

# Digital Storage Oscilloscope auto-measurements test

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 forum  
Date: Dec 14, 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  
Range tested: 0.2V/div (1.6Vpp)  
Channels in use: 1  
CH coupling: AC  
Comments: 1024x averaging used, after range change always pressed [CLEAR] (stats somewhat corrupt otherwise)

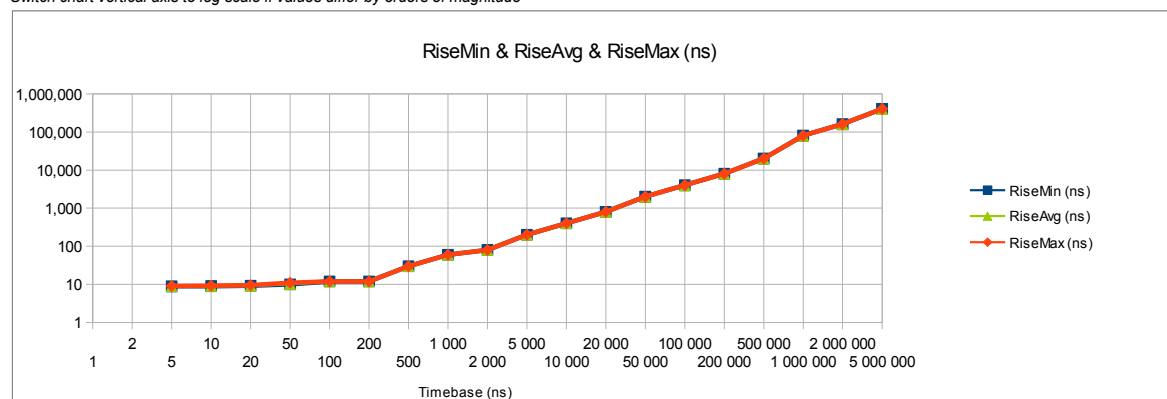
Test waveform: square wave, 50% duty  
Risetime: <= 10ns  
Jitter: <= 1ns  
Amplitude: 1Vpp  
Signal generator: Siglent SDG2000X  
Comments: 50ohm system

on some scopes switching on multiple channels can affect sampling rates

signal amplitude should be at least 50% of the range tested

Timebase (ns)	Memory MS/s	90%/10%			PeriodMin (us)	PeriodAvg (us)	PeriodMax (us)
		RiseMin (ns)	RiseAvg (ns)	RiseMax (ns)			
1							
2							
5	1,000	8.900	9.002	9.100			
10	1,000	9.000	9.167	9.200			
20	1,000	9.200	9.250	9.600			
50	1,000	10.000	10.270	11.000			
100	1,000	12.000	12.000	12.000			
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	30.500	30.500	30.500
10,000	1,000	400.000	400.000	400.000	30.600	30.600	30.600
20,000	1,000	800.000	800.000	800.000	30.400	30.400	30.400
50,000	1,000	2,000.000	2,000.000	2,000.000	31.000	31.000	31.000
100,000	1,000	4,000.000	4,000.000	4,000.000	30.000	30.000	30.000
200,000	1,000	8,000.000	8,000.000	8,000.000	32.000	32.000	32.000
500,000	1,000	20,000.000	20,000.000	20,000.000	30.000	30.000	30.000
1,000,000	500	80,000.000	80,000.000	80,000.000	40.000	40.000	40.000
2,000,000	250	160,000.000	160,000.000	160,000.000	120.000	120.000	120.000
5,000,000	125	400,000.000	400,000.000	400,000.000	300.000	300.000	300.000

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

