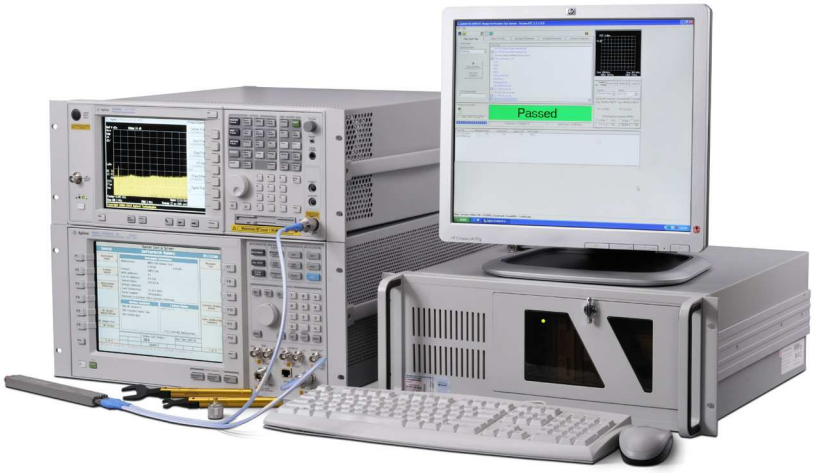
# Agilent N8993A GS-8800 Series (8960) Wireless Communication Design Verification (DV) Bench-top System

## Data Sheet

**N8993A** A platform for

- GSM, GPRS, and EGPRS (Bands GSM 850, GSM 900, DCS 1800, and PCS 1900)
  - 3GPP TS51.010-01. Sections 12, 13, 14, 21, and 22
- W-CDMA, HSDPA, HSUPA, HSPA+, and DC-HSDPA (Bands I to IX, XI, and XIX)
  - 3GPP TS34.121-1. Sections 5, 6, 7, 9, and 10
  - Rel. 99, Rel. 5 to Rel. 8
- TD-SCDMA (Bands A and F)
  - 3GPP TS34.122. Sections 5 and 6
- cdmaOne, cdma2000®, 1xEV-DO, and 1xEV-DO Rev. A (Band Classes 0, 1, 3, 4, 6, 10, 14, and 15)
  - 3GPP2 C.S0011 and 3GPP2 C.S0033




## Introduction

The Agilent N8993A is one piece of the GS-8800 family of test systems, which covers the entire product lifecycle:

- N8993A wireless communication design verification (DV) benchtop system
- N1960A wireless communication design verification (DV) and conformance test (CT) racked system

The N8993A is designed for R&D early phase development of mobile phones, and for manufacturing or quality assurance testing before going to market. In the design verification environment, tests can be easily configured or modified to suit your specific test requirements.

The N8993A can be upgraded to the N1960A RF design verification and conformance test platform by re-using the hardware and software. The N8993A can also be easily upgraded to support new radio technology formats, allowing you to stay up to date with the latest technologies and safeguard your investment.

# N8993A Platform Overview

The N8993A is a flexible bench-top system solution that provides superior flexibility and great performance for "just-enough" test case coverage, and it supports multiple radio technology formats. The N8993A performs high accuracy measurements and provides excellent repeatability and performance test. The multitechnology test platform supports:

- GSM/GPRS/EGPRS (3GPP TS51.010-01)
- W-CDMA/HSDPA/HSUPA/HSPA+/DC-HSDPA (3GPP TS34.121-1)
- TD-SCDMA/TD-HSDPA/TD-HSUPA (3GPP TS34.122)
- cdmaOne/cdma2000/1xEV-DO/1xEV-DO Rev. A (3GPP2 C.S0011 and 3GPP2 C.S0033)

The N8993A meets existing radio format requirements while providing a flexible upgrade path for future formats. The system architecture makes it easy to modify or scale the system configuration to provide the test capabilities needed for the different stages of your product's life cycle—from R&D to manufacturing or quality assurance test applications. Plus, the system's single-platform scalability for multiple radio technology formats, bands, and product life-cycle safeguards your investment.

# N8993A Platform Characteristics

## Bench-top system application

| Software | Application |
|---|---|
| N8993A-Sxx | • For R&D quick, simple, and stripped down receiver verification<br>• For manufacturing quality acceptance verification |
| N8993A-SA1<br>N8993A-FA1 | • Licenses enable more test cases using additional E4445A/N9020A or/and N5115B to provide more comprehensive quality acceptance verification |

## Flexibility

N8993A supports multiple radio technology formats and bands

- GSM/GPRS/EGPRS (GSM 850, GSM 900, DCS 1800, PCS 1900)
- W-CDMA/HSDPA/HSUPA/HSPA+/DC-HSUPA (Bands I to IX)
- TD-SCDMA/TD-HSDPA/TD-HSUPA (Bands A and F)
- cdmaOne/cdma2000/1xEV-DO/1xEV-DO Rev. A (Band Classes 0, 1, 3, 4, 6, 10, 14, and 15)

In addition, the flexible measurement software provides users full control over parameters, as well as the ability to stress designs through a broad range of frequencies and power levels.

## Easy-to-use user interface

The N8993A is equipped with an easy-to-use user interface, making it simple for end users to change test parameters and run design verification tests.

## Scalability and upgradability

The system can be easily upgraded to include other radio formats on the same hardware platform simply by adding the necessary radio format software option. In addition, the systems can be scaled up to the N1960A to support more test case coverage for design verification testing or conformance testing.

## Accuracy and repeatability

The N8993A provides accurate measurements and repeatable results due to equipment stability. It leverages the measurement speed, accuracy, and repeatability strengths of Agilent products; creating reliable, high performance design verification test systems.

## Comprehensive test coverage

The N8993A covers "just-enough" test cases specified in 3GPP TS51.010-01, 3GPP TS34.121-1, 3GPP TS34.122, 3GPP2 C.S0011, and 3GPP2 C.S0033. Agilent is committed to supporting more test case sections and enhancing test coverage as technology standards evolve.

## Software support

The N8993A Software and Technical Support Contract (STSC) is available for purchase which entitles you to software updates and feature enhancements, as well as direct access to a technical expert for technical support for the period of the STSC contract. A minimum 1-year STSC is mandatory for new system purchases. For more info on STSC, please visit **www.agilent.com/find/gs8800**

# Hardware Architecture

The N8993A platform is a bench-top system with integrated test equipment and test software.

| System | Industrial PC | GS-8800 measurement software | 8960 Series 10 (E5515E) | E4445A/ N9020A spectrum analyzer | N5115B baseband studio for fading | 66319D Power Supply[1] |
|---|---|---|---|---|---|---|
| N8993A-Sxx | √ | √ | √ | | | √ |
| N8993A-SA1 | | | | √ | | |
| N8993A-FA1 | | | | | √ | |

# Software Architecture

The N8993A's GS-8800 measurement software is based on the Agilent Wireless Test Manager (WTM)[2] platform and automates RF parametric tests according to the specified supported standards. The software's great value lies in its functions and features, which are specially designed to enhance the user's R&D design verification test experience.

The software is also designed with a user-friendly graphical user interface (GUI) (Figure 1). In addition, the GS-8800 measurement software is able to selectively perform subtests for a chosen test step to reduce the time required to identify root-cause failures.

The software automates test execution to enable a large number of test cases to run in a relatively short time frame.

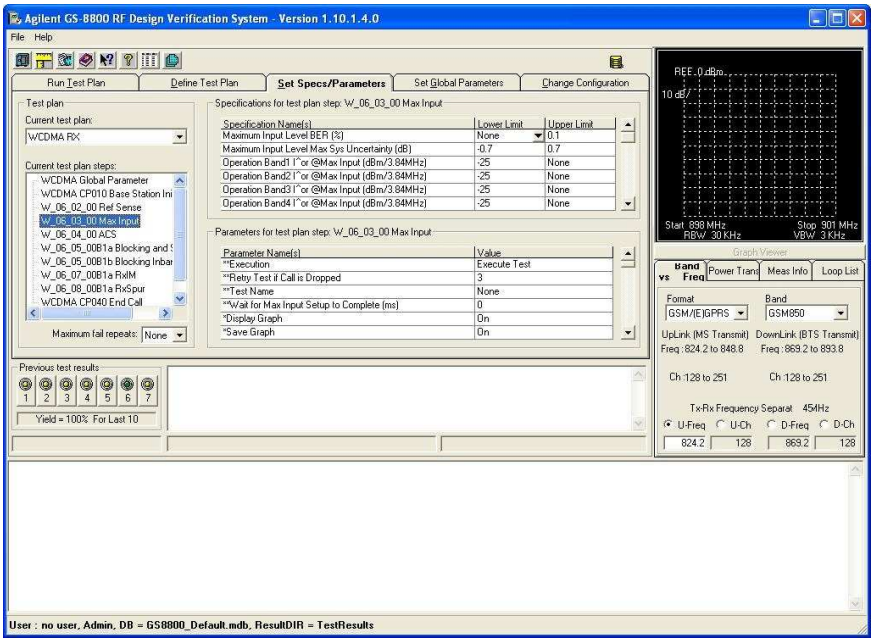



*Figure 1. GS-8800 measurement software GUI overview*

1. *Optional add-on component.*
2. *Find out more about WTM at:* ***www.agilent.com/find/wtm***

The software provides integrated data collection. Results reporting, saved in a comma-separated value (CSV) format, allows easy sharing with other applications. The viewer software application (Figure 2), provided as a standard option, allows you to perform off-line graphical analysis on measurement data.

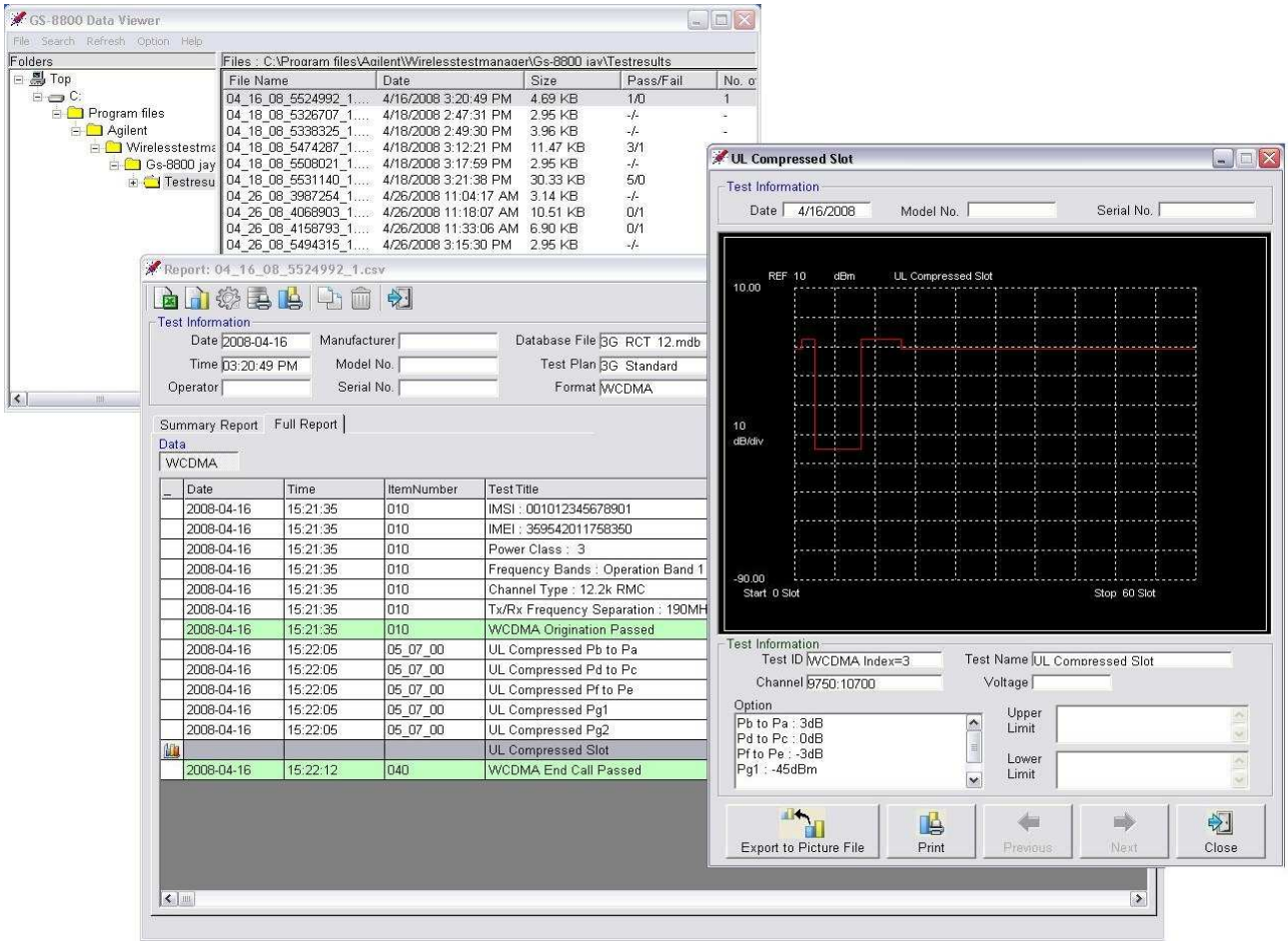



*Figure 2. GS-8800 measurement software data viewer*

# Specifications

## Generic instrument specification

### E5515E general specification

| | |
|---|---|
| GPIB | IEEE Standard 488.2 |
| Dimensions (H x W x D) | 235 mm x 425 mm x 629 mm (9.25 in x 16.7 in x 24.7 in), 7 rack spaces high |
| Weight | 31.9 kg (70.1 lbs) |
| Display | 26.7 cm (10.5 in), active matrix, color, liquid crystal |

### LAN (local area network)

| | |
|---|---|
| LAN port (for firmware upgrades only) | RJ-45 connector, 100 Mbps |
| LAN 2 port (for high data throughput) | RJ-45 connector, 1000 Mbps (for E5515E) |
| LAN 3 port (for future use) | RJ-45 connector, 1000 Mbps |
| Calibration interval | Two years |
| EMI | EMI conducted and radiated interference meets CISPR-11 |

### PC/peripheral input/output

| | |
|---|---|
| USB | Six auxiliary ports are available: two on the front panel and four on the rear panel of the industrial PC |
| Serial (RS-232) | Two on the on the rear panel of the industrial PC, DB9 male connector |
| LAN | Three 100 Base-T Ethernet, RJ-45 connector |
| GPIB | One on the rear panel of the industrial PC |

## Timebase specification

| | |
|---|---|
| Internal timebase | Internal timebase of the 8960/E5515E wireless communications test set is fed to all other instruments in the system. The 8960's internal oven-controlled crystal oscillator's specifications are as follows:<br>• Aging rates: < ±0.1 ppm per year, < ±0.005 ppm peak-to-peak per day during any 24-hour period starting 24 hours or more after a cold start<br>• Temperature stability: < ±0.01 ppm, frequency variation from +25 °C over the temperature range 0 to +55 °C<br>Warm-up time: 5 minutes to be within ±0.1 ppm of frequency at one hour, 15 minutes to be within ±0.01 ppm of frequency at one hour |
| External timebase | When the external reference signal is present on the EXT REF IN, the system instruments will be locked to it |

## General specifications

### Operating conditions

| | |
|---|---|
| General | Indoor |
| Storage temperature | –20 to +70 °C |
| Operating temperature | +10 to +30 °C |
| Accuracy specified temperature | +20 to +30 °C (Refer to measurement accuracy specification of individual radio technology for further information) |
| Humidity (relative) | 5 to 80% relative humidity (non-condensing) |
| Altitude | 0 to 2 km |
| Power requirement | 90 to 254 VAC, 50 to 60 Hz, 4118 VA maximum |

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Product specifications and descriptions in this document subject to change without notice.


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