

Customer

SERCOM
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Jason Pacini
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Calibration By

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Date

03/30/2021

Next Calibration

03/30/2022

Pipette • Chemistry Department • Room 100

MANUFACTURER	MODEL	TYPE	VOLUME (µL)	SERIAL	ASSET
Eppendorf	Reference	Single Channel	1000	123456789	PIP-01

Additional Action Taken

Nose cone cleaned, shaft cleaned, piston cleaned, seal replaced, o-ring replaced.

Remarks

Unit required minor increase and internal cleaning.

Results

As found: PASS
As left: PASS

Service Technician



Jason Pacini

Room Conditions

WATER TEMP (°C)	ROOM TEMP (°C)	HUMIDITY (%)	H2O DENSITY (mg/mL)	AIR PRESSURE (kPa)	EVAPORATION TIME (mg/min)	Z-FACTOR
20.1	20.4	33.1	0.9981	101.2	0.3	1.0029

NIST Traceability

DEVICE	MANUFACTURER	SERIAL NO.	LAST CALIBRATION	NEXT CALIBRATION	TRACEABILITY NO.
Analytical Balance	Sartorius	33005585	05/29/2020	05/31/2021	KBFXQG103L - 1
Water Probe	Control Company	192602651	10/29/2019	10/29/2021	4376-10834504
Weight Set #2	Troemner	2	07/22/2020	01/31/2022	01144827-1
Environmental Probe	Control Company	192413851	08/20/2019	08/20/2021	6530-10642150

The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable to and through NIST to the International System of Units. SERCOM is ISO/IEC 17025:2017 accredited by PJLA, accreditation number 60261. The reported expanded uncertainty of measurement is stated as the combined standard uncertainty of measurement multiplied by the coverage factor $k = 2$ such that the coverage probability corresponds to approximately 95%. Decision rule is simple acceptance where the results are within specified tolerance without uncertainties.

Samples 1000 µL

As Found PASS

NOMINAL VALUE (µL)	RAW (µL)	ADJUSTED (µL)	RESULT	MEAN VOLUME (µL)
1000	1	992.03	PASS	995.46
	2	994.20	PASS	
TOLERANCE (%)	3	995.39	PASS	INACCURACY (%)
	4	993.75	PASS	
1	5	992.01	PASS	-0.45
	6	994.21	PASS	
ACCEPTABLE RANGE (µL)				IMPRECISION (%)
990.00 to 1010.00				0.12
				STANDARD DEVIATION (µL)
				1.22
				COEFFICIENT OF VARIATION (%)
				0.12
				EXPANDED UNCERTAINTY (µL)
				2.69

Samples 200 µL

As Found PASS

NOMINAL VALUE (µL)	RAW (µL)	ADJUSTED (µL)	RESULT	MEAN VOLUME (µL)
200	1	196.11	PASS	196.76
	2	196.60	PASS	
TOLERANCE (%)	3	195.83	PASS	INACCURACY (%)
	4	196.46	PASS	
2	5	196.80	PASS	-1.62
	6	196.55	PASS	
ACCEPTABLE RANGE (µL)				IMPRECISION (%)
196.00 to 204.00				0.16
				STANDARD DEVIATION (µL)
				0.33
				COEFFICIENT OF VARIATION (%)
				0.17
				EXPANDED UNCERTAINTY (µL)
				0.71

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Samples 1000 µL

As Left PASS

	RAW (µL)	ADJUSTED (µL)	RESULT	
NOMINAL VALUE (µL)				MEAN VOLUME (µL)
1000	1 997.89	999.76	PASS	999.67
	2 998.21	1000.08	PASS	
TOLERANCE (%)	3 999.49	1001.37	PASS	INACCURACY (%)
1	4 996.02	997.89	PASS	-0.03
ACCEPTABLE RANGE (µL)	5 997.48	999.35	PASS	IMPRECISION (%)
990.00 to 1010.00	6 997.72	999.59	PASS	0.10
				STANDARD DEVIATION (µL)
				1.03
				COEFFICIENT OF VARIATION (%)
				0.10
				EXPANDED UNCERTAINTY (µL)
				2.27

Samples 200 µL

As Left PASS

	RAW (µL)	ADJUSTED (µL)	RESULT	
NOMINAL VALUE (µL)				MEAN VOLUME (µL)
200	1 199.56	199.93	PASS	200.17
	2 199.67	200.04	PASS	
TOLERANCE (%)	3 199.42	199.79	PASS	INACCURACY (%)
2	4 200.24	200.62	PASS	0.09
ACCEPTABLE RANGE (µL)	5 200.22	200.60	PASS	IMPRECISION (%)
196.00 to 204.00	6 199.68	200.05	PASS	0.16
				STANDARD DEVIATION (µL)
				0.32
				COEFFICIENT OF VARIATION (%)
				0.16
				EXPANDED UNCERTAINTY (µL)
				0.69

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