Test Report

M/s. MIKA ENGINEERS

REPORT NUMBER: 4787352208-01-NABL-S1

PROJECT NUMBER: 4787352208-01

T1431, T1432, T2215, T2216, T2233, T2234

Location (a)
UL India Lab,
UL India Pvt Limited,
Laboratory building,
Kalyani Platina
Campus, Sy.no.129/4,
EPIP Zone, Phase II,
Whitefield,
Bangalore – 560 066
P:91-80-41384400

Location (b)
UL India Pvt Limited,
413 Sector-8, IMT
Manesar, Gurgaon.
P:91-124-4215707

TEST DISCIPLINE: PHOTOMETRY

General details

Customer / Applicant	M/s. MIKA ENGINEERS D-101, DHEERAJ HERITAGE RESIDENCY II, SHASTRI NAGAR SANTA CRUZ (W), MUMBAI 400 054		
Manufacturer	M/s. MIKA ENGINEERS		
Program	NABL		
Test Lab Location	(b) UL Manesar	**Refer to Cover page for the UL address**	
Item Under Test	LED TUBE LIGHT 18W		
Model	ME-TL18-01-190		
Number of Samples	1		
UL Sample Identification	2305433	**Refer Summary of Test results for multiple samples**	
Manufacturer Serial Number (if any)	METL18W-19001		
Condition of IUT on receipt	Good		
Date of Receipt	23 February 2016		
Applicable Standard	IES LM 79-08		
Date of Testing (Start date)	24 February 2016	**End Date**	26 February 2016
UL general^ ambient condition	**Temperature in °C**		23 ± 5°C
	Relative humidity in %		< 70%
Date of Reporting	26 February 2016		
Test In-charge	Navin Kumar Maurya		

Fill in the rows with information or add hyphen (-)

Ajay Kumar Patidar Engineer Project Associate	Ajay Kumar Patidar Engineer Project Associate
Reviewed by	**Authorized signatory**

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General Remarks (If any)

NIL

Description of Item under Test (IUT)

Rated voltage: 230 VAC, Frequency: 50Hz, Input Power: 18W +10%

LED Specification:
LED Make / Model: NICHIA / NF2L757DR, No of LEDs: 36 nos.

LED Driver Specification :
Driver Make / Model : MIKA ENGINEERS / MK-DRV-54VA30, No of Drivers: 01

Summary of Test Results

Test No.	Test Parameter	Standard & Clause Number	UL Sample Identification	Result
1	Electrical and Photometric measurements	IES LM 79-08, Clause number 8, 9, 10 and 11	2305433	Evaluate by customer
2	Colorimetric measurements	IES LM 79-08, Clause number 12		Evaluate by customer

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Test No.01 Electrical and Photometric measurements

Master Equipment and Calibration details

Serial No.	Test Equipment	UL Equipment ID	Calibration status (Valid up to)
1	Goniophotometer	GON02	Before use
2	Measured standard lamp	SL06	13.05.2016
3	Measured standard lamp	SL07	13.05.2016
4	Digital Power Meter	PM16	23.07.2016

Test methodology adopted

- The sample was tested according to the IES LM-79-2008.
- The condition of the sample tested was new. Stabilization time before testing was216 minutes.
- Orientation (burning position) of SSL product during testing was its normal burning position i.e. at zero degree inclination to horizontal.
- Electrical measurements were obtained with a Yokogawa WT210 digital power meter.
- Photometric parameters were obtained using a Type-C Goniophotometer and software. Photometric distance was more than five times of the largest dimension of the test sample.
- The ambient temperature was maintained at (25 ± 1) ° C during testing.
- The sample was operated at 230 Volts AC. It was stabilized before measurement. Luminous flux, luminous efficacy, zonal lumen were calculated from the software.

Test Observation

INPUT PARAMETER				
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
229.95	50.00	0.0857	19.15	0.97

OUTPUT PARAMETER	
Flux (lm)	Efficacy (lm/W)
1844.0	96.5

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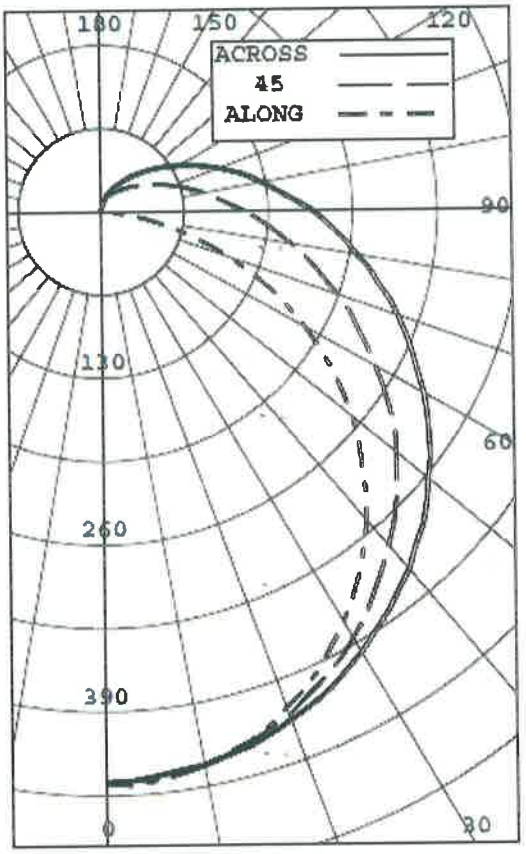
Light Distribution curve: [Unit: cd]



ANGLE	ALONG	22.5	45	67.5	ACROSS	OUTPUT LUMENS
	INTENSITY(CANDLEPOWER) SUMMARY					
0	445	445	445	445	445	
5	446	442	445	441	442	43
15	429	425	431	432	433	121
25	394	394	402	410	412	185
35	345	347	364	381	382	227
45	284	293	320	343	349	245
55	217	233	271	303	307	238
65	144	170	219	258	264	211
75	70	112	172	215	222	170
85	11	65	129	175	182	127
90	1	49	111	155	164	
95	1	37	94	135	143	93
105	1	23	69	106	112	67
115	1	16	49	79	83	47
125	1	13	35	57	60	31
135	1	11	25	40	42	19
145	1	9	18	27	28	11
155	1	8	14	18	19	6
165	1	1	8	11	11	2
175	2	1	1	1	1	0
180	1	1	1	1	1	

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	349	18.93
0-40	576	31.25
0-60	1060	57.47
0-90	1568	85.06
40-90	992	53.81
60-90	509	27.58
90-180	276	14.94
0-180	1844	100.00

EFFICACY (LUMENS PER WATT): 96.5

*** THIS IS AN ABSOLUTE TEST ***

LUMINANCE SUMMARY CD./SQ.M.

ANGLE	ALONG	45	ACROSS
45	379	429	468
55	358	448	509
65	322	491	594
75	256	628	814
85	119	1406	1979

S/MH: 1.3

SC(ALONG): 1.2, SC(ACROSS): 1.3

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Intensity Data:

ANGLE	PLANE						OUTPUT
	ALONG	22.5	45	67.5	ACROSS	AVERAGE	LUMENS
0	445	445	445	445	445	445	
5	446	442	445	441	442	443	43
10	439	438	440	439	439	439	
15	429	425	431	432	433	430	121
20	412	412	419	421	423	417	
25	394	394	402	410	412	402	185
30	370	371	385	396	398	384	
35	345	347	364	381	382	364	227
40	316	319	342	361	366	341	
45	284	293	320	343	349	318	245
50	252	263	295	323	328	293	
55	217	233	271	303	307	267	238
60	182	202	243	279	286	240	
65	144	170	219	258	264	213	211
70	106	141	195	236	243	186	
75	70	112	172	215	222	161	170
80	37	87	150	194	201	137	
85	11	65	129	175	182	116	127
90	1	49	111	155	164	99	
95	1	37	94	135	143	85	93
100	1	29	81	120	127	73	
105	1	23	69	106	112	64	67
110	1	19	59	91	97	55	
115	1	16	49	79	83	47	47
120	1	15	42	67	71	40	
125	1	13	35	57	60	34	31
130	1	12	30	48	50	29	
135	1	11	25	40	42	24	19
140	1	10	21	33	35	21	
145	1	9	18	27	28	17	11
150	1	8	16	22	23	14	
155	1	8	14	18	19	12	6
160	1	6	11	14	15	10	
165	1	1	8	11	11	7	2
170	1	1	2	7	7	4	
175	2	1	1	1	1	1	0
180	1	1	1	1	1	1	

Test No.02 Colorimetric Measurements

Master Equipment and Calibration details

Serial No.	Test Equipment	UL Equipment ID	Calibration status (Valid up to)
1	Integrating Sphere	TIS 02	Before use
2	Measured standard lamp	WSL 09	14.04.2016
3	Power Meter	PM12	23.07.2016

Test methodology adopted

- The sample was tested according to the IES LM-79-2008.
- Orientation (burning position) of SSL product during testing was its normal burning position i.e. at zero degree inclination to horizontal.
- Colorimetric parameters were measured using an integrating sphere, a spectroradiometer and software. 4π geometry was used.
- The ambient temperature was maintained at (25 ± 1) ° C during testing.
- 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 230 Volts AC. It 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 350 to 800nm.

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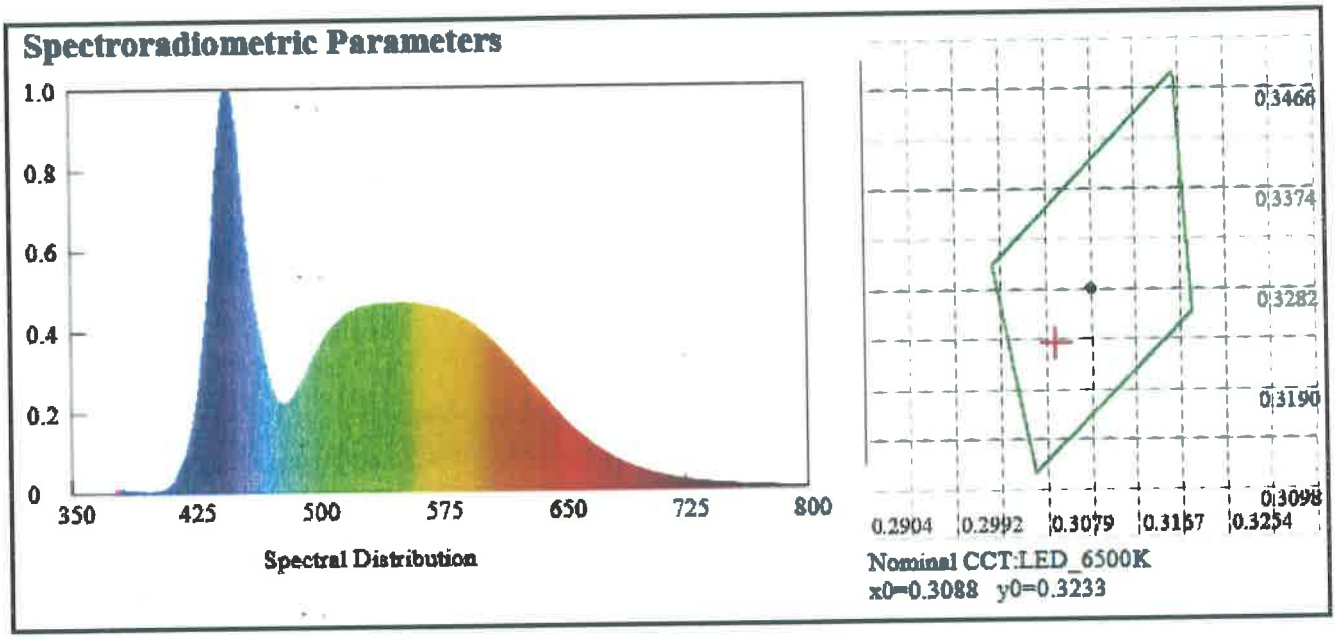
Test Observation



Spectral Distribution

Chromaticity Coordinates: x=0.3088 y=0.3233 u'=0.1972 v'=0.4647

Correlated Color Temperature: 6780 K

Dominant Wavelength: 486.0 nm(E)

Purity: 0.0903

Chromaticity Difference: +0.00228Duv

Peak Wavelength: 448.7 nm

Color Ratio: Kr=29.8% Kg=57.3% Kb=12.9%

Bandwidth: 24.2nm

Radiant Flux: 5.461 W

Rendering Index: Ra=82.4

R1=81 R2=85 R3=87 R4=84 R5=82 R6=80 R7=88 R8=72

R9=10 R10=64 R11=83 R12=59 R13=83 R14=93 R15=78

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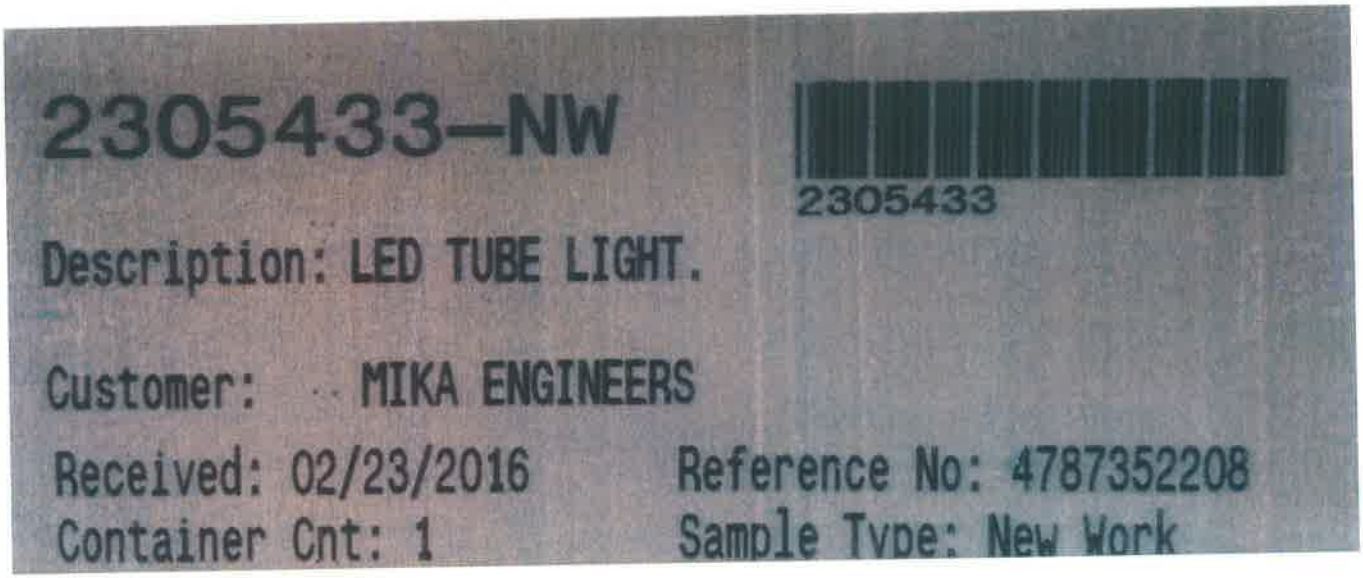
Appendix

Photographs

Front View



SampleID

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

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