPP2.

NOTE: SignalMeister™ Version 2.0 does NOT supersede Version 1.2.1. Version 2.0 does not provide TD-SCDMA waveform generation capability. Therefore, to generate waveforms for TD-SCDMA, plus any of the WLAN, WiMAX®, 3GPP, or 3GPP2 standards, you must install SignalMeister™ Versions 1.2.1 *and* 2.0.

Differences between Version 1.2.1 and Version 2.0

Features	Version 1.2.1	Version 2.0		
Waveform standards supported, and required Series 2900 licenses	TD-SCDMA (3GPP-TDD standard). Requires these licenses for Series V2900 instruments: <ul style="list-style-type: none"> V2900A-212 (TD-SCDMA waveform playback capability) One or more of the following licenses for 100Msa arbitrary waveform generation: V2920A-B20, V2920A-B40, V2920A-B80 	Category	Standard	Series V2900 licenses required (for waveform playback capability) *
		WLAN	802.11a/b/g/j	V2900A-205
			802.11n MIMO and SISO	V2900A-206 ** <u>and</u> V2900A-205
		WiMAX®	802.16e OFDMA	V2900A-208 ** <u>and</u> V2900A-105
		3GPP	W-CDMA	V2900A-202 <u>and</u> V2900A-105
			HSDPA (including HSDPCCH and HSDPAFRC)	V2900A-203 <u>and</u> V2900A-202 <u>and</u> V2900A-105
			HSUPA (including HSUPAFRC, EHICH, ERGCH, and EAGCH)	V2900A-203 <u>and</u> V2900A-202 <u>and</u> V2900A-105
		3GPP2	cdma2000	V2900A-201 <u>and</u> V2900A-104
			cdmaOne®	V2900A-201 <u>and</u> V2900A-104
			1xEV-DV	V2900A-201 <u>and</u> V2900A-104
* All standards require one or more of the following licenses for 100Msa arbitrary waveform generation: V2920A-B20, V2920A-B40, or V2920A-B80. ** These licenses require V2920A-B40 or V2920A-B80. To purchase licenses, contact Agilent. Refer also to the visit the V2901A support page at www.agilent.com/find/V2901A				
Instrument firmware requirements	Requires Series V2900 firmware revision 2.0 or higher.	Requires Series 2900 firmware revision 3.11 or higher.		

Differences between Version 1.2.1 and Version 2.0 (continued)

Features	Version 1.2.1	Version 2.0
System Requirements	<p>PC requirements</p> <ul style="list-style-type: none"> • 1.0 GHz Intel® Pentium® processor or better • Minimum 512 MB RAM • 150 MB free disk space • Minimum 800 x 600 screen resolution (1024 x 768 recommended) • Microsoft® Windows® XP Professional (Service Pack 2 or later) • Microsoft® Windows® 2000 Professional (Service Pack 4 or later) <p>Software requirements</p> <ul style="list-style-type: none"> • LabVIEW™ 8.2.1 Runtime Engine (or higher) • NI-VISA™ Runtime 4.1 Engine (or higher) <p>or</p> <ul style="list-style-type: none"> • LabVIEW 8.2.1 Run-time Engine (or higher) • Agilent Technologies I/O Libraries version 14.2 <p>NOTE: We recommend that you have only one of the following software installations in your computer at the same time: NI-VISA™ Runtime Engine or Agilent I/O Libraries. Both software programs install and use a DLL file named "visa32.dll." Conflicts may be created if you are using the SignalMeister™ software to directly download a waveform file when both programs are installed on your computer. If you encounter problems, uninstall either NI-VISA™ Runtime Engine or Agilent I/O Libraries.</p>	<p>PC Requirements</p> <ul style="list-style-type: none"> • 2.4 GHz Intel® Pentium® processor or better • Minimum 2.0 GB RAM • 200 GB free disk space • Minimum 1024 x 768 screen resolution • Microsoft® Windows® XP Professional (Service Pack 2 or later) • Microsoft® Windows® Vista Business or Vista Business 64-bit <p>Software Requirements</p> <ul style="list-style-type: none"> • NI-VISA™ Runtime 4.1 Engine (or higher)