

Keysight S-Series vs. Tektronix 6 Series

HARDWARE AND MEASUREMENT PERFORMANCE

Banner Specifications

	Keysight S-Series	Tektronix 6 Series
Channel Count	4 analog and 16 digital, independent	4 analog or 32 digital, same inputs
Bandwidth (max)	500 MHz – 8 GHz	1 GHz – 8 GHz
Bandwidth (4 channels)	500 MHz – 4 GHz	1 GHz – 8 GHz
Sample Rate (max)	20 GSa/s	25 GSa/s
Standard Memory (4 ch)	100 Mpts/ch	62.5 Mpts/ch
Max Memory (4 ch)	410 Mpts/ch	250 Mpts/ch
Timescale accuracy	12 ppb ± 75 ppb/yr	12 ppb ± 300 ppb/yr
ADC Bits @ 8 GHz ^[1]	10	8
ENOB @ 8 GHz ^[2]	6.4	6.5
Noise @ 8 GHz ^[3] (1V full scale)	2.93 mV	3.46 mV
Display	15" capacitive	15.6" capacitive
Operating System	Windows 10	Windows 10 or Embedded

[1] Tektronix' 6 Series has a 12 bit ADC, but it doesn't work at maximum sample rate, only below 12.5 GSa/s.

[2] Tektronix ENOB self reported at 500 mV, Keysight at 300 mV full scale. See respective datasheets for more.

[3] Tek noise self reported at 100 mV/div (10 divisions full scale). Keysight measured at 120 mV/div (8 divisions full scale).

Diving Deeper

Usable Channels

Keysight's traditional MSO setup has 4 analog and 16 digital channels, all independent. Tektronix only offers four total inputs, which can either be 1 analog or 8 digital channels each. This creates measurement compromise when analyzing complex mixed signal designs, and extra costs when purchasing probes.

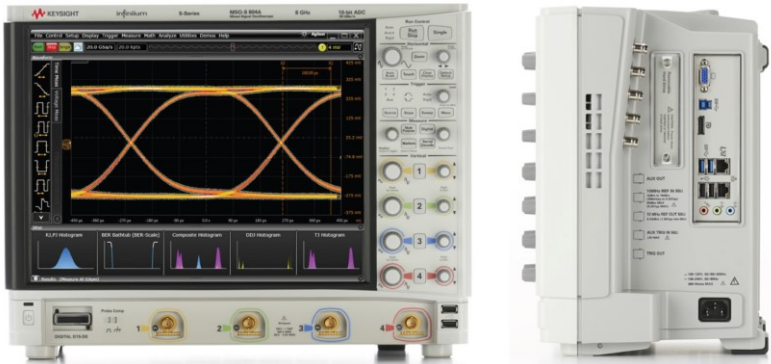
Memory Depth

Keysight offers 60% more memory standard, 64% more memory optionally, and charges up to 50% less for additional memory ^[4].

[4] As of publication date, Keysight offers 410 Mpts/ch for \$8,400 USD and Tektronix offers 250 Mpts/ch for \$10,000 USD.

Signal Integrity

Keysight and Tektronix are fairly matched in ENOB and noise floor in most settings. The S-Series has a 10 bit ADC, while the 6 Series offers up to 12 bits of resolution in hardware. Tektronix will drop to 8 bits at 25 GSa/s. Keysight will drop to 8 bits below 10 GSa/s. See our respective datasheets for more info.

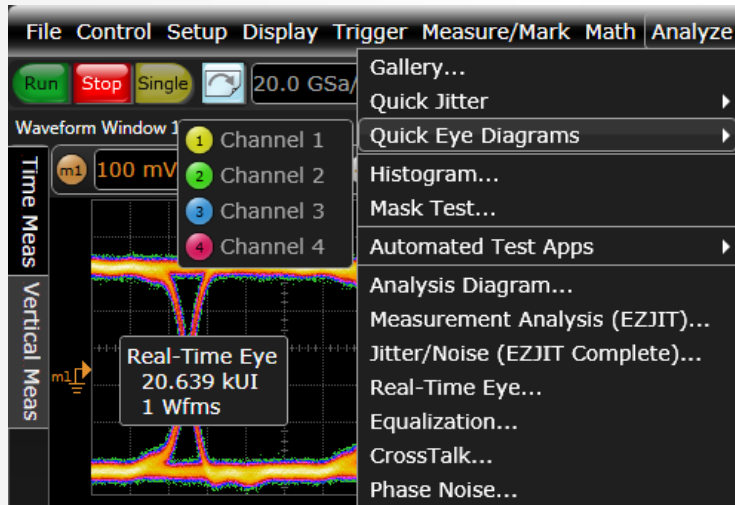


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EASIER TO USE INTERFACE

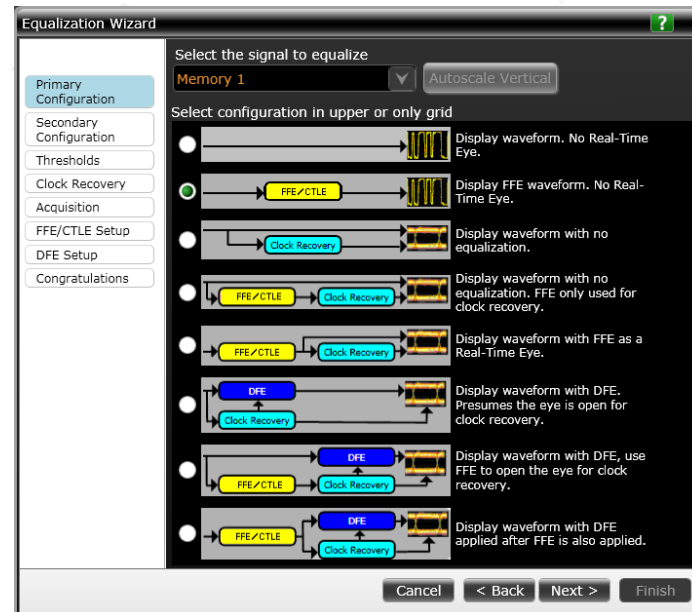
The Keysight S-Series offers...

- ✓ Automatic, easy, fast **setup wizards**
- ✓ a traditional **menu driven** user interface
- ✓ comprehensive, **built-in help**
- ✓ **one click** jitter and eye diagrams
- ✓ more **comprehensive** signal integrity tests
- ✓ **powerful FFT** for RF measurements
- ✓ nearly **3x more** protocol decode/triggers
- ✓ over **5x more** protocol compliance

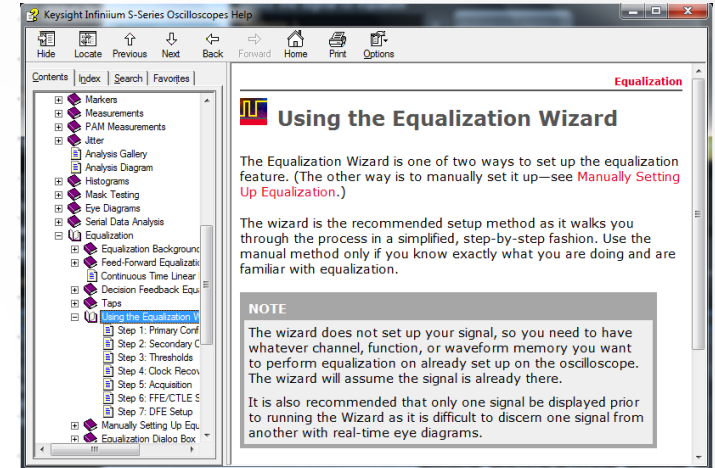


Jitter tests and eye diagrams can be set up automatically with one click in the Analyze menu. An eye diagram on a Tektronix 5 or 6 Series may take up to 14 steps within four different menus.

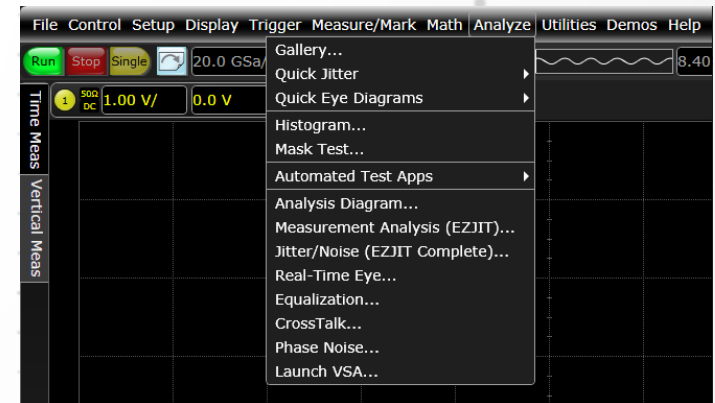
KEYS	Setup Wizard	TEK
	PAM	
	Jitter	
	Phase Noise	
	Crosstalk	
	Power Integrity	
	Equalization	
	Serial Data	
	Real Time Eye	
	De-Embedding	



Setup wizards walk you step by step through every setting you need to adjust for the best measurement results. None are featured on the Tektronix 5 or 6 Series.



Access built-in help for any feature by pressing the green "?" on a dialog, or through the main help menu and searching.



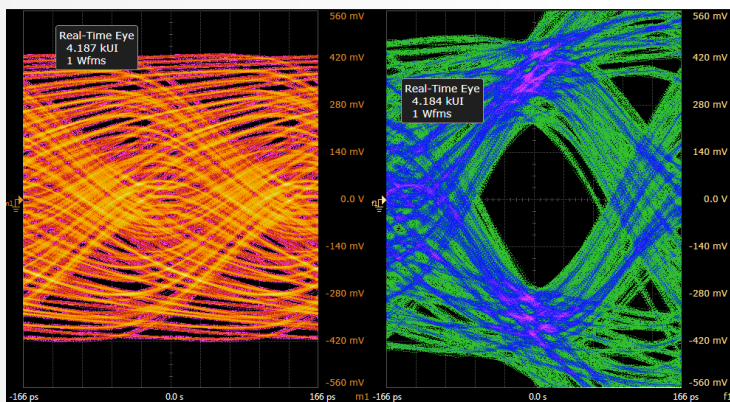
All menus and dialog boxes are accessible through a simple and traditional menu structure, optimized for mouse or touch operation. A Tektronix 5 or 6 series forces you to access many menus with right clicks or long presses on areas of the display.

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MORE COMPREHENSIVE ANALYSIS APPLICATIONS

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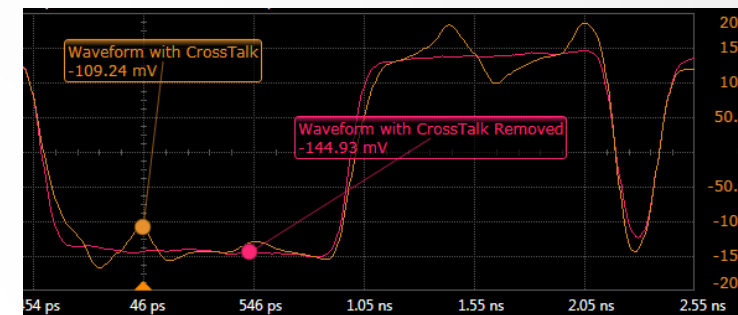


Use the S-Series to open closed eyes on fast data streams using various Equalization techniques (before and after above), or remove the effects of cables or probes from your measurement. This is not possible with a Tektronix 5 or 6 Series.

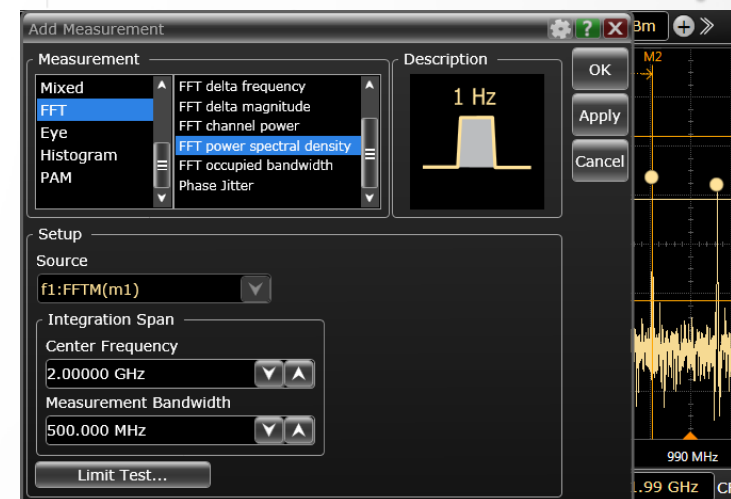
KEYS	Analysis	TEK
	PAM 3/4	
	Visual Triggering	
	Jitter	
	Switch Mode Power Test	

KEYS	Signal Integrity Test	TEK
	Eye Diagrams	
	Power Rail Test	
	De-Embedding	
	Equalization	
	Crosstalk Analysis	

KEYS	RF Measurements	TEK
	Frequency	
	Magnitude	
	Channel Power	
	Power Spectral Density	
	Occupied Bandwidth	
	Phase Jitter	



Determine the effects of aggressors on a signal before you do the design work to remove them using the S-Series Crosstalk analysis application. This is not possible with a Tektronix 5 or 6 Series.



RF focused measurements within the FFT on the S-Series means one less piece of equipment or software is required to get essential measurements done. See table to the right and note what is not available on a Tektronix 5 or 6 Series:

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SUPERIOR PROTOCOL DECODE/TRIGGER/COMPLIANCE APPS

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SMPI is one of nearly a dozen MIPI protocols supported on the Keysight S-Series. The Tektronix 5 and 6 Series do not support any MIPI protocol decode or triggers at this time.

KEYS	Compliance	TEK
	Automotive Ethernet	
	MOST	
	USB 2.0	
	USB Power Delivery	
	MIPI C-PHY	
	MIPI D-PHY 1.2	
	MIPI D-PHY 2.0	
	MIPI M-PHY 4.1	
	1000BASE-T Transmitter	
	10/100/1G	
	MGBASE-T (2.5G / 5G)	
	NBASE-T (2.5G / 5G)	
	10GBASE-T	
	XAUI	
	10GBASE-CX4	
	CPRI	
	OBSAI	
	Serial RapidIO	
	HDMI Electrical	
	HDMI 1.4	
	DDR/LPDDR	
	DDR/LPDDR2	
	DDR/LPDDR3	Measurements
	eMMC	
	ONFI	
	PCIe Gen 1 thru 4 (up to 2.5GT/s)	
	PAM-4	

The S-Series features a phenomenally large suite of compliance applications and protocol decode/triggers that are not supported on the Tektronix 5 or 6 Series.

KEYS	Protocol	TEK
	I2C	
	SPI	
	eSPI	
	Quad SPI	
	Quad eSPI	
	RS232/UART	
	MIL-STD-1553	
	ARINC 429	
	SpaceWire	
	CAN / CAN-FD	
	LIN	
	FlexRay	
	SENT	
	Automotive Ethernet	
	I2S Audio	
	Ethernet	
	USB 2.0	
	PCIe	
	SVID	
	JTAG	
	MIPI C-PHY	
	MIPI D-PHY	
	MIPI RFFE	
	MIPI I3C	
	MIPI SPMI	
	MIPI DigRF	
	MIPI UniPro	
	MIPI LLI	
	MIPI UFS	
	MIPI SSC	