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Kikkoman Biochemifa Company

# CASE STUDY 2024-25

Effectiveness of the ATP Test  
(Kikkoman A3) for cleaning efficiency



Leveraging the  
**ATP TEST (KIKKOMAN A3)**  
to Detect and Measure  
High-Touch Surfaces and  
to IMPROVE CLEANING  
EFFICIENCY in Public Spaces

## INTRODUCTION

In today's rapidly evolving world, ensuring high standards of cleanliness and hygiene has become a top priority across multiple industries. This focus has been driven not only by the increased awareness of health risks posed by communicable diseases such as COVID-19, but also by growing public expectations. Individuals are more conscious than ever about the environments they enter, from hotels and schools to convention centers, and expect these places to maintain rigorous sanitation protocols. Cleanliness is no longer just about appearance; it is now directly tied to health, safety, and the overall reputation of facilities.

Maintaining these high standards in high-traffic public spaces—where thousands of people interact with shared surfaces daily—presents a unique challenge. These high-touch surfaces can become large reservoirs of soil and contamination that cannot be treated in the same way as other areas. These areas may need to be scheduled to be cleaned more often (i.e., a higher task frequency assignment) and potentially using different methods.

Conventional cleaning procedures often rely on visual inspections and scheduled routines, which, while important, can fail to identify high-touch areas and potential reservoirs. Microbial contamination, including bacteria, viruses, and other biological materials, can accumulate quickly on frequently touched surfaces like door handles, railings, and countertops. Left unidentified, these surfaces can become vectors for disease transmission. This is where advanced, data-driven tools like the ATP Test (Kikkoman A3) can significantly aid in effective identification.

The ATP Test (Kikkoman A3) is a cutting-edge device designed to offer quick, reliable, and scientifically backed assessments of surface cleanliness. By measuring the presence of adenosine triphosphate (ATP)—a molecule found in all living organisms—the Lumitester Smart can detect biological contamination that may otherwise go unnoticed. ATP testing provides an objective measure of cleanliness, ensuring that cleaning efforts are both effective and targeted toward areas requiring the most attention. Unlike traditional cleaning assessments that rely on human observation, ATP testing delivers measurable data, giving cleaning teams real-time insights into surface hygiene.

This ISSA training case study draws upon findings from the use of the ATP Test (Kikkoman A3) conducted during ISSA Accredited Auditing Professional (AAP) training programs delivered by ISSA Consulting in three diverse locations: a convention center, a luxury hotel in Baltimore, and a Connecticut public school district building. Testing conducted during the training class uncovered significant contamination in high-touch areas, illustrating the critical role of the ATP Test (Kikkoman A3) in identifying hygiene vulnerabilities and guiding cleaning protocols. By using this technology, these facilities were able to target contamination hot spots more effectively and make data-driven decisions that improved overall cleanliness and safety.

In the following sections, we will examine the ATP levels measured in these three distinct environments, demonstrating how ATP can be a game-changing tool for maintaining hygiene standards in high-traffic areas. This data not only highlights areas that require immediate attention but also offers insight into how cleaning operations can be optimized for better efficiency, safety, and public confidence.

## ATP TESTING OVERVIEW

ATP testing is a well-established and widely adopted method for evaluating surface contamination by detecting adenosine triphosphate (ATP), a molecule present in all living cells. ATP is found in bacteria, mold, yeast, and organic residues such as food particles, and the presence of ATP on surfaces serves as a highly reliable indicator of surface contamination. Unlike traditional visual inspections, which often fail to detect microbial contaminants, ATP testing offers a precise and scientific way to measure and assess surface cleanliness.

Because of this, the use of ATP testing is recommended in the ISSA Clean Standard: Institutional and Commercial for both K-12 schools and commercial buildings.

ATP testing enhances hygiene evaluations by providing instant, quantifiable results, enabling rapid assessments of surface cleanliness. Its simplicity and speed make it particularly suitable for high-traffic environments such as hotels, schools, and commercial buildings where surfaces are frequently touched, and the risk of contamination is elevated. Tests are conducted by using a test swab to sample a surface. The swab reacts with the ATP reagent, and the reaction is then read by a sensitive instrument called a luminometer. In only a few seconds, the luminometer produces a numerical reading indicating the cleanliness of the surface that is then used to decide how frequently the surface needs to be cleaned and to measure and monitor the effectiveness of that cleaning.

Integrating ATP testing into regular cleaning protocols allows facilities to transition from a reactive approach to a proactive, data-driven strategy, ensuring consistently high cleanliness standards, even in the busiest settings.

## ISSA SUPERVISOR AND MANAGEMENT BOOT CAMP TRAININGS

### Baltimore/Connecticut 2024

The ISSA/CMI Supervisor and Management Boot Camp is designed to better inform the supervisor or manager of a cleaning team/program on the technical and soft skills needed to effectively clean, maintain, and service a facility in the most efficient and effective way possible. A trained and competent management professional has never been more important to the success of a cleaning organization and maintaining a healthy indoor environment for their clients. Effective cleaning procedures, combined with effective workloading, are essential to both assure the quality of the work being done and for the cost-effectiveness and efficiency of the program and its ultimate success.

Auditing and inspections are a key part of that process. During this training in 2024, class attendees were introduced to the use of ATP for not only the verification of routine cleaning, but also for the identification of high-touch and high-contamination areas of the building that may need to be cleaned more often based on their locations, related traffic patterns, and the occupancy of the building.

The trainees collected ATP measurements during the training to identify these high-contamination areas. Areas were assessed throughout three different training locations: a convention center, a luxury hotel, and a public school building.

In this case study, we will present the data found in the testing and assessment of these high-traffic, high-touch areas and what was decided during the training to reassess the cleaning methods and frequency.

## FINDINGS BY LOCATION

### 1 Convention Center

The convention center is a bustling location, regularly hosting large events, making it a high-risk area for contamination due to constant foot traffic. Testing revealed the following:

- Average ATP level: -6,816 RLU
- Highest ATP reading: 20,593 RLU (lobby staircase handrail)
- Lowest ATP reading: 130 RLU (men's main bathroom door)



The lobby staircase handrail showed extremely high ATP levels, indicating a potential area for cross-contamination due to the sheer number of people interacting with the handrails each day. The reception desk countertop also showed a high reading (12,987 RLU).

Meanwhile, bathroom doors, which are often expected to have high contamination, showed surprisingly lower ATP levels, likely due to regular cleaning practices.

A supervisor would want to use this information to assess the cleaning practices being used in each of these areas and consider how the traffic patterns impact the use of the handrails and schedule cleaning more frequently. Subsequent testing using ATP will also help determine if the scheduled frequency is now effective and if it needs to be adjusted up or down based on the data.

### 2 Luxury Hotel-Baltimore

The luxury hotel is also a high-traffic property with many daily visitors and guests, and this was evident in the alarming ATP levels in key high-touch surfaces in the hotel:

- Average ATP level: -4,808 RLU
- Highest ATP reading: 12,574 RLU (bathroom door)
- Lowest ATP reading: 123 RLU (bathroom fixture handle)



The bathroom door at the luxury hotel presented the highest ATP reading, underscoring the need for improved cleaning protocols, especially in such a luxury hospitality environment where cleanliness is a high priority.

This testing also revealed ATP's effectiveness in identifying priority cleaning locations that are otherwise overlooked. This data will allow supervisors to adjust the practices and task frequency assignments until an acceptable outcome is achieved. Then, subsequent ATP readings will be used to maintain that level.

### 3 Connecticut Public School District

Schools are known to be environments where germs can spread quickly due to their high level of activity, high occupancy, and frequent student interactions in many shared spaces. The testing conducted during the supervisor training for the Connecticut public school district was consistent with this assumption that high ATP readings would be seen:

- Average ATP level: -7,926 RLU
- Highest ATP reading: 27,031 RLU (Stair railing)
- Lowest ATP reading: 150 RLU (Hallway)

The stair railing in the school district displayed the highest ATP level across all tested locations. The cafeteria (25,092 RLU) and one of the lunch

tables (12,838 RLU) also showed very high RLU levels. Again, this data is consistent with high-traffic, high-touch surfaces that are easily overlooked without data to uncover the problem. The use of ATP testing uncovered the true conditions and provided the program with the data they needed to make appropriate adjustments and follow-up testing for verification.



These findings again reveal that high-touch surfaces such as railings, cafeteria tables, and bathroom doors are often hot spots for contamination, regardless of the environment. The ability to identify and monitor these areas using the ATP Test (Kikkoman A3) allows facilities to adjust their cleaning protocols accordingly to focus on these critical areas.

## IMPLICATIONS FOR CLEANING PRACTICES

The data collected using the ATP Test (Kikkoman A3) highlights the importance of targeting high-traffic areas, particularly high-touch surfaces, to improve sanitation. By incorporating routine ATP testing into cleaning protocols, facilities can take a more scientific approach to hygiene, focusing on the areas most in need of attention. This approach not only reduces contamination but also enhances the safety and well-being of employees, customers, and visitors.

- **Tailored Cleaning Schedules:** High ATP readings on surfaces such as handrails, staircases, and bathroom doors indicate that these areas require more frequent, thorough cleaning. By identifying the dirtiest areas, cleaning teams can optimize their efforts.
- **Immediate Feedback:** The Lumitester Smart instrument provides instant results, enabling cleaning

1 RLU: Relative light unit is a measure of the level of surface soil detected by the ATP test. For more information on relative light units, what they mean, and how they are used in commercial buildings and schools, the reader should refer to the ISSA Clean Standard: Institutional and Commercial for K-12 and commercial buildings.

teams to quickly address problem areas in real time so hygiene standards are consistently met.

- **Improved Hygiene in Sensitive Environments:** For spaces like schools and convention centers, where many people congregate, implementing ATP monitoring can prevent the spread of illness, ensuring a safer environment for all occupants.

The ATP Test (Kikkoman A3) is not just a device for measuring surface cleanliness; it's a strategic asset for any organization committed to maintaining high hygiene standards in its facilities. By delivering real-time, data-driven insights, the ATP Test (Kikkoman A3) empowers cleaning teams to prioritize and tailor their cleaning efforts, ensuring they identify and target the areas with the greatest potential for contamination. As demonstrated in the examples of the convention center, luxury hotel, and Connecticut public school district in this case study, ATP testing provides a scientific foundation for identifying contamination hot spots, guiding and redirecting cleaning operations where necessary, to focus on where they are most needed.

Incorporating ATP testing into inspections and regular cleaning protocols allows facilities to adopt a proactive, results-oriented approach to hygiene. Instead of relying on visual inspection or scheduled cleanings alone, ATP data ensures that cleaning efforts are supported using appropriate workloading, producing measurable results. This helps you develop an efficient and cost-effective cleaning program, improving both the quality of cleaning and the facility's overall safety.

## HOW CLEANING OPERATIONS CAN BENEFIT FROM ATP TESTING

- **Enhanced Identification:** ATP testing enables cleaning teams to understand precisely where contamination levels are highest, focusing efforts on the areas most in need of cleaning. High-traffic, high-touch surfaces such as handrails, door handles, and countertops are consistently shown to have elevated ATP levels, even in facilities with well-established cleaning protocols. By identifying these contamination hot spots, cleaning teams can allocate resources more efficiently and reduce the risk of cross-contamination.
- **Real-Time Monitoring and Feedback:** ATP testing with the Kikkoman Lumitester Smart offers instant feedback on surface cleanliness, meaning cleaning teams don't have to wait for laboratory results or rely on subjective evaluations to make decisions. If a surface is cleaned but ATP levels remain high, cleaning staff can immediately address the issue, ensuring the surface meets hygiene standards. This leads to immediate corrective actions that help maintain a consistently high standard of cleanliness across the facility.
- **Improving Cleaning Protocols Over Time:** By consistently measuring ATP levels over time, cleaning managers can gather data to identify patterns in contamination. For instance, certain areas may consistently register higher ATP readings even after

## SUMMARY OF ATP LEVELS BY LOCATION:

### Convention Center:

- Average ATP: ~6,816 RLU
- Highest ATP: 20,593 RLU (lobby staircase handrail)
- Lowest ATP: 130 RLU (men's main bathroom door)

### Luxury Hotel-Baltimore:

- Average ATP: ~4,808 RLU
- Highest ATP: 12,574 RLU (bathroom door)
- Lowest ATP: 123 RLU (bathroom fixture handle)

### Connecticut Public School District:

- Average ATP: ~7,926 RLU
- Highest ATP: 27,031 RLU (stair railing)
- Lowest ATP: 150 RLU (hallway)

## HIGH CONTAMINATION LOCATIONS (ATP > 10,000 RLU):

### Connecticut Public School District:

- Stair railing: 27,031 RLU
- Cafeteria: 25,092 RLU
- Lunch table: 12,838 RLU

### Convention Center:

- Lobby staircase handrail: 20,593 RLU
- Reception desk countertop: 12,987 RLU

### Luxury Hotel-Baltimore:

- Bathroom Door: 12,574 RLU

regular cleaning, indicating a need to revise the cleaning methods or increase the frequency of cleaning. Facilities can also track the effectiveness of new cleaning products or techniques, using ATP readings to validate their success. This data-driven approach to continuous improvement ensures that cleaning protocols evolve in response to real-world conditions rather than relying on assumptions.

- **Optimizing Labor and Resource Allocation:** With ATP testing, cleaning operations can shift from a rigid, schedule-based cleaning approach to a dynamic, need-based system. Instead of cleaning all areas equally, regardless of actual contamination levels, resources can be deployed where they will have the most impact. This targeted cleaning reduces unnecessary labor and allows cleaning teams to focus on high-risk areas, ultimately leading to more efficient use of time and cleaning materials. For example, high-traffic zones like reception areas or school staircases may require more frequent attention than less-trafficked spaces.
- **Promoting Health and Safety:** Regular ATP testing is particularly valuable in environments like schools, hotels, and convention centers, where large numbers of people interact with shared surfaces. Reducing biological contamination on surfaces minimizes the spread of germs and helps prevent illness outbreaks, contributing to public health and safety. For facilities serving vulnerable populations, such as schools or healthcare institutions, ATP testing is essential to ensure the environment is safe for occupants.

- Demonstrating Commitment to Cleanliness:** In a world where consumers and occupants are increasingly concerned about cleanliness, especially in the wake of global health crises, ATP testing provides an objective way to demonstrate a facility's commitment to maintaining the highest hygiene standards. Whether for guests at a luxury hotel or parents of schoolchildren, knowing that ATP testing is part of a facility's regular hygiene routine can inspire confidence and trust. It also helps businesses meet or exceed regulatory requirements and industry best practices, which can be crucial for certifications or inspections.
- Data-Driven Reporting and Transparency:** ATP testing results can be documented and shared with stakeholders—whether that's upper management, clients, or even the public. Providing evidence of cleanliness through ATP data can support claims of a clean, safe environment and allow organizations to show transparency in their cleaning efforts. Facilities can leverage this data to improve their public image, attract business, and ensure that they meet cleanliness promises, enhancing their operational credibility and customer satisfaction.

## CONCLUSION: MOVING FORWARD WITH ATP TESTING

The ATP Test (Kikkoman A3) has the potential to revolutionize cleaning operations by improving hot spot identification and offering actionable, science-based insights into surface contamination. By integrating this technology into their daily routines, facilities across various sectors can adopt a more proactive, data-driven approach to cleanliness that consistently meets high hygiene standards. From convention centers hosting thousands of attendees to schools filled with students and staff, ATP testing allows facilities to prioritize cleaning, optimize labor, improve health outcomes, and instill confidence in those who use the space.

Ultimately, facilities that invest in ATP testing not only safeguard the health of their occupants but also position themselves as leaders in cleanliness and safety, setting a higher standard for hygiene in public and commercial spaces.

LOCATION	DETAIL	ATP (RLU)
Convention Center	Lobby staircase handrail	20593
Convention Center	Men's main bathroom first stall door handle	968
Convention Center	Men's main bathroom door	130
Convention Center	Bathroom	8654
Convention Center	Bathroom handle	10658
Convention Center	Dining area by hall 309	1133
Convention Center	Cardio section handrail	3413
Convention Center	Main staircase center handrail	9359
Convention Center	Exterior door	3253
Convention Center	Reception desk countertop	12987
Convention Center	Seating area	151
Luxury Hotel-Baltimore	Bathroom door	12574
Luxury Hotel-Baltimore	Main stairway railing	886
Luxury Hotel-Baltimore	Bathroom fixture handle	123
Luxury Hotel-Baltimore	Bathroom fixture handle	7988
Luxury Hotel-Baltimore	Elevator	9996
Luxury Hotel-Baltimore	Bar area cart	1219
Luxury Hotel-Baltimore	Hallway door	798
Luxury Hotel-Baltimore	Main staircase center handrail	4565
Luxury Hotel-Baltimore	Exterior door	3520
Luxury Hotel-Baltimore	Entry desk	875
Luxury Hotel-Baltimore	Seating area	139
Connecticut Public School District	Front lobby	3496
Connecticut Public School District	Front lobby	1785
Connecticut Public School District	Hallway	250
Connecticut Public School District	Hallway	1768
Connecticut Public School District	Cafeteria	24114
Connecticut Public School District	Cafeteria	1648
Connecticut Public School District	Front door area	2990
Connecticut Public School District	Front door area	6800
Connecticut Public School District	Hallway	150
Connecticut Public School District	Hallway	780
Connecticut Public School District	Front entry	5529
Connecticut Public School District	Front entry	1268
Connecticut Public School District	Corridor	7645
Connecticut Public School District	Corridor	4563
Connecticut Public School District	Corridor	480
Connecticut Public School District	Front hall	3959
Connecticut Public School District	Cafeteria	9822
Connecticut Public School District	Cafeteria	2750
Connecticut Public School District	Cafeteria	2498
Connecticut Public School District	Front hall	6292
Connecticut Public School District	Bathroom partition	3103
Connecticut Public School District	Art table	518
Connecticut Public School District	Hall	1760
Connecticut Public School District	Front entry	4688
Connecticut Public School District	Cafeteria	25092
Connecticut Public School District	Elevator	6215
Connecticut Public School District	Front door	2924
Connecticut Public School District	Lunch table	12838
Connecticut Public School District	Hallway	1250
Connecticut Public School District	Hallway door	3849
Connecticut Public School District	Office door	2064
Connecticut Public School District	Hallways	1577
Connecticut Public School District	Front display glass	897
Connecticut Public School District	Stair railing	27031
Connecticut Public School District	Elevator buttons	2165