Final Report Summary
Efficacy Study of a CLEARSCAN Portable UV-C Sanitizer Pen

Project Title: Antibacterial efficacy testing of a CLEARSCAN Portable UV-C Sanitizer Pen.

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

Study Period: October 21-November 19, 2020

Product Tested: CLEARSCAN Portable UV-C Sanitizer 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 CLEARSCAN Portable UV-C Sanitizer Pen 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
0 (10 sec control)	11,7000,000	7.07		
10 sec	700	2.85	4.22	99.994

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 CLEARSCAN Portable UV-C Sanitizer Pen 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 CLEARSCAN Portable UV-C Sanitizer Pen was effective at reducing the bacteria on test surfaces and showed 99.994% as the highest kill against *S. aureus* and 99.96% against *E. coli*.

Signatures:

Study Performed by: Report Issued by:

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