



HONGKONG ROMANTIS LIGHTING CO., LTD.

TEST REPORT

Prepared For:	HONGKONG ROMANTIS LIGHTING CO., LTD. 14 Chuangye Industrial Park, Caosan District, Guzhen Town, Zhongshan City, Guang Dong, China
Product Name:	Pendant Lamp
Test Model :	MD088-8851 (53781)
Prepared By :	Shenzhen BST Technology Co., Ltd. Building No.23-24, Zhiheng industrial park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China.
Test Date:	Sep.30, 2019 - Jun.23, 2020
Date of Report :	Jun.23, 2020
Report No.:	BST200614668602SR

**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**

Testing laboratory	Shenzhen BST Technology Co., Ltd.
Address:	Building No.23-24, Zhiheng industrial park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China.
Testing location:	Shenzhen BST Technology Co., Ltd.
Applicant	HONGKONG ROMANTIS LIGHTING CO., LTD.
Address	14 Chuangye Industrial Park, Caosan District, Guzhen Town, Zhongshan City, Guang Dong, China
Test Result	Commission Regulation (EU) No 1194/2012+(EU) No 874/2012
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.
Type of test object.	See page 1
Trademark	N/A
Model/type reference	See page 1
Rating	Input:220-240V~, 50/60Hz, 36W
Manufacturer	HONGKONG ROMANTIS LIGHTING CO., LTD.
Address	14 Chuangye Industrial Park, Caosan District, Guzhen Town, Zhongshan City, Guang Dong, China



Name and address of the testing laboratory: Shenzhen BST Technology Co., Ltd.
Building No.23-24, Zhiheng industrial park,
Guankouer Road, Nantou, Nanshan District,
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Prepared by : Eidy Hu
Engineer

Reviewer : M.S.
Supervisor

Approved & Authorized Signer : APPROVED
Manager

Possible test case verdicts :

Test case does not apply to the test object : N(.A.)

Test object does meet the requirement : P(ass)

Test object does not meet the requirement : F(ail)

General remarks:

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>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> <ul style="list-style-type: none">A. The energy efficient label.B. Photo documentation.
<p>Summary of testing:</p> <ol style="list-style-type: none">1. All submitted models were tested according to Implementation measure (EU) No 1194/2012.2. The product meets the stage 3 requirement of the implementation measure.3. According to (EU) No 874/2012, the product meets the class requirement of the implementation measure.	



0.	General		
0.1	Power source mets requirement of: Where no requirement stated in the relevant standards EN60969 requirement are to be applied accordingly.		P
0.2	Ambient condition met requirement of: Where no requirement stated in the relevant standards EN60969 requirement are to be applied accordingly.		P
0.3	Test are done under rated value unless otherwise stated or required.		P
0.4	Sample		
	Number of sample used for tested	20 pcs	P
1.	ENERGY EFFICIENCY REQUIREMENTS		
1.1	Energy efficiency requirements for directional lamps: The energy efficiency index (EEI) of the lamp is calculated as follows and rounded to two decimal places: EEI = P cor / P ref P cor is the rated power measured at nominal input voltage and corrected where appropriate in accordance with follow. The correction factors are cumulative where appropriate.		P
1.1.0	EEI = P cor / P ref	EEI = P cor / P ref=0.200	P
1.1.1	Lamps operating on external halogen lamp control gear: P rated × 1,06		N
1.1.2	Lamps operating on external LED lamp control gear: P rated × 1,10		N
1.1.3	Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear: P rated × 1,10		N
1.1.4	Other lamps operating on external fluorescent lamp control Gear: P rated × (0,24√Φ use+0,0103Φ use)/ (0,15√Φ use+0,0097Φ use)		N
1.1.5	Lamps operating on external high-intensity discharge lamp control gear: P rated × 1,10		N



Clasue	Requirement-Test	Result-Remark	Verdict
1.1.6	Lamps operating on external low pressure sodium lamp control Gear: P rated x 1,15		N
1.1.7	P ref is the reference power obtained from the useful luminous flux of the model (Φ use) by the following formulae:		P
	For models with Φ use < 1 300 lumen: P ref = $0,88\sqrt{\Phi$ use + 0,049 Φ use		N
	For models with Φ use \geq 1 300 lumen: P ref = 0,07341 Φ use	P ref = 0,07341 Φ use =179.85W	P
1.1.8	Φ use is defined as follows:		P
	directional lamps with a beam angle \geq 90° other than filament lamps and carrying a warning on their packaging in accordance with point 3.1.2: rated luminous flux in a 120° cone (Φ 120°)		N
	other directional lamps: rated luminous flux in a 90° cone (Φ 90°).		N
1.2	Energy efficiency requirements for lamp control gear		P
1.2.1	As from stage 2, the no-load power of a lamp control gear intended for use between the mains and the switch for turning the lamp load on/off shall not exceed 1,0 W. As from stage 3, the limit shall be 0,50 W. For lamp control gear with output power (P) over 250 W, the no-load power limits shall be multiplied by P/250 W.		P
1.2.2	As from stage 3, the standby power of a lamp control gear shall not exceed 0,50 W.		P
1.2.3	As from stage 2, the efficiency of a halogen lamp control gear shall be at least 0,91 at 100 % load.		N
2.	FUNCTIONALITY REQUIREMENTS		
2.1	Functionality requirements for directional lamps other than LED lamps		
2.1.1	Functionality requirements for directional compact fluorescent lamps		
2.1.1.1	Lamp survival factor at 6 000 h		
	Stage 1 except where indicated otherwise: From 1 March 2014: \geq 0,50		N
	Stage 3: \geq 0,70		N
2.1.1.2	Lumen maintenance		



Clasue	Requirement-Test	Result-Remark	Verdict
	Stage 1 except where indicated otherwise: At 2 000 h: $\geq 80 \%$		N
	Stage 3: At 2 000 h: $\geq 83 \%$ At 6 000 h: $\geq 70 \%$		N
2.1.1.3	Number of switching cycles before failure		
	Stage 1 except where indicated otherwise: \geq half the lamp lifetime expressed in hours $\geq 10\,000$ if lamp starting time $>0,3$ s		N
	Stage 3: \geq lamp lifetime expressed in hours $\geq 30\,000$ if lamp starting time $>0,3$ s		N
2.1.1.4	Starting time		
	Stage 1 except where indicated otherwise: $< 2,0$ s		N
	Stage 3: $< 1,5$ s if $P < 10$ W $< 1,0$ s if $P \geq 10$ W		N
2.1.1.5	Lamp warm-up time to 60% Φ		
	Stage 1 except where indicated otherwise: < 40 s or < 100 s for lamps containing mercury in amalgam form		N
	Stage 3: < 40 s or < 100 s for lamps containing mercury in amalgam form		N
2.1.1.6	Premature failure rate		
	Stage 1 except where indicated otherwise: $\leq 5,0 \%$ at 500 h		N
	Stage 3: $\leq 5,0 \%$ at 1 000 h		N
2.1.1.7	Lamp power factor for lamps with integrated control gear		
	Stage 1 except where indicated otherwise: $\geq 0,50$ if $P < 25$ W $\geq 0,90$ if $P \geq 25$ W		N



Clasue	Requirement-Test	Result-Remark	Verdict
	Stage 3: ≥ 0,55 if P < 25 W ≥ 0,90 if P ≥ 25 W		N
2.1.1.8	Colour rendering (Ra)		
	Stage 1 except where indicated otherwise: ≥ 80 ≥ 65 if the lamp is intended for outdoor or industrial applications according to point 3.1.3		N
	Stage 3: ≥ 80 ≥ 65 if the lamp is intended for outdoor or industrial applications according to point 3.1.3		N
2.1.2	Functionality requirements for other directional lamps (excluding LED lamps, compact fluorescent lamps and high-intensity discharge lamps)		
2.1.2.1	Rated lamp lifetime at 50 % lamp survival		
	Stage 1 and 2: ≥ 1 000 h (≥ 2 000 h in stage 2) ≥2 000 h for extra low voltage lamps not complying with the stage 3 filament lamp efficiency requirement in point 1.1		N
	Stage 3: ≥ 2 000 h ≥ 4 000 h for extra low voltage lamps		N
2.1.2.2	Lumen maintenance		
	Stage 1 and 2: ≥ 80 % at 75 % of rated average lifetime		N
	Stage 3: ≥ 80 % at 75 % of rated average lifetime		N
2.1.2.3	Number of switching cycles		
	Stage 1 and 2: ≥ four times the rated lamp life expressed in hours		N
	Stage 3: ≥ four times the rated lamp life expressed in hours		N
2.1.2.4	Starting time		
	Stage 1 and 2: < 0,2 s		N



Clasue	Requirement-Test	Result-Remark	Verdict
	Stage 3: < 0,2 s		N
2.1.2.5	Lamp warm-up time to 60 % Φ		
	Stage 1 and 2: $\leq 1,0$ s		N
	Stage 3: $\leq 1,0$ s		N
2.1.2.6	Premature failure rate		
	Stage 1 and 2: $\leq 5,0$ % at 100 h		N
	Stage 3: $\leq 5,0$ % at 200 h		N
2.1.2.7	Lamp power factor for lamps with integrated control gear		
	Stage 1 and 2: Power > 25 W: $\geq 0,9$ Power ≤ 25 W: $\geq 0,5$		N
	Stage 3: Power > 25 W: $\geq 0,9$ Power ≤ 25 W: $\geq 0,5$		N
2.2	Functionality requirements for non-directional and directional LED lamps Requirement as from stage 1, except where indicated otherwise		
2.2.1	Lamp survival factor at 6 000 h		
	From 30 September 2019: $\geq 0,90$	1.0	P
2.2.2	Lumen Maintenance at 6 000 h		
	From 30 September 2019: $\geq 0,80$	0.89	P
2.2.3	Number of switching cycles before failure		
	≥ 15 000 if rated lamp life ≥ 30 000 h otherwise: \geq half the rated lamp life expressed in hours	>15000, fail 0 pcs	P
2.2.4	Starting time		
	< 0,5 s	0.25s	P
2.2.5	Lamp warm-up time to 95 % Φ		



Clasue	Requirement-Test	Result-Remark	Verdict
	< 2 s	0.1s	P
2.2.6	Premature failure rate		
	≤ 5,0 % at 1 000 h	0%	P
2.2.7	Colour rendering (Ra)		
	≥ 80 ≥ 65 if the lamp is intended for outdoor or industrial applications in accordance with point 3.1.3	82.4	P
2.2.8	Colour consistency		
	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.	0.3SDCM	P
2.2.9	Lamp power factor (PF) for lamps with integrated control gear		
	P ≤ 2 W: no requirement 2 W < P ≤ 5 W: PF > 0,4 5 W < P ≤ 25 W: PF > 0,5 P > 25 W: PF > 0,9	0.977	P
2.3.	Functionality requirement for equipment designed for installation between the mains and the lamps		
2.3.1	As from stage 2, equipment designed for installation between the mains and the lamps shall comply with state-of-the-art requirements for compatibility with lamps whose energy efficiency index (calculated for both directional and non-directional lamps in accordance with the method set out in point 1.1) is at most:		P
2.3.1.1	0,24 for non-directional lamps (assuming that Φ use = total rated luminous flux),		N
2.3.1.2	0,40 for directional lamps.		P
2.3.2	When a dimming control device is switched on at its lowest control setting for which the operated lamps consume power, the operated lamps shall emit at least 1 % of their luminous flux at full load.		N
2.3.3	When a luminaire is placed on the market and intended to be marketed to the end-users, and lamps that the end-user can replace are included with the luminaire, these lamps shall be of one of the two highest energy classes, according to Commission Delegated Regulation (EU) No 874/2012, with which the luminaire is labelled to be compatible.		P
3.	PRODUCT INFORMATION REQUIREMENTS		
3.1.	Product information requirements for directional lamps		P



Clause	Requirement-Test	Result Remark	Verdict
3.1.1	Information to be displayed on the lamp itself		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
3.1.2.1	Nominal useful luminous flux displayed in a font at least twice as large as any display of the nominal lamp power;		P
3.1.2.2	Nominal life time of the lamp in hours (not longer than the rated life time);		P
3.1.2.3	Colour temperature, as a value in Kelvins and also expressed graphically or in words;		P
3.1.2.4	Number of switching cycles before premature failure;		P
3.1.2.5	Warm-up time up to 60 % of the full light output (may be indicated as 'instant full light' if less than 1 second);		N
3.1.2.6	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
3.1.2.7	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
3.1.2.8	Lamp dimensions in millimetres (length and largest diameter);		P
3.1.2.9	Nominal beam angle in degrees;		P
3.1.2.10	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 lighting;		N
3.1.2.11	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
3.1.2.12	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 ($\Phi 90^\circ$) is not lower than the reference luminous flux indicated in Table 6 for the smallest wattage among the lamps of the type concerned. The reference luminous flux shall be multiplied by the correction factor in Table 7. For LED lamps, it shall be in addition multiplied by the correction factor		N



Clause	Requirement-Test	Result Remark	Verdict
3.1.2.13	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 reference luminous flux shall be multiplied by the correction factor in Table 7. For LED lamps, it shall be in addition multiplied by the correction factor in Table 8. 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
	If the lamp contains mercury:		
3.1.2.14	Lamp mercury content as X,X mg;		N
3.1.2.15	Indication of which website to consult in case of accidental lamp breakage to find instructions on how to clean up the lamp debris.		
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.		
3.1.3.1	The information specified in point 3.1.2;		N
3.1.3.2	Rated power (0,1 W precision);		P
3.1.3.3	Rated useful luminous flux;		P
3.1.3.4	Rated lamp life time;		P
3.1.3.5	Lamp power factor;		P
3.1.3.6	Lumen maintenance factor at the end of the nominal life (except for filament lamps);		P
3.1.3.7	Starting time (as X,X seconds);		P
3.1.3.8	Colour rendering;		P
3.1.3.9	Colour consistency (only for LEDs);		P
3.1.3.10	Rated peak intensity in candela (cd);		P
3.1.3.11	Rated beam angle;		P
3.1.3.12	If intended for use in outdoor or industrial applications, an indication to this effect;		N
3.1.3.14	Spectral power distribution in the range 180-800 nm;		P



Clasue	Requirement-Test	Result-Remark	Verdict
	If the lamp contains mercury:		N
3.1.3.15	Instructions on how to clean up the lamp debris in case of accidental lamp breakage;		N
3.1.3.16	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
3.2	Additional product information requirements for LED lamps replacing fluorescent lamps without integrated ballast		N
	Claims that an LED lamp replaces a fluorescent lamp without integrated ballast of a particular wattage may be made only if:		N
3.2.1	the luminous intensity in any direction around the tube axis does not deviate by more than 25 % from the average luminous intensity around the tube,		N
3.2.2	the luminous flux of the LED lamp is not lower than the luminous flux of the fluorescent lamp of the claimed wattage. The luminous flux of the fluorescent lamp shall be obtained by multiplying the claimed wattage with the minimum luminous efficacy value corresponding to the fluorescent lamp in Commission Regulation (EC) No 245/2009 (1)		N
3.2.3	the wattage of the LED lamp is not higher than the wattage of the fluorescent lamp it is claimed to replace.		N
3.3.	Product information requirements for equipment other than luminaires, designed for installation between the mains and the lamps		N
3.4	Product information requirements for lamp control gears As from stage 2, the following information shall be published on publicly available free access websites and in other forms the manufacturer deems appropriate:		P
3.4.1	Indication that the product is intended to be used as a lamp control gear,		P
3.4.2	If applicable, the information that the product may be operated in no-load mode.		N



Clasue		Result-Remark	Verdict
	COMPLIANCE WITH COMISSION REGULATION 1194/2012/EC		
ANNEX I	Technical parameters		--
	Lamp efficacy Which is the quotient of the luminous flux emitted (Φ) by the power consumed by the lamp (P_{lamp}): $\eta_{lamp} = \Phi / P_{lamp}$ (unit: lm/W). The power dissipated by non-integrated auxiliary equipment, such as ballasts, transformers or power supplies, is not included in the power consumed by the lamp;	68.05lm/W	P
	POWER MEASUREMENT	36W	--
	Lamp lifetime Which is the period of operation time after which the fraction of the total number of lamps which continue to operate corresponds to the lamp survival factor of the lamp, under defined conditions and switching frequency;	25000h by Applicant declaration	P
	Correlated colour temperature Which is temperature of a Planckian (black body) radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions;	4000K	P
	Luminous flux Which is a quantity derived from radiant flux (radiant power) by evaluating the radiation according to the spectral sensitivity of the human eye, measured after 0 hours of lamp running time;	3000lm	P

Applicable requirements and beginning for compliance as referred in Regulation (EU) No. 1194/2012	
Stage 1:	1 September 2013
Stage 2:	1 September 2014
Stage 3:	1 September 2016

**The maximum EEI of directional lamps:**

Application date	Maximum energy efficiency index (EEI)				Average results	Verdict
	Main-voltage filament lamps	Other filament lamps	High-intensity discharge lamps	Other lamps		
Stage 1	If Φ use > 450 lm: 1,75	If Φ use \leq 450lm:1,20; If Φ use > 450 lm: 0,95	0.5	0.5	-	N
Stage 2	1.75	0.95	0.5	0.5	-	N
Stage 3	0.95	0.95	0.36	0.2	0.18	P



TEST REPORT

Implementing Measure (EU) No 874/2012

Supplementing Directive (EU)2017/1369 of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires

1.	General		
1.1	Power source mets requirement of: Where no requirement stated in the relevant standards EN60969 requirement are to be applied accordingly.		P
1.2	Ambient condition met requirement of: Where no requirement stated in the relevant standards EN60969 requirement are to be applied accordingly.		P
1.3	Test are done under rated value unless otherwise stated or required.		P
2.	Sample		
	Number of sample used for tested	20 pcs	P
3.	Energy efficiency classes for lamps: The energy efficiency index (EEI) of the lamp is calculated as follows and rounded to two decimal places: $EEI = P_{cor} / P_{ref}$		P
3.1	Energy efficiency index (EEI) for non-directional lamps:		N
	A++ (most efficient): $EEI \leq 0,11$		N
	A+: $0,11 < EEI \leq 0,17$		N
	A: $0,17 < EEI \leq 0,24$		N
	B: $0,24 < EEI \leq 0,60$		N
	C: $0,60 < EEI \leq 0,80$		N
	D: $0,80 < EEI \leq 0,95$		N



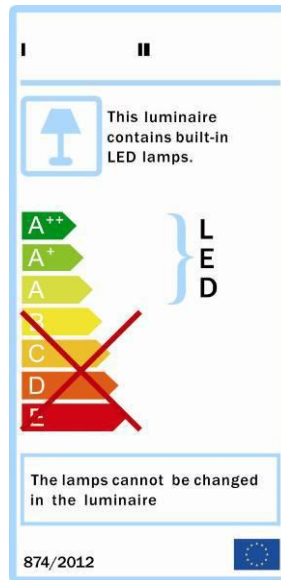
Clasue	Requirement-Test	Result-Remark	Verdict
	E (least efficient): EEI > 0,95		N
3.2	Energy efficiency index (EEI) for directional lamps		P
	A++ (most efficient): EEI ≤ 0,13		N
	A+: 0,13 < EEI ≤ 0,18		N
	A: 0,18 < EEI ≤ 0,40	EEI = P cor / P ref=0.200	P
	B: 0,40 < EEI ≤ 0,95		N
	C: 0,95 < EEI ≤ 1,20		N
	D: 1,20 < EEI ≤ 1,75		N
	E (least efficient): EEI > 1,75		N
4.	Power correction if the model requires external control gear		
4.1	Power corrected for control gear losses (P cor)	P cor=36W	P
4.1.1	Lamps operating on external halogen lamp control gear: P rated × 1,06		N
4.1.2	Lamps operating on external LED lamp control gear: P rated × 1,10		N
4.1.3	Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear: P rated × 1,10		N
4.1.4	Other lamps operating on external fluorescent lamp control Gear: P rated × (0,24√Φ use+0,0103Φ use)/ (0,15√Φ use+0,0097Φ use)		N
4.1.5	Lamps operating on external high-intensity discharge lamp control gear: P rated × 1,10		N



Clasue	Requirement-Test	Result-Remark	Verdict
4.1.6	Lamps operating on external low pressure sodium lamp control Gear: P rated x 1,15		N
4.2	P ref is the reference power obtained from the useful luminous flux of the model (Φ_{use}) by the following formulae:		P
4.2.1	For models with $\Phi_{use} < 1\ 300$ lumen: $P_{ref} = 0,88\sqrt{\Phi_{use}} + 0,049\Phi_{use}$		N
4.2.2	For models with $\Phi_{use} \geq 1\ 300$ lumen: $P_{ref} = 0,07341\Phi_{use}$	$P_{ref} = 0,07341\Phi_{use}$ $=179.85W$	P
4.3	Useful luminous flux (Φ_{use})		P
4.3.1	Non-directional lamps: Total rated luminous flux (Φ)		N
4.3.2	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
4.3.3	Other directional lamps: Rated luminous flux in a 90° cone (Φ_{90°)		N
5.	CALCULATION OF THE ENERGY CONSUMPTION		P
5.1	The weighted energy consumption (E_c) is calculated in kWh/1 000 h as follows and is rounded to two decimal places: $E_c = P_{cor} * 1\ 000\ h/1000$	36	P



The energy efficient class label of the EUT





ANNEX A:

Photo-documentation

