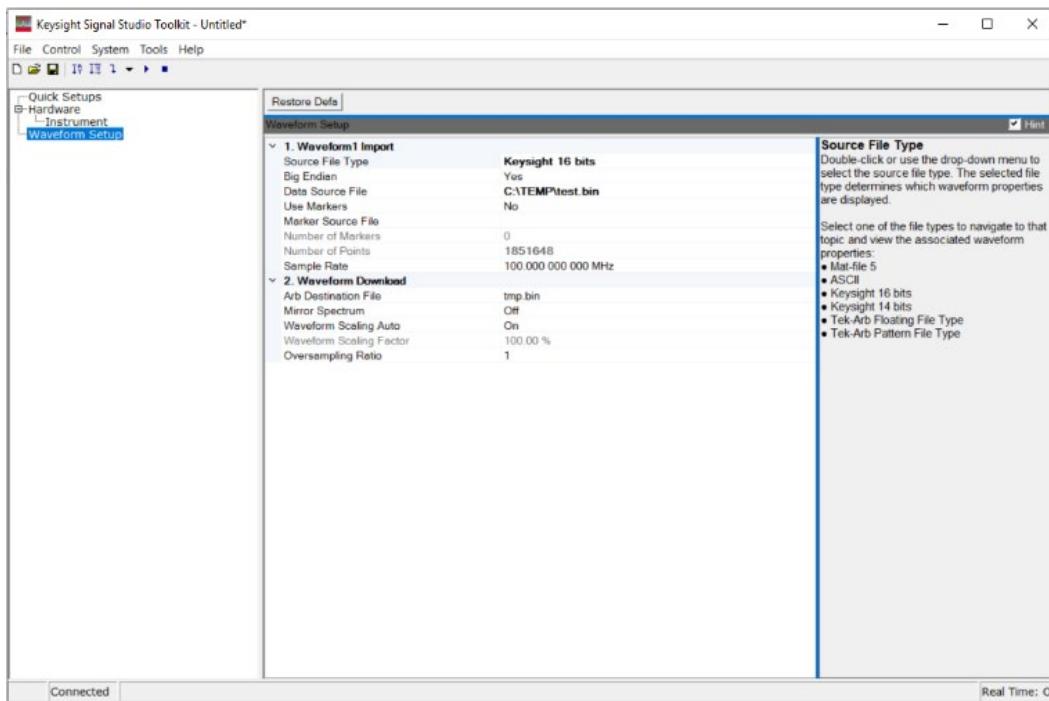


# N7622C Signal Studio for Toolkit

- Free software utility compatible with multiple hardware platforms
- Provides easy-to-use PC-based graphical user interface supporting Win10
- Configure frequency, amplitude, ALC, IQ impairment and adjustment
- Easily change the data sample rate and set oversampling ratio
- Supports multiple common waveform file formats: MATLAB, ASCII/CSV/DAT, Keysight binary and more

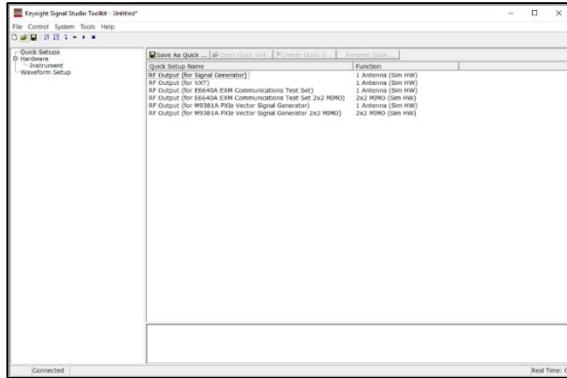


# Easily Download Waveform Files

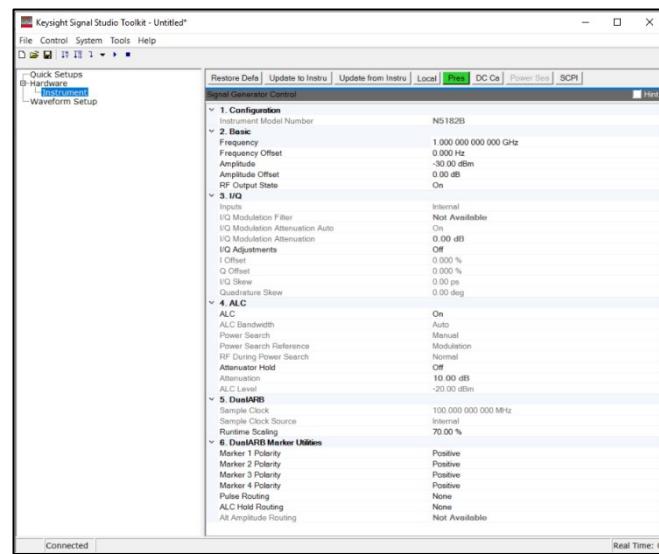
The Keysight Technologies, Inc. N7622B Signal Studio for Toolkit is a free software utility for Keysight vector signal generators that downloads and plays back custom I/Q waveforms. I/Q waveforms created in common development environments, such as MATLAB and C++, are automatically translated into the proper file format for the target baseband generator and then downloaded for playback. Signal Studio for Toolkit features an easy-to-use graphical interface to control the entire waveform download and playback process.

## Download Custom Waveform Files at No Charge

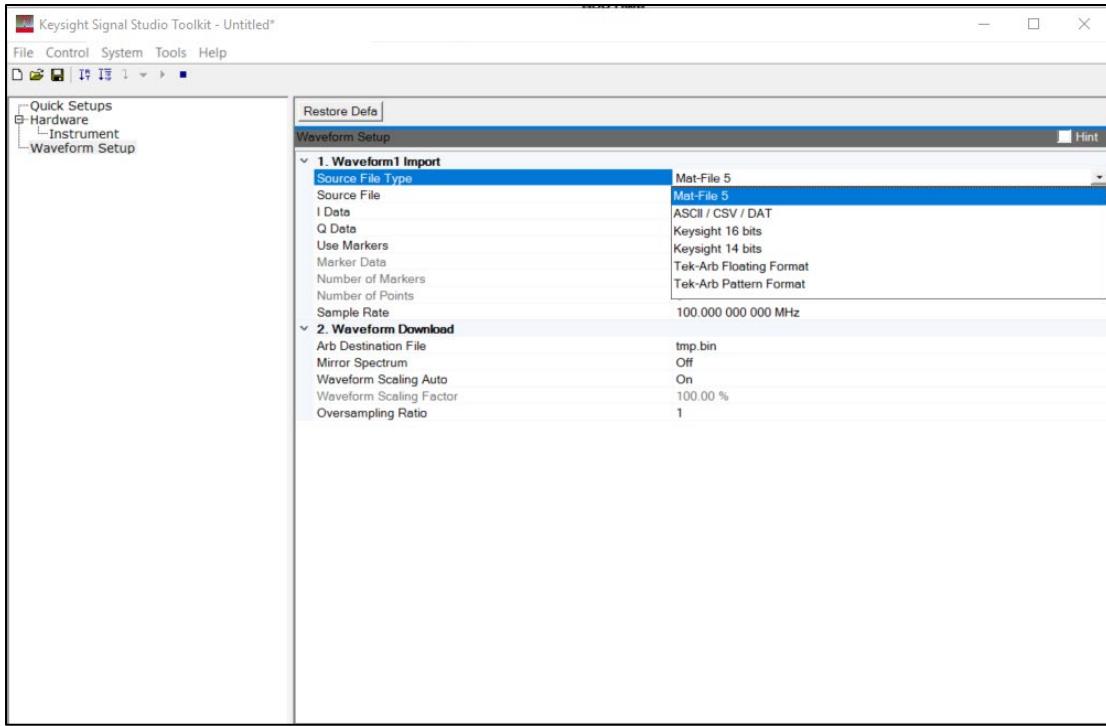
Creating custom waveforms using tools such as MATLAB or C++ then downloading them to an ARB, which converts them to I/Q signals, is a typical practice. The base functionality of Signal Studio for Toolkit provides a free, easy-to-use graphical user interface to control the entire downloading process from one location.



**Figure 1.** Quick Setup help save time and easily repeat tests



**Figure 2.** Set up and control the signal generators' key function from one user interface



**Figure 3.** Signal Studio for Toolkit supports six common file types, automatically loading the wave- form files into the baseband generator

The download utility simplifies downloading waveforms into the signal generator by automatically converting waveforms into the file format required by the baseband generator. The utility supports the following formats:

- MATLAB MAT File 5, 6, 6.5 and 7
- ASCII/CSV/DAT
- Keysight 16 bits
- Keysight 14 bits\*
- Tektronix floating format
- Tektronix pattern format

**Note\*:** For more information regarding Keysight 16 bit and Keysight 14-bit waveform formats, refer to the Keysight E4428C/38C ESG Signal Generators Programming Guide, literature number E4400-90505.

## Marker Capability

The software enables up to four markers to be easily added to the waveform for use as trigger signals or in controlling advanced features of the signal generator, such as the burst modulator. Additional features such as waveform scaling can be used to achieve the best dynamic range of the digital-to-analog converters (DACs).

## Change the Data Sample Rate

Toolkit allows you to change the data sample rate from the user interface and enables downloading and playback of all custom waveform files without time-consuming conversions. The software automatically re-samples the data provided with the supplied waveform sample rate. The re-sampling is accomplished using an FFT and an IFFT. The process is designed to preserve the waveform shape of the provided data and minimize distortion at the end points.

## Application Programming Interface (API)

The N7622C software supports both the Microsoft .NET and COM application programming interfaces (API), which means you can develop your own custom user interface. It enables systematic and efficient configuration of custom waveforms.

Creating a custom interface allows programmatic setting of signal parameters by importing custom data sets or using programming loops and mathematical functions rather than manually entering data in the Signal Studio graphical user interface. The entire signal configuration and playback process can be easily automated in your own programming environment using the API. The API's built-in Help System provides information and programming examples to assist you in creating your custom interface.

# Ordering Information

## Software configuration and licensing

Free download - no license required

Visit [www.keysight.com/find/n7622c](http://www.keysight.com/find/n7622c) and download the free N7622C Signal Studio for Toolkit software to your PC. There is no license required for this utility that enables you to download custom waveforms from a PC to the internal baseband generator inside a Keysight signal generator.

## Signal Studio for Toolkit Configuration

Signal Studio for Toolkit requires one of the following:

- N5166B CXG vector signal generator
- N5172B EXG vector signal generator
- N5182B MXG vector signal generator
- N5182A MXG RF vector signal generator
- E4438C ESG vector signal generator
- E8267D PSG vector signal generator
- M9420A/M9421 PXIe vector transceiver
- M9381A PXIe vector signal generator

**Note:** To view waveforms, a Keysight X-Series signal analyzer is recommended. Visit [www.keysight.com/find/x-series](http://www.keysight.com/find/x-series) for X-Series product information.

# Hardware Configurations

## N5166B/N5172B/N5182B CXG/EXG/MXG vector signal generator

Model-Option	Description	Notes
503 or -506	9 kHz to 3 or 6 GHz frequency range	One required
653, 655, 656 or 657	Internal baseband generator, 60, 120, 80 or 160 MHz RF bandwidth	One required
021, 022 or 023	Increased baseband generator memory from 32 Msa to 256 Msa, 512 Msa or 1Gsa	Memory extension if needed

## N5182A MXG vector signal generator

Model-Option	Description	Notes
N5182A-503 or -506	250 kHz to 3 or 6 GHz frequency range	One required; requires firmware revision A.01.04 or later
N5182A-651, -652 or -654	Internal baseband generator, 30, 60, or 125 MSa	One required
N5182A-019	Increased baseband generator memory	64 MSa memory; required when waveform is greater than 8 MSa
N5182A-UNV	Enhanced phase noise performance	For improved ACP performance
N5182A-1EL	Differential I/Q outputs	Required for use with external arbitrary waveform generator

## E4438C ESG vector signal generator

Model-Option	Description	Notes
E4438C-501, -502, -503, -504, or -506	250 kHz to 1, 2, 3, 4 or 6 GHz frequency range	One required; requires firmware revision C.04.10 or later
E4438C-601 or -602	Internal baseband generator, 8 or 64 MSa	One required
E4438C-005	6 GB hard disk drive	Recommended
E4438C-UNJ	Enhanced phase noise performance	Required with Option 506

## E8267D PSG vector signal generator

Model-Option	Description	Notes
E8267D-520, -532, or -544	250 kHz to 20, 31.8, or 44 GHz frequency range	One required; requires firmware revision C.04.01 or later
E8267D-601 or -602	Internal baseband generator, 8 or 64 MSa	One required
E8267D-015	Wideband external I/Q input	Required for use with external arbitrary waveform generator

# Additional Resources

## Websites

### Signal Studio for IQ Toolkit:

[www.keysight.com/find/n7622c](http://www.keysight.com/find/n7622c)

This web page also references links to online documents including configuration assistance.

### PathWave Signal Generation (Signal Studio) software

[www.keysight.com/find/signalstudio](http://www.keysight.com/find/signalstudio)

### PathWave Signal Generation (Signal Studio) software supported hardware

[www.keysight.com/find/signalstudio\\_platforms](http://www.keysight.com/find/signalstudio_platforms)

### PathWave Signal Generation (Signal Studio) software 30-day trial license

[www.keysight.com/find/signalstudio\\_trial](http://www.keysight.com/find/signalstudio_trial)

### Signal generators:

[www.keysight.com/find/sg](http://www.keysight.com/find/sg)

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at [www.keysight.com](http://www.keysight.com).