SUPPLEMENTARY MATERIAL

Implementation of Class II biological safety cabinet good maintenance practice: protective countermeasures against SARS-CoV-2 for ISO 15189:2012 accredited medical laboratories

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Table S1. The conformance requirement frequency relating to the equipment conformity evaluation.

Relevant contents of International Standard ISO 15189:2012 (*n* = 8)	**Frequency** (*n* = 64)
Subclause 4.3 (Document control) of International Standard ISO 15189:2012 (1, pp. 10-11) The laboratory shall control documents required by the quality management system and shall ensure that unintended use of any obsolete document is prevented. The laboratory shall have a documented procedure to ensure that the following conditions are met. c) Current authorized editions and their distribution are identified by means of a list (e.g. document register, log or master index).	4/64 * (6.3 %)
Subclause 4.13 (Control of records) of International Standard ISO 15189:2012 (1, pp. 15-16) Records shall include, at least, the following: i) instrument maintenance records, including internal and external calibration records; k) quality control records;	4/64 (6.3 %)
Subclause 5.2.1 (General) of International Standard ISO 15189:2012 (1, p. 21) The laboratory shall have space allocated for the performance of its work that is designed to ensure the quality, safety and efficacy of the service provided to the users and the health and safety of laboratory personnel, patients and visitors.	8/64 † (12.5 %)
Subclause 5.2.3 (Storage facilities) of International Standard ISO 15189:2012 (1, p. 22) Storage space and conditions shall be provided that ensure the continuing integrity of sample materials, documents, equipment, reagents, consumables, records, results and any other items that could affect the quality of examination results.	2/64 ‡ (3.1 %)
Subclause 5.3.1.2 (Equipment acceptance testing) of International Standard ISO 15189:2012 (1, p. 23) Each item of equipment shall be uniquely labelled, marked or otherwise identified.	1/64 (1.6 %)
Subclause 5.3.1.4 (Equipment calibration and metrological traceability) of International Standard ISO 15189:2012 (1, p. 24) The laboratory shall have a documented procedure for the calibration of equipment that directly or indirectly affects examination results. Metrological traceability shall be to a reference material or reference procedure of the higher metrological order available.	2/64 (3.1 %)
Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25) Equipment shall be maintained in a safe working condition and in working order. This shall include examination of electrical safety, emergency stop devices where they exist and the safe handling and disposal of chemical, radioactive and biological materials by authorized persons. At a minimum, manufacturer's schedules or instructions, or both, shall be used.	11/64 (17.2 %)
Subclause 5.3.1.7 (Equipment records) of International Standard ISO 15189:2012 (1, p. 25) Records shall be maintained for each item of equipment that contributes to the performance of examinations. These equipment records shall include, but not be limited to, the following: a) identity of the equipment; b) manufacturer's name, model and serial number or other unique identification;	32/64 (50.0 %)

c) contact information for the supplier or the manufacturer; d) date of receiving and date of entering into service; e) location; f) condition when received; g) manufacturer's instructions; h) records that confirmed the equipment's initial acceptability for use when equipment is incorporated in the laboratory; i) maintenance carried out and the schedule for preventive maintenance; j) equipment performance records that confirm the equipment's ongoing acceptability for use; k) damage to, or malfunction, modification, or repair of the equipment. The performance records referred to in j) shall include copies of reports/certificates of all calibrations and/or verifications including dates, times and results, adjustments, the acceptance criteria and due date of the next calibration and/or verification, to fulfil part or all of this requirement. These records shall be maintained and shall be readily available for the lifespan of the equipment or longer, as specified in the laboratory's Control of Records procedure.	
	64/64 (100 %)

*Subclause 4.3 (Document control) of International Standard ISO 15189:2012 (1, pp. 10-11) is applicable to laboratory equipment that incorporates software to support the operational process. Software that bears a version number required by the medical laboratory quality management system must be subject to document control. The term 'version' has been defined by the International Organization for Standardization (2, p. 857) and the International Electrotechnical Commission (2, p. 1158) as a 'unique string of number and letter values indicating a unique revision of an item' in Item 3.54 of International Standard ISO/IEC 19770-5:2015 (3, p. 8).
†Only conformance requirements for the health and safety of laboratory personnel and visitors have been selected for inclusion.
‡Only conformance requirements for space and conditions relating to equipment have been selected for inclusion.

Table S2. Supplementary requirements in relation to Class II biological safety cabinet maintenance provided by signatory members (*n* = 83) of the International Laboratory Accreditation Cooperation mutual recognition arrangement.

Countries (*n* = 83)	**Relevant compliance requirements** (*n* = 83)
Angola (AGO)	In Angola (AGO), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Argentina (ARF)	In Argentina (ARF), the Argentine Accreditation Organization (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (5, pp. 8-9); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Argentine Standard IRAM-ISO 15189:2014 (6)] apply for accreditation.
Australia (AUS) §	In Australia (AUS), the National Association of Testing Authorities, Australia (a national accreditation body) specifies supplementary requirements in relation to Class II biological safety cabinet maintenance; therefore, implementation of an interval-specific calibration (7, p. 4), relevant requirements of Australian Standard AS 2252.4—2010 (8) prepared by Standards Australia (7, p. 4) and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Australian Standard AS ISO 15189:2013 (9, pp. 24-25)] apply for accreditation.
Austria (AUT)	In Austria (AUT), the Accreditation Austria (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (10); however, the Austrian Standards International (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Austrian Standard ÖNORM EN 12469:2000 (11) [see Clause 1 (Scope) of Austrian Standard ÖNORM EN ISO 15189:2012 (12)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Austrian Standard ÖNORM EN ISO 15189:2012 (12)] apply for accreditation.
Bangladesh (BGD)	In Bangladesh (BGD), the Bangladesh Accreditation Board (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (13); therefore, relevant requirements of the manufacturer's instructions

	[see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Belarus (BLR)	In Belarus (BLR), the Belarusian State Centre for Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (14); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Belgium (BEL)	In Belgium (BEL), the BELAC (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (15); however, the Bureau for Standardisation (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Belgian Standard NBN EN 12469:2000 (16) [see Clause 1 (Scope) of Belgian Standard NBN EN ISO 15189:2012 (17)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Belgian Standard NBN EN ISO 15189:2012 (17)] apply for accreditation.
Botswana (BWA)	In Botswana (BWA), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Brazil (BRA)	In Brazil (BRA), the General Coordination for Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (18); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Brazilian Standard NBR ISO 15189:2015 (19)] apply for accreditation.
Bulgaria (BFT)	In Bulgaria (BFT), the Executive Agency Bulgarian Accreditation Service (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (20); however, the Bulgarian Institute for Standardization (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Bulgarian Standard BDS EN 12469:2003 (21) [see Clause 1 (Scope) of Bulgarian Standard BDS EN ISO 15189:2012 (22)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Bulgarian Standard BDS EN ISO 15189:2012 (22)] apply for accreditation.
Canada (CAN)	In Canada (CAN), the Institute for Quality Management in Healthcare (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (23); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Canada (CAN)	In Canada (CAN), the Standards Council of Canada (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (24); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Chile (CHL)	In Chile (CHL), the National Institute of Standardization (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (25); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Chilean Standard NCh-ISO 15189:2012 (26)] apply for accreditation.
China (CHN)	In China (CHN), the China National Accreditation Service for Conformity Assessment (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (27); however, the Standardization Administration of the People's Republic of China (a national standardisation body) has prepared China National Standard YY 0569—2011 (28); therefore, relevant requirements of China National Standard YY 0569—2011 (29, p. 3) and relevant requirements of the manufacturer's instructions (29, pp. 26-27) apply for accreditation.
Colombia (COL)	In Colombia (COL), the National Accreditation Body of Colombia (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (30); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Colombian Standard NTC-ISO 15189:2012 (31)] apply for accreditation.
Comoros (COM)	In Comoros (COM), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.

Congo (COG)	In Congo (COG), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Costa Rica (CRI)	In Costa Rica (CRI), the Costa Rican Accreditation Entity (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (32); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Croatia (HRV)	In Croatia (HRV), the Croatian Accreditation Agency (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance; however, the Croatian Standards Institute (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Croatian Standard HRN EN 12469:2000 (33) [see Clause 1 (Scope) of Croatian Standard HRN EN ISO 15189:2012 (34)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Croatian Standard HRN EN ISO 15189:2012 (34)] apply for accreditation.
Cyprus (CYP)	In Cyprus (CYP), the Cyprus Accreditation Body (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (35); however, the Cyprus Organization for Standardisation (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of Cyprus National Standard CYS EN ISO 15189:2012 (37)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Cyprus National Standard CYS EN ISO 15189:2012 (37)] apply for accreditation.
Czech Republic (CZE)	In Czech Republic (CZE), the Czech Accreditation Institute (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (38, p. 8); however, the Czech Office for Standards, Metrology and Testing (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Czechoslovak Technical Standard ČSN EN 12469:2000 (39) [see Clause 1 (Scope) of Czechoslovak Technical Standard ČSN EN ISO 15189:2013 (40)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Czechoslovak Technical Standard ČSN EN ISO 15189:2013 (40)] apply for accreditation.
Denmark (DEN)	In Denmark (DEN), the Danish Accreditation Fund (a national accreditation body) does not specify supplementary requirements in relation to Class II biological safety cabinet maintenance (41); however, the Danish Standards Foundation (a national standardisation body) (2, p. 1158) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Danish Standard DS/EN 12469:2000 (42) [see Clause 1 (Scope) of Danish Standard DS/EN ISO 15189:2012 (43)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Danish Standard DS/EN ISO 15189:2012 (43)] apply for accreditation.
Egypt (EGY)	In Egypt (EGY), the Egyptian Accreditation Council (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (44); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Ethiopia (ETH)	In Ethiopia (ETH), the Ethiopian National Accreditation Office (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (45); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Finland (FIN)	In Finland (FIN), the Finnish Accreditation Service (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (46); however, the Finnish Standards Association (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Finnish Standard SFS-EN 12469:en (47) [see Clause 1 (Scope) of Finnish Standard SFS-EN ISO 15189:en (48)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Finnish Standard SFS-EN ISO 15189:en (48)] apply for accreditation.
France (FRA)	In France (FRA), the French Accreditation Committee (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (49); however, the French Standardization Association (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of French Standard NF EN 12469:2000 (50) [see Clause 1 (Scope) of

	French Standard NF EN ISO 15189:2012 (51)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of French Standard NF EN ISO 15189:2012 (51)] apply for accreditation.
Germany (DEU)	In Germany (DEU), the German Accreditation Body (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (52); however, the German Institute for Standardization (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of German Standard DIN EN 12469:2000 (53) [see Clause 1 (Scope) of German Standard DIN EN ISO 15189:2014 (54)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of German Standard DIN EN ISO 15189:2014 (54)] apply for accreditation.
Greece (GRC)	In Greece (GRC), the Hellenic Accreditation Service (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (55); however, the Hellenic Organization for Standardization (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of Hellenic Standard ELOT EN ISO 15189:2012 (56)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Hellenic Standard ELOT EN ISO 15189:2012 (56)] apply for accreditation.
Guatemala (GTM)	In Guatemala (GTM), the Guatemalan Accreditation Body (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (57); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Guatemalan Standard COGUANOR NTG/ISO 15189:2012 (58)] apply for accreditation.
Hong Kong (HKG)	In Hong Kong (HKG), the Hong Kong Accreditation Service (an accreditation body) specifies supplementary criteria in relation to Class II biological safety cabinet maintenance; therefore, implementation of a program to verify the airflow rate (uniform downflow velocity) (59, p. 7), airflow rate (uniform inflow velocity) (59, p. 7) and sterility check (59, p. 7) with maintenance of records of such checks (59, p. 7) and relevant requirements of the manufacturer's instructions (60, p. 32) apply for accreditation.
Hungary (HUN)	In Hungary (HUN), the National Accreditation Authority (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (61); however, the Hungarian Standards Institution (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Hungarian Standard MSZ EN 12469:2000 (62) [see Clause 1 (Scope) of Hungarian Standard MSZ EN ISO 15189:2012 (63)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Hungarian Standard MSZ EN ISO 15189:2012 (63)] apply for accreditation.
India (IND) **	In India (IND), the National Accreditation Board for Testing and Certification Laboratories (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (64, pp. 36-41); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Indonesia (IDN)	In Indonesia (IDN), the National Accreditation Committee (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (65, p. 6); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Indonesian National Standard SNI ISO 15189:2012 (66, pp. 24-25)] apply for accreditation.
Ireland (IRL)	In Ireland (IRL), the Irish National Accreditation Board (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (67); however, the National Standards Authority of Ireland (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Irish Standard IS EN 12469:2000 (68) [see Clause 1 (Scope) of Irish Standard IS EN ISO 15189:2012 (69, p. 1)(69)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 of Irish Standard IS EN ISO 15189:2012 (69, pp. 24-25)] apply for accreditation.
Israel (ISR)	In Israel (ISR), the Israel Laboratory Accreditation Authority (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (70); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Italy (ITA)	In Italy (ITA), the Italian Accreditation Body (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (71); however, the Italian National Unification Body (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of European Standard

	EN ISO 15189:2012 (72, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of European Standard EN ISO 15189:2012 (72, pp. 24-25)] apply for accreditation.
Jamaica (JAM)	In Jamaica (JAM), the Jamaica National Agency for Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (73); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Japan (JPN)	In Japan (JPN), the Japan Accreditation Board (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (74); however, the Japanese Standards Association (a national standardisation body) (2, pp. 857-858) has prepared Japanese Industrial Standard JIS K 3800:2009 (75); therefore, relevant requirements of Japanese Industrial Standard JIS K 3800:2009 (75) [see Clause 1 (Scope) of International Standard ISO 15189:2012 (1, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Jordan (JOR)	In Jordan (JOR), the Jordan Standards and Metrology Organization (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance; therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Jordanian Standard JS EN ISO 15189:2012 (76, pp. 24-25)] apply for accreditation.
Kazakhstan (KAZ)	In Kazakhstan (KAZ), the National Center of Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (77); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Standard of the Republic of Kazakhstan ST RK ISO 15189-2015 (78)] apply for accreditation.
Kenya (KEN)	In Kenya (KEN), the Kenya Accreditation Service (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (79); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Korea (KOR)	In Korea (KOR), the Korea Laboratory Accreditation Scheme (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (80); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Korean Standard KS P ISO 15189:2013 (81)] apply for accreditation.
Lesotho (LSO)	In Lesotho (LSO), the Southern African Development Community Accreditation Service (a regional accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Lithuania (LTU)	In Lithuania (LTU), the Lithuanian National Accreditation Bureau (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (82); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 of Lithuanian Standard LST EN ISO 15189:2012 (83, pp. 24-25)] apply for accreditation.
Luxembourg (LUX)	In Luxembourg (LUX), the Luxembourg Office of Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (84); however, the Luxembourg Institute for Standardization, Accreditation, Safety and Quality of Products and Services (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Luxembourg Standard ILNAS-EN 12469:2000 (85) [see Clause 1 (Scope) of Luxembourg Standard ILNAS-EN ISO 15189:2012 (86)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Luxembourg Standard ILNAS-EN ISO 15189:2012 (86)] apply for accreditation.
Madagascar (MDF)	In Madagascar (MDF), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Malawi (MWI)	In Malawi (MWI), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.

Malaysia (MYS)	In Malaysia (MYS), the Department of Standards Malaysia (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (87); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Malaysian Standard MS ISO 15189:2012 (88, pp. 24-25)] apply for accreditation.
Mexico (MEX)	In Mexico (MEX), the Mexican Accreditation Entity (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (89); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Mexican Standard NMX-EC-15189-IMNC-2015 (90)] apply for accreditation.
Moldova (MDA)	In Moldova (MDA), the National Accreditation Centre of the Republic of Moldova (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (91, pp. 26-28); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Moldovan Standard SM SR EN ISO 15189:2013 (92, pp. 24-25)] apply for accreditation.
Mozambique (MOZ)	In Mozambique (MOZ), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Namibia (NAM)	In Namibia (NAM), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Netherlands (HLD)	In the Netherlands (HLD), the Dutch Accreditation Council (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (93); however, the Royal Netherlands Standardization Institute (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Dutch Standard NEN-EN 12469:2000 (94) [see Clause 1 (Scope) of Dutch Standard NEN-EN-ISO 15189:2012(Cor. 2014-9) (95)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Dutch Standard NEN-EN-ISO 15189:2012(Cor. 2014-9) (95)] apply for accreditation.
New Zealand (NZL)	In New Zealand (NZL), the International Accreditation New Zealand (a national accreditation body) specifies specific criteria in relation to Class II biological safety cabinet maintenance; therefore, implementation of an interval-specific check (96, p. 27), relevant requirements of Australian Standard AS 2252.2—2009 (97) prepared by the Standards Australia (96, p. 27) and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
North Macedonia (MKD)	In North Macedonia (MKD), the Institute for Accreditation of the Republic of North Macedonia (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (98); however, the Standardization Institute of the Republic of North Macedonia (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of Macedonian Standard MKC EN ISO 15189:2013 (99)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Macedonian Standard MKC EN ISO 15189:2013 (99)] apply for accreditation.
Norway (NOR)	In Norway (NOR), the Norwegian Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance; however, the Standards Norway (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Norwegian Standard NS-EN 12469:2000 (100) [see Clause 1 (Scope) of Norwegian Standard NS-EN ISO 15189:2012 (101, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Norwegian Standard NS-EN ISO 15189:2012 (101, pp. 24-25)] apply for accreditation.
Philippines (PHL)	In the Philippines (PHL), the Philippine Accreditation Bureau (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (102); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Philippine National Standard PNS ISO 15189:2012 (103, pp. 24-25)] apply for accreditation.
Poland (POL)	In Poland (POL), the Polish Centre for Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (104); however, the Polish Committee for Standardization (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant

	requirements of Polish Standard PN EN 12469:2002 (105) [see Clause 1 (Scope) of Polish Standard PN EN ISO 15189:2013-5 (106)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Polish Standard PN EN ISO 15189:2013-5 (106)] apply for accreditation.
Portugal (PRT)	In Portugal (PRT), the Portuguese Institute for Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (107, p. 24); however, the Portuguese Institute of Quality (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of Portugal Standard NP EN ISO 15189:2012 (108)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Portugal Standard NP EN ISO 15189:2012 (108)] apply for accreditation.
Romania (ROU)	In Romania (ROU), the Romanian Accreditation Association (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (109); however, the Romanian Standards Association (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of Romanian Standard SR EN ISO 15189:2013 (110)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Romanian Standard SR EN ISO 15189:2013 (110)] apply for accreditation.
Serbia (SRB)	In Serbia (SRB), the Accreditation Body of Serbia (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (111); however, the Institute for Standardization of Serbia (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Serbian Standard SRPS EN 12469:2013 (112) [see Clause 1 (Scope) of Serbian Standard SRPS EN ISO 15189:2012 (113)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Serbian Standard SRPS EN ISO 15189:2012 (113)] apply for accreditation.
Seychelles (SYC)	In Seychelles (SYC), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Singapore (SGP)	In Singapore (SGP), the Singapore Accreditation Council (a national accreditation body) specifies supplementary requirements in relation to Class II biological safety cabinet maintenance; therefore, implementation of relevant requirements of the manufacturer's instructions (114,p.2), interval-specific check of installed filter system (114,p.2) and interval-specific check of airflow rate (114,p.2) and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Slovakia (SVK)	In Slovakia (SVK), the Slovak National Accreditation Service (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (115); however, the Slovak Office of Standards Metrology and Testing (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of European Standard EN ISO 15189:2012 (72, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of European Standard EN ISO 15189:2012 (72, pp. 24-25)] apply for accreditation.
Slovenia (SVN)	In Slovenia (SVN), the Slovenian Accreditation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (116); however, the Slovenian Institute for Standardization (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of European Standard EN 12469:2000 (36) [see Clause 1 (Scope) of European Standard EN ISO 15189:2012 (72, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of European Standard EN ISO 15189:2012 (72, pp. 24-25)] apply for accreditation.
South Africa (ZAF)	In South Africa (ZAF), the South African National Accreditation System (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (117, 118); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Spain (ESP)	In Spain (ESP), the Spanish National Accreditation Body (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (119); however, the Spanish Association for Standardisation (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Spanish Standard UNE-EN 12469:2001 (120) [see Clause 1

	(Scope) of Spanish Standard UNE-EN ISO 15189:2013 (121)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Spanish Standard UNE-EN ISO 15189:2013 (121)] apply for accreditation.
Sri Lanka (LKA)	In Sri Lanka (LKA), the Sri Lanka Accreditation Board for Conformity Assessment (a national accreditation body) specifies supplementary requirements in relation to Class II biological safety cabinet maintenance; therefore, implementation of an interval-specific check (122, p. 27), an interval-specific sterility check (110, p. 27) and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Swaziland (SWZ)	In Swaziland (SWZ), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Sweden (SWE)	In Sweden (SWE), the Swedish Board for Accreditation and Conformity Assessment (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (123); however, the Swedish Institute for Standards (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Swedish Standard SS-EN 12469:2000 (124) [see Clause 1 (Scope) of Swedish Standard SS-EN ISO 15189:2012 (125)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Swedish Standard SS-EN ISO 15189:2012 (125)] apply for accreditation.
Switzerland (CHE)	In Switzerland (CHE), the Swiss Accreditation Service (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (126); however, the Swiss Association for Standardization (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Swiss Standard SN EN 12469:2000 (127) [see Clause 1 (Scope) of Swiss Standard SN EN ISO 15189:2013 (128)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Swiss Standard SN EN ISO 15189:2013 (128)] apply for accreditation.
Taiwan (TWN)	In Taiwan (TWN), the Taiwan Accreditation Foundation (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (129); therefore, relevant requirements of the manufacturer's instructions (129, p. 30) apply for accreditation.
Tanzania, United Republic of (TZA)	In the United Republic of Tanzania (TZA), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Thailand (THA)	In Thailand (THA), the Bureau of Laboratory Quality Standards (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (130); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Turkey (TUR)	In Turkey (TUR), the Turkish Accreditation Agency (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (131); however, the Turkish Standards Institution (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of Turkish Standard TS EN 12469:2000 (132) [see Clause 1 (Scope) of Turkish Standard TS EN ISO 15189:2012 (133, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of Turkish Standard TS EN ISO 15189:2012 (133, pp. 24-25)] apply for accreditation.
United Arab Emirates (ARE) §	In the United Arab Emirates (ARE), the Emirates International Accreditation Centre (an accreditation body) specifies supplementary requirements in relation to Class II biological safety cabinet maintenance; therefore, implementation of an interval-specific calibration (134, p. 38), an interval-specific sterility check (134, p. 38) and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
United Kingdom (GBR)	In the United Kingdom (GBR), the United Kingdom Accreditation Service (a national accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (135); however, the British Standards Institution (a national standardisation body) is a member of the European Committee for Standardization (2, p. 857); therefore, relevant requirements of British Standard BS EN 12469:2000 (136) [see Clause 1 (Scope) of British Standard BS EN ISO 15189:2012 (137, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of British Standard BS EN ISO 15189:2012 (137, pp. 24-25)] apply for accreditation.

United States (USA) ††	In the United States (USA), the American Association for Laboratory Accreditation (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (138); however, the NSF International (a product testing, inspection and certification organisation) has prepared American National Standard NSF/ANSI 49-2018 (139); therefore, relevant requirements of American National Standard NSF/ANSI 49-2018 (139) [see Clause 1 (Scope) of International Standard ISO 15189:2012 (1, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
United States (USA) ††	In the United States (USA), the Perry Johnson Laboratory Accreditation (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (140); however, the NSF International (a product testing, inspection and certification organisation) has prepared American National Standard NSF/ANSI 49-2018 (139); therefore, relevant requirements of American National Standard NSF/ANSI 49-2018 (139) [see Clause 1 (Scope) of International Standard ISO 15189:2012 (1, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
United States (USA) ††	In the United States (USA), the ANSI National Accreditation Board (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (141); however, the NSF International (a product testing, inspection and certification organisation) has prepared American National Standard NSF/ANSI 49-2018 (139); therefore, relevant requirements of American National Standard NSF/ANSI 49-2018 (139) [see Clause 1 (Scope) of International Standard ISO 15189:2012 (1, p. 1)] and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Viet Nam (VNM)	In Viet Nam (VNM), the Bureau of Accreditation (an accreditation body) specifies supplementary requirements in relation to Class II biological safety cabinet maintenance (142); therefore, implementation of an interval-specific check of install filter system (142, p. 31), an interval-specific check of airflow rate (142, p. 31), an interval-specific check of work surface sterility (142, p. 31), an interval-specific check of work surface irradiance (142, p. 31), an interval-specific check of work surface illuminance (142, p. 31), an interval-specific check of sound pressure level (142, p. 31), an interval-specific check of work surface sterility (on use) (142, p. 31) and relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Zambia (ZMB)	In Zambia (ZMB), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.
Zimbabwe (ZWE)	In Zimbabwe (ZWE), the Southern African Development Community Accreditation Service (an accreditation body) does not provide any specific supplementary requirements in relation to Class II biological safety cabinet maintenance (4); therefore, relevant requirements of the manufacturer's instructions [see Subclause 5.3.1.5 (Equipment maintenance and repair) of International Standard ISO 15189:2012 (1, pp. 24-25)] apply for accreditation.

§The National Association of Testing Authorities, Australia and the Emirates International Accreditation Centre do not provide any specific information in relation to the interval-specific calibration; therefore, it may include the calibration of the annunciator and the manometer. The annunciator normally incorporates audible signal generator(s) and visual indicator(s) of airflow alarm, internal supply fan interlock alarm and sash alarm.

**The National Accreditation Board for Testing and Certification Laboratories does not provide any specific information in relation to the verification of airflow; therefore, the verification of airflow may include the performance verification of airflow direction and airflow rate.

††The CAP Accreditation Program (143, p. 20) of the College of American Pathologists requires the participating medical laboratories to obtain certifications annually for their Class II biological safety cabinets in accordance with the American National Standard NSF/ANSI 49-2018 (139). In sum, the implementation of Annex F (Field tests) of American National Standard NSF/ANSI 49-2018 (139, pp. 133-150) should be taken into consideration in order to align with the checklist requirements of the College of American Pathologists.

Table S3. Selected performance verification routines in accordance with Australian Standard AS 2252.2—2009 for Class II biological safety cabinet.

Testing requirements (n = 11)	**Acceptability** (n = 11)
Airflow alarm serviceability	The airflow alarm audible signal generator and visual indicator are activated when the airflow deviates from the manufacturer's specifications, as specified in Subclause 5.2.5 (Alarm operational adjustment) of Australian Standard AS 2252.2—2009 (97, p. 17).
Airflow rate (uniform downflow velocity)	The airflow rate conforms to 0.40 m/s to 0.45 m/s (individual measurement variability tolerance of ± 20 % from the mean), as specified in Subclause 5.2.4 (Air velocity and uniformity in the work zone) of Australian Standard AS 2252.2—2009 (97, p. 17), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.1—2000 (144, pp. 1-2); the acceptability is valid when the air rate is unspecified by the manufacturer. The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (145, p. 5); however, m/s is a commonly used unit.
Airflow rate (uniform downflow velocity)	The airflow rate conforms to the manufacturer's specification (individual measurement variability tolerance conforms to ± 20 % from the mean), as specified in Subclause 5.2.4 (Air velocity and uniformity in the work zone) of Australian Standard AS 2252.2—2009 (97, p. 17), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.1—2000 (129, pp. 1-2).
Airflow rate (uniform inflow velocity)	The airflow rate conforms to 0.40 m/s to 0.45 m/s (individual measurement variability tolerance of ± 20 % from the mean), as specified in Subclause 5.2.4 (Air velocity and uniformity in the work zone) of Australian Standard AS 2252.2—2009 (97, p. 17), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.1—2000 (129, pp. 1-2); the acceptability is valid when the air rate is unspecified by the manufacturer. The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
Airflow rate (uniform inflow velocity)	The airflow rate conforms to the manufacturer's specification (individual measurement variability tolerance conforms to ± 20 % from the mean), as specified in Subclause 5.2.4 (Air velocity and uniformity in the work zone) of Australian Standard AS 2252.2—2009 (97, p. 17), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.1—2000 (129, pp. 1-2).
Front aperture containment efficiency	The penetration concentration conforms to ≤ 0.01 % more than once every 10 s during the total period of test for each test position, as specified in Subclause 5.2.2 (Containment at the aperture) of Australian Standard AS 2252.2—2009 (97, p. 17), when measured in accordance with Clause 7 (Procedure) of Australian Standard AS 1807.22—2000 (146, p. 2).
Front aperture containment efficiency	The aperture protector factor conforms to ≥ 1×10^5, as specified in Subclause 5.2.2 (Containment at the aperture) of Australian Standard AS 2252.2—2009 (97, p. 17), when measured in accordance with Clause 8 (Procedure) of Australian Standard AS 1807.26—2000 (147, p. 4).
Installed filter system integrity	The aerosol penetration conforms to ≤ 0.01 % of the upstream concentration, as specified in Subclause 5.2.2 (Containment at the aperture) of Australian Standard AS 2252.2—2009 (97, p. 16) for Group H filter (Class H14) or higher, as specified in Clause 5 (Classification) of European Standard EN 1822-1:2019 (148, pp. 5-6); when measured in accordance with Clause 7 (Procedure) of Australian Standard AS 1807.6—2000 (149, pp. 2-3).
Internal supply fan interlock alarm serviceability	The internal supply fan interlock alarm audible signal generator and visual indicator are activated when the airflow deviates from the manufacturer's specifications, as specified in Subclause 5.2.5 (Alarm operational adjustment) of Australian Standard AS 2252.2—2009 (97, p. 17).
Sash alarm serviceability	The sash alarm audible signal generator and visual indicator are activated when the sash deviates from the manufacturer's specified front aperture height, as specified in Subclause 5.2.5 (Alarm operational adjustment) of Australian Standard AS 2252.2—2009 (97, p. 17).
Sound pressure level (L_p)	The sound pressure level (L_p) conforms to ≤ 65 dB, as specified in Subclause 5.3.5 (Sound level) of Australian Standard AS 2252.2—2009 (97, p. 18), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.20—2000 (150, pp. 1-2). The L_p is expressed in

	dB, as specified in Item 8-14 of International Standard ISO 80000-8:2020 (151, p. 6).
Vibration	The vibration velocity conforms to < 0.5 mm/s (in any horizontal plane) and < 1.0 mm/s (vertical plan) root-mean-square amplitude in the centre of the work surface in the frequency range of 10 Hz to 1000 Hz, as specified in Subclause 5.3.2 (Vibration) of Australian Standard AS 2252.2—2009 (97, pp. 17-18), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.18—2000 (152, pp. 1-2). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (145, p. 5); however, m/s is a commonly used unit.
Work surface illuminance (E_v)	The average work surface illuminance (E_v) conforms to > 650 lx and the individual value conforms to > 430 lx, as specified in Subclause 5.3.4 (Lighting) of Australian Standard AS 2252.2—2009 (97, p. 18), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.15—2000 (153, p. 1). The E_v is expressed in lx, as specified in Item 7-16 of International Standard ISO 80000-7:2019 (154, p. 15).
Work surface irradiance (E_e)	The work surface irradiance (E_e) conforms to ≥ 400 mW/m^2, as specified in Subclause 5.3.5 (Ultraviolet radiation) of Australian Standard AS 2252.2—2009 (97, p. 18), when measured in accordance with Clause 6 (Procedure) of Australian Standard AS 1807.23—2000 (155, pp. 1-2). The E_e is expressed in W/m^2, as specified in Item 7-7.1 of International Standard ISO 80000-7:2019 (139, p. 6); however, mW/m^2 is a commonly used unit.
Work zone integrity	The aerosol challenge concentration conforms to ≤ 0.01 %, as specified in Subclause 5.2.3 (Work zone integrity) of Australian Standard AS 2252.2—2009 (97, p. 17), when measured in accordance with Clause 7 (Procedure) of Australian Standard AS 1807.5—2000 (156, p. 2).

Table S4. Selected performance verification routines in accordance with European Standard EN 12469:2000 for Class II biological safety cabinet.

Testing requirements (*n* = 13)	**Acceptability** (*n* = 12)
Airflow alarm serviceability	The airflow alarm audible signal generator and visual indicator are activated when the airflow deviates from the manufacturer's specifications, as specified in Subclause 7.2 (Alarm indicators) of European Standard EN 12469:2000 (36, p. 12), when tested at time of alarm verification in accordance with Annex K.3 (Class II MSCs) of European Standard EN 12469:2000 (31, p. 42).
Airflow direction orientation (downflow)	The smoke shows smooth downward flow with no dead spots or reflux (upward flow), as specified in Annex H.3.1 (General) of European Standard EN 12469:2000 (31, p. 38), when measured in accordance with Annex H.3.1 (General) of European Standard EN 12469:2000 (31, p. 38).
Airflow direction orientation (work access opening)	The smoke shows smooth inward flow over the whole area of the front aperture, as specified in Annex H.3.1 (General) of European Standard EN 12469:2000 (31, p. 38), when measured in accordance with Annex H.3.1 (General) of European Standard EN 12469:2000 (31, p. 38).
Airflow rate (uniform downflow velocity)	The airflow rate conforms to 0.25 m/s to 0.50 m/s [individual measurement variability tolerance conforms to ± 20 % from the mean, as specified in Annex H.3.2 (Downflow) of European Standard EN 12469:2000 (31, p. 39)], as specified in Annex K.3 (Class II MSCs) of European Standard EN 12469:2000 (31, p. 42), when measured in accordance with Annex G.3.2.1 (Downflow) of European Standard EN 12469:2000 (31, p. 36) and manufacturer's instructions. The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
Airflow rate (uniform inflow velocity)	The airflow rate conforms to ≥ 0.4 m/s [individual measurement variability tolerance conforms to ± 20 % from the mean, as specified in Annex H.3.3 (Inflow) of European Standard EN 12469:2000 (31, p. 39)], as specified in Annex K.3 (Class II MSCs) of European Standard EN 12469:2000 (31, p. 42), when measured in accordance with Annex G.3.2.2 (Inflow) of European Standard EN 12469:2000 (31, pp. 36-37). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (145, p. 5); however, m/s is a commonly used unit.
Electrical safety	Conformity with International Standard IEC 61010-1, [International Standards IEC 61010-1:2010 (157), IEC 61010-1:2010/COR1:2011 (158), IEC 61010-1:2010/COR2:2012 (159), IEC 61010-1:2010/AMD1:2016 (160) and

	IEC 61010-1:2010/AMD1:2016/COR1:2019 (161)] as specified in Annex A.8 (Electrical safety) of European Standard EN 12469:2000 (31, p. 17).
Installed filter system integrity	The aerosol penetration conforms to ≤ 0.01 % of the upstream concentration, as specified in Annex D.5 (Expression of results) of European Standard EN 12469:2000 (31, pp. 30-31) to Group H filter (Class H14) or higher, as specified in Clause 5 (Classification) of European Standard EN 1822-1:2019 (148, pp. 5-6); when measured in accordance with Annex D.5 (Expression of results) of European Standard EN 12469:2000 (31, pp. 30-31).
Internal supply fan interlock alarm serviceability	The internal supply fan interlock alarm audible signal generator and visual indicator are activated when the airflow deviates from the manufacturer's specifications, as specified in Subclause 7.2 (Alarm indicators) of European Standard EN 12469:2000 (31, p. 12), when tested at time of alarm verification in accordance with Annex K.3 (Class II MSCs) of European Standard EN 12469:2000 (31, p. 42).
Sash alarm serviceability	The sash alarm audible signal generator and visual indicator are activated when the sash is > 250 mm or < 160 mm of the front aperture height, as specified in Annex A.1 (Front aperture height) of European Standard EN 12469:2000 (31, p. 15), when tested at time of alarm verification in accordance with Annex K.3 (Class II MSCs) of European Standard EN 12469:2000 (31, p. 42).
Sound pressure level (L_p)	The sound pressure level (L_p) conforms to ≤ 65 dB, as specified in Annex A.3 (Sound) of European Standard EN 12469:2000 (31, p. 15), when measured in accordance with Subclause 8.2 (Determination of sound power levels) of International Standard ISO 3744:2010 (162, pp. 18-24) or Clause 10 (Measurements) International Standard ISO 11201:2010 (163, pp. 16-17). The L_p is expressed in dB, as specified in Item 8-14 of International Standard ISO 80000-8:2020 (151, p. 6).
Surface integrity	All external and internal surfaces contains no surface defects, cracks or other damage, as specified in Annex K.3 (Class II MSCs) of European Standard EN 12469:2000 (31, p. 42), when examined in accordance with Annex K.3 (Class II MSCs) of European Standard EN 12469:2000 (31, p. 42).
Vibration	The net vibration displacement conforms to < 0.005 mm root-mean-square amplitude at 20 Hz to 20 kHz in the centre of the work surface, as specified in Annex A.4 (Vibration) of European Standard EN 12469:2000 (31, p. 15), when measured in accordance with Clause 6 (Measurement of vibration magnitude) of International Standard ISO 5349-2:2001 (164, pp. 11-17).
Work surface illuminance (E_v)	The work surface illuminance (E_v) is ≥ 750 lx, as specified in Annex A.2 (Lighting) of European Standard EN 12469:2000 (31, p. 15), when measured in accordance with Subclause 6.1 (Illuminance) of International Standard ISO 8995:2002 (165, p. 17). The E_v is expressed in lx, as specified in Item 7-16 of International Standard ISO 80000-7:2019 (139, p. 15).

Table S5. Selected performance verification routines in accordance with China National Standard YY 0569—2011 for Class II biological safety cabinet.

Testing requirements (n = 10)	**Acceptability** (n = 10)
Airflow direction orientation (downflow)	The smoke shows smooth downward flow with no dead spots or reflux (upward flow), as specified in Subclause 5.4.9.1 of China National Standard YY 0569—2011 (28, p. 7), when measured in accordance with Subclause 6.3.9.3 (Descent air flow test) of China National Standard YY 0569—2011 (28, p. 23).
Airflow direction orientation (sash seal)	The smoke shows no escape from the cabinet, as specified in Subclause 5.4.9.2 of China National Standard YY 0569—2011 (28, p. 7), when measured in accordance with Subclause 6.3.9.6 (Front window operation edge air flow test) of China National Standard YY 0569—2011 (28, p. 23).
Airflow direction orientation (view screen)	The smoke shows smooth downward flow with no dead spots or reflux (upward flow) and no escape from the cabinet, as specified in Subclause 5.4.9.1 of China National Standard YY 0569—2011 (28, p. 7) and Subclause 5.4.9.2 of China National Standard YY 0569—2011 (28, p. 7), when measured in accordance with Subclause 6.3.9.4 (Observation window airflow test) of China National Standard YY 0569—2011 (28, p. 23).
Airflow direction orientation (work access opening)	The smoke shows smooth inward flow over the whole area of the front aperture, as specified in Subclause 5.4.9.3 of China National Standard YY 0569—2011 (28, p. 7), when measured in accordance with Subclause 6.3.9.5 (Front window operation edge air flow test) of China National Standard YY 0569—2011 (28, p. 23).

Airflow rate (uniform downflow velocity)	The airflow rate conforms to 0.25 m/s to 0.50 m/s, as specified in Subclause 5.4.7.1 of China National Standard YY 0569—2011 (28, p. 6), when measured in accordance with Subclause 6.3.7 (Falling air flow rate) of China National Standard YY 0569—2011 (28, pp. 18-19). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
Airflow rate (uniform inflow velocity)	The airflow rate conforms to > 0.50 m/s, as specified in Subclause 5.4.8.3 of China National Standard YY 0569—2011 (24, p. 7), when measured in accordance with Subclause 6.3.8 (Flow rate of inflow air) of China National Standard YY 0569—2011 (28, pp. 19-23). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
Installed filter system integrity	The aerosol penetration conforms to ≤ 0.01 % of the upstream concentration, as specified in Subclause 5.4.2.1 of China National Standard YY 0569—2011 (28, p. 6), when measured in accordance with Subclause 6.3.2.4.1 (Filter for scan detection) of China National Standard YY 0569—2011 (28, pp. 9-10).
Surface integrity	All external and internal surfaces contain no surface defects, cracks or other damage, as specified in Subclause 5.1 (Appearance) of China National Standard YY 0569—2011 (28, p. 3).
Vibration	The net vibration displacement conforms to < 0.005 mm root-mean-square amplitude at 10 Hz to 10 kHz in the centre of the work surface, as specified in Subclause 5.4.5 (Vibration) of China National Standard YY 0569—2011 (28, p. 6), when measured in accordance with Subclause 6.3.5 (Vibration) of China National Standard YY 0569—2011 (28, p. 12).
Work surface irradiance (E_e)	The work surface irradiance (E_e) conforms to ≥ 400 mW/m^2, as specified in Subclause 5.4.14.4 of China National Standard YY 0569—2011 (28, p. 8), when measured in accordance with Subclause 6.3.14 (UV light) of China National Standard YY 0569—2011 (28, pp. 26-27). The E_e is expressed in W/m^2, as specified in Item 7-7.1 of International Standard ISO 80000-7:2019 (154, p. 6); however, mW/m^2 is a commonly used unit.

Table S6. Selected performance verification routines in accordance with Japanese Industrial Standard JIS K 3800:2009 for Class II biological safety cabinet.

Testing requirements (*n* = 12)	**Acceptability** (*n* = 18)
Airflow balance	The number of colony-forming units recovered from the collection suspension of all six impingers conforms to < 10 colony-forming units and the total slit-type air sampler plate counts conforms to ≤ 5 colony-forming units for a 15 min sampling period, as specified in Subclause 5.4.1 (Worker safety test) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 8), when measured in accordance with Subclause 8.3.2 (Worker safety test) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 18-20).
	The number of colony-forming units recovered from the settling plates conforms to ≤ 5 colony-forming units, as specified in Subclause 5.4.2 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 8), when measured in accordance with Subclause 8.3.3 (Sample protection test) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 20-21).
	The number of colony-forming units recovered from the agar plates with centres > 360 mm conforms to ≤ 5 colony-forming units, as specified in Subclause 5.4.3 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 8), when measured in accordance with Subclause 8.3.4 (Cross-contamination prevention test between samples) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 21-22).
Airflow direction orientation (downflow)	The smoke shows smooth downward flow with no dead spots or reflux (upward flow), as specified in Subclause 5.6 a) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 8-9), when measured in accordance with Subclause 8.9 a) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 30).
Airflow direction orientation (sash seal)	The smoke shows no escape from the cabinet, as specified in Subclause 5.6 d) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 8-9), when measured in accordance with Subclause 8.9 d) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 31).
Airflow direction orientation	The smoke shows smooth downward flow with no dead spots or reflux (upward flow) and no smoke escapes from the cabinet, as specified in

(view screen)	Subclause 5.6 b) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 8-9), when measured in accordance with Subclause 8.9 b) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 30).
Airflow direction orientation (work access opening)	The smoke shows smooth inward flow over the whole area of the front aperture, as specified in Subclause 5.6 c) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 8-9), when measured in accordance with Subclause 8.9 c) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 30-31).
Airflow rate (uniform downflow velocity)	The airflow rate conforms to ± 0.025 m/s of the manufacturer's specification (individual measurement variability tolerance of ± 25 % from the mean), as specified in Subclause 5.5.1 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 8), when measured in accordance with Subclause 8.4 (Wind speed test) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 22-24). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
Airflow rate (uniform inflow velocity)	The airflow rate conforms to > 0.40 m/s (individual measurement variability tolerance conforms to ± 25 % from the mean), as specified in Subclause 5.5.2 of Japanese Industrial Standard Japanese Industrial Standard JIS K 3800:2009 (75, p. 8), when measured in accordance with Subclause 8.5 (Inlet wind speed test) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 24-25). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
	The airflow rate conforms to ± 0.025 m/s of the manufacturer's specification (individual measurement variability tolerance conforms to ± 25 % from the mean), as specified in Subclause 5.5.2 of Japanese Industrial Standard JIS K 3800:2009 (68, p. 8), when measured in accordance with Subclause 8.5 (Inlet wind speed test) of Japanese Industrial Standard JIS K 3800:2009 (68, pp. 24-25). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
Carcass leaktightness	The decrease in internal pressure after 30 min conforms to ≤ 10 %, as specified in Subclause 5.1.1 of Japanese Industrial Standard JIS K 3800:2009 (?, p. 7), when measured in accordance with Subclause 8.1.1 (Positive pressure maintenance method) of Japanese Industrial Standard JIS K 3800:2009 (68, pp. 12-13).
	All welds, gaskets, penetrations, and seals on exterior surfaces of air plenums are free of soap bubbles, as specified in Subclause 5.1.2 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 7), when measured in accordance with Subclause 8.1.2 (Soap method) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 12-13).
	The leakage amount conforms to ≤ 1×10^{-5} cm^3/s, as specified in Subclause 5.1.3 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 7), when measured in accordance with Subclause 8.1.3 (Helium gas method) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 13).
	The leakage amount conforms to ≤ 1×10^{-7} cm^3/s, as specified in Subclause 5.1.4 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 7), when measured in accordance with Subclause 8.1.4 (Sulfur hexafluoride gas method) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 13).
Installed filter system integrity	The aerosol penetration conforms to ≤ 0.01 % of the upstream concentration, as specified in Subclause 5.2 (HEPA filter transmittance) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 7) to Group H filter (Class H14) or higher, as specified in Clause 5 (Classification) of European Standard EN 1822-1:2019 (148, pp. 5-6); when measured in accordance with Subclause 8.2 (HEPA filter transmittance test) of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 13-15).
Sound pressure level (L_p)	The sound pressure level (L_p) conforms to < 67 dB, as specified in Subclause 5.7 (Noise) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 9), when measured in accordance with Subclause 8.10 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 31). The L_p is expressed in dB, as specified in Item 8-14 of International Standard ISO 80000-8:2020 (151, p. 6).
Vibration	The net vibration displacement conforms to < 0.005 mm root-mean-square amplitude in the centre of the work surface, as specified in Subclause 5.9 (Vibration) of Japanese Industrial Standard JIS K 3800:2009 (75, p. 9), when measured in accordance with Subclause 8.12 of Japanese Industrial Standard JIS K 3800:2009 (75, pp. 31-32).
Work surface illuminance (E_v)	The average work surface illuminance (E_v) conforms to ≥ 650 lx and the individual value conforms to ≥ 430 lx, as specified in Subclause 5.8 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 9), when measured in

	accordance with Subclause 8.11 of Japanese Industrial Standard JIS K 3800:2009 (75, p. 31). The E_v is expressed in lx, as specified in Item 7-16 of International Standard ISO 80000-7:2019 (154, p. 15).

Table S7. Selected performance verification routines in accordance with American National Standard NSF/ANSI 49-2018 for Class II biological safety cabinet.

Testing requirements (n = 14)	**Acceptability** (n = 14)
Airflow alarm serviceability	The airflow audible signal generator and visual indicator are activated within 15 s of the manufacturer's designated low alarm point, as specified in Annex F.7.3.3.1 (Airflow alarm system - Type A1, A2, or C1) of American National Standard NSF/ANSI 49-2018 (139, p. 146), when tested at time of alarm verification in accordance with Annex F.7.3.3.1 (Airflow alarm system - Type A1, A2, or C1) of American National Standard NSF/ANSI 49-2018 (139, p. 146).
Airflow direction orientation (downflow)	The smoke shows smooth downward flow with no dead spots or reflux (upward flow), as specified in Annex F.4.4.1 (Downflow test) of American National Standard NSF/ANSI 49-2018 (139, p. 140), when measured in accordance with Annex F.4.3.1 (Downflow test) of American National Standard NSF/ANSI 49-2018 (139, p. 140).
Airflow direction orientation (sash seal)	The smoke shows no escape from the cabinet, as specified in Annex F.4.4.4 (Sash/window seal test) of American National Standard NSF/ANSI 49-2018 (139, p. 141), when measured in accordance with Annex F.4.3.4 (Sash seal test) of American National Standard NSF/ANSI 49-2018 (139, p. 140).
Airflow direction orientation (view screen)	The smoke shows smooth downward flow with no dead spots or reflux (upward flow) and no escape from the cabinet, as specified in Annex F.4.4.2 (View screen retention test) of American National Standard NSF/ANSI 49-2018 (139, p. 140), when measured in accordance with Annex F.4.3.2 (View screen retention test) of American National Standard NSF/ANSI 49-2018 (139, p. 140).
Airflow direction orientation (work access opening)	The smoke shows smooth inward flow over the whole area of the front aperture, as specified in Annex F.4.4.3 (Work opening edge retention test) of American National Standard NSF/ANSI 49-2018 (139, p. 141), when measured in accordance with Annex F.4.3.3 (Work opening edge retention test) of American National Standard NSF/ANSI 49-2018 (139, p. 140).
Airflow rate (uniform downflow velocity)	The airflow rate conforms to ± 0.025 m/s (individual measurement variability tolerance conforms to ± 25 % from the mean), as specified in Annex F.2.4.1 (Uniform downflow) of American National Standard NSF/ANSI 49-2018 (139, p. 135), when measured in accordance with Annex F.2.4.1 (Uniform downflow) of American National Standard NSF/ANSI 49-2018 (139, p. 135). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (145, p. 5); however, m/s is a commonly used unit.
Airflow rate (uniform inflow velocity)	The airflow rate conforms to ± 0.025 m/s (individual measurement variability tolerance conforms to ± 25 % from the mean), as specified in Annex F.3.4 (Acceptance) of American National Standard NSF/ANSI 49-2018 (139, p. 139), when measured in accordance with Annex F.3.3 (Methods) of American National Standard NSF/ANSI 49-2018 (139, pp. 136-139). The velocity is expressed in m s^{-1}, as specified in Item 3-10.1 of International Standard ISO 80000-3:2019 (130, p. 5); however, m/s is a commonly used unit.
Electrical safety	Conformity with International Standard IEC 61010-1 [International Standards IEC 61010-1:2010 (157), IEC 61010-1:2010/COR1:2011 (158), IEC 61010-1:2010/COR2:2012 (159), IEC 61010-1:2010/AMD1:2016 (160) and IEC 61010-1:2010/AMD1:2016/COR1:2019 (161)] as specified in Annex F.8 (Electrical leakage and ground circuit resistance and polarity tests) of American National Standard NSF/ANSI 49-2018 (147, p. 147).
Installed filter system integrity	The aerosol penetration conforms to ≤ 0.01 % of the upstream concentration, as specified in Annex F.5.4.1 (Filters that can be scanned) of American National Standard NSF/ANSI 49-2018 (139, p. 143) for Group H filter (Class H14) or higher, as specified in Clause 5 (Classification) of EN 1822-1:2019 (148, pp. 5-6); when measured in accordance with Annex F.5.3.1 (Filters that can be scanned) of American National Standard NSF/ANSI 49-2018 (139, pp. 141-142).
Internal supply fan interlock alarm serviceability	The supply fan interlock alarm audible signal generator and visual indicator are activated ≤ 15 s when the airflow deviates from the manufacturer's specifications, as specified in Annex F.7.3.3.2 (Internal supply/exhaust fan interlock alarm

	system - Type A1, A2, or C1) of American National Standard NSF/ANSI 49-2018 (139, p. 147), when tested at time of alarm verification in accordance with Annex F.7.3.3.2 (Internal supply/exhaust fan interlock alarm system - Type A1, A2, or C1) of American National Standard NSF/ANSI 49-2018 (139, p. 147).
Sash alarm serviceability	The sash alarm audible signal generator and visual indicator are activated when the sash is > ± 25 mm of the manufacturer's specified front aperture height, as specified in Annex F.7.3.1.1 (Sash alarms) of American National Standard NSF/ANSI 49-2018 (139, pp. 144-145), when tested at time of alarm verification in accordance with Annex F.7.3.1.1 (Sash alarms) of American National Standard NSF/ANSI 49-2018 (139, pp. 144-145).
Sound pressure level (L_p)	The sound pressure level (L_p) conforms to ≤ 70 dB, as specified in Annex F.11.4 (Acceptance) of American National Standard NSF/ANSI 49-2018 (139, p. 149), when measured in accordance with Annex F.11.3 (Method) of American National Standard NSF/ANSI 49-2018 (139, p. 149). The L_p is expressed in dB, as specified in Item 8-14 of International Standard ISO 80000-8:2020 (151, p. 6).
Vibration	The net vibration displacement conforms to ≤ 50 μm root-mean-square amplitude at 10 Hz to 7 kHz in the centre of the work surface, as specified in Annex F.10.4 (Acceptance) of American National Standard NSF/ANSI 49-2018 (124, p. 148), when measured in accordance with Annex F.10.3 (Method) of American National Standard NSF/ANSI 49-2018 (139, p. 148).
Work surface illuminance (E_v)	The average work surface illuminance (E_v) conforms to ≥ 480 lux greater than background levels, as specified in Annex F.9.4 (Acceptance) of American National Standard NSF/ANSI 49-2018 (139, p. 148), when measured in accordance with Annex F.9.3 (Method) of American National Standard NSF/ANSI 49-2018 (139, p. 147). The E_v is expressed in lx, as specified in Item 7-16 of International Standard ISO 80000-7:2019 (154, p. 15).

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