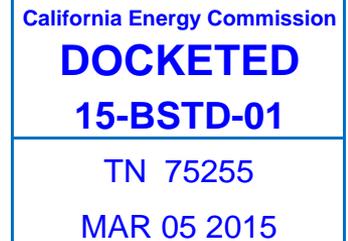




# 2016 Reference Joint Appendices

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# Reference Joint Appendix JA4

## U-factor, C-factor and Thermal Mass

- Updated U-factor tables to capture proper insulation types
  - Added new insulation R-values and U-factors to the different tables to be used for meeting both Residential and nonresidential Prescriptive requirements.
  - Updated Table 4.2.7 U-factor for Metal Building Roofs
  - Working on New table for roofs with Metal truss Joists with insulation in the cavity and also continuous insulation
- NOTE: Reference U-factors for assemblies can be updated at any time with valid support Information.



# Reference Joint Appendix JA5

## Occupant Controlled Smart Thermostat

Clarify Occupant Controlled Smart Thermostat (OCST) requirements:

- JA5.1 – Clarified that the communication interface consists of the physical communication interface and the logical communication interface.
- Added definitions for “default restart settings” and “Automatic Rejoin” under JA5.2.5.
- JA5.2.3.1 Clarified that OCST shall be capable of demand responsive control for the demand response period upon receipt to a DR signal.



## JA5 (continued)

- JA5.3.1
  - Clarifies OpenADR 2.0 or SEP 1.1 are the minimum standards for the logical interface within the OCST.
  - Clarifies Wi-Fi and/or Zigbee as the physical communication interfaces. Allows additional wireless or wired physical communication interface.
  - Clarifies that physical communication shall be capable of bi-directional of exchange of information.
- JA5.3.2 - Clarifies the expansion port allows for the installation of a removable module to enable physical and logical communication.



# Reference Joint Appendix JA10 Test Method for measuring flicker of lighting systems and reporting requirements

- This is a new appendix created along with the revised JA8 high efficacy light source requirement for 2016 Standards.
- It describes the test method for measuring flickering from lighting systems and the reporting required.
- JA10.1 Introduction



## JA10 (continued)

- JA10.2 Equipment combinations - describes the different combinations of light sources controlled by dimmers or dimming systems.
  - Phase cut dimmer (PCD) controlling an incandescent line voltage lamp
  - PCD controlling a transformer for incandescent low voltage lamps.
  - PCD controlling a non-incandescent light source.
  - Light source controlled by other dimming control technologies



## JA10 (continued)

- JA10.3 Test Equipment Requirements
  - Test enclosure does not admit stray light.
  - Photodetector shall match CIE spectral curve.
  - If a signal amplifier is needed, it shall have a bandwidth of 20 kHz.
  - The device for data collection shall have sample rate greater than or equal to 100 kHz for 2 seconds.



## JA10 (continued)

- JA10.4 Flicker Test Conditions
  - Fluorescent lamps shall be seasoned before the test. (Not needed for other light source types.)
  - Maintain temperature at 25 deg C plus and minus 5 deg C.
  - Dimming levels - Measurements taken at 100%, 20%, and minimum fraction of light output.
- JA10.5 Test Procedures
  - Lamp light output to be stabilized before dimming measurements. Lamp stabilization in accordance to the light source types.
  - Recording interval no greater than 50  $\mu$ s.
  - Equipment measurement period of 2 sec.



## JA10 (continued)

- JA10.6 Calculations – Percent Flicker formula

$$\text{Percent Amplitude Modulation} = \frac{(\text{Max} - \text{Min})}{(\text{Max} + \text{Min})} \times 100$$

Where,

Max is the maximum recorded light level or voltage from the test apparatus during the duration of the test for a given dimming level.

Min is the minimum recorded light level or voltage from the test apparatus during the duration of the test for a given dimming level.



## JA10 (continued)

- JA10.7 Test Report and Data Format – TABLE JA-10.

### TABLE JA-10. FLICKER DATA TO BE RECORDED AND SUBMITTED TO THE CALIFORNIA ENERGY COMMISSION

<u>Data</u>	<u>Units/Format</u>
<u>Test Date</u>	<u>2 comma separated data values: Date, and: mm/dd/yyyy</u>
<u>Test Operator</u>	<u>5 comma separated data values: Test Operator, and: Company, Contact Name, Phone Number, e-mail address</u>
<u>Entity submitting results</u>	<u>5 comma separated data values: Entity submitting results, and: Company, Contact Name, Phone Number, e-mail address</u>
<u>Product submitted for certification</u>	<u>5 comma separated data values: Product for certification, and: Product type (dimmer, ballast or driver, lamp etc.) manufacturer, model number, other description</u>