

Digital Storage Oscilloscope dual frequency auto-measurements test

V1
Determines scope horizontal auto-measurements (frequency, period) accuracy with two different frequency signals on same timebase.
Test idea by MrWolf@EEVblog forum.

Test conducted by:
Date:

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Oscilloscope under test:
Production year:
Calibration date:
Hardware version:
Firmware version etc:
Vertical setting:
Channels in use:
Channel coupling:
Horizontal setting:
Sampling rate:
Comments:

PicoScope 2205 MSO
2013
04/03/2013
1
1.3.3.0 / 0.2.39.0
200mV/div (2Vpp)
2
DC
20us/div
100MSa/s
1000x averaging used, stats reset after signal change

Test waveforms:
Frequency:
Risetime:
Jitter:
Amplitude:
Signal generator:
Comments:

square waves, 50% duty
6,660Hz...13,639,680Hz in 6,660*2^n steps
≤10ns
≤150ps rms
1Vpp
Siglent SDG2000X
50ohm system, frequency accuracy verified with hardware counter

from generator	reported by DSO	calculated	reported by DSO	from generator	reported by DSO	calculated	reported by DSO	
F-CH1-GEN (Hz)	F-CH1 (Hz)	Period CH1-GEN (ns)	Period CH1 (ns)	F-CH2-GEN (Hz)	F-CH2 (Hz)	Period CH2-GEN (ns)	Period CH2 (ns)	F-CH2 abs error %
6,660	6 660	150,150	150 100	6,660	6 660	150,150	150 100.00	0.0000
6,660	6 660	150,150	150 100	13,320	13 320	75,075	75 070.00	0.0000
6,660	6 660	150,150	150 100	26,640	26 640	37,538	37 540.00	0.0000
6,660	6 660	150,150	150 100	53,280	53 280	18,769	18 770.00	0.0000
6,660	6 660	150,150	150 100	106,560	106 600	9,384	9 384.00	0.0375
6,660	6 660	150,150	150 100	213,120	213 100	4,692	4 692.00	0.0094
6,660	6 660	150,150	150 100	426,240	426 200	2,346	2 346.00	0.0094
6,660	6 660	150,150	150 100	852,480	852 500	1,173	1 173.00	0.0023
6,660	6 660	150,150	150 100	1,704,960	1 705 000	587	586.50	0.0023
6,660	6 660	150,150	150 100	3,409,920	3 410 000	293	293.30	0.0023
6,660	6 660	150,150	150 100	6,819,840	6 820 000	147	146.60	0.0023
6,660	6 660	150,150	150 100	13,639,680	13 640 000	73	73.31	0.0023

