



Ref No. TBMSZ1/SSL/10015

Date : 15<sup>th</sup> Sep' 2023

Tambaram Medical Center,  
No.30,Bharathamadha Street,  
East Tambaram,  
Chennai-600 059.

Dear Sirs,

As desired by you please find the Calibration Check Report on CHEM 5X  
Sr No. S210407

1. Year of manufacturing: 2021
2. Range of the instrument: Optical density Linear form 0-2.5
3. Date of Calibration – 15<sup>th</sup> Sep '2023
4. Next Calibration Due: 14<sup>th</sup> Sep '2024

Test Voltages / Test Temperature -

Test Voltage	Actual Voltage	Ok / Not Ok
Logic 5 V	5V	OK
Line voltage	220V	OK
Lamp Voltage 12v	11.72V	OK
Temperature 25°C	25°C	OK
Temperature 30°C	30°C	OK
Temperature 37°C	37°C	OK
Input Voltage	18.0 VDC	OK
Pump Calibration	2150	OK





Sr.No.	Filters	Pre Channel	Log Channel
1	340	0 31K	0 73
2	405	0 58K	0 46
3	505	0 46K	0 56
4	546	0 61K	0 43
5	578	0 83K	0 30
6	630	0 97K	0 23

Thanking you and assuring of our prompt attention at all times.

Yours Sincerely,  
For TRANSASIA BIO-MEDICALS LTD.,

  
S.SIVA  
SR.SERVICE ENGINEER





**YODHA MANUFACTURING & EQUIPMENTS PVT LTD**  
**(An ISO 9001: 2015 Certified Company)**

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Website: [www.yomaecalibration.com](http://www.yomaecalibration.com)

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Customer Name & Address	ULR : CC349123000000291F	Page	1 of 2
M/S Tambaram Medical Center, No.31 Bharathamadha Street, East Tambaram, Chennai-600 050		SRF No	SRF-2023-L-14
		Date of Receipt	19-09-2023
		Date Of Calibration	19-09-2023
		Due Date for Calibration	18-09-2024
Certificate No	YME/23-24/L-14-05	Date Of Issue	20-09-2024

**Calibration Certificate of Pipette**

DETAILS OF UUC :			Calibration Location	Lab	
Parameter	VOLUME	Calibration Point:	2	Identification Number	-
Instrument Under calibration(DUC) :	Volumetric Pipette		Range:	2 - 20 µl	
S No	SW00325		Least Count / Resolution of balance :	0.00001 g	
Make & Accuracy	AGAPPE		Location	Lab	

Details of Standard Used	Standard	Calculation as per ISO/TR 20461		
Standards used for calibration :	Electronic Weighing Balance	Air density (pa)	0.001159292	g/ml
Make	Radwag	Water density (pw)	0.997928484	g/ml
Certificate No	CRMTI/01/423100328-A4	Uncertainties of		
Calibration Date & Validity:	24-04-2023 To 23-04-2023	Abs pressure meter @0.0327%rdg	994.7	mbar
Traceability:	Roots	Air Temp. Meter	23.9	°C
Expanded Unc. In cal certificate	0.1000000 mg	Humidity meter	54.00	%RH
Balance Linearity Error	0.1000000 mg	Water Temperature meter unc.	0.41	°C
Mass density (assuming) (pb)	7.98 g/ml	Uncertainty Coeff. of expansion (γ)	0.000027	/°C
Ref ISO 8655-6	Cal. Procedure : YME-L03-WI-V-002	Evaporation	0.0000	g

Environmental Conditions :				Calculation of sensitivity coefficient as per EURAMAT cg-19	
Parameter	Start	End	Mean	A = 1/(pw-pa) =	1.00324128
Temperature (°C)	24.1	23.8	24.0	B = pa/pb =	0.000145275
Relative Humidity (%)	53	56	55	C = (1-γ(t-t0)) =	1.0001539
Pressure (hPa)	994.7	994.7	994.7	m =	0.010079559
				Sensitivity coeff. of water density =	-1.47404E-06 ml/g
				Sensitivity coeff. of air density =	-0.001265918 ml/g
				Sensitivity coeff. of water temperature =	-3.96644E-11 ml/°C
				Cubic thermal expansion coeff. of material of DUC =	8.37359E-06 °C/ml

Checked by :

A. Reshma  
 Calibration Engineer

Document Number YME-L04-R60

Issue No. & Date 01 / 01 10 2021



Authorised by:

Ravi  
 Ravinthiran.MF  
 (Technical Manager)







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ULR : CC34912300000291F	SRF-2023-L-14	Certificate Number :	YME/23-24/L-14-05
Mechanical - Mass & Volume			

For 10 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.01005	21.3	0.00244

For 20 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.02002	21.2	0.00244

Volume of measure :

Volume (Vm) = $[(W/((\rho_w - \rho_a)) * ((1 - (\rho_a / \rho_b))))]$	=	0.01008	ml
Volume of measure at 27°C (V27)	=	0.01008	ml

**Remarks :**

- 1 The above UUC is calibrated at thermal Lab.
- 2 UUC is defined as Unit under calibration.
- 3 The measurement confidence level is 95.45% with Coverage Factor K=2.
- 4 The above results relate only to the item calibrated
- 5 The calibration certificate shall not be reproduced except in full without written approval of YOMAE.

Checked by :

A.Reshma  
Calibration Engineer

Document Number : YME-L04-R60

Issue No. & Date : 01 / 01.10.2021



Authorised by:

Ravi  
Ravanthiran.M  
(Technical Manager)



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Customer Name & Address	ULR : CC34912XXXXXX0290F	Page	1 of 2
MEN Tambaram Medical Center No.10 Bharathamadha Street, East Tambaram Chennai-600059		SRF No	SRF-2023-L-14
		Date of Receipt	19-09-2023
		Date Of Calibration	19-09-2023
		Due Date for Calibration	18-09-2024
Certificate No	YME/23-24-L-14-04	Date Of Issue	20-09-2024

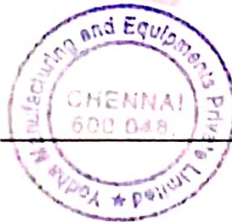
**Calibration Certificate of Pipette**

DETAILS OF UUC :			Calibration Location	Lab
Parameter	VOLUME	Calibration Point	3	Identification Number
Instrument Under calibration(DUC)	Volumetric Pipette		Range	100 - 1000 µl
S No	AAB161420		Least Count / Resolution of balance	0.00001 g
Make & Accuracy	Eriba		Location	Lab

Details of Standard Used		Standard	Calculation as per ISO/TR 20461	
Standards used for calibration :		Electronic Weighing Balance	Air density (pa)	0.001159007 g/ml
Make		Radwag	Water density (pw)	0.997950428 g/ml
Certificate No:		CRM/TL/01/423100328-A4	Uncertainties of	
Calibration Date & Validity:		24-04-2023 To 23-04-2023	Abs pressure meter @0.0327%rdg	994.7 mbar
Traceability:		Roots	Air Temp. Meter	23.9 °C
Expanded Unc. In cal certificate		0.100000 mg	Humidity meter	54.00 %RH
Balance Linearity Error		0.100000 mg	Water Temperature meter unc.	0.41 °C
Mass density (assuming) (pb)		7.98 g/ml	Uncertainty Coeff. of expansion (y)	0.000027 °C
Ref. ISO 8655-e		Cal. Procedure : YME-L03-WI-V-002	Evaporation	0.0000 g

Environmental Conditions :				Calculation of sensitivity coefficient as per EURAMAT eg-19	
Parameter	Start	End	Mean	A = 1/(pw-pa) =	1.003218906
Temperature (°C)	24.1	23.9	24.0	B = pa.pb =	0.000145239
Relative Humidity (%)	56	54	55	C = (1-y(t-t0)) =	1.0001566
Pressure (hPa)	994.7	994.7	994.7	m =	0.200422757
				Sensitivity coeff. of water density =	-2.93015E-05 ml/g
				Sensitivity coeff. of air density =	-0.025171123 ml/g
				Sensitivity coeff. of water temperature =	-7.88478E-10 ml/°C
				Cubic thermal expansion coeff. of material of DUC =	0.000169377 °C/ml

Checked by :  
 A. Reshma  
 Calibration Engineer  
 Document Number : YME-L04-R60  
 Issue No. & Date : 01 / 01.10.2021



Authorised by:  
 Ravinthiran.M  
 (Technical Manager)







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UIC: CC349120000002901	SRF-20231-14	Certificate Number :	YMI/23-24/I-14-04
Mechanical - Mass & Volume			

For 100 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.19984	21.2	0.00244

For 500 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.49982	21.1	0.00244

For 1000 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.99995	21.0	0.00244

Volume of measure :			
Volume (Vm) = [(M/((ρw-ρa)))*(1-(αa/(βb)))]	-	-	0.20045 ml
Volume of measure at 27°C (V27)	-	-	0.20042 ml

### Remarks :

1. The above UUC is calibrated at thermal Lab .
2. UUC is defined as Unit under calibration
3. The measurement confident level is 95.45% with Coverage Factor K-2.
4. The above results relate only to the item calibrated
5. The calibration certificate shall not be reproduced except in full without written approval of YOMAE.

Checked by :

A.Reshma  
Calibration Engineer  
Document Number : YME-L04-R60  
Issue No. & Date : 01 / 01.10.2021



Authorised by:

Rost  
Ravinthiran.M  
(Technical Manager)



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<b>Customer Name &amp; Address</b>		ULR / CC34912300000289F	Page	1 of 2
M/S. Jaoshram Medical Center, No. 30, Bharathnagar Street, East Tambaram, Chennai-600059			SRI No	SRI 2023-1-14
			Date of Receipt	19/09/2023
			Date Of Calibration	19/09/2023
			Due Date for Calibration	18/09/2024
Certificate No	YME/23/241-14/03		Date Of Issue	20/09/2024
<b>Calibration Certificate of Pipette</b>				
<b>DETAILS OF UUC :</b>			Calibration Location	Lab
Parameter	VOLUME	Calibration Point	Identification Number	
Instrument Under calibration(DUC)	Volumetric Pipette		Range	20 - 200 µl
S No	SW00650		Least Count / Resolution of balance	0.00001 g
Make & Accuracy	AGAPIT		Location	Lab
<b>Details of Standard Used</b>		Standard	Calculation as per ISO/IR 20461	
Standards used for calibration	Electronic Weighing Balance		Air density (pa)	0.001199125 g/ml
Make	Radwag		Water density (pw)	0.999986437 g/ml
Certificate No	CRM11/01/423100328 A4		Uncertainties of	
Calibration Date & Validity	24/04/2023 To 23/04/2023		Abs pressure meter @0.0327% rdg	994.7 mbar
Traceability	Roosts		Air Temp. Meter	23.9 °C
Expanded Unc. In cal certificate	0.1000000	mg	Humidity meter	54.00 %RH
Balance Linearity Error	0.1000000	mg	Water Temperature meter unc.	0.41 °C
Mass density (assuming) (pb)	7.98	g/ml	Uncertainty Coeff. of expansion (γ)	0.000027 /°C
Ref. ISO 8655-6	Cal. Procedure: YME-103-WI-V-002		Evaporation	0.0000 g
<b>Environmental Conditions :</b>			Calculation of sensitivity coefficient as per EURAMAT cg 19	
Parameter	Start	End	Mean	A = 1/(pw-pa) = 1.003263302
Temperature (°C)	24.2	23.9	24.1	B = pa/pb = 0.000145254
Relative Humidity (%)	52	53	53	C = (1-γ(t-t0)) = 1.0001512
Pressure (hPa)	994.7	994.7	994.7	m = 0.020089402
				Sensitivity coeff. of water density = 2.93758E-06 ml/g
				Sensitivity coeff. of air density = 0.002523129 ml/g
				Sensitivity coeff. of water temperature = -7.96448E-11 ml/°C
				Cubic thermal expansion coeff. of material of DUC = 1.63945E-05 °C/ml
Checked by : A. Reshma Calibration Engineer Document Number : YME-L04-R60 Issue No & Date : 01 / 01.10.2021			Authorised by: R. Vinthiran.M (Technical Manager)	







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CC-3491

ULR : CC349123000000289T	SRF-2023-L-14	Certificate Number :	YME/23-24/L-14-43
Mechanical - Mass & Volume			

For 20 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.02003	21.4	0.00244

For 100 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.10008	21.2	0.00244

For 200 µl

SLNo	Observed Readings (g)	Temp. Of water (°C)	Measurement Of Uncertainty ml
1	0.19986	21.3	0.00244

Volume of measure :			
Volume (Vm) = [(W)/((pw-ρa))*((1-(ρa/ρb)))]	-	-	0.02009 ml
Volume of measure at 27° C (V27)	-	-	0.02009 ml

**Remarks :**

- 1 The above UUC is calibrated at thermal Lab
- 2 UUC is defined as Unit under calibration
- 3 The measurement confidence level is 95.45% with Coverage Factor K=2.
- 4 The above results relate only to the item calibrated
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Checked by :

A.Reshma  
 Calibration Engineer  
 Document Number : YME-L04-R60  
 Issue No. & Date : 01 / 01.10.2021



Authorised by:

R. Vinthiran\_M  
 (Technical Manager)