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**Report No. 103635111CRT-001**

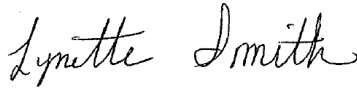
**Shanghai Nanhua Electronics Co., Ltd.**

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**Standards**

*International Civil Aviation Organization (ICAO), Aerodromes, Annex 14, Volume 1, Seventh Edition, dated July 2016*

<i>Test Purpose</i>	ICAO testing of Low Intensity Obstruction Lights
<i>Test Dates</i>	August 24th, 2018 through August 30th, 2018



Lynette Smith  
Engineer  
Lighting



Christopher W Metcalf  
Engineering Supervisor  
Lighting

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Test Plan and Datasheets			
Client	Shanghai Nanhua Electronics Co., Ltd.	Engineer	Lynette Smith
Report #	103635111CRT-001	Reviewer	Chris Metcalf
Product	Low Intensity Obstruction Light	Model(s)	LP312AO
Standard	ICAO Annex 14		

Spec	Test name	Clause	Pass Fail NA
Annex 14	Low Intensity Obstacle Light-Photometry	Table 6-1 & Table 6-2	Pass
Annex 14	Low Intensity Obstacle Light-Color	1.2.3	Pass

Sample Information				
Date Rec.	Intertek ID	Description	Condition	Model No.
8/22/18	CRT1808221603-001	Low Intensity Obstruction Light	Production	LP322AO
8/22/18	CRT1808221603-002	Low Intensity Obstruction Light	Production	LP312AO

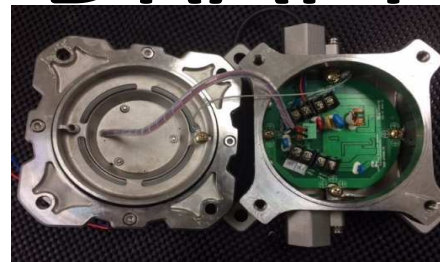
Further Sample Description	
Type:	Low Intensity Type A & B Fixed Obstacle Light
Options:	NA
Light Source:	4 Cree LED XPE-2
Approx. Size:	6in x 6in
Electrical Input:	100-240Vac; 24 VDC
Casting Material:	Stainless Steel
Yield Device:	NA

**Picture(s)**

CRT1808221603-001



DRAFT



CRT1808221603-002



**Low Intensity Obstacle Light-Photometry (Steady)**

Low intensity obstacle lights Types A and B, shall be in accordance with the specifications in Table 6-1 and Table 6-2. Energize each light fixture and test for compliance with the photometric requirements. Photometric axes will be established with the horizontal axis passing through the center of the fixture and parallel to the runway centerline at grade and the vertical axis running through the center of the fixture and perpendicular to the ground plane. Operate the fixture until stable before taking measurements.

**Results: 100-240 Vac**

Voltage Variation	Voltage	Position	Measured	Factor	Result
Input Voltage*	120	0,0	75.8	NA	NA
Input Voltage +10%	264	0,0	75.4	99%	Pass
Input Voltage -10%	90.1	0,0	75.4	99%	Pass

Sample	CRT1808221603-001
Type	Low Intensity Obstruction Light
Lamp	Cree LED
Color	Red

\* Distribution test voltage

Luminous Intensity (cd)												
Vertical Position (deg)	Horizontal Position (deg.)											
	0	30	60	90	120	150	180	210	240	270	300	330
90U	42.8	42.8	42.9	42.8	42.8	42.7	42.6	42.7	42.6	42.7	42.7	42.7
89U	43.0	43.1	43.3	43.1	42.7	42.4	42.3	42.6	42.7	42.7	43.1	43.1
88U	42.4	43.0	43.1	42.7	42.8	42.2	42.1	42.9	42.5	42.2	42.6	43.0
87U	41.6	42.9	43.4	41.3	43.4	42.6	41.3	43.4	42.7	41.1	42.2	43.1
86U	41.0	42.5	42.0	40.7	42.7	42.2	40.7	43.7	41.9	39.7	40.7	42.8
85U	39.4	42.2	41.4	39.5	42.2	40.9	39.8	42.3	40.7	38.4	40.2	42.6
84U	36.6	41.1	39.9	37.8	40.8	39.8	37.7	40.8	39.6	37.2	38.4	41.4
83U	35.4	37.9	38.3	35.9	38.4	37.4	35.2	38.1	37.6	35.0	36.8	38.7
82U	34.3	36.2	36.5	34.6	36.1	35.9	33.9	35.6	35.7	33.6	34.7	36.2
81U	32.6	35.3	35.1	33.6	34.2	34.2	32.6	34.7	34.5	32.8	33.1	34.5
80U	31.4	33.3	33.9	32.5	33.1	32.9	32.0	33.9	33.6	31.8	32.7	33.5
79U	30.9	32.9	33.0	31.5	32.5	32.0	31.2	33.2	33.4	31.1	32.1	32.3
78U	30.5	32.3	32.4	30.9	31.9	32.1	30.6	32.8	32.7	30.3	31.4	32.0
77U	30.2	31.8	32.0	30.3	31.3	30.6	30.5	32.9	32.3	30.5	31.3	31.8
76U	29.5	31.4	31.6	30.2	31.2	31.0	30.3	32.2	31.7	30.5	30.8	31.2
75U	29.4	30.7	31.1	30.1	31.0	31.0	29.7	32.2	31.5	30.0	30.4	30.8
74U	29.4	30.8	30.6	29.4	30.3	30.5	29.7	31.5	31.8	29.9	30.4	30.6
73U	29.5	30.3	30.8	29.3	30.2	30.3	29.7	31.8	31.2	29.8	30.2	30.9
72U	28.4	30.5	30.7	29.1	30.1	29.8	29.1	31.0	30.7	29.8	29.9	30.4
71U	29.0	29.9	30.1	29.4	30.0	30.1	28.8	30.8	30.9	29.6	30.1	30.1
70U	29.0	29.5	30.4	28.8	29.9	30.0	28.8	30.7	30.2	29.3	29.6	29.6
69U	28.6	29.5	30.0	28.8	29.4	29.8	28.4	30.3	30.0	28.7	29.1	29.3
68U	27.9	29.5	30.1	28.8	29.6	29.7	28.6	30.1	29.8	29.1	29.3	29.6
67U	28.1	29.2	30.4	28.9	29.9	29.6	28.7	30.6	30.0	29.2	29.3	30.2
66U	28.6	29.6	30.3	28.4	30.4	30.1	28.6	30.1	30.6	28.9	29.1	30.4
65U	28.3	30.3	30.8	28.6	30.1	30.6	28.1	30.6	30.7	28.5	29.2	30.6
64U	28.4	30.5	31.6	28.7	30.8	30.7	28.2	31.1	30.8	29.1	29.5	30.9
63U	28.1	30.9	31.8	28.6	30.9	30.6	28.1	31.1	30.5	28.5	29.4	31.0
62U	28.5	30.7	31.9	28.5	30.5	30.1	27.9	30.6	29.9	28.2	29.6	31.4
61U	28.6	30.4	31.3	28.6	30.4	30.1	28.4	30.1	29.9	29.2	29.3	31.1
60U	28.8	30.0	31.4	28.7	29.9	29.6	28.5	29.2	29.1	28.9	28.9	31.2
59U	29.0	29.8	30.7	28.5	29.7	28.6	28.0	29.0	29.1	29.0	28.6	30.6
58U	28.9	29.7	30.4	28.9	29.2	28.3	28.2	28.0	28.7	28.4	28.9	30.2
57U	29.2	29.7	30.6	29.1	29.6	28.4	28.7	27.8	29.2	27.7	29.4	30.1
56U	29.3	29.3	30.5	28.4	29.9	29.4	27.9	28.3	29.4	27.7	29.2	30.4
55U	29.2	29.4	29.5	28.3	30.0	28.6	27.2	28.0	29.1	27.0	28.8	30.2
54U	28.3	29.1	29.6	27.8	28.9	28.4	26.9	27.6	28.3	27.4	28.6	29.2
53U	27.9	28.4	28.6	27.7	28.4	27.8	27.6	27.6	28.8	26.9	28.1	28.6
52U	29.1	27.9	28.1	27.7	27.7	28.4	28.1	27.9	28.5	28.2	28.7	28.4
51U	29.2	27.7	28.4	28.6	27.7	27.9	28.8	28.3	27.8	28.1	28.5	28.1
50U	27.9	27.6	27.9	28.0	27.5	27.6	27.7	28.0	28.3	27.6	28.9	28.1
49U	27.4	28.0	28.2	27.8	27.7	28.4	27.5	28.2	28.1	27.7	29.3	28.4
48U	27.6	27.3	28.1	28.1	27.9	27.9	27.1	27.8	28.1	27.8	29.2	27.6
47U	28.1	27.6	28.1	28.5	26.7	28.5	27.5	28.7	28.1	27.8	28.7	28.5
46U	28.3	27.5	28.0	27.2	27.8	28.7	27.5	29.1	28.4	28.4	28.9	28.3
45U	28.8	27.5	27.6	28.4	27.4	28.1	27.3	29.0	28.6	29.1	29.8	28.2
44U	28.8	27.8	27.8	28.5	28.7	28.6	27.6	29.7	29.0	29.0	29.5	28.6
43U	28.5	28.2	28.4	27.9	29.8	28.6	28.2	29.7	29.9	28.9	29.0	29.0
42U	28.9	28.8	29.4	27.8	29.6	29.3	28.4	30.7	29.9	29.4	29.2	29.0
41U	29.7	29.0	28.9	29.0	29.6	29.5	28.0	30.4	30.1	29.2	29.7	29.7
40U	29.8	30.0	29.9	29.8	30.1	30.6	28.9	30.6	30.7	29.2	30.1	30.1

39U	29.8	30.0	30.3	29.0	29.7	31.1	29.9	31.1	30.8	30.0	30.5	30.3
38U	30.4	30.4	30.6	29.6	30.6	31.4	29.8	32.0	32.0	30.3	30.9	30.9
37U	31.6	30.6	30.9	29.8	30.2	31.7	29.9	32.0	32.3	31.0	30.8	32.0
36U	31.1	30.8	31.1	31.8	31.1	32.4	31.1	32.5	32.5	31.6	32.1	31.7
35U	31.5	31.4	31.2	32.1	31.6	33.3	31.9	32.2	33.6	31.9	32.9	33.0
34U	32.0	32.1	31.5	31.2	32.4	33.0	32.5	32.4	33.9	32.2	32.9	33.2
33U	32.9	32.0	32.4	30.9	32.7	33.2	33.2	32.9	33.8	33.2	32.6	33.1
32U	33.4	33.5	32.6	31.3	33.2	33.9	33.6	33.8	34.5	34.4	33.6	34.3
31U	34.0	32.7	32.5	32.8	34.9	34.5	35.3	35.5	35.5	35.4	34.5	34.9
30U	34.8	33.4	33.2	33.3	35.5	34.4	35.7	35.8	35.6	35.5	35.4	35.6
29U	35.8	33.9	33.6	34.4	36.6	35.8	36.4	35.1	36.5	35.7	36.6	36.2
28U	36.4	33.9	34.6	35.8	35.9	36.7	36.7	36.0	36.7	37.1	36.3	36.8
27U	37.1	36.0	36.3	35.9	37.8	37.6	38.6	37.1	38.0	38.1	36.8	37.0
26U	36.5	35.4	37.1	37.0	38.8	38.0	38.0	37.4	38.2	39.1	37.2	38.8
25U	36.9	35.2	37.8	38.6	39.8	38.5	38.9	38.6	39.6	39.4	37.6	40.3
24U	37.7	37.0	38.3	39.0	40.8	39.6	39.6	39.4	39.7	40.1	37.9	39.0
23U	38.8	36.3	38.7	40.5	41.4	40.4	41.0	39.7	40.5	40.4	39.2	39.8
22U	39.7	38.9	39.1	40.2	41.7	41.4	42.9	40.5	41.5	42.6	39.2	39.2
21U	39.8	39.3	40.4	41.6	41.9	41.8	42.8	42.1	41.5	41.5	39.2	40.2
20U	40.6	40.5	40.3	42.6	42.6	42.0	43.2	43.0	42.9	43.6	38.4	41.8
19U	41.2	41.1	42.1	42.8	42.6	43.1	44.4	44.1	44.3	43.3	39.2	42.3
18U	40.6	41.3	42.1	43.7	43.6	44.7	45.7	43.5	44.3	44.2	39.4	43.4
17U	42.5	40.4	42.6	44.9	44.1	45.0	46.2	45.2	46.0	44.6	39.6	43.0
16U	41.9	42.9	42.2	45.5	43.3	45.6	46.5	45.6	45.2	43.8	41.1	44.6
15U	44.2	43.5	43.5	46.3	44.3	46.9	46.2	45.3	45.6	45.7	42.0	44.2
14U	46.7	43.2	44.1	46.0	44.8	47.2	48.1	46.1	45.2	45.3	43.3	45.3
13U	49.1	44.4	42.0	48.0	45.7	48.1	49.7	46.8	45.8	47.5	44.0	47.7
12U	48.0	47.1	40.9	50.8	47.0	49.5	49.9	48.6	47.0	47.8	43.3	47.5
11U	47.6	46.8	45.2	52.5	48.4	51.2	51.7	49.6	49.0	48.6	45.8	47.7
10U	50.2	47.2	48.5	54.9	49.3	52.3	52.0	52.2	50.0	49.5	47.5	48.2
9U	50.3	50.1	49.4	56.0	51.0	53.8	53.4	52.5	49.8	52.9	48.2	48.5
8U	51.2	50.9	50.7	59.8	52.6	55.6	57.1	54.8	50.9	54.7	51.0	50.7
7U	53.9	56.5	51.9	61.8	55.1	58.2	58.5	53.3	53.0	55.6	51.4	52.4
6U	56.9	55.1	52.4	67.0	57.9	61.4	61.0	55.7	54.5	57.1	50.4	52.3
5U	56.6	55.9	56.2	65.0	60.3	63.6	61.2	59.6	56.7	62.2	51.2	53.9
4U	58.0	56.3	60.1	68.7	62.3	66.1	62.2	59.1	57.3	59.0	54.3	53.0
3U	59.2	62.8	61.9	69.7	63.2	64.6	58.0	61.2	62.4	59.6	55.2	53.8
2U	61.6	66.8	65.9	68.3	68.0	71.0	66.3	65.2	64.8	63.7	57.2	57.3
1U	66.9	71.0	75.6	73.7	72.0	77.4	74.3	67.6	68.0	66.1	59.8	64.7
0	75.8	76.0	82.4	80.6	77.3	87.6	78.5	68.4	63.7	67.8	58.0	68.2
1D	73.0	77.4	82.5	83.5	77.9	84.8	77.9	66.6	61.0	54.6	61.4	65.9
2D	57.9	76.2	81.5	73.5	79.7	81.7	56.5	60.2	64.4	50.4	57.9	65.0
3D	37.6	64.8	73.8	46.3	66.2	63.6	41.3	48.9	43.8	32.6	46.4	48.7
4D	32.4	47.0	54.0	41.1	49.6	45.4	31.5	43.9	41.9	21.4	31.9	31.6
5D	19.7	46.5	42.8	36.0	45.6	46.3	19.4	35.9	24.9	9.33	32.6	35.8
6D	6.94	21.5	21.9	18.3	24.3	22.5	7.36	11.2	7.95	8.44	19.1	13.8
7D	5.87	8.80	8.09	9.61	15.4	8.84	5.95	5.83	5.11	6.94	5.58	6.71
8D	4.89	5.85	4.98	6.71	6.47	5.13	4.81	4.49	4.03	5.21	4.37	5.63
9D	4.08	4.93	3.91	5.27	4.94	4.03	3.95	3.77	3.60	3.48	3.61	4.55
10D	3.26	4.18	3.30	4.06	3.91	3.38	3.31	3.33	3.18	2.71	3.14	3.97
ICAO Annex 14 Requirements- Type A (Minimum Intensity: 10 cd)												
Min (cd)	51.2	50.9	50.7	59.8	52.6	55.6	57.1	53.3	50.9	54.7	50.4	50.7
Upper(°)	90	90	90	90	90	90	90	90	90	90	90	90
Lower(°)	-5	-6	-6	-6	-6	-6	-5	-5	-5	-4	-6	-6
Spread(°)	95	96	96	96	96	96	95	95	95	94	96	96
ICAO Annex 14 Requirements- Type B (Minimum Intensity: 32 cd)												
Min (cd)	51.2	50.9	50.7	59.8	52.6	55.6	57.1	53.3	50.9	54.7	50.4	50.7
Upper(°)	90	90	90	90	90	90	90	90	90	90	90	90
Lower(°)	-7	-8	-7	-9	-8	-8	-7	-7	-7	-8	-7	-8
Spread(°)	97	98	97	99	98	98	97	97	97	98	97	98

Complies:  YES  NO

**Results: 24 Vdc**



Voltage Variation	Voltage	Position	Measured	Factor	Result
Input Voltage*	24.0	0,0	66.3	NA	NA
Input Voltage +10%	21.6	0,0	66.3	100%	Pass
Input Voltage -10%	26.4	0,0	66.3	100%	Pass

Sample	CRT1808221603-002
Type	Low Intensity Obstruction Light
Lamp	Cree LED
Color	Red

Vertical Position (deg)	Luminous Intensity (cd)											
	Horizontal Position (deg.)											
	0	30	60	90	120	150	180	210	240	270	300	330
90U	36.6	36.7	36.7	36.6	36.5	36.5	36.4	36.5	36.6	36.6	36.5	36.6
89U	36.4	37.3	37.0	37.0	37.1	36.8	36.3	36.3	36.3	36.2	36.2	36.3
88U	36.1	38.8	38.0	37.3	38.6	38.4	36.4	36.8	37.0	37.2	37.9	36.3
87U	35.6	40.4	38.9	36.5	38.9	39.5	35.6	37.7	39.5	37.0	39.8	37.5
86U	35.0	38.9	36.5	34.4	36.7	39.0	34.7	38.2	40.7	35.6	40.1	38.5
85U	33.6	37.2	33.9	32.8	34.4	37.1	33.3	36.8	39.7	33.2	39.9	37.8
84U	31.0	35.6	32.7	32.2	32.8	34.9	31.7	34.0	37.7	31.3	37.3	35.0
83U	30.6	32.9	31.4	30.8	31.1	32.5	30.7	32.3	34.7	30.7	35.1	33.3
82U	29.9	31.5	30.2	29.8	29.8	31.3	29.8	30.9	32.2	29.4	32.3	32.0
81U	28.8	30.4	29.5	28.4	28.7	29.5	28.9	29.6	30.6	28.8	30.2	30.6
80U	28.1	28.6	28.3	27.5	27.9	29.0	28.1	28.4	30.2	28.4	29.6	29.4
79U	27.0	28.4	28.0	27.2	27.4	28.4	27.0	28.0	29.3	27.1	28.7	28.2
78U	26.6	27.5	27.4	26.2	26.7	27.8	26.7	27.5	27.8	26.9	27.6	27.4
77U	25.9	27.0	26.7	25.9	26.7	26.9	26.1	27.1	27.9	26.5	27.6	26.7
76U	25.3	26.6	26.7	25.9	27.0	26.8	25.8	27.0	27.7	25.8	27.1	26.5
75U	25.2	26.3	26.1	25.8	25.9	26.6	25.7	26.3	27.3	25.4	26.6	26.6
74U	25.8	26.6	26.1	25.0	26.0	26.3	25.1	26.3	27.2	25.5	26.8	26.5
73U	24.8	25.8	26.2	25.1	25.6	26.4	25.1	26.5	26.8	25.7	26.5	25.8
72U	24.9	26.1	25.9	25.4	25.7	26.2	25.2	26.0	27.1	24.6	26.5	25.7
71U	25.1	26.0	25.8	25.2	26.2	25.9	25.3	26.0	26.6	24.6	26.1	26.0
70U	25.1	26.1	26.2	25.1	25.3	26.2	25.1	25.8	26.7	25.1	26.3	25.9
69U	25.0	25.9	25.6	25.0	25.3	26.2	25.1	26.4	26.5	24.8	26.0	25.9
68U	25.2	25.8	25.6	25.2	25.6	26.4	25.1	25.9	26.9	24.5	26.0	25.6
67U	25.2	26.0	25.9	25.2	26.1	25.9	25.0	25.7	26.6	24.3	26.4	25.4
66U	25.0	26.0	25.9	24.5	25.7	26.0	24.8	26.2	26.6	24.4	26.8	25.6
65U	25.7	26.1	25.4	25.0	25.7	26.5	24.8	26.1	27.1	24.4	27.2	25.8
64U	25.4	26.4	25.8	24.9	26.0	27.1	24.7	26.0	27.2	24.7	27.7	26.0
63U	25.3	26.6	25.8	24.7	25.7	27.5	24.5	26.2	27.3	24.6	27.7	26.8
62U	25.2	26.6	25.7	24.8	25.6	27.2	24.2	26.0	27.7	24.1	27.9	27.1
61U	25.7	26.3	25.8	25.0	24.8	27.2	24.4	25.8	28.0	24.7	27.8	26.7
60U	25.4	25.8	25.8	25.1	24.8	27.1	23.9	25.7	27.4	25.2	27.7	26.5
59U	25.0	25.7	25.3	25.6	25.2	26.2	24.1	25.7	26.8	24.7	27.0	26.0
58U	25.5	25.5	25.7	25.5	25.1	25.8	24.4	25.4	26.2	24.5	26.6	25.6
57U	25.7	25.7	25.4	25.5	25.1	25.7	24.4	25.4	26.3	24.8	26.3	25.5
56U	25.4	25.7	25.0	25.7	25.3	25.4	24.2	25.5	26.4	24.5	26.3	25.5
55U	24.8	25.8	25.5	25.5	25.6	26.1	24.2	25.6	25.9	24.2	26.0	25.6
54U	24.9	25.7	25.5	24.1	25.5	25.8	23.5	24.7	25.6	23.6	25.8	25.8
53U	24.4	25.0	25.1	24.2	24.6	24.7	23.3	24.4	24.5	23.2	23.7	24.7
52U	24.8	24.2	24.9	25.1	24.3	24.3	23.4	24.2	24.6	23.2	22.9	24.1
51U	25.5	24.5	24.6	26.1	24.3	24.1	24.4	24.2	24.4	23.1	23.6	24.7
50U	26.6	24.9	24.8	25.5	24.3	23.5	25.8	24.2	24.0	23.6	23.7	24.2
49U	25.1	25.2	24.8	25.1	24.3	24.1	24.3	24.1	24.2	21.9	23.5	24.4
48U	24.4	25.3	25.0	24.6	24.2	24.3	23.9	23.9	24.0	21.2	22.9	25.0
47U	25.2	25.1	24.7	24.6	24.7	24.6	24.1	24.2	23.9	20.5	22.4	24.9
46U	24.8	25.6	25.3	24.6	25.2	24.9	24.6	24.2	23.7	20.5	22.2	24.6
45U	25.2	25.7	25.4	25.3	25.3	25.3	23.8	24.2	24.0	20.8	22.1	25.0
44U	25.1	26.3	26.0	24.7	25.0	24.5	24.3	24.3	24.0	21.6	21.5	24.8
43U	25.8	26.4	25.9	24.9	25.8	24.7	24.3	24.5	24.3	21.7	21.6	25.8
42U	25.6	26.5	26.6	25.5	25.9	25.5	24.6	25.0	24.4	22.9	21.8	25.6
41U	25.7	26.5	26.8	25.4	26.0	25.7	25.1	25.1	24.5	22.8	22.5	25.0
40U	25.7	27.2	26.9	25.4	27.1	26.3	24.2	25.3	24.5	23.4	22.9	25.0
39U	26.6	27.9	26.8	25.3	27.1	26.6	24.8	25.6	25.3	24.0	23.8	25.5
38U	26.8	28.4	28.3	26.0	27.2	26.5	24.3	26.7	25.0	24.0	24.5	25.8
37U	26.5	28.3	28.4	26.8	27.4	26.9	25.6	27.4	25.1	24.3	25.5	26.5
36U	26.7	29.0	28.2	27.2	27.3	28.1	26.1	27.1	26.5	24.5	26.4	27.1
35U	27.1	29.6	29.0	27.2	28.5	27.9	26.0	27.7	27.2	25.3	27.0	26.9
34U	28.1	30.1	30.2	27.1	28.0	28.5	26.4	28.8	27.5	25.8	27.5	27.1
33U	28.4	30.8	30.9	28.7	29.7	28.9	27.1	29.4	27.3	25.7	27.4	27.4
32U	29.0	31.1	31.3	30.2	29.9	30.0	28.7	29.4	26.9	25.5	28.2	28.0
31U	29.9	31.2	31.4	29.8	29.8	30.7	29.1	29.7	28.3	26.3	28.1	29.3
30U	30.4	32.0	31.6	31.5	30.4	30.9	29.8	30.0	27.9	26.7	28.7	29.2
29U	30.4	31.8	31.8	31.0	31.3	31.1	30.8	30.3	28.9	27.0	28.7	29.6
28U	31.6	33.9	33.6	32.5	32.5	32.0	31.6	30.6	28.5	27.5	29.3	29.0
27U	32.5	33.3	32.8	32.8	32.6	31.7	31.6	31.1	29.1	28.7	29.3	31.1
26U	33.1	34.7	34.4	33.1	33.0	32.3	31.7	31.2	29.7	29.5	30.2	31.6
25U	33.1	35.5	35.4	35.0	34.0	32.7	33.1	31.9	30.9	29.4	31.0	31.7
24U	33.4	34.9	36.0	35.1	34.4	34.3	33.9	34.1	31.1	30.6	31.3	31.7

23U	34.3	36.0	37.3	36.0	35.2	34.3	34.5	34.1	31.8	31.3	32.6	32.5
22U	36.2	35.9	37.3	36.6	35.2	36.1	34.4	35.2	32.6	32.3	33.4	32.8
21U	37.1	36.9	38.5	37.8	35.7	36.2	35.7	35.2	33.5	32.6	34.8	34.2
20U	37.7	37.5	38.2	37.7	36.9	37.3	35.8	35.4	34.0	32.6	33.9	34.7
19U	38.0	39.4	39.9	38.9	37.9	37.4	37.7	37.5	35.0	33.8	35.0	35.5
18U	38.1	41.0	40.5	39.0	38.9	38.6	37.4	38.0	35.9	33.8	36.0	36.5
17U	40.1	40.7	41.1	39.6	38.9	38.3	38.3	38.4	36.4	36.5	35.9	36.7
16U	41.5	40.2	41.9	41.6	41.2	40.8	39.0	39.3	37.2	36.4	36.3	37.0
15U	42.1	40.3	43.4	41.8	40.3	41.0	40.5	41.2	37.3	37.5	37.0	38.3
14U	43.3	42.5	44.4	42.8	40.9	41.8	42.5	42.0	37.9	40.2	38.9	39.0
13U	45.0	43.1	46.1	45.8	42.9	42.8	43.4	43.0	38.8	41.7	39.3	38.9
12U	45.3	44.2	47.5	46.4	44.5	45.3	44.0	44.0	41.0	41.3	41.4	41.0
11U	46.7	46.1	47.4	48.3	45.8	46.3	46.0	44.5	42.5	42.1	41.0	42.6
10U	48.5	46.8	48.9	46.6	47.3	46.9	48.2	47.4	43.5	42.9	42.5	43.4
9U	49.0	48.1	50.1	50.9	48.7	48.8	50.4	48.0	44.5	44.8	41.6	44.5
8U	52.1	47.2	51.8	53.6	50.6	50.0	51.6	50.1	44.8	45.2	42.3	45.5
7U	53.5	49.7	50.3	55.0	50.7	50.4	54.2	51.4	46.5	47.6	43.9	46.5
6U	54.8	50.4	53.4	54.4	53.1	52.8	56.8	53.0	46.7	51.0	45.8	47.0
5U	56.4	53.9	54.5	56.5	56.4	53.4	58.0	53.0	49.8	49.7	46.9	47.8
4U	54.9	52.8	56.7	57.3	56.6	54.2	57.2	54.8	49.9	49.7	48.5	49.6
3U	58.7	57.1	57.8	58.3	58.1	56.0	58.3	56.6	51.5	51.1	50.0	51.0
2U	58.4	59.3	59.9	57.8	58.7	57.6	61.2	57.8	54.7	52.0	53.7	52.9
1U	61.0	57.1	64.7	61.1	60.8	64.3	64.5	62.0	57.4	54.3	54.6	57.7
0	66.3	56.9	68.5	69.7	64.9	69.3	68.4	66.9	63.7	57.1	60.4	62.1
1D	69.4	62.3	70.2	75.7	68.0	70.8	78.5	72.6	70.7	64.0	67.4	65.9
2D	60.1	63.5	69.3	68.2	69.1	67.4	74.0	70.8	74.6	65.9	62.8	65.2
3D	45.9	60.1	65.4	51.0	61.2	68.8	55.8	67.4	67.5	56.5	59.0	56.7
4D	31.4	43.3	51.0	35.8	44.5	55.5	37.2	56.4	52.2	33.8	49.2	48.8
5D	34.6	43.4	39.6	34.7	40.8	37.0	32.9	42.6	41.5	31.3	33.7	36.4
6D	7.92	39.2	32.3	15.2	40.0	40.6	18.6	33.3	38.2	27.1	42.2	33.7
7D	3.51	14.4	18.0	3.34	16.6	20.8	4.30	11.3	15.2	4.75	20.1	15.5
8D	2.75	5.35	3.71	2.67	5.68	7.10	3.17	3.93	5.31	3.79	6.92	5.23
9D	2.30	3.91	2.37	2.23	3.05	4.83	2.42	2.39	2.65	2.82	2.70	3.51
ICAO Annex 14 Requirements- Type A (Minimum Intensity: 10 cd)												
Min (cd)	48.5	46.8	48.9	46.6	47.3	46.9	48.2	47.4	43.5	42.9	41.6	43.4
Upper(°)	90	90	90	90	90	90	90	90	90	90	90	90
Lower(°)	-5	-6	-6	-5	-6	-6	-5	-6	-6	-4	-6	-6
Spread(°)	95	96	96	95	96	96	95	96	96	94	96	96
ICAO Annex 14 Requirements- Type B (Minimum Intensity: 32 cd)												
Min (cd)	48.5	46.8	48.9	46.6	47.3	46.9	48.2	47.4	43.5	42.9	41.6	43.4
Upper(°)	90	90	90	90	90	90	90	90	90	90	90	90
Lower(°)	-6	-8	-7	-6	-8	-8	-6	-7	-8	-6	-8	-8
Spread(°)	96	98	97	96	98	98	96	97	98	96	98	98

Complies:  YES  NO

Tested By:	Matthew Benninger	Signature or initials:		Comp. Date:	8/30/18
Reviewed By:	cwm	Signature or initials:			
Test Equipment Used:	12,13,14,15	Sample No:	Listed Above		
Amb (°C):	24	RH%:	66		

**Low Intensity Obstacle Light-Color**

Wherever a color is referred to in this annex, the specifications for that color given in Appendix 1 shall apply.

Operate the fixture at rated input until stable prior to starting the chromaticity measurements. Test the fixture with the lamp, filter and optical system for color of light emitted at 100% intensity at the center of the main beam and at the extremes of the horizontal and vertical beam distribution.

**Results**

Sample	Type	Color	Input	Position	x	y	z	P/F
CRT1808221603-001	Low Intensity Obstacle Light	Red	120Vac	(0,10)	0.678	0.322	0.000	P
				(0,6)	0.678	0.321	0.000	P
				(0,1)	0.678	0.321	0.000	P

ICAO Red LED	
Purple Boundary	$y \geq 0.980 - x$
Yellow Boundary	$y \leq 0.335$



Position	$y \geq 0.980 - x$	$y \leq 0.335$
(0,10)	0.302	0.322
(0,6)	0.302	0.321
(0,1)	0.302	0.321

Sample	Type	Color	Input	Position	x	y	z	P/F
CRT1808221603-002	Low Intensity Obstacle Light	Red	24 Vdc	(0,10)	0.701	0.298	0.001	P
				(0,6)	0.699	0.299	0.001	P
				(0,1)	0.702	0.298	0.000	P

ICAO Red LED	
Purple Boundary	$y \geq 0.980 - x$
Yellow Boundary	$y \leq 0.335$

Position	$y \geq 0.980 - x$	$y \leq 0.335$
(0,10)	0.279	0.298
(0,6)	0.281	0.299
(0,1)	0.278	0.298

Complies:  YES  NO

Tested By:	Craig Small	Signature or initials:		Comp. Date	8/28/18
Reviewed By:	cwm	Signature or initials:			
Test Equipment Used:	5,6,7,8,9,10,11	Sample No:	CRT1808221603-001 & 002		
Amb (°C):	23.9	RH%	51.7		



Equipment list				
#	Intertek ID No.	Description	Manufacturer	Calibration Due
1	N1314	Stop Watch	Fisher Scientific	14-Jun-2019
2	M211	Multimeter	Fluke	05-May-2019
3	M244	Multimeter	Fluke	25-Jan-2019
4	O045	Optometer	UDT Instruments	04-Apr-2019
5	E288	OL-750 Spectroradiometer	Optronic Laboratories	20-Sep-2018
6	M282	Hygrometer	Testo	18-Apr-2019
7	E536	Digital Power Meter	Yokogowa	19-Jan-2019
8	A208	Current Transformer	Pearson Electric	27-Jun-2019
9	N721	Steel Ruler	Products Engineering Corp	12-Jul-2019
10	N1335	Tape Measure	Stanley	19-Jan-2019
11	E499	Digital Level	Smart Tool	29-Jan-2019
12	O109	Goniometer	Optroniks	04-Oct-2018
13	O114	5M Photometer	X-Rite	22-Oct-2018
14	T1555	Hygro-Thermometer	Extech	03-Jun-2019
15	M135	Multimeter	Fluke	12-Apr-2019
16				
17				
18				
19				
20				

Note: For measurement uncertainty, refer to the calibration certificates for all the test equipment located in the equipment files