

Infiniium 54850 Series Oscilloscopes InfiniiMax 1130 Series Probes

7 GHz, 20 GSa/s Differential and Single-Ended Oscilloscope Measurement System

Data Sheet

- 7, 6, 4, 2.5 and 2 GHz bandwidth real-time oscilloscopes with up to 20 GSa/s sample rate on all four channels simultaneously
- Up to 1 Mpts MegaZoom deep memory at all sample rates and 32 Mpts MegaZoom deep memory at 2 GSa/s and slower sample rates
- Electronic attenuators eliminate the reliability and repeatability concerns associated with mechanical attenuator relays
- Trigger jitter 1.0 ps rms
- Easy-to-use, easy-to-understand jitter analysis option
- InfiniiMax 7 GHz, 5 GHz, 3.5 GHz, and 1.5 GHz probing systems
- Each InfiniiMax probe amplifier supports both differential and single-ended measurements for a more cost-effective solution
- Unrivaled InfiniiMax probing accessories support browsing, solder-in, and socket use models at the maximum performance available
- Award-winning user interface based on Microsoft Windows® XP Pro supports CD-RW, dual-monitor, and third-party software packages



The highest-performance end-to-end measurement system available

If you are an experienced scope user, you know that your measurements are only as good as your probing system. And as bandwidth increases, it's increasingly important to ask the question: am I measuring my circuit or my scope probe? Nothing is more frustrating than chasing down an apparent design problem, only to find that it was caused by an inferior scope probe.

Together, the newest Agilent Infiniium scopes and the breakthrough Agilent InfiniiMax

high-performance probing systems offer an end-to-end measurement system with unmatched performance, accuracy, and connectivity. The result is measurements you can trust and better insight into your circuit behavior.

InfiniiMax: The Worlds Best High-Speed Probing System

EDN Magazine has awarded Agilent's InfiniiMax active probe system the 2002 Innovation of the Year Award.



Agilent Technologies

Benefits

54850 Series Infiniium oscilloscopes

| Model | Bandwidth | Channels | Sample rate per channel | Standard acquisition memory | Optional acquisition memory |
|--------|-----------|----------|-------------------------|-----------------------------|--|
| 54855A | 6 - 7 GHz | 4 | 20 GSa/s | 262 kpts per channel | 1 Mpts per channel up to 20 GSa/s 32 Mpts per channel ≤ 2 GSa/s |
| 54854A | 4 GHz | 4 | 20 GSa/s | 262 kpts per channel | 1 Mpts per channel up to 20 GSa/s 32 Mpts per channel ≤ 2 GSa/s |
| 54853A | 2.5 GHz | 4 | 20 GSa/s | 262 kpts per channel | 1 Mpts per channel up to 20 GSa/s 32 Mpts per channel ≤ 2 GSa/s |
| 54852A | 2 GHz | 4 | 10 GSa/s | 262 kpts per channel | 1 Mpts per channel up to 10 GSa/s 32 Mpts per channel ≤ 2 GSa/s |

1130 Series InfiniiMax probe amplifier

| Model | Bandwidth | Description |
|-------------------------|-----------|--|
| 1134A | 7 GHz | Probe amplifier – order one or more probe heads or connectivity kits |
| 1132A | 5 GHz | Probe amplifier – order one or more probe heads or connectivity kits |
| 1131A | 3.5 GHz | Probe amplifier – order one or more probe heads or connectivity kits |
| 1130A | 1.5 GHz | Probe amplifier – order one or more probe heads or connectivity kits |
| E2669A differential kit | | Each connectivity kit includes browser, solder-in and socket probe-heads |
| E2668A single-ended kit | | Each connectivity kit includes browser, solder-in and socket probe-heads |

InfiniiMax probe amplifier specifications: Dynamic range = ± 2.5 V, DC offset range = ±12 V, maximum voltage = ± 30 V

1130 Series InfiniiMax probe system specifications (1134A probe amplifier with probe head)

| Probe head | Model number | Differential measurement (BW, input C, input R) | Single-ended measurement (BW, input C, input R) |
|------------------------|--------------|---|---|
| Differential solder-in | E2677A | 7 GHz, 0.27 pF, 50 kΩ | 7 GHz, 0.44 pF, 25 kΩ |
| Differential socket | E2678A | 7 GHz, 0.34 pF, 50 kΩ | 7 GHz, 0.56 pF, 25 kΩ |
| Differential browser | E2675A | 6 GHz, 0.32 pF, 50 kΩ | 6 GHz, 0.57 pF, 25 kΩ |
| Differential SMA | E2695A | 7 GHz | 7 GHz |
| Single-ended solder-in | E2679A | N/A | 5.2 GHz, 0.50 pF, 25 kΩ |
| Single-ended browser | E2676A | N/A | 5.5 GHz, 0.67 pF, 25 kΩ |

Benefits (continued)

How much bandwidth and sample rate do I need?

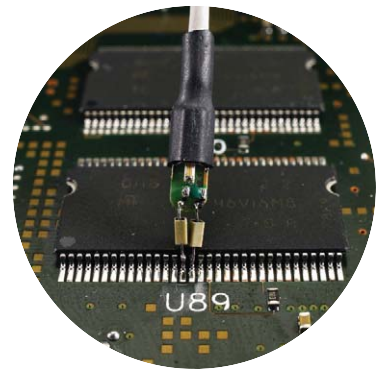
| Bandwidth required to measure risetime with 3% error | Example: 100 ps rise time (20-80%) |
|--|---|
| Maximum signal frequency content = $0.4/\text{rise time}$ (20-80%) | Maximum signal frequency = 4 GHz |
| Scope bandwidth required = $1.4 \times$ maximum frequency | Required scope bandwidth = 5.6 GHz |
| Minimum scope sample rate required = $2.5 \times$ bandwidth | Required scope sample rate = 14 GSa/s |

Key trends in the electronics market

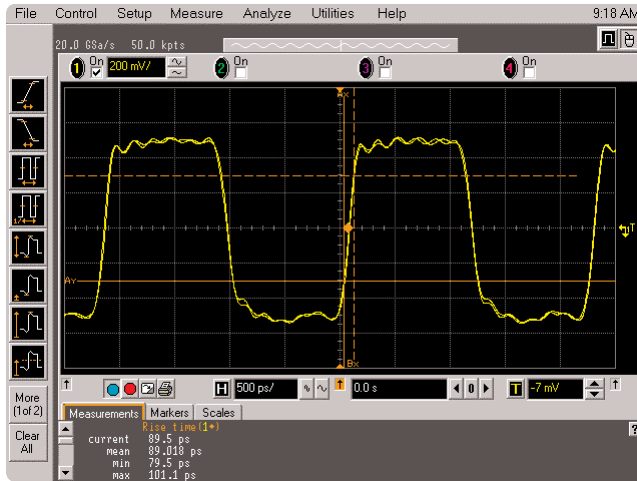
- Technologies with dramatically increased clock speeds and edge rates have emerged.
- Very fast serial differential buses are being used to save board space, reduce power and provide better noise immunity.
- Densely packed circuit boards, often with stacked daughter boards, increase the need to probe in very hard-to-reach places.

Key benefits of the 54850 and InfiniiMax Series

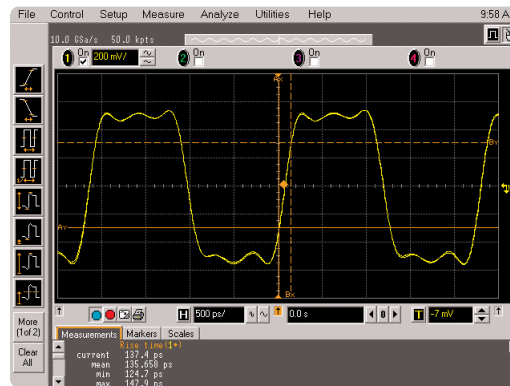
- Up to 7 GHz bandwidth can track even the fastest signal speeds.
- A sample rate of 20 GSa/s on all four channels can measure high-speed differential buses correlated with other signals.
- The innovative InfiniiMax probing system supports even the most demanding mechanical access requirements without sacrificing performance.



20 GSa/s Sample Rate on All Channels at Once!



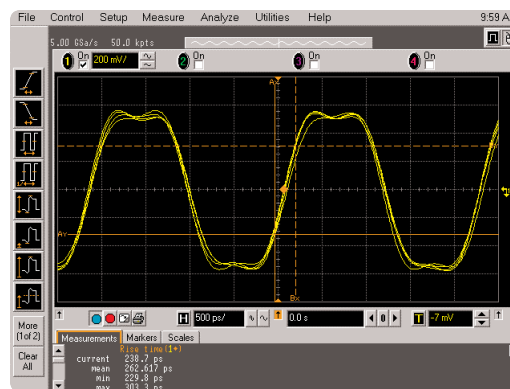
20 GSa/s provides accurate measurement.



10 GSa/s is not enough.

| Sample rate | Measured rise time |
|-------------|--------------------|
| 20 GSa/s | 89 psec |
| 10 GSa/s | 137 psec |
| 5 GSa/s | 238 psec |

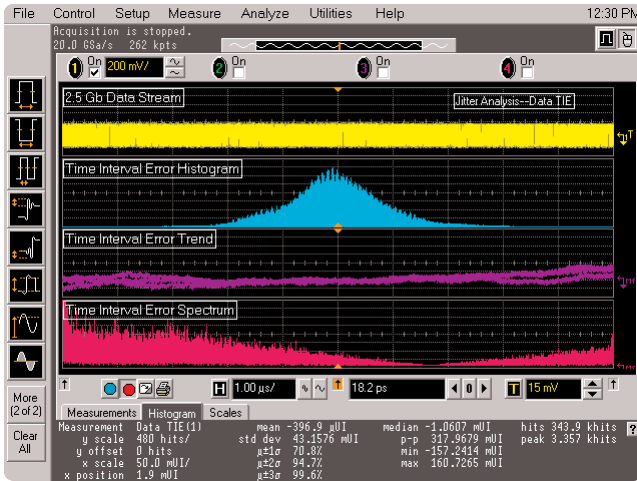
Example for 90 ps rise time input



5 GSa/s is not enough.

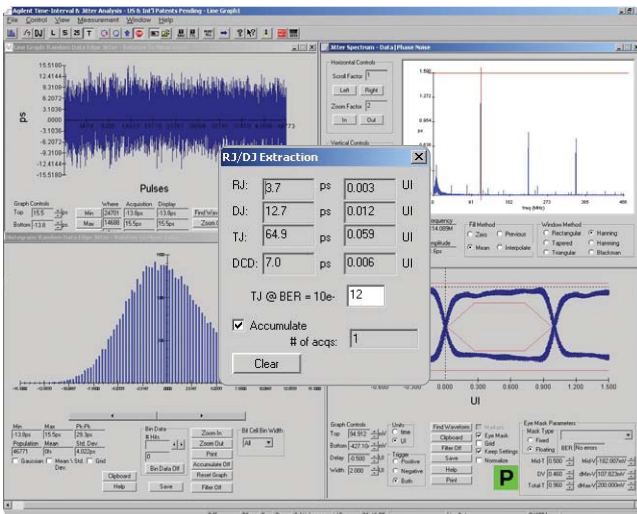
- The full real-time bandwidth of up to 7 GHz is supported on every channel by the 20 GSa/s sample rate.
- This industry-leading sample rate produces more accurate and repeatable measurements, avoiding measurement error and signal aliasing due to under sampling, as shown above.
- The combination of 7 GHz bandwidth and 20 GSa/s sample rate on all channels makes the 54850 series ideal for designs that include: PCI-Express, Serial ATA, Rapid IO, HyperTransport, InfiniBand, or Gigabit Ethernet.

Application Software



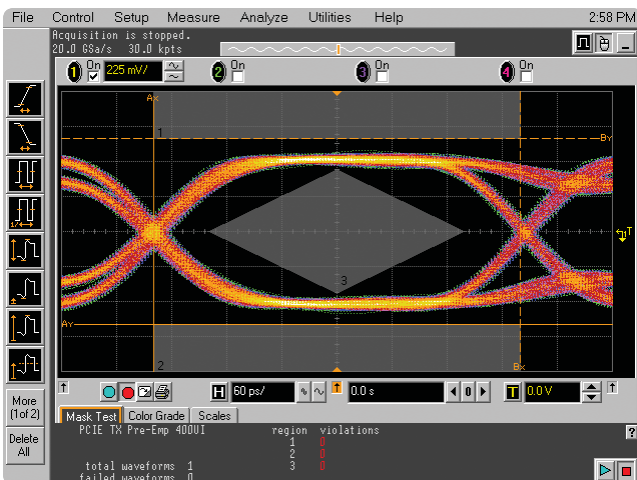
E2681A EZJIT Jitter analysis software

Includes the following key measurements: cycle-to-cycle jitter, n-cycle jitter, period jitter, time interval error, setup and hold time, measurement histograms, measurement trending, and jitter spectrum.



E2690A Timing Interval and Jitter Analysis software

Measure the worst-case jitter in serial data streams, PLLs, and high-speed clock designs. Measurements include line graph, histogram, jitter spectrum, RJ/DJ separation, and bathtub curve. Provides a superset of capabilities relative to the E2681A EZJIT software.



E2688A High-Speed Serial Bus Analysis/Mask Testing with Clock Recovery

Characterize high-speed serial data streams, perform eye mask testing, and decode 8b/10b data for PCI Express, Serial ATA, Serial Attached SCSI (SAS), Fibre Channel, 10/100/1000 Base-T Ethernet, and XAUI.

Infiniium: “It’s like someone who sits down and actually uses a scope designed this one.”

Steve Montgomery, Director of Engineering, Linx Technologies

20 GSa/s sample rate on all four channels significantly reduces the chances of aliasing, increases measurement accuracy, and delivers the full real-time bandwidth of the oscilloscope on every channel simultaneously.

Get fast answers to your questions with the built-in information system. Infiniium’s task-oriented Setup Guide provides step-by-step instructions for several advanced measurements and procedures.

See your signal more clearly with a large (8.4-inch) high-resolution color display. Infiniium’s bright TFT display with anti-glare coating lets you see the details of your signal from all angles.

20 GB hard drive, 3.5” 1.44 MB floppy drive and rear USB port make it easy to save setup files, data files, screen shots, etc.

Identify anomalies easily with color-graded persistence, a colorful visual representation of waveform distribution.

Label waveforms and add notes to your screen captures — Infiniium’s keyboard makes it easy.

Drag and drop markers with your mouse or use the arrow keys.

Easy access to advanced features like math functions and FFTs, is provided by the Windows-based graphical user interface. This GUI also gives you unique capabilities like drag-and-drop measurements and zooming, and offers a graphical equivalent to all front panel controls.

Remote access with Web-enabled connectivity, e-mail on trigger, and GPIB over LAN allows you to access your scope from remote locations.

Infiniium: Award-winning scopes

Infiniium has received eight industry awards to date, including EDN’s “Innovation of the Year” award (twice) and T&M World’s “Best in Test.” Agilent is committed to breaking new ground and providing tools that bring unique value to our customers.

32 Mpts acquisition memory at 2 GSa/s or slower sample rates allows you to capture long time windows at high resolution – such as identifying glitches due to a power supply start-up from reset.



QuickMeas+ key gives you any five automated measurements with a push of a button. You can also configure this key to print/save screen shots, save waveforms, or load a favorite setup.

Zoom and search with instant response. Zoom into your signal using the horizontal scale knob and search through your waveform with the position knob. MegaZoom technology allows you to find your area of interest quickly and easily – even with 32 Mpts waveforms.



Built-in CD-RW drive on rear panel allows you to update the system software conveniently and can be used to archive large data files and install third-party application packages.

Install third-party software packages such as Excel, LabView, Agilent Vee, MATLAB®, anti-virus software, and more to perform customized processing and automation of your oscilloscope or to make the scope compliant to the network environment of your company.

An external monitor allows you to run third-party applications on a large, high-resolution display while using the scope's built-in monitor for high-speed waveform display.

Windows® XP Pro operating system.

A familiar interface makes simple tasks simple. Infiniium's analog-like front panel has a full set of controls color coded to the waveforms and measurements, making simple tasks simple.

Three-year standard warranty and a variety of Agilent support options protect your investment for the long term.

A new 18 GHz, BNC-compatible connector provides a high signal fidelity connection to Agilent active probes, SMA adapters, and standard BNCs.

AutoProbe interface completely configures your scope for use with the InfiniiMax probing system and previous generation Agilent active probes.

10/100 Mbps LAN interface lets you easily print waveforms on networked printers, save your results on your office PC, share information with others, and control the scope over the Web.

Hands-free operation with the Infiniium VoiceControl option. Just speak into the microphone to operate front-panel controls.



InfiniiMax: The Worlds Best High-Speed Probing System

InfiniiMax offers you the highest performance available for measuring differential and single-ended signals, with flexible connectivity solutions for today's high-density ICs and circuit boards.

Variable spacing via the tab on the side of the differential browser allows the probe tips to be adjusted for different circuit geometries from 0.25-5.80 mm (10-230 mills).

Z-axis compliance allows both probe tips of the differential browser to spring, supporting various probing angles and target system characteristics.

Differential browser is the best choice for general-purpose trouble-shooting of differential or single-ended signals up to 6 GHz bandwidth.

Solder-in differential probe head provides 7 GHz bandwidth and can be attached to very small geometry circuits for measuring both single-ended and differential signals.

The differential socket probe head can be used to measure either differential or single-ended signals to 7 GHz bandwidth.

Extremely small single-ended, solder-in probe heads support 5.2 GHz measurements of even the hardest-to-reach single-ended signals.

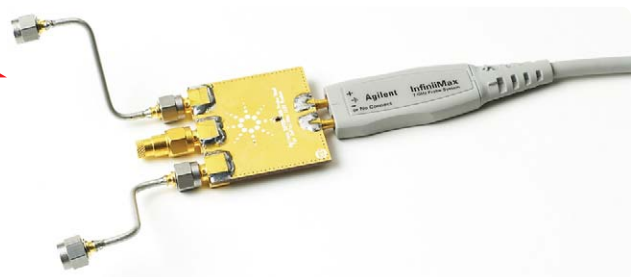
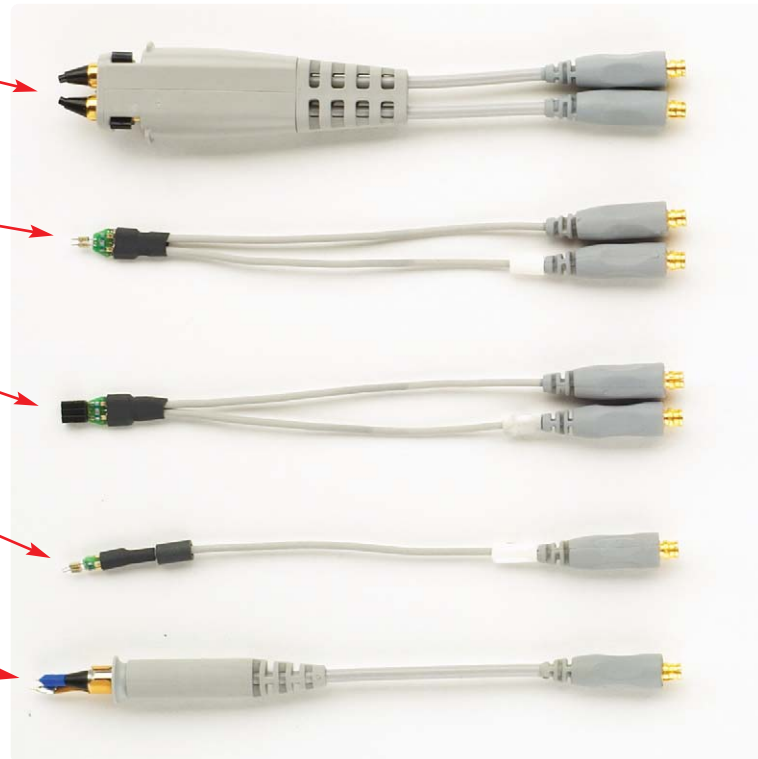
Single-ended browser is the best choice for general purpose probing of single-ended signals when small size of the probe head is the primary consideration. Bandwidths up to 5.5 GHz can be obtained in this configuration.

Differential SMA probe head provides 7 GHz bandwidth and allows you to connect two SMA cables to make a differential measurement on a single scope channel.

The 54006A 7.5 GHz resistive divider probe is available as a low-cost probing alternative for casual inspection of signals.

A flat frequency response over the entire probe bandwidth eliminates the distortion and frequency-dependent loading effects that are present in probes that have an in-band resonance.

Ergonomic sleeves make hand browsing comfortable even over long periods of time.





Supplied axial lead resistors, when trimmed to the appropriate length, allow user to trade off bandwidth and reach. Values and trimming templates are supplied for measurements from 2.8 GHz to 7 GHz.

The damped-wire accessory provides maximum connection reach and flexibility without introducing an in-band resonance for signals up to 1.2 GHz bandwidth.

InfiniiMax probes have fully characterized performance for all of their various probe heads. This includes:

- Swept frequency response plot
- Common mode rejection vs. frequency plot
- Impedance vs. frequency plot
- Time-domain probe loading plot
- Time-domain probe tracking plot

See page 16 for an example.

One-year standard warranty on active probes and a variety of Agilent support options to choose from.

Controlled impedance transmission lines in every probe head deliver full performance versus the performance limitations produced by traditional wire accessories.

Probe interface software allows you to save the calibration information for up to 10 different probe heads per channel and will automatically retrieve calibration data for a probe amplifier as it is attached to the scope.

High-input impedance active probes minimize loading, support differential measurements and DC offset, and can compensate for cable loss.



InfiniiMax is the world's best high-speed probe

- InfiniiMax's bandwidth is greater than the scope's bandwidth.
- Each use model (browsing, solder-in, socket) is optimized for maximum performance.
- Supports both differential and single-ended measurements with a single probe amplifier.



EDN Magazine has awarded Agilent's InfiniiMax active probe system the 2002 Innovation of the year award. This exclusive award program, now in its 13th year, awards truly outstanding products in the electronics industry.

Infiniium 54850 Series Performance Characteristics

Vertical

| | | | | |
|--|---|----------------|-----------------|----------------|
| Input channels | 4 | | | |
| Analog bandwidth (–3 dB)* | 54855A: 6 GHz | 54854A: 4 GHz | 54853A: 2.5 GHz | 54852A: 2 GHz |
| Rise time (10% to 90%) | 54855A: 70 ps 54855A with option 008: 62 ps | 54854A: 105 ps | 54853A: 168 ps | 54852A: 210 ps |
| Input impedance | 50 Ω ± 2.5% | | | |
| Sensitivity ¹ | 1 mV/div to 1 V/div | | | |
| Input coupling | DC | | | |
| Vertical resolution ² | 8 bits, ≥ 12 bits with averaging | | | |
| Channel to channel isolation (any two channels with equal V/div settings) | DC to 100 MHz: 40 dB 100 MHz to 1 GHz: 28 dB > 1 GHz to 6 GHz: 24dB | | | |
| DC gain accuracy* ¹ | ± 1% of full scale at full resolution channel scale | | | |
| Maximum input voltage* | ± 5 V | | | |
| Offset range | > ± 12 div or ± 4 Volts, whichever is smallest | | | |
| Offset accuracy* ¹ | ± (2% of channel offset + 1% of full scale) | | | |
| Dynamic range | ± 4 div from center screen | | | |
| DC voltage measurement accuracy* ¹ | | | | |
| Dual cursor | ± [(DC gain accuracy)+(resolution)] | | | |
| Single cursor | ± [(DC gain accuracy)+(offset accuracy)+(resolution/2)] | | | |

Horizontal

| | | | | |
|--|--|--------------------|--|---------------------|
| Main timebase range | 54855A and 54854A: 5 ps/div to 20 s/div | | 54853A and 54852A: 10 ps/div to 20 s/div | |
| Main timebase delay range | –200 s to 200 s | | | |
| Delayed timebase scale range | 1 ps/div to current main time scale setting | | | |
| Channel deskew | –50 μs to 150 μs range, 100 fs resolution | | | |
| Time scale accuracy ³ | ± 1 ppm pk | | | |
| Delta-time measurement accuracy ^{6,7} | | | | |
| ≥ 256 Averages, rms | 54855A: 70 fs rms | 54854A: 90 fs rms | 54853A: 110 fs rms | 54852A: 160 fs rms |
| ≥ 256 Averages, peak | ± [(0.5 ps) + (1 × 10 ⁻⁶ × reading)] peak | | | |
| Averaging disabled, rms | 54855A: 2.0 ps rms | 54854A: 2.5 ps rms | 54853A: 3.0 ps rms | 54852A: 4.5 ps rms |
| Averaging disabled, peak | ± [(X ps) + (1 × 10 ⁻⁶ × reading)] peak | | | |
| | 54855A: X = 7.0 ps | 54854A: X = 8.0 ps | 54853A: X = 10.0 ps | 54852A: X = 15.0 ps |
| Jitter measurement floor ⁶ | | | | |
| Time interval error | 54855A: 1.4 ps rms | 54854A: 1.8 ps rms | 54853A: 2.0 ps rms | 54852A: 3.0 ps rms |
| Period jitter | 54855A: 2.0 ps rms | 54854A: 2.5 ps rms | 54853A: 3.0 ps rms | 54852A: 4.5 ps rms |
| N-cycle, cycle-cycle jitter | 54855A: 3.0 ps rms | 54854A: 3.8 ps rms | 54853A: 4.5 ps rms | 54852A: 6.8 ps rms |

Infiniium 54850 Series Performance Characteristics (continued)

Acquisition

| | |
|-----------------------------------|--|
| Real time sample rate per channel | 54855A: 20 GSa/s 54854A: 20 GSa/s 54853A: 20 GSa/s 54852A: 10 GSa/s |
| Memory depth per channel | |
| Standard | 262,144 at all sample rates |
| Option 001 | 1,025,000 at all sample rates 32,800,000 \leq 2 GSa/s sample rate |
| Sampling modes | |
| Real time | Successive single-shot acquisitions |
| Real time with averaging | Selectable from 2 to 4096 |
| Real time with peak detect | 2 GSa/s peak detect, for less than 2 GSa/s sample rates (option 001 only) |
| Filters | |
| Sin(x)/x Interpolation | On/off selectable FIR digital filter. Digital signal processing adds points between acquired data points to enhance measurement accuracy and waveform display quality. |

Trigger

| | |
|-------------------------------|---|
| Sensitivity ¹ | |
| Internal Low ¹ | 54855A: 0.5 div p-p 0 to 2 GHz, 1.0 div p-p 2 to 4 GHz, < 2.5 div @ 5 GHz 54854A: 0.5 div p-p 0 to 2 GHz, 1.0 div p-p 2 to 4 GHz 54853A: 0.5 div p-p 0 to 2 GHz, 1.0 div p-p 2 to 2.5 GHz 54852A: 0.5 div p-p 0 to 2 GHz |
| Internal High ¹ | 54855A: 0.2 div p-p 0 to 6 GHz 54854A: 0.2 div p-p 0 to 4 GHz 54853A: 0.2 div p-p 0 to 2.5 GHz 54852A: 0.2 div p-p 0 to 2 GHz |
| Auxiliary | DC to 500 MHz: 500 mV p-p |
| Level range | |
| Internal | ± 8 div from center screen or ± 4 Volts, whichever is smallest |
| Auxiliary | ± 5 V |
| Sweep modes | Auto, triggered, single |
| Trigger jitter ^{6,8} | 54855A: 1.0 ps rms 54854A: 1.3 ps rms 54853A: 1.7 ps rms 54852A: 1.8 ps rms |
| Trigger holdoff range | 80 ns to 320 ms |
| Trigger actions | Specify an action to occur and the frequency of the action when a trigger condition occurs. Actions include e-mail on trigger and QuickMeas+. |

Infiniium 54850 Series Performance Characteristics (continued)

Trigger (continued)

| | |
|-----------------|---|
| Trigger modes | |
| Edge | Triggers on a specified slope and voltage level on any channel or auxiliary trigger. |
| Glitch | Triggers on glitches narrower than the other pulses in your waveform by specifying a width less than your narrowest pulse and a polarity. Triggers on glitches as narrow as 500 ps. Glitch range settings: < 1.5 ns to < 160 ms. |
| Line | Triggers on the line voltage powering the oscilloscope. |
| Pattern | Triggers when a specified logical combination of the channels is entered, exited, present for a specified period of time or is within a specified time range. Each channel can have a value of High (H), Low (L) or Don't care (X). Triggers on patterns as narrow as 500 ps. |
| State | Pattern trigger clocked by the rising or falling edge of one channel. Logic type: AND or NAND. |
| Delay by time | The trigger is qualified by an edge. After a specified time delay between 30 ns to 160 ms, a rising or falling edge on any one selected input will generate the trigger. |
| Delay by events | The trigger is qualified by an edge. After a specified delay between 1 to 16,000,000 rising or falling edges, another rising or falling edge on any one selected input will generate the trigger. |

| | |
|--------------------|---|
| Violation triggers | |
| Pulse width | Trigger on a pulse that is wider or narrower than the other pulses in your waveform by specifying a pulse width and a polarity. Triggers on pulse widths as narrow as 500 ps. Pulse width range settings: 1.5 ns to 160 ms. |
| Setup/hold | Triggers on setup, hold or setup and hold violations in your circuit. Requires a clock and data signal on any two input channels as trigger sources. High and low thresholds and setup and/or hold time must then be specified. |
| Transition | Trigger on pulse rising or falling edges that do not cross two voltage levels in > or < the amount of time specified. |

Measurements and math

| | |
|---|--|
| Waveform measurements | |
| Voltage | Peak to peak, minimum, maximum, average, RMS, amplitude, base, top, overshoot, preshoot, upper, middle, lower, area. |
| Time | Period, frequency, positive width, negative width, duty cycle, delta time, rise time, fall time, Tmin, Tmax, channel-to-channel phase. |
| Frequency domain | FFT frequency, FFT magnitude, FFT delta frequency, FFT delta magnitude, FFT phase. |
| Statistics | Displays the mean, standard deviation, minimum, maximum and number of measurements value for the displayed automatic measurements. |
| Histograms | Vertical (for timing and jitter measurements) or horizontal (noise and amplitude change) modes, regions are defined using waveform markers. Measurements included: mean, standard deviation, peak-to-peak value, median, min, max, total hits, peak (area of most hits), and mean \pm 1, 2, and 3 sigma. |
| Eye-diagram measurements | Eye-diagram measurements include eye height, eye width, eye jitter, crossing percentage, Q factor, and duty-cycle distortion. |
| Jitter analysis measurements (Available E2681A EZJIT Jitter Analysis software) | Cycle-cycle jitter, N-cycle jitter, cycle-cycle + width, cycle-cycle – width, cycle-cycle duty cycle, data rate, unit interval, time interval error data, time interval error clock, setup time, hold time, phase, period, frequency, + width, – width, duty cycle, rise time, fall time. |

Infiniium 54850 Series Performance Characteristics (continued)

Measurements and math (continued)

| | |
|--|--|
| Mask testing | Allows pass/fail testing to user-defined or Agilent-supplied waveform templates. AutoMask lets you create a mask template from a captured waveform and define a tolerance range in time/voltage or percentage. Test modes include test forever, test to specified time or event limit, and stop on failure. Communications Mask Test Kit option provides a set of ITU-T G.703, ANSI T1.102, and IEEE 802.3 industry-standard masks for compliance testing. |
| Waveform math | Four functions, select from add, average, differentiate, divide, FFT magnitude, FFT phase, integrate, invert, magnify, min, max, multiply, subtract, versus, common mode, smoothing. |
| FFT | |
| Frequency range ⁴ | DC to 10 GHz. |
| Frequency resolution | Sample rate/memory depth = Resolution. |
| Best resolution at maximum sample rate | 54855A, 54854A, 54853A: 20 GSa/s / 1 Mpts = 20 kHz. 54852A: 10 GSa/s / 1 Mpts = 10 kHz. |
| Frequency accuracy | (1/2 frequency resolution)+(1 x 10 ⁻⁶)(signal frequency). |
| Signal-to-noise ratio ⁵ | 60 dB at 32k memory depth. |
| Window modes | Hanning, flattop, rectangular. |
| Measurement modes | |
| Automatic measurements | Measure menu access to all measurements, five measurements can be displayed simultaneously. |
| QuickMeas+ | Front-panel button activates five pre-selected or five user-defined automatic measurements. |
| Drag-and-drop measurement toolbar | Measurement toolbar with common measurement icons that can be dragged and dropped onto the displayed waveforms. |
| Marker modes | Manual markers, track waveform data, track measurements. |

Display

| | |
|-----------------|---|
| Display | |
| Display | 8.4 inch diagonal color TFT-LCD. |
| Resolution | 640 pixels horizontally x 480 pixels vertically. |
| Annotation | Up to 12 labels, with up to 100 characters each, can be inserted into the waveform area. |
| Grids | Can display 1, 2 or 4 waveform grids. |
| Waveform styles | Connected dots, dots, persistence (minimum, variable, infinite), color-graded infinite persistence. |

Computer system and peripherals, I/O ports

| | |
|---------------------------------|--|
| Computer system and peripherals | |
| Operating system | Windows [®] XP Pro. |
| CPU | Intel [®] Pentium [®] III 1 GHz microprocessor. |
| PC system memory | 512 MB. |
| Drives | ≥ 20 GB internal hard drive, CD-RW drive on rear panel, standard 3.5 inch 1.44 MB floppy drive. |
| Peripherals | Logitech optical USB mouse and compact keyboard supplied. All Infiniium models support any Windows-compatible input device with a serial, PS/2 or USB interface. |
| File types | |
| Waveforms | Compressed internal format, comma and tab separated X and Y pairs or voltage values. |
| Images | BMP, PCX, TIFF, GIF or JPEG. |

Infiniium 54850 Series Performance Characteristics (continued)

Computer system and peripherals, I/O ports (continued)

| | |
|----------------------------|--|
| I/O ports | |
| LAN | RJ-45 connector, supports 10Base-T and 100Base-T. Enables Web-enabled remote control, e-mail on trigger or demand, data/file transfers and network printing. |
| GPIB | IEEE 488.2, fully programmable. |
| RS-232 (serial) | COM1, printer and pointing device support. |
| Parallel | Centronics printer port. |
| PS/2 | 2 ports. Supports PS/2 pointing and input devices. |
| USB | 2 ports. Allows connection of USB peripherals like storage devices and pointing devices while the oscilloscope is on. |
| Video output | 15 pin VGA, full color output of scope waveform display. |
| Dual-monitor video output | 15 pin XGA, full color output for using third-party applications. |
| Auxiliary output | DC (± 2.4 V); square wave (~ 715 Hz and 456 MHz); trigger output (255 mV p-p into 50 Ω). |
| Trigger output | 5 V 50 Ω back-terminated. |
| Time base reference output | 10 MHz, 5V 50 Ω back-terminated. |

General characteristics

| | |
|-------------------------------|--|
| Temperature | Operating: 5° C to +40° C. Non-operating: -40° C to +70° C. |
| Humidity | Operating: Up to 95% relative humidity (non-condensing) at +40°C. Non-operating: Up to 90% relative humidity at +65°C. |
| Altitude | Operating: Up to 4,600 meters (15,000 feet). Non-operating: Up to 15,300 meters (50,000 feet). |
| Vibration | Operating: Random vibration 5-500 Hz, 10 minutes per axis, 0.3 g(rms). Non-operating: Random vibration 5-500 Hz, 10 minutes per axis, 2.41 g(rms); resonant search 5-500 Hz, swept sine, 1 octave/minute sweep rate, (0.75g), 5 minute resonant dwell at 4 resonances per axis. |
| Power | 100-240 VAC, $\pm 10\%$, Cat II, 47 to 440 Hz; max power dissipated: 475 W. |
| Weight | Net: 13 kg (28.5 lbs.). Shipping: 16 kg (35.2 lbs.). |
| Dimensions (excluding handle) | Height: 216 mm (8.5 in). Width: 437 mm (17.19 in). Depth: 440 mm (17.34 in). |
| Safety | Meets IEC 61010-1 +A2, CSA certified to C22.2 No.1010.1, self-certified to UL 3111. |

* Denotes warranted specifications, all others are typical. Specifications are valid after a 30-minute warm-up period, and $\pm 5^\circ\text{C}$ from annual calibration temperature.

1 Full scale is defined as 8 vertical divisions. Vertical divisions are defined by the major scale settings above non-major scale settings. The major scale settings are 10 mV, 20 mV, 50 mV, 100 mV, 200 mV, 500 mV, 1 V.

2 Vertical resolution for 8 bits = 0.4% of full scale, for 12 bits = 0.024% of full scale.

3 Within one year of previous calibration.

4 FFT amplitude readings are affected by input amplifier roll-off.

54855A: -3 dB at 6 GHz, with amplitude decreasing as frequency increases above 6 GHz.

54854A: -3 dB at 4 GHz, with amplitude decreasing as frequency increases above 4 GHz.

54853A: -3 dB at 2.5 GHz, with amplitude decreasing as frequency increases above 2.5 GHz.

54852A: -3 dB at 2 GHz, with amplitude decreasing as frequency increases above 2 GHz.

5 The noise floor varies with memory depth and averaging.

6 Test signal peak-to-peak amplitude ≥ 5 divisions; vertical scale ≥ 10 mV/div; test signal rise time ≤ 415 ps (54852A), 335 ps (54853A), 225 ps (54854A), 150 ps (54855A); sample rate = 20 GSa/s (10 GSa/s for 54852A); sin(x)/x interpolation enabled; measurement threshold = fixed voltage at 50 % level.

7 Between two edges on a single channel. Rms value refers to the standard deviation of 256 consecutive measurements performed using an individual instrument.

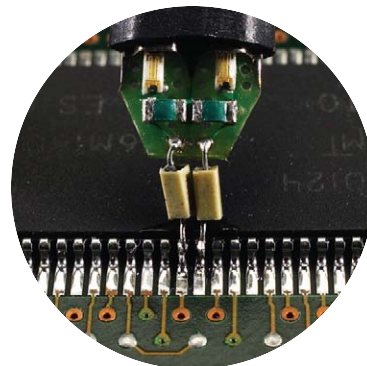
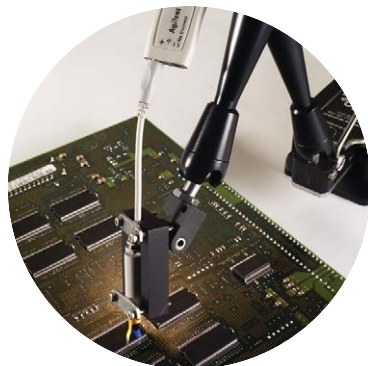
8 Internal trigger. Trigger level contained within full scale display range of trigger channel.

InfiniiMax 1130 Series Performance Characteristics

| | 1134A, 1132A, 1131A, 1130A | |
|-------------------------------------|--|---|
| Bandwidth* | 1134A: > 7 GHz 1132A: > 5 GHz | 1131A: > 3.5 GHz 1130A: > 1.5 GHz |
| Rise and fall time (10% to 90%) | 1134A: 60 ps 1132A: 86 ps | 1131A: 100 ps 1130A: 233 ps |
| System bandwidth (-3 dB) | 1134A with 54855A: 6 GHz 1132A with 54854A: 4 GHz 1131A with 54853A: 2.5 GHz 1131A with 54846B: 2.25 GHz 1131A with 54852A: 2 GHz 1130A with 54832B/D, 33A/D: 1 GHz | |
| Input capacitance ¹ | C _m = 0.10 pF C _g = 0.34 pF C _{diff} = 0.27 pF C _{se} = 0.44 pF | C _m is between tips C _g is to ground for each tip Differential mode capacitance = C _m + C _g /2 Single-ended mode capacitance = C _m + C _g |
| Input resistance* | Differential mode resistance = 50 kΩ ± 2% Single-ended mode resistance = 25 kΩ ± 2% | |
| Input dynamic range | 5.0 V peak to peak, ± 2.5 V | |
| Input common mode range | 6.75 V peak to peak dc to 100 Hz; 1.25 V peak to peak > 100 Hz | |
| Maximum signal slew rate | 18 V/ns when probing a single-ended signal 30 V/ns when probing a differential signal | |
| DC attenuation | 10:1 ± 3% before calibration on oscilloscope 10:1 ± 1% after calibration on oscilloscope | |
| Zero offset error referred to input | < 30 mV before calibration on oscilloscope < 5 mV after calibration on oscilloscope | |
| Offset range | ± 12.0 V when probing single-ended | |
| Offset accuracy | < ± 1% of setting when probing single-ended | |
| Noise referred to input | 3.0 mV rms | |
| Propagation delay | ~6 ns (this delay can be deskewed relative to other signals) | |
| Maximum input voltage | 30 V peak, CAT I | |
| ESD tolerance | > 8 kV from 100 pF, 300 Ω HBM | |

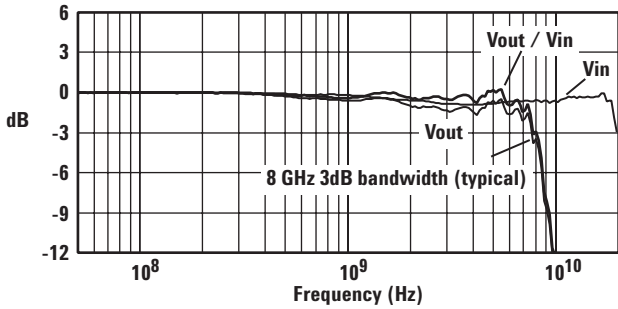
* Denotes warranted specifications, all others are typical.

¹ Measured using the probe amplifier and solder-in differential probe head with full bandwidth resistors.

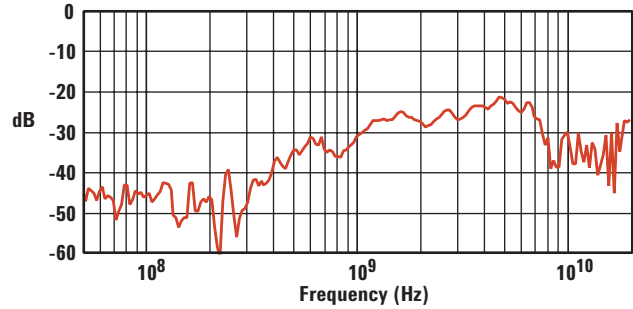


InfiniiMax 1130 Series Performance Characteristics (continued)

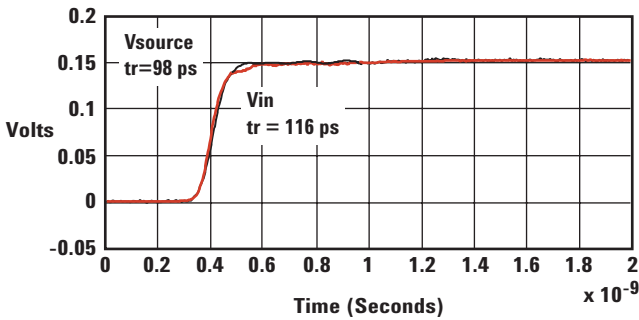
Example of characterized performance plots: differential solder-in probe head



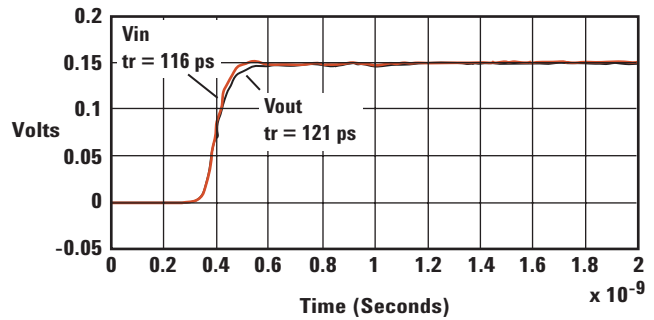
Swept frequency response



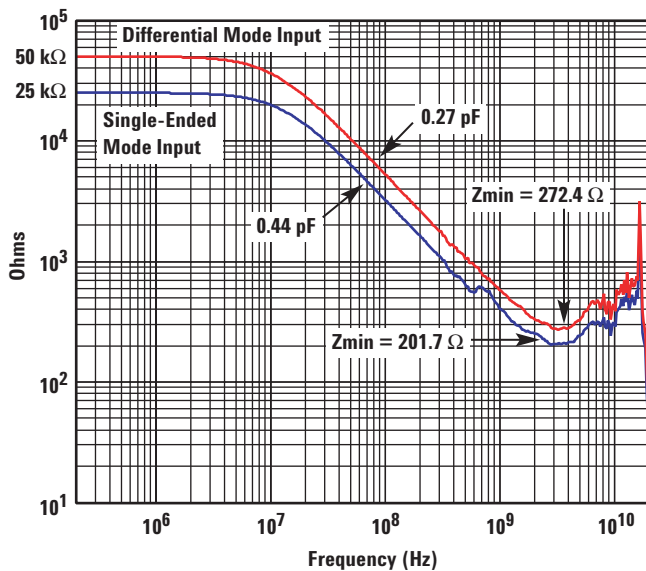
Common mode rejection vs. frequency



Time-domain probe loading



Time-domain probe tracking of 100 ps 10-90% step



Impedance vs. frequency

The electrical properties of the oscilloscope's probe head or probe accessory can often be the limiting factor in the measurement bandwidth or measurement accuracy that can be realized in practical use. The InfiniiMax probing system is the only high-bandwidth probing system that provides characterized performance plots for each of its probe heads. This allows you to see the measurement capability you can achieve for a given use model.

Input impedance SPICE models (and corresponding SPICE decks) for InfiniiMax probes can be found online at (<http://www.cos.agilent.com/manuals/>).

Ordering Information

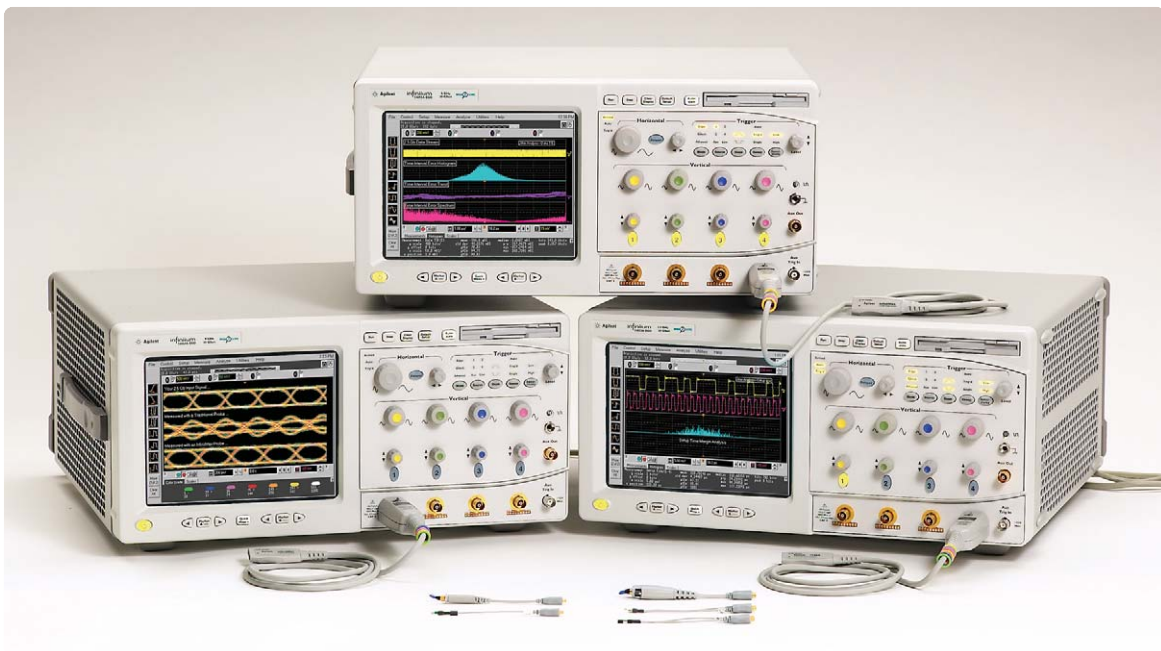
54850 Series Infiniium oscilloscopes

| Model | Bandwidth | Channels | Sample rate per channel | Standard acquisition memory |
|--------|-----------|----------|-------------------------|-----------------------------|
| 54855A | 6 - 7 GHz | 4 | 20 GSa/s | 262 kpts per channel |
| 54854A | 4 GHz | 4 | 20 GSa/s | 262 kpts per channel |
| 54853A | 2.5 GHz | 4 | 20 GSa/s | 262 kpts per channel |
| 54852A | 2 GHz | 4 | 10 GSa/s | 262 kpts per channel |

The above models include:

- Optical USB mouse
- Compact keyboard
- User's quick-start guide
- Documentation CD (service guide, programmer's guide, programmer's quick reference guide)
- Accessory pouch
- Power cord
- High-performance calibration cable (54855A only)
- E2655A probe deskew and performance verification kit
- Two 54855-67604 BNC-compatible to precision 3.5 mm (f) adapters (54855A, 54854A only)
- Three-year warranty.

Note: No probes are included with the 54850 Series oscilloscopes. The InfiniiMax 1130 Series probes must be purchased separately.



Ordering Information (continued)

54850 Series Infiniium oscilloscope options and accessories

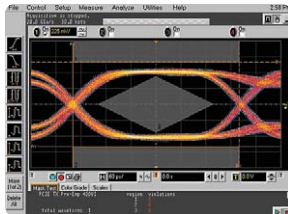
| Options | Description |
|--------------------|--|
| 001 | 1M/ch memory upgrade for Infiniium 5485xA oscilloscopes (32M/ch for sample rates \leq 2 GSa/s). |
| 002 | EZJIT jitter analysis software for Infiniium 5485xA oscilloscopes (installed at the factory). |
| 003 | High-Speed Serial Data Analysis/Mask Testing with clock recovery for Infiniium 5485xA oscilloscopes (installed at the factory). |
| 008 | 7 GHz enhanced bandwidth software for the 54855A oscilloscope. Increase measurement bandwidth to 7 GHz (typical) or reduce scope bandwidth to 1 GHz to reduce system noise. |
| 017 | 20 GB removable hard disk drive for Infiniium 5485xA oscilloscopes Replaces internal hard disk with a removable hard disk. Order the N5390A for additional hard disk drive cartridges. |
| 021 | Low-Speed Serial Data Analysis for Infiniium 548xx oscilloscopes (installed at the factory). |
| Instrument options | Description |
| 1CM (E2609B) | Rack-mount kit. |
| Service options | Description |
| A6J | ANSI Z540-compliant calibration. |
| Accessories | Description |
| E2680A | After-purchase memory upgrade for Infiniium 5485xA oscilloscopes. Order 5485xA option 001 when purchasing a new Infiniium 5485xA oscilloscope. The E2680A is for customers who own a 5485xA scope and wish to upgrade the acquisition memory. |
| E2681A | After-purchase EZJIT jitter analysis software for Infiniium 5485xA oscilloscopes. Order 5485xA option 002 when purchasing a new Infiniium 5485xA oscilloscope. The E2681A is for customers who own a 5485xA oscilloscope and wish to upgrade to add the EZJIT software. |
| E2690A ADV | After-purchase Advanced Timing Interval and Jitter Analysis software for Infiniium 5485xA oscilloscopes. Available in one scope license and four scope license versions. |
| E2688A | After-purchase High-Speed Serial Data Analysis/Mask Testing with clock recovery for Infiniium 5485xA oscilloscopes. Order 5485xA option 003 when purchasing a new Infiniium 5485xA oscilloscope. The E2688A is for customers who own a 5485xA oscilloscope and wish to upgrade to add the High-Speed SDA software. |
| N5390A | Additional 20 GB hard disk drive cartridge for Infiniium 5485xA option 017 |
| N5391A | After-purchase Low-Speed Serial Data Analysis/Mask Testing with clock recovery for Infiniium 5485xA oscilloscopes. Order 5485xA option 021 when purchasing a new Infiniium 5485xA oscilloscope. The N5391A is for customers who own a 5485xA oscilloscope and wish to upgrade to add the Low-Speed SDA software. |
| E2697A | High impedance adapter (includes passive probe) |
| E2698A | Ethernet Mask Testing for 54850/54830 series oscilloscopes |
| E2654A | EZ Probe Positioner [®] : includes base, joystick, and articulating arm. |

Ordering Information (continued)

54850 Series Infiniium oscilloscope options and accessories (continued)

| Accessories (continued) | Description |
|-------------------------|--|
| E2682A | VoiceControl. (See page 23.) |
| E2683A | USB 2.0 Compliance Test option. (See page 20.) |
| E2625A | Communication Mask Test Kit. (See page 22.) |
| 1184A | Testmobile with keyboard and mouse tray, drawer for accessories. (See page 23.) |
| E5850A | Time-correlation fixture – integrate Infiniium scope and 1670x logic analyzer. (See page 22.) |
| E2655A | Additional probe deskew/performance verification kit for InfiniiMax probes. |
| 54855-67604 | 18 GHz BNC-compatible to precision 3.5 mm (f) adapter for Infiniium 5485xA scopes. Allows highest fidelity connection of 3.5 mm or SMA cables. |

E2688A



High-Speed Serial Data Analysis/Mask Testing with Clock Recovery.

Easily perform mask testing and characterize serial data streams that employ embedded clocks. The E2688A provides mask templates and clock recovery for verifying compliance to computer, communication and datacom standards. You can even characterize proprietary serial buses with the built-in, general purpose golden PLL clock recovery.

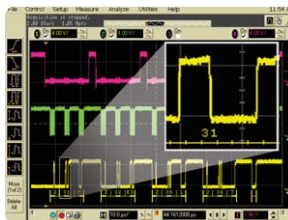
Features include:

- Golden PLL clock recovery
- Set up wizard to configure the clock recovery
- Real-time eye diagram display with eye-mask unfolding
- Recovered clock display
- Time interval error (TIE) jitter measurement with statistics on the data stream
- Mask template loading
- 8b/10b decode with symbol trigger and search

Standard masks include:

- PCI Express (2.5 Gbps)
- Serial ATA (1.5 Gbps)
- Fibre Channel Electrical (1.0625, 2.125, 4.25 Gbps)
- Ethernet IEEE 802.3 (10/100/1000Base-T)
- Serial Attached SCSI, XAUI

N5391A



Low-Speed Serial Data Analysis Software.

Provides a fast and easy way to debug Inter-Integrated Circuit (I²C) and 2-wire or 3-wire Serial Peripheral Interface (SPI) serial communication busses. The Low-Speed SDA software, when used with the Agilent 54830 Series or 54850 Series Infiniium oscilloscopes, provides the ability to capture and automatically display decoded serial data in numerical format synchronized with the analog or digital waveform view of I²C or SPI serial data streams.

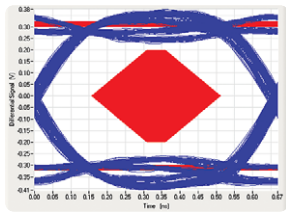
Ordering Information (continued)

54850 Series Infiniium oscilloscope options and accessories (continued)

Accessories (continued)

Description

Download



Serial ATA Signal Quality Compliance Test.

If you develop Serial ATA host bus adapters or devices and would like to perform compliance testing to the standard, the sigtest program provides the following features:

- program runs inside Infiniium 54855A and tests host bus adapters and devices for compliance to Serial ATA standard, as issued by Serial ATA working group
- written test procedure for Agilent Infiniium 54855A and Agilent 81134A pulse/pattern generator
- software automatically sets up the oscilloscope, allows user to transfer setups to pattern generator, acquires waveform data and launches eye measurement (sigtest)
- includes support for OOB (out of band) signal testing
- solution has been evaluated and proven at Serial ATA plugfests

Program can be downloaded for free from the following URL:
<http://www.cos.agilent.com/scope-apps/sata.html>

Partner Product

IEEE-1394 Pre-Compliance Test Option.

A pre-compliance test solution is available from Quantum Parametrics for use in conjunction with Agilent 54850 Series oscilloscopes. This test solution automates the compliance test process for the IEEE-1394 standard. See <http://www.quantumparametrics.com> for additional information.

E2683A

USB 2.0 Compliance Test Option.



The Agilent USB 2.0 compliance test option makes USB signal integrity testing as simple as capturing the signals with your oscilloscope. Infiniium has significantly reduced the work associated with USB compliance testing by eliminating the need to transfer scope waveforms to a PC. The Infiniium USB 2.0 test option features run-time MATLAB embedded in the scope for use with the USB signal integrity scripts, providing a one-box solution. The USB-IF compliance program recognizes Infiniium as a recommended scope for use in pre-compliance testing. In addition, all MATLAB scripts used with the USB 2.0 test option come from the USB-IF organization.

This option works with all Infiniium 5485xA 4-channel oscilloscopes. Included with the E2683A are USB-IF MATLAB scripts and Signal Quality Inrush Droop/Drop (SqIDD) test fixture, needed for low/full speed testing. Additional SqIDD test fixtures can be purchased as the E2646A.

For USB 2.0 High Speed testing, order the E2683A test option as well as the E2649A for a complete set of six fixtures and power supply.

For USB 2.0 High Speed testing, a differential probe is required. Please order either the InfiniiMax 1130A 1.5 GHz, 1131A 3.5 GHz, 1132A 5 GHz or 1134A 7 GHz probe amplifiers, along with the E2669A differential connectivity kit or E2678A differential socketed probe head.

The USB 2.0 Compliance Test Procedure is located at <http://www.usb.org/developers/docs>

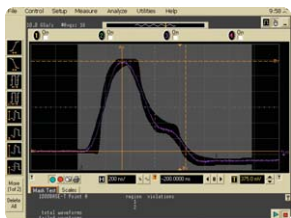
Ordering Information (continued)

54850 Series Infiniium oscilloscope options and accessories (continued)

Accessories (continued)

Description

E2698A



Ethernet Mask Testing for 54850/54830 Series Oscilloscopes.

The E2698A Ethernet Masks provide mask templates for 1000BaseTX, 100BaseT and 10BaseT. These masks are supported for both the Infiniium 54850 series and Infiniium 54830 series of oscilloscopes, and provide pass/fail testing for Ethernet signals.

Masks provided: 1000BaseTX: six masks (points A, B, C, D, F and H as specified in paragraph 40.6.1.1.2 and figure 40-19 of IEEE 802.3-2002 specification). The masks assume that the user has properly connected a differential probe from channel 1 of the oscilloscope to one pair of the transmitter under test (as in 802.3-2002 paragraph 40.6.1.1.3) and that Test Mode 1 (802.3-2002 paragraph 40.6.1.1.2) is enabled. You also receive two mask templates for 100BaseT and four mask templates for 10BaseT.

E2697A

High Impedance Adapter (Includes 500 MHz Passive Probe) for Infiniium 54850 Series Oscilloscopes.

The E2697A high impedance adapter allows connection of probes that require a high impedance input (e.g., passive probes, current probes) to the Infiniium 54855A, 54854A and 54853A family of high performance oscilloscopes. The E2697A high impedance adapter extends the capability of Agilent Infiniium high-performance oscilloscopes, making them ideal for a variety of general-purpose measurements such as power supplies, inverters, semiconductor measurements, etc. The E2697A provides switchable ac/dc coupling, as well as 10:1 and 1:1 attenuation settings.



Specifications/Characteristics

| | | |
|---|--|--|
| Bandwidth | Analog BW (-3 dB)* | 500 MHz (with supplied 10073C passive probe) |
| | System Bandwidth | 500 MHz (with 10073C passive probe and 54850 series oscilloscope) |
| Dc attenuation | 1.16:1 | E2697A internal attenuator at 1:1 (at scale settings > 200 mV/div signal size limited by input dynamic range) |
| | 11.6:1 | E2697A internal attenuator at 10:1 (at scale settings > 200 mV/div signal size limited by input dynamic range) |
| Input Dynamic Range | E2697A internal attenuator setting of 1:1 | ±0.8 V |
| | E2697A internal attenuator setting of 10:1 | ±8 V |
| Input Dynamic Range with 10073C passive probe | E2697A internal attenuator setting of 1:1 | ±8 V |
| | E2697A internal attenuator setting of 10:1 | ±80 V |
| Input Impedance* | 1 MΩ ± 1% (~12 pF) | |
| Input Coupling | dc, ac (7 Hz) | |
| Maximum Input Voltage | ±100V [dc + ac] [ac < 10 kHz], CAT I | |
| Offset Range | E2697A internal attenuator setting of 1:1 | ±5 V |
| | E2697A internal attenuator setting of 10:1 | ±50 V |
| Dc Gain Accuracy* ¹ | ±1.5% of full scale | |
| Offset Accuracy* ¹ | ±(1.5% of channel offset + 1.5% of full scale) | |

* Denotes warranted specifications, all others typical. Specifications are valid after a 30 minute warm-up period and ±5 °C from calibration temperature.

¹ Full scale is defined as 8 vertical divisions.

Ordering Information (continued)

54850 Series Infiniium oscilloscope options and accessories (continued)

Accessories (continued)

Description

E2625A

Communication Mask Test Kit.



Take the frustration out of communications testing and prove your designs conform to industry standards with the E2625A Communications Mask Test Kit option. Infiniium's familiar Windows interface makes it easy for you to access the masks you need and configure your tests.

In addition, the E2625A Communication Mask Test Kit comes with a set of electrical communication adapters to ensure convenient, reliable and accurate connections to your device under test. Included are more than 20 industry standard ANSI T1.102 and ITU-T G.703 communication signal mask templates.

E5850A

Logic Analyzer/Oscilloscope Time-Correlation Fixture.



Now you can more effectively verify and track down problems between the analog and digital portions of a design. Easily make time-correlated measurements between an Agilent 16700 Series logic analysis system and an Infiniium 54800 Series oscilloscope. With the E5850A Time-Correlation Fixture, you can trigger the Infiniium from the logic analyzer (or vice versa), automatically deskew the waveforms and simultaneously view the Infiniium oscilloscope waveforms and the logic analyzer's timing waveforms on your Agilent 16700 Series Logic Analyzer.

Foot Switch

Kinesis Savant 3-Action Programmable Foot Switch P/N AC004PF.

Allows you to easily program the 3-action foot pedals to perform the following scope functions: run, stop, toggle between run and stop, save waveform, save screenshot, measure any five waveform parameters and recall an instrument setup.

See http://www.kinesis-ergo.com/prog_fs.htm for additional information and ordering instructions.

Ordering Information (continued)

54850 Series Infiniium oscilloscope options and accessories (continued)

Accessories (continued)

Description

1184A

Testmobile.

Agilent's 1184A testmobile provides a convenient solution for your portability and storage needs. The 1184A includes a drawer for accessories and a keyboard tray with a mouse extension for either right- or left-handed operation.



E2682A

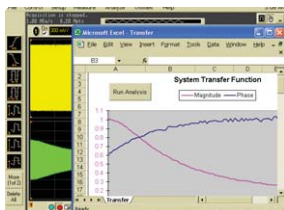
VoiceControl Option.



If you're making measurements on target systems with densely packed ICs, your hands are tied up holding probes, making it difficult to turn knobs and press buttons on the front panel of your scope. Infiniium's award-winning VoiceControl option solves this problem. Just speak into the collar-mounted microphone to operate your Infiniium's front-panel controls without using your hands. Simply tell the scope what you want it to do, using natural English-language commands, such as "set channel one to 1 volt per division." The VoiceControl system does not require the scope to be trained to understand a particular user.

E2699A

My Infiniium Integration Package



My Infiniium allows you to extend the power of your Windows XP-based Infiniium oscilloscope by letting you launch customized applications, such as those written for Agilent VEE Pro, NI LabVIEW[®] or Microsoft Excel, directly from the oscilloscope's front panel or graphical user interface.

For more detailed information, please request Agilent publication number 5988-9934EN.

Ordering Information (continued)

1130 Series InfiniiMax probing system

| Probe amplifiers model | Description |
|------------------------|--|
| 1134A | 7 GHz InfiniiMax probe amp – order one or more probe heads or connectivity kits. |
| 1132A | 5 GHz InfiniiMax probe amp – order one or more probe heads or connectivity kits. |
| 1131A | 3.5 GHz InfiniiMax probe amp – order one or more probe heads or connectivity kits. |

| Connectivity kits model | Description |
|-------------------------|---|
| E2669A | InfiniiMax connectivity kit for differential/single-ended measurements. Includes a differential browser, four solder-in differential probe heads and two socketed differential probe heads. Includes all necessary accessories. |
| E2668A | InfiniiMax connectivity kit for single-ended measurements. Includes one single-ended browser, one solder-in probe head and one socketed probe head. Includes all necessary accessories. |

| Individual probe heads | Description |
|------------------------|---|
| E2675A | InfiniiMax differential browser probe head and accessories. Includes 20 replaceable tips and ergonomic handle. Order E2658A for replacement accessories. |
| E2676A | InfiniiMax single-ended browser probe head and accessories. Includes 2 ground collar assemblies, 10 replaceable tips, a ground lead socket and ergonomic browser handle. Order E2663A for replacement accessories. |
| E2677A | InfiniiMax differential solder-in probe head and accessories. Includes 20 full bandwidth and 10 medium bandwidth damping resistors. Order E2670A for replacement accessories. |
| E2678A | InfiniiMax single-ended/differential socketed probe head and accessories. Includes 48 full bandwidth damping resistors, 6 damped wire accessories, 4 square pin sockets and socket heatshrink. Order E2671A for replacement accessories. Order E5381-82103 for 34 damped wire accessories only. |
| E2679A | InfiniiMax single-ended solder-in probe head and accessories. Includes 16 full bandwidth and 8 medium bandwidth damping resistors and 24 zero ohm ground resistors. Order E2672A for replacement accessories. |
| E2695A | Differential SMA probe head. Includes semi-rigid coax to change span between SMA cables. Works with InfiniiMax 1130 series probe amplifiers. |

| Adapters | Description |
|----------|--|
| N1022A | Adapts 113x/115x active probes to 86100 Infiniium DCA. |

Ordering Information (continued)

1130 Series InfiniiMax probing system (continued)

| Other compatible probes | Description |
|-------------------------|--|
| 1144A | 800 MHz active probe. Requires 1142A probe power supply when used with Infiniium scopes. Requires 01144-61604 probe power extender when using two or more 1144A active probes. |
| 1145A | 2-channel, 750 MHz active probe. Requires 1142A power supply when used with Infiniium oscilloscopes. |
| 1156A | 1.5 GHz single-ended active probe for Infiniium scopes. |
| 1157A | 2.5 GHz single-ended active probe for Infiniium scopes. |
| 1158A | 4 GHz single-ended active probe for Infiniium scopes. |
| 54006A | 7.5 GHz passive resistive divider probe – 10:1 (500 ohms) or 20:1 (1 kohms). |

Ordering Information (continued)



The Agilent 81134A pulse/pattern generator provides high speed stimulus to your devices, with pulses, patterns and PRBS data from 15 MHz to 3.35 GHz. You can also perform stressed eye diagram measurements with jitter on PRBS, data and clock signals.

Related Literature

| Publication Title | Publication Type | Publication Number |
|---|--------------------------|--------------------|
| <i>Infiniium 54800 Series Oscilloscopes</i> | Data Sheet | 5988-3788ENUS |
| <i>Option 008, 7 GHz Enhanced Bandwidth Oscilloscope</i> | Data Sheet | 5989-1066EN |
| <i>E2681A EZJIT Jitter Analysis Software</i> | Data Sheet | 5989-0109EN |
| <i>E2690A Timing Interval & Jitter Analysis Software</i> | Data Sheet | 5988-9723EN |
| <i>E2683A USB 2.0 Compliance Test Software</i> | Data Sheet | 5989-0236EN |
| <i>E2688A High-Speed Serial Data Analysis Software</i> | Data Sheet | 5989-0108EN |
| <i>Using Agilent InfiniiMax Probes with Test Equipment other than Agilent Infiniium Oscilloscopes</i> | Configuration Guide | 5989-1869EN |
| <i>Infiniium 54800 Series Oscilloscope Probes, Accessories and Options</i> | Selection Guide | 5968-7141EUS |
| <i>Advantages and Disadvantages of Using DSP Filtering on Oscilloscope Waveforms</i> | Application Note 1494 | 5989-1145EN |
| <i>Restoring Confidence in Your High-Bandwidth Probe Measurements</i> | Application Note 1419-01 | 5988-7951EN |
| <i>Understanding Usability Versus Performance on High-Bandwidth Active Oscilloscope Probes</i> | Application Note 1419-02 | 5988-8005EN |
| <i>Performance Comparison of Differential and Single-Ended Active Voltage Probes</i> | Application Note 1419-03 | 5988-8006EN |
| <i>Understanding Oscilloscope Frequency Response and Its Effect on Rise Time Accuracy</i> | Application Note 1420 | 5988-8008EN |
| <i>Understanding and Using Offset in InfiniiMax Active Probes</i> | Application Note 1451 | 5988-9264EN |
| <i>Finding Sources of Jitter with Real-Time Jitter Analysis</i> | Application Note 1448-2 | 5988-9740EN |

Product Web site

For the most up-to-date and complete application and product information, please visit our product Web site at:
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Product specifications and descriptions in this document subject to change without notice.

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Printed in USA December 23, 2004

5988-7976EN



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