





Project No: 13CA13236  
Report No: 13CA13236-4  
Issued Date: 2013-MAR-21  
Revision:

## Verification Services Test Report

Customer Company & Address
ARTEMIDE S.P.A. Via Bergamo 18 20010 Pregnana Milanese (MI)

<b>Manufacturer:</b>	Artemide S.P.A.
<b>Country of Origin:</b>	Italy
<b>Country of Export:</b>	N/A
<b>Product Category:</b>	CUMA 20
<b>Product Description:</b>	LED luminaire
<b>Model Number(s):</b>	CUMA 20
<b>Electrical Ratings:</b>	100-240Vac 50/60Hz
<b>Test Sample(s) Received Date:</b>	2013-MAR-15
<b>Test Period:</b>	2013-MAR-19 to 2013-MAR-20
<b>The Sample(s) is(are) tested in accordance with the following:</b>	
IES LM-79-08	

Prepared By	Approved By
Giovanni Di Martino 	Walter Parmiani 
<b>Name &amp; Signatory</b>	<b>Name &amp; Signatory</b>

**This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.**



UL International Italia S.r.l.  
Via XXV Aprile 3/B  
20875 Burago di Molgora (MB) Italy  
NVLAP Lab Code: 200985-0



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### Statement of Results

Test Flow	Test Method	Sample ID	Test Result
1.	Goniophotometer	008002-S001	Evaluated by Customer
2.	Integrating Sphere	008002-S001	Evaluated by Customer

### Measurement Uncertainty

N/A

### Deviation from Test Method (if any)

N/A

### Remarks (if any)

This report extends to the 230Vac 50Hz version of this product.



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### Test No. 1: Goniophotometer

#### Sample ID / Test Round Number

008002-S001 / 1

#### Environmental Conditions

Ambient Temperature
25 °C

#### Test Equipment

Local ID	Description	Model	Last cal	Next cal
BURVS0074	Goniophotometer system	LSI 6440T	14/dec/2012	By evidence
BURVS0078	AC PSU	ELGAR CW 1251	Reference only	Reference only
BURVS0077	Digital power meter	Yokogawa WT210	12/jul/2012	12/jul/2013
S541	CHRONOMETER	QUANTUM	21/may/2012	21/may/2013
BURVS0079	THERMOMETER	OMEGA MDSi8	16/jul/2012	16/jul/2013

#### Test Condition(s)

Input Voltage	Input Current	Input Power	Power Factor
120.02 V	0.24 A	28.35 W	0.96

#### Test Results

Result Name	Result
Test Date	2013-MAR-19 11:38:00 PM
Current THD	0.1 %
Luminous Flux	1650.0 lm
Luminous Efficacy	58.2 lm/W
Luminous Opening Length	0.8 in.
Luminous Opening Width	0.0 "
Luminous Opening Height	0.0 "



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### Test No. 2: Integrating Sphere

#### Sample ID / Test Round Number

008002-S001 / 1

#### Environmental Conditions

Ambient Temperature
24.2 °C

#### Test Equipment

Local ID	Description	Model	Last cal	Next cal
BURVS0033	INTEGRATING SPHERE	LABSPHERE 1.65m INTEGRATING SPHERE	04/feb/2013	By evidence
BURVS0038	SPECTRORADIOMETER	LABSPHERE CDS-1100	04/feb/2013	By evidence
BURVS0042	AC PSU	CHROMA 61603	Reference only	Reference only
BURVS0039	DIGITAL POWER METER	YOKOGAWA WT210	13/jul/2012	13/jul/2013
S541	DIGITAL CHRONOMETER	QUANTUM	21/may/2012	21/may/2013
BURVS0034	THERMOMETER	OMEGA MDSi8	16/jul/2012	16/jul/2013

#### Test Condition(s)

Base Orientation	Input Voltage	Input Current	Input Power	Power Factor
Base Down	120.01 V	0.246 A	28.36 W	0.96



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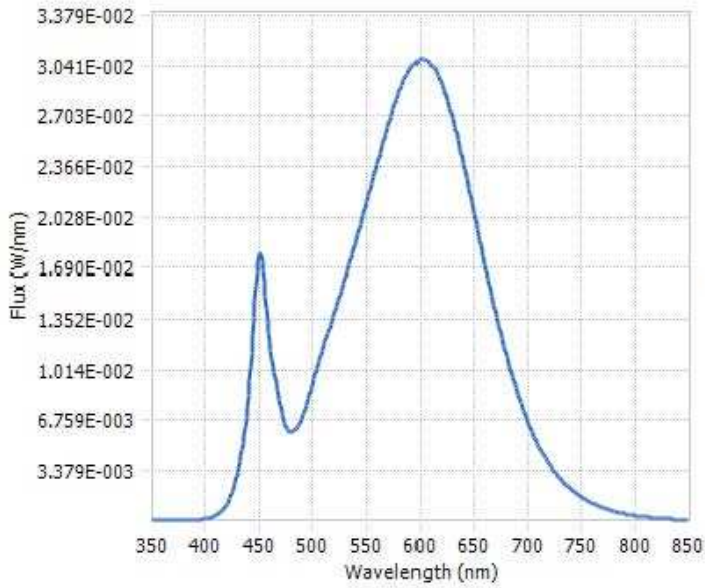
### Test Results

Result Name	Result
Current THD	0.1 %
CCT	3037 K
CRI (Ra)	81.17
CRI (R9)	11.8
Duv	0.0008
x	0.4331
y	0.4009
u'	0.2495
v'	0.5196



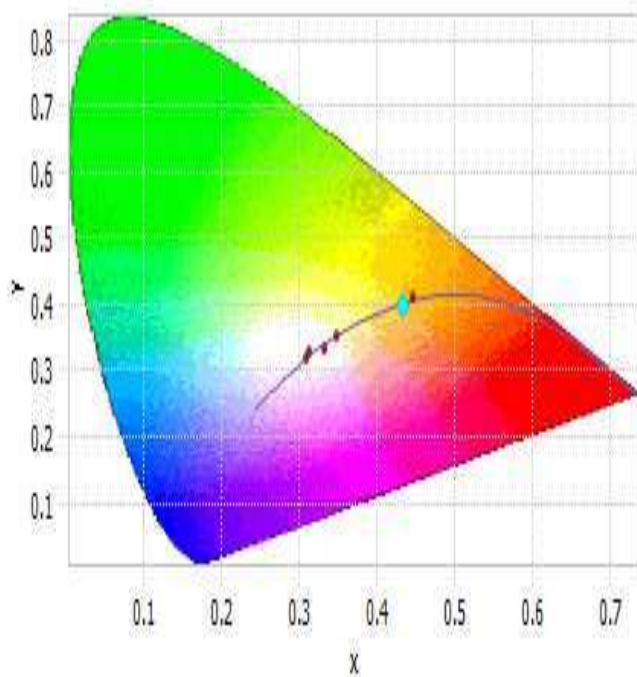
# Verification Services Test Report

## Spectral power distribution



## Chromaticity diagram

CIE 1931, 2 Degree



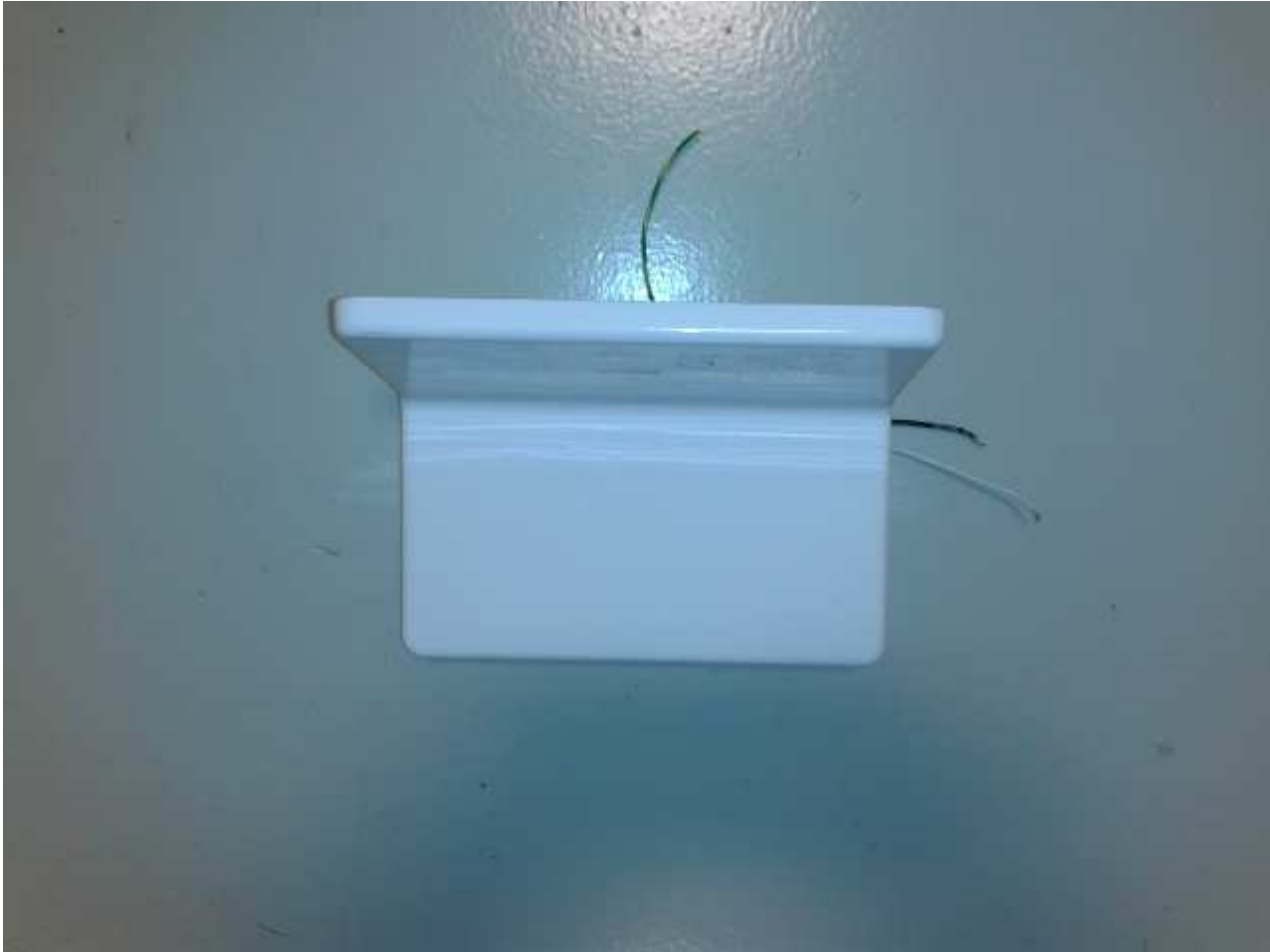


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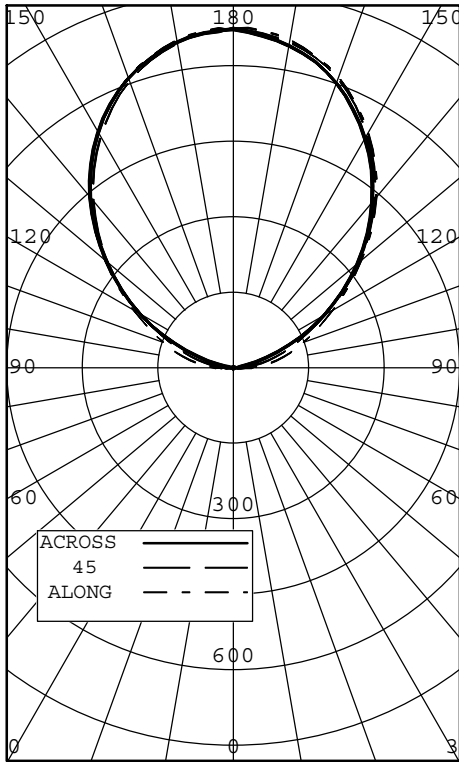
## Verification Services Test Report

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### Photo of Sample(s)



ARTEMIDE SPA, CAT# CUMA 20  
 CUMA 20  
 LED, CAT# LED. LUMINAIRE OUTPUT = 1650 LMS  
 OPERATING AT 120VAC 28.35W



ANGLE	INTENSITY (CANDLEPOWER) SUMMARY			ACROSS	OUTPUT LUMENS
	ALONG	BEAM SIDE 67.5	45		
0	2	2	2	2	2
5	2	2	2	2	2
15	1	1	1	1	1
25	0	0	0	1	1
35	0	0	0	0	0
45	0	0	0	0	0
55	0	0	0	0	0
65	0	0	0	0	0
75	0	0	0	0	0
85	15	9	4	0	0
90	36	25	12	4	0
95	61	50	31	11	4
105	118	109	88	61	46
115	185	177	163	153	149
125	279	275	270	268	265
135	389	385	384	382	378
145	492	490	488	486	480
155	578	576	575	574	565
165	640	636	637	637	630
175	672	665	666	666	662
180	673	673	673	673	673

BOTH SIDES  
 ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1	0.04
0-40	1	0.04
0-60	1	0.04
0-90	8	0.49
40-90	7	0.45
60-90	7	0.45
90-180	1642	99.51
0-180	1650	100.00

EFFICACY (LUMENS PER WATT): 58.1

\*\*\* THIS IS AN ABSOLUTE TEST \*\*\*

LUMINANCE SUMMARY - CD./SQ.M.

ANGLE	BEAM SIDE		
	ALONG	45	ACROSS
45	0	0	0
55	0	0	0
65	0	0	0
75	0	0	0
85	360	101	0

CERTIFIED BY:

DATE:  
 MAR 19, 2013

PREPARED FOR:

ARTEMIDE  
 SPA

TESTED IN ACCORDANCE WITH IES PROCEDURES.



UL INTERNATIONAL ITALIA SRL  
 VIA XXV APRILE 3/B  
 BURAGO DI MOLGORA, ITALY, ITALY 20875

TEST REPORT No. 13CA13236-4

ARTEMIDE SPA, CAT# CUMA 20  
 CUMA 20  
 LED, CAT# LED. LUMINAIRE OUTPUT = 1650 LMS  
 OPERATING AT 120VAC 28.35W

BEAM SIDE  
 INTENSITY (CANDLEPOWER) DATA

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	67.5	45	22.5	ACROSS	AVERAGE	
0	2	2	2	2	2	2	
5	2	2	2	2	2	2	0
10	2	2	2	2	2	2	
15	1	1	1	1	1	1	0
20	1	1	1	1	1	1	
25	0	0	0	1	1	0	0
30	0	0	0	0	0	0	
35	0	0	0	0	0	0	0
40	0	0	0	0	0	0	
45	0	0	0	0	0	0	0
50	0	0	0	0	0	0	
55	0	0	0	0	0	0	0
60	0	0	0	0	0	0	
65	0	0	0	0	0	0	0
70	0	0	0	0	0	0	
75	0	0	0	0	0	0	0
80	5	3	0	0	0	1	
85	15	9	4	0	0	5	3
90	36	25	12	4	0	15	
95	61	50	31	11	4	31	18
100	88	79	58	30	16	55	
105	118	109	88	61	46	85	45
110	148	141	123	101	94	122	
115	185	177	163	153	149	165	82
120	228	222	214	210	207	216	
125	279	275	270	268	265	271	121
130	333	330	327	325	322	327	
135	389	385	384	382	378	383	147
140	443	439	438	435	430	437	
145	492	490	488	486	480	488	152
150	538	535	533	532	525	533	
155	578	576	575	574	565	574	132
160	614	611	610	609	601	609	
165	640	636	637	637	630	636	89
170	660	654	656	655	649	655	
175	672	665	666	666	662	666	32
180	673	673	673	673	673	673	

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ARTEMIDE SPA, CAT# CUMA 20  
 CUMA 20  
 LED, CAT# LED. LUMINAIRE OUTPUT = 1650 LMS  
 OPERATING AT 120VAC 28.35W

BEAM SIDE  
 AVERAGE LUMINANCE DATA

CD./SQ.M (FOOTLAMBERTS)

ANGLE	ALONG	67.5	45	22.5	ACROSS
0	3 ( 1)	3 ( 1)	3 ( 1)	3 ( 1)	3 ( 1)
30	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
40	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
45	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
50	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
55	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
60	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
65	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
70	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
75	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
80	60 ( 17)	35 ( 10)	0 ( 0)	0 ( 0)	0 ( 0)
85	360 ( 105)	209 ( 61)	101 ( 29)	0 ( 0)	0 ( 0)

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TEST REPORT No. 13CA13236-4

ARTEMIDE SPA, CAT# CUMA 20  
 CUMA 20  
 LED, CAT# LED. LUMINAIRE OUTPUT = 1650 LMS  
 OPERATING AT 120VAC 28.35W

OPPOSITE SIDE TO BEAM  
 INTENSITY (CANDLEPOWER) DATA

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	112.5	135	157.5	ACROSS	AVERAGE	
0	2	2	2	2	2	2	
5	2	2	2	2	2	2	0
10	2	2	2	2	2	2	
15	1	1	1	1	1	1	0
20	1	1	1	1	1	1	
25	0	0	1	1	1	0	0
30	0	0	0	0	0	0	
35	0	0	0	0	0	0	0
40	0	0	0	0	0	0	
45	0	0	0	0	0	0	0
50	0	0	0	0	0	0	
55	0	0	0	0	0	0	0
60	0	0	0	0	0	0	
65	0	0	0	0	0	0	0
70	0	0	0	0	0	0	
75	0	0	0	0	0	0	0
80	5	4	0	0	0	2	
85	15	10	5	0	0	6	4
90	36	28	14	4	0	16	
95	61	53	34	12	6	33	19
100	88	79	59	33	18	56	
105	118	108	88	64	52	86	46
110	148	140	123	105	100	123	
115	185	177	165	157	155	167	83
120	228	224	217	215	214	219	
125	279	275	272	272	272	274	122
130	333	328	326	329	330	329	
135	389	384	380	385	387	384	148
140	443	438	433	438	442	438	
145	492	488	483	486	493	487	152
150	538	532	529	531	538	532	
155	578	572	570	570	578	573	132
160	614	606	605	605	612	607	
165	640	633	633	632	637	634	89
170	660	653	654	653	656	655	
175	672	666	668	667	668	668	32
180	673	673	673	673	673	673	

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ARTEMIDE SPA, CAT# CUMA 20  
 CUMA 20  
 LED, CAT# LED. LUMINAIRE OUTPUT = 1650 LMS  
 OPERATING AT 120VAC 28.35W

OPPOSITE SIDE TO BEAM  
 AVERAGE LUMINANCE DATA

CD./SQ.M (FOOTLAMBERTS)

ANGLE	ALONG	112.5	135	157.5	ACROSS
0	3 ( 1)	3 ( 1)	3 ( 1)	3 ( 1)	3 ( 1)
30	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
40	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
45	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
50	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
55	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
60	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
65	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
70	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
75	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)	0 ( 0)
80	60 ( 17)	43 ( 12)	0 ( 0)	0 ( 0)	0 ( 0)
85	360 ( 105)	245 ( 71)	113 ( 33)	0 ( 0)	0 ( 0)

UL INTERNATIONAL ITALIA SRL  
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CONE OF LIGHT

MOUNTING HEIGHT ABOVE WORK PLANE (FT)	INITIAL FC AT NADIR -FCN (FC)	.1*FCN (FC)	10% LIGHTED DIAMETER (FT)	.5*FCN (FC)	50% LIGHTED DIAMETER (FT)
5	0.1	0.0	4.5	0.0	2.2
7	0.0	0.0	6.3	0.0	3.1
9	0.0	0.0	8.2	0.0	3.9
11	0.0	0.0	10.0	0.0	4.8
13	0.0	0.0	11.8	0.0	5.7
15	0.0	0.0	13.6	0.0	6.6
17	0.0	0.0	15.4	0.0	7.4
19	0.0	0.0	17.2	0.0	8.3

10% CONE ANGLE: 48.7 DEGREES  
 50% CONE ANGLE: 24.6 DEGREES

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LED, CAT# LED. LUMINAIRE OUTPUT = 1650 LMS  
OPERATING AT 120VAC 28.35W

COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

CC WALL	90				80				70				50				30				10				0
	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0			
RCR																									
0	1.091	.091	.091	.09	0.950	.950	.950	.95	0.820	.820	.820	.82	0.560	.560	.56	0.320	.320	.32	0.110	.110	.11	0.00			
1	0.990	.940	.900	.87	0.870	.820	.790	.76	0.740	.700	.680	.64	0.480	.470	.45	0.280	.270	.26	0.090	.090	.09	0.00			
2	0.900	.820	.750	.69	0.790	.720	.660	.61	0.670	.610	.570	.53	0.420	.390	.37	0.240	.230	.22	0.080	.070	.07	0.00			
3	0.820	.720	.640	.58	0.720	.630	.560	.51	0.610	.540	.490	.44	0.370	.340	.31	0.220	.200	.18	0.070	.060	.06	0.00			
4	0.750	.630	.550	.48	0.650	.550	.480	.43	0.560	.480	.420	.37	0.330	.290	.26	0.190	.170	.15	0.060	.060	.05	0.00			
5	0.690	.540	.470	.41	0.600	.480	.420	.36	0.510	.420	.360	.31	0.290	.250	.22	0.170	.150	.13	0.050	.050	.04	0.00			
6	0.630	.500	.410	.35	0.550	.440	.360	.31	0.470	.380	.310	.27	0.260	.220	.19	0.150	.130	.11	0.050	.040	.04	0.00			
7	0.580	.450	.360	.30	0.500	.390	.320	.27	0.430	.340	.280	.23	0.230	.190	.16	0.140	.110	.10	0.040	.040	.03	0.00			
8	0.530	.400	.320	.26	0.460	.350	.280	.23	0.390	.300	.240	.20	0.210	.170	.14	0.120	.100	.08	0.040	.030	.03	0.00			
9	0.490	.360	.280	.23	0.430	.320	.250	.20	0.360	.270	.220	.18	0.190	.150	.12	0.110	.090	.07	0.040	.030	.02	0.00			
10	0.460	.330	.250	.20	0.400	.290	.220	.18	0.340	.250	.190	.15	0.170	.140	.11	0.100	.080	.07	0.030	.030	.02	0.00			

THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS  
BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN.  
LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD  
THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

LUMINAIRE INPUT WATTS 28.4

LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE.  
BALLAST AND FIELD FACTORS HAVE NOT BEEN APPLIED.

TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST  
LUMINOUS OPENING OF LUMINAIRE.