

Letter of Attestation

On the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the essential requirements of the referenced portions of the specifications at the time the tests were carried out.

Manufacturer Name & Address : Shanghai Nanhua Electronics Company
Bldg 9 No 1755 Wenbei Road
Jiading 201802
China

Product(s) Tested : Low Intensity Type A/B Obstruction Light

Ratings and principal characteristics : Single LED Array w/ 6ea Red LEDs

Model(s) : LS710

Relevant Standard(s)/Specification(s) : International Civil Aviation Organization, Standards and Recommended Practices for Aerodromes, Annex 14, Volume 1, Fifth Edition, dated July 2009.
Photometric: Table 6-3
Chromaticity: Figure A1-1

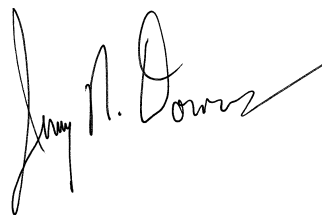
Verification Issuing Office Name & Address : Intertek Cortland – Lighting
3933 US Rt. 11
Cortland, NY, 13045

Date of Test(s) : August 23, 2011 through August 25, 2011

Verification/Report Number(s) : 100452220CRT-001

NOTE : This verification is part of the full test report(s) and should be read in conjunction with it.

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Signature

Name: Jeremy N. Downs, P.E.
Position: Engineering Team Leader
Original Issue Date: August 30, 2011
Re-evaluation Due Date: August 30, 2014



REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. G100452220

Date: August 26, 2011

REPORT NO. 100452220CRT-001

TEST OF ICAO LOW-INTENSITY TYPE A/B OBSTACLE LIGHT

RENDERED TO:

SHANGHAI NANHUA ELECTRONICS COMPANY
BLDG 9 NO 1755 WENBEI ROAD
JIADING 201802
CHINA

INTRODUCTION

This report contains the results of examinations and tests of the above device to demonstrate compliance with the applicable requirements of International Civil Aviation Organization, Standards and Recommended Practices for Aerodromes, Annex 14, Volume 1, Fifth Edition, dated July 2009.

Summary

The following is a summary of the results of tests of the device performed in accordance with the following:

<u>Test</u>	<u>Requirement Paragraph</u>	<u>Remarks</u>
Photometric	Table 6-3	Complies
Chromaticity	Appendix 1, Figure A1-1	Complies



EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Calibration Due Date
Arch Ruler	-	N721	3/23/2012
Cole-Parmer Temperature/Humidity Indicator	03313-85	N858	11/3/2011
Detector (5 meters)	FE 10	O114	1/13/2012
Extech Hygro Thermometer	445703	T1363	10/12/2011
Fluke Multimeter	87 V	D589	3/14/2012
Fluke Multimeter	87 V	E262	6/1/2012
Goniophotometer	SMS 10h	O109	10/12/2011
MD Electronic Level	-	N951	2/19/2011
Spectroradiometer	OL 750D	E288	8/22/2011

AUTHORIZATION

The testing performed was authorized by quote 500307962.

MATERIAL SUBMITTED

The client submitted 1 sample. The sample was received by Intertek on June 28, 2011 in undamaged condition, and tested as received. The sample designation is L11009F.

MANUFACTURER

SHANGHAI NANHUA ELECTRONICS COMPANY
BLDG 9 NO 1755 WENBEI ROAD
JIADING 201802
CHINA

DESCRIPTION OF DEVICE

Input: 120-240VAC
Light Source: 1 LED Array w/ 6ea red LEDs
Lens: Clear

Manufacturer's LS710
Catalog Number:

(See picture pages included in this report)

DATES OF TESTS

August 23, 2011 through August 25, 2011



TEST, TEST METHODS AND RESULTS OF TESTS

Photometric Test – Table 6-3 of Annex 14, Volume I

The light fixture was energized and tested for compliance with the photometric requirements. Photometric axes were 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. The fixtures were operated for 15 minutes before taking measurements.

NANHUA® 南华机电
Nanhua Electronics Co., Ltd.



TEST, TEST METHODS AND RESULTS OF TESTS (continued)

Photometric Distribution – ICAO Table 6-3
 All intensity measurements are in candela
 Test distance: 25 m
 Intertek Sample No.: L11009F

Color: Red
 Voltage: 120V
 Lamp Type: LED

Vertical Position (deg.)	Horizontal Position (deg.)											
	-180	-150	-120	-90	-60	-30	0	30	60	90	120	150
20	6	6	7	7	6	6	6	6	5	5	6	7
19	7	7	9	9	7	7	7	7	6	7	7	9
18	9	10	15	15	10	9	9	8	7	8	8	11
17	15	16	32	27	13	13	13	11	9	11	14	15
16	29	28	38	46	24	26	25	21	14	17	19	26
15	41	46	58	67	37	40	41	41	27	30	30	43
14	55	64	73	91	53	53	49	53	36	48	47	70
13	78	110	88	88	91	71	68	64	51	65	77	99
12	114	146	69	85	127	108	86	93	80	108	86	104
11	109	110	91	96	130	113	80	116	89	118	78	106
10	112	81	97	93	90	95	77	90	93	96	93	100
9	106	86	77	100	80	100	83	67	101	65	98	72
8	124	111	84	114	101	113	108	56	108	76	94	75
7	160	145	136	127	127	105	117	56	113	88	112	94
6	148	133	177	117	137	88	110	87	111	128	130	133
5	126	101	169	96	102	88	104	151	107	134	136	143
4	88	69	105	90	78	79	118	159	115	100	123	99
3	69	53	82	80	79	69	122	114	98	79	84	62
2	51	55	59	70	75	70	85	72	71	59	66	57
1	55	59	58	68	70	61	60	53	55	44	63	52
0	48	51	47	50	57	48	61	47	50	48	52	39
-1	35	44	41	48	50	52	56	51	47	45	39	38
-2	35	44	43	56	48	49	46	46	42	38	39	42
-3	29	41	34	50	38	43	44	41	34	36	36	37
-4	27	36	29	41	37	43	39	43	36	35	31	35
-5	26	31	23	37	35	45	33	36	30	29	29	33
-6	23	25	22	36	29	39	33	34	27	29	25	22
-7	20	19	21	30	27	34	29	29	25	25	19	19
-8	16	14	19	22	23	26	24	25	20	20	16	18
-9	13	12	12	15	17	20	19	19	17	19	16	15
-10	10	9	8	10	13	17	15	15	15	16	10	12
-11	9	8	7	8	10	12	10	11	12	11	8	8
-12	8	6	5	7	7	8	7	8	9	7	7	7



TEST, TEST METHODS AND RESULTS OF TESTS (continued)

Photometric Conspicuity – ICAO Table 6-3
 All intensity measurements are in candela
 Test distance: 25 m
 Intertek Sample No.: L11009F

Color: Red
 Voltage: 120V
 Lamp Type: LED

Vertical Position (deg.)	Horizontal Position (deg.)											
	-180	-150	-120	-90	-60	-30	0	30	60	90	120	150
50	6	7	6	7	6	6	6	6	6	6	6	7
45	6	6	6	6	6	5	6	5	6	6	6	6
40	5	5	5	5	5	5	5	5	5	5	5	5
35	4	5	5	5	5	4	5	4	4	4	4	5
30	4	4	4	4	4	4	4	4	3	4	4	4
25	4	4	4	4	4	4	4	4	4	4	4	4
20	5	5	5	22	5	6	5	6	6	6	6	6
15	30	33	28	39	28	41	41	65	46	40	40	40
10	103	100	103	84	97	114	83	82	76	119	90	99
5	114	154	125	159	136	98	146	111	96	91	103	142
0	55	44	49	44	50	52	47	51	60	50	51	50
-5	36	25	34	28	30	26	28	26	35	36	41	26
-10	14	16	11	9	11	9	7	10	11	16	12	13



TEST, TEST METHODS AND RESULTS OF TESTS (continued)

Chromaticity

The color of light emitted was measured at operating temperature and rated voltage. Chromaticity coordinates were calculated from a spectral distribution measured in 2nm increments.

Results

The color of light emitted complies with the requirements of ICAO Annex 14, July 2009, Volume I, Appendix 1, Fig. A1-1.

Color	Lamp Type	Chromaticity Coordinates		
		x	y	z
Red	LED	0.6961	0.3038	0.0001

Report Prepared By:

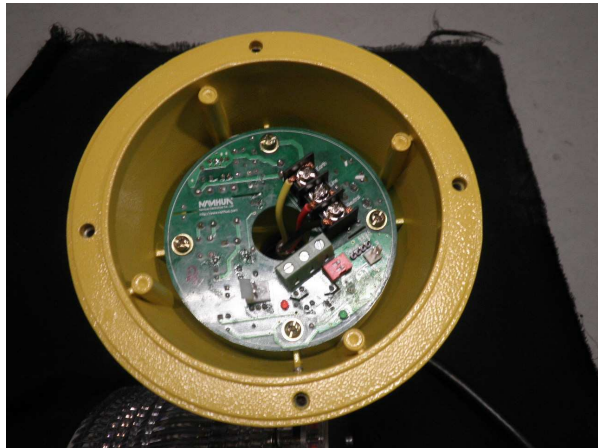
Christopher D. Fenton
Engineer
Lighting Division

Report Reviewed By:

Jeremy N. Downs, P.E.
Engineering Team Leader
Lighting Division

See attachment: Two picture pages

TEST OF ICAO LOW-INTENSITY TYPE A/B OBSTACLE LIGHT
TESTED FOR SHANGHAI NANHUA ELECTRONICS COMPANY



TEST OF ICAO LOW-INTENSITY TYPE A/B OBSTACLE LIGHT
TESTED FOR SHANGHAI NANHUA ELECTRONICS COMPANY

