



**World Calibration Centre  
for Aerosol Physics**

Leibniz-Institut für Troposphärenforschung Permoserstraße 15 04318 Leipzig



**Leibniz Institute for  
Tropospheric Research**

**CPC Model:** TSI CPC 3010

**CPC Serial Number:** 2339

**Customer:** TROPOS

**Description:** Calibration of a Condensation Particle Counter (CPC, Model 3772)

**Date of Calibration:** September 16, 2020

**Summary of Intercomparison:**

The candidate passed the quality standards of ACTRIS and GAW. The candidate reached 100% efficiency at 40 nm. The Dp50 is at 9.4 nm. The CPC efficiency curve corresponds to the standard of ACTRIS and GAW.

Certificate / Reference: WCCAP

Date of issue: September 16, 2020      Signature:

Reviewed by: **TROPOS**

Name: **Kay Weinhold**

Page 1 / 3



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**Date of arrival of instrument in calibration lab:**

*September 15, 2020*

**Instrument:**

*Condensation Particle Counter*

**Model and serial number of instrument:**

*CPC 3010 S/N 2339*

**Result of physical inspection:**

*no damages*

**Result of functional test:**

*functional test successful, no problems*

**Internal parameters of instrument**

*nominal flow rate 1.0 l/min*

**Model and identification number of  
aerosol electrometer:**

*TSI Electrometer Model 3068, S/N 70838596*

**Electrometer calibration certificate:**

*September 5, 2018, calibrated at PTB  
Braunschweig*

**Corrections of electrometer, for instance,  
differing flow rate:**

*Within tolerance range (+/-2%); reference: 4.0  
l/min, measured: 4.000 l/min*

**Software for recording:**

*LabView 2010; National Instruments; Program  
„LabCount.vi“*

**Date of calibration:**

*September 16, 2020*

**Lab temperature and pressure:**

*23.0°C, 100.1 mbar*

**Measured aerosol flow rate of CPC:**

*1.005 l/min*

**Uncertainty in measured flow rate:**

*3%*

**Flowmeter used:**

*Gilian Gilibrator V; S/N 1711008-S,  
January, 2018*

**Particles and gases used for calibration:**

*silver particles and nitrogen*

**Method of particle generation:**

*tube furnace generator*

**Zero measurement of instrument:**

*0 particles/cm<sup>3</sup> in 5 minutes*

**Results (using pulse output):**

Particle size (nm)	<b>40</b>	<b>30</b>	<b>20</b>	<b>15</b>	<b>14</b>
Number concentration (cm-3)	1321	1393	1799	1067	1428
Counting efficiency $\eta$	1.01	1.02	1.00	0.96	0.93
Particle size (nm)	<b>11</b>	<b>10</b>	<b>09</b>	<b>08</b>	<b>07</b>
Number concentration (cm-3)	659	1012	766	312	242
Counting efficiency $\eta$	0.71	0.58	0.42	0.26	0.11
Particle size (nm)	<b>06</b>	<b>05</b>	<b>40</b>		
Number concentration (cm-3)	49	0	1388		
Counting efficiency $\eta$	0.02	0.00	1.01		



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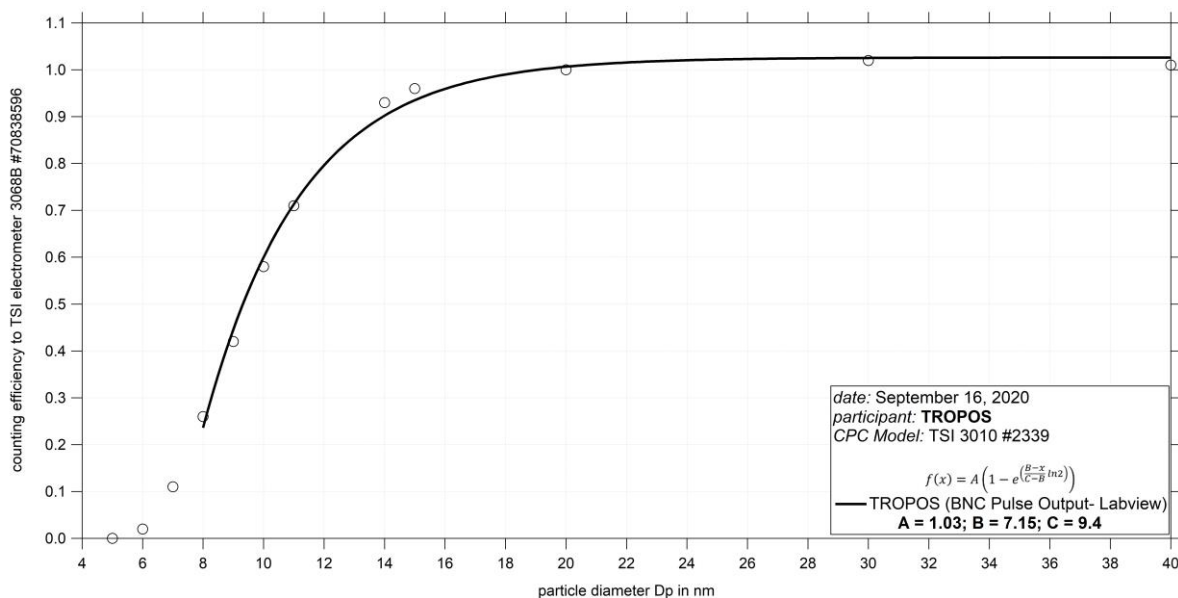


Fig. 1: Counting efficiency for TSI CPC 3010 S/N 2339 against aerosol electrometer 3068 S/N 70838596; silver particles between 5 and 40 nm were used for calibration.

#### Status information:

Status	T SAT	T CON	T OPT	T CAB	P AMB	P VAC
from display	-	-	-	-	-	-
Status	P OR	P NO	Laser	LV	flow	P INLET
from display	-	-	-	full	1.005	-

Date of issue: September 16, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold



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Page 3 / 3

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