U.S. FOOD & DRUG ADMINISTRATION

VIA Email

February 16, 2024

Sean Populorum
Laser Light Company
P.O. Box 7938,
Seminole, Florida 33775

Re: FDA Docket Number: FDA-2015-V-1018
Amendment/Renewal Accession Number: 15A0097-002

Dear Sean Populorum:

CDRH is approving, in accordance with 21 CFR 1010.4(c)(1), your petition dated February 15, 2024 to renew and amend your firm's variance approval identified by the FDA Docket Number referenced above.

Section D is amended to read as follows:

Section D – Product for Which Variance is Granted

This variance is granted for the Class IIIb and IV laser light shows assembled and produced by Laser Light Company with Kvant ClubMax projectors that incorporate the Pangolin Professional Audience Scanning System (PASS™) controller under the conditions specified in Attachment C of this variance. The conditions of this variance that reference other projectors now apply to the Kvant ClubMax since it is now the only projector approved under this variance.

The firm also may manufacture, report, and certify Class IIIb or IV laser light show projectors under this variance. Further, the firm may incorporate into their laser light shows any laser projection systems, which have been certified and reported by the firm or by another manufacturer under an approved laser light show variance, except:

1. Projection systems designed or intended to produce visible effects by means of invisible laser emissions, or
2. Projection systems designed or intended to produce audience scanning effects other than certified projectors which incorporate the Pangolin PASS™ controller to monitor and control all audience scanning effects they produce in accordance with Attachment C of this variance.

The firm's laser light shows may be presented in temporary installations in any type of facility or outdoor unenclosed area for any contracted duration.

The effects employed may be front or rear screen projection, multiple reflection diffraction effects, reflections from stationary mirrors, and enhanced scattering effects. The firm may also produce audience scanning effects only with their Kvant Clubmax projectors under the monitoring and control of a Pangolin PASS™ controller card in accordance with the conditions of Attachment C of this variance.

This variance amendment shall become effective on the date of this letter in accordance with 21 CFR 1010.4(c)(1). The amended termination date of the variance is December 31, 2024, unless extended by the submission of an annual report, as required by 21 CFR 1002.13. Only upon submission of an annual report, this variance shall be extended for one year at a time, effective December 31 each year, until its final termination, three (3) years from the date of this letter.

All other sections from the original variance approval letter remain unchanged except for references to other projectors, and the conditions of the original variance approval letter continue to apply. The original variance approval letter is attached for reference.

This variance action will be posted to the Docket associated with your variance request and made available for public view online at www.regulations.gov. The variance will remain in effect until the termination date, unless the variance is amended or withdrawn, or the provisions of the standard from which the variance is granted are amended before the termination date.

Should you have any questions or comments pertaining to this letter, please contact Indraneel Samanta by telephone at (240) 402-7532 or by e-mail at indranee.samanta@fda.hhs.gov. In any follow-up correspondence, please clearly reference the FDA Docket Number and include a contact email address.

Sincerely,

Laurel Burk, Ph.D.
Director
DHT8B: Division of Radiological Imaging Devices and Electronic Products
OHT8: Office of Radiological Health
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

cc: FDA Dockets Management Staff, Docket Number FDA-2015-V-1018

VIA Email

March 18, 2020

Brooks Palmer
BAP Agency, Inc.
DBA Fullcolorlasers.com
P.O. Box 7938
Seminole, Florida 33775

Re: FDA Docket Number: 2015-V-1018
Amendment/Renewal Accession Number: 15A0097-001

Dear Mr. Palmer:

CDRH is approving, in accordance with 21 CFR 1010.4(c)(1), your petition dated February 10, 2020 to renew and amend your firm's variance approval identified by the FDA Docket Number (2015-V-1018) referenced above.

Section D is amended to read as follows:

Section D – Product for Which Variance is Granted

This variance is granted for the Class IIIb and IV laser light shows assembled and produced by FULL COLOR LASERS with Nu-Salt model NSL-2000A projectors and Kvant ClubMax projectors that incorporate the Pangolin Professional Audience Scanning System (PASS™) controller under the conditions specified in Attachment C of this variance.

The firm also may manufacture, report, and certify Class IIIb or IV laser light show projectors under this variance. Further, the firm may incorporate into their laser light shows any laser projection systems, which have been certified and reported by the firm or by another manufacturer under an approved laser light show variance, except:

1. Projection systems designed or intended to produce visible effects by means of invisible laser emissions, or
2. Projection systems designed or intended to produce audience scanning effects other than certified projectors which incorporate the Pangolin PASS™ controller to monitor and control all audience scanning effects they produce in accordance with Attachment C of this variance.

The firm's laser light shows may be presented in temporary installations in any type of facility or outdoor unenclosed area for any contracted duration.

The effects employed may be front or rear screen projection, multiple reflection diffraction effects, reflections from stationary mirrors, and enhanced scattering effects. The firm may also produce audience scanning effects only with their Nu-Salt model NSL-2000A or Kvant Clubmax projectors under the monitoring and control of a Pangolin PASS™ controller card in accordance with the conditions of Attachment C of this variance.

This variance amendment shall become effective on the date of this letter in accordance with 21 CFR 1010.4(c)(1). The amended termination date of the variance is December 31, 2020, unless extended by the submission of an annual report, as required by 21 CFR 1002.13. Only upon submission of an annual report, this variance shall be extended for one year at a time, effective December 31 each year, until its final termination, three (3) years from the date of this letter.

All other sections from the original variance approval letter remain unchanged, and the conditions of the original variance approval letter continue to apply. The original variance approval letter is attached for reference.

This variance action will be posted to the Docket associated with your variance request and made available for public view online at www.regulations.gov. The variance will remain in effect until the termination date, unless the variance is amended or withdrawn, or the provisions of the standard from which the variance is granted are amended before the termination date.

Should you have any questions or comments pertaining to this letter, please contact William Calhoun by telephone at (301) 796-2754 or by e-mail at William.calhoun@fda.hhs.gov. In any follow-up correspondence, please clearly reference the FDA Docket Number and include a contact email address.

Sincerely,

Corinne R. Tylka -S

Digitally signed by Corinne R. Tylka -S
Date: 2020.03.18 14:43:16 -04'00'

for

Thalia T. Mills, Ph.D.
Director
Division of Radiological Health
OHT7: Office of In Vitro Diagnostics and Radiological Health
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Silver Spring, MD 20993

August 14, 2015

Ref: FDA Docket No. 2015-V-1018
Accession No. 15A0097

Brooks Palmer
FULL COLOR LASERS
1208 N. WARD ST.
TAMPA FL 33607

In accordance with 21 CFR 1010.4(c)(1) notice is given that the petition of FULL COLOR LASERS ("the firm") dated 3/17/2015, for a variance from 21 CFR 1040.11(c) of the performance standard for laser products is approved. This variance will allow the introduction into commerce of the laser light show products described in paragraph D below.

A. Variance Number

2015-V-1018

B. Effective Date

In accordance with 21 CFR 1010.4(c)(1), this variance shall become effective on the date of this letter.

C. Termination Date

This variance shall be terminated three (3) years from the date of this letter.

D. Product for Which Variance is Granted

This variance is granted for the Class IIIb and IV laser light shows assembled and produced by FULL COLOR LASERS with Nu-Salt model NSL-2000A projectors that incorporate the Pangolin Professional Audience Scanning System (PASS™) controller under the conditions specified in Attachment C of this variance.

The firm also may manufacture, report, and certify Class IIIb or IV laser light show projectors under this variance. Further, the firm may incorporate into their laser light shows any laser projection systems, which have been certified and reported by the firm or by another manufacturer under an approved laser light show variance, except:

1) Projection systems designed or intended to produce visible effects by means of invisible laser emissions, or
2) Projection systems designed or intended to produce audience scanning effects other than certified projectors which incorporate

the Pangolin PASS™ controller to monitor and control all audience scanning effects they produce in accordance with Attachment C of this variance.

The firm's laser light shows may be presented in temporary installations in any type of facility or outdoor unenclosed area for any contracted duration.

The effects employed may be front or rear screen projection, multiple reflection diffraction effects, reflections from stationary mirrors, and enhanced scattering effects. The firm may also produce audience scanning effects only with their Nu-Salt model NSL-2000A projectors under the monitoring and control of a Pangolin PASS™ controller card in accordance with the conditions of Attachment C of this variance.

E. Provision from Which Variance is Granted

This variance is granted from 21 CFR 1040.11(c) of the performance standard for laser products which requires that each demonstration laser product shall comply with all of the applicable requirements of 21 CFR 1040.10 for a Class I, IIa, II, or IIIa laser product and shall not permit human access to laser radiation in excess of the accessible emission limits of Class I and, if applicable, Class IIa, Class II, or Class IIIa.

F. Conditions under Which Variance is Granted

In lieu of the requirements referred to in Item E above, the conditions as specified below in Variance Attachment A, Variance Attachment B, and Variance Attachment C shall apply to the products and devices manufactured under this variance and to the shows assembled and produced under this variance.

G. Basis for Approval of Variance

In accordance with 21 CFR 1010.4(a)(2), it has been determined that the product is required to perform a necessary function or is intended for a special purpose which cannot be performed or accomplished with equipment meeting the requirements referred to in Item E. Suitable means of radiation safety and protection will be provided by constraints on the physical and optical design, and by warnings in the user/purchaser information.

H. Certification Label

The certification label required by 21 CFR 1010.2 shall be modified in accordance with 21 CFR 1010.4(d) to state: This product complies with performance standards for laser products under 21 CFR Part 1040 except with respect to those characteristics authorized by Variance Number 2015-V-1018 effective on the date of this letter.

This variance action is available for public disclosure in the Food and Drug Administration (FDA) Dockets Management Branch and a notice of availability will be

published in the Federal Register. The variance will remain in effect until the termination date unless a determination is made that the variance should be amended or withdrawn to protect the public health and safety.

Sincerely yours,

Mary S Pastel, ScD
Deputy Director for
Radiological Health
Office of In Vitro Diagnostics
and Radiological Health
Center for Devices
and Radiological Health, FDA, HHS

cc: FDA Division of Dockets Management, Docket No. 2015-V-1018
Attachments A, B, and C

Variance Attachment A

1. This variance is not transferable to any other firm or person and applies only to the specific products identified in the variance.

2. All laser products, systems, shows, and projectors shall be certified to comply with applicable requirements of 21 CFR 1040.10 and the conditions of this variance and be reported as required by 21 CFR 1002.10 and 1002.11 using the reporting guides provided for such purpose. These actions shall be accomplished prior to any introduction into commerce.

3. Effects not specifically indicated in this variance approval shall not be performed. Any additional effects require the submission of an amendment request (using Form 3147 or in accordance with 21 CFR 1010.4) and the filing of product reports or supplements as applicable.

4. Laser projection systems and light shows manufactured, assembled, produced, or distributed under this variance shall not be transferred to any other party until the recipient has demonstrated that they have a variance, as required, in effect that permits them to produce certified laser light shows incorporating these laser projection systems. A notation of the recipient's variance number and its effective date, as applicable, shall be entered and retained in the records of compliance test results required by 21 CFR 1002.30.

5. Scanning, projection, or reflection of laser and collateral radiation (light show radiation) into audience or other accessible, uncontrolled areas shall not be permitted except for (a) diffuse reflections produced by the atmosphere, added atmospheric scattering media, or target screens or (b) projections produced by a(n) Nu-Salt model NSL-2000A laser projector under the control and monitoring by the Pangolin PASS™ controller in accordance with the conditions of Attachment C of this variance.

6. Access to radiation levels in excess of the limits of Class I by any person other than operators, performers, or employees shall not be permitted at any point less than 3.0 meters above any surface upon which such persons are permitted to stand or 2.5 meters below or in lateral separation from any place where such persons are permitted to be. Operators, performers, and employees shall not be required or allowed to view radiation above the limits of Class I or be exposed to radiation above the limits of Class II.

7. Any product which relies on scanning to meet access, exposure, or product class limits shall incorporate a scanning safeguard system which directly senses

scanner motion and which will react fast enough to preclude exceeding the applicable limit.

8. All laser light shows shall be under the direct and personal control of a trained, competent operator(s). The operator(s) shall:

   (a) Be an employee of the variance holder who shall be responsible for the training and conduct of the operator; and
   (b) Be located where all propagating beam paths, their terminations, and the audience can be directly observed at all times; and
   (c) Be in communication with personnel assisting in surveillance of the laser display; and
   (d) Immediately terminate (or designate the termination) of the emission of light show radiation in the event of any unsafe condition and, for open air shows, at the request of any air traffic control officials; and
   (e) Ensure one or more readily accessible controls are provided to immediately terminate laser radiation.

9. The maximum laser projector output power shall not exceed the level required to obtain the intended effects.

10. The projection system (i.e., the projector and all other components used to produce the lighting effects) shall be securely mounted or immobilized to prevent unintended movement or misalignment.

    Electronic controls and circuits shall be adequately shielded to prevent electromagnetic sources (e.g., walkie-talkies, head-set radios, wireless microphones, cellular telephones, etc.) in the vicinity of the projector, its active projection heads, and control system(s) from causing the laser emissions to be misdirected from their intended target area.

    Beam masking to prevent projections into prohibited areas or directions or overfilling of screens, beam stops, targets, etc. shall be incorporated as an inherent part of the system design. Such devices may be adjustable if the system's intended use environment requires such capability.

11. In addition to the requirements of 21 CFR 1040.10(h), the manufacturer of laser projectors/systems shall provide to parties who purchase, lease, or borrow the equipment, adequate user's instructions for safe installation and operation. These instructions shall also explain the responsibility of the recipient as an independent light show manufacturer to submit the required reports and apply for and obtain a variance from the Center for Devices and Radiological Health (CDRH) prior to the introduction into commerce of any laser light shows.

12. The requirements of 21 CFR 1002.30(a)(1) and (2) shall be accomplished through the use of written procedures for setup, alignment, testing, and performance of each show. These procedures shall be in sufficient detail to ensure compliance with 21 CFR 1040.10, the conditions of this variance, and any emergency shutdown requirements, and the control of access to radiation areas using the procedures described in the ANSI Z136.1 2007 Standard For The Safe Use of Lasers (available from The Laser Institute of America, 1242 Research Parkway, Suite 130, Orlando, Florida 32826) or any other equivalent user consensus standard and, where applicable, State or local requirements.

    Laser radiation areas which can contain radiation levels above Class I or II as applicable, shall be clearly identified by the posting of warning signs and/or restricting access through physical means (such as pressure switches, photocells, barriers, guards, etc.). These requirements apply to temporary areas (such as during setup and alignment procedures) and to final or permanent areas.

    The variance holder shall retain the records of these procedures and the results of all tests as required by 21 CFR 1002.31. A copy of the variance application, the approval letter, Laser Notice 55, the most recent annual report, the CDRH acknowledgment of receipt for the annual report, current procedures, and records relating to each particular show shall be with the operator or other responsible individual and shall be made available for inspection by FDA and other responsible authorities.

13. The firm or person to whom this variance is issued shall maintain complete records of all show itineraries with dates, locations, operator name, and contact information clearly and completely identified. Records shall contain the specific equipment used, a basic description of proposed effects and a statement of the maximum power output used. These records shall be available to the Food and Drug Administration upon request.

14. Advance written notification shall be made as early as possible to appropriate Federal, State, and local authorities providing show itinerary with dates and locations clearly and completely identified, and a basic description of proposed effects including a statement of the maximum power output intended. Such notifications shall be made, but not necessarily be limited, to:

    (a) The Federal Aviation Administration (FAA) and the Department of Defense (DOD) for any projections into open airspace at any time (i.e., including setup, alignment, rehearsals, performances, etc.). If the FAA or DOD objects to any laser effects, the objections shall be resolved and any conditions requested by FAA and DOD will be adhered to. If these conditions can not be met, the objectionable effects shall be deleted from the show.

(b) State and local radiation control offices/agencies for all shows to be performed within their jurisdictions. All requirements of State and local law shall be satisfied and any objections raised by local authorities shall be resolved or the effects deleted.

Unless otherwise specified by regulation (e.g., variance applications), all correspondence to be provided to the CDRH shall be addressed to:

Center for Devices and Radiological Health
Magnetic Resonance and Electronic Products Branch
Office of In Vitro Diagnostics and Radiological Health
10903 New Hampshire Avenue
WO66-G609
Silver Spring, MD 20993-0002
Phone: Voice: (301) 796-5710
FAX: (301) 847-8502

Regional Radiological Health Representatives and Electro-Optics Specialists as of 4/11/2014

Northeast Region: ME, NH, VT, MA, NY, CT, RI
George T. Allen, Jr., (RRHR, NER) (508) 869-6023 x1102
PO Box 1139 (508) 869-6819 (fax)
140 Shrewsbury Street
Boylston, MA 01505 george.allen@fda.hhs.gov

Southeast Region: TN, NC, SC, GA, FL, PR, AL, MS, LA
Karen Smallwood, (RRHR, SER) (615) 366-7823
DO-NSH, HFR-SE350 (615) 366-7848 (fax)
404 BNA Drive
Building 200, Suite 500
Nashville, TN 37217-2565 karen.smallwood@fda.hhs.gov

Central Region: NJ, DE, MD, DC, VA, PA, WV, KY, OH, IN, IL, MI, WI, MN, ND, SD
Jeff Sincek, (RRHR, CER) (614) 227-5780 x111
508 South High Street (614) 227-5795 (fax)
Suite 140
Columbus, OH 43215 jeffrey.sincek@fda.hhs.gov

Southwest Region: IA, MO, AR, NE, KS, OK, TX, WY, CO, NM, UT
Scotty Hargrave, (RRHR, SWR) (214) 253-4930
RO-DAL, HFR-SW19 (214) 353-4960 (fax)
4040 N. Central Expressway, Suite 900
Dallas, TX 75204 scotty.hargrave@fda.hhs.gov

Don A. Leeseberg, CSO (Med Dev-Rad, MQSA, EOS) (210) 241-0422
FDA (HFR-SW19)
RP-SA Airport Center – 101000 Reunion Place
San Antonio, TX 78216 don.leeseberg@fda.hhs.gov

Pacific Region: AK, AZ, CA, HI, ID, MT, NV, OR, WA
Terry Jones, (RRHR, PAC) (481) 829-7396
FDA Phoenix Resident Post (480) 829-7677 (fax)
51 W. 3rd St. Room 265
Tempe, AZ 85281 terri.jones@fda.hhs.gov

Winchester Engineering and Analytical Laboratory
Emir Galevi, EOS (781) 729-5700 x724
FDA/WEAC (HRF-NE 480) (781) 729-3593 (fax)
109 Holton Street
Winchester, MA 01890 egalevi@ora.fda.gov

Variance Attachment B

This attachment provides the list of information to be provided to the Federal Aviation Administration (FAA) and the Department of Defense (DOD) in notifications of outdoor laser light shows (demonstrations) which cause projections into the sky. This information is required to permit FAA and DOD jointly to do the aeronautical study necessary to determine whether or not the proposed effects are objectionable.

CONTENT OF NOTIFICATIONS

a. Proponent notifications to the FAA regional office will include the following information on all proposed outdoor demonstrations:

1. Laser group/company (point of contact).
2. Business addresses.
3. Telephone number.
4. CDRH Variance number and expiration date.
5. Date(s) and time(s) of setup and alignment.
6. Date(s) and time(s) of shows(s).
   (a) Show length
   (b) Running time.
7. Location of the show.
   (a) Show place name and address.
   (b) Latitude and longitude of show place in Degrees, Minutes and Seconds.
   (c) Maps (USGS 7.5 Quadrangle or acceptable alternate).
8. Class/Type of Laser (CW or Pulsed*)
9. Maximum emitted power (watts)/repetition frequency (kHz) at the projector as certified to CDRH.
10. Azimuth direction of beams.
11. Elevation of beams in degrees above the horizon.
    (a) Maximum
    (b) Minimum
12. Beam divergence (milliradians).
13. Maximum distance from source for irradiance of 2.6 mW/cm^2, 100 $\mu W/cm^2$, and 5 $\mu W/cm^2$ based on maximum emitted power.
14. Maximum altitude above source for irradiance of 2.6 mW/cm^2, 100 $\mu W/cm^2$, and 5 $\mu W/cm^2$ based on maximum emitted power.
15. A diagram depicting all beam arrays terminated/unterminated.
16. Laser safety officer/operator:
    (a) Local address and phone number, to include an operational telephone number at the site.
    (b) Additional safety procedures:
        (1) Communications procedures during the show.
        (2) Visual aircraft spotters.
        (3) Other.

17. Quality Assurance Program, describing physical/procedural control of:
    (a) Laser power
    (b) Beam divergence
    (c) Azimuth and elevation of beam paths
    (d) Beam termination surfaces
    (e) Emergency shutdown procedures

* Note: Repetitive pulsed laser data (e.g., equipment type, pulse duration, etc.) shall be validated by the CDRH, and shall accompany submission to the FAA.

b. Supplementary information if applicable. Include the CDRH letter validating the measures which result in a smaller affected area than that shown in the Laser System Power Range Table (Table 28-2-1, FAA Order 7400.2E, Chg. 2).

SUBMISSION OF PROPOSAL

a. The last condition of Attachment A of the variance requires that you provide written notification to the Federal Aviation Administration (FAA) and the Department of Defense (DOD) and satisfy any requirements they may specify before conducting an outdoor laser light show.

b. In detail, this requirement means that:

1. All notifications are to be directed to the Air Traffic Division at the FAA regional office having jurisdiction over the area where the laser show will take place.

2. FAA needs at least 30 days advance notice to process a request and conduct an aeronautical study. The FAA recognizes that industry conditions may not always permit the advance notice desired. While FAA endeavors to accommodate all requests, proper conduct of the aeronautical study to determine airspace effects is essential to air safety. This is particularly true when the nature of the demonstration is in close proximity to an airport or would necessitate protection of large amounts of airspace. In these cases, it may be impossible for the FAA to respond to short-notice requests.

3. Notifications are required for all demonstrations in which laser light beams may be directed or reflected into airspace (including set-up, alignment, and rehearsals). Notifications should contain sufficient technical information to allow proper evaluation. The primary concern is the range and elevation from the source of the airspace which may be affected by the display.

4. A proponent wishing to provide supplementary information about measures which will result in a smaller actual danger area than that shown in the Laser System Power Range Table (Table 28-2-1, FAA Order 7400.2E, Chg. 2) should submit the data in advance to CDRH for review. CDRH will validate the information and issue a letter to the proponent to include with their notification to the FAA.

Variance Attachment C

This attachment is applicable only to those laser effects produced by Nu-Salt model NSL-2000A projection systems equipped with the Pangolin Professional Audience Scanning System (PASS™) controller in laser light shows or displays produced by FULL COLOR LASERS.

1. Nu-Salt model NSL-2000A projectors incorporated into the firm's laser light shows shall be operated with effective means to prevent the audience from approaching closer than 10 meters radially from the front of the projection system. This shall prevent access to the area closer than 10 meters and within 2.5 meters on either side of the projection field (as specified in Attachment A, Condition 6), wherever projections may fall below the 3 meter clearance height.

2. When Nu-Salt model NSL-2000A projectors equipped with the Pangolin PASS™ controller are incorporated into a laser light show, the effects produced by it shall be subject to the following conditions in accordance with Condition 5(b) of Attachment A of this variance.

    a. The emission levels of the scanned laser output shall not exceed the limits of Class I determined in accordance with 21 CFR 1040.10(d), Table I, for any emission duration up to 10 seconds at locations which are within the scan field of the projection system, less than 3 meters above the floor, and more than 10 meters from the front of the projection system.

    b. The maximum exposure in the event of a scanning system failure shall be prevented from exceeding the MPE for ocular exposures determined in accordance with ANSI Z136.1 (2007), Tables 5a, 8a, 8b, and 9 ("§" footnote) for any exposure duration possible within the total reaction time of the scanning safeguard system and at any one location less than 3 meters above the floor in the audience or in other unrestricted areas.

    c. The PASS™ controller shall have a means necessary to monitor:
        1) The power supply for the x-y scanner drivers;
        2) The instantaneous beam velocity caused by scanning action to determine that it is above the minimum preset value;
        3) The angular pattern size to determine that it is above the minimum acceptable size;
        4) The angular pattern size in a way that provides logically redundant monitoring of the instantaneous beam velocity;
        5) The beam power in real time to determine that:
            (a) Beam power does not exceed the maximum beam power that assures that the applicable maximum permissible exposure is not exceeded;
            (b) Beam power is not emitting when it should be blanked; and

(c) The real time beam power monitor is functioning;

6) The beam position to determine if it is below the 3 meter horizon where the monitor control system must be enabled to limit the projections in accordance with c.2, c.3, and c.4; and

7) The proper operation of the monitor control system or Monitor Control Board.

d. In the event that any monitored parameters indicated above fail to meet their permitted limits, the system shall terminate all laser emissions.

e. The projection system shall be provided with the instrumentation necessary to perform the field calibration procedures:
- Measuring and setting irradiance of the stationary beam at the audience barrier,
- Verifying beam termination reaction time,
- Setting maximum acceptable beam power, and
- Setting the projection system's horizon to meet the 3 meter clearance requirement, since the monitor control system does not limit the laser projection output levels for projections above the horizon.

f. The compliance test records required by Condition 12 of Attachment A of this variance for the laser light shows incorporating the Controlled Exposure Laser Pattern Projection System shall record the results of the field calibration tests identified in paragraph 2.e. of this Attachment. The record shall record the values determined for the irradiance and the maximum acceptable beam power.

g. The Laser Safety Officer shall determine if, in accordance with ANSI Z136.1 (2007), "there is a reasonable probability of accidental viewing with optics". This determination shall be based on the nature of the facility, the nature of the event, and whether effective security measures are taken to prevent the use of such optical aids. Assessment of the security measures, where warranted, for adequacy and effectiveness shall be based on a detailed review of audience entrance security (including physical searches of audience possessions), and review with operating staff, photographers, camera operators, and venue management of the laser operation.

If the LSO does not find these controls adequate then either:

1) The LSO shall modify the MPE and related parameters for aided viewing conditions; or

2) Audience scanning shall be removed from the show.