

ERP Test Report

Product : WORK LIGHT

Model Number : NBT-P2-128

Prepared for : Ningbo Three Tree Electronic Co., Ltd.
Address : The East Sea Machinery Manufacturing Industrial Park, Yinzhou District, Ningbo, China.

Prepared By : Shenzhen ZCT Technology Co.,Ltd.
Address : 3F, 5th Building, Hongsheng Industrial Zone, No.4336 Bao'an Road, Bao'an District, Shenzhen, China.

Tel : 400-805-1899

Fax : (86) 755-23702323

Report No. : 17ZCTS0215001-ERP

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Prepared by(Engineer):

Reviewer(Quality Manager):

Approved & Authorized Signer(Manager):



Shenzhen ZCT Technology Co.,Ltd.

3F, 5th Building, Hongsheng Industrial Zone, No.4336 Bao'an Road, Bao'an District, Shenzhen, China.

Tel: 400-805-1899 Fax:86-755-23702323; <http://www.renzhengjiance.com>



TEST REPORT COMMISSION REGULATION (EU) No 1194/2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment	
Applicant:	
Name.....:	Ningbo Three Tree Electronic Co., Ltd.
Address.....:	The East Sea Machinery Manufacturing Industrial Park, Yinzhou District, Ningbo, China.
Test specification:	
Standard.....:	Commission Regulation (EC) 1194/2012
Test procedure.....:	Implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment.
Non-standard test method.....:	N/A
Test item description:	
Description.....:	WORK LIGHT
Trade Mark.....:	N/A
Manufacturer.....:	Ningbo Three Tree Electronic Co., Ltd.
Address.....:	The East Sea Machinery Manufacturing Industrial Park, Yinzhou District, Ningbo, China.
Model and/or type reference.....:	NBT-P2-128
Ratings.....:	6V $\overline{=}$ COB:3W, LED: 0.1W

<p>Possible test case verdicts</p> <ul style="list-style-type: none"> - test case does not apply to the test object..... N (not applicable) - test object does meet the requirement..... P (Pass) - test object does not meet the requirement..... F (Fail) 	
<p>General remarks:</p> <p>Throughout this report a point is used as the decimal separator. The test results presented in this report relate only to the object tested.</p>	
<p>General remarks:</p>	
<p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p>	<p>Attached with:</p>
<p>Summary of testing:</p> <ol style="list-style-type: none"> 1. All submitted models were tested according to Implementation measure EC 1194/2012. 2. The product meets the stage 1 requirement of the implementation measure. 	

Standard and test conditions for measurement

For the purpose of assessing the conformity of the product with ecodesign requirements as set in regulation (EC)1194/2012, the following standard has been used:

Shenzhen ZCT Technology Co.,Ltd.

3F, 5th Building, Hongsheng Industrial Zone, No.4336 Bao'an Road, Bao'an District, Shenzhen, China.
 Tel: 400-805-1899 Fax:86-755-23702323; <http://www.renzhengjiance.com>

Measured parameter	Standard used
Luminous efficacy	EN50285:1999-Energy efficiency of electric lamps for household use—Measurements methods
Lamp lifetime	EN 60357:2003 +A1: 2008 - Tungsten halogen lamps(non-vehicle)- Performance specifications
Lumen maintenance	
Lamp starting time	EN 60969:1993 + A1: 1993 A2: 2000 - Starting time test for Self-ballasted lamps for general lighting services —Performance requirement
Lamp warm-up time to 60% ϕ	
UV radiation	Systems - UV radiation measurement
Lamp power factor	EN61000-3-2:2006-Electromagnetic compatibility (EMC) Part 3-2:Limits - Limits for harmonic current emissions (equipment input current \leq 16 A per phase)
Lamp caps	EN 60061:1993 + All amendments up to A40: 2008 - Lamp caps and holders together with gauges for the control of interchangeability and safety Part 1: Lamp caps
Chromaticity Correlated Colour Temperature(Tc[K])	CIE 15:2004 – Colorimetry
Luminance	CIE 18.2:1983 - The Basis of Physical Photometry
Luminous flux	CIE 84:1989 - The Measurement of Luminous Flux
Lamp Lumen Maintenance Factor (LLMF)	CIE 97:2005 – Maintenance of indoor electric lighting systems
Lamp Survival Factor	

Ambient temperature:.....	24.8°C
Test voltage(s) (V):.....	6V $\overline{---}$
Test Frequency (Hz):.....	50Hz

Annex III		
Ecodesign Requirements		
1	ENERGY EFFICIENCY REQUIREMENTS	P
1.1	Energy efficiency requirements for directional lamps	P
	P_{rated} is the rated power measured at nominal input voltage	See table 1 of this report
	P_{cor} is and corrected where appropriate in accordance with Table 1 of Annex III of EC 1194. The correction factors are cumulative where appropriate.	
	- Lamps operating on external halogen lamp control gear: $P_{rated} \times 1,06$	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Lamps operating on external LED lamp control gear: $P_{rated} \times 1,1$	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Fluorescent lamps of 16 mm diameter (T5 lamps) and 4- pin single capped fluorescent lamps operating on external fluorescent lamp control gear: $P_{rated} \times 1,1$	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Other lamps operating on external fluorescent lamp $P_{rated} \times \frac{0,24\sqrt{\Phi_{use}} + 0,0103\Phi_{use}}{0,15\sqrt{\Phi_{use}} + 0,0097\Phi_{use}}$	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Lamps operating on external high-intensity discharge lamp control gear: $P_{rated} \times 1,06$	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Compact fluorescent lamps with colour rendering index ≥ 90 : $P_{rated} \times 0,85$	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Lamps with anti-glare shield: $P_{rated} \times 0,80$	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Others not mention in table 1: $P_{rated} \times 1,0$	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	Useful luminous flux (Φ_{use})	See table 1 of this report
	- Directional lamps with a beam angle $\geq 90^\circ$ other than filament lamps and carrying a warning on their packaging in accordance with point 3.1.2(j) of this Annex: rated luminous flux in a 120° cone (Φ_{120°)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	- Other directional lamps: rated luminous flux in a 90° cone (Φ_{90°).	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	P_{ref} is the reference power obtained from the useful luminous flux of the lamp (Φ_{use}) by the following formula:	

	For models with $\Phi_{use} < 1300$ lumen: $0,88\sqrt{(\Phi_{use})} + 0,049\Phi_{use}$	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
	For models with $\Phi_{use} \geq 1300$ lumen: $0,07341\Phi_{use}$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
	EEl = P_{cor} / P_{ref} in Stage 1:			N/A
	- Mains-voltage filament lamps, if $\Phi_{use} > 450$ lm: $\leq 1,75$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	- Other filament lamps:			N/A
	If $\Phi_{use} \leq 450$ lm: $\leq 1,20$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	If $\Phi_{use} > 450$ lm: $\leq 0,95$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	High-intensity discharge lamps: $\leq 0,5$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	Other lamps: $\leq 0,5$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	EEl = P_{cor} / P_{ref} in Stage 2:	See table 1 of this report		P
	- Mains-voltage filament lamp: $\leq 1,75$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	- Other filament lamps: $\leq 0,95$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	High-intensity discharge lamps: $\leq 0,5$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	Other lamps: $\leq 0,5$	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	P
	EEl = P_{cor} / P_{ref} in Stage 3:			N/A
	- Mains-voltage filament lamps: $\leq 0,95$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	- Other filament lamps: $\leq 0,95$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	High-intensity discharge lamps: $\leq 0,36$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
	Other lamps: $\leq 0,2$	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A
2	FUNCTIONALITY REQUIREMENTS			P
2.1	Functionality requirements for other directional lamps (excluding LED lamps, compact fluorescent lamps and high-intensity discharge lamps) other than LED lamps			N/A
	Requirement for stage 1			N/A
	Rated lamp lifetime at 50% lamp survival:			N/A
	≥ 1000 h (lm: ≥ 2000 h in stage 2)			N/A

≥2000h for extra low voltage lamps not complying with the stage 3 filament lamp efficiency requirement in point 1.1 of this Annex		N/A
Lumen maintenance at 75% of rated average lifetime: ≥80%		N/A
Number of switching cycles: ≥four times the rated lamp life expressed in hours		N/A
Starting time: <0,2s		N/A
Lamp warm-up time to 60% Φ: ≤1,0s		N/A
Premature failure rate at 100h: ≤5,0%		N/A
Lamp power factor for lamps with integrated control gear:		N/A
Power>25W, ≥0,9		N/A
Power≤25W, ≥0,5		N/A
Requirement for stage 2		N/A
Rated lamp lifetime at 50% lamp survival:		N/A
≥2000h		N/A
≥2000h for extra low voltage lamps not complying with the stage 3 filament lamp efficiency requirement in point 1.1 of this Annex		N/A
Lumen maintenance at 75% of rated average lifetime: ≥80%		N/A
Number of switching cycles: ≥four times the rated lamp life expressed in hours		N/A
Starting time: <0,2s		N/A
Lamp warm-up time to 60% Φ: ≤1,0s		N/A
Premature failure rate at 200h: ≤5,0%		N/A
Lamp power factor for lamps with integrated control gear:		N/A
Power>25W, ≥0,9		N/A
Power≤25W, ≥0,5		N/A

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	Requirement for stage 3		N/A
	Rated lamp lifetime at 50% lamp survival:		N/A
	≥2000h		N/A
	≥4000h for extra low voltage lamps		N/A
	Lumen maintenance at 75% of rated average lifetime: ≥80%		N/A
	Number of switching cycles: Im: ≥four times the rated lamp life expressed in hours		N/A
	Starting time: <0,2s		N/A
	Lamp warm-up time to 60% Φ: ≤1,0s		N/A
	Premature failure rate at 100h: ≤5,0%		N/A
	Lamp power factor for lamps with integrated control gear:		N/A
	Power>25W, ≥0,9		N/A
	Power≤25W, ≥0,5		N/A
2.2	Functionality requirements for non-directional and directional LED lamps	See table 2 and 3 of this report	P
	Lamp survival factor at 6 000 h		P
	Lumen Maintenance at 6 000 h		P
	Number of switching cycles before failure: ≥ 15 000 if rated lamp life ≥ 30 000 h	15000 cycles (rated life: 30000 h)	N/A
	otherwise: ≥ half the rated lamp life expressed in hours	10000 cycles (rated life: 20000 h)	P
	Starting time: < 0,5 s		P
	Lamp warm-up time to 95 % Φ: < 2 s		P
	Premature failure rate: ≤ 5,0 % at 1 000 h		P
	Colour rendering (Ra)		P
	≥ 80		P
	≥ 65 if the lamp is intended for outdoor or industrial applications in accordance with point 3.1.3(I) of this Annex		N/A

	Colour consistency: Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.		P
	Lamp power factor (PF) for lamps with integrated control gear:		P
	P ≤ 2 W: no requirement		P
	2 W < P ≤ 5 W: PF > 0,4		P
	5 W < P ≤ 25 W: PF > 0,5		N/A
	P > 25 W: PF > 0,9		N/A
3	PRODUCT INFORMATION REQUIREMENTS		--
3.1	Product information requirements for directional lamps		P
	The following information shall be provided as from stage 1, except where otherwise stipulated. These information requirements do not apply to: filament lamps not fulfilling the efficacy requirements of Stage 2.		N/A
	The term 'energy-saving lamp' or any similar product related promotional statement about lamp efficacy may be used only if the energy efficiency index of the lamp (calculated in accordance with the method set out in point 1.1 of this Annex) is 0,40 or below.		P
3.1.1	Information to be displayed on the lamp itself		P
	Inclusion of safety-related information such as power and voltage		P
	If there is sufficient space available for it on the lamp without unduly obstructing the light coming from the lamp, below information shall also be displayed in a legible font on the surface.		P
	- Nominal useful luminous flux in unit 'lm'	Display on package	P
	- Colour temperature in unit 'K'	Display on package	P
	- Nominal beam angle in unit '°'	Display on package	P

3.1.2	Information to be visibly displayed to end-users, prior to their purchase, on the packaging and on free access websites		P
	The information in paragraphs (a) to (o) below shall be displayed on free access websites and in any other form the manufacturer deems appropriate.EN 14.12.2012 Official Journal of the European Union L 342/13		P
	(a) Nominal useful luminous flux displayed in a font at least twice as large as any display of the nominal lamp power;		P
	(b) Nominal life time of the lamp in hours (not longer than the rated life time);		P
	(c) Colour temperature, as a value in Kelvins and also expressed graphically or in words;		P
	(d) Number of switching cycles before premature failure;		P
	(e) Warm-up time up to 60 % of the full light output (may be indicated as 'instant full light' if less than 1 second);		P
	(f) A warning if the lamp cannot be dimmed or can be dimmed only on specific dimmers; in the latter case a list of compatible dimmers shall be also provided on the manufacturer's website;		P
	(g) If designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25\text{ }^\circ\text{C}$ or specific thermal management is necessary), information on those conditions;		N/A
	(h) Lamp dimensions in millimetres (length and largest diameter);		P
	(i) Nominal beam angle in degrees;		P
	(j) If the lamp's beam angle is $\geq 90^\circ$ and its useful luminous flux as defined in point 1.1 of this Annex is to be measured in a 120° cone, a warning that the lamp is not suitable for accent		N/A

	lighting;		
	(k) If the lamp cap is a standardised type also used with filament lamps, but the lamp's dimensions are different from the dimensions of the filament lamp(s) that the lamp is meant to replace, a drawing comparing the lamp's dimensions to the dimensions of the filament lamp(s) it replaces;		N/A
	(l) An indication that the lamp is of a type listed in the first column of Table 6 may be displayed only if the luminous flux of the lamp in a 90° cone (Φ 90°) is not lower than the reference luminous flux indicated in Table 6 for the smallest wattage among the lamps of the type concerned.		N/A
	(m) An equivalence claim involving the power of a replaced lamp type may be displayed only if the lamp type is listed in Table 6 and if the luminous flux of the lamp in a 90° cone (Φ 90°) is not lower than the corresponding reference luminous flux in Table 6. The intermediate values of both the luminous flux and the claimed equivalent lamp power (rounded to the nearest 1 W) shall be calculated by linear interpolation between the two adjacent values.		N/A
	If the lamp contains mercury:		N/A
	(n) Lamp mercury content as X,X mg;		N/A
	(o) Indication of which website to consult in case of accidental lamp breakage to find instructions on how to clean up the lamp debris		N/A
3.1.3	Information to be made publicly available on free-access websites and in any other form the manufacturer deems appropriate As a minimum, the following information shall be expressed at least as values.		P
	(a) The information specified in point 3.1.2;		P

(b) Rated power (0,1 W precision);		P
(c) Rated useful luminous flux;		P
(d) Rated lamp life time;		P
(e) Lamp power factor;		P
(g) Starting time (as X,X seconds);		P
(h) Colour rendering;		P
(j) Rated peak intensity in candela (cd);		P
(k) Rated beam angle;		P
(l) If intended for use in outdoor or industrial applications, an indication to this effect;		N/A
(m) Spectral power distribution in the range 180-800 nm;		P
If the lamp contains mercury:		N/A
(n) Instructions on how to clean up the lamp debris in case of accidental lamp breakage;		N/A
(o) Recommendations on how to dispose of the lamp at the end of its life for recycling in line with Directive 2012/19/EU of the European Parliament and of the Council (1).		N/A



1、LED 0.1W

Appendix-Test Data Sheet

Table 1 EEI:

Model: NBT-P2-128					
Sample No.	P (W)	P _{cor} (W) (correction factor=1)	Φ ₉₀ (lm)	P _{ref} (W) $0,88\sqrt{(\Phi_{90})}+0,049\Phi_{90}$	EEI= P _{cor} / P _{ref}
1	0.11	0.11	30.22	6.32	0.017
2	0.10	0.10	29.92	6.28	0.016
3	0.11	0.11	29.84	6.27	0.017
4	0.11	0.11	30.93	6.41	0.017
5	0.12	0.12	30.10	6.30	0.019
6	0.09	0.09	30.10	6.30	0.015
7	0.11	0.11	31.23	6.45	0.017
8	0.12	0.12	31.75	6.51	0.018
9	0.10	0.10	30.51	6.36	0.016
10	0.10	0.10	31.93	6.54	0.016
11	0.10	0.10	29.09	6.17	0.017
12	0.11	0.11	30.75	6.39	0.018
13	0.11	0.11	30.94	6.41	0.018
14	0.09	0.09	31.02	6.42	0.014
15	0.09	0.09	31.46	6.48	0.015
16	0.11	0.11	30.61	6.37	0.018
17	0.10	0.10	30.57	6.36	0.015
18	0.11	0.11	31.23	6.45	0.017
19	0.11	0.11	31.09	6.43	0.016
20	0.12	0.12	31.47	6.48	0.018
Average value	0.11	0.11	30.74	6.38	0.017

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Table 2 Functionality requirements:

Model: NBT-P2-128					
Sample No.	Premature Failure (1000 Hours)	Luminous Flux at 15 mins (lm)	Starting time (s)	Lamp warm-up time to 95%Φ (s)	Power factor
1	Pass	30.22	0.27	0.72	0.42
2	Pass	29.92	0.33	0.84	0.42
3	Pass	29.84	0.33	0.71	0.42
4	Pass	30.93	0.32	0.81	0.42
5	Pass	30.10	0.31	0.87	0.42
6	Pass	30.10	0.35	0.83	0.42
7	Pass	31.23	0.23	0.79	0.42
8	Pass	31.75	0.39	0.79	0.42
9	Pass	30.51	0.25	0.72	0.42
10	Pass	31.93	0.22	0.78	0.42
11	Pass	29.09	0.32	0.75	0.42
12	Pass	30.75	0.30	0.75	0.42
13	Pass	30.94	0.25	0.80	0.42
14	Pass	31.02	0.34	0.78	0.42
15	Pass	31.46	0.27	0.79	0.42
16	Pass	30.61	0.35	0.81	0.42
17	Pass	30.57	0.28	0.81	0.42
18	Pass	31.23	0.21	0.85	0.42
19	Pass	31.09	0.35	0.78	0.42
20	Pass	31.47	0.34	0.84	0.42
Average value	Pass	30.74	0.30	0.79	0.42

Model: NBT-P2-128					
Sample No.	Luminous Flux at 6000 hours (lm)	6000 Hours Lumen Maintenance (%)	Lamp survival factor (6000 Hours)	Sample No.	Switching cycle (10000 cycle)
1	26.43	0.87	pass	1	pass
2	25.58	0.85	pass	2	pass
3	25.93	0.87	pass	3	pass
4	26.13	0.84	pass	4	pass
5	25.76	0.86	pass	5	pass
6	25.87	0.86	pass	6	pass
7	26.31	0.84	pass	7	pass
8	25.60	0.81	pass	8	pass
9	25.64	0.84	pass	9	pass
10	25.35	0.79	fail	10	pass
11	25.88	0.89	pass	11	pass
12	25.75	0.84	pass	12	pass
13	26.99	0.87	pass	13	pass
14	25.19	0.81	pass	14	pass
15	26.48	0.84	pass	15	pass
16	25.66	0.84	pass	16	pass
17	25.23	0.83	pass	17	pass
18	25.88	0.83	pass	18	pass
19	26.08	0.84	pass	19	pass
20	25.83	0.82	pass	20	pass
Average value	25.88	0.84	pass	Average value	Pass

Table 3 Parameters of the lamps:

Model: NBT-P2-128				
Sample No.	Colour rendering (Ra)	Color temperature (K)	Colour consistency	Beam angle (°)
1	81.2	6049.3	4.8	14.34
2	82.6	6018.3	5.5	14.61
3	82.1	6020.5	4.4	15.33
4	80.5	6026.0	5.1	14.27
5	81.9	6008.2	4.4	14.67
6	82.4	6005.5	5.0	14.51
7	80.4	6037.7	4.6	15.63
8	81.9	6007.8	4.3	15.20
9	82.0	6022.7	4.3	14.94
10	80.7	6019.4	4.2	15.96
11	82.0	6044.5	5.4	14.68
12	81.2	6048.2	4.4	14.96
13	82.1	6005.5	5.3	14.03
14	81.0	6015.0	4.1	15.95
15	80.2	6003.0	4.3	15.57
16	81.4	6041.9	4.7	14.16
17	81.8	6023.2	4.9	15.18
18	81.7	6028.7	4.4	15.48
19	82.5	6024.1	4.8	14.55
20	82.5	6037.5	4.7	14.46
Average value	81.6	6024.4	4.7	14.92

	The Energy Efficiency Class	—														
	The energy efficiency class as follows:	P														
	$EEl = P_{cor} / P_{ref}$:	P														
	P_{cor} is rated power of the lamps is measured at their nominal input voltage for products without external control gear	P														
	P_{cor} is rated power (P_{rated}) corrected in accordance with Table below for models with external control gear.	N/A														
	<table border="1"> <thead> <tr> <th>Scope of the correction</th> <th>Power corrected for control gear losses (P_{cor})</th> </tr> </thead> <tbody> <tr> <td>Lamps operating on external halogen lamp control gear</td> <td>$P_{rated} \times 1,06$</td> </tr> <tr> <td>Lamps operating on external LED lamp control gear</td> <td>$P_{rated} \times 1,10$</td> </tr> <tr> <td>Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear</td> <td>$P_{rated} \times 1,10$</td> </tr> <tr> <td>Other lamps operating on external fluorescent lamp control gear</td> <td>$P_{rated} \times \frac{0,24\sqrt{\Phi_{use}} + 0,0103\Phi_{use}}{0,15\sqrt{\Phi_{use}} + 0,0097\Phi_{use}}$</td> </tr> <tr> <td>Lamps operating on external high-intensity discharge lamp control gear</td> <td>$P_{rated} \times 1,10$</td> </tr> <tr> <td>Lamps operating on external low pressure sodium lamp control gear</td> <td>$P_{rated} \times 1,15$</td> </tr> </tbody> </table>	Scope of the correction	Power corrected for control gear losses (P_{cor})	Lamps operating on external halogen lamp control gear	$P_{rated} \times 1,06$	Lamps operating on external LED lamp control gear	$P_{rated} \times 1,10$	Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear	$P_{rated} \times 1,10$	Other lamps operating on external fluorescent lamp control gear	$P_{rated} \times \frac{0,24\sqrt{\Phi_{use}} + 0,0103\Phi_{use}}{0,15\sqrt{\Phi_{use}} + 0,0097\Phi_{use}}$	Lamps operating on external high-intensity discharge lamp control gear	$P_{rated} \times 1,10$	Lamps operating on external low pressure sodium lamp control gear	$P_{rated} \times 1,15$	
Scope of the correction	Power corrected for control gear losses (P_{cor})															
Lamps operating on external halogen lamp control gear	$P_{rated} \times 1,06$															
Lamps operating on external LED lamp control gear	$P_{rated} \times 1,10$															
Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear	$P_{rated} \times 1,10$															
Other lamps operating on external fluorescent lamp control gear	$P_{rated} \times \frac{0,24\sqrt{\Phi_{use}} + 0,0103\Phi_{use}}{0,15\sqrt{\Phi_{use}} + 0,0097\Phi_{use}}$															
Lamps operating on external high-intensity discharge lamp control gear	$P_{rated} \times 1,10$															
Lamps operating on external low pressure sodium lamp control gear	$P_{rated} \times 1,15$															
	$P_{ref} = 0,88\sqrt{(\Phi_{use})} + 0,049\Phi_{use}$, When $\Phi_{use} < 1300$ lumens	P														
	$P_{ref} = 0,07341\Phi_{use}$, When $\Phi_{use} \geq 1300$ lumens	N/A														
	Where Φ_{use} is the useful luminous flux output of the lamp, $\Phi_{use} =$															
	- Non-directional lamps: Total rated luminous flux (Φ)	N/A														
	- Directional lamps with a beam angle $\geq 90^\circ$ other than filament lamps and carrying a textual or graphical warning on their packaging that they are not suitable for accent lighting: Rated luminous flux in a 120° cone (Φ_{120°)	N/A														

	- Other directional lamps: Rated luminous flux in a 90° cone (Φ_{90°)			P
	The energy efficiency classes are then set in accordance with the following table:			P
	Energy efficiency class	Energy efficiency index (EEI)		P
		<input type="checkbox"/>	<input checked="" type="checkbox"/>	--
		Non-directional lamps	Directional lamps	
	A ++	EEI ≤ 0,11	EEI ≤ 0,13	P
	A +	0,11 < EEI ≤ 0,17	0,13 < EEI ≤ 0,18	N/A
	A	0,17 < EEI ≤ 0,24	0,18 < EEI ≤ 0,40	N/A
	B	0,24 < EEI ≤ 0,60	0,40 < EEI ≤ 0,95	N/A
	C	0,60 < EEI ≤ 0,80	0,95 < EEI ≤ 1,2	N/A
	D	0,80 < EEI ≤ 0,95	1,2 < EEI ≤ 1,75	N/A
	E	EEI > 0,95	EEI > 1,75	N/A



2、COB 3W

Appendix-Test Data Sheet

Table 1 EEI:

Model: NBT-P2-128					
Sample No.	P (W)	P _{cor} (W) (correction factor=1)	Φ ₉₀ (lm)	P _{ref} (W) $0,88\sqrt{(\Phi_{90})}+0,049\Phi_{90}$	EEI= P _{cor} / P _{ref}
1	3.12	3.12	271.96	27.84	0.112
2	3.02	3.02	271.98	27.84	0.109
3	3.24	3.24	272.15	27.85	0.116
4	3.18	3.18	271.40	27.80	0.115
5	3.26	3.26	271.80	27.83	0.117
6	3.08	3.08	270.70	27.74	0.111
7	3.14	3.14	270.82	27.75	0.113
8	3.29	3.29	272.21	27.86	0.118
9	3.21	3.21	270.43	27.72	0.116
10	3.13	3.13	270.07	27.70	0.113
11	3.17	3.17	270.67	27.74	0.114
12	3.19	3.19	271.86	27.83	0.114
13	3.02	3.02	270.06	27.69	0.109
14	3.25	3.25	272.44	27.88	0.116
15	3.01	3.01	271.47	27.80	0.108
16	3.05	3.05	270.37	27.72	0.110
17	3.19	3.19	272.00	27.84	0.115
18	3.13	3.13	272.23	27.86	0.113
19	3.20	3.20	271.73	27.82	0.115
20	3.19	3.19	271.05	27.77	0.115
Average value	3.15	3.15	271.37	27.79	0.113

Shenzhen ZCT Technology Co.,Ltd.

3F, 5th Building, Hongsheng Industrial Zone, No.4336 Bao'an Road, Bao'an District, Shenzhen, China.
Tel: 400-805-1899 Fax:86-755-23702323; <http://www.renzhengjian.com>

Table 2 Functionality requirements:

Model: NBT-P2-128					
Sample No.	Premature Failure (1000 Hours)	Luminous Flux at 15 mins (lm)	Starting time (s)	Lamp warm-up time to 95%Φ (s)	Power factor
1	Pass	271.96	0.39	0.78	0.55
2	Pass	271.98	0.39	0.87	0.55
3	Pass	272.15	0.25	0.78	0.55
4	Pass	271.40	0.29	0.90	0.55
5	Pass	271.80	0.26	0.86	0.55
6	Pass	270.70	0.27	0.79	0.55
7	Pass	270.82	0.31	0.76	0.55
8	Pass	272.21	0.32	0.76	0.55
9	Pass	270.43	0.21	0.89	0.55
10	Pass	270.07	0.33	0.80	0.55
11	Pass	270.67	0.31	0.85	0.55
12	Pass	271.86	0.38	0.86	0.55
13	Pass	270.06	0.26	0.89	0.55
14	Pass	272.44	0.25	0.81	0.55
15	Pass	271.47	0.37	0.76	0.55
16	Pass	270.37	0.22	0.87	0.55
17	Pass	272.00	0.33	0.80	0.55
18	Pass	272.23	0.20	0.71	0.55
19	Pass	271.73	0.25	0.71	0.55
20	Pass	271.05	0.26	0.85	0.55
Average value	Pass	271.37	0.29	0.81	0.55

Model: NBT-P2-128					
Sample No.	Luminous Flux at 6000 hours (lm)	6000 Hours Lumen Maintenance (%)	Lamp survival factor (6000 Hours)	Sample No.	Switching cycle (10000 cycle)
1	217.21	0.80	pass	1	pass
2	218.74	0.80	pass	2	pass
3	217.91	0.80	pass	3	pass
4	218.26	0.80	pass	4	pass
5	218.71	0.80	pass	5	pass
6	220.50	0.81	pass	6	pass
7	221.52	0.82	pass	7	pass
8	217.77	0.80	pass	8	pass
9	221.75	0.82	pass	9	pass
10	221.08	0.82	pass	10	pass
11	218.06	0.81	pass	11	pass
12	218.26	0.80	pass	12	pass
13	221.76	0.82	pass	13	pass
14	219.24	0.80	pass	14	pass
15	221.96	0.82	pass	15	pass
16	219.92	0.81	pass	16	pass
17	219.11	0.81	pass	17	pass
18	218.84	0.80	pass	18	pass
19	221.76	0.82	pass	19	pass
20	220.99	0.82	pass	20	pass
Average value	219.67	0.81	pass	Average value	Pass

Table 3 Parameters of the lamps:

Model: NBT-P2-128				
Sample No.	Colour rendering (Ra)	Color temperature (K)	Colour consistency	Beam angle (°)
1	81.3	6033.9	5.0	121.93
2	82.3	6005.8	4.8	121.63
3	81.8	6024.9	5.0	120.19
4	80.8	6047.4	4.3	120.11
5	80.8	6009.2	4.2	121.41
6	81.6	6018.1	5.0	121.15
7	80.6	6022.3	5.2	121.77
8	81.8	6030.4	5.0	121.80
9	82.2	6026.1	4.1	120.37
10	81.0	6011.2	5.1	121.35
11	82.1	6021.2	3.8	120.46
12	82.0	6043.4	4.5	120.36
13	81.9	6005.5	5.0	121.29
14	81.7	6043.9	5.2	120.58
15	81.1	6041.5	5.1	121.18
16	80.9	6042.2	4.7	121.88
17	80.6	6016.0	5.0	120.24
18	82.3	6009.3	4.7	121.90
19	82.1	6017.6	5.2	121.35
20	80.5	6020.2	3.7	121.53
Average value	81.5	6024.5	4.7	121.12

	The Energy Efficiency Class	—														
	The energy efficiency class as follows:	P														
	$EEl = P_{cor} / P_{ref}$:	P														
	P_{cor} is rated power of the lamps is measured at their nominal input voltage for products without external control gear	P														
	P_{cor} is rated power (P_{rated}) corrected in accordance with Table below for models with external control gear.	N/A														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Scope of the correction</th> <th style="text-align: center;">Power corrected for control gear losses (P_{cor})</th> </tr> </thead> <tbody> <tr> <td>Lamps operating on external halogen lamp control gear</td> <td>$P_{rated} \times 1,06$</td> </tr> <tr> <td>Lamps operating on external LED lamp control gear</td> <td>$P_{rated} \times 1,10$</td> </tr> <tr> <td>Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear</td> <td>$P_{rated} \times 1,10$</td> </tr> <tr> <td>Other lamps operating on external fluorescent lamp control gear</td> <td>$P_{rated} \times \frac{0,24\sqrt{\Phi_{use}} + 0,0103\Phi_{use}}{0,15\sqrt{\Phi_{use}} + 0,0097\Phi_{use}}$</td> </tr> <tr> <td>Lamps operating on external high-intensity discharge lamp control gear</td> <td>$P_{rated} \times 1,10$</td> </tr> <tr> <td>Lamps operating on external low pressure sodium lamp control gear</td> <td>$P_{rated} \times 1,15$</td> </tr> </tbody> </table>	Scope of the correction	Power corrected for control gear losses (P_{cor})	Lamps operating on external halogen lamp control gear	$P_{rated} \times 1,06$	Lamps operating on external LED lamp control gear	$P_{rated} \times 1,10$	Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear	$P_{rated} \times 1,10$	Other lamps operating on external fluorescent lamp control gear	$P_{rated} \times \frac{0,24\sqrt{\Phi_{use}} + 0,0103\Phi_{use}}{0,15\sqrt{\Phi_{use}} + 0,0097\Phi_{use}}$	Lamps operating on external high-intensity discharge lamp control gear	$P_{rated} \times 1,10$	Lamps operating on external low pressure sodium lamp control gear	$P_{rated} \times 1,15$	
Scope of the correction	Power corrected for control gear losses (P_{cor})															
Lamps operating on external halogen lamp control gear	$P_{rated} \times 1,06$															
Lamps operating on external LED lamp control gear	$P_{rated} \times 1,10$															
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Lamps operating on external high-intensity discharge lamp control gear	$P_{rated} \times 1,10$															
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	$P_{ref} = 0,07341\Phi_{use}$, When $\Phi_{use} \geq 1300$ lumens	N/A														
	Where Φ_{use} is the useful luminous flux output of the lamp, $\Phi_{use} =$															
	- Non-directional lamps: Total rated luminous flux (Φ)	N/A														
	- Directional lamps with a beam angle $\geq 90^\circ$ other than filament lamps and carrying a textual or graphical warning on their packaging that they are not suitable for accent lighting: Rated luminous flux in a 120° cone (Φ_{120°)	N/A														

	- Other directional lamps: Rated luminous flux in a 90° cone (Φ_{90°)			P
	The energy efficiency classes are then set in accordance with the following table:			P
	Energy efficiency class	Energy efficiency index (EEI)		P
		<input type="checkbox"/>	<input checked="" type="checkbox"/>	--
		Non-directional lamps	Directional lamps	
	A ++	EEI ≤ 0,11	EEI ≤ 0,13	P
	A +	0,11 < EEI ≤ 0,17	0,13 < EEI ≤ 0,18	N/A
	A	0,17 < EEI ≤ 0,24	0,18 < EEI ≤ 0,40	N/A
	B	0,24 < EEI ≤ 0,60	0,40 < EEI ≤ 0,95	N/A
	C	0,60 < EEI ≤ 0,80	0,95 < EEI ≤ 1,2	N/A
	D	0,80 < EEI ≤ 0,95	1,2 < EEI ≤ 1,75	N/A
	E	EEI > 0,95	EEI > 1,75	N/A

ANNEX A: Photo Documentation



Photo 1



Photo 2

Shenzhen ZCT Technology Co.,Ltd.

3F, 5th Building, Hongsheng Industrial Zone, No.4336 Bao'an Road, Bao'an District, Shenzhen, China.

Tel: 400-805-1899 Fax:86-755-23702323; <http://www.renzhengjian.com>



Photo 3

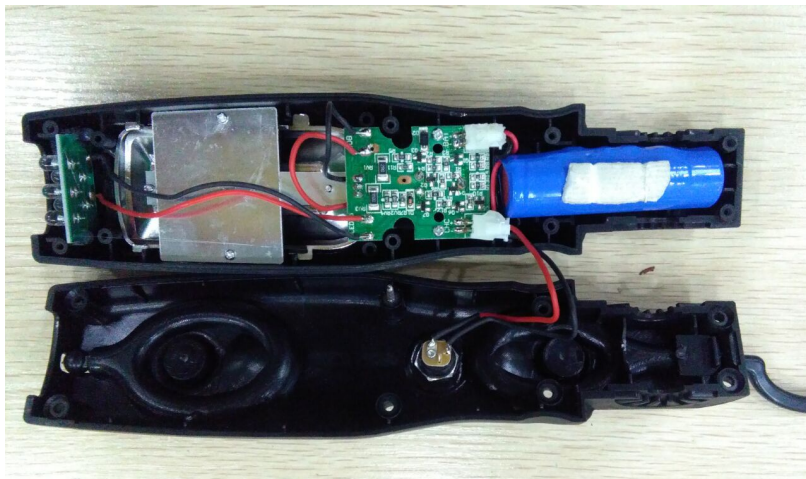


Photo 4

====End of Report====