

customer:

date: 25.08.2021

Harman Professional Denmark ApS.
Olof Plames Allé 14

8200 Aarhus N
Denmark

project No: 21000131-6

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 - half zoom

Serial No.: 15064036359

power supply: Electronics, integrated

DMX settings: zoom: 32768
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 - 15°	1°
	15 - 90°	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
-	65148,00 lm	65148,00 lm
-	100 %	100 %

max. luminous intensity: 950325,8 cd @ (γ=0°/C=0°)

beam angles:

half beam 50 % :	16,6°
field angle 10% :	23,3°
cutoff angel 3% :	25,0°

symmetry condition: rotational symmetric

luminous efficiency: 48,86 lm/W

electrical operating conditions:

voltage: 230,0 V (const. < 0.1%)
current: 5,837 A
system power: 1333,40 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, 25.08.2021



F. Siepe (Management Board)



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

PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,04 V
Name:	MAC Ultra Wash - half zoom	Current:	5,841 A
Report:	21000131-6	Power:	1333,4 W
Date:	24.08.2021 10:01:47		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - half zoom	
Luminaire dimensions:			
Length:	300 mm		
Width:	450 mm		
Height:	855 mm		

Cones (C0-359-1, G0-90-1/25, S7)

LiTG-class:	A60		
UTE-class:	Not available		
IES-class:	100 - 100 - 100 - 100 - 100		
TM5-class:	Not available		
Divergences in the plane through maximum intensity:	Horizontal	Vertical	
One half peak divergence:	16,6°	16,6°	
Half peak side angle (left):	-8,3°	-8,3°	
Half peak side angle (right):	8,3°	8,3°	
One tenth peak divergence:	23,3°	23,3°	
Tenth peak side angle (left):	-11,7°	-11,7°	
Tenth peak side angle (right):	11,7°	11,7°	

PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,04 V
Name:	MAC Ultra Wash - half zoom	Current:	5,841 A
Report:	21000131-6	Power:	1333,4 W
Date:	24.08.2021 10:01:47		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - half zoom	
Luminaire dimensions:			
Length:	300 mm		
Width:	450 mm		
Height:	855 mm		

Intensity [cd] MAC Ultra Wash - half zoom

G/C [cd]	0,0
0,0	950325,8
1,0	938848,2
2,0	908231,0
3,0	861265,9
4,0	795035,2
5,0	738158,8
6,0	669305,3
7,0	593285,5
8,0	503732,1
9,0	412240,4
10,0	296419,8
11,0	182284,1
12,0	51441,7
13,0	7943,3
14,0	2093,5
15,0	680,2
20,0	45,4
25,0	17,6
30,0	13,2
35,0	11,3
40,0	8,6
45,0	6,3
50,0	5,1
55,0	4,2
60,0	3,4
65,0	2,9
70,0	2,1
75,0	1,0
80,0	0,5
85,0	0,2
90,0	0,1

PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,04 V
Name:	MAC Ultra Wash - half zoom	Current:	5,841 A
Report:	21000131-6	Power:	1333,4 W
Date:	24.08.2021 10:01:47		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - half zoom	
Luminaire dimensions:			
Length:	300 mm		
Width:	450 mm		
Height:	855 mm		

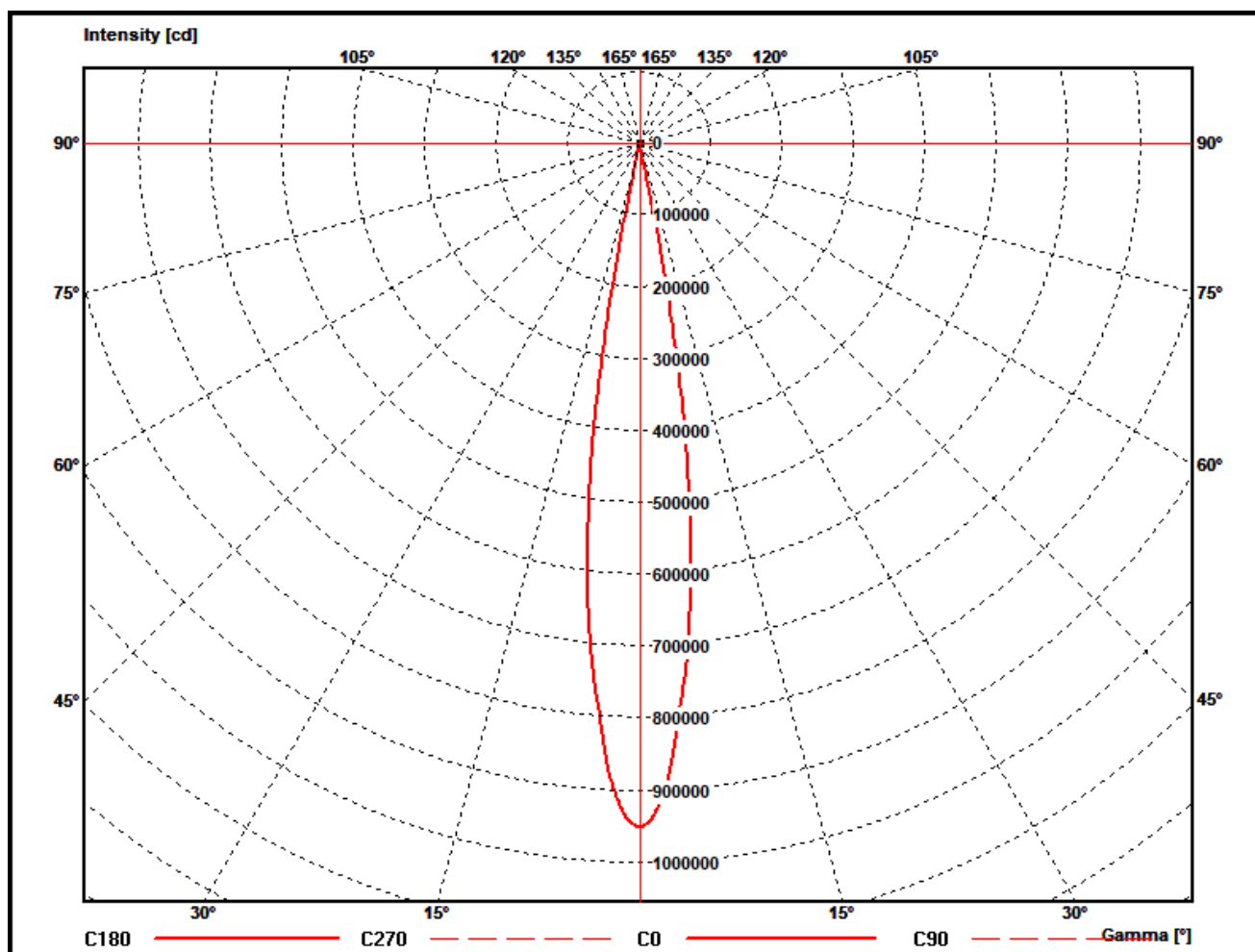
Zonal flux MAC Ultra Wash - half zoom

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	14587,2	14587,2	14587,2	0,00	0,00	0,00	0,00
1,0	14411,0	14411,0	14411,0	903,93	903,93	1,39	1,39
2,0	13941,0	13941,0	13941,0	2651,10	3555,03	4,07	5,46
3,0	13220,1	13220,1	13220,1	4232,05	7787,09	6,50	11,95
4,0	12203,5	12203,5	12203,5	5544,17	13331,25	8,51	20,46
5,0	11330,5	11330,5	11330,5	6595,72	19926,97	10,12	30,59
6,0	10273,6	10273,6	10273,6	7396,60	27323,57	11,35	41,94
7,0	9106,7	9106,7	9106,7	7836,88	35160,45	12,03	53,97
8,0	7732,1	7732,1	7732,1	7851,15	43011,59	12,05	66,02
9,0	6327,8	6327,8	6327,8	7423,46	50435,05	11,39	77,42
10,0	4549,9	4549,9	4549,9	6413,12	56848,16	9,84	87,26
11,0	2798,0	2798,0	2798,0	4783,24	61631,40	7,34	94,60
12,0	789,6	789,6	789,6	2554,96	64186,36	3,92	98,52
13,0	121,9	121,9	121,9	704,75	64891,11	1,08	99,61
14,0	32,1	32,1	32,1	128,47	65019,58	0,20	99,80
15,0	10,4	10,4	10,4	38,08	65057,66	0,06	99,86
20,0	0,7	0,7	0,7	59,80	65117,46	0,09	99,95
25,0	0,3	0,3	0,3	6,61	65124,07	0,01	99,96
30,0	0,2	0,2	0,2	3,90	65127,97	0,01	99,97
35,0	0,2	0,2	0,2	3,61	65131,57	0,01	99,97
40,0	0,1	0,1	0,1	3,31	65134,89	0,01	99,98
45,0	0,1	0,1	0,1	2,76	65137,64	0,00	99,98
50,0	0,1	0,1	0,1	2,31	65139,95	0,00	99,99
55,0	0,1	0,1	0,1	2,03	65141,98	0,00	99,99
60,0	0,1	0,1	0,1	1,77	65143,76	0,00	99,99
65,0	0,0	0,0	0,0	1,54	65145,30	0,00	100,00
70,0	0,0	0,0	0,0	1,26	65146,55	0,00	100,00
75,0	0,0	0,0	0,0	0,80	65147,36	0,00	100,00
80,0	0,0	0,0	0,0	0,39	65147,75	0,00	100,00
85,0	0,0	0,0	0,0	0,18	65147,93	0,00	100,00
90,0	0,0	0,0	0,0	0,07	65148,00	0,00	100,00

PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,04 V
Name:	MAC Ultra Wash - half zoom	Current:	5,841 A
Report:	21000131-6	Power:	1333,4 W
Date:	24.08.2021 10:01:47		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - half zoom	
Luminaire dimensions:			
Length:	300 mm		
Width:	450 mm		
Height:	855 mm		

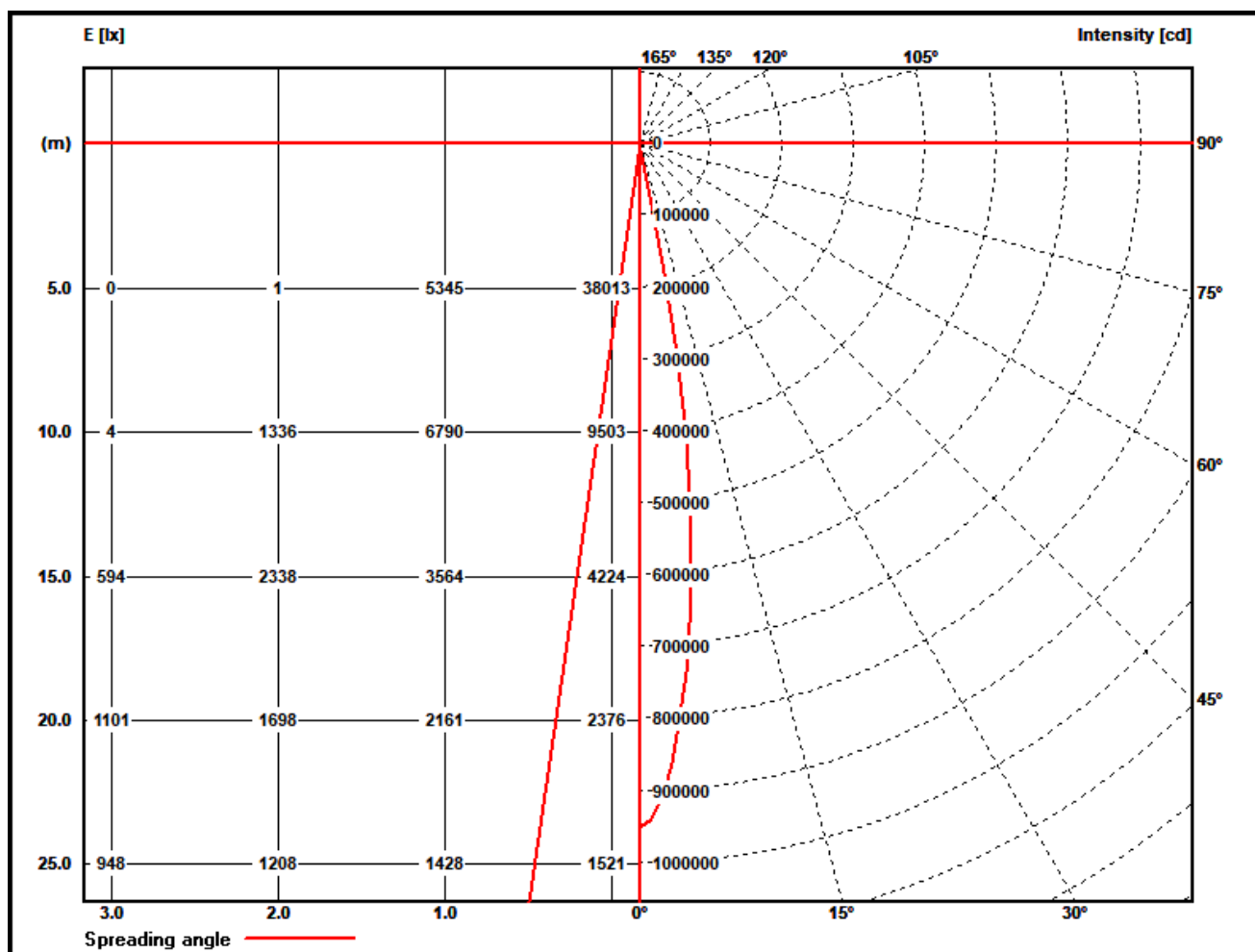
Polar diagram MAC Ultra Wash - half zoom



PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,04 V
Name:	MAC Ultra Wash - half zoom	Current:	5,841 A
Report:	21000131-6	Power:	1333,4 W
Date:	24.08.2021 10:01:47		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - half zoom	
Luminaire dimensions:			
Length:	300 mm		
Width:	450 mm		
Height:	855 mm		

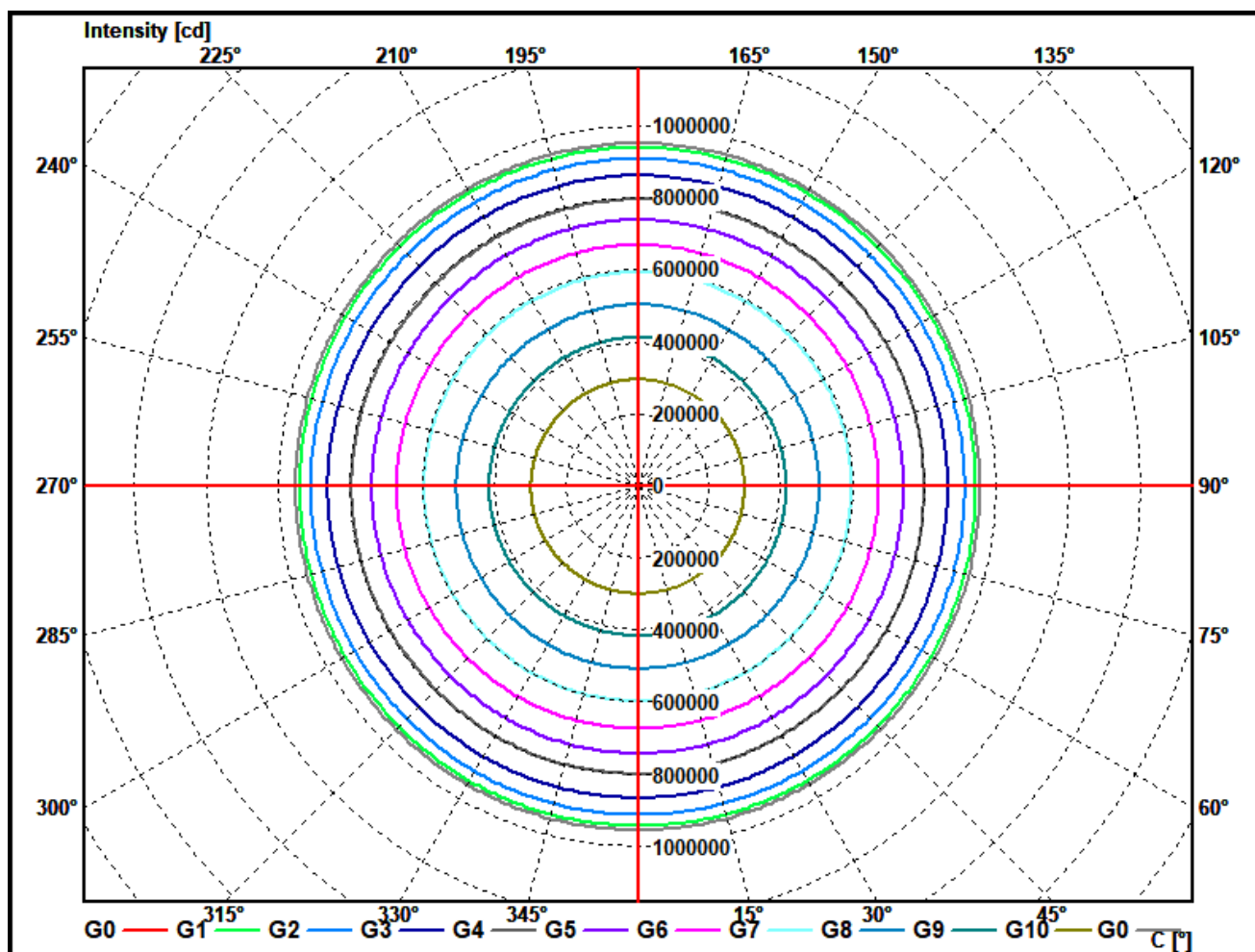
Illuminance and Intensity diagram MAC Ultra Wash - half zoom



PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,04 V
Name:	MAC Ultra Wash - half zoom	Current:	5,841 A
Report:	21000131-6	Power:	1333,4 W
Date:	24.08.2021 10:01:47		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - half zoom	
Luminaire dimensions:			
Length:	300 mm		
Width:	450 mm		
Height:	855 mm		

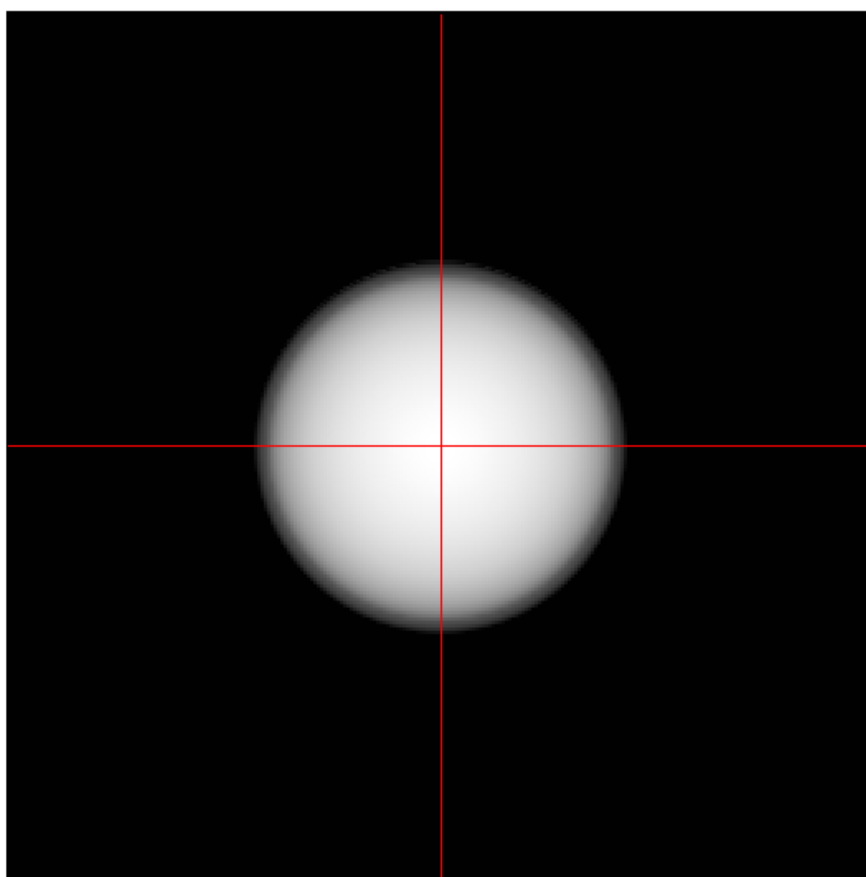
Cone diagram MAC Ultra Wash - half zoom



PHOTOMETRIC RESULTS

Manufacturer:	Harman Professional ApS	Voltage:	230,04 V
Name:	MAC Ultra Wash - half zoom	Current:	5,841 A
Report:	21000131-6	Power:	1333,4 W
Date:	24.08.2021 10:01:47		
Operator:	F. Siepe	No. of lamps:	1
		MAC Ultra Wash - half zoom	
Luminaire dimensions:			
Length:	300 mm		
Width:	450 mm		
Height:	855 mm		

Isoline diagram MAC Ultra Wash - half zoom



Luminaire mounting height above ground: 15 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
--	--------------

integrating sphere

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