

PENN Fast Amp for CMS Detector at CERN

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Fast Amp Board v2: Signals and Noise FE55 source, APD @ 1800V

Amplitude is set to 40 mV per division

Time is set to 2ns per division

V amplitude is measured from baseline to peak.

T = Threshold voltage (scope signal threshold)

Thresholds are -16.1mV, -33.1mV, -50mV, -80mV, and -120mV.

Noise rms was calculated to 1.4mV.

Signal Overlays -33mV (pg 2) -16mV(pg 28) -130mV (pg 49)

Noise Pg 112 with 2mV / box signals.

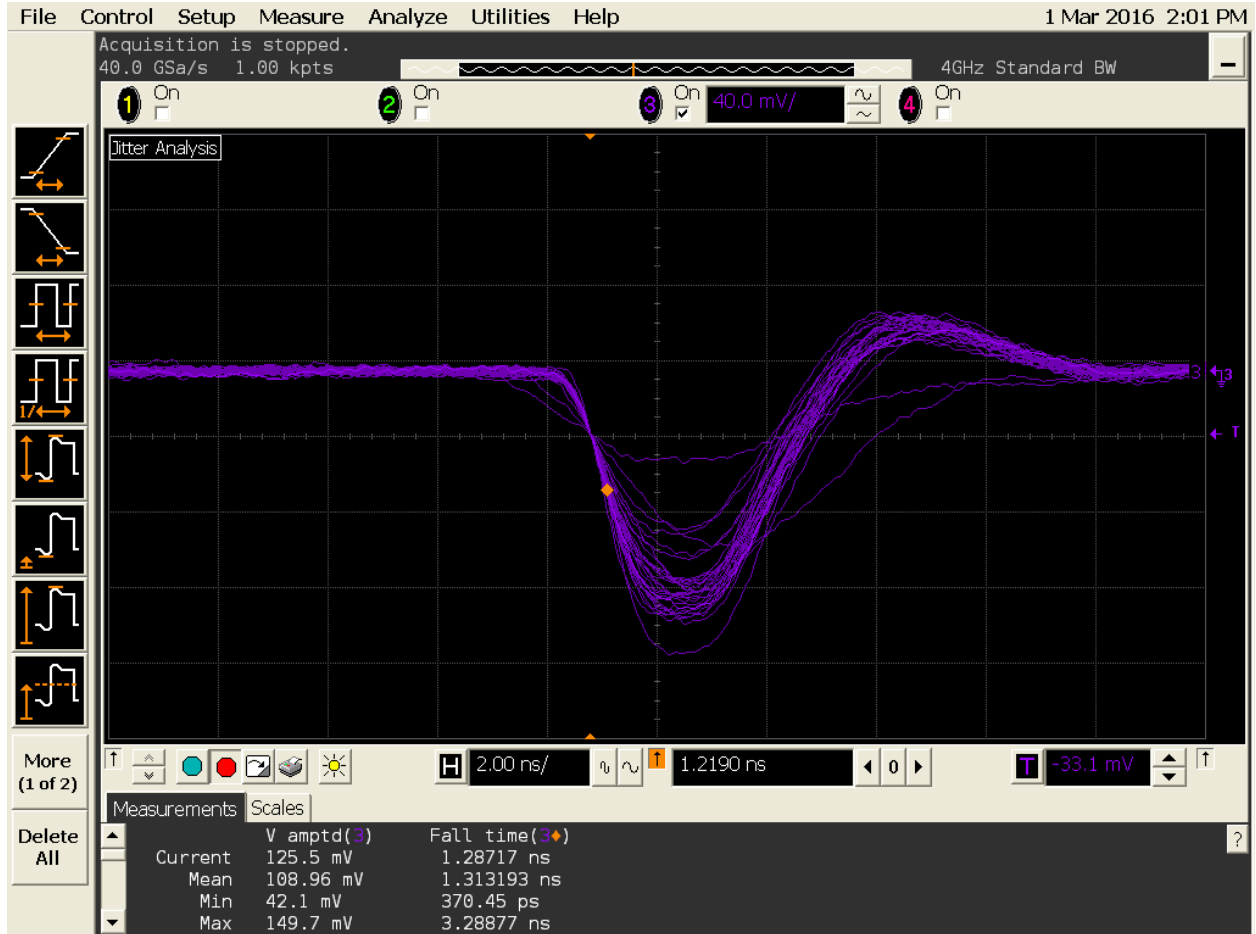
The best rise time is about 1.1ns and the longest is as much as 5ns.

Again these may simply be manifestations of the Fe55 depositions.

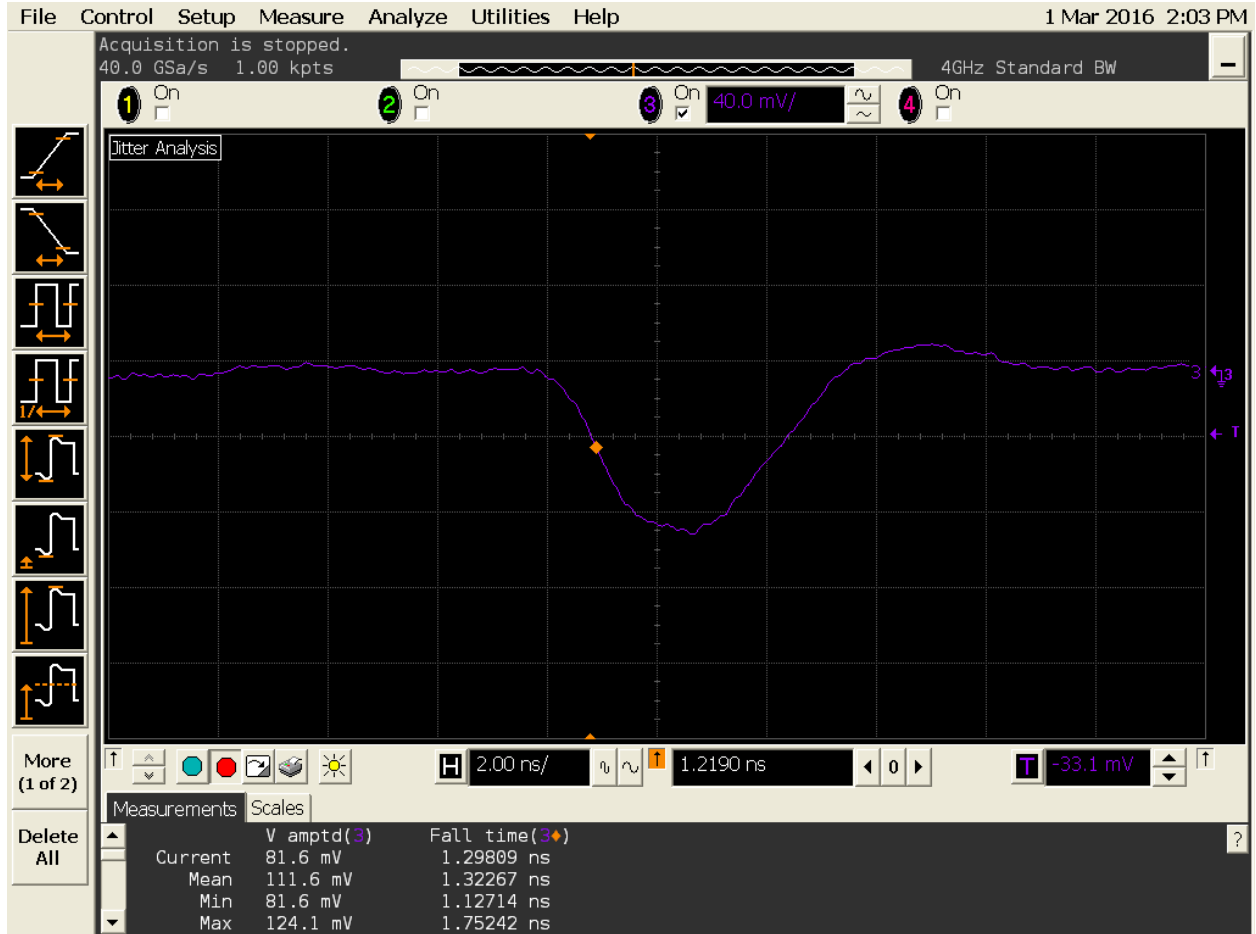
The RMS noise is 1.4mV Signals are typically 100mV

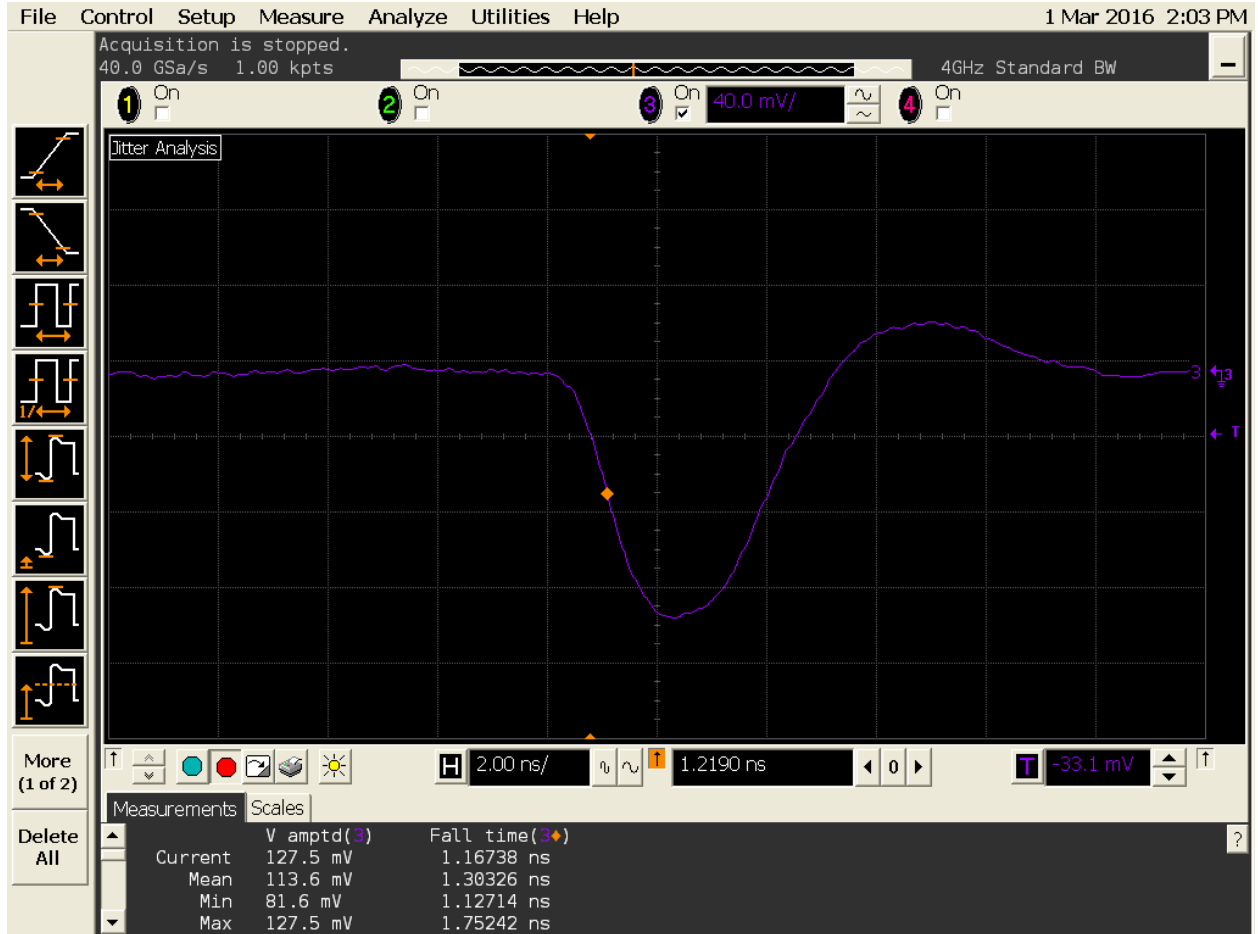
March 1, 2016

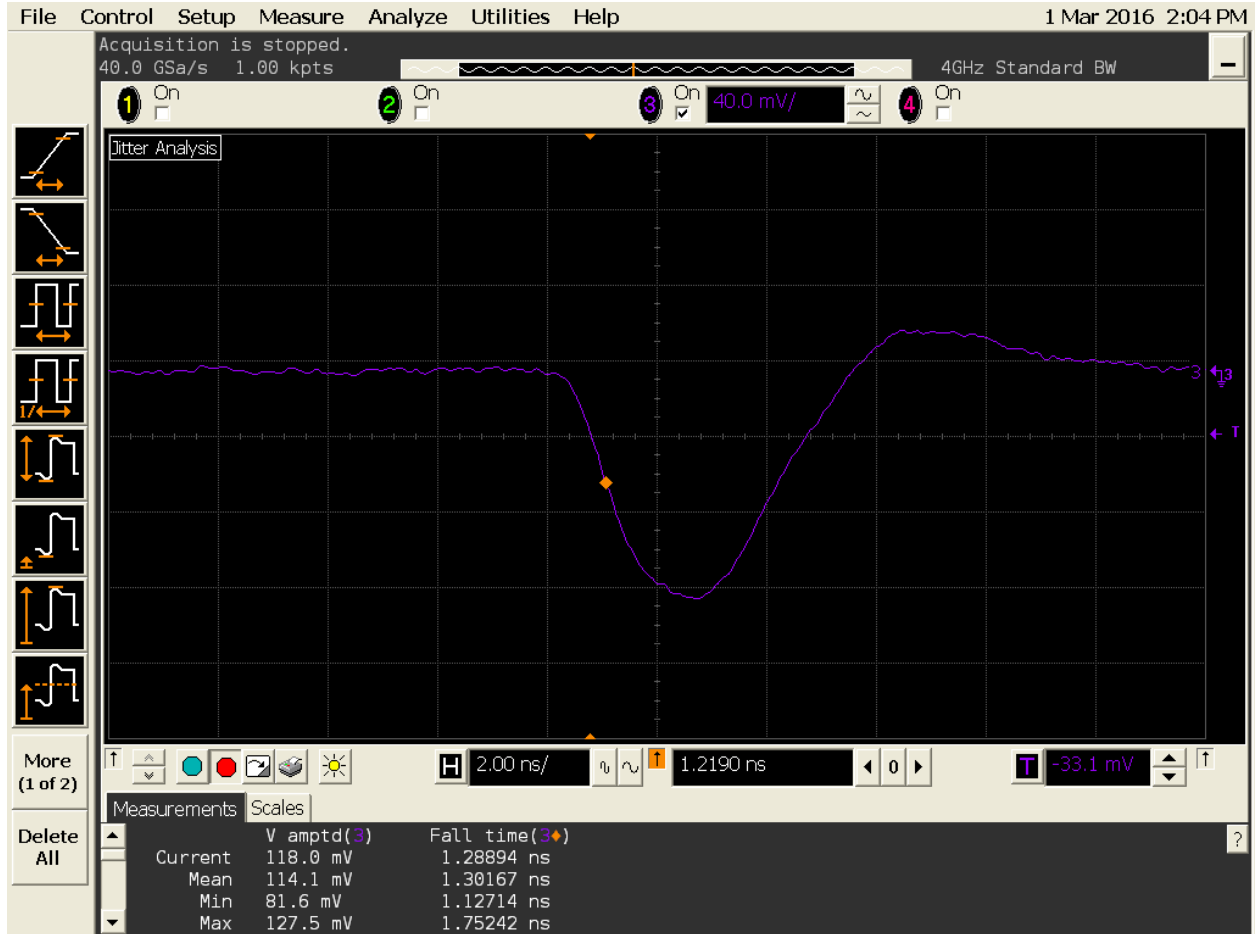
Multiple overlaid signals Scope threshold -33mV

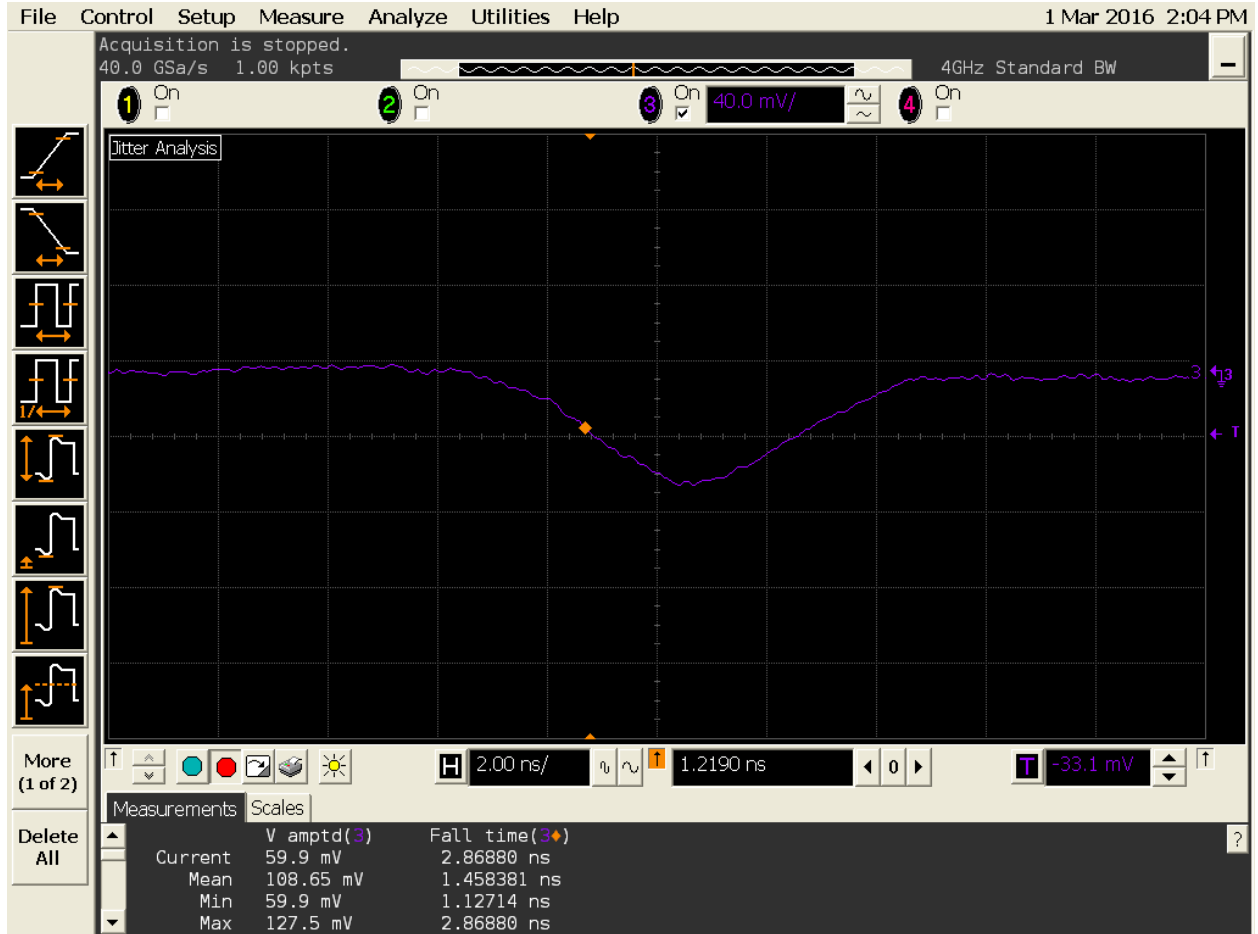


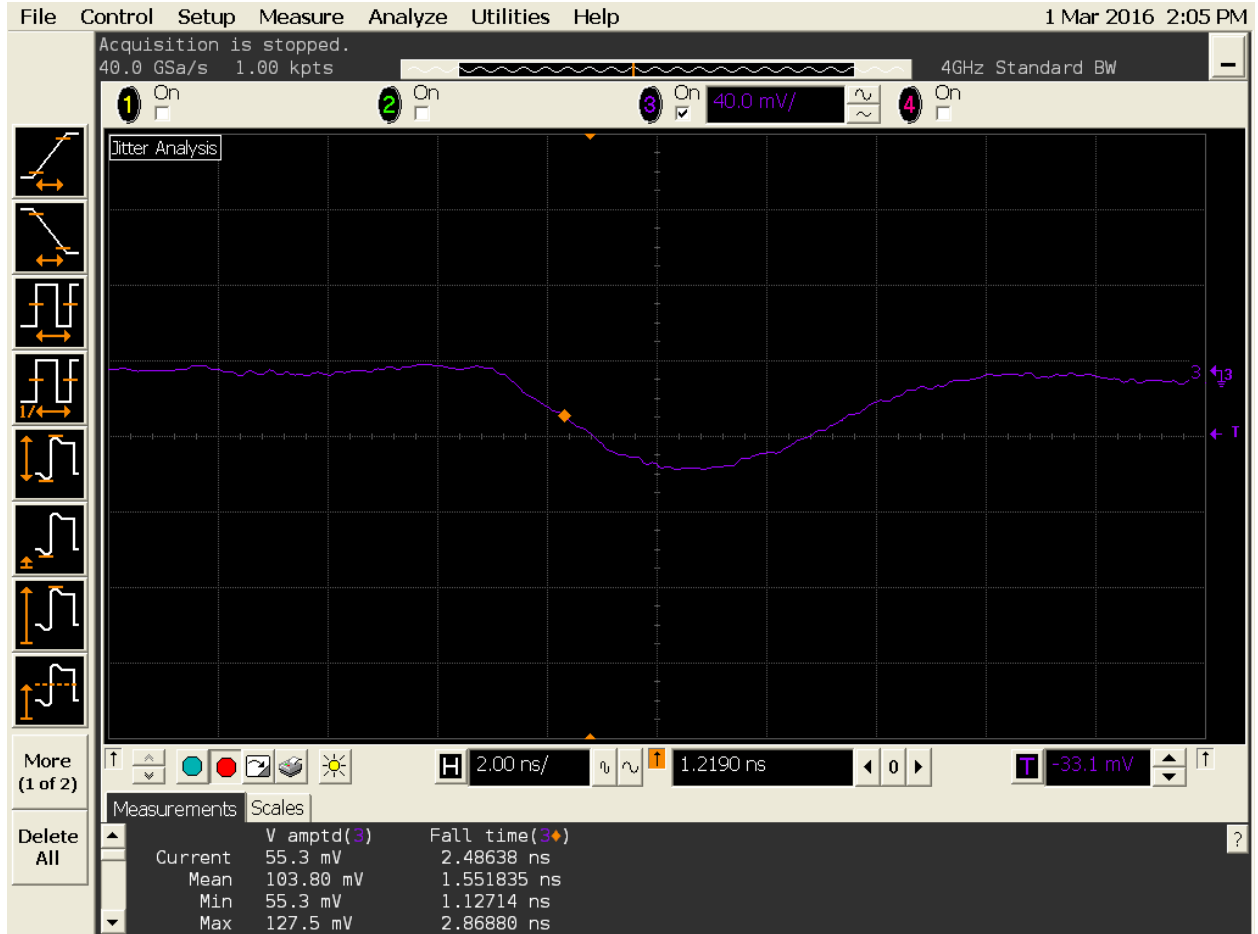
Gallery of Single Shots

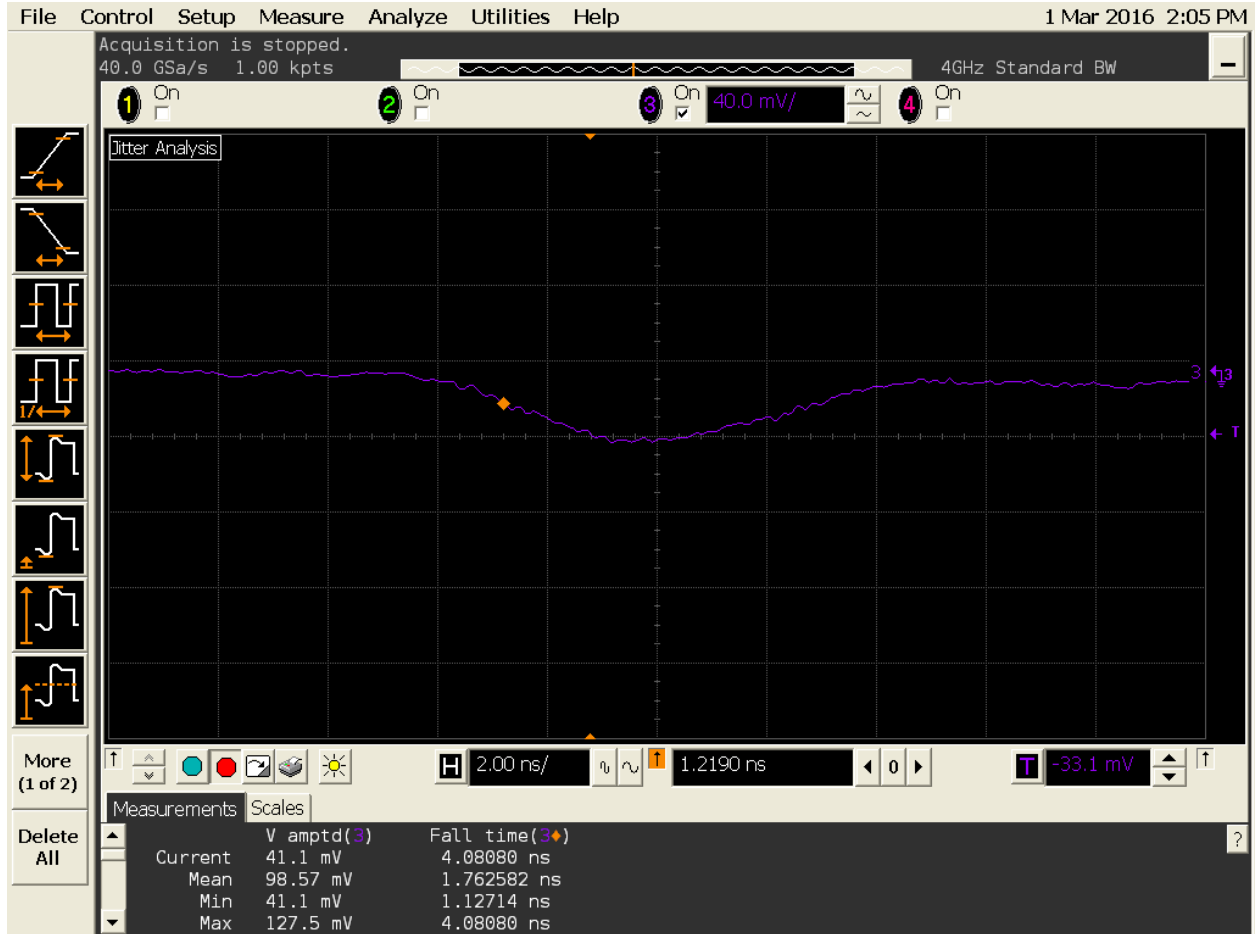


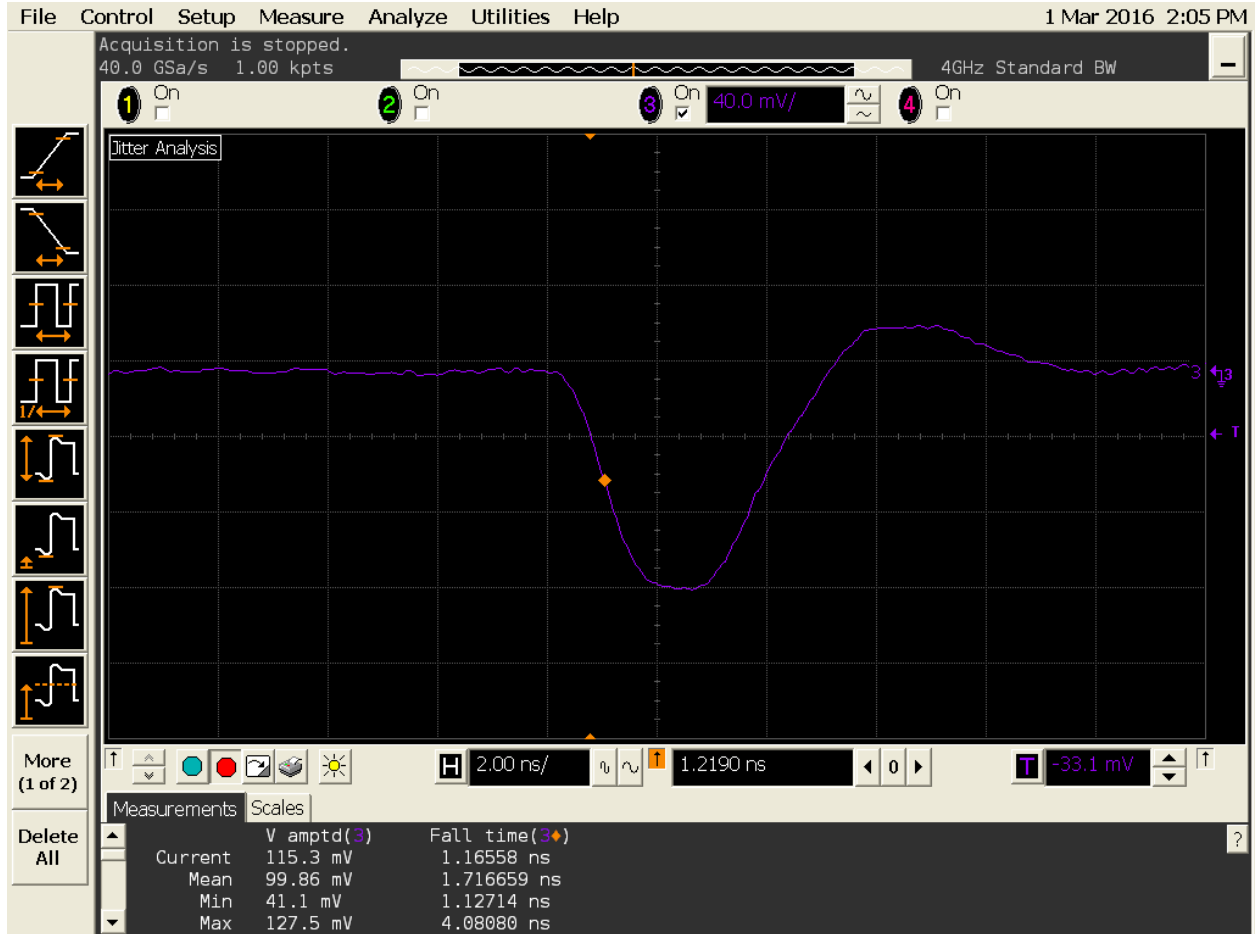




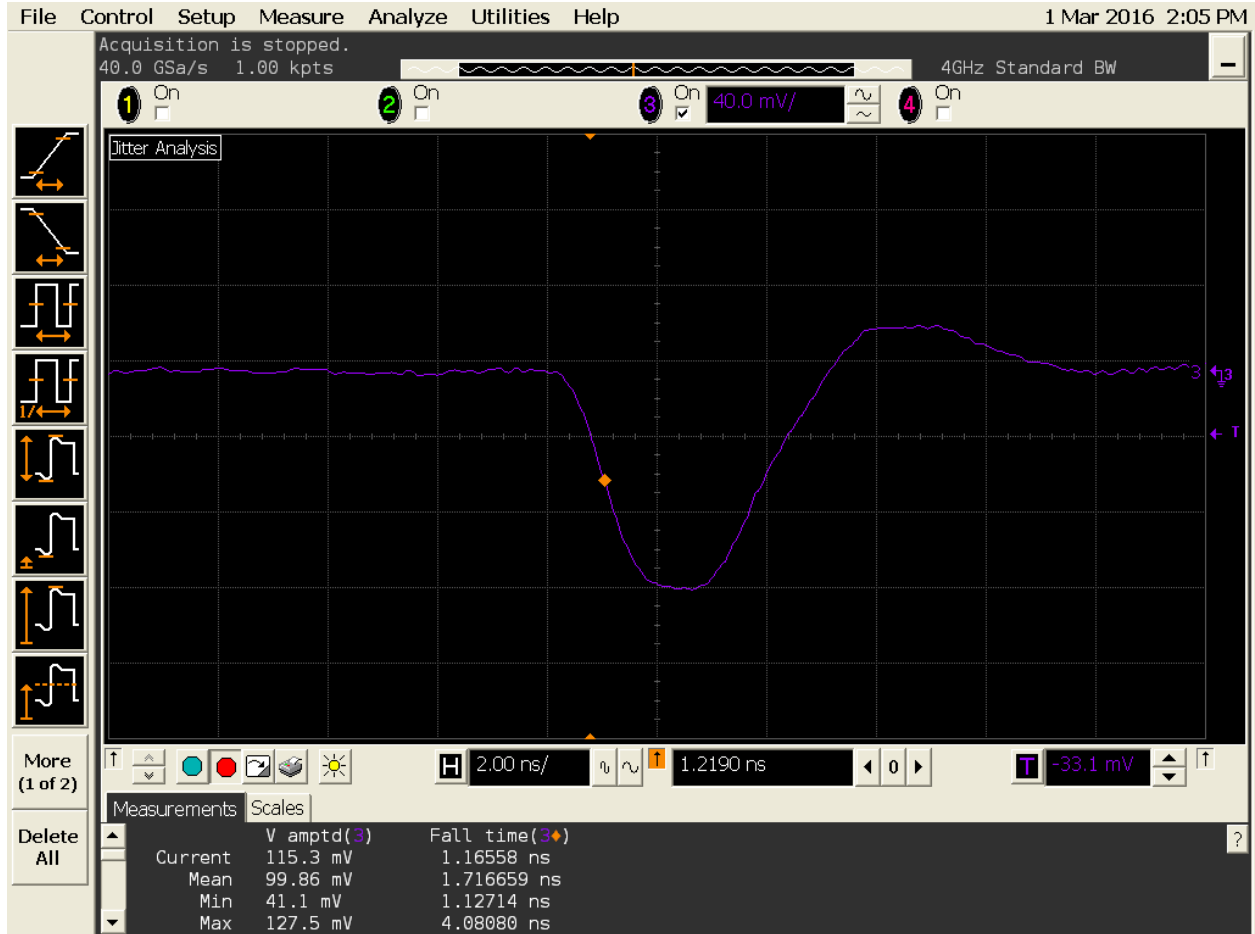






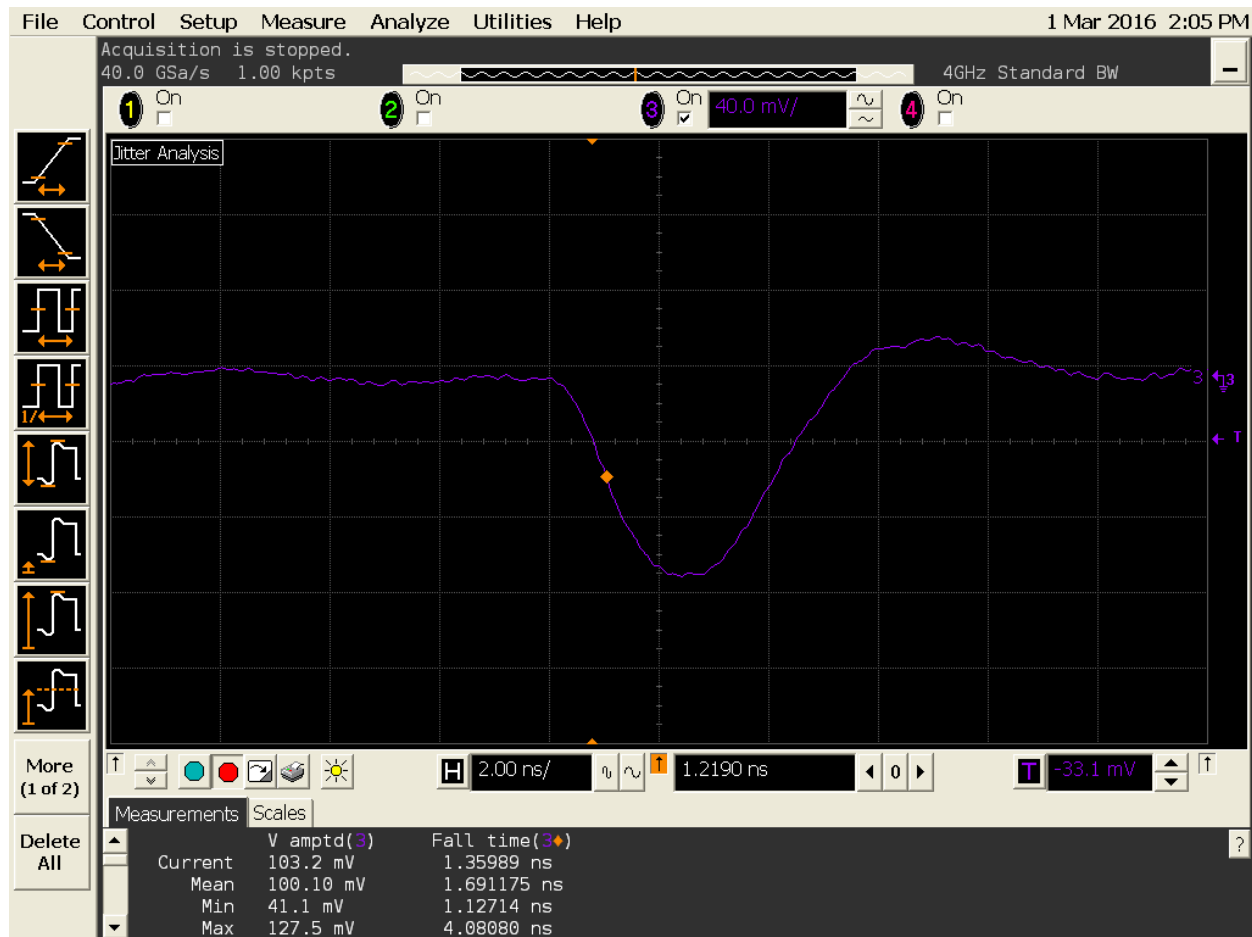


1.16ns Fall time



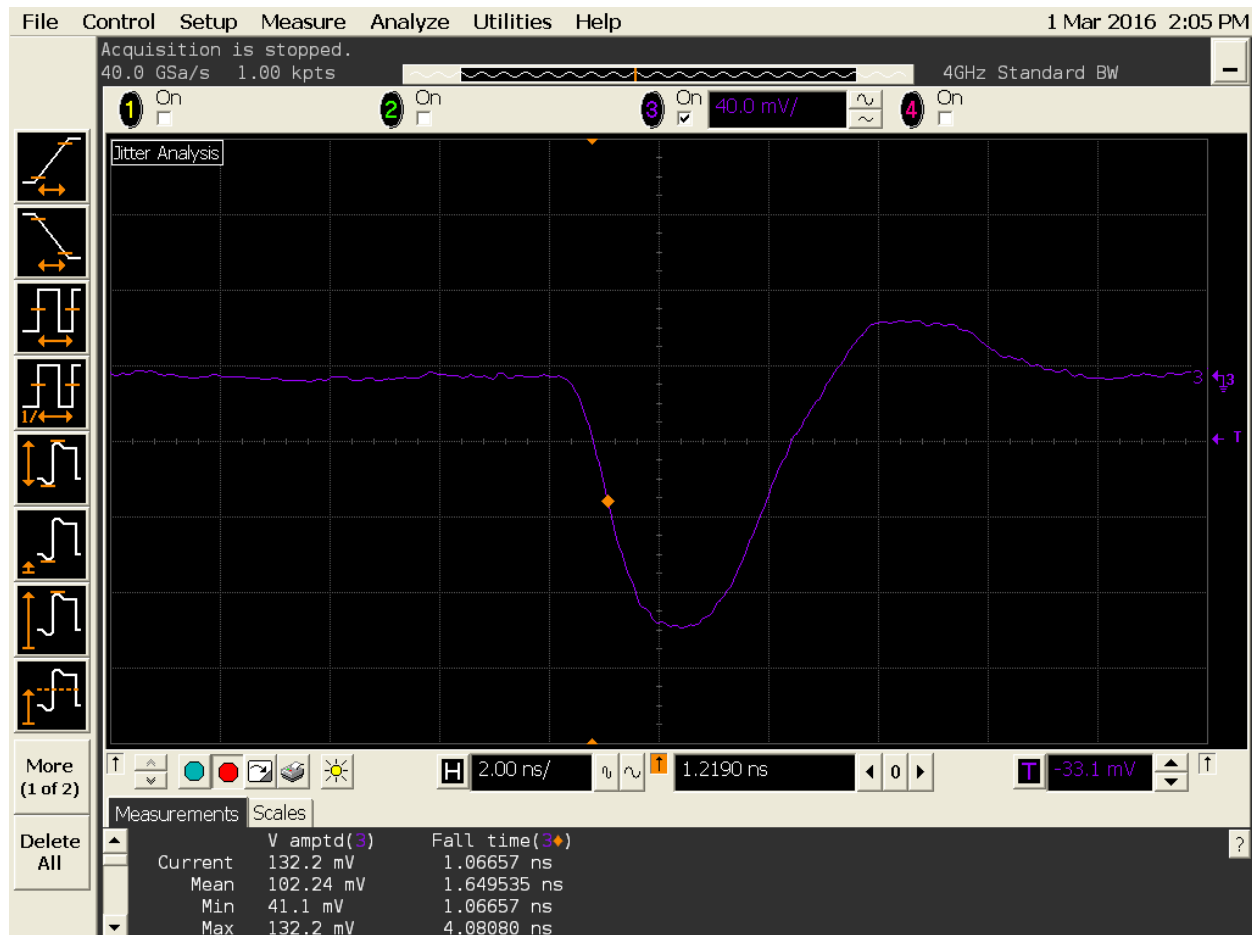
1.35ns fall time

March 1, 2016

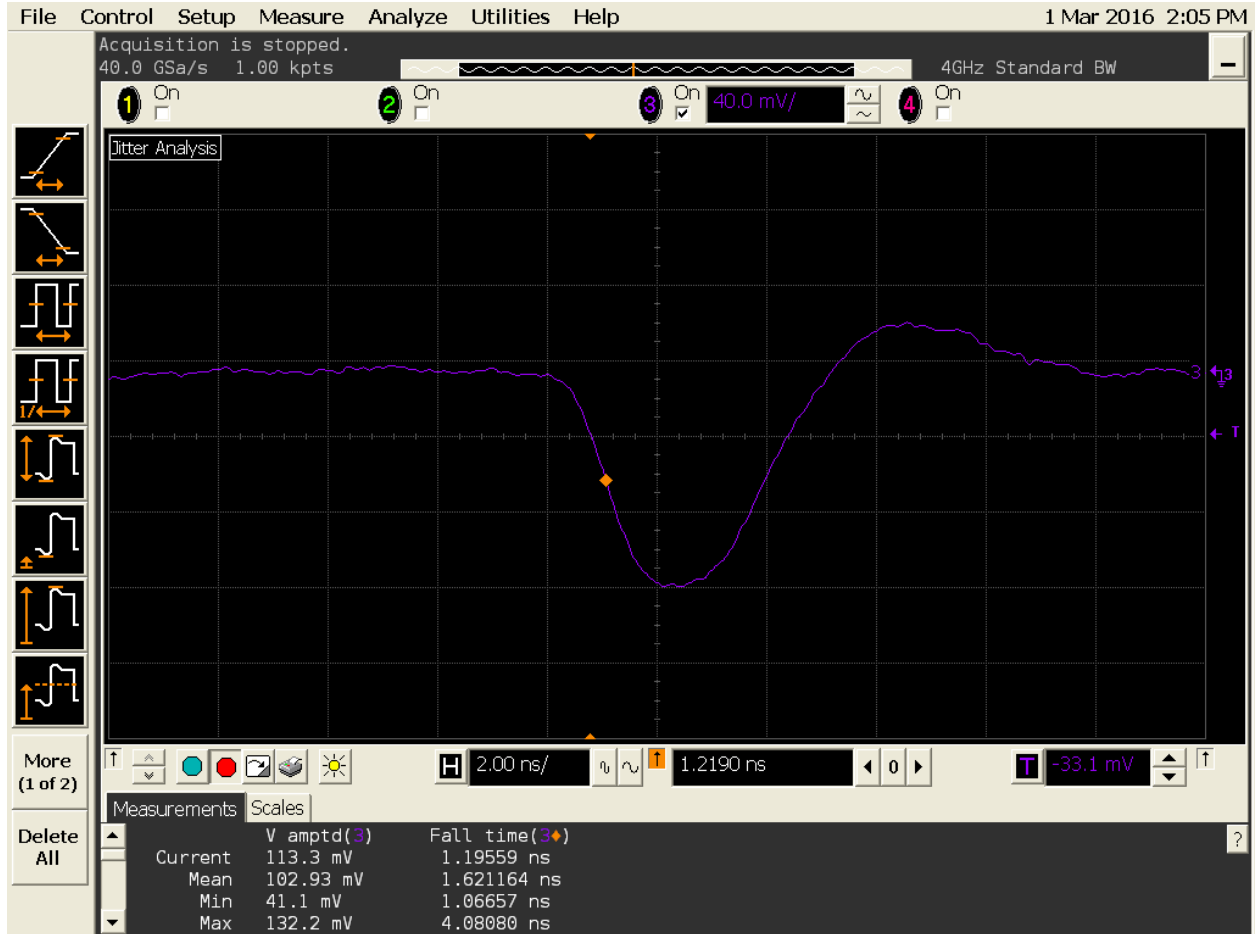


1.06ns Fall time

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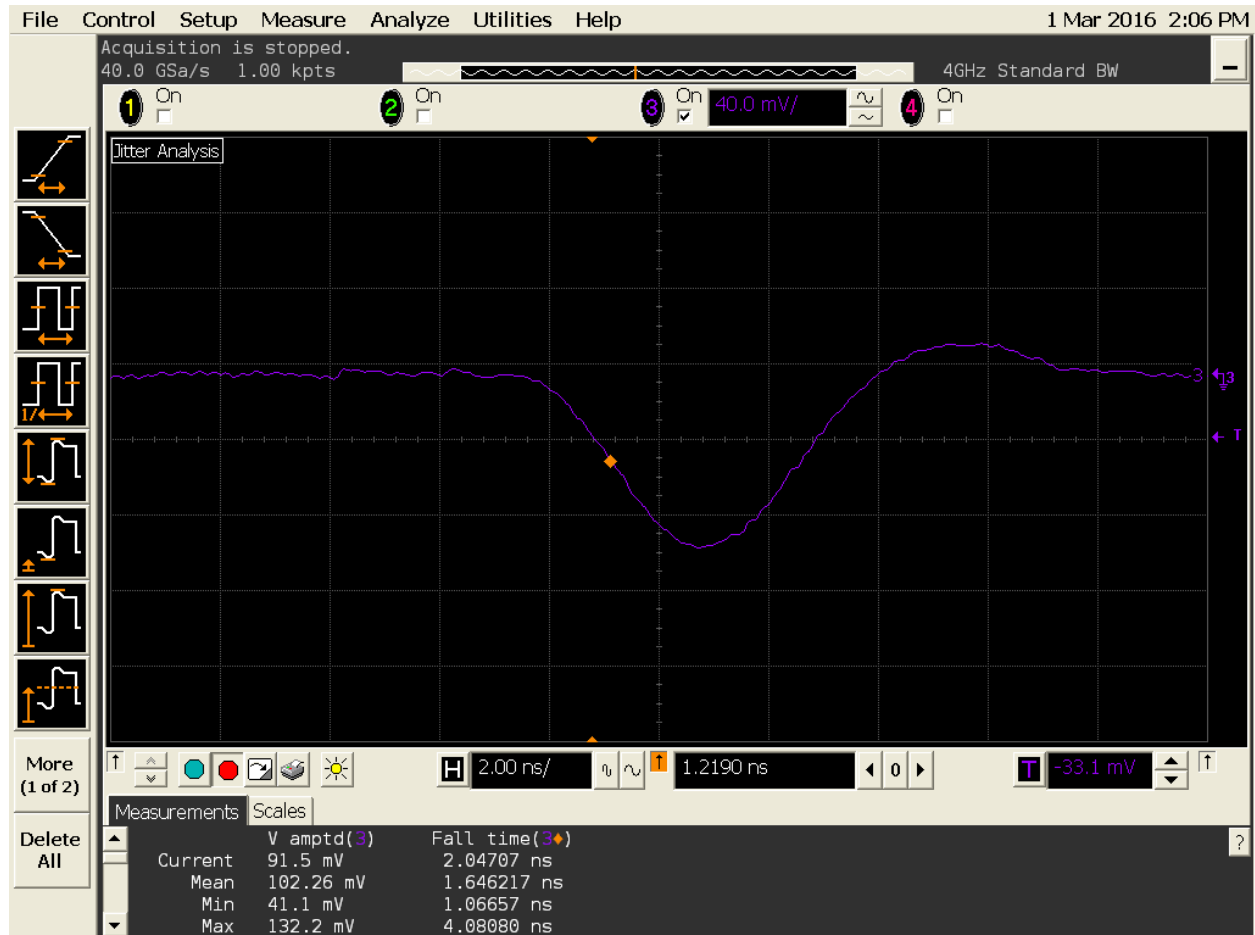


1.19ns Fall time



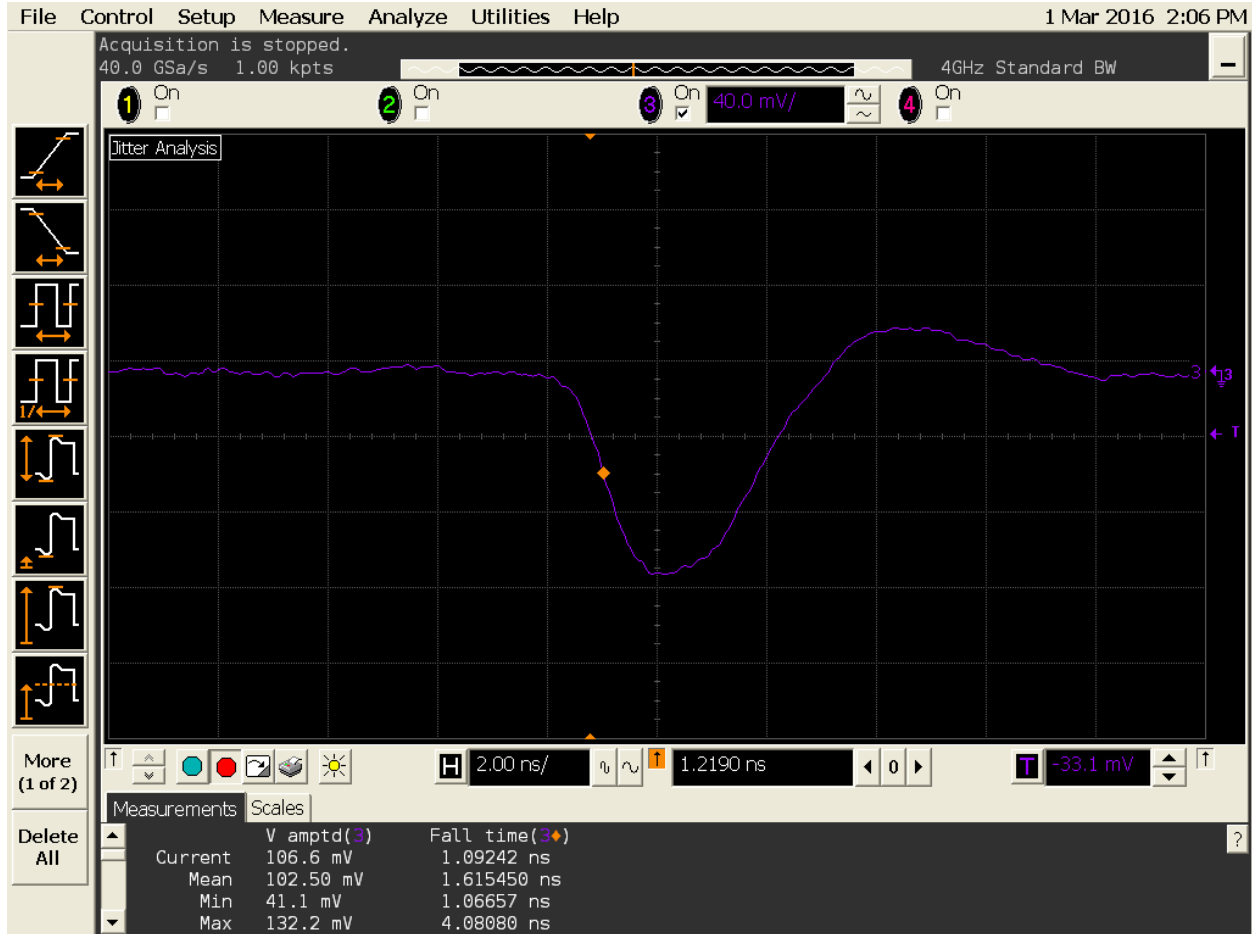
2ns Fall time

March 1, 2016

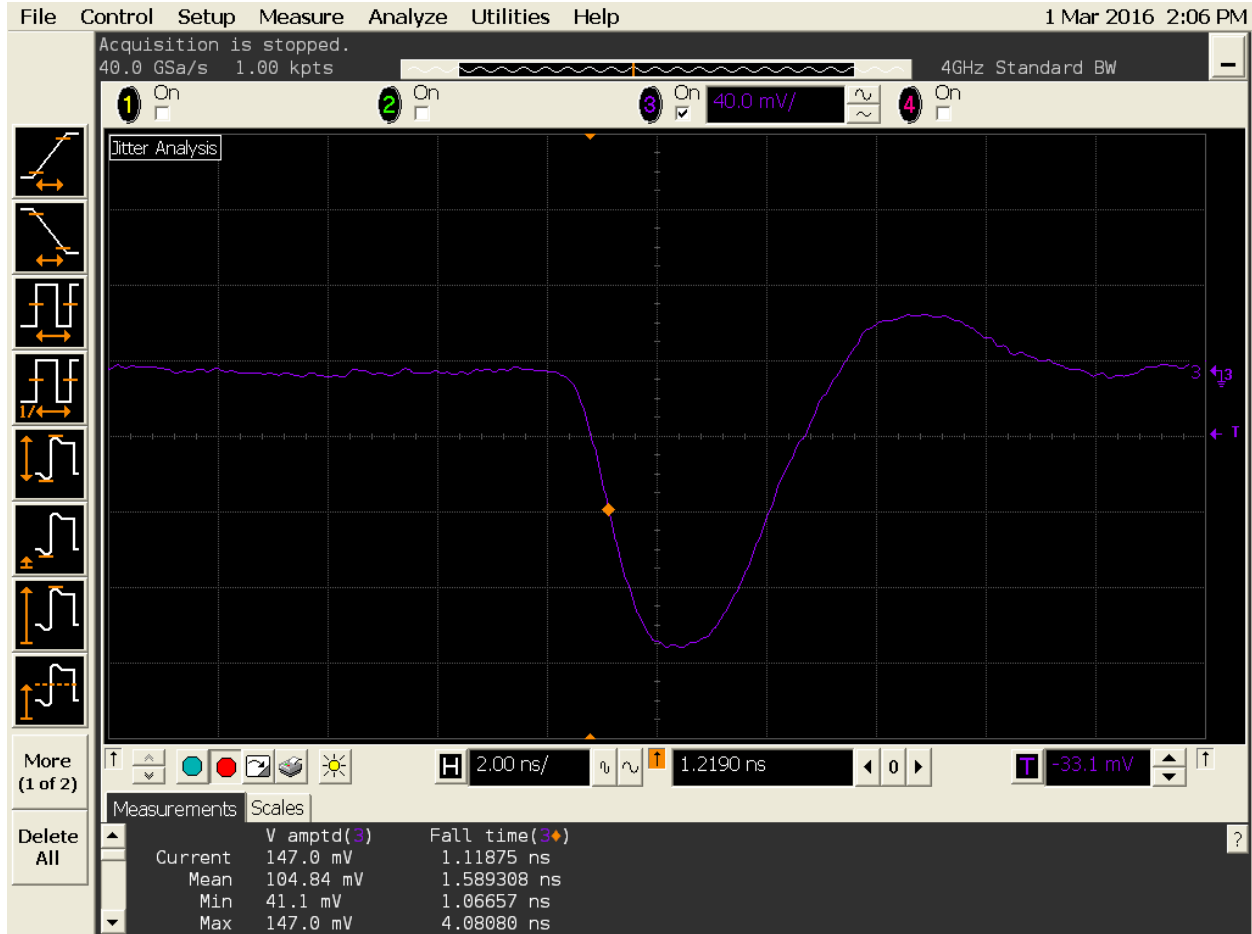


1.09ns Fall time

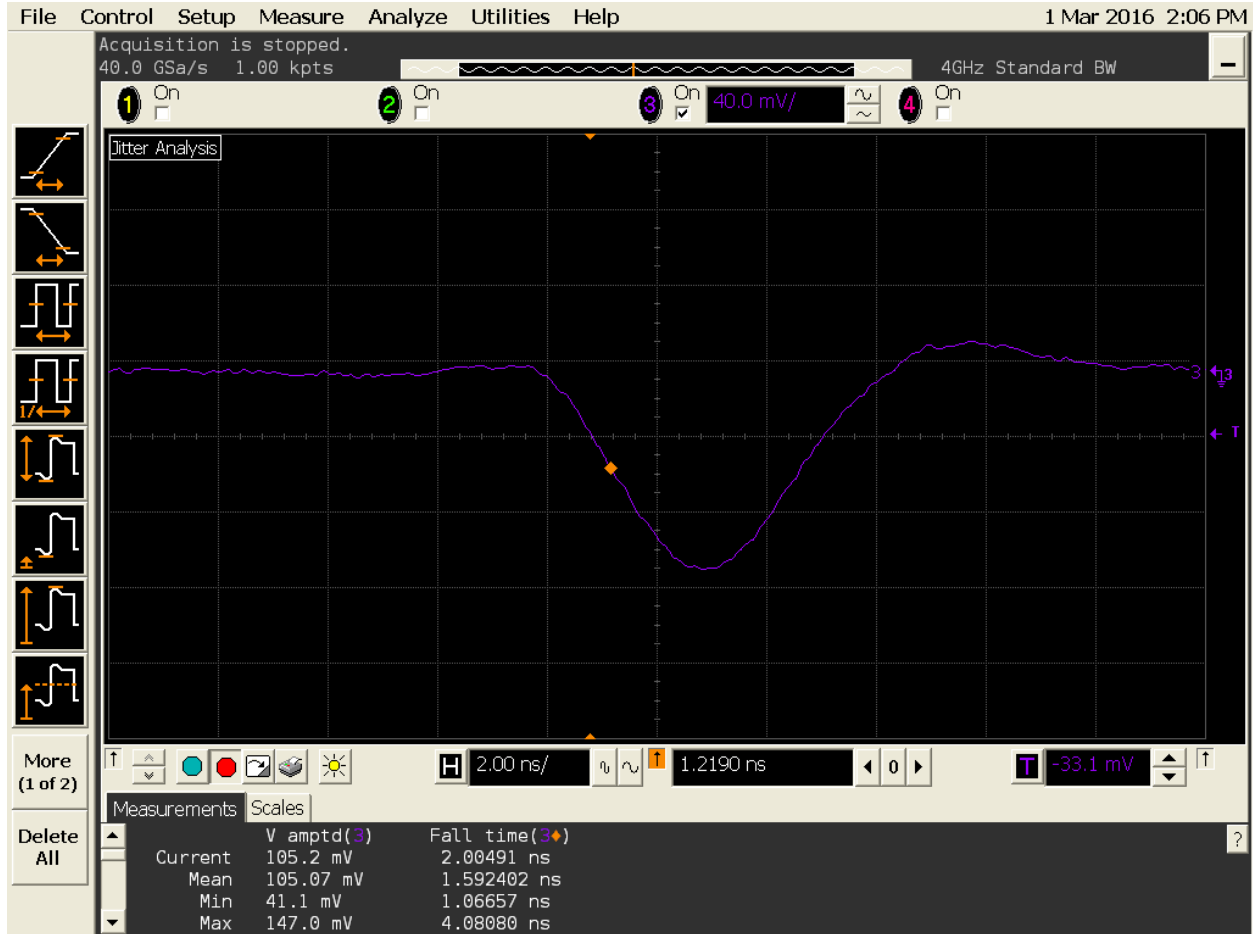
March 1, 2016



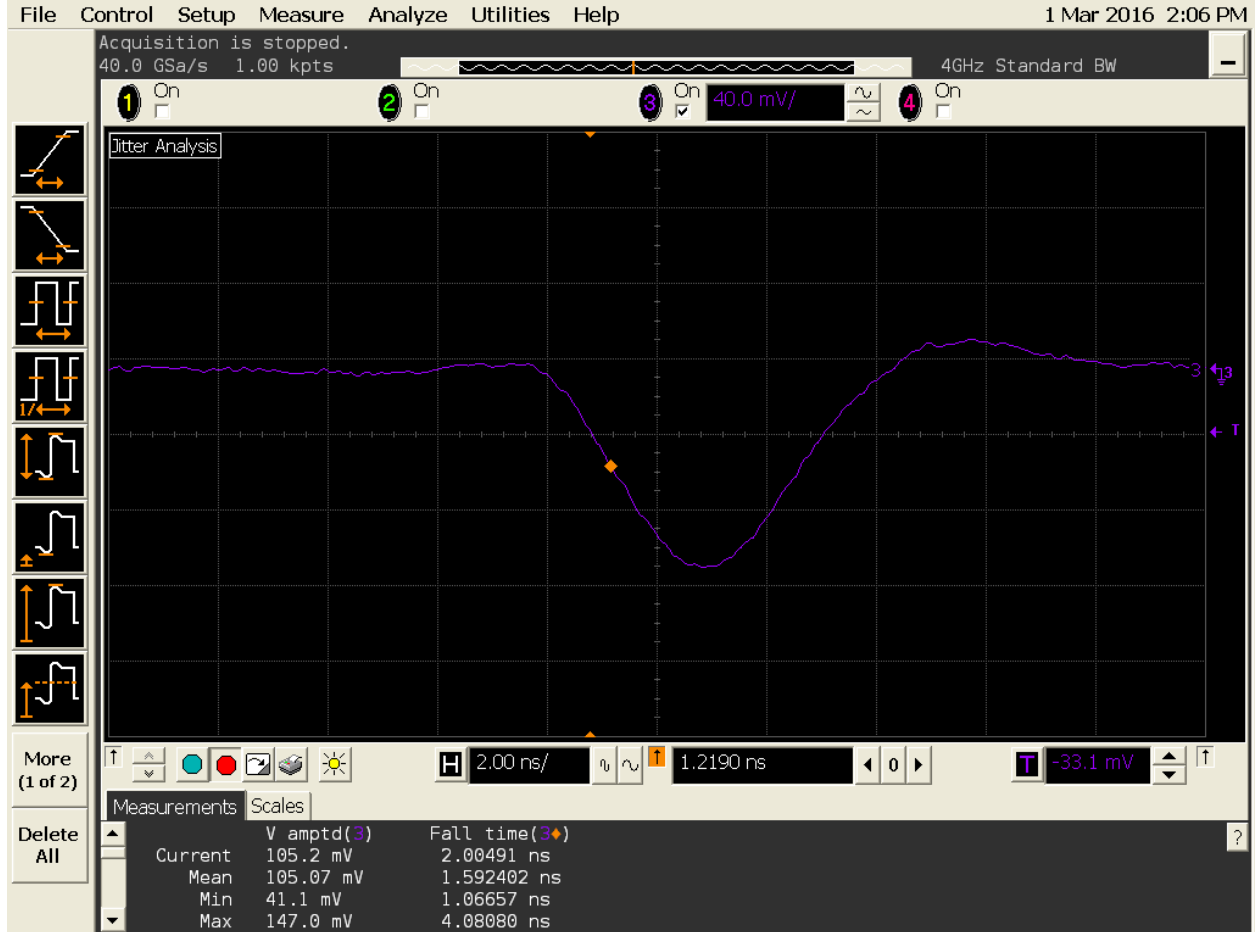
1.1ns Fall time



2ns Fall time

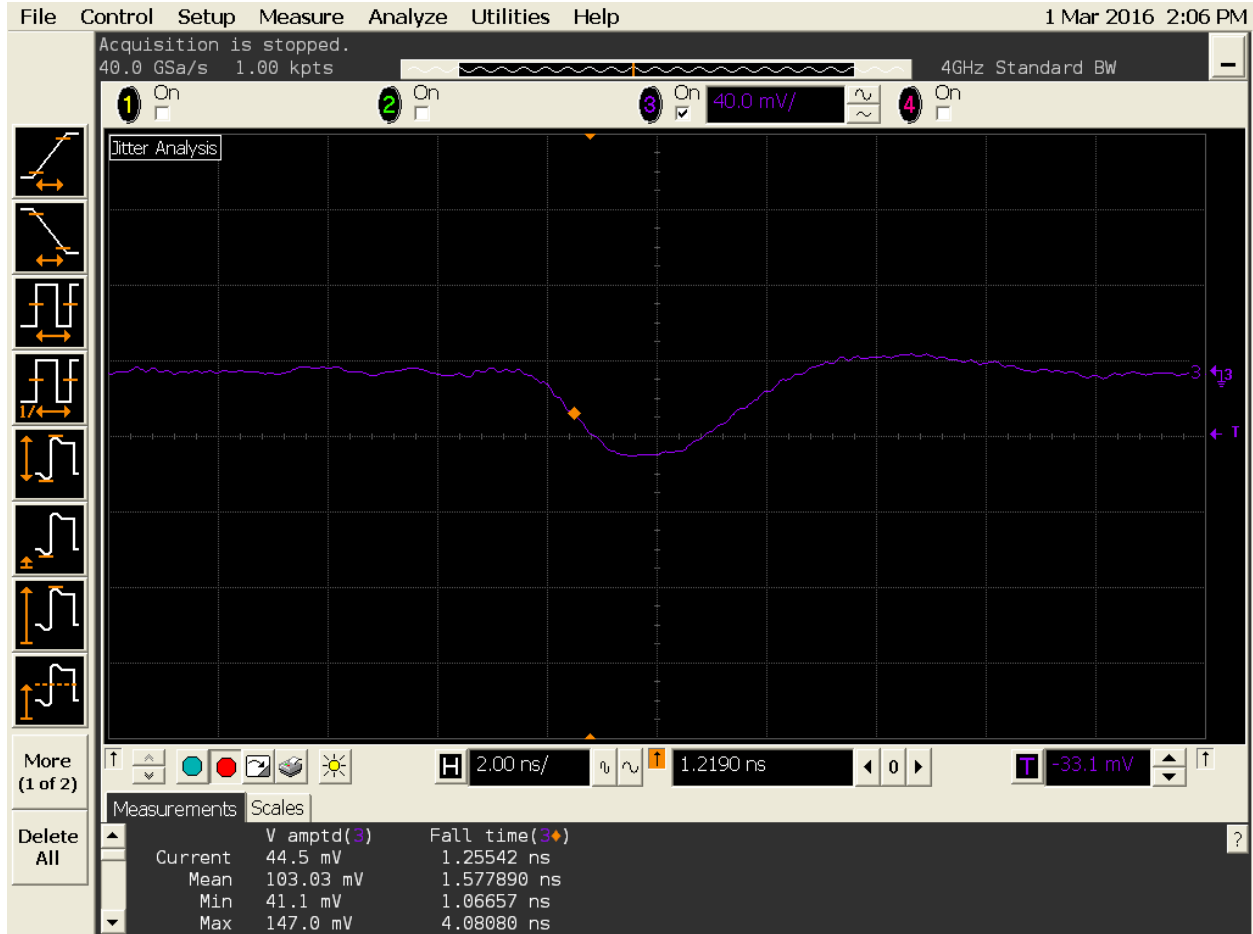


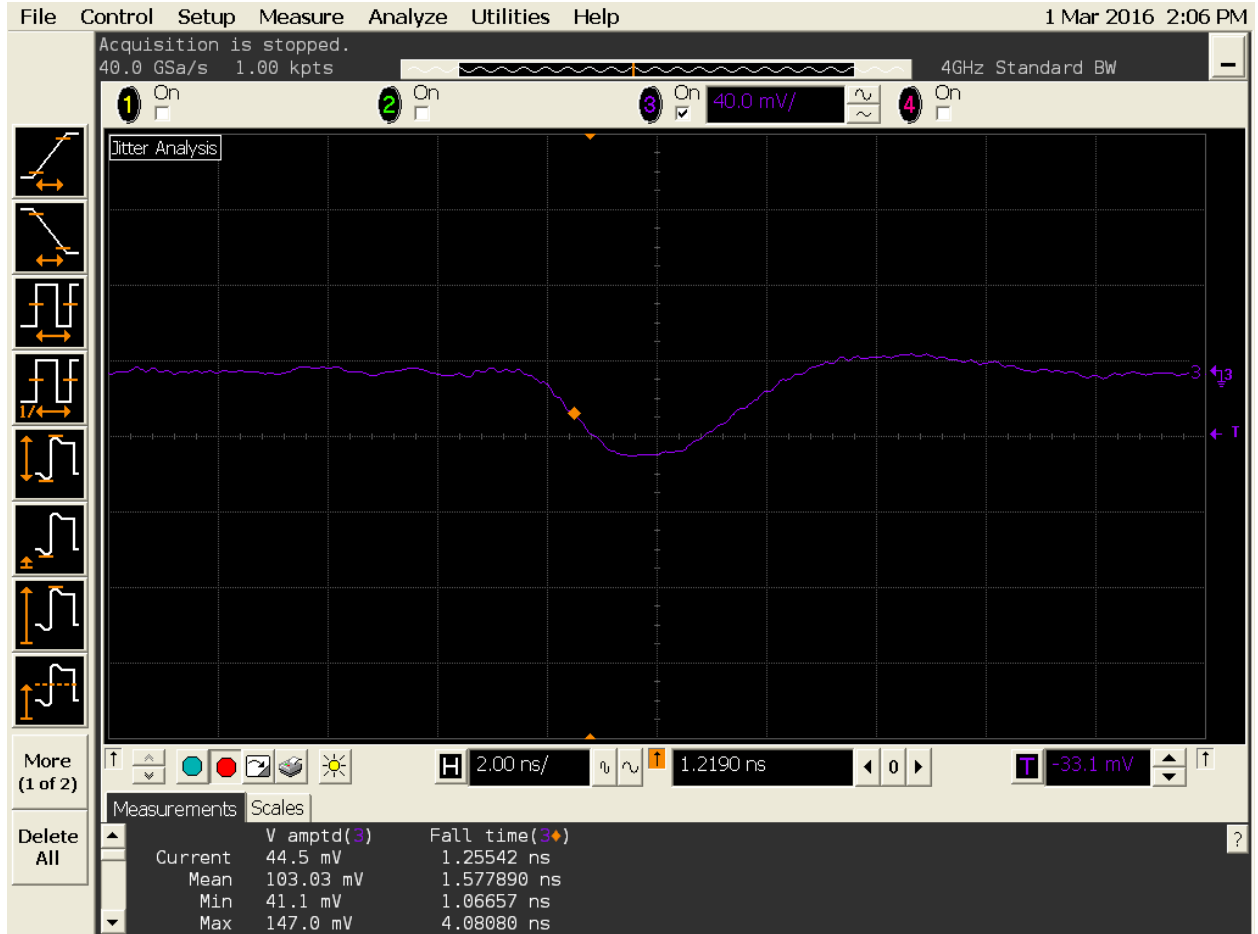
2ns Fall time

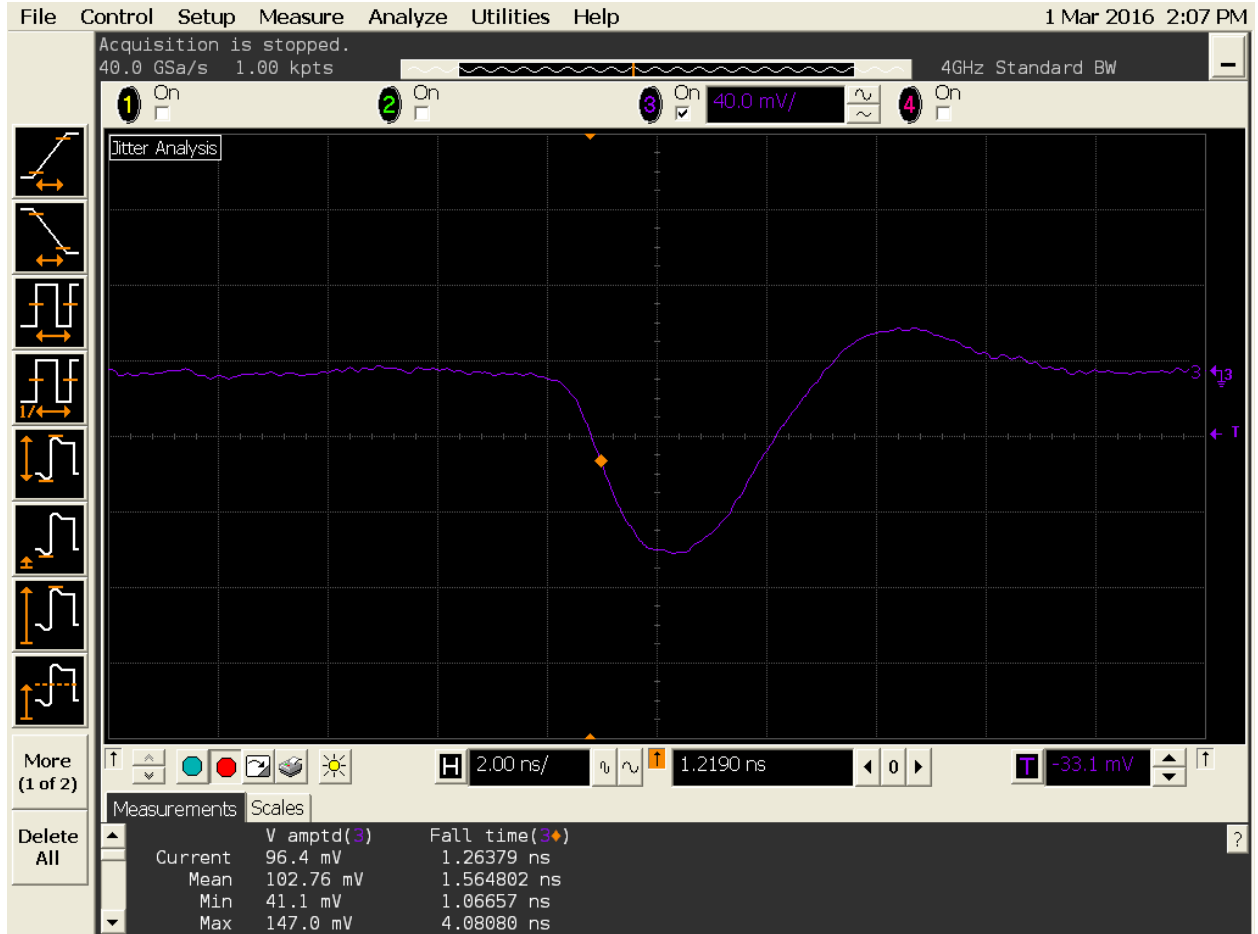


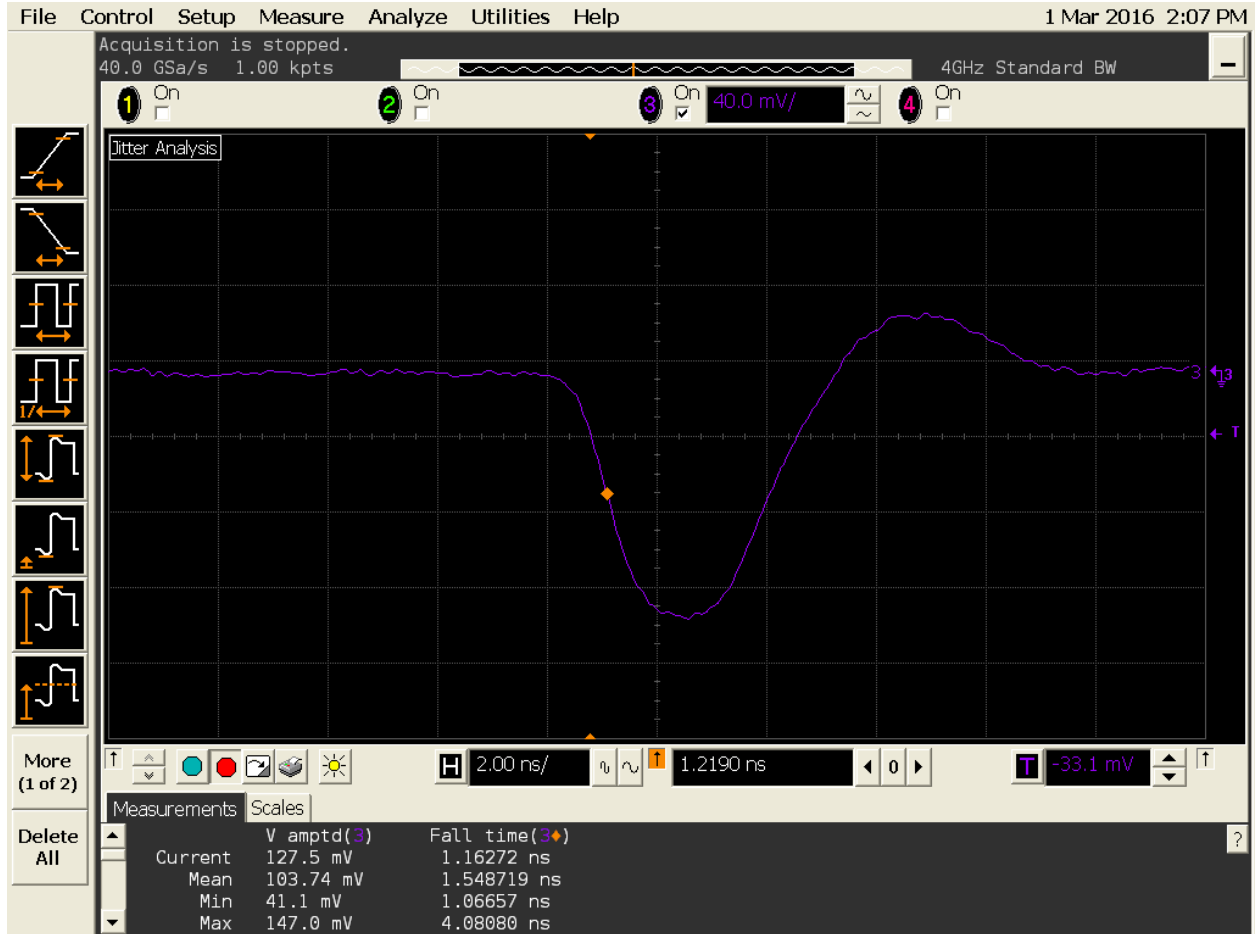
1.2ns Fall time

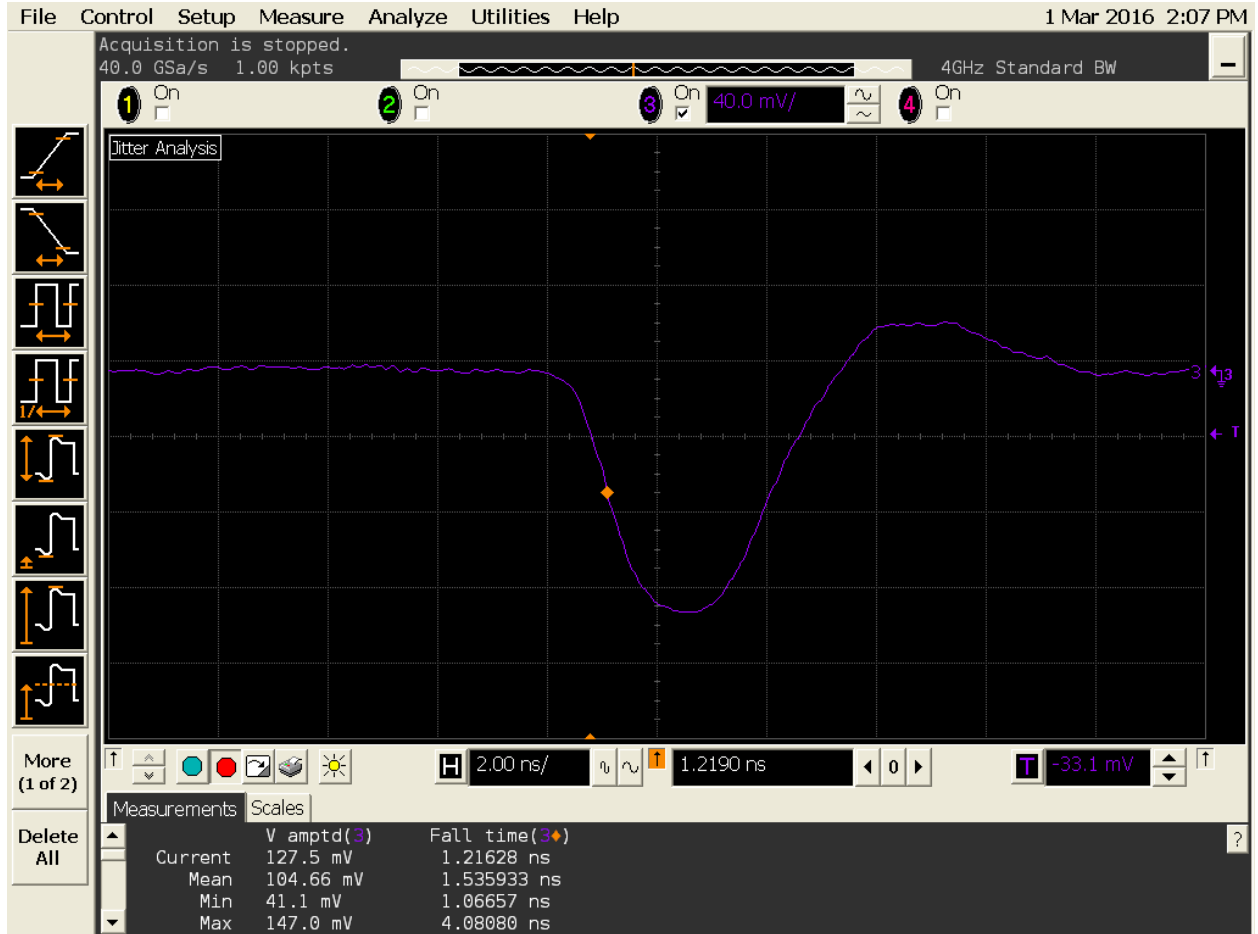
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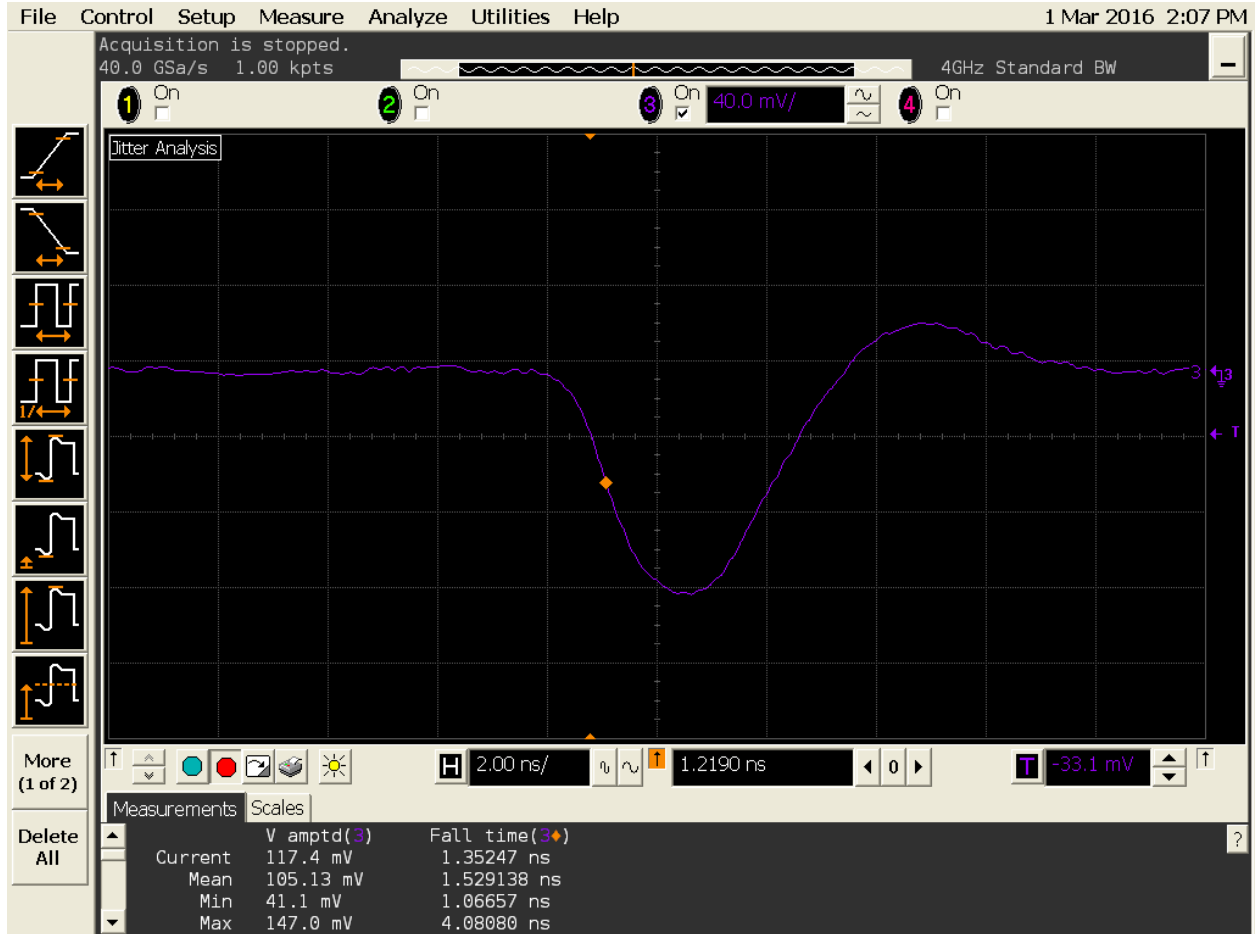


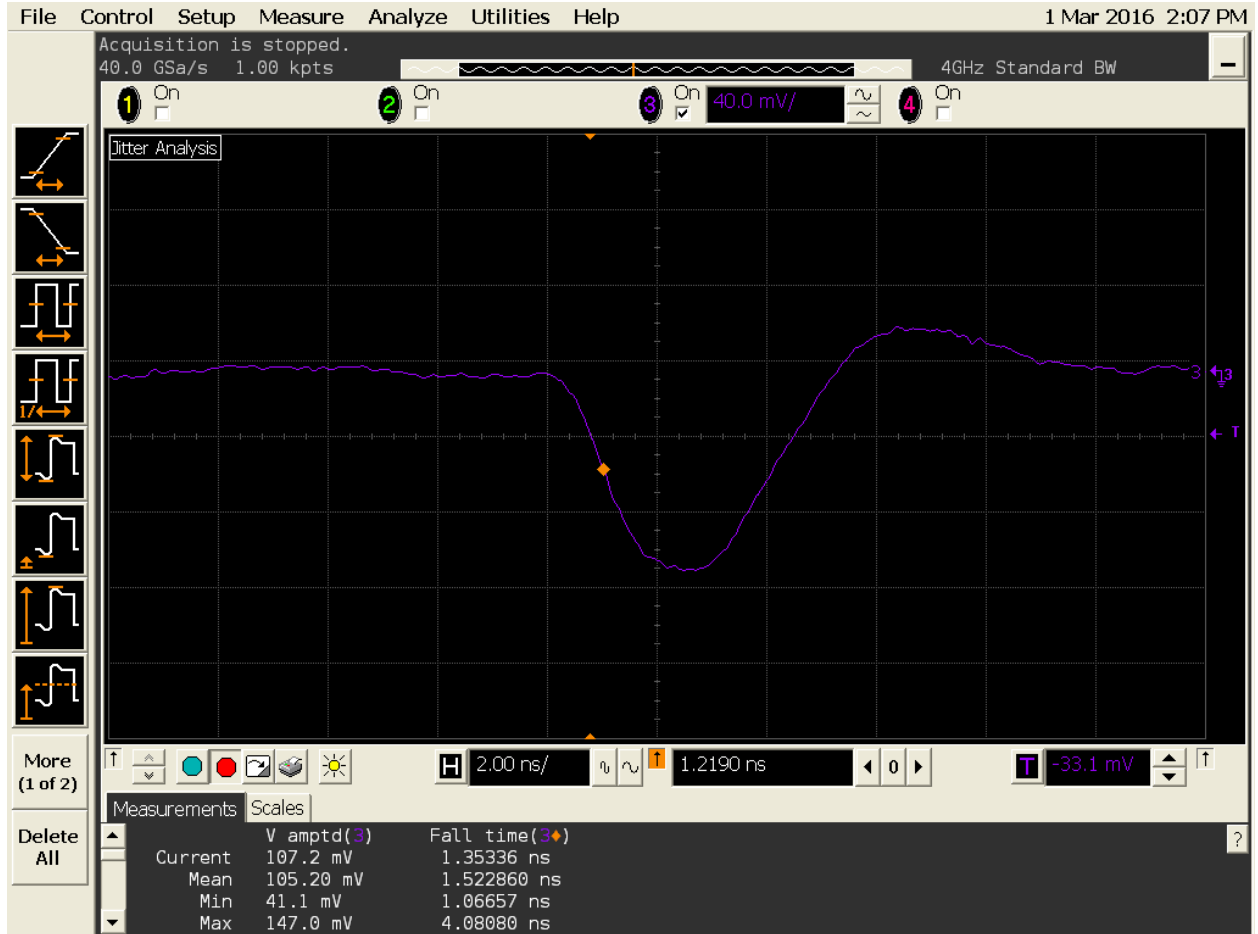


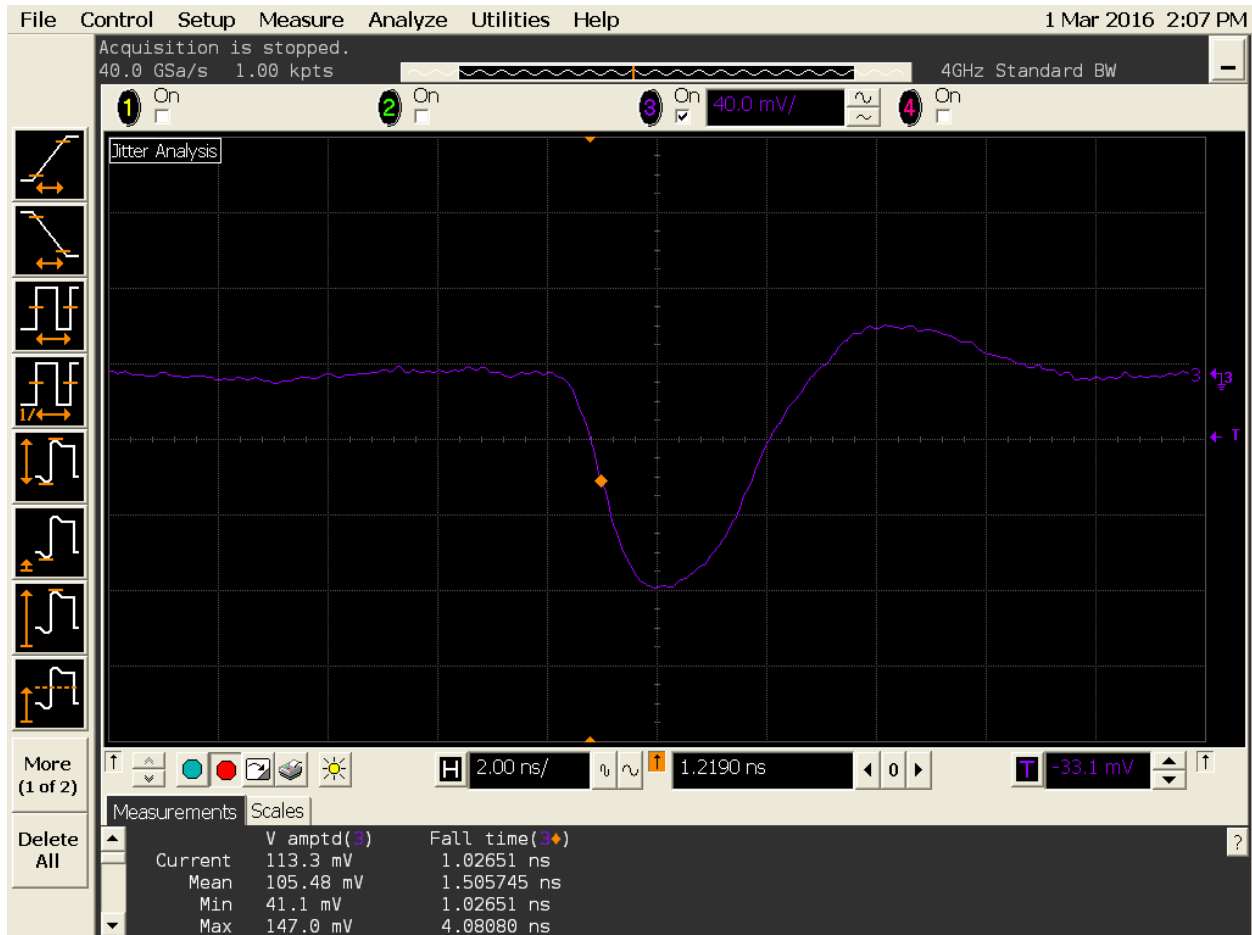


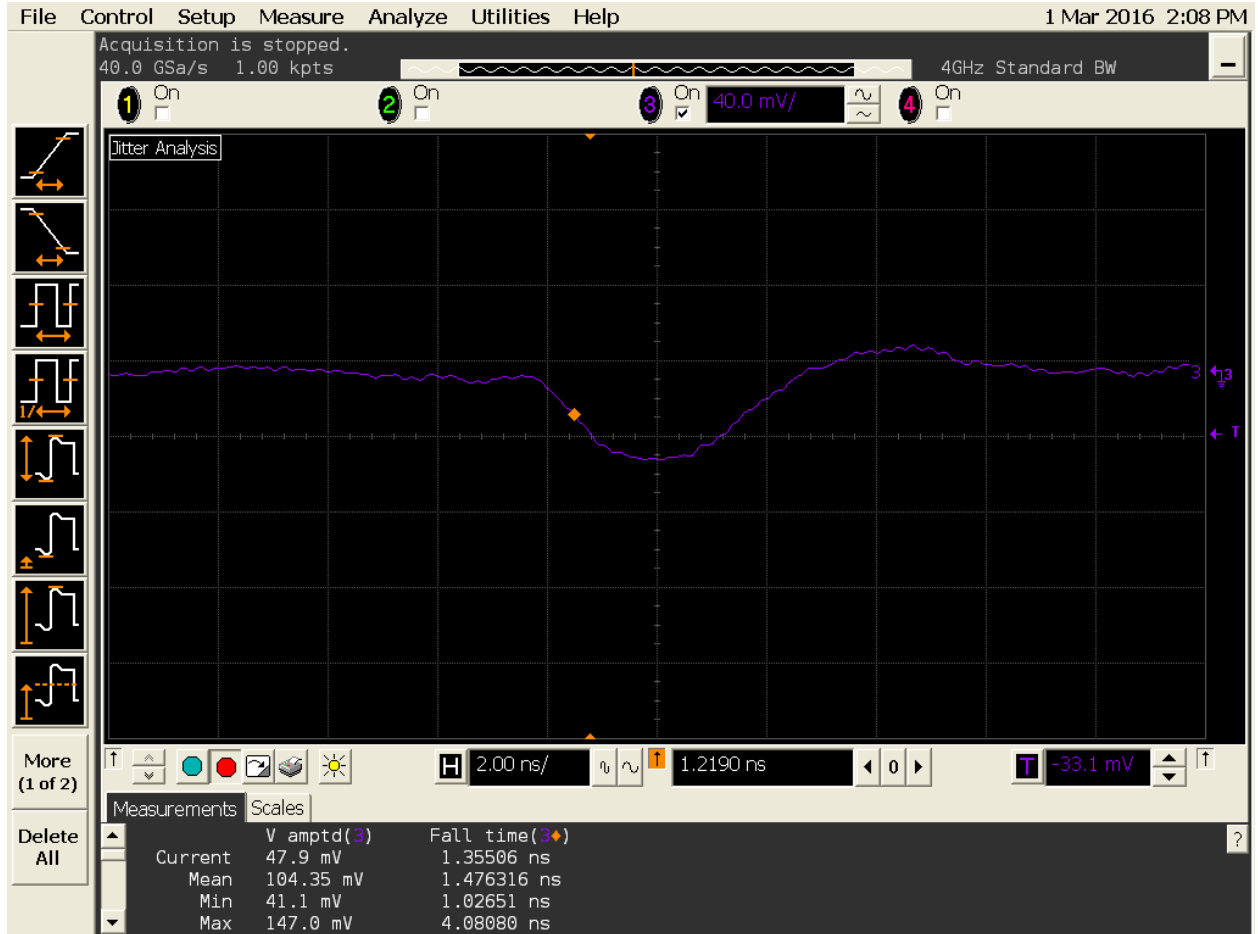








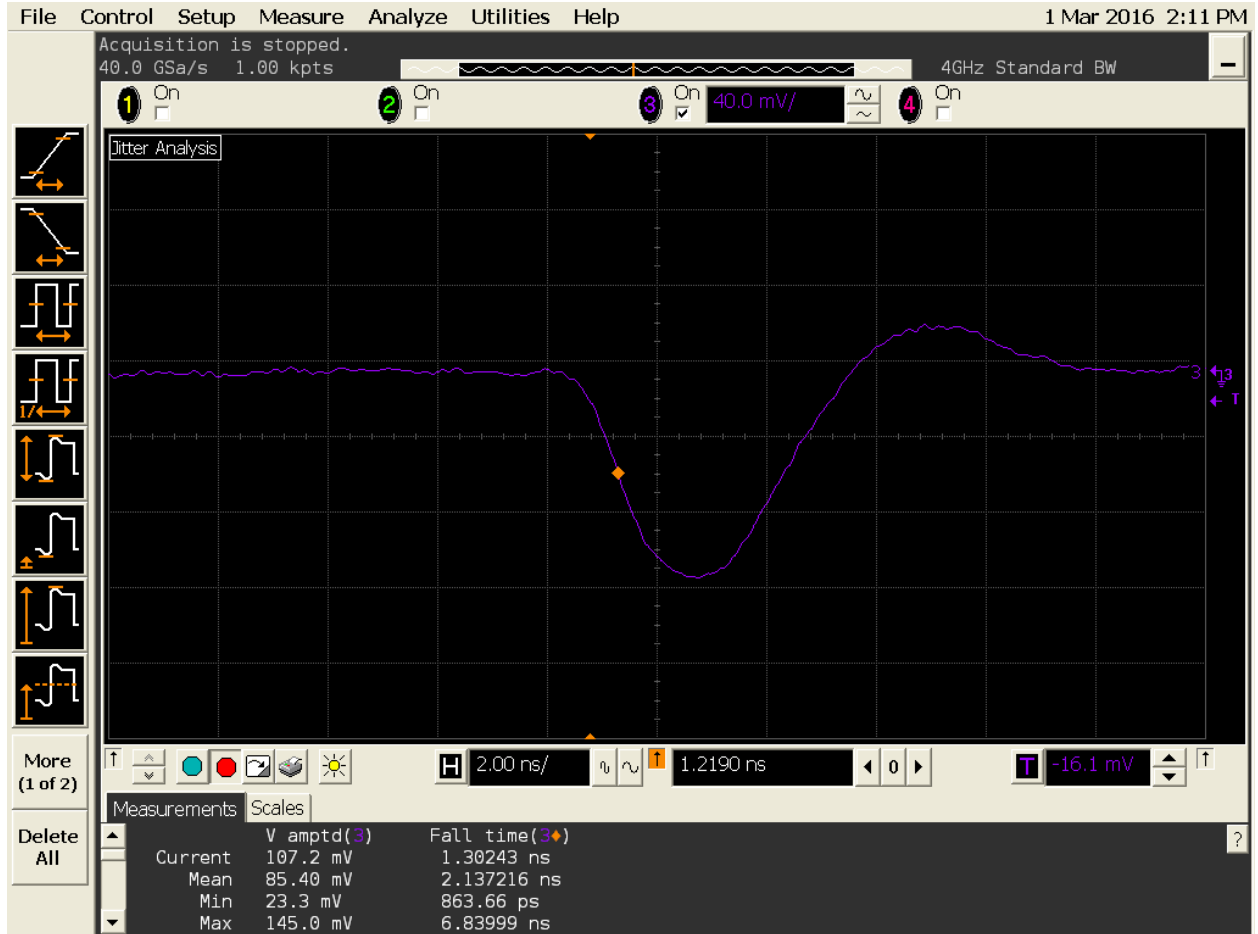


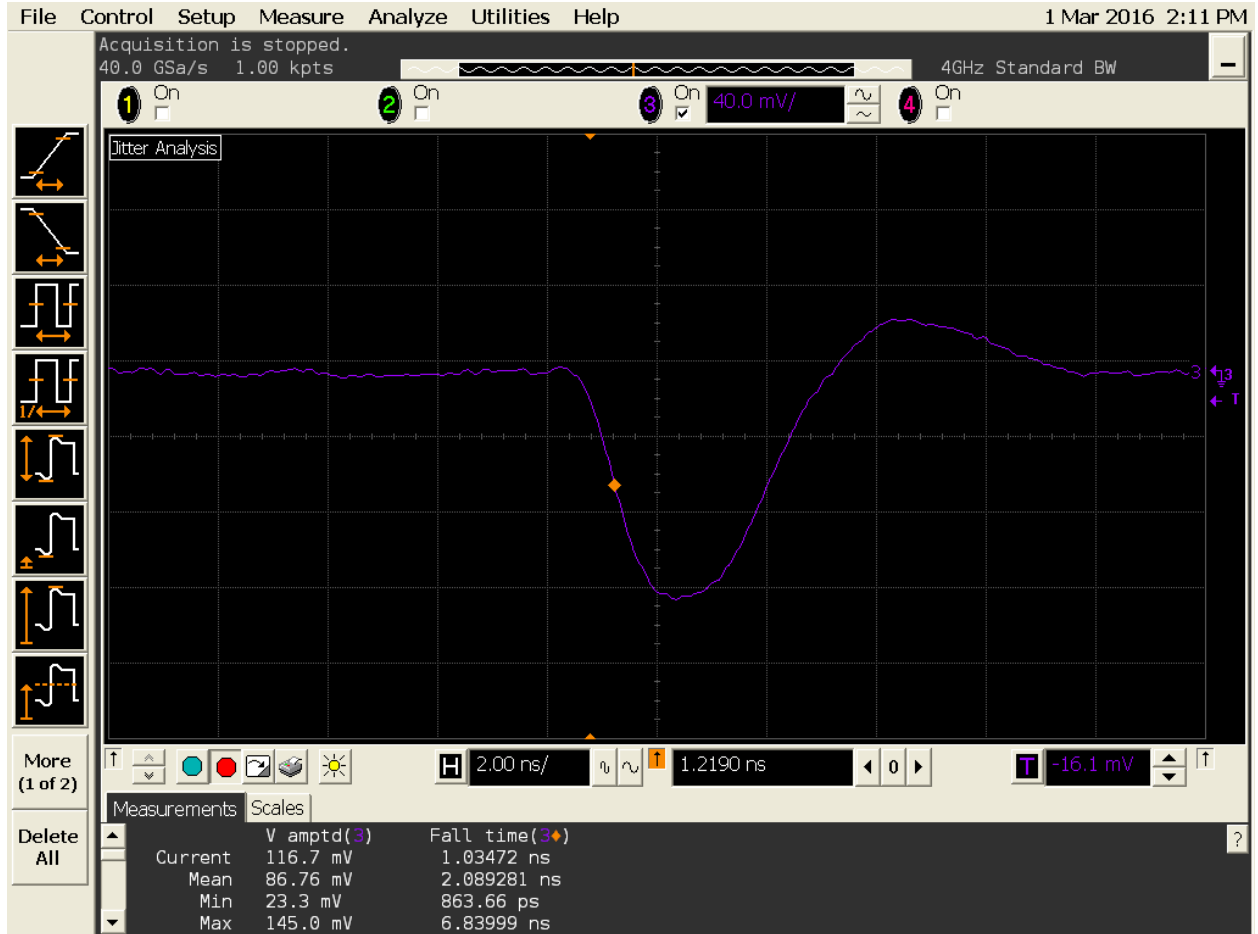


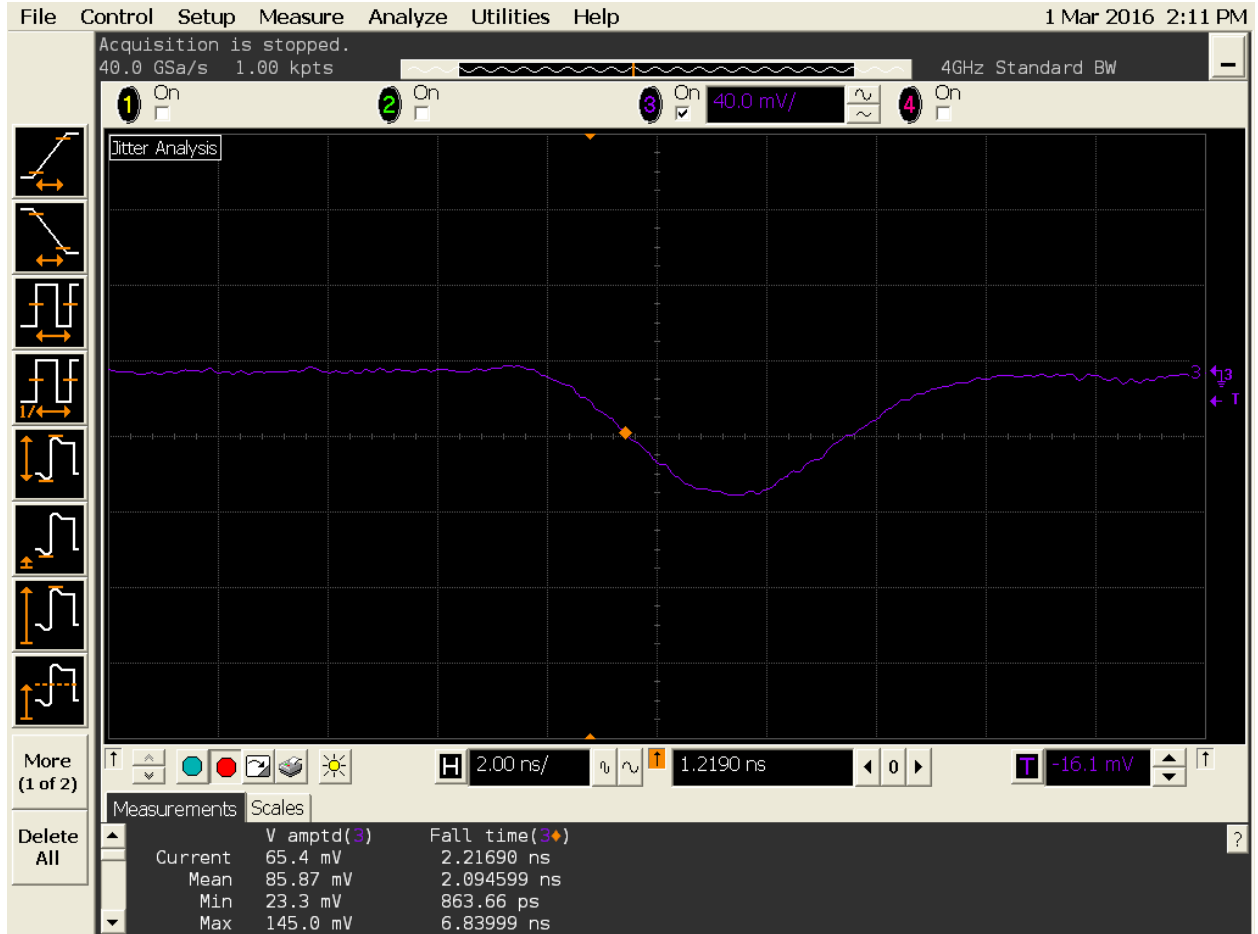
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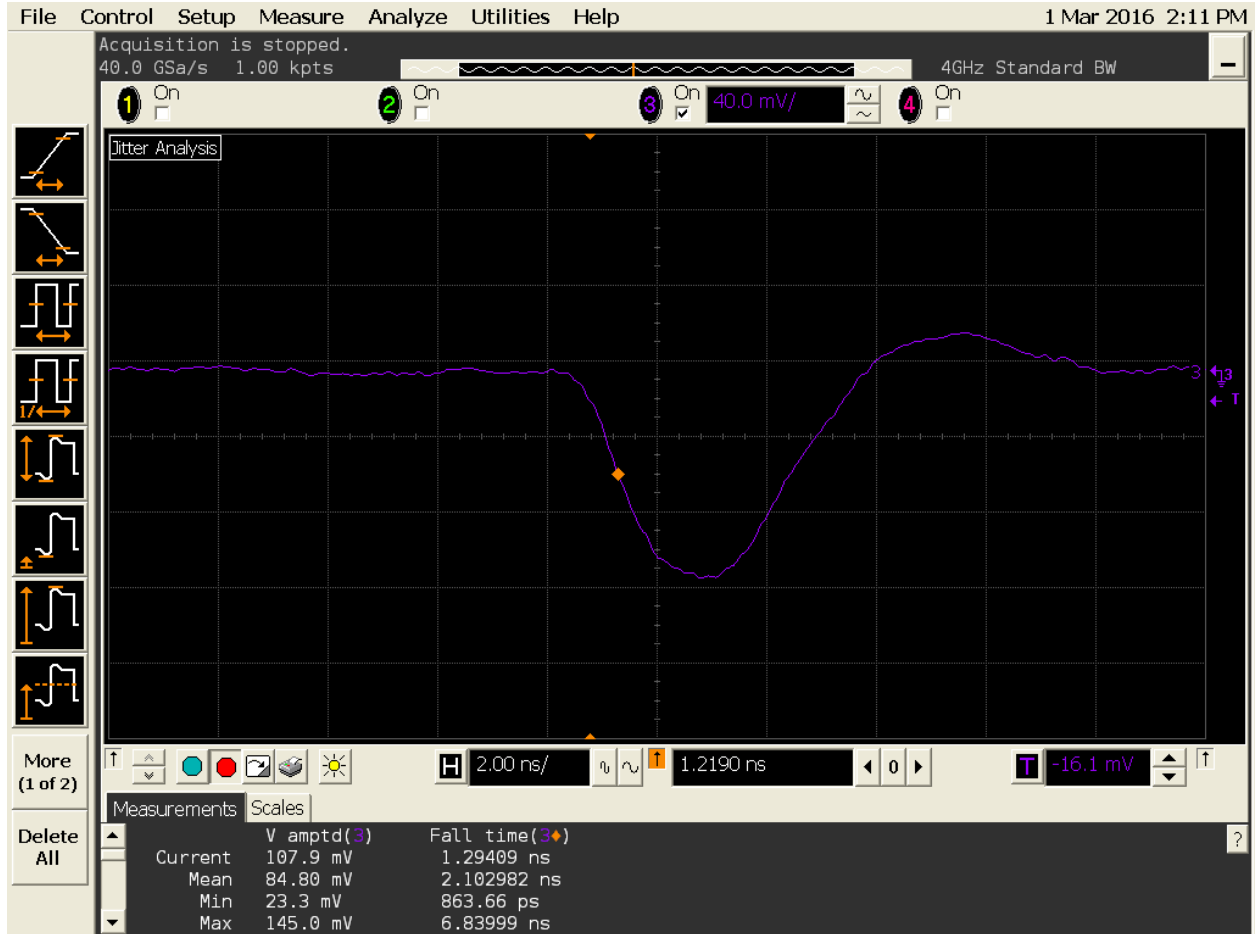
Threshold -16mV

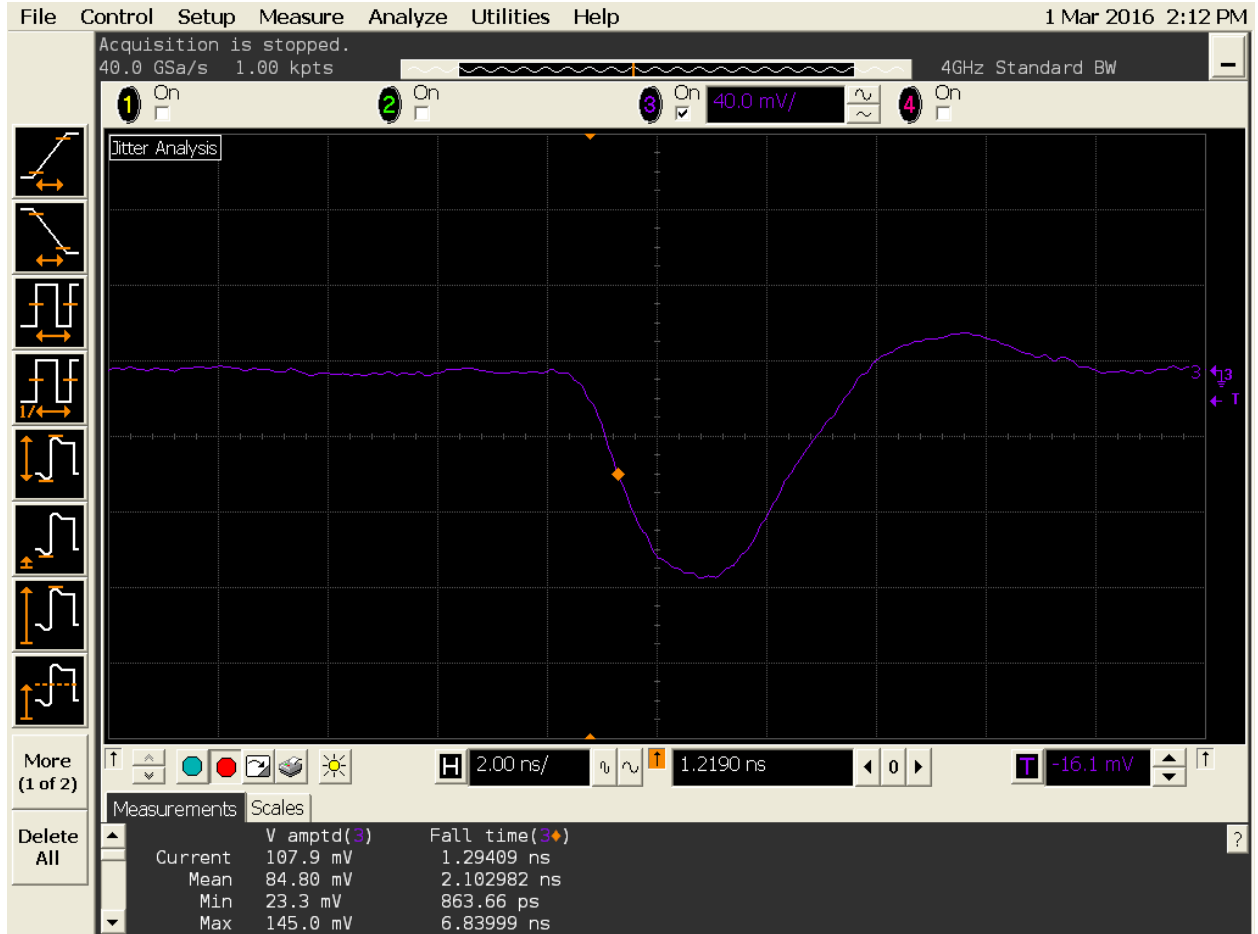


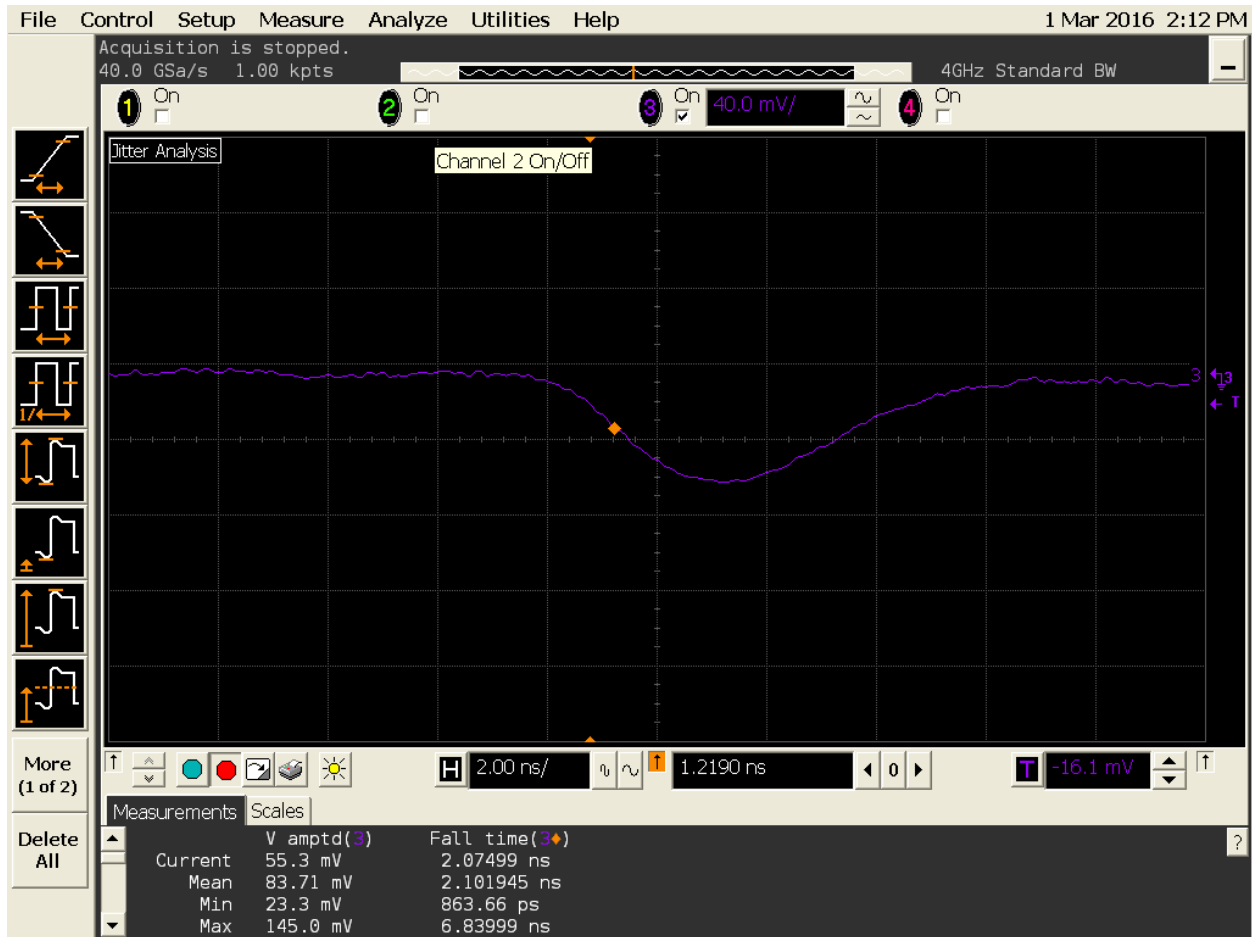


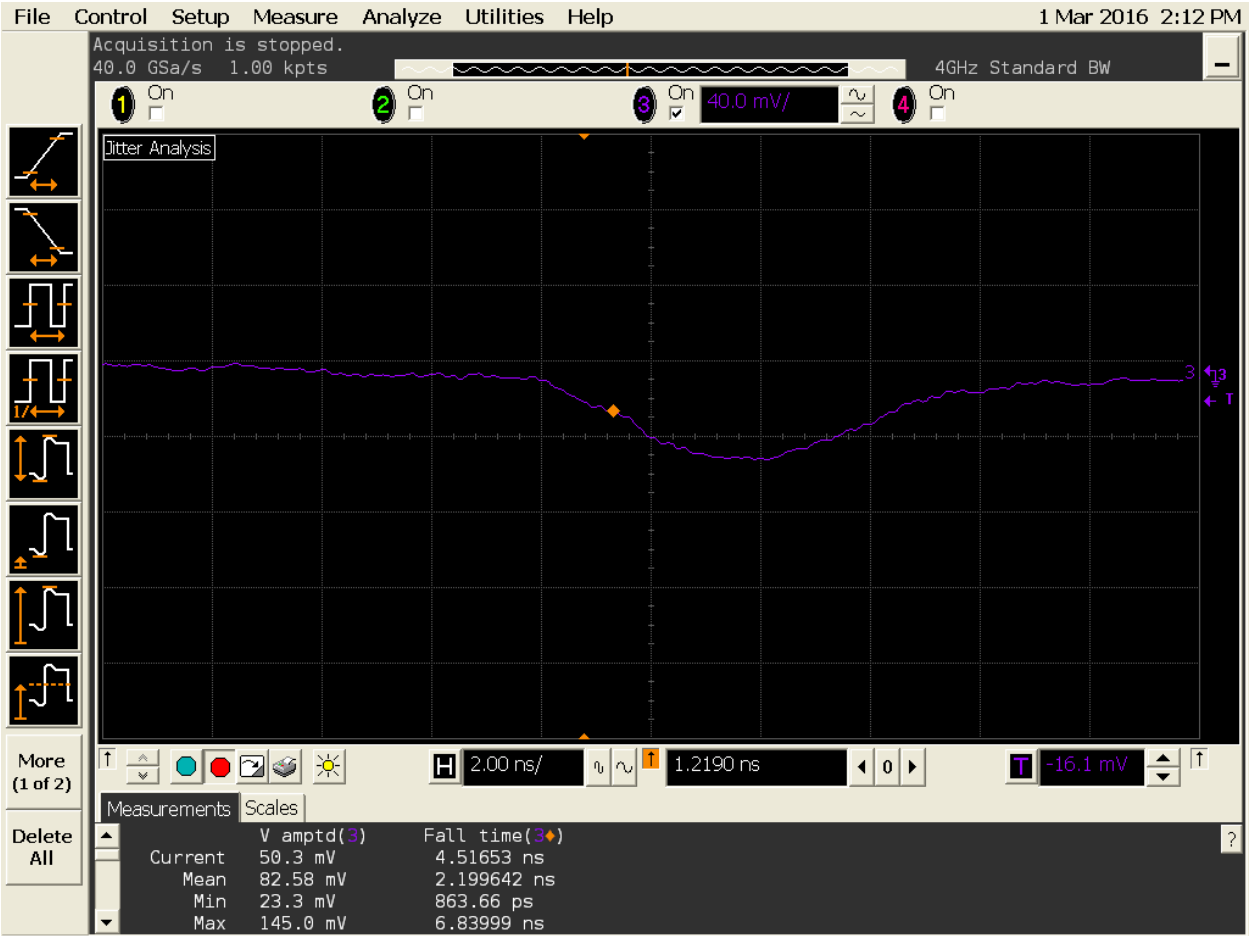


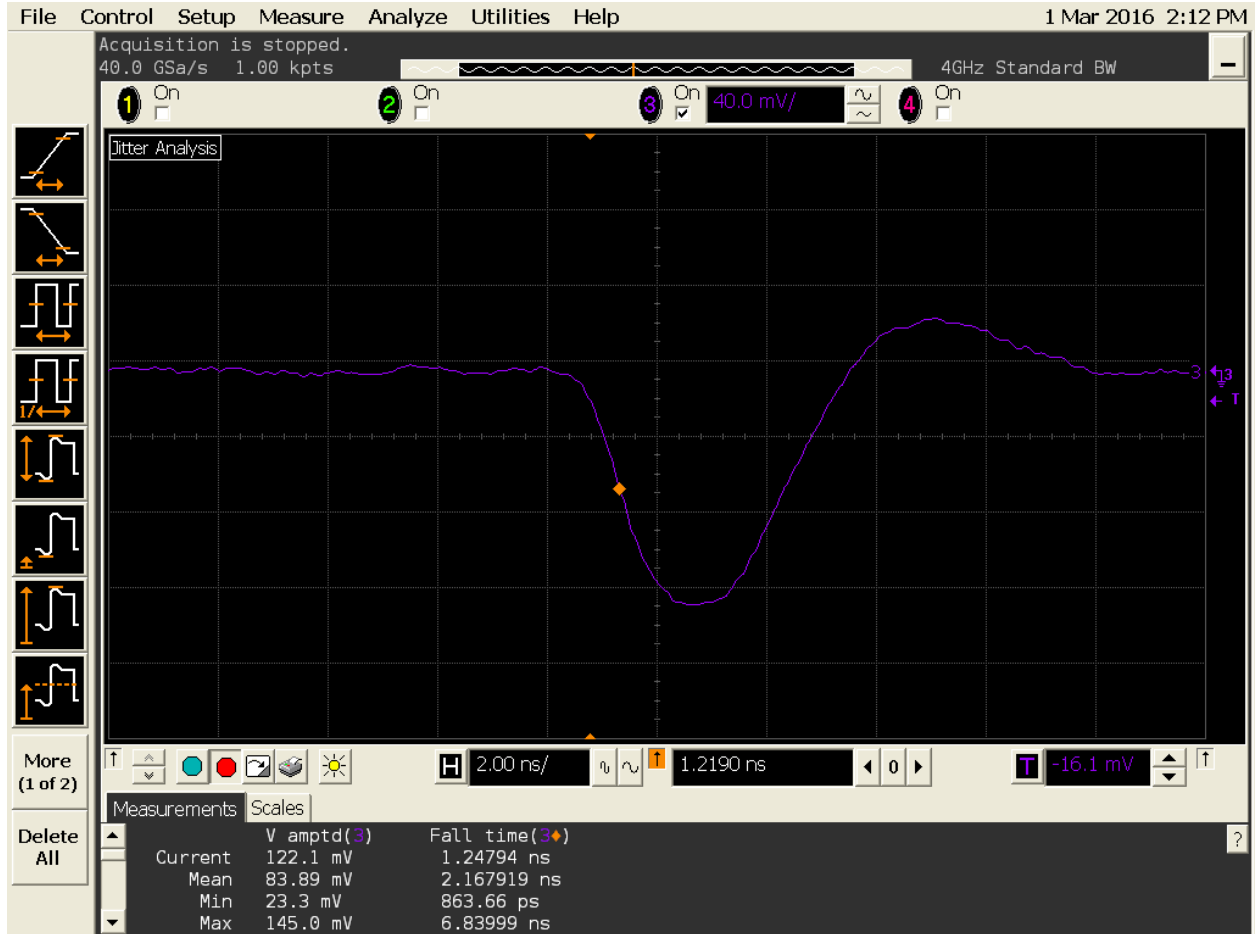


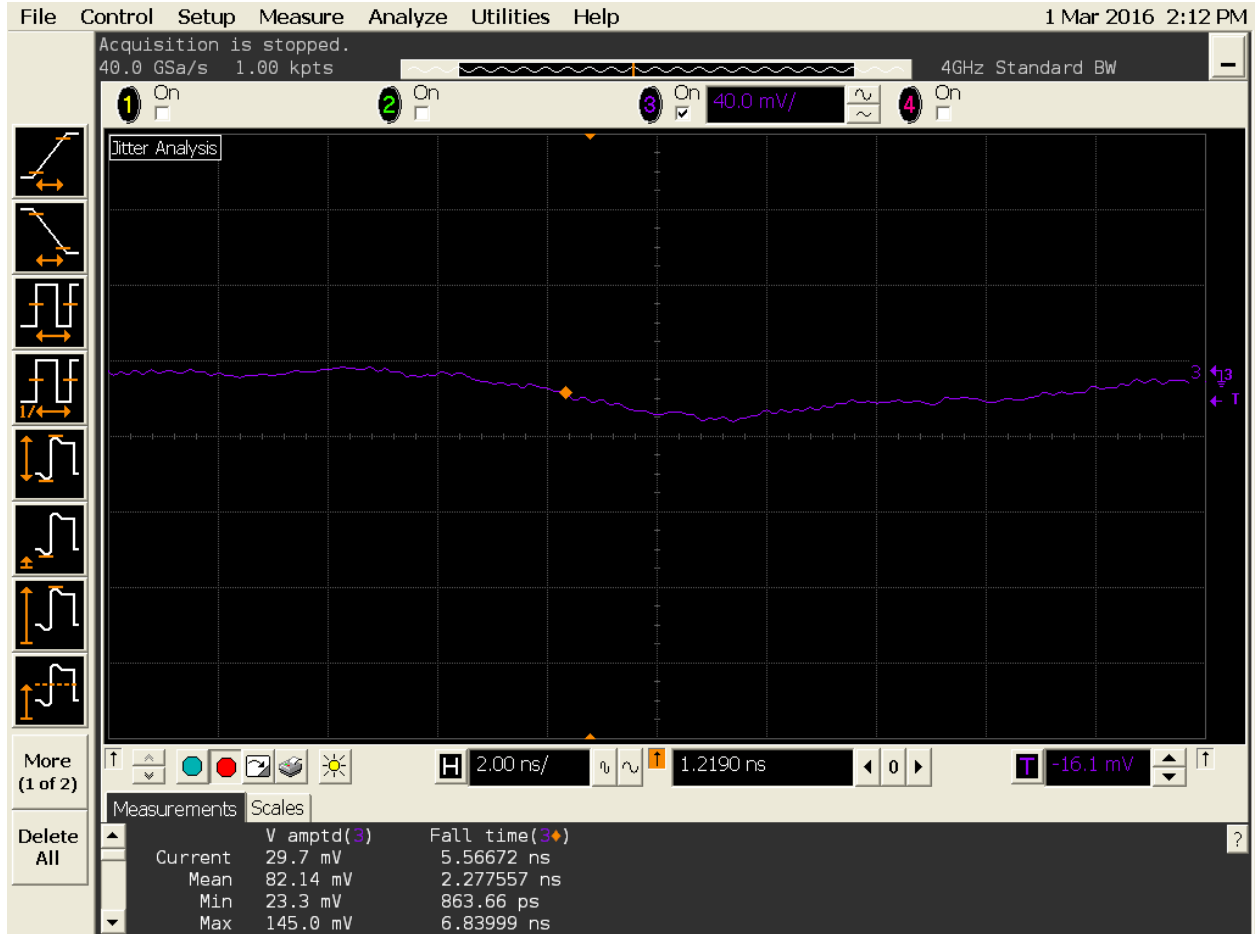


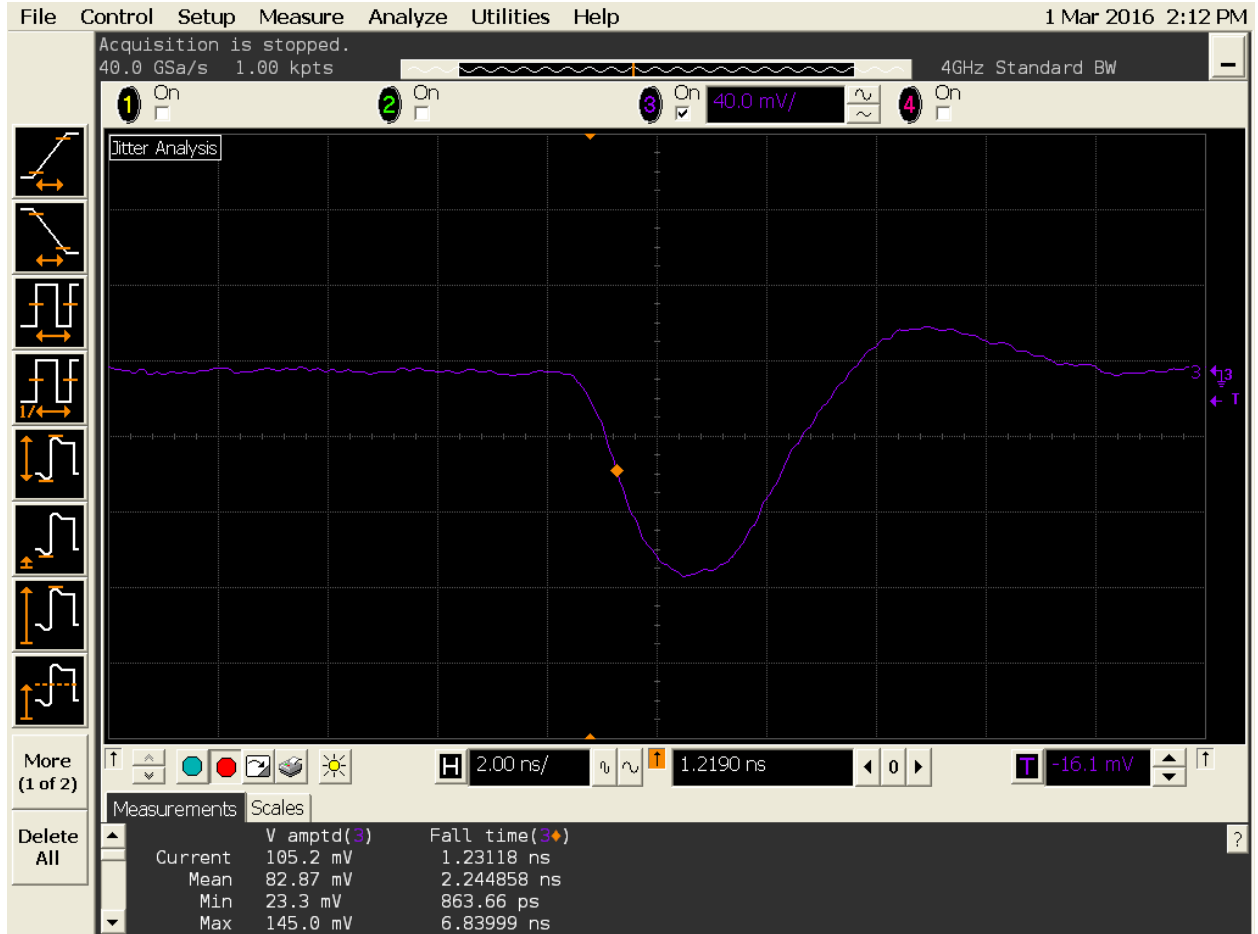


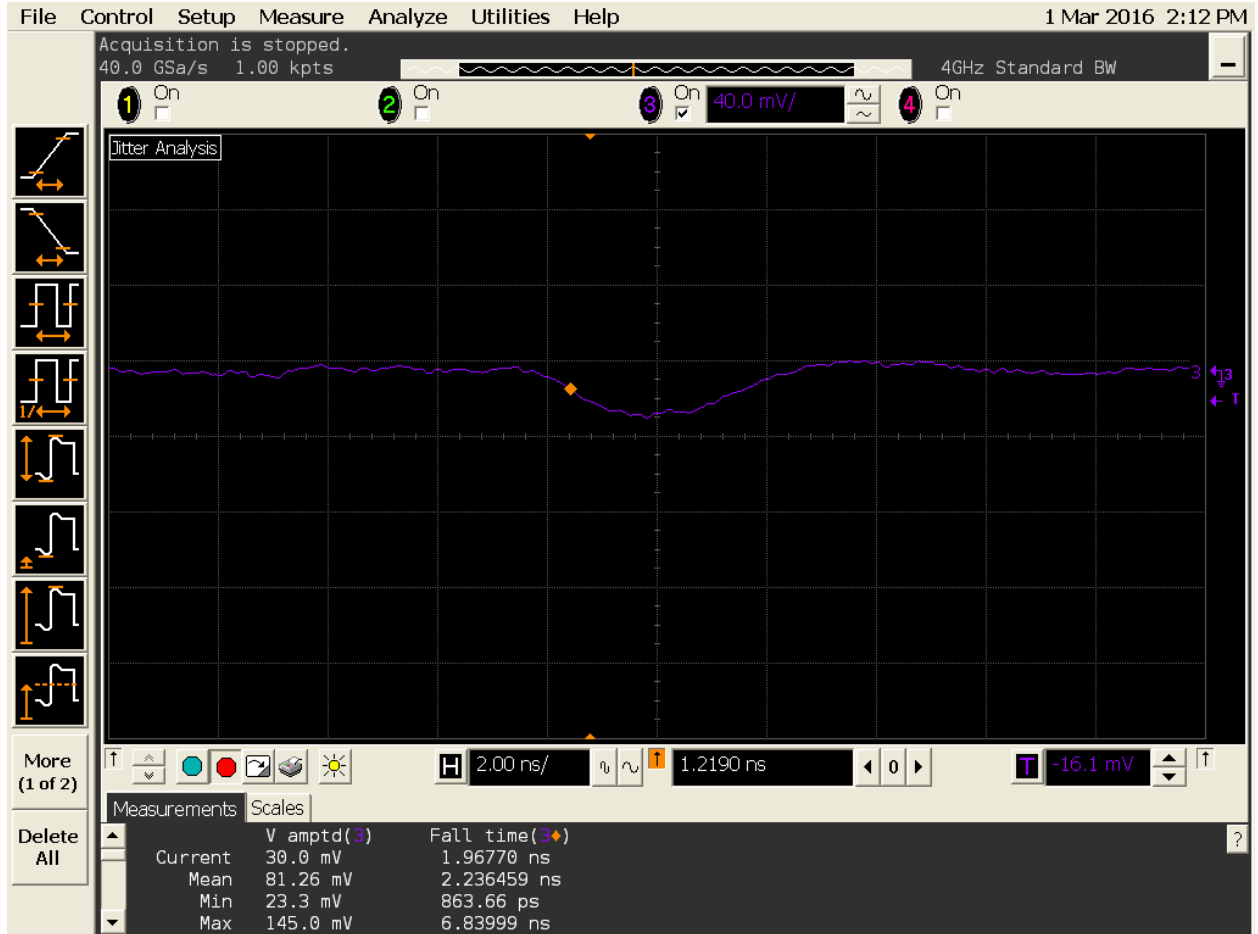


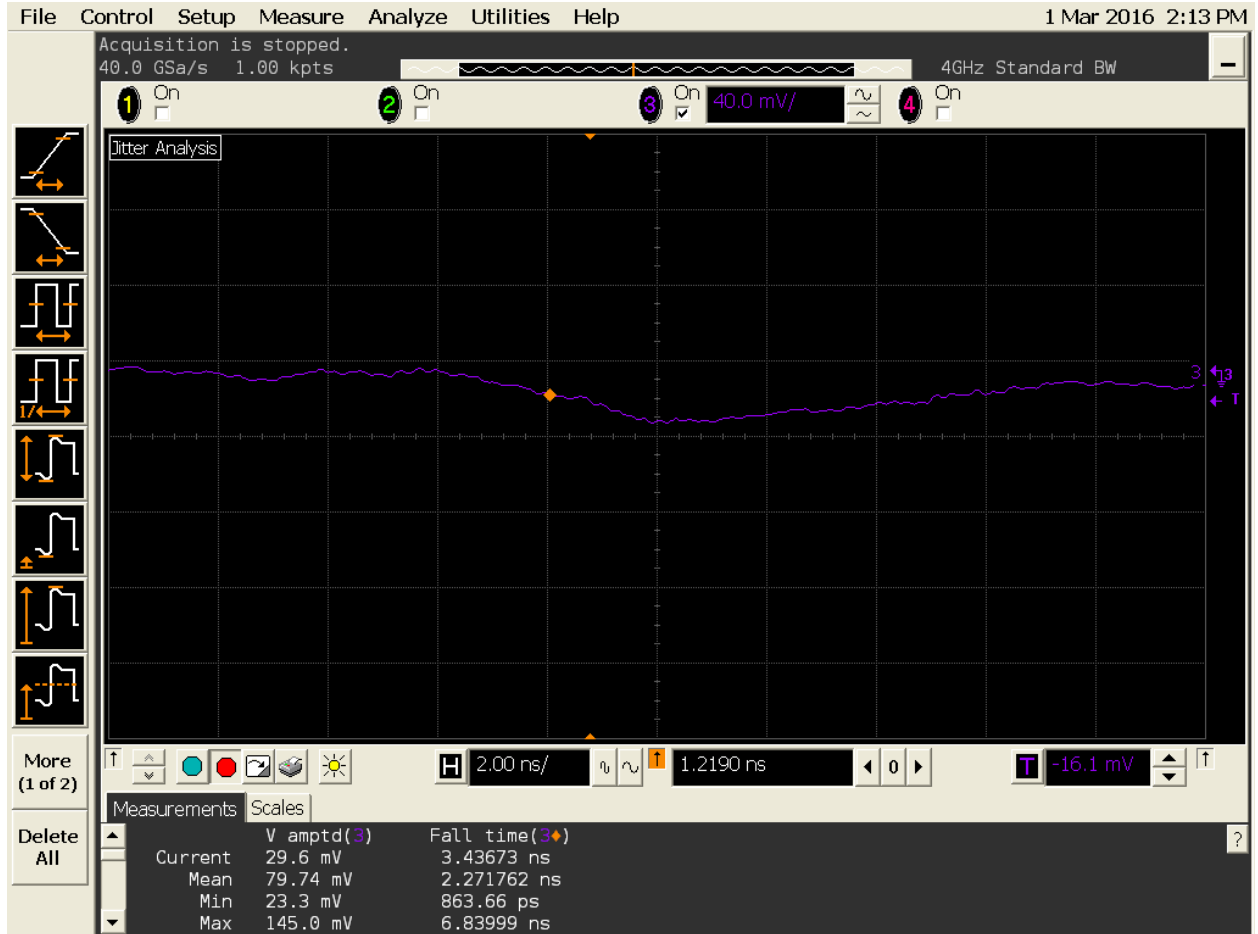


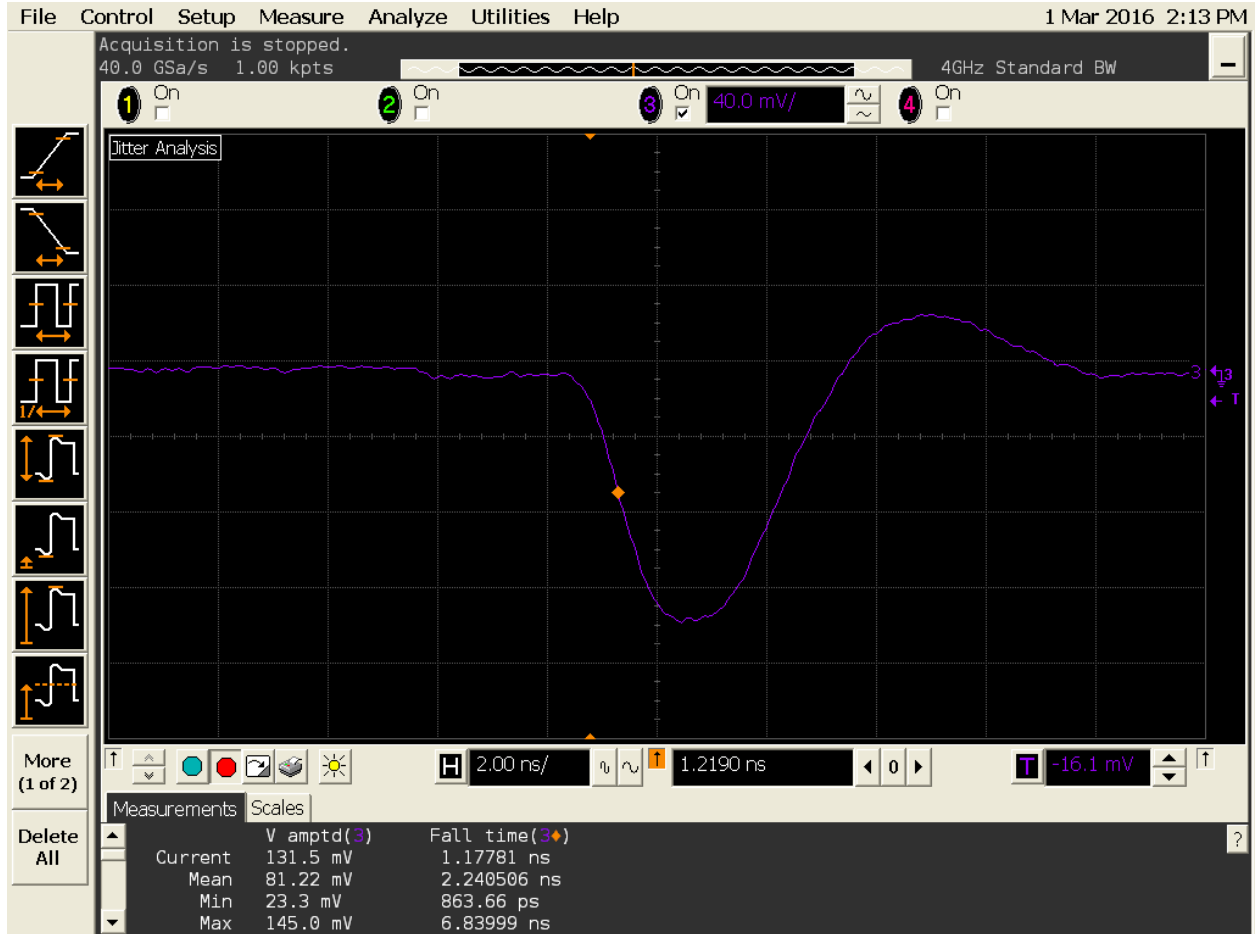


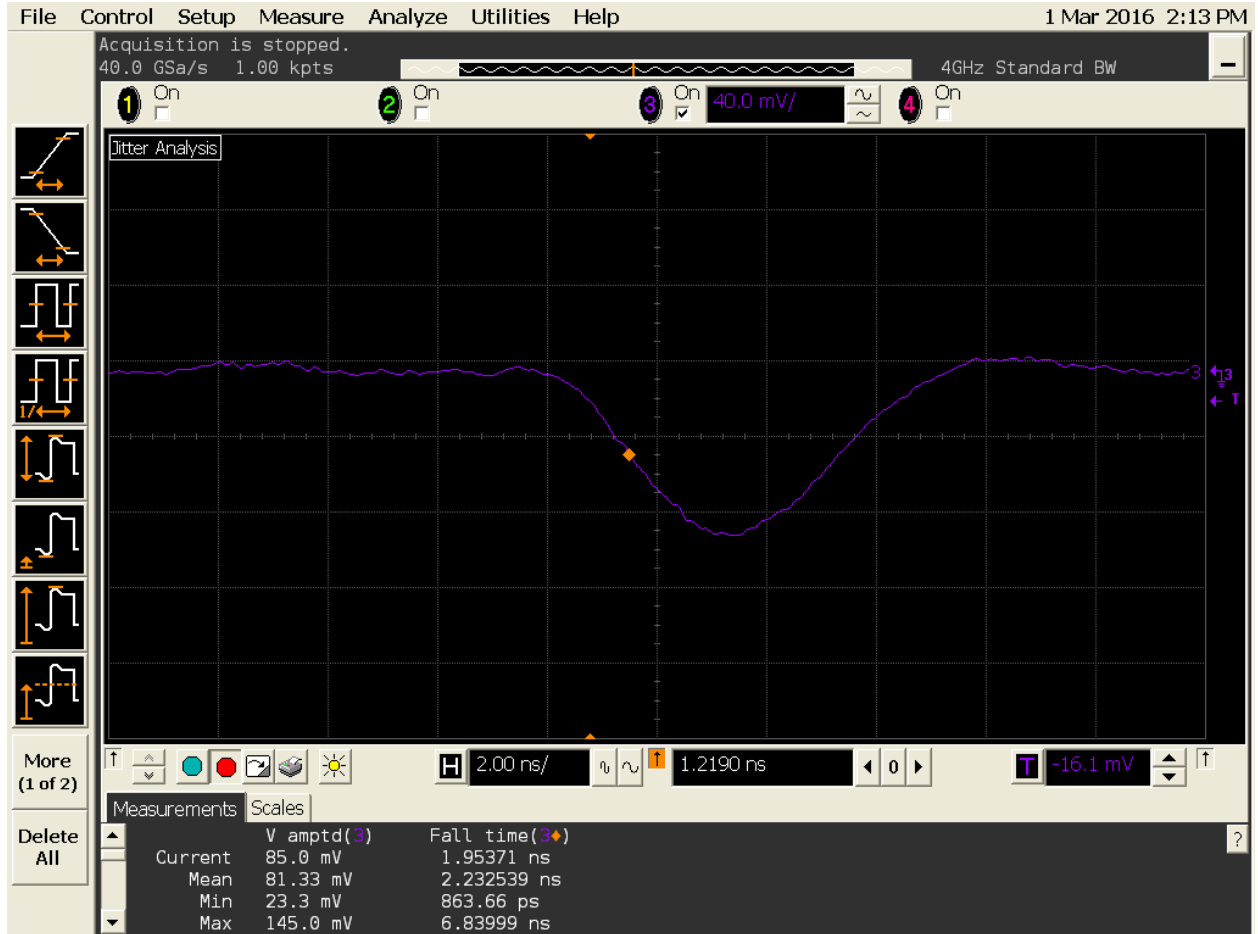


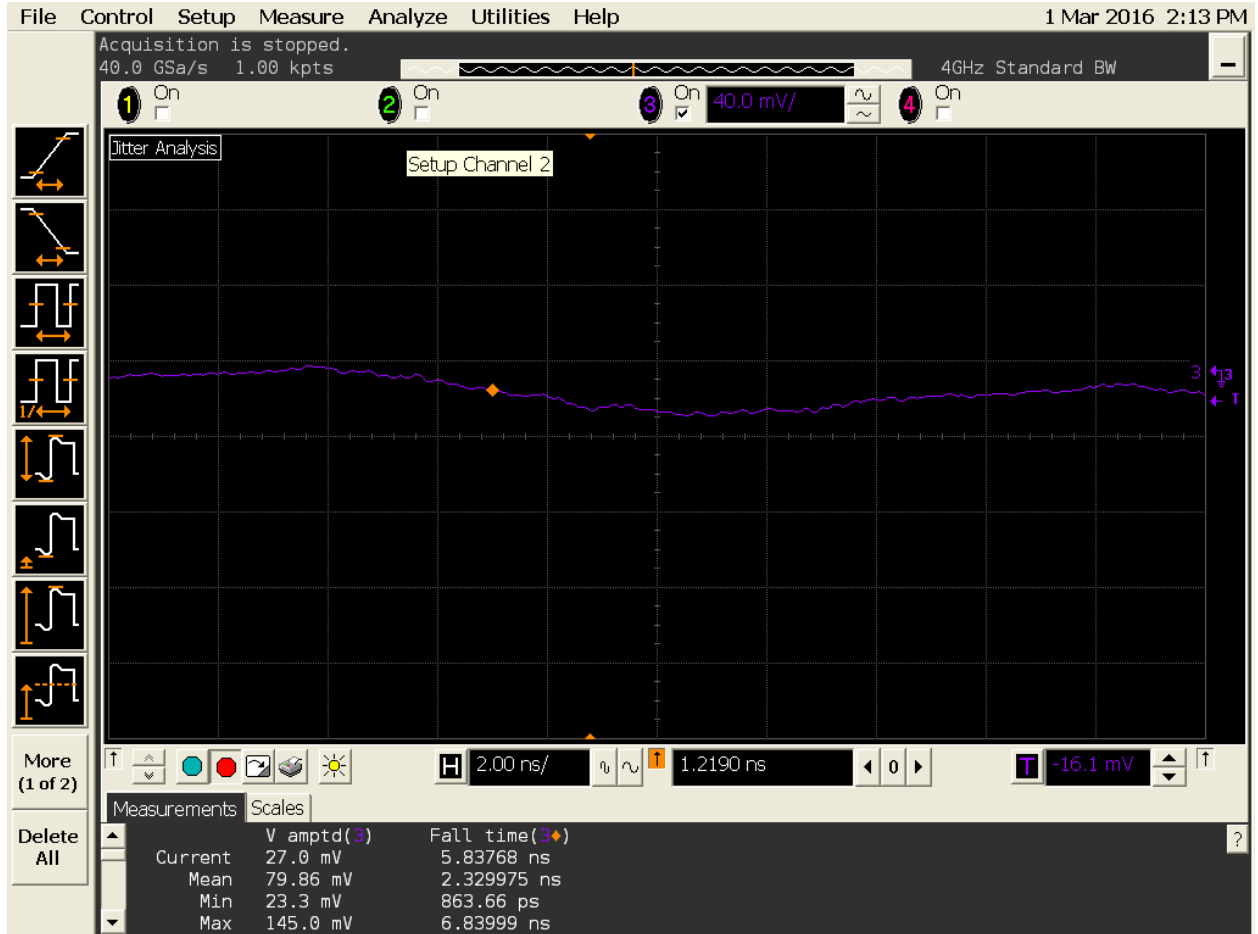


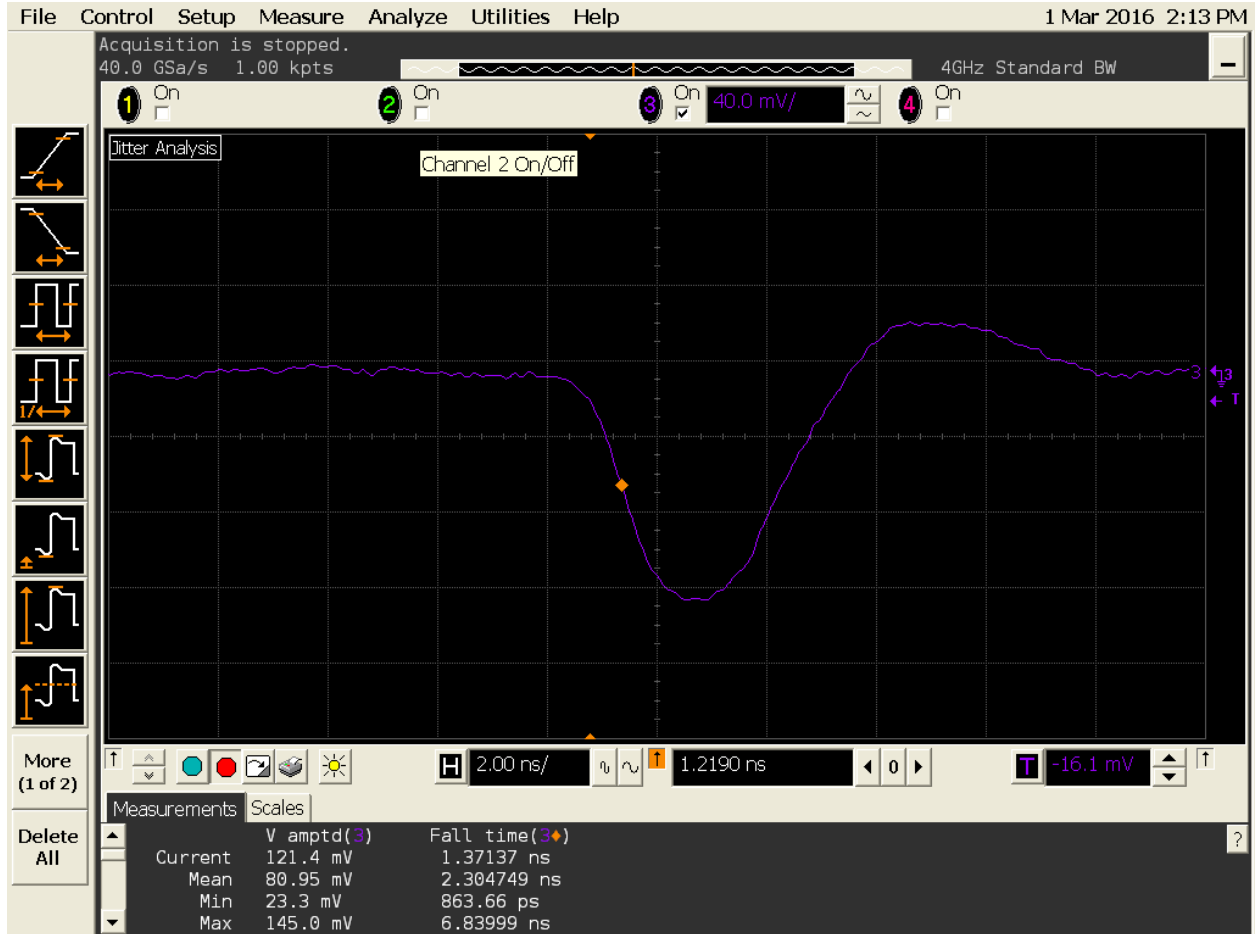


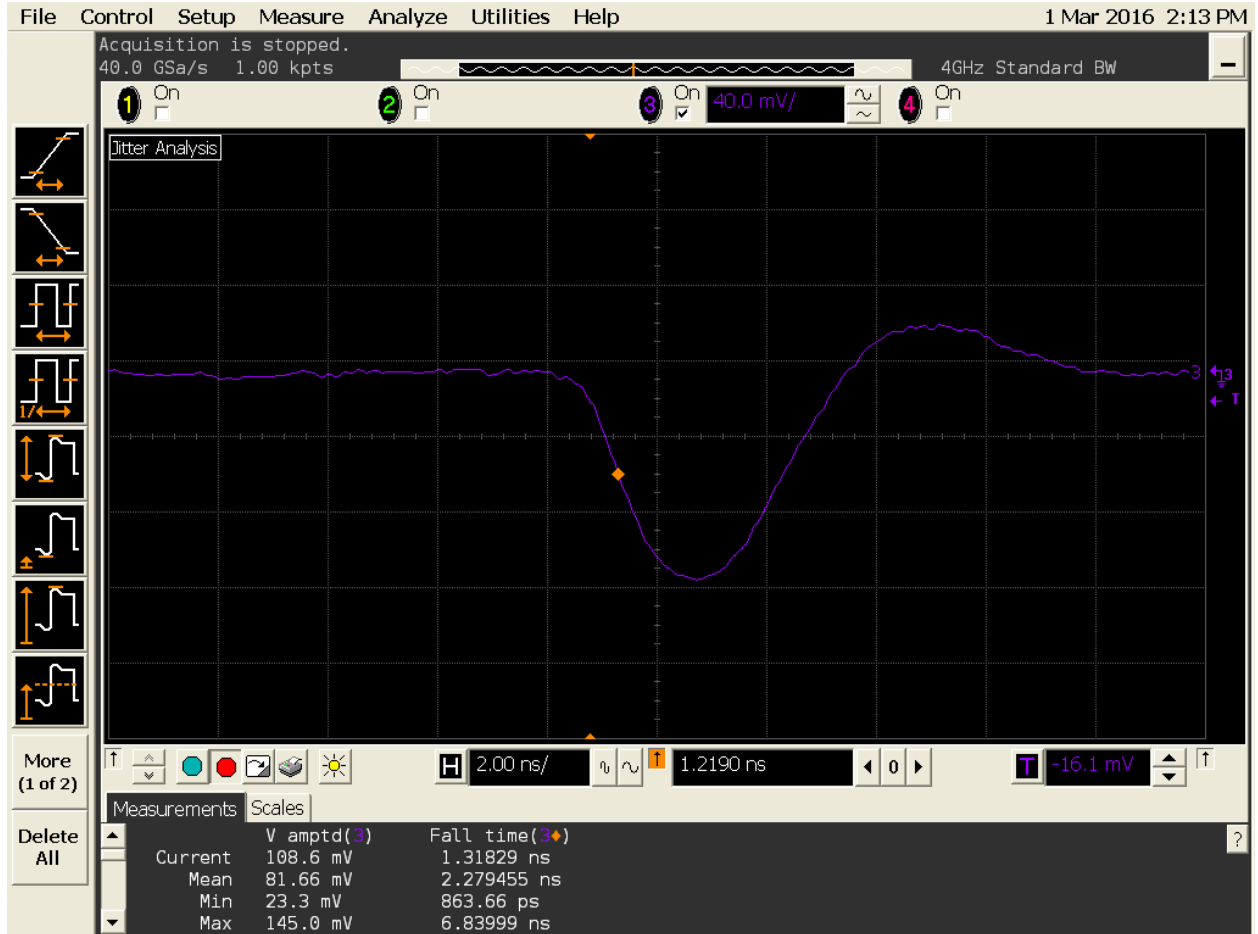


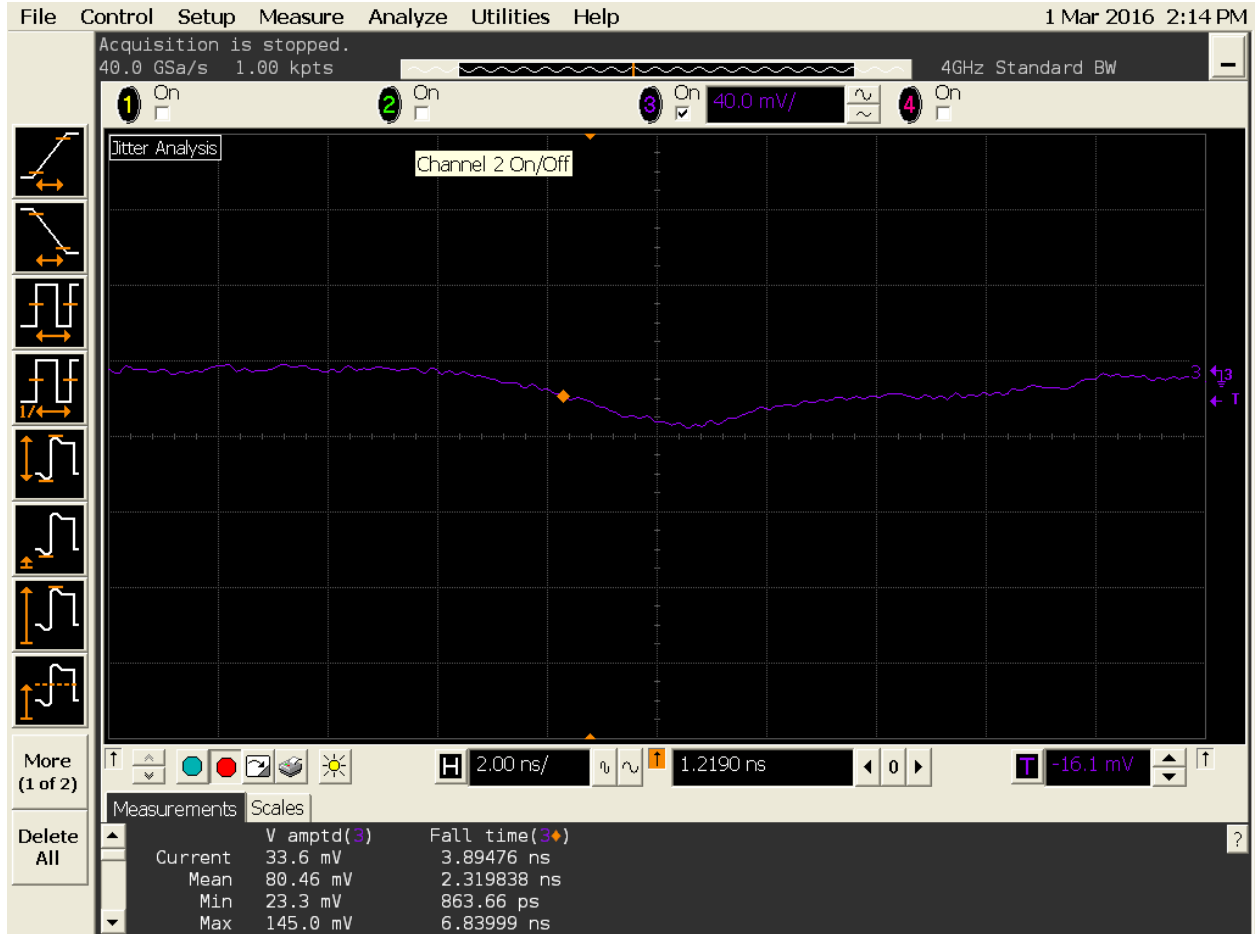


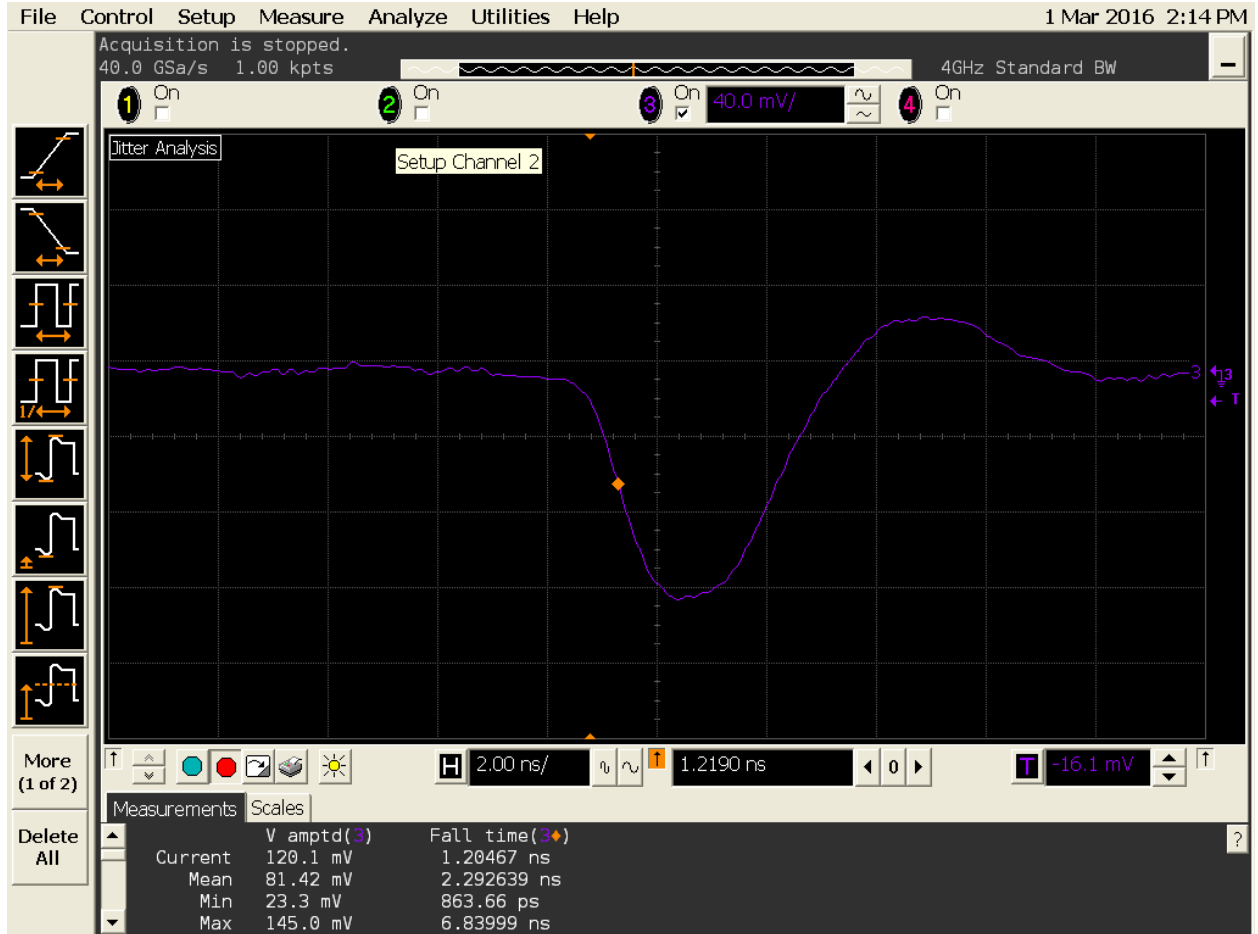




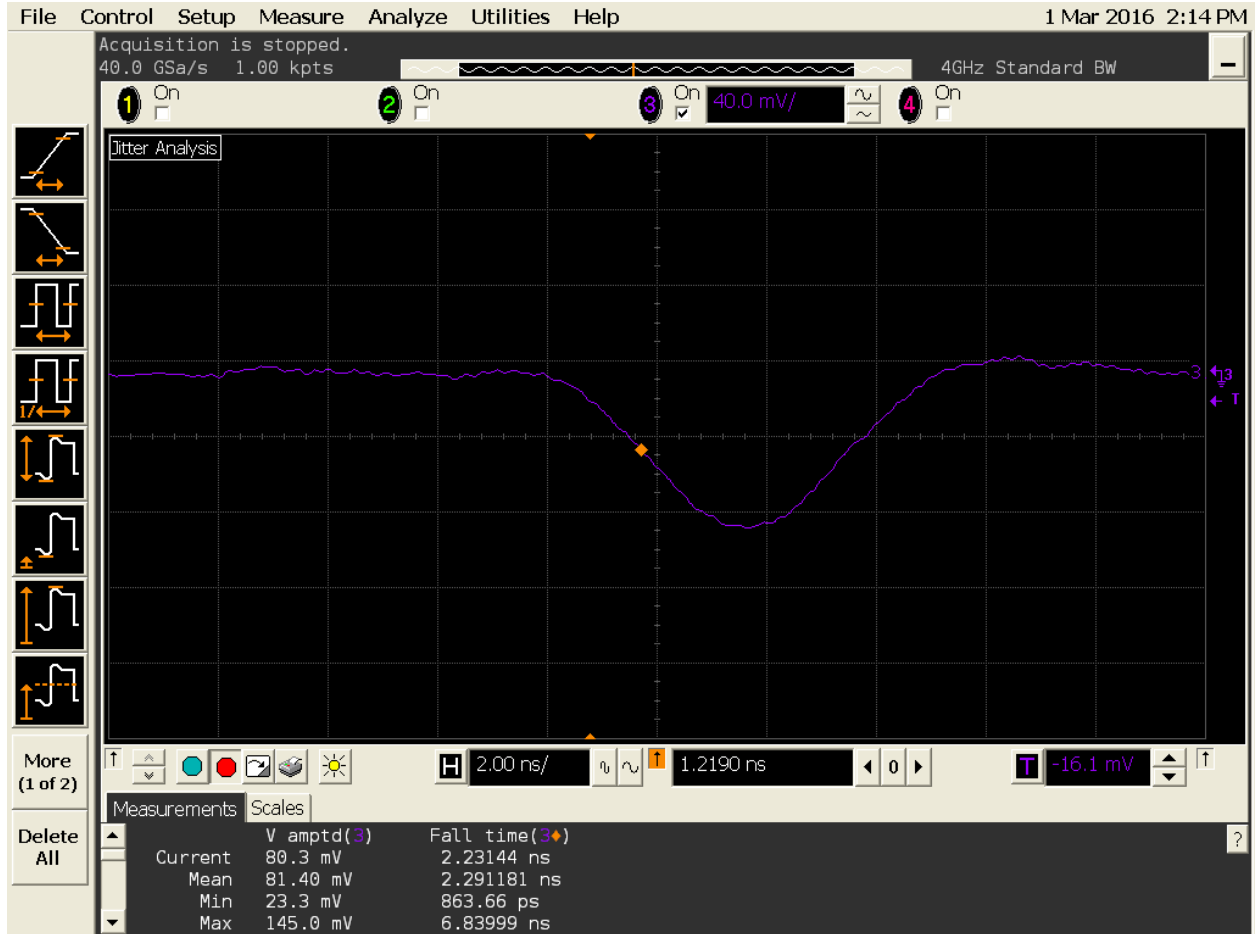






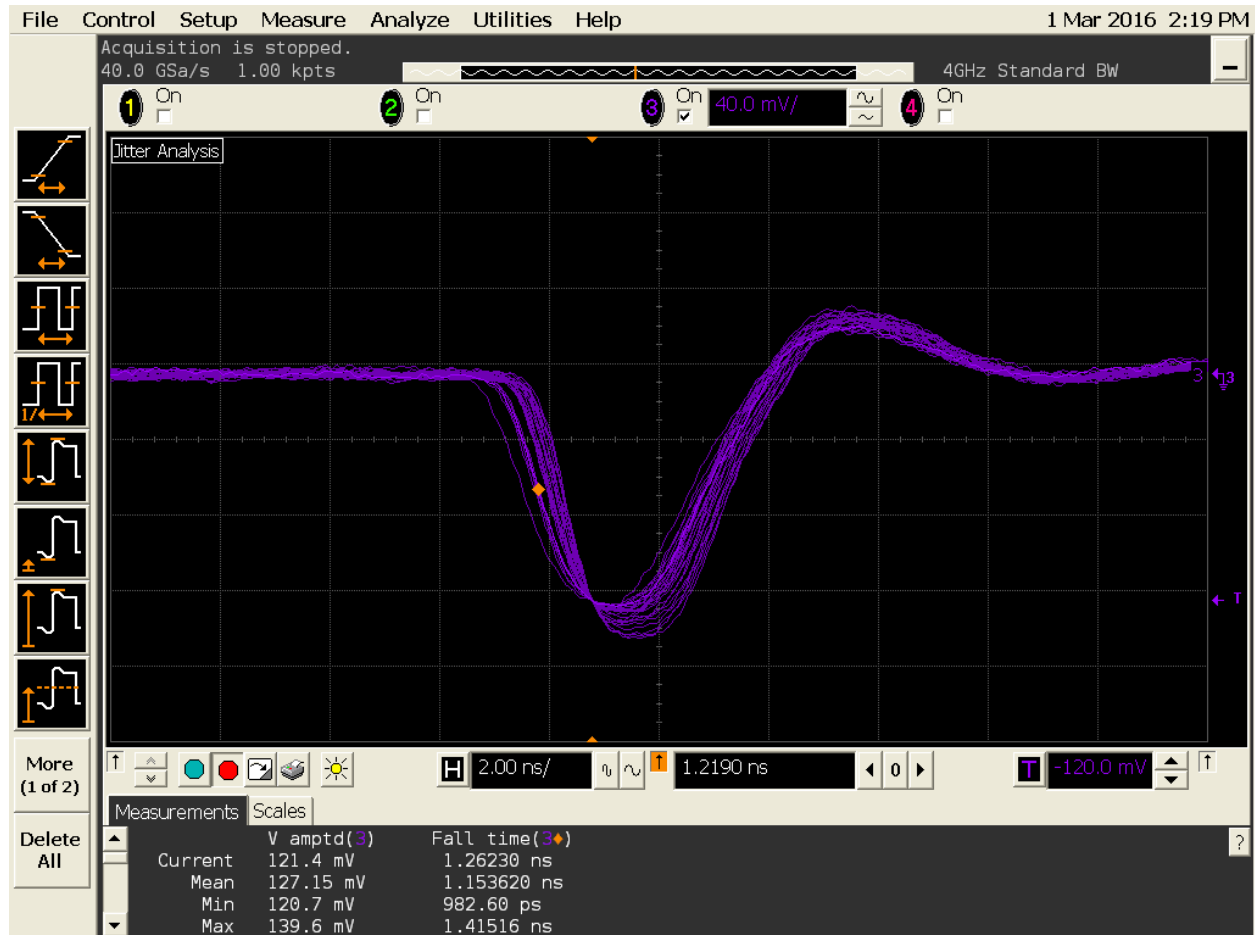


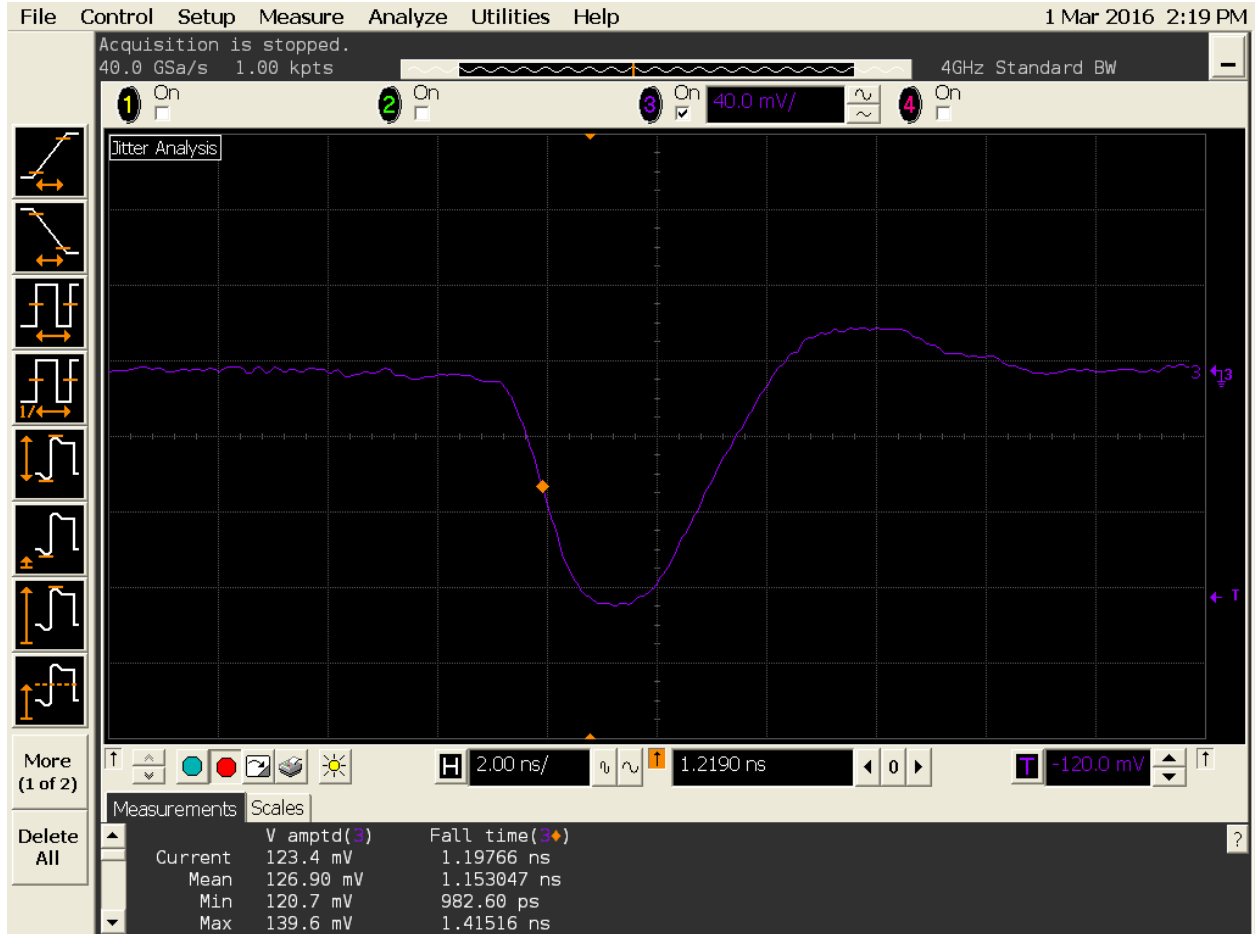
2.23ns Fall time

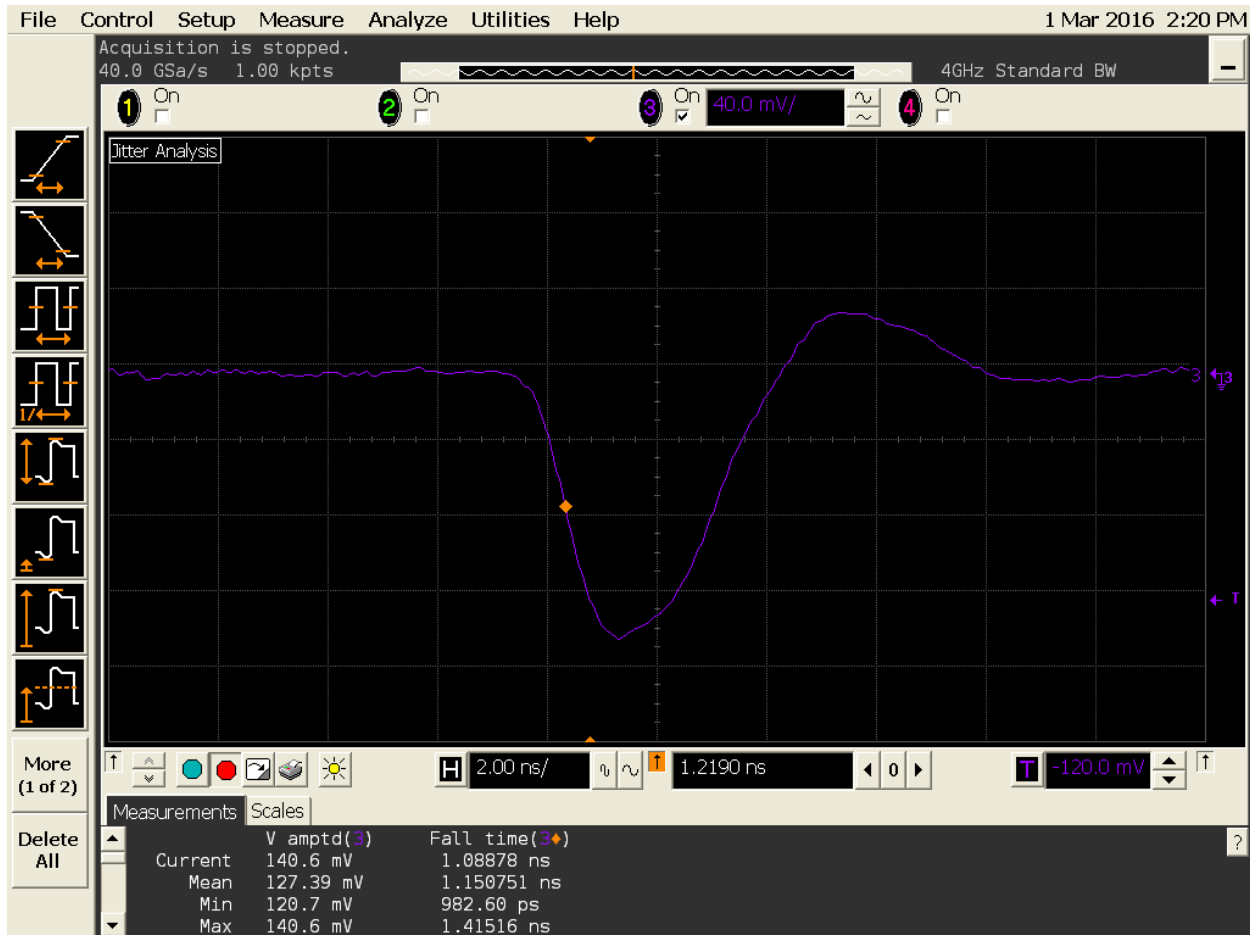


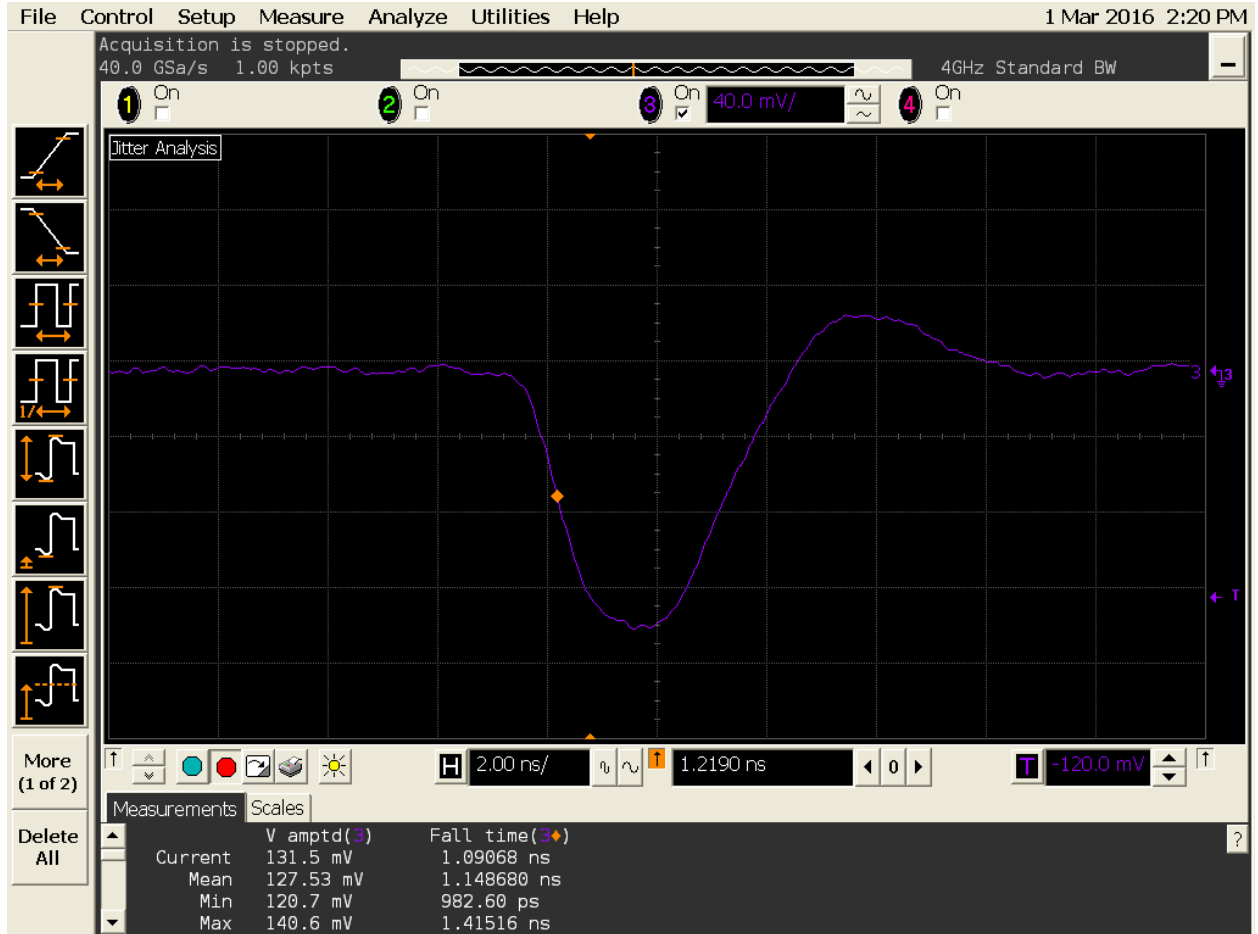
Trigger Threshold -130mV

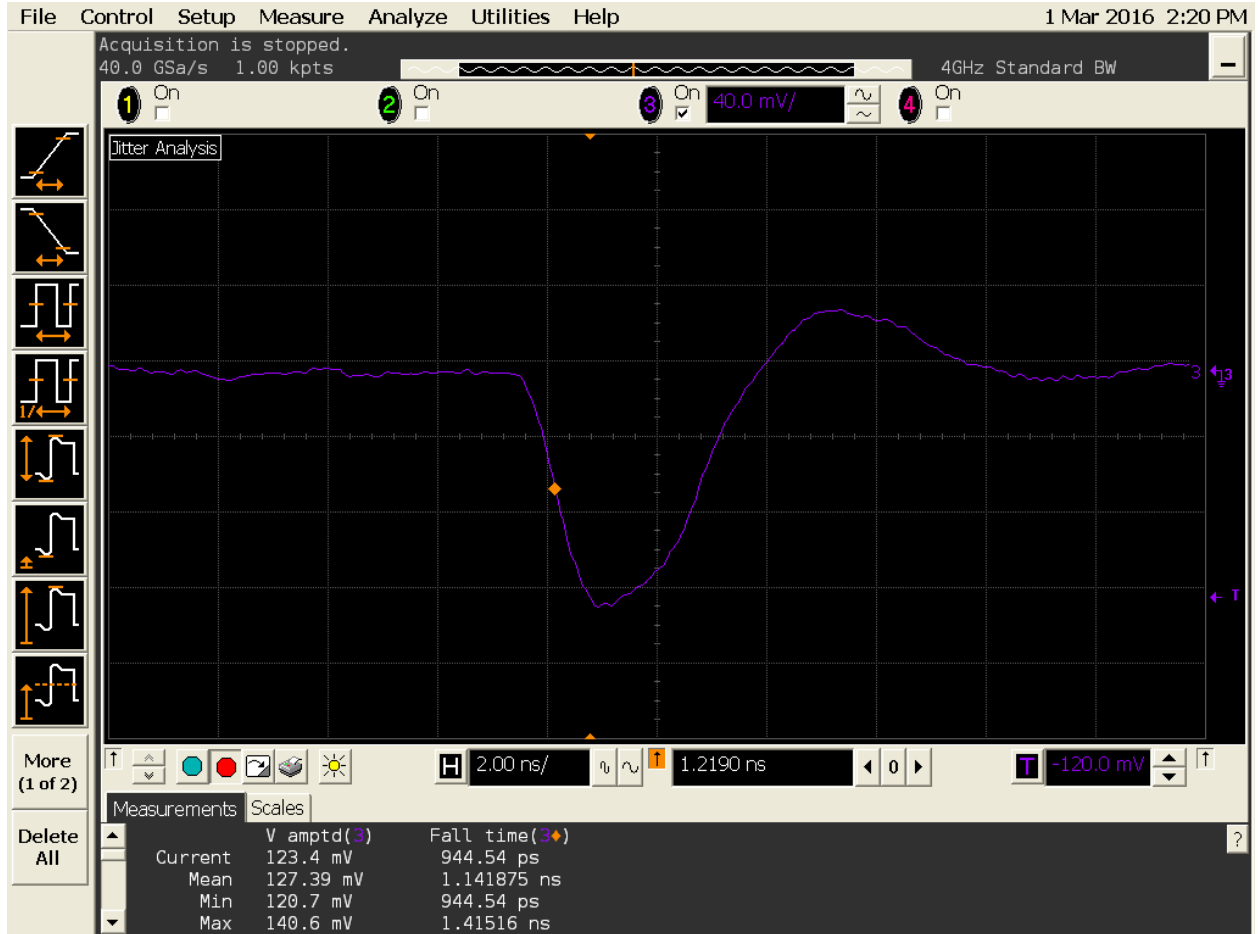
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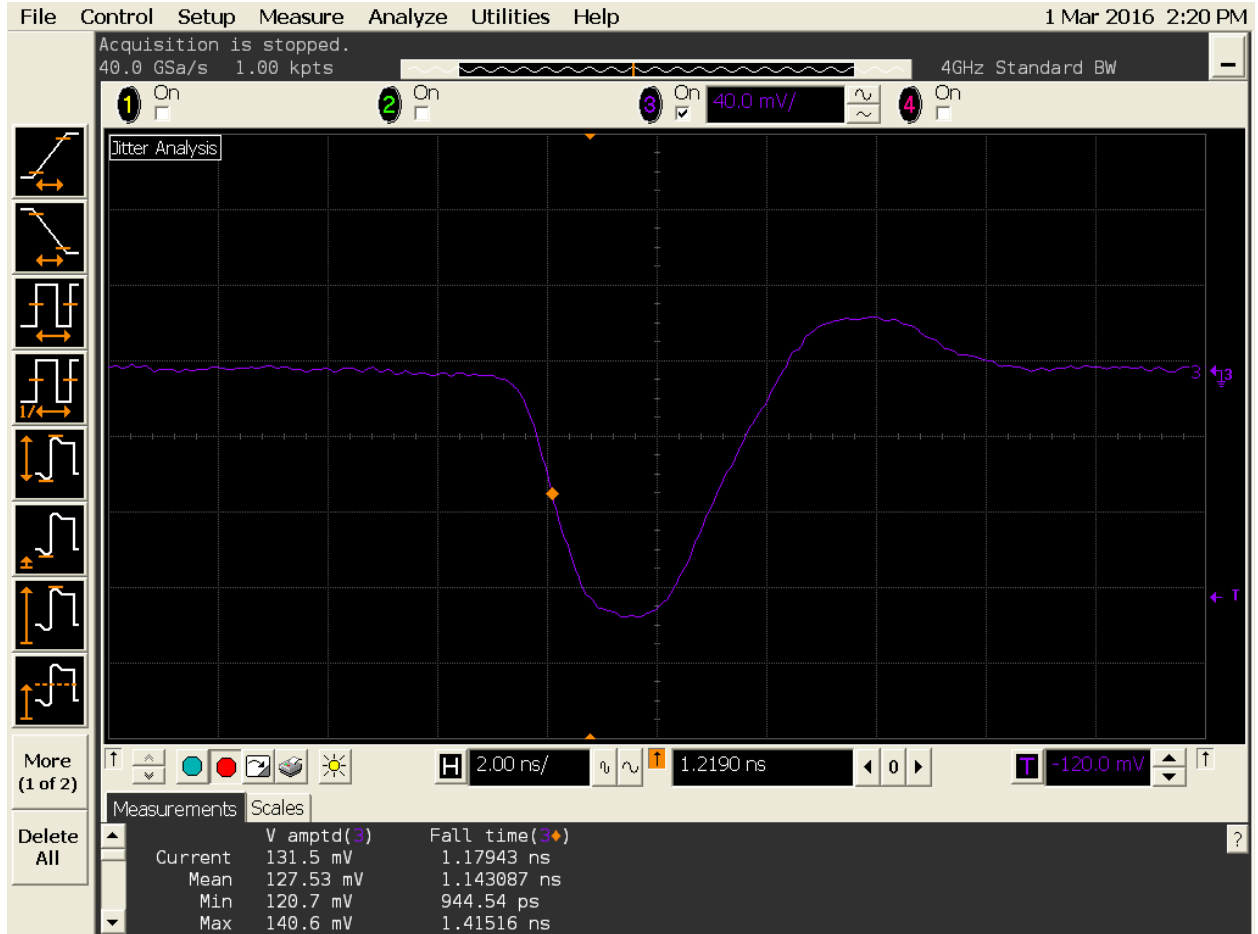


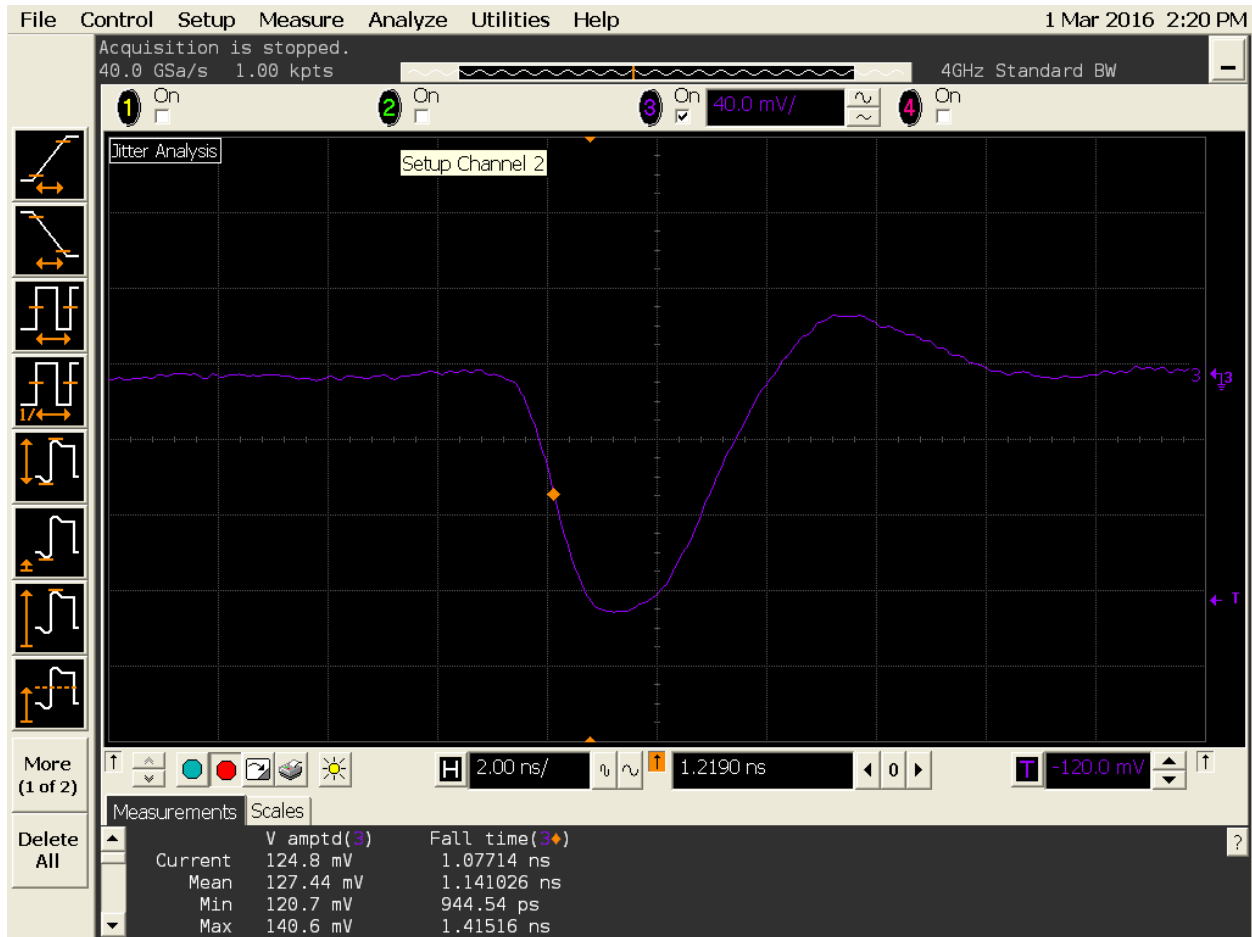


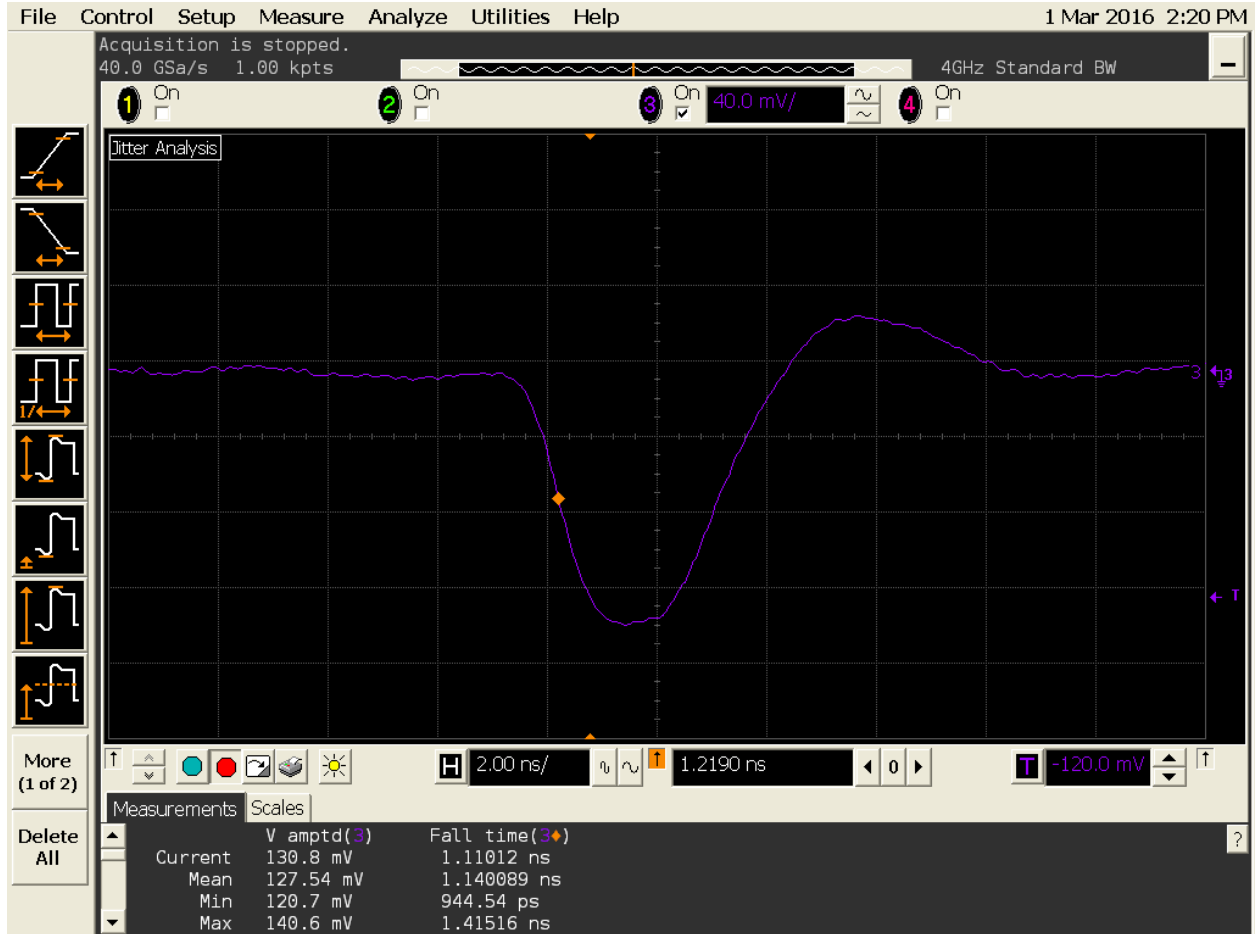


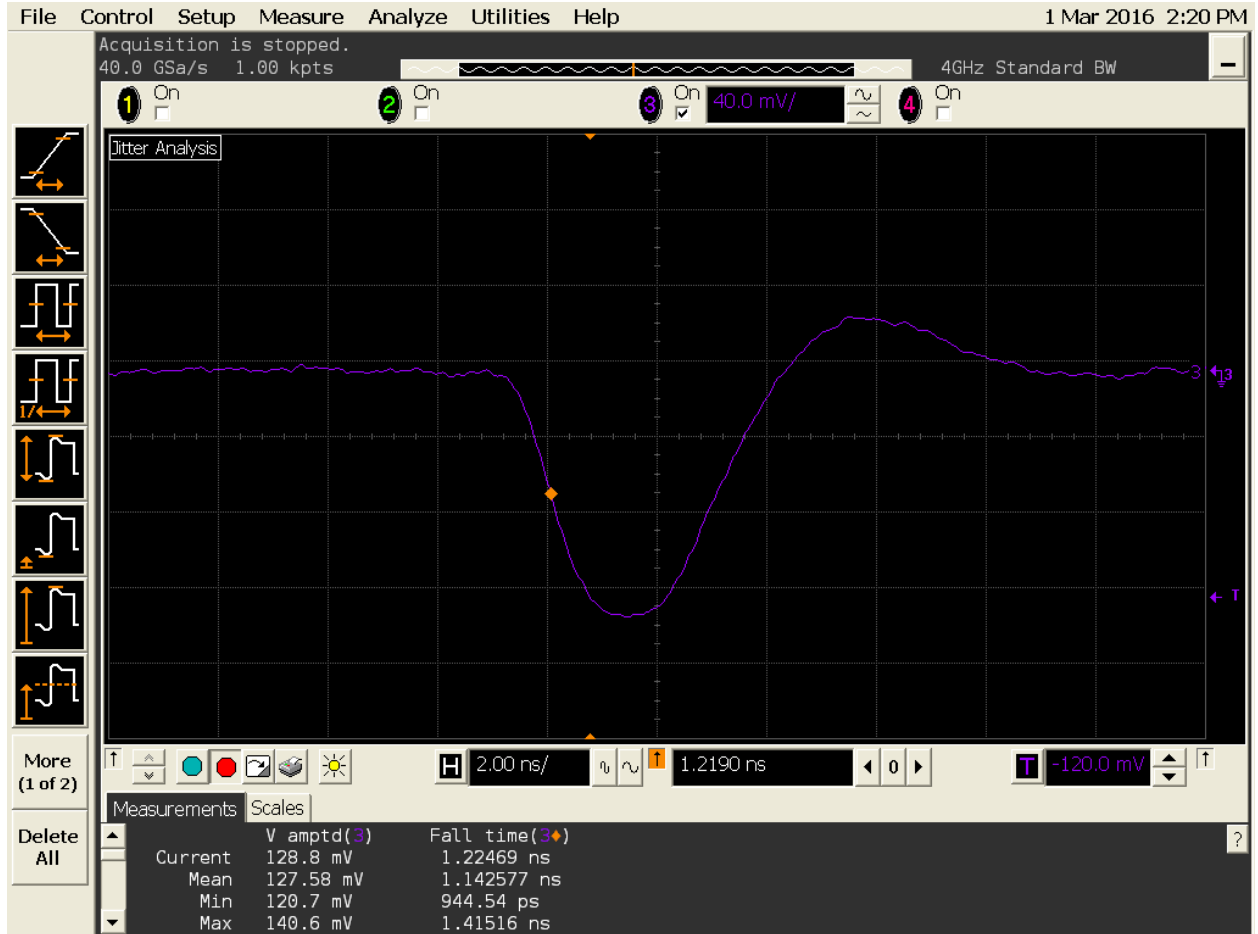


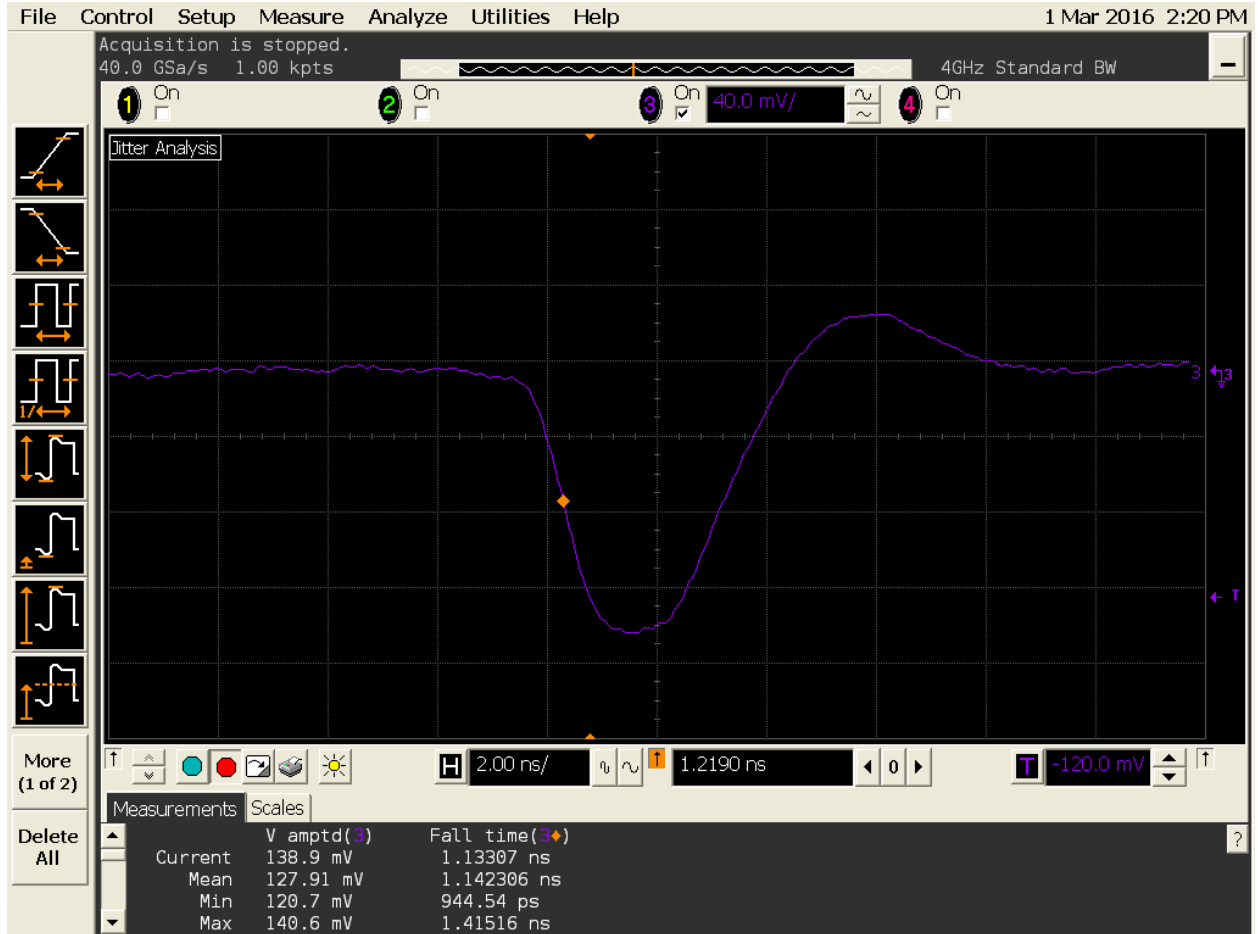


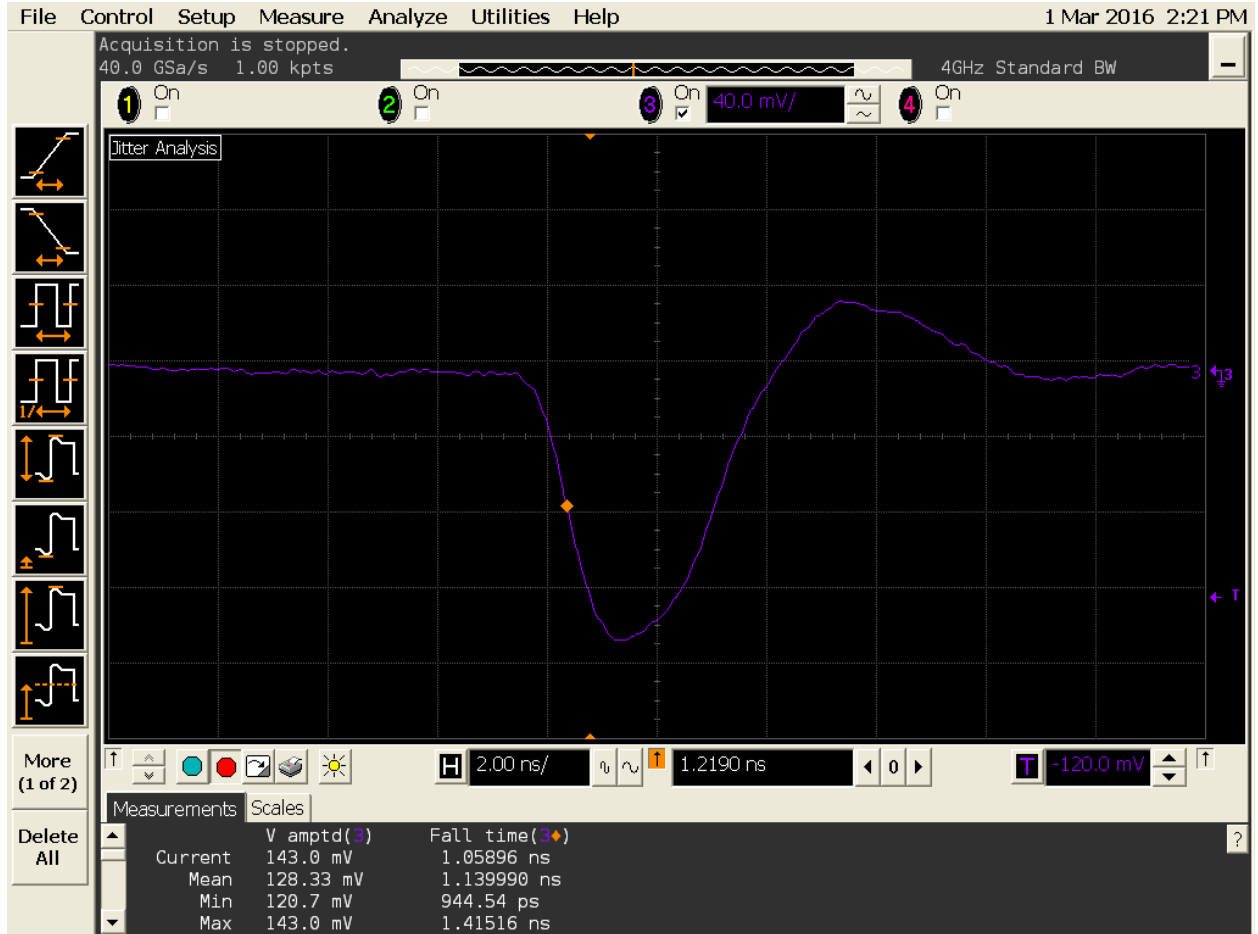


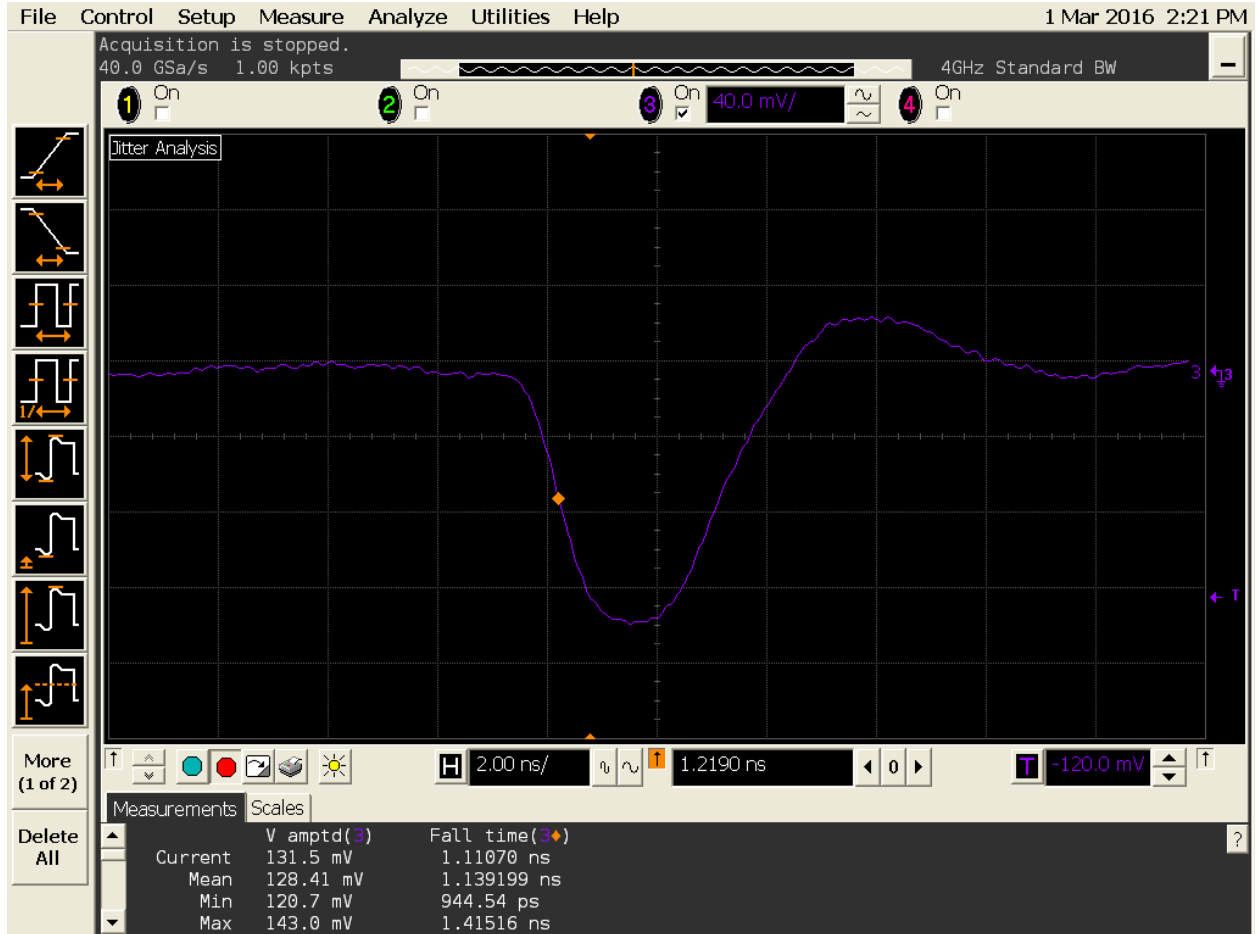


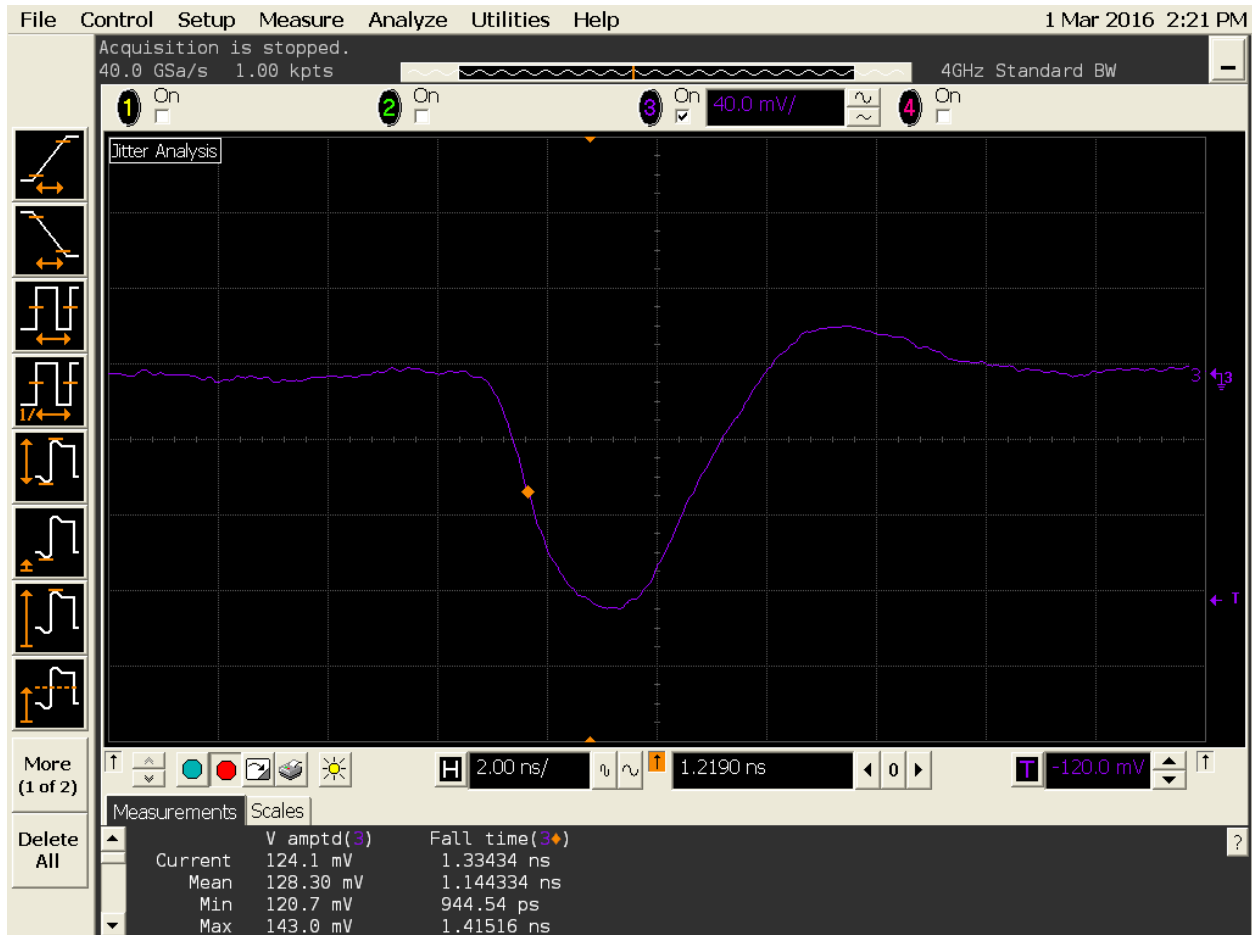


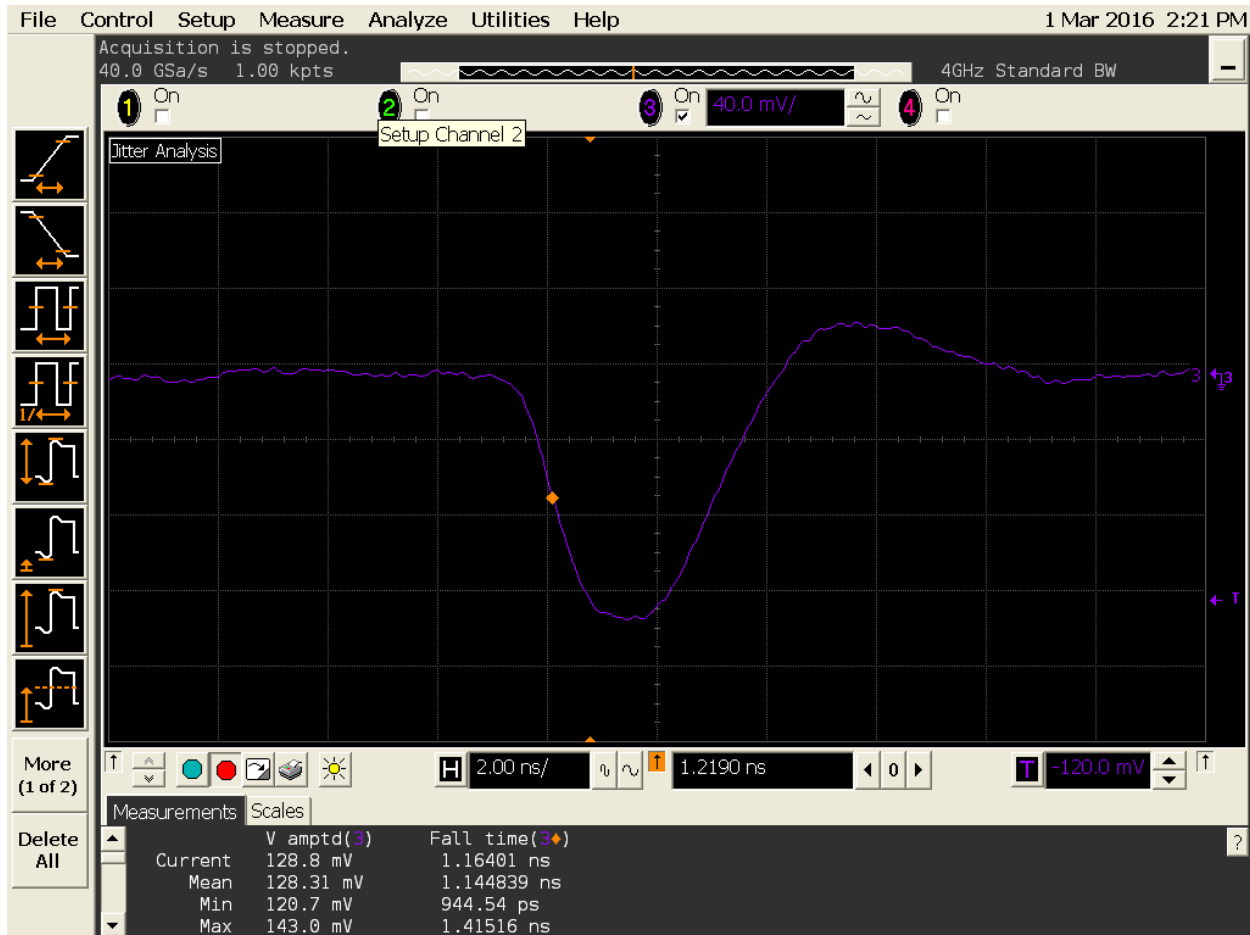


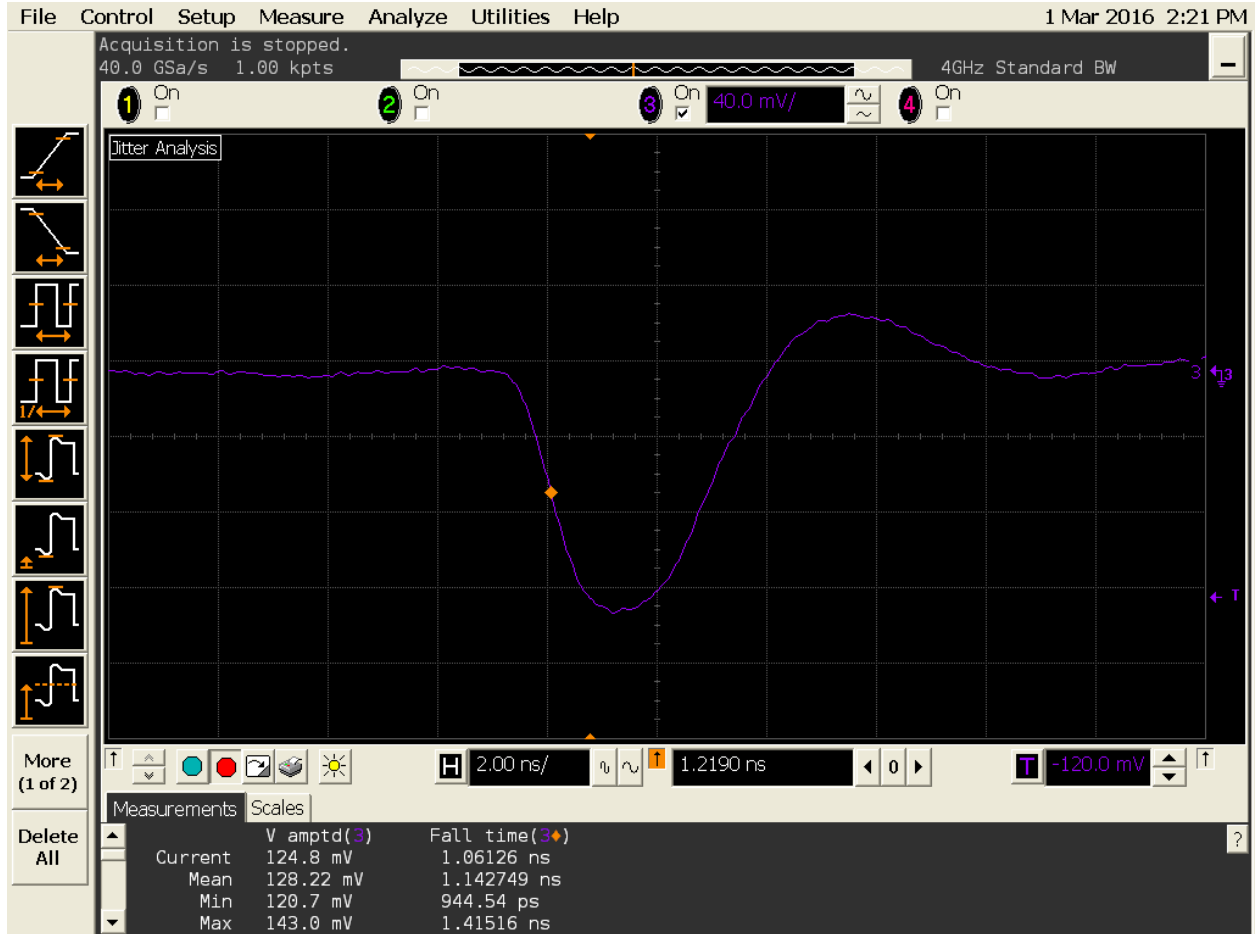


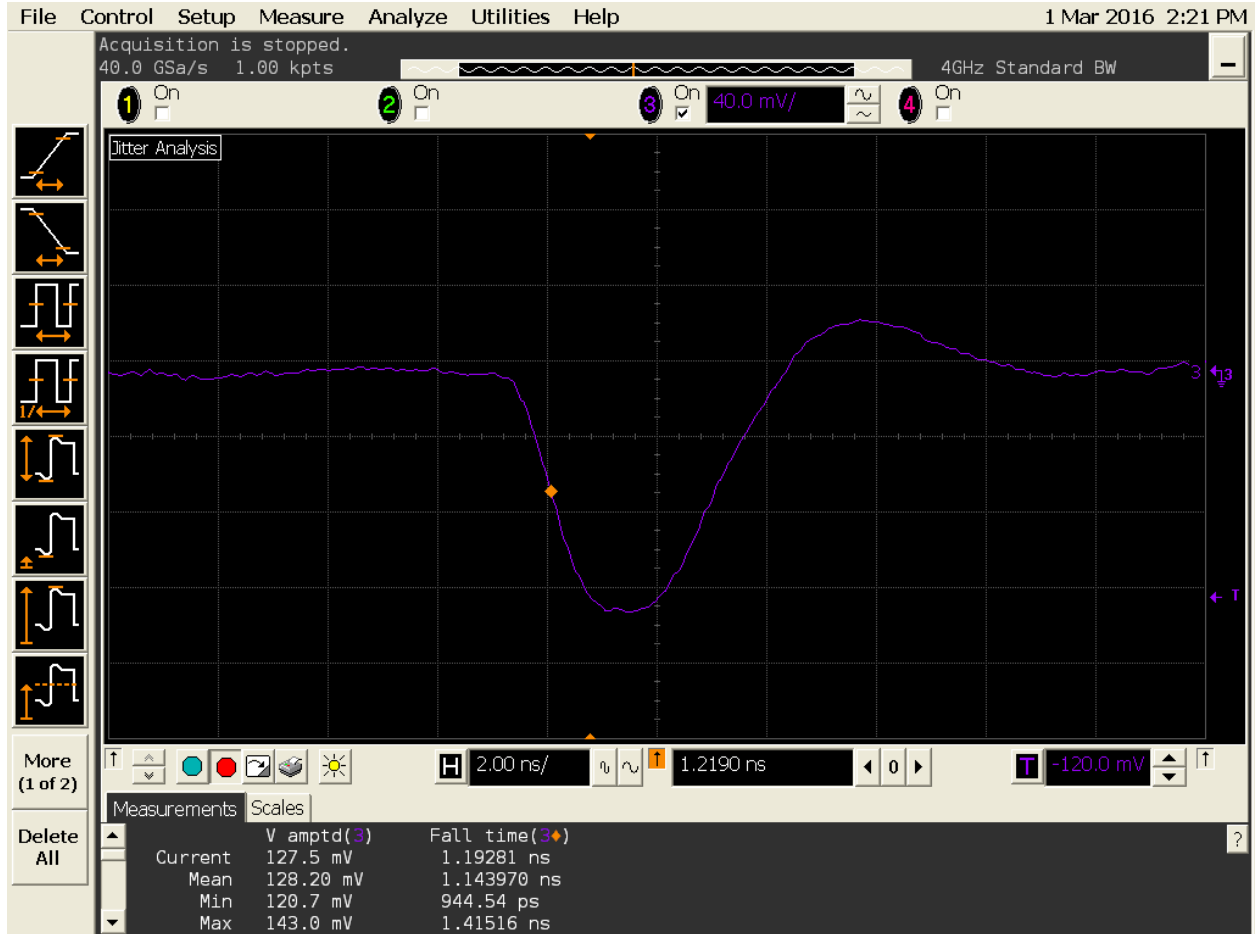


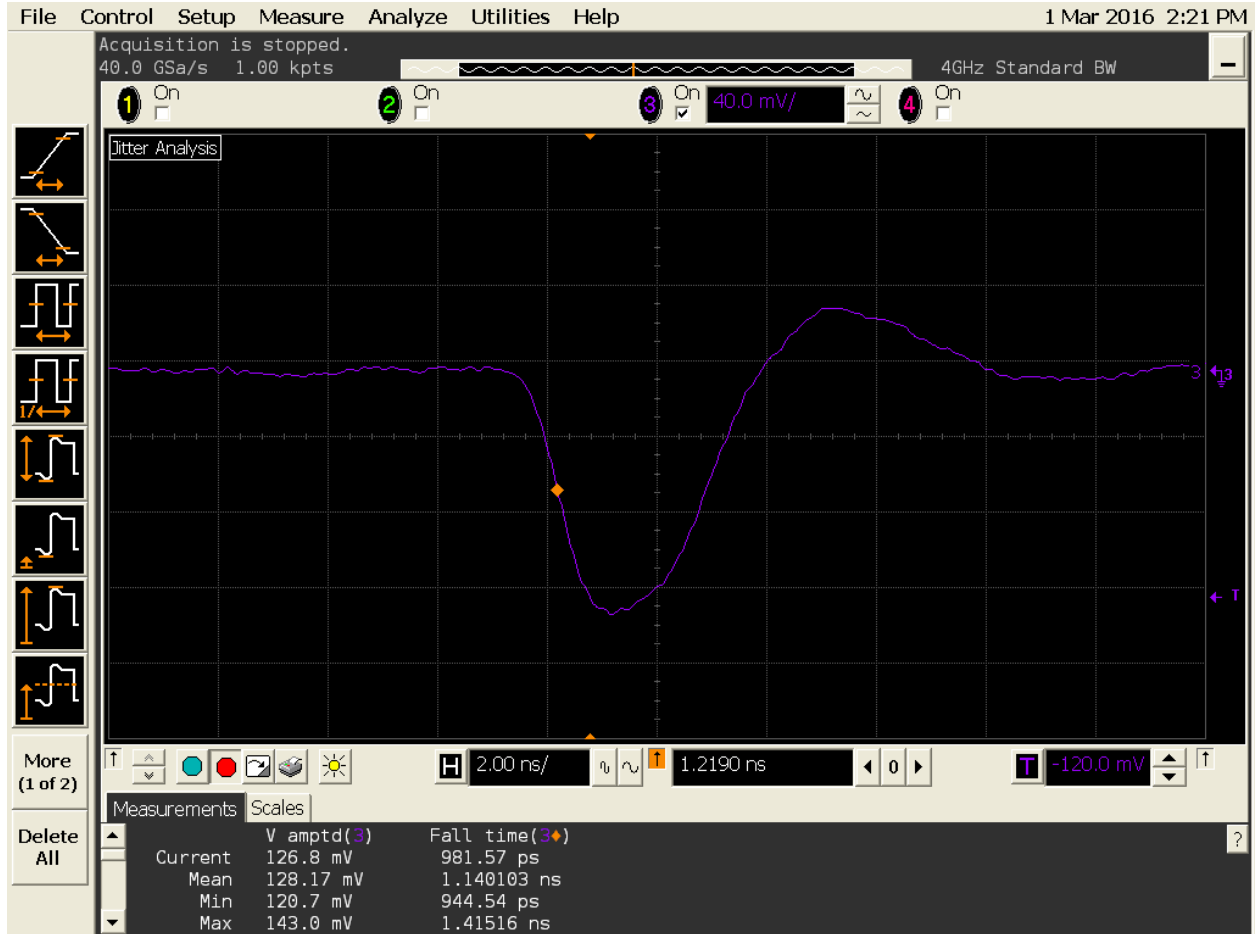


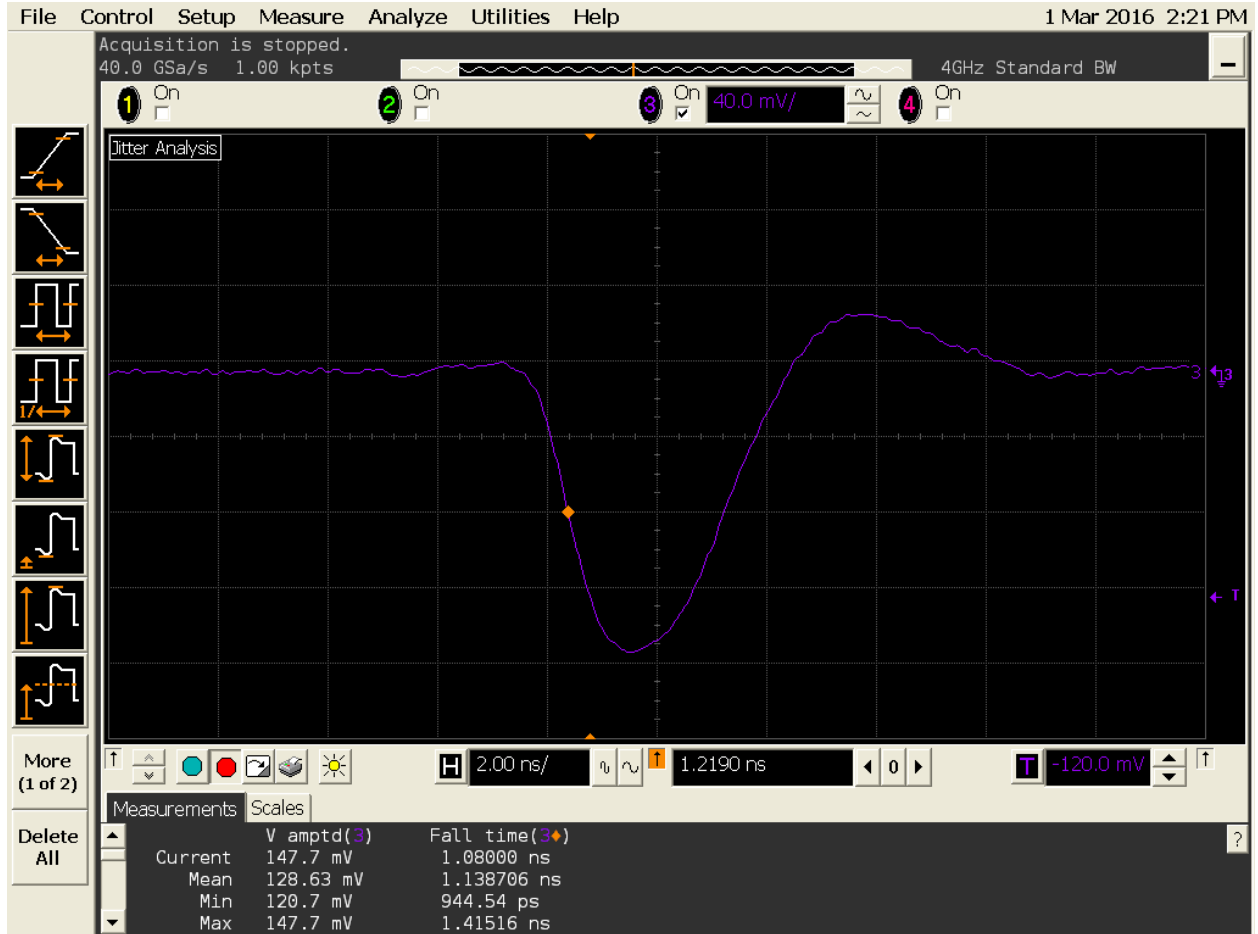


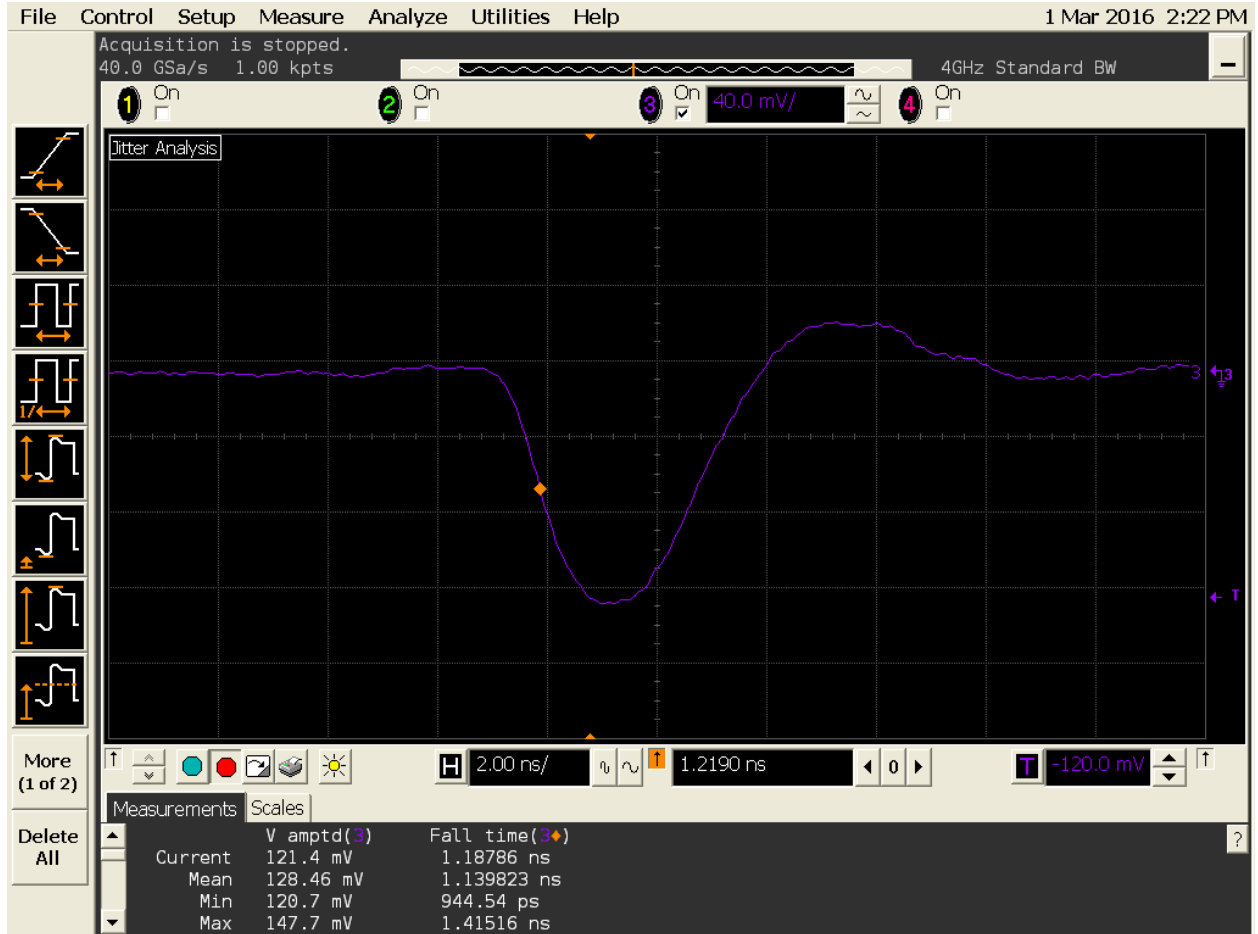


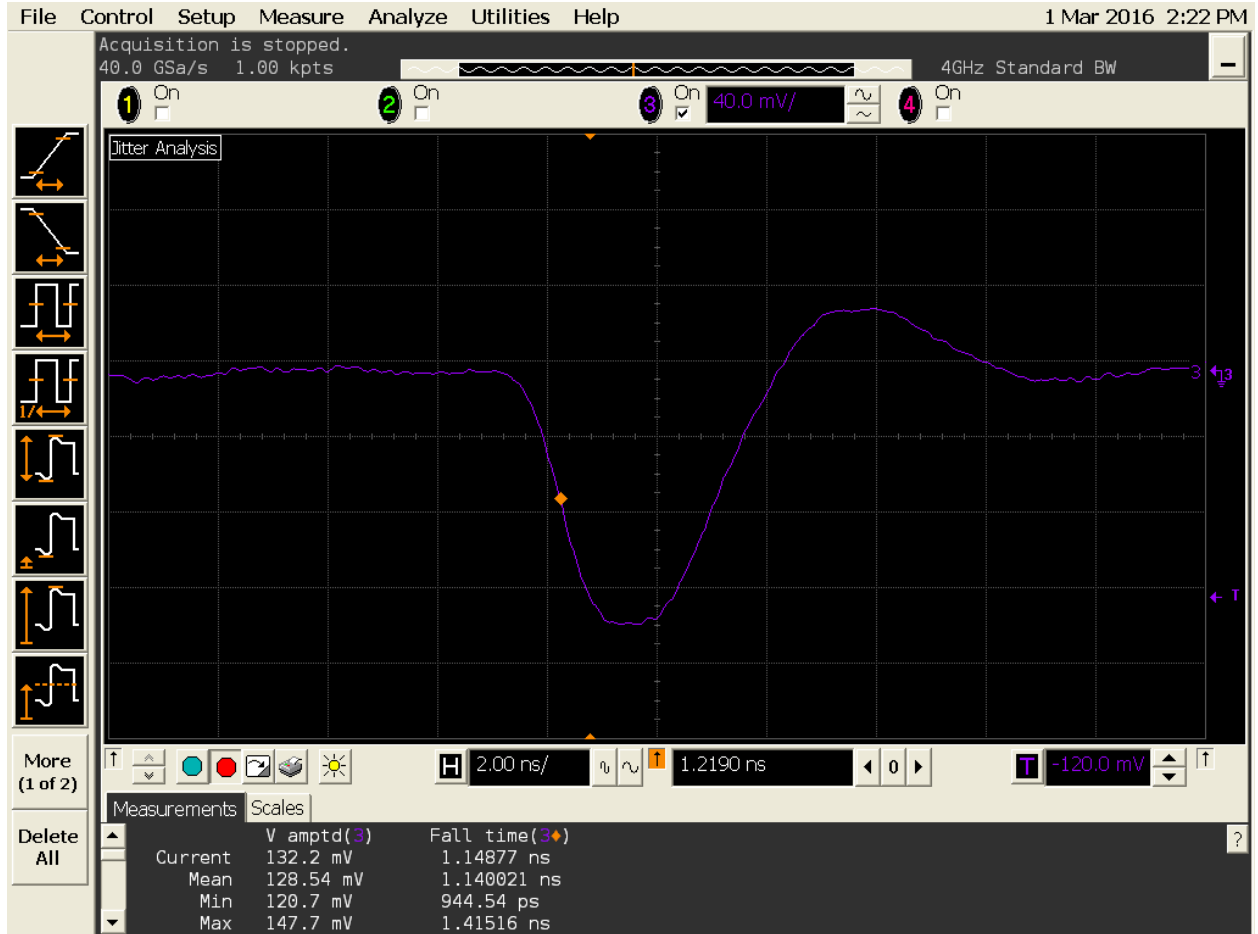


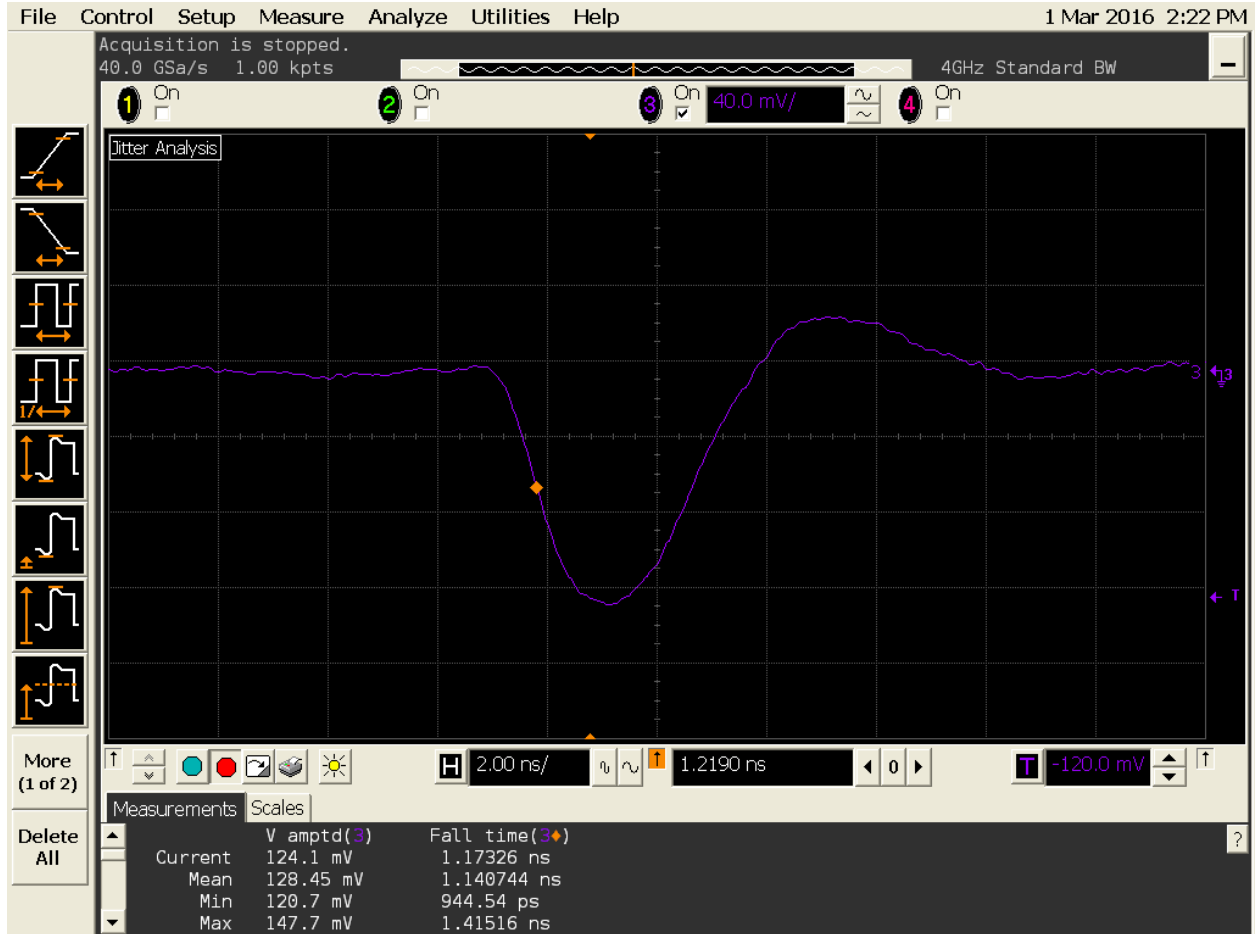


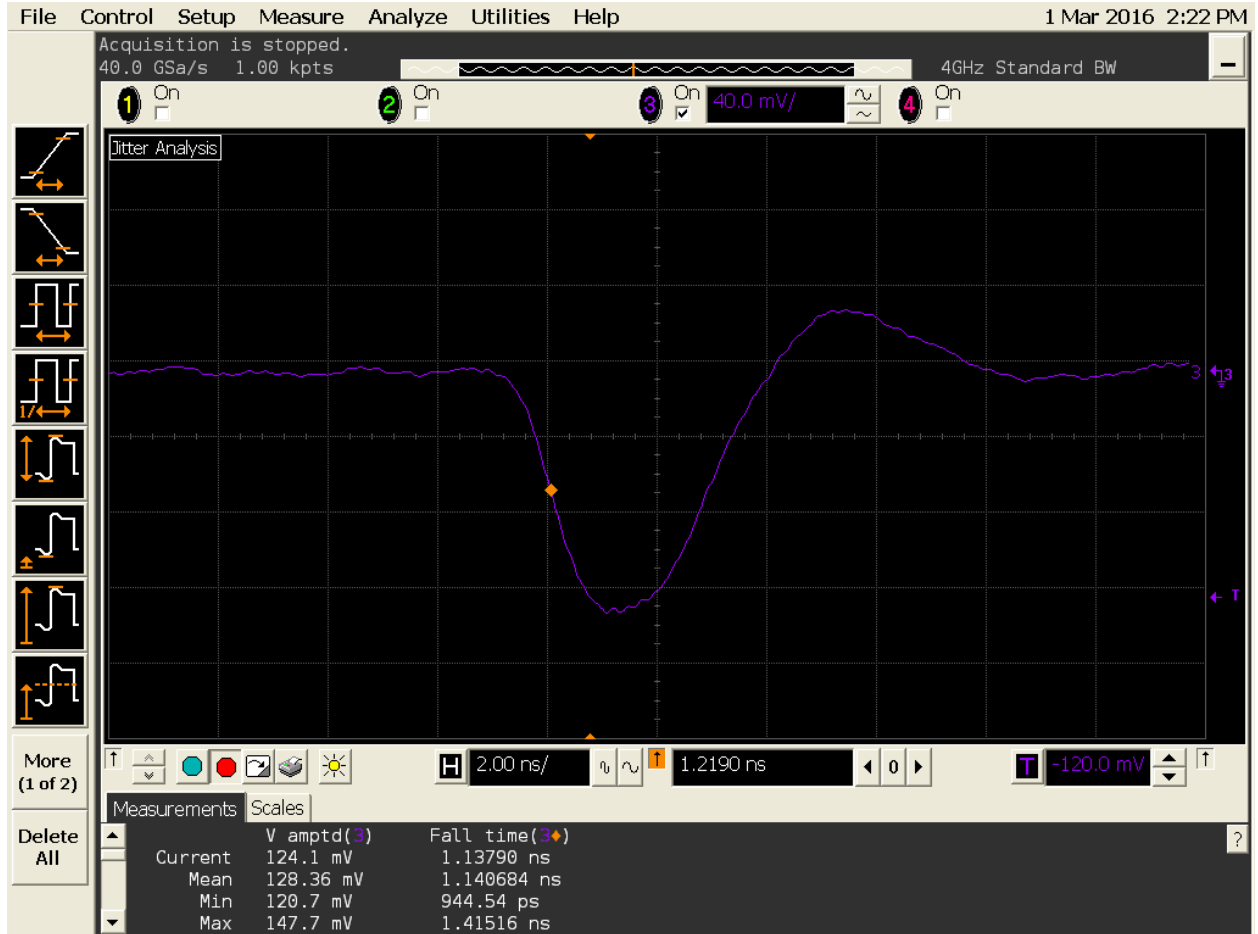


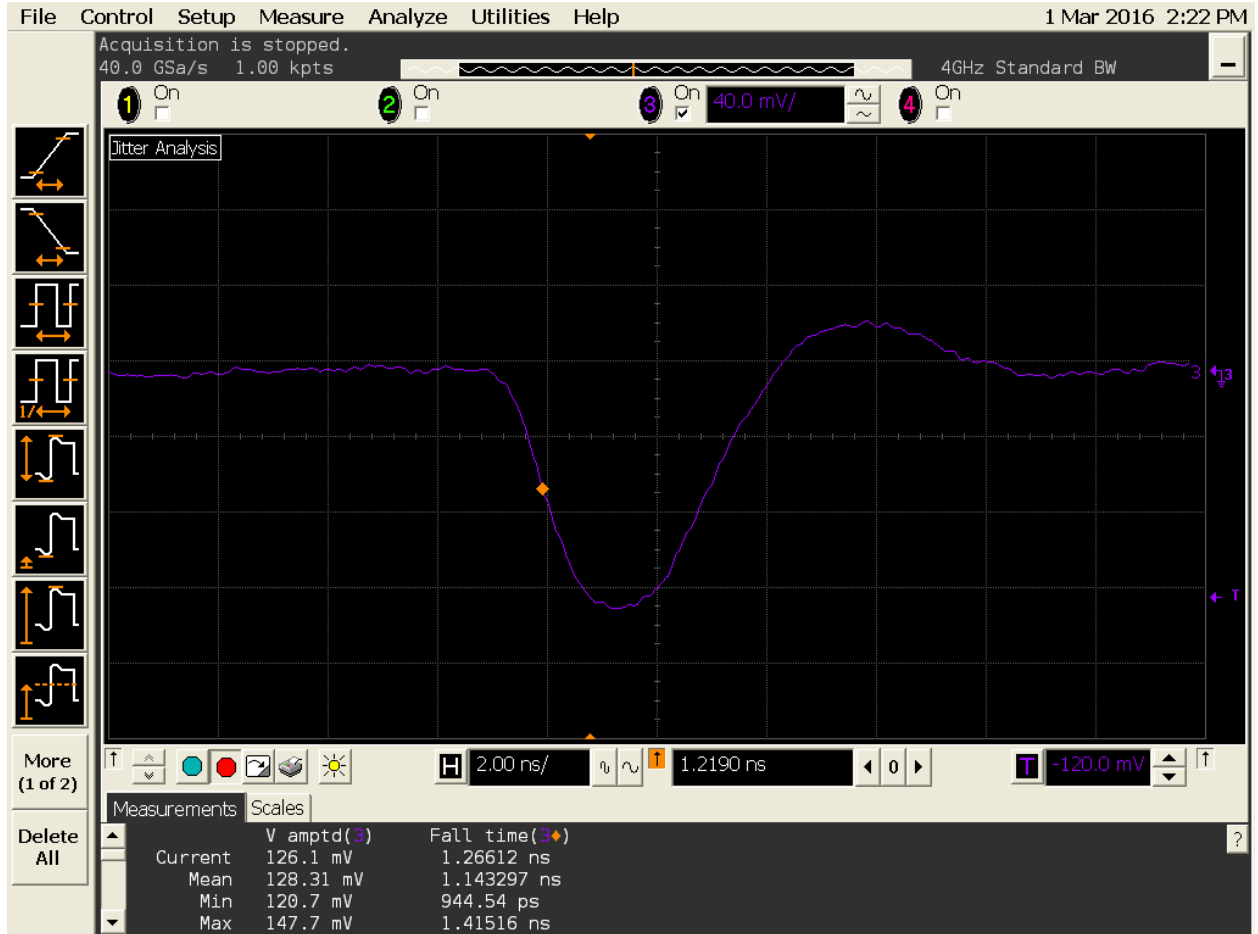


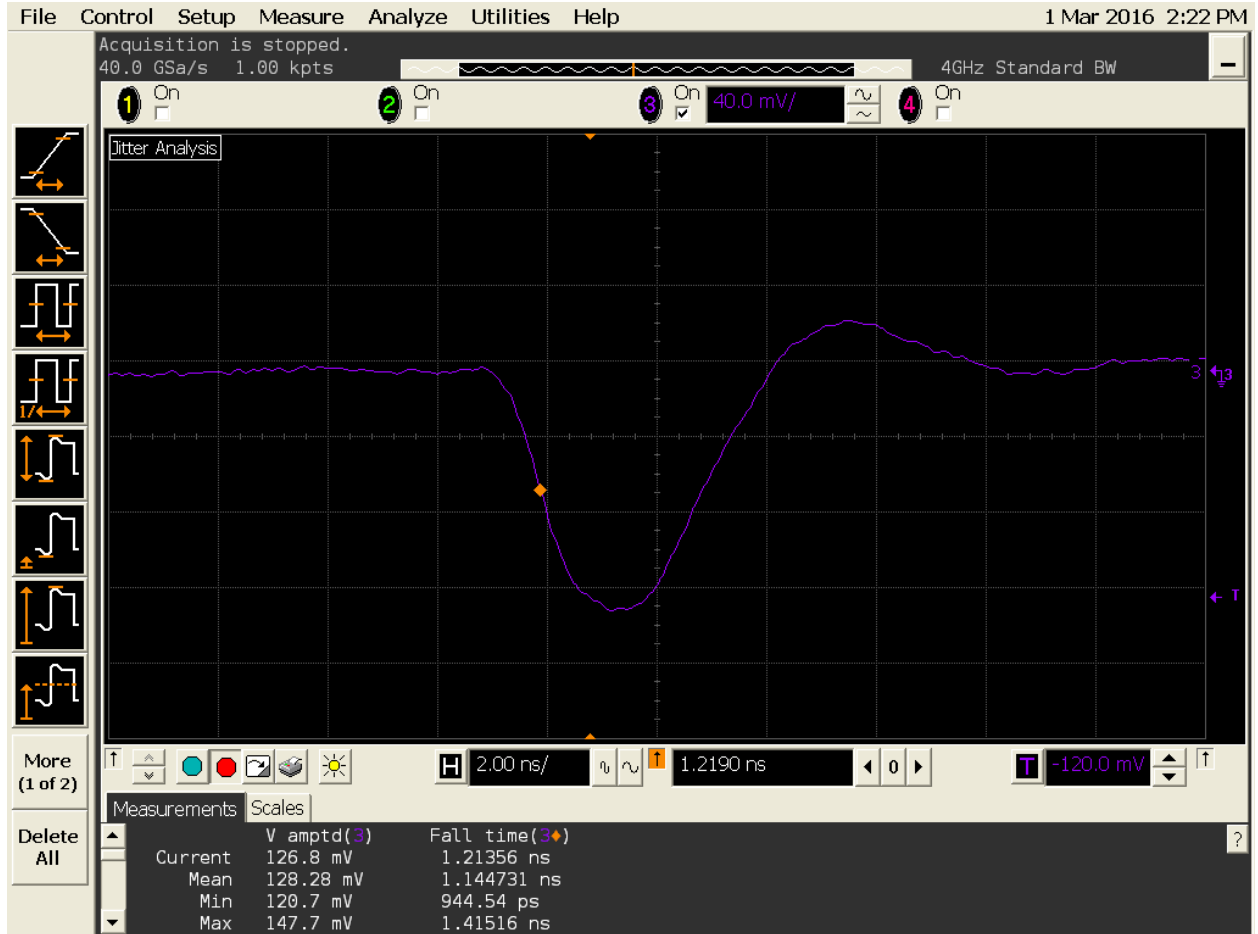


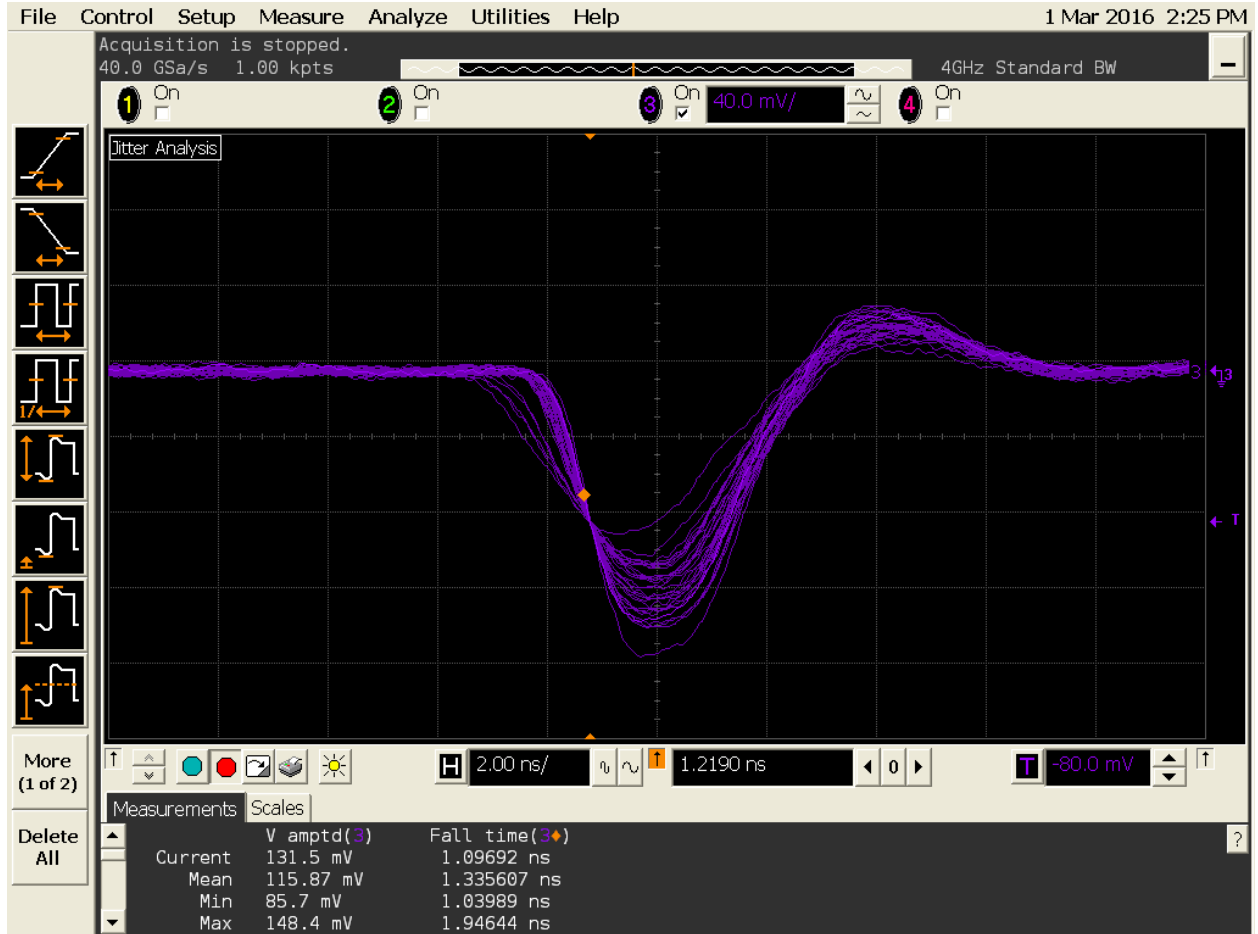


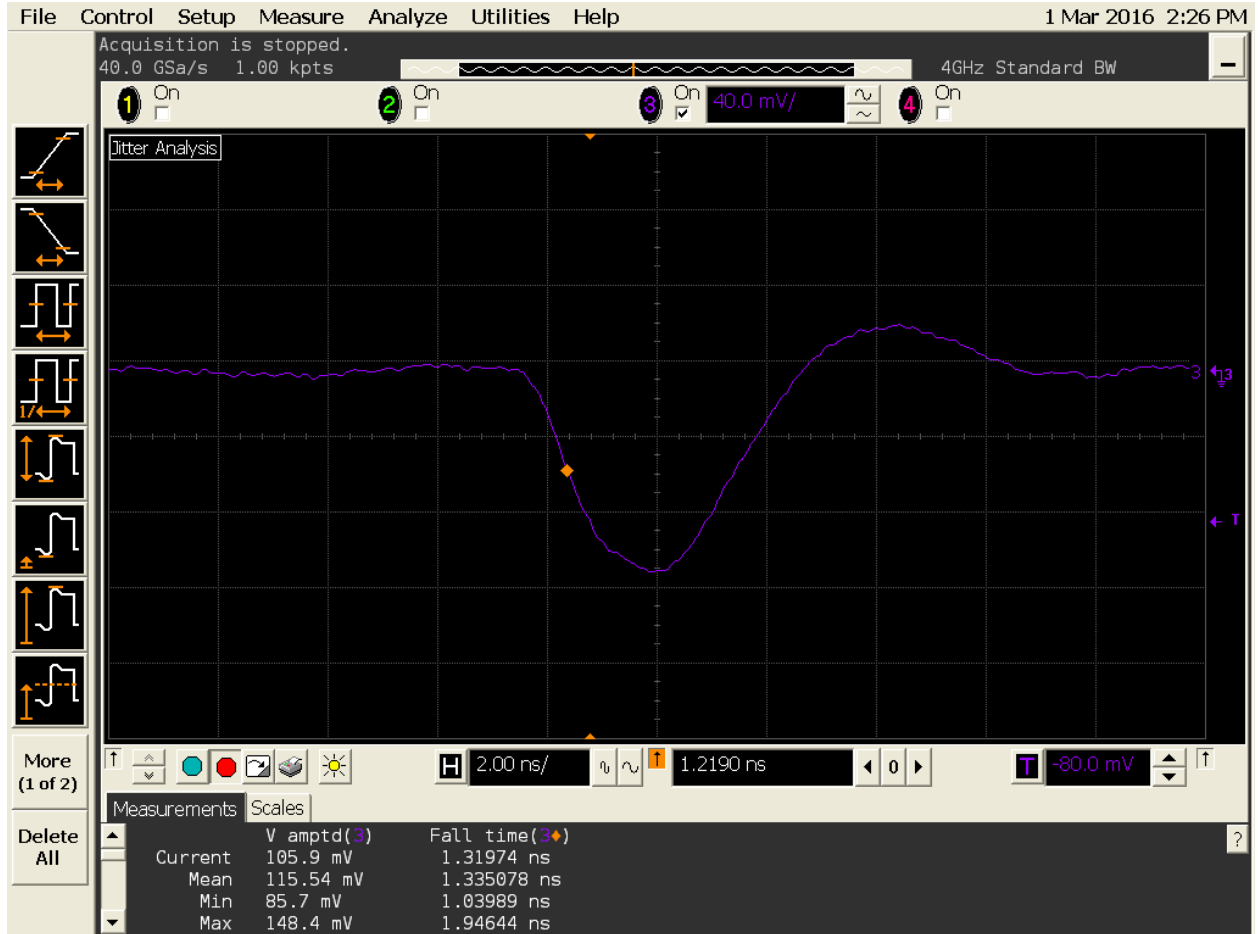


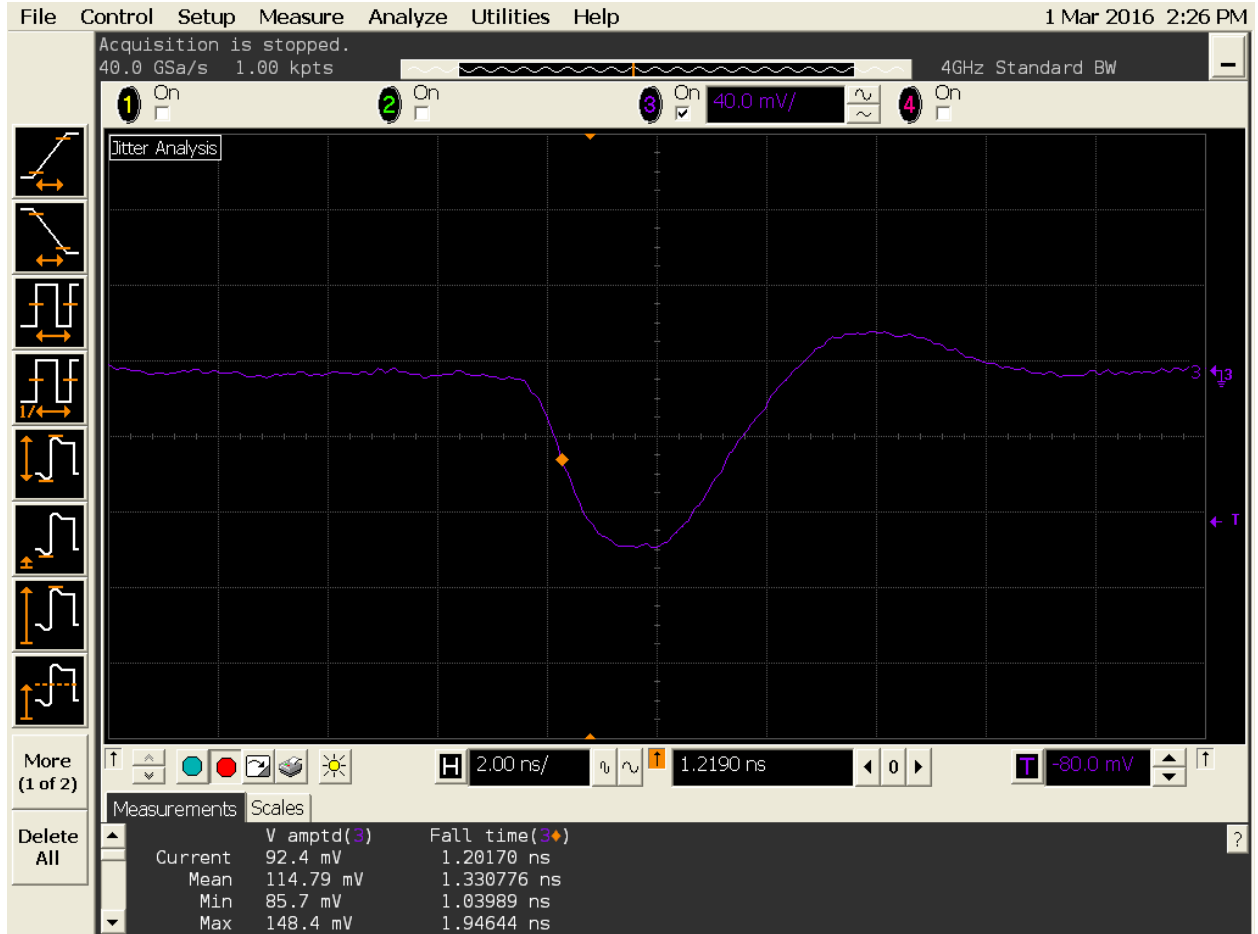


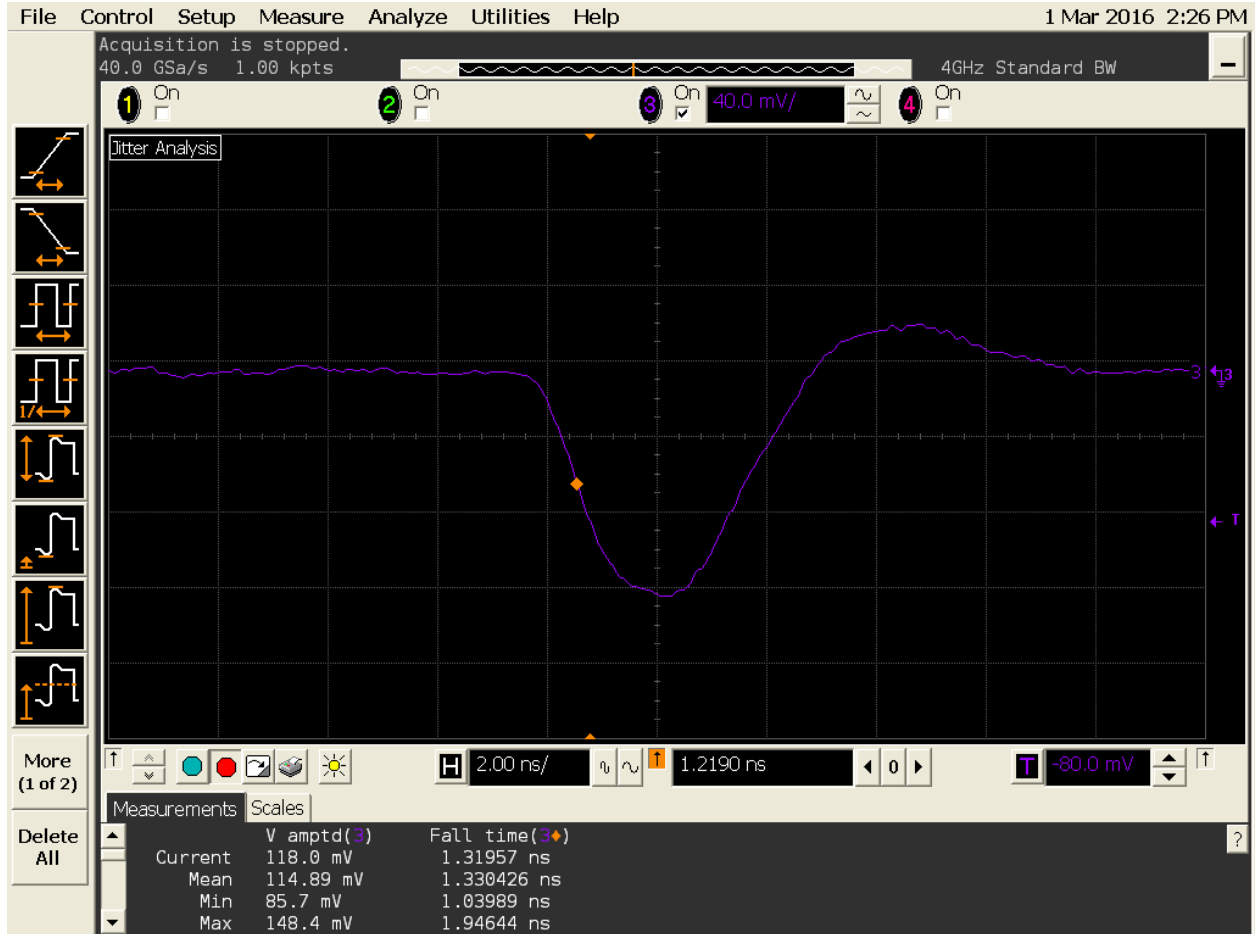


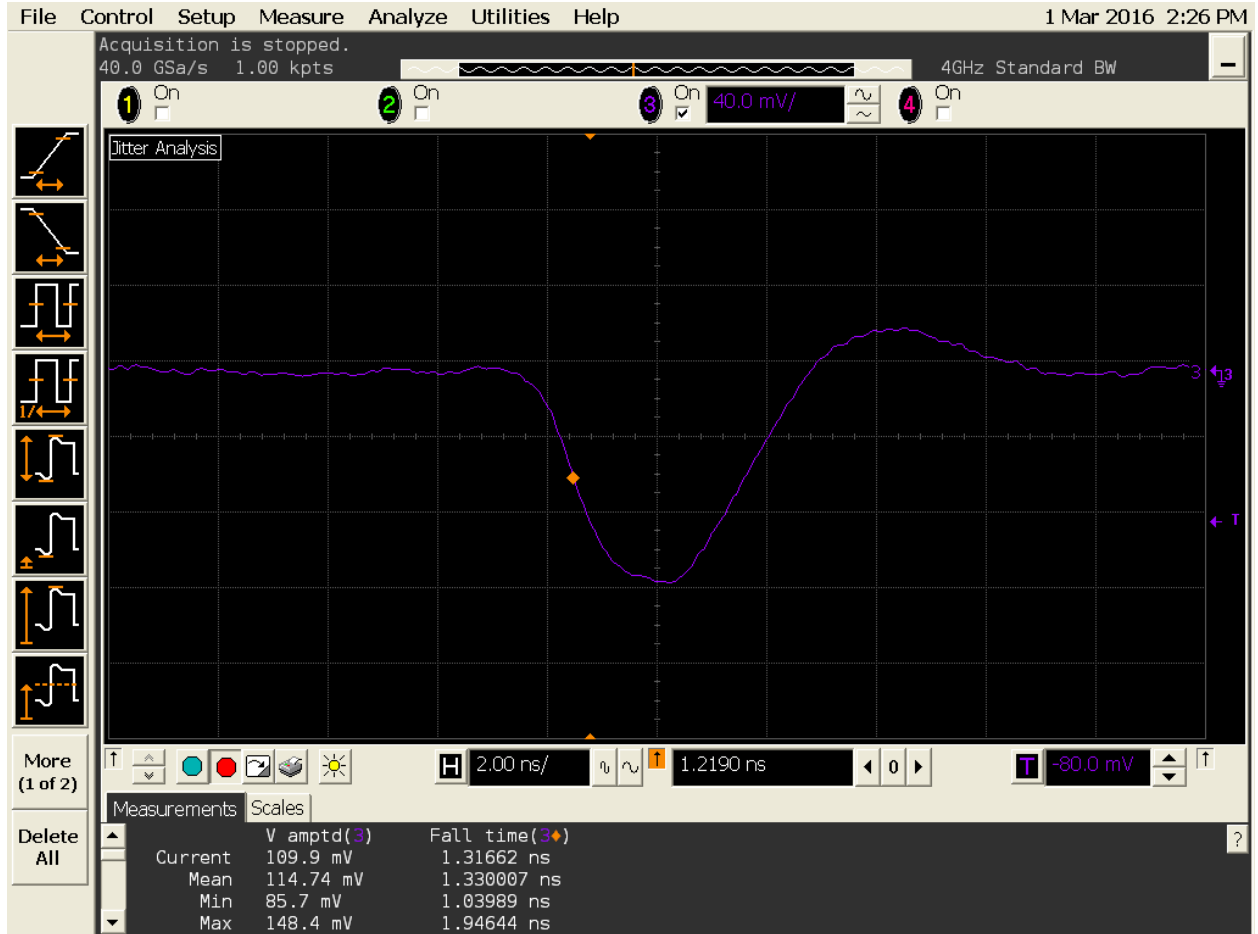


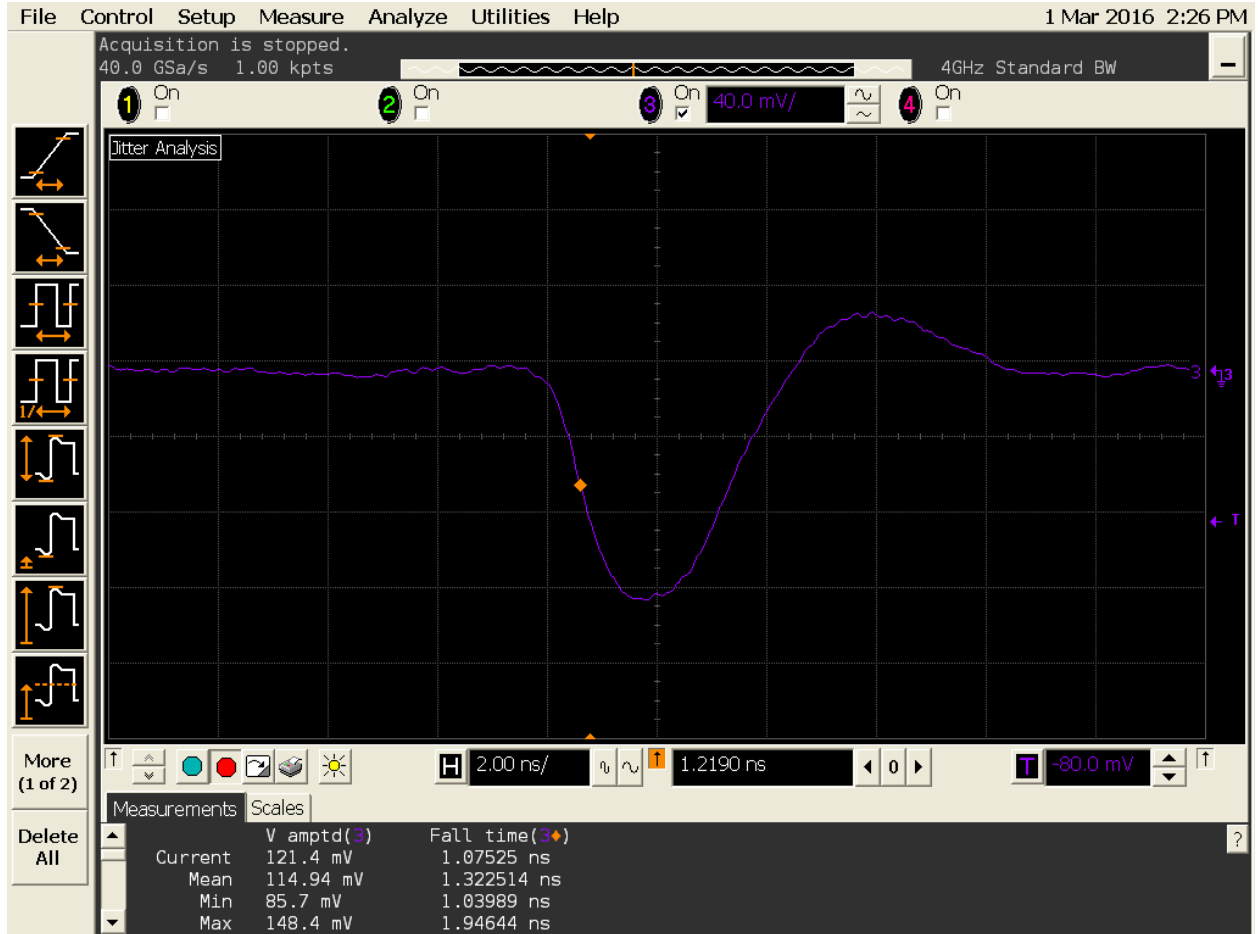


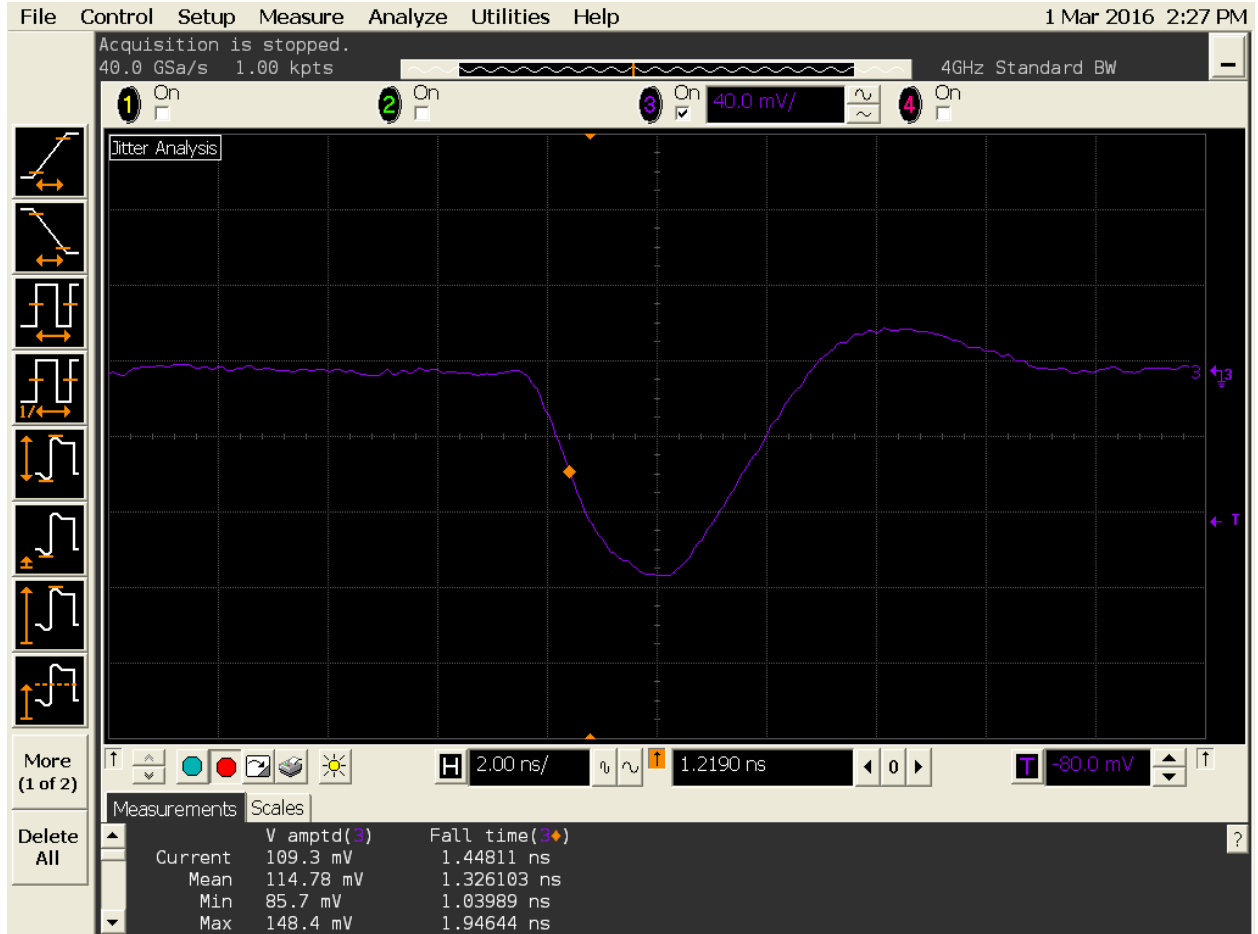


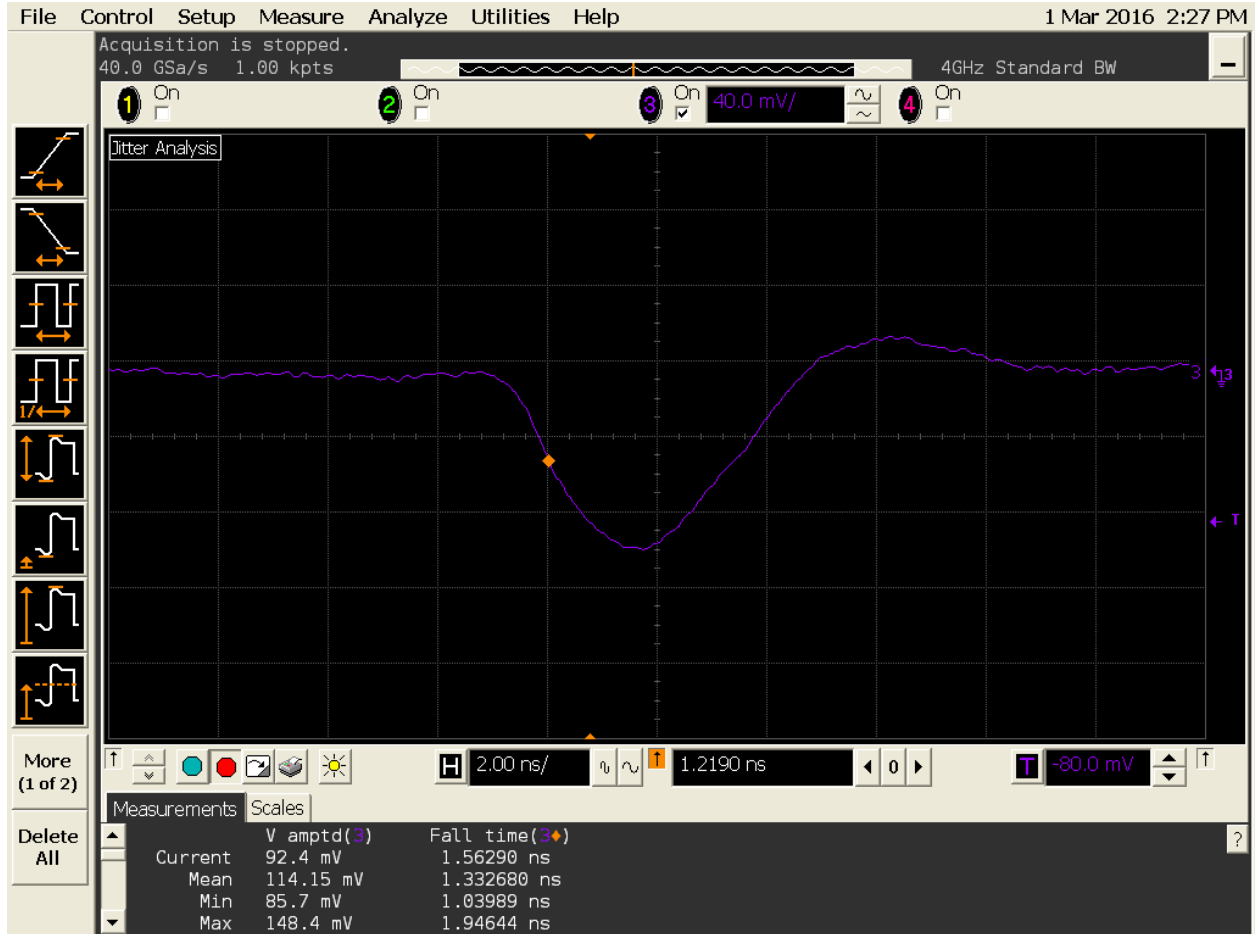


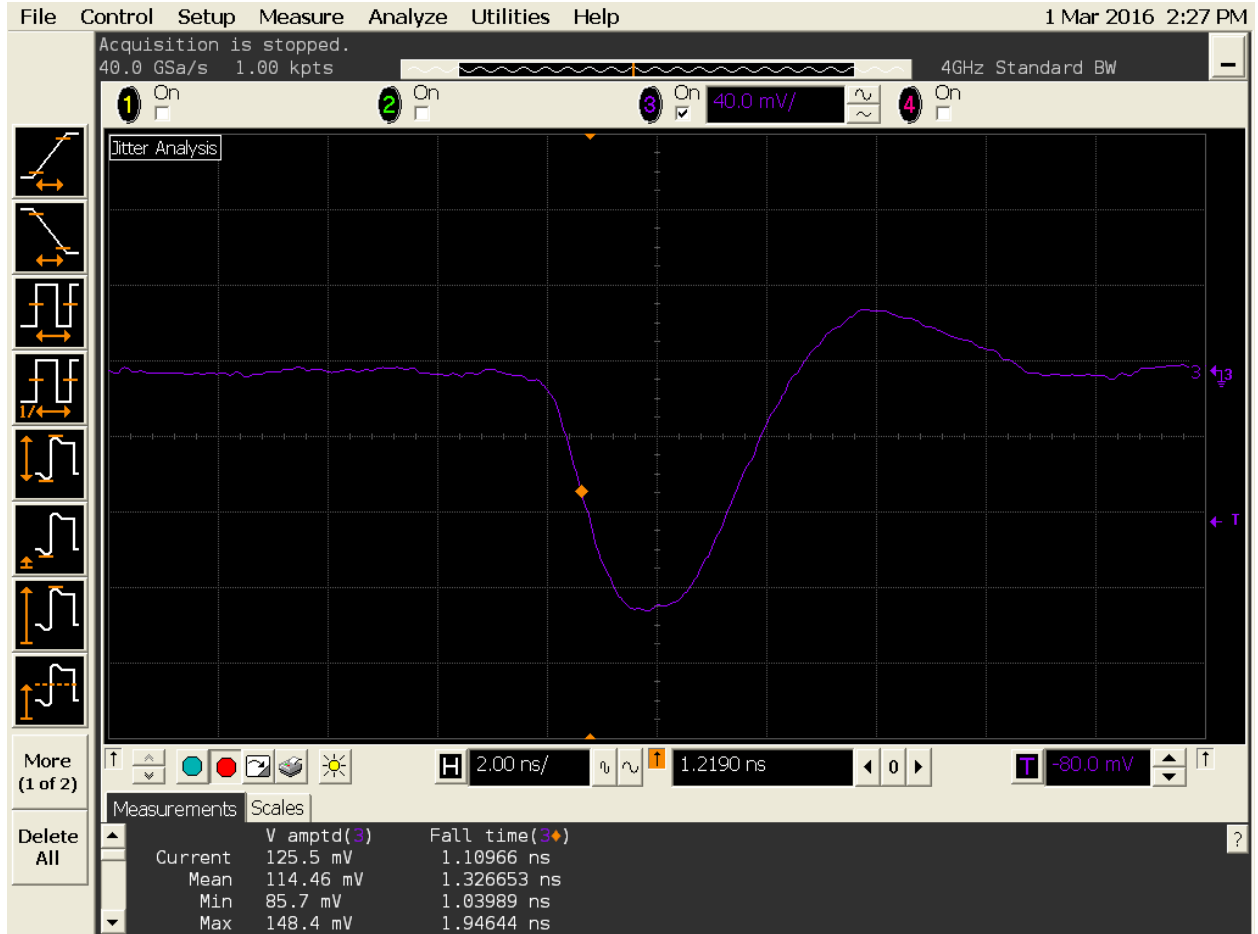


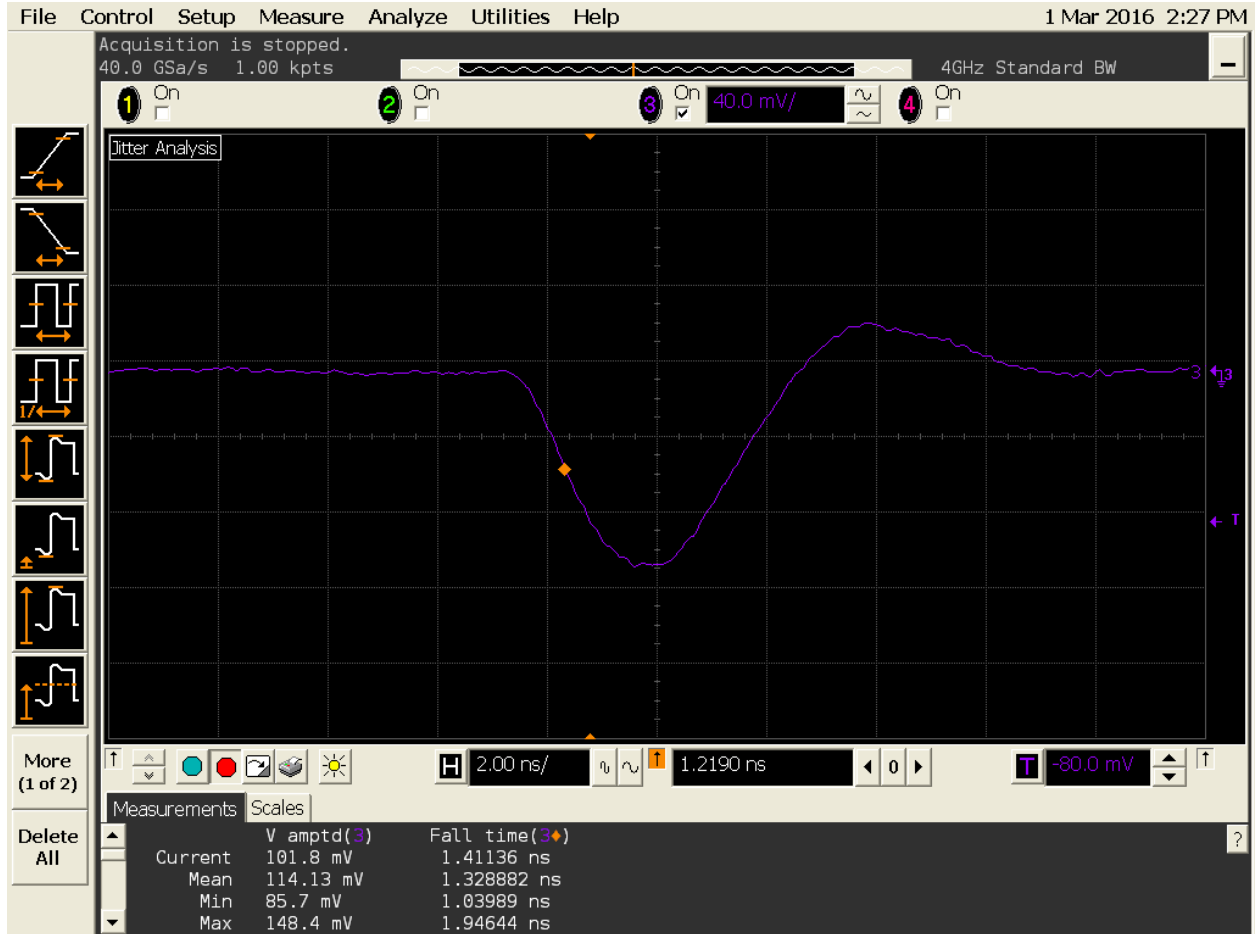


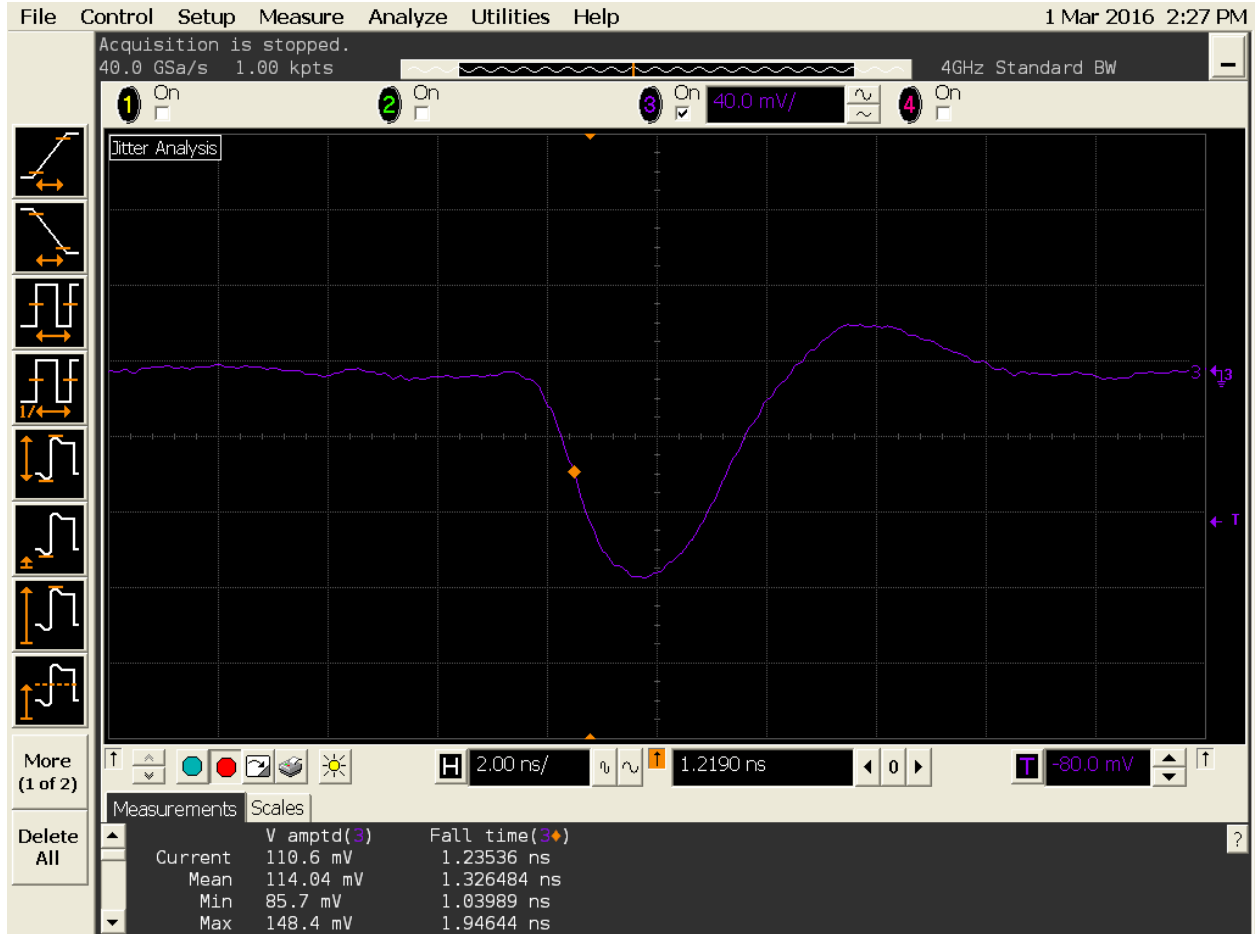


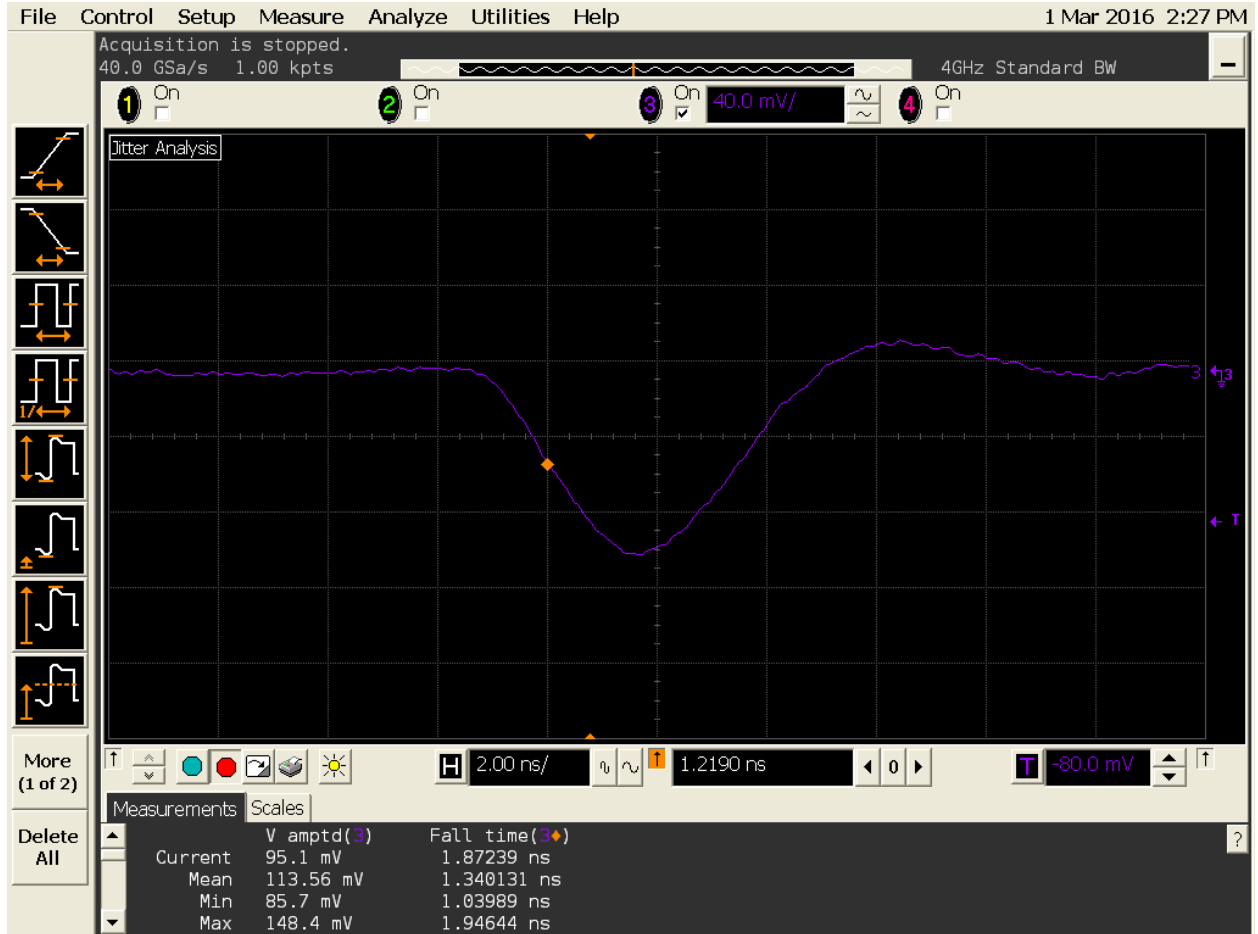


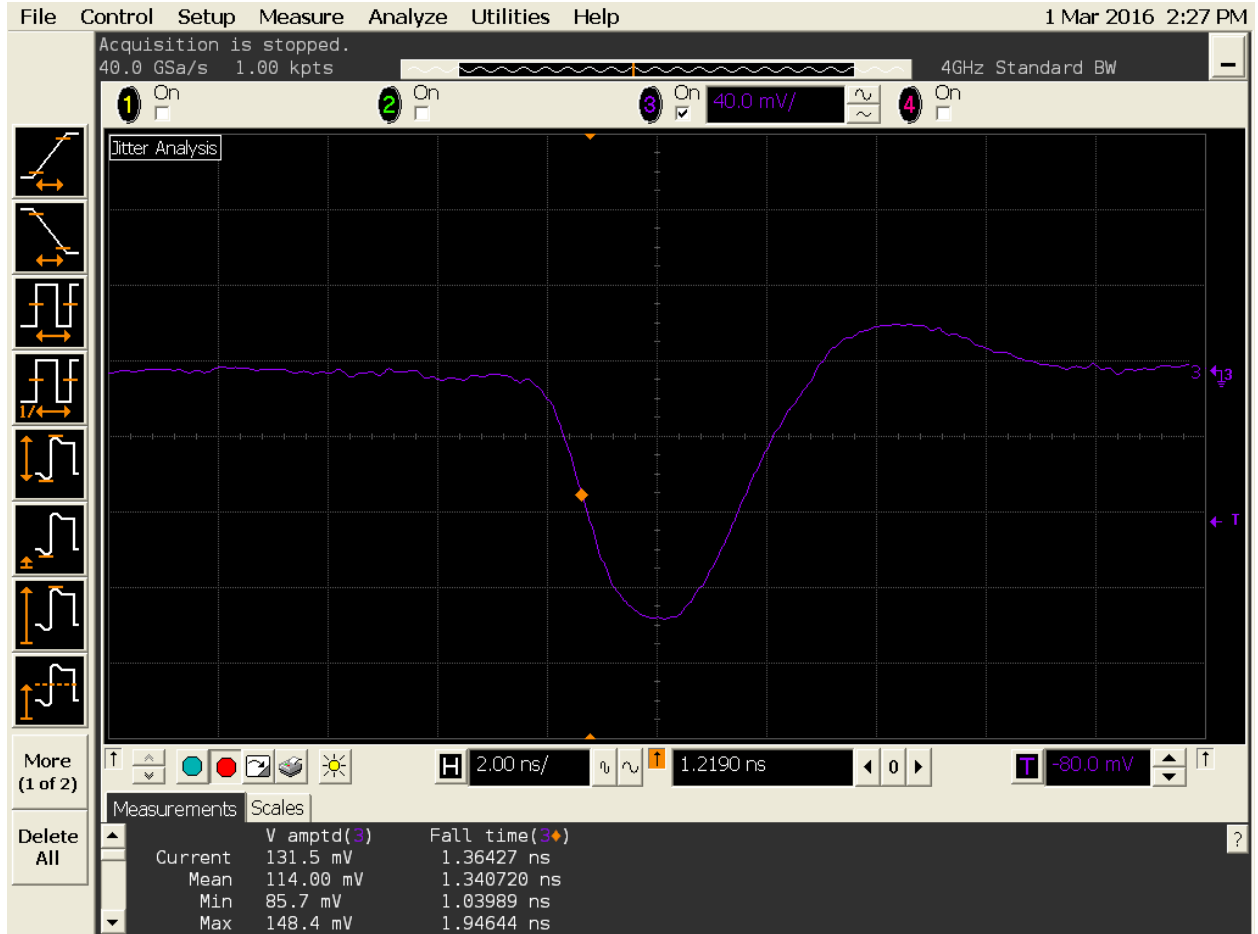


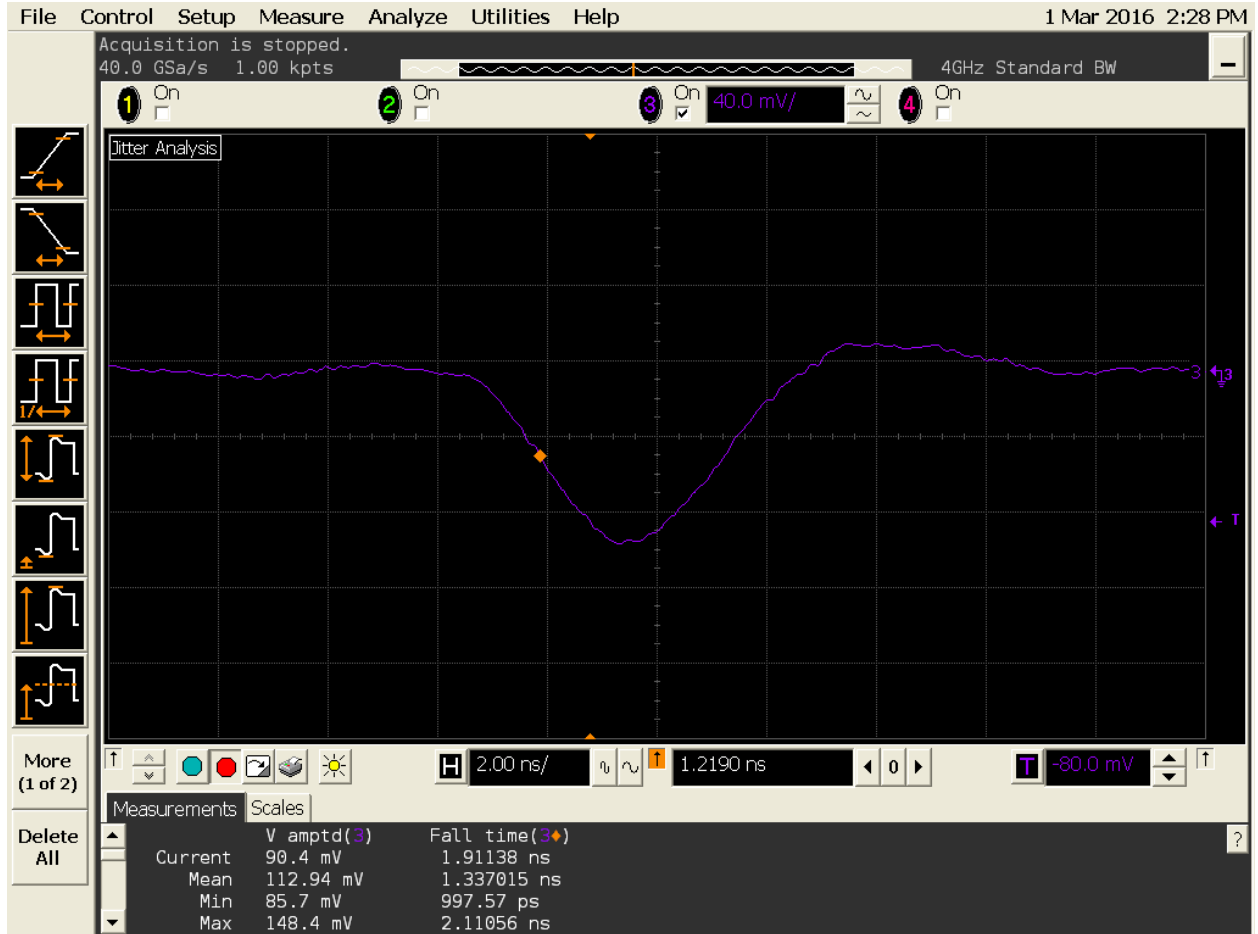


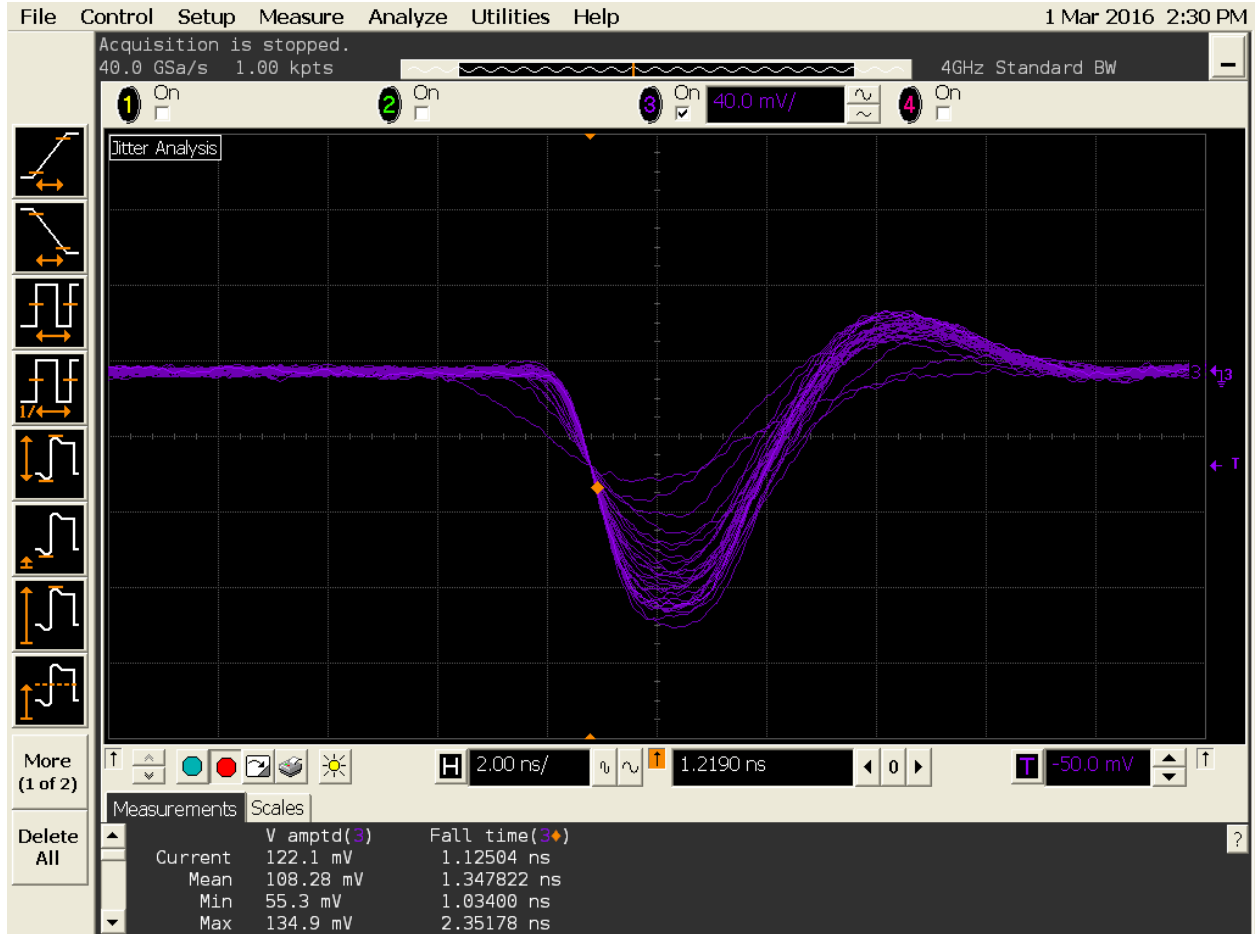


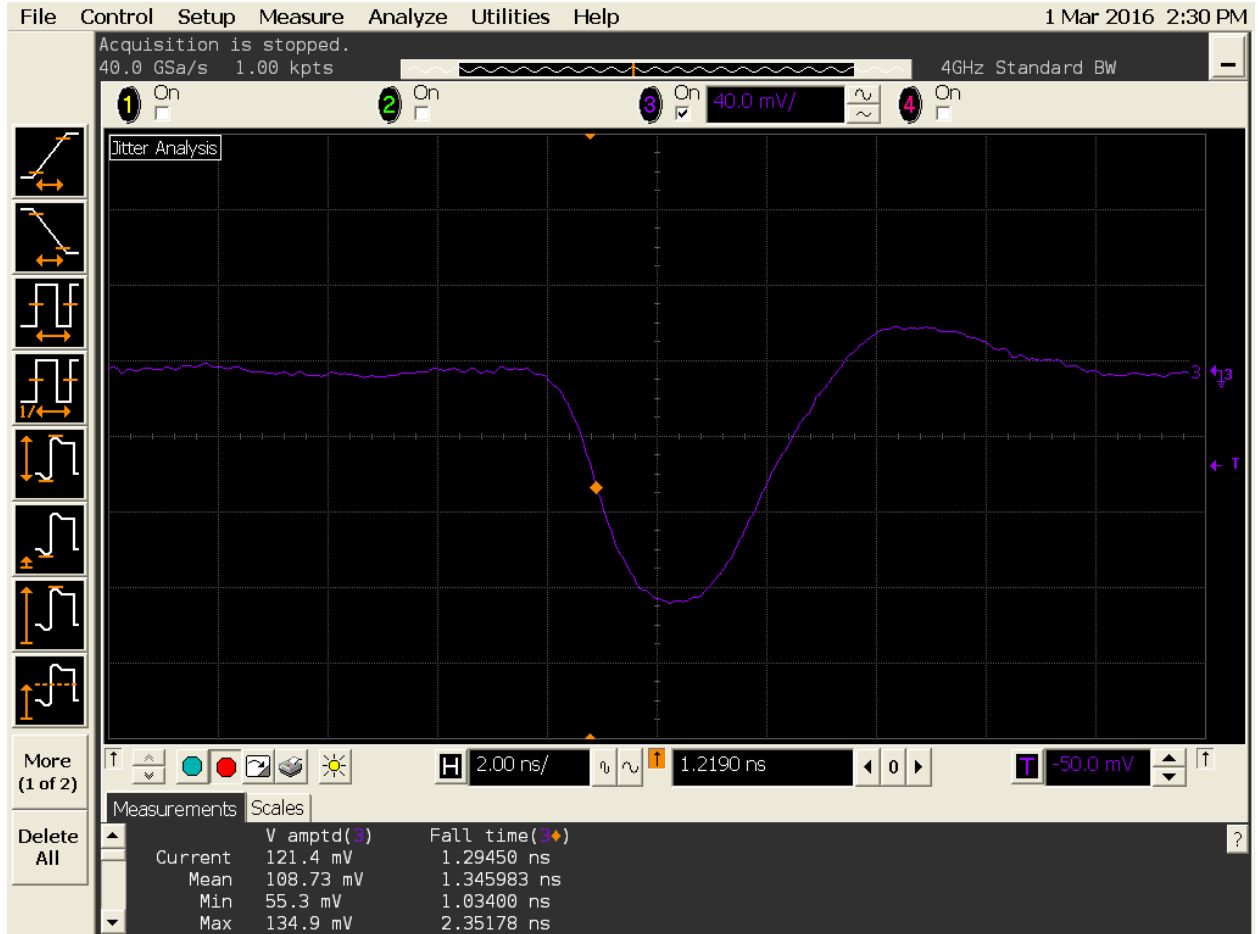


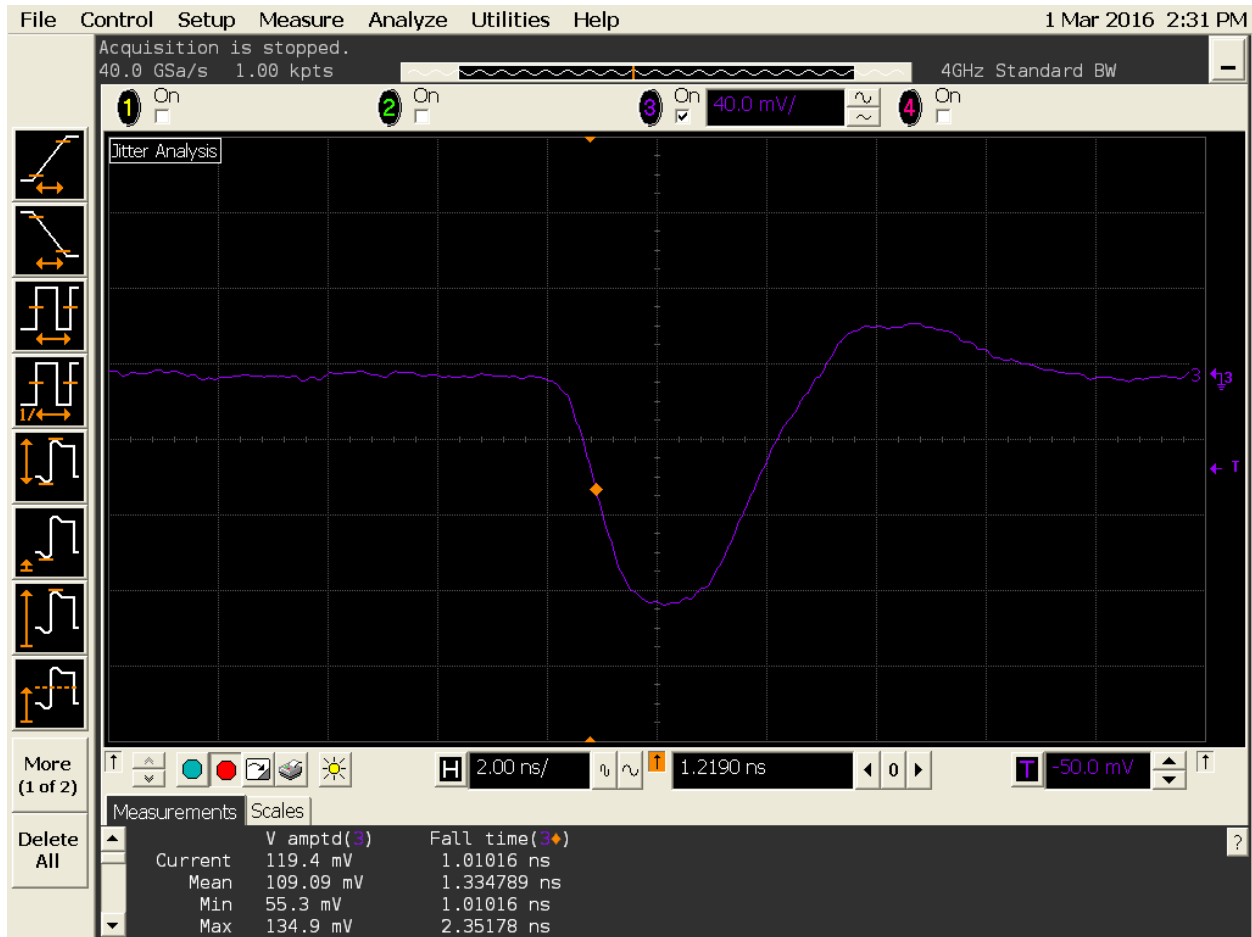


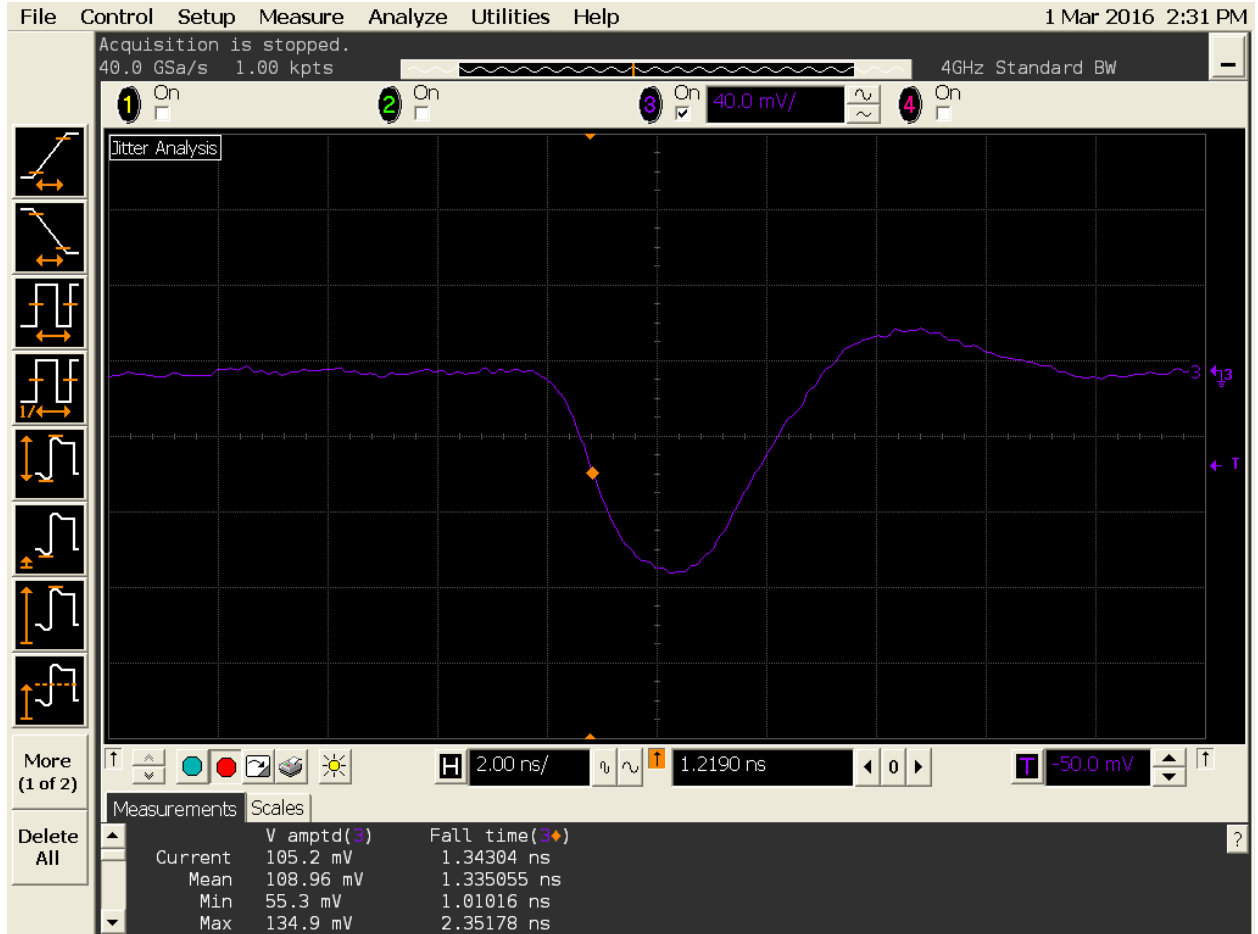


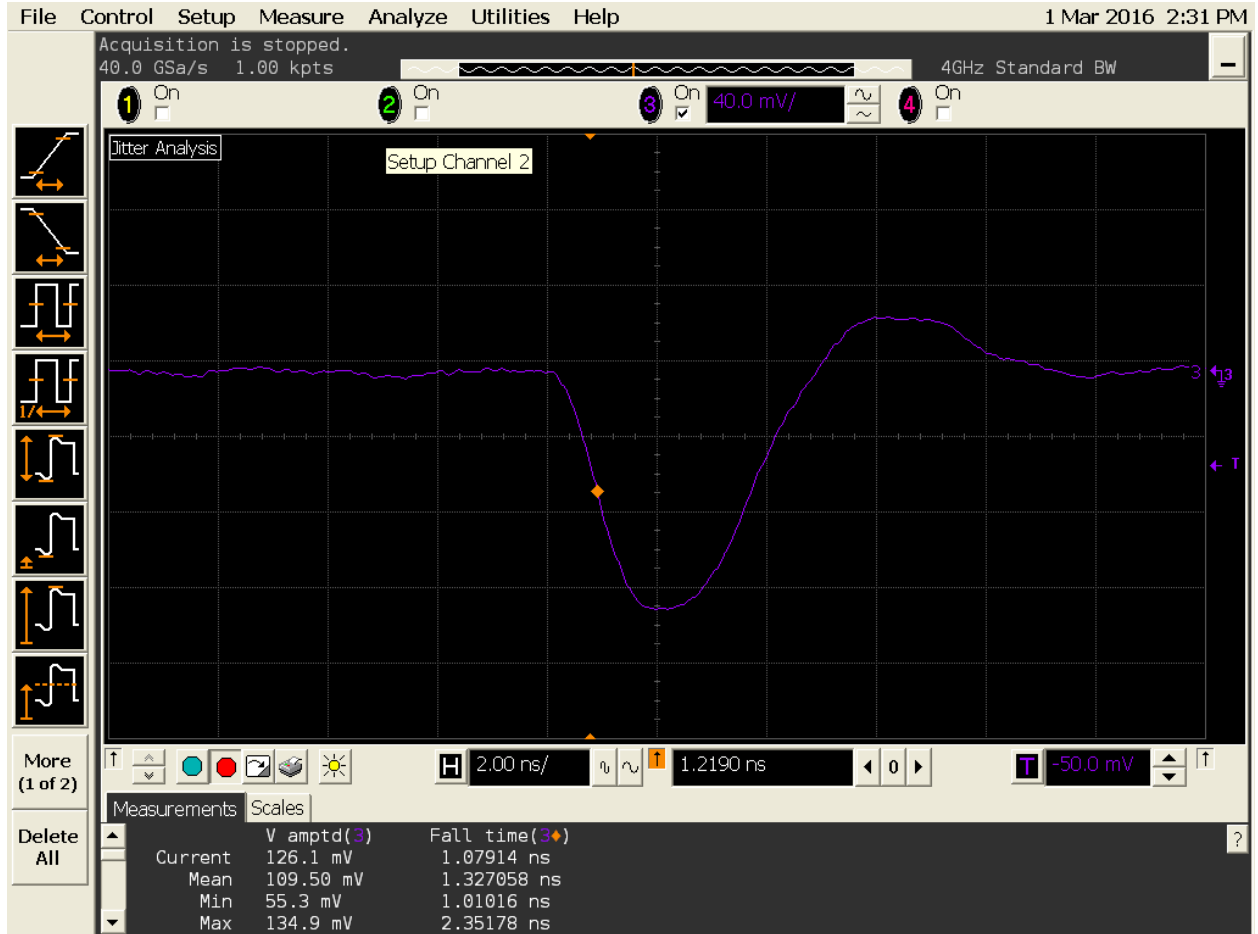


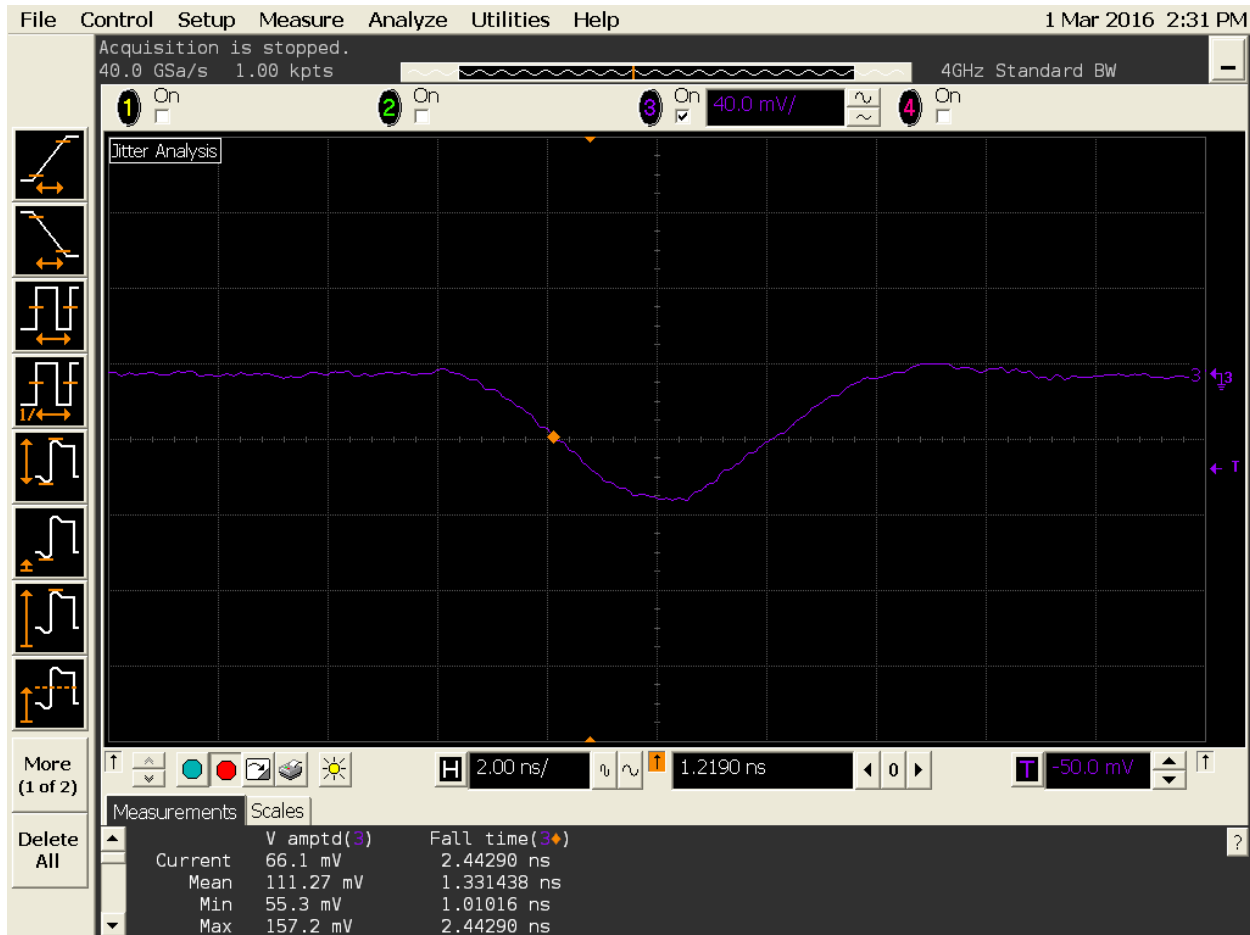


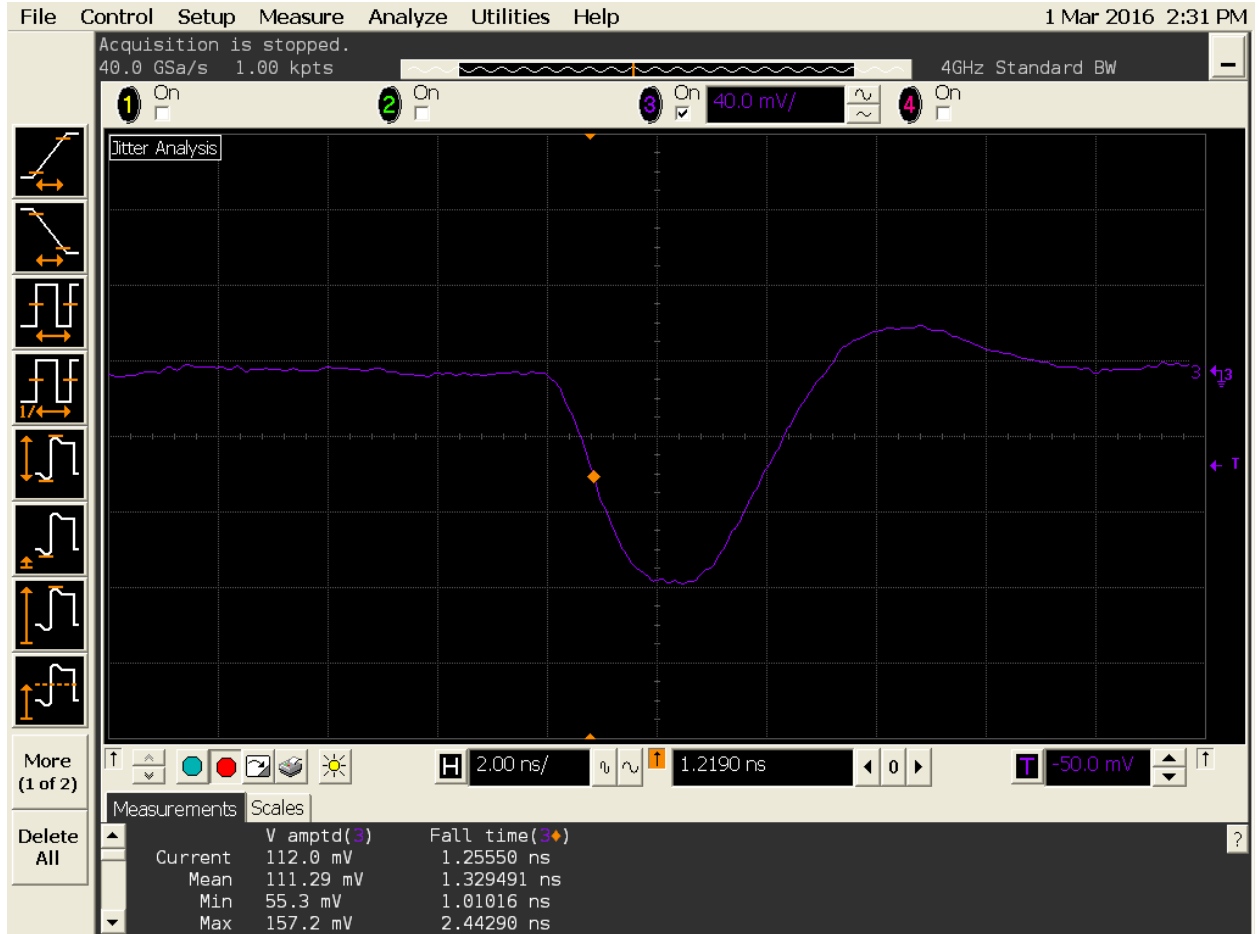


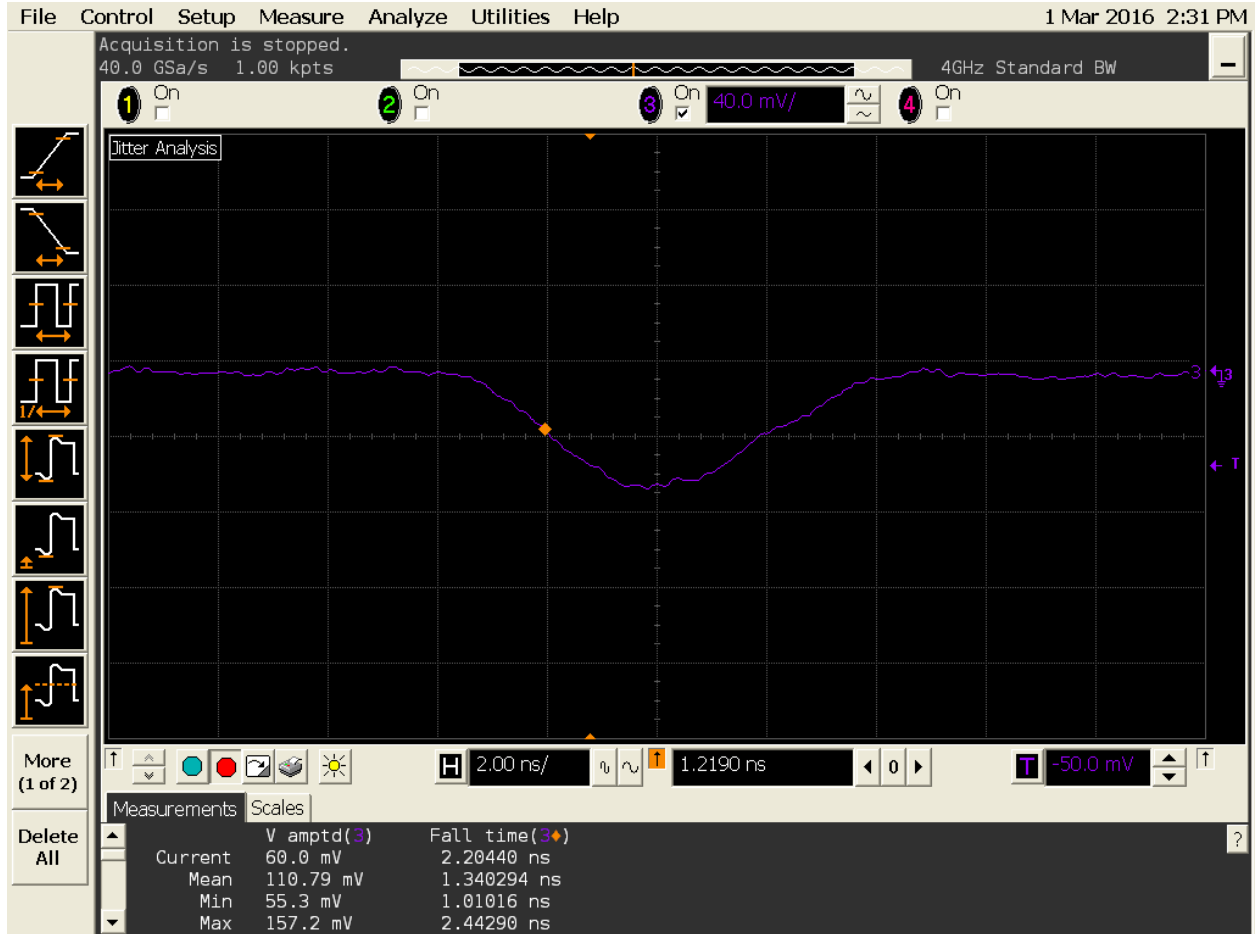


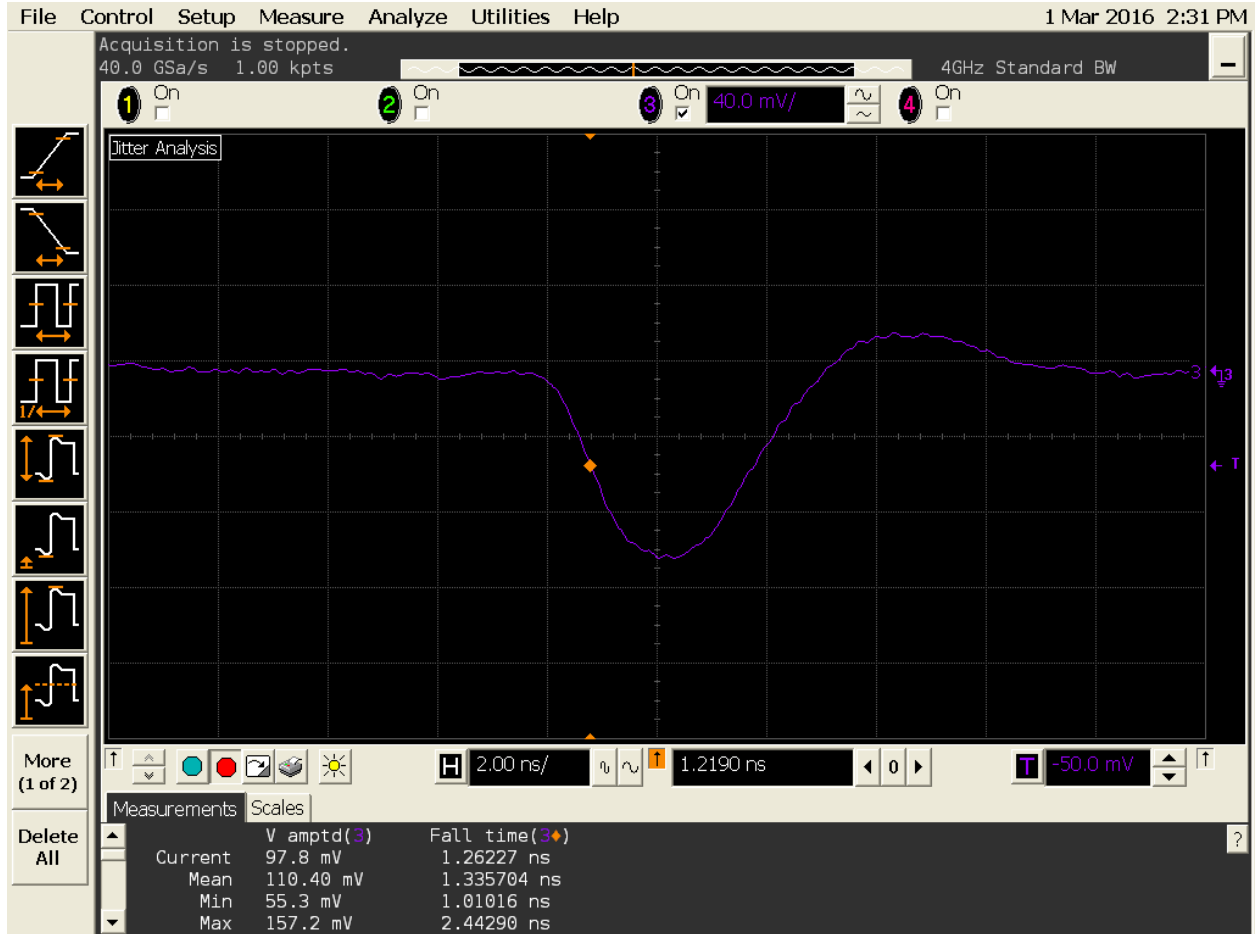


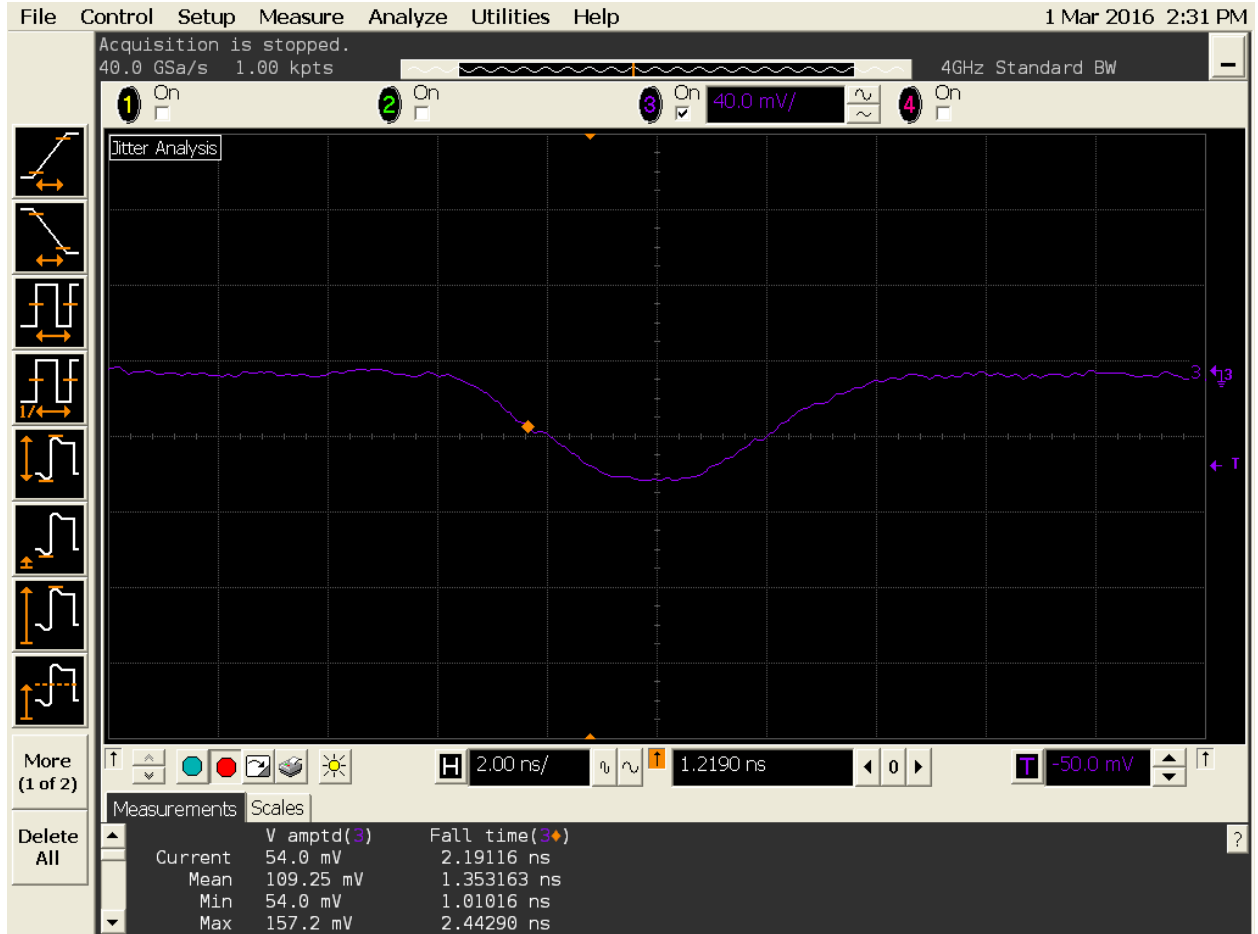


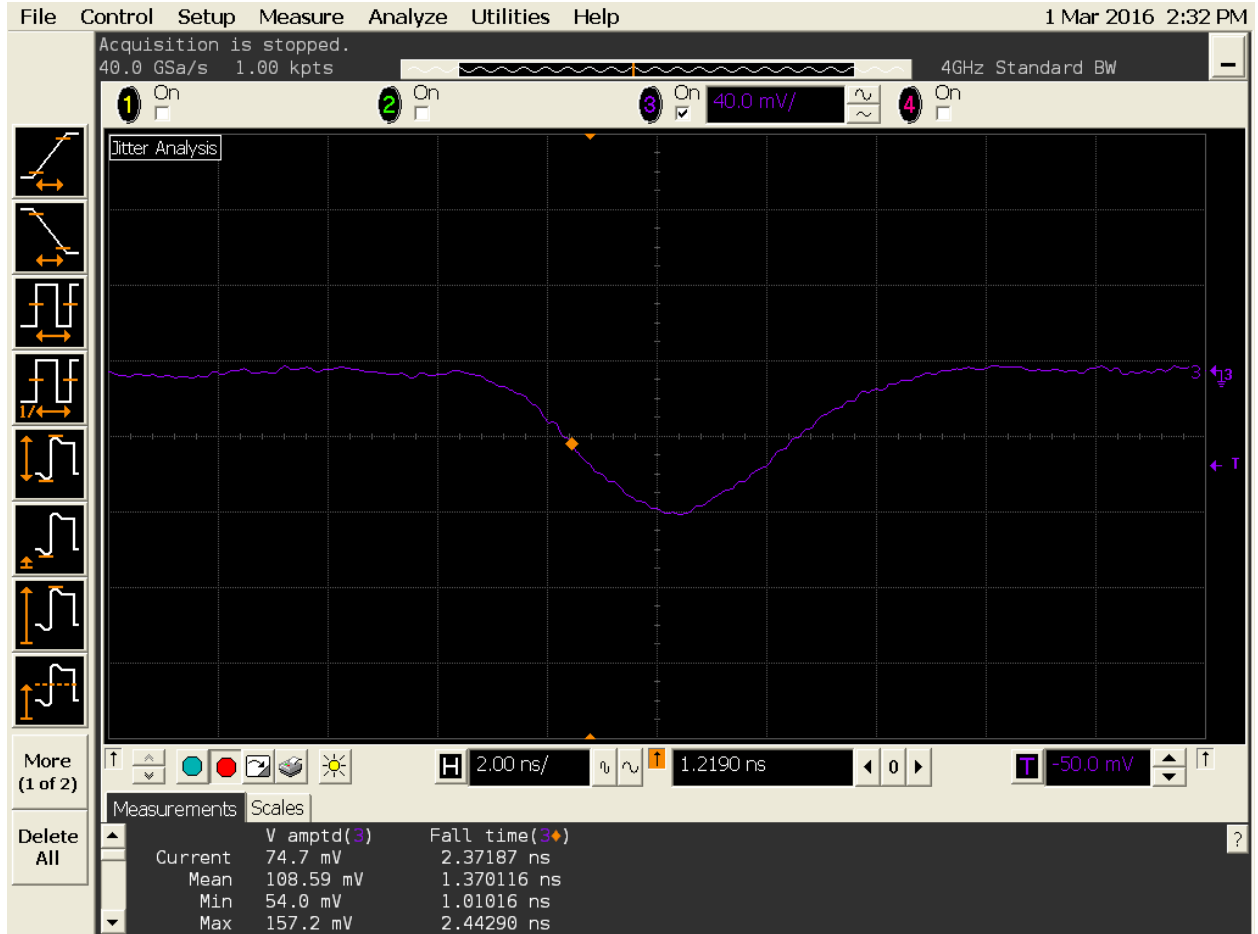


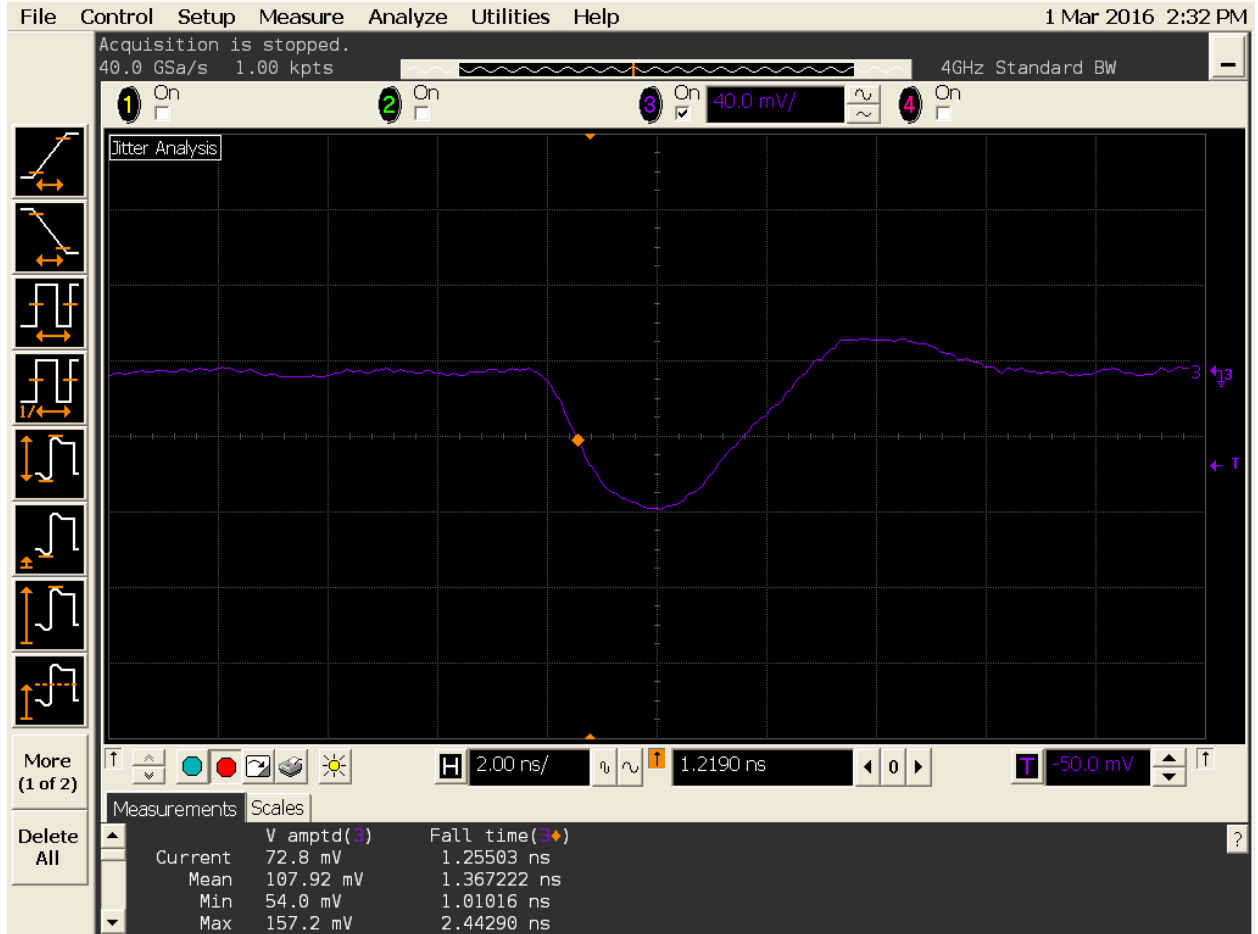


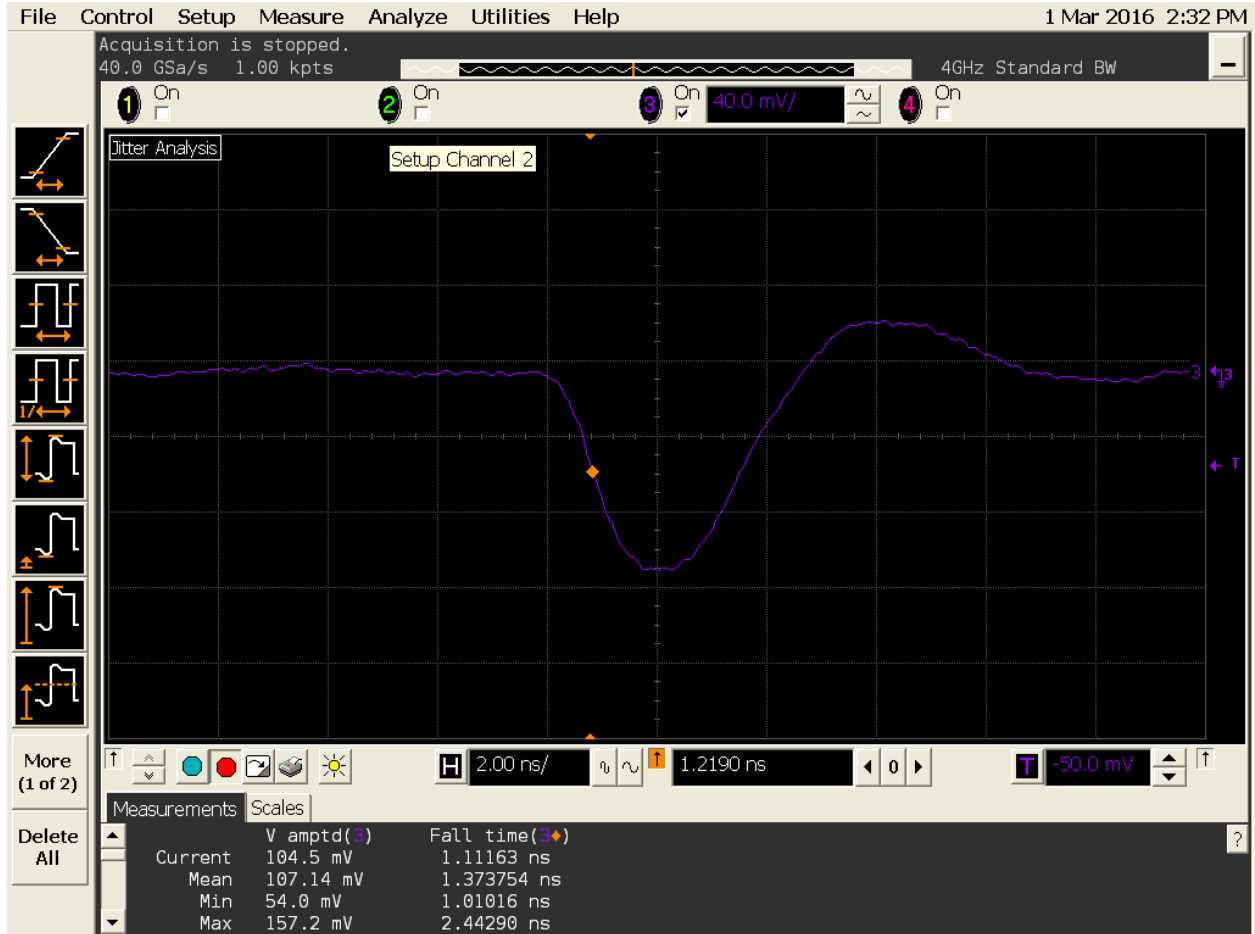


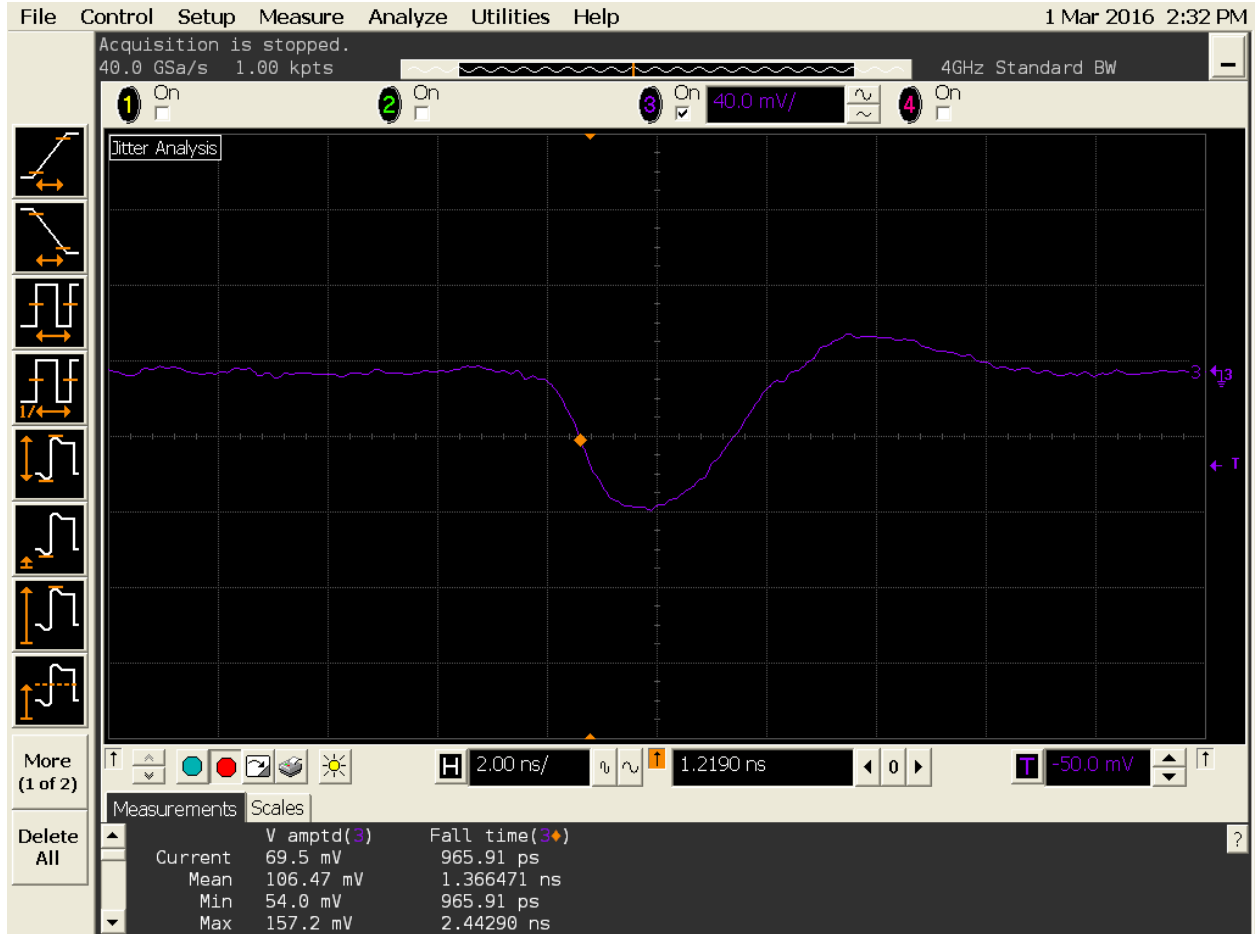


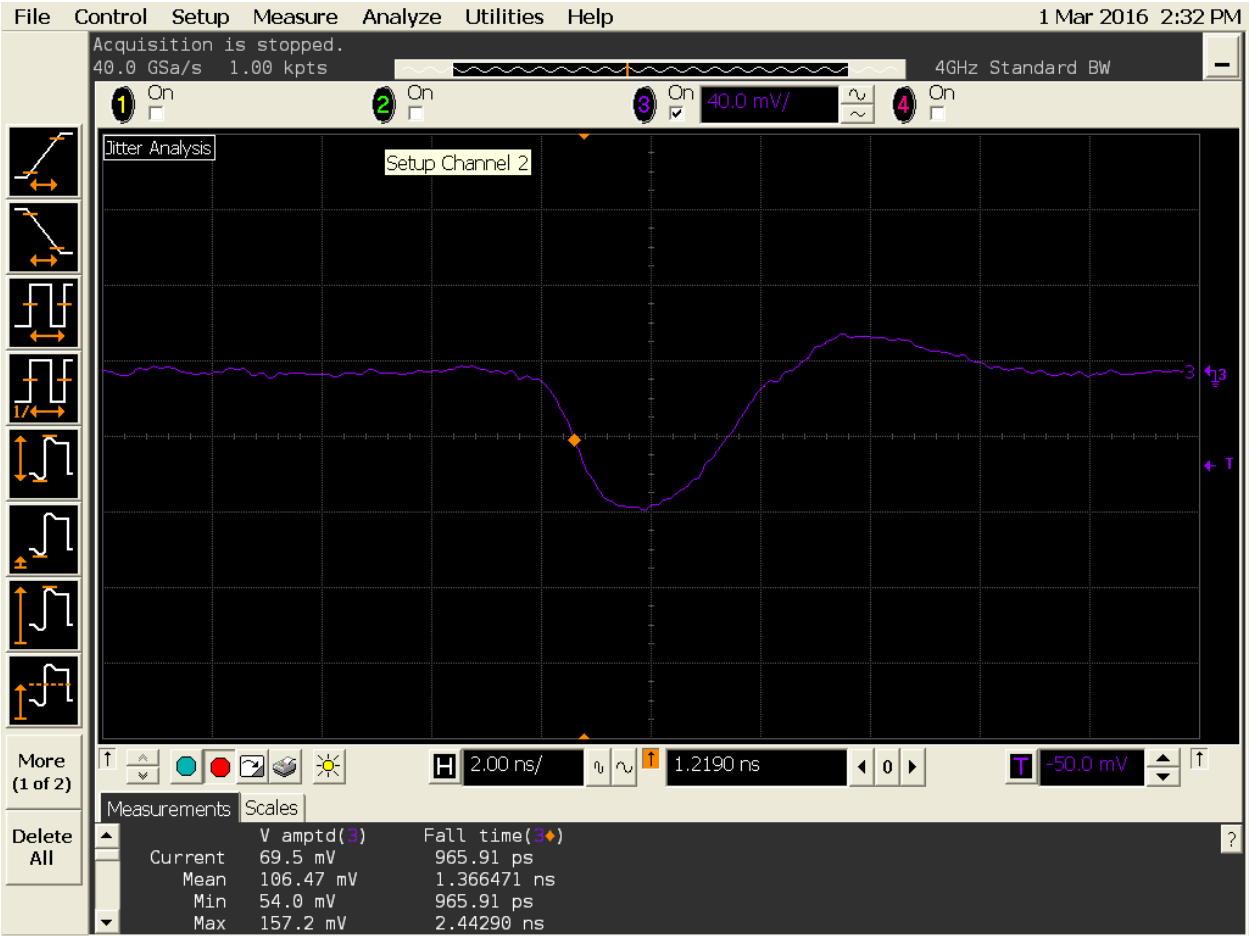


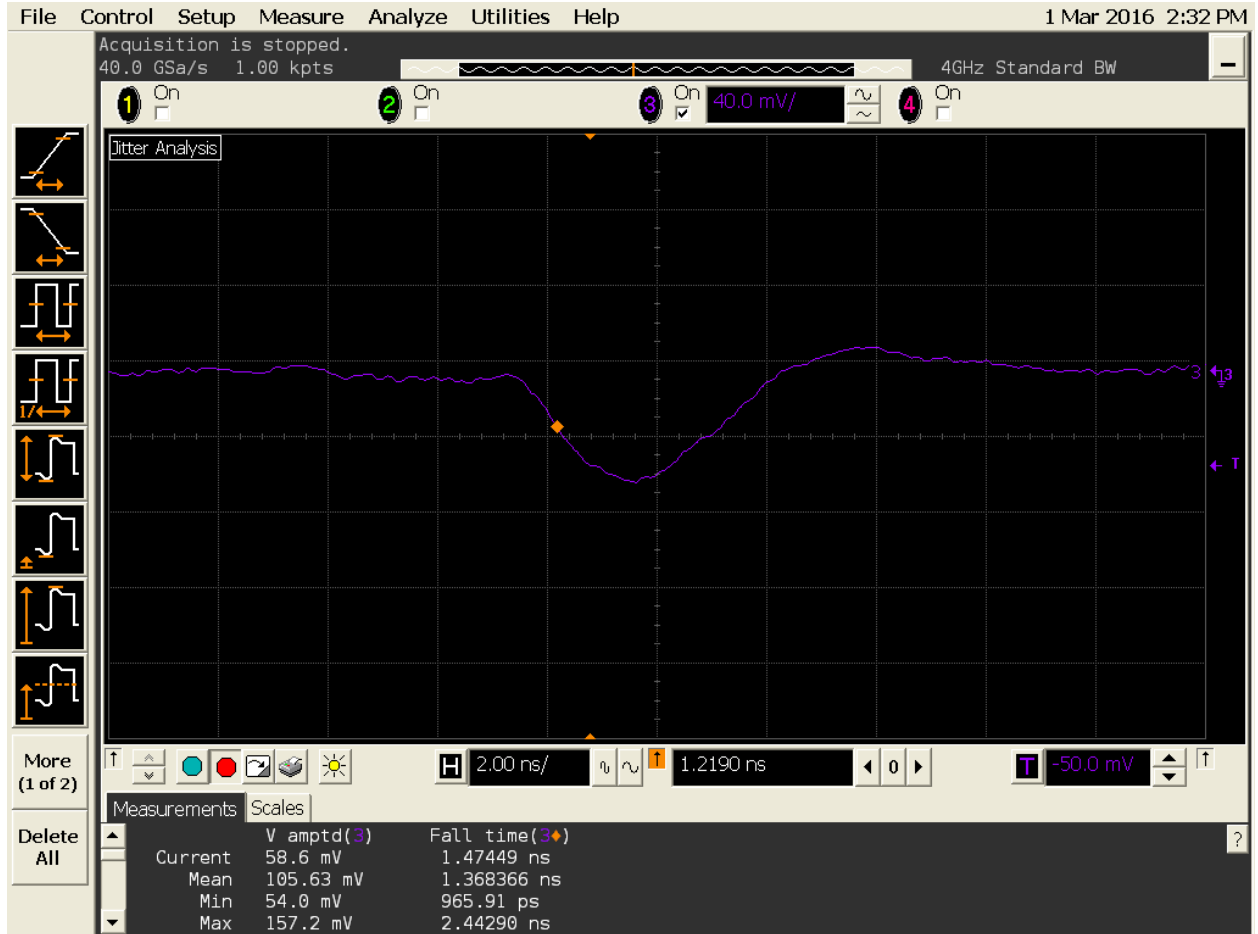


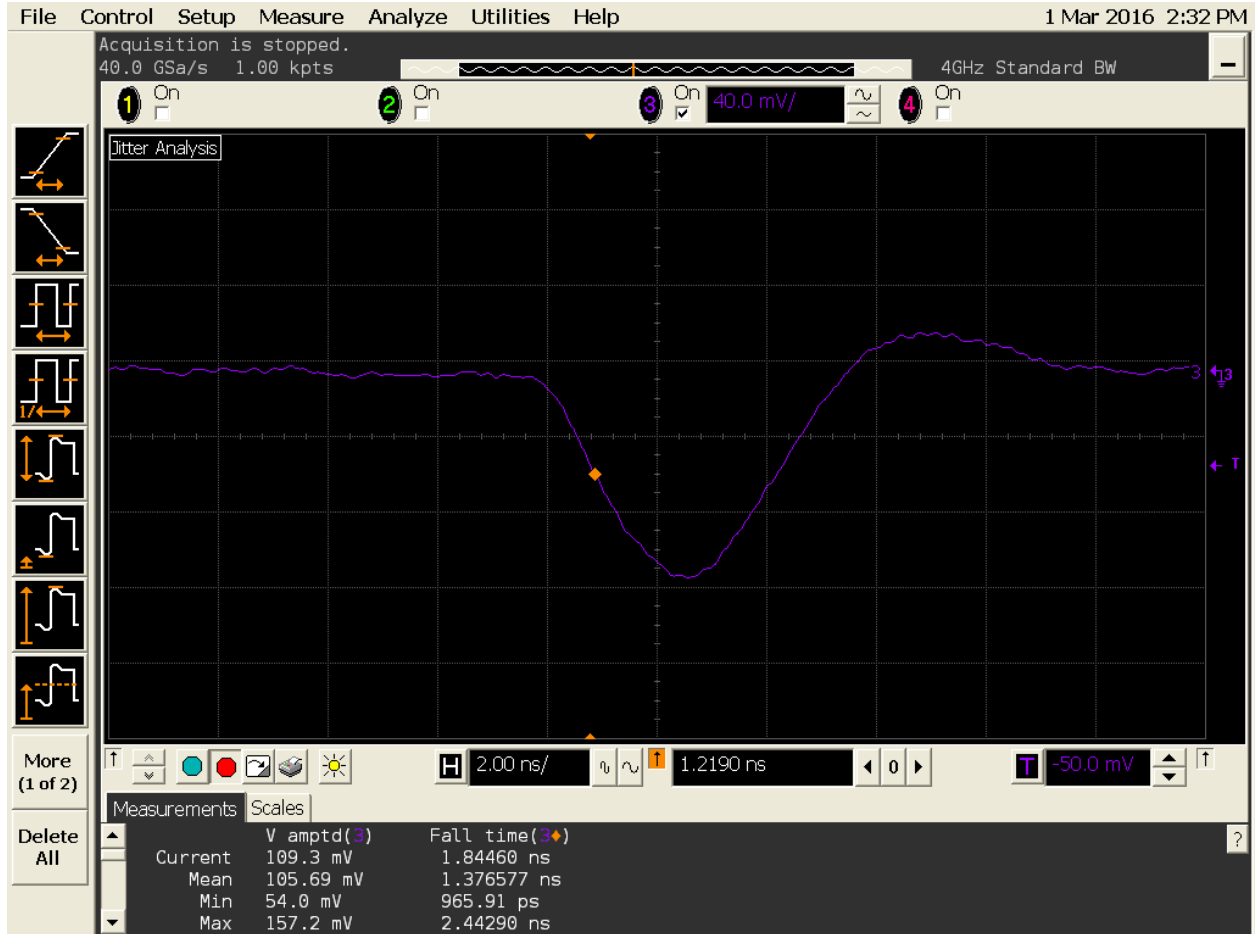


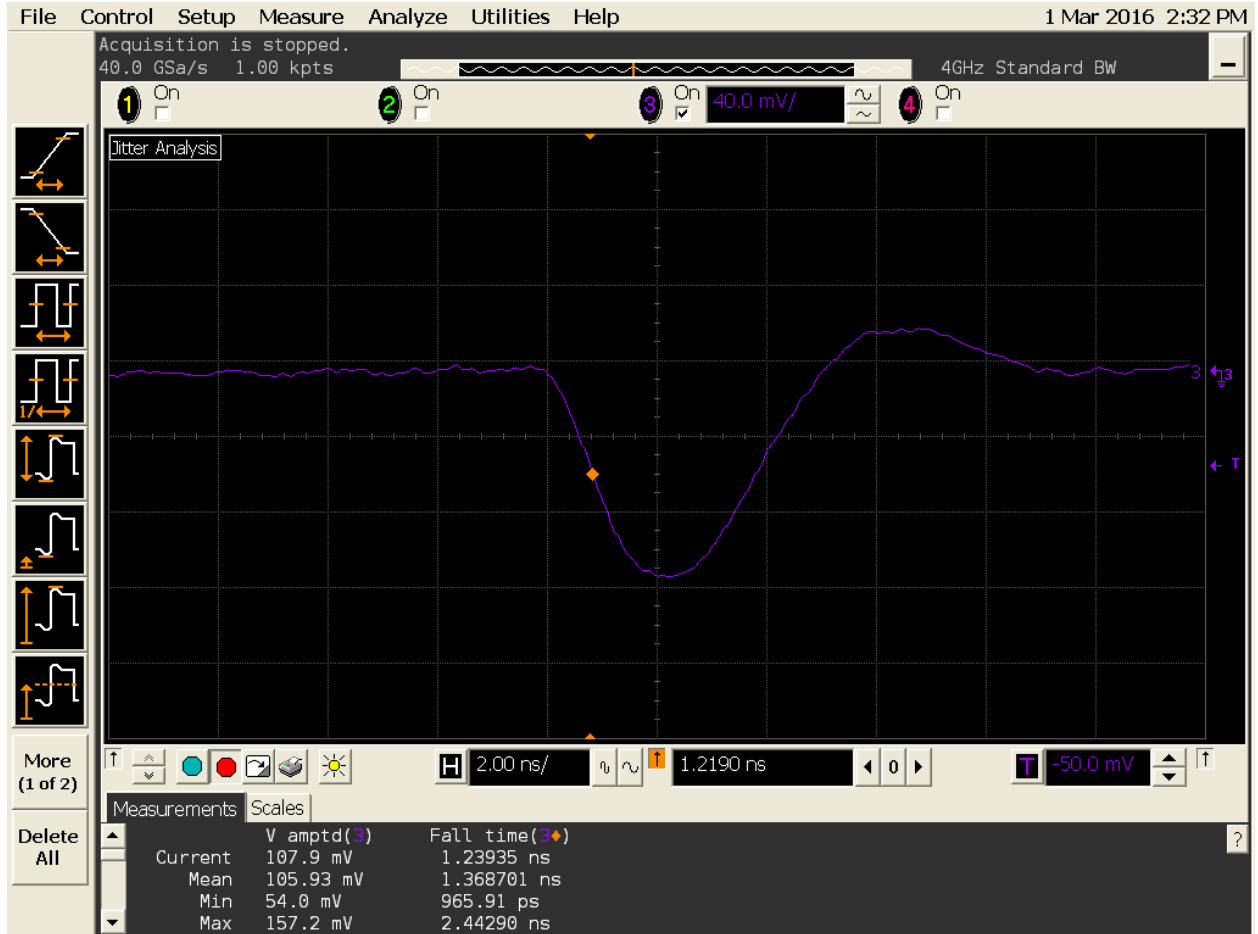


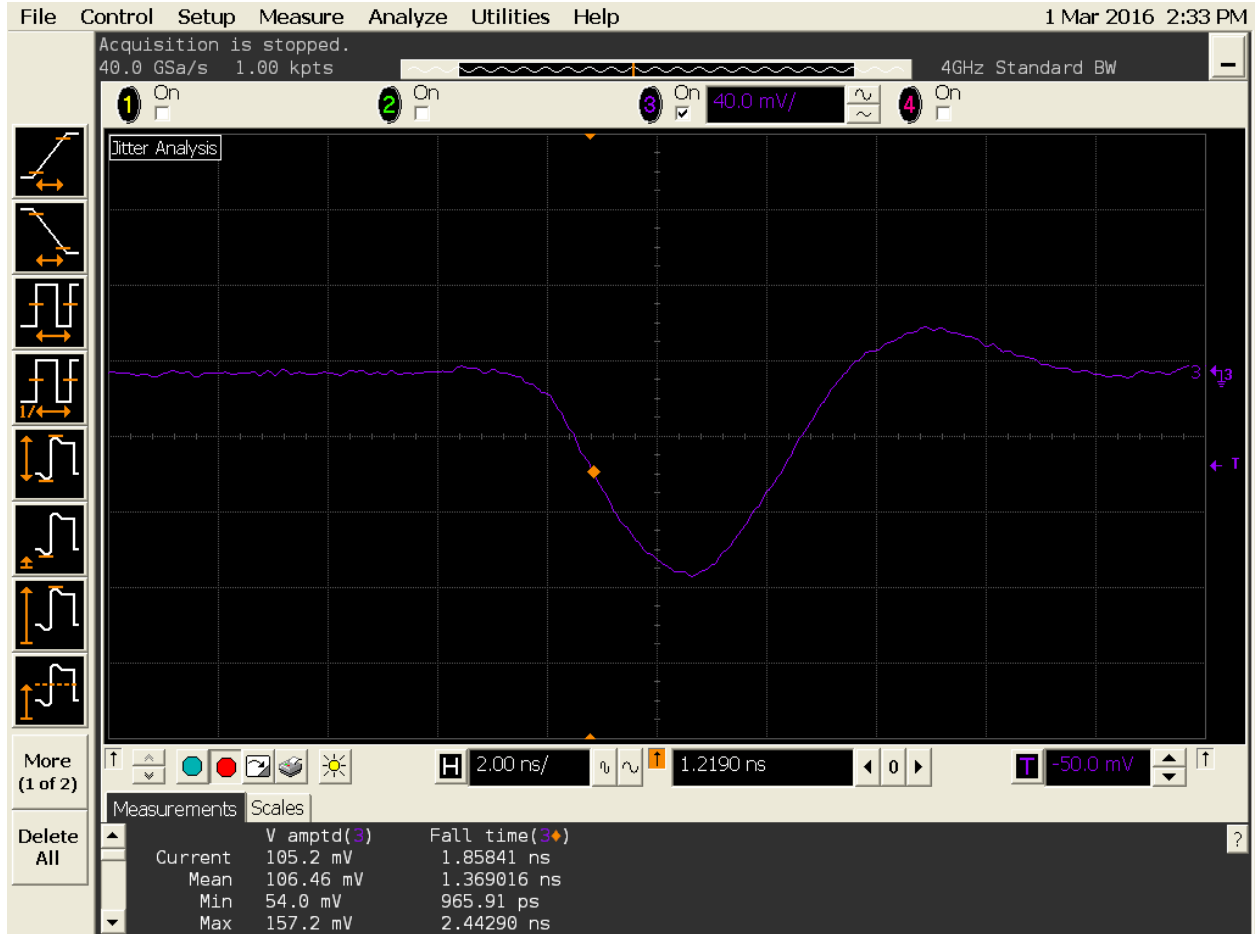


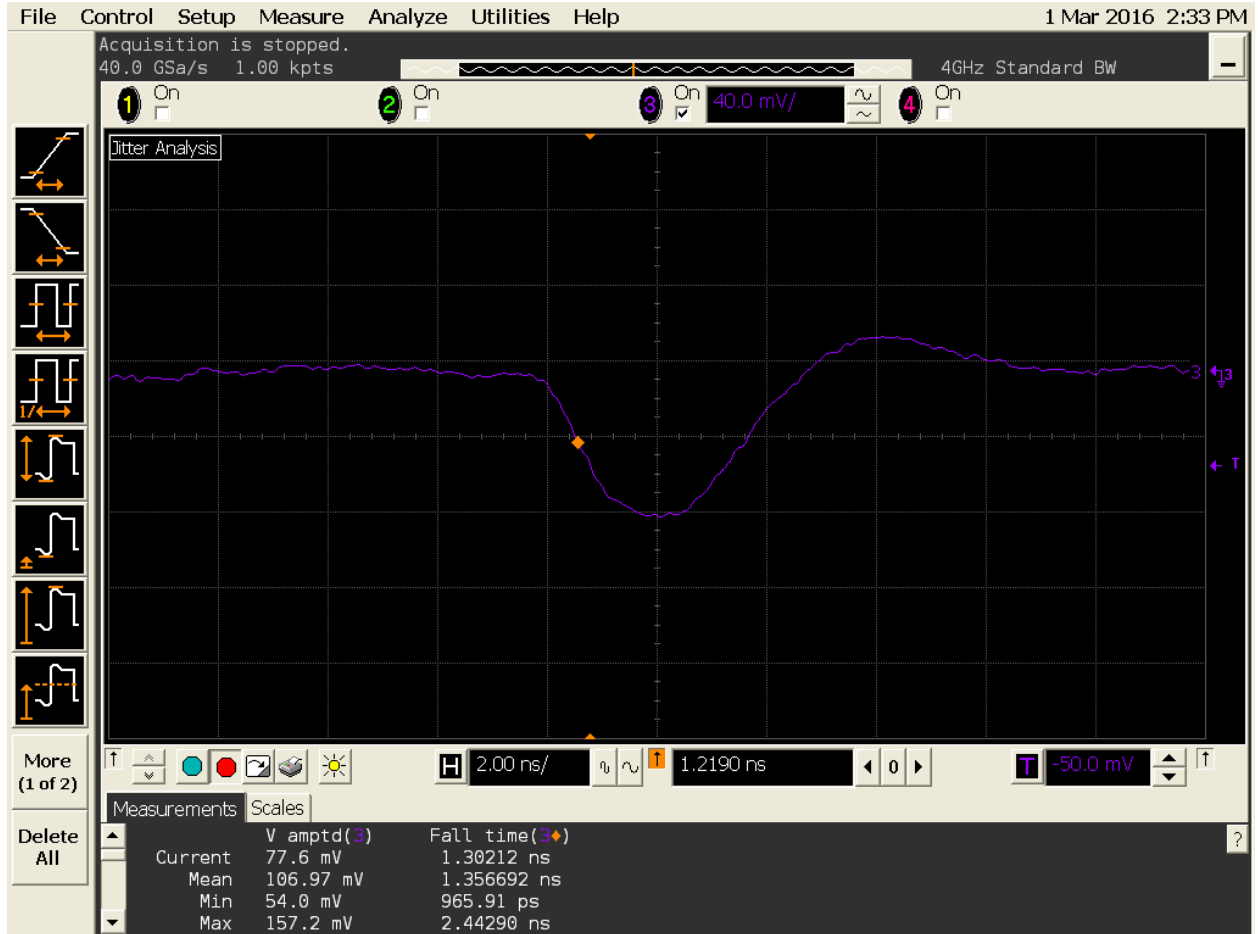


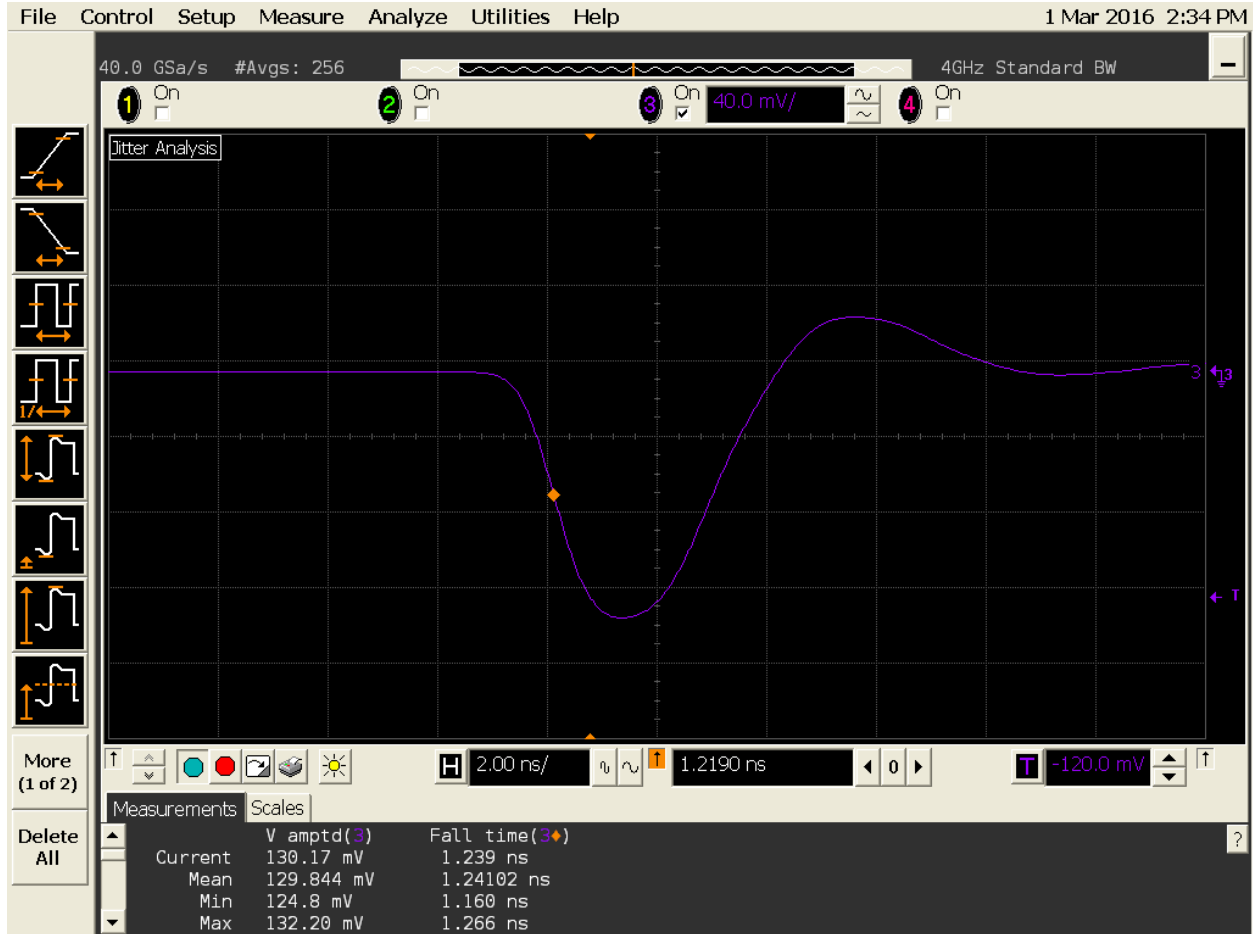




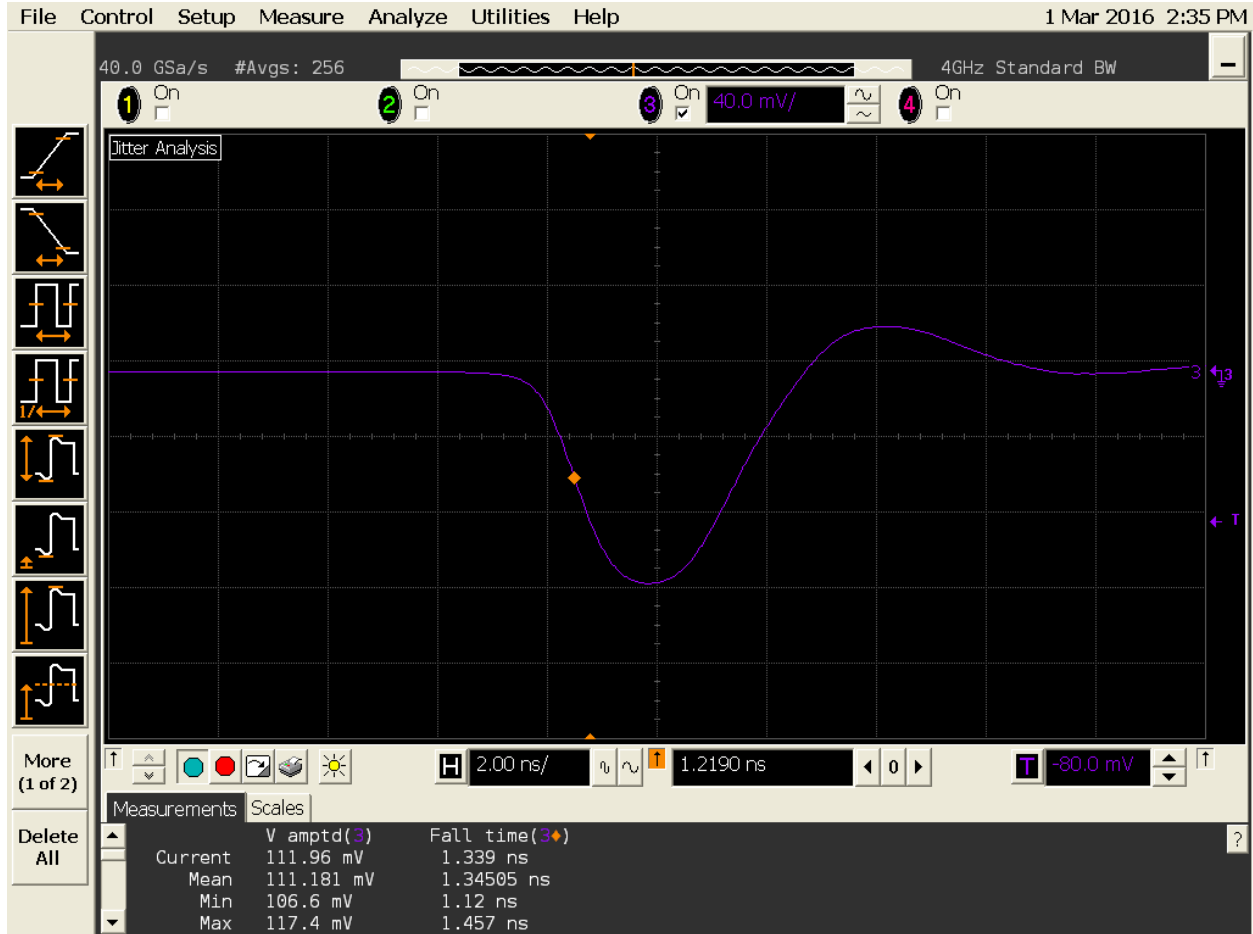




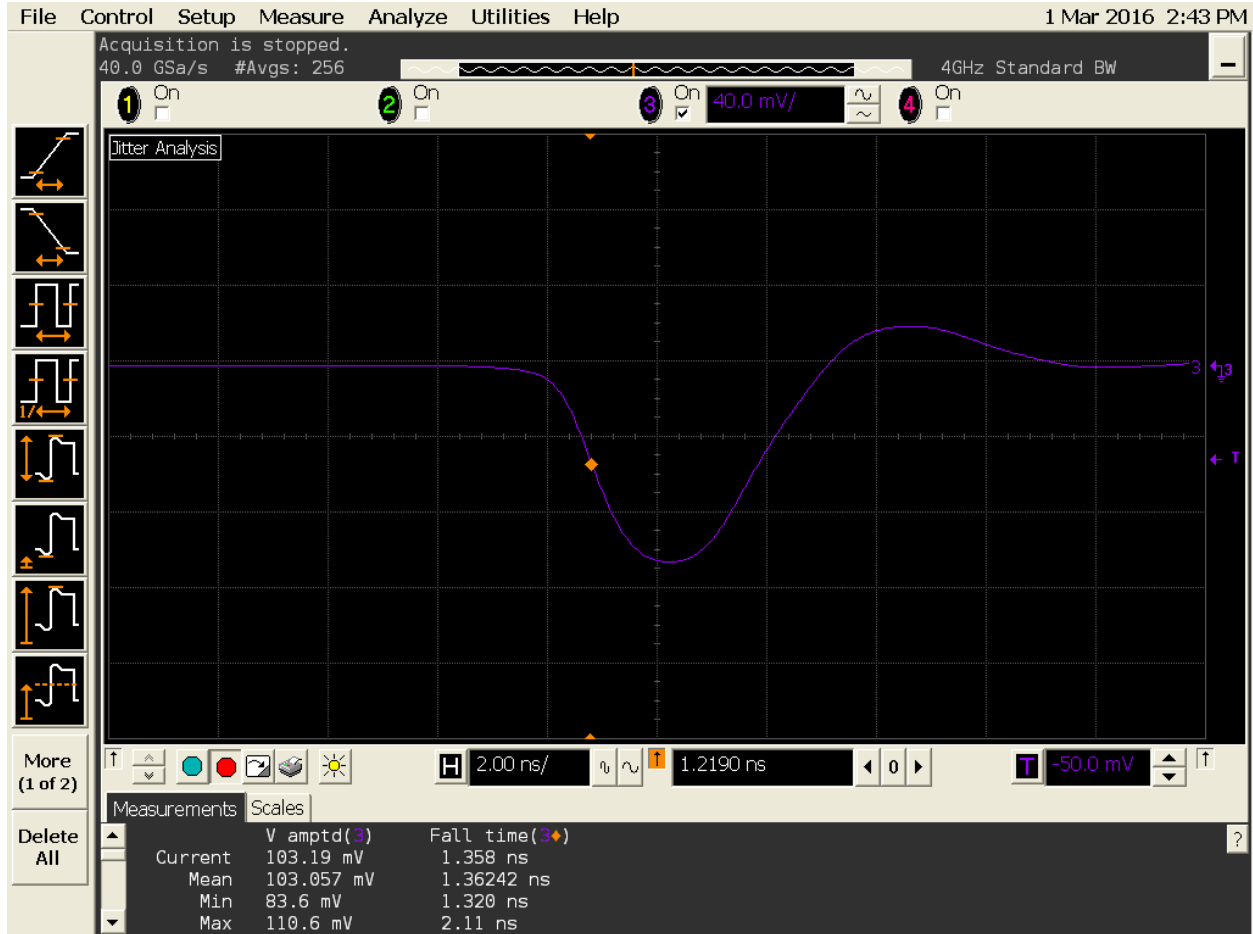




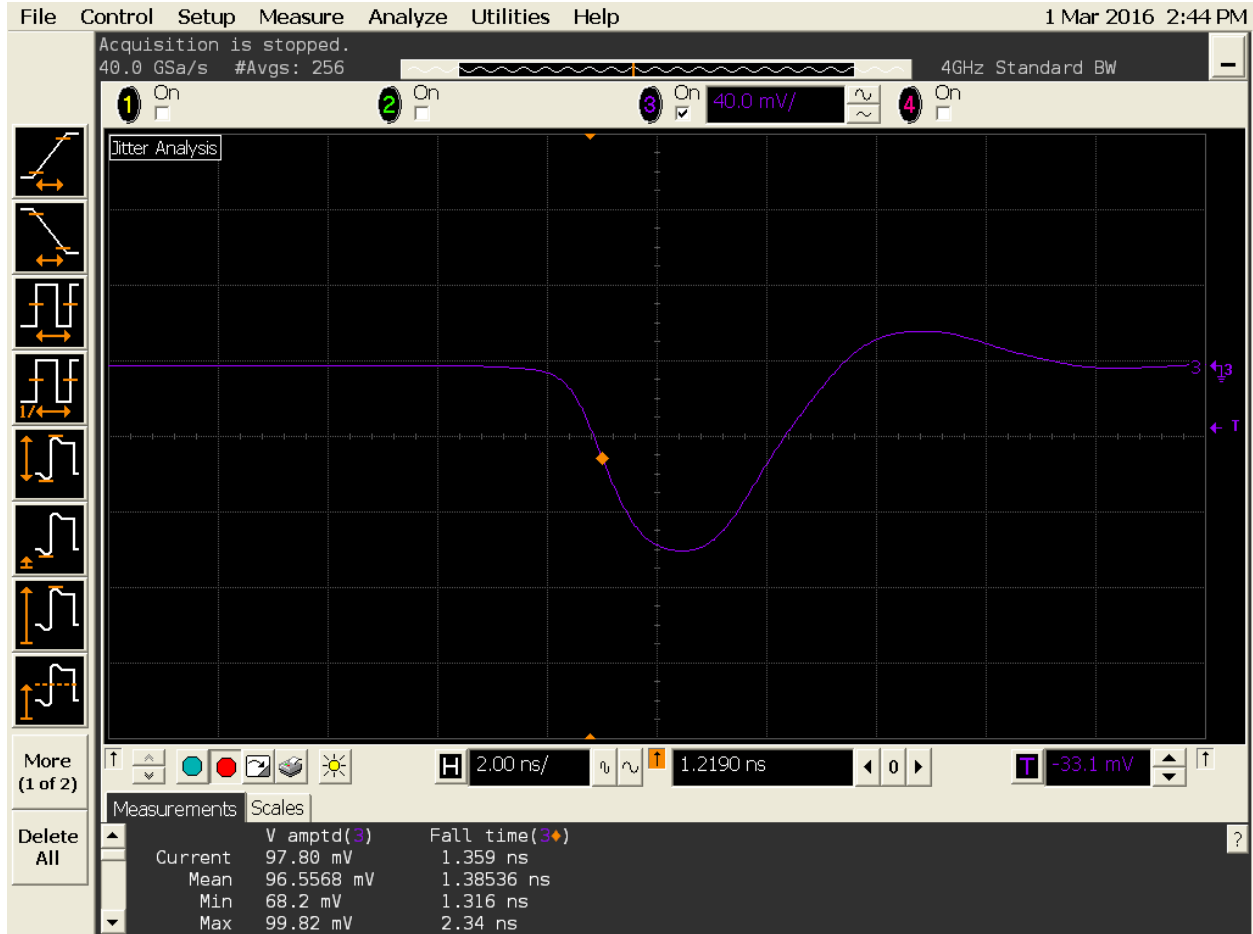
Average



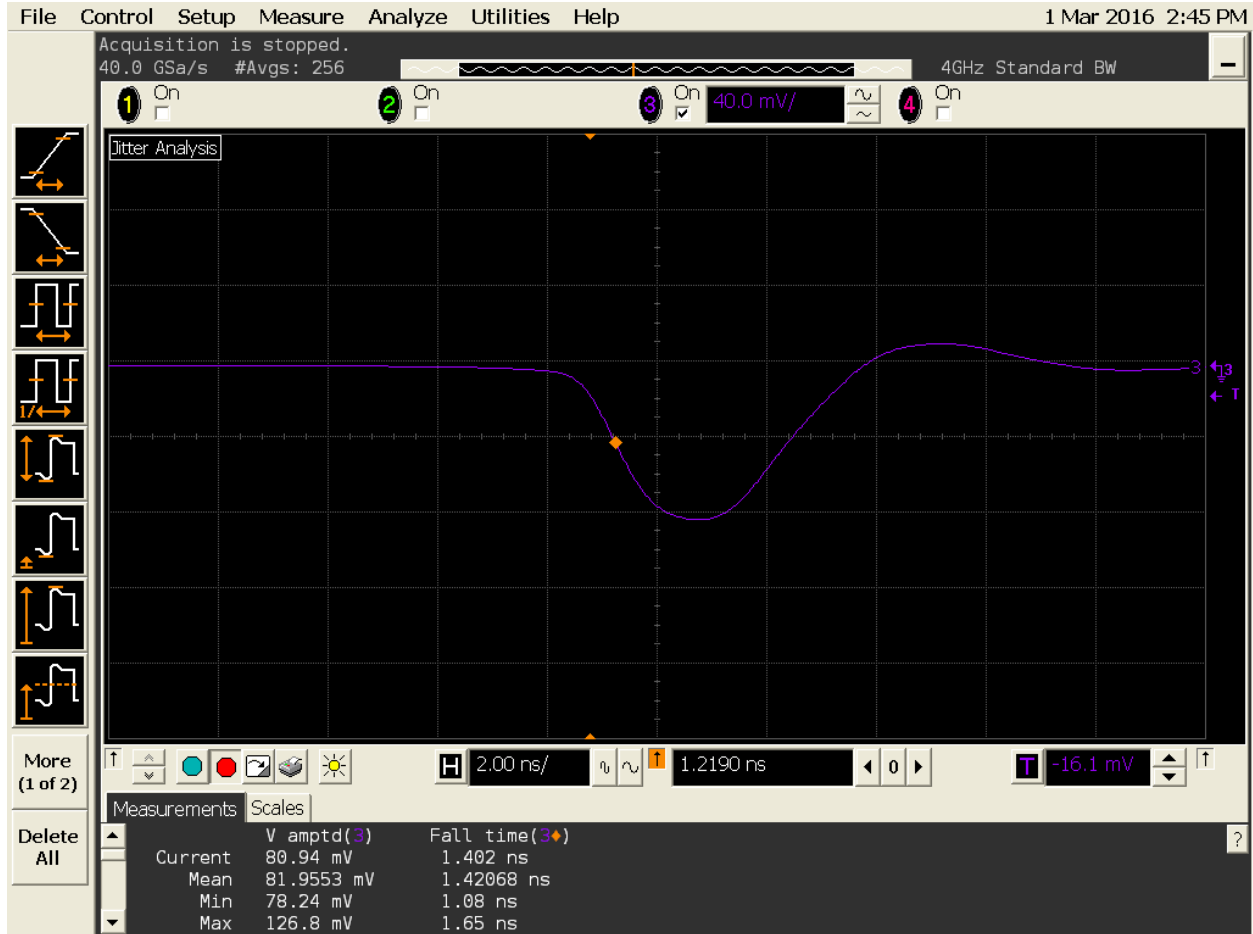
Average



Average



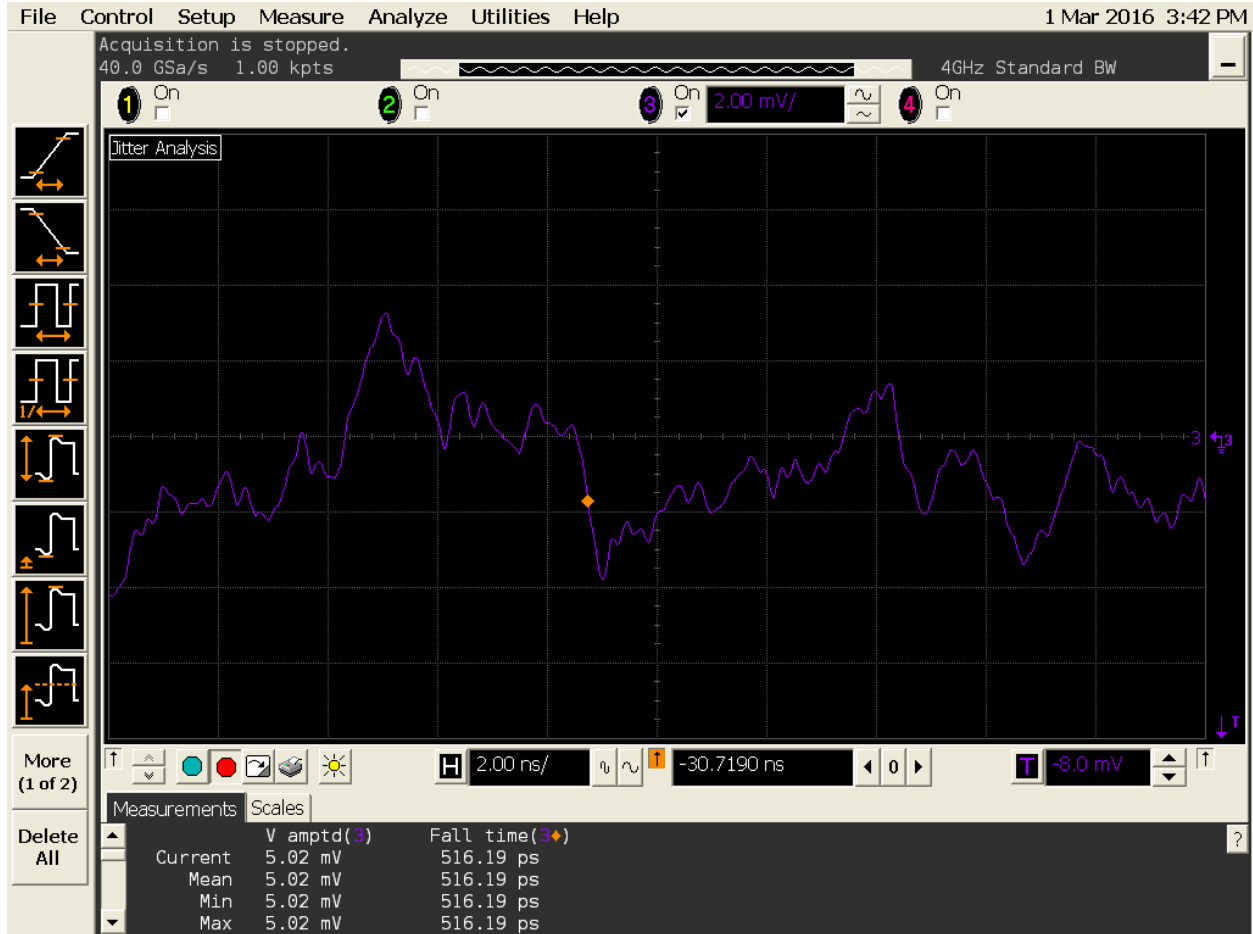
Average



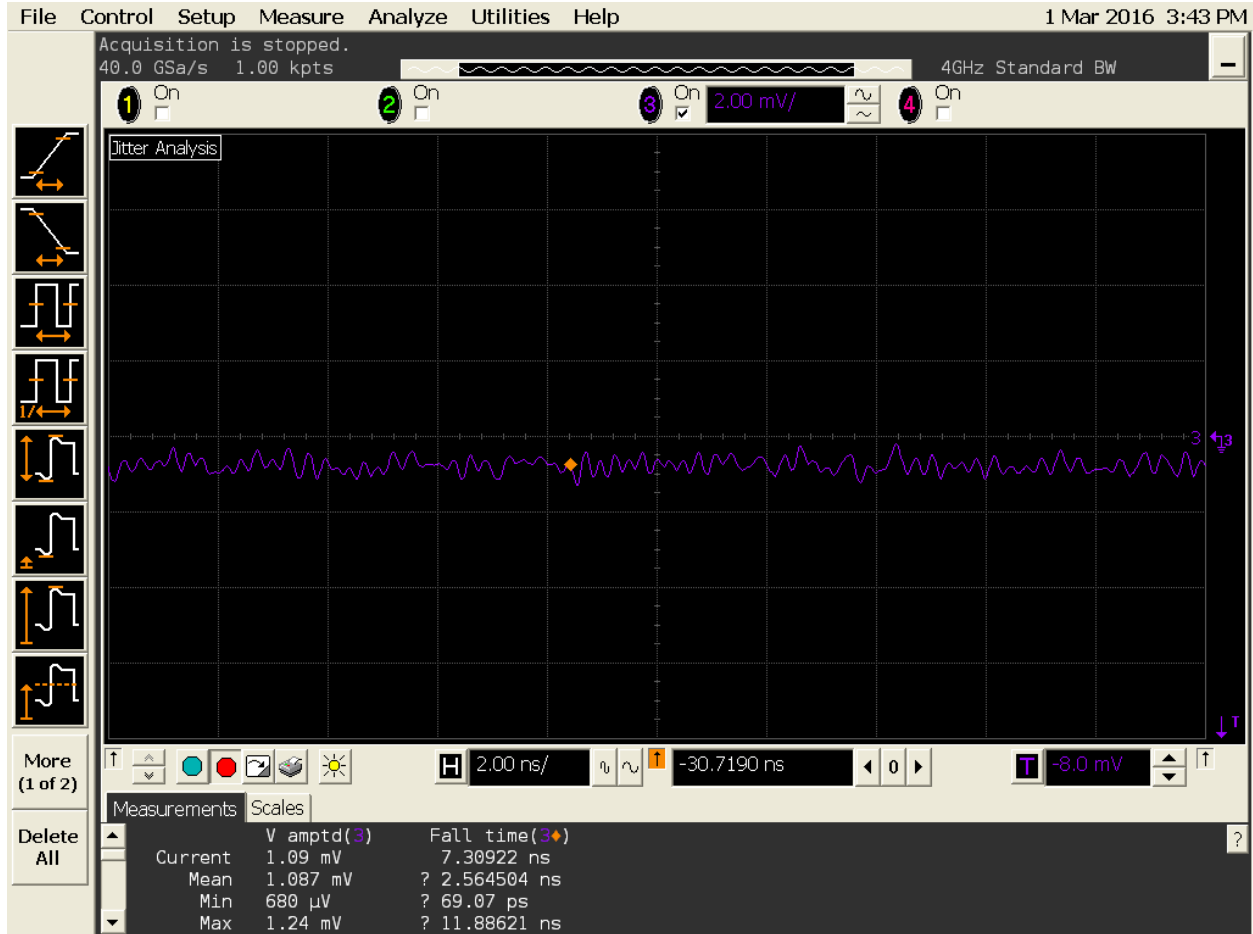
Average

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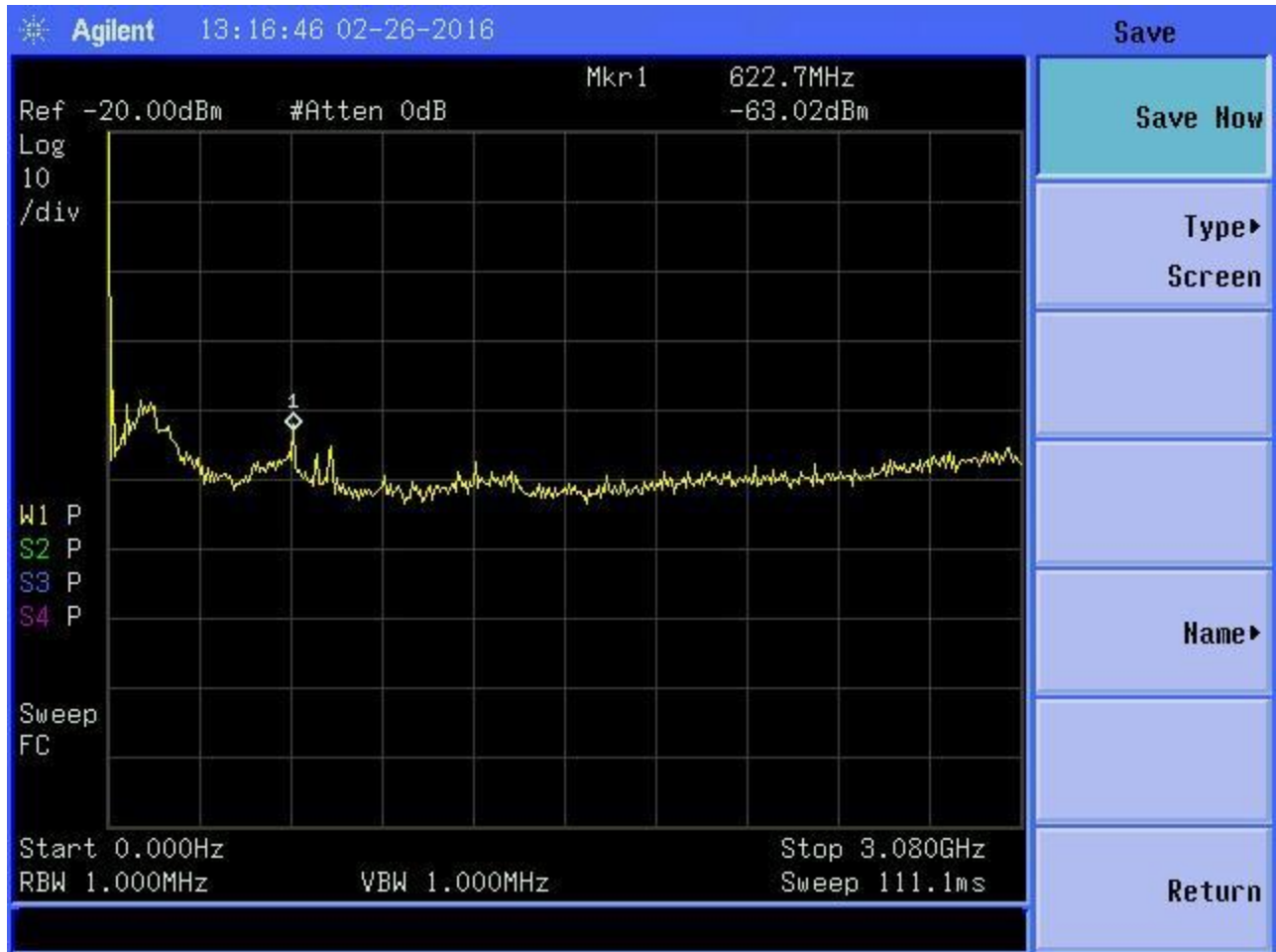
2mV / box.



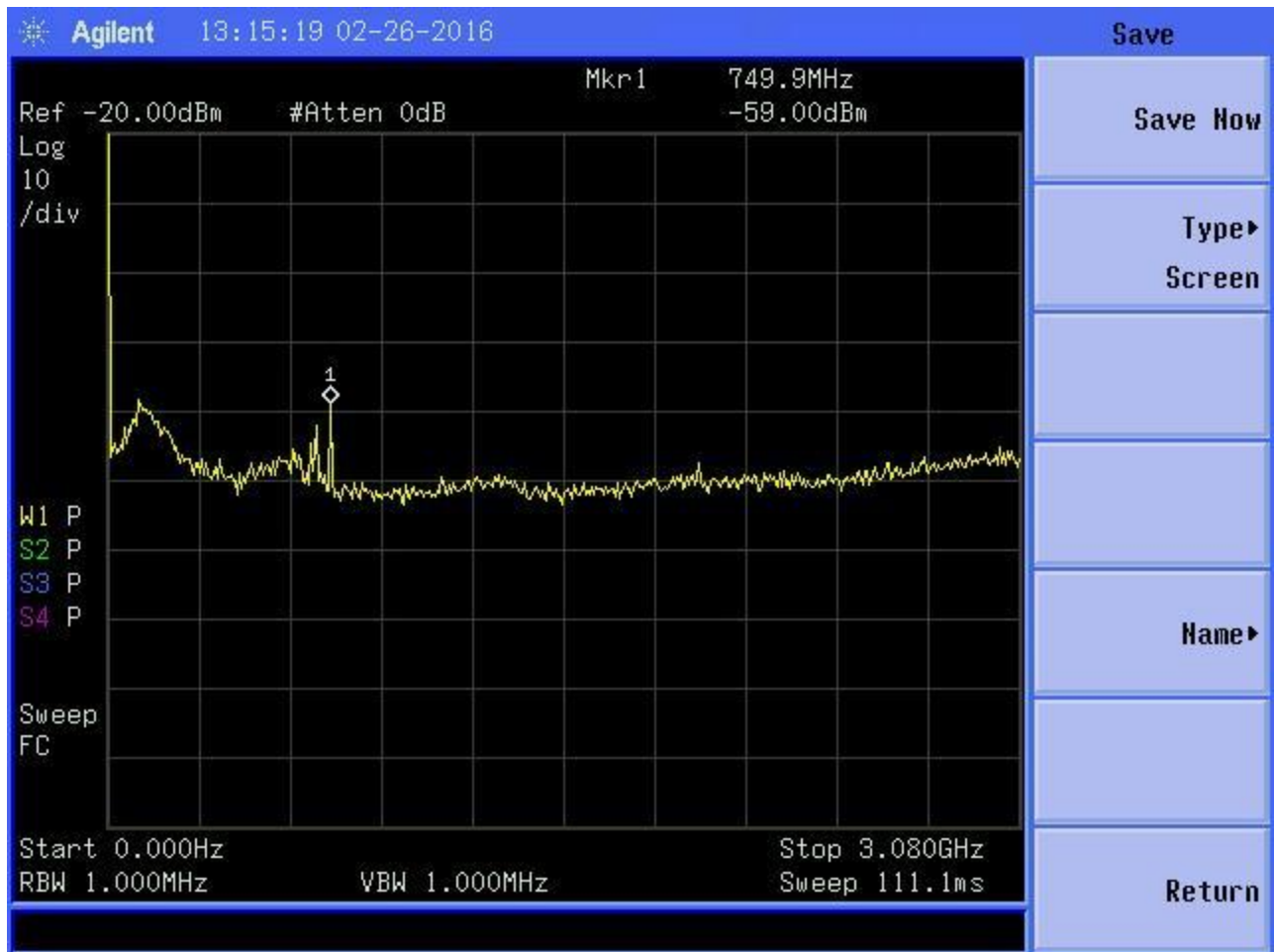
Amplifier noise



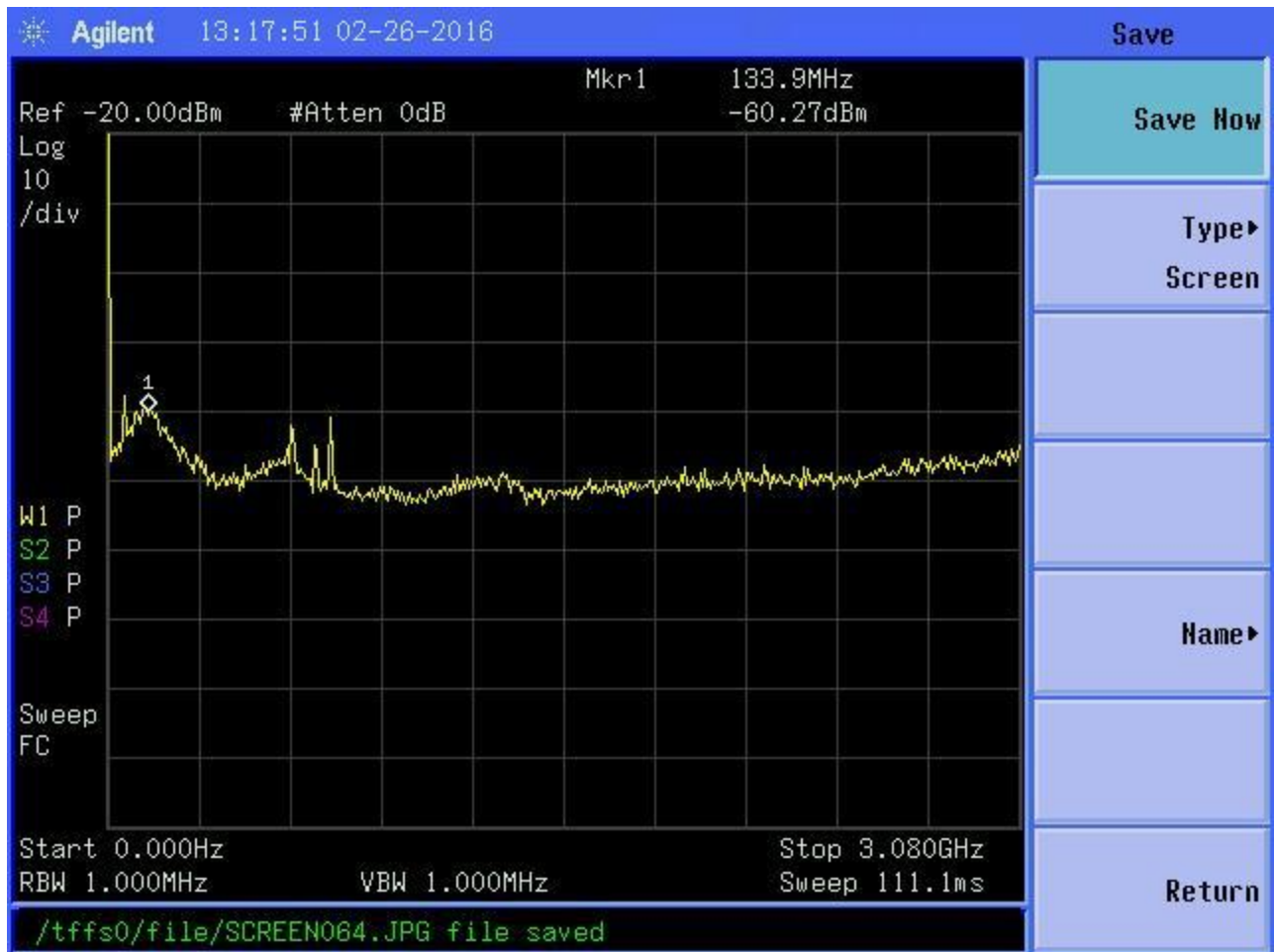
Scope noise



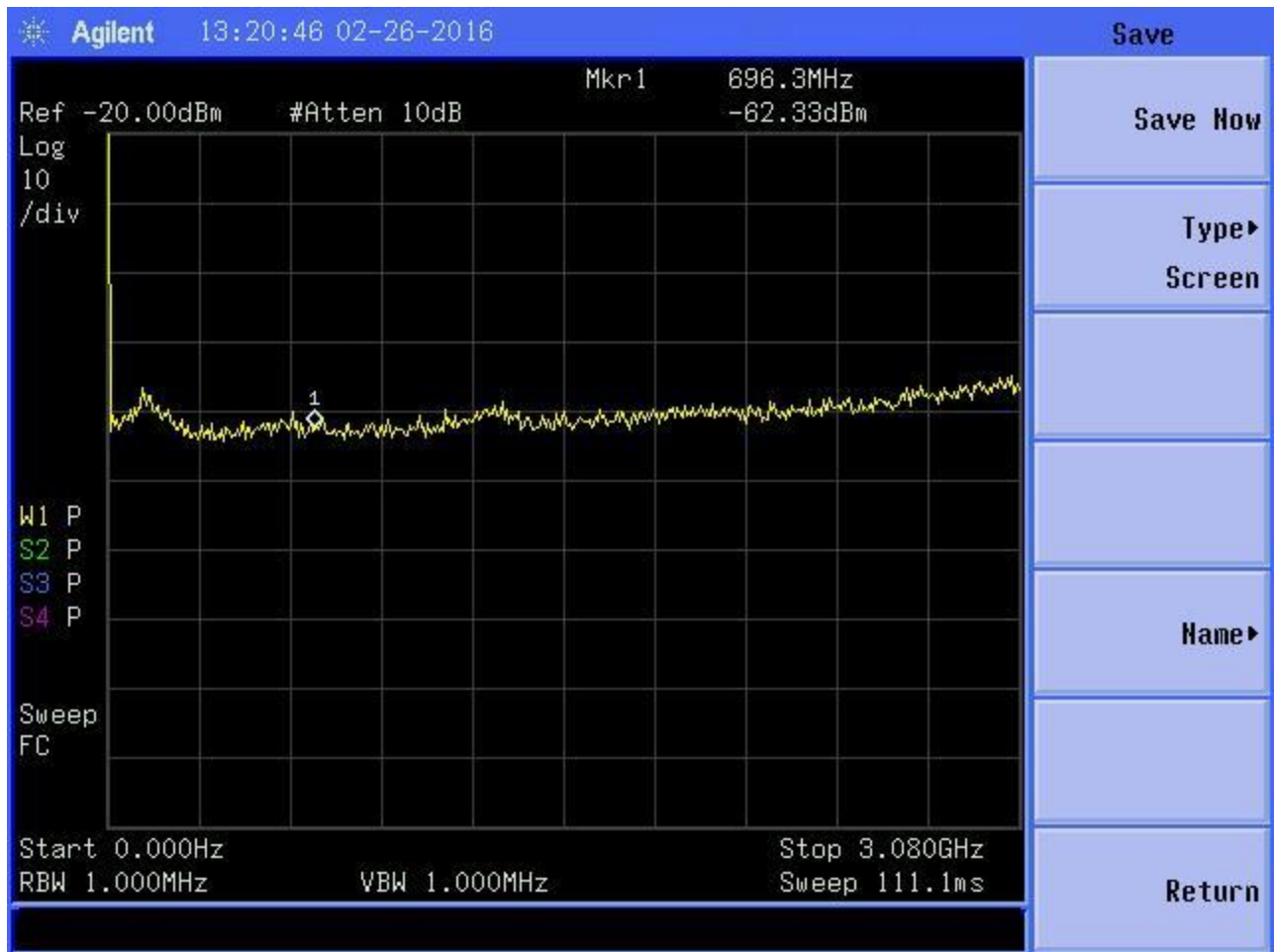
Spectrum analyzer with 0dB attenuation



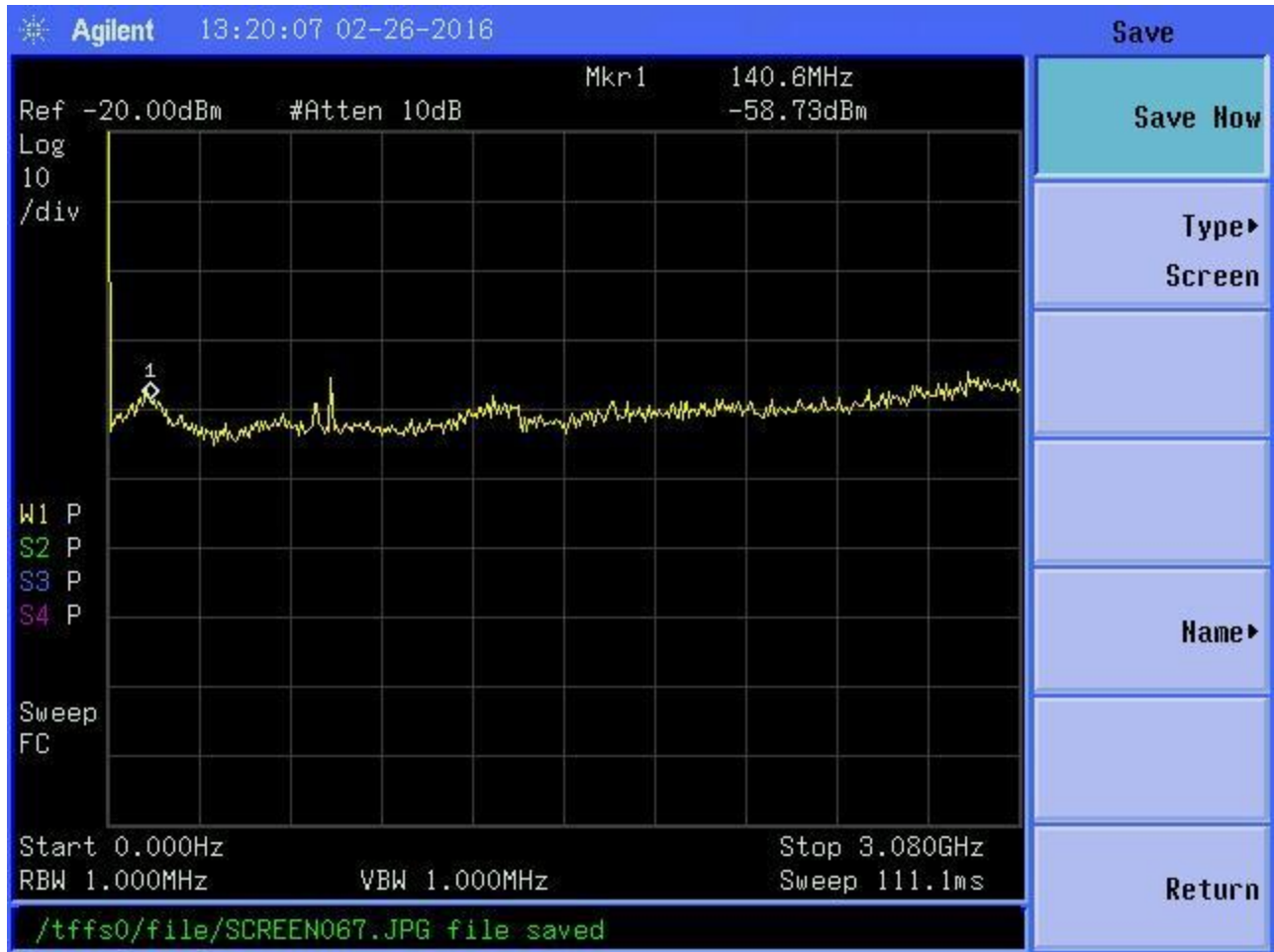
Spectrum analyzer with 0dB attenuation



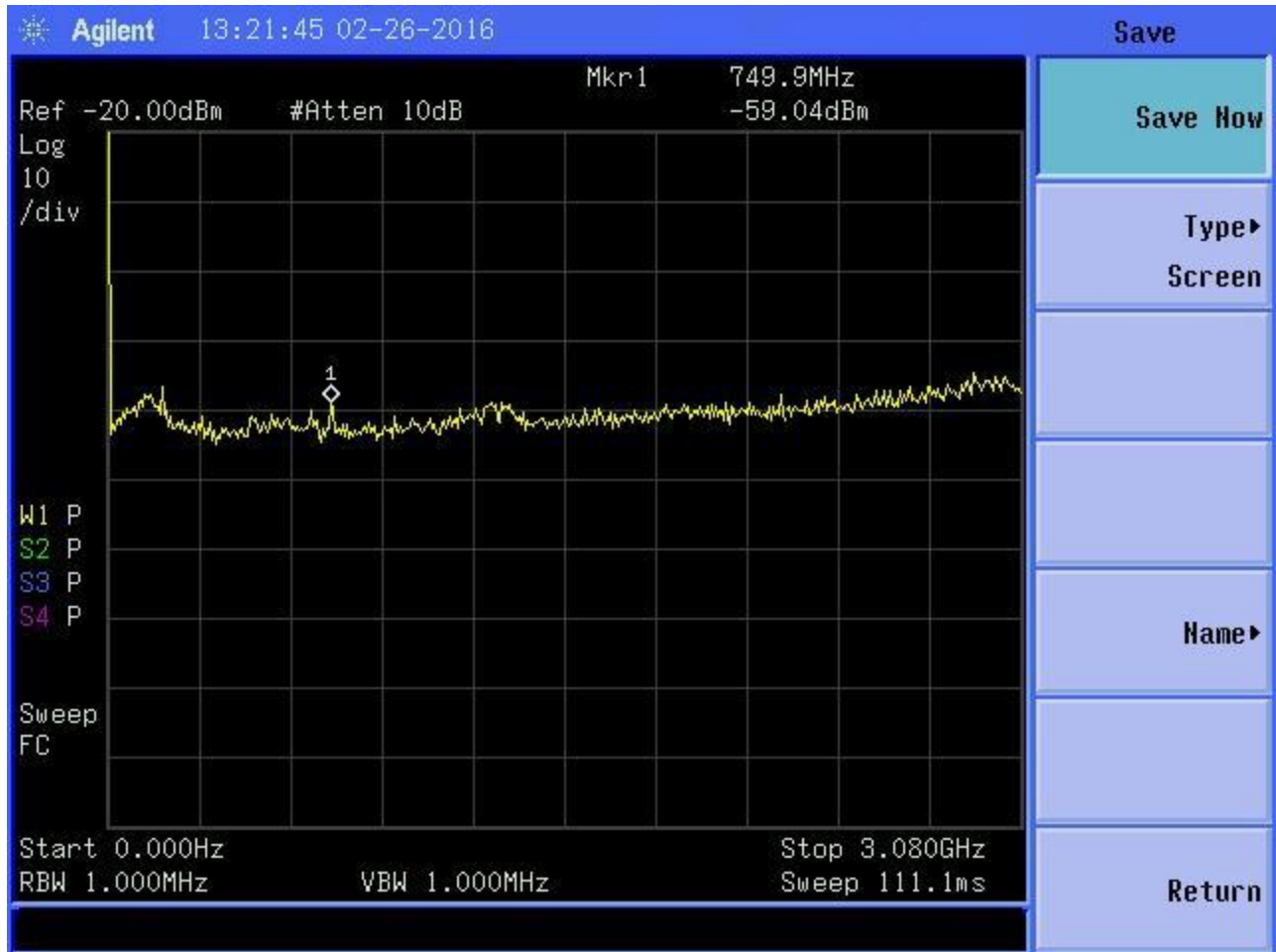
Spectrum analyzer with 0dB attenuation



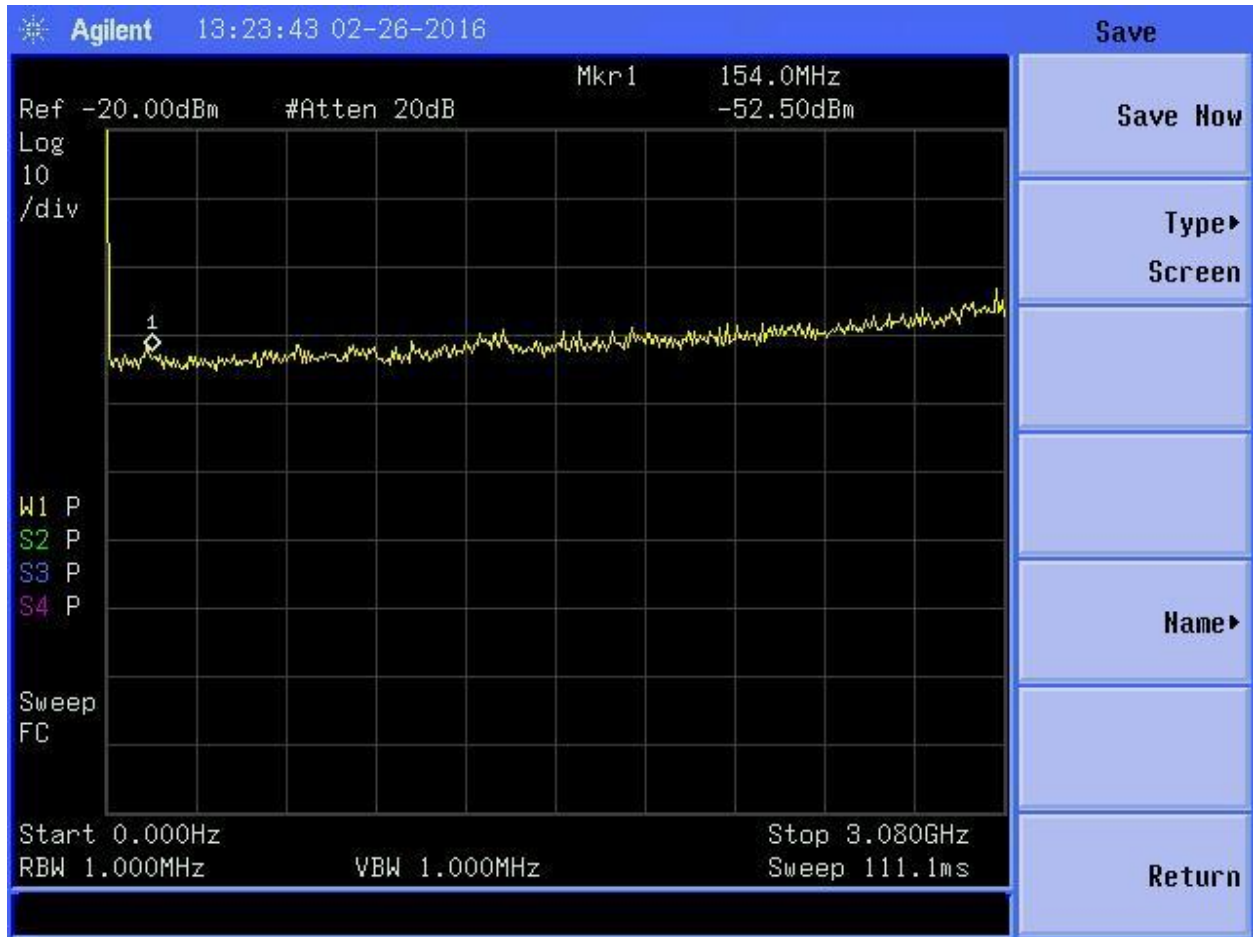
Spectrum analyzer with 10dB attenuation



Spectrum analyzer with 10dB attenuation



Spectrum analyzer with 10dB attenuation



Spectrum analyzer with 20dB attenuation