

## เอกสารสอบเทียบเครื่องมือที่ใช้ในการวิเคราะห์

### PREVENTATIVE MAINTENANCE (PM) CHECK LIST

## FOR ATOMIC ABSORPTION SPECTROMETER

Date: 29 Nov. 22

- Flame, Inspect/replace o-ring nebulizer, spray chamber and burner
- Flame, Clean nebulizer, spray chamber and burner
- Flame, Check liquid trap interlock, burner interlock, pressure relief interlock and shield interlock
- Furnace, Clean work head , electrode and shroud
- Furnace, Clean PSD and PSD tray
- Furnace, Check water pressure
- Check drain tube
- Check exhaust system
- Check gas pressure sensor interlock
- Check and all gas hoses for SpectraAA
- Clean computer control

- Inspect/Replace that external optics surfaces
- Check Wavelength Accuracy the copper line at  $323.0\text{-}326.0\text{ nm} = 324.7\text{ nm}$
- Check that PMT % Gain the copper at  $324.8\text{ nm}$ ,  $0.5\text{ mA}$ ,  $0.5\text{ nm}$  slit width, Gain  $49.1\%$  (should be  $\leq 64\%$  or  $\leq 380\text{V}$ )
- Flame, Check D2 lamp is work

ER-SV-053 Rev 05

1

Dr. King

Customer : Amal

15/04/2024 20003052

उत्तर ५०३२

15/04/2024 20003052

FR-S<sup>®</sup>-053 Rev. 05

Certificate No. : M01075/22

**Procedure Used :**

- European Standard EN12469 : 2000 has the status of British Standard, Biotechnology Performance criteria for microbiological safety cabinets.
- NSF International Standard / American National Standard NSF / ANSI 49-2008 Biosafety Cabinet : Design, Construction, Performance and Field Certification.
- Australian Standard : AS 1807.23-2000 Determination of intensity of radiation from germicidal ultraviolet lamps.
- Manufacturer's specification.

### 1. Downflow velocity test.

#### Measurement Information

No. of Rows	No. of Readings	Grid Spacing Front-Back	Grid Spacing Side-Side	Probe height Above sash
2	8	1/4,3/4	1/8,3/8	100mm

#### Measurement Data.

0.36	0.42	0.43	0.41
0.40	0.34	0.34	0.33

Average velocity 0.38 m/s ( 75 FPM.) Velocity range 0.25-0.50 m/s ( 49-98 FPM.)

Uniformity( EN: +/20%avg.) 0.30 - 0.46 m/s ( 60 - 90 FPM.)

Supply filter dimension 24 x 72 (inch x inch) Supply filter area 10.69 SQ.FT

Downflow volume (Q) 802 CFM.

Result Summary ☒ Pass ☐ Fail

Equipment used : Thermo Anemometer Model 425 S/N : 02623979 Calibration date : 14/07/2022

## BSC Certification Test Report

Certificate No. : M01075/22

Customer Name : LABORATORY WATER ANALYSIS CENTER COMPANY LIMITED

Customer Address : 1/94 Moo 5 T.Kanharm, A.U.-Thai,  
Phra Nakhon Si Ayutthaya 13210

Equipment : Biological Safety Cabinet Class II Type A2

Manufacturer : Microtech

Model : V6-T

Serial No : 0972

ID No. : WWL0084

Were in accordance with ☒ EN 12469 ☐ NSF 49 ☐ Manufacturer's specification

Test Date : 23/09/2022

Due Date : 23/09/2023

or after HEPA filters are replaced or unit is moved

Test by : Mr. Piyapong Pusua

Approved by :

  
(Mr.Kridsada Thinhuatoci)  
Authorized Signatory

Issued Date : 26/09/2022

This calibration certificate documents the traceability to national standards, which realize the unit of measurement according to the International System of Units (SI).

This certificate may not be reproduced other than in full except with the prior written approval of the Megafil Company Limited.

Certificate No. : M01075/22

#### Leak location

Supply HEPA Filter

Back



Exhaust HEPA Filter

Back



Result Summary



Pass



Fail

Equipment used : Aerosol Photometer Model 2I S/N : 26468 Calibration date 14/07/2022

Equipment used : Smoke Generator Model TDA-6D S/N : 26530

#### 4. Airflow smoke patterns test

##### Measurement Information

- Downflow Pattern test : Smoke shall be passed from one end of the cabinet to the other, along the centerline of the work surface, at a height of 4 inch (10 cm) above the top of the access opening
- View screen retention test : Smoke shall be passed from one end of the cabinet to the other, 1.0 in (2.5 cm) behind the view screen, at a height 6.0 inch (15 cm) above the top of the access opening.
- Work opening edge retention test : Smoke shall be passed along the entire perimeter of the work opening  
Particular attention should be paid to corners and vertical edges.
- Sash/window seal test : Smoke shall be passed up the inside of the window 2 in (5 cm) from the sides and along the top of the work area.

Certificate No. : M01075/22

#### 2. Inflow velocity test.

Select method. : ☐ DIM ☒ Exhaust velocity. ☐ MFG's Specifications

0.53	0.47	0.48	0.50	0.51
0.57	0.46	0.52	0.53	0.50
0.54	0.57	0.55	0.52	0.53
0.53	0.51	0.57	0.54	0.51
0.51	0.48	0.53	0.55	0.56

Average Inflow velocity 0.44 m/s (86 FPM.) Velocity range >0.40 m/s ( ≥79 FPM.)

Inflow dimension 8 x 72 (inch x inch) Inflow area 4.00 SQ.FT

Inflow volume(Q) 344 CFM

Result Summary



Pass



Fail

Adjustments Required



Fan Speed



Damper

Equipment used : Thermo Anemometer Model 425 S/N : 02623979 Calibration date : 14/07/2022

#### 3. HEPA filter leak test.

##### Measurement Data

HEPA Filter	PAO Upstream Conc.(calculated)	Specification	Measured leak penetration
Supply HEPA Filter	18 µg/l.	<0.003%	<0.003%
Exhaust HEPA Filter	18 µg/l.	<0.003%	<0.003%

Certificate No. : M01075/22

7. Ultraviolet Lamp Test (UV) : Option

Ultraviolet radiation where UV Lamp are fitted, the intensity of radiation at a wavelength of 254 nm.  
Shall be not less than 400 mW/m<sup>2</sup> when measures at work floor surface.

mW/m<sup>2</sup>

720	1510	1540	760
470	980	990	450

Remark :

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Certificate No. : M01075/22

Result Summary

Downflow Pattern test	<input checked="" type="checkbox"/> Accept	<input type="checkbox"/> Non-Conforming
View screen retention test	<input checked="" type="checkbox"/> Accept	<input type="checkbox"/> Non-Conforming
Work opening edge retention test	<input checked="" type="checkbox"/> Accept	<input type="checkbox"/> Non-Conforming
Sash/window seal test	<input checked="" type="checkbox"/> Accept	<input type="checkbox"/> Non-Conforming

5. Site installation

Sash Alarm.	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A
Interlock System.	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A
Exhaust System Performance	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A

Remark / Recommendation

ระบบ Site installation ไม่มีการตรวจสอบ เนื่องจากตู้ไม่ฟังก์ชัน

6. Illumination Test (Lighting) : Option

Lighting should be adequate for safe working within the cabinet. Illumination measured at the work surface.

Lux

620	965	938	561
867	1446	1492	768

Remark :