Flexible resolution oscilloscopes address mixed-domain application challenges

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Analog and digital engineers have different needs when it comes to waveform measurements, and have had to choose different oscilloscopes optimized for their respective tasks. Engineers working on digital systems tend to focus on the oscilloscope sampling rate, memory depth, bandwidth, advanced triggering and analysis features, while resolution, precision, noise and spurious free dynamic range (SFDR) are critical specifications for validating analog elements of a design.

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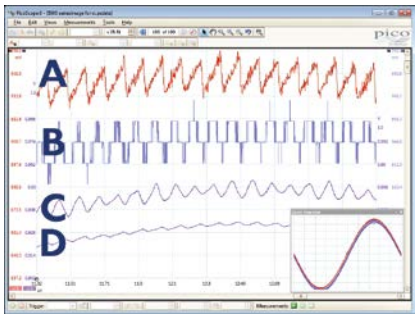
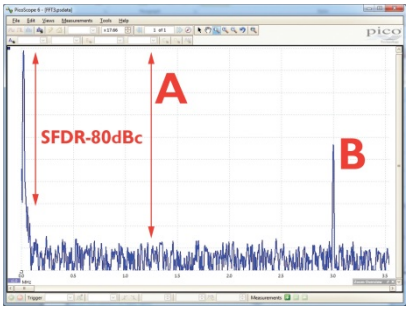
Pico Technology has recognized the different requirements and developed the PicoScope 5000 Series of Flexible Resolution Oscilloscopes that combine a precision 80 dBc SFDR analog front end with a reconfigurable 8/12/14/15/16 bit, 62.5 MS/s to 1 GS/s A-D converter and a huge 500 Msample memory!

While many oscilloscopes boast some kind of "bandwidth for resolution" trade-off to improve resolution, the Pico approach is very different and far more effective. The PicoScope 5000 Series oscilloscopes use multiple 13 bit A-Ds simultaneously that can be configured by the user to optimize the oscilloscope for the type of measurement being made. The technique is equally effective for repetitive or single-shot waveform captures.

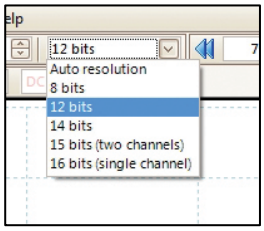


The sawtooth interference pictured here could be noise riding on an audio signal, patterning on video, or a spur that can be seen in the frequency domain. The 8-bit oscilloscope can't resolve the interference. Its high frequency is unrelated to our signal (and trigger), so oscilloscopes that combine multiple captures will average it away; and a resolution enhancement filter does little better. Only the PicoScope 5000 Series correctly resolves what we need to see, critical in tracking the interfering source.

Resolution, the ability to detect small detail in a signal, however achieved, is of little value if it reveals noise and distortions of the oscilloscope itself. At 80 dBc SFDR, PicoScopes stand alone. 55 dBc is as good as traditional oscilloscopes get.



For higher-speed signals, where timing is critical, the PicoScope 5000 Series can be rapidly reconfigured by the user to lower resolution, which enables high-performance operation up to 1 GS/s.



PicoScope 5000 Series oscilloscopes include advanced triggers, serial bus decoding and sophisticated tools for engineers working on mixed domain projects.