Airmid Healthgroup Ltd. Laboratory Test Results for KTII Air Steriliser

Executive Summary

Controlled testing to evaluate the efficacy of the removal of airborne Bacteriophage MS2, a surrogate for SARS-CoV-2, using a KTII Medical Grade Air Steriliser.

Testing Facility: Airmid Healthgroup Ltd, Citywest Business Campus, Dublin 24, D24 YH58, Ireland
airmidhealthgroup.com

Accreditation: Airmid Healthgroup is a world leading biomedical research facility and ISO/IEC 17025:2017 accredited testing laboratory, with a purpose built state-of-the-art, ASTM compliant environmental test chamber.

Report Date: 17 August 2021 **ASC Code:** ASC004147 **Report No.:** ASCR092502

Reviewed by: Vivienne Mahon, PhD – Chief Scientist/Quality Director, Airmid Healthgroup Ltd

Test Item: KTII Air Steriliser with Medical Grade HEPA 14 filter, dual technology ultraviolet germicidal irradiation (UVGI) chamber and activated carbon filter.

Test Material: Bacteriophage MS2 (MS2). Like SARS-CoV-2 coronavirus, MS2 is a single stranded RNA virus (positive-sense). Due to its viability and resistance to disinfection, MS2 is an often used surrogate in air purifier tests and is considered to represent a "worst case scenario".

Analysis: Samples collected from the test chamber were analysed by plaque assay, which assesses the infectivity of the sampled virus. The concentration of infective MS2 virus is denoted as the number of plaque forming units per cubic metre of air (PFU/m^3).

Results: Table 5.1 and Figure 5.1 summarises the MS2 plaque-forming units per cubic meter of air (log_{10} PFU/m^3). This shows a reduction from 7.6 log_{10} PFU/m^3 to below the limit of detection LOD (< 3.66 log_{10} PFU/m^3) in less than 30 minutes.

Table 5.1. Log_{10} values of the average PFU/m^3 for individual active test and inactive control runs, and for the overall average for all active test and inactive control runs

Time (minute)	Control				Test			
	Run 1	Run 2	Run 3	Average (n=3)	Run 1	Run 2	Run 3	Average (n=3)
– 10 to 0	8.0	7.9	8.2	**8.1**	7.4	7.6	7.8	**7.6**
+ 05 to 15	8.0	7.9	8.0	**7.9**	6.2	5.9	6.4	**6.2**
+ 20 to 30	7.6	7.8	7.6	**7.7**	<LOD	<LOD	<LOD	**<LOD**
+ 50 to 60	7.6	7.8	7.6	**7.6**	<LOD	<LOD	<LOD	**<LOD**

MS2 Limit of Detection: 3.66 log_{10} PFU/m^3

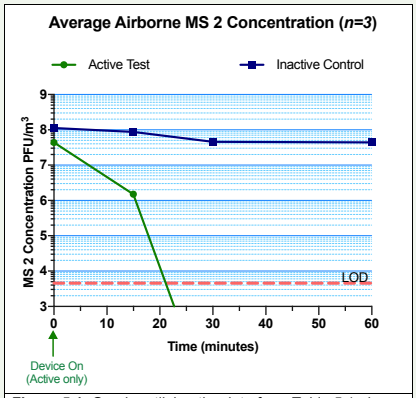

Figure 5.1. Graph outlining the data from Table 5.1 above, which demonstrates the average concentration of airborne MS2 measured throughout the study.

Conclusion: **When challenged with airborne SARS-CoV-2 phage MS2, the KTII reduced the average number of PFU/m^3 from 7.6 log_{10} to below the limit of detection (LOD) < 3.66 log_{10} which would result in a greater than 99.99% reduction of the virus in under 30 minutes and greater than 99.999% reduction after 60 minutes.**