

customer:

date: 13.08.2021

Harman Professional Denmark ApS.
Olof Plames Allé 14

8200 Aarhus N
Denmark

project No: 21000131-8

inspection order: Photometric measurement according DIN EN 13032-1,
EN 13032-4:2015 and IES LM-79-08

- measurement of intensity distribution
- measurement of luminous flux

measurement procedure: - measurement with goniophotometer according DIN EN 13032

test sample specification:

luminaire: LED fixture for stage and studio, direct beam

description: MAC Ultra Wash - wide

Serial No.: 15064036359

power supply: Electronics, integrated

DMX settings: zoom: 0
focus: 32768
Fans: Constant Fan Full

test sample dimensions:

luminaire dimensions:

length:	300 mm
width:	450 mm
height:	855 mm
diameter:	- mm

dimensions of luminant areas:

length:	- mm
width:	- mm
height:	- mm
diameter:	220 mm

measurement configuration:

	area	step size
C- planes	0 - 360°	1°
γ- angle	0 - 90°	2.5°

luminaire position: hanging, light beam vertical

light center: central, bottom of light output

test results:

stabilization time: 30 min.

stability of luminous flux: < 1%

luminous flux:

upper half space	lower half space	overall
-	61401,31 lm	61401,31 lm
-	100 %	100 %

max. luminous intensity: 121053,5 cd @ (γ=0°/C=0°)

 beam angles:

half beam 50 % :	47,5°
field angle 10% :	62,0°
cutoff angel 3% :	65,8°

symmetry condition: rotational symmetric

luminous efficiency: 46,03 lm/W

electrical operating conditions:

voltage:	230,0 V (const. < 0.1%)
current:	5,838 A
system power:	1333,8 W
power factor:	0,993

ambient temperature:

T= 25° C ± 1°C

The company ILUmetriX insures that all statements are made by the best of knowledge, according to European standards.

Meschede, 17.08.2021



F. Siepe (Management Board)



annex:	page 3-9	testreport
	page 10	testsample
	page 11	testequipment

PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,06 V
Name:	MAC Ultra Wash - wide	Current:	5,839 A
Report:	21000131-4	System Power:	1333,8 W
Date:	12.08.2021 12:07:13		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - wide	
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Width:	450 mm		
Diameter:	0 mm		

Cones (C0-359-1, G0-90-2,5, S7)

LiTG-class:	A60		
UTE-class:	Not available		
IES-class:	100 - 100 - 100 - 100 - 100		
TM5-class:	BZ1		
Divergences in the plane through maximum intensity:			
	Horizontal	Vertical	
One half peak divergence:	47,5°	47,5°	
Half peak side angle (left):	-23,8°	-23,8°	
Half peak side angle (right):	23,8°	23,8°	
One tenth peak divergence:	62,0°	62,0°	
Tenth peak side angle (left):	-31,0°	-31,0°	
Tenth peak side angle (right):	31,0°	31,0°	

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Intensity [cd] MAC Ultra Wash - wide

G/C [cd]	0,0
0,0	121053,5
2,5	120044,8
5,0	117410,5
7,5	112830,3
10,0	106546,1
12,5	99859,7
15,0	91999,1
17,5	84671,5
20,0	77020,0
22,5	66667,1
25,0	54523,0
27,5	36767,8
30,0	17357,4
32,5	4258,0
35,0	225,8
37,5	41,4
40,0	30,7
42,5	25,1
45,0	20,1
47,5	17,4
50,0	14,6
52,5	11,8
55,0	9,6
57,5	8,2
60,0	7,0
62,5	6,2
65,0	5,5
67,5	4,8
70,0	4,2
72,5	3,6
75,0	2,9
77,5	2,2
80,0	1,6
82,5	1,0
85,0	0,4
87,5	0,1
90,0	0,1

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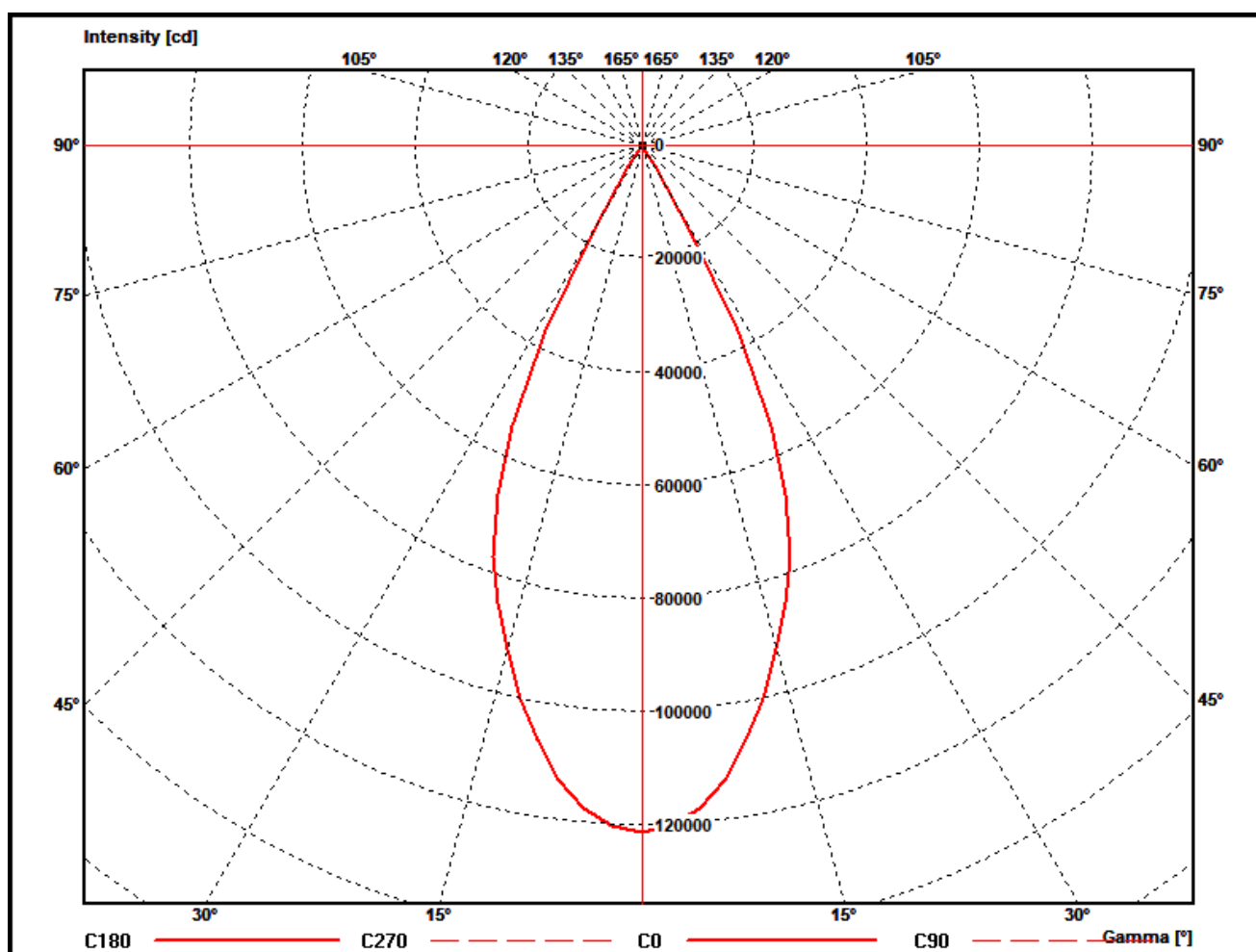
Zonal flux MAC Ultra Wash - wide

Gamma [°]	Imin [cd/klm]	Imax [cd/klm]	Imean [cd/klm]	Zonal flux [lm]	Sum. zonal flux [lm]	Rel. zonal flux [%]	Sum. rel. zonal flux [%]
0,0	1971,5	1971,5	1971,5	0,00	0,00	0,00	0,00
2,5	1955,1	1955,1	1955,1	720,91	720,91	1,17	1,17
5,0	1912,2	1912,2	1912,2	2128,69	2849,60	3,47	4,64
7,5	1837,6	1837,6	1837,6	3435,67	6285,27	5,60	10,24
10,0	1735,2	1735,2	1735,2	4574,24	10859,50	7,45	17,69
12,5	1626,3	1626,3	1626,3	5519,38	16378,88	8,99	26,68
15,0	1498,3	1498,3	1498,3	6250,55	22629,43	10,18	36,85
17,5	1379,0	1379,0	1379,0	6776,26	29405,69	11,04	47,89
20,0	1254,4	1254,4	1254,4	7123,92	36529,61	11,60	59,49
22,5	1085,8	1085,8	1085,8	7138,13	43667,73	11,63	71,12
25,0	888,0	888,0	888,0	6690,09	50357,83	10,90	82,01
27,5	598,8	598,8	598,8	5534,34	55892,17	9,01	91,03
30,0	282,7	282,7	282,7	3568,35	59460,52	5,81	96,84
32,5	69,3	69,3	69,3	1537,00	60997,52	2,50	99,34
35,0	3,7	3,7	3,7	341,45	61338,96	0,56	99,90
37,5	0,7	0,7	0,7	21,66	61360,62	0,04	99,93
40,0	0,5	0,5	0,5	6,18	61366,80	0,01	99,94
42,5	0,4	0,4	0,4	5,05	61371,85	0,01	99,95
45,0	0,3	0,3	0,3	4,28	61376,13	0,01	99,96
47,5	0,3	0,3	0,3	3,71	61379,84	0,01	99,97
50,0	0,2	0,2	0,2	3,30	61383,14	0,01	99,97
52,5	0,2	0,2	0,2	2,82	61385,96	0,00	99,98
55,0	0,2	0,2	0,2	2,36	61388,32	0,00	99,98
57,5	0,1	0,1	0,1	2,02	61390,34	0,00	99,98
60,0	0,1	0,1	0,1	1,78	61392,13	0,00	99,99
62,5	0,1	0,1	0,1	1,59	61393,72	0,00	99,99
65,0	0,1	0,1	0,1	1,44	61395,16	0,00	99,99
67,5	0,1	0,1	0,1	1,29	61396,45	0,00	99,99
70,0	0,1	0,1	0,1	1,15	61397,60	0,00	99,99
72,5	0,1	0,1	0,1	1,00	61398,61	0,00	100,00
75,0	0,0	0,0	0,0	0,85	61399,45	0,00	100,00
77,5	0,0	0,0	0,0	0,69	61400,14	0,00	100,00
80,0	0,0	0,0	0,0	0,52	61400,66	0,00	100,00
82,5	0,0	0,0	0,0	0,35	61401,01	0,00	100,00
85,0	0,0	0,0	0,0	0,20	61401,20	0,00	100,00
87,5	0,0	0,0	0,0	0,07	61401,28	0,00	100,00
90,0	0,0	0,0	0,0	0,03	61401,30	0,00	100,00

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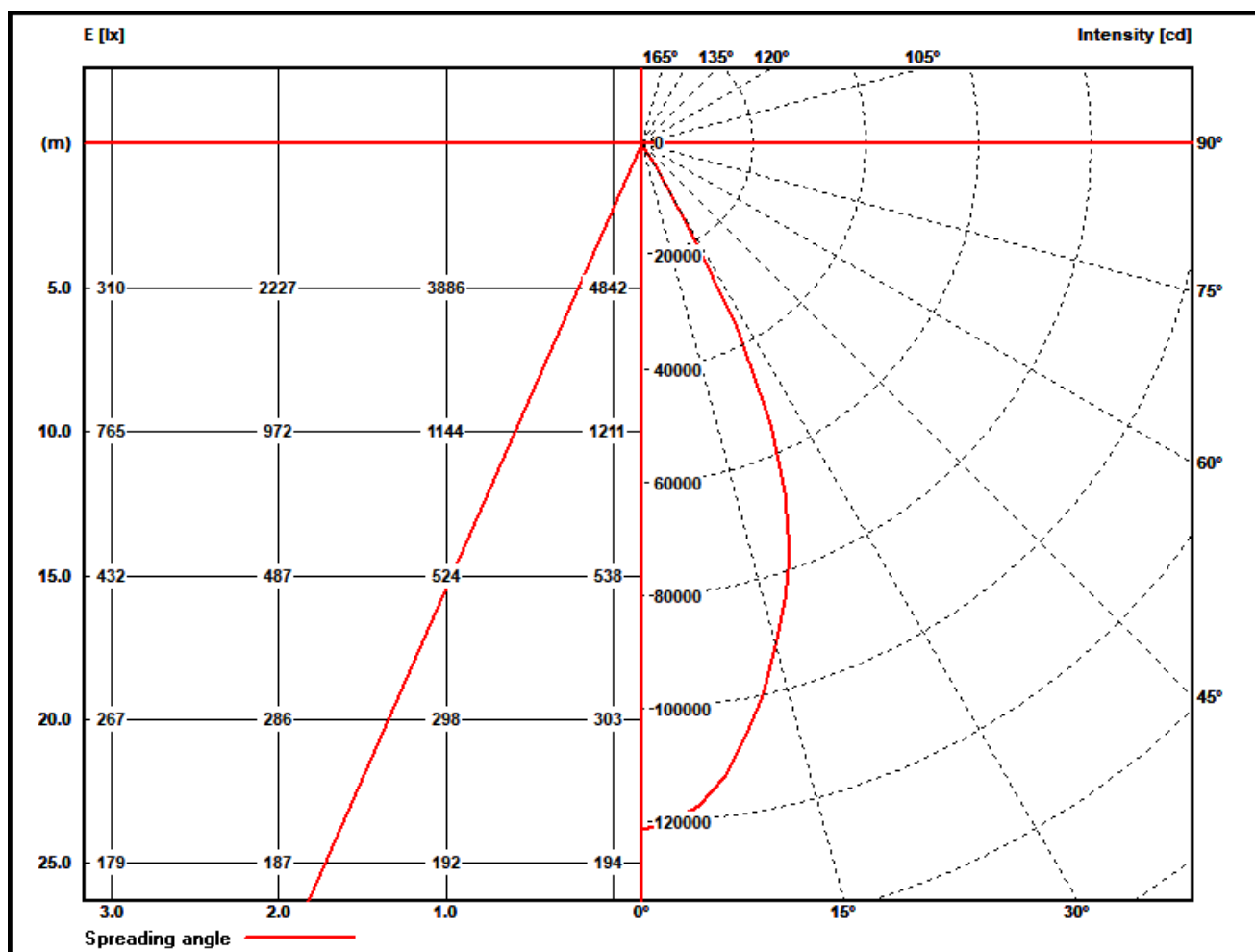
Polar diagram MAC Ultra Wash - wide



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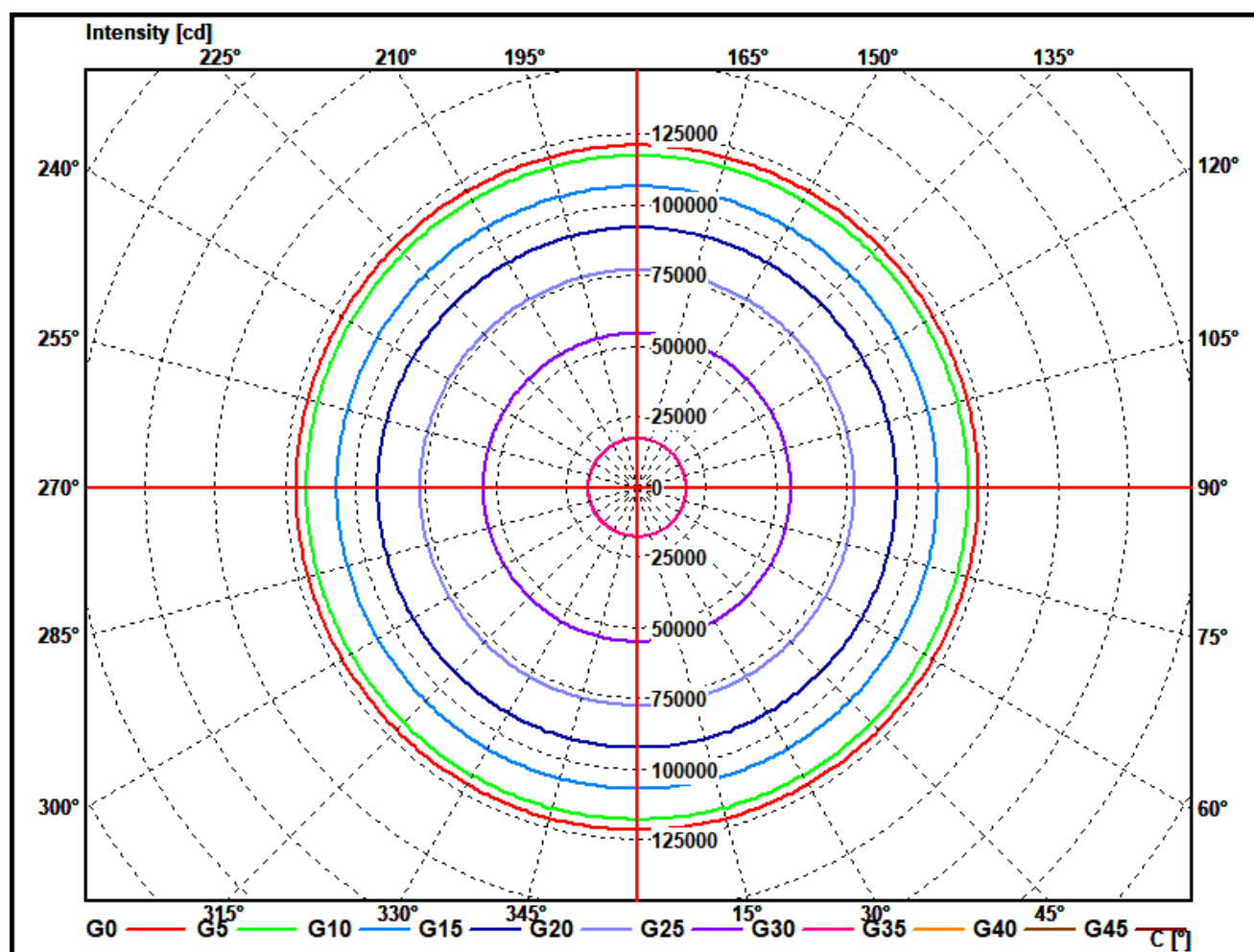
Illuminance and Intensity diagram MAC Ultra Wash - wide



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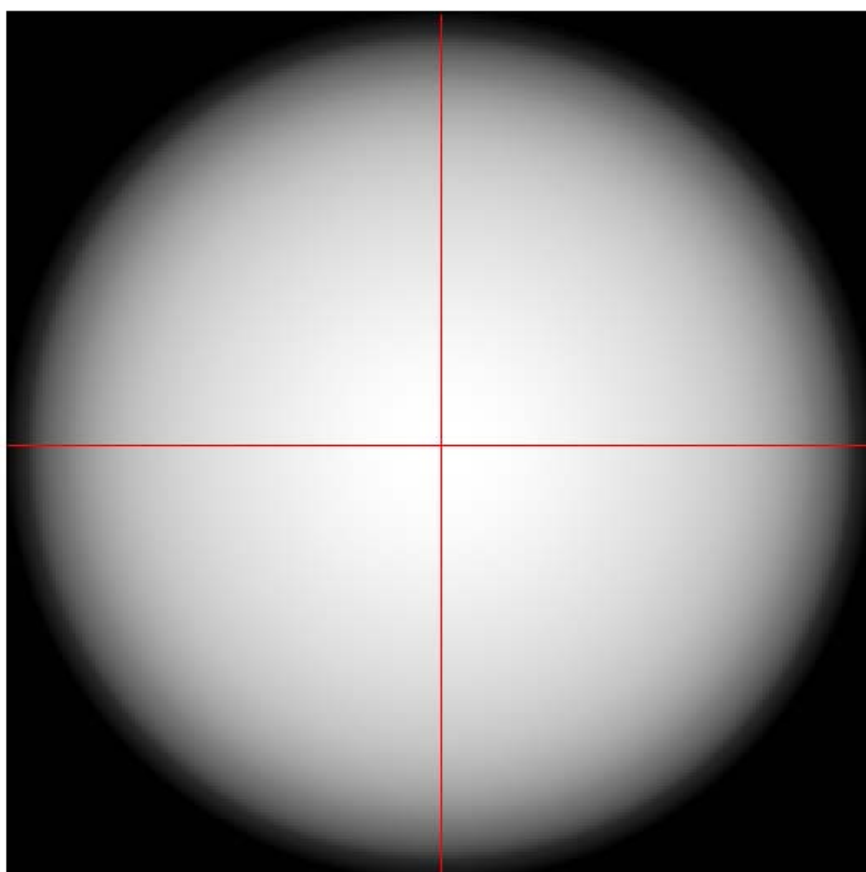
Cone diagram MAC Ultra Wash - wide



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Isoline diagram MAC Ultra Wash - wide



Luminaire mounting height above ground: 12 m
Luminaire rotation angle: 0 °

testsample:

dimensions [L x W x H]: 300 x 450 x 855 mm



test equipment - ILUmetriX GmbH

- goniophotometer with mirror arrangement GO-DS 2000 No.: 09A84831	Manufacturer: LMT GmbH, Berlin
- Photometer head GO-DS 2000, Nr.: 09A84812	Manufacturer: LMT GmbH, Berlin
- integrating sphere UL 1650/2250, Nr.: 09A8482	Manufacturer: LMT GmbH, Berlin
- colormeter C 1210 with colorimeterhead CH60	Manufacturer: LMT GmbH, Berlin
- power supply, Chroma 6415	Manufacturer: Chroma ATE INC.
- powermeter, Yokogawa WT 2010	Manufacturer: Yokogawa, Japan

calibration data:

goniophotometer with mirror arrangement

photometer unit with photometer head SP30S0T-GODS Serial No.: 09A84811 mit 09A84812	October 2018
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integrating sphere

colormeter with colorimeterhead Type: C 1210 with CH 60 serial No. 09A84831 mit 09A84832	October 2018
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