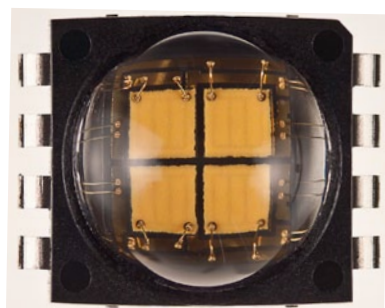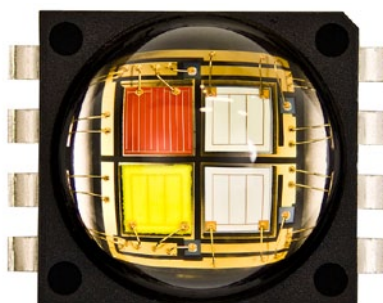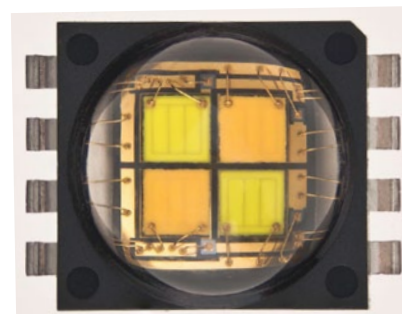# Cree® XLamp® MC-E LED

MC-E White

MC-E Color

MC-E Dynamic White

INTRODUCTION

This document describes the product nomenclature required to select and order Cree XLamp MC-E LEDs. XLamp MC-E LEDs are tested and sorted into bins which are then combined into orderable kits identified by an order code.

All XLamp LEDs are tested and sorted by color and brightness into a unique bin. Each bin contains LEDs from only one color and brightness group and is uniquely identified by a bin code. White XLamp LEDs are sorted by chromaticity (color) and luminous flux (brightness). Color XLamp LEDs are sorted by dominant wavelength (color) and luminous flux (brightness). LEDs are shipped on reels containing LEDs from one bin and are always labeled with the appropriate bin code.

Kits contain LEDs from a number of similar bins and are fully defined by their order codes. A full explanation of the order codes for XLamp MC-E, as well as a list of standard order codes, is provided in this document.

TABLE OF CONTENTS

BIN AND ORDER-CODE FORMAT (WHITE)

Bin codes and order codes are configured in the following manner:

Order Code

SSSGCC-BD-HHHH-NNNNNN

- Series
  MCE = MC-E
- Color
  WT = White
- Optical characteristic
  2 = Lambertian
- Kit number
- Internal code
- CRI
  A = Standard CRI
- Number of chips
  4 = 4 chips

Bin Code

SSSGCC-BD-WWW-FF-G-AAAAA

- Series
  MCE = MC-E
- Color
  WT = White
- CRI
  A = Standard CRI
- Chromaticity group
- Luminous flux group
- Internal code
- Optical characteristic
- Number of chips
  4 = 4 chips
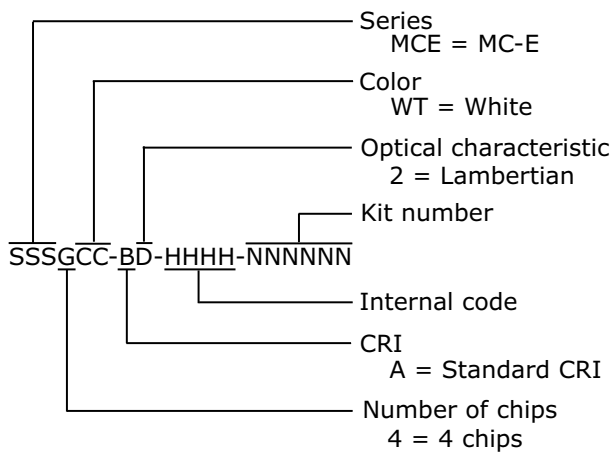
BIN AND ORDER-CODE FORMAT (EASYWHITE™)

Bin codes and order codes are configured in the following manner:

Order Code

SSSCCC-BD-HHHH-NNNNNNNNN

- Series
  - MCE = MC-E
- CRI
  - A = Standard CRI
  - H = 80 CRI
  - P = 85 CRI
- Internal code
- Kit number
- Optical characteristic
- Color
  - EZW = EasyWhite

Bin Code

SSSCCC-BD-WWW-FF-GG-AAAA

- Series
  - MCE = MC-E
- CRI
  - A = Standard CRI
  - H = 80 CRI
  - P = 85 CRI
- Chromaticity group
- Internal code
- Flux group
- Optical characteristic
- Color
  - EZW = EasyWhite
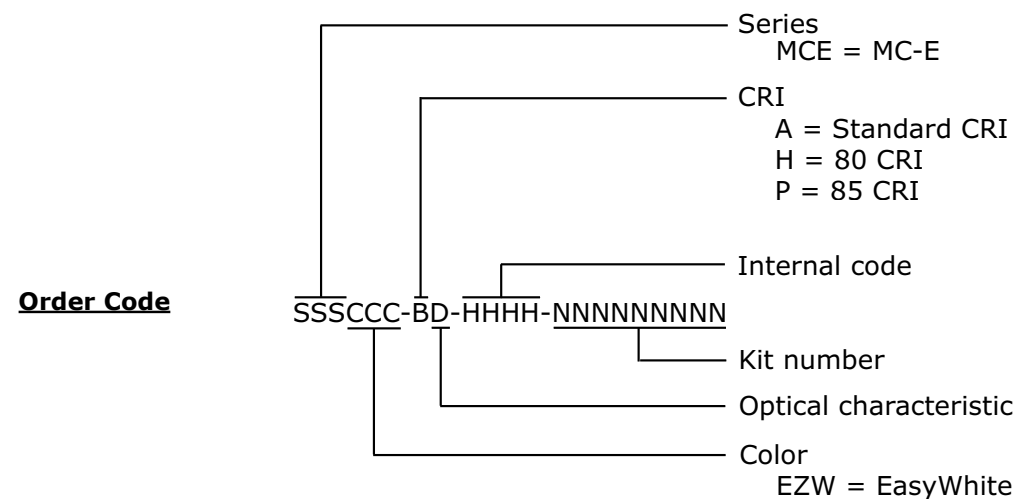
BIN AND ORDER-CODE FORMAT (DYNAMIC WHITE)

Bin codes and order codes are configured in the following manner:

Order Code

SSSCCC-BD-HHHH-NNNNNNNNN

- Series
  MCE = MC-E
- CRI
  A = Standard CRI
- Internal code
- Kit number
- Optical characteristic
- Color
  DWT = Dynamic White

Bin Code

SSSCCC-BD-FFFF-WWWW00000

- Series
  MCE = MC-E
- CRI
  A = Standard CRI
- Flux group
- Internal code
- Chromaticity group
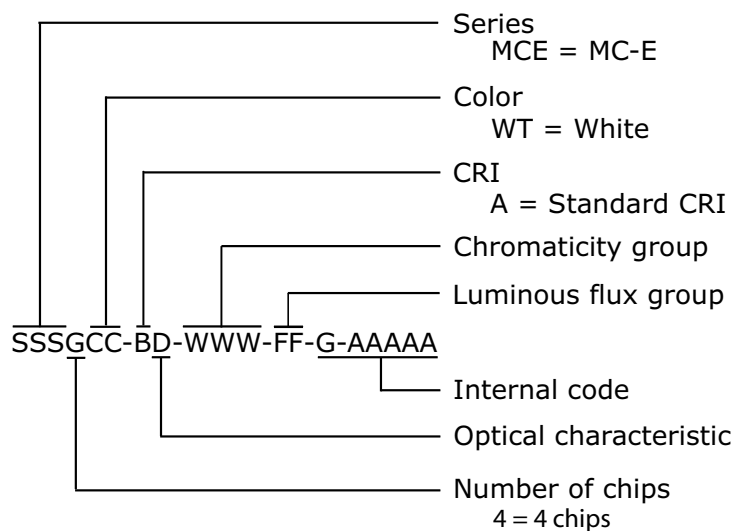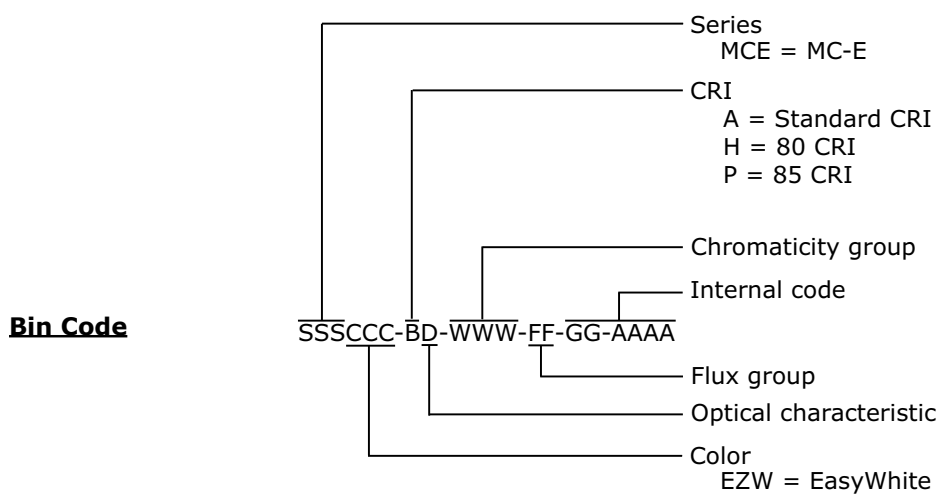- Optical characteristic
- Color
  DWT = Dynamic White
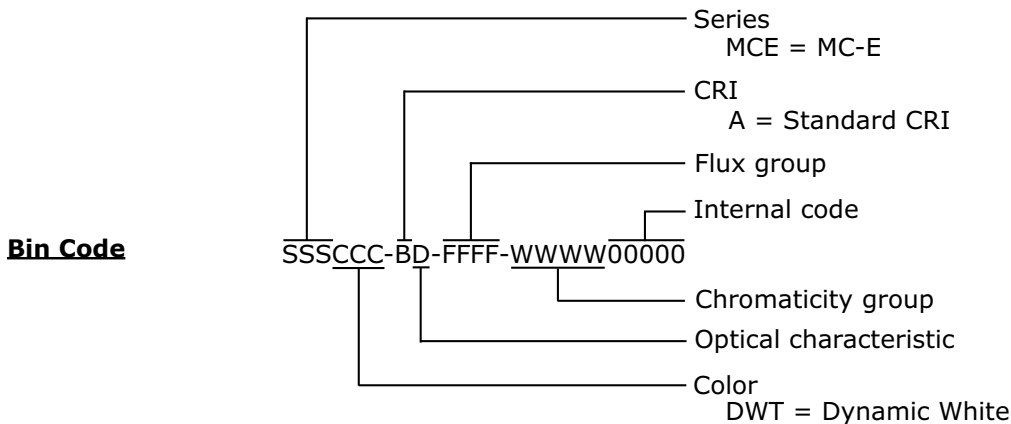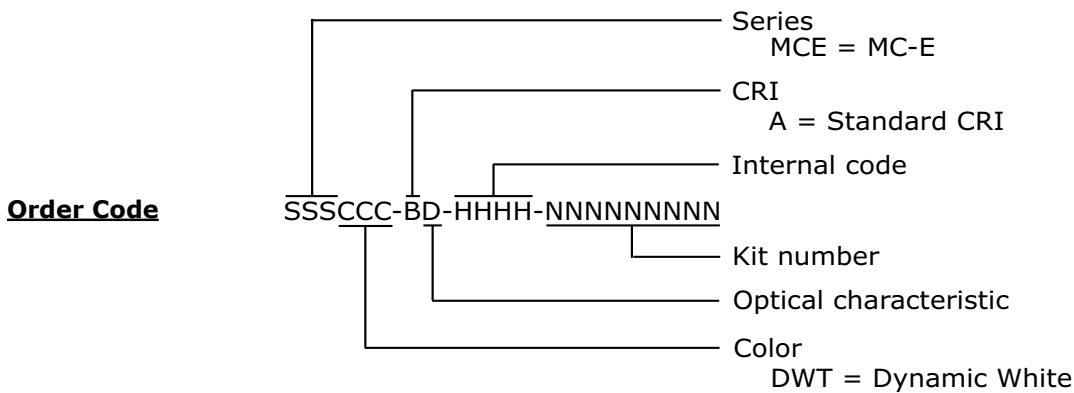
BIN AND ORDER-CODE FORMAT (COLOR)

Bin codes and order codes are configured in the following manner:

Order Code

SSSGCC-BD-HHHH-NNNNNNNNN

- Series
  MCE = MC-E
- Color
  CT = Red, Green, Blue, White
- Optical characteristics
  2 = Lambertian
- Internal code
- Dominant wavelength kit (RGB)
- Chromaticity kit for white
- Flux kit
- Internal code
- Package configuration
  A: Individually addressable (all anodes on same side)
- Number of chips
  4 = 4 chips

Bin Code

SSSGCC-BD-HHHH-NNNMMMKKK

- Series
  MCE = MC-E
- Color
  CT = Red, Green, Blue, White
- Optical characteristics
  2 = Lambertian
- Dominant wavelength bin for each die (RGB)
- Internal code
- Chromaticity bin for white die
- Flux bin for each die (RGBW)
- Package configuration
  A: Individually addressable (all anodes on same side)
- Number of chips
  4 = 4 chips

PERFORMANCE GROUPS – BRIGHTNESS

XLamp MC-E White and EasyWhite LEDs are tested for luminous flux and placed into one of the following luminous-flux groups:

Group Code	Min. Luminous Flux @ 350 mA (lm)	Max. Luminous Flux @ 350 mA (lm)
F	210	240
G	240	280
H	280	320
J	320	370
K	370	430
M	430	490

- Flux and chromaticity are measured with each LED die connected to independent drive circuits at 350 mA.
- The flux and chromaticity are measured with all LEDs lit simultaneously.

Each die in the XLamp MC-E Dynamic White LED is tested individually for luminous flux and placed into one of the following luminous flux groups. For the XLamp MC-E Dynamic White LED the flux groups specify only a minimum per-die flux and do not specify a maximum.

Color	Group Code	Min. Luminous Flux @ 350 mA
White	G	70
	H	80
	J	90
	K	100

Each LED die in the XLamp MC-E Color LED is tested individually for luminous flux and placed into one of the following luminous-flux groups. The luminous-flux groups for the XLamp MC-E Color LED specify only minimum flux and do not have a maximum.

Color	Group Code	Min. Luminous Flux @ 350 mA
Red	K	30.6
Green	P	67.2
Blue	E	8.2
White	J	80
	K	100

PERFORMANCE GROUPS – CHROMATICITY (I$_F$=350 MA PER EMITTER)

XLamp MC-E White LEDs and the white LED in the XLamp MC-E Color LED are tested for chromaticity and placed into one of the regions defined by the bounding coordinates on the following pages. The XLamp MC-E White and EasyWhite LEDs are tested with each LED die connected to independent drive circuits at 350 mA and all LED die lit simultaneously. The white LED in the XLamp MC-E Color LED is tested individually.

Region	x	y	Region	x	y
WK	.283	.284	WF	.314	.355
	.295	.297		.316	.332
	.298	.288		.306	.322
	.287	.276		.301	.342
WA	.292	.306	WP	.317	.319
	.295	.297		.329	.330
	.283	.284		.329	.318
	.279	.291		.318	.308
WM	.295	.297	WD	.329	.345
	.308	.311		.329	.330
	.310	.300		.317	.319
	.298	.288		.316	.332
WB	.306	.322	WG	.329	.369
	.308	.311		.329	.345
	.295	.297		.316	.332
	.292	.306		.314	.355
WE	.301	.342	WJ	.329	.330
	.306	.322		.329	.345
	.292	.306		.346	.359
	.287	.321		.344	.342
WN	.308	.311	WH	.348	.384
	.317	.319		.346	.359
	.318	.308		.329	.345
	.310	.300		.329	.369
WC	.316	.332			
	.317	.319			
	.308	.311			
	.306	.322			

Region	x	y	Region	x	y	Region	x	y	Region	x	y
3A	.3371	.3490	3B	.3376	.3616	3C	.3463	.3687	3D	.3451	.3554
	.3451	.3554		.3463	.3687		.3551	.3760		.3533	.3620
	.3440	.3428		.3451	.3554		.3533	.3620		.3515	.3487
	.3366	.3369		.3371	.3490		.3451	.3554		.3440	.3428
4A	.3512	.3465	4B	.3529	.3597	4C	.3615	.3659	4D	.3590	.3521
	.3529	.3597		.3548	.3736		.3641	.3804		.3615	.3659
	.3615	.3659		.3641	.3804		.3736	.3874		.3702	.3722
	.3590	.3521		.3615	.3659		.3702	.3722		.3670	.3578

PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
5A	.3670	.3578	5B	.3702	.3722	5C	.3825	.3798	5D	.3783	.3646
	.3702	.3722		.3736	.3874		.3869	.3958		.3825	.3798
	.3825	.3798		.3869	.3958		.4006	.4044		.3950	.3875
	.3783	.3646		.3825	.3798		.3950	.3875		.3898	.3716
6A	.3889	.3690	6B	.3941	.3848	6C	.4080	.3916	6D	.4017	.3751
	.3941	.3848		.3996	.4015		.4146	.4089		.4080	.3916
	.4080	.3916		.4146	.4089		.4299	.4165		.4221	.3984
	.4017	.3751		.4080	.3916		.4221	.3984		.4147	.3814
7A	.4147	.3814	7B	.4221	.3984	7C	.4342	.4028	7D	.4259	.3853
	.4221	.3984		.4299	.4165		.4430	.4212		.4342	.4028
	.4342	.4028		.4430	.4212		.4562	.4260		.4465	.4071
	.4259	.3853		.4342	.4028		.4465	.4071		.4373	.3893
8A	.4373	.3893	8B	.4465	.4071	8C	.4582	.4099	8D	.4483	.3919
	.4465	.4071		.4562	.4260		.4687	.4289		.4582	.4099
	.4582	.4099		.4687	.4289		.4813	.4319		.4700	.4126
	.4483	.3919		.4582	.4099		.4700	.4126		.4593	.3944
40F	.3744	.3685	35F	.3981	.3800	30F	.4242	.3919	27F	.4475	.3994
	.3782	.3837		.4040	.3966		.4322	.4096		.4573	.4178
	.3912	.3917		.4186	.4037		.4449	.4141		.4695	.4207
	.3863	.3758		.4116	.3865		.4359	.3960		.4589	.4021
40H	.3784	.3741	35H	.4030	.3857	30H	.4291	.3973	27H	.4528	.4046
	.3804	.3818		.4061	.3941		.4333	.4062		.4578	.4138
	.3867	.3857		.4132	.3976		.4395	.4084		.4638	.4152
	.3844	.3778		.4099	.3890		.4351	.3994		.4586	.4060

XLamp MC-E DynamicWhite LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

| Color	Color Code	CCx	CCy
Cool White	A	0.3140	0.3550
		0.2937	0.3312
		0.3009	0.3042
		0.3170	0.3190
	B	0.329	0.369
		0.329	0.33
		0.3144	0.3166
		0.3099	0.3509
Warm White	H	0.4562	0.4260
		0.4813	0.4319
		0.4646	0.4034
		0.4418	0.3981

PERFORMANCE GROUPS – DOMINANT WAVELENGTH

The red, green and blue LEDs in the XLamp MC-E Color LED are tested individually for dominant wavelength (DWL) and sorted into one of the DWL bins defined below.
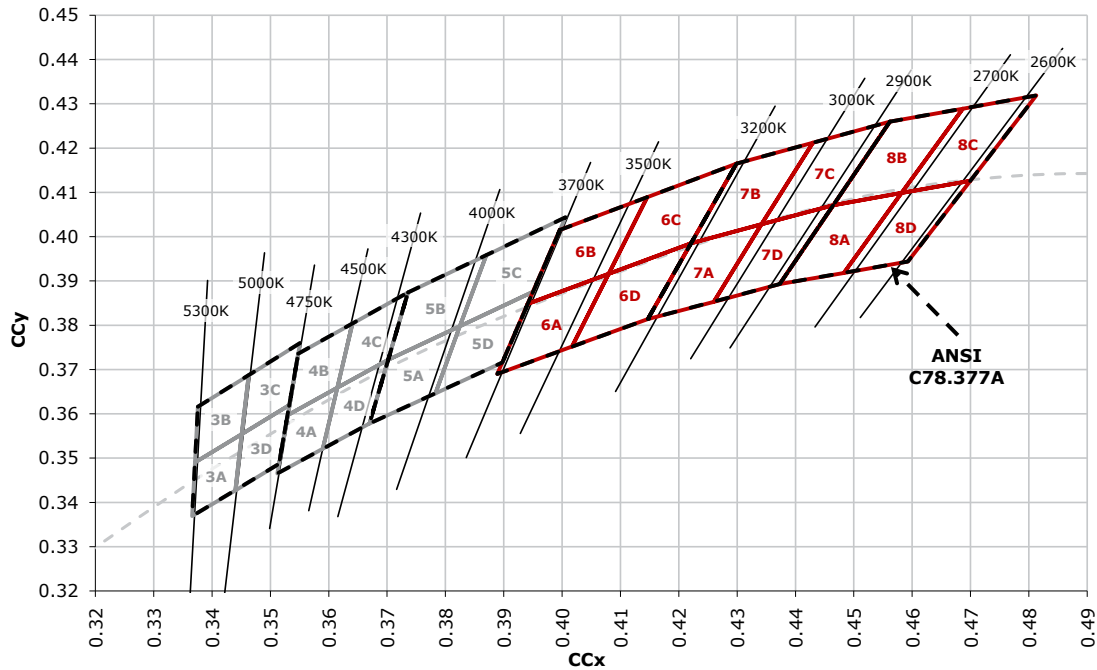
Color	DWL Group	Min. DWL @ 350 mA	Max. DWL @ 350 mA
Blue	K	450	455
	L	455	460
	M	460	465
Green	2	520	525
	3	525	530
	4	530	535
Red	A	620	630

CREE'S STANDARD CHROMATICITY REGIONS PLOTTED ON THE 1931 CIE CURVE
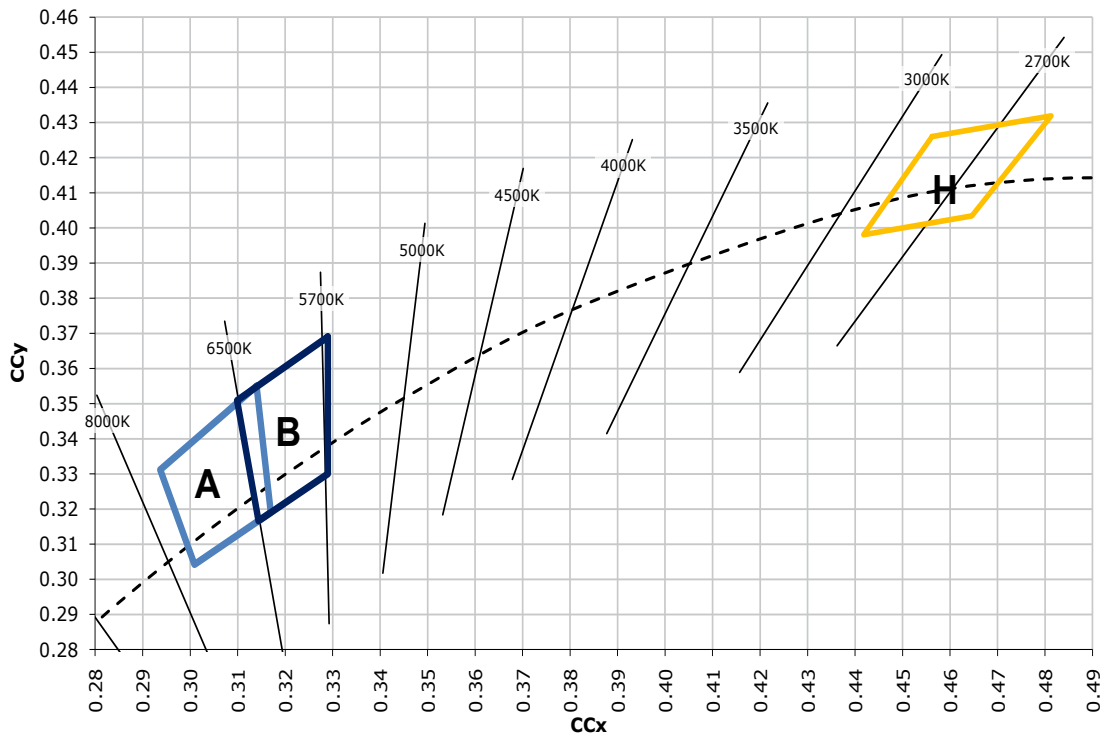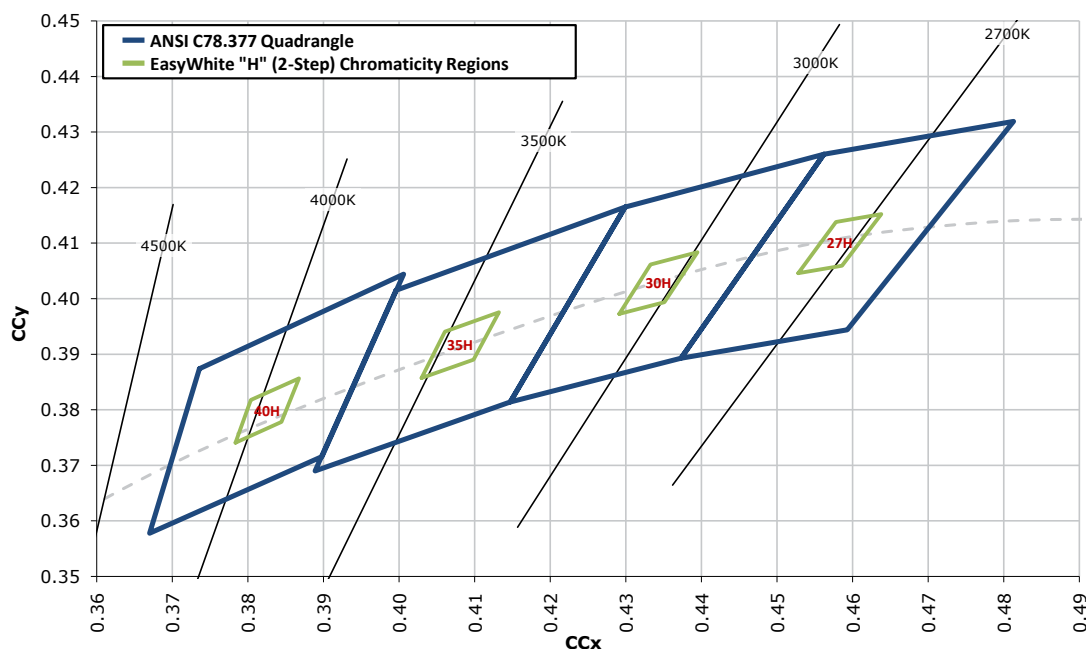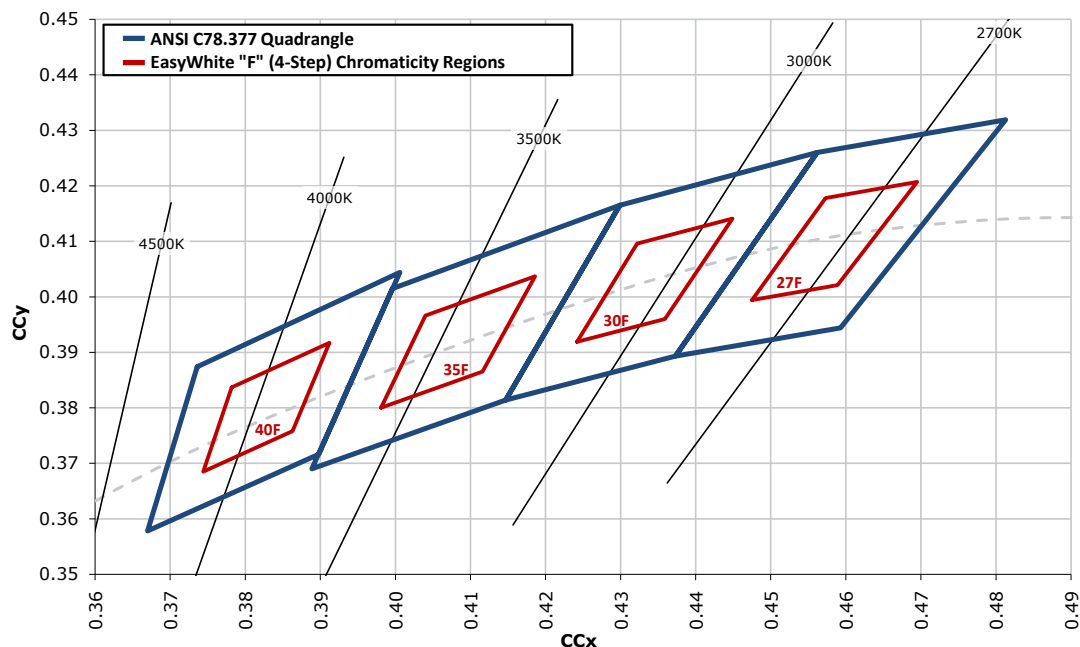
Cool White
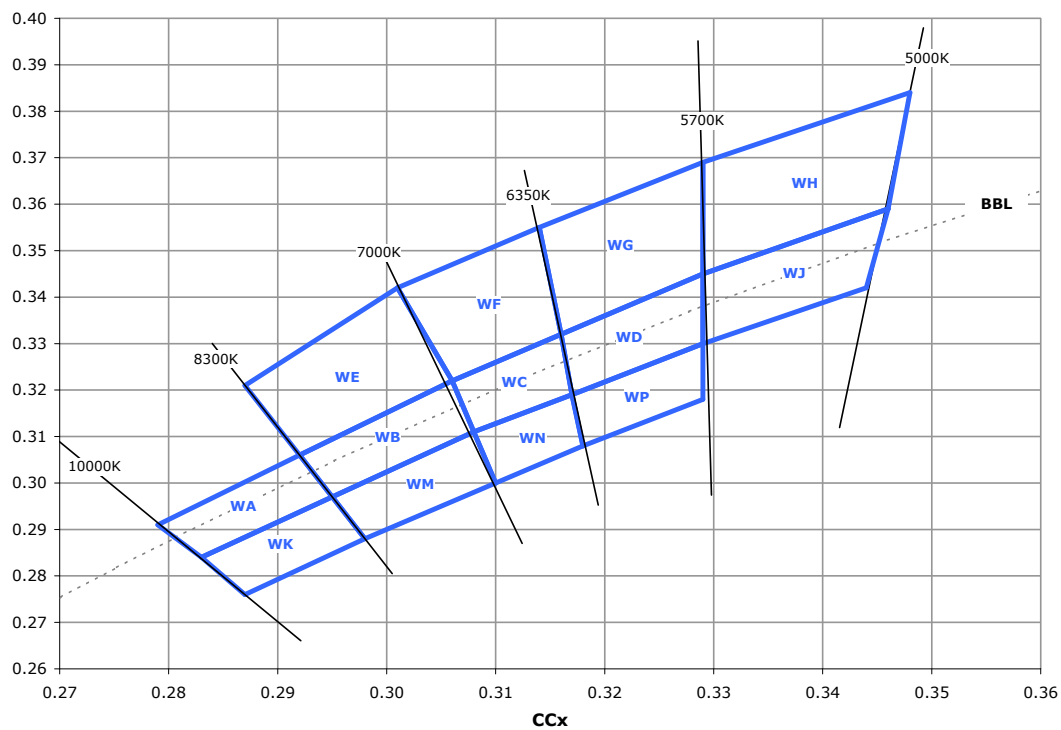
Neutral and Warm White

Dynamic White

CREE'S STANDARD CHROMATICITY REGIONS PLOTTED ON THE 1931 CIE CURVE (CONTINUED)

EasyWhite

STANDARD ORDER CODES AND BINS (MC-E COOL WHITE)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp MC-E LED Standard Order Codes - White			
Min. Luminous Flux (lm) @ 350 mA*		**Chromaticity Regions**	**Kit Number**
Group	**Flux (lm)**		
Cool White (5000 K – 10,000 K)			
K	370	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	000K01
		WC, WD, WF, WG	000K02
		WC, WD, WF, WG, WH, WJ, WN, WP	000K03
M	430	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	000M01
		WC, WD, WF, WG	000M02
		WC, WD, WF, WG, WH, WJ, WN, WP	000M03

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp MC-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.

STANDARD ORDER CODES AND BINS (MC-E NEUTRAL WHITE)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp MC-E LED Standard Order Codes - White				
Minimum Luminous Flux (lm) @ 350 mA*		**Chromaticity Regions**	**Kit Number**	**CCT**
Group	**Flux (lm)**			
Neutral White (3700 K - 5000 K)				
H	280	5C, 5D, 6A, 6B	000HF6	3700 K
J	320	3A, 3B, 3C, 3D	000JE3	5000 K
		3C, 3D, 4A, 4B	000JF4	4750 K
		4A, 4B, 4C, 4D	000JE4	4500 K
		4C, 4D, 5A, 5B	000JF5	4300 K
		5A, 5B, 5C, 5D	000JE5	4000 K
		5C, 5D, 6A, 6B	000JF6	3700 K
K	370	3A, 3B, 3C, 3D	000KE3	5000 K
		3C, 3D, 4A, 4B	000KF4	4750 K
		4A, 4B, 4C, 4D	000KE4	4500 K
		4C, 4D, 5A, 5B	000KF5	4300 K
		5A, 5B, 5C, 5D	000KE5	4000 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp MC-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order codewithout advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.

STANDARD ORDER CODES AND BINS (MC-E WARM WHITE)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp MC-E LED Standard Order Codes - White				
Minimum Luminous Flux (lm) @ 350 mA*		**Chromaticity Regions**	**Kit Number**	**CCT**
Group	**Flux (lm)**			
Warm White (2600 K - 3700 K)				
G	240	6C, 6D, 7A, 7B	000GF7	3200 K
		7A, 7B, 7C, 7D	000GE7	3000 K
		7C, 7D, 8A, 8B	000GF8	2900 K
		8A, 8B, 8C, 8D	000GE8	2700 K
H	280	6A, 6B, 6C, 6D	000HE6	3500 K
		6C, 6D, 7A, 7B	000HF7	3200 K
		7A, 7B, 7C, 7D	000HE7	3000 K
		7C, 7D, 8A, 8B	000HF8	2900 K
		8A, 8B, 8C, 8D	000HE8	2700 K
J	320	6A, 6B, 6C, 6D	000JE6	3500 K
		6C, 6D, 7A, 7B	000JF7	3200 K
		7A, 7B, 7C, 7D	000JE7	3000 K
		7C, 7D, 8A, 8B	000JF8	2900 K
		8A, 8B, 8C, 8D	000JE8	2700 K
K	370	6A, 6B, 6C, 6D	000KE6	3500 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp MC-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.

STANDARD ORDER CODES AND BINS (MC-E DYNAMIC WHITE)

The following table provides the two order codes for XLamp MC-E Dynamic White LEDs.

Part	**Color**	**CCT / Dominant Wavelength Range**	**Base order codes Min Luminous Flux (lm) @ 350 mA**		**Order Code**
			Group	**Flux (lm)**	
Dynamic White	2 cool-white die	6,500 K	K	100	MCEDWT-A1-0000-0000A1001
	2 warm-white die	2,700 K	G	70	
	2 cool-white die	6,000 K	K	100	MCEDWT-A1-0000-0000A1002
	2 warm-white die	2,700 K	G	70	

STANDARD ORDER CODES AND BINS (MC-E EASYWHITE)

The following table provides order codes for XLamp MC-E EasyWhite LEDs.

Color	CCT Range	Base Order Codes Min Luminous Flux @ 350 mA, 25° C		2-Step Order Code		4-Step Order Code	
		Group	Flux (lm)	Chromaticity Region		Chromaticity Region	
Standard CRI EasyWhite	4000 K	K	370	40H	MCEEZW-A1-0000-0000K040H	40F	MCEEZW-A1-0000-0000K040F
		J	320		MCEEZW-A1-0000-0000J040H		MCEEZW-A1-0000-0000J040F
	3500 K	J	320	35H	MCEEZW-A1-0000-0000J035H	35F	MCEEZW-A1-0000-0000J035F
		H	280		MCEEZW-A1-0000-0000H035H		MCEEZW-A1-0000-0000H035F
	3000 K	J	320	30H	MCEEZW-A1-0000-0000J030H	30F	MCEEZW-A1-0000-0000J030F
		H	280		MCEEZW-A1-0000-0000H030H		MCEEZW-A1-0000-0000H030F
	2700 K	J	320	27H	MCEEZW-A1-0000-0000J027H	27F	MCEEZW-A1-0000-0000J027F
		H	280		MCEEZW-A1-0000-0000H027H		MCEEZW-A1-0000-0000H027F
80-CRI Minimum EasyWhite	4000 K	K	370	40H	MCEEZW-H1-0000-0000K040H	40F	MCEEZW-H1-0000-0000K040F
		J	320		MCEEZW-H1-0000-0000J040H		MCEEZW-H1-0000-0000J040F
	3500 K	J	320	35H	MCEEZW-H1-0000-0000J035H	35F	MCEEZW-H1-0000-0000J035F
		H	280		MCEEZW-H1-0000-0000H035H		MCEEZW-H1-0000-0000H035F
	3000 K	J	320	30H	MCEEZW-H1-0000-0000J030H	30F	MCEEZW-H1-0000-0000J030F
		H	280		MCEEZW-H1-0000-0000H030H		MCEEZW-H1-0000-0000H030F
	2700 K	J	320	27H	MCEEZW-H1-0000-0000J027H	27F	MCEEZW-H1-0000-0000J027F
		H	280		MCEEZW-H1-0000-0000H027H		MCEEZW-H1-0000-0000H027F
85-CRI Minimum EasyWhite	3000 K	H	280	30H	MCEEZW-P1-0000-0000H030H	30F	MCEEZW-P1-0000-0000H030F
		G	240		MCEEZW-P1-0000-0000G030H		MCEEZW-P1-0000-0000G030F
	2700 K	H	280	27H	MCEEZW-P1-0000-0000H027H	27F	MCEEZW-P1-0000-0000H027F
		G	240		MCEEZW-P1-0000-0000G027H		MCEEZW-P1-0000-0000G027F

STANDARD ORDER CODES AND BINS (MC-E COLOR)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's color or chromaticity bins and luminous flux range.

XLamp MC-E LED Standard Order Codes - Color				
Color	Minimum Luminous Flux (lm) @ 350 mA*		DWL / Chromaticity Bins	Kit Number
	Group	Flux (lm)		
Red	K	30.6	A	00A5AAAA1
Green	P	67.2	2, 3, 4	
Blue	E	8.2	K, L, M	
White	K	100	WC, WD, WF, WG	
Red	K	30.6	A	00A4AAAB1
Green	P	67.2	2, 3, 4	
Blue	E	8.2	K, L, M	
White	J	80	5A, 5B, 5C, 5D	

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp MC-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.