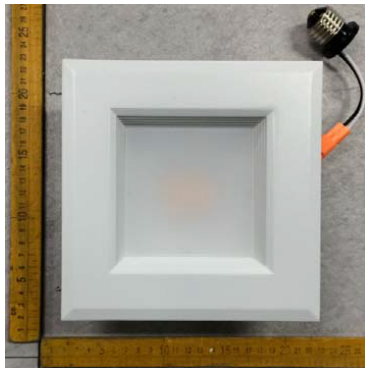
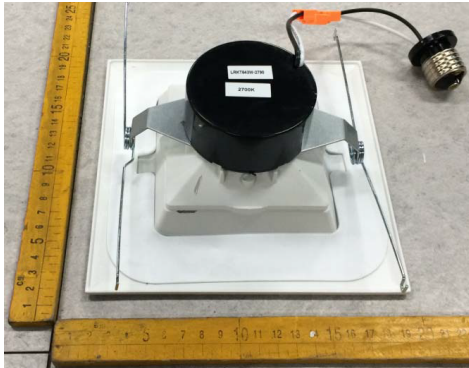




# A7 LED 40K SQUARE

## 1.1 Product Information:

|                                                                                     |                |                                                                                      |  |
|-------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------|--|
| Model Number                                                                        |                |                                                                                      |  |
| SKU (if available)                                                                  | A7/LED/40/SQ   |                                                                                      |  |
| Type of Luminaire<br>(for integral lamps, list base type and lamp type)             | LED Luminaires |                                                                                      |  |
| Rated Voltage / Frequency                                                           | 120Vac, 60 Hz  |                                                                                      |  |
| Nominal Power                                                                       | 16W            |                                                                                      |  |
| Rated Initial Lamp Lumen                                                            | --             |                                                                                      |  |
| Declared CCT                                                                        | 4000K          |                                                                                      |  |
| LED Manufacturer                                                                    | N/A            |                                                                                      |  |
| LED Model                                                                           | N/A            |                                                                                      |  |
| Sample Number                                                                       | GZE161261-N3   |                                                                                      |  |
| Luminaire Aperture (for downlights)                                                 | --             | in.<br>mm<br>mm<br>s                                                                 |  |
| Luminaire Length                                                                    | --             |                                                                                      |  |
| Luminaires Width                                                                    | --             |                                                                                      |  |
| Number of Units (modular products)                                                  | N/A            |                                                                                      |  |
| Photo                                                                               |                |                                                                                      |  |
|  |                |  |  |

## 1.2 Test Specifications:

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of Receipt    | Dec.22,2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Date of Test       | Dec.23,2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test item          | <ol style="list-style-type: none"><li>1. Total Luminous Flux</li><li>2. Luminous Efficacy</li><li>3. Correlated Color Temperature</li><li>4. Color Rendering Index</li><li>5. Chromaticity Coordinate</li><li>6. Electrical Parameters</li></ol>                                                                                                                                                                                                                                                                                                                                    |
| Reference Standard | <ol style="list-style-type: none"><li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li><li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li><li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li><li>4. CIE 15-2004 Technical Report Colorimetry</li><li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li><li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li></ol> |

1.3 Test Methods

- 1) Chromaticity Measurement – Sphere-Spectroradiometer Method:  
Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.
- 2) Electrical Measurements:  
Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25° C ± 1° C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements  
(Refer to Work Instruction QD25)

|                  |               |                          |          |
|------------------|---------------|--------------------------|----------|
| Test date        | 2016-12-23    | Test Ambient:            | 25.2 ° C |
| Test Orientation | As intended   | Stabilization Time (min) | 90       |
| Model Number     | LRKT643W-4090 |                          |          |

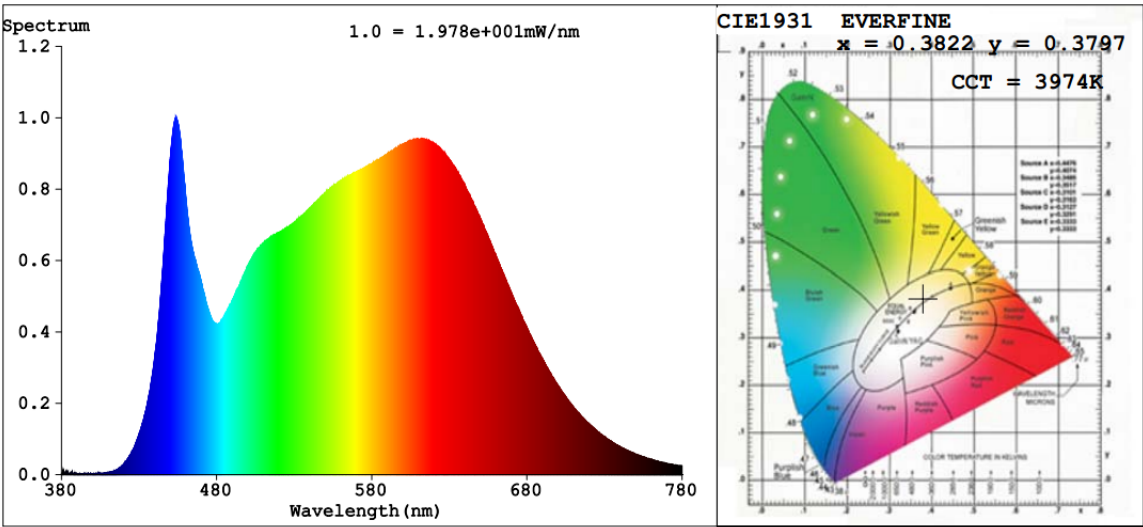
Electrical Measurement:

| Sample No.   | Voltage (Vac) | Frequency (Hz ) | Current (A) | Power (W) | Power Factor |
|--------------|---------------|-----------------|-------------|-----------|--------------|
| GZE161261-N3 | 120.0         | 60              | 0.1309      | 15.63     | 0.9951       |

Chromaticity Measurement - Sphere-Spectroradiometer Method:

| Parameter                   | Result              | Special Color Rendering Indices |    |     |     |
|-----------------------------|---------------------|---------------------------------|----|-----|-----|
| Test Voltage (V)            | 120.0               | R1                              | 93 | R9  | 60  |
| Frequency (Hz)              | 60                  | R2                              | 97 | R10 | 92  |
| CCT (K)                     | 3974                | R3                              | 98 | R11 | 92  |
| Duv                         | 0.0008              | R4                              | 91 | R12 | 73  |
| Chromaticity (x, y)         | x=0.3822 y=0.3797   | R5                              | 92 | R13 | 94  |
| Chromaticity (u', v')       | u'=0.2251 v'=0.5031 | R6                              | 94 | R14 | 100 |
| Color Rendering Index (CRI) | 92.6                | R7                              | 92 | R15 | 89  |
| R9                          | 60                  | R8                              | 83 | --  | --  |
| Total Luminous (lm)         | 1133                |                                 |    |     |     |
| Luminous Efficacy (lm/W)    | 72.49               |                                 |    |     |     |

Spectral Power Distribution & Chromaticity Diagram



3. Test Equipment

| Equipment ID                                                                                     | Equipment Name                     | Last Calibration Date | Next Calibration Date |
|--------------------------------------------------------------------------------------------------|------------------------------------|-----------------------|-----------------------|
| ST-R-336                                                                                         | 2 meter Integrating Sphere         | 2016-07-01            | 2017-06-30            |
| ST-R-331                                                                                         | Spectral analysis system HAAS-2000 | 2016-07-01            | 2017-06-30            |
| D204                                                                                             | Standard Lamp                      | 2016-07-01            | 2017-06-30            |
| PF2010                                                                                           | Power Meter for Integrating Sphere | 2016-07-01            | 2017-06-30            |
| Uncertainty:<br>Photometric Measurement (Sphere):1.74%<br>Chromaticity Measurement(Sphere):14.3K |                                    |                       |                       |