



Technical Note 136

DS-11+ vs. Agilent 8453 Performance Data

Introduction

The DeNovix® DS-11 Series Spectrophotometer / Fluorometer, equipped with SmartPath® Technology, enables accurate, reproducible measurements for both cuvette and microvolume measurements.

This document 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 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 EasyApps® program and the Cuvette 10 mm mode.

Microvolume measurements were made using six 1 μL aliquots of dsDNA between 5 and 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 in Figure 1 and Table 1 below:

Table 1: DS-11+ Compared to Agilent 8453

Agilent 1 cm cuvette n=6	Agilent 1 cm cuvette n=6	DS-11+ 1 cm Cuvette	DS-11+ 1 cm Cuvette	DS-11+ Microvolume	DS-11+ Microvolume
ng/μL	stdev	ng/μL	stdev	ng/μL	stdev
0.53	0.01	0.58	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	0.6
76.68	0.13	78.64	0.08	79.22	0.81

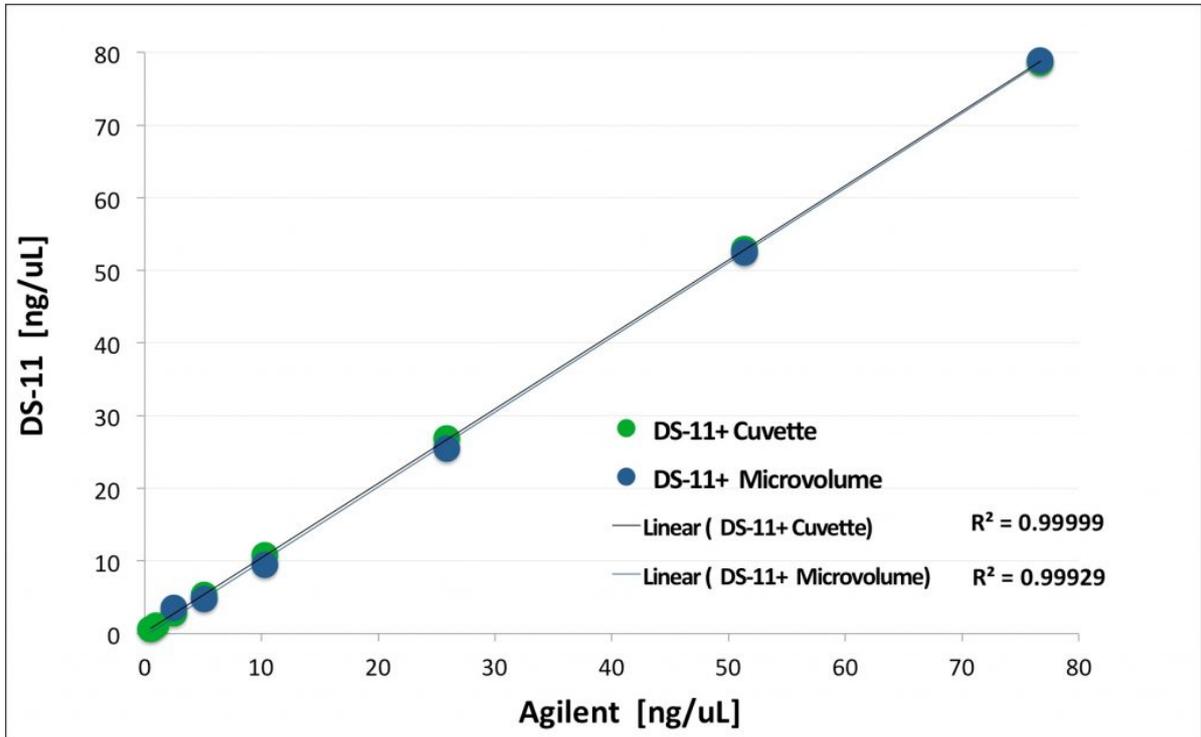


Figure 1: Linear response and accuracy correlation.

Summary

The DeNovix DS-11 Series exhibits outstanding linear and accuracy correlations 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.

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