

Keysight Technologies

N8993A and N1960A

GS-8800 Series (8960) Wireless  
Communications Design Verification (DV)  
and Conformance Test (CT) System

Configuration Guide



# Introduction

## GS-8800 Series Wireless Communications Test System

The Keysight Technologies, Inc. N8993A and N1960A test systems are designed for mobile phone design verification (DV) and conformance test (CT) for RF parametric measurements capabilities for all major 2G/3G cellular technologies. Either of the test systems can be used in the GS-800 Series system.

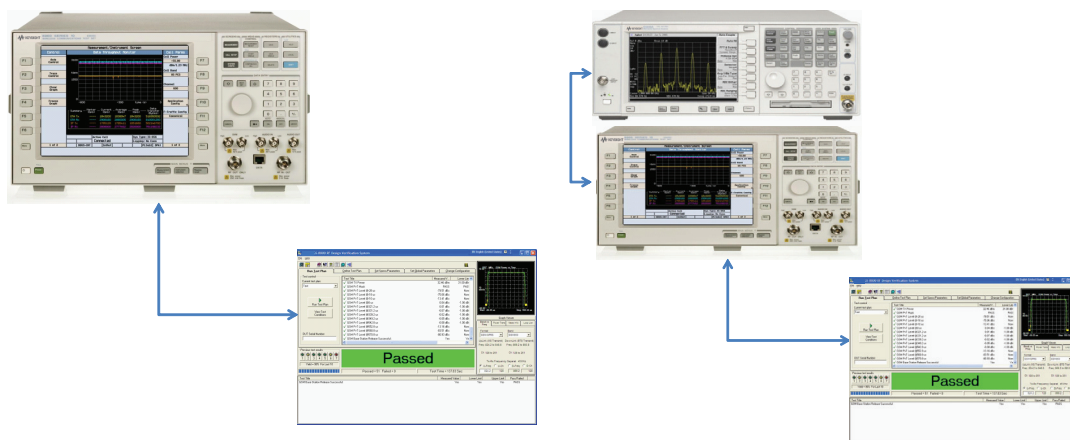
The N8993A is a flexible, bench-top DV system solution, combining reliable performance with “just-enough” test case coverage for early UE reference designers and UE prototype designers. The N1960A is a full-blown two (or three) rack system solution, ideal for complete design verification applications or conformance test applications.

Adding additional radio technology formats to the N8993A or N1960A system hardware platform is as easy as loading the necessary radio technology format software option.

The GS-8800 Series system comes with GS-8800 measurement software. This easy-to-use software automates parametric tests measurements in accordance with 3GPP or 3GPP2 specifications by creating a default test. GS-8800 measurement software runs on a Windows PC.

This guide provides you with a reference for configuring a GS-8800 Series system. For details about supported test cases to help in configuring the system hardware instruments, software product options, and software and technical support contracts (STSCs) options, please refer to the GS-8800 test coverage metric (TCM) document available through your local Keysight representative.

This three-step configuration guide explains how to 1) configure the hardware instruments options for the system, 2) configure the software product options, and 3) configure the STSCs that matches the software product options.



# Step 1 Configuring N8993A and N1960A GS-8800 Series Major Hardware Instruments Options

The GS-8800 Series system is scalable from a bench-top system to a full-blown rack system, while using the same hardware instruments and safeguarding your investment.

Tables 1 and 2 show the major hardware instrument configuration options for the N8993A and N1960A.

Table 1: Configuring N8993A GS-8800 Series (8960) bench-top DV hardware options

Hardware description	Hardware ordering options
<b>Industrial PC</b>	
Advantech industrial PC	N1960A-H01
<b>66319D power supply</b>	
Mobile communication dual-output DC source, with battery emulation	N1960A-D01
<b>8960 Series 10 wireless communications test set</b>	
E5515C hardware, version 5.8 <sup>1</sup> with required options	N1960A-234
Lab application suite	N1960A-L00
GSM/GPRS/EGPRS lab application	N1960A-L01
W-CDMA/HSPA lab application	N1960A-L02
cdma2000®/EV-DO lab application	N1960A-L03
UMTS lab application suite	N1960A-L12
cdmaOne/cdma2000 test application	N1960A-T03
1xEV-DO test application	N1960A-T04
TD-SCDMA test application (signalling mode)	N1960A-T07
<b>E4445A performance signal analyzer<sup>2</sup> with</b>	
GSM/GPRS, EGPRS, W-CDMA, HSPA, cdma2000, and 1xEV-DO personalities	N1960A-P00
GSM/GPRS, EGPRS personality	N1960A-P01
W-CDMA and HSPA personalities	N1960A-P02
cdma2000 and 1xEV-DO personalities	N1960A-P03
GSM/GPRS, EGPRS, W-CDMA, and HSPA personalities	N1960A-P12
GSM/GPRS, EGPRS, cdma2000, and 1xEV-DO personalities	N1960A-P13
W-CDMA, HSPA, cdma2000, and 1xEV-DO personalities	N1960A-P23
<b>Baseband studio for fading<sup>3</sup></b>	
N5115B baseband studio for fading	N1960A-F60
<b>Additional accessories options</b>	
N8993A bench-top accessories	N8993A-SL1
N8993A bench-top with spectrum analyzer option accessories	N8993A-LT1

1. Some test cases require hardware version 5.8. Customers need to upgrade to 8960 hardware version 5.8 to support these test cases. Refer TCM for more details.
2. If the signal analyzer is configured, software product Option N8993A-SA1 needs to be configured to support additional test cases.
3. If baseband studio for fading is configured, software product Option N8993A-FA1 needs to be configured to support fading test cases.

## Configuring N8993A and N1960A GS-8800 Series Major Hardware Instruments Options (continued)

Table 2: Configuring N1960A GS-8800 Series (8960) DV or CT hardware options

Hardware description	Hardware ordering options
<b>Industrial PC</b>	
Advantech industrial PC	N1960A-H01
<b>66319D power supply</b>	
Mobile communication dual-output DC source, with battery emulation	N1960A-D01
<b>E4418B power meter</b>	
Single channel power meter with required option	N1960A-M00
<b>E9304A power sensor</b>	
Average power sensor, 9 kHz to 6 GHz, -60 to +20 dBm with required option	N1960A-N00
<b>8960 Series 10 wireless communications test set<sup>1</sup></b>	
E5515C hardware, version 5.8 <sup>2</sup> with required options	N1960A-234
Lab application suite	N1960A-L00
GSM/GPRS/EGPRS lab application	N1960A-L01
W-CDMA/HSPA lab application	N1960A-L02
cdma2000/EV-DO lab application	N1960A-L03
UMTS lab application suite	N1960A-L12
cdmaOne/cdma2000 test application	N1960A-T03
1xEV-DO test application	N1960A-T04
TD-SCDMA test application (signalling mode)	N1960A-T07
E6590A-101 GSM/GPRS Anite application <sup>3</sup>	N1960A-AN1
E6590A-102 EGPRS Anite application <sup>3</sup>	N1960A-AN2
E6590A-103 RF modem Anite application <sup>3</sup>	N1960A-AN3
<b>E4445A performance signal analyzer with</b>	
GSM/GPRS, EGPRS, W-CDMA, HSPA, cdma2000, and 1xEV-DO personalities	N1960A-P00
GSM/GPRS, EGPRS personality	N1960A-P01
W-CDMA and HSPA personalities	N1960A-P02
cdma2000 and 1xEV-DO personalities	N1960A-P03
GSM/GPRS, EGPRS, W-CDMA, and HSPA personalities	N1960A-P12
GSM/GPRS, EGPRS, cdma2000, and 1xEV-DO personalities	N1960A-P13
W-CDMA, HSPA, cdma2000, and 1xEV-DO personalities	N1960A-P23

1. Some test cases require more than one 8960 Series 10. Refer TCM for more details.

2. Some test cases require hardware version 5.8. Customers need to upgrade to 8960 hardware version 5.8 to support these test cases. Refer TCM for more details.

3. Only required for PLUS system with Anite instruments.

## Configuring N8993A and N1960A GS-8800 Series Major Hardware Instruments Options (continued)

Hardware description	Hardware ordering options
<b>E4438C economic signal generator<sup>1</sup> with</b>	
GSM/GPRS, EGPRS, W-CDMA, cdma2000, 1xEV-DO, and AWGN personalities	N1960A-E00
GSM/GPRS, EGPRS and AWGN personality	N1960A-E01
W-CDMA and AWGN personalities	N1960A-E02
cdma2000, 1xEV-DO, and AWGN personalities	N1960A-E03
GSM/GPRS, EGPRS, W-CDMA, and AWGN personalities	N1960A-E12
W-CDMA, cdma2000, 1xEV-DO, and AWGN personalities	N1960A-E23
Signal Studio for TD-SCDMA	N1960A-ST3
<b>E8257D performance signal generator</b>	
Performance signal generator with required options	N1960A-G00
<b>RF interface and filter module</b>	
N1961A RF interface box, version 3.0	N1960A-R04
GSM filter module box <sup>2</sup>	N1960A-G01
N8990A-P06 add-on RF interface <sup>3</sup>	N1960A-D01
TD-SCDMA Band Extension Module 1 <sup>4</sup>	N1960A-Q04
<b>Fader</b>	
N5115B baseband studio for fading <sup>5</sup>	N1960A-F60
Spirent SR5500 fading simulator with AWGN without GUI <sup>6</sup>	N1960A-F10
<b>PLUS system instruments</b>	
Plus 1 package with Anite baseband processor and fading adapter unit	N1960AS-AN1
Plus 2 package with two Anite baseband processors, fading adapter unit and RF combiner	N1960AS-AN2

1. Some test cases require more than one ESG. Refer TCM for more details.

2. Not required if configuring a cdma2000/1xEV-DO-only system.

3. Required by PLUS 2 system, 1xEVDO Rev B multi-carrier test cases, and R&D test cases. Refer to TCM for more details.

4. Only required by TD-SCDMA.

5. Only applicable for a DV system.

6. Required for CT system.

## Step 2 Configuring N8993A and N1960A GS-8800 Series Software Product Options

Software licenses for test cases are required and must be installed in the system before it will operate. Each 2G/3G cellular technology is separated into individual fixed and perpetual license/software product options.

Tables 3, 4, and 5 show the software product options recommended or required based on the system configuration and wireless technology needs.

Table 3: Configuring N8993A GS-8800 Series (8960) bench-top DV system software product options

Wireless technology format (product)	N8993A (ordering option)
<b>3GPP2 (C.S0011 and C.S0033)</b>	
cdmaOne/cdma2000/1xEV-DO Rev.0 software – fixed and perpetual	N8993A-S20
1xEV-DO Rev. A software – fixed and perpetual	N8993A-S08
<b>3GPP (TS 51.010-1)</b>	
GSM/GPRS/EGPRS software – fixed and perpetual	N8993A-S10
EGPRS2 software – fixed and perpetual	N8993A-S96
<b>3GPP (TS 34.121-1)</b>	
W-CDMA software – fixed and perpetual	N8993A-S04
HSDPA software – fixed and perpetual	N8993A-S05
HSUPA software – fixed and perpetual	N8993A-S09
HSPA+ software – fixed and perpetual	N8993A-S76
<b>3GPP (TS 34.122)</b>	
TD-SCDMA software – fixed and perpetual <sup>1</sup>	N8993A-ST1
<b>3GPP (TS 51.010-1, TS 34.121-1, C.S0011, and C.S0033)</b>	
GSM/GPRS/EGPRS/W-CDMA software – fixed and perpetual	N8993A-S12
GSM/GPRS/EGPRS/W-CDMA/cdma2000/1xEV-DO Rev.0 software – fixed and perpetual	N8993A-S91
<b>Additional support</b>	
Enable spectrum analyzer-supported test cases	N8993A-SA1
Enable fading test cases	N8993A-FA1

1. To be released in April 2011.

## Configuring N8993A and N1960A GS-8800 Series Software Product Options (continued)

Table 4: Configuring N1960A GS-8800 Series (8960) DV system software product options

Wireless technology format (product)	N1960A (ordering option)
<b>3GPP2 (C.S0011 and C.S0033)</b>	
C.S0011 and C.S0033 DVT CORE sections software – fixed and perpetual	N1960A-W08
C.S0033 DVT EXTENSION 1xEV-DO Rev. B software – fixed and perpetual <sup>1</sup>	N1960A-W8B
<b>3GPP (TS 51.010-1)</b>	
TS 51.010-1 DVT CORE sections software – fixed and perpetual	N1960A-W01
TS 51.010-1 DVT EXTENSION DARP phase 1 software – fixed and perpetual	N1960A-W20
TS 51.010-1 DVT EXTENSION Section 21/22 software – fixed and perpetual	N1960A-W21
TS 51.010-1 DVT EXTENSION EGPRS2 software – fixed and perpetual	N1960A-W23
<b>3GPP (TS 34.121-1)</b>	
TS 34.121-1 DVT CORE Rel_99/4/5 software – fixed and perpetual	N1960A-W41
TS 34.121-1 DVT EXTENSION Rel_6 software – fixed and perpetual	N1960A-W71
TS 34.121-1 DVT EXTENSION Rel_7 software – fixed and perpetual	N1960A-W76
TS 34.121-1 DVT PLUS Rel_99/4/5 software – fixed and perpetual	N1960A-W42
TS 34.121-1 DVT PLUS Rel_6 software – fixed and perpetual	N1960A-W72

<sup>1</sup> To be released in February 2011.

## Configuring N8993A and N1960A GS-8800 Series Software Product Options (continued)

Table 5: Configuring N1960A GS-8800 Series (8960) CT system software product options

Wireless technology format (product)	N1960A (ordering option)
<b>3GPP (TS 51.010-1)</b>	
TS 51.010-1 RCT CORE sections software – fixed and perpetual	N1960A-C01
TS 51.010-1 RCT EXTENSION DARP phase 1 software – fixed and perpetual	N1960A-C20
TS 51.010-1 RCT EXTENSION Section 21/22 software – fixed and perpetual	N1960A-C21
<hr/> <b>3GPP (TS 34.121-1)</b>	
TS 34.121-1 RCT CORE Rel_99/4/5 software – fixed and perpetual	N1960A-C41
TS 34.121-1 RCT EXTENSION Rel_6 software – fixed and perpetual	N1960A-C71
TS 34.121-1 RCT EXTENSION Rel_7 software – fixed and perpetual	N1960A-C76
TS 34.121-1 RCT PLUS Rel_99/4/5 FDD I/II/V software – fixed and perpetual	N1960A-C42
TS 34.121-1 RCT PLUS Rel_6 FDD I/II/V software – fixed and perpetual	N1960A-C72
<hr/> <b>3GPP (TS 34.122)</b>	
TS 34.122 RCT CORE sections software – fixed and perpetual <sup>1</sup>	N1960A-CT1

<sup>1</sup> To be released in April 2011.



## Step 3 Configuring the Software and Technical Support Contracts

Software and technical support contracts (STSCs) are compulsory for GS-8800 system test solutions, depending on the software product options selected. The STSC entitles you to software updates, feature enhancements, and access to product experts for technical support.

Tables 6, 7, and 8 show the STSC recommended or required based on the system configuration and the wireless technology installed. For STSC renewal, please refer to STSC renewal column.

Table 6: Configuring N8993A GS-8800 Series (8960) bench-top STSCs options

Software and technical support (product)	STSC initial <sup>1</sup> (ordering option)	STSC renewal <sup>2</sup> (ordering option)	Support covers (N8993A option)
Bench-top design verification 12-month software technical support contract	N8993AS-1SY	N8993AS-1RY	N8993A-S20, N8993A-S08 N8993A-S10, N8993A-S96 N8993A-S04, N8993A-S05 N8993A-S09, N8993A-S76 N8993A-S12, N8993A-S91, N8993A-ST1

Table 7: Configuring N1960A GS-8800 Series (8960) DV STSCs options

Software and technical support (product)	STSC initial <sup>3</sup> (ordering option)	STSC renewal <sup>4</sup> (ordering option)	Support covers (N1960A option)
<b>3GPP2 (C.S0011 and C.S0033)</b>			
C.S0011 and C.S0033 DVT – 12-month software and technical support contract	U1951AS-1SY	U1951AS-1RY	N1960A-W08 N1960A-W8B <sup>5</sup>
<b>3GPP (TS 51.010-1)</b>			
TS 51.010-1 DVT CORE sections – 12-month software and technical support contract	U1950AS-1SY	U1950AS-1RY	N1960A-W01
TS 51.010-1 DVT EXTENSIONS – 12-month software and technical support contract	U1958AS-1SY	U1958AS-1RY	N1960A-W20 N1960A-W21 N1960A-W23
<b>3GPP (TS 34.121-1)</b>			
TS 34.121-1 DVT CORE Rel_99/4/5 – 12-month software and technical support contract	U1956AS-1SY	U1956AS-1RY	N1960A-W41
TS 34.121-1 DVT EXTENSIONS – 12-month software and technical support contract	U1957AS-1SY	U1957AS-1RY	N1960A-W71 N1960A-W76
TS 34.121-1 DVT PLUS – 12-month software and technical support contract	U1959AS-1SY	U1959AS-1RY	N1960A-W42 N1960A-W72

1. A minimum of a 1-year (-1SY) STSC is required with the initial purchase of the system. Only a 1-year STSC is available for the N8993A.
2. Use this option for renewal of a 1-year STSC. Only a 1-year STSC renewal is available for the N8993A.
3. A minimum of a 1-year (-1SY) STSC is required with the initial purchase of the system. A STSC for 1 month (U195xAS-1SM), 3 months (U195xAS-3SM), 6 months (U195xAS-6SM), 9 months (U195xAS-9SM), 2 years (U195xAS-2SY), or 3 years (U195xAS-3SY) is also available.
4. Use this option for renewal of a 1-year STSC. A STSC renewal for 1-month (U195xAS-1RM), 3-months (U195xAS-3RM), 6-months (U195xAS-6RM), 9-months (U195xAS-9RM), 2-years (U195xAS-2RY), or 3-years (U195xAS-3RY) is also available.
5. To be released in February 2011.

## Configuring the Software and Technical Support Contracts (Continued)

Table 8: Configuring N1960A GS-8800 Series (8960) CT STSCs options

Software and technical support (product)	STSC initial <sup>1</sup> (ordering option)	STSC renewal <sup>2</sup> (ordering option)	Support covers (N1960A option)
<b>3GPP (TS 51.010-1)</b>			
TS 51.010-1 RCT CORE sections – 12-month software and technical support contract	U1960AS-1SY	U1960AS-1RY	N1960A-C01
TS 51.010-1 RCT EXTENSIONS – 12-month software and technical support contract	U1968AS-1SY	U1968AS-1RY	N1960A-C20 N1960A-C21
<b>3GPP (TS 34.121-1)</b>			
TS 34.121-1 RCT CORE Rel_99/4/5 – 12-month software and technical support contract	U1966AS-1SY	U1966AS-1RY	N1960A-C41
TS 34.121-1 RCT EXTENSIONS – 12-month software and technical support contract	U1967AS-1SY	U1967AS-1RY	N1960A-C71 N1960A-C76
TS 34.121-1 RCT PLUS – 12-month software and technical support contract	U1969AS-1SY	U1969AS-1RY	N1960A-C42 N1960A-C72
<b>3GPP (TS 34.122)</b>			
TS 34.122 RCT CORE <sup>3</sup> – 12-month software and technical support contract	U1970AS-1SY	U1970AS-1RY	N1960A-CT1

1. A minimum of a 1-year (-1SY) STSC is required with the initial purchase of the system. A STSC for 1 month (U196/7xAS-1SM), 3 months (U196/7xAS-3SM), 6 months (U196/7xAS-6SM), 9 months (U196/7xAS-9SM), 2 years (U196/7xAS-2SY), or 3 years (U196/7xAS-3SY) is also available.
2. Use this option for renewal of a 1-year STSC. A STSC renewal for 1-month (U196/7xAS-1RM), 3-months (U196/7xAS-3RM), 6-months (U196/7xAS-6RM), 9-months (U196/7xAS-9RM), 2-years (U196/7xAS-2RY), or 3-years (U196/7xAS-3RY) is also available.
3. To be released in April 2011.

## Warranty

### Standard warranty

The Keysight standard instruments hardware in GS-8800 Series system are warranted against defects in materials and workmanship for a period of one year from the date of delivery. During the warranty period, Keysight will, at its discretion, repair or replace the defective hardware covered by this warranty. Hardware warranty renewals can be purchased separately.

### OEM instruments warranty

Spirent SR5500M Fading Simulator is inclusive of three years warranty and calibration. Anite's instruments are inclusive of a one year warranty and calibration. Industrial PC is inclusive of a one year warranty.

### Warranty and upgrade

Item	Remarks
Hardware warranty	Hardware warranty and calibration renewals can be purchased separately. Please contact your local Keysight representative for new purchase or renewal
E7620A: 8960 lab application annual upgrade contract	May be required depending on lab application version installed in the target 8960 Series 10 and GS-8800 measurement software requirements. Refer to GS-8800 release notes for supported lab application/test application versions. Please contact your local Keysight representative for new purchase or renewal
Hardware upgrade or additional hardware purchase	A new hardware version or new hardware may be required to support new features or due to the product being discontinued. Please contact your local Keysight representative for upgrade or new purchase

## Related Literature

*Keysight N1960A GS-8800 Series (8960) Wireless Communication Design Verification (DV) and Conformance Test (CT) System*, Data Sheet, literature number 5990-5805EN

*Keysight N8993A GS-8800 Series (8960) Wireless Communication Design Verification (DV) Bench-top System*, Data Sheet, literature number 5990-5806EN

*Keysight GS-8800 series 2G/3G Design Verification and Conformance Test System Solutions Software and Technical Support Contracts (STSCs)*, Product Overview, literature number 5990-5301EN

## For More Information

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