



# Emergency Lighting Practices in the UAE

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Society of  
Light and Lighting



- UAE emergency lighting requirements
- Emergency systems and luminaires
  - Emergency lighting design
  - Approved products

## UAE Fire & Life Safety Code of Practice

- Chapter 6 - Emergency and Exit lighting requirements
- Mixture of British, European and American standards
- Emergency lighting products require Civil Defence approval

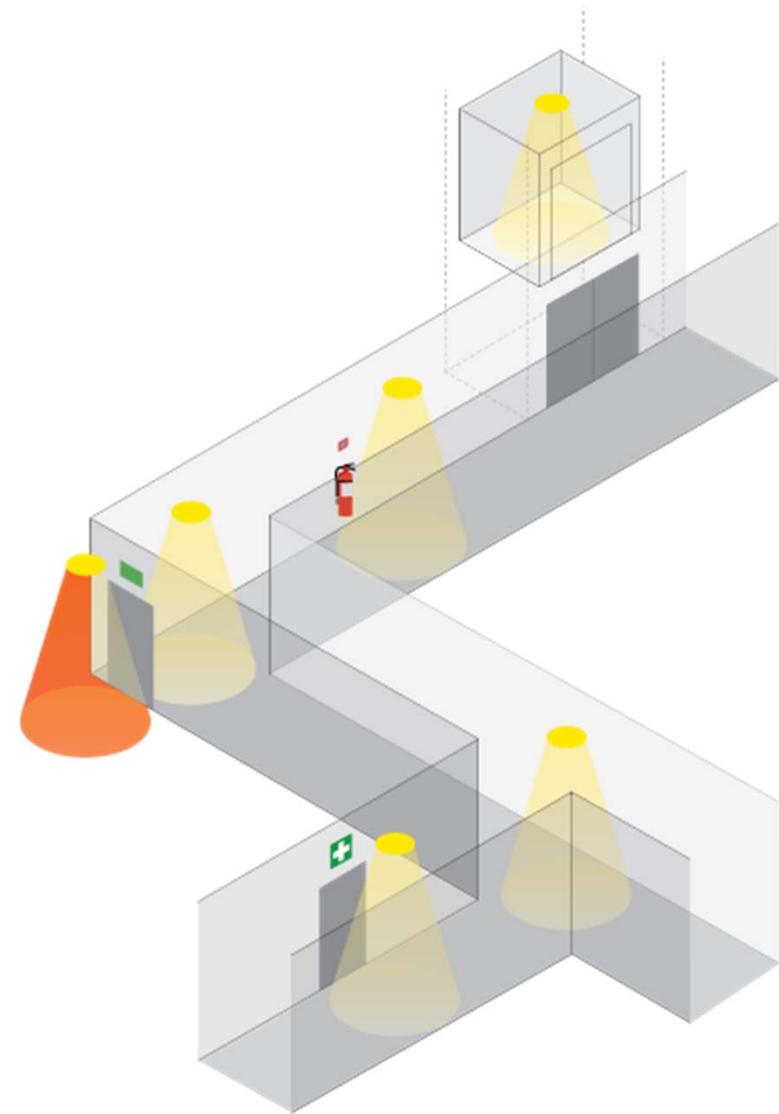


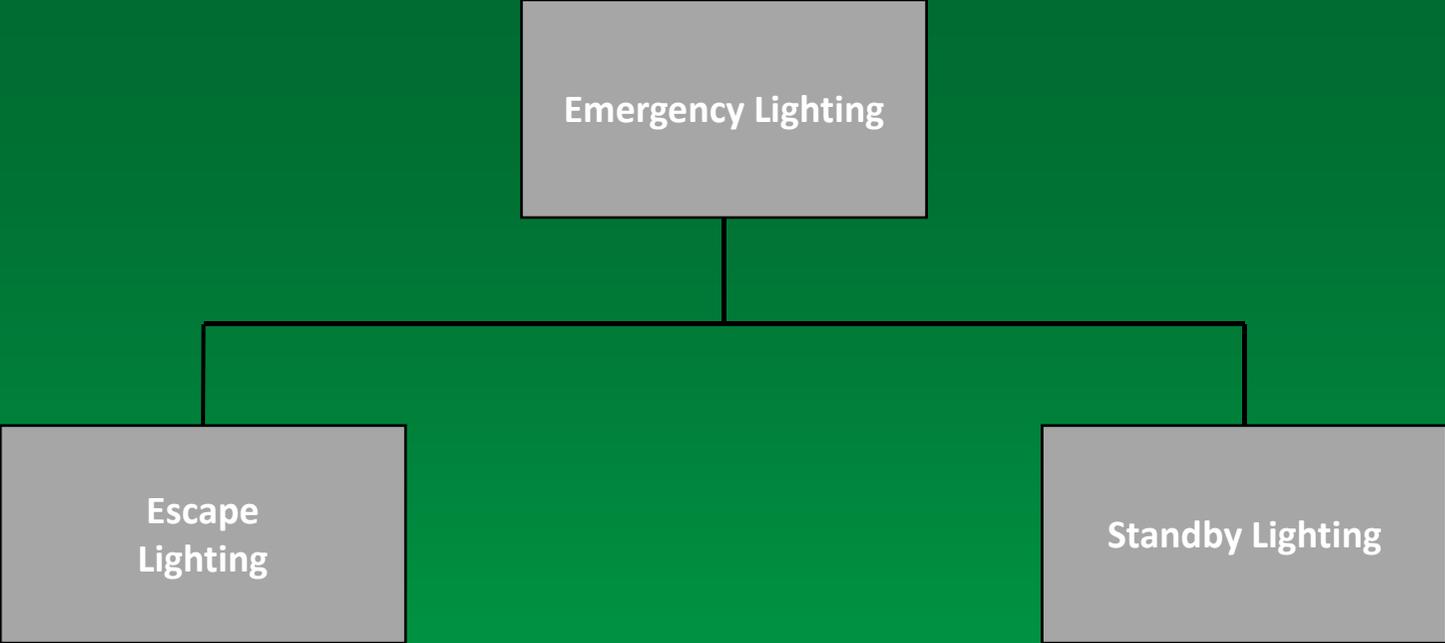
- Technically known as “Escape Lighting”
- To facilitate safe exit from the building when the normal lighting fails
- To allow potentially dangerous equipment to be made safe before evacuation
- To enable Fire Wardens & Fire and Rescue Service to search the building & locate missing people



## Emergency lighting must:-

- Indicate clearly and unambiguously the escape routes
- Provide illumination along such routes to allow safe movement towards and through the exits provided
- Ensure that fire alarm call points and fire fighting equipment provided along the escape routes can be readily located
- Permit operations concerned with safety measures



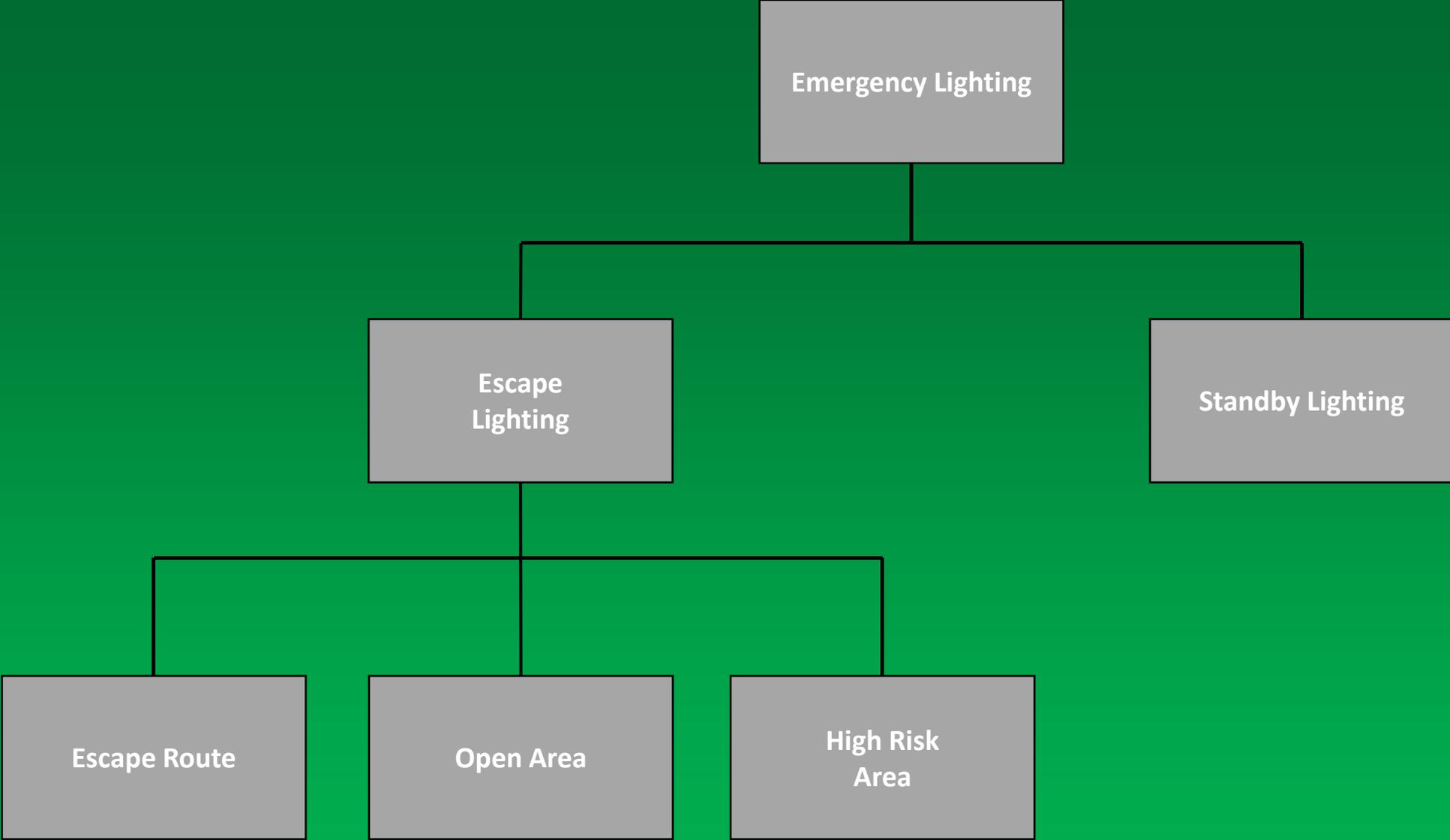


# Emergency Lighting Requirements

## Standby Lighting



- Providing full output if mains fails



## Escape Route Lighting

- Applies to corridors, lobbies and staircases
- Illumination level: 10.8 lux average, 1.1 lux minimum
- Uniformity (max:min)= 40:1



## Open Area Lighting

- $>60\text{m}^2$  or as determined by Risk Assessment
- Illumination Level: 10.8 lux average, 1.1 lux minimum
- Uniformity (max:min) = 40:1
- Exclude 0.5m border around perimeter of area



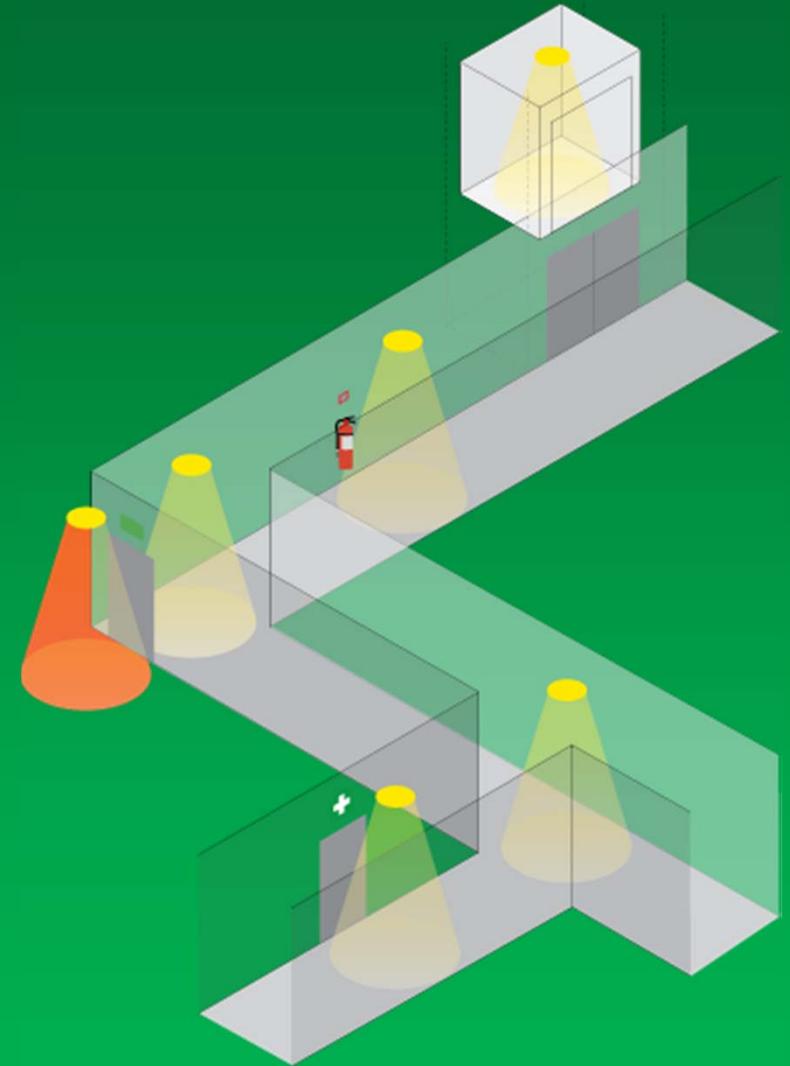
## High Risk Lighting

- Safe termination of hazardous activity
- Safe passage / rescue access
- Illumination level: 10.8 lux minimum
- Applies to all areas where high risks have been identified within a risk assessment, these may include:-
  - Kitchens
  - Plant rooms
  - Areas of refuge
  - First aid rooms
  - Fire control equipment rooms
  - etc



## Points of Emphasis

- Stairs so that each flight receives direct light
- Changes in level
- Changes of escape route direction
- Corridor intersections
- First aid posts
- Fire alarm call points or pieces of fire fighting equipment
- External areas in the immediate vicinity of final exits
- Moving stairways and walkways
- Motor generator, control and plant rooms
- Lift cars
- Covered car parks
- Areas of refuge
- Toilet facilities exceeding 8m<sup>2</sup> or any multiple closet facility without borrowed light
- All other areas as deemed by the Risk Assessment





Emergency lighting must be provided for 3 hours



Emergency lighting levels should not fall below 60% of the target level (6.5 lux ave / 0.65 lux min) after 1.5 hrs of operation.



Hotel rooms or suites need to be covered



Buildings where many people maybe in attendance



Emergency luminaires should be feed from the local lighting circuit

## Testing of Emergency Luminaires

- Emergency luminaires shall be automatically monitored and tested through a dedicated control system.
- The control system shall be interfaced with the BMS and fire alarm control



## Exit Signage



## Exit Signage

- Required to ensure ESCAPE ROUTES are apparent from any location
- Should be conspicuous
- Consider smoke accumulation



## Exit Signage

- Externally Lit
  - Viewing Distance =  $100 \times \text{Sign Height} = 15\text{m}$  (150mm tall sign)
  
- Internally Lit
  - Viewing Distance =  $200 \times \text{Sign Height} = 30\text{m}$  (150mm tall sign)



Clear and unambiguous instructions!



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## Stand Alone system

- ✓ Easier to install
- ✓ Greater flexibility
- ✓ Maintenance costs are spread over time
  
- ✗ Can be difficult to achieve higher emergency light levels

## Central Battery system

- ✓ Higher illumination values
- ✓ Longer battery life (Maintenance required)
- ✓ Luminaires do not need conversion
  
- ✗ Increased wiring complexity/cost
- ✗ Needs daily inspection
- ✗ Fixed capacity
- ✗ Higher battery replacement costs

## Stand alone systems shall:-

- Provide 3 hour duration
- Be connected an automatic monitoring and testing system
- The control system shall monitor the luminaires for:-
  - Low battery
  - Faults
  - Status



Central battery systems shall:-

- Provide 3 hour duration
- Be connected to an automatic monitoring and testing system
- Provide a cross zoning arrangement where at least two circuits shall cover each area in a overlapping of light units





- **Non-maintained**
  - Normal mode off
  - Switches ON when mains fails
- **Maintained**
  - Normal mode permanently on or switched
  - Switches to battery when mains fails
- **Sustained**
  - “Normal” lamp is switched
  - “Emergency” lamp switches ON when mains fails

## Product suitability

- Aesthetics of stand alone emergency products often undesirable



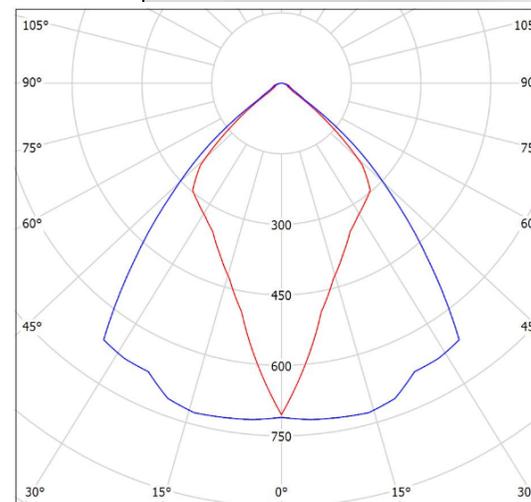
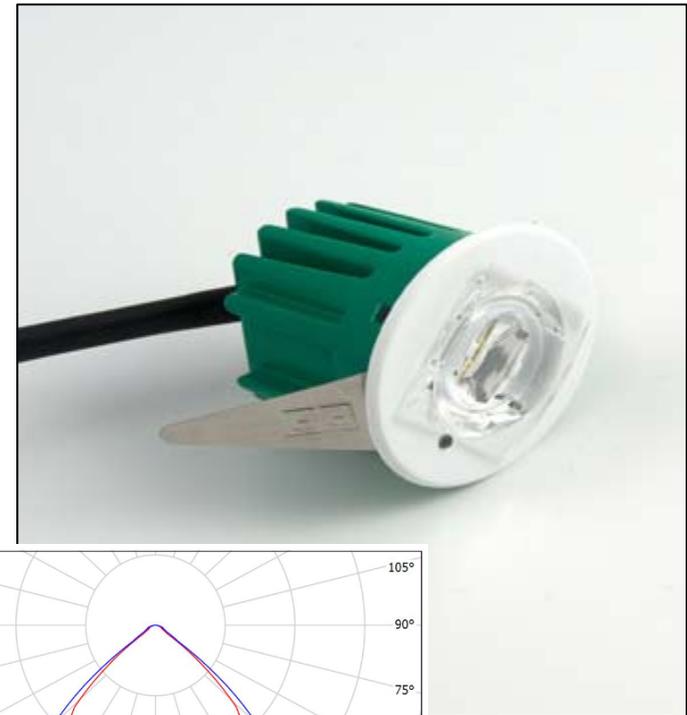
## Product suitability

- LED technology has allowed emergency lighting to become more discrete
- Enhanced performance over traditional light sources
- Longer life/less maintenance

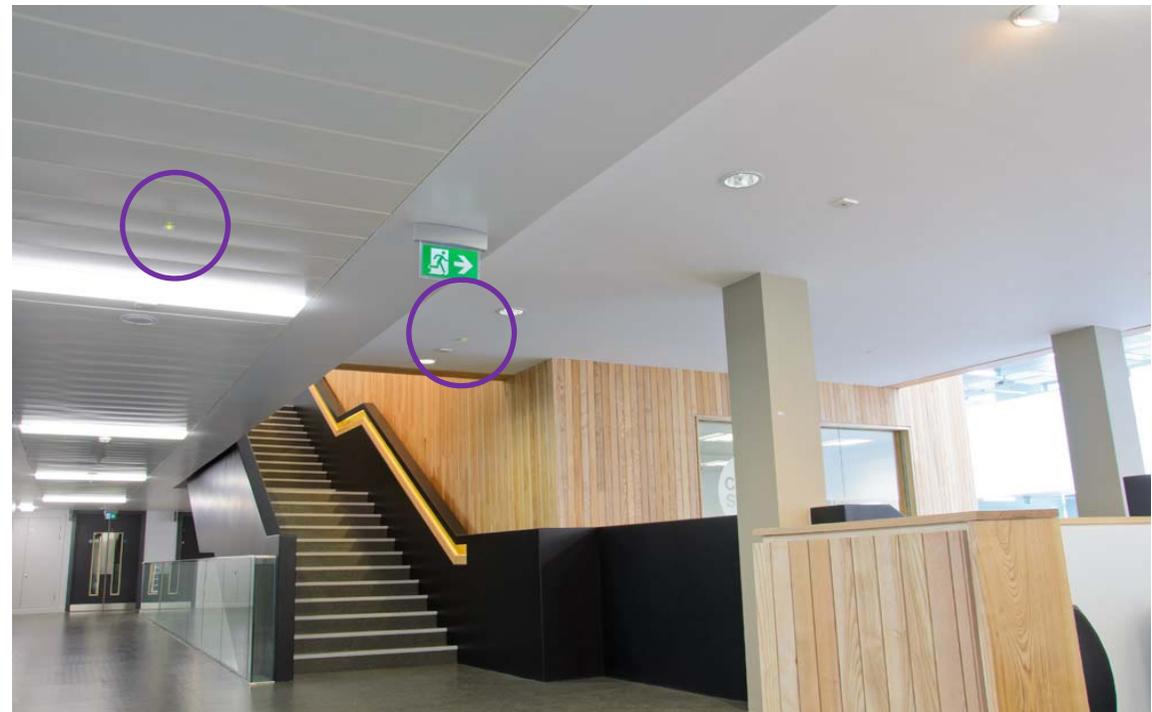


## Product suitability

- Lens technology to optimise light distribution
- Efficiency - 3W LED @ 1000mA = 280 lumen output
- Long Life - typically >50,000 hours
- Small form factor - just 50mm Ø



# Emergency Systems and Luminaires



## Exit signage



50,000 hr 4w LED strip

vs.

4,000 hr T5 8w fluorescent

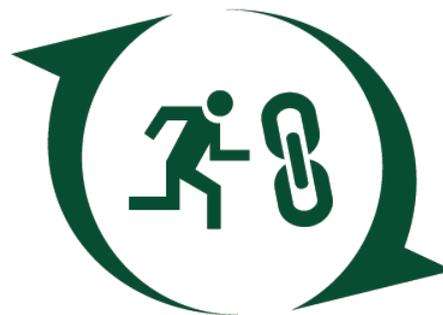
## Inspection & testing

- **Daily**
  - Central battery cabinets only
  - Visual inspection to ensure the system is in a ready condition
- **Monthly**
  - Short duration test
    - To ensure that all emergency luminaires illuminate correctly (lamps and batteries are working)
- **Annually**
  - Full duration test
    - To ensure that all emergency luminaires illuminate correctly and fully achieve duration required (3 hours)



## Inspection & testing

- Automatic testing systems



- UAE emergency lighting requirements
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## Design process

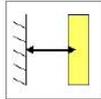
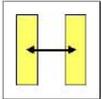
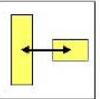
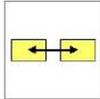
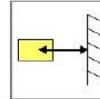
- Identify the type of building
- Identify exits, final exits and safe areas
- Identify escape routes
- Identify open plan areas  $>60\text{m}^2$
- Identify hazardous areas
- Identify points of emphasis
- Select emergency lighting products
- Position luminaires at points of emphasis and add extra fitting is until lighting levels are reached
- Check glare and uniformity

## Other design considerations

- Height & position of calculation plane
- Reflectance's of room
- Maintenance factors

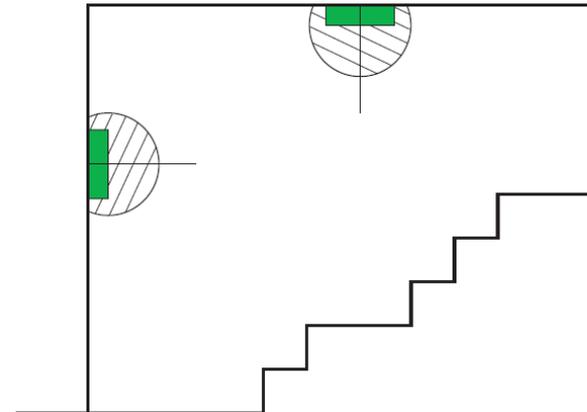
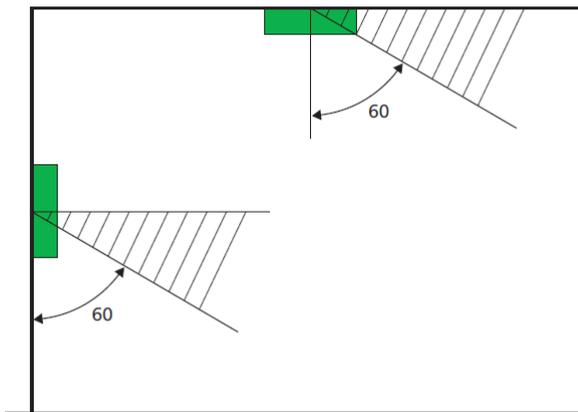
## Luminaire spacing tables

- Lighting software can provide spacing table information

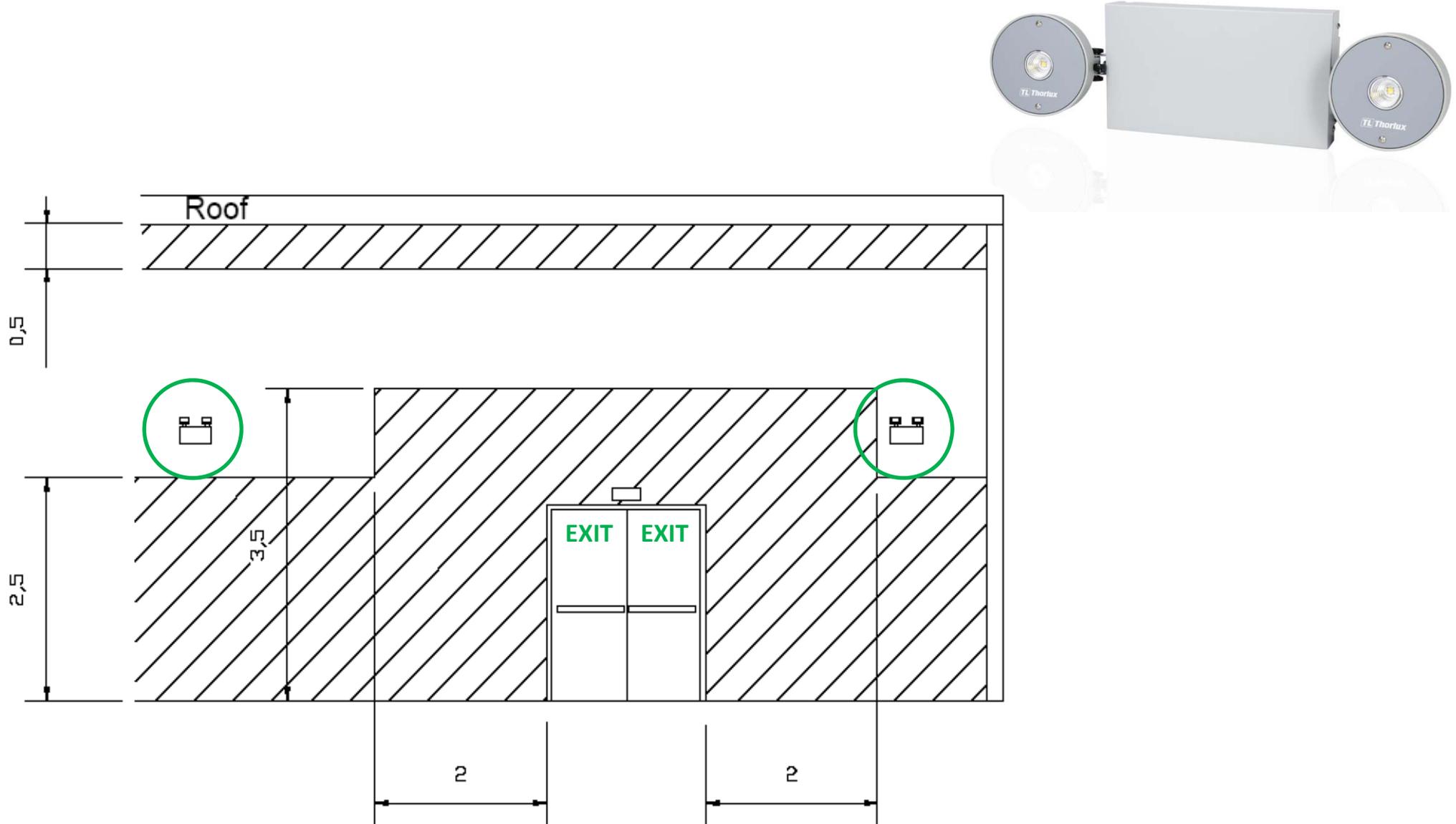
Mounting Height [m]					
2.00	2.65	5.57	5.69	5.95	2.75
2.50	3.09	6.85	7.01	7.14	3.32
3.00	3.58	7.94	8.16	8.33	3.84
3.50	4.03	8.94	9.22	9.43	4.17
4.00	4.29	9.86	10.19	10.46	4.60

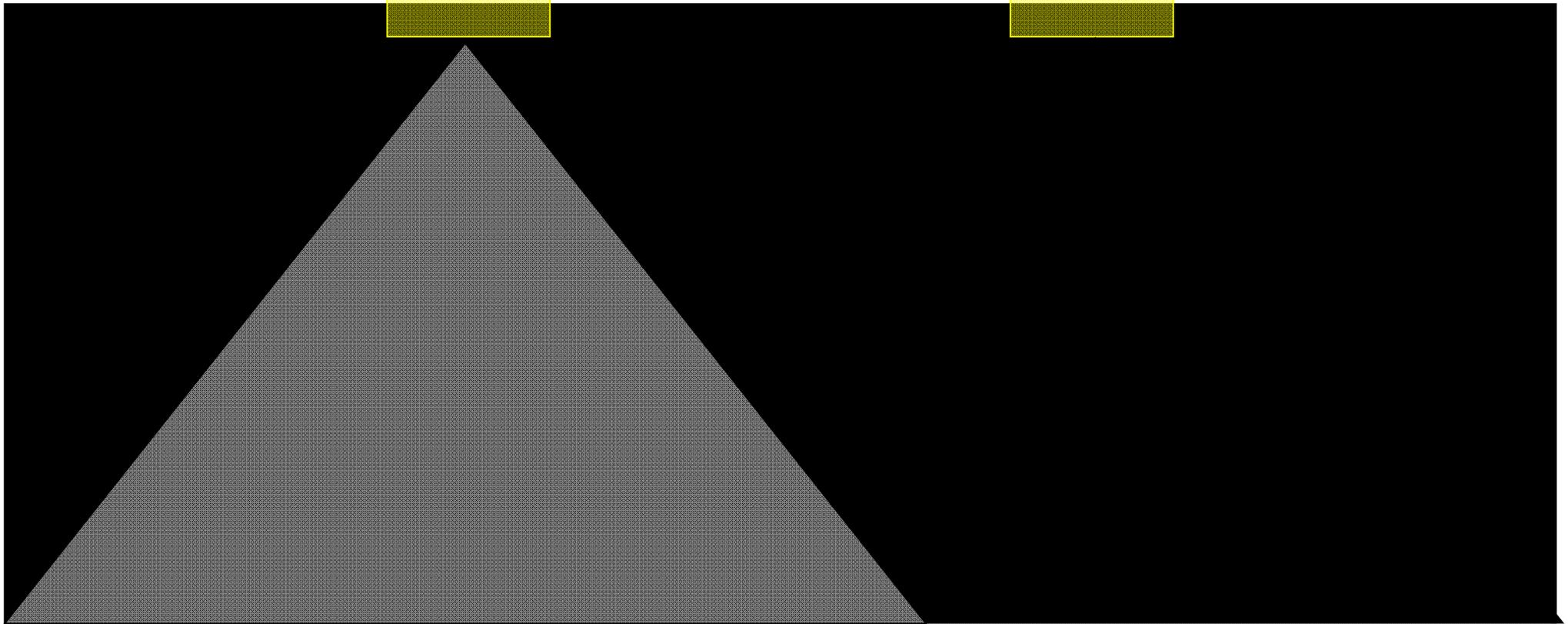
## Avoiding glare

Mounting height above floor level $h$ (m)	Escape route and open area maximum Luminous intensity $I_{\max}$ (cd)	High-risk task area lighting maximum Luminous intensity $I_{\max}$ (cd)
$h < 2.5$	500	1000
$2.5 \leq h < 3.0$	900	1800
$3.0 \leq h < 3.5$	1600	3200
$3.5 \leq h < 4.0$	2500	5000
$4.0 \leq h < 4.5$	3500	7000
$h \leq 4.5$	5000	10000



## Avoiding glare





Minimum 2 luminaires per compartment

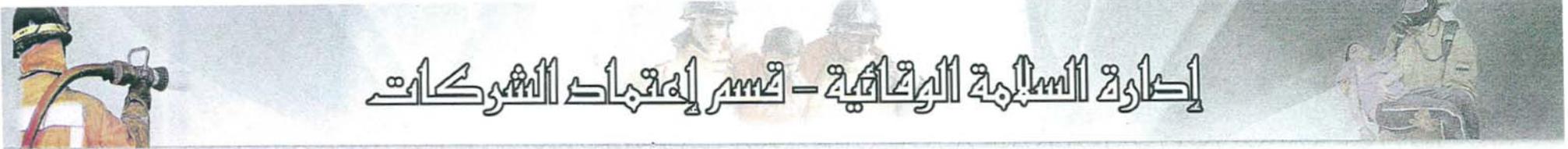
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All life safety, fire safety and emergency services shall be listed, approved and registered by the Civil Defence Ministry



## Requirements from the UK perspective

- Civil Defence approval certificate



# إدارة السلامة الوقائية - قسم إمتحان الشركات



دولة الإمارات العربية المتحدة  
وزارة الداخلية  
الإدارة العامة للدفاع المدني - دبي  
United Arab Emirates  
Ministry of Interior  
DCD General Directorate

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P.O. Box 11377 Dubai  
United Arab Emirates

للطوارئ  
Emergency

997

سيجنتكس سيستمز

اسم الشركة

رقم الترخيص: K11  
سنة الترخيص: 2014  
عدد التراخيص: (12 - 13)

م	اسم المعدة	الاسم التجاري	رقم شهادة السلامة	اسم المختبر الصادر للشهادة	بلد الصنع	فيد الوكالة	منطقة الوكالة	تاريخ انتهاء قيد الوكالة
28	إتارة طواريء ومخارج Emergency Lighting Luminaires A. Exit Luminaires: 1. Super 7 Range. Rated: 230-240 V 50Hz. - Models: S7000 LE, S7000 LM, S7000 DL, S7000 YL, DSVI3626/7/8/9, TSV13626/7/8/9, Duration: 3 Hrs, 2. Mini Cylinder Range. Rated: 230-240 V 50Hz. - Models: 250MCSDA, 250MCSHLE, 250MCSHLM, 250MCSHDL, 250MCSHYL, 250MCSVDA, 250MCSVLE, 250MCSVLM, 250MCSVDL, 250MCSVYL, 250MCRVDA, 250MCRVLE, 250MCRVLM, 250MCRVDL, 250MCRVYL, 250MCRHDA, 250MCRHLE, 250MCRHLM, 250MCRHDL, 250MCRHYL, Duration: 3 Hrs, 3. Architectural Range. Rated: 230-240 V 50Hz. - Models: 250FCDA, 250FCLE, 250FCLM, 250FCDL, 250FCYL, 250DWDA, 250DWLE, 250DWLM, 250DWDL, 250DWYL, 250IWDA, 250IWLE, 250IWL, 250IWDL, 250IWYL, 250CMDA, 250CML, 250CMDL, 250CMYL, 250SMDA, 250SMLE, 250SMDL, 250SMYL, Duration: 3 Hrs,	Philip Payne	KM 587259	KITEMARK - UK	بريطانيا	16474	دبي	2015/11/02م

- يخبر الوكيل مرخص من قبل الإدارة العامة للدفاع المدني - دبي ووجه له مزاولة نشاطه في إمارة دبي فقط، استناداً إلى قرار مجلس الوزراء رقم (34) لسنة 2012م الذي تنظم جدول الدفاع المدني للخدمة التنفيذية رقم (505) لسنة 2013، ولا يحق له ممارسة أنشطته في باقي الإمارات إلا بعد استخراج ترخيص موزع من قبل الإدارات العامة ذات الاختصاص على الإمارة.
- يحق للوكيل تركيب وصيانة المعدات المراد تداولها والمسجلة بترخيصه فقط.
- إبلاغ الإدارة العامة للدفاع المدني - دبي في حالة تغيير أو تعديل في البيانات المتعلقة في الترخيص الصادر من قبل الإدارة.
- حجب عن الشركة المعتمدة لدى إدارة الدفاع المدني - دبي إبراز الترخيص ساري المفعول الخاص بالمعدات المعتمدة والصادر من قبل الإدارة للعاملين، وعلى الشركة تحميل المسؤولية عند انتهاء الترخيص أو إغلاق الشركة.

ملاحظة:

الإدارة العامة للدفاع المدني - دبي

يعتمد عن مدير الإدارة العامة للدفاع المدني/دبي

## Certificate of Compliance

## Kitemark certification



BSI Assurance UK Limited, Kitemark Court, Davy Avenue,  
Knowlhill, Milton Keynes, MK5 8PP, United Kingdom  
Tel: +44 845 080 9000  
Email: [product.certification@bsigroup.com](mailto:product.certification@bsigroup.com)  
Website: [www.bsigroup.com](http://www.bsigroup.com)

**Certificate of Compliance No.** CC 621422  
**Certificate of Compliance issue date:** 25 November 2014  
**Expiry date:** 24 November 2017

**Based on:**

**BSI Certificate Number:** KM 587259  
**Certificate Issue date:** 7<sup>th</sup> August 2014  
**Certificate Expiry date:** Not applicable

**Name and Address of Certificate Holder:**

Philip Payne Ltd  
Thornhill House  
Thornhill Road  
Lode lane  
Solihull  
B91 2HB  
United Kingdom

**Name of the Brand:** Philip Payne  
**Logo on the product:**



**Name and Address of Factory/Manufacturer:**

Philip Payne Ltd  
Thornhill House  
Thornhill Road  
Lode lane  
Solihull  
B91 2HB  
United Kingdom

**Model/ Number:** See table 1 for listing

**CERTIFICATION MARK:**



BSI Assurance UK Limited, Kitemark Court, Davy Avenue,  
Knowlhill, Milton Keynes, MK5 8PP, United Kingdom  
Tel: +44 845 080 9000  
Email: [product.certification@bsigroup.com](mailto:product.certification@bsigroup.com)  
Website: [www.bsigroup.com](http://www.bsigroup.com)

**Certificate of Compliance No.** CC 621422  
**Certificate of Compliance issue date:** 25 November 2014  
**Expiry date:** 24 November 2017

**Description of Product:** Emergency Lighting Luminaires

**Test Standard:** BS EN 60598-2-22

**Test Description:** General requirements and tests for Luminaires for Emergency Lighting

**Specification of Test Specimen:** As a minimum, the worst case product was tested and limited testing conducted on the other products as deemed appropriate to cover the full product series covered by the certificate.

**Test Result:** PASS

**Product Application Guidance (End use):**

This section of IEC 60598-2 specifies requirements for emergency lighting luminaires for use with electrical light sources on emergency power supplies not exceeding 1 000 V.

This section does not cover the effects of non-emergency voltage reductions on luminaires incorporating high pressure discharge lamps.

This section also includes relevant requirements and tests that shall be conducted and complied with for control gears, as specified in IEC 61347, that incorporate additional facilities such as remote control devices, indicators, changeover devices, etc.

Page

Philip

Payne

## Civil Defence Approved Products

DCD	Dubai	Approved
QCD	Qatar	Approved
ADCD	Abu Dhabi	Approved

# Thank You



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Designers, manufacturers  
and suppliers of professional  
lighting systems since 1936

