



Report No.: 80239581-37
Project No.: 80239581
Client: Vista Professional Outdoor Lighting

PHOTOMETRIC TESTING & EVALUATION TO IES LM-79-19

Sample Tested

1052YM-X-WW-RGBW-FL-MV-DMX-With Filter-RED Output

Prepared for:

Vista Professional Outdoor Lighting

1625 Surveyor Ave
Simi Valley, CA 93063

Technical Report Number

80239581-37

March 7, 2025

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Program Description

Photometric and electrical testing of a 1052YM-X-WW-RGBW-FL-MV-DMX-With Filter-RED Output Type C LED Luminaire to IES LM-79-19.

Executive Summary

Sample Tested = 1052YM-X-WW-RGBW-FL-MV-DMX-With Filter-RED Output

Sample Number = 44003367

Driver = ELDOLED PW50U-M4Z0X1

LED Module = LUMILEDS LUXEON 3528 RGB

Test Condition = The sample features Red, Green, Blue, and White light settings. It was tested with only the Red light turned on. The color settings were adjusted using an ENTTEC DMX USB PRO DMX512 controller. Candela values are scaled to calculate the same output of the sphere measurement.

| Luminous Efficacy (Lumens/Watt) | Luminous Flux (Lumens) | Input Power (Watts) | Power Factor | ATHD (%) |
|---------------------------------|------------------------|---------------------|--------------|----------|
| 29.72 | 457.42 | 15.39 | 0.9569 | 16.19 |

| CCT(K) | CRI | R9 | Rcs,h1 | Rf / Rg |
|--------|------|------|--------|---------|
| N.A. | N.A. | N.A. | N.A. | N.A. |

* The above results are recorded / derived from measurements made using an Integrating Sphere

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Test Sample Pictures

The following sample was submitted for evaluation:



Vista Professional Outdoor Lighting : 1052YM-X-WW-RGBW-FL-MV-DMX-With Filter-RED Output

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Test Result

The following results were measured after stabilization of the sample in the Integrating Sphere (unless otherwise stated). Stability shall be achieved when the variation (Maximum to minimum) of at least three readings of the light output and electrical power consumption, taken at a maximum of 10 minute intervals over a period of 20 minutes and divided by the last of these measurements chronologically, is less than 0.5%.

| Key Photometric Results | Sample Reference |
|--|---|
| | 1052YM-X-WW-RGBW-FL-MV-DMX-With Filter-RED Output |
| | Integrating Sphere |
| Luminous Efficacy (Lumens/Watt) | 29.72 |
| Total Luminous Flux (Lumens) | 457.42 |
| Total Radiant Flux (Watts) | 2.22 |
| Correlated Color Temperature (CCT) | N.A. |
| Color Rendering Index (CRI)(Ra) | N.A. |
| R9 Value | N.A. |
| IES Rf / IES Rg | N.A. |
| Local Chroma Shift Rcs,h1 | N.A. |
| Chromaticity (Chroma x/Chroma y) | 0.6965 / 0.3034 |
| Chromaticity (Chroma u/Chroma v) | 0.5309 / 0.3469 |
| Chromaticity (Chroma u'/Chroma v') | 0.5309 / 0.5203 |
| Duv Value | 0.0000 |
| Stabilization Time (Light and Power) | 90 minutes |
| Total Run Time (Integrating Sphere) | 95 minutes |
| Scotopic/Photopic ratio $\Phi(v')/\Phi(v)$ | 0.03 |

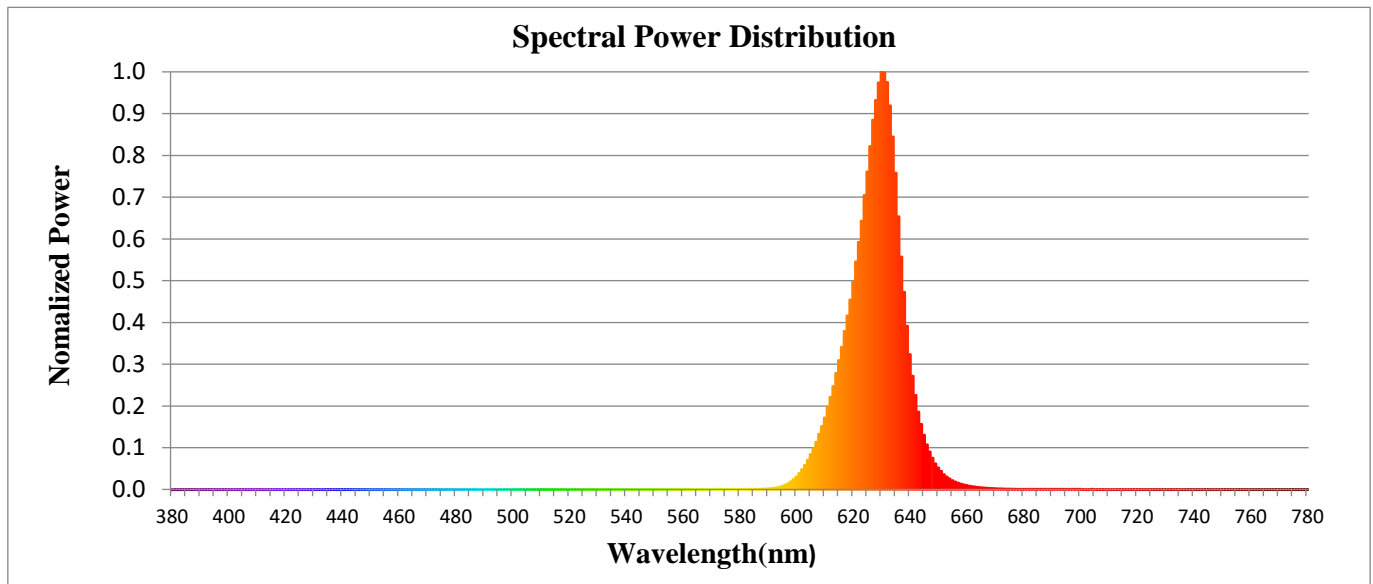
| Electrical Input Results: | Sample Reference |
|--------------------------------------|---|
| | 1052YM-X-WW-RGBW-FL-MV-DMX-With Filter-RED Output |
| Input Power (Watts) | 15.39 |
| Input Voltage (Volts AC) | 120.03 |
| Input Current (Amps) | 0.13 |
| Input Frequency (Hertz) | 60.0 |
| Power Factor | 0.9569 |
| Total Harmonic Distortion (THD V,A)% | 0.11, 16.19 |

| Additional Information | Sample Reference |
|-----------------------------|---|
| | 1052YM-X-WW-RGBW-FL-MV-DMX-With Filter-RED Output |
| Ambient Temperature | 25.3°C |
| Integrating Sphere Detector | CDS 2600 Spectroradiometer |
| Absortion Correction Used? | Yes |
| Date Tested | 3/6/2025 |

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Spectral Flux

The following graph shows the spectral response curve of the radiant flux for the sample:

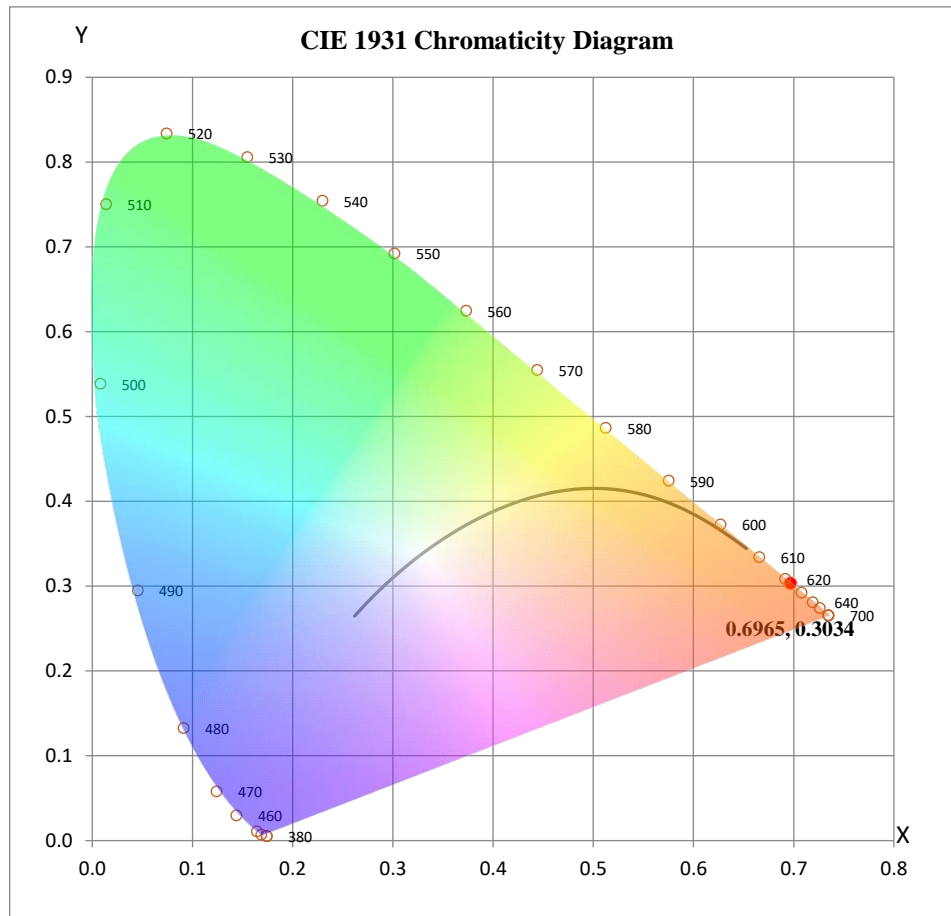


Spectral response of the Radiant Flux
 (380nm to 780nm - calibrated range of the Spectroradiometer)

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Chromaticity Diagram

The following image shows the chromaticity diagram for the sample:



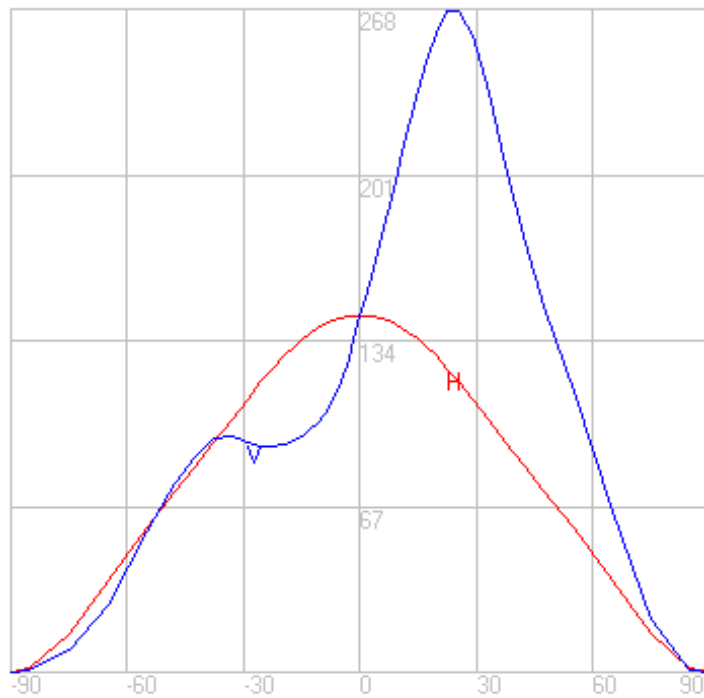
$x = 0.6965$ $y = 0.3034$

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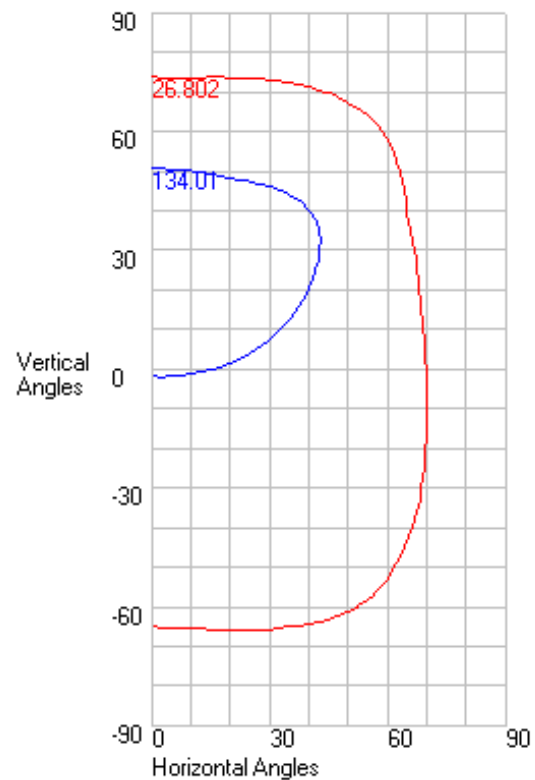
Photometric Test Results

| Characteristics | |
|------------------------------|-------------|
| NEMA Type | 7 H x 7 V |
| Maximum Candela | 268.02 |
| Maximum Candela Angle | -1 H 22.5 V |
| Horizontal Beam Angle (50%) | 81.80 |
| Vertical Beam Angle (50%) | 52.40 |
| Horizontal Field Angle (10%) | 135.40 |
| Vertical Field Angle (10%) | 138.80 |
| Beam Lumens | 192.00 |
| Field Lumens | 439 |

Axial Candela Display



Isocandela Curves



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Candela Tabulation

| | | Vertical Angle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|-----|----------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| Horizontal Angle | | 0.0 | 2.5 | 5.0 | 7.5 | 10.0 | 12.5 | 15.0 | 17.5 | 20.0 | 22.5 | 25.0 | 27.5 | 30.0 | 32.5 | 35.0 | 37.5 | 40.0 | 42.5 | 45.0 | 47.5 | 50.0 | 52.5 | 55.0 | 57.5 | 60.0 | 62.5 | 65.0 | 67.5 | 70.0 | 72.5 | 75.0 | 77.5 | 80.0 | 82.5 | 85.0 | 87.5 | 90.0 | |
| | 0 | 144 | 156 | 173 | 189 | 205 | 220 | 235 | 250 | 261 | 267 | 268 | 264 | 253 | 238 | 221 | 205 | 189 | 174 | 161 | 148 | 137 | 125 | 114 | 103 | 91 | 78 | 65 | 53 | 41 | 30 | 21 | 14 | 8 | 4 | 1 | 0 | 0 | |
| | 5 | 144 | 158 | 175 | 191 | 206 | 222 | 237 | 251 | 262 | 269 | 269 | 264 | 254 | 239 | 221 | 205 | 189 | 174 | 160 | 148 | 136 | 125 | 114 | 103 | 91 | 78 | 65 | 52 | 41 | 30 | 21 | 13 | 8 | 4 | 1 | 0 | 0 | |
| | 10 | 144 | 158 | 174 | 190 | 206 | 221 | 235 | 249 | 260 | 267 | 269 | 264 | 254 | 239 | 223 | 206 | 190 | 175 | 161 | 149 | 137 | 125 | 114 | 103 | 91 | 79 | 66 | 53 | 42 | 31 | 22 | 14 | 8 | 4 | 1 | 0 | 0 | |
| | 15 | 144 | 158 | 173 | 189 | 204 | 219 | 233 | 246 | 257 | 265 | 267 | 264 | 255 | 241 | 225 | 208 | 192 | 177 | 163 | 150 | 138 | 126 | 115 | 103 | 92 | 80 | 67 | 55 | 43 | 32 | 23 | 15 | 9 | 4 | 1 | 0 | 0 | |
| | 20 | 144 | 157 | 173 | 188 | 202 | 216 | 230 | 243 | 254 | 261 | 265 | 263 | 255 | 243 | 228 | 211 | 195 | 179 | 165 | 151 | 139 | 126 | 115 | 103 | 92 | 80 | 68 | 56 | 45 | 34 | 24 | 16 | 10 | 5 | 2 | 0 | 0 | |
| | 25 | 144 | 157 | 172 | 186 | 200 | 213 | 226 | 238 | 249 | 257 | 261 | 261 | 255 | 244 | 231 | 215 | 199 | 183 | 168 | 154 | 141 | 128 | 116 | 104 | 93 | 81 | 70 | 58 | 46 | 36 | 26 | 17 | 10 | 5 | 2 | 0 | 0 | |
| | 30 | 144 | 156 | 170 | 184 | 197 | 209 | 221 | 232 | 243 | 251 | 256 | 256 | 253 | 245 | 234 | 220 | 204 | 188 | 173 | 158 | 144 | 130 | 118 | 105 | 93 | 82 | 70 | 59 | 48 | 37 | 27 | 18 | 11 | 6 | 2 | 0 | 0 | |
| | 35 | 144 | 155 | 169 | 182 | 194 | 205 | 216 | 226 | 235 | 243 | 248 | 250 | 249 | 243 | 234 | 222 | 208 | 193 | 178 | 163 | 148 | 134 | 120 | 107 | 94 | 82 | 71 | 59 | 48 | 38 | 28 | 19 | 12 | 6 | 2 | 0 | 0 | |
| | 40 | 144 | 155 | 167 | 179 | 190 | 201 | 210 | 219 | 227 | 234 | 239 | 242 | 242 | 239 | 233 | 223 | 212 | 198 | 183 | 168 | 152 | 138 | 123 | 110 | 97 | 84 | 72 | 60 | 48 | 38 | 28 | 20 | 12 | 7 | 3 | 1 | 0 | 0 |
| | 45 | 144 | 154 | 165 | 176 | 186 | 195 | 204 | 211 | 218 | 223 | 228 | 231 | 232 | 231 | 227 | 220 | 211 | 200 | 186 | 172 | 157 | 143 | 128 | 113 | 99 | 86 | 73 | 61 | 49 | 38 | 28 | 20 | 12 | 7 | 3 | 0 | 0 | 0 |
| | 50 | 144 | 153 | 163 | 172 | 181 | 190 | 197 | 203 | 208 | 212 | 216 | 218 | 219 | 219 | 216 | 211 | 204 | 196 | 185 | 173 | 160 | 146 | 131 | 117 | 103 | 89 | 75 | 62 | 50 | 39 | 29 | 20 | 12 | 7 | 3 | 1 | 0 | 0 |
| | 55 | 144 | 152 | 160 | 169 | 177 | 183 | 189 | 194 | 198 | 200 | 202 | 204 | 204 | 203 | 201 | 197 | 192 | 185 | 176 | 166 | 155 | 143 | 130 | 117 | 103 | 90 | 76 | 63 | 51 | 39 | 29 | 20 | 12 | 7 | 3 | 1 | 0 | 0 |
| | 60 | 144 | 151 | 158 | 165 | 171 | 177 | 181 | 185 | 187 | 189 | 190 | 190 | 188 | 186 | 183 | 179 | 174 | 168 | 161 | 152 | 142 | 132 | 121 | 109 | 97 | 84 | 72 | 60 | 48 | 38 | 28 | 19 | 12 | 6 | 2 | 1 | 0 | 0 |
| | 65 | 144 | 150 | 156 | 161 | 166 | 170 | 173 | 176 | 177 | 177 | 176 | 175 | 173 | 169 | 165 | 160 | 154 | 148 | 141 | 133 | 124 | 114 | 104 | 94 | 83 | 73 | 62 | 52 | 42 | 32 | 24 | 16 | 10 | 5 | 2 | 1 | 0 | 0 |
| | 70 | 144 | 149 | 153 | 157 | 160 | 163 | 165 | 166 | 166 | 165 | 164 | 161 | 157 | 153 | 148 | 142 | 136 | 129 | 121 | 113 | 105 | 96 | 87 | 77 | 68 | 59 | 50 | 42 | 34 | 26 | 19 | 13 | 8 | 4 | 2 | 0 | 0 | 0 |
| | 75 | 144 | 148 | 151 | 153 | 155 | 156 | 157 | 156 | 155 | 153 | 150 | 147 | 143 | 137 | 132 | 126 | 119 | 112 | 104 | 97 | 89 | 80 | 72 | 64 | 56 | 49 | 41 | 34 | 28 | 21 | 16 | 11 | 7 | 3 | 1 | 0 | 0 | 0 |
| | 80 | 144 | 147 | 148 | 149 | 150 | 150 | 149 | 147 | 145 | 142 | 138 | 134 | 129 | 123 | 118 | 111 | 105 | 98 | 91 | 84 | 77 | 70 | 63 | 56 | 50 | 43 | 37 | 31 | 25 | 20 | 14 | 10 | 6 | 3 | 1 | 0 | 0 | 0 |
| | 85 | 144 | 146 | 146 | 146 | 145 | 143 | 141 | 139 | 136 | 132 | 127 | 123 | 118 | 112 | 107 | 101 | 95 | 89 | 83 | 77 | 71 | 65 | 59 | 53 | 47 | 42 | 36 | 30 | 25 | 20 | 15 | 10 | 6 | 3 | 1 | 0 | 0 | 0 |
| | 90 | 144 | 144 | 144 | 142 | 140 | 138 | 135 | 131 | 127 | 123 | 118 | 114 | 108 | 103 | 98 | 93 | 88 | 83 | 78 | 73 | 68 | 63 | 58 | 53 | 48 | 43 | 37 | 32 | 26 | 21 | 16 | 11 | 7 | 4 | 1 | 0 | 0 | 0 |
| | 95 | 144 | 143 | 141 | 139 | 136 | 132 | 129 | 124 | 120 | 115 | 111 | 106 | 101 | 97 | 92 | 88 | 85 | 81 | 77 | 73 | 69 | 64 | 60 | 55 | 50 | 45 | 39 | 34 | 28 | 22 | 17 | 12 | 7 | 4 | 2 | 0 | 0 | 0 |
| | 100 | 144 | 142 | 139 | 135 | 132 | 127 | 123 | 118 | 113 | 108 | 104 | 100 | 96 | 93 | 90 | 87 | 84 | 80 | 77 | 74 | 70 | 66 | 62 | 57 | 52 | 47 | 42 | 36 | 30 | 24 | 18 | 13 | 8 | 4 | 2 | 0 | 0 | 0 |
| | 105 | 144 | 141 | 137 | 132 | 128 | 123 | 117 | 112 | 108 | 103 | 100 | 97 | 94 | 91 | 89 | 86 | 84 | 81 | 78 | 75 | 72 | 68 | 65 | 60 | 55 | 50 | 44 | 38 | 32 | 25 | 19 | 14 | 9 | 5 | 2 | 0 | 0 | 0 |
| | 110 | 144 | 139 | 134 | 129 | 124 | 118 | 112 | 107 | 103 | 100 | 97 | 94 | 92 | 90 | 88 | 86 | 84 | 82 | 80 | 77 | 74 | 71 | 67 | 63 | 58 | 52 | 46 | 40 | 33 | 27 | 20 | 14 | 9 | 5 | 2 | 1 | 0 | 0 |
| | 115 | 144 | 138 | 132 | 126 | 120 | 114 | 108 | 104 | 100 | 98 | 95 | 93 | 91 | 90 | 88 | 86 | 85 | 83 | 82 | 80 | 77 | 74 | 69 | 65 | 59 | 53 | 47 | 40 | 34 | 27 | 20 | 14 | 9 | 5 | 2 | 0 | 0 | 0 |
| | 120 | 144 | 137 | 130 | 123 | 116 | 110 | 105 | 102 | 99 | 96 | 94 | 92 | 91 | 90 | 88 | 87 | 86 | 85 | 84 | 82 | 79 | 76 | 71 | 66 | 60 | 54 | 47 | 40 | 33 | 27 | 20 | 14 | 9 | 5 | 2 | 1 | 0 | 0 |
| | 125 | 144 | 136 | 129 | 121 | 114 | 108 | 103 | 100 | 97 | 95 | 93 | 92 | 90 | 89 | 89 | 88 | 88 | 87 | 86 | 84 | 81 | 77 | 72 | 66 | 59 | 53 | 46 | 39 | 32 | 26 | 19 | 14 | 9 | 5 | 2 | 0 | 0 | 0 |
| | 130 | 144 | 135 | 127 | 119 | 111 | 105 | 101 | 98 | 96 | 94 | 92 | 91 | 90 | 90 | 89 | 90 | 90 | 90 | 88 | 86 | 82 | 77 | 71 | 65 | 58 | 51 | 44 | 38 | 31 | 25 | 19 | 13 | 9 | 5 | 2 | 0 | 0 | 0 |
| | 135 | 144 | 135 | 125 | 116 | 109 | 104 | 100 | 97 | 95 | 93 | 92 | 91 | 90 | 90 | 91 | 92 | 92 | 92 | 90 | 86 | 81 | 75 | 69 | 63 | 56 | 49 | 42 | 36 | 29 | 23 | 17 | 12 | 8 | 5 | 2 | 0 | 0 | 0 |
| | 140 | 144 | 134 | 124 | 114 | 107 | 102 | 99 | 96 | 94 | 93 | 92 | 91 | 91 | 91 | 92 | 94 | 94 | 93 | 90 | 85 | 80 | 73 | 67 | 60 | 54 | 47 | 40 | 34 | 27 | 21 | 16 | 11 | 7 | 4 | 2 | 0 | 0 | 0 |
| | 145 | 144 | 133 | 123 | 113 | 106 | 101 | 98 | 96 | 94 | 92 | 91 | 91 | 91 | 92 | 94 | 95 | 95 | 93 | 88 | 83 | 77 | 71 | 64 | 58 | 51 | 44 | 38 | 32 | 25 | 20 | 15 | 10 | 6 | 4 | 2 | 0 | 0 | 0 |
| | 150 | 144 | 132 | 121 | 112 | 105 | 101 | 97 | 95 | 93 | 92 | 91 | 91 | 92 | 93 | 95 | 96 | 95 | 92 | 87 | 81 | 75 | 69 | 62 | 56 | 49 | 42 | 36 | 30 | 23 | 18 | 13 | 9 | 6 | 3 | 1 | 0 | 0 | 0 |
| | 155 | 144 | 132 | 120 | 111 | 104 | 100 | 97 | 94 | 93 | 92 | 91 | 91 | 92 | 94 | 96 | 96 | 94 | 90 | 85 | 79 | 73 | 67 | 61 | 54 | 48 | 41 | 34 | 27 | 21 | 16 | 11 | 8 | 5 | 3 | 1 | 0 | 0 | 0 |
| | 160 | 144 | 131 | 120 | 110 | 103 | 99 | 96 | 94 | 92 | 91 | 91 | 92 | 93 | 95 | 96 | 96 | 93 | 89 | 84 | 78 | 72 | 66 | 60 | 53 | 46 | 39 | 32 | 25 | 19 | 14 | 10 | 7 | 5 | 2 | 1 | 0 | 0 | 0 |
| | 165 | 144 | 131 | 119 | 109 | 103 | 99 | 96 | 94 | 92 | 91 | 91 | 92 | 93 | 95 | 96 | 95 | 92 | 88 | 83 | 77 | 71 | 65 | 59 | 52 | 45 | 37 | 30 | 23 | 18 | 13 | 10 | 7 | 4 | 2 | 1 | 0 | 0 | 0 |
| | 170 | 144 | 131 | 119 | 109 | 103 | 99 | 96 | 93 | 92 | 91 | 91 | 92 | 93 | 95 | 96 | 95 | 92 | 88 | 82 | 77 | 71 | 64 | 58 | 51 | 44 | 36 | 28 | 22 | 17 | 13 | 9 | 7 | 4 | 2 | 1 | 0 | 0 | 0 |
| | 175 | 144 | 130 | 118 | 108 | 102 | 99 | 96 | 93 | 92 | 91 | 91 | 92 | 94 | 95 | 96 | 94 | 91 | 87 | 82 | 76 | 70 | 64 | 57 | 50 | 43 | 35 | 27 | 21 | 16 | 12 | 9 | 6 | 4 | 2 | 1 | 0 | 0 | 0 |
| 180 | 144 | 129 | 118 | 108 | 102 | 98 | 95 | 93 | 92 | 91 | 92 | 93 | 94 | 95 | 96 | 95 | 92 | 87 | 82 | 76 | 70 | 64 | 57 | 50 | 42 | 34 | 27 | 21 | 16 | 12 | 9 | 6 | 4 | 2 | 1 | 0 | 0 | 0 | |

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Photometric Testing Information

The sample was evaluated for photometric and electrical characteristics using an integrating sphere and a goniophotometer, each located in purpose-built, temperature and humidity-controlled, draft free environments

The integrating sphere is by Labsphere which exhibits a “4 π geometry” configuration according to IES LM-79-19 and is applicable for all types of LED products (directional and non-directional light projections). Its spectroradiometer is an array-type detector manufactured and calibrated by Labsphere.

The integrating sphere uses self-absorption correction to eliminate errors due to mismatches between the standard reference lamp and the test samples being measured. The auxiliary lamp used to perform this task is a halogen type lamp powered by a calibrated Lamp Power Supply manufactured and calibrated by Labsphere. Ambient temperature (for photometric analysis) is measured using a “J-Type” thermocouple located inside the integrating sphere at the same height as the sample under test and not more than 1 meter in horizontal distance away from the sample. The thermocouple is located behind the baffle of the photo detector in order to eliminate any direct optical radiation from the sample under test.

Luminaire Stabilization.

The sample was placed inside the integrating sphere and powered by a regulated and conditioned Voltage alternating current supply. The correlated color temperature, color rendering index, chromaticity coordinates and electrical power measurements contained in this report are the numeric averages of the three readings upon which stabilization is verified. The stabilization times shown on the results pages of this report denote the time of the 1st measurement (of the 3 consecutive readings) since this is the minimum time that the sample is assumed to have taken to reach stabilization.

The integrating sphere is calibrated using a quartzline halogen lamp with the following specifications:
(Calibrated by Labsphere – NIST traceable).

| Lamp ID | J178 | L177 | A178 |
|------------------|---------------|---------------|---------------|
| Manufacture | Donar | Donar | Donar |
| Model Number | SCL-1400-J178 | SCL-1400-L177 | SCL-1400-A178 |
| Part ID | SCL-1400 | SCL-1400 | SCL-1400 |
| Current (A) | 2.679 | 2.679 | 2.679 |
| Wattage (W) | 75.0 | 75.0 | 75.0 |
| Voltage (VDC) | 28.0 | 28.0 | 28.0 |
| Luminous Flux | 1306 | 1417 | 1343 |
| Calibration Date | 6/21/2021 | 2/16/2021 | 6/21/2021 |

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Photometric Testing Information (Continued)

The goniophotometer Mayer Engineering Type C is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

Manufacturer: GE
Part Number: DZE
Bulb Number: 106-A
Voltage: 16.93 Volts DC reference
Calibration Current: 4.863 Amperes
Luminous Intensity: 168.8 Candelas
Calibration Date: 4/25/12 (NIST traceable)

Manufacturer: GE
Part Number: DZE
Bulb Number: 106-B
Voltage: 16.45 Volts DC reference
Calibration Current: 4.79 Amperes
Luminous Intensity: 145.3 Candelas
Calibration Date: 4/25/12 (NIST traceable)

Manufacturer: GE
Part Number: DZE
Bulb Number: 106-C
Voltage: 16.57 Volts DC reference
Calibration Current: 4.829 Amperes
Luminous Intensity: 157.0 Candelas
Calibration Date: 4/25/12 (NIST traceable)

A Yokogawa WT210 Power Analyzer was used to measure all electrical characteristics of the sample.

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Equipment List: Goniophotometer Type C

| Description | Manufacturer and Model Number | CSA Instrument Reference Number | Calibration Due Date |
|------------------------------|---------------------------------|---------------------------------|----------------------|
| Optometer | Gigahertz Optik P9801 | OPT400 | N/A |
| Programmable DC Power Supply | Chroma Instruments 62012P-80-60 | DCP300 | N/A |
| Regulated Power Supply | Chroma Instruments 61602 | AC301 | N/A |
| Power Analyzer | Yokogawa WT210 | Z00019641 | 10/28/2025 |

Equipment List: Sphere D Equipment

| Description | Manufacturer and Model Number | CSA Instrument Reference Number | Calibration Due Date |
|------------------------------|-------------------------------|---------------------------------|----------------------|
| Integrating Sphere 118" | Labsphere LMS-3M | Z00029788 | N/A |
| Spectroradiometer | Labsphere CDS2600 | N/A | N/A |
| Auxiliary Lamp PSU | Labsphere LPS525 | N/A | N/A |
| Power Analyzer | Yokogawa WT310E | Z00025875 | 5/14/2025 |
| Programmable AC Power Supply | Chroma Instruments 61605 | Z00023974 | N/A |

* All equipment is calibrated to ISO / IEC 17025-2017 guidelines.

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