



**World Calibration Centre  
for Aerosol Physics**

Leibniz-Institut für Troposphärenforschung Permoserstraße 15 04318 Leipzig



**Leibniz Institute for  
Tropospheric Research**

**CPC Model:** TCPC Ref4 SN 3772154401

**CPC Serial Number:** 3772154401

**Customer:** WCCAP Reference CPC

**Description:** Calibration of a Condensation Particle Counter (CPC, Model TCPC Ref4 SN 3772154401)

**Date of Calibration:** January 24, 2020

Certificate / Reference: WCCAP

Date of issue: January 24, 2020

Signature:

Reviewed by: **TROPOS**

Name: **Kay Weinhold**

Page 1 / 3



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

**Instrument:**

**Model and serial number of instrument:**

**Result of physical inspection:**

**Result of functional test:**

*January 24, 2020*

*Condensation Particle Counter*

*TCPC Ref4 SN 3772154401*

*no damages*

*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:**

*January 24, 2020*

**Lab temperature and pressure:**

*23.45°C, 1001 mbar*

**Measured aerosol flow rate of CPC:**

*1.013 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)	40	30	20	10	08
Number concentration (cm-3)	968	1323	1687	531	374
Counting efficiency $\eta$	1.00	0.99	0.95	0.51	0.21
Particle size (nm)	06				
Number concentration (cm-3)	0.17				
Counting efficiency $\eta$	0				

Page 2 / 3



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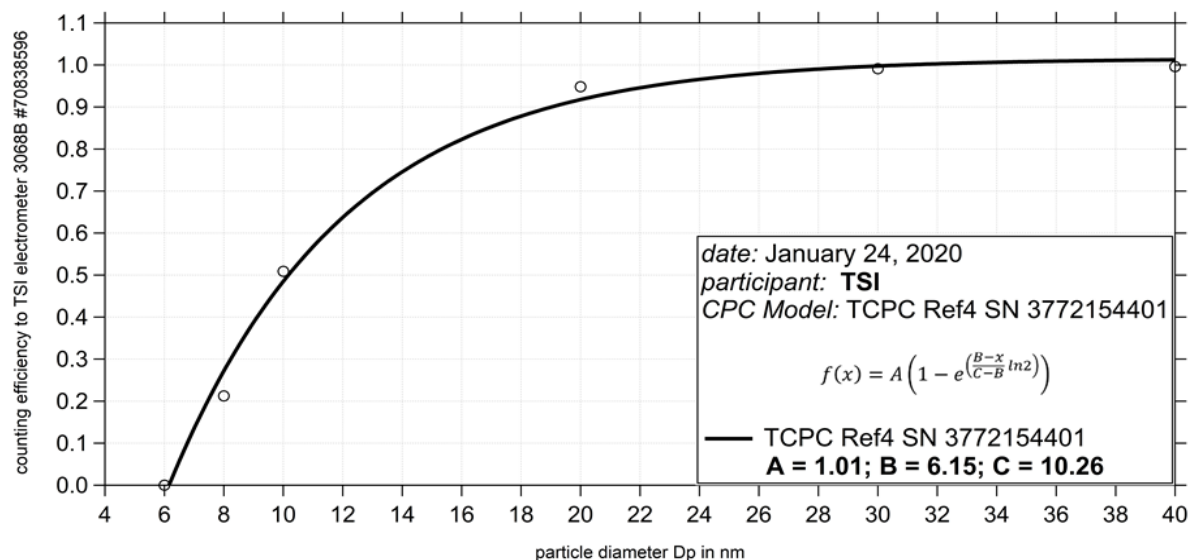


Fig. 1: Counting efficiency for TCPC Ref4 SN 3772154401 CPC against aerosol electrometer 3068 S/N 70838596; silver particles between 6 and 40 nm were used for calibration; the calculated  $Dp_{50}$  is 10.26 nm.

#### 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	39.0	23.8	40.1	29.4	98.5	
Status	<i>P OR</i>	<i>P NO</i>	<i>Laser</i>	<i>LV</i>	<i>flow</i>	<i>P INLET</i>
from display	79.6	2.6	41	full	1.013	

Date of issue: January 24, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold