



impression X4 atom RGBW Photometric Report

GLP German Light Products GmbH
Optical Laboratory

Catalog Number	7671
Maximum Output	316.400 lm
Maximum Intensity	49630.000 cd
Energy Efficiency Class	C
Energy Efficiency Index	1.12
Power Consumption	20.8 $\frac{\text{kWh}}{1000\text{h}}$



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1 Description

The GLP X4 atom has been designed from the ground up to be as versatile a light as possible in a number of different ways.

With its small body, designed to fit subtly into the tightest spaces yet give big coverage, the X4 atom is a new everyday fixture for static sources. From television and film, to corporate events, set lighting and special events. From concert touring stages and truss systems to architectural elements, the X4 atom has a use everywhere.

The X4 atom is fitted with the same high output quad color LED source that we use across the X4 range, giving it a bright, full spectrum output from its compact size. But the X4 atoms small size houses a lot more, starting with a 9 to 1 zoom ratio that goes from a wide 34° wash down to a tight 3.5° beam for pinpoint accuracy and great mid-air effects. Something which no other fixture offers and all the while maintaining a clean output and even distribution of color and intensity.

But it doesn't stop there. As versatility is the key, we made the housing IP 65 rated allowing it to be used on events and shows all year round, indoors or out. And for times when one X4 atom just isn't enough, we've created a clever and fast interlock system that allows fixtures to easily be coupled together.

The standard hanging yoke is easily removed and you can quickly assemble pairs, quads, lines and grids of fixtures in any configuration that you need ? and still keep individual control of each atom head creating stunning displays.

The X4 atom runs from an external power supply that feeds each fixture via an industry standard 4 pin XLR color changer cable, tapping into existing infrastructure and not trying to reinvent things again and reducing the overall environmental impact of the atom.

2 Light Distribution

Table 1: Summary of beam opening angles for different fixture configurations.

Beam	Beam Angle (50 %)		Field Angle (10 %)		Cutoff Angle (3 %)	
	C0	C90	C0	C90	C0	C90
Narrow, Red	4	4	5	5	5	5
Narrow, Green	4	4	5	5	6	6
Narrow, Blue	4	4	6	6	6	6
Narrow, White	4	4	5	5	6	5
Narrow, Full	4	4	5	5	6	6
Medium, Red	10	10	18	17	20	20
Medium, Green	10	10	17	17	19	19
Medium, Blue	10	10	17	17	19	19
Medium, White	11	10	18	17	20	20
Medium, Full	10	10	18	17	20	20
Wide, Red	21	21	32	32	34	35
Wide, Green	20	20	32	31	34	34
Wide, Blue	20	20	32	32	34	34
Wide, White	21	21	32	32	34	34
Wide, Full	21	21	32	32	34	34

Table 2: Summary of luminous flux and intensity for different fixture configurations.

Beam	Total Lumen Output (lm)	Peak Luminous Intensity (cd)
Narrow, Red	49	9618
Narrow, Green	93	18875
Narrow, Blue	18	3653
Narrow, White	122	24957
Narrow, Full	254	49632
Medium, Red	57	1789
Medium, Green	109	3841
Medium, Blue	22	775
Medium, White	150	4759
Medium, Full	311	9975
Wide, Red	58	509
Wide, Green	110	1041
Wide, Blue	23	208
Wide, White	152	1315
Wide, Full	316	2811

Table 3: Summary of luminous flux and intensity for different fixture configurations.

Beam	Parameter	Factor	Projection Distance [m]								
			5	7.5	10	12.5	15	17.5	20	22.5	25
Narrow, Red	Diameter [m]	0.09	0.46	0.68	0.91	1.1	1.4	1.6	1.8	2.1	2.3
	Illuminance [lx]	9620	380.0	170.0	96.0	62.0	43.0	31.0	24.0	19.0	15.0
Narrow, Green	Diameter [m]	0.10	0.50	0.75	1.0	1.3	1.5	1.8	2.0	2.3	2.5
	Illuminance [lx]	18900	750.0	340.0	190.0	120.0	84.0	62.0	47.0	37.0	30.0
Narrow, Blue	Diameter [m]	0.11	0.53	0.80	1.1	1.3	1.6	1.9	2.1	2.4	2.7
	Illuminance [lx]	3650	150.0	65.0	37.0	23.0	16.0	12.0	9.1	7.2	5.8
Narrow, White	Diameter [m]	0.10	0.49	0.73	0.98	1.2	1.5	1.7	2.0	2.2	2.4
	Illuminance [lx]	25000	1000.0	440.0	250.0	160.0	110.0	81.0	62.0	49.0	40.0
Narrow, Full	Diameter [m]	0.10	0.50	0.75	1.0	1.3	1.5	1.8	2.0	2.3	2.5
	Illuminance [lx]	49600	2000.0	880.0	500.0	320.0	220.0	160.0	120.0	98.0	79.0
Medium, Red	Diameter [m]	0.35	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7
	Illuminance [lx]	1790	72.0	32.0	18.0	11.0	8.0	5.8	4.5	3.5	2.9
Medium, Green	Diameter [m]	0.34	1.7	2.5	3.4	4.2	5.1	5.9	6.7	7.6	8.4
	Illuminance [lx]	3840	150.0	68.0	38.0	25.0	17.0	13.0	9.6	7.6	6.1
Medium, Blue	Diameter [m]	0.33	1.7	2.5	3.3	4.2	5.0	5.8	6.7	7.5	8.3
	Illuminance [lx]	775	31.0	14.0	7.8	5.0	3.4	2.5	1.9	1.5	1.2
Medium, White	Diameter [m]	0.35	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7
	Illuminance [lx]	4760	190.0	85.0	48.0	30.0	21.0	16.0	12.0	9.4	7.6
Medium, Full	Diameter [m]	0.35	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7
	Illuminance [lx]	9980	400.0	180.0	100.0	64.0	44.0	33.0	25.0	20.0	16.0
Wide, Red	Diameter [m]	0.58	2.9	4.4	5.8	7.3	8.8	10.0	12.0	13.0	15.0
	Illuminance [lx]	509	20.0	9.1	5.1	3.3	2.3	1.7	1.3	1.0	0.81
Wide, Green	Diameter [m]	0.58	2.9	4.3	5.8	7.2	8.6	10.0	12.0	13.0	14.0
	Illuminance [lx]	1040	42.0	19.0	10.0	6.7	4.6	3.4	2.6	2.1	1.7
Wide, Blue	Diameter [m]	0.57	2.9	4.3	5.7	7.2	8.6	10.0	11.0	13.0	14.0
	Illuminance [lx]	208	8.3	3.7	2.1	1.3	0.93	0.68	0.52	0.41	0.33
Wide, White	Diameter [m]	0.58	2.9	4.4	5.8	7.3	8.7	10.0	12.0	13.0	15.0
	Illuminance [lx]	1310	53.0	23.0	13.0	8.4	5.8	4.3	3.3	2.6	2.1
Wide, Full	Diameter [m]	0.58	2.9	4.3	5.8	7.2	8.7	10.0	12.0	13.0	14.0
	Illuminance [lx]	2810	110.0	50.0	28.0	18.0	12.0	9.2	7.0	5.6	4.5

2.1 Narrow, Red Beam

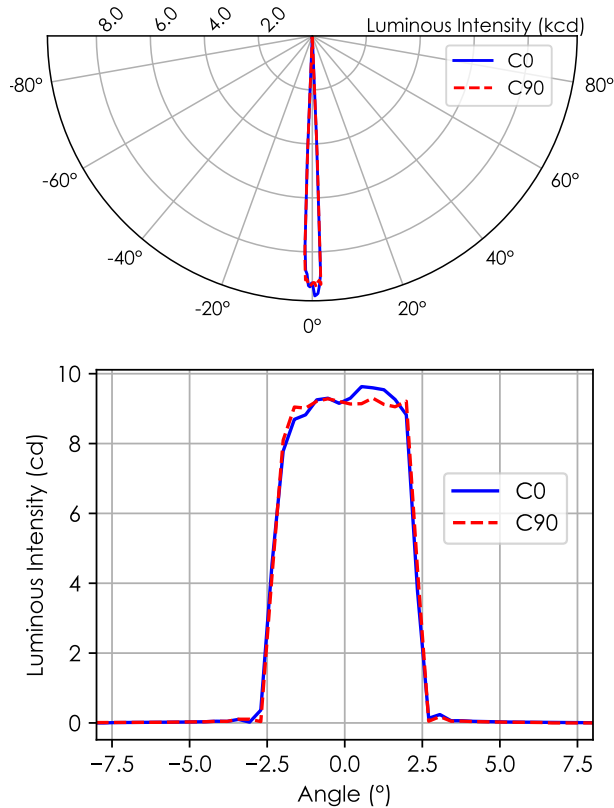


Figure 1: Polar and cartesian light intensity distributions. Narrow, Red

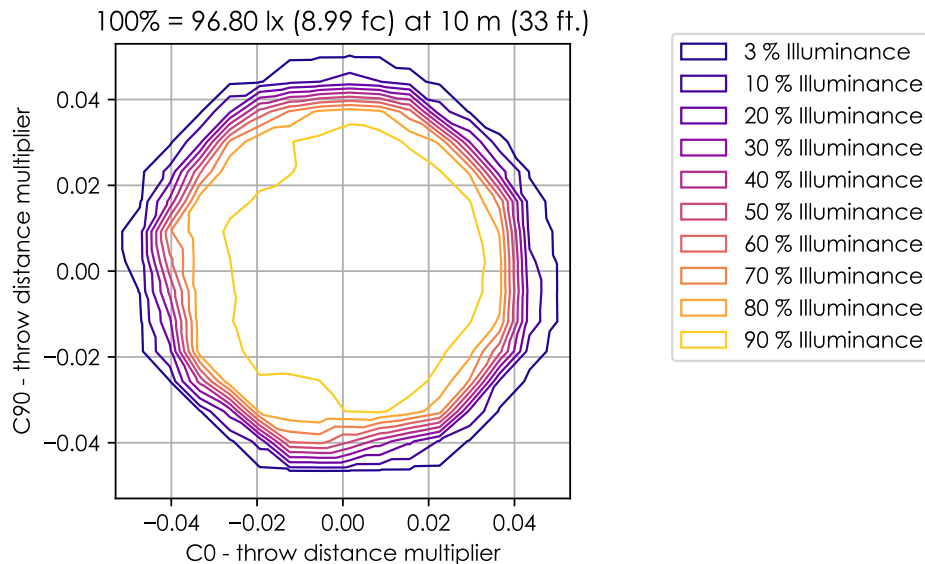


Figure 2: Iso-illuminance diagram of projected beam. Narrow, Red
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 4: DMX Settings. Narrow, Red

	DMX Slot	Value
Zoom	10	255

Table 5: Opening angles for different intensity thresholds. Narrow, Red

		C0	C90
Beam Angle	50 %	4.3°	4.3°
Field Angle	10 %	5.1°	5.1°
Cutoff Angle	3 %	5.4°	5.1°

Table 6: Luminous flux, integrated over the beam for several minimum threshold intensities. Narrow, Red

		Flux (lm)
Half-Peak Output	@50 %	45.28
Tenth-Peak Output	@10 %	48.7
Total Lumen Output	@3 %	48.7

$$\text{diameter} = 0.091 \times \text{distance}$$

$$\text{illuminance} = \frac{9620.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 7: Quick calculation diagram for illuminance and beam diameter. Narrow, Red

Parameter	Factor	Projection Distance [m]									
		5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.09	0.46	0.68	0.91	1.1	1.4	1.6	1.8	2.1	2.3	
Illuminance [lx]	9620	380.0	170.0	96.0	62.0	43.0	31.0	24.0	19.0	15.0	

2.2 Narrow, Green Beam

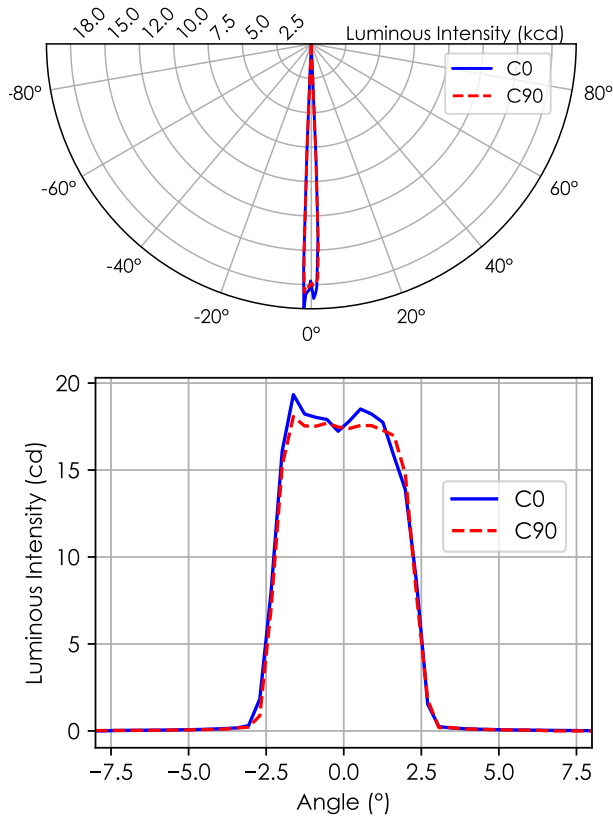


Figure 3: Polar and cartesian light intensity distributions. Narrow, Green

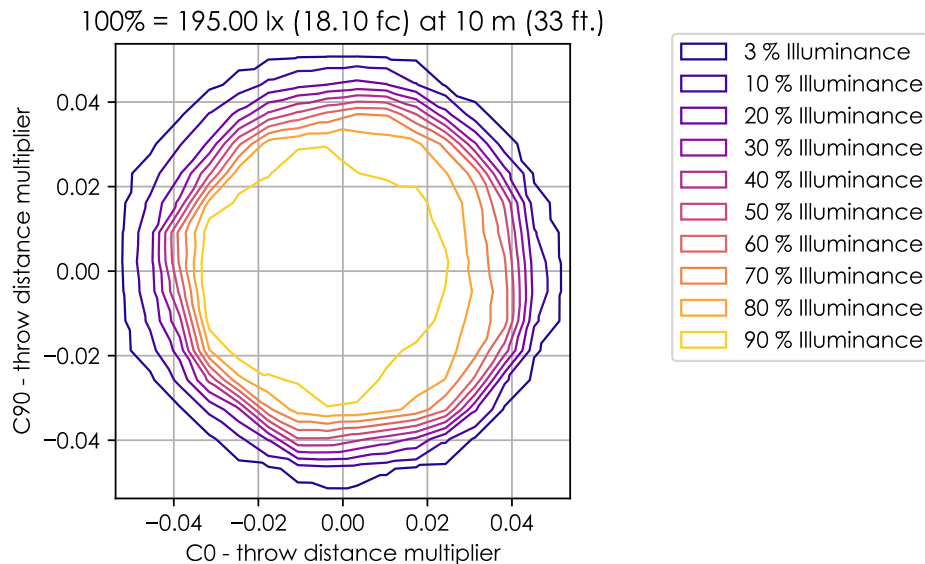


Figure 4: Iso-illuminance diagram of projected beam. Narrow, Green
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 8: DMX Settings. Narrow, Green

DMX Slot Value	
Zoom 10	255

Table 9: Opening angles for different intensity thresholds. Narrow, Green

	C0	C90
Beam Angle 50%	4.3°	4.3°
Field Angle 10%	5.1°	5.1°
Cutoff Angle 3%	5.8°	5.8°

Table 10: Luminous flux, integrated over the beam for several minimum threshold intensities. Narrow, Green

	Flux (lm)	
Half-Peak Output @50%	81.1	
Tenth-Peak Output @10%	91.4	
Total Lumen Output @3%	91.8	

$$\text{diameter} = 0.10 \times \text{distance}$$

$$\text{illuminance} = \frac{18\,900.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 11: Quick calculation diagram for illuminance and beam diameter. Narrow, Green

Parameter	Factor	Projection Distance [m]									
		5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.10	0.50	0.75	1.0	1.3	1.5	1.8	2.0	2.3	2.5	
Illuminance [lx]	18900	750.0	340.0	190.0	120.0	84.0	62.0	47.0	37.0	30.0	

2.3 Narrow, Blue Beam

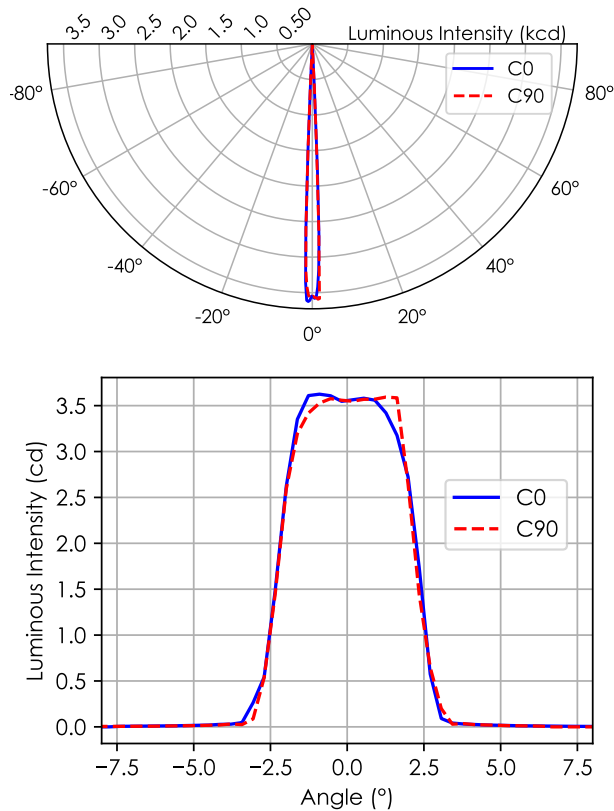


Figure 5: Polar and cartesian light intensity distributions. Narrow, Blue

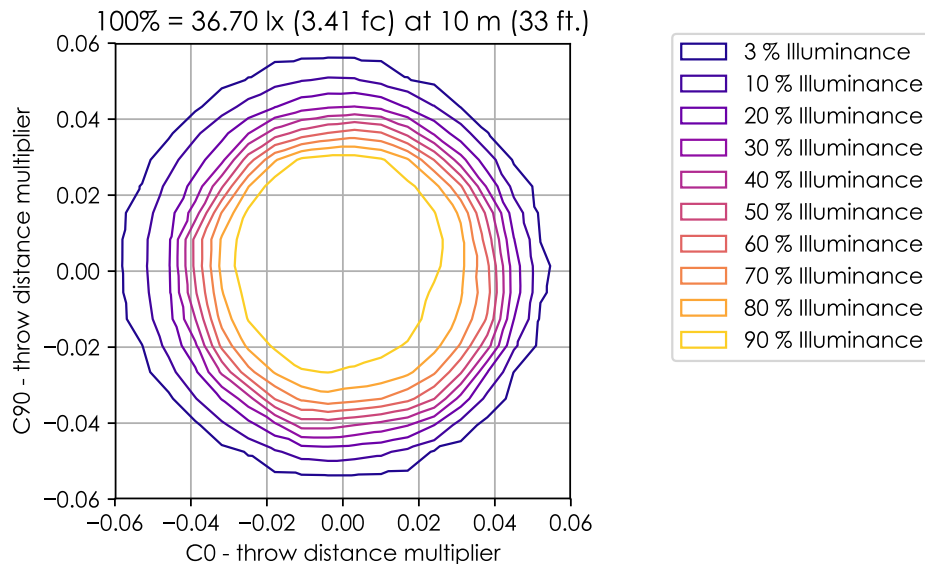


Figure 6: Iso-illuminance diagram of projected beam. Narrow, Blue
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 12: DMX Settings. Narrow, Blue

	DMX Slot	Value
Zoom	10	255

Table 13: Opening angles for different intensity thresholds. Narrow, Blue

		C0	C90
Beam Angle	50%	4.3°	4.3°
Field Angle	10%	5.8°	5.8°
Cutoff Angle	3%	6.1°	6.1°

Table 14: Luminous flux, integrated over the beam for several minimum threshold intensities. Narrow, Blue

		Flux (lm)
Half-Peak Output	@50%	15.67
Tenth-Peak Output	@10%	18.33
Total Lumen Output	@3%	18.53

$$\text{diameter} = 0.11 \times \text{distance}$$

$$\text{illuminance} = \frac{3650.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 15: Quick calculation diagram for illuminance and beam diameter. Narrow, Blue

Parameter	Factor	Projection Distance [m]									
		5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.11	0.53	0.80	1.1	1.3	1.6	1.9	2.1	2.4	2.7	
Illuminance [lx]	3650	150.0	65.0	37.0	23.0	16.0	12.0	9.1	7.2	5.8	

2.4 Narrow, White Beam

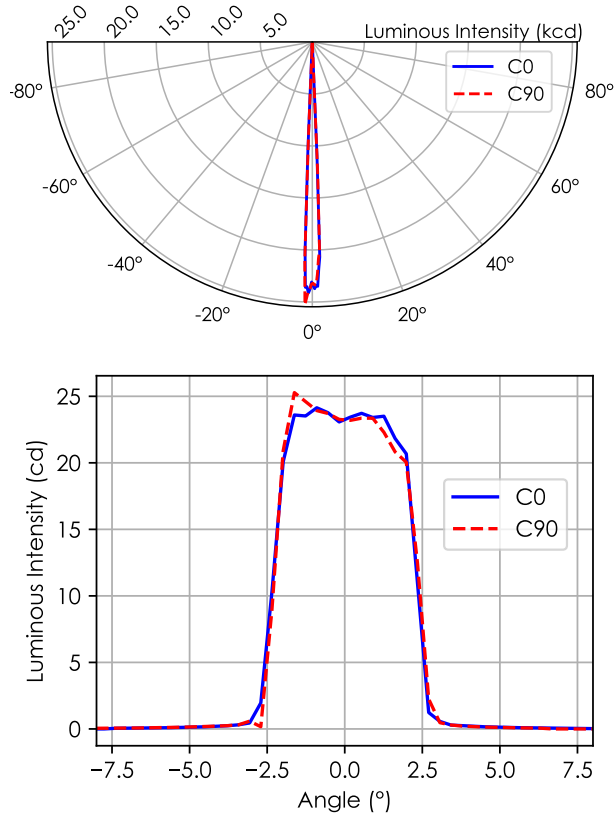


Figure 7: Polar and cartesian light intensity distributions. Narrow, White

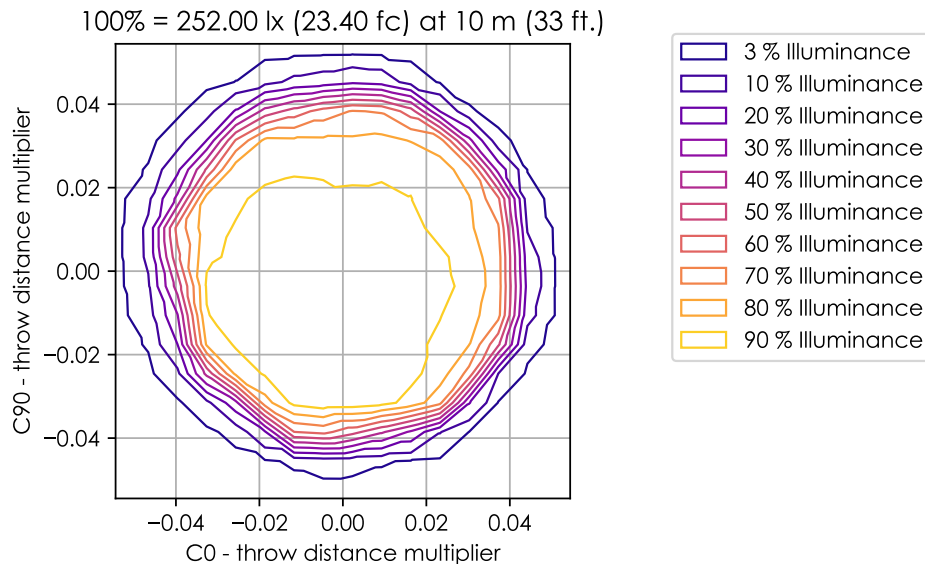


Figure 8: Iso-illuminance diagram of projected beam. Narrow, White
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 16: DMX Settings. Narrow, White

	DMX Slot	Value
Zoom	10	255

Table 17: Opening angles for different intensity thresholds. Narrow, White

	C0	C90
Beam Angle 50%	4.3°	4.3°
Field Angle 10%	5.1°	5.1°
Cutoff Angle 3%	5.8°	5.4°

Table 18: Luminous flux, integrated over the beam for several minimum threshold intensities. Narrow, White

		Flux (lm)
Half-Peak Output	@50%	112.1
Tenth-Peak Output	@10%	122.4
Total Lumen Output	@3%	123.8

$$\text{diameter} = 0.098 \times \text{distance}$$

$$\text{illuminance} = \frac{25\,000.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 19: Quick calculation diagram for illuminance and beam diameter. Narrow, White

Parameter	Factor	Projection Distance [m]									
		5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.10	0.49	0.73	0.98	1.2	1.5	1.7	2.0	2.2	2.4	
Illuminance [lx]	25000	1000.0	440.0	250.0	160.0	110.0	81.0	62.0	49.0	40.0	

2.5 Narrow, Full Beam

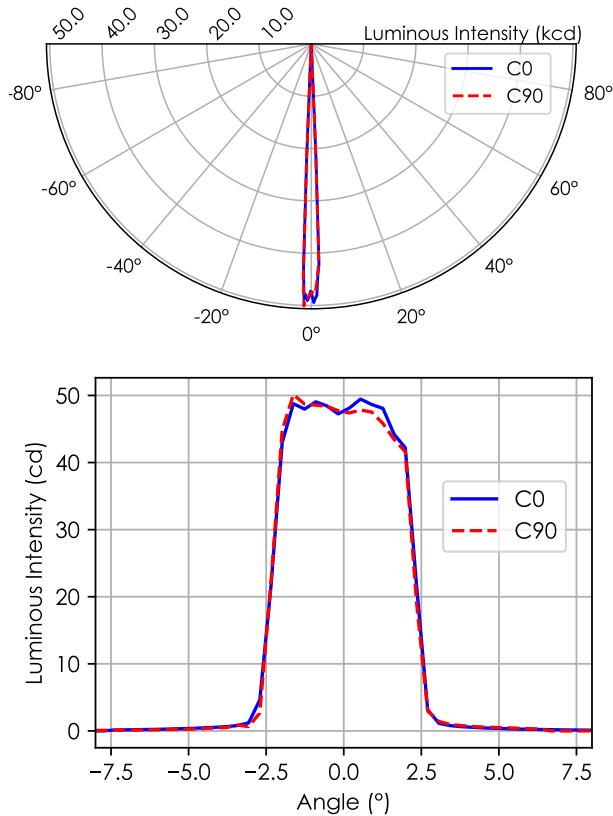


Figure 9: Polar and cartesian light intensity distributions. Narrow, Full

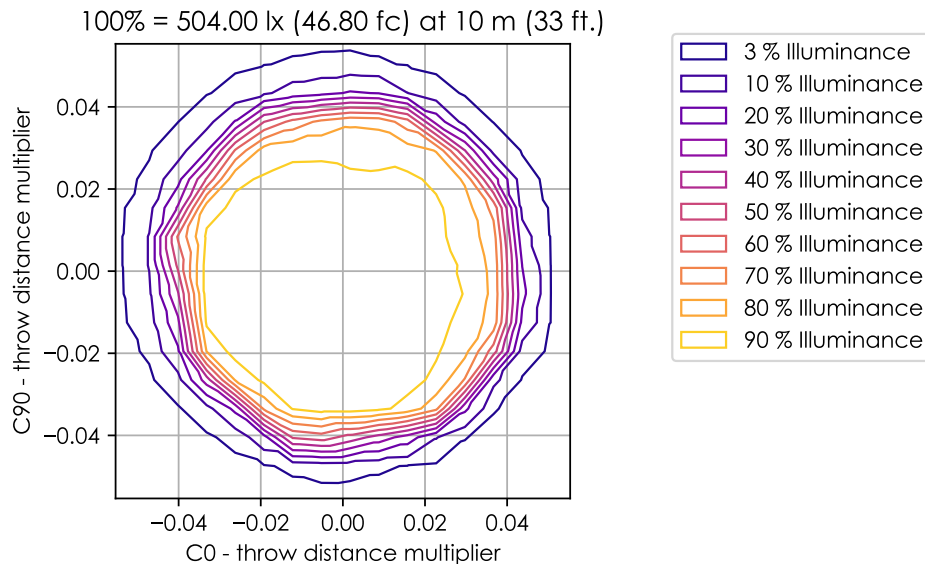


Figure 10: Iso-illuminance diagram of projected beam. Narrow, Full
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 20: DMX Settings. Narrow, Full

	DMX Slot	Value
Zoom	10	255

Table 21: Opening angles for different intensity thresholds. Narrow, Full

	C0	C90
Beam Angle 50 %	4.3°	4.3°
Field Angle 10 %	5.1°	5.1°
Cutoff Angle 3 %	5.8°	5.8°

Table 22: Luminous flux, integrated over the beam for several minimum threshold intensities. Narrow, Full

	Flux (lm)
Half-Peak Output @50 %	227.8
Tenth-Peak Output @10 %	251.0
Total Lumen Output @3 %	255.2

$$\text{diameter} = 0.10 \times \text{distance}$$

$$\text{illuminance} = \frac{49\,600.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 23: Quick calculation diagram for illuminance and beam diameter. Narrow, Full

Parameter	Factor	Projection Distance [m]								
		5	7.5	10	12.5	15	17.5	20	22.5	25
Diameter [m]	0.10	0.50	0.75	1.0	1.3	1.5	1.8	2.0	2.3	2.5
Illuminance [lx]	49600	2000.0	880.0	500.0	320.0	220.0	160.0	120.0	98.0	79.0

2.6 Medium, Red Beam

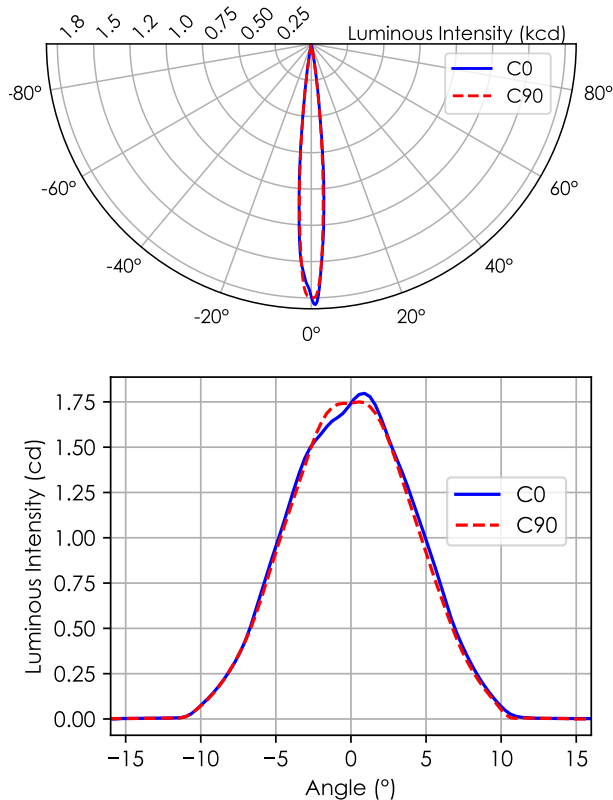


Figure 11: Polar and cartesian light intensity distributions. Medium, Red

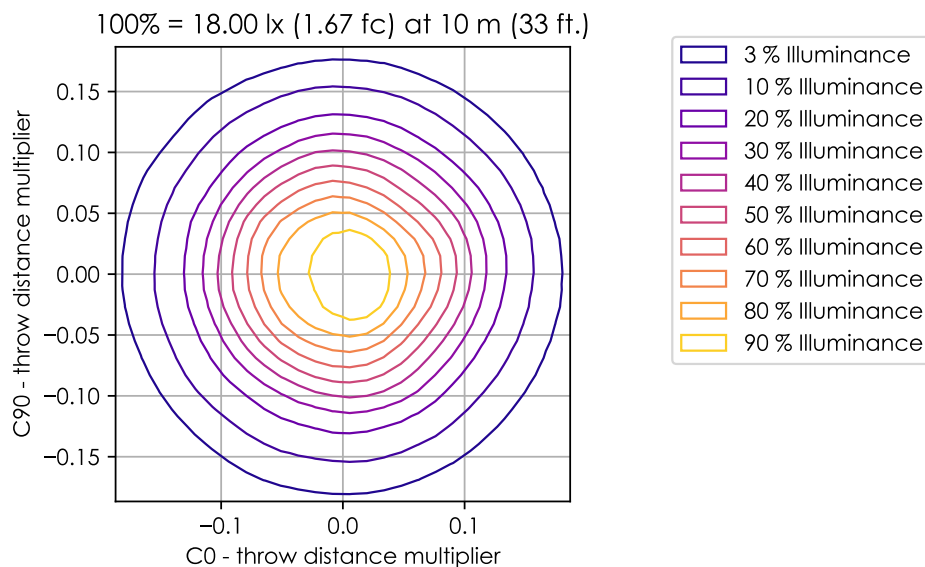


Figure 12: Iso-illuminance diagram of projected beam. Medium, Red
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 24: DMX Settings. Medium, Red

DMX Slot Value	
Zoom 10	128

Table 25: Opening angles for different intensity thresholds. Medium, Red

	C0	C90
Beam Angle 50%	10.5°	10.1°
Field Angle 10%	17.7°	17.3°
Cutoff Angle 3%	20.2°	20.2°

Table 26: Luminous flux, integrated over the beam for several minimum threshold intensities. Medium, Red

	Flux (lm)
Half-Peak Output @50%	32.60
Tenth-Peak Output @10%	53.7
Total Lumen Output @3%	56.6

$$\text{diameter} = 0.35 \times \text{distance}$$

$$\text{illuminance} = \frac{1790.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 27: Quick calculation diagram for illuminance and beam diameter. Medium, Red

Parameter	Factor	Projection Distance [m]									
		5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.35	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7	
Illuminance [lx]	1790	72.0	32.0	18.0	11.0	8.0	5.8	4.5	3.5	2.9	

2.7 Medium, Green Beam

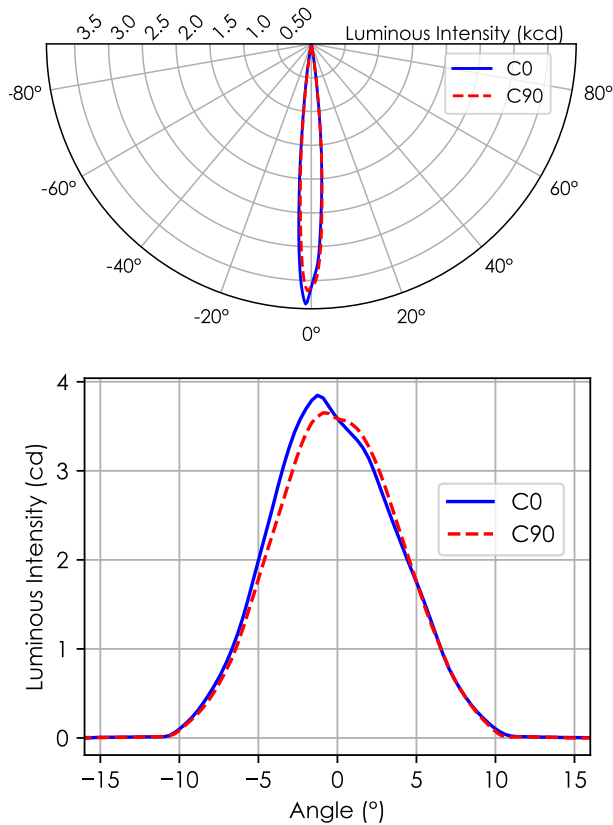


Figure 13: Polar and cartesian light intensity distributions. Medium, Green

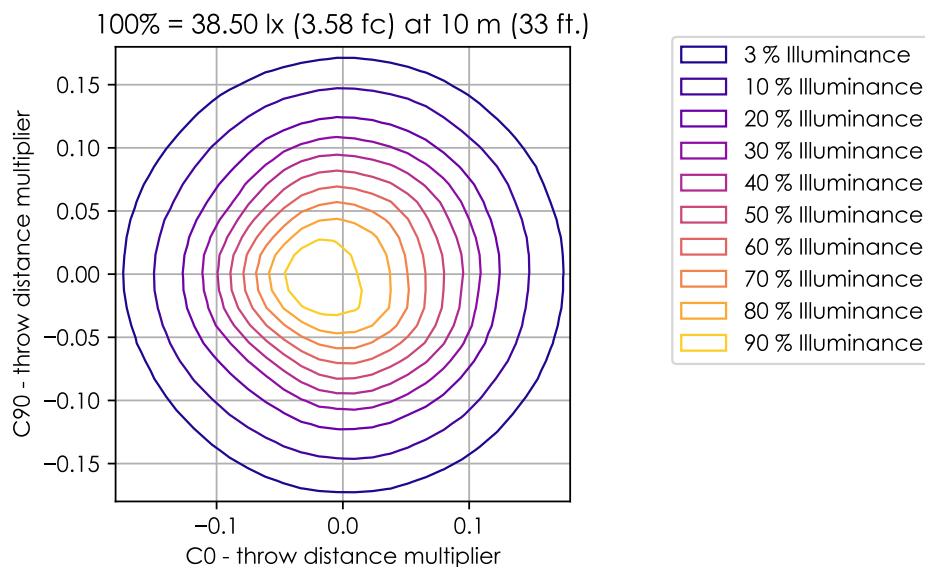


Figure 14: Iso-illuminance diagram of projected beam. Medium, Green
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 28: DMX Settings. Medium, Green

	DMX Slot	Value
Zoom	10	128

Table 29: Opening angles for different intensity thresholds. Medium, Green

		C0	C90
Beam Angle	50 %	9.7°	10.1°
Field Angle	10 %	17.0°	16.6°
Cutoff Angle	3 %	19.5°	19.5°

Table 30: Luminous flux, integrated over the beam for several minimum threshold intensities. Medium, Green

		Flux (lm)
Half-Peak Output	@50 %	58.8
Tenth-Peak Output	@10 %	103.2
Total Lumen Output	@3 %	109.5

$$\text{diameter} = 0.34 \times \text{distance}$$

$$\text{illuminance} = \frac{3840.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 31: Quick calculation diagram for illuminance and beam diameter. Medium, Green

		Projection Distance [m]									
Parameter	Factor	5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.34	1.7	2.5	3.4	4.2	5.1	5.9	6.7	7.6	8.4	
Illuminance [lx]	3840	150.0	68.0	38.0	25.0	17.0	13.0	9.6	7.6	6.1	

2.8 Medium, Blue Beam

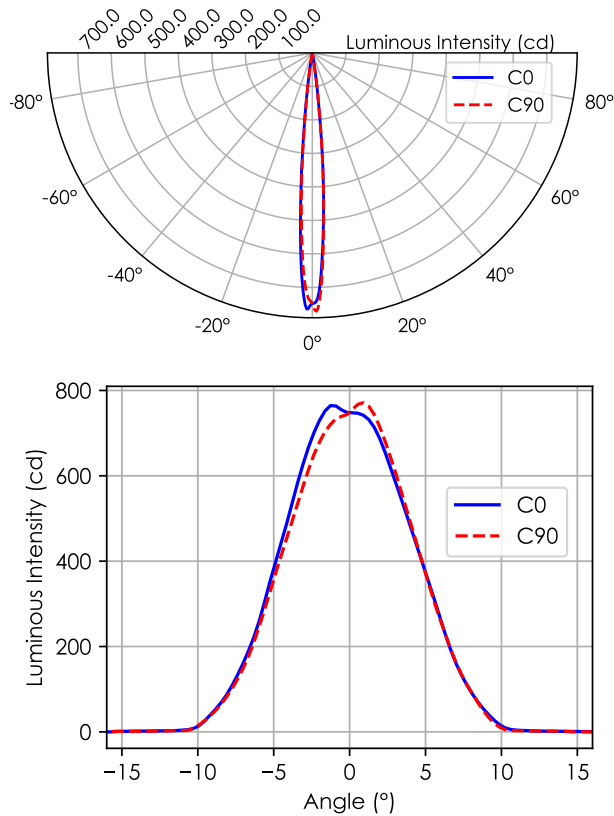


Figure 15: Polar and cartesian light intensity distributions. Medium, Blue

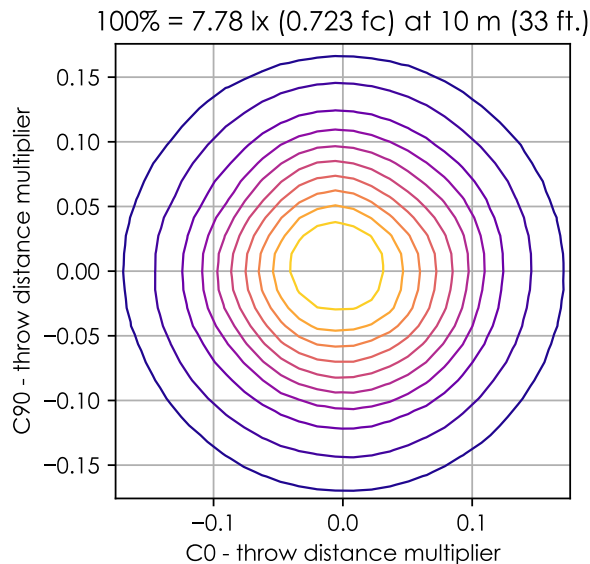


Figure 16: Iso-illuminance diagram of projected beam. Medium, Blue
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 32: DMX Settings. Medium, Blue

	DMX Slot	Value
Zoom	10	128

Table 33: Opening angles for different intensity thresholds. Medium, Blue

		C0	C90
Beam Angle	50 %	10.1°	9.7°
Field Angle	10 %	16.6°	16.6°
Cutoff Angle	3 %	19.5°	19.1°

Table 34: Luminous flux, integrated over the beam for several minimum threshold intensities. Medium, Blue

		Flux (lm)
Half-Peak Output	@50 %	12.16
Tenth-Peak Output	@10 %	20.90
Total Lumen Output	@3 %	22.01

$$\text{diameter} = 0.33 \times \text{distance}$$

$$\text{illuminance} = \frac{775.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 35: Quick calculation diagram for illuminance and beam diameter. Medium, Blue

Parameter	Factor	Projection Distance [m]									
		5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.33	1.7	2.5	3.3	4.2	5.0	5.8	6.7	7.5	8.3	
Illuminance [lx]	775	31.0	14.0	7.8	5.0	3.4	2.5	1.9	1.5	1.2	

2.9 Medium, White Beam

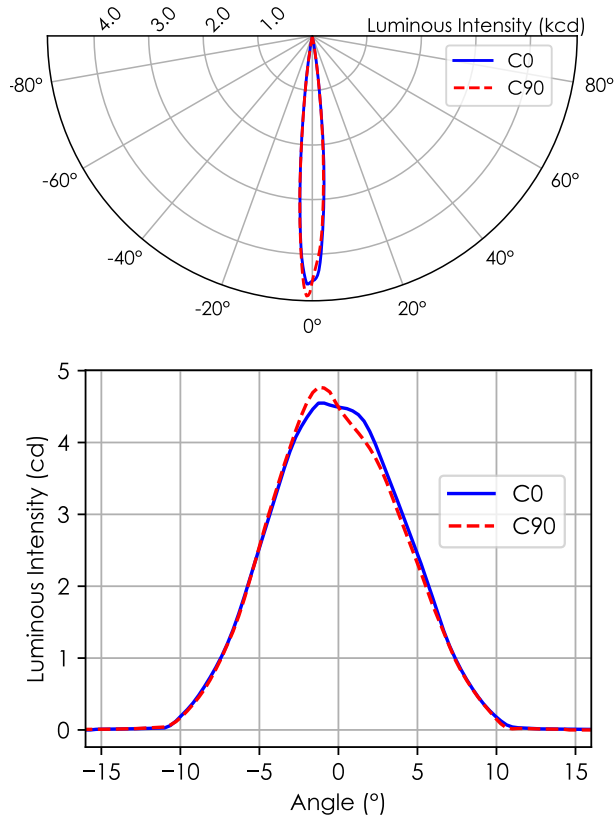


Figure 17: Polar and cartesian light intensity distributions. Medium, White

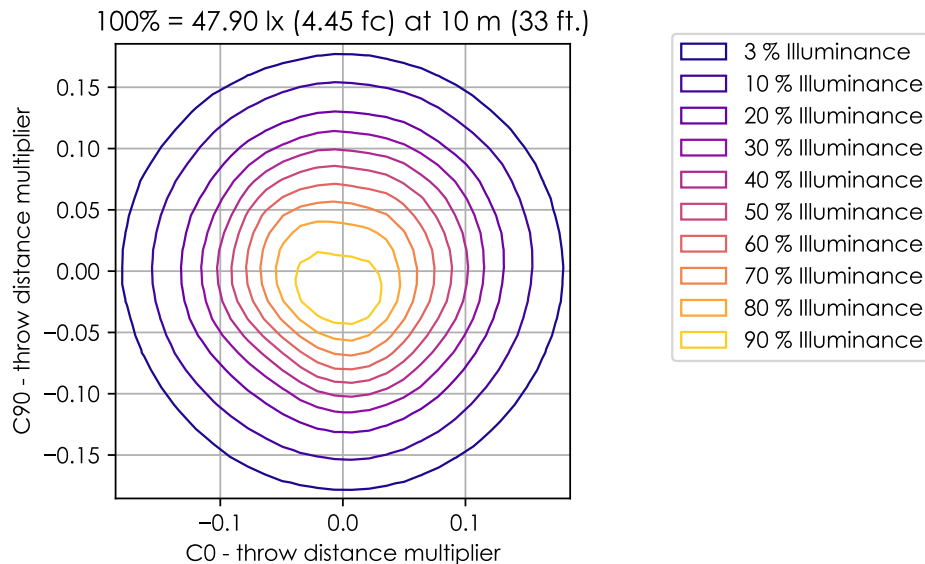


Figure 18: Iso-illuminance diagram of projected beam. Medium, White
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 36: DMX Settings. Medium, White

DMX Slot Value	
Zoom 10	128

Table 37: Opening angles for different intensity thresholds. Medium, White

	C0	C90
Beam Angle 50%	10.8°	10.1°
Field Angle 10%	18.0°	17.3°
Cutoff Angle 3%	20.2°	20.2°

Table 38: Luminous flux, integrated over the beam for several minimum threshold intensities. Medium, White

	Flux (lm)	
Half-Peak Output @50%	83.9	
Tenth-Peak Output @10%	142.4	
Total Lumen Output @3%	148.9	

$$\text{diameter} = 0.35 \times \text{distance}$$

$$\text{illuminance} = \frac{4760.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 39: Quick calculation diagram for illuminance and beam diameter. Medium, White

		Projection Distance [m]									
Parameter	Factor	5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.35	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7	
Illuminance [lx]	4760	190.0	85.0	48.0	30.0	21.0	16.0	12.0	9.4	7.6	

2.10 Medium, Full Beam

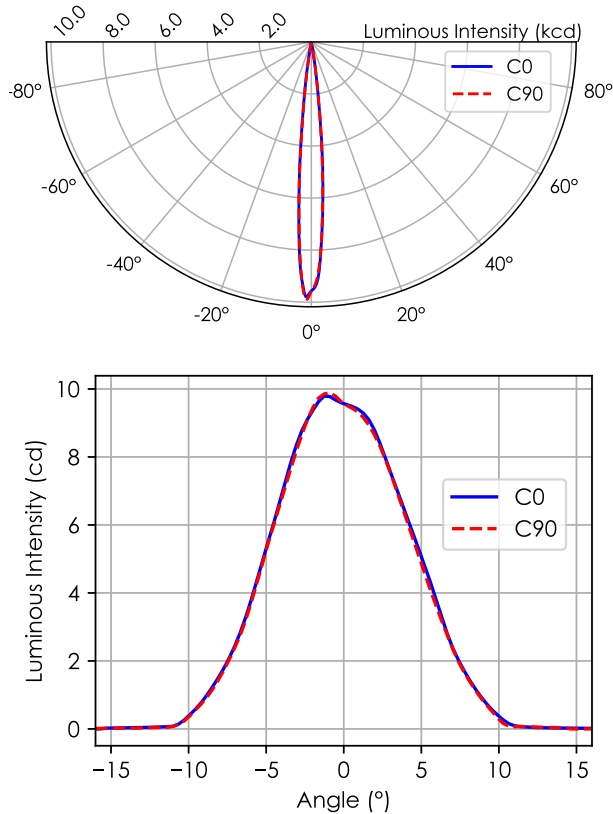


Figure 19: Polar and cartesian light intensity distributions. Medium, Full

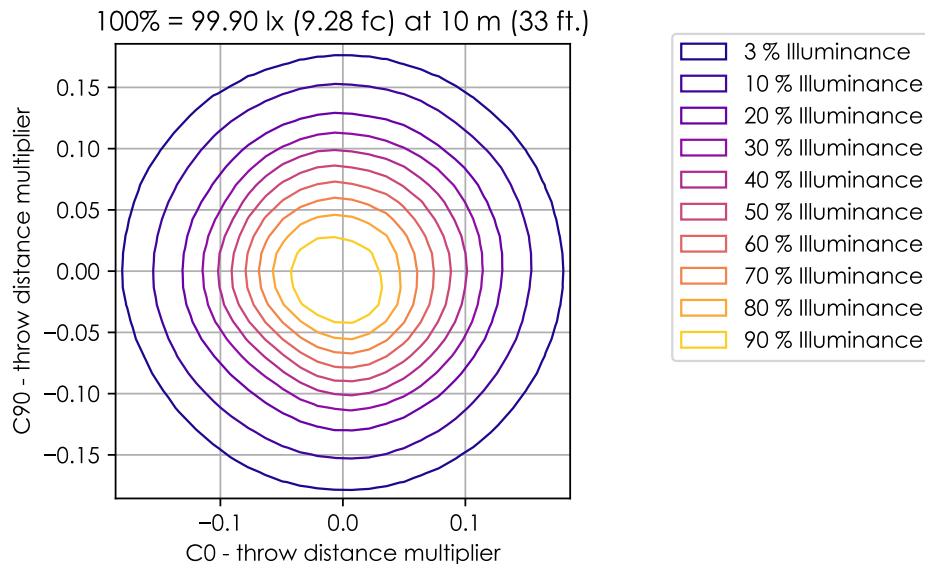


Figure 20: Iso-illuminance diagram of projected beam. Medium, Full
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 40: DMX Settings. Medium, Full

DMX Slot Value	
Zoom 10	128

Table 41: Opening angles for different intensity thresholds. Medium, Full

	C0	C90
Beam Angle 50%	10.5°	10.1°
Field Angle 10%	17.7°	17.3°
Cutoff Angle 3%	20.2°	20.2°

Table 42: Luminous flux, integrated over the beam for several minimum threshold intensities. Medium, Full

	Flux (lm)
Half-Peak Output @50%	175.5
Tenth-Peak Output @10%	295.4
Total Lumen Output @3%	313.1

$$\text{diameter} = 0.35 \times \text{distance}$$

$$\text{illuminance} = \frac{9980.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 43: Quick calculation diagram for illuminance and beam diameter. Medium, Full

Parameter	Factor	Projection Distance [m]									
		5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.35	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7	
Illuminance [lx]	9980	400.0	180.0	100.0	64.0	44.0	33.0	25.0	20.0	16.0	

2.11 Wide, Red Beam

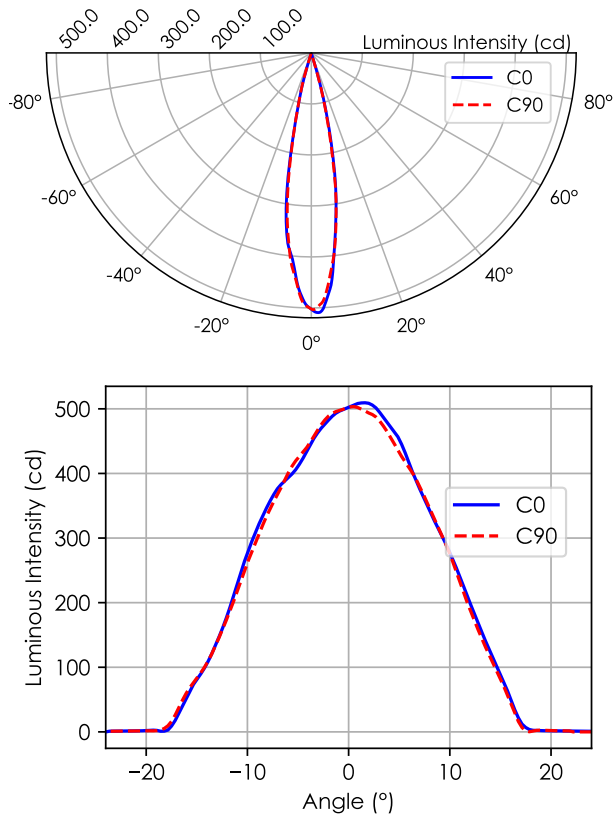


Figure 21: Polar and cartesian light intensity distributions. Wide, Red

Type Type B measurement with a total of 1681 data points.

Table 44: DMX Settings. Wide, Red

	DMX Slot	Value
Zoom	10	0

Table 45: Opening angles for different intensity thresholds. Wide, Red

		C0	C90
Beam Angle	50 %	20.9°	20.6°
Field Angle	10 %	32.1°	32.1°
Cutoff Angle	3 %	34.3°	34.6°

Table 46: Luminous flux, integrated over the beam for several minimum threshold intensities. Wide, Red

		Flux (lm)
Half-Peak Output	@50 %	37.28
Tenth-Peak Output	@10 %	56.6
Total Lumen Output	@3 %	57.8

$$\text{diameter} = 0.58 \times \text{distance}$$

$$\text{illuminance} = \frac{509.00 \text{ lx}}{(\text{distance [m]})^2}$$

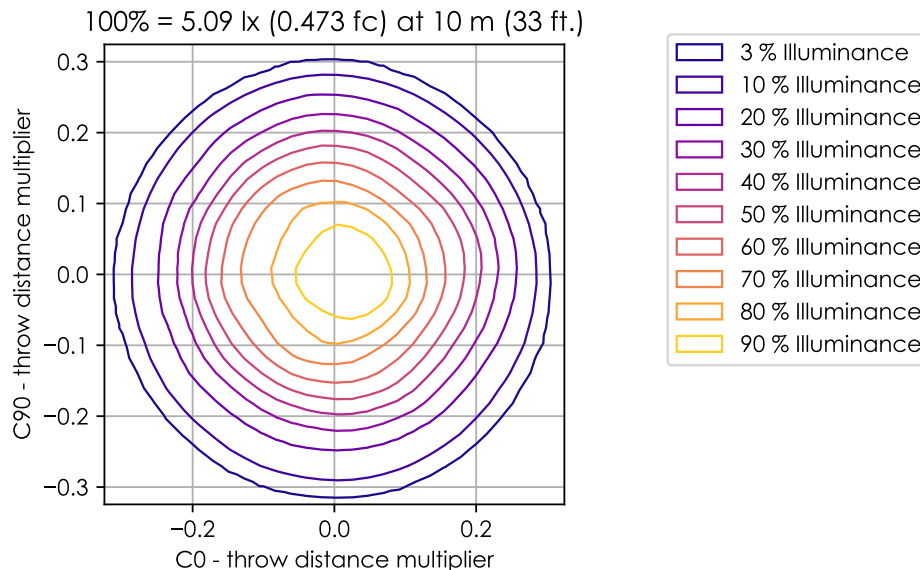


Figure 22: Iso-illuminance diagram of projected beam. Wide, Red
dist. from origin = throw dist. × throw dist. multiplier

Table 47: Quick calculation diagram for illuminance and beam diameter. Wide, Red

Parameter	Factor	Projection Distance [m]								
		5	7.5	10	12.5	15	17.5	20	22.5	25
Diameter [m]	0.58	2.9	4.4	5.8	7.3	8.8	10.0	12.0	13.0	15.0
Illuminance [lx]	509	20.0	9.1	5.1	3.3	2.3	1.7	1.3	1.0	0.81

2.12 Wide, Green Beam

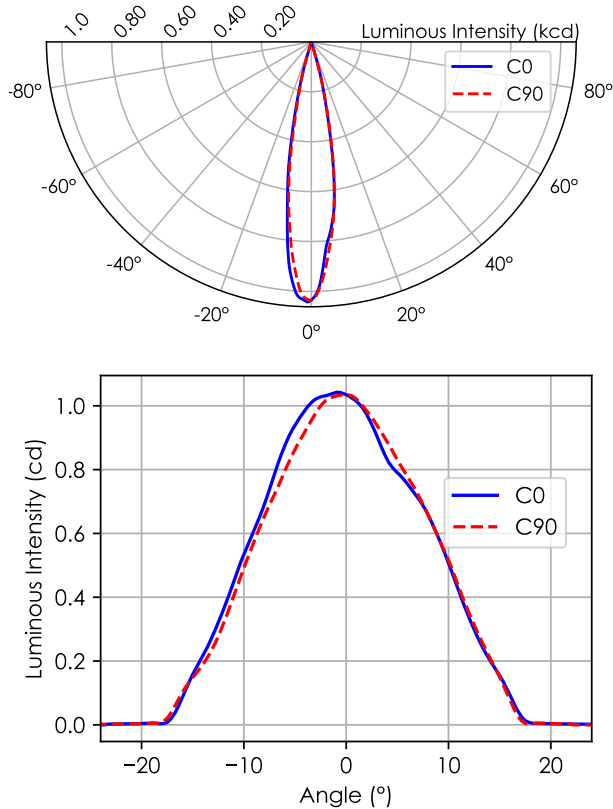


Figure 23: Polar and cartesian light intensity distributions. Wide, Green

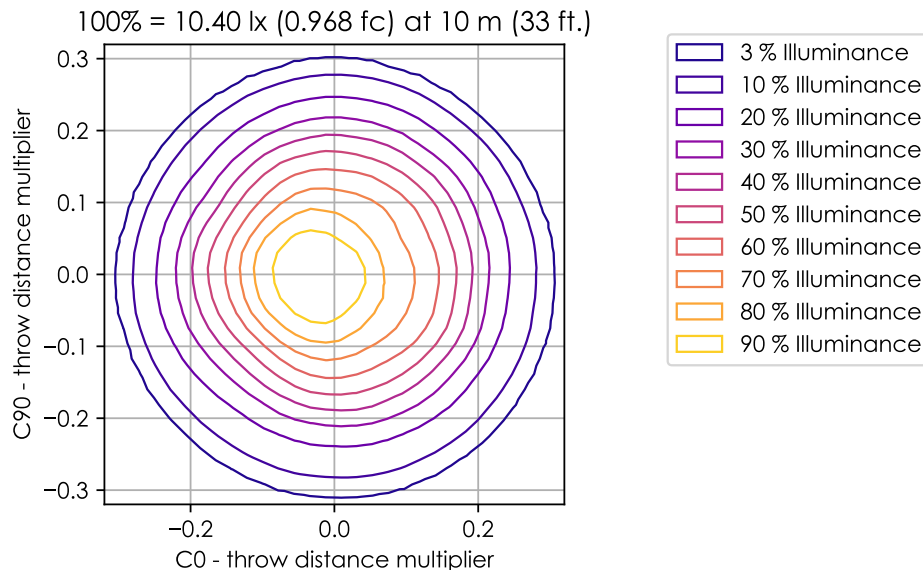


Figure 24: Iso-illuminance diagram of projected beam. Wide, Green
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 48: DMX Settings. Wide, Green

	DMX Slot	Value
Zoom	10	0

Table 49: Opening angles for different intensity thresholds. Wide, Green

	C0	C90
Beam Angle 50%	19.8°	19.8°
Field Angle 10%	31.7°	31.4°
Cutoff Angle 3%	33.9°	33.9°

Table 50: Luminous flux, integrated over the beam for several minimum threshold intensities. Wide, Green

	Flux (lm)
Half-Peak Output @50%	68.0
Tenth-Peak Output @10%	108.6
Total Lumen Output @3%	110.8

$$\text{diameter} = 0.58 \times \text{distance}$$

$$\text{illuminance} = \frac{1040.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 51: Quick calculation diagram for illuminance and beam diameter. Wide, Green

		Projection Distance [m]								
Parameter	Factor	5	7.5	10	12.5	15	17.5	20	22.5	25
Diameter [m]	0.58	2.9	4.3	5.8	7.2	8.6	10.0	12.0	13.0	14.0
Illuminance [lx]	1040	42.0	19.0	10.0	6.7	4.6	3.4	2.6	2.1	1.7

2.13 Wide, Blue Beam

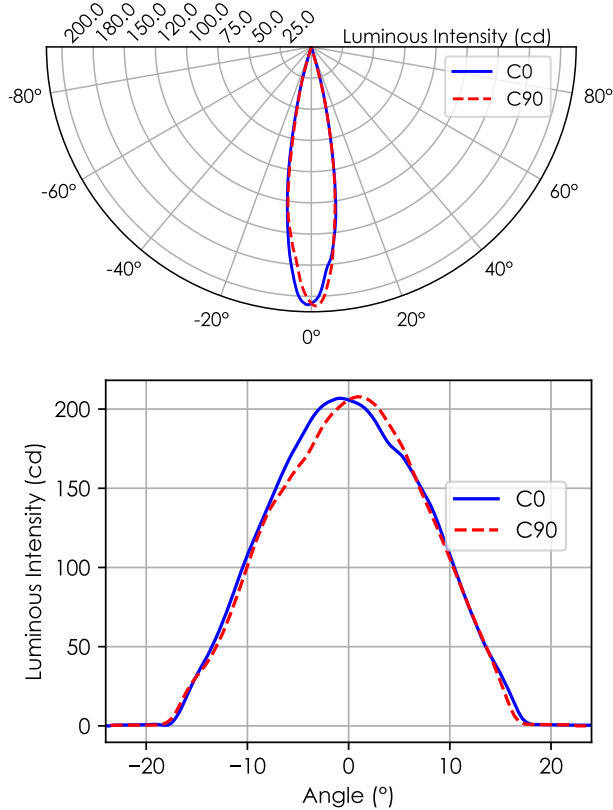


Figure 25: Polar and cartesian light intensity distributions. Wide, Blue

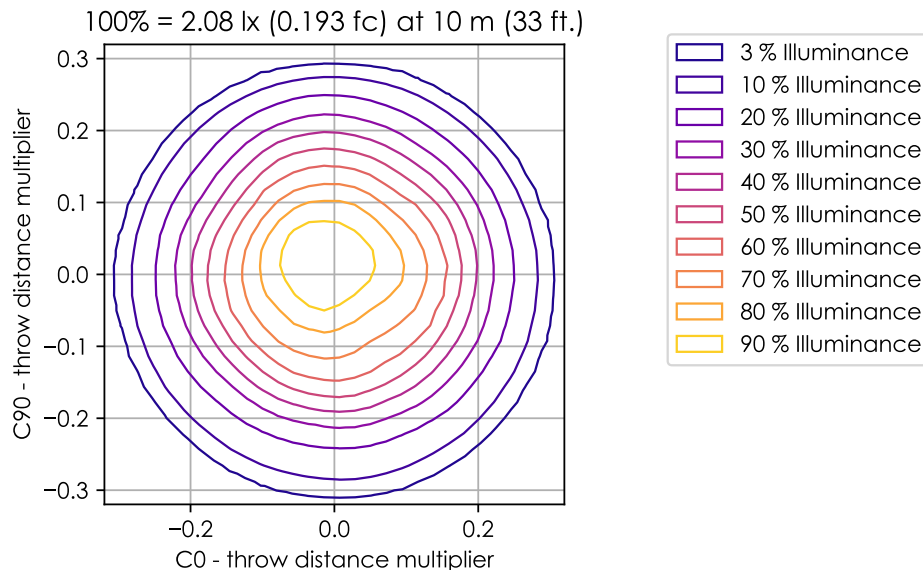


Figure 26: Iso-illuminance diagram of projected beam. Wide, Blue
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 52: DMX Settings. Wide, Blue

	DMX Slot	Value
Zoom	10	0

Table 53: Opening angles for different intensity thresholds. Wide, Blue

		C0	C90
Beam Angle	50 %	20.2°	19.8°
Field Angle	10 %	31.7°	31.7°
Cutoff Angle	3 %	33.9°	33.5°

Table 54: Luminous flux, integrated over the beam for several minimum threshold intensities. Wide, Blue

		Flux (lm)
Half-Peak Output	@50 %	14.11
Tenth-Peak Output	@10 %	22.23
Total Lumen Output	@3 %	22.49

$$\text{diameter} = 0.57 \times \text{distance}$$

$$\text{illuminance} = \frac{208.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 55: Quick calculation diagram for illuminance and beam diameter. Wide, Blue

		Projection Distance [m]									
Parameter	Factor	5	7.5	10	12.5	15	17.5	20	22.5	25	
Diameter [m]	0.57	2.9	4.3	5.7	7.2	8.6	10.0	11.0	13.0	14.0	
Illuminance [lx]	208	8.3	3.7	2.1	1.3	0.93	0.68	0.52	0.41	0.33	

2.14 Wide, White Beam

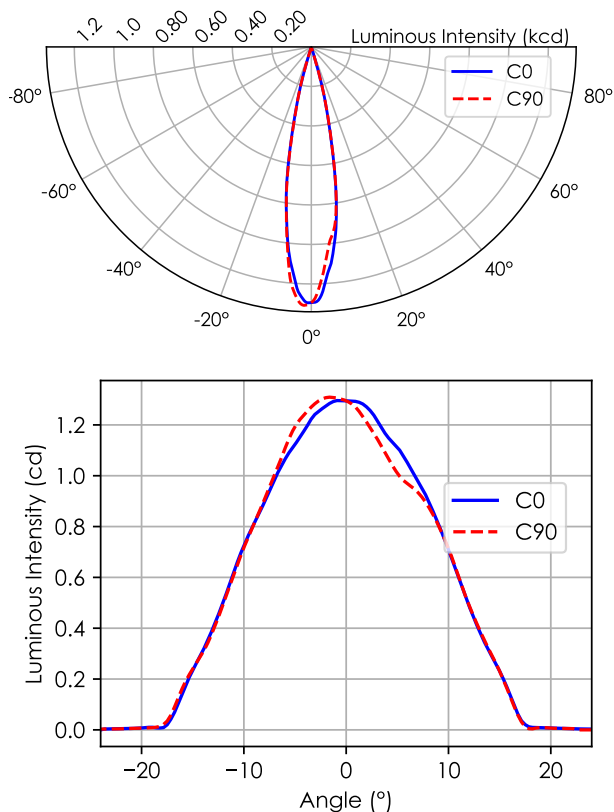


Figure 27: Polar and cartesian light intensity distributions. Wide, White

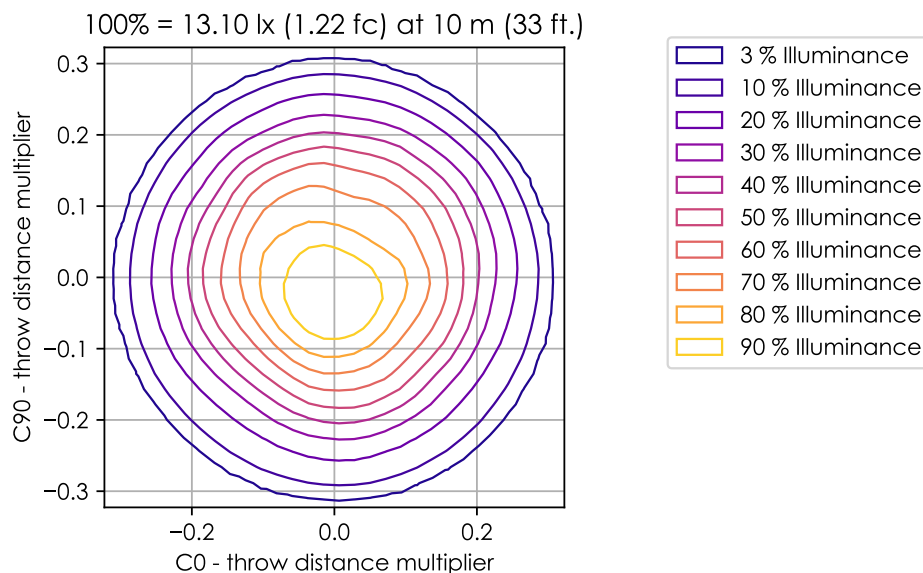


Figure 28: Iso-illuminance diagram of projected beam. Wide, White
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 56: DMX Settings. Wide, White

	DMX Slot	Value
Zoom	10	0

Table 57: Opening angles for different intensity thresholds. Wide, White

		C0	C90
Beam Angle	50 %	21.3°	20.9°
Field Angle	10 %	32.5°	32.1°
Cutoff Angle	3 %	34.3°	34.3°

Table 58: Luminous flux, integrated over the beam for several minimum threshold intensities. Wide, White

		Flux (lm)
Half-Peak Output	@50 %	98.4
Tenth-Peak Output	@10 %	149.6
Total Lumen Output	@3 %	152.0

$$\text{diameter} = 0.58 \times \text{distance}$$

$$\text{illuminance} = \frac{1310.00 \text{ lx}}{(\text{distance [m]})^2}$$

Table 59: Quick calculation diagram for illuminance and beam diameter. Wide, White

Parameter	Factor	Projection Distance [m]								
		5	7.5	10	12.5	15	17.5	20	22.5	25
Diameter [m]	0.58	2.9	4.4	5.8	7.3	8.7	10.0	12.0	13.0	15.0
Illuminance [lx]	1310	53.0	23.0	13.0	8.4	5.8	4.3	3.3	2.6	2.1

2.15 Wide, Full Beam

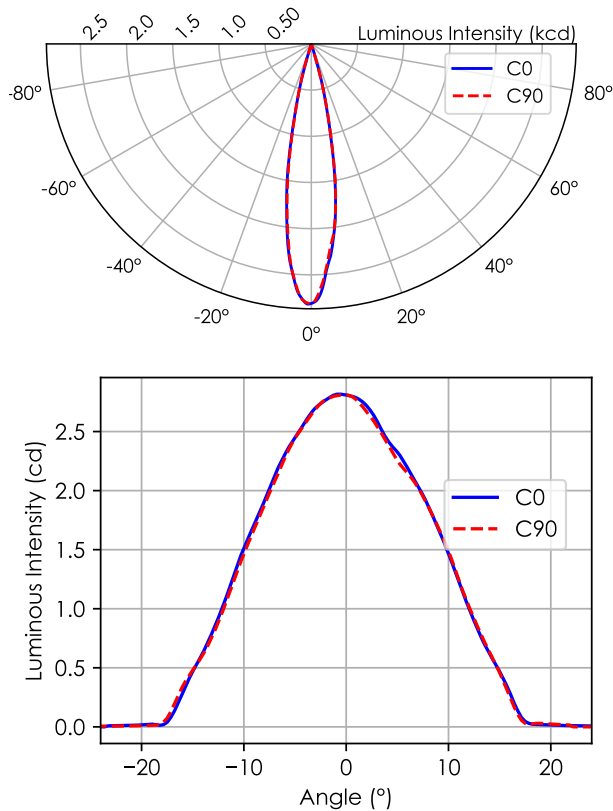


Figure 29: Polar and cartesian light intensity distributions. Wide, Full

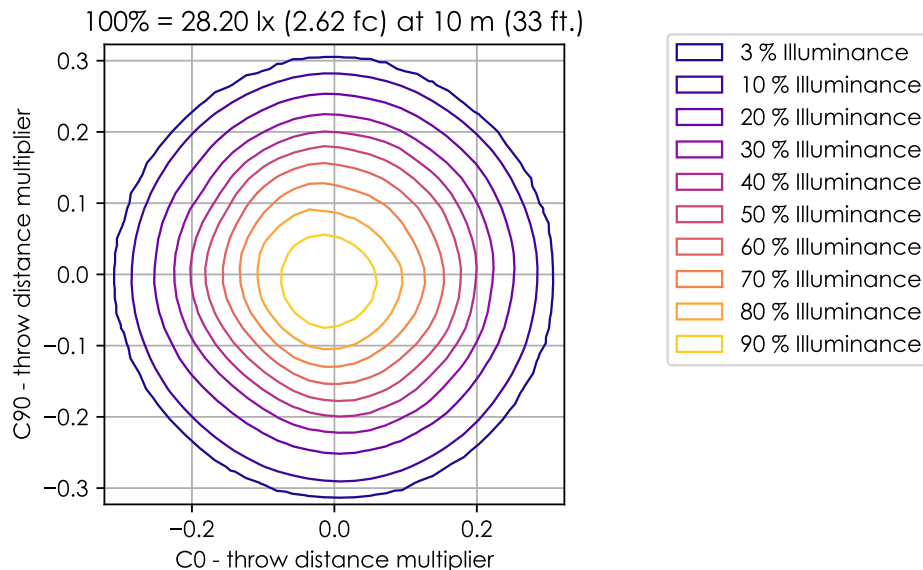


Figure 30: Iso-illuminance diagram of projected beam. Wide, Full
dist. from origin = throw dist. × throw dist. multiplier

Type Type B measurement with a total of 1681 data points.

Table 60: DMX Settings. Wide, Full

	DMX Slot	Value
Zoom	10	0

Table 61: Opening angles for different intensity thresholds. Wide, Full

		C0	C90
Beam Angle	50 %	20.6°	20.6°
Field Angle	10 %	31.7°	32.1°
Cutoff Angle	3 %	33.9°	34.3°

Table 62: Luminous flux, integrated over the beam for several minimum threshold intensities. Wide, Full

		Flux (lm)
Half-Peak Output	@50 %	202.6
Tenth-Peak Output	@10 %	311.7
Total Lumen Output	@3 %	318.2

$$\text{diameter} = 0.58 \times \text{distance}$$

$$\text{illuminance} = \frac{2810.00 \text{ lx}}{(\text{distance [m]})^2}$$

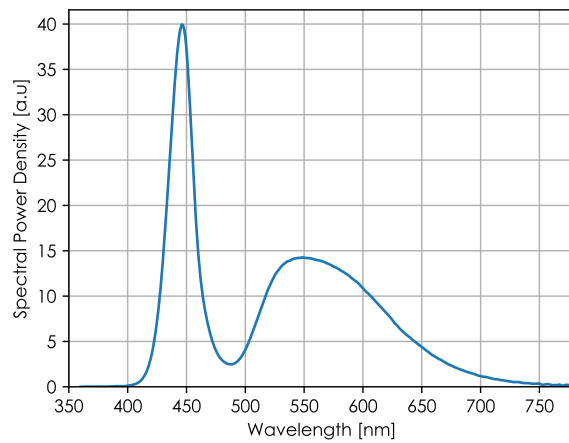
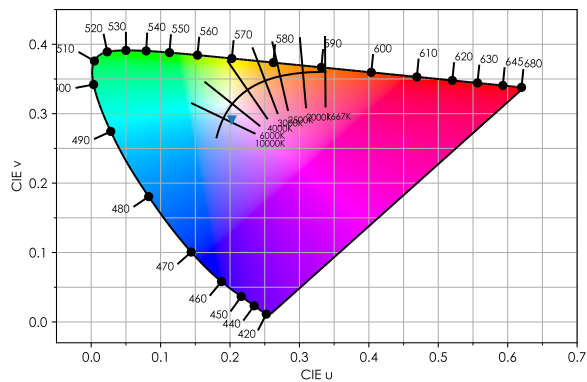
Table 63: Quick calculation diagram for illuminance and beam diameter. Wide, Full

Parameter	Factor	Projection Distance [m]								
		5	7.5	10	12.5	15	17.5	20	22.5	25
Diameter [m]	0.58	2.9	4.3	5.8	7.2	8.7	10.0	12.0	13.0	14.0
Illuminance [lx]	2810	110.0	50.0	28.0	18.0	12.0	9.2	7.0	5.6	4.5

3 White Quality – White

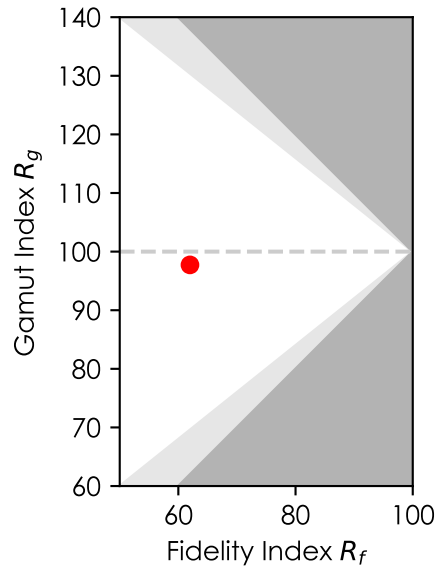
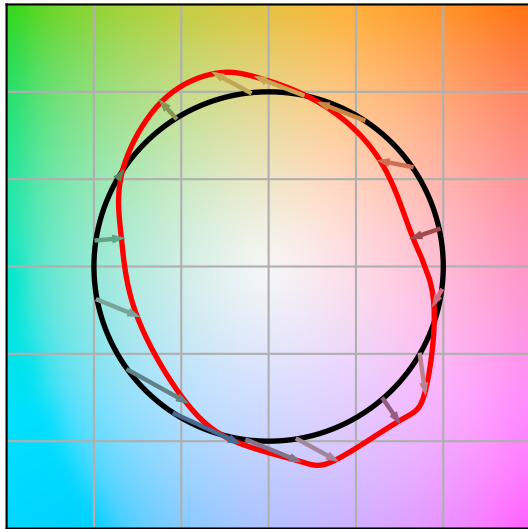
Table 64: Color metrics for White measurement.

Metric	Value
CCT	9100K
CCT Duv	-0.012068
CRI Ra	73
TLCI-2015	43
TM-30-15 Rf	62
TM-30-15 Rg	98
CIE 1931 x	0.2926
CIE 1931 y	0.2801
CIE 1960 u	0.2027
CIE 1960 v	0.2910

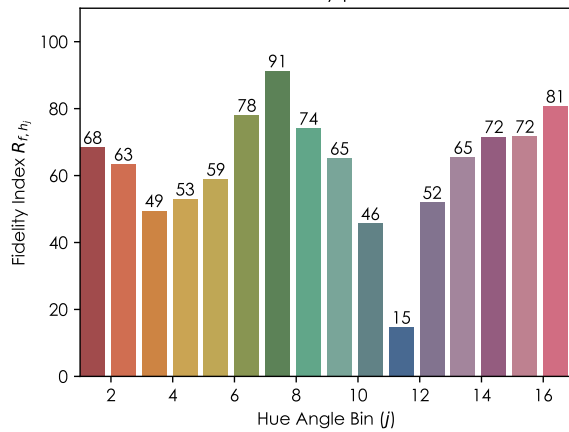


3.1 TM-30-15

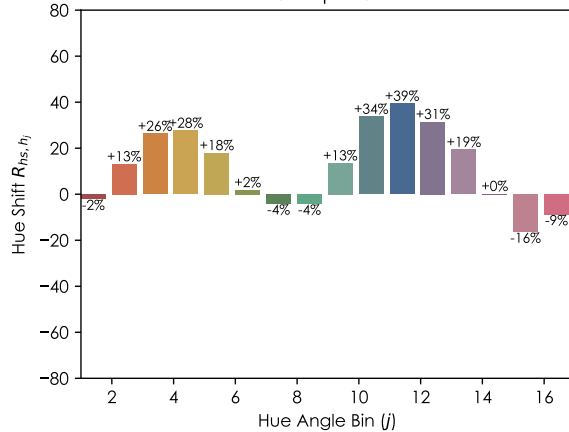
Color Vector Graphic



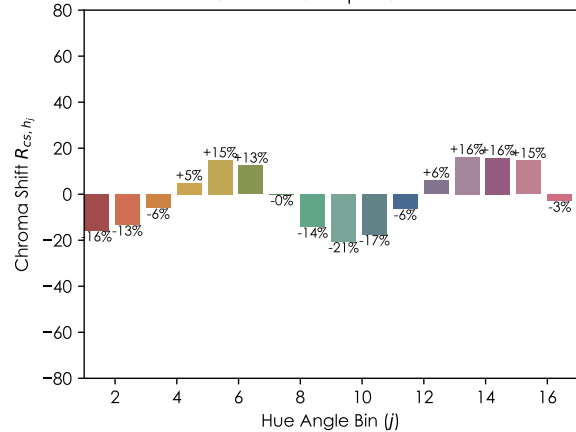
Color Fidelity per Sector

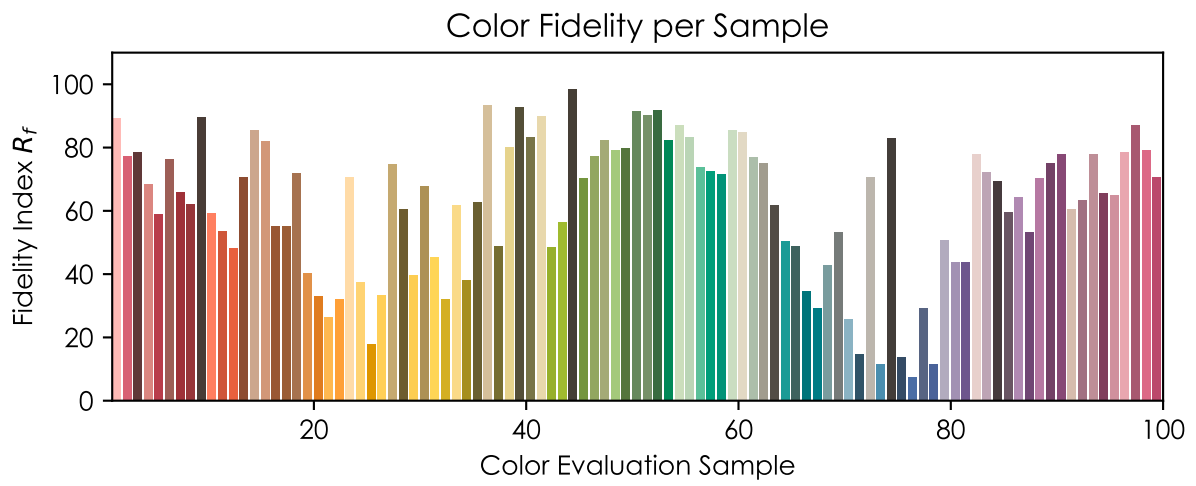


Hue Shift per Sector

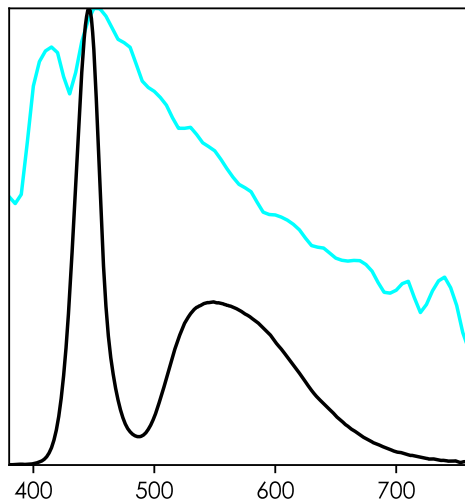
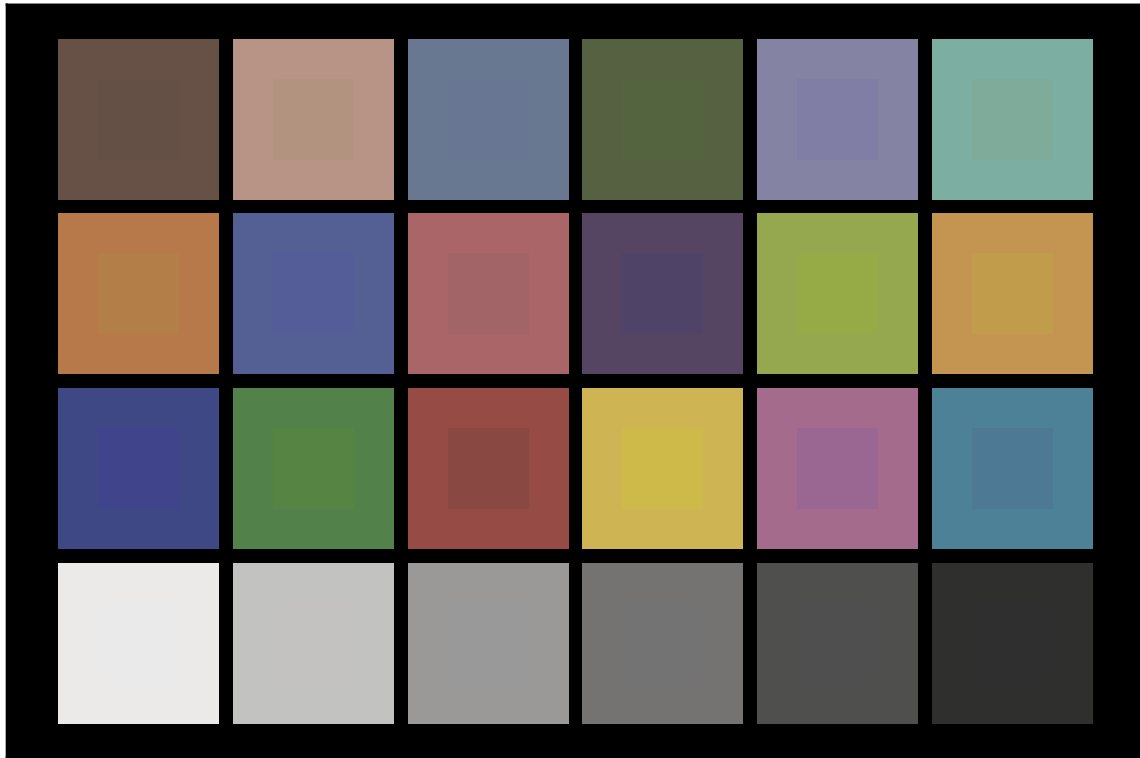


Chroma Shift per Sector





3.2 TLCI-2012



Sector	Lightness	Chroma	Hue
R	4	2	1
R/Y	0	1	-3
Y	0	0	-2
Y/G	-1	-3	0
G	-2	-3	3
G/C	1	0	4
C	3	0	0
C/B	5	0	-5
B	0	-4	-5
B/M	2	-4	2
M	4	-1	7
M/R	4	1	3

4 Color Mixing

