



World Calibration Centre
for Aerosol Physics

Leibniz-Institut für Troposphärenforschung, Permoserstraße 15, 04318 Leipzig



Leibniz Institute for
Tropospheric Research

CPC Model: TSI CPC 3787

CPC Serial Number: 3787122001

Customer: TUBS

Description: Calibration of a Condensation Particle Counter (CPC, Model 3787)

Date of Calibration: October 27, 2020

Summary of Intercomparison:

The candidate passed the quality standards of ACTRIS and GAW. The candidate reached 97% efficiency at 40 nm. The D_{p50} is at 10.06 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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Date of arrival of instrument in calibration lab:	<i>October 23, 2020</i>
Instrument:	<i>Condensation Particle Counter</i>
Model and serial number of instrument:	<i>CPC 3787 SN 3787122001</i>
Result of physical inspection:	<i>no damages</i>
Result of functional test:	<i>functional test successful, no problems</i>
Internal parameters of instrument	<i>nominal flow rate 0.6 l/min</i>
Model and identification number of aerosol electrometer:	<i>TSI Electrometer Model 3068, SN 70838596</i>
Electrometer calibration certificate:	<i>September 5, 2018, calibrated at PTB Braunschweig</i>
Corrections of electrometer, for instance, differing flow rate:	<i>Within tolerance range (+/-2%); reference: 4.0 l/min, measured: 4.000 l/min</i>
Software for recording:	<i>LabView 2010; National Instruments; Program „LabCount.vi“</i>
Date of calibration:	<i>October 27, 2020</i>
Lab temperature and pressure:	<i>23.0°C, 988 mbar</i>
Measured aerosol flow rate of CPC:	<i>0.64 l/min</i>
Uncertainty in measured flow rate:	<i>3%</i>
Flowmeter used:	<i>Gilian Gilibrator V; SN 1711008-S, January, 2018</i>
Particles and gases used for calibration:	<i>silver particles and nitrogen</i>
Method of particle generation:	<i>tube furnace generator</i>
Zero measurement of instrument:	<i>0 particles/cm³ in 10 minutes</i>



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	Unit	Status
Model	-	TSI 3787
SN	-	3787122001
Firmware	-	-
Date	-	-
TSI Software Version	-	-
Saturator Temperature	°C	-
Condenser Temperature	°C	20.00
Optics Temperature	°C	60.10
Cabinet Temperature	°C	-
Ambient Pressure	kPa	-
Vacuum Pressure	kPa	-
Inlet Pressure	kPa	-
Critical Orifice Pressure	kPa	-
Aerosol Nozzle Pressure	kPa	-
Laser Current	mA	-
Liquid Level	-	full
Aerosol Flow	l/min	0.64
Zero	avg 10 min	0

Diameter	EL 3068B (#/cm ³)	BNC (pulse output)	
		Concentration (#/cm ³)	Efficiency (μ)
40	1054	1012	0.96
40	1273	1231	0.97
30	1085	1040	0.96
20	1008	990	0.98
15	1187	1092	0.92
14	-	-	-
12	983	722	0.73
11	-	-	-
10	1765	812	0.46
9	1045	267	0.26
8	1331	125	0.09
7	1170	11	0.01
6	1257	0	0.00
5	1030	0	0.00



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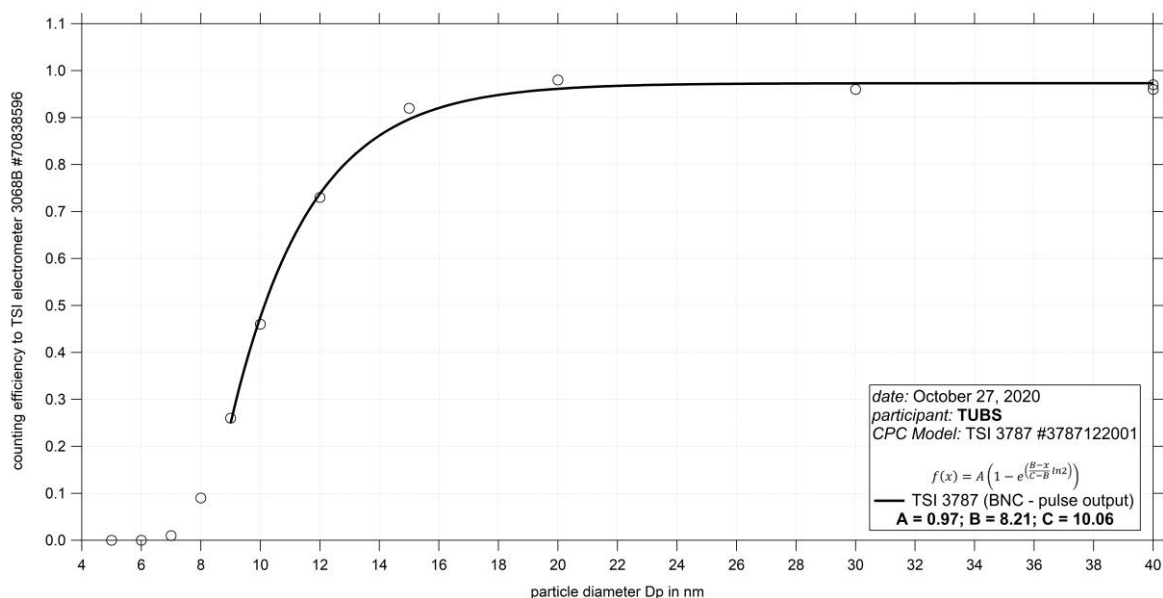


Fig. 1: Counting efficiency for TSI-CPC 3787 SN 3787122001 against aerosol electrometer 3068 SN 70838596; silver particles between 5 nm and 40 nm were used for calibration; the calculated D_{p50} from the BNC (pulse output) is 10.06 nm.

Date of issue: October 27, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold