



**World Calibration Centre
for Aerosol Physics**

Leibniz-Institut für Troposphärenforschung Permoserstraße 15 04318 Leipzig



**Leibniz Institute for
Tropospheric Research**

CPC Model: TCPC Ref1 SN 3772154301

CPC Serial Number: 3772154301

Customer: WCCAP Reference CPC

Description: Calibration of a Condensation Particle Counter (CPC, Model TCPC Ref1 SN 3772154301)

Date of Calibration: January 24, 2020

Certificate / Reference: WCCAP

Date of issue: January 24, 2020

Signature:

Reviewed by: **TROPOS**

Name: **Kay Weinhold**

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Date of arrival of instrument in calibration lab: *January 24, 2020*
Instrument: *Condensation Particle Counter*
Model and serial number of instrument: *TCPC Ref1 SN 3772154301*
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: *January 24, 2020*
Lab temperature and pressure: *23.45°C, 1001 mbar*
Measured aerosol flow rate of CPC: *1.027 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	10	08
Number concentration (cm-3)	959	1307	1694	511	265
Counting efficiency η	0.99	0.98	0.95	0.49	0.15
Particle size (nm)	06				
Number concentration (cm-3)	0.05				
Counting efficiency η	0				



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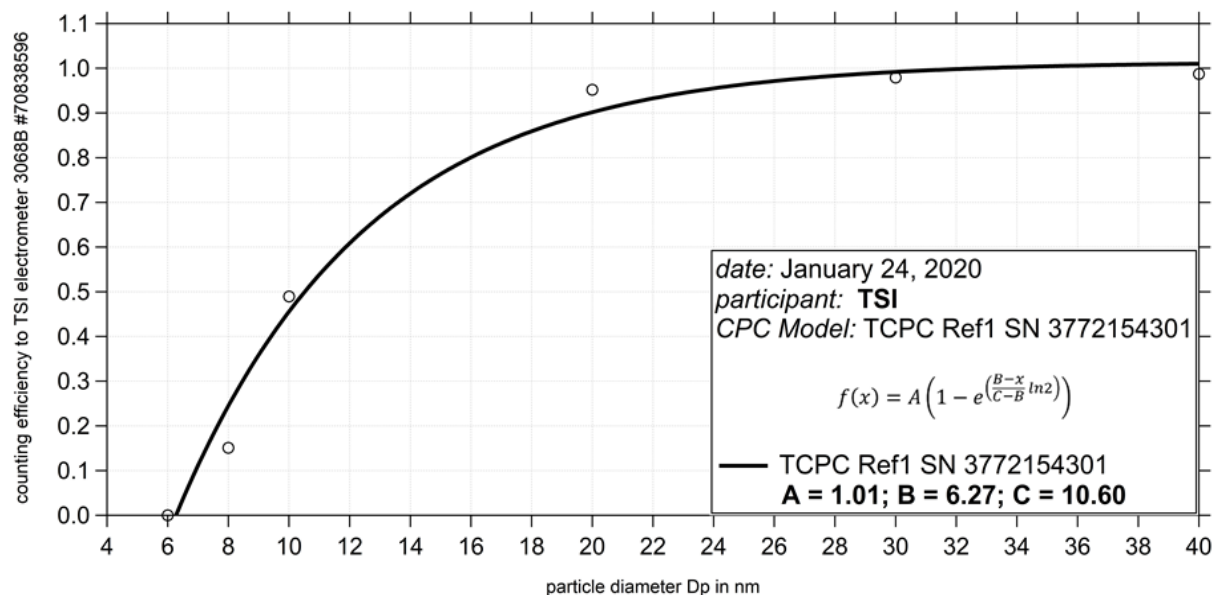


Fig. 1: Counting efficiency for TCPC Ref1 SN 3772154301 CPC against aerosol electrometer 3068 S/N 70838596; silver particles between 6 and 40 nm were used for calibration; the calculated D_{p50} is 10.60 nm.

Status information:

Status	T SAT	T CON	T OPT	T CAB	P AMB	P VAC
from display	39.0	23.6	40.0	34.9	100.2	
Status	P OR	P NO	Laser	LV	flow	P INLET
from display	79.6	2.3	52	full	1.027	

Date of issue: January 24, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold