



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: 2124

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 9.38 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**

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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 2124

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:

1.017 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	14
Number concentration (cm-3)	1324	1402	1850	1107	1472
Counting efficiency η	1.01	1.03	1.03	0.99	0.96
Particle size (nm)	11	10	09	08	07
Number concentration (cm-3)	681	1009	748	297	203
Counting efficiency η	0.74	0.58	0.41	0.25	0.09
Particle size (nm)	06	05	40		
Number concentration (cm-3)	20	0	1385		
Counting efficiency η	0.01	0.00	1.02		



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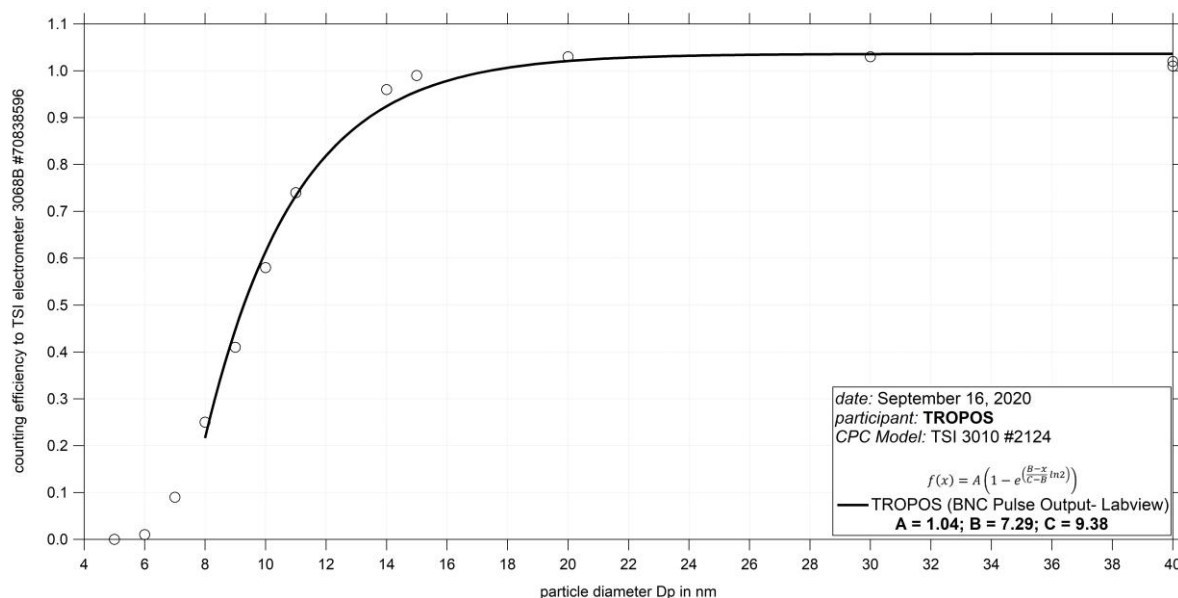


Fig. 1: Counting efficiency for TSI CPC 3010 S/N 2124 against aerosol electrometer 3068 S/N 70838596; silver particles between 5 and 40 nm were used for calibration.

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	1.017	-

Date of issue: September 16, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold