



World Calibration Centre  
for Aerosol Physics

Leibniz-Institut für Troposphärenforschung, Permoserstraße 15, 04318 Leipzig



Leibniz Institute for  
Tropospheric Research

**CPC Model:** TSI CPC 3772

**CPC Serial Number:** 70640111

**Customer:** UBA Schneefernerhaus

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

**Date of Calibration:** October 27, 2020

**Summary of Intercomparison:**

The candidate passed the quality standards of ACTRIS and GAW. The candidate reached 98% efficiency at 40 nm. The  $Dp_{50}$  is at 9.60 nm. The CPC efficiency curve corresponds to the standard of ACTRIS and GAW.

Certificate / Reference: WCCAP

Date of issue: October 27, 2020

Signature:

Reviewed by: **TROPOS**

Name: **Kay Weinhold**

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<b>Date of arrival of instrument in calibration lab:</b>	<i>October 23, 2020</i>
<b>Instrument:</b>	<i>Condensation Particle Counter</i>
<b>Model and serial number of instrument:</b>	<i>CPC 3772 SN 70640111</i>
<b>Result of physical inspection:</b>	<i>no damages</i>
<b>Result of functional test:</b>	<i>functional test successful, no problems</i>
<b>Internal parameters of instrument</b>	<i>nominal flow rate 1.0 l/min</i>
<b>Model and identification number of aerosol electrometer:</b>	<i>TSI Electrometer Model 3068, SN 70838596</i>
<b>Electrometer calibration certificate:</b>	<i>September 5, 2018, calibrated at PTB Braunschweig</i>
<b>Corrections of electrometer, for instance, differing flow rate:</b>	<i>Within tolerance range (+/-2%); reference: 4.0 l/min, measured: 4.000 l/min</i>
<b>Software for recording:</b>	<i>LabView 2010; National Instruments; Program „LabCount.vi“</i>
<b>Date of calibration:</b>	<i>October 27, 2020</i>
<b>Lab temperature and pressure:</b>	<i>23.0°C, 988 mbar</i>
<b>Measured aerosol flow rate of CPC:</b>	<i>1.027 l/min</i>
<b>Uncertainty in measured flow rate:</b>	<i>3%</i>
<b>Flowmeter used:</b>	<i>Gilian Gilibrator V; SN 1711008-S, January, 2018</i>
<b>Particles and gases used for calibration:</b>	<i>silver particles and nitrogen</i>
<b>Method of particle generation:</b>	<i>tube furnace generator</i>
<b>Zero measurement of instrument:</b>	<i>0 particles/cm<sup>3</sup> in 10 minutes</i>



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	Unit	Status
Model	-	TSI 3772
SN	-	70640111
Firmware	-	2.15
Date	-	-
TSI Software Version	-	-
Saturator Temperature	°C	39.00
Condenser Temperature	°C	23.50
Optics Temperature	°C	40.00
Cabinet Temperature	°C	29.40
Ambient Pressure	kPa	98.10
Vacuum Pressure	kPa	-
Inlet Pressure	kPa	-
Critical Orifice Pressure	kPa	75.20
Aerosol Nozzle Pressure	kPa	2.30
Laser Current	mA	56.00
Liquid Level	-	full
Aerosol Flow	l/min	1.027
Zero	avg 10 min	0

Diameter	EL 3068B (#/cm <sup>3</sup> )	BNC (pulse output)	
		Concentration (#/cm <sup>3</sup> )	Efficiency (μ)
40	1054	1032	0.98
40	1273	1259	0.99
30	1085	1047	0.96
20	1008	941	0.93
15	1187	994	0.84
14	-	-	-
12	983	689	0.70
11	-	-	-
10	1765	946	0.54
9	1045	434	0.42
8	1331	335	0.25
7	1170	76	0.06
6	1257	0	0.00
5	1030	0	0.00



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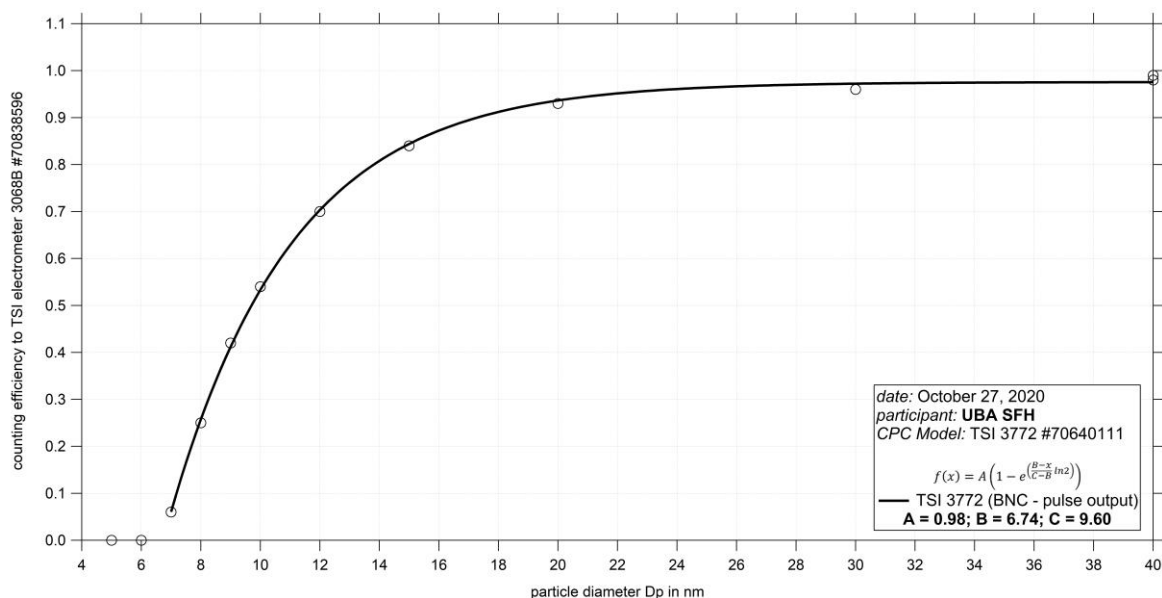


Fig. 1: Counting efficiency for TSI-CPC 3772 SN 70640111 against aerosol electrometer 3068 SN 70838596; silver particles between 5 nm and 40 nm were used for calibration; the calculated  $D_{p50}$  from the BNC (pulse output) is 9.60 nm.

**Date of issue:** October 27, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold