Free Trial License

Agilent N7611B
Signal Studio for Broadcast Radio

Technical Overview

Create Broadcast Radio Test Waveforms with Ease

N7611B Signal Studio for Broadcast Radio enables you to easily create arbitrary baseband I/Q waveforms compliant with different broadcast radio standards, like FM Stereo/RDS (Radio Data system), DAB series including DAB, DAB+, and T-DMB, targeting both R&D and manufacturing.

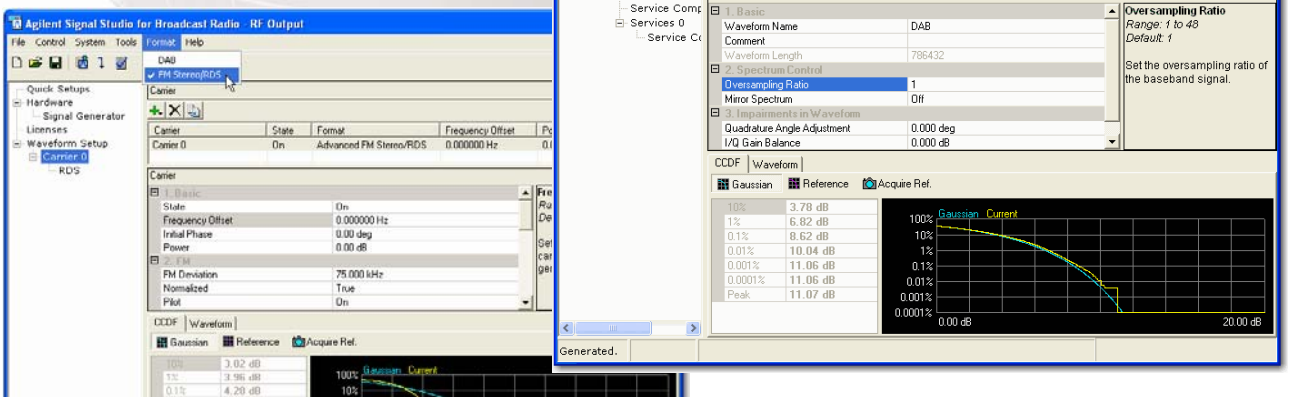
The software's intuitive graphical user interface provides the versatility you need to configure waveforms for both component and receiver design verification and testing.

With the software's advanced capability, you can generate DAB-series waveforms using ETI steam files, which enable you to thoroughly test DAB receivers compliant with Receiver Profile 2 as defined by the World DMB Forum.

Use the N7611B software to generate and download your FM Stereo/RDS, or DAB-series waveform files to the N5162A MXG ATE, N5182A MXG, or E4438C ESG signal generator, or the N5106A PXB baseband generator and channel emulator.

Key Features

- Configurable FM Stereos/RDS waveforms
- Configurable DAB waveforms including Mode I, II, III, IV
- Multi-carrier/multi-channel capability for up to 12 carriers, each independently configurable
- I/Q waveform impairments and real-time AWGN support (requires signal generator option 403)



Summary of Features

- **Configurable FM Stereos/RDS waveforms**
  - FM Multiplex-MPX or mono signal generation
  - Settable FM deviation (up to 300 kHz)
  - Settable Pilot deviation: 0.1% to 50% of FM Deviation in 0.1% steps
  - Settable RDS deviation
  - Flexible RDS information configuration
- **Configurable DAB waveforms including Mode I, II, III, IV**
  - DAB, DAB+, and T-DMB waveform generation
  - Flexible Service and Service Components settings
  - User defined FIG for flexible configuration
  - Payload types: Audio files for each service component and ETI stream files
  - ETI demo files and DAB, DAB+ audio demo files provided
- **Multi-carrier/multi-channel capability for up to 12 carriers, each independently configurable**
- **I/Q waveform impairments and real-time AWGN support (requires signal generator option 403)**
- Connectivity to N5162/N5182 MXG, E4438 ESG, and N5106A PXB
- Transportable, time-based, and trial licensing

Configure Waveforms Quickly and Easily

Signal Studio for Broadcast Radio provides a flexible, intuitive graphical user interface that makes the operation easy and straightforward. All signal and hardware parameters can be conveniently set in a windows interface. Graphical displays make it easy to confirm the parameters you've chosen. The software also provides feedback on your settings, enabling you to quickly resolve any conflicts.

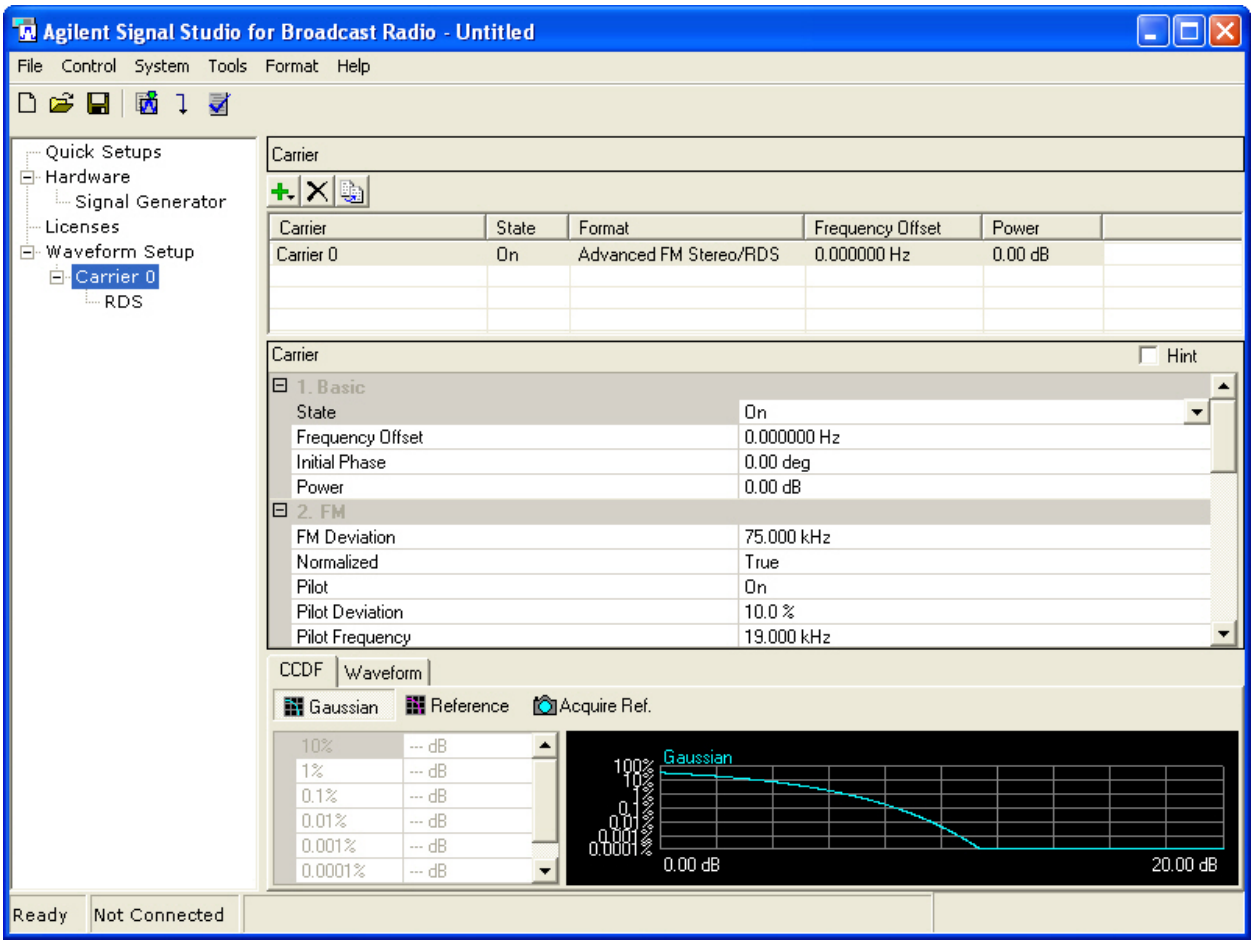


Figure 1. Graphical display of carrier setup for FM stereo/RDS signals, as well as pre-download CCDF and power analysis tools.

Save Configurations as Quick Setup Buttons

Start by customizing the parameters in a configuration to create the signals you need. Save your custom configurations as Quick Setups for later use. Create a library of different scenarios tailored to meet your specific testing requirements.

Thoroughly Test Your Broadcast Radio Receivers and Components

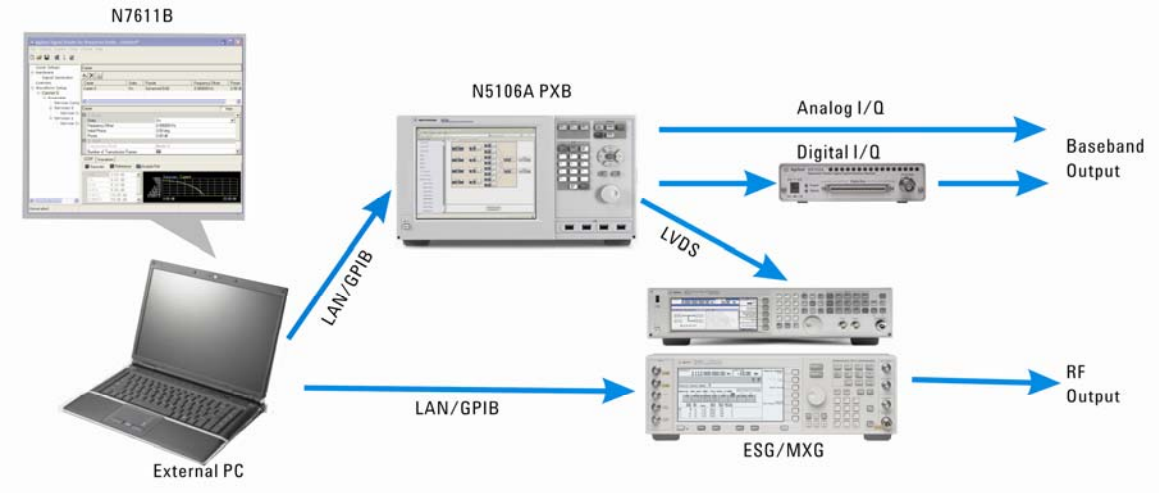
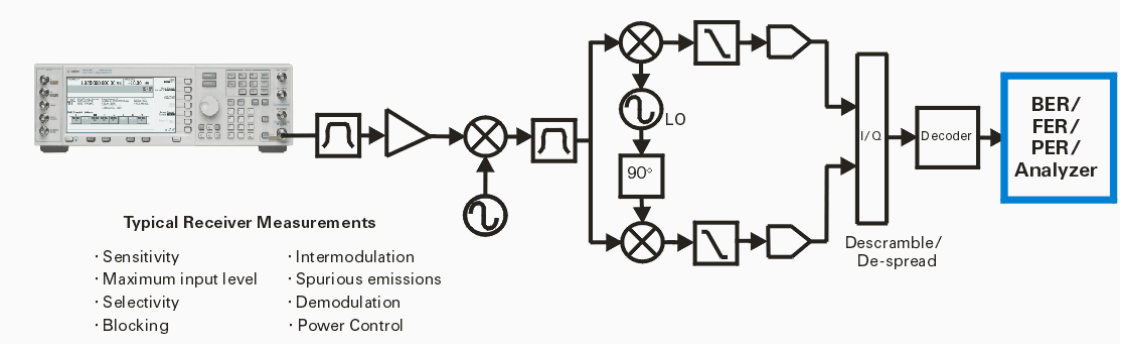


Figure 2. Measurement Platform with N7611B

Using the N7611B software with the PXB and ESG/MXG allows you to generate the baseband and RF signals required for test configurations specified in the standard, enabling thorough testing of your broadcast radio receivers and components. With the introduction of the N5106A PXB, real-time AWGN, real-time fading, and interference can be added to the wanted signal in one instrument.

Receiver Test

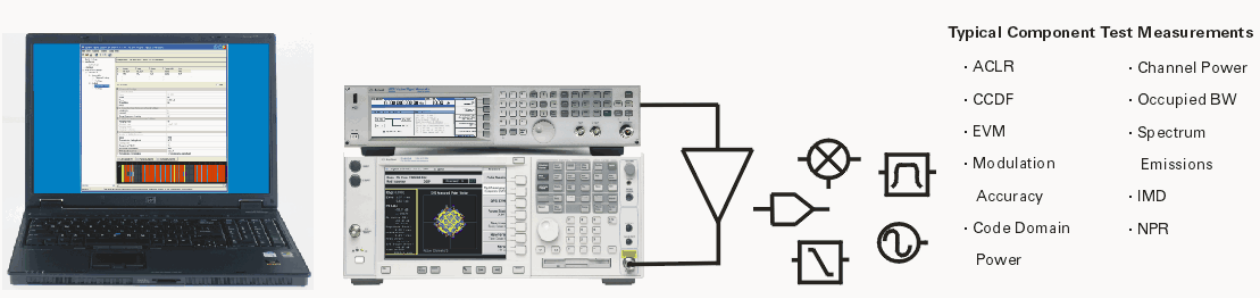


For Broadcast Radio receiver development, N7611B Signal Studio for Broadcast Radio provides flexibility in signal creation, enabling you to generate FM stereo signals as well as RDS test stimuli needed to perform measurements throughout the design process. RDS functions such as EON, TP, TA, PTY, PS, AF, CT, and RT can be tested. Also, the performance of receivers can be measured by altering RF output frequencies and output levels.

The N7611B software also provides flexibility in configuring DAB/DAB+/T-DMB signals. You can set up the payload types and associated parameters for individual service components or for the whole ensemble. For individual service components, choices for payload sources include demo files for typical DAB/DAB+ receiver testing, test patterns for BER testing, and your own audio files. For ensembles, ETI stream files, which are read by the software to automatically set related parameters, are used as payload. The software also provides Demo ETI files, such as DAB tone, DAB+ tone, and slideshow. The following tests defined in BS EN 50248, Characteristics of DAB receivers are supported:

- Sensitivity (7.3.1)
- Maximum input power (7.3.2)
- Selectivity (7.3.3)
- Performance in a Rayleigh channel (7.3.4)

Component Test



Quickly and easily characterize your components using customized FM stereo/RDS or DAB/DAB+/T-DMB waveforms. Signal Studio for Broadcast Radio generates versatile FM stereo/RDS and DAB/DAB+/T-DMB waveforms, enabling you to measure frequency accuracy, linearity, and power efficiency of amplifiers and other components, which greatly facilitate the manufacturing, quality assurance, and maintenance of products.

To conduct component tests, you also need a signal analyzer to receive and monitor the quality of the signals passed through the component-under-test. For FM/RDS signals, the Agilent N9063A analog demodulation measurement application on an X-Series signal analyzer provides easy-to-use, one-button measurements. For DAB/DAB+/T-DMB signals, the Agilent E9285B digital video modulation analysis software with the DAB/DAB+/T-DMB option provides a detailed view of the DAB signal.

For more information, visit www.agilent.com/find/N9063A and www.agilent.com/find/E9285B.

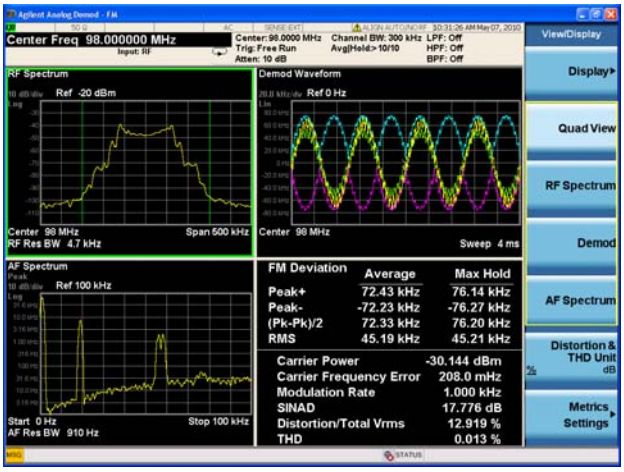


Figure 3. N9063A measurement application for FM/RDS signals

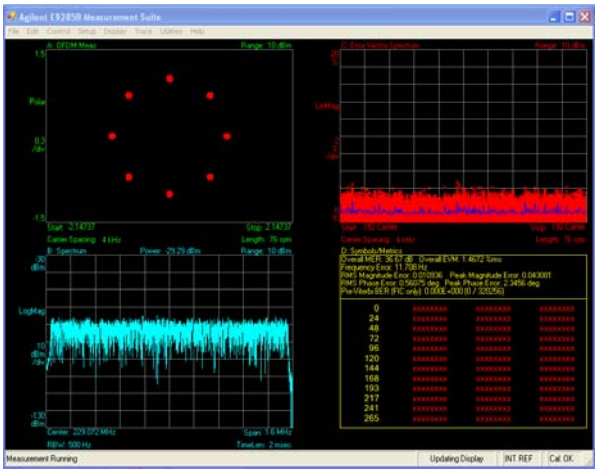


Figure 4. E9285B software for DAB/DAB+/T-DMB

Supported Standards

Formats	Standards
FM Stereo/RDS	IEC 62106:1999 standard
DAB	ETSI EN 300 401 V1.3.3
ETI	ETS 300 799, September 1997

Performance Characteristics

FM Stereo/RDS Performance

Test condition: Digital mode, 1 kHz rate, 75 kHz deviation

Performance: Deviation accuracy < 0.5 % of the FM deviation, Distortion < 0.5 %

DAB Performance

Frequency: 229.072 MHz

Mode	Measured MER (dB)
Mode 1	39.15
Mode 2	39.56
Mode 3	42.44
Mode 4	41.80

Recommended Configuration

N5162A MXG ATE vector signal generator

N7611B Signal Studio software with the following options[1]:

N7611B-3FP	Connectivity to the N5162A MXG ATE vector signal generator
N7611B-QFP	Advanced FM Stereos/RDS
N7611B-RFP	Advanced DAB
N7611B-SFP	ETI support for DAB/DMB

N5162A MXG ATE with the following options:

N5162A[2]	N5162A MXG ATE vector signal generator
N5162A-503	250 kHz to 3 GHz frequency range
N5162A-651, 652, or 654	Internal baseband generator, 30 MSamples, 60 MSamples/s, or 125 MSamples, 8 MSamples waveform memory
N5162A-019	Increase baseband generator memory to 64 MSa (recommended)
N5162A-403	Calibrated Noise (AWGN) personality, required in C/N test (recommended)
N5162A-UNV[4]	Enhanced dynamic range

N5182A MXG vector signal generator

N7611B Signal Studio software with the following options[1]:

N7611B-3FP	Connectivity to the N5182A MXG vector signal generator
N7611B-QFP	Advanced FM Stereos/RDS
N7611B-RFP	Advanced DAB
N7611B-SFP	ETI support for DAB/DMB

N5182A MXG with the following options:

N5182A[3]	N5182A MXG vector signal generator
N5182A-503	250 kHz to 3 GHz frequency range
N5182A-651, 652, or 654	Internal baseband generator, 30 MSamples, 60 MSamples/s, or 125 MSamples, 8 MSamples waveform memory
N5182A-019	Increase baseband generator memory to 64 MSa (recommended)
N5182A-403	Calibrated Noise (AWGN) personality, required in C/N test (recommended)
N5182A-UNV[4]	Enhanced dynamic range

1 Recommended options are for a fixed, perpetual license; transportable and time-based license options are also available.

2 N5162A requires firmware revision A.01.42 or later for the basic capabilities and firmware revision A.01.50 or later for the advanced capability. Download firmware from www.agilent.com/find/upgradeassistant.

3 N5182A requires firmware revision A.01.10 or later for the basic capabilities and firmware revision A.01.50 or later for the advanced capability. Download firmware from www.agilent.com/find/upgradeassistant.

4 For improved ACP performance.

E4438C ESG vector signal generator

N7611B Signal Studio software with the following options[1]:

N7611B-1FP	Connectivity to the E4438C ESG vector signal generator
N7611B-QFP	Advanced FM Stereos/RDS
N7611B-RFP	Advanced DAB
N7611B-SFP	ETI support for DAB/DMB

E4438C ESG with the following options:

E4438C[2]	E4438C ESG vector signal generator
E4438C-005	6 GB internal hard drive
E4438C-403	Calibrated noise (AWGN), required in C/N test (recommended)
E4438C-503	250 kHz to 3 GHz frequency range
E4438C-602[3]	Internal baseband generator (64 MSa memory)
E4438C-UNJ	Enhanced phase noise performance (recommended)

1 Recommended options are for a fixed, perpetual license; transportable and time-based license options are also available.

2 E4438C requires firmware revision C.04.84 or later for the basic capabilities and firmware revision C.05.24 or later for the advanced capability. Download firmware from www.agilent.com/find/upgradeassistant.

3 Earlier baseband Options 001 and 002 are also supported.

N5106A PXB baseband generator and channel emulator

Download standards-based radio waveforms from the N7611B Signal Studio for Broadcast Radio software to the Agilent N5106A PXB baseband generator and channel emulator and apply these waveforms to simulate real-world channel conditions for your DUT with single channel and multiple channel coexistence configurations.

N7611B Signal Studio software with the following options:

N7611B-6FP	Connectivity to the N5106A PXB baseband generator and channel emulator
N7611B-QFP	Advanced FM Stereos/RDS
N7611B-RFP	Advanced DAB
N7611B-SFP	ETI support for DAB/DMB

N5106A PXB with the following options

N5106A-186 — Digital video application bundle including:

- 612 — 2 DSP blocks on 1 baseband card
- 632 — 2 I/O ports - 2 analog I/Q out and 2 digital I/O on 1 I/O card
- EFP — Baseband generation
- JFP — Calibrated AWGN
- QFP — Fading with SISO channel models

Free Trials

Try the software today. Evaluate the user interface and generate signals for 14-days prior to purchase.

To evaluate the user interface

- Every Signal Studio software package can be installed on your PC
- No license is required

To generate signals[1]

- One-time, 14-day free trial license
- Enables signal generation on MXG, ESG, or PSG vector signal generators
- 14-day clock starts upon license redemption
- Enables the playback of waveforms on a specific signal generator
- Enables all optional capabilities in the software
- Can be redeemed for multiple signal generators, one per instrument serial number

To redeem a trial license[2]

- Method 1: Go to www.agilent.com/find/signalstudio, select a Signal Studio product, and then select "Free Trial License"
- Method 2: Install the Signal Studio software and select "Get a Free Trial" in the Online Documentation main menu

Upon trial license expiration

- The trial license will expire 14 days after it is redeemed
- Upon expiration, the signal generator no longer generates signals created by the Signal Studio software
- To continue generating signals, a right-to-use license must be purchased

1 Most Signal Studio software products offer a free trial license. The product summary table indicates which Signal Studio products offer a free 14-day trial.

2 Internet access is required. You will be navigated to the Agilent Software Licensing website.

Flexible Right-to-Use Licenses

Signal Studio software can be installed on multiple users' PCs to create signals for use with Agilent instruments equipped with right-to-use licenses. Flexible right-to-use licensing options are available to meet your specific test needs, schedules, and budget requirements.[1]

Transportable, perpetual license

- Enables generation of the signals created by a specific Signal Studio product on a specific instrument, at any one time
- License is transportable from one instrument to another up to 10 times per month
- Permanent ownership of license
- Ideal for cost-effective single/multi-user, multi-instrument use cases
- Transportable licenses are priced at only a 30% premium relative to fixed, perpetual license

Fixed, time-based license[2]

- Enables generation of the signals created by a specific Signal Studio product on a specific instrument
- License is fixed to a single instrument (not transportable)
- Time-perishable lease of license (1 month)
- Ideal for cost-effective single/multi-user, single-instrument short term and project based use cases
- 1-month time-based licenses are priced at 10% of the fixed, perpetual license

Fixed, perpetual license

- Enables generation of the signals created by a specific Signal Studio product on a specific instrument
- License is fixed to a single instrument (not transportable)
- Permanent ownership of license
- Ideal for single/multi-user, single-instrument use cases

Waveform license[3]

- Enables generation of up to 545 user-configured Signal Studio I/Q waveform files
- License I/Q waveform files from any N76xxB Signal Studio software product on a specific instrument
- License is fixed to a single instrument (not transportable)
- Permanent ownership of license
- Ideal for cost-effective deployment of Signal Studio test signals in manufacturing
- Available in packs of 5 or 50 waveform licenses
- Evaluate each of the waveforms for up to 48 hours before assigning individual licenses

1 Each Signal Studio software license enables signal generation on a specific signal generator (i.e. model number and serial number) at any one time. The Product summary table lists the right-to-use licenses available for each Signal Studio software product.

2 Upon license expiration, the instrument stops generating signals created by the specific Signal Studio software product. To continue generating signals on the instrument, a new right-to-use license must be purchased. Time-based licenses cannot be upgraded to enable additional capability after initial purchase.

3 Only available on N5182A MXG, N5162A MXG ATE, or E4438C ESG vector signal generators; up to 9 Waveform 5-packs (MXG/ESG Options 221-229); up to 10 Waveform 50-packs (MXG/ESG Options 250-259)

Additional Information

Explore the Online Documentation

For more information about this Signal Studio software, explore the online documentation (help), which includes this technical overview, release notes, user interface descriptions, tutorials, installation information, and an easy-to-use configuration assistant to help you determine the right option combination for your test needs. Access the online documentation at:

www.agilent.com/find/n7611b

Related Websites

Agilent Digital Video Industry
www.agilent.com/find/digital_video

Agilent ESG Signal Generator
www.agilent.com/find/esg

Agilent MXG Signal Generator
www.agilent.com/find/mxg

Agilent PXB Baseband Generator and Channel Emulator
www.agilent.com/find/pxb

Agilent MXA Signal Analyzer
www.agilent.com/find/mxa

Agilent E9285B Digital Video Modulation Analysis Software
www.agilent.com/find/e9285b

Agilent N9063A Analog Demodulation Measurement Application

www.agilent.com/find/n9063a

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Other European Countries:
www.agilent.com/find/contactus

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

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