



# LUNA Technical Requirements Version 1.0

## References

Standard # or Document Name	Title and URL
ANSI C136.41-2013	Roadway And Area Lighting Equipment–Dimming Control Between An External Locking Type Photocontrol And Ballast Or Driver <a href="https://webstore.ansi.org/Search/Find?in=1&amp;st=c136.41">https://webstore.ansi.org/Search/Find?in=1&amp;st=c136.41</a>
ANSI C136.58-2019	Roadway And Area Lighting Equipment – Luminaire Four-Pin Extension Module And Receptacle – Physical And Electrical Interchangeability And Testing <a href="https://webstore.ansi.org/Search/Find?in=1&amp;st=c136.58">https://webstore.ansi.org/Search/Find?in=1&amp;st=c136.58</a>
ANSI C137.1-2019	Lighting Systems – 0-10V Dimming Interface For LED Drivers, Fluorescent Ballasts, And Controls <a href="https://webstore.ansi.org/Standards/NEMA/ANSIC1372019-2392108">https://webstore.ansi.org/Standards/NEMA/ANSIC1372019-2392108</a>
ANSI C137.4-2019	Lighting Systems - Digital Interface With Auxiliary Power <a href="https://webstore.ansi.org/Standards/NEMA/ANSIC1372019-2392109">https://webstore.ansi.org/Standards/NEMA/ANSIC1372019-2392109</a>
ANSI C78.377-2017	Electric Lamps - Specifications For The Chromaticity Of Solid-State Lighting Products <a href="https://webstore.ansi.org/Standards/NEMA/ANSIC783772017">https://webstore.ansi.org/Standards/NEMA/ANSIC783772017</a>
ANSI/ASHRAE/IES 90.1-2019	Energy Standard for Buildings Except Low-Rise Residential Building <a href="https://www.ashrae.org/technical-resources/bookstore/standard-90-1">https://www.ashrae.org/technical-resources/bookstore/standard-90-1</a> , or <a href="https://store.ies.org/product/ash-st90-1-19-ansi-ashrae-ies-standard-90-1-2019-energy-efficiency-standard-for-buildings-except-low-rise-r-for-ies-member-discount">https://store.ies.org/product/ash-st90-1-19-ansi-ashrae-ies-standard-90-1-2019-energy-efficiency-standard-for-buildings-except-low-rise-r-for-ies-member-discount</a>
ANSI/IES LM-63-02 R2008	Lighting Measurement: APPROVED METHOD: IES STANDARD FILE FORMAT FOR THE ELECTRONIC TRANSFER OF PHOTOMETRIC DATA AND RELATED INFORMATION

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ANSI/IES LM-63-19	Lighting Measurement: APPROVED METHOD: IES STANDARD FILE FORMAT FOR THE ELECTRONIC TRANSFER OF PHOTOMETRIC DATA AND RELATED INFORMATION <a href="https://store.ies.org/product/lm-63-19-approved-method-ies-standard-file-format-for-the-electronic-transfer-of-photometric-data-and-related-information/">https://store.ies.org/product/lm-63-19-approved-method-ies-standard-file-format-for-the-electronic-transfer-of-photometric-data-and-related-information/</a>
ANSI/IES LM-75-19	Lighting Measurement: APPROVED METHOD: GUIDE TO GONIOMETER MEASUREMENTS AND TYPES, AND PHOTOMETRIC COORDINATE SYSTEMS <a href="https://store.ies.org/product/lm-75-19-approved-method-guide-to-goniometer-measurements-and-types-and-photometric-coordinate-systems/">https://store.ies.org/product/lm-75-19-approved-method-guide-to-goniometer-measurements-and-types-and-photometric-coordinate-systems/</a>
IES LM-79-08	Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products
ANSI/IES LM-79-19	Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products <a href="https://store.ies.org/product/lm-79-19-approved-method-optical-and-electrical-measurements-of-solid-state-lighting-products/">https://store.ies.org/product/lm-79-19-approved-method-optical-and-electrical-measurements-of-solid-state-lighting-products/</a>
ANSI/IES LP-11-20	Lighting Practice: Environmental Considerations for Outdoor Lighting <a href="https://store.ies.org/product/lp-11-20-lighting-practice-environmental-considerations-for-outdoor-lighting/">https://store.ies.org/product/lp-11-20-lighting-practice-environmental-considerations-for-outdoor-lighting/</a>
ANSI/IES LP-2-20	Lighting Practice: Designing Quality Lighting for People in Outdoor Environments <a href="https://store.ies.org/product/ansi-ies-lp-2-20-lighting-practice-designing-quality-lighting-for-people-in-outdoor-environments/">https://store.ies.org/product/ansi-ies-lp-2-20-lighting-practice-designing-quality-lighting-for-people-in-outdoor-environments/</a>
ANSI/IES LS-6-20	Lighting Science: Calculation of Light and Its Effects <a href="https://store.ies.org/product/ls-6-20-lighting-science-calculation-of-light-and-its-effects/">https://store.ies.org/product/ls-6-20-lighting-science-calculation-of-light-and-its-effects/</a>
ANSI/IES RP-8-18	Recommended Practice: For Design And Maintenance Of Roadway And Parking Facility Lighting <a href="https://webstore.ansi.org/Standards/IESNA/ANSIIESRP18">https://webstore.ansi.org/Standards/IESNA/ANSIIESRP18</a>
ANSI/IES TM-15-20 Annex A	Technical Memorandum: Luminaire Classification System for Outdoor Luminaires, Annex A <a href="https://store.ies.org/product/tm-15-20-technical-memorandum-luminaire-classification-system-for-outdoor-luminaires/">https://store.ies.org/product/tm-15-20-technical-memorandum-luminaire-classification-system-for-outdoor-luminaires/</a>
ANSI/IES TM-27-20 and IES TM-27-14	Technical Memorandum: IES Standard Format for the Electronic Transfer of Spectral Data <a href="https://store.ies.org/product/tm-27-20-technical-memorandum-ies-standard-format-for-the-electronic-transfer-of-spectral-data/">https://store.ies.org/product/tm-27-20-technical-memorandum-ies-standard-format-for-the-electronic-transfer-of-spectral-data/</a>
ANSI/IES TM-30-20	IES Method for Evaluating Light Source Color Rendition <a href="https://store.ies.org/product/tm-30-20-ies-method-for-evaluating-light-source-color-rendition/">https://store.ies.org/product/tm-30-20-ies-method-for-evaluating-light-source-color-rendition/</a>
ANSI/IES TM-33-18	Standard Format for the Electronic Transfer of Luminaire Optical Data <a href="https://store.ies.org/product/tm-33-18-technical-memoranda-standard-format-for-the-electronic-transfer-of-luminaire-optical-data/">https://store.ies.org/product/tm-33-18-technical-memoranda-standard-format-for-the-electronic-transfer-of-luminaire-optical-data/</a>
ANSI/IES TM-37-21	Technical Memorandum: Description, Measurement, and Estimation of Sky Glow <a href="https://store.ies.org/product/tm-37-21-description-measurement-and-estimation-of-sky-glow/">https://store.ies.org/product/tm-37-21-description-measurement-and-estimation-of-sky-glow/</a>

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BACnet	BACnet – A Data Communication Protocol for Building Automation and Control Networks <a href="http://www.bacnet.org">http://www.bacnet.org</a>
BLE MDP v1.x	Bluetooth Low Energy Mesh Device Properties, Revisions 1.0, 1.1, 1.2 <a href="https://www.bluetooth.com/specifications/specs/">https://www.bluetooth.com/specifications/specs/</a>
BLE MDP v2	Bluetooth Low Energy Mesh Device Properties, Revision v2 <a href="https://www.bluetooth.com/specifications/specs/mesh-device-properties-2/">https://www.bluetooth.com/specifications/specs/mesh-device-properties-2/</a>
BSR/IES-43-2x	Recommended Practice: Lighting for People in Outdoor Environments Coming soon to <a href="https://store.ies.org/">https://store.ies.org/</a>
CA Title 24	California Building Energy Efficiency Standards – Title 24 <a href="https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards">https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards</a>
CIE 13.3-1995	METHOD OF MEASURING AND SPECIFYING COLOUR RENDERING PROPERTIES OF LIGHT SOURCES <a href="http://cie.co.at/publications/method-measuring-and-specifying-colour-rendering-properties-light-sources">http://cie.co.at/publications/method-measuring-and-specifying-colour-rendering-properties-light-sources</a>
D4i ANSI	D4i is the DALI standard for intelligent, IoT-ready luminaires. Aligned with NEMA/ANSI C137.4 Lighting Systems – Digital Interface With Auxiliary Power <a href="https://www.dali-alliance.org/d4i/">https://www.dali-alliance.org/d4i/</a> <a href="https://webstore.ansi.org/standards/nema/ansic1372019-2392109?gclid=CjwKCAjw8uGBhBAEiwAayu_9YQ-kUcuUIAZkr05duKoPcXbMY7wpV5j2wjQZRjg7HU5ythgh4VxURoCSH0QAvD_BwE">https://webstore.ansi.org/standards/nema/ansic1372019-2392109?gclid=CjwKCAjw8uGBhBAEiwAayu_9YQ-kUcuUIAZkr05duKoPcXbMY7wpV5j2wjQZRjg7HU5ythgh4VxURoCSH0QAvD_BwE</a>
DALI	IEC 62386 <a href="https://www.dali-alliance.org/">https://www.dali-alliance.org/</a>
DALI2	Certification program based on parts of IEC 62386 and D4i <a href="https://www.dali-alliance.org/">https://www.dali-alliance.org/</a>
DLC SSL Technical Requirements V5.1	DLC Solid State Lighting Technical Requirements V5.1 <a href="https://www.designlights.org/our-work/solid-state-lighting/technical-requirements/ssl-v5-1">https://www.designlights.org/our-work/solid-state-lighting/technical-requirements/ssl-v5-1</a>
DLC NLC5 Technical Requirements	DLC Networked Lighting Controls Technical Requirements Version 5 <a href="https://www.designlights.org/our-work/networked-lighting-controls/technical-requirements/nlc5/">https://www.designlights.org/our-work/networked-lighting-controls/technical-requirements/nlc5/</a>
DLC Horticultural Technical Requirements	DLC Horticultural Technical Requirements <a href="https://www.designlights.org/our-work/horticultural-lighting/technical-requirements">https://www.designlights.org/our-work/horticultural-lighting/technical-requirements</a>
DMX512-A	ANSI E1.11-2008 (R2018) Entertainment Technology-USITT DMX512-A Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories <a href="https://tsp.esta.org/tsp/documents/docs/ANSI-ESTA_E1-11_2008R2018.pdf">https://tsp.esta.org/tsp/documents/docs/ANSI-ESTA_E1-11_2008R2018.pdf</a>

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EnOcean	EnOcean Alliance self-powered wireless communication <a href="https://www.enocean-alliance.org/">https://www.enocean-alliance.org/</a>
IEC 60929	IEC 60929:2011+AMD1:2015 CSV Consolidated version. AC and/or DC-supplied electronic control gear for tubular fluorescent lamps – Performance requirements <a href="https://webstore.iec.ch/publication/23568">https://webstore.iec.ch/publication/23568</a>
IECC 2018	2018 International Energy Conservation Code (IECC) <a href="https://codes.iccsafe.org/content/IECC2018P4">https://codes.iccsafe.org/content/IECC2018P4</a>
IDA-IES MLO	IDA-IES Model Lighting Ordinance <a href="https://store.ies.org/product/ida-ies-mlo-11-model-lighting-ordinance-mlo-with-users-guide/">https://store.ies.org/product/ida-ies-mlo-11-model-lighting-ordinance-mlo-with-users-guide/</a>
IES LS-1-20	Lighting Science: Nomenclature and Definitions for Illuminating Engineering <a href="https://www.ies.org/standards/definitions/">https://www.ies.org/standards/definitions/</a>
IES RP-33-14	Lighting for Exterior Environments Deprecated. Content moved to <a href="#">ANSI/IES LP-11-20</a> and <a href="#">BSR/IES-43-2x</a>
LonWorks	ISO/IEC 14908 LonWorks local operating network <a href="https://www.lonmark.org">https://www.lonmark.org</a>
Modbus	Modbus <a href="https://www.modbus.org">https://www.modbus.org</a>
PNNL-26411	An Investigation of LED Street Lighting’s Impact on Sky Glow <a href="https://www.energy.gov/sites/prod/files/2017/05/f34/2017_led-impact-sky-glow.pdf">https://www.energy.gov/sites/prod/files/2017/05/f34/2017_led-impact-sky-glow.pdf</a>
US DoD UFC	Department of Defense Unified Facilities Criteria (DoD UFC) <a href="https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc">https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc</a>
US FEMP	Federal Energy Management Program (FEMP) <a href="https://www7.eere.energy.gov/femp/requirements/requirements_filtering/facility_energy_efficiency">https://www7.eere.energy.gov/femp/requirements/requirements_filtering/facility_energy_efficiency</a>
US GSA P100	General Services Administration’s (GSA) P100 Facilities Standards for the Public Buildings Service <a href="https://www.gsa.gov/real-estate/design-construction/engineering-and-architecture/facilities-standards-p100-overview">https://www.gsa.gov/real-estate/design-construction/engineering-and-architecture/facilities-standards-p100-overview</a>
WiFi	Wi-Fi IEEE 802.11
Zigbee 3.0 Full Stack	IEEE 802.15.4-2011 Zigbee 3.0 Full Stack <a href="https://zigbeealliance.org/zigbee_products/?product_type=certified_product">https://zigbeealliance.org/zigbee_products/?product_type=certified_product</a>