

## Photometric Test Report

### Relevant Standards

- ☒ ANSI/IES LM-79-2019
- ☒ ANSI C82.77-2017

Prepared For

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## 1.0 Test Summary

DLC Technical Requirements V5.1

Stairwell and Passageway Luminaires					
Requirement Category		Test Method	Requirements		Test Value
Luminaire Output (lm) (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	750		483
Minimum Luminaire Efficacy (lm/W) (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Standard	Premium	27.3
			105	120	
Power (Input Wattage) (W) (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Worst Case		17.7
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)		ANSI C82.77:2002	20.00%	120V	5.77
		ANSI C82-77-10:2020		277V	19.65
Power Factor (THD & PF – Section 4.3)		ANSI C82.77:2002	0.9	120V	0.988
		ANSI C82-77-10:2020		277V	0.849
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	N/A		Blue (Lp=470nm)
Minimum CRI (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019 CIE13.3-1995	N/A		-37.6
Minimum R9 (Integrating Sphere – Section 4.1)		ANSI/IES LM-79-2019 CIE13.3-1995	N/A		-285
Minimum Rf (Integrating Sphere – Section 4.1)		ANSI/IES TM-30-18	N/A		N/A
Minimum Rg (Integrating Sphere – Section 4.1)		ANSI/IES TM-30-18	N/A		N/A
IES Rcs,h1 (Integrating Sphere – Section 4.1)		ANSI/IES TM-30-18	N/A		N/A
Zonal Lumen Requirement (0°-90°) (Goniophotometer – Section 4.2)		ANSI/IES LM-79:2019	≥85%		N/A
Backlight, Uplight and Glare (BUG) Ratings (Goniophotometer – Section 4.2)		ANSI/IES LM-79:2019 IES TM-15-11	N/A		N/A
Input Voltage (V)					
(Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Worst Cast		277.0
(Integrating Sphere – Section 4.1)			Non-Worst Case		120.0
Input Current (A)					
(Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Worst Case		0.075
(Integrating Sphere – Section 4.1)			Non-Worst Case		0.142
Power (Input Wattage – W)					
(Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Worst Case		17.7
(Integrating Sphere – Section 4.1)			Non-Worst Case		16.8

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-07-23	VXRGB @18WBLUE	-	240715001-S1
2	Goniophotometer Test	N/A	VXRGB @18WBLUE	-	240715001-S1
3	THD and PF Test	2024-07-23	VXRGB @18WBLUE	-	240715001-S1

### Remark (If any):

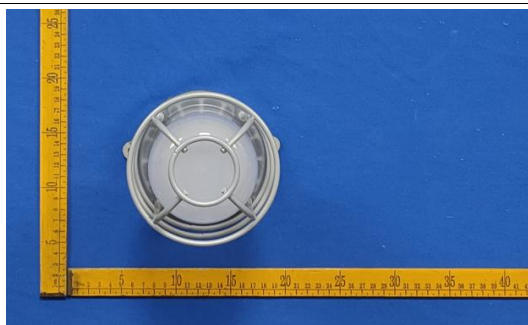
1. The results contained in this report pertain only to the tested samples.
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3. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.

## 3.0 Product Description

Luminaire Description: Model No. VXRGB @18WBLUE.

Electrical Specification: 120-277Vac, 50/60Hz

### Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

<b>Model No.</b>	VXRGB @18WBLUE	<b>Sample ID</b>	240715001-S1
<b>Operate time (Min.)</b>	10	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.4	<b>Humidity (%RH)</b>	41.0

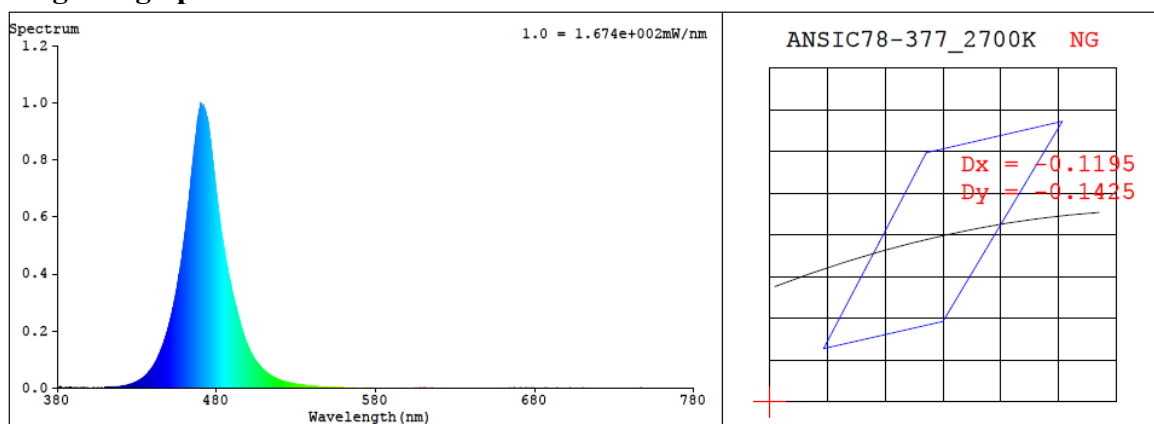
<b>Test Method</b>
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were 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 4<math>\pi</math> 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 780nm.</p>

#### Test Result

<b>Voltage (Vac)</b>	<b>Frequency (Hz)</b>	<b>Current (A)</b>	<b>Power (W)</b>	<b>Power Factor</b>
120.0	60	0.142	16.8	0.988
277.0	60	0.075	17.7	0.849

<b>CCT (K)</b>	<b>CRI</b>	<b>R9</b>	<b>Duv</b>	<b>Rf</b>	<b>Rg</b>	<b>IES Rcs,h1</b>
Blue (Lp=470nm)	-37.6	-285	-0.1310	N/A	N/A	N/A

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.1231$   $y = 0.0957$  /  $u' = 0.1262$   $v' = 0.2207$  ( $duv = -1.31e-01$ )

CCT >= 100000K Prcp WL:  $L_d = 474.4\text{nm}$  Purity = 94.8%

Peak WL:  $L_p = 470\text{nm}$  FWHM:  $\approx 25.3\text{nm}$  Ratio: R=0.3% G=24.3% B=75.4%

Render Index:  $R_a = -37.6$  AvgR = -66.5 TM30:  $R_f = 0$   $R_g = 51$

EEL: 0.41176 B

R1 = -17 R2 = -28 R3 = -101 R4 = -66 R5 = 3 R6 = -41 R7 = -27

R8 = -25 R9 = -285 R10 = -188 R11 = -98 R12 = -78 R13 = -31 R14 = -15 R15 = -1

## 4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	2.90E-06	447	1.59E-04	514	4.43E-05	581	1.10E-06	648	4.00E-07	715	1.00E-07
381	1.30E-06	448	1.79E-04	515	4.08E-05	582	1.10E-06	649	5.00E-07	716	1.00E-07
382	2.70E-06	449	1.95E-04	516	3.73E-05	583	1.10E-06	650	4.00E-07	717	0.00E+00
383	2.10E-06	450	2.16E-04	517	3.45E-05	584	9.00E-07	651	4.00E-07	718	0.00E+00
384	1.60E-06	451	2.39E-04	518	3.17E-05	585	1.10E-06	652	4.00E-07	719	1.00E-07
385	2.00E-06	452	2.64E-04	519	2.95E-05	586	1.00E-06	653	4.00E-07	720	1.00E-07
386	1.20E-06	453	2.86E-04	520	2.71E-05	587	1.00E-06	654	4.00E-07	721	0.00E+00
387	1.10E-06	454	3.17E-04	521	2.54E-05	588	9.00E-07	655	4.00E-07	722	1.00E-07
388	2.50E-06	455	3.43E-04	522	2.39E-05	589	9.00E-07	656	3.00E-07	723	1.00E-07
389	1.10E-06	456	3.80E-04	523	2.23E-05	590	9.00E-07	657	3.00E-07	724	0.00E+00
390	8.00E-07	457	4.08E-04	524	2.09E-05	591	1.00E-06	658	3.00E-07	725	0.00E+00
391	9.00E-07	458	4.48E-04	525	1.95E-05	592	9.00E-07	659	4.00E-07	726	1.00E-07
392	1.00E-06	459	4.91E-04	526	1.84E-05	593	9.00E-07	660	3.00E-07	727	1.00E-07
393	8.00E-07	460	5.35E-04	527	1.73E-05	594	9.00E-07	661	3.00E-07	728	1.00E-07
394	1.10E-06	461	5.77E-04	528	1.61E-05	595	9.00E-07	662	3.00E-07	729	1.00E-07
395	1.20E-06	462	6.25E-04	529	1.54E-05	596	9.00E-07	663	4.00E-07	730	1.00E-07
396	1.20E-06	463	6.74E-04	530	1.41E-05	597	8.00E-07	664	3.00E-07	731	1.00E-07
397	1.40E-06	464	7.30E-04	531	1.34E-05	598	9.00E-07	665	3.00E-07	732	1.00E-07
398	1.50E-06	465	7.83E-04	532	1.25E-05	599	8.00E-07	666	3.00E-07	733	1.00E-07
399	1.20E-06	466	8.37E-04	533	1.18E-05	600	8.00E-07	667	3.00E-07	734	1.00E-07
400	1.50E-06	467	8.79E-04	534	1.10E-05	601	8.00E-07	668	3.00E-07	735	1.00E-07
401	1.40E-06	468	9.29E-04	535	1.03E-05	602	8.00E-07	669	3.00E-07	736	0.00E+00
402	1.30E-06	469	9.65E-04	536	9.70E-06	603	8.00E-07	670	3.00E-07	737	1.00E-07
403	1.60E-06	470	9.97E-04	537	9.20E-06	604	8.00E-07	671	3.00E-07	738	1.00E-07
404	1.50E-06	471	9.79E-04	538	8.70E-06	605	7.00E-07	672	3.00E-07	739	1.00E-07
405	1.20E-06	472	9.86E-04	539	7.90E-06	606	8.00E-07	673	3.00E-07	740	0.00E+00
406	1.70E-06	473	9.71E-04	540	7.60E-06	607	8.00E-07	674	3.00E-07	741	0.00E+00
407	1.80E-06	474	9.49E-04	541	7.10E-06	608	7.00E-07	675	2.00E-07	742	1.00E-07
408	2.10E-06	475	9.21E-04	542	6.70E-06	609	8.00E-07	676	2.00E-07	743	0.00E+00
409	1.90E-06	476	8.76E-04	543	6.40E-06	610	7.00E-07	677	2.00E-07	744	1.00E-07
410	2.30E-06	477	8.31E-04	544	5.80E-06	611	8.00E-07	678	2.00E-07	745	0.00E+00
411	2.70E-06	478	7.83E-04	545	5.50E-06	612	8.00E-07	679	2.00E-07	746	1.00E-07
412	2.60E-06	479	7.31E-04	546	5.30E-06	613	7.00E-07	680	2.00E-07	747	2.00E-07
413	3.10E-06	480	6.83E-04	547	4.90E-06	614	7.00E-07	681	1.00E-07	748	0.00E+00
414	3.00E-06	481	6.33E-04	548	4.70E-06	615	7.00E-07	682	2.00E-07	749	2.00E-07
415	3.60E-06	482	5.94E-04	549	4.40E-06	616	6.00E-07	683	2.00E-07	750	1.00E-07
416	4.20E-06	483	5.51E-04	550	4.10E-06	617	6.00E-07	684	1.00E-07	751	1.00E-07
417	4.30E-06	484	5.15E-04	551	3.50E-06	618	7.00E-07	685	2.00E-07	752	0.00E+00
418	5.20E-06	485	4.82E-04	552	3.20E-06	619	7.00E-07	686	2.00E-07	753	0.00E+00
419	5.60E-06	486	4.47E-04	553	3.10E-06	620	6.00E-07	687	2.00E-07	754	0.00E+00
420	6.40E-06	487	4.18E-04	554	3.00E-06	621	7.00E-07	688	2.00E-07	755	1.00E-07
421	7.20E-06	488	3.88E-04	555	2.90E-06	622	7.00E-07	689	2.00E-07	756	1.00E-07
422	7.90E-06	489	3.63E-04	556	2.70E-06	623	6.00E-07	690	2.00E-07	757	0.00E+00
423	8.80E-06	490	3.35E-04	557	2.60E-06	624	7.00E-07	691	2.00E-07	758	1.00E-07
424	1.03E-05	491	3.12E-04	558	2.40E-06	625	6.00E-07	692	2.00E-07	759	1.00E-07
425	1.18E-05	492	2.89E-04	559	2.30E-06	626	6.00E-07	693	2.00E-07	760	0.00E+00
426	1.32E-05	493	2.67E-04	560	2.20E-06	627	6.00E-07	694	2.00E-07	761	0.00E+00
427	1.50E-05	494	2.45E-04	561	2.20E-06	628	6.00E-07	695	2.00E-07	762	1.00E-07
428	1.73E-05	495	2.25E-04	562	2.00E-06	629	6.00E-07	696	1.00E-07	763	0.00E+00
429	1.97E-05	496	2.04E-04	563	1.90E-06	630	5.00E-07	697	1.00E-07	764	1.00E-07
430	2.25E-05	497	1.87E-04	564	1.80E-06	631	6.00E-07	698	1.00E-07	765	0.00E+00
431	2.53E-05	498	1.70E-04	565	1.80E-06	632	6.00E-07	699	2.00E-07	766	1.00E-07
432	2.87E-05	499	1.55E-04	566	1.70E-06	633	6.00E-07	700	1.00E-07	767	0.00E+00
433	3.25E-05	500	1.42E-04	567	1.60E-06	634	5.00E-07	701	2.00E-07	768	0.00E+00
434	3.60E-05	501	1.30E-04	568	1.60E-06	635	5.00E-07	702	2.00E-07	769	1.00E-07
435	4.06E-05	502	1.20E-04	569	1.50E-06	636	5.00E-07	703	1.00E-07	770	0.00E+00
436	4.64E-05	503	1.09E-04	570	1.40E-06	637	5.00E-07	704	1.00E-07	771	0.00E+00
437	5.26E-05	504	1.01E-04	571	1.50E-06	638	6.00E-07	705	1.00E-07	772	1.00E-07
438	5.86E-05	505	9.25E-05	572	1.40E-06	639	5.00E-07	706	2.00E-07	773	1.00E-07
439	6.61E-05	506	8.53E-05	573	1.30E-06	640	6.00E-07	707	1.00E-07	774	1.00E-07
440	7.40E-05	507	7.84E-05	574	1.30E-06	641	5.00E-07	708	1.00E-07	775	1.00E-07
441	8.21E-05	508	7.20E-05	575	1.30E-06	642	5.00E-07	709	1.00E-07	776	0.00E+00
442	9.28E-05	509	6.63E-05	576	1.20E-06	643	5.00E-07	710	2.00E-07	777	0.00E+00
443	1.03E-04	510	6.13E-05	577	1.30E-06	644	4.00E-07	711	1.00E-07	778	1.00E-07
444	1.17E-04	511	5.64E-05	578	1.20E-06	645	4.00E-07	712	1.00E-07	779	0.00E+00
445	1.30E-04	512	5.19E-05	579	1.10E-06	646	4.00E-07	713	2.00E-07	780	0.00E+00
446	1.45E-04	513	4.78E-05	580	1.10E-06	647	4.00E-07	714	2.00E-07	N/A	N/A

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	VXRGB @18WBLUE	<b>Sample ID</b>	240715001-S1
<b>Temperature (°C)</b>	25.4	<b>Humidity (%RH)</b>	41.0

<b>Test Method</b>
<p>The samples were tested according to the and Ansi C82.77: 2002 and ANSI C82.77-10:2020</p> <p>The total harmonic distortion shall be measured to the 40th order.</p> <p>The ambient temperature shall be maintained at <math>25 \pm 1^{\circ}\text{C}</math>. 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 was calculated.</p>

### Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD(%)
120.0	60	0.142	16.8	0.988	5.77
277.0	60	0.075	17.7	0.849	19.65

## 5.0 Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2023-11-08	2024-11-07
NTC-F01-006	2.0 meter Integrating Sphere	2023-11-08	2024-11-07
NTC-F01-012	Standard Lamp	2023-11-02	2024-11-01
NTC-F01-013	Standard Lamp	2023-11-02	2024-11-01
NTC-F01-031	Digital Power Meter	2023-08-25	2024-08-24
NTC-F01-019	Temperature & Humidity Meter	2023-11-06	2024-11-05

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