

Volume Measurement in Greiner Bio-One 781906 384-Well μ Clear Polystyrene Microplates Using the Scarlett™ 01 Volume Analysis System

Summary

The Scarlett 01 Volume Analysis System accurately quantified liquid volumes in the Greiner Bio-One 781906 384-Well μ Clear Microplate. These two-part polystyrene plates are manufactured with black sidewalls and optical flat-bottoms. These non-binding surface microplates are widely used for fluorescence, luminescence, and cell-based assays requiring low-background optical performance. Scarlett demonstrated accurate volume measurements across a 20–110 μ L working range using reference volumes dispensed with traceably calibrated syringes.

Key Results

- Scarlett successfully measured liquid volumes in **Greiner 781906** 384-well μ Clear optical-bottom polystyrene microplates.
- Successful volume measurement from **20–110 μ L** using 10 mg/mL BSA in 1 $\times$ PBS.
- Observed Inaccuracy: **1.5% to 4.5%**
- High measurement precision with a **maximum CV of 1.26%**.

Performance Overview

Table 1. Test Summary

Parameter	Value
Plate Manufacturer / Model	Greiner Bio-One 781906
Plate Type	384-well, square-well, flat μ Clear bottom, black sidewall, polystyrene
Volume Range Evaluated	20–110 μ L
Liquids Evaluated	10 mg/mL BSA in 1 $\times$ PBS
Maximum Inaccuracy	$\leq 4.5\%$
Maximum CV	1.3%

Verification Results

Across the evaluated range, volumes measured by the Scarlett 01 System closely matched the reference volumes. Inaccuracy values ranged from 1.50% to 4.48%, while coefficient of variation (CV) values remained below 1.26%.

Table 2. Measurement Performance Results

Reference Volume (μL)	Mean Volume (μL) (n=6)	^a Inaccuracy	CV
20.06	20.96	4.48%	1.26%
30.18	30.85	2.21%	1.08%
39.76	40.72	2.41%	1.07%
49.88	50.63	1.50%	0.87%
80.20	83.28	3.84%	0.64%
99.56	101.29	1.73%	0.80%
109.68	113.01	3.04%	0.41%

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

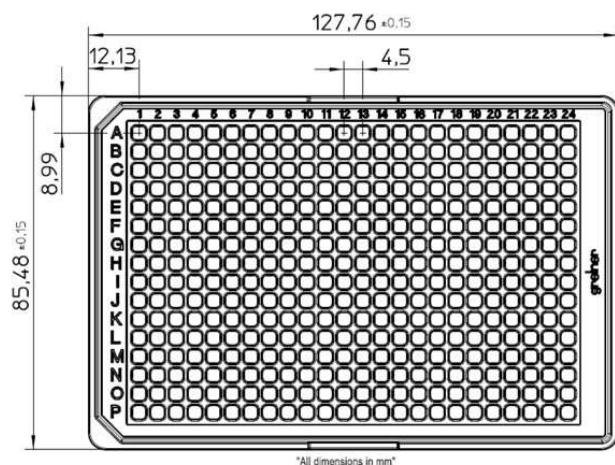
Measurement Method

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.

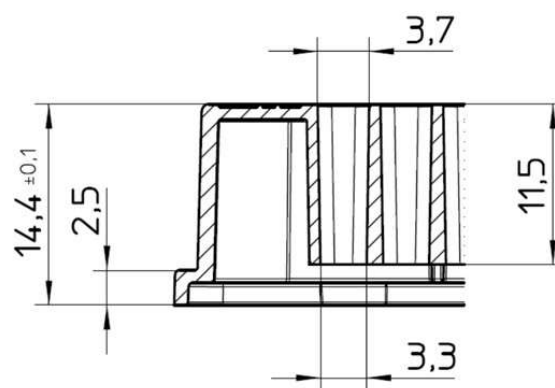
Conclusion

The Scarlett 01 Volume Analysis System demonstrated accurate and precise liquid volume measurements of a 10 mg/mL BSA solution in Greiner 781906 384-well μClear microplates across a volume range of 20–110 μL. These results support reliable volume verification and quality control workflows using optical-bottom microplates.

Greiner 384 Well Microplate (top view)



Well cross-section (through wells)

**Figure 1.** Greiner Bio-One 781906 μClear 384-well plate and well geometry.

Your plates. Your reagents. Your workflow. Contact Aventix (hello@aventix.io) to learn how Scarlett 01 can provide fast, non-contact volume verification across your laboratory workflows.