

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.

Equipment must be warmed up (30 min). Stats must be reset when changing ranges. Averaging (if applied) must not affect Min/Max.

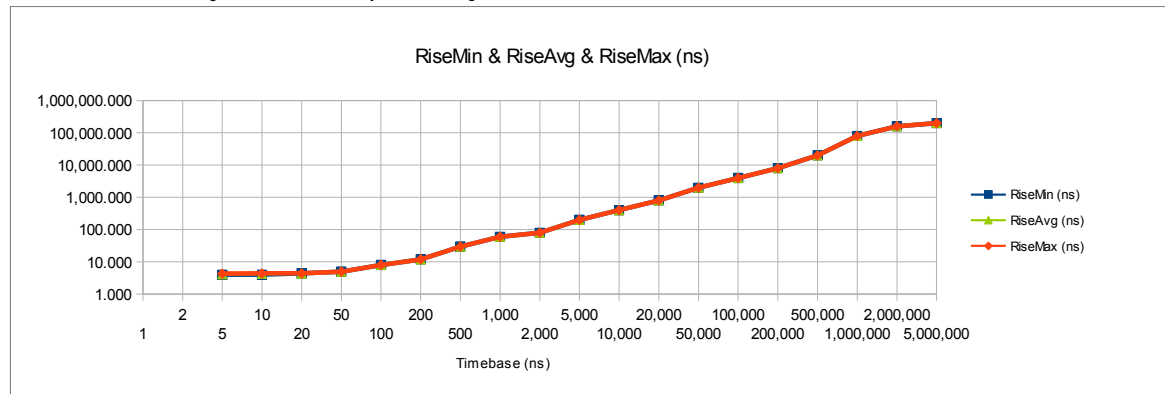
Test conducted by: MrWolf@EEVblog
Date: Dec 18, 2016

Oscilloscope under test: Rigol DS1000Z
Production year: 2016
Calibration date: self-cal after firmware update
Hardware version: 0.1.4
Firmware version etc: 00.04.04.SP1
Vertical setting (V/div): 1V/div (8Vpp)
Channels in use: 1
Channel coupling: AC
Comments: used supplied 10X probe with spring ground attachment, probe was compensated before test

Test waveform: square wave, 50% duty
Frequency: 32771Hz
Risettime: <5ns
Jitter: same as Arduino clock
Amplitude: 5VDC
Signal generator: Arduino Uno R3
Comments: Signal gen program supplied in thread: <http://www.eevblog.com/forum/testgear/testing-dso-auto-measurements-accuracy-across-timebases/>

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	1,000	4,000	4,159	4,300			
10	1,000	4,000	4,275	4,400			
20	1,000	4,400	4,400	4,400			
50	1,000	5,000	5,000	5,000			
100	1,000	8,000	8,000	8,000			
200	1,000	12,000	12,000	12,000			
500	1,000	30,000	30,000	30,000			
1,000	1,000	60,000	60,000	60,000			
2,000	1,000	80,000	80,000	80,000			
5,000	1,000	200,000	200,000	200,000	30.5	30.5	30.5
10,000	1,000	400,000	400,000	400,000	30.6	30.6	30.6
20,000	1,000	800,000	800,000	800,000	30.4	30.4	30.4
50,000	1,000	2,000,000	2,000,000	2,000,000	31.0	31.0	31.0
100,000	1,000	4,000,000	4,000,000	4,000,000	30.0	30.0	30.0
200,000	1,000	8,000,000	8,000,000	8,000,000	32.0	32.0	32.0
500,000	1,000	20,000,000	20,000,000	20,000,000	30.0	30.0	30.0
1,000,000	500	80,000,000	80,000,000	80,000,000	40.0	40.0	40.0
2,000,000	250	160,000,000	160,000,000	160,000,000	120.0	120.0	120.0
5,000,000	125	200,000,000	200,000,000	200,000,000	400.0	400.0	400.0

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

