Agilent 81150A – Designed for Best Signal Generation

Stress your analog, digital or mixed signal device to it’s limits

- 120 MHz pulses
- 240 MHz sine waves
- 14-bit, 2 Gsa/s arbitrary waveforms
- FM, AM, PM, PWM, FSK modulation up to 10 MHz
- White Gaussian noise with selectable crest factor
- One or two channels, uncoupled, coupled or channel add

**Arbitrary bit shaped pattern option**
- Ideal and arbitrary bit-shaped pattern up to 120 Mbit/s
- Three level signals, in advanced mode up to four level signals
- PRBS up to $2^{31}$
- 16 Mbit Pattern Memory
- Pass through pattern for combined physical layer and protocol test up to 10 Mbit/s.

Quad versatility – Optimum signal fidelity
81150A Pulse Function Arbitrary Noise Generator

Pattern Generator with arbitrary bit-shaped pattern

- For engineers working with serial buses up to 120 Mbit/s e.g. FlexRay
- Designers of analog, digital and mixed signal devices
- For ideal and real-world pattern to emulate overshoot, asymmetric delay, and duty cycle distortion

Trends
- Fast cycle times
- High quality products
- Cost pressure

Requires
- More efficient test approaches
- Productivity Improvements
- Cost efficiency

81150A Pattern
- Quad versatility integrated in one instrument
- Reliable and repeatable measurements
Quad Versatility – Optimum Signal Fidelity

The “must have” for accelerated ideal and real-world testing

**Pulse Generator**
- 1µHz – 120 MHz pulse with variable rise/fall time
- Trigger and Clock up to 120 MHz
- Coupled / uncoupled channels

**Pattern Generator**
- Ideal and distorted pattern up to 120 Mbit/s
- Three level signals with sequencer and 16 Mbit Memory
- Pass through pattern for combined physical and protocol layer test up to 10 Mbit/s

**Function Arbitrary Generator**
- 1µHz – 240 MHz sine
- 14 bit, 2 GSa/s arbitrary waveforms
- FM, AM, PM, FSK, PWM up to 10 MHz
- Modulation frequency, internally or externally

**Noise Generator**
- Crest factor (Peak/RMS) selectable 3.1, 4.8, 6.0, 7.0
- Noise type: deterministic, triggerable
- Repetition 39 hours

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**Test your DUT and not your source**
- Superior precision pulses with highest timing stability guarantee reproducible tests.

**Test in addition to analog, digital and mixed signal devices**
- Arbitrary bit-shaping emulates real-world conditions

**Stress your device to its limit**
- Versatile waveforms and modulation capabilities adopt your signal to any real world signal.

**Repeatable and stochastic noise**
- Combines two required extremes:
  - Repeatable noise with long Repetition rates for simple problem identification.
81150A #PAT – The must have for every device

Just generate the signal you need

- Precise signals and distorted signals to stress your device to its limits

Pattern Generator Option for Improved Digital Testing

- Ideal and distorted pattern
- Three level signals to wake up your device
- Sequencing to get device into test mode
- Proven stress test with PRBS up to $2^{31}$
- Modulation capabilities to emulate
  - AM - distortion and sinusoidal interference
  - FM - SSC
  - PM – jitter
- Arbitrary Bit Shaping to emulate real world conditions e.g. overshoot or electrical idle
- 16 Mbit pattern memory for more complex pattern
- Pass through Pattern to emulate SSC, Interference or jitter on protocol data

Shipments start in July 2009
Software upgrade to existing 81150A #PAT $3990
Stress your device to it’s limits
Define your own bit shape

**Emulate effects like**
- Capacitive load of the channel,
- Asymmetric delay,
- Crossing point deviations,
- Duty cycle distortions,
- Arbitrary transition times,
- Level noise,
- Delays from / to electrical idle

By defining the transitions so that the previous bit influences the current bit

**NRZ Mode**
NRZ mode with minimum transition times
NRZ mode with transition time = 1/3 * period
Data Pattern: 0 1 0 0 1 1 0 1

**Arbitrary Bitshape Mode**
NRZ mode with minimum transition times
Bit shape waveforms (user defined)

Output waveform

Max Voltage level
Min Voltage level
Bridge the gap between Protocol and Physical Layer Test – in real time up to 10 Mbit/s

Increase your test efficiency by combining physical layer test with protocol test

Protocol Exerciser
- Sends out protocol data
  - e.g. VPT 1000 for FlexRay

81150A Pass through Pattern
- Real-time data pass through with flexible modulation and re-shaping for stress test

DUT
- pass/fail test

The 81150A pass-through pattern functionality takes the protocol data via “mod in” and adopts it to any kind of stress test (shape and timing changes)
The 81150A with arbitrary bit-shaped pattern

Precise *Pulse* Generator
To test your device and not your source

Arbitrary bit-shaped *Pattern* Generator to emulate real-world conditions

Versatile *Function Arbitrary* Generator to stress your device to its limit

Repeatable and random *Noise* Generator