HAMILTON
LIFE SCIENCE ROBOTICS

Volume Verification Report
for 1000 µl Pipetting Channels

Instrument Name:	ML_STAR	**Date:**	2022-10-05
Instrument Serial No.:	291E	**Time:**	14:52
Instrument User Software Version:	4.5.0.5217 FVK2: 1020/04		
Location:	SSI	**Temperature [°C]:**	21.3
Operator:	Niels Broenderup	**Relative Humidity [%]:**	61.2
Reason for Verification:	PM2		
Report File:	Report_Vol_Ver_1000ulSingleChannels_291E_202210051452.pdf		

Test Equipment:			
Balance Serial No.:	B719096888	**Valid until:**	2023-08-21
Calibration Weight No.:	C132337080	**Valid until:**	2023-08-01
Actual Weigth [g]:	19.99992	**Calibration Weight [g]:**	20 +/- 0.00034
Reader Serial No.:	1257	**Validation:**	**passed**
Reader Checkplate Serial No.	1629	**Valid until:**	2023-01-25
Ambient Temperature and Humidity Measuring Device Serial No.:	83475586	**Valid until:**	2022-11-06
Reagent Kit Lot No.:	L3140	**Valid until:**	2023-05-04

Measurements:

Testing Volume [µl]:	10	1000
Number of Samples:	8	8
Used Tip Type:	10µl Low Volume Tip	1000µl High Volume Tip
Liquid Density [g/cm3]:	1.0005	1.0004
Mean Volume [µl]:	10.088	988.6
Standard Deviation [µl]:	0.050	6.3
Trueness (spec.) [%]:	<= +/- 8.00	<= +/- 2.50
Trueness (actual) [%]:	0.88	-1.14
Precision (spec.) [%]:	<= 5.00	<= 2.00
Precision (actual) [%]:	0.50	0.64
Test Result:	passed	passed

Process Status: ***passed***

Summary Volume 10µl:

Channel No.	
1	passed
2	passed
3	passed
4	passed
5	passed
6	passed
7	passed
8	passed

Summary Volume 1000µl:

Channel No.	
1	passed
2	passed
3	passed
4	passed
5	passed
6	passed
7	passed
8	passed

Operator: NCB **Date:** 2022-10-05 **Signature:** Niels Brønderup

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Testing Volume: 10µl

	Channel 1	Channel 2	Channel 3	Channel 4
No. 1	10.189	10.169	10.044	10.104
No. 2	10.116	10.128	10.112	10.076
No. 3	10.120	10.132	9.997	10.124
No. 4	10.068	10.128	10.016	10.112
No. 5	10.160	10.210	10.091	10.128
No. 6	10.108	10.136	10.064	10.128
No. 7	10.100	10.148	10.028	10.132
No. 8	10.100	10.202	10.044	10.136
Mean Volume [µl]:	10.120	10.156	10.050	10.117
Standard Deviation [µl]:	0.038	0.033	0.038	0.020
Trueness [%]:	1.20	1.56	0.50	1.17
Precision [%]:	0.38	0.33	0.38	0.20
Test Result:	passed	passed	passed	passed

	Channel 5	Channel 6	Channel 7	Channel 8
No. 1	10.076	9.989	10.095	10.001
No. 2	10.091	10.120	10.087	10.032
No. 3	10.005	10.016	10.083	10.044
No. 4	10.128	10.091	10.040	10.020
No. 5	10.128	10.083	10.064	10.056
No. 6	10.108	10.072	10.044	10.060
No. 7	10.108	10.091	10.076	10.016
No. 8	10.124	10.083	10.060	10.013
Mean Volume [µl]:	10.096	10.068	10.069	10.030
Standard Deviation [µl]:	0.041	0.043	0.020	0.021
Trueness [%]:	0.96	0.68	0.69	0.30
Precision [%]:	0.41	0.43	0.20	0.21
Test Result:	passed	passed	passed	passed

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Testing Volume: 1000µl

	Channel 1	Channel 2	Channel 3	Channel 4
No. 1	995.9	997.6	993.2	989.8
No. 2	996.1	998.9	992.6	991.1
No. 3	996.6	996.2	992.9	993.3
No. 4	985.0	990.0	988.7	981.9
No. 5	985.5	988.3	982.9	979.6
No. 6	988.5	989.5	986.4	982.1
No. 7	993.5	990.8	983.8	981.5
No. 8	1004.8	988.0	983.1	981.9
Mean Volume [µl]:	993.2	992.4	988.0	985.2
Standard Deviation [µl]:	6.7	4.4	4.5	5.3
Trueness [%]:	-0.68	-0.76	-1.20	-1.48
Precision [%]:	0.67	0.45	0.46	0.54
Test Result:	passed	passed	passed	passed

	Channel 5	Channel 6	Channel 7	Channel 8
No. 1	990.8	989.0	997.0	992.0
No. 2	992.5	991.0	999.2	996.3
No. 3	993.7	992.9	999.6	999.7
No. 4	981.1	978.6	984.3	979.5
No. 5	983.1	978.0	987.0	983.3
No. 6	984.0	983.0	987.6	986.2
No. 7	980.8	979.5	991.0	982.8
No. 8	982.5	981.4	987.8	987.6
Mean Volume [µl]:	986.1	984.2	991.7	988.4
Standard Deviation [µl]:	5.4	5.9	6.0	7.0
Trueness [%]:	-1.39	-1.58	-0.83	-1.16
Precision [%]:	0.54	0.60	0.61	0.71
Test Result:	passed	passed	passed	passed