FINAL REPORT

Efficacy Study of a UV-Light Device to
Kill Surface Bacteria on Handheld Devices

ORDER Number
151907122

PREPARED FOR:

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Certificate of Analysis

Client: Microlyscs

Contact: Rakesh Guduru

Project: Efficacy study of a UV-light device to kill surface bacteria on handheld devices.

Product: CrazyCap 2 (UV-light)

EMSL NO: 151907122

Sample received: 9/26/19

Report date: 10/11/19

Challenge Bacteria: *Staphylococcus aureus* (*S. aureus)*

Experimental Summary:

The testing procedure was designed after discussions between EMSL Analytical, the testing company, and the client, Microlyscs, LLC. The testing was conducted on a UV light device, CrazyCap 2, for its ability to kill bacteria on the contaminated surfaces of an iPad. The testing was conducted in our Houston Microbiology Laboratory.

Procedure:

Bacterial Inoculum Preparation

An *S. aureus* stock culture was plated onto Tryptic Soy Agar with 5% sheep Blood (TSAB) and incubated at 35°C for 24 hours. Well isolated colonies were then harvested, suspended in 10% tryptic soy broth (TSB) and vortexed for 1 minute to ensure homogenization.

Efficacy Testing

Test 1: An iPad was uniformly sprayed with a thin layer of the inoculum on the front glass surface and allowed to air dry at room temperature inside a biosafety cabinet. After drying, a 1-inch square was swabbed using a sterile collector swab and cultured to determine the initial inoculum concentration (untreated control).

The iPad was then exposed for 2 minutes using the CrazyCap2 set on Crazy mode at a height of 3 inches from the iPad surface. Following treatment, a 1-inch area was swabbed to recovering any remaining bacteria. The surface of the iPad was treated for another 2 minutes on Crazy mode and another swab collected to determine the 4 minute exposure results. The swabs were suspended in 10 mL of sterile DI water and vortexed for 1 minute. This recovery fluid was used to make dilutions and AC Petrifilm plates. Plates were incubated for 48 hours at 35°C then after incubation any recovered colonies were counted.

Test 2: An iPad was uniformly sprayed with a thin layer of the inoculum on the front glass surface and allowed to air dry at room temperature inside a biosafety cabinet. After drying, a 1-inch square was swabbed using a sterile collector swab and cultured to determine the initial inoculum concentration (untreated control).

The entire surface of the iPad was then exposed for 2 minutes using the CrazyCap2 set on Crazy mode at a height of 1 inch from the iPad surface. Following treatment, a 1-inch area was swabbed to recovering any remaining bacteria. The entire surface of the iPad was treated for another 2 minutes on Crazy mode and another swab collected to determine the 4 minute exposure results. The swabs were suspended in 10 mL of sterile DI water and vortexed for 1 minute. This recovery fluid was used to make dilutions and AC Petrifilm plates. Plates were incubated for 48 hours at 35°C then after incubation any recovered colonies were counted.

Experimental Results:

Table 1: Quantitative counts for *S. aureus* contaminated iPad surface treated with the CrazyCap 2 using Test 1 protocol.

Time Point (minutes)	CFU/mL	Log	Log Reduction	%Kill
0 (untreated control)	6,700,000	6.83		
Crazy mode (2 min)	870,000	5.94	0.89	87.0
Crazy mode (4 min)	450,000	5.65	1.17	93.3

Limit of detection = 10 CFU.
% Kill = Percent difference between starting population and device-treated population.

Table 2: Quantitative counts for *S. aureus* contaminated iPad surface treated with the CrazyCap 2 using Test 2 protocol.

Time Point (minutes)	CFU/mL	Log	Log Reduction	%Kill
0 (untreated control)	3,000,000	6.48		
Crazy mode (2 min)	2,200,000	6.34	0.48	67.2
Crazy mode (4 min)	28,000	4.45	2.38	99.6

Limit of detection = 10 CFU.
% Kill = Percent difference between starting population and device-treated population.

Conclusions:

The CrazyCap 2 significantly decreased the level of bacteria on the contaminated iPad surface after 4 minutes of treatment on the Crazy mode compared to the starting bacterial populations.

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