

Sensitivity Comparison Between EnSURE Touch, EnSURE & SystemSURE Plus Luminometers

Hygiena provides a range of ATP detection tests and luminometers to help users reach the optimal sensitivity needed for their ATP monitoring programs. This document compares the Relative Light Unit (RLU) measurements achieved with known dilutions of ATP using UltraSnap (Cat No. US2020) and SuperSnap (Cat No. SUS3000) ATP detection tests measured with EnSURE Touch, EnSURE and SystemSURE Plus luminometers.

Purpose

To compare RLU measurements with differing configurations of Hygiena ATP luminometers using known low levels of ATP.

Procedure

Sample Preparation

ATP was diluted 50mM Tris-Acetate buffer from a certified stock solution (2×10^{-2} Molar) to a concentration of 2×10^{-7} Molar. The diluted concentration (2×10^{-7} Molar) was further diluted to 2×10^{-8} , 2×10^{-9} , and 2×10^{-10} Molar. A 10 μ L sample was taken from one of the three dilutions and pipetted into the UltraSnap or SuperSnap swab tip, then measured with EnSURE Touch, EnSURE and SystemSURE Plus luminometers. Twenty replicates were made of each test.

Assay Method

UltraSnap or SuperSnap device activity was measured as follows:

1. Remove swab from swab tube
2. Pipette 10 μ L of ATP solution directly into the center of the end of each swab tip
3. Replace swab tube and to activate device, hold swab tube firmly and use thumb and forefinger to break Snap -Valve by bending bulb forward and backward.
4. Squeeze bulb twice, expelling all liquid down swab shaft.
5. Bathe the swab bud in liquid by shaking for 5 – 10 seconds. Once activated, sample must be read in luminometer within 30 seconds.
6. Holding luminometer upright, insert entire device into Hygiena luminometer to measure the activity

Results

Results are displayed in Table 1.

Table 1. Average RLU measurements on EnSURE Touch, EnSURE and SystemSure Plus with known concentrations of ATP using UltraSnap and SuperSnap devices

Sample	2×10^{-15} moles ATP (2fmoles)	2×10^{-14} moles ATP (20fmoles)	2×10^{-13} moles ATP (200fmoles)
System	UltraSnap (RLU)		
EnSURE Touch	5	47	487
EnSURE	4	42	400
SystemSure Plus	2	21	199
System	SuperSnap (RLU)		
EnSURE Touch	16	162	1,552
EnSURE	16	164	1,436
SystemSure Plus	8	82	718

Table 2. RLU measurements from various system configurations. For example, 1 femtomole of ATP measured with UltraSnap and SystemSURE Plus is equivalent to 1 RLU. 1 femtomole of ATP measured with SuperSnap and EnSURE is equivalent to 7.2-8 RLU. 1 femtomol of ATP measured with UltraSnap and EnSURE Touch is equivalent to 2.4 RLU.

System	UltraSnap	SuperSnap
EnSURE Touch	2.4	7.6-8.2
EnSURE	2	7.2-8
SystemSure Plus	1	3.6-4

Conclusion

Hygiena monitoring systems and ATP swabs detect low levels of ATP, down to a single femtomole. EnSURE and EnSURE Touch RLU results are exactly twice the RLU results on the SystemSURE Plus. Increased sensitivity of the EnSURE and EnSURE Touch systems with SuperSnap ATP swabs enable detection that is up to 8 times more sensitive than the SystemSURE Plus with UltraSnap ATP swabs.