

I took some time this evening to examine the output characteristics of my newly acquired PCGU1000

This is a very impressive instrument!

Here are some numbers relative to the output frequency, amplitude, and THD...

Velleman PCGU1000 (s/n 200701142) Distortion (THD), Amplitude, and Frequency Analysis
 11/14/2008 by C.Knight

instrument settings		measured values				
Hz	RMS	Hz	Hz Δ % ¹	RMS	RMS Δ % ²	THD (%) ³
10	3.53	9.999844	-0.0016%	3.53	0.000%	0.0329%
20	3.53	19.99968	-0.0016%	3.55	0.567%	0.0771%
50	3.53	49.99920	-0.0016%	3.55	0.567%	0.0464%
100	3.53	99.99842	-0.0016%	3.55	0.567%	0.0328%
200	3.53	199.9968	-0.0016%	3.56	0.850%	0.0690%
500	3.53	499.9920	-0.0016%	3.56	0.850%	0.0423%
1000	3.53	999.9841	-0.0016%	3.55	0.567%	0.0301%
2000	3.53	1999.968	-0.0016%	3.55	0.567%	0.0546%
5000	3.53	4999.920	-0.0016%	3.54	0.283%	0.0531%
10000	3.53	9999.842	-0.0016%	3.53	0.000%	0.0450%
20000	3.53	19999.68	-0.0016%	3.54	0.283%	0.0472%
50000	3.53	49999.21	-0.0016%	3.56	0.850%	0.0755%
100000	3.53	99998.42	-0.0016%	3.62	2.550%	0.0797%

Instrumentation:

Tektronics DA 4084 Distortion Analyser (calibration verified 02/08/2008)

HP 5316A Counter (calibrated 06/09/2008 - NIST traceable)

Lecroy Wavejet 322 DSO (calibrated 5/14/2008)

HP 3581A Wave Analyser (calibrated 11/22/2007)

Software:

Microsoft XP Pro sp3

Velleman PC-Lab2000SE v3.08

(fine tuning = none)

Footnotes:

¹ - The frequency deviation is remarkable in that it clearly relates to the variance of the PCGU100's 50 mHz clock and the 10 mHz TCXO in the HP 5316A.

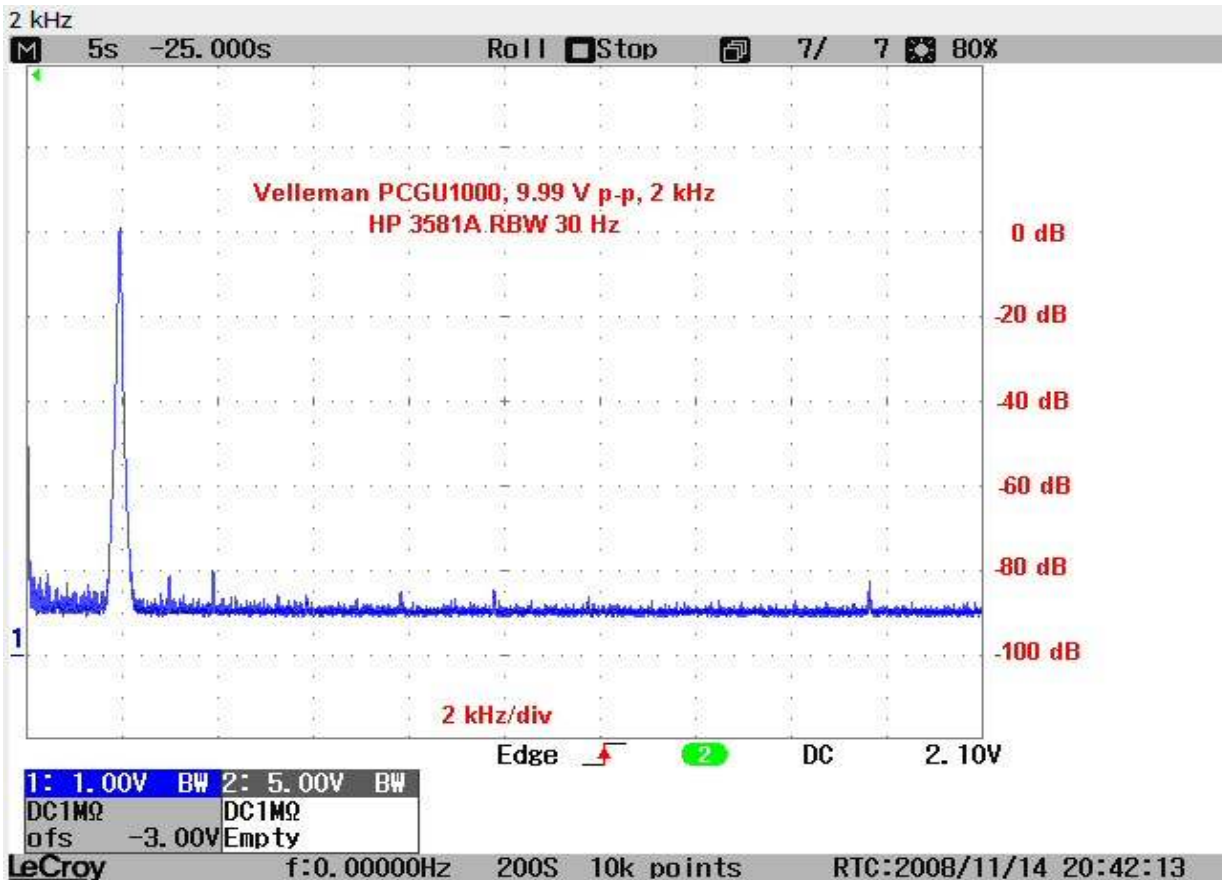
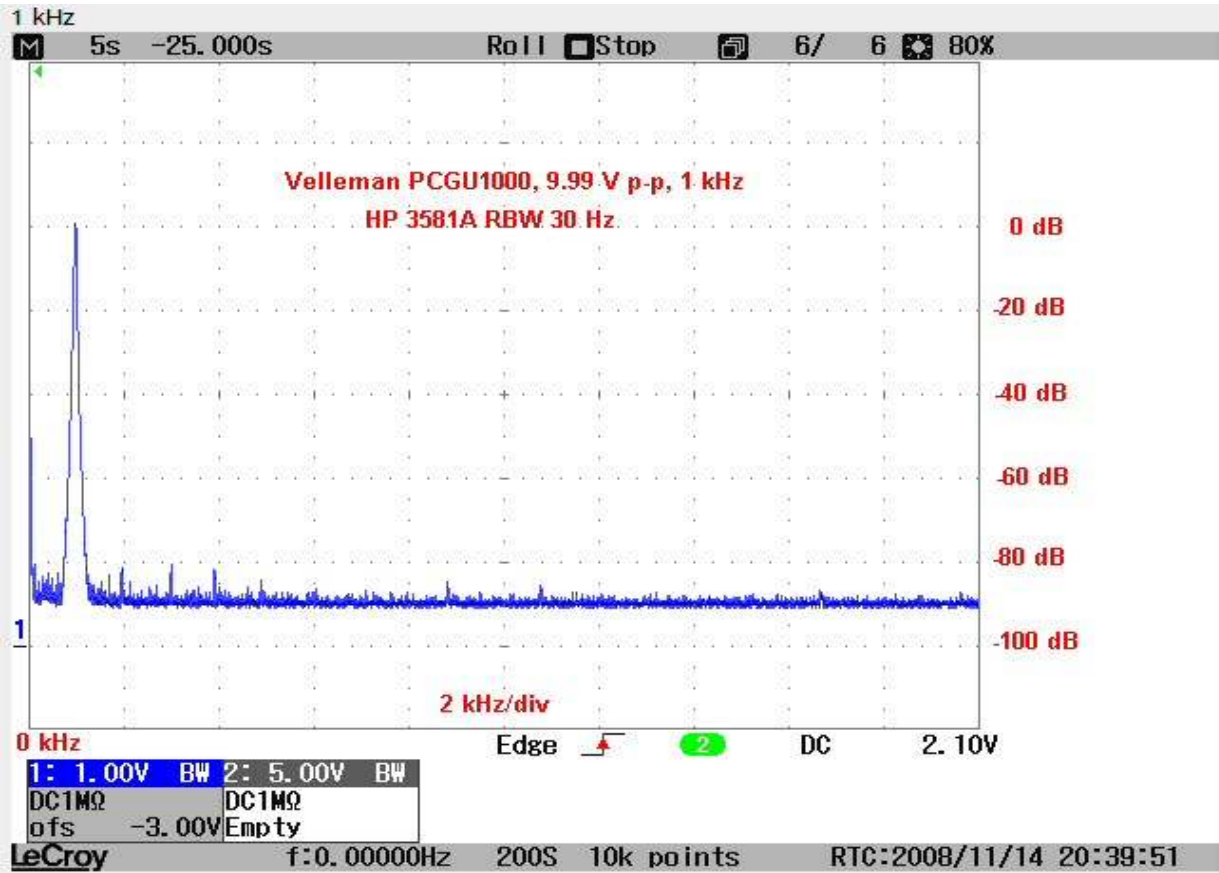
² - The RMS variance is for informational purposes only, no attempt was made to precisely match impedances, and it also appears that the software's displayed "RMS" values are not relative to 50 Ohm loads, but rather open circuit or "higher: impedance loads.

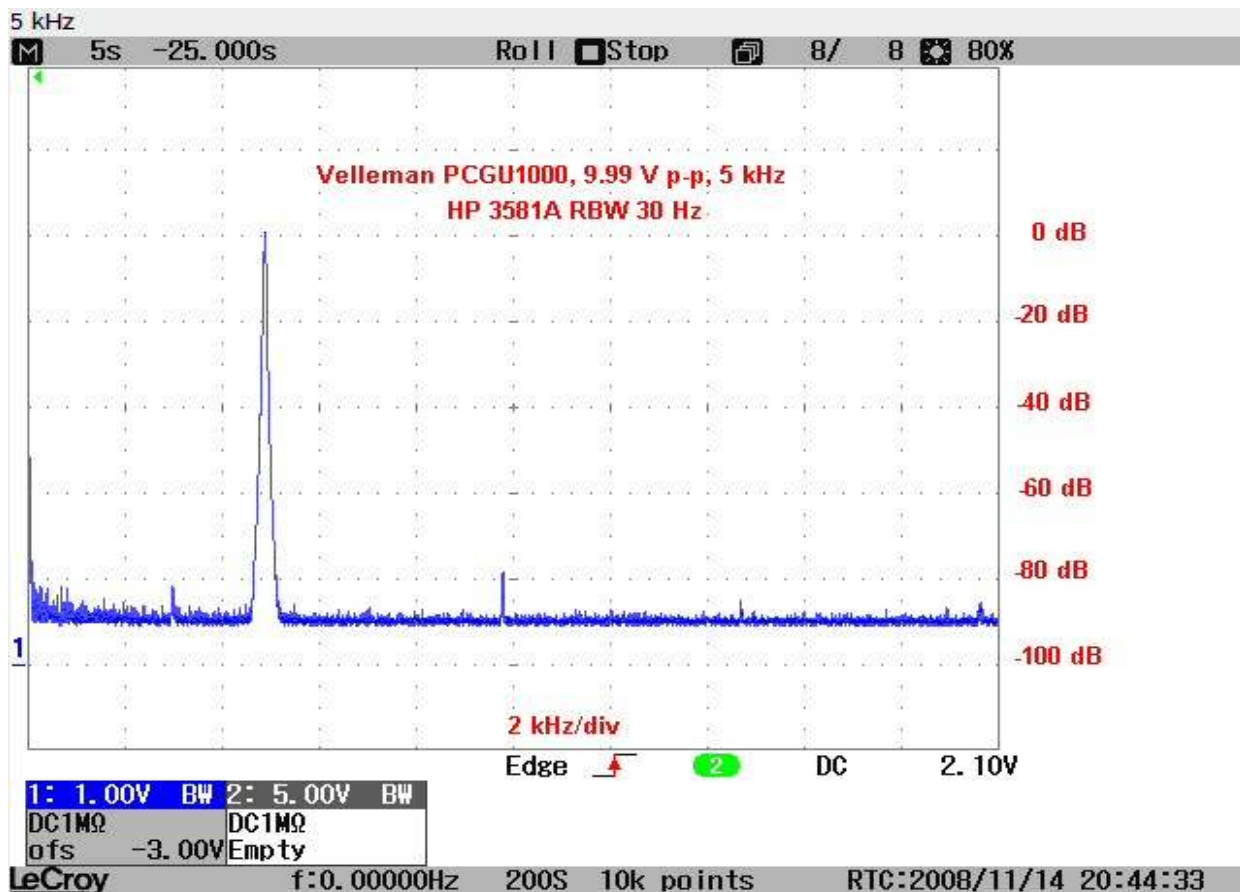
³ - These THDs are well contained within the instrument's 0.08% specification (THD recorded at 100kHz is at the limit of the Tek DA 4084)

The frequency accuracy numbers are just as I recorded them--there is NO "fudge" here, startled the crap out of me when I plugged 'em into the worksheet!

My HP 5316A was calibrated in June against a local shop's PRS10 rubidium standard.

I also performed a wave analysis at 1 kHz, 2 kHz, and 5 kHz to determine the THD content and noise floor. As for noise floor it is at -90 dBc, the lower limit of my instrumentation...

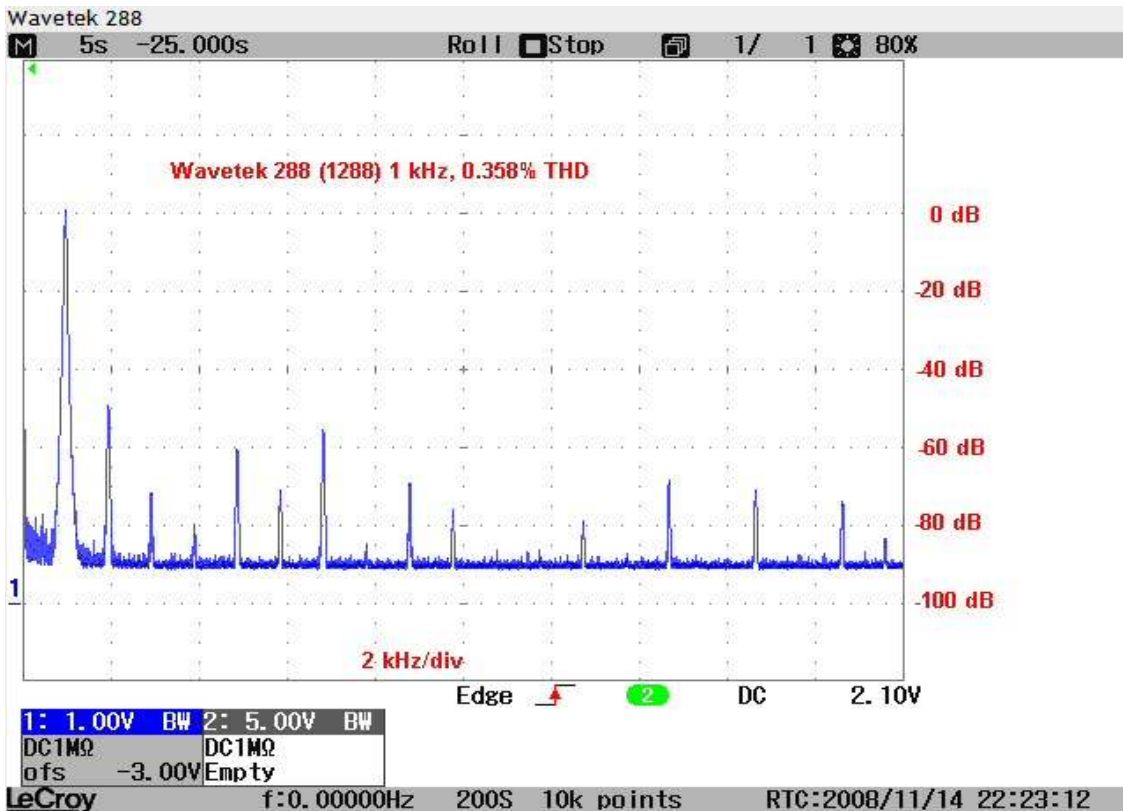
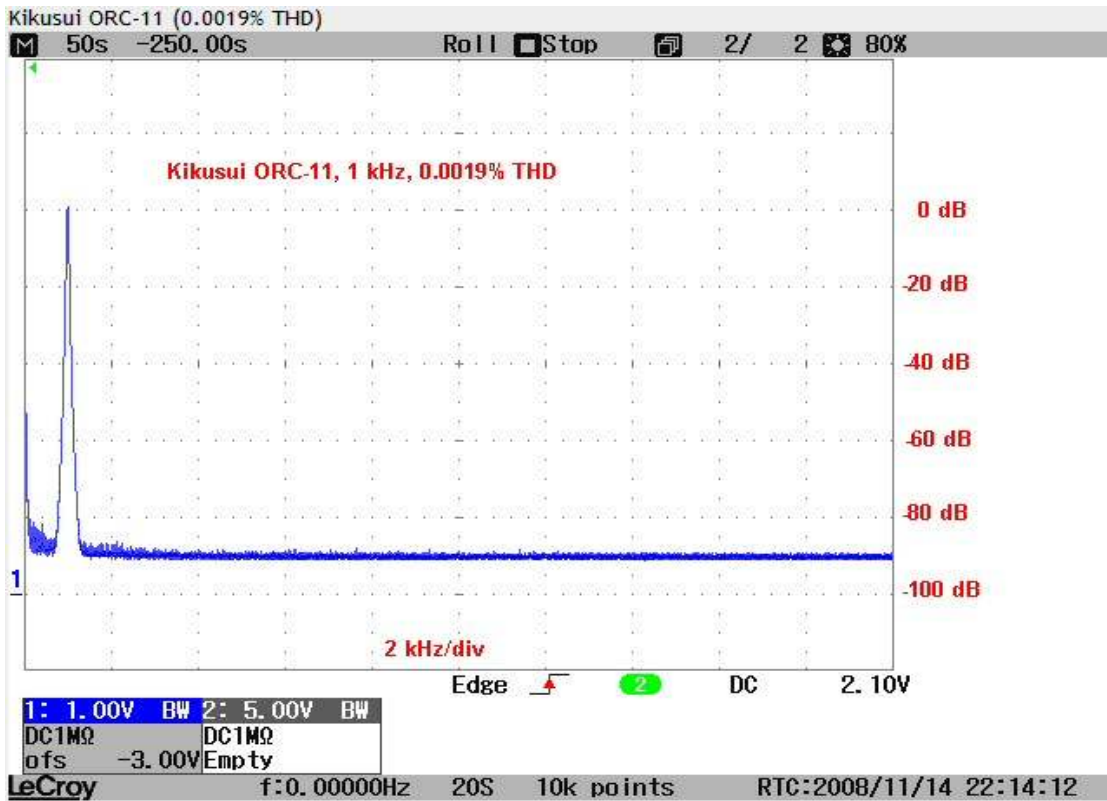




This is **very** impressive for a \$210 instrument!

By way of reference, here are similar waveform analyses from my Kikusui ORC-11 low-distortion signal generator and my:

Wavetek 288 synthesised generator that had been my ultralow frequency and extended sweep frequency source.



Times change!