



LM-79-08 Test Report

For

ETI Solid State Lighting (Zhuhai) Ltd.

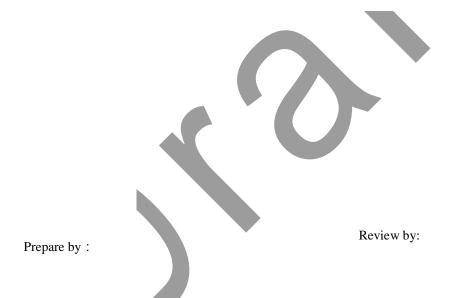
No. 1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City, Guangdong Prov., China 519085

Inseparable SSL Luminaire

Model Name(s): 565681##

Representative (Tested) Model: 56568111

Model Difference: ## can be 11-60 identical to Color Tunable, tunable 3000K, 4000K and 5000K.



Engineer: Derek Lai Technical Lead: Vincent Yuan

Note: 1. The results contained in this report pertain only to the tested samples.

- 2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd
- 3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

Laboratory: Dongguan New Testing Centre Co., Ltd





Product Information:

| Client Name: | ETI Solid State Lighting (Zhuhai) Ltd. | |
|------------------------|--|--|
| Brand Name: | ETI, Commercial Electric, Hampton Bay | |
| Model Number: | 565681##(##=11-60) | |
| Product Type: | Inseparable SSL Luminaire | |
| Rating Input: | 120Vac, 60Hz, 12W | |
| Declared CCT: | 3000K/4000K/5000K | |
| Declared Light Output: | 800 lm | |
| LED Manufacturer: | Samsung | |
| LED Model: | SPMWH6229AXXXXXXXX | |
| LED Quantity: | 24 pcs for Night Light | |
| | 64 pcs for Main Light | |

Test Information:

| Standard Lamp: | Total Spectral Radiant Flux Standard Lamp, trace to NIST. | |
|------------------------------|---|--|
| | 1. D908S for Gonio | |
| | 2. D215S for Integrating Sphere | |
| Date of Receipt Samples: | 2019-06-27 | |
| Quantity of Receipt Samples: | 1 pcs | |
| Sample Number: | 190627003-S1 | |

Laboratory Information:

| Test Laboratory: | Dongguan New Testing Centre Co., Ltd |
|----------------------------|---|
| Laboratory Address: | 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, |
| | Dongguan, Guangdong, China |
| Laboratory Contact Name: | Neil Zhong |
| Laboratory Contact E-mail: | Neil ntc@163.com |

Report Information:

| Issued Date of Test Report: | 2019-07- |
|------------------------------|---------------|
| Revised Date of Test Report: | N/A |
| Test Report No.: | NTCLR19070060 |
| Remark (If applicable): | N/A |





| Test Specification: | | |
|---------------------|---|--|
| Date of Test | 2019-07-12 | |
| Test Item | 1. Total Luminous Flux | |
| | 2. Luminous Distribution Intensity | |
| | 3. Luminous Efficacy | |
| | 4. Correlated Color Temperature | |
| | 5. Color Rendering Index | |
| | 6. Chromaticity Coordinate | |
| Reference Standard | IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products | |
| | ANSI C78.377-2017 Specifications for the Chromaticity of Solid State Lighting Products | |
| | CIE 13.3-1995 Method of Measuring and Specifying Color Rendering Properties of Light | |
| | Sources | |
| | CIE 15-2004 Technical Report Colorimetry | |

Test Methods:

1. Photometric and Electrical Measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25 \,^{\circ}\text{C} \pm 1 \,^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at required Voltage and Frequency. It was stabilized before measurement was made. Luminous Flux, Luminaire Efficacy and Zonal Lumen were calculated from the software taken at 1° vertical intervals and 15° horizonal intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured 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 require Voltage and Frequency. It was stabilized before measurement was made. Chromaticity Coordinates, Correlated Color Temperature and Color Rendering Index were calculated from the spectral radiant flux measurements taken at least 1 nm intervals over the rage of 380 to 780 nm.





Integrating Sphere Test Results (Test for 3000K):

Test Condition:

| Test Ambient (°C) | Test Humidity (%) | Orientation | Stabilization Time (minute) | Test Time (minute) |
|-------------------|--------------------------|-------------|-----------------------------|---------------------------|
| 24.6 | 41.4 | Face Down | 90 | 10 |

Electrical Data:

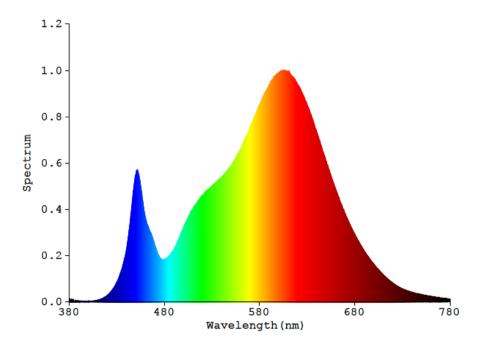
| Voltage (V) | Frequency (Hz) | Current (A) | Wattage (W) | Power Factor |
|-------------|----------------|-------------|-------------|--------------|
| 120.0 | 60 | 0.1030 | 11.42 | 0.9233 |

Color Data:

| Parameter | Result |
|------------------|----------|
| CCT(K) | 2977 |
| Ra | 84.2 |
| R9 | 14 |
| Chromaticity, x | 0.4358 |
| Chromaticity, y | 0.3990 |
| Chromaticity, u' | 0.2520 |
| Chromaticity, v' | 0.5192 |
| Duv | -0.00190 |

| Special Color Rendering | | | | |
|-------------------------|----|-----|----|--|
| R1 | 83 | R9 | 14 | |
| R2 | 92 | R10 | 83 | |
| R3 | 96 | R11 | 83 | |
| R4 | 83 | R12 | 76 | |
| R5 | 84 | R13 | 86 | |
| R6 | 91 | R14 | 99 | |
| R7 | 83 | R15 | 76 | |
| R8 | 62 | - | - | |

Spectrum Diagram:







Integrating Sphere Test Results (Test for 5000K):

Test Condition:

| Test Ambient (°C) | Test Humidity (%) | Orientation | Stabilization Time (minute) | Test Time (minute) |
|-------------------|--------------------------|-------------|------------------------------------|--------------------|
| 25.1 | 41.0 | Face Down | 90 | 10 |

Electrical Data:

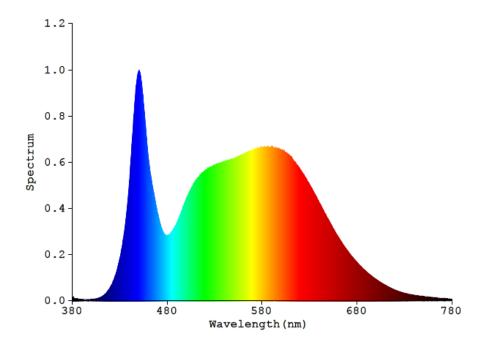
| Voltage (V) | Frequency (Hz) | Current (A) | Wattage (W) | Power Factor |
|-------------|----------------|-------------|-------------|--------------|
| 120.0 | 60 | 0.1031 | 11.42 | 0.9233 |

Color Data:

| Parameter | Result |
|------------------|---------|
| CCT(K) | 4908 |
| Ra | 85.8 |
| R9 | 22 |
| Chromaticity, x | 0.3482 |
| Chromaticity, y | 0.3578 |
| Chromaticity, u' | 0.2111 |
| Chromaticity, v' | 0.4881 |
| Duv | 0.00187 |

| | Special Colo | r Rendering | |
|----|--------------|-------------|----|
| R1 | 84 | R9 | 22 |
| R2 | 90 | R10 | 76 |
| R3 | 94 | R11 | 85 |
| R4 | 86 | R12 | 63 |
| R5 | 84 | R13 | 86 |
| R6 | 86 | R14 | 97 |
| R7 | 90 | R15 | 79 |
| R8 | 72 | - | - |

Spectrum Diagram:







Goniophotemeter Test Results (Test for 3000K):

Test Condition:

| Test Ambient (°C) | Test Humidity (%) | Orientation | Stabilization Time (minute) | Test Time (minute) |
|-------------------|-------------------|-------------|-----------------------------|--------------------|
| 25.3 | 40.4 | Face Down | 90 | 25 |

Electrical Data:

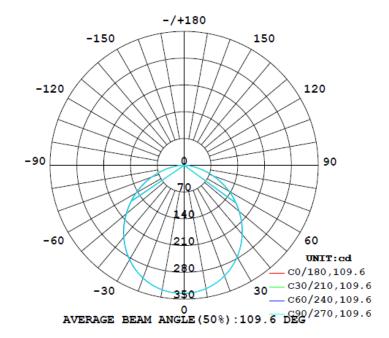
| Voltage (V) | Frequency (Hz) | Current (A) | Wattage (W) | Power Factor |
|-------------|----------------|-------------|-------------|--------------|
| 120.0 | 60 | 0.1030 | 11.42 | 0.9233 |

Goniophotometer Data:

| Parameter | Results |
|-----------------------------------|---------|
| Total Luminous (lm) | 928.4 |
| Luminous Efficacy (lm/w) | 81.30 |
| Zonal Lumens Distribution (0-60°) | 79.6% |
| Beam Angle (°) | 109.6 |

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM





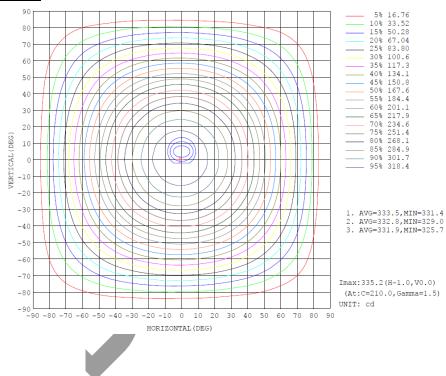


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

| γ | C0 | C45 | C90 | C135 | C180 | C225 | C270 | C315 | γ | Φ zone | Φ total | %lum,lamp |
|-----|--------|--------|------------|----------|-----------|------------|------------|--------|---------|--------|---------|-----------|
| 10 | 327.6 | 327.4 | 327.6 | 328.9 | 330.4 | 330.4 | 330.1 | 329.2 | 0- 10 | 31.69 | 31.69 | 3.41,3.41 |
| 20 | 307.9 | 308.0 | 308.1 | 310.7 | 313.5 | 313.4 | 313.1 | 311.0 | 10- 20 | 90.67 | 122.4 | 13.2,13.2 |
| 30 | 276.7 | 277.1 | 277.3 | 280.6 | 284.8 | 284.2 | 283.9 | 280.7 | 20- 30 | 136.9 | 259.2 | 27.9,27.9 |
| 40 | 235.4 | 236.5 | 236.8 | 240.7 | 245.5 | 244.8 | 244.0 | 240.2 | 30- 40 | 163.7 | 422.9 | 45.6,45.6 |
| 50 | 186.9 | 187.8 | 189.3 | 192.6 | 197.6 | 197.1 | 195.4 | 192.0 | 40- 50 | 167.5 | 590.4 | 63.6,63.6 |
| 60 | 133.8 | 135.2 | 137.0 | 140.7 | 145.5 | 144.5 | 142.5 | 138.8 | 50- 60 | 148.7 | 739.1 | 79.6,79.6 |
| 70 | 78.67 | 81.05 | 82.80 | 86.83 | 91.27 | 89.32 | 87.34 | 83.23 | 60- 70 | 111.3 | 850.4 | 91.6,91.6 |
| 80 | 28.37 | 30.76 | 32.84 | 36.25 | 39.54 | 37.23 | 35.76 | 32.17 | 70- 80 | 62.11 | 912.5 | 98.3,98.3 |
| 90 | 0 | 0 | 0 | 0.0006 | 1.148 | 0.1311 | 0 | 0 | 80- 90 | 15.62 | 928.1 | 100,100 |
| 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90-100 | 0.0033 | 928.1 | 100,100 |
| 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0099 | 0.0027 | 100-110 | 0.0006 | 928.1 | 100,100 |
| 120 | 0 | 0 | 0 | 0 | 0.0172 | 0.0148 | 0.0199 | 0.0135 | 110-120 | 0.0037 | 928.1 | 100,100 |
| 130 | 0.0214 | 0.0130 | 0.0122 | 0.0149 | 0.0591 | 0.0603 | 0.0666 | 0.0529 | 120-130 | 0.0171 | 928.1 | 100,100 |
| 140 | 0.0470 | 0.0447 | 0.0460 | 0.0445 | 0.1001 | 0.1159 | 0.1097 | 0.1024 | 130-140 | 0.0446 | 928.2 | 100,100 |
| 150 | 0.0593 | 0.0623 | 0.0593 | 0.0614 | 0.1403 | 0.1590 | 0.1577 | 0.1524 | 140-150 | 0.0572 | 928.2 | 100,100 |
| 160 | 0.0911 | 0.0843 | 0.0686 | 0.0879 | 0.1870 | 0.2012 | 0.1799 | 0.1847 | 150-160 | 0.0563 | 928.3 | 100,100 |
| 170 | 0.1107 | 0.1163 | 0.0997 | 0.1025 | 0.1852 | 0.1992 | 0.1773 | 0.1755 | 160-170 | 0.0403 | 928.3 | 100,100 |
| 180 | 0.1551 | 0.1588 | 0.1465 | 0.1406 | 0.1554 | 0.1588 | 0.1461 | 0.1406 | 170-180 | 0.0139 | 928.4 | 100,100 |
| DEG | | LUM | INOUS INTE | NSITY:cd | Less than | 35% Percen | t = 13.7 % | | | UNI | r:lm | |

Isocandela Diagram:







Luminous Distribution Intensity Data:

| Table1 | | | | | | | | | | | | | | | | UNI | T: cd | | |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|
| C (DEG) | | | | | | | | | | | | | | | | | | | |
| y (DEG) | 0 | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 | 195 | 210 | 225 | 240 | 255 | 270 |
| 0 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 |
| 5 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 334 | 334 | 334 | 334 | 334 | 334 | 334 | 334 |
| 10 | 328 | 328 | 328 | 327 | 327 | 328 | 328 | 328 | 328 | 329 | 329 | 330 | 330 | 330 | 331 | 330 | 330 | 330 | 330 |
| 15 | 319 | 320 | 319 | 319 | 319 | 319 | 319 | 320 | 320 | 321 | 321 | 322 | 323 | 323 | 324 | 324 | 324 | 323 | 323 |
| 20 | 308 | 309 | 308 | 308 | 308 | 308 | 308 | 309 | 310 | 311 | 311 | 312 | 313 | 313 | 314 | 313 | 314 | 313 | 313 |
| 25 | 294 | 295 | 294 | 294 | 294 | 294 | 294 | 295 | 296 | 297 | 297 | 299 | 301 | 300 | 301 | 301 | 301 | 300 | 300 |
| 30 | 277 | 278 | 277 | 277 | 277 | 277 | 277 | 279 | 279 | 281 | 281 | 283 | 285 | 284 | 285 | 284 | 285 | 284 | 284 |
| 35 | 257 | 259 | 257 | 258 | 257 | 258 | 258 | 260 | 260 | 262 | 262 | 264 | 266 | 265 | 266 | 266 | 266 | 265 | 265 |
| 40 | 235 | 237 | 236 | 236 | 236 | 237 | 237 | 238 | 239 | 241 | 241 | 243 | 245 | 244 | 245 | 245 | 245 | 244 | 244 |
| 45 | 212 | 213 | 212 | 212 | 213 | 213 | 214 | 215 | 216 | 217 | 218 | 220 | 223 | 221 | 223 | 222 | 222 | 221 | 221 |
| 50 | 187 | 188 | 188 | 188 | 188 | 188 | 189 | 190 | 191 | 193 | 194 | 195 | 198 | 197 | 197 | 197 | 197 | 197 | 195 |
| 55 | 161 | 162 | 162 | 162 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 172 | 171 | 172 | 171 | 171 | 170 | 169 |
| 60 | 134 | 135 | 135 | 135 | 136 | 136 | 137 | 138 | 139 | 141 | 141 | 143 | 146 | 144 | 145 | 144 | 144 | 143 | 142 |
| 65 | 106 | 108 | 108 | 108 | 108 | 109 | 110 | 111 | 112 | 114 | 115 | 116 | 119 | 117 | 118 | 117 | 117 | 116 | 115 |
| 70 | 78.7 | 80.9 | 80.0 | 81.1 | 81.0 | 82.3 | 82.8 | 84.4 | 85.0 | 86.8 | 87.3 | 88.6 | 91.3 | 89.4 | 90.2 | 89.3 | 89.3 | 87.8 | 87.3 |
| 75 | 52.3 | 54.4 | 53.7 | 54.8 | 54.9 | 56.2 | 56.8 | 58.3 | 59.0 | 60.6 | 60.9 | 62.1 | 64.7 | 62.4 | 63.3 | 62.3 | 62.4 | 61.1 | 60.6 |
| 80 | 28.4 | 30.3 | 29.7 | 30.8 | 30.9 | 32.3 | 32.8 | 34.2 | 34.8 | 36.3 | 36.4 | 37.5 | 39.5 | 37.5 | 38.3 | 37.2 | 37.3 | 36.1 | 35.8 |
| 85 | 8.56 | 10.3 | 9.63 | 10.7 | 10.6 | 11.9 | 12.2 | 13.6 | 13.9 | 15.4 | 15.3 | 16.3 | 18.1 | 16.0 | 16.7 | 15.7 | 16.0 | 14.9 | 14.7 |
| 90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.29 | 1.15 | 0.28 | 0.41 | 0.13 | 0.12 | 0.02 | 0.00 |
| 95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 105 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| 110 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 |
| 115 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 |
| 120 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 |
| 125 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 | 0.04 |
| 130 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 |
| 135 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.10 |
| 140 | 0.05 | 0.05 | 0.04 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.04 | 0.04 | 0.04 | 0.04 | 0.10 | 0.10 | 0.11 | 0.12 | 0.12 | 0.12 | 0.11 |
| 145 | 0.05 | 0.06 | 0.06 | 0.05 | 0.06 | 0.06 | 0.05 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.12 | 0.12 | 0.13 | 0.14 | 0.14 | 0.14 | 0.14 |
| 150 | 0.06 | 0.07 | 0.06 | 0.06 | 0.06 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.14 | 0.14 | 0.15 | 0.16 | 0.16 | 0.16 | 0.16 |
| 155 | 0.07 | 0.08 | 0.08 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 | 0.07 | 0.16 | 0.16 | 0.18 | 0.18 | 0.18 | 0.18 | 0.17 |
| 160 | 0.09 | 0.10 | 0.09 | 0.08 | 0.07 | 0.08 | 0.07 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.20 | 0.20 | 0.20 | 0.19 | 0.18 |
| 165 | 0.10 | 0.11 | 0.10 | 0.10 | 0.09 | 0.09 | 0.08 | 0.09 | 0.10 | 0.10 | 0.09 | 0.09 | 0.19 | 0.19 | 0.20 | 0.21 | 0.20 | 0.19 | 0.19 |
| 170 | 0.11 | 0.12 | 0.12 | 0.12 | 0.10 | 0.10 | 0.10 | 0.10 | 0.11 | 0.10 | 0.10 | 0.10 | 0.19 | 0.19 | 0.20 | 0.20 | 0.19 | 0.18 | 0.18 |
| 175 | 0.13 | 0.14 | 0.14 | 0.14 | 0.13 | 0.12 | 0.12 | 0.12 | 0.12 | 0.13 | 0.12 | 0.13 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.17 | 0.16 |
| 180 | 0.16 | 0.16 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.13 | 0.14 | 0.14 | 0.14 | 0.15 | 0.16 | 0.16 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 |

| Table2 | | | | | | | | | | | UNI | T: cd | |
|---------|------|------|------|------|------|--|------|--|------|------|-----|-------|--|
| C (DEG) | | | | | | | | | | | | | |
| y (DEG) | 285 | 300 | 315 | 330 | 345 | | | | | | | | |
| 0 | 335 | 335 | 335 | 335 | 335 | | | | | | | | |
| 5 | 334 | 334 | 333 | 333 | 333 | | | | | | | | |
| 10 | 330 | 330 | 329 | 329 | 328 | | | | | | | | |
| 15 | 323 | 322 | 322 | 321 | 320 | | | | | | | | |
| 20 | 312 | 312 | 311 | 311 | 309 | | | | | | | | |
| 25 | 299 | 299 | 297 | 297 | 296 | | | | | | | | |
| 30 | 283 | 282 | 281 | 280 | 279 | | | | | | | | |
| 35 | 264 | 263 | 262 | 261 | 260 | | | | | | | | |
| 40 | 243 | 242 | 240 | 240 | 238 | | | | | | | | |
| 45 | 220 | 218 | 217 | 216 | 215 | | | | | | | | |
| 50 | 195 | 193 | 192 | 190 | 190 | | | | | | | | |
| 55 | 168 | 167 | 166 | 164 | 163 | | | | | | | | |
| 60 | 142 | 140 | 139 | 138 | 137 | | | | | | | | |
| 65 | 114 | 113 | 111 | 110 | 109 | | | | | | | | |
| 70 | 86.0 | 85.1 | 83.2 | 82.6 | 81.3 | | | | | | | | |
| 75 | 59.1 | 58.5 | 56.6 | 56.1 | 54.7 | | | | | | | | |
| 80 | 34.4 | 33.8 | 32.2 | 31.8 | 30.5 | | | | | | | | |
| 85 | 13.3 | 12.8 | 11.3 | 11.1 | 10.0 | | | | | | | | |
| 90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 105 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 110 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 115 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | | | | | | | | |
| 120 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | | | | | | | | |
| 125 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | | | | | | | | |
| 130 | 0.06 | 0.06 | 0.05 | 0.06 | 0.05 | | | | | | | | |
| 135 | 0.09 | 0.08 | 0.08 | 0.08 | 0.08 | | | | | | | | |
| 140 | 0.10 | 0.11 | 0.10 | 0.10 | 0.10 | | | | | | | | |
| 145 | 0.12 | 0.13 | 0.13 | 0.12 | 0.12 | | | | | | | | |
| 150 | 0.15 | 0.15 | 0.15 | 0.15 | 0.14 | | | | | | | | |
| 155 | 0.17 | 0.17 | 0.17 | 0.18 | 0.17 | | | | | | | | |
| 160 | 0.18 | 0.18 | 0.18 | 0.19 | 0.19 | | | | | | | | |
| 165 | 0.18 | 0.18 | 0.19 | 0.19 | 0.19 | | | | | | | | |
| 170 | 0.18 | 0.17 | 0.18 | 0.18 | 0.18 | | | | | | | | |
| 175 | 0.16 | 0.15 | 0.17 | 0.17 | 0.17 | | | | | | | | |
| 180 | | _ | _ | 0.14 | _ | | | | | | | | |
| | _ | _ | | | | | | | | | | | |

Tel: 86-769-22212079 Website: http://www.ntc-cert.com





Goniophotemeter Test Results (Test for 5000K):

Test Condition:

| Test Ambient (°C) | Test Humidity (%) | Orientation | Stabilization Time (minute) | Test Time (minute) |
|-------------------|--------------------------|-------------|-----------------------------|---------------------------|
| 25.3 | 40.4 | Face Down | 90 | 25 |

Electrical Data:

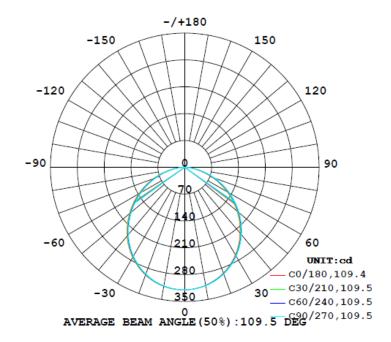
| Voltage (V) | Frequency (Hz) | Current (A) | Wattage (W) | Power Factor |
|-------------|----------------|-------------|-------------|--------------|
| 120.0 | 60 | 0.1031 | 11.42 | 0.9233 |

Goniophotometer Data:

| Parameter | Results |
|-----------------------------------|---------|
| Total Luminous (lm) | 884.2 |
| Luminous Efficacy (lm/w) | 77.43 |
| Zonal Lumens Distribution (0-60°) | 79.6% |
| Beam Angle (°) | 109.5 |

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM





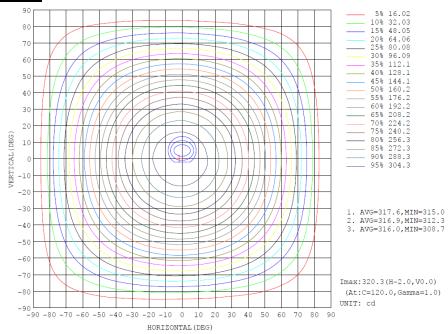


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

| γ | C0 | C45 | C90 | C135 | C180 | C225 | C270 | C315 | γ | Φ zone | Φ total | %lum,lamp |
|-----|--|--------|--------|--------|--------|--------|--------|--------|---------|--------|---------|-----------|
| 10 | 312.5 | 313.2 | 313.9 | 314.8 | 315.4 | 314.8 | 313.8 | 312.9 | 0- 10 | 30.24 | 30.24 | 3.42,3.42 |
| 20 | 293.7 | 295.2 | 296.7 | 298.4 | 299.3 | 297.9 | 296.3 | 294.2 | 10- 20 | 86.51 | 116.7 | 13.2,13.2 |
| 30 | 263.5 | 265.8 | 268.2 | 270.5 | 271.8 | 269.7 | 267.1 | 264.2 | 20- 30 | 130.5 | 247.3 | 28,28 |
| 40 | 224.1 | 227.3 | 230.2 | 233.3 | 234.2 | 231.5 | 228.3 | 224.5 | 30- 40 | 156.0 | 403.2 | 45.6,45.6 |
| 50 | 177.7 | 181.0 | 185.1 | 187.8 | 188.4 | 185.7 | 181.1 | 178.0 | 40- 50 | 159.4 | 562.7 | 63.6,63.6 |
| 60 | 127.0 | 131.0 | 135.6 | 138.5 | 138.9 | 135.3 | 130.5 | 127.2 | 50- 60 | 141.5 | 704.2 | 79.6,79.6 |
| 70 | 74.37 | 79.16 | 83.64 | 87.11 | 87.23 | 82.64 | 78.26 | 74.51 | 60- 70 | 105.8 | 810.0 | 91.6,91.6 |
| 80 | 26.65 | 30.93 | 35.17 | 38.28 | 37.94 | 33.66 | 30.02 | 26.88 | 70- 80 | 59.04 | 869.1 | 98.3,98.3 |
| 90 | 0 | 0 | 0.0228 | 1.310 | 1.202 | 0.0109 | 0 | 0 | 80- 90 | 14.92 | 884.0 | 100,100 |
| 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90-100 | 0.0110 | 884.0 | 100,100 |
| 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0073 | 0 | 100-110 | 0.0003 | 884.0 | 100,100 |
| 120 | 0 | 0 | 0 | 0 | 0.0109 | 0.0098 | 0.0166 | 0.0106 | 110-120 | 0.0024 | 884.0 | 100,100 |
| 130 | 0.0138 | 0.0067 | 0.0046 | 0.0067 | 0.0514 | 0.0540 | 0.0608 | 0.0484 | 120-130 | 0.0138 | 884.0 | 100,100 |
| 140 | 0.0384 | 0.0378 | 0.0378 | 0.0359 | 0.0898 | 0.1066 | 0.1028 | 0.0955 | 130-140 | 0.0388 | 884.1 | 100,100 |
| 150 | 0.0506 | 0.0554 | 0.0521 | 0.0538 | 0.1294 | 0.1467 | 0.1469 | 0.1403 | 140-150 | 0.0516 | 884.1 | 100,100 |
| 160 | 0.0811 | 0.0763 | 0.0600 | 0.0780 | 0.1735 | 0.1866 | 0.1678 | 0.1719 | 150-160 | 0.0515 | 884.2 | 100,100 |
| 170 | 0.0999 | 0.1061 | 0.0902 | 0.0926 | 0.1714 | 0.1850 | 0.1648 | 0.1626 | 160-170 | 0.0371 | 884.2 | 100,100 |
| 180 | 0.1426 | 0.1465 | 0.1350 | 0.1284 | 0.1430 | 0.1468 | 0.1349 | 0.1284 | 170-180 | 0.0128 | 884.2 | 100,100 |
| DEG | LUMINOUS INTENSITY:cd Less than 35% Percent = 13.7 % | | | | | | | | | UNI | r:lm | |

Isocandela Diagram:







Luminous Distribution Intensity Data:

| 5 | 0 320 318 | 15 | 30 | 45 | | | | | | | | | | | | | | | |
|-------|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0 5 | 320 | | 30 | | | | | | | | l | | | | | | | | |
| 5 | | | | 40 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 | 195 | 210 | 225 | 240 | 255 | 270 |
| | | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 |
| 10 | 318 | 318 | 318 | 318 | 318 | 318 | 318 | 319 | 318 | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 318 | 318 | 318 |
| 40 | 313 | 313 | 313 | 313 | 313 | 314 | 314 | 314 | 315 | 315 | 315 | 315 | 315 | 315 | 315 | 315 | 315 | 314 | 314 |
| 15 | 304 | 305 | 305 | 305 | 306 | 306 | 307 | 308 | 308 | 308 | 308 | 309 | 309 | 308 | 308 | 308 | 308 | 307 | 307 |
| 20 | 294 | 294 | 294 | 295 | 295 | 296 | 297 | 298 | 298 | 298 | 298 | 299 | 299 | 299 | 299 | 298 | 298 | 296 | 296 |
| 25 | 280 | 281 | 281 | 282 | 282 | 283 | 284 | 285 | 285 | 286 | 286 | 286 | 287 | 286 | 286 | 285 | 285 | 283 | 283 |
| 30 | 263 | 265 | 265 | 266 | 266 | 268 | 268 | 270 | 270 | 271 | 271 | 271 | 272 | 271 | 271 | 270 | 269 | 267 | 267 |
| 35 | 245 | 246 | 246 | 248 | 248 | 250 | 250 | 252 | 252 | 253 | 253 | 254 | 254 | 253 | 253 | 252 | 251 | 249 | 249 |
| 40 | 224 | 226 | 226 | 227 | 228 | 230 | 230 | 232 | 232 | 233 | 233 | 234 | 234 | 233 | 233 | 232 | 231 | 229 | 228 |
| 45 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 211 | 211 | 212 | 211 | 210 | 209 | 208 | 206 | 205 |
| 50 | 178 | 179 | 180 | 181 | 182 | 184 | 185 | 186 | 187 | 188 | 188 | 188 | 188 | 187 | 187 | 186 | 184 | 182 | 181 |
| 55 | 153 | 154 | 155 | 156 | 158 | 159 | 161 | 162 | 163 | 164 | 164 | 164 | 164 | 163 | 162 | 161 | 159 | 157 | 156 |
| 60 | 127 | 129 | 130 | 131 | 133 | 134 | 136 | 137 | 138 | 138 | 139 | 139 | 139 | 137 | 137 | 135 | 134 | 132 | 130 |
| 65 | 101 | 103 | 104 | 105 | 107 | 108 | 110 | 111 | 112 | 113 | 113 | 113 | 113 | 111 | 111 | 109 | 108 | 106 | 104 |
| 70 1 | 74.4 | 76.7 | 77.2 | 79.2 | 80.4 | 82.7 | 83.6 | 85.6 | 86.1 | 87.1 | 87.0 | 87.1 | 87.2 | 84.9 | 84.6 | 82.6 | 81.5 | 79.1 | 78.3 |
| 75 | 49.2 | 51.5 | 52.0 | 54.1 | 55.3 | 57.5 | 58.5 | 60.5 | 60.9 | 61.9 | 61.6 | 61.8 | 61.8 | 59.5 | 59.1 | 57.2 | 56.1 | 53.9 | 53.1 |
| 80 2 | 26.6 | 28.6 | 29.1 | 30.9 | 32.1 | 34.2 | 35.2 | 37.0 | 37.4 | 38.3 | 37.9 | 38.1 | 37.9 | 35.8 | 35.4 | 33.7 | 32.6 | 30.7 | 30.0 |
| 85 1 | 7.65 | 9.54 | 9.82 | 11.5 | 12.3 | 14.2 | 14.9 | 16.6 | 16.8 | 17.9 | 17.3 | 17.6 | 17.4 | 15.3 | 15.1 | 13.5 | 12.9 | 11.1 | 10.7 |
| 90 (| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.57 | 0.84 | 1.31 | 1.24 | 1.25 | 1.20 | 0.31 | 0.13 | 0.01 | 0.00 | 0.00 | 0.00 |
| 95 (| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100 (| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 105 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 110 (| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 |
| 115 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 |
| 120 (| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 |
| 125 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| 130 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 |
| 135 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.07 | 0.08 | 0.08 | 0.08 | 0.09 | 0.08 | 0.09 |
| 140 (| 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.03 | 0.04 | 0.03 | 0.03 | 0.09 | 0.09 | 0.10 | 0.11 | 0.11 | 0.11 | 0.10 |
| 145 (| 0.04 | 0.05 | 0.05 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.04 | 0.04 | 0.04 | 0.11 | 0.11 | 0.12 | 0.13 | 0.13 | 0.13 | 0.13 |
| 150 (| 0.05 | 0.06 | 0.06 | 0.06 | 0.05 | 0.06 | 0.05 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.13 | 0.13 | 0.14 | 0.15 | 0.15 | 0.15 | 0.15 |
| 155 (| 0.06 | 0.07 | 0.07 | 0.06 | 0.06 | 0.07 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.06 | 0.15 | 0.15 | 0.16 | 0.17 | 0.17 | 0.17 | 0.16 |
| 160 (| 0.08 | 0.09 | 0.08 | 0.08 | 0.07 | 0.07 | 0.06 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.17 | 0.18 | 0.18 | 0.19 | 0.18 | 0.18 | 0.17 |
| 165 (| 0.09 | 0.10 | 0.09 | 0.09 | 0.08 | 0.08 | 0.07 | 0.08 | 0.09 | 0.09 | 0.08 | 0.09 | 0.17 | 0.18 | 0.19 | 0.19 | 0.19 | 0.18 | 0.18 |
| 170 (| 0.10 | 0.11 | 0.11 | 0.11 | 0.09 | 0.09 | 0.09 | 0.09 | 0.10 | 0.09 | 0.09 | 0.09 | 0.17 | 0.18 | 0.18 | 0.19 | 0.18 | 0.17 | 0.16 |
| 175 | 0.12 | 0.13 | 0.13 | 0.13 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.12 | 0.16 | 0.17 | 0.17 | 0.17 | 0.17 | 0.15 | 0.15 |
| 180 (| 0.14 | 0.15 | 0.15 | 0.15 | 0.14 | 0.13 | 0.13 | 0.12 | 0.12 | 0.13 | 0.13 | 0.14 | 0.14 | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.13 |

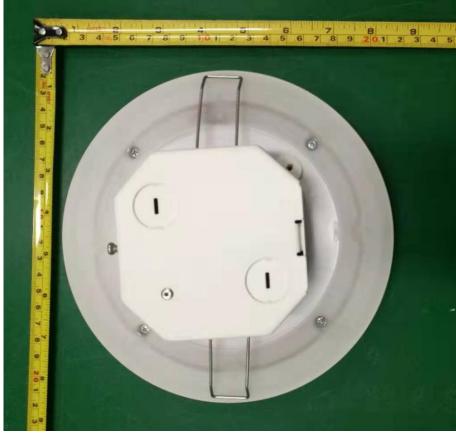
| Table2 | | | | | | | | | | | UNI | T: cd | |
|---------|------|------|------|------|------|--|--|--|--|--|-----|-------|--|
| C (DEG) | | | | | | | | | | | | | |
| y (DEG) | 285 | 300 | 315 | 330 | 345 | | | | | | | | |
| 0 | 320 | 320 | 320 | 320 | 320 | | | | | | | | |
| 5 | 318 | 318 | 318 | 318 | 318 | | | | | | | | |
| 10 | 313 | 313 | 313 | 313 | 312 | | | | | | | | |
| 15 | 306 | 306 | 305 | 305 | 305 | | | | | | | | |
| 20 | 295 | 295 | 294 | 294 | 294 | | | | | | | | |
| 25 | 282 | 281 | 280 | 281 | 280 | | | | | | | | |
| 30 | 266 | 265 | 264 | 264 | 264 | | | | | | | | |
| 35 | 247 | 247 | 245 | 245 | 245 | | | | | | | | |
| 40 | 226 | 226 | 225 | 225 | 224 | | | | | | | | |
| 45 | 204 | 203 | 202 | 201 | 202 | | | | | | | | |
| 50 | 180 | 179 | 178 | 177 | 178 | | | | | | | | |
| 55 | 155 | 154 | 153 | 152 | 153 | | | | | | | | |
| 60 | 129 | 128 | 127 | 127 | 127 | | | | | | | | |
| 65 | 103 | 102 | 101 | 101 | 101 | | | | | | | | |
| 70 | 76.3 | 75.7 | 74.5 | 74.7 | 74.4 | | | | | | | | |
| 75 | 51.2 | 50.7 | 49.5 | 49.6 | 49.4 | | | | | | | | |
| 80 | 28.3 | 27.9 | 26.9 | 27.0 | 26.6 | | | | | | | | |
| 85 | 9.17 | 8.72 | 7.82 | 7.95 | 7.81 | | | | | | | | |
| 90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 105 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 110 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 115 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | | | | | | | | |
| 120 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | | | | | | | | |
| 125 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | | | | | | | | |
| 130 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | | | | | | | | |
| 135 | 0.08 | 0.07 | 0.07 | 0.07 | 0.07 | | | | | | | | |
| 140 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | | | | | | | | |
| 145 | 0.12 | 0.12 | 0.12 | 0.12 | 0.11 | | | | | | | | |
| 150 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 | | | | | | | | |
| 155 | 0.16 | 0.16 | 0.16 | 0.17 | 0.15 | | | | | | | | |
| 160 | 0.17 | 0.17 | 0.17 | 0.18 | 0.17 | | | | | | | | |
| 165 | 0.17 | 0.17 | 0.17 | 0.18 | 0.18 | | | | | | | | |
| 170 | 0.16 | 0.15 | 0.16 | 0.17 | 0.16 | | | | | | | | |
| 175 | 0.15 | 0.14 | 0.15 | 0.16 | 0.16 | | | | | | | | |
| 180 | 0.12 | 0.12 | 0.13 | 0.13 | 0.14 | | | | | | | | |





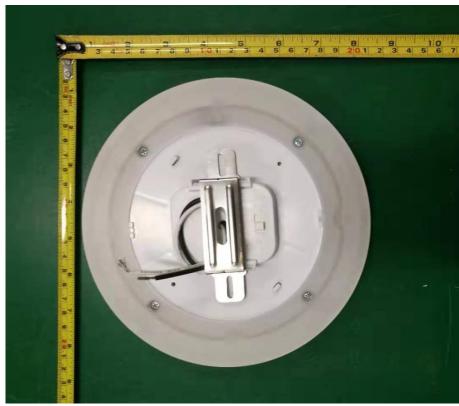
Photo of Sample:

















Equipment List:

| Equipment ID | Equipment Name | Last Cal. | Due Cal. |
|---------------------|------------------------------|------------|------------|
| NTC-F01-001 | Goniophotometer System | 2018-11-16 | 2019-11-15 |
| NTC-F01-006 | 2.0 meter Integrating Sphere | 2018-11-16 | 2019-11-15 |
| NTC-F01-012 | Standard Lamp | 2018-11-13 | 2019-11-12 |
| NTC-F01-013 | Standard Lamp | 2018-11-13 | 2019-11-12 |
| NTC-F01-031 | Digital Power Meter | 2018-08-29 | 2019-08-28 |
| NTC-F01-019 | Temperature & Humidity Meter | 2018-11-12 | 2019-11-11 |

**********End of Report******

