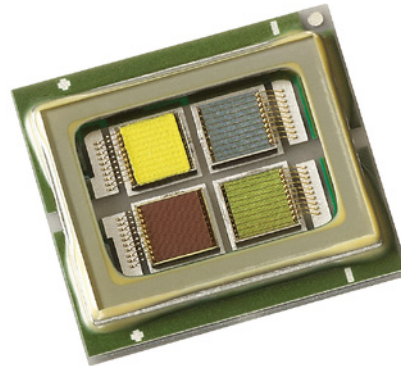


## SBM-160 LEDs



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### Introduction:

This document describes the binning and labeling nomenclature for SBM-160 RGBW Big Chip LED™ product 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 wave length or chromaticity. In order to guarantee 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 Products

Products	Ordering Part Number	Description
SBM-160-RGBW	SBM-160-RGBW-H 41-XX123	SBM-160 RGBW Big Chip LED™ surface mount LED consisting of a red 4 mm <sup>2</sup> LED, a green 4 mm <sup>2</sup> LED, a blue 4 mm <sup>2</sup> LED, a white 4 mm <sup>2</sup> LED , tray pack
SBR-160-RGBW	SBR-160-RGBW-R 41-XX123	SBR-160 evaluation module consisting of a SBM-160 RGBW surface mount LED mounted on an aluminum star-board

### SBM-160 Shipping and Labeling Nomenclature

All SBM-160 RGBW 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 6**

Product Family	Chip Area	Color	Package Configuration	Flux Bin	Chromaticity Bin/ Wavelength
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<b>Product Family</b>	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 prototyping board				
<b>Chip Area</b>	1 2 3 - Total LED chip area (mm <sup>2</sup> ) x 10: "160" denotes 16 mm <sup>2</sup>				
<b>Color</b>	D E F G- Color: "RGBW" denotes Red Green Blue White				
<b>Package Config.</b>	H 4 5 - Package configuration (for internal use)				
<b>Flux Bin</b>	I J - Flux bin				
<b>Chromaticity Bin/ Wavelength</b>	K 6 - Wavelength / Chromaticity bin				

**Example:**

The part number SBM-160-RGBW-H41-EA-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).

**SBM-160 Bin Kit Ordering Nomenclature**

All SBM-160 RGBW 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
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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 prototyping board			
Chip Area	1 2 3 - Total LED chip area (mm <sup>2</sup> ) x 10: "160" denotes 16 mm <sup>2</sup>			
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-RE102 refers to a bin kit containing a minimum flux value of 510 lumens and falling in the F4, F3, G4, and G3 chromaticity bins.

### SBM-160 White Binning Structure

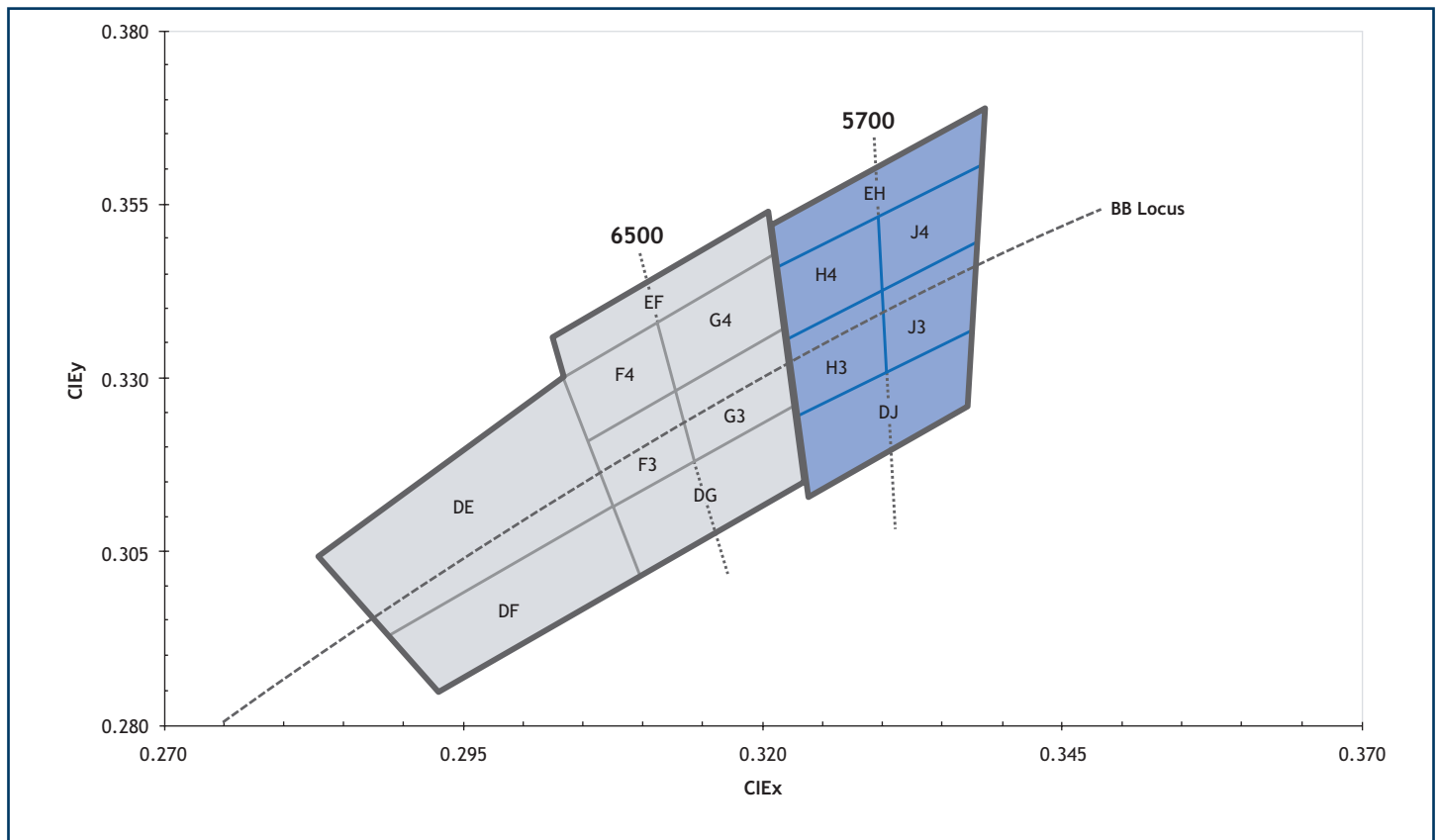
SBM-160 RGBW LEDs are tested for luminous flux and chromaticity at a drive current of 4.0 A (1.0 A/mm<sup>2</sup>) and placed into one of the following luminous flux (FF) and chromaticity (WW) bins:

Flux Bin Code (FF)	Composite Bin Code	Minumum Flux (lm) @ 4.0 A	Maximum Flux (lm) @ 4.0 A
D	DA, DB	440	510
E	EA, EB	510	590

\*Note: Luminus maintains a +/- 6% tolerance on flux measurements.

### Chromaticity Bins

Luminus' Standard Chromaticity Bins: 1931 CIE Curve



The following tables describe the four chromaticity points that bound each chromaticity bin. Chromaticity bins are grouped together based on the color temperature.

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

\*Sub-bins within ANSI defined quadrangles per ANSI C78.377-2008

### SBM-160 and SBR-160 Bin Kit Order Codes

The following tables describe the bin kit ordering codes for SBM-160 and SBR-160. Flux and chromaticity bins are also included in the bin kit. Each kit specifies a minimum flux and the listed 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 chromaticity bins. For information on ordering bin kits not listed below, please contact Luminus or an official distributor.

#### SBM-160 and SBR-160 Bin Kit Order Codes

Color	Luminous Flux		Chromaticity Bins	Kit Number
	Bin Kit Flux Code	Min. Flux		
RGBW	RD	440	F4, F3, G4, G3, EF, DG, DE, DF	RD100
	RE	510	F4, F3, G4, G3	RE102

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