

## Photometric Test Report

### Relevant Standards

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

Prepared For

**RAB Lighting Inc.**

Address: 408 W 14th St New York, NY 10014

Prepared By

**Dongguan New Testing Centre Co., Ltd.**

Address: 3F No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China

Prepare by:

*Alan Wang*

Engineer: Alan Wang

Date: 2024-07-24

Review by:

*Vincent Yuan*

Technical Lead: Vincent Yuan

Issue Date: 2024-07-24

Revised Date: N/A

## 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		452
Minimum Luminaire Efficacy (lm/W) (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Standard	Premium	22.6
			105	120	
Power (Input Wattage) (W) (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Worst Case		20.0
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)		ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	9.55
				277V	18.21
Power Factor (THD & PF – Section 4.3)		ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.988
				277V	0.860
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	N/A		Red (Lp=639nm)
Minimum CRI (Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019 CIE13.3-1995	N/A		32.1
Minimum R9 (Integrating Sphere – Section 4.1)		ANSI/IES LM-79-2019 CIE13.3-1995	N/A		-184
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		0.084
(Integrating Sphere – Section 4.1)			Non-Worst Case		0.161
Power (Input Wattage – W)					
(Integrating Sphere – Section 4.1)		ANSI/IES LM-79:2019	Worst Case		20.0
(Integrating Sphere – Section 4.1)			Non-Worst Case		19.1

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-07-23	VXRGB @26WRED	-	240715001-S1
2	Goniophotometer Test	N/A	VXRGB @26WRED	-	240715001-S1
3	THD and PF Test	2024-07-23	VXRGB @26WRED	-	240715001-S1

### Remark (If any):

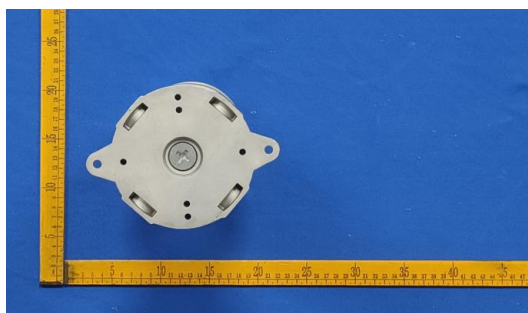
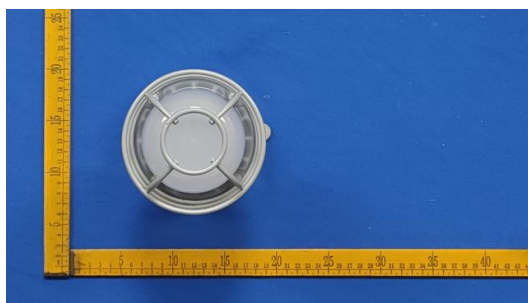
1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.

## 3.0 Product Description

Luminaire Description: Model No. VXRGB @26WRED.

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 @26WRED	<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

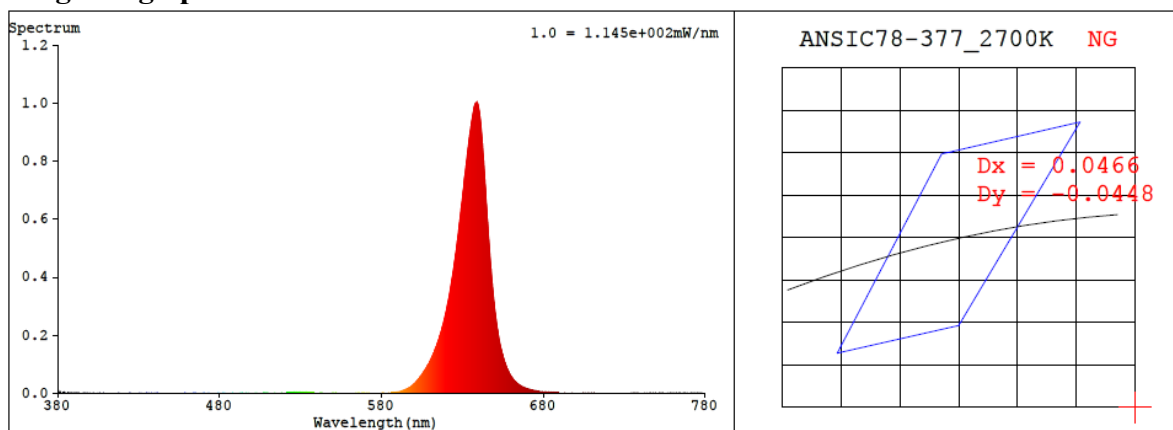
<b>Test Method</b>
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were 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 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 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	0.161	19.1	0.988
277.0	60	0.084	20.0	0.860

<b>CCT (K)</b>	<b>CRI</b>	<b>R9</b>	<b>Duv</b>	<b>Rf</b>	<b>Rg</b>	<b>IES Rcs,h1</b>
Red (Lp=639nm)	32.1	-184	0.0906	N/A	N/A	N/A

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.6993$   $y = 0.2997$  /  $u' = 0.5381$   $v' = 0.5190$  ( $duv = -9.06e-02$ )

CCT= 1001K Prcp WL: Ld=624.7nm Purity=99.8%

Peak WL: Lp=639nm FWHM: =20.4nm Ratio:R=96.6% G=3.4% B=0.0%

Render Index: Ra = 32.1 AvgR = 23.7 TM30:Rf=0 Rg=0

EEL: 0.48895 B

R1 =24 R2 =86 R3 =45 R4 =7 R5 =28 R6 =96 R7 =18  
R8 =-46 R9 =-184 R10=84 R11=33 R12=67 R13=47 R14=68 R15=-17

## 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	1.50E-06	447	1.00E-07	514	1.30E-06	581	1.10E-06	648	4.03E-04	715	5.00E-07
381	5.00E-07	448	1.00E-07	515	1.40E-06	582	1.40E-06	649	3.41E-04	716	6.00E-07
382	0.00E+00	449	0.00E+00	516	1.50E-06	583	1.50E-06	650	2.89E-04	717	5.00E-07
383	1.00E-06	450	0.00E+00	517	1.60E-06	584	1.50E-06	651	2.44E-04	718	5.00E-07
384	2.10E-06	451	1.00E-07	518	1.60E-06	585	1.80E-06	652	2.07E-04	719	5.00E-07
385	0.00E+00	452	2.00E-07	519	1.90E-06	586	2.10E-06	653	1.75E-04	720	3.00E-07
386	9.00E-07	453	0.00E+00	520	2.00E-06	587	2.50E-06	654	1.48E-04	721	3.00E-07
387	5.00E-07	454	0.00E+00	521	2.10E-06	588	2.80E-06	655	1.26E-04	722	4.00E-07
388	1.10E-06	455	0.00E+00	522	2.20E-06	589	3.30E-06	656	1.08E-04	723	5.00E-07
389	9.00E-07	456	0.00E+00	523	2.40E-06	590	4.00E-06	657	9.18E-05	724	3.00E-07
390	3.00E-07	457	1.00E-07	524	2.50E-06	591	4.80E-06	658	7.83E-05	725	4.00E-07
391	1.00E-07	458	0.00E+00	525	2.50E-06	592	6.20E-06	659	6.75E-05	726	3.00E-07
392	0.00E+00	459	1.00E-07	526	2.70E-06	593	8.20E-06	660	5.75E-05	727	4.00E-07
393	3.00E-07	460	1.00E-07	527	2.70E-06	594	1.06E-05	661	5.02E-05	728	4.00E-07
394	0.00E+00	461	0.00E+00	528	2.60E-06	595	1.29E-05	662	4.35E-05	729	3.00E-07
395	0.00E+00	462	0.00E+00	529	2.80E-06	596	1.53E-05	663	3.77E-05	730	5.00E-07
396	3.00E-07	463	1.00E-07	530	2.80E-06	597	1.80E-05	664	3.28E-05	731	4.00E-07
397	4.00E-07	464	3.00E-07	531	2.80E-06	598	2.15E-05	665	2.89E-05	732	3.00E-07
398	4.00E-07	465	3.00E-07	532	2.60E-06	599	2.56E-05	666	2.53E-05	733	4.00E-07
399	0.00E+00	466	1.00E-07	533	2.60E-06	600	3.05E-05	667	2.21E-05	734	3.00E-07
400	0.00E+00	467	0.00E+00	534	2.60E-06	601	3.60E-05	668	1.97E-05	735	2.00E-07
401	0.00E+00	468	2.00E-07	535	2.40E-06	602	4.23E-05	669	1.72E-05	736	2.00E-07
402	3.00E-07	469	2.00E-07	536	2.40E-06	603	4.85E-05	670	1.53E-05	737	3.00E-07
403	1.00E-07	470	2.00E-07	537	2.30E-06	604	5.63E-05	671	1.36E-05	738	2.00E-07
404	0.00E+00	471	1.00E-07	538	2.30E-06	605	6.37E-05	672	1.20E-05	739	3.00E-07
405	4.00E-07	472	0.00E+00	539	2.10E-06	606	7.21E-05	673	1.09E-05	740	3.00E-07
406	3.00E-07	473	3.00E-07	540	1.90E-06	607	8.08E-05	674	9.60E-06	741	4.00E-07
407	0.00E+00	474	0.00E+00	541	2.00E-06	608	8.97E-05	675	8.60E-06	742	3.00E-07
408	2.00E-07	475	1.00E-07	542	1.70E-06	609	9.88E-05	676	7.50E-06	743	1.00E-07
409	0.00E+00	476	2.00E-07	543	1.70E-06	610	1.10E-04	677	6.90E-06	744	3.00E-07
410	0.00E+00	477	1.00E-07	544	1.60E-06	611	1.22E-04	678	6.00E-06	745	4.00E-07
411	0.00E+00	478	1.00E-07	545	1.60E-06	612	1.33E-04	679	5.60E-06	746	3.00E-07
412	0.00E+00	479	2.00E-07	546	1.40E-06	613	1.48E-04	680	5.00E-06	747	2.00E-07
413	2.00E-07	480	2.00E-07	547	1.40E-06	614	1.62E-04	681	4.50E-06	748	3.00E-07
414	0.00E+00	481	2.00E-07	548	1.40E-06	615	1.77E-04	682	4.10E-06	749	2.00E-07
415	0.00E+00	482	2.00E-07	549	1.30E-06	616	1.96E-04	683	3.80E-06	750	0.00E+00
416	0.00E+00	483	3.00E-07	550	1.20E-06	617	2.15E-04	684	3.30E-06	751	2.00E-07
417	0.00E+00	484	2.00E-07	551	1.30E-06	618	2.36E-04	685	2.90E-06	752	2.00E-07
418	0.00E+00	485	1.00E-07	552	1.20E-06	619	2.60E-04	686	2.90E-06	753	3.00E-07
419	1.00E-07	486	1.00E-07	553	1.10E-06	620	2.85E-04	687	2.50E-06	754	3.00E-07
420	1.00E-07	487	1.00E-07	554	1.20E-06	621	3.13E-04	688	2.30E-06	755	2.00E-07
421	0.00E+00	488	3.00E-07	555	1.10E-06	622	3.41E-04	689	2.30E-06	756	2.00E-07
422	0.00E+00	489	1.00E-07	556	1.00E-06	623	3.75E-04	690	2.00E-06	757	3.00E-07
423	0.00E+00	490	1.00E-07	557	9.00E-07	624	4.09E-04	691	2.00E-06	758	2.00E-07
424	2.00E-07	491	2.00E-07	558	1.00E-06	625	4.49E-04	692	1.70E-06	759	0.00E+00
425	3.00E-07	492	0.00E+00	559	1.00E-06	626	4.88E-04	693	1.70E-06	760	2.00E-07
426	0.00E+00	493	3.00E-07	560	8.00E-07	627	5.31E-04	694	1.50E-06	761	4.00E-07
427	1.00E-07	494	3.00E-07	561	8.00E-07	628	5.79E-04	695	1.50E-06	762	3.00E-07
428	0.00E+00	495	2.00E-07	562	9.00E-07	629	6.26E-04	696	1.40E-06	763	1.00E-07
429	0.00E+00	496	3.00E-07	563	8.00E-07	630	6.75E-04	697	1.40E-06	764	2.00E-07
430	0.00E+00	497	2.00E-07	564	9.00E-07	631	7.25E-04	698	1.10E-06	765	2.00E-07
431	5.00E-07	498	4.00E-07	565	7.00E-07	632	7.73E-04	699	1.10E-06	766	2.00E-07
432	2.00E-07	499	3.00E-07	566	7.00E-07	633	8.24E-04	700	1.00E-06	767	2.00E-07
433	0.00E+00	500	4.00E-07	567	6.00E-07	634	8.68E-04	701	1.00E-06	768	0.00E+00
434	0.00E+00	501	4.00E-07	568	8.00E-07	635	9.08E-04	702	9.00E-07	769	3.00E-07
435	2.00E-07	502	5.00E-07	569	7.00E-07	636	9.46E-04	703	9.00E-07	770	0.00E+00
436	3.00E-07	503	4.00E-07	570	7.00E-07	637	9.80E-04	704	9.00E-07	771	4.00E-07
437	0.00E+00	504	4.00E-07	571	7.00E-07	638	9.96E-04	705	9.00E-07	772	2.00E-07
438	3.00E-07	505	5.00E-07	572	7.00E-07	639	1.00E-03	706	8.00E-07	773	2.00E-07
439	0.00E+00	506	7.00E-07	573	8.00E-07	640	9.84E-04	707	7.00E-07	774	2.00E-07
440	3.00E-07	507	7.00E-07	574	8.00E-07	641	9.44E-04	708	8.00E-07	775	4.00E-07
441	3.00E-07	508	8.00E-07	575	8.00E-07	642	8.83E-04	709	6.00E-07	776	3.00E-07
442	2.00E-07	509	8.00E-07	576	9.00E-07	643	8.08E-04	710	6.00E-07	777	1.00E-07
443	1.00E-07	510	9.00E-07	577	7.00E-07	644	7.24E-04	711	6.00E-07	778	2.00E-07
444	0.00E+00	511	1.00E-06	578	1.00E-06	645	6.34E-04	712	6.00E-07	779	2.00E-07
445	0.00E+00	512	1.10E-06	579	1.00E-06	646	5.52E-04	713	6.00E-07	780	2.00E-07
446	0.00E+00	513	1.10E-06	580	1.20E-06	647	4.72E-04	714	5.00E-07	N/A	N/A

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	VXRGB @26WRED	<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	0.161	19.1	0.988	9.55
277.0	60	0.084	20.0	0.860	18.21

## 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\*\*\*\*\*