



GUAM POWER AUTHORITY
AGANA, GUAM

SPECIFICATION No. E-043

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PREPARED BY THE ENGINEERING DEPT.

GUAM POWER AUTHORITY
P.O. BOX 2977
AGANA, GUAM 96932

TRANSMISSION & DISTRIBUTION SPECIFICATION

SPECIFICATION NO. E-043

FOR

**LIGHT EMITTING DIODE (LED) STREET LIGHT
LUMINAIRES AND RETROFIT MODULES**

if
EFFECTIVE DATE: 11/15/10

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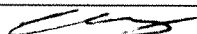
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LIGHT EMITTING DIODE RETROFIT STREET LIGHT REPLACEMENT MODULES

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1.0 SCOPE

- 1.1 This specification covers GPA requirements for Light Emitting Diode (LED) streetlight luminaires and retrofit modules used to replace the existing High Pressure Sodium (HPS) lights for street lighting and private outdoor lighting.
- 1.2 The streetlights are intended for use in tropical weather conditions with a corrosive sea air atmosphere and subject to moderate to severe earthquakes.

2.0 APPLICABLE PUBLICATIONS

The equipment covered by this specification shall be designed, manufactured, assembled, and tested in accordance with the standards listed below:

2.1 IESNA (ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA)

- LM-63-02** ANSI APPROVED STANDARD FILE FORMAT FOR ELECTRONIC TRANSFER OF PHOTOMETRIC DATA AND RELATED INFORMATION
- LM-79-08** APPROVED METHOD FOR ELECTRICAL AND PHOTOMETRIC MEASUREMENTS OF SOLID STATE LIGHTING PRODUCTS
- LM-80-08** APPROVED METHOD FOR MEASURING LUMEN MAINTENANCE OF LED LIGHT SOURCES

2.2 ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)

- C78.377** SPECIFICATIONS FOR THE CHROMATICITY OF SOLID STATE LIGHTING PRODUCTS
- C82.SSL1** POWER SUPPLY
- C82.77** HARMONIC EMISSION LIMITS – RELATED POWER QUALITY

2.3 UL (UNDERWRITERS LABORATORIES)

- UL 1598** THE STANDARD FOR SAFETY OF LUMINAIRES
- UL 8750** THE STANDARD FOR SAFETY OF LIGHT EMITTING DIODE (LED) EQUIPMENT FOR USE IN LIGHTING PRODUCTS

2.4 ENERGY STAR PROGRAM REQUIREMENTS FOR SOLID STATE LIGHTING LUMINAIRES

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3.0 DEVIATIONS AND NON-CONFORMANCE REQUIREMENTS

- 3.1 Deviations from this specification or changes in the material or design after the purchase order has been placed must be approved by the GPA Engineering department and acknowledged by a Purchase Order Amendment issued by GPA.
- 3.2 Units received with deviations or non-conformances that are not acknowledged per Section 3.1 are subject to rejection. The Supplier of rejected units is responsible for any corrective action including but not limited to materials, labor and transportation necessary to dispose of or make the units conform to the specification.
- 3.3 Notification of defective units discovered before or after installation that are believed to be inherent to manufacturing problems or workmanship shall be made and forwarded to the Supplier. The description of the item, documentation of the problem and the described information, disposition and/or follow-up (as appropriate) that GPA expects from the Supplier will be specified. The Supplier's response shall be made within thirty (30) days unless an extension is acknowledged and approved in writing by the GPA Manager of Engineering.

4.0 RATINGS

- 4.1 All photometric data must be collected via absolute photometry which tests the LED light when installed in the applicable luminaire. Ratings of the LED light shall be as specified Table 1. Appendices A and B shall follow the requirements stated in Table 1.

	150W HPS replacement LED	250W HPS replacement LED
Input Voltage	120 V	120 V
Nominal Rating (Total)	100 W max	160 W max
Burning Position	Horizontal	Horizontal
Off-state power	zero	zero
Power Factor	>0.9	>0.9
THD	<20%	<20%
Initial Lumens	3500 lm min.	5000 lm min.
CCT	3800 - 5200K	3800 - 5200K
CRI	> 60	> 60
Total Luminaire Efficacy(FTE)	> 37 lm/W	> 37 lm/W
IES Classification	Type II	Type III
Glare Control	BUG (see 4.2)	BUG (see 4.2)
Shielding	Shielded	Shielded
Rated Life for outdoor temp of 25° C	50,000 Hours min.	50,000 Hours min.

Table 1

- 4.2 BUG ratings shall be declared if available. The BUG system (Backlight, Uplight, and Glare) measures the glare control of a luminaire.



5.0 REQUIRED DOCUMENTS

The required documents stated in this section are outlined in Appendices A and B for the respective lights.

- 5.1 Modules and luminaires must come with wiring diagrams and all necessary equipment and hardware for installation.
- 5.2 The manufacturer shall furnish completed Appendices A and B as applicable providing manufacturer information, electrical information, photometric information, weight, and dimensions.
- 5.3 All products shall come with a minimum 5 year warranty on all parts associated with the product.
- 5.4 Provide an LM-79-08 report
- 5.5 Provide an LM-80-08 report or a lifetime statement reporting rated life and methodology used.
- 5.6 Provide an in-situ case temperature measurement test report by an approved OSHA/NRTL and CALiPER lab or a lab recognized through UL's Data Acceptance Program.
- 5.7 Provide an IES file according to the LM-63 format.

6.0 NAMEPLATE

The manufacturer shall furnish with each luminaire or module a nameplate attached to the light. Then nameplate shall include the following data:

- a. Manufacturer's name
- b. Catalog number
- c. Lamp Type
- d. Wattage
- e. Voltage
- f. Frequency
- g. Connection diagram

7.0 COMPATIBILITY AND INSTALLATION

- 7.1 The LED module installation shall not require extensive modifications to the existing luminaire housing, require any special tools, and shall be provided with a step by step installation guide.
- 7.2 LED retrofit modules and luminaires shall be compatible with the existing NEMA standard 3-terminal twist lock type photoelectric control device (ECDV-AP-TD).

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7.3 Replacement modules must fit into the existing Cooper Lighting - Streetworks OVZ Drop Lens Refractor cobra head street lights used by GPA.

7.4 Luminaires must be compatible with 1-1/4" L.P.S (1-5/8" O.D.) or 2" O.D. mast arms.

8.0 QUALITY CONTROL

8.1 The Supplier shall have a quality control program to ensure compliance with the requirements of this specification. The program shall be documented and available for GPA's review if requested.

8.2 Documentation of the quality control program shall indicate where in the production and manufacturing process the quality checks are taken, describe the purpose of the checks, and describe the nature of the check, e.g. if check is visual only or if electrical or mechanical testing is used.

9.0 PACKING AND SHIPPING

9.1 The equipment shall be placed and crated with suitable material to prevent damage and injury during shipment and handling operations.

9.2 The equipment shall be securely blocked to prevent shifting during transit.

9.3 Instructions for handling, shipping, packaging, and storing shall be provided by the manufacturer to prevent damage, loss, deterioration, and substitution of the luminaires.

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Appendix A

150 Watt HPS replacement LED Streetlight Luminaire or Retrofit Module Information Sheet

NOTE: Please complete the product information and provide the required documents. Incomplete information shall be cause for rejection.

Product Information			
1.	Light Type (Retrofit Module or Full Luminaire)		
	Is retrofit module compatible with Cooper Lighting Streetworks OVZ Luminaire?	Yes	No
2.	NEMA Standard 3-terminal twist lock type PEC	Yes	No
3.	Mounting, Horizontal Tenon, 1-1/4" I.P.S (1-5/8" O.D.) to 2" O.D. I.P.S. pipe	Yes	No
4.	Voltage (120VAC)	Yes	No
5.	Frequency (60Hz)	Yes	No
6.	Manufacturer's Name		
7.	Brand Name		
8.	Model #		
9.	Weight		
10.	Wattage		
11.	Drive Current		
12.	Light Distribution		
13.	Correlated Color Temperature (CCT)		
14.	Color Rendering Index (CRI)		
15.	Applicable Accessories & Description (Provide Attachment if more space is needed)		

Required Documents			
1.	Product Literature	Yes	No
2.	Warranty	Yes	No
3.	LM-79-08 reports	Yes	No
4.	LM-80-08 report or a lifetime statement reporting rated life and methodology	Yes	No
5.	in-situ case temperature measurement test report by an approved OSHA/NRTL and CALiPER lab, or recognized through UL's Data Acceptance Program.	Yes	No
6.	IES File according to LM-63 format	Yes	No

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Appendix B

250 Watt HPS replacement LED Streetlight Luminaire or Retrofit Module Information Sheet

NOTE: Please complete the product information and provide the required documents. Incomplete information shall be cause for rejection.

Product Information			
1.	Light Type (Retrofit Module or Full Luminaire)		
	Is retrofit module compatible with Cooper Lighting Streetworks OVZ Luminaire?	Yes	No
2.	NEMA Standard 3-terminal twist lock type PEC	Yes	No
3.	Mounting, Horizontal Tenon, 1-1/4" I.P.S (1-5/8" O.D.) to 2" O.D. I.P.S. pipe	Yes	No
4.	Voltage (120VAC)	Yes	No
5.	Frequency (60Hz)	Yes	No
6.	Manufacturer's Name		
7.	Brand Name		
8.	Model #		
9.	Weight		
10.	Wattage		
11.	Drive Current		
12.	Light Distribution		
13.	Correlated Color Temperature (CCT)		
14.	Color Rendering Index (CRI)		
15.	Applicable Accessories & Description (Provide Attachment if more space is needed)		

Required Documents			
1.	Product Literature	Yes	No
2.	Warranty	Yes	No
3.	LM-79-08 reports	Yes	No
4.	LM-80-08 report or a lifetime statement reporting rated life and methodology	Yes	No
5.	in-situ case temperature measurement test report by an approved OSHA/NRTL and CALiPER lab, or recognized through UL's Data Acceptance Program.	Yes	No
6.	IES File according to LM-63 format	Yes	No

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