# Digital Storage Oscilloscope auto-measurements test

v1.1

Determines if scope makes auto-measurements based on main sample memory or secondary buffer.
Buffer size and auto-measurements accuracy across timebases can be deduced from test data. Test idea by MrWolf@EEVblog forum.

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| Test conducted by: | MrW0lf |
| Date: | 02/25/2016 |

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|---|---|
| Oscilloscope under test: | Digilent Analog Discovery 2 |
| Production year: | 2016 |
| Calibration date: | 02/24/2017 selfcal |
| Vertical setting (V/div): | 400mV/div |
| Channels in use: | 1 |
| Channel coupling: | DC |
| Comments: | Config #2: 2x16k memory; Sample mode: 10x average; Stats count: waited >100 |

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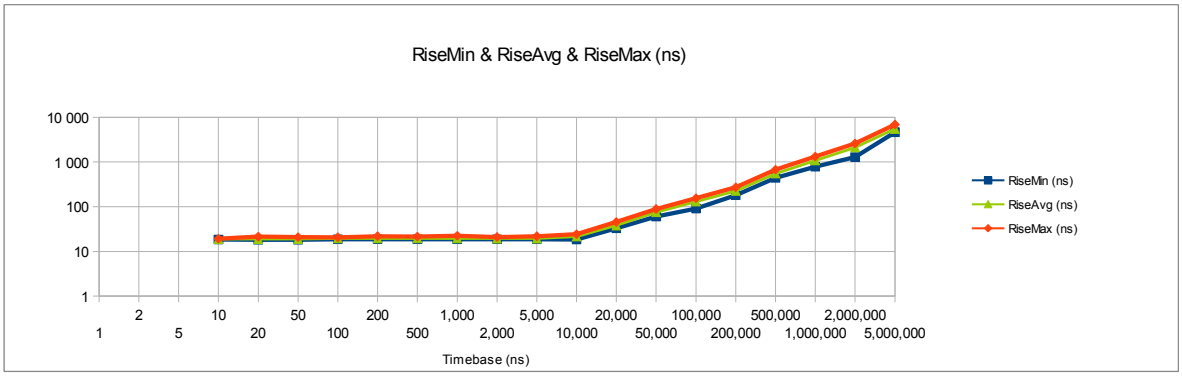
|---|---|
| Test waveform: | square wave, 50% duty |
| Frequency: | 32 768Hz |
| Risetime: | ~9ns |
| Jitter: | ~150ps RMS |
| Amplitude: | 3.3Vpp |
| Signal generator: | Siglent SDG2000X |
| Comments: | HiZ output |

| *horizontal setting* | *as reported by DSO* | *90%/10%* | *90%/10%* | *90%/10%* | | | |
|---|---|---|---|---|---|---|---|
| **Timebase (ns/div)** | **Sampling rate (MSa/s)** | **RiseMin (ns)** | **RiseAvg (ns)** | **RiseMax (ns)** | **PeriodMin (us)** | **PeriodAvg (us)** | **PeriodMax (us)** |
| **1** | | | | | | | |
| **2** | | | | | | | |
| **5** | | | | | | | |
| **10** | 100.000 | 18.387549041 | 18.842023321 | 19.274572852 | | | |
| **20** | 100.000 | 18.184275518 | 18.861663097 | 21.299960686 | | | |
| **50** | 100.000 | 18.100264416 | 18.845312502 | 20.768475833 | | | |
| **100** | 100.000 | 18.675368367 | 19.400902670 | 20.700790071 | | | |
| **200** | 100.000 | 18.705771099 | 19.393497699 | 21.839003755 | | | |
| **500** | 100.000 | 18.597645577 | 19.391786477 | 21.434618385 | | | |
| **1 000** | 100.000 | 18.686812357 | 19.419212037 | 22.265985968 | | | |
| **2 000** | 100.000 | 18.645315893 | 19.329595419 | 20.958095605 | | | |
| **5 000** | 100.000 | 18.680272916 | 19.377545202 | 21.876744015 | 30.516237925 | 30.516492940 | 30.516869686 |
| **10 000** | 100.000 | 18.368957288 | 21.443195301 | 24.317102452 | 30.516205991 | 30.517038301 | 30.517548811 |
| **20 000** | 50.000 | 32.693304882 | 37.903810800 | 45.360062415 | 30.515615794 | 30.517022132 | 30.517949277 |
| **50 000** | 25.000 | 60.248935502 | 75.044136880 | 88.648323855 | 30.515428607 | 30.517186853 | 30.518076700 |
| **100 000** | 14.286 | 91.058785278 | 128.947281284 | 155.029808084 | 30.515061060 | 30.517243553 | 30.518265224 |
| **200 000** | 7.692 | 179.659435360 | 225.885826273 | 273.121404442 | 30.501412950 | 30.517279606 | 30.527687819 |
| **500 000** | 3.125 | 439.780110069 | 549.261349748 | 670.497555030 | 30.482198792 | 30.517251818 | 30.560262235 |
| **1 000 000** | 1.587 | 783.344681063 | 1 075.435723000 | 1 324.226490000 | 30.437422198 | 30.517003010 | 30.603561935 |
| **2 000 000** | 0.800 | 1 278.610453000 | 2 105.927408000 | 2 591.732560000 | 30.359825343 | 30.517127312 | 30.693617779 |
| **5 000 000** | 0.320 | 4 640.020641000 | 5 479.619534000 | 6 873.648950000 | 30.195757477 | 30.517258693 | 30.734202522 |

*Switch chart vertical axis to log scale if values differ by orders of magnitude*




*Switch chart vertical axis to log scale if values differ by orders of magnitude*