World Calibration Centre
for Aerosol Physics

Leibniz Institute for
Tropospheric Research

Leibniz-Institut für Troposphärenforschung Permoserstraße 15 04318 Leipzig

CPC Model: TSI CPC 3750

CPC Serial Number: 3750194201

Customer: ZAMG

Description: Calibration of a Condensation Particle Counter (CPC, Model 3750)

Date of Calibration: October 27, 2020

Summary of Intercomparison:

The candidate passed the quality standards of ACTRIS and GAW. The candidate reached 99% efficiency at 40 nm. The Dp_{50} is at 6.53 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**

Leibniz-Institut für Troposphärenforschung e.V.
Telefon: +49 341 2717-7060
Telefax: +49 341 2717-99-7060
info@tropos.de
http://www.tropos.de

Commerzbank Leipzig
KTO 102 14 50
BLZ 860 400 00
IBAN: DE77 8604 0000 0102 1450 00
SWIFT CODE: COBADEFF 860

Mitglied der Leibniz-Gemeinschaft

World Calibration Centre
for Aerosol Physics

TROPOS
Leibniz Institute for
Tropospheric Research

Date of arrival of instrument in calibration lab:	*October 23, 2020*
Instrument:	*Condensation Particle Counter*
Model and serial number of instrument:	*CPC 3750 SN* 3750194201
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, 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:	*0.99 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*

Leibniz-Institut für Troposphärenforschung e.V.
Telefon: +49 341 2717-7060
Telefax: +49 341 2717-99-7060
info@tropos.de
http://www.tropos.de

Commerzbank Leipzig
KTO 102 14 50
BLZ 860 400 00
IBAN: DE77 8604 0000 0102 1450 00
SWIFT CODE: COBADEFF 860

Mitglied der Leibniz-Gemeinschaft

	Unit	Status
Model	-	TSI 3750
SN	-	3750194201
Firmware	-	2.9
Date	-	-
TSI Software Version	-	-
Saturator Temperature	°C	39.00
Condenser Temperature	°C	18.00
Optics Temperature	°C	40.00
Cabinet Temperature	°C	24.30
Ambient Pressure	kPa	99.40
Vaccuum Pressure	kPa	84.70
Inlet Pressure	kPa	-0.10
Critical Orifice Pressure	kPa	82.50
Aerosol Nozzle Pressure	kPa	2.45
Laser Current	mA	36.00
Liquid Level	-	full
Aerosol Flow	l/min	0.99
Zero	avg 10 min	0

		BNC (pulse output)	
Diameter	**EL 3068B (#/cm³)**	**Concentration (#/cm³)**	**Efficiency (µ)**
40	1054	1032	0.98
40	1273	1255	0.99
30	1085	1059	0.98
20	1008	998	0.99
15	1187	1159	0.98
14	-	-	-
12	983	930	0.95
11	-	-	-
10	1765	1548	0.88
9	1045	856	0.82
8	1331	953	0.72
7	1170	674	0.58
6	1257	446	0.35
5	1030	80	0.08

Leibniz-Institut für Troposphärenforschung e.V.
Telefon: +49 341 2717-7060
Telefax: +49 341 2717-99-7060
info@tropos.de
http://www.tropos.de

Commerzbank Leipzig
KTO 102 14 50
BLZ 860 400 00
IBAN: DE77 8604 0000 0102 1450 00
SWIFT CODE: COBADEFF 860

Mitglied der
Leibniz-Gemeinschaft

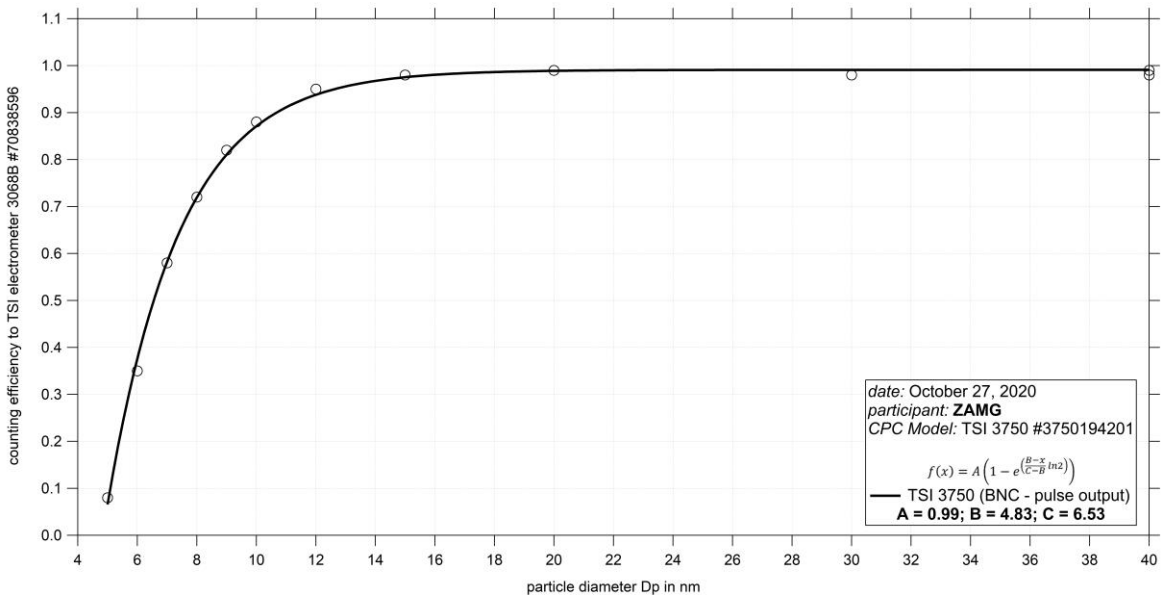

Fig. 1: Counting efficiency for TSI-CPC 3750 SN 3750194201 *against aerosol electrometer 3068 SN 70838596; silver particles between 5 nm and 40 nm were used for calibration; the calculated* Dp_{50} *from the BNC (pulse output) is 6.53 nm.*

Date of issue: *October 27, 2020*

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

Leibniz-Institut für Troposphärenforschung e.V.
Telefon: +49 341 2717-7060
Telefax: +49 341 2717-99-7060
info@tropos.de
http://www.tropos.de

Commerzbank Leipzig
KTO 102 14 50
BLZ 860 400 00
IBAN: DE77 8604 0000 0102 1450 00
SWIFT CODE: COBADEFF 860

Mitglied der
Leibniz-Gemeinschaft