

## Protocol for Assessment of Environmental Cleanliness using ATP Testing

ATP hygiene testing is based on the measurement of adenosine triphosphate (ATP) which is an energy molecule for all living cells. ATP present on a surface is picked up with a test swab and tested using a luminometer which measures a bioluminescence reaction. The results of this reaction are reported in “relative light units” or RLUs. The higher the RLUs, higher the residual organic debris on a surface. This is a measure of organic residues and microorganisms which exist on a surface at a given point in time and could be the result of inadequate surface cleaning.

### Sampling Strategy

***Expert opinion suggests that the best way to measure the quality of hospital cleaning using ATP is testing both BEFORE and AFTER cleaning. However, due to limited time and resources, hospitals are often limited to testing post-cleaning only.***

### Selection of Rooms

Sample at least 10 daily cleans and as many discharge cleans as possible. Prioritize *C. difficile* rooms if available. When possible, sampling should be done BEFORE and AFTER cleaning. If doing only post-cleaning sampling, sample rooms available immediately after cleaning. Create a sampling plan and record the rooms and time of cleaning of each room (see Table 1). You can create labels for high-touch surfaces ahead of time (see Table 2). This is helpful when collecting multiple swabs from different rooms as test swabs can be batched for sampling to increase efficiency. Sample the following high-touch sites, the precise area at a certain site can be selected at the discretion of the observer, with the goal of swabbing an approximately 10x10 cm area.

High-Touch Surface
Bed-rail/controls
Tray table
IV pole (grab area)
Call box/button
Telephone
Bedside table
Main Room sink rim
Room light switch
Room inner door knob
Supply cart
Chair
Window sill
Bathroom inside door handle
Bathroom outside door handle

Bathroom sink faucet
Bathroom sink rim
Toilet seat
Flush handle
Towel bar

Follow the manufacturer’s Instructions for Use of the specific luminometer. Pass/Caution/Fail is based on pre-defined thresholds. This threshold is guided by the specific manufacturer of the ATP measurement device you are using but also may be guided by your RLU measurements of areas that have known to be cleaned (i.e., define clean based on your readings of clean surfaces in your hospital using your specific luminometer devices).<sup>1,2</sup> Use the software provided by the manufacturer to upload and display your data.

**References**

1. Salsgiver E, Bernstein D, Siman MS, Greendyke W, Jia H, Robertson A, Salter S, Schuetz AN, Saiman L, Furuya EY, and Calfee DP. Comparing the Bioburden Measured by Adenosine Triphosphate (ATP) Luminescence Technology to Contact Plate-Based Microbiologic Sampling to Assess the Cleanliness of the Patient Care Environment. *ICHE*. 2018; 39(5).
2. Boyce JM, Havill NL, Dumigan DG, Golebiewski M, Balogun O, and Rizvani R. Monitoring the Effectiveness of Hospital Cleaning Practices by Use of an Adenosine Triphosphate Bioluminescence Assay. *ICHE* 2009; 30(7)

**Table 1**

Plan	Hospital Unit	Hospital Room	Date/Time cleaned
Room A			
Room B			
Room C			
Room D			
Room E			
Room F			
Room G			
Room H			
Room I			
Room J			

**Table 2**

<b>Room</b>	<b>Site</b>
Room A	Bed-rail/controls
Room A	Tray table
Room A	IV pole (grab area)
Room A	Call box/button or telephone
Room A	Main room or bathroom light switch
Room A	Inside or outside bathroom door knob
Room A	Bathroom sink rim or faucet
Room A	Toilet seat
Room A	Flush handle or bathroom grab bar
Room A	Supply cart
Room B	Bed-rail/controls
Room B	Tray table
Room B	IV pole (grab area)
Room B	Call box/button or telephone
Room B	Main room or bathroom light switch
Room B	Inside or outside bathroom door knob
Room B	Bathroom sink rim or faucet
Room B	Toilet seat
Room B	Flush handle or bathroom grab bar
Room B	Supply cart