

# GENERATION BRANDS, LLC TEST REPORT

## SCOPE OF WORK

LED Performance Testing

## MODEL NUMBER

ESSF0606P48300930WW1

## PROJECT NUMBER

G104349704

## REPORT NUMBER

10434974CHI-022

## ISSUE DATE

8/17/2020

## REVISED DATE

None

## TEST DATES

08/13/2020.

## DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

10434974CHI-022

**MODEL NUMBER(s)**

ESSF0606P48300930WW1

**REPORT RENDERED TO:**

GENERATION BRANDS, LLC  
7400 LINDER AVE  
SKOKIE, IL 60077

**STATEMENT OF LIMITATION**

NVLAP Lab Code 600186-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

**AUTHORIZATION**

The testing performed was authorized by signed quote number Qu-01080748-3.

**TEST STANDARDS**

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

In Charge of Testing:



Ian Smith  
Engineer  
Lighting Division

Reviewer:



Jeff Davis  
NA Technical Lead  
Lighting Division

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**SAMPLE INFORMATION**

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**ITEMS RECEIVED**

| Item No. | Control No.          | Model No.                | Description                   | Type       | Received  |
|----------|----------------------|--------------------------|-------------------------------|------------|-----------|
| 1        | AH08122020025613-022 | ESSF0606P48300930WW<br>1 | ESSENCE 0606 P 300<br>930 W W | Production | 8/12/2020 |

**TESTED SAMPLE CONFIGURATIONS**

| Config No. | Tested Model No.     | Item Nos. Utilized |
|------------|----------------------|--------------------|
| 1          | ESSF0606P48300930WW1 | 1                  |

## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

|                      |                            |
|----------------------|----------------------------|
| Product Model No.:   | ESSF0606P48300930WW1       |
| Product Description: | ESSENCE 0606 P 300 930 W W |
| LED Model No.:       | P Series                   |
| Driver Model No.:    | NA                         |
| Light Source:        | LED                        |

| Criteria                             | Results         |                    |
|--------------------------------------|-----------------|--------------------|
|                                      | Goniophotometer | Integrating Sphere |
| Light Output (lumens)                | 1178.5          | 1198.1             |
| Input Power (W) @ 24VDC (Vdc)        | 18.52           | 18.43              |
| Lumen Efficacy (lm/W)                | 63.6            | 65.0               |
| Input Power Factor (I) @ 24VDC (Vdc) | NA              | NA                 |

| Criteria                         | Results |
|----------------------------------|---------|
| Input ATHD (%) @ 24VDC (Vdc)     | NA      |
| Correlated Color Temperature (K) | 2955    |
| Color Rendering Index - Ra (I)   | 97.6    |
| Color Rendering Index - R9 (I)   | 98.4    |
| Duv (I)                          | -0.0016 |
| Chromaticity Coordinate (x)      | 0.438   |
| Chromaticity Coordinate (y)      | 0.400   |
| Chromaticity Coordinate (u')     | 0.253   |
| Chromaticity Coordinate (v')     | 0.520   |

## TEST METHODS

### SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with IESNA LM-79.

### INTEGRATING SPHERE TESTING

A spectroradiometer and integrating sphere were used to measure the spectral distribution for each EUT resulting in photometric and colorimetric data. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position inside the sphere and stabilization procedures to LM-79 were followed.

### TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position near the EUT at equal height and stabilization procedures to LM-79 were followed.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

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| Test Configuration | Tested Model No.     | Pass/Fail/NA |
|--------------------|----------------------|--------------|
| 1                  | ESSF0606P48300930WW1 | NA           |

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)**

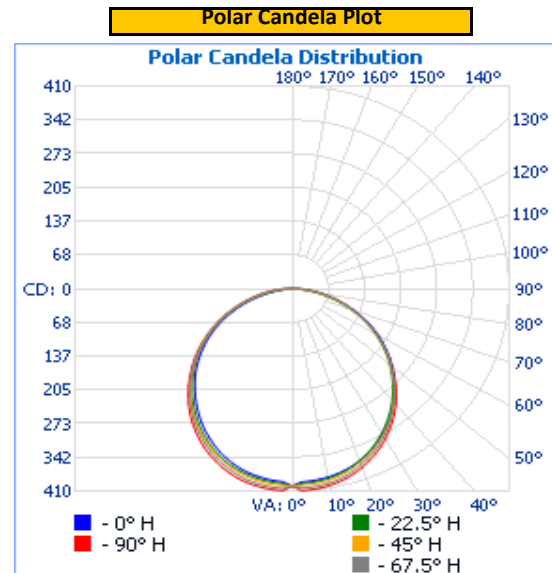
| Base Orientation | Input Voltage (Vdc) | Input Current (mA) | Input Power (W) | Input Power Factor ( ) |
|------------------|---------------------|--------------------|-----------------|------------------------|
| Up               | 24.0                | 772.0              | 18.52           | NA                     |

| Light Output (lm) | Lumen Efficacy (lm/W) |
|-------------------|-----------------------|
| 1178.5            | 63.6                  |

**INTENSITY SUMMARY - CANDELA**

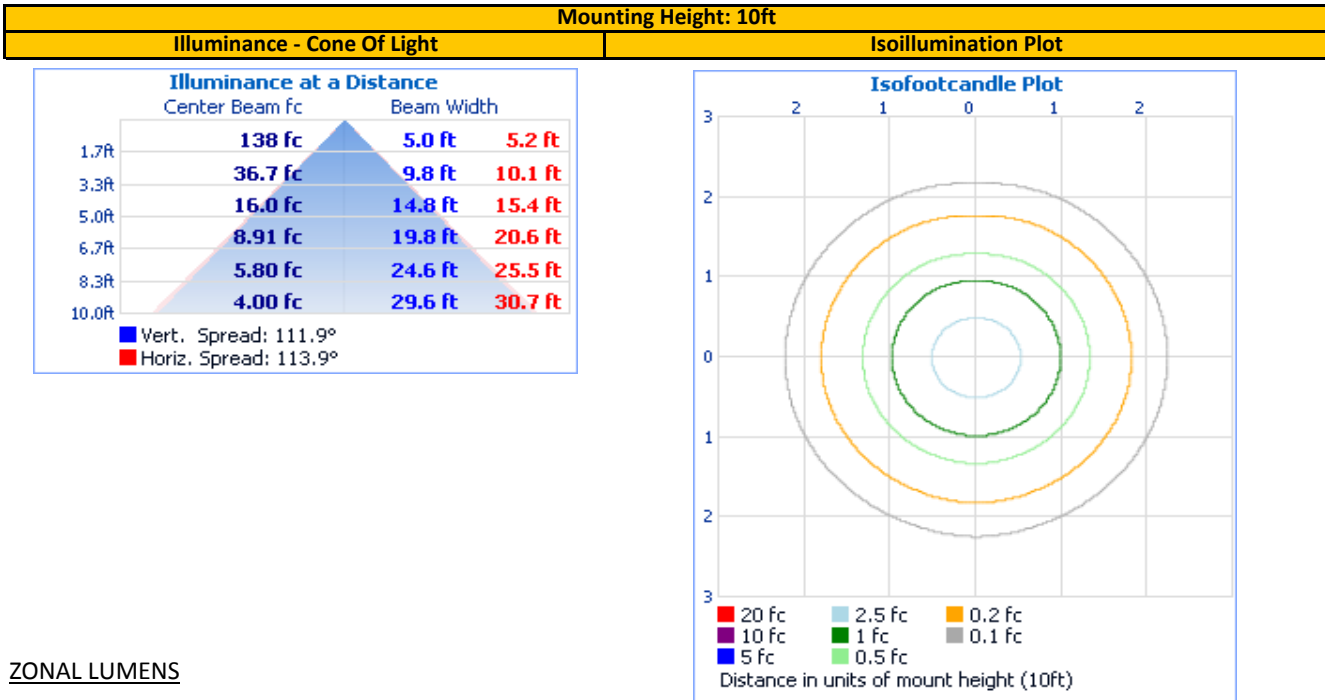
| Angle | 0   | 22.5 | 45  | 67.5 | 90  |
|-------|-----|------|-----|------|-----|
| 0     | 400 | 400  | 400 | 400  | 400 |
| 5     | 391 | 394  | 398 | 403  | 408 |
| 10    | 388 | 390  | 394 | 400  | 405 |
| 15    | 381 | 383  | 387 | 392  | 397 |
| 20    | 371 | 371  | 375 | 380  | 386 |
| 25    | 358 | 356  | 361 | 365  | 370 |
| 30    | 340 | 338  | 343 | 346  | 352 |
| 35    | 320 | 317  | 322 | 325  | 330 |
| 40    | 297 | 294  | 298 | 300  | 304 |
| 45    | 273 | 268  | 272 | 273  | 277 |
| 50    | 246 | 241  | 243 | 244  | 248 |
| 55    | 217 | 212  | 214 | 214  | 217 |
| 60    | 187 | 180  | 182 | 183  | 185 |
| 65    | 154 | 148  | 149 | 151  | 152 |
| 70    | 120 | 114  | 116 | 118  | 120 |
| 75    | 86  | 79   | 83  | 86   | 88  |
| 80    | 52  | 48   | 53  | 57   | 59  |
| 85    | 22  | 21   | 27  | 33   | 34  |
| 90    | 0   | 0    | 0   | 0    | 0   |
| 95    | 0   | 0    | 0   | 0    | 0   |
| 100   | 0   | 0    | 0   | 0    | 0   |
| 105   | 0   | 0    | 0   | 0    | 0   |
| 110   | 0   | 0    | 0   | 0    | 0   |
| 115   | 0   | 0    | 0   | 0    | 0   |
| 120   | 0   | 0    | 0   | 0    | 0   |
| 125   | 0   | 0    | 0   | 0    | 0   |
| 130   | 0   | 0    | 0   | 0    | 0   |
| 135   | 0   | 0    | 0   | 0    | 0   |
| 140   | 0   | 0    | 0   | 0    | 0   |
| 145   | 0   | 0    | 0   | 0    | 0   |
| 150   | 0   | 0    | 0   | 0    | 0   |
| 155   | 0   | 0    | 0   | 0    | 0   |
| 160   | 0   | 0    | 0   | 0    | 0   |
| 165   | 0   | 0    | 0   | 0    | 0   |
| 170   | 0   | 0    | 0   | 0    | 0   |
| 175   | 0   | 0    | 0   | 0    | 0   |
| 180   | 0   | 0    | 0   | 0    | 0   |

Entire luminous intensity matrix found in .IES file



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ILLUMINANCE SUMMARY



ZONAL LUMENS

| Zonal Lumen Summary |         |           |         |        |       |
|---------------------|---------|-----------|---------|--------|-------|
| Zone                | Lumens  | Luminaire | Zone    | Lumens | Total |
| 0-30                | 313.3   | 26.6%     | 90-100  | 0.0    | 0.0%  |
| 0-40                | 514.2   | 43.6%     | 100-110 | 0.0    | 0.0%  |
| 0-60                | 913.6   | 77.5%     | 110-120 | 0.0    | 0.0%  |
| 60-90               | 264.9   | 22.5%     | 120-130 | 0.0    | 0.0%  |
| 70-100              | 117.3   | 10.0%     | 130-140 | 0.0    | 0.0%  |
| 90-120              | 0.0     | 0.0%      | 140-150 | 0.0    | 0.0%  |
| 0-90                | 1,178.5 | 100.0%    | 150-160 | 0.0    | 0.0%  |
| 90-180              | 0.0     | 0.0%      | 160-170 | 0.0    | 0.0%  |
| 0-180               | 1,178.5 | 100.0%    | 170-180 | 0.0    | 0.0%  |

# **INTEGRATING SPHERE TESTING**

**REPORT NO. 10434974CHI-022**

| Test Configuration | Tested Model No.     | Pass/Fail/NA |
|--------------------|----------------------|--------------|
| 1                  | ESSF0606P48300930WW1 | NA           |

PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

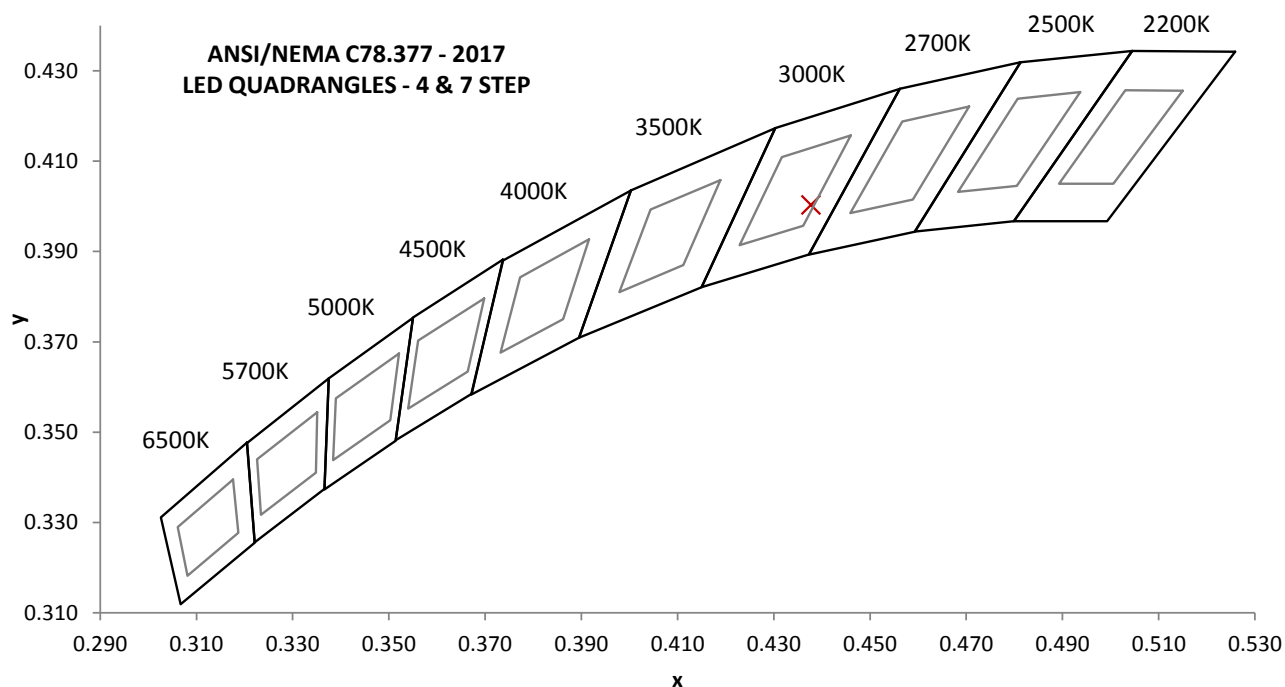
| Base Orientation |
|------------------|
| Up               |

| Input Voltage (Vdc) | Input Current (mA) | Input Power (W) | Input Power Factor ( ) | Input ATHD (%) |
|---------------------|--------------------|-----------------|------------------------|----------------|
| 23.99               | 768.0              | 18.43           | NA                     | NA             |

Measured at 23.99(Vdc)

| Light Output (lm) | Lumen Efficacy (lm/W) | CCT (K) | CRI - Ra ( ) | CRI - R9 ( ) |
|-------------------|-----------------------|---------|--------------|--------------|
| 1198.1            | 65.0                  | 2955    | 97.6         | 98.4         |

| Duv ( ) | 1931 Chrom (x) | 1931 Chrom (y) | 1976 Chrom (u') | 1976 Chrom (v') |
|---------|----------------|----------------|-----------------|-----------------|
| -0.0016 | 0.438          | 0.400          | 0.253           | 0.520           |

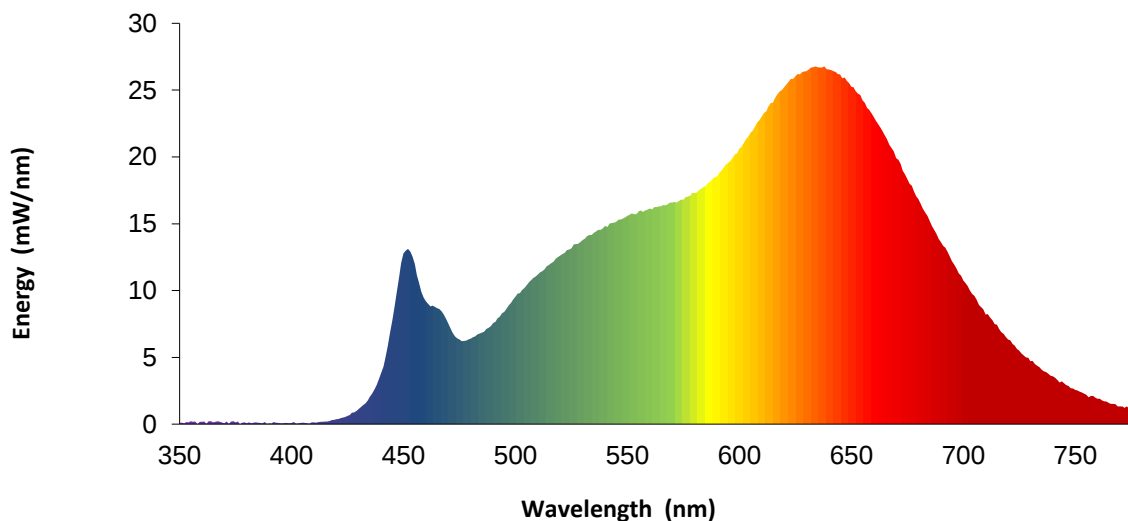


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

| nm  | mW/nm |  | nm  | mW/nm |  | nm  | mW/nm |  | nm  | mW/nm |
|-----|-------|--|-----|-------|--|-----|-------|--|-----|-------|
| 350 | 0.1   |  | 460 | 9.2   |  | 570 | 16.6  |  | 680 | 16.9  |
| 355 | 0.2   |  | 465 | 8.7   |  | 575 | 16.8  |  | 685 | 15.2  |
| 360 | 0.2   |  | 470 | 7.5   |  | 580 | 17.3  |  | 690 | 13.6  |
| 365 | 0.1   |  | 475 | 6.3   |  | 585 | 17.8  |  | 695 | 12.2  |
| 370 | 0.1   |  | 480 | 6.4   |  | 590 | 18.5  |  | 700 | 10.7  |
| 375 | 0.1   |  | 485 | 6.8   |  | 595 | 19.6  |  | 705 | 9.6   |
| 380 | 0.1   |  | 490 | 7.6   |  | 600 | 20.6  |  | 710 | 8.2   |
| 385 | 0.1   |  | 495 | 8.4   |  | 605 | 21.8  |  | 715 | 7.4   |
| 390 | 0.1   |  | 500 | 9.5   |  | 610 | 23.0  |  | 720 | 6.3   |
| 395 | 0.1   |  | 505 | 10.4  |  | 615 | 24.0  |  | 725 | 5.5   |
| 400 | 0.1   |  | 510 | 11.2  |  | 620 | 25.2  |  | 730 | 4.7   |
| 405 | 0.1   |  | 515 | 11.9  |  | 625 | 26.0  |  | 735 | 4.1   |
| 410 | 0.1   |  | 520 | 12.6  |  | 630 | 26.4  |  | 740 | 3.6   |
| 415 | 0.2   |  | 525 | 13.2  |  | 635 | 26.7  |  | 745 | 3.1   |
| 420 | 0.4   |  | 530 | 13.8  |  | 640 | 26.5  |  | 750 | 2.6   |
| 425 | 0.6   |  | 535 | 14.3  |  | 645 | 26.2  |  | 755 | 2.2   |
| 430 | 1.1   |  | 540 | 14.8  |  | 650 | 25.2  |  | 760 | 1.9   |
| 435 | 2.1   |  | 545 | 15.1  |  | 655 | 24.2  |  | 765 | 1.6   |
| 440 | 3.8   |  | 550 | 15.6  |  | 660 | 23.0  |  | 770 | 1.3   |
| 445 | 7.8   |  | 555 | 15.9  |  | 665 | 21.6  |  | 775 | 1.2   |
| 450 | 12.8  |  | 560 | 16.1  |  | 670 | 19.9  |  | 780 | 1.0   |
| 455 | 12.0  |  | 565 | 16.3  |  | 675 | 18.4  |  | --- | ---   |

Without correction of sample absorption.



Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only

**EQUIPMENT LIST**

**REPORT NO. 10434974CHI-022**

| #  | Equipment                        | Model No  | Control No. | Last Cal   | Cal Due    |
|----|----------------------------------|-----------|-------------|------------|------------|
| 1  | Yokogawa Power Meter             | WT210     | 146919      | 7/1/2020   | 7/1/2021   |
| 2  | Omega Thermometer                | DPI8-C24  | 146920      | 10/3/2019  | 10/3/2020  |
| 3  | LSI High Speed Mirror Goniometer | 6440T     | 146928      | VBU        | VBU        |
| 4  | Newport Thermohygrometer         | iServer   | 146957      | 12/2/2019  | 12/2/2020  |
| 5  | Sorenson DC Power Supply         | XHR 150-7 | 146922      | VBU        | VBU        |
| 6  | Newport Humidity Recorder        | iServer   | CHI0456     | 10/11/2019 | 10/11/2020 |
| 7  | Labsphere Spectroradiometer      | CDS-600   | 146923      | VBU        | VBU        |
| 8  | 2M Rotating Sphere               | 7660-ROT  | 146923      | VBU        | VBU        |
| 9  | Omega thermometer                | USB TC08  | EQAH002615  | 4/7/2020   | 4/7/2021   |
| 10 | Ametek DC Power Supply           | XFR150-8  | 1468464     | VBU        | VBU        |
| 11 | Yokogawa Power Meter             | WT210     | 146880      | 10/2/2019  | 10/2/2020  |
| 12 | Chroma Power Supply              | 61604     | CHI0371     | VBU        | VBU        |
| 13 |                                  |           |             |            |            |
| 14 |                                  |           |             |            |            |
| 15 |                                  |           |             |            |            |
| 16 |                                  |           |             |            |            |
| 17 |                                  |           |             |            |            |
| 18 |                                  |           |             |            |            |
| 19 |                                  |           |             |            |            |
| 20 |                                  |           |             |            |            |
| 21 |                                  |           |             |            |            |
| 22 |                                  |           |             |            |            |
| 23 |                                  |           |             |            |            |
| 24 |                                  |           |             |            |            |
| 25 |                                  |           |             |            |            |
| 26 |                                  |           |             |            |            |
| 27 |                                  |           |             |            |            |
| 28 |                                  |           |             |            |            |
| 29 |                                  |           |             |            |            |
| 30 |                                  |           |             |            |            |

Note: Standard sources listed above are traceable to NIST: National Institute of Standards and Technology

**REVISION HISTORY**

| #   | Revision Date | Updated By | Reviewed By | Description of Change |
|-----|---------------|------------|-------------|-----------------------|
| --- | None          | ---        | ---         | ---                   |
| --- | ---           | ---        | ---         | ---                   |
| --- | ---           | ---        | ---         | ---                   |