HAMILTON
LIFE SCIENCE ROBOTICS

Volume Verification Report
for 1000 µl Pipetting Channels

Instrument Name:	ML_STAR	**Date:**	2022-11-14
Instrument Serial No.:	745G	**Time:**	13:30
Instrument User Software Version:	4.5.0.5217 FVK2: 1020/04		
Location:	SSI Vest	**Temperature [°C]:**	20.7
Operator:	Niels Broenderup	**Relative Humidity [%]:**	48.6
Reason for Verification:	PM2		
Report File:	Report_Vol_Ver_1000ulSingleChannels_745G_202211141330.pdf		

Test Equipment:			
Balance Serial No.:	B719096888	**Valid until:**	2023-08-21
Calibration Weight No.:	C132337080	**Valid until:**	2023-08-01
Actual Weigth [g]:	20.00004	**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:**	2022-12-06
Reagent Kit Lot No.:	M0470	**Valid until:**	2023-08-10

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]:	1.0006	1.0005
	Mean Volume [µl]:	10.068	984.7
	Standard Deviation [µl]:	0.088	6.4
	Trueness (spec.) [%]:	<= +/- 8.00	<= +/- 2.50
	Trueness (actual) [%]:	0.68	-1.53
	Precision (spec.) [%]:	<= 5.00	<= 2.00
	Precision (actual) [%]:	0.88	0.65
	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:** 14-11-2022 **Signature:** Niels Brønderup

Report_Vol_Ver_1000ulSingleChannels_745G_202211141330.pdf

Testing Volume: 10µl

	Channel 1	Channel 2	Channel 3	Channel 4
No. 1	10.037	10.086	10.005	9.966
No. 2	9.958	9.832	10.082	9.973
No. 3	9.923	9.958	10.148	9.993
No. 4	10.074	10.131	10.123	10.078
No. 5	10.107	10.136	10.102	10.098
No. 6	10.107	10.115	10.131	10.065
No. 7	10.090	10.065	10.127	10.061
No. 8	10.136	10.178	10.123	10.098
Mean Volume [µl]:	10.054	10.063	10.105	10.042
Standard Deviation [µl]:	0.076	0.114	0.045	0.055
Trueness [%]:	0.54	0.63	1.05	0.42
Precision [%]:	0.76	1.13	0.45	0.55
Test Result:	passed	passed	passed	passed

	Channel 5	Channel 6	Channel 7	Channel 8
No. 1	10.123	9.962	10.049	9.927
No. 2	10.111	10.005	10.049	9.877
No. 3	9.919	9.911	9.981	9.824
No. 4	10.182	10.074	10.078	10.078
No. 5	10.169	10.094	10.119	10.098
No. 6	10.191	10.086	10.212	10.111
No. 7	10.157	10.049	10.136	10.090
No. 8	10.212	10.074	10.169	10.131
Mean Volume [µl]:	10.133	10.032	10.099	10.017
Standard Deviation [µl]:	0.093	0.066	0.074	0.121
Trueness [%]:	1.33	0.32	0.99	0.17
Precision [%]:	0.92	0.66	0.74	1.21
Test Result:	passed	passed	passed	passed

Report_Vol_Ver_1000ulSingleChannels_745G_202211141330.pdf

Testing Volume: 1000µl

	Channel 1	Channel 2	Channel 3	Channel 4
No. 1	994.3	991.4	986.6	982.6
No. 2	995.2	990.6	986.9	985.8
No. 3	992.9	993.8	992.2	989.2
No. 4	984.6	984.8	982.7	974.6
No. 5	984.3	986.1	984.7	981.7
No. 6	981.7	985.7	984.1	979.3
No. 7	982.1	985.8	978.0	973.4
No. 8	991.2	1000.5	984.0	974.3
Mean Volume [µl]:	988.3	989.8	984.9	980.1
Standard Deviation [µl]:	5.7	5.4	4.1	5.8
Trueness [%]:	-1.17	-1.02	-1.51	-1.99
Precision [%]:	0.57	0.55	0.41	0.59
Test Result:	passed	passed	passed	passed

	Channel 5	Channel 6	Channel 7	Channel 8
No. 1	984.2	983.0	993.3	990.8
No. 2	987.4	984.8	993.8	989.2
No. 3	990.2	988.7	994.5	993.8
No. 4	978.7	975.3	980.0	979.9
No. 5	981.3	976.1	984.2	984.4
No. 6	979.9	980.0	982.6	987.8
No. 7	974.3	976.2	978.3	980.1
No. 8	976.2	973.7	979.8	992.4
Mean Volume [µl]:	981.5	979.7	985.8	987.3
Standard Deviation [µl]:	5.4	5.3	6.9	5.3
Trueness [%]:	-1.85	-2.03	-1.42	-1.27
Precision [%]:	0.56	0.54	0.70	0.54
Test Result:	passed	passed	passed	passed