World Calibration Centre
for Aerosol Physics

Leibniz-Institut für Troposphärenforschung Permoserstraße 15 04318 Leipzig

TROPOS
Leibniz Institute for
Tropospheric Research

CPC Model: TSI CPC 3787

CPC Serial Number: 3787111801

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 95% efficiency at 40 nm. The Dp_{50} is at 9.84 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:	*October 23, 2020*
Instrument:	*Condensation Particle Counter*
Model and serial number of instrument:	*CPC 3787 SN* 3787111801
Result of physical inspection:	*no damages*
Result of functional test:	*functional test successful, no problems*
Internal parameters of instrument	*nominal flow rate 0.6 l/min*
Model and identification number of aerosol electrometer:	*TSI Electrometer Model 3068, SN 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:	*October 27, 2020*
Lab temperature and pressure:	*23.0°C, 988 mbar*
Measured aerosol flow rate of CPC:	*0.605 l/min*
Uncertainty in measured flow rate:	*3%*
Flowmeter used:	*Gilian Gilibrator V; SN 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 10 minutes*

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	Unit	Status
Model	-	TSI 3787
SN	-	3787111801
Firmware	-	-
Date	-	-
TSI Software Version	-	-
Saturator Temperature	°C	-
Condenser Temperature	°C	20.00
Optics Temperature	°C	60.00
Cabinet Temperature	°C	-
Ambient Pressure	kPa	-
Vaccuum Pressure	kPa	-
Inlet Pressure	kPa	-
Critical Orifice Pressure	kPa	-
Aerosol Nozzle Pressure	kPa	-
Laser Current	mA	-
Liquid Level	-	full
Aerosol Flow	l/min	0.605
Zero	avg 10 min	0

		BNC (pulse output)	
Diameter	**EL 3068B (#/cm³)**	**Concentration (#/cm³)**	**Efficiency (µ)**
40	1054	990	0.94
40	1273	1204	0.95
30	1085	1014	0.93
20	1008	951	0.94
15	1187	1060	0.89
14	-	-	-
12	983	732	0.74
11	-	-	-
10	1765	849	0.48
9	1045	304	0.29
8	1331	144	0.11
7	1170	16	0.01
6	1257	0	0.00
5	1030	0	0.00

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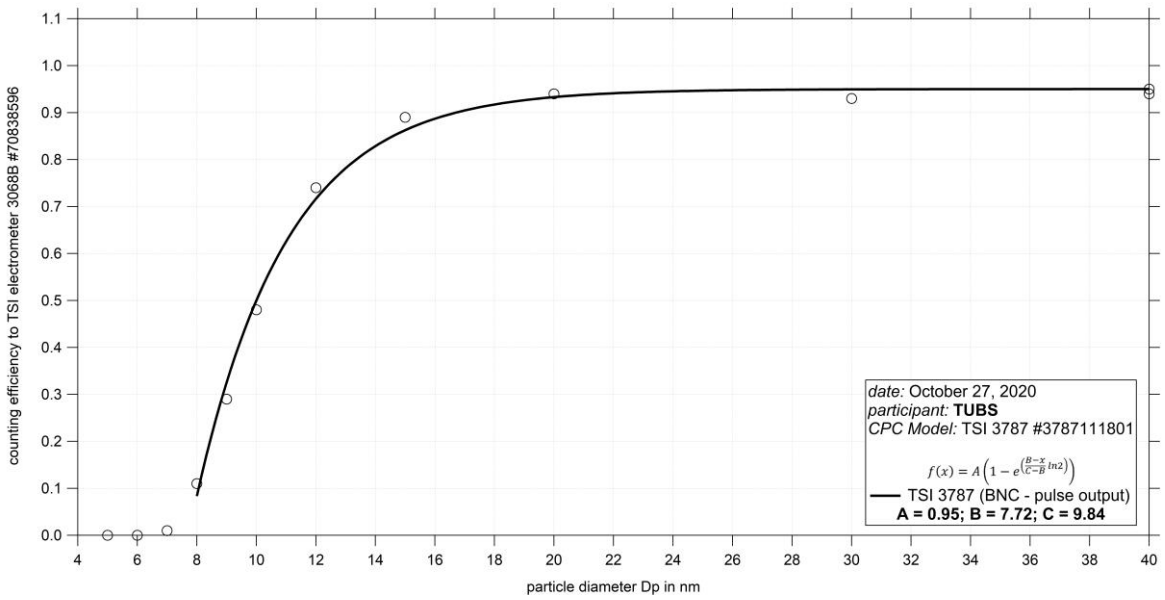

Fig. 1: Counting efficiency for TSI-CPC 3787 SN 3787111801 *against aerosol electrometer 3068 SN 70838596; silver particles between 5 nm and 40 nm were used for calibration; the calculated* Dp_{50} *from the BNC (pulse output) is 9.84 nm.*

Date of issue: *October 27, 2020*

Reference: TSI electrometer, model 3068, SN *70838596*
Reviewed: TROPOS / Kay Weinhold

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