



Shenzhen Belling Efficiency Testing Lab



TESTING
NVLAP LAB CODE 600102-0

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Test report of

IES LM-79-08

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Applicant:

LUMATEQ LIGHTING

Address:

4300 NW 37th Avenue, Miami, Florida, 33142

For Product:

Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires

Model No.:

LWP96BZ-110-277

Test laboratory: Shenzhen Belling Efficiency Testing Lab., 1/F., Building 1, 1F, No.1 building, Meibaohe industrial park, Dalang street, Shenzhen, Guangdong Prov.518101, China.

Complied by: Sam Chen

Review by: Jason Zhou

Project Engineer

Technical Manager

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Belling Efficiency Testing Lab. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the Federal Government.



1 General

1.1 Product Information

Manufacturer	Quicklite Electrical Co., Ltd.
Manufacturer Address	YUXING Industrial Park, Torch HiTech Industrial Zone, Yang Jiang East Road, ZHONGSHAN Guangdong
Brand Name	Lumateq
Luminaire Type	Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires
Model Number	LWP96BZ-110-277
Rated Inputs	AC 110-277V 50/60Hz
Rated Power	96W
Nominal CCT	5000K
LED Package, Array or Module	-
Date of Receipt Samples	2016-08-22

1.2 Standards or methods

- ANSI C78.377-2011: Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-2002: Harmonic Emission Limits-Related Power Quality Requirements for Lighting Equipment
- CIE Publication No.13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products



1.3 Equipment list

Device	Manufacture	Model No.	Serial No.	Calibration due date
Goniophotometric System	SENSING	GMS-3000	N.A	2016-09-22
AC Power Source	ALL POWER	APW-110N	992257	2016-08-28
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S13100234	2016-09-16
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2016-08-30
Integral Sphere	SENSING	SPR-600M	N.A	2016-08-28
Integral Sphere (2M)	SENSING	SD-20	N.A	2016-08-28
Digital Power Meter	YOKOGAWA	WT210	91L929742	2016-08-30
Optical Color and Electrical Measurement System	SENSING	SPR-3000	N.A	2016-08-28
Temperature/humidity/clock	VICTOR	VC230	57636	2016-09-14
Digital Anemometer	TECMAN	TD8901	026141	2016-09-14

Statement of Traceability: Shenzhen Belling Efficiency Testing Lab attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).



2 Test conducted and method

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within ± 0.2 percent under load.

2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

2.4 Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards. 4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

2.5 Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.



3 Test Result Summary

3.1 Integrating Sphere System

3.1.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
LWP96BZ-110-277	120.14	60	0.788	94.4	0.997

3.1.2 Additional Test

Test Item	Model	Test Voltage (V)	Frequency (Hz)	Test Result
Power factor	LWP96BZ-110-277	120	60	0.997
		277	60	0.938
Total harmonic distortion	LWP96BZ-110-277	120	60	13.5%
		277	60	14.1%
Off state power (W)	LWP96BZ-110-277	120	60	0
	LWP96BZ-110-277	277	60	0

3.1.3 Photometric data

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
LWP96BZ-110-277	12802.339	135.618	4869	74.0	22

3.1.4 Chromaticity Coordinate

Model Number	Duv	x	y	u'	v'
LWP96BZ-110-277	0.0025	0.3495	0.3601	0.2111	0.4894



3.2 Goniophotometer System

3.2.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
LWP96BZ-110-277	120.15	60	0.7864	94.16	0.9965

3.2.2 Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Zonal Lumen in 80-90°(%lm)
12712.20	118.33	9.58



4 Test Data

Report of Spectroradiometric & Electric Analysis for Light Source

Model No.:
Sample SN:
Manufacturer:
Tested By:
Description:

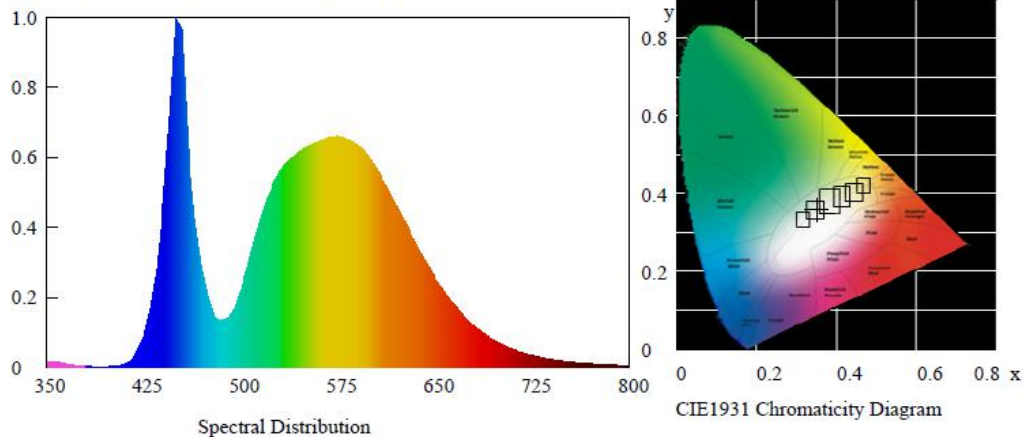
Application NO.:
Applicant:
Date:
Reviewed By:

Test Condition

Temperature: 25°C
Spectrum Range: 350-800 nm

RH: 58%
Scan Step: 5 nm

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.3495$ $y=0.3601$ $u'=0.2111$ $v'=0.4894$

Correlated Color Temperature: 4869 K

Dominant Wavelength: 571.0 nm(E)

Luminous Flux: 12802.339 lm

Purity: 0.1293

Chromaticity Difference: 0.0025Duv

Peak Wavelength: 438.7 nm

Color Ratio: $K_r=33.5\%$ $K_g=58.0\%$ $K_b=8.5\%$

Bandwidth: -434.5nm

Radiant Flux: 30.197 W

Rendering Index: $R_a=74.0$

$R_1=71$ $R_2=80$ $R_3=85$ $R_4=73$ $R_5=70$ $R_6=70$ $R_7=84$ $R_8=59$

$R_9=22$ $R_{10}=50$ $R_{11}=68$ $R_{12}=39$ $R_{13}=74$ $R_{14}=91$ $R_{15}=67$

Electric Parameters

Voltage: 120.14 V

Current: 0.788 A

Power Factor: 0.997

Power: 94.4 W

Luminous Efficacy: 135.618 lm/W

SENSING Instruments Co.,Ltd

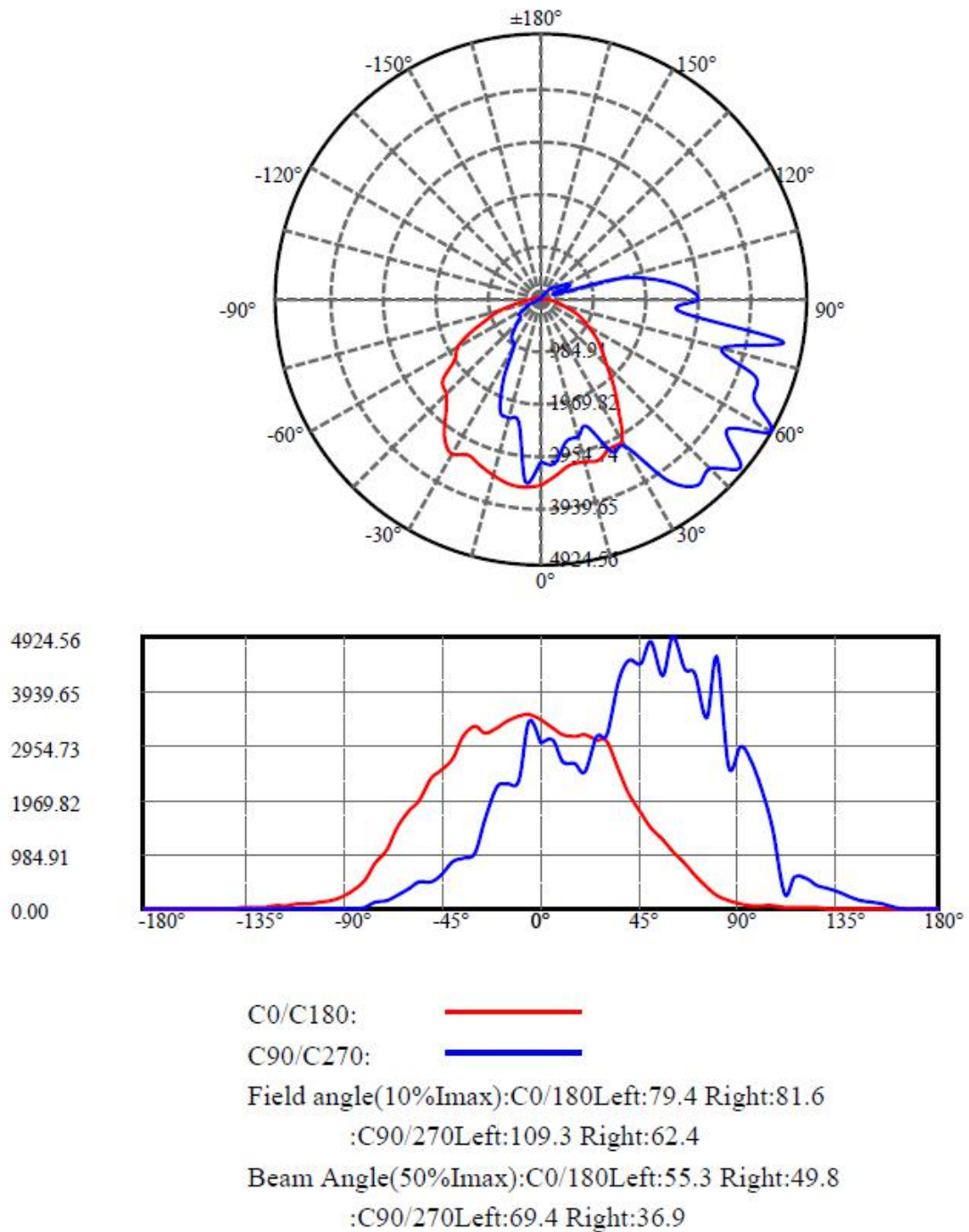
**Zonal Flux Diagram**

Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3117.170	0.000	0	.000%	.000%
5.0	3278.516	76.548	76.548	.602%	.602%
10.0	2953.778	223.596	300.144	1.759%	2.361%
15.0	2651.707	333.639	633.783	2.625%	4.986%
20.0	2519.797	427.190	1060.974	3.360%	8.346%
25.0	2455.731	522.633	1583.607	4.111%	12.457%
30.0	2227.485	594.348	2177.955	4.675%	17.133%
35.0	2215.207	658.286	2836.241	5.178%	22.311%
40.0	2283.524	756.909	3593.15	5.954%	28.265%
45.0	2124.067	824.131	4417.28	6.483%	34.748%
50.0	2081.723	860.258	5277.538	6.767%	41.516%
55.0	1837.422	863.071	6140.609	6.789%	48.305%
60.0	1867.802	866.986	7007.595	6.820%	55.125%
65.0	1663.798	869.062	7876.657	6.836%	61.961%
70.0	1483.248	805.581	8682.238	6.337%	68.298%
75.0	1190.622	706.045	9388.284	5.554%	73.853%
80.0	1351.968	686.075	10074.359	5.397%	79.250%
85.0	846.381	601.258	10675.617	4.730%	83.979%
90.0	848.270	466.465	11142.082	3.669%	87.649%
95.0	738.555	436.015	11578.097	3.430%	91.079%
100.0	579.570	359.364	11937.461	2.827%	93.906%
105.0	428.298	270.541	12208.002	2.128%	96.034%
110.0	161.802	154.881	12362.883	1.218%	97.252%
115.0	165.580	83.453	12446.336	.656%	97.909%
120.0	135.782	73.740	12520.076	.580%	98.489%
125.0	109.337	57.041	12577.117	.449%	98.937%
130.0	90.086	43.601	12620.718	.343%	99.280%
135.0	74.345	33.385	12654.102	.263%	99.543%
140.0	55.834	24.225	12678.327	.191%	99.734%
145.0	40.518	16.123	12694.45	.127%	99.860%
150.0	26.618	9.893	12704.343	.078%	99.938%
155.0	15.662	5.354	12709.697	.042%	99.980%
160.0	4.596	2.125	12711.821	.017%	99.997%
165.0	0.000	0.379	12712.2	.003%	100.000%
170.0	0.000	0.000	12712.2	.000%	100.000%
175.0	0.000	0.000	12712.2	.000%	100.000%
180.0	0.000	0.000	12712.2	.000%	100.000%

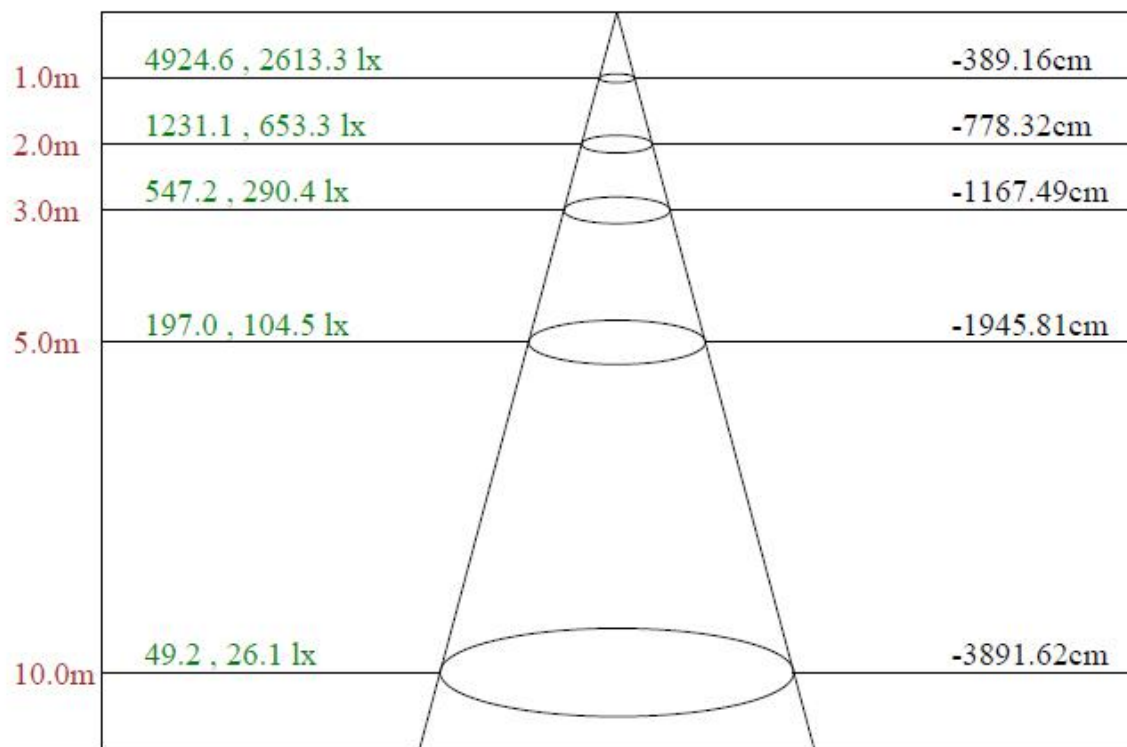
**Luminous Intensity Distribution Diagram**

Light Distribution Curve [Unit:cd]





Lux distance Curve



Max , Ave

Beam angle of C90 plane 127.26

**Luminous Intensity Distribution Data**

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	3436.08	3264.82	3136.37	3118.74	3156.52	3060.82	3012.96	2521.84	2081.09
22.5	3204.38	3428.53	3426.01	2937.41	2640.22	2343.03	2181.84	2038.28	2113.84
45.0	3065.85	3564.53	2871.92	2856.81	2468.95	2526.88	2557.10	2839.18	3398.31
67.5	3050.74	3126.30	2725.85	2705.70	2486.58	3080.97	2977.70	3886.91	4385.58
90.0	2997.85	3058.30	2672.96	2630.14	2491.62	3131.34	3141.41	4116.10	4501.44
112.5	2965.11	3086.00	2667.92	2824.07	2375.77	2899.63	2922.30	3476.38	4289.88
135.0	3038.15	3753.42	2939.93	2685.55	2625.10	2363.17	2499.18	2501.70	2909.70
157.5	3179.19	2977.70	3645.13	3075.93	2826.59	2521.84	2169.24	2013.09	1914.87
180.0	3436.08	3504.09	3476.38	3385.71	3272.38	3186.75	3312.67	3106.15	2710.74
202.5	3204.38	3106.15	3390.75	2554.59	2564.66	2564.66	2028.20	2050.87	1839.31
225.0	3065.85	3227.04	2541.99	2365.69	2330.43	2285.10	1970.28	1164.33	967.89
247.5	3050.74	3466.31	2897.11	2060.95	2254.88	1892.20	1028.33	945.22	1164.33
270.0	2997.85	3408.38	2335.47	2275.02	2212.06	1620.20	998.11	909.96	847.00
292.5	2965.11	3358.01	2892.07	2201.99	1977.83	1940.05	1056.04	892.33	1018.26
315.0	3038.15	3108.67	2385.84	1975.31	1846.87	1796.50	1834.27	1234.85	879.74
337.5	3179.19	3018.00	3254.75	2773.70	2786.29	2078.58	1950.13	1746.12	1514.42
360.0	3436.08	3264.82	3136.37	3118.74	3156.52	3060.82	3012.96	2521.84	2081.09

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	1741.09	1471.60	1255.00	1025.81	821.81	617.81	401.21	245.06	139.28
22.5	2128.95	2128.95	2048.35	1892.20	1909.83	1625.23	1345.67	1315.45	920.03
45.0	3375.64	3516.68	3305.12	3297.56	3222.01	2798.89	2345.54	2819.03	1809.09
67.5	4181.58	4488.85	3728.24	4556.85	3811.35	3713.13	3038.15	3947.35	2207.02
90.0	4443.51	4826.33	4224.40	4924.56	4352.84	4242.03	3468.83	4546.77	2567.18
112.5	3964.98	4347.81	3670.31	4279.80	3783.65	3672.83	2912.22	3836.54	2423.62
135.0	3181.71	3171.63	3229.56	3018.00	3151.49	2753.55	2282.58	2589.85	1917.39
157.5	1884.65	1839.31	1841.83	1695.75	1615.16	1524.49	1262.56	1124.04	917.52
180.0	2499.18	2363.17	1970.28	1768.79	1464.04	1078.70	814.25	519.58	325.65
202.5	1416.19	1101.37	879.74	768.92	562.40	433.95	310.54	212.32	136.76
225.0	1063.59	763.88	582.55	456.62	325.65	222.39	149.35	91.42	38.53
247.5	713.51	529.66	426.39	416.32	295.43	166.98	119.13	53.65	0.00
270.0	612.77	474.25	484.32	378.54	232.46	166.98	109.05	43.57	0.00
292.5	688.33	517.06	401.21	340.76	265.21	159.43	109.05	51.13	0.00
315.0	796.62	743.73	547.29	421.36	305.50	207.28	134.24	76.31	36.02
337.5	1292.78	1023.30	804.18	642.99	501.95	348.32	247.58	159.43	104.02
360.0	1741.09	1471.60	1255.00	1025.81	821.81	617.81	401.21	245.06	139.28

C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	98.98	73.79	58.68	51.13	41.05	30.98	23.42	15.87	10.83
22.5	882.26	648.03	491.88	353.36	242.54	151.87	111.57	91.42	68.76
45.0	1783.90	1481.67	1139.15	889.81	491.88	335.73	242.54	192.17	164.46
67.5	2622.59	2194.43	1819.16	1320.49	222.39	464.17	433.95	376.02	318.10
90.0	2932.37	2688.07	2098.72	1433.82	265.21	592.62	547.29	433.95	355.87
112.5	2403.47	2327.91	1821.68	1421.23	398.69	476.77	378.54	320.61	282.84
135.0	1725.98	1504.34	1169.37	887.29	574.99	358.39	252.61	184.61	144.31
157.5	731.14	590.10	431.43	315.58	209.80	131.72	96.46	73.79	53.65
180.0	199.72	151.87	121.65	91.42	78.83	63.72	53.65	38.53	23.42
202.5	86.39	68.76	53.65	41.05	28.46	20.90	15.87	10.83	8.31
225.0	15.87	10.83	8.31	3.27	0.76	0.76	0.00	0.00	0.00
247.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
292.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
315.0	18.39	15.87	10.83	8.31	5.79	3.27	0.76	0.76	0.00
337.5	71.28	61.20	48.61	36.02	28.46	18.39	15.87	10.83	10.83
360.0	98.98	73.79	58.68	51.13	41.05	30.98	23.42	15.87	10.83

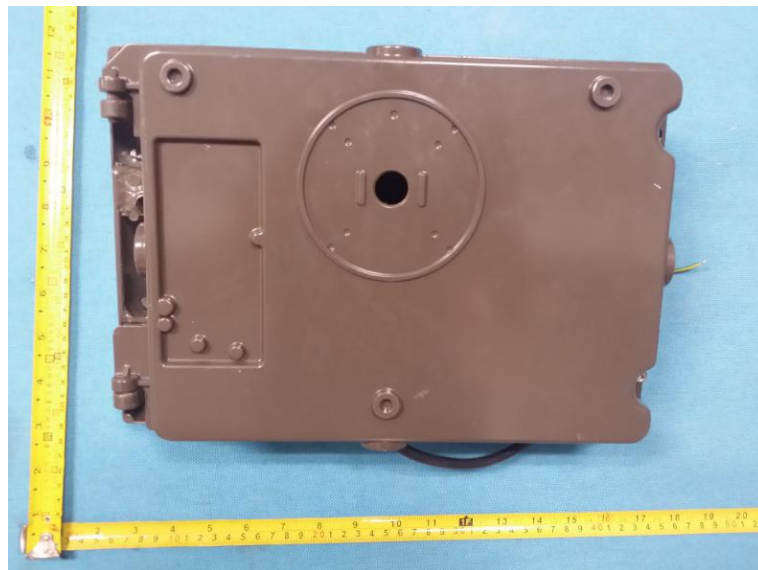


C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.5	53.65	30.98	18.39	0.00	0.00	0.00	0.00	0.00	0.00
45.0	151.87	124.17	88.91	56.16	25.94	3.27	0.00	0.00	0.00
67.5	255.13	194.69	149.35	106.54	66.24	23.42	0.00	0.00	0.00
90.0	297.95	227.43	166.98	126.68	81.35	28.46	0.00	0.00	0.00
112.5	240.02	184.61	139.28	93.94	58.68	18.39	0.00	0.00	0.00
135.0	129.20	104.02	73.79	41.05	18.39	0.00	0.00	0.00	0.00
157.5	33.50	18.39	10.83	0.76	0.00	0.00	0.00	0.00	0.00
180.0	15.87	8.31	0.76	0.76	0.00	0.00	0.00	0.00	0.00
202.5	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
247.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
292.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
315.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
337.5	5.79	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360.0	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C/γ(°)	180.0
0.0	0.00
22.5	0.00
45.0	0.00
67.5	0.00
90.0	0.00
112.5	0.00
135.0	0.00
157.5	0.00
180.0	0.00
202.5	0.00
225.0	0.00
247.5	0.00
270.0	0.00
292.5	0.00
315.0	0.00
337.5	0.00
360.0	0.00



Photo Document



****End of test report****