Absorbance Test Plate Calibration Certificate

Serial Number: ***409664***
Certificate Number: ***409664***
Next Calibration Due: ***Last day of December, 2019***

Absorbance OD Standards - Set *12243*

Well	405nm	450nm	490nm	550nm	620nm	630nm	690nm	750nm
C1	0.141	0.134	0.138	0.134	0.150	0.152	0.134	0.135
E2	0.664	0.612	0.613	0.592	0.611	0.608	0.514	0.472
G3	1.196	1.106	1.112	1.089	1.116	1.109	0.916	0.832
H6	1.796	1.659	1.667	1.634	1.674	1.664	1.371	1.244
F5	2.177	1.931	1.883	1.812	1.780	1.756	1.412	1.174
D4	2.692	2.386	2.327	2.238	2.199	2.167	1.741	1.444

Wavelength Accuracy Standards - Lot *1018-1*

2.4nm Spectral Bandpass	
Expected Peak nm	**Test Range**
585	-5+5

Certified and released for shipment by: _____

Date: ***21 December, 2018 12:31*** Test Location: ***Winooski, VT, USA***

BioTek Procedure used for the OD and wavelength testing: ***7260522-TP Rev A***

Additional Absorbance OD Standards - Set *12243*

Well	650nm
C1	0.156
E2	0.608
G3	1.098
H6	1.647
F5	1.711
D4	2.113

 Tel: (800) 242-4685, Outside the USA: (802) 655-4740 Email: tac@biotek.com web:http://www.biotek.com
Winooski, VT, USA

This **Absorbance Test Plate** can be used to confirm the reproducibility, linearity and alignment of your BioTek plate reader. If a filter is located in the C6 position it may also be used to confirm the wavelength accuracy of BioTek monochromator based readers. The following calibration data has been confirmed to be correct on a NIST traceable BioTek reader at our facility listed on the reverse side of this sheet.

I **Alignment:** Place the Test Plate in your reader and run a plate read. The reader under test will have the appropriate alignment holes listed in its Operator's Manual. These alignment holes should read 0 ± 0.015 OD.

II **Accuracy:** Instrument specifications vary by model. See individual Operator's Manual for exact information. To confirm performance within specification requires a composite tolerance of the Test Plate and reader under test. For example:

-Glass Filter Accuracy (on NIST traceable spectrophotometer)		± 1% of reading
-Positional Tolerance of Glass Filter	± 0.010 OD	
-Reader under test accuracy **	± 0.010 OD	± 1% of reading
Total:	± 0.020 OD	± 2% of reading

** Typical reader accuracy may vary, see specifications.

Apply the total tolerance of the Optical Density value from the data sheet for the wavelength being tested. The OD obtained on the reader under test should fall within the range calculated as in the example above.

III **Repeatability:** Instrument specifications vary by model. See individual Operator's Manual for exact information. Repeated reads of the Test Plate should fall within the tolerance for repeatability listed for the reader under test.

IV **Turnaround:** This is a test of some reader's ability to read samples accurately in different plate positions. Apply the specified accuracy for the reader under test to the data produced for a normal read of the test plate (A1 upper left or right). Next rotate the plate so that the A1 position is the opposite position and read again. The data produced from the second read should fit within the window calculated for accuracy of the first read.

V **Linearity:** Several methods of analyzing the linear performance of the microplate reader may be utilized:

A - The Accuracy verification from Step II above also verifies Linearity by default; therefore if the reader meets the accuracy specification then it meets the linearity specification as well.

This relationship is true within the specified variance for the absorbance values since the reader cannot be accurate without being linear. This can be proven by performing a regression analysis on the OD values obtained for accuracy using statistical software in a program such as Microsoft® Excel. Directions for performing this analysis are available in the test chapter of most Operator's Manuals.

B - The Operator's Manual for most BioTek readers describes a "wet test" that can be performed in the laboratory as an additional confirmation of linearity.

VI **Wavelength Accuracy**: If the Absorbance Test Plate is equipped with a filter in the C6 position then the wavelength accuracy of a Monochromator based reader may be confirmed. The C6 filter is scanned across a specified wavelength range in 1-nm increments. If equipped with a C6 filter the wavelength(s) of maximum absorbance is compared to the data given in the chart where the "Expected Peak nm" is the Certified peak. The accuracy of the peak wavelength should be ± 3 nm (± 2 nm instrument, ± 1 nm filter allowance).

This Absorbance Test Plate is certified to be in specification when released and traceable to the US National Institute of Standards and Technology (NIST) for Optical Density (OD or Transmittance Density, which is $-\log_{10}T$, for wavelength accuracy, and for mechanical functionality. (Normal room temperature, relative humidity and barometric pressure is adequate for this testing.) In order to guarantee continued measurement accuracy, this Absorbance Test Plate should be returned to BioTek for recertification by the due date on the reverse side of this sheet.

Care and Handling This Test Plate must be carefully handled and stored to maintain its integrity. It should be stored in its original box except when in use. The filters may be cleaned using lens paper.