FINAL REPORT

Efficacy Study of a UVC Light Disinfection Pen

EMSL ANALYTICAL, INC.

Project Title: Antibacterial efficacy testing of a UVC light disinfection pen.

Study Methods: ASTM E3135 Standard Practice for Determining Antimicrobial Efficacy of Ultraviolet Germicidal Irradiation Against Microorganisms on Carriers with Simulated Soil.

Study period: Oct.21~Nov.09, 2020

Product Tested: UVC disinfection pen (Clearwin Korea Co., Ltd)

Challenge Organism: Staphylococcus aureus (ATCC 6538) and E. coli (ATCC 25922)
Treatment Times: 0 (untreated control), 1, 3, 5, and 10 seconds at room temperature
Distance: ½ inch away from UVC lights on the pen

Experimental Results

Table 1. Antibacterial efficacy of the UVC light device against S. aureus

UV Treatment (seconds)	Bacterial Recovery (average CFU/mL)	Log	Log Reduction	%Kill
0 (Control)	4,430,000	6.65		
1 sec	169,000	5.23	1.42	96.2
3 sec	66,700	4.82	1.82	98.5
5 sec	34,200	4.53	2.11	99.2
10 sec	68,600	4.84	1.81	98.5

Log Reduction = difference between Log of Control (untreated) and Log of UV treatment. Detection limit on culture plates was 10 CFU/Test surface.

Table 2. Antibacterial efficacy of the UVC light device against E. coli.

UV Treatment (seconds)	Bacterial Recovery (average CFU/mL)	Log	Log Reduction	%Kill
0 (Control)	490,000	5.69		
1 sec	21,000	4.32	1.37	95.7
3 sec	13,700	4.14	1.55	97.2
5 sec	6,100	3.79	1.90	98.8
10 sec	200	2.30	3.39	99.96

Log Reduction = difference between Log of Control (untreated) and Log of UV treatment. Detection limit on culture plates was 10 CFU/Test surface.

Conclusions: The UVC light disinfection pen was effective at reducing the bacteria on test surfaces and showed 99.2% as the highest kill against S. aureus and 99.96% against E. coli.

Signatures:

Study Performed by:

Mona Ramadi, Ph.D.
Microbiologist

Report Issued by:

Jason Dobranic, Ph.D.
Vice President of Microbiology & Life Sciences
Study Director