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Our reference: CR-22-11215

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The self-contained emergency luminaire supplied by you was tested in our laboratory on 9 March 2015 and the results were presented as follows.

Description of luminaire:	"Crystalite" self-contained emergency LED luminaire
Complete set model:	CC-R48-LED-13-K2 / CC-R48-LED-13-K2-GC + DIMON LAHAN-6W; LAHAN-7W; LAHAN-8W; LAHAN-9W; LAHAN-10W; LAHAN-11W; LAHAN-12W; LAHAN-13W; LAHAN-14W; LAHAN-15W; LAHAN-16W; LAHAN-17W; LAHAN-18W; LAHAN-19W; LAHAN-20W; LAHAN-21W; LAHAN-22W; LAHAN-23W; LAHAN-24W; LAHAN-25W; LAHAN-26W; LAHAN-27W; LAHAN-28W; LAHAN-29W; LAHAN-30W; LAHAN-31W; LAHAN-32W; LAHAN-33W; LAHAN-34W; LAHAN-35W; LAHAN-36W; LAHAN-37W; LAHAN-38W; LAHAN-39W; LAHAN-40W; LAHAN-41W; LAHAN-42W; LAHAN-43W; LAHAN-44W; LAHAN-45W; LAHAN-46W; LAHAN-47W; LAHAN-48W; LAHAN-49W; LAHAN-50W; LAHAN-51W; LAHAN-52W; LAHAN-53W; LAHAN-54W; LAHAN-55W; LAHAN-56W; LAHAN-57W; LAHAN-58W; LAHAN-59W; LAHAN-60W
Suitable converter model:	CC-R48-LED-13-K2 / CC-R48-LED-13-K2-GC
Input:	AC 220-240V +6%/-10% 50Hz
Battery:	Sealed Ni-Cd / Ni-MH rechargeable battery pack (12V 4.0Ah)
Full charge period / Duration:	12 hours / 2 hours
Lamp type:	LED lamp
Test button and charging LED:	Incorporated
Low voltage cut off:	Incorporated
Power cables:	The power cables extended outside the enclosure of the self-contained emergency luminaire
Case:	The Battery Kit Case is made of metal housing. The Lighting fixture case is made of Aluminum Alloy with polycarbonate diffuser.

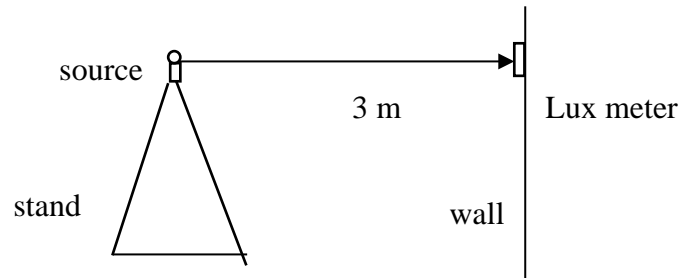
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Test procedures;

1. After 12 hours of charging at 220V 50 Hz AC supply, the emergency luminaire has attained 100% of its rated battery capacity.
2. The luminaire is positioned on a stand at 3 meters from a wall as shown below (not to scale);



3. The room light is switched off. The normal supply is terminated by pulling the plug and the emergency light is automatically turned on.
4. The illuminance at a point on the wall which lies on the central axis of the emergency luminaire is measured at 5 s, 1 min, 30 min and then at 30 min intervals after the emergency light is turned on. The maximum duration of emergency light is noted.

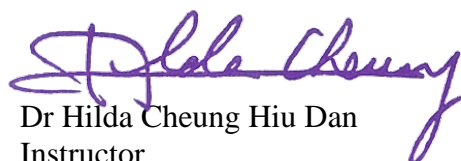
The results are as follows;

1. The emergency luminaire produced more than 90% of the stipulated illumination level within 5 seconds.
2. The total discharge time is 133 minutes at which the batteries were disconnected by the incorporated low voltage cut out device.
3. The emergency luminaire passed the resistance to flame and ignition at a temperature of 850°C as stipulated in clause 13.3.2 of IEC 60598-1:2020, clause 22.16 of BS EN 60598-2-22:2014+A1:2020 and IEC 60695-2-10:2013.

Summary of compliance with PPA/104(A)(5th Revision)

Item	Test Requirement of PPA/104(A) (5 th Revision)	Verdict
B.3	Emergency lighting luminaires shall be compliant with the glow wire test as stated in sub-clause 13.3.2 of IEC 60598-1:2020 but at temperature of 850°C.	pass
B.4	All power cables extended outside the enclosure of a self-contained emergency lighting luminaire, other than the wiring connecting the luminaire to normal supply shall conform to: (a) BS EN 50200: 2015 (PH60) and Annex E of BS EN 50200: 2015 (a duration of survival time of 30 minutes) and one of the following standards: (i) BS EN 60702-1: 2002 +A1: 2015 & BS EN 60702-2: 2002 +A1: 2015 (ii) BS 7629-1: 2015 (Cat. Standard 60) (iii) BS 7846: 2015 (Cat. F2 for cables of overall diameter not exceeding 20mm); or (b) BS 6387: 2013 Cat. CWZ.	Must be complied with
B.5	An automatic trickle charger with a 220-volt input and suitable output and fitted with pilot lights or other indicating device shall be provided for the batteries. The charger shall be capable of re-charging the battery to 100% of the rated capacity in not more than 12 hours.	pass
B.6	The self-contained luminaires emergency lighting systems shall be capable of maintaining the stipulated lighting levels for a minimum period of 2 hours (rated duration).	pass
B.7	Upon failure of the normal lighting system or in the event of power failure, the emergency lighting shall automatically light up to at least 90% of the stipulated illumination level within 5 seconds.	pass
B.8	Each unit shall be provided with a properly labeled 'TEST' switch and charge monitor light. A low voltage cut out shall also be provided to disconnect the batteries when fully discharged.	pass

The test results from our measurement complied with the relevant sections of BS 5266-1:2016, BS EN 1838:2013 and relevant parts of BS EN 60598-2-22:2014+A1:2020 and regulation PPA / 104 (A) (5th Revision) of Fire Services Department specifications.



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Instructor



Department of Building Environment and Energy Engineering

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This certificate is issued by PolyU Technology and Consultancy Co. Ltd. (PTeC) to Crystalite Electrical Engineering Co. for the Consultancy Service Agreement signed by both parties. PTeC is the wholly-owned subsidiary of The Hong Kong Polytechnic University (PolyU) and is assigned by the PolyU to deal with all commercial matters on its behalf for the undertaking of external consultancy projects.

This is to certify that the above test was conducted at the laboratory of Department of Building Environment and Energy Engineering of The Hong Kong Polytechnic University with reference to the Agreement signed by both parties.