

DS-11+ vs Agilent 8453 Performance Data

Technical Note 136

Introduction

The DeNovix DS-11+ dual mode spectrophotometer with SmartPath® Technology enables accurate, reproducible measurements for both cuvette and microvolume measurements.

This technical bulletin presents typical performance data comparing dsDNA measurements made using a DS-11+ versus measurements made using an Agilent 8453 spectrophotometer across a concentration range measurable using a 1 cm cuvette.

Materials and Methods

A 250 ng/μL solution of fish sperm dsDNA (Amresco, cat # 1b1509) was prepared in dH₂O. A series of eight dilutions ranging from ~0.5 ng/μL to 75 ng/μL were then gravimetrically prepared to fall within the study concentration range.

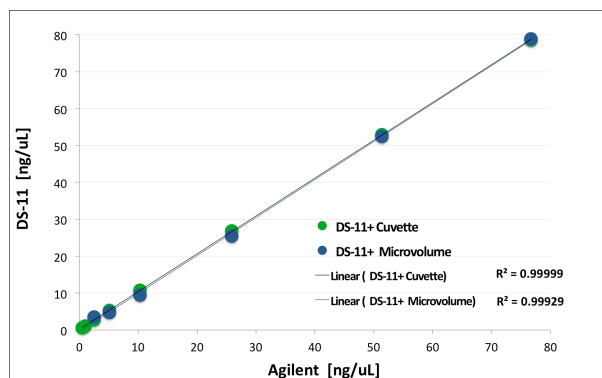
Reference concentrations for the dilutions were determined using an Agilent 8453 (Agilent, Santa Clara CA) in a 10 mm quartz cuvette (Starna, #1-Q-10). The same cuvette was then used to measure six replicates of the same dilutions on the DS-11+ spectrophotometer using the dsDNA EasyApp® and the Cuvette 10 mm mode.

Microvolume measurements were made using six 1 μL aliquots of dsDNA between 5 to 75 ng/μL. Fresh aliquots were used for each microvolume measurement. The sample solution was removed between each measurement by wiping the upper and lower sample surfaces with a clean dry laboratory wipe.

Concentrations were calculated by applying Beer's Law using 10 mm equivalent 260 nm absorbance values.

Results

The linear response and accuracy correlation of the DS-11+ as compared to the reference Agilent 8453 spectrophotometer is presented below:



Agilent 1 cm cuvette n=6		DS-11+ 1 cm Cuvette		DS-11+ Microvolume	
ng/μL	stdev	ng/μL	stdev	ng/μL	stdev
0.53	0.01	0.058	0.02	NA	-
0.96	0.01	1.12	0.02	NA	-
2.5	0.02	2.73	0.02	NA	-
5.09	0.02	5.37	0.03	4.83	0.57
10.31	0.01	10.77	0.03	9.38	0.44
25.87	0.04	26.85	0.01	25.44	0.47
51.34	0.06	52.95	0.03	52.51	0.60
76.68	0.13	78.64	0.08	79.22	0.81

Summary

The DeNovix DS-11+ spectrophotometer exhibits outstanding linear and accuracy correlation to a calibrated Agilent 8453 spectrophotometer. The dual cuvette and microvolume mode with extended high concentration range capabilities (data not shown) makes the DS-11+ the instrument of choice for the broadest concentration range.

Refer to Technical Notes #105 and #107 at www.denovix.com for additional microvolume mode performance data.

