



**World Calibration Centre
for Aerosol Physics**

Leibniz-Institut für Troposphärenforschung Permoserstraße 15 04318 Leipzig



**Leibniz Institute for
Tropospheric Research**

CPC Model: TSI CPC 3750

CPC Serial Number: 3750190506

Customer: HLNUG

Description: Calibration of a Condensation Particle Counter (CPC, Model 3750)

Date of Calibration: May 26, 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 5.74nm. The CPC efficiency curve corresponds to the standard of ACTRIS and GAW.

Certificate / Reference: WCCAP

Date of issue: May 27, 2020 Signature:

Reviewed by: **TROPOS**

Name: **Kay Weinhold**

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Date of arrival of instrument in calibration lab: *May 25, 2020*
Instrument: *Condensation Particle Counter*
Model and serial number of instrument: *CPC 3750 S/N 3750190506*

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: *May 26, 2020*
Lab temperature and pressure: *23.0°C, 995.0 mbar*
Measured aerosol flow rate of CPC: *0.997 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/cm³ in 5 minutes*

Results (using pulse output):

Particle size (nm)	40	30	20	15	10
Number concentration (cm-3)	1424	1380	1214	1027	1795
Counting efficiency η	1.00	1.00	1.02	1.02	0.97
Particle size (nm)	09	08	07	06	05
Number concentration (cm-3)	1355	1254	1308	853	310
Counting efficiency η	0.93	0.86	0.75	0.56	0.27
Particle size (nm)	40				
Number concentration (cm-3)	1349				
Counting efficiency η	1.00				



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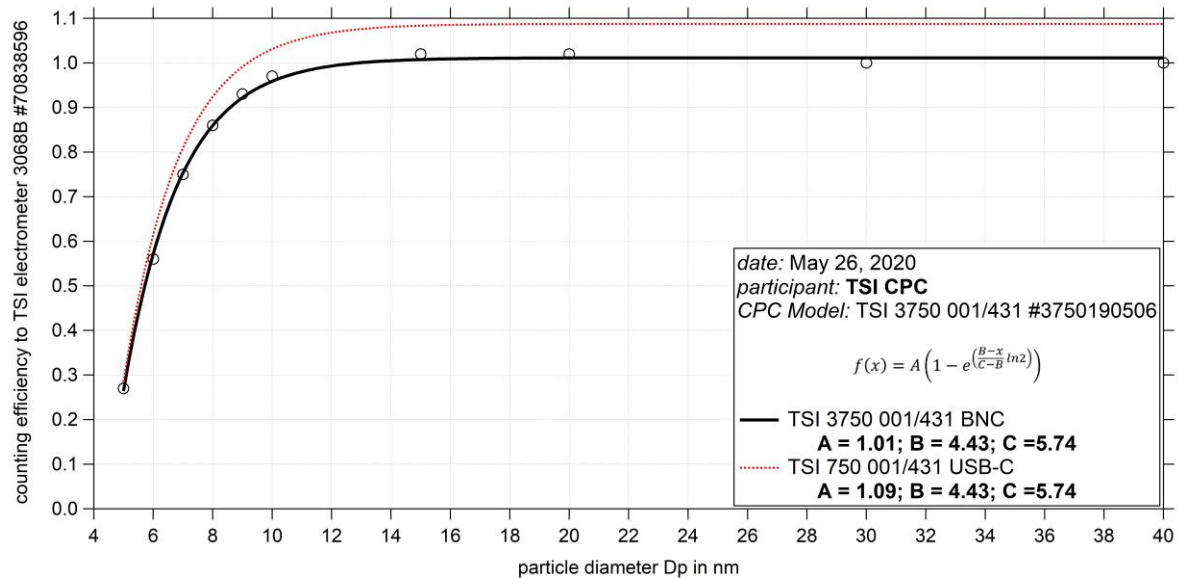


Fig. 1: Counting efficiency for CPC 3750 001/431 S/N 3750190506 against aerosol electrometer 3068 S/N 70838596; silver particles between 5 and 40 nm were used for calibration; the calculated D_{p50} is 5.74 nm.

Status information:

Status	<i>T SAT</i>	<i>T CON</i>	<i>T OPT</i>	<i>T CAB</i>	<i>P AMB</i>	<i>P VAC</i>
from display	39	18	40.0	24.3	102.1	79.6
Status	<i>P OR</i>	<i>P NO</i>	<i>Laser</i>	<i>LV</i>	<i>flow</i>	<i>P INLET</i>
from display	76.9	2.58	44	full	0.997	0.0

Date of issue: May 27, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold