



Activity report for EJPD

WP1

D1.1.1

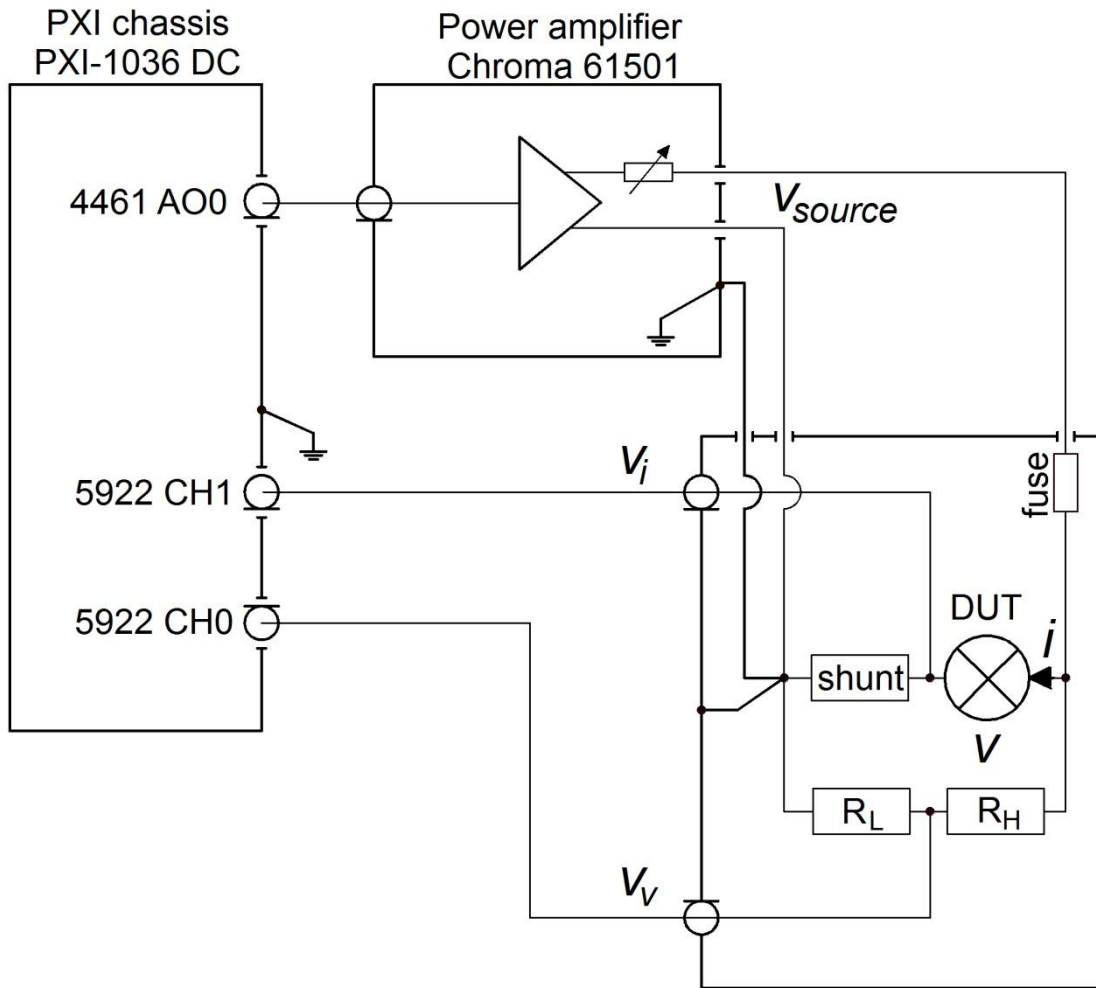
Characterized measurement facility for electrical parameters of SSL, DC to 100 kHz, $u < 0.1\%$.

D1.1.2

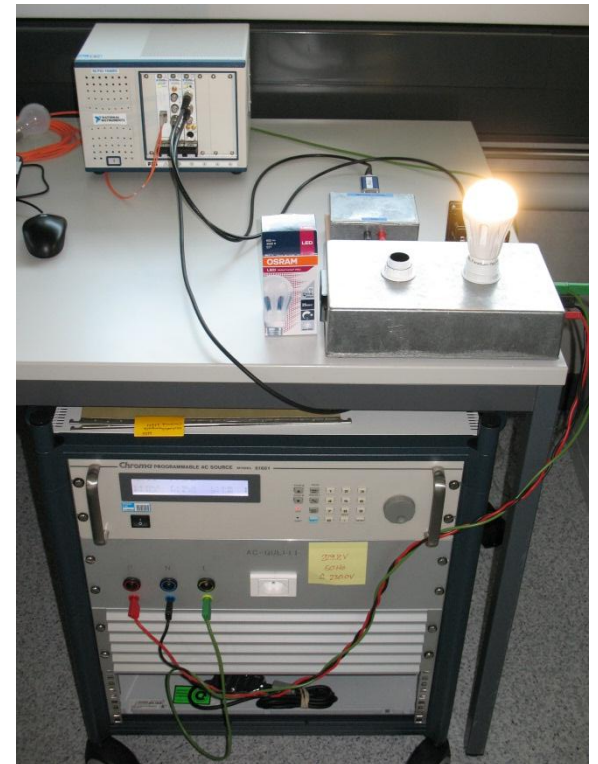
Evaluated control software for traceable measurement.



D1.1.1: Setup

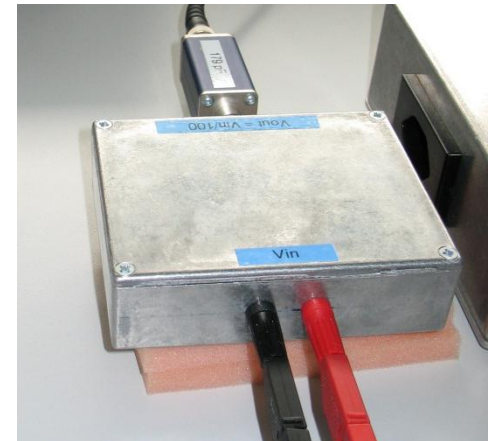
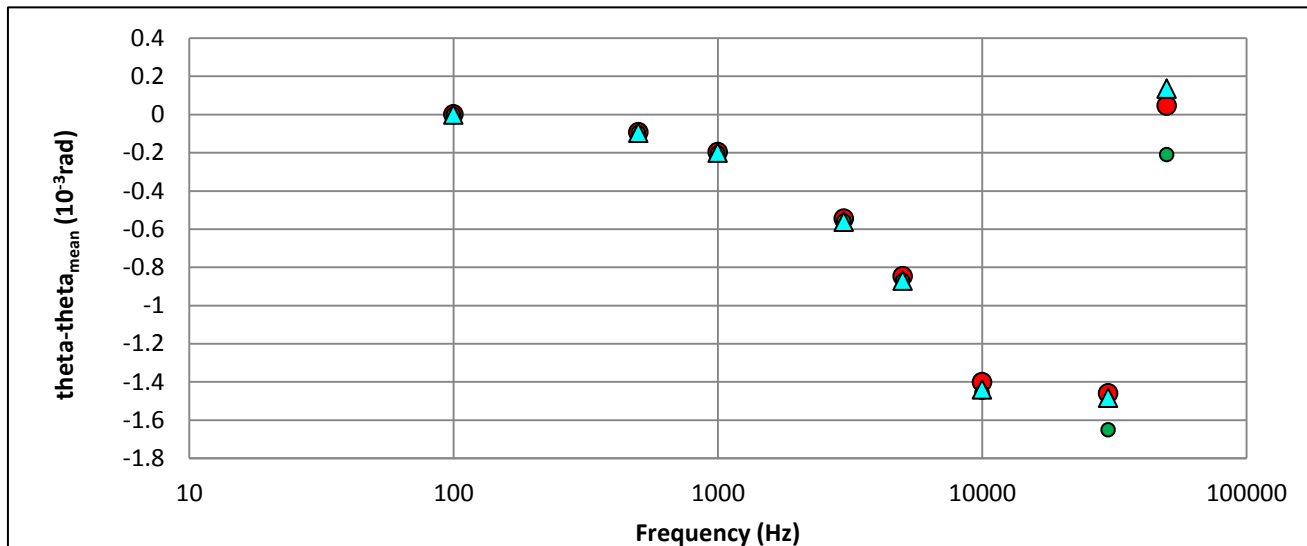
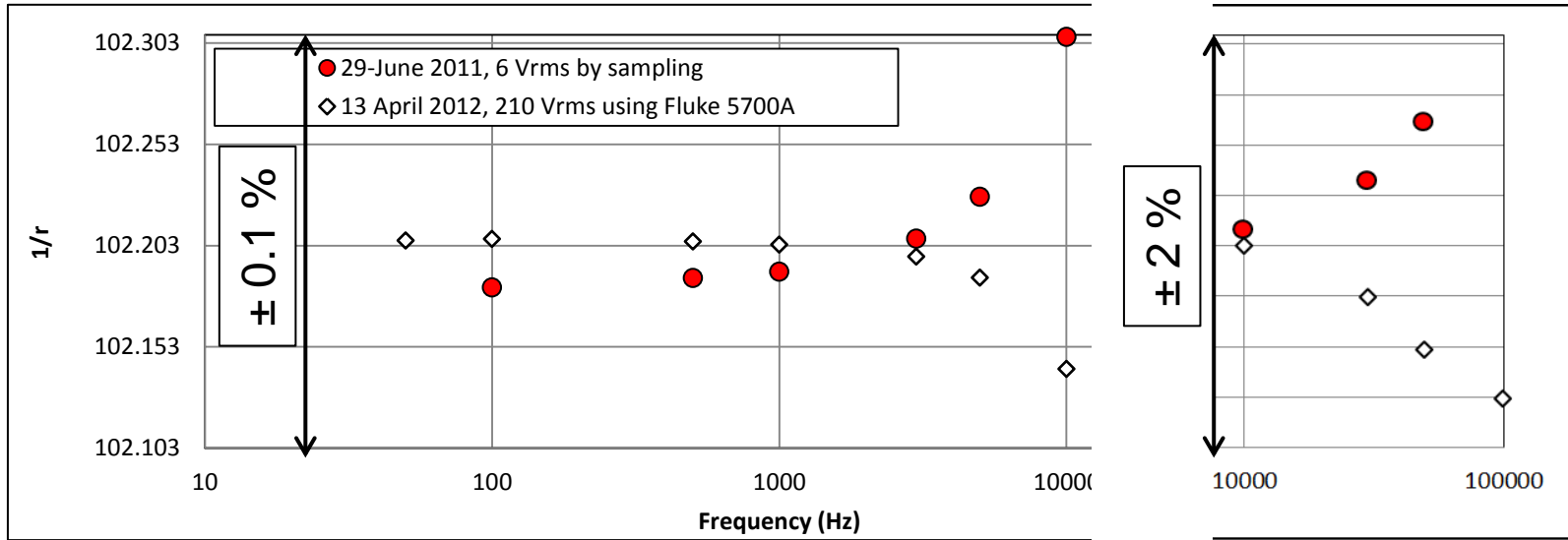


$$\begin{cases} V = V_v \frac{1}{r} - V_i \\ i = \frac{V_i}{R_{shunt}} \end{cases}$$





D1.1.1: Setup, voltage divider



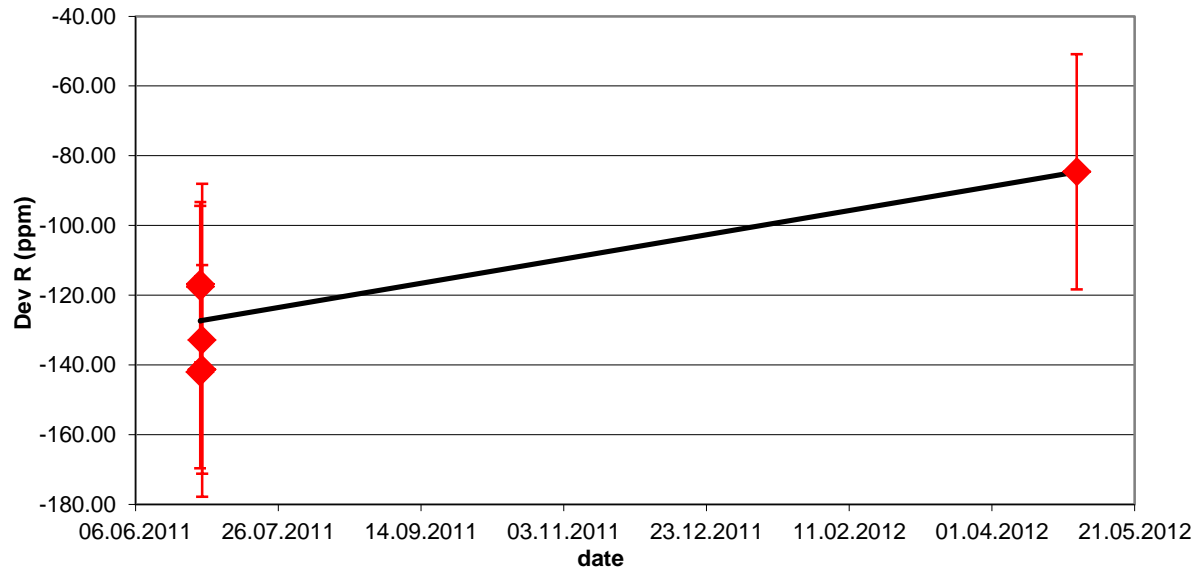


D1.1.1: Setup, shunt



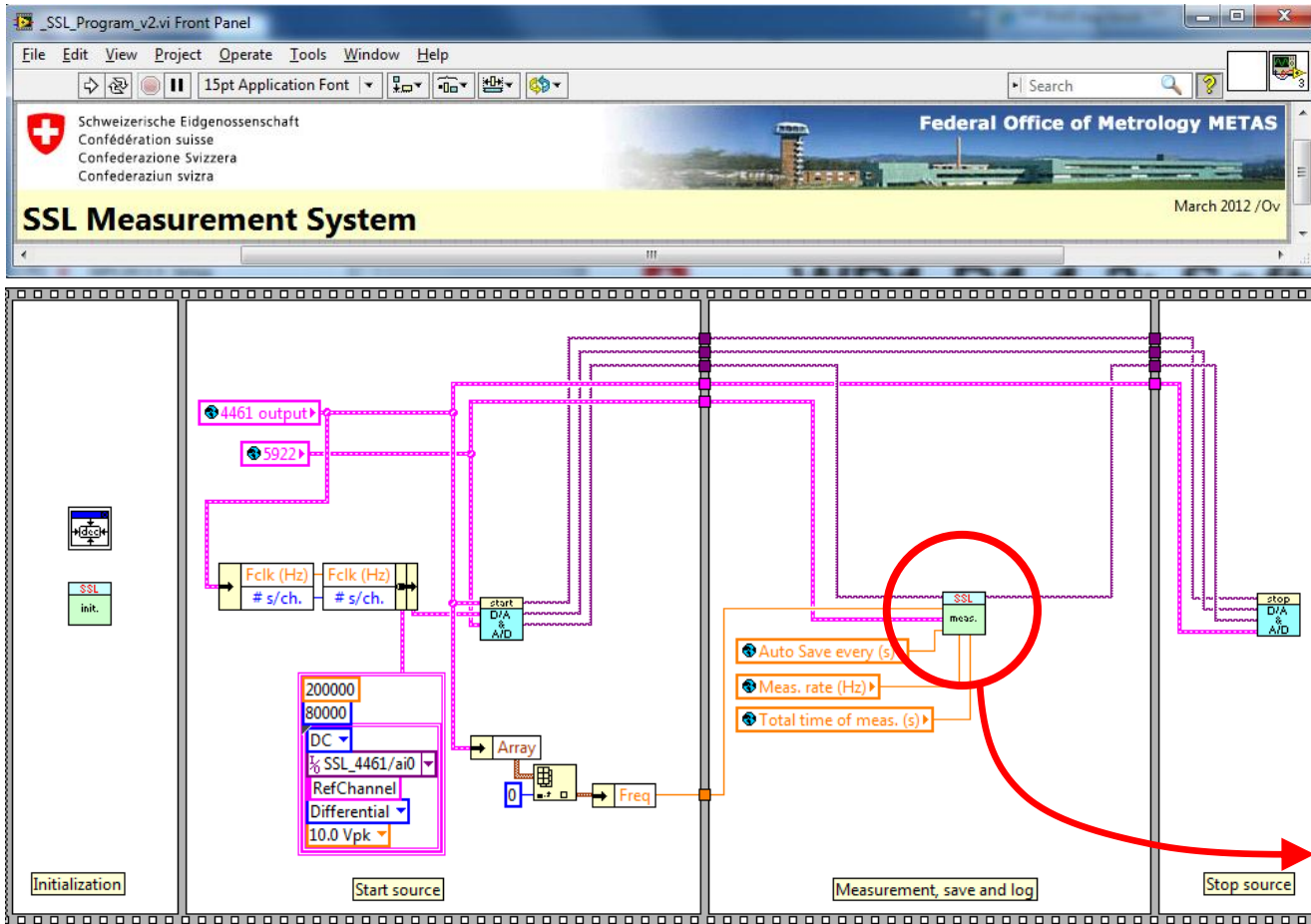
$$R_{shunt} = R^{dc} \cdot (1 + \delta_{ac-dc})$$

Shunt Nominal Current	Nominal Resistance (Ohms)	Specification $\pm \mu\text{A/A}$, TCal $\pm 1 \text{ }^\circ\text{C}$, $\leq 50 \text{ \% RH}^{1,2,3,5}$				
		DC	1 kHz	10 kHz	30 kHz	100 kHz
500 mA	1.6	21	27	27	27	28





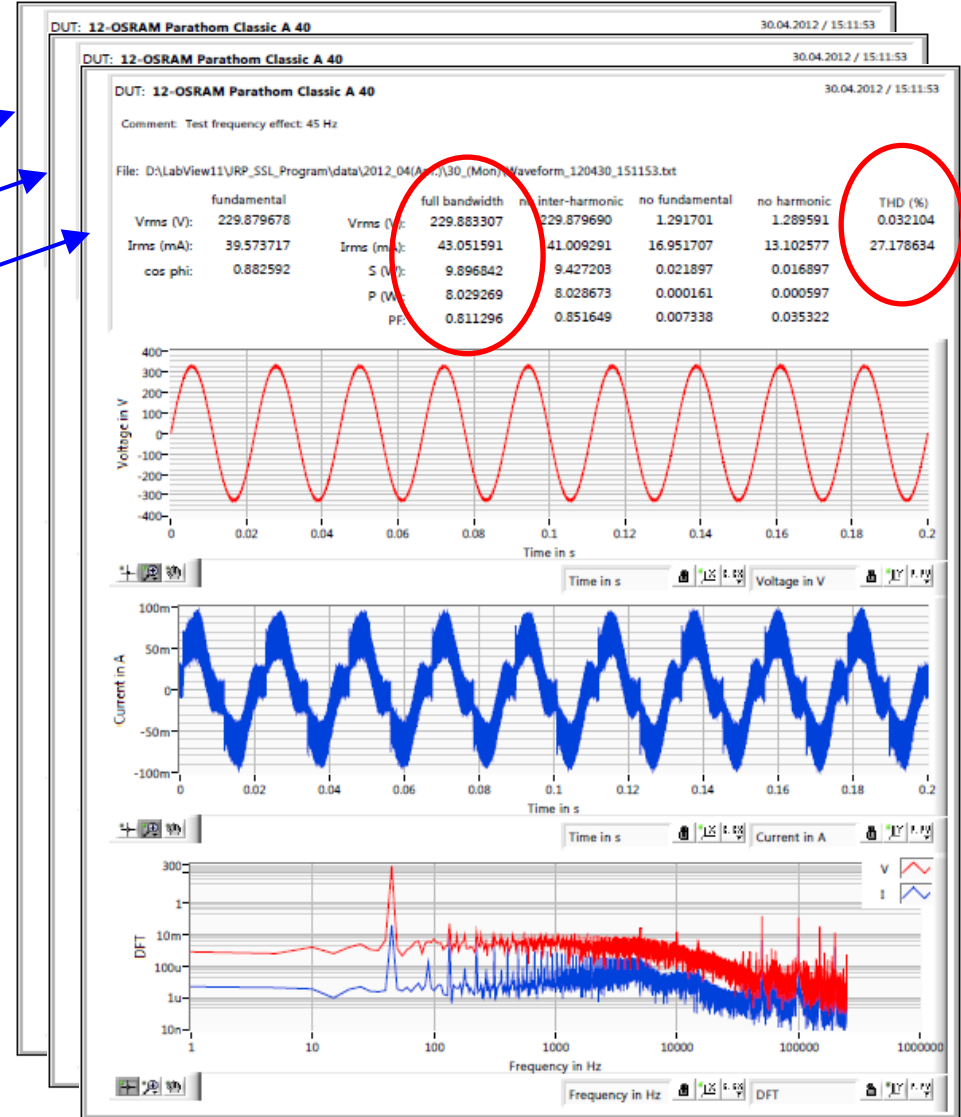
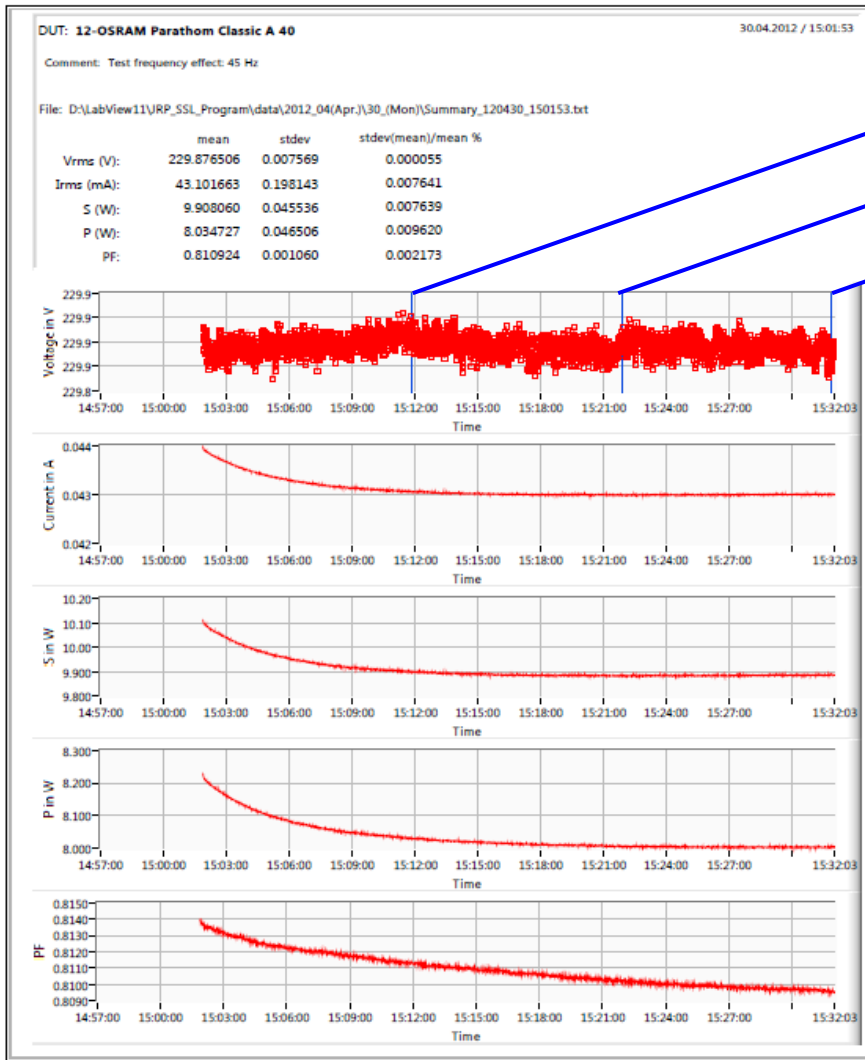
D1.1.2: Software



$$\left\{ \begin{array}{l} v_k \\ i_k \end{array} \right\} \Rightarrow \left\{ \begin{array}{l} V_{rms} = \sqrt{\frac{1}{N} \sum_k v_k^2} \\ I_{rms} = \sqrt{\frac{1}{N} \sum_k i_k^2} \\ S = V_{rms} \cdot I_{rms} \\ P = \frac{1}{N} \sum_k v_k \cdot i_k \\ PF = \frac{P}{S} \end{array} \right.$$



D1.1.2: Software, analysis





D1.1.2: Software, data storage

*** PJVS log-book *** - Windows Internet Explorer provided by METAS

D:\LabView1\JRP_SSL_Program\data\SSL-logbook.html

Favorites: Web Slice Gallery

*** PJVS log-book ***

Schweizerische Eidgenossenschaft
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Confederaziun svizra

Federal Office of Metrology METAS

HTML LOG-BOOK | **SSL** Solid State Lighting back to main menu

Time	Event	File
14:38:28		data/table Harmonics_120430_143827.txt
14:38:28		report Waveform_120430_143827.pdf
15:01:52	12-OSRAM Parathom Classic A 40 Test frequency effect: 45 Hz	data/table Parameters_120430_150152.txt
15:01:54	Summary	data/table Summary_120430_150153.txt
15:01:54		report Summary_120430_150153.pdf
15:11:53	New waveform	data/table Waveform_120430_151153.txt
15:11:53		report Waveform_120430_151153.pdf
15:11:53	New waveform	data/table Harmonics_120430_151153.txt
15:11:53		report Waveform_120430_151153.pdf
15:21:53	New waveform	data/table Waveform_120430_152153.txt
15:21:53		report Waveform_120430_152153.pdf
15:21:53	New waveform	data/table Harmonics_120430_152153.txt
15:21:53		report Waveform_120430_152153.pdf
15:31:54	New waveform	data/table Waveform_120430_153153.txt
15:31:54		report Waveform_120430_153153.pdf
15:31:54	New waveform	data/table Harmonics_120430_153153.txt
15:31:54		report Waveform_120430_153153.pdf

Parameters

```
Date: 30 April 2012 Time: 15:01:52

5922 Gain Error:
  Channel Vv=0.000000000000000
  Channel Vi=0.000000000000000
Voltage Divider:
  r_nom=9.78660000000000E-3
  Er=0.000000000000000
Shunt:
  R_nom=1.600000000000000
  dR=-127.000000000000000
  AC/DC=0.000000000000000
AOutputParameters:
  Fclk (Hz)=180000.000000000000000
  # s/ch.=8000
  PXI_Ch=SSL_4461/ao0
  Terminal=10106
  FS (V)=10.000000000000000
AInputParameters:
```

Waveform

```
Date: 30 April 2012 Time: 15:11:53
Laboratory: METAS
Operator: Overney
Delta t(s): 2.00000000E-6
Fs: 5.00000000E+5
Record Length: 1.00000000E+5
DUT: 12-OSRAM Parathom Classic A 40
Comments: Test frequency effect: 45 Hz
***End_of_Header***

Time      Current      Voltage
0.00000000E+0  2.02039871E-1  2.19743927E-2
2.00000000E-6  4.81675225E-1  1.98262214E-3
4.00000000E-6  3.55522501E-1  -6.87475196E-3
6.00000000E-6  4.22956611E-1  1.27498644E-2
8.00000000E-6  6.80372726E-1  7.32672008E-3
1.00000000E-5  6.97199677E-1  -1.10605926E-3
1.20000000E-5  8.36005226E-1  1.67821158E-2
```

Summary

```
Date: 30 April 2012 Time: 15:01:53
Laboratory: METAS
Operator: Overney
DUT: 12-OSRAM Parathom Classic A 40
Comments: Test frequency effect: 45 Hz
***End_of_Header***

Time      P          S          PF          Vrms      Irms
15:01:53.78  1.01105938E+1  8.23003695E+0  8.14001341E-1  2.29891950E+2
15:01:54.08  1.01099469E+1  8.22946212E+0  8.13996575E-1  2.29882787E+2
15:01:54.56  1.01074287E+1  8.22666050E+0  8.13922193E-1  2.29883890E+2
15:01:55.06  1.01056794E+1  8.22460444E+0  8.13859626E-1  2.29892233E+2
```

Spectrum

```
Date: 30 April 2012 Time: 15:11:53
Laboratory: METAS
Operator: Overney
Fundamental: 4.50000000E+1
Frequency resolution: 5.00000000E+0
Length: 5.00000000E+4
DUT: 12-OSRAM Parathom Classic A 40
Comments: Test frequency effect: 45 Hz
***End_of_Header***

Frequency      I_har_mag      I_har_phase      V_har_mag      V_har_phase
0.00000000E+0  3.22884561E-4  3.14159265E+0  1.25904977E+0  3.14159265E+0
5.00000000E+0  4.35329194E-6  3.09803332E+0  6.52937270E-4  -9.04964788E-1
1.00000000E+1  3.61475816E-6  2.28869171E+0  1.66816854E-3  -2.47549573E+0
1.50000000E+1  9.64188469E-7  2.98935910E+0  6.47482906E-4  -1.36491062E+0
```