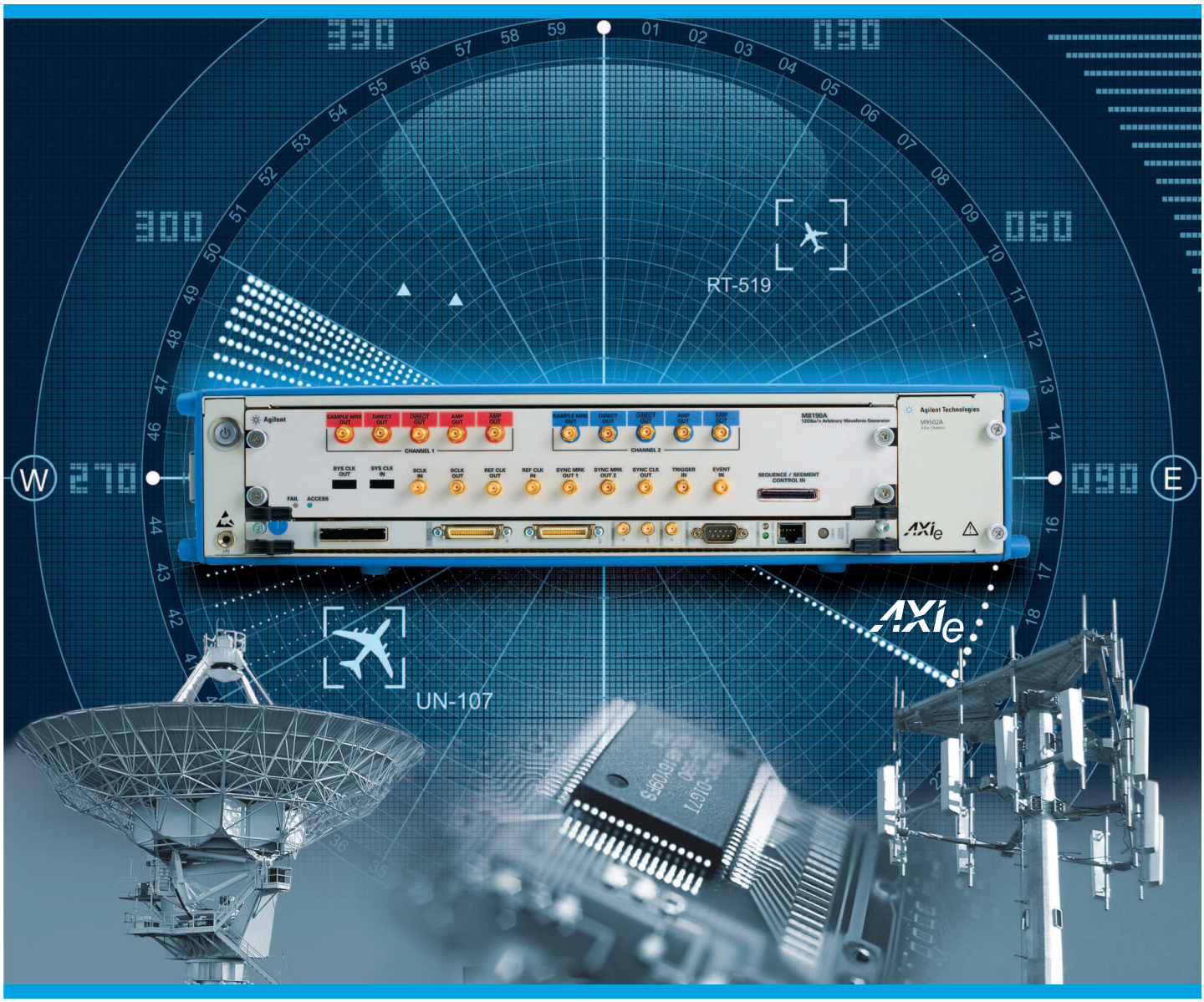
Enhance your reality

M8190A Arbitrary Waveform Generator

12 GSa/s Arbitrary Waveform Generator

Version 1.2



Anticipate ___Accelerate ___Achieve

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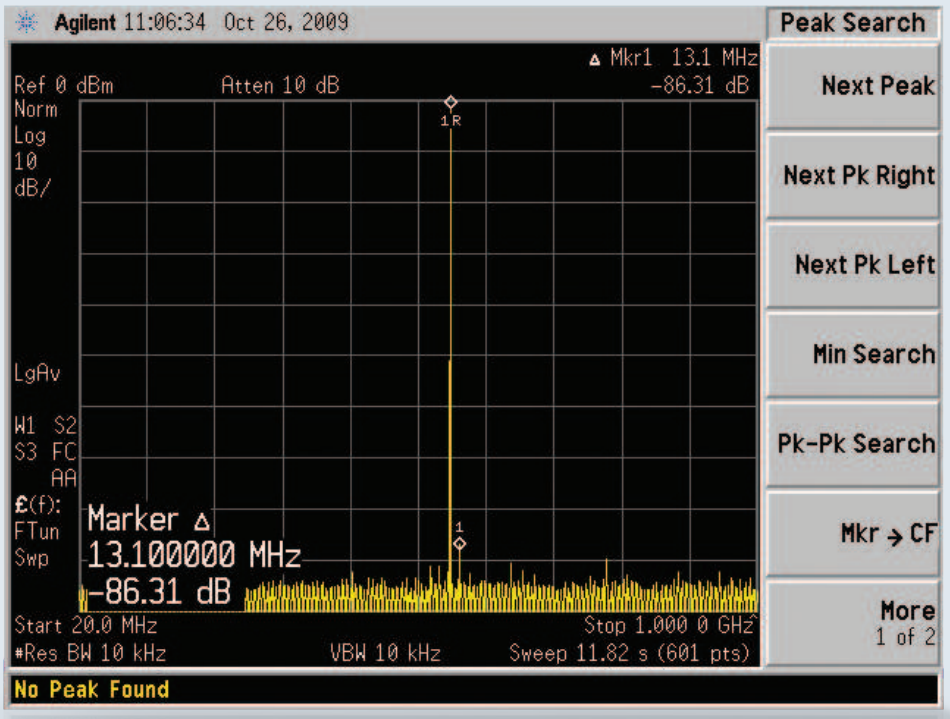


High resolution + wide bandwidth in an AWG.

M8190A 12 GSa/s
Arbitrary Waveform Generator (AWG)

M8190A at a glance

- Precision AWG with two DAC settings
  - » 14-bit resolution up to 8 GSa/s
  - » 12-bit resolution up to 12 GSa/s
- Variable sample rate from 125 MSa/s to 8/12 GSa/s
- Spurious-free-dynamic range (SFDR) up to 80 dBc typical
- Harmonic distortion (HD) up to –72 dBc typical
- Up to 2 GSa arbitrary waveform memory per channel with advanced sequencing
- Analog bandwidth 5 GHz

Three amplifiers for different applications

- **Direct DAC** — optimized for best SFDR & HD
  - SFDR up to –80 dBc (typ), f_{out} = 100 MHz, measured DC to 1 GHz
  - Amplitude ~350 mVpp ... 700 mVpp, offset –20 mV ... +20 mV
  - Differential output
- **DC amplifier** [1] — optimized for serial data/time domain applications
  - Amplitude 500 mV_{pp} ... 1.0 V_{pp}; output voltage window: –1.0 V ... +3.3 V
  - $t_{rise/fall, 20\% - 80\%}$ < 60 ps
  - Differential output
- **AC amplifier** [1] — optimized to generate high voltage, high bandwidth signals
  - 50 MHz to 5 GHz bandwidth
  - Single ended, AC coupled output
  - Amplitude: 200 mV_{pp} ... 2.0 V_{pp}
- Form-factor: 2 U AXIe module, controlled via external PC or AXIe system controller
- Supported software: Agilent Benchlink Waveform Editor, MATLAB, LABVIEW, Agilent Signal Studio (pulse builder and multitone [2]), Agilent SystemVue, Agilent Wideband Waveform Center

1 AMP option

2 Planned

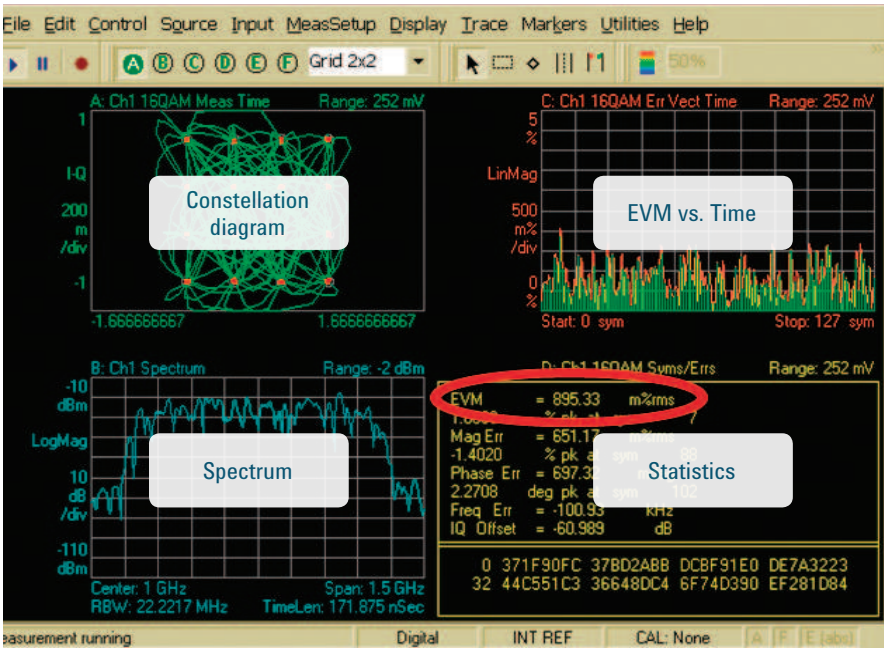
Enhance Your Reality

Get reliable, repeatable measurements from precise signal simulations

A better name for an advanced arbitrary waveform generator is a "signal scenario generator" or SSG.

This description signifies a level of versatility that enables you to set up complex real-world signals—whether you need precise signals to characterize the performance of a design or need to stress a device to its limits. From low-observable radar to high-density communications, testing is more realistic with precision arbitrary waveform generation from an SSG.

Take reality to the extreme: An Agilent AWG is the source of greater fidelity, delivering high resolution and wide bandwidth—simultaneously. This unique combination lets you create signal scenarios that push your designs to the limit and bring new insights to your analysis. Get bits and bandwidth—and enhance your reality.



High-quality signal generation is the foundation of reliable and repeatable measurements. The Agilent M8190A ensures accuracy and repeatability with 14-bit resolution, up to 8 GSa/s sampling rate and up to 80 dBc SFDR. High dynamic range and excellent vertical resolution gives you confidence that you are testing your device, not the signal source.

As an example, a test setup that exhibits a high error vector magnitude (EVM) reading might prevent you from seeing problems within your device under test (DUT). The level of reality possible with the M8190A minimizes problems like this.

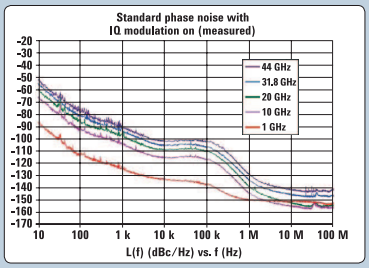
Versatile

Optimize the output to match your application

An AWG is the most versatile signal scenario generator possible. Capabilities such as easy switching between 14-bit output at 8 GSa/s and 12-bit output at 12 GSa/s help you handle multiple applications and measurement requirements.

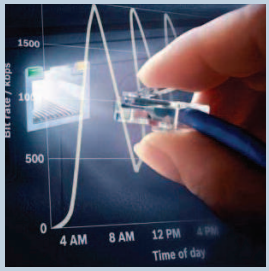
Because every application calls for different signal characteristics, the Agilent M8190A also contains three amplifiers that are optimized for I/Q signals, IF/RF output, or clean time-domain signals. You can switch between them as needed through software commands.

Optimized for different signal characteristics



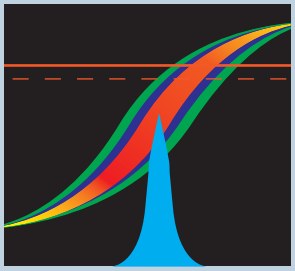
Best SFDR and HD

- Single-ended or differential output
- Amplitude 350 mV_{pp} ... 700 mV_{pp}, single-ended
- Offset –20 mV ... +20 mV
- Direct output



High bandwidth high voltage

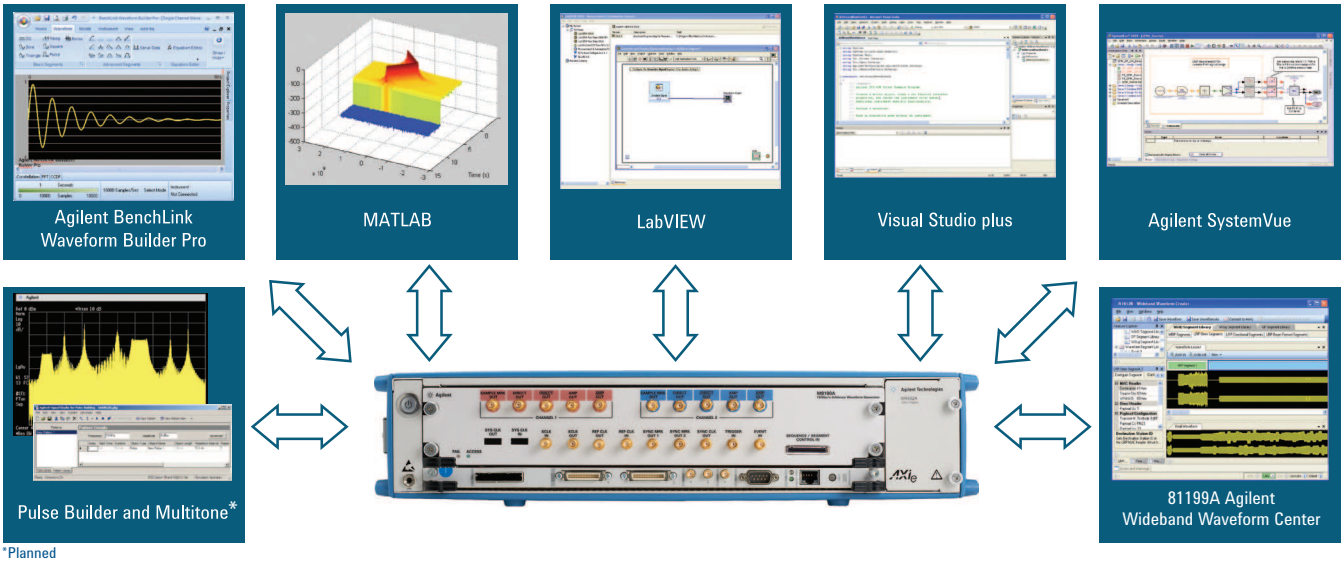
- Up to 5 GHz
- Single-ended, AC coupled output
- Amplitude 200 mV_{pp} to 2.0 V_{pp}, single-ended
- AC amplifier [1]



Time domain measurements low jitter

- Single-ended or differential, DC-coupled output
- Amplitude 500 mV_{pp} ... 1.0 V_{pp} single-ended
- Output voltage window –1.0 V to +3.3 V
- Transition times (20/80) < 60 ps
- DC amplifier [1]

1 AMP option



*Planned

Memory

Highly realistic testing often requires long play times and long signal scenarios

For example, 2 GSa of memory combined with advanced sequencing capabilities allow you to use the memory efficiently and effectively.

Direct access to individual memory segments is possible in real time through the dynamic sequence control input. You can create waveforms in software applications such as Signal Studio and MATLAB and download them into the M8190A.

For sensitive applications, memory storage is not persistent: Memory contents are volatile and are erased when power is turned off.

Create complex signal scenarios—efficiently