

Volume Measurement in Ratiolab 6018211 96-Well Polystyrene Microplates Using the Scarlett™ 01 Volume Analysis System

Summary

The Scarlett™ 01 Volume Analysis System successfully measured liquid volumes in Ratiolab 6018211 96-well microplates across multiple liquid types and dispense volumes. Measurements demonstrate strong agreement with calibrated reference volumes throughout the evaluated range.

Key Results

- Scarlett successfully measured liquid volumes in **Ratiolab 6018211** 96-well polystyrene microplates.
- Successful volume measurement from **40–200 µL**
- Liquids evaluated:
 - **DI H₂O + Tartrazine**
 - **DMSO (≥99.9%) + Tartrazine**
- Observed Inaccuracy: **-2.5% to +1.9%**
- Observed Precision (CV): **0.23 to 1.8%**
- Measurements demonstrated good agreement with calibrated syringe reference volumes across the tested volume ranges.

Performance Overview

Table 1. Test Summary

Parameter	Value
Plate Manufacturer / Model	Ratiolab GmbH 6018211
Plate Type	96-Well, Round-well, Flat-bottom, Polystyrene
Volume Range Evaluated	40–200 µL
Liquids Evaluated	2
Maximum Inaccuracy	≤ ±2.5%
Maximum CV	1.8%

Verification Results

Across all tested liquids, measured volumes closely matched calibrated reference volumes. Inaccuracy values ranged from -2.5% to +1.9%, while coefficient of variation (CV) values remained below 1.8%.

Table 2. Measurement Performance Results

Liquid	Target Volume (μL)	n	Mean Volume (μL)	^a Inaccuracy	CV
DI H ₂ O + 0.110 g/L Tartrazine	39.76	6	40.05	0.73%	1.81%
	49.88	6	48.61	-2.54%	0.58%
	179.76	6	175.34	-2.46%	0.60%
DMSO + 0.072 g/L Tartrazine	39.76	4	39.56	-0.50%	1.29%
	49.88	6	50.72	1.68%	0.96%
	179.76	6	183.18	1.90%	0.23%

^a - Inaccuracy (%) is calculated relative to calibrated syringe reference volumes

Measurement Method

Measurements were performed using plate- and liquid-specific calibration curves. Calibration curves were generated using reference volumes dispensed by Hamilton glass syringes calibrated by RISE (Research Institutes of Sweden) according to ISO 8655 procedures. Reported inaccuracy values are relative to calibrated reference volumes.

Conclusion

The Scarlett 01 Volume Analysis System demonstrated accurate and precise liquid volume measurements in Ratiolab 6018211 microplates using DI H₂O + tartrazine and DMSO + tartrazine over a volume range of 40-200 μL. These results support reliable volume verification and quality control workflows in laboratory and automated liquid handling environments.

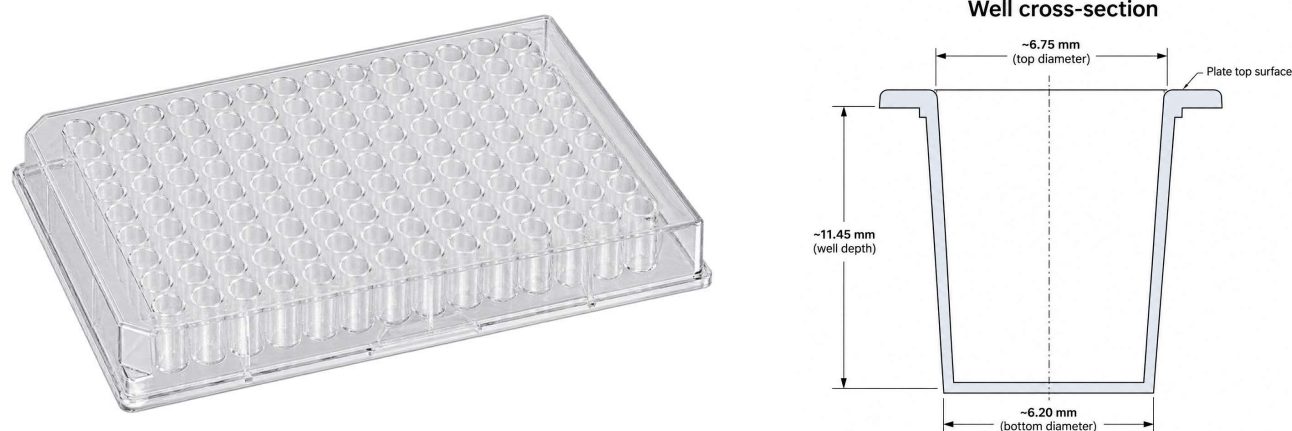


Figure 1. RatioLabCorning 3657 384-well square-well, round-bottom polypropylene microplate geometry.

Measure what matters. Verify liquid volumes in your plates, with your reagents, in your workflow. Contact Aventix to learn how (hello@aventix.io)