

APPENDIX 2. THIRD PARTY CERTIFICATION PROGRAM AND PROCEDURES.

1. BASIS OF QUALIFICATION PROGRAM. The purpose of the qualification program is to provide airport operators with a list of equipment that meets the required standards for safety, performance, quality, and standardization. Manufacturers of lighting and visual aids equipment that desire to participate in the program may select any third party certification body from the list contained in Appendix 1 in the Addendum Third Party Certification Bodies. Manufacturers of airport lighting equipment may request to be approved by a third party certifier and use a Certificate of Conformance as evidence that the Qualifying Equipment has been tested to and meets the requirements of this Appendix, "Third Party Certification Program and Procedures." Products certified in the Program are included in the list of FAA "Certified Airport Equipment" in Appendix 3 in the Addendum of this AC.

2. THIRD PARTY CERTIFIER'S ROLE. A testing laboratory accepted by the Federal Aviation Administration (FAA) as a third party certification body as defined in this Advisory Circular evaluates and certifies airport lighting equipment for manufacturers. The third party certification body, under the procedures contained in the Procedural Guide, evaluates equipment. The manufacturer is issued a Certificate of Conformance by the third party certifier for each type of equipment that meets the applicable FAA standards. A copy of each Certificate of Conformance must be submitted to the FAA by the third party certification body. FAA accepts this Program, and products qualified under this Program will be subsequently listed as certified equipment in Appendix 3 in the Addendum of this AC. The third party certification body may also serve the function of a testing laboratory when necessary or when requested by the manufacturer.

3. PARTICIPANT'S ROLE. The manufacturer must certify to the third party certifier by notarized affidavit that the equipment initially and continuously meets all provisions of the applicable FAA Advisory Circular. Any manufacturer of airport lighting equipment may participate by satisfying all program requirements and signing an exclusive license agreement with a third party certifier and paying the appropriate schedule of fees. The program is funded entirely out of fees paid by the manufacturers. A principal feature of the program is that it is accepted by the Federal Aviation Administration as a means of meeting the FAA equipment certification requirements. Manufacturers are subject to a quality audit and twice yearly quality assurance inspections by the third party certifier.

Manufacturers submitting products for qualification must have a representative in North America to provide aftermarket services to purchasers of the equipment.

4. LICENSE AGREEMENT. An exclusive licensing agreement details the relationship between the manufacturer and the third party certification body and their respective roles. It is the responsibility of each manufacturer/participant to conduct its business related to a certified product in a manner which is consistent with the pertinent FAA Advisory Circular and the provisions of the Procedural Guide and License Agreement for this certification program. The Procedural Guide supplements the License Agreement.

Prior to entering into a License Agreement with an equipment manufacturer and issuance of the Certificate of Conformance, an initial quality audit in accordance with FAA-STD-013, "Quality Control Program Requirements," or suitable alternative, of the manufacturer and all manufacturing facilities must be performed by the third party certifier.

A. Any manufacturer of airport lighting equipment within the scope of the FAA Advisory Circular 150/5345 series may participate by satisfying all program requirements, including demonstrating that equipment produced is eligible for qualification. Upon entering the program, an initial facility audit will be scheduled. The facility audit must include a review of the manufacturer's Quality Control Program.

B. Each manufacturing facility of the Licensee and/or Licensee's subcontractor must be licensed individually (except for multiple operations under the same control located in the same city or within 30 miles of each other), and equipment therefrom tested, inspected and certified separately and apart from equipment manufactured in other facilities or branches of any Licensee.

5. PROCEDURAL GUIDE. The Procedural Guide supplements the License Agreement, describes the operational aspects of the third party certification program, and details the manufacturer requirements and equipment qualification process.

A. EQUIPMENT QUALIFICATION REQUEST. Only complete systems of airport lighting equipment conforming to all the requirements of the applicable Advisory Circular(s) may be certified. No individual

components of these systems may be considered for certification. Request for equipment qualification shall be submitted in writing to a third party certifier listed in Appendix 1 of this Advisory Circular. At a minimum, this request must include the following:

- i. A list of the types, classes, styles, and sizes of equipment, along with the manufacturer's catalog number(s) for which qualification certification is requested. Manufacturer's catalog numbers must be representative of specific equipment certified and not a series of equipment. A list of equipment options should also be included when so specified in individual equipment specifications.
- ii. Engineering assembly and schematic drawings of the equipment to permit determination of adherence to specification design requirements.
- iii. A copy of the proposed test procedures and test data sheets, and a statement as to whether the manufacturer proposes to conduct the tests at its own facility, or the name and location of a third party testing laboratory where the tests are to be conducted. Third party certifier may provide testing services for the manufacturer. Since the third party certifier reserves the right to witness any or all tests, the manufacturer should not commence the tests without authorization from the third party certification body. The third party certifier may conduct initial inspections and audits of any laboratories used for testing. The third party certifier may elect to witness or waive the option to witness the tests. In any instance, the third party certifier must verify that laboratories conducting testing conform to the requirements of International Organization for Standardization /International Electrotechnical Commission (ISO/IEC) Guide 17025 for applicable testing. The manufacturer must give the third party certifier at least 2 weeks notice prior to starting tests.
- iv. A statement that the manufacturer agrees to provide the following minimum warrantee for the equipment:

"That the equipment has been manufactured and will perform in accordance with applicable specifications and that any defect in design, materials, (excluding lamps), or workmanship which may occur during proper and normal use during a period of 1 year from date of installation or a maximum of 2 years from date

of shipment will be corrected by repair or replacement by the manufacturers f.o.b. factory."

- v. A statement that the manufacturer agrees to provide and maintain a quality control program in accordance with FAA-STD-013 or suitable alternative such as ISO 9000 family of standards or Department of Defense quality standards. The manufacturer should provide a copy of the proposed quality control program.
- vi. A copy of the proposed instruction manual for the equipment and a copy of each product listed Product Description Sheet (i.e. marketing material).
- vii. Lamp life test procedure, if applicable, in accordance with Appendix 5.

B. REVIEW PROCEDURE FOR QUALIFICATION TESTING REQUEST. After receipt by the third party certifier of the request for equipment qualification documentation, the manufacturer will be notified as to whether the proposed test procedures, test data sheets, and other documentation are acceptable. Notification of acceptance, or of changes required for acceptance, will be made to the manufacturer.

C. TESTS. All equipment and each configuration of equipment (for example: size, type, class, style, wattage, color) offered for certification to the program will be subject to the required qualification tests of each applicable Advisory Circular before it can be certified.

- i. **Qualification Tests.** The tests may be conducted at the third party certifier laboratory, or witnessed by the third party certifier at the manufacturer's laboratory or at a third party laboratory. All testing laboratories utilized must conform to the requirements of the ISO/IEC Guide 17025, "General Requirements for the Competence of Testing and Testing Laboratories." Where the third party certifier waives the option to witness tests, the manufacturer must submit a certified copy of all test reports. Only test data collected after contact with the third party certifier may be utilized toward certification of equipment. The manufacturer must bear all associated costs.
- ii. **Recertification.** Each piece of equipment must be requalified to the applicable Advisory Circular in its entirety every 8 years, or as specified in the applicable AC. Interim limited

testing associated with product modification or Advisory Circular revisions is not applicable toward recertification.

- iii. **Equipment Requirements.** The equipment must meet all of the design requirements described in the applicable Advisory Circular. The third party certifier may require additional testing of equipment and/or system components to demonstrate compliance to design requirements in areas where qualification testing does not address a specific requirement.
- iv. **Modification To Equipment.** Once an equipment type has been certified, the manufacturer may not make any changes in the equipment without submission of the changes to and recertification by the third party certification body. Requests for design or component changes must be submitted in writing to the third party certification body and must be accompanied by supporting documentation plus (if applicable) copies of the revised instruction manual pages, which reflect the proposed change. The third party certifier will review the modification. If acceptable and required, it will issue a revised Certificate of Conformance. Substitution of stock electrical items such as resistors, capacitors, which are identical in form, fit, and function and which are equal or better in quality and rating is permissible. Although such substitution does not necessarily require recertification, the manufacturer must supply the third party certifier a list of the substituted items for filing with the inspection records. This exception does not apply to light sources.
- v. **Substitution of Lamp/Light Sources.** Once an equipment type has been certified, only the lamp or light sources (for example: a light emitting diode (LED) array) subjected to all applicable specifications per the applicable Advisory Circular, and as referenced in conjunction with equipment listed in AC150/5345-53 Appendix 3 in the Addendum as currently published by the FAA, Lamp Descriptions, may be utilized. When a manufacturer chooses to utilize an alternative lamp or light source (i.e. different OEM, wattage, voltage amperage, type) in any fixture, complete photometry and chromaticity testing, and any other testing related to light source/lamp operation must be conducted successfully.
- vi. **Production Tests.** In addition to qualification tests and equipment requirements, each equipment specification requires some

tests to be conducted on production units. The manufacturer must demonstrate/document acceptable production testing processes to the third party certifier during initial and annual Quality Assurance Audits. Records of production test results must be traceable to equipment serial numbers or production lots when not serialized and retained for a minimum period of 3 years.

- vii. **Lamp Life Tests.** Within 6 months of certification, lamp life tests, if applicable, shall be conducted in accordance with the procedures contained in Appendix 5, Lamp Life Test Procedure.

D. REQUIREMENTS FOR CERTIFICATION.

The manufacturer must be a licensee to have its equipment certified in the program. The equipment must successfully pass all qualification tests described in the applicable Advisory Circular. If a manufacturer has no product certified for a period of 180 days, or does not produce any certified product for a period of 180 days, that manufacturer may not be a licensee.

E. PRODUCT ACCEPTANCE. Prior to issuance of the Certificate of Conformance, the following documentation is required for review:

- i. The written test report(s) covering all required testing and design verification.
- ii. Within 6 months of certification, lamp life test procedure, if applicable, in accordance with Appendix 5.
- iii. Required documentation as listed in section 5.A of Appendix 2.
- iv. Each certified product's Listed Products Description Sheet (marketing material). Reference to "FAA" approval or certification is unacceptable. Reference to non-certified product characteristics or components must be denoted clearly as such.

After the last submittal of the required documentation, if acceptable, the manufacturer will be notified that the equipment is certifiable. The Certificate of Conformance is then issued. A complete file, containing all supporting documentation, must be maintained by the third party certifier for every certified product.

F. QUALITY CONTROL. After the manufacturer has entered the program, inspections

and audits will be conducted on a semi-annual basis at each manufacturing facility.

i. Quality Assurance Audit. Prior to licensing, and once annually thereafter, the manufacturing facility will be subjected to an in-depth Quality Audit. At a minimum, the audit must evaluate the following:

- Management Commitment Organization Documentation of the quality System
- Control of Procured Material
- Manufacturing Quality Controls
- Final Inspection and Testing
- Equipment Calibration and Maintenance
- Control of Non-conforming Material
- Corrective Action Program
- Handling, Packaging and Storage
- Product Identification
- Periodic Product Qualification
- Collection and Analysis of Field Performance Data

ii. Inspections. Production of certified equipment is audited annually to verify that the product is the same as the sample subjected to the qualification tests. It is intended that samples of all certified equipment produced in a given year be inspected.

- (a) The inspections may be scheduled or unannounced, at the option of the third party certifier.
- (b) Production test records must be made available for review for compliance to applicable FAA Advisory Circulars, and production testing may be witnessed by the third party certifier.
- (c) If equipment is not being produced during the inspection, production test records and test data will be reviewed.
- (d) After verbal review of findings with a designated representative of the manufacturer, a formal report documenting the inspection will be made by the third party certifier to the manufacturer detailing the status of certification and identifying any actions that are required to correct any deficiencies.
- (e) Nonconformance to specifications found during these inspections will result in suspension of the model, as certified, unless corrections are made. Additional inspections or testing may be necessary to resolve any suspension or withdrawal of certification.

G. REVISION OF SPECIFICATIONS. The FAA may, at times, revise the specification for a particular equipment to reflect changing needs of aviation or of new technology. The procedure for requalification of currently qualified equipment is the same as for the original qualification as discussed in Appendix 2, paragraph 5 with the following exceptions:

- i. The manufacturer does not have to resubmit the quality control plan unless changed.
- ii. Depending on the nature of an Advisory Circular revision, it may not be necessary to perform all qualification tests. The manufacturer must submit an action plan to the third party certifier, which will in turn complete an engineering review to determine the extent of testing required complying with the revised Advisory Circular.

H. CERTIFICATE OF CONFORMANCE. The manufacturer must have a Certificate of Conformance (see Appendix 7) issued by the third party certifier verifying the acceptance of the equipment by the program. Optional labeling and/or other markings may be utilized, but is not recognized as proof of certification. The certification will be subject to the condition that it may be rescinded if:

- i. The manufacturer fails to provide the required documentation.
- ii. The manufacturer fails to honor the warrantee or does not maintain quality control in accordance with the approved plan.
- iii. The equipment has an unsatisfactory failure rate. Since reliable equipment is of prime importance to safety of airport operations, equipment that proves unreliable in use (as determined by the FAA) may be removed from the certified listing. The determination of unreliability will be based on judgment and experience with equipment of a like nature. Where any such equipment is deemed to have an unsatisfactory failure rate or is deficient in workmanship or materials, the FAA will notify the manufacturer in writing. The manufacturer must then notify the FAA in writing within 15 working days as to its plan of action for correcting the problem. If the manufacturer does not resolve the problem within a

reasonable time (the time frame will, of necessity, be based on safety considerations and/or the nature of the problem), the manufacturer and third party certifier will be notified and the equipment will be removed from the certified listing. The FAA reserves the right to require the equipment to be subjected to any or all qualification tests when the equipment has been deemed unreliable.

- iv. The manufacturer fails to perform the required production tests.
- v. Changes are made in the equipment without approval from the third party certifier.
- vi. The equipment specification is canceled or is revised and the manufacturer fails to requalify.
- vii. The manufacturer is found not in conformance with the quality control requirements of paragraph 5(F) in this appendix or other program and licensing requirements.
- viii. The equipment does not comply with the requirements for recertification (Appendix 2, paragraph 5 (C)(ii)).
- ix. The equipment is determined to be non-compliant as a result of a manufacturer challenge.

The third party certifier must notify the manufacturer and the FAA within 24 hours of any suspension or withdrawal of equipment. Non-conformance to FAA specifications found during inspection visits may result in suspension of the equipment model as certified unless corrections are made to the satisfaction of the third party certifier. Corrective action must be taken by the manufacturer. Manufacturers are given 15 working days to advise the third party certifier of corrective action to be taken, including a schedule for any necessary retesting and/or inspections. Corrective action schedules may not be longer than 30 days.

I. INFRACTIONS. It is the responsibility of each manufacturer to conduct its business related to the program in a manner which is consistent with the pertinent FAA Advisory Circular(s) and the provisions of the Program Procedural Guide and License Agreement.

Appropriate sanctions may be imposed by the third party certifier if it is determined that a manufacturer within their program is manufacturing/marketing a product in a manner inconsistent with the program requirements. Penalties will be proportional to the offense or infraction.

J. CHALLENGE PROCEDURE - INTRA-PROGRAM MANUFACTURER. In the event the performance and/or design of a certified manufacturer's product is challenged by a manufacturer licensed by the same third party certifier, the process below must be followed. The confidentiality of each manufacturer must be maintained by the third party certifier at all times. The challenged manufacturer's equipment will remain on the Certified Airport Lighting Equipment list while the challenge is underway.

- i. The challenger must submit in writing by certified mail to the third party certifier supporting documentation outlining details of the challenge and applicable test data. The documentation must specify the section(s) of the particular specification being challenged.
- ii. The third party certifier will estimate the full cost of testing and or audits that will be required to verify the challenge and invoice the challenger for that amount.
- iii. The challenger must then agree to accept the challenge costs or discontinue the challenge.
- iv. Within 30 days of the challenger's acceptance of costs, the third party certifier will obtain a sample of the challenged product. The third party certifier will then perform testing and/or audits within 15 days of procurement as necessary to confirm or deny the challenge.
- v. An initial determination will be made by the third party certifier whether each challenged characteristic is controlled in manufacturing solely by the design of the product or by control of variation in the manufacturing process. Testing or auditing will be performed only on the challenged characteristics of the challenged model. Non-conformance found by test or audit will constitute challenge confirmation. If the challenge is confirmed, then the challenge applies to all other models from the manufacturer sharing the same design characteristics.
- vi. If the characteristic is controlled solely by design, testing of a randomly acquired unit

- should be sufficient to confirm or deny the challenge.
- vii. If the characteristic is also controlled by process (i.e., by adjustments, set up, technique, methods) an audit at the manufacturer's facility will be performed.
 - viii. After a challenge confirmation (test or audit failure), the third party certifier must notify the challenged party and the challenger within 24 hours. A challenged product may not be shipped until corrective action and/or a retest is completed.
 - ix. Upon failure of tests, the challenged party is given 15 days working days to correct the discrepancy and submit the product for retest. The third party certifier will use the means necessary (e.g., testing and auditing) to assure that the subsequent modifications by the manufacturer to meet FAA specification did not adversely affect any other performance characteristics, and that tests, inspections, and/or procedures are in practice at the challenged manufacturer's facility to assure 100% product conformance to specifications.
 - x. Upon failure of an audit, the challenged party, within the same 15 day period, must submit a detailed auditable test/inspection plan to control the characteristics. The third party certifier will increase the frequency of facility visits to assure conformance to approved plan.
 - xi. If no redesigned product is submitted within the 15 day period, or the resubmitted product fails any test, or no acceptable test/inspection plan (if required) is submitted within the 15 day period, then the product will be removed from the Certified Equipment List until full qualification tests are performed on the resubmitted product. The FAA, challenger, and challenged manufacturer are notified by the third party certifier.
 - xii. Equipment utilized in the challenge becomes the property of the third party certifier and will be destroyed 90 days after completion of the challenge process.
 - xiii. The full costs of the challenge procedure must be paid by the challenger or the challenged manufacturer. If the challenge is found to have merit, the challenged party pays all costs plus any costs for requalification testing and/or follow up facility audits. If the challenge is without merit, the challenger pays all costs associated with the challenge.
- K. APPEALS PROCEDURE.** A manufacturer who is affected by an adverse determination by their third party certifier with respect to its certified equipment or its participation in the program may appeal the determination to the third party certification body per the guidelines detailed in the third party certifier's procedural guide.
- L. FORMS.** The use and function of forms to be used in administering the program shall be addressed in the third party certifier's procedural guide. The Certificate of Conformance must follow the sample shown in Appendix 7.