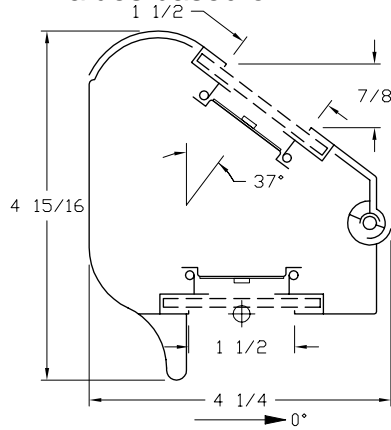


**ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION**

Values based on 12 foot mounting height.



REPORT NUMBER: ITL67475  
ISSUE DATE: 02/22/11 PAGE: 1 OF 7  
PREPARED FOR: SECURITY LIGHTING  
CATALOG NUMBER: HIRAF-LED-48-UD-120-PS  
LUMINAIRE: EXTRUDED GRAY PAINTED METAL HOUSING WITH FABRICATED GRAY PAINTED METAL END CAPS/MOUNTING BRACKETS, EIGHT CIRCUIT BOARDS WITH A TOTAL OF 40 LEDS, CLEAR GLASS TOP AND BOTTOM LENSES.

LAMPS: FORTY WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), 24 LEDS VERTICAL BASE-UP POSITION, 16 LEDS TILTED 37-DEGREES FROM VERTICAL BASE-DOWN POSITION.

TOTAL INPUT WATTS = 54.8 AT 120.0 VOLTS

LED DRIVER: THOMAS RESEARCH PRODUCTS TWC-050S035SS

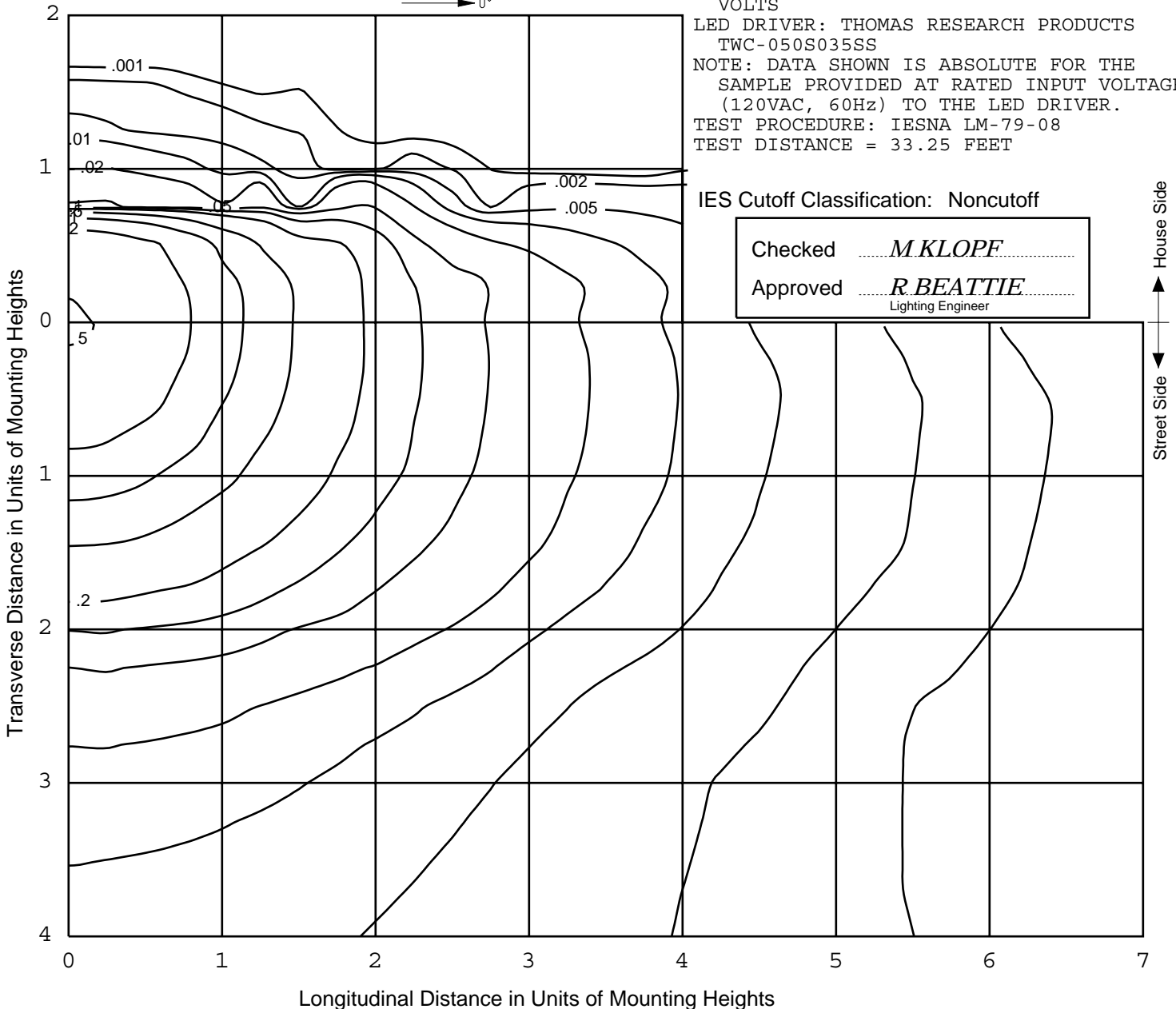
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE LED DRIVER.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 33.25 FEET

IES Cutoff Classification: Noncutoff

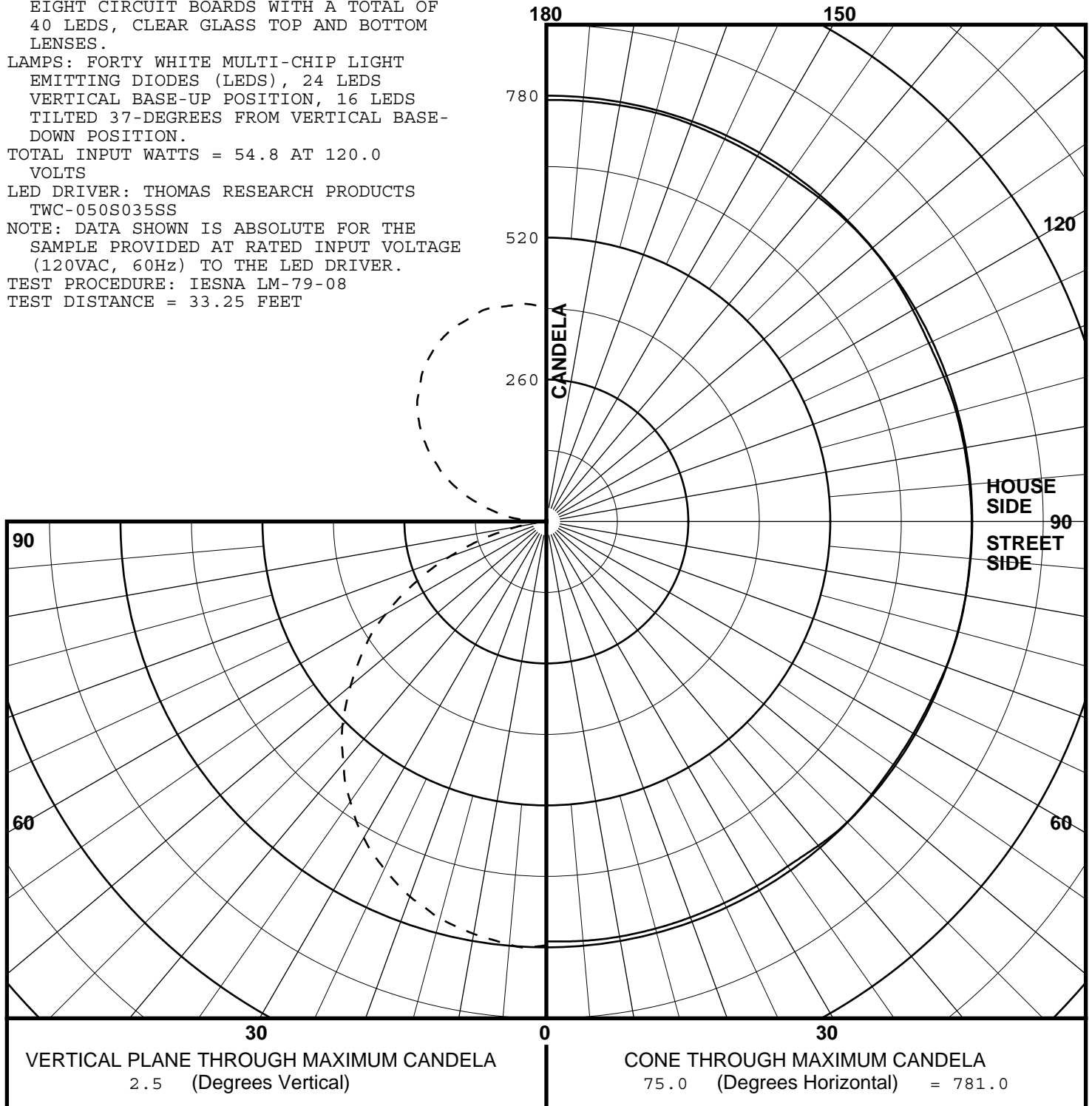
Checked ..... *M.KLOPF* .....  
Approved ..... *R.BEATTIE* .....  
Lighting Engineer





REPORT NUMBER: ITL67475  
 ISSUE DATE: 02/22/11 PAGE: 2 OF 7  
 PREPARED FOR: SECURITY LIGHTING  
 CATALOG NUMBER: HIRAF-LED-48-UD-120-PS  
 LUMINAIRE: EXTRUDED GRAY PAINTED METAL HOUSING WITH FABRICATED GRAY PAINTED METAL END CAPS/MOUNTING BRACKETS, EIGHT CIRCUIT BOARDS WITH A TOTAL OF 40 LEDS, CLEAR GLASS TOP AND BOTTOM LENSES.  
 LAMPS: FORTY WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), 24 LEDS VERTICAL BASE-UP POSITION, 16 LEDS TILTED 37-DEGREES FROM VERTICAL BASE-DOWN POSITION.  
 TOTAL INPUT WATTS = 54.8 AT 120.0 VOLTS  
 LED DRIVER: THOMAS RESEARCH PRODUCTS TWC-050S035SS  
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE LED DRIVER.  
 TEST PROCEDURE: IESNA LM-79-08  
 TEST DISTANCE = 33.25 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA



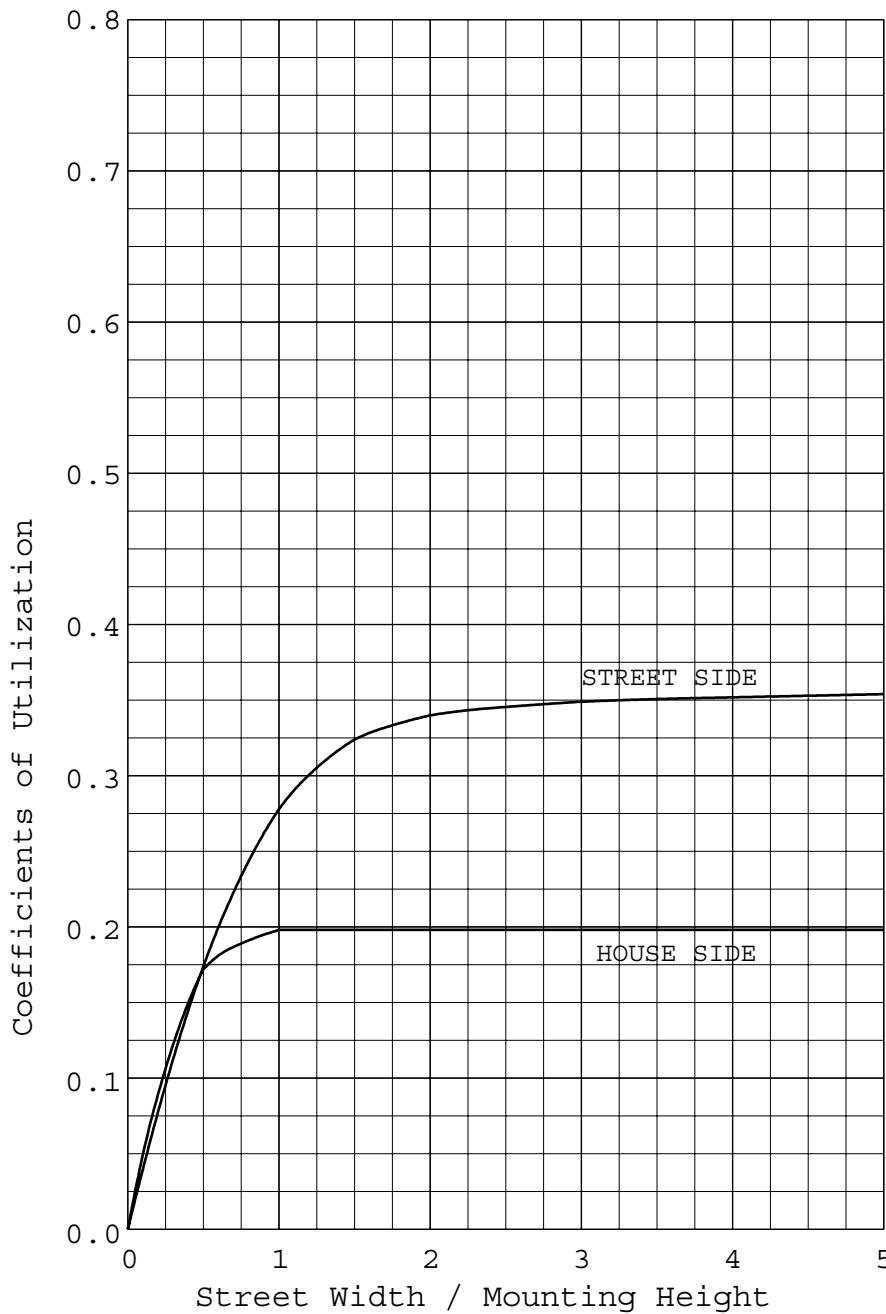
REPORT NUMBER: ITL67475

PAGE: 3 OF 7

ISSUE DATE: 02/22/11

PREPARED FOR: SECURITY LIGHTING

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1127	37.6
DOWNWARD HOUSE SIDE	598	19.9
DOWNWARD TOTAL	1725	57.5
UPWARD STREET SIDE	1092	36.4
UPWARD HOUSE SIDE	183	6.1
UPWARD TOTAL	1275	42.5
TOTAL FLUX	3000	100.0
EFFICACY = 54.7 Lm/W		

ALL CANDELA AND LUMENS IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.



INDEPENDENT TESTING LABORATORIES, INC.  
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL67475  
ISSUE DATE: 02/22/11  
PREPARED FOR: SECURITY LIGHTING

PAGE: 4 OF 7

FLUX DISTRIBUTION BY SOLID ANGLE

(PER IESNA TM-15-07, LUMINAIRE CLASSIFICATION SYSTEM FOR OUTDOOR LUMINAIRES)

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	1127.	37.6	
FL ( 0- 30)	305.2	10.2	
FM ( 30- 60)	595.5	19.9	
FH ( 60- 80)	157.4	5.2	G0
FVH( 80- 90)	69.1	2.3	U1 G1
BACK LIGHT	598.	19.9	
BL ( 0- 30)	302.6	10.1	B1
BM ( 30- 60)	264.8	8.8	B1
BH ( 60- 80)	30.0	1.0	B0 G0
BVH( 80- 90)	0.5	0.0	U0 G0
UPLIGHT	1275.	42.5	
UL ( 90-100)	115.5	3.8	U3
UH (100-180)	1159.5	38.6	U5
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	3000.	100.0	

BACKLIGHT, UPLIGHT, AND GLARE (BUG) RATINGS  
(PER ADDENDUM A FOR IESNA TM-15-07)

BUG RATING: B1 U5 G1



INDEPENDENT TESTING LABORATORIES, INC.  
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL67475  
ISSUE DATE: 02/22/11  
PREPARED FOR: SECURITY LIGHTING

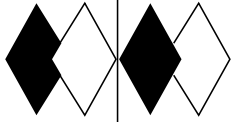
PAGE: 5 OF 7

CANDELA TABULATION

	LATERAL ANGLE											
	STREET SIDE	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0
	180.0	392.	392.	392.	392.	392.	392.	392.	392.	392.	392.	392.
	175.0	412.	413.	412.	412.	412.	408.	406.	403.	400.	395.	392.
	165.0	466.	464.	462.	458.	448.	443.	431.	419.	404.	389.	381.
	155.0	496.	495.	495.	485.	472.	462.	439.	420.	394.	370.	354.
	145.0	515.	514.	509.	495.	481.	461.	435.	408.	371.	333.	315.
	135.0	513.	512.	505.	490.	472.	446.	413.	376.	331.	283.	257.
	125.0	494.	493.	485.	470.	446.	413.	374.	329.	278.	220.	188.
	115.0	462.	461.	450.	434.	409.	372.	324.	271.	211.	147.	111.
	105.0	413.	410.	400.	379.	348.	307.	255.	197.	129.	68.	39.
	95.0	358.	358.	345.	323.	283.	239.	179.	113.	52.	14.	2.
	92.5	343.	343.	329.	307.	267.	222.	160.	95.	37.	6.	0.
	90.0	327.	321.	313.	284.	249.	197.	143.	78.	28.	2.	0.
	87.5	297.	292.	283.	254.	218.	168.	114.	56.	17.	4.	1.
	85.0	257.	249.	243.	211.	174.	127.	78.	34.	15.	12.	7.
V	82.5	199.	188.	187.	153.	127.	81.	47.	28.	24.	28.	19.
E	80.0	141.	134.	127.	105.	78.	52.	39.	34.	53.	50.	38.
R	77.5	92.	87.	83.	68.	59.	49.	44.	71.	81.	83.	64.
T	75.0	72.	70.	67.	62.	57.	56.	68.	105.	118.	110.	97.
I	72.5	70.	69.	67.	65.	64.	75.	124.	152.	151.	143.	129.
C	70.0	73.	75.	72.	75.	82.	137.	173.	197.	189.	180.	168.
A	67.5	86.	89.	93.	110.	139.	200.	226.	241.	229.	213.	207.
L	65.0	122.	137.	133.	175.	221.	252.	272.	283.	265.	254.	247.
	62.5	189.	195.	223.	267.	276.	310.	317.	319.	304.	293.	285.
A	60.0	292.	298.	306.	315.	329.	354.	355.	354.	340.	330.	323.
N	57.5	346.	351.	354.	369.	381.	398.	396.	390.	378.	367.	364.
G	55.0	397.	404.	408.	419.	423.	431.	431.	419.	408.	403.	400.
L	52.5	447.	453.	450.	463.	462.	467.	462.	450.	438.	437.	433.
E	50.0	488.	493.	496.	498.	496.	497.	492.	478.	468.	468.	465.
	47.5	524.	531.	528.	533.	527.	528.	518.	508.	498.	503.	496.
	45.0	559.	562.	559.	561.	556.	553.	547.	534.	528.	530.	527.
	42.5	586.	587.	588.	586.	580.	578.	568.	559.	554.	555.	552.
	40.0	609.	614.	613.	609.	604.	601.	590.	587.	578.	582.	577.
	37.5	632.	636.	635.	629.	625.	622.	613.	608.	605.	605.	602.
	35.0	651.	656.	653.	649.	643.	642.	632.	632.	626.	629.	627.
	30.0	683.	684.	682.	679.	676.	679.	669.	668.	669.	669.	665.
	25.0	707.	709.	708.	705.	705.	709.	702.	701.	702.	704.	702.
	20.0	729.	729.	729.	729.	727.	734.	729.	729.	731.	730.	729.
	15.0	745.	746.	746.	746.	747.	756.	751.	749.	753.	751.	748.
	10.0	760.	760.	760.	760.	760.	769.	764.	765.	767.	766.	764.
	5.0	767.	768.	770.	769.	770.	777.	774.	774.	778.	775.	775.
	2.5<<	769.	771.	772.	771.	771.	779.	776.	777.	781.	779.	779.
	0.0	776.	776.	776.	776.	776.	776.	776.	776.	776.	776.	776.

||  
CONE OF MAXIMUM CANDELA

||  
PLANE OF MAXIMUM CANDELA



REPORT NUMBER: ITL67475  
 ISSUE DATE: 02/22/11  
 PREPARED FOR: SECURITY LIGHTING

PAGE: 6 OF 7

CANDELA TABULATION

	HOUSE SIDE		LATERAL ANGLE									
	95.0	105.0	115.0	120.0	125.0	135.0	145.0	155.0	165.0	175.0	180.0	
	180.0	392.	392.	392.	392.	392.	392.	392.	392.	392.	392.	392.
	175.0	390.	387.	384.	380.	377.	377.	373.	371.	367.	368.	367.
	165.0	373.	359.	342.	334.	327.	316.	300.	290.	283.	275.	278.
	155.0	342.	315.	286.	268.	247.	201.	152.	110.	74.	67.	62.
	145.0	296.	253.	195.	152.	108.	37.	21.	15.	12.	10.	10.
	135.0	233.	174.	70.	36.	14.	6.	5.	3.	2.	2.	2.
	125.0	159.	73.	6.	1.	2.	0.	0.	0.	0.	0.	0.
	115.0	81.	7.	2.	1.	0.	0.	0.	0.	0.	0.	0.
	105.0	17.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	92.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	85.0	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
V	82.5	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E	80.0	37.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
R	77.5	69.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
T	75.0	102.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
I	72.5	134.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.
C	70.0	179.	9.	2.	1.	0.	0.	0.	0.	0.	0.	0.
A	67.5	213.	54.	4.	1.	2.	0.	0.	0.	0.	0.	0.
L	65.0	251.	195.	6.	1.	2.	0.	0.	0.	0.	0.	0.
	62.5	292.	287.	9.	2.	4.	1.	0.	0.	0.	0.	0.
A	60.0	328.	328.	10.	3.	6.	3.	2.	2.	0.	0.	0.
N	57.5	369.	368.	20.	4.	7.	4.	3.	2.	3.	2.	2.
G	55.0	403.	404.	132.	54.	10.	6.	3.	3.	3.	2.	3.
L	52.5	439.	436.	381.	193.	12.	9.	6.	3.	3.	3.	3.
E	50.0	470.	470.	460.	237.	15.	11.	8.	6.	5.	5.	5.
	47.5	503.	498.	495.	284.	66.	14.	10.	8.	7.	6.	5.
	45.0	531.	529.	528.	442.	319.	17.	13.	10.	10.	9.	8.
	42.5	558.	555.	556.	569.	520.	28.	15.	13.	11.	11.	11.
	40.0	585.	580.	584.	599.	571.	227.	17.	16.	14.	14.	13.
	37.5	610.	606.	607.	608.	602.	540.	56.	19.	17.	16.	14.
	35.0	633.	625.	633.	629.	624.	624.	346.	71.	19.	18.	19.
	30.0	670.	667.	671.	669.	667.	670.	660.	640.	512.	365.	291.
	25.0	703.	701.	706.	706.	706.	707.	700.	699.	696.	697.	693.
	20.0	731.	729.	732.	733.	733.	734.	729.	730.	729.	728.	725.
	15.0	752.	750.	749.	751.	753.	755.	750.	750.	750.	750.	748.
	10.0	767.	764.	764.	765.	767.	769.	765.	764.	765.	765.	763.
	5.0	776.	774.	771.	773.	776.	778.	773.	773.	774.	772.	771.
	2.5<<	778.	777.	773.	775.	778.	778.	773.	773.	775.	773.	772.
	0.0	776.	776.	776.	776.	776.	776.	776.	776.	776.	776.	776.

CONE OF MAXIMUM CANDELA



INDEPENDENT TESTING LABORATORIES, INC.  
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: [itl@itlboulder.com](mailto:itl@itlboulder.com) • WEBSITE: [www.itlboulder.com](http://www.itlboulder.com)

REPORT NUMBER: ITL67475  
ISSUE DATE: 02/22/11  
PREPARED FOR: SECURITY LIGHTING

PAGE: 7 OF 7

ADDRESS: 1085 JOHNSON DRIVE  
BUFFALO GROVE, IL 60089

THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.



INDEPENDENT TESTING LABORATORIES, INC.  
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: [itl@itlboulder.com](mailto:itl@itlboulder.com) • WEBSITE: [www.itlboulder.com](http://www.itlboulder.com)

REPORT NUMBER: ITL67476

DATE: 02/22/11

PREPARED FOR: SECURITY LIGHTING

Page 1 of 2

ADDRESS: 1085 JOHNSON DRIVE  
BUFFALO GROVE, IL 60089

CATALOG NUMBER: HIRAF-LED-48-UD-120-PS

LUMINAIRE: EXTRUDED GRAY PAINTED METAL HOUSING WITH FABRICATED GRAY PAINTED METAL END CAPS/MOUNTING BRACKETS, EIGHT CIRCUIT BOARDS WITH A TOTAL OF 40 LEDS, CLEAR GLASS TOP AND BOTTOM LENSES.

LAMPS: FORTY WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), 24 LEDS VERTICAL BASE-UP POSITION, 16 LEDS TILTED 37-DEGREES FROM VERTICAL BASE-DOWN POSITION.

DRIVER: THOMAS RESEARCH PRODUCTS TWC-050S035SS

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60HZ) TO THE LED DRIVER.

INSTRUMENTS: Kikusui PCR500L AC Power Source  
Yokogawa WT210 Digital Power Meter  
Optronic Laboratories OL770 Spectroradiometer  
ITL 1.5 Meter Diameter Integrating Sphere, 4π Geometry

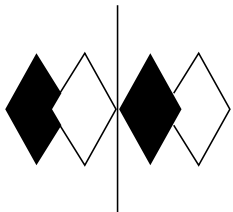
OBJECT OF TEST: Measure the Correlated Color Temperature (CCT), Color Rendering Index (CRIa), Chromaticity Coordinates (x,y), ANSI C78.377 Duv, and electrical data including Power Factor (PF) to the luminaire.

PROCEDURE: The luminaire was provided by the customer and had an unknown number of burn hours. The luminaire was mounted inside the integrating sphere in a horizontal position (24 LEDs facing down, 16 LEDs tilted 37-degrees from vertical base-down position). The luminaire was allowed to stabilize at 120VAC input. After stabilization occurred, Correlated Color Temperature (CCT), Color Rendering Index (CRIa), Chromaticity Coordinates (x,y), ANSI C78.377 Duv, and electrical data including Power Factor (PF) were measured with the luminaire operating in the integrating sphere. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the luminaire operating at 120VAC input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. All data are traceable to the National Institute of Standards and Technology.

RESULTS: (continued next page)

THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

Checked           N Gully            
Approved           R Bergin            
                  Lighting Engineer



# itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



INDEPENDENT TESTING LABORATORIES, INC.  
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: [itl@itlboulder.com](mailto:itl@itlboulder.com) • WEBSITE: [www.itlboulder.com](http://www.itlboulder.com)  
REPORT NUMBER: ITL67476  
DATE: 02/22/11  
PREPARED FOR: SECURITY LIGHTING  
CATALOG NUMBER: HIRAF-LED-48-UD-120-PS

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3456
Chromaticity Ordinate y	0.3640
Correlated Color Temp CCT (K)	5022
Color Rendering Index (CRIa)	69
ANSI C78.377-2008 Duv	0.006
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (mA AC)	512
Input Power (Watts)	54.8
Input Power Factor (%)	89.2