



CERTIFICATE OF CALIBRATION

FT-Q-25		Page 1 of 2	
ULR No.	: CC29372000000799P	Date of Issue	: 21-Nov-20
Certificate No	: TVCS 20/11/188 - 01	Recom. Due Date	: 17-May-21
Date of Calibration	: 18-Nov-20		
Customer Details:		SRF No.	: 188
M/s. SRI SELLAM CLINICAL LAB,		Calibrated at	: Lab
11314, Sulthanpet Near Panchamuga		Date of Receipt	: 17-Nov-20
Vinayagar Kovil,		Cond. On Receipt	: Satisfactory
P.Velur - 638182.			
Details of Test Instrument:			
Description	: Micropipette	Model No.	: --
Range	: 5-50 µl	Serial No	: YE199AL0532036
Least Count	: 0.5 µl	Identification No.	: --
Make	: D - Lab	Accuracy	: As per Manual
Working range	: --	Location	: Lab
Details of Standard Used			
Name	Certificate No.	Valid upto	Traceability
Electronic SemiMicro Balance	TVCSPL 20/05/364-01	12-May-21	TVCSPL, Chennai.
Work Instruction	: WI-M-03	(Reference Standard ISO 8655-6)	
Environmental Details	: Temperature : 25±2°C	Relative Humidity : 50±10 % RH	
MECHANICAL CALIBRATION			
(Volume)			
Calibration Results			
1. Lower Volume :	5 µl	No. of Measurements :	10
<input type="text" value="4.97"/>	<input type="text" value="4.97"/>	<input type="text" value="4.93"/>	<input type="text" value="4.95"/>
<input type="text" value="4.92"/>	<input type="text" value="5.00"/>	<input type="text" value="4.97"/>	<input type="text" value="4.99"/>
<input type="text" value="4.94"/>	<input type="text" value="4.98"/>		
Mean Value :	4.97 µl		
Error Limits(±)			
Systematic Error :	-0.03 µl	0.13 µl	
Systematic Error :	-0.67 %	2.50 %	
Random Error :	0.03 µl	0.08 µl	
Random Error :	0.53 %	1.50 %	
Measurement Uncertainty :	±	0.14 µl	

Calibrated by :
S. Mani
Ms. S. Manikala
(Calibration Engineer)



...redefining the true value



ULR No. : CC293720000000799P
Certificate No : TVCS 20/11/188 - 01

MECHANICAL CALIBRATION					
(Volume)					
Calibration Results					
2. Middle Volume :	25	μl	No. of Measurements :	10	
25.03	24.96		25.05	25.05	
25.02	25.06		25.04	25.05	
25.03	25.02				
Mean Value :	25.03	μl			
Error Limits(\pm)					
Systematic Error :	0.03	μl	0.20	μl	
Systematic Error :	0.13	%	1.00	%	
Random Error :	0.03	μl	0.10	μl	
Random Error :	0.11	%	0.50	%	
Measurement Uncertainty :	\pm		0.14	μl	
3. Nominal Volume :	50	μl	No. of Measurements :	10	
50.22	50.15		50.24	50.22	
50.19	50.15		50.21	50.19	
50.15	50.28				
Mean Value :	50.20	μl			
Error Limits(\pm)					
Systematic Error :	0.20	μl	0.50	μl	
Systematic Error :	0.40	%	1.00	%	
Random Error :	0.04	μl	0.20	μl	
Random Error :	0.09	%	0.40	%	
Measurement Uncertainty :	\pm		0.14	μl	

Remarks

- The reported Expanded Uncertainty is calculated at 95.45 % C.L with coverage factor $k=2$
- The Above Results are within the maximum permissible Error

Calibrated by :

S. Manikala
Ms. S. Manikala

(Calibration Engineer)



...redefining the true value



CERTIFICATE OF CALIBRATION

FT-Q-25		Page 1 of 2	
ULR No.	: CC293720000000800F	Date of Issue	: 21-Nov-20
Certificate No	: TVCS 20/11/188 - 02	Recom. Due Date	: 17-May-21
Date of Calibration	: 18-Nov-20		
Customer Details:		SRF No.	: 188
M/s. SRI SELLAM CLINICAL LAB,		Calibrated at	: Lab
11314, Sulthanpet Near Panchamuga		Date of Receipt	: 17-Nov-20
Vinayagar Kovil,		Cond. On Receipt	: Satisfactory
P.Velur - 638182.			
Details of Test Instrument:			
Description	: Micropipette	Model	: --
Range	: 100 - 1000 µl	Serial No	: YE199AL0547630
Least Count	: 1 µl	Identification No.	: --
Make	: D - Lab	Accuracy	: As per Manual
Working range :	: --	Location	: Lab
Details of Standard Used			
Name	Certificate No.	Valid upto	Traceability
Electronic SemiMicro Balance	TVCSPL 20/05/364 - 01	12-May-21	TVCSPL, Chennai.
Work Instruction	: WI-M-03 (Reference Standard ISO 8655-6)		
Environmental Details	: Temperature : 25±2°C Relative Humidity : 50±10 % RH		
MECHANICAL CALIBRATION			
(Volume)			
Calibration Results			
1. Lower Volume :	100 µl	No. of Measurements :	10
<input type="text" value="100.30"/>	<input type="text" value="100.21"/>	<input type="text" value="100.23"/>	<input type="text" value="100.28"/>
<input type="text" value="100.22"/>	<input type="text" value="100.25"/>	<input type="text" value="100.32"/>	<input type="text" value="100.29"/>
<input type="text" value="100.33"/>	<input type="text" value="100.31"/>		
Mean Value :	100.27 µl		
Error Limits(±)			
Systematic Error :	0.27 µl	0.80 µl	
Systematic Error :	0.27 %	0.80 %	
Random Error :	0.04 µl	0.30 µl	
Random Error :	0.04 %	0.30 %	
Measurement Uncertainty :	±	0.14 µl	

Calibrated by :
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Ms. S. Manikala
(Calibration Engineer)



...redefining the true value



ULR No. : CC29372000000800F
Certificate No : TVCS 20/11/188 - 02

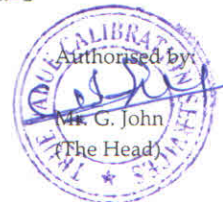
MECHANICAL CALIBRATION				
(Volume)				
Calibration Results				
2. Middle Volume :	500	μl	No. of Measurements :	10
	498.78	498.48	498.66	498.17
	498.82	498.67	498.24	498.05
	498.34	498.72		
Mean Value :	498.50	μl		
Error Limits(\pm)				
Systematic Error :	-1.50	μl	4.00	μl
Systematic Error :	-0.30	%	0.80	%
Random Error :	0.28	μl	1.50	μl
Random Error :	0.06	%	0.30	%
Measurement Uncertainty :		\pm	1.1 μl	
3. Nominal Volume :	1000	μl	No. of Measurements :	10
	999.05	999.09	998.92	998.97
	999.05	998.67	998.73	999.02
	998.98	999.45		
Mean Value :	999.00	μl		
Error Limits(\pm)				
Systematic Error :	-1.00	μl	8.00	μl
Systematic Error :	-0.10	%	0.80	%
Random Error :	0.21	μl	3.00	μl
Random Error :	0.02	%	0.30	%
Measurement Uncertainty :		\pm	1.1 μl	

Remarks

1. The reported Expanded Uncertainty is calculated at 95.45 % C.L. with coverage factor $k=2$
2. The Above Results are within the maximum permissible Error

Calibrated by :

S. Manikala
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(Calibration Engineer)



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