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11th January 2021

To Whom It May Concern

This letter is to certificate that **Aurabeat AG+™ Silver Ion Air Purifier (NSP Series)**, has the following testing and certifications completed:

Certification:	Descriptions:
MRIGlobal	Airborne COVID-19 virus (SARS-CoV-2) Elimination Test 空氣懸浮 COVID-19 病毒（SARS-CoV-2）消滅測試 Proven that Aurabeat AG+ Series Air Purifier can eliminate >99.9% of Airborne COVID-19 virus in 15 minutes 證實 Aurabeat AG +系列空氣淨化器可以在 15 分鐘內消滅> 99.9%的空氣懸浮 COVID-19 病毒
ATCC®	COVID-19 virus (SARS-CoV-2) TCID50 Assay with Vero E6 Cell System (ATCC CRL-1586) 新型冠狀病毒 (COVID-19/SARS-CoV-2) 配合 Vero E6 細胞系統進行 TCID50 定量化驗 (ATCC CRL-1586) Proven that Aurabeat AG+ Antiviral technology can eliminate >99.9% of COVID-19 (SARS-CoV-2) within 30 mins 證實 Aurabeat AG+ 抗病毒技術 30 分鐘消滅＞99.9% 新型冠狀病毒(COVID-19 virus)
AATCC®	AATCC 100 modified for Human Coronavirus (ATCC VR-740) AATCC 100 修改用於測試人類冠狀病毒 (ATCC VR-740) 99.09% Elimination (2.04 log_{10} Reduction) on Human Coronavirus in 30 minutes 30 分鐘內消滅人類冠狀病毒 99.09%（減少 2.04 log_{10}）
SGS	Airborne Influenza Virus Elimination Test – Tested against Airborne Influenza A virus H1N1 subtype and H3N2 subtype 消除空氣懸浮流感病毒測試 – 已針對空氣懸浮甲型流感病毒 H1N1 亞型和 H3N2 亞型進行測試 >99.99% Elimination on 2 Subtypes of Airborne Influenza Virus 對兩種甲型流感病毒亞型消滅超過 99.99%
SGS	SGS Bacteria Elimination Test – Tested against Staphylococcus Aureus and Escherichia Coli, and Natural airborne bacteria. SGS 細菌殺滅測試 - 針對金黃色葡萄球菌和大腸桿菌進行了測試 >99.9% Elimination on 2 Strains of Bacteria 對兩種細菌殺滅超過 99.9%
MA	Technical Standard for Disinfection – Tested against Staphylococcus Aureus, Staphylococcus Albus, Escherichia Coli, and Natural airborne bacteria. 消毒技術規範 – 已針對金黃色葡萄球菌，白色葡萄球菌，大腸桿菌和天然空氣傳播的細菌進行了測試 99 to 99.99% Elimination on 3 Strains of Bacteria (On UV+Plasma alone) 3 種細菌的消滅率達 99%至 99.99%（僅在紫外線+等離子作用下）

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	GB/T 18801-2015 B Clean Air Delivery Rate (PM 0.3 and above) 顆粒物的潔淨空氣量 (0.3 μm 以上顆粒總數) Clean Air Delivery Rate (CADR) ≥375 m^3/hr 潔淨空氣輸送率（CADR）≥375 立方米/小時
	IEST-RP-CC001.5 HEPA and ULPA Filters – Filtration Efficiency Test IEST-RP-CC001.5 高效率空氣微粒子過濾網及超低穿透空氣過濾網 – 過濾效率測試 99.7% Filtration Efficiency 99.7% 過濾效率
	Cytotoxicity test on human cell – Medical Research Council cell strain 5 (MRC-5) 對人類細胞進行細胞毒性測試 - 英國醫學研究委員會 MRC-5 細胞 No cytotoxicity to human cell. 證實對人類細胞無毒性。
	ISO 10993-10 Biological evaluation of medical devices — Part 10: Tests for irritation and skin sensitization ISO 10993-10 醫療器械的生物學評估 — 第 10 部分：刺激性和皮膚致敏性測試 Proven that the technology does not cause any skin irritation. 證實不刺激皮膚。
	FDA Registered 510(k) Class II Medical Device 美國食品藥品監督管理局註冊 510（k）II 類醫療器械 FDA approved as medical grade sterilization air purifier. 通過美國食品藥品監督管理局確認為醫療級別消毒空氣淨化機。
	Restriction of Hazardous Substances Directive (EU) 2015/863 amending 2011/65/EU 危害性物質限制指令 (EU) 2015/863 修正為 2011/65/EU Restricted chemical substances in the product comply with limits 產品中限制化學物質符合限值
	UL 867 - Electrostatic Air Cleaners, Ozone Emission Compliance UL 867-靜電空氣淨化器，臭氧釋出標準 Product Ozone emission level complies US standard 產品臭氧釋出水平符合美國標準
	On-site IAQ assessment with reference to the HKIAQ Guidance – Ozone 參照 HKIAQ 指南進行現場 IAQ 評估 - 臭氧 No Observable Ozone Generation by NSP-X1. 證實 NSP-X1 沒有產生臭氧。
	EN 55014-1: Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus Emission EN 55014-2: Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus Immunity. Product family standard EN 61000-3-2: Electromagnetic compatibility (EMC) Limits. Limits for harmonic current emissions

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	EN 61000-3-3: Electromagnetic compatibility (EMC) Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection EN 62233: Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure EN 60335: Safety of household and similar electrical appliances EN 55014-1: 電磁兼容。 家用電器，電動工具及類似器具的要求 EN 55014-2: 電磁兼容。 家用電器，電動工具和類似器具的抗擾度要求。 產品系列標準 EN 61000-3-2: 電磁兼容。(EMC) 極限。諧波電流發射限值 EN 61000-3-3: 電磁兼容性（EMC）限制。公共低壓電源系統中電壓變化，電壓波動和閃爍的限制，對於每相額定電流≤16 A 且無條件連接的設備 EN 62233: 家用電器和類似設備對人體暴露的電磁場的測量方法 EN 60335: 家用和類似用途電器的安全
FCC	FCC Part 15B - Equipment Authorization – RF Device FCC Part 15B - 設備授權 – 射頻設備
IECEE CB SCHEME	Household and similar electrical appliances - Safety Household and similar electrical appliances - Safety - Part 2-65: Particular requirements for air-cleaning appliances 家用和類似用途電器-安全 家用和類似用途電器-安全-第 2-65 部分：空氣淨化器的特殊要求 IEC 60335-1:2020/AMD2:2016; IEC 60335-1:2010; IEC 60335-1:2010/AMD1:2013; IEC 60335-2-65:2002/AMD1:2008; IEC 60335-2-65:2002; IEC 60335-2-65:2002/AMD2:2015

Sincerely,

Aurabeat Technology Limited

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Airborne COVID-19 virus (SARS-CoV-2) Elimination Test
空氣懸浮 COVID-19 病毒（SARS-CoV-2）消滅測試
Proven that Aurabeat AG+ Series Air Purifier can eliminate >99.9% of Airborne COVID-19 virus in 15 minutes
證實 Aurabeat AG +系列空氣淨化器可以在 15 分鐘內消滅> 99.9%的空氣懸浮 COVID-19 病毒

MRIGlobal
The science you expect.
The people you know.

Characterization of a Flow–Through Air Purification Device In Deactivation Of SARS-CoV-2

Final Report

FOR

Aurabeat Technology Limited

Unit 651, 6/F., Building 19W, No.19 Science Park West Avenue, Hong Kong Science Park, Pak Shek Kok, N.T., Hong Kong

MRIGlobal Project No. 311717.01.001

January 8, 2021

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Preface

This final report was prepared at MRIGlobal for the work performed under MRIGlobal Task No. 311717.01.001, "Characterization of a Flow-Through Air Purification Device in Deactivation of Aerosolized SARS-CoV-2."

Test devices were supplied to MRIGlobal by Aurabeat Technologies Limited for the conduct of the program. The Flow-Through Air Purification Device is marketed under the product names: Aurabeat AG+ Sanitizing Air Purifier (Model NSP-X1), Brondell Pro Sanitizing Air Purifier with AG+ Technology by Aurabeat (Models P700BB-W & P7004C-W), and AG+ Pro Air Purifier (Model NSP-X2). The experimental phase of this task was initiated by MRIGlobal on May 7, 2020 and ended on December 4, 2020.

The Study Director of the program was Rick Tuttle. Execution of the study was assisted by Kristen Solocinski, Ph.D., Sam Humphries, and managed by William Sosna.

The studies were performed in compliance with MRIGlobal QA procedures. All operations pertaining to this study, unless specifically defined in this protocol, were performed according to the Standard Operating Procedures of MRIGlobal or approved laboratory procedures, and any deviations were documented.

MRIGLOBAL

Richard Tuttle
Rick Tuttle
Study Director

Approved:

Claire L Croutch
Claire Croutch, Ph.D.
Portfolio Director
Medical Research

January 8, 2021

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Section 3.
Test Systems and Methods

3.1 Equipment

Test Equipment

Aurabeat air purifier (Test Device) with dimensions of 390 × 211 × 628 mm. The unit was delivered with 110V power supply and voltage regulator for fan speed control.

3.2 Methods

Testing Description

MRIGlobal conducted testing characterization of the Aurabeat Air Purifier in viral aerosol decontamination trials to evaluate the log reduction destructive kill effectiveness against an envelope virus (SARS-CoV-2) strain USA-WA1/2020. USA-WA1/2020 was obtained from The University of Texas Medical Branch (UTMB) from an isolate of a patient who traveled to an infected region of China and developed the clinical disease (COVID-19) in Washington, USA in January 2020. The complete genome of USA –WA1/2020 has been sequenced. The Isolate-GenBank: MN985325 and after one passage in in Vero cells GenBank: MT020880. The complete genome of SARS-CoV-2 strain USA-WA1/2020 has been sequenced after four passages in collaboration with Database for Reference Grade Microbial Sequence (FDA-ARGOS; GenBank: MT246667). Each vial used on study contains approximately 0.5 mL of cell lysate and supernatant from Cercopithecus aethiops kidney cells infected with SARS-CoV-2 isolate USA-WA1/2020.

All tests were conducted in a Biosafety Level 3(BSL-3) facility at MRIGlobal, Kansas City, MO. Due to the impracticality and potential hazards associated with conducting large area aerosol dissemination studies with safety level 3 human pathogens, MRIGlobal designed a scaled down aerosol containment cabinet to simulate a large room environment. The client provided an air purification unit (Aurabeat AG+ Sanitizing Air Purifier Model NSP-X1) with a voltage regulator to scale down the units large room flow recirculation rate for aerosol test chamber challenges. The Test Device under normal operating conditions with full power would produce a room air flow recirculation rate of approximately 7000 L/minute. A supplied voltage regulator was utilized to provide a continuous and regulated supply of 50V to regulate the Test Device flowrate to 100L/minute to accommodate the smaller size of the aerosol containment system. This provided approximately sixteen (16) test chamber air exchanges every hour to provide test results that can be extrapolated into a larger real life room size. This 100L/minute flow rate setting represents the unit running at 1.428% of capacity as compared to the standard 7000 L/min large room operation condition. For this testing, MRIGlobal fabricated a primary aerosol containment system (cabinet) to conduct evaluation of the Test Device. Tests were conducted at MRIGlobal inside a Biological Class III Safety Cabinet in a high containment BSL-3 laboratory using a common SARS-CoV-2 stock with known viral concentration. The aerosol containment cabinet was fabricated out of Plexiglas with internal dimensions of 30 inches tall × 3.5ft long × 1.5ft wide with a displacement volume of approximately 370 liters or 13 cubic feet. The Test Device fan speed was regulated for all tests at 50 volts with the power regulator plugged into a standard 110V receptacle. A diagram of the test system is shown in Figure 1.

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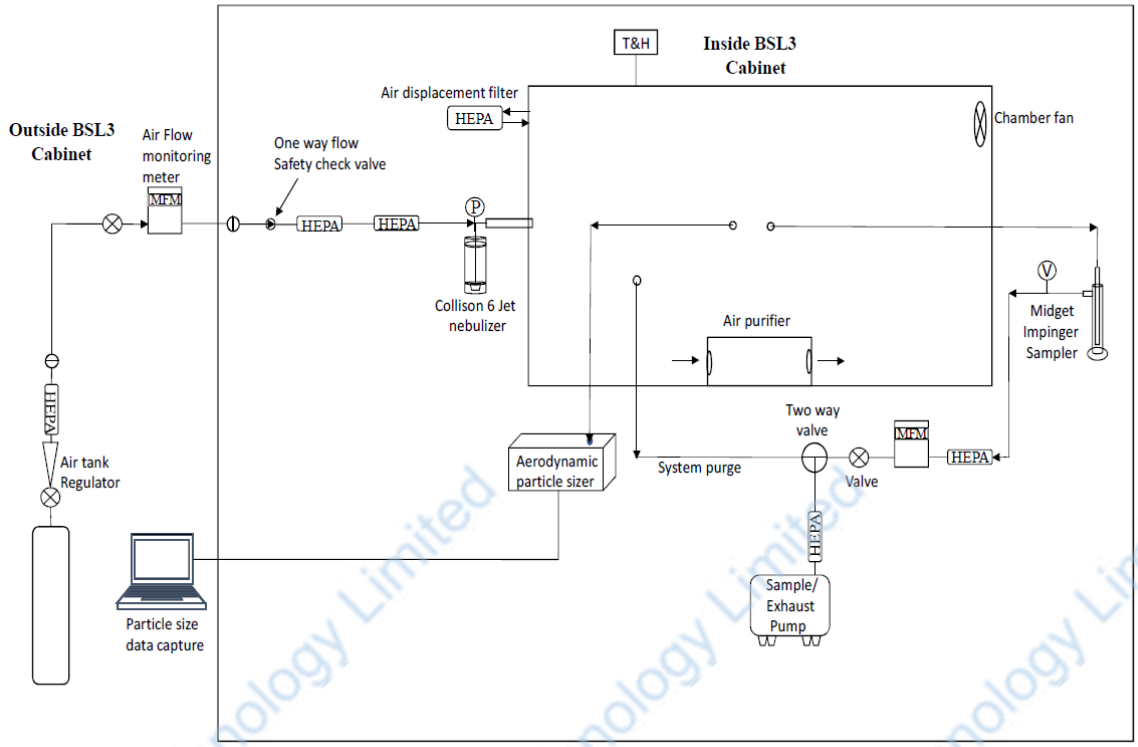

Figure 1. SARS-CoV-2 Aerosol Test System

Testing was conducted to obtain conditions that provided aerosol challenge concentrations acceptable for evaluating the Test Device in viral deactivation reduction at equal to or greater than 3 logs. For SARS-CoV-2 aerosol generation, a Collison 6 jet nebulizer ("Nebulizer") was filled with a fresh aliquot of 10 ml of viral DMEM stock suspension for each test. The Nebulizer was operated with tank supplied breathing grade air at a supply pressure of 26 psi to generate viral aerosol into the test cabinet at a flow rate of approximately 15 L/min. The test cabinet is adapted with a HEPA capsule filter to allow for the introduction of generated viral aerosol air supply flows, and air displacement introduction for aerosol sampling during testing. The bio-aerosol test system was fabricated for nebulizer adaptation, aerosol and sample dilution air displacement filtration, air supply regulation and control, sample flow regulation, particle size measurement, and temperature and humidity monitoring. Aerosol generation and sampling system pressures and flow rates were monitored using calibrated and regulated digital mass flow meters.

An Aerodynamic Particle Sizer (APS) was utilized to sample baseline standard and test aerosols for particle size distribution measurement and particle count concentration at time intervals corresponding to impinger samples during each test. The APS is an aerodynamic time of flight particle measurement instrument that provides accurate particle size analysis, and has a dynamic particle size measurement range of 0.3 to 20 µm. The APS provides mass median aerodynamic diameter (MMAD), Geometric Standard Deviation (GSD), total sample aerosol mass (mg/cc), and aerosol particle counts (#/cc) in real time. All tests were conducted using a common stock of SARS-CoV-2 prepared in DMEM suspension at a concentration of 5×10^6 plaque forming units per milliliter. Pre – device test characterization of the viral aerosol delivery efficiency and time

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weighted viable aerosol concentration testing was performed to establish baseline (control) results for subsequent viral deactivation efficacy of the Test Device. A test matrix showing the baseline control and Test Device associated testing and samples is shown in Table 1.

Table 1. Test Matrix

Test description	Test Time (min)	SARS-Cov-2 stock supension media	Collison 6 jet aerosol generator operation (psia)	Collison 6 jet ~ flow rate (L/min)	Collison 6 jet generation time (min)	Collison 6 jet test generation time (min)	Midget Impinger sample flow rate (L/min)	Midget Impinger test sample times (min)	APS particle size test sample time (min)	Total number of tests	Number of Impinger samples/ test	Total TCID50 sample assays
Characterization control testing, chamber fan only operation	60	DMEM	26	15	20	t = -20-0	1.5	t = 0-15 t = 15-30 t = 30-45 t = 45-60	t = 0 t = 15 t = 30 t = 45	3	4	36
Aurabeat Air Purifier testing	60	DMEM	26	15	20	t = -20-0	1.5	t = 0-15 t = 15-30 t = 30-45 t = 45-60	t = 0 t = 15 t = 30 t = 45	3	4	36

For conducting and characterizing the viral aerosol viability and establishing natural aerosol decay results, the Test Device was placed in the center bottom of the test system with only a low flow test chamber recirculation fan operational (Test Device turned off). This provided uniform mixing and a homogeneous concentration of generated aerosols. The test chamber fan was operated throughout the entirety of characterization control testing to provide aerosol mixing and recirculation conditions in the chamber similar to that produced during operation of the Test Device. For each conducted test, the Collison nebulizer was operated over a twenty (20) minute aerosol generation period, the Nebulizer was turned off, and aerosol viral sampling from the cabinet initiated. SARS-CoV-2 aerosol sample collection and measurement of the viral deactivation efficacy were derived from impinger samples taken in sequential time order and duration from a common sample location during all conducted tests. The aerosol sample impingers (Midget, model 7531), have a high collection efficiency rating and operate at low sample flow rate requirements. Between each conducted test, resident aerosols were evacuated with a system equipped exhaust pump and verified for total particle evacuation with the APS 3321 analyzer.

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Section 4.
Sample Analysis and Results

Stock virus used for test and control coupon inoculation (SARS-CoV-2, strain USA-WA1/2020) were concentration titered by serial dilution to obtain the 50% tissue culture infectious dose ($TCID_{50}$). This was conducted to ensure that sufficient quantities of virus were available for testing. Untreated virus control concentrations were assessed to ensure that titers remained consistent. For cell and virus cultures, sterile DMEM (Mediatech) supplemented with 7% fetal bovine serum (HyClone), GlutaMax (Gibco), and penicillin-streptomycin-neomycin antibiotic mixture (Gibco) were utilized. Vero E6 cells (monkey kidney cells) that were originally obtained from ATCC (CRL-1586) were used for all assays on this project. All cells were maintained at 36°-38°C and 5% CO_2 in a humidified atmosphere, and cells were seeded into flasks for propagation and expanded into 96 well plates for titration of SARS-CoV-2 virus. Cells were infected with viral samples and observed for the presence of cytopathic effect (CPE) for four (4) to five (5) days post-infection. A 10× serial dilution of collected impinger virus samples were applied to cell assay plates at up to an 8 log dilution factor for the presence of viral growth into assay plate host cells. Plates were inoculated with 5 replicate samples at each dilution level, with each row of replicates 10 × more dilute than that used in the preceding row for viral cell infectivity detection. Viral propagation plate readings were conducted under high intensity magnification of each plate cell for viral host cell infectivity and recorded on a sample test log for positive (+) or negative (-) viral propagation. Data was entered into a Reed Muench calculation for sample concentration measurement and determination of the $TCID_{50}$ (50% tissue culture infectious concentration of virus).

Test Results:

Midget impinger samples were analyzed as described above for both the in triplicate one hour characterization control tests, and the in triplicate Test Device efficacy tests. Collected samples were poured into sterile 50 ml labeled sterile conical tubes following each aerosol collection timepoint, and transported to a dedicated Class II Biological Safety cabinet for assay and viable viral analysis. Results for the baseline control characterization testing and Test Device log reduction and percent viral deactivation efficiency were calculated by comparing the control test natural viral decay in relation to the Test Device operation results under the same conditions. Collected impinger $TCID_{50}$ concentrations at each aerosol collection time interval were calculated, and the test cabinet viral aerosol concentrations derived by defining the ratio of sampled volume in relation to the volumetric dicplacement volume of the test chamber. This ratio multiplied by the impinger sample $TCID_{50}$/mL concentration was used to extrapolate the total viable viral aerosol concentration and efficacy of the Test Device in deactivating the airborne virus. A table with results for the collected virus $TCID_{50}$ assay concentrations, and test cabinet viable aerosol concentrations for control and test device operation are shown in Table 2.

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Table 2. Test Results for Aurabeat Purifier Viral Deactivation Efficacy

Characterization Control Sample Results and Aurabeat Viable Virus Deactivation Efficiency												
Sample Name	Impinger Sample Duration (mins)	Impinger Sample Flow rate (L/min)	Impinger total sample volume (L)	Test Chamber Total Displacement volume (L)	Ratio Of impinger sample volume (L) to Test Chamber volume (L)	Plate Type	Sample concentration TCID50/mL	Ratio Of impinger sample volume (L) to test chamber volume (L)	TCID50 viral chamber concentration	Impinger Avg TCID50/mL total chamber vol	Test Average TCID50 total chamber concentration	Averaged test sample Log10 chamber concentraton TCID50
Control test 1 0-15 min	0-15	1.4	21	370	17.50	24-Well	316.23	17.50	5533.99	3.74	2698.75	3.30
Control test 2 0-15 min							100.00	17.50	1750.00	3.24		
Control test 3 0-15 min							46.42	17.50	812.28	2.91		
Control test 1 15-30 min	15-30	1.4	21	370	17.50	24-Well	46.42	17.50	812.28	2.91	554.47	2.71
Control test 2 15-30 min							31.62	17.50	553.40	2.74		
Control test 3 15-30 min							17.01	17.50	297.72	2.47		
Control test 1 30-45 min	30-45	1.4	21	370	17.50	24-Well	31.62	17.50	553.40	2.74	221.36	2.08
Control test 2 30-45 min							3.16	17.50	55.34	1.74		
Control test 3 30-45 min							3.16	17.50	55.34	1.74		
Control test 1 45-60 min	45-60	1.4	21	370	17.50	24-Well	3.16	17.50	55.34	1.74	49.46	1.69
Control test 2 45-60 min							3.16	17.50	55.34	1.74		
Control test 3 45-60 min							2.15	17.50	37.70	1.58		
Aurabeat Test Sample Results and Percent Aerosol Viral Deactivation Efficiency												
Sample Name	Impinger Sample Duration (mins)	Impinger Sample Flow rate (L/min)	Impinger total sample volume (L)	Test Chamber Total Displacement volume (L)	Ratio Of impinger sample volume (L) to Test Chamber volume (L)	Plate Type	Sample Concentration TCID50/mL	Ratio Of impinger sample volume (L) to Test Chamber volume (L)	TCID50 viral chamber Concentration	Impinger Avg TCID50/mL total chamber vol	Test Average TCID50 total chamber Concentration	Aurabeat Total Chamber % aerosol Log reduction in 15 minutes related to control test concentration
Test 1 15 min	0-15	1.4	21	370	17.50	24-Well	2.25	17.50	39.38	1.60	52.50	99.9%
Test 2 15 min							2.25	17.50	39.38	1.60		
Test 3 15 min							4.50	17.50	78.75	1.90		
Test 1 30 min	15-30	1.4	21	370	17.50	24-Well	0.00	0.00	0.00	0.00	0.00	
Test 2 30 min												
Test 3 30 min												
Test 1 45 min	30-45	1.4	21	370	17.50	24-Well	0.00	0.00	0.00	0.00	0.00	
Test 2 45 min												
Test 3 45 min												
Test 1 60 min	45-60	1.4	21	370	17.50	24-Well	0.00	0.00	0.00	0.00	0.00	
Test 2 60 min												
Test 3 60 min												

A plot of the averaged SARS-CoV-2 chamber aerosol concentrations for each of the in triplicate conducted tests shows the natural airborne viable viral concentration over each of the four (4) sample time intervals. The plot represents the control sample concentrations at the midpoint sample time intervals taken for each test, and shows a very linear relationship between the natural viral concentration decay in the test chamber in relation to residence time. The plot shows a near linear regession fit with an R^2 value of 0.99, and is shown in Figure 2.

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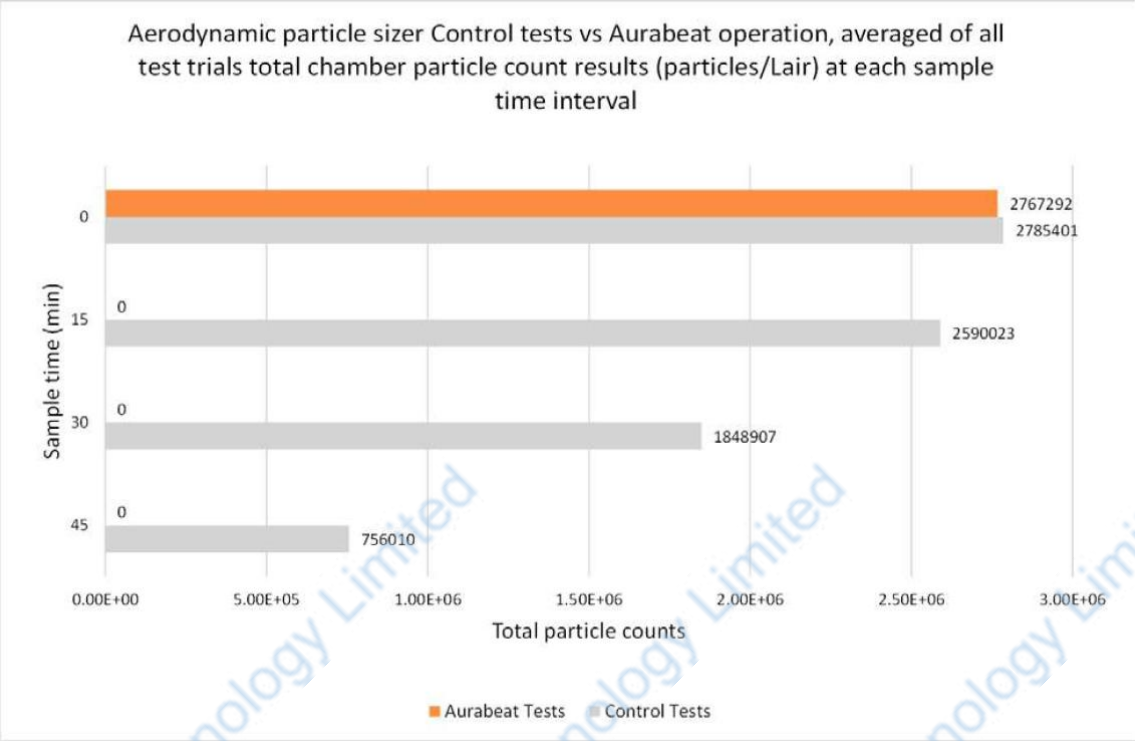

Figure 3. Aerodynamic Particle Sizer (APS) Aerosol Particle Count vs Sample Time Plot

Particle size distributions were also measured with the APS. A plot representing the particle size distribution of the resident aerosol in the test chamber following the termination of 20 minute pre-test SARS-CoV-2 aerosol generation from suspension in DMEM is shown in Figure 4. The plot shows the percent mass of the particle size distribution in relation to particle size. The Mass Median Aerodynamic Diameter (MMAD) shown in the graph reflects a median diameter of approximately 3.4 µm, with 50% of the aerosol particle mass below and 50% above the median diameter.

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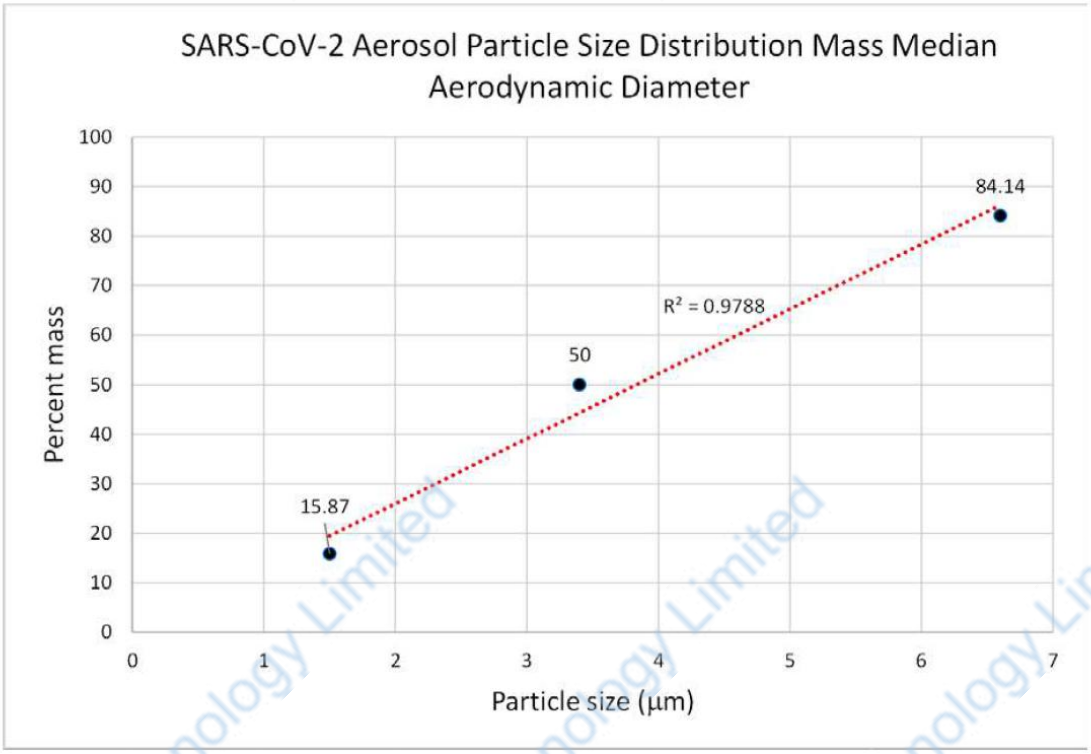

Figure 4. Aerodynamic Particle Sizer (APS) Aerosol Particle Size Plot

Conclusions:

The Test Device air purifier showed a very quick removal of resident aerosol in the test cabinet for all conducted tests. The aerosol particle concentration was reduced from an average concentration of over 2 million particles per liter of air to a zero count reading per liter of air in less than fifteen (15) minutes of operation. The viable viral concentration was also greatly reduced within the first 15 minutes of the test device operation as compared to the baseline control test data, and the control testing time dependent aerosol concentration plot shown in Figure 2. The Test Device had a calculated viable virus test cabinet concentration reduction of 99.9% within 15 minutes of Test Device operation with no detectable viral sample collection, or resident aerosol particles detected in subsequent test time sample intervals. This depletion of viable viral aerosol over the 0-15 minute operation time period equates to approximately four (4) aerosol test cabinet volume air displacement cycles through the air purifier to fully remove and deactivate the airborne virus from the test atmosphere.

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MRIGlobal
The science you expect.
The people you know.

Assessment of Melt Blown Fiber with Antiviral Coating Against SARS-CoV-2

Letter Report

FOR

Aurabeat Technology Limited

Roger Sze To
651, 6/F., Building 19
Science Park W Ave.
Pak Shek Kok, Hong Kong

MRIGlobal Project No. 311664.01.001

September 4, 2020

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The people you know.

September 4, 2020

Roger Sze To
651, 6/F., Building 19
Science Park W Ave
Pak Shek Kok, Hong Kong

Subject: MRIGlobal Project No.: 311664.01.001 Final Report

Dear Mr. Sze To:

MRIGlobal is pleased to submit this letter report to Aurabeat Technology Limited titled "Assessment of Melt Blown Fiber with Antiviral Coating against SARS-CoV-2." The objective of this project was to determine if Filter Media treated with Aurabeat AG+™ Antiviral Air Filtration technology has the ability to inhibit the growth of SARS-CoV-2 *in vitro*. We added 200 µl of virus stock to melt blown fiber coupons with coating X or uncoated as control. After 30 minutes, we recovered virus (if any) from the coupons and added it to Vero E6 cells. Plates were examined at 5 days post-testing for cytopathic effects (CPE). Cytotoxicity was seen with X treatment but not in control samples. No CPE was observed with samples from the X treated samples past cytotoxicity at 30 minutes.

1. Results Summary

The objective for project 311664.01.001 was to determine if Filter Media treated with Aurabeat AG+™ Antiviral Air Filtration technology has the ability to inhibit the growth of SARS-CoV-2 *in vitro*. MRIGlobal utilized the USA-WA1/2020 strain of the virus, acquired from BEI Resources (NR-52281). This was propagated in Vero E6 cells (ATCC CRL-1586); these cells were also used for the neutralization assay. Vero E6 cells were cultured in growth media consisting of Dulbeco's Modified Eagle Medium/F12 supplemented with 5% FBS (Fetal Bovine Serum), and PSN (penicillin, streptomycin, and neomycin).

The Vero E6 cells were plated on 96-well plates the day before the assay and were allowed to grow to ~ 60%-70% confluence. On the day of the assay, melt blown fiber coupons were inoculated with 200 µl of virus stock and allowed to sit for 30 minutes in a biosafety cabinet. When 30 minutes passed, 2 ml of DMEM/F12 media was added to coupons and lightly scraped with a cell scraper to aid in viral resuspension. Samples were added to an empty 96-well plate and diluted 1:10 down the plate in DMEM/F12. These dilutions were then transferred to a plate of Vero cells with media removed. After at least 15 minutes, DMEM/F12 supplemented with FBS was added to cells to feed them for the next 5 days. This incubation period of at least 15 minutes is to allow the virus to adsorb to cells without interference from FBS. Cytotoxicity

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controls of the test articles without virus added were also performed. The assay was executed in five replicates for each condition.

After 5 days, cells were examined for the presence of cytopathic effect (CPE) associated with viral presence and replication. Examination is done using a microscope (10x objective to view the entire well at once) and observing the morphology of the cells. Healthy Vero cells have somewhat transparent appearance with pinched or rounded ends in a monolayer of cells with little to no space between cells. Dead cells displaying CPE are often not adhered to the plate, round, and much smaller than living cells. Considerable empty space can be seen on the bottom of the plate where cells have detached from the surface. Any well displaying CPE is marked as positive whether the whole well, or only a small portion is affected, because this is indicative of the presence of viable virus.

Cytotoxicity was observed at the first dilution of recovered samples from X treated coupons. When media was added to the X coupons, it changed from a red color to a purple color, which is indicative of an increase in pH to a more basic level. No cytotoxicity was observed from control samples. Since there was no CPE observed after the cytotoxic effects were gone, we cannot say for certain whether there was virus present in the wells that displayed cytotoxicity, thus limiting the quantification of viral reduction in these samples. Day 5 reads showed no CPE in any test wells. All uninfected controls remained healthy and did not display any CPE throughout the 5-day observation period. Table 1 summarizes these findings. Results were calculated using the Reed & Muench Calculator (produced by BD Lindenbach from "Measuring HCV infectivity produced in cell culture and in vivo" Methods Mol Biol. (2009) 510:329-36). Results are shown as Log reduction relative to timed controls as well as a percent reduction of SARS-CoV-2 infectivity.

Table 1. Results of *in vitro* Neutralization of SARS-CoV-2 with coated melt blown fiber.

Sample Name	Time of Contact (minutes)	TCID50	Log10 TCID50	Average TCID50	Average Log10 TCID50	Log Reduction to Virus Controls	Percent Log Reduction
X30-1	30	31.62	1.50	31.62	1.50	3.33	99.95%
X30-2	30	31.62	1.50				
X30-3	30	31.62	1.50				
C30-1	30	50118.72	4.70	75376.66	4.83		
C30-2	30	125892.54	5.10				
C30-3	30	50118.72	4.70				

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Based on this experiment, we conclude that melt blown fiber coated with X treatment is very effective at inhibiting SARS-CoV-2 infection of Vero cells. It is important to note that the cytotoxicity observed from X treatment limits the enumeration of virus at the highest concentration and therefore it cannot be said whether virus was present in those wells which showed cytotoxicity.

Sincerely,

MRIGLOBAL

Kristy Solocinski, Ph.D.
Staff Scientist
Medical Countermeasures Division

Approved by:

Ed Sistrunk, MSM, PMP
Division Director
Medical Countermeasures Division

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MICROCHEM LABORATORY

STUDY REPORT

Study Title
AATCC-100
Test Method for Antibacterial Finishes on Textile Materials modified for Viruses

Product Identity
Aurabeat Catalyzed Silver Ion Antiviral Air Filter Media

STUDY REPORT SUMMARY

General Study Information

Study Title:	AATCC-100 Test Method for Antibacterial Finishes on Textile Materials modified for Viruses
Study Identification Number:	NG15769

Test System

Test Microorganism(s):	Human coronavirus, Strain Strain 229E, ATCC VR-740
Contact Time(s):	30 minutes

Study Dates

Experimental Start Date/Time:	23JUL2020 / 1515
Experimental Termination Date/Time:	30JUL2020 / 1912
Study Completion Date:	05AUG2020

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RESULTS

Table : Test Results

		Sample Replicate #1	Sample Replicate #2	Sample Replicate #3
Cell Control		0 0 0 0	0 0 0 0	0 0 0 0
Dilution	10^{-1}	+ + + +	+ + + +	+ + + +
	10^{-2}	+ + + +	+ + + +	+ + + +
	10^{-3}	0 0 0 +	+ 0 0 0	0 + + +
	10^{-4}	0 0 0 0	0 0 0 0	0 0 + 0
	10^{-5}	0 0 0 0	0 0 0 0	0 0 0 0
	10^{-6}	0 0 0 0	0 0 0 0	0 0 0 0
	10^{-7}	0 0 0 0	0 0 0 0	0 0 0 0
$TCID_{50}$ per 0.1 ml		2.75 Log_{10}	2.75 Log_{10}	3.50 Log_{10}
Average $TCID_{50}$ per 0.1 ml		3.16 Log_{10}		
Average Log reduction			2.04 Log_{10}	
Average Percent Reduction			99.09%	

Key: + = Virus recovered; 0 = Virus not recovered and/or no cytotoxicity observed;
T = Cytotoxicity observed

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Airborne Influenza Virus Elimination Test –
Tested against Airborne Influenza A virus H1N1 subtype and H3N2 subtype
消除空氣懸浮流感病毒測試 – 已針對空氣懸浮甲型流感病毒 H1N1 亞型和 H3N2 亞型進行測試
>99.99% Elimination on 2 Subtypes of Airborne Influenza Virus
對兩種甲型流感病毒亞型消滅超過 99.99%

Report No.: GZES2011032588
Issue Date: Dec. 30, 2020

Test report

The sample(s) listed below was/were submitted and identified on behalf of the applicant/vendor

Applicant/Vendor	:	Aurabeat Technology Limited Unit 651, 6/F., Building 19W, No.19 Science Park West Avenue, Hong Kong Science Park, Pak Shek Kok, N.T., Hong Kong
Manufacturer	:	Aurabeat Technology Limited Unit 651, 6/F., Building 19W, No.19 Science Park West Avenue, Hong Kong Science Park, Pak Shek Kok, N.T., Hong Kong
Sample Name	:	Air Purifier
Model/Item	:	Tested model: Aurabeat AG+ NSP-X1 Coverage models: NSP-X2, Brondell ABG80-W, Brondell P700BB-W, Brondell P7004C-W, Luftreiniger AG+ AirProtect 20100 (The circuitry design, PCB layout, electrical components used, internal wiring and functions of all models are identical, except for the model name, color, logos and placement of the logos.)
Electrical Rating	:	/
Sample Source	:	Submitted for Testing by the Applicant
Sample Received Date	:	25 Nov 2020
Test Period	:	26 Nov 2020 - 22 Dec 2020
Test Requested	:	Selected test(s) as requested by client.
Test Method	:	Refer to GB 21551.3-2010 Appendix A
Test Item Name	:	Air virus elimination effect.
Test Result(s)	:	Please refer to next page(s).
Remark	:	1. The test was carried out by external laboratory which is assessed as competent. 2. Unless otherwise stated the results shown in this test report refer only to the items tested, and for clients internal use only, not to the society has the proof function. This document cannot be used for publicity, without prior written approval of the SGS.

Signed for and on behalf of
SGS-CSTC Standard Technical Services Co., Ltd. Guangzhou Branch

Robin Lu

Authorized Signature
Robin Lu

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Report No.: GZES2011032588
Issue Date: Dec. 30, 2020

Sample pretreatment:

- Turn on the highest wind speed, P03, ultra-violet Sterilize and Plasma mode of the sample. Place the sample in a 30m^3 test chamber for 1h.

Test Result(s):

Virus and host cell	Action time	Serial Number	Air virus content ($TCID_{50}/m^3$)	Removal rate (%)
H1N1 Influenza virus (A/PR/8/34) Host cell: MDCK	0h (CK)	1	2.44×10^6	
		2	1.94×10^6	
		3	2.44×10^6	
	1h	1	<97.3	>99.99
		2	<97.3	>99.99
		3	<97.3	>99.99
Influenza virus H3N2 Host cell: MDCK	0h (CK)	1	1.73×10^6	
		2	1.44×10^6	
		3	1.73×10^6	
	1h	1	<97.3	>99.99
		2	<97.3	>99.99
		3	<97.3	>99.99

Remark: The natural decay of the microorganisms in the air has been eliminated.

- - - End of Report - - -

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SGS Bacteria Elimination Test
SGS 細菌殺滅測試–
> 99.9% Elimination on 2 Strains of Bacteria
對兩種細菌殺滅超過 99.9%

Test Report

GZF20-010912-01

Date: 10 Jul 2020

Test organism	Staphylococcus aureus ATCC 6538
Concentration of bacteria(CFU/mL)	1.9x10^5
Sample -at "0H" contact time (CFU /sample)	1.2x10^5
Control sample- at "0H" contact time (CFU /sample)	1.8x10^5
Sample -at "24H" contact time (CFU /sample)	<100
Control sample- at "24H" contact time (CFU /sample)	8.5x10^7
Reduction(%)	>99.9

GZF20-010912.002

Test organism	Escherichia coli ATCC8739
Concentration of bacteria(CFU/mL)	1.9x10^5
Sample -at "0H" contact time (CFU /sample)	1.4x10^5
Control sample- at "0H" contact time (CFU /sample)	1.9x10^5
Sample -at "24H" contact time (CFU /sample)	<100
Control sample- at "24H" contact time (CFU /sample)	1.4x10^8
Reduction(%)	>99.9

Notes :

1.Test sample was 3 swatches of 4.8 cm diameter circular ,1 mL inoculum per trial.
2.The control sample is standard cotton, provided by SGS laboratory.
3.Test without pre-treatment.
4.According to client's requirement, test item Escherichia coli was tested with reference to AATCC 100-2012.

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Technical Standard for Disinfection 消毒技術規範 –
99 to 99.99% Elimination on 3 Strains of Bacteria (On UV+Plasma alone)
3 種細菌的消滅率達 99%至 99.99%（僅在紫外線+等離子作用下）

CMA 201819000873

广州中科检测技术服务有限公司
检验报告

样品受理编号：JKK20020044　　第 2 页/共 4 页

样　品　名　称　XT-C06 等离子杀菌空气净化器　接　样　日　期　2020-02-07
检　验　项　目　空气模拟现场消毒试验（金黄色葡萄球菌）　检验完成日期　2020-02-13

一、器材

1. 试验舱：20 m³。
2. 试验菌株：金黄色葡萄球菌 6538，培养基：普通营养琼脂培养基，采样器：六级筛孔空气撞击式采样器。
3. 消毒器械：XT-C06 等离子杀菌空气净化器。

二、方法

1. 检测依据：《消毒技术规范》（2002 年版）2.1.3。
2. 检测环境：温度：（20~25）℃，相对湿度：（50~70）%RH。
3. 机器运行状态：试验过程开启“极速档”、“等离子”、“杀菌”。
4. 消毒方法：试验时将待测样机安置于试验舱内，样机开启至额定档位消毒 60 min 后采样，试验重复 3 次。
5. 采样方法：在试验舱中央距离地面 1.0 m 设一个采样点，用六级筛孔空气撞击式采样器采样，采样流量为 28.3 L/min。在消毒作用时间为 0 min、60 min 时进行采样，对照组的采样时间分别为 20 s、20 s，试验组采样时间为 20 s、5 min。

三、结果

试验温度为（20~25）℃，相对湿度为（50~70）%RH，样品“XT-C06 等离子杀菌空气净化器”在开启“极速档”、“等离子”、“杀菌”运行状态下消毒作用 60 min，对金黄色葡萄球菌的杀灭率 3 次试验结果分别是>99.99%，>99.99%，>99.99%。

表 1 空气消毒效果鉴定试验实验数据

试验菌种	作用时间（min）	试验编号	对照组 试验前菌落数（cfu/m³）	对照组 试验后菌落数（cfu/m³）	对照组 自然消亡率（%）	试验组 试验前菌落数（cfu/m³）	试验组 试验后菌落数（cfu/m³）	杀灭率（%）
金黄色葡萄球菌	60	1	1.01×10^5	7.29×10^4	27.82	9.81×10^4	<7	>99.99
		2	9.74×10^4	7.03×10^4	27.82	1.01×10^5	<7	>99.99
		3	9.23×10^4	6.77×10^4	26.65	9.00×10^4	<7	>99.99

四、结论

样品“XT-C06 等离子杀菌空气净化器”在开启“极速档”、“等离子”、“杀菌”运行状态下消毒作用 60 min，对金黄色葡萄球菌的杀灭率 3 次试验结果均≥99.90%，为消毒合格，符合《消毒技术规范》（2002 年版）的要求。

（以下空白）

编辑：李晓蕾　审核：钟瑜　批准：

广州中科检测技术服务有限公司 检验检测专用章

AURABEAT

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CMA 201819000873

广州中科检测技术服务有限公司
检验报告

样品受理编号：JKK20020044　　第 3 页/共 4 页

样品名称 XT-C06 等离子杀菌空气净化器　接样日期 2020-02-07
检验项目 空气模拟现场消毒试验（大肠杆菌）　检验完成日期 2020-02-13

一、器材

1. 试验舱：20 m^3。
2. 试验菌株：大肠杆菌 8099，培养基：普通营养琼脂培养基，采样器：六级筛孔空气撞击式采样器。
3. 消毒器械：XT-C06 等离子杀菌空气净化器。

二、方法

1. 检测依据：《消毒技术规范》（2002 年版）2.1.3。
2. 检测环境：温度：（20~25）℃，相对湿度：（50~70）%RH。
3. 机器运行状态：试验过程开启“极速档”、“等离子”、“杀菌”。
4. 消毒方法：试验时将待测样机安置于试验舱内，样机开启至额定档位消毒 60 min 后采样，试验重复 3 次。
5. 采样方法：在试验舱中央距离地面 1.0 m 设一个采样点，用六级筛孔空气撞击式采样器采样，采样流量为 28.3 L/min。在消毒作用时间为 0 min、60 min 时进行采样，对照组的采样时间分别为 20 s、20 s，试验组采样时间为 20 s、5 min。

三、结果

试验温度为（20~25）℃，相对湿度为（50~70）%RH，样品“XT-C06 等离子杀菌空气净化器”在开启“极速档”、“等离子”、“杀菌”运行状态下消毒作用 60 min，对大肠杆菌的杀灭率 3 次试验结果分别是>99.99%，>99.98%，>99.98%。

表 2 空气消毒效果鉴定试验实验数据

试验菌种	作用时间（min）	试验编号	对照组			试验组		杀灭率（%）
			试验前菌落数（cfu/m^3）	试验后菌落数（cfu/m^3）	自然消亡率（%）	试验前菌落数（cfu/m^3）	试验后菌落数（cfu/m^3）	
大肠杆菌	60	1	7.59×10^4	4.65×10^4	38.74	7.67×10^4	<7	>99.99
		2	7.72×10^4	4.81×10^4	37.69	7.44×10^4	<7	>99.98
		3	7.30×10^4	4.38×10^4	40.00	7.18×10^4	<7	>99.98

四、结论

样品“XT-C06 等离子杀菌空气净化器”在开启“极速档”、“等离子”、“杀菌”运行状态下消毒作用 60 min，对大肠杆菌的杀灭率 3 次试验结果均≥99.90%，为消毒合格，符合《消毒技术规范》（2002 年版）的要求。

（以下空白）

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广州中科检测技术服务有限公司 检验检测专用章

CMA 201819000873

广州中科检测技术服务有限公司
检验报告

样品受理编号：JKK20020044 第 4 页/共 4 页

样 品 名 称 XT-C06 等离子杀菌空气净化器 接 样 日 期 2020-02-07
检 验 项 目 空气现场消毒试验 检验完成日期 2020-02-14

一、器材

1. 试验场所：约 50 m^3 密闭空间。
2. 培养基：普通营养琼脂培养基，采样器：六级筛孔空气撞击式采样器。
3. 消毒器械：XT-C06 等离子杀菌空气净化器。

二、方法

1. 检测依据：《消毒技术规范》（2002 年版）2.1.3。
2. 检测环境：温度：（20~22）℃，相对湿度：（78~80）%RH。
3. 机器运行状态：试验过程开启“极速档”、“等离子”、“杀菌”。
4. 消毒方法：试验时将待测样机安置于密闭空间内，样机开启至额定档位消毒 60 min 后采样，试验重复 3 次。
5. 采样方法：用六级筛孔空气撞击式采样器采样，采样流量为 28.3 L/min；采样时间：消毒前为 5 min，消毒作用后为 7 min，采样点距离地面 1.0 m。

三、结果

试验场所为约 50 m^3 密闭空间，环境温度为（20~22）℃，相对湿度为（78~80）%RH，样品“XT-C06 等离子杀菌空气净化器”在开启“极速档”、“等离子”、“杀菌”运行状态下消毒作用 60 min，对空气自然菌的消亡率 3 次试验结果分别是 99.06%、99.25%、99.19%。

表 3 空气消毒效果鉴定试验（空气自然菌）实验数据

试验菌种	作用时间（min）	试验编号	试验前菌落数（cfu/m^3）	试验后菌落数（cfu/m^3）	消亡率（%）
空气自然菌	60	1	1.60×10^3	15	99.06
		2	1.33×10^3	10	99.25
		3	1.23×10^3	10	99.19

四、结论

样品“XT-C06 等离子杀菌空气净化器”在开启“极速档”、“等离子”、“杀菌”运行状态下消毒作用 60 min，对约 50 m^3 密闭空间中空气自然菌的消亡率 3 次试验结果均≥90.00%，为消毒合格，符合《消毒技术规范》（2002 年版）的要求。

（以下空白）

编辑：李晓燕 审核：钟瑜 批准：[illegible] 检验检测专用章

Address: Unit 651, 6/F., Building 19W,
No.19 Science Park West Avenue,
Hong Kong Science Park, Pak Shek Kok, N.T.
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>99.4% Elimination on Staphylococcus Albus
消灭> 99.4%白色葡萄球菌

广微测 Gmicro Testing

201819000883 中国认可 国际互认 检测 TESTING CNAS L1747

广东省微生物分析检测中心

GUANGDONG DETECTION CENTER OF MICROBIOLOGY

分析检测结果

ANALYSIS AND TEST RESULT

报告编号（Report №.）：2020FM04273R02

测试微生物	处理时间	序号	空气中含菌量 (cfu/m^3)	除菌率 (%)
白色葡萄球菌 (*Staphylococcus albus*) 8032	0h(CK)	1	5.6×10^4	
		2	5.5×10^4	
		3	5.8×10^4	
	1h	1	2.0×10^2	99.47
		2	1.5×10^2	99.59
		3	2.4×10^2	99.40
	平均值			99.49

样品图片：

（以下空白）

备注 Remarks	1.方法简述：开启样机 3 档风速，“杀菌”、“等离子”功能作用 1h 后,用筛孔撞击式六级空气微生物采样器 JWL-6 以 28.3 升/分钟的抽风量进行采样;实验舱空间大小为 30m^3。 2.除菌率试验结果已消除微生物在空气中自然消亡因素的影响。

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Clean Air Delivery Rate (CADR) ≥375 m³/hr
潔淨空氣輸送率（CADR）≥375 立方米/小時

广 微 测
Gmicro Testing

201819000883

中国认可
国际互认
检测
TESTING
CNAS L1747

广东省微生物分析检测中心

GUANGDONG DETECTION CENTER OF MICROBIOLOGY

分 析 检 测 结 果

ANALYSIS AND TEST RESULT

报告编号（Report №.）：2020FM04273R01

1.试验舱容积：30m³；试验环境：温度 24.5℃，湿度 57%。
1.1 试验结果

试验组别	采样时间	检测结果		CADR 值 (m³/h)
		粒子浓度 (个/L)	衰减常数(min⁻¹)	
自然衰减常数 (k_n)	0 min	16256000	0.00417	388.8
	2 min	16080000		
	4 min	15934000		
	6 min	15842000		
	8 min	15758000		
	10 min	15554000		
	12 min	15522000		
	14 min	15278000		
	16 min	15208000		
	18 min	15032000		
	20 min	14946000		
总衰减常数 (k_e)	0 min	10638000	0.22018	
	2 min	6866000		
	4 min	4366000		
	6 min	2788000		
	8 min	1812000		
	10 min	1058000		
	12 min	718000		
	14 min	512000		
	16 min	310000		
	18 min	188000		
	20 min	136000		

(以下空白)

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99.7% Filtration Efficiency
99.7% 過濾效率

TTRI 財團法人紡織產業綜合研究所 Taiwan Textile Research Institute

TEST REPORT TUCHENG

Date: May. 01, 2020 Date of Receipt: Apr. 24, 2020

Report No.: TFP9D644 Quantity: 1PC Page Order/Pages: (P1/1) Ref. No.: NIL

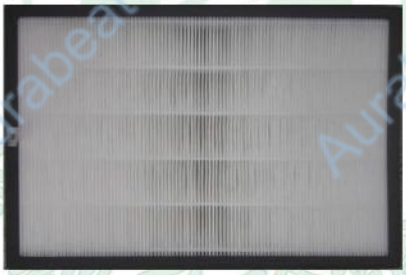
Report Title: Aurabeat Technology Limited(HK135) Item: Filter

Address: Unit 651, 6/F., Building 19W, No.19 Science Park West Avenue, Hong Kong Science Park, Pak Shek Kok, N.T., Hong Kong

Sample descriptions are given by the client			
Manufacturer : Aurabeat Technology Limited			
Sample Name : Aurabeat Silver Ion High Efficiency Air Filter			
Model:NSP-X1-SF	Color :White	Filter Media :Synthetic fiber	
Filter dimensions (width x height x depth):445 mm × 295 mm × 33 mm			
Test parameter			
Volume airflow rate : 250 CMH	Test air temperature: 25±2°C	Test air relative humidity : 45±5%	Test aerosol : PAO

Test Item	Test Result	Test Method
Initial pressure drop (Pa)	20.9	IEST-RP-CC001.5
Initial Efficiency @ 0.3 μm (%)	99.7	IEST-RP-CC001.5

Test Sample



Note: 1.This report is only responsible for the submitted sample(s), which will be kept for one month period.
2.This report cannot be reproduced in any way, except in full context, without the prior approval in writing of this Department of Testing and Certification.
3.The test report should not be used for public advertisement and commercial promotion.

Authorized by president of Taiwan Textile Research Institute
Jui-hung Kao
Director, Department of Testing and Certification

Department of Testing and Certification, Taiwan Textile Research Institute
No.6, Chengtian Rd., Tucheng Dist., New Taipei City 23674, Taiwan (R.O.C.)
Tel : +886-2-22670321 ext. 7107, 7110
Fax : +886-2-22675108 , +886-2-22689839

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https://www.aurabeat-tech.com

Cytotoxicity test on human cell – Medical Research Council cell strain 5 (MRC-5)
對人類細胞進行細胞毒性測試 - 英國醫學研究委員會 MRC-5 細胞
No cytotoxicity to human cell
證實對人類細胞無毒性

Aurabeat Technology Limited
Study ID: NG15769

RESULTS (cont.)

Table 3: Cytotoxicity Control Results

		Cytoxicity Control
Cell Control		0 0 0 0
Dilution	10^{-1}	0 0 0 0
	10^{-2}	0 0 0 0
	10^{-3}	0 0 0 0
$TCID_{50}$ per 0.1 ml		≤ 0.50 Log_{10}

Key: + = Virus recovered; 0 = Virus not recovered and/or no cytotoxicity observed;
T = Cytotoxicity observed

Table 4: Test Substance Neutralization Control Results

		Neutralization Control
Cell Control		0 0 0 0
Dilution	10^{-1}	+ + + +
	10^{-2}	+ + + +
	10^{-3}	+ + + +
Neutralized at $TCID_{50}$ per 0.1 ml		≤ 0.50 Log_{10}

Key: + = Virus recovered; 0 = Virus not recovered and/or no cytotoxicity observed;
T = Cytotoxicity observed

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ISO 10993-10 Biological evaluation of medical devices — Part 10: Tests for irritation and skin sensitization
ISO 10993-10 醫療器械的生物學評估 — 第 10 部分：刺激性和皮膚致敏性測試
Proven that the technology does not cause any skin irritation
證實不刺激皮膚

GLP STUDY REPORT

Date: 2020-08-01
No.: DY20060312

TEST FACILITY

STC (Dongguan)
68 Fumin Nan Road,
Dalang, Dongguan, Guangdong,
China. (Zip code 523770)

SPONSOR

Roger Sze To
Aurabeat Technology Limited
Unit 651, 6/F, Building 19W, No. 19 Science Park West Avenue, Hong Kong Science Park, Pak Shek Kok, N.T., Hong Kong

CONFIDENTIAL

STUDY TITLE

Skin Irritation Test of Aurabeat Catalyzed Silver Ion Antivira Air Filter Media using ISO 10993-10:2010 Test Methods skin irritation Test, 0.9% Sodium Chloride Injection and Soybean Oil Extract

TEST ARTICLE NAME

Aurabeat Catalyzed Silver Ion Antivira Air Filter Media

TEST ARTICLE IDENTIFICATION

CP-MD-2465
CSD NO: CL20200601920

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Table 8 Irritation Calculations of SC group

Animal Number	Test Score Average	-	Control Score Average	Individual Primary Irritation Score	Combined Primary Irritation Score (CPIS)	Primary Irritation Index (CPIS/3)	Response Category
20200 31920	0	-	0	0	0	0	Negligible
20200 31921	0	-	0	0			
20200 31922	0	-	0	0			

Table 9 Irritation Calculations of SO group

Animal Number	Test Score Average	-	Control Score Average	Individual Primary Irritation Score	Combined Primary Irritation Score (CPIS)	Primary Irritation Index (CPIS/3)	Response Category
202003 1923	0	-	0	0	0	0	Negligible
202003 1924	0	-	0	0			
202003 1926	0	-	0	0			

9 Conclusion

There was no erythema and no edema observed on the skin of the animals treated with the test article. The Primary Irritation Indexes for the test article extracts were both calculated to be 0.0. The response of the test article extracts was categorized as negligible.

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FDA Registered 510(k) Class II Medical Device
美國食品藥品監督管理局註冊 510（k）II 類醫療器械
FDA approved as medical grade sterilization air purifier
通過美國食品藥品監督管理局確認為醫療級別消毒空氣淨化機

2020

CERTIFICATE OF REGISTRATION

This certifies that:

AURABEAT TECHNOLOGY LIMITED
Unit 651, 6/F Building 19W, No.19 Science Park West Avenue, Hong Kong Science Park Park Shek Kok, HK

is registered with the U.S. Food and Drug Administration for FY 2020 pursuant to Title 21, 807 et seq. of the United States Code of Federal Regulations:

Establishment Owner/Operator Number:	**10077333**
Device Classification Name:	**CLEANER, AIR, MEDICAL RECIRCULATING**
Product Code:	**FRF**
Regulation Number:	**880.5045**
Official Correspondent and U.S. Agent:	**Registrar Corp** 144 Research Drive, Hampton, Virginia, 23666, USA Telephone: +1-757-224-0177 • Fax: +1-757-224-0179

Registrar Corp will confirm that such registration remains effective upon request and presentation of this certificate until the end of the year stated above, unless said registration is terminated after issuance of this certificate. Registrar Corp makes no other representations or warranties, nor does this certificate make any representations or warranties to any person or entity other than the named certificate holder, for whose sole benefit it is issued. This certificate does not denote endorsement or approval of the certificate-holder's device or establishment by the U.S. Food and Drug Administration. Registrar Corp assumes no liability to any person or entity in connection with the foregoing.

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David Lennarz
Executive Director
Registrar Corp
Dated: August 24, 2020

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Restriction of Hazardous Substances Directive (EU) 2015/863 amending 2011/65/EU
危害性物質限制指令 (EU) 2015/863 修正為 2011/65/EU
Restricted chemical substances in the product comply with limits
產品中限制化學物質符合限值

Verification Report No. HKTEC2003657702 Date : 09 Dec 2020 Page 1 of 128

AURABEAT TECHNOLOGY LIMITED
UNIT 651, 6/F, BUILDING 19W,
NO.19 SCIENCE PARK, WEST AVENUE,
HONG KONG SCIENCE PARK, PAK SHEK KOK, N.T., HONG KONG

Sample Name	: SILVER ION PLASMA AIR PURIFIER
SGS Job No.	: 4689050 - HK
Model No. Provided by Client	: NSP-X1
Country of Origin	: CHINA
Country of Destination	: UNITED ARAB EMIRATES
Date of Sample Received	: 23 Sep 2020
2ND Submission	: 09 Nov 2020
3rd Submission	: 24 Nov 2020
Verification Period	: 23 Sep 2020 - 01 Dec 2020
Verification Requested:	: With reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.
Verification Method	: Please refer to next page(s)
Verification Results	: Please refer to next page(s)
Verification Conclusion	: Based on the verification results of the submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) **comply** with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.
Note	: The test results are related only to the tested items. The report shall not be reproduced except in full without the written approval of the testing laboratory.

Signed for and on behalf of
SGS Hong Kong Limited

Lam Ka Yung, Allen
Chemist

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OZONE TEST REPORT

SCOPE OF WORK
Ozone Emissions Testing of Air purifier for Model: NSP-X1

REPORT NUMBER
200914018GZU -001

ISSUE DATE
31-Dec-2020

PAGES
13

QUOTE NUMBER
QGZ200907111

DOCUMENT CONTROL NUMBER
GFT-OP-10o (16-Oct-2017)

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Block E, No,7-2 Guang Dong
Software Science Park, Caipin
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GETDD Guangzhou, China

Telephone: +86 20 82139688
www.intertek.com

AURABEAT TECHNOLOGY LIMITED.
Report No.: 200914018GZU-001
Date: Dec. 31, 2020

Contact Name: Sze To Gin Nam
Address: UNIT 651, 6/F., BUILDING 19W, NO.19 SCIENCE PARK WEST AVENUE, HONG KONG SCIENCE PARK, PAK SHEK KOK, N.T., HONG KONG.
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Email: roger@aurabeat-tech.com

SECTION 1
SUMMARY

The representative sample(s) have been tested, investigated, and found to comply with the requirements of standards:

> *Electrostatic Air Cleaners, UL 867*, ***Section 40***, *Fifth Edition, August 4, 2011 revision: AUGUST 7, 2018.*

The equipment identified in this report has been found to meet the criteria for emittance of ozone not exceeding a concentration of 0.050 ppm. Furthermore, a second sample was not required to be tested, according to UL 867, as the first sample's maximum emissions were less than 0.030 ppm, which satisfies item a) in the Section 40.1.1.

This report completes our evaluation covered by Intertek Project Number 200914018GZU which has been authorized by Intertek quote number: QGZ200907111. If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the above signed.

OZONE EMISSIONS SUMMARY

FAN SPEED	FILTER(S)	03/VOLTAGE SETTING	$C(t)_{max}$ [ppm]
P3 (Highest)	PRE-/HEPA/Carbon Filter	-	0.001
P1 (Lowest)	PRE-/HEPA/Carbon Filter	-	0.001
P1 (Lowest)	None	-	0.005

Completed by:	Sylvia Xu/Sunny Zhou	Reviewed by:	Jacob Langenbacher
Title:	Engineer/Assistant Technical Manager	Title:	Engineer
Signature:	Sylvia Xu / Sunny Zhou	Signature:	Jacob Langenbacher
Date:	Dec. 25, 2020	Date:	Dec. 31, 2020

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On-site IAQ Assessment with Reference to the HKIAQ Guidance
參照 HKIAQ 指南進行現場 IAQ 評估 – –
No Observable Ozone Generation by NSP-X1
NSP-X1 沒有產生臭氧

浩科 ACUMEN ENVIRONMENTAL **Acumen Environmental Engineering & Technologies Co. Ltd**

Report No.: RPT-20-8296

TEST REPORT

TEST RESULTS

Indoor Air Quality for Unit 651, 6/F, Building 19W, No. 19 Science Park West Avenue, Hong Kong Science Park, Shatin, NT		
Assessment Date: 17th April, 2020		
Points	**Sampling location**	**Ozone**
#1	Unit 651 (Before *air purifier is turned ON)	<10
#2	Unit 651 (After *air purifier is turned ON)	<10
#3	Unit 651 (*Air Purifier's discharge outlet while running)	<10
Unit		ppbv
Excellent Class		<25
Good Class		<61
Indoor Points - Excellent Class Compliance %		100.0%

Note:
1. < - Less than
2. > - Greater than
3. Readings in ***Bold and Italic*** were out of IAQ "Good" Class Objective
4. * Air Purifier's Brand: Aurabeat AG+ ; Model: NSP-X1

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CE Certification
CE 認證

Shenzhen iPEN Testing Technology Co., Ltd.

4/F Building E,Fenghuanggang Second Industrial Zone,Xixiang Street,Baoan District,Shenzhen,China.
Tel: +86 (0)755 29630351 Web: http://www.ipen-lab.com

CERTIFICATE OF CONFORMITY

No.: IP20033310

Applicant	:	**Aurabeat Technology Limited**
Address	:	Unit 651,6/F.,Building 19W,No.19 Science Park West Avenue,Hong Kong Science Park,Pakshek Kok,N.T.,Hong Kong
Manufacturer	:	[redacted]
Address	:	[redacted]
Product	:	**AG+ Silver Ion Plasma Air Purifier**
Trade Name	:	Aurabeat
Models	:	NSP-X1

LVD Test Standards:

EN 60335-1:2012+A11:2014;
EN 60335-2-65:2003+A11:2013;
EN 62233: 2008.

EMC Test Standards:

EN 55014-1:2017;
EN 61000-3-2:2014;
EN 61000-3-3:2013+A1:2017;
EN 55014-2:2015.

The EUT described above has been tested by us with the listed standards and found in compliance with the Council LVD Directive 2014/35/EU and EMC Directive 2014/30/EU. It is possible to use CE marking to demonstrate the compliance with the LVD and EMC Directive.
The certificate applies to the tested sample above mentioned only and shall not imply an assessment of the whole production. It is only valid in connection with the LVD test report number: IP-LVD20033311 EMC test report number IP-EMC20033312.

CE

David Dai
(Manager)
Mar. 25, 2020

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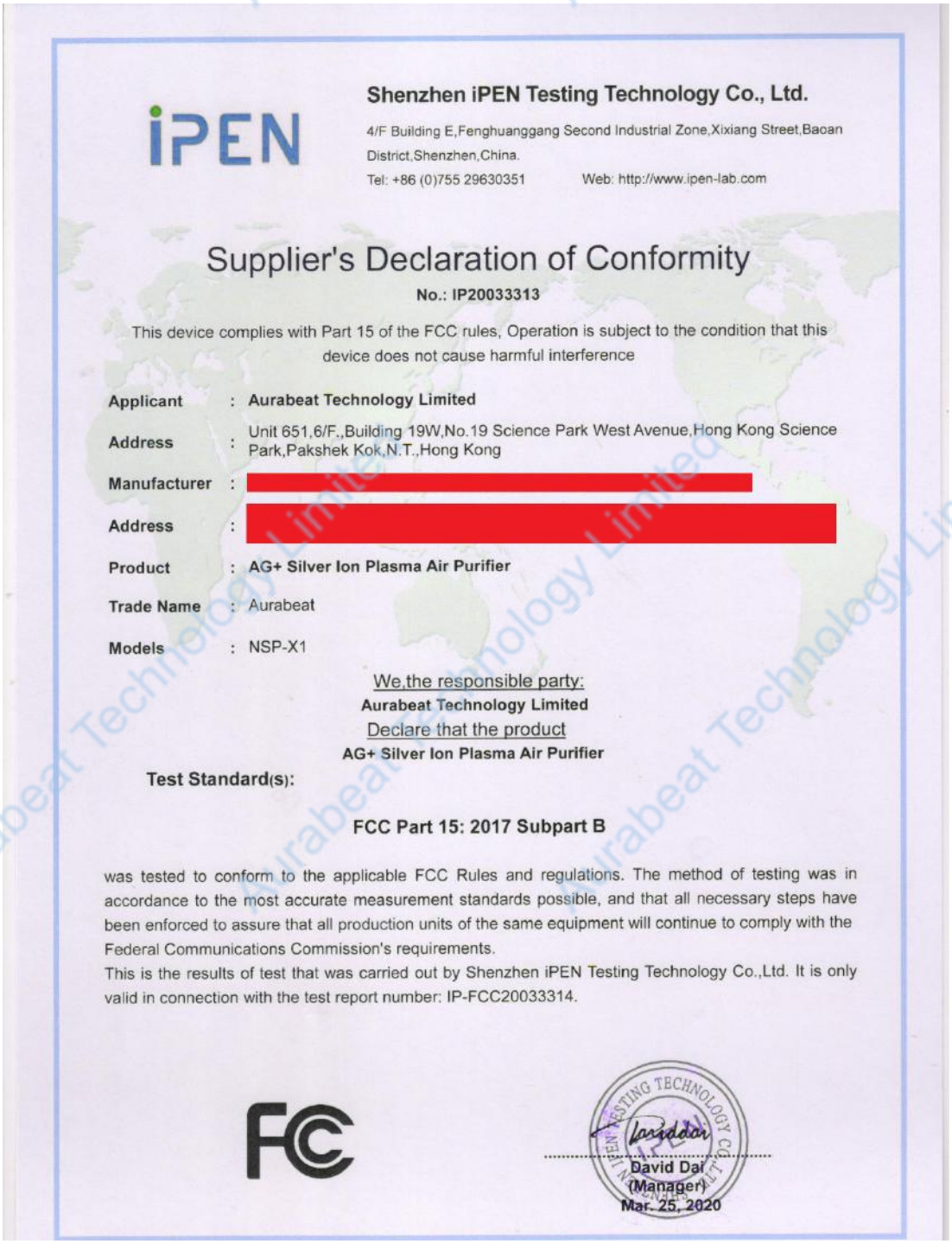
FCC Certification
FCC 認證



Shenzhen iPEN Testing Technology Co., Ltd.

4/F Building E,Fenghuanggang Second Industrial Zone,Xixiang Street,Baoan District,Shenzhen,China.
Tel: +86 (0)755 29630351 Web: http://www.ipen-lab.com

Supplier's Declaration of Conformity

No.: IP20033313

This device complies with Part 15 of the FCC rules, Operation is subject to the condition that this device does not cause harmful interference

Applicant	:	**Aurabeat Technology Limited**
Address	:	Unit 651,6/F.,Building 19W,No.19 Science Park West Avenue,Hong Kong Science Park,Pakshek Kok,N.T.,Hong Kong
Manufacturer	:	[redacted]
Address	:	[redacted]
Product	:	**AG+ Silver Ion Plasma Air Purifier**
Trade Name	:	Aurabeat
Models	:	NSP-X1

We,the responsible party:
Aurabeat Technology Limited
Declare that the product
AG+ Silver Ion Plasma Air Purifier

Test Standard(s):

FCC Part 15: 2017 Subpart B

was tested to conform to the applicable FCC Rules and regulations. The method of testing was in accordance to the most accurate measurement standards possible, and that all necessary steps have been enforced to assure that all production units of the same equipment will continue to comply with the Federal Communications Commission's requirements.
This is the results of test that was carried out by Shenzhen iPEN Testing Technology Co.,Ltd. It is only valid in connection with the test report number: IP-FCC20033314.

FC

David Dai
(Manager)
Mar. 25, 2020

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IEC (IECEE) CE CB 認證

IEC IECEE CB SCHEME

Ref. Certif. No.
CN50866

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	AG+Silver Ion Plasma Sterilization Air Purifier
Name and address of the applicant	AURABEAT TECHNOLOGY LIMITED. 6/F KONG LING BLDG 102 JERVOIS ST SHEUNG WANG HK
Name and address of the manufacturer	AURABEAT TECHNOLOGY LIMITED. 6/F KONG LING BLDG 102 JERVOIS ST SHEUNG WANG HK
Name and address of the factory Note: When more than one factory, please report on page 2	[redacted]
Ratings and principal characteristics	220-240V~, 50-60Hz, 95W, Class II
Trademark (if any)	
Customer's Testing Facility (CTF) Stage used	
Model / Type Ref.	NSP-X1
Additional information (if necessary may also be reported on page 2)	
A sample of the product was tested and found to be in conformity with	IEC 60335-1:2010/AMD2:2016;IEC 60335-1:2010;IEC 60335-1:2010/AMD1:2013;IEC 60335-2-65:2002/AMD1:2008;IEC 60335-2-65:2002;IEC 60335-2-65:2002/AMD2:2015
As shown in the Test Report Ref. No. which forms part of this Certificate	GZESL.2020.CB0202

This CB Test Certificate is issued by the National Certification Body

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CQC

Date: Jul.23,2020

Signature: Lu Mei

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