Agilent Technologies
Pulse Pattern and Data Generators

For Digital and Analog Testing

Leading versatile and precise stimulus through ideal and real-world signals

In Design and Manufacturing

Agilent Technologies

Pulse Generators

Agilent Technologies offers a comprehensive portfolio of signal generation instruments for analog and digital waveforms and data signals.

Whether your application calls for:

- Demanding digital pulses
- High-speed clock signals
- Square waves
- Flexible serial or
- Parallel bit patterns and data streams
- Sine waves or arbitrary waveforms
- Modulation to shape the signal DUT needs
- Jitter and noise generation to test your device to its limits

Agilent Technologies provides the stimulus solution you are looking for.

Choose the performance you need from the portfolio of reliable pulse generators, the data generator platform with up to 132 parallel channels or the multi-purpose pulse function arbitrary noise generator instruments.

Agilent's family of stimulus instruments comprises:

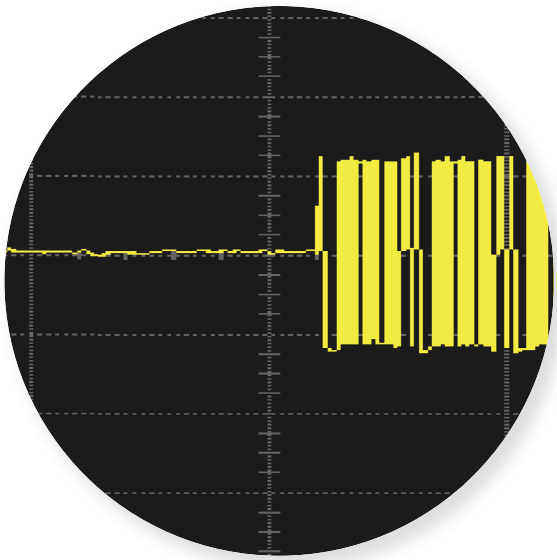
- Pulse generators
- Pattern generators
- Data generators
- PRBS generators
- Jitter generators
- Noise generators
- Controllable jitter injection
- Timing generators
- Function arbitrary generators

Agilent provides the perfect signal generation instrument for your application.

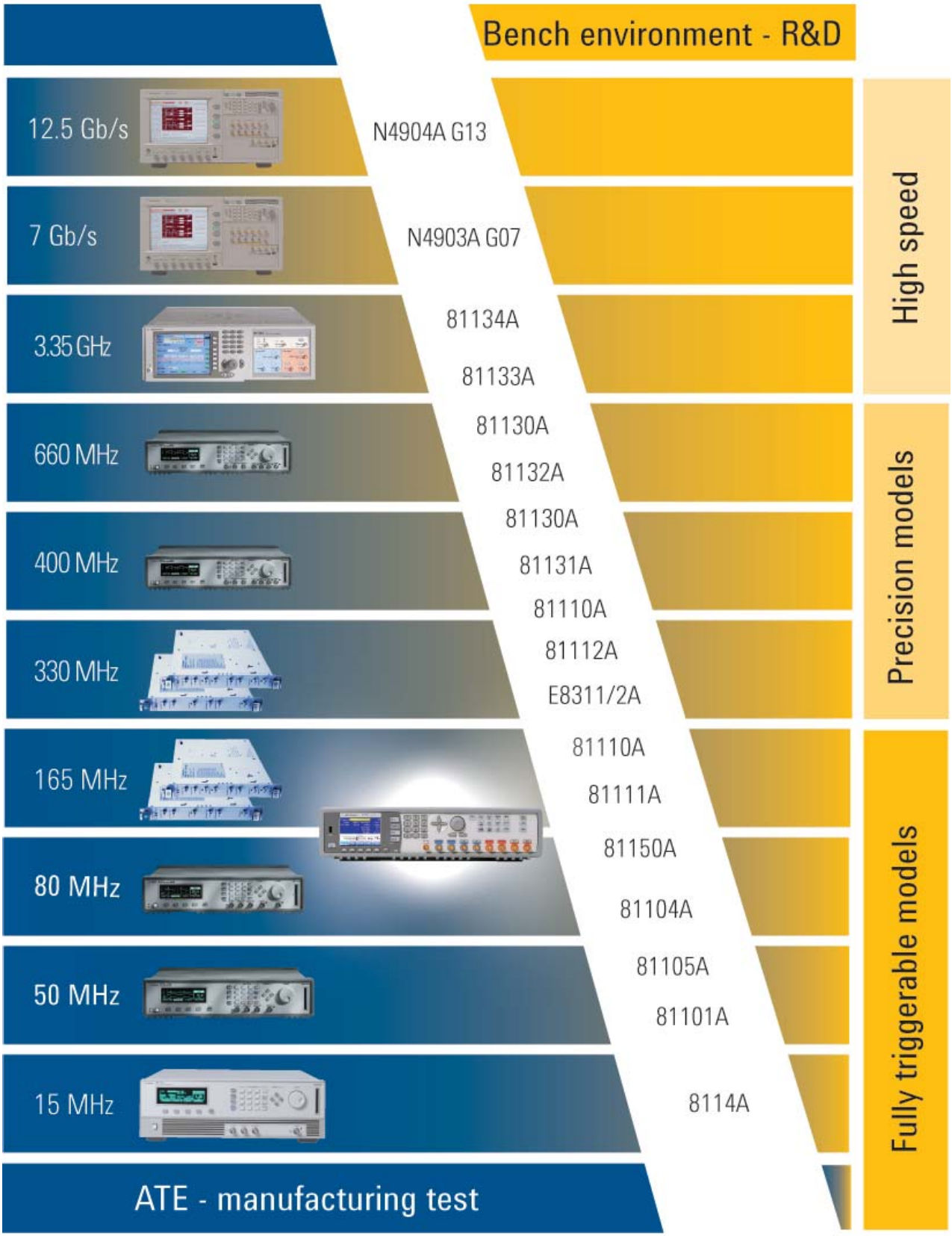
Whether you:

- Require powerful pulses for the latest generation of laser diodes,
- Need to characterize a high-speed serial bus device at the physical layer, or
- Need to get a detailed insight into your system's signal integrity,

Agilent's pulse pattern generators and pulse function arbitrary noise generator deliver the reliable and accurate results you require.



Pulse Pattern Generators



Key Applications at a Glance

Application	8114A	81101A	81104A 81105A	81150A	81111A	81110A 81112A	81130A 81132A	E8311A	E8312A	81133A	81334A	N4903A-G07/G13	81250A
Clock generation		●	●	●	●	●	●	●	●	●	●	●	●
System trigger source		●	●	●	●	●	●	●	●	●	●	●	●
Diodes - LEDs	●	●	●		●			●					
Laser or IR diodes	●												
Radar test				●	●	●		●	●				●
Mixed signal devices			●	●	●	●		●	●				
Flash chip test			●		●			●					
EEPROMs	●												
High power semi-conductors	●												
PRBS generation			●		●	●	●	●	●	●	●	●	● PRWS
Data generation < 56 kBit			●		●	●	●	●	●	●	●	●	●
Data generation > 56 kBit										●	●	●	●
Data looping							●					●	●
Serial bus test < 1 GBit/s		●	●		●	●	●						
High speed serial bus test > 1 GBit/s							●						
Signal integrity test				●						●	●	●	●
Jitter (stress) test				●						●	●	●	●
Noise immunity test				●						●	●	●	

Product Specifications at a Glance

Specification	8114A	81101A	81104A 81105A	81150A	81111A	81110A 81112A	81131A	81130A 81132A	E8311A	E8312A	81133A	81334A	81250A	N4903A-G07/G13
Frequency range	1 Hz - 15 MHz	1 MHz - 50 MHz	1 MHz - 80 MHz	1 µHz - 120 MHz	1 MHz - 165 MHz	1 MHz - 330 MHz	1 KHz - 400 MHz	1 kHz - 660 MHz	1 mHz - 165 MHz	1 mHz - 330 MHz	15 MHz - 3.35 GHz	15 MHz - 3.35 GHz	1 kHz - 2.7 GBit/s	150 mHz - 135 GHz
Number of channels	1	1	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	2[1]	2[1]	1	2	2-132	1
Optional 2nd channel retrofitable			●		●	●	●	●					● Max 132	
Amplitude range (Volts)	1 V - 100 V	100 mV - 20 V[3]	100 mV - 20 V[3]	100 mV - 20 V[4]	100 mV - 20 V	100 mV - 3.8 V[3]	100 mV - 3.8 V	100 mV - 2.5 V	100 mV - 20 V	100 mV - 3.8 V	100 mV - 2 V	100 mV - 2 V	100 mV - 1.8 V	100 mV - 1.8 V
Differential outputs				●		●	●	●		●	●	●	●	●
LDVS levels				●							●	●	●	●
Triggerable	●	●	●	●	●	●			●	●			●	●
Gate mode	●	●	●	●	●	●	●	●	●	●				
Remotely programmable	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Pulse generation	●	●	●	●	●	●	●	●	●	●	●	●		●
Pattern & data generation			●	●	●	●	●	●	●	●	●	●	●	●
PRBS generation			●		●	●	●	●	●	●	●	●	●	●
Bursts	●	●	●		●	●	●	●	●	●	●	●		●
Data bursts			●		●	●	●	●	●	●	●	●		●
Memory (kBit/channel)			16 KBit /ch.	512 Ksamples/ ch.	16 KBit /ch.	16 KBit /ch.	64 KBit /ch.	64 KBit /ch.	16 KBit /ch.	16 KBit /ch.	12 KBit /ch.	12 KBit /ch.	8 KBit /ch.	32 KBit /ch.
PRBS variations (2n-1)			n = 7, 8, ... 14		n = 7, 8, ... 14	n = 7, 8, ... 14	n = 7, 8,... 15	n = 7, 8,... 15	n = 7, 8, ... 14	n = 7, 8, ... 14	n = 5, 6, ... 32	n = 5, 6, ... 32	n = 7, 8, ... 31 (PRWS)	n = 5, 6, ... 32
Segment looping							4 seg. 1 looping level	4 seg. 1 looping level					Mult. seg.; up to 5 looping levels	4 seg. 1 looping level
Controlled jitter injection				●							●	●		●
Variable width	●	●	●	●	●	●	●	●	●	●	●	●		●
Variable delay	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Glitch-free timing changes (patented)		●	●	●	●	●			●	●	Note 2 ●	Note 2 ●		●
Analog channel add			●		●				●					
Digital channel add				●			●	●					●	●
Multi-level signals			●	●	●				●				●	●
Sine waves				●										
Modulation				●										
Noise with adjustable crest factor				●										
Uncouple				●										
Couple				●										

1. *VXI modules with 2 channels per module - multiple modules can be combined in one VXI-frame for multi-channel applications*
2. *Glitch-free frequency changes only in "direct" clock mode with external clock source*
3. *81101A, 81104A, and 81110A amplitude is 1 kΩ into 50 Ω.*
4. *5 Ω into 50 Ω*

Pulse Generation

Pulse generation and signal parameters

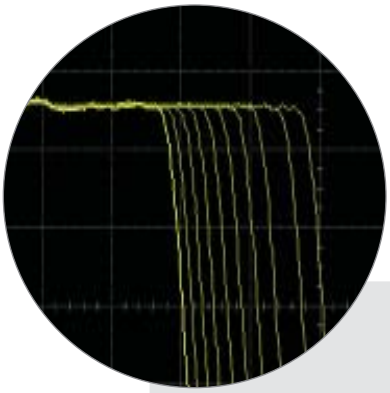
A pulse generator provides full control over all pulse parameters like timing, levels and edges as shown in the diagram below.

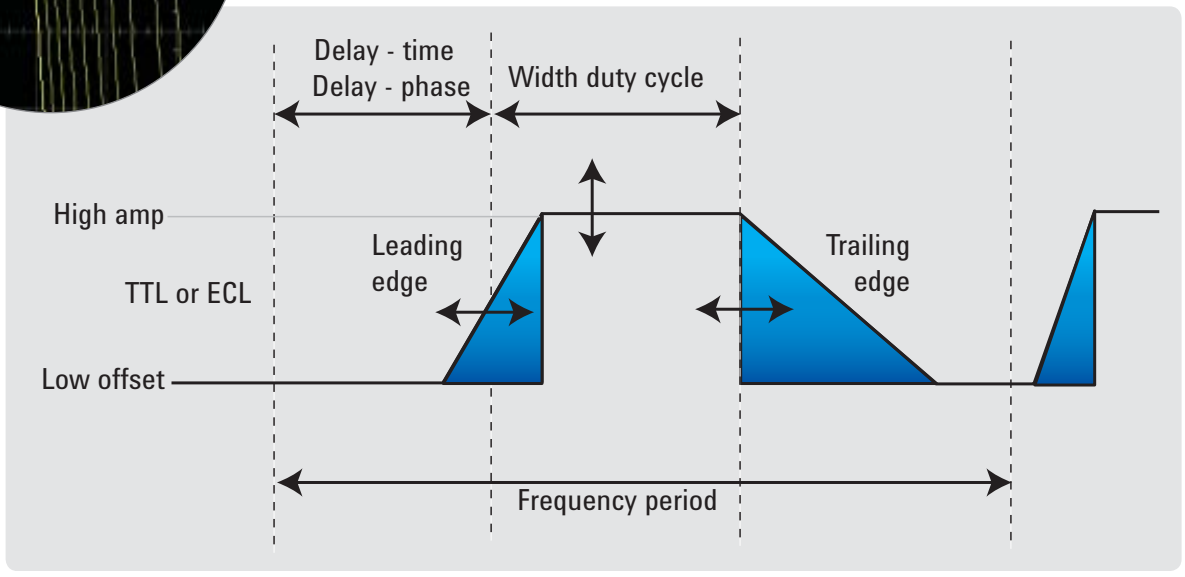
It is used to set up continuous or triggered pulse streams and offers flexibility to address the most challenging applications.

All parameters can be adjusted to meet the needs of the specific application. Pulse generation capability is provided by all models. The pulse function arbitrary noise generator provides all flexibility to generate ideal and worst-case signals. The Agilent instruments cover a frequency range from 1 mHz to 3.35 GHz and an output amplitude range from 50 mV up to 100 V.

Glitch-free timing changes

The Agilent 81101A, 81104A, 81150A, and 81110A uniquely allow timing parameter changes, such as changing the frequency, without dropouts or glitches. This industry-leading feature enables continuous operation without rebooting or resetting the device under test, when measuring a PLL pull-in and hold range for instance, or to characterize a device over a sweeping clock frequency.





From Pulse to Pattern, Data and PRBS

Pulse pattern generators not only generate single impulses, bursts or continuous pulse streams as mentioned before.

Their pattern capability also allows the generation of data signals. This versatility is key to digital device test applications, for example for compliance tests.

In pattern mode, the same full control over the signal output is available as in the traditional pulse generation mode. This allows the generation of uncounted forms of data signals, including standard Non-return-to-zero (NRZ) signals, or data bursts with programmable pulse width with additional delay to the clock signal.

Apart from user defined data signals, standardized pseudo random binary sequences (PRBS) can also be generated.

The ability to create user-defined bit patterns, standard compliant data and PRBS make the Agilent pulse pattern generators the ideal source for:

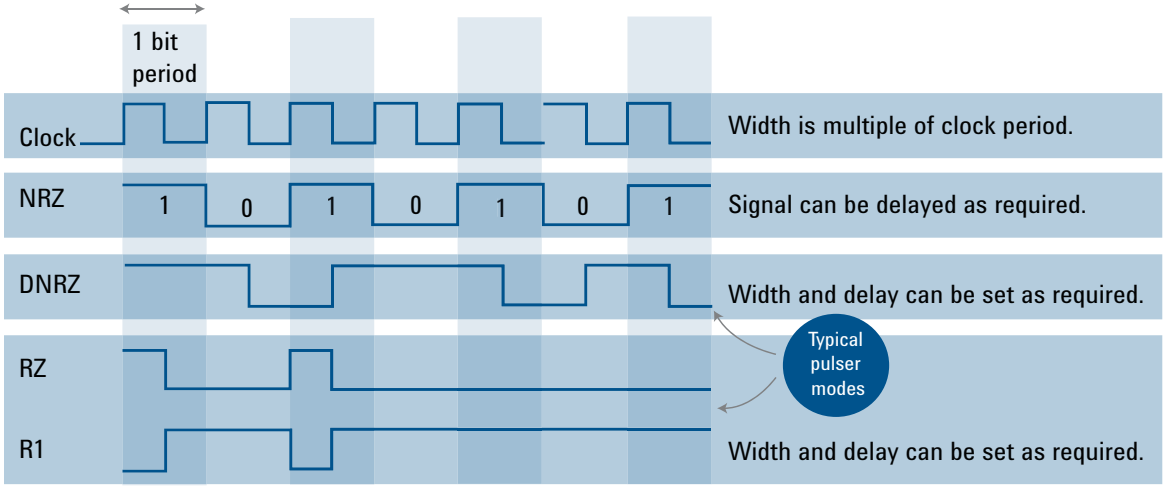
- Stimulated eye diagram measurements
- Cross-talk measurements
- Compliance tests
- Jitter tests
- Signal integrity measurements
- Stress tests for receivers

With the VXI modules E8311A and E8312A and the 81250A data generator and analyzer platform, modular and parallel pulse and data applications can be addressed with up to 132 parallel channels. The 81130A's data looping capabilities or the 12 MBit deep memory and the PC based pattern management tool of the 81133A and 81134A enable you to generate 'real-life' data sequences for today's latest technology, like serial high-speed busses.

Pulse pattern generators provide all the tools to generate the data packets needed for digital bus device tests: integrated pattern editors, PC-based graphically enhanced data and pattern management software, segment looping features as well as hardware-generated PRBS. This enables engineers to quickly gain detailed insight into their digital bus device - including devices for:

- USB 2.0
- Serial ATA
- PCI Express
- Firewire and more

These tools allow the easy carrying out of all measurements from physical layer characterization, signal integrity, and jitter measurements, to complete standard compliance test.



From Digital to Analog

Mixed signal devices require analog signals and modulation capabilities.

Combining different instruments like a pulse generator, function arbitrary generator, and noise generator allows you to generate the signal you need, whether it is an ideal pulse or a real-world signal.

The 81150A provides:

- A pulse generator with precise signals for performance verification and characterization
- A function arbitrary generator for versatile signal generation to optimize testing and for modulation to shape the signal to the DUT needs
- A noise generator to distort signals and build worst-case scenarios.

Signal imperfections such as rise time, ringing, glitches, noise and random timing variations can be easily simulated in a controlled manner. Physics, chemistry, biomedicine, electronics, mechanics, and other fields can benefit from the versatility of an arbitrary waveform generator. Wherever things vibrate, pump, pulse, bubble, burst, or change with time, there are applications available – limited only by your ability to specify the waveform data.

The noise generators are needed to distort the signal, controlled and repeatable. Your device under test might require an arbitrary or an Gaussian distribution. A long repetition rate of 26 days guarantee an almost random signal with exact signal repetition. The selectable crest factor guarantees to test even serial bus standards.

81150A pulse function arbitrary noise generator

The Basics: 81101A

81101A 50 MHz pulse generator

The Agilent 81101A 50 MHz pulse generator is the instrument of choice for cost efficient pulse and clock generation.

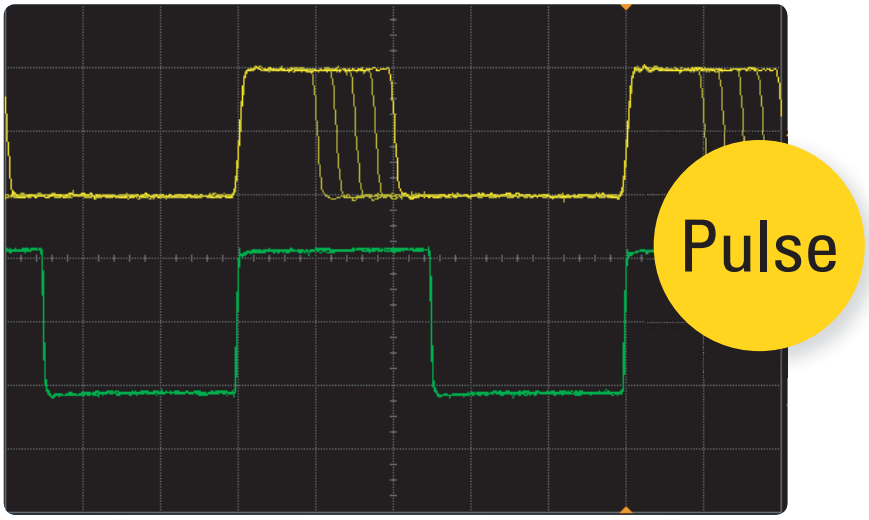
It provides flexibility and full control over all the parameters needed for system clock applications.

The variable transition times range (5 ns to 200 ms) can be set individually for rising and falling edges. In combination with the unique capability to change the timing parameters without glitches, this provides full control over the stimulus signal.

The 81101A is the perfect entry-level instrument for signal generation. And because the portfolio of Agilent Technologies' 81100A pulse pattern generators is designed for compatibility, your equipment can grow with your needs. The 81101A, 81104A, 81110A, 81130A share the same user interface, compatible programming commands and much more!

Complementary products

- D/MSO 601x
- DSO 3000
- D/MSO 6030
- DSO 3062A oscilloscopes
- InfiniiVision 7000 Series oscilloscope



Flexible pulse generation

81101A pulse generator

D/MSO 6030 oscilloscope

Key features 81101A

- 1 channel
- Up to 20 Vpp (into 50 Ω)
- Variable transition times between 5 ns and 200 ms
- Internal and external clocking
- 1 mHz to 50 MHz repetition rate
- Glitch-free timing changes
- Triggerable or internal PLL
- Single ended outputs

The Basics: 81104A

81104A pulse pattern generator with 81105A output channel(s)

Pulse
Pattern
DATA
PRBS

81104A pulse pattern generator

The Agilent 81104A pulse pattern generator offers flexible pulse, data, and PRBS generation with a frequency range up to 80 MHz.

The 81104A can be configured with one or two 81105A output channels. Single channel instruments can easily be upgraded with a second output channel.

The 81104A allows you to generate multi-level signals, using its analog channel-add function. In addition to pulse generation, the 81104A also supports user-defined data patterns as well as pseudo random binary sequences.

Complementary products

- D/MSO 6030
- D/MSO 601x
- D/MSO 3000
- D/MSO 6050/8064A oscilloscopes
- InfiniiVision 7000 Series oscilloscope

Key features 81104A with 81105A

- 1 or 2 channels
- Up to 20 Vpp (into 50 Ω)
- Internal and external clocking
- 1 mHz - 80 MHz repetition rate
- Glitch-free timing changes
- Triggerable or internal PLL
- Data patterns
- Pseudo random binary sequence (PRBS) generation
- Variable transition times between 2 ns and 200 ms
- Single-ended outputs
- Analog channel addition

DSO 80304B oscilloscope

NEW 81150A Pulse Function Arbitrary Noise Generator

www.agilent.com/find/81150

Pulse
Function
Arbitrary
Noise

81150A pulse function arbitrary noise generator

The Agilent 81150A pulse function arbitrary noise generator enables reliable and repeatable measurements. It is the instrument of choice for pulse and clock generation.

It offers flexible pulse, clock and trigger generation with highest signal quality and with a frequency range up to 120 MHz. It is therefore a perfect fit for all system clock or trigger applications.

It combines the benefits of a pulse generator, a noise generator and a function arbitrary generator.

Complementary products

- InfiniiVision 7000 Series oscilloscope

With high quality pulses test your DUT without any effects generated by the source. Achieve complete control over timing parameters including trigger ability with fixed latency and glitch free change of timing. The different modulation capabilities up to 10 MHz, combined with the precision digital noise functionality, allow you to build real-world signals, simply and quickly. Use real-life signals for worst case scenarios e.g., reproducible noise.

The selectable crest factor (voltage peak/ RMS[1]) combined with the long repetition period of 39 hours helps you to stress your device to your limits but keeping the test results repeatable. The enhanced trigger capabilities are there to measure exactly when needed.

Key features 81150A

- 1 or 2 channels
- 1 µHz - 120 MHz pulse with variable rise/fall time
- 1 µHz - 240 MHz sine waveform outputs
- Precise digital noise: crest factor (peak/RMS) selectable: 3.1, 4.8, 6.0, 7.0
- Noise repetition: 39 hours
- Pulse, sine, square, ramp, noise, and arbitrary waveforms
- Triggerable
- FM, AM, PM, FSK, PWM modulation capability
- Full control of all pulse parameters (rise/fall/width, etc.)
- Differential outputs

1. RMS = root mean square

The Lab Standard: 81110A

81110A 165/330 MHz pulse generator

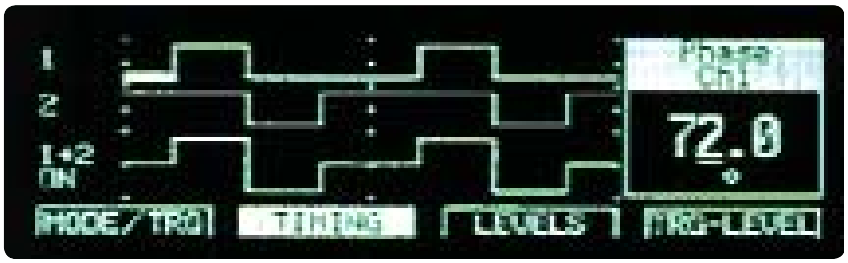
81110A pulse generator

The Agilent 81110A pulse pattern generator is the industry-standard for pulse, pattern, data and PRBS generation up to 165/330 MHz.

It provides high quality signals and leading flexibility that meets virtually all application needs. This instrument is a must for all labs.

The 81110A with one or two 81111A 165 MHz output channels provides pulse, pattern, data and PRBS generation up to 165 MHz with an amplitude of up to 20 Vpp. With the same user interface and programming commands, it is the natural upgrade from the 81101A and 81104A.

The 81110A with 81111A output channels is used in countless applications, flash chip test, communication equipment, aerospace defence and automotive test as well as many other high-end applications.



www.agilent.com/find/81100family

The Agilent 81110A pulse pattern generator with one or two 81112A 330 MHz output channels provides up to two differential output channels with fast transition times for a broad range of tests.

DSO 80304B oscilloscope

81110A pulse pattern generator with 81111A output channel(s)

Key features
81110A with 81111A

- 1 or 2 channels
- Up to 20 Vpp (into 50 Ω)
- Variable transition times between 3 ns and 200 ms
- Internal and external clocking
- 1 mHz to 165 MHz repetition rate
- Glitch-free timing changes
- Triggerable or internal PLL
- Single ended outputs
- Analog channel addition
- Data patterns
- Pseudo random binary sequence (PRBS) generation

Complementary products

- D/MSO 6050/8064A
- D/MSO 6100/8104A
- D/MSO 6030 oscilloscopes
- InfiniiVision 7000 Series oscilloscope

81110A pulse pattern generator with 81112A 330 MHz output channel(s)

Key features
81110A with 81112A

- 1 or 2 channels
- Up to 3.8 Vpp (into 50 Ω)
- Selectable transition times 800 ps or 1.6 ns
- Internal and external clocking
- 1 mHz to 330 MHz repetition rate
- Glitch-free timing changes
- Triggerable or internal PLL
- Differential outputs
- Data patterns
- Pseudo random binary sequence (PRBS) generation

Complementary products

- D/MSO 6100/8104A
- D/MSO 6050/8064A
- DSO 80304B oscilloscopes
- InfiniiVision 7000 Series oscilloscope

Clean and Precise: 81130A

81130A pulse pattern generator with 81131A 400 MHz output channel(s)

The Agilent 81130A 400 MHz pulse pattern generator with one or two 81131A output channels is the instrument of choice for advanced applications that require even higher precision signals and timing accuracy.

It offers a wide channel delay range and of course, full control of the pulse width. On top of which, enhanced data generation and pattern segment looping features allow you to generate complex data patterns.

81130A pulse pattern generator

DSO 80404B oscilloscope

Key features 81130A with 81131A

- 1 or 2 channels
- Up to 3.8 Vpp (into 50 Ω)
- Selectable transition times 800 ps or 1.6 ns
- Internal and external clocking
- 1 kHz to 400 MHz repetition rate
- Precision timing
- Differential outputs
- EXOR channel addition
- Complex data patterns and pattern segment looping
- Pseudo random binary sequence (PRBS) generation

Complementary products

- DSO 80304B
- D/MSO 6100/8104A
- DSO 80404B oscilloscopes
- InfiniiVision 7000 Series oscilloscope

www.agilent.com/find/81100family

81130A pulse pattern generator with 81132A 660 MHz output channel(s)

The Agilent 81130A pulse pattern generator with one or two 81132A 660 MHz output channels offers enhanced performance compared to the 81130A with 81131A output channels.

It is Agilent's recommended data generator for USB compliance tests. Data rates up to 1.32 Gbit/s can be achieved by the digital channel add feature, offering stimulus signals for Gigabit ethernet test, for example.

Complementary products

- DSO 80404B
- DSO 80804B/80604B
- DSO 80304B oscilloscopes
- InfiniiVision 7000 Series oscilloscope

Key features 81130A with 81132A

- 1 or 2 channels
- Up to 2.5 Vpp (into 50 Ω)
- Fixed transition times 500 ps typ.
- Internal and external clocking
- 1 kHz to 600 MHz repetition rate
- Precision timing
- Differential outputs
- EXOR channel addition
- Up to 1.32 Gbit/s data generation
- Complex data patterns and pattern segment looping e.g. for USB pre-compliance testing
- Pseudo random binary sequence (PRBS) generation

Precision Timing
PRBS, Data
Pattern, Pulse

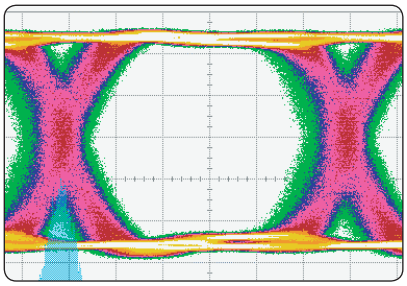
High Speed, High Fidelity: 81133A/81134A

The Agilent 81133A and 81134A 3.35 GHz pulse pattern generators provide the ultimate timing accuracy and signal performance.

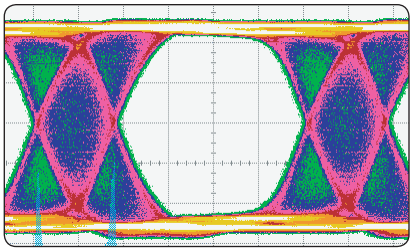
With their unrivaled performance, they are the perfect clock, pulse, data, pattern and PRBS sources for all applications up to 3.35 GHz. In addition, the instruments allow you to control the signal quality at speeds from 15 MHz up to 3.35 GHz. Sample applications comprise crossover point adjustments and jitter insertion using the delay control input. Their high quality signals and low intrinsic jitter enable you to perform quick and reliable measurements with accurate and repeatable results. With the 12 Mbit pattern memory per channel, the 81133A and 81134A enable you to generate the long data patterns required to test today's high speed interfaces, like PCI Express or Serial ATA and many more. The PC-based pattern management software is a very convenient tool to edit and save data patterns on any computer. It also allows you to load patterns easily into the generator. The jitter-insertion capabilities enable jitter tolerance tests. Target applications of the 81133A and 81134A include physical layer characterization, signal integrity and jitter tests. In addition the 81134A is Agilent's recommended solution for PCI Express® and Serial ATA compliance tests.

Precision Timing PRBS, Data Pattern, Pulse Jitter

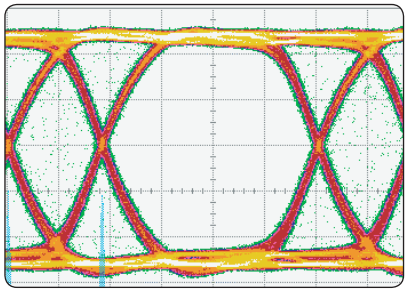
81134A pulse pattern generator



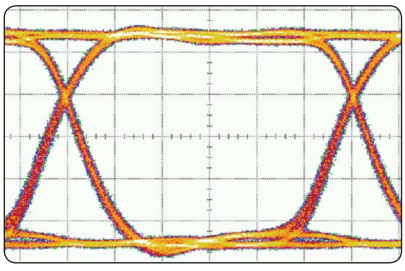
Jitter modulated with noise



Jitter modulated with sine-wave



Jitter modulated with rectangle-wave



Variable cross over point at 70%

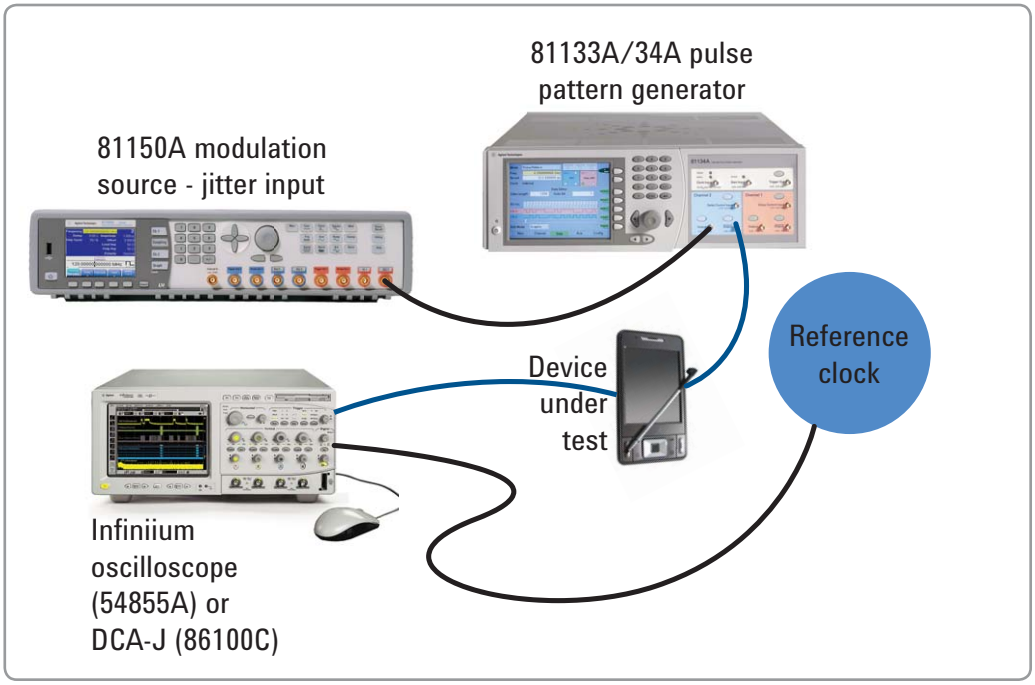
www.agilent.com/find/81134A

Key features
81133A with 81134A

- 1 channel (81133A) or 2 channels (81134A)
- 50 mV up to 2 Vpp amplitude (into 50 Ω)
- Programmable termination voltage
- Transition times < 90 ps (adjustable between 70 ps and 120 ps)
- 15 MHz to 3.35 GHz repetition rate
- Total jitter typically less than 2 ps
- 12 Mbit pattern memory per channel
- PC-based pattern management software
- 1.5 ps typ. RMS jitter
- Differential outputs
- Complex data patterns e.g. for PCI Express, SATA
- Pseudo random binary sequence (PRBS) generation
- Delay modulation: -250 ps to 250 ps (up to 500 ps total jitter)
- Modulation frequency: 0 - 200 MHz
- Additional variable crossover between 30% - 70% typ.
- NRZ/RZ/R1 signal formats over the full frequency range

Complementary products

- DSO 80000 / DCA-J
- 54655A
- 54854A oscilloscopes



Perform stress tests by modifying the amount and shape of jitter by using the delay control input and an external modulation source.

J-BERT N4903A Pattern Generator 7 Gb/s & 12.5 Gb/s

The Agilent N4903A J-BERT pattern generator options for data rates up to 7 Gb/s and 12.5 Gb/s provide an accurate and flexible stimulus for stimulating high-speed digital devices.

The N4903A generates user-definable NRZ-patterns or PRBS with variable data rate and output amplitude. It offers built-in and calibrated jitter injection to stress receiver ports of high-speed digital devices and boards. Design and test engineers can quickly and accurately stimulate serial high-speed ports, as used in DisplayPort, PCI Express, SATA, fully-buffered DIMM, Fibre Channel, CEI, 10 Gigabit Ethernet, XFP/XFI, SFP/SFP+ designs. The J-BERT pattern generator can be used in combination with the de-emphasis signal converter to compensate for channel degradations. For signal analysis it is complemented by oscilloscopes, built-in error detectors and other analyzers. The N4903A pattern generator can be upgraded to a full bit error ratio tester when test needs change.

Complementary products

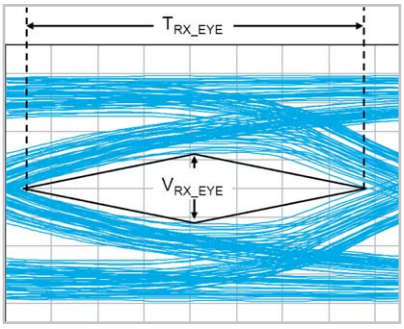
- 86100C DCA-J Infiniium wide-bandwidth oscilloscope
- N4916A de-emphasis signal converter

Key features 81133A with 81134A

- Data rates between 150 Mb/s and 7 Gb/s or 12.5 Gb/s provide sufficient margin
- Fastest transition times < 20 ps
- Low jitter < 9 ps pp for accurate measurements
- Differential outputs on data and clock with variable amplitude between 0.1 and 1.8 V
- Pattern with NRZ format, 32 Mbit user pattern, PRBS, block & loop sequencer
- Built-in and calibrated jitter injection: SJ, PJ, RJ, BUJ (option J10) to generate eye closures of > 0.5 UI
- External jitter injection via delay control input up to 1GHz
- Interference channel with switchable ISI traces and sinusoidal interference (option J11) to emulate channel degradations
- SSC clocking (Option J11) for computer bus clocks
- Sub-rate clock output to generate reference clocks
- Upgrade path to add jitter, SSC, and analysis functionality

J-BERT N4903A pattern generator

N4916A de-emphasis signal converter



J-BERT N4903A pattern generator allows to generate calibrated jitter for receiver tolerance tests.

Jitter
PRBS
Pattern
Clock
Sequences

The Real Power: 8114A

www.agilent.com/find/pulse

8114A 15 MHz High power pulse generator

For tests on devices that require high voltages or currents the Agilent 8114A pulse generator is the instrument you need.

It has the power required for measurements of laser or IR diodes and other applications with pulses up to 100 Volts, 2 Amperes and 15 MHz. In addition, it can also be used as a pulsed current source. The Agilent 8114A offers the same look and feel as well as the same programming syntax as the 81100A series to ease your work with different pulse pattern generators from Agilent Technologies.

Pulse

8114A pulse generator

Key features
8114A

- 1 channel
- Up to 100 Vpp (into 50 Ω) or 2A
- Clean, reliable pulses with 1-point variable pulse width and 7 ns transition time
- External synchronization and gating
- 15 MHz repetition rate and a counted burst mode
- Load compensation
- Optional variable pulse baseline (25 V)
- Device protection to avoid accidental damage

Complementary products

- 54622/24 A/D 100 MHz

E8311A & E8312A

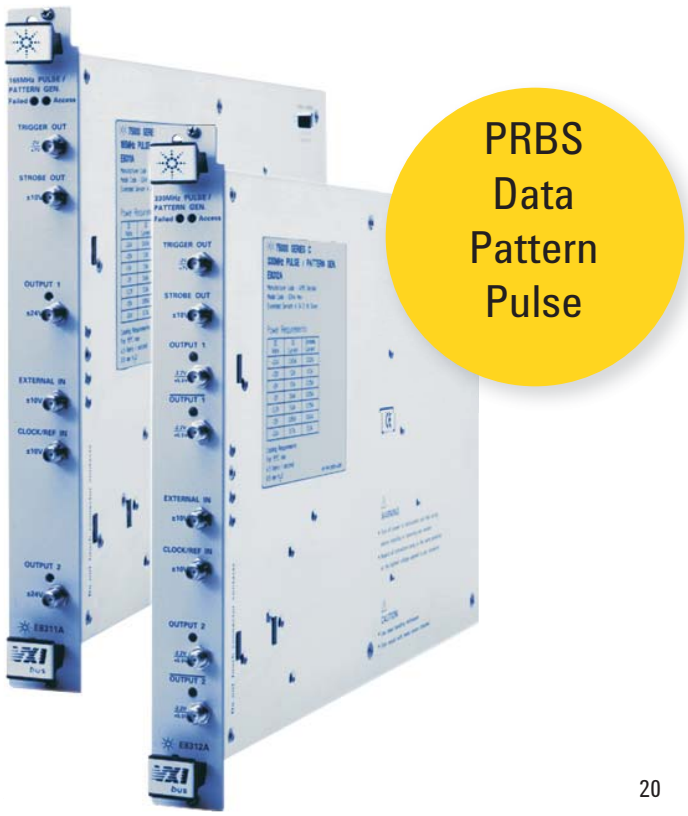
www.agilent.com/find/pulse

The Agilent E8311A and E8312A pulse pattern generators combine the 81110A's versatility and performance in the modular and flexible VXI form factor (C-size, 1 slot).

The specifications of the E8311A and E8312A match those of the 81110A with 81111A and 81112A output channels. All VXI pulse pattern generators have identical programming syntax and pattern capabilities - enabling a quick and easy transition from lab to production.

Key features
E8311A, E8312A

	E8311A	E8312A
Frequency range	1 MHz to 165 MHz	1 MHz to 330 MHz
No. of channels	2 channels	
Data pattern	16 kbit/channel user defined; PRBS 2^n - 1, n = 7, 8, ... 14 RZ, NRZ, DNRZ	
Variable delay range	0.00 ns to 999.5 s	
Priod RMS-jitter	0.001% + 15 ps	
Amplitude range	100 mV to 20.0 V	100 mV to 3.8 V
Transition time range (10/90)	2.00 ns to 200 ms programmable	800 ps or 1.6 ns selectable



For a Parallel World: 81250

www.agilent.com/find/81250

The Agilent 81250 data generator/analyzer platform is the right choice for functional and parametric test applications on digital subsystems, ICs and boards, during development or manufacturing.

The 81250 is a flexible and scalable platform which, depending on the configuration, offers up to 132 channels (RZ, NRZ). The data rate range covers 1 kBit/s to 2.7 GBit/s. The 81250 data generator and analyzer is freely configurable to fit application needs either as a stand alone data generator or a platform with any number of generator and analyzer channels. In addition, the Agilent 81250 can be combined with other standard VXI modules or systems. With up to 8 MBit memory depth per channel and full control of the pulse parameters for each individual channel, maximum stress can be applied to a DUT. The 81250 data generator/analyzer platform is the ideal tool throughout the design verification process - from first turn-on through operational check and characterization of design margins, to detailed analysis of critical design parts.

Key features
81250

- Up to 132 channels (RZ, NRZ) within one clock group, depending on the configuration
- PRBS and ORWS (pseudo random word sequence) up to 2^{31}-1
- 1 kbit/s to 2.7 Gbit/s data rate
- Sequencing with 5 looping levels
- Branching on internal and external events
- Variable delays, levels and transition times can be independently set for each channel
- EXOR channel edition

81250 generator/analyzer platform

Transition-Time Converters

www.agilent.com/find/time_converter

Models 15432B, 15433B, 1534B, 15435A, 15438A, and N4915A

These converters have been designed to convert the transition times of instruments with fast, fixed transition times, to slower, fixed transition-times

(150 ps, 250 ps, 500 ps, 47 ps, 1 ns, 2 ns). This reduces signal bandwidth which may be necessary during the development of some devices. All transition times are measured between 10% and 90% of amplitude.

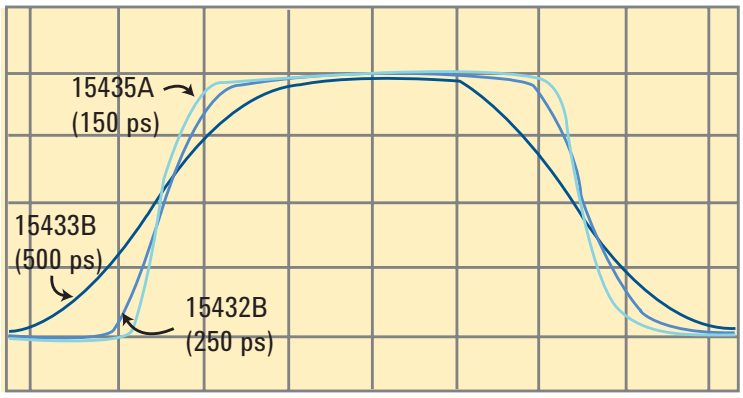
The design of these converters ensures very low signal reflection (far beyond the 3 dB point).

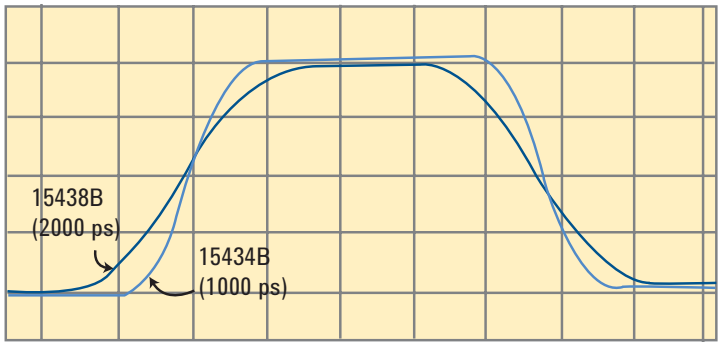
Reducing the signal transition times also increases the overall pulse-performance for overshoot /reflection sensitive applications.

The converters are fitted with two SMA connectors, one male, one female.

Key features

- Converter: 15435A, 15432B, 15433B, 15434B, 5438A, N4915A
- Output transition time 150 ps, 250 ps, 500 ps, 1000 ps, 2000 ps
- 3 dB pont 2.1 GHz, 1.3 GHz, 640 MHz, 370 MHz, 190 MHz
- Input voltage < 10 Vpp
- Insertion loss < 0.2 dB
- Overshoot and ringing < 3 %





Related Literature

Publication title	Pub number
Agilent Technologies 81133A and 81134A, 3.35 GHz Pulse Pattern Generators, Data Sheet	5988-5549EN
Agilent Technologies 81100 Family Pulse Pattern Generators, Technical Specifications	5980-1215E
Agilent Technologies 8114A 100 V/2 A Programmable Pulse Generator, Technical Specifications	5980-1213E
Agilent 81100 Family of Pulse Pattern Generators: Radar Distance Test to Airborne Planes, Product Note 1	5968-5843E
Agilent 81100 Family of Pulse Pattern Generators: The Dual Clock Gbit Chip Test, Product Note 2	5968-5844E
Agilent 81100 Family of Pulse Pattern Generators: Magneto-Optical Disk Drive Research, Product Note 3	5968-5845E
Agilent 81100 Family of Pulse Pattern Generators: Simulation of Jittering Synchronization Signals for Video Interfaces, Product Note 4	5968-5846E
PCI Express RX Design Validation with 81133A / 81250	5988-7432EN
USB 2.0 Pre-Compliance Testing with Agilent Infiniium, Application Note 1400	5988-6219EN
81150A Pulse Function Arbitrary Noise Generator Data Sheet	5989-6433EN
Flexible Signal Conditioning with the Help of the Agilent 81134A Pulse Pattern Generator	5989-8094EN
Jitter Generation and Jitter Measurements with the Agilent 81134A Pulse Pattern Generator and 54855 Infiniium Oscilloscope	5988-9411EN
Automated USB 2.0 Receiver Compliance Test and characterization with the Agilent N5990A Software Platform	5989-6232EN
J-BERT N4903A Data Sheet	5989-2899EN
Agilent 81150A Pulse Function Arbitrary Noise Generator Applications	5989-7860EN
Agilent 81150A Pulse Function Arbitrary Noise generator Demo Guide	5989-7718EN

Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment through-out its lifetime. Your equipment will be serviced by Agilent trained technicians using the latest factory calibration procedures, auto-mated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance, onsite education and training, as well as design, system integration, and project management.

For more information on repair and calibration services, go to:

www.agilent.com/find/removealldoubt

Agilent Email Updates

www.agilent.com/find/emailupdates

Get the latest information on the products and applications you select.

Agilent Direct

www.agilent.com/find/agilentdirect

Quickly choose and use your test equipment solutions with confidence.

Agilent Open 

www.agilent.com/find/open

Agilent Open simplifies the process of connecting and programming test systems to help engineers design, validate and manufacture electronic products. Agilent offers open connectivity for a broad range of system-ready instruments, open industry software, PC-standard I/O and global support, which are combined to more easily integrate test system development.

www.lxistandard.org

LXI is the LAN-based successor to GPIB, providing faster, more efficient connectivity. Agilent is a founding member of the LXI consortium.

PCI Express® is a registered trademark.

For more information, please visit us at:

www.agilent.com/find/pulse

www.agilent.com

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Americas

Canada	(877) 894-4414
Latin America	305 269 7500
United States	(800) 829-4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East

Austria	0820 87 44 11
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700* *0.125 €/minute
Germany	01805 24 6333** **0.14 €/minute
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland	0800 80 53 53
United Kingdom	44 (0) 118 9276201
Other European Countries:	**www.agilent.com/find/contactus**

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

Printed in USA, July 7, 2008
5980-0489E

Agilent Technologies