



World Calibration Centre
for Aerosol Physics



Leibniz Institute for
Tropospheric Research

Leibniz-Institut für Troposphärenforschung Permoserstraße 15 04318 Leipzig

CPC Model: ACTRIS RR3772

CPC Serial Number: 71011008

Customer: WCCAP Reference CPC

Project No.: CPC-2019-5-9

Principal Investigator: Prof. Dr. Alfred Wiedensohler

Home Institution: Leibniz Institute for Tropospheric Research

Participant: -

**Location of the
quality assurance:** TROPOS Leipzig, lab 130

Description: Calibration of a Condensation Particle Counter (CPC, Model ACTRIS RR3772)

Date of Calibration: November 13, 2019

Summary of Intercomparison:

The candidate passed the quality standards of ACTRIS and GAW. The candidate reached 100% efficiency at 40 nm. The Dp50 is at 7.35 nm. The CPC efficiency curve corresponds to the standard of ACTRIS and GAW.

Certificate / Reference: WCCAP

Date of issue: November 13, 2019

Reviewed by: **TROPOS**

Name: **Kay Weinhold**

Page 1 / 4

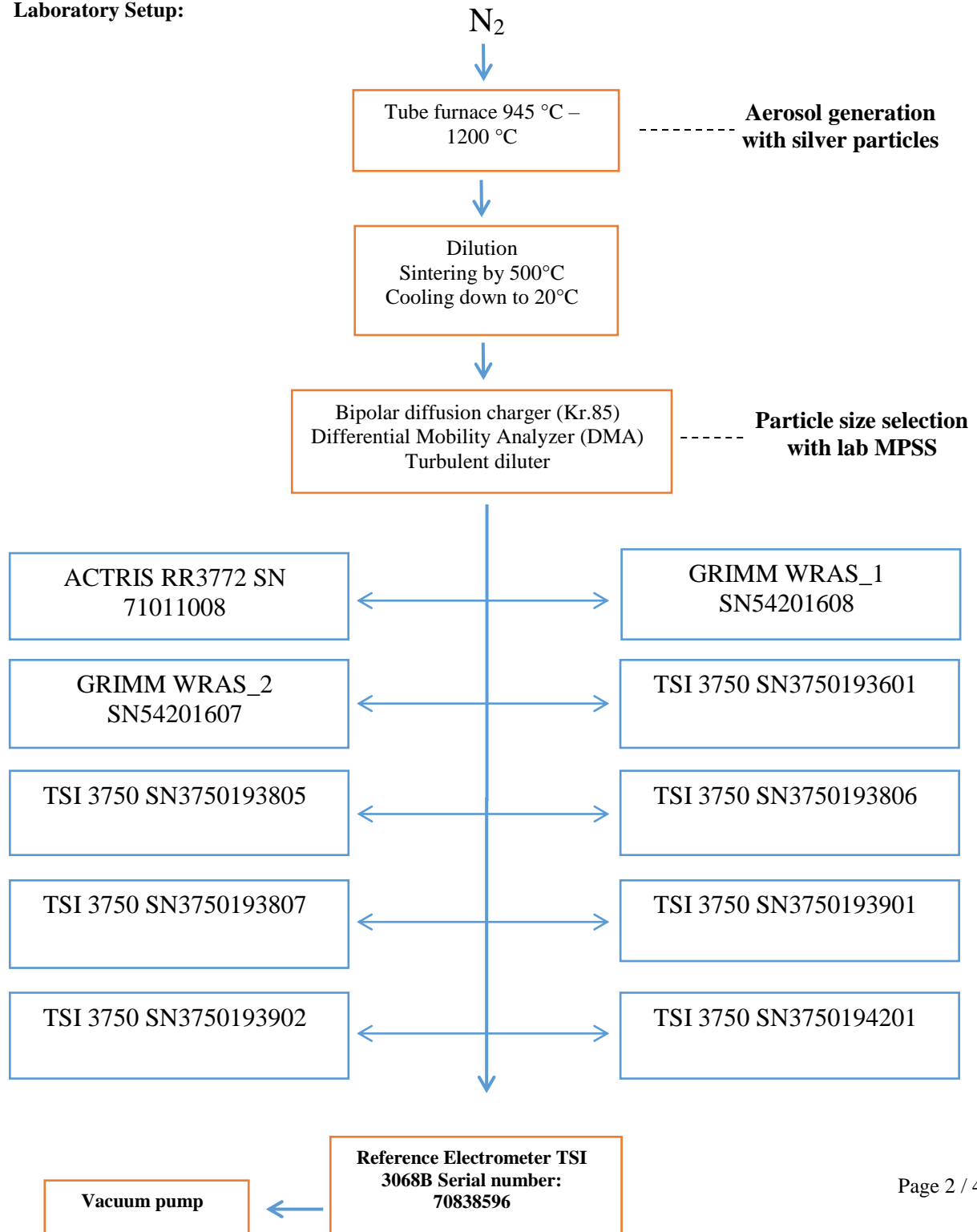


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Laboratory Setup:



Date of arrival of instrument in calibration lab: *November 11, 2019*
Instrument: *Condensation Particle Counter*
Model and serial number of instrument: *ACTRIS CPC RR3772 S/N 71011008*

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: *November 13, 2019*
Lab temperature and pressure: *24.5°C, 982.5 mbar*
Measured aerosol flow rate of CPC: *1.011 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	15	10
Number concentration (cm-3)	1287	1280	1516	1254	1190
Counting efficiency η	0.99	1.00	1.00	0.99	0.83
Particle size (nm)	09	08	07	06	
Number concentration (cm-3)	1219	731	597	252	
Counting efficiency η	0.73	0.60	0.42	0.18	



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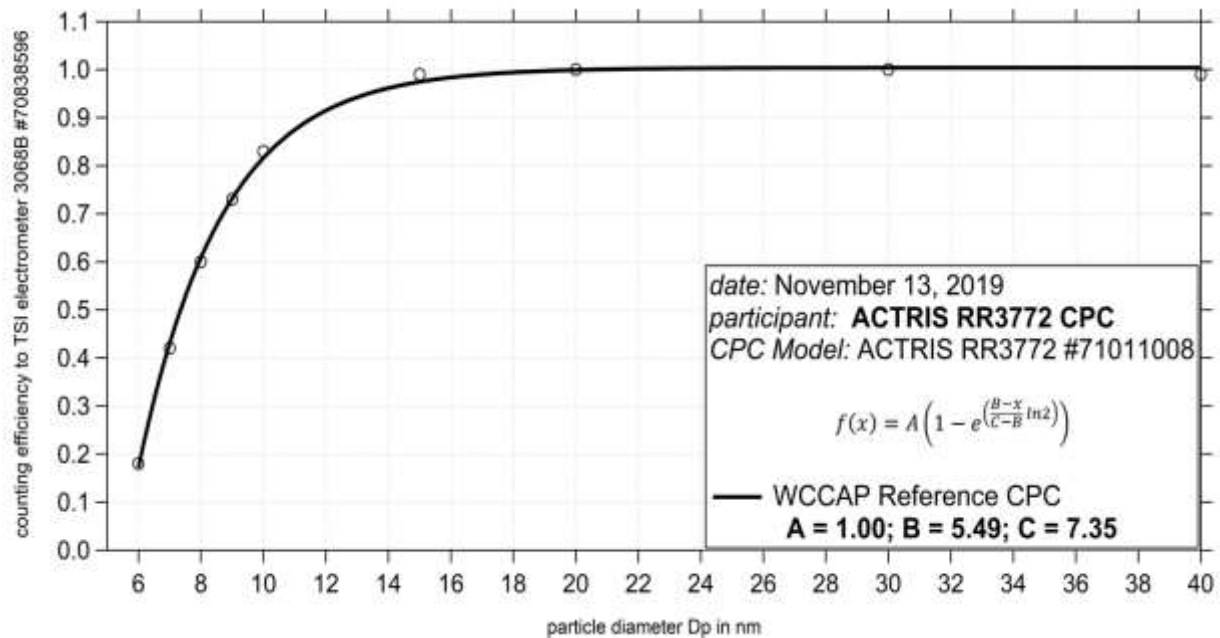


Fig. 1: Counting efficiency for ACTRIS RR3772 S/N 71011008 CPC against aerosol electrometer 3068 S/N 70838596; silver particles between 6 and 40 nm were used for calibration; the calculated Dp50 is 7.35 nm.

Status information:

Status	T SAT	T CON	T OPT	T CAB	P AMB	P VAC
from display	39.0	22.0	40.0	30.8	98.8	
Status	P OR	P NO	Laser	LV	flow	P INLET
from display	77.9	2.5	55	full	1.011	

Date of issue: November 13, 2019

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold