

Keysight Technologies

30 Things Only Infiniium Oscilloscopes Can Do

Experience the Next-Generation User Interface on Your Oscilloscope and PC



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Could your user interface use an upgrade?

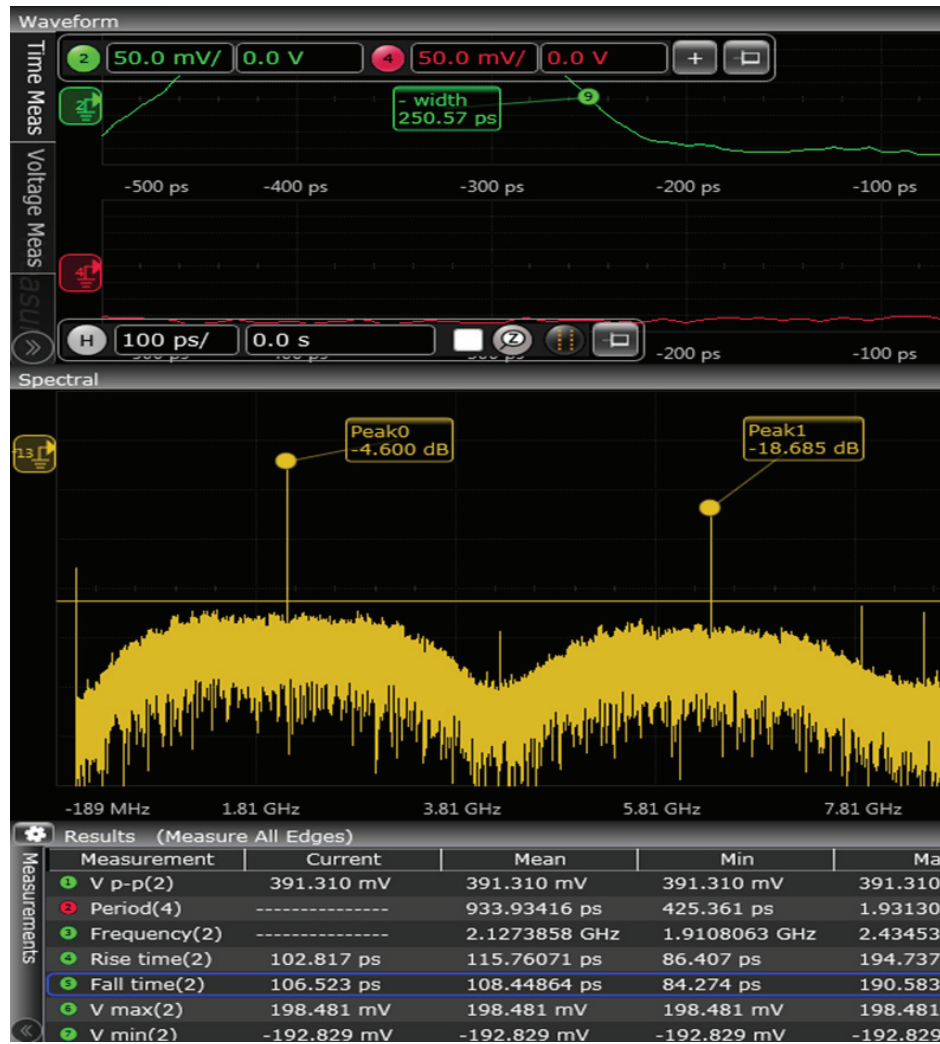
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See what the next generation has to offer:

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#1 Full Offline Analysis

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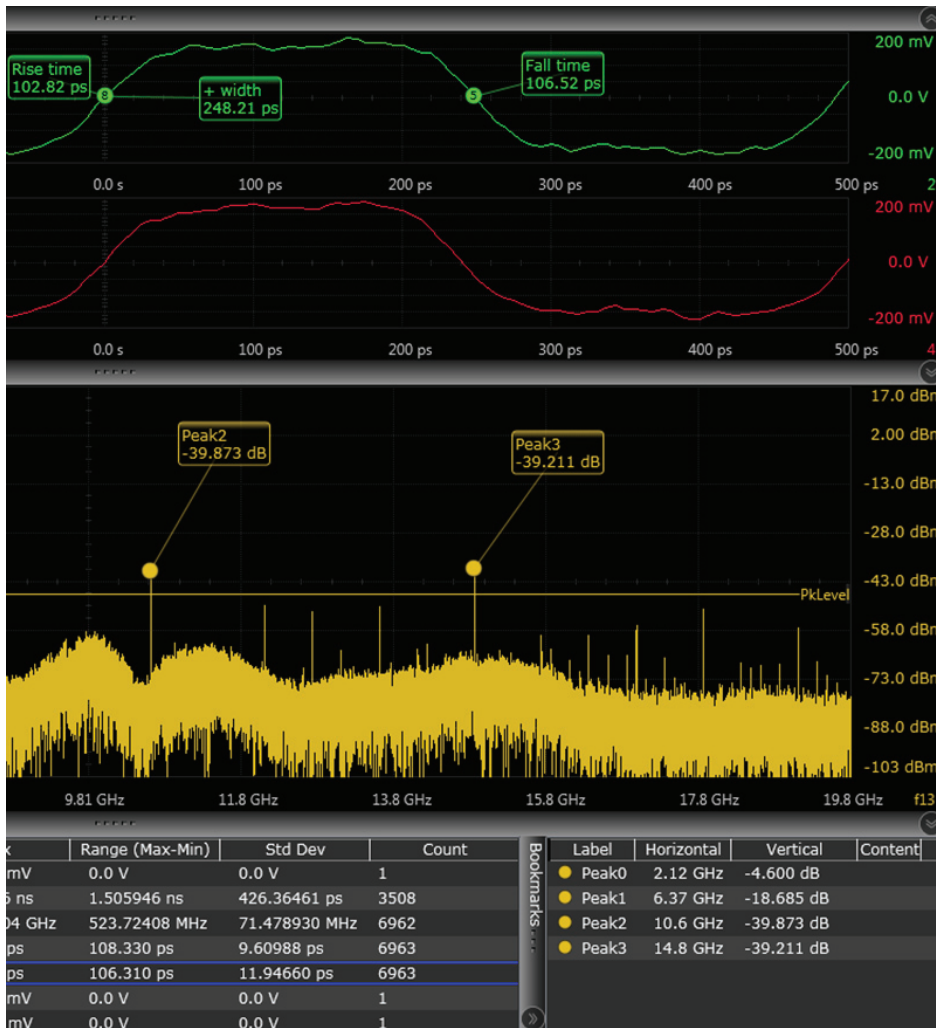
- Use your PC to view and analyze data and get additional insight without being tied to your oscilloscope and target system.
- Share oscilloscope measurements more easily across your team and with customers and vendors.
- Create more useful documentation, faster.
- Utilize a variety of popular file formats from Keysight Technologies, Inc. Infiniium and InfiniiVision oscilloscopes as well as generic .csv, .txt, and .tsv files.

continued on next page

Infiniium Offline is the world's most advanced offline analysis tool.

#1 Full Offline Analysis (continued)

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The following analyses are supported offline by Keysight's Infiniium Offline tool:

- Jitter analysis
- Jitter decomposition
- Equalization
- De-embedding
- Protocol analysis
- Measurements
- Spectral analysis
- Envelope analysis
- Amplitude or noise analysis
- Collaboration tools
- Plus much more

#2 Easy Collaboration

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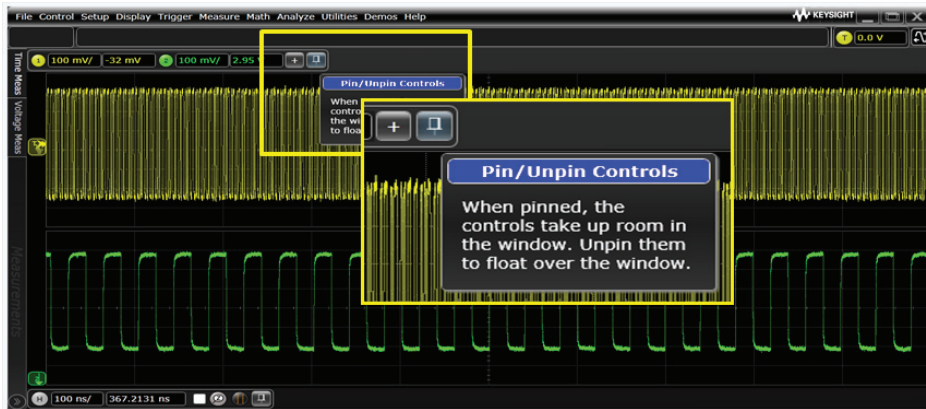
Use the composite format to enable worldwide collaboration.

Save more than just a screen shot, waveform, or setup file. The Infiniium user interface supports composite files, which save waveforms, setups, comments, measurements, and everything else that you are doing on the oscilloscope.

Debug with true waveforms from your partners or customers, save your comments in the composite format (*.osc), and then send the file directly to them. They will open the file and get your comments, waveform, and setup. They can then comment further and save it as a *.osc and sent it back to you. This is true collaboration enablement.

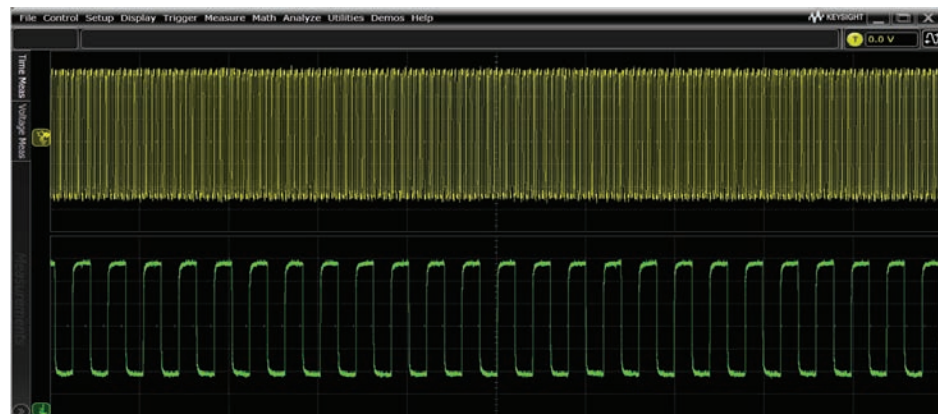
#3 Pin / Unpin Controls

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Pin/Unpin control.

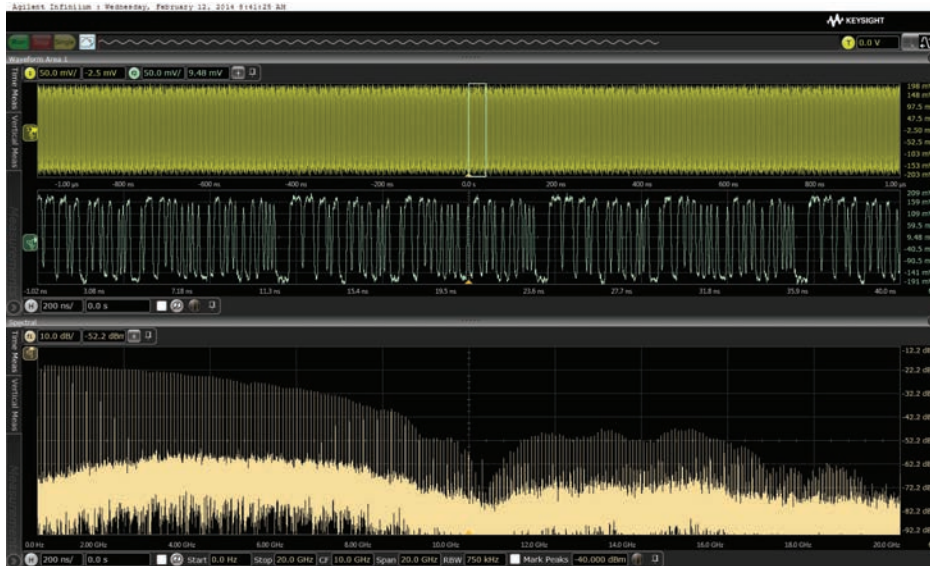
Sometimes you only want to see the waveform on the screen and not have controls take up precious viewing space. With Keysight's "Pin/Unpin" control, you can choose whether or not you wish to see the vertical and horizontal scale controls. Today's technologies require the display of much more data, including multiple grids and waveform areas. You want to see your data and not the oscilloscope controls. Use the "pin/unpin" controls to see the full signal.



Captured waveforms with controls minimized.

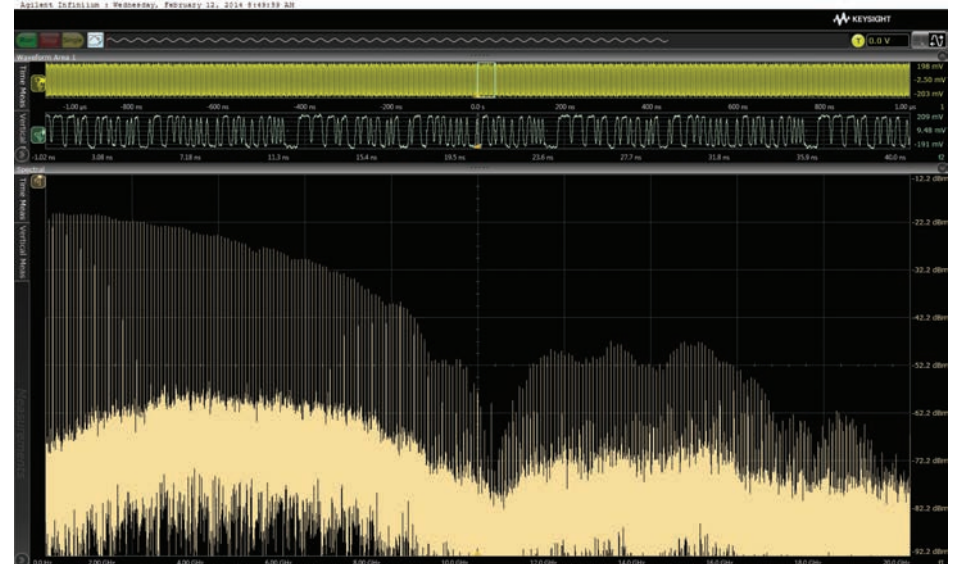
#4 Slider Bar for Better Viewing

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Infiniium now provides slider bars for better viewing.

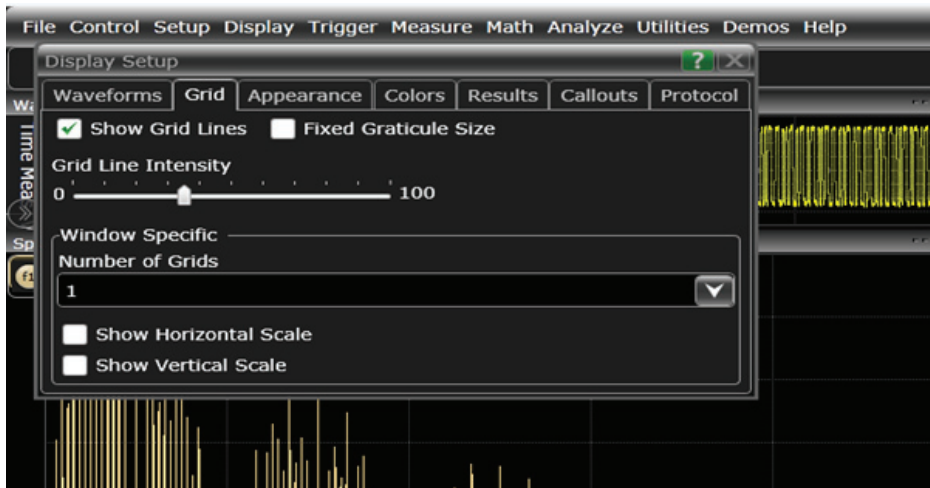
The Infiniium user interface provides a slider bar that allows you to adjust the size of the screen to the exact view that suits your viewing needs. All other Windows-based oscilloscopes use fixed and immovable windows, which lead to non-optimized viewing. With the new “slider bar,” you control how much area should be taken up by measurements, FFTs, waveforms, and more.



Notice how the screen has been adjusted to show minimum measurements/waveforms while maximizing FFT viewing.

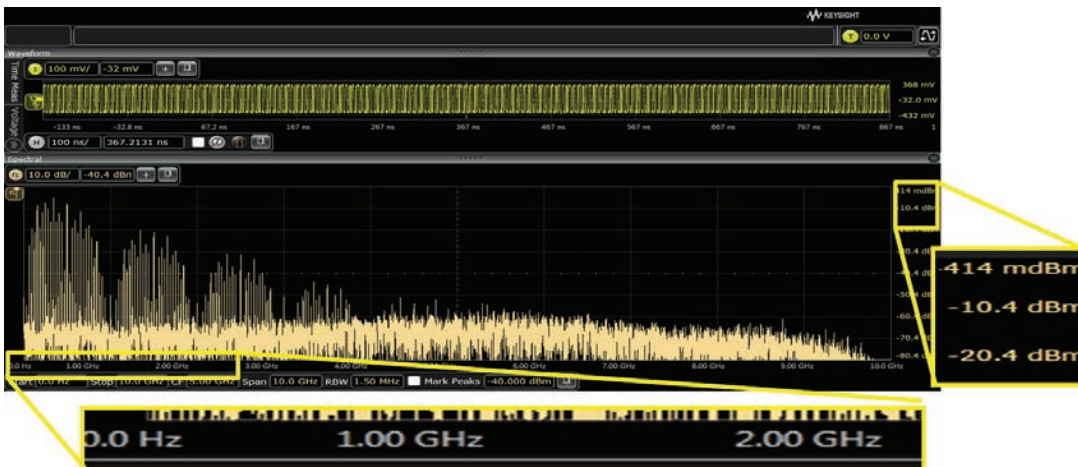
#5 Viewing Horizontal and Vertical Scales

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While this may seem obvious now, never before have you had the option to see the scaling of your signals right on the screen. By enabling these views, you are able to quickly see how big your signal is and to what frequency scale your FFT is set. This ultimately means that screen shots now tell a significantly better story.

The new Keysight user interface enables scale viewing.

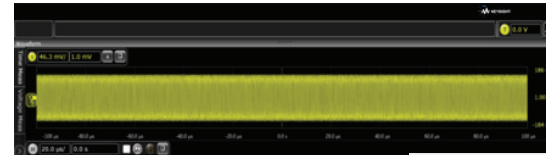


By seeing scales, it is easy to determine key oscilloscope settings without pulling up complicated menus.

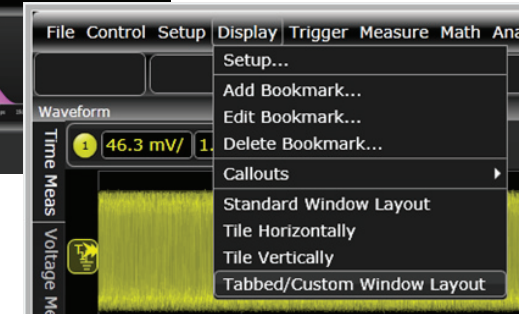
#6 Tabbed Windows

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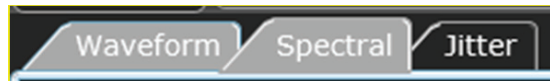
Tabbed viewing has become standard in Web browsers. Infiniium's user interface is the first interface to support tabbed viewing. This allows you to maximize the view of the data you wish to see. Tabs can include waveforms, FFTs, measurements, and all charts. By using chart viewing, users can easily find the analysis they need to identify any problems that may exist in their device.



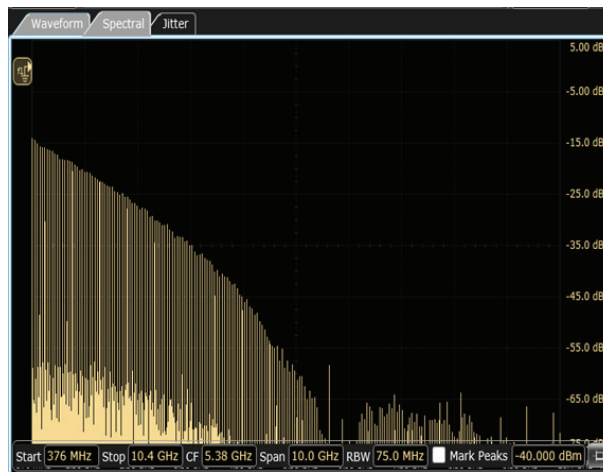
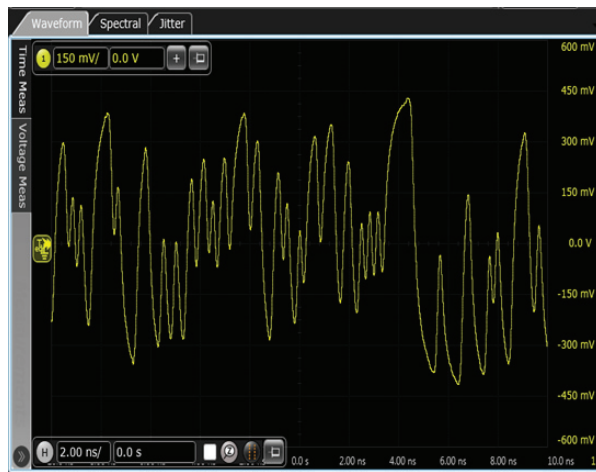
Standard view



Enabling tabbed viewing



Viewing EZJIT Plus charts in tabbed view

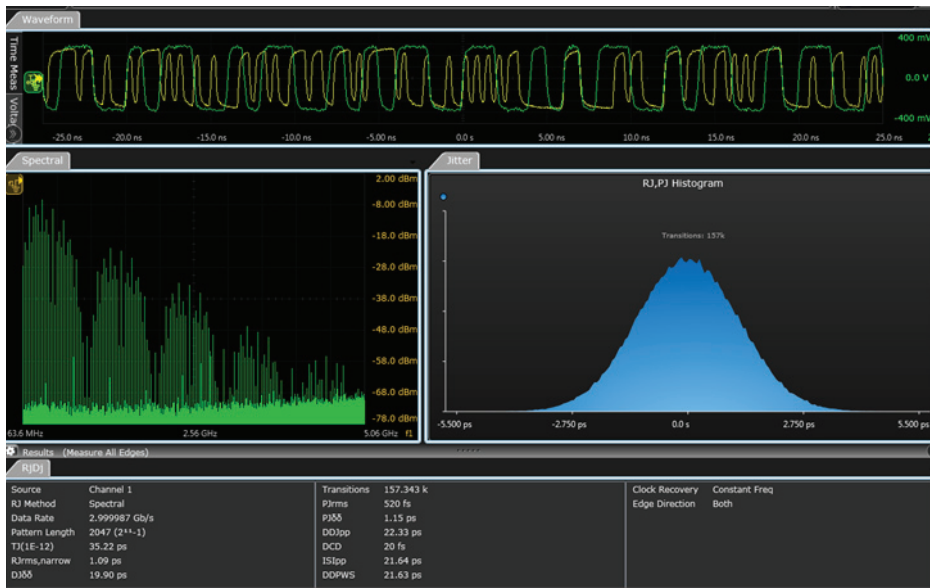


#7 Customizable Window Viewing

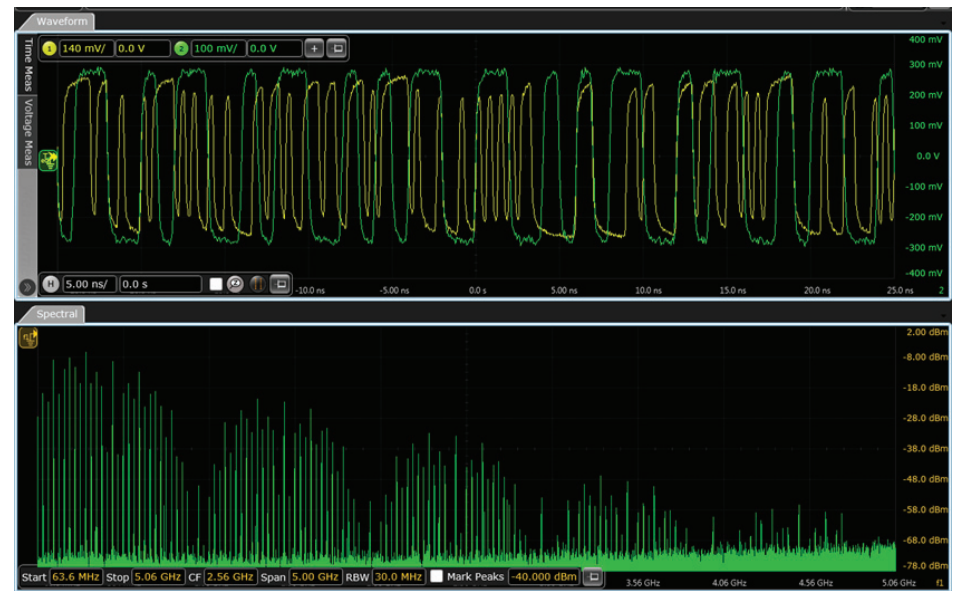
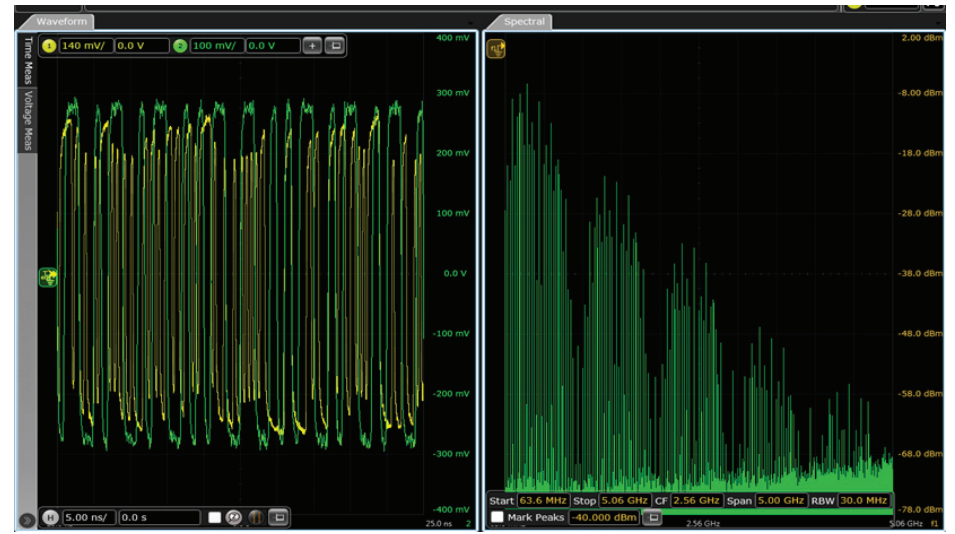
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Take tabbed viewing to a new level by moving the windows in different positions on the screen. You can tile the waveforms horizontally, vertically, or both.

To enable this view, click on the tab and drag it to the middle of the screen, then decide what the final outcome is.



The Infiniium user interface provides unmatched viewing flexibility. You can tile the windows vertically, horizontally, or in a number of other combinations.

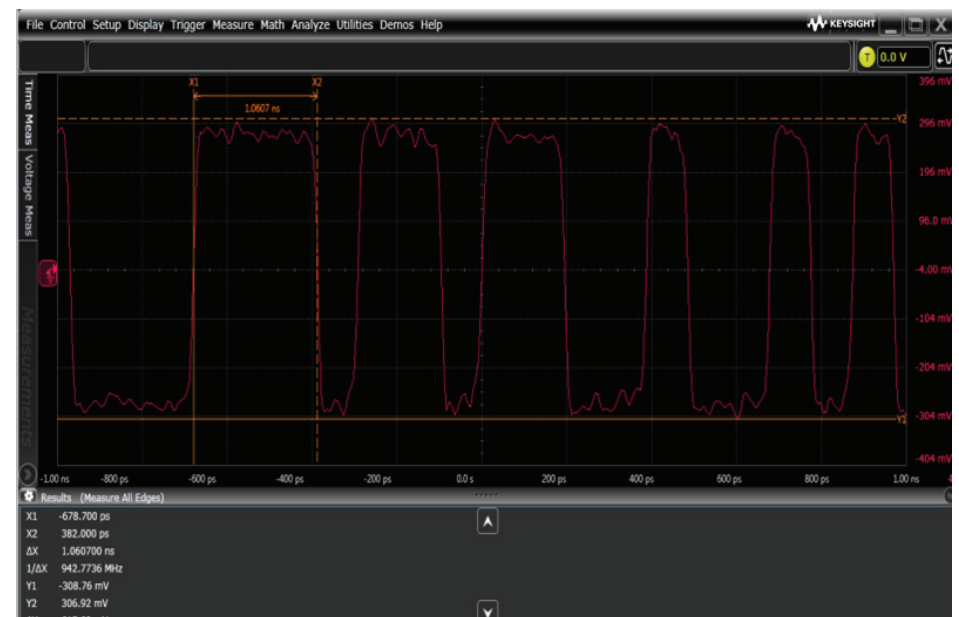
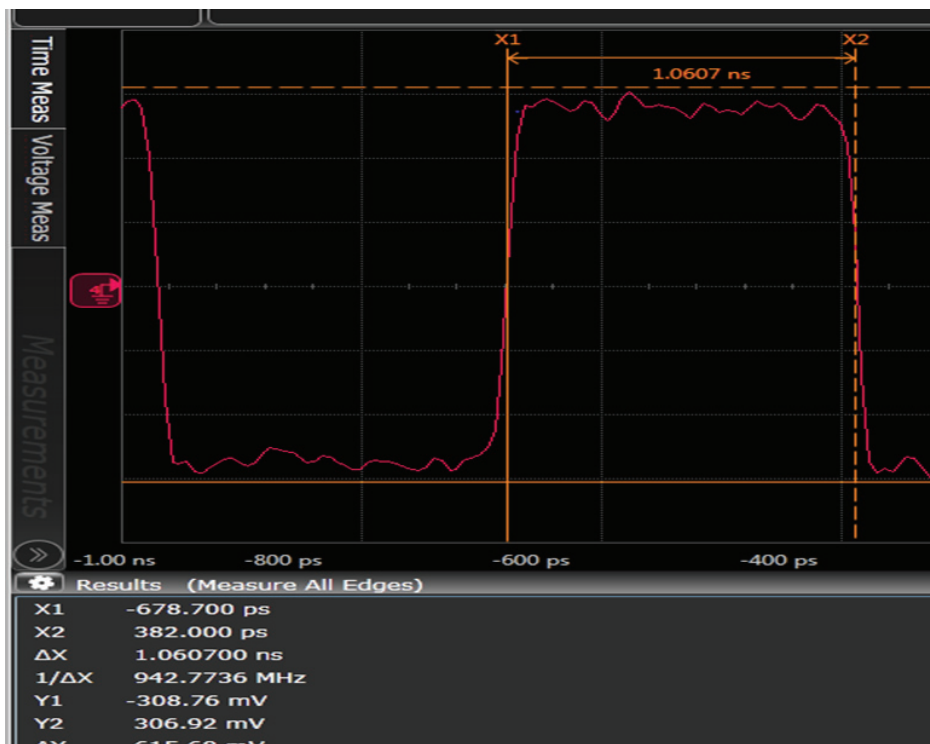


#8 Displayed Marker Deltas

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Historically, markers have been very poorly documented in oscilloscope user interfaces—but not any more. The new user interface displays the delta value right where the markers are on the screen, making it easy to see marker deltas.

Even more importantly, as you save screen images of important information, the delta markers are shown on the screen shot, enabling fast explanation of the image.



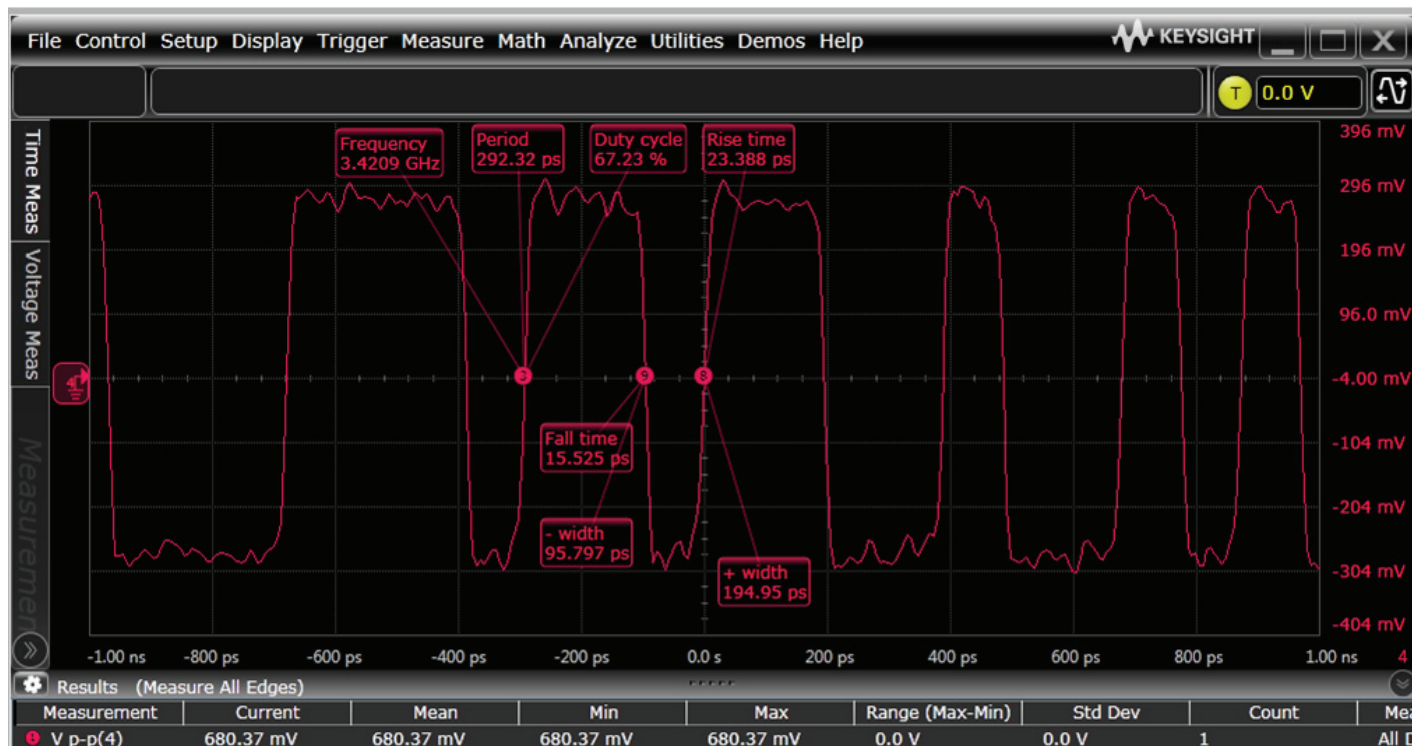
Show delta marker values in two places: on the screen and in the results window.

#9 Measurement Annotation

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Have you ever wanted to display measurement results in an easier way? The measurement annotation provides this capability. Measurement annotations show the results of your chosen measurements right on the screen in an easy, viewable format.

Measurement annotations are the perfect solution for displaying results data in a presentation or on-screen shots with your colleagues.



Easily see important measurement results with measurement annotation.

#10 Tabular Measurements with Statistics Control

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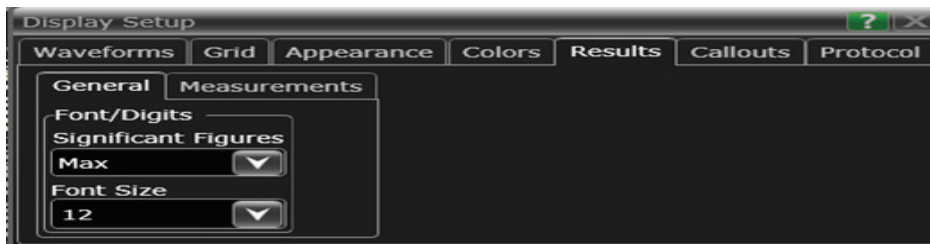
The Keysight Infiniium user interface now displays the measurement results in tabular form with the results shown horizontally, a much more space-efficient way to show measurements. Users can now display up to 20 measurements at once with up to 13 different statistics.

For better viewing, users also have full control of the font size of the measurements and other significant figures.

Users have full control of the statistics they want to display. For instance, they can choose to only show the current measurement and mean, or they can have all statistics shown.

Measurement	Current	Mean	Min	Max	Range (Max-Min)	Std Dev	Count	Mea
V p-p(4)	680.37 mV	680.37 mV	680.37 mV	680.37 mV	0.0 V	0.0 V	1	All D
Period(4)	292.320 ps	384.84111 ps	191.392 ps	778.906 ps	587.514 ps	175.78876 ps	68117	All D
Frequency(4)	3.4209033 GHz	3.1616534 GHz	1.2838525 GHz	5.2248802 GHz	3.9410276 GHz	1.3382011 GHz	68117	All D
Rise time(4)	23.388 ps	19.45656 ps	14.466 ps	31.037 ps	16.571 ps	1.75316 ps	68118	All D
Fall time(4)	15.525 ps	16.68017 ps	12.492 ps	28.240 ps	15.748 ps	1.22307 ps	68117	All D
V max(4)	337.69 mV	337.69 mV	337.69 mV	337.69 mV	0.0 V	0.0 V	1	All D
V min(4)	-342.68 mV	-342.68 mV	-342.68 mV	-342.68 mV	0.0 V	0.0 V	1	All D
+ width(4)	194.949 ps	191.29513 ps	93.578 ps	583.683 ps	490.105 ps	125.09703 ps	68117	All D
- width(4)	95.797 ps	193.54598 ps	92.330 ps	681.771 ps	589.440 ps	135.31798 ps	68117	All D
Duty cycle(4)	67.2 %	50.1 %	12.3 %	86.2 %	73.9 %	18.2 %	68117	All D

Measurements are displayed horizontally.



Choose the font size and significant figures of your measurements.



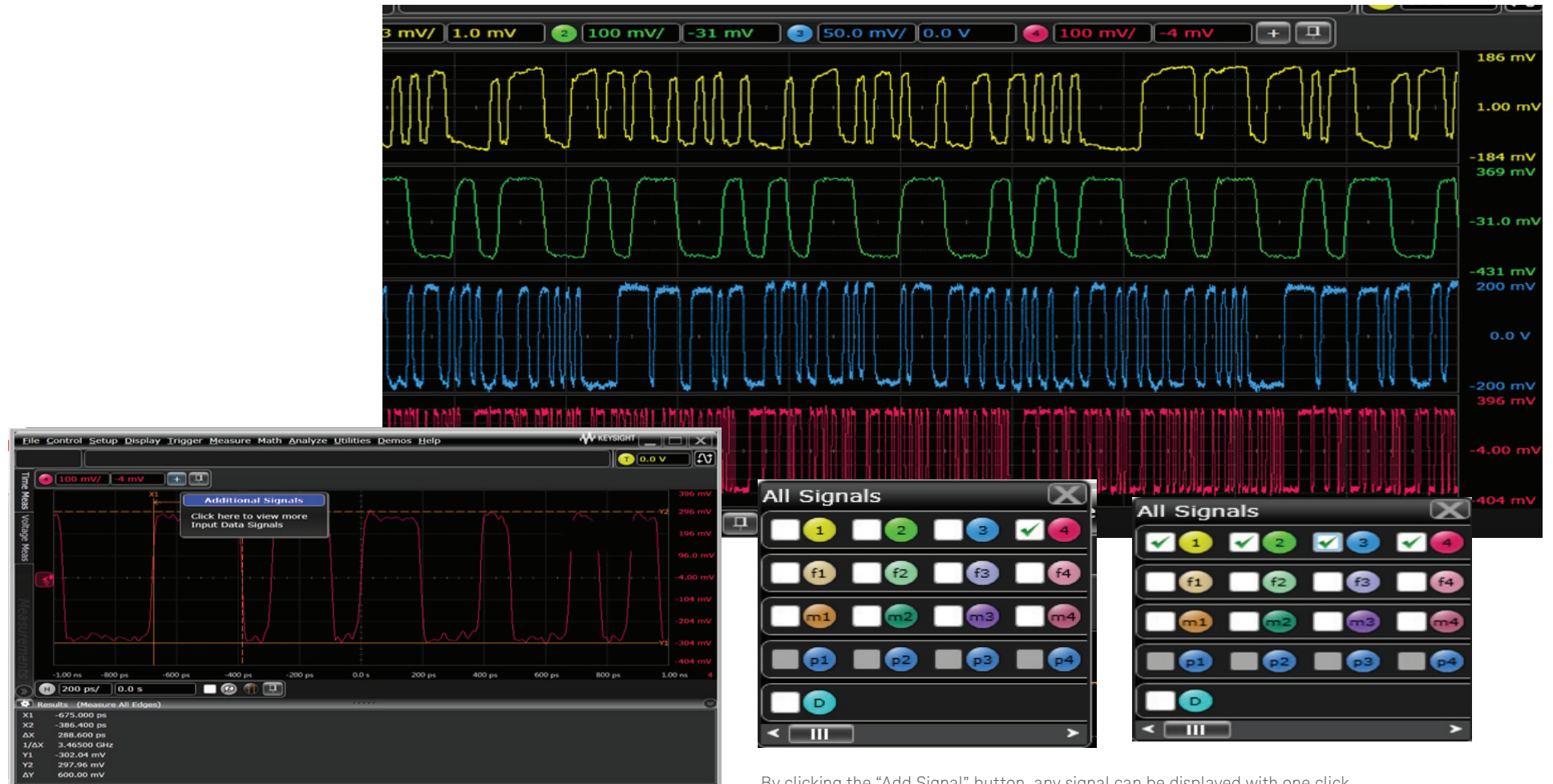
Choose the statistics you want to see.

#11 Additional Signal Buttons

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The “Add Signal” buttons make it possible to turn on or off any signal with a simple button click.

By using this button, you can avoid complicated menu selections to turn on any signal (analog or digital), function, or waveform memory.

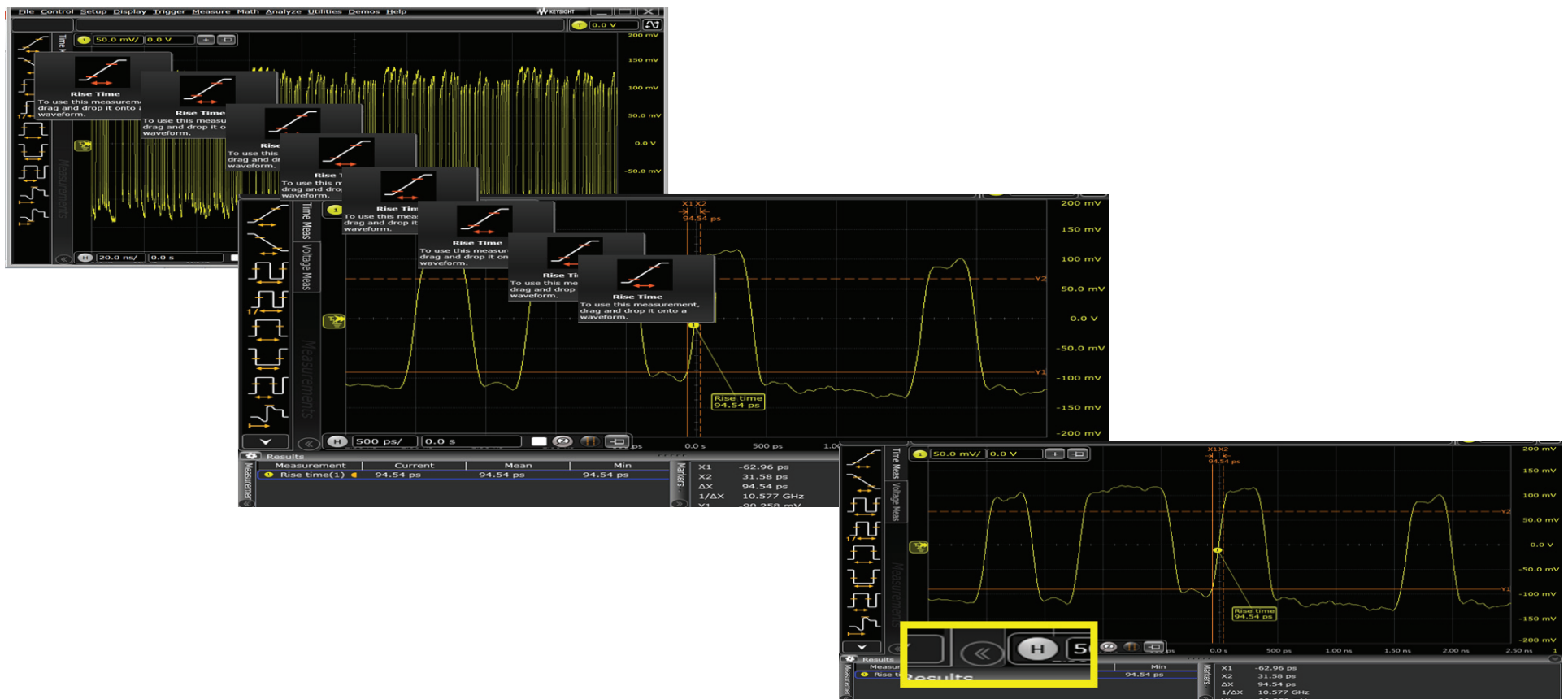


By clicking the “Add Signal” button, any signal can be displayed with one click.

#12 Drag and Drop

The time it takes to make the first measurement is a key feature of an oscilloscope. Infiniium has made it very easy with its Drag-and-Drop measurements. Simply grab the measurement icon from the left side of the user interface, drag it to the waveform, and you are instantly making measurements. Icons include rise and fall time, peak-to-peak voltage, and many others.

The Drag-and-Drop menu can be minimized and maximized by simply clicking the button located at the bottom left corner of the waveform window.

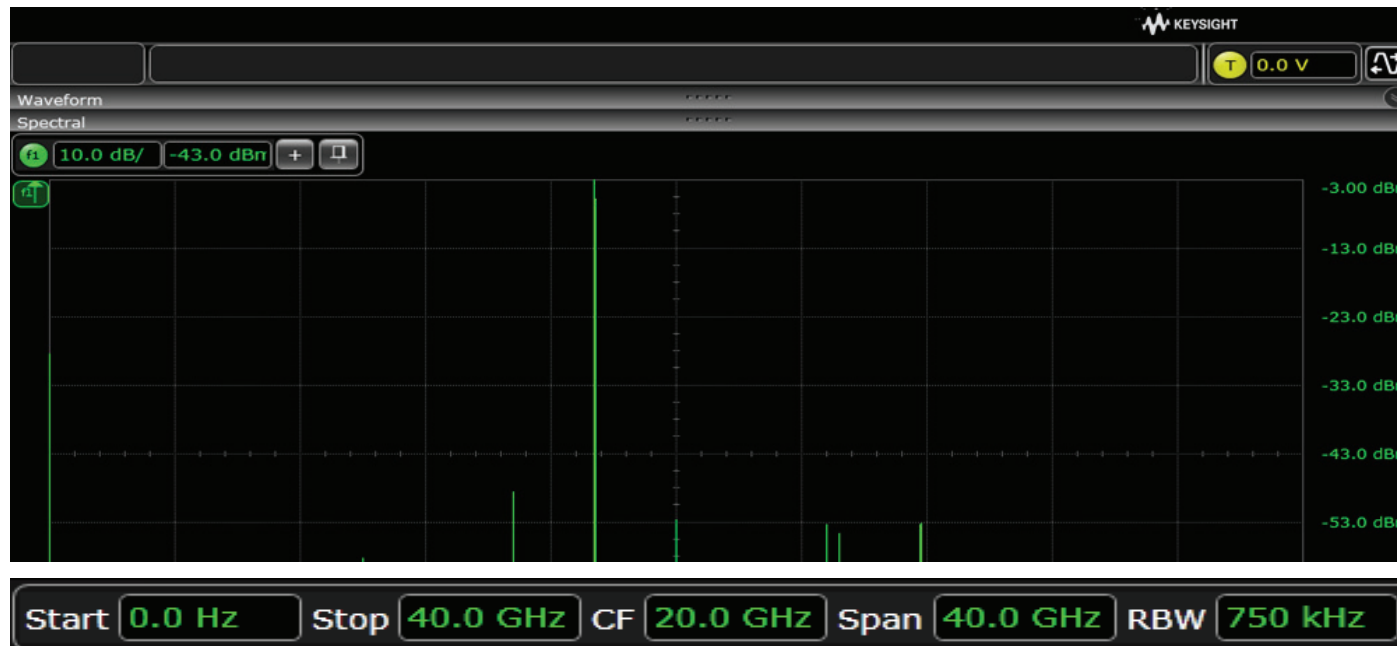


Drag-and-Drop measurements make using Infiniium oscilloscopes more intuitive and easy.

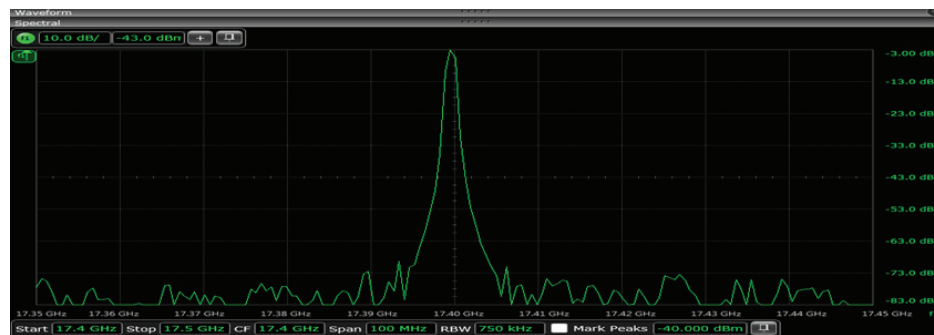
#13 Spectral View

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Typically, an oscilloscope makes you use complicated menus when running FFTs – that is not the case with Infiniium’s software. The Start – Stop – Center Frequency – Span – Resolution Bandwidth controls are all on the screen and ready to be used. This makes zooming into frequency content as easy as a click of the mouse or touch of the screen.



Spectral View makes it easy to zoom in to the signal of choice.

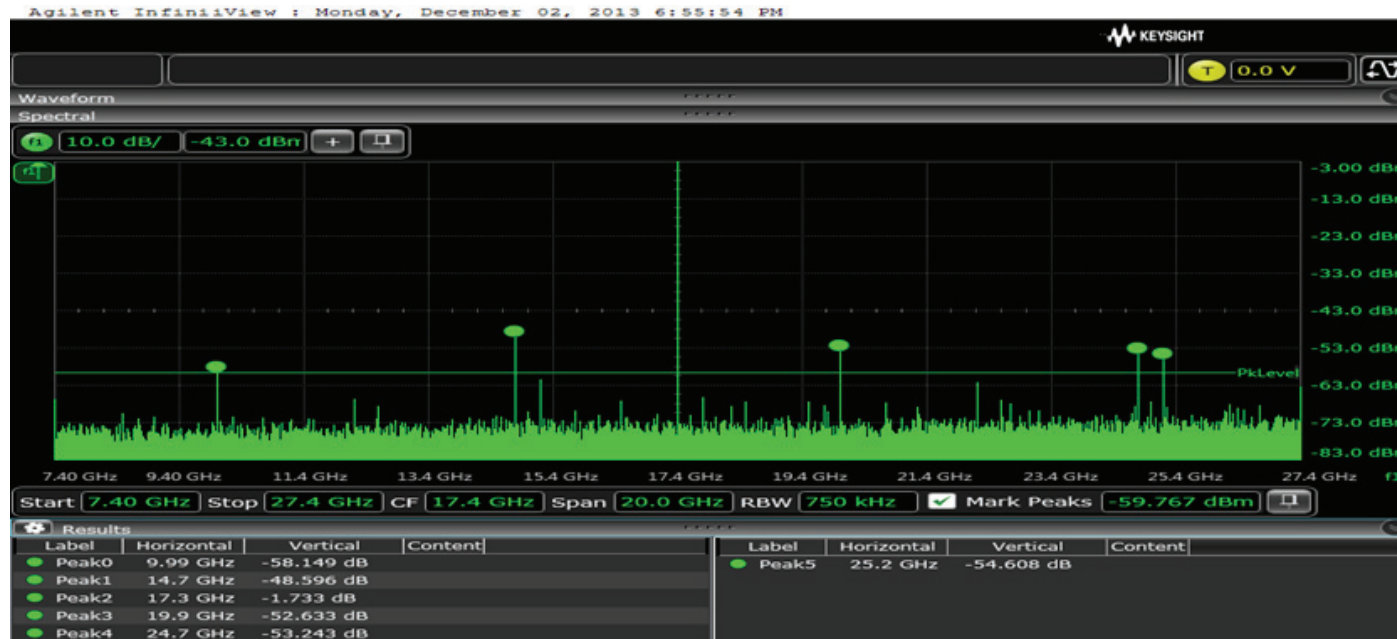


The fundamental is captured simply by clicking the CF and Span buttons.

#14 Peak Level Bar

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Take the guesswork out of which peaks you want to view. The Peak Level bar makes it easy to identify the peaks you wish to see. Simply put the bar below any peak you want to mark. The peaks are then sorted and labeled.

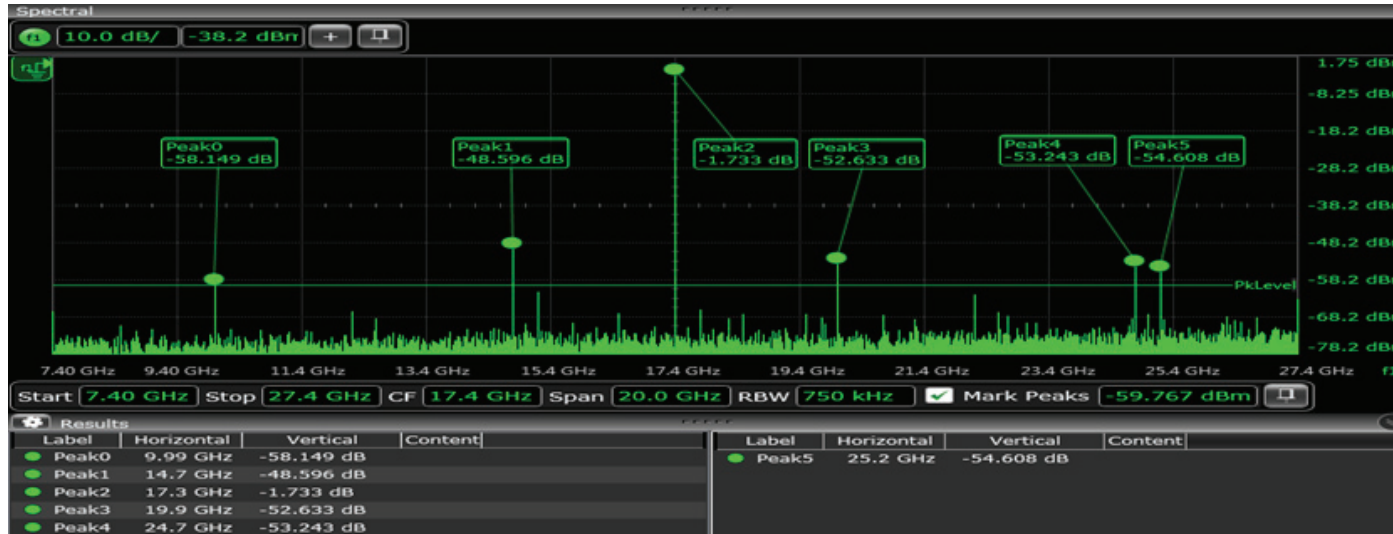


Drag the Peak Level bar where you want it.

#15 Peak Annotation

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Tell the entire story with peak annotation. Each peak displays its characteristics on the screen with individual annotations. The annotations are easy to move to where you want them to create the perfect image for sharing with your colleagues.



Peak annotation makes it easy to see the peak information you want to see.

#16 On-Screen FFT Scaling

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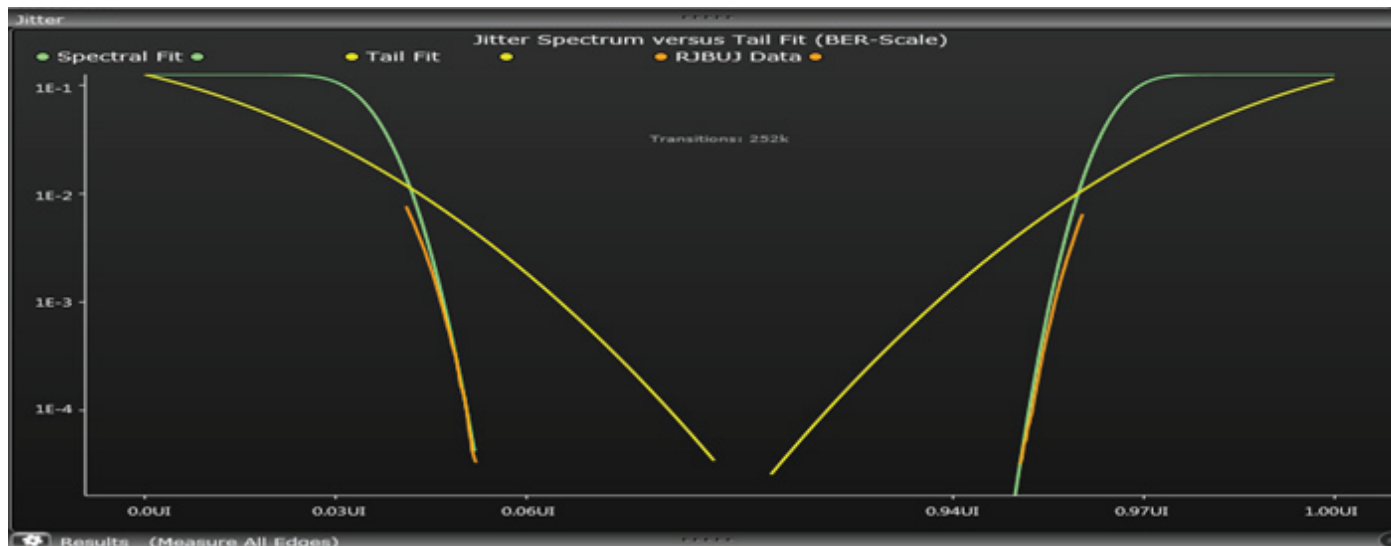


The FFT scaling is shown on the screen at all times so you can quickly see the scale of your FFT and the power in your peaks.

#17 Tailfit Versus Spectral Bathtub Curve Comparisons

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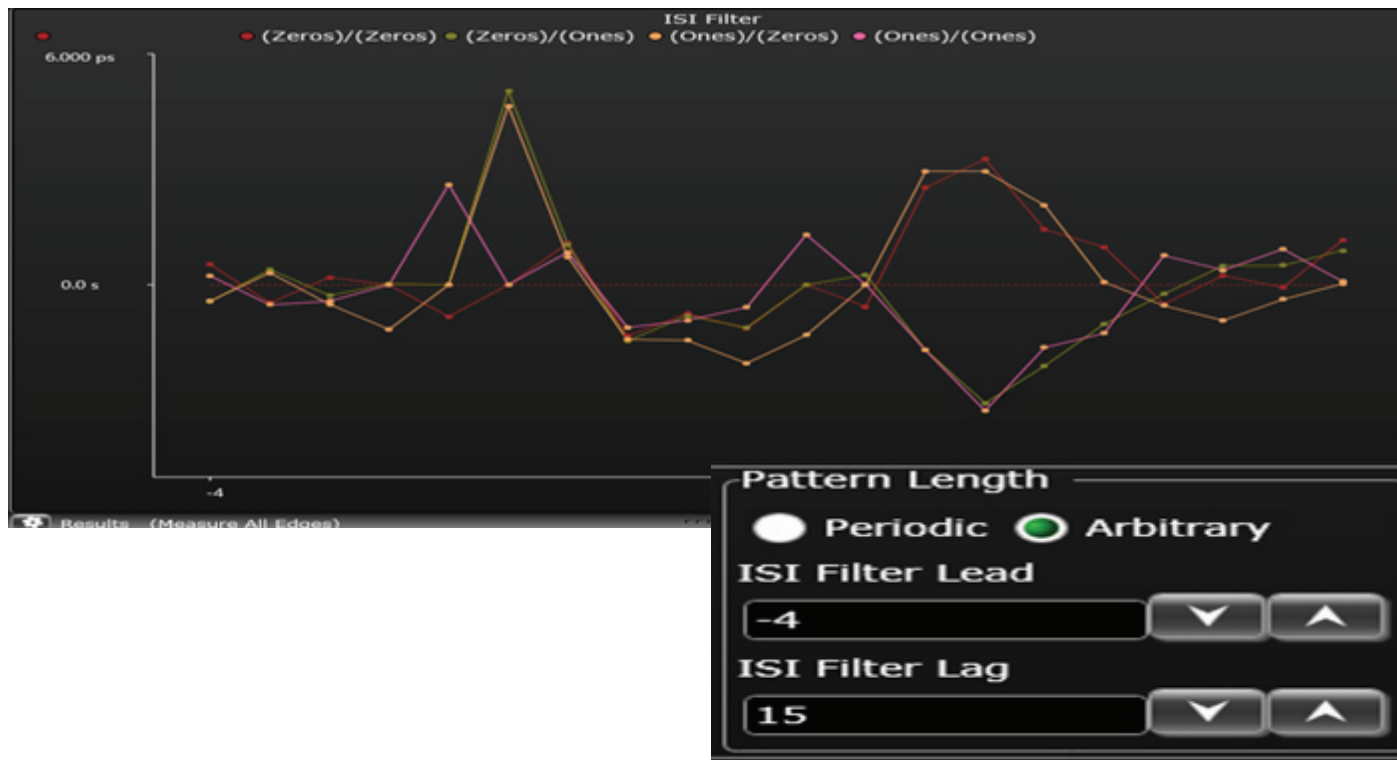
Choosing the correct jitter algorithm is extremely important for many complicated analysis measurements. Keysight provides an easy comparison between its tailfit and spectral jitter separation method. By looking at this chart, you can find the curve that best matches the real data to see the algorithm you want to choose. The image to the left shows a case where the tailfit method is the best method. This can be done quickly using your own visualization skills.



#18 Jitter ISI Filter Chart (requires EZJIT Plus)

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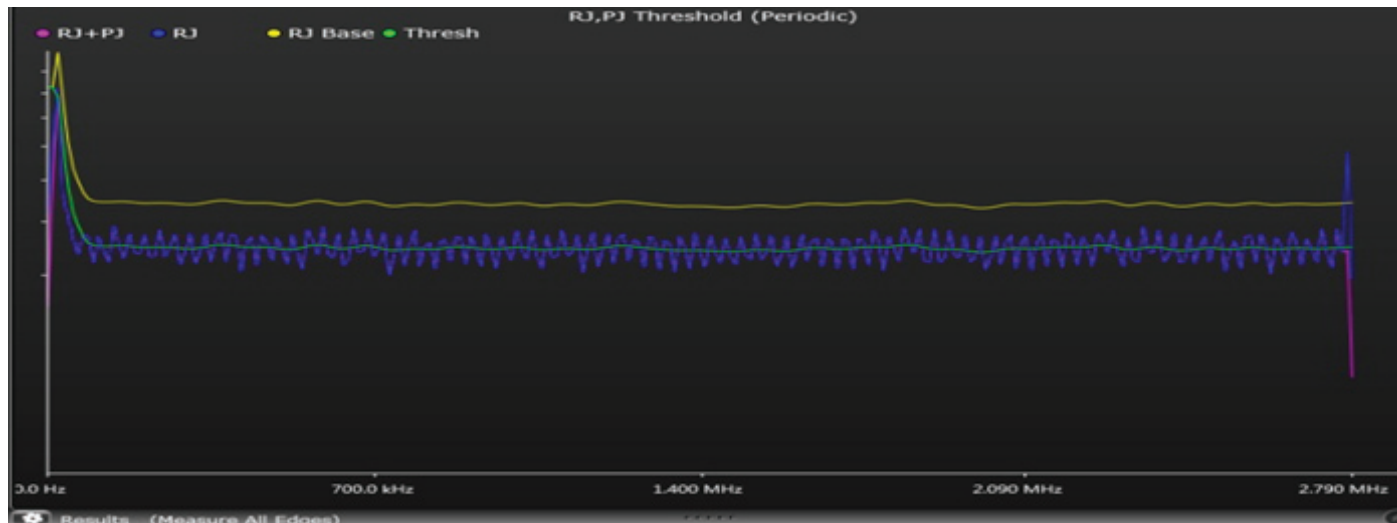
One of the big values of a real-time oscilloscope is the ability to separate jitter on an arbitrary or non-repeating pattern. The hard part of this separation is finding a correct filter to properly remove the ISI and, ultimately, the DDJ from the jitter separation. While most real-time oscilloscopes have the ability to create an ISI filter to remove the ISI from the jitter separation, Keysight takes it a step further with its jitter ISI filter chart. This simple chart allows you to quickly see if by increasing the filter length, the ISI is settling. Once you see settling, you know you have the correct ISI filter selected for your jitter separation and will have the most accurate answer.



#19 RJ PJ Spectrum Chart (requires EZJIT Plus)

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Jitter separation is easy as long as you have infinite data. However, if you had infinite data, you would need infinite time to calculate the jitter. Because we don't have that much time, we need to optimize the memory that we are using in our algorithms. The RJ PJ spectrum chart lets you see how well the spectral method is converging and if you need more time and memory to get a good answer.



#20 View All Jitter Charts at Once (requires EZJIT Plus)

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With so much analysis needed to properly measure jitter, it is important to have all the tools available to you at the push of a button. With Keysight's user interface, you can easily see all at once every jitter graph that Keysight provides. By doing this, you can more efficiently get to the root of your jitter problems. If you want to see only one chart, simply double click on the chart you wish to see, then double click on it again to bring back the full view of all the charts.



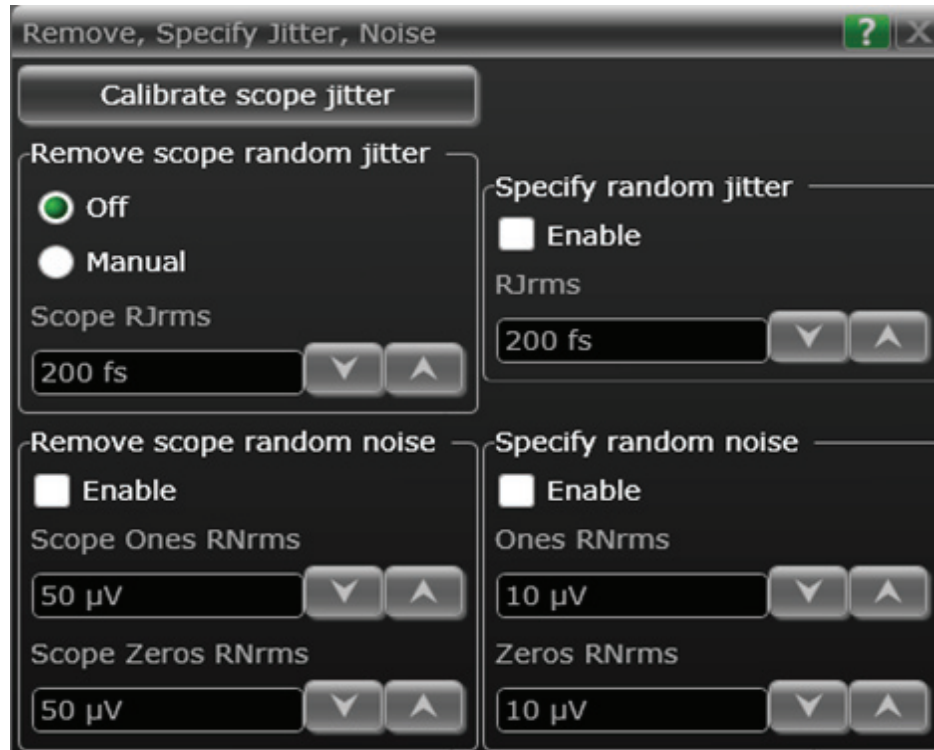
See the entire jitter picture by viewing all jitter charts at once.

Zoom in to the chart that interests you most by double clicking on it. Go back to seeing all the charts by double clicking on the chart again.

#21 Remove Scope Jitter (requires EZJIT Plus)

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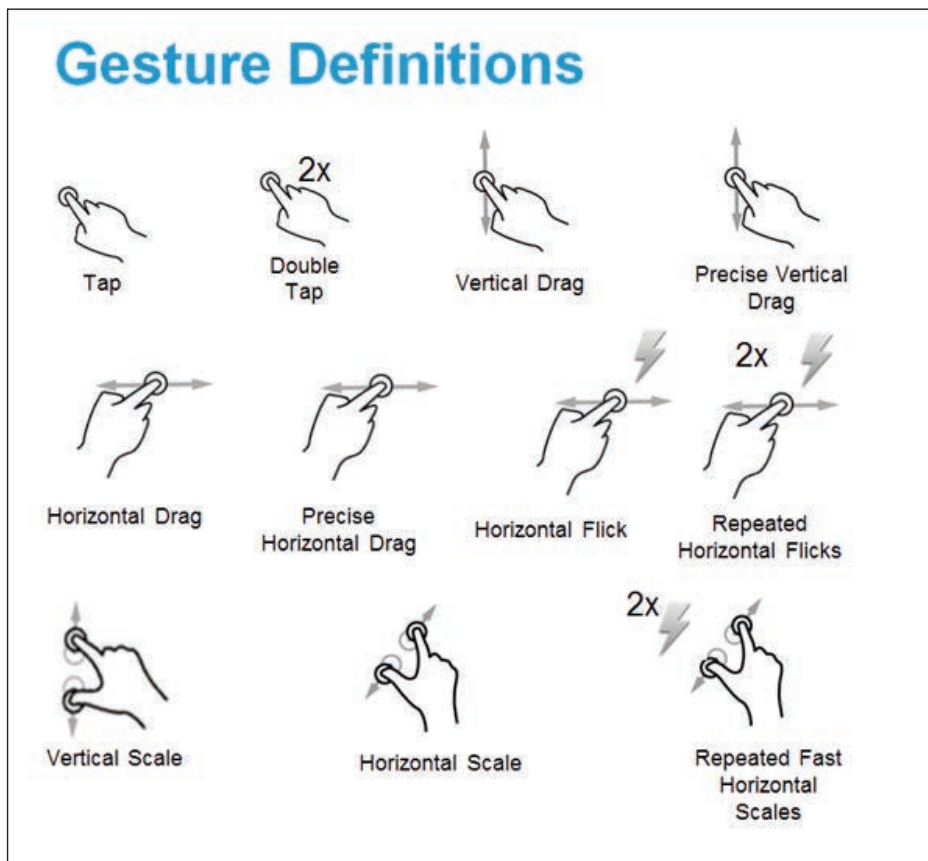
Only Infiniium oscilloscopes have the capability to allow you to calibrate the scope jitter and remove it. Some vendors let you enter a fixed R_j and remove that, but only Keysight uses “smart” algorithms to find the true oscilloscope jitter and remove it.



#22 Multi-Touch (gestures)

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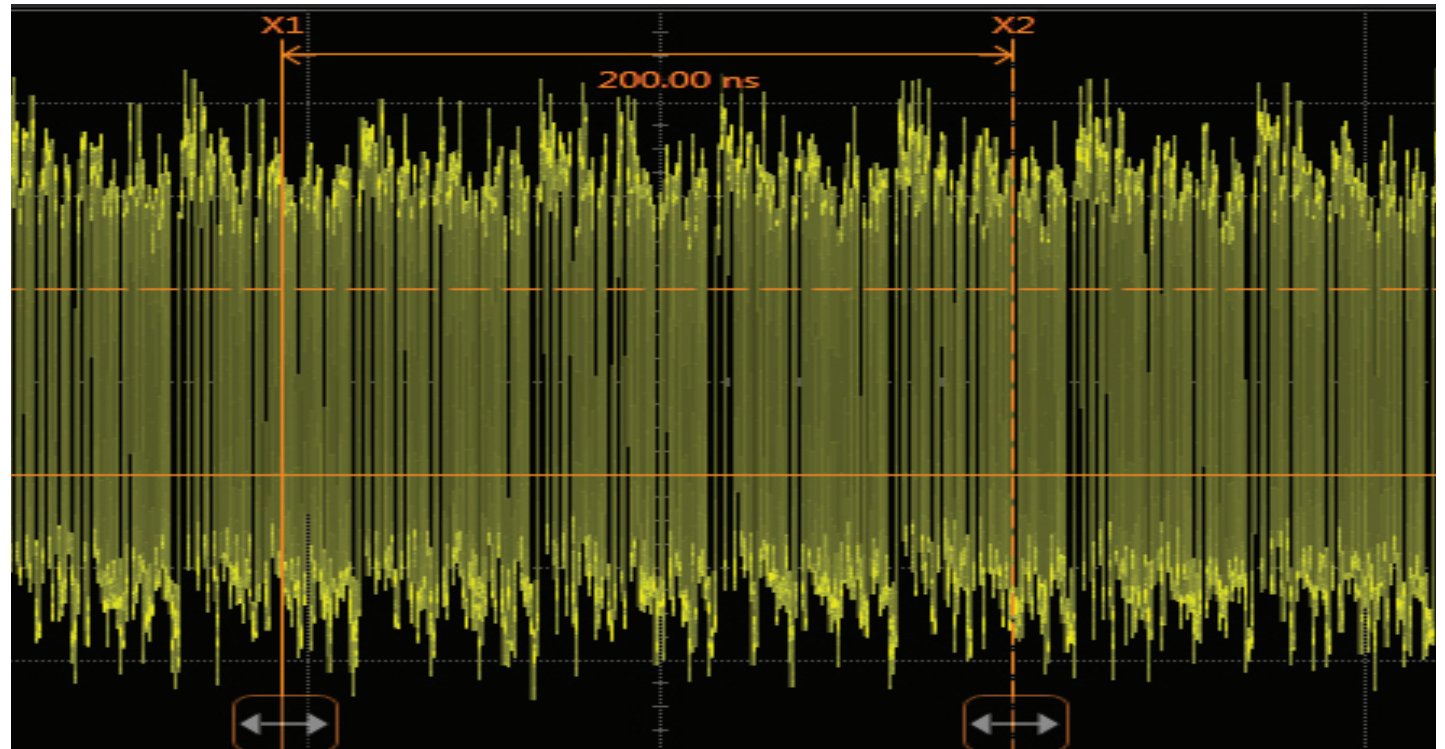
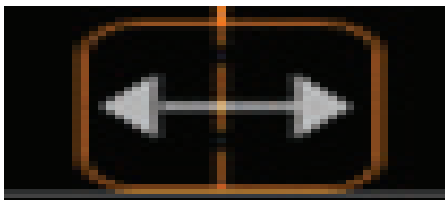
Have you ever thought that an oscilloscope's touch screen should drive more like the touch screen on your smartphone? Now it can! When you purchase an Infiniium oscilloscope from Keysight that has a capacitive touch screen, the user interface now supports multi-touch gestures, which enable the touch controls that you would typically use on your smartphone. For example, now you can swipe your signal to scroll through all the data.



#23 Marker Handles

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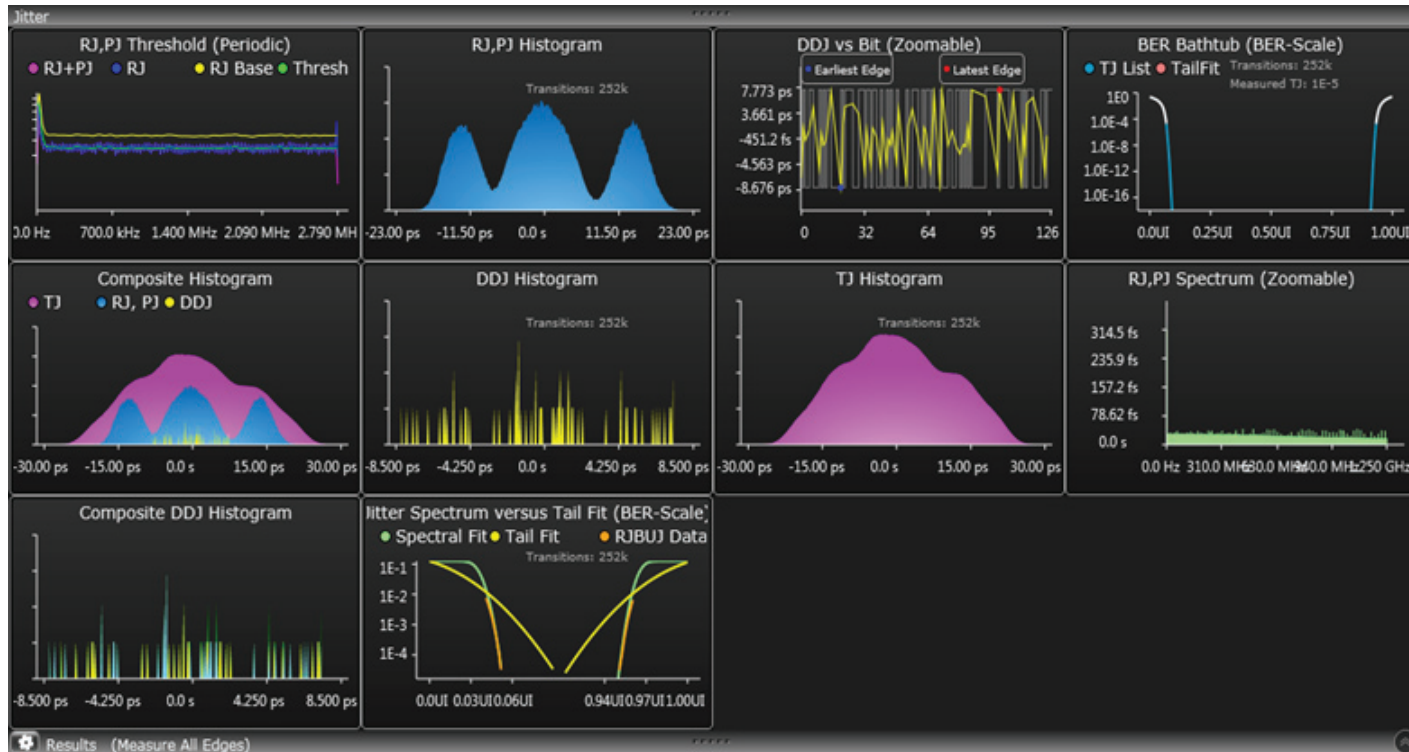
Handles allow you to easily grab markers with your fingers on the oscilloscope's touch screen. When you touch the screen, the handle will be displayed, making it easy to move the markers on the screen.



#24 Drag Charts For Custom View

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Every chart on the Infiniium user interface is draggable. If you don't like the layout, simply click on a chart to drag it to the position you want. This lets you see the issues you wish to see with the views you want to see.

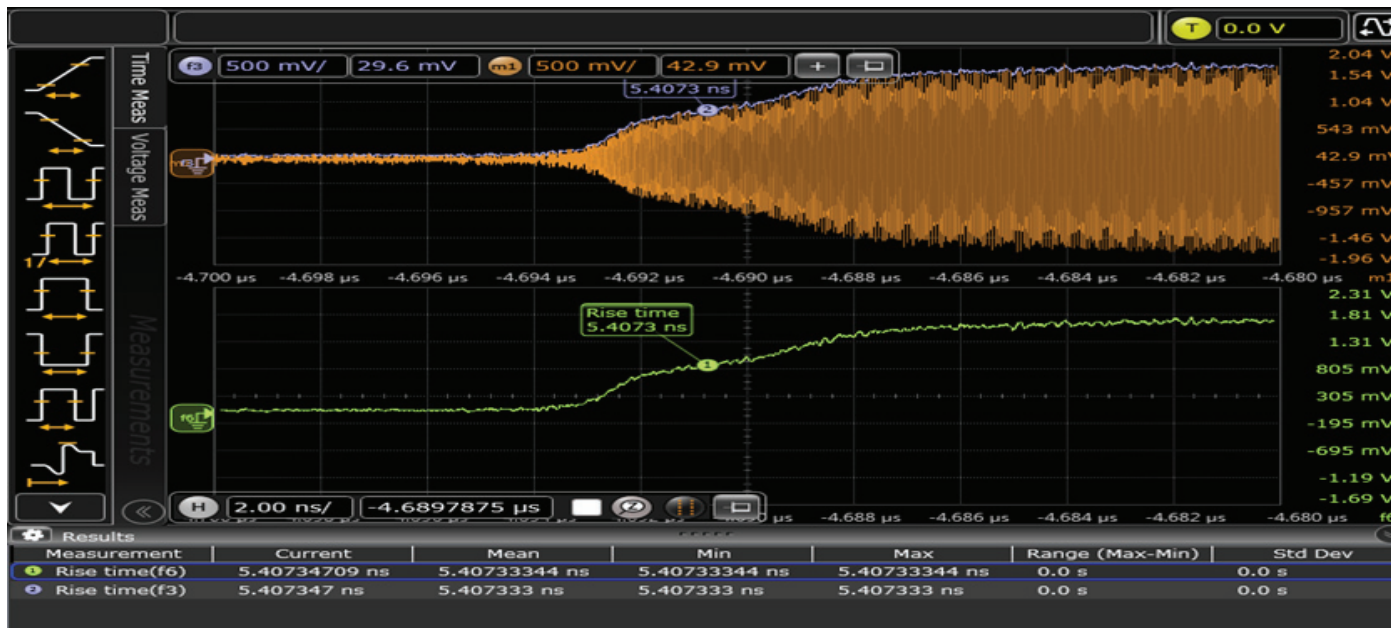


Drag the charts and arrange them how you want to see them.

#25 Amplitude Modulation (Envelope Mode)

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Envelope mode captures the shape of the waveform and then makes it possible to make measurements on that shape. This is extremely useful for making measurements such as rise and fall times on the modulated signal. The measurement is fully integrated into the oscilloscope user interface, allowing for fast updates and easy analysis.



Amplitude modulation provides powerful analysis integrated into the oscilloscope.

#26 Pattern Quality on Real Time Eye (requires Serial Data Analysis (SDA))

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One of the truly unique features of the Infiniium user interface is the ability to look at pattern qualified eyes. This means that you choose which bit you want to be the key part of the eye and the user interface performs the measurement based on your input.



#27 Function Overview Menu

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Infiniium supports 16 functions on numerous sources. Use the function summary menu to identify what all 16 functions are doing and the sources they are acting upon. The summary also checks for any illegal nested function options by explaining if the operation is valid or not.

On	Fn	Valid	Operator	Source 1	Source 2
<input type="checkbox"/>	f1	✓	Magnify	Channel 1	
<input type="checkbox"/>	f2	✓	FFT Magnitude	Function 3	
<input type="checkbox"/>	f3	✓	High Pass Filter	Channel 2	
<input type="checkbox"/>	f4	✓	InfiniiSim 2 Port	Channel 4	
<input type="checkbox"/>	f5	✓	Invert	Function 4	
<input type="checkbox"/>	f6	✓	Integrate	Function 5	
<input type="checkbox"/>	f7	✓	Low Pass Filter	Channel 4	
<input type="checkbox"/>	f8	✓	Max	Function 7	
<input type="checkbox"/>	f9	✓	Amplitude Demodulation	Memory 3	
<input type="checkbox"/>	f10	✓	Delay	Channel 3	
<input type="checkbox"/>	f11	✓	Horizontal Gating	Function 10	
<input type="checkbox"/>	f12	✓	Versus (XY)	Channel 1	Channel 2
<input type="checkbox"/>	f13	✓	Subtract	Function 5	Memory 3
<input type="checkbox"/>	f14	✓	FFT phase	Function 11	
<input type="checkbox"/>	f15	✓	Magnify	Memory 4	
<input type="checkbox"/>	f16	✓	Magnify	Channel 1	

Quickly view all the functions and what they represent.

#28 16 Possible Horizontal Gates

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With 16 possible horizontal gates plus a zoom feature, the Infiniium user interface gives you the ability to zoom in on FFTs, functions, waveform memories, and even gates of gates.



Infiniium oscilloscopes provide up to 16 gates, which can be used on each other.

#29 Multiple Displays - Float Your Window

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The screenshot displays a multi-windowed oscilloscope interface. The main window shows a waveform with a red trace and a yellow trace. A context menu is open over the waveform, offering options: Close, Float, Dock, New Horizontal Tab Group, and New Vertical Tab Group. The Markers window shows a list of markers with their values. The Histograms window displays statistical data for the waveform. The Bookmarks window lists saved measurement points. The Measurements window shows a table of current and historical measurement data.

X1	-6.04013050 μ s
X2	0 Hz
Δ X	6.04013050 μ s
1/ Δ X	165.559336 ku
Y1	37.0000 s
Y2	24.0000 s
Δ Y	-13.0000 s

Y Scale	9 hits/	Hist p-p	128.298 ps
Y Offset	0 hits	Hist Min	-64.819 ps
X Scale	20.000 ps/	Hist Max	63.479 ps
X Position	-670 fs	Bin Width	188 fs
Hist Mean	3 fs	Hist Median	2.993 ps
Hist Std Dev	36.948 ps	Hist Mode	44.694 ps
Hist $\mu \pm 1\sigma$	50%	Hist Hits	9.008 khits
Hist $\mu \pm 2\sigma$	100%	Hist Peak	42 hits
Hist $\mu \pm 3\sigma$	100%		

Label	Horizontal	Vertical	Content
Trend on TIE to break out SSC	-1.120 μ s	5.613 ps	
SSC	-1.544 μ s	-30.87 mV	
Jitter Spectrum: SSC Fundamental	970. kHz	35.750 ps	

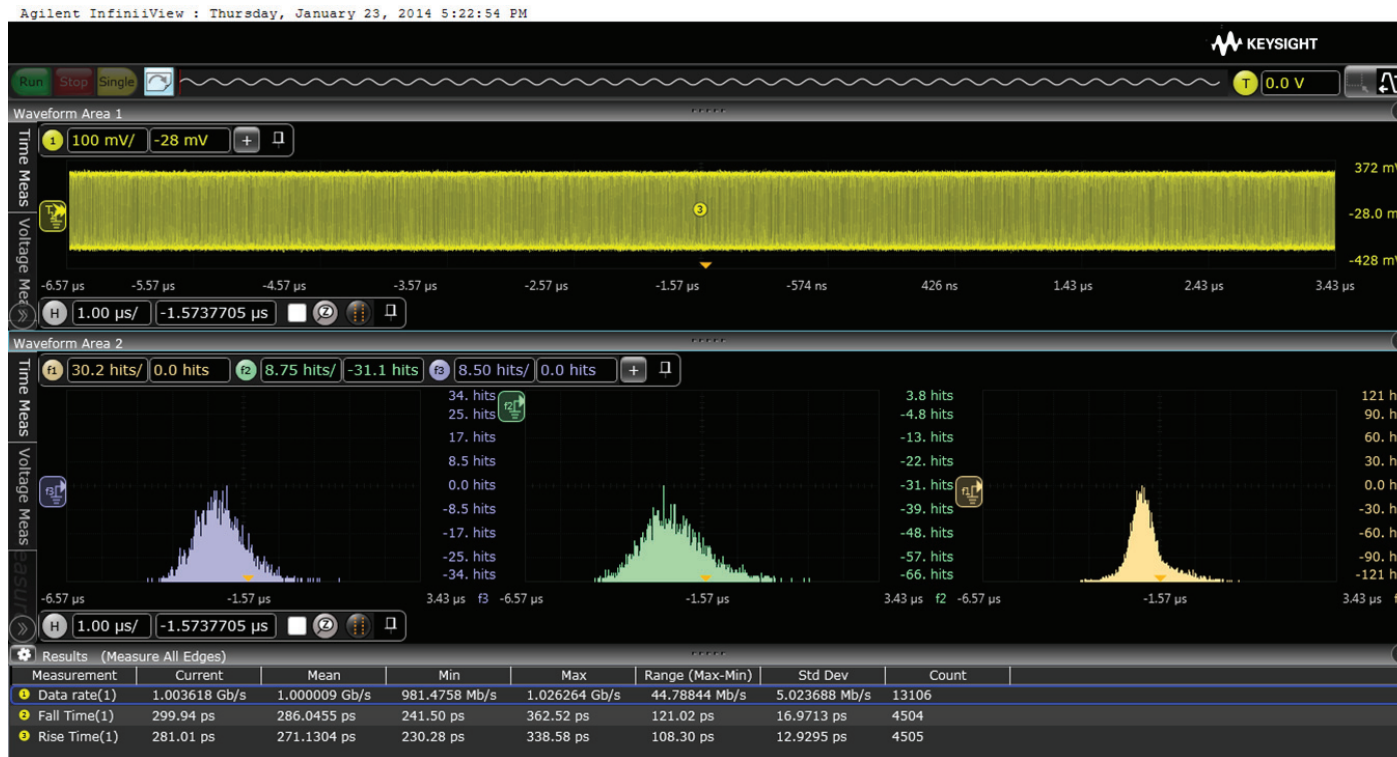
Measurement	Current	Mean	Min	Max	Range (Max-Min)	Std Dev	Count
Data TIE(m1)	-28.71 ps	2.9 fs	-64.76 ps	63.48 ps	128.23 ps	36.9502 ps	9008
Frequency(mt)	964.24108 kHz	971.77659 kHz	963.85087 kHz	979.32603 kHz	15.475152 kHz	5.0555216 kHz	24

Too much information for a single display? No problem! Go to tabbed view and float your window. The window can now be moved anywhere on the screen or to a second monitor.

#30 Multiple Measurement Histograms

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Use the multiple grids and the vertical stacking to look at up to 16 measurement histograms all in their own dedicated grid area with their vertical and horizontal scaling.



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A personalized view into the information most relevant to you.



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