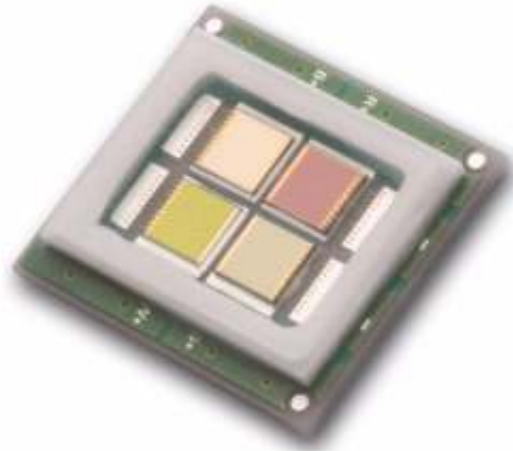# SBM-160 LED
Binning and Labeling

Introduction

This document describes the binning and labeling nomenclature for PhlatLight LED products as well as the orderable bin kits for each part.

With each build of parts, there is a distribution of performance in both flux and wavelength or chromaticity. In order to guarentee specific performance for customers, each device is measured and subsequently grouped into flux and wavelength or chromaticity bins. Each individual package or reel of parts contains only one combination of flux and wavelength or chromaticity bin. Furthermore, bins are combined into orderable bin kits comprising of a selection of flux and wavelength or chromaticity bins to ease the ordering process.

Table of Contents

Table of Products

Product	Ordering Part Number	Description
SBM-160-RGBW	SBM-160-RGBW-H 41-X X 1 2 3	PhlatLight SBM-160 surface mount device consisting of four 4 mm^2 LED mounted on a ceramic substrate.
SBR-160-RGBW	SBR-160-RGBW-R 41-X X 1 2 3	PhlatLight SBR-160 evaluation module s consisting of a SBM-160 urface mount device mounted on an Aluminum star board.

PhlatLight Shipping and Labeling Nomenclature

All PhlatLight products are packaged and labeled with their respective bin as outlined in the following pages. Each package or reel will only contain one bin. The part number designation is as follows:

A B C —— 1 2 3 —— D E F G —— H 4 5 —— I J K —— L 6

Product Family	Chip Area	Color	Package Configuration	Flux Bin	Wavelength/ Chromaticity Bin

Product Family	A - Package type. "S" denotes surface mount
	B - Lens type. "B" denotes window (no lens).
	C - Chip quantity. "M" denotes multi-chip and "R" denotes prototype board
Chip Area	1 2 3 - Total LED chip area (mm^2) x 10. "160" denotes 16 mm^2.
Color	D E F G- Color. "RGBW" denotes red Green blue white
Package Config	H 4 5 - Package configuration (for internal use).
Flux Bin	I J K - Flux bin
Wavelength/ Chromaticity Bin	L 6 - Wavelength / Chromaticity bin

Example:

The part number **SBM-160-RGBW-H41-WEA-G4** refers to a RGBW, SBM-160 emitter, with a flux range of 510-550 lumens and a chromaticity value within the box defined by the four points (0.313, 0.338), (0.321, 0.348), (0.322, 0.336), (0.312, 0.328).

（）

PhlatLight Bin Kit Ordering Nomenclature

All PhlatLight White products are sold in sets of flux and chromaticity bins called bin kits. Each bin kit specifies a minimum flux bin and a specific selection of chromaticity bins. The ordering part number designation is as follows:

A B C ⎯⎯ 1 2 3 ⎯⎯ D E F G ⎯⎯ H 4 5 ⎯⎯ I J 6 7 8

Product Family	Chip Area	Color	Package Configuration	Bin Kit

Product Family	A - Package type. "S" denotes surface mount
	B - Lens type. "B" denotes window (no lens).
	C - Chip quantity. "M" denotes multi-chip and "R" denotes prototype board
Chip Area	1 2 3 - Total LED chip area (mm^2) x 10. "160" denotes 16 mm^2.
Color	D E F G- Color. "RGBW" denotes red Green blue white
Package Config	H 4 5 - Package configuration (for internal use).
Bin Kit	I J - Flux bin kit code 6 7 8 - Wavelength / Chromaticity bin kit code

Example:

The ordering part number SBM-160-RGBW-H41-RE101 refers to a bin kit containing a minimum flux value of 510 lumens and falling in the F4, F3, G4, G3, EF, and DG chromaticity bins.

PhlatLight White Flux Binning Structure

All white PhlatLight LEDs are tested for luminous flux and placed into one of the following flux bins. Not all flux bins are currently available for each product, so consult the specific product datasheet for the list of available flux bins for the specific product.

White Flux Bins

Flux Bin Code (FF)	Composite Bin Code	Minimum Luminous Flux	Maximum Luminous Flux
WD	WDA,WDB	440	510
WE	WEA,WEB	510	590

•Note: Luminus maintains a tolerance of +/- 6% on all flux measurements.

PhlatLight White Chromaticity Binning Structure

All white PhlatLight LEDs are tested for chromaticity and placed into one of the following chromaticity bins. The binning structure is universally applied across the full white product line, however not all chromaticity bins are currently available for each product. Consult the specific product datasheet for the list of available chromaticity bins for the specific product.

Luminus' Standard Chromaticity Bins: 1931 CIE Curve
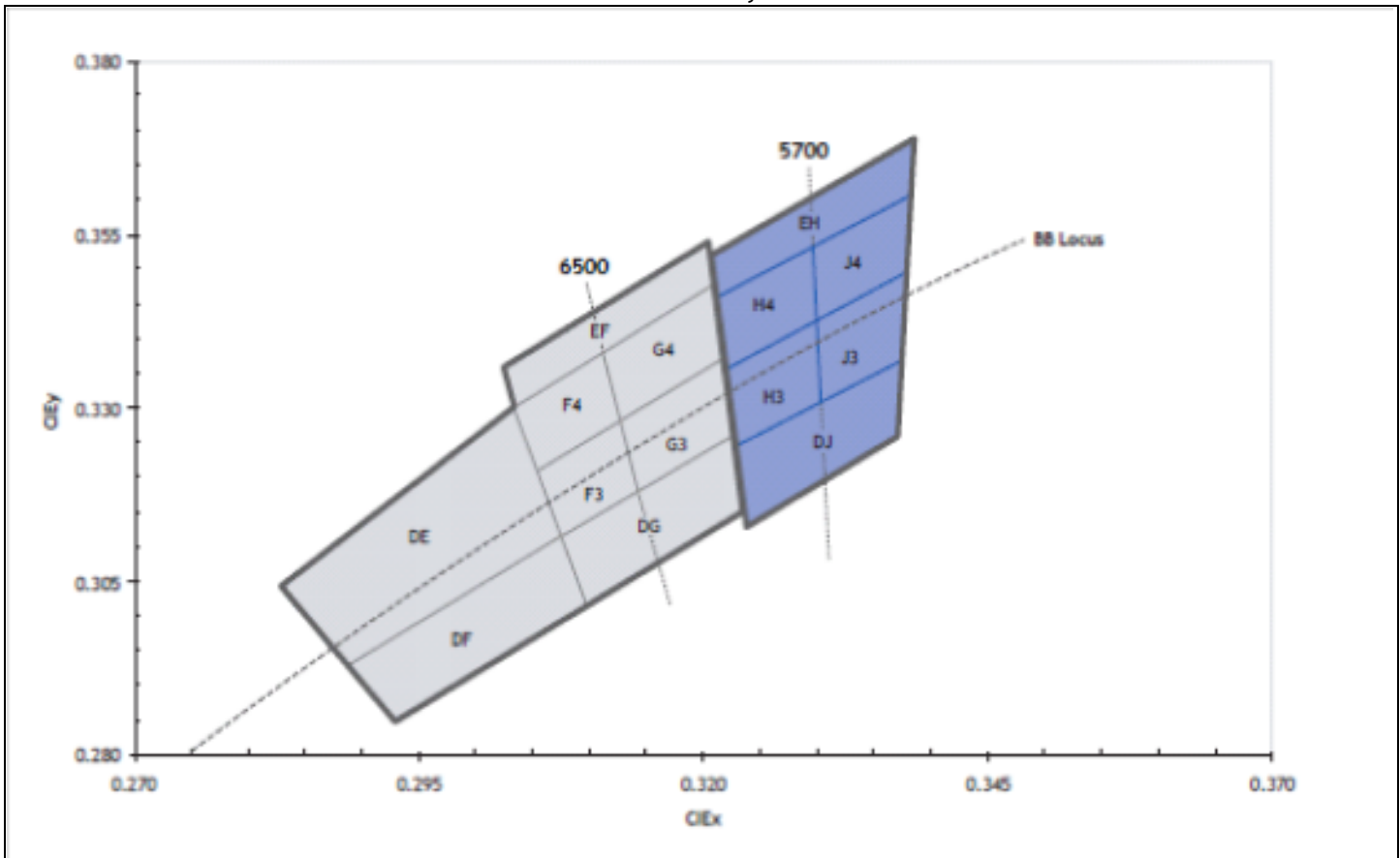
•Note: Luminus maintains a tolerance of +/- 6% on all flux measurements.

6500K Chromaticity Bins		
Bin Code (WW)	CIEx	CIEy
DG	0.307	0.311
	0.322	0.326
	0.323	0.316
	0.309	0.302
F3*	0.305	0.321
	0.313	0.329
	0.315	0.319
	0.307	0.311
F4*	0.303	0.330
	0.312	0.339
	0.313	0.329
	0.305	0.321
G3*	0.313	0.329
	0.321	0.337
	0.322	0.326
	0.315	0.319
G4*	0.312	0.339
	0.321	0.348
	0.321	0.337
	0.313	0.329
EF	0.302	0.335
	0.320	0.354
	0.321	0.348
	0.303	0.330
DE	0.283	0.304
	0.303	0.330
	0.307	0.311
	0.289	0.293
DF	0.289	0.293
	0.307	0.311
	0.309	0.302
	0.293	0.285

5700K Chromaticity Bins		
Bin Code (WW)	CIEx	CIEy
DJ	0.322	0.324
	0.337	0.337
	0.336	0.326
	0.323	0.314
H3*	0.321	0.335
	0.329	0.342
	0.329	0.331
	0.322	0.324
H4*	0.321	0.346
	0.329	0.354
	0.329	0.342
	0.321	0.335
J3*	0.329	0.342
	0.337	0.349
	0.337	0.337
	0.330	0.331
J4*	0.329	0.354
	0.338	0.362
	0.337	0.349
	0.329	0.342
EH	0.320	0.352
	0.338	0.368
	0.338	0.362
	0.321	0.346

SBM-160 Bin Kit Order Codes

The following tables describe the bin kit ordering codes for the SBM-160 and the flux and wavelength or chromaticity bins included in the bin kit. Each kit specifies a minimum flux and the listed wavelength or chromaticity bins. A maximum flux is not specified. Within each kit, Luminus may ship any part meeting or exceeding the minimum flux specification. Shipments will always meet the listed wavelength or chromaticity bins. For information on ordering bin kits not listed below, please contact Luminus or an official distributor.

SBM-160-RGBW-H41-XX123

Color	Luminous Flux		Chromaticity Bins	Kit Number
	Bin Kit Flux Code	Minimum Flux		
RGBW	RD	440	F4, F3, G4, G3, EF, DG, DE, DF	RD100
			F4, F3, G4, G3, EF, DG	RD101
			F4, F3, G4, G3	RD102
	RE	510	F4, F3, G4, G3, EF, DG, DE, DF	RE100
			F4, F3, G4, G3, EF, DG	RE101
			F4, F3, G4, G3	RE102

SBR-160-RGBW-R41-XX123

Color	Luminous Flux		Chromaticity Bins	Kit Number
	Bin Kit Flux Code	Minimum Flux		
RGBW	RD	440	F4, F3, G4, G3, EF, DG, DE, DF	RD100
			F4, F3, G4, G3, EF, DG	RD101
			F4, F3, G4, G3	RD102
	RE	510	F4, F3, G4, G3, EF, DG, DE, DF	RE100
			F4, F3, G4, G3, EF, DG	RE101
			F4, F3, G4, G3	RE102

The products, their specifications and other information appearing in this document are subject to change by Luminus Devices without notice. Luminus Devices assumes no liability for errors that may appear in this document, and no liability otherwise arising from the application or use of the product or information contained herein. None of the information provided herein should be considered to be a representation of the fitness or suitability of the product for any particular application or as any other form of warranty. Luminus Devices' product warranties are limited to only such warranties as accompany a purchase contract or purchase order for such products. Nothing herein is to be construed as constituting an additional warranty. No information contained in this publication may be considered as a waiver by Luminus Devices of any intellectual property rights that Luminus Devices may have in such information. PhlatLight® is a registered trademark of Luminus Devices, Inc., all rights reserved.

This product is protected by U.S. Patents 6,831,302; 7,074,631; 7,083,993; 7,084,434; 7,098,589; 7,105,861; 7,138,666; 7,166,870; 7,166,871; 7,170,100; 7,196,354; 7,211,831; 7,262,550; 7,274,043; 7,301,271; 7,341,880; 7,344,903; 7,345,416; 7,348,603; 7,388,233; 7,391,059; Patents Pending in the U.S. and other countries.

www.luminus.com