



# Agilent EDA-Instrument Connected Solutions

## Configuration Guide

### **An introduction to EDA-Instrument Connected Solutions**

Agilent Technologies offers powerful design and test solutions for a diverse set of applications. Connecting design software and test and measurement hardware together provides powerful test and validation capabilities. These connected solutions help minimize development risk and costs by identifying problems early in the design and fabrication cycle, where they are typically easier and less costly to fix.

This connected solutions configuration guide is designed to help you select the right design software and test instrumentation to speed your particular design and validation processes. It provides configuration information for:

- General purpose connected solutions
- 1xEV-DO
- 3GPP W-CDMA
- cdma2000
- EDGE
- WLAN 802.11
- TD-SCDMA

Refer to application note AN1394 *Connected Simulation and Test Solutions Using Advanced Design System*, for a complete technical overview of software and hardware connected solutions and their applicability design and test challenges.

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### **Incorporating connected solutions into your design flow can help you:**

- Create custom test signals and model impairments in simulation.
  - Evaluate components with test signals that reflect how the component will be used in the system.
  - Verify and test individual pieces of hardware as they return from fabrication, using simulation to fill in for missing hardware.
  - Evaluate re-using existing hardware in new designs modeled in simulation
  - Increase your debugging power by stimulating or analyzing portions of broken hardware
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## General Purpose Connected Solutions Configuration

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The general purpose connected software/hardware solution configuration consists of Advanced Design System (ADS), an ESG (electronic signal generator), and a VSA (vector signal analyzer) and/or PSA (performance spectrum analyzer). The suggested configurations are subdivided into two categories:

1. Connected signal source configuration, which allows a signal to be modeled in simulation and created on the testbench.
2. Connected signal analysis configuration, which allows a signal to be captured on the testbench and brought back into simulation for further analysis.

These two capabilities can also be combined to provide flexibility in transitioning between simulation and test. All part numbers listed below are required for connected solutions, unless otherwise noted as (recommended).

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### Connected signal source configuration

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<b>Agilent products</b>	<b>Part number</b>
ADS design environment	E8900 A/AN (ADS 2001 or later)
ADS data display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy simulator	E8823 A/AN (ADS 2001 or later)

**And**

E4438C ESG vector signal generator	E4438C*
with desired frequency range option (1 GHz, 2 GHz, 3 GHz)	option 501, 502, or 503
with internal baseband generator with 8 Msamples [40 Mbytes] of memory or 32 Msamples [160 Mbytes] of memory	option 001 or 002

\*Note- ADS 2002 or later is required to interface to the E4438C

**Or**

ESG-D or ESG-DP series digital RF signal generator	E443XB
with option internal dual arbitrary waveform generator	option UND

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## Connected signal analysis configuration

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<b>Agilent products</b>	<b>Part number</b>
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy S imulator	E8823 A/AN (ADS 2001 or later)
<b>And</b>	
E444XA PSA Series Spectrum Analyzer	E4440A, E4443A, or E4445A (with firmware version A.02.01 or later)
PSA digital demodulation hardware	Opt. B7J
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with Vector Modulation Analysis	89601A-AYA
with Dynamic Links to ADS	89601A-105
<b>Or</b>	
E4406A Vector Signal Analyzer (VSA Series Transmitter Tester)	E4406A (with firmware version A.05.01 or later)
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with Vector Modulation Analysis	89601A-AYA
with Dynamic Links to ADS	89601A-105
<b>Or</b>	
89600 Series Vector Signal Analyzer with Vector Modulation Analysis with Dynamic Links to ADS with option 288 or 001 <sup>1</sup>	89640A or 89641A 89640A-AYA 89640A-105 89640A-288 or -001
<b>Or</b>	
E440XA ESA-E Series Spectrum Analyzer	E4402B, E4404B, E4405B, E4407B (with firmware version A.08.04 or later)
with ESA Hardware Options	
High-Stability Frequency Reference	Opt. 1D5
Digital Signal Processing/Fast ADC	Opt. B7D
RF Communications Hardware	Opt. B7E
<b>Or</b>	
RF and Digital Communications Hardware Bundle	Opt. B74
89601A software	
with Vector Signal Analysis	89601A-100
with Vector Modulation Analysis	89601A-AYA
with Dynamic Links to ADS	89601A-105

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## Recommended platform for connected signal source and connected signal analysis

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1. For applications that require a longer time capture length, such as BER, refer to <http://cp.literature.agilent.com/litweb/pdf/5980-1258E.pdf> or <http://cp.literature.agilent.com/litweb/pdf/5988-4089EN.pdf> for detailed information on time capture length versus span and capture memory size.

PC with LAN/GPIB Gateway (Agilent E2050A with option E2050A-AG6) or GPIB interface card for connected signal source.

PC with Microsoft Windows 2000 and IEEE-1394 card for connected signal analysis when using 89640A or 89641A. PC with any ADS-supported operating system when using E444xA PSA or E4406A VSA.

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## **1xEV-DO Connected Solutions Configuration**

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The connected solutions configuration for 1xEV-DO consists of Advanced Design System (ADS), an ESG (electronic signal generator), and a VSA (vector signal analyzer) and/or PSA (performance spectrum analyzer). The suggested configurations are subdivided into two categories:

1. Connected signal source configuration, which allows a signal to be modeled in simulation and created on the testbench.
2. Connected signal analysis configuration, which allows a signal to be captured on the testbench and brought back into simulation for further analysis.

These two capabilities can also be combined to provide flexibility in transitioning between simulation and test. All part numbers listed below are required for connected solutions, unless otherwise noted as (recommended).

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### **Connected signal source configuration**

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<b>Agilent products</b>	<b>Part number</b>
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS 1xEV-DO Design Library	E8878 A/AN (version 1.7.3 or later)
<b>And</b>	
E4438C ESG vector signal generator with 1xEV-DO Signal Studio personality with desired frequency range option (1 GHz, 2 GHz, 3 GHz) with internal baseband generator with 8 Msamples [40 Mbytes] of memory or 32 Msamples [160 Mbytes] of memory	E4438C* option 404 (recommended) option 501, 502, or 503 option 001 or 002
<b>Or</b>	
ESG-D or ESG-DP series digital RF signal generator with option internal dual arbitrary waveform generator	E443XB option UND

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\*Note- ADS 2002 or later is required to interface to the E4438C

## Connected signal analysis configuration

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Agilent products	Part number
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS 1xEV-DO Design Library	E8878 A/AN (version 1.7.2 or later)
<b>And</b>	
E444XA PSA Series Spectrum Analyzer	E4440A, E4443A, or E4445A (with firmware version A.02.01 or later) Opt. B7J
PSA digital demodulation hardware	
PSA option 204 1xEV-DO measurement personality	option 204 (recommended) (version 3.0 or later)
89601A software	89601A-100
with Vector Signal Analysis	89601A-B7N
with 3G Modulation Analysis	89601A-105
with Dynamic Links to ADS	
<b>Or</b>	
E4406A Vector Signal Analyzer (VSA Series Transmitter Tester)	E4406A (with firmware version A.05.01 or later)
with 1xEV-DO	option 204 (recommended)
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with 3G Modulation Analysis	89601A-B7N
with Dynamic Links to ADS	89601A-105
<b>Or</b>	
89600 Series Vector Signal Analyzer	89640A or 89641A
with 3G Modulation Analysis	89640A-B7N
with Dynamic Links to ADS	89640A-105
with option 288 or 001 <sup>1</sup>	89640A-288 or -001
<b>Or</b>	
E440XA ESA-E Series Spectrum Analyzer	E4402B, E4404B, E4405B, E4407B (with firmware version A.08.04 or later)
with ESA Hardware Options	
High-Stability Frequency Reference	Opt. 1D5
Digital Signal Processing/Fast ADC	Opt. B7D
RF Communications Hardware	Opt. B7E
<b>Or</b>	
RF and Digital Communications Hardware Bundle	Opt. B74
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with 3G Modulation Analysis	89601A-B7N
with Dynamic Links to ADS	89601A-105

## Recommended platform for connected signal source and connected signal analysis

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1. For applications that require a longer time capture length, such as BER, refer to <http://cp.literature.agilent.com/litweb/pdf/5980-1258E.pdf> or <http://cp.literature.agilent.com/litweb/pdf/5988-4089EN.pdf> for detailed information on time capture length versus span and capture memory size.

PC with LAN/GPIB Gateway (Agilent E2050A with option E2050A-AG6) or GPIB interface card for connected signal source.

PC with Microsoft Windows 2000 and IEEE-1394 card for connected signal analysis when using 89640A or 89641A. PC with any ADS-supported operating system when using E444xA PSA or E4406A VSA.

## 3GPP W-CDMA Connected Solutions Configuration

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The connected solutions configuration for 3GPP W-CDMA consists of Advanced Design System (ADS), an ESG (electronic signal generator), and a VSA (vector signal analyzer) and/or PSA (performance spectrum analyzer). The suggested configurations are subdivided into two categories:

1. Connected signal source configuration, which allows a signal to be modeled in simulation and created on the testbench.
2. Connected signal analysis configuration, which allows a signal to be captured on the testbench and brought back into simulation for further analysis.

These two capabilities can also be combined to provide flexibility in transitioning between simulation and test. All part numbers listed below are required for connected solutions, unless otherwise noted as (recommended).

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### Connected signal source configuration

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Agilent products	Part number
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS 3GPP W-CDMA Design Library	E8875 A/AN (version 1.7.2 or later)
<b>And</b>	
E4438C ESG vector signal generator with 3GPP W-CDMA FDD personality with desired frequency range option (1 GHz, 2 GHz, 3 GHz) with internal baseband generator with 8 Msamples [40 Mbytes] of memory or 32 Msamples [160 Mbytes] of memory	E4438C* option 400 (recommended)  option 501, 502, or 503  option 001 or 002
*Note- ADS 2002 or later is required to interface to the E4438C	
<b>Or</b>	
ESG-D or ESG-DP series digital RF signal generator with option internal dual arbitrary waveform generator with option 3GPP W-CDMA firmware personality	E443XB  option UND  option 100 (recommended)
<b>Or</b>	
option real-time I/Q baseband generator option 3GPP W-CDMA real-time baseband generator	option UN8 (recommended)  option 200 (recommended)

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## Connected signal analysis configuration

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Agilent products	Part number
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS 3GPP W-CDMA Design Library	E8875 A/AN (version 1.7.2 or later)
<b>And</b>	
E444XA PSA Series Spectrum Analyzer	E4440A, E4443A, or E4445A (with firmware version A.02.01 or later)
PSA digital demodulation hardware	Opt. B7J
PSA W-CDMA measurement personality	option BAF (recommended)
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with 3G Modulation Analysis	89601A-B7N
with Dynamic Links to ADS	89601A-105
<b>Or</b>	
E4406A Vector Signal Analyzer (VSA Series Transmitter Tester)	E4406A (with firmware version A.05.01 or later)
with W-CDMA	option BAF (recommended) (version 3.0 or later)
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with 3G Modulation Analysis	89601A-B7N
with Dynamic Links to ADS	89601A-105
<b>Or</b>	
89600 Series Vector Signal Analyzer with Vector Modulation Analysis with 3G and cdma2000 Modulation Analysis with Dynamic Links to ADS with option 288 or 001	89640A or 89641A* 89640A-AYA  89640A-B7N 89640A-105 89640A-288 or -001
<b>Or</b>	
E440XA ESA-E Series Spectrum Analyzer	E4402B, E4404B, E4405B, E4407B (with firmware version A.08.04 or later)
with ESA Hardware Options	Opt. 1D5
High-Stability Frequency Reference	Opt. B7D
Digital Signal Processing/Fast ADC	Opt. B7E
RF Communications Hardware	
<b>Or</b>	
RF and Digital Communications Hardware Bundle	Opt. B74
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with 3G Modulation Analysis	89601A-B7N
with Dynamic Links to ADS	89601A-105

\* Note- See appendix for 89600S custom system configurations

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## **Recommended platform for connected signal source and connected signal analysis**

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PC with LAN/GPIB Gateway (Agilent E2050A with option E2050A-AG6) or GPIB interface card for connected signal source.

PC with Microsoft Windows 2000 and IEEE-1394 card for connected signal analysis when using 89640A or 89641A. PC with any ADS-supported operating system when using E444xA PSA or E4406A VSA.

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## **cdma2000 Connected Solutions Configuration**

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The connected solutions configuration for cdma2000 consists of Advanced Design System (ADS), an ESG (electronic signal generator), and a VSA (vector signal analyzer) and/or PSA (performance spectrum analyzer). The suggested configurations are subdivided into two categories:

1. Connected signal source configuration, which allows a signal to be modeled in simulation and created on the testbench.
2. Connected signal analysis configuration, which allows a signal to be captured on the testbench and brought back into simulation for further analysis.

These two capabilities can also be combined to provide flexibility in transitioning between simulation and test. All part numbers listed below are required for connected solutions, unless otherwise noted as (recommended).

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### **Connected signal source configuration**

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<b>Agilent products</b>	<b>Part number</b>
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS 3GPP W-CDMA Design Library	E8875 A/AN (version 1.7.2 or later)
<b>And</b>	
E4438C ESG vector signal generator with cdma2000 personality with desired frequency range option (1 GHz, 2 GHz, 3 GHz) with internal baseband generator with 8 Msamples [40 Mbytes] of memory or 32 Msamples [160 Mbytes] of memory	E4438C* option 401 (recommended) option 501, 502, or 503 option 001 or 002
*Note- ADS 2002 or later is required to interface to the E4438C	
<b>Or</b>	
ESG-D or ESG-DP series digital RF signal generator with option internal dual arbitrary waveform generator with option cdma2000 firmware personality	E443XB option UND option 101 (recommended)
<b>Or</b>	
option real-time I/Q baseband generator option cdma2000 real-time baseband generator	option UN8 (recommended) option 201 (recommended)

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## Connected signal analysis configuration

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Agilent products	Part number
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS cdma2000 Design Library	E8877 A/AN (version 1.7.2 or later)
<b>And</b>	
E444XA PSA Series Spectrum Analyzer	E4440A, E4443A, or E4445A (with firmware version A.02.01 or later) Opt. B7J
PSA digital demodulation hardware PSA with cdma2000 measurement personality	option B78 (recommended) (version 3.0 or later)
89601A software with Vector Signal Analysis with 3G Modulation Analysis with Dynamic Links to ADS	89601A-100 89601A-B7N 89601A-105
<b>Or</b>	
E4406A Vector Signal Analyzer (VSA Series Transmitter Tester)	E4406A (with firmware version A.05.01 or later)
with cdma2000 89601A software with Vector Signal Analysis with 3G Modulation Analysis with Dynamic Links to ADS	option B78 (recommended) (version 3.0 or later) 89601A-100 89601A-B7N 89601A-105
<b>Or</b>	
89600 Series Vector Signal Analyzer with Vector Modulation Analysis with W-CDMA and cdma2000 Modulation Analysis with Dynamic Links to ADS with option 288 or 001 <sup>1</sup>	89640A or 89641A 89640A-AYA  89640A-B7N 89640A-105 89640A-288 or -001
<b>Or</b>	
E440XA ESA-E Series Spectrum Analyzer	E4402B, E4404B, E4405B, E4407B (with firmware version A.08.04 or later)
with ESA Hardware Options High-Stability Frequency Reference Digital Signal Processing/Fast ADC RF Communications Hardware	Opt. 1D5 Opt. B7D Opt. B7E
<b>Or</b>	
RF and Digital Communications Hardware Bundle	Opt. B74
89601A software with Vector Signal Analysis with 3G Modulation Analysis with Dynamic Links to ADS	(version 3.0 or later) 89601A-100 89601A-B7N 89601A-105

1. For applications that require a longer time capture length, such as BER, refer to <http://cp.literature.agilent.com/litweb/pdf/5980-1258E.pdf> or <http://cp.literature.agilent.com/litweb/pdf/5988-4089EN.pdf> for detailed information on time capture length versus span and capture memory size.

## Recommended platform for connected signal source and connected signal analysis

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PC with LAN/GPIB Gateway (Agilent E2050A with option E2050A-AG6) or GPIB interface card for connected signal source.

PC with Microsoft Windows 2000 and IEEE-1394 card for connected signal analysis when using 89640A or 89641A. PC with any ADS-supported operating system when using E444xA PSA or E4406A VSA.

## EDGE Connected Solutions Configuration

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The connected solutions configuration for EDGE consists of Advanced Design System (ADS), an ESG (electronic signal generator), and a VSA (vector signal analyzer) and/or PSA (performance spectrum analyzer). The suggested configurations are subdivided into two categories;

1. Connected signal source configuration, which allows a signal to be modeled in simulation and created on the testbench.
2. Connected signal analysis configuration, which allows a signal to be captured on the testbench and brought back into simulation for further analysis.

These two capabilities can also be combined to provide flexibility in transitioning between simulation and test. All part numbers listed below are required for connected solutions, unless otherwise noted as (recommended).

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### Connected signal source configuration

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<b>Agilent products</b>	<b>Part number</b>
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS EDGE Design Library	E8879 A/AN (version 1.7.2 or later)
<b>And</b>	
E4438C ESG vector signal generator with EDGE personality with desired frequency range option (1 GHz, 2 GHz, 3 GHz) with internal baseband generator with 8 Msamples [40 Mbytes] of memory or 32 Msamples [160 Mbytes] of memory	E4438C* option 402 (recommended) option 501, 502, or 503 option 001 or 002
<b>Or</b>	
ESG-D or ESG-DP series digital RF signal generator with option internal dual arbitrary waveform generator option real-time I/Q baseband generator option EDGE real-time baseband generator	E443XB option UND option UN8 (recommended) option 202 (recommended)

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\*Note- ADS 2002 or later is required to interface to the E4438C

## Connected signal analysis configuration

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Agilent products	Part number
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS EDGE Design Library	E8879 A/AN (version 1.7.2 or later)
<b>And</b>	
E444XA PSA Series Spectrum Analyzer	E4440A, E4443A, or E4445A (with firmware version A.02.01 or later)
PSA digital demodulation hardware	Opt. B7J
PSA EDGE measurement personality	option 202 (recommended)
89601A software	
with Vector Signal Analysis	89601A-100
with Dynamic Links to ADS	89601A-105
<b>Or</b>	
E4406A Vector Signal Analyzer (VSA Series Transmitter Tester)	E4406A (with firmware version A.05.01 or later)
with EDGE	option 202 (recommended)
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with Dynamic Links to ADS	89601A-105
<b>Or</b>	
89600 Series Vector Signal Analyzer with Vector Modulation Analysis with Dynamic Links to ADS with option 288 or 001	89640A or 89641A* 89640A-AYA 89640A-105 89640A-288 or -001
<b>Or</b>	
E440XA ESA-E Series Spectrum Analyzer	E4402B, E4404B, E4405B, E4407B (with firmware version A.08.04 or later)
with ESA Hardware Options	
High-Stability Frequency Reference	Opt. 1D5
Digital Signal Processing/Fast ADC	Opt. B7D
RF Communications Hardware	Opt. B7E
<b>Or</b>	
RF and Digital Communications Hardware Bundle	Opt. B74
89601A software	(version 3.0 or later)
with Vector Signal Analysis	89601A-100
with Dynamic Links to ADS	89601A-105

\* Note- See appendix for 89600S custom system configurations

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## **Recommended platform for connected signal source and connected signal analysis**

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PC with LAN/GPIB Gateway (Agilent E2050A with option E2050A-AG6) or GPIB interface card for connected signal source.

PC with Microsoft Windows 2000 and IEEE-1394 card for connected signal analysis when using 89640A or 89641A. PC with any ADS-supported operating system when using E444xA PSA or E4406A VSA.

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## **WLAN 802.11 Connected Solutions Configuration**

The connected solutions configuration for WLAN 802.11 consists Advanced Design System (ADS), an ESG (electronic signal generator), and a VSA (vector signal analyzer) and/or PSA (performance spectrum analyzer). The suggested configurations are subdivided into two categories:

1. Connected signal source configuration, which allows a signal to be modeled in simulation and created on the testbench.
2. Connected signal analysis configuration, which allows a signal to be captured on the testbench and brought back into simulation for further analysis.

These two capabilities can also be combined to provide flexibility in transitioning between simulation and test. All part numbers listed below are required for connected solutions, unless otherwise noted as (recommended).

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### **Connected signal source configuration**

<b>Agilent products</b>	<b>Part number</b>
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS WLAN Design Library	E8874 A/AN (version 1.7.3 or later)

***And***

E4438C ESG vector signal generator	E4438C*
with WLAN 802.11 Signal Studio	
personality option	option 417 (recommended)
with 6 GHz frequency range option	option 506
with enhanced phase noise performance option	option UNJ
with internal baseband generator with	
8 Msamples [40 Mbytes] of memory or	
32 Msamples [160 Mbytes] of memory	option 001 or 002

\*Note- ADS 2002 or later is required to interface to the E4438C

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## Connected signal analysis configuration

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Agilent products		Part number
ADS Design Environment		E8900 A/AN (ADS 2001 or later)
ADS Data Display		E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator		E8823 A/AN (ADS 2001 or later)
ADS WLAN Design Library		E8874 A/AN (version 1.7.3 or later)
	<b>And</b>	
89600 Series Vector Signal Analyzer		89641A*
with Vector Modulation Analysis		89641A-AYA
with WLAN Modulation Analysis		89641A-B7R
with Dynamic Links to ADS		89641A-105
		* Note- See appendix for 89600S custom system configurations
	<b>Or</b>	
E444XA PSA Series Spectrum Analyzer		E4440A, E4443A, or E4445A (with firmware version A.02.01 or later)
PSA 70 MHz IF option		option H70
	<b>And</b>	
89600 Series Vector Signal Analyzer		89611A
with WLAN Modulation Analysis		89611A-B7R
with Dynamic Links to ADS		89611A-105
with option 288 or 001 <sup>1</sup>		89611A-288 or -001

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## Recommended platform for connected signal source and connected signal analysis

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PC with LAN/GPIB Gateway (Agilent E2050A with option E2050A-AG6) or GPIB interface card for connected signal source.

PC with Microsoft Windows 2000 and IEEE-1394 card for connected signal analysis when using 89640A or 89641A. PC with any ADS-supported operating system when using E444xA PSA or E4406A VSA.

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1. For applications that require a longer time capture length, such as BER, refer to <http://cp.literature.agilent.com/litweb/pdf/5980-1258E.pdf> or <http://cp.literature.agilent.com/litweb/pdf/5988-4089EN.pdf> for detailed information on time capture length versus span and capture memory size.

## **TD-SCDMA Connected Solutions Configuration**

The connected solutions configuration for TD-SCDMA consists Advanced Design System (ADS), an ESG (electronic signal generator), and a VSA (vector signal analyzer) and/or PSA (performance spectrum analyzer). The suggested configurations are subdivided into two categories:

1. Connected signal source configuration, which allows a signal to be modeled in simulation and created on the testbench.
2. Connected signal analysis configuration, which allows a signal to be captured on the testbench and brought back into simulation for further analysis.

These two capabilities can also be combined to provide flexibility in transitioning between simulation and test. All part numbers listed below are required for connected solutions, unless otherwise noted as (recommended).

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### **Connected signal source configuration**

<b>Agilent products</b>	<b>Part number</b>
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS TD-SCDMA Design Library	E8873 A/AN
<b><i>And</i></b>	
E4438C ESG vector signal generator with TD-SCDMA Signal Studio personality option	E4438C* option 411 (recommended)
with enhanced phase noise performance option	option UNJ
with internal baseband generator with 8 Msamples [40 Mbytes] of memory or 32 Msamples [160 Mbytes] of memory	option 001 or 002

\*Note- ADS 2002 or later is required to interface to the E4438C

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## Connected signal analysis configuration

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<b>Agilent products</b>	<b>Part number</b>
ADS Design Environment	E8900 A/AN (ADS 2001 or later)
ADS Data Display	E8901 A/AN (ADS 2001 or later)
ADS Ptolemy Simulator	E8823 A/AN (ADS 2001 or later)
ADS TD-SCDMA Design Library	E8873 A/AN
<b>And</b>	
89600 Series Vector Signal Analyzer with 3G Modulation Analysis with Dynamic Links to ADS	89640A or 89641A* 89641A-B7N 89641A-105
89601A software with Vector Signal Analysis with 3G Modulation Analysis with Dynamic Links to ADS	(version 3.0 or later) 89601A-100 89601A-B7N 89601A-105
<b>Or</b>	
E444XA PSA Series Spectrum Analyzer	E4440A, E4443A, or E4445A (with firmware version A.02.01 or later)
<b>Or</b>	
E440XA ESA-E Series Spectrum Analyzer	E4402B, E4404B, E4405B, E4407B (with firmware version A.08.04 or later)
with ESA Hardware Options High-Stability Frequency Reference Digital Signal Processing/Fast ADC RF Communications Hardware	Opt. 1D5 Opt. B7D Opt. B7E
<b>Or</b>	
RF and Digital Communications Hardware Bundle	Opt. B74
89601A software with Vector Signal Analysis with 3G Modulation Analysis with Dynamic Links to ADS	(version 3.0 or later) 89601A-100 89601A-B7N 89601A-105

\* Note- See appendix for 89600S custom system configurations

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## Recommended platform for connected signal source and connected signal analysis

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PC with LAN/GPIB Gateway (Agilent E2050A with option E2050A-AG6) or GPIB interface card for connected signal source.

PC with Microsoft Windows 2000 and IEEE-1394 card for connected signal analysis when using 89640A or 89641A. PC with any ADS-supported operating system when using E444xA PSA or E4406A VSA.

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## **Appendix A: 89600S Custom System Configuration**

### **Two channel baseband HW configuration**

(equivalent to an 89610A with no software)

<b>Part number</b>	<b>Description</b>
E8408A	VXI 4-slot mainframe
E8408A-001	High power option
E8408-80900	RF shields
E8491B	IEEE-1394 PC link to VXI
E8491B-001	PCI interface
89606B	Baseband input module
E1438A	ADC-Baseband channel (first)
E1438A-001	Increase memory to 1.2 GBytes
E1438A	ADC-Baseband channel (second)
E1438A-001	Increase memory to 1.2 GBytes
E1438A-610	Cabling for second baseband channel

### **RF HW configuration**

(equivalent to an 89640/89641A with no software)

<b>Part number</b>	<b>Description</b>
E8408A	VXI 4-slot mainframe
E8408A-001	High power option
E8408-80900	RF shields
E8491B	IEEE-1394 PC link to VXI
E8491B-001	PCI interface
89605B	RF input/calibration module
E2730A or E2731A	2.7 or 6.0 GHz RF tuner module
E1439A	ADC-RF channel
E1439A-001	Increase memory to 1.2 GBytes

### **Required software** (for all formats, including EDGE)

Note option 100 included with all 89600 VXI hardware bundles

89601A	Vector Signal Analysis Software
89601A-100	Vector Signal Analysis measurements
89601A-AYA	Digital Demodulation
89601A-105	Dynamic Link to ADS

#### **For 3G (W-CDMA, cdma2000, 1xEV-DO, TD-SCDMA) add only:**

89601A-B7N	3G Modulation Analysis
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#### **For WLAN add only:**

89601A-B7R	OFDM Analysis
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## Related Literature

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<b>Title</b>	<b>Publication number</b>
Design with Confidence: Advanced Design System	5988-3326EN
ADS Communications System Designer	5966-2870E
Agilent Connected Simulation and Test Solutions Using the Advanced Design System, Application Note 1394	5988-6044EN
E4438C ESG Vector Signal Generator, Data Sheet	E5988-4039EN
E4438C ESG Vector Signal Generator, Configuration Guide	E5988-4085EN
E4438C ESG Vector Signal Generator, Brochure	E5988-3935EN
ESG Family RF Digital and Analog Signal Generators	5968-4313E
ESG Family RF Signal Generators, Data Sheet	5965-3096E
ESG Family RF Signal Generators, Configuration Guide	5965-4973E
Generating and Downloading Data to the ESG-D RF Signal Generator for Digital Modulation	5966-1010E
Generating Digital Modulation with the ESG-D Series Dual Arbitrary Waveform Generator	5966-4097E
ESG Series RF Signal Generators, Option 201 cdma2000, Product Overview	5988-0371EN
PSA Series, Data Sheet	5980-1284E
PSA Series, Brochure	5980-1283E
PSA Link to 89600	5988-5015EN
E4406A Vector Signal Analyzer, Data Sheet	5968-3030E
E4406A Vector Signal Analyzer, Brochure	5968-7618E
E4406A Vector Signal Analyzer Performance Guide Using 89601A VSA Software	5988-2906EN
89600 VSA Demo Software	5980-1989E
89640/89641A VSA, Data Sheet	5980-1258E
89600 Series Vector Signal Analyzers, Configuration Guide	5968-9350E
89600 Series Wide Bandwidth VSA, Brochure	5980-0723E
Using the 89600 to Make OFDM Measurements	5988-4094EN
89611A, Product Overview	5988-4093EN
89611A, Data Sheet	5988-4092EN
Wireless 2G/3G Solutions	5968-5860E
Solutions for Designing and Manufacturing Base Transceiver Stations and Their Components	5988-3706EN
Solutions for Designing and Manufacturing Wireless Appliances	5988-1504EN
Designing and Testing 3GPP W-CDMA Base Stations, Application Note 1355	5980-1239E
Designing and Testing 3GPP W-CDMA User Equipment, Application Note 1356	5980-1238E
Designing and Testing cdma2000 Base Stations, Application Note 1357	5980-1303E
Designing and Testing cdma2000 Mobile Stations, Application Note 1358	5980-1237E
Measuring EDGE signals - New and Modified Techniques and Measurement Requirements, Application Note 1361	5980-2508EN
Bluetooth & Wireless LAN Test Products, Systems & Services Brochure	5988-4438EN
RF Testing of Wireless LAN Products, Application Note 1380-1	5988-3762EN
Wireless LAN PHY Layer Operation and Measurement, Application Note 1380-2	5988-5411EN

## Web Resources

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For more information on Agilent products and services, visit these websites at:

[www.agilent.com/](http://www.agilent.com/)  
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[www.agilent.com/find/esg](http://www.agilent.com/find/esg)  
[www.agilent.com/find/89600](http://www.agilent.com/find/89600)  
[www.agilent.com/find/psa](http://www.agilent.com/find/psa)  
[www.agilent.com/find/wlan](http://www.agilent.com/find/wlan)



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