

**SINGAPORE STANDARD**

**Code of practice for the design,  
installation and maintenance of  
emergency lighting and power supply  
systems in buildings**

**– Part 1 : Emergency lighting**

Incorporating Amendment No. 1  
Confirmed 2017

Published by

**Enterprise**  
**Singapore**

**SS 563-1:2010(2017)+A1:2017**  
(ICS 91.160.10)

---

SINGAPORE STANDARD

**Code of practice for the design, installation and  
maintenance of emergency lighting and power  
supply systems in buildings**

– Part 1 : Emergency lighting

---

All rights reserved. Unless otherwise specified, no part of this Singapore Standard may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from Enterprise Singapore. Request for permission can be sent to: [standards@enterprisesg.gov.sg](mailto:standards@enterprisesg.gov.sg).

ISBN 978-981-4278-72-0

## SS 563-1:2010(2017)+A1:2017

This Singapore Standard was approved by the Electrical and Electronic Standards Committee on behalf of the Standards Council of Singapore on 20 October 2010.

First published, 2011

The Electrical and Electronic Standards Committee appointed by the Standards Council consists of the following members:

	<b>Name</b>	<b>Capacity</b>
<b>Chairman</b>	: Mr Renny Yeo Ah Kiang	<i>Member, Standards Council</i>
<b>Deputy Chairman</b>	: Er. Peter Leong Weng Kwai	<i>Member, Standards Council</i>
<b>Secretary</b>	: Mr Lee Toon Huat	<i>SPRING Singapore</i>
<b>Members</b>	: Prof Choi San Shing	<i>Nanyang Technological University</i>
	Mr Chong Weng Hoe	<i>TUV SUD PSB Pte Ltd</i>
	Mr Mazad Khan	<i>Singapore International Chamber of Commerce</i>
	Er. Adeline Koh	<i>Association of Consulting Engineers Singapore</i>
	Er. Prof Liew Ah Choy	<i>National University of Singapore</i>
	Mr Lim Ah Hee	<i>Housing &amp; Development Board</i>
	Er. Lim Say Leong	<i>Singapore Business Federation</i>
	Er. Kenneth Liu	<i>Association of Consulting Engineers Singapore</i>
	Er. Ng Eng Kiong	<i>Individual Capacity</i>
	Er. Ng Kim Leong	<i>Institution of Engineers Singapore</i>
	Mr Ng Kin Ming	<i>Singapore Electrical Contractors and Licensed Electrical Workers Association</i>
	Mr Michael Ong	<i>SPRING Singapore</i>
	Er. Ong Ser Huan	<i>Institution of Engineers Singapore</i>
	Mr Jeff Ong Soon Boon	<i>SP PowerGrid Ltd</i>
	Mr K Seshadri	<i>Individual Capacity</i>
	Mr Sim Wee Meng	<i>Land Transport Authority</i>
	Mr Tan Boon Chong	<i>Singapore Manufacturers' Federation</i>
Er. Tan Hak Khoo	<i>Energy Market Authority</i>	
Mr Jimi Wong Yick Chee	<i>Singapore Electrical Trades Association</i>	
Prof Yeo Tat Soon	<i>National University of Singapore</i>	

The Technical Committee on Lamps and Related Equipment appointed by the Electrical and Electronic Standards Committee and responsible for the preparation of this standard consists of representatives from the following organisations:

	<b>Name</b>	<b>Capacity</b>
<b>Chairman</b>	: Mr K Seshadri	<i>Member, Electrical and Electronic Standards Committee</i>
<b>Deputy Chairman</b>	: Mr Tan Heng Khoon	<i>TUV SUD PSB Pte Ltd</i>
<b>Secretary</b>	: Mrs Leong Suet Mui	<i>SPRING Singapore</i>
<b>Members</b>	: Assoc Prof Choo Fook Hoong	<i>Nanyang Technological University</i>
	Mr Gan Hwee Ghee	<i>SP PowerGrid Ltd</i>
	Mr Sonny Goh Seow Eng	<i>Housing &amp; Development Board</i>
	Er. Loh Wah Kay	<i>Association of Consulting Engineers Singapore</i>
	Er. Ong Ser Huan	<i>Institution of Engineers Singapore</i>
	CPT Tan Chung Yee	<i>Singapore Civil Defence Force Fire Safety &amp; Shelter Department</i>
	Mr Teo Yong Choon	<i>Land Transport Authority</i>
	Mr Daniel Wong Chun Yap	<i>Singapore Manufacturers' Federation</i>
	Mr Jimi Wong Yick Chee	<i>Singapore Electrical Trades Association</i>
<b>Co-opted Member</b>	: Mr Tay Hooi Seng	<i>Individual Capacity</i>

The Working Group appointed by the Technical Committee to assist in the preparation of this standard comprises of experts who contribute in their *individual capacity*:

	<b>Name</b>
<b>Convenor</b>	: Mr Tan Heng Khoon
<b>Members</b>	: Mr Cheng Khay Ping
	Mr Cheong Wah Onn
	Mr Francis Lim
	CPT Tan Chung Yee
	Mr Jimi Wong Yick Chee

The organisations in which the experts of the Working Group are involved are:

*Housing & Development Board*

*Land Transport Authority*

*Maxspid Enterprise Pte Ltd*

*Singapore Civil Defence Force, Fire Safety and Shelter Department*

*TUV SUD PSB Pte Ltd*

(blank page)

**Contents**

	<b>Page</b>
National Foreword _____	6
Foreword of the International Organization for Standardization _____	8
Foreword of the International Commission on Illumination _____	9
1 Introduction _____	10
2 Scope _____	10
3 Normative references _____	10
4 Terms and definitions _____	11
5 Emergency escape lighting _____	12
6 Escape route lighting _____	13
7 Open area (anti-panic) lighting _____	15
8 High risk task area lighting _____	15
9 Standby lighting _____	16
10 Internally illuminated graphical symbol signs _____	16
11 Influence of smoke _____	17
12 Annex (informative): Bibliography _____	17

## National Foreword

This Singapore Standard was prepared by the Technical Committee on Lamps and Related Equipment under the purview of the Electrical and Electronic Standards Committee

The review of CP 19 – ‘Code of practice for the installation and maintenance of emergency lighting and power supply systems in buildings’ resulted in the development of SS 563 – ‘Code of practice for the design, installation and maintenance of emergency lighting and power supply systems in buildings’ comprising the following parts:

Part 1 : 2010 Emergency lighting

Part 2 : 2010 Installation requirements and maintenance procedures.

Parts 1 and Part 2 of SS 563 replace SS CP 19: 2000 and its amendments.

SS 563 : Part 1 is a modified adoption of the first edition of ISO 30061:2007 – ‘Emergency lighting’. It is not identical to the ISO Standard because it includes the national fire code requirements for emergency evacuation.

ISO 30061: 2007 also numbered CIE S 020/E:2007 is a joint edition published by the International Organisation for Standardisation and the International Commission on Illumination (abbreviated as CIE in French).

Strikethrough in the text indicates the International Standard text being deleted or replaced by text of the Singapore Standard which is highlighted in grey. A left vertical bar adjacent to the text indicates there is deviation from that particular clause. The following deviations apply.

Clause	Deviations
--------	------------

3	<b>Normative reference</b>
---	----------------------------

	- add ‘SS 563 : Part 2 : 2010 Code of practice for the design, installation and maintenance of emergency lighting and power supply systems in buildings, Part 2 : Installation requirements and maintenance procedures
--	--

	- Where ‘IEC 60598-2-22’, ISO 3864-1, ISO 7010 appear, they should be replaced with ‘SS IEC 60598-2-22’, SS 508-1 and SS 508-3, respectively.
--	---

4	<b>Terms and definitions</b>
---	------------------------------

	- delete 4.15
--	---------------

*Explanation*

ISO 16069 calls for too many signages in the premises which are deemed impractical in the context of the local building industry.

5	<b>Escape lighting</b>
---	------------------------

	- replace title to ‘Emergency escape lighting’.
--	---

*Explanation*

Changes are made to align with Part 2 of this standard.

6	<b>Escape route lighting</b>
---	------------------------------

6.3	- delete 2 <sup>nd</sup> and 3 <sup>rd</sup> paragraphs.
-----	--

6.5	- delete the text and replace with ‘The duration and response time to conform to Part 2’
-----	--

As amended,  
Nov 17

As amended,  
Nov 17

- 7           **Open area (anti-panic) lighting**  
7.3         - delete the 2<sup>nd</sup> sentence.  
7.5         - delete text and replace with 'The duration and response time to conform to Part 2'
- 8           **High risk task area lighting**  
8.3         - delete the 2<sup>nd</sup> sentence.  
8.5         - delete text and replace with 'The duration and response time to conform to Part 2'

*Explanation*

The glare measurements of 6.3, 7.3 and 8.3 are not adopted. Compliance of this provision is at the discretion of the designer.

- 10          **Safety signs**  
              - replace 'Safety signs' with 'Internally illuminated graphical symbol signs'  
              - delete 'and first aid signs.'
- 10.1        **Standards**  
              - delete 'and ISO 6309'
- 10.2        **Colour**  
              - replace with 5.5 of Part 2
- 10.5        **Height of the sign equating to viewing distance**  
              - Reference to the formula, delete '100 for externally illuminated signs and'

*Explanation*

Changes made are to align with local industry practice and the national fire code.

Attention is drawn to the possibility that some of the elements of this Technical Reference may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

**NOTE**

1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.
2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.
3. Compliance with a SS or TR does not exempt users from any legal obligations.



## **Foreword of the International Organization for Standardization**

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

ISO 30061 was prepared as Standard CIE S 020/E by the International Commission on Illumination, which has been recognized by the ISO Council as an international standardizing body. It was adopted by ISO under a special procedure which requires approval by at least 75 % of the member bodies casting a vote, and is published as a joint ISO/CIE edition.

The International Commission on Illumination (abbreviated as CIE from its French title) is an organization devoted to international cooperation and exchange of information among its member countries on all matters relating to the science and art of lighting.

ISO 30061 was prepared by CIE Technical Committee 5-19 *Emergency Lighting*.

## **Foreword of the International Commission on Illumination (CIE)**

Standards produced by the Commission Internationale de l'Eclairage (CIE) are a concise documentation of data defining aspects of light and lighting, for which international harmony requires such unique definition. CIE Standards are therefore a primary source of internationally accepted and agreed data, which can be taken, essentially unaltered, into universal standard systems.

This CIE Standard has been prepared by CIE Technical Committee TC 5-19\* "Emergency Lighting":

### **TABLE OF CONTENTS**

#### **FOREWORD**

1. INTRODUCTION
2. SCOPE
3. NORMATIVE REFERENCES
4. TERMS AND DEFINITIONS
5. ESCAPE LIGHTING
6. ESCAPE ROUTE LIGHTING
7. OPEN AREA (ANTI-PANIC) LIGHTING
8. HIGH RISK TASK AREA LIGHTING
9. STANDBY LIGHTING
10. SAFETY SIGNS
  - 10.1 Standards
  - 10.2 Colour
  - 10.3 Luminance
    - 10.3.1 Requirements for emergency mode
    - 10.3.2 Requirements for non-emergency mode
  - 10.4 Uniformity
    - 10.4.1 Uniformity of colours
    - 10.4.2 Uniformity between colours
  - 10.5 Height of the sign equating to viewing distance
11. INFLUENCE OF SMOKE
12. ANNEX (INFORMATIVE) BIBLIOGRAPHY

\* The chairperson of this TC was B. Weis (DE); members were: J. Audestad (NO), J. Breden (AU), M. C. Crawford (US), H. Finke (DE), J. Horváth (HU), H. Juslén (FI), J. Lecocq (FR), T. Lemons (US), J. L. Pimenta (BR), P. Rombauts (BE), A. Stockmar (DE), A. Tanaka (JP), G. Vandermeersch (BE), and C. Watts (UK), with the following committee advisors: P. K. Bandyopadhyay (IN), E. Bistricky (AU), A. Ottosson (SE), N. Radovanović (YU), M. K. Timmings (CA), N. Vassilev (BG), J. Wild (PL).

# Code of practice for the design, installation and maintenance of emergency lighting and power supply systems in buildings

## – Part 1 : Emergency lighting

### 1 Introduction

The primary objective of emergency lighting is the provision of visual conditions that can alleviate panic and facilitate safer evacuation of buildings' occupants during the failure of normal power supply/lighting, in clear (non-smoke) and smoke filled conditions.

The emergency lighting scheme design should be based on worst conditions (e.g. minimum light output, maximum glare limits) of the luminaires during operating life and should be based only on direct light from luminaires. The contributions by room surface interreflections should be ignored. However, in lighting systems such as indirect luminaires or uplights (used in maintained/combined mode), where the luminaire works in conjunction with a reflecting surface, the first reflection should be taken as direct light from the system and subsequent reflections should be ignored.

The requirements given in this standard are a minimum for design purposes and are calculated for the full rated duration period and end of design life of the equipment. A special chapter for smoke is included.

Safety signs may also fulfil further functions within maintained operation.

In most countries, states or towns statutory regulations relating to emergency lighting already exist. For this reason, the appropriate authority should always be consulted before commencing the design of a specific emergency lighting system. It is hoped that by providing an international standard, lighting technical requirements in local statutory regulations will converge on that standard.

### 2 Scope

This standard specifies the luminous requirements for emergency lighting systems installed in premises or locations where such systems are required. It is principally applicable to locations where the public or workers have access.

### 3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CIE 17.4-1987. *International lighting vocabulary (ILV)* (Joint publication IEC/CIE).

IEC 60598-2-22. *Luminaires – Part 2-22: Particular requirements - Luminaires for emergency lighting.*

ISO 3864-1. *Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs in workplaces and public areas.*

ISO 7010. *Graphical symbols – Safety signs used in workplaces and public areas.*

ISO 16069. *Graphical symbols – Safety signs – Safety way guidance systems (SWGS).*

SS 563 : Part 2 : 2010 *Code of practice for design, installation and maintenance of emergency lighting and power supply systems in buildings, Part 2 : Installation requirements and maintenance procedures.*

As amended,  
Nov 17