LIGHT LABORATORY INC.
8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L022212011 **Issue Date: 3/3/2022**

Report Prepared For: FX Luminaire / >umascape
1940 Diamond Street, San Marcos, CA

Model Number: MP-ECO20FL-FW

Test: Photometric/Colorimetric/Electrical Test

Standards Used: Appropriate part or all test guidelines were used for test performed:

IESNA LM79: 2019 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products

ANSI NEMA ANSLG C78.377: 2017 Specification of the Chromaticity of Solid State Lighting Products

ANSI C82.77-10:2014: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

Special Test Condition: Fixture is tested with no special conditions.

Date of Tests: 2/28/22

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S4	4/7/23
HP Power Supply	6032A	PS-DC05-S2	--
Fluke Digital Thermometer	52K/J	MT-TP05	3/17/23
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

General Information	
Manufacturer:	FX Luminaire / >umascape
Model Number:	MP-ECO20FL-FW
Driver Model Number:	NONE

Test Summary	
Total Lumens:	114.00
Efficacy:	53.61
Color Redering Index:	87.0
Correlated Color Temperature:	2566
Input Voltage (VAC):	12.01
Input Current (Amp):	0.2833
Input Power (W):	2.13
Input Power Factor:	0.6250
Current ATHD (%):	88.3%

Test Condition	
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:10

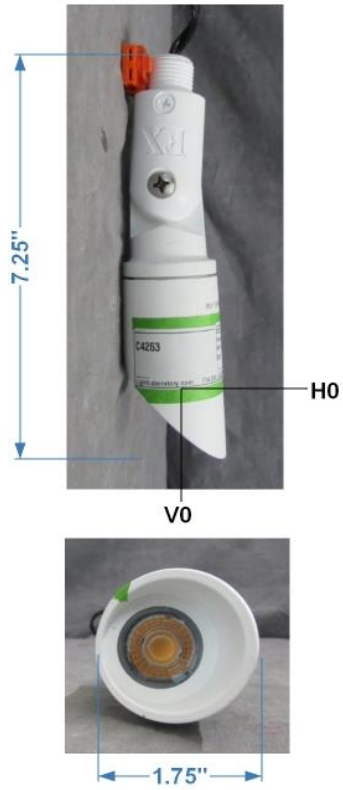


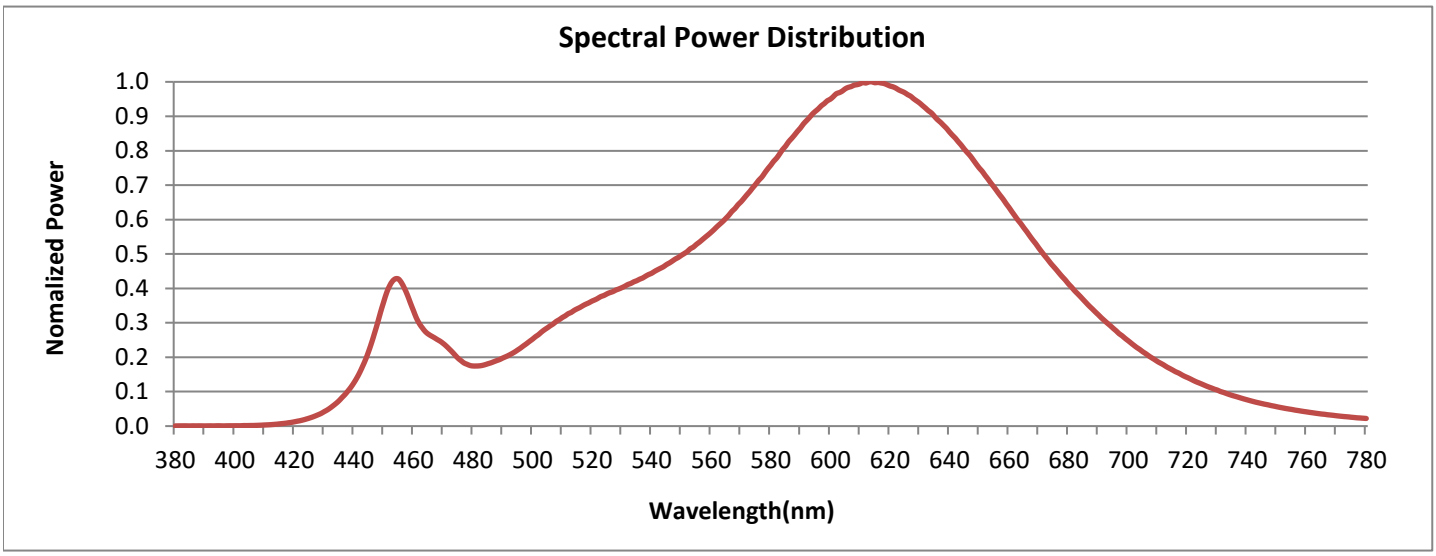
FIG. 1 LUMINAIRE

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Colorimetry Test Results

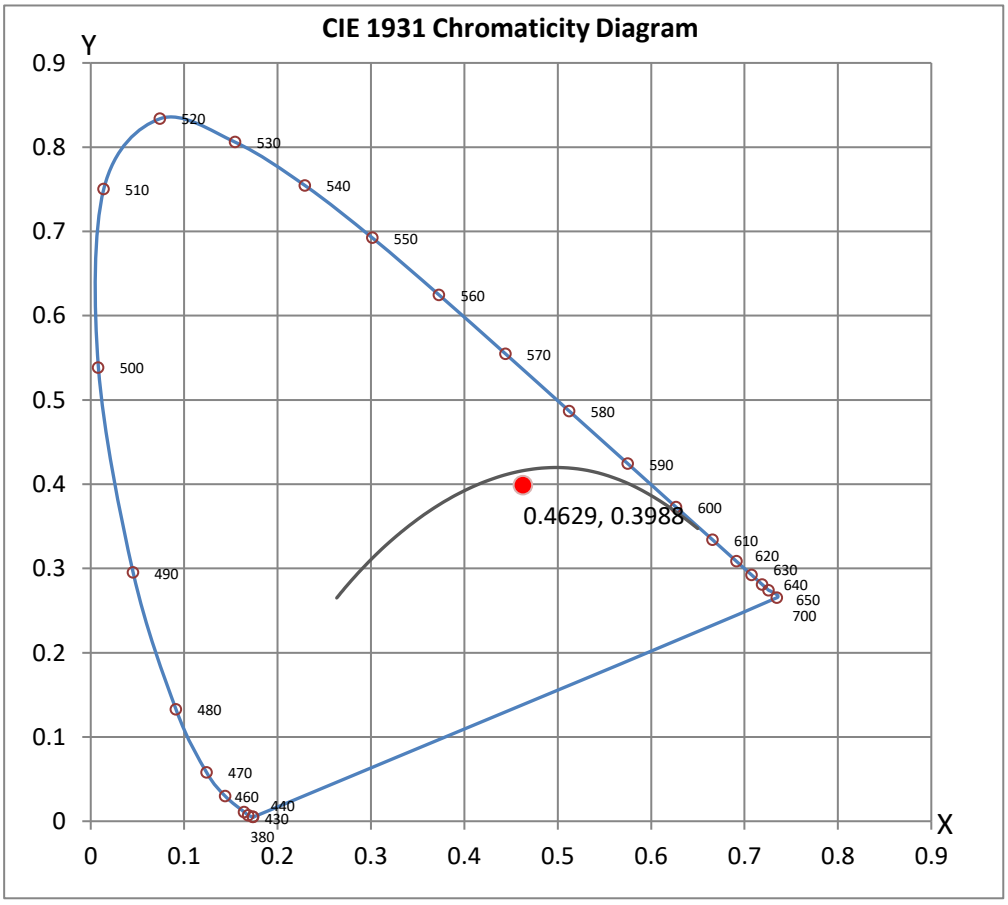


CRI & CCT

x	0.4629
y	0.3988
u'	0.2699
v'	0.5232
CRI	87.00
CCT	2566
Duv	-0.00458

R Values

R1	87.63
R2	96.55
R3	93.52
R4	85.40
R5	88.93
R6	95.69
R7	82.39
R8	66.07
R9	33.06
R10	92.39
R11	86.28
R12	85.32
R13	90.20
R14	97.52
R15	81.47



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Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25^{o}C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25^{o}C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25^{o}C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25^{o}C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

The results related only to the samples as received and tested. This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government.

Report Prepared by : Kunjan Modi

Test Report Reviewed by:

Steve Kang
Quality Assurance

**Attached are photometric data reports.*

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Photometric Test Report

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L022212011.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L022212011
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 3/2/2022
[MANUFAC] FX Luminaire / >umascape
[LUMCAT] MP-ECO20FL-FW
[LUMINAIRE] MP Redesign, 20W, 2700K, Flat White
[BALLASTCAT] NONE
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 12VAC
[TEST PROCEDURE] IESNA:LM-79-08

Note: Candela values converted from Type-C to Type-B

CHARACTERISTICS

NEMA Type	4 H x 4 V
Maximum Candela	287
Maximum Candela Angle	0H 0V
Horizontal Beam Angle (50%)	31.6
Vertical Beam Angle (50%)	31.6
Horizontal Field Angle (10%)	57.3
Vertical Field Angle (10%)	57.3
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	48
Beam Efficiency	N.A.
Field Lumens	87
Field Efficiency	N.A.
Spill Lumens	27
Luminaire Lumens	114
Total Efficiency	N.A.
Total Luminaire Watts	2.13
Ballast Factor	1.00

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Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

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AXIAL CANDELA

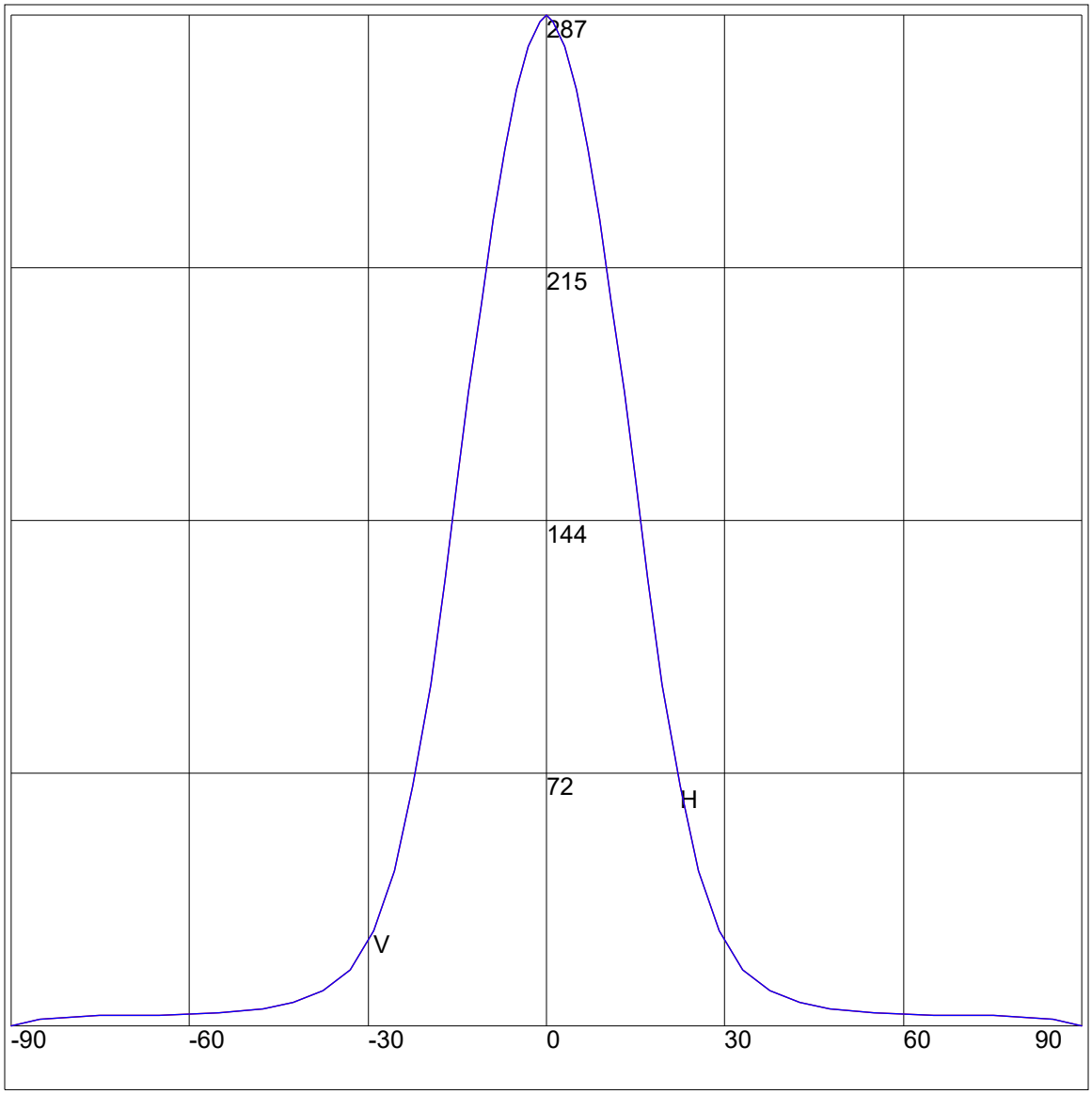
DEG.	HOR.	DEG.	VERT.
90	0	90	0
85	2	85	2
75	3	75	3
65	3	65	3
55	4	55	4
47.5	5	47.5	5
42.5	7	42.5	7
37.5	10	37.5	10
33	16	33	16
29	27	29	27
25.5	44	25.5	44
22.5	68	22.5	68
19.5	97	19.5	97
17	127	17	127
15	154	15	154
13	180	13	180
11	205	11	205
9	229	9	229
7	249	7	249
5	266	5	266
3	278	3	278
1	285	1	285
0	287	0	287
-1	285	-1	285
-3	278	-3	278
-5	266	-5	266
-7	249	-7	249
-9	229	-9	229
-11	205	-11	205
-13	180	-13	180
-15	154	-15	154
-17	127	-17	127
-19.5	97	-19.5	97
-22.5	68	-22.5	68
-25.5	44	-25.5	44
-29	27	-29	27
-33	16	-33	16
-37.5	10	-37.5	10
-42.5	7	-42.5	7
-47.5	5	-47.5	5
-55	4	-55	4
-65	3	-65	3
-75	3	-75	3
-85	2	-85	2
-90	0	-90	0

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AXIAL CANDELA DISPLAY



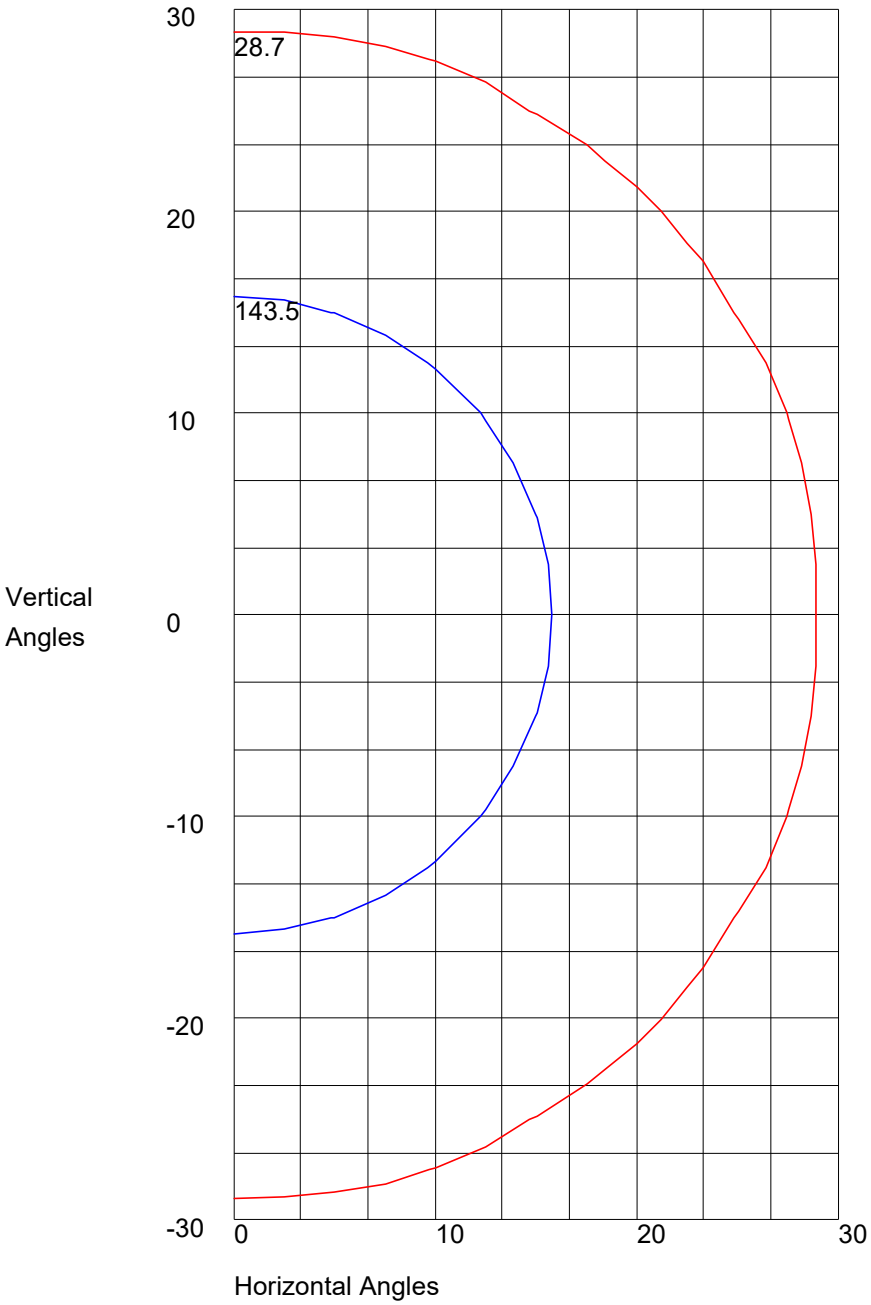
Maximum Candela = 287 Located At Horizontal Angle = 0, Vertical Angle = 0
H - Horizontal Axial Candela
V - Vertical Axial Candela

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ISOCANDELA CURVES



Maximum Candela = 287 Located At Horizontal Angle = 0, Vertical Angle = 0
50% Maximum Candela = 143.5
10% Maximum Candela = 28.7

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