

# Original Data

## Relevant Standards

- ☒ IES LM-79-2008
- ☒ ANSI C82.77:2014

## Prepared For RAB lighting INC

170 Ludlow Avenue, Northvale, New Jersey 07647 USA

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170 Ludlow Avenue, Northvale, New Jersey 07647 USA

Project Number

Data Number

Test Date  
2020/9/10

## 1.0 Test List

| Test Item | Test                    | Test Date | Model Number       | Sample No. |
|-----------|-------------------------|-----------|--------------------|------------|
| 1         | Integrating Sphere Test | 2020/9/10 | PLT-15.5-H-835-BYP | A1         |
| 2         | Goniophotometer Test    | 2020/9/10 | PLT-15.5-H-835-BYP | A1         |
| 3         | THD and PF Test         | 2020/9/10 | PLT-15.5-H-835-BYP | A1         |

### 1.1 Test Summary

| Requirement Category             | Test Method                     | Requirements      | Test value |
|----------------------------------|---------------------------------|-------------------|------------|
| <b>Integrating Sphere system</b> |                                 |                   |            |
| Power (W)                        | IES LM-79-2008                  | 15.5 ±10%         | 15.02      |
| Lamp Output for bare lamp (lm)   | IES LM-79-2008                  | 1900 ±10%         | 2000.4     |
| Lamp Efficacy (lm/W)             | IES LM-79-2008                  | > 110.3           | 131.0      |
| Allowable CCTs* (K)              | IES LM-79-2008                  | 7 step            | 3985±275   |
|                                  |                                 | 4 step            | 3985±154   |
|                                  |                                 | 7 step            | 3465±245   |
|                                  |                                 | 4 step            | 3465±124   |
|                                  |                                 | 7 step            | 3045±175   |
|                                  |                                 | 4 step            | 3045±100   |
|                                  |                                 | 7 step            | 2725 ± 145 |
|                                  |                                 | 4 step            | 2725 ± 83  |
| CRI                              | IES LM-79-2008<br>CIE 13.3-1995 | >80               | 82.6       |
| R9                               | IES LM-79-2008<br>CIE 13.3-1995 | >0                | 7          |
| Rf                               | ANSI/IES TM-30-18               | >70               | 84         |
| Rg                               | ANSI/IES TM-30-18               | >89               | 96         |
| Rcs,h1                           | ANSI/IES TM-30-18               | Rcs=>-12%,h1<=23% |            |
| Power Factor                     | ANSI C82.77:2014                | >0.9              | 0.96       |
| Total Harmonic Distortion (A%)   | ANSI C82.77:2014                | <25%              | 21.50%     |
| <b>Goniophotometer system</b>    |                                 |                   |            |
| Lamp Output (lm)                 | IES LM-79-2008                  | 1900 ±10%         | 2083.1     |
| Luminaire Efficacy(lm/W)         | IES LM-79-2008                  | > 110.3           | 138.7      |
| Beam Angle                       | IES LM-79-2008                  |                   | 162.0      |

## 2.0 Production Description

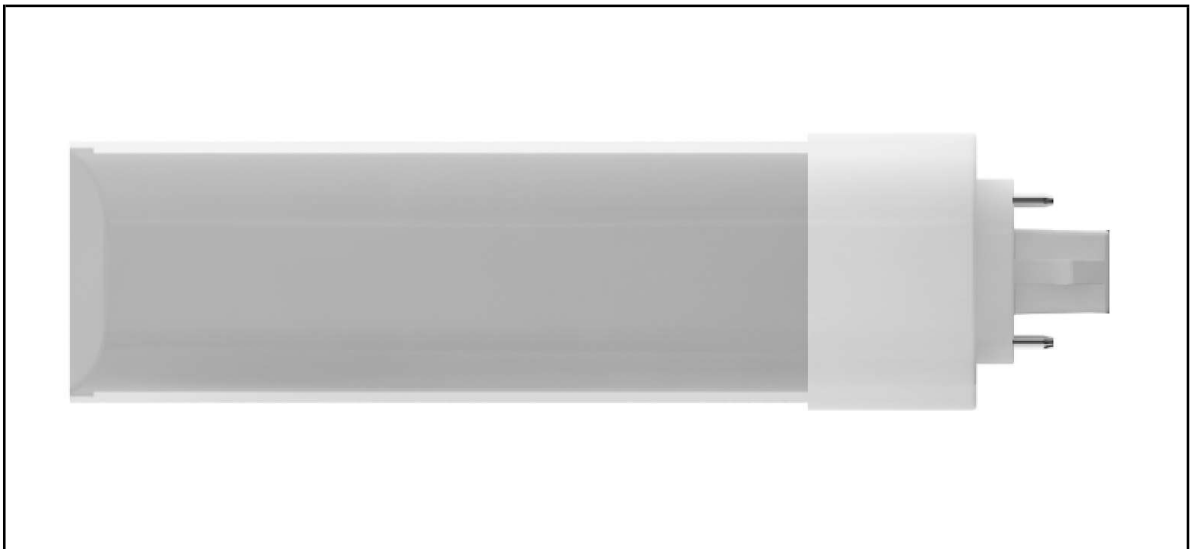
**Luminaire Description:** PLT-15.5-H-835-BYP

**Electrical Specification:** 120V~277V,50/60HZ

**Light source:**

**Manufacturer Of Light Source:** Seoul Semiconductor Co.,LTD

### Photos of Luminaire Characteristics



### 3.0 LM-79 Measurement and Test Results

#### 3.1 Integrating Sphere Test

|                     |                    |                           |    |
|---------------------|--------------------|---------------------------|----|
| Model No.           | PLT-15.5-H-835-BYP | Sample ID.                | A1 |
| Opreate time (Min.) | 15                 | Stabilization time (Min.) | 15 |
| Temperature (°C)    | 25.3               | Humidity %                | 55 |

| Test Method  |
|--|
| <p>The samples were tested according to the IES LM-79-2008.</p> <p>Photometric paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C.</p> <p>The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.</p> <p>The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load.</p> <p>The sample was measured using 4π geometry and operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.</p> |

#### Test Conditions

| Temperatur<br>e (°C) | Voltage<br>(Vac) | Frequency<br>(Hz) | Current (A) | Power (W) | Power<br>Factor | Flux<br>(lm) | Efficacy<br>(lm/W) |
|----------------------|------------------|-------------------|-------------|-----------|-----------------|--------------|--------------------|
| 25.3                 | 120.00           | 60.00             | 0.128       | 15.020    | 0.9800          | 2000.4       | 133.2              |
| 25.3                 | 277.02           | 60.00             | 0.058       | 15.370    | 0.9622          | 2013.5       | 131.0              |

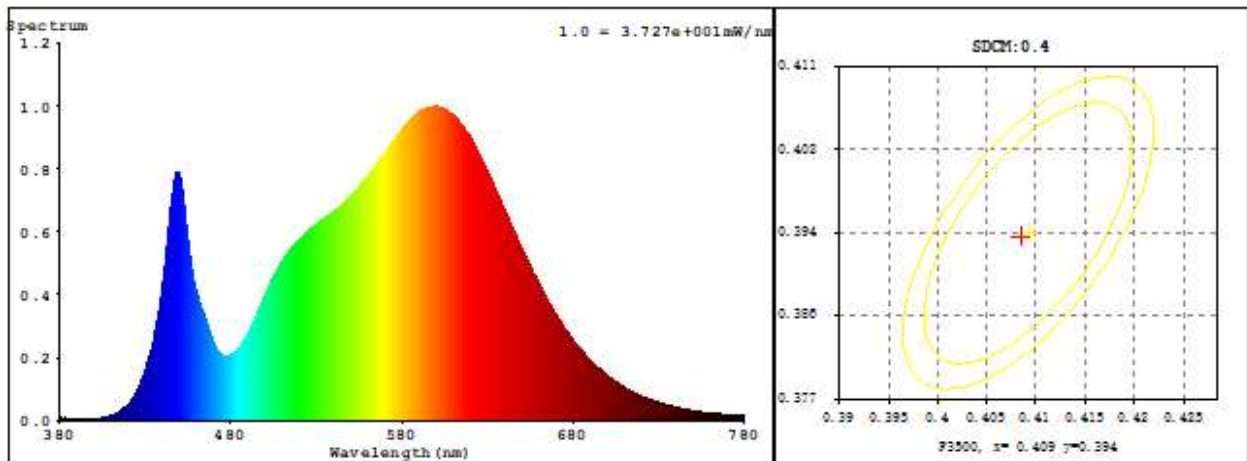
#### Test Result

| Tc(K) | 色差(Duv) | Rf | Rg | Ra | R9  | SDCM |
|-------|---------|----|----|----|-----|------|
| 3461  | 6.6E-04 | 84 | 96 | 83 | 7.0 | 0.4  |
| 3462  | 6.7E-04 | 84 | 96 | 83 | 7.0 | 0.4  |

### 3.1 Integrating Sphere Test

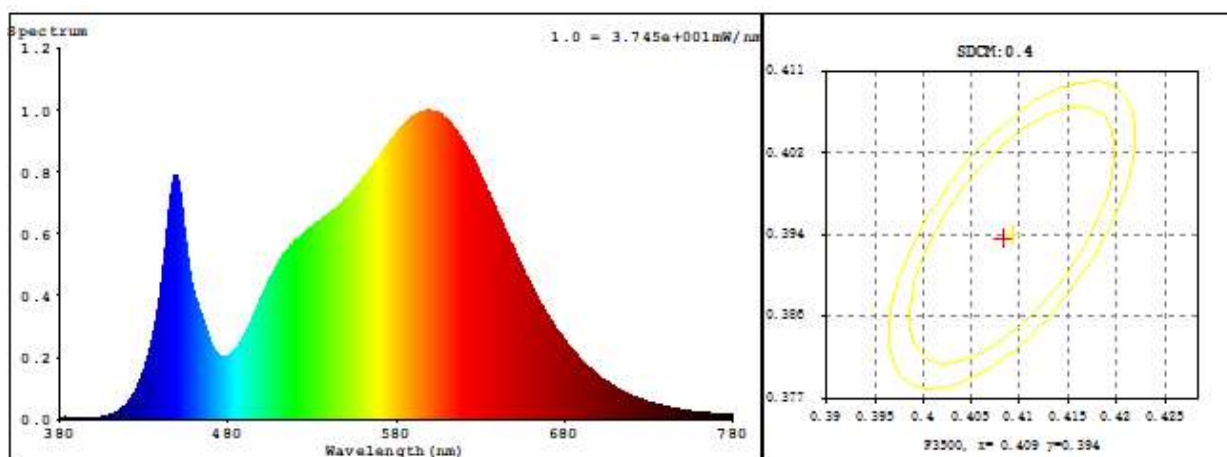
#### Spectroradiometric Parameters

120V



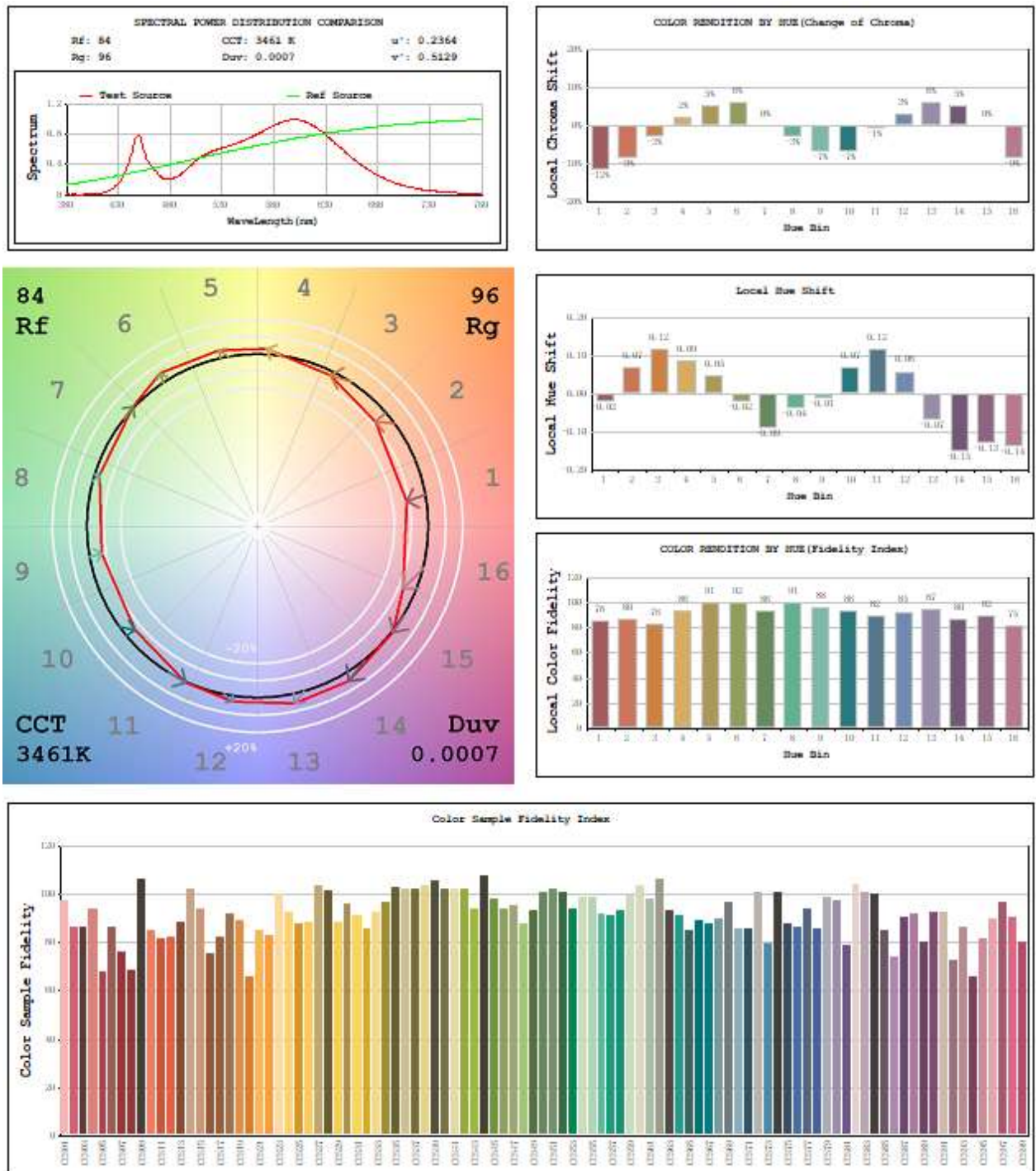
|        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|
| R1 =81 | R2 =89 | R3 =95 | R4 =82 | R5 =81 | R6 =85 | R7 =85 |        |
| R8 =62 | R9 =7  | R10=74 | R11=82 | R12=66 | R13=82 | R14=97 | R15=74 |

277V



|        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|
| R1 =81 | R2 =89 | R3 =95 | R4 =82 | R5 =81 | R6 =85 | R7 =85 |        |
| R8 =62 | R9 =7  | R10=74 | R11=82 | R12=67 | R13=82 | R14=97 | R15=74 |

### 3.2 Integrating Sphere Test - Minimum CCT



### 3.3 Goniophotometer Test

|                     |                    |                           |    |
|---------------------|--------------------|---------------------------|----|
| Model No.           | PLT-15.5-H-835-BYP | Sample ID.                | 0  |
| Operate time (Min.) | 15                 | Stabilization time (Min.) | 15 |

#### Test Method

The samples were tested according to the IES LM-79-2008. Photometric 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 voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ± 0.2 percent under load.

The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5° vertical intervals and 10° horizontal intervals.

#### Test Conditions

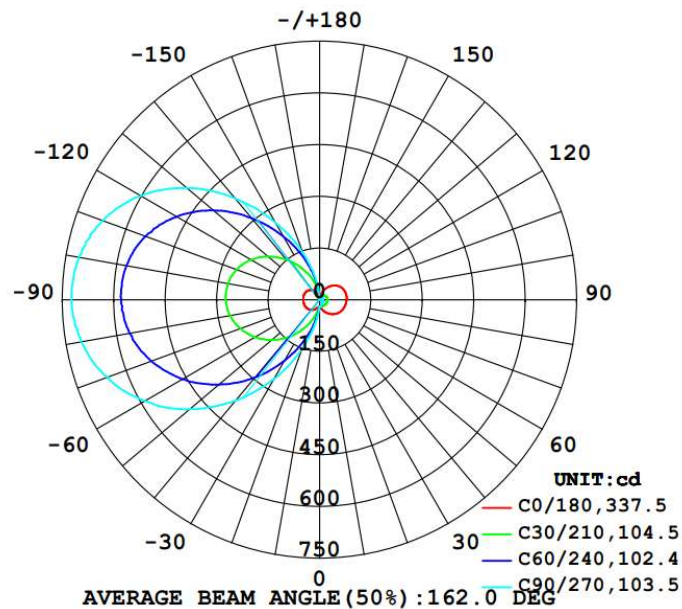
| Temperature (°C) | Voltage (Vac) | Frequency (Hz) | Current (A) | Power (W) | Power Factor |
|------------------|---------------|----------------|-------------|-----------|--------------|
| 25.3             | 120.00        | 60.00          | 0.128       | 15.0      | 0.980        |

#### Test Result

| Flux(lm) | Beam Angle | Zonal Lumen Requirement(0°-60°) | SC (0°-180°) | SC (90°-270°) | Efficacy (lm/W) |
|----------|------------|---------------------------------|--------------|---------------|-----------------|
| 2083.1   | 162        | 18.7%                           | 1.16         | 1.20          | 138.7           |

### 3.3 Goniophotometer Test

#### Light Distrubtion Curve



#### Zonal Lumen Summary

| Zone    | Lumens  | %Lamp  | %Fixt  | Zone    | Lumens |
|---------|---------|--------|--------|---------|--------|
| 0-20    | 16.36   | 0.80   | 0.80   | 0-10    | 2.70   |
| 0-30    | 52.10   | 2.50   | 2.50   | 10-20   | 13.67  |
| 0-40    | 121.38  | 5.80   | 5.80   | 20-30   | 35.73  |
| 0-60    | 388.75  | 18.70  | 18.50  | 30-40   | 69.28  |
| 0-80    | 814.31  | 39.10  | 38.80  | 40-50   | 111.25 |
| 0-90    | 1059.93 | 50.90  | 50.40  | 50-60   | 156.13 |
| 10-90   | 1057.24 | 50.80  | 50.30  | 60-70   | 197.04 |
| 20-40   | 105.01  | 5.00   | 5.00   | 70-80   | 228.51 |
| 20-50   | 216.26  | 10.40  | 10.30  | 80-90   | 245.63 |
| 40-70   | 464.41  | 22.30  | 22.10  | 90-100  | 246.30 |
| 60-80   | 425.55  | 20.40  | 20.30  | 100-110 | 229.81 |
| 70-80   | 228.51  | 11.00  | 10.90  | 110-120 | 198.17 |
| 80-90   | 245.63  | 11.80  | 11.70  | 120-130 | 155.19 |
| 90-110  | 476.11  | 22.90  | 22.70  | 130-140 | 107.80 |
| 90-120  | 674.28  | 32.40  | 32.10  | 140-150 | 63.85  |
| 90-130  | 829.47  | 39.80  | 39.50  | 150-160 | 30.13  |
| 90-150  | 1001.11 | 48.10  | 47.60  | 160-170 | 9.29   |
| 90-180  | 1041.34 | 50.00  | 49.60  | 170-180 | 0.81   |
| 110-180 | 565.23  | 27.10  | 26.90  |         |        |
| 0-180   | 2101.27 | 100.90 | 100.00 |         |        |



## 5.0 THD and PF Test

|                  |                    |            |    |
|------------------|--------------------|------------|----|
| Model No.        | PLT-15.5-H-835-BYP | Sample ID. | A1 |
| Temperature (°C) | 25.3               | Humidity % | 49 |

### Test Method

The samples were tested according to the ANSI C82.77:2002.

The total harmonic distortion shall be measured to the 40th order.

The ambient temperature condition was maintained at 25° C ± 1° C. The sample measurements were made using a digital power meter and power supply. The sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion were calculated.

### Test Results

| Temperature (°C) | Voltage (Vac) | Frequency (Hz) | Current (A) | Power (W) | Power Factor | THD    |
|------------------|---------------|----------------|-------------|-----------|--------------|--------|
| 25.3             | 120.00        | 60.00          | 0.128       | 15.0      | 0.980        | 21.50% |
| 25.3             | 277.02        | 60.00          | 0.058       | 15.4      | 0.962        | 20.90% |