Energy Star Test Report

For

L-TECH CORPORTION

(Brand Name: L-TECH CORP)

SHAOGANGTOU DISTRICT.QIAOTOU TOWN.
DONGGUAN CITY.GUANGDONG PROVINCE,CHINA

SSL downlight retrofits

Model name(s): LRKT477W-2790

Representative (Tested) Model: LRKTLRKT477W-2790

Model Different: N/A

Test & Report By:

Candice Liao

Engineer:Candice Liao

Date: Jan.24,2018

Review By:

Univ Xie

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.
2.This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information:

Name of Test Laboratory	Standard-Tech Co. Ltd Testing Center
Date of Test Report	Jan.18,2018
Test Report No.	GZE1712072-H-C
Laboratory Contact Name	Univ Xie

Product Information:

Organization Name	L-TECH CORPORTION	
Brand Name	L-TECH CORP	
Model Number	LRKT477W-2790	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	SSL downlight retrofits	
Luminaire Aperture (for SSL downlight retrofitss)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	--	9.552	W
Input Current	--	0.0828	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9613	
Off-State Power	--	0	W
Photometric Characteristics			
Total Initial Lumen Output	--	673.59	lm
Initial Lumen Efficacy	--	70.50	lm/w
Correlated color temperature / CCT	2727	--	K
Color rendering index / CRI	94.0	--	
R9 Value	61	--	
Duv	0.0005	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	297	cd
Beam angle (if applicable)		92.3	°
Zonal lumens in the 0°-60° zone		83.7	%
Zonal lumens in the 60°-90° zone		16.3	%
Zonal lumens in the 90°-120° zone		0	%
Zonal lumens in the 120°-180° zone		0	%

Test Specifications:	
Date of Receipt	Jan.17,2018
Date of Test	Jan.18,2018
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems UL1993 4th Edition, Self-Ballasted Lamps and Lamp Adapters ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) – Version 2.0
Reference Work Instruction	QD25
Remark	Below test and data are not covered by NVLAP accreditation: - Operating Frequency

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° C ± 1° 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 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

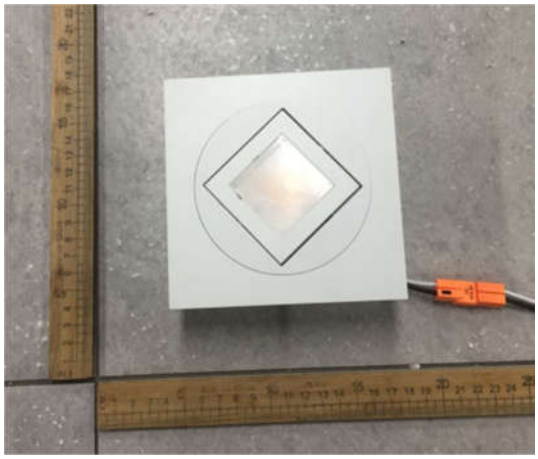
2. Photometric and Electrical Measurements – Integrating Sphere Method:

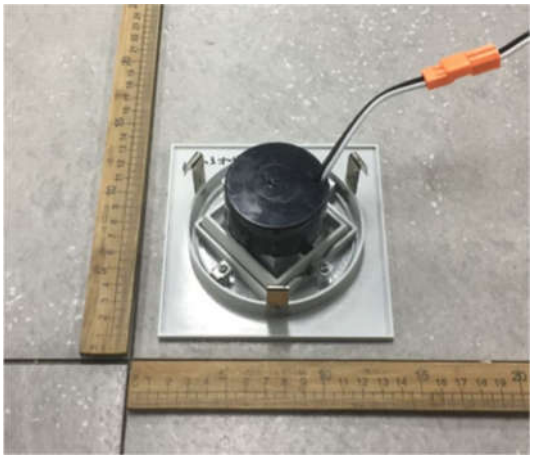
Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 Volts AC, 60Hz. 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 5 nm intervals over the range of 380 to 780 nm.

1. Product Information:

Brand Name	L-TECH CORP
Model Number	LRKT477W-2790
Luminaire Type	SSL downlight retrofits
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	10W
Rated Initial Lamp Lumen	600lm
Declared CCT	2700K,3000K, 3500K ,4000K,5000K
LED Manufacturer	Everlight Electronics Co., LTD.
LED Model	5630
Sample Receipt Date	Jan.17,2018
Sample Number	GZE1712072-H-C1,C2,C3(2700K)

Photo





2.1 Electrical, Photometric and Chromaticity Measurements *(Refer to Work Instruction QD25)*	**IES LM-79 2008**

Test date	2018-01-18	**Test Ambient:**	25.0 ° C
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	LRKT477W-2790		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE1712072-H-C1	120.0	60	0.0827	9.555	0.9630
GZE1712072-H-C2	120.0	60	0.0828	9.535	0.9600
GZE1712072-H-C3	120.0	60	0.0830	9.567	0.9611
Average			0.0828	9.552	0.9613

Sphere-Spectroradiometer Method:

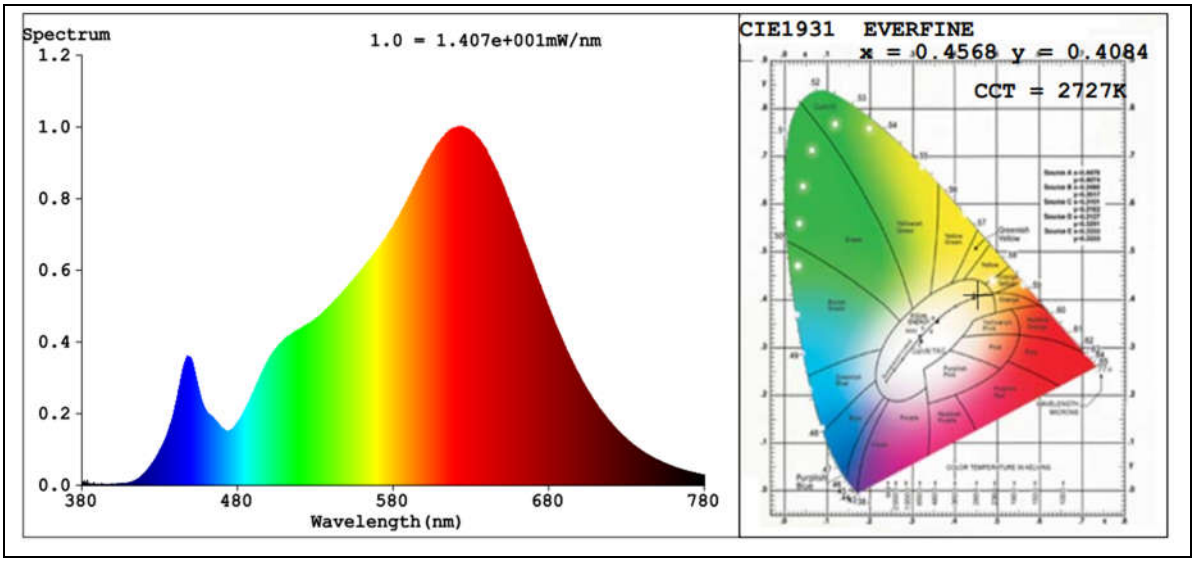
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	94.0
R9	61
CCT (K)	2727
Chromaticity (x, y)	x=0.4568 y=0.4084
Chromaticity (u', v')	u'=0.2615 v'=0.5261
Duv	0.0005

Special Color Rendering Indices			
R1	94	R9	61
R2	97	R10	94
R3	99	R11	97
R4	95	R12	93
R5	95	R13	95
R6	98	R14	99
R7	92	R15	89
R8	82	--	--

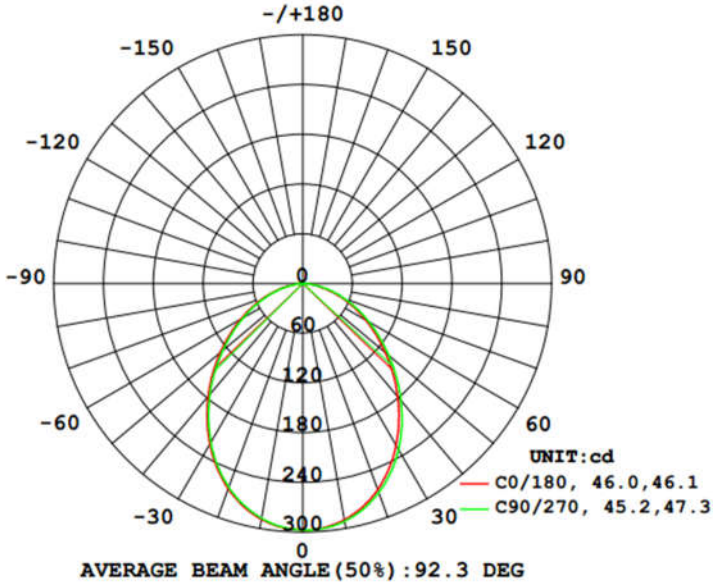
Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	673.59
Luminous Efficacy (lm/W)	70.50
Beam Angle°	92.3
Center Beam Candle Power (cd)	297

Spectral Power Distribution and Chromaticity Diagram



Zonal Lumen Tabulation



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	219.9	32.7%
0-40	346.8	51.5%
0-60	563.7	83.7%
60-90	109.8	16.3%
70-100	42.3	6.3%
90-120	0.0	0%
0-90	673.5	100%
90-180	0.0	0%
0-180	673.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	28.0	4.2%	90-100	0.0	0%
10-20	78.5	11.7%	100-110	0	0%
20-30	113.4	16.8%	110-120	0.0	0%
30-40	126.9	18.8%	120-130	0.0	0%
40-50	119.5	17.7%	130-140	0.0	0%
50-60	97.3	14.4%	140-150	0.0	0%
60-70	67.5	10.0%	150-160	0.0	0%
70-80	34.9	5.2%	160-170	0.0	0%
80-90	7.4	1.1%	170-180	0.0	0%

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297
5	296	296	296	296	296	296	296	295	295	295	295	294	295	295	295	295
10	289	290	291	291	291	291	290	289	289	288	288	287	288	288	288	289
15	279	280	281	282	282	281	280	279	278	277	277	276	276	277	278	279
20	264	266	268	268	268	268	266	264	263	262	262	261	261	262	263	264
25	246	248	250	251	251	251	249	247	245	244	243	243	243	244	245	246
30	225	227	230	231	231	231	229	226	224	223	222	222	222	223	224	225
35	202	205	208	209	208	208	206	203	201	200	199	199	198	200	202	202
40	178	181	184	185	184	184	183	179	178	176	176	175	174	176	178	179
45	154	156	159	160	160	159	158	155	154	152	152	151	150	151	153	155
50	130	133	135	136	136	135	134	132	130	129	128	127	126	128	130	131
55	108	110	112	113	113	113	112	109	108	106	105	104	104	105	107	109
60	87.2	89.1	91.1	91.9	91.4	91.1	90.1	87.9	86.9	85.5	84.5	83.6	83.1	84.3	86.0	87.5
65	68.2	70.0	71.7	72.4	72.1	71.7	70.7	68.8	67.3	66.0	64.9	64.1	63.8	64.7	66.3	67.8
70	50.1	51.6	53.1	53.7	53.5	53.0	52.1	50.3	49.1	47.7	46.7	45.9	45.7	46.6	48.0	49.4
75	33.2	34.6	35.9	36.4	36.3	35.8	34.8	33.2	32.1	30.8	29.8	29.2	29.1	29.8	31.1	32.4
80	18.1	19.3	20.3	20.8	20.7	20.1	19.3	18.0	17.3	16.0	15.1	14.6	14.6	15.2	16.1	17.4
85	6.02	7.02	7.75	8.07	7.98	7.58	6.97	6.09	5.17	4.42	3.95	3.61	3.57	3.92	4.56	5.31
90	0.02	0.11	0.44	0.61	0.59	0.51	0.27	0.05	0.00	0.00	0.00	0.00	0.00	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
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
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
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
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
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
125	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	0.01	0.01
130	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	0.01	0.01
135	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
140	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
145	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
150	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
155	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
160	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
165	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
170	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
175	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
180	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

2.2 Color Spatial Uniformity	IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.0

Test Data :

Test date	2018-01-18	Test Ambient	25.1°C
Sample No.		Maximum Δu'v'	
GZE1712072-H-C1		0.0023	

Gamma\C	CIE u'	CIE v'	du'v'	CIE u'	CIE v'	du'v'
-77	0.2595	0.5238	0.0019	0.2591	0.5235	0.0023
-76	0.2595	0.5236	0.0019	0.2592	0.5234	0.0023
-75	0.2595	0.5237	0.0019	0.2593	0.5234	0.0021
-74	0.2596	0.5237	0.0018	0.2592	0.5234	0.0023
-73	0.2597	0.5238	0.0017	0.2594	0.5236	0.0021
-72	0.2597	0.5237	0.0017	0.2594	0.5235	0.002
-71	0.2597	0.5238	0.0017	0.2595	0.5236	0.002
-70	0.2598	0.5238	0.0016	0.2595	0.5236	0.0019
-69	0.2599	0.5238	0.0014	0.2596	0.5236	0.0018
-68	0.2599	0.5239	0.0014	0.2597	0.5237	0.0017
-67	0.26	0.5239	0.0014	0.2597	0.5237	0.0017
-66	0.2601	0.524	0.0013	0.2598	0.5236	0.0016
-65	0.2602	0.524	0.0012	0.2598	0.5238	0.0015
-64	0.2602	0.524	0.0011	0.2599	0.5238	0.0015
-63	0.2603	0.524	0.0011	0.26	0.5238	0.0014
-62	0.2603	0.524	0.001	0.26	0.5239	0.0014
-61	0.2604	0.5241	0.0009	0.2602	0.5239	0.0012
-60	0.2605	0.5241	0.0008	0.2601	0.5239	0.0012
-59	0.2606	0.5242	0.0007	0.2603	0.524	0.001
-58	0.2606	0.5242	0.0007	0.2603	0.524	0.001
-57	0.2607	0.5242	0.0006	0.2604	0.5241	0.0009
-56	0.2607	0.5242	0.0006	0.2605	0.5241	0.0008
-55	0.2608	0.5243	0.0004	0.2606	0.5241	0.0007
-54	0.2609	0.5243	0.0004	0.2606	0.5242	0.0006
-53	0.261	0.5244	0.0003	0.2607	0.5242	0.0005
-52	0.261	0.5244	0.0002	0.2608	0.5242	0.0005
-51	0.2611	0.5244	0.0001	0.2609	0.5243	0.0004
-50	0.2612	0.5245	0.0001	0.2609	0.5243	0.0003
-49	0.2613	0.5245	0.0001	0.261	0.5244	0.0002

-48	0. 2613	0. 5245	0. 0001	0. 2611	0. 5244	0. 0001
-47	0. 2614	0. 5245	0. 0002	0. 2612	0. 5244	0
-46	0. 2614	0. 5246	0. 0002	0. 2612	0. 5245	0. 0001
-45	0. 2614	0. 5246	0. 0003	0. 2613	0. 5245	0. 0001
-44	0. 2615	0. 5246	0. 0003	0. 2614	0. 5245	0. 0002
-43	0. 2615	0. 5246	0. 0004	0. 2615	0. 5245	0. 0003
-42	0. 2616	0. 5246	0. 0004	0. 2615	0. 5246	0. 0003
-41	0. 2617	0. 5246	0. 0005	0. 2615	0. 5246	0. 0003
-40	0. 2617	0. 5247	0. 0005	0. 2616	0. 5246	0. 0004
-39	0. 2617	0. 5247	0. 0005	0. 2616	0. 5246	0. 0004
-38	0. 2618	0. 5247	0. 0006	0. 2617	0. 5246	0. 0005
-37	0. 2618	0. 5247	0. 0006	0. 2618	0. 5247	0. 0006
-36	0. 2618	0. 5247	0. 0006	0. 2618	0. 5247	0. 0006
-35	0. 2618	0. 5247	0. 0006	0. 2618	0. 5247	0. 0006
-34	0. 2618	0. 5247	0. 0006	0. 2618	0. 5247	0. 0006
-33	0. 2618	0. 5247	0. 0007	0. 2619	0. 5247	0. 0007
-32	0. 2618	0. 5247	0. 0007	0. 2618	0. 5247	0. 0007
-31	0. 2618	0. 5247	0. 0007	0. 2619	0. 5247	0. 0007
-30	0. 2618	0. 5247	0. 0006	0. 2619	0. 5247	0. 0007
-29	0. 2618	0. 5247	0. 0007	0. 2619	0. 5247	0. 0007
-28	0. 2619	0. 5247	0. 0007	0. 2618	0. 5247	0. 0006
-27	0. 2619	0. 5247	0. 0007	0. 2618	0. 5247	0. 0007
-26	0. 2618	0. 5247	0. 0007	0. 2618	0. 5247	0. 0006
-25	0. 2618	0. 5246	0. 0006	0. 2618	0. 5247	0. 0006
-24	0. 2618	0. 5246	0. 0006	0. 2618	0. 5247	0. 0006
-23	0. 2618	0. 5246	0. 0006	0. 2618	0. 5246	0. 0006
-22	0. 2618	0. 5246	0. 0006	0. 2618	0. 5246	0. 0006
-21	0. 2618	0. 5246	0. 0006	0. 2618	0. 5246	0. 0006
-20	0. 2618	0. 5246	0. 0006	0. 2617	0. 5246	0. 0005
-19	0. 2617	0. 5246	0. 0005	0. 2617	0. 5246	0. 0005
-18	0. 2617	0. 5246	0. 0005	0. 2617	0. 5245	0. 0005
-17	0. 2617	0. 5245	0. 0004	0. 2616	0. 5245	0. 0004
-16	0. 2617	0. 5245	0. 0005	0. 2617	0. 5245	0. 0004
-15	0. 2616	0. 5245	0. 0004	0. 2617	0. 5245	0. 0004
-14	0. 2617	0. 5245	0. 0004	0. 2616	0. 5245	0. 0004
-13	0. 2616	0. 5245	0. 0004	0. 2616	0. 5245	0. 0003
-12	0. 2616	0. 5245	0. 0003	0. 2616	0. 5245	0. 0004
-11	0. 2615	0. 5245	0. 0003	0. 2615	0. 5244	0. 0003
-10	0. 2616	0. 5244	0. 0003	0. 2615	0. 5244	0. 0003

-9	0. 2615	0. 5244	0. 0003	0. 2615	0. 5244	0. 0003
-8	0. 2615	0. 5244	0. 0003	0. 2615	0. 5244	0. 0003
-7	0. 2615	0. 5244	0. 0003	0. 2615	0. 5244	0. 0002
-6	0. 2615	0. 5244	0. 0002	0. 2615	0. 5244	0. 0002
-5	0. 2615	0. 5244	0. 0002	0. 2615	0. 5244	0. 0003
-4	0. 2615	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
-3	0. 2615	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
-2	0. 2614	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
-1	0. 2614	0. 5244	0. 0002	0. 2614	0. 5243	0. 0002
0	0. 2615	0. 5245	0. 0003	0. 2615	0. 5245	0. 0003
1	0. 2615	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
2	0. 2614	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
3	0. 2614	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
4	0. 2614	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
5	0. 2614	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
6	0. 2615	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
7	0. 2615	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
8	0. 2615	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
9	0. 2615	0. 5244	0. 0002	0. 2614	0. 5244	0. 0002
10	0. 2615	0. 5244	0. 0003	0. 2615	0. 5244	0. 0002
11	0. 2615	0. 5244	0. 0003	0. 2614	0. 5244	0. 0002
12	0. 2615	0. 5244	0. 0003	0. 2615	0. 5244	0. 0003
13	0. 2615	0. 5244	0. 0003	0. 2615	0. 5244	0. 0003
14	0. 2616	0. 5244	0. 0003	0. 2615	0. 5244	0. 0003
15	0. 2616	0. 5245	0. 0003	0. 2615	0. 5245	0. 0003
16	0. 2616	0. 5245	0. 0003	0. 2615	0. 5245	0. 0003
17	0. 2616	0. 5245	0. 0004	0. 2616	0. 5245	0. 0004
18	0. 2616	0. 5245	0. 0004	0. 2616	0. 5245	0. 0004
19	0. 2616	0. 5245	0. 0004	0. 2616	0. 5245	0. 0004
20	0. 2617	0. 5245	0. 0004	0. 2616	0. 5245	0. 0004
21	0. 2617	0. 5245	0. 0005	0. 2617	0. 5245	0. 0005
22	0. 2617	0. 5246	0. 0005	0. 2617	0. 5246	0. 0005
23	0. 2617	0. 5246	0. 0005	0. 2617	0. 5246	0. 0005
24	0. 2617	0. 5246	0. 0005	0. 2617	0. 5246	0. 0005
25	0. 2617	0. 5246	0. 0005	0. 2617	0. 5246	0. 0005
26	0. 2617	0. 5246	0. 0005	0. 2617	0. 5246	0. 0005
27	0. 2617	0. 5246	0. 0006	0. 2618	0. 5246	0. 0006
28	0. 2617	0. 5246	0. 0005	0. 2618	0. 5247	0. 0006
29	0. 2617	0. 5246	0. 0005	0. 2618	0. 5247	0. 0006

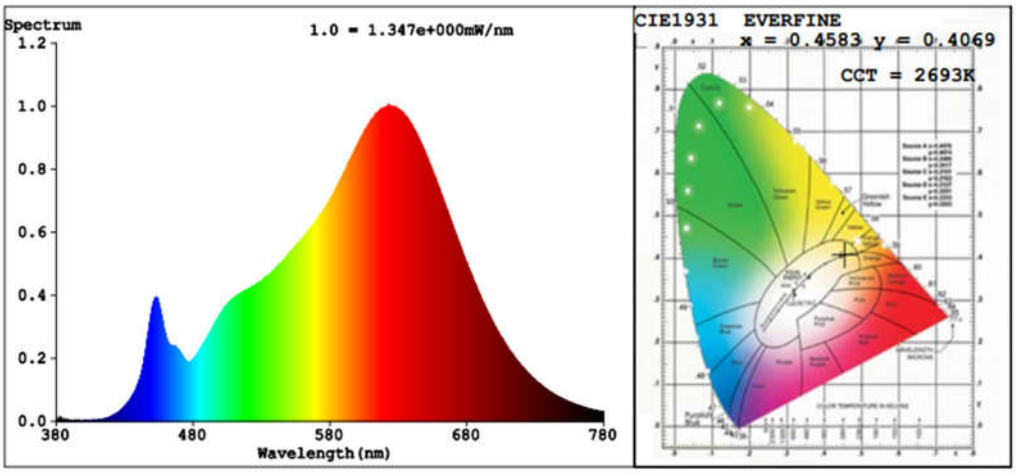
30	0. 2617	0. 5246	0. 0006	0. 2618	0. 5247	0. 0006
31	0. 2618	0. 5246	0. 0006	0. 2618	0. 5247	0. 0007
32	0. 2617	0. 5246	0. 0005	0. 2618	0. 5247	0. 0006
33	0. 2617	0. 5246	0. 0005	0. 2618	0. 5247	0. 0006
34	0. 2617	0. 5246	0. 0005	0. 2619	0. 5247	0. 0007
35	0. 2617	0. 5246	0. 0005	0. 2618	0. 5247	0. 0006
36	0. 2616	0. 5246	0. 0004	0. 2618	0. 5247	0. 0006
37	0. 2616	0. 5246	0. 0004	0. 2618	0. 5247	0. 0006
38	0. 2616	0. 5246	0. 0004	0. 2618	0. 5246	0. 0006
39	0. 2616	0. 5246	0. 0004	0. 2617	0. 5247	0. 0006
40	0. 2615	0. 5246	0. 0003	0. 2617	0. 5247	0. 0005
41	0. 2615	0. 5245	0. 0003	0. 2617	0. 5247	0. 0005
42	0. 2615	0. 5245	0. 0003	0. 2616	0. 5246	0. 0004
43	0. 2614	0. 5245	0. 0002	0. 2615	0. 5246	0. 0004
44	0. 2613	0. 5245	0. 0002	0. 2615	0. 5246	0. 0003
45	0. 2613	0. 5245	0. 0001	0. 2614	0. 5246	0. 0003
46	0. 2613	0. 5244	0	0. 2614	0. 5245	0. 0002
47	0. 2612	0. 5244	0. 0001	0. 2614	0. 5245	0. 0002
48	0. 2611	0. 5244	0. 0001	0. 2612	0. 5245	0. 0001
49	0. 2611	0. 5244	0. 0001	0. 2612	0. 5245	0. 0001
50	0. 261	0. 5243	0. 0003	0. 2611	0. 5244	0. 0001
51	0. 2609	0. 5243	0. 0004	0. 2611	0. 5244	0. 0002
52	0. 2609	0. 5243	0. 0004	0. 261	0. 5243	0. 0003
53	0. 2608	0. 5242	0. 0005	0. 2609	0. 5243	0. 0003
54	0. 2607	0. 5242	0. 0005	0. 2608	0. 5243	0. 0004
55	0. 2607	0. 5241	0. 0006	0. 2608	0. 5243	0. 0005
56	0. 2606	0. 5241	0. 0007	0. 2606	0. 5242	0. 0007
57	0. 2605	0. 5241	0. 0008	0. 2606	0. 5242	0. 0007
58	0. 2605	0. 524	0. 0009	0. 2605	0. 5241	0. 0008
59	0. 2603	0. 524	0. 001	0. 2604	0. 5241	0. 0009
60	0. 2602	0. 524	0. 0011	0. 2604	0. 5241	0. 001
61	0. 2602	0. 5239	0. 0012	0. 2603	0. 524	0. 001
62	0. 2601	0. 5239	0. 0012	0. 2602	0. 524	0. 0011
63	0. 26	0. 5239	0. 0013	0. 2601	0. 524	0. 0012
64	0. 2599	0. 5239	0. 0014	0. 26	0. 5239	0. 0013
65	0. 2599	0. 5237	0. 0015	0. 26	0. 5239	0. 0014
66	0. 2599	0. 5238	0. 0015	0. 2599	0. 5239	0. 0014
67	0. 2598	0. 5237	0. 0016	0. 2599	0. 5238	0. 0015
68	0. 2597	0. 5237	0. 0017	0. 2598	0. 5238	0. 0015

69	0. 2597	0. 5237	0. 0017	0. 2598	0. 5238	0. 0016
70	0. 2596	0. 5236	0. 0019	0. 2597	0. 5237	0. 0017
71	0. 2595	0. 5236	0. 0019	0. 2596	0. 5237	0. 0018
72	0. 2595	0. 5236	0. 002	0. 2596	0. 5237	0. 0018
73	0. 2594	0. 5235	0. 002	0. 2595	0. 5237	0. 0019
74	0. 2594	0. 5236	0. 0021	0. 2594	0. 5236	0. 002
75	0. 2593	0. 5235	0. 0021	0. 2593	0. 5235	0. 0021
76	0. 2593	0. 5235	0. 0022	0. 2594	0. 5235	0. 0021
77	0. 2592	0. 5234	0. 0023	0. 2592	0. 5235	0. 0022

3. Electrical and Photometric Measurements, with dimming	IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.0

Test date	2018-01-19	Test Ambient:	25.1°C
Dimmer Model		LEVITON MFG CO INC (E31373), Cat. No. 6681	

Sample No.	Input	Luminous flux (lm)	CCT (K)	CRI	P.F.
GZE1712072-H-C1	120.0 V / 60 Hz	61.71	2693	94.4	0.2563
GZE1712072-H-C3	120.0 V / 60 Hz	51.66	2691	94.6	0.2804
GZE1712072-H-C2	120.0 V / 60 Hz	46.34	2693	94.7	0.2522
Average		53.24	2692	94.6	0.2630



Colorimetric Parameters

Chromaticity Coordinate:x=0.4583 y=0.4069/u'=0.2632 v'=0.5257 Dx,Dy:-0.0022,-0.0039

CCT=2693K(Duv=-0.0013) Dominant WL:Ld =584.7nm Purity=59.7%

Peak WL:Lp=622.5nm FWHM=135.7nm

Render Index:Ra=94.4 CRI=93.0

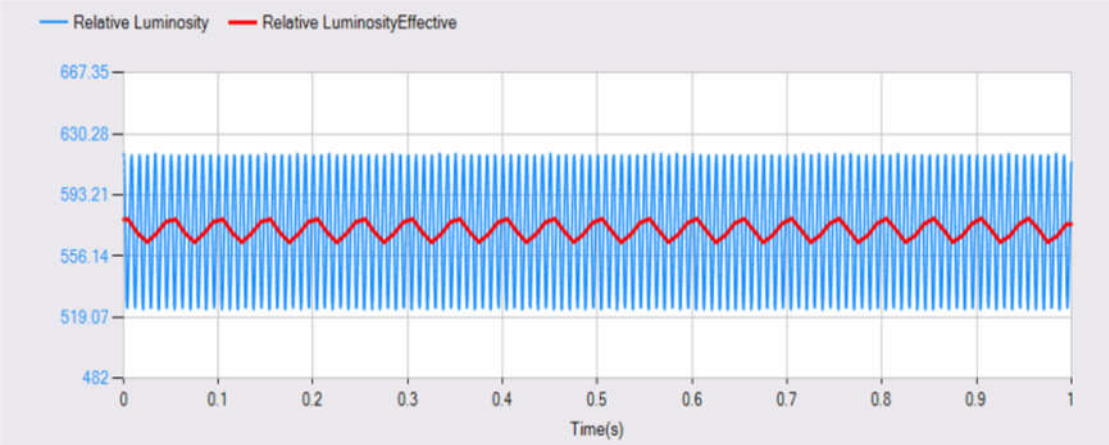
R1 =96	R2 =99	R3 =97	R4 =96	R5 =97	R6 =96	R7 =91	
R8 =83	R9 =65	R10=99	R11=98	R12=89	R13=97	R14=99	R15=91

The luminaires [can] ~~[can not]~~ provide less than 20% of total light output with continuous dimmer.

Dimmer	Peak Noise Reading (dBA)	Test Condition	Distance between the microphone and the UUT
LEVITON MFG CO INC (E31373), Cat. No. 6681	16.1	Dimmer adjusted to lowest light output	< 1 m

4 Operating Frequency	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.0
Noted: This test and data are not covered by NVLAP accreditation	

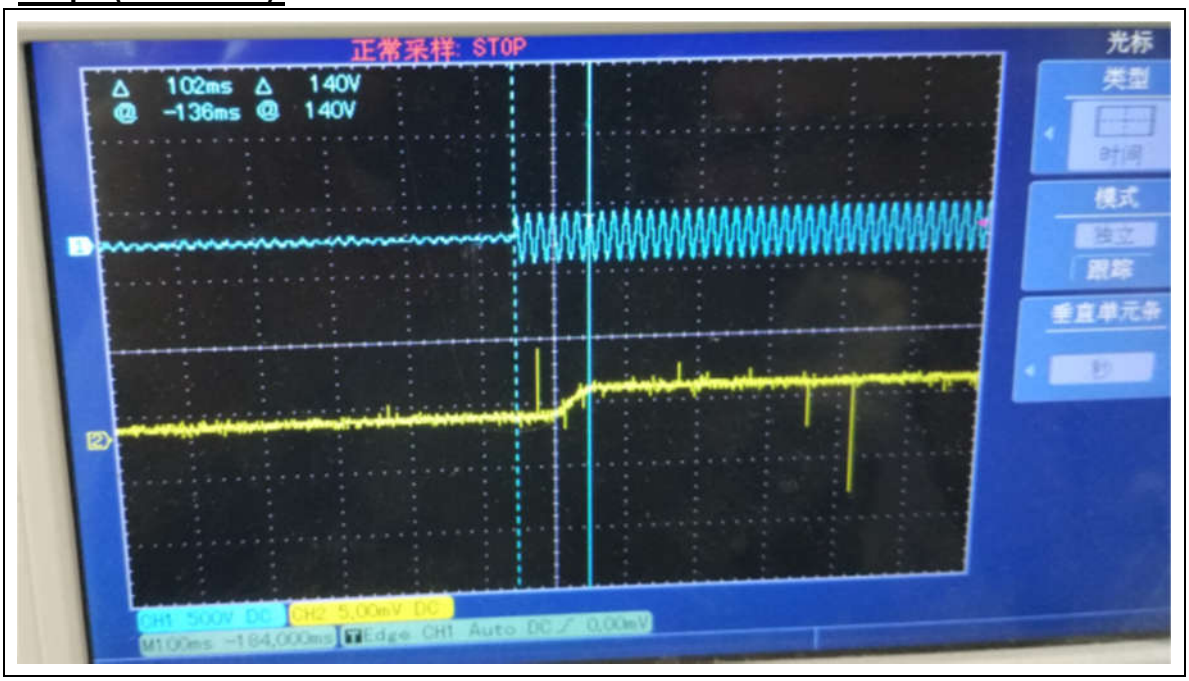
Test date	2018-01-19	Test Ambient:	25.1°C
Sample No.		Operating Frequency (Hz)	
GZE1712072-H-C1		120.02	
GZE1712072-H-C3		120.02	
GZE1712072-H-C2		120.02	
Average		120.02	



5 Starting Time *(Refer to Work Instruction QD28)*	**ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.0**

Test date	2018-01-19	Test Ambient:	25.1°C
Sample No.	**Start Time (ms)**		
GZE1712072-H-C1	102		
GZE1712072-H-C3	108		
GZE1712072-H-C2	100		
Average	103		

Graph (Start Time):



6. Transient Protection Test *(Refer to Work Instruction QD34)*	**ANSI/IEEE C62.41** **ENERGY STAR® Program Requirements for Luminaires – Version 2.0**

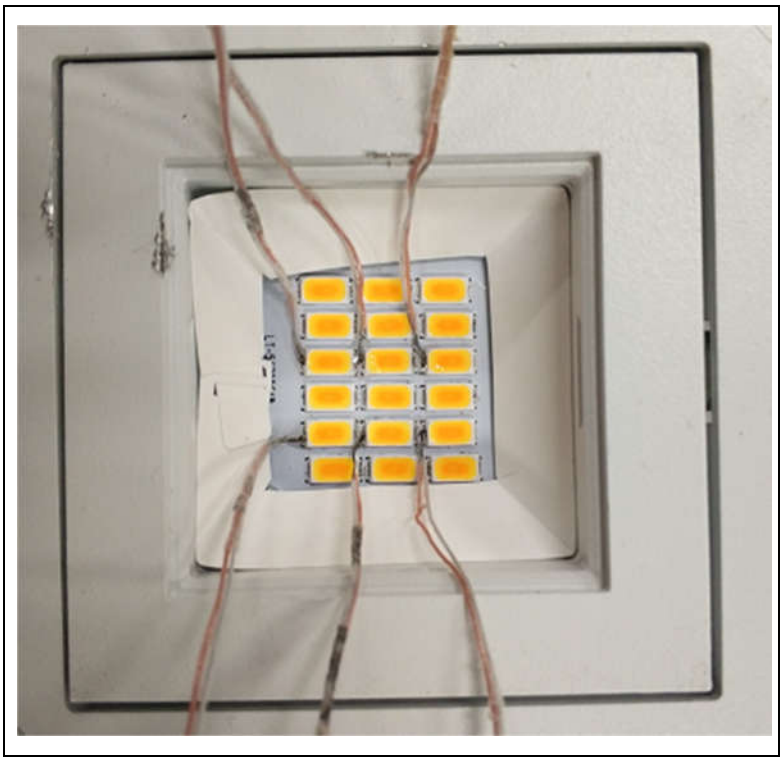
Test voltage: 120V,60Hz

Test date	2018-01-19	Test Ambient	25.1°C
Sample No.		**Transient Protection Test - Seven Strikes**	
GZE1712072-H-C1		Pass	
GZE1712072-H-C3		Pass	
GZE1712072-H-C2		Pass	

7.1 In-Situ Temperature Measurement Test (ISTMT)	UL1598-2008, 3rd Edition

Test date	2018-01-22	Test Ambient	25.1℃
Input Vol./Frequency	120 V / 60 Hz	Output Current of Single LED(mA)	144.0
Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum LED Ts Point Temperature Limited (°C)
GZE1712072-H-C1	5630	85.7	105

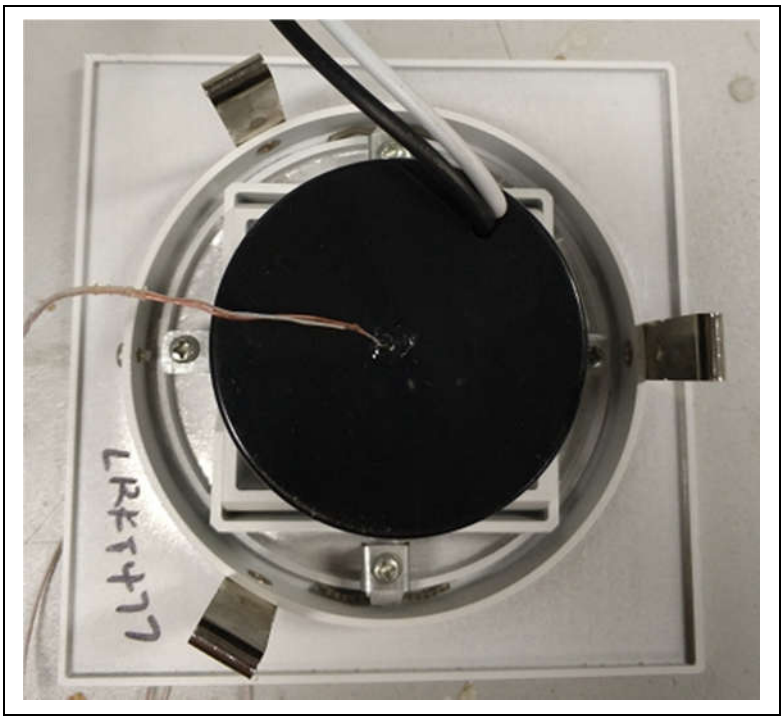
In-Situ Picture - Ts:



7.2 Maximum Measured Ballast or Driver Case Temperature	UL1598-2008, 3rd Edition

Test date	2018-01-22	Test Ambient	25.1°C
Sample No.	Maximum Measured Driver Case Temperature (°C)	Maximum Driver Case Temperature Limited (°C)	
GZE1712072-H-C1	68.6	90	

In-Situ Picture - Ts:



8 Off-State Power Consumption:	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.0

Test date	2018-01-22	Test Ambient:	25.0 ° C
Model Number	LRKT477W-2790	Stabilization Time (min)	90

Electrical Measurement – when the luminaires turned off:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)
GZE1712072-H-C1	120.0	60	0	0

9. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-331	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
EE-09	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-01	2018-06-30
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
PF210	Power Meter for Goniophotometer	2017-07-01	2018-06-30
EE-015	Flux Meter	2017-07-01	2018-06-30
ST-R-277	Oscillograph	2017-07-01	2018-06-30
ST-R-EM01	Surge Generator	2017-07-01	2018-06-30
ST-R-EM02	EMC Coupler/Decoupler Module	2017-07-01	2018-06-30

Uncertainty
Photometric Measurement (Sphere):1.74%
Chromaticity Measurement(Sphere):14.3K
Photometric Measurement(Goniophotometer):1.62%

******** END OF DATASHEET PACKAGE ********

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