

## Cypher One: Comparing Imaging with a Lid, Seal, or No Cover

**Background:** Cypher One™ is a new tool for rapid automated analysis of hemagglutination (HA) and hemagglutination inhibition (HI) assays. Until now interpretation of HA and HI assays required specialized expertise to accurately read and manually record the data, with experienced users often differing in their interpretation of the titer value. The Cypher One system will not only standardize analysis but also provide a digital, traceable record to enhance data quality and reliability.

**Objective:** To ensure biological safety within the lab, users often cover 96-well plates containing live influenza virus with either a polystyrene lid or an adhesive seal. The objective of this technical note is to demonstrate the optical equivalence of the approved plate covers (optically clear lid or seal) as compared to a plate imaged with no cover.

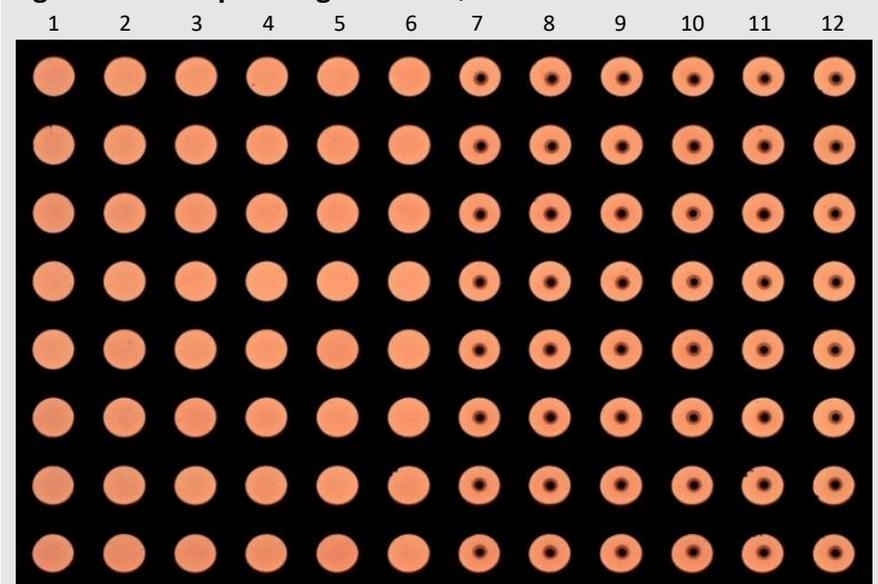
**Method:** Experiments were performed using a fixed, non-biological QC plate without a cover, with a polystyrene lid, and with an optically clear adhesive seal. A non-biological QC plate was used to produce a consistent image over time. Signal intensity variability of non-agglutinated wells was examined using the proprietary Cypher One algorithm which calculates an intensity value for each well based on its light transmission.

Three images were taken for each condition on a single instrument. Averages and standard deviations from all non-agglutinated wells were calculated.

An example image of the non-biological QC plate is shown in **Figure 1**. Columns 1 through 6 represent fully agglutinated wells while columns 7 through 12 represent non-agglutinated wells. The algorithm assigns a well value of 0 to fully agglutinated wells, while non-agglutinated wells are assigned a non-zero value.

**Results:** For each imaging condition, the well values for the non-agglutinated wells were analyzed. The average and relative standard deviation (% RSD) values are shown in **Table 1**. Each condition produced an RSD less than 3%.

**Figure 1 – Example Image of the QC Plate**



**Table 1 – Average Well Values, Standard Deviations and %RSD**

No Cover	
Average Well Value	1437
Standard Deviation	36
%RSD	2.5
Optically Clear Polystyrene Lid	
Average Well Value	1456
Standard Deviation	32
%RSD	2.2
Optically Clear Adhesive Seal	
Average Well Value	1452
Standard Deviation	36
%RSD	2.5

**Summary:** From the experiments and data outlined above, we conclude that there is negligible variability in well values between plate cover conditions. As shown in **Table 1**, all average well values are within error of each other, demonstrating consistent well values and lighting across all three conditions.

