



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 dH<sub>2</sub>O. 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          |       | Agilent          |       | DS-11+       |       | DS-11+       |       | DS-11+      |       | DS-11+      |       |
|------------------|-------|------------------|-------|--------------|-------|--------------|-------|-------------|-------|-------------|-------|
| 1 cm cuvette n=6 |       | 1 cm cuvette n=6 |       | 1 cm Cuvette |       | 1 cm Cuvette |       | Microvolume |       | Microvolume |       |
| ng/μL            | stdev | ng/μL            | stdev | ng/μL        | stdev | ng/μL        | stdev | ng/μL       | stdev | ng/μL       | stdev |
| 0.53             | 0.01  | 0.53             | 0.01  | 0.58         | 0.02  | NA           | -     | NA          | -     | NA          | -     |
| 0.96             | 0.01  | 0.96             | 0.01  | 1.12         | 0.02  | NA           | -     | NA          | -     | NA          | -     |
| 2.5              | 0.02  | 2.5              | 0.02  | 2.73         | 0.02  | NA           | -     | NA          | -     | NA          | -     |
| 5.09             | 0.02  | 5.09             | 0.02  | 5.37         | 0.03  | 4.83         | 0.57  | 4.83        | 0.57  | 4.83        | 0.57  |
| 10.31            | 0.01  | 10.31            | 0.01  | 10.77        | 0.03  | 9.38         | 0.44  | 9.38        | 0.44  | 9.38        | 0.44  |
| 25.87            | 0.04  | 25.87            | 0.04  | 26.85        | 0.01  | 25.44        | 0.47  | 25.44       | 0.47  | 25.44       | 0.47  |
| 51.34            | 0.06  | 51.34            | 0.06  | 52.95        | 0.03  | 52.51        | 0.6   | 52.51       | 0.6   | 52.51       | 0.6   |
| 76.68            | 0.13  | 76.68            | 0.13  | 78.64        | 0.08  | 79.22        | 0.81  | 79.22       | 0.81  | 79.22       | 0.81  |

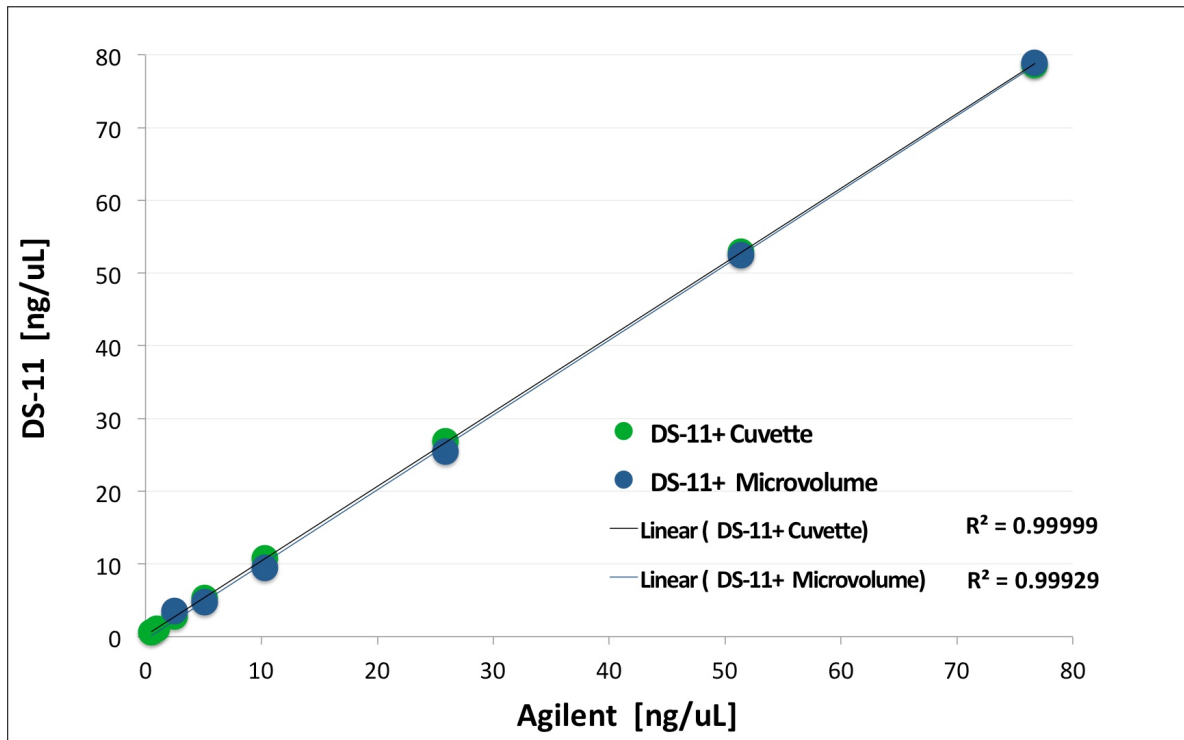


Figure 1: Linear response and accuracy correlation.

### Summary

The DeNovix DS-11 Series exhibits outstanding linear and accuracy correlations to a calibrated Agilent 8453 Spectrophotometer. The dual cuvette and microvolume modes extend the concentration range capabilities (data not shown) and make the DS-11+ the instrument of choice for the broadest concentration range.

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