

CERTIFICATE OF ACCEPTANCE

LTG-3A

Automatic Daylighting Control Acceptance Document

(Page 1 of 10)

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the person who performed the acceptance requirements verification reported on this Certificate of Acceptance (Field Technician).
- I certify that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.
- I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.

Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Check boxes for all pages of this LTG-3A completed and included in this submittal

- | | | |
|--------------------------|-------------------|---|
| <input type="checkbox"/> | LTG-3A Page 2 | Construction Inspection. This page required for all submittals. |
| <input type="checkbox"/> | LTG-3A Page3 & 4 | Continuous dimming control functional performance test – watt-meter or amp-meter measurement |
| <input type="checkbox"/> | LTG-3A Page5 & 6 | Stepped Switching/ Stepped Dimming functional performance test – watt-meter or amp-meter measurement |
| <input type="checkbox"/> | LTG-3A Page7 & 8 | Continuous dimming control functional performance test – light meter power measurement, and default look-up table of fraction of rated power versus fraction of rated light output. |
| <input type="checkbox"/> | LTG-3A Page9 & 10 | Stepped Switching/ Stepped Dimming functional performance test – based on light output |

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

I. Construction Inspection NA-7.6.1.1

1 Drawing of Daylit Area(s) must be shown on plans or attached to this form. Select one or both of the following:

Shown on plans page #'s _____

Daylit area(s) drawn in on as-built plans (attached) page #'s _____

Check box below if sampling method is used in accordance with NA7.6.1.2. If checked, attach a page with names of other controls in sample (only for buildings with > 5 daylight control systems, sample group glazing same orientation)

Control System	System Name	Plans Page Number	Check if Tested Control is Representative of Sample
A	_____	_____	<input type="checkbox"/>
B	_____	_____	<input type="checkbox"/>
C	_____	_____	<input type="checkbox"/>

Applicable Control System		
A	B	C

2 System Information

Zone Type: Skylit (Sky), Primary Sidelit (PS), or Secondary Sidelit (SS)

Control Type: Continuous Dimming with more than 10 light levels (C), Stepped Dimming (SD), Switching (SW)

Design Footcandles: (enter number or "Unknown")

3 Sensor and Controls

Control Loop Type: Open Loop (OL), Closed Loop (CL)

Sensor Location: Outside (O), Inside Skylight (IS), Near Windows facing out (NW), In Controlled Zone (CZ)

Sensor Location is Appropriate to Control Loop Type: (Y/N)

If control loop type is Open Loop (OL): Enter yes (Y) if location = Outside (O), Inside Skylight (IS), or Near Windows facing out (NW); otherwise, enter no (N).
If Control loop type is Closed Loop (CL): Enter yes (Y) if location = In Controlled Zone (CZ); otherwise, enter no (N).

Control Adjustments are in Appropriate Location (Y/N): Yes, If Readily Accessible or Yes if in Ceiling ≤ 11 ft, No for all other.

4 Has documentation been provided by the installer:

Installation Manuals and Calibration Instructions Provided to Building Owner: (Y/N)

Location of Light Sensor on Plans: (Y/N)

Location of Light Sensor on Plans: (Page Number)

5 Separate Controls of Luminaires in Daylit Areas:

Are luminaires controlled by automatic daylighting controls only in daylit areas: (Y/N)

Separately circuited for daylit areas by windows and daylit areas under skylights: (Y/N)

6 Daylighting control device certification

Daylighting control has been certified in accordance with §119: (Y/N)

Construction Inspection PASS/FAIL. If all responses on this **Construction Inspection** page are complete and all Yes/No questions have a Yes (Y) response, the tests **PASS**; If any responses on this page are incomplete OR there are any no (N) responses, the tests **FAIL**

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II. Functional Performance Testing – Continuous Dimming Systems NA-7.6.1.2

Power estimation using amp-meter measurement, or alternate option – watt-meter measurement

Complete all tests on page 3 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 4 of 10.

		Applicable Control System		
		A	B	C
System Information				
a.	Control Loop Type: Open Loop or Closed Loop? (O or C)			
b.	Indicate if Mandatory control - M (required for skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (M, CC, V)			
c.	If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (Y/N)			
d.	Documented general lighting design footcandles . (Enter footcandle value or “Unknown” (U))			
e.	Power estimation method . Measured Amps Multiplied by Volts, Volt-Amps (VA), alternate option is Measured Watts (W),			
Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)				
f.	Method Used: Illuminance or Distance? (I or D)			
Override daylight control system and drive electric lights to full light output for the following:				
g.	Full load fc – enter measured footcandles (fc) from controlled electric lighting (does not include daylight illuminance)			
h.	Full load power . Enter measured Amps times Volts, Volt-Amps (VA) or measured Watts.			
Step 2: No Daylight Test controls enabled & daylight less than 1 fc at reference location				
i.	Method Used: Night time manual measurement (Night), Night Time Illuminance Logging (Log), Cover Fenestration (CF), Cover Open Loop Photosensor (COLP)			
j.	Reference Illuminance (footcandles) as measured at Reference Location (see Step 1) . Enter footcandles			
k.	Enter Y if either of the following statements are true: [Reference Illuminance (line j)] / [Full load fc (line g)] > 90%? or [Reference Illuminance (line j)] / [design footcandles (line d)] > 90%? (Y/N)			
Step 3: Full Daylight Test conducted when daylight greater than reference illuminance (line j)				
l.	Enter measured Amps Multiplied by Volts, Volt-Amps (VA) or measured Watts (W).			
m.	System power reduction enter $[1 - (\text{line l})/(\text{line h})]$ enter as percent.			
n.	Is System Power Reduction (line m) > 65% (Y/N)			
o.	With uncontrolled lights also on, no lamps are dimmed outside of daylit area by control (Y/N)			
p.	Dimmed lamps have stable output (no perceptible visual flicker) (Y/N)			
Step 4: Partial Daylight Test conducted when daylight between 60% and 95% of (line j)				
q.	Daylight illuminance (light level without electric light) measured at Reference Location (fc)			
r.	Daylight illuminance divided by the Reference Illuminance = (line q) / (line j). Enter %.			
s.	Is Ratio of Daylight illuminance to Ref illuminance (line r) between 60% and 95%? (Y/N)			
t.	Total (daylight + electric light) illuminance measured at the Reference Location (fc)			
u.	Total illuminance divided by the Reference Illuminance = (line t) / (line j), Enter %			
v.	Is Total illuminance divided by the Reference illuminance (line u) between 100% and 150%? (Y/N)			

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

III. PASS/FAIL Evaluation (check one):

- PASS:** All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (**Y - yes**) (applicable questions on page 3 of 10 = c, k, n, o, p, s, v)
- FAIL:** Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on page 3 of 10 = c, k, n, o, p, s, v). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.

CERTIFICATE OF ACCEPTANCE		LTG-3A
Automatic Daylighting Control Acceptance Document		(Page 5 of 10)
Project Name/Address:		
System Name or Identification/Tag:	System Location or Area Served:	

II. NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems
Power estimation using watt-meter or amp-meter measurement

Complete all tests on pages 5 & 6 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 6 of 10.

		Applicable Control System		
		A	B	C
System Information				
a.	Control Loop Type. Open Loop or Closed Loop? (O or C)			
b.	Indicate if Mandatory control - M (required for skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (M, CC, V)			
c.	If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (Y/N)			
d.	Power estimation method. Measured Watts (W), Measured Amps Multiplied by Volts, Volt-Amps (VA),			
Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)				
e.	Method Used: Illuminance or Distance? (I or D)			
Step 2: No Daylight Test (daylight less than 1 fc at reference location)				
f.	Method Used: Night time manual measurement (Night) , Night Time Illuminance Logging (Log) attach plot of fc or power, Cover Fenestration (CF) , Cover Photosensor (CP)			
g.	Reference Illuminance (foot-candles) measured at Reference Location			
h.	Enter measured Watts (W), or Amps Multiplied by Volts, Volt-Amps (VA)			
i.	All controlled lights turn on and are at top dimming step? (Y/N)			
Step 3: Full Daylight Test conducted when daylight > reference illuminance (line g)				
j.	Measured Watts of Volt-Amps - record system power			
k.	System fraction of power reduction = $[1-(line\ k) / (line\ h)]$,			
l.	Is System Power Reduction (k) > 65% (Y/N)			
Step 4: Partial Daylight Test				
m.	Method Used: Light Logging (Log) , Partially Cover Fenestration (PCF) , Open Loop Setpoint Adjustment (OLSA)			
n.	If the control has three steps of control or less, all steps of control are tested. If the control has more than three steps, testing three steps of control is sufficient for showing compliance. Tests have been conducted at various daylight levels that correspond to steps of electric lighting control. (Y/N)			

CERTIFICATE OF ACCEPTANCE		LTG-3A
Automatic Daylighting Control Acceptance Document		(Page 6 of 10)
Project Name/Address:		
System Name or Identification/Tag:	System Location or Area Served:	

II.NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems (continued)

		Applicable Control System		
		A	B	C
First Stage of Control				
F1	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F2	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F3	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Second Stage of Control				
F4	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F5	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F6	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Third Stage of Control				
F7	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F8	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F9	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Step 5: Time Delay Test (conduct at least 60 minutes after overriding time delay)				
r.	After change of state from little daylight to full daylight, time in minutes before light output is reduced			
s.	Is the measured time delay (line r) greater than or equal to 3 minutes? (Y/N)			

III. PASS/FAIL Evaluation (check one):

PASS: All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (Y - yes) (applicable questions on pages 5 & 6 of 10 are on lines c, i, l, m, n, F2, F3, F5, F6, F8, F9, s)

FAIL: Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on pages 5 & 6 of 10 are on lines c, i, l, m, n, F2, F3, F5, F6, F8, F9, s). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II. Functional Performance Testing – Continuous Dimming Systems NA-7.6.1.2

Power estimation using light meter measurement

Complete all tests on page 7 & 8 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 8 of 10.

Applicable Control System

A B C

System Information

- a. Control Loop Type: Open Loop or Closed Loop? (**O** or **C**)
- b. Indicate if Mandatory control - M (required for skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (**M, CC, V**)
- c. If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (**Y/N**)
- d. Documented **general lighting design footcandles**. If design footcandles not documented leave blank (enter fc)
- e. **Power estimation method.** (see line r) Default ratio of power to light (Dfc), cut-sheet ratio of power to light (CSfc) If CSfc – attach cut-sheet. Enter **Dfc** or **CSfc**,

Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)

- f. Method Used: Illuminance or Distance? (**I** or **D**)
- Override daylight control system and drive electric lights to full light output for full load fc.:
- g. **Full load fc** – enter measured controlled electric lighting footcandles (fc)

Step 2: No Daylight Test

- h. Method Used: Night time manual measurement (**Night**), Night Time Illuminance Logging (**Log**), Cover Fenestration (**CF**), Cover Open Loop Photosensor (**COLP**)
- i. **Reference Illuminance** (footcandles) measured at Reference Location (Illuminance of general lighting at the reference location)
- j. Enter **Y** if either of the following statements are true:
 [Reference Illuminance (line i)] / [Full Load fc (line g)] > 90%? or
 [Reference Illuminance (line i)] / [design footcandles (line d)] > 90%? (**Y/N**)

Step 3: Full Daylight Test conducted when daylight > reference illuminance (line i)

- k. Daylight illuminance (light level with electric lighting turned off) measured at Reference Location (fc)
- l. Daylight illuminance (line k) greater than Reference Illuminance (line i) ? (**Y/N**)
- m. **Fraction controlled wattage turned off.** Enter %.
- n. Fraction of controlled wattage dimmed [1 – (line m)] Enter %.

Fill out lines o through r only if fraction of controlled wattage turned off (line m) < 100%.

- o. Total (daylight + electric light) illuminance measured at the Reference Location (fc)
- p. **Electric lighting illuminance** at the Reference Location (fc) [(line o) – (line k)]
- q. Electric lighting illuminance (line p) divided by Full load fc (line g). Enter %
- r. **Dimmed luminaire fraction of rated power.** Attach manufacturer’s cut-sheet or use default graph of rated power to light output on bottom of page 8 of 10. Label applicable control system (column A, B or C) on cut-sheet or graph. Enter fraction of rated power in %.
- s. **System Power Reduction** = [1 – (line n) * (line r)]
- t. Is System Power Reduction (line s) > 65% (**Y/N**)
- u. With uncontrolled lights also on, no lamps dimmed outside of daylit area by control (**Y/N**)
- v. Dimmed lamps have stable output, no perceptible flicker (**Y/N**)

Project Name/Address:

System Name or Identification/Tag:

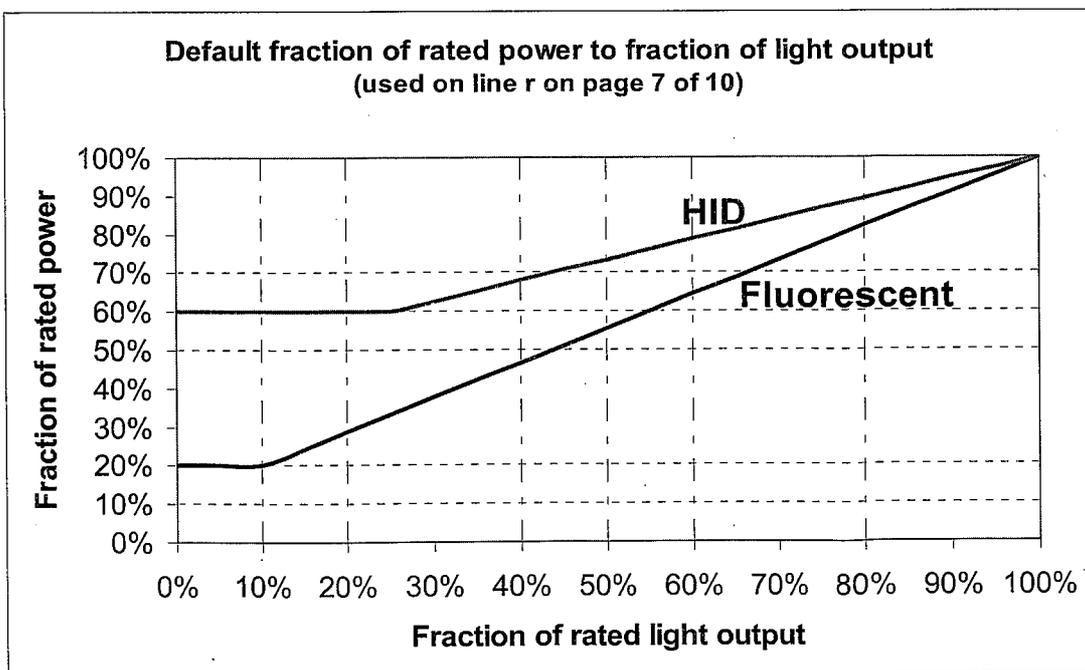
System Location or Area Served:

II. Functional Performance Testing – Continuous Dimming Systems NA-7.6.1.2 (continued)

		Applicable Control System		
		A	B	C
Step 4: Partial Daylight Test conducted when daylight between 60% and 95% of (line i)				
w.	Daylight illuminance (light level without electric light) measured at Reference Location (fc)			
x.	Daylight illuminance divided by the Reference Illuminance = (line w)/ (line i). Enter %			
y.	Is Ratio of Daylight illuminance to Ref illuminance (line x) between 60% and 95%? (Y/N)			
z.	Total (daylight + electric light) illuminance measured at the Reference Location (fc)			
aa.	Total illuminance divided by the Reference Illuminance = (line z) / (line i). Enter %			
ab.	Is Ratio of Total illum. to Reference illum. (line aa) between 100% and 150%? (Y/N)			

III. PASS/FAIL Evaluation (check one):

- PASS:** All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (Y - yes) (applicable questions on page 7 of 10 = c, j, l, t, u, v, y, ab)
- FAIL:** Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on page 7 of 10 = c, j, l, t, u, v, y, ab). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.



Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II. NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems

Power estimation based on light output

Complete all tests on page 9 & 10 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 10 of 10.

Applicable Control System

A B C

System Information

- a. Open Loop or Closed Loop? (O or C)
- b. Indicate if Mandatory control - M (skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (M, CC, V)
- c. If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (Y/N)
- d. **Power estimation method.** Counting (C) – not allowed for step dimming, Counting plus Cut Sheet (C+CS) attach ballast cut sheet with steps of power and light.

Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)

- e. Method Used: Illuminance or Distance? (I or D)

Step 2: No Daylight Test

- f. Method Used: Night time manual measurement (Night), Night Time Illuminance Logging (Log) attach plot of fc or power, Cover Fenestration (CF), Cover Photosensor (CP)
- g. Reference Illuminance (foot-candles) measured at Reference Location
- h. All controlled lights turn on and are at top dimming step? (Y/N)

Step 3: Full Daylight Test conducted when daylight > reference illuminance (line g)

- i. Fraction system wattage turned off
- j. Fraction of system wattage dimmed
- k. Step dimming level as a fraction of rated light output if applicable
- l. Dimmed ballast fraction of rated power from cut-sheet
- m. **System Power Reduction** = [1 – (line j)*(line l)]
- n. Is System Power Reduction (line m) > 65% (Y/N)
- o. With uncontrolled lights also on, no lamps controlled outside of daylit area (Y/N)
- p. Dimmed lamps have stable output, no perceptible visual flicker (Y/N)

Step 4: Partial Daylight Test

- q. Method Used: Light Logging (Log), Partially Cover Fenestration (PCF), Open Loop Setpoint Adjustment (OLSA)
- r. If the control has three steps of control or less, all steps of control are tested. If the control has more than three steps, testing three steps of control is sufficient for showing compliance. Tests have been conducted at various daylight levels that correspond to steps of electric lighting control. (Y/N)

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II.NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems (continued)

		Applicable Control System		
		A	B	C
First Stage of Control				
F1	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F2	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F3	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Second Stage of Control				
F4	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F5	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F6	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Third Stage of Control				
F7	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F8	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F9	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Step 5: Time Delay Test (conduct at least 60 minutes after overriding time delay)				
s.	After change of state from little daylight to full daylight, time in minutes before light output is reduced			
t.	Is the measured time delay (line s) greater than or equal to 3 minutes? (Y/N)			

III. PASS/FAIL Evaluation (check one):

- PASS:** All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (Y - yes) (applicable questions on pages 9 & 10 of 10 are on lines c, h, n, o, p, r, F2, F3, F5, F6, F8, F9, t)
- FAIL:** Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on pages 9 & 10 of 10 are on lines c, h, h, o, p, r, F2, F3, F5, F6, F8, F9, t). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.