Biolum

Portable ATP Hygiene Monitoring System

Your reliable hygiene safety guardian

Fast
Result in 10s for one test

Powerful Memory Capacity
256 test plans, 256 user IDs, 2000 test program, 10000 results

Sensitive
Detect ATP down to 10^{-16} mol

User-friendly
3.5 inch high resolution color screen, intuitive menus, simple to use

Template
Pre-configured templates including different industries and locations, together with upper and lower limits can start your test immediately

Connectivity
Connect PC via USB or Bluetooth, connect printer through Bluetooth

Low Consumption
Using Li-ion battery that can work up to 10h continually

Highly Portable
Within 300g with battery



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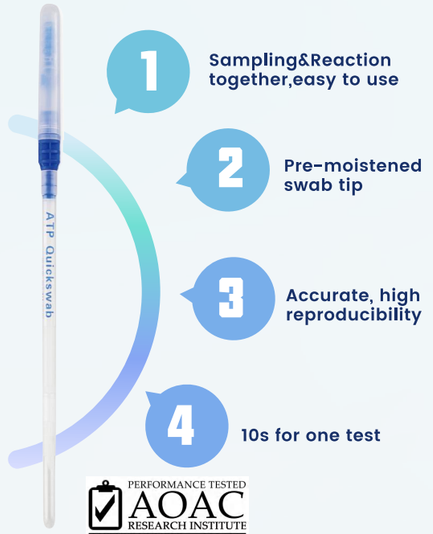
Biolum Portable ATP Hygiene Monitoring System, a powerful tool for implementing and managing your hygiene monitoring program. Taking advantages of the progressive testing swab, the hygiene level will be evaluated in seconds, and the results can be visualized on screen. Featuring the state-of-art technology, the Biolum is a user-friendly, flexible, and accurate quality monitoring system. It has all the features to maximize its value to your business.

Biolum ATP Hygiene Monitoring System and Quickswab have achieved Performance Tested Methods certification from the AOAC Research Institute, an internationally recognized organization for analytical method evaluation.

COMPATIBLE SWABS

QuickSwab

ATP QuickSwab is a simple to use, all-in-one and pen-sized sampling device,with the pre-moistened swab that offers extraordinary accuracy and precision for many industrial applications



1. Sampling&Reaction together,easy to use
2. Pre-moistened swab tip
3. Accurate, high reproducibility
4. 10s for one test

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Test Procedure



LiquSwab

LiquSwab is an easy-to-use ATP liquid test that works with the Biolum hygiene monitoring system from Tianlong. The swab is available in two formats: Free and Total. LiquSwab Free measures dissolved ATP that is free in liquid(non-microbial ATP). LiquSwab Total measures both free ATP and microbial ATP (non-microbial and microbial ATP) in the liquid. The difference between LiquSwab Total and Free provides an indication of microbial contamination in the samples.



1. Easy to operate
2. 10s for one test
3. 12 month shelf life at 2-8°C, 4 weeks shelf life at 21-25°C
4. Detect ATP down to 10^{-16} mol

Test Procedure



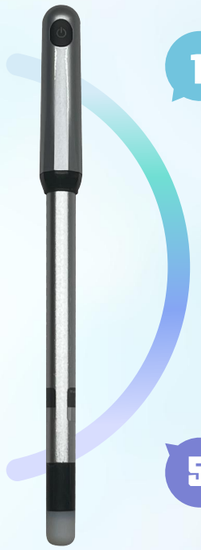
ACCESSORIES

EternalLight-H

ATP Detector Optical Calibrator

EternalLight-H is a reusable device for quick and reliable calibration verification. We recommend incorporating instrument calibration into a quality control program to verify that the Biolum ATP continues to operate correctly and is under control. EternalLight-H provides an all-in-one, reusable positive and negative calibration verification, activated by the click of a button.

By pressing the button on the cap, EternalLight-H will emit a 3 seconds green LED light to indicate power on. EternalLight-H can be used as a positive control when on. In the off state, EternalLight-H can be used as a negative control to remind the user whether the null value is normal.



1. **LED calibration verification device featuring negative and positive modes**
2. **Verifying as part of a quality control program and proving system working properly**
3. **Powered by an easily replaceable coin battery**
4. **Reusable device allowing for unlimited calibration verification**
5. **Compatible with Biolum ATP hygiene monitoring system**

Test Procedure

Negative test



1. Biolum self-checking



2. Checking the EternalLight-H



3. Insert EternalLight-H into Biolum

Taking care not to press the button



4. Close the lid of Biolum



5. Press “OK” to start measurement



6. Record initial RLU results

Instrument No:	
Negative EternalLight-H RLU	*
Positive EternalLight-H RLU	

*Record your initial negative RLU.
RLU range should be within 0-4.

Positive test



1. Biolum self-checking



2. Checking the EternalLight-H



3. Insert EternalLight-H into Biolum



4. Press the button on EternalLight-H to turn the device on

the light will turn green



5. Close the lid of Biolum



6. Press “OK” to start measurement



7. Record initial RLU results

Instrument No:	
Negative EternalLight-H RLU	
Positive EternalLight-H RLU	*

*Record your initial positive RLU.
RLU range should be within 160-240.

Interpretation: record your initial positive and negative RLU, if either of the RLU is not within the range, please start calibration.

Calibration



1. Select in turn “Setting”-“Help”-“Calibration”



2. Set the RLU value to 200 RLU



3. Wait instrument background calibration complete



4. Press the button on EternalLight-H to turn the device on



5. Insert EternalLight-H for calibration

Ensure swab in the front direction



6. Remove EternalLight-H and close the lid



7. Continue the calibration process until done



8. Take positive and negative test to validate again

APPLICATION AREAS











PERFORMANCE

ATP hygiene monitoring is a simple, rapid, and quantitative testing method to verify cleaning effectiveness. The critical performance characteristics of ATP hygiene monitoring systems are:

- **Sensitivity - the smallest amount of ATP detectable**
- **Consistency - the variation of results from repeated tests of the same sample**
- **Accuracy - the measured ATP value compared to the true value**
- **Precision - the repeatability of the test to produce the same result**

Tianlong Biolum ATP Hygiene Monitoring System has an AOAC certificate and The data generated from the Biolum AOAC certificate shows its excellent performance in sensitivity, consistency, accuracy, and precision. Tianlong Biolum is highly sensitive and can detect extremely low levels of ATP molecules and monitor the efficacy of higher cleaning standards, resulting in a lower risk of microbial contamination.

Sensitivity

The table below shows the smallest amount of ATP detectable by each ATP hygiene monitoring system. Tianlong Biolum shows higher sensitivity with limit of detection (LOD) <1 fmols, compared with the performance of 3M and Kikkoman systems. Tianlong Biolum is capable of measuring lower amounts of ATP and monitoring the efficacy of higher cleaning standards.

Lower amount of ATP (fmols) detected = greater sensitivity

Model	Kikkoman Lumitester PD-30	3M LM1	Hygiena EnSURE	Tianlong Biolum
Lod (fmols)	>3	>3	<1	<1

Data provided by Tianlong AOAC certificate #022401, Hygiena AOAC certificate #101803, Kikkoman AOAC certificate #051901, 3M AOAC certificate #041901

Accuracy

At 100 fmol ATP concentration and test for ten times, the graph below shows Tianlong Biolum produces more accurate results than 3M, and produces the most consistent results close to the actual value than 3M and Hygiena. Accordingly, Tianlong Biolum has greater consistency and accuracy.



Comparison of accuracy and precision of Tianlong Biolum versus other brands measuring 100 fmols of ATP

Precision and Consistency

The AOAC report shows that Tianlong Biolum can detect various microorganisms and food residues with good consistency and high precision.

Microorganism Detection

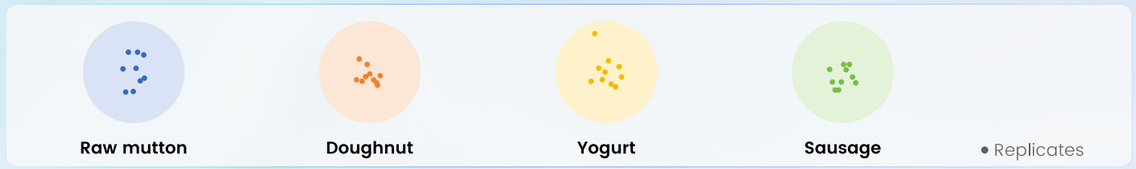
Tianlong Biolum and compatible QuickSwab detect different types of microorganisms (Gram-positive bacteria, Gram-negative bacteria, yeast) in a dilution of 10^{-4}or even more times.



Detection efficacy of different types of microorganisms

Food Residues Detection

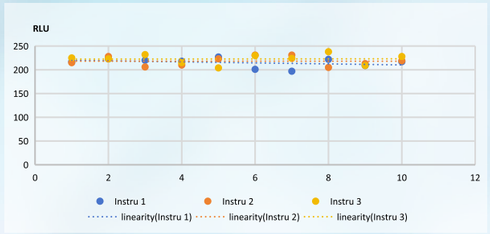
Tianlong Biolum and compatible QuickSwab detect different types of food residues (raw meat, cooked meat products, dairy products, baked foods) in a dilution of 10^{-4}.



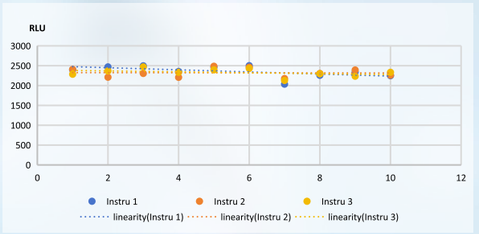
Detection efficacy of different food residues

Batch Difference

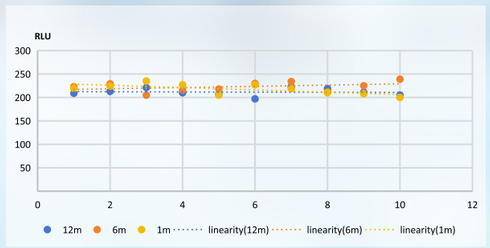
Three batches of Tianlong Biolum ATP hygiene monitoring system and QuickSwab produced in different months are detected under different concentrations of ATP. The graphs show similar linearity, which means Tianlong ATP hygiene monitoring system and compatible swab can provide consistent performance for customers.



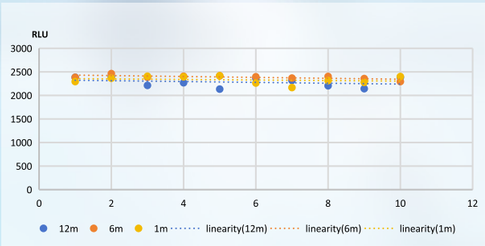
Tianlong Biolum system performanc at 100 fmols of ATP



Tianlong Biolum system performance at 1000 fmols of ATP



Tianlong QuickSwab performance at 100 fmols of ATP



Tianlong QuickSwab performance at 1000 fmols of ATP

PERFORMANCE

Model	Biolum
Dimensions	189mmx70mmx35mm
Weight	280g
Detection Limit	10^{-16} moles ATP
Detection Deviation	±5% or±5 RLUs
Self-calibration at Startup	15s or 60s
Real-time Detection Time	10s/test
Memory Capacity	256 test plans, 256 user IDs, 2000 test program and 10000 results
Communication Interface	USB, Bluetooth
Test Repeatability	8%-20%
Correlation Coefficient	$R^2 \geq 0.995$
Power Supply	Rechargeable battery
Running Time	Continuously work for 10hrs, standby for 600 hrs
Operating Temperature Range	5-40°C
Operating humidity Range	20-80%

Swabs

Cat.No.	Swabs	Specification	Remark
A017H	QuickSwab	20 pieces/package	Surface test
A010H	LiquSwab Total	20 pieces/package	Liquid test (Total ATP)
A011H	LiquSwab Free	20 pieces/package	Liquid test (Free ATP)

Calibrator

Model	EternalLight-H
Service life	5 years
Battery	CR1025 lithium battery (3V)

Bring Technology to Life

Tianlong Science and Technology
Mail: inquiry@medtl.com
Phone: 86 029 82682132
Website: www.medtl.net
Address: No. 4266 Shanglin Road, Xi'an, China

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