

Performance Test On a Portable Room Air Cleaner



Model NV100

TEST REPORT NET 201001-RL1 RI01

Mainleus, December 15th, 2020

Following EN1822-1:2019 /
EN ISO 29463-5:2018

initiated by:

NETCO srl

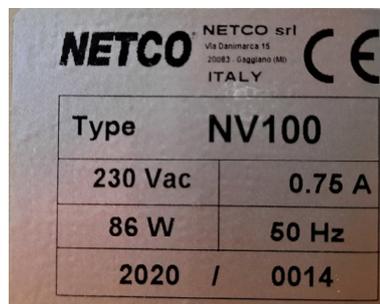
1. Objectives and Test Set-up

On a portable room air cleaner with installed filter system the particle filtration performance against DEHS Particles had to be tested according to the test procedure below. The general test procedure of this one-pass efficiency test follows state of the art techniques and methods described in EN1822.

- a) Test requested by: NETCO srl
- b) Test specimen / Construction: Portable air purifier unit (see pictures)
 The installed filter consists of a high efficiency filter cartridge with pleated filter media and an activated carbon filter cartridge. According customer information the device is equipped with UV-C sterilizing led light.



- c) Model/Parts ID: NV100
- d) Flow Direction: Air inlet on the upper side of the device, air outlet on the lower side of the purifier (see picture of device)
- e) Label/Identification: see picture below



- f) Dimensions Total: ca. 415 x 415 x 840 mm (L-B-H)
- g) Samples were received on: November 18th, 2020
- h) Test has been performed on: December 10th, 2020



Test Procedure

No.	Test	fiatec-No.: NET 201001-	RL1
1	Efficiency Test Room Air Cleaner, SMPS, 0,05 - 0,5 µm, highest blower level		x
2	Ozone Test Room Air Cleaner		x

Test Conditions (Efficiency test)

Air Flow:	Air purifier internal blower ca. 270 m ³ /h on highest air blower level, with filter element
Temperature:	22 ± 1 °C
Relative Humidity:	ca. 33 %
Test Aerosol:	DEHS (Bis(2-ethylhexyl)sebacat)
Particle Size Range:	0,05 – 0,52 µm with SMPS
Particle Counter:	SMPS (Scanning Mobility Particle Sizer, TSI Inc.)

Airflow

The air flow was measured with an anemometer in an adapted air outlet tube with 235 mm diameter. This measurement principle has only a medium accuracy (ca. ± 5 – 10 %) but was not in the focus of the test.

Particle Size and generation

The particle size range was chosen to measure the efficiency in the most penetration particle size range. The efficiency for larger particles then in the measured range can expected to be higher.

For determination of fractional efficiencies in the particle size range of 0,05 – 0,5 µm a SMPS (Scanning Mobility Particle Sizer, TSI Inc.) was used as detector.

The DEHS aerosol was generated by an atomizer ATM230 (Topas GmbH). The test aerosol was not electrostatically neutralized.

Test Setup

The air purifier was installed upside down in a chamber with an air inlet tube and aerosol injection system installed on the front side of the chamber. The outlet of the purified air was adapted to a 235 mm diameter outlet tube. The air inlet and outlet tubes of the test chamber were open to atmosphere to allow the blower of the test device to suck and blow the air without restriction from ambient air / ambient pressure. To prevent differences in the aerosol concentration of 2 sampling positions (before and after test device) due to different air flow profiles only the aerosol sampling position at the clean air side in the outlet tube was used. The upstream concentration of the test aerosol was measured without installed filter element and corrected by the higher air flow.



2. Results

2.1 Air Flow

Highest air blower level with installed filter elements: ca. 270 m³/h

2.2 Particle Filtration

The detailed results of the efficiency test are reported in the attachment.

The used test setup does not follow the described test rig requirements in EN1822-5, as this standard is made for filter elements only. Nevertheless it can be assumed that the used test procedure is according the sense of EN1822-5.

According the classification requirements described in EN 1822-1:2019 the air purifier complies with minimum the grade H14 at a nominal air flow of 270 m³/h.

With this setup the particle counts measured on the clean air side were statistically not sufficient to determine an exact efficiency value (efficiency curve)

The results apply to the tested specimen only at the test conditions mentioned above. Filtration performance under certain application conditions cannot necessarily be predicted from these data.

This test report consists of 4 pages plus 3 pages attachment and may only be published in its entirety. Publications of excerpts from this report are only permitted with written permission of Fiatec experts.

2.3 Ozone Emission

Ambient Air concentration:	2,8 ppb
Outlet Concentration with Ionizer:	2,2 ppb
Outlet Concentration with Ionizer and without filter:	2,3 ppb

The air purifier does not produce ozone above the detection limits / measurement uncertainty.

Steffan Trnetschek
(Managing Director)

Data summary

GENERAL

Testing organisation:	fiatec GmbH, Germany, Burgkunstadterstr. 3, 95336 Mainleus, +49(0)9229 99390				
Test sample no.:	RL1	Date of test:	10.12.2020	Supervisor:	Steffan Trnetschek
Test requested by:	NETCO srl			Samples received:	25.11.2020
Samples submitted by:	NETCO srl			Lab Technician:	Nicolas Gurlitt

DETAILS OF TEST SAMPLES

Model:	Netco NV 100	Manufacturer:	NETCO srl	Filter state:	New
Construction:	Room Air Cleaner	Installed filter Size (mm)	ca. D 328 x 496 mm	Number of samples:	1
Overall sample dimensions [mm]: ca.	415 x 415 x 840	Type of filtermedia:	Glass fiber	Article number or LOT number	-
Additional information:					

TEST PARAMETERS

TEST INSTRUMENTATION

Air flow:	[m ³ /h]	270	Aerosol:	DEHS (pure), polydisperse
Media velocity:	[cm/s]	-	Sampling probe:	fixed
Temperature:	[°C]	22	Sampling diameter / sample flow:	4 mm / 0.4 l/min
Rel. humidity:	[%]	30	Particle generator:	Atomizer ATM 230 (Topas GmbH)
Ambient pressure:	[mbar]	970	Particle detector:	SMPS (TSI Inc.)
Pressure at sample loc.:	[Pa]	0		same for concentration up / down
Mounting orientation filter:		horizontal	Neutralizer:	N/A
Median diam. test aerosol:	[nm]	159	Dilution system:	N/A
Geom. standard deviation (Aerosol):		1,78	Pressure transducer (range):	N/A

TEST RESULTS

	At start of test	At end of test
Mean initial differential pressure drop [Pa]	N/A	N/A
Mean discharged diff. pressure drop [Pa]	N/A	N/A

Filter Grade:	≥ H14
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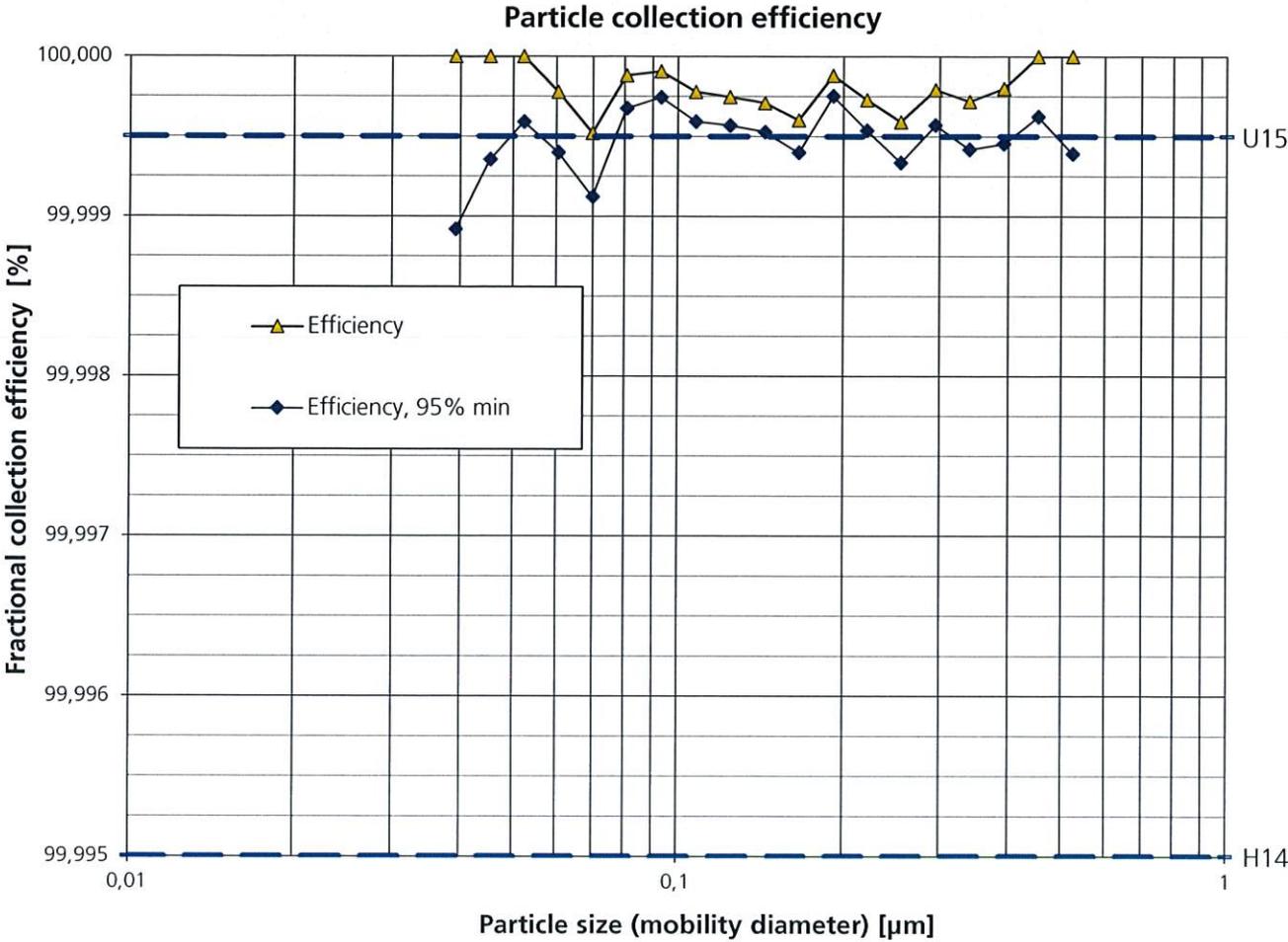
MPPS new [µm]	not detectable	MPPS discharged [µm]	N/A
Mean Eff. at MPPS [%]	>99,999	Mean Eff. at MPPS discharged [%]	N/A
Mean E _{95%} at MPPS [%]	99,9989	Mean E _{95%} at MPPS discharged [%]	N/A

15.12.2020

Date



Signature



Data tables, new filter element

Table 1: Efficiencies and lower limit of 95%-level of confidence

Particle size [µm]	Efficiency [%]	Efficiency, 95% min [%]	Penetration [%]	Penetration, 95% [%]
0,039	>99,9995	99,9989	<0,001	0,001
0,045	>99,9995	>99,999	<0,001	<0,001
0,052	>99,9995	>99,999	<0,001	<0,001
0,060	99,9998	>99,999	<0,001	<0,001
0,070	99,9995	>99,999	<0,001	<0,001
0,081	99,9999	>99,999	<0,001	<0,001
0,093	>99,9995	>99,999	<0,001	<0,001
0,108	99,9998	>99,999	<0,001	<0,001
0,124	99,9997	>99,999	<0,001	<0,001
0,143	99,9997	>99,999	<0,001	<0,001
0,166	99,9996	>99,999	<0,001	<0,001
0,191	99,9999	>99,999	<0,001	<0,001
0,221	99,9997	>99,999	<0,001	<0,001
0,255	99,9996	>99,999	<0,001	<0,001
0,294	99,9998	>99,999	<0,001	<0,001
0,340	99,9997	>99,999	<0,001	<0,001
0,392	99,9998	>99,999	<0,001	<0,001
0,453	>99,9995	>99,999	<0,001	<0,001
0,523	>99,9995	>99,999	<0,001	<0,001