

customer:

date: 13.08.2021

Harman Professional Denmark ApS.
Olof Plames Allé 14

8200 Aarhus N
Denmark

project No: 21000131-4

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 Performance - wide

Serial No.: 15063403503

power supply: Electronics, integrated

DMX settings: zoom: 0
focus: 26240
Fans: Constant Fan Full

test sample dimensions:

luminaire dimensions:

length:	300 mm
width:	450 mm
height:	865 mm
diameter:	- mm

dimensions of luminant areas:

length:	- mm
width:	- mm
height:	- mm
diameter:	160 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
-	48440,99 lm	48440,99 lm
-	100 %	100 %

max. luminous intensity: 95838,4 cd @ ($\gamma=0^\circ/C=0^\circ$)

beam angles:

half beam 50 % :	50,2°
field angle 10% :	54,1°
cutoff angel 3% :	54,8°

symmetry condition: rotational symmetric

luminous efficiency: 34,56 lm/W

electrical operating conditions:

voltage: 230,0 V (const. < 0.1%)
 current: 6,132 A
 system power: 1401,80 W
 power factor: 0,994

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, 13.08.2021



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 Performance - wide	Current:	6,132 A
Report:	21000131-4	System Power:	1401,8 W
Date:	12.08.2021 15:42:21		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Performance - wide	
Luminaire dimensions:			
Length:	300 mm		
Height:	865 mm		
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:	50,2°	50,2°	
Half peak side angle (left):	-25,1°	-25,1°	
Half peak side angle (right):	25,1°	25,1°	
One tenth peak divergence:	54,1°	54,1°	
Tenth peak side angle (left):	-27,0°	-27,0°	
Tenth peak side angle (right):	27,0°	27,0°	

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Intensity [cd] MAC Ultra Performance - wide

G/C [cd]	0,0
0,0	95838,4
2,5	95606,1
5,0	94895,8
7,5	93581,8
10,0	91829,2
12,5	89225,0
15,0	85028,8
17,5	79381,0
20,0	71819,0
22,5	61703,1
25,0	50312,6
27,5	370,6
30,0	158,7
32,5	93,8
35,0	61,3
37,5	43,7
40,0	33,8
42,5	27,5
45,0	26,6
47,5	14,8
50,0	10,9
52,5	8,4
55,0	6,7
57,5	5,5
60,0	4,6
62,5	3,6
65,0	2,6
67,5	1,6
70,0	1,1
72,5	0,7
75,0	0,2
77,5	0,2
80,0	0,2
82,5	0,1
85,0	0,1
87,5	0,1
90,0	0,1

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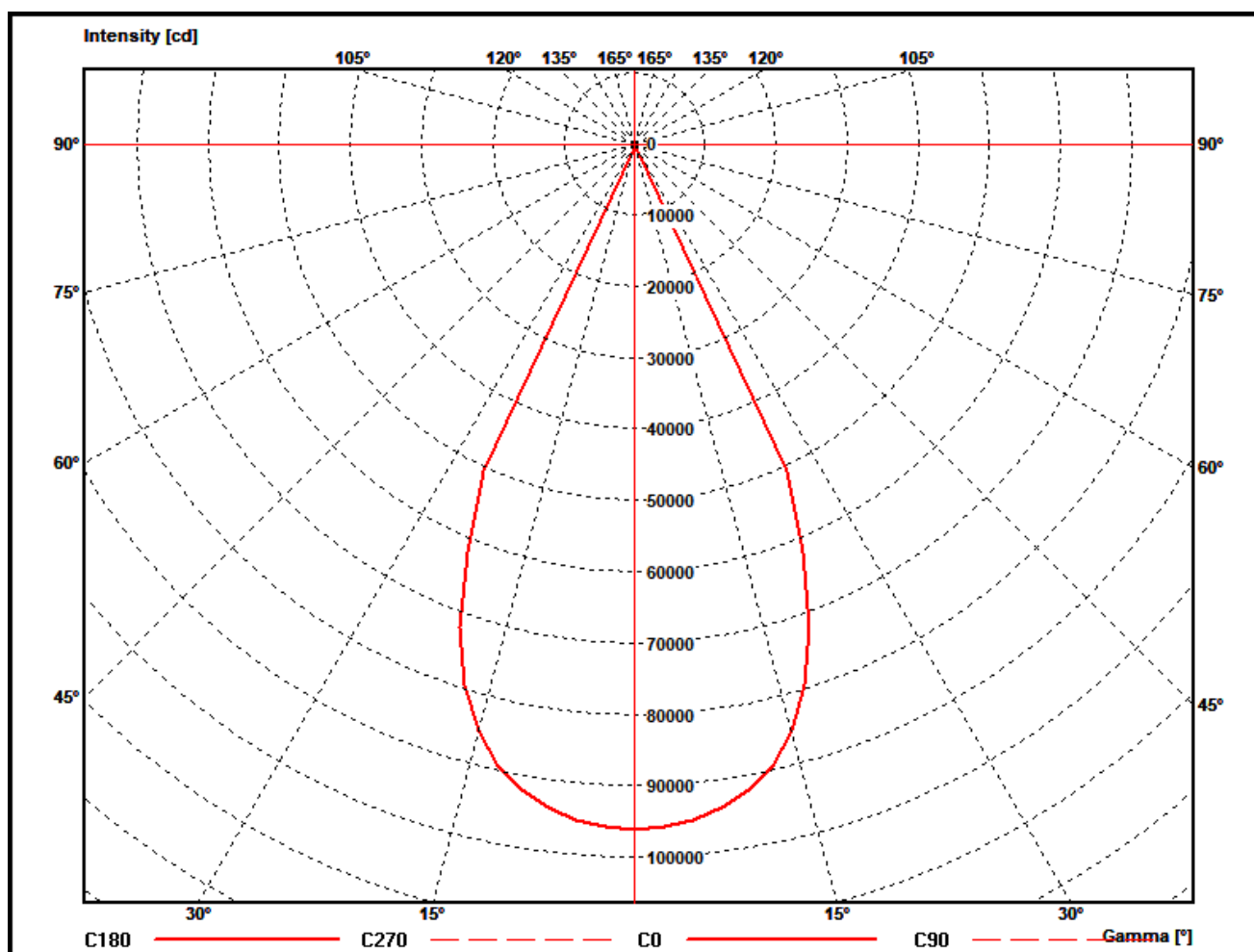
Zonal flux MAC Ultra Performance - wide

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	1978,5	1978,5	1978,5	0,00	0,00	0,00	0,00
2,5	1973,7	1973,7	1973,7	572,44	572,44	1,18	1,18
5,0	1959,0	1959,0	1959,0	1707,78	2280,21	3,53	4,71
7,5	1931,9	1931,9	1931,9	2812,47	5092,69	5,81	10,51
10,0	1895,7	1895,7	1895,7	3866,02	8958,71	7,98	18,49
12,5	1841,9	1841,9	1841,9	4841,47	13800,18	9,99	28,49
15,0	1755,3	1755,3	1755,3	5677,00	19477,17	11,72	40,21
17,5	1638,7	1638,7	1638,7	6305,99	25783,16	13,02	53,23
20,0	1482,6	1482,6	1482,6	6661,68	32444,84	13,75	66,98
22,5	1273,8	1273,8	1273,8	6633,15	39077,99	13,69	80,67
25,0	1038,6	1038,6	1038,6	6183,63	45261,63	12,77	93,44
27,5	7,7	7,7	7,7	3072,58	48334,20	6,34	99,78
30,0	3,3	3,3	3,3	34,90	48369,10	0,07	99,85
32,5	1,9	1,9	1,9	17,96	48387,06	0,04	99,89
35,0	1,3	1,3	1,3	11,82	48398,88	0,02	99,91
37,5	0,9	0,9	0,9	8,51	48407,39	0,02	99,93
40,0	0,7	0,7	0,7	6,65	48414,04	0,01	99,94
42,5	0,6	0,6	0,6	5,54	48419,58	0,01	99,96
45,0	0,5	0,5	0,5	5,13	48424,71	0,01	99,97
47,5	0,3	0,3	0,3	4,10	48428,81	0,01	99,97
50,0	0,2	0,2	0,2	2,65	48431,46	0,01	99,98
52,5	0,2	0,2	0,2	2,06	48433,52	0,00	99,98
55,0	0,1	0,1	0,1	1,67	48435,19	0,00	99,99
57,5	0,1	0,1	0,1	1,40	48436,59	0,00	99,99
60,0	0,1	0,1	0,1	1,19	48437,77	0,00	99,99
62,5	0,1	0,1	0,1	0,99	48438,77	0,00	100,00
65,0	0,1	0,1	0,1	0,76	48439,53	0,00	100,00
67,5	0,0	0,0	0,0	0,52	48440,05	0,00	100,00
70,0	0,0	0,0	0,0	0,35	48440,40	0,00	100,00
72,5	0,0	0,0	0,0	0,23	48440,63	0,00	100,00
75,0	0,0	0,0	0,0	0,12	48440,75	0,00	100,00
77,5	0,0	0,0	0,0	0,06	48440,81	0,00	100,00
80,0	0,0	0,0	0,0	0,05	48440,86	0,00	100,00
82,5	0,0	0,0	0,0	0,04	48440,89	0,00	100,00
85,0	0,0	0,0	0,0	0,03	48440,93	0,00	100,00
87,5	0,0	0,0	0,0	0,03	48440,96	0,00	100,00
90,0	0,0	0,0	0,0	0,03	48440,99	0,00	100,00

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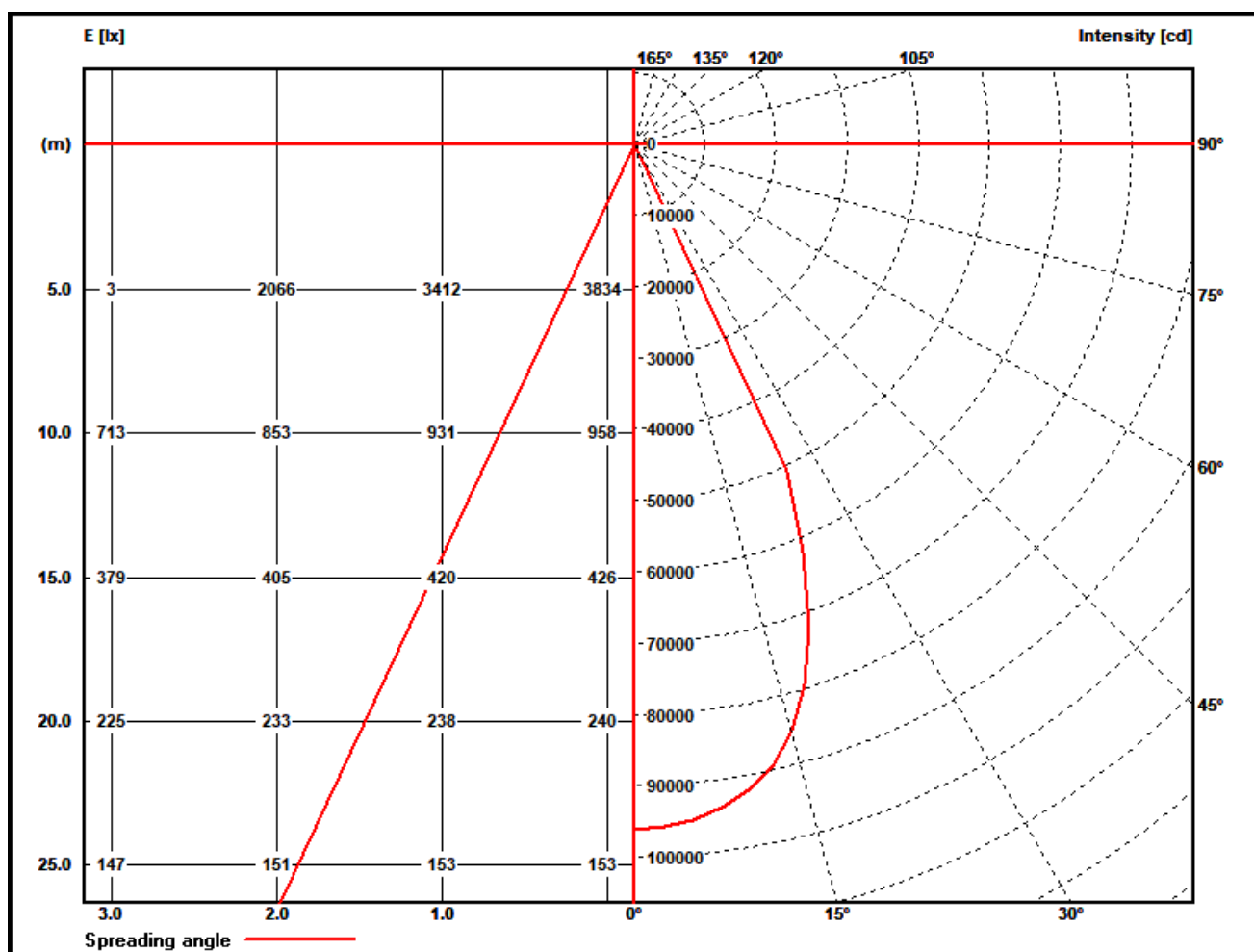
Polar diagram MAC Ultra Performance - wide



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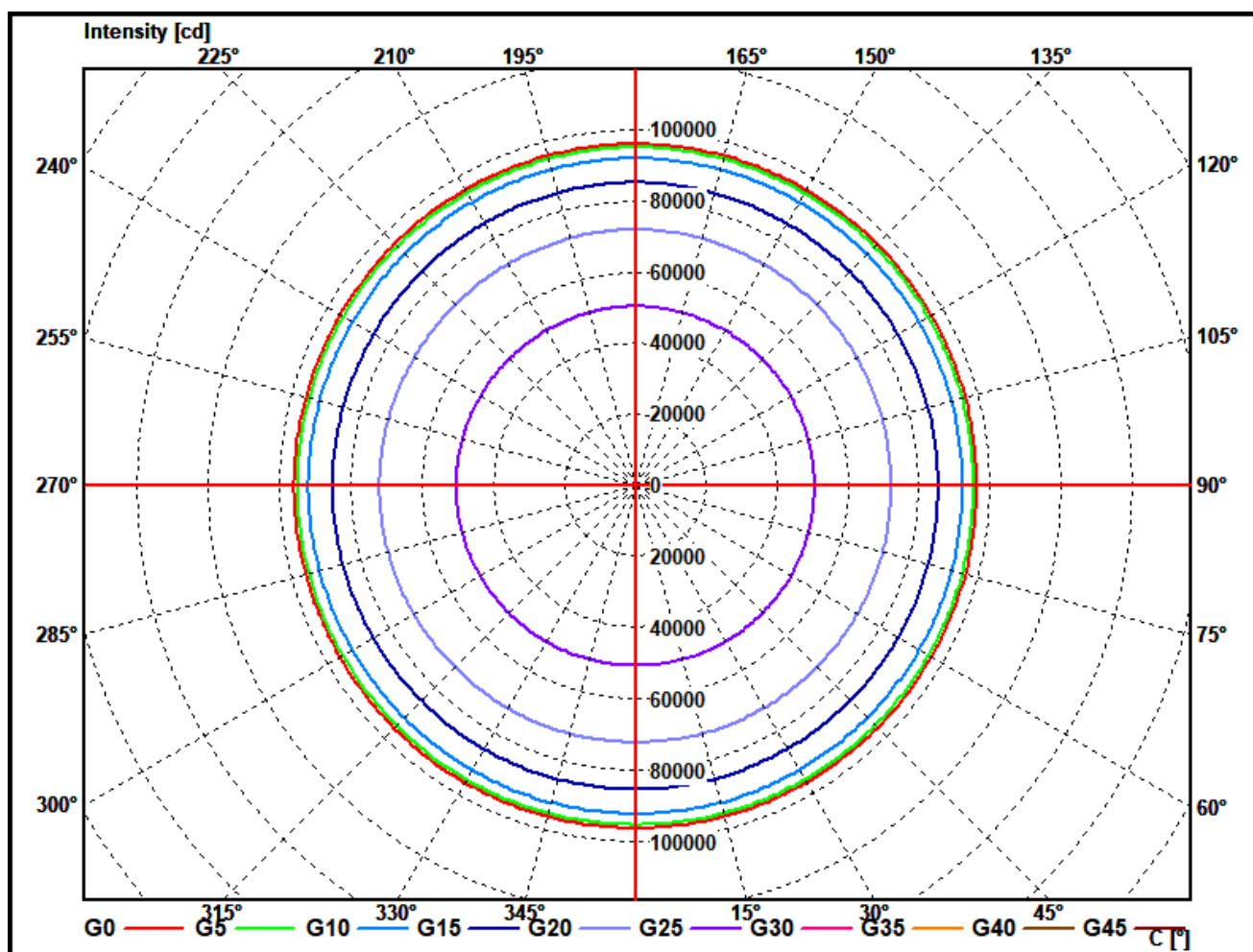
Illuminance and Intensity diagram MAC Ultra Performance - wide



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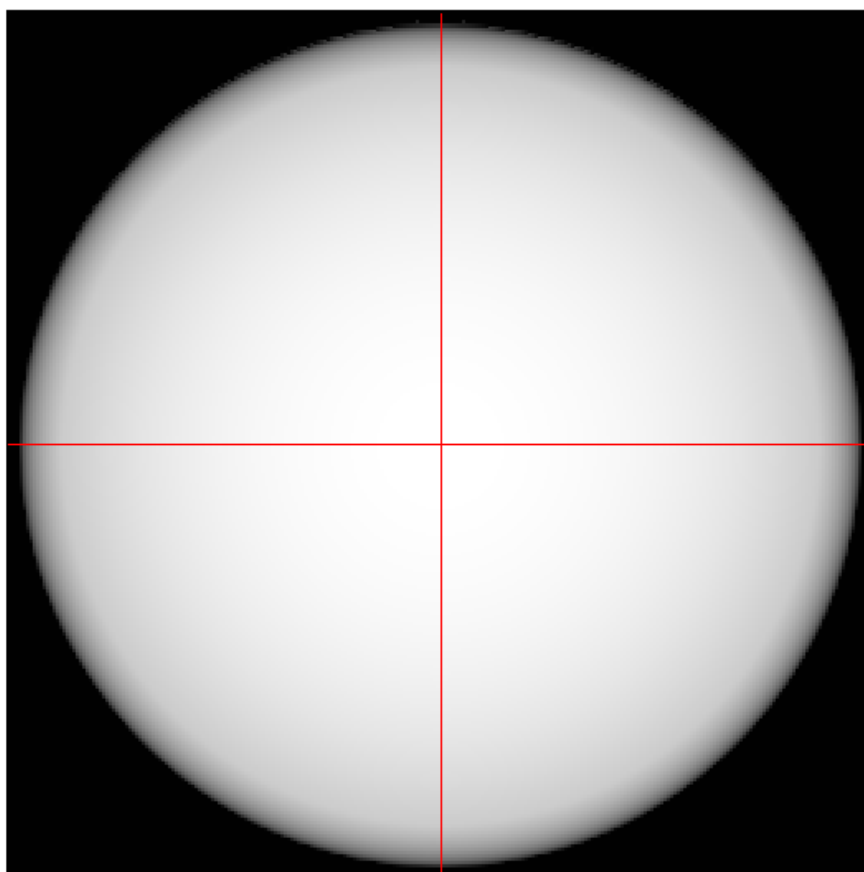
Cone diagram MAC Ultra Performance - wide



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Isoline diagram MAC Ultra Performance - wide



Luminaire mounting height above ground: 15 m
Luminaire rotation angle: 0 °

testsample:

dimensions [L x W x H]: 300 x 450 x 865 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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