Annex to the AHAM Portable Electric Room Air Cleaner Certification Program Procedural Guide

Qualification Requirements for Alternate Test Facilities

Version 4.0

ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

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SECTION 1 - INTRODUCTION

This document contains the requirements that must be met by testing laboratories (internal or commercial facilities) that wish to be considered as alternate test facilities accepted by AHAM to provide Initial Maximum Certified Ratings (CADR values) per ANSI/AHAM AC-1 (latest edition) in support of the AHAM Portable Electric Room Air Cleaner Certification Program. This document is supplemental to the AHAM Portable Electric Room Air Cleaner Procedural Guide.

The AHAM Air Cleaner Certification Steering Committee, AHAM Staff members, and designated technical experts are responsible for ensuring proper implementation of the requirements specified in this document.

The AHAM Air Cleaner Certification Steering Committee must approve all revisions to this document.

1.1 AHAM ROOM AIR CLEANER CERTIFICATION TESTING

There are two (2) steps to the testing of air cleaners in the AHAM Portable Electric Room Air Cleaner Certification Program:

1. **Initial Maximum Certified Ratings Testing**

   Testing for Initial Maximum Certified Ratings (CADR values) may be performed by the Program Laboratory or by alternate test facilities that have been found to meet the requirements defined in this document. To obtain information on available alternate test facilities, please contact AHAM.

2. **Annual Verification Testing**

   Annual verification testing required under the AHAM Portable Electric Room Air Cleaner Certification Program may only be performed by the Program Laboratory.

1.2 GENERAL DESCRIPTION OF REQUIREMENTS FOR ALTERNATE TEST FACILITIES

The requirements for alternate test facilities are as follows:

1. The alternate test facility shall have its own quality systems documentation for facility operations, maintenance, employee training, and oversight. The laboratory must consider and define these and conduct business according to its defined practices. For specific requirements, see Section 2.
2. The alternate test facility shall perform the ANSI/AHAM AC-1 (latest edition) test method correctly, with all necessary controls and conditions as specified in the standard. See Section 3.
3. The alternate test facility shall participate in initial and periodic correlation testing with the Program Laboratory and resulting data must meet the defined repeatability and reproducibility criteria. See Section 4.
4. The alternate test facility shall follow the proper administrative procedures and complete the appropriate administrative forms as defined in the AHAM Portable Electric Room Air Cleaner Procedural Guide and this document when submitting the Initial Maximum Certified Ratings to Program Licensees. Program Licensees must

submit the proper forms to the Program Laboratory for inclusion of the Initial Maximum Certified Ratings in the Certification Directory. See Section 5.

SECTION 2 - QUALITY SYSTEMS DOCUMENTATION

2.1 CHAMBER OPERATION

The operation of the chamber and associated facilities as perANSI/AHAM AC-1 (latest edition) must be documented at the testing facility for full program correlation. Program correlation is defined as meeting the requirements of the ANSI/AHAM AC-1 (latest edition) for accuracy/reproducibility, operation, reporting, and documentation. A copy of the documentation must be maintained at the test facility and must be available for inspection by AHAM staff and designated technical experts.

2.2 COMPLIANCE WITH ISO/IEC 17025

Alternate test facilities must demonstrate compliance to ISO/IEC 17025 through either:

1. A valid accreditation issued by an acceptable laboratory accreditation organization and a copy of the scope of accreditation along with the certification of accreditation must be provided to AHAM upon request.
2. A quality systems assessment (audit) conducted by AHAM staff and designated technical experts. Any non-conformances found during the audit must be resolved, documented and provided to AHAM.

SECTION 3 – TECHNICAL COMPETENCY & COMPLIANCE WITH ANSI/AHAM AC-1 & ISO/IEC 17025

To demonstrate technical competency, alternate test facilities must be assessed to the following technical requirements by AHAM staff and designated technical experts.

3.1 AC-1 CHAMBER AND TEST PERFORMANCE

3.1.1 The alternate test facility shall have a copy of ANSI/AHAM AC-1 (latest edition).

3.1.2 Compliance with the following specific ANSI/AHAM AC-1 (latest edition) environmental, material, and equipment requirements must be demonstrated. The information contained in this section is normative. Equivalent equipment and material substitutes are acceptable. Equivalent substitutes are those, which, when used in concert with all other equipment, produce equivalent testing conditions and results as the set of equipment and materials specified here.

a) Chamber Construction

Inside dimensions	10 ½ ft x 12 ft x 8 ft, 1008 ft^3 (3.2 m x 3.7 m x 2.4 m, 28.5 m^3)	Annex A
Wall & ceiling surfaces	½ in. (1.3 cm) wallboard over 3/8 in. (0.9 cm) plywood; painted with white, washable latex semi-gloss	Annex A
Framework	Standard 2 in. x 4 in. (5.1 cm x 10.2 cm) construction, sealed at floor line, inside and outside,	Annex A

	with caulking compound	
Caulking	No silicone caulk is to be used in the test chamber	Annex A
Flooring	Seamless, smooth surface, full width linoleum or vinyl	Annex A
Table Stand	Height 29.25 in. (0.74 m) from the floor; Table top size: 14 x 22 x 1 in. (0.36 x 0.56 x 0.03 m)	Annex A

b) Environmental Equipment and Conditions

Filtration loop	750 cfm (21.5 m^3/m) fan, 4 in. (10.2 cm) WG, 3/4 HP motor, 208 Volts, 3 phase or equipment which provides equivalent chamber cleaning	Annex A
Humidification limits	Chamber relative humidity is to be 40 $\pm$ 5%	Sec. 4.2
Temperature limits	Chamber ambient temperature is to be 70 $\pm$ 5°F (21 $\pm$ 3°C)	Sec. 4.2
Humidifier	D.F. Brandt, inc. Resdelux Steam Humidifier or equivalent steam humidifier capable of maintaining chamber relative humidity at required level	Annex A
Cooling/Dehumidifying Equipment	Trane No. XE900 1 ton condensing unit and Model EAS Evaporator Coil or equivalent	Annex A
Reheater	10 kW duct heater	Annex A
Relative Humidity-Temperature Sensor	Vaisala, Inc. Model HMW 30YB or equivalent	Annex A
Recirculation fan	A fan capable of producing between 300 and 400 cfm positioned 60 in. (1.5 m) from the floor to the center of the motor and 15 in. (0.4 m) from the back wall to the fan unit.	Sec. 3.5.2, Annex A
Mixing Fan	3 blade, 36 in. (.91 m), ceiling fan 395 RPM Stock No. 4C852 Amps 0.5, Volts 120, Weight 28 lbs (12.7 kg) or equivalent	Annex A

c) Generation Equipment

i. Air Pressure Sources and Lines

Air Supply	TSI Inc, Model 3074 Air Supply System or equivalent	Annex A
Dust Neutralizer	TSI, Inc, Model 3012 Aerosol Neutralizer or equivalent	Annex A

ii. Smoke Chamber, Pot, Valving, and Lines

Maintenance schedule	Cigarette smoke generator, including injection tube, should be cleaned weekly	Annex C, Sec. III.A.2
Appropriate air pressure and flow	4-6 scfh air supply is required to cigarette smoke generator	Sec. 5.1.4.2

iii. Dust Generator, Valving, and Lines

Model	TSI Inc, Model 3400 Fluidized Bed Aerosol Generator or equivalent	Annex A
Appropriate air pressure and flow	Air pressure for dispersing dust should be set at 40 to 60 psig (2.8 to 4.2 kg/cm^2) or pressure needed to produce equivalent results with a different dust generator model	Annex C, Sec. III.B.2

iv. Pollen, Pot, Valving, and Lines

Equipment	2 oz. screw-top glass laboratory sample jars sealed air tight with nominal ¼ inch brass fittings for air entry and pollen discharge	Annex A
Maintenance schedule	Jars must be washed and lids cleaned with a lint-free wipe on a daily basis	Annex C, Sec. VI
Appropriate air pressure and flow	Air pressure should be set at 20 psig (1.4 kg/cm^2)	Annex C, Sec. III.C.4

d) Particle Counter Equipment

i. Smoke Particle Counter

Model	TSI, Inc. High Sensitivity Laser Aerosol Spectrometer Model 3340 or equivalent • Particle Size Range – 0.09 to 7.5 µm • Maximum Concentration –18000 particles/cm^3 at 10 cm^3/min, 3600 particles/cm^3 at 50 cm^3/min, 1800 particles/cm^3 at 95 cm^3/min • Resolution – Error ≤5% of particle diameter at 0.1 microns (typically error <= 2.5%) • Total Flow Rate – 10-95 sccm ±5%	Annex A
Isokinetic Diluter	Custom aerosol diluter – 6 to 1 dilution ratio at 1 cc/sec total flow rate or equivalent dilution rate, if using different particle counter model	Annex A

ii. Dust/Pollen Particle Counter

Model	TSI Inc. Aerodynamic Particle Sizer® (APS) Spectrometer – Model 3321 or equivalent • Particle Size Range – 0.5 µm to 20	Annex A

	µm • Particle Concentration Range – 0.001 to 1000 particles/cm^3 • Aerodynamic Size Resolution – 0.02 µm at 1.0 µm, 0.03 µm at 10.0 µm • Total Flow Rate – 5.0 L/min ±0.2	

e) Power Equipment

Multiple Voltage/Frequency Capabilities	Must be able to support, at minimum, the following voltage/frequency combinations, delivering 2 kVA: 120 V 60 Hz 230 V 50 Hz 115 V 60 Hz 100 V 50/60 Hz 220 V 50 Hz 230 V 50 Hz	Procedural Guide, sec. 3.1.12
Operating Power and Standby Power Measurement Watt Meter	Watt meter or equivalent instrument capable of measuring true RMS watts Accuracy: ±1% at 120 V, 60 hz Resolution: 0.01 Watt or better	AC-1, Annex A

f) Pollutants

i. Cigarette Smoke

Primary Storage Conditions	Room temperature and 70 ± 15% RH for 24 to 72 hours prior to a test series	Annex C, Sec. III.A.1
Secondary Storage Conditions	Store at a temperature of 39 ± 3.6°F (4±2°C) and RH of 50±10%	Annex C, Sec. III.A.3
Particle Size Distribution	0.1 µm to 1.0 µm	Sec. 3.3.1
Range	24,000 to 35,000 particles/cc	Sec. 4.4.1
Sampling Period	20 sec. @ 0.06 L/min ± 5% or standard	Sec. 4.4.1

ii. Air Cleaner Test Dust

Primary Storage Conditions	Desiccating chamber with a maximum RH of 20%	Annex C, Sec. III.B.3
Secondary Storage Conditions	Desiccating chamber with a maximum RH of 20%	Annex C, Sec. III.B.3
Particle Size Distribution	0.5 µm to 3.0 µm	Sec. 3.3.2
Range	200 to 400 particles/cc	Sec. 4.4.1
Sampling Period	20 sec. @ 1 L/min ± 5%	Sec. 4.4.1

iii. Paper Mulberry Pollen

Primary Storage Conditions	Store loaded generator jars in desiccator with drying agent for a minimum of 24 hours prior to testing	Annex C, Sec. III.C.3
Secondary Storage Conditions	Store in desiccating chamber with maximum RH of 20%	Annex C, Sec. III.C.5
Particle Size Distribution	5 µm to 11 µm	Sec. 3.3.3
Range	4 to 9 particles/cc	Sec. 4.4.1
Sampling Period	20 sec. @ 1 L/min ± 5%	Sec. 4.4.1

g) Computer and computer interfaces

a. Validated acquisition programs
b. Validated statistical evaluation programs
c. Validated slope, standard deviation, prediction limit and CADR calculation programs (Sec. 8)
d. Validated data elimination criteria programs (Sec. 8.1)

h) Secondary systems are defined (ante room, run-in room, storeroom, etc.)

i. Maintenance SOPs
ii. Logbook
    1. Start/stop times

i) Run-in Room

i. Clean environment in which all air cleaners will be run-in for a period of approximately 48 hours prior to testing. (Procedural Guide, Sec. 3.6.1)

j) Additional Materials in Accordance with ANSI/AHAM AC-1 (latest edition)

Air Filters	High efficiency particulate air (HEPA) filter 99.97% efficient for 0.3 µm DOP (1000 cfm).	Sec. 3.7
Cleaning supplies	Mops, sponges, lint-free wipes, anti-static cleaning solution (commercially available formula acceptable)	Annex C

k) Room Maintenance in accordance with ANSI/AHAM AC-1 (latest edition)

Daily Startup Cleaning	Clean countertops and equipment with a damp sponge. Clean floor with a damp mop	Annex C, Sec. VI
Additional Cleaning on shutdown and as required	Mop all floors, walls, and ceilings with an anti-static cleaning solution. Clean all other surfaces with sponge and same solution	Annex C, Sec. VII
Short Term Maintenance and Calibration	Check chamber wall, ceilings, and joints for repairs as necessary. Blow out particle counter chassis with compressed air every two weeks	Annex C, Sec. VIII
Long Term Maintenance and Calibration	Have particle counters cleaned and calibrated by manufacturer annually; Paint walls and ceiling annually; Calibrate watt meter annually to standard traceable to the National Institute of Standards and Technology (NIST)	Annex C, Sec. IX
Leak testing (ACH)	Perform tracer gas analysis on test chamber to determine air leakage rate at least every six months	Annex C, Sec. VIII.A

3.1.3 The designated technical expert shall verify compliance with the following maintenance, data acquisition and reporting procedures in accordance with ISO/IEC 17025:

a) Conformance to ANSI/AHAM AC-1 (latest edition) and general conformance to the required statistics, chamber operating conditions, equipment parameters, cleaning, etc.

Operator/Oversight	A management system clearly stating the roles of all personnel must be defined for the Laboratory and then communicated to and acted upon by all personnel	Sec. 4.2
Test Result Approvals and Communication	The Laboratory shall have procedures in place to monitor the validity of results of all tests	Sec. 5.9

b) Reports shall follow the protocols established in ISO/IEC 17025, Section 5.10, and should include the following information (Annex F)

i. Sample time and bin counts
ii. Graphical representation of test natural decay and test unit operating decay
iii. Tabular time and total concentration counts (with natural log)
iv. Graphical representation of data elimination
v. Graphical representation of prediction limits
vi. Air cleaner model information and operating parameters including unique test identifier
vii. Chamber parameters for test duration (natural decay and unit operating decay combinations)

c) Methodology in accordance with ANSI/AHAM AC-1 (latest edition)

Natural Decay Measurement	Immediately prior to testing any unit, a test must be performed with the unit off to determine the natural decay rate of the pollutant	Sec. 5,6,7
Appropriate timing and delays in acquisition cycle		Annex H

d) Security in accordance with ISO/IEC 17025

Equipment storage	The laboratory shall have procedures for safe handling, transport, storage, use and planned maintenance of measuring equipment to ensure proper functioning and in order to prevent contamination or deterioration	Sec. 5.5.6
Data archives	All practices regarding control of records outlined in section 14.3 shall be followed	
Equipment safeguards	Test and calibration shall be safeguarded against adjustments which would invalidate the test and/or calibration results	Sec. 5.5.12
Product Storage	Procedures and facilities shall be in place for avoiding deterioration, loss or damage to the product or equipment during storage, handling and preparation	Sec. 5.8.4

e) Data Review and Reporting Procedures in accordance with ISO/IEC 17025

Protocol for data challenge	Quality control procedures shall be in place to monitor the validity of tests and calibrations undertaken including participation in interlaboratory comparison or proficiency testing programs	Sec. 5.9.1
Computer data validation and security	When computers or automated equipment is used for data acquisition, the laboratory shall validate the software used suitably and adequate procedures shall be in place to protect the security of the data.	Sec. 5.4.7.2
Data review	Data shall be record in such a way to allow trends to be recognized and, where practicable, statistical techniques applied	Sec. 5.9.1
Data checks	Data shall be checked regularly in a systematic manner	Sec. 5.4.7.1

f) A logbook shall be maintained containing the following information

- Primary and secondary maintenance (facility, test equipment, auxiliary systems)
- Schedules (cleaning, chamber use, …)
- Inspections
- Supplies (manufacturer, lot, dates of use)
- Testing
- Equipment compliance
- Computer compliance (data acquisition, reporting, archiving)
- Unique identifiers (by test)
- Process control files/charts

3.2 TRAINING AND DOCUMENTATION IN ACCORDANCE WITH ISO/IEC 17025

- Define employee training for ANSI/AHAM AC-1 (latest edition) (Sec. 5.2.2)
- Establish process for conveying new procedures or protocols
- Identify personnel that are qualified to run ANSI/AHAM AC-1 (latest edition) and maintain following training documentation (Sec. 5.2.1)
    - Training materials documentation (Sec. 5.2.2)
    - Training records identifying date and scope of training and trainer (Sec. 5.2.5)
    - Training records identifying the trainer's qualifications (Sec. 5.2.5)
- Perform Cross-checks (examination/inspection of logbooks, interpretation of)

3.3 CHANGE CONTROL AND CALIBRATION IN ACCORDANCE WITH ISO/IEC 17065

3.3.1 Compliance with all Change Control protocols

Staff responsibility and review hierarchy	The Laboratory shall have procedures in place in which the top management periodically reviews the Laboratory's management system, as well as testing and/or calibration systems for continuing suitability and then necessary changes are introduced to address any unsuitability.	Sec. 4.15.1
Corrective Actions	A policy and a procedure shall be established designating appropriate authorities for implementing corrective action when work deviating from the policies is identified and the results shall be monitored to ensure their effectiveness	Sec. 4.11
Preventive Actions	Needed improvements and potential sources of nonconformities shall be identified and action plans developed, implemented, and monitored to reduce the likelihood of the occurrence of such nonconformities	Sec. 4.12
Documents	Changes to documents shall be reviewed and approved by the same function that performed the original approval and procedures shall be established to describe how changes in documents are made and controlled	Sec. 4.3.3
Training	A policy shall be in place and procedures followed in order to evaluate the effectiveness of the training program	Sec. 5.2.2
Facilities Change Control	A policy and procedure shall be established designating the facilities (materials and structures), and environmental systems. The document shall indicate any changes to the materials, structures or environmental controls, and the responsible individual. The document shall include evidence of approval for any changes related to ANSI/AHAM AC-1 (Latest Edition) and evidence of testing to indicate test/retest for conformity to the Method.	Sec. 5.3.2
Instrumentation Change Control	A policy and procedure shall be established describing instrumentation and materials utilized in the ANSI/AHAM AC-1 (Latest Edition). The document shall indicate (at minimum) the current instrument calibration and validation information and prior instrument calibration and validation	Sec. 5.3.2

	information. The document shall include evidence of all service and maintenance.	
Personnel Change Control	A policy and procedure shall be established designating training documents, training schedules, and evidence of completion/understanding of each individual involved in testing, maintenance, and oversight of each individual related to ANSI/AHAM AC-1 (Latest Edition).	Sec. 5.2.5
Oversight/ Management Change Control	A policy and procedure shall be established designating the individuals and routing for oversight of documents and data resulting from testing through the ANSI/AHAM AC-1 Methodology (Latest Edition). The document shall indicate (at minimum) the degree of oversight responsibility and information reviewed at each level. The document shall include evidence of training related to the ANSI/AHAM AC-1 (Latest Edition).	Sec. 4.1.5

3.3.2 Compliance with all Calibration protocols

Calibration Measurements	The program for calibration of equipment shall be designed so that calibration and measurements are traceable to the International System of Units (SI)	Sec. 5.6.2.1.1
External Calibration Services	External Calibration laboratories must be able to demonstrate competence, measurement capability and traceability	Sec. 5.6.2.1.1
Correction Factors	When calibrations give rise to correction factors, procedures shall be in place to ensure that all copies are correctly updated	Sec. 5.5.11

3.4 FINAL ALTERNATE TEST FACILITY APPROVAL

Prior to approval as an Alternate Test Facility for the AHAM Air Cleaner Certification Program, the Laboratory must perform a full test, according to ANSI/AHAM AC-1 (Latest Edition) and with full compliance of all regulations contained within this document, under the surveillance of a technical expert representing AHAM.

SECTION 4 - CORRELATION TESTING

4.0 REFERENCE AIR CLEANER

The purpose of correlation testing is to verify that CADR values obtained by the Alternate Test Facility using ANSI/AHAM AC-1 (latest edition) fall within defined acceptable tolerances with respect to the Program Laboratory.

The reference air cleaner (unit) is a specifically configured Atmosphere™ product, supplied by Access Business Group. Four (4) of these units will be utilized as the reference stocks for the ANSI/AHAM AC-1 method. The units are configured to provide CADR values in the general ranges of 50 CADR, 200 CADR, and ~350 CADR.

The filters for the reference units are provided by Columbus Industries and are equivalent to the standard filters currently supplied with the unit. Columbus Industries will set a

specification on the filters and provide this information to AHAM. Filters will be manufactured to specifications, on average, every three (3) years, resulting in three (3) filter lots over the estimated ten (10) year life of the reference units.

Four (4) units shall be tested and maintained as reference units at the Program Lab. Two (2) additional units shall be stored and maintained at Access Business Group as back-up reference units for use as needed or required depending on volume of testing and number of laboratories.

The loading of the filters encountered during validation and subsequent quarterly tests is considered insignificant to the operation and performance of the unit at the initiation of this correlation testing. As the program matures, an AHAM task force will review the feasibility of incorporating filter load testing into the test requirements using AHAM AC-3, *Method for Measuring the Performance of Portable Household Electric Room Air Cleaners Following Accelerated Particulate Loading.*

4.1 STATISTICAL REQUIREMENTS

Laboratories shall perform seven (7) consecutive series of trials ("test series"), where each test series consists of the following sequential runs:

- Natural decay test for smoke
- Test for smoke with air cleaner operating
- Natural decay test for dust
- Test for dust with air cleaner operating
- Natural decay test for pollen
- Test for pollen with air cleaner operating

A test series is to be performed by a prospective Alternate Test Facility on a single reference air cleaner at each of the three sample speeds. Each test series will produce nine (9) CADRs with seven (7) data points ("CADR data"). The mean and coefficient of variation (COV) shall be determined for each set of CADR data. The COV of each set of CADR data shall be equal to or less than the values in the table below for at least eight (8) of the nine (9) CADRs.

Pollutant	COV
Smoke	5%
Dust	5%
Pollen	7%

Eight (8) of the nine (9) mean CADR values shall fit within an allowable interval of the reference mean for that reference air cleaner:

Sample Speed (cfm)	Particulate	Allowable Interval
50	Smoke	± 10
	Dust	± 20
	Pollen	± 35
200	Smoke	± 10
	Dust	± 20
	Pollen	± 40
350	Smoke	± 20
	Dust	± 30
	Pollen	± 50

4.2 TESTING AND VALIDATION

The data set obtained by the Program Laboratory serves as the statistical repeatability package. An alternate test facility shall run seven (7) consecutive series of tests sequentially. The data produced by an alternate test facility shall be compared with the data in Table 1 obtained by the Program Laboratory and shall fall between the upper and lower limits listed, based on the requirements described in Section 4.1.

Table 1: Reference Mean Values

Reference Cleaner	Sample Speed (cfm)	Particulate	Reference Mean (μ0)	Lower Limit	Upper Limit
1	50	Smoke	47	37	57
		Dust	68	58	78
		Pollen	54	34	74
	200	Smoke	191	171	211
		Dust	202	182	222
		Pollen	200	170	230
	350	Smoke	335	300	370
		Dust	350	310	390
		Pollen	355	305	405
2	50	Smoke	49	39	59
		Dust	67	57	77
		Pollen	58	38	78
	200	Smoke	189	169	209
		Dust	204	184	224
		Pollen	211	181	241
	350	Smoke	330	295	365
		Dust	344	304	384

		Pollen	372	322	422
3	**50**	**Smoke**	52	42	62
		Dust	75	65	85
		Pollen	61	41	81
	200	**Smoke**	193	173	213
		Dust	202	182	222
		Pollen	203	173	233
	350	**Smoke**	333	298	368
		Dust	350	310	390
		Pollen	359	309	409
4	**50**	**Smoke**	53	43	63
		Dust	72	62	82
		Pollen	67	47	87
	200	**Smoke**	189	169	209
		Dust	204	184	224
		Pollen	210	180	240
	350	**Smoke**	330	295	365
		Dust	347	307	387
		Pollen	388	338	438

Testing shall be required on one reference air cleaner during the audit phase of the potential Alternate Test Facility, and through quarterly checks on all pollutants at one sample speed per calendar quarter. During the first quarter, the reference units shall be rested while operating at 50 CFM. During the second calendar quarter, the reference units shall be tested while operating at 200 CFM. During the third calendar quarter, the reference units shall be tested while operating at 350 CFM. During the final quarter, testing of all pollutants at the three sample speeds shall occur. Different reference air cleaners shall be tested at different sample speeds. Ideally, a different reference air cleaner is used each year.

4.3 COST AND TIMING

The cost for the primary round robin testing performed by the Program Laboratory will be borne by the Air Cleaner Certification Steering Committee. All further quarterly, annual, and initiation start-up tests will be considered an operational cost of the laboratory and expected to be included as part of the ongoing testing fees charged for the use of the individual facilities. Laboratories are responsible for re-packaging and shipping reference units between laboratories according to AHAM's schedule.

4.4 OVERSIGHT

Oversight of the results and tabulation of the data will be managed by AHAM staff. Alternate Test Facilities shall coordinate correlation testing with AHAM staff and the Program Laboratory.

4.5 CHANGE CONTROL

The statistical requirements described in section 4.1 are meant to be temporary. This statistical package will be reevaluated within one year of the acceptance of this annex to the Air Cleaner Procedural Guide. During this reevaluation, all data produced by all labs testing the reference cleaners will be evaluated to determine the reproducibility among similar tests of identical cleaners at different laboratories along with the repeatability of tests during correlation testing of the reference units at the Program Laboratory at different times.

The program as described is expected to be self sufficient for reference product and filters for a period of ten (10) years. At one year prior to the end of this period, a new reference product will be selected and a full statistical analysis completed on the product(s) prior to the conclusion of use of the current reference product.

SECTION 5 - ADMINISTRATIVE PROCEDURES

5.1 To be considered as an acceptable Alternate Test Facility, a laboratory shall present a proposal to AHAM for review. AHAM will conduct an audit on the proposed Alternate Test Facility, which includes evaluation of the reference air cleaner data.

5.2 Alternate test facilities that meet all required criteria will be added to a publicly available list of Available Alternate Test Facilities for Issuance of Initial CADR Ratings for the AHAM Portable Electric Room Air Cleaner Certification Program.

5.3 No claims shall be made that listing with AHAM implies certification of the Alternate Test Facility.

5.4 No claims shall be made that the Alternate Test Facility is approved by AHAM.

5.5 No claims shall be made that the Alternate Test Facility performs the Air Cleaner Program verification testing.

5.6 In explaining the significance of this listing, the Alternate Test Facility may state that "XX laboratory has been found to meet the requirements for listing as an Acceptable Alternate Test Facility supporting the AHAM Portable Electric Room Air Cleaner Certification Program."

SECTION 6 – APPLICATION

Prior to an Alternate Laboratory being considered for approval, the laboratory shall submit a letter and report in English language, stating the following:

6.1 The candidate alternate laboratory shall state in its letter request that it has read the latest version of the ANSI/AHAM AC-1 Standard and the AHAM Air Cleaner Certification Program Procedural Guide. The letter shall state that the alternate laboratory understands that, upon approval, it will be eligible for conducting certification testing. The alternate laboratory will not be eligible to conduct verification program testing.

6.2. According to Section 2.2 of this document, the candidate laboratory should include a copy of current accreditation to ISO 17025 or a copy of the quality system that shows compliance with the principles of ISO 17025.

6.3 Chamber. The candidate laboratory shall submit with is application a copy of the plans for the AC-1 chamber. The copy of the information on the chamber shall include the specifications for

a.) chamber construction information
b.) environmental equipment and conditions
c.) pollutant generation equipment
d.) particle counter equipment
e.) power equipment
f.) pollutants

6.4 Maintenance. The candidate laboratory shall submit a copy of the cleaning procedure, cleaning schedule, and other relevant maintenance procedures for the AC-1 chamber.

6.5 Calibration. The candidate laboratory shall submit a copy of the calibration schedule and information on the calibration laboratory used, including a record of the most recent calibration for the equipment to be used.

6.6. Sample of testing. The candidate laboratory shall conduct testing and submit a sample report of an air cleaner with the raw data and calculation of CADR for smoke, dust & pollen.